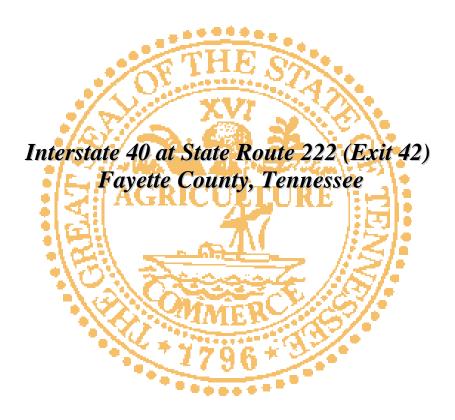
# INTERCHANGE MODIFICATION STUDY



### PREPARED BY TRANSYSTEMS

**FOR** 

THE TENNESSEE DEPARTMENT OF TRANSPORTATION PROJECT PLANNING DIVISION

November 2011

## **TABLE OF CONTENTS**

| Execut   | ive Su | ummary   | iv    |
|----------|--------|--|-------|
| 1.0      | Introd | luction  | 1     |
|          | 1.1    | Study Scope  | 1     |
|          | 1.2    | Project Need   | 1     |
|          | 1.3    | Description of Project Area  | 2     |
|          | 1.4    | Relationship to Other Highway Improvement Plans and Programs                 | 6     |
| 2.0      | Prelin | ninary Planning Data   | 9     |
|          | 2.1    | Land Use   | 9     |
|          | 2.2    | Environmental Concerns   | 12    |
|          | 2.3    | Traffic Served   | 12    |
|          | 2.4    | Discussion of Interchange Concepts   | 15    |
| 3.0      | Engin  | eering Investigation   | 20    |
|          | 3.1    | Traffic Operations   | 20    |
|          | 3.2    | Crash Analysis   | 27    |
|          | 3.3    | S.R. 222 Bridge Inspection Report  | 28    |
|          | 3.4    | Wastewater Treatment Facility  | 29    |
|          | 3.5    | Interchange Concept Evaluation Comparison                                    | 29    |
|          | 3.6    | Access Analysis (FHWA Eight Policy Points)                                   | 33    |
|          |        | FHWA Prompt-List for Reviewing Interstate Access Requests (Concepts 1 and 5) |       |
| 4.0      | Sumn   | nary and Conclusions   | 38    |
|          | 4.1    | TDOT Design Concurrence Letter and Local Agency Letters of Support           | 38    |
| Tables   |        |  |       |
| 1.1      | -      | U.S. Census Population Trends  | 6     |
| 2.1      | -      | Historical Traffic Volumes Growth Rate Summary                               | 13    |
| 2.2      | -      | Estimated Development Build-Out Trips  | 14    |
| 2.3      | -      | Description of Interchange Concepts  | 15    |
| 3.1      | -      | Level of Service (LOS) Description   | 20    |
| 3.2      | -      | Traffic Volumes (Two-Way) and Truck Percentages                              | 21    |
| 3.3 – 3. | 8 -    | Capacity Analysis Results  | 22-27 |
| 3.9      | -      | I-40/S.R. 222 Crash Data Summary   | 28    |

| Figur | es |   |    |
|-------|----|---|----|
| 1.1   | -  | Location Map  | 3  |
| 1.2   | -  | Existing Interchange Overview                                 | 4  |
| 1.3   | -  | Northbound on S.R. 222  | 5  |
| 1.4   | -  | Southbound on S.R. 222  | 5  |
| 1.5   | -  | Concept Relationship  | 8  |
| 2.1   | -  | Abandoned Gas Station and UST's                               | 9  |
| 2.2   | -  | Pilot Travel Center   | 10 |
| 2.3   | -  | Deerfield Inn   | 10 |
| 2.4   | -  | Exxon Gas Station/Convenience Store                           | 11 |
| 2.5   | -  | Bethlehem Hebron Chapel Church                                | 11 |
| 2.6   | -  | TDOT Traffic Count Stations                                   | 12 |
| 2.7   | -  | Combination Interchange Option (with Shared Frontage Road)    | 19 |
| 2.8   | -  | Combination Interchange Option (with Separate Frontage Roads) | 19 |
| 3.1   | -  | Concept 1   | 31 |
| 3.2   | -  | Concept 5   | 32 |
|       |    |   |    |

## Appendix

- A Traffic Data
- B Concept Figures
- C Cost Estimate Worksheets
- D Highway Capacity Analysis Output Files

#### 1.0 INTRODUCTION

#### 1.1 Study Scope

The scope of this study is to provide a detailed evaluation of potential modifications and/or configurations to better accommodate existing and future traffic for the study interchange of I-40 at S.R. 222 (Exit 42). This study addresses the issues required to obtain Federal Highway Administration (FHWA) approval for an interchange modification, consistent with the Tennessee Department of Transportation's (TDOT) roadway design standards. This report considers existing and future traffic conditions in the project study area to assess the potential traffic impacts on the interstate and connecting roadway system over a twenty (20) year planning horizon.

#### 1.2 Project Need

The request for upgrading the study interchange was initiated by the Tennessee Department of Economic and Community Development (ECD) on behalf of the Tennessee Valley Authority (TVA). In March 2007, the University of Memphis conducted an economic research study on land adjacent to the interchange area referred to as the Memphis-Jackson I-40 Advantage Megasite. The report, *The Potential Economic Impact of an Automobile Assembly Plant: I-40 Advantage Auto Park*, discusses the economic impacts and characteristics of the Megasite totaling approximately 2,000 jobs and evaluates the potential for this location to bring jobs, income, and tax revenue to the citizens of West Tennessee.

TVA's Megasite Program offers sites suitable for large-scale manufacturing that are certified as ready for development. To be certified, a large land parcel must meet the criteria of being ready for sale, accessible to utilities, and physically developable. The proposed improvements for the study interchange are essential to the development of the Megasite located on the north side of I-40 within the study area as shown in *Figure 1.1*.

The adjacent interchanges as described in **Section 1.3** are too far away to adequately serve the Megasite. The local road system is adequate for the current land uses in the vicinity of the study interchange. However, if the Megasite is developed, the local road system and existing interchange will not provide the necessary capacity and the desired access to function adequately. As detailed in **Section 3.1**, the capacity of the study interchange will be at LOS F if the Megasite is developed without modifications to the interchange.

The existing two (2) lane S.R. 222 bridge is constructed over I-40 on a fifty-two (52) degree skew angle. The latest bridge inspection report was conducted on December 14, 2010. During this inspection, the overall condition of the study bridge was determined to be rated fair with a sufficiency rating of 63.2. TDOT Structures Division has determined that the existing bridge consists of four (4) spans and is not a candidate for retrofit and needs to be replaced for the following reasons:

- Any new bridge would be a two (2) span structure for the safety of motorists travelling on I-40.
- A two (2) span structure would accommodate any future widening of I-40 without additional bridge modifications.
- The cost of widening the existing structure to accommodate the required travel lanes plus full shoulders would be greater than the cost of replacing the entire structure.

The ECD has agreed to provide 100% of the funding for the preparation of the Preliminary Engineering documents for the S.R. 222 construction improvements. Even though there are no confirmed developments for the Megasite, the ECD envisions that all of the paperwork including construction design documents be completed and are shovel-ready projects when a tenant for the Megasite is identified so that the roadway improvements can be in place in conjunction with the opening of the Megasite.

#### 1.3 Description of Project Area

The I-40 at S.R. 222 (Exit 42) study interchange, a traditional diamond interchange, is located in Fayette County near Mile Marker 42. Within the interchange study area, I-40 is a four (4) lane divided, limited access interstate facility and S.R. 222 is a two (2) lane arterial facility that bridges over I-40. S.R. 222, also known as Stanton-Somerville Road, provides direct interstate access to Stanton to the north side and Sommerville to the south. Sommerville is the County Seat for Fayette County.

The nearest interchange to the east along I-40 is located at Exit 47 (Dancyville Road) and the nearest interchange to the west is located at Exit 35 (S.R. 59). These adjacent I-40 interchanges are approximately five (5) miles to the east and seven (7) miles to the west, respectively.

**Figure 1.1** depicts the study location and the surrounding area with the proximity of the adjacent interchanges highlighted and the approximate location of the Megasite. **Figure 1.2** shows the study interchange area on an aerial photograph. **Figure 1.3** and **Figure 1.4** depict the northbound and southbound views along S.R. 222, respectively.

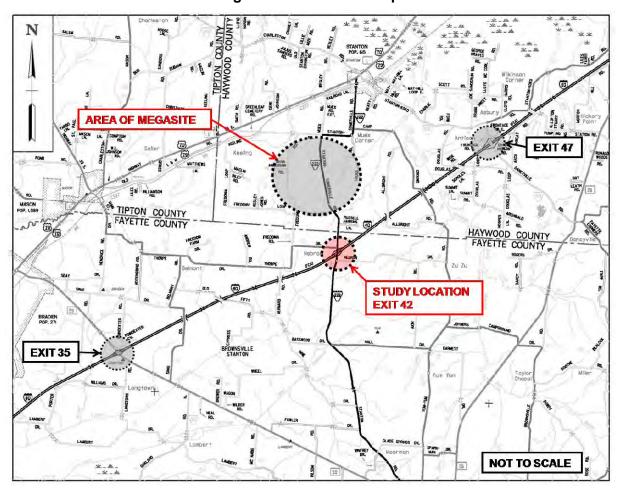


Figure 1.1 – Location Map



Figure 1.2 – Existing Interchange Overview



Figure 1.3 – Northbound on S.R. 222





#### Population and Growth

**Table 1.1** presents population trends for the area. From the year 1990 to 2009, the population in Fayette County increased by 52% while Haywood County decreased by 3%, respectively. For comparison, the statewide pace increased during the same period by 29%. The difference in growth between Fayette and Haywood Counties is mainly due to the influence of the Memphis suburban growth on the western area of Fayette County, which is approximately twenty (20) miles west of the study interchange. The Megasite development area is entirely in Haywood County and closer to the study interchange (located just south of the county line in Fayette County) than the primary population centers in Fayette County.

| Year        | Fayette County | Haywood County | Tennessee |
|-------------|----------------|----------------|-----------|
| 1990        | 25,509         | 19,437         | 4.9 mil   |
| 2000        | 28,806         | 19,797         | 5.7 mil   |
| 2009 (Est.) | 38,785         | 18,881         | 6.3 mil   |

Table 1.1 – U.S. Census Population Trends

#### 1.4 Relationship to Other Highway Improvement Plans and Programs

In 2009, Tennessee Governor Phil Bredesen requested the State's General Assembly to include approximately \$27 million in next fiscal-year's budget for the construction of roads, bridges, water and sewer lines, and other infrastructure items related to the potential Megasite. The proposed modifications to the I-40 at S.R. 222 (Exit 42) interchange will provide significant transportation significant infrastructure improvements for the Megasite. The request was approved. Currently, the ECD has authorized funding for the preparation of the Preliminary Engineering documents for the S.R. 222 construction improvements in conjunction with this study.

This Interchange Modification Study (IMS) is being prepared in conjunction with other studies, planned projects, and consideration for future needs within the study area. The following summarizes these considerations and efforts:

#### I-40/I-81 Corridor Feasibility Study

In 2007, Parsons Brinckerhoff prepared an I-40/I-81 Corridor Feasibility Study for TDOT. Based on the findings of the study, the I-40 corridor will merit at least one (1) additional lane in each direction in the future.

#### S.R. 222 Relocation & System Improvements Feasibility Study

A draft study was prepared in 2009 to evaluate the feasibility of improving S.R. 222 to better meet the needs of the area necessitated if the Megasite is developed. The S.R. 222 study limits extended 5.81 miles from the I-40 interchange in Fayette County to the intersection of S.R. 1 (U.S. 70/U.S. 79) in Haywood County. The feasibility study established the immediate and long-term needs of the study area and assessed various options for meeting these needs in the future. One need is to relocate the alignment of S.R. 222 to allow for the full development of the Megasite area.

The ECD has agreed to provide 100% of the funding for the preparation of the Preliminary Engineering documents for the S.R. 222 construction improvements. Even though there are no confirmed developments for the Megasite, the ECD envisions that all of the paperwork including

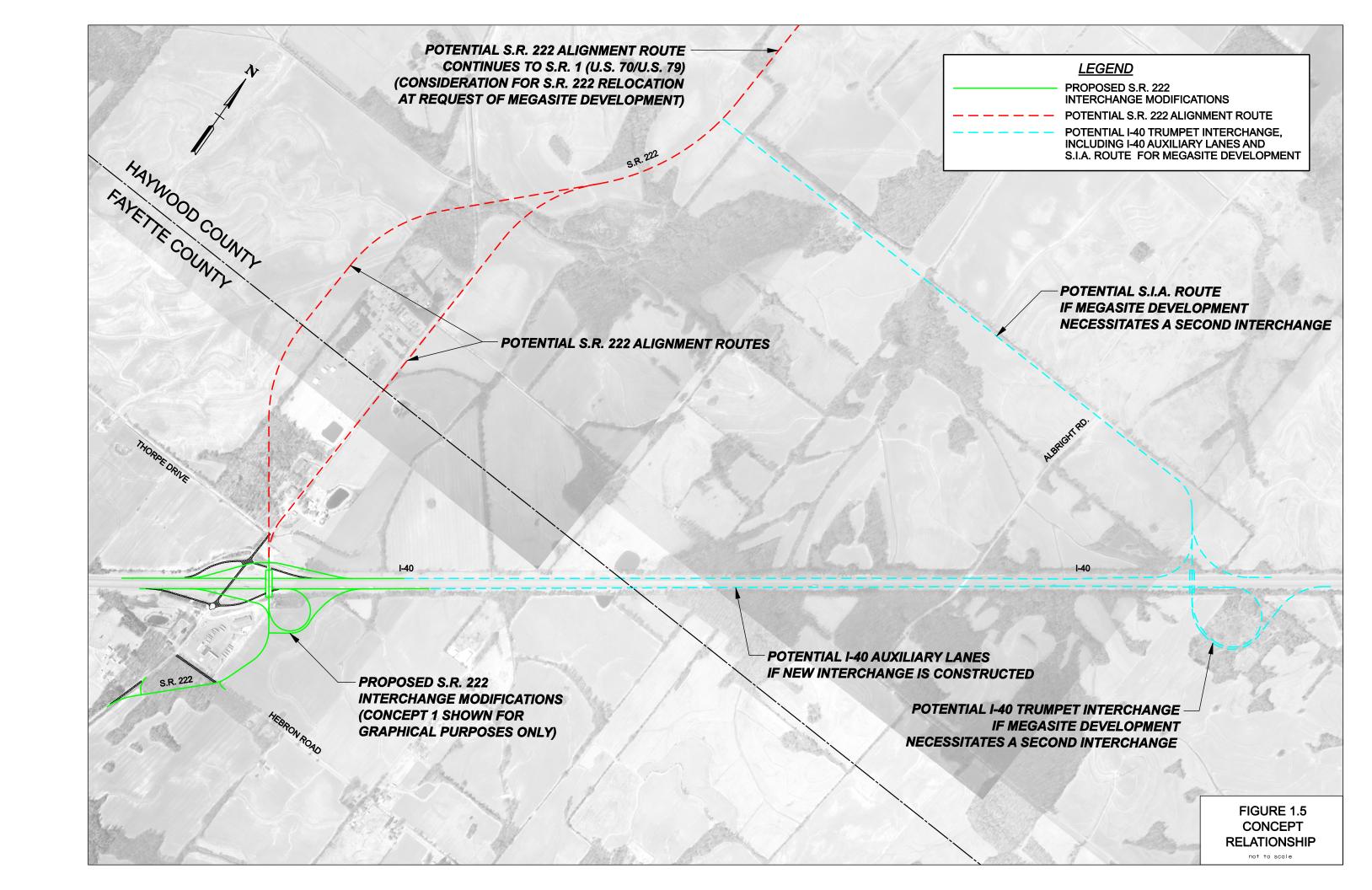
construction design documents be completed and are shovel-ready projects when a tenant for the Megasite is identified so that the roadway improvements can be in place in conjunction with the opening of the Megasite.

#### Potential I-40 Interchange Justification Study (IJS)

There is a potential need for a new interchange to the east if the Megasite is developed and demand exceeds the capacity at an improved Exit 42 interchange. A new interchange is solely dependent upon the potential development of the Megasite and the ability to accommodate capacity at the existing Exit 42 interchange. Preliminary analysis was conducted to investigate the viability of providing a new interchange on I-40 between the existing interchanges at Exit 42 (S.R. 222) in Fayette County and Exit 47 (Dancyville Road) in Haywood County. The analysis conceptualized the proposed interchange configuration is a trumpet layout with a bridge over I-40 connecting to a new State Industrial Access (SIA) roadway on the north side of I-40. Auxiliary lanes along I-40 are included in conjunction with the addition of a new interchange.

Potential State Industrial Access (SIA) Road to Connect the Potential I-40 Interchange Similar to the new interchange, the State Industrial Access (SIA) road is directly dependent upon the potential new interchange and the development of the Megasite. The SIA provides an alternative connection from the Megasite to the potential new interchange on I-40.

**Figure 1.5** (Concept Relationship) presents a depiction of how these future (potential and feasibility study) projects relate to the improvements at the I-40/S.R. 222 interchange.



#### 2.0 PRELIMINARY PLANNING DATA

#### 2.1 Land Use

The land in the vicinity of the study interchange is a mixture of various commercial, residential, agricultural, and institutional land uses. Specific areas adjacent to this interchange are discussed below.

#### Northeast Quadrant

In the study interchange's northeast quadrant, there is an abandoned service station shown in *Figure 2.1*. Underground storage tanks (UST's) exist on this abandoned site.



Figure 2.1 – Abandoned Service Station and UST's

#### Northwest Quadrant

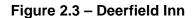
In the study interchange's northwest quadrant, the land use is primarily agricultural with some residential. No commercial development exists in this quadrant.

#### Southeast Quadrant

In the study interchange's southeast quadrant, there is a truck stop (Pilot Travel Center) and a hotel (Deerfield Inn) shown in *Figure 2.2* and *Figure 2.3*, respectively. The Pilot Travel Center consists of many uses (truck stop/gas station/convenience store). As a result, the truck percentage within the vehicle classification composition on S.R. 222 between I-40 and the Pilot Travel Center is almost half (48%). In addition, there is a waste water treatment facility located adjacent to I-40 that is owned by the Pilot Travel Center and also used by the Deerfield Inn.



Figure 2.2 – Pilot Travel Center



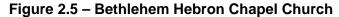


## Southwest Quadrant

In the study interchange's southwest quadrant, there is a gas station/convenience store (Exxon) and a church (Bethlehem Hebron Chapel) shown in *Figure 2.4* and *Figure 2.5*, respectively. A cemetery is adjacent to the church.



Figure 2.4 – Exxon Gas Station/Convenience Store





### Northern Area

The northern area along S.R. 222 contains agricultural and residential land uses along with some commercial land uses, a service station (Earl's Garage) and a motel (America's Best Value Inn).

Southern Area The southern area along S.R. 222 is primarily undeveloped with some agricultural and residential land uses.

#### 2.2 Environmental Concerns

There are UST's in three (3) of the four (4) quadrants of the study interchange. Other concerns include potential impacts to the waste water treatment facility in the southeast quadrant. Two (2) concepts discussed later in this report include widening S.R. 222 adjacent to the church/cemetery site in the southwest quadrant of the interchange.

As this project progresses in the National Environmental Policy Act (NEPA) planning process, it will be necessary to conduct other studies to determine detailed environmental and historical impacts. TDOT will perform all necessary studies including ecological and historical studies.

#### 2.3 Traffic Served

The traffic volumes used in this study were approved by TDOT on April 14, 2011. A copy of the TDOT approval letter is contained in *Appendix A*. The following is a summary of the background information utilized in the development of these traffic volumes.

#### Traffic Volume Data Collection

24-hour traffic counts were obtained from TDOT within the study area. In addition, TDOT provided I-40 ramp counts for each of the twelve (12) entrance/exit ramps within the study area. Turning movement counts (TMC) were also collected at ramp terminal intersections. Truck percentages were provided by TDOT with the exception of the Megasite that was estimated to be 10%. The traffic volume data collected for this study is contained in *Appendix A*.

#### **Historical Growth Rate Analyses**

Historical traffic volumes were obtained from nine (9) traffic count stations within the project study area. Three (3) traffic count stations were located on I-40 and two (2) traffic count stations each were located at the three (3) study interchanges (Exit 35, Exit 42, and Exit 47). All of these traffic count stations are maintained by TDOT. A summary of the historical traffic volumes growth rates at these nine traffic count stations is shown in *Figure 2.6* and *Table 2.1*.

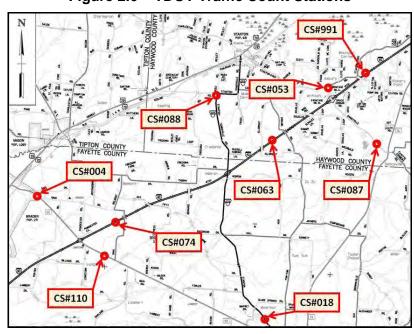


Figure 2.6 - TDOT Traffic Count Stations

Table 2.1 – Historical Traffic Volumes Growth Rate Summary

|                                      | Annual Average Daily Traffic (AADT) |        |                             |        |                                |        |  |        |        |
|--------------------------------------|-------------------------------------|--------|-----------------------------|--------|--------------------------------|--------|--|--------|--------|
| Year                                 | I-40 Mainline                       |        | SR 59 Mainline<br>(Exit 35) |        | S.R. 222 Mainline<br>(Exit 42) |        | Dancyville Road<br>Mainline<br>(Exit 47) |        |        |
|                                      | CS#074                              | CS#063 | CS#991                      | CS#004 | CS#110                         | CS#088 | CS#018                                   | CS#053 | CS#087 |
| 2010                                 | 26,834                              | 26,502 | 35,613                      | 2738   | 2695                           | 581    | 689                                      | 459    | 890    |
| 2009                                 | 26,568                              | 25,896 | 34,730                      | 2350   | 2864                           | 576    | 743                                      | 463    | 924    |
| 2008                                 | 26,798                              | 26,580 | 33,339                      | 2573   | 2593                           | 573    | 662                                      | 426    | 886    |
| 2007                                 | 35,626                              | 37,392 | 36,856                      | 2779   | 2804                           | 599    | 748                                      | 463    | 912    |
| 2006                                 | 34,253                              | 33,295 | 36,960                      | 3170   | 3137                           | 593    | 692                                      | 450    | 956    |
| 2005                                 | 36,566                              | 33,382 | 35,983                      | 2805   | 2725                           | 644    | 749                                      | 404    | 972    |
| 2004                                 | 30,448                              | 31,721 | 33,168                      | 2494   | 3070                           | 626    | 720                                      | 396    | 964    |
| 2003                                 | 33,943                              | 31,501 | 31,462                      | 2482   | 2960                           | 601    | 686                                      | 355    | 899    |
| 2002                                 | 30,670                              | 33,972 | 31,213                      | 2229   | 4372                           | 536    | 702                                      | 426    | 956    |
| 2001                                 | 36,234                              | 34,958 | 32,109                      | 2209   | 3137                           | 518    | 909                                      | 433    | 937    |
| 2000                                 | 34,030                              | 31,810 | 31,730                      | 2875   |                                | 545    | 632                                      | 420    | 853    |
| 10-Year<br>Average<br>Growth<br>Rate | -0.85%                              | -0.92% | 2.37%                       | 2.17%  | 1.80%                          | 0.69%  | 1.07%                                    | 2.56%  | 0.13%  |
| 2-Year<br>Average<br>Growth<br>Rate  | -0.15%                              | 0.07%  | 2.71%                       | 2.86%  | 1.75%                          | 0.67%  | 1.80%                                    | 3.20%  | 0.22%  |

As shown in *Table 2.1*, the traffic volumes on the I-40 mainline experienced an overall 20%± reduction between 2007 and 2008. Since 2008, the I-40 traffic volumes have increased at a slow to moderate growth rate. As a result, the historical traffic volumes were analyzed for both a ten (10) year period (2000-2010) and for a two (2) year period (2008-2010). The overall average growth rate for both analyses was calculated using simple linear regression procedures. Relying on engineering judgment and being conservative, it was decided to only use CS#991 for the I-40 mainline growth rate calculations since negligible growth had occurred at the other two (2) traffic count stations and both of these traffic count stations had experienced a greater reduction in traffic since 2008 when compared against CS#991. The final growth rate for each mainline was determined by combining the 2-year (2008-2010) and the 10-year (2000-2010) growth rates, giving two-thirds weight to the 2-year growth rate and one-third weight to the 10-year growth rate. In addition, the final growth rate for each of the side roads (i.e. S.R. 59, S.R. 222, and Dancyville Road) was adjusted to 2.00% if the growth rate was calculated below 2.00%.

The following are the final calculated growth rates for each mainline utilized in this study:

I-40: 2.60%
SR 59 (Exit 35): 2.19%
S.R. 222 (Exit 42): 2.00%
Dancyville Road (Exit 47): 2.00%

#### Horizon Years and Time Periods Analyzed

The horizon years were determined to be 2014 and 2034. For both horizon years, the time periods analyzed were AM and PM Design Hour Volumes (DHV) and Annual Average Daily Traffic (AADT).

#### Traffic Volume Projections

Traffic volumes were projected using the previously described growth rates within the project study area for the horizon years 2014 and 2034 and for each time period AM and PM DHV and AADT. A truck stop, Pilot Travel Center, is located on S.R. 222 (Exit 42) in the southeast quadrant of the I-40/S.R. 222 interchange. This place of business attracts heavy truck volumes not indicative of the other sections along S.R. 222. In order to reduce the interchange traffic volumes down to the S.R. 222 traffic volumes southeast of the Pilot Travel Center, the S.R. 222 intersection with the Pilot Travel Center has been included in the traffic volume projections.

#### Megasite and Other Assumed Developments

In addition to the traffic volume projections developed for horizon years 2014 and 2034, trips were generated for the megasite and other assumed developments. The number of trips was estimated using the Institute of Transportation Engineer's (ITE) Trip Generation Manual, 7th Edition. The development build-out was assumed to be 2,000 full-time employees for the Industrial Park Land Use Type. In addition, the trips were increased to account for other assumed development around the I-40/S.R. 222 interchange which included four (4) fast food restaurants and two (2) convenience markets with gas pumps. Overall, a total of 17,708 trips were estimated for the Megasite development build-out. **Table 2.2** summarizes the trips generated for each land use.

Table 2.2 – Estimated Development Build-Out Trips

| Land Use Description |                       | Industrial Park                     | Convenience<br>Markets with Gas<br>Pumps | Fast Food Restaurant<br>with Drive Thru |
|----------------------|-----------------------|-------------------------------------|--|---|
| ITE Code             |                       | 130                                 | 853                                      | 934                                     |
| Developme            | nt Size (Each)        | 2000 Employees                      | 3,000 Gross SF                           | 3,000 Gross SF                          |
| Number of            | Developments          | 1                                   | 2  | 4                                       |
| Daily                | Average Rate          | 3.34/Employee<br>(50% In - 50% Out) | 845.60/KSF<br>(50% In - 50% Out)         | 496.12/KSF<br>(50% In - 50% Out)        |
|                      | Total Estimated Trips | 6,680                               | 5,074                                    | 5,954                                   |
| AM<br>Peak<br>Hour   | Average Rate          | 0.47/Employee<br>(86% In - 14% Out) | 45.58/KSF<br>(50% In - 50% Out)          | 53.11/KSF<br>(51% In - 49% Out)         |
| A G H                | Total Estimated Trips | 940                                 | 274                                      | 638                                     |
| PM<br>Peak<br>Hour   | Average Rate          | 0.46/Employee<br>(20% In - 80% Out) | 60.61/KSF<br>(50% In - 50% Out)          | 34.64/KSF<br>(52% In - 48% Out)         |
|                      | Total Estimated Trips | 920                                 | 364                                      | 416                                     |

The trip distribution percentages are contained in *Appendix A* along with the development trip assignments for time period analyzed. To be conservative and a worst-case scenario, internal capture and pass-by reductions were not included in the above trip totals in the trip assignments.

#### **Traffic Volume Diagrams**

Traffic volume diagrams were prepared for I-40 between Exit 35 and Exit 47 and approved by TDOT on April 14, 2011. These traffic volume diagrams include the AM DHV, the PM DHV and the AADT for the horizon years 2014 and 2034. The traffic volumes include the calculated traffic volume projections and the total generated trips from full build-out of the Megasite and other assumed developments. The traffic volume diagrams are contained in *Appendix A*.

#### 2.4 Discussion of Interchange Concepts

During the course of this study, a total of six (6) build interchange concepts were developed for evaluation. In addition, a no-build alternative was evaluated to determine the transportation impacts if no construction improvements are made to the study interchange. The following is a summary of the study concepts considered and evaluated include:

Table 2.3 – Description of Interchange Concepts

| Concept No. | Description  |
|-------------|--|
| Concept 1   | Partial Traditional Diamond Interchange located to the east of the existing interchange. |
| Concept 2   | Traditional Diamond Interchange located to the east of the existing interchange.         |
| Concept 3   | Diverging Diamond Interchange located to the east of the existing interchange.           |
| Concept 4   | Traditional Diamond Interchange located at the existing interchange.                     |
| Concept 5   | Combined Traditional/Tight Diamond Interchange located at the existing interchange.      |
| Concept 6   | Traditional Diamond Interchange located to the west of the existing interchange.         |
| -           | No-Build Alternative   |

Cost estimates were prepared for the construction of all six (6) concepts. These cost estimates include the costs to construct a new S.R. 222 bridge over I-40 and the required modifications to S.R. 222 such as providing connections back to S.R. 222 on both the north and south sides of I-40. Concept figures and cost estimates including the breakdown details for the six (6) concepts are contained in *Appendix B* and *Appendix C*, respectively. All concept figures provide full interchange access for all traffic movements and show connections to public roads. The following is a description of these six (6) interchange concepts and the No-Build Alternative:

#### Concept 1 – Partial Traditional Diamond Interchange East of the Existing Interchange

This concept consists of constructing a new S.R. 222 bridge, perpendicular to I-40, approximately 500 feet east of the existing S.R. 222 bridge structure. A five (5) lane section for S.R. 222 is proposed with this concept that consists of two (2) travel lanes in each direction and a center left turn lane in each direction. An I-40 eastbound loop ramp is located in the southeast quadrant of the interchange for traffic heading north on S.R. 222 and an I-40 eastbound right turn ramp is located in the southwest quadrant of the interchange for traffic heading south on S.R. 222. The S.R. 222 improvements extend approximately 1,100 feet north from the northern ramp terminal intersection and 2,500 feet south from the southern ramp terminal intersection.

The loop ramp provides for improved access to the north side of the interchange for vehicular movements from the west. This is a critical movement for goods and supplies if the Megasite ntial Megasite development. This loop provides separation from other off-ramp movements and eliminates the need for signalization at this ramp terminal. Because of the loop ramp, the I-40 eastbound exit traffic movement will utilize a split along the exit ramp for the north/south direction. The will require an overhead sign truss and two (2) large guide signs that are not included in any of the other concepts.

On the north side of I-40, a field drive would be connected to Thorpe Drive since it is located within the proposed controlled access limits. On the south side of I-40, a separate roadway connection is provided from the existing S.R. 222 roadway to the relocated S.R. 222 roadway for access to the Pilot Travel Center and other nearby destinations. The existing wastewater treatment facility would be relocated with this concept or an alternative system provided. The estimated cost for Concept 1 is \$13.1 million.

#### Concept 2 – Traditional Diamond Interchange East of the Existing Interchange

This concept is similar to Concept 1 with the exception of eliminating the I-40 eastbound loop ramp located in the southeast quadrant of the interchange. As a result, this I-40 eastbound traffic movement must turn left via a signalized intersection in order to head north on S.R. 222. Similar to Concept 1, the existing wastewater treatment facility would need to be relocated or an alternative system provided. The estimated cost for Concept 2 is \$12.2 million.

#### Concept 3 – Diverging Diamond Interchange East of the Existing Interchange

This diverging diamond concept consists of constructing a new S.R. 222 bridge perpendicular to I-40 approximately 500 feet east of the existing S.R. 222 bridge structure. A four (4) lane section for S.R. 222 is proposed with this concept that consists of two (2) travel lanes in each direction separated by barrier. The left turn and right turn movements from both eastbound and westbound ramps consist of two (2) lanes each. The design of the Thorpe Drive intersection is similar to a divided highway intersection because S.R. 222 is divided through this location.

The design speed on S.R. 222 within the vicinity of the I-40 bridge area is reduced to twenty-five (25) miles per hour (mph). This speed restriction could be increased to thirty (30) mph by increasing the right-of-way impacts.

The S.R. 222 improvements extend approximately 1,200 feet north from the northern ramp terminal intersection and 2,500 feet south from the southern ramp terminal intersection. On the north side of I-40, a field drive would be connected to Thorpe Drive since it is located within the proposed controlled access limits. On the south side of I-40, a separate roadway connection is provided from the existing S.R. 222 roadway to the relocated S.R. 222 roadway for access to the Pilot Travel Center and other nearby destinations.

Similar to Concepts 1 and 2, the existing wastewater treatment facility would be relocated with this concept or an alternative system provided. The total estimated cost for Concept 3 is \$13.4 million.

#### <u>Concept 4 – Traditional Diamond Interchange</u>

This concept consists of rebuilding the S.R. 222 bridge at the same location on the same skew angle. Similar to Concept 1, a five (5) lane section for S.R. 222 is proposed with this concept that consists of two (2) travel lanes in each direction and a center left turn lane in each direction. The west side of S.R. 222 remains on the existing location due to the church and cemetery located on the south side of I-40 and all of the widening is along the east side of S.R. 222. Therefore, a separate roadway connection is provided from the existing S.R. 222 roadway for access to the Pilot Travel Center and other destinations on the south side of I-40. The existing businesses along the east side of S.R. 222 and their access to S.R. 222 would be greatly impacted and limited due to the construction of the separate roadway connection. These additional access challenges will require more direct negotiations with the Pilot Station and Deerfield Inn properties.

This concept also includes the widening S.R. 222 adjacent to the church/cemetery site in the southwest quadrant of the interchange. This concept does not eliminate the existing access connections along the west side of S.R. 222 (south side of I-40) currently within the controlled access limits. The S.R. 222 improvements extend approximately 700 feet north from the northern ramp terminal intersection and 1,800 feet south from the southern ramp terminal intersection. On the north side of I-40, a field drive would be connected to Thorpe Drive since it is located within the proposed controlled access limits. Since the proposed bridge is located at the same location of the existing bridge and being constructed under traffic, the estimated costs for the bridge structure include a 25% contingency. The total estimated cost for Concept 4 is \$13.8 million.

#### Concept 5 – Combined Traditional/Tight Diamond Interchange

This concept is similar to Concept 4 with two (2) exceptions: 1) the I-40 eastbound interchange ramp terminal intersection is relocated approximately 150 feet closer towards I-40, and 2) the separate roadway connection providing access to the Pilot Travel Center and other destinations on the south side of I-40 is eliminated. Overall, the I-40 westbound interchange ramp terminal intersection functions as a Traditional Diamond Interchange and the I-40 eastbound interchange ramp terminal intersection functions as a Tight Diamond Interchange. As with Concept 4, the west side of S.R. 222 remains on the existing location due to the church and cemetery located on the south side of I-40 and all of the widening is along the east side of S.R. 222. Similar to Concept 4, the S.R. 222 widening will create additional access challenges and will require more direct negotiations with the Pilot Station and Deerfield Inn properties.

In order to eliminate all access driveways within the controlled access limits, the first (or closest) driveway from I-40 to the Exxon gas station/convenience store is closed and the Deerfield Inn driveway is relocated approximately fifty (50) feet southward. The Exxon gas

station/convenience store has a third driveway that has been temporarily closed with bollards. The removal of these bollards would provide for a second driveway replacing the closed driveway.

This concept also includes widening S.R. 222 adjacent to the church/cemetery site in the southwest quadrant of the interchange. A lane add/drop situation occurs at the Hebron Road intersection, thus creating the four-lane typical section northward on S.R. 222. These S.R. 222 improvements reduce the construction impacts on S.R. 222 south of I-40 to approximately 1,400 feet south from the southern ramp terminal intersection. On the north side of I-40, a field drive would be constructed to Thorpe Drive since it is located within the proposed controlled access limits. Similar to Concept 4, the estimated costs for the bridge structure include a 25% contingency since the proposed bridge is located at the same location of the existing bridge and being constructed under traffic. The total estimated cost for Concept 5 is \$13.2 million.

#### Concept 6 – Traditional Diamond Interchange West of the Existing Interchange

This concept consists of constructing a new S.R. 222 bridge perpendicular to I-40, but approximately 1,500 feet west of the existing S.R. 222 bridge structure. The proposed S.R. 222 bridge over I-40 was relocated approximately 1,500 feet west of S.R. 222 in order to avoid the existing cemetery and keep the residential impacts to a minimum. Similar to most of the previous concepts, a five (5) lane section for S.R. 222 is proposed with this concept that consists of two (2) travel lanes in each direction and a center left turn lane in each direction.

The horizontal and vertical alignment geometry would be of concern as a result of the number of turns along the proposed route. The S.R. 222 improvements extend approximately 2,300 feet north from the northern ramp terminal intersection and 2,000 feet south from the southern ramp terminal intersection. On the south side of I-40, a separate roadway connection is provided from the existing S.R. 222 roadway to the relocated S.R. 222 roadway for access to the Pilot Travel Center and other nearby destinations. The total estimated cost for Concept 6 is \$11.9 million.

#### No-Build Alternative

No construction improvements are made to the study interchange. The no-build alternative is being considered as an option if the Megasite is not developed. However, if the Megasite is developed, then the interchange will require the upgrade improvements previously described in Concepts 1-6.

#### Other Options Considered during the Planning Process

Two other options were considered during the planning process that focused on improving the existing S.R. 222 bridge and also providing direct access to the Megasite area. The following are brief descriptions of two (2) of these options:

#### Combination Interchange Option (with Shared Frontage Road between Interchanges):

This option, shown in *Figure 2.7*, consists of constructing a new trumpet interchange approximately two-thirds (%) mile west of the existing S.R. 222 interchange in conjunction with Concept 1. With this option, an assumption was made to assign 50% of the development traffic to the new trumpet interchange. As a result of the reduced traffic volume on S.R. 222, a three (3) lane section for S.R. 222 is shown with this option. A separate roadway connection is provided from the existing S.R. 222 roadway to the relocated S.R. 222 roadway for access to the Pilot Travel Center and other destinations on the south side of I-40. This option also consists of constructing auxiliary lanes (barrier separated) to link ramp movements between the new trumpet interchange and the ramps for the new S.R. 222 diamond interchange. The frontage

road weave distance between interchanges is 1500 feet (EB) and 2200 feet (WB). Because of the concern regarding the development of the Megasite, plus the extent of construction impacts and the weaving area impacts between interchanges, this option was eliminated from consideration.

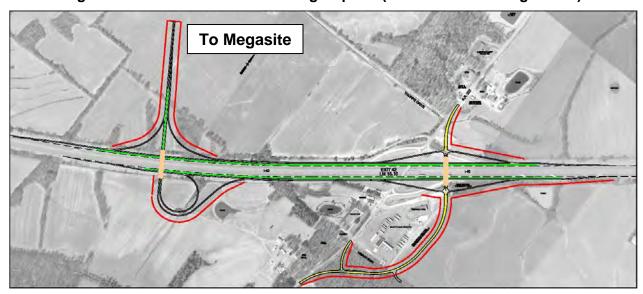


Figure 2.7 – Combination Interchange Option (with Shared Frontage Road)

Combination Interchange Option (with Separate Frontage Roads between Interchanges):

This option, shown in *Figure 2.8*, is similar to the other option with the exception that the new trumpet interchange is located approximately one-half (½) mile west of the existing S.R. 222 interchange and the on/off ramp movements from each interchange are grade separated at the location where the two (2) ramps intersect. This option was eliminated from considerations for the same reasons previously listed in the other option.

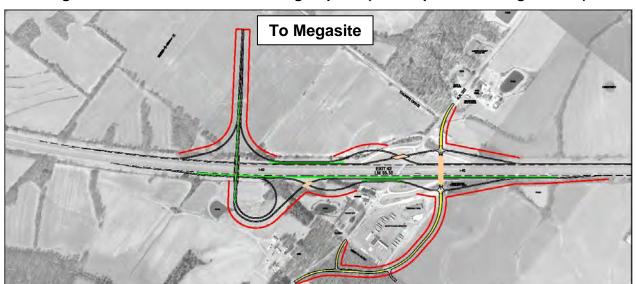


Figure 2.8 – Combination Interchange Option (with Separate Frontage Roads)

#### 3.0 ENGINEERING INVESTIGATION

#### 3.1 Traffic Operations

Analysis was made to determine the potential impacts of proposed concept modifications to the existing interchange and the effect these changes may have on the Interstate system.

The capacity of a facility is defined in the Highway Capacity Manual (HCM) as the maximum hourly rate at which vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions. Any change in these conditions will result in a change in the capacity of a facility.

The analysis of highway capacity is a set of procedures used to estimate the traffic-carrying ability of facilities over a range of defined operational conditions known as level-of-service (LOS). LOS is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A LOS definition generally describes these operational conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. *Table 3.1* presents general descriptions for each LOS.

Table 3.1 – Level-of-Service (LOS) Description

| LOS | Level-of-Service (LOS) Description  |
|-----|---|
| А   | Free Flow operations. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The general level of physical and psychological comfort provided the driver is high.   |
| В   | Reasonably free flow operations. The ability to maneuver within the traffic stream is only slightly restricted and the general level of physical and psychological comfort provided to the driver is high.  |
| С   | Flow with speeds at or near free flow. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require more vigilance on the part of the driver. The driver notices an increase in tension because of additional vigilance required for safe operation.   |
| D   | Speeds decline with increasing traffic. Freedom to maneuver within the traffic stream is noticeably limited. The driver experiences reduced physical and psychological comfort levels.  |
| E   | At the lower boundary, the facility is at capacity. Operations are volatile because there are virtually no gaps in the traffic stream. There is little or no room to maneuver. The driver experiences poor levels of physical and psychological comfort.                                  |
| F   | Breakdowns in traffic flow. The number of vehicles entering the highway section exceeds the capacity, or ability of the highway to accommodate that number of vehicles. There is little or no room to maneuver. The driver experiences poor levels of physical and psychological comfort. |

Source: Highway Capacity Manual (2000), Transportation Research Board

The <u>Highway Capacity Software</u> (HCS) was used to obtain the capacity analysis LOS results presented in this study for different facility types: Basic Freeway Segments, Freeway Ramp Merges, Freeway Ramp Diverges, Multi-Lane Highways, Two-Lane Highways, Signalized Intersections, and Unsignalized Intersections. The HCS printouts for all of the capacity analyses can be found in *Appendix C* of this report.

<u>Traffic Volumes</u>
The project study area Annual Average Daily Traffic (AADT) Volumes and the Design Hour Volumes (DHV) for the horizon years 2014 and 2034 are shown in *Table 3.2*.

Table 3.2 – Traffic Volumes (Two-Way) and Truck Percentages

| Type                  | Lagation              | Sammant                   | Traffic \ | Truck  |      |
|-----------------------|-----------------------|---------------------------|-----------|--------|------|
| Туре                  | Location              | Segment                   | 2014      | 2034   | Pct. |
|                       |                       | West of Exit 35           | 44,420    | 62,340 | 35%  |
|                       | I-40                  | Exit 35 to Exit 42        | 43,610    | 60,510 | 35%  |
|                       | 1-40                  | Exit 42 to Exit 47        | 38,820    | 55,560 | 35%  |
|                       |                       | East of Exit 47           | 36,850    | 53,510 | 35%  |
|                       | S.R. 59               | North of I-40             | 4290      | 5780   | 3%   |
| AADT                  | (Exit 35)             | South of I-40             | 4440      | 5990   | 3%   |
|                       | 0.000                 | North of I-40             | 14,490    | 15,960 | 10%  |
|                       | S.R. 222<br>(Exit 42) | I-40 to PTC <sup>1</sup>  | 13,220    | 16,250 | 48%  |
|                       | (LAIL 42)             | South of PTC <sup>1</sup> | 4940      | 6450   | 3%   |
|                       | Dancyville Road       | North of I-40             | 1700      | 2040   | 2%   |
|                       | (Éxit 47)             | South of I-40             | 2530      | 3230   | 2%   |
|                       |                       | West of Exit 35           | 4256      | 5992   |      |
|                       | 1.40                  | Exit 35 to Exit 42        | 4125      | 5706   |      |
|                       | I-40                  | Exit 42 to Exit 47        | 3629      | 5194   |      |
|                       |                       | East of Exit 47           | 3396      | 4937   |      |
| 51.07                 | S.R. 59<br>(Exit 35)  | North of I-40             | 404       | 555    |      |
| DHV<br>AM Peak Period |                       | South of I-40             | 417       | 575    |      |
| AWFEARFEIIOU          | S.R. 222<br>(Exit 42) | North of I-40             | 1485      | 1503   |      |
|                       |                       | I-40 to PTC <sup>1</sup>  | 673       | 791    |      |
|                       |                       | South of PTC <sup>1</sup> | 462       | 544    |      |
|                       | Dancyville Road       | North of I-40             | 199       | 250    |      |
|                       | (Éxit 47)             | South of I-40             | 206       | 263    |      |
|                       |                       | West of Exit 35           | 4353      | 6133   |      |
|                       | I-40                  | Exit 35 to Exit 42        | 4275      | 5935   |      |
|                       | 1-40                  | Exit 42 to Exit 47        | 3845      | 5503   |      |
|                       |                       | East of Exit 47           | 3652      | 5298   |      |
| <b>-</b>              | S.R. 59               | North of I-40             | 384       | 531    |      |
| DHV<br>PM Peak Period | (Exit 35)             | South of I-40             | 398       | 549    |      |
| I WIFEAR FEIIUU       | 0.0                   | North of I-40             | 1327      | 1343   |      |
|                       | S.R. 222<br>(Exit 42) | I-40 to PTC <sup>1</sup>  | 667       | 815    |      |
|                       | (LAIL 42)             | South of PTC <sup>1</sup> | 400       | 500    |      |
|                       | Dancyville Road       | North of I-40             | 169       | 210    |      |
|                       | (Éxit 47)             | South of I-40             | 212       | 273    |      |

<sup>1.</sup> PTC is Pilot Travel Center.

<u>I-40 Mainline Capacity Analyses</u>
The project study area I-40 mainline capacity analysis results for the horizon years 2014 and 2034 are shown in *Table 3.3*.

Table 3.3 – I-40 Mainline Capacity Analysis Results (Existing Conditions)

| Location                 | Direction | Peak Period | 2014 | 2034 |
|--------------------------|-----------|-------------|------|------|
|                          | EB        | AM          | С    | D    |
| West of                  | ED        | PM          | С    | D    |
| Exit 35 (S.R. 59)        | WB        | AM          | С    | D    |
|                          | VVD       | PM          | С    | D    |
|                          | ED        | AM          | С    | D    |
| Exit 35 (S.R. 59)        | EB        | PM          | С    | D    |
| to<br>Exit 42 (S.R. 222) | WB        | AM          | В    | С    |
|                          |           | PM          | С    | D    |
| F : 40 (0 F 000)         | EB        | AM          | В    | С    |
| Exit 42 (S.R. 222)<br>to |           | PM          | С    | D    |
| Exit 47 (Dancyville Rd.) | WD        | AM          | В    | С    |
| (Dancyville Rd.)         | WB        | PM          | С    | D    |
|                          | EB        | AM          | В    | С    |
| East of<br>Exit 47       | ED        | PM          | В    | С    |
| (Dancyville Rd.)         | WB        | AM          | В    | С    |
| ,                        | VVD       | PM          | В    | С    |

<u>I-40 Merge and Diverge Ramp Capacity Analyses</u> The I-40 merge/diverge ramp capacity analysis results are shown in *Table 3.4*.

Table 3.4 – I-40 Merge and Diverge Ramps Capacity Analysis Results (Existing Conditions)

| Location                 | Direction         | Peak Period | 2014 | 2034 |  |  |  |
|--------------------------|-------------------|-------------|------|------|--|--|--|
| MERGE RAMPS              |                   |             |      |      |  |  |  |
|                          | ED Entrance Domn  | AM          | С    | D    |  |  |  |
| I-40 at                  | EB Entrance Ramp  | PM          | С    | D    |  |  |  |
| Exit 35 (S.R. 59)        | WB Entrance Ramp  | AM          | С    | D    |  |  |  |
|                          | WB Entrance Kamp  | PM          | С    | E    |  |  |  |
|                          | EB Entrance Ramp  | AM          | С    | D    |  |  |  |
| I-40 at                  | EB Elitiance Kamp | PM          | С    | D    |  |  |  |
| Exit 42 (S.R. 222)       | WB Entrance Ramp  | AM          | С    | D    |  |  |  |
|                          | WB Entrance Kamp  | PM          | D    | E    |  |  |  |
|                          | ED Entrance Romp  | AM          | В    | С    |  |  |  |
| I-40 at                  | EB Entrance Ramp  | PM          | С    | D    |  |  |  |
| Exit 47 (Dancyville Rd.) | WP Entrance Pomp  | AM          | С    | D    |  |  |  |
|                          | WB Entrance Ramp  | PM          | С    | D    |  |  |  |
|                          | DIVERGE           | RAMPS       |      |      |  |  |  |
|                          | ED Evit Bomp      | AM          | С    | D    |  |  |  |
| I-40 at                  | EB Exit Ramp      | PM          | В    | С    |  |  |  |
| Exit 35 (S.R. 59)        | WB Exit Ramp      | AM          | В    | С    |  |  |  |
|                          | WB EXIL Kamp      | PM          | С    | D    |  |  |  |
|                          | ED Evit Bomp      | AM          | В    | С    |  |  |  |
| I-40 at                  | EB Exit Ramp      | PM          | В    | С    |  |  |  |
| Exit 42 (S.R. 222)       | MR Evit Roma      | AM          | В    | С    |  |  |  |
|                          | WB Exit Ramp      | PM          | В    | С    |  |  |  |
|                          | ER Evit Domo      | AM          | В    | С    |  |  |  |
| I-40 at                  | EB Exit Ramp      | PM          | В    | С    |  |  |  |
| Exit 47 (Dancyville Rd.) | WB Exit Ramp      | AM          | В    | С    |  |  |  |
|                          | ייים באני המוווף  | PM          | В    | С    |  |  |  |

## I-40 Interchange Crossroads Mainline Capacity Analyses

The project study area I-40 interchange crossroads mainline capacity analysis results for the horizon years 2014 and 2034 are shown in *Table 3.5*.

Table 3.5 – I-40 Interchange Crossroads Mainline Capacity Analysis Results (Existing Conditions)

| Crossroad                    | Location                  | Direction   | Peak Period | 2014 | 2034 |
|------------------------------|---------------------------|-------------|-------------|------|------|
| S.R. 59                      | North of I-40             | Two-Way     | AM          | С    | С    |
| (Exit 35)                    | 1101111 01 1-40           | TWO-VVay    | PM          | В    | С    |
| [Note: Two-Lane<br>Analyses] | South of I-40             | Two Mov     | AM          | С    | С    |
|                              | South of 1-40             | Two-Way     | PM          | С    | С    |
|                              | North of I-40             | Two-Way     | AM          | D    | D    |
| S.R. 222                     | NOITH OF 1-40             | i wo-vvay   | PM          | D    | D    |
| (Exit 42)                    | I-40 to PTC <sup>1</sup>  | Two Mov     | AM          | С    | С    |
| [Note: Two-Lane              | 1-40 10 PTC               | Two-Way     | PM          | С    | С    |
| Analyses]                    | South of PTC <sup>1</sup> | Tura Mari   | AM          | С    | С    |
|                              | South of PTC              | Two-Way     | PM          | В    | С    |
|                              |                           | NB          | AM          | В    | В    |
|                              | North of I-40             |             | PM          | А    | А    |
|                              |                           | O.D.        | AM          | А    | А    |
|                              |                           | SB          | PM          | Α    | А    |
| S.R. 222                     | I-40 to PTC <sup>1</sup>  | NB          | AM          | Α    | А    |
| (Exit 42)                    |                           |             | PM          | А    | А    |
| [Note: Multilane             |                           | CD          | AM          | А    | А    |
| Analyses]                    |                           | SB          | PM          | Α    | А    |
|                              |                           | ND          | AM          | Α    | А    |
|                              | Carrie of DTC1            | NB          | PM          | Α    | А    |
|                              | South of PTC <sup>1</sup> | 0.0         | AM          | А    | А    |
|                              |                           | SB          | PM          | А    | А    |
| Dancyville Road              | North of LAC              | T           | AM          | В    | В    |
| (Exit 47)                    | North of I-40             | Two-Way     | PM          | А    | В    |
| [Note: Two-Lane              | 0                         | T \ \ \ / \ | AM          | В    | В    |
| Analyses]                    | South of I-40             | Two-Way     | PM          | В    | В    |

<sup>1.</sup> PTC is Pilot Travel Center.

<sup>2.</sup> The multilane capacity analysis results are shown by direction (NB/SB).

## Ramp Terminal Intersections

The project study area ramp terminal intersection capacity analysis results were conducted for the horizon years 2014 and 2034. The SR 59 (Exit 35) and the Dancyville Road (Exit 47) intersection capacity analysis results are shown in *Table 3.6*.

Table 3.6 – S.R. 59 (Exit 35) and the Dancyville Road (Exit 47) Ramp Terminal Intersections Capacity Analysis Results (Existing Conditions)

| ıtion                      | Ammanah  | Peak   | S.R. 59 ( | Exit 35) <sup>1</sup> | Dancyville Ro | oad (Exit 47) <sup>1</sup> |
|----------------------------|----------|--------|-----------|-----------------------|---------------|----------------------------|
| Location                   | Approach | Period | 2014      | 2034                  | 2014          | 2034                       |
|                            | Overall  | AM     | N/A       | N/A                   | N/A           | N/A                        |
|                            | Overall  | PM     | IN/A      | IN/A                  | IN/A          | IN/A                       |
| ps <sup>2</sup>            | ND       | AM     | Α         | Α                     | Α             | Α                          |
| EB Ramps <sup>2</sup>      | NB       | PM     | Α         | Α                     | Α             | Α                          |
| EB                         | 0.5      | AM     | Α         | Α                     | Α             | Α                          |
| I-40                       | SB       | PM     | Α         | Α                     | Α             | Α                          |
|                            | EB       | AM     | В         | С                     | Α             | В                          |
|                            |          | PM     | В         | С                     | Α             | В                          |
|                            | Overall  | AM     | N/A       | N/A                   | N/A           | N/A                        |
|                            | Overall  | PM     | IN/A      | IN/A                  | IN/A          |                            |
| nps <sup>3</sup>           | NB       | AM     | Α         | Α                     | Α             | Α                          |
| Ran                        | IND      | PM     | Α         | Α                     | Α             | Α                          |
| I-40 WB Ramps <sup>3</sup> | SB       | AM     | Α         | А                     | Α             | A                          |
| 1-40                       | SD       | PM     | Α         | А                     | Α             | A                          |
|                            | WB       | AM     | В         | С                     | В             | В                          |
|                            | VVD      | PM     | В         | С                     | В             | В                          |

<sup>1.</sup> Unsignalized capacity analysis results.

The S.R. 222 (Exit 42) capacity analysis results for each concept are shown in *Table 3.7*. The proposed lanes for each concept are depicted graphically in *Appendix B*.

Table 3.7 – S.R. 222 (Exit 42) Ramp Terminal Intersections Capacity Analysis Results (Existing and Proposed Conditions)

|                                 | Approach and<br>Movement |                  | Peak<br>Period | Interchange Types <sup>1</sup>          |                  |                     |      |                      |      |                          |      |  |
|---------------------------------|--------------------------|------------------|----------------|---|------------------|---------------------|------|----------------------|------|--------------------------|------|--|
| Location                        |                          |                  |                | Proposed Conditions                     |                  |                     |      |                      |      |                          |      |  |
|                                 |                          |                  |                | Traditional Diamond                     |                  |                     |      | Diverging<br>Diamond |      | No-Build<br>Alternative  |      |  |
|                                 |                          |                  |                | Concept 1<br>(Mod. for EB<br>Loop Ramp) |                  | Concepts 2, 4, 5, 6 |      | Concept 3            |      | (Existing<br>Conditions) |      |  |
|                                 |                          |                  |                | 2014                                    | 2034             | 2014                | 2034 | 2014                 | 2034 | 2014                     | 2034 |  |
|                                 | Overall                  |                  | AM             | N/A                                     | N/A              | (B)                 | (B)  | (B)                  | (B)  | N/A                      | N/A  |  |
| I-40/S.R. 222<br>EB Off/On-Ramp |                          |                  | PM             |   |                  | (B)                 | (B)  | (B)                  | (B)  |                          |      |  |
|                                 | Traffic Movement         | NB Thru          | AM             | Α                                       | А                | (B)                 | (B)  | (B)                  | (B)  | Α                        | Α    |  |
|                                 |                          |                  | PM             | Α                                       | Α                | (B)                 | (B)  | (B)                  | (B)  | Α                        | Α    |  |
|                                 |                          | SB <sup>2</sup>  | AM             | Α                                       | А                | (A)                 | (A)  | (B)                  | (B)  | Α                        | Α    |  |
|                                 |                          |                  | PM             | Α                                       | Α                | (A)                 | (A)  | (B)                  | (B)  | Α                        | Α    |  |
|                                 |                          | EB Left<br>Turn  | AM             | N/A <sup>4</sup>                        | N/A <sup>4</sup> | (B)                 | (B)  | (B)                  | (B)  | F                        | F    |  |
|                                 |                          |                  | PM             |   | IN/A             | (B)                 | (B)  | (B)                  | (B)  | F                        | F    |  |
|                                 |                          | EB Right<br>Turn | AM             | В                                       | В                | (B)                 | (B)  | (B)                  | (B)  | 5                        | 5    |  |
|                                 |                          |                  | PM             | Α                                       | В                | (B)                 | (C)  | (B)                  | (B)  |                          |      |  |
|                                 | Overall                  |                  | AM             | (B)                                     | (B)              | (B)                 | (B)  | (B)                  | (B)  | N/A                      | N/A  |  |
|                                 |                          |                  | PM             | (B)                                     | (B)              | (B)                 | (B)  | (B)                  | (B)  |                          |      |  |
|                                 | Traffic Movement         | NB <sup>3</sup>  | AM             | (A)                                     | (A)              | (A)                 | (A)  | (B)                  | (C)  | Α                        | Α    |  |
| I-40/S.R. 222<br>WB Off/On-Ramp |                          |                  | PM             | (A)                                     | (A)              | (A)                 | (A)  | (B)                  | (B)  | В                        | В    |  |
|                                 |                          | SB Thru          | AM             | (B)                                     | (B)              | (B)                 | (B)  | (B)                  | (B)  | Α                        | Α    |  |
|                                 |                          |                  | PM             | (B)                                     | (B)              | (B)                 | (B)  | (B)                  | (B)  | Α                        | Α    |  |
|                                 |                          | WB Left<br>Turn  | AM             | (B)                                     | (B)              | (B)                 | (B)  | (B)                  | (B)  | F                        | F    |  |
|                                 |                          |                  | PM             | (C)                                     | (C)              | (C)                 | (C)  | (B)                  | (B)  | F                        | F    |  |
|                                 |                          | WB Right<br>Turn | AM             | (C)                                     | (C)              | (C)                 | (C)  | (B)                  | (B)  | 5                        | 5    |  |
|                                 |                          |                  | PM             | (C)                                     | (C)              | (C)                 | (C)  | (B)                  | (B)  |                          |      |  |

<sup>1.</sup> The signalized capacity analysis results are shown in parentheses.

<sup>2.</sup> The capacity analysis results shown represent the SB Left Turn Movement for the Traditional Diamond Interchange/No-Build concepts and the SB Thru Movement for the Diverging Diamond Interchange concept.

<sup>3.</sup> The capacity analysis results shown represent the NB Left Turn Movement for the Traditional Diamond Interchange/No-Build concepts and the NB Thru Movement for the Diverging Diamond Interchange concept.

<sup>4.</sup> The EB Left Turn Movement is free-flow utilizing a one-lane loop ramp to S.R. 222 NB.

<sup>5.</sup> The EB Right Turn Movement is included in the EB Left Turn Movement (Shared Lane) for the No-Build concept.

As shown in *Table 3.7*, all of the concepts provide LOS C or better capacity results for all traffic movements with the exception of the No-Build Alternative which produced LOS F capacity results.

#### S.R. 222/Pilot Travel Center Intersection

The project study area intersection capacity analysis results for the S.R. 222/Pilot Travel Center intersection was conducted for the horizon years 2014 and 2034. These intersection capacity analysis results are shown in *Table 3.8*.

Table 3.8 – S.R. 222/Pilot Travel Center Intersection Capacity Analysis Results (Proposed Conditions)

| Location                           | Approach Peak<br>Period |    | 2014 <sup>1</sup> | <b>2034</b> <sup>1</sup> |  |  |
|------------------------------------|-------------------------|----|-------------------|--------------------------|--|--|
| S.R. 222 at<br>Pilot Travel Center | Overall                 | AM | N/A               | N/A                      |  |  |
|                                    | Overall                 | PM | IV/A              |                          |  |  |
|                                    | NB                      | AM | Α                 | A                        |  |  |
|                                    | ND                      | PM | Α                 | A                        |  |  |
|                                    | SB                      | AM | Α                 | A                        |  |  |
|                                    |                         | PM | Α                 | A                        |  |  |
|                                    | WD                      | AM | В                 | В                        |  |  |
|                                    | WB                      | PM | В                 | В                        |  |  |

<sup>1.</sup> Unsignalized capacity analysis results.

#### 3.2 Crash Analysis

The crash data used in this analysis was provided by TDOT and included reports from 2005 to 2007. A total of twenty-one (21) crashes were reported within the vicinity of the study interchange during this three (3) year period. Of these twenty-one (21) reported crashes, eight (8) occurred along I-40 and thirteen (13) occurred along S.R. 222. A summary of the I-40/S.R. 222 crash data is presented in *Table 3.9*.

As expected, the predominant types were right angle crashes (7) and rear end crashes (5). The overall severity damage totals included five (5) injury crashes with no incapacitating injury or fatal crashes.

<sup>2.</sup> Existing geometry for the intersection: 1 NB Thru/Right Turn Shared Lane, 1 SB Left Turn/Thru Shared Lane, and 1 WB Left Turn/Right Turn Shared Lane.

Table 3.9 - I-40/S.R. 222 Crash Data Summary

| Description                           | I-40 |       |       | S.R. 222 |      |       | T-1-1 | Pct. of |  |
|---------------------------------------|------|-------|-------|----------|------|-------|-------|---------|--|
| Description                           | 2005 | 2006  | 2007  | 2005     | 2006 | 2007  | Total | Total   |  |
| Rear End                              | 1    |       |       | 2        |      | 2     | 5     | 23.8%   |  |
| Right Angle                           |      | 1     |       | 1        | 1    | 4     | 7     | 33.3%   |  |
| Overturn                              |      |       | 1     |          |      |       | 1     | 4.8%    |  |
| Struck Bridge Rail/Guardrail          |      | 2     | 1     | 1        |      |       | 4     | 19.0%   |  |
| Struck Other Object (Fixed)           |      | 1     |       |          |      |       | 1     | 4.8%    |  |
| Struck Animal in Road                 |      |       | 1     | 1        |      |       | 2     | 9.5%    |  |
| Run off the Road                      |      |       |       | 1        |      |       | 1     | 4.8%    |  |
| INVOLVEMENT                           |      |       |       |          |      |       |       |         |  |
| All Vehicles                          | 2    | 5     | 3     | 9        | 2    | 12    | 33    |         |  |
| ROAD SURFACE                          |      |       |       |          |      |       |       |         |  |
| Dry (No Adverse Conditions)           | 1    | 2     | 2     | 5        | 1    | 4     | 15    | 71.5%   |  |
| Wet (Rain)                            |      |       | 1     | 1        |      | 2     | 4     | 19.0%   |  |
| Snow / Ice                            |      | 2     |       |          |      |       | 2     | 9.5%    |  |
| SEVERITY DAMAGE                       |      |       |       |          |      |       |       |         |  |
| Property Damage Only                  |      | 4     | 2     | 5        | 1    | 4     | 16    | 76.2%   |  |
| Injury Crashes (No Fatalities)        | 1    |       | 1     | 1        |      | 2     | 5     | 23.8%   |  |
| Incap. Injury Crashes (No Fatalities) |      |       |       |          |      |       | 0     | -       |  |
| Fatality Crashes                      |      |       |       |          |      |       | 0     | -       |  |
| Number of Injuries (All Crashes)      | 2    |       | 1     | 1        |      | 2     | 6     |         |  |
| Number of Fatalities (All Crashes)    |      |       |       |          |      |       | 0     |         |  |
| CRASH SUMMARY                         |      |       |       |          |      |       |       |         |  |
| Total Crashes                         | 1    | 4     | 3     | 6        | 1    | 6     | 21    | 100%    |  |
| Percentage of Total                   | 4.8% | 19.0% | 14.3% | 28.6%    | 4.8% | 28.6% |       |         |  |

## 3.3 S.R. 222 Bridge Inspection Report

The latest bridge inspection report was conducted on December 14, 2010. During this inspection, the overall condition of the study bridge was determined to be "Fair" and having a sufficiency rating of 63.2. Repairs to correct previously identified deficiencies to the bridge structure and the bridge rails were made in 2008.

### 3.4 Wastewater Treatment Facility

An existing wastewater treatment facility is located in the southeast quadrant of the I-40 at S.R. 222 interchange adjacent to the Deerfield Inn. This facility is owned by the Pilot Travel Center and serves both the Pilot Travel Center and the Deerfield Inn. This treatment facility consists of a series of septic tanks with sand filters, discharging to a pond adjacent to the right of way for I-40.

Concepts 1, 2, and 3 will require the relocation of this wastewater treatment facility. An area adjacent to the present location is available and noted on each of these three (3) concept figures contained in *Appendix B*. A representative of the Tennessee Department of Environment and Conservation (TDEC) stated that due to heavy vegetation around the pond and since there is no history of noted problems at this location, the facility is apparently functioning very efficiently and could be relocated with no anticipated problems. If a wastewater treatment system cannot be provided, a worst-case scenario of approximately \$7.0 million has been estimated by TDOT for the acquisition of two businesses (Pilot Travel Center and Deerfield Inn). However, this worst-case scenario should not be an issue and should be resolved in design especially with all of the various technologies available.

#### 3.5 Interchange Concept Evaluation Summary

During the course of the study, the six (6) interchange concepts along with the No-Build Alternative, described in **Section 2.4**, were discussed with TDOT, FHWA, and the ECD. The design criteria considered included, but was not limited to, sight distance at ramp terminals, sufficient storage on the ramps, vertical clearance, pedestrian access through the interchange, length of acceleration/deceleration lanes, length of tapers, spacing between ramps, lane continuity, lane balance, and uniformity in interchange design and operational patterns. Through these discussions, two (2) concepts were determined to be viable while the four (4) others were removed from further consideration for a variety of reasons. A summary of these concepts are included in the following paragraphs.

#### Viable Concepts

Concepts 1 and 5, shown in *Figures 3.1 and 3.2* respectively, were determined viable for this study.

Concept 1 satisfies the travel demands of the interchange especially since the major traffic movement within the interchange (I-40 eastbound to S.R. 222 northbound) would be free-flow via a single lane loop ramp, as compared to Concept 2 that requires the signalization of this traffic movement. The total estimated cost for Concept 1 is \$13.1 million.

Concept 5 satisfies the 300 feet of controlled access limits for this interchange and does not include a separate frontage road paralleling S.R. 222, as compared to Concept 4. On the south side of the interchange, direct access to businesses south of I-40 is maintained in Concept 5, but two (2) existing driveways are affected along S.R. 222. These driveways include the closure of the first (or closest) driveway from I-40 to the Exxon gas station/convenience store along the west side of S.R. 222 and the relocation of the Deerfield Inn driveway approximately fifty (50) feet southward along the east side of S.R. 222. Even though this concept includes the widening of S.R. 222 adjacent to the church/cemetery site in the southwest quadrant of the interchange, all of the widening impacts are on the east side of S.R. 222 resulting in no construction impacts to the church/cemetery site. The total estimated cost for Concept 5 is \$13.2 million.

The No-Build Alternative was determined viable if the Megasite is not developed. If the Megasite is developed, then the No-Build Alternative is a non-viable concept because the capacity of the existing interchange will not be satisfied (LOS F conditions) in the future 2034 design year.

Between the viable construction concepts, TDOT and ECD both prefer Concept 1 since the I-40 eastbound to S.R. 222 northbound traffic movement would be free-flow via a single lane loop ramp and removed from signalization as required with Concept 5. This traffic movement is the highest turning movement within the interchange totaling 586 vehicles during the 2034 morning peak period.

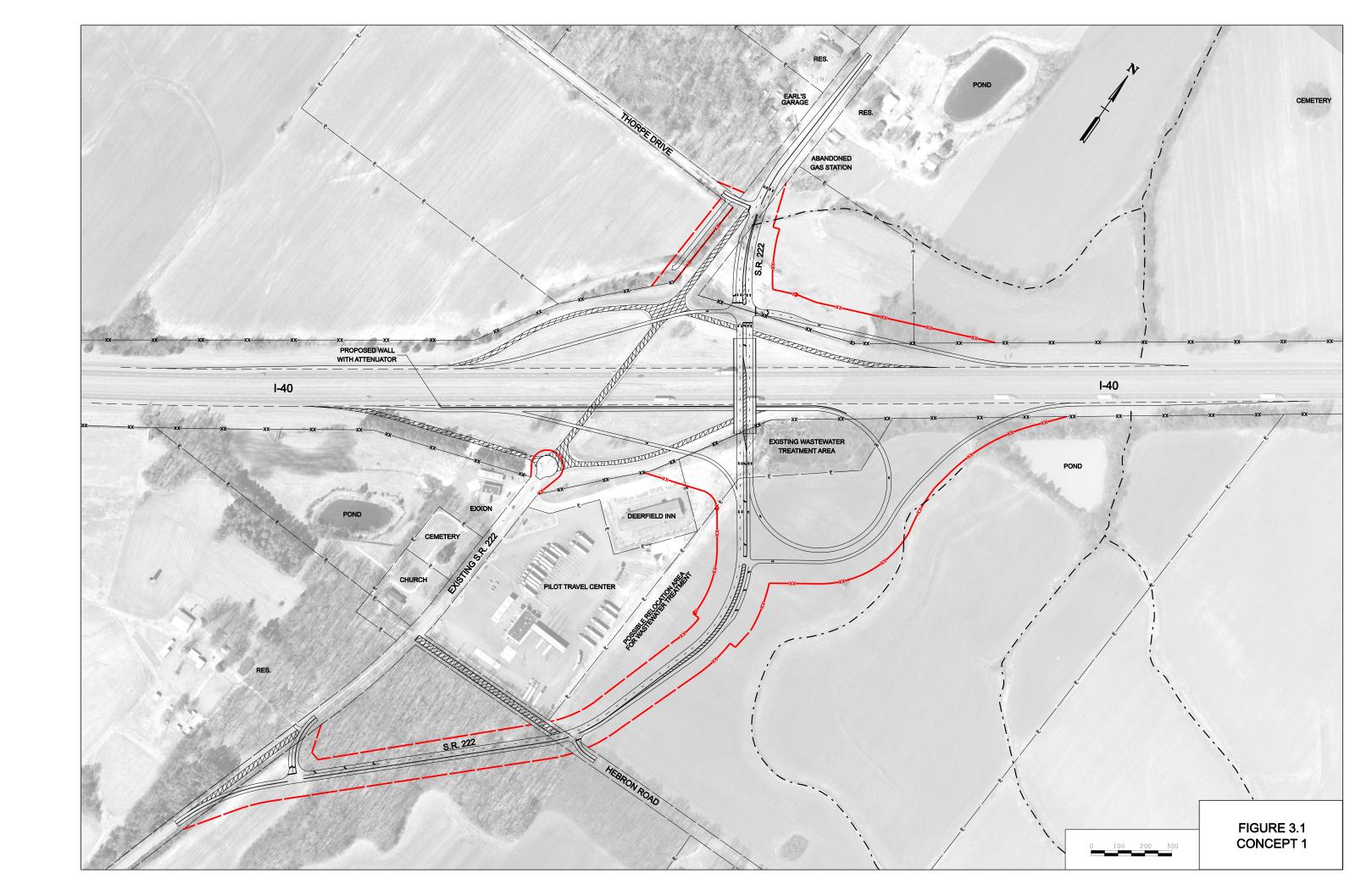
#### Non-Viable Concepts

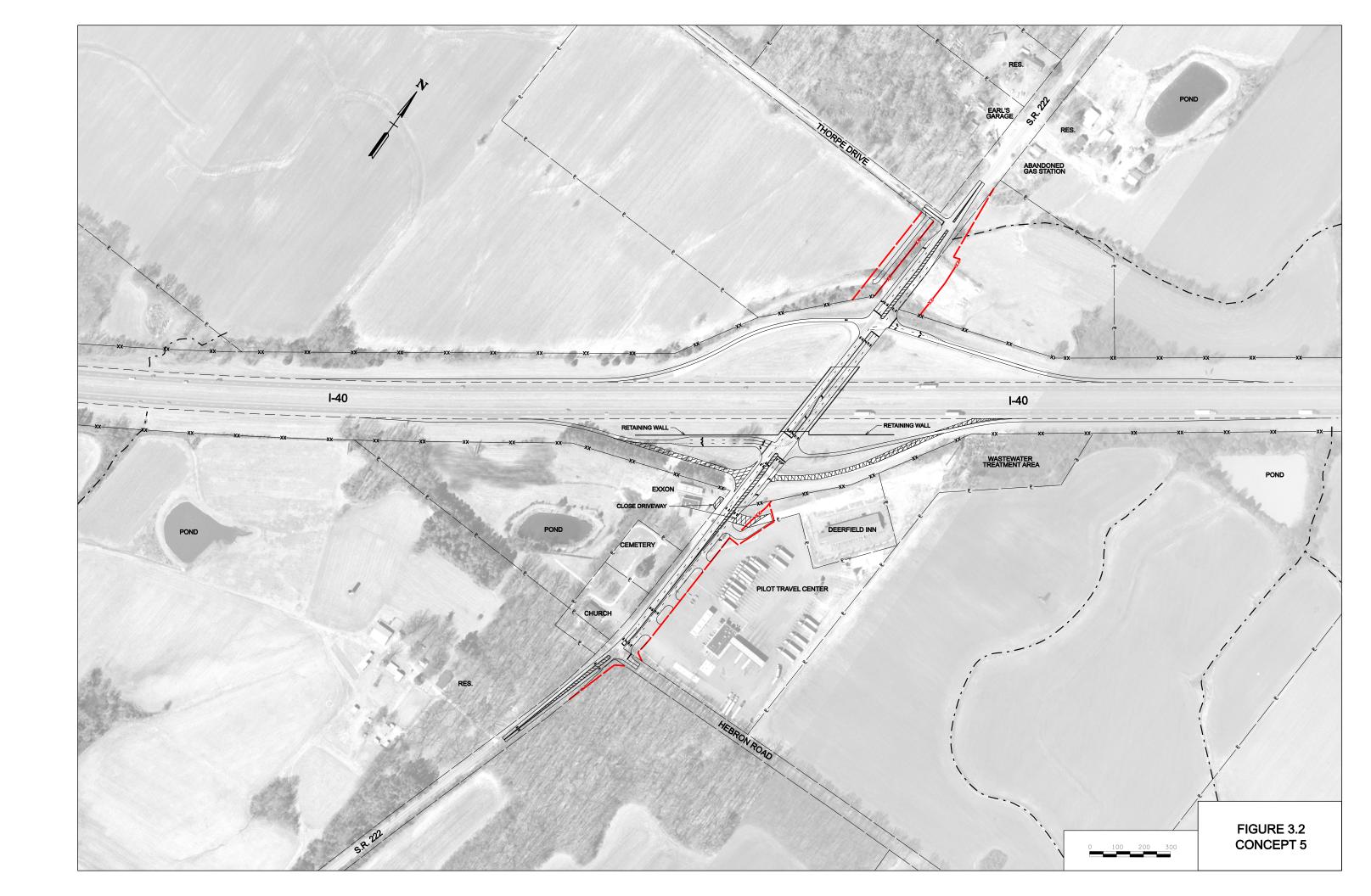
Concept 2 (Traditional Diamond Interchange East of the Existing Interchange) was determined not viable and eliminated because the I-40 eastbound to S.R. 222 northbound traffic movement within the interchange must travel through a signalized intersection at the ramp terminal instead of the single lane free-flow loop ramp provided in Concept 1. This is the highest traffic movement within the study interchange and since it will be controlled through signalization in this concept, it would contain vehicular delays for this movement that would not be present in Concept 1. Safety considerations of this traffic driving through a signalized intersection vs. free-flow were also considered during the elimination process. As a result, this concept was removed from further consideration.

Concept 3 (Diverging Diamond Interchange East of the Existing Interchange) was determined not viable because the traffic patterns do not provide a good fit for a diverging diamond footprint, especially with both of the S.R. 222 left turn traffic volumes being less than 226 vehicles during the 2034 morning and afternoon peak periods. The major traffic movement is the I-40 eastbound to S.R. 222 northbound which would require signalization similar to Concept 2. The motorists speed would require being reduced through their navigation within the interchange. As a result, this concept was removed from further consideration.

Concept 4 (Traditional Diamond Interchange) was determined not viable because the 300 feet of controlled access limits for this interchange could not be achieved. On the south side of the interchange, direct access to businesses south of I-40 is maintained in Concept 4, but the 300 feet of controlled access limits for this interchange cannot be achieved along the west side of S.R. 222 south of the interchange. In order to meet the 300 feet of controlled access limits along the east side of S.R. 222 south of the interchange, a frontage road was developed that parallels S.R. 222 and intersects S.R. 222 about 400 feet south of Hebron Road. This frontage road requires the acquisition of right-of-way along the Pilot Travel Center property adjacent to S.R. 222 which includes business impacts such as parking and truck maneuverability within the site. This interchange concept is the same as Concept 5 with the exception that in Concept 5, the 300 feet of controlled access limits can be achieved with the relocation of the eastbound ramps closer to I-40 in conjunction with the closure/relocation of two (2) existing driveways. As a result, this concept was removed from further consideration.

Concept 6 (Traditional Diamond Interchange West of the Existing Interchange) was determined not viable. The main reason is that the horizontal and vertical alignment geometry would be of concern as a result of the number of turns required along the proposed route. As a result, this concept was removed from further consideration.





### 3.6 Access Analysis (FHWA Eight Policy Points)

This study is undertaken in accordance with the Federal Highway Administration's (FHWA) eight policy points as outlined in the document entitled "Interstate System Access Informational Guide". These eight policy points address the appropriate issues and provide the information necessary to allow the FHWA to make an informed decision considering the potential consequences of a change in access. The eight (8) policy points are listed below in bulleted italics, followed by the response as analyzed for this location.

1. The need being addressed by the request cannot be adequately satisfied by existing interchanges to the Interstate, and/or local roads and streets in the corridor can neither provide the desired access, nor can they be reasonably improved (such as access control along surface streets, improving traffic control, modifying ramp terminals and intersections, adding turn bays or lengthening storage) to satisfactorily accommodate the design-year traffic demands (23 CFR 625.2(a)).

The request for upgrading the study interchange was initiated by the Tennessee Department of Economic and Community Development (ECD) on behalf of the Tennessee Valley Authority (TVA). The proposed improvements for the study interchange are essential to the development of the Megasite located on the north side of I-40 within the study area. The expected increases in both population and development activity related to the Megasite will reduce the traffic operating conditions to LOS F with the current interchange configuration (i.e. No-Build Alternative). It is crucial for this development of regional significance that a modified and improved interchange access be considered to preserve efficient traffic operations in the region. The current adjacent interchanges are too far way (approximately five (5) and seven (7) miles to the adjacent interchanges) to accommodate development traffic and the local routes by themselves will not accommodate the travel patterns, nor be the preferred routes, for the employment base, suppliers, and distributors.

During the latest bridge inspection, the overall condition of the study bridge was determined to be rated as fair with a sufficiency rating of 63.2. TDOT Structures Division has determined that the existing bridge consists of four (4) spans and is not a candidate for retrofit and needs to be replaced for the following reasons:

- Any new bridge would be a two (2) span structure for the safety of motorists travelling on I-40.
- A two (2) span structure would accommodate any future widening of I-40 without additional bridge modifications.
- The cost of widening the existing structure to accommodate the required travel lanes plus full shoulders would be greater than the cost of replacing the entire structure.

The ECD has agreed to provide 100% of the funding for the preparation of the Preliminary Engineering documents for the S.R. 222 construction improvements. Even though there are no confirmed developments for the Megasite, the ECD envisions that all of the paperwork including construction design documents be completed and are shovel-ready projects when a tenant for the Megasite is identified so that the roadway improvements can be in place in conjunction with the opening of the Megasite.

If the Megasite is developed, the Megasite will serve a regional need with primary access from I-40 via the Exit 42 interchange. All proposed improvements currently identified in the State/Regional Long Range Transportation Plan (LRTP) have been included in this study. In

conjunction with the development of the Megasite, additional improvements to S.R. 222 will be recommended to the north of the interchange study limits.

2. The need being addressed by the request cannot be adequately satisfied by reasonable transportation system management (such as ramp metering, mass transit, and HOV facilities), geometric design, and alternative improvements to the Interstate without the proposed change(s) in access. The need being addressed by the request cannot be adequately satisfied by reasonable transportation system management (such as ramp metering, mass transit, and HOV facilities), geometric design, and alternative improvements to the Interstate without the proposed change(s) in access (23 CFR 625.2(a)).

This study area covered a sufficient area to allow for the evaluation of different types of interchange configurations such as a traditional diamond, a modified traditional diamond containing a loop ramp in one quadrant, a combined traditional/tight diamond, and a diverging diamond. In addition, this study included the evaluation of different intersection configurations such as stop control, signal control, and free right turns. The No-Build Alternative was also included in the analyses.

The location of the study interchange for the two (2) viable concepts is the best location as it is at or in extremely close proximity to the existing interchange location. The proposed improvements do not include pedestrian and bicycle accommodations at this time since such facilities are not currently provided along the existing S.R. 222 roadway system nor typical in this rural area.

Safety issues related to the existing interchange cannot be addressed through Transportation Systems Management (TSM) strategies. There is no mass transit service in the area of the interchange. HOV facilities are not available or planned along the I-40 mainline study area. The widening of I-40 to six (6) lanes may be constructed by the 2034 planning horizon. Even with the addition of I-40 mainline lanes, the functionality of the existing study interchange will be deficient without the proposed improvements.

3. An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).

The 2014 and 2034 design traffic volumes analyzed in this study were approved by TDOT and a copy of the approval letter is contained in *Appendix A*. The capacity analyses conducted in this study utilized Highway Capacity Manual procedures and included the following facility types: Basic Freeway Segments, Freeway Ramp Merges, Freeway Ramp Diverges, Multi-Lane Highways, Two-Lane Highways, Signalized Intersections, and Unsignalized Intersections. The capacity analyses included the Pilot Travel Center intersection with S.R.222 because of the high percentage of trucks (48%) utilizing this facility. Results of the capacity analyses presented in *Section 3.1* indicate that no significant traffic operational issues are expected with construction improvements of the viable concepts (Concepts 1 and 5). The No-Build Alternative indicates that if no improvements are made to the study interchange, then LOS F traffic conditions will be expected if the Megasite is developed. All of the proposed improvements for each concept satisfactorily accommodate the 2014 and 2034 design traffic volumes. The results from the capacity analyses are summarized in *Tables 3.3 to 3.8*.

For the two (2) viable concepts, the proposed access point is either relocated approximately 500 feet eastward on I-40 (Concept 1) or at the same location (Concept 5). The adjacent I-40 interchanges, Exit 35 (S.R. 59) and Exit 47 (Dancyville Road), are approximately seven (7) miles to the west and five (5) miles to the east along I-40.

In addition, a proposed interchange discussed in **Section 1.4** is located between the study interchange and Exit 47 (Dancyville Road) approximately 1.1 miles east of the study interchange. As a result of this distance, the existing adjacent interchanges, as they relate to this proposed interchange, are outside the influence of traffic weaving conditions along I-40.

The proposed interchange access provides connections to S.R. 222 and other public roads in the vicinity of the interchange such as Hebron Road and Thorpe Drive and will not require upgrading of those facilities. The proximity of both Hebron Road and Thorpe Drive do not contribute to any safety and operational problems associated with the study interchange. On both the north and south sides of the study interchange, the 300 feet of controlled access limits are satisfied for the two (2) viable concepts (Concepts 1 and 5).

The State Strategic Highway Safety Plan was used as a benchmark on safety for this study. However, as mentioned in Policy Point 2, the proposed improvements do not include pedestrian and bicycle accommodations because such facilities are not currently provided in the existing roadway system. In addition, a conceptual signing plan for Concepts 1 and 5 are contained in *Appendix B*. The conceptual signing plan for Concept 1 shows that the I-40 eastbound will require the use of A and B exits to distinguish between S.R. 222 northbound and southbound traffic movements.

4. The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)).

The existing study interchange currently serves, and the proposed improvements will provide for all traffic movements for full interchange access. The proposed improvements secure sufficient ROW by utilizing either available existing ROW or through the acquisition of proposed ROW. Concepts 1 and 5 require the approximate ROW acquisition of 25.5 acres and 2.2 acres, respectively.

As mentioned in Policy Point 3, the proposed interchange access provides connections to S.R. 222 and other public roads in the vicinity of the interchange such as Hebron Road and Thorpe Drive and meets and/or exceeds current design standards for the Interstate System. No design exceptions are anticipated with either Concept 1 or Concept 5. All traffic movements have been analyzed during the 2014 and 2034 design years for each concept and have been summarized in *Table 3.7*.

5. The proposal considers and is consistent with local and regional land use and transportation plans. Prior to receiving final approval, all requests for new or revised access must be included in an adopted Metropolitan Transportation Plan, in the adopted Statewide or Metropolitan Transportation Improvement Program (STIP or TIP), and the Congestion Management Process within transportation management areas, as appropriate, and as specified in 23 CFR part 450, and the transportation conformity requirements of 40 CFR parts 51 and 93.

This study includes coordination with other projects as discussed in **Section 1.4**. and the proposed improvements are consistent and conform with applicable local, regional, and statewide land use and transportation plans. The study interchange is in the current 2012-14 TIP (TDOT Proposed Comprehensive Multimodal Program) funded for ROW in FY 2013.

The location of the study interchange is not within a Transportation Management Area (TMA) and is not within a non-attainment area for air quality. As mentioned in Policy Point 3, the proposed access point for the two (2) viable concepts is either relocated approximately 500 feet eastward on I-40 (Concept 1) or at the same location (Concept 5).

6. In corridors where the potential exists for future multiple interchange additions, a comprehensive corridor or network study must accompany all requests for new or revised access with recommendations that address all of the proposed and desired access changes within the context of a longer-range system or network plan (23 U.S.C. 109(d), 23 CFR 625.2(a), 655.603(d), and 771.111).

This study does not preclude or affect future access points along I-40 and the proposed improvements satisfy the future needs for the study interchange. However, if the Megasite is developed and the travel demand of the Megasite exceeds the capacity of these proposed interchange improvements, the potential construction of the new interchange near Mile Marker 45, shown in *Figure 1.5*, could be considered in the future.

7. When a new or revised access point is due to a new, expanded, or substantial change in current or planned future development or land use, requests must demonstrate appropriate coordination has occurred between the development and any proposed transportation system improvements (23 CFR 625.2(a) and 655.603(d)). The request must describe the commitments agreed upon to assure adequate collection and dispersion of the traffic resulting from the development with the adjoining local street network and Interstate access point (23 CFR 625.2(a) and 655.603(d)).

This study was coordinated with the adjacent Megasite area because of its close proximity to the study interchange. *Table 2.2* summarizes the trips generated for the Megasite which were considered conservative and a worst-case scenario. The improvements recommended in this study interchange are integral to adequately accommodating projected traffic volumes and operations if the Megasite is developed.

As mentioned in Policy Point 3, the proposed improvements in this study are compatible and provide adequate tie-in connections to the existing street network. As discussed in **Section 1.4**, this study has been coordinated with the S.R. 222 Relocation & System Improvements Feasibility Study to ensure that the immediate and long-term needs of the study area will be met. In addition, if the potential interchange near Mile Marker 45 is constructed, a State Industrial Access (SIA) road to the Megasite will be necessary to access S.R. 222 on the north side of the study interchange as shown in **Figure 1.5**. The location of the SIA road will have no direct impacts to the operations of the study interchange because of their proposed distance apart from each other.

There are no pre-condition contingencies related to the adjacent projects that are required for this study. In addition, this study does not require financial or infrastructure commitments from other agencies, organizations, or private entities.

8. The proposal can be expected to be included as an alternative in the required environmental evaluation, review and processing. The proposal should include supporting information and current status of the environmental processing (23 CFR 771.111).

This study was developed in coordination with TDOT and documents the expected impacts and benefits from modifying the existing I-40 interchange at Exit 42 (S.R. 222). If the Megasite is developed and with the proposed modifications contained in this IMS report, the overall traffic operations at the study interchange can be adequately accommodated through the 20-year horizon year (2034).

As mentioned in Policy Point 5, this study is consistent with the current 2012-14 STIP (TDOT Proposed Comprehensive Multimodal Program) funded for ROW in FY 2013. The known environmental issues are provided in **Section 2.2**. When this study receives a finding of Operational and Engineering Acceptability, it will then be necessary to begin conducting additional environmental studies as outlined in the NEPA planning process.

The FHWA Prompt-List for Reviewing Interstate Access Requests for Concepts 1 and 5 are provided on the following pages.

| Prompt List for Review of |    |   |  |
|---------------------------|----|---|--|
|                           |    | Interstate System Access Change Requests  |  |
| Adequ                     |    | FHWA Interstate Access Policy Points  |  |
| Addressed? Yes No         |    | 1 11 W 11 interstate 11 eeess 1 oney 1 onits  |  |
| X                         | No | Policy Point 1: The need being addressed by the request cannot be adequately satisfied by existing interchanges to the Interstate, and/or local roads and streets in the corridor can neither provide the desired access, nor can they be reasonably improved (such as access control along surface streets, improving traffic control, modifying ramp terminals and intersections, adding turn bays or lengthening storage) to satisfactorily accommodate the design-year traffic demands (23 CFR 625.2(a)).   |  |
| X                         |    | Policy Point 2: The need being addressed by the request cannot be adequately satisfied by reasonable transportation system management (such as ramp metering, mass transit, and HOV facilities), geometric design, and alternative improvements to the Interstate without the proposed change(s) in access (23 CFR 625.2(a)).   |  |
| X                         |    | Policy Point 3: An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)). |  |
| X                         |    | Policy Point 4: The proposed access connects to a public road only and will provide for all traffic movements. Less than ``full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)).  |  |
| X                         |    | Policy Point 5: The proposal considers and is consistent with local and regional land use and transportation plans. Prior to receiving final approval, all requests for new or revised access must be included in an adopted Metropolitan Transportation Plan, in the adopted Statewide or Metropolitan Transportation Improvement Program (STIP or TIP), and the Congestion Management Process within transportation management areas, as appropriate, and as specified in 23 CFR part 450, and the transportation conformity requirements of 40 CFR parts 51 and 93.  |  |
| X                         |    | Policy Point 6: In corridors where the potential exists for future multiple interchange additions, a comprehensive corridor or network study must accompany all requests for new or revised access with recommendations that address all of the proposed and desired access changes within the context of a longer-range system or network plan (23 U.S.C. 109(d), 23 CFR 625.2(a), 655.603(d), and 771.111).   |  |
| X                         |    | Policy Point 7: When a new or revised access point is due to a new, expanded, or substantial change in current or planned future development or land use, requests must demonstrate appropriate coordination has occurred between the development and any proposed transportation system improvements (23 CFR 625.2(a) and 655.603(d)). The request must describe the commitments agreed upon to assure adequate collection and dispersion of the traffic resulting from the development with the adjoining local street network and Interstate access point (23 CFR 625.2(a) and 655.603(d)).  |  |
| X                         |    | Policy Point 8: The proposal can be expected to be included as an alternative in the required environmental evaluation, review and processing. The proposal should include supporting information and current status of the environmental processing (23 CFR 771.111).  |  |

Policy Point 1: "The need being addressed by the request cannot be adequately satisfied by existing interchanges to the Interstate, and/or local roads and streets in the corridor can neither provide the desired access, nor can they be reasonably improved (such as access control along surface streets, improving traffic control, modifying ramp terminals and intersections, adding turn bays or lengthening storage) to satisfactorily accommodate the design-year traffic demands (23 CFR 625.2(a))."

| Addressed |             | sed |  |   |
|-----------|-------------|-----|--|---|
| Ac        | Adequately? |     | Question   | Reference Location  |
| Y         | N           | N/A |  |   |
| X         |             |     | Does the access request clearly describe the need and purpose of the proposal and identify project goals and objectives that are specific and measurable?                                  | Sect. 1.2 and 3.6 (PP1)   |
| X         |             |     | Is the proposal in the best interest of the public, or does it merely serve a narrow interest?   | Sect. 1.2 (P1) and 3.6 (PP1)  |
| X         |             |     | Is the proposal serving a regional transportation need, or is it merely compensating for deficiencies in the local network of arterials and collectors?                                    | Sect. 1.2 (P1) and 3.6 (PP1)  |
|           |             | X   | In lieu of granting new access, is there any reasonable alternative consisting of improvements to the existing roadway(s) or adjacent access points that could serve the need and purpose? | This request is for modification of an existing interchange.                    |
| X         |             |     | Has the evaluation of existing interchanges and the local road network taken into account all proposed improvements currently identified in the State and/or Regional Long Range Plan?     | Sect. 3.6 (PP5-P1)  |
| X         |             |     | Will the proposed change in access result in needed upgrades or improvements to the cross road for a significant distance away from the interchange?                                       | Sect. 1.4 (SR 222 Study), 2.4,<br>and 3.6 (PP1-P3); Fig. 3.1<br>and 3.2; App. B |

**Policy Point 2:** "The need being addressed by the request cannot be adequately satisfied by reasonable transportation system management (such as ramp metering, mass transit, and HOV facilities), geometric design, and alternative improvements to the Interstate without the proposed change(s) in access (23 CFR 625.2(a))."

|   | Addressed   |     |   |   |
|---|-------------|-----|---|---|
|   | Adequately? |     | Question  | Reference Location  |
| Y | N           | N/A | WY THINKS AT I THE IT IS A IT IN IT OF IT   |   |
| X |             |     | Was FHWA actively involved in preliminary studies and decisions? If not, then more detailed information may be required in support of proposed action.                            | FHWA attended a design concept meeting at TDOT on 8/23/2010.  |
|   |             |     |   | Sect. 3.5 (P1)  |
| X |             |     | Did the study area cover sufficient area to allow for an evaluation of all reasonable alternatives?   | Sect. 1.3 (P3), 2.4 (Traffic<br>Volume Diagrams), and 3.6<br>(PP2); Fig. 1.1  |
| X |             |     | Was a No-Build Alternative evaluated?   | Sect. 2.4 (P1)(No-Build<br>Alternative), 3.1 (Ramp<br>Terminal Intersections), 3.5<br>(Viable Concepts), 3.6 (PP2-<br>P1)(PP3-P1), and 4.0<br>(P1&P2); Tables 2.3 and 3.7 |
| X |             |     | Considering the context of the proposal, is this the best location for the proposed new interchange?  | Sect. 3.5 (P1) and 3.6 (PP2-P2)   |
| X |             |     | Were different interchange configurations (Tight diamond, SPDI, Parclo) considered?   | AASHTO Greenbook<br>Chapter 10<br>Sect. 2.4 (Concepts) and 3.6<br>(PP2-P1); Table 2.3   |
| X |             |     | Were pedestrians and bicyclists considered in the alternative evaluation?   | Sect. 3.6 (PP2-P2) and 3.6 (PP3-P4)   |
| X |             |     | Was there an evaluation of different intersection configurations (stop control, signal, roundabout, free right turns, etc?)   | Sect. 3.1 (P4) and 3.6 (PP2-P1); Tables 3.7 and 3.8   |
| X |             |     | Have Transportation Systems Management (i.e. HOV, ITS, Ramp Metering, Transit etc.) options been evaluated as an alternative to a new or modification to an existing interchange? | This request is for modification of an existing interchange. Sect. 3.6 (PP2-P3)   |

| v |    | Did the report discuss how TSM alternatives were evaluated and          | Sect. 3.6 (PP2-P3)            |
|---|----|---|-------------------------------|
| Λ |    | eliminated from consideration?  |                               |
|   |    | Does the proposal consider any future planned TSM strategies and is the | The design is consistent with |
|   | X  | design consistent with the ability to implement the future TSM          | future TSM strategies, but    |
|   | 71 | strategies?   | none were considered in the   |
|   |    | Stategies.  | study.                        |

Policy Point 3: "An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d))."

Addressed Adequately? Question **Reference Location** Ν N/A Sect. 3.1(P4) and 3.6 (PP3-Does the report demonstrate that a proper traffic operational analysis P1); Tables 3.3-3.8 was conducted? The analysis should include the applicable basic X freeway segments, freeway weaving segments, freeway ramp segments, ramp junctions and crossroad intersections related to the proposed access point and at least the two adjacent interchanges. Does the report include a **safety** analysis of the mainline, ramps and Sect. 3.1 (P4), 3.5 (P1), and 3.6 (PP3-P1&P2); Tables intersections of the proposed access point and the nearest adjacent X 3.3-3.8 interchange (provided they are near enough that it is reasonable to assume there may be impacts)? Has the design traffic volume been validated? Sect. 2.3 (P1) and 3.6 (PP3-X Sect. 2.3 (P1); App. A Does the report include verification that the data used in the traffic analysis is consistent with the traffic and air quality models MPOs use to X develop their current Transportation Plan (20-year) and Transportation Improvement Program (TIP)? Does the report include a design period of 20 years commencing at the Sect. 2.3 (Horizon Years and X Time Periods Analyzed) time of project approval (PS&E approval)? Does the report include quantitative analyses and results to identify Sect. 3.1 (Ramp Terminal X Intersections) and 3.6 (PP2operational differences between alternatives that are heavily congested? P1); Table 3.7 Viable Concepts 1&5; Sect. Has a conceptual signing plan been provided? X 3.6 (PP3-P4); App. B MUTCD Chapter 2E: Guide Is guidance signing (i.e., way-finding or trail blazing signs) clear and Signs - Freeways and simple? X Expressways Sect. 3.6 (PP3-P4) Do the results of the operational analysis result in a significant adverse Sect. 3.1 (Capacity Analysis X *Results) and 3.6 (PP3-P1);* impact to existing or future conditions? Tables 3.3-3.8 Will the proposed change in access result in needed upgrades or SR 222 would be upgraded improvements to the cross road for a significant distance away from the as part of the Megasite X development. interchange? If so, have impacts to the local network been disclosed and fully evaluated?" Sect. 2.4 (P2) and 3.6 (PP1-

| X |   | Are the cross roads or adjacent surface level roads and intersections affected by the proposed access point analyzed to the extent (length) where impacts caused or affecting the new proposed access point are disclosed to the appropriate managing jurisdiction? | Sect. 3.6 (PP3-P3) and 4.1<br>(Local Agency Letters)   |
|---|---|---|--|
| X |   | Are pedestrian and/or bicycle facilities included (as appropriate) and do these facilities provide for reasonable accommodation?  | Sect. 3.6 (PP2-P2) and 3.6 (PP3-P4)  |
| X |   | Does the proposed access secure sufficient Limits of Access adjacent to the Interchange ramps?  | AASHTO's "A Policy on<br>Design Standards Interstate<br>System, 2005" Pg. 2;<br>NCHRP Synthesis 332<br>Sect. 2.4 (P2), 3.5 (P4), and<br>3.6 (PP4-P2)               |
| X |   | Does the proximity of the nearest crossroad intersections to the ramps contribute to safety or operational problems? Can they be mitigated??  | Sect. 2.4 (Concepts), 3.1, and 3.6 (PP3-P3)  |
|   | X | In addition to HCS, what analysis tools were employed and were they appropriate?  | HCS only.  |
| X |   | Has the proposal distinguished between nominal safety (i.e. adherence to design policies and standards) and substantive safety (actual and expected safety performance)?  | Safety was considered throughout the study in the development of the concepts.   |
| X |   | Will any individual elements within the recommended alternative be degraded operationally as a result of this action? If yes, are reasons provided to accept them?  | Fig. 3.1 and 3.2; App. B  Acceptable LOS were obtained from the capacity analysis results.  Sect. 3.1 (Capacity Analysis Results) and 3.6 (PP3-P1); Tables 3.3-3.8 |
| X |   | In evaluating whether the proposal has a "significant adverse impact" on safety, has the State Strategic Highway Safety Plan been used as a benchmark?  | Safety was considered throughout the study in the development of the concepts. Sect. 3.6 (PP3-P4); Fig. 3.1 and 3.2; App. B  |
| X |   | Are the proposed interchange design configurations able to satisfactorily accommodate the design year traffic volumes?  | Sect. 3.1 (Capacity Analysis<br>Results) and 3.6 (PP3-P1);<br>Tables 3.3-3.8   |
| X |   | If the project is to be built in stages, has the traffic operational and safety analyses considered the interim stages of the proposal?   | Project is being built in one stage.   |

**Policy Point 4:** "The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d))."

| Addressed<br>Adequately? |   |     | Question   | Reference Location   |
|--------------------------|---|-----|--|--|
| Y                        | N | N/A |  |  |
| X                        |   |     | Does the proposed access connect to a public road?   | Sect. 2.4 (P2), 3.5 (P1), 3.6 (PP3-P3), and 3.6 (PP4-P2); Fig. 3.1 and 3.2; App. B |
| X                        |   |     | Are all traffic movements for full interchange access provided?  | Sect. 2.4 (P2), 3.5, and 3.6 (PP4-P1); Fig. 3.1 and 3.2; App. B                    |
|                          |   | X   | If not, is the proposed access for special purposes such as transit vehicles, HOVs, and/or a park and ride lot?  | Providing for a full interchange.  |
|                          |   | X   | If a partial interchange is proposed, is there sufficient justification for providing only a partial interchange?  | AASHTO Greenbook<br>2004 Pg. 821-823<br>Providing for a full<br>interchange.       |
|                          |   | X   | If a partial interchange is proposed; was a full interchange evaluated as an alternative and is there sufficient justification to eliminate or discard it? | Providing for a full interchange.  |

**Policy Point 4:** "The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d))."

|      | ddresse<br>lequate |          | Overtion   | Reference Location   |
|------|--------------------|----------|--|--|
| Y    | N                  | N/A      | Question   | Reference Location   |
|      |                    | X        | Is sufficient ROW available (or being acquired) to provide a full interchange at a future date (staged construction)?  | Providing for a full interchange.  |
|      |                    | X        | Are you comfortable with how the missing movements will be accommodated on the surface streets and adjacent interchanges?  | Providing for a full interchange.  |
| X    |                    |          | Does FHWA support the selection of design controls/criteria and desired operational goals?   | Sect. 2.4 (Concepts), 3.1<br>(Capacity Analysis Results),<br>3.5 (P1), and 3.6 (PP4-P2);<br>Tables 3.3-3.8                                     |
| X    |                    |          | Does the proposed access meet or exceed current design standards for the Interstate System?  | AASHTO's Greenbook and<br>A Policy on Design<br>Standards Interstate System,<br>2005<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP4-P2)    |
|      |                    | X        | If not, have anticipated design exceptions been identified and reviewed (at least conceptually)?   | Concept meets current design standards   |
|      |                    | X        | If expected design exceptions could have significant operational impacts on the Interstate and/or Crossroad system, are mitigation measures described?   | Concept meets current design standards   |
| X    |                    |          | Will the length of access control along the crossroad provide for acceptable operations and safety? (100-300' is a minimum. Additional access control is strongly encouraged when needed for safety and operational enhancement) | AASHTO "A Policy on<br>Design Standards Interstate<br>System" 2005<br>Sect. 2.4 (P2), 3.5 (P4), and<br>3.6 (PP4-P2)                            |
| X    |                    |          | Does FHWA support selection of opening and design years?   | Sect. 2.3 (Horizon Year and<br>Time Periods Analyzed)  |
| X    |                    |          | Has each movement of the proposal been "tested" for ease of operation?   | AASHTO Greenbook 2004<br>Pg. 863<br>Sect. 2.4 (Concepts), 3.1<br>(Capacity Analysis Results),<br>3.6 (PP3-P1), and 3.6 (PP4-<br>P2); Table 3.7 |
| Have | all desi           | gn crite | ria (including but not limited to the following) been adequately addressed?  |  |
| X    |                    |          | a. Sight distance at ramp terminals (Don't overlook signal heads obscured by structures.)  | AASHTO Greenbook 2004<br>Pg. 841<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP4-P2)  |
| X    |                    |          | b. Sufficient storage on ramp to prevent queues from spilling on to the Interstate (based on current and/or future projected traffic demand)   | Sect. 2.4 (Concepts), 3.5 (P1), and 3.6 (PP4-P2)   |
| X    |                    |          | c. Vertical clearance  | AASHTO "A Policy on<br>Design Standards Interstate<br>System" 2005<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP4-P2)                      |
| X    |                    |          | d. Pedestrian access through the interchange   | AASHTO Greenbook 2004<br>Pg. 864<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP2-P2) and<br>3.6 (PP3-P4)                                    |
| X    |                    |          | e. Length of acceleration/deceleration lanes   | AASHTO Greenbook 2004 Pg. 823, 847 Sect. 2.4 (Concepts), 3.5 (P1), and 3.6 (PP4-P2)  |

**Policy Point 4:** "The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d))."

| Addressed<br>Adequately? |   |     | Question   | Reference Location   |
|--------------------------|---|-----|--|--|
| Y                        | N | N/A |  |  |
| X                        |   |     | f. Length of tapers  | AASHTO Greenbook 2004<br>Pg. 849<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP4-P2)                      |
| X                        |   |     | g. Spacing between ramps   | Greenbook pg 843 & Ex. 10-68 and operational analysis Sect. 2.4 (Concepts), 3.5 (P1), and 3.6 (PP4-P2)       |
| X                        |   |     | h. Lane continuity   | AASHTO Greenbook 2004<br>Pg. 810<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP4-P2)                      |
| X                        |   |     | i. Lane balance  | AASHTO Greenbook 2004 Pg. 810 AASHTO Greenbook 2004 Pg. 807 Sect. 2.4 (Concepts), 3.5 (P1), and 3.6 (PP4-P2) |
| X                        |   |     | j. Uniformity in interchange design and operational patterns (i.e. right-side ramps, exit design consistent w/adjacent interchanges) | Sect. 2.4 (Concepts), 3.5 (P1), and 3.6 (PP4-P2)   |

<u>Policy Point 5:</u> "The proposal considers and is consistent with local and regional land use and transportation plans. Prior to receiving final approval, all requests for new or revised access must be included in an adopted Metropolitan Transportation Plan, in the adopted Statewide or Metropolitan Transportation Improvement Program (STIP or TIP), and the Congestion Management Process within transportation management areas, as appropriate, and as specified in 23 CFR part 450, and the transportation conformity requirements of 40 CFR parts 51 and 93."

| Addressed   |   | ed  |   |  |
|-------------|---|-----|---|--|
| Adequately? |   |     | Question  | Reference Location   |
| Y           | N | N/A |   |  |
| X           |   |     | Does the IJR discuss or include (as appropriate) other project(s), studies or planned actions that may have an effect on the report analysis results?   | Sect. 1.4 (4 Projects Listed) and 3.6 (PP5-P1)                                   |
| X           |   |     | Does the project conform to the local planning, MPO or other related plans?   | Sect. 3.6 (PP5-P1)   |
|             |   | X   | Does the report include an endorsement of land use plans by the appropriate government entity before it is utilized for traffic generation purposes?  | Existing land use is rural agriculture   |
| X           |   |     | Is the access request located within a Transportation Management Areas? (TMAs are metropolitan areas of 200,000 or more in population)  | http://hepgis.fhwa.dot.gov/hepgis_v2/Urbanboundaries/Map.aspx Sect. 3.6 (PP5-P2) |
| X           |   |     | Is the access request located within a non-attainment area for air quality? (requests for access in a non-attainment or maintenance areas for air quality must be a part of a conforming transportation plan) | Sect. 3.6 (PP5-P2)   |
| X           |   |     | Is the project included in the TIP/STIP and LRTP?   | Sect. 3.6 (PP5-P1)   |
| X           |   |     | Is the access point covered as a part of an Interstate corridor study or plan? (especially important for areas where the potential exists for construction of future adjacent interchanges)                   | Sect. 3.6 (PP5-P2)   |

<u>Policy Point 6:</u> "In corridors where the potential exists for future multiple interchange additions, a comprehensive corridor or network study must accompany all requests for new or revised access with recommendations that address all of the proposed and desired access changes within the context of a longer-range system or network plan (23 U.S.C. 109(d), 23 CFR 625.2(a), 655.603(d), and 771.111)."

| Addressed   | Our and the second | Defense I seeties  |
|-------------|--------------------|--------------------|
| Adequately? | Question           | Reference Location |

| Y | N | N/A |   |   |
|---|---|-----|---|---|
| X |   |     | Is it possible that new interchange(s) not addressed in the IJR could be added within an area of influence to the proposed access point? (If so, could the proposal preclude or otherwise be affected by any future access points?) | Sect. 3.6 (PP6-P1&P2)   |
|   |   | X   | Does the IJR report include the traffic volumes generated by any future additional interchanges within a vicinity of influence that are proposed?   | No planned future interchanges.                                   |
| X |   |     | Does the IJR report fail to include any other proposed interstate access points within a vicinity of influence that are being proposed or are in the current long range construction program?                                       | Sect. 1.4 (1 Potential Project<br>Listed) and 3.6 (PP6-<br>P1&P2) |

Policy Point 7: "When a new or revised access point is due to a new, expanded, or substantial change in current or planned future development or land use, requests must demonstrate appropriate coordination has occurred between the development and any proposed transportation system improvements (23 CFR 625.2(a) and 655.603(d)). The request must describe the commitments agreed upon to assure adequate collection and dispersion of the traffic resulting from the development with the adjoining local street network and Interstate access point (23 CFR 625.2(a) and 655.603(d))."

| A | Addressed   |     |   |  |
|---|-------------|-----|---|--|
|   | Adequately? |     | Question  | Reference Location   |
| Y | N           | N/A |   |  |
| X |             |     | Does the access request adequately demonstrate that an appropriate effort of coordination has been made with appropriate proposed developments?   | Sect. 2.3 (Megasite and<br>Other Assumed<br>Developments) and 3.6<br>(PP7-P1); Table 2.2 |
| X |             |     | Are the proposed improvements compatible with the existing street network or are other improvements needed?   | Sect. 2.4 (Concepts), 3.1,<br>and 3.6 (PP3-P3); Fig. 3.1<br>and 3.2; App. B              |
| X |             |     | Are there any pre-condition contingencies required in regards to the timing of other improvements?  | Sect. 3.6 (PP7-P3)   |
| X |             |     | Have all commitments to improve the local transportation network been included in a TIP/STIP/LRTP prior to the Interstate access approval (final approval of NEPA document)?                    | Sect. 1.4 (P1) and 3.6 (PP7-P2)  |
|   |             | X   | If pre-condition contingencies are required, are pertinent parties in agreement with these contingencies and is this documented?  | No pre-conditions are required.  |
|   |             | X   | If the proposed improvements are founded on the need for providing access to new development, are appropriate commitments in place to ensure that the development will likely occur as planned? | No commitments are required.   |
|   |             | X   | If project is privately funded, are appropriate measures in place to ensure improvements will be completed if the developer is unable to meet financial obligations?                            | Project is not privately funded.   |
| X |             |     | If the purpose and need to accommodate new development/traffic demands aren't fully known, is a worst case scenario used for future traffic?  | Sect. 2.3 and 3.6 (PP7-P1);<br>Table 2.2   |
| X |             |     | Does the project require financial or infrastructure commitments from other agencies, organizations, or private entities?   | Sect. 3.6 (PP7-P3)   |

**Policy Point 8:** "The proposal can be expected to be included as an alternative in the required environmental evaluation, review and processing. The proposal should include supporting information and current status of the environmental processing (23 CFR 771.111)."

| Addressed<br>Adequately? |   |     | Question   | Reference Location                 |
|--------------------------|---|-----|--|------------------------------------|
| Y                        | N | N/A |  |                                    |
| X                        |   |     | Are there any known social or environmental issues that could affect the proposal?                       | Sect. 2.2 (P1&P2) and 3.6 (PP8-P2) |
| X                        |   |     | Is the project consistent with the current TIP/STIP and LRTP and/or proposed amendments to the plan?     | Sect. 3.6 (PP5-P1)(PP8-P2)         |
| X                        |   |     | Although NEPA is a separate action, is an environmental overview for the proposed improvements included? | Sect. 2.2 (P2) and 3.6 (PP8-P2)    |

| X | Is it appropriate to emphasize to the project stakeholders that the access approval will be handled as a two-step process? (i.e. Step 1: Engineering and Operational Acceptability and Step 2: Environmental Approvals) | Sect. 3.6 (PP8-P2)         |
|---|---|----------------------------|
| X | Are all funding commitments included in a TIP/STIP/LRTP prior to the Interstate access approval (prior to final approval of the NEPA document)?   | Sect. 3.6 (PP5-P1)(PP8-P2) |
| X | Are all commitments included in a TIP/STIP/LRTP prior to the Interstate access approval (prior to final approval of the NEPA document)?   | Sect. 3.6 (PP5-P1)(PP8-P2) |

**Reference Location Legend: P# = Paragraph Number; PP# = Policy Point Number** 

| Prompt List for Review of |  |   |  |  |  |
|---------------------------|--|---|--|--|--|
|                           | Interstate System Access Change Requests |   |  |  |  |
| Adequ                     |  | FHWA Interstate Access Policy Points  |  |  |  |
| Addres<br>Yes             |  | THWA Interstate Access I oney I onits   |  |  |  |
| X                         | No                                       | Policy Point 1: The need being addressed by the request cannot be adequately satisfied by existing interchanges to the Interstate, and/or local roads and streets in the corridor can neither provide the desired access, nor can they be reasonably improved (such as access control along surface streets, improving traffic control, modifying ramp terminals and intersections, adding turn bays or lengthening storage) to satisfactorily accommodate the design-year traffic demands (23 CFR 625.2(a)).   |  |  |  |
| X                         |  | Policy Point 2: The need being addressed by the request cannot be adequately satisfied by reasonable transportation system management (such as ramp metering, mass transit, and HOV facilities), geometric design, and alternative improvements to the Interstate without the proposed change(s) in access (23 CFR 625.2(a)).   |  |  |  |
| X                         |  | Policy Point 3: An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)). |  |  |  |
| X                         |  | Policy Point 4: The proposed access connects to a public road only and will provide for all traffic movements. Less than ``full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)).  |  |  |  |
| X                         |  | Policy Point 5: The proposal considers and is consistent with local and regional land use and transportation plans. Prior to receiving final approval, all requests for new or revised access must be included in an adopted Metropolitan Transportation Plan, in the adopted Statewide or Metropolitan Transportation Improvement Program (STIP or TIP), and the Congestion Management Process within transportation management areas, as appropriate, and as specified in 23 CFR part 450, and the transportation conformity requirements of 40 CFR parts 51 and 93.  |  |  |  |
| X                         |  | Policy Point 6: In corridors where the potential exists for future multiple interchange additions, a comprehensive corridor or network study must accompany all requests for new or revised access with recommendations that address all of the proposed and desired access changes within the context of a longer-range system or network plan (23 U.S.C. 109(d), 23 CFR 625.2(a), 655.603(d), and 771.111).   |  |  |  |
| X                         |  | Policy Point 7: When a new or revised access point is due to a new, expanded, or substantial change in current or planned future development or land use, requests must demonstrate appropriate coordination has occurred between the development and any proposed transportation system improvements (23 CFR 625.2(a) and 655.603(d)). The request must describe the commitments agreed upon to assure adequate collection and dispersion of the traffic resulting from the development with the adjoining local street network and Interstate access point (23 CFR 625.2(a) and 655.603(d)).  |  |  |  |
| X                         |  | <u>Policy Point 8:</u> The proposal can be expected to be included as an alternative in the required environmental evaluation, review and processing. The proposal should include supporting information and current status of the environmental processing (23 CFR 771.111).   |  |  |  |

Policy Point 1: "The need being addressed by the request cannot be adequately satisfied by existing interchanges to the Interstate, and/or local roads and streets in the corridor can neither provide the desired access, nor can they be reasonably improved (such as access control along surface streets, improving traffic control, modifying ramp terminals and intersections, adding turn bays or lengthening storage) to satisfactorily accommodate the design-year traffic demands (23 CFR 625.2(a))."

| A  | Addressed |      |  |   |
|----|-----------|------|--|---|
| Ac | dequate   | ely? | Question   | Reference Location  |
| Y  | N         | N/A  |  |   |
| X  |           |      | Does the access request clearly describe the need and purpose of the proposal and identify project goals and objectives that are specific and measurable?                                  | Sect. 1.2 and 3.6 (PP1)   |
| X  |           |      | Is the proposal in the best interest of the public, or does it merely serve a narrow interest?   | Sect. 1.2 (P1) and 3.6 (PP1)  |
| X  |           |      | Is the proposal serving a regional transportation need, or is it merely compensating for deficiencies in the local network of arterials and collectors?                                    | Sect. 1.2 (P1) and 3.6 (PP1)  |
|    |           | X    | In lieu of granting new access, is there any reasonable alternative consisting of improvements to the existing roadway(s) or adjacent access points that could serve the need and purpose? | This request is for modification of an existing interchange.                    |
| X  |           |      | Has the evaluation of existing interchanges and the local road network taken into account all proposed improvements currently identified in the State and/or Regional Long Range Plan?     | Sect. 3.6 (PP5-P1)  |
| X  |           |      | Will the proposed change in access result in needed upgrades or improvements to the cross road for a significant distance away from the interchange?                                       | Sect. 1.4 (SR 222 Study), 2.4,<br>and 3.6 (PP1-P3); Fig. 3.1<br>and 3.2; App. B |

**Policy Point 2:** "The need being addressed by the request cannot be adequately satisfied by reasonable transportation system management (such as ramp metering, mass transit, and HOV facilities), geometric design, and alternative improvements to the Interstate without the proposed change(s) in access (23 CFR 625.2(a))."

|   | Addressed   |     |  |   |
|---|-------------|-----|--|---|
|   | Adequately? |     | Question   | Reference Location  |
| Y | N           | N/A | W TIWA - disels in a local in and in the disease of disease disease of the second se |   |
| X |             |     | Was FHWA actively involved in preliminary studies and decisions? If not, then more detailed information may be required in support of proposed action.   | FHWA attended a design concept meeting at TDOT on 8/23/2010.  |
|   |             |     |  | Sect. 3.5 (P1)  |
| X |             |     | Did the study area cover sufficient area to allow for an evaluation of all reasonable alternatives?  | Sect. 1.3 (P3), 2.4 (Traffic<br>Volume Diagrams), and 3.6<br>(PP2); Fig. 1.1  |
| X |             |     | Was a No-Build Alternative evaluated?  | Sect. 2.4 (P1)(No-Build<br>Alternative), 3.1 (Ramp<br>Terminal Intersections), 3.5<br>(Viable Concepts), 3.6 (PP2-<br>P1)(PP3-P1), and 4.0<br>(P1&P2); Tables 2.3 and 3.7 |
| X |             |     | Considering the context of the proposal, is this the best location for the proposed new interchange?   | Sect. 3.5 (P1) and 3.6 (PP2-P2)   |
| X |             |     | Were different interchange configurations (Tight diamond, SPDI, Parclo) considered?  | AASHTO Greenbook<br>Chapter 10<br>Sect. 2.4 (Concepts) and 3.6<br>(PP2-P1); Table 2.3   |
| X |             |     | Were pedestrians and bicyclists considered in the alternative evaluation?  | Sect. 3.6 (PP2-P2) and 3.6 (PP3-P4)   |
| X |             |     | Was there an evaluation of different intersection configurations (stop control, signal, roundabout, free right turns, etc?)  | Sect. 3.1 (P4) and 3.6 (PP2-P1); Tables 3.7 and 3.8   |
| X |             |     | Have Transportation Systems Management (i.e. HOV, ITS, Ramp Metering, Transit etc.) options been evaluated as an alternative to a new or modification to an existing interchange?  | This request is for modification of an existing interchange. Sect. 3.6 (PP2-P3)   |

| X |    | Did the report discuss how TSM alternatives were evaluated and          | Sect. 3.6 (PP2-P3)            |
|---|----|---|-------------------------------|
|   |    | eliminated from consideration?  |                               |
|   |    | Does the proposal consider any future planned TSM strategies and is the | The design is consistent with |
|   | X  | design consistent with the ability to implement the future TSM          | future TSM strategies, but    |
|   | 71 | strategies?   | none were considered in the   |
|   |    | suregies.   | study.                        |

Policy Point 3: "An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, shall be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access must include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request must also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d))."

Addressed Adequately? Question **Reference Location** Ν N/A Sect. 3.1(P4) and 3.6 (PP3-Does the report demonstrate that a proper traffic operational analysis P1); Tables 3.3-3.8 was conducted? The analysis should include the applicable basic X freeway segments, freeway weaving segments, freeway ramp segments, ramp junctions and crossroad intersections related to the proposed access point and at least the two adjacent interchanges. Does the report include a **safety** analysis of the mainline, ramps and Sect. 3.1 (P4), 3.5 (P1), and 3.6 (PP3-P1&P2); Tables intersections of the proposed access point and the nearest adjacent X 3.3-3.8 interchange (provided they are near enough that it is reasonable to assume there may be impacts)? Has the design traffic volume been validated? Sect. 2.3 (P1) and 3.6 (PP3-X Sect. 2.3 (P1); App. A Does the report include verification that the data used in the traffic analysis is consistent with the traffic and air quality models MPOs use to X develop their current Transportation Plan (20-year) and Transportation Improvement Program (TIP)? Does the report include a design period of 20 years commencing at the Sect. 2.3 (Horizon Years and X Time Periods Analyzed) time of project approval (PS&E approval)? Does the report include quantitative analyses and results to identify Sect. 3.1 (Ramp Terminal X Intersections) and 3.6 (PP2operational differences between alternatives that are heavily congested? P1); Table 3.7 Viable Concepts 1&5; Sect. Has a conceptual signing plan been provided? X 3.6 (PP3-P4); App. B MUTCD Chapter 2E: Guide Is guidance signing (i.e., way-finding or trail blazing signs) clear and Signs - Freeways and simple? X Expressways Sect. 3.6 (PP3-P4) Do the results of the operational analysis result in a significant adverse Sect. 3.1 (Capacity Analysis X *Results) and 3.6 (PP3-P1);* impact to existing or future conditions? Tables 3.3-3.8 Will the proposed change in access result in needed upgrades or SR 222 would be upgraded improvements to the cross road for a significant distance away from the as part of the Megasite X development. interchange? If so, have impacts to the local network been disclosed and fully evaluated?" Sect. 2.4 (P2) and 3.6 (PP1-

| X |   | Are the cross roads or adjacent surface level roads and intersections affected by the proposed access point analyzed to the extent (length) where impacts caused or affecting the new proposed access point are disclosed to the appropriate managing jurisdiction? | Sect. 3.6 (PP3-P3) and 4.1<br>(Local Agency Letters)   |
|---|---|---|--|
| X |   | Are pedestrian and/or bicycle facilities included (as appropriate) and do these facilities provide for reasonable accommodation?  | Sect. 3.6 (PP2-P2) and 3.6 (PP3-P4)  |
| X |   | Does the proposed access secure sufficient Limits of Access adjacent to the Interchange ramps?  | AASHTO's "A Policy on<br>Design Standards Interstate<br>System, 2005" Pg. 2;<br>NCHRP Synthesis 332<br>Sect. 2.4 (P2), 3.5 (P4), and<br>3.6 (PP4-P2)               |
| X |   | Does the proximity of the nearest crossroad intersections to the ramps contribute to safety or operational problems? Can they be mitigated??  | Sect. 2.4 (Concepts), 3.1, and 3.6 (PP3-P3)  |
|   | X | In addition to HCS, what analysis tools were employed and were they appropriate?  | HCS only.  |
| X |   | Has the proposal distinguished between nominal safety (i.e. adherence to design policies and standards) and substantive safety (actual and expected safety performance)?  | Safety was considered throughout the study in the development of the concepts.   |
| X |   | Will any individual elements within the recommended alternative be degraded operationally as a result of this action? If yes, are reasons provided to accept them?  | Fig. 3.1 and 3.2; App. B  Acceptable LOS were obtained from the capacity analysis results.  Sect. 3.1 (Capacity Analysis Results) and 3.6 (PP3-P1); Tables 3.3-3.8 |
| X |   | In evaluating whether the proposal has a "significant adverse impact" on safety, has the State Strategic Highway Safety Plan been used as a benchmark?  | Safety was considered throughout the study in the development of the concepts. Sect. 3.6 (PP3-P4); Fig. 3.1 and 3.2; App. B  |
| X |   | Are the proposed interchange design configurations able to satisfactorily accommodate the design year traffic volumes?  | Sect. 3.1 (Capacity Analysis<br>Results) and 3.6 (PP3-P1);<br>Tables 3.3-3.8   |
| X |   | If the project is to be built in stages, has the traffic operational and safety analyses considered the interim stages of the proposal?   | Project is being built in one stage.   |

**Policy Point 4:** "The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d))."

|   | Addressed<br>Adequately? |     | Question   | Reference Location   |
|---|--------------------------|-----|--|--|
| Y | N                        | N/A | Carana a   |  |
| X |                          |     | Does the proposed access connect to a public road?   | Sect. 2.4 (P2), 3.5 (P1), 3.6 (PP3-P3), and 3.6 (PP4-P2); Fig. 3.1 and 3.2; App. B |
| X |                          |     | Are all traffic movements for full interchange access provided?  | Sect. 2.4 (P2), 3.5, and 3.6 (PP4-P1); Fig. 3.1 and 3.2; App. B                    |
|   |                          | X   | If not, is the proposed access for special purposes such as transit vehicles, HOVs, and/or a park and ride lot?  | Providing for a full interchange.  |
|   |                          | X   | If a partial interchange is proposed, is there sufficient justification for providing only a partial interchange?  | AASHTO Greenbook<br>2004 Pg. 821-823<br>Providing for a full<br>interchange.       |
|   |                          | X   | If a partial interchange is proposed; was a full interchange evaluated as an alternative and is there sufficient justification to eliminate or discard it? | Providing for a full interchange.  |

Policy Point 4: "The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d))."

| A       | ddress       | ed         | 25.2(a), 625.4(a)(2), and 655.603(d))."  |  |
|---------|--------------|------------|--|--|
| Ad<br>Y | lequate<br>N | ly?<br>N/A | Question   | Reference Location   |
|         | ,            | X          | Is sufficient ROW available (or being acquired) to provide a full interchange at a future date (staged construction)?  | Providing for a full interchange.  |
|         |              | X          | Are you comfortable with how the missing movements will be accommodated on the surface streets and adjacent interchanges?  | Providing for a full interchange.  |
| X       |              |            | Does FHWA support the selection of design controls/criteria and desired operational goals?   | Sect. 2.4 (Concepts), 3.1<br>(Capacity Analysis Results),<br>3.5 (P1), and 3.6 (PP4-P2);<br>Tables 3.3-3.8                                     |
| X       |              |            | Does the proposed access meet or exceed current design standards for the Interstate System?  | AASHTO's Greenbook and<br>A Policy on Design<br>Standards Interstate System,<br>2005<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP4-P2)    |
|         |              | X          | If not, have anticipated design exceptions been identified and reviewed (at least conceptually)?   | Concept meets current design standards   |
|         |              | X          | If expected design exceptions could have significant operational impacts on the Interstate and/or Crossroad system, are mitigation measures described?   | Concept meets current design standards   |
| X       |              |            | Will the length of access control along the crossroad provide for acceptable operations and safety? (100-300' is a minimum. Additional access control is strongly encouraged when needed for safety and operational enhancement) | AASHTO "A Policy on<br>Design Standards Interstate<br>System" 2005<br>Sect. 2.4 (P2), 3.5 (P4), and<br>3.6 (PP4-P2)                            |
| X       |              |            | Does FHWA support selection of opening and design years?   | Sect. 2.3 (Horizon Year and<br>Time Periods Analyzed)  |
| X       |              |            | Has each movement of the proposal been "tested" for ease of operation?   | AASHTO Greenbook 2004<br>Pg. 863<br>Sect. 2.4 (Concepts), 3.1<br>(Capacity Analysis Results),<br>3.6 (PP3-P1), and 3.6 (PP4-<br>P2); Table 3.7 |
| Have    | all desig    | gn crite   | ria (including but not limited to the following) been adequately addressed?  |  |
| X       |              |            | a. Sight distance at ramp terminals (Don't overlook signal heads obscured by structures.)  | AASHTO Greenbook 2004<br>Pg. 841<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP4-P2)  |
| X       |              |            | b. Sufficient storage on ramp to prevent queues from spilling on to the Interstate (based on current and/or future projected traffic demand)   | Sect. 2.4 (Concepts), 3.5 (P1), and 3.6 (PP4-P2)   |
| X       |              |            | c. Vertical clearance  | AASHTO "A Policy on<br>Design Standards Interstate<br>System" 2005<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP4-P2)                      |
| X       |              |            | d. Pedestrian access through the interchange   | AASHTO Greenbook 2004<br>Pg. 864<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP2-P2) and<br>3.6 (PP3-P4)                                    |
| X       |              |            | e. Length of acceleration/deceleration lanes   | AASHTO Greenbook 2004<br>Pg. 823, 847<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP4-P2)   |

**Policy Point 4:** "The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access for managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d))."

| Addressed<br>Adequately? |   |     | Question   | Reference Location   |
|--------------------------|---|-----|--|--|
| Y                        | N | N/A |  |  |
| X                        |   |     | f. Length of tapers  | AASHTO Greenbook 2004<br>Pg. 849<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP4-P2)                      |
| X                        |   |     | g. Spacing between ramps   | Greenbook pg 843 & Ex. 10-68 and operational analysis Sect. 2.4 (Concepts), 3.5 (P1), and 3.6 (PP4-P2)       |
| X                        |   |     | h. Lane continuity   | AASHTO Greenbook 2004<br>Pg. 810<br>Sect. 2.4 (Concepts), 3.5<br>(P1), and 3.6 (PP4-P2)                      |
| X                        |   |     | i. Lane balance  | AASHTO Greenbook 2004 Pg. 810 AASHTO Greenbook 2004 Pg. 807 Sect. 2.4 (Concepts), 3.5 (P1), and 3.6 (PP4-P2) |
| X                        |   |     | j. Uniformity in interchange design and operational patterns (i.e. right-side ramps, exit design consistent w/adjacent interchanges) | Sect. 2.4 (Concepts), 3.5 (P1), and 3.6 (PP4-P2)   |

<u>Policy Point 5:</u> "The proposal considers and is consistent with local and regional land use and transportation plans. Prior to receiving final approval, all requests for new or revised access must be included in an adopted Metropolitan Transportation Plan, in the adopted Statewide or Metropolitan Transportation Improvement Program (STIP or TIP), and the Congestion Management Process within transportation management areas, as appropriate, and as specified in 23 CFR part 450, and the transportation conformity requirements of 40 CFR parts 51 and 93."

| Addressed   |   | ed  |   |  |
|-------------|---|-----|---|--|
| Adequately? |   |     | Question  | Reference Location   |
| Y           | N | N/A |   |  |
| X           |   |     | Does the IJR discuss or include (as appropriate) other project(s), studies or planned actions that may have an effect on the report analysis results?   | Sect. 1.4 (4 Projects Listed) and 3.6 (PP5-P1)                                   |
| X           |   |     | Does the project conform to the local planning, MPO or other related plans?   | Sect. 3.6 (PP5-P1)   |
|             |   | X   | Does the report include an endorsement of land use plans by the appropriate government entity before it is utilized for traffic generation purposes?  | Existing land use is rural agriculture   |
| X           |   |     | Is the access request located within a Transportation Management Areas? (TMAs are metropolitan areas of 200,000 or more in population)  | http://hepgis.fhwa.dot.gov/hepgis_v2/Urbanboundaries/Map.aspx Sect. 3.6 (PP5-P2) |
| X           |   |     | Is the access request located within a non-attainment area for air quality? (requests for access in a non-attainment or maintenance areas for air quality must be a part of a conforming transportation plan) | Sect. 3.6 (PP5-P2)   |
| X           |   |     | Is the project included in the TIP/STIP and LRTP?   | Sect. 3.6 (PP5-P1)   |
| X           |   |     | Is the access point covered as a part of an Interstate corridor study or plan? (especially important for areas where the potential exists for construction of future adjacent interchanges)                   | Sect. 3.6 (PP5-P2)   |

<u>Policy Point 6:</u> "In corridors where the potential exists for future multiple interchange additions, a comprehensive corridor or network study must accompany all requests for new or revised access with recommendations that address all of the proposed and desired access changes within the context of a longer-range system or network plan (23 U.S.C. 109(d), 23 CFR 625.2(a), 655.603(d), and 771.111)."

| Addressed   | Overtion | Defenence Leastion |
|-------------|----------|--------------------|
| Adequately? | Question | Reference Location |

| Y | N | N/A |   |   |
|---|---|-----|---|---|
| X |   |     | Is it possible that new interchange(s) not addressed in the IJR could be added within an area of influence to the proposed access point? (If so, could the proposal preclude or otherwise be affected by any future access points?) | Sect. 3.6 (PP6-P1&P2)   |
|   |   | X   | Does the IJR report include the traffic volumes generated by any future additional interchanges within a vicinity of influence that are proposed?   | No planned future interchanges.                                   |
| X |   |     | Does the IJR report fail to include any other proposed interstate access points within a vicinity of influence that are being proposed or are in the current long range construction program?                                       | Sect. 1.4 (1 Potential Project<br>Listed) and 3.6 (PP6-<br>P1&P2) |

Policy Point 7: "When a new or revised access point is due to a new, expanded, or substantial change in current or planned future development or land use, requests must demonstrate appropriate coordination has occurred between the development and any proposed transportation system improvements (23 CFR 625.2(a) and 655.603(d)). The request must describe the commitments agreed upon to assure adequate collection and dispersion of the traffic resulting from the development with the adjoining local street network and Interstate access point (23 CFR 625.2(a) and 655.603(d))."

| A           | Addressed |     |   | !  |
|-------------|-----------|-----|---|--|
| Adequately? |           |     | Question  | Reference Location   |
| Y           | N         | N/A | ]   |  |
| X           |           |     | Does the access request adequately demonstrate that an appropriate effort of coordination has been made with appropriate proposed developments?   | Sect. 2.3 (Megasite and<br>Other Assumed<br>Developments) and 3.6<br>(PP7-P1); Table 2.2 |
| X           |           |     | Are the proposed improvements compatible with the existing street network or are other improvements needed?   | Sect. 2.4 (Concepts), 3.1,<br>and 3.6 (PP3-P3); Fig. 3.1<br>and 3.2; App. B              |
| X           |           |     | Are there any pre-condition contingencies required in regards to the timing of other improvements?  | Sect. 3.6 (PP7-P3)   |
| X           |           |     | Have all commitments to improve the local transportation network been included in a TIP/STIP/LRTP prior to the Interstate access approval (final approval of NEPA document)?                    | Sect. 1.4 (P1) and 3.6 (PP7-P2)  |
|             |           | X   | If pre-condition contingencies are required, are pertinent parties in agreement with these contingencies and is this documented?  | No pre-conditions are required.  |
|             |           | X   | If the proposed improvements are founded on the need for providing access to new development, are appropriate commitments in place to ensure that the development will likely occur as planned? | No commitments are required.   |
|             |           | X   | If project is privately funded, are appropriate measures in place to ensure improvements will be completed if the developer is unable to meet financial obligations?                            | Project is not privately funded.   |
| X           |           |     | If the purpose and need to accommodate new development/traffic demands aren't fully known, is a worst case scenario used for future traffic?  | Sect. 2.3 and 3.6 (PP7-P1);<br>Table 2.2   |
| X           |           |     | Does the project require financial or infrastructure commitments from other agencies, organizations, or private entities?   | Sect. 3.6 (PP7-P3)   |

**Policy Point 8:** "The proposal can be expected to be included as an alternative in the required environmental evaluation, review and processing. The proposal should include supporting information and current status of the environmental processing (23 CFR 771.111)."

| Addressed Adequately? |   |     | Question   | Reference Location                 |
|-----------------------|---|-----|--|------------------------------------|
| Y                     | N | N/A |  |                                    |
| X                     |   |     | Are there any known social or environmental issues that could affect the proposal?                       | Sect. 2.2 (P1&P2) and 3.6 (PP8-P2) |
| X                     |   |     | Is the project consistent with the current TIP/STIP and LRTP and/or proposed amendments to the plan?     | Sect. 3.6 (PP5-P1)(PP8-P2)         |
| X                     |   |     | Although NEPA is a separate action, is an environmental overview for the proposed improvements included? | Sect. 2.2 (P2) and 3.6 (PP8-P2)    |

| X | Is it appropriate to emphasize to the project stakeholders that the access approval will be handled as a two-step process? (i.e. Step 1: Engineering and Operational Acceptability and Step 2: Environmental Approvals) | Sect. 3.6 (PP8-P2)         |
|---|---|----------------------------|
| X | Are all funding commitments included in a TIP/STIP/LRTP prior to the Interstate access approval (prior to final approval of the NEPA document)?   | Sect. 3.6 (PP5-P1)(PP8-P2) |
| X | Are all commitments included in a TIP/STIP/LRTP prior to the Interstate access approval (prior to final approval of the NEPA document)?   | Sect. 3.6 (PP5-P1)(PP8-P2) |

**Reference Location Legend:** P# = Paragraph Number; PP# = Policy Point Number

#### 4.0 SUMMARY AND CONCLUSIONS

As discussed in **Section 3.5**, this study determined that the following options are considered viable for this interchange location:

- Concept 1 Partial Traditional Diamond located east of the existing interchange.
- Concept 5 Combined Traditional/Tight Diamond located at the existing interchange.
- No-Build Alternative.

The No-Build Alternative was determined viable option if the Megasite is not developed. However, if the Megasite is developed, then the No-Build Alternative is a non-viable concept because the capacity of the existing interchange will not be satisfied (LOS F conditions) in the future 2034 design year.

Between the viable construction concepts, TDOT and ECD both prefer Concept 1 since the I-40 eastbound to S.R. 222 northbound traffic movement would be free-flow via a single lane loop ramp and removed from signalization as required with Concept 5. This traffic movement is the highest turning movement within the interchange totaling 586 vehicles during the 2034 morning peak period. The construction cost for both of these concepts are similar with Concept 1 (\$13.1 million) being slightly less than Concept 5 (\$13.2 million).

At this time, a tenant for the Megasite has not been identified. However, if a tenant is identified and the Megasite is developed, these proposed modifications will be needed to meet the passenger and freight transportation needs and to support the future logical pattern of development within the study area. Without the construction of one of these two (2) viable concepts, the existing level of service (LOS) at the I-40/S.R. 222 interchange will be LOS F which includes the development of the Megasite. The service life of the viable concepts along with the development of the Megasite will exceed the 2034 planning horizon.

#### 4.1 TDOT Design Concurrence Letter and Local Agency Letters of Support

The TDOT Design concurrence letter and three (3) letters of local agency support are included on subsequent pages.



# STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION NASHVILLE, TENNESSEE 37243-0340

#### **MEMORANDUM**

TO:

Steve Allen, Director, Project Planning Division

FROM:

Carolyn Stonecipher, Director, Design Division

DATE:

September 9, 2010

SUBJECT:

Interchange Modification Study

Interstate 40 at State Route 222 (exit 42)

**Fayette County** 

The subject Interchange Modification Study has been reviewed by my office and we concur with the conceptual plan as shown.

Please advise if this office can be of further assistance.

CAS:rdb

## **HAYWOOD COUNTY**

TELEPHONE (731) 772-1432



#### OFFICE OF COUNTY MAYOR

COURTHOUSE

1 NORTH WASHINGTON . BROWNSVILLE, TN 38012

STATE OF TENNESSEE DEPT. OF TRANSPORTATION RECEIVED

JUN 2 2009

CHIEF ENGINEER

May 19, 2009

Paul Degges, P.E. Chief Engineer Tennessee Department of Transportation James K. Polk Building 505 Deaderick Street, Suite 700 Nashville, TN 37243-0349

Dear Mr. Degges:

The purpose of this letter is to support efforts by the Tennessee Department of Transportation to get operational approvals for proposed interchange studies along Interstate 40 in Haywood and Fayette Counties. We appreciate the opportunity to express our preferences on your conceptual drawings of the interchanges and commend your staff for their hard work.

As you know, the interchange at Exit 42 is currently insufficient to serve the I-40 Advantage Auto Park in Haywood County, assuming that a large project decides to locate on this TVA-certified megasite. Improvements to the existing interchange at SR 222, as shown on Concept 1, will add that capability and we respectfully ask you to submit an Interchange Modification Study to the Federal Highway Administration (FHWA).

Furthermore, a new I-40 interchange will be necessary if the megasite develops as expected. Another interchange at about mile marker 44, as shown on Concept 4, would provide additional interstate highway access to an assembly plant and adjoining supplier park. Again, we ask you to submit an Interchange Justification Study to FHWA in conjunction with the aforementioned Modification Study of Exit 42.

Having these interchange studies approved would make the megasite even more attractive to industrial prospects and we appreciate your willingness to seek the operational approvals mentioned above.

Respectfully

A. Franklin Smith, III

County Mayor

# Town of Stanton

8 MAIN STREET P.O. BOX 97 STANTON, TENNESSEE 38069 731-548-2565 STATEOFTENNESSEE DEPT.OFTRANSPORTATION RECEIVED

JUN 2 2009

CHIEF ENGINEER

May 19, 2009

Paul Degges, P.E. Chief Engineer Tennessee Department of Transportation James K. Polk Building 505 Deaderick Street, Suite 700 Nashville, TN 37243-0349

Dear Mr. Degges:

The purpose of this letter is to support efforts by the Tennessee Department of Transportation to get operational approvals for proposed interchange studies along Interstate 40 in Haywood and Fayette Counties. We appreciate the opportunity to express our preferences on your conceptual drawings of the interchanges and commend your staff for their hard work.

As you know, the interchange at Exit 42 is currently insufficient to serve the I-40 Advantage Auto Park in Haywood County, assuming that a large project decides to locate on this TVA-certified megasite. Improvements to the existing interchange at SR 222, as shown on Concept 1, will add that capability and we respectfully ask you to submit an Interchange Modification Study to the Federal Highway Administration (FHWA).

Furthermore, a new I-40 interchange will be necessary if the megasite develops as expected. Another interchange at about mile marker 44, as shown on Concept 4, would provide additional interstate highway access to an assembly plant and adjoining supplier park. Again, we ask you to submit an Interchange Justification Study to FHWA in conjunction with the aforementioned Modification Study of Exit 42.

Having these interchange studies approved would make the megasite even more attractive to industrial prospects and we appreciate your willingness to seek the operational approvals mentioned above.

Respectfully,

Allan Sterbinsky Mayor of Stanton



STATE OF TENNESSEE DEPT. OF TRANSPORTATION RECEIVED

JUN 2 2009

CHIEF ENGINEER

111 North Washington P.O. Box 375 Brownsville, TN 38012 (731)772-1212

May 26, 2009

Paul Degges, P.E.
Chief Engineer
Tennessee Department of Transportation
James K. Polk Building
505 Deaderick Street, Suite 700
Nashville, TN 37243-0349

Dear Mr. Degges:

The purpose of this letter is to support efforts by the Tennessee Department of Transportation to get operational approvals for proposed interchange studies along Interstate 40 in Haywood and Fayette Counties. We appreciate the opportunity to express our preferences on your conceptual drawings of the interchanges and commend your staff for their hard work.

As you know, the interchange at Exit 42 is currently insufficient to serve the I-40 Advantage Auto Park in Haywood County, assuming that a large project decides to locate on the TVA-certified mega site. Improvements to the existing interchange at SR 222, as shown on Concept 1, will add that capability and we respectfully ask you to submit an Interchange Modification Study to the Federal Highway Administration (FHWA).

Furthermore, a new I-40 interchange will be necessary if the mega site develops as expected. Another interchange at about mile marker 44, as shown on Concept 4, would provide additional interstate highway access to an assembly plant and adjoining supplier park. Again, we ask you to submit an Interchange Justification Study to FHWA in conjunction with the aforementioned Modification Study of Exit 42.

Having these interchange studies approved would make the mega site even more attractive to industrial prospects and we appreciate your willingness to seek the operational approvals mentioned above.

Respectfully,

Webb F. Banks, Mayor

# APPENDIX A TRAFFIC DATA

# TDOT TRAFFIC VOLUME APPROVAL LETTER



# STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION PROJECT PLANNING DIVISION

SUITE 1000, JAMES K. POLK BUILDING 505 Deaderick Street NASHVILLE, TENNESSEE 37243-0344

John Schroer Commissioner Bill Haslam Governor

April 14, 2011

Mr. Steve Bryan TranSystems 5500 Franklin Pike Suite 202 Nashville, TN 37220

Subject : Updated Traffic Volume Projections for I-40 between Exit 35 and Exit 47 Fayette and Haywood Counties

Dear Mr. Bryan,

We have checked and reviewed the traffic forecasts you submitted on April 5, 2011 for the subject project. All traffic volumes and DHVs have our approval. If you have any questions, please contact me at (615) 741-5786 or via email at gregory.dyer@tn.gov.

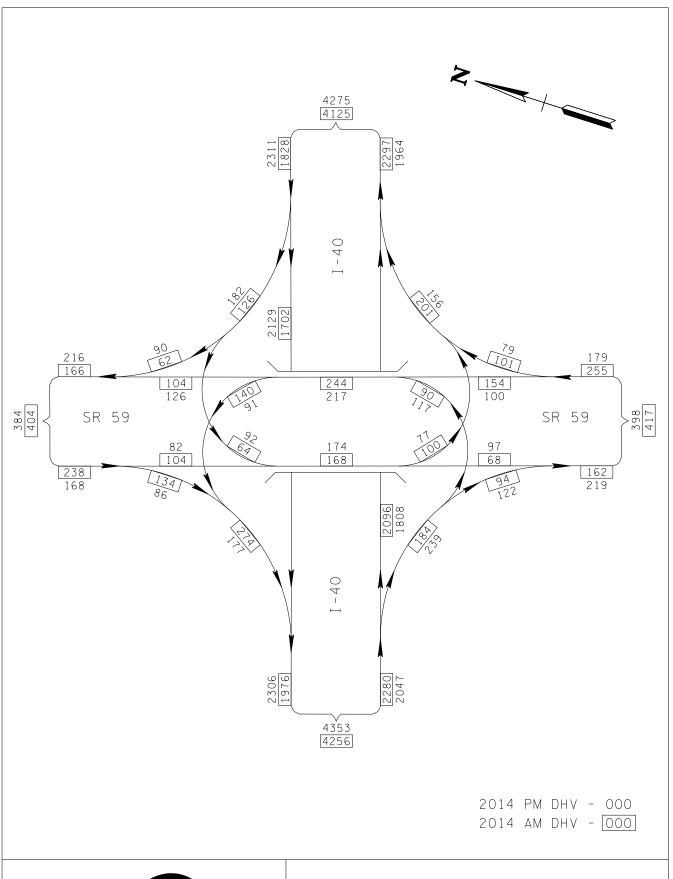
Sincerely,

Greg Dyer

Roadway Specialist 2

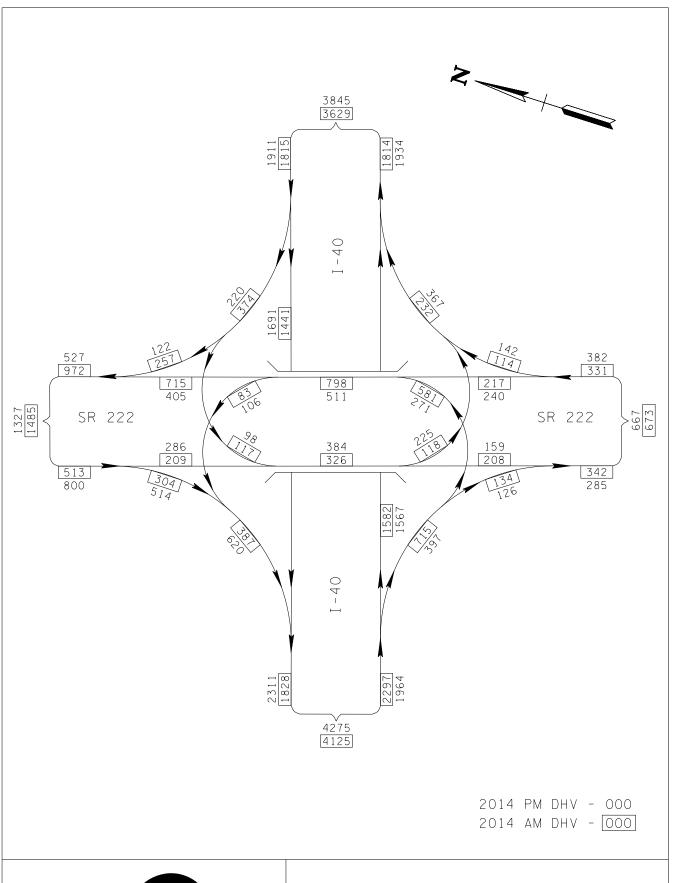
CC: Mr. Tony Armstrong

# 2014 AND 2034 TRAFFIC DIAGRAMS





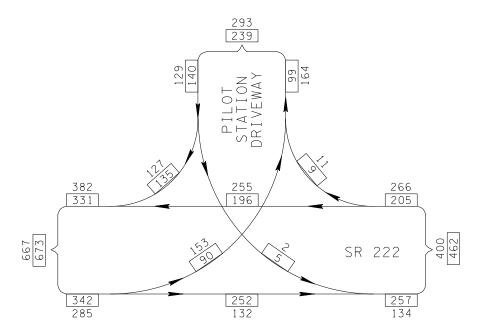
FAYETTE COUNTY I-40 AT SR 59 (EXIT 35) 2014 DESIGN HOUR VOLUMES





FAYETTE COUNTY I-40 AT SR 222 (EXIT 42) 2014 DESIGN HOUR VOLUMES

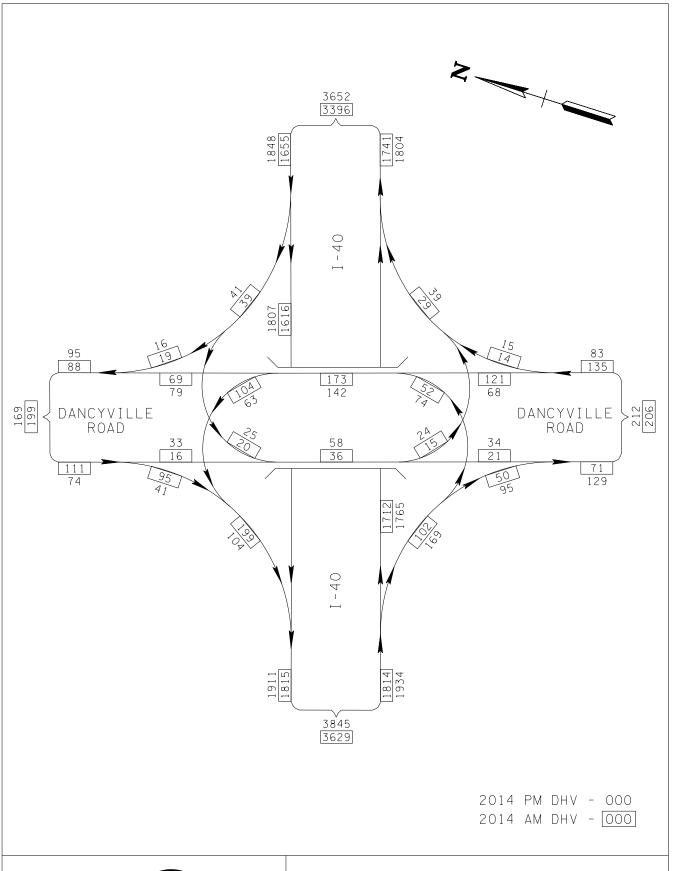




2014 PM DHV - 000 2014 AM DHV - 000

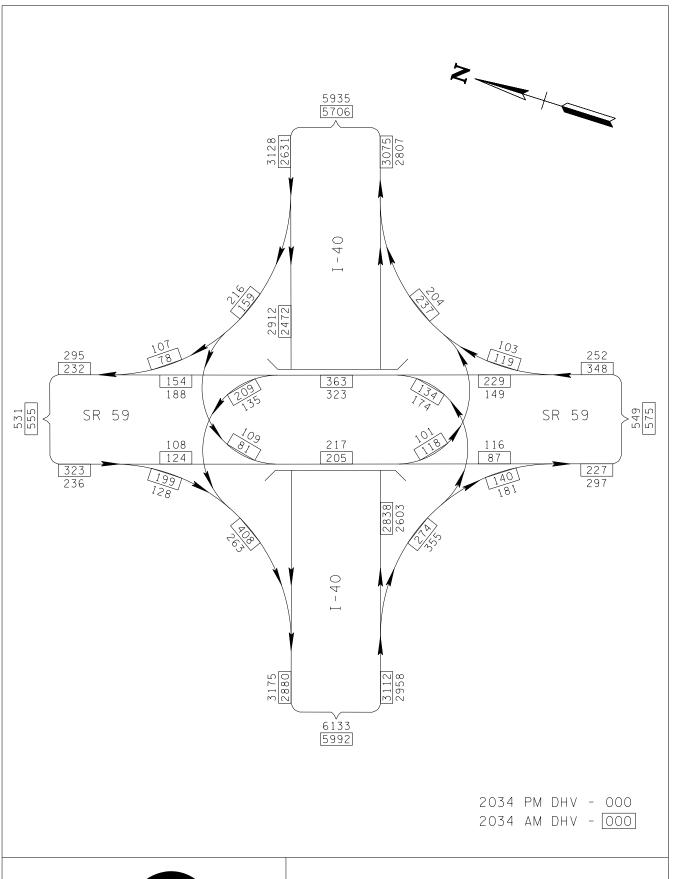


FAYETTE COUNTY
SR 222 AT PILOT STATION DRIVEWAY
2014 DESIGN HOUR VOLUMES



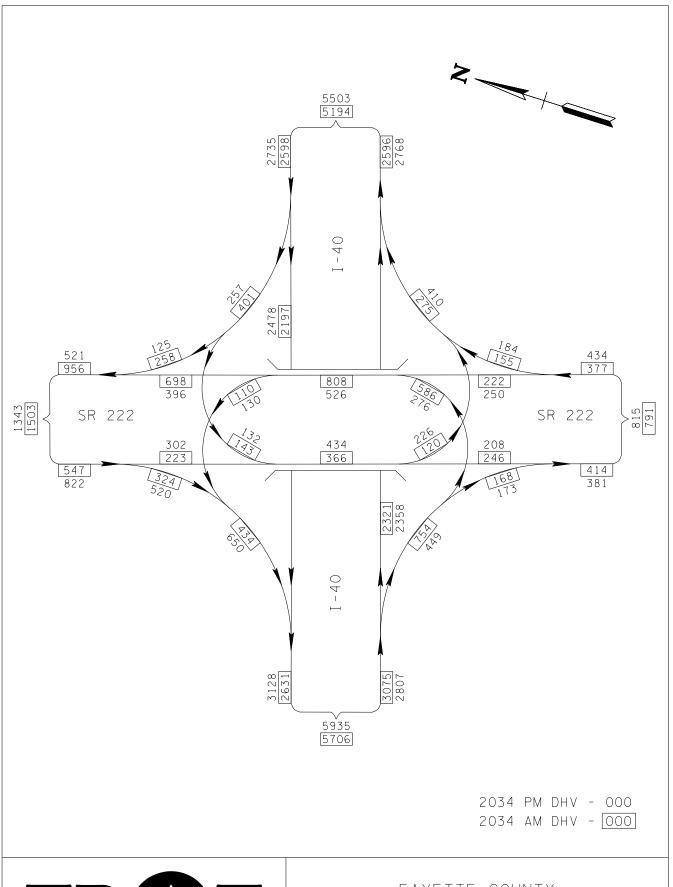


HAYWOOD COUNTY I-40 AT DANCYVILLE ROAD (EXIT 47) 2014 DESIGN HOUR VOLUMES





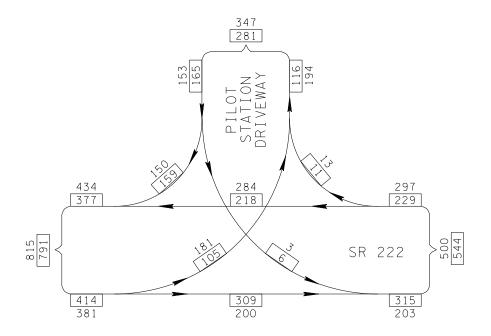
FAYETTE COUNTY I-40 AT SR 59 (EXIT 35) 2034 DESIGN HOUR VOLUMES





FAYETTE COUNTY I-40 AT SR 222 (EXIT 42) 2034 DESIGN HOUR VOLUMES

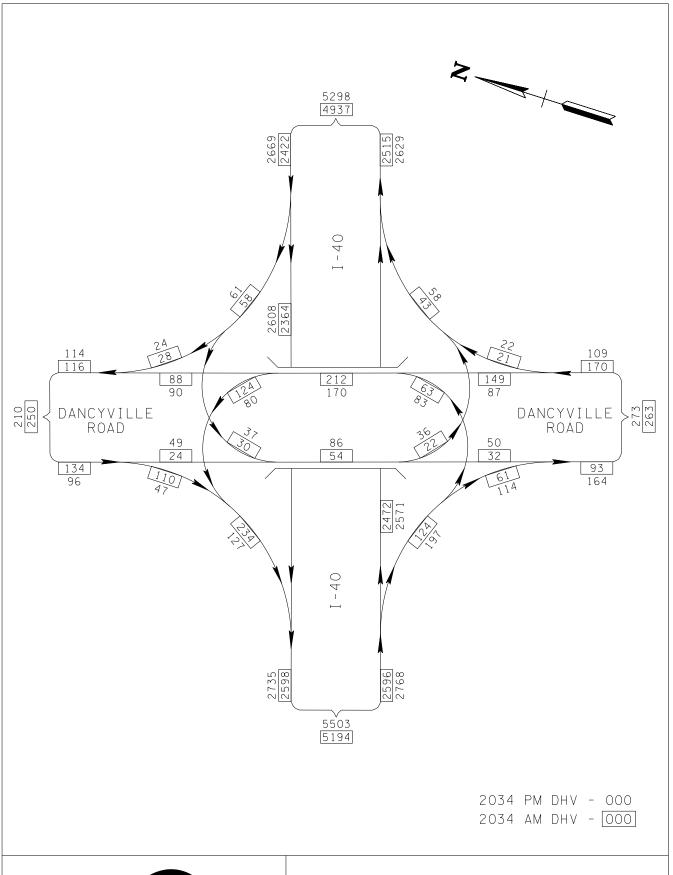




2034 PM DHV - 000 2034 AM DHV - 000

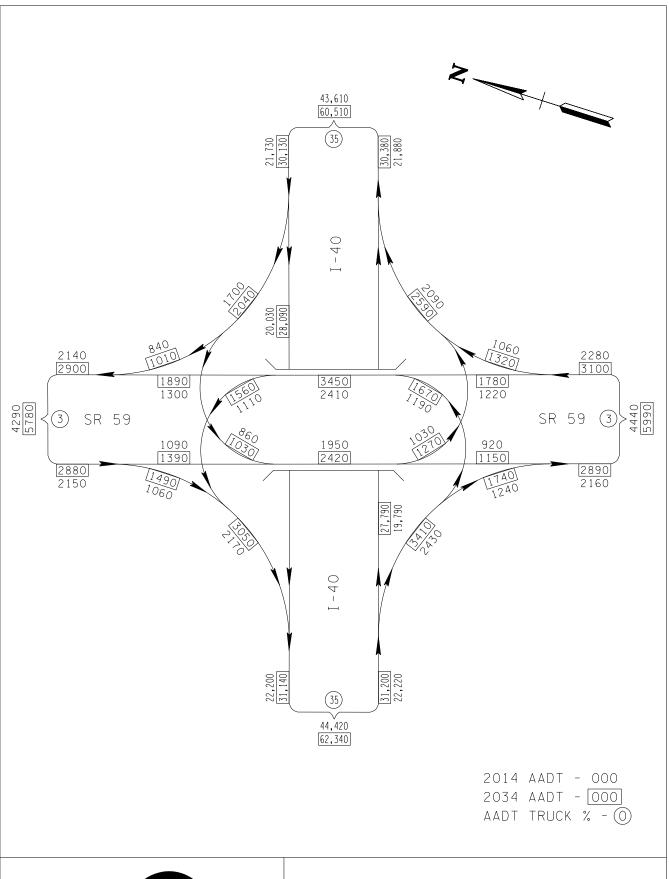


FAYETTE COUNTY
SR 222 AT PILOT STATION DRIVEWAY
2034 DESIGN HOUR VOLUMES



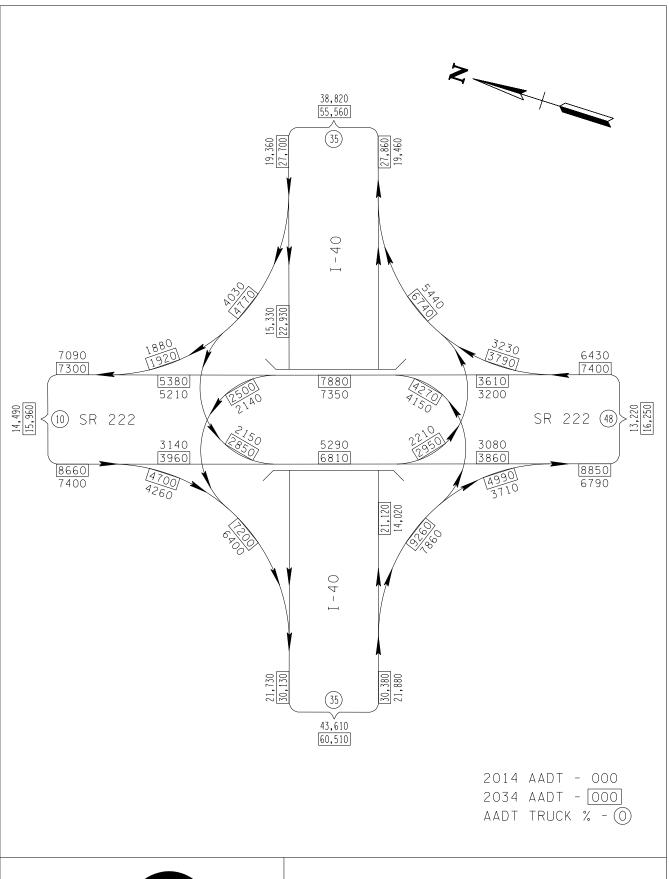


HAYWOOD COUNTY I-40 AT DANCYVILLE ROAD (EXIT 47) 2034 DESIGN HOUR VOLUMES





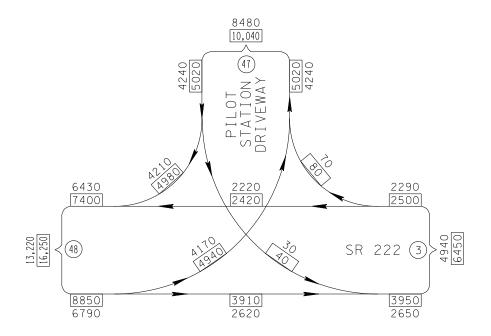
FAYETTE COUNTY
I-40 AT SR 59 (EXIT 35)
2014 AND 2034 AADT'S





FAYETTE COUNTY
I-40 AT SR 222 (EXIT 42)
2014 AND 2034 AADT'S

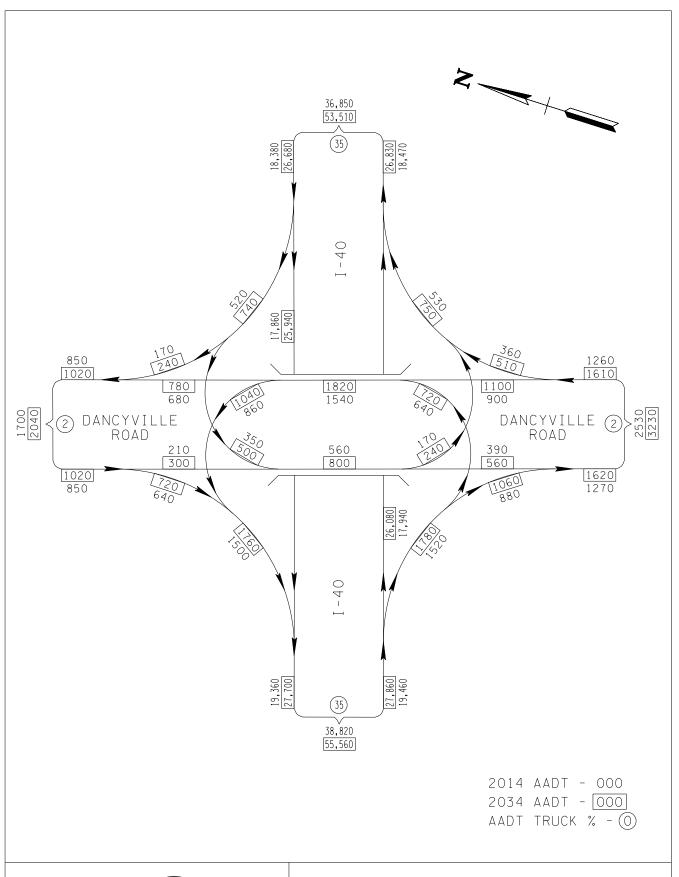




2014 AADT - 000 2034 AADT - 000 AADT TRUCK % - 0



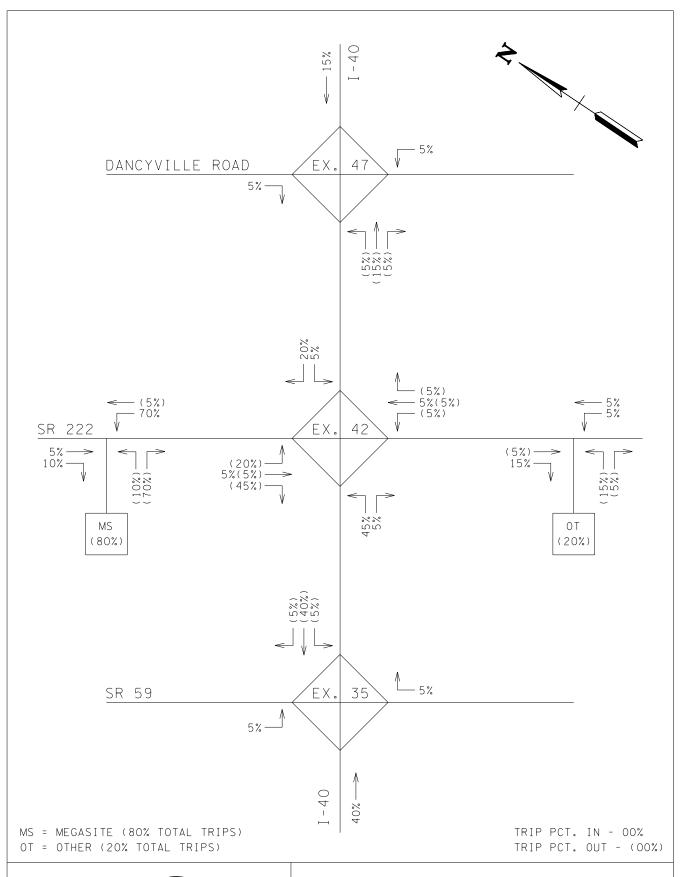
FAYETTE COUNTY
SR 222 AT PILOT STATION DRIVEWAY
2014 AND 2034 AADT'S





HAYWOOD COUNTY
I-40 AT DANCYVILLE ROAD (EXIT 47)
2014 AND 2034 AADT'S

## MEGASITE AND OTHER DEVELOPMENTS TRIP DISTRIBUTION PERCENTAGES AM/PM PEAK HOUR AND DAILY TRIPS

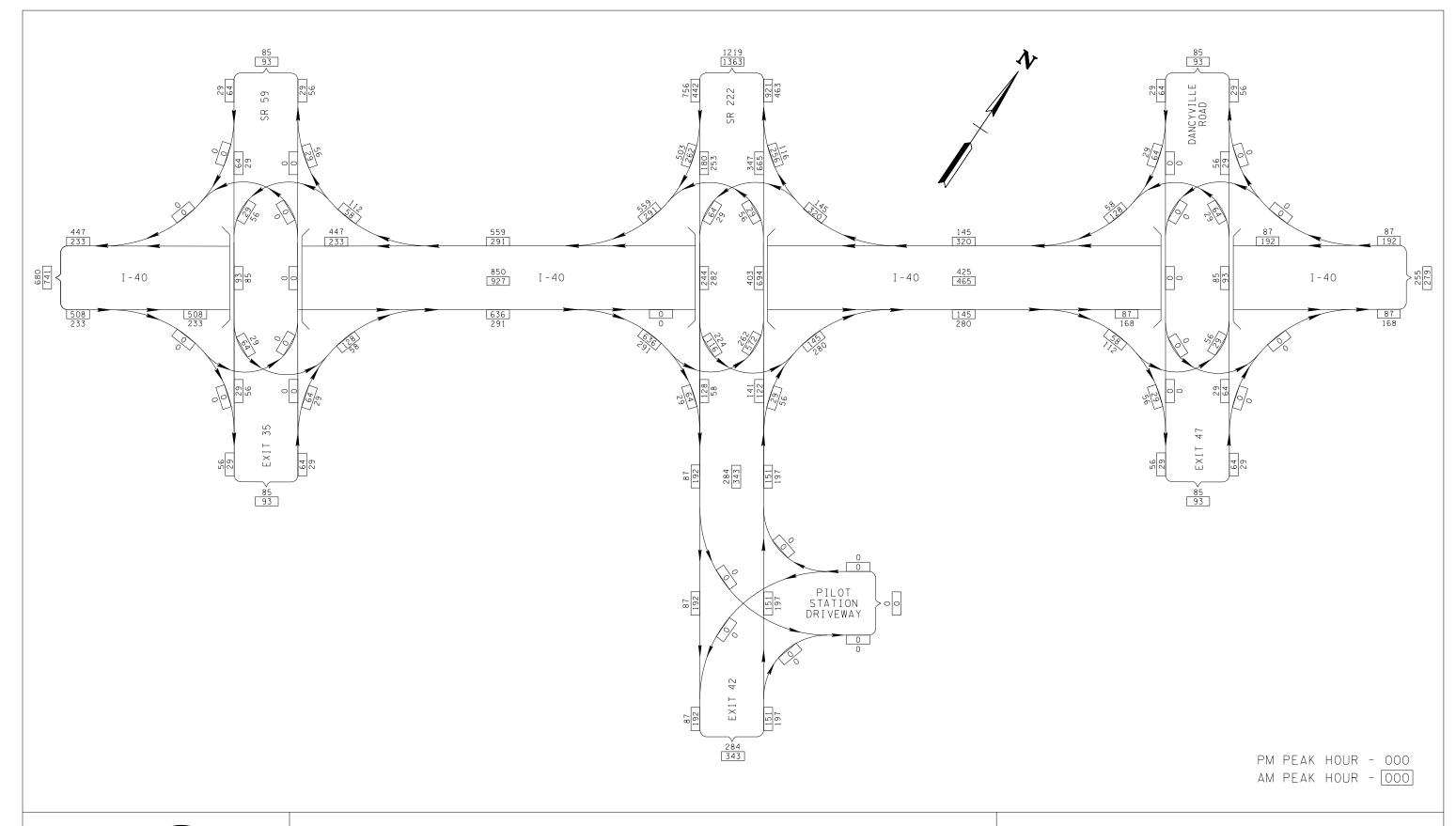




FAYETTE AND HAYWOOD COUNTIES

I-40 BETWEEN SR 59 & DANCYVILLE ROAD

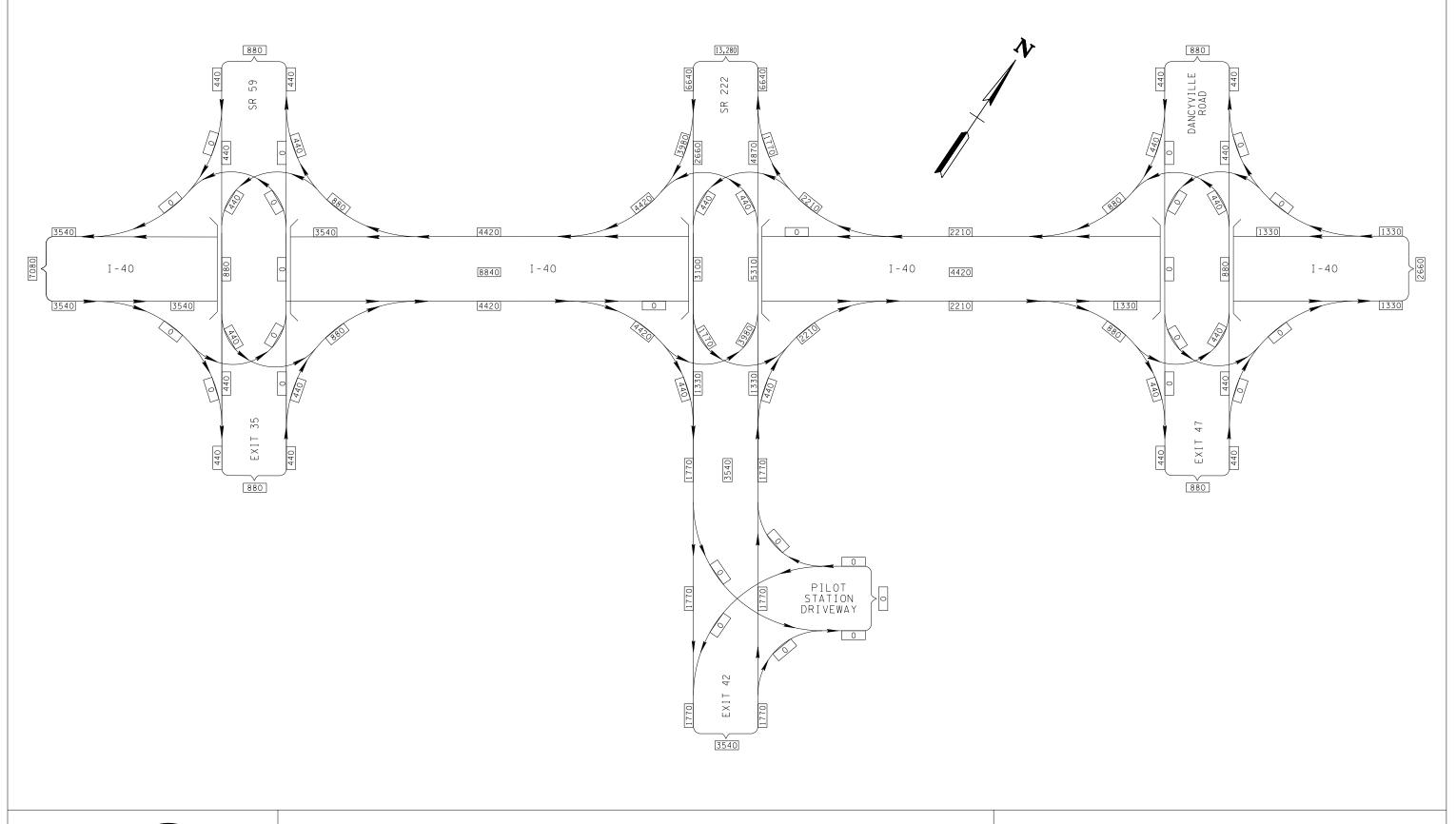
TRIP DISTRIBUTION PERCENTAGES





FAYETTE AND HAYWOOD COUNTIES
I-40 BETWEEN SR 59 & DANCYVILLE ROAD

AM / PM PEAK HOUR TRIPS





FAYETTE AND HAYWOOD COUNTIES
I-40 BETWEEN SR 59 & DANCYVILLE ROAD

DAILY TRIPS

## **SUPPORT DATA**

| 8                 |           |
|-------------------|-----------|
| #063              |           |
| #                 |           |
| 2                 |           |
| Station Out:      |           |
|                   |           |
|                   |           |
| Interstate, Rural |           |
| Station Type:     |           |
| 40                | C10 C10 M |

| ¢0<br>#           |           |         |            |         |        |                |        |        |           |        |        |        |        |        |        |        |        |        |           |        |        |        |        |                |                      |           |        |        |        |        |                |               |
|-------------------|-----------|---------|------------|---------|--------|----------------|--------|--------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------|--------|--------|--------|--------|----------------|----------------------|-----------|--------|--------|--------|--------|----------------|---------------|
| Station Out: NO   |           |         |            | Remarks |        | ACTUAL = 17271 |        |        | 2ND COUNT |        |        |        |        |        |        |        |        |        | 2ND COUNT |        |        |        |        | AADT LESS THAN | EXPECTED VALUE BASED | DATA DATA |        |        |        | RAMP   | RAMIP MOD PROC | RAMP MOD PROC |
|                   |           | Axle    | Adjustment | Factor  | 29.0   | 0.67           | 0.67   | 0.67   | 0.67      | 0.67   | 0.67   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70      | 0.70   | 0.70   | 0.70   | 0.70   | 0.70           |                      |           | 07.0   | 0.70   | 0.70   | 0.63   | 0.63           | 00.0          |
| Interstate, Rural |           | Annual  | Average    | Daily   | 14,741 | 15,500         | 16,684 | 669,61 | 16,525    | 19,044 | 20,335 | 20,148 | 24,264 | 23,391 | 22,220 | 24,016 | 27,895 | 27,999 | 29,163    | 31,810 | 34,958 | 33,972 | 31,501 | 31,721         |                      |           | 33,382 | 33,295 | 37,392 | 26,580 | 25,896         | 26,502        |
| Station Type:     |           | Average | Daily      | Traffic | 22,001 | 25,778         |        |        |           |        | 30,350 | 28,783 | 34,663 | 33,415 | 31,744 | 34,309 | 39,850 | 39,999 | 41,662    | 45,443 | 49,940 | 48,532 | 45,002 | 45,315         |                      |           | 47,688 | 47,564 | 53,417 | 0      | 0              | 0             |
|                   | -842      | Average | Weekday    | Traffic | 22,682 | 28,020         | 22,433 | 29,694 | 29,362    | 28,180 | 28,102 | 27,154 | 32,701 | 33,982 | 34,505 | 34,309 | 43,315 | 42,552 | 40,845    | 44,552 | 48,961 | 44,525 | 44,120 | 43,158         |                      |           | 45,854 | 47,093 | 53,957 | 0      | 0              | 0             |
| 04-1              | SW OF 842 |         |            | Vear    | 1985   | 9861           | 1987   | 1988   | 6861      | 1990   | 1661   | 1992   | 1993   | 1994   | 1995   | 9661   | 1997   | 8661   | 6661      | 2000   | 2001   | 2002   | 2003   | 2004           |                      |           | 2005   | 2006   | 2007   | 2008   | 2009           | 2010          |
| Route:            | Location: |         |            | Month   | 90     | 0.5            | 770    | 90     | 0.7       | 0.5    | 0.5    | 0.5    | 0.5    | 0.5    | 90     | 90     | 9      | 90     | 90        | 0.5    | 92     | 04     | 10     | 97             |                      |           | 90     | 90     | 90     | 92     | (~)            | Amend         |
|                   |           |         |            |         |        |                |        |        |           |        |        |        |        |        |        |        |        |        |           |        |        |        |        |                |                      |           |        |        |        |        |                |               |

Station Type:

EXPECTED VALUE BASED AADT GREATER THAN ON PREVIOUS YEARS Remarks RAMP MOD PROC RAMP MOD PROC ACTUAL = 15875 ACTUAL = 22115 2ND COUNT RAMP DATA EST Adjustment 0.70 0.70 0.67 0.67 0.67 29.0 0.70 0.70 0.70 0.70 0.70 0.70 0.70 79.0 0.67 0.63 0.03 Factor Average Annual Daily 17,758 19,469 20,616 25,683 24,977 24,668 25,000 30,365 15,975 18,000 34,030 30,670 30,448 34,253 26,798 26,568 26,834 14,387 5,884 31,164 36,234 33,943 Average Traffic Daily 21,473 23,843 29,059 29,452 36,690 35,240 44,519 43,819 35,682 31,593 43,378 48,118 48,614 48,490 43,497 51,763 48,933 50,894 E OF JCT. WITH SR-59 Weekday 22,137 22,926 23,474 21,736 27,045 27,252 27,675 27,715 34,290 41,459 41,607 45,318 47,280 50,715 33,662 29,805 40,165 45,394 00 43,385 45,732  $\circ$ 47,661 48,377 Average Traffic 1-40 6861 9861 1988 0661 1994 1995 1996 1987 1992 1997 8661 6661 2000 2002 2003 2005 2006 2008 2009 2001 2004 2007 Location: Month Route: 04 0.5 90 04 05 05 05 05 05 05 05 05 06 06 92 03 4224-

Station Out: NO #991 Axle Station Type: Interstate, Rural Annual Average Location: W OF SR-76 INTER. (ATR 41) Average 140 Route:

|            | Remarks | 12 MO, AVG. | 12 MO. AVG. | 12 MO, AVG. | 12 MO, AVG. | 12 MO. AVG. | 12 MO. AVG. | ACTUAL = 18005 |        |        |        |        |        | EST    |        |        |        |        |        |        | AADT LESS THAN | EXPECTED VALUE BASED | ON PREVIOUS YEARS | חאות   |        | EST    |        | RAMP   | ATR MONTHLY AVERAGE | ATR WEEKDAY FOR JULY |
|------------|---------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------------|----------------------|-------------------|--------|--------|--------|--------|--------|---------------------|----------------------|
| Adjustment | Factor  | 0.67        | 0.67        | 0.67        | 0.67        | 0.67        | 0.67        | 0.67           | 0.70   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70   | 0.70           |                      |                   | 000    | 00     | 0.70   | 0.70   | 0.70   | 0.70                | 0.70                 |
| Average    | Daily   | 15,030      | 17,249      | 17,300      | 19,647      | 21,078      | 24,505      | 19,000         | 20,072 | 21,462 | 22,003 | 25,374 | 26,776 | 27,000 | 30,526 | 28,705 | 31,730 | 32,109 | 31,213 | 31,462 | 33,168         |                      |                   | 600 36 | 22,402 | 36,960 | 36,856 | 33,339 | 34,730              | 35,613               |
| Daily      | Traffic | 0           | 0           | 0           | 0           | 0           | 0           | 26,873         | 28,675 | 30,660 | 31,433 | 36,248 | 38,252 | 0      | 43,608 | 41,007 | 45,329 | 45,870 | 44,590 | 44,946 | 47,383         |                      |                   | 51 404 | 101.   | 0      | 52,651 | 0      | 0                   | 0                    |
| Weekday    | Traffic | 0           | 0           | 0           | 0           | 0           | 0           | 27,144         | 27,052 | 32,274 | 32,074 | 36,248 | 38,252 |        | 45,903 | 40,203 | 44,880 | 44,971 | 46,448 | 46,337 | 45,127         |                      |                   | 70002  | 11.774 | 0      | 52,130 | 0      | 0                   | 0                    |
|            | Year    | 1985        | 1986        | 1987        | 1988        | 6861        | 1990        | 1661           | 1992   | 1993   | 1994   | 1995   | 9661   | 1997   | 8661   | 6661   | 2000   | 2001   | 2002   | 2003   | 2004           |                      |                   | 3000   | 7007   | 2006   | 2007   | 2008   | 2009                | 2010                 |
|            | Month   | 90          | 90          | 90          | 90          | 90          | 90          | 90             | 90     | 90     | 90     | 90     | 90     | 90     | 90     | 90     | 90     | 90     | 25     | 10     | 040            |                      |                   | 00     | 000    | 08     | 90     | 0.5    | 5                   | 0.7                  |

Fayette

Station Number: 000004

Route:

SR-59

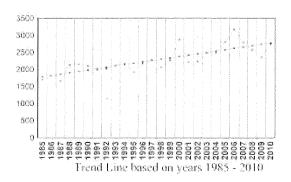
Station Type: Other Rural

Station Out:

Location:

NEAR TIPTON COUNTY LINE

| Month | Year | Average<br>Weekday<br>Traffie | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks  |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|--|
| 05    | 1985 | 1,725                         | 1,708                       | 1,690                      | 0.99                         |  |
| 05    | 1986 | 1,741                         | 1,828                       | 1,810                      | 0.99                         |  |
| 03    | 1987 | 1,530                         |                             | 1,651                      | 0.99                         |  |
| 05    | 1988 | 2,080                         |                             | 2,122                      | 0,99                         |  |
| 05    | 1989 | 2,185                         |                             | 2,142                      | 0.99                         |  |
| 04    | 1990 | 2,095                         |                             | 2,095                      | 0.99                         |  |
| 04    | 1991 | 1,958                         | 1,997                       | 1,977                      | 0,99                         |  |
| 05    | 1992 | 2,079                         | 2,037                       | 2,017                      | 0.99                         |  |
| 04    | 1993 | 2,169                         | 2,126                       | 2,104                      | 0.99                         |  |
| 04    | 1994 | 2,230                         | 2,185                       | 2,164                      | 0,99                         | •  |
| 06    | 1995 | 2,173                         | 1,933                       | 1,913                      | 0,99                         |  |
| 05    | 1996 | 2,276                         | 2,185                       | 2,163                      | 0.99                         |  |
| 05    | 1997 | 2,446                         | 2,299                       | 2,276                      | 0.99                         |  |
| 05    | 1998 | 2,188                         | 2,079                       | 2,058                      | 0.99                         |  |
| 0.5   | 1999 | 2,620                         | 2,279                       | 2,256                      | 0.99                         |  |
| 06    | 2000 | 3,057                         | 2,904                       | 2,875                      | 0.99                         |  |
| 04    | 2001 | 2,277                         | 2,231                       | 2,209                      | 0,99                         |  |
| 02    | 2002 | 2,236                         | 2,252                       | 2,229                      | 0,99                         |  |
| 04    | 2003 | 2,559                         | 2,507                       | 2,482                      | 0.99                         |  |
| 06    | 2004 | 0                             | 0                           | 2,494                      | 0,99                         | EST  |
| 03    | 2005 | 2,805                         | 2,833                       | 2,805                      | 0.99                         |  |
| 0.3   | 2006 | 3,234                         | 3,202                       | 3,170                      | 0.99                         |  |
| 02    | 2007 | 2,752                         | 2,807                       | 2,779                      | 0.99                         |  |
| 08    | 2008 | 2,679                         | 2,599                       | 2,573                      | 0,99                         |  |
| 04    | 2009 | 2,666                         | 2,350                       | 2.350                      | 0,99                         | USED CLASS COUNT                               |
| 06    | 2010 | 2,9                           | 2,765                       | 2,738                      | 6,99                         | COUNT WAS LOW THE<br>LAST TWO YEARS<br>COUNTED |



Fayette

Station Number: 000110

Route:

SR-59

Station Type:

Other Rural

Station Out:

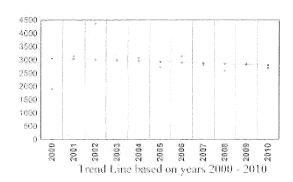
NO

Location:

SE OF I-40

#110

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks   |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---|
| 06    | 2000 | 1,980                         | 1,921                       | 1,902                      | 0.99                         | SCHOOL OUT  |
| 04    | 2001 | 3,301                         | 3,169                       | 3,137                      | 0.99                         | 2ND YR CT-SCHOOL IN   |
| 03    | 2002 | 0                             | 0                           | 4,372                      | 0.99                         | EST   |
| 04    | 2003 | 3,051                         | 2,989                       | 2,960                      | 0.99                         | AADT LESS THAN<br>EXPECTED VALUE BASED<br>ON PREVIOUS YEARS<br>DATA |
| 06    | 2004 | 3,231                         | 3,101                       | 3,070                      | 0.99                         |   |
| 0.3   | 2005 | 2,725                         | 2,752                       | 2,725                      | 0.99                         |   |
| 04    | 2006 | 3,335                         | 3,168                       | 3,137                      | 0.99                         | OK - SEE 2004   |
| 02    | 2007 | 2,804                         | 2,832                       | 2,804                      | 0,99                         |   |
| 08    | 2008 | 2,700                         | 2,619                       | 2,593                      | 0.99                         |   |
| 0.5   | 2009 | 3,045                         | 2,893                       | 2,864                      | 0,99                         |   |
| 06    | 2010 | 2,865                         | 2,722                       | 2,695                      | 0.99                         |   |



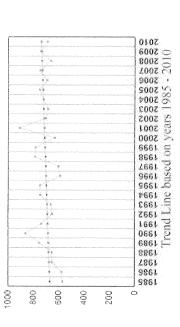
Station Type: Other Rural

SR-222

Route:

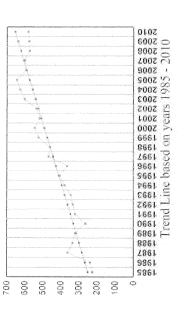
N OF SOMERVILLE Location:

|                               | NCME TO |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | HIGH SCHOOL IS IN |      |      | T    |      |      |      |      | <u></u> |      |
|-------------------------------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------------------|------|------|------|------|------|------|------|---------|------|
|                               |         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | Ή                 |      |      | EST  |      |      |      |      | EST     |      |
| Adjustment                    | 86.0    | 0.98 | 86.0 | 0.98 | 0.98 | 86.0 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98              | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98    | 0.97 |
| Average                       | 398     | 576  | 653  | 652  | 753  | 862  | 736  | .059 | 799  | 746  | 748  | 588  | 709  | 787  | 782  | 632  | 606               | 702  | 989  | 720  | 749  | 692  | 748  | 662  | 743     | 689  |
| Average<br>Daily              | 580     | 588  | 199  |      |      |      | 751  | £99  | 929  | 761  | 764  | 009  | 614  | 803  | 798  | 645  | 928               | 716  | 700  | 0    | 764  | 706  | 764  | 929  | 0       | 703  |
| Average<br>Weekday<br>Troffic | 563     | 639  | 099  | 739  | 753  | 871  | 759  | 677  | 269  | 785  | 967  | 625  | 640  | 854  | 849  | 999  | 196               | 746  | 715  | 0    | 749  | 743  | 756  | 751  | 0       | 781  |
| 100                           | 1985    | 1986 | 1987 | 1988 | 1989 | 0661 | 1661 | 1992 | 1993 | 1994 | 1995 | 9661 | 1997 | 8661 | 6661 | 2000 | 2001              | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009    | 2010 |
| Z E                           | 04      | 05   | 9    | 0.5  | 90   | 04   | 0.5  | 0.5  | 5    | 90   | 90   | 0.5  | 04   | 90   | 90   | 90   | 04                | 63   | 04   | 90   | 03   | 0.4  | 0.2  | 60   | 0.5     | 90   |



NEAR FAYETTE COLINE Location:

|                    | Remarks |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|--------------------|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                    |         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | EST  | EST  |      |      | EST  |      |      |      |      | ,    |
| Axle<br>Adjustment | Factor  | 86.0 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 86.0 | 0.98 | 86.0 | 0.98 | 0.98 | 0.98 | 0.93 |
| Annual             | Daily   | 225  | 237  | 362  | 334  | 322  | 262  | 320  | 333  | 344  | 379  | 406  | 365  | 468  | 461  | 523  | 545  | 518  | 536  | 601  | 626  | 644  | 593  | 599  | 573  | 576  | 581  |
| Average<br>Daily   | Traffic | 230  | 242  |      |      |      |      | 327  | 340  | 351  | 387  | 415  | 372  | 478  | 470  | 534  | 556  | 0    | 0    | 614  | 639  | 0    | 909  | 611  | 585  | 588  | 593  |
| Average<br>Weekday |         | 232  | 244  | 351  | 340  | 322  | 270  | 330  | 347  | 362  | 395  | 433  | 387  | 508  | 500  | 550  | 592  | 0    | 0    | 633  | 629  | 0    | 637  | 059  | 603  | 899  | 618  |
|                    | Year    | 1985 | 9861 | 1987 | 1988 | 6861 | 1990 | 1661 | 1992 | 1993 | 1994 | 5661 | 9661 | 1997 | 8661 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|                    | Month   | 92   | 90   | 2    | 90   | 90   | 2    | 0.5  | 0.5  | 0.5  | 90   | 90   | 90   | 0.5  | 0.5  | 90   | 0.5  | 0.5  | 04   | 90   | 0.4  | 7    | 90   | 04   | 0.7  | 0.5  | 90   |



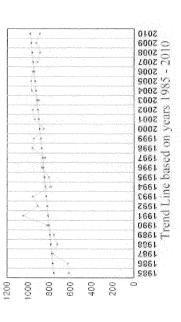
| \r<br>\text{\text{\$\ext{\$\text{\$\exititt{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\}}}}\\ \text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\exititt{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\}\$\text{\$\text{\$\text{\$\text{\$\text{\$\te |             |                    |         |  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                | SED                  |                             |      |      |      |      |      |      |              |
|--|-------------|--------------------|---------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------------|----------------------|-----------------------------|------|------|------|------|------|------|--------------|
| Station Our:   |             |                    | Remarks | and the second s |      |      |      |      |      |      |      |      | EST  |      | EST  |      |      |      |      |      |      | AADT LESS THAN | EXPECTED VALUE BASED | ON PICE VIOUS YEAKS<br>DATA | EST  |      |      | EST  |      |      | ACTUAL = 645 |
|  |             | Axle               | Factor  | 0.97   | 0.97 | 0,97 | 0.97 | 0.97 | 0.97 | 76.0 | 76.0 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97           |                      |                             | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 08.0         |
| Other Rural  |             | Annual             | Daily   | 397  | 375  | 372  | 442  | 74   | 432  | 444  | 463  | 395  | 410  | 405  | 410  | 419  | 529  | 874  | 420  | 433  | 426  | 355            |                      |                             | 396  | 404  | 450  | 463  | 462  | 463  | 459          |
| Station Type:  |             | Average<br>Daily   | Traffic | 409  | 387  |      |      |      |      | 458  | 17.7 | 407  |      | 418  |      | 432  | 545  | 493  | 433  | 446  | 439  | 366            |                      |                             | 0    | 4    | 464  | 0    | 476  | 477  | 999          |
| ~  | URY         | Average<br>Weekday | Traffic | 422  | 387  | 365  | 494  | 461  | 450  | 458  | 487  | 420  |      | 441  |      | 497  | 580  | 508  | 461  | 474  | 448  | 378            |                      |                             | 0    | 434  | 488  | 0    | 491  | 542  | 693          |
| SR-179   | : S. ASBURY |                    | Year    | 1985   | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 9661 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003           |                      |                             | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010         |
| Route:   | Location:   |                    | Month   | 0.5  | 90   | 04   | 90   | 0.7  | 0.5  | 0.5  | 05   | 0.5  | 20   | 90   | 90   | 92   | 0.5  | 90   | 0.5  | 0.5  | 04   | 90             |                      |                             | 90   | 90   | 90   | 90   | 0.7  | 0.5  | 90           |

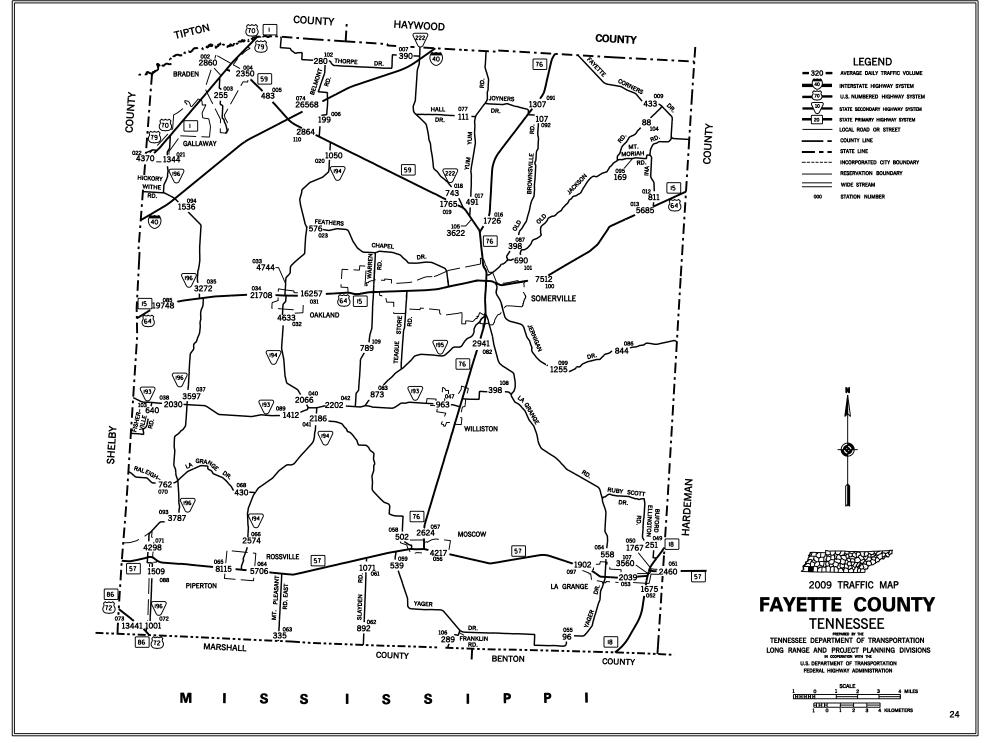
SR-179

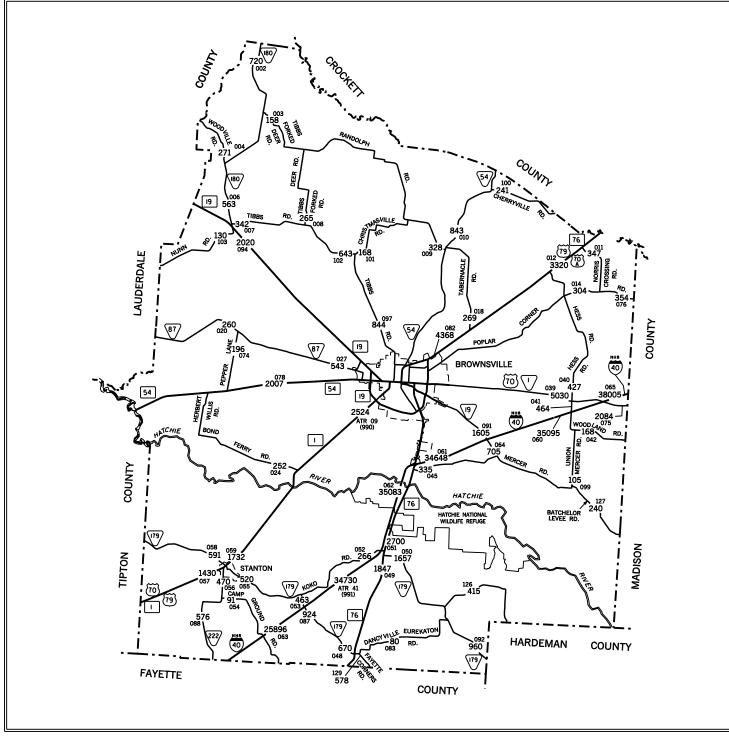
Route:

Station Type: Other Rural

|                    | Remarks |      |      |      |      |      |      |       |      |       |      |      |      |      |       |       |      |       |      |      | EST  |       |       |       |      |       | USED CLASS COUNT |
|--------------------|---------|------|------|------|------|------|------|-------|------|-------|------|------|------|------|-------|-------|------|-------|------|------|------|-------|-------|-------|------|-------|------------------|
| Axle<br>Adjustment | Factor  | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | 0.97  | 0.97 | 0.97  | 0.97 | 0.97 | 0.97 | 0.97 | 0.97  | 0.97  | 0.97 | 0.97  | 0.97 | 0.97 | 0.97 | 0.97  | 0.97  | 0.97  | 0.97 | 26.0  | 0.89             |
| Annual             | Daily   | 613  | 623  | 191  | 25   | 755  | 819  | 1,045 | S)5  | 956   | 785  | 803  | 50   | 841  | 959   | 946   | 853  | 937   | 956  | 668  | 964  | 226   | 956   | 912   | 886  | 924   | 068              |
| Average            | Traffic | 632  | 542  |      |      |      |      | 1,077 | 937  | 986   | 608  | 828  | 868  | 867  | 686   | 975   | 879  | 996   | 986  | 726  | 0    | 1,002 | 985   | 940   | 516  | 952   | 0                |
| Average<br>Weekday | Traffic | 652  | 642  | 753  | 808  | 7.78 | 853  | 1,088 | 956  | 1,016 | 834  | 872  | 945  | 966  | 1,052 | 1,005 | 935  | 1,028 | 957  | 956  | 0    | 1,044 | 1,037 | 1,000 | 242  | 1,082 | 0                |
|                    | Year    | 1985 | 1986 | 1987 | 1988 | 1989 | 0661 | 1661  | 1992 | 1993  | 1994 | 1995 | 9661 | 1997 | 8661  | 6661  | 2000 | 2001  | 2002 | 2003 | 2004 | 2005  | 2006  | 2007  | 2008 | 2009  | 2010             |
|                    | Month   | 05   | 90   | 90   | 90   | 90   | 0.5  | 0.5   | 90   | 92    | 90   | 90   | 90   | .50  | 90    | 90    | 0.5  | 0.5   | 03   | 90   | 90   | 90    | 90    | 0.5   | 7.0  | 90    | 90               |













2009 TRAFFIC MAP

## **HAYWOOD COUNTY**

## **TENNESSEE**

TENNESSEE DEPARTMENT OF TRANSPORTATION

LONG RANGE AND PROJECT PLANNING DIVISIONS
IN COOPDITION WITH THE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION





County: Haywood

Station Number: 000001

Route:

I-40

**Station Type:** 

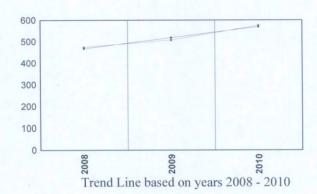
Interstate, Rural

**Station Out:** 

NO

Location:

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 07    | 2008 | 498                           | 483                         | 473                        | 0.98                         |         |
| 05    | 2009 | 512                           | 517                         | 507                        | 0.98                         |         |
| 06    | 2010 | 605                           | 587                         | 575                        | 0.98                         |         |



Haywood

**Station Number:** 

000002

Route:

I-40

**Station Type:** 

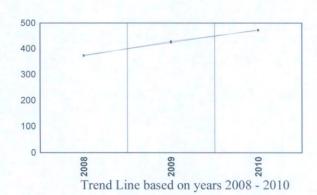
Interstate, Rural

**Station Out:** 

NO

Location:

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 07    | 2008 | 391                           | 379                         | 372                        | 0.98                         |         |
| 05    | 2009 | 432                           | 436                         | 428                        | 0.98                         |         |
| 06    | 2010 | 495                           | 480                         | 471                        | 0.98                         |         |



Haywood County:

**Station Number:** 000003

Route:

I-40

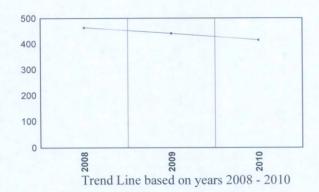
Station Type: Interstate, Rural

**Station Out:** 

NO

Location: SR-179

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 07    | 2008 | 487                           | 472                         | 463                        | 0.98                         |         |
| 05    | 2009 | 447                           | 451                         | 442                        | 0.98                         |         |
| 06    | 2010 | 503                           | 423                         | 414                        | 0.98                         |         |



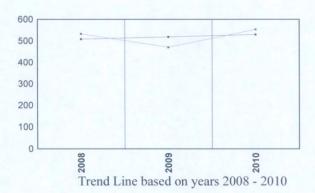
A-36

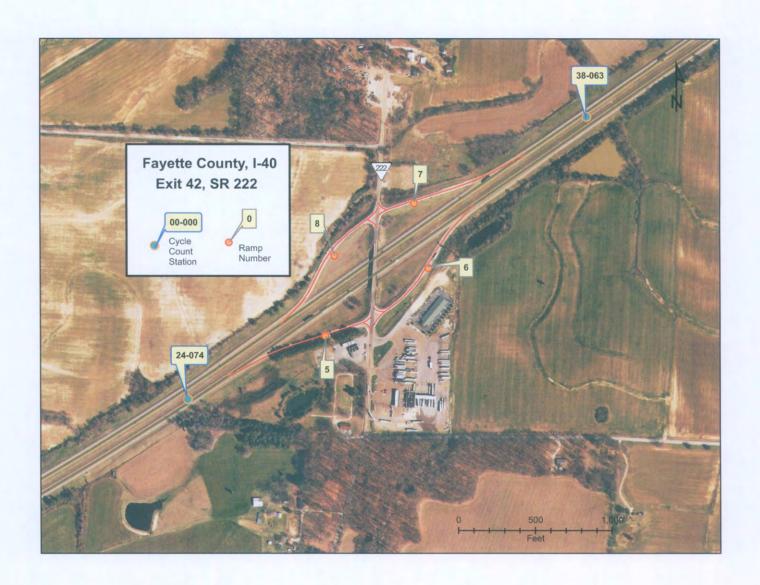
County: Haywood Station Number: 000004

Route: I-40 Station Type: Interstate, Rural Station Out: NO

Location: SR-179

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 07    | 2008 | 560                           | 543                         | 532                        | 0.98                         |         |
| 05    | 2009 | 475                           | 480                         | 470                        | 0.98                         |         |
| 06    | 2010 | 582                           | 565                         | 553                        | 0.98                         |         |



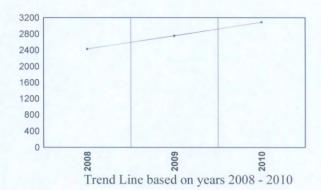


County: Fayette Station Number: 000005

Route: I-40 Station Type: Interstate, Rural Station Out: NO

Location: SR-222

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 09    | 2008 | 2,694                         | 2,478                       | 2,429                      | 0.98                         |         |
| 05    | 2009 | 2,922                         | 2,805                       | 2,749                      | 0.98                         |         |
| 06    | 2010 | 3,464                         | 3,152                       | 3,089                      | 0.98                         |         |



Fayette

**Station Number:** 

000006

Route:

I-40

**Station Type:** 

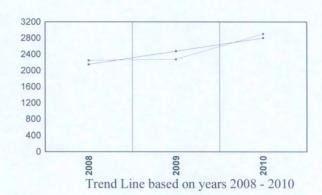
Interstate, Rural

**Station Out:** 

NO

Location:

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 09    | 2008 | 2,496                         | 2,296                       | 2,250                      | 0.98                         |         |
| 05    | 2009 | 2,419                         | 2,322                       | 2,276                      | 0.98                         |         |
| 06    | 2010 | 3,252                         | 2,959                       | 2,900                      | 0.98                         |         |



Fayette

**Station Number:** 

000007

Route:

I-40

**Station Type:** 

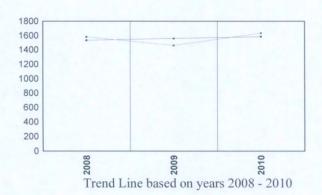
Interstate, Rural

**Station Out:** 

NO

Location:

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 08    | 2008 | 1,630                         | 1,614                       | 1,581                      | 0.98                         |         |
| 05    | 2009 | 1,551                         | 1,489                       | 1,459                      | 0.98                         |         |
| 06    | 2010 | 1,831                         | 1,666                       | 1,633                      | 0.98                         |         |



Fayette

**Station Number:** 

000008

Route:

I-40

**Station Type:** 

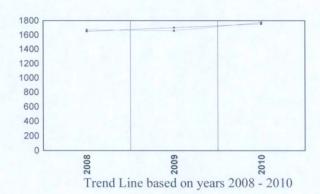
Interstate, Rural

**Station Out:** 

NO

Location:

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 09    | 2008 | 1,852                         | 1,704                       | 1,670                      | 0.98                         |         |
| 05    | 2009 | 1,762                         | 1,692                       | 1,658                      | 0.98                         |         |
| 06    | 2010 | 1,991                         | 1,812                       | 1,776                      | 0.98                         |         |





Fayette

**Station Number:** 

000001

Route:

I-40

**Station Type:** 

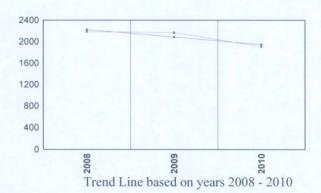
Interstate, Rural

**Station Out:** 

NO

Location:

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 09    | 2008 | 2,421                         | 2,227                       | 2,183                      | 0.98                         |         |
| 05    | 2009 | 2,302                         | 2,210                       | 2,166                      | 0.98                         |         |
| 06    | 2010 | 2,316                         | 1,945                       | 1,907                      | 0.98                         |         |



Fayette

**Station Number:** 

000002

Route:

I-40

**Station Type:** 

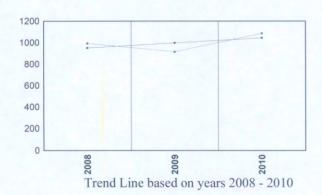
Interstate, Rural

**Station Out:** 

NO

Location:

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 09    | 2008 | 1,100                         | 1,012                       | 992                        | 0.98                         |         |
| 05    | 2009 | 972                           | 933                         | 914                        | 0.98                         |         |
| 06    | 2010 | 1,218                         | 1,108                       | 1,086                      | 0.98                         |         |



Fayette

Station Number:

000003

Route:

I-40

**Station Type:** 

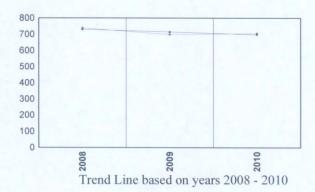
Interstate, Rural

**Station Out:** 

NO

Location:

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 09    | 2008 | 818                           | 753                         | 738                        | 0.98                         |         |
| 05    | 2009 | 743                           | 713                         | 699                        | 0.98                         |         |
| 06    | 2010 | 791                           | 720                         | 705                        | 0.98                         |         |



Fayette

Station Number:

000004

Route:

I-40

**Station Type:** 

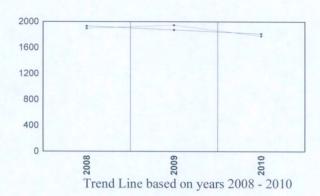
Interstate, Rural

**Station Out:** 

NO

Location:

| Month | Year | Average<br>Weekday<br>Traffic | Average<br>Daily<br>Traffic | Annual<br>Average<br>Daily | Axle<br>Adjustment<br>Factor | Remarks |
|-------|------|-------------------------------|-----------------------------|----------------------------|------------------------------|---------|
| 09    | 2008 | 2,101                         | 1,933                       | 1,894                      | 0.98                         |         |
| 05    | 2009 | 2,067                         | 1,984                       | 1,945                      | 0.98                         |         |
| 06    | 2010 | 1,994                         | 1,815                       | 1,778                      | 0.98                         |         |



#### **Interstate Traffic Counts - 2007**

| xit 35 | SR 59        | 1 2                                | 25,65:<br>24,669                                   | [276]<br>5<br>4<br>3  | 24,858<br>24,669 | 52,027<br>54,664<br>52,243<br>50,513<br>49,337 | [06]<br>79-1039<br>[04]<br>[05]<br>[06]<br>24-81   | -1,730<br>-2,906 | -3.42%<br>-5.89% |
|--------|--------------|------------------------------------|--|---|------------------|--|--|------------------|------------------|
| xit 35 |              |                                    | 24,669   | 4   |                  | 52,027<br>54,664<br>52,243<br>50,513           | [04]<br>[05]<br>[06]<br>24-81  |                  |                  |
| xit 35 |              |                                    | 24,669   | 4   |                  | 54,664<br>52,243<br>50,513                     | [05]<br>[06]<br>24-81  |                  |                  |
| xit 35 |              |                                    | 24,669   | 4   |                  | 54,664<br>52,243<br>50,513                     | [05]<br>[06]<br>24-81  |                  |                  |
|        |              |                                    | 24,669   | 4   |                  | 54,664<br>52,243<br>50,513                     | [05]<br>[06]<br>24-81  |                  |                  |
|        |              |                                    | 24,669   | 4   |                  | 52,243<br>50,513                               | [06]   |                  |                  |
|        |              |                                    | 24,669   | 4   |                  | 50,513   | [04]   |                  |                  |
|        |              |                                    | 24,669   | 4   |                  |  | [04]   |                  |                  |
|        |              |                                    |  |   | 24,669           | 49,337   | [04]   | -2,906           | -5.897           |
|        |              |                                    | 25,447   |   |                  |  |  |                  |                  |
|        |              |                                    | 25,447   |   |                  |  |  |                  |                  |
| xit 42 | SR222        |                                    | 25,447   |   |                  |  |  |                  |                  |
| xit 42 | SR222        | 2                                  | 25,447   | 3   |                  |  |  |                  |                  |
| xit 42 | SR222        |                                    | 25,447   |   |                  |  | [06]   |                  |                  |
| xit 42 | SR222        |                                    |  |   | 25,447           | 50,894   | 24-74  |                  |                  |
| xit 42 | SR222        |                                    |  |   |                  |  |  |                  |                  |
|        |              |                                    |  |   |                  |  |  |                  |                  |
|        |              | 5                                  |  | 8   |                  |  |  |                  |                  |
|        |              | 6                                  |  | 7   |                  |  |  |                  |                  |
|        |              |                                    |  |   |                  |  |  |                  |                  |
|        |              |                                    |  |   |                  |  |  |                  |                  |
| l Co.  |              |                                    |  |   |                  |  | 10.41  |                  |                  |
|        |              |                                    | 1,777  |   |                  |  |  |                  |                  |
|        |              |                                    |  |   |                  |  |  |                  |                  |
|        |              |                                    |  |   | 2< 700           | 52 417   |  |                  |                  |
|        |              |                                    | 26,709   |   | 26,709           | 55,417   | 36-03  |                  |                  |
|        | CD 170       |                                    | 1  |   |                  |  |  |                  |                  |
| xit 47 | SK 179       | 1                                  | 473  | 4   | 532              |  |  |                  |                  |
|        |              |                                    |  |   |                  |  | [04]   |                  |                  |
|        |              | 2                                  | 372  |   | 100              |  |  |                  |                  |
|        |              |                                    |  |   |                  |  |  |                  |                  |
|        |              |                                    | 26,326   |   | 26,326           | 52,651   |  |                  |                  |
|        |              |                                    |  |   |                  |  | 1111/4   |                  |                  |
| xit 52 | Stanton - Ko | oko Road                           |  | 1   |                  |  |  |                  |                  |
| 7      |              | 5                                  |  | 8   |                  |  |  |                  |                  |
|        |              | 6                                  |  | 7   |                  |  |  |                  |                  |
|        |              |                                    |  |   |                  |  |  |                  |                  |
|        |              |                                    |  |   |                  |  |  |                  |                  |
|        |              |                                    | 23,896   |   | 23,896           | 47,792   | 38-62  |                  |                  |
|        |              |                                    |  |   |                  |  |  |                  |                  |
| xit 56 | SR 76        |                                    |  |   |                  |  | FO 47  |                  |                  |
|        |              |                                    |  |   |                  |  |  |                  |                  |
|        |              | 10                                 |  | 11  |                  |  |  |                  |                  |
|        |              |                                    |  |   |                  | 45 520   |  |                  |                  |
|        | xit 47       | xit 47 SR 179  xit 52 Stanton - Ko | xit 47 SR 179  1 2  xit 52 Stanton - Koko Road 5 6 | 26,709  xit 47 SR 179  1 473 2 372  xit 52 Stanton - Koko Road 5 6  23,896  xit 56 SR 76 9 10 | Co.              | Co.  | 26,709 26,709 53,417  xit 47 SR 179  1 473 4 532 2 372 3 463  26,326 26,326 52,651  xit 52 Stanton - Koko Road  5 8 6 7  23,896 23,896 47,792  xit 56 SR 76 9 12 10 11 | Co.              | Co.              |

Long Engineering 5550 Franklin Pike, Suite 202 Nashville, TN 37220



File Name: am peak\_northern terminal\_CB1

Site Code : Exit 42 Start Date : 8/27/2008

Page No : 1

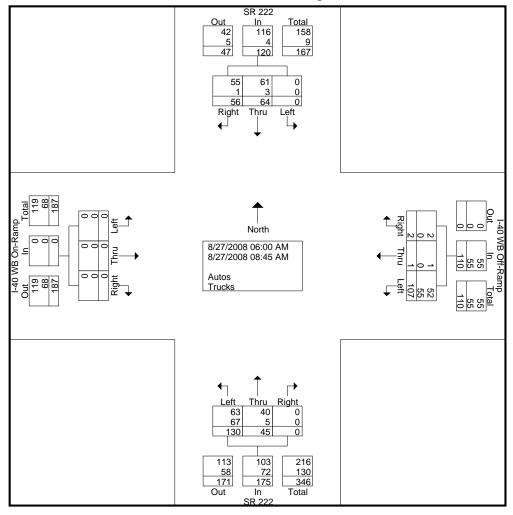
**Groups Printed- Autos - Trucks** 

|             |       |      |       |            |       | Gr      | oups Pi | rinted- Au | <u>ıtos - Tr</u> | ucks |       |            |       |       |        |            | ,          |
|-------------|-------|------|-------|------------|-------|---------|---------|------------|------------------|------|-------|------------|-------|-------|--------|------------|------------|
|             |       | SR   | 222   |            | I-    | 40 WB ( | Off-Rai | mp         |                  | SR   | 222   |            | I     | 40 WB | On-Rai | np         |            |
|             |       | From | North |            |       | From    | East    |            |                  | From | South |            |       | From  | West   |            |            |
| Start Time  | Right | Thru | Left  | App. Total | Right | Thru    | Left    | App. Total | Right            | Thru | Left  | App. Total | Right | Thru  | Left   | App. Total | Int. Total |
| 06:00 AM    | 3     | 3    | 0     | 6          | 0     | 0       | 8       | 8          | 0                | 3    | 13    | 16         | 0     | 0     | 0      | 0          | 30         |
| 06:15 AM    | 10    | 4    | 0     | 14         | 0     | 1       | 11      | 12         | 0                | 5    | 10    | 15         | 0     | 0     | 0      | 0          | 41         |
| 06:30 AM    | 5     | 8    | 0     | 13         | 0     | 0       | 11      | 11         | 0                | 1    | 15    | 16         | 0     | 0     | 0      | 0          | 40         |
| 06:45 AM    | 9     | 10   | 0     | 19         | 0     | 0       | 11      | 11         | 0                | 2    | 11    | 13         | 0     | 0     | 0      | 0          | 43         |
| Total       | 27    | 25   | 0     | 52         | 0     | 1       | 41      | 42         | 0                | 11   | 49    | 60         | 0     | 0     | 0      | 0          | 154        |
| 07.00.434   | 1.0   | 2    | 0     | 10         | 1 0   | 0       | 0       | 0          | 1 0              |      | 0     | 1.1        | 1 0   |       |        | 0          | 1 24       |
| 07:00 AM    | 10    | 2    | 0     | 12         | 0     | 0       | 8       | 8          | 0                | 6    | 8     | 14         | 0     | 0     | 0      | 0          | 34         |
| 07:15 AM    | 2     | 6    | 0     | 8          | 1     | 0       | 7       | 8          | 0                | 7    | 14    | 21         | 0     | 0     | 0      | 0          | 37         |
| 07:30 AM    | 4     | 8    | 0     | 12         | 0     | 0       | 16      | 16         | 0                | 1    | 11    | 12         | 0     | 0     | 0      | 0          | 40         |
| 07:45 AM    | 4     | 10   | 0     | 14         | 1     | 0       | 8       | 9          | 0                | 7    | 11    | 18         | 0     | 0     | 0      | 0          | 41         |
| Total       | 20    | 26   | 0     | 46         | 2     | 0       | 39      | 41         | 0                | 21   | 44    | 65         | 0     | 0     | 0      | 0          | 152        |
| 08:00 AM    | 2     | 3    | 0     | 5          | 0     | 0       | 6       | 6          | 0                | 3    | 14    | 17         | 0     | 0     | 0      | 0          | 28         |
| 08:15 AM    | 3     | 2    | 0     | 5          | 0     | 0       | 4       | 4          | 0                | 2    | 7     | 9          | 0     | 0     | 0      | 0          | 18         |
| 08:30 AM    | 1     | 4    | 0     | 5          | 0     | 0       | 5       | 5          | 0                | 5    | 8     | 13         | 0     | 0     | 0      | 0          | 23         |
| 08:45 AM    | 3     | 4    | 0     | 7          | 0     | 0       | 12      | 12         | 0                | 3    | 8     | 11         | 0     | 0     | 0      | 0          | 30         |
| Total       | 9     | 13   | 0     | 22         | 0     | 0       | 27      | 27         | 0                | 13   | 37    | 50         | 0     | 0     | 0      | 0          | 99         |
| G 1m 1      |       | - 4  |       | 420        |       |         | 405     | 440        | ۱ ۵              |      | 420   |            | 1 0   |       |        |            | 1 40-5     |
| Grand Total | 56    | 64   | 0     | 120        | 2     | 1       | 107     | 110        | 0                | 45   | 130   | 175        | 0     | 0     | 0      | 0          | 405        |
| Apprch %    | 46.7  | 53.3 | 0     |            | 1.8   | 0.9     | 97.3    |            | 0                | 25.7 | 74.3  |            | 0     | 0     | 0      |            |            |
| Total %     | 13.8  | 15.8 | 0     | 29.6       | 0.5   | 0.2     | 26.4    | 27.2       | 0                | 11.1 | 32.1  | 43.2       | 0     | 0_    | 0      | 0          |            |
| Autos       | 55    | 61   | 0     | 116        | 2     | 1       | 52      | 55         | 0                | 40   | 63    | 103        | 0     | 0     | 0      | 0          | 274        |
| % Autos     | 98.2  | 95.3 | 0     | 96.7       | 100   | 100     | 48.6    | 50         | 0                | 88.9 | 48.5  | 58.9       | 0     | 0     | 0      | 0          | 67.7       |
| Trucks      | 1     | 3    | 0     | 4          | 0     | 0       | 55      | 55         | 0                | 5    | 67    | 72         | 0     | 0     | 0      | 0          | 131        |
| % Trucks    | 1.8   | 4.7  | 0     | 3.3        | 0     | 0       | 51.4    | 50         | 0                | 11.1 | 51.5  | 41.1       | 0     | 0     | 0      | 0          | 32.3       |



File Name: am peak\_northern terminal\_CB1

Site Code: Exit 42 Start Date: 8/27/2008

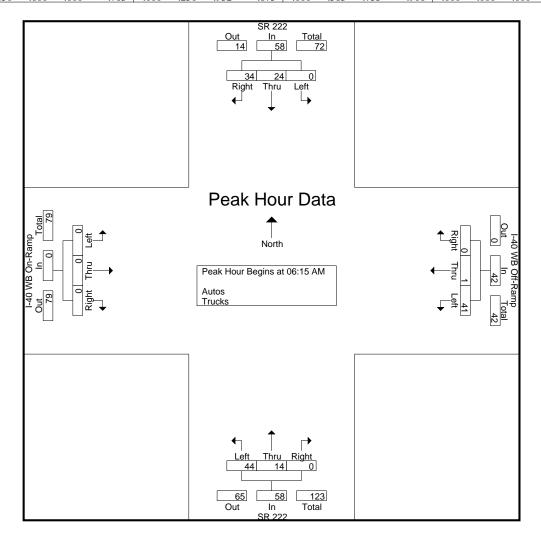




File Name: am peak\_northern terminal\_CB1

Site Code: Exit 42 Start Date: 8/27/2008

|                 |            | SR        | 222     |            | I-       | 40 WB | Off-Ra | mp         |       | SR   | 222   |            | I-    | 40 WB | On-Rai | mp         |            |
|-----------------|------------|-----------|---------|------------|----------|-------|--------|------------|-------|------|-------|------------|-------|-------|--------|------------|------------|
|                 |            | From      | North   |            |          | Fron  | ı East |            |       | From | South |            |       | Fron  | ı West |            |            |
| Start Time      | Right      | Thru      | Left    | App. Total | Right    | Thru  | Left   | App. Total | Right | Thru | Left  | App. Total | Right | Thru  | Left   | App. Total | Int. Total |
| Peak Hour Anal  | ysis Fror  | n 06:00   | AM to 0 | 8:45 AM    | - Peak 1 | of 1  |        |            |       |      |       |            |       |       |        |            |            |
| Peak Hour for E | ntire Inte | ersection | Begins  | at 06:15 A | M        |       |        |            |       |      |       |            |       |       |        |            |            |
| 06:15 AM        | 10         | 4         | 0       | 14         | 0        | 1     | 11     | 12         | 0     | 5    | 10    | 15         | 0     | 0     | 0      | 0          | 41         |
| 06:30 AM        | 5          | 8         | 0       | 13         | 0        | 0     | 11     | 11         | 0     | 1    | 15    | 16         | 0     | 0     | 0      | 0          | 40         |
| 06:45 AM        | 9          | 10        | 0       | 19         | 0        | 0     | 11     | 11         | 0     | 2    | 11    | 13         | 0     | 0     | 0      | 0          | 43         |
| 07:00 AM        | 10         | 2         | 0       | 12         | 0        | 0     | 8      | 8          | 0     | 6    | 8     | 14         | 0     | 0     | 0      | 0          | 34         |
| Total Volume    | 34         | 24        | 0       | 58         | 0        | 1     | 41     | 42         | 0     | 14   | 44    | 58         | 0     | 0     | 0      | 0          | 158        |
| % App. Total    | 58.6       | 41.4      | 0       |            | 0        | 2.4   | 97.6   |            | 0     | 24.1 | 75.9  |            | 0     | 0     | 0      |            |            |
| PHF             | .850       | .600      | .000    | .763       | .000     | .250  | .932   | .875       | .000  | .583 | .733  | .906       | .000  | .000  | .000   | .000       | .919       |





File Name : am peak\_southern terminal\_cb2 Site Code : Exit 42

Site Code : Exit 42 Start Date : 8/27/2008

Page No : 1

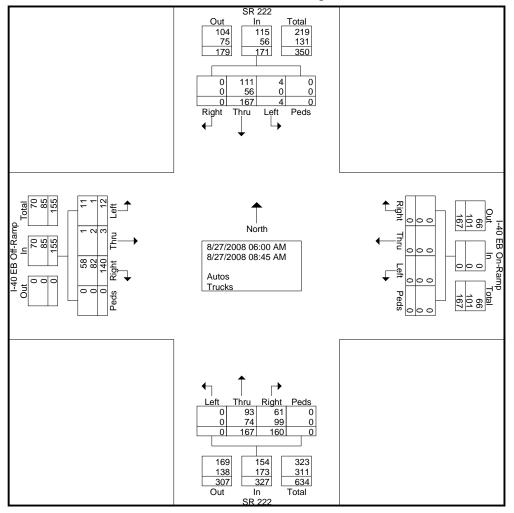
**Groups Printed- Autos - Trucks** 

|             |       |      |       |      |            |       |        | Gro   | ups r ri | meu- A     | utos - | TTUCK | .5    |      |            |       |        |        |       |            | 1          |
|-------------|-------|------|-------|------|------------|-------|--------|-------|----------|------------|--------|-------|-------|------|------------|-------|--------|--------|-------|------------|------------|
|             |       |      | SR 22 | 2    |            |       | I-40 E | B On  | -Ramp    | )          |        |       | SR 22 | 2    |            |       | I-40 I | EB Off | -Ramp | )          |            |
|             |       | Fr   | om No | orth |            |       | Fi     | rom E | ast      |            |        | Fr    | om So | uth  |            |       | F      | rom W  | est   |            |            |
| Start Time  | Right | Thru | Left  | Peds | App. Total | Right | Thru   | Left  | Peds     | App. Total | Right  | Thru  | Left  | Peds | App. Total | Right | Thru   | Left   | Peds  | App. Total | Int. Total |
| 06:00 AM    | 0     | 11   | 0     | 0    | 11         | 0     | 0      | 0     | 0        | 0          | 7      | 17    | 0     | 0    | 24         | 4     | 0      | 2      | 0     | 6          | 41         |
| 06:15 AM    | 0     | 13   | 0     | 0    | 13         | 0     | 0      | 0     | 0        | 0          | 7      | 12    | 0     | 0    | 19         | 8     | 0      | 0      | 0     | 8          | 40         |
| 06:30 AM    | 0     | 16   | 1     | 0    | 17         | 0     | 0      | 0     | 0        | 0          | 13     | 15    | 0     | 0    | 28         | 13    | 0      | 1      | 0     | 14         | 59         |
| 06:45 AM    | 0     | 21   | 0     | 0    | 21         | 0     | 0      | 0     | 0        | 0          | 12     | 14    | 0     | 0    | 26         | 11    | 1      | 0      | 0     | 12         | 59         |
| Total       | 0     | 61   | 1     | 0    | 62         | 0     | 0      | 0     | 0        | 0          | 39     | 58    | 0     | 0    | 97         | 36    | 1      | 3      | 0     | 40         | 199        |
|             |       |      |       |      |            |       |        |       |          |            |        |       |       |      |            |       |        |        |       |            |            |
| 07:00 AM    | 0     | 12   | 0     | 0    | 12         | 0     | 0      | 0     | 0        | 0          | 10     | 16    | 0     | 0    | 26         | 9     | 0      | 1      | 0     | 10         | 48         |
| 07:15 AM    | 0     | 11   | 1     | 0    | 12         | 0     | 0      | 0     | 0        | 0          | 26     | 16    | 0     | 0    | 42         | 16    | 0      | 2      | 0     | 18         | 72         |
| 07:30 AM    | 0     | 21   | 1     | 0    | 22         | 0     | 0      | 0     | 0        | 0          | 12     | 13    | 0     | 0    | 25         | 13    | 0      | 2      | 0     | 15         | 62         |
| 07:45 AM    | 0     | 22   | 0     | 0    | 22         | 0     | 0      | 0     | 0        | 0          | 16     | 12    | 0     | 0    | 28         | 16    | 0      | 2      | 0     | 18         | 68         |
| Total       | 0     | 66   | 2     | 0    | 68         | 0     | 0      | 0     | 0        | 0          | 64     | 57    | 0     | 0    | 121        | 54    | 0      | 7      | 0     | 61         | 250        |
|             |       |      |       |      |            |       |        |       |          |            | _      |       |       |      |            |       |        |        |       |            |            |
| 08:00 AM    | 0     | 12   | 0     | 0    | 12         | 0     | 0      | 0     | 0        | 0          | 15     | 17    | 0     | 0    | 32         | 12    | 0      | 1      | 0     | 13         | 57         |
| 08:15 AM    | 0     | 9    | 0     | 0    | 9          | 0     | 0      | 0     | 0        | 0          | 13     | 10    | 0     | 0    | 23         | 6     | 2      | 1      | 0     | 9          | 41         |
| 08:30 AM    | 0     | 9    | 1     | 0    | 10         | 0     | 0      | 0     | 0        | 0          | 15     | 14    | 0     | 0    | 29         | 15    | 0      | 0      | 0     | 15         | 54         |
| 08:45 AM    | 0     | 10   | 0     | 0    | 10         | 0     | 0      | 0     | 0        | 0          | 14     | 11    | 0     | 0    | 25         | 17    | 0      | 0      | 0     | 17         | 52         |
| Total       | 0     | 40   | 1     | 0    | 41         | 0     | 0      | 0     | 0        | 0          | 57     | 52    | 0     | 0    | 109        | 50    | 2      | 2      | 0     | 54         | 204        |
|             |       |      |       |      |            |       |        |       |          |            |        |       |       |      |            |       |        |        |       |            |            |
| Grand Total | 0     | 167  | 4     | 0    | 171        | 0     | 0      | 0     | 0        | 0          | 160    | 167   | 0     | 0    | 327        | 140   | 3      | 12     | 0     | 155        | 653        |
| Apprch %    | 0     | 97.7 | 2.3   | 0    |            | 0     | 0      | 0     | 0        |            | 48.9   | 51.1  | 0     | 0    |            | 90.3  | 1.9    | 7.7    | 0     |            |            |
| Total %     | 0     | 25.6 | 0.6   | 0    | 26.2       | 0     | 0      | 0     | 0        | 0          | 24.5   | 25.6  | 0     | 0    | 50.1       | 21.4  | 0.5    | 1.8    | 0     | 23.7       |            |
| Autos       | 0     | 111  | 4     | 0    | 115        | 0     | 0      | 0     | 0        | 0          | 61     | 93    | 0     | 0    | 154        | 58    | 1      | 11     | 0     | 70         | 339        |
| % Autos     | 0     | 66.5 | 100   | 0    | 67.3       | 0     | 0      | 0     | 0        | 0          | 38.1   | 55.7  | 0     | 0    | 47.1       | 41.4  | 33.3   | 91.7   | 0     | 45.2       | 51.9       |
| Trucks      | 0     | 56   | 0     | 0    | 56         | 0     | 0      | 0     | 0        | 0          | 99     | 74    | 0     | 0    | 173        | 82    | 2      | 1      | 0     | 85         | 314        |
| % Trucks    | 0     | 33.5 | 0     | 0    | 32.7       | 0     | 0      | 0     | 0        | 0          | 61.9   | 44.3  | 0     | 0    | 52.9       | 58.6  | 66.7   | 8.3    | 0     | 54.8       | 48.1       |



File Name: am peak\_southern terminal\_cb2

Site Code : Exit 42 Start Date : 8/27/2008

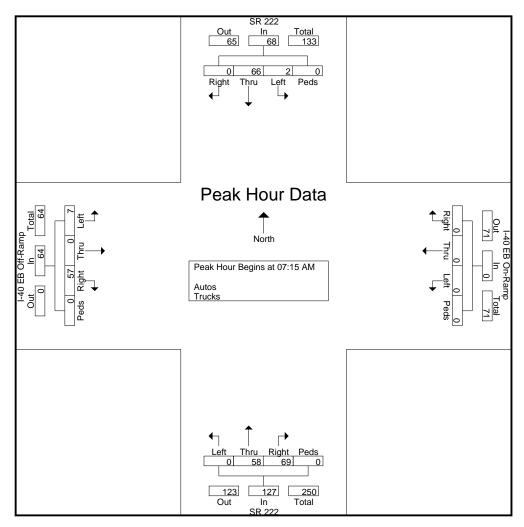




File Name: am peak\_southern terminal\_cb2

Site Code : Exit 42 Start Date : 8/27/2008

|               |         |        | SR 22    | 2      |            |          | I-40 E   | B On- | -Ramp |            |       |      | SR 22 | 2    |            |       | I-40 E | EB Off | -Ramp | )          | ]          |
|---------------|---------|--------|----------|--------|------------|----------|----------|-------|-------|------------|-------|------|-------|------|------------|-------|--------|--------|-------|------------|------------|
|               |         | Fr     | om No    | rth    |            |          | F        | rom E | ast   |            |       | Fr   | om So | uth  |            |       | Fı     | rom W  | est   |            |            |
| Start Time    | Right   | Thru   | Left     | Peds   | App. Total | Right    | Thru     | Left  | Peds  | App. Total | Right | Thru | Left  | Peds | App. Total | Right | Thru   | Left   | Peds  | App. Total | Int. Total |
| Peak Hour Ar  | nalysis | From ( | 06:00 A  | M to 0 | 8:45 AN    | 1 - Peal | k 1 of 1 |       |       |            |       |      |       |      |            |       |        |        |       |            |            |
| Peak Hour for | Entire  | Inters | ection 1 | Begins | at 07:15   | AM       |          |       |       |            |       |      |       |      |            |       |        |        |       |            |            |
| 07:15 AM      | 0       | 11     | 1        | 0      | 12         | 0        | 0        | 0     | 0     | 0          | 26    | 16   | 0     | 0    | 42         | 16    | 0      | 2      | 0     | 18         | 72         |
| 07:30 AM      | 0       | 21     | 1        | 0      | 22         | 0        | 0        | 0     | 0     | 0          | 12    | 13   | 0     | 0    | 25         | 13    | 0      | 2      | 0     | 15         | 62         |
| 07:45 AM      | 0       | 22     | 0        | 0      | 22         | 0        | 0        | 0     | 0     | 0          | 16    | 12   | 0     | 0    | 28         | 16    | 0      | 2      | 0     | 18         | 68         |
| 08:00 AM      | 0       | 12     | 0        | 0      | 12         | 0        | 0        | 0     | 0     | 0          | 15    | 17   | 0     | 0    | 32         | 12    | 0      | 1      | 0     | 13         | 57         |
| Total Volume  | 0       | 66     | 2        | 0      | 68         | 0        | 0        | 0     | 0     | 0          | 69    | 58   | 0     | 0    | 127        | 57    | 0      | 7      | 0     | 64         | 259        |
| % App. Total  | 0       | 97.1   | 2.9      | 0      |            | 0        | 0        | 0     | 0     |            | 54.3  | 45.7 | 0     | 0    |            | 89.1  | 0      | 10.9   | 0     |            |            |
| PHF           | .000    | .750   | .500     | .000   | .773       | .000     | .000     | .000  | .000  | .000       | .663  | .853 | .000  | .000 | .756       | .891  | .000   | .875   | .000  | .889       | .899       |





File Name: pm peak\_northern terminal\_cb2

Site Code: Exit 42 Start Date: 8/26/2008

Page No : 1

**Groups Printed- Autos - Trucks** 

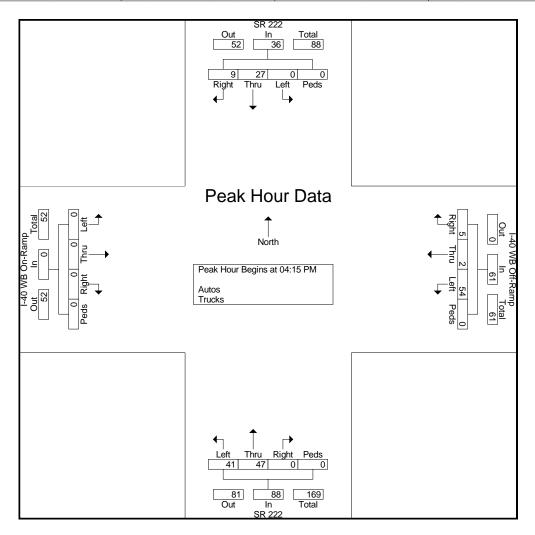
|             |       | ,          | SR 22 | 22   |            |       | I-40 V | /B Of | f-Ram <sub>l</sub> | <b>)</b>   |       |      | SR 22 | 22   |            |       | I-40 W | /B On | -Ram | р          | l          |
|-------------|-------|------------|-------|------|------------|-------|--------|-------|--------------------|------------|-------|------|-------|------|------------|-------|--------|-------|------|------------|------------|
|             |       | Fre        | om N  | orth |            |       | Fi     | om E  | ast                |            |       | Fr   | om So | outh |            |       | Fr     | om W  | est  |            |            |
| Start Time  | Right | Thru       | Left  | Peds | App. Total | Right | Thru   | Left  | Peds               | App. Total | Right | Thru | Left  | Peds | App. Total | Right | Thru   | Left  | Peds | App. Total | Int. Total |
| 04:15 PM    | 5     | 6          | 0     | 0    | 11         | 1     | 1      | 15    | 0                  | 17         | 0     | 11   | 8     | 0    | 19         | 0     | 0      | 0     | 0    | 0          | 47         |
| 04:30 PM    | 0     | 8          | 0     | 0    | 8          | 2     | 0      | 14    | 0                  | 16         | 0     | 12   | 11    | 0    | 23         | 0     | 0      | 0     | 0    | 0          | 47         |
| 04:45 PM    | 2     | 9          | 0     | 0    | 11         | 0     | 1      | 11    | 0                  | 12         | 0     | 16   | 14    | 0    | 30         | 0     | 0      | 0     | 0    | 0          | 53         |
| Total       | 7     | 23         | 0     | 0    | 30         | 3     | 2      | 40    | 0                  | 45         | 0     | 39   | 33    | 0    | 72         | 0     | 0      | 0     | 0    | 0          | 147        |
| 05:00 PM    | 2     | 4          | 0     | 0    | 6          | 2     | 0      | 14    | 0                  | 16         | 0     | 8    | 8     | 0    | 16         | 0     | 0      | 0     | 0    | 0          | 38         |
| 05:15 PM    | 1     | 7          | 0     | 0    | 8          | 0     | 0      | 11    | 0                  | 11         | 0     | 11   | 14    | 0    | 25         | 0     | 0      | 0     | 0    | 0          | 44         |
| 05:30 PM    | 1     | 5          | 0     | 0    | 6          | Ö     | Ō      | 15    | 0                  | 15         | 0     | 10   | 9     | 0    | 19         | 0     | 0      | 0     | 0    | 0          | 40         |
| 05:45 PM    | 3     | 4          | Ō     | Ö    | 7          | Ö     | Ö      | 19    | Ö                  | 19         | Ö     | 5    | 13    | Ō    | 18         | Ö     | Ö      | Ō     | Ö    | Ö          | 44         |
| Total       | 7     | 20         | 0     | 0    | 27         | 2     | 0      | 59    | 0                  | 61         | 0     | 34   | 44    | 0    | 78         | 0     | 0      | 0     | 0    | 0          | 166        |
| 06:00 PM    |       | 6          | 0     | 0    | 6          | 0     | 0      | 10    | 0                  | 10         | l 0   | 9    | 14    | 0    | 23         | 0     | 0      | 0     | 0    | 0          | 39         |
| Grand Total | 14    | 49         | 0     | 0    | 63         | 5     | 2      | 109   | 0                  | 116        | 0     | 82   | 91    | 0    | 173        | 0     | 0      | 0     | 0    | 0          | 352        |
|             | 22.2  | 49<br>77.8 | 0     | 0    | 03         | 4.3   | 1.7    | 94    | 0                  | 110        | 0     | 47.4 | 52.6  | 0    | 173        | 0     | 0      | 0     | 0    | U          | 332        |
| Apprch %    |       |            | 0     | -    | 47.0       |       |        |       | 0                  | 22         | 0     |      |       | 0    | 40.4       | _     | 0      | _     | 0    | 0          | l          |
| Total %     | 4     | 13.9       | 0     | 0    | 17.9       | 1.4   | 0.6    | 31    | 0                  | 33         | 0     | 23.3 | 25.9  |      | 49.1       | 0     | 0      | 0     | 0    | 0          | 000        |
| Autos       | 14    | 47         | 0     | 0    | 61         | 5     | 7      | 43    | 0                  | 49         | 0     | 80   | 38    | 0    | 118        | 0     | 0      | 0     | 0    | 0          | 228        |
| % Autos     | 100   | 95.9       | 0     | 0    | 96.8       | 100   | 50     | 39.4  | 0                  | 42.2       | 0     | 97.6 | 41.8  | 0    | 68.2       | 0     | 0      | 0     | 0    | 0          | 64.8       |
| Trucks      | 0     | 2          | 0     | 0    | 2          | 0     | 1      | 66    | 0                  | 67         | 0     | 2    | 53    | 0    | 55         | 0     | 0      | 0     | 0    | 0          | 124        |
| % Trucks    | 0     | 4.1        | 0     | 0    | 3.2        | 0     | 50     | 60.6  | 0                  | 57.8       | 0     | 2.4  | 58.2  | 0    | 31.8       | 0     | 0      | 0     | 0    | 0          | 35.2       |



File Name: pm peak\_northern terminal\_cb2

Site Code: Exit 42 Start Date: 8/26/2008

|               |         |         | SR 22<br>om No | _      |            |        |                   | VB Off | f-Ram<br>ast | p          |       |      | SR 22<br>om Sc | _    |            |       |      | VB On<br>om W | -Ram<br>/est | p          |            |
|---------------|---------|---------|----------------|--------|------------|--------|-------------------|--------|--------------|------------|-------|------|----------------|------|------------|-------|------|---------------|--------------|------------|------------|
| Start<br>Time | Right   | Thru    | Left           | Peds   | App. Total | Right  | Thru              | Left   | Peds         | App. Total | Right | Thru | Left           | Peds | App. Total | Right | Thru | Left          | Peds         | App. Total | Int. Total |
| Peak Hour A   | nalysi  | s Fron  | n 04:1         | 5 PM t | o 06:00    | PM -   | Peak <sup>2</sup> | l of 1 |              |            | •     |      |                |      |            |       |      |               |              |            |            |
| Peak Hour fo  | or Enti | re Inte | rsection       | on Beg | gins at 0  | 4:15 P | M                 |        |              |            |       |      |                |      |            |       |      |               |              |            |            |
| 04:15 PM      | 5       | 6       | 0              | 0      | 11         | 1      | 1                 | 15     | 0            | 17         | 0     | 11   | 8              | 0    | 19         | 0     | 0    | 0             | 0            | 0          | 47         |
| 04:30 PM      | 0       | 8       | 0              | 0      | 8          | 2      | 0                 | 14     | 0            | 16         | 0     | 12   | 11             | 0    | 23         | 0     | 0    | 0             | 0            | 0          | 47         |
| 04:45 PM      | 2       | 9       | 0              | 0      | 11         | 0      | 1                 | 11     | 0            | 12         | 0     | 16   | 14             | 0    | 30         | 0     | 0    | 0             | 0            | 0          | 53         |
| 05:00 PM      | 2       | 4       | 0              | 0      | 6          | 2      | 0                 | 14     | 0            | 16         | 0     | 8    | 8              | 0    | 16         | 0     | 0    | 0             | 0            | 0          | 38         |
| Total Volume  | 9       | 27      | 0              | 0      | 36         | 5      | 2                 | 54     | 0            | 61         | 0     | 47   | 41             | 0    | 88         | 0     | 0    | 0             | 0            | 0          | 185        |
| % App. Total  | 25      | 75      | 0              | 0      |            | 8.2    | 3.3               | 88.5   | 0            |            | 0     | 53.4 | 46.6           | 0    |            | 0     | 0    | 0             | 0            |            |            |
| PHF           | .450    | .750    | .000           | .000   | .818       | .625   | .500              | .900   | .000         | .897       | .000  | .734 | .732           | .000 | .733       | .000  | .000 | .000          | .000         | .000       | .873       |





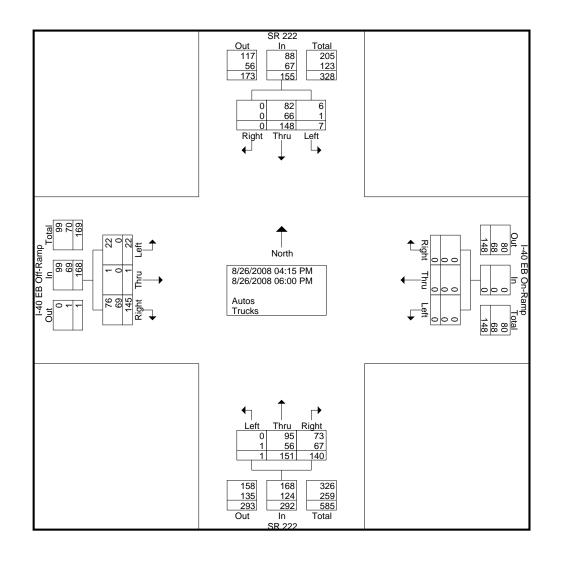
File Name: pm peak\_southern terminal\_cb1

Site Code : 00000000 Start Date : 8/26/2008

Page No : 1

**Groups Printed- Autos - Trucks** 

|             |       | SR   | 222   |            | I-    | -40 EB ( | )n-Ran | np         |       | SR   | 222   |            | I-    | 40 EB ( | Off-Rar | np         |            |
|-------------|-------|------|-------|------------|-------|----------|--------|------------|-------|------|-------|------------|-------|---------|---------|------------|------------|
|             |       | From | North |            |       | From     | East   |            |       | From | South |            |       | From    | West    |            |            |
| Start Time  | Right | Thru | Left  | App. Total | Right | Thru     | Left   | App. Total | Right | Thru | Left  | App. Total | Right | Thru    | Left    | App. Total | Int. Total |
| 04:15 PM    | 0     | 18   | 0     | 18         | 0     | 0        | 0      | 0          | 20    | 14   | 0     | 34         | 21    | 0       | 4       | 25         | 77         |
| 04:30 PM    | 0     | 21   | 2     | 23         | 0     | 0        | 0      | 0          | 22    | 19   | 1     | 42         | 14    | 0       | 5       | 19         | 84         |
| 04:45 PM    | 0     | 16   | 3     | 19         | 0     | 0        | 0      | 0          | 13    | 25   | 0     | 38         | 9     | 0       | 4       | 13         | 70_        |
| Total       | 0     | 55   | 5     | 60         | 0     | 0        | 0      | 0          | 55    | 58   | 1     | 114        | 44    | 0       | 13      | 57         | 231        |
|             |       |      |       |            |       |          |        |            |       |      |       |            | i.    |         |         |            |            |
| 05:00 PM    | 0     | 18   | 1     | 19         | 0     | 0        | 0      | 0          | 15    | 15   | 0     | 30         | 23    | 0       | 2       | 25         | 74         |
| 05:15 PM    | 0     | 16   | 1     | 17         | 0     | 0        | 0      | 0          | 14    | 24   | 0     | 38         | 19    | 0       | 1       | 20         | 75         |
| 05:30 PM    | 0     | 21   | 0     | 21         | 0     | 0        | 0      | 0          | 19    | 16   | 0     | 35         | 24    | 0       | 2       | 26         | 82         |
| 05:45 PM    | 0     | 24   | 0     | 24         | 0     | 0        | 0      | 0          | 14    | 16   | 0     | 30         | 17    | 1       | 2       | 20         | 74_        |
| Total       | 0     | 79   | 2     | 81         | 0     | 0        | 0      | 0          | 62    | 71   | 0     | 133        | 83    | 1       | 7       | 91         | 305        |
|             |       |      |       |            |       |          |        |            |       |      |       |            | i.    |         |         |            |            |
| 06:00 PM    | 0     | 14   | 0     | 14         | 0     | 0        | 0      | 0          | 23    | 22   | 0     | 45         | 18    | 0       | 2       | 20         | 79         |
| Grand Total | 0     | 148  | 7     | 155        | 0     | 0        | 0      | 0          | 140   | 151  | 1     | 292        | 145   | 1       | 22      | 168        | 615        |
| Apprch %    | 0     | 95.5 | 4.5   |            | 0     | 0        | 0      |            | 47.9  | 51.7 | 0.3   |            | 86.3  | 0.6     | 13.1    |            |            |
| Total %     | 0     | 24.1 | 1.1   | 25.2       | 0     | 0        | 0      | 0          | 22.8  | 24.6 | 0.2   | 47.5       | 23.6  | 0.2     | 3.6     | 27.3       |            |
| Autos       | 0     | 82   | 6     | 88         | 0     | 0        | 0      | 0          | 73    | 95   | 0     | 168        | 76    | 1       | 22      | 99         | 355        |
| % Autos     | 0     | 55.4 | 85.7  | 56.8       | 0     | 0        | 0      | 0          | 52.1  | 62.9 | 0     | 57.5       | 52.4  | 100     | 100     | 58.9       | 57.7       |
| Trucks      | 0     | 66   | 1     | 67         | 0     | 0        | 0      | 0          | 67    | 56   | 1     | 124        | 69    | 0       | 0       | 69         | 260        |
| % Trucks    | 0     | 44.6 | 14.3  | 43.2       | 0     | 0        | 0      | 0          | 47.9  | 37.1 | 100   | 42.5       | 47.6  | 0       | 0       | 41.1       | 42.3       |

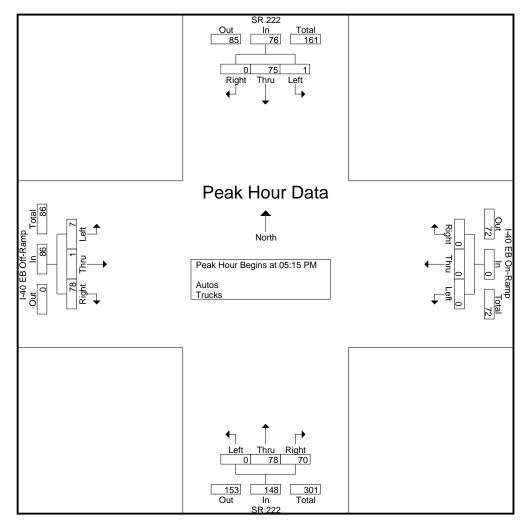




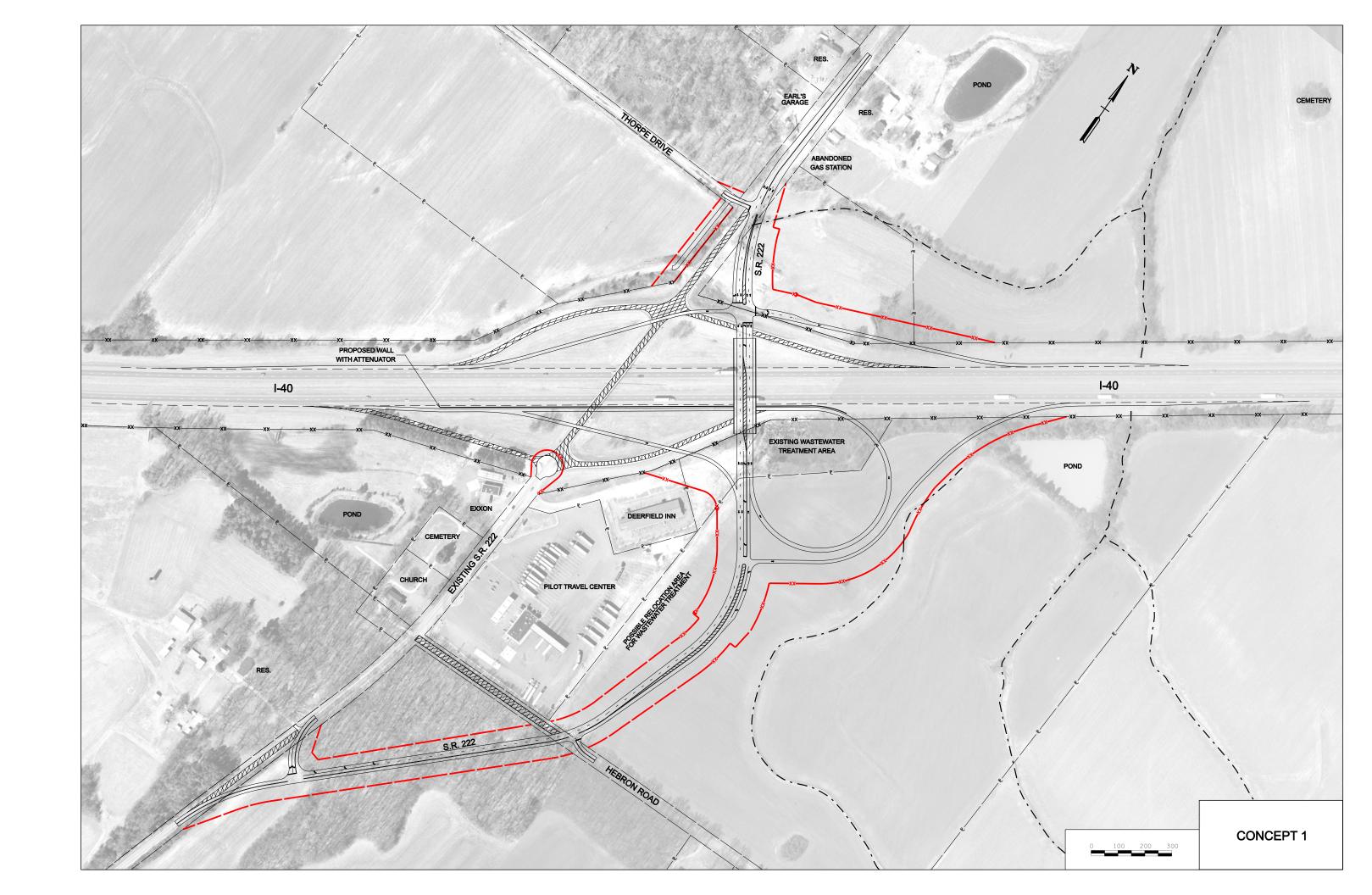
File Name: pm peak\_southern terminal\_cb1

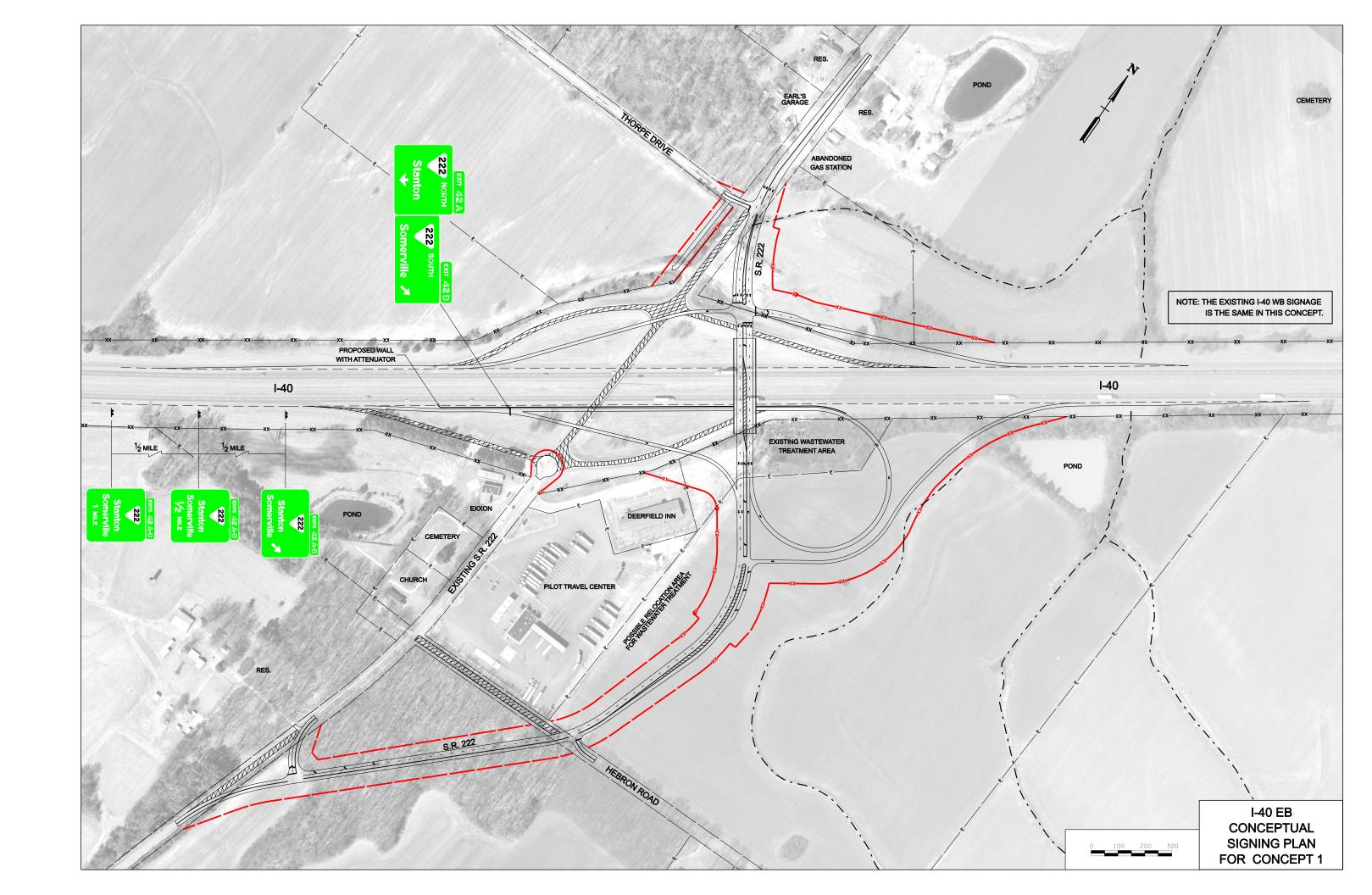
Site Code : 00000000 Start Date : 8/26/2008

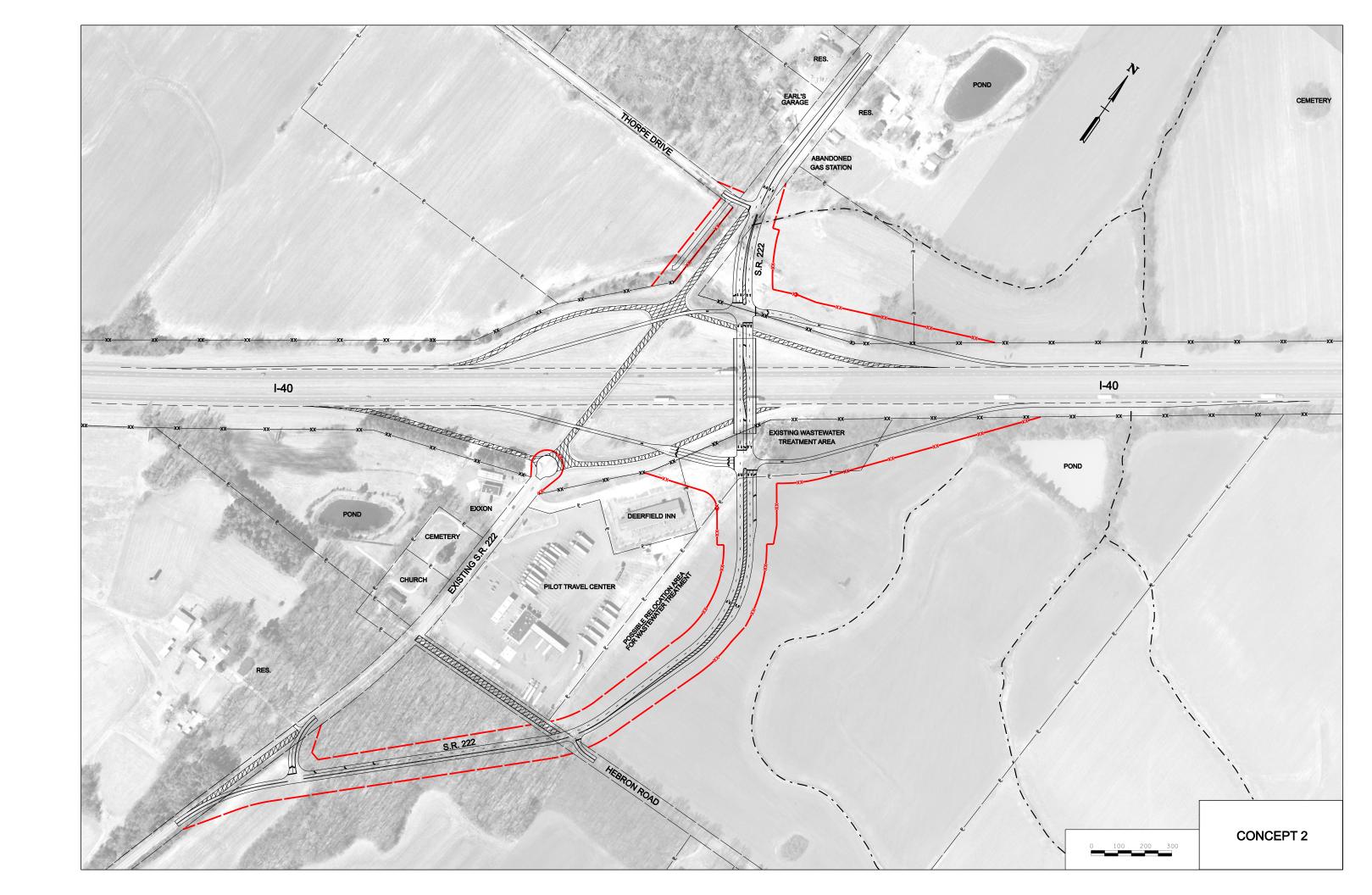
|                 |            | SR        | 222     |            | I-       | 40 EB ( | On-Ran      | np         |       | SR   | 222   |            | I-    | 40 EB | Off-Rar | np         |            |
|-----------------|------------|-----------|---------|------------|----------|---------|-------------|------------|-------|------|-------|------------|-------|-------|---------|------------|------------|
|                 |            | From      | North   |            |          | Fron    | <b>East</b> |            |       | From | South |            |       | From  | West    |            |            |
| Start Time      | Right      | Thru      | Left    | App. Total | Right    | Thru    | Left        | App. Total | Right | Thru | Left  | App. Total | Right | Thru  | Left    | App. Total | Int. Total |
| Peak Hour Analy | ysis Fron  | n 04:15 l | PM to 0 | 6:00 PM -  | Peak 1 c | of 1    |             |            |       |      |       |            |       |       |         |            |            |
| Peak Hour for E | ntire Inte | rsection  | Begins  | at 05:15 P | M        |         |             |            |       |      |       |            |       |       |         |            |            |
| 05:15 PM        | 0          | 16        | 1       | 17         | 0        | 0       | 0           | 0          | 14    | 24   | 0     | 38         | 19    | 0     | 1       | 20         | 75         |
| 05:30 PM        | 0          | 21        | 0       | 21         | 0        | 0       | 0           | 0          | 19    | 16   | 0     | 35         | 24    | 0     | 2       | 26         | 82         |
| 05:45 PM        | 0          | 24        | 0       | 24         | 0        | 0       | 0           | 0          | 14    | 16   | 0     | 30         | 17    | 1     | 2       | 20         | 74         |
| 06:00 PM        | 0          | 14        | 0       | 14         | 0        | 0       | 0           | 0          | 23    | 22   | 0     | 45         | 18    | 0     | 2       | 20         | 79         |
| Total Volume    | 0          | 75        | 1       | 76         | 0        | 0       | 0           | 0          | 70    | 78   | 0     | 148        | 78    | 1     | 7       | 86         | 310        |
| % App. Total    | 0          | 98.7      | 1.3     |            | 0        | 0       | 0           |            | 47.3  | 52.7 | 0     |            | 90.7  | 1.2   | 8.1     |            |            |
| PHF             | .000       | .781      | .250    | .792       | .000     | .000    | .000        | .000       | .761  | .813 | .000  | .822       | .813  | .250  | .875    | .827       | .945       |

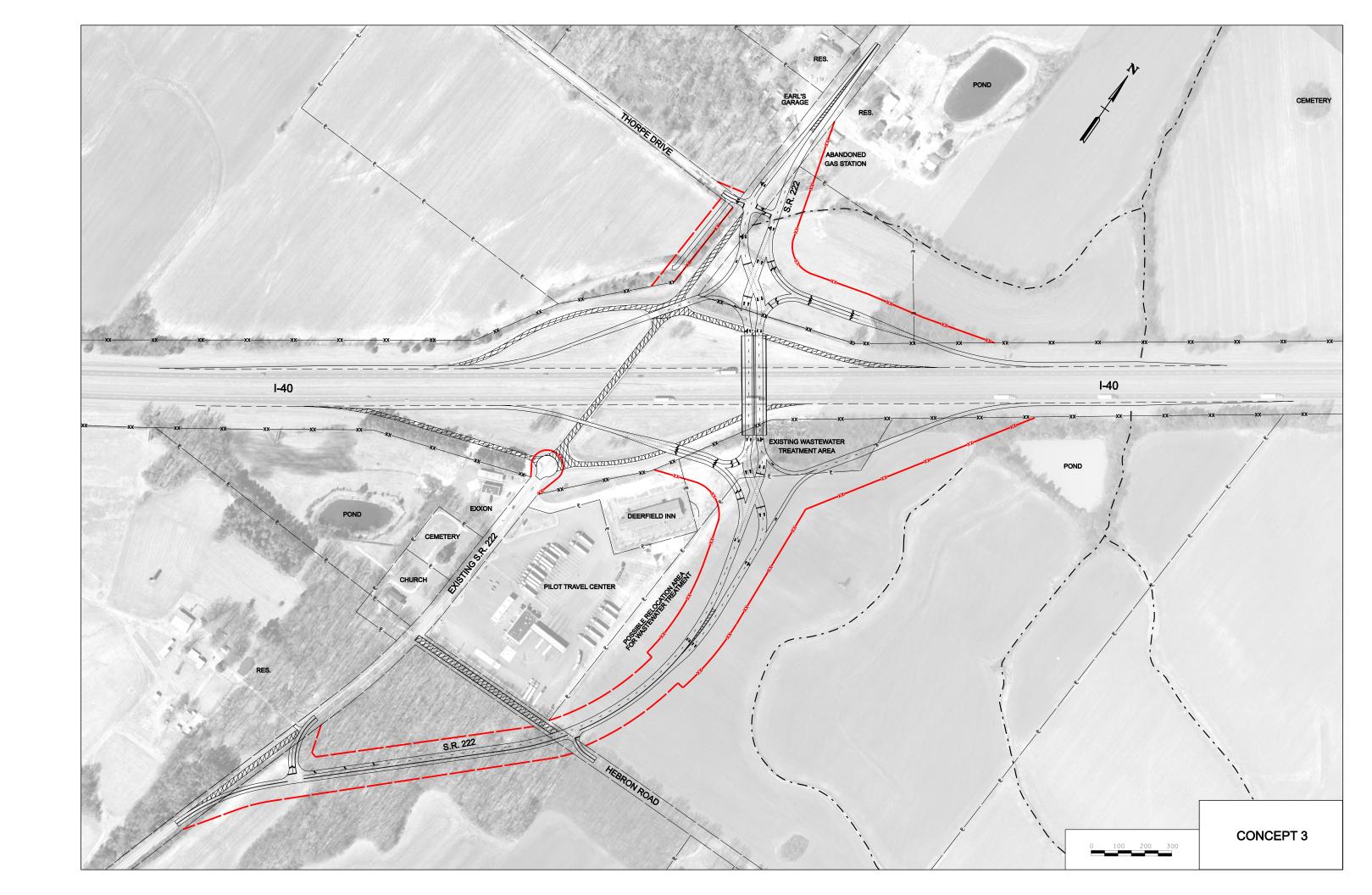


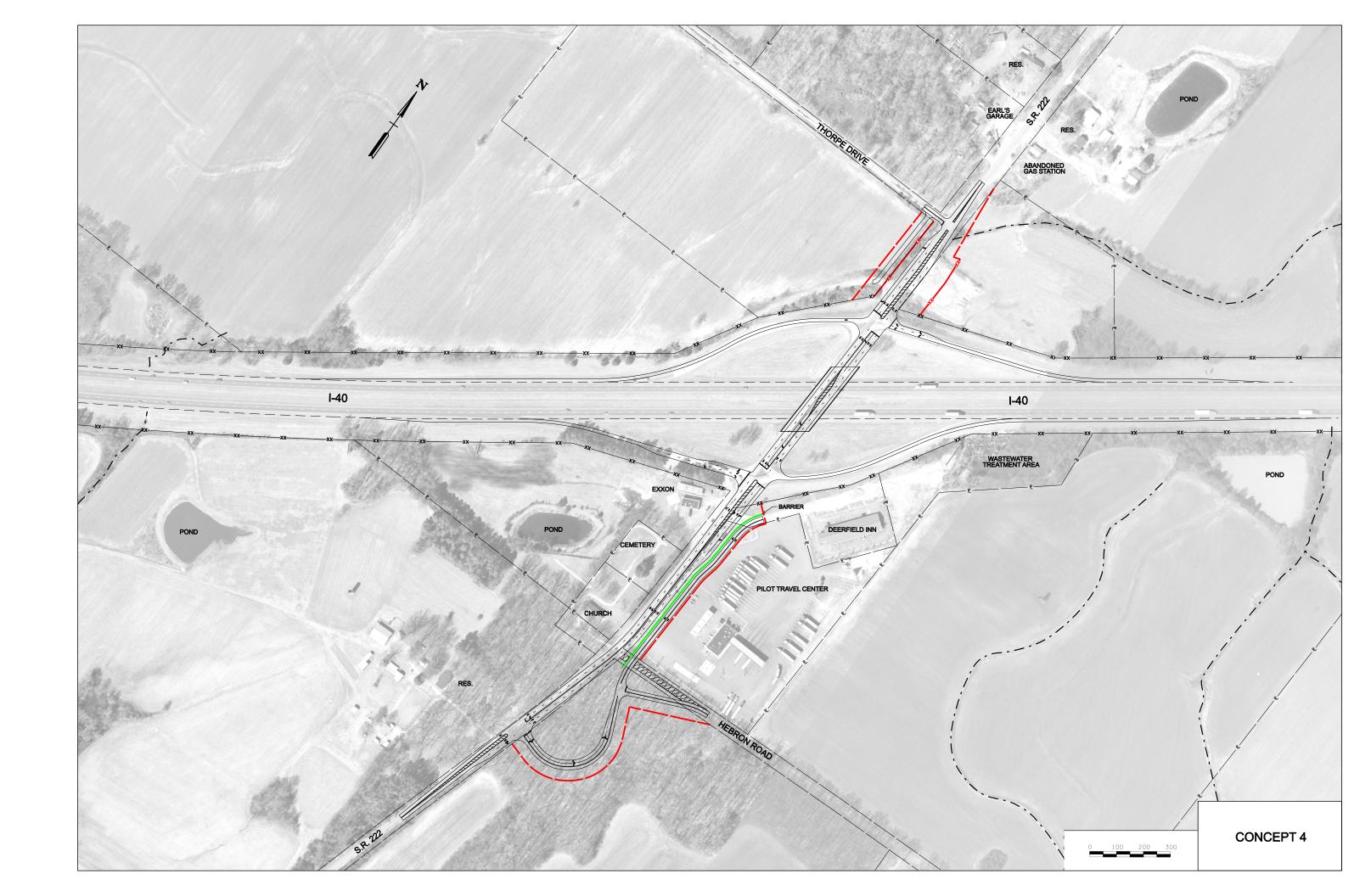
# APPENDIX B CONCEPT FIGURES

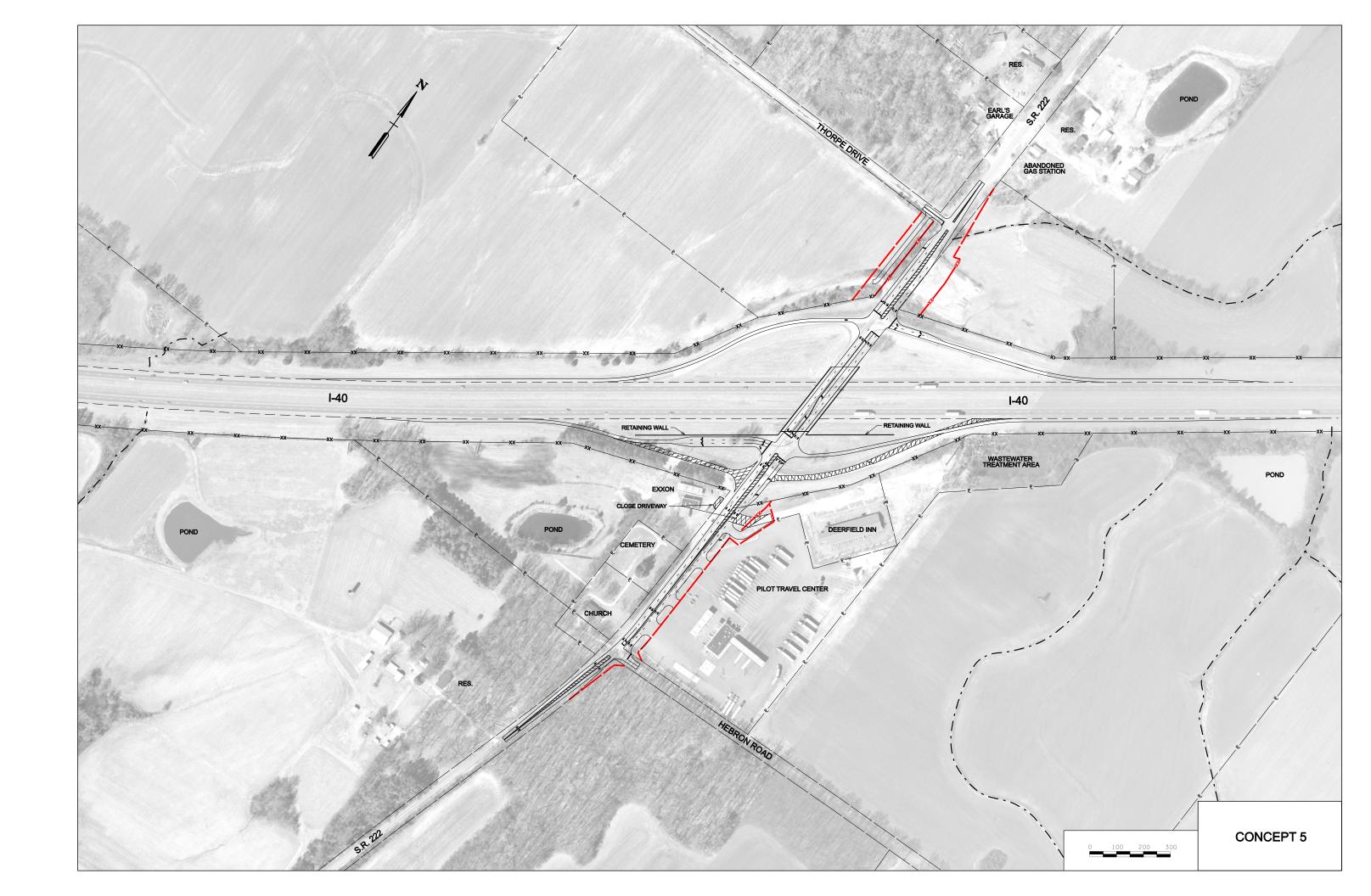


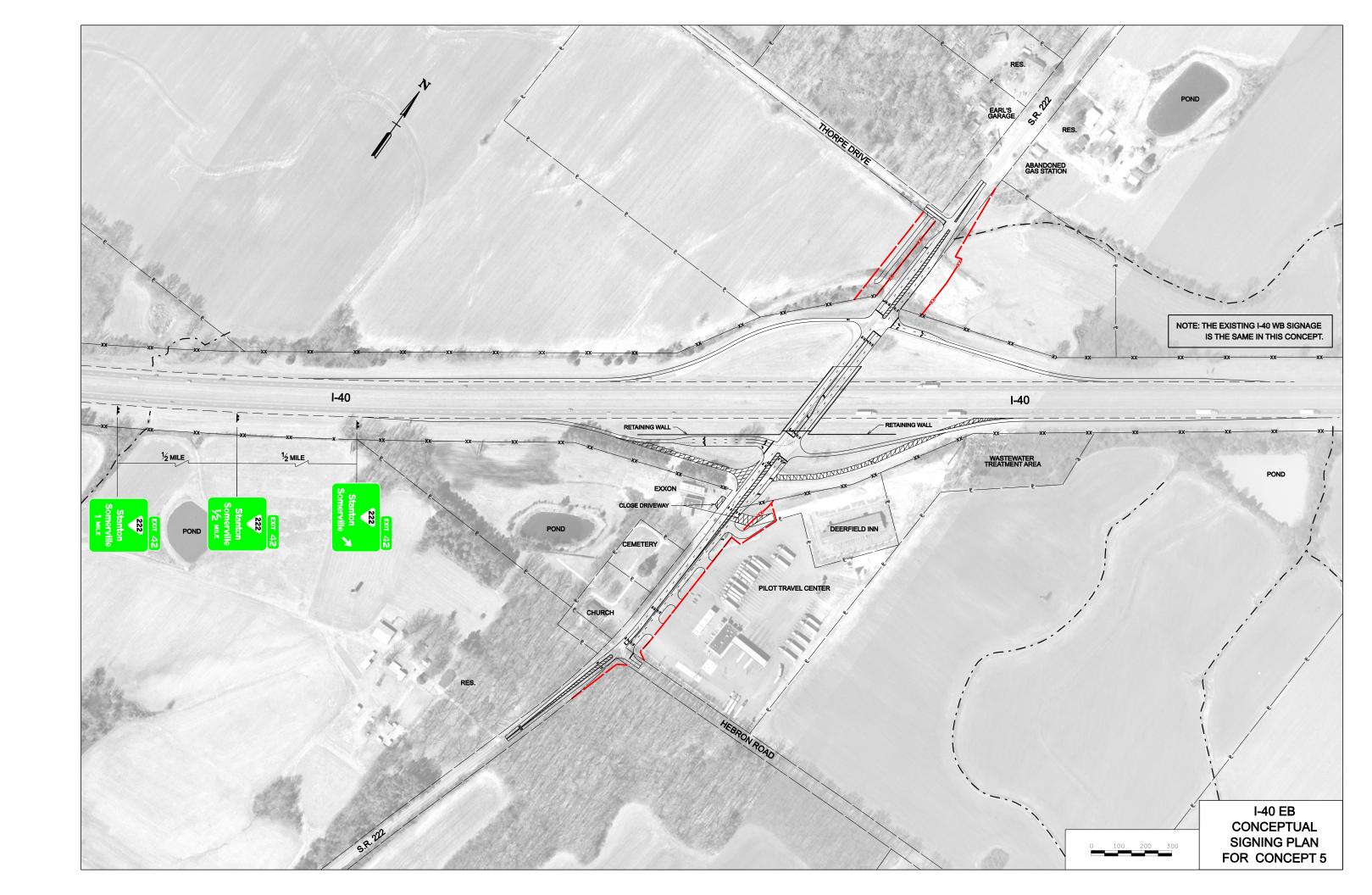


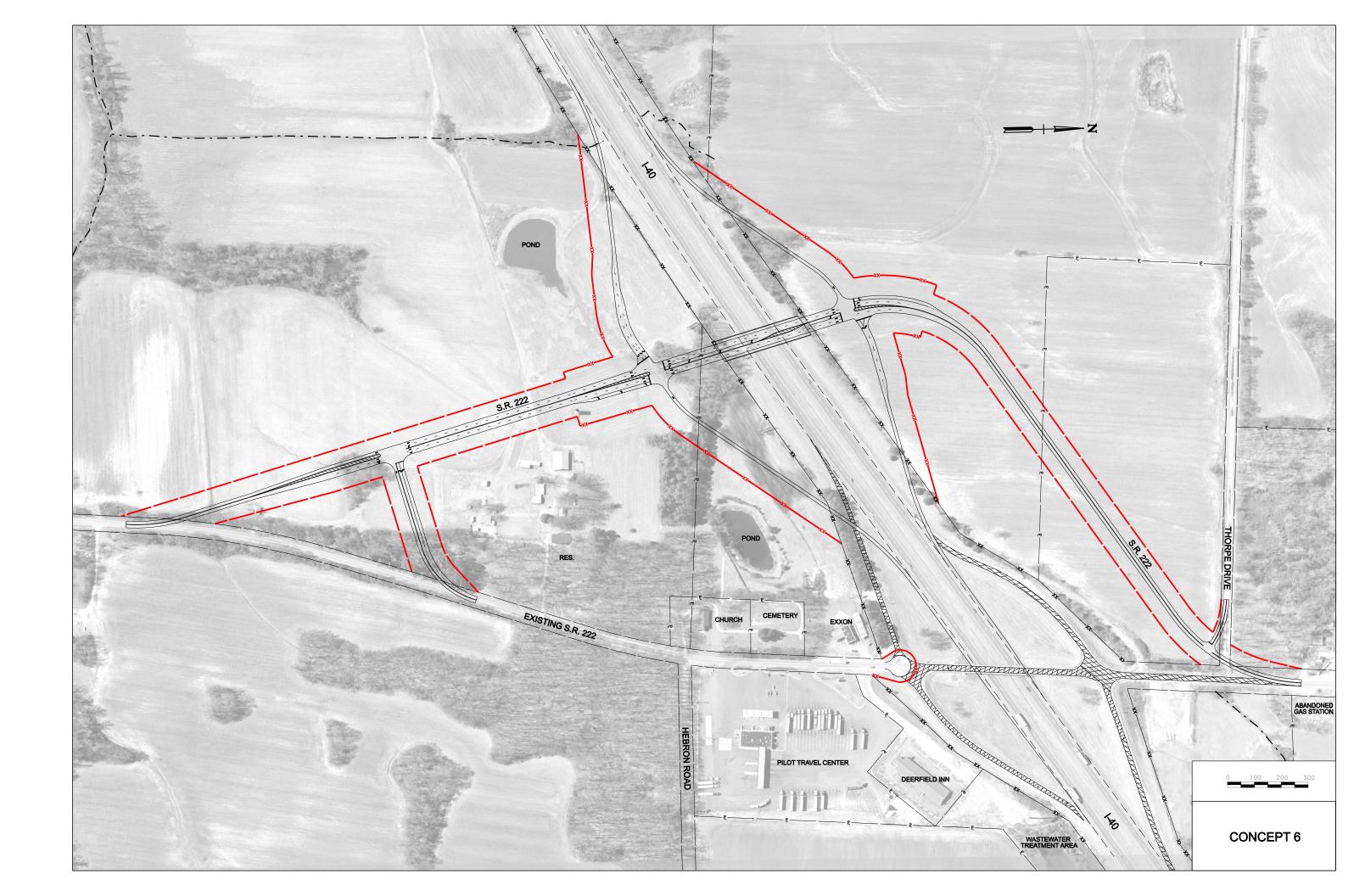












## APPENDIX C COST ESTIMATE WORKSHEETS

### Modified Exit 42 Interchange Cost Estimate Summary

| ITEM  |                 |                  | COST          |              |                                    |
|---|-----------------|------------------|---------------|--------------|------------------------------------|
| Clear & Grubbing:   |                 | \$53,320         | =             | \$53,000     | \$53,000                           |
| Earthwork:  |                 | \$1,440,775      | =             | \$1,441,000  | \$1,494,000                        |
| Pavement Removal:   |                 | \$43,476         | =             | \$43,000     | \$1,537,000                        |
| Erosion Control:  |                 | \$317,000        | =             | \$317,000    | \$1,854,000                        |
| Drainage:   |                 | \$41,531         | =             | \$42,000     | \$1,896,000                        |
| Structures:   |                 | \$4,849,920      | =             | \$4,850,000  | \$6,746,000                        |
| Railroad:   |                 | \$0              | =             | \$0          | \$6,746,000                        |
| Paving:   |                 | \$1,327,006      | =             | \$1,327,000  | \$8,073,000                        |
| Retaining Walls:  |                 | \$0              | =             | \$0          | \$8,073,000                        |
| Maintenance of Traffic:                                   |                 | \$250,000        | =             | \$250,000    | \$8,323,000                        |
| Topsoil:  |                 | \$198,955        | =             | \$199,000    | \$8,522,000                        |
| Seeding:  |                 | \$52,226         | =             | \$52,000     | \$8,574,000                        |
| Sodding:  |                 | \$25,000         | =             | \$25,000     | \$8,599,000                        |
| Signing:  |                 | \$260,000        | =             | \$260,000    | \$8,859,000                        |
| Signalization:  |                 | \$150,000        | =             | \$150,000    | \$9,009,000                        |
| Fencing:  |                 | \$76,347         | =             | \$76,000     | \$9,085,000                        |
| Guardrail:  |                 | \$80,500         | =             | \$81,000     | \$9,166,000                        |
| Rip-Rap:  |                 | \$25,000         | =             | \$25,000     | \$9,191,000                        |
| Other Construction:                                       |                 | \$431,614        | =             | \$432,000    | \$9,623,000                        |
| Sub-Total:  |                 | \$9,622,669      | =             | \$9,623,000  | \$9,623,000                        |
| 10% Eng. & Cont.:   |                 | \$962,267        | =             | \$962,000    | \$962,000                          |
| Sub-Total:  |                 | \$10,584,936     | =             | \$10,585,000 | \$10,585,000                       |
| Total Construction Cost :                                 | Sub-Total       | +                | Mobil.        |              |                                    |
|   | \$10,585,000    | +                | \$450,000     | =            | \$11,035,000                       |
|   |                 |                  | 10% Prel. En  | g.           |                                    |
|   | \$11,035,000    | +                | \$962,000     | =            | \$11,997,000                       |
|   | Row Total       | +                | Utility Total | +            | Constr. Total                      |
|   | \$355,000       | +                | \$700,000     | +            | \$11,997,000                       |
| TOTAL SECTION COST :                                      |                 |                  |               |              | \$13,052,000                       |
| Mobilization Table  |                 |                  |               |              |                                    |
| \$0 to \$1,000,000  | 5%              |                  |               |              | \$ -                               |
| \$1,000,000 to \$5,000,000                                | \$50,000 + 4.5% | S over \$1,000.0 | 00            |              | \$ -<br>\$ -<br>\$ -<br>\$ 450,000 |
| \$5,000,000 to \$3,000,000<br>\$5,000,000 to \$10,000,000 | \$230,000 + 4%  |                  |               |              | φ -                                |
| \$10,000,000 to \$20,000,000                              |                 |                  |               |              | \$ 450,000                         |
| \$20,000,000 +  | \$780,000 + 3%  |                  |               |              | \$ 430,000                         |

|                   |                       |              |               |               |               |               |               |               |               |               | eatment Area                       |               |                |                                 |                      |            |                    |                 |                 |                                       |                   |                    |          |                    |          |                 | South                 | Middle                 | North                 |               |  |
|-------------------|-----------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------------------------------------|---------------|----------------|---------------------------------|----------------------|------------|--------------------|-----------------|-----------------|---------------------------------------|-------------------|--------------------|----------|--------------------|----------|-----------------|-----------------------|------------------------|-----------------------|---------------|--|
|                   |                       | Total        | North of I-40 | North of I-40 | North of I-40 | North of I-40 | South of I-40 | South of I-40 | South of I-40 | South of I-40 | Possible Wastewater Treatment Area | 331.000       | •              | 331 000 (Rounded)               | 24 000               | 24,000     |                    | •               | 355,000         |                                       |                   | 4,477 Ramp NE Quad |          | 1.980 Ramp SW Quad |          |                 | 9,140 Conn. To SR 222 | 14,520 Conn. To SR 222 | 3,363 Conn. To SR 222 | 53.320        |  |
|                   |                       | Ţ            |               |               |               |               |               |               |               |               |                                    | <del>\$</del> | · <b>69</b> 6  |                                 |                      | ₽ €        | <del>s</del> (     | <del>S</del>    | <b>↔</b>        |                                       |                   | 49                 | <b>•</b> | · <b>69</b>        | <b>.</b> | · <del>so</del> | ss                    | <del>ss</del>          | <del>69</del>         | <del>69</del> |  |
|                   |                       | Land Cost    | 6,485.08      | 438.41        | 36,295.84     | 3,174.49      | 50,903.83     | 152,175.80    | 41,287.53     | 2,092.06      | 38,039.03                          | 323.968.60    |                | 11   11                         | l I                  | II         | II                 | II              | II              |                                       |                   |                    |          |                    |          |                 |                       |                        |                       | Total         |  |
|                   | Improvements          | (1.2 factor) | ₩.            | <b>⇔</b>      | ₩.            | \$            | €             | €             | \$            | €             | <del>\$</del>                      | · ·           |                |                                 | Oor Troot for Incide |            | Per Unit           | Per Unit        |                 |                                       | Cost (\$/ac.)     | \$2,500            | \$2,500  | \$2.500            | \$2,500  | \$2,500         | \$2,500               | \$2,500                | \$2,500               |               |  |
|                   | Cost<br>(\$/Acre)*1.2 | factor       | \$ 13,000.00  | •             | \$ 13,000.00  | \$ 13,000.00  | \$ 13,000.00  | \$ 13,000.00  | •             | \$ 13,000.00  | \$ 13,000.00                       |               |                |                                 | 000 6                | 3,000      |                    | 25,000          |                 | ar. and Grub.)                        | Acres             | 1.791              | 0.000    | 0.792              | 3.115    | 4.821           | 3.656                 | 5.808                  | 1.345                 |               |  |
|                   |                       | Acres        | 0.499         | 0.034         | 2.792         | 0.244         | 3.916         | 11.706        | 3.176         | 0.161         | 2.926                              | 25.453        |                |                                 | >                    | < >        | <b>×</b> :         | ×               |                 | of Brush and Trees (Clear. and Grub.) | Area (sq.ft./ac.) | 78,000             | 0        | 34.500             | 135,700  | 210,000         | 159,250               | 253,000                | 58590                 |               |  |
|                   |                       | Area (sf)    | 21,730        | 1,469         | 121,619       | 10,637        | 170,567       | 906'609       | 138,345       | 7,010         | 127,460                            |               |                | ement Costs                     | 000                  |            |                    | ×               |                 |                                       |                   | 120                | 0        | 150                | 115      | 200             | 130                   | 200                    | 186                   |               |  |
| Right of Way Cost |                       | Parcel       |               |               |               |               |               |               |               |               |                                    | Sub-Total     | Cost of Bldgs. | Total I and & Improvement Costs | Incidentale          | meidentals | Replacement Housin | Moving Expenses | TOTAL ROW COSTS | 201-07.05 Removal and Disposal        | Length (ft.)      | 650                | 0        | 230                | 1180     | 1050            | 1225                  | 1265                   | 315                   |               |  |

| Maintenance of Traffic                                       |                    |                 |              |                  |              |                         |  |
|--|--------------------|-----------------|--------------|------------------|--------------|-------------------------|--|
| Drums (Ea.) Cost (\$/drum)<br>Signs (s.f.) Cost (\$/s.f.)    | ('J                | Total           |              |                  |              |                         |  |
| 712-06   |                    |                 |              |                  |              |                         |  |
| 712-02.02 Interconnected Portable Barrier Rail<br>Lgth.(ft.) | Barrier Rail<br>.) |                 |              |                  |              |                         |  |
| 712-07.03 Temporary Barricades<br>Lgth.(ft.)                 |                    | Total Lgth. C   | Cost (\$/ft) |                  |              |                         |  |
| Total Maintenance of Traffic                                 |                    |                 |              |                  |              | \$ 250,000              |  |
| Signing  |                    |                 |              |                  |              |                         |  |
| Signs (s.f.) Cost (\$/s.f.)                                  | f.)                | Total 713-13.03 | 3.03         |                  |              |                         |  |
|  |                    |                 |              |                  |              | \$ 50,000<br>\$ 210,000 |  |
|  |                    |                 |              |                  |              |                         |  |
|  |                    |                 |              |                  | Total        | \$ 260,000              |  |
| Utility Relocation Cost                                      |                    |                 |              |                  |              |                         |  |
|  | No. of Poles       |                 |              | Cost (\$/pole) ( | Cost (\$/ft) |                         |  |
| 6" Water 1500  |                    |                 |              |                  | \$50.00      | \$75,000                |  |
| 12" Water  |                    |                 |              |                  | \$80.00      | 0\$                     |  |
| Utility Poles<br>6" Gas                                      | 25                 |                 |              | \$15,000.00      | \$30.00      | \$375,000<br>\$0        |  |
| Wastewater Treatment System                                  |                    |                 |              |                  |              | \$250,000               |  |
|  |                    |                 |              |                  | Total        | \$700,000.00            |  |

| ط                        | Avg. Exc. Depth 10 10 10 10 10 | Factor 27 27 27 27 27 27 27 27 | C.Y.<br>40276<br>52241<br>42250<br>55828<br>58019<br>53778 | \$3.50<br>\$3.50<br>\$3.50<br>\$3.50<br>\$3.50<br>\$3.50 |                          | Total<br>\$140,965.74<br>\$182,842.59<br>\$147,875.00<br>\$195,397.22<br>\$203,064.81<br>\$188,222.22 | Ramp NE Quad Ramp NW Quad Ramp SW Quad Ramp SE Quad Loop Ramp Conn. To SR 222 (North of I-40) |
|--------------------------|--------------------------------|--------------------------------|--|--|--------------------------|---|---|
| 2                        |                                | i                              |  |  | Total                    | \$1,440,775.00  |   |
| sf/sy                    |                                |                                | Cost (\$/sy)   |  |                          |   |   |
| 6                        |                                |                                | \$3.75   |  | Total                    | \$43,475.83   |   |
|                          |                                |                                |  |  |                          |   |   |
| Length (ft)<br>700       |                                |                                | cy/ft<br>0.266   |  | Cost (\$/cy)<br>\$30.00  | \$186.20  |   |
| Length (ft)<br>700       |                                |                                | Cost (\$/ft)<br>\$40.00                                    |  |                          | \$28,000.00   | Note: Based on 24" concrete pipe @  |
| lbs/wall<br>172          |                                |                                | # H'walls<br>14  |  | Cost (\$/lb)<br>\$1.30   | \$3,130.40  | loo ber pipes)  |
| cy/wall<br>1.52          |                                |                                | # H'walls<br>14  |  | Cost (\$/cy)<br>\$480.00 | \$10,214.40   |   |
|                          |                                |                                |  |  | Total                    | \$41,531.00   |   |
| s.f.                     |                                |                                |  | Cost/s.f.  |                          | Total   |   |
| 31680<br>9792<br>6481.25 |                                |                                |  | \$150.00<br>\$10.00<br>\$125.00                          | Total                    | \$4,752,000.00<br>\$97,920.00<br>\$190,625.00<br>\$4,849,920.00                                       | Remove existing bridge over I-40<br>Barrier wall along I-40                                   |

Total

| Paving                      |                       |                  |            |    |        |      |               |                |          |            |                     |               |         |
|-----------------------------|-----------------------|------------------|------------|----|--------|------|---------------|----------------|----------|------------|---------------------|---------------|---------|
|                             | Area (sq.ft.)         | Avg. Width (ft.) | Depth (ft) | /  | factor | Mass | Mass (lbs/cy) | Total cy or sy | lbs/Tons | Total Tons | Cost (\$/ton or cy) | Ľ             | Total   |
| Famp Conc. Pvm t. 501-01 02 | 121611                |                  | 0.75       | _  | 27     |      |               | 3378 08        |          |            | \$50.00             | <del>U</del>  | 168.904 |
| Ramp Treated Base           | -<br>-<br>-<br>-<br>I |                  | )          |    | i      |      |               |                |          |            | )<br>)<br>)         | <b>,</b>      |         |
| 313-03                      | 121611                |                  | 0.330      | /  | 6      |      |               | 4459.07        |          |            | \$10.00             | <del>⇔</del>  | 44,591  |
| Ramp Base Stone             |                       |                  |            |    |        |      |               |                |          |            |                     |               |         |
| 303-01                      | 121611                |                  | 0.330      | /  | 27     | 2    | 2.03          |                |          | 3017.30    | \$13.50             | <del>69</del> | 40,734  |
| P.C. and T.C.               |                       |                  |            |    |        |      |               |                |          |            |                     |               |         |
| 402-01                      | 121611                |                  |            |    | 6      | 0    | .35           |                | 231      | 20.47      | \$375.00            | <del>⇔</del>  | 7,677   |
| 402-02                      | 121611                |                  |            |    | 6      |      | 12            |                | 2000     | 81.07      | \$15.00             | <del>⇔</del>  | 1,216   |
| Outside ShId'r.             |                       |                  |            |    |        |      |               |                |          |            |                     |               |         |
| 501-01.02                   | 20572                 | 2                | 0.75       | _  | 27     |      |               | 571.44         |          |            | \$20.00             | <del>⇔</del>  | 28,572  |
| 313-03                      | 20572                 | 2                | 0.330      | _  | 6      |      |               | 754.31         |          |            | \$10.00             | ઝ             | 7,543   |
| 303-01                      | 20572                 | 2                | 0.25       | _  | 27     | 2    | .03           |                |          | 386.68     | \$13.50             | ↔             | 5,220   |
| 303-01                      | 20572                 | 2                | 1.30       | _  | 27     | 2    | .03           |                |          | 2010.72    | \$13.50             | <del>⇔</del>  | 27,145  |
| 303-01                      | 20572                 | 5.57             |            |    | 27     | 2    | 2.03          |                |          | 8615.17    | \$13.50             | <del>⇔</del>  | 116,305 |
| Conn. To SR 222             | Lath/Area (sa.ft.)    |                  | Depth (ft) |    | factor |      |               |                |          | Tons       |                     |               |         |
| <u>~</u>                    | 192342                |                  | 0.104      | 27 | 3816   | 2000 |               |                |          | 1414       | \$60.00             | 49            | 84.815  |
| 307-02.08 (B-M2)            | 192342                |                  | 0.167      | 27 | 4068   | 2000 |               |                |          | 2420       | \$60.00             |               | 145,187 |
| 307-02.01 (Gr. 'A')         | 192342                |                  | 0.292      | 27 | 4140   | 2000 |               |                |          | 4306       | \$60.00             |               | 258,354 |
| 303-01                      | 192342                |                  | 0.833      | 27 | 2.03   |      |               |                |          | 12046      | \$14.00             | ₩             | 168,647 |
| Outside Shld'r.             | 8320                  | 12               | 1.255      | 27 | 2.03   |      |               |                |          | 9421       | \$14.00             |               | 131,889 |
|                             | 8320                  | 4.85             | 1.115      | 27 | 2.03   |      |               |                |          | 3383       | \$14.00             |               | 47,359  |
| 411-01.07 ('E' Shidr.)      | 8320                  | 10               | 0.125      | 27 | 3708   | 2000 |               |                |          | 714        | \$60.00             | <del>⇔</del>  | 42,848  |
| Access Rd. to Pilot         |                       |                  |            |    |        |      |               |                |          |            |                     |               |         |
| 411-02.10 (Surf.)           | 0                     |                  | 0.104      | 27 | 3816   | 2000 |               |                |          | 0          | \$60.00             | <del>69</del> | •       |
| 307-02.08 (B-M2)            | 0                     |                  | 0.167      | 27 | 4068   | 2000 |               |                |          | 0          | \$60.00             | <del>⇔</del>  | •       |
| 307-02.01 (Gr. 'A')         | 0                     |                  | 0.292      | 27 | 4140   | 2000 |               |                |          | 0          | \$60.00             | <del>⇔</del>  | •       |
| 303-01                      | 0                     |                  | 0.833      | 27 | 2.03   |      |               |                |          | 0          | \$14.00             | <del>⇔</del>  | •       |
| Outside Shld'r.             | 0                     | 12               | 1.255      | 27 | 2.03   |      |               |                |          | 0          | \$14.00             | <del>⇔</del>  | •       |
|                             | 0                     | 4.85             | 1.115      | 27 | 2.03   |      |               |                |          | 0          | \$14.00             | <del>so</del> | •       |
| 411-01.07 ('E' Shldr.)      | 0                     | 10               | 0.125      | 27 | 3708   | 2000 |               |                |          | 0          | \$60.00             | <del>⇔</del>  |         |
|                             |                       |                  |            |    |        |      |               |                |          |            |                     |               |         |

| Topsoil (203-07)                      |  |                      |                         |         |                 |                               |        |                |                               |       |             |
|---------------------------------------|--|----------------------|-------------------------|---------|-----------------|-------------------------------|--------|----------------|-------------------------------|-------|-------------|
| Based on 4:1 slope ar<br>Length (ft.) | Based on 4:1 slope and 10' fill with 48' widening<br>Length (ft.) Slope Lgth.(ft.) T | aning<br>Thk.(ft.)   | cy factor               | cy      | Cost (\$/cy)    | Both Sides                    |        |                |                               |       |             |
| 14,487                                | 41.2   | 0.5                  | 27                      | 11053.0 | \$9.00          | 2                             |        |                |                               | Total | \$ 198,955  |
| Seeding (801-01)<br>Length (ft.)      | Slope Lgth.(ft.)   |                      |                         | sf      | sf/unit         | Both Sides                    | factor | nnits          | Cost (\$/unit)                |       |             |
| 14,487                                | 41.2   |                      |                         | 596864  | 1,000           | 2                             | 1.25   | 1492           | \$35.00                       | Total | \$ 52,226   |
| Signalization                         |  |                      |                         |         |                 |                               |        |                |                               |       |             |
| 1 Signal at WB Ramp                   |  |                      |                         |         |                 |                               |        |                |                               | Total | \$ 150,000  |
| Fencing                               |  |                      |                         |         |                 |                               |        |                |                               |       |             |
| Length (ft.)                          | 707-02.01  |                      |                         |         | Cost (\$/ft)    |                               |        |                |                               |       |             |
| 4491                                  |  |                      |                         |         | \$17.00         |                               |        |                |                               | Total | \$ 76,347   |
| Guardrail                             |  |                      |                         |         |                 |                               |        |                |                               |       |             |
|                                       |  | (Length (ft)<br>3000 | Cost (\$/ft)<br>\$17.50 |         | (# Anch.)<br>10 | Cost (\$/Anch.)<br>\$2,500.00 |        | (# Attn.)<br>1 | Cost (\$/Attn.)<br>\$3,000.00 |       |             |
|                                       |  |                      | \$52,500.00             |         |                 | \$25,000.00                   |        |                | \$3,000.00                    | Total | \$80,500.00 |

#### New Interchange Cost Estimate Summary

| ITEM                         |                 |                 | COST          |              |                                    |
|------------------------------|-----------------|-----------------|---------------|--------------|------------------------------------|
| Clear & Grubbing:            |                 | \$24,408        | =             | \$24,000     | \$24,000                           |
| Earthwork:                   |                 | \$1,209,989     | =             | \$1,210,000  | \$1,234,000                        |
| Pavement Removal:            |                 | \$43,583        | =             | \$44,000     | \$1,278,000                        |
| Erosion Control:             |                 | \$295,000       | =             | \$295,000    | \$1,573,000                        |
| Drainage:                    |                 | \$41,531        | =             | \$42,000     | \$1,615,000                        |
| Structures:                  |                 | \$4,849,920     | =             | \$4,850,000  | \$6,465,000                        |
| Railroad:                    |                 | \$0             | =             | \$0          | \$6,465,000                        |
| Paving:                      |                 | \$1,268,020     | =             | \$1,268,000  | \$7,733,000                        |
| Retaining Walls:             |                 | \$0             | =             | \$0          | \$7,733,000                        |
| Maintenance of Traffic:      |                 | \$250,000       | =             | \$250,000    | \$7,983,000                        |
| Topsoil:                     |                 | \$120,826       | =             | \$121,000    | \$8,104,000                        |
| Seeding:                     |                 | \$31,717        | =             | \$32,000     | \$8,136,000                        |
| Sodding:                     |                 | \$50,000        | =             | \$50,000     | \$8,186,000                        |
| Signing:                     |                 | \$200,000       | =             | \$200,000    | \$8,386,000                        |
| Signalization:               |                 | \$250,000       | =             | \$250,000    | \$8,636,000                        |
| Fencing:                     |                 | \$77,197        | =             | \$77,000     | \$8,713,000                        |
| Guardrail:                   |                 | \$77,500        | =             | \$78,000     | \$8,791,000                        |
| Rip-Rap:                     |                 | \$25,000        | =             | \$25,000     | \$8,816,000                        |
| Other Construction:          |                 | \$393,977       | =             | \$394,000    | \$9,210,000                        |
| Sub-Total:                   |                 | \$9,208,668     | =             | \$9,209,000  | \$9,210,000                        |
| 10% Eng. & Cont.:            |                 | \$920,867       | =             | \$921,000    | \$921,000                          |
| Sub-Total:                   |                 | \$10,129,535    | =             | \$10,130,000 | \$10,131,000                       |
| Total Construction Cost :    | Sub-Total       | +               | Mobil.        |              |                                    |
|                              | \$10,131,000    | +               | \$435,000     | =            | \$10,566,000                       |
|                              |                 |                 | 10% Prel. En  | q.           |                                    |
|                              | \$10,566,000    | +               | \$921,000     | =            | \$11,487,000                       |
|                              | Row Total       | +               | Utility Total | +            | Constr. Total                      |
|                              | \$281,000       | +               | \$450,000     | +            | \$11,487,000                       |
| TOTAL SECTION COST :         |                 |                 |               |              | \$12,218,000                       |
|                              |                 |                 |               |              |                                    |
| Mobilization Table           | <b>5</b> 0/     |                 |               |              | Φ                                  |
| \$0 to \$1,000,000           | 5%              |                 | 00            |              | <b>5</b> -                         |
| \$1,000,000 to \$5,000,000   | \$50,000 + 4.5% |                 |               |              | \$ -<br>\$ -<br>\$ -<br>\$ 435,000 |
| \$5,000,000 to \$10,000,000  | \$230,000 + 4%  |                 |               |              | ф -                                |
| \$10,000,000 to \$20,000,000 |                 |                 |               |              | \$ 435,000                         |
| \$20,000,000 +               | \$780,000 + 3%  | over \$20,000,0 | JUU           |              | \$ -                               |

| Parcel   Acres   Acr  | Right of Way Cost         |                    |                   | Č                               |                              |                 |         |                 |
|---|---------------------------|--------------------|-------------------|---------------------------------|------------------------------|-----------------|---------|-----------------|
| 12.264   \$ 13,000.00   \$ 6,485.08   North of   12.792   \$ 13,000.00   \$ 36,295.84   North of   12.792   \$ 13,000.00   \$ 31,7449   North of   10.244   \$ 13,000.00   \$ 31,7449   North of   10.244   \$ 13,000.00   \$ 31,7449   North of   10.244   \$ 13,000.00   \$ 31,7449   North of   10.202   \$ 13,000.00   \$ 19,620.29   \$ 200th of   10.000   \$ 13,000.00   \$ 19,620.29   \$ 20th of   10.000   North of   10.000  | Parcel                    | Area (sf)          | Acres             | Cost<br>(\$/Acre)*1.2<br>factor | Improvements<br>(1.2 factor) | Land Cost       | Total   |                 |
| 12.264   \$ 13.000.00   \$ 36,295.84   North of the control of the  |                           | 21,730             | 0.499             |                                 |                              |                 |         |                 |
| 12.264   \$ 13,000.00   \$ 3,174.49   North of the street   |                           | 1,469              | 0.034<br>2.792    |                                 |                              |                 |         |                 |
| 3.916 \$ 13,000.00 \$ 19,620.29 South of   |                           | 10,637             | 0.244             | •                               |                              | •               |         |                 |
| 9.202 \$ 13,000.00 \$ 19,612.29 South of Possible 3.063 \$ 13,000.00 \$ 13,000.00 \$ 13,000.00 \$ 13,000.00 \$ 13,000.00 \$ 1,000 |                           | 170,567            | 3.916             | •                               |                              | 40              |         |                 |
| 3.063   |                           | 400,820            | 9.202             | `                               |                              |                 |         |                 |
| 12.264  |                           | 133,410            | 3.063             | •                               |                              |                 |         |                 |
| X   | Total                     |                    | 12 264            |                                 | <u>√</u>                     | 159 435 03      |         |                 |
| X   | t of Bldgs.<br>tengenices |                    |                   |                                 | •                            |                 |         |                 |
| X         \$ 3,000 Per Tract for Incide         =         \$ 24,000           X         \$ 12,000 Per Unit         =         \$ 24,000           X         \$ 25,000 Per Unit         =         \$ 281,000           of Brush and Trees (Clear, and Grub.)           Area (sq.ft./ac.)         Acres         Cost (\$/ac.)           Ag.)         Area (sq.ft./ac.)         Acres         Cost (\$/ac.)           Ag.)         Area (sq.ft./ac.)         \$ 4,477           0         0.000         \$2,500         \$ 1,524           88,550         0.610         \$2,500         \$ 5,082           58590         1.345         \$2,500         \$ 5,082           58590         1.345         \$2,500         \$ 5,082           16740         0.384         \$2,500         \$ 961           156860         3.601         \$2,500         \$ 9003  | I Land & Improve          | ment Costs         |                   |                                 |                              | =               |         | (Rounded)       |
| Sin   0   | lentals                   | 8                  | ×                 | 3,000                           | Per Tract for Incide         | II              | 24,000  |                 |
| TS  al and Disposal of Brush and Trees (Clear. and Grub.)  Width (ft.) (Avg.) Area (sq.ft./ac.) Acres Cost (\$/ac.)  120 778,000 1.791 \$2,500 \$\$ 4,477  0 0 0.000 \$2,500 \$\$ 5,082  115 88,550 0.610 \$2,500 \$\$ 5,082  116 88,550 1.345 \$2,500 \$\$ 5,082  1174 16740 0.384 \$2,500 \$\$ \$9,003  Total \$\$ \$2,408  | acement Housin            |                    | ×                 | 12,000                          | Per Unit                     |                 | •       |                 |
| Serion   S  | ing Expenses              | 0                  | ×                 | 25,000                          | Per Unit                     | =               | •       |                 |
| \$2,500 \$ 4,477 \$2,500 \$ 1,524 \$5,082 \$2,500 \$ \$ 1,524 \$2,500 \$ \$ 5,082 \$2,500 \$ \$ 5,082 \$2,500 \$ \$ 3,363 \$2,500 \$ \$ 9,003   | AL ROW COSTS              |                    |                   |                                 |                              | -               |         |                 |
| \$2,500       \$ 4,477         \$2,500       \$ 1,524         \$2,500       \$ 1,524         \$2,500       \$ 5,082         \$2,500       \$ 5,082         \$2,500       \$ 961         \$2,500       \$ 961         \$2,500       \$ 961         \$2,500       \$ 9603   | 07.05 Removal a           | nd Disposal of Bro | ush and Trees (C  | lear. and Grub.)                |                              |                 |         |                 |
| 120       78,000       1.791       \$2,500       \$       4,477         0       0       0.000       \$2,500       \$       1,524         150       26,550       0.610       \$2,500       \$       1,524         115       88,550       2.033       \$2,500       \$       5,082         186       58590       1.345       \$2,500       \$       961         124       16740       0.384       \$2,500       \$       9,003         124       156860       3.601       \$2,500       \$       9,003  | Length (ft.)              | Width (ft.)(Avg.)  | Area (sq.ft./ac.) | Acres                           | Cost (\$/ac.)                |                 |         |                 |
| 0 0 0.000 \$2,500 \$ 150 26,550 0.610 \$2,500 \$ 115 88,550 2.033 \$2,500 \$ 118 58590 1.345 \$2,500 \$ 124 16740 0.384 \$2,500 \$ 124 156860 3.601 \$2,500 \$ 103 82,500 \$ 1                          | 650                       | 120                | 78,000            | 1.791                           | \$2,500                      | <del>\$\$</del> | 4,477 F | Ramp NE Quad    |
| 150       26,550       0.610       \$2,500       \$       1,524         115       88,550       2.033       \$2,500       \$       5,082         186       58590       1.345       \$2,500       \$       3,363         124       16740       0.384       \$2,500       \$       9,003         124       156860       3.601       \$2,500       \$       9,003   | 0                         | 0                  | 0                 | 0.000                           | \$2,500                      | φ.              | •       | Ramp NW Quad    |
| 115       88,550       2.033       \$2,500       \$       \$,082         186       58590       1.345       \$2,500       \$       3,363         124       16740       0.384       \$2,500       \$       961         124       156860       3.601       \$2,500       \$       9,003         Total       \$       24,408  | 177                       | 150                | 26,550            | 0.610                           | \$2,500                      | \$              | 1,524   | Ramp SW Quad    |
| 186       58590       1.345       \$2,500       \$ 3,363         124       16740       0.384       \$2,500       \$ 961         124       156860       3.601       \$2,500       \$ 9,003         Total       \$ 24,408   | 770                       | 115                | 88,550            | 2.033                           | \$2,500                      | \$              | 5,082   | Ramp SE Quad    |
| 124 16740 0.384 \$2,500 <b>\$ 961</b> 124 156860 3.601 \$2,500 <b>\$ 9,003 Total \$ 24,408</b>  | 315                       | 186                | 58590             | 1.345                           | \$2,500                      | €\$             | 3,363   | Conn. To SR 222 |
| 124 156860 3.601 \$2,500 <b>\$ 9,003 Total \$ 24,408</b>  | 135                       | 124                | 16740             | 0.384                           | \$2,500                      | €               | 961     | Conn. To SR 222 |
| <b>↔</b>  | 1265                      | 124                | 156860            | 3.601                           | \$2,500                      | \$              | 9,003   | Conn. To SR 222 |
| •   |                           |                    |                   |                                 |                              | Total           | 24.408  |                 |
|   |                           |                    |                   |                                 |                              |                 | 2016-   |                 |

Concept 2

| Maintenance of Traffic   |  |             |              |                |                         |                          |  |
|--|--|-------------|--------------|----------------|-------------------------|--------------------------|--|
| Drums (Ea.)<br>Signs (s.f.)  | Cost (\$/drum)<br>Cost (\$/s.f.)         | Total       |              |                |                         |                          |  |
| 712-06   |  |             |              |                |                         |                          |  |
| 712-02.02 Interconnected Portable Barrier Rail<br>Lgth.(ft.) Cost (\$/ft.) | I Portable Barrier Rail<br>Cost (\$/ft.) |             |              |                |                         |                          |  |
| 712-07.03 Temporary Barricades Lgth.(ft.)                                  | rricades<br>No.                          | Total Lgth. | Cost (\$/ft) |                |                         |                          |  |
| Total Maintenance of Traffic   | ffic                                     |             |              |                |                         | \$ 250,000               |  |
| Signing  |  |             |              |                |                         |                          |  |
| ns (s.f.)  | Cost (\$/s.f.)                           | Total       | 713-13.03    |                |                         | 200,000                  |  |
| <b>Utility Relocation Cost</b>   |  |             |              |                |                         |                          |  |
| 6" Water   | Lgth (ft) No. of Poles<br>1500           |             |              | Cost (\$/pole) | Cost (\$/ft)<br>\$50.00 | \$75,000                 |  |
| 12. water<br>Utility Poles<br>6" Gas                                       | 25                                       |             |              | \$15,000.00    | \$30.00                 | \$375,000<br>\$00<br>\$0 |  |
|  |  |             |              |                | Total                   | \$450,000.00             |  |

| >            |
|--------------|
| ARY          |
| ₹            |
| €            |
| 5            |
| $\mathbf{z}$ |
| >            |
| ╘            |
| Ε            |
| Z            |
| $\vec{}$     |
| ಠ            |
| Õ            |
| R            |
| ₹            |
| Z            |
| ≥            |
| O            |
| 9            |
| ×            |
| EA           |
| 2            |
| Ω            |
| Ш            |
| H            |
| $\geq$       |
| É            |
| S            |
| Ш            |
|              |
|              |
|              |

Concept 2

| 203-01 Road and Drain. Exc. (Uncl.) | in. Exc. (Uncl.) |                    |        |                         |                     |                          |                               |  |
|-------------------------------------|------------------|--------------------|--------|-------------------------|---------------------|--------------------------|-------------------------------|--|
| Length (ft.)                        | Width (ft.)      | Avg. Exc. Depth    | Factor | C.Y.                    | Cost/cy             |                          | Total                         |  |
| 1673                                | 65               | 10                 | 27     | 40276                   | \$3.50              |                          | \$140,965.74                  | Ramp NE Quad   |
| 21/0                                | တို့ လ           | 2 (                | 27     | 39722                   | \$3.50              |                          | \$182,842.59                  | Ramp NW Quad   |
| 2095                                | 65               | 10 2               | 27     | 50435                   | \$3.50              |                          |                               | Ramp SE Quad   |
| 1210<br>2950                        | 120              | 100                | 27     | 53778<br>109259         | \$3.50              |                          | \$188,222.22<br>\$382,407,41  | Conn. To SR 222 (North of I-40)<br>Conn. To SR 222 (South of I-40) |
| 0 700                               |                  |                    |        |                         |                     | F                        |                               |  |
| 8,798                               |                  |                    |        |                         |                     | lotal                    | \$1,209,988.89                |  |
| 202-03.01 Pavement Removal          | Removal          |                    |        |                         |                     |                          |                               |  |
| Area (sf)                           |                  | sf/sy              |        | Cost (\$/sy)            |                     |                          |                               |  |
| 104600                              |                  | თ                  |        | \$3.75                  |                     | Total                    | \$43,583.33                   |  |
|                                     |                  |                    |        |                         |                     |                          |                               |  |
| <u>Drainage</u>                     |                  |                    |        |                         |                     |                          |                               |  |
| Bedding<br>204-07                   |                  | Length (ft)<br>700 |        | cy/ft<br>0.266          |                     | Cost (\$/cy)<br>\$30.00  | \$186.20                      |  |
| Pipe<br>607-05.02                   |                  | Length (ft)<br>700 |        | Cost (\$/ft)<br>\$40.00 |                     |                          | \$28,000.00                   | Note: Based on 24" concrete pipe @                                 |
| Headwall Steel<br>611-07.02         |                  | lbs/wall<br>172    |        | # H'walls<br>14         |                     | Cost (\$/lb)<br>\$1.30   | \$3,130.40                    | 100' per pipe (7 pipes)  |
| Headwall Conc.<br>611-07.01         |                  | cy/wall<br>1.52    |        | # H'walls<br>14         |                     | Cost (\$/cy)<br>\$480.00 | \$10,214.40                   |  |
|                                     |                  |                    |        |                         |                     | Total                    | \$41,531.00                   |  |
| New Structure                       |                  |                    |        |                         |                     |                          |                               |  |
| Length (ft.)                        | Width (ft.)      | s.f.               |        |                         | Cost/s.f.           |                          | Total                         |  |
| 360                                 | 88<br>32         | 31680<br>9792      |        |                         | \$150.00<br>\$10.00 |                          | \$4,752,000.00<br>\$97,920.00 | Remove existing bridge over I-40                                   |
|                                     |                  |                    |        |                         |                     | Total                    | \$4,849,920.00                |  |

|                       | Area (sq.ft.)      | Avg. Width (ft.) | Depth (ft) | /  | factor | Mass (lbs/cy) |    | Total cy or sy | suo1/sql | lbs/Tons Total Tons | Cost (\$/ton or cy) |              | Total   |
|-----------------------|--------------------|------------------|------------|----|--------|---------------|----|----------------|----------|---------------------|---------------------|--------------|---------|
| Ramp Conc. Pvm't.     |                    |                  |            |    |        |               |    |                |          |                     |                     |              |         |
| 501-01.02             | 97587              |                  | 0.75       | _  | 27     |               |    | 2710.75        |          |                     | \$50.00             | <del>⇔</del> | 135,538 |
| Ramp Treated Base     |                    |                  |            |    |        |               |    |                |          |                     |                     |              |         |
| 313-03                | 97587              |                  | 0.330      | _  | 6      |               |    | 3578.19        |          |                     | \$10.00             | <del>⇔</del> | 35,782  |
| Ramp Base Stone       |                    |                  |            |    |        |               |    |                |          |                     |                     |              |         |
| 303-01                | 97587              |                  | 0.330      | _  | 27     | 2.03          | 3  |                |          | 2421.24             | \$13.50             | <del>⇔</del> | 32,687  |
| P.C. and T.C.         |                    |                  |            |    |        |               |    |                |          |                     |                     |              |         |
| 402-01                | 97587              |                  |            |    | 6      | 0.35          | 10 |                | 231      | 16.43               | \$375.00            | <del>⇔</del> | 6,161   |
| 402-02                | 97587              |                  |            |    | 6      | 12            |    |                | 2000     | 92.09               | \$15.00             | <del>⇔</del> | 926     |
| Outside ShId'r.       |                    |                  |            |    |        |               |    |                |          |                     |                     |              |         |
| 501-01.02             | 15176              | 2                | 0.75       | _  | 27     |               |    | 421.56         |          |                     | \$20.00             | <del>⇔</del> | 21,078  |
| 313-03                | 15176              | 2                | 0.330      | _  | 6      |               |    | 556.45         |          |                     | \$10.00             | <del>⇔</del> | 5,565   |
| 303-01                | 15176              | 2                | 0.25       | _  | 27     | 2.05          | 3  |                |          | 285.25              | \$13.50             | <del>⇔</del> | 3,851   |
| 303-01                | 15176              | 2                | 1.30       | _  | 27     | 2.03          | 3  |                |          | 1483.31             | \$13.50             | <del>⇔</del> | 20,025  |
| 303-01                | 15176              | 5.57             |            |    | 27     | 2.03          | 3  |                |          | 6355.43             | \$13.50             | <del>⇔</del> | 85,798  |
| Conn. To SR 222       | Lgth/Area (sq.ft.) |                  | Depth (ft) |    | factor |               |    |                |          | Tons                |                     |              |         |
| 411-02.10 (Surf.)     | 204480             |                  | 0.104      | 27 | 3816   | 2000          |    |                |          | 1503                | \$60.00             | <del>⇔</del> | 90,168  |
| 307-02.08 (B-M2)      | 204480             |                  | 0.167      | 27 | 4068   | 2000          |    |                |          | 2572                | \$60.00             | <del>⇔</del> | 154,350 |
| 307-02.01 (Gr. 'A')   | 204480             |                  | 0.292      | 27 | 4140   | 2000          |    |                |          | 4578                | \$60.00             | <del>⇔</del> | 274,658 |
| 303-01                | 204480             |                  | 0.833      | 27 | 2.03   |               |    |                |          | 12806               | \$14.00             | <del>⇔</del> | 179,290 |
| Outside ShId'r.       | 8320               | 12               | 1.255      | 27 | 2.03   |               |    |                |          | 9421                | \$14.00             | <del>⇔</del> | 131,889 |
|                       | 8320               | 4.85             | 1.115      | 27 | 2.03   |               |    |                |          | 3383                | \$14.00             | <del>⇔</del> | 47,359  |
| 411-01 07 ('E' Shidr) | 8320               | 70               | 0.125      | 27 | 2700   | 0000          |    |                |          | 1777                | 0000                | •            | 070 07  |

| MARY           |  |
|----------------|--|
| Y SUM          |  |
| UANTITY        |  |
| A AND Q        |  |
| AKDOWN /       |  |
| <b>TE BREA</b> |  |
| STIMA          |  |
| Ш              |  |

Concept 2

| Topsoil (203-07)                     |  |                      |           |                         |              |                 |        |                               |                |       |             |
|--------------------------------------|--|----------------------|-----------|-------------------------|--------------|-----------------|--------|-------------------------------|----------------|-------|-------------|
| Based on 4:1 slope a<br>Length (ft.) | Based on 4:1 slope and 10' fill with 48' widening<br>Length (ft.) Slope Lgth.(ft.) Thk.(ft.) | əning<br>Thk.(ft.)   | cy factor | cy                      | Cost (\$/cy) | Both Sides      |        |                               |                |       |             |
| 8,798                                | 41.2   | 0.5                  | 27        | 6712.5                  | \$9.00       | 2               |        |                               |                | Total | \$ 120,826  |
| Seeding (801-01)                     | :  |                      |           | ·                       |              |                 | ,      |                               |                |       |             |
| Length (ft.)                         | Slope Lgth.(ft.)   |                      |           | sţ                      | sf/unit      | Both Sides      | factor | nnits                         | Cost (\$/unit) |       |             |
| 8,798                                | 41.2   |                      |           | 362478                  | 1,000        | 2               | 1.25   | 453                           | \$35.00        | Total | \$ 31,717   |
| Signalization                        |  |                      |           |                         |              |                 |        |                               |                |       |             |
| 2 Signals at Ramps                   |  |                      |           |                         |              |                 |        |                               |                | Total | \$ 250,000  |
| Fencing                              |  |                      |           |                         |              |                 |        |                               |                |       |             |
| Length (ft.)                         | 707-02.01  |                      |           |                         | Cost (\$/ft) |                 |        |                               |                |       |             |
| 4541                                 |  |                      |           |                         | \$17.00      |                 |        |                               |                | Total | \$ 77,197   |
| Guardrail                            |  |                      |           |                         |              |                 |        |                               |                |       |             |
|                                      |  | (Length (ft)<br>3000 |           | Cost (\$/ft)<br>\$17.50 |              | (# Anch.)<br>10 |        | Cost (\$/Anch.)<br>\$2,500.00 |                |       |             |
|                                      |  |                      |           | \$52,500.00             |              |                 |        | \$25,000.00                   |                | Total | \$77,500.00 |
|                                      |  |                      |           |                         |              |                 |        |                               |                |       |             |

### Modified Exit 42 Interchange Cost Estimate Summary

| ITEM                         |   |                  | COST          |              |   |
|------------------------------|---|------------------|---------------|--------------|---|
| Clear & Grubbing:            |   | \$52,505         | =             | \$53,000     | \$53,000                                |
| Earthwork:                   |   | \$1,227,852      | =             | \$1,228,000  | \$1,281,000                             |
| Pavement Removal:            |   | \$42,882         | =             | \$43,000     | \$1,324,000                             |
| Erosion Control:             |   | \$317,000        | =             | \$317,000    | \$1,641,000                             |
| Drainage:                    |   | \$41,531         | =             | \$42,000     | \$1,683,000                             |
| Structures:                  |   | \$5,217,720      | =             | \$5,218,000  | \$6,901,000                             |
| Railroad:                    |   | \$0              | =             | \$0          | \$6,901,000                             |
| Paving:                      |   | \$1,482,092      | =             | \$1,482,000  | \$8,383,000                             |
| Retaining Walls:             |   | \$0              | =             | \$0          | \$8,383,000                             |
| Maintenance of Traffic:      |   | \$250,000        | =             | \$250,000    | \$8,633,000                             |
| Topsoil:                     |   | \$162,465        | =             | \$162,000    | \$8,795,000                             |
| Seeding:                     |   | \$42,647         | =             | \$43,000     | \$8,838,000                             |
| Sodding:                     |   | \$25,000         | =             | \$25,000     | \$8,863,000                             |
| Signing:                     |   | \$200,000        | =             | \$200,000    | \$9,063,000                             |
| Signalization:               |   | \$250,000        | =             | \$250,000    | \$9,313,000                             |
| Fencing:                     |   | \$80,410         | =             | \$80,000     | \$9,393,000                             |
| Guardrail:                   |   | \$77,500         | =             | \$78,000     | \$9,471,000                             |
| Rip-Rap:                     |   | \$25,000         | =             | \$25,000     | \$9,496,000                             |
| Other Construction:          |   | \$425,188        | =             | \$425,000    | \$9,921,000                             |
| Sub-Total:                   |   | \$9,919,792      | =             | \$9,920,000  | \$9,921,000                             |
| 10% Eng. & Cont.:            |   | \$991,979        | =             | \$992,000    | \$992,000                               |
| Sub-Total:                   |   | \$10,911,772     | =             | \$10,912,000 | \$10,913,000                            |
| Total Construction Cost :    | Sub-Total                               | +                | Mobil.        |              |   |
|                              | \$10,913,000                            | +                | \$462,000     | =            | \$11,375,000                            |
|                              | , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |                  |               |              | , |
|                              |   |                  | 10% Prel. En  | g.           |   |
|                              | \$11,375,000                            | +                | \$992,000     | =            | \$12,367,000                            |
|                              | Row Total                               | +                | Utility Total | +            | Constr. Total                           |
|                              | \$322,000                               | +                | \$700,000     | +            | \$12,367,000                            |
| TOTAL SECTION COST :         |   |                  |               |              | \$13,389,000                            |
|                              |   |                  |               |              | •                                       |
| Mobilization Table           |   |                  |               |              |   |
| \$0 to \$1,000,000           | 5%                                      |                  |               |              | \$ -                                    |
| \$1,000,000 to \$5,000,000   | \$50,000 + 4.5%                         | 6 over \$1,000,0 | 00            |              | \$ -<br>\$ -<br>\$ -<br>\$ 462,000      |
| \$5,000,000 to \$10,000,000  | \$230,000 + 4%                          |                  |               |              | \$ -                                    |
| \$10,000,000 to \$20,000,000 |   |                  |               |              | \$ 462,000                              |
| \$20,000,000 +               | \$780,000 + 3%                          |                  |               |              | \$ -                                    |

|                   |                       |              | North of I-40 | Area south of Interstate 40 |              | Possible Wastewater Treatment Area | 11_           |                | 11_                             |                      |        |                    | . 11            |                 |                    |  |                   | Ramp NE Quad | Ramp NW Quad | Ramp SE Quad | Ramp SW Quad | Conn. To SR 22 (North) | Conn. To SR 22 (South) |          |
|-------------------|-----------------------|--------------|---------------|---------------|---------------|---------------|---------------|-----------------------------|--------------|------------------------------------|---------------|----------------|---------------------------------|----------------------|--------|--------------------|-----------------|-----------------|--------------------|--|-------------------|--------------|--------------|--------------|--------------|------------------------|------------------------|----------|
|                   |                       | Total        |               |               |               |               |               |                             |              |                                    | 298 000       |                | 298 000                         | 24,000               | 74,000 |                    | •               | 000 000         | 322,000            |  |                   | 7.346        |              | 11,613       | 2,296        | 5,682                  | 25,568                 | 52,505   |
|                   |                       | Land Cost    | 6,485.08      | 438.41        | 2,235.90      | 58,311.98     | 4,988.41      | 143,818.02                  | 51,418.64    | , 29,720.34                        | 224 957 00 \$ |                | 1                               |                      |        | <b>₩</b>           | <b>\$</b>       | •               | n<br>II            |  |                   | €            | · <b>4</b> 9 | 49           | S            | ₩                      | <del>\$</del>          | Total \$ |
|                   | Improvements          | (1.2 factor) | <b>€</b>      | ₩.            | ₩             | ₩             | \$            | · <del>•</del>              | \$           | <b>↔</b>                           | •             |                |                                 | Dor Tract for Incide |        | Per Unit           | Per Unit        |                 |                    |  | Cost (\$/ac.)     | \$2.500      | \$2.500      | \$2,500      | \$2,500      | \$2,500                | \$2,500                |          |
|                   | Cost<br>(\$/Acre)*1.2 | factor       | •             | \$ 13,000.00  | \$ 13,000.00  | \$ 13,000.00  | _             | _                           | \$ 13,000.00 | \$ 13,000.00                       |               |                |                                 | 3 000                | 3,000  |                    | 25,000          |                 |                    | ear. and Grub.)  | Acres             | 2,938        | 0.000        | 4.645        | 0.918        | 2.273                  | 10.227                 |          |
|                   |                       | Acres        | 0.499         | 0.034         | 0.172         | 4.486         | 0.384         | 11.063                      | 3.955        | 2.286                              | 22 878        |                |                                 | >                    | < >    | <b>×</b> :         | X               |                 |                    | sh and Trees (Cl   | Area (sq.ft./ac.) | 128,000      | 0            | 202,350      | 40,000       | 000,66                 | 445500                 |          |
|                   |                       | Area (sf)    | 21,730        | 1,469         | 7,492         | 195,390       | 16,715        | 481,901                     | 172,292      | 99,586                             |               |                | ent Costs                       | 800                  | ο :    | ×                  | ×               |                 |                    | 1 Disposal of Brus   | Width (ft.)(Avg.) | 200          | 0            | 285          | 200          | 225                    | 180                    |          |
| Right of Way Cost |                       | Parcel       |               |               |               |               |               |                             |              |                                    | Sub-Total     | Cost of Bldgs. | Total I and & Improvement Costs | Incidentale          |        | Replacement Housin | Moving Expenses | STSCS WOG INTOT | I O I AL ROW COSIS | 201-07.05 Removal and Disposal of Brush and Trees (Clear. and Grub.) | Length (ft.) W    | 640          | 0            | 710          | 200          | 440                    | 2475                   |          |

| Maintenance of Traffic   |              |             |              |                |                                    |                           |  |
|--|--------------|-------------|--------------|----------------|------------------------------------|---------------------------|--|
| Drums (Ea.) Cost (\$/drum)<br>Signs (s.f.) Cost (\$/s.f.)                  |              | Total       |              |                |                                    |                           |  |
| 712-06   |              |             |              |                |                                    |                           |  |
| 712-02.02 Interconnected Portable Barrier Rail<br>Lgth.(ft.) Cost (\$/ft.) | ır Rail      |             |              |                |                                    |                           |  |
| 712-07.03 Temporary Barricades<br>Lgth.(ft.)                               | F            | Total Lgth. | Cost (\$/ft) |                |                                    |                           |  |
| Total Maintenance of Traffic   |              |             |              |                | ₩                                  | \$ 250,000                |  |
| Signing  |              |             |              |                |                                    |                           |  |
| Signs (s.f.) Cost (\$/s.f.)  |              | Total 713   | 713-13.03    |                | S                                  | \$ 200,000                |  |
| Utility Relocation Cost  |              |             |              |                |                                    |                           |  |
| Lgth (ft)<br>6" Water<br>12" Water   | No. of Poles |             |              | Cost (\$/pole) | Cost (\$/ft)<br>\$50.00<br>\$80.00 | \$75,000                  |  |
| Utility Poles<br>6" Gas  | 25           |             |              | \$15,000.00    | \$30.00                            | \$375,000<br>\$0          |  |
| Wastewater Treatment System  |              |             |              |                | Total                              | \$250,000<br>\$700,000.00 |  |

| TY SUMMARY                        |
|-----------------------------------|
| AND QUANTITY                      |
| <b>\TE BREAKDOWN AND QUANTI</b> ' |
| ESTIMA                            |

Concept 3

| 203-01 Road and Drain. Exc. (Uncl.) | in. Exc. (Uncl.) |                    |        |                  |                     |                         |   |                        |
|-------------------------------------|------------------|--------------------|--------|------------------|---------------------|-------------------------|---|------------------------|
| Length (ft.)                        | Width (ft.)      | Avg. Exc. Depth    | Factor | C.Y.             | Cost/cy             |                         | Total   |                        |
| 1750                                | 65               | 10                 | 27     | 42130            | \$3.50              |                         | \$147,453.70                                    | Ramp NE Quad           |
| 2205                                | 92               | 10                 | 27     | 53083            | \$3.50              |                         | \$185,791.67                                    | Ramp NW Quad           |
| 1985                                | 65               | 10                 | 27     | 47787            | \$3.50              |                         | \$167,254.63                                    | Ramp SE Quad           |
| 1690                                | 92               | 10                 | 27     | 40685            | \$3.50              |                         | \$142,398.15                                    | Ramp SW Quad           |
| 1250                                | 125              | 10                 | 27     | 57870            | \$3.50              |                         | \$202,546.30                                    | Conn. To SR 22 (North) |
| 2950                                | 100              | 10                 | 27     | 109259           | \$3.50              |                         | \$382,407.41                                    | Conn. To SR 22 (South) |
| 11,830                              |                  |                    |        |                  |                     | Total                   | \$1,227,851.85                                  |                        |
| tacmound to co coc                  | lowond           |                    |        |                  |                     |                         |   |                        |
| ZUZ-US.U1 FAVEINENT REINOVAI        | Kemovai          |                    |        |                  |                     |                         |   |                        |
| Area (sf)                           |                  | st/sy              |        | Cost (\$/sy)     |                     |                         |   |                        |
| 102916                              |                  | თ                  |        | \$3.75           |                     | Total                   | \$42,881.67                                     |                        |
|                                     |                  |                    |        |                  |                     |                         |   |                        |
| <b>Drainage</b>                     |                  |                    |        |                  |                     |                         |   |                        |
| Bedding<br>204-07                   |                  | Length (ft)<br>700 |        | cy/ft<br>0.266   |                     | Cost (\$/cy)<br>\$30.00 | \$186.20  |                        |
| Pipe                                |                  | Length (ft)        |        | Cost (\$/ft)     |                     |                         |   |                        |
| 607-05.02                           |                  | 200                |        | \$40.00          |                     |                         | \$28,000.00                                     |                        |
| Headwall Steel<br>611-07.02         |                  | lbs/wall<br>172    |        | # H'walls<br>14  |                     | Cost (\$/lb)<br>\$1.30  | \$3,130.40                                      |                        |
| Day Hewbeet                         |                  | llew/yo            |        | sllew'H #        |                     | Cost (\$/07)            |   |                        |
| 611-07.01                           |                  | 1.52               |        | # IT walls<br>14 |                     | \$480.00                | \$10,214.40                                     |                        |
|                                     |                  |                    |        |                  |                     | Total                   | \$41,531.00                                     |                        |
| New Structure                       |                  |                    |        |                  |                     |                         |   |                        |
| Length (ft.)                        | Width (ft.)      | s.f.               |        |                  | Cost/s.f.           |                         | Total   |                        |
| 371<br>306                          | 92<br>32         | 34132<br>9792      |        |                  | \$150.00<br>\$10.00 | Total                   | \$5,119,800.00<br>\$97,920.00<br>\$5,217,720.00 | Remove old bridge      |
|                                     |                  |                    |        |                  |                     |                         |   |                        |

Total

| Paving   |  |                  |   |                                  |  |                              |                  |             |   |  |                      |   |
|--|--|------------------|---|----------------------------------|--|------------------------------|------------------|-------------|---|--|----------------------|---|
| Damp Conc Dym't  | Area (sq.ft.)  | Avg. Width (ft.) | Depth (ft)  | /                                | factor   | Mass (lbs/cy)                | Total cy or sy   | lbs/Tons    | Total Tons                                    | Cost (\$/ton or cy)  |                      | Total   |
| 501-01.02<br>503-01.02   | 135691   |                  | 0.75  | /                                | 27   |                              | 3769.19          |             |   | \$50.00  | ₩                    | 188,460   |
| 313-03   | 135691   |                  | 0.330   | /                                | ō  |                              | 4975.34          |             |   | \$10.00  | ₩                    | 49,753  |
| Kamp base stone<br>303-01  | 135691   |                  | 0.330   | /                                | 27   | 2.03                         |                  |             | 3366.64                                       | \$13.50  | <del>\$</del>        | 45,450  |
| F.C. and 1.C.<br>402-01<br>402-02  | 135691<br>135691   |                  |   |                                  | <b>o</b> o                                     | 0.35                         |                  | 231<br>2000 | 22.84<br>90.46                                | \$375.00<br>\$15.00  | ss ss                | 8,566<br>1,357  |
| 501-01.02<br>313-03  | 15990<br>15990   | <b>ပ</b> ပ       | 0.75  |                                  | 27   |                              | 444.17<br>586.30 |             |   | \$50.00  | <del>\$\ \ \ \</del> | 22,208<br>5,863   |
| 303-01<br>303-01<br>303-01   | 15990<br>15990<br>15990  | 6<br>2<br>5.57   | 0.25<br>1.30  |                                  | 27<br>27<br>27                                 | 2.03<br>2.03<br>2.03         |                  |             | 300.55<br>1562.87<br>6696.32                  | \$13.50<br>\$13.50<br>\$13.50                                  | <del>••••</del>      | 4,057<br>21,099<br>90,400                                     |
| Conn. To SR 222<br>411-02.10 (Surf.)<br>307-02.08 (B-M2)<br>307-02.01 (Gr. 'A')<br>303-01<br>Outside Shld'r.     | Lgth/Area (sq.ft.)<br>241031<br>241031<br>241031<br>241031<br>8300<br>8300 | 12<br>4 85       | Depth (ft)<br>0.104<br>0.167<br>0.292<br>0.833<br>1.255 | 27<br>27<br>27<br>27             | factor<br>3816<br>4068<br>4140<br>2.03<br>2.03 | 2000<br>2000<br>2000         |                  |             | Tons<br>1771<br>3032<br>5396<br>15096<br>9398 | \$60.00<br>\$60.00<br>\$60.00<br>\$14.00                       | <del>•••••••</del>   | 106,285<br>181,940<br>323,753<br>211,338<br>131,572<br>47,245 |
| 411-01.07 ('E' Shldr.)   | 8300   | 10               | 0.125   | 27                               | 3708   | 2000                         |                  |             | 712   | \$60.00  | <del>•</del>         | 42,745  |
| Access Rd. to Pilot<br>411-02.10 (Surf.)<br>307-02.08 (B-M2)<br>307-02.01 (Gr. 'A')<br>303-01<br>Outside Shld'r. | 000000   | 12<br>4.85<br>10 | 0.104<br>0.167<br>0.292<br>0.833<br>1.255<br>1.115      | 27<br>27<br>27<br>27<br>27<br>27 | 3816<br>4068<br>4140<br>2.03<br>2.03<br>3708   | 2000<br>2000<br>2000<br>2000 |                  |             | 000000  | \$60.00<br>\$60.00<br>\$60.00<br>\$14.00<br>\$14.00<br>\$60.00 | <b>~ ~ ~ ~ ~ ~ ~</b> |   |

| ESTIMATE BREAKDOWN AND QUANTITY SUMMARY |  |
|---|--|
| ette County                             |  |

Concept 3

| Topsoil (203-07)                      |  |                      |           |                         |              |                 |        |                               |                |       |             |
|---------------------------------------|--|----------------------|-----------|-------------------------|--------------|-----------------|--------|-------------------------------|----------------|-------|-------------|
| Based on 4:1 slope al<br>Length (ft.) | Based on 4:1 slope and 10' fill with 48' widening<br>Length (ft.) Slope Lgth.(ft.) | ning<br>Thk.(ft.)    | cy factor | cy                      | Cost (\$/cy) | Both Sides      |        |                               |                |       |             |
| 11,830                                | 41.2   | 0.5                  | 27        | 9025.9                  | \$9.00       | 2               |        |                               |                | Total | \$ 162,465  |
| Seeding (801-01)                      |  |                      |           |                         |              |                 |        |                               |                |       |             |
| Length (ft.)                          | Slope Lgth.(ft.)   |                      |           | sf                      | sf/unit      | Both Sides      | factor | units                         | Cost (\$/unit) |       |             |
| 11,830                                | 41.2   |                      |           | 487396                  | 1,000        | 2               | 1.25   | 1218                          | \$35.00        | Total | \$ 42,647   |
| Signalization                         |  |                      |           |                         |              |                 |        |                               |                |       |             |
| 2 Signals                             |  |                      |           |                         |              |                 |        |                               |                | Total | \$ 250,000  |
| Fencing                               |  |                      |           |                         |              |                 |        |                               |                |       |             |
| Length (ft.)                          | 707-02.01  |                      |           |                         | Cost (\$/ft) |                 |        |                               |                |       |             |
| 4730                                  |  |                      |           |                         | \$17.00      |                 |        |                               |                | Total | \$ 80,410   |
| Guardrail                             |  |                      |           |                         |              |                 |        |                               |                |       |             |
|                                       |  | (Length (ft)<br>3000 |           | Cost (\$/ft)<br>\$17.50 |              | (# Anch.)<br>10 |        | Cost (\$/Anch.)<br>\$2,500.00 |                |       |             |
|                                       |  |                      |           | \$52,500.00             |              |                 |        | \$25,000.00                   |                | Total | \$77,500.00 |

#### New Interchange Cost Estimate Summary

| ITEM                         |                 |                | COST          |              |                                    |
|------------------------------|-----------------|----------------|---------------|--------------|------------------------------------|
| Clear & Grubbing:            |                 | \$7,296        | =             | \$7,000      | \$7,000                            |
| Earthwork:                   |                 | \$1,157,593    | =             | \$1,158,000  | \$1,165,000                        |
| Pavement Removal:            |                 | \$2,631        | =             | \$3,000      | \$1,168,000                        |
| Erosion Control:             |                 | \$334,000      | =             | \$334,000    | \$1,502,000                        |
| Drainage:                    |                 | \$26,199       | =             | \$26,000     | \$1,528,000                        |
| Structures:                  |                 | \$6,211,070    | =             | \$6,211,000  | \$7,739,000                        |
| Railroad:                    |                 | \$0            | =             | \$0          | \$7,739,000                        |
| Paving:                      |                 | \$1,272,243    | =             | \$1,272,000  | \$9,011,000                        |
| Retaining Walls:             |                 | \$0            | =             | \$0          | \$9,011,000                        |
| Maintenance of Traffic:      |                 | \$250,000      | =             | \$250,000    | \$9,261,000                        |
| Topsoil:                     |                 | \$156,766      | =             | \$157,000    | \$9,418,000                        |
| Seeding:                     |                 | \$41,151       | =             | \$41,000     | \$9,459,000                        |
| Sodding:                     |                 | \$50,000       | =             | \$50,000     | \$9,509,000                        |
| Signing:                     |                 | \$200,000      | =             | \$200,000    | \$9,709,000                        |
| Signalization:               |                 | \$250,000      | =             | \$250,000    | \$9,959,000                        |
| Fencing:                     |                 | \$10,914       | =             | \$11,000     | \$9,970,000                        |
| Guardrail:                   |                 | \$77,500       | =             | \$78,000     | \$10,048,000                       |
| Rip-Rap:                     |                 | \$25,000       | =             | \$25,000     | \$10,073,000                       |
| Other Construction:          |                 | \$383,629      | =             | \$384,000    | \$10,457,000                       |
| Sub-Total:                   |                 | \$10,455,992   | =             | \$10,456,000 | \$10,457,000                       |
| 10% Eng. & Cont.:            |                 | \$1,045,599    | =             | \$1,046,000  | \$1,046,000                        |
| Sub-Total:                   |                 | \$11,501,591   | =             | \$11,502,000 | \$11,503,000                       |
| Total Construction Cost :    | Sub-Total       | +              | Mobil.        |              |                                    |
|                              | \$11,503,000    | +              | \$483,000     | =            | \$11,986,000                       |
|                              |                 |                | 10% Prel. En  | a.           |                                    |
|                              | \$11,986,000    | +              | \$1,046,000   | =            | \$13,032,000                       |
|                              | Row Total       | +              | Utility Total | +            | Constr. Total                      |
|                              | \$336,000       | +              | \$450,000     | +            | \$13,032,000                       |
| TOTAL SECTION COST :         | ,               |                | . ,           |              | \$13,818,000                       |
| TOTAL SECTION COST.          |                 |                |               |              | \$13,616,000                       |
| Mobilization Table           |                 |                |               |              |                                    |
| \$0 to \$1,000,000           | 5%              |                |               |              | \$ -                               |
| \$1,000,000 to \$5,000,000   | \$50,000 + 4.5% | over \$1,000,0 | 000           |              | \$ -                               |
| \$5,000,000 to \$10,000,000  | \$230,000 + 4%  |                |               |              | \$ -                               |
| \$10,000,000 to \$20,000,000 |                 |                |               |              | \$ -<br>\$ -<br>\$ -<br>\$ 483,000 |
| \$20,000,000 +               | \$780,000 + 3%  |                |               |              | \$ -                               |

|                   |                                 |                                | to Pilot and Deerfield                             |   |                 |   |                                     | North of I-40<br>South of I-40                              |          |
|-------------------|---------------------------------|--------------------------------|--|---|-----------------|---|-------------------------------------|---|----------|
|                   | Total                           | North of I-40<br>South of I-40 | 71,000 - Additional damages to Pilot and Deerfield | 321,000 (Rounded)<br>15,000<br>-<br>-   | 336,000         |   | - Ramp NE<br>- Ramp NW<br>- Ramp SW | - Ramp SE<br>2,475 Conn. To SR 222<br>4,821 Conn. To SR 222 | 7,296    |
|                   | Ţ                               |                                |  | <del>•••••</del>  | <b>↔</b>        |   | <del>••••</del> •                   | <del>••••</del>   | <b>⇔</b> |
|                   | Land Cost                       | \$ 14,167.49<br>\$ 56,539.85   | \$ 70,707.35                                       | 11 11 11  | II              |   |                                     |   | Total    |
|                   | Improvements<br>(1.2 factor)    |                                | ·<br>«   | Per Tract for Incid<br>Per Unit<br>Per Unit                                   |                 | Cost (\$/ac.)   | \$2,500<br>\$2,500<br>\$2,500       | \$2,500<br>\$2,500<br>\$2,500                               |          |
|                   | Cost<br>(\$/Acre)*1.2<br>factor | \$ 13,000.00<br>\$ 13,000.00   |  | \$ 3,000<br>\$ 12,000<br>\$ 25,000  |                 | ear. and Grub.)<br>Acres  | 0.000                               | 0.000<br>0.990<br>1.928                                     |          |
|                   | Acres                           | 1.090<br>4.349                 | 5.439  | ×××   |                 | ush and Trees (Clo<br>Area (sq.ft./ac.)   | 000                                 | 0<br>43125<br>84000   |          |
|                   | Area (sf)                       | 47,472<br>189,452              |  | ement Costs<br>5<br>0<br>0  |                 | and Disposal of Br<br>Width (ft.)(Avg.)   | 75<br>75<br>75                      | 75<br>75<br>120   |          |
| Right of Way Cost | Parcel                          |                                | Sub-Total<br>Cost of Bldgs.<br>Contengenices       | Total Land & Improvement Costs Incidentals Replacement Housir Moving Expenses | TOTAL ROW COSTS | 201-07.05 Removal and Disposal of Brush and Trees (Clear. and Grub.) Length (ft.) Width (ft.)(Avg.) Area (sq.ft./ac.) Acres | 000                                 | 0<br>575<br>700   |          |

| Majntonanco of Traffic   |              |                          |                |              |                  |
|--|--------------|--------------------------|----------------|--------------|------------------|
| Drums (Ea.) Cost (\$/drum) Signs (s.f.) Cost (\$/s.f.)                     |              | Total                    |                |              |                  |
| 712-06   |              |                          |                |              |                  |
| 712-02.02 Interconnected Portable Barrier Rail<br>Lgth.(ft.) Cost (\$/ft.) | r Rail       |                          |                |              |                  |
| 712-07.03 Temporary Barricades<br>Lgth.(ft.)                               |              | Total Lgth. Cost (\$/ft) |                |              |                  |
| Total Maintenance of Traffic   |              |                          |                |              | \$ 250,000       |
| Signing  |              |                          |                |              |                  |
| Signs (s.f.) Cost (\$/s.f.)  |              | Total 713-13.03          |                |              | \$ 200,000       |
| Utility Relocation Cost  |              |                          |                |              |                  |
| Lgth (ft)  | No. of Poles |                          | Cost (\$/pole) | Cost (\$/ft) |                  |
| 6" Water 1500  |              |                          |                | \$50.00      | \$75,000<br>\$0  |
| Utility Poles<br>6" Gas  | 25           |                          | \$15,000.00    | \$30.00      | \$375,000<br>\$0 |
|  |              |                          |                | Total        | \$450,000.00     |

| 203-01 Road and Drain. Exc. (Uncl.) | in. Exc. (Uncl.) |                    |        |                         |                                |                          |  |   |
|-------------------------------------|------------------|--------------------|--------|-------------------------|--------------------------------|--------------------------|--|---|
| Length (ft.)                        | Width (ft.)      | Avg. Exc. Depth    | Factor | C.Y.                    | Cost/cy                        |                          | Total  |   |
| 1430                                | 65               | 10                 | 27     | 34426                   | \$3.50                         |                          | \$120,490.74                                 | Ramp NE   |
| 2130                                | 92               | 10                 | 27     | 51278                   | \$3.50                         |                          | \$179,472.22                                 | Ramp NW   |
| 1475                                | 92               | 10                 | 27     | 35509                   | \$3.50                         |                          | \$124,282.41                                 | Ramp SW   |
| 2065                                | 92               | 10                 | 27     | 49713                   | \$3.50                         |                          | \$173,995.37                                 | Ramp SE   |
| 4315                                | 100              | 10                 | 27     | 159815                  | \$3.50                         |                          | \$559,351.85                                 | Conn. To SR 222   |
| 11,415                              |                  |                    |        |                         |                                | Total                    | \$1,157,592.59                               |   |
| 202-03.01 Pavement Removal          | Removal          |                    |        |                         |                                |                          |  |   |
| Area (sf)                           |                  | sf/sy              |        | Cost (\$/sy)            |                                |                          |  |   |
| 6314                                |                  | တ                  |        | \$3.75                  |                                | Total                    | \$2,630.83                                   |   |
|                                     |                  |                    |        |                         |                                |                          |  |   |
| <u>Drainage</u>                     |                  |                    |        |                         |                                |                          |  |   |
| Bedding<br>204-07                   |                  | Length (ft)<br>300 |        | cy/ft<br>0.266          |                                | Cost (\$/cy)<br>\$30.00  | \$79.80                                      |   |
| Pipe<br>607-05.02                   |                  | Length (ft)<br>300 |        | Cost (\$/ft)<br>\$40.00 |                                |                          | \$12,000.00                                  | Note: Based on 24" concrete pipe @  |
| Headwall Steel<br>611-07.02         |                  | lbs/wall<br>172    |        | # H'walls<br>6          |                                | Cost (\$/lb)<br>\$1.30   | \$1,341.60                                   | 100 per pipe (3 pipes)  |
| Headwall Conc.<br>611-07.01         |                  | cy/wall<br>1.52    |        | # H'walls<br>6          |                                | Cost (\$/cy)<br>\$480.00 | \$4,377.60                                   |   |
| Catchbasins                         | 4                |                    |        |                         | \$2,100.00                     |                          | \$8,400.00                                   |   |
|                                     |                  |                    |        |                         |                                | Total                    | \$26,199.00                                  |   |
| New Structure                       |                  |                    |        |                         |                                |                          |  |   |
| Length (ft.)                        | Width (ft.)      | s.f.               |        |                         | Cost/s.f.                      |                          | Total  |   |
| 306<br>306<br>785                   | 106<br>32        | 32436<br>9792      |        |                         | \$187.50<br>\$10.00<br>\$40.00 |                          | \$6,081,750.00<br>\$97,920.00<br>\$31,400.00 | 25% Increase in cost due to being built under traffic<br>Remove existing bridge<br>Barrier Wall |
|                                     |                  |                    |        |                         |                                | Total                    | \$6,211,070.00                               |   |
|                                     |                  |                    |        |                         |                                |                          |  |   |

Total

**Fayette County** 

| Paving                 |                    |                  |            |    |        |               |                |          |            |                     |               |         |
|------------------------|--------------------|------------------|------------|----|--------|---------------|----------------|----------|------------|---------------------|---------------|---------|
|                        | Area (sq.ft.)      | Avg. Width (ft.) | Depth (ft) | /  | factor | Mass (lbs/cy) | Total cy or sy | suo_/sql | Total Tons | Cost (\$/ton or cy) |               | Total   |
| Ramp Conc. Pvm't.      |                    |                  |            |    |        |               |                |          |            |                     |               |         |
| 501-01.02              | 89372              |                  | 0.75       | _  | 27     |               | 2482.56        |          |            | \$50.00             | <del>\$</del> | 124,128 |
| Ramp Treated Base      |                    |                  |            |    |        |               |                |          |            |                     |               |         |
| 313-03                 | 89372              |                  | 0.330      | _  | 6      |               | 3276.97        |          |            | \$10.00             | <del>69</del> | 32,770  |
| Ramp Base Stone        |                    |                  |            |    |        |               |                |          |            |                     |               |         |
| 303-01                 | 89372              |                  | 0.330      | _  | 27     | 2.03          |                |          | 2217.42    | \$13.50             | <del>⇔</del>  | 29,935  |
| P.C. and T.C.          |                    |                  |            |    |        |               |                |          |            |                     |               |         |
| 402-01                 | 89372              |                  |            |    | 6      | 0.35          |                | 231      | 15.05      | \$375.00            | <del>⇔</del>  | 5,642   |
| 402-02                 | 89372              |                  |            |    | 6      | 12            |                | 2000     | 59.58      | \$15.00             | <del>⇔</del>  | 894     |
| Outside Shld'r.        |                    |                  |            |    |        |               |                |          |            |                     |               |         |
| 501-01.02              | 14200              | 2                | 0.75       | _  | 27     |               | 394.44         |          |            | \$50.00             | <del>⇔</del>  | 19,722  |
| 313-03                 | 14200              | 2                | 0.330      | _  | 6      |               | 520.67         |          |            | \$10.00             | <del>⇔</del>  | 5,207   |
| 303-01                 | 14200              | 2                | 0.25       | _  | 27     | 2.03          |                |          | 266.91     | \$13.50             | <del>⇔</del>  | 3,603   |
| 303-01                 | 14200              | 2                | 1.30       | _  | 27     | 2.03          |                |          | 1387.92    | \$13.50             | <del>⇔</del>  | 18,737  |
| 303-01                 | 14200              | 5.57             |            |    | 27     | 2.03          |                |          | 5946.70    | \$13.50             | <del>⇔</del>  | 80,280  |
| Conn. To SR 222        | Lgth/Area (sq.ft.) |                  | Depth (ft) |    | factor |               |                |          | Tons       |                     |               |         |
| 411-02.10 (Surf.)      | 211064             |                  | 0.104      | 27 | 3816   | 2000          |                |          | 1551       | \$60.00             | <del>⇔</del>  | 93,071  |
| 307-02.08 (B-M2)       | 211064             |                  | 0.167      | 27 | 4068   | 2000          |                |          | 2655       | \$60.00             | <del>⇔</del>  | 159,320 |
| 307-02.01 (Gr. 'A')    | 211064             |                  | 0.292      | 27 | 4140   | 2000          |                |          | 4725       | \$60.00             | ₩             | 283,501 |
| 303-01                 | 211064             |                  | 0.833      | 27 | 2.03   |               |                |          | 13219      | \$14.00             | ₩             | 185,063 |
| Outside ShId'r.        | 8630               | 12               | 1.255      | 27 | 2.03   |               |                |          | 9772       | \$14.00             | ₩             | 136,803 |
|                        | 8630               | 4.85             | 1.115      | 27 | 2.03   |               |                |          | 3209       | \$14.00             | ↔             | 49,123  |
| 411-01.07 ('E' Shldr.) | 8630               | 10               | 0.125      | 27 | 3708   | 2000          |                |          | 741        | \$60.00             | <del>\$</del> | 44,445  |

C-24

| וא                |  |  |
|-------------------|--|--|
| AND COANING SOMME |  |  |
| E BREANDOWN       |  |  |
| ESIIMAI           |  |  |
|                   |  |  |
|                   |  |  |

Concept 4

|  | Total \$ 156,766 |   | Total \$ 41,151 |               | Total \$ 250,000   |         |              | Total \$ 10,914 |           |                               | Total \$77,500.00 |
|--|------------------|---|-----------------|---------------|--------------------|---------|--------------|-----------------|-----------|-------------------------------|-------------------|
|  |                  | Cost (\$/unit)                          | \$35.00         |               |                    |         |              |                 |           |                               |                   |
|  |                  | units                                   | 1176            |               |                    |         |              |                 |           | Cost (\$/Anch.)<br>\$2,500.00 | \$25,000.00       |
|  |                  | factor                                  | 1.25            |               |                    |         |              |                 |           |                               |                   |
| Both Sides   | 2                | Both Sides                              | 2               |               |                    |         |              |                 |           | (# Anch.)<br>10               |                   |
| Cost (\$/cv)   | \$9.00           | sf/unit                                 | 1,000           |               |                    |         | Cost (\$/ft) | \$17.00         |           |                               |                   |
| ٥٥   | 8709.2           | Sf                                      | 470298          |               |                    |         |              |                 |           | Cost (\$/ft)<br>\$17.50       | \$52,500.00       |
| cv factor  | 27               |   |                 |               |                    |         |              |                 |           |                               |                   |
| lening<br>Thk (# )   | 0.5              |   |                 |               |                    |         |              |                 |           | (Length (ft)<br>3000          |                   |
| Topsoil (203-07)  Based on 4:1 slope and 10' fill with 48' widening Length (ft.) Slope I ath (ft.) | 41.2             | Slope Lgth.(ft.)                        | 41.2            |               |                    |         | 707-02.01    |                 |           |                               |                   |
| Topsoil (203-07) Based on 4:1 slope a  | 11,415           | <b>Seeding (801-01)</b><br>Length (ft.) | 11,415          | Signalization | 2 Signals at Ramps | Fencing | Length (ft.) | 642             | Guardrail |                               |                   |

### New Interchange Cost Estimate Summary

| ITEM                         |                 |                | COST          |              |                            |
|------------------------------|-----------------|----------------|---------------|--------------|----------------------------|
| Clear & Grubbing:            |                 | \$2,705        | =             | \$3,000      | \$3,000                    |
| Earthwork:                   |                 | \$514,267      | =             | \$514,000    | \$517,000                  |
| Pavement Removal:            |                 | \$8,966        | =             | \$9,000      | \$526,000                  |
| Erosion Control:             |                 | \$318,000      | =             | \$318,000    | \$844,000                  |
| Drainage:                    |                 | \$41,898       | =             | \$42,000     | \$886,000                  |
| Structures:                  |                 | \$7,022,295    | =             | \$7,022,000  | \$7,908,000                |
| Railroad:                    |                 | \$0            | =             | \$0          | \$7,908,000                |
| Paving:                      |                 | \$801,602      | =             | \$802,000    | \$8,710,000                |
| Retaining Walls:             |                 | \$0            | =             | \$0          | \$8,710,000                |
| Maintenance of Traffic:      |                 | \$250,000      | =             | \$250,000    | \$8,960,000                |
| Topsoil:                     |                 | \$90,475       | =             | \$90,000     | \$9,050,000                |
| Seeding:                     |                 | \$23,750       | =             | \$24,000     | \$9,074,000                |
| Sodding:                     |                 | \$50,000       | =             | \$50,000     | \$9,124,000                |
| Signing:                     |                 | \$200,000      | =             | \$200,000    | \$9,324,000                |
| Signalization:               |                 | \$250,000      | =             | \$250,000    | \$9,574,000                |
| Fencing:                     |                 | \$13,600       | =             | \$14,000     | \$9,588,000                |
| Guardrail:                   |                 | \$77,500       | =             | \$78,000     | \$9,666,000                |
| Rip-Rap:                     |                 | \$25,000       | =             | \$25,000     | \$9,691,000                |
| Other Construction:          |                 | \$264,276      | =             | \$264,000    | \$9,955,000                |
| Sub-Total:                   |                 | \$9,954,334    | =             | \$9,954,000  | \$9,955,000                |
| 10% Eng. & Cont.:            |                 | \$995,433      | =             | \$996,000    | \$996,000                  |
| Sub-Total:                   |                 | \$10,949,767   | =             | \$10,950,000 | \$10,951,000               |
| Total Construction Cost :    | Sub-Total       | +              | Mobil.        |              |                            |
|                              | \$10,951,000    | +              | \$463,000     | =            | \$11,414,000               |
|                              |                 |                | 10% Prel. En  | g.           |                            |
|                              | \$11,414,000    | +              | \$996,000     | =            | \$12,410,000               |
|                              | Row Total       | +              | Utility Total | +            | Constr. Total              |
|                              | \$294,000       | +              | \$450,000     | +            | \$12,410,000               |
| TOTAL SECTION COST :         |                 |                |               |              | \$13,154,000               |
| Mobilization Table           |                 |                |               |              |                            |
| \$0 to \$1,000,000           | 5%              |                |               |              | \$ -                       |
| \$1,000,000 to \$5,000,000   | \$50,000 + 4.5% | over \$1,000,0 | 000           |              | \$ -                       |
| \$5,000,000 to \$10,000,000  | \$230,000 + 4%  |                |               |              | \$ -                       |
| \$10,000,000 to \$20,000,000 |                 |                |               |              | \$ -<br>\$ -<br>\$ 463,000 |
| \$20,000,000 +               | \$780,000 + 3%  |                |               |              | \$ -                       |

|                   |                                 |                                | to Pilot and Deerfield                       |   |                 |   |             |  |           | North of I-40     | South of I-40       |          |
|-------------------|---------------------------------|--------------------------------|--|---|-----------------|---|-------------|--|-----------|-------------------|---------------------|----------|
|                   |                                 | North of I-40<br>South of I-40 | -<br>Additional damages                      | 279,000 (Rounded)<br>15,000<br>-<br>-   | 01              |   | - Ramp NE   | - Kamp NW<br>- Ramp SW                           | - Ramp SE | 5 Conn. To SR 222 | 230 Conn. 10 SR 222 | 5        |
|                   | Total                           |                                | 250,000                                      | 279,000<br>15,000<br>-  | 294,000         |   |             |  |           | 2,475             | 3                   | 2,705    |
|                   | Land Cost                       | \$ 14,167.49<br>\$ 14,585.31   | \$ 28,752.80 <b>\$</b>                       |   | <b>45</b>       |   | <b>69</b> ( | <del>ss                                   </del> | \$        | <b>69</b> 6       | A                   | Total \$ |
|                   | Improvements<br>(1.2 factor)    |                                |  | Per Tract for Incid<br>Per Unit<br>Per Unit                                   |                 | Cost (\$/ac.)   | \$2,500     | \$2,500<br>\$2,500                               | \$2,500   | \$2,500           | \$2,500             |          |
|                   | Cost<br>(\$/Acre)*1.2<br>factor | \$ 13,000.00<br>\$ 13,000.00   |  | \$ 3,000<br>\$ 12,000<br>\$ 25,000  |                 | Clear. and Grub.)<br>Acres  | 0.000       | 0.000  | 0.000     | 0.990             | 0.092               |          |
|                   | Acres                           | 1.090                          | 2.212  | ×××   |                 | rush and Trees (C<br>Area (sq.ft./ac.)  | 0           | 00   | 0         | 43125             | 4000                |          |
|                   | Area (sf)                       | 47,472<br>48,872               |  | ement Costs 5 0   |                 | and Disposal of B<br>Width (ft.)(Avg.)  | 75          | 75<br>75   | 75        | 75                | 70                  |          |
| Right of Way Cost | Parcel                          |                                | Sub-Total<br>Cost of Bldgs.<br>Contengenices | Total Land & Improvement Costs Incidentals Replacement Housir Moving Expenses | TOTAL ROW COSTS | 201-07.05 Removal and Disposal of Brush and Trees (Clear. and Grub.) Length (ft.) Width (ft.)(Avg.) Area (sq.ft./ac.) Acres | 0           | 0 0  | 0         | 575               | 200                 |          |

| Maintenance of Traffic                                       |              |                    |                |              |                 |
|--|--------------|--------------------|----------------|--------------|-----------------|
| Drums (Ea.) Cost (\$/drum)<br>Signs (s.f.) Cost (\$/s.f.)    | Total        | tal                |                |              |                 |
| 712-06   |              |                    |                |              |                 |
| 712-02.02 Interconnected Portable Barrier Rail<br>Lgth.(ft.) | Rail         |                    |                |              |                 |
| 712-07.03 Temporary Barricades<br>Lgth.(ft.)                 | Total Lgth.  | Lgth. Cost (\$/ft) |                |              |                 |
| Total Maintenance of Traffic                                 |              |                    |                | <b>S</b>     | \$ 250,000      |
| Signing  |              |                    |                |              |                 |
| Signs (s.f.) Cost (\$/s.f.)                                  | Total        | tal 713-13.03      |                | <b>∽</b>     | \$ 200,000      |
| Utility Relocation Cost                                      |              |                    |                |              |                 |
| Lgth (ft)  | No. of Poles |                    | Cost (\$/pole) | Cost (\$/ft) |                 |
| 6" Water 1500<br>12" Water                                   |              |                    |                | \$50.00      | \$75,000<br>\$0 |
| Utility Poles  | 25           |                    | \$15,000.00    |              | \$375,000       |
| 6" Gas   |              |                    |                | \$30.00      | 80              |
|  |              |                    |                | Total        | \$450,000.00    |
|  |              |                    |                |              |                 |

| 203-01 Road and Drain. Exc. (Uncl.) | in. Exc. (Uncl.) |                       |              |                         |                                 |                          |   |  |
|-------------------------------------|------------------|-----------------------|--------------|-------------------------|---------------------------------|--------------------------|---|--|
| Length (ft.)                        | Width (ft.)      | Avg. Exc. Depth       | Factor       | C.Y.                    | Cost/cy                         |                          | Total   |  |
| 633                                 | <u>გ</u>         | 10                    | 27           | 15239                   | \$3.50                          |                          | \$53 336 11                                   | Ramp NF  |
| 340                                 | 8 G              | 2 €                   | 27           | 8185                    | \$3.50                          |                          | \$28,648.15                                   | Samo NW  |
| 040                                 | 8 <b>4</b>       | 5 5                   | 7 6          | 37077                   | \$3.50<br>\$3.50                |                          | £120 750 26                                   | My dans  |
| 1975                                |                  | 2 (2                  | 27           | 47546                   | \$3.50                          |                          | \$166 412 04                                  | Samo Sil   |
| 2100                                | 20               | 10                    | 27           | 38889                   | \$3.50                          |                          | \$136,111.11                                  | Conn. To SR 222  |
| 6,588                               |                  |                       |              |                         |                                 | Total                    | \$514,266.67                                  |  |
| 202-03.01 Pavement Removal          | Removal          |                       |              |                         |                                 |                          |   |  |
| Area (sf)                           |                  | sf/sy                 |              | Cost (\$/sy)            |                                 |                          |   |  |
| 21519                               |                  | 6                     |              | \$3.75                  |                                 | Total                    | \$8,966.25                                    |  |
|                                     |                  |                       |              |                         |                                 |                          |   |  |
| <u>Drainage</u>                     |                  |                       |              |                         |                                 |                          |   |  |
| Bedding<br>204-07                   |                  | Length (ft)<br>600    |              | cy/ft<br>0.266          |                                 | Cost (\$/cy)<br>\$30.00  | \$159.60                                      |  |
| Pipe<br>607-05.02                   |                  | Length (ft)<br>600    |              | Cost (\$/ft)<br>\$40.00 |                                 |                          | \$24,000.00                                   | Note: Based on 24" concrete pipe @   |
| Headwall Steel<br>611-07.02         |                  | lbs/wall<br>172       |              | # H'walls<br>12         |                                 | Cost (\$/lb)<br>\$1.30   | \$2,683.20                                    | 100' per pipe (6 pipes)  |
| Headwall Conc.<br>611-07.01         |                  | cy/wall<br>1.52       |              | # H'walls<br>12         |                                 | Cost (\$/cy)<br>\$480.00 | \$8,755.20                                    |  |
| Catchbasins                         | က                |                       |              |                         | \$2,100.00                      |                          | \$6,300.00                                    |  |
|                                     |                  |                       |              |                         |                                 | Total                    | \$41,898.00                                   |  |
| New Structure                       |                  |                       |              |                         |                                 |                          |   |  |
| Length (ft.)                        | Width (ft.)      | s.f.                  | Height (ft.) |                         | Cost/s.f.                       |                          | Total   |  |
| 306<br>306<br>900                   | 32               | 25704<br>9792<br>9000 | 10           |                         | \$187.50<br>\$10.00<br>\$100.00 |                          | \$6,024,375.00<br>\$97,920.00<br>\$900,000.00 | 25% Increase in cost due to being built under traffic<br>Remove existing bridge<br>Retaining Wall along I-40 |
|                                     |                  |                       |              |                         |                                 | Total                    | \$7,022,295.00                                |  |

| Paving                 |                    |                  |            |    |          |      |               |                |          |            |                     |               |         |
|------------------------|--------------------|------------------|------------|----|----------|------|---------------|----------------|----------|------------|---------------------|---------------|---------|
|                        | Area (sq.ft.)      | Avg. Width (ft.) | Depth (ft) | /  | factor   | Mass | Mass (lbs/cy) | Total cy or sy | suo1/sql | Total Tons | Cost (\$/ton or cy) | Total         | tal     |
| Ramp Conc. Pvm't.      |                    |                  |            |    |          |      |               |                |          |            |                     |               |         |
| 501-01.02              | 60939              |                  | 0.75       | _  | 27       |      |               | 1684.42        |          |            | \$50.00             | <del>s</del>  | 84,221  |
| Ramp Treated Base      |                    |                  |            |    |          |      |               |                |          |            |                     |               |         |
| 313-03                 | 60939              |                  | 0.330      | _  | 6        |      |               | 2223.43        |          |            | \$10.00             | <del>s</del>  | 22,234  |
| Ramp Base Stone        |                    |                  |            |    |          |      |               |                |          |            |                     |               |         |
| 303-01                 | 60939              |                  | 0.330      | _  | 27       | 2    | 2.03          |                |          | 1504.52    | \$13.50             | <del>\$</del> | 20,311  |
| P.C. and T.C.          |                    |                  |            |    |          |      |               |                |          |            |                     |               |         |
| 402-01                 | 60639              |                  |            |    | 6        | 0    | 0.35          |                | 231      | 10.21      | \$375.00            | <del>\$</del> | 3,828   |
| 402-02                 | 60639              |                  |            |    | <b>ග</b> |      | 12            |                | 2000     | 40.43      | \$15.00             | <del>\$</del> | 909     |
| Outside ShId'r.        |                    |                  |            |    |          |      |               |                |          |            |                     |               |         |
| 501-01.02              | 8976               | 2                | 0.75       | _  | 27       |      |               | 249.33         |          |            | \$50.00             | <del>\$</del> | 12,467  |
| 313-03                 | 8976               | 2                | 0.330      | _  | 6        |      |               | 329.12         |          |            | \$10.00             | <del>⇔</del>  | 3,291   |
| 303-01                 | 8976               | 2                | 0.25       | _  | 27       | 2    | 2.03          |                |          | 168.72     | \$13.50             | <del>\$</del> | 2,278   |
| 303-01                 | 8976               | 2                | 1.30       | _  | 27       | 2    | 2.03          |                |          | 877.32     | \$13.50             | <del>\$</del> | 11,844  |
| 303-01                 | 8976               | 5.57             |            |    | 27       | 2    | 03            |                |          | 3758.98    | \$13.50             | <del>⇔</del>  | 50,746  |
| Conn. To SR 222        | Lgth/Area (sq.ft.) |                  | Depth (ft) |    | factor   |      |               |                |          | Tons       |                     |               |         |
| 411-02.10 (Surf.)      | 139838             |                  | 0.104      | 27 | 3816     | 2000 |               |                |          | 1028       | \$60.00             | <del>s</del>  | 61,663  |
| 307-02.08 (B-M2)       | 139838             |                  | 0.167      | 27 | 4068     | 2000 |               |                |          | 1759       | \$60.00             | \$            | 105,555 |
| 307-02.01 (Gr. 'A')    | 139838             |                  | 0.292      | 27 | 4140     | 2000 |               |                |          | 3131       | \$60.00             | &<br>_        | 187,830 |
| 303-01                 | 139838             |                  | 0.833      | 27 | 2.03     |      |               |                |          | 8758       | \$14.00             | \$            | 122,611 |
| Outside Shld'r.        | 4200               | 12               | 1.255      | 27 | 2.03     |      |               |                |          | 4756       | \$14.00             | <del>⇔</del>  | 66,579  |
|                        | 4200               | 4.85             | 1.115      | 27 | 2.03     |      |               |                |          | 1708       | \$14.00             | <del>⇔</del>  | 23,907  |
| 411-01.07 ('E' Shldr.) | 4200               | 10               | 0.125      | 27 | 3708     | 2000 |               |                |          | 361        | \$60.00             | <del>⇔</del>  | 21,630  |
|                        |                    |                  |            |    |          |      |               |                |          |            |                     |               |         |

Total

| <b>QUANTITY SUMMARY</b>       |
|-------------------------------|
| <b>ESTIMATE BREAKDOWN AND</b> |
| ш                             |

|                         |  | Total \$ 90,475 |                  |                      | Total \$ 23,750 |               | Total \$ 250,000   |         |              | Total \$ 13,600 |           |                               | Total \$77,500.00 |
|-------------------------|--|-----------------|------------------|----------------------|-----------------|---------------|--------------------|---------|--------------|-----------------|-----------|-------------------------------|-------------------|
|                         |  |                 |                  | units Cost (\$/unit) | 339 \$35.00     |               |                    |         |              |                 |           | Cost (\$/Anch.)<br>\$2,500.00 | \$25,000.00       |
|                         |  |                 |                  | tactor               | 1.25 3          |               |                    |         |              |                 |           | Cost (\$<br>\$2,5             | \$25,0            |
|                         | Both Sides   | 2               | 20170            | Both Sides           | 2               |               |                    |         |              |                 |           | (# Anch.)<br>10               |                   |
|                         | Cost (\$/cy)   | \$9.00          | 1, 1, 7 -        | st/unit              | 1,000           |               |                    |         | Cost (\$/ft) | \$17.00         |           |                               |                   |
|                         | cy   | 5026.4          | 77               | St                   | 271426          |               |                    |         |              |                 |           | Cost (\$/ft)<br>\$17.50       | \$52,500.00       |
|                         | cy factor  | 27              |                  |                      |                 |               |                    |         |              |                 |           |                               |                   |
|                         | dening<br>Thk.(ft.)  | 0.5             |                  |                      |                 |               |                    |         |              |                 |           | (Length (ft)<br>3000          |                   |
|                         | Based on 4:1 slope and 10' fill with 48' widening<br>Length (ft.) Slope Lgth.(ft.) Thk.(ft.) | 41.2            | (1) 10 10 10 10  | Slope Lgth.(ft.)     | 41.2            |               |                    |         | 707-02.01    |                 |           |                               |                   |
| <b>Topsoil (203-07)</b> | Based on 4:1 slope<br>Length (ft.)   | 6,588           | Seeding (801-01) | Length (ft.)         | 6,588           | Signalization | 2 Signals at Ramps | Fencing | Length (ft.) | 800             | Guardrail |                               |                   |

#### New Interchange Cost Estimate Summary

| ITEM                         |                 |                 | COST          |              |                                    |
|------------------------------|-----------------|-----------------|---------------|--------------|------------------------------------|
| Clear & Grubbing:            |                 | \$73,020        | =             | \$73,000     | \$73,000                           |
| Earthwork:                   |                 | \$1,290,981     | =             | \$1,291,000  | \$1,364,000                        |
| Pavement Removal:            |                 | \$30,685        | =             | \$31,000     | \$1,395,000                        |
| Erosion Control:             |                 | \$292,000       | =             | \$292,000    | \$1,687,000                        |
| Drainage:                    |                 | \$47,464        | =             | \$47,000     | \$1,734,000                        |
| Structures:                  |                 | \$4,533,120     | =             | \$4,533,000  | \$6,267,000                        |
| Railroad:                    |                 | \$0             | =             | \$0          | \$6,267,000                        |
| Paving:                      |                 | \$1,340,291     | =             | \$1,340,000  | \$7,607,000                        |
| Retaining Walls:             |                 | \$0             | =             | \$0          | \$7,607,000                        |
| Maintenance of Traffic:      |                 | \$250,000       | =             | \$250,000    | \$7,857,000                        |
| Topsoil:                     |                 | \$168,783       | =             | \$169,000    | \$8,026,000                        |
| Seeding:                     |                 | \$44,305        | =             | \$44,000     | \$8,070,000                        |
| Sodding:                     |                 | \$25,000        | =             | \$25,000     | \$8,095,000                        |
| Signing:                     |                 | \$200,000       | =             | \$200,000    | \$8,295,000                        |
| Signalization:               |                 | \$250,000       | =             | \$250,000    | \$8,545,000                        |
| Fencing:                     |                 | \$68,510        | =             | \$69,000     | \$8,614,000                        |
| Guardrail:                   |                 | \$51,250        | =             | \$51,000     | \$8,665,000                        |
| Rip-Rap:                     |                 | \$25,000        | =             | \$25,000     | \$8,690,000                        |
| Other Construction:          |                 | \$413,229       | =             | \$413,000    | \$9,103,000                        |
| Sub-Total:                   |                 | \$9,103,639     | =             | \$9,104,000  | \$9,103,000                        |
| 10% Eng. & Cont.:            |                 | \$910,364       | =             | \$910,000    | \$910,000                          |
| Sub-Total:                   |                 | \$10,014,003    | =             | \$10,014,000 | \$10,013,000                       |
| Total Construction Cost :    | Sub-Total       | +               | Mobil.        |              |                                    |
|                              | \$10,013,000    | +               | \$430,000     | =            | \$10,443,000                       |
|                              |                 |                 | 10% Prel. En  | q.           |                                    |
|                              | \$10,443,000    | +               | \$910,000     | =            | \$11,353,000                       |
|                              | Row Total       | +               | Utility Total | +            | Constr. Total                      |
|                              | \$381,000       | +               | \$150,000     | +            | \$11,353,000                       |
| TOTAL SECTION COST :         |                 |                 |               |              | \$11,884,000                       |
|                              |                 |                 |               |              |                                    |
| Mobilization Table           | E0/             |                 |               |              | <b>c</b>                           |
| \$0 to \$1,000,000           | 5%              |                 | 00            |              | <b>5</b> -                         |
| \$1,000,000 to \$5,000,000   | \$50,000 + 4.5% |                 |               |              | \$ -<br>\$ -<br>\$ -<br>\$ 430,000 |
| \$5,000,000 to \$10,000,000  | \$230,000 + 4%  |                 |               |              | ф -                                |
| \$10,000,000 to \$20,000,000 |                 |                 |               |              | \$ 430,000                         |
| \$20,000,000 +               | \$780,000 + 3%  | over \$20,000,0 | JUU           |              | \$ -                               |

|                               | North of I-40<br>South of I-40 |  | Rounded)                       |                            |                    |                 |                 |  |
|-------------------------------|--------------------------------|--|--------------------------------|----------------------------|--------------------|-----------------|-----------------|--|
| Total                         |                                | 360,000                                      | 360,000 (Rounded)              | 21,000                     | •                  | •               | 381,000         |  |
| •                             | 4. 6.                          | <b>\$</b>                                    | <del>⇔</del>                   | <del>⇔</del>               | <del>⇔</del>       | <del>\$</del>   | <b>\$</b>       |  |
| Land Cost                     | \$ 145,018.34<br>\$ 214,762.63 | \$ 359,780.97                                | II                             | II                         | II                 | П               | II              |  |
| Improvements<br>(1.2 factor)  | <i>s</i> , <i>s</i> ,          | -  |                                | 3,000 Per Tract for Incide | er Unit            | er Unit         |                 |  |
| 1.2                           | \$ 13,000.00<br>\$ 13,000.00   | <del>\$</del>                                |                                | 3,000 Pe                   | 12,000 Per Unit    | 25,000 Per Unit |                 | drub.)   |
| Cost<br>(\$/Acre)**<br>factor | \$ 13,0<br>13,0                |  |                                | ↔                          | `<br>\$            | \$              |                 | lear. and  |
| Acres                         | 11.155<br>16.520               | 27.675                                       |                                | ×                          | ×                  | X               |                 | sh and Trees (C  |
| Area (sf)                     | 485,923<br>719,620             |  | ent Costs                      | 7                          | 0                  | 0               |                 | Disposal of Bru  |
| Parcel                        |                                | Sub-Total<br>Cost of Bldgs.<br>Contengenices | Total Land & Improvement Costs | Incidentals                | Replacement Housir | Moving Expenses | TOTAL ROW COSTS | 201-07.05 Removal and Disposal of Brush and Trees (Clear. and Grub.) |

| Maintenance of Traffic                                       |              |                          |                |              |                  |  |
|--|--------------|--------------------------|----------------|--------------|------------------|--|
| Drums (Ea.) Cost (\$/drum)<br>Signs (s.f.) Cost (\$/s.f.)    | Total        | tal                      |                |              |                  |  |
| 712-06   |              |                          |                |              |                  |  |
| 712-02.02 Interconnected Portable Barrier Rail<br>Lgth.(ft.) | ər Rail      |                          |                |              |                  |  |
| 712-07.03 Temporary Barricades<br>Lgth.(ft.)                 | Total        | Total Lgth. Cost (\$/ft) |                |              |                  |  |
| Total Maintenance of Traffic                                 |              |                          |                |              | \$ 250,000       |  |
| Signing  |              |                          |                |              |                  |  |
| Signs (s.f.) Cost (\$/s.f.)                                  | To           | Total 713-13.03          |                |              | \$ 200,000       |  |
| Utility Relocation Cost                                      |              |                          |                |              |                  |  |
| Lgth (ft)  | No. of Poles |                          | Cost (\$/pole) | Cost (\$/ft) |                  |  |
| 6" Water 0<br>12" Water                                      |              |                          |                | \$50.00      | 0\$              |  |
| Utility Poles<br>6" Gas                                      | 10           |                          | \$15,000.00    | \$30.00      | \$150,000<br>\$0 |  |
|  |              |                          |                | Total        | \$150,000.00     |  |

|  |                              |              |                 |                |                            |              |             |          |                         | Note: Based on 24" concrete pipe @ | pipes)                      |                             |             |               |              |               |
|--|------------------------------|--------------|-----------------|----------------|----------------------------|--------------|-------------|----------|-------------------------|------------------------------------|-----------------------------|-----------------------------|-------------|---------------|--------------|---------------|
|  | Ramp NE Quad<br>Ramp NW Quad | Ramp SW Quad | Conn. To SR 222 |                |                            |              |             |          |                         | Note: Based or                     | 100' per pipe (8 pipes)     |                             |             |               |              | 1-40 Bridge   |
| Total  | \$131,444.44                 | \$113,750.00 | \$729,814.81    | \$1,290,981.48 |                            |              | \$30,685.42 |          | \$212.80                | \$32,000.00                        | \$3,577.60                  | \$11,673.60                 | \$47,464.00 |               | Total        | ¢4 425 200 00 |
|  |                              |              |                 | Total          |                            |              | Total       |          | Cost (\$/cy)<br>\$30.00 |                                    | Cost (\$/lb)<br>\$1.30      | Cost (\$/cy)<br>\$480.00    | Total       |               |              |               |
| Cost/cy  | \$3.50                       | \$3.50       | \$3.50          |                |                            |              |             |          |                         |                                    |                             |                             |             |               | Cost/s.f.    | 045000        |
| C.Y.   | 37556<br>34426               | 32500        | 208519          |                |                            | Cost (\$/sy) | \$3.75      |          | cy/ft<br>0.266          | Cost (\$/ft)<br>\$40.00            | # H'walls<br>16             | # H'walls<br>16             |             |               | Cost/I.f.    |               |
| Factor   | 27                           | 27           | 27              |                |                            |              |             |          |                         |                                    |                             |                             |             |               |              |               |
| Avg. Exc. Depth  | 10                           | 2 6 6        | 2 0             |                |                            | sf/sy        | O           |          | Length (ft)<br>800      | Length (ft)<br>800                 | lbs/wall<br>172             | cy/wall<br>1.52             |             |               | s.f.         | 20560         |
| in. Exc. (Uncl.)<br>Width (ft.)                              | 65<br>65                     | 65<br>65     | 100             |                | Removal                    |              |             |          |                         |                                    |                             |                             |             |               | Width (ft.)  | 0             |
| 203-01 Road and Drain. Exc. (Uncl.) Length (ft.) Width (ft.) | 1560<br>1430                 | 1350         | 2320<br>5630    | 12,290         | 202-03.01 Pavement Removal | Area (sf)    | 73645       | Drainage | Bedding<br>204-07       | Pipe<br>607-05.02                  | Headwall Steel<br>611-07.02 | Headwall Conc.<br>611-07.01 |             | New Structure | Length (ft.) | 338           |

| Paving                 |                    |                  |            |    |        |               |                |          |            |                     |              |         |
|------------------------|--------------------|------------------|------------|----|--------|---------------|----------------|----------|------------|---------------------|--------------|---------|
|                        | Area (sq.ft.)      | Avg. Width (ft.) | Depth (ft) | /  | factor | Mass (lbs/cy) | Total cy or sy | lbs/Tons | Total Tons | Cost (\$/ton or cy) | Tc           | Total   |
| Ramp Conc. Pvm't.      |                    |                  |            |    |        |               |                |          |            |                     |              |         |
| 501-01.02              | 90424              |                  | 0.75       | _  | 27     |               | 2511.78        |          |            | \$50.00             | €            | 125,589 |
| Ramp Treated Base      |                    |                  |            |    |        |               |                |          |            |                     |              |         |
| 313-03                 | 90424              |                  | 0.330      | _  | 6      |               | 3315.55        |          |            | \$10.00             | ↔            | 33,155  |
| Ramp Base Stone        |                    |                  |            |    |        |               |                |          |            |                     |              |         |
| 303-01                 | 90424              |                  | 0.330      | _  | 27     | 2.03          |                |          | 2243.52    | \$13.50             | <del>⇔</del> | 30,288  |
| P.C. and T.C.          |                    |                  |            |    |        |               |                |          |            |                     |              |         |
| 402-01                 | 90424              |                  |            |    | 6      | 0.35          |                | 231      | 15.22      | \$375.00            | <del>⇔</del> | 6,709   |
| 402-02                 | 90424              |                  |            |    | 6      | 12            |                | 2000     | 60.28      | \$15.00             | <del>⇔</del> | 904     |
| Outside Shld'r.        |                    |                  |            |    |        |               |                |          |            |                     |              |         |
| 501-01.02              | 13320              | 2                | 0.75       | _  | 27     |               | 370.00         |          |            | \$50.00             | <del>⇔</del> | 18,500  |
| 313-03                 | 13320              | 2                | 0.330      | _  | 6      |               | 488.40         |          |            | \$10.00             | <del>⇔</del> | 4,884   |
| 303-01                 | 13320              | 2                | 0.25       | _  | 27     | 2.03          |                |          | 250.37     | \$13.50             | <del>⇔</del> | 3,380   |
| 303-01                 | 13320              | 2                | 1.30       | _  | 27     | 2.03          |                |          | 1301.91    | \$13.50             | <del>⇔</del> | 17,576  |
| 303-01                 | 13320              | 5.57             |            |    | 27     | 2.03          |                |          | 5578.17    | \$13.50             | <del>⇔</del> | 75,305  |
| Conn. To SR 222        | Lgth/Area (sq.ft.) |                  | Depth (ft) |    | factor |               |                |          | Tons       |                     |              |         |
| 411-02.10 (Surf.)      | 212080             |                  | 0.104      | 27 | 3816   | 2000          |                |          | 1559       | \$60.00             | <del>⇔</del> | 93,519  |
| 307-02.08 (B-M2)       | 212080             |                  | 0.167      | 27 | 4068   | 2000          |                |          | 2668       | \$60.00             | <del>∨</del> | 980,091 |
| 307-02.01 (Gr. 'A')    | 212080             |                  | 0.292      | 27 | 4140   | 2000          |                |          | 4748       | \$60.00             | ₩            | 284,866 |
| 303-01                 | 212080             |                  | 0.833      | 27 | 2.03   |               |                |          | 13282      | \$14.00             | <del>⇔</del> | 185,954 |
| Outside ShId'r.        | 11260              | 12               | 1.255      | 27 | 2.03   |               |                |          | 12750      | \$14.00             | <del>⇔</del> | 178,494 |
|                        | 11260              | 4.85             | 1.115      | 27 | 2.03   |               |                |          | 4578       | \$14.00             | <del>⇔</del> | 64,094  |
| 411-01.07 ('E' Shldr.) | 11260              | 10               | 0.125      | 27 | 3708   | 2000          |                |          | 996        | \$60.00             | <del>⇔</del> | 57,989  |

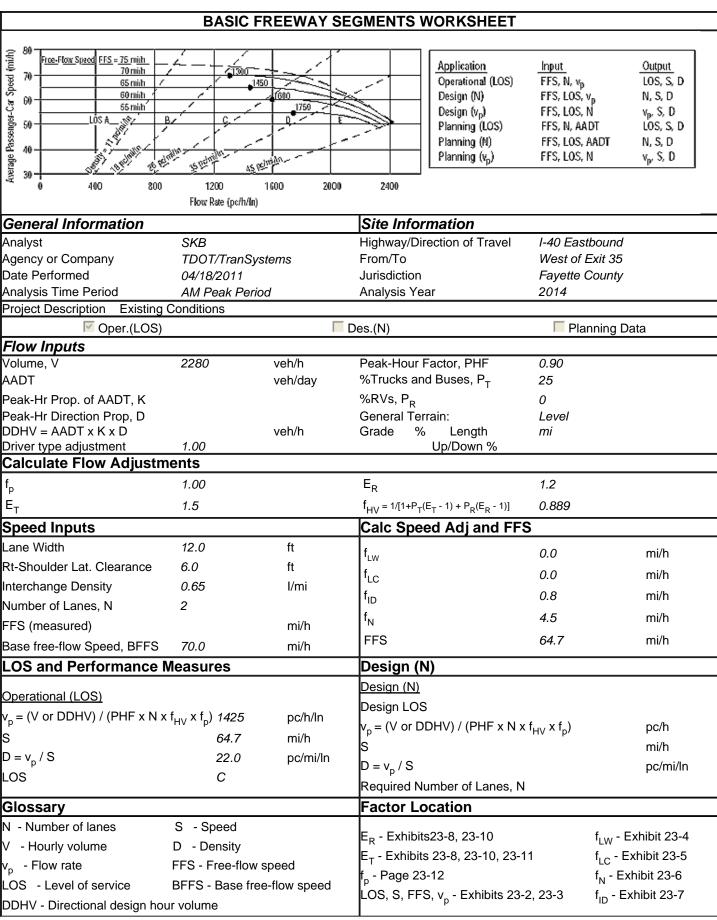
| _<br>_ |  |
|--------|--|
|        |  |
|        |  |

Concept 6

| Topsoil (203-07)                     |   |                      |           |                         |              |                 |        |                               |                |       |          |             |
|--------------------------------------|---|----------------------|-----------|-------------------------|--------------|-----------------|--------|-------------------------------|----------------|-------|----------|-------------|
| Based on 4:1 slope a<br>Length (ft.) | Based on 4:1 slope and 10' fill with 48' widening<br>Length (ft.) Slope Lgth.(ft.) Th | ening<br>Thk.(ft.)   | cy factor | cy                      | Cost (\$/cy) | Both Sides      |        |                               |                |       |          |             |
| 12,290                               | 41.2  | 0.5                  | 27        | 9376.8                  | \$9.00       | 2               |        |                               |                | Total | ₩        | 168,783     |
| Seeding (801-01)                     |   |                      |           |                         |              |                 |        |                               |                |       |          |             |
| Length (ft.)                         | Slope Lgth.(ft.)  |                      |           | sf                      | sf/unit      | Both Sides      | factor | nnits                         | Cost (\$/unit) |       |          |             |
| 12,290                               | 41.2  |                      |           | 506348                  | 1,000        | 2               | 1.25   | 1266                          | \$35.00        | Total | <b>↔</b> | 44,305      |
| Signalization                        |   |                      |           |                         |              |                 |        |                               |                |       |          |             |
| 2 Signals at Ramps                   |   |                      |           |                         |              |                 |        |                               |                | Total | \$       | 250,000     |
| Fencing                              |   |                      |           |                         |              |                 |        |                               |                |       |          |             |
| Length (ft.)                         | 707-02.01   |                      |           |                         | Cost (\$/ft) |                 |        |                               |                |       |          |             |
| 4030                                 |   |                      |           |                         | \$17.00      |                 |        |                               |                | Total | <b>↔</b> | 68,510      |
| Guardrail                            |   |                      |           |                         |              |                 |        |                               |                |       |          |             |
|                                      |   | (Length (ft)<br>1500 |           | Cost (\$/ft)<br>\$17.50 |              | (# Anch.)<br>10 |        | Cost (\$/Anch.)<br>\$2,500.00 |                |       |          |             |
|                                      |   |                      |           | \$26,250.00             |              |                 |        | \$25,000.00                   |                | Total |          | \$51,250.00 |
|                                      |   |                      |           |                         |              |                 |        |                               |                |       |          |             |

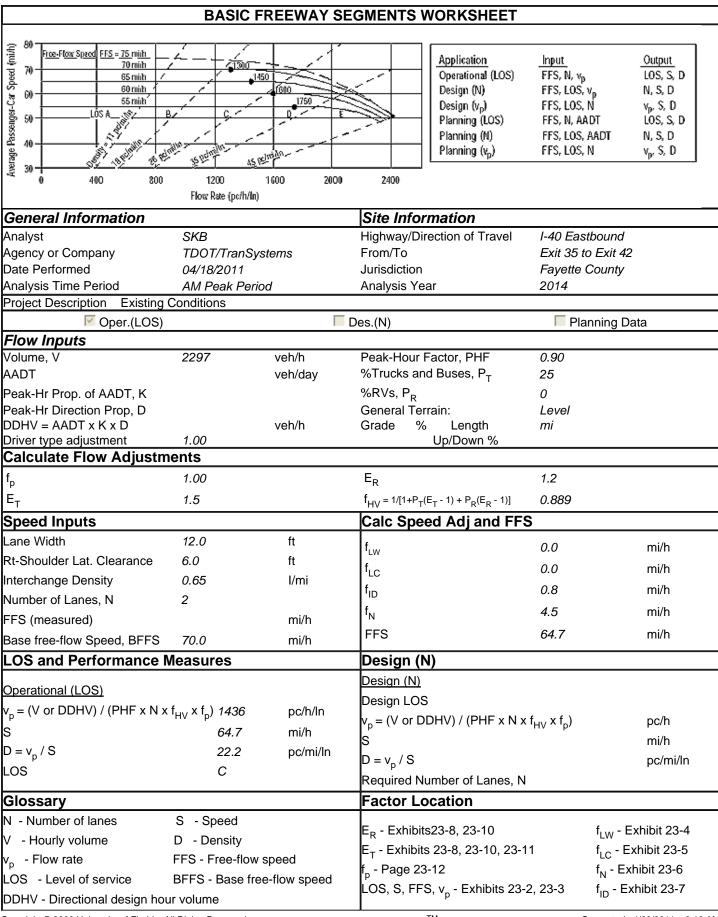
## APPENDIX D HIGHWAY CAPACITY ANALYSIS OUTPUT FILES

# Freeway Mainline Segments Highway Capacity Software Computer Printouts



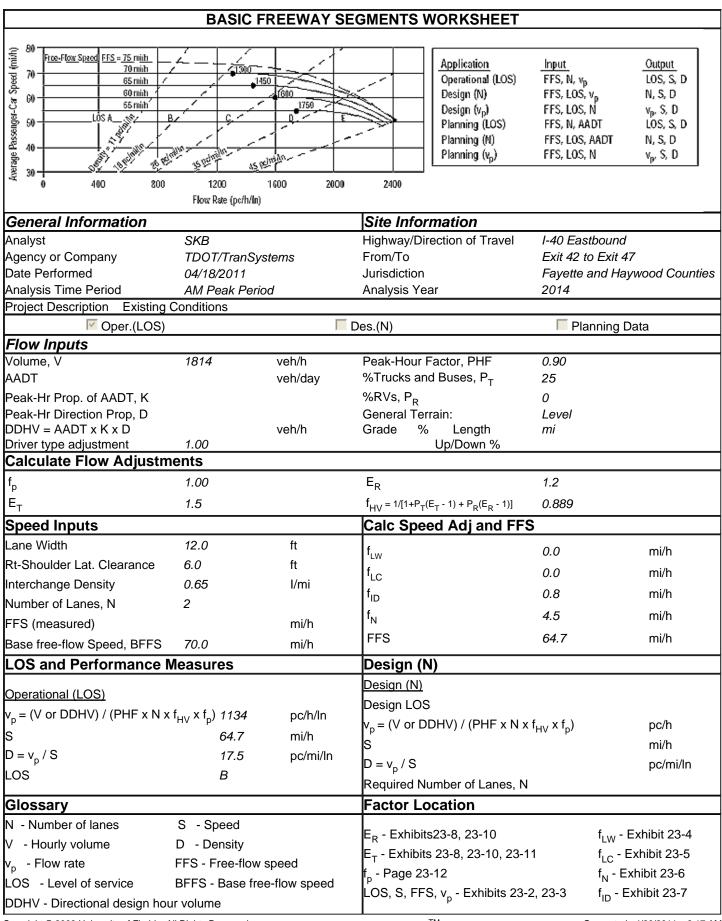
HCS+TM Version 5.4

Generated: 4/20/2011 8:14 AM



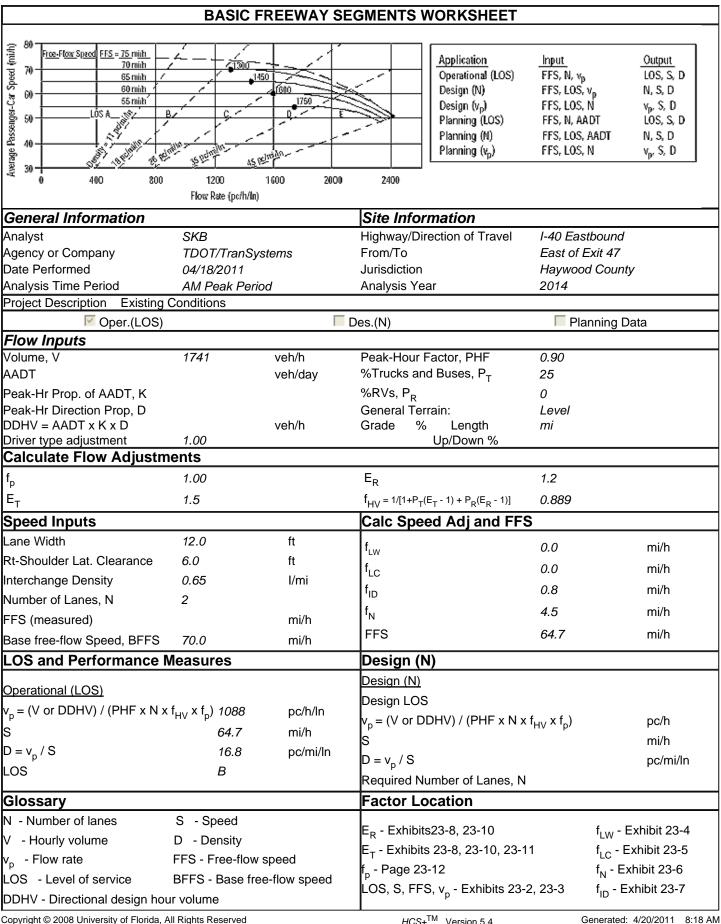
HCS+TM Version 5.4

Generated: 4/20/2011 8:16 AM

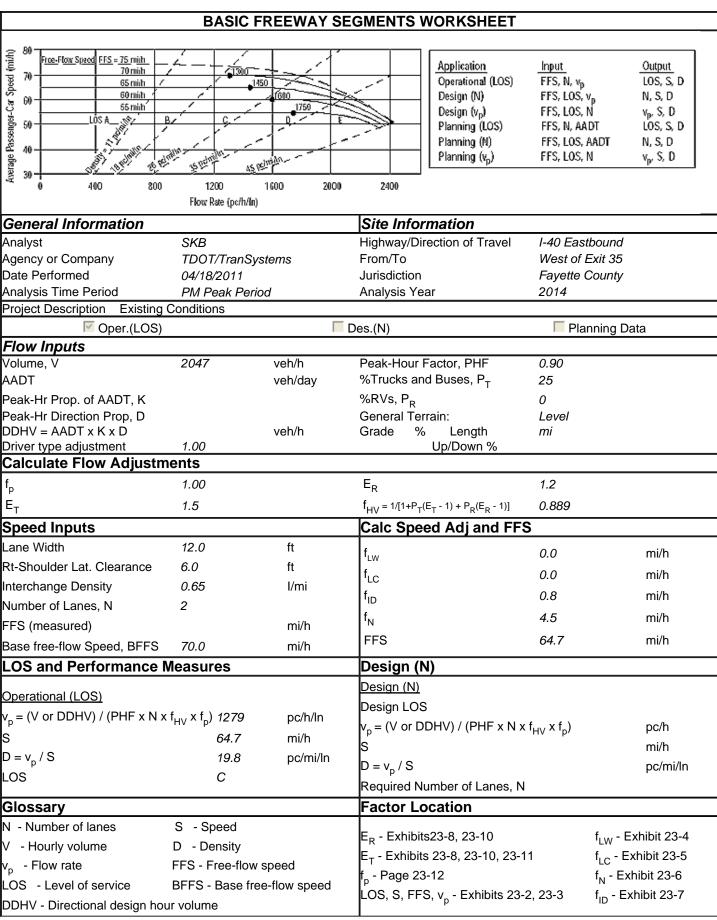


HCS+TM Version 5.4

Generated: 4/20/2011 8:17 AM

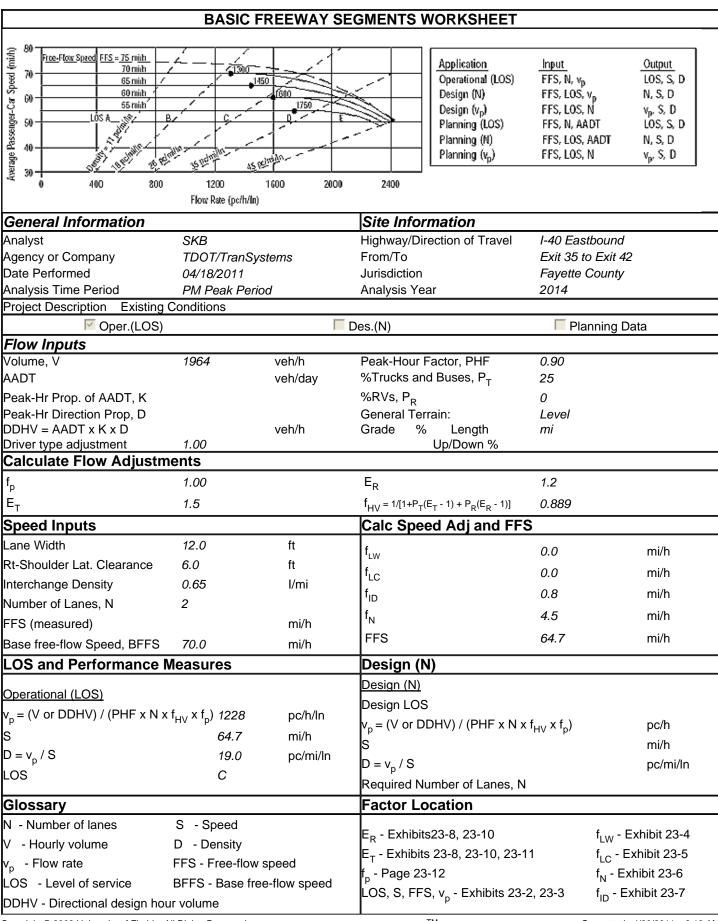


HCS+TM Version 5.4



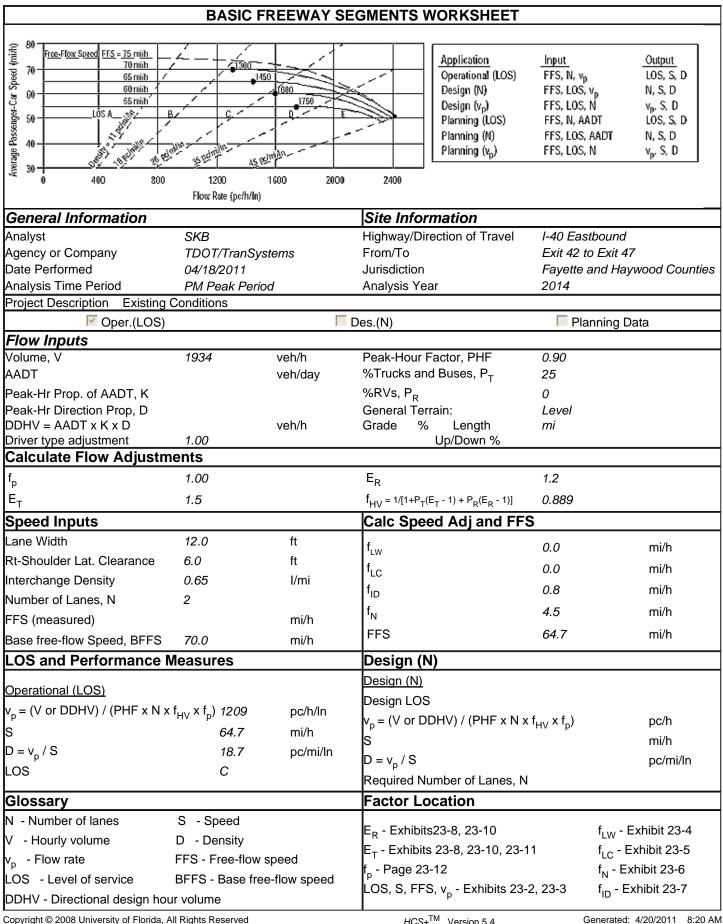
HCS+TM Version 5.4

Generated: 4/20/2011 8:19 AM

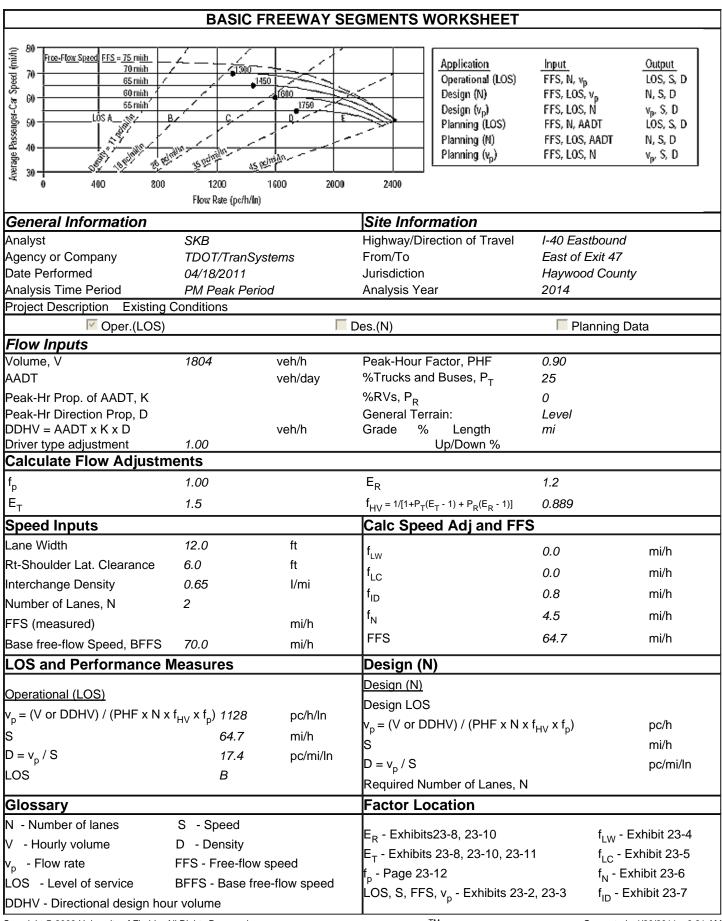


HCS+TM Version 5.4

Generated: 4/20/2011 8:19 AM

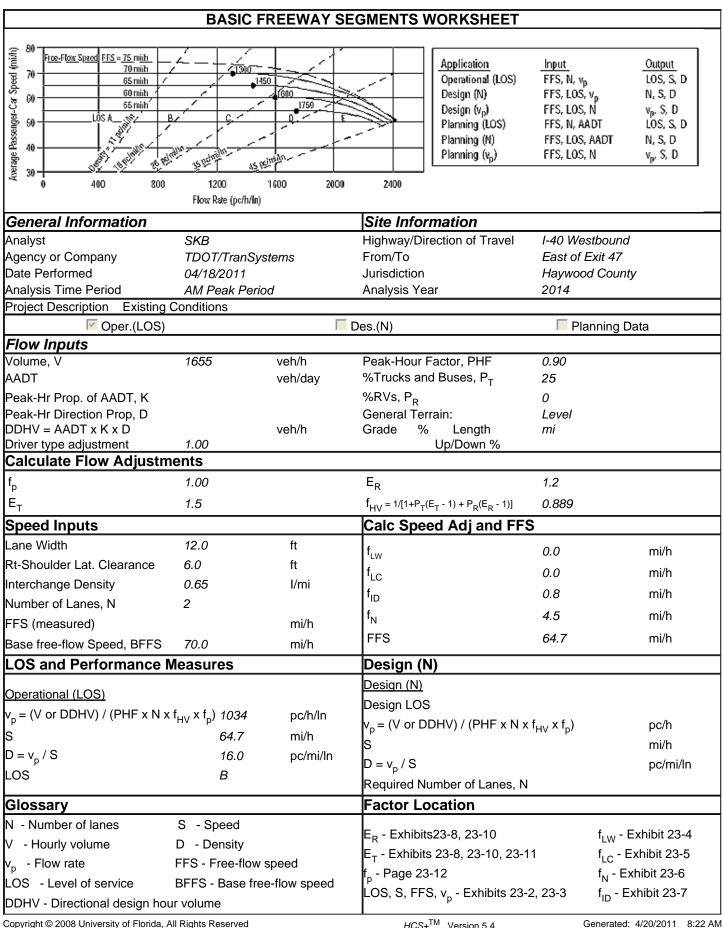


HCS+TM Version 5.4

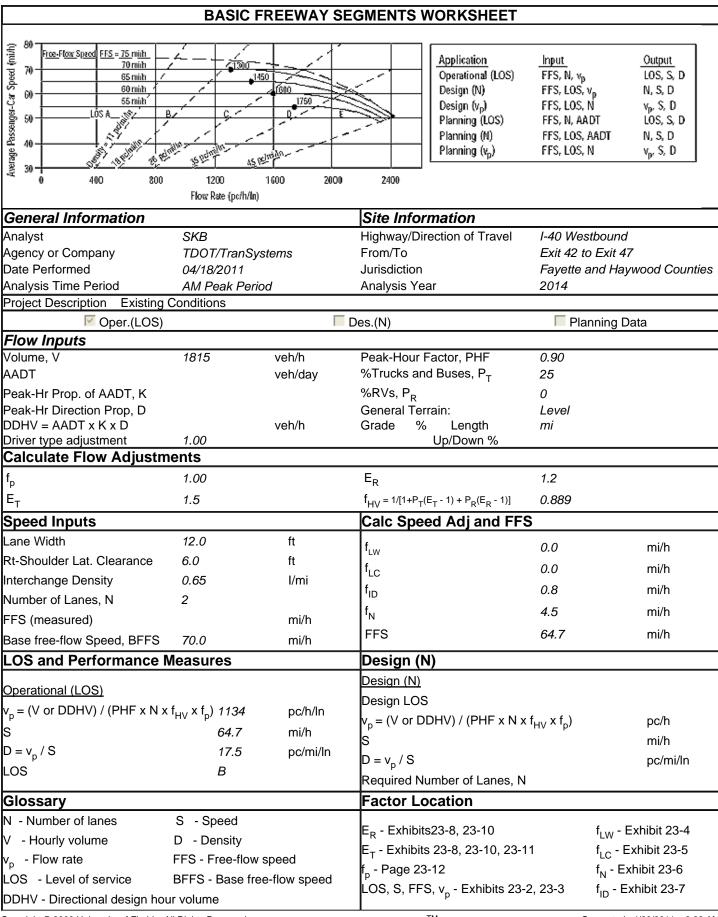


HCS+TM Version 5.4

Generated: 4/20/2011 8:21 AM

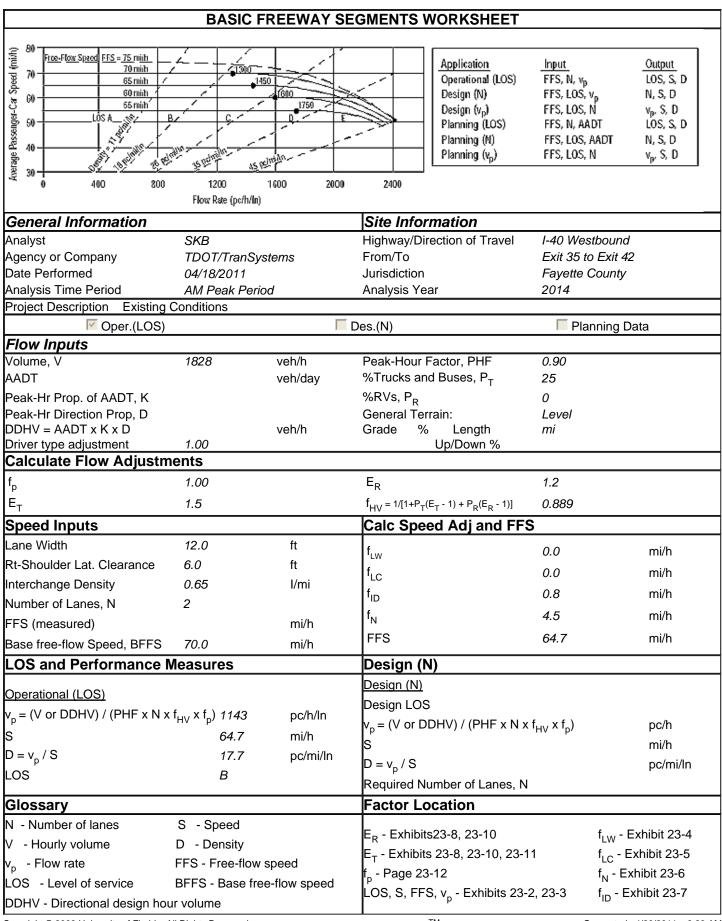


HCS+TM Version 5.4



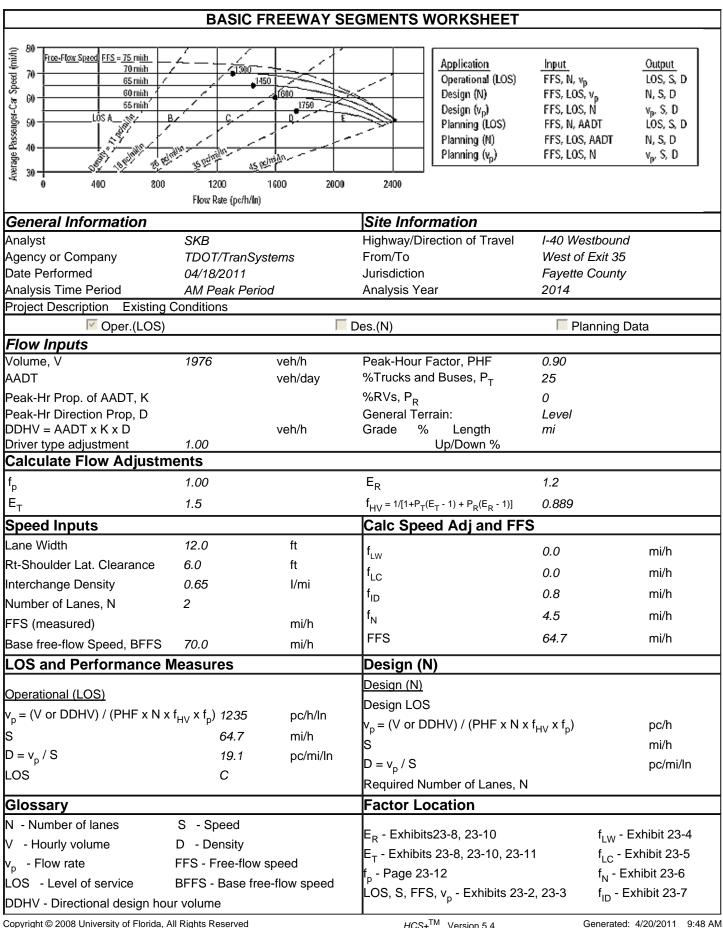
HCS+TM Version 5.4

Generated: 4/20/2011 8:22 AM

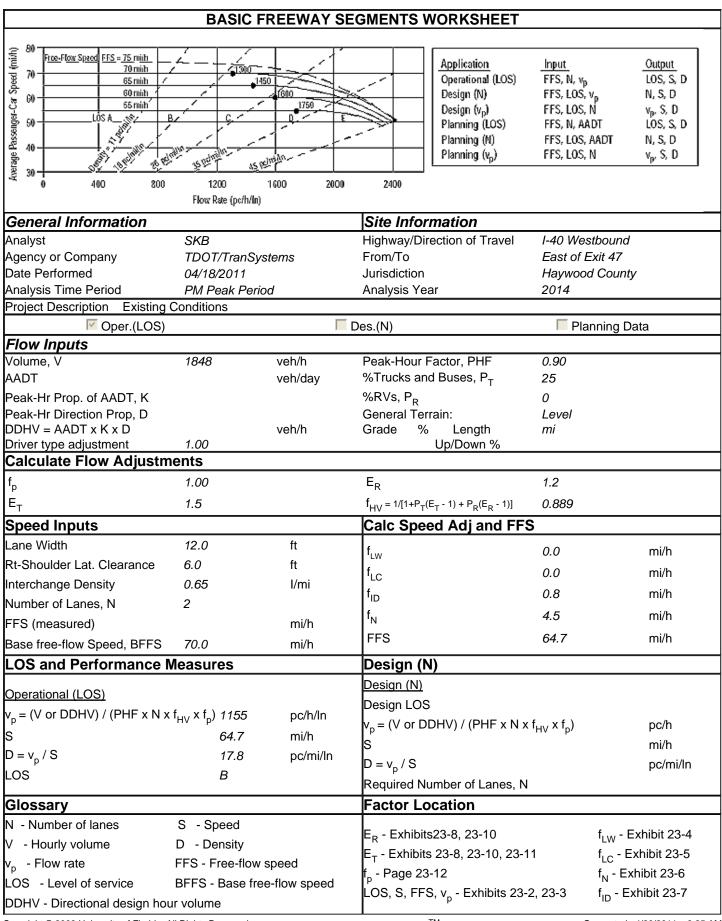


HCS+TM Version 5.4

Generated: 4/20/2011 8:23 AM

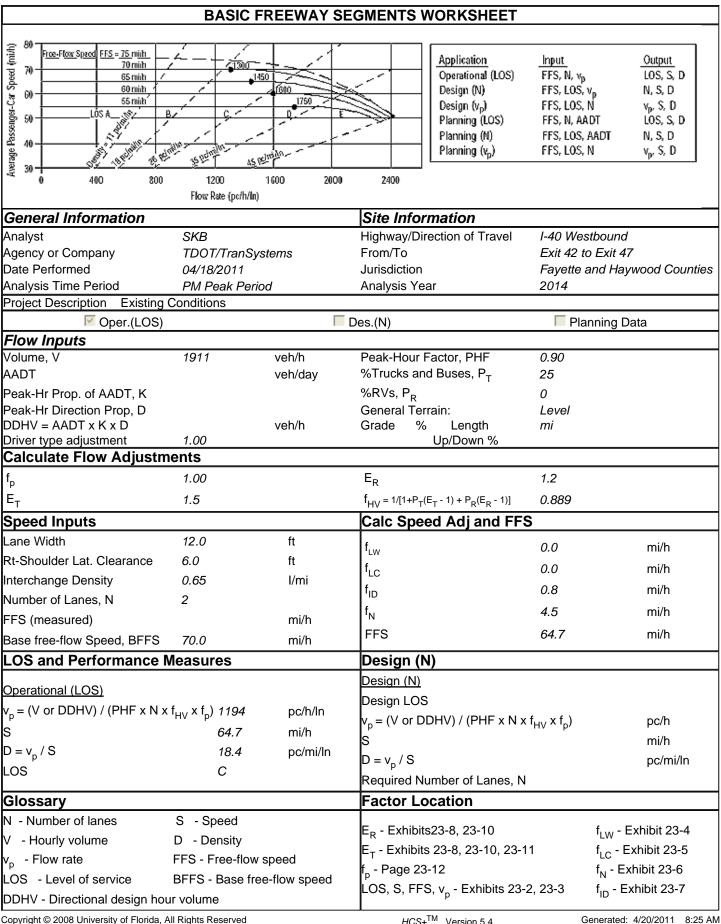


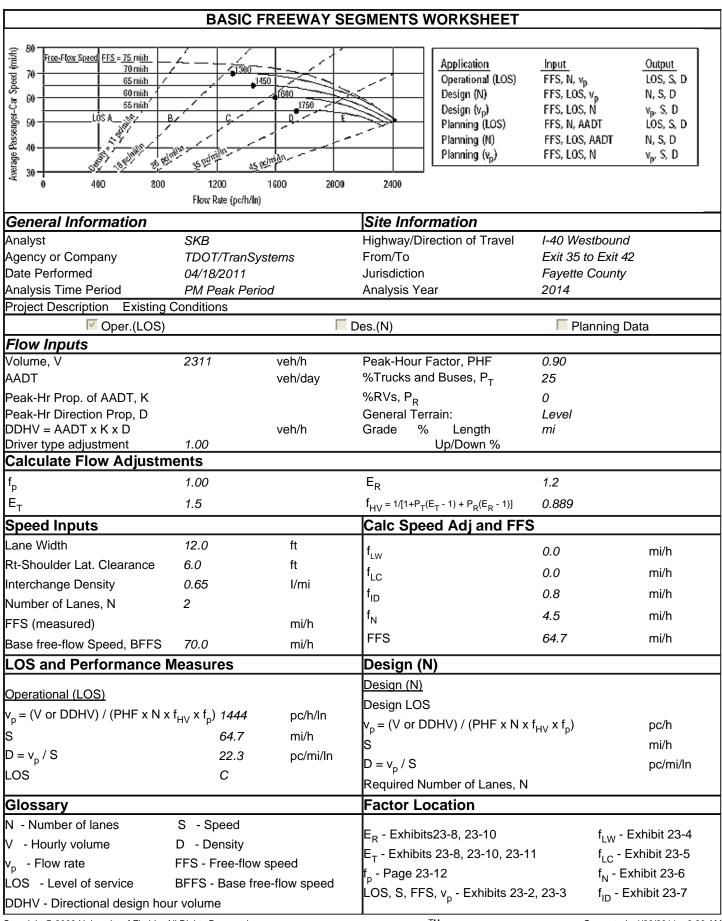
HCS+TM Version 5.4



HCS+TM Version 5.4

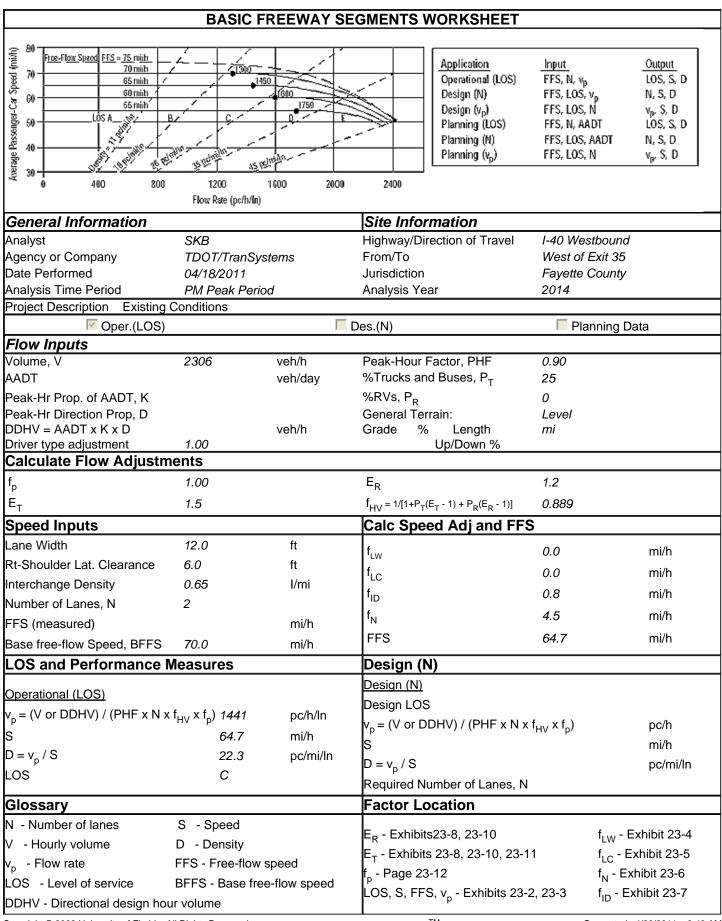
Generated: 4/20/2011 8:25 AM





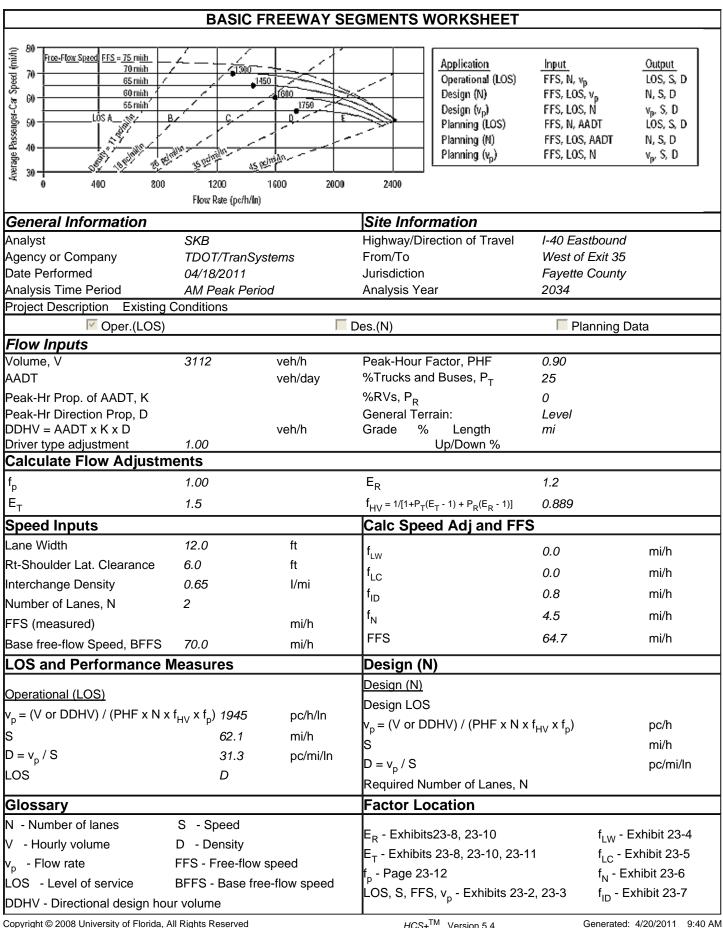
HCS+TM Version 5.4

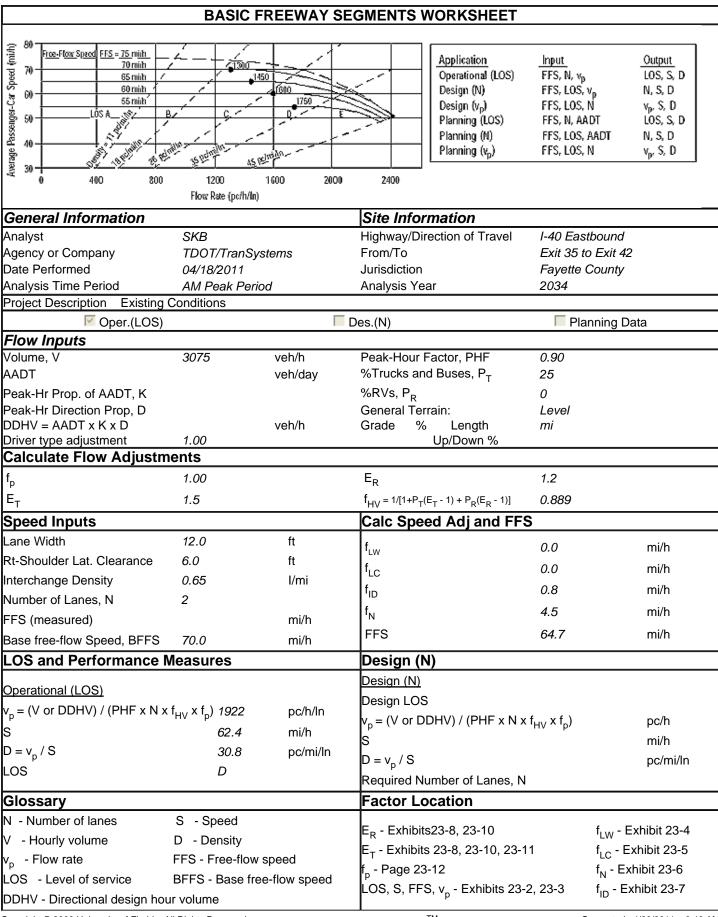
Generated: 4/20/2011 8:26 AM



HCS+TM Version 5.4

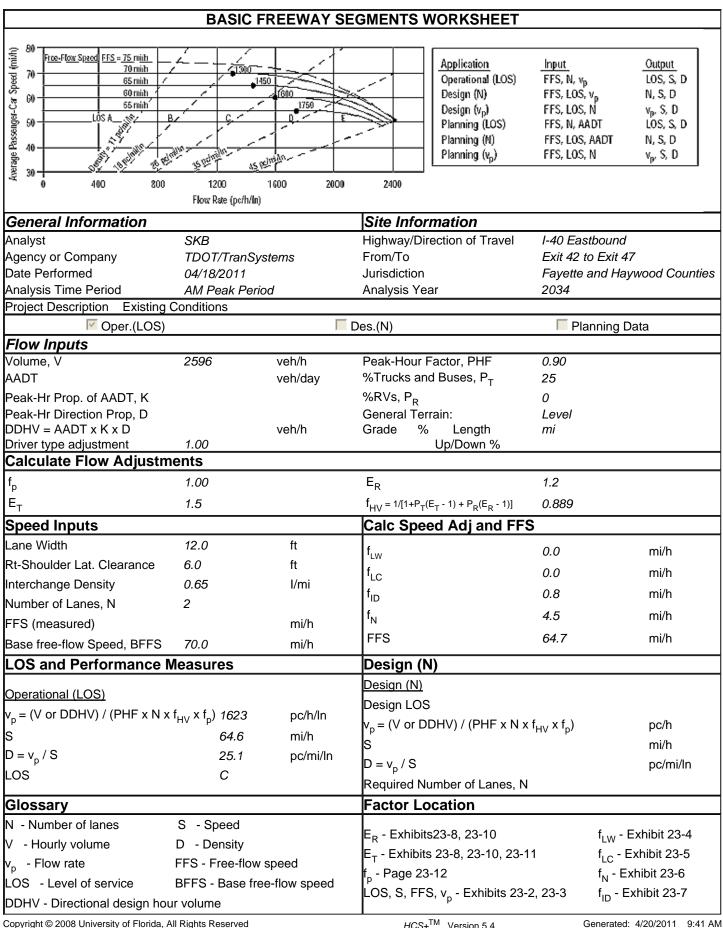
Generated: 4/20/2011 9:49 AM

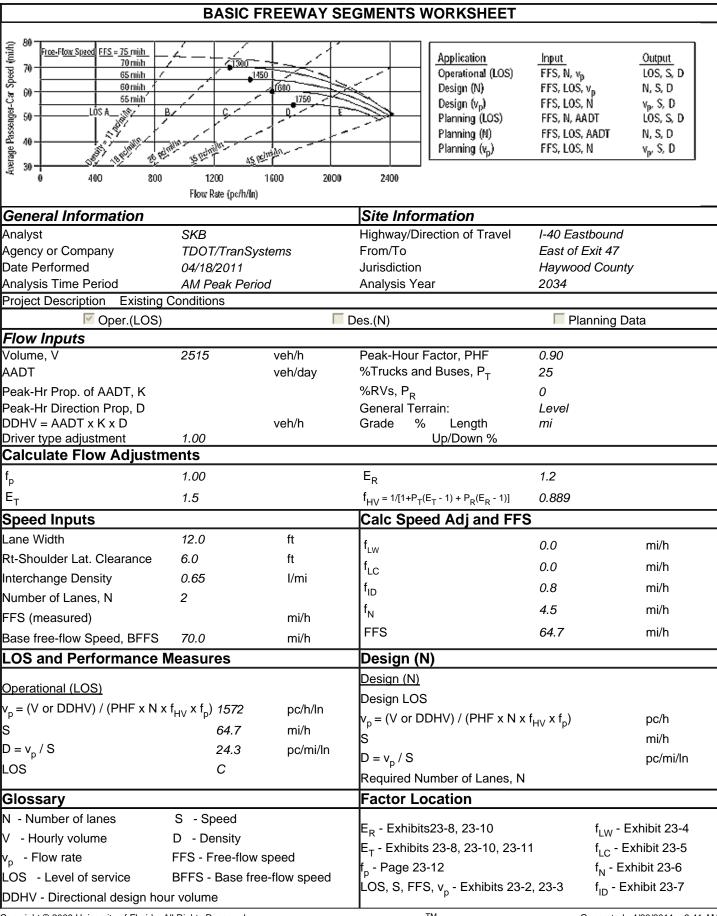




HCS+TM Version 5.4

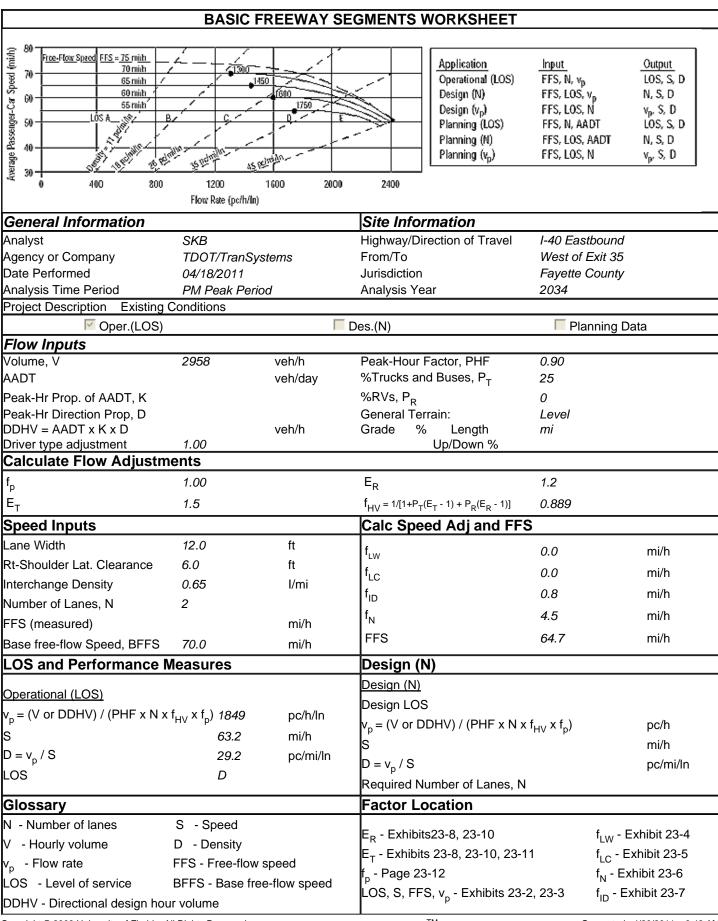
Generated: 4/20/2011 9:40 AM





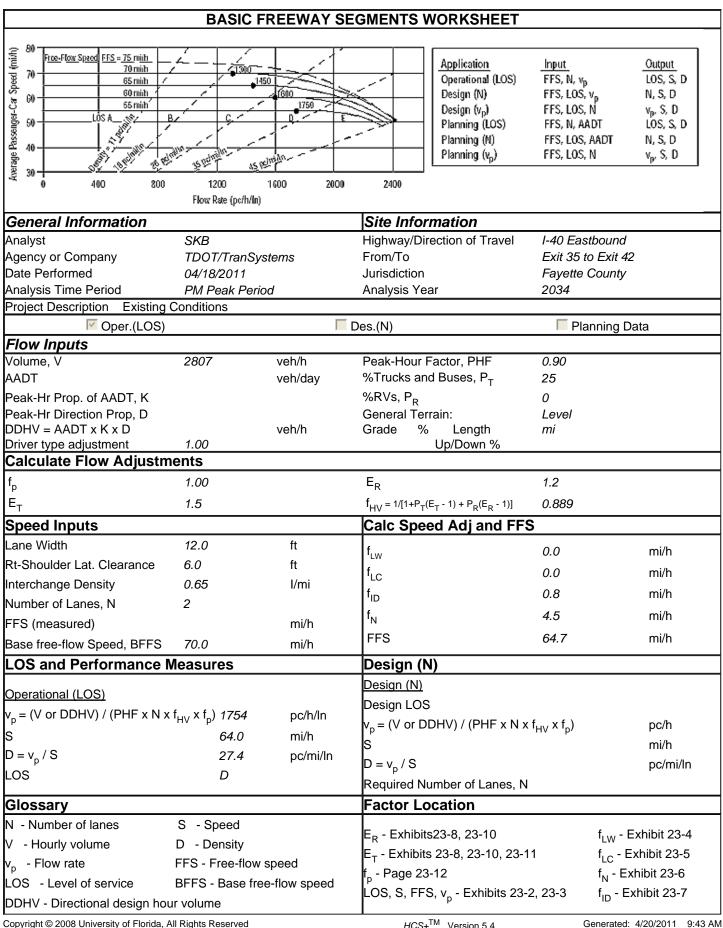
HCS+TM Version 5.4

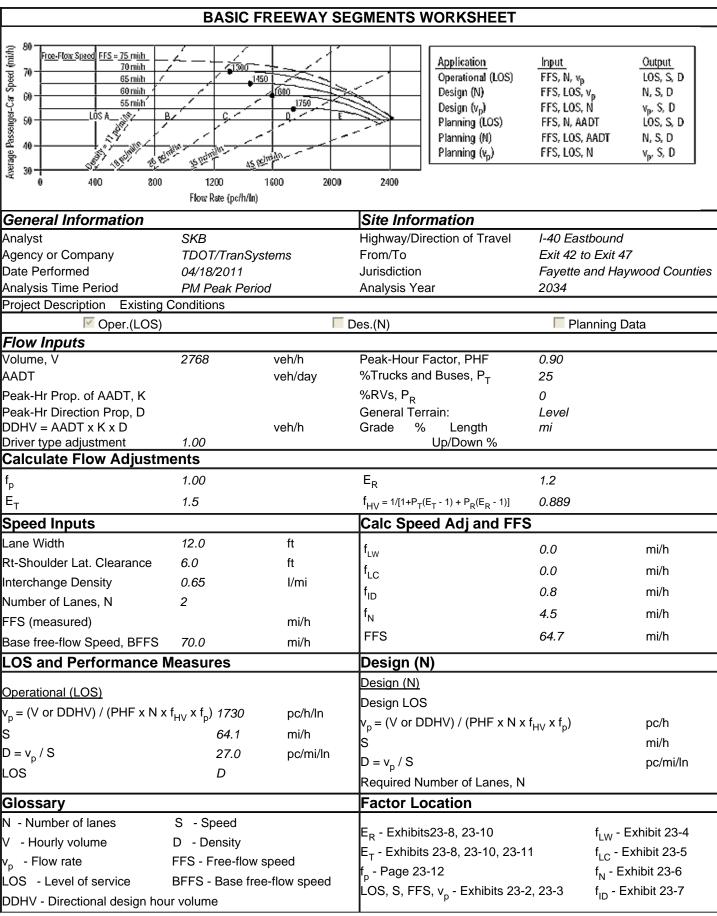
Generated: 4/20/2011 9:41 AM



HCS+TM Version 5.4

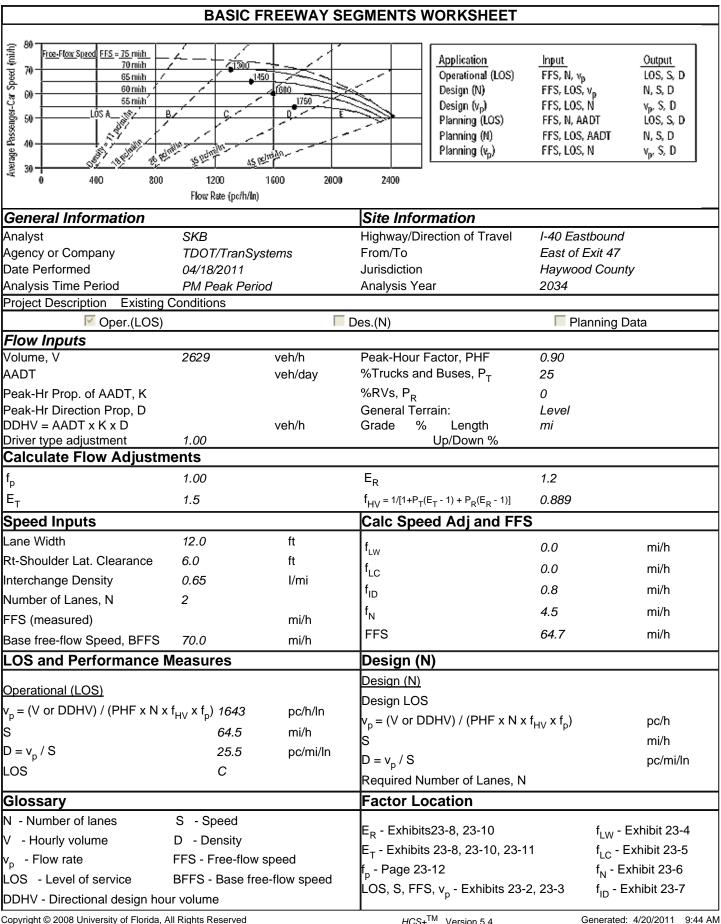
Generated: 4/20/2011 9:42 AM

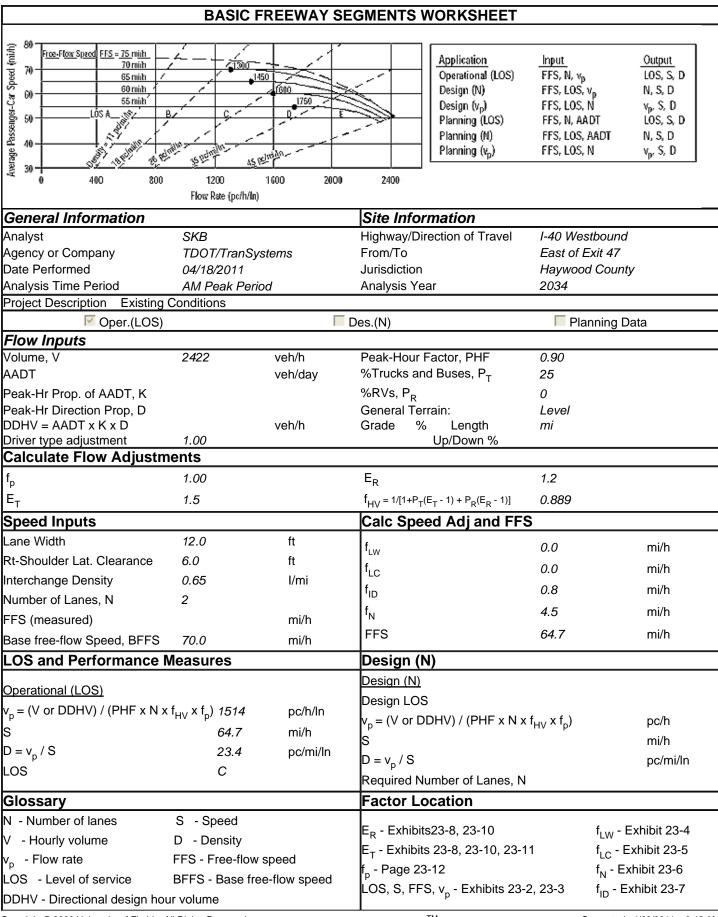




HCS+TM Version 5.4

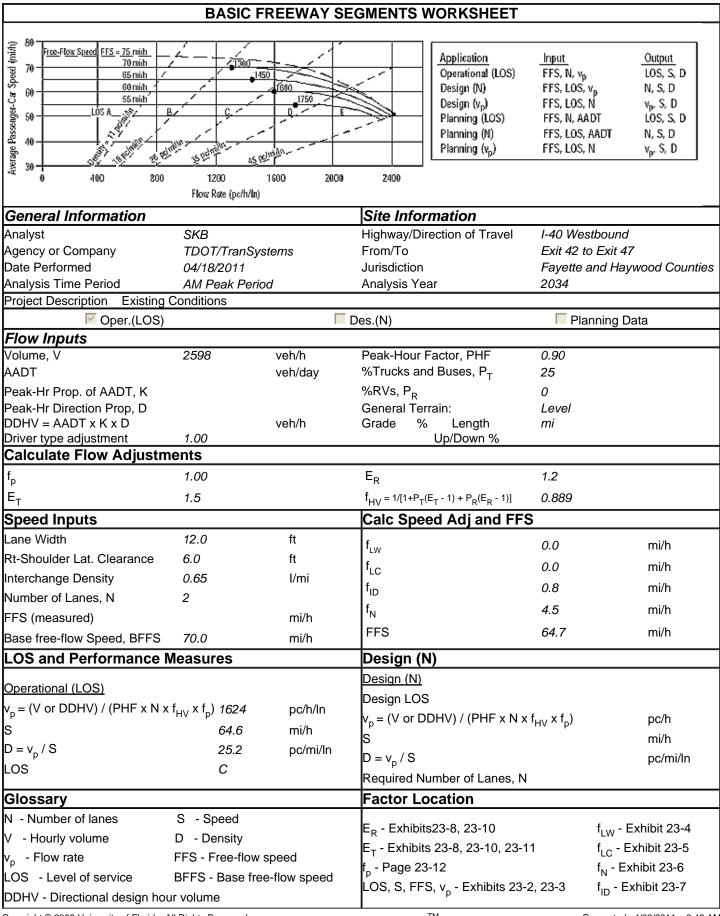
Generated: 4/20/2011 9:44 AM





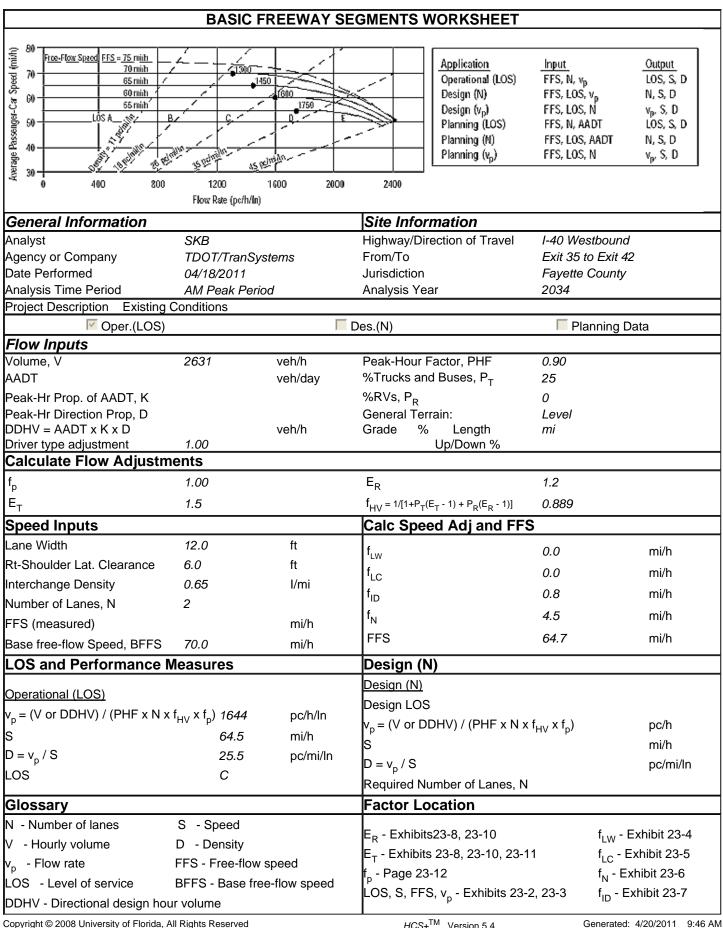
HCS+TM Version 5.4

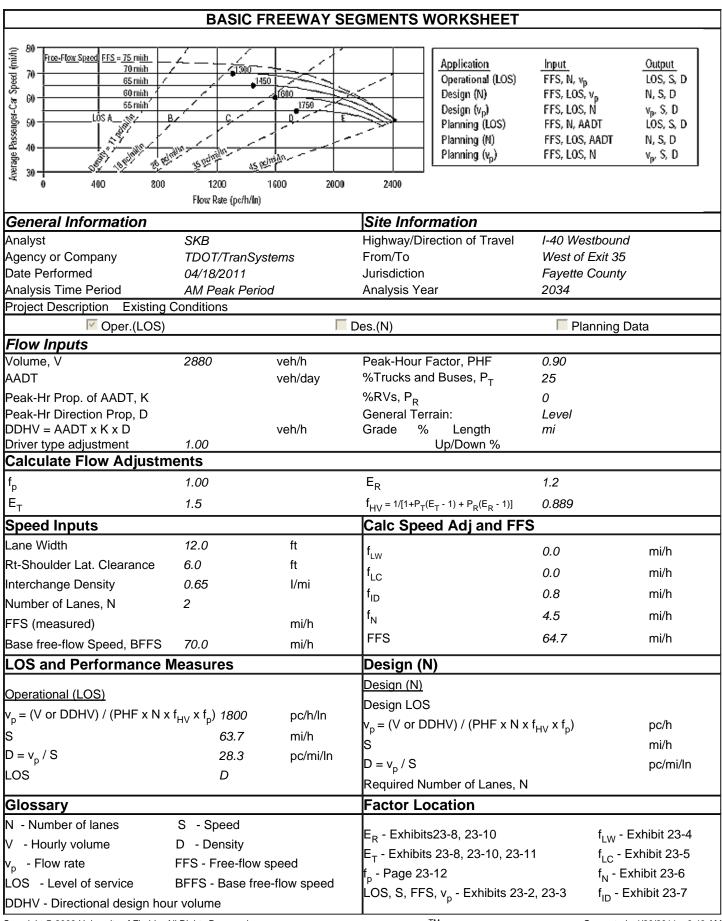
Generated: 4/20/2011 9:45 AM



HCS+TM Version 5.4

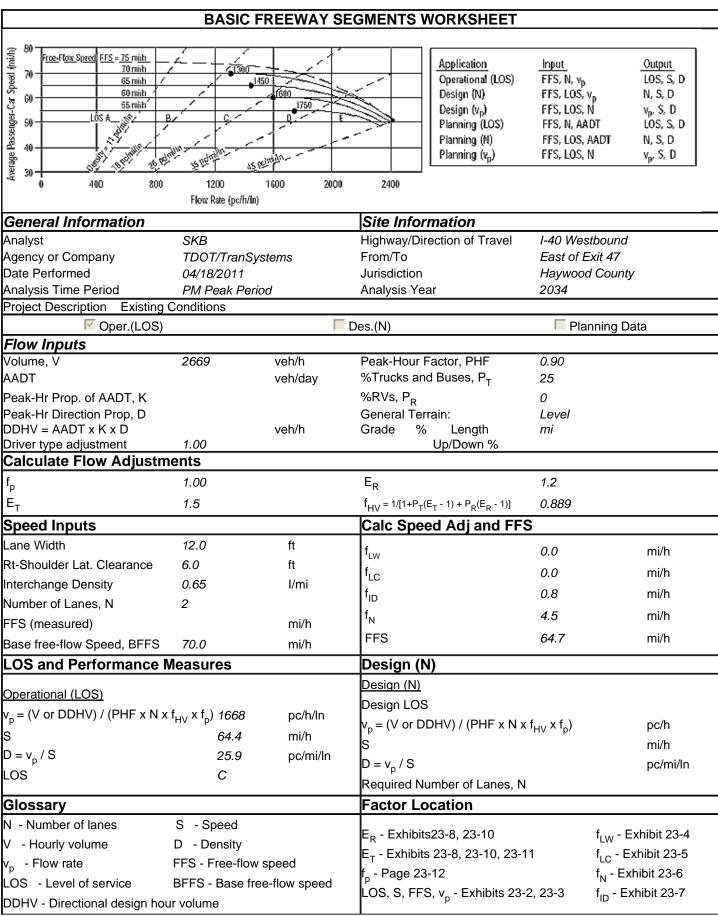
Generated: 4/20/2011 9:46 AM





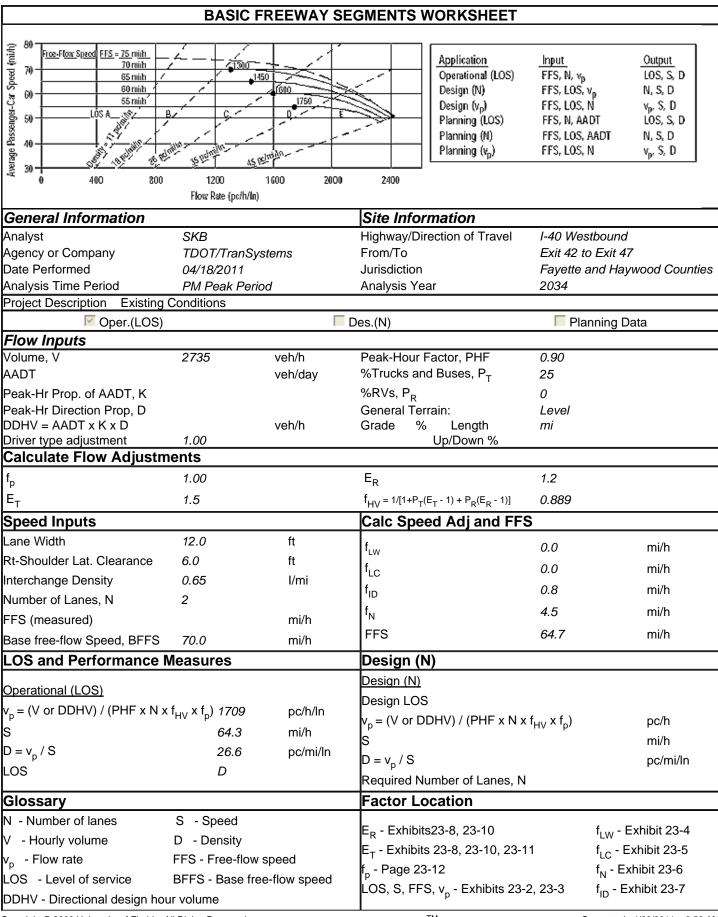
HCS+TM Version 5.4

Generated: 4/20/2011 9:49 AM



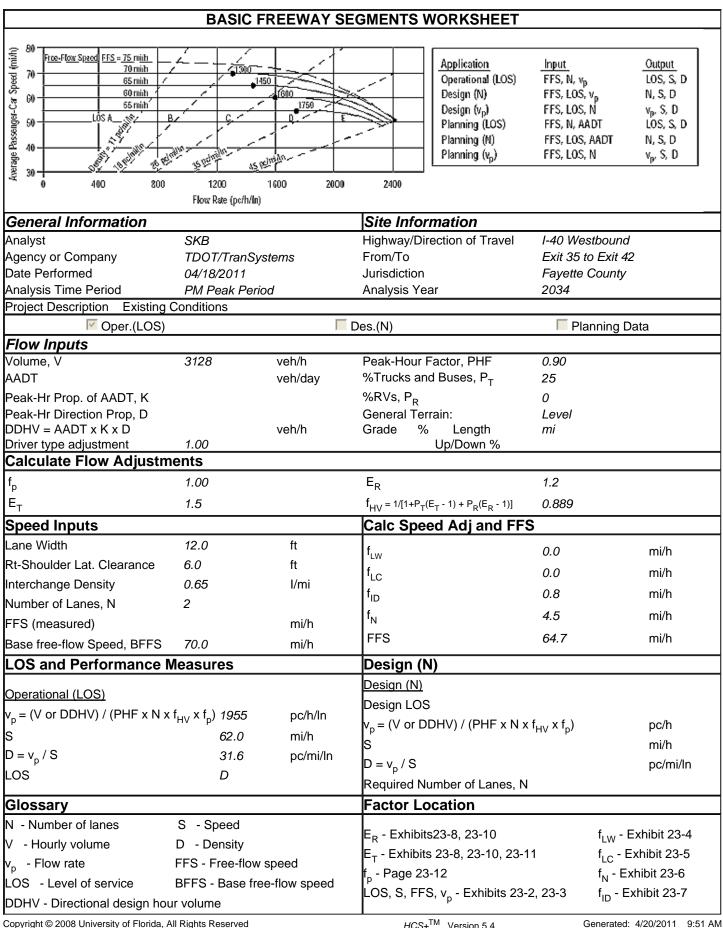
HCS+TM Version 5.4

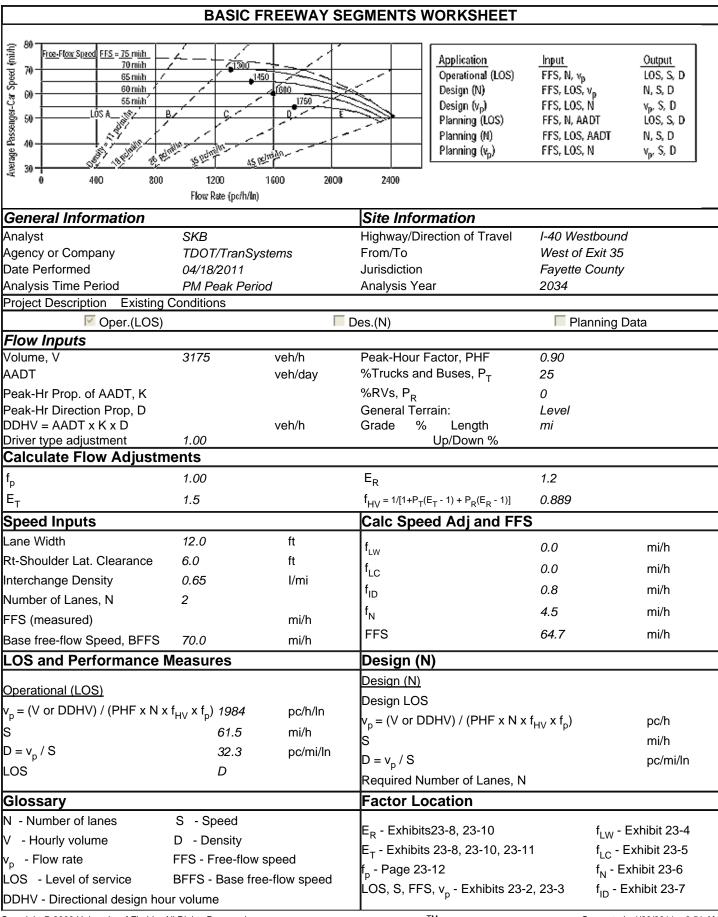
Generated: 4/20/2011 9:50 AM



HCS+TM Version 5.4

Generated: 4/20/2011 9:50 AM





HCS+TM Version 5.4

Generated: 4/20/2011 9:51 AM

## Merge Ramps Highway Capacity Software Computer Printouts

| RAMPS AN                             | D RAMP JUNG  | CTIONS W  | ORKSHE   | EET   |  |                                 |                                      |  |  |
|--------------------------------------|--|---|--|---|--|---------------------------------|--------------------------------------|--|--|
|                                      |  |   |  |   |  |                                 |                                      |  |  |
| SKB                                  | Fre  |   |  | I-40 EB   |  |                                 |                                      |  |  |
|                                      |  | ,   |  |   |  |                                 |                                      |  |  |
| 04/18/2011                           |  | risdiction  |  |   |  |                                 |                                      |  |  |
| AM Peak Period                       | An   | alysis Year   |  |   |  |                                 |                                      |  |  |
|                                      |  |   |  |   |  |                                 |                                      |  |  |
|                                      |  |   |  |   |  |                                 |                                      |  |  |
| Terrain: Le                          | vel  |   |  |   |  | Downstre<br>Ramp                | am Adj                               |  |  |
|                                      |  |   |  |   |  | ✓ Yes                           | ☐ On                                 |  |  |
|                                      |  |   |  |   |  | □ No                            | ✓ Off                                |  |  |
|                                      |  |   |  |   |  | L <sub>down</sub> =             | 2000 ft                              |  |  |
|                                      | $S_{FF} = 70.0 \text{ mph}$  |   | $S_{FR} = 3$                                   | 35.0 mph  |  | \/ _                            | 104 l- /l-                           |  |  |
|                                      | Sketch (s  | show lanes, L <sub>A</sub> ,  | $L_{D'}V_{R'}V_{f}$                            |   |  | v <sub>D</sub> =                | 184 <b>veh/h</b>                     |  |  |
| Under Base                           | Conditions   |   |  |   |  | •                               |                                      |  |  |
| I DUL                                | Terrain  | %Truck  | %Rv  | f <sub>HV</sub>   | f <sub>p</sub>                         | v = V/PHI                       | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |
|                                      | Level  | 25  | 0  | 0.889   | 1.00                                   |                                 | 2871                                 |  |  |
| 0.90                                 | Level  | 3   | 0  | 0.985   | 1.00                                   |                                 | 227                                  |  |  |
|                                      |  |   |  |   |  |                                 |                                      |  |  |
|                                      | Level  | 3   | 0  | 0.985   | 1.00                                   |                                 | 208                                  |  |  |
| Merge Areas                          | S  |   |  |   | Diverge Areas                          | S                               |                                      |  |  |
|                                      |  |   | Estimati                                       | ion of v <sub>12</sub>  |  |                                 |                                      |  |  |
| = V <sub>E</sub> ( P <sub>EM</sub> ) |  |   |  | V <sub>12</sub>   | = V <sub>D</sub> + (V <sub>E</sub> - \ | / <sub>B</sub> )P <sub>ED</sub> |                                      |  |  |
|                                      | or 25-3)   |   | L <sub>50</sub> =                              | 12  |  |                                 | 9)                                   |  |  |
| •                                    | ·  |   | l_   |   |  |                                 | •                                    |  |  |
| -                                    | ation (Exhibit 20-0)   |   |  |   |  | quation (Exhibit 25-12)         |                                      |  |  |
| •                                    |  |   |  |   | •                                      |                                 |                                      |  |  |
|                                      | n 25-4 or 25-5)  |   |  |   |  |                                 | 5-16)                                |  |  |
| Tyes 🗹 No                            |  |   |  |   |  |                                 |                                      |  |  |
| TYes ✓ No                            |  |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No |   |  |                                 |                                      |  |  |
| pc/h (Equation :                     | 25-8)  |   | If Yes, V <sub>12a</sub> =                     | :   | pc/h (Equat                            | ion 25-18)                      |                                      |  |  |
|                                      |  |   | Capacit  | v Checks  |  |                                 |                                      |  |  |
| ual                                  | Capacity   | LOS F?  |  | 1   | al C                                   | apacity                         | LOS F?                               |  |  |
|                                      |  |   | V <sub>F</sub>                                 |   |  |                                 |                                      |  |  |
| 98 Exhibit 25-                       | 7  | No  | $V_{FO} = V_{F}$                               | - V <sub>D</sub>  | Exhibit 25                             | -14                             |                                      |  |  |
|                                      |  |   |  | K   |  |                                 | _                                    |  |  |
|                                      | <b>1</b>   |   | <u>. '` </u>                                   | . (   D/-   |  |                                 |                                      |  |  |
|                                      |  | Violetiana  | riow En  |   |  |                                 |                                      |  |  |
|                                      | 1  | i e   | V  | Actual  | 7                                      | sirable                         | Violation?                           |  |  |
|                                      |  | 110   | ·  | Service I   |  | ion (if no                      | )                                    |  |  |
|                                      |  |   | 1  |   |  | •                               | ,, i j                               |  |  |
| R + 0.00/0 V <sub>12</sub> -         | 0.00027 L <sub>A</sub>   |   |  |   | 0.0000 V <sub>12</sub> -               | o.ooa LD                        |                                      |  |  |
|                                      |  |   |  | •   |  |                                 |                                      |  |  |
|                                      |  |   | <u> </u>                                       |   | 4! - ·-                                |                                 |                                      |  |  |
|                                      |  |   |  |   | tion                                   |                                 |                                      |  |  |
| 1                                    |  |   | 1  | •   | 10)                                    |                                 |                                      |  |  |
|                                      | S <sub>R</sub> = 59.6 mph (Exhibit 25-19)  |   |  |   |  |                                 |                                      |  |  |
| 5-19)                                |  |   | I "  | •   |  |                                 |                                      |  |  |
| 5-19)<br>5-19)                       |  |   | I "  | ph (Exhibit 25-1<br>ph (Exhibit 25-1  |  |                                 |                                      |  |  |
|                                      | SKB TDOT/TranSyster 04/18/2011 AM Peak Period Conditions  Terrain: Le  Terrain: Le | SKB From TDOT/TranSystems Ju 04/18/2011 Ju AM Peak Period An Conditions  Terrain: Level  Terrain: Level  Terrain: Level  Terrain  7 0.90 Level 1 0.90 Level 1 0.90 Level 2 0.90 Level 4 0.90 Level Merge Areas  2 = V <sub>F</sub> (P <sub>FM</sub> ) (Equation 25-2 or 25-3) .000 using Equation (Exhibit 25-5) 1871 pc/h 19 pc/h (Equation 25-4 or 25-5) 19 Yes No 19 No 19 No 19 Period Area  10 Under Base Conditions  Terrain  Terrain | SKB Freeway/Dir of Tr Junction   O4/18/2011    | SKB Freeway/Dir of Travel  Junction  Junisdiction  AM Peak Period Analysis Year    Terrain: Level | SKB                                    | Site   Information   SKB        | Site Information  SKB                |  |  |

| AMPS AND                           | RAMP JUNC   | CTIONS W  | ORKSHI   | EET  |  |                                 |                                      |  |
|------------------------------------|---|---|--|--|--|---------------------------------|--------------------------------------|--|
|                                    |   |   |  |  |  |                                 |                                      |  |
| В                                  |   |   |  | I-40 EB  |  |                                 |                                      |  |
|                                    |   | •   |  |  |  |                                 |                                      |  |
| 18/2011                            |   | risdiction  |  |  | ٧                                      |                                 |                                      |  |
| l Peak Period                      | An  | alysis Year   |  |  | ,                                      |                                 |                                      |  |
| ditions                            |   |   |  |  |  |                                 |                                      |  |
|                                    |   |   |  |  |  |                                 |                                      |  |
| Terrain: Leve                      | I   |   |  |  |  |                                 | am Adj                               |  |
|                                    |   |   |  |  |  | ✓ Yes                           | ☐ On                                 |  |
|                                    |   |   |  |  |  | □ No                            | ✓ Off                                |  |
|                                    |   |   |  |  |  | L <sub>down</sub> =             | 2000 ft                              |  |
| S                                  | FF = 70.0 mph   |   | $S_{FR} = 3$   | 35.0 mph   |  | \/ _                            | 220 l. /l-                           |  |
|                                    | Sketch (s   | show lanes, L <sub>A</sub>  | $L_{D}, V_{R}, V_{f}$  |  |  | v <sub>D</sub> =                | 239 <b>veh/h</b>                     |  |
| nder Base (                        | Conditions  |   |  |  |  |                                 |                                      |  |
| PHF                                | Terrain   | %Truck  | %Rv  | f <sub>HV</sub>  | f <sub>p</sub>                         | v = V/PH                        | F x f <sub>HV</sub> x f <sub>p</sub> |  |
| 0.90                               | Level   | 25  | 0  | 0.889  | 1.00                                   | 1                               | 2455                                 |  |
| 0.90                               | Level   | 3   | 0  | 0.985  | 1.00                                   |                                 | 176                                  |  |
| 1                                  |   |   |  |  |  |                                 |                                      |  |
| 0.90                               | Level   | 3   | 0  | 0.985  | 1.00                                   |                                 | 270                                  |  |
| Merge Areas                        |   |   |  |  |  | S                               |                                      |  |
|                                    |   |   | Estimat  | ion of v <sub>12</sub>   |  |                                 |                                      |  |
| / <sub>E</sub> ( P <sub>EM</sub> ) |   |   | 1  | V <sub>40</sub>  | = V <sub>D</sub> + (V <sub>F</sub> - V | V <sub>D</sub> )P <sub>ED</sub> |                                      |  |
|                                    | 25-3)   |   | L <sub>FO</sub> =  | 12   |  |                                 | 9)                                   |  |
|                                    | •   |   | L  |  | · ·                                    |                                 | •                                    |  |
|                                    | IOTT (LXIIINILZD-0)   |   |  |  |  | quation (Exhibit 25-12)         |                                      |  |
| -                                  |   |   |  |  | •                                      |                                 |                                      |  |
|                                    | 25-4 or 25-5)   |   |  |  |  |                                 | 5-16)                                |  |
|                                    |   |   |  |  |  |                                 |                                      |  |
| 'es 🗹 No                           |   |   | Is V <sub>3</sub> or V <sub>av</sub>   | <sub>34</sub> > 1.5 * V <sub>12</sub> /2   | ☐ Yes ☐ N                              | ٧o                              |                                      |  |
| n (Equation 25                     | -8)   |   | If Yes,V <sub>12a</sub> =  | =  | pc/h (Equa                             | tion 25-18)                     |                                      |  |
|                                    |   |   | Capacit  | y Checks   |  |                                 |                                      |  |
| С                                  | apacity   | LOS F?  |  | ı ı  | ıal (                                  | Capacity                        | LOS F?                               |  |
|                                    |   |   | V <sub>F</sub>   |  |  |                                 |                                      |  |
| Exhibit 25-7                       |   | No  |  | - V <sub>D</sub>   | Exhibit 2!                             | 5-14                            |                                      |  |
|                                    |   |   |  | K  |  |                                 |                                      |  |
| Influence A                        | <u> </u>  | <u> </u>  | <u> </u>   | toring Di  |  |                                 |                                      |  |
|                                    |   | Violetian?  | riow En  |  |  |                                 |                                      |  |
|                                    |   |   | V  | ACIUAI   | _                                      |                                 | Violation?                           |  |
|                                    |   | 110   | ->   | f Sarvice !  |  |                                 | )                                    |  |
|                                    |   |   |  |  |  | •                               | ,, i j                               |  |
| - 0.0070 V <sub>12</sub> - 0.0     | JUUZI LA  |   |  |  | - 0.0000 V <sub>12</sub> -             | o.oos LD                        |                                      |  |
|                                    |   |   |  | ,  |  |                                 |                                      |  |
|                                    |   |   | <u> </u>   |  | 41                                     |                                 |                                      |  |
|                                    |   |   |  |  | tion                                   |                                 |                                      |  |
|                                    |   |   | $D_{s} = (E$   | •  |  |                                 |                                      |  |
|                                    |   | S <sub>R</sub> = 60.5 mph (Exhibit 25-19)   |  |  |  |                                 |                                      |  |
| ')                                 |   |   | '`   | ph (Exhibit 25-  |  |                                 |                                      |  |
| ))<br>)                            |   |   | 1 ''   | ph (Exhibit 25-<br>ph (Exhibit 25-   |  |                                 |                                      |  |
|                                    | B OT/TranSystems /18/2011 1 Peak Period ditions  Terrain: Leve  S  Terrain: Leve  PHF 0.90 0.90 0.90 0.90 Merge Areas  (F (P <sub>FM</sub> ) Juation 25-2 or using Equation pc/h (Ch (Equation 25) (F S No (F S N | B Free OT/TranSystems Jun /18/2011 Jun /1 Peak Period An iditions    Terrain: Level | Site Infor  B Freeway/Dir of Tr OT/TranSystems Junction (18/2011 Jurisdiction In Peak Period Analysis Year Inditions    Terrain: Level | Site Information   Freeway/Dir of Travel   OT/TranSystems   Junction   Jurisdiction   Peak Period   Analysis Year   dittions | Freeway/Dir of Travel                  | Site Information   B            | Site Information   B                 |  |

|                                | RAI                              | MPS AND                      | RAMP JUNC                | CTIONS W                    | ORKSH   | EET                     |                            |                             |                                      |  |  |
|--------------------------------|----------------------------------|------------------------------|--------------------------|-----------------------------|---|-------------------------|----------------------------|-----------------------------|--------------------------------------|--|--|
| General Infor                  |                                  |                              |                          | Site Infor                  |   |                         |                            |                             |                                      |  |  |
| Analyst                        | SKB                              |                              | Fre                      | eway/Dir of Tr              | avel  | I-40 WB                 |                            |                             |                                      |  |  |
| Agency or Company              |                                  | T/TranSystems                |                          | nction                      |   | Exit 35                 |                            |                             |                                      |  |  |
| Date Performed                 | 04/18                            | -                            |                          | isdiction                   |   | Fayette Cour            | nty                        |                             |                                      |  |  |
| Analysis Time Period           | AM P                             | eak Period                   | Ana                      | alysis Year                 |   | 2014                    | ,                          |                             |                                      |  |  |
| Project Description            |                                  |                              |                          |                             |   |                         |                            |                             |                                      |  |  |
| Inputs                         |                                  |                              |                          |                             |   |                         |                            |                             |                                      |  |  |
| Upstream Adj Ramp              |                                  | Terrain: Leve                | l                        |                             |   |                         |                            | Downstre<br>Ramp            | eam Adj                              |  |  |
| ☐ Yes ☐ On                     |                                  |                              |                          |                             |   |                         |                            | ✓ Yes                       | ☐ On                                 |  |  |
| ✓ No                           |                                  |                              |                          |                             |   |                         |                            | □ No                        | ✓ Off                                |  |  |
| L <sub>up</sub> = ft           |                                  |                              |                          |                             |   |                         |                            | L <sub>down</sub> =         | 2000 ft                              |  |  |
|                                |                                  | S                            | <sub>FF</sub> = 70.0 mph |                             | S <sub>FR</sub> = 3   | 35.0 mph                |                            |                             |                                      |  |  |
| $V_u = veh/h$                  |                                  |                              | Sketch (s                | how lanes, L <sub>A</sub> , | $L_{D_f}V_{D_f}V_f$   |                         |                            | $V_D =$                     | 126 <b>veh/h</b>                     |  |  |
| Conversion to                  | pc/h Und                         | der Base (                   |                          | A                           | DKF   |                         |                            |                             |                                      |  |  |
|                                | V                                |                              |                          | %Truck                      | 0/ Dv   | f                       | f f                        | V – V/DH                    | Evf vf                               |  |  |
| (pc/h)                         | (Veh/hr)                         | PHF                          | Terrain                  | % ITUCK                     | %Rv   | f <sub>HV</sub>         | f <sub>p</sub>             |                             | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway                        | 1976                             | 0.90                         | Level                    | 25                          | 0   | 0.889                   | 1.00                       |                             | 2470                                 |  |  |
| Ramp                           | 274                              | 0.90                         | Level                    | 3                           | 0   | 0.985                   | 1.00                       |                             | 309                                  |  |  |
| UpStream                       |                                  |                              |                          |                             | ļ   | <u> </u>                |                            |                             |                                      |  |  |
| DownStream                     | 126                              | 0.90                         | Level                    | 3                           | 0   | 0.985                   | 1.00                       |                             | 142                                  |  |  |
|                                |                                  | Merge Areas                  |                          |                             | ļ   |                         | Diverge Area               | as                          |                                      |  |  |
| Estimation of                  | V <sub>12</sub>                  |                              |                          |                             | ∟stimat   | ion of v <sub>1</sub>   | 2                          |                             |                                      |  |  |
|                                | V <sub>12</sub> = V <sub>F</sub> | (P <sub>FM</sub> )           |                          |                             |   | V.                      | $V_{12} = V_R + (V_F -$    | $V_R)P_{FD}$                |                                      |  |  |
| L <sub>EQ</sub> =              |                                  | ation 25-2 or                | 25-3)                    |                             | L <sub>EQ</sub> =   |                         |                            | 25-8 or 25-                 | 9)                                   |  |  |
| P <sub>FM</sub> =              |                                  |                              | ion (Exhibit 25-5)       |                             | I_  |                         | using Equa                 |                             | · ·                                  |  |  |
|                                |                                  |                              | IOIT (EXHIBIT 25-5)      |                             | P <sub>FD</sub> =   |                         |                            | <b>446.10</b> 11 (271.1121) |                                      |  |  |
| V <sub>12</sub> =              | 2470 <b>r</b>                    |                              |                          |                             | V <sub>12</sub> =   |                         | pc/h                       | 05.45                       | ()                                   |  |  |
| $V_3$ or $V_{av34}$            |                                  |                              | 25-4 or 25-5)            |                             | V <sub>3</sub> or V <sub>av34</sub>                             |                         |                            | on 25-15 or 2               | b-16)                                |  |  |
| Is $V_3$ or $V_{av34} > 2,700$ |                                  |                              |                          |                             | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |                         |                            |                             |                                      |  |  |
| Is $V_3$ or $V_{av34} > 1.5$ * | V <sub>12</sub> /2               | s 🗹 No                       |                          |                             | Is V <sub>3</sub> or V <sub>av</sub>                            | $v_{34} > 1.5 * V_{12}$ | /2 ☐ Yes ☐ I               | No                          |                                      |  |  |
| If Yes,V <sub>12a</sub> =      | pc/h (                           | (Equation 25                 | 5-8)                     |                             | If Yes,V <sub>12a</sub> =                                       | =                       | pc/h (Equa                 | ation 25-18)                | )                                    |  |  |
| Capacity Che                   | cks                              |                              |                          |                             | Capacit   | y Check                 | <br>S                      |                             |                                      |  |  |
|                                | Actual                           | С                            | apacity                  | LOS F?                      | 1   |                         | 1                          | Capacity                    | LOS F?                               |  |  |
|                                |                                  |                              | 1 7                      |                             | V <sub>F</sub>  |                         | Exhibit 2                  |                             |                                      |  |  |
| V <sub>FO</sub>                | 2779                             | Exhibit 25-7                 |                          | No                          | $V_{FO} = V_{F}$  | - V-                    | Exhibit 2                  |                             |                                      |  |  |
| FO                             |                                  | EXTIBIT 20 /                 |                          | 140                         |   | · K                     |                            |                             |                                      |  |  |
|                                | <u> </u>                         | <u> </u>                     |                          |                             | V <sub>R</sub>  | <u> </u>                | Exhibit 2                  |                             |                                      |  |  |
| Flow Entering                  |                                  |                              |                          | 1012 5                      | Flow Er   |                         | iverge Influ               |                             |                                      |  |  |
|                                | Actual                           |                              | Desirable                | Violation?                  | <u> </u>  | Actual                  | _                          | esirable                    | Violation?                           |  |  |
| V <sub>R12</sub>               | 2779                             | Exhibit 25-7                 | 4600:AII                 | No                          | V <sub>12</sub>   |                         | Exhibit 25-1               |                             |                                      |  |  |
| Level of Serv                  |                                  |                              |                          |                             | 1   |                         | Determina                  | •                           | ot F)                                |  |  |
| $D_R = 5.475 +$                | $0.00734 \text{ V}_{R} + 0$      | 0.0078 V <sub>12</sub> - 0.0 | 00627 L <sub>A</sub>     |                             |   | $D_R = 4.252$           | 2 + 0.0086 V <sub>12</sub> | - 0.009 L <sub>D</sub>      |                                      |  |  |
| $D_{R} = 23.9 \text{ (pc/m)}$  | i/ln)                            |                              |                          |                             | $D_R = (p)$   | oc/mi/ln)               |                            |                             |                                      |  |  |
| LOS = C (Exhibit 2             | 25-4)                            |                              |                          |                             |   | Exhibit 25-4            | l)                         |                             |                                      |  |  |
| Speed Detern                   |                                  |                              |                          |                             | <u> </u>  | Determin                |                            |                             |                                      |  |  |
| M <sub>S</sub> = 0.349 (Exit   |                                  |                              |                          |                             | <del>† '</del>  | Exhibit 25-19)          |                            |                             |                                      |  |  |
|                                | Exhibit 25-19)                   |                              |                          |                             |   | ph (Exhibit 2!          |                            |                             |                                      |  |  |
| .,                             |                                  |                              |                          |                             | S <sub>0</sub> = mph (Exhibit 25-19)                            |                         |                            |                             |                                      |  |  |
| •                              | Exhibit 25-19)                   |                              |                          |                             |   |                         |                            |                             |                                      |  |  |
| S = 60.2  mph (                | Exhibit 25-14)                   |                              |                          |                             | S = m   | ipn (Exnibit 2          | D-15)                      |                             |                                      |  |  |

Generated: 4/20/2011 10:06 AM

|   | RAI   | MPS AND                                | RAMP JUNG                | CTIONS V   | VORKSHI                | EET                                   |  |                                 |                        |                                      |  |
|---|---|--|--------------------------|--|------------------------|---------------------------------------|--|---------------------------------|------------------------|--------------------------------------|--|
| General Info  |   |  |                          | Site Infor   |                        |                                       |  |                                 |                        |                                      |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio   | SKB<br>7 TDO<br>04/18   | T/TranSystems<br>3/2011<br>Peak Period | Fre<br>Jui<br>Jui        | eeway/Dir of Tonction<br>risdiction<br>alysis Year | ravel                  | I-40 WE<br>Exit 35<br>Fayette<br>2014 | 3<br>County  |                                 |                        |                                      |  |
| Project Description   | Existing Condit   | tions                                  |                          |  |                        |                                       |  |                                 |                        |                                      |  |
| Inputs  |   |  |                          |  |                        |                                       |  |                                 | •                      |                                      |  |
| Upstream Adj Ramp   |   | Terrain: Leve                          | el                       |  |                        |                                       |  |                                 | Downstre<br>Ramp       | eam Adj                              |  |
| Yes O   |   |  |                          |  |                        |                                       |  |                                 | ✓ Yes                  | ☐ On                                 |  |
| ✓ No ☐ Of   | Ħ.  |  |                          |  |                        |                                       |  |                                 | □ No                   | ✓ Off                                |  |
| L <sub>up</sub> = ft  |   | S                                      | <sub>FF</sub> = 70.0 mph |  | S <sub>FR</sub> = 3    | 35.0 mp                               | h  |                                 | L <sub>down</sub> =    | 2000 ft                              |  |
| $V_u = veh/h$   | า   |  | • •                      | show lanes, L <sub>A</sub>                         |                        |                                       | $V_D =$  | 182 <b>veh/h</b>                |                        |                                      |  |
| Conversion t  | to pc/h Und   | der Base                               |                          |  |                        |                                       |  |                                 |                        |                                      |  |
| (pc/h)  | V<br>(Veh/hr)   | PHF                                    | Terrain                  | %Truck   | %Rv                    | f                                     | :<br>HV  | f <sub>p</sub>                  | v = V/PH               | F x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway   | 2306  | 0.90                                   | Level                    | 25   | 0                      | 0.8                                   | 189  | 1.00                            |                        | 2883                                 |  |
| Ramp<br>UpStream  | 177   | 0.90                                   | Level                    | 3  | 0                      | 0.9                                   | 85   | 1.00                            | _                      | 200                                  |  |
| DownStream  | 182   | 0.90                                   | Level                    | 3  | 0                      | 0.9                                   | 85   | 1.00                            |                        | 205                                  |  |
|   |   | Merge Areas                            |                          |  |                        |                                       |  | Diverge Are                     | as                     |                                      |  |
| Estimation o  | f v <sub>12</sub>   |  |                          |  | Estimat                | ion o                                 | f v <sub>12</sub>  |                                 |                        |                                      |  |
| $L_{EQ} = P_{FM} = V_{12} = V_3 \text{ or } V_{av34} = 2,70$ Is $V_3$ or $V_{av34} > 2,70$ Is $V_3$ or $V_{av34} > 1.5$ | $V_{12} = V_F (P_{FM})$ $L_{EQ} = $ (Equation 25-2 or 25-3) $P_{FM} = $ 1.000 using Equation (Exhibit 25-5) $V_{12} = $ 2883 pc/h |  |                          |  |                        |                                       | $V_{12} = V_{R} + (V_{F} - V_{R})P_{FD}$ $L_{EQ} = (Equation 25-8 \text{ or } 25-9)$ $P_{FD} = using Equation (Exhibit 25-12)$ $V_{12} = pc/h$ $V_{3} \text{ or } V_{av34} > 2,700 \text{ pc/h?} \text{ yes } \text{ No}$ $Is V_{3} \text{ or } V_{av34} > 1.5 * V_{12}/2 \text{ yes } \text{ No}$ |                                 |                        |                                      |  |
|   | · <del>-</del>  |  | 5-8)                     |  |                        |                                       |  |                                 |                        | 1                                    |  |
| If Yes,V <sub>12a</sub> = <b>Capacity Che</b>   |   | (Lqualion 20                           | <del>)-0)</del>          |  | Capacit                |                                       |  | pc/ii (Lqu                      | ation 25-18)           |                                      |  |
| Capacity Cite   | Actual  |  | apacity                  | LOS F?   | Сарасп                 | y Circ                                | Actual   |                                 | Capacity               | LOS F?                               |  |
| V <sub>FO</sub>   | 3083  | Exhibit 25-7                           |                          | No   | $V_F = V_F$ $V_{R}$    | - V <sub>R</sub>                      |  | Exhibit :  Exhibit :  Exhibit : | 25-14<br>25-14         |                                      |  |
| Flow Enterin  | g Merge In  | fluence A                              | rea                      |  | Flow En                | terin                                 | g Dive   | erge Influ                      | ience Are              | ea                                   |  |
|   | Actual  | Max                                    | Desirable                | Violation?   |                        | А                                     | ctual  | Max D                           | esirable               | Violation?                           |  |
| V <sub>R12</sub>  | 3083  | Exhibit 25-7                           | 4600:All                 | No   | V <sub>12</sub>        |                                       |  | Exhibit 25-1                    |                        |                                      |  |
| Level of Serv   |   | <u>`</u>                               |                          |  |                        |                                       |  |                                 | tion (if n             | ot F)                                |  |
| $D_R = 5.475 + D_R = 26.3 \text{ (pc/n)}$ $D_R = C \text{ (Exhibit)}$   | 25-4)   | 0.0078 V <sub>12</sub> - 0.0           | 00627 L <sub>A</sub>     |  | $D_R = (p)$            | oc/mi/lr<br>Exhibit                   | n)<br>25-4)  |                                 | - 0.009 L <sub>D</sub> |                                      |  |
| $S_0 = N/A \text{ mph}$   | ibit 25-19)<br>(Exhibit 25-19)<br>(Exhibit 25-19)<br>(Exhibit 25-14)  |  |                          |  | $S_R = m$<br>$S_0 = m$ | ph (Exh                               | 5-19)<br>ibit 25-19<br>ibit 25-19<br>ibit 25-15  | )                               |                        |                                      |  |

Generated: 4/20/2011 10:07 AM

|   | RAI                                     | MPS AND                 | RAMP JUNG                            | CTIONS W                     | ORKSH                                   | EET                 |                        |                                      |                                 |                                      |
|---|---|-------------------------|--------------------------------------|------------------------------|---|---------------------|------------------------|--------------------------------------|---------------------------------|--------------------------------------|
| General Info  |   |                         |                                      | Site Infor                   |   |                     |                        |                                      |                                 |                                      |
| Analyst   | SKB                                     |                         | Fre                                  | eeway/Dir of Tr              | avel                                    | I-40 E              | 3                      |                                      |                                 |                                      |
| Agency or Compan  | ny TDO                                  | T/TranSystems           | Jui                                  | nction                       |   | Exit 35             | )                      |                                      |                                 |                                      |
| Date Performed  | 04/18                                   | 3/2011                  | Jui                                  | risdiction                   |   | Fayett              | e County               |                                      |                                 |                                      |
| Analysis Time Peri  | od AM F                                 | Peak Period             | An                                   | alysis Year                  |   | 2034                |                        |                                      |                                 |                                      |
| Project Description   | Existing Condi                          | tions                   |                                      |                              |   |                     |                        |                                      |                                 |                                      |
| Inputs  |   | ,                       |                                      |                              |   |                     |                        |                                      |                                 |                                      |
| Upstream Adj Ram  |   | Terrain: Leve           |                                      |                              |   |                     |                        |                                      | Downstre<br>Ramp                | eam Adj                              |
| Yes C   | On                                      |                         |                                      |                              |   |                     |                        |                                      | ✓ Yes                           | ☐ On                                 |
| ™ No □ C  | Off                                     |                         |                                      |                              |   |                     |                        |                                      | □ No                            | ✓ Off                                |
| $L_{up} = ft$   |   |                         |                                      |                              |   |                     |                        |                                      | L <sub>down</sub> =             | 2000 ft                              |
| V <sub>u</sub> = veh/   | /h                                      | S                       | $_{FF} = 70.0 \text{ mph}$ Sketch (s | show lanes, L <sub>A</sub> , | $S_{FR} = 3$<br>$L_{D_f} V_{P_f} V_f$   | 35.0 m              | oh                     |                                      | V <sub>D</sub> =                | 274 veh/h                            |
| Conversion  | to pc/h Und                             | der Base (              |                                      |                              | D K I                                   |                     |                        |                                      |                                 |                                      |
| (pc/h)  | V<br>(Veh/hr)                           | PHF                     | Terrain                              | %Truck                       | %Rv                                     |                     | f <sub>HV</sub>        | f <sub>p</sub>                       | v = V/PH                        | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 3075                                    | 0.90                    | Level                                | 25                           | 0                                       | 0                   | 889                    | 1.00                                 | 1                               | 3844                                 |
| Ramp  | 237                                     | 0.90                    | Level                                | 3                            | 0                                       | 0                   | 985                    | 1.00                                 | ĺ                               | 267                                  |
| UpStream  | 1                                       |                         |                                      |                              | İ                                       |                     |                        |                                      |                                 |                                      |
| DownStream  | 274                                     | 0.90                    | Level                                | 3                            | 0                                       | 0                   | 985                    | 1.00                                 |                                 | 309                                  |
|   | •                                       | Merge Areas             |                                      |                              |   | •                   | C                      | Diverge Areas                        | ,                               |                                      |
| Estimation o  | of v <sub>12</sub>                      |                         |                                      |                              | Estimat                                 | ion (               | of v <sub>12</sub>     |                                      |                                 |                                      |
|   | V <sub>12</sub> = V <sub>F</sub>        | ( P <sub>EM</sub> )     |                                      |                              |   |                     | V <sub>12</sub> = '    | V <sub>R</sub> + (V <sub>F</sub> - V | / <sub>B</sub> )P <sub>ED</sub> |                                      |
| L <sub>EQ</sub> =   | .= .                                    | ation 25-2 or           | 25-3)                                |                              | L <sub>EQ</sub> =                       |                     |                        | Equation 2                           |                                 | 9)                                   |
| _   | • •                                     |                         | ion (Exhibit 25-5)                   |                              | P <sub>FD</sub> =                       |                     |                        | using Equat                          |                                 | •                                    |
| P <sub>FM</sub> =   |   |                         | IOTT (EXTIIDIT 25-5)                 |                              | 1                                       |                     |                        | oc/h                                 | ion (Exhibit                    | 23 12)                               |
| V <sub>12</sub> =   | 3844                                    |                         |                                      |                              | V <sub>12</sub> =                       |                     | •                      |                                      | 05.45                           | - 4 ()                               |
| $V_3$ or $V_{av34}$   | -                                       |                         | 25-4 or 25-5)                        |                              | V <sub>3</sub> or V <sub>av34</sub>     | _                   |                        | pc/h (Equation                       |                                 | 0-16)                                |
| Is $V_3$ or $V_{av34} > 2.7$                                    |   |                         |                                      |                              |   |                     |                        | Yes No                               |                                 |                                      |
| Is $V_3$ or $V_{av34} > 1.5$                                    | 5 * V <sub>12</sub> /2                  | s 🗹 No                  |                                      |                              | Is V <sub>3</sub> or V <sub>av</sub>    | <sub>/34</sub> > 1. | 5 * V <sub>12</sub> /2 | Yes No                               | 0                               |                                      |
| f Yes,V <sub>12a</sub> =  | pc/h                                    | (Equation 25            | 5-8)                                 |                              | If Yes,V <sub>12a</sub> =               | =                   | ŗ                      | oc/h (Equati                         | ion 25-18)                      |                                      |
| Capacity Ch   | ecks                                    |                         |                                      |                              | Capacit                                 |                     |                        |                                      |                                 |                                      |
|   | Actual                                  | С                       | apacity                              | LOS F?                       |   |                     | Actual                 | С                                    | apacity                         | LOS F?                               |
|   |   |                         |                                      |                              | V <sub>F</sub>                          |                     |                        | Exhibit 25                           | -14                             |                                      |
| $V_{FO}$  | 4111                                    | Exhibit 25-7            |                                      | No                           | $V_{FO} = V_{F}$                        | - V <sub>R</sub>    |                        | Exhibit 25                           | -14                             |                                      |
|   |   |                         |                                      |                              | $V_R$                                   |                     |                        | Exhibit 25                           | 5-3                             |                                      |
| Flow Enterir  | ng Merge In                             | fluence A               | rea                                  |                              | Flow Er                                 | nterii              | ng Dive                | rge Influe                           | nce Are                         | ea                                   |
|   | Actual                                  | Max                     | Desirable                            | Violation?                   |   |                     | Actual                 | Max Des                              | sirable                         | Violation?                           |
| $V_{R12}$   | 4111                                    | Exhibit 25-7            | 4600:All                             | No                           | V <sub>12</sub>                         |                     |                        | Exhibit 25-14                        |                                 |                                      |
| Level of Ser  | vice Detern                             | nination (i             | if not F)                            |                              | ·                                       | f Ser               | vice De                | terminati                            | on (if no                       | ot F)                                |
|   | + 0.00734 v <sub>R</sub> + 0            | •                       |                                      |                              |   |                     |                        | .0086 V <sub>12</sub> -              | _                               |                                      |
| D <sub>R</sub> = 34.3 (pc/                                      | • | 12                      | Α.                                   |                              | 1                                       | oc/mi/              |                        |                                      | J                               |                                      |
| _OS = D (Exhib  |   |                         |                                      |                              | I                                       |                     | t 25-4)                |                                      |                                 |                                      |
| Speed Deter   | •                                       |                         |                                      |                              | Speed L                                 |                     |                        | <u> </u>                             |                                 |                                      |
| •   | xibit 25-19)                            |                         |                                      |                              | <del>' '</del>                          | Exhibit             |                        |                                      |                                 |                                      |
|   | ,                                       |                         |                                      |                              | $S_R$ = mph (Exhibit 25-19)             |                     |                        |                                      |                                 |                                      |
| -   | n (Exhibit 25-19)                       |                         |                                      |                              |   |                     |                        |                                      |                                 |                                      |
| $S_0$ = N/A mph (Exhibit 25-19)<br>S = 55.3 mph (Exhibit 25-14) |   |                         |                                      |                              | T v v v v v v v v v v v v v v v v v v v |                     |                        |                                      |                                 |                                      |
| S = 55.3  mpf   |   | S = mph (Exhibit 25-15) |                                      |                              |   |                     |                        |                                      |                                 |                                      |

Generated: 4/20/2011 10:07 AM

|                              | RAI                                     | MPS AND                 | RAMP JUNG                  | CTIONS W                     | ORKSH                                 | EET                |                        |                                      |                                 |                                      |
|------------------------------|---|-------------------------|----------------------------|------------------------------|---------------------------------------|--------------------|------------------------|--------------------------------------|---------------------------------|--------------------------------------|
| General Info                 |   |                         |                            | Site Infor                   |                                       |                    |                        |                                      |                                 |                                      |
| Analyst                      | SKB                                     |                         |                            | eeway/Dir of Tr              |                                       | I-40 E             | В                      |                                      |                                 |                                      |
| Agency or Compan             | ny TDO                                  | T/TranSystems           | Jui                        | nction                       |                                       | Exit 35            | 5                      |                                      |                                 |                                      |
| Date Performed               | 04/18                                   | 3/2011                  | Jui                        | risdiction                   |                                       | Fayett             | e County               |                                      |                                 |                                      |
| Analysis Time Peri           | od PM F                                 | Peak Period             | An                         | alysis Year                  |                                       | 2034               |                        |                                      |                                 |                                      |
| Project Description          | Existing Condi                          | tions                   |                            |                              |                                       |                    |                        |                                      |                                 |                                      |
| Inputs                       |   | ,                       |                            |                              |                                       |                    |                        |                                      |                                 |                                      |
| Upstream Adj Ram             | •                                       | Terrain: Leve           |                            |                              |                                       |                    |                        |                                      | Downstre<br>Ramp                | am Adj                               |
| ☐ Yes ☐ C                    | On                                      |                         |                            |                              |                                       |                    |                        |                                      | ✓ Yes                           | ☐ On                                 |
| ™ No  □ C                    | Off                                     |                         |                            |                              |                                       |                    |                        |                                      | □ No                            | ✓ Off                                |
| $L_{up} = ft$                |   |                         |                            |                              |                                       |                    |                        |                                      | L <sub>down</sub> =             | 2000 ft                              |
| V <sub>u</sub> = veh         | /h                                      | S                       | FF = 70.0 mph<br>Sketch (s | show lanes, L <sub>A</sub> , | $S_{FR} = 3$<br>$L_{D}, V_{D}, V_{f}$ | 35.0 m             | ph                     |                                      | V <sub>D</sub> =                | 355 <b>veh/h</b>                     |
| Conversion                   | to pc/h Und                             | der Base (              |                            |                              | D IX I                                |                    |                        |                                      |                                 |                                      |
| (pc/h)                       | V<br>(Veh/hr)                           | PHF                     | Terrain                    | %Truck                       | %Rv                                   |                    | f <sub>HV</sub>        | f <sub>p</sub>                       | v = V/PH                        | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway                      | 2807                                    | 0.90                    | Level                      | 25                           | 0                                     | 0                  | .889                   | 1.00                                 |                                 | 3509                                 |
| Ramp                         | 204                                     | 0.90                    | Level                      | 3                            | 0                                     | 0                  | .985                   | 1.00                                 |                                 | 230                                  |
| UpStream                     |   |                         |                            |                              |                                       |                    |                        |                                      |                                 |                                      |
| DownStream                   | 355                                     | 0.90                    | Level                      | 3                            | 0                                     | 0                  | .985                   | 1.00                                 |                                 | 400                                  |
|                              |   | Merge Areas             |                            |                              |                                       |                    | D                      | iverge Areas                         |                                 |                                      |
| Estimation o                 | of v <sub>12</sub>                      |                         |                            |                              | Estimat                               | ion (              | of v <sub>12</sub>     |                                      |                                 |                                      |
|                              | V <sub>12</sub> = V <sub>F</sub>        | (P <sub>EM</sub> )      |                            |                              |                                       |                    | V <sub>42</sub> = \    | V <sub>R</sub> + (V <sub>F</sub> - V | ' <sub>D</sub> )P <sub>ED</sub> |                                      |
| l = 0 =                      |   | ` ™'<br>ation 25-2 or   | 25-3)                      |                              | L <sub>EQ</sub> =                     |                    |                        | Equation 2                           |                                 | a)                                   |
| L <sub>EQ</sub> =<br>D _     |   |                         | •                          |                              | L_                                    |                    |                        | using Equat                          |                                 | •                                    |
| P <sub>FM</sub> =            |   |                         | ion (Exhibit 25-5)         |                              | P <sub>FD</sub> =                     |                    |                        |                                      | IOII (EXIIIDII                  | 20-12)                               |
| V <sub>12</sub> =            | 3509                                    |                         |                            |                              | V <sub>12</sub> =                     |                    | •                      | oc/h                                 |                                 |                                      |
| $V_3$ or $V_{av34}$          | =                                       |                         | 25-4 or 25-5)              |                              | $V_3$ or $V_{av34}$                   |                    |                        | oc/h (Equation                       |                                 | 5-16)                                |
| Is $V_3$ or $V_{av34} > 2.7$ |   |                         |                            |                              |                                       |                    |                        | Yes No                               |                                 |                                      |
| Is $V_3$ or $V_{av34} > 1.5$ | 5 * V <sub>12</sub> /2                  | s 🗹 No                  |                            |                              | Is V <sub>3</sub> or V <sub>av</sub>  | <sub>34</sub> > 1. | 5 * V <sub>12</sub> /2 | Yes 🗆 No                             | 0                               |                                      |
| f Yes,V <sub>12a</sub> =     | pc/h                                    | (Equation 25            | 5-8)                       |                              | If Yes, V <sub>12a</sub> =            | =                  | ŗ                      | oc/h (Equati                         | on 25-18)                       |                                      |
| Capacity Ch                  |   |                         |                            |                              | Capacit                               |                    |                        |                                      |                                 |                                      |
|                              | Actual                                  | С                       | apacity                    | LOS F?                       |                                       |                    | Actual                 | С                                    | apacity                         | LOS F?                               |
|                              |   |                         |                            |                              | V <sub>F</sub>                        | Î                  |                        | Exhibit 25                           | -14                             |                                      |
| $V_{FO}$                     | 3739                                    | Exhibit 25-7            |                            | No                           | $V_{FO} = V_{F}$                      | - V <sub>R</sub>   |                        | Exhibit 25                           | -14                             |                                      |
|                              |   |                         |                            |                              | $V_R$                                 |                    |                        | Exhibit 25                           | 5-3                             |                                      |
| Flow Enterin                 | ng Merge In                             | fluence A               | rea                        | -                            | Flow Er                               | nterii             | ng Dive                | rge Influe                           | nce Are                         | <u></u><br>ea                        |
|                              | Actual                                  | Max                     | Desirable                  | Violation?                   |                                       | ,                  | Actual                 | Max Des                              | irable                          | Violation?                           |
| $V_{R12}$                    | 3739                                    | Exhibit 25-7            | 4600:All                   | No                           | V <sub>12</sub>                       |                    |                        | Exhibit 25-14                        |                                 |                                      |
| Level of Ser                 | vice Detern                             | nination (i             | if not F)                  |                              | ·                                     | f Ser              | vice De                | terminati                            | on (if no                       | ot F)                                |
|                              | + 0.00734 V <sub>R</sub> + 0            | •                       |                            |                              |                                       |                    |                        | .0086 V <sub>12</sub> -              |                                 |                                      |
| $D_{R} = 31.4 \text{ (pc/}$  | • | 12                      | n.                         |                              | 1                                     | oc/mi/             |                        | 12                                   | D                               |                                      |
| LOS = D (Exhib               | •                                       |                         |                            |                              | I                                     |                    | t 25-4)                |                                      |                                 |                                      |
| Speed Deter                  | •                                       |                         |                            |                              | Speed L                               |                    | •                      |                                      |                                 |                                      |
| •                            | xibit 25-19)                            |                         |                            |                              | <del>' '</del>                        | Exhibit            |                        | ·                                    |                                 |                                      |
|                              | h (Exhibit 25-19)                       |                         |                            |                              | S <sub>R</sub> = mph (Exhibit 25-19)  |                    |                        |                                      |                                 |                                      |
|                              |   |                         |                            |                              | $S_0 = mph (Exhibit 25-19)$           |                    |                        |                                      |                                 |                                      |
| •                            |   |                         |                            |                              |                                       |                    |                        |                                      |                                 |                                      |
| S = 57.4  mpf                |   | S = mph (Exhibit 25-15) |                            |                              |                                       |                    |                        |                                      |                                 |                                      |

Generated: 4/20/2011 10:08 AM

|   |                 | RAI                                     | MPS AND                     | RAMP JUN                                | CTIONS W                   | ORKSH  | EET              |                        |                                      |                        |                                      |  |
|---|-----------------|---|-----------------------------|---|----------------------------|--|------------------|------------------------|--------------------------------------|------------------------|--------------------------------------|--|
| General   | Inform          |   |                             |   | Site Infor                 |  |                  |                        |                                      |                        |                                      |  |
| Analyst   |                 | SKB                                     |                             | Fı                                      | reeway/Dir of Tr           |  | I-40 W           | /B                     |                                      |                        |                                      |  |
| Agency or Co  | ompany          |   | T/TranSystems               |   | unction                    |  | Exit 3           |                        |                                      |                        |                                      |  |
| Date Perform  |                 |   | 3/2011                      |   | urisdiction                |  |                  | e County               |                                      |                        |                                      |  |
| Analysis Tim  | e Period        |   | eak Period                  | А                                       | nalysis Year               |  | 2034             | ,                      |                                      |                        |                                      |  |
|   |                 | Existing Condit                         |                             |   |                            |  |                  |                        |                                      |                        |                                      |  |
| Inputs  |                 |   |                             |   |                            |  |                  |                        |                                      |                        |                                      |  |
| Jpstream Ad   | lj Ramp         |   | Terrain: Leve               | <del>j</del>                            |                            |  |                  |                        |                                      | Downstre<br>Ramp       | eam Adj                              |  |
| ☐ Yes   | ☐ On            |   |                             |   |                            |  |                  |                        |                                      | ✓ Yes                  | ☐ On                                 |  |
| ✓ No  | ☐ Off           |   |                             |   |                            |  |                  |                        |                                      | □ No                   | ✓ Off                                |  |
| - <sub>up</sub> =                                       | ft              |   |                             |   |                            |  |                  |                        |                                      | L <sub>down</sub> =    | 2000 ft                              |  |
| V <sub>u</sub> =  | veh/h           |   | 5                           | $S_{FF} = 70.0 \text{ mph}$<br>Sketch ( | show lanes, L <sub>A</sub> | $S_{FR} = 35.0 \text{ mph}$<br>$L_{A_1} L_{D_2} V_{D_2} V_{f}$ $V_D = 159 \text{ V}$ |                  |                        |                                      |                        | 159 <b>veh/h</b>                     |  |
| Convers   | ion to          | pc/h Und                                | der Base                    | Conditions                              |                            | 5 K I  |                  |                        |                                      |                        |                                      |  |
| (pc/h)  |                 | V<br>(Veh/hr)                           | PHF                         | Terrain                                 | %Truck                     | %Rv  |                  | f <sub>HV</sub>        | f <sub>p</sub>                       | v = V/PH               | F x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway   |                 | 2880                                    | 0.90                        | Level                                   | 25                         | 0  | 0                | .889                   | 1.00                                 |                        | 3600                                 |  |
| Ramp  |                 | 408                                     | 0.90                        | Level                                   | 3                          | 0  | 0                | .985                   | 1.00                                 |                        | 460                                  |  |
| UpStream  |                 |   |                             |   | 1                          |  |                  |                        |                                      | 1                      |                                      |  |
| DownStream  | n               | 159                                     | 0.90                        | Level                                   | 3                          | 0  | 0                | .985                   | 1.00                                 |                        | 179                                  |  |
|   |                 |   | Merge Areas                 |   | •                          |  | •                |                        | Diverge Area                         | S                      |                                      |  |
| Estimati  | on of           | V <sub>12</sub>                         |                             |   |                            | Estimat  | ion              | of v <sub>12</sub>     |                                      |                        |                                      |  |
|   |                 | V <sub>12</sub> = V <sub>F</sub>        | ( P)                        |   |                            | 1  |                  |                        | V <sub>R</sub> + (V <sub>F</sub> - ' | V_\P                   |                                      |  |
| _   |                 |   |                             | - OF O                                  |                            | _  |                  |                        |                                      |                        | 0)                                   |  |
| EQ =  |                 |   | ation 25-2 o                | •                                       |                            | L <sub>EQ</sub> =  |                  |                        | Equation 2                           |                        | •                                    |  |
| P <sub>FM</sub> =                                       |                 |   | -                           | tion (Exhibit 25-5)                     | )                          | P <sub>FD</sub> =  |                  |                        |                                      | uation (Exhibit 25-12) |                                      |  |
| / <sub>12</sub> =                                       |                 | 3600                                    |                             |   |                            | V <sub>12</sub> =  |                  | -                      | oc/h                                 | U 05.45 05.4()         |                                      |  |
| $V_3$ or $V_{av34}$                                     |                 | 0 <b>pc/</b> ł                          | n (Equation                 | 25-4 or 25-5)                           |                            | $V_3$ or $V_{av34}$  |                  |                        | pc/h (Equatio                        | n 25-15 or 2           | 5-16)                                |  |
| Is $V_3$ or $V_{av3}$                                   | $_{34} > 2,700$ | pc/h? TYes                              | s 🗹 No                      |   |                            | Is V <sub>3</sub> or V <sub>av</sub>   | ,34 > 2,         | 700 pc/h?              | Yes I                                | No                     |                                      |  |
| Is V <sub>3</sub> or V <sub>av3</sub>                   | , > 1.5 * \     | V <sub>12</sub> /2                      | s 🔽 No                      |   |                            | Is V <sub>3</sub> or V <sub>av</sub>   | ,34 > 1.         | 5 * V <sub>12</sub> /2 | Yes I                                | No                     |                                      |  |
| f Yes,V <sub>12a</sub> =                                |                 |   | (Equation 2                 | 5-8)                                    |                            |  |                  |                        | oc/h (Equa                           |                        | )                                    |  |
| Capacity  |                 |   | (= 9000.0 = 1               |   |                            | Capacit  |                  |                        |                                      |                        | <u> </u>                             |  |
| Sapacity  | CHEC            |   |                             | `anaaitu                                | LOS F?                     | Capacit  | y Ci             |                        |                                      | Canacity               | LOS F?                               |  |
|   |                 | Actual                                  |                             | Capacity                                | LUST!                      | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \  |                  | Actual                 |                                      | Capacity               | LUSE                                 |  |
|   |                 |   |                             |   | 1                          | V <sub>F</sub>   |                  |                        | Exhibit 2                            | _                      |                                      |  |
| $V_{FO}$  |                 | 4060                                    | Exhibit 25-7                |   | No                         | $V_{FO} = V_{F}$   | - V <sub>R</sub> |                        | Exhibit 2                            | 5-14                   |                                      |  |
|   |                 |   |                             |   |                            | $V_R$  |                  |                        | Exhibit 2                            | 5-3                    |                                      |  |
| Flow En   | terina          | Merge In                                | fluence A                   | \rea                                    | -                          | Flow Er  | nteri            | ng Dive                | rge Influ                            | ence Are               |                                      |  |
|   |                 | Actual                                  |                             | Desirable                               | Violation?                 | 1  |                  | Actual                 | Max De                               |                        | Violation?                           |  |
| V <sub>R12</sub>  | ,               | 4060                                    | Exhibit 25-7                | 4600:All                                | No                         | V <sub>12</sub>  |                  |                        | Exhibit 25-14                        |                        |                                      |  |
|   |                 | ce Detern                               | nination (                  |   | <u>.l</u>                  |  | f Sai            |                        | terminat                             |                        | 0 <i>t F</i> )                       |  |
|   |                 |   | ).0078 V <sub>12</sub> - 0. |   |                            | +  |                  |                        | .0086 V <sub>12</sub> -              | •                      | <i>,</i>                             |  |
|   |                 | • | v <sub>12</sub> - 0.        | UUUZI LA                                |                            |  | • • •            |                        | .0000 v <sub>12</sub> ·              | 0.009 LD               |                                      |  |
| IX.   | .8 (pc/mi/      | •                                       |                             |   |                            | '` "   | oc/mi/           | •                      |                                      |                        |                                      |  |
| .OS = D (   | (Exhibit 2      | 5-4)                                    |                             |   |                            | LOS = (I   | Exhib            | t 25-4)                |                                      |                        |                                      |  |
| Speed D   | eterm           | ination                                 |                             |   |                            | Speed I  | Dete             | rminatio               | on                                   |                        |                                      |  |
| $M_{\rm S} = 0.5$                                       | 512 (Exibi      | t 25-19)                                |                             |   |                            | $D_s = (E_s)^{-1}$   | xhibit           | 25-19)                 |                                      |                        | · · ·                                |  |
| -   | •               | Exhibit 25-19)                          |                             |   |                            | S <sub>R</sub> = mph (Exhibit 25-19)   |                  |                        |                                      |                        |                                      |  |
|   |                 |   |                             |   |                            | $S_0$ = mph (Exhibit 25-19)  |                  |                        |                                      |                        |                                      |  |
|   |                 |   |                             |   |                            | 1  |                  |                        |                                      |                        |                                      |  |
| S = 55.7  mph (Exhibit 25-14) $S = mph (Exhibit 25-15)$ |                 |   |                             |   |                            |  |                  |                        |                                      |                        |                                      |  |

Generated: 4/20/2011 10:08 AM

|   | RAI                          | MPS AND            | RAMP JUNC         | CTIONS W                    | ORKSH  | EET                      |                        |                                   |                                       |  |  |
|---|------------------------------|--------------------|-------------------|-----------------------------|--|--------------------------|------------------------|-----------------------------------|---------------------------------------|--|--|
| General Infor                                     |                              |                    |                   | Site Infor                  |  |                          |                        |                                   |                                       |  |  |
| Analyst   | SKB                          |                    |                   | eway/Dir of Tr              |  | I-40 WB                  |                        |                                   |                                       |  |  |
| Agency or Company                                 |                              | T/TranSystems      |                   | nction                      |  | Exit 35                  |                        |                                   |                                       |  |  |
| Date Performed                                    |                              | 3/2011             |                   | isdiction                   |  | Fayette Cou              | unty                   |                                   |                                       |  |  |
| Analysis Time Period                              |                              | eak Period         | Ana               | alysis Year                 |  | 2034                     | ,                      |                                   |                                       |  |  |
| Project Description                               |                              |                    |                   | ,                           |  |                          |                        |                                   |                                       |  |  |
| Inputs  |                              |                    |                   |                             |  |                          |                        |                                   |                                       |  |  |
| Upstream Adj Ramp                                 |                              | Terrain: Leve      |                   |                             |  |                          |                        | Downstr<br>Ramp                   | eam Adj                               |  |  |
| ☐ Yes ☐ Or  | 1                            |                    |                   |                             |  |                          |                        | ✓ Yes                             | ☐ On                                  |  |  |
| ✓ No  | f                            |                    |                   |                             |  |                          |                        | □ No                              | ✓ Off                                 |  |  |
| L <sub>up</sub> = ft                              |                              |                    |                   |                             |  |                          |                        | L <sub>down</sub> =               | 2000 ft                               |  |  |
|   |                              | S                  | FF = 70.0 mph     |                             | $S_{FR} = 3$                                   | 35.0 mph                 |                        | \/ _                              | 21/                                   |  |  |
| $V_u = veh/h$                                     |                              |                    | Sketch (s         | how lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$                            |                          |                        | $V_D =$                           | 216 <b>veh/h</b>                      |  |  |
| Conversion to                                     | o pc/h Und                   | der Base (         | Conditions        |                             |  |                          |                        |                                   |                                       |  |  |
| (pc/h)  | V<br>(Veh/hr)                | PHF                | Terrain           | %Truck                      | %Rv  | f <sub>HV</sub>          | f <sub>p</sub>         | v = V/PH                          | HF x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway   | 3175                         | 0.90               | Level             | 25                          | 0  | 0.889                    | 1.00                   |                                   | 3969                                  |  |  |
| Ramp  | 263                          | 0.90               | Level             | 3                           | 0  | 0.985                    | 1.00                   |                                   | 297                                   |  |  |
| UpStream  |                              |                    |                   |                             |  |                          |                        |                                   |                                       |  |  |
| DownStream  | 216                          | 0.90               | Level             | 3                           | 0  | 0.985                    | 1.00                   |                                   | 244                                   |  |  |
|   |                              | Merge Areas        |                   |                             | <u> </u>                                       |                          | Diverge A              | reas                              |                                       |  |  |
| Estimation of                                     | <sup>1</sup> V <sub>12</sub> |                    |                   |                             | Estimat  | tion of v                | 12                     |                                   |                                       |  |  |
|   | $V_{12} = V_{F}$             | (P <sub>FM</sub> ) |                   |                             |  | \                        | $V_{12} = V_R + (V_F)$ | V <sub>R</sub> )P <sub>FD</sub>   |                                       |  |  |
| L <sub>EQ</sub> =                                 | (Equa                        | ation 25-2 or      | 25-3)             |                             | L <sub>EQ</sub> =                              |                          | (Equatio               | n 25-8 or 25                      | -9)                                   |  |  |
| P <sub>FM</sub> =                                 |                              |                    | on (Exhibit 25-5) |                             | P <sub>FD</sub> =                              |                          | · ·                    | <b>quation</b> (Exhib             | •                                     |  |  |
|   | 3969 <b>r</b>                |                    | CATHOR 20 0)      |                             | 1  |                          | pc/h                   | <b>446.116</b> 11 (271.116)(2012) |                                       |  |  |
| V <sub>12</sub> =                                 | •                            |                    |                   |                             | V <sub>12</sub> =                              |                          | •                      | 05.45                             | )                                     |  |  |
| $V_3$ or $V_{av34}$                               |                              |                    | 25-4 or 25-5)     |                             | V <sub>3</sub> or V <sub>av34</sub>            |                          |                        | ation 25-15 or 2<br>              | 25-16)                                |  |  |
| Is $V_3$ or $V_{av34} > 2,70$                     |                              |                    |                   |                             | Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No    |                          |                        |                                   |                                       |  |  |
| Is $V_3$ or $V_{av34} > 1.5$                      | $V_{12}/2  \square  Yes$     | s 🗹 No             |                   |                             | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No |                          |                        |                                   |                                       |  |  |
| If Yes,V <sub>12a</sub> =                         | pc/h (                       | (Equation 25       | -8)               |                             | If Yes,V <sub>12a</sub> =                      | =                        | pc/h (Eq               | uation 25-18                      | 3)                                    |  |  |
| Capacity Che                                      | cks                          |                    |                   |                             | Capacit  | y Check                  | rs                     |                                   |                                       |  |  |
|   | Actual                       | С                  | apacity           | LOS F?                      |  | Д                        | ctual                  | Capacity                          | LOS F?                                |  |  |
|   |                              |                    |                   |                             | $V_{F}$  |                          | Exhib                  | it 25-14                          |                                       |  |  |
| $V_{FO}$  | 4266                         | Exhibit 25-7       |                   | No                          | $V_{FO} = V_{F}$                               | - V <sub>R</sub>         | Exhib                  | it 25-14                          |                                       |  |  |
|   |                              |                    |                   |                             | V <sub>R</sub>                                 | - 1                      |                        | it 25-3                           |                                       |  |  |
| Flow Entering                                     | Morgo In                     | fluence A          | <u></u>           | <u> </u>                    | <u> </u>                                       | ntoring !                | Diverge Inf            |                                   |                                       |  |  |
| I IOW EIITEIII                                    | Actual                       |                    | Desirable         | Violation?                  | i iow Ei                                       | Actua                    |                        | Desirable                         | Violation?                            |  |  |
| V <sub>R12</sub>                                  | 4266                         | Exhibit 25-7       | 4600:All          | No                          | V <sub>12</sub>                                | Actua                    | Exhibit 25             |                                   | v ioiation:                           |  |  |
| Level of Serv                                     |                              |                    |                   |                             | <del></del>                                    | f Service                | e Determin             |                                   | ot F)                                 |  |  |
|   | 0.00734 v <sub>R</sub> + 0   |                    |                   |                             | 1  |                          | 2 + 0.0086 V           | •                                 |                                       |  |  |
| .,  |                              |                    | A                 |                             |  | oc/mi/ln)                | J.JJJJJ V.             | 12 3.000 LD                       |                                       |  |  |
| $D_R = 35.5 \text{ (pc/m)}$<br>LOS = E  (Exhibit) |                              |                    |                   |                             | I '' "   | oc/mi/in)<br>Exhibit 25- | .4)                    |                                   |                                       |  |  |
| Speed Detern                                      |                              |                    |                   |                             | <u> </u>                                       | Determii                 |                        |                                   |                                       |  |  |
| M <sub>S</sub> = 0.564 (Exil                      |                              |                    |                   |                             | <del>† '</del>                                 | Exhibit 25-19            |                        |                                   |                                       |  |  |
| _ ~   |                              |                    |                   |                             |  | nph (Exhibit :           | •                      |                                   |                                       |  |  |
| .,  | (Exhibit 25-19)              |                    |                   |                             | $S_0$ = mph (Exhibit 25-19)                    |                          |                        |                                   |                                       |  |  |
| •   | Exhibit 25-19)               |                    |                   |                             |  |                          |                        |                                   |                                       |  |  |
| S = 54.2  mph                                     | (Exhibit 25-14)              |                    |                   |                             | S = m  | ipn (Exnibit )           | <u> </u>               |                                   |                                       |  |  |

Generated: 4/20/2011 10:09 AM

| ln <sub>c</sub>                      |  |  |  |  |
|--------------------------------------|--|--|--|--|
| Do                                   |  |  |  |  |
| Inc                                  |  |  |  |  |
| Dr                                   |  |  |  |  |
| Do                                   |  |  |  |  |
| IDa                                  |  |  |  |  |
|                                      | ownstream Adj<br>amp   |  |  |  |
|                                      | Yes On   |  |  |  |
|                                      | No   |  |  |  |
|                                      | = 2000 ft  |  |  |  |
| V                                    | $_{\rm O}$ = 715 veh/h   |  |  |  |
| <u> </u>                             |  |  |  |  |
| f <sub>p</sub> v =                   | = V/PHF x f <sub>HV</sub> x f <sub>p</sub>   |  |  |  |
| 1.00                                 | 2268   |  |  |  |
| 1.00                                 | 271  |  |  |  |
|                                      |  |  |  |  |
| 1.00                                 | 834  |  |  |  |
| Diverge Areas                        |  |  |  |  |
|                                      |  |  |  |  |
|                                      | . 2  |  |  |  |
|                                      | •  |  |  |  |
| using Equation                       | (Exhibit 25-12)  |  |  |  |
| pc/h                                 |  |  |  |  |
| pc/h (Equation 25                    | 5-15 or 25-16)   |  |  |  |
|                                      |  |  |  |  |
| ☐ Yes ☐ No                           |  |  |  |  |
| pc/h (Equation                       | 25-18)   |  |  |  |
|                                      |  |  |  |  |
| <del></del>                          | acity LOS F  |  |  |  |
| Exhibit 25-14                        |  |  |  |  |
| Exhibit 25-14                        |  |  |  |  |
| Exhibit 25-3                         |  |  |  |  |
| erge Influenc                        | ce Area  |  |  |  |
| Max Desirat                          | 4  |  |  |  |
| Exhibit 25-14                        |  |  |  |  |
| etermination                         | i (if not F)   |  |  |  |
| 0.0086 V <sub>12</sub> - 0.0         | 009 L <sub>D</sub>   |  |  |  |
|                                      |  |  |  |  |
|                                      |  |  |  |  |
| ion                                  |  |  |  |  |
|                                      |  |  |  |  |
| 9)                                   |  |  |  |  |
| S <sub>0</sub> = mph (Exhibit 25-19) |  |  |  |  |
| S = mph (Exhibit 25-15)              |  |  |  |  |
|                                      | f <sub>p</sub> V:  1.00  1.00  1.00  1.00  Diverge Areas  V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub> ) (Equation 25-8 using Equation pc/h pc/h (Equation 25 Yes No Pc/h (Equation 25 Exhibit 25-14 Exhibit 25-14 Exhibit 25-14 Exhibit 25-14 Determination 0.0086 V <sub>12</sub> - 0.0 |  |  |  |

Generated: 4/20/2011 10:10 AM

|                                    | RAI                              | MPS AND               | RAMP JUNG                               | CTIONS W                     | ORKSH   | EET                                  |                      |                                      |                     |                                      |
|------------------------------------|----------------------------------|-----------------------|---|------------------------------|---|--------------------------------------|----------------------|--------------------------------------|---------------------|--------------------------------------|
| General Info                       |                                  | 55                    |   | Site Infor                   |   |                                      |                      |                                      |                     |                                      |
| Analyst                            | SKB                              |                       |   | eeway/Dir of Tr              |   | I-40 EB                              |                      |                                      |                     |                                      |
| Agency or Company                  |                                  | T/TranSystems         |   | nction                       |   | Exit 42                              |                      |                                      |                     |                                      |
| Date Performed                     |                                  | 3/2011                |   | risdiction                   |   | Fayette                              | County               |                                      |                     |                                      |
| Analysis Time Perio                | d PM P                           | eak Period            | An                                      | alysis Year                  |   | 2014                                 | ,                    |                                      |                     |                                      |
| Project Description                |                                  |                       |   |                              |   |                                      |                      |                                      |                     |                                      |
| Inputs                             | -                                |                       |   |                              |   |                                      |                      |                                      |                     |                                      |
| Upstream Adj Ramp                  | )                                | Terrain: Leve         | l                                       |                              |   |                                      |                      |                                      | Downstre<br>Ramp    | am Adj                               |
| Yes O                              | n                                |                       |   |                              |   |                                      |                      |                                      | ✓ Yes               | ☐ On                                 |
| ▼ No □ Ot                          | ff                               |                       |   |                              |   |                                      |                      |                                      | □ No                | ✓ Off                                |
| $L_{up} = ft$                      |                                  |                       | <sub>FF</sub> = 70.0 mph                |                              | S <sub>FR</sub> =   | 25 0 mnh                             | `                    |                                      | L <sub>down</sub> = | 2000 ft                              |
| $V_u = veh/h$                      | า                                | 3                     | • | show lanes, L <sub>A</sub> , | 111   | 33.0 mpi                             | 1                    |                                      | $V_D =$             | 397 <b>veh/h</b>                     |
| Conversion t                       | to pc/h Und                      | der Base (            | Conditions                              |                              |   |                                      |                      |                                      |                     |                                      |
| (pc/h)                             | V<br>(Veh/hr)                    | PHF                   | Terrain                                 | %Truck                       | %Rv   | f,                                   | HV                   | f <sub>p</sub>                       | v = V/PH            | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway                            | 1934                             | 0.90                  | Level                                   | 25                           | 0   | 0.8                                  | 89                   | 1.00                                 |                     | 2418                                 |
| Ramp                               | 367                              | 0.90                  | Level                                   | 10                           | 0   | 0.9                                  | 52                   | 1.00                                 | ĺ                   | 428                                  |
| UpStream                           |                                  |                       |   |                              |   | 1                                    | T (                  |                                      |                     |                                      |
| DownStream                         | 397                              | 0.90                  | Level                                   | 10                           | 0   | 0.9                                  | 52                   | 1.00                                 |                     | 463                                  |
|                                    |                                  | Merge Areas           |   |                              |   |                                      |                      | Diverge Areas                        |                     |                                      |
| Estimation o                       | f v <sub>12</sub>                |                       |   |                              | Estimat   | tion o                               | f v <sub>12</sub>    |                                      |                     |                                      |
|                                    | V <sub>12</sub> = V <sub>F</sub> | ( P <sub>54</sub> )   |   |                              | 1   |                                      | V <sub>40</sub> =    | V <sub>R</sub> + (V <sub>F</sub> - V | '5)P-5              |                                      |
| <br> -                             |                                  | 、 ™,<br>ation 25-2 or | 25.2\                                   |                              | _   |                                      |                      | Equation 25                          |                     | 2)                                   |
| -EQ =                              |                                  |                       | •                                       |                              | L <sub>EQ</sub> =   |                                      |                      |                                      |                     | •                                    |
| P <sub>FM</sub> =                  |                                  |                       | ion (Exhibit 25-5)                      |                              | P <sub>FD</sub> =   |                                      |                      | using Equati                         | ion (Exnibit        | 25-12)                               |
| V <sub>12</sub> =                  | 2418                             |                       |   |                              | V <sub>12</sub> =   |                                      | -                    | pc/h                                 |                     |                                      |
| $V_3$ or $V_{av34}$                |                                  |                       | 25-4 or 25-5)                           |                              | $V_3$ or $V_{av34}$   |                                      |                      | pc/h (Equation                       |                     | 5-16)                                |
| Is $V_3$ or $V_{av34} > 2,70$      | 00 pc/h? 🥅 Ye:                   | s 🗹 No                |   |                              | Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\square$ Yes $\square$ No |                                      |                      |                                      |                     |                                      |
| Is $V_3$ or $V_{av34} > 1.5$       | * V <sub>12</sub> /2             | s 🗹 No                |   |                              | Is V <sub>3</sub> or V <sub>av</sub>                            | <sub>/34</sub> > 1.5                 | * V <sub>12</sub> /2 | Yes No                               | 0                   |                                      |
| f Yes,V <sub>12a</sub> =           | pc/h                             | (Equation 25          | i-8)                                    |                              | If Yes, V <sub>12a</sub>  | =                                    |                      | oc/h (Equati                         | on 25-18)           |                                      |
| Capacity Che                       |                                  |                       |   |                              | Capacit   |                                      |                      |                                      |                     |                                      |
|                                    | Actual                           | С                     | apacity                                 | LOS F?                       | 1   |                                      | Actual               | C                                    | apacity             | LOS F?                               |
|                                    | 1                                | Ì                     |   |                              | V <sub>F</sub>  |                                      |                      | Exhibit 25                           |                     |                                      |
| V                                  | 2846                             | Exhibit 25-7          |   | No                           | <u> </u>  | - V                                  |                      | Exhibit 25                           |                     | <del>-  </del>                       |
| $V_{FO}$                           | 2040                             | EXHIBIT 23-7          |   | INO                          | $V_{FO} = V_{F}$  | · · VR                               |                      |                                      | _                   | _                                    |
|                                    |                                  |                       |   |                              | V <sub>R</sub>  |                                      |                      | Exhibit 25                           | 5-3                 |                                      |
| Flow Entering                      | g Merge In                       | fluence A             | rea                                     |                              | Flow E  | nterin                               | g Dive               | rge Influe                           | nce Are             | a                                    |
|                                    | Actual                           | Max                   | Desirable                               | Violation?                   |   | Ac                                   | ctual                | Max Des                              | irable              | Violation?                           |
| $V_{R12}$                          | 2846                             | Exhibit 25-7          | 4600:All                                | No                           | V <sub>12</sub>   |                                      |                      | Exhibit 25-14                        |                     |                                      |
| Level of Serv                      | vice Detern                      | nination (i           | f not F)                                |                              | Level o   | f Serv                               | ice De               | terminati                            | on (if no           | ot F)                                |
|                                    | - 0.00734 v <sub>R</sub> + 0     | •                     |   |                              | <del>                                     </del>                |                                      |                      | .0086 V <sub>12</sub> -              |                     | -                                    |
| D <sub>R</sub> = 24.3 (pc/n        | .,                               | 12                    | Λ                                       |                              | 1   | pc/mi/ln                             |                      | 12                                   | D                   |                                      |
| _OS = C (Exhibit                   |                                  |                       |   |                              | '` ''   | Exhibit :                            | •                    |                                      |                     |                                      |
| •                                  |                                  |                       |   |                              | <u> </u>  |                                      | -                    |                                      |                     |                                      |
| Speed Deteri                       |                                  |                       |   |                              | Speed I   |                                      |                      | חח                                   |                     |                                      |
| $M_{\rm S} = 0.353$ (Exibit 25-19) |                                  |                       |   |                              | $D_s = $ (Exhibit 25-19)  |                                      |                      |                                      |                     |                                      |
| $S_R = 60.1 \text{ mph}$           | R= 60.1 mph (Exhibit 25-19)      |                       |   |                              |   | S <sub>R</sub> = mph (Exhibit 25-19) |                      |                                      |                     |                                      |
|                                    |                                  |                       |   |                              |   | $S_0 = mph$ (Exhibit 25-19)          |                      |                                      |                     |                                      |
| •                                  | (Exhibit 25-14)                  |                       |   |                              | 1 *   | nph (Exhi                            | bit 25-15)           |                                      |                     |                                      |
|                                    | , = 5 /                          |                       |   |                              | <u>ı "</u>  | 1 /-/···                             | 0 10)                |                                      |                     |                                      |

Generated: 4/20/2011 10:10 AM

|                               | RAI                          | MPS AND            | RAMP JUNC         | CTIONS W                   | ORKSH  | EET                                   |                    |                                    |                     |                                      |  |  |
|-------------------------------|------------------------------|--------------------|-------------------|----------------------------|--|---------------------------------------|--------------------|------------------------------------|---------------------|--------------------------------------|--|--|
| General Info                  |                              |                    |                   | Site Infor                 |  |                                       |                    |                                    |                     |                                      |  |  |
| Analyst                       | SKB                          |                    |                   | eeway/Dir of Tr            |  | I-40 WB                               |                    |                                    |                     |                                      |  |  |
| Agency or Company             |                              | T/TranSystems      |                   | nction                     |  | Exit 42                               |                    |                                    |                     |                                      |  |  |
| Date Performed                |                              | 3/2011             |                   | risdiction                 |  | Fayette Co                            | unty               |                                    |                     |                                      |  |  |
| Analysis Time Perio           | d AM P                       | eak Period         | An                | alysis Year                |  | 2014                                  | ,                  |                                    |                     |                                      |  |  |
| Project Description           |                              |                    |                   |                            |  |                                       |                    |                                    |                     |                                      |  |  |
| Inputs                        |                              |                    |                   |                            |  |                                       |                    |                                    |                     |                                      |  |  |
| Upstream Adj Ramp             | )                            | Terrain: Leve      |                   |                            |  |                                       |                    |                                    | Downstre<br>Ramp    | eam Adj                              |  |  |
| ☐ Yes ☐ Oi                    | n                            |                    |                   |                            |  |                                       |                    |                                    | ✓ Yes               | ☐ On                                 |  |  |
| ✓ No ☐ Of                     | ff                           |                    |                   |                            |  |                                       |                    |                                    | □ No                | ✓ Off                                |  |  |
| L <sub>up</sub> = ft          |                              |                    |                   |                            |  |                                       |                    |                                    | L <sub>down</sub> = | 2000 ft                              |  |  |
| $V_u = veh/t$                 | า                            | S                  | FF = 70.0 mph     | how lance I                | $S_{FR} = 3$                                       | 35.0 mph                              |                    | ,                                  | V <sub>D</sub> =    | 374 veh/h                            |  |  |
| -                             |                              | dor Bood           |                   | show lanes, L <sub>A</sub> | L <sub>D</sub> , v <sub>R</sub> , v <sub>f</sub> ) |                                       |                    |                                    |                     |                                      |  |  |
| Conversion t                  | o pc/n Und                   | der Base (         | <i>sonaitions</i> |                            | 1  | 1                                     |                    | ſ                                  |                     |                                      |  |  |
| (pc/h)                        | v<br>(Veh/hr)                | PHF                | Terrain           | %Truck                     | %Rv  | f <sub>HV</sub>                       |                    | f <sub>p</sub>                     | v = V/PH            | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |
| Freeway                       | 1828                         | 0.90               | Level             | 25                         | 0  | 0.889                                 | 1                  | .00                                |                     | 2285                                 |  |  |
| Ramp                          | 387                          | 0.90               | Level             | 10                         | 0  | 0.952                                 | 1                  | .00                                |                     | 452                                  |  |  |
| UpStream                      |                              |                    |                   |                            |  |                                       |                    |                                    |                     |                                      |  |  |
| DownStream                    | 374                          | 0.90               | Level             | 10                         | 0  | 0.952                                 |                    | .00                                |                     | 436                                  |  |  |
| <b>F</b> -44                  |                              | Merge Areas        |                   |                            |  | · · · · · · · · · · · · · · · · · · · |                    | ge Areas                           |                     |                                      |  |  |
| Estimation o                  | τ V <sub>12</sub>            |                    |                   |                            | Estimat  | ion of v                              | 12                 |                                    |                     |                                      |  |  |
|                               | $V_{12} = V_F$               | (P <sub>FM</sub> ) |                   |                            |  | _                                     | $V_{12} = V_{R} +$ | - (V <sub>F</sub> - V <sub>I</sub> | R)P <sub>FD</sub>   |                                      |  |  |
| L <sub>EQ</sub> =             | (Equa                        | ation 25-2 or      | 25-3)             |                            | L <sub>EQ</sub> =                                  |                                       | (Equ               | ation 25                           | -8 or 25-           | 9)                                   |  |  |
| P <sub>FM</sub> =             | 1.000                        | using Equati       | on (Exhibit 25-5) |                            | P <sub>FD</sub> =                                  |                                       | usin               | g Equati                           | on (Exhibit         | 25-12)                               |  |  |
| V <sub>12</sub> =             | 2285                         |                    | , ,,,             |                            | V <sub>12</sub> =                                  |                                       | pc/h               | •                                  | ,                   |                                      |  |  |
|                               | -                            |                    | 25-4 or 25 5\     |                            | 1  |                                       | •                  |                                    | 25-15 or 2!         | 5-16)                                |  |  |
| $V_3$ or $V_{av34}$           |                              |                    | 25-4 or 25-5)     |                            | V <sub>3</sub> or V <sub>av34</sub>                | . 2700 -                              |                    |                                    |                     | J-10 <i>j</i>                        |  |  |
| Is $V_3$ or $V_{av34} > 2.70$ |                              |                    |                   |                            | Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No        |                                       |                    |                                    |                     |                                      |  |  |
| Is $V_3$ or $V_{av34} > 1.5$  | · <del>-</del>               |                    |                   |                            | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No     |                                       |                    |                                    |                     |                                      |  |  |
|                               |                              | (Equation 25       | -8)               |                            | If Yes,V <sub>12a</sub> =                          |                                       | pc/h               | (Equation                          | on 25-18)           |                                      |  |  |
| Capacity Che                  | ecks                         |                    |                   |                            | Capacit  | y Chec                                | ks                 |                                    |                     |                                      |  |  |
|                               | Actual                       | C                  | apacity           | LOS F?                     |  | 7                                     | Actual             |                                    | pacity              | LOS F?                               |  |  |
|                               |                              |                    |                   |                            | V <sub>F</sub>                                     |                                       | Į.                 | Exhibit 25-                        | 14                  |                                      |  |  |
| V <sub>FO</sub>               | 2737                         | Exhibit 25-7       |                   | No                         | $V_{FO} = V_{F}$                                   | - V <sub>R</sub>                      | E                  | Exhibit 25-                        | 14                  |                                      |  |  |
|                               |                              |                    |                   |                            | $V_R$  |                                       |                    | Exhibit 25                         | -3                  |                                      |  |  |
| Flow Enterin                  | g Merge In                   | fluence A          | rea               |                            | Flow Er  | nterina                               | Diverae            | Influe                             | nce Are             |                                      |  |  |
|                               | Actual                       |                    | Desirable         | Violation?                 |  | Actua                                 |                    | Max Desi                           |                     | Violation?                           |  |  |
| V <sub>R12</sub>              | 2737                         | Exhibit 25-7       | 4600:All          | No                         | V <sub>12</sub>                                    |                                       |                    | oit 25-14                          |                     |                                      |  |  |
| Level of Serv                 | rice Detern                  | nination (i        | f not F)          |                            | <del></del>  | f Servic                              | e Deter            | minatio                            | on (if no           | ot F)                                |  |  |
|                               | - 0.00734 v <sub>R</sub> + 0 |                    |                   |                            | 1  |                                       | 52 + 0.008         |                                    |                     | •                                    |  |  |
| D <sub>R</sub> = 23.5 (pc/n   | .,                           | 12                 | Λ                 |                            |  | oc/mi/ln)                             |                    | 14                                 | D                   |                                      |  |  |
| LOS = C (Exhibit              |                              |                    |                   |                            | I '' "   | Exhibit 25                            | -4)                |                                    |                     |                                      |  |  |
| Speed Deteri                  |                              |                    |                   |                            | Speed I  |                                       |                    |                                    |                     |                                      |  |  |
| $M_S = 0.346  (Ex)$           |                              |                    |                   |                            | <del>† '</del>                                     | Exhibit 25-1                          |                    |                                    |                     |                                      |  |  |
|                               | (Exhibit 25-19)              |                    |                   |                            |  | ph (Exhibit                           | 25-19)             |                                    |                     |                                      |  |  |
| .,                            | (Exhibit 25-19)              |                    |                   |                            | $S_0$ = mph (Exhibit 25-19)                        |                                       |                    |                                    |                     |                                      |  |  |
| •                             | (Exhibit 25-14)              |                    |                   |                            | S = mph (Exhibit 25-15)                            |                                       |                    |                                    |                     |                                      |  |  |
| o - 00.5 mpn                  | (EVIIINII 50-14)             |                    |                   |                            | ۱۱ ۱۱  | יאוי (רעוווטונ                        | ∠J-1J)             |                                    |                     |                                      |  |  |

Generated: 4/20/2011 10:11 AM

|                               | RAI                              | MPS AND       | RAMP JUNC                   | CTIONS W                     | ORKSH  | EET                         |                        |                                      |                     |                                      |
|-------------------------------|----------------------------------|---------------|-----------------------------|------------------------------|--|-----------------------------|------------------------|--------------------------------------|---------------------|--------------------------------------|
| General Info                  |                                  |               |                             | Site Infor                   |  |                             |                        |                                      |                     |                                      |
| Analyst                       | SKB                              |               | Fre                         | eeway/Dir of Tr              | avel   | I-40 W                      | /B                     |                                      |                     |                                      |
| Agency or Company             | y TDO                            | T/TranSystems | Jur                         | nction                       |  | Exit 42                     | 2                      |                                      |                     |                                      |
| Date Performed                | 04/18                            | 3/2011        | Jur                         | risdiction                   |  | Fayett                      | e County               |                                      |                     |                                      |
| Analysis Time Perio           | od PM F                          | eak Period    | An                          | alysis Year                  |  | 2014                        |                        |                                      |                     |                                      |
| Project Description           | Existing Condi                   | tions         |                             |                              |  |                             |                        |                                      |                     |                                      |
| Inputs                        |                                  |               |                             |                              |  |                             |                        |                                      |                     |                                      |
| Upstream Adj Ramp             |                                  | Terrain: Leve |                             |                              |  |                             |                        |                                      | Downstre<br>Ramp    | am Adj                               |
| Yes O                         | n                                |               |                             |                              |  |                             |                        |                                      | ✓ Yes               | ☐ On                                 |
| ™ No □ Of                     | ff                               |               |                             |                              |  |                             |                        |                                      | □ No                | ✓ Off                                |
| $L_{up} = ft$                 |                                  |               |                             |                              |  |                             |                        |                                      | L <sub>down</sub> = | 2000 ft                              |
| $V_u = veh/h$                 | h                                | S             | FF = 70.0 mph<br>Sketch ( s | show lanes, L <sub>A</sub> , | $S_{FR} = S_{FR}$                                | 35.0 m                      | ph                     |                                      | V <sub>D</sub> =    | 220 <b>veh/h</b>                     |
| Conversion t                  | to pc/h Und                      | der Base (    |                             | Α'                           | ט' א' וי   |                             |                        |                                      | <u> </u>            |                                      |
| (pc/h)                        | V<br>(Veh/hr)                    | PHF           | Terrain                     | %Truck                       | %Rv  |                             | $f_{HV}$               | f <sub>p</sub>                       | v = V/PH            | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway                       | 2311                             | 0.90          | Level                       | 25                           | 0  | 0                           | .889                   | 1.00                                 |                     | 2889                                 |
| Ramp                          | 620                              | 0.90          | Level                       | 10                           | 0  | _                           | .952                   | 1.00                                 |                     | 723                                  |
| UpStream                      | 020                              | 0.70          | 20001                       | 10                           | Ť  | Ť                           | .702                   | 1.00                                 |                     | 720                                  |
| DownStream                    | 220                              | 0.90          | Level                       | 10                           | 0  | 0                           | .952                   | 1.00                                 |                     | 257                                  |
|                               |                                  | Merge Areas   | 2010.                       |                              |  |                             |                        | Diverge Areas                        |                     |                                      |
| Estimation o                  |                                  |               |                             |                              | Estimat  | tion                        |                        |                                      |                     |                                      |
|                               | V <sub>12</sub> = V <sub>F</sub> | (P.,.)        |                             |                              | 1  |                             |                        | V <sub>R</sub> + (V <sub>F</sub> - V | '-)P                |                                      |
| l =                           | .= .                             | ation 25-2 or | 25-3)                       |                              | -  |                             |                        | (Equation 2                          |                     | מו                                   |
| L <sub>EQ</sub> =             |                                  |               | •                           |                              | L <sub>EQ</sub> =                                |                             |                        |                                      |                     | •                                    |
| P <sub>FM</sub> =             |                                  |               | ion (Exhibit 25-5)          |                              | P <sub>FD</sub> =                                |                             |                        | using Equat                          | ion (Exhibit        | 25-12)                               |
| V <sub>12</sub> =             | 2889                             |               |                             |                              | V <sub>12</sub> =                                |                             |                        | pc/h                                 |                     |                                      |
| $V_3$ or $V_{av34}$           | -                                |               | 25-4 or 25-5)               |                              | V <sub>3</sub> or V <sub>av34</sub>              |                             |                        | pc/h (Equation                       |                     | 5-16)                                |
| Is $V_3$ or $V_{av34} > 2,70$ | 00 pc/h?                         | s 🗹 No        |                             |                              | Is V <sub>3</sub> or V <sub>av</sub>             | <sub>/34</sub> > 2,         | 700 pc/h?              | Yes No                               | 0                   |                                      |
| Is $V_3$ or $V_{av34} > 1.5$  | * V <sub>12</sub> /2             | s 🗹 No        |                             |                              | Is V <sub>3</sub> or V <sub>av</sub>             | <sub>/34</sub> > 1.         | 5 * V <sub>12</sub> /2 | Yes No                               | 0                   |                                      |
| f Yes,V <sub>12a</sub> =      | pc/h                             | (Equation 25  | 5-8)                        |                              | If Yes, V <sub>12a</sub> :                       | =                           |                        | pc/h (Equati                         | on 25-18)           |                                      |
| Capacity Che                  |                                  | · ·           | ·                           |                              | Capacit  |                             |                        |                                      |                     |                                      |
|                               | Actual                           | С             | apacity                     | LOS F?                       | 1  |                             | Actual                 | C                                    | apacity             | LOS F?                               |
|                               |                                  |               | - [                         |                              | V <sub>F</sub>                                   |                             |                        | Exhibit 25                           |                     |                                      |
| $V_{FO}$                      | 3612                             | Exhibit 25-7  |                             | No                           | $V_{FO} = V_{F}$                                 | - V <sub>D</sub>            |                        | Exhibit 25                           |                     |                                      |
| 10                            |                                  |               |                             |                              | $V_{R}$  | - 11                        |                        | Exhibit 25                           | 5-3                 |                                      |
| Flow Enterin                  | a Merae In                       | fluence A     | rea                         |                              | <u>'</u>   | nterii                      | na Dive                | rge Influe                           | nce Are             | <u> </u>                             |
|                               | Actual                           | 4             | Desirable                   | Violation?                   | 1  | _                           | Actual                 | Max Des                              |                     | Violation?                           |
| V <sub>R12</sub>              | 3612                             | Exhibit 25-7  | 4600:All                    | No                           | V <sub>12</sub>                                  |                             |                        | Exhibit 25-14                        |                     |                                      |
| Level of Serv                 | l .                              |               |                             |                              | ·  | f Ser                       |                        | terminati                            | on (if no           | ot F)                                |
|                               | + 0.00734 v <sub>R</sub> + 0     | •             |                             |                              | <del>                                     </del> |                             |                        | .0086 V <sub>12</sub> -              | •                   |                                      |
| $D_{R} = 30.2 \text{ (pc/n)}$ |                                  |               | А                           |                              | 1  | pc/mi/                      |                        | 12                                   | D                   |                                      |
| LOS = D (Exhibit              |                                  |               |                             |                              | '` ''  |                             | it 25-4)               |                                      |                     |                                      |
| Speed Deteri                  | •                                |               |                             |                              | Speed I  |                             | •                      | <u> </u>                             |                     |                                      |
|                               |                                  |               |                             |                              | <del>' '</del>                                   | Exhibit                     |                        | <i>7</i> 11                          |                     |                                      |
|                               | tibit 25-19)                     |               |                             |                              |  |                             |                        |                                      |                     |                                      |
| -                             |                                  |               |                             |                              |  |                             |                        |                                      |                     |                                      |
| •                             |                                  |               |                             |                              |  | $S_0$ = mph (Exhibit 25-19) |                        |                                      |                     |                                      |
| S = 57.9 mph (Exhibit 25-14)  |                                  |               |                             |                              |  | S = mph (Exhibit 25-15)     |                        |                                      |                     |                                      |

Generated: 4/20/2011 10:12 AM

|  | RA                               | MPS AND                  | RAMP JUN           | CTIONS W                | /ORKSHI  | EET             |   |                         |                                 |                  |  |  |
|--|----------------------------------|--------------------------|--------------------|-------------------------|--|-----------------|---|-------------------------|---------------------------------|------------------|--|--|
| General Infor  |                                  |                          |                    | Site Infor              |  |                 |   |                         |                                 |                  |  |  |
| Analyst  | SKB                              |                          | Fr                 | eeway/Dir of Tr         |  | I-40 EE         | 3   |                         |                                 |                  |  |  |
| Agency or Company  |                                  |                          |                    |                         |  | Exit 42         |   |                         |                                 |                  |  |  |
| Date Performed   |                                  |                          |                    |                         |  | Fayette County  |   |                         |                                 |                  |  |  |
| Analysis Time Period AM Peak Period Analysis Year              |                                  |                          |                    |                         | 2034   |                 |   |                         |                                 |                  |  |  |
| Project Description  |                                  |                          |                    |                         |  |                 |   |                         |                                 |                  |  |  |
| Inputs   |                                  |                          |                    |                         |  |                 |   |                         |                                 |                  |  |  |
| Upstream Adj Ramp Terrain: Level                               |                                  |                          |                    |                         |  |                 |   |                         | Downstre<br>Ramp                | eam Adj          |  |  |
| ☐ Yes ☐ On   |                                  |                          |                    |                         |  |                 |   |                         | ✓ Yes                           | □ On             |  |  |
| ☑ No ☐ Of  | f                                |                          |                    |                         |  |                 |   |                         | □ No                            | ✓ Off            |  |  |
| L <sub>up</sub> = ft   |                                  | C 70.0                   |                    |                         |  |                 | $L_{down} = 2000 \; f$ $S_{FR} = 35.0 \; mph$ |                         |                                 |                  |  |  |
| $V_u = veh/h$ $S_{FF} = 70.0 \text{ mph}$ Sketch ( show lanes, |                                  |                          |                    |                         |  | JJ.0 111¢       | 711   |                         | $V_D =$                         | 754 <b>veh/h</b> |  |  |
| Conversion t   | o pc/h Un                        | der Base                 | Conditions         |                         |  |                 |   |                         |                                 |                  |  |  |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                      | Terrain            | %Truck                  | %Rv  |                 | f <sub>HV</sub>                               | f <sub>p</sub>          | v = V/PHF x f <sub>HV</sub> x f |                  |  |  |
| Freeway  | 2596                             | 0.90                     | Level              | 25                      | 0  | 0.              | 389   | 1.00                    |                                 | 3245             |  |  |
| Ramp   | 275                              | 0.90                     | Level              | 10                      | 0  | 0.              | 952   | 1.00                    | 1                               | 321              |  |  |
| UpStream   |                                  |                          |                    |                         |  |                 |   |                         |                                 |                  |  |  |
| DownStream   | 754                              | 0.90                     | Level              | 10                      | 0  | 0.              | 952   | 1.00                    |                                 | 880              |  |  |
|  |                                  | Merge Areas              |                    |                         |  | Diverge Areas   |   |                         |                                 |                  |  |  |
| Estimation of  | f v <sub>12</sub>                |                          |                    |                         | Estimat  | ion c           | of V <sub>12</sub>                            |                         |                                 |                  |  |  |
|  | V <sub>12</sub> = V <sub>F</sub> | (P )                     |                    |                         |  |                 |   | \/ _+ (\/ _ \           | // \P                           |                  |  |  |
| 1  |                                  |                          | . 05. 0)           |                         | $V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 25.8 or 25.9)         |                 |   |                         |                                 |                  |  |  |
| L <sub>EQ</sub> =  |                                  | ation 25-2 or            | -                  |                         | L <sub>EQ</sub> = (Equation 25-8 or 25-9)                          |                 |   |                         |                                 |                  |  |  |
| P <sub>FM</sub> =  |                                  |                          | ion (Exhibit 25-5) |                         | P <sub>FD</sub> = using Equation (Exhibit 25-12)                   |                 |   |                         |                                 |                  |  |  |
| V <sub>12</sub> =  | 3245                             | pc/h                     |                    |                         | V <sub>12</sub> = pc/h   |                 |   |                         |                                 |                  |  |  |
| V <sub>3</sub> or V <sub>av34</sub>                            | 0 pc/                            | h (Equation              | 25-4 or 25-5)      |                         | V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16) |                 |   |                         |                                 |                  |  |  |
| Is $V_3$ or $V_{av34} > 2,70$                                  | 00 pc/h? 🥅 Ye                    | s 🗹 No                   |                    |                         | Is $V_3$ or $V_{av34} > 2,700$ pc/h? <b>Yes No</b>                 |                 |   |                         |                                 |                  |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                   |                                  |                          |                    |                         |  |                 |   | Yes 🗆 N                 |                                 |                  |  |  |
| If Yes,V <sub>12a</sub> =                                      | · <del>-</del>                   |                          | 5-8)               |                         | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18)                   |                 |   |                         |                                 |                  |  |  |
|  |                                  | (29001101120             | , c <sub>j</sub>   |                         |  |                 |   | 70/11 (Equa             |                                 | <u>'</u>         |  |  |
| Capacity Checks  |                                  |                          |                    |                         |  | Capacity Checks |   |                         |                                 |                  |  |  |
|  | Actual                           | al C                     | Capacity<br>       | LOS F?                  | \ \/   | _               |   |                         |                                 | LOS F?           |  |  |
|  |                                  | Exhibit 25-7             |                    | No                      | V <sub>F</sub>   |                 | Exhil   |                         | _                               |                  |  |  |
| $V_{FO}$   | 3566                             |                          |                    |                         | $V_{FO} = V_F - V$   |                 |   | Exhibit 25              | t 25-14                         |                  |  |  |
|  |                                  |                          |                    |                         | $V_R$  |                 |   | Exhibit 2               | 5-3                             |                  |  |  |
| Flow Entering  | a Merae Ir                       | ifluence A               | rea                | -                       | Flow Entering Diverge Influence Area                               |                 |   |                         |                                 |                  |  |  |
|  | Actual                           |                          | Desirable          | Violation?              | 1  | _               | ctual   | Max De                  |                                 | Violation?       |  |  |
| V <sub>R12</sub>   | 3566                             | Exhibit 25-7             | 4600:AII           | No                      | V <sub>12</sub>  |                 | <del></del>                                   | Exhibit 25-14           |                                 |                  |  |  |
| Level of Serv  | <u> </u>                         |                          |                    |                         | _  | f Sor           |   | terminat                |                                 | ot F)            |  |  |
|  | 0.00734 V <sub>R</sub> +         | •                        |                    |                         |  |                 |   | .0086 V <sub>12</sub> - |                                 | <i>(</i> )       |  |  |
| ,,   |                                  | 5.5576 <b>v</b> 12 - 0.9 | A                  |                         |  |                 |   | .5550 12                | 5.505 LD                        |                  |  |  |
| $D_{R} = 30.0 \text{ (pc/m)}$                                  | •                                |                          |                    |                         | 1 "  | oc/mi/l         | •   |                         |                                 |                  |  |  |
| LOS = D (Exhibit 25-4)   |                                  |                          |                    |                         | LOS = (Exhibit 25-4)   |                 |   |                         |                                 |                  |  |  |
| Speed Deterr   | mination                         |                          |                    |                         | Speed L  |                 |   | on                      |                                 |                  |  |  |
| M <sub>S</sub> = 0.424 (Exibit 25-19)                          |                                  |                          |                    |                         | $D_s = $ (Exhibit 25-19)   |                 |   |                         |                                 |                  |  |  |
| S <sub>R</sub> = 58.1 mph (Exhibit 25-19)                      |                                  |                          |                    |                         | S <sub>R</sub> = mph (Exhibit 25-19)                               |                 |   |                         |                                 |                  |  |  |
| S <sub>0</sub> = N/A mph (Exhibit 25-19)                       |                                  |                          |                    |                         | $S_0$ = mph (Exhibit 25-19)  |                 |   |                         |                                 |                  |  |  |
| S = 58.1  mph (Exhibit 25-14)                                  |                                  |                          |                    | S = mph (Exhibit 25-15) |  |                 |   |                         |                                 |                  |  |  |
| - 00.1111p11   | D = 111h11 (EX111011 50-10)      |                          |                    |                         |  |                 |   |                         |                                 |                  |  |  |

Generated: 4/20/2011 10:20 AM

| n Adj<br>☑ On<br>☑ Off<br>000 ft<br>49 veh/                              |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
| On Off   |  |  |  |  |  |  |
| On Off   |  |  |  |  |  |  |
| On Off   |  |  |  |  |  |  |
| On Off   |  |  |  |  |  |  |
| On Off   |  |  |  |  |  |  |
| On Off   |  |  |  |  |  |  |
| On Off   |  |  |  |  |  |  |
| Off<br>000 ft  |  |  |  |  |  |  |
| 000 ft   |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 49 veh/  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| f <sub>HV</sub> x f <sub>p</sub>   |  |  |  |  |  |  |
| 0  |  |  |  |  |  |  |
| 8  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 4  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| $V_{12} = V_R + (V_F - V_R)P_{FD}$<br>$L_{FO} =$ (Equation 25-8 or 25-9) |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 1 .5   |  |  |  |  |  |  |
| V <sub>12</sub> = pc/h   |  |  |  |  |  |  |
| V <sub>3</sub> or V <sub>av34</sub> pc/h (Equation 25-15 or 25-16)       |  |  |  |  |  |  |
| Is $V_3$ or $V_{av34} > 2,700$ pc/h? <b>Yes No</b>                       |  |  |  |  |  |  |
| Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No                           |  |  |  |  |  |  |
| If Yes, V <sub>12a</sub> = pc/h (Equation 25-18)                         |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| LOSF   |  |  |  |  |  |  |
| 1 200.   |  |  |  |  |  |  |
| <del> </del>   |  |  |  |  |  |  |
| ├──  |  |  |  |  |  |  |
| <u></u>  |  |  |  |  |  |  |
| Flow Entering Diverge Influence Area  Actual Max Desirable Violation?    |  |  |  |  |  |  |
| Violation  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| <b>F</b> )   |  |  |  |  |  |  |
| F)   |  |  |  |  |  |  |
| F)   |  |  |  |  |  |  |
| <u>F)</u>  |  |  |  |  |  |  |
| <u>F)</u>  |  |  |  |  |  |  |
| F)   |  |  |  |  |  |  |
| F)   |  |  |  |  |  |  |
| F)   |  |  |  |  |  |  |
| F)   |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

Generated: 4/20/2011 10:21 AM

|  | RA  | MPS AND                      | RAMP JUNG   | CTIONS W  | VORKSHI  | EET  |           |                                    |                                 |                                      |  |  |  |
|--|---|------------------------------|---|---|--|--|-----------|------------------------------------|---------------------------------|--------------------------------------|--|--|--|
| General Info   |   |                              |   | Site Infor  |  |  |           |                                    |                                 |                                      |  |  |  |
| Analyst SKB Agency or Company TDOT/TranSystems Date Performed 04/18/2011                   |   |                              | Ju<br>Ju  | Freeway/Dir of Travel<br>Junction<br>Jurisdiction |  |  |           |                                    |                                 |                                      |  |  |  |
| Analysis Time Period AM Peak Period Analysis Year  Project Description Existing Conditions |   |                              |   |   |  | 2034   |           |                                    |                                 |                                      |  |  |  |
|  | Existing Condi                                    | itions                       |   |   |  |  |           |                                    |                                 |                                      |  |  |  |
| Inputs   | _   | Terrain: Level               |   |   |  |  |           |                                    | D                               |                                      |  |  |  |
| Upstream Adj Ramp    Frain: Level   Yes  |   |                              |   |   |  |  |           |                                    | Downstre<br>Ramp                | eam Adj                              |  |  |  |
|  | □ Off   |                              |   |   |  |  |           |                                    | ✓ Yes                           | □ On                                 |  |  |  |
| I NO   | ЛІ  |                              |   |   |  |  |           |                                    | □ No                            | ✓ Off                                |  |  |  |
| L <sub>up</sub> = ft   |   | S                            | $S_{FF} = 70.0 \text{ mph}$ $S_{FR} = 35.0 \text{ mph}$ |   |  |  |           | L <sub>down</sub> = 2000 ft        |                                 |                                      |  |  |  |
| V <sub>u</sub> = veh   | $V_u = \text{veh/h}$ Sketch (show lanes, $L_{A'}$ |                              |   |   |  |  |           |                                    | $V_D =$                         | 401 <b>veh/h</b>                     |  |  |  |
| Conversion   | to pc/h Un  | der Base (                   |   | А   | י טי אי וי   |  |           |                                    |                                 |                                      |  |  |  |
|  | V   | PHF                          | Terrain   | %Truck  | 0/ Dv  | T f  |           | f                                  | V – V/DH                        | Evf vf                               |  |  |  |
| (pc/h)   | (Veh/hr)  | +                            |   |   | %Rv  | +  | HV        | f <sub>p</sub>                     |                                 | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |  |
| Freeway  | 2631  | 0.90                         | Level   | 25  | 0  | 0.8  |           | 1.00                               | 4                               | 3289                                 |  |  |  |
| Ramp   | 434   | 0.90                         | Level   | 10  | 0  | 0.9  | 52        | 1.00                               |                                 | 506                                  |  |  |  |
| UpStream   | 401   | 0.90                         | Lovol   | 10  |  | 100  | F 2       | 1.00                               | +                               | 440                                  |  |  |  |
| DownStream   | 401   | Merge Areas                  | Level   | 10  | 0  | 0.9  |           | 1.00<br>Diverge Area               | l<br>Ic                         | 468                                  |  |  |  |
| Estimation of  |   | Werge Areas                  |   |   | Estimat  | ion o  |           | Siverge Area                       | 13                              |                                      |  |  |  |
|  | V <sub>12</sub> = V <sub>F</sub>                  | (P <sub>514</sub> )          |   |   |  |  |           | V <sub>D</sub> + (V <sub>C</sub> - | V <sub>D</sub> )P <sub>ED</sub> |                                      |  |  |  |
| l =  |   | ation 25-2 or                | 25-3)   |   | $V_{12} = V_R + (V_F - V_R)P_{FD}$<br>$L_{FO} =$ (Equation 25-8 or 25-9)                           |  |           |                                    |                                 |                                      |  |  |  |
| L <sub>EQ</sub> =<br>P <sub>FM</sub> =   |   |                              | on (Exhibit 25-5)                                       |   | $L_{EQ} = $ (Equation 25-8 or 25-9)<br>$P_{FD} = $ using Equation (Exhibit 25-12)                  |  |           |                                    |                                 |                                      |  |  |  |
| V <sub>12</sub> =  | 3289  |                              | OII (EXHIBIT 25-5)                                      |   | $V_{12} = pc/h$  |  |           |                                    |                                 |                                      |  |  |  |
| V <sub>12</sub> –<br>V <sub>3</sub> or V <sub>av34</sub>                                   |   | h (Equation 2                | 05 4 or 25 5)   |   | $V_{12} = PC/II$<br>$V_3$ or $V_{av34}$ pc/h (Equation 25-15 or 25-16)                             |  |           |                                    |                                 |                                      |  |  |  |
| Is $V_3$ or $V_{av34} > 2.7$   |   |                              | .5-4 01 25-5)   |   | $v_3$ or $v_{av34}$ pc/fi (Equation 25-15 of 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No |  |           |                                    |                                 |                                      |  |  |  |
|  |   |                              |   |   | 1  |  |           |                                    |                                 |                                      |  |  |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5   | ·=  |                              | 0)  |   | Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No   |  |           |                                    |                                 |                                      |  |  |  |
| ·  |   |                              |   |   |  | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18) |           |                                    |                                 |                                      |  |  |  |
| Capacity Checks  |   |                              |   |   |  | Capacity Checks                                  |           |                                    |                                 |                                      |  |  |  |
|  | Actual  | C                            | apacity   | LOS F?  | \ \ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\  |  | Actual    |                                    | Capacity                        | LOS F?                               |  |  |  |
| .,   |   |                              |   |   | V <sub>F</sub>   |  |           | Exhibit 2                          |                                 |                                      |  |  |  |
| V <sub>FO</sub>  | 3795  | Exhibit 25-7                 |   | No  | $V_{FO} = V_{F}$   | - V <sub>R</sub>                                 |           | Exhibit 2                          |                                 |                                      |  |  |  |
|  |   |                              |   |   | V <sub>R</sub>   |  |           | Exhibit 2                          | 25-3                            |                                      |  |  |  |
| Flow Enterin   | ng Merge Ir                                       |                              |   |   | Flow Entering Diverge Influence Area   |  |           |                                    |                                 |                                      |  |  |  |
|  | Actual  | <del>`</del>                 | Desirable   | Violation?  |  | A  | ctual     | Max De                             |                                 | Violation?                           |  |  |  |
| V <sub>R12</sub>   | 3795  | Exhibit 25-7                 | 4600:All  | No  | V <sub>12</sub>  |  |           | Exhibit 25-14                      |                                 |                                      |  |  |  |
| Level of Ser   |   |                              |   |   | _  |  |           |                                    | tion (if n                      | ot F)                                |  |  |  |
| $D_{R} = 5.475$  | + 0.00734 V <sub>R</sub> +                        | 0.0078 V <sub>12</sub> - 0.0 | 0627 L <sub>A</sub>                                     |   |  | $D_R = 4$  | .252 + 0  | .0086 V <sub>12</sub>              | - 0.009 L <sub>D</sub>          |                                      |  |  |  |
| D <sub>R</sub> = 31.7 (pc/   | mi/ln)  |                              |   |   | $D_R = (p)$  | oc/mi/lr   | 1)        |                                    |                                 |                                      |  |  |  |
| LOS = D (Exhibit 25-4)   |   |                              |   |   | LOS = (Exhibit 25-4)   |  |           |                                    |                                 |                                      |  |  |  |
| Speed Determination  |   |                              |   |   | Speed Determination  |  |           |                                    |                                 |                                      |  |  |  |
| -  |   |                              |   |   | $D_s = $ (Exhibit 25-19)   |  |           |                                    |                                 |                                      |  |  |  |
| $S_R$ = 57.1 mph (Exhibit 25-19)   |   |                              |   |   | S <sub>R</sub> = mph (Exhibit 25-19)   |  |           |                                    |                                 |                                      |  |  |  |
| $S_0$ = N/A mph (Exhibit 25-19)  |   |                              |   |   | $S_0$ = mph (Exhibit 25-19)  |  |           |                                    |                                 |                                      |  |  |  |
| S = 57.1  mph (Exhibit 25-14)  |   |                              |   | S = mph (Exhibit 25-15)                           |  |  |           |                                    |                                 |                                      |  |  |  |
| - 07.11 mpi  | . (=  |                              |   |   | <u> </u>   | L /⊏\/   | ~1.20 10) |                                    |                                 |                                      |  |  |  |

Generated: 4/20/2011 10:23 AM

|  | R                                       | AMPS AND   | RAMP JUN  | CTIONS V   | VORKSH  | EET  |  |                                      |                                 |                                      |  |  |  |
|--|---|--|---|--|---|--|--|--------------------------------------|---------------------------------|--------------------------------------|--|--|--|
| General In   | formation                               |  |   | Site Infor   |   |  |  |                                      |                                 |                                      |  |  |  |
| Analyst SKB Agency or Company TDOT/TranSystems Date Performed 04/18/2011 Analysis Time Period PM Peak Period |   |  | Ju<br>Ju  | Freeway/Dir of Travel<br>Junction<br>Jurisdiction<br>Analysis Year |   |  | I-40 WB<br>Exit 42<br>Fayette County<br>2034 |                                      |                                 |                                      |  |  |  |
| Project Descript   | ion Existing Cor                        | nditions   |   |  |   |  |  |                                      |                                 |                                      |  |  |  |
| Inputs   |   |  |   |  |   |  |  |                                      | 1                               |                                      |  |  |  |
| Upstream Adj Ramp Terrain: Level   |   |  |   |  |   |  |  |                                      | Downstre<br>Ramp                | eam Adj                              |  |  |  |
|  |   |  |   |  |   |  |  |                                      | ✓ Yes                           | ☐ On                                 |  |  |  |
| ™ No □   | Off                                     |  |   |  |   |  |  |                                      | □ No                            | Off                                  |  |  |  |
| $L_{up} = f$   | t                                       | S  | $S_{FF} = 70.0 \text{ mph}$ $S_{FR} = 35.0 \text{ mph}$ |  |   |  |  |                                      | L <sub>down</sub> =             | 2000 ft                              |  |  |  |
| $V_u = veh/h$ Sketch (show lanes, $L_{A^{-}}$  |   |  |   |  |   |  |  |                                      | $V_D =$                         | 257 <b>veh/h</b>                     |  |  |  |
| Conversio  | n to pc/h U                             | nder Base (                                      |   | А А  | ' D' R' I'  |  |  |                                      | ļ                               |                                      |  |  |  |
| (pc/h)   | V                                       | PHF  | Terrain   | %Truck   | %Rv   |  | :<br>HV                                      | fp                                   | v = V/PH                        | F x f <sub>HV</sub> x f <sub>p</sub> |  |  |  |
|  | (Veh/hr)                                |  |   |  | <del>                                     </del>  | +  |  |                                      |                                 | •                                    |  |  |  |
| Freeway<br>Ramp  | 3128<br>650                             | 0.90   | Level   | 25<br>10   | 0   | 3.0  |  | 1.00                                 | <del>-</del>                    | 3910<br>758                          |  |  |  |
| UpStream   | 000                                     | 0.90   | Level   | 10   | 0   | 0.9  | 952  | 1.00                                 | 1                               | 738                                  |  |  |  |
| DownStream   | 257                                     | 0.90   | Level   | 10   | 0   | 0.9  | 952  | 1.00                                 |                                 | 300                                  |  |  |  |
|  |   | Merge Areas                                      | 2010.   | 1  | †   | 0  |  | Diverge Area                         | <br>IS                          |                                      |  |  |  |
| Estimation   | 1 of V <sub>12</sub>                    | <u> </u>   |   |  | Estimat   | tion o   |  | J                                    |                                 |                                      |  |  |  |
|  | <u>:=</u>                               | V <sub>F</sub> ( P <sub>FM</sub> )               |   |  | +   |  |  | : V <sub>D</sub> + (V <sub>F</sub> - | V <sub>D</sub> )P <sub>ED</sub> |                                      |  |  |  |
| <br>  <sub>=0</sub> =  |   | ւր (՝ բա <i>ր</i><br>quation 25-2 or             | 25-3)   |  | $V_{12} = V_R + (V_F - V_R)P_{FD}$<br>$L_{FO} =$ (Equation 25-8 or 25-9)                          |  |  |                                      |                                 |                                      |  |  |  |
| L <sub>EQ</sub> =<br>P <sub>FM</sub> =   | •                                       | •  | on (Exhibit 25-5)                                       | 1  | $L_{EQ} = $ (Equation 25-8 or 25-9)<br>$P_{FD} = $ using Equation (Exhibit 25-12)                 |  |  |                                      |                                 |                                      |  |  |  |
| V <sub>12</sub> =  |   | pc/h   | Off (Exhibit 25-5)                                      | 1  | $V_{12} = pc/h$   |  |  |                                      |                                 |                                      |  |  |  |
| V <sub>12</sub> –<br>V <sub>3</sub> or V <sub>av34</sub>   |   | c/h (Equation 2                                  | 05 4 or 25 5\   |  |   |  |  | •                                    | on 25 15 or 2                   | F 14)                                |  |  |  |
|  | 2,700 pc/h?                             |  | 25-4 01 25-5)   |  | $V_3$ or $V_{av34}$ pc/h (Equation 25-15 or 25-16)<br>Is $V_3$ or $V_{av34} > 2,700$ pc/h? Yes No |  |  |                                      |                                 |                                      |  |  |  |
|  |   |  |   |  | Is $V_3$ or $V_{av34} > 2,700$ pc/// Yes No<br>Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No     |  |  |                                      |                                 |                                      |  |  |  |
| Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No   |   |  |   |  |   |  |  |                                      |                                 |                                      |  |  |  |
| ·=-  |   |  |   |  |   | If Yes, V <sub>12a</sub> = pc/h (Equation 25-18) |  |                                      |                                 |                                      |  |  |  |
| Capacity Checks  |   |  |   |  |   | Capacity Checks                                  |  |                                      |                                 |                                      |  |  |  |
|  | Actual                                  | <del>                                     </del> | apacity   | LOS F?   | V <sub>F</sub>  | -  | Actual                                       |                                      | Capacity                        | LOS F?                               |  |  |  |
| .,,  | 1,,,,                                   | E  |   | Ma   |   |  |  | Exhibit 2                            |                                 |                                      |  |  |  |
| $V_{FO}$   | 4668                                    | Exhibit 25-7                                     |   | No   | $V_{FO} = V_{F}$  | - V <sub>R</sub>                                 |  | Exhibit 2                            |                                 |                                      |  |  |  |
|  |   |  |   |  | V <sub>R</sub>  |  |  |                                      | Exhibit 25-3                    |                                      |  |  |  |
| Flow Ente  | <del></del>                             | Influence A                                      |   | Ť  | Flow Entering Diverge Influence Area  |  |  |                                      |                                 |                                      |  |  |  |
|  | Actual                                  |  | Desirable   | Violation?   | 1   | A  | ctual  | Max De                               |                                 | Violation?                           |  |  |  |
| V <sub>R12</sub>   | 4668                                    | Exhibit 25-7                                     | 4600:All  | Yes  | V <sub>12</sub>   |  |  | Exhibit 25-14                        |                                 | <u> </u>                             |  |  |  |
|  |   | rmination (i                                     |   |  | 1   |  |  | eterminat                            | •                               | ot F)                                |  |  |  |
|  | • | + 0.0078 V <sub>12</sub> - 0.0                   | 00627 L <sub>A</sub>                                    |  |   |  |  | 0.0086 V <sub>12</sub>               | - 0.009 L <sub>D</sub>          |                                      |  |  |  |
| 1  | (pc/mi/ln)                              |  |   |  | I '` ''   | pc/mi/lı   | •  |                                      |                                 |                                      |  |  |  |
| LOS = E (Exhibit 25-4)   |   |  |   |  | LOS = (Exhibit 25-4)  |  |  |                                      |                                 |                                      |  |  |  |
| Speed Determination  |   |  |   |  | Speed Determination   |  |  |                                      |                                 |                                      |  |  |  |
| M <sub>S</sub> = 0.701 (Exibit 25-19)  |   |  |   |  | $D_s = $ (Exhibit 25-19)  |  |  |                                      |                                 |                                      |  |  |  |
| $S_R$ = 50.4 mph (Exhibit 25-19)   |   |  |   |  | S <sub>R</sub> = mph (Exhibit 25-19)  |  |  |                                      |                                 |                                      |  |  |  |
| S <sub>0</sub> = N/A mph (Exhibit 25-19)   |   |  |   |  | $S_0 = mph (Exhibit 25-19)$   |  |  |                                      |                                 |                                      |  |  |  |
| S = 50.4 mph (Exhibit 25-14)   |   |  |   | S = mph (Exhibit 25-15)  |   |  |  |                                      |                                 |                                      |  |  |  |

Generated: 4/20/2011 10:23 AM

|  | RA                                 | MPS AND                      | RAMP JUNG                | CTIONS V                   | VORKSHI                              | EET                         |                      |                                      |                                 |                                      |
|--|------------------------------------|------------------------------|--------------------------|----------------------------|--------------------------------------|-----------------------------|----------------------|--------------------------------------|---------------------------------|--------------------------------------|
| General Info                                 |                                    |                              |                          | Site Infor                 |                                      |                             |                      |                                      |                                 |                                      |
| Analyst<br>Agency or Compa<br>Date Performed | SKB<br>ny TDC                      | T/TranSystems<br>8/2011      | Ju                       | eeway/Dir of Tonction      | ravel                                | I-40 EE<br>Exit 47<br>Haywo |                      | V                                    |                                 |                                      |
| Analysis Time Per<br>Project Descriptior     |                                    | Peak Period<br>litions       | An                       | nalysis Year               |                                      | 2014                        |                      |                                      |                                 |                                      |
| Inputs                                       | 3                                  |                              |                          |                            |                                      |                             |                      |                                      |                                 |                                      |
| Upstream Adj Ran                             | np                                 | Terrain: Leve                |                          |                            |                                      |                             |                      |                                      | Downstre<br>Ramp                | eam Adj                              |
| ☐ Yes ☐ C                                    |                                    |                              |                          |                            |                                      |                             |                      |                                      | ✓ Yes                           | ☐ On                                 |
| ✓ No C                                       | Off                                |                              |                          |                            |                                      |                             |                      |                                      | □ No                            | ✓ Off                                |
| L <sub>up</sub> = ft                         |                                    | S                            | <sub>FF</sub> = 70.0 mph |                            | S <sub>FR</sub> = 3                  | 35.0 mr                     | oh                   |                                      | L <sub>down</sub> =             | 2000 ft                              |
| $V_u = veh$                                  | n/h                                |                              | • •                      | show lanes, L <sub>A</sub> |                                      |                             |                      |                                      | $V_D =$                         | 102 <b>veh/h</b>                     |
| Conversion                                   | to pc/h Un                         | der Base (                   |                          | А                          | י טי אי וי                           |                             |                      |                                      |                                 |                                      |
| (pc/h)                                       | V<br>(Veh/hr)                      | PHF                          | Terrain                  | %Truck                     | %Rv                                  |                             | $f_{HV}$             | f <sub>p</sub>                       | v = V/PH                        | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway                                      | 1741                               | 0.90                         | Level                    | 25                         | 0                                    | 0.                          | 389                  | 1.00                                 |                                 | 2176                                 |
| Ramp   | 29                                 | 0.90                         | Level                    | 2                          | 0                                    | 0.                          | 990                  | 1.00                                 |                                 | 33                                   |
| UpStream<br>DownStream                       | 102                                | 0.90                         | Level                    | 2                          | 0                                    |                             | 990                  | 1.00                                 | +                               | 114                                  |
| Downstream                                   | 102                                | Merge Areas                  | revei                    |                            | 1 0                                  | 0.                          | 770                  | Diverge Are                          | <u> </u>                        | 114                                  |
| Estimation                                   | of V <sub>12</sub>                 |                              |                          |                            | Estimat                              | ion c                       | of V <sub>12</sub>   | <b>J</b>                             |                                 |                                      |
|  | V <sub>12</sub> = V <sub>F</sub>   | ( P <sub>EM</sub> )          |                          |                            |                                      |                             |                      | = V <sub>R</sub> + (V <sub>F</sub> - | V <sub>D</sub> )P <sub>ED</sub> |                                      |
| L <sub>EQ</sub> =                            |                                    | ıation 25-2 or               | 25-3)                    |                            | L <sub>EQ</sub> =                    |                             | 12                   |                                      | 25-8 or 25-                     | 9)                                   |
| P <sub>FM</sub> =                            |                                    |                              | on (Exhibit 25-5)        |                            | P <sub>FD</sub> =                    |                             |                      |                                      | ation (Exhibit                  | •                                    |
| V <sub>12</sub> =                            | 2176                               |                              | ,                        |                            | V <sub>12</sub> =                    |                             |                      | pc/h                                 | ·                               | ·                                    |
| V <sub>3</sub> or V <sub>av34</sub>          | 0 pc/                              | h (Equation 2                | 25-4 or 25-5)            |                            | V <sub>3</sub> or V <sub>av34</sub>  |                             |                      | pc/h (Equati                         | on 25-15 or 2                   | 5-16)                                |
| Is $V_3$ or $V_{av34} > 2$ ,                 | 700 pc/h? 🥅 Ye                     | es 🗹 No                      |                          |                            | Is V <sub>3</sub> or V <sub>av</sub> | <sub>34</sub> > 2,7         | '00 pc/h?            | ☐ Yes ☐                              | No                              |                                      |
| Is $V_3$ or $V_{av34} > 1$ .                 | 5 * V <sub>12</sub> /2 ΓΥ <b>Υ</b> | es 🗹 No                      |                          |                            | Is V <sub>3</sub> or V <sub>av</sub> | <sub>34</sub> > 1.5         | * V <sub>12</sub> /2 | ☐ Yes ☐                              | No                              |                                      |
| If Yes,V <sub>12a</sub> =                    | pc/h                               | (Equation 25                 | -8)                      |                            | If Yes,V <sub>12a</sub> =            | =                           |                      | pc/h (Equa                           | ation 25-18)                    | 1                                    |
| Capacity Cl                                  | necks                              |                              |                          |                            | Capacit                              | y Ch                        | ecks                 |                                      |                                 |                                      |
|  | Actual                             | С                            | apacity                  | LOS F?                     |                                      |                             | Actua                |                                      | Capacity                        | LOS F?                               |
|  |                                    |                              |                          |                            | V <sub>F</sub>                       |                             |                      | Exhibit 2                            | 25-14                           |                                      |
| $V_{FO}$                                     | 2209                               | Exhibit 25-7                 |                          | No                         | $V_{FO} = V_{F}$                     | - V <sub>R</sub>            |                      | Exhibit 2                            | 25-14                           |                                      |
|  |                                    |                              |                          |                            | V <sub>R</sub>                       |                             |                      | Exhibit :                            | 25-3                            |                                      |
| Flow Enteri                                  | ng Merge li                        | *                            |                          | -                          | Flow Er                              | terir                       | g Div                |                                      | ience Are                       |                                      |
| .,   | Actual                             | <del></del>                  | Desirable                | Violation?                 | ļ                                    | P                           | ctual                | 1                                    | <u>esirable</u>                 | Violation?                           |
| V <sub>R12</sub>                             | 2209                               | Exhibit 25-7                 | 4600:All                 | No                         | V <sub>12</sub>                      |                             |                      | Exhibit 25-1                         |                                 | 1 = 1                                |
| Level of Sei                                 |                                    |                              |                          |                            |                                      |                             |                      |                                      | tion (if no                     | ot F)                                |
| •      | 5 + 0.00734 V <sub>R</sub> +       | 0.0078 V <sub>12</sub> - 0.0 | 0627 L <sub>A</sub>      |                            |                                      |                             |                      | 0.0086 V <sub>12</sub>               | - 0.009 L <sub>D</sub>          |                                      |
| $D_{R} = 19.6 \text{ (pc)}$                  |                                    |                              |                          |                            | I " "                                | oc/mi/l                     | •                    |                                      |                                 |                                      |
| LOS = B (Exhib                               |                                    |                              |                          |                            |                                      |                             | 25-4)                | •                                    |                                 |                                      |
| Speed Dete                                   |                                    |                              |                          |                            | Speed L                              |                             |                      | ion                                  |                                 |                                      |
|  | Exibit 25-19)                      |                              |                          |                            | ' '                                  | xhibit 2                    | •                    | ))                                   |                                 |                                      |
|  | h (Exhibit 25-19)                  |                              |                          |                            | '`                                   |                             | nibit 25-19          |                                      |                                 |                                      |
|  | h (Exhibit 25-19)                  |                              |                          |                            | ľ                                    |                             | nibit 25-19          |                                      |                                 |                                      |
| S = 61.0 mp                                  | h (Exhibit 25-14)                  |                              |                          |                            | S = m                                | ph (Exh                     | nibit 25-15          | )                                    |                                 |                                      |

Generated: 4/20/2011 10:24 AM

|  |                             | RAI                                       | MPS AND                             | RAMP JUNG                | CTIONS V                   | VORKSHI                             | EET                |                          |   |  |                                      |
|--|-----------------------------|---|-------------------------------------|--------------------------|----------------------------|-------------------------------------|--------------------|--------------------------|---|--|--------------------------------------|
| Genera   | al Infori                   |   |                                     | , , , ,                  | Site Infor                 |                                     |                    |                          |   |  |                                      |
| Analyst<br>Agency or<br>Date Perfo                       | Company                     | SKB<br>TDO                                | T/TranSystems<br>8/2011             | Ju                       | eeway/Dir of Tonction      | ravel                               | I-40 El<br>Exit 47 |                          | V.  |  |                                      |
| Analysis Ti<br>Project De:                               | ime Period                  |   | eak Period                          |                          | alysis Year                |                                     | 2014               | ou Couri                 | у   |  |                                      |
| Inputs   | Scription                   | LAISTING CONTIN                           | 110113                              |                          |                            |                                     |                    |                          |   |  |                                      |
| Upstream <i>i</i>  | Adj Ramp                    |   | Terrain: Level                      |                          |                            |                                     |                    |                          |   | Downstre<br>Ramp                                 | eam Adj                              |
| ☐ Yes  | □ On                        |   |                                     |                          |                            |                                     |                    |                          |   | ✓ Yes  | ☐ On                                 |
| ✓ No   | ☐ Off                       |   |                                     |                          |                            |                                     |                    |                          |   | □ No   | ✓ Off                                |
| L <sub>up</sub> =  | ft                          |   | S                                   | <sub>FF</sub> = 70.0 mph |                            | S <sub>FR</sub> = 3                 | 35.0 mj            | oh                       |   | L <sub>down</sub> =                              | 2000 ft                              |
| $V_u =$  | veh/h                       |   |                                     |                          | show lanes, L <sub>A</sub> |                                     |                    |                          |   | $V_D =$  | 169 <b>veh/h</b>                     |
| Conve  | rsion to                    | pc/h Und                                  | der Base (                          | Conditions               |                            | D K I                               |                    |                          |   |  |                                      |
| (pc  |                             | V<br>(Veh/hr)                             | PHF                                 | Terrain                  | %Truck                     | %Rv                                 |                    | f <sub>HV</sub>          | f <sub>p</sub>                                    | v = V/PH   | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  |                             | 1804                                      | 0.90                                | Level                    | 25                         | 0                                   |                    | 889                      | 1.00  |  | 2255                                 |
| Ramp   |                             | 39  | 0.90                                | Level                    | 2                          | 0                                   | 0.                 | 990                      | 1.00  |  | 44                                   |
| UpStream<br>DownStrea                                    |                             | 169                                       | 0.90                                | Level                    | 2                          | 0                                   | 0.                 | 990                      | 1.00  |  | 190                                  |
| Estima   | tion of                     |   | Merge Areas                         |                          |                            | Estimat                             | ion                | of v                     | Diverge Are                                       | as   |                                      |
| LSUIIIa  | uon oi                      | - <del>-</del>                            | ·                                   |                          |                            | Estimat                             | 1011               |                          |   | =  |                                      |
| L <sub>EQ</sub> =  |                             | V <sub>12</sub> = V <sub>F</sub><br>(Equa | (P <sub>FM</sub> )<br>ation 25-2 or | 25-3)                    |                            | L <sub>EQ</sub> =                   |                    | V <sub>12</sub> =        | = V <sub>R</sub> + (V <sub>F</sub> -<br>(Equation | · V <sub>R</sub> )P <sub>FD</sub><br>25-8 or 25- | 9)                                   |
| P <sub>FM</sub> =  |                             | 1.000<br>2255 <b>;</b>                    |                                     | on (Exhibit 25-5)        |                            | P <sub>FD</sub> =                   |                    |                          |   | ation (Exhibi                                    | 25-12)                               |
| V <sub>12</sub> =<br>V <sub>3</sub> or V <sub>av34</sub> |                             | 0 <b>pc/</b> ł                            | n (Equation 2                       | 25-4 or 25-5)            |                            | $V_{12} = V_3 \text{ or } V_{av34}$ |                    |                          |   | ion 25-15 or 2                                   | 5-16)                                |
|  |                             | pc/h? 🔲 Yes                               |                                     |                          |                            |                                     |                    |                          | ☐ Yes ☐   |  |                                      |
|  |                             | V <sub>12</sub> /2                        |                                     |                          |                            |                                     |                    | ·-                       | ☐ Yes ☐   |  |                                      |
| If Yes,V <sub>12a</sub>                                  | •                           |   | (Equation 25                        | -8)                      |                            | If Yes,V <sub>12a</sub> =           |                    |                          | pc/h (Equ   | ation 25-18)                                     |                                      |
| Capaci   | ity Che                     |   | 1                                   |                          | 1                          | Capacit                             | y Ch               |                          | . 1   |  | 1                                    |
|  |                             | Actual                                    | C;                                  | apacity                  | LOS F?                     | V <sub>F</sub>                      |                    | Actua                    | Exhibit   | Capacity<br>25-14                                | LOS F?                               |
| V <sub>F</sub>   | FO                          | 2299                                      | Exhibit 25-7                        |                          | No                         | $V_{FO} = V_{F}$                    | - V <sub>R</sub>   |                          | Exhibit   |  |                                      |
|  |                             |   |                                     |                          |                            | V <sub>R</sub>                      |                    |                          | Exhibit   |  |                                      |
| Flow E   | ntering                     |   | fluence A                           |                          |                            | Flow Er                             | _                  |                          |   | ience Are  |                                      |
| V <sub>R</sub>   |                             | Actual<br>2299                            | Max I<br>Exhibit 25-7               | Desirable<br>4600:All    | Violation?<br>No           | V <sub>12</sub>                     | 1 1                | Actual                   | Max D<br>Exhibit 25-1                             | esirable<br>4                                    | Violation?                           |
|  |                             |   | nination (i                         |                          | 140                        |                                     | f Ser              | vice D                   |   | ition (if n                                      | of F)                                |
|  |                             |   | 0.0078 V <sub>12</sub> - 0.0        |                          |                            |                                     |                    |                          | 0.0086 V <sub>12</sub>                            | •  | <i></i>                              |
| 1.   | 20.3 (pc/mi<br>C (Exhibit 2 |   |                                     |                          |                            | I " "                               | oc/mi/l<br>=xhibi  | n)<br>t 25-4)            |   |  |                                      |
|  |                             | ination                                   |                                     |                          |                            | Speed L                             |                    |                          | ion   |  |                                      |
|  | 0.325 (Exib                 |   |                                     |                          |                            | <del>' '</del>                      | Exhibit 2          |                          |   |  |                                      |
| _  | 60.9 mph (I                 | Exhibit 25-19)                            |                                     |                          |                            | $S_R = m$                           | ph (Ex             | hibit 25-1               | 9)  |  |                                      |
| $S_0 = I$  | N/A mph (E                  | xhibit 25-19)<br>Exhibit 25-14)           |                                     |                          |                            | ľ                                   |                    | hibit 25-1<br>hibit 25-1 |   |  |                                      |
| J – (  | υυ. 7 ΠΙΡΠ (Ι               | _AHIDIL 20-14)                            |                                     |                          |                            | P = 111                             | ihii (EX           | IIIVIL ZO- I             | J)  |  |                                      |

|  | RAI                              | MPS AND                      | RAMP JUNC             | CTIONS W                     | ORKSH                                | EET                                      |                                   |                                 |                                      |
|--|----------------------------------|------------------------------|-----------------------|------------------------------|--------------------------------------|--|-----------------------------------|---------------------------------|--------------------------------------|
| General Infor                                  |                                  |                              |                       | Site Infor                   |                                      |  |                                   |                                 |                                      |
| Analyst  | SKB                              |                              |                       | eeway/Dir of Tr              |                                      | I-40 WB                                  |                                   |                                 |                                      |
| Agency or Company                              |                                  | T/TranSystems                |                       | nction                       |                                      | Exit 47                                  |                                   |                                 |                                      |
| Date Performed                                 |                                  | 3/2011                       |                       | risdiction                   |                                      | Haywood Cou                              | ıntv                              |                                 |                                      |
| Analysis Time Period                           |                                  | eak Period                   |                       | alysis Year                  |                                      | 2014                                     |                                   |                                 |                                      |
| Project Description                            |                                  |                              | 7                     | a.joio . oa.                 |                                      | 2011                                     |                                   |                                 |                                      |
| Inputs   |                                  |                              |                       |                              |                                      |  |                                   |                                 |                                      |
| Upstream Adj Ramp                              |                                  | Terrain: Leve                |                       |                              |                                      |  |                                   | Downstre<br>Ramp                | eam Adj                              |
| Yes On   | 1                                |                              |                       |                              |                                      |  |                                   | ✓ Yes                           | ☐ On                                 |
| ☑ No ☐ Off                                     | f                                |                              |                       |                              |                                      |  |                                   | □ No                            | ✓ Off                                |
| L <sub>up</sub> = ft                           |                                  |                              |                       |                              |                                      |  |                                   | L <sub>down</sub> =             | 2000 ft                              |
|  |                                  | S                            | FF = 70.0 mph         |                              | $S_{FR} = 3$                         | 35.0 mph                                 |                                   | \/ _                            | 20 /b                                |
| $V_u = veh/h$                                  |                                  |                              | Sketch (s             | show lanes, L <sub>A</sub> , | $L_{D'}V_{R'}V_{f}$                  |  |                                   | $V_D =$                         | 39 <b>veh/h</b>                      |
| Conversion to                                  | o pc/h Und                       | der Base (                   |                       |                              |                                      |  |                                   | •                               |                                      |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                          | Terrain               | %Truck                       | %Rv                                  | f <sub>HV</sub>                          | f <sub>p</sub>                    | v = V/PH                        | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 1815                             | 0.90                         | Level                 | 25                           | 0                                    | 0.889                                    | 1.00                              |                                 | 2269                                 |
| Ramp   | 199                              | 0.90                         | Level                 | 2                            | 0                                    | 0.990                                    | 1.00                              |                                 | 223                                  |
| UpStream                                       |                                  |                              |                       |                              |                                      |  |                                   |                                 |                                      |
| DownStream                                     | 39                               | 0.90                         | Level                 | 2                            | 0                                    | 0.990                                    | 1.00                              | 1                               | 44                                   |
|  |                                  | Merge Areas                  |                       |                              |                                      |  | Diverge Area                      | ıS                              |                                      |
| Estimation of                                  |                                  |                              |                       |                              | Estimat                              | ion of v <sub>12</sub>                   | <del></del>                       |                                 |                                      |
|  | V <sub>12</sub> = V <sub>F</sub> | ( P <sub>EM</sub> )          |                       |                              |                                      | V.,                                      | $\frac{1}{2} = V_R + (V_F - V_F)$ | V <sub>D</sub> )P <sub>ED</sub> |                                      |
| l =  |                                  | ` ™′<br>ation 25-2 or        | 25-3)                 |                              | l =                                  | 12                                       | Equation 2                        |                                 | o)                                   |
| L <sub>EQ</sub> =                              |                                  |                              | -                     |                              | L <sub>EQ</sub> =                    |  | · ·                               |                                 | •                                    |
| P <sub>FM</sub> =                              |                                  |                              | on (Exhibit 25-5)     |                              | P <sub>FD</sub> =                    |  | using Equa                        | ation (Exhibit                  | . 20-12)                             |
| V <sub>12</sub> =                              | 2269                             |                              |                       |                              | V <sub>12</sub> =                    |  | pc/h                              |                                 |                                      |
| $V_{3}$ or $V_{av34}$                          |                                  |                              | 25-4 or 25-5)         |                              | V <sub>3</sub> or V <sub>av34</sub>  |  | pc/h (Equation                    |                                 | 5-16)                                |
| Is $V_3$ or $V_{av34} > 2,70$                  | 0 pc/h?                          | s 🗹 No                       |                       |                              | Is V <sub>3</sub> or V <sub>av</sub> | <sub>/34</sub> > 2,700 pc/ł              | n? ☐ Yes ☐ N                      | No                              |                                      |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * | V <sub>12</sub> /2               | s 🗹 No                       |                       |                              | Is V <sub>3</sub> or V <sub>av</sub> | <sub>34</sub> > 1.5 * V <sub>12</sub> /2 | 2                                 | ٧o                              |                                      |
| If Yes, V <sub>12a</sub> =                     | pc/h                             | (Equation 25                 | -8)                   |                              | If Yes, V <sub>12a</sub> =           | =  | pc/h (Equa                        | tion 25-18)                     |                                      |
| Capacity Che                                   |                                  |                              |                       |                              |                                      | y Checks                                 |                                   |                                 |                                      |
|  | Actual                           | C                            | apacity               | LOS F?                       | 10 11/10 11 11                       | Acti                                     |                                   | Capacity                        | LOS F?                               |
|  |                                  |                              | 1                     |                              | V <sub>F</sub>                       |  | Exhibit 2                         |                                 |                                      |
| $V_{FO}$                                       | 2492                             | Exhibit 25-7                 |                       | No                           | $V_{FO} = V_{F}$                     | - V <sub>D</sub>                         | Exhibit 2                         | 5-14                            |                                      |
| - 40   | 2172                             | EXHIBIT 20 7                 |                       |                              | V <sub>R</sub>                       | · K                                      | Exhibit 2                         |                                 |                                      |
| <u> </u>                                       | <u> </u>                         | <u> </u>                     |                       |                              |                                      | <u> </u>                                 |                                   |                                 |                                      |
| Flow Entering                                  |                                  | 1                            | 1                     | Ministry O                   | Flow Er                              |  | verge Influ                       |                                 |                                      |
| V  | Actual<br>2492                   | Exhibit 25-7                 | Desirable<br>4600:All | Violation?<br>No             | V <sub>12</sub>                      | Actual                                   | Max De                            |                                 | Violation?                           |
| V <sub>R12</sub>                               | J                                |                              |                       | INO                          | -                                    | f Comico                                 |                                   |                                 | <u> </u><br>                         |
| Level of Serv                                  |                                  |                              |                       |                              | <del>1</del>                         |  | Determinat                        |                                 | ot F)                                |
| .,   | 0.00734 v <sub>R</sub> + 0       | ).0078 V <sub>12</sub> - 0.0 | 10627 L <sub>A</sub>  |                              | 1                                    |  | + 0.0086 V <sub>12</sub> ·        | - 0.009 L <sub>D</sub>          |                                      |
| $D_R = 21.7 \text{ (pc/m)}$                    | i/ln)                            |                              |                       |                              | $D_R = (p)$                          | oc/mi/ln)                                |                                   |                                 |                                      |
| LOS = C (Exhibit)                              | 25-4)                            |                              |                       |                              | LOS = (I                             | Exhibit 25-4)                            |                                   |                                 |                                      |
| Speed Detern                                   | nination                         |                              |                       |                              |                                      | Determina                                | ation                             |                                 |                                      |
| M <sub>S</sub> = 0.333 (Exil                   | bit 25-19)                       |                              |                       |                              | ] °                                  | Exhibit 25-19)                           |                                   |                                 |                                      |
| S <sub>R</sub> = 60.7 mph (                    | (Exhibit 25-19)                  |                              |                       |                              | $S_R = m$                            | ph (Exhibit 25                           | -19)                              |                                 |                                      |
|  | Exhibit 25-19)                   |                              |                       |                              | $S_0 = m$                            | ph (Exhibit 25                           | -19)                              |                                 |                                      |
|  | (Exhibit 25-14)                  |                              |                       |                              |                                      | ph (Exhibit 25                           | -15)                              |                                 |                                      |
| L  |                                  |                              |                       |                              | <u> </u>                             | , ,                                      | -,                                |                                 |                                      |

Generated: 4/20/2011 10:26 AM

|  | RAI                                     | MPS AND                 | RAMP JUNG                | CTIONS V                                | VORKSHI                              | EET                          |                      |                                      |                     |                                      |
|--|---|-------------------------|--------------------------|---|--------------------------------------|------------------------------|----------------------|--------------------------------------|---------------------|--------------------------------------|
| General Info                                     |   |                         | , , , ,                  | Site Infor                              |                                      | -                            |                      |                                      |                     |                                      |
| Analyst<br>Agency or Compan<br>Date Performed    | SKB<br>y TDO                            | T/TranSystems<br>8/2011 | Ju                       | eeway/Dir of Ti<br>nction<br>risdiction |                                      | I-40 WE<br>Exit 47<br>Haywoo | 3<br>od County       | l                                    |                     |                                      |
| Analysis Time Perio                              |   | Peak Period             | An                       | nalysis Year                            |                                      | 2014                         |                      |                                      |                     |                                      |
| Project Description                              | Existing Condi                          | tions                   |                          |   |                                      |                              |                      |                                      |                     |                                      |
| Inputs   |   | Torroin, Loyal          |                          |   |                                      |                              |                      |                                      |                     |                                      |
| Upstream Adj Ramp                                |   | Terrain: Level          |                          |   |                                      |                              |                      |                                      | Downstre<br>Ramp    | eam Adj                              |
| <ul><li>✓ Yes</li><li>✓ No</li><li>✓ O</li></ul> |   |                         |                          |   |                                      |                              |                      |                                      | ✓ Yes               | □ On                                 |
| M NO I O   | '11                                     |                         |                          |   |                                      |                              |                      |                                      | □ No                | ✓ Off                                |
| L <sub>up</sub> = ft                             |   | S                       | <sub>FF</sub> = 70.0 mph |   | S <sub>FR</sub> = 3                  | 35.0 mp                      | h                    |                                      | L <sub>down</sub> = | 2000 ft                              |
| $V_u = veh/l$                                    | h                                       |                         |                          | show lanes, L <sub>A</sub>              |                                      | ·                            |                      |                                      | $V_D =$             | 41 veh/h                             |
| Conversion                                       | to pc/h Uni                             | der Base (              |                          | · A                                     | : D: K: I/                           |                              |                      |                                      |                     |                                      |
| (pc/h)   | V<br>(Veh/hr)                           | PHF                     | Terrain                  | %Truck                                  | %Rv                                  | 1                            | HV                   | f <sub>p</sub>                       | v = V/PH            | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 1911                                    | 0.90                    | Level                    | 25                                      | 0                                    | 0.8                          | 189                  | 1.00                                 |                     | 2389                                 |
| Ramp   | 104                                     | 0.90                    | Level                    | 2                                       | 0                                    |                              | 90                   | 1.00                                 |                     | 117                                  |
| UpStream   |   |                         |                          |   |                                      |                              |                      |                                      |                     |                                      |
| DownStream                                       | 41                                      | 0.90                    | Level                    | 2                                       | 0                                    | 0.9                          | 90                   | 1.00                                 |                     | 46                                   |
| <b>5</b> - (i (i                                 |   | Merge Areas             |                          |   | <b>F</b> - (i (                      | •                            |                      | Diverge Area                         | as                  |                                      |
| Estimation o                                     | <sup>17 V</sup> 12                      |                         |                          |   | Estimat                              | ion o                        |                      |                                      |                     |                                      |
|  | $V_{12} = V_F$                          | (P <sub>FM</sub> )      |                          |   |                                      |                              | V <sub>12</sub> =    | · V <sub>R</sub> + (V <sub>F</sub> - | $V_R)P_{FD}$        |                                      |
| L <sub>EQ</sub> =                                | (Equ                                    | ation 25-2 or           | 25-3)                    |   | L <sub>EQ</sub> =                    |                              |                      | (Equation                            | 25-8 or 25-         | 9)                                   |
| P <sub>FM</sub> =                                | 1.000                                   | using Equati            | on (Exhibit 25-5)        |   | P <sub>FD</sub> =                    |                              |                      | using Equa                           | ation (Exhibi       | t 25-12)                             |
| V <sub>12</sub> =                                | 2389                                    | •                       |                          |   | V <sub>12</sub> =                    |                              |                      | pc/h                                 |                     |                                      |
| V <sub>3</sub> or V <sub>av34</sub>              |   | h (Equation 2           | 25-4 or 25-5)            |   | $V_3$ or $V_{av34}$                  |                              |                      | pc/h (Equati                         | on 25-15 or 2       | 5-16)                                |
| Is $V_3$ or $V_{av34} > 2.7$                     | 00 pc/h?                                | s 🗹 No                  |                          |   | Is V <sub>3</sub> or V <sub>av</sub> | <sub>34</sub> > 2,7          | 00 pc/h?             | ☐ Yes ☐                              | No                  |                                      |
| Is $V_3$ or $V_{av34} > 1.5$                     | * V <sub>12</sub> /2                    | s 🗹 No                  |                          |   | Is V <sub>3</sub> or V <sub>av</sub> | <sub>34</sub> > 1.5          | * V <sub>12</sub> /2 | ☐ Yes ☐                              | No                  |                                      |
| If Yes,V <sub>12a</sub> =                        | pc/h                                    | (Equation 25            | -8)                      |   | If Yes,V <sub>12a</sub> =            | =                            |                      | pc/h (Equa                           | ation 25-18)        | )                                    |
| Capacity Ch                                      | ecks                                    |                         |                          |   | Capacit                              | y Ch                         | ecks                 |                                      |                     |                                      |
|  | Actual                                  | Ca                      | apacity                  | LOS F?                                  |                                      |                              | Actual               |                                      | Capacity            | LOS F?                               |
|  |   |                         |                          |   | $V_{F}$                              |                              |                      | Exhibit 2                            | 25-14               |                                      |
| $V_{FO}$   | 2506                                    | Exhibit 25-7            |                          | No                                      | $V_{FO} = V_{F}$                     | - V <sub>R</sub>             |                      | Exhibit 2                            | 25-14               |                                      |
|  |   |                         |                          |   | $V_R$                                |                              |                      | Exhibit 2                            | 25-3                |                                      |
| Flow Enterin                                     | a Merae In                              | fluence A               | rea                      |   | Flow En                              | terin                        | a Dive               | erae Influ                           | ience Are           | <u>'</u><br>ea                       |
|  | Actual                                  | *                       | Desirable                | Violation?                              |                                      |                              | ctual                |                                      | esirable            | Violation?                           |
| V <sub>R12</sub>                                 | 2506                                    | Exhibit 25-7            | 4600:All                 | No                                      | V <sub>12</sub>                      |                              |                      | Exhibit 25-1                         |                     |                                      |
| Level of Serv                                    | vice Detern                             | nination (i             | f not F)                 |   |                                      | f Serv                       | ice D                | etermina                             | tion (if n          | ot F)                                |
|  | + 0.00734 v <sub>R</sub> + 0            | •                       |                          |   | _                                    |                              |                      | 0.0086 V <sub>12</sub>               | •                   | ,                                    |
| D <sub>R</sub> = 21.8 (pc/r                      | • | 12                      | ^                        |   |                                      | oc/mi/lı                     |                      |                                      | J                   |                                      |
| LOS = C (Exhibi                                  |   |                         |                          |   |                                      | Exhibit                      | •                    |                                      |                     |                                      |
| Speed Deter                                      |   |                         |                          |   | Speed L                              |                              |                      | on                                   |                     |                                      |
|  | kibit 25-19)                            |                         |                          |   | <del>' '</del>                       | xhibit 2                     |                      |                                      |                     |                                      |
| _  | (Exhibit 25-19)                         |                         |                          |   | 1                                    | ph (Exh                      | ibit 25-19           | )                                    |                     |                                      |
|  | (Exhibit 25-19)                         |                         |                          |   | I ''                                 |                              | ibit 25-19           |                                      |                     |                                      |
|  | (Exhibit 25-14)                         |                         |                          |   | 1                                    |                              | ibit 25-15           |                                      |                     |                                      |
| [- 00.7 mpm                                      | \                                       |                         |                          |   | <u> </u>                             | L /_VI                       |                      | ,                                    |                     |                                      |

Generated: 4/20/2011 10:26 AM

|   | RAI                         | MPS AND                      | RAMP JUNC            | CTIONS W                   | ORKSH                                | EET              |                |                       |                               |                                      |
|---|-----------------------------|------------------------------|----------------------|----------------------------|--------------------------------------|------------------|----------------|-----------------------|-------------------------------|--------------------------------------|
| General Infor                           |                             |                              |                      | Site Infor                 |                                      |                  |                |                       |                               |                                      |
| Analyst                                 | SKB                         |                              |                      | eeway/Dir of Tr            |                                      | I-40 EB          |                |                       |                               |                                      |
| Agency or Company                       |                             | T/TranSystems                |                      | nction                     |                                      | Exit 47          |                |                       |                               |                                      |
| Date Performed                          |                             | 3/2011                       |                      | isdiction                  |                                      | Haywood          | County         |                       |                               |                                      |
| Analysis Time Period                    |                             | eak Period                   |                      | alysis Year                |                                      | 2034             |                |                       |                               |                                      |
| Project Description                     |                             |                              |                      | ,                          |                                      |                  |                |                       |                               |                                      |
| Inputs                                  |                             |                              |                      |                            |                                      |                  |                |                       |                               |                                      |
| Upstream Adj Ramp                       |                             | Terrain: Leve                |                      |                            |                                      |                  |                |                       | Downstre<br>Ramp              | eam Adj                              |
| ☐ Yes ☐ Or                              | า                           |                              |                      |                            |                                      |                  |                |                       | ✓ Yes                         | ☐ On                                 |
| ✓ No                                    | f                           |                              |                      |                            |                                      |                  |                |                       | □ No                          | ✓ Off                                |
| L <sub>up</sub> = ft                    |                             |                              |                      |                            |                                      |                  |                |                       | L <sub>down</sub> =           | 2000 ft                              |
| $V_{u} = veh/h$                         | 1                           | S                            | FF = 70.0 mph        | how lance I                | $S_{FR} = 1$                         | 35.0 mph         |                |                       | V <sub>D</sub> =              | 124 <b>veh/h</b>                     |
|   |                             | dor Bood                     |                      | show lanes, L <sub>A</sub> | LD, VR, Vf)                          |                  |                |                       |                               |                                      |
| Conversion t                            | o pc/n und<br>      ∨       |                              | Jonaitions           |                            | Т                                    | Т                |                |                       | 1                             |                                      |
| (pc/h)                                  | (Veh/hr)                    | PHF                          | Terrain              | %Truck                     | %Rv                                  | f <sub>H√</sub>  | ,              | f <sub>p</sub>        | v = V/PH                      | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway                                 | 2515                        | 0.90                         | Level                | 25                         | 0                                    | 0.889            |                | 1.00                  |                               | 3144                                 |
| Ramp                                    | 43                          | 0.90                         | Level                | 2                          | 0                                    | 0.990            |                | 1.00                  |                               | 48                                   |
| UpStream                                |                             |                              |                      |                            | ļ                                    |                  | -              |                       |                               |                                      |
| DownStream                              | 124                         | 0.90                         | Level                | 2                          | 0                                    | 0.990            |                | 1.00                  |                               | 139                                  |
| Estimation of                           |                             | Merge Areas                  |                      |                            | Fatimat                              | tion of          |                | erge Areas            |                               |                                      |
| Estimation o                            |                             |                              |                      |                            | Estimat                              |                  |                |                       |                               |                                      |
|   | $V_{12} = V_F$              | (P <sub>FM</sub> )           |                      |                            |                                      |                  | $V_{12} = V_R$ | + (V <sub>F</sub> - V | <sub>R</sub> )P <sub>FD</sub> |                                      |
| L <sub>EQ</sub> =                       | (Equa                       | ation 25-2 or                | 25-3)                |                            | L <sub>EQ</sub> =                    |                  | (Ed            | quation 25            | 5-8 or 25-                    | 9)                                   |
| P <sub>FM</sub> =                       | 1.000                       | using Equati                 | on (Exhibit 25-5)    |                            | P <sub>FD</sub> =                    |                  | usi            | ing Equati            | ion (Exhibit                  | 25-12)                               |
| V <sub>12</sub> =                       | 3144                        | oc/h                         |                      |                            | V <sub>12</sub> =                    |                  | рс             | /h                    |                               |                                      |
| V <sub>3</sub> or V <sub>av34</sub>     | -                           |                              | 25-4 or 25-5)        |                            | V <sub>3</sub> or V <sub>av34</sub>  |                  | •              | h (Equation           | 25-15 or 25                   | 5-16)                                |
| Is $V_3$ or $V_{av34} > 2,70$           |                             |                              |                      |                            | Is V <sub>3</sub> or V <sub>av</sub> | > 2 700          |                |                       |                               | ,                                    |
|   |                             |                              |                      |                            | 1                                    |                  |                |                       |                               |                                      |
| Is $V_3$ or $V_{av34} > 1.5$            | · <del>-</del>              |                              | . 0)                 |                            | Is V <sub>3</sub> or V <sub>a</sub>  |                  |                |                       |                               |                                      |
|   |                             | (Equation 25                 | -8)                  |                            | If Yes,V <sub>12a</sub>              |                  |                | /h (Equati            | on 25-18)                     |                                      |
| Capacity Che                            | 1                           | 1 .                          |                      |                            | Capacit                              |                  |                |                       |                               |                                      |
|   | Actual                      | C                            | apacity              | LOS F?                     | \ \/                                 |                  | Actual         | 1                     | apacity                       | LOS F?                               |
|   | 2400                        | E 1.1.11 05 3                |                      | J                          | V <sub>F</sub>                       | \ <u></u>        |                | Exhibit 25            | _                             |                                      |
| V <sub>FO</sub>                         | 3192                        | Exhibit 25-7                 |                      | No                         | $V_{FO} = V_{F}$                     | - v <sub>R</sub> |                | Exhibit 25-           |                               |                                      |
|   |                             |                              |                      |                            | V <sub>R</sub>                       |                  |                | Exhibit 25            |                               |                                      |
| Flow Entering                           | <del></del>                 |                              |                      |                            | Flow E                               |                  |                |                       |                               |                                      |
|   | Actual                      |                              | Desirable            | Violation?                 | <del> </del>                         | Actu             |                | Max Des               | irable<br>I                   | Violation?                           |
| V <sub>R12</sub>                        | 3192                        | Exhibit 25-7                 | 4600:All             | No                         | V <sub>12</sub>                      |                  |                | hibit 25-14           |                               | <u> </u>                             |
| Level of Serv                           |                             | •                            |                      |                            |                                      |                  |                | rminati               |                               | ot F)                                |
| • | $0.00734 \text{ V}_{R} + 0$ | 0.0078 V <sub>12</sub> - 0.0 | 00627 L <sub>A</sub> |                            |                                      | $D_{R} = 4.2$    | 52 + 0.00      | 086 V <sub>12</sub> - | 0.009 L <sub>D</sub>          |                                      |
| $D_{R} = 27.2 \text{ (pc/m)}$           | ni/ln)                      |                              |                      |                            | $D_R = ($                            | pc/mi/ln)        |                |                       |                               |                                      |
| LOS = C (Exhibit                        | 25-4)                       |                              |                      |                            | LOS = (I                             | Exhibit 25       | 5-4)           |                       |                               |                                      |
| Speed Deteri                            | mination                    |                              |                      |                            | Speed I                              | Determ           | ination        | ı                     |                               |                                      |
| M <sub>S</sub> = 0.381 (Exi             | bit 25-19)                  |                              |                      |                            |                                      | Exhibit 25-1     |                |                       |                               |                                      |
|   | (Exhibit 25-19)             |                              |                      |                            | $S_R = m$                            | nph (Exhibi      | 25-19)         |                       |                               |                                      |
|   | Exhibit 25-19)              |                              |                      |                            | $S_0 = m$                            | nph (Exhibi      | 25-19)         |                       |                               |                                      |
| •                                       | (Exhibit 25-14)             |                              |                      |                            |                                      | nph (Exhibi      | 25-15)         |                       |                               |                                      |
| ·                                       |                             |                              |                      |                            |                                      |                  | •              |                       |                               |                                      |

Generated: 4/20/2011 10:27 AM

|  |                  | RAI                                       | MPS AND                             | RAMP JUNG                | CTIONS V                                | VORKSHI                             | EET                                   |                   |   |  |                                       |
|--|------------------|---|-------------------------------------|--------------------------|---|-------------------------------------|---------------------------------------|-------------------|---|--|---------------------------------------|
| General                                | Inform           |   |                                     |                          | Site Infor                              |                                     |                                       |                   |   |  |                                       |
| Analyst<br>Agency or C<br>Date Perforr | ompany           | SKB<br>TDO                                | Γ/TranSystems<br>8/2011             | Ju                       | eeway/Dir of Ti<br>nction<br>risdiction | ravel                               | I-40 EI<br>Exit 47<br>Haywo           |                   | ty  |  |                                       |
| Analysis Tim<br>Project Desc           |                  | PM P<br>Existing Condit                   | eak Period<br>ions                  | An                       | alysis Year                             |                                     | 2034                                  |                   |   |  |                                       |
| Inputs                                 |                  |   |                                     |                          |   |                                     |                                       |                   |   |  |                                       |
| Upstream Ad                            | dj Ramp          |   | Terrain: Level                      |                          |   |                                     |                                       |                   |   | Downstro<br>Ramp                                   | eam Adj                               |
| ☐ Yes                                  | ☐ On             |   |                                     |                          |   |                                     |                                       |                   |   | ✓ Yes  | ☐ On                                  |
| ✓ No                                   | ☐ Off            |   |                                     |                          |   |                                     |                                       |                   |   | □ No   | ✓ Off                                 |
| L <sub>up</sub> =                      | ft               |   | S                                   | <sub>FF</sub> = 70.0 mph |   | S <sub>FR</sub> = 3                 | 35 () mi                              | nh                |   | L <sub>down</sub> =                                | 2000 ft                               |
| V <sub>u</sub> =                       | veh/h            |   |                                     |                          | show lanes, L <sub>A</sub>              |                                     | , , , , , , , , , , , , , , , , , , , | J. 1              |   | $V_D =$  | 197 veh/h                             |
| Convers                                | sion to          | pc/h Und                                  | der Base (                          | Conditions               | · A                                     | : D: K: I/                          |                                       |                   |   |  |                                       |
| (pc/h                                  | 1                | V<br>(Veh/hr)                             | PHF                                 | Terrain                  | %Truck                                  | %Rv                                 |                                       | f <sub>HV</sub>   | f <sub>p</sub>                                  | v = V/PH   | IF x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway                                |                  | 2629                                      | 0.90                                | Level                    | 25                                      | 0                                   | 0.                                    | 889               | 1.00  |  | 3286                                  |
| Ramp<br>UpStream                       |                  | 58  | 0.90                                | Level                    | 2                                       | 0                                   | 0.                                    | 990               | 1.00  | +  | 65                                    |
| DownStream                             | m                | 197                                       | 0.90                                | Level                    | 2                                       | 0                                   | 0.                                    | 990               | 1.00  |  | 221                                   |
| Estimat                                | ion of           |   | Merge Areas                         |                          |   | Estimat                             | ion (                                 | of v              | Diverge Are                                     | eas  |                                       |
| LStillati                              | ion or           |   | (D)                                 |                          |   | LStillat                            | 1011                                  |                   | ., .,   | \/\\D  |                                       |
| L <sub>EQ</sub> =                      |                  | V <sub>12</sub> = V <sub>F</sub><br>(Equa | (P <sub>FM</sub> )<br>ation 25-2 or | 25-3)                    |   | L <sub>EQ</sub> =                   |                                       | V <sub>12</sub> : | = V <sub>R</sub> + (V <sub>F</sub><br>(Equation | - V <sub>R</sub> )P <sub>FD</sub><br>ı 25-8 or 25- | .9)                                   |
| P <sub>FM</sub> =                      |                  |   |                                     | on (Exhibit 25-5)        |   | P <sub>FD</sub> =                   |                                       |                   | · ·   | uation (Exhibi                                     | •                                     |
| V <sub>12</sub> =                      |                  | 3286 <b>r</b>                             |                                     | OTT (EXHIBIT 20 0)       |   | V <sub>12</sub> =                   |                                       |                   | pc/h  |  | . 20 . 27                             |
| $V_3$ or $V_{av34}$                    |                  | •   | n (Equation 2                       | 25-4 or 25-5)            |   | V <sub>3</sub> or V <sub>av34</sub> |                                       |                   | •   | tion 25-15 or 2                                    | 5-16)                                 |
|  | 24 > 2,700       | pc/h? TYes                                |                                     |                          |   | 1                                   | 24 > 2,                               | 700 pc/h?         | Yes   |  | ,                                     |
| 0 411                                  | · .              | V <sub>12</sub> /2                        |                                     |                          |   |                                     |                                       |                   | ☐ Yes ☐   |  |                                       |
| If Yes,V <sub>12a</sub> =              |                  | · <del>-</del>                            | Equation 25                         | -8)                      |   | If Yes, V <sub>12a</sub> =          |                                       | 12                |   | ation 25-18  | )                                     |
| Capacit                                |                  |   | (29000011 20                        | <u> </u>                 |   | Capacit                             |                                       |                   | po/// (=qo                                      |  | /                                     |
| <u>Gupuon</u>                          | <i>y 0.1.</i> 00 | Actual                                    | Ca                                  | apacity                  | LOS F?                                  | Joupaon                             | <i>y U</i>                            | Actua             | al l  | Capacity   | LOS F?                                |
|  |                  |   |                                     | 1                        |   | V <sub>F</sub>                      | ĺ                                     |                   | Exhibit   |  |                                       |
| V <sub>FC</sub>                        | ,                | 3351                                      | Exhibit 25-7                        |                          | No                                      | $V_{FO} = V_{F}$                    | - V <sub>R</sub>                      |                   | Exhibit   | 25-14  |                                       |
|  |                  |   |                                     |                          |   | V <sub>R</sub>                      |                                       |                   | Exhibit   | 25-3   |                                       |
| Flow En                                | terina           | Merae In                                  | fluence A                           | rea                      |   | Flow En                             | iterii                                | na Div            | erae Infl                                       | uence Ar   | '<br>ea                               |
|  | Ĭ                | Actual                                    |                                     | Desirable                | Violation?                              |                                     |                                       | Actual            |   | Desirable  | Violation?                            |
| V <sub>R1</sub>                        | 2                | 3351                                      | Exhibit 25-7                        | 4600:All                 | No                                      | V <sub>12</sub>                     |                                       |                   | Exhibit 25-                                     | 14   |                                       |
| Level of                               | f Servi          | ce Detern                                 | nination (i                         | f not F)                 |   | Level of                            | f Ser                                 | vice D            | etermina  | ation (if n  | ot F)                                 |
| D <sub>R</sub> =                       | 5.475 + (        | 0.00734 v <sub>R</sub> + 0                | 0.0078 V <sub>12</sub> - 0.0        | 0627 L <sub>A</sub>      |   |                                     | $D_R = \frac{1}{2}$                   | 4.252 +           | 0.0086 V <sub>12</sub>                          | <sub>2</sub> - 0.009 L <sub>D</sub>                |                                       |
| $D_R = 28$                             | 3.4 (pc/mi/      | 'ln)                                      |                                     |                          |   | $D_R = (p)$                         | oc/mi/                                | ln)               |   |  |                                       |
| LOS = D                                | (Exhibit 2       | 5-4)                                      |                                     |                          |   | LOS = (E                            | Exhibi                                | t 25-4)           |   |  |                                       |
| Speed L                                | Determ           | ination                                   |                                     |                          |   | Speed L                             | Detei                                 | minat             | ion   |  |                                       |
| $M_S = 0.$                             | 397 (Exib        | it 25-19)                                 |                                     |                          |   | 1 "                                 | xhibit :                              |                   |   |  |                                       |
| S <sub>R</sub> = 58                    | 3.9 mph (E       | Exhibit 25-19)                            |                                     |                          |   | I ''                                |                                       | hibit 25-1        |   |  |                                       |
| $S_0 = N/$                             |                  | xhibit 25-19)                             |                                     |                          |   | ľ                                   |                                       | hibit 25-1        |   |  |                                       |
|  | 3.9 mph (E       | Exhibit 25-14)                            |                                     |                          |   | S = m                               | ph (Ex                                | hibit 25-1        | 5)  |  |                                       |

Generated: 4/20/2011 10:30 AM

|                                     | RAI                              | MPS AND            | RAMP JUNG          | CTIONS W                  | ORKSH                                | EET                                       |                           |                                 |                      |
|-------------------------------------|----------------------------------|--------------------|--------------------|---------------------------|--------------------------------------|---|---------------------------|---------------------------------|----------------------|
| General Info                        |                                  |                    |                    | Site Infor                |                                      |   |                           |                                 |                      |
| Analyst                             | SKB                              |                    |                    | eeway/Dir of Tr           |                                      | I-40 WB                                   |                           |                                 |                      |
| Agency or Company                   |                                  | T/TranSystems      |                    | nction                    |                                      | Exit 47                                   |                           |                                 |                      |
| Date Performed                      |                                  | 3/2011             | Jur                | isdiction                 |                                      | Haywood Cou                               | intv                      |                                 |                      |
| Analysis Time Perio                 |                                  | eak Period         | An                 | alysis Year               |                                      | 2034                                      | ,                         |                                 |                      |
| Project Description                 |                                  |                    |                    |                           |                                      |   |                           |                                 |                      |
| Inputs                              | -                                |                    |                    |                           |                                      |   |                           |                                 |                      |
| Upstream Adj Ramp                   | )                                | Terrain: Leve      |                    |                           |                                      |   |                           | Downstre<br>Ramp                | eam Adj              |
| ☐ Yes ☐ Oi                          | n                                |                    |                    |                           |                                      |   |                           | ✓ Yes                           | □ On                 |
| ✓ No ☐ Of                           | ff                               |                    |                    |                           |                                      |   |                           | □ No                            | ✓ Off                |
| L <sub>up</sub> = ft                |                                  |                    |                    |                           |                                      |   |                           | L <sub>down</sub> =             | 2000 ft              |
| $V_{u} = veh/h$                     | 1                                | S                  | FF = 70.0 mph      | h. L                      | S <sub>FR</sub> = 3                  | 35.0 mph                                  |                           | V <sub>D</sub> =                | 58 veh/h             |
|                                     |                                  | <u> </u>           |                    | how lanes, L <sub>A</sub> | $L_{D'}V_{R'}V_{f}$                  |   |                           |                                 |                      |
| Conversion t                        | T *                              | der Base (         | Conditions         |                           | 1                                    | 1   |                           |                                 |                      |
| (pc/h)                              | V<br>(Veh/hr)                    | PHF                | Terrain            | %Truck                    | %Rv                                  | f <sub>HV</sub>                           | f <sub>p</sub>            | v = V/PH                        | $F x f_{HV} x f_{p}$ |
| Freeway                             | 2598                             | 0.90               | Level              | 25                        | 0                                    | 0.889                                     | 1.00                      |                                 | 3248                 |
| Ramp                                | 234                              | 0.90               | Level              | 2                         | 0                                    | 0.990                                     | 1.00                      |                                 | 263                  |
| UpStream                            |                                  |                    |                    |                           |                                      |   |                           |                                 |                      |
| DownStream                          | 58                               | 0.90               | Level              | 2                         | 0                                    | 0.990                                     | 1.00                      |                                 | 65                   |
|                                     |                                  | Merge Areas        |                    |                           |                                      |   | Diverge Area              | IS                              |                      |
| Estimation o                        | f v <sub>12</sub>                |                    |                    |                           | Estimat                              | ion of v <sub>12</sub>                    | 2                         |                                 |                      |
|                                     | V <sub>12</sub> = V <sub>F</sub> | (P <sub>EM</sub> ) |                    |                           |                                      | V <sub>1</sub> ,                          | $_{2} = V_{R} + (V_{F} -$ | V <sub>P</sub> )P <sub>ED</sub> |                      |
| L <sub>EQ</sub> =                   |                                  | ation 25-2 or      | 25-3)              |                           | L <sub>EQ</sub> =                    | 12  | (Equation 2               | –                               | 9)                   |
| P <sub>FM</sub> =                   |                                  |                    | on (Exhibit 25-5)  |                           | P <sub>FD</sub> =                    |   | using Equa                |                                 | •                    |
|                                     |                                  |                    | OII (EXHIBIT 25-5) |                           | 1                                    |   |                           | ACIOIT (EXTIIDIT                | 25 12)               |
| V <sub>12</sub> =                   | 3248                             |                    |                    |                           | V <sub>12</sub> =                    |   | pc/h                      | 05.45                           | - 44)                |
| V <sub>3</sub> or V <sub>av34</sub> |                                  |                    | 25-4 or 25-5)      |                           | V <sub>3</sub> or V <sub>av34</sub>  |   | pc/h (Equation            |                                 | o-16)                |
| Is $V_3$ or $V_{av34} > 2,70$       |                                  |                    |                    |                           |                                      |   | n? ☐ Yes ☐ N              |                                 |                      |
| Is $V_3$ or $V_{av34} > 1.5$        | * V <sub>12</sub> /2             | s 🗹 No             |                    |                           | Is V <sub>3</sub> or V <sub>av</sub> | <sub>/34</sub> > 1.5 * V <sub>12</sub> /2 | 2 ☐ Yes ☐ N               | No                              |                      |
| If Yes,V <sub>12a</sub> =           | pc/h                             | (Equation 25       | -8)                |                           | If Yes,V <sub>12a</sub> =            | =   | pc/h (Equa                | tion 25-18)                     |                      |
| Capacity Che                        | ecks                             |                    |                    |                           | Capacit                              | y Checks                                  | }                         |                                 |                      |
|                                     | Actual                           | С                  | apacity            | LOS F?                    |                                      | Act                                       | ual                       | Capacity                        | LOS F?               |
|                                     |                                  |                    |                    |                           | V <sub>F</sub>                       |   | Exhibit 2                 | 5-14                            |                      |
| $V_{FO}$                            | 3511                             | Exhibit 25-7       |                    | No                        | $V_{FO} = V_{F}$                     | - V <sub>R</sub>                          | Exhibit 2                 | 5-14                            |                      |
| 10                                  |                                  |                    |                    |                           | V <sub>R</sub>                       |   | Exhibit 2                 | 25-3                            |                      |
| Flow Entering                       | a Marga In                       | fluonoo A          | <u></u>            | <u> </u>                  |                                      | storing Di                                | verge Influ               |                                 | <u> </u>             |
| FIOW EIREIN                         | Actual                           | T .                | Desirable          | Violation?                | FIOW EI                              | Actual                                    | Max De                    |                                 | Violation?           |
| V <sub>R12</sub>                    | 3511                             | Exhibit 25-7       | 4600:All           | No                        | V <sub>12</sub>                      | Actual                                    | Exhibit 25-14             |                                 | v ioiation:          |
| Level of Serv                       |                                  |                    |                    |                           | -                                    | f Service                                 | <br>Determinat            |                                 | ot F)                |
|                                     | - 0.00734 v <sub>R</sub> + 0     |                    |                    |                           | <del>1</del>                         |   | + 0.0086 V <sub>12</sub>  | •                               | ,                    |
| $D_{R} = 29.6 \text{ (pc/n)}$       | .,                               | 7,0070 1 12 0.0    | 552, TA            |                           | 1                                    | oc/mi/ln)                                 | 1 010000 1 12             | 0.000 <b>-</b> D                |                      |
| LOS = D (Exhibit                    |                                  |                    |                    |                           | I                                    | Exhibit 25-4)                             | )                         |                                 |                      |
| Speed Deteri                        |                                  |                    |                    |                           | <u> </u>                             | Determina                                 |                           |                                 |                      |
| $M_S = 0.417 \text{ (Ex}$           |                                  |                    |                    |                           |                                      | Exhibit 25-19)                            |                           |                                 |                      |
| _ ·                                 | (Exhibit 25-19)                  |                    |                    |                           |                                      | ph (Exhibit 25                            | -19)                      |                                 |                      |
|                                     | (Exhibit 25-19)                  |                    |                    |                           | I ''                                 | ph (Exhibit 25                            |                           |                                 |                      |
|                                     | (Exhibit 25-14)                  |                    |                    |                           |                                      | nph (Exhibit 25                           |                           |                                 |                      |
| 5 – 30.3 mpn                        | (EVIIINII 50-14)                 |                    |                    |                           | <u>ار</u> ا                          | ihu (Evilinit 53.                         | 10)                       |                                 |                      |

|   |             | RAI                                     | MPS AND  | RAMP JUNG                | CTIONS V   | VORKSHI                                | EET                                |                    |                                    |                                     |                                      |
|---|-------------|---|--|--------------------------|--|--|------------------------------------|--------------------|------------------------------------|-------------------------------------|--------------------------------------|
| General   | Inform      |   |  |                          | Site Infor   |  |                                    |                    |                                    |                                     |                                      |
| Analyst<br>Agency or Co<br>Date Performo<br>Analysis Time | mpany<br>ed | SKB<br>TDO <sup>-</sup><br>04/18        | T/TranSystems<br>3/2011<br>Peak Period           | Ju<br>Ju                 | eeway/Dir of Tonction<br>risdiction<br>alysis Year |  | I-40 W<br>Exit 47<br>Haywo<br>2034 |                    | ty                                 |                                     |                                      |
| Project Descri  |             |   |  |                          | ,  |  |                                    |                    |                                    |                                     |                                      |
| Inputs  |             |   |  |                          |  |  |                                    |                    |                                    |                                     |                                      |
| Upstream Adj  | ·           |   | Terrain: Level                                   |                          |  |  |                                    |                    |                                    | Downstre<br>Ramp                    | eam Adj                              |
|   | On          |   |  |                          |  |  |                                    |                    |                                    | ✓ Yes                               | ☐ On                                 |
| ™ No  | Off         |   |  |                          |  |  |                                    |                    |                                    | □ No                                | Off                                  |
| L <sub>up</sub> =   | ft          |   | S  | <sub>FF</sub> = 70.0 mph |  | S <sub>FR</sub> = 3                    | 35.0 mi                            | oh                 |                                    | L <sub>down</sub> =                 | 2000 ft                              |
| V <sub>u</sub> =  | veh/h       |   |  |                          | show lanes, L <sub>A</sub>                         |  | ,                                  |                    |                                    | $V_D =$                             | 61 <b>veh/h</b>                      |
| Conversi  | ion to      | pc/h Und                                | der Base (                                       | Conditions               | . А  | r Dr Rr Ir                             |                                    |                    |                                    |                                     |                                      |
| (pc/h)  |             | V<br>(Veh/hr)                           | PHF  | Terrain                  | %Truck   | %Rv                                    |                                    | f <sub>HV</sub>    | f <sub>p</sub>                     | v = V/PH                            | F x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   |             | 2735                                    | 0.90   | Level                    | 25   | 0                                      | 0.                                 | 889                | 1.00                               |                                     | 3419                                 |
| Ramp  |             | 127                                     | 0.90   | Level                    | 2  | 0                                      | 0.                                 | 990                | 1.00                               |                                     | 143                                  |
| UpStream  |             |   | <b>.</b>   |                          |  |  | 1                                  |                    |                                    |                                     |                                      |
| DownStream  |             | 61                                      | 0.90   | Level                    | 2  | 0                                      | 0.                                 | 990                | 1.00                               |                                     | 68                                   |
| Estimation  | on of v     |   | Merge Areas                                      |                          |  | Estimat                                | ion d                              | of V <sub>12</sub> | Diverge Are                        | eas                                 |                                      |
|   |             | V <sub>12</sub> = V <sub>F</sub>        | ( P )  |                          |  | 1                                      |                                    |                    | = V <sub>R</sub> + (V <sub>F</sub> | - V_ )P                             |                                      |
| l =   |             |   | or ition 25-2 or                                 | 25-3)                    |  | =                                      |                                    | * 12               |                                    | 25-8 or 25-                         | <b>a)</b>                            |
| L <sub>EQ</sub> =<br>P <sub>FM</sub> =                    |             |   |  | on (Exhibit 25-5)        |  | L <sub>EQ</sub> =<br>P <sub>FD</sub> = |                                    |                    |                                    | ation (Exhibi                       | •                                    |
| V <sub>12</sub> =   |             | 3419 <b>r</b>                           |  | OII (EXHIBIT 25-5)       |  | V <sub>12</sub> =                      |                                    |                    | pc/h                               | action (Exhibi                      | (25-12)                              |
| V <sub>3</sub> or V <sub>av34</sub>                       |             | •                                       | n (Equation 2                                    | 5-4 or 25-5)             |  | $V_{3}^{12}$ or $V_{av34}$             |                                    |                    | •                                  | tion 25-15 or 2                     | 5-16)                                |
| Is $V_3$ or $V_{av34}$                                    | > 2 700 i   |   |  | .5-4 01 25-5)            |  | 1                                      | > 2                                | 700 nc/h?          | Yes                                |                                     | J-10)                                |
| Is $V_3$ or $V_{av34}$                                    |             |   |  |                          |  |  |                                    |                    | Yes =                              |                                     |                                      |
| If Yes,V <sub>12a</sub> =                                 |             |   |  | ۵/                       |  |  |                                    |                    |                                    | ino<br>ation 25-18)                 |                                      |
|   |             |   | (Equation 25                                     | -0)                      |  | If Yes,V <sub>12a</sub> =              |                                    | - ooko             | pc/II (⊑qu                         | alion 25-16,                        |                                      |
| Capacity  | Cnec        |   | 1 0  | an a altre               | LOS F?   | Capacit                                | y Ch                               |                    | .i [                               | Canacity                            | 1,00,50                              |
|   |             | Actual                                  |  | apacity                  | LUSF?  | V <sub>F</sub>                         |                                    | Actua              | Exhibit                            | Capacity                            | LOS F?                               |
| \/  |             | 25/2                                    | Fyhih!# 0F 7                                     |                          | No   |  | 1/                                 |                    |                                    |                                     | _                                    |
| V <sub>FO</sub>   |             | 3562                                    | Exhibit 25-7                                     |                          | No   | $V_{FO} = V_{F}$                       | - v <sub>R</sub>                   |                    | Exhibit                            |                                     | _                                    |
|   |             |   |  |                          |  | V <sub>R</sub>                         |                                    |                    | Exhibit                            |                                     |                                      |
| Flow Ent  | ering       |   | fluence A  |                          |  | Flow En                                | _                                  |                    |                                    | uence Are                           | *                                    |
| \/  |             | Actual                                  | <del>`                                    </del> | Desirable                | Violation?   | \/                                     | 1                                  | Actual             | 1                                  | Desirable                           | Violation?                           |
| V <sub>R12</sub>  | <u> </u>    | 3562                                    | Exhibit 25-7                                     | 4600:All                 | No   | V <sub>12</sub>                        | ( C =                              | ulas 5             | Exhibit 25-                        |                                     | <br>                                 |
|   |             |   | <u>nination (i</u>                               |                          |  | _                                      |                                    |                    |                                    | ation (if n                         | ot F)                                |
| ,,  |             | • | 0.0078 V <sub>12</sub> - 0.0                     | UUZI LA                  |  |  |                                    |                    | 0.0000 V <sub>12</sub>             | <sub>2</sub> - 0.009 L <sub>D</sub> |                                      |
| 1.  | 1 (pc/mi/lr |   |  |                          |  | "                                      | oc/mi/l                            | •                  |                                    |                                     |                                      |
|   | Exhibit 25  |   |  |                          |  | <del></del>                            |                                    | t 25-4)            | •                                  |                                     |                                      |
| Speed De  |             |   |  |                          |  | Speed L                                |                                    |                    | ion                                |                                     |                                      |
| 3   | 23 (Exibit  | •                                       |  |                          |  | ° '                                    | xhibit 2                           | •                  | 0)                                 |                                     |                                      |
| $S_{R} = 58.$   | 1 mph (E)   | khibit 25-19)                           |  |                          |  | I ''                                   | •                                  | hibit 25-1         |                                    |                                     |                                      |
| _ ~   |             | hibit 25-19)                            |  |                          |  | ľ                                      | •                                  | hibit 25-1         |                                    |                                     |                                      |
| S = 58.   | 1 mph (E)   | (hibit 25-14)                           |  |                          |  | S = m                                  | ph (Ex                             | hibit 25-1         | 5)                                 |                                     |                                      |

Generated: 4/20/2011 10:31 AM

## Diverge Ramps Highway Capacity Software Computer Printouts

|  |                                    | RAMP                    | S AND RAM     | IP JUNCTI                           | ONS WO                                | RKSI                          | HEET                 |                          |                           |                                    |
|--|------------------------------------|-------------------------|---------------|-------------------------------------|---------------------------------------|-------------------------------|----------------------|--------------------------|---------------------------|------------------------------------|
| General II                                 | nformation                         |                         |               | Site Infor                          |                                       | <u></u> -                     | -                    |                          |                           |                                    |
| Analyst<br>Agency or Com<br>Date Performed | SKB<br>npany TDO                   | T/TranSystems<br>8/2011 | J             | reeway/Dir of Trunction urisdiction | avel                                  | I-40 EB<br>Exit 35<br>Fayette | County               |                          |                           |                                    |
| Analysis Time F                            | Period AM I                        | Peak Period             | А             | nalysis Year                        |                                       | 2014                          |                      |                          |                           |                                    |
| Project Descrip                            | tion Existing Cond                 | itions                  |               |                                     |                                       |                               |                      |                          |                           |                                    |
| Inputs                                     |                                    | 1                       |               |                                     |                                       |                               |                      | -                        |                           |                                    |
| Upstream Adj F                             | ,                                  | Terrain: Leve           | ·l            |                                     |                                       |                               |                      |                          | Downstrear<br>Ramp        | n Adj                              |
|  | ▼ On<br>Off                        |                         |               |                                     |                                       |                               |                      |                          |                           | □ On                               |
|  | 000 ft                             |                         |               |                                     |                                       |                               |                      |                          | No<br>L <sub>down</sub> = | Off<br>ft                          |
| ap   | 01 veh/h                           | S                       | FF = 70.0 mph | show lanes, L <sub>A</sub>          | $S_{FR} = 3$                          | 35.0 mph                      | 1                    |                          |                           | veh/h                              |
| Conversion                                 | on to pc/h Un                      | der Base (              |               | А                                   | ' D' R' I'                            |                               |                      |                          |                           |                                    |
| (pc/h)                                     | V<br>(Veh/hr)                      | PHF                     | Terrain       | %Truck                              | %Rv                                   | f                             | HV                   | f <sub>p</sub>           | v = V/PHF >               | k f <sub>HV</sub> x f <sub>p</sub> |
| Freeway                                    | 2096                               | 0.90                    | Level         | 25                                  | 0                                     | 0.8                           | 189                  | 1.00                     | 262                       | 0                                  |
| Ramp                                       | 184                                | 0.90                    | Level         | 3                                   | 0                                     | 0.9                           | 85                   | 1.00                     | 208                       | 3                                  |
| UpStream                                   | 201                                | 3                       | 0             | 0.9                                 | 85                                    | 1.00                          | 227                  | 7                        |                           |                                    |
| DownStream                                 |                                    |                         |               |                                     |                                       |                               |                      |                          |                           |                                    |
| Cotino o tio                               |                                    | Merge Areas             |               |                                     | [ Cating at                           |                               |                      | erge Areas               |                           |                                    |
| Estimatio                                  | n or v <sub>12</sub>               |                         |               |                                     | Estimat                               | ion o                         | 1 <sub>2</sub>       |                          |                           |                                    |
|  | $V_{12} = V_F$                     | (P <sub>FM</sub> )      |               |                                     |                                       |                               | V <sub>12</sub> = \  | $V_R + (V_F - V_F)$      | R)P <sub>FD</sub>         |                                    |
| L <sub>EQ</sub> =                          | (Equ                               | ation 25-2 or           | 25-3)         |                                     | L <sub>EQ</sub> =                     |                               | (Ed                  | quation 25-8             | or 25-9)                  |                                    |
| P <sub>FM</sub> =                          | using                              | Equation (              | Exhibit 25-5) |                                     | P <sub>FD</sub> =                     |                               | 1.00                 | 0 using Eq               | uation (Exhil             | bit 25-12)                         |
| V <sub>12</sub> =                          | pc/h                               |                         |               |                                     | V <sub>12</sub> =                     |                               | 2620                 | pc/h                     |                           |                                    |
| $V_3$ or $V_{av34}$                        | pc/h                               | (Equation 25            | 5-4 or 25-5)  |                                     | V <sub>3</sub> or V <sub>av34</sub>   |                               | 0 p                  | c/h (Equatio             | n 25-15 or                | 25-16)                             |
| Is V <sub>3</sub> or V <sub>av34</sub> >   | > 2,700 pc/h? 🥅 Ye                 | s 🗏 No                  |               |                                     | Is V <sub>3</sub> or V <sub>av3</sub> | 34 > 2,70                     | 00 pc/h? 🦳           | Yes 🗹 No                 |                           |                                    |
| Is V <sub>3</sub> or V <sub>av34</sub> >   | > 1.5 * V <sub>12</sub> /2         | s 🗏 No                  |               |                                     | Is V <sub>3</sub> or V <sub>av</sub>  | <sub>34</sub> > 1.5           | * V <sub>12</sub> /2 | Yes   ✓ No               |                           |                                    |
| If Yes,V <sub>12a</sub> =                  | pc/h                               | (Equation 25            | 5-8)          |                                     | If Yes, V <sub>12a</sub> =            | =                             | pc/                  | h (Equation              | 25-18)                    |                                    |
| Capacity                                   |                                    |                         |               |                                     | Capacit                               |                               |                      |                          |                           |                                    |
|  | Actual                             | С                       | apacity       | LOS F?                              |                                       |                               | Actual               | Ca                       | pacity                    | LOS F?                             |
|  |                                    |                         |               |                                     | V <sub>F</sub>                        |                               | 2620                 | Exhibit 25-1             | 4 4800                    | No                                 |
| $V_{FO}$                                   |                                    | Exhibit 25-7            |               |                                     | $V_{FO} = V_{F}$                      | - V <sub>D</sub>              | 2412                 | Exhibit 25-1             | 4800                      | No                                 |
|  |                                    |                         |               |                                     | V <sub>R</sub>                        | $\overline{}$                 | 208                  | Exhibit 25-3             |                           | No                                 |
| Flow Ente                                  | ring Morgo I                       | ofluonoo 1              | roo           |                                     |                                       | torin                         |                      | e Influen                |                           | 110                                |
| FIOW EITE                                  | ering Merge Ir<br>Actual           | 7                       | Desirable     | Violation?                          | FIOW EII                              |                               | ctual                | Max Desirab              |                           | Violation?                         |
| V <sub>R12</sub>                           | Actual                             | Exhibit 25-7            | Desirable     | Violation:                          | V <sub>12</sub>                       | _                             |                      | Exhibit 25-14            | 4400:All                  | No                                 |
|  | Service Deteri                     |                         | if not E)     |                                     |                                       |                               |                      | erminatio                |                           |                                    |
|  | 5 + 0.00734 v <sub>R</sub> +       | <u> </u>                |               |                                     |                                       |                               |                      | 086 V <sub>12</sub> - 0. | •                         | <i>)</i>                           |
|  |                                    | 0.0070 V <sub>12</sub>  | 0.00021 LA    |                                     | 1                                     |                               |                      | 000 v <sub>12</sub> - 0. | 009 <b>∟</b> D            |                                    |
| l '` "                                     | mi/ln)                             |                         |               |                                     | 1 .,                                  | 2.3 (pc/                      | •                    |                          |                           |                                    |
|  | nibit 25-4)                        |                         |               |                                     |                                       |                               | it 25-4)             |                          |                           |                                    |
|  | termination                        |                         |               |                                     | Speed L                               |                               |                      |                          |                           |                                    |
| M <sub>S</sub> = (Exi                      | bit 25-19)                         |                         |               |                                     | l s                                   | -                             | chibit 25-1          | •                        |                           |                                    |
| S <sub>R</sub> = mph                       | (Exhibit 25-19)                    |                         |               |                                     | 1 '`                                  | •                             | (Exhibit 2           | •                        |                           |                                    |
| 4  |                                    |                         |               |                                     | IC N                                  | / A                           | E 1 11 14 OF         | . 40\                    |                           |                                    |
|  | (Exhibit 25-19)<br>(Exhibit 25-14) |                         |               |                                     | $S_0 = N/$                            | A mpn                         | Exhibit 25           | 5-19)                    |                           |                                    |

|   |                                       | RAMP                                   | S AND RAM                   | IP JUNCT  | IONS WO                               | RKSI                                  | HEET         |   |                     |   |
|---|---------------------------------------|--|-----------------------------|---|---------------------------------------|---------------------------------------|--------------|---|---------------------|---|
| General Info  | rmation                               |  |                             | Site Info   |                                       |                                       | <del>-</del> |   |                     |   |
| Analyst<br>Agency or Compar<br>Date Performed<br>Analysis Time Peri | SKB<br>ny TDO<br>04/18                | T/TranSystem:<br>8/2011<br>Peak Period | s Ji<br>Ji                  | reeway/Dir of T<br>unction<br>urisdiction<br>nalysis Year | ravel                                 | I-40 EB<br>Exit 35<br>Fayette<br>2014 | County       |   |                     |   |
| Project Description   |                                       |  |                             | a.yo.o . oa.  |                                       | 2011                                  |              |   |                     |   |
| Inputs  | <u> </u>                              |  |                             |   |                                       |                                       |              |   |                     |   |
| Upstream Adj Ram  | •                                     | Terrain: Leve                          | el                          |   |                                       |                                       |              |   | Downstrea<br>Ramp   | m Adj   |
| Yes C   |                                       |  |                             |   |                                       |                                       |              |   | ☐ Yes               | ☐ On  |
| □ No □ C  | Off                                   |  |                             |   |                                       |                                       |              |   | ✓ No                | Off   |
| L <sub>up</sub> = 2000  | ft                                    |  | $S_{FF} = 70.0  \text{mph}$ |   | S <sub>FR</sub> = 3                   | 35 () mpl                             | 1            |   | L <sub>down</sub> = | ft  |
| u .   | veh/h                                 |  | Sketch (                    | show lanes, L <sub>A</sub>                                |                                       | 50.0 mpi                              | '            |   | V <sub>D</sub> =    | veh/h   |
| Conversion  |                                       | der Base                               | Conditions                  |   |                                       |                                       |              |   |                     |   |
| (pc/h)  | V<br>(Veh/hr)                         | PHF                                    | Terrain                     | %Truck  | %Rv                                   |                                       | :<br>HV      | f <sub>p</sub>                                    | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub>            |
| Freeway   | 1808                                  | 0.90                                   | Level                       | 25  | 0                                     | _                                     | 389          | 1.00  | 220                 |   |
| Ramp  | 239                                   | 0.90                                   | Level                       | 3   | 0                                     |                                       | 985          | 1.00  | 27                  |   |
| UpStream  | 156                                   | 0.90                                   | Level                       | 3   | 0                                     | 0.9                                   | 985          | 1.00  | 17                  | 6   |
| DownStream  |                                       | <u> </u><br>Merge Areas                |                             |   | 1                                     |                                       | <br>Div      | /erge Areas                                       |                     |   |
| Estimation of   |                                       | ivierge Areas                          |                             |   | Estimat                               | ion o                                 |              | reige Aleas                                       |                     |   |
|   | V <sub>12</sub> = V <sub>F</sub>      | (P)                                    |                             |   | 1                                     |                                       |              | / <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | \P                  |   |
| l –   |                                       | ation 25-2 o                           | r 25_3)                     |   | -                                     |                                       |              | quation 25-8                                      |                     |   |
| L <sub>EQ</sub> =<br>D _  |                                       | Equation (                             | •                           |   | L <sub>EQ</sub> =                     |                                       | -            | ousing Eq   | -                   | hit 25 12)                                    |
| P <sub>FM</sub> =<br>V <sub>12</sub> =                              | -                                     | Lqualion (                             | EXHIBIT 25-5)               |   | P <sub>FD</sub> =                     |                                       |              |   | ualion (Exil        | DII 23-12)                                    |
|   | pc/h                                  | (Equation 2                            | 5 4 or 25 5)                |   | V <sub>12</sub> =                     |                                       |              | 0 pc/h  | OF 4F ar            | OF 4C\  |
| V <sub>3</sub> or V <sub>av34</sub>                                 | -                                     | -                                      | 5-4 01 25-5)                |   | V <sub>3</sub> or V <sub>av34</sub>   | > 2.70                                |              | oc/h (Equatio                                     | )II 25-15 OF        | 25-16)  |
| Is $V_3$ or $V_{av34} > 2$ ,  |                                       |  |                             |   |                                       |                                       |              | Yes ✓ No  |                     |   |
| Is $V_3$ or $V_{av34} > 1.5$  | ·=                                    |  | - o)                        |   |                                       |                                       |              | Yes ✓ No  | 05.40)              |   |
| If Yes,V <sub>12a</sub> =   |                                       | (Equation 2                            | o-8)                        |   |                                       |                                       |              | /h (Equation                                      | 25-18)              |   |
| Capacity Ch   | 7                                     | 1 .                                    |                             | 1   | Capacit                               | y Che                                 |              | 1 -   |                     | 1   |
|   | Actual                                | (                                      | Capacity                    | LOS F?  | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ |                                       | Actual       |   | pacity              | LOS F?  |
|   |                                       |  |                             |   | V <sub>F</sub>                        |                                       | 2260         | Exhibit 25-1                                      | _                   | No  |
| $V_{FO}$  |                                       | Exhibit 25-7                           |                             |   | $V_{FO} = V_{F}$                      | - V <sub>R</sub>                      | 1990         | Exhibit 25-1                                      |                     | No  |
|   |                                       |  |                             |   | V <sub>R</sub>                        |                                       | 270          | Exhibit 25-3                                      | 2000                | No  |
| Flow Enterii  | ng Merge In                           | fluence A                              | \ <i>rea</i>                |   | Flow En                               | nterin                                | g Diverg     | ge Influen  | ce Area             |   |
|   | Actual                                | 1                                      | Desirable                   | Violation?  |                                       | Α                                     | ctual        | Max Desirab                                       |                     | Violation?                                    |
| V <sub>R12</sub>  |                                       | Exhibit 25-7                           |                             |   | V <sub>12</sub>                       |                                       |              | Exhibit 25-14                                     | 4400:All            | No  |
| Level of Ser  |                                       | <b>`</b>                               |                             |   |                                       |                                       |              | erminatio   | •                   | <u>F)                                    </u> |
| $D_R = 5.475 + 0$   | 0.00734 v <sub>R</sub> +              | 0.0078 V <sub>12</sub>                 | - 0.00627 L <sub>A</sub>    |   |                                       | $D_R = 4$                             | .252 + 0.0   | 086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>  |   |
| D <sub>R</sub> = (pc/mi/  | ln)                                   |  |                             |   | $D_R = 10$                            | 9.2 <b>(pc</b> /                      | mi/ln)       |   |                     |   |
| LOS = (Exhibi   | t 25-4)                               |  |                             |   | LOS = B                               | (Exhib                                | it 25-4)     |   |                     |   |
| Speed Deter   | rmination                             |  |                             |   | Speed L                               | Deteri                                | nination     | 1   |                     |   |
| M <sub>S</sub> = (Exibit  | <br>25-19)                            |  |                             |   | D <sub>s</sub> = 0.                   | 452 <b>(E</b> )                       | chibit 25-1  | 9)  |                     |   |
|   | (hibit 25-19)                         |  |                             |   | $S_R = 5$                             | 7.3 mph                               | (Exhibit 2   | 5-19)   |                     |   |
|   | (hibit 25-19)                         |  |                             |   | $S_0 = N$                             | /A mph                                | (Exhibit 25  | 5-19)   |                     |   |
| ' '   | (hibit 25-14)                         |  |                             |   | S = 5                                 | 7.3 mph                               | (Exhibit 2   | 5-15)   |                     |   |
| . ,   | · · · · · · · · · · · · · · · · · · · |  |                             |   |                                       |                                       | •            | •   |                     |   |

Generated: 4/20/2011 10:34 AM

|  |   | RAMP                    | S AND RAM                   | IP JUNCT                                  | IONS WO                              | RKSI                                  | HEET                                    |   |                     |                                    |
|--|---|-------------------------|-----------------------------|---|--------------------------------------|---------------------------------------|---|---|---------------------|------------------------------------|
| General Info   | rmation                                 | <b></b>                 |                             | Site Info                                 |                                      |                                       | <del>-</del>                            |   |                     |                                    |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | SKB<br>y TDO<br>04/18                   | T/TranSystems<br>8/2011 | s Ji<br>Ji                  | reeway/Dir of T<br>unction<br>urisdiction | ravel                                | I-40 WB<br>Exit 35<br>Fayette         |   |   |                     |                                    |
| Project Description  |   | Peak Period             | A                           | nalysis Year                              |                                      | 2014                                  |   |   |                     |                                    |
| Inputs   | Existing Condi                          | liulis                  |                             |   |                                      |                                       |   |   |                     |                                    |
| Upstream Adj Ramı  | 0                                       | Terrain: Leve           | el                          |   |                                      |                                       |   |   | Downstrea           | m Adj                              |
| ✓ Yes ✓ O  | n                                       |                         |                             |   |                                      |                                       |   |   | Ramp<br>Yes         | ☐ On                               |
| □ No □ O   | ff                                      |                         |                             |   |                                      |                                       |   |   | ✓ No                | Off                                |
| L <sub>up</sub> = 2000   | ft                                      |                         | $S_{FF} = 70.0 \text{ mph}$ |   | S <sub>FR</sub> = 3                  | 25 0 mnh                              | <b>.</b>                                |   | L <sub>down</sub> = | ft                                 |
| $V_u = 274 \text{ N}$  | /eh/h                                   |                         | !!                          | show lanes, L <sub>A</sub>                |                                      | 33.0 mpi                              | I                                       |   | V <sub>D</sub> =    | veh/h                              |
| Conversion   | to pc/h Un                              | der Base                | Conditions                  |   |                                      |                                       |   |   |                     |                                    |
| (pc/h)   | V<br>(Veh/hr)                           | PHF                     | Terrain                     | %Truck                                    | %Rv                                  | 1                                     | HV                                      | f <sub>p</sub>                                    | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 1702                                    | 0.90                    | Level                       | 25  | 0                                    | 3.0                                   | 189                                     | 1.00  | 212                 | 28                                 |
| Ramp   | 126                                     | 0.90                    | Level                       | 3   | 0                                    | 0.9                                   | 85                                      | 1.00  | 14                  | 2                                  |
| UpStream   | 274                                     | 3                       | 0                           | 0.9                                       | 85                                   | 1.00                                  | 30                                      | 9   |                     |                                    |
| DownStream   |   |                         |                             |   | <u> </u>                             |                                       |   |   |                     |                                    |
| Estimation of  |   | Merge Areas             |                             |   | Estimat                              | ion o                                 |   | verge Areas                                       |                     |                                    |
| Estimation o   |   |                         |                             |   | Esumat                               | 1011 0                                |   |   |                     |                                    |
|  | $V_{12} = V_{F}$                        |                         |                             |   |                                      |                                       |   | / <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> |                     |                                    |
| L <sub>EQ</sub> =  | · · ·                                   | ation 25-2 o            | •                           |   | L <sub>EQ</sub> =                    |                                       | •                                       | quation 25-8                                      | -                   |                                    |
| P <sub>FM</sub> =  | using                                   | Equation (              | Exhibit 25-5)               |   | P <sub>FD</sub> =                    |                                       | 1.00                                    | 00 using Eq                                       | uation (Exh         | bit 25-12)                         |
| V <sub>12</sub> =  | pc/h                                    |                         |                             |   | V <sub>12</sub> =                    |                                       | 212                                     | 8 pc/h  |                     |                                    |
| V <sub>3</sub> or V <sub>av34</sub>                                  | -                                       | (Equation 2             | 5-4 or 25-5)                |   | $V_3$ or $V_{av34}$                  |                                       | 0 p                                     | c/h (Equatio                                      | on 25-15 or         | 25-16)                             |
| Is $V_3$ or $V_{av34} > 2.7$   | 00 pc/h?                                | s 🗏 No                  |                             |   | Is V <sub>3</sub> or V <sub>av</sub> | <sub>34</sub> > 2,70                  | 00 pc/h? 🥅                              | Yes 🗹 No  |                     |                                    |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                         | * V <sub>12</sub> /2                    | s 🗏 No                  |                             |   | Is V <sub>3</sub> or V <sub>av</sub> | <sub>34</sub> > 1.5                   | * V <sub>12</sub> /2                    | Yes 🗹 No  |                     |                                    |
| If Yes,V <sub>12a</sub> =  | pc/h                                    | (Equation 2             | 5-8)                        |   | If Yes,V <sub>12a</sub> =            | =                                     | pc                                      | h (Equation                                       | 25-18)              |                                    |
| Capacity Ch  |   |                         |                             |   | Capacit                              |                                       |   |   |                     |                                    |
|  | Actual                                  | (                       | Capacity                    | LOS F?                                    | ĺ                                    |                                       | Actual                                  | Ca  | pacity              | LOS F?                             |
|  |   |                         |                             |   | V <sub>F</sub>                       |                                       | 2128                                    | Exhibit 25-14                                     | 4800                | No                                 |
| $V_{FO}$   |   | Exhibit 25-7            |                             |   | $V_{FO} = V_{F}$                     | - V <sub>R</sub>                      | 1986                                    | Exhibit 25-1                                      | 4 4800              | No                                 |
|  |   |                         |                             |   | V <sub>R</sub>                       |                                       | 142                                     | Exhibit 25-3                                      | 2000                | No                                 |
| Flow Enterin   | na Merae Ir                             | ofluence A              | lrea                        |   | <del></del>                          | nterin                                |   | ge Influen  |                     |                                    |
| - 1011 <b>-</b> 11101111   | Actual                                  | 7                       | Desirable                   | Violation?                                | 1.0.7.                               |                                       | ctual                                   | Max Desirab                                       |                     | Violation?                         |
| V <sub>R12</sub>   |   | Exhibit 25-7            |                             |   | V <sub>12</sub>                      |                                       |   | Exhibit 25-14                                     | 4400:All            | No                                 |
| Level of Serv  | vice Detern                             | nination (              | if not F)                   |   |                                      | f Serv                                | ice Dete                                | erminatio   | n (if not l         | <u> </u>                           |
| $D_R = 5.475 + 0$  |   |                         |                             |   |                                      |                                       |   | 086 V <sub>12</sub> - 0.                          | •                   | ,                                  |
| D <sub>R</sub> = (pc/mi/li   | • | 12                      | A                           |   |                                      | 8.1 <b>(pc</b> /                      |   | 12  | U                   |                                    |
| LOS = (Exhibit   | •                                       |                         |                             |   | 1 ''                                 |                                       | it 25-4)                                |   |                     |                                    |
| Speed Deter  | •                                       |                         |                             |   | Speed L                              | -                                     |   | •   |                     |                                    |
| $M_S = (Exibit 2)$   |   |                         |                             |   | <del>  '</del>                       |                                       | hibit 25-1                              |   |                     |                                    |
| _  | hibit 25-19)                            |                         |                             |   |                                      | 7.7 mph                               | (Exhibit 2                              | 5-19)   |                     |                                    |
|  | hibit 25-19)                            |                         |                             |   |                                      |                                       | `<br>Exhibit 25                         | •   |                     |                                    |
| ' '  | hibit 25-14)                            |                         |                             |   | '                                    |                                       | (Exhibit 2                              | •   |                     |                                    |
|  |   |                         |                             |   |                                      | , , , , , , , , , , , , , , , , , , , | (=\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\ | - 10,   |                     |                                    |

|                                     |                                  | RAMP                    | S AND RAM                               | P JUNCT                    | ONS WO  | ORKS                 | HEET                 |   |                     |            |
|-------------------------------------|----------------------------------|-------------------------|---|----------------------------|---|----------------------|----------------------|---|---------------------|------------|
| General Info                        | rmation                          |                         |   | Site Infor                 |   |                      |                      |   |                     |            |
| Analyst                             | SKB                              |                         | Fr                                      | eeway/Dir of T             |   | I-40 WI              | 3                    |   |                     |            |
| Agency or Compan                    | ny TDO                           | T/TranSystems           | s Ju                                    | nction                     |   | Exit 35              |                      |   |                     |            |
| Date Performed                      | 04/18                            | 3/2011                  | Ju                                      | risdiction                 |   | Fayette              | County               |   |                     |            |
| Analysis Time Perio                 | od PM P                          | Peak Period             | Ar                                      | nalysis Year               |   | 2014                 | -                    |   |                     |            |
| Project Description                 | Existing Condi                   | tions                   |   | •                          |   |                      |                      |   |                     |            |
| Inputs                              |                                  |                         |   |                            |   |                      |                      |   |                     |            |
| Upstream Adj Ram                    |                                  | Terrain: Leve           | )                                       |                            |   |                      |                      |   | Downstrean<br>Ramp  | n Adj      |
| ✓ Yes ✓ C                           | On                               |                         |   |                            |   |                      |                      |   | -                   | ☐ On       |
| □ No □ C                            | Off                              |                         |   |                            |   |                      |                      |   | ™ No                | Off        |
| L <sub>up</sub> = 2000              | ft                               |                         | 70.0                                    |                            |   | 25.0                 |                      |   | L <sub>down</sub> = | ft         |
| V <sub>u</sub> = 177 ·              | veh/h                            | 5                       | S <sub>FF</sub> = 70.0 mph<br>Sketch (s | show lanes, L <sub>A</sub> | $S_{FR} = L_{D_f} V_{D_f} V_f$                    | 35.0 mp              | h                    |   | V <sub>D</sub> =    | veh/h      |
| Conversion                          | to pc/h Und                      | der Base                |   |                            | DKT   |                      |                      |   |                     |            |
| (pc/h)                              | V                                | PHF                     | Terrain                                 | %Truck                     | %Rv   | $\top$               | f                    | f   | v = V/PHF x         | f v f      |
| * '                                 | (Veh/hr)                         |                         |   | ļ                          | <del> </del>                                      |                      | f <sub>HV</sub>      | <u>'</u>  |                     |            |
| Freeway                             | 2129                             | 0.90                    | Level                                   | 25                         | 0   | _                    | 889                  | 1.00  | 266                 |            |
| Ramp                                | 182                              | 0.90                    | Level                                   | 3                          | 0   |                      | 985                  | 1.00  | 205                 |            |
| UpStream<br>DownStream              | 177                              | 0.90                    | Level                                   | 3                          | 0   | 0.                   | 985                  | 1.00  | 200                 | )          |
| Downstream                          |                                  | <u>I</u><br>Merge Areas |   |                            | 1   |                      | I<br>Div             | erge Areas  |                     |            |
| Estimation of                       |                                  | <u> </u>                |   |                            | Estima  | tion c               |                      | <u>. J </u>                                       |                     |            |
|                                     | V <sub>12</sub> = V <sub>F</sub> | (P)                     |   |                            | 1   |                      | - '-                 | / <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> | \P                  |            |
| l –                                 |                                  | ation 25-2 o            | r 25-3)                                 |                            | -   |                      | .=                   | quation 25-8                                      |                     |            |
| L <sub>EQ</sub> =<br>D =            | · · ·                            | Equation (              | · ·                                     |                            | L <sub>EQ</sub> =                                 |                      | •                    | -   | uation (Exhib       | \i+ 2E 12\ |
| P <sub>FM</sub> =<br>V _            | pc/h                             | Lquation (              |   |                            | P <sub>FD</sub> =                                 |                      |                      |   | juation (Exilia     | JIL 25-12) |
| V <sub>12</sub> =                   | •                                | ·=                      |   |                            | V <sub>12</sub> =                                 |                      |                      | 1 pc/h  |                     |            |
| V <sub>3</sub> or V <sub>av34</sub> |                                  | (Equation 25            | o-4 or 25-5)                            |                            | V <sub>3</sub> or V <sub>av34</sub>               |                      | -                    |   | on 25-15 or 2       | 25-16)     |
| Is $V_3$ or $V_{av34} > 2.7$        |                                  |                         |   |                            |   |                      |                      | Yes 🗹 No  |                     |            |
| Is $V_3$ or $V_{av34} > 1.5$        | 5 * V <sub>12</sub> /2           | s 🗆 No                  |   |                            | Is V <sub>3</sub> or V <sub>a</sub>               | <sub>v34</sub> > 1.5 | * V <sub>12</sub> /2 | Yes 🗹 No  |                     |            |
| If Yes,V <sub>12a</sub> =           | pc/h                             | (Equation 25            | 5-8)                                    |                            | If Yes,V <sub>12a</sub>                           | =                    | pc/                  | h (Equation                                       | 25-18)              |            |
| Capacity Ch                         | ecks                             |                         |   |                            | Capaci  |                      |                      |   |                     |            |
|                                     | Actual                           |                         | Capacity                                | LOS F?                     |   |                      | Actual               | Ca  | pacity              | LOS F?     |
|                                     |                                  |                         |   |                            | V <sub>F</sub>                                    |                      | 2661                 | Exhibit 25-1                                      | 4 4800              | No         |
| $V_{FO}$                            |                                  | Exhibit 25-7            |   |                            | $V_{FO} = V_{FO}$                                 | - V <sub>R</sub>     | 2456                 | Exhibit 25-1                                      | 4 4800              | No         |
| ]                                   |                                  |                         |   |                            | V <sub>R</sub>                                    |                      | 205                  | Exhibit 25-3                                      | 3 2000              | No         |
| Flow Enterir                        | na Merae In                      | fluence A               | \rea                                    |                            |   |                      | a Diverd             | e Influen   | ce Area             |            |
| - 1013 <b>- 110111</b>              | Actual                           | 1                       | Desirable                               | Violation?                 | 1   |                      | Actual               | Max Desirat                                       |                     | Violation? |
| V <sub>R12</sub>                    |                                  | Exhibit 25-7            |   |                            | V <sub>12</sub>                                   | _                    |                      | Exhibit 25-14                                     | 4400:All            | No         |
| Level of Ser                        | vice Detern                      |                         | if not F)                               | <u> </u>                   |   |                      |                      |   | n (if not F         |            |
| $D_R = 5.475 + 0$                   |                                  |                         |   |                            | 1   |                      |                      | 086 V <sub>12</sub> - 0.                          |                     | <i>,</i>   |
| D <sub>R</sub> = (pc/mi/l           |                                  | 12                      | A                                       |                            | $D_R = 2$   | - k<br>2.6 (pc       |                      | 12  | U                   |            |
| LOS = (Exhibit                      | •                                |                         |   |                            |   |                      | oit 25-4)            |   |                     |            |
| Speed Deter                         | •                                |                         |   |                            | +   |                      | mination             | ,   |                     |            |
| •                                   |                                  |                         |   |                            | <del>  '                                   </del> |                      | xhibit 25-1          |   |                     |            |
|                                     | •                                |                         |   |                            |   |                      | (Exhibit 2           | -   |                     |            |
| _ ``                                | (hibit 25-19)                    |                         |   |                            | I ''  |                      | (Exhibit 25          | -   |                     |            |
| ' '                                 | (hibit 25-19)                    |                         |   |                            | 1 '   | •                    | •                    | •   |                     |            |
| S = mph(Ex                          | (hibit 25-14)                    |                         |   |                            | S = 5   | nqm c.v              | (Exhibit 2           | )-10)   |                     |            |

|                                     |                  | RAMP          | S AND RAM                  | P JUNCTI                   | ONS WC                              | RKS              | HEET   |   |                     |                                  |
|-------------------------------------|------------------|---------------|----------------------------|----------------------------|-------------------------------------|------------------|--|---|---------------------|----------------------------------|
| General Infor                       | mation           |               |                            | Site Infor                 |                                     |                  |  |   |                     |                                  |
| Analyst                             | SKB              |               | Fre                        | eeway/Dir of Ti            |                                     | I-40 EB          |  |   |                     |                                  |
| Agency or Company                   | TDO <sup>-</sup> | T/TranSystems | Ju                         | nction                     |                                     | Exit 35          |  |   |                     |                                  |
| Date Performed                      | 04/18            | 3/2011        | Jui                        | risdiction                 |                                     | Fayette          | County   |   |                     |                                  |
| Analysis Time Period                | d AM P           | Peak Period   | An                         | alysis Year                |                                     | 2034             |  |   |                     |                                  |
| Project Description                 | Existing Condit  | tions         |                            |                            |                                     |                  |  |   |                     |                                  |
| Inputs                              |                  | _             |                            |                            |                                     |                  |  |   |                     |                                  |
| Upstream Adj Ramp                   |                  | Terrain: Leve | I                          |                            |                                     |                  |  |   | Downstream<br>Ramp  | n Adj                            |
| Yes Or                              | ı                |               |                            |                            |                                     |                  |  |   | -                   | On                               |
| □ No □ Of                           | f                |               |                            |                            |                                     |                  |  |   | ✓ No                | Off                              |
| L <sub>up</sub> = 2000              | ft               |               |                            |                            |                                     |                  |  |   | L <sub>down</sub> = | ft                               |
| V <sub>u</sub> = 237 ve             | eh/h             | S             | FF = 70.0 mph<br>Sketch (s | show lanes, L <sub>A</sub> | $S_{FR} = L_{D_t} V_{D_t} V_f$      | 35.0 mp          | h  | ,   | $V_D = v$           | veh/h                            |
| Conversion t                        | o pc/h Und       | der Base (    |                            | . А                        | D' K' I'                            |                  |  |   |                     |                                  |
|                                     | <i>∨ ∨</i>       |               |                            | 0/ =1                      | 0/5                                 | 1                | <u>,                                      </u> | <u>,</u>  | ., \//D!!E          | 44                               |
| (pc/h)                              | (Veh/hr)         | PHF           | Terrain                    | %Truck                     | %Rv                                 |                  | f <sub>HV</sub>                                | f <sub>p</sub>                                    | v = V/PHF x         | τ <sub>HV</sub> x t <sub>p</sub> |
| Freeway                             | 2838             | 0.90          | Level                      | 25                         | 0                                   | 0.8              | 889  | 1.00  | 3548                | 3                                |
| Ramp                                | 274              | 0.90          | Level                      | 3                          | 0                                   | 0.9              | 985  | 1.00  | 309                 |                                  |
| UpStream                            | 237              | 0.90          | Level                      | 3                          | 0                                   | 0.               | 985  | 1.00  | 267                 |                                  |
| DownStream                          | <u> </u>         | Marga Arasa   |                            |                            | 1                                   |                  | Div  |   |                     |                                  |
| Estimation of                       |                  | Merge Areas   |                            |                            | Estima                              | tion o           |  | erge Areas  |                     |                                  |
| LStillation of                      |                  |               |                            |                            | LSuma                               |                  | 12   |   |                     |                                  |
|                                     | $V_{12} = V_{F}$ |               |                            |                            |                                     |                  | .=   | ′ <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> |                     |                                  |
| L <sub>EQ</sub> =                   | (Equa            | ation 25-2 or | 25-3)                      |                            | L <sub>EQ</sub> =                   |                  | (Ed  | quation 25-8                                      | or 25-9)            |                                  |
| P <sub>FM</sub> =                   | using            | Equation (E   | Exhibit 25-5)              |                            | P <sub>FD</sub> =                   |                  | 1.00   | 0 using Eq  | uation (Exhib       | it 25-12)                        |
| V <sub>12</sub> =                   | pc/h             |               |                            |                            | V <sub>12</sub> =                   |                  | 3548   | B pc/h  |                     |                                  |
| V <sub>3</sub> or V <sub>av34</sub> | •                | (Equation 25  | -4 or 25-5)                |                            | V <sub>3</sub> or V <sub>av34</sub> |                  |  | •   | n 25-15 or 2        | 25-16)                           |
| Is $V_3$ or $V_{av34} > 2,70$       |                  |               | 101200)                    |                            |                                     | > 2.7            | -  | Yes ☑ No  | 11 20 10 01 2       | -0 10)                           |
|                                     |                  |               |                            |                            |                                     |                  |  |   |                     |                                  |
| Is $V_3$ or $V_{av34} > 1.5$        |                  |               |                            |                            |                                     |                  |  | Yes ☑ No  |                     |                                  |
| If Yes,V <sub>12a</sub> =           |                  | (Equation 25  | 5-8)                       |                            |                                     |                  |  | h (Equation                                       | 25-18)              |                                  |
| Capacity Che                        | cks              |               |                            |                            | Capaci                              | ty Che           | ecks   | _   |                     |                                  |
|                                     | Actual           | С             | apacity                    | LOS F?                     |                                     |                  | Actual   |   | pacity              | LOS F?                           |
|                                     |                  |               |                            |                            | V <sub>F</sub>                      |                  | 3548   | Exhibit 25-14                                     | 4 4800              | No                               |
| $V_{FO}$                            |                  | Exhibit 25-7  |                            |                            | $V_{FO} = V_{F}$                    | - V <sub>R</sub> | 3239   | Exhibit 25-14                                     | 4800                | No                               |
|                                     |                  |               |                            |                            | $V_R$                               |                  | 309  | Exhibit 25-3                                      | 2000                | No                               |
| Flow Entering                       | a Merae In       | fluence A     | rea                        |                            | Flow E                              | nterin           | a Diverd                                       | e Influen   | ce Area             | •                                |
|                                     | Actual           | *             | Desirable                  | Violation?                 | 1                                   | _                | Actual   | Max Desirab                                       | -                   | Violation?                       |
| V <sub>R12</sub>                    |                  | Exhibit 25-7  |                            |                            | V <sub>12</sub>                     | 3                | 548 E  | Exhibit 25-14                                     | 4400:All            | No                               |
| Level of Serv                       | ice Detern       |               | if not F)                  | Į.                         |                                     | f Serv           |  |   | n (if not F         |                                  |
| $D_R = 5.475 + 0.$                  |                  |               |                            |                            | 1                                   |                  |  | 086 V <sub>12</sub> - 0.0                         |                     | <u> </u>                         |
| D <sub>R</sub> = (pc/mi/ln          | • • •            | - 12          | A                          |                            | $D_R = 3$                           | 0.3 (pc/         |  | 12  | U                   |                                  |
| LOS = (Exhibit :                    | •                |               |                            |                            | 1 "                                 |                  | oit 25-4)                                      |   |                     |                                  |
| ,                                   | •                |               |                            |                            |                                     | -                |  | •   |                     |                                  |
| Speed Deterr                        |                  |               |                            |                            | <del>  '</del>                      |                  | mination                                       |   |                     |                                  |
| $M_S = (Exibit 28)$                 | •                |               |                            |                            | ľ                                   | -                | xhibit 25-1                                    | •   |                     |                                  |
|                                     | ibit 25-19)      |               |                            |                            | I ''                                |                  | (Exhibit 2                                     | -   |                     |                                  |
| $S_0 = mph (Exh$                    | ibit 25-19)      |               |                            |                            | $S_0 = N$                           | I/A mph          | (Exhibit 25                                    | -   |                     |                                  |
| S = mph (Exh                        | ibit 25-14)      |               |                            |                            | S = 5                               |                  | (Exhibit 2                                     |   |                     |                                  |

|   |   | RAMP                    | S AND RAM                   | IP JUNCT                                  | ONS WO              | RKSI                          | HEET            |                              |                     |                                    |
|---|---|-------------------------|-----------------------------|---|---------------------|-------------------------------|-----------------|------------------------------|---------------------|------------------------------------|
| General Info  | rmation                                 |                         | ***                         | Site Info                                 |                     |                               |                 |                              |                     |                                    |
| Analyst<br>Agency or Compan<br>Date Performed                                       | SKB<br>y TDO<br>04/18                   | T/TranSystems<br>8/2011 | s Ji<br>Ji                  | reeway/Dir of T<br>unction<br>urisdiction | ravel               | I-40 EB<br>Exit 35<br>Fayette |                 |                              |                     |                                    |
| Analysis Time Perion<br>Project Description   |   | Peak Period             | A                           | nalysis Year                              |                     | 2034                          |                 |                              |                     |                                    |
| Inputs  | Existing Condi                          | 1110115                 |                             |   |                     |                               |                 |                              |                     |                                    |
| Upstream Adj Ramı   | 0                                       | Terrain: Leve           | el                          |   |                     |                               |                 |                              | Downstrea           | m Adj                              |
| ✓ Yes ✓ O   | n                                       |                         |                             |   |                     |                               |                 |                              | Ramp<br>Yes         | □ On                               |
| □ No □ O  | ff                                      |                         |                             |   |                     |                               |                 |                              | ✓ No                | Off                                |
| L <sub>up</sub> = 2000  | ft                                      |                         | $S_{FF} = 70.0 \text{ mph}$ |   | S <sub>FR</sub> = 3 | 25 0 mnl                      | <u> </u>        |                              | L <sub>down</sub> = | ft                                 |
| $V_u = 204 \text{ N}$   | /eh/h                                   |                         | !!                          | show lanes, L <sub>A</sub>                | 1 11                | 33.0 mpi                      | 1               |                              | V <sub>D</sub> =    | veh/h                              |
| Conversion  | to pc/h Un                              | der Base                | Conditions                  |   |                     |                               |                 |                              |                     |                                    |
| (pc/h)  | V<br>(Veh/hr)                           | PHF                     | Terrain                     | %Truck                                    | %Rv                 |                               | f <sub>HV</sub> | f <sub>p</sub>               | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 2603                                    | 0.90                    | Level                       | 25  | 0                   | 0.8                           | 389             | 1.00                         | 325                 | 54                                 |
| Ramp  | 355                                     | 0.90                    | Level                       | 3   | 0                   | 0.9                           | 985             | 1.00                         | 40                  | 0                                  |
| UpStream  | 204                                     | 0.90                    | Level                       | 3   | 0                   | 0.9                           | 985             | 1.00                         | 23                  | 0                                  |
| DownStream  |   | <u> </u>                |                             |   | ļ                   |                               |                 |                              |                     |                                    |
| Estimation o  |   | Merge Areas             |                             |   | Ectimot             | ion o                         |                 | verge Areas                  |                     |                                    |
| Estimation o  |   |                         |                             |   | Estimat             | 1011 0                        |                 |                              |                     |                                    |
|   | $V_{12} = V_{F}$                        |                         |                             |   |                     |                               |                 | $V_R + (V_F - V_F)$          |                     |                                    |
| L <sub>EQ</sub> =   | · · ·                                   | ation 25-2 o            | •                           |   | L <sub>EQ</sub> =   |                               | •               | quation 25-8                 | -                   |                                    |
| P <sub>FM</sub> =   | using                                   | Equation (              | Exhibit 25-5)               |   | P <sub>FD</sub> =   |                               | 1.00            | 00 using Eq                  | <b>uation</b> (Exhi | bit 25-12)                         |
| V <sub>12</sub> =   | pc/h                                    |                         |                             |   | V <sub>12</sub> =   |                               | 325             | 4 pc/h                       |                     |                                    |
| V <sub>3</sub> or V <sub>av34</sub><br>Is V <sub>3</sub> or V <sub>av34</sub> > 2,7 | -                                       | (Equation 25            | 5-4 or 25-5)                |   | $V_3$ or $V_{av34}$ | > 2.70                        | -               | oc/h (Equatio<br>Yes         | on 25-15 or         | 25-16)                             |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5  |   |                         |                             |   |                     |                               |                 | Yes ✓ No                     |                     |                                    |
| If Yes,V <sub>12a</sub> =   | ·=                                      |                         | 5-8)                        |   |                     |                               |                 | /h (Equation                 | 25-18)              |                                    |
| Capacity Ch   |   | (Equation 2)            | <del>3 0)</del>             |   | Capacit             |                               |                 | TT (Equation                 | 20 10)              |                                    |
| Capacity Off  | Actual                                  |                         | Capacity                    | LOS F?                                    | Joapach             | y On                          | Actual          | Са                           | pacity              | LOS F?                             |
|   | ricidal                                 |                         | Jupucky                     | 1 2001.                                   | V <sub>F</sub>      | $\dashv$                      | 3254            | Exhibit 25-1                 |                     | No                                 |
| V <sub>FO</sub>   |   | Exhibit 25-7            |                             |   | $V_{FO} = V_{F}$    | _                             | 2854            | Exhibit 25-1                 | +                   | No                                 |
| *FO   |   | LATIIDIL 23-7           |                             |   |                     | _                             |                 | Exhibit 25-3                 |                     |                                    |
| <u> </u>  | <u> </u>                                | <u> </u>                |                             |   | V <sub>R</sub>      |                               | 400             |                              |                     | No                                 |
| Flow Enterin  | <del></del>                             | T .                     |                             | 1 Walatiano                               | Flow Er             | _                             | <del>-</del>    | ge Influen                   |                     | \/:- -+:                           |
| V <sub>R12</sub>  | Actual                                  | Exhibit 25-7            | Desirable                   | Violation?                                | V <sub>12</sub>     |                               | octual<br>254   | Max Desirab<br>Exhibit 25-14 | 4400:All            | Violation?                         |
| Level of Serv   | vice Deterr                             |                         | if not F)                   |   |                     |                               |                 | erminatio                    |                     |                                    |
| $D_{R} = 5.475 + 0$   |   |                         |                             |   |                     |                               |                 | 086 V <sub>12</sub> - 0.     | •                   | /                                  |
|   | • | 0.0070 V <sub>12</sub>  | 0.00021 LA                  |   |                     |                               |                 | 1000 v <sub>12</sub> - 0.    | oos LD              |                                    |
|   | •                                       |                         |                             |   | ··                  | 7.7 (pc/                      | •               |                              |                     |                                    |
| LOS = (Exhibit  | •                                       |                         |                             |   | <del></del>         |                               | oit 25-4)       |                              |                     |                                    |
| Speed Deter   |   |                         |                             |   | Speed L             |                               |                 |                              |                     |                                    |
| $M_S = (Exibit 2)$  | •                                       |                         |                             |   | , and a             |                               | xhibit 25-1     | •                            |                     |                                    |
| $S_{R}^{=}$ mph (Ex   | hibit 25-19)                            |                         |                             |   | · ` `               |                               | (Exhibit 2      | •                            |                     |                                    |
|   | hibit 25-19)                            |                         |                             |   | 1 *                 |                               | (Exhibit 2      | •                            |                     |                                    |
| S = mph(Ex  | hibit 25-14)                            |                         |                             |   | S = 5               | 7.0 mph                       | (Exhibit 2      | 5-15)                        |                     |                                    |

Generated: 4/20/2011 10:36 AM

|   |   | RAMP               | S AND RAM                                | P JUNCTI                                | ONS WC   | RKS            | HEET              |   |                                       |                                    |
|---|---|--------------------|--|---|--|----------------|-------------------|---|---------------------------------------|------------------------------------|
| General Info                                  | rmation                                 |                    |  | Site Infor                              |  |                |                   |   |                                       |                                    |
| Analyst<br>Agency or Compan<br>Date Performed | SKB<br>y TDO <sup>-</sup><br>04/18      | T/TranSystems      | s Ju<br>Ju                               | eeway/Dir of Tr<br>nction<br>risdiction |  |                | 3<br>County       |   |                                       |                                    |
| Analysis Time Perion<br>Project Description   |   | eak Period         | Ar                                       | nalysis Year                            |  | 2034           |                   |   |                                       |                                    |
| Inputs  | Existing Condi                          | lions              |  |   |  |                |                   |   |                                       |                                    |
| Upstream Adj Rami                             | n                                       | Terrain: Leve      | <br>el                                   |   |  |                |                   | Į,  | Downstrea                             | m Δdi                              |
| ✓ Yes ✓ O                                     |   |                    |  |   |  |                |                   | F   | Ramp                                  |                                    |
| □No □O  | off                                     |                    |  |   |  |                |                   |   |                                       | ☐ On<br>☐ Off                      |
| L <sub>up</sub> = 2000                        | ft                                      |                    | 70.0                                     |   |  | 05.0           |                   |   | -down =                               | ft                                 |
| $V_u = 408  \text{V}$                         | veh/h                                   |                    | $S_{FF} = 70.0 \text{ mph}$<br>Sketch (s | show lanes, L <sub>A</sub> ,            | $S_{FR} = L_{D'}V_{R'}V_{f}$                     | 35.0 mp        | n                 | \   | V <sub>D</sub> =                      | veh/h                              |
| Conversion                                    | to pc/h Und                             | der Base           | Conditions                               |   |  |                |                   |   |                                       |                                    |
| (pc/h)  | V<br>(Veh/hr)                           | PHF                | Terrain                                  | %Truck                                  | %Rv  |                | f <sub>HV</sub>   | f <sub>p</sub>                                    | / = V/PHF                             | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway                                       | 2472                                    | 0.90               | Level                                    | 25                                      | 0  | 0.             | 889               | 1.00  | 309                                   | 0                                  |
| Ramp  | 159                                     | 0.90               | Level                                    | 3                                       | 0  | 0.             | 985               | 1.00  | 17                                    | 9                                  |
| UpStream                                      | 408                                     | 0.90               | Level                                    | 3                                       | 0  | 0.             | 985               | 1.00  | 46                                    | 0                                  |
| DownStream                                    |   | <br>Merge Areas    |  |   | 1  |                |                   | iverge Areas                                      |                                       |                                    |
| Estimation o                                  |   | ivierge Areas      |  |   | Estimat  | tion o         |                   | iverge Areas                                      |                                       |                                    |
|   | V <sub>12</sub> = V <sub>F</sub>        | (P <sub>EM</sub> ) |  |   |  |                | V <sub>12</sub> = | V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub> | )P <sub>ED</sub>                      |                                    |
| L <sub>EQ</sub> =                             | 12 1                                    | ation 25-2 o       | r 25-3)                                  |   | L <sub>EQ</sub> =                                |                |                   | equation 25-8                                     |                                       |                                    |
| P <sub>FM</sub> =                             |   | Equation (         | •  |   | P <sub>FD</sub> =                                |                | •                 | 00 using Equ                                      | •                                     | bit 25-12)                         |
| V <sub>12</sub> =                             | pc/h                                    | ,                  | ,  |   | V <sub>12</sub> =                                |                |                   | 90 pc/h   | , , , , , , , , , , , , , , , , , , , |                                    |
| V <sub>3</sub> or V <sub>av34</sub>           | •                                       | (Equation 2        | 5-4 or 25-5)                             |   | V <sub>3</sub> or V <sub>av34</sub>              |                |                   | pc/h (Equatio                                     | n 25-15 or                            | 25-16)                             |
| Is $V_3$ or $V_{av34} > 2.7$                  |   |                    | ,  |   |  |                |                   | Yes 🗹 No  | 20 10 01                              | 20 .0,                             |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5  |   |                    |  |   |  |                |                   | Yes ✓ No  |                                       |                                    |
| If Yes, V <sub>12a</sub> =                    | · <del>-</del>                          |                    | 5-8)                                     |   |  |                |                   |   | 25-18)                                |                                    |
| Capacity Ch                                   |   | (Equation 2)       | <del>5-0)</del>                          |   | Capacit  |                |                   | c/h (Equation                                     | 20-10)                                |                                    |
| Capacity Cit                                  | Actual                                  | I (                | Capacity                                 | LOS F?                                  | Capacit  | iy Ciri        | Actual            | Car   | acity                                 | LOS F?                             |
|   | Actual                                  |                    | zapacity                                 | LOST:                                   | V <sub>F</sub>                                   | $\overline{}$  | 3090              | Exhibit 25-14                                     | T -                                   | No                                 |
| \/  |   | Exhibit 25-7       |  |   | $V_{FO} = V_{F}$                                 |                | 2911              | Exhibit 25-14                                     |                                       |                                    |
| V <sub>FO</sub>                               |   | LAHIDIL 25-7       |  |   |  |                |                   | _   | <del> </del>                          | No                                 |
| <u> </u>                                      | <u> </u>                                |                    |  |   | V <sub>R</sub>                                   |                | 179               | Exhibit 25-3                                      | 2000                                  | No                                 |
| Flow Enterin                                  | <del></del>                             |                    |  | Violation?                              | FIOW EI  | _              | <del>-</del>      | ge Influenc                                       |                                       | Violation                          |
| V <sub>R12</sub>                              | Actual                                  | Exhibit 25-7       | Desirable                                | Violation?                              | V <sub>12</sub>                                  | _              | Actual<br>8090    | Max Desirabl Exhibit 25-14                        | e<br>4400:All                         | Violation?<br>No                   |
| Level of Serv                                 | vice Detern                             |                    | if not F)                                |   |  |                |                   | ermination  |                                       |                                    |
| $D_R = 5.475 + 0$                             |   |                    |  |   | <del>1</del>                                     |                |                   | 0086 V <sub>12</sub> - 0.0                        | •                                     | /                                  |
| D <sub>R</sub> = (pc/mi/li                    | • | - 12               | A  |   | L  | 6.3 <b>(pc</b> |                   | 12  | U                                     |                                    |
| LOS = (Exhibit                                | •                                       |                    |  |   | 1  |                | oit 25-4)         |   |                                       |                                    |
| Speed Deter                                   |   |                    |  |   | Speed  |                |                   | n   |                                       |                                    |
| $M_S = $ (Exibit 2                            |   |                    |  |   | <del>' '                                  </del> |                | xhibit 25-        |   |                                       |                                    |
|   | hibit 25-19)                            |                    |  |   | 1  | 7.6 mph        | (Exhibit 2        | 25-19)  |                                       |                                    |
| l '`  | hibit 25-19)                            |                    |  |   |  |                | Exhibit 2         | •   |                                       |                                    |
|   | hibit 25-14)                            |                    |  |   | 1  | •              | (Exhibit 2        | •   |                                       |                                    |
|   | · · · · · · · · · · · · · · · · · · ·   |                    |  |   |  |                | *                 | ,   |                                       |                                    |

Generated: 4/20/2011 10:36 AM

|  |                                  | RAMP                    | S AND RAM                  | IP JUNCT                   | ONS WO                              | RKSI                          | HEET           |   |                        |             |
|--|----------------------------------|-------------------------|----------------------------|----------------------------|-------------------------------------|-------------------------------|----------------|---|------------------------|-------------|
| General Info   | rmation                          |                         |                            | Site Infor                 |                                     |                               | <u> </u>       |   |                        |             |
| Analyst<br>Agency or Compan<br>Date Performed                | SKB<br>y TDO                     | T/TranSystems<br>8/2011 | s Ju                       | reeway/Dir of Touristion   | ravel                               | I-40 WB<br>Exit 35<br>Fayette |                |   |                        |             |
| Analysis Time Perio  |                                  | Peak Period             | A                          | nalysis Year               |                                     | 2034                          |                |   |                        |             |
| Project Description  | Existing Condi                   | tions                   |                            |                            |                                     |                               |                |   |                        |             |
| Inputs   |                                  | l <del>a</del>          | . 1                        |                            |                                     |                               |                | 1   |                        |             |
| Upstream Adj Ram   | '                                | Terrain: Leve           | ĐI                         |                            |                                     |                               |                |   | Downstrea<br>Ramp      | m Adj       |
| <ul><li>✓ Yes</li><li>✓ O</li><li>✓ No</li><li>✓ O</li></ul> |                                  |                         |                            |                            |                                     |                               |                |   | Yes                    | □ On        |
|  |                                  |                         |                            |                            |                                     |                               |                |   | No L <sub>down</sub> = | Off<br>ft   |
| $V_{up} = 2000$ $V_{u} = 263$ v                              |                                  | S                       | S <sub>FF</sub> = 70.0 mph | chow lance I               | S <sub>FR</sub> = 3                 | 35.0 mpl                      | ı              |   | -down V <sub>D</sub> = | veh/h       |
|  |                                  | dor Doos                |                            | show lanes, L <sub>A</sub> | ' LD' VR' Vf)                       |                               |                |   | _                      |             |
| Conversion   | to pc/n Uno                      |                         |                            | T                          | 1                                   | _                             | Т              | 1   |                        |             |
| (pc/h)   | (Veh/hr)                         | PHF                     | Terrain                    | %Truck                     | %Rv                                 |                               | HV             | · ·   | v = V/PHF              |             |
| Freeway  | 2912                             | 0.90                    | Level                      | 25                         | 0                                   | _                             | 389            | 1.00  | 364                    |             |
| Ramp   | 216                              | 0.90                    | Level                      | 3                          | 0                                   |                               | 985            | 1.00  | 24                     |             |
| UpStream   | 263                              | 0.90                    | Level                      | 3                          | 0                                   | 0.9                           | 985            | 1.00  | 29                     | 7           |
| DownStream   |                                  | <u> </u><br>Merge Areas |                            |                            | 1                                   |                               | I              | /erge Areas                                       |                        |             |
| Estimation of  |                                  | Weige Areas             |                            |                            | Estimat                             | ion o                         |                | reige Aicus                                       |                        |             |
|  | V <sub>12</sub> = V <sub>F</sub> | (P <sub>5M</sub> )      |                            |                            | +                                   |                               |                | / <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | )P <sub>EP</sub>       |             |
| L <sub>EQ</sub> =  |                                  | tion 25-2 o             | r 25-3)                    |                            | L <sub>EQ</sub> =                   |                               |                | quation 25-8                                      |                        |             |
| P <sub>FM</sub> =  |                                  | Equation (              | · ·                        |                            | P <sub>FD</sub> =                   |                               | •              | 00 using Eq                                       | -                      | hit 25-12)  |
| V <sub>12</sub> =  | pc/h                             | _900.0 (                |                            |                            | V <sub>12</sub> =                   |                               |                | 0 <b>pc/h</b>                                     | addon (Emi             | 1011 20 12) |
| V <sub>3</sub> or V <sub>av34</sub>                          | •                                | (Equation 2             | 5-4 or 25-5)               |                            | V <sub>3</sub> or V <sub>av34</sub> |                               |                | oc/h (Equatio                                     | on 25-15 or            | 25-16)      |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                 | =                                |                         | 3 1 01 20 0)               |                            |                                     | > 2 7(                        |                | Yes ☑ No  | 711 20 10 01           | 20 10)      |
| Is $V_3$ or $V_{av34} > 2,7$                                 |                                  |                         |                            |                            |                                     |                               |                | Yes ✓ No  |                        |             |
|  | ·=                               |                         | 5-8)                       |                            |                                     |                               |                |   | 25-18)                 |             |
| If Yes,V <sub>12a</sub> =                                    |                                  | (Lqualion 2)            | J-0)                       |                            | _                                   |                               |                | h (Equation                                       | 23-10)                 |             |
| Capacity Ch  | Ť                                | I (                     | `anaaitu                   | LOS F?                     | Capacit                             | y Crie                        |                | l Co.   | pacity                 | LOS F?      |
|  | Actual                           |                         | Capacity                   | LUST                       | V <sub>F</sub>                      |                               | Actual<br>3640 | Exhibit 25-1                                      |                        | No          |
| <b>.</b> ,   |                                  | Exhibit 25-7            |                            |                            |                                     |                               |                |   | +                      |             |
| V <sub>FO</sub>  |                                  | EXHIBIT 23-7            |                            |                            | $V_{FO} = V_{F}$                    |                               | 3396           | Exhibit 25-1                                      | +                      | No          |
|  |                                  |                         |                            |                            | V <sub>R</sub>                      |                               | 244            | Exhibit 25-3                                      |                        | No          |
| Flow Enterin   | 7                                | 7                       |                            | 1 1/1 1/1 0                | Flow Er                             |                               | <del></del>    | ge Influen  |                        | \" \ \" \ O |
| V <sub>R12</sub>   | Actual                           | Max<br>Exhibit 25-7     | Desirable                  | Violation?                 | V <sub>12</sub>                     |                               | ctual<br>640 l | Max Desirab<br>Exhibit 25-14                      | 4400:All               | Violation?  |
|  | vice Deter                       |                         | if not El                  | <u> </u>                   |                                     |                               |                |   |                        |             |
| Level of Service $D_R = 5.475 + 0$                           |                                  | •                       |                            |                            | <del></del>                         |                               |                | <b>erminatio</b><br>086 V <sub>12</sub> - 0.0     | •                      | )           |
|  |                                  | 0.0070 V <sub>12</sub>  | 0.00021 LA                 |                            |                                     |                               |                | 1000 v <sub>12</sub> - 0.                         | oos LD                 |             |
| "  | •                                |                         |                            |                            | ··                                  | 1.1 (pc/                      | -              |   |                        |             |
| LOS = (Exhibit   | •                                |                         |                            |                            | <del></del>                         | -                             | it 25-4)       |   |                        |             |
| Speed Deter  |                                  |                         |                            |                            | Speed L                             |                               |                |   |                        |             |
| $M_S = (Exibit 2)$   | -                                |                         |                            |                            | l "                                 | -                             | chibit 25-1    | -   |                        |             |
| "  | hibit 25-19)                     |                         |                            |                            | I                                   |                               | (Exhibit 2     | -   |                        |             |
|  | hibit 25-19)                     |                         |                            |                            | 1 *                                 |                               | (Exhibit 25    | -   |                        |             |
| S = mph (Ex  | hibit 25-14)                     |                         |                            |                            | S = 5                               | 7.4 mph                       | (Exhibit 2     | 5-15)   |                        |             |

|   |                               | RAMP                                   | S AND RAM                              | IP JUNCTI  | ONS WO  | RKS                                   | HEET            |                            |                        |                                    |
|---|-------------------------------|--|--|--|---|---------------------------------------|-----------------|----------------------------|------------------------|------------------------------------|
| General Infor   | mation                        |  |  | Site Infor   |   |                                       |                 |                            |                        |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioo<br>Project Description | SKB<br>TDO<br>04/18<br>d AM F | T/TranSystems<br>3/2011<br>Peak Period | ն Ji<br>Ji                             | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | ravel   | I-40 EB<br>Exit 42<br>Fayette<br>2014 | County          |                            |                        |                                    |
| Inputs  | Existing Condi                | lions                                  |  |  |   |                                       |                 |                            |                        |                                    |
| Upstream Adj Ramp   |                               | Terrain: Leve                          | el                                     |  |   |                                       |                 |                            | Downstrea<br>Ramp      | m Adj                              |
| ✓ Yes ✓ Or  |                               |  |  |  |   |                                       |                 |                            | Yes                    | □ On                               |
| No Of $L_{up} = 2000$   |                               |  |  |  |   |                                       |                 |                            | No L <sub>down</sub> = | Off<br>ft                          |
| $V_u = 232 \text{ Ve}$  |                               | S                                      | S <sub>FF</sub> = 70.0 mph<br>Sketch ( | show lanes, L <sub>A</sub>                                 | S <sub>FR</sub> = 3                               | 35.0 mp                               | h               |                            | V <sub>D</sub> =       | veh/h                              |
| Conversion to   | o pc/h Und                    | der Base                               |  | Α  | י טי אי וי  |                                       |                 |                            |                        |                                    |
| (pc/h)  | V<br>(Veh/hr)                 | PHF                                    | Terrain                                | %Truck   | %Rv   |                                       | f <sub>HV</sub> | f <sub>p</sub>             | v = V/PHF              | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 1582                          | 0.90                                   | Level                                  | 25   | 0   | 0.                                    | 889             | 1.00                       | 197                    | 78                                 |
| Ramp  | 715                           | 0.90                                   | Level                                  | 3  | 0   | 0.                                    | 985             | 1.00                       | 80                     | 6                                  |
| UpStream  | 232                           | 0.90                                   | Level                                  | 3  | 0   | 0.                                    | 985             | 1.00                       | 26                     | 2                                  |
| DownStream  | <u> </u>                      | Marga Araaa                            |  |  | 1   |                                       |                 | Nivers Areas               |                        |                                    |
| Estimation of   |                               | Merge Areas                            |  |  | Estimat   | ion o                                 |                 | iverge Areas               |                        |                                    |
|   |                               | (D )                                   |  |  | Louman  |                                       |                 | \                          | \D                     |                                    |
|   | $V_{12} = V_F$                |  | . 05. 0)                               |  |   |                                       |                 | $V_R + (V_F - V_F)$        |                        |                                    |
| L <sub>EQ</sub> =   |                               | ation 25-2 o                           | •                                      |  | L <sub>EQ</sub> =                                 |                                       | •               | Equation 25-8              | •                      | 05 40)                             |
| P <sub>FM</sub> =   |                               | Equation (I                            | =XNIDIT 25-5)                          |  | P <sub>FD</sub> =                                 |                                       |                 | 000 using Eq               | luation (Exh           | bit 25-12)                         |
| V <sub>12</sub> =   | pc/h                          | <i>(</i> = o                           |  |  | V <sub>12</sub> =                                 |                                       |                 | 78 pc/h                    |                        |                                    |
| V <sub>3</sub> or V <sub>av34</sub><br>Is V <sub>3</sub> or V <sub>av34</sub> > 2,70          |                               | (Equation 25<br>s     No               | o-4 or 25-5)                           |  | $V_3$ or $V_{av34}$<br>Is $V_3$ or $V_{av}$       | , <sub>34</sub> > 2,7                 |                 | pc/h (Equation<br>Yes ☑ No | on 25-15 or            | 25-16)                             |
| Is $V_3$ or $V_{av34} > 1.5$  |                               |  |  |  | 0 4.  | 0.                                    |                 | Yes ✓ No                   |                        |                                    |
| If Yes,V <sub>12a</sub> =   | · <del>-</del>                |  | 5-8)                                   |  | l o uv  | 01                                    | 12              | c/h (Equation              | 25-18)                 |                                    |
| Capacity Che  |                               | (                                      | ,                                      |  | Capacit   |                                       |                 | ( 1                        | /                      |                                    |
|   | Actual                        |  | Capacity                               | LOS F?   |   |                                       | Actual          | Ca                         | pacity                 | LOS F?                             |
|   |                               |  |  |  | V <sub>F</sub>                                    |                                       | 1978            | Exhibit 25-1               | 4 4800                 | No                                 |
| $V_{FO}$  |                               | Exhibit 25-7                           |  |  | $V_{FO} = V_{F}$                                  | - V <sub>R</sub>                      | 1172            | Exhibit 25-1               | 4 4800                 | No                                 |
|   |                               |  |  |  | V <sub>R</sub>                                    |                                       | 806             | Exhibit 25-3               | 2000                   | No                                 |
| Flow Entering   | a Merae In                    | fluence A                              | \rea                                   |  |   | nterin                                |                 | rge Influen                |                        |                                    |
|   | Actual                        |  | Desirable                              | Violation?   | 1 1011  | _                                     | Actual          | Max Desirab                |                        | Violation?                         |
| V <sub>R12</sub>  |                               | Exhibit 25-7                           |  |  | V <sub>12</sub>                                   | 1                                     | 978             | Exhibit 25-14              | 4400:All               | No                                 |
| Level of Serv   | ice Detern                    | nination (                             | if not F)                              |  |   | f Serv                                | ∕ice De         | terminatio                 | n (if not l            | =)                                 |
| $D_R = 5.475 + 0.$  |                               |  |  |  | +   |                                       |                 | .0086 V <sub>12</sub> - 0. |                        | -                                  |
| D <sub>R</sub> = (pc/mi/ln  | )                             |  |  |  | D <sub>R</sub> = 16                               | 6.8 <b>(pc</b> ,                      | /mi/ln)         |                            | _                      |                                    |
| LOS = (Exhibit :  | 25-4)                         |  |  |  | I '''   |                                       | oit 25-4)       |                            |                        |                                    |
| Speed Deterr  | <u>-</u>                      |  |  |  | Speed L   | -                                     |                 | on                         |                        |                                    |
| $M_S = $ (Exibit 2  |                               |  |  |  | <del>  '                                   </del> |                                       | xhibit 25-      |                            |                        |                                    |
|   | nibit 25-19)                  |  |  |  | 1   | 6.0 mph                               | (Exhibit        | 25-19)                     |                        |                                    |
|   | nibit 25-19)                  |  |  |  |   | /A mph                                | (Exhibit 2      | 25-19)                     |                        |                                    |
| S = mph (Exh  | nibit 25-14)                  |  |  |  |   |                                       | (Exhibit        |                            |                        |                                    |
|   |                               |  |  |  | -   |                                       |                 |                            |                        |                                    |

Generated: 4/20/2011 10:38 AM

|  |                                  | RAMP                                   | S AND RAM                  | P JUNCTI  | ONS WC                              | RKS                                   | HEET            |   |                    |                                    |
|--|----------------------------------|--|----------------------------|---|-------------------------------------|---------------------------------------|-----------------|---|--------------------|------------------------------------|
| General Infor  | rmation                          |  |                            | Site Infor  |                                     |                                       |                 |   |                    |                                    |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Period | SKB<br>TDO<br>04/18<br>d PM P    | Γ/TranSystem:<br>3/2011<br>Peak Period | s Ju<br>Ju                 | eeway/Dir of Tr<br>nction<br>risdiction<br>nalysis Year | avel                                | I-40 EE<br>Exit 42<br>Fayette<br>2014 |                 |   |                    |                                    |
| Project Description  | Existing Condit                  | tions                                  |                            |   |                                     |                                       |                 |   |                    |                                    |
| Inputs   |                                  | T                                      | -1                         |   |                                     |                                       |                 | 1   |                    |                                    |
| Upstream Adj Ramp  |                                  | Terrain: Leve                          | el                         |   |                                     |                                       |                 |   | Downstrear<br>Ramp | m Adj                              |
| ✓ Yes ✓ Or   | า                                |  |                            |   |                                     |                                       |                 |   | -                  | □ On                               |
| □ No □ Of  | f                                |  |                            |   |                                     |                                       |                 |   | <b>™</b> No        | Off                                |
| L <sub>up</sub> = 2000   | ft                               |  | S <sub>FF</sub> = 70.0 mph |   | S <sub>FR</sub> =                   | 35 0 mr                               | sh.             | L   | -down =            | ft                                 |
| $V_u = 367 \text{ v}$  | eh/h                             |  | • •                        | show lanes, L <sub>A</sub> ,                            |                                     | 55.0 mp                               | ,,,,            |   | $V_{\rm D} =$      | veh/h                              |
| Conversion t   | o pc/h Und                       | der Base                               |                            | A'  | D' R' I'                            |                                       |                 |   |                    |                                    |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                                    | Terrain                    | %Truck  | %Rv                                 |                                       | f <sub>HV</sub> | f <sub>p</sub>                                    | / = V/PHF :        | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 1567                             | 0.90                                   | Level                      | 25  | 0                                   | 0.                                    | 889             | 1.00  | 195                | i9                                 |
| Ramp   | 397                              | 0.90                                   | Level                      | 3   | 0                                   | 0.                                    | 985             | 1.00  | 44                 | 8                                  |
| UpStream   | 367                              | 0.90                                   | Level                      | 3   | 0                                   | 0.                                    | 985             | 1.00  | 41                 | 4                                  |
| DownStream   |                                  | <br>Merge Areas                        |                            |   |                                     |                                       | <u> </u>        | iverge Areas                                      |                    |                                    |
| Estimation of  |                                  | weige Areas                            |                            |   | Estima                              | tion c                                |                 | iverge Areas                                      |                    |                                    |
|  | V <sub>12</sub> = V <sub>F</sub> | ( P )                                  |                            |   | 1                                   |                                       |                 | V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub> | \P                 |                                    |
| L <sub>FO</sub> =  | 12 1                             | ation 25-2 o                           | r 25-3)                    |   | L <sub>EQ</sub> =                   |                                       |                 | equation 25-8                                     |                    |                                    |
| L <sub>EQ</sub> =<br>P <sub>FM</sub> =                                 |                                  | Equation (                             | · ·                        |   | P <sub>FD</sub> =                   |                                       |                 | 000 using Equ                                     | =                  | hit 25-12)                         |
| V <sub>12</sub> =  | pc/h                             |  | ,                          |   | V <sub>12</sub> =                   |                                       |                 | 59 <b>pc/h</b>                                    |                    | J. 20 .2)                          |
| V <sub>3</sub> or V <sub>av34</sub>                                    | •                                | (Equation 2                            | 5-4 or 25-5)               |   | V <sub>3</sub> or V <sub>av34</sub> |                                       |                 | pc/h (Equatio                                     | n 25-15 or         | 25-16)                             |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,70                          |                                  |  | ,                          |   |                                     |                                       |                 | Yes  ✓ No   |                    | ,                                  |
| Is $V_3$ or $V_{av34} > 1.5$   |                                  |  |                            |   |                                     |                                       |                 | Yes ✓ No  |                    |                                    |
| If Yes,V <sub>12a</sub> =  | · <del>-</del>                   |  | 5-8)                       |   |                                     |                                       | · <del>-</del>  | c/h (Equation                                     | 25-18)             |                                    |
| Capacity Che   |                                  |  |                            |   | Capacit                             |                                       |                 |   | ,                  |                                    |
|  | Actual                           | (                                      | Capacity                   | LOS F?  |                                     |                                       | Actual          | Cap   | acity              | LOS F?                             |
|  |                                  |  |                            |   | V <sub>F</sub>                      |                                       | 1959            | Exhibit 25-14                                     | 4800               | No                                 |
| $V_{FO}$   |                                  | Exhibit 25-7                           |                            |   | $V_{FO} = V_{F}$                    | - V <sub>R</sub>                      | 1511            | Exhibit 25-14                                     | 4800               | No                                 |
|  |                                  |  |                            |   | $V_R$                               |                                       | 448             | Exhibit 25-3                                      | 2000               | No                                 |
| Flow Entering  | g Merge In                       | fluence A                              | Area                       | <u> </u>  | Flow E                              | nterin                                | g Diver         | ge Influenc                                       | ce Area            |                                    |
|  | Actual                           |  | Desirable                  | Violation?  |                                     |                                       | Actual          | Max Desirabl                                      | е                  | Violation?                         |
| V <sub>R12</sub>   |                                  | Exhibit 25-7                           |                            |   | V <sub>12</sub>                     |                                       | 1959            | Exhibit 25-14                                     | 4400:All           | No                                 |
| Level of Serv  |                                  |  |                            |   |                                     |                                       |                 | termination                                       | •                  | =)                                 |
| $D_R = 5.475 + 0.$   |                                  | 0.0078 V <sub>12</sub>                 | - 0.00627 L <sub>A</sub>   |   |                                     |                                       |                 | 0086 V <sub>12</sub> - 0.0                        | 009 L <sub>D</sub> |                                    |
| D <sub>R</sub> = (pc/mi/ln   | -                                |  |                            |   | I                                   | 6.6 <b>(pc</b>                        | •               |   |                    |                                    |
| LOS = (Exhibit   |                                  |  |                            |   | <del></del>                         |                                       | oit 25-4)       |   |                    |                                    |
| Speed Deterr   | mination                         |  |                            |   | Speed                               |                                       |                 |   |                    |                                    |
| $M_S = (Exibit 2)$   | 5-19)                            |  |                            |   | ľ                                   | •                                     | xhibit 25-      | -   |                    |                                    |
| S <sub>R</sub> = mph (Exh  | nibit 25-19)                     |  |                            |   | l ''                                |                                       | (Exhibit 2      | •   |                    |                                    |
|  | nibit 25-19)                     |  |                            |   | l *                                 |                                       | (Exhibit 2      | •   |                    |                                    |
| S = mph (Exh   | nibit 25-14)                     |  |                            |   | S = 5                               | 6.9 mph                               | (Exhibit 2      | 25-15)  |                    |                                    |

|  |                         | RAMP                     | S AND RAM                           | P JUNCT                    | ONS WO   | RKS              | HEET                   |                        |                      |                       |
|--|-------------------------|--------------------------|-------------------------------------|----------------------------|--|------------------|------------------------|------------------------|----------------------|-----------------------|
| General Info   | rmation                 |                          |                                     | Site Infor                 |  |                  |                        |                        |                      |                       |
| Analyst  | SKB                     |                          | Fr                                  | eeway/Dir of T             |  | I-40 W           | В                      |                        |                      |                       |
| Agency or Company                                    |                         | T/TranSystems            |                                     | ınction                    |  | Exit 42          |                        |                        |                      |                       |
| Date Performed                                       |                         | 8/2011                   |                                     | ırisdiction                |  | Fayette          | County                 |                        |                      |                       |
| Analysis Time Perio                                  | d AM F                  | Peak Period              | Ar                                  | nalysis Year               |  | 2014             | ,                      |                        |                      |                       |
| Project Description                                  | Existing Condi          | tions                    |                                     |                            |  |                  |                        |                        |                      |                       |
| Inputs   |                         |                          |                                     |                            |  |                  |                        |                        |                      |                       |
| Upstream Adj Ramp                                    | )                       | Terrain: Leve            | I                                   |                            |  |                  |                        |                        | Downstrea<br>Ramp    | am Adj                |
| ▼ Yes  | n                       |                          |                                     |                            |  |                  |                        |                        |                      | ☐ On                  |
| □ No □ O   | ff                      |                          |                                     |                            |  |                  |                        |                        | ✓ No                 | Off                   |
| L <sub>up</sub> = 2000                               | ft                      |                          | 70.0 mmh                            |                            |  | 25.0 555         | .h                     |                        | L <sub>down</sub> =  | ft                    |
| $V_u = 387 v$  | reh/h                   | 5                        | $_{FF} = 70.0 \text{ mph}$ Sketch ( | show lanes, L <sub>A</sub> | $S_{FR} = L_{D_i} V_{R_i} V_{f_i}$               | 35.0 mp          | n                      |                        | V <sub>D</sub> =     | veh/h                 |
| Conversion   | to pc/h Une             | der Base                 |                                     | ,,                         | D IX I   |                  |                        |                        |                      |                       |
| (pc/h)   | V                       | PHF                      | Terrain                             | %Truck                     | %Rv  | $\Box$           | f [                    | f                      | v = V/PHF            | <b>y</b> f <b>y</b> f |
|  | (Veh/hr)                |                          |                                     |                            | <del> </del>                                     | +                | f <sub>HV</sub>        | f <sub>p</sub>         |                      | · ·                   |
| Freeway  | 1441                    | 0.90                     | Level<br>Level                      | 25                         | 0  |                  | 889                    | 1.00                   | +                    | 01                    |
| Ramp   | 374                     | 0.90                     | 3                                   | 0                          | 0.   | 985              | 1.00                   | <del></del>            | 22                   |                       |
| UpStream   | 387                     | 0.90                     | Level                               | 3                          | 0  | 0.               | 985                    | 1.00                   | 4                    | 36                    |
| DownStream   |                         |                          |                                     |                            |  |                  |                        |                        |                      |                       |
| Fatimatian a   |                         | Merge Areas              |                                     |                            | Fatime   | 4:               |                        | verge Areas            | <u> </u>             |                       |
| Estimation o   | 17 V <sub>12</sub>      |                          |                                     |                            | Estima   | tion c           | οτ ν <sub>12</sub>     |                        |                      |                       |
|  | $V_{12} = V_{F}$        | (P <sub>FM</sub> )       |                                     |                            |  |                  | $V_{12} = $            | $V_R + (V_F -$         | $V_R)P_{FD}$         |                       |
| L <sub>EQ</sub> =                                    | (Equ                    | ation 25-2 or            | 25-3)                               |                            | L <sub>EQ</sub> =                                |                  | (E                     | quation 25             | 5-8 or 25-9)         |                       |
| P <sub>FM</sub> =                                    | using                   | Equation (E              | Exhibit 25-5)                       |                            | P <sub>FD</sub> =                                |                  | 1.00                   | 00 using l             | Equation (Ext        | nibit 25-12)          |
| V <sub>12</sub> =                                    | pc/h                    |                          | ,                                   |                            | V <sub>12</sub> =                                |                  |                        | 1 pc/h                 | 1 ,                  | ,                     |
| V <sub>3</sub> or V <sub>av34</sub>                  | •                       | (Equation 25             | (1 or 25 5)                         |                            | V <sub>3</sub> or V <sub>av34</sub>              |                  |                        | -                      | tion 25-15 o         | . 25 16)              |
|  |                         |                          | )-4 01 23-3)                        |                            |  | . 27             |                        |                        |                      | 25-16)                |
| Is $V_3$ or $V_{av34} > 2.7$                         |                         |                          |                                     |                            | _ ~ ~  |                  | '00 pc/h? ☐            |                        |                      |                       |
| Is $V_3$ or $V_{av34} > 1.5$                         | · <del>-</del>          |                          |                                     |                            |  |                  | 5 * V <sub>12</sub> /2 |                        |                      |                       |
| If Yes,V <sub>12a</sub> =                            | pc/h                    | (Equation 25             | 5-8)                                |                            | If Yes,V <sub>12a</sub>                          | =                | рс                     | /h (Equation           | on 25-18)            |                       |
| Capacity Che   | ecks                    |                          |                                     |                            | Capaci   | ty Ch            | ecks                   |                        |                      |                       |
|  | Actual                  | С                        | apacity                             | LOS F?                     |  |                  | Actual                 | (                      | Capacity             | LOS F?                |
|  |                         |                          |                                     |                            | V <sub>F</sub>                                   |                  | 1801                   | Exhibit 25             | 5-14 4800            | No                    |
| $V_{FO}$   |                         | Exhibit 25-7             |                                     |                            | $V_{FO} = V$                                     | - V <sub>D</sub> | 1379                   | Exhibit 25             | 5-14 4800            | No                    |
| 10   |                         |                          |                                     |                            | V <sub>R</sub>                                   |                  | 422                    | Exhibit 2              |                      | No                    |
| Flance Frage   |                         | - Cl                     |                                     | <u> </u>                   |  |                  |                        |                        |                      | INU                   |
| Flow Enterin   | <del></del>             | 4                        |                                     | Violetian                  | FIOW E   |                  | <del>-</del>           | Max Desi               | ence Area            | Violetian             |
| \/   | Actual                  | 1                        | Desirable                           | Violation?                 | \/   | _                | Actual                 |                        | 1                    | Violation?            |
| V <sub>R12</sub>                                     | <u> </u>                | Exhibit 25-7             |                                     |                            | V <sub>12</sub>                                  |                  |                        | Exhibit 25-14          |                      | No                    |
| Level of Serv  |                         | Level o                  |                                     |                            |  | on (if not       | F)                     |                        |                      |                       |
| $D_R = 5.475 + 0$                                    | .00734 v <sub>R</sub> + | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>              |                            |  | $D_R = 4$        | 1.252 + 0.0            | 0086 V <sub>12</sub> - | 0.009 L <sub>D</sub> |                       |
| D <sub>R</sub> = (pc/mi/lr                           | ገ)                      |                          |                                     |                            | $D_R = 1$  | 5.2 <b>(pc</b>   | /mi/ln)                |                        |                      |                       |
| LOS = (Exhibit                                       | 25-4)                   |                          |                                     |                            | LOS = E  | (Exhil           | oit 25-4)              |                        |                      |                       |
| Speed Deter  | mination                |                          |                                     |                            | <del>-</del> }                                   |                  | minatio                | <u> </u>               |                      |                       |
| $M_S = $ (Exibit 2                                   |                         |                          |                                     |                            | <del>                                     </del> |                  | xhibit 25-1            |                        |                      |                       |
| _  | hibit 25-19)            |                          |                                     |                            | ľ  | -                | (Exhibit 2             | -                      |                      |                       |
|  | •                       |                          |                                     |                            | 1 ''   |                  | (Exhibit 2             | •                      |                      |                       |
|  | hibit 25-19)            |                          |                                     |                            | 1 *  |                  | •                      | -                      |                      |                       |
| S = mph (Exhibit 25-14) S = 57.0 mph (Exhibit 25-15) |                         |                          |                                     |                            |  |                  |                        |                        |                      |                       |

|   | RAMP                                   | S AND RAM              | P JUNCTI  | ONS WO  | RKSH                                  | IEET                    |   |   |                                    |
|---|--|------------------------|---|---|---------------------------------------|-------------------------|---|---|------------------------------------|
| General Information                                       |  |                        | Site Infor  |   |                                       | <del></del> -           |   |   |                                    |
| Date Performed 04/18                                      | T/TranSystems<br>3/2011<br>Peak Period | Jui<br>Jui             | eeway/Dir of Tr<br>nction<br>risdiction<br>nalysis Year |   | I-40 WB<br>Exit 42<br>Fayette<br>2014 | County                  |   |   |                                    |
| Project Description Existing Condit                       |  | 7                      | larysis rour  |   | 2011                                  |                         |   |   |                                    |
| Inputs  |  |                        |   |   |                                       |                         |   |   |                                    |
| Upstream Adj Ramp   | Terrain: Leve                          | l                      |   |   |                                       |                         |   | Downstrea<br>Ramp                       | m Adj                              |
| ✓ Yes ✓ On  |  |                        |   |   |                                       |                         |   | •                                       | ☐ On                               |
| No ☐ Off  |  |                        |   |   |                                       |                         |   |   | ☐ Off                              |
| $L_{up} = 2000 \text{ ft}$ $V_{u} = 620 \text{ veh/h}$    | S                                      | FF = 70.0 mph          | show longs I  | S <sub>FR</sub> = 3                                   | 35.0 mph                              |                         |   | - <sub>down</sub> =<br>V <sub>D</sub> = | ft<br>veh/h                        |
| Conversion to pc/h Und                                    | dor Pasa (                             |                        | show lanes, L <sub>A</sub>                              | L <sub>D</sub> , V <sub>R</sub> , V <sub>f</sub> )    |                                       |                         |   |   |                                    |
| V   |  |                        | 0.7   | 215   | T .                                   | Т                       | <del>, 1</del>                                    | 1//5::=                                 | , .                                |
| (pc/h) (Veh/hr)   | PHF                                    | Terrain                | %Truck  | %Rv   | f                                     | HV                      | f <sub>p</sub>                                    | / = V/PHF :                             | x t <sub>HV</sub> x t <sub>p</sub> |
| Freeway 1691  | 0.90                                   | Level                  | 25  | 0   | 0.8                                   | 89                      | 1.00  | 211                                     | 14                                 |
| Ramp 220  | 0.90                                   | Level                  | 3   | 0   | 0.9                                   | 85                      | 1.00  | 24                                      | 8                                  |
| UpStream 620  | 0.90                                   | Level                  | 3   | 0   | 0.9                                   | 85                      | 1.00  | 69                                      | 9                                  |
| DownStream  | Marma Araaa                            |                        |   | <u> </u>  |                                       | Di-                     | 10×20 A×000                                       |   |                                    |
| Estimation of v <sub>12</sub>                             | Merge Areas                            |                        |   | Estimat   | tion of                               |                         | verge Areas                                       |   |                                    |
| V <sub>12</sub> = V <sub>F</sub>                          | ( P.,. )                               |                        |   | 1   |                                       |                         | / <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub> | )P-5                                    |                                    |
|   | ation 25-2 or                          | 25-3)                  |   | <br> =  |                                       |                         | quation 25-8                                      |   |                                    |
| Lu  | Equation (E                            | •                      |   | L <sub>EQ</sub> =<br>P =                              |                                       | •                       | 00 using Equ                                      | •                                       | hit 25 12)                         |
| 1111  | Equation (L                            | Milbit 25-5)           |   | P <sub>FD</sub> = V <sub>12</sub> =                   |                                       |                         | 4 pc/h  | Jation (Exili                           | DII 23-12)                         |
| 12  | (Equation 25                           | 1 or 25 5)             |   | V <sub>12</sub> - V <sub>3</sub> or V <sub>av34</sub> |                                       |                         | •   | n 05 15 or                              | OF 46\                             |
|   | (Equation 25                           | 1-4 01 25-5)           |   |   | > 2.70                                |                         | oc/h (Equatio                                     | 11 25-15 01                             | 25-16)                             |
| Is $V_3$ or $V_{av34} > 2,700$ pc/h? $\bigvee$ Yes        |  |                        |   |   |                                       |                         | Yes ✓ No  |   |                                    |
| Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes               |  | . 0)                   |   |   |                                       |                         | Yes ✓ No  | 05.40\                                  |                                    |
| If Yes, $V_{12a} = pc/h$ (                                | (Equation 25                           | 9-8)                   |   |   |                                       |                         | /h (Equation                                      | 25-18)                                  |                                    |
| Capacity Checks   | 1 -                                    |                        | 1   | Capacit   | ty Che                                |                         | 1 -   |   | 1                                  |
| Actual  | C                                      | apacity                | LOS F?  | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \                 |                                       | Actual                  |   | acity                                   | LOS F?                             |
| l l   |  |                        |   | V <sub>F</sub>  |                                       | 2114                    | Exhibit 25-14                                     |   | No                                 |
| V <sub>FO</sub>   | Exhibit 25-7                           |                        |   | $V_{FO} = V_{F}$                                      |                                       | 1866                    | Exhibit 25-14                                     | 4800                                    | No                                 |
|   |  |                        |   | V <sub>R</sub>  |                                       | 248                     | Exhibit 25-3                                      | 2000                                    | No                                 |
| Flow Entering Merge In                                    | 4                                      |                        |   | Flow Er   | `                                     |                         | ge Influenc                                       |   |                                    |
| Actual  | 1 1                                    | Desirable              | Violation?  |   | _                                     | ctual                   | Max Desirabl                                      |   | Violation?                         |
| V <sub>R12</sub>  | Exhibit 25-7                           |                        |   | V <sub>12</sub>                                       |                                       |                         | Exhibit 25-14                                     | 4400:All                                | No                                 |
| Level of Service Detern                                   |  |                        |   | <del>*                                    </del>      |                                       |                         | ermination  | •                                       | <del>-</del> )                     |
| $D_R = 5.475 + 0.00734 \text{ V}_R + 0.00734 \text{ V}_R$ | 0.0078 V <sub>12</sub> -               | 0.00627 L <sub>A</sub> |   | 1   |                                       |                         | 086 V <sub>12</sub> - 0.0                         | )09 L <sub>D</sub>                      |                                    |
| $D_R = (pc/mi/ln)$  |  |                        |   | I   | 7.9 <b>(pc/r</b>                      | -                       |   |   |                                    |
| LOS = (Exhibit 25-4)                                      |  |                        |   |   | (Exhib                                |                         |   |   |                                    |
| Speed Determination                                       |  |                        |   | Speed I   | Deterr                                | ninatio                 | າ   |   |                                    |
| M <sub>S</sub> = (Exibit 25-19)                           |  |                        |   | $D_s = 0$   | .450 (Ex                              | hibit 25-1              | 9)  |   |                                    |
| s (Exibit 20 10)  |  |                        |   | 1 '   |                                       |                         |   |   |                                    |
| $S_R$ = mph (Exhibit 25-19)                               |  |                        |   | 1   | 7.4 mph                               | (Exhibit 2              | 5-19)   |   |                                    |
|   |  |                        |   | $S_R = 5$   |                                       | (Exhibit 2<br>Exhibit 2 | •   |   |                                    |

|  |                                  | RAMP                                   | S AND RAM                   | IP JUNCT  | ONS WO                              | RKSI                                  | HEET                           |   |                     |                                    |
|--|----------------------------------|--|-----------------------------|---|-------------------------------------|---------------------------------------|--------------------------------|---|---------------------|------------------------------------|
| General Info   | rmation                          |  | ***                         | Site Info   |                                     |                                       | <u> </u>                       |   |                     |                                    |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Perio | SKB<br>y TDO<br>04/18            | T/TranSystems<br>8/2011<br>Peak Period | s Ji<br>Ji                  | reeway/Dir of T<br>unction<br>urisdiction<br>nalysis Year | ravel                               | I-40 EB<br>Exit 42<br>Fayette<br>2034 | County                         |   |                     |                                    |
| Project Description  |                                  |  |                             | inalysis i cai  |                                     | 2034                                  |                                |   |                     |                                    |
| <i>Inputs</i>  | Existing Condi                   | tions                                  |                             |   |                                     |                                       |                                |   |                     |                                    |
| Upstream Adj Ram   | p                                | Terrain: Leve                          | el                          |   |                                     |                                       |                                |   | Downstrea<br>Ramp   | m Adj                              |
| ✓ Yes ✓ C  | )n                               |  |                             |   |                                     |                                       |                                |   | Yes                 | □ On                               |
| □ No □ C   | Off                              |  |                             |   |                                     |                                       |                                |   | ✓ No                | Off                                |
| L <sub>up</sub> = 2000   | ft                               |  | $S_{FF} = 70.0 \text{ mph}$ |   | S <sub>FR</sub> = 3                 | 25 0 mnl                              |                                |   | L <sub>down</sub> = | ft                                 |
| ŭ  | veh/h                            |  | Sketch (                    | show lanes, L <sub>A</sub>                                |                                     | 55.0 IIIpi                            | ı                              |   | V <sub>D</sub> =    | veh/h                              |
| Conversion   | to pc/h Un                       | der Base                               | Conditions                  | 9   |                                     |                                       |                                |   |                     |                                    |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                                    | Terrain                     | %Truck  | %Rv                                 | 1                                     | HV                             | f <sub>p</sub>  | v = V/PHF           | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 2321                             | 0.90                                   | Level                       | 25  | 0                                   |                                       | 389                            | 1.00  | 290                 |                                    |
| Ramp   | 754                              | 0.90                                   | Level                       | 10  | 0                                   |                                       | 952                            | 1.00  | 88                  |                                    |
| UpStream   | 275                              | 0.90                                   | Level                       | 10  | 0                                   | 0.9                                   | 952                            | 1.00  | 32                  | 1                                  |
| DownStream   |                                  | Merge Areas                            |                             |   | 1                                   |                                       | I<br>Di                        | verge Areas   |                     |                                    |
| Estimation of  |                                  | o.go / oue                             |                             |   | Estimat                             | ion o                                 |                                | 70. go 7 ouc  |                     |                                    |
|  | V <sub>12</sub> = V <sub>F</sub> | (P )                                   |                             |   |                                     |                                       |                                | V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>                 | \D                  |                                    |
| l =  |                                  | ation 25-2 o                           | r 25-3)                     |   | <br> =                              |                                       |                                | v <sub>R</sub> + (v <sub>F</sub> = v <sub>F</sub><br>quation 25-8 |                     |                                    |
| L <sub>EQ</sub> =<br>P -   | · · ·                            | Equation (                             | •                           |   | L <sub>EQ</sub> =                   |                                       | •                              | ousing Eq   | -                   | hit 25 12)                         |
| P <sub>FM</sub> =<br>V <sub>12</sub> =                               | pc/h                             | Lquation (                             | EXHIBIT 25-5)               |   | P <sub>FD</sub> = V <sub>12</sub> = |                                       |                                | 1 pc/h  | uation (LAII        | IDIT 23-12)                        |
| V <sub>3</sub> or V <sub>av34</sub>                                  | •                                | (Equation 2                            | 5-4 or 25-5)                |   | V <sub>3</sub> or V <sub>av34</sub> |                                       |                                | oc/h (Equatio   | on 25-15 or         | 25-16)                             |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                         |                                  |  | 3 4 01 20 0)                |   |                                     | >270                                  | -                              | Yes <b>⊠</b> No   | JII 23-13 01        | 20-10)                             |
| Is $V_3$ or $V_{av34} > 2,7$   |                                  |  |                             |   |                                     |                                       |                                | Yes ✓ No  |                     |                                    |
| If Yes, V <sub>12a</sub> =   | ·=                               |  | 5-8)                        |   |                                     |                                       |                                | /h (Equation  | 25-18)              |                                    |
| Capacity Ch  |                                  | (Equation 2)                           | 3 0)                        |   | Capacit                             |                                       |                                | /II (Equation   | 20 10)              |                                    |
| Capacity Cit   | Actual                           |  | Capacity                    | LOS F?  | Joapach                             | y One                                 | Actual                         | Ca  | pacity              | LOS F?                             |
|  | Notadi                           | †                                      | Jupacky                     | 1 2001.   | V <sub>F</sub>                      | $\neg$                                | 2901                           | Exhibit 25-1  | <del></del>         | No                                 |
| V <sub>FO</sub>  |                                  | Exhibit 25-7                           |                             | 1   | $V_{FO} = V_{F}$                    | - V_                                  | 2021                           | Exhibit 25-1  | +                   | No                                 |
| - FO   |                                  | LAINDIC 20-7                           |                             |   | V <sub>FO</sub> V <sub>R</sub>      | · R                                   | 880                            | Exhibit 25-3  |                     | No                                 |
| Class Cretoris   | Nove le                          | fluonos                                | 1                           |   |                                     | 40 "!"                                |                                |   |                     | INO                                |
| Flow Enterin   | Actual                           | 7                                      | Desirable                   | Violation?  | FIOW EI                             | _                                     | g <i>Diver</i> g               | <b>ge Influen</b><br>Max Desirab                                  |                     | Violation?                         |
| V <sub>R12</sub>   | Actual                           | Exhibit 25-7                           | Desirable                   | Violation:  | V <sub>12</sub>                     |                                       |                                | Exhibit 25-14   | 4400:All            | No                                 |
| Level of Ser   | vice Deterr                      |  | if not F)                   |   |                                     |                                       |                                | erminatio   |                     |                                    |
| $D_{R} = 5.475 + 0$  |                                  |  |                             |   | <del></del>                         |                                       |                                | 086 V <sub>12</sub> - 0.  | •                   | /                                  |
| $D_R = 0.475 + 0$ $D_R = (pc/mi/l)$                                  | • • •                            | 0.0070 V <sub>12</sub>                 | 3.00027 LA                  |   | L                                   | 4.7 (pc/                              |                                | 12 0.   | <u>-</u> D          |                                    |
| LOS = (Exhibit   | •                                |  |                             |   | I                                   |                                       | -                              |   |                     |                                    |
| Speed Deter  | -                                |  |                             |   | +                                   |                                       | it 25-4)                       | <u> </u>  |                     |                                    |
|  |                                  |  |                             |   | <b>Speed L</b> $D_s = 0$ .          |                                       | <i>ninatioi</i><br>khibit 25-1 |   |                     |                                    |
| M <sub>S</sub> = (Exibit 2   | •                                |  |                             |   | 1                                   | -                                     | (Exhibit 2                     | •   |                     |                                    |
| "  | thibit 25-19)                    |  |                             |   | 1                                   | •                                     | (Exhibit 2                     | •   |                     |                                    |
| ' '  | thibit 25-19)<br>thibit 25-14)   |  |                             |   | 1 *                                 |                                       | -                              | -   |                     |                                    |
| b = IIIhii (Ex   | 111DIL 20-14)                    |  |                             |   | D = 55                              | מקווו ס.כ                             | (Exhibit 2                     | o-10)   |                     |                                    |

Generated: 4/20/2011 10:41 AM

|  |   | RAMP                                   | S AND RAM                  | P JUNCTI  | ONS WC   | RKS  | HEET              |   |                        |                                    |
|--|---|--|----------------------------|---|--|--|-------------------|---|------------------------|------------------------------------|
| General Info   | rmation                                 |  |                            | Site Infor  |  |  | <del>-</del>      |   |                        |                                    |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | 04/18                                   | T/TranSystem:<br>3/2011<br>Peak Period | s Ju<br>Ju                 | eeway/Dir of Tr<br>nction<br>risdiction<br>nalysis Year | avel   | I-40 EE<br>Exit 42<br>Fayette<br>2034              |                   |   |                        |                                    |
| Project Description  |   |  | 711                        | larysis rour  |  | 2001   |                   |   |                        |                                    |
| Inputs   | · ·                                     |  |                            |   |  |  |                   |   |                        |                                    |
| Upstream Adj Ramı  | 0                                       | Terrain: Leve                          | el                         |   |  |  |                   |   | Downstreai<br>Ramp     | m Adj                              |
| ✓ Yes ✓ O  |   |  |                            |   |  |  |                   |   | •                      | ☐ On                               |
| □No □O   |   |  |                            |   |  |  |                   |   |                        | Off                                |
| $L_{up} = 2000$ $V_{u} = 410$ V                                      |   |  | S <sub>FF</sub> = 70.0 mph | show lanes, L <sub>A</sub> ,                            | S <sub>FR</sub> = 1                                | 35.0 mp  | h                 |   | $L_{down} = V_D = V_D$ | ft<br>veh/h                        |
| Conversion   | to pc/h Und                             | der Base                               |                            | - A   | -D/ · R/ · f/                                      |  |                   |   |                        |                                    |
| (pc/h)   | V<br>(Veh/hr)                           | PHF                                    | Terrain                    | %Truck  | %Rv  |  | f <sub>HV</sub>   | f <sub>p</sub>                                    | v = V/PHF              | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway  | 2358                                    | 0.90                                   | Level                      | 25  | 0  | 0.   | 889               | 1.00  | 294                    | 8                                  |
| Ramp   | 449                                     | 0.90                                   | Level                      | 3   | 0  | 0.   | 985               | 1.00  | 50                     | 6                                  |
| UpStream   | 410                                     | 0.90                                   | Level                      | 3   | 0  | 0.   | 985               | 1.00  | 46                     | 2                                  |
| DownStream   |   | Μ Δ                                    |                            |   |  |  |                   | A   |                        |                                    |
| Estimation o   |   | Merge Areas                            |                            |   | Estimat  | tion c   |                   | iverge Areas                                      |                        |                                    |
|  | V <sub>12</sub> = V <sub>F</sub>        | (P <sub>EM</sub> )                     |                            |   |  |  | V <sub>12</sub> = | V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub> | )P <sub>ED</sub>       |                                    |
| L <sub>EQ</sub> =  | 12 1                                    | ation 25-2 o                           | r 25-3)                    |   | L <sub>EQ</sub> =                                  |  |                   | Equation 25-8                                     |                        |                                    |
| P <sub>FM</sub> =  |   | Equation (                             | •                          |   | P <sub>FD</sub> =                                  |  | •                 | 000 using Eq                                      |                        | bit 25-12)                         |
| V <sub>12</sub> =  | pc/h                                    |  | ,                          |   | V <sub>12</sub> =                                  |  |                   | 48 pc/h   | (                      | ,                                  |
| V <sub>3</sub> or V <sub>av34</sub>                                  | •                                       | (Equation 2                            | 5-4 or 25-5)               |   | V <sub>3</sub> or V <sub>av34</sub>                |  |                   | pc/h (Equatio                                     | n 25-15 or             | 25-16)                             |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                         |   |  | ,                          |   |  |  |                   | Yes ☑ No  |                        | ,                                  |
| Is $V_3$ or $V_{av34} > 1.5$   |   |  |                            |   |  |  |                   | Yes ✓ No  |                        |                                    |
| If Yes, V <sub>12a</sub> =   | · <del>-</del>                          |  | 5-8)                       |   |  |  | · <del>-</del>    | c/h (Equation                                     | 25-18)                 |                                    |
| Capacity Ch  |   | (                                      | ,                          |   | Capacit  |  |                   |   |                        |                                    |
|  | Actual                                  |  | Capacity                   | LOS F?  | Joupaon  | . <del>,                                    </del> | Actual            | Car   | oacity                 | LOS F?                             |
|  |   |  | 1                          |   | V <sub>F</sub>                                     |  | 2948              | Exhibit 25-14                                     | 1                      | No                                 |
| $V_{FO}$   |   | Exhibit 25-7                           |                            |   | $V_{FO} = V_{F}$                                   |  | 2442              | Exhibit 25-14                                     | 4800                   | No                                 |
| FO   |   |  |                            |   | V <sub>R</sub>                                     |  | 506               | Exhibit 25-3                                      |                        | No                                 |
| Flow Enterin   | na Morao In                             | fluonco                                | l roa                      |   |  |  |                   | ge Influen  |                        | 110                                |
| . IOW LINEIII  | Actual                                  | 1                                      | Desirable                  | Violation?  | I IOW EI   |  | Actual            | Max Desirab                                       |                        | Violation?                         |
| V <sub>R12</sub>   | , totaui                                | Exhibit 25-7                           | _ 000010                   | 1.514110111   | V <sub>12</sub>                                    | _  | 2948              | Exhibit 25-14                                     | 4400:All               | No                                 |
| Level of Serv  | vice Detern                             |  | if not F)                  |   |  |  |                   | termination                                       |                        |                                    |
| $D_R = 5.475 + 0$  |   |  |                            |   | <del>†                                      </del> |  |                   | .0086 V <sub>12</sub> - 0.0                       |                        | /                                  |
| D <sub>R</sub> = (pc/mi/li   | • | 12                                     | А                          |   | L  | -к<br>5.1 <b>(рс</b>                               |                   | 12  | - ט                    |                                    |
| LOS = (Exhibit   | -                                       |  |                            |   | 1  |  | bit 25-4)         |   |                        |                                    |
| Speed Deter  |   |  |                            |   | Speed I  |  |                   | nn  |                        |                                    |
| $M_S = $ (Exibit 2   |   |  |                            |   | <del>' '                                  </del>   |  | xhibit 25-        |   |                        |                                    |
|  | hibit 25-19)                            |  |                            |   | 1  | 6.7 mph  | (Exhibit          | 25-19)  |                        |                                    |
| l '`   | hibit 25-19)                            |  |                            |   |  |  | (Exhibit 2        | •   |                        |                                    |
|  | hibit 25-14)                            |  |                            |   | 1  | 6.7 mph  | (Exhibit          | 25-15)  |                        |                                    |
|  |   |  |                            |   |  |  |                   |   |                        |                                    |

|  |                          | RAMP                     | S AND RAM                               | P JUNCT                    | ONS WO                                | ORKS           | HEET            |   |                     |                                   |
|--|--------------------------|--------------------------|---|----------------------------|---------------------------------------|----------------|-----------------|---|---------------------|-----------------------------------|
| General Info                                 | rmation                  |                          |   | Site Infor                 |                                       |                |                 |   |                     |                                   |
| Analyst                                      | SKB                      |                          | Fr                                      | eeway/Dir of T             |                                       | I-40 WI        | В               |   |                     |                                   |
| Agency or Compan                             | ny TDO                   | T/TranSystems            | s Ju                                    | inction                    |                                       | Exit 42        |                 |   |                     |                                   |
| Date Performed                               | 04/18                    | 3/2011                   | Ju                                      | ırisdiction                |                                       | Fayette        | County          |   |                     |                                   |
| Analysis Time Perio                          | od AM P                  | Peak Period              | Ar                                      | nalysis Year               |                                       | 2034           | -               |   |                     |                                   |
| Project Description                          | Existing Condi           | tions                    |   |                            |                                       |                |                 |   |                     |                                   |
| Inputs                                       |                          |                          |   |                            |                                       |                |                 |   |                     |                                   |
| Upstream Adj Ram                             |                          | Terrain: Leve            | )                                       |                            |                                       |                |                 |   | Downstrear<br>Ramp  | n Adj                             |
| ✓ Yes ✓ C                                    | On                       |                          |   |                            |                                       |                |                 |   | -                   | ☐ On                              |
| □ No □ C                                     | Off                      |                          |   |                            |                                       |                |                 |   | ✓ No                | Off                               |
| L <sub>up</sub> = 2000                       | ft                       |                          |   |                            |                                       |                |                 |   | L <sub>down</sub> = | ft                                |
| $V_u = 434$                                  | veh/h                    | S                        | S <sub>FF</sub> = 70.0 mph<br>Sketch (s | show lanes, L <sub>A</sub> | S <sub>FR</sub> =                     | 35.0 mp        | bh              |   | V <sub>D</sub> =    | veh/h                             |
| Conversion                                   | to pc/h Uni              | der Base                 |   | . А                        | D R I                                 |                |                 |   |                     |                                   |
|  | V                        |                          |   | 0/ =                       | 0/5                                   | $\neg$         | ,               | ,   | ., \//D!!E          | , 4 4                             |
| (pc/h)                                       | (Veh/hr)                 | PHF                      | Terrain                                 | %Truck                     | %Rv                                   | $\perp$        | f <sub>HV</sub> | f <sub>p</sub>                                    | v = V/PHF >         | κτ <sub>ΗV</sub> x t <sub>p</sub> |
| Freeway                                      | 2197                     | 0.90                     | Level                                   | 25                         | 0                                     | 0.             | 889             | 1.00  | 274                 | 6                                 |
| Ramp   | 401                      | 0.90                     | Level                                   | 3                          | 0                                     | 0.             | 985             | 1.00  | 452                 |                                   |
| UpStream                                     | 434                      | 0.90                     | Level                                   | 3                          | 0                                     | 0.             | 985             | 1.00  | 489                 | )                                 |
| DownStream                                   |                          | Marga Araaa              |   | <u> </u>                   | 1                                     |                | D:              | .o A  |                     |                                   |
| Estimation of                                |                          | Merge Areas              |   |                            | Estima                                | tion c         |                 | verge Areas                                       |                     |                                   |
| LStillation                                  |                          |                          |   |                            | LSuma                                 | uon c          | 12              |   |                     |                                   |
|  | $V_{12} = V_{F}$         |                          |   |                            |                                       |                | .=              | / <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> |                     |                                   |
| L <sub>EQ</sub> =                            | (Equa                    | ation 25-2 o             | r 25-3)                                 |                            | L <sub>EQ</sub> =                     |                | (E              | quation 25-8                                      | or 25-9)            |                                   |
| P <sub>FM</sub> =                            | using                    | Equation (               | Exhibit 25-5)                           |                            | P <sub>FD</sub> =                     |                | 1.00            | 00 using Eq                                       | uation (Exhil       | oit 25-12)                        |
| V <sub>12</sub> =                            | pc/h                     |                          |   |                            | V <sub>12</sub> =                     |                | 274             | 6 pc/h  |                     |                                   |
| V <sub>3</sub> or V <sub>av34</sub>          | pc/h                     | (Equation 25             | 5-4 or 25-5)                            |                            | V <sub>3</sub> or V <sub>av34</sub>   |                | 0 p             | c/h (Equatio                                      | on 25-15 or         | 25-16)                            |
| Is $V_3$ or $V_{av34} > 2.7$                 |                          |                          | •                                       |                            |                                       |                | -               | Yes ☑ No  |                     | ,                                 |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 |                          |                          |   |                            |                                       |                |                 | Yes ☑ No  |                     |                                   |
|  | · <del>-</del>           |                          | = o\                                    |                            |                                       |                |                 |   | 25 10)              |                                   |
| If Yes, V <sub>12a</sub> =                   |                          | (Equation 2              | D-0)                                    |                            |                                       |                |                 | h (Equation                                       | 20-10)              |                                   |
| Capacity Ch                                  | 1                        | 1 6                      |   | I 100 F0                   | Capaci                                | ty Cn          |                 | 1 0   |                     | 1 . 00 50                         |
|  | Actual                   |                          | Capacity                                | LOS F?                     | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ |                | Actual          | _   | pacity              | LOS F?                            |
| .,   |                          |                          |   |                            | V <sub>F</sub>                        |                | 2746            | Exhibit 25-1                                      |                     | No                                |
| V <sub>FO</sub>                              |                          | Exhibit 25-7             |   |                            | $V_{FO} = V_{I}$                      |                | 2294            | Exhibit 25-1                                      | +                   | No                                |
|  |                          |                          |   |                            | V <sub>R</sub>                        |                | 452             | Exhibit 25-3                                      | 2000                | No                                |
| Flow Enterin                                 | ng Merge In              | fluence A                | \rea                                    |                            | Flow E                                | nterin         | ng Diverg       | je Influen  | ce Area             |                                   |
|  | Actual                   | Max                      | Desirable                               | Violation?                 |                                       |                | Actual          | Max Desirab                                       | ole                 | Violation?                        |
| V <sub>R12</sub>                             |                          | Exhibit 25-7             |   | <u></u>                    | V <sub>12</sub>                       | :              | 2746 I          | Exhibit 25-14                                     | 4400:All            | No                                |
| Level of Ser                                 | vice Detern              | nination (               | if not F)                               |                            | Level o                               | f Ser          | vice Dete       | erminatio   | n (if not F         | )                                 |
| $D_R = 5.475 + 0$                            | 0.00734 v <sub>R</sub> + | 0.0078 V <sub>12</sub> · | · 0.00627 L <sub>A</sub>                |                            |                                       | $D_R = 4$      | 1.252 + 0.0     | 086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>  |                                   |
| D <sub>R</sub> = (pc/mi/l                    | ln)                      |                          |   |                            | $D_R = 2$                             | 3.4 <b>(pc</b> | /mi/ln)         | -   |                     |                                   |
| LOS = (Exhibit                               | •                        |                          |   |                            |                                       |                | bit 25-4)       |   |                     |                                   |
| Speed Deter                                  | •                        |                          |   |                            |                                       | -              | mination        | ,   |                     |                                   |
|  |                          |                          |   |                            | † <i>*</i>                            |                | xhibit 25-1     |   |                     |                                   |
|  | •                        |                          |   |                            | 1                                     | •              | (Exhibit 2      | -   |                     |                                   |
| _ ``   | (hibit 25-19)            |                          |   |                            | 1                                     |                | -               | •   |                     |                                   |
| ' '  | (hibit 25-19)            |                          |   |                            | 1 -                                   |                | (Exhibit 25     | -   |                     |                                   |
| S = mph (Ex                                  | (hibit 25-14)            |                          |   |                            | S = 5                                 | o.y mpr        | (Exhibit 2      | 5-15)   |                     |                                   |

|   |                                  | RAMP                                  | S AND RAM                  | P JUNCTI  | ONS WC   | RKS                                   | HEET            |   |                    |                                    |
|---|----------------------------------|---------------------------------------|----------------------------|---|--|---------------------------------------|-----------------|---|--------------------|------------------------------------|
| General Info  | rmation                          |                                       |                            | Site Infor  |  |                                       |                 |   |                    |                                    |
| Analyst<br>Agency or Compang<br>Date Performed<br>Analysis Time Perio | 04/18                            | T/TranSystem<br>8/2011<br>Peak Period | s Ju<br>Ju                 | eeway/Dir of Tr<br>nction<br>risdiction<br>nalysis Year | avel   | I-40 WI<br>Exit 42<br>Fayette<br>2034 | 3<br>: County   |   |                    |                                    |
| Project Description   | Existing Condit                  | tions                                 |                            |   |  |                                       |                 |   |                    |                                    |
| Inputs  |                                  | <b>-</b>                              |                            |   |  |                                       |                 |   |                    |                                    |
| Upstream Adj Ramp   | )                                | Terrain: Leve                         | el                         |   |  |                                       |                 |   | Downstrea<br>Ramp  | m Adj                              |
| ✓ Yes ✓ O   | n                                |                                       |                            |   |  |                                       |                 |   | •                  | ☐ On                               |
| □ No □ O  | ff                               |                                       |                            |   |  |                                       |                 |   | ✓ No               | Off                                |
| L <sub>up</sub> = 2000  | ft                               |                                       | S <sub>FF</sub> = 70.0 mph |   | S <sub>FR</sub> =                                  | 35 () mn                              | h               | L   | -down =            | ft                                 |
| $V_u = 650 \text{ V}$   | /eh/h                            |                                       | • •                        | show lanes, L <sub>A</sub> ,                            |  | 55.0 mp                               |                 | \   | √ <sub>D</sub> =   | veh/h                              |
| Conversion  | to pc/h Und                      | der Base                              | Conditions                 |   |  |                                       |                 | ,   |                    |                                    |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                                   | Terrain                    | %Truck  | %Rv  |                                       | f <sub>HV</sub> | f <sub>p</sub>                                    | / = V/PHF          | x f <sub>HV</sub> x f <sub>p</sub> |
| Freeway   | 2478                             | 0.90                                  | Level                      | 25  | 0  | 0.                                    | 889             | 1.00  | 309                | 98                                 |
| Ramp  | 257                              | 0.90                                  | Level                      | 3   | 0  | 0.                                    | 985             | 1.00  | 29                 | 0                                  |
| UpStream  | 650                              | 0.90                                  | Level                      | 3   | 0  | 0.                                    | 985             | 1.00  | 73                 | 3                                  |
| DownStream  |                                  | Marga Araga                           |                            |   |  |                                       |                 | hiorna Arasa                                      |                    |                                    |
| Estimation o  |                                  | Merge Areas                           |                            |   | Estima   | tion c                                |                 | iverge Areas                                      |                    |                                    |
|   | V <sub>12</sub> = V <sub>F</sub> | ( P <sub>EM</sub> )                   |                            |   |  |                                       |                 | V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub> | )P <sub>ED</sub>   |                                    |
| L <sub>EQ</sub> =   | 12                               | 、                                     | r 25-3)                    |   | L <sub>EQ</sub> =                                  |                                       |                 | quation 25-8                                      |                    |                                    |
| P <sub>FM</sub> =   |                                  | Equation (                            | -                          |   | P <sub>FD</sub> =                                  |                                       | •               | 00 using Equ                                      | -                  | bit 25-12)                         |
| V <sub>12</sub> =   | pc/h                             | ,                                     | ,                          |   | V <sub>12</sub> =                                  |                                       |                 | 98 pc/h   | ,                  | ,                                  |
| V <sub>3</sub> or V <sub>av34</sub>                                   | -                                | (Equation 2                           | 5-4 or 25-5)               |   | V <sub>3</sub> or V <sub>av34</sub>                |                                       |                 | pc/h (Equatio                                     | n 25-15 or         | 25-16)                             |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,7                          |                                  |                                       | •                          |   |  |                                       |                 | Yes ☑ No  |                    | ,                                  |
| Is $V_3$ or $V_{av34} > 1.5$  |                                  |                                       |                            |   |  |                                       |                 | Yes <b></b> No                                    |                    |                                    |
| If Yes,V <sub>12a</sub> =   | · <del>=</del>                   |                                       | 5-8)                       |   |  |                                       |                 | c/h (Equation                                     | 25-18)             |                                    |
| Capacity Ch   |                                  |                                       |                            |   | Capacia  |                                       |                 |   |                    |                                    |
|   | Actual                           | (                                     | Capacity                   | LOS F?  |  |                                       | Actual          | Cap   | acity              | LOS F?                             |
|   |                                  |                                       |                            |   | V <sub>F</sub>                                     |                                       | 3098            | Exhibit 25-14                                     | 4800               | No                                 |
| $V_{FO}$  |                                  | Exhibit 25-7                          |                            |   | $V_{FO} = V_{F}$                                   | V <sub>R</sub>                        | 2808            | Exhibit 25-14                                     | 4800               | No                                 |
|   |                                  |                                       |                            |   | $V_R$  |                                       | 290             | Exhibit 25-3                                      | 2000               | No                                 |
| Flow Enterin  | g Merge In                       | fluence A                             | Area                       |   | Flow E   | nterin                                | g Diver         | ge Influenc                                       | ce Area            |                                    |
|   | Actual                           |                                       | Desirable                  | Violation?  |  |                                       | Actual          | Max Desirabl                                      | е                  | Violation?                         |
| V <sub>R12</sub>  |                                  | Exhibit 25-7                          |                            |   | V <sub>12</sub>                                    |                                       | 8098            | Exhibit 25-14                                     | 4400:All           | No                                 |
| Level of Serv   |                                  | <b>`</b>                              |                            |   | <del>†                                      </del> |                                       |                 | ermination  | •                  | <del>-</del>                       |
| $D_R = 5.475 + 0$   | • •                              | 0.0078 V <sub>12</sub>                | - 0.00627 L <sub>A</sub>   |   | 1  |                                       |                 | 0086 V <sub>12</sub> - 0.0                        | 009 L <sub>D</sub> |                                    |
| D <sub>R</sub> = (pc/mi/lı  | •                                |                                       |                            |   |  | 6.4 <b>(pc</b>                        | · ·             |   |                    |                                    |
| LOS = (Exhibit  | <u>-</u>                         |                                       |                            |   |  |                                       | oit 25-4)       |   |                    |                                    |
| Speed Deter   | mination                         |                                       |                            |   | Speed  |                                       |                 |   |                    |                                    |
| $M_S = (Exibit 2)$  | 25-19)                           |                                       |                            |   | ľ  | -                                     | xhibit 25-      | •   |                    |                                    |
| S <sub>R</sub> = mph (Ex  | hibit 25-19)                     |                                       |                            |   | I ''   |                                       | (Exhibit 2      | •   |                    |                                    |
|   | hibit 25-19)                     |                                       |                            |   | ľ  | •                                     | (Exhibit 2      | •   |                    |                                    |
| S = mph (Ex   | hibit 25-14)                     |                                       |                            |   | S = 5  | 7.3 mph                               | (Exhibit 2      | 25-15)  |                    |                                    |

|   |                               | RAMP                                   | S AND RAM                              | IP JUNCTI  | ONS WO                                      | RKS                                       | HEET                 |   |                        |                                    |  |
|---|-------------------------------|--|--|--|---|---|----------------------|---|------------------------|------------------------------------|--|
| General Infor   | mation                        |  |  | Site Infor   |   |   |                      |   |                        |                                    |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perioo<br>Project Description | SKB<br>TDO<br>04/18<br>d AM F | T/TranSystems<br>3/2011<br>Peak Period | S Ji<br>Ji                             | reeway/Dir of Tr<br>unction<br>urisdiction<br>nalysis Year | ravel                                       | I-40 EB<br>Exit 47<br>Haywo<br>2014       | od County            |   |                        |                                    |  |
| Inputs  | Existing Condi                | lions                                  |  |  |   |   |                      |   |                        |                                    |  |
| Upstream Adj Ramp   |                               | Terrain: Leve                          | el                                     |  |   |   |                      |   | Downstrea<br>Ramp      | m Adj                              |  |
| ✓ Yes ✓ Or  |                               |  |  |  |   |   |                      |   | Yes                    | □ On                               |  |
| No Of  L <sub>iin</sub> = 2000  |                               |  |  |  |   |   |                      |   | No L <sub>down</sub> = | Off<br>ft                          |  |
| $L_{up} = 2000$ $V_{u} = 29 \text{ ve}$   |                               | S                                      | S <sub>FF</sub> = 70.0 mph<br>Sketch ( | show lanes, L <sub>A</sub>                                 | S <sub>FR</sub> = 3                         | 35.0 mp                                   | h                    |   | V <sub>D</sub> =       | veh/h                              |  |
| Conversion to   | o pc/h Und                    | der Base                               |  | ,  | ין - אי יע                                  |   |                      |   |                        |                                    |  |
| (pc/h)  | V<br>(Veh/hr)                 | PHF                                    | Terrain                                | %Truck   | %Rv   |   | f <sub>HV</sub>      | f <sub>p</sub>                                      | v = V/PHF              | x f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway   | 1712                          | 0.90                                   | Level                                  | 25   | 0   | 0.  | 889                  | 1.00  | 214                    | 10                                 |  |
| Ramp  | 102                           | 0.90                                   | Level                                  | 2  | 0   | 0.  | 990                  | 1.00  | 11                     | 4                                  |  |
| UpStream  | 29                            | 0.90                                   | Level                                  | 2  | 0   | 0.  | 990                  | 1.00  | 33                     | 3                                  |  |
| DownStream  | <u> </u>                      | Marga Araaa                            |  |  | <del> </del>                                |   |                      | Niverma Areas                                       |                        |                                    |  |
| Estimation of   |                               | Merge Areas                            |  |  | Estimat                                     | ion o                                     |                      | Diverge Areas                                       |                        |                                    |  |
|   |                               | (D )                                   |  |  | Lotimat                                     |   |                      | \( \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \              | \D                     |                                    |  |
|   | $V_{12} = V_F$                |  | . 05. 0)                               |  | l.  |   |                      | : V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> |                        |                                    |  |
| L <sub>EQ</sub> =   |                               | ation 25-2 or                          | •                                      |  | L <sub>EQ</sub> =                           |   | •                    | Equation 25-8                                       | •                      | LU 05 40\                          |  |
| P <sub>FM</sub> =   |                               | Equation (I                            | =XNIDIT 25-5)                          |  | P <sub>FD</sub> =                           |   |                      | 000 using Eq  | luation (Exh           | Dit 25-12)                         |  |
| V <sub>12</sub> =   | pc/h                          | <i>(</i> = o                           |  |  | V <sub>12</sub> =                           |   |                      | 140 pc/h  |                        |                                    |  |
| V <sub>3</sub> or V <sub>av34</sub><br>Is V <sub>3</sub> or V <sub>av34</sub> > 2,70          |                               | (Equation 25<br>s      No              | o-4 or 25-5)                           |  | $V_3$ or $V_{av34}$<br>Is $V_3$ or $V_{av}$ | , <sub>34</sub> > 2,7                     |                      | pc/h (Equation<br>Yes  ✓ No                         | on 25-15 or            | 25-16)                             |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5  |                               |  |  |  | Is V <sub>3</sub> or V <sub>av</sub>        | , <sub>34</sub> > 1.5                     | * V <sub>12</sub> /2 | Yes  ✓ No   |                        |                                    |  |
| If Yes,V <sub>12a</sub> =   | pc/h                          | (Equation 25                           | 5-8)                                   |  | If Yes, V <sub>12a</sub> =                  | =   | p                    | c/h (Equation                                       | 25-18)                 |                                    |  |
| Capacity Che  |                               |  |  |  | Capacit                                     |   |                      |   |                        |                                    |  |
|   | Actual                        | C                                      | apacity                                | LOS F?   |   |   | Actual               | Ca  | pacity                 | LOS F?                             |  |
|   |                               |  |  |  | V <sub>F</sub>                              |   | 2140                 | Exhibit 25-1  | 4 4800                 | No                                 |  |
| $V_{FO}$  |                               | Exhibit 25-7                           |  |  | $V_{FO} = V_{F}$                            | - V <sub>R</sub>                          | 2026                 | Exhibit 25-1  | 4 4800                 | No                                 |  |
|   |                               |  |  |  | V <sub>R</sub>                              |   | 114                  | Exhibit 25-3  | 2000                   | No                                 |  |
| Flow Entering   | a Merae In                    | fluence A                              | \rea                                   |  |   | nterin                                    | a Dive               | rge Influen   | ce Area                |                                    |  |
|   | Actual                        |  | Desirable                              | Violation?   |   |   | Actual               | Max Desirab   |                        | Violation?                         |  |
| V <sub>R12</sub>  |                               | Exhibit 25-7                           |  |  | V <sub>12</sub>                             | 2   | 2140                 | Exhibit 25-14                                       | 4400:All               | No                                 |  |
| Level of Serv   | rice Detern                   | nination (                             | if not F)                              |  |   | f Ser                                     | vice De              | terminatio  | n (if not l            | <del>-</del>                       |  |
| $D_R = 5.475 + 0.$  | 00734 v <sub>R</sub> +        | 0.0078 V <sub>12</sub> -               | · 0.00627 L <sub>A</sub>               |  |   | $D_R = 4$                                 | 1.252 + 0            | .0086 V <sub>12</sub> - 0.                          | 009 L <sub>D</sub>     |                                    |  |
| D <sub>R</sub> = (pc/mi/ln  | )                             |  |  |  | $D_R = 18$                                  | 8.2 <b>(pc</b>                            | /mi/ln)              |   |                        |                                    |  |
| LOS = (Exhibit :  | 25-4)                         |  |  |  | LOS = B                                     | (Exhil                                    | oit 25-4)            |   |                        |                                    |  |
| Speed Deterr  | nination                      |  |  |  | Speed L                                     | Deter                                     | minatio              | on  |                        |                                    |  |
| M <sub>S</sub> = (Exibit 2  | <br>5-19)                     |  |  |  | $D_s = 0$                                   | .438 <b>(E</b>                            | xhibit 25            | -19)  |                        |                                    |  |
|   |                               |  |  |  |   | S <sub>R</sub> = 57.7 mph (Exhibit 25-19) |                      |   |                        |                                    |  |
|   |                               |  |  |  |   | $S_0$ = N/A mph (Exhibit 25-19)           |                      |   |                        |                                    |  |
| S = mph (Exh  | nibit 25-14)                  |  |  |  | 1   |   | (Exhibit             |   |                        |                                    |  |
|   |                               |  |  |  |   |   | •                    | •   |                        |                                    |  |

Generated: 4/20/2011 10:43 AM

|                               |                                  | RAMP                      | S AND RAM                               | P JUNCTI                   | ONS WO  | ORKS  | HEET                           |   |                     |                       |  |
|-------------------------------|----------------------------------|---------------------------|---|----------------------------|---|---|--------------------------------|---|---------------------|-----------------------|--|
| General Infor                 | mation                           |                           |   | Site Infor                 |   |   |                                |   |                     |                       |  |
| Analyst                       | SKB                              |                           | Fre                                     | eeway/Dir of Ti            |   | I-40 EE   |                                |   |                     |                       |  |
| Agency or Company             | TDO <sup>-</sup>                 | T/TranSystems             | Ju                                      | nction                     |   | Exit 47   |                                |   |                     |                       |  |
| Date Performed                | 04/18                            | 3/2011                    | Jui                                     | risdiction                 |   | Haywo   | od County                      |   |                     |                       |  |
| Analysis Time Period          | d PM F                           | Peak Period               | An                                      | alysis Year                |   | 2014  |                                |   |                     |                       |  |
| Project Description           | Existing Condi                   | tions                     |   |                            |   |   |                                |   |                     |                       |  |
| Inputs                        |                                  | ,                         |   |                            |   |   |                                |   |                     |                       |  |
| Upstream Adj Ramp             |                                  | Terrain: Leve             | ·l                                      |                            |   |   |                                |   | Downstrean<br>Ramp  | n Adj                 |  |
| Yes Or                        |                                  |                           |   |                            |   |   |                                |   | Yes                 | ☐ On                  |  |
| □ No □ Of                     | f                                |                           |   |                            |   |   |                                |   | ✓ No                | Off                   |  |
| L <sub>up</sub> = 2000        | ft                               |                           |   |                            |   |   |                                |   | L <sub>down</sub> = | ft                    |  |
| $V_u = 39 \text{ ve}$         | h/h                              | S                         | $_{FF} = 70.0 \text{ mph}$<br>Sketch (s | show lanes, L <sub>A</sub> | $S_{FR} = L_{D_t} V_{D_t} V_t$                    | 35.0 mp   | h                              | ,   | V <sub>D</sub> =    | veh/h                 |  |
| Conversion t                  | o pc/h Und                       | der Base                  |   | A                          | DKF   |   |                                | ļ   |                     |                       |  |
| (pc/h)                        | V                                | PHF                       | Terrain                                 | %Truck                     | %Rv   |   | f <sub>HV</sub>                | f <sub>p</sub>                                    | v = V/PHF x         | f <sub>in</sub> , x f |  |
|                               | (Veh/hr)                         |                           |   |                            | <del> </del>                                      |   |                                |   |                     |                       |  |
| Freeway                       | 1765                             | 0.90                      | Level                                   | 25                         | 0   |   | 889                            | 1.00  | 2200                |                       |  |
| Ramp<br>UpStream              | 169                              | 0.90                      | Level                                   | 2                          | 0   |   | 990                            | 1.00  | 190                 | )                     |  |
| DownStream                    | 39                               | 0.90                      | Level                                   | 2                          | 1 0   | 0.  | 990                            | 1.00  | 44                  |                       |  |
| Downstream                    | <u>I</u>                         | <u>I I</u><br>Merge Areas |   | <u> </u>                   | 1   |   | Div                            | verge Areas                                       |                     |                       |  |
| Estimation of                 |                                  | <u> </u>                  |   |                            | Estima  | tion c  |                                | <u> </u>  |                     |                       |  |
|                               | V <sub>12</sub> = V <sub>F</sub> | (P <sub>-</sub> ,,)       |   |                            | 1   |   | 12                             | / <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | .)P-5               |                       |  |
| l =                           |                                  | र म्लार<br>ation 25-2 oा  | 25-3)                                   |                            | =   |   |                                | quation 25-8                                      |                     |                       |  |
| L <sub>EQ</sub> =<br>P =      |                                  | Equation (                | -                                       |                            | L <sub>EQ</sub> =<br>P =                          |   | · ·                            | using Eq  | -                   | nit 25 12)            |  |
| P <sub>FM</sub> =             | _                                | Lquation (i               | _ATTION 2J-J)                           |                            | P <sub>FD</sub> =                                 |   |                                |   | uation (Exilic      | JII 23-12)            |  |
| V <sub>12</sub> =             | pc/h                             |                           |   |                            | V <sub>12</sub> =                                 |   |                                | 6 pc/h  |                     |                       |  |
| $V_3$ or $V_{av34}$           |                                  | (Equation 25              | 5-4 or 25-5)                            |                            | $V_3$ or $V_{av34}$                               |   | -                              | c/h (Equatio                                      | n 25-15 or 2        | 25-16)                |  |
| Is $V_3$ or $V_{av34} > 2,70$ | 00 pc/h? 🥅 Ye:                   | s 🗏 No                    |   |                            | Is V <sub>3</sub> or V <sub>a</sub>               | v34 > 2,7   | 00 pc/h? 🥅                     | Yes 🗹 No  |                     |                       |  |
| Is $V_3$ or $V_{av34} > 1.5$  | * V <sub>12</sub> /2             | s 🗆 No                    |   |                            | Is V <sub>3</sub> or V <sub>a</sub>               | <sub>v34</sub> > 1.5  | * V <sub>12</sub> /2           | Yes 🗹 No  |                     |                       |  |
| If Yes,V <sub>12a</sub> =     | pc/h                             | (Equation 25              | 5-8)                                    |                            | If Yes, V <sub>12a</sub>                          | =   | pc/                            | h (Equation                                       | 25-18)              |                       |  |
| Capacity Che                  |                                  |                           |   |                            | Capaci  |   |                                |   |                     |                       |  |
|                               | Actual                           | C                         | apacity                                 | LOS F?                     |   |   | Actual                         | Ca  | pacity              | LOS F?                |  |
|                               |                                  |                           |   |                            | V <sub>F</sub>                                    |   | 2206                           | Exhibit 25-14                                     | 4 4800              | No                    |  |
| $V_{FO}$                      |                                  | Exhibit 25-7              |   |                            | $V_{FO} = V$                                      | <sub>F</sub> - V <sub>R</sub>                                       | 2016                           | Exhibit 25-14                                     | 4 4800              | No                    |  |
|                               |                                  |                           |   |                            | V <sub>R</sub>                                    |   | 190                            | Exhibit 25-3                                      | 2000                | No                    |  |
| Flow Entering                 | n Merge In                       | fluence A                 | roa                                     | <u> </u>                   |   |   |                                | e Influen   |                     | 1.10                  |  |
| . 10 W LINGINI                | Actual                           | 7                         | Desirable                               | Violation?                 | , ,OW <u>L</u>                                    |   | Actual                         | Max Desirab                                       |                     | Violation?            |  |
| V <sub>R12</sub>              |                                  | Exhibit 25-7              |   | 112.20.0111                | V <sub>12</sub>                                   | _   |                                | Exhibit 25-14                                     | 4400:All            | No                    |  |
| Level of Serv                 | ice Detern                       |                           | if not F)                               | <u> </u>                   | <del></del>                                       |   |                                | erminatio   |                     |                       |  |
| $D_R = 5.475 + 0.$            |                                  |                           |   |                            | 1   |   |                                | 086 V <sub>12</sub> - 0.0                         |                     | /                     |  |
| $D_R = 0.170 \cdot 0.00$      | • • •                            | 12                        | A                                       |                            | D <sub>R</sub> = 1                                | 8.7 (pc   |                                | - 32 - 12   | ט=                  |                       |  |
| LOS = (Exhibit)               | •                                |                           |   |                            | I ''  |   | oit 25-4)                      |   |                     |                       |  |
| •                             | -                                |                           |   |                            | <del>_</del>                                      |   |                                |   |                     |                       |  |
| Speed Deterr                  |                                  |                           |   |                            | <del>  '                                   </del> |   | <i>minatior</i><br>xhibit 25-1 |   |                     |                       |  |
| $M_S = (Exibit 2)$            | •                                |                           |   |                            | ľ   | •   |                                | •   |                     |                       |  |
|                               |                                  |                           |   |                            |   | $S_R$ = 57.5 mph (Exhibit 25-19)<br>$S_0$ = N/A mph (Exhibit 25-19) |                                |   |                     |                       |  |
|                               | nibit 25-19)                     |                           |   |                            | 1 *   |   | •                              | -   |                     |                       |  |
| S = mph (Exh                  | nibit 25-14)                     |                           |   |                            | S = 5   | 7.5 mph   | (Exhibit 2                     | 5-15)   |                     |                       |  |

|  |                                  | RAMP                                  | S AND RAM                                | P JUNCTI  | ONS WC   | RKS                                       | HEET              |   |  |                                    |  |
|--|----------------------------------|---------------------------------------|--|---|--|---|-------------------|---|--|------------------------------------|--|
| General Info   | rmation                          |                                       |  | Site Infor  |  |   |                   |   |  |                                    |  |
| Analyst<br>Agency or Compan<br>Date Performed<br>Analysis Time Peric | SKB<br>y TDO<br>04/18<br>od AM F | T/TranSystem<br>8/2011<br>Peak Period | s Ju<br>Ju                               | eeway/Dir of Tr<br>nction<br>risdiction<br>nalysis Year | avel   | I-40 W<br>Exit 47<br>Haywo<br>2014        |                   |   |  |                                    |  |
| Project Description  | Existing Condi                   | tions                                 |  |   |  |   |                   |   |  |                                    |  |
| Inputs   |                                  | F                                     |  |   |  |   |                   |   |  |                                    |  |
| Upstream Adj Ramı  | p                                | Terrain: Leve                         | el                                       |   |  |   |                   |   | Downstrear<br>Ramp                               | n Adj                              |  |
| ▼ Yes   ▼ O  | 'n                               |                                       |  |   |  |   |                   |   | •  | □ On                               |  |
| □ No □ O   | ff                               |                                       |  |   |  |   |                   |   | ✓ No   | Off                                |  |
| L <sub>up</sub> = 2000   | ft                               |                                       |  |   |  |   |                   |   | down =   | ft                                 |  |
| V <sub>u</sub> = 199 ν   | /eh/h                            |                                       | $S_{FF} = 70.0 \text{ mph}$<br>Sketch (s | show lanes, L <sub>A</sub> ,                            | $S_{FR} = L_{D'}V_{R'}V_{f}$                       | 35.0 mp                                   | bh                | \   | / <sub>D</sub> =                                 | veh/h                              |  |
| Conversion   | to pc/h Und                      | der Base                              | Conditions                               |   |  |   |                   |   |  |                                    |  |
| (pc/h)   | V<br>(Veh/hr)                    | PHF                                   | Terrain                                  | %Truck  | %Rv  |   | f <sub>HV</sub>   | f <sub>p</sub>                                    | / = V/PHF :                                      | k f <sub>HV</sub> x f <sub>p</sub> |  |
| Freeway  | 1616                             | 0.90                                  | Level                                    | 25  | 0  | 0.  | .889              | 1.00  | 202  | 0                                  |  |
| Ramp   | 39                               | 0.90                                  | Level                                    | 2   | 0  | 0.  | .990              | 1.00  | 44   |                                    |  |
| UpStream   | 199                              | 0.90                                  | Level                                    | 2   | 0  | 0.  | .990              | 1.00  | 223  | 3                                  |  |
| DownStream   |                                  | <br>Merge Areas                       |  |   | 1  |   |                   | iverge Areas                                      |  |                                    |  |
| Estimation of  |                                  | ivierge Areas                         |  |   | Estima   | tion c                                    |                   | iverge Areas                                      |  |                                    |  |
|  | V <sub>12</sub> = V <sub>F</sub> | ( P <sub>EM</sub> )                   |  |   |  |   | V <sub>12</sub> = | V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub> | )P <sub>ED</sub>                                 |                                    |  |
| L <sub>EQ</sub> =  | 12 1                             | tion 25-2 o                           | r 25-3)                                  |   | L <sub>EQ</sub> =                                  |   |                   | Equation 25-8                                     |  |                                    |  |
| P <sub>FM</sub> =  |                                  | Equation (                            | -  |   | P <sub>FD</sub> =                                  |   | -                 | 000 using Equ                                     | -  | hit 25-12)                         |  |
| V <sub>12</sub> =  | pc/h                             | 1                                     | ,  |   | V <sub>12</sub> =                                  |   |                   | 20 <b>pc/h</b>                                    |  | ,                                  |  |
| V <sub>3</sub> or V <sub>av34</sub>                                  | •                                | (Equation 2                           | 5-4 or 25-5)                             |   | V <sub>3</sub> or V <sub>av34</sub>                |   |                   | pc/h (Equatio                                     | n 25-15 or                                       | 25-16)                             |  |
| Is $V_3$ or $V_{av34} > 2.7$   |                                  |                                       | ,  |   |  |   |                   | Yes 🗹 No  |  | _0 .0,                             |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                         |                                  |                                       |  |   |  |   |                   | Yes ✓ No  |  |                                    |  |
| If Yes, V <sub>12a</sub> =   | · <del>-</del>                   |                                       | 5-8)                                     |   |  |   |                   | c/h (Equation                                     | 25-18)   |                                    |  |
| Capacity Ch  |                                  | (Equation E                           | 3 3,                                     |   | Capacia  |   |                   | om (Equation                                      |  |                                    |  |
| Capacity On  | Actual                           |                                       | Capacity                                 | LOS F?  | <br>   | iy On                                     | Actual            | Can   | acity  | LOS F?                             |  |
|  |                                  |                                       |  |   | V <sub>F</sub>                                     |   | 2020              | Exhibit 25-14                                     | <del></del>                                      | No                                 |  |
| $V_{FO}$   |                                  | Exhibit 25-7                          |  |   | $V_{FO} = V_{FO}$                                  |   | 1976              | Exhibit 25-14                                     | <del>                                     </del> | No                                 |  |
| FO   |                                  | 2,1111011 20 7                        |  |   | V <sub>R</sub>                                     |   | 44                | Exhibit 25-3                                      | 2000   | No                                 |  |
| Elow Entorin   | Na Maraa In                      | fluonos                               | 1 400                                    |   | <del></del>  |   |                   |   |  | INU                                |  |
| Flow Enterin   | Actual                           |                                       | Desirable                                | Violation?  | jr-IOW EI  | _   | Actual            | ge Influenc<br>Max Desirabl                       |  | Violation?                         |  |
| V <sub>R12</sub>   | / totaai                         | Exhibit 25-7                          | Domable                                  | v ioidiioii:  | V <sub>12</sub>                                    | _   | 2020              | Exhibit 25-14                                     | 4400:All   | No                                 |  |
| Level of Serv  | vice Detern                      |                                       | (if not F)                               | <u></u>   |  |   |                   | termination                                       |  |                                    |  |
| $D_R = 5.475 + 0$  |                                  | <b>`</b>                              |  |   | <del>†                                      </del> |   |                   | 0086 V <sub>12</sub> - 0.0                        | •  | ,                                  |  |
| D <sub>R</sub> = (pc/mi/li   |                                  | 12                                    | А  |   | L  |   | /mi/ln)           | 12  | ט -  |                                    |  |
| LOS = (Exhibit   | •                                |                                       |  |   | 1  |   | bit 25-4)         |   |  |                                    |  |
| Speed Deter  |                                  |                                       |  |   |  |   | minatio           | n   |  |                                    |  |
| $M_S = $ (Exibit 2   |                                  |                                       |  |   | <del>' '</del>                                     |   | xhibit 25-        |   |  |                                    |  |
|  |                                  |                                       |  |   |  | S <sub>R</sub> = 57.9 mph (Exhibit 25-19) |                   |   |  |                                    |  |
|  | • •                              |                                       |  |   |  | S <sub>0</sub> = N/A mph (Exhibit 25-19)  |                   |   |  |                                    |  |
|  | hibit 25-14)                     |                                       |  |   | 1  | •   | `<br>ı (Exhibit : | •   |  |                                    |  |
| · ` `  | •                                |                                       |  |   |  |   | •                 | •   |  |                                    |  |

|   |                                  | RAMP                                   | S AND RAM                   | IP JUNCT  | IONS WO                               | RKSI                                      | HEET            |   |                     |             |  |
|---|----------------------------------|--|-----------------------------|---|---------------------------------------|---|-----------------|---|---------------------|-------------|--|
| General Info  | rmation                          |  |                             | Site Info   |                                       |   |                 |   |                     |             |  |
| Analyst<br>Agency or Company<br>Date Performed<br>Analysis Time Perio | SKB<br>y TDO<br>04/18            | T/TranSystems<br>8/2011<br>Peak Period | s Ji<br>Ji                  | reeway/Dir of T<br>unction<br>urisdiction<br>nalysis Year | ravel                                 | I-40 WE<br>Exit 47<br>Haywoo<br>2014      | B<br>od County  |   |                     |             |  |
| Project Description   |                                  |  |                             |   |                                       |   |                 |   |                     |             |  |
| Inputs  | <u> </u>                         |  |                             |   |                                       |   |                 |   |                     |             |  |
| Upstream Adj Ramp   |                                  | Terrain: Leve                          | el                          |   |                                       |   |                 |   | Downstrea<br>Ramp   | m Adj       |  |
| ✓ Yes ✓ O   |                                  |  |                             |   |                                       |   |                 |   | ☐ Yes               | ☐ On        |  |
| □ No □ O  | ff                               |  |                             |   |                                       |   |                 |   | ✓ No                | Off         |  |
| L <sub>up</sub> = 2000  | ft                               |  | $S_{FF} = 70.0  \text{mph}$ |   | S <sub>FR</sub> = 3                   | 35 Ω mnl                                  | n               |   | L <sub>down</sub> = | ft          |  |
| V <sub>u</sub> = 104 ν  |                                  |  | Sketch (                    | show lanes, L <sub>A</sub>                                | 1 11                                  | 70.0 mpi                                  | '               |   | V <sub>D</sub> =    | veh/h       |  |
| Conversion  | <u> </u>                         | der Base                               | Conditions                  | •   |                                       |   |                 |   |                     |             |  |
| (pc/h)  | V<br>(Veh/hr)                    | PHF                                    | Terrain                     | %Truck  | %Rv                                   |   | f <sub>HV</sub> | f <sub>p</sub>                                    | v = V/PHF           |             |  |
| Freeway   | 1807                             | 0.90                                   | Level                       | 25  | 0                                     |   | 389             | 1.00  | 22!                 |             |  |
| Ramp  | 41                               | 0.90                                   | Level                       | 2   | 0                                     |   | 990             | 1.00  | 40                  |             |  |
| UpStream  | 104                              | 0.90                                   | Level                       | 2   | 0                                     | 0.9                                       | 990             | 1.00  | 11                  | 7           |  |
| DownStream  |                                  | <br>Merge Areas                        |                             |   | 1                                     | ļ   |                 | verge Areas                                       |                     |             |  |
| Estimation o  |                                  | ivici ye Ai eas                        |                             |   | Estimat                               | ion o                                     |                 | reige Aleas                                       |                     |             |  |
|   | V <sub>12</sub> = V <sub>F</sub> | (P )                                   |                             |   | +                                     |   |                 | V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | \D                  |             |  |
| l –   |                                  | ation 25-2 o                           | r 25 3)                     |   | -                                     |   |                 | quation 25-8                                      |                     |             |  |
| L <sub>EQ</sub> =<br>D _  | · · · · · ·                      | Equation (                             | •                           |   | L <sub>EQ</sub> =                     |   |                 | oualion 25-0<br>0 using Eq                        | -                   | ihit 25 12) |  |
| P <sub>FM</sub> =<br>V <sub>12</sub> =                                | _                                | Lqualion (                             | EXHIBIT 25-5)               |   | P <sub>FD</sub> =                     |   |                 |   | juation (Exil       | IDIL 23-12) |  |
|   | pc/h                             | (Equation 2)                           | 5 4 or 25 5)                |   | V <sub>12</sub> =                     |   |                 | 9 pc/h  | n 05 15 ar          | 05.40\      |  |
| $V_3$ or $V_{av34}$   |                                  | (Equation 2                            | 5-4 01 25-5)                |   | V <sub>3</sub> or V <sub>av34</sub>   | . 27                                      | -               | oc/h (Equatio                                     | )fi 25-15 Of        | 25-16)      |  |
| Is $V_3$ or $V_{av34} > 2.7$  |                                  |  |                             |   |                                       |   |                 | Yes ✓ No  |                     |             |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5                          | ·=                               |  | - o)                        |   |                                       |   |                 | Yes ✓ No  | 05.40)              |             |  |
| If Yes,V <sub>12a</sub> =   |                                  | (Equation 2                            | o-8)                        |   |                                       |   |                 | /h (Equation                                      | 25-18)              |             |  |
| Capacity Ch   | 1                                | 1 .                                    |                             | 1   | Capacit                               | y Che                                     |                 | 1 -   |                     | 1           |  |
|   | Actual                           |  | Capacity                    | LOS F?  | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | $\rightarrow$                             | Actual          |   | pacity              | LOS F?      |  |
| .,  |                                  | [                                      |                             |   | V <sub>F</sub>                        | <u>,,</u>                                 | 2259            | Exhibit 25-1                                      |                     | No          |  |
| $V_{FO}$  |                                  | Exhibit 25-7                           |                             |   | $V_{FO} = V_{F}$                      | - V <sub>R</sub>                          | 2213            | Exhibit 25-1                                      |                     | No          |  |
|   |                                  |  |                             |   | V <sub>R</sub>                        |   | 46              | Exhibit 25-3                                      | 3 2000              | No          |  |
| Flow Enterin  | g Merge In                       | fluence A                              | A <i>rea</i>                |   | Flow En                               | terin                                     | g Diverç        | ge Influen  | ce Area             |             |  |
|   | Actual                           | <del>-</del>                           | Desirable                   | Violation?  | 1                                     | _   | Actual          | Max Desirab                                       |                     | Violation?  |  |
| V <sub>R12</sub>  |                                  | Exhibit 25-7                           |                             |   | V <sub>12</sub>                       |   |                 | Exhibit 25-14                                     | 4400:All            | No          |  |
| Level of Serv   |                                  |  |                             |   |                                       |   |                 | erminatio   | •                   | F)          |  |
| $D_R = 5.475 + 0$   | 0.00734 v <sub>R</sub> +         | 0.0078 V <sub>12</sub>                 | - 0.00627 L <sub>A</sub>    |   |                                       | $D_R = 4$                                 | .252 + 0.0      | 0086 V <sub>12</sub> - 0.                         | 009 L <sub>D</sub>  |             |  |
| D <sub>R</sub> = (pc/mi/lı  | n)                               |  |                             |   | $D_R = 19$                            | 9.2 <b>(pc</b> /                          | mi/ln)          |   |                     |             |  |
| LOS = <b>(Exhibit</b>   | 25-4)                            |  |                             |   | LOS = B                               | (Exhib                                    | it 25-4)        |   |                     |             |  |
| Speed Deter   | mination                         |  |                             |   | Speed L                               | Deteri                                    | minatio         | า   |                     |             |  |
| M <sub>S</sub> = (Exibit 2  | <u></u>                          |  |                             |   | $D_s = 0.$                            | 432 <b>(E</b> )                           | xhibit 25-1     | 9)  |                     |             |  |
| -   |                                  |  |                             |   |                                       | S <sub>R</sub> = 57.9 mph (Exhibit 25-19) |                 |   |                     |             |  |
|   |                                  |  |                             |   |                                       | /A mph                                    | (Exhibit 25     | 5-19)   |                     |             |  |
| ' '   | hibit 25-14)                     |  |                             |   | 1 *                                   |   | (Exhibit 2      | ·-  |                     |             |  |
| Γ 1   | ,                                |  |                             |   |                                       |   | ,               | - /   |                     |             |  |

|   |                         | RAMP                     | S AND RAM                           | P JUNCT                    | ONS WO                                | RKS              | HEET            |                            |                               |            |
|---|-------------------------|--------------------------|-------------------------------------|----------------------------|---------------------------------------|------------------|-----------------|----------------------------|-------------------------------|------------|
| General Info                                  | rmation                 |                          |                                     | Site Infor                 |                                       |                  |                 |                            |                               |            |
| Analyst                                       | SKB                     |                          | Fr                                  | eeway/Dir of T             |                                       | I-40 EB          |                 |                            |                               |            |
| Agency or Company                             |                         | T/TranSystems            |                                     | ınction                    |                                       | Exit 47          |                 |                            |                               |            |
| Date Performed                                |                         | 3/2011                   |                                     | ırisdiction                |                                       |                  | od County       |                            |                               |            |
| Analysis Time Perio                           | d AM P                  | Peak Period              | Ar                                  | nalysis Year               |                                       | 2034             | ,               |                            |                               |            |
| Project Description                           | Existing Condit         | tions                    |                                     | _                          |                                       |                  |                 |                            |                               |            |
| Inputs  |                         |                          |                                     |                            |                                       |                  |                 |                            |                               |            |
| Upstream Adj Ramp                             |                         | Terrain: Leve            | l                                   |                            |                                       |                  |                 |                            | Downstrear<br>Ramp            | n Adj      |
| Yes Or  | n                       |                          |                                     |                            |                                       |                  |                 |                            | ☐ Yes                         | ☐ On       |
| □ No □ Of                                     | ff                      |                          |                                     |                            |                                       |                  |                 |                            | ☑ No                          | Off        |
| L <sub>up</sub> = 2000                        | ft                      |                          |                                     |                            |                                       |                  |                 |                            | L <sub>down</sub> =           | ft         |
| $V_u = 43 \text{ ve}$                         | ·h/h                    | S                        | $_{FF} = 70.0 \text{ mph}$ Sketch ( | show lanes, L <sub>A</sub> | $S_{FR} = 3$<br>, $L_{D_i}V_{D_i}V_i$ | 35.0 mp          | h               |                            | V <sub>D</sub> =              | veh/h      |
| Conversion t                                  | o pc/h Und              | der Base (               |                                     | . А                        | י טי אי וי                            |                  |                 |                            |                               |            |
|   | V V                     |                          |                                     | 0/ Truck                   | 0/ Dv                                 |                  | <u>, [</u>      | f                          | V = W/DUE :                   | v f v f    |
| (pc/h)  | (Veh/hr)                | PHF                      | Terrain                             | %Truck                     | %Rv                                   | +-               | f <sub>HV</sub> | '                          | v = V/PHF                     | · ·        |
| Freeway                                       | 2472                    | 0.90                     | Level                               | 25                         | 0                                     |                  | 889             | 1.00                       | 309                           |            |
| Ramp  | 124                     | 0.90                     | Level                               | 2                          | 0                                     | 0.               | 990             | 1.00                       | 13'                           | 9          |
| UpStream                                      | 43                      | 0.90                     | Level                               | 2                          | 0                                     | 0.               | 990             | 1.00                       | 48                            | 1          |
| DownStream                                    |                         |                          |                                     |                            | ļ                                     |                  |                 |                            |                               |            |
| Estimation o                                  |                         | Merge Areas              |                                     |                            | Fotimot                               | ion o            |                 | iverge Areas               |                               |            |
| Estimation o                                  |                         |                          |                                     |                            | Estimat                               | ion o            |                 |                            |                               |            |
|   | $V_{12} = V_F$          | (P <sub>FM</sub> )       |                                     |                            |                                       |                  | $V_{12} =$      | $V_R + (V_F - V_I)$        | <sub>R</sub> )P <sub>FD</sub> |            |
| L <sub>EQ</sub> =                             | (Equa                   | ation 25-2 or            | 25-3)                               |                            | L <sub>EQ</sub> =                     |                  | (1              | Equation 25-8              | 3 or 25-9)                    |            |
| P <sub>FM</sub> =                             | using                   | Equation (E              | Exhibit 25-5)                       |                            | P <sub>FD</sub> =                     |                  | 1.0             | 000 using Ed               | quation (Exhi                 | bit 25-12) |
| V <sub>12</sub> =                             | pc/h                    |                          |                                     |                            | V <sub>12</sub> =                     |                  | 30              | 90 pc/h                    |                               |            |
| V <sub>3</sub> or V <sub>av34</sub>           | pc/h                    | (Equation 25             | -4 or 25-5)                         |                            | V <sub>3</sub> or V <sub>av34</sub>   |                  | 0               | pc/h (Equation             | on 25-15 or                   | 25-16)     |
| Is V <sub>3</sub> or V <sub>av34</sub> > 2,70 |                         |                          | ,                                   |                            |                                       | > 2.7            |                 | Yes  ✓ No                  |                               |            |
| Is $V_3$ or $V_{av34} > 1.5$                  |                         |                          |                                     |                            |                                       |                  |                 | Yes ✓ No                   |                               |            |
|   | ·=                      |                          | : 0\                                |                            | , u.                                  |                  |                 |                            | ) 25 10\                      |            |
|   | pc/h                    | (Equation 25             | i-o)                                |                            | If Yes,V <sub>12a</sub> =             |                  |                 | c/h (Equation              | 120-10)                       |            |
| Capacity Che                                  | _                       | I 0                      | ana altri                           | LOS F?                     | Capacit                               | y Cri            |                 | l Co                       | un a aitu                     | LOCES      |
|   | Actual                  | i                        | apacity                             | LUSF?                      | \                                     |                  | Actual          |                            | pacity                        | LOS F?     |
|   |                         |                          |                                     |                            | V <sub>F</sub>                        |                  | 3090            | Exhibit 25-1               |                               | No         |
| $V_{FO}$                                      |                         | Exhibit 25-7             |                                     |                            | $V_{FO} = V_{F}$                      | - V <sub>R</sub> | 2951            | Exhibit 25-1               |                               | No         |
|   |                         |                          |                                     |                            | $V_R$                                 |                  | 139             | Exhibit 25-3               | 3 2000                        | No         |
| Flow Entering                                 | g Merge In              | fluence A                | rea                                 |                            | Flow Er                               | nterin           | g Dive          | rge Influen                | ce Area                       |            |
|   | Actual                  | 1                        | Desirable                           | Violation?                 |                                       |                  | Actual          | Max Desiral                |                               | Violation? |
| V <sub>R12</sub>                              |                         | Exhibit 25-7             |                                     |                            | V <sub>12</sub>                       | 3                | 3090            | Exhibit 25-14              | 4400:All                      | No         |
| Level of Serv                                 | rice Detern             | nination (i              | f not F)                            |                            | Level o                               | f Serv           | vice De         | terminatio                 | n (if not l                   | =)         |
| $D_R = 5.475 + 0$                             | .00734 v <sub>R</sub> + | 0.0078 V <sub>12</sub> - | 0.00627 L <sub>A</sub>              |                            |                                       | $D_R = 4$        | 1.252 + 0       | .0086 V <sub>12</sub> - 0. | .009 L <sub>D</sub>           |            |
| D <sub>R</sub> = (pc/mi/lr                    | 1)                      |                          |                                     |                            | D <sub>R</sub> = 20                   | 6.3 <b>(pc</b> , | /mi/ln)         |                            |                               |            |
| LOS = (Exhibit                                | 25-4)                   |                          |                                     |                            | 1                                     |                  | oit 25-4)       |                            |                               |            |
| Speed Deteri                                  | mination                |                          |                                     |                            | Speed L                               |                  |                 | on                         |                               |            |
| M <sub>S</sub> = (Exibit 2                    |                         |                          |                                     |                            | +                                     |                  | xhibit 25-      |                            |                               |            |
| 1   | nibit 25-19)            |                          |                                     |                            |                                       | 7.7 mph          | (Exhibit        | 25-19)                     |                               |            |
|   | nibit 25-19)            |                          |                                     |                            | I ''                                  |                  | (Exhibit 2      | •                          |                               |            |
|   | nibit 25-19)            |                          |                                     |                            | 1                                     |                  | (Exhibit        | •                          |                               |            |
| C - IIIIII (LXI                               | 11011 20-14)            |                          |                                     |                            | <u>h - 2</u>                          | i.i iiipli       | (LYIIIDII       | 20-10)                     |                               |            |

|  |  | RAMP          | S AND RAM                                | P JUNCT                    | ONS WO  | ORKS                                      | HEET                           |   |                       |                                   |  |
|--|--|---------------|--|----------------------------|---|---|--------------------------------|---|-----------------------|-----------------------------------|--|
| General Infor                                | mation                                       |               |  | Site Infor                 |   |   |                                |   |                       |                                   |  |
| Analyst                                      | SKB  |               | Fre                                      | eeway/Dir of T             |   | I-40 EE                                   | }                              |   |                       |                                   |  |
| Agency or Company                            | TDO  | T/TranSystems | . Ju                                     | nction                     |   | Exit 47                                   |                                |   |                       |                                   |  |
| Date Performed                               | 04/18  | 3/2011        | Ju                                       | risdiction                 |   | Haywo                                     | od County                      |   |                       |                                   |  |
| Analysis Time Period                         | d PMP  | eak Period    | An                                       | nalysis Year               |   | 2034                                      |                                |   |                       |                                   |  |
| Project Description                          | Existing Condit                              | tions         |  |                            |   |   |                                |   |                       |                                   |  |
| Inputs                                       |  |               |  |                            |   |   |                                |   |                       |                                   |  |
| Upstream Adj Ramp<br>—                       |  | Terrain: Leve | <u> </u>                                 |                            |   |   |                                |   | Downstream<br>Ramp    | n Adj                             |  |
| ✓ Yes ✓ Or                                   |  |               |  |                            |   |   |                                |   | ☐ Yes                 | On                                |  |
| □ No □ Of                                    |  |               |  |                            |   |   |                                |   |                       | Off                               |  |
| $L_{up} = 2000$                              | ft   |               | 70.0                                     |                            |   | 05.0                                      |                                |   | L <sub>down</sub> =   | ft                                |  |
| $V_u = 58 \text{ ve}$                        | h/h  | 5             | $S_{FF} = 70.0 \text{ mph}$<br>Sketch (s | show lanes, L <sub>A</sub> | $S_{FR} = L_{D_i} V_{P_i} V_{f_i}$                | 35.0 mp                                   | n                              |   | V <sub>D</sub> = ,    | veh/h                             |  |
| Conversion t                                 | o pc/h Und                                   | der Base      |  |                            | DICT  |   |                                |   |                       |                                   |  |
| (pc/h)                                       | V  | PHF           | Terrain                                  | %Truck                     | %Rv   |   | f <sub>HV</sub>                | fp  | v = V/PHF x           | f <sub>u\/</sub> x f <sub>=</sub> |  |
| Freeway                                      | (Veh/hr)<br>2571                             | 0.90          | Level                                    | 25                         | 0   |   | 889                            | 1.00  | 3214                  | <u>'</u>                          |  |
| Ramp   | 197  | 0.90          | Level                                    | 25                         | 0   |   | 990                            | 1.00  | 221                   | T                                 |  |
| UpStream                                     | 58   | 0.90          | Level                                    | 2                          | 0   |   | 990                            | 1.00  | 65                    |                                   |  |
| DownStream                                   | 30   | 0.90          | Levei                                    |                            | 0   | 0.  | 990                            | 1.00  | 03                    |                                   |  |
| Down ou dum                                  | <u>.                                    </u> | Merge Areas   |  | <u>I</u>                   | 1   |   | Div                            | erge Areas  |                       |                                   |  |
| Estimation or                                |  |               |  |                            | Estima  | tion c                                    |                                |   |                       |                                   |  |
|  | V <sub>12</sub> = V <sub>F</sub>             | (P)           |  |                            | 1   |   | 12                             | / <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub> |                       |                                   |  |
| l =  |  | ation 25-2 o  | 25-3)                                    |                            |   |   |                                | quation 25-8                                      |                       |                                   |  |
| L <sub>EQ</sub> =<br>D -                     |  | Equation (    | •  |                            | L <sub>EQ</sub> =                                 |   | · ·                            | -   | · ·                   | # DE 10\                          |  |
| P <sub>FM</sub> =                            | _  | Equation (    | EXHIBIT 20-0)                            |                            | P <sub>FD</sub> =                                 |   |                                |   | <b>Juation</b> (Exhib | 11 25-12)                         |  |
| V <sub>12</sub> =                            | pc/h   |               |  |                            | V <sub>12</sub> =                                 |   |                                | 4 pc/h  |                       |                                   |  |
| V <sub>3</sub> or V <sub>av34</sub>          |  | (Equation 25  | 5-4 or 25-5)                             |                            | $V_3$ or $V_{av34}$                               |   |                                |   | on 25-15 or 2         | 25-16)                            |  |
| Is $V_3$ or $V_{av34} > 2,70$                |  |               |  |                            | •   |   |                                | Yes 🗹 No  |                       |                                   |  |
| Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 | * V <sub>12</sub> /2                         | s 🗏 No        |  |                            | Is V <sub>3</sub> or V <sub>a</sub>               | <sub>v34</sub> > 1.5                      | * V <sub>12</sub> /2           | Yes 🗹 No  |                       |                                   |  |
| If Yes,V <sub>12a</sub> =                    | pc/h   | (Equation 25  | 5-8)                                     |                            | If Yes,V <sub>12a</sub>                           | =   | pc/                            | h (Equation                                       | 25-18)                |                                   |  |
| Capacity Che                                 |  |               |  |                            | Capaci  |   |                                |   |                       |                                   |  |
|  | Actual                                       | С             | apacity                                  | LOS F?                     |   |   | Actual                         | Ca  | pacity                | LOS F?                            |  |
|  |  |               |  |                            | V <sub>F</sub>                                    |   | 3214                           | Exhibit 25-1                                      | 4 4800                | No                                |  |
| $V_{FO}$                                     |  | Exhibit 25-7  |  |                            | $V_{FO} = V$                                      | - V <sub>P</sub>                          | 2993                           | Exhibit 25-1                                      | 4 4800                | No                                |  |
|  |  |               |  |                            | V <sub>R</sub>                                    |   | 221                            | Exhibit 25-3                                      |                       | No                                |  |
| Flow Entering                                | a Morgo In                                   | fluoneo A     | roa                                      |                            |   |   |                                | e Influen   |                       | 110                               |  |
| I IOW EIILEIII                               | Actual                                       | 4             | Desirable                                | Violation?                 | I IOW E   |   | Actual                         | Max Desiral                                       |                       | Violation?                        |  |
| V <sub>R12</sub>                             | Actual                                       | Exhibit 25-7  | บ <sub>ั</sub> ดวแนมเด                   | violation:                 | V <sub>12</sub>                                   | _   |                                | Exhibit 25-14                                     | 4400:All              | No                                |  |
| Level of Serv                                | ice Detern                                   |               | if not F)                                | <u> </u>                   |   |   |                                |   | n (if not F           |                                   |  |
| $D_R = 5.475 + 0.$                           |  |               |  |                            |   |   |                                | 086 V <sub>12</sub> - 0.                          |                       | /                                 |  |
| $D_R = 0.776 \cdot 0.00$                     | • •  | -100.0 12     |  |                            | D_ = 2  | 27.4 (pc                                  |                                | - 12 0.   | - <b></b> D           |                                   |  |
|  | •  |               |  |                            | 1 "   |   | •                              |   |                       |                                   |  |
| LOS = (Exhibit:                              | -  |               |  |                            |   |   | oit 25-4)                      |   |                       |                                   |  |
| Speed Deterr                                 |  |               |  |                            | <del>  '                                   </del> |   | <i>minatior</i><br>xhibit 25-1 |   |                       |                                   |  |
| $M_S = $ (Exibit 2)                          | -  |               |  |                            | ľ   | •   |                                | •   |                       |                                   |  |
|  |  |               |  |                            |   | S <sub>R</sub> = 57.5 mph (Exhibit 25-19) |                                |   |                       |                                   |  |
| · ·  | nibit 25-19)                                 |               |  |                            | 1 *   |   | (Exhibit 25                    | •   |                       |                                   |  |
| S = mph(Exh                                  | nibit 25-14)                                 |               |  |                            | S = 5   | 7.5 mph                                   | (Exhibit 2                     | 5-15)   |                       |                                   |  |

|   |                | RAMP               | S AND RAM                 | P JUNCT                    | ONS WO   | RKS                    | HEET              |                           |                               |            |
|---|----------------|--------------------|---------------------------|----------------------------|--|------------------------|-------------------|---------------------------|-------------------------------|------------|
| General Infor   | mation         |                    |                           | Site Infor                 |  |                        | -                 |                           |                               |            |
| Analyst   | SKB            |                    | Fr                        | eeway/Dir of T             |  | I-40 WE                | 3                 |                           |                               |            |
| Agency or Company   |                | T/TranSystems      |                           | inction                    |  | Exit 47                |                   |                           |                               |            |
| Date Performed  |                | 3/2011             |                           | ırisdiction                |  |                        | od County         |                           |                               |            |
| Analysis Time Period  | d AM F         | Peak Period        | Ar                        | nalysis Year               |  | 2034                   | ,                 |                           |                               |            |
| Project Description   |                |                    |                           | ,                          |  |                        |                   |                           |                               |            |
| Inputs  |                |                    |                           |                            |  |                        |                   |                           |                               |            |
| Upstream Adj Ramp   |                | Terrain: Leve      |                           |                            |  |                        |                   |                           | Downstrear<br>Ramp            | n Adj      |
| ✓ Yes ✓ Or  | า              |                    |                           |                            |  |                        |                   |                           | -                             | □ On       |
| □ No □ Of   | f              |                    |                           |                            |  |                        |                   |                           | ✓ No                          | Off        |
| L <sub>up</sub> = 2000  | ft             |                    |                           |                            | _  |                        |                   |                           | L <sub>down</sub> =           | ft         |
| $V_u = 234 \text{ V}_u$                                       | eh/h           | S                  | FF = 70.0 mph<br>Sketch ( | show lanes, L <sub>A</sub> | $S_{FR} = 3$ $, L_{D_f} V_{D_f} V_f)$            | 35.0 mp                | h                 |                           | V <sub>D</sub> =              | veh/h      |
| Conversion t  | o pc/h Uni     | der Base (         |                           | · A                        | D. K. I.   |                        |                   |                           |                               |            |
|   | V              |                    |                           | 0/ T                       | 0/ D   |                        | , [               |                           | \//DUE                        |            |
| (pc/h)  | (Veh/hr)       | PHF                | Terrain                   | %Truck                     | %Rv  | +-                     | f <sub>HV</sub>   | <u>'</u>                  | v = V/PHF                     | '          |
| Freeway   | 2364           | 0.90               | Level                     | 25                         | 0  | _                      | 389               | 1.00                      | 295                           |            |
| Ramp  | 58             | 0.90               | Level                     | 2                          | 0  | 0.9                    | 990               | 1.00                      | 65                            |            |
| UpStream  | 234            | 0.90               | Level                     | 2                          | 0  | 0.9                    | 990               | 1.00                      | 26                            | 3          |
| DownStream  | <u> </u>       | <u> </u>           |                           |                            |  |                        |                   |                           |                               |            |
| Estimation of   |                | Merge Areas        |                           |                            | Fatimat  | iono                   |                   | iverge Areas              |                               |            |
| Estimation of   |                |                    |                           |                            | Estimat  | 1011 0                 |                   |                           |                               |            |
|   | $V_{12} = V_F$ | (P <sub>FM</sub> ) |                           |                            |  |                        | V <sub>12</sub> = | $V_R + (V_F - V_F)$       | <sub>R</sub> )P <sub>FD</sub> |            |
| L <sub>EQ</sub> =   | (Equa          | ation 25-2 or      | 25-3)                     |                            | L <sub>EQ</sub> =                                |                        | (E                | Equation 25-8             | 3 or 25-9)                    |            |
| P <sub>FM</sub> =   | using          | Equation (E        | xhibit 25-5)              |                            | P <sub>FD</sub> =                                |                        | 1.0               | 000 using Eq              | <mark>juation</mark> (Exhi    | bit 25-12) |
| V <sub>12</sub> =   | pc/h           |                    |                           |                            | V <sub>12</sub> =                                |                        | 29                | 55 <b>pc/h</b>            |                               |            |
| V <sub>3</sub> or V <sub>av34</sub>                           | •              | (Equation 25       | -4 or 25-5)               |                            | V <sub>3</sub> or V <sub>av34</sub>              |                        |                   | pc/h (Equation            | on 25-15 or                   | 25-16)     |
| Is $V_3$ or $V_{av34} > 2,70$                                 |                |                    |                           |                            |  | > 2.7                  |                   | Yes ✓ No                  | J. 20 10 01                   | 20 .0,     |
| Is $V_3$ or $V_{av34} > 2,76$<br>Is $V_3$ or $V_{av34} > 1.5$ |                |                    |                           |                            |  |                        |                   | Yes Vo                    |                               |            |
|   | · <del>-</del> |                    | 0)                        |                            | J uv   | 01                     | 12                |                           | 05 40\                        |            |
|   | pc/h           | (Equation 25       | -8)                       |                            | If Yes,V <sub>12a</sub> =                        |                        |                   | c/h (Equation             | 25-18)                        |            |
| Capacity Che  | ,              |                    |                           | 1                          | Capacit  | y Che                  |                   |                           |                               |            |
|   | Actual         | C                  | apacity                   | LOS F?                     | <del>                                     </del> |                        | Actual            |                           | pacity                        | LOS F?     |
|   |                |                    |                           |                            | V <sub>F</sub>                                   |                        | 2955              | Exhibit 25-1              | 4 4800                        | No         |
| $V_{FO}$  |                | Exhibit 25-7       |                           |                            | $V_{FO} = V_{F}$                                 | - V <sub>R</sub>       | 2890              | Exhibit 25-1              | 4 4800                        | No         |
|   |                |                    |                           |                            | V <sub>R</sub>                                   |                        | 65                | Exhibit 25-3              | 3 2000                        | No         |
| Flow Entering   | a Merae In     | fluence A          | rea                       |                            |  | terin                  | a Diver           | ge Influen                | ce Area                       |            |
| - 1011 <b>- 1110</b> 1111                                     | Actual         |                    | Desirable                 | Violation?                 | 1  |                        | Actual            | Max Desirab               |                               | Violation? |
| V <sub>R12</sub>  |                | Exhibit 25-7       |                           |                            | V <sub>12</sub>                                  | _                      | 955               | Exhibit 25-14             | 4400:All                      | No         |
| Level of Serv   | rice Detern    |                    | f not F)                  |                            |  | f Serv                 | rice De           | terminatio                |                               | =)         |
| $D_R = 5.475 + 0.00$  |                |                    |                           |                            | <del>-</del>                                     |                        |                   | 0086 V <sub>12</sub> - 0. | •                             | ,          |
| $D_R = (pc/mi/ln$   | • •            | 12                 | А                         |                            |  | -к<br>5.2 <b>(рс</b> / |                   | 12                        | U                             |            |
| LOS = (Exhibit  | •              |                    |                           |                            | 1  |                        | oit 25-4)         |                           |                               |            |
| Speed Deterr  |                |                    |                           |                            | Speed L  | •                      |                   | n                         |                               |            |
| $M_S = $ (Exibit 2  |                |                    |                           |                            | +  |                        | xhibit 25-        |                           |                               |            |
|   | •              |                    |                           |                            |  |                        | (Exhibit 2        | -                         |                               |            |
|   | nibit 25-19)   |                    |                           |                            | I ''   |                        | •                 | -                         |                               |            |
|   | nibit 25-19)   |                    |                           |                            | 1 *  |                        | (Exhibit 2        | •                         |                               |            |
| S = mph (Exh  | nibit 25-14)   |                    |                           |                            | S = 57   | 7.9 mph                | (Exhibit 2        | 25-15)                    |                               |            |

|                               |   | RAMP               | S AND RAM                                | P JUNCT                    | ONS WO  | ORKS                  | HEET                |   |                     |  |
|-------------------------------|---|--------------------|--|----------------------------|---|-----------------------|---------------------|---|---------------------|--|
| General Info                  | rmation                                 |                    |  | Site Infor                 |   |                       |                     |   |                     |  |
| Analyst                       | SKB                                     |                    | Fre                                      | eeway/Dir of T             |   | I-40 WI               | 3                   |   |                     |  |
| Agency or Company             | TDO                                     | T/TranSystems      | . Ju                                     | nction                     |   | Exit 47               |                     |   |                     |  |
| Date Performed                | 04/18                                   | 3/2011             | Jui                                      | risdiction                 |   | Haywo                 | od County           |   |                     |  |
| Analysis Time Perio           | d PM P                                  | eak Period         | An                                       | nalysis Year               |   | 2034                  |                     |   |                     |  |
| Project Description           | Existing Condit                         | tions              |  |                            |   |                       |                     |   |                     |  |
| Inputs                        |   |                    |  |                            |   |                       |                     | -   |                     |  |
| Upstream Adj Ramp<br>—        |   | Terrain: Leve      | <u> </u>                                 |                            |   |                       |                     |   | Downstrean<br>Ramp  | n Adj  |
| ✓ Yes ✓ Oi                    |   |                    |  |                            |   |                       |                     |   | Yes                 | On   |
| □ No □ Ot                     |   |                    |  |                            |   |                       |                     |   |                     | Off  |
| $L_{up} = 2000$               | ft                                      |                    | 700                                      |                            |   | 25.0                  |                     |   | L <sub>down</sub> = | ft   |
| $V_u = 127 \text{ v}$         | eh/h                                    | S                  | $S_{FF} = 70.0 \text{ mph}$<br>Sketch (s | show lanes, L <sub>A</sub> | $S_{FR} = L_{D_f} V_{D_f} V_f$                    | 35.0 mp               | 'n                  |   | $V_D = $            | veh/h  |
| Conversion t                  | to pc/h Und                             | der Base           |  |                            | DKT   |                       |                     |   |                     |  |
| (pc/h)                        | V                                       | PHF                | Terrain                                  | %Truck                     | %Rv   | $\Box$                | f <sub>HV</sub>     | f <sub>p</sub>                                  | v = V/PHF x         | f <sub>HV</sub> x f <sub>z</sub>               |
| Freeway                       | (Veh/hr)<br>2608                        | 0.90               | Level                                    | 25                         | 0   |                       | 889                 | 1.00  | 3260                | <u>'</u>                                       |
| Ramp                          | 61                                      | 0.90               | Level                                    | 23                         | 0   | _                     | 990                 | 1.00  | 68                  | <u>,                                      </u> |
| UpStream                      | 127                                     | 0.90               | Level                                    | 2                          | 0   |                       | 990                 | 1.00  | 143                 |  |
| DownStream                    | 127                                     | 0.70               | Lovoi                                    |                            | , ,   | ╅~                    | 770                 | 1.00  | 110                 | '  |
|                               |   | Merge Areas        |  |                            |   |                       | Div                 | erge Areas                                      |                     |  |
| Estimation o                  | f v <sub>12</sub>                       |                    |  |                            | Estima  | tion c                | of v <sub>12</sub>  |   |                     |  |
|                               | V <sub>12</sub> = V <sub>F</sub>        | (P <sub>EM</sub> ) |  |                            |   |                       | V <sub>12</sub> = \ | <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> | )P <sub>ED</sub>    |  |
| L <sub>EQ</sub> =             |   | tion 25-2 oi       | (25-3)                                   |                            | L <sub>EQ</sub> =                                 |                       |                     | quation 25-8                                    |                     |  |
| P <sub>FM</sub> =             |   | Equation (         | •  |                            | P <sub>FD</sub> =                                 |                       | •                   | -   | uation (Exhib       | nit 25-12)                                     |
|                               | pc/h                                    | _qualion (         | -Arnon 20 0)                             |                            |   |                       |                     | pc/h  | addon (Exilic       | 120 12)  |
| V <sub>12</sub> =             | •                                       | /F                 | . 4 05 5)                                |                            | V <sub>12</sub> =                                 |                       |                     | -   | 05.45               | 25 40)   |
| $V_3$ or $V_{av34}$           |   | (Equation 25       | o-4 or 25-5)                             |                            | V <sub>3</sub> or V <sub>av34</sub>               |                       |                     |   | on 25-15 or 2       | 25-16)   |
| Is $V_3$ or $V_{av34} > 2,70$ |   |                    |  |                            |   |                       |                     | Yes 🗹 No  |                     |  |
| Is $V_3$ or $V_{av34} > 1.5$  | * V <sub>12</sub> /2                    | s 🗏 No             |  |                            |   |                       |                     | Yes 🔽 No  |                     |  |
| If Yes,V <sub>12a</sub> =     | pc/h                                    | (Equation 25       | 5-8)                                     |                            | If Yes,V <sub>12a</sub>                           | =                     | pc/                 | h (Equation                                     | 25-18)              |  |
| Capacity Che                  | ecks                                    |                    |  |                            | Capaci  | ty Ch                 | ecks                |   |                     |  |
|                               | Actual                                  | С                  | apacity                                  | LOS F?                     |   |                       | Actual              | Ca  | pacity              | LOS F?   |
|                               |   |                    |  |                            | V <sub>F</sub>                                    |                       | 3260                | Exhibit 25-14                                   | 4 4800              | No   |
| $V_{FO}$                      |   | Exhibit 25-7       |  |                            | $V_{FO} = V_{FO}$                                 | V <sub>R</sub>        | 3192                | Exhibit 25-1                                    | 4800                | No   |
|                               |   |                    |  |                            | V <sub>R</sub>                                    |                       | 68                  | Exhibit 25-3                                    | 2000                | No   |
| Flow Enterin                  | a Merae In                              | fluence A          | rea                                      |                            |   |                       | a Diverd            | e Influen                                       | ce Area             |  |
| - 1011 <b>- 11101111</b>      | Actual                                  | 4                  | Desirable                                | Violation?                 | 1   |                       | Actual              | Max Desirab                                     |                     | Violation?                                     |
| V <sub>R12</sub>              |   | Exhibit 25-7       |  |                            | V <sub>12</sub>                                   | _                     |                     | Exhibit 25-14                                   | 4400:All            | No   |
| Level of Serv                 | rice Detern                             |                    | if not F)                                | <u>l</u>                   |   |                       |                     |   | n (if not F         |  |
| $D_R = 5.475 + 0$             |   |                    |  |                            | 1   |                       |                     | 086 V <sub>12</sub> - 0.                        |                     | <i>,</i>                                       |
| D <sub>R</sub> = (pc/mi/lr    | • | - 12               | A  |                            | $D_R = 2$   | -к<br>!7.8 <b>(рс</b> |                     | 12  | U                   |  |
| LOS = (Exhibit                | •                                       |                    |  |                            |   |                       | oit 25-4)           |   |                     |  |
| Speed Deteri                  | •                                       |                    |  |                            | +   |                       | mination            | ,   |                     |  |
|                               |   |                    |  |                            | <del>  '                                   </del> |                       | xhibit 25-1         |   |                     |  |
| M <sub>S</sub> = (Exibit 2    | -                                       |                    |  |                            |   |                       | (Exhibit 25-1       | •   |                     |  |
| _ ``                          |   |                    |  |                            |   |                       | •                   | -   |                     |  |
|                               | nibit 25-19)                            |                    |  |                            | 1 '   | •                     | (Exhibit 25         | -   |                     |  |
| S = mph (Ext)                 | nibit 25-14)                            |                    |  |                            | S = 5   | 7.8 mph               | (Exhibit 2          | o-15)   |                     |  |

## Two Lane Segments Highway Capacity Software Computer Printouts

| General Information   |  | Site Informati                | tion   |             |
|---|--|-------------------------------|--|-------------|
| Analyst   | SKB  | Highway                       | SR 59  |             |
| Agency or Company   | TDOT/TranSystems                                   | From/To                       | North of I-40  |             |
| Date Performed<br>Analysis Time Period                                | 04/18/2011<br>AM Peak Hour                         | Jurisdiction<br>Analysis Year | Fayette County<br>2014   |             |
| Project Description: Existing Con                                     |  | 7 thatyolo 1 oat              | 2011   |             |
| nput Data   |  |                               |  |             |
|   |  |                               | Class I highway Class I  | Lhighway    |
| <b> </b>  |  |                               |  |             |
|   | \$\frac{1}{2} Shoulder width                       | tt                            | Terrain ✓ Level ☐ Ro   |             |
| -   | Lane width   | tt                            | Two-way hourly volume 404 Directional split 54/                        | veh/h<br>46 |
|   | Lane width   | ft                            | Peak-hour factor, PHF 0.90   |             |
|   | Shoulder width                                     | = <u>#</u>                    | No-passing zone 100  |             |
| Segment   | length, L <sub>t</sub> mi                          | Show North A                  | 250738   |             |
| Jeginene  | rengar, 4m   | A                             | % Recreational vehicles, P <sub>R</sub> 0%                             |             |
|   |  |                               | Access points/ mi 10   | )           |
| Average Travel Speed  |  | •                             |  |             |
| Grade adjustment factor, f <sub>G</sub> (Exhi                         | bit 20-7)  |                               | 1.00   |             |
| Passenger-car equivalents for tru                                     | cks, E <sub>T</sub> (Exhibit 20-9)                 |                               | 1.7  |             |
| Passenger-car equivalents for RV                                      | 's, E <sub>R</sub> (Exhibit 20-9)                  |                               | 1.0  |             |
| Heavy-vehicle adjustment factor,                                      | $f_{HV} = 1/(1 + P_T(E_T-1) + P_R(E_R-1))$         |                               | 0.979  |             |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/             | (PHF * f <sub>G</sub> * f <sub>HV</sub> )          |                               | 458  |             |
| $v_{ m p}^{\;\;*}$ highest directional split propo                    | rtion <sup>2</sup> (pc/h)                          |                               | 247  |             |
| Free-Flow S   | peed from Field Measurement                        |                               | Estimated Free-Flow Speed  |             |
| Field Measured are and C  | mi   | Base free-flow                | v speed, BFFS <sub>FM</sub>  | 45.0 mi/h   |
| Field Measured speed, S <sub>FM</sub>                                 |  | Adj. for lane v               | vidth and shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h    |
| Observed volume, V <sub>f</sub>                                       | vel  | n/n                           | ss points, f <sub>A</sub> (Exhibit 20-6)                               | 2.5 mi/h    |
| Free-flow speed, FFS FFS=S <sub>FM</sub> -                            | $+0.00776(V_{f}/f_{HV})$ mi                        | i/h <b>I</b>                  | eed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )                   | 41.2 mi/h   |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>m</i>                 | <i>i/h</i> ) (Exhibit 20-11)                       | 133 600                       | 4.3  | -           |
| Average travel speed, ATS ( mi/h                                      |  | 1                             | 33.3   |             |
| Percent Time-Spent-Following  | h lih  | <u>I</u>                      |  |             |
| Grade Adjustment factor, f <sub>G</sub> (Exhi                         | ibit 20-8)   |                               | 1.00   |             |
|   |  | +                             |  |             |
| Passenger-car equivalents for tru                                     | 1.   |                               | 1.1  |             |
| Passenger-car equivalents for RV                                      |  |                               | 1.0  |             |
| Heavy-vehicle adjustment factor,                                      |  |                               | 0.997  |             |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/             |  |                               | 450  |             |
| /p * highest directional split propo                                  |  |                               | 243  |             |
| Base percent time-spent-following                                     | g, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)       |                               | 32.7   |             |
| Adj. for directional distribution and                                 | d no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-1 | 2)                            | 23.0   |             |
| Percent time-spent-following, PTS                                     |  |                               | 55.6   |             |
| Level of Service and Other Perf<br>Level of service, LOS (Exhibit 20- |  | T                             | С  |             |
| /olume to capacity ratio, v/c=V <sub>p</sub> /                        | · · · · · · · · · · · · · · · · · · ·              |                               | 0.14   |             |
| Peak 15-min veh-miles of travel, V                                    |  |                               | 112  |             |
| Peak-hour vehicle-miles of travel,                                    |  | <u> </u>                      | 404  |             |
| Peak 15-min total travel time, TT <sub>1</sub>                        |  |                               | 3.4  |             |
| Notes   |  | ı                             |  |             |
|   |  |                               |  |             |

| General Information                                       |   | Site Information                         |  |           |
|---|---|--|--|-----------|
| Analyst   | SKB   | Highway                                  | SR 59  |           |
| Agency or Company   | TDOT/TranSystems  | From/To                                  | South of I-40  |           |
| Date Performed<br>Analysis Time Period                    | 04/18/2011<br>AM Peak Hour  | Jurisdiction<br>Analysis Year            | Fayette County<br>2014                                     |           |
| Project Description: Existing Con                         | nditions  | , , ,                                    |  |           |
| nput Data   |   |  |  |           |
|   |   |  | Class I highway Class II                                   | highway   |
|   | 1 Shoulder width  | - 4                                      | Terrain Level Ro   |           |
|   |   |  |  | veh/h     |
|   |   |  | Directional split 61 / 3                                   |           |
| \$2 - 30 - 30 - 30 - 30 - 30 - 30 - 30 - 3                |   |  | Peak-hour factor, PHF 0.90<br>No-passing zone 100          |           |
|   |   | Show North Arrow                         | % Trucks and Buses , P <sub>T</sub> 3 %                    |           |
| Segment   | length, L <sub>t</sub> mi   | -50200 500000000000000000000000000000000 | % Recreational vehicles, P <sub>R</sub> 0%                 |           |
| 81  |   |  | Access points/ mi 10                                       | )         |
| Average Travel Speed                                      |   | <u> </u>                                 | toooo pointo, mi   | ,         |
| Grade adjustment factor, f <sub>G</sub> (Exhi             | pit 20-7)   |  | 1.00   |           |
| Passenger-car equivalents for true                        |   |  | 1.7  |           |
| Passenger-car equivalents for RV                          | ·   |  | 1.0  |           |
| Heavy-vehicle adjustment factor,                          |   |  | 0.979  |           |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ |   |  | 473  |           |
| v <sub>p</sub> * highest directional split propo          |   |  | 289  |           |
|   | peed from Field Measurement   |  | Estimated Free-Flow Speed                                  |           |
|   |   | Base free-flow speed, BFI                | FS <sub>EM</sub>   | 45.0 mi/h |
| Field Measured speed, S <sub>FM</sub>                     | mi/h  |  | oulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h  |
| Observed volume, V <sub>f</sub>                           | veh/h   | Adj. for access points, f <sub>A</sub> ( | 20   | 2.5 mi/h  |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +                | $-0.00776(V_f/f_{HV})$ mi/h   | Free-flow speed, FFS (FS                 |  | 41.2 mi/h |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>m</i>     | i/h) (Exhibit 20-11)  |  | 4.3  |           |
| Average travel speed, ATS ( mi/h                          | ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>  |  | 33.2   |           |
| Percent Time-Spent-Following                              |   |  |  |           |
| Grade Adjustment factor, f <sub>G</sub> (Exhi             | bit 20-8)   |  | 1.00   |           |
| Passenger-car equivalents for true                        | cks, E <sub>T</sub> (Exhibit 20-10)   |  | 1.1  |           |
| Passenger-car equivalents for RV                          | s, E <sub>R</sub> (Exhibit 20-10)   |  | 1.0  |           |
| Heavy-vehicle adjustment factor,                          | f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |  | 0.997  |           |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ | PHF * f <sub>G</sub> * f <sub>HV</sub> )  |  | 465  |           |
| <sub>p</sub> * highest directional split propo            | rtion <sup>2</sup> (pc/h)   |  | 284  |           |
| Base percent time-spent-following                         | , BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)   |  | 33.6   |           |
| Adj. for directional distribution and                     | no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  |  | 21.8   |           |
| Percent time-spent-following, PTS                         | SF(%)=BPTSF+f <sub>d/np</sub>   |  | 55.3   |           |
| evel of Service and Other Perf                            |   |  |  |           |
| evel of service, LOS (Exhibit 20-                         |   |  | C  |           |
| /olume to capacity ratio, v/c=V <sub>p</sub> /            |   |  | 0.15   |           |
| Peak 15-min veh-miles of travel, \                        |   |  | 116  |           |
| Peak-hour vehicle-miles of travel,                        |   |  | 417  |           |
| Peak 15-min total travel time, TT <sub>1</sub>            | <sub>5</sub> (veh-h)= VMT <sub>15</sub> /ATS  |  | 3.5  |           |
| Votes   |   |  |  |           |

Generated: 4/20/2011 10:54 AM

| General Information  | TWO-WAY TWO-LANE I                                   | Site Information                                    |   |
|--|--|---|---|
| Analyst  | SKB  | Highway   | SR 59   |
| Agency or Company  | TDOT/TranSystems                                     | From/To   | North of I-40   |
| Date Performed<br>Analysis Time Period   | 04/18/2011<br>PM Peak Hour                           | Jurisdiction<br>Analysis Year                       | Fayette County<br>2014                                    |
| Project Description: Existing Con-   | ditions  |   |   |
| Input Data   |  |   |   |
|  |  | Class   | I highway Class II highway                                |
|  | 1 Shoulder width                                     |   | Level Rolling   |
| <u> </u>   |  |   | ourly volume 384 veh/h                                    |
|  |  | Directional   |   |
| STATE OF THE STATE |  | Peak-hour find No-passing                           | •   |
| <u>.</u>   |  | Show North Arrow % Trucks a                         | and Buses , P <sub>T</sub> 3 %                            |
| Segment I  | ength, L <sub>t</sub> mi                             | % Recreation  | onal vehicles, P <sub>R</sub> 0%                          |
|  |  | Access poir   |   |
| Average Travel Speed   |  | <u>'</u>  |   |
| Grade adjustment factor, f <sub>G</sub> (Exhib   | it 20-7)   |   | 1.00  |
| Passenger-car equivalents for truc   |  |   | 1.7   |
| Passenger-car equivalents for RVs  |  |   | 1.0   |
| Heavy-vehicle adjustment factor, f   |  |   | 0.979   |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (l   |  |   | 436   |
| v <sub>p</sub> * highest directional split propor  | tion <sup>2</sup> (pc/h)                             |   | 244   |
| Free-Flow Sp   | eed from Field Measurement                           | Estimate  | ed Free-Flow Speed  |
|  |  | Base free-flow speed, BFFS <sub>FM</sub>            | 45.0 mi/h   |
| Field Measured speed, S <sub>FM</sub>  | mi/h   | Adj. for lane width and shoulder widt               | h <sup>3</sup> , f <sub>I,S</sub> (Exhibit 20-5) 1.3 mi/h |
| Observed volume, V <sub>f</sub>  | veh/h  | Adj. for access points, f <sub>A</sub> (Exhibit 20- |   |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +0  | $0.00776(V_f/f_{HV})$ mi/h                           | Free-flow speed, FFS (FSS=BFFS-f                    |   |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi/</i>  | /h) (Exhibit 20-11)                                  |   | 4.4   |
| Average travel speed, ATS ( mi/h)  | ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>       |   | 33.4  |
| Percent Time-Spent-Following   |  | -   |   |
| Grade Adjustment factor, f <sub>G</sub> (Exhib   | pit 20-8)  |   | 1.00  |
| Passenger-car equivalents for truc   | ks, E <sub>T</sub> (Exhibit 20-10)                   |   | 1.1   |
| Passenger-car equivalents for RVs  | s, E <sub>R</sub> (Exhibit 20-10)                    |   | 1.0   |
| Heavy-vehicle adjustment factor, f   | $_{HV}$ =1/(1+ $P_{T}(E_{T}$ -1)+ $P_{R}(E_{R}$ -1)) |   | 0.997   |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (F   | PHF * f <sub>G</sub> * f <sub>HV</sub> )             |   | 428   |
| /p * highest directional split propor  |  |   | 240   |
| Base percent time-spent-following,   |  |   | 31.4  |
|  | no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)   |   | 22.9  |
| Percent time-spent-following, PTS  | *  |   | 54.2  |
| Level of Service and Other Performance Level of Service, LOS (Exhibit 20-3)  |  |   | В   |
| /olume to capacity ratio, v/c=V <sub>p</sub> / 3   |  |   | 0.14  |
| Peak 15-min veh-miles of travel, V   |  |   | 107   |
| Peak-hour vehicle-miles of travel,   |  |   | 384   |
|  |  |   | 3.2   |
| Peak 15-min total travel time, TT <sub>15</sub>  | -(ACII-III- AIMI * 5/V 12)                           |   |   |

Generated: 4/20/2011 10:55 AM

| General Information   |   | Site Information              |  |                    |  |
|---|---|-------------------------------|--|--------------------|--|
| Analyst   | SKB   | Highway                       | SR 59  |                    |  |
| Agency or Company   | TDOT/TranSystems  | From/To                       | South of I-40  |                    |  |
| Date Performed<br>Analysis Time Period                                | 04/18/2011<br>PM Peak Hour  | Jurisdiction<br>Analysis Year | Fayette County<br>2014   |                    |  |
| Project Description: Existing Co                                      |   | Analysis Teal                 | 2014   |                    |  |
| nput Data   |   |                               |  |                    |  |
|   |   |                               |  | LICAL              |  |
| L   |   |                               | Class I highway Class I  |                    |  |
|   | \$ Shoulder width   | _ft _                         | Terrain Level Ro   |                    |  |
| *   | Lane width  | _tt /                         | Two-way hourly volume 398 Directional split 55/                  | veh/h<br><i>45</i> |  |
|   | Lane width  | tt                            | Peak-hour factor, PHF 0.96                                       | )                  |  |
|   | Shoulder_width  | =- <u>#</u>                   | No-passing zone 100  |                    |  |
| · Samuel  | Local I   | Show North Arrow              | % Trucks and Buses , P <sub>T</sub> 3 %                          |                    |  |
| Segmen  | t length, L <sub>t</sub> mi   |                               | % Recreational vehicles, P <sub>R</sub> 0%                       | 1                  |  |
|   |   |                               | Access points/ mi 10   | 0                  |  |
| Average Travel Speed  |   | •                             |  |                    |  |
| Grade adjustment factor, f <sub>G</sub> (Exh                          | ibit 20-7)  |                               | 1.00   |                    |  |
| Passenger-car equivalents for tru                                     | icks, E <sub>T</sub> (Exhibit 20-9)   |                               | 1.7  |                    |  |
| Passenger-car equivalents for R\                                      | /s, E <sub>R</sub> (Exhibit 20-9)   |                               | 1.0  |                    |  |
| Heavy-vehicle adjustment factor,                                      | $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$  |                               | 0.979  |                    |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/             | (PHF * f <sub>G</sub> * f <sub>HV</sub> )   |                               | 452  |                    |  |
| v <sub>p</sub> * highest directional split propo                      | ortion <sup>2</sup> (pc/h)  |                               | 249  |                    |  |
| Free-Flow S   | peed from Field Measurement   |                               | Estimated Free-Flow Speed  |                    |  |
| Field Measured speed, S <sub>FM</sub>                                 | mi/   | Base free-flow spec           | ed, BFFS <sub>FM</sub>   | 45.0 mi/h          |  |
|   | veh   | Adj. for lane width a         | and shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h           |  |
| Observed volume, V <sub>f</sub>                                       |   | Adj. for access poir          | nts, f <sub>A</sub> (Exhibit 20-6)                               | 2.5 mi/h           |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub>                              | $+0.00776(V_f/f_{HV})$ mi/  | /h I                          | FS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )                   | 41.2 mi/h          |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>n</i>                 | ni/h) (Exhibit 20-11)   |                               | 4.3  |                    |  |
| Average travel speed, ATS ( mi/f                                      | n) ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>   |                               | 33.3   |                    |  |
| Percent Time-Spent-Following  |   | •                             |  |                    |  |
| Grade Adjustment factor, f <sub>G</sub> (Exh                          | nibit 20-8)   |                               | 1.00   |                    |  |
| Passenger-car equivalents for tru                                     |   |                               | 1.1  |                    |  |
| Passenger-car equivalents for R\                                      | 1.5   |                               | 1.0  |                    |  |
|   | f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |                               | 0.997  |                    |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/             |   |                               | 444  |                    |  |
| v <sub>p</sub> * highest directional split propo                      |   |                               | 244  |                    |  |
| •   | g, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)  |                               | 32.3   |                    |  |
|   | d no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12   | 2)                            | 22.9   |                    |  |
| Percent time-spent-following, PTSF(%)=BPTSF+f <sub>d/np</sub>         |   |                               | 55.2   |                    |  |
| Level of Service and Other Per  | formance Measures   | <u>'</u>                      | С  |                    |  |
| _evel of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II) |   |                               | 0.14   |                    |  |
| Volume to capacity ratio, v/c=V <sub>p</sub> /                        |   |                               | 111  |                    |  |
|   | VMT_(veh- mi)= 0.25L <sub>t</sub> (V/PHF)   | +                             | 398  |                    |  |
| Peak-hour vehicle-miles of travel                                     |   | +                             | 3.3  |                    |  |
| Peak 15-min total travel time, TT                                     | 15(veii-ii)= vivii 15/A13   |                               | 3.3  |                    |  |
| <b>Notes</b> 1. If Vp >= 3,200 pc/h, terminate                        | analysis-the LOS is F   |                               |  |                    |  |
| 1. 11 vp >= 3,200 pc/11, terminate                                    | analysis-the LOS is F.<br>- 1,700 pc/h, terminated anlysis-the LO                               |                               |  |                    |  |

| General Information   |   | Site Information                               |  |           |  |
|---|---|--|--|-----------|--|
| Analyst   | SKB   | Highway  | SR 59  |           |  |
| Agency or Company   | TDOT/TranSystems  | From/To  | North of I-40  |           |  |
| Date Performed<br>Analysis Time Period                              | 04/18/2011<br>AM Peak Hour                                      | Jurisdiction<br>Analysis Year                  | Fayette County<br>2034                                 |           |  |
| Project Description: Existing Co                                    |   | Allalysis Teal                                 | 2034   |           |  |
| Input Data  |   |  |  |           |  |
|   |   |  | Class I highway  | -i-al     |  |
| <u>L</u>  |   |  | • .  |           |  |
|   | \$ Shoulder width   | _ttTerra                                       |  |           |  |
| * * *   | Lane width  |  | way hourly volume 555 ve<br>tional split 58 / 42       |           |  |
|   | Lane width  | _tt Peak                                       | -hour factor, PHF 0.90                                 | -         |  |
|   | Shoulder width  |  | assing zone 100  |           |  |
| Sogmen  | t length, L   | Show North Arrow % In                          | rucks and Buses , P <sub>T</sub> 3 %                   |           |  |
| Segmen  | t length, L <sub>t</sub> mi                                     | % Re   | ecreational vehicles, P <sub>R</sub> 0%                |           |  |
|   |   | Acce:  | ss points/ mi 10                                       |           |  |
| Average Travel Speed  |   | <u>,                                      </u> |  |           |  |
| Grade adjustment factor, f <sub>G</sub> (Exh                        | nibit 20-7)   |  | 1.00   |           |  |
| Passenger-car equivalents for tr                                    | ucks, E <sub>T</sub> (Exhibit 20-9)                             |  | 1.2  |           |  |
| Passenger-car equivalents for R                                     | Vs, E <sub>R</sub> (Exhibit 20-9)                               |  | 1.0  |           |  |
| Heavy-vehicle adjustment factor                                     | $f_{HV} = 1/(1 + P_T(E_{T}-1) + P_R(E_{R}-1))$                  |  | 0.994  |           |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/           | (PHF * f <sub>G</sub> * f <sub>HV</sub> )                       |  | 620  |           |  |
| v <sub>p</sub> * highest directional split prop                     | ortion <sup>2</sup> (pc/h)                                      |  | 360  |           |  |
| Free-Flow Speed from Field Measurement                              |   | E  | Estimated Free-Flow Speed                              |           |  |
| Field Managered annotal C   | mi/h  | Base free-flow speed, BFFS <sub>FN</sub>       | 1  | 45.0 mi/h |  |
| Field Measured speed, S <sub>FM</sub>                               |   | Adj. for lane width and shoulde                | er width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h  |  |
| Observed volume, V <sub>f</sub>                                     | veh/h   | Adj. for access points, f <sub>A</sub> (Exhi   |  | 2.5 mi/h  |  |
| Free-flow speed, FFS FFS= $S_{FN}$                                  | $_{1}+0.00776(V_{f}/f_{HV})$ mi/h                               | Free-flow speed, FFS (FSS=E                    |  | 41.2 mi/h |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>r</i> .             | <i>ni/h</i> ) (Exhibit 20-11)                                   | 1100 11011 040000, 1110 (1100-1                | 3.8  |           |  |
| Average travel speed, ATS ( mi/l                                    |   |  | 32.6   |           |  |
| Percent Time-Spent-Following  |   |  |  |           |  |
| Grade Adjustment factor, f <sub>G</sub> (Exh                        |   |  | 1.00   |           |  |
|   |   |  |  |           |  |
| Passenger-car equivalents for tru                                   | '   |  | 1.1  |           |  |
| Passenger-car equivalents for R                                     |   |  | 1.0  |           |  |
|   | $f_{HV} = 1/(1 + P_T(E_T-1) + P_R(E_R-1))$                      |  | 0.997  |           |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/           |   |  | 619  |           |  |
| v <sub>p</sub> * highest directional split prop                     |   |  | 359  |           |  |
|   | ng, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)                   |  | 42.0   |           |  |
|   | nd no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)           |  | 20.1   |           |  |
| Percent time-spent-following, PT                                    | **  |  | 62.0   |           |  |
| Level of Service and Other Per<br>Level of service, LOS (Exhibit 20 | n-3 for Class I or 20-4 for Class II)                           |  | С  |           |  |
| Volume to capacity ratio, v/c=V <sub>p</sub> /                      | ·   |  | 0.19   |           |  |
| '   | VMT <sub>15</sub> (veh- <i>mi</i> )= 0.25L <sub>t</sub> (V/PHF) |  | 154  |           |  |
| Peak-hour vehicle-miles of trave                                    | I, VMT <sub>60</sub> (veh- <i>mi</i> )=V*L <sub>t</sub>         |  | 555  |           |  |
| Peak 15-min total travel time, TT                                   |   |  | 4.7  |           |  |
| Notes   | ·•  | •<br>  |  |           |  |
|   | analysis-the LOS is F.  |  |  |           |  |

| Carear information   Step  |  | WAY SEGMENT WORKSHEET   |              |
|--|--|---|--------------|
| Ageing of Company   April  | General Information Applyet SKR  | Site Information  |              |
| Project Date (1997)  | Agency or Company TDOT/TranSystems Date Performed 04/18/2011   | From/To South of I-40 Jurisdiction Fayette County                     |              |
| The part Date   The part Dat   | ,  | Analysis Year 2034  |              |
| Shoulder width   Ti   Law width   Ti   |  |   |              |
| Directional spit    Shoulder width   It  | ·  | Terrain ✓ Level ☐ Ro  | olling       |
| Segment length. L <sub>1</sub>   | Lane widthft   | Directional split 61/3 Peak-hour factor, PHF 0.90 No-passing zone 100 | 39<br>)<br>) |
| 1.00   Passenger car equivalents for trucks, E <sub>T</sub> (Exhibit 20-9)   1.2   1.0   | Segment length, L <sub>t</sub> mi  | % Recreational vehicles, P <sub>R</sub> 0%                            |              |
| Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-9)  1.2  Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-9)  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.  | Average Travel Speed   | •   |              |
| Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-9) 1.0  Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/(1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1)) 0.994  Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pch)=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> ) 643  v <sub>p</sub> * Nighest directional split proportion <sup>2</sup> (pch) 392  Free-Flow Speed from Field Measurement Estimated Free-Flow Speed  Free-Flow Speed from Field Measurement Adj. for lane width and shoulder width and shoul  | Grade adjustment factor, f <sub>G</sub> (Exhibit 20-7)   | 1.00  |              |
| Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/(1+P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1))  | Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-9)  | 1.2   |              |
| Two-way flow rate   , v <sub>p</sub> (br.h) = V (PHF *   c   f +   v   v   k   says   s   | Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-9)   | 1.0   |              |
| vp * highest directional split proportion? (po/h)         392           Free-Flow Speed from Field Measurement         Estimated Free-Flow Speed           Field Measured speed, SFM         mi/h         veh/h         Adj. for lane width and shoulder width3, ft_S (Exhibit 20-5)         1.3 mi/h           Observed volume, V <sub>1</sub> veh/h         veh/h         Adj. for lane width and shoulder width3, ft_S (Exhibit 20-5)         1.3 mi/h           Adj. for no-passing zones, ft_ne (mi/h) (Exhibit 20-11)         3.7         Adj. for access points, ft_A (Exhibit 20-6)         2.5 mi/h           Average travel speed, ATS (mi/h) ATS=FFS-0.00776v_p-ft_p         32.5         Percent Time-Spent-Following           Grade Adjustment factor, ft_G (Exhibit 20-8)         1.00         1.1           Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-10)         1.1         1.0           Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-10)         1.0         1.0           Heavy-vehicle adjustment factor, ft_nc=ft/(t)=PT(Ft_1)+P <sub>R</sub> (E <sub>R</sub> -1))         0.997         43.1           Woway flow rate <sup>1</sup> , vp_ (pc/h)=V/ (PHF * ft_6 * ft_Hv)         641         43.1           Base percent time-spent-following, BPTSF(%)=BPTSFrf dnp         62.5         43.1           Adj. for directional distribution and no-passing zone, ft_shp(%)(Exh. 20-12)         19.4         45.0           Percent time-spent-following, PTSF(%)=BPTSFrf dnp  | Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_{T}-1)+P_R(E_{R}-1))$  | 0.994   |              |
| Free-Flow Speed from Field Measurement Field Measured speed, S <sub>FM</sub> Observed volume, V <sub>1</sub> Free-flow speed, FFS FFS=S <sub>FM</sub> +0.00776(V <sub>f</sub> f <sub>HV</sub> ) Nith Adj. for lane width and shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS FFS=S <sub>FM</sub> +0.00776(V <sub>f</sub> f <sub>HV</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) Adj. for access points, f <sub>A</sub> (Exhibit 20-6) | Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ )   | 643   |              |
| Field Measured speed, $S_{FM}$ $mi/h$ Observed volume, $V_t$ $veh/h$   | v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h)  | 392   |              |
| Field Measured speed, $S_{FM}$ observed volume, $V_{t}$ veh/h veh  | Free-Flow Speed from Field Measurement   | Estimated Free-Flow Speed   |              |
| Observed volume, $V_{\rm f}$ Free-flow speed, FFS FFS=S <sub>FM</sub> +0.00776(V $_{\rm f}$ $V_{\rm fHV}$ ) $mih$ Adj. for access points, $f_{\rm A}$ (Exhibit 20-6) 2.5 $mih$ Adj. for access points, $f_{\rm A}$ (Exhibit 20-6) 3.7 Average travel speed, ATS ( $mih$ ) ATS=FFS-0.00776 $v_{\rm p}$ - $f_{\rm np}$ 32.5 Percent Time-Spent-Following  Grade Adjustment factor, $f_{\rm G}$ (Exhibit 20-8) 1.00  Passenger-car equivalents for trucks, $E_{\rm T}$ (Exhibit 20-10) 1.1  Passenger-car equivalents for RVs, $E_{\rm R}$ (Exhibit 20-10) 1.0  Heavy-vehicle adjustment factor, $f_{\rm HV}$ =T/( $f_{\rm HV}$ ) 9.997  Two-way flow rate $f_{\rm t}$ - $v_{\rm p}$ - $f_{\rm th}$ - $f_{\rm g}$ - $f_{\rm HV}$ ) 641 $v_{\rm p}$ - highest directional split proportion 2 (pc/h) 3.91  Base percent time-spent-following, BPTSF(%)=100(1-e^{-0.000879v_{\rm p}}) 43.1  Adj. for directional distribution and no-passing zone, $f_{\rm aftp}$ (%)(Exh. 20-12) 1.9.4  Percent time-spent-following, PTSF(%)=BPTSF+f_{atrp} 6.25  Level of Service and Other Performance Measures  Level of Service and Other Performance Measures  Level of Service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II) C  Peak-hour vehicle-miles of travel, VMT <sub>15</sub> (veh- $m$ )=0.25L <sub>1</sub> (V/PHF) 1.60  Peak-hour vehicle-miles of travel, VMT <sub>15</sub> (veh- $m$ )=VMT <sub>15</sub> (ATS 4.9  Notes  | Field Measured speed, S <sub>FM</sub> mi/h   | · · · ·   |              |
| Free-flow speed, FFS FFS= $_{FM}^{+}$ 0.00776( $_{V_l}^{+}$ 1 $_{HV}^{+}$ ) $_{HV}^{+}$ $_{HV}^$   | Observed volume, V <sub>f</sub> veh/h  |   |              |
| Average travel speed, ATS ( $mih$ ) ATS=FFS-0.00776 $v_p$ -f $_{np}$ 32.5  Percent Time-Spent-Following  Grade Adjustment factor, $f_G$ (Exhibit 20-8) 1.00  Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10) 1.1  Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10) 1.0  Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T$ ( $E_T$ -1)+ $P_R$ ( $E_R$ -1)) 0.997  Two-way flow rate $f_T$ , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ ) 641 $v_p$ * highest directional split proportion² (pc/h) 391  Base percent time-spent-following, BPTSF(%)=100(1-e^{-0.000879v}p) 43.1  Adj. for directional distribution and no-passing zone, $f_{dhp}$ (%)(Exh. 20-12) 19.4  Percent time-spent-following, PTSF(%)=BPTSF+f_{dinp} 62.5  Level of Service and Other Performance Measures  Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II) C  Volume to capacity ratio, $v(c=V_p/3, 2.00)$ 0.20  Peak 15-min veh-miles of travel, VMT $_{15}$ (veh- $m$ )= 0.25L <sub>1</sub> (V/PHF) 160  Peak-hour vehicle-miles of travel, VMT $_{15}$ (veh- $m$ )= 0.25L <sub>1</sub> (V/PHF) 4.9  Notes   | Free-flow speed, FFS FFS=S <sub>FM</sub> +0.00776( $V_{l'}$ f <sub>HV</sub> ) $mi/h$   |   |              |
| Percent Time-Spent-Following         Grade Adjustment factor, $f_G$ (Exhibit 20-8)       1.00         Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)       1.1         Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)       1.0         Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T^{-1})+P_R(E_R^{-1}))$ 0.997         Two-way flow rate $f_V$ , $v_p$ (pc/h)=V/ (PHF $f_G$ $f_H$ )       641 $v_p$ * highest directional split proportion $f_V$ (pc/h)       391         Base percent time-spent-following, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)       43.1         Adj. for directional distribution and no-passing zone, $f_{dhp}$ (%)(Exh. 20-12)       19.4         Percent time-spent-following, PTSF(%)=BPTSF+f_{drip}       62.5         Level of Service and Other Performance Measures       5         Level of Service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)       C         Volume to capacity ratio, $v/c=V_p'$ 3,200       0.20         Peak 15-min veh-miles of travel, VMT <sub>60</sub> (veh- $m$ )= 0.25L <sub>1</sub> (V/PHF)       160         Peak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh- $m$ )= VMT <sub>15</sub> (ATS       4.9         Notes  | Adj. for no-passing zones, f <sub>np</sub> ( <i>mi/h</i> ) (Exhibit 20-11)   | 3.7   |              |
| Grade Adjustment factor, $f_G$ (Exhibit 20-8)  1.00  Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)  1.1  Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)  1.0  Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$ 7. Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$ 9. 40  1.0  Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)  1.0  Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$ 1.0  9. 997  Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)= $V/(PHF * f_G * f_{HV})$ 9. 40  41  Power and time-spent-following, BPTSF(%)=100(1-e-0.000879v_p)  43.1  Adj. for directional distribution and no-passing zone, $f_{dhp}(\%)(Exh. 20-12)$ Percent time-spent-following, PTSF(%)=BPTSF+f dnp  62.5  Level of Service and Other Performance Measures  Level of Service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)  C  Volume to capacity ratio, $v/c=V_p/3$ , 3.200  0.20  Peak 15-min veh-miles of travel, $VMT_{15}$ (veh- $m$ )= 0.25L <sub>1</sub> ( $V/PHF$ )  160  Peak-hour vehicle-miles of travel, $VMT_{15}$ (veh- $m$ )= $V^*L_t$ 575  Peak 15-min total travel time, $TT_{15}$ (veh-h)= $VMT_{15}/ATS$ Notes   | Average travel speed, ATS ( <i>mi/h</i> ) ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>   | 32.5  |              |
| Passenger-car equivalents for trucks, $E_T$ (Exhibit 20-10)  1.1  Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)  1.0  Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T^{-1})+P_R(E_R^{-1}))$ 0.997  Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ )  641 $v_p$ * highest directional split proportion² (pc/h)  391  Base percent time-spent-following, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)  43.1  Adj. for directional distribution and no-passing zone, $f_{d/hp}$ (%)(Exh. 20-12)  Percent time-spent-following, PTSF(%)=BPTSF+ $f_{d/np}$ 62.5  Level of Service and Other Performance Measures  Level of Service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)  C  Volume to capacity ratio, $v/c=V_p/3$ , 200  Peak 15-min veh-miles of travel, VMT <sub>15</sub> (veh- m)= 0.25L <sub>1</sub> (V/PHF)  Peak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh- m)=V <sup>1</sup> L <sub>1</sub> 575  Peak 15-min total travel time, TT <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS  Notes   | Percent Time-Spent-Following   |   |              |
| Passenger-car equivalents for RVs, $E_R$ (Exhibit 20-10)  Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T^{-1})+P_R(E_R^{-1}))$ $0.997$ Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ ) $v_p$ * highest directional split proportion <sup>2</sup> (pc/h)  Base percent time-spent-following, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p) $v_p$ * no directional distribution and no-passing zone, $f_{dhp}$ (%)(Exh. 20-12)  Percent time-spent-following, PTSF(%)=BPTSF+ff $v_p$ (%)(Exh. 20-12) $v_p$ * proper time-spent-following, PTSF(%)=BPTSF+ff $v_p$ (%) $v_p$ * no directional distribution and no-passing zone, $v_p$ (%)(Exh. 20-12) $v_p$ * no directional distribution and no-passing zone, $v_p$ (%)(Exh. 20-12) $v_p$ * no directional distribution and no-passing zone, $v_p$ (%)(Exh. 20-12) $v_p$ * no directional distribution and no-passing zone, $v_p$ (%)(Exh. 20-12) $v_p$ * no directional distribution and no-passing zone, $v_p$ (%)(Exh. 20-12) $v_p$ * no directional distribution and no-passing zone, $v_p$ (%)(Exh. 20-12) $v_p$ * no directional distribution and no-passing zone, $v_p$ (%)(Exh. 20-12) $v_p$ * no directional distribution and no-passing zone, $v_p$ (%)(Exh. 20-12) $v_p$ * no directional distribution and no-passing zone, $v_p$ (%)(Exh. 20-12) $v_p$ * no directional distribution and no-passing zone, $v_p$ (%)(Exh. 20-12) $v_p$ * no directional distribution and no-passing zone, $v_p$ * no directional distribution and no directional distribution and no distribution a  | Grade Adjustment factor, f <sub>G</sub> (Exhibit 20-8)   | 1.00  |              |
| Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$ Two-way flow rate $^1$ , $v_p$ (pc/h)=V/ (PHF * $^*f_G$ * $^*f_{HV}$ ) $v_p$ * highest directional split proportion $^2$ (pc/h)  Base percent time-spent-following, BPTSF(%)=100(1-e-0.000879v_p)  43.1  Adj. for directional distribution and no-passing zone, $f_{d/hp}$ (%)(Exh. 20-12)  Percent time-spent-following, PTSF(%)=BPTSF+ $f_{d/np}$ 62.5  Level of Service and Other Performance Measures  Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)  C  Volume to capacity ratio, $v/c=V_p/3$ , 3,200  Peak 15-min veh-miles of travel, $VMT_{15}$ (veh- $m$ )= 0.25L <sub>1</sub> (V/PHF)  Peak-hour vehicle-miles of travel, $VMT_{15}$ (veh- $m$ )= $V^*L_1$ Foreign total travel time, $TT_{15}$ (veh-h)= $VMT_{15}/ATS$ Notes  | Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-10)   | 1.1   |              |
| Two-way flow rate $^1$ , $v_p$ (pc/h)=V/ (PHF * $^*f_G$ * $^*f_{HV}$ ) 641 $v_p$ * highest directional split proportion $^2$ (pc/h) 391  Base percent time-spent-following, BPTSF(%)=100(1-e-0.000879 $v_p$ ) 43.1  Adj. for directional distribution and no-passing zone, $f_{d/hp}$ (%)(Exh. 20-12) 19.4  Percent time-spent-following, PTSF(%)=BPTSF+f $_{d/np}$ 62.5  Level of Service and Other Performance Measures  Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II) C  Volume to capacity ratio, $v/c=V_p/3$ ,200 0.20  Peak 15-min veh-miles of travel, VMT $_{15}$ (veh- $m$ )= 0.25L <sub>1</sub> (V/PHF) 160  Peak-hour vehicle-miles of travel, VMT $_{60}$ (veh- $m$ )=V*L <sub>1</sub> 575  Peak 15-min total travel time, TT $_{15}$ (veh-h)= VMT $_{15}$ /ATS 4.9  Notes   | Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-10)  | 1.0   |              |
| $v_{p} * \text{highest directional split proportion}^{2} (\text{pc/h}) \\ \text{Base percent time-spent-following, BPTSF}(\%) = 100(1-e^{-0.000879v}p) \\ \text{43.1} \\ \text{Adj. for directional distribution and no-passing zone, } f_{d/hp}(\%)(\text{Exh. 20-12}) \\ \text{Percent time-spent-following, PTSF}(\%) = \text{BPTSF+f}_{d/hp} \\ \text{62.5} \\ \text{Level of Service and Other Performance Measures} \\ \text{Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)} \\ \text{C} \\ \text{Volume to capacity ratio, } v/c = V_{p}/3,200 \\ \text{Peak 15-min veh-miles of travel, } VMT_{15} (\text{veh-}mi) = 0.25L_{t}(V/PHF) \\ \text{Peak-hour vehicle-miles of travel, } VMT_{60}(\text{veh-}mi) = V^{*}L_{t} \\ \text{Peak 15-min total travel time, } TT_{15}(\text{veh-}h) = VMT_{15}/ATS} \\ \text{Notes} \\ \text{Notes}$   | Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) | 0.997   |              |
| Base percent time-spent-following, BPTSF(%)= $100(1-e^{-0.000879V_p})$ Adj. for directional distribution and no-passing zone, $f_{d/hp}$ (%)(Exh. 20-12)  Percent time-spent-following, PTSF(%)=BPTSF+ $f_{d/np}$ 62.5  Level of Service and Other Performance Measures  Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)  C  Volume to capacity ratio, $v/c=V_p/3$ ,200  Peak 15-min veh-miles of travel, $VMT_{15}$ (veh- $m$ )= 0.25L <sub>t</sub> (V/PHF)  160  Peak-hour vehicle-miles of travel, $VMT_{60}$ (veh- $m$ )= $V^*L_t$ 575  Peak 15-min total travel time, $TT_{15}$ (veh-h)= $VMT_{15}$ /ATS  Notes   | Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )                              | 641   |              |
| Adj. for directional distribution and no-passing zone, $f_{d/hp}(\%)(Exh. 20-12)$ Percent time-spent-following, PTSF(%)=BPTSF+f $_{d/hp}$ 62.5  Level of Service and Other Performance Measures  Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)  C  Volume to capacity ratio, $v/c=V_p/3$ , 200  Peak 15-min veh-miles of travel, $VMT_{15}$ (veh- $mi$ )= 0.25L <sub>t</sub> (V/PHF)  Peak-hour vehicle-miles of travel, $VMT_{60}$ (veh- $mi$ )= $V^*L_t$ Peak 15-min total travel time, $TT_{15}$ (veh-h)= $VMT_{15}/ATS$ Notes  | v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h)  | 391   |              |
| Percent time-spent-following, PTSF(%)=BPTSF+f d/np  62.5  Level of Service and Other Performance Measures  Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)  C  Volume to capacity ratio, v/c=V <sub>p</sub> /3,200  Peak 15-min veh-miles of travel, VMT <sub>15</sub> (veh- m)= 0.25L <sub>t</sub> (V/PHF)  Peak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh- m)=V*L <sub>t</sub> Peak 15-min total travel time, TT <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS  Notes   | Base percent time-spent-following, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)   | 43.1  |              |
| Level of Service and Other Performance MeasuresLevel of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)CVolume to capacity ratio, $v/c=V_p/3,200$ 0.20Peak 15-min veh-miles of travel, $VMT_{15}$ (veh- $mi$ )= 0.25L <sub>t</sub> ( $V/PHF$ )160Peak-hour vehicle-miles of travel, $VMT_{60}$ (veh- $mi$ )= $V^*L_t$ 575Peak 15-min total travel time, $TT_{15}$ (veh-h)= $VMT_{15}/ATS$ 4.9Notes  | Adj. for directional distribution and no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)   | 19.4  |              |
| Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)  Volume to capacity ratio, $v/c=V_p/3$ ,200  Peak 15-min veh-miles of travel, $VMT_{15}$ (veh- $m$ )= $0.25L_t(V/PHF)$ Peak-hour vehicle-miles of travel, $VMT_{60}$ (veh- $m$ )= $V^*L_t$ Peak 15-min total travel time, $TT_{15}$ (veh-h)= $VMT_{15}/ATS$ Notes  | * 1  | 62.5  |              |
| Volume to capacity ratio, $v/c=V_p/3,200$ Peak 15-min veh-miles of travel, $VMT_{15}$ (veh- $m$ )= $0.25L_t(V/PHF)$ 160  Peak-hour vehicle-miles of travel, $VMT_{60}$ (veh- $m$ )= $V^*L_t$ 575  Peak 15-min total travel time, $TT_{15}$ (veh-h)= $VMT_{15}/ATS$ 4.9  Notes  |  |   |              |
| Peak 15-min veh-miles of travel, VMT <sub>15</sub> (veh- $mi$ )= 0.25L <sub>t</sub> (V/PHF)  160  Peak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh- $mi$ )=V*L <sub>t</sub> 575  Peak 15-min total travel time, TT <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS  4.9  Notes  |  | <u>†</u>  |              |
| Peak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh- mi)=V*L <sub>t</sub> 575  Peak 15-min total travel time, TT <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS 4.9  Notes  | г  |   |              |
| Peak 15-min total travel time, TT <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS  4.9  Notes  |  | 575   |              |
|  |  | 4.9   |              |
|  |  | <u> </u>  |              |

Generated: 4/20/2011 10:57 AM

| General Information   |   | Site Information                          |  |  |  |
|---|---|---|--|--|--|
| Analyst   | SKB   | Highway                                   | SR 59  |  |  |
| Agency or Company   | TDOT/TranSystems  | From/To                                   | North of I-40  |  |  |
| Date Performed<br>Analysis Time Period                                      | 04/18/2011<br>PM Peak Hour  | Jurisdiction<br>Analysis Year             | Fayette County<br>2034   |  |  |
| Project Description: Existing Con   |   | Analysis Teal                             | 2004   |  |  |
| Input Data  |   |   |  |  |  |
|   |   |   | Class I highway Class II highway                                   |  |  |
| L   |   | '   | • ,  |  |  |
|   | Shoulder width  |   | errain Level Rolling   |  |  |
| <del>*</del>  | Lane width  |   | wo-way hourly volume 531 veh/h irectional split 56 / 44            |  |  |
|   | Lane width  | _tt Pe                                    | eak-hour factor, PHF 0.90  |  |  |
|   | Shoulder width  | \ \   /                                   | o-passing zone 100   |  |  |
| Sagment   | length, L, mi   | Show North Arrow %                        | % Trucks and Buses , P <sub>T</sub> 3 %                            |  |  |
| Segment   | length, L <sub>t</sub> mi   | %   | Recreational vehicles, P <sub>R</sub> 0%                           |  |  |
|   |   | Ad  | ccess points/ mi 10  |  |  |
| Average Travel Speed  |   | •   |  |  |  |
| Grade adjustment factor, f <sub>G</sub> (Exhit                              | pit 20-7)   |   | 1.00   |  |  |
| Passenger-car equivalents for truc  | cks, E <sub>T</sub> (Exhibit 20-9)  |   | 1.2  |  |  |
| Passenger-car equivalents for RV  | s, E <sub>R</sub> (Exhibit 20-9)  |   | 1.0  |  |  |
| Heavy-vehicle adjustment factor, f  | f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |   | 0.994  |  |  |
| Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (                          | PHF * f <sub>G</sub> * f <sub>HV</sub> )  |   | 594  |  |  |
| v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h)   |   |   | 333  |  |  |
| Free-Flow Sp  | peed from Field Measurement   |   | Estimated Free-Flow Speed  |  |  |
| Field Managered around C  | mi/h  | Base free-flow speed, BFF                 | S <sub>FM</sub> 45.0 mi/   |  |  |
| Field Measured speed, S <sub>FM</sub>                                       |   | Adj. for lane width and sho               | ulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) 1.3 mi/h |  |  |
| Observed volume, V <sub>f</sub>   | veh/h   | Adj. for access points, f <sub>A</sub> (E | Exhibit 20-6) 2.5 mi/h   |  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +                                  | $-0.00776(V_f/f_{HV})$ mi/h   | Free-flow speed, FFS (FS                  |  |  |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi</i>                      | i/h) (Exhibit 20-11)  |   | 3.9  |  |  |
| Average travel speed, ATS ( mi/h)   | ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>  |   | 32.7   |  |  |
| Percent Time-Spent-Following  |   | •   |  |  |  |
| Grade Adjustment factor, f <sub>G</sub> (Exhil                              | bit 20-8)   |   | 1.00   |  |  |
| Passenger-car equivalents for true  |   |   | 1.1  |  |  |
| Passenger-car equivalents for RV  | 1   |   | 1.0  |  |  |
| Heavy-vehicle adjustment factor, f  |   |   | 0.997  |  |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (                 |   |   | 592  |  |  |
| v <sub>p</sub> * highest directional split propor                           |   |   | 332  |  |  |
| Base percent time-spent-following   |   |   | 40.6   |  |  |
|   | I no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  |   | 20.7   |  |  |
| Percent time-spent-following, PTSF(%)=BPTSF+f d/np                          |   |   | 61.3   |  |  |
| Level of Service and Other Performance Level of service, LOS (Exhibit 20-3) | ormance Measures  | <u> </u>                                  | С  |  |  |
| Volume to capacity ratio, v/c=V <sub>p</sub> /3                             | ·   |   | 0.19   |  |  |
| Peak 15-min veh-miles of travel, \  |   |   | 148  |  |  |
| Peak-hour vehicle-miles of travel,  |   |   | 531  |  |  |
| Peak 15-min total travel time, TT <sub>1:</sub>                             |   |   | 4.5  |  |  |
| Notes   |   | <u> </u>                                  |  |  |  |
|   | nalysis-the LOS is F.   |   |  |  |  |

| General Information                                       |   | Site         | Information            |  |              |
|---|---|--------------|------------------------|--|--------------|
| Analyst   | SKB   |              | way                    | SR 59  |              |
| Agency or Company   | TDOT/TranSystems  | Fron         | n/To                   | South of I-40  |              |
| Date Performed<br>Analysis Time Period                    | 04/18/2011<br>PM Peak Hour  |              | sdiction<br>lysis Year | Fayette County<br>2034   |              |
| Project Description: Existing Co                          |   | Allai        | ysis i eai             | 2034   |              |
| nput Data   |   |              |                        |  |              |
|   |   |              |                        | Class I highway Class II h                                     | . California |
| L   |   |              |                        | * ·  |              |
|   | \$ Shoulder width   | ft           |                        | Terrain Level Roll   |              |
| *   | Lane width  | ft /         |                        | Two-way hourly volume 549 ve<br>Directional split 54 / 46      |              |
|   | Lane width  | ft \         | $\overline{}$          | Peak-hour factor, PHF 0.90                                     |              |
|   | Shoulder width  | ft _         | $\langle   /  $        | No-passing zone 100  |              |
| - Samuel  | Howards I mi  | - S          | now North Arrow        | % Trucks and Buses , P <sub>T</sub> 3 %                        |              |
| Segmen  | t length, L <sub>t</sub> mi   | 14           |                        | % Recreational vehicles, P <sub>R</sub> 0%                     |              |
|   |   |              |                        | Access points/ mi 10   |              |
| Average Travel Speed                                      |   | ,            |                        |  |              |
| Grade adjustment factor, f <sub>G</sub> (Exh              | ibit 20-7)  |              |                        | 1.00   |              |
| Passenger-car equivalents for tru                         | icks, E <sub>T</sub> (Exhibit 20-9)   |              |                        | 1.2  |              |
| Passenger-car equivalents for R\                          | √s, E <sub>R</sub> (Exhibit 20-9)   |              |                        | 1.0  |              |
| Heavy-vehicle adjustment factor,                          | $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$  |              |                        | 0.994  |              |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ | (PHF * f <sub>G</sub> * f <sub>HV</sub> )   |              |                        | 614  |              |
| v <sub>p</sub> * highest directional split propo          | ortion <sup>2</sup> (pc/h)  |              | 332                    |  |              |
| Free-Flow S   | peed from Field Measurement   |              |                        | Estimated Free-Flow Speed                                      |              |
| Field Measured speed, S <sub>FM</sub>                     | m   | ni/h         | e free-flow speed      | I, BFFS <sub>FM</sub>  | 45.0 mi/h    |
|   |   | Adj.         | for lane width an      | d shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h     |
| Observed volume, V <sub>f</sub>                           |   | eh/h<br>Adj. | for access points      | s, f <sub>A</sub> (Exhibit 20-6)                               | 2.5 mi/h     |
| Free-flow speed, FFS FFS=S <sub>FM</sub>                  | $+0.00776(V_f/f_{HV})$ m  | ni/h         |                        | S (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )                  | 41.2 mi/h    |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>n</i>     | ni/h) (Exhibit 20-11)   |              | 3.8                    |  |              |
| Average travel speed, ATS ( mi/t                          |   |              | 32.6                   |  |              |
| Percent Time-Spent-Following                              |   | •            |                        |  |              |
| Grade Adjustment factor, f <sub>G</sub> (Exh              | iibit 20-8)   |              |                        | 1.00   |              |
| Passenger-car equivalents for tru                         |   |              |                        | 1.1  |              |
| Passenger-car equivalents for R\                          | 1.5   |              | 1.0                    |  |              |
|   | f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |              | 0.997                  |  |              |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ |   |              | 612                    |  |              |
| v <sub>p</sub> * highest directional split propo          |   |              | 330                    |  |              |
| •   | g, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)  |              |                        | 41.6   |              |
|   | d no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-1  | 12)          | 20.2                   |  |              |
| Percent time-spent-following, PT                          | · · · · · · · · · · · · · · · · · · ·   | <u> </u>     | 61.9                   |  |              |
| Level of Service and Other Per                            | formance Measures   |              |                        |  |              |
| ·   | -3 for Class I or 20-4 for Class II)  |              |                        | С  |              |
| Volume to capacity ratio, v/c=V <sub>p</sub> /            |   |              |                        | 0.19   |              |
|   | VMT <sub>15</sub> (veh- <i>mi</i> )= 0.25L <sub>t</sub> (V/PHF)                                 |              |                        | 153  |              |
| Peak-hour vehicle-miles of travel                         | , VMT <sub>60</sub> (veh- <i>mi</i> )=V*L <sub>t</sub>  |              |                        | 549  |              |
| Peak 15-min total travel time, TT                         | <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS   |              |                        | 4.7  |              |
| Notes   | analysis the LOS is E   |              |                        |  |              |
| 1. If Vp >= 3,200 pc/h, terminate                         | analysis-the LOS is F.<br>- 1,700 pc/h, terminated anlysis-the L0                               |              |                        |  |              |

| General Information   |   | Site Information              |  |           |  |
|---|---|-------------------------------|--|-----------|--|
| Analyst   | SKB   | Highway                       | SR 222   |           |  |
| Agency or Company   | TDOT/TranSystems  | From/To                       | North of I-40  |           |  |
| Date Performed<br>Analysis Time Period                                    | 04/18/2011<br>AM Peak Hour                                      | Jurisdiction<br>Analysis Year | Fayette County<br>2014   |           |  |
| Project Description: Existing Con   |   | p many size is sum            |  |           |  |
| nput Data   |   |                               |  |           |  |
|   |   |                               | Class I highway Class II h                                       | nighway   |  |
|   |   |                               | Terrain Level Roll   | -         |  |
|   | Shoulder width  | = <del>  </del>               | Two-way hourly volume 1485 v                                     |           |  |
|   | Lane width  | <u> </u>                      | Directional split 65 / 35  |           |  |
| -   | Lane width Shoulder width                                       |                               | Peak-hour factor, PHF 0.90<br>No-passing zone 100                |           |  |
|   | 3 Silouidei Widii   | <del>-</del> -1   \           | No-passing zone 100 % Trucks and Buses , P <sub>T</sub> 10 %     |           |  |
| Segment   | length, L <sub>t</sub> mi                                       | Show North Arrow              | •  |           |  |
|   | 3 1   | .le                           | % Recreational vehicles, P <sub>R</sub> 0%                       |           |  |
|   |   |                               | Access points/ mi 10   |           |  |
| Average Travel Speed  |   |                               |  |           |  |
| Grade adjustment factor, f <sub>G</sub> (Exhib                            | pit 20-7)   |                               | 1.00   |           |  |
| Passenger-car equivalents for truc  |   |                               | 1.1  |           |  |
| Passenger-car equivalents for RV  | s, E <sub>R</sub> (Exhibit 20-9)                                |                               | 1.0  |           |  |
| Heavy-vehicle adjustment factor, f  | $E_{HV} = 1/(1 + P_T(E_T-1) + P_R(E_R-1))$                      |                               | 0.990  |           |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (               | PHF * f <sub>G</sub> * f <sub>HV</sub> )                        |                               | 1667   |           |  |
| v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h) |   |                               | 1084   |           |  |
| Free-Flow Sp  | eed from Field Measurement                                      |                               | Estimated Free-Flow Speed  |           |  |
| Field Measured speed, S <sub>FM</sub>                                     | mi  | Base free-flow spe            | * ***  | 45.0 mi/h |  |
|   | veh   | Adj. for lane width           | and shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h  |  |
| Observed volume, V <sub>f</sub>   |   | Adj. for access poi           | nts, f <sub>A</sub> (Exhibit 20-6)                               | 2.5 mi/h  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +                                | $0.00776(V_f/f_{HV})$ mi  | /h <b>I</b>                   | FS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )                   | 41.2 mi/h |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi</i>                    | /h) (Exhibit 20-11)   |                               | 1.4  |           |  |
| Average travel speed, ATS ( mi/h)   |   |                               | 26.8   |           |  |
| Percent Time-Spent-Following  | 9 119   |                               |  |           |  |
| Grade Adjustment factor, f <sub>G</sub> (Exhit                            | bit 20-8)   |                               | 1.00   |           |  |
| Passenger-car equivalents for truc  |   |                               | 1.0  |           |  |
| Passenger-car equivalents for RV  |   |                               | 1.0  |           |  |
| Heavy-vehicle adjustment factor, f  |   |                               | 1.000  |           |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (               |   |                               | 1650   |           |  |
| $v_p$ * highest directional split propor                                  |   |                               |  |           |  |
| •   |   |                               | 76.6   |           |  |
| Base percent time-spent-following   |   | 2)                            | 6.6  |           |  |
|   | no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12               | <del>-</del> /                | 83.1   |           |  |
| Percent time-spent-following, PTS  Level of Service and Other Perfo       |   |                               | 03.1   |           |  |
| Level of service, LOS (Exhibit 20-3                                       |   |                               | D  |           |  |
| /olume to capacity ratio, v/c=V <sub>p</sub> /3                           | 3,200   |                               | 0.52   |           |  |
| Peak 15-min veh-miles of travel, V  | /MT <sub>15</sub> (veh- <i>mi</i> )= 0.25L <sub>t</sub> (V/PHF) |                               | 413  |           |  |
| Peak-hour vehicle-miles of travel,  |   |                               | 1485   |           |  |
| Peak 15-min total travel time, TT <sub>1!</sub>                           |   |                               | 15.4   |           |  |
| Notes   | . 10  | <u>I</u>                      |  |           |  |
|   | nalysis-the LOS is F.   |                               |  |           |  |

| General Information   |  | Site In:            | ormation      |   |           |
|---|--|---------------------|---------------|---|-----------|
| Analyst   | SKB  | Highwa              |               | SR 222  |           |
| Agency or Company   | TDOT/TranSystems                                 | From/T              | Ó             | I-40 to Pilot Dwy.  |           |
| Date Performed<br>Analysis Time Period                                    | 04/18/2011<br>AM Peak Hour                       | Jurisdio<br>Analysi |               | Fayette County<br>2014  |           |
| Project Description: Existing Cor   |  | ļa.ya.              |               |   |           |
| nput Data   |  |                     |               |   |           |
|   |  |                     |               | Class I highway Class II I                                      | nighway   |
| <b> </b>  |  | 1                   |               |   |           |
|   | 3 Shoulder width                                 | tt                  |               | Terrain Level Roll Two-way hourly volume 673 vo                 |           |
|   | Lane width                                       | tt                  | 1             | Directional split 51 / 49                                       |           |
|   | ↓ Lane width<br>↓ Shoulder width                 | n                   |               | Peak-hour factor, PHF 0.90<br>No-passing zone 100               |           |
|   | Shoulder width                                   |                     |               | No-passing zone 100 % Trucks and Buses , P <sub>T</sub> 48 %    |           |
| Segment   | length, L <sub>t</sub> mi                        | Show                | North Arrow   | ·   | '         |
|   | 3 1  | al.                 |               | % Recreational vehicles, P <sub>R</sub> 0%                      |           |
|   |  |                     |               | Access points/ mi 10  |           |
| Average Travel Speed  |  |                     |               |   |           |
| Grade adjustment factor, f <sub>G</sub> (Exhil                            | bit 20-7)  |                     |               | 1.00  |           |
| Passenger-car equivalents for true  | cks, E <sub>T</sub> (Exhibit 20-9)               |                     |               | 1.2   |           |
| Passenger-car equivalents for RV  | s, E <sub>R</sub> (Exhibit 20-9)                 |                     |               | 1.0   |           |
| Heavy-vehicle adjustment factor, t  | $f_{HV} = 1/(1 + P_T(E_{T}-1) + P_R(E_{R}-1))$   |                     |               | 0.912   |           |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (               |  |                     |               | 820   |           |
| v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h) |  |                     | 418           |   |           |
| Free-Flow Sp  | peed from Field Measurement                      |                     |               | Estimated Free-Flow Speed                                       |           |
| Field Measured sneed S  | n  | Base fr             | ee-flow speed | d, BFFS <sub>FM</sub>   | 45.0 mi/h |
| Field Measured speed, S <sub>FM</sub>                                     |  | Adj. for            | lane width an | nd shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h  |
| Observed volume, V <sub>f</sub>   |  | eh/h<br>Adj. for    | access points | s, f <sub>A</sub> (Exhibit 20-6)                                | 2.5 mi/h  |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +                                | $-0.00776(V_f/f_{HV})$ n                         | ni/h                |               | S (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )                   | 41.2 mi/h |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi</i>                    | <i>i/h</i> ) (Exhibit 20-11)                     |                     | 3.0           |   |           |
| Average travel speed, ATS ( <i>mi/h</i> )                                 |  | İ                   | 31.9          |   |           |
| Percent Time-Spent-Following  | · ·  |                     |               |   |           |
| Grade Adjustment factor, f <sub>G</sub> (Exhi                             | bit 20-8)  |                     |               | 1.00  |           |
| Passenger-car equivalents for true  |  | <u> </u>            |               | 1.1   |           |
| Passenger-car equivalents for RV  | 1  |                     | 1.0           |   |           |
| Heavy-vehicle adjustment factor, t  |  |                     | 0.954         |   |           |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (               |  |                     | 784           |   |           |
| $v_p^*$ highest directional split propo                                   | -  |                     |               | 400   |           |
| •   |  |                     |               | 49.8  |           |
| Base percent time-spent-following   |  | 12)                 | 15.7          |   |           |
|   | Ino-passing zone, f <sub>d/hp</sub> (%)(Exh. 20- | 12)                 | 65.5          |   |           |
| Percent time-spent-following, PTS  Level of Service and Other Perf        | **   |                     |               | 00.0  |           |
| _evel of service, LOS (Exhibit 20-  |  |                     |               | С   |           |
| /olume to capacity ratio, v/c=V <sub>p</sub> /                            | 3,200  |                     |               | 0.26  |           |
| Peak 15-min veh-miles of travel, \  |  |                     |               | 187   |           |
| Peak-hour vehicle-miles of travel,  |  |                     |               | 673   |           |
| Peak 15-min total travel time, TT <sub>1</sub>                            |  |                     |               | 5.9   |           |
| Notes   | - 10   |                     |               |   |           |
|   |  |                     |               |   |           |

| General Information   |   | Site Information              |  |  |  |
|---|---|-------------------------------|--|--|--|
| Analyst   | SKB   | Highway                       | SR 222   |  |  |
| Agency or Company<br>Date Performed   | TDOT/TranSystems<br>04/18/2011  | From/To                       | South of Pilot Dwy.  |  |  |
| Analysis Time Period  | 04/18/2011<br>AM Peak Hour  | Jurisdiction<br>Analysis Year | Fayette County<br>2014   |  |  |
| Project Description: Existing Cond  |   | j manyana maan                | <del></del>  |  |  |
| nput Data   |   |                               |  |  |  |
|   |   |                               | Class I highway  Class II highway  |  |  |
| <b>+</b>  |   | 4                             |  |  |  |
|   | \$\frac{1}{2} \text{ Shoulder width }   | _tt                           | Terrain Level Rolling Two-way hourly volume 462 veh/h                    |  |  |
| -   | Lane width  | tt                            | Directional split 56 / 44  |  |  |
|   | Lane width  |                               | Peak-hour factor, PHF 0.90   |  |  |
|   | Shoulder width  | = <u>t</u> t                  | No-passing zone 100  |  |  |
| Sogment I   | ength, L <sub>t</sub> mi  | Show North Arrow              | % Trucks and Buses , P <sub>T</sub> 3 %                                  |  |  |
| Segment   | engin, 4 m  | 4                             | % Recreational vehicles, P <sub>R</sub> 0%                               |  |  |
|   |   |                               | Access points/ mi 10   |  |  |
| Average Travel Speed  |   |                               |  |  |  |
| Grade adjustment factor, f <sub>G</sub> (Exhib                              | it 20-7)  |                               | 1.00   |  |  |
| Passenger-car equivalents for truc  | ks, E <sub>T</sub> (Exhibit 20-9)   |                               | 1.7  |  |  |
| Passenger-car equivalents for RVs   | s, E <sub>R</sub> (Exhibit 20-9)  |                               | 1.0  |  |  |
| Heavy-vehicle adjustment factor, f  | <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |                               | 0.979  |  |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (F                | PHF * f <sub>G</sub> * f <sub>HV</sub> )  |                               | 524  |  |  |
| v <sub>p</sub> * highest directional split proport                          | tion <sup>2</sup> (pc/h)  |                               | 293  |  |  |
| Free-Flow Sp  | eed from Field Measurement  |                               | Estimated Free-Flow Speed  |  |  |
| Field Measured speed S  | mi/   | Base free-flow speed          | d, BFFS <sub>FM</sub> 45.0 mi/h  |  |  |
| Field Measured speed, S <sub>FM</sub>                                       |   | Adj. for lane width ar        | nd shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) 1.3 mi/h |  |  |
| Observed volume, V <sub>f</sub>   | veh   | Adj. for access point         | ts, $f_{\Lambda}$ (Exhibit 20-6) 2.5 mi/h                                |  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +0                                 | 0.00776(V <sub>f</sub> / f <sub>HV</sub> ) <i>mi/</i>   | 'h I                          | S (FSS=BFFS- $f_{LS}$ - $f_A$ ) 41.2 mi/h                                |  |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi/</i>                     | /h) (Exhibit 20-11)   |                               | 4.1  |  |  |
| Average travel speed, ATS ( mi/h)   |   |                               | 33.0   |  |  |
| Percent Time-Spent-Following  | р пр  | <u> </u>                      |  |  |  |
| Grade Adjustment factor, f <sub>G</sub> (Exhib                              | uit 20-8)   |                               | 1.00   |  |  |
|   |   |                               |  |  |  |
| Passenger-car equivalents for truc  | ks, E <sub>T</sub> (Exhibit 20-10)  |                               | 1.1  |  |  |
| Passenger-car equivalents for RVs   |   |                               | 1.0  |  |  |
| Heavy-vehicle adjustment factor, f  |   |                               | 0.997  |  |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (F                |   |                               | 515  |  |  |
| v <sub>p</sub> * highest directional split proport                          |   |                               | 288  |  |  |
| Base percent time-spent-following,  | BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)   |                               | 36.4   |  |  |
| Adj. for directional distribution and                                       | no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12   | 2)                            | 21.7   |  |  |
| Percent time-spent-following, PTSI  | **  |                               | 58.1   |  |  |
| Level of Service and Other Performance Level of service, LOS (Exhibit 20-3) |   | <u> </u>                      | С  |  |  |
| /olume to capacity ratio, v/c=V <sub>D</sub> / 3                            | ·   |                               | 0.16   |  |  |
| Peak 15-min veh-miles of travel, V  |   |                               | 128  |  |  |
| Peak-hour vehicle-miles of travel,  |   |                               | 462  |  |  |
| Peak 15-min total travel time, TT <sub>15</sub>                             |   |                               | 3.9  |  |  |
| Notes   | 7 312   | <u> </u>                      |  |  |  |
| 10100   |   |                               |  |  |  |

| General Information   |  | Site Information                         |  |                   |
|---|--|--|--|-------------------|
| Analyst   | SKB  | Highway                                  | SR 222   |                   |
| Agency or Company   | TDOT/TranSystems                                   | From/To                                  | North of I-40  |                   |
| Date Performed<br>Analysis Time Period  | 04/18/2011<br>PM Peak Hour                         | Jurisdiction<br>Analysis Year            | Fayette County<br>2014                                     |                   |
| Project Description: Existing Cor   |  | r manyone real                           | 20   |                   |
| nput Data   |  |  |  |                   |
|   |  |  | Class I highway Class II                                   | highway           |
| <b> </b>  |  | .  | * *  |                   |
|   |  | $\exists$ $\Box$ $\Box$                  | Terrain Level Ro   | olling<br>7 veh/h |
|   |  | $\exists$ $17$ $1$ $1$                   | Directional split 60 / 4                                   | 40                |
| 2 - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - 2 - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> - <del>2</del> |  |  | Peak-hour factor, PHF 0.90<br>No-passing zone 100          |                   |
|   |  | - 1   \   /                              | % Trucks and Buses , P <sub>T</sub> 10 %                   |                   |
| Segment   | length, L <sub>t</sub> mi                          |  | % Recreational vehicles, P <sub>R</sub> 0%                 |                   |
|   |  |  | •••  |                   |
| 1   |  |  | Access points/ mi 10                                       |                   |
| Average Travel Speed  | -:- 00.7)  |  | 4.00   |                   |
| Grade adjustment factor, f <sub>G</sub> (Exhil  |  |  | 1.00   |                   |
| Passenger-car equivalents for true  | cks, E <sub>T</sub> (Exhibit 20-9)                 |  | 1.1  |                   |
| Passenger-car equivalents for RV  | s, E <sub>R</sub> (Exhibit 20-9)                   |  | 1.0  |                   |
| Heavy-vehicle adjustment factor, t  | $f_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$     |  | 0.990  |                   |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (   | PHF * f <sub>G</sub> * f <sub>HV</sub> )           |  | 1489   |                   |
| v <sub>p</sub> * highest directional split propo  |  |  | 893  |                   |
| Free-Flow Sp  | peed from Field Measurement                        |  | Estimated Free-Flow Speed                                  |                   |
| Field Measured apped S  | mi/h   | Base free-flow speed, BFF                | FS <sub>FM</sub>   | 45.0 mi/h         |
| Field Measured speed, S <sub>FM</sub>   |  | Adj. for lane width and sho              | oulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h          |
| Observed volume, V <sub>f</sub>   | veh/h  | Adj. for access points, f <sub>A</sub> ( | (Exhibit 20-6)   | 2.5 mi/h          |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +  | $-0.00776(V_f/f_{HV})$ mi/h                        | Free-flow speed, FFS (FS                 | SS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )                  | 41.2 mi/h         |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi</i>  | i/h) (Exhibit 20-11)                               |  | 1.6  |                   |
| Average travel speed, ATS ( mi/h)   | ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>     |  | 28.0   |                   |
| Percent Time-Spent-Following  |  |  |  |                   |
| Grade Adjustment factor, f <sub>G</sub> (Exhi   | bit 20-8)  |  | 1.00   |                   |
| Passenger-car equivalents for true  | cks, E <sub>T</sub> (Exhibit 20-10)                |  | 1.0  |                   |
| Passenger-car equivalents for RV  | s, E <sub>R</sub> (Exhibit 20-10)                  |  | 1.0  |                   |
| Heavy-vehicle adjustment factor, t  | $f_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$     |  | 1.000  |                   |
| 「wo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (   | PHF * f <sub>G</sub> * f <sub>HV</sub> )           |  | 1474   |                   |
| $v_{ m p}^{~*}$ highest directional split propo   | rtion <sup>2</sup> (pc/h)                          |  | 884  |                   |
| Base percent time-spent-following   | , BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)        |  | 72.6   |                   |
| Adj. for directional distribution and   | no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12) |  | 7.6  |                   |
| Percent time-spent-following, PTS   | * 1  |  | 80.3   |                   |
| Level of Service and Other Perf   |  |  |  |                   |
| Level of service, LOS (Exhibit 20-  |  |  | D 0.47   |                   |
| /olume to capacity ratio, v/c=V <sub>p</sub> /  |  |  | 0.47   |                   |
| Peak 15-min veh-miles of travel, \  |  |  | 369  |                   |
| Peak-hour vehicle-miles of travel,  |  |  | 1327   |                   |
| Peak 15-min total travel time, TT <sub>1</sub>  | <sub>5</sub> (veh-h)= VMT <sub>15</sub> /ATS       |  | 13.2   |                   |
| Notes   |  |  |  |                   |

Generated: 4/20/2011 11:09 AM

| General Information  |   | Site Information              |  |           |  |
|--|---|-------------------------------|--|-----------|--|
| Analyst  | SKB   | Highway                       | SR 222   |           |  |
| Agency or Company<br>Date Performed  | TDOT/TranSystems                              | From/To                       | I-40 to Pilot Dwy.   |           |  |
| Date Performed<br>Analysis Time Period   | 04/18/2011<br>PM Peak Hour                    | Jurisdiction<br>Analysis Year | Fayette County<br>2014   |           |  |
| Project Description: Existing Conditions   |   | , ,                           |  |           |  |
| nput Data  |   |                               |  |           |  |
|  |   |                               | Class I highway Class II h                                     | nighway   |  |
|  | <b>4</b> -5                                   | - + 4                         |  |           |  |
|  | Shoulder width                                | tt                            | Terrain Level Rolli Two-way hourly volume 667 ve               |           |  |
| <u> </u>   | Lane width                                    | _tt                           | Directional split 57 / 43                                      |           |  |
|  | Lane width Shoulder width                     | _ft                           | Peak-hour factor, PHF 0.90<br>No-passing zone 100              |           |  |
|  | Shoulder widdi                                |                               | % Trucks and Buses , P <sub>T</sub> 48 %                       |           |  |
| Segment length   | n, L <sub>t</sub> mi                          | Show North Arrow              | •  |           |  |
| 1  | 300 <b>5</b>                                  | :4                            | % Recreational vehicles, P <sub>R</sub> 0%                     |           |  |
|  |   |                               | Access points/ mi 10   |           |  |
| Average Travel Speed   |   | <u> </u>                      |  |           |  |
| Grade adjustment factor, f <sub>G</sub> (Exhibit 20-                                     | 7)  |                               | 1.00   |           |  |
| Passenger-car equivalents for trucks, E  | (Exhibit 20-9)                                |                               | 1.2  |           |  |
| Passenger-car equivalents for RVs, E <sub>R</sub> (                                      |   |                               | 1.0  |           |  |
| Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/                                     | $(1+ P_T(E_{T}-1)+P_R(E_{R}-1))$              |                               | 0.912  |           |  |
| Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF *                                  | $f_G * f_{HV}$                                |                               | 812  |           |  |
| v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h)                |   |                               | 463  |           |  |
| Free-Flow Speed fr   | om Field Measurement                          |                               | Estimated Free-Flow Speed                                      |           |  |
| Field Measured speed, S <sub>FM</sub>  | mi/h  | Base free-flow speed,         | BFFS <sub>FM</sub>   | 45.0 mi/h |  |
|  |   | Adj. for lane width and       | d shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h  |  |
| Observed volume, V <sub>f</sub>  | veh/i   | Adj. for access points        | , f <sub>A</sub> (Exhibit 20-6)                                | 2.5 mi/h  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +0.007  | $76(V_f/f_{HV})$ mi/h                         | Free-flow speed, FFS          | • •  | 41.2 mi/h |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi/h</i> ) (Ex                           | khibit 20-11)                                 |                               | 3.0  |           |  |
| Average travel speed, ATS ( mi/h) ATS=   |   |                               | 31.9   |           |  |
| Percent Time-Spent-Following   |   |                               |  |           |  |
| Grade Adjustment factor, f <sub>G</sub> (Exhibit 20-                                     | 8)  |                               | 1.00   |           |  |
|  |   |                               | 1.1  |           |  |
| Passenger-car equivalents for trucks, E <sub>1</sub>                                     | 1   |                               | 1.0  |           |  |
| Passenger-car equivalents for RVs, E <sub>R</sub> (                                      |   |                               |  |           |  |
| Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/                                     |   |                               | 0.954  |           |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (PHF *                         | -   |                               | 777  |           |  |
| v <sub>p</sub> * highest directional split proportion <sup>2</sup> (                     |   |                               | 443  |           |  |
| Base percent time-spent-following, BPT   |   |                               | 49.5   |           |  |
| Adj. for directional distribution and no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12) |   | )                             | 15.4   |           |  |
| Percent time-spent-following, PTSF(%)=   | **  |                               | 64.9   |           |  |
| Level of Service and Other Performan<br>Level of service, LOS (Exhibit 20-3 for C        |   |                               | С  |           |  |
| olume to capacity ratio, v/c=V <sub>p</sub> / 3,200                                      |   |                               | 0.25   |           |  |
| Peak 15-min veh-miles of travel, VMT <sub>15</sub>                                       | (veh- <i>mi</i> )= 0.25L <sub>t</sub> (V/PHF) |                               | 185  |           |  |
| Peak-hour vehicle-miles of travel, VMT <sub>6</sub>                                      | <u> </u>                                      |                               | 667  |           |  |
| Peak 15-min total travel time, TT <sub>15</sub> (veh-                                    |   |                               | 5.8  |           |  |
| Notes  | 10  | <u> </u>                      |  |           |  |
|  |   |                               |  |           |  |

| General Information  | Site Information                       |  |  |  |
|--|--|--|--|--|
| nalyst SKB   | Highway                                | SR 222   |  |  |
| gency or Company TDOT/TranSystems Date Performed 04/18/2011  | From/To                                | South of Pilot Dwy.  |  |  |
| Date Performed 04/18/2011 Analysis Time Period PM Peak Hour  | Jurisdiction<br>Analysis Year          | Fayette County<br>2014   |  |  |
| Project Description: Existing Conditions (No Build)  |  | · · · · · · · · · · · · · · · · · · ·                                |  |  |
| nput Data  |  |  |  |  |
|  |  | Class I highway Class II highway                                     |  |  |
|  |  |  |  |  |
| Shoulder width   |  | Terrain Level Rolling Two-way hourly volume 400 veh/h                |  |  |
| Lane width   |  | Directional split 64 / 36  |  |  |
| Lane width   |  | Peak-hour factor, PHF 0.90   |  |  |
| \$\frac{1}{4}\$ Shoulder width   | 1                                      | No-passing zone 100 % Trucks and Buses , P <sub>T</sub> 3%           |  |  |
| Segment length, L <sub>t</sub> mi  | 5024                                   | •  |  |  |
|  | al                                     | % Recreational vehicles, P <sub>R</sub> 0%                           |  |  |
|  |  | Access points/ mi 10   |  |  |
| Average Travel Speed   |  |  |  |  |
| Grade adjustment factor, f <sub>G</sub> (Exhibit 20-7)   |  | 1.00   |  |  |
| 'assenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-9)  |  | 1.7  |  |  |
| assenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-9)  |  | 1.0  |  |  |
| Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_{T}-1)+P_R(E_{R}-1))$  |  | 0.979  |  |  |
| wo-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ )  |  | 454  |  |  |
| p * highest directional split proportion <sup>2</sup> (pc/h)   |  | 291  |  |  |
| Free-Flow Speed from Field Measurement   |  | Estimated Free-Flow Speed  |  |  |
| rield Measured speed, S <sub>FM</sub> n  | Base free-flow speed, BF               |  |  |  |
|  | Adj. for lane width and sh             | noulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) 1.3 mi/h |  |  |
| · · · · · · · · · · · · · · · · · · ·  | Adj. for access points, f <sub>Δ</sub> | (Exhibit 20-6) 2.5 mi/h  |  |  |
| Free-flow speed, FFS FFS= $S_{FM}$ +0.00776( $V_f$ / $f_{HV}$ )  | ni/h Free-flow speed, FFS (F           |  |  |  |
| dj. for no-passing zones, f <sub>np</sub> ( <i>mi/h</i> ) (Exhibit 20-11)  |  | 4.3  |  |  |
| vverage travel speed, ATS ( <i>mi/h</i> ) ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>   |  | 33.3   |  |  |
| Percent Time-Spent-Following   | •                                      |  |  |  |
| Grade Adjustment factor, f <sub>G</sub> (Exhibit 20-8)   |  | 1.00   |  |  |
| Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-10)   | <u> </u>                               | 1.1  |  |  |
| - 1  |  | 1.0  |  |  |
| Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-10)  |  | 0.997  |  |  |
| leavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |  | 446  |  |  |
| wo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )                               |  |  |  |  |
| p * highest directional split proportion <sup>2</sup> (pc/h)   |  | 285  |  |  |
| Base percent time-spent-following, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)   | 12)                                    | 32.4   |  |  |
| dj. for directional distribution and no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-   | 12)                                    | 22.2   |  |  |
| Percent time-spent-following, PTSF(%)=BPTSF+f d/np  Level of Service and Other Performance Measures                              |  | 54.6   |  |  |
| evel of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)   |  | В  |  |  |
| olume to capacity ratio, v/c=V <sub>p</sub> / 3,200  |  | 0.14   |  |  |
| Peak 15-min veh-miles of travel, VMT <sub>15</sub> (veh- mi)= 0.25L <sub>t</sub> (V/PHF)   |  | 111  |  |  |
| Peak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh- <i>mi</i> )=V*L <sub>t</sub>  |  | 400  |  |  |
| Peak 15-min total travel time, TT <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS  |  | 3.3  |  |  |
| votes  | I                                      |  |  |  |
| . If Vp >= 3,200 pc/h, terminate analysis-the LOS is F.  |  |  |  |  |

| General Information  |   | Site Information                          |  |  |  |
|--|---|---|--|--|--|
| Analyst  | SKB   | Highway                                   | SR 222   |  |  |
| Agency or Company Date Performed   | TDOT/TranSystems<br>04/18/2011  | From/To                                   | North of I-40<br>Fayette County                                    |  |  |
| Analysis Time Period   | 04/18/2011<br>AM Peak Hour  | Jurisdiction Analysis Year                | Payette County<br>2034   |  |  |
| Project Description: Existing Co   |   | i manyere i ean                           |  |  |  |
| nput Data  |   |   |  |  |  |
|  |   | Г   | Class I highway Class II highway                                   |  |  |
|  |   | 4   | errain Level Rolling   |  |  |
| <u> </u>   | Shoulder width  |   | wo-way hourly volume 1503 veh/h                                    |  |  |
|  | Lane width  |   | irectional split 64 / 36   |  |  |
| -  | Lane width Shoulder width   |   | eak-hour factor, PHF 0.90<br>o-passing zone 100                    |  |  |
| L  | 3 Shoulder width  |   | % Trucks and Buses , P <sub>T</sub> 10 %                           |  |  |
| Segmen   | t length, L <sub>t</sub> mi   | 50.54                                     | •  |  |  |
|  |   |   | Recreational vehicles, P <sub>R</sub> 0%                           |  |  |
|  |   | A   | ccess points/ mi 10  |  |  |
| Average Travel Speed   |   |   |  |  |  |
| Grade adjustment factor, f <sub>G</sub> (Exh                               | nibit 20-7)   |   | 1.00   |  |  |
| Passenger-car equivalents for tru  | •   |   | 1.1  |  |  |
| Passenger-car equivalents for R  |   |   | 1.0  |  |  |
|  | $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$  |   | 0.990  |  |  |
| Fwo-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ ) |   |   | 1687   |  |  |
| v <sub>p</sub> * highest directional split prop                            | ortion <sup>2</sup> (pc/h)  |   | 1080   |  |  |
| Free-Flow S  | Speed from Field Measurement  |   | Estimated Free-Flow Speed  |  |  |
| Field Measured speed S   | mi/h  | Base free-flow speed, BFF                 | S <sub>FM</sub> 45.0 mi/h  |  |  |
| Field Measured speed, S <sub>FM</sub>                                      |   | Adj. for lane width and sho               | ulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) 1.3 mi/h |  |  |
| Observed volume, V <sub>f</sub>  | veh/f   | Adj. for access points, f <sub>Δ</sub> (E |  |  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub>                                   | $_{\rm H}+0.00776(V_{\rm f}/{\rm f_{HV}})$ mi/h   | Free-flow speed, FFS (FS                  |  |  |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>n</i>                      | ni/h) (Exhibit 20-11)   |   | 1.4  |  |  |
| Average travel speed, ATS ( mi/l   |   |   | 26.7   |  |  |
| Percent Time-Spent-Following   |   |   |  |  |  |
| Grade Adjustment factor, f <sub>G</sub> (Exh                               | nibit 20-8)   |   | 1.00   |  |  |
| Passenger-car equivalents for tru  |   |   | 1.0  |  |  |
| Passenger-car equivalents for R'   | 1   |   | 1.0  |  |  |
|  | , f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |   | 1.000  |  |  |
| Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/                           |   |   | 1670   |  |  |
| $v_p$ * highest directional split prop                                     | -   |   | 1069   |  |  |
| '  | ug, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)   |   | 77.0   |  |  |
|  | nd no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)   |   | 6.4  |  |  |
| Percent time-spent-following, PT   |   |   | 83.4   |  |  |
| Level of Service and Other Per   |   | <b>i</b>                                  |  |  |  |
| evel of service, LOS (Exhibit 20   | -3 for Class I or 20-4 for Class II)  |   | D  |  |  |
| /olume to capacity ratio, v/c=V <sub>p</sub> /                             | 7 3,200   |   | 0.53   |  |  |
| eak 15-min veh-miles of travel,  | VMT <sub>15</sub> (veh- <i>mi</i> )= 0.25L <sub>t</sub> (V/PHF)                                   |   | 418  |  |  |
| Peak-hour vehicle-miles of travel  | I, VMT <sub>60</sub> (veh- <i>mi</i> )=V*L <sub>t</sub>   |   | 1503   |  |  |
| Peak 15-min total travel time, TT  | 15(veh-h)= VMT <sub>15</sub> /ATS   |   | 15.7   |  |  |
| Votes  |   |   |  |  |  |
| 1. If Vp >= 3,200 pc/h, terminate  | analysis-the LOS is F.  |   |  |  |  |

| General Information                                       |   | Site Information                       |  |  |  |
|---|---|--|--|--|--|
| Analyst   | SKB   | Highway                                | SR 222   |  |  |
| Agency or Company   | TDOT/TranSystems  | From/To                                | I-40 to Pilot Dwy.   |  |  |
| Date Performed<br>Analysis Time Period                    | 04/18/2011<br>AM Peak Hour  | Jurisdiction<br>Analysis Year          | Fayette County<br>2034   |  |  |
| Project Description: Existing Co                          |   | , maryoto 1 odi                        | 2007   |  |  |
| nput Data   | · · · · · ·   |  |  |  |  |
|   |   |  | Class I highway Class II highway                                     |  |  |
| L   |   | 4                                      |  |  |  |
|   | \$\frac{1}{2} Shoulder width  | _tt                                    | Terrain Level Rolling Two-way hourly volume 791 yeh/h                |  |  |
| -   | Lane width  |  | Two-way hourly volume 791 veh/h Directional split 52 / 48            |  |  |
|   | Lane width  | _ft                                    | Peak-hour factor, PHF 0.90   |  |  |
|   | Shoulder width  | = <u>*</u>                             | No-passing zone 100  |  |  |
| Sormani   | t length, L <sub>t</sub> mi   | Show North Arrow                       | % Trucks and Buses , P <sub>T</sub> 48 %                             |  |  |
| Segment   | riengal, L  | J                                      | % Recreational vehicles, P <sub>R</sub> 0%                           |  |  |
|   |   |  | Access points/ mi 10   |  |  |
| Average Travel Speed                                      |   | •                                      |  |  |  |
| Grade adjustment factor, f <sub>G</sub> (Exh              | ibit 20-7)  |  | 1.00   |  |  |
| Passenger-car equivalents for tru                         | ucks, E <sub>T</sub> (Exhibit 20-9)   |  | 1.2  |  |  |
| Passenger-car equivalents for R\                          | Vs, E <sub>R</sub> (Exhibit 20-9)   |  | 1.0  |  |  |
| Heavy-vehicle adjustment factor,                          | $f_{HV} = 1/(1 + P_T(E_T-1) + P_R(E_R-1))$  |  | 0.912  |  |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ | (PHF * f <sub>G</sub> * f <sub>HV</sub> )   |  | 963  |  |  |
| v <sub>p</sub> * highest directional split propo          | ortion <sup>2</sup> (pc/h)  |  | 501  |  |  |
| Free-Flow S   | peed from Field Measurement   |  | Estimated Free-Flow Speed  |  |  |
| Field Magazzad apaed C                                    | mi/h  | Base free-flow speed, BF               | FFS <sub>FM</sub> 45.0 mi/l  |  |  |
| Field Measured speed, S <sub>FM</sub>                     |   | Adj. for lane width and sh             | noulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) 1.3 mi/h |  |  |
| Observed volume, V <sub>f</sub>                           | veh/l   | Adj. for access points, f <sub>A</sub> | (Exhibit 20-6) 2.5 <i>mi/h</i>                                       |  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub>                  | $+0.00776(V_f/f_{HV})$ mi/h   | Free-flow speed, FFS (F                |  |  |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>n</i>     | ni/h) (Exhibit 20-11)   |  | 2.7  |  |  |
| Average travel speed, ATS ( mi/h                          |   |  | 31.1   |  |  |
| Percent Time-Spent-Following                              |   | ,                                      |  |  |  |
| Grade Adjustment factor, f <sub>G</sub> (Exh              | nibit 20-8)   |  | 1.00   |  |  |
|   |   |  | 1.1  |  |  |
| Passenger-car equivalents for tru                         | '   |  | 1.0  |  |  |
|   | f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |  | 0.954  |  |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ |   |  | 921  |  |  |
| $v_p^*$ highest directional split propo                   |   |  | 479  |  |  |
| •   | g, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)  |  | 55.5   |  |  |
|   | d no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  |  | 13.7   |  |  |
| Percent time-spent-following, PT                          | · · ·   |  | 69.2   |  |  |
| Level of Service and Other Per                            |   |  |  |  |  |
| evel of service, LOS (Exhibit 20                          | -3 for Class I or 20-4 for Class II)  |  | С  |  |  |
| /olume to capacity ratio, v/c=V <sub>p</sub> /            | 3,200   |  | 0.30   |  |  |
| Peak 15-min veh-miles of travel,                          | VMT <sub>15</sub> (veh- <i>mi</i> )= 0.25L <sub>t</sub> (V/PHF)                                 |  | 220  |  |  |
| Peak-hour vehicle-miles of travel                         | , VMT <sub>60</sub> (veh- <i>mi</i> )=V*L <sub>t</sub>  |  | 791  |  |  |
| Peak 15-min total travel time, TT                         | <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS   |  | 7.1  |  |  |
| Notes   | analysis the LOC is 5   |  |  |  |  |
| 1. If Vp >= 3,200 pc/h, terminate                         | analysis-the LOS is F.<br>= 1,700 pc/h, terminated anlysis-the LOS                              |  |  |  |  |

| General Information   |   | Site Information                          |   |           |  |
|---|---|---|---|-----------|--|
| Analyst   | SKB   | Highway                                   | SR 222  |           |  |
| Agency or Company   | TDOT/TranSystems  | From/To                                   | South of Pilot Dwy.                                       |           |  |
| Date Performed<br>Analysis Time Period                      | 04/18/2011<br>AM Peak Hour  | Jurisdiction<br>Analysis Year             | Fayette County<br>2034                                    |           |  |
| Project Description: Existing Con                           |   | 1 ,                                       |   |           |  |
| nput Data   |   |   |   |           |  |
|   |   | l I                                       | Class I highway Class II                                  | highway   |  |
| <b> </b>  |   |   | errain Level Ro   |           |  |
|   |   |   |   | veh/h     |  |
|   |   |   | irectional split 58 / 4                                   | 42        |  |
| -   |   |   | eak-hour factor, PHF 0.90<br>o-passing zone 100           |           |  |
|   |   | - 1   \   /                               | % Trucks and Buses , P <sub>T</sub> 3 %                   |           |  |
| Segment   | length, L <sub>t</sub> mi   | - 502 d                                   | Recreational vehicles, P <sub>R</sub> 0%                  |           |  |
| ÿI  |   |   | ccess points/ mi  |           |  |
| Average Travel Speed  |   | ^   | ccess points/ mi /c                                       | ,         |  |
| <u> </u>  | nit 20.7\   |   | 1.00  |           |  |
| Grade adjustment factor, f <sub>G</sub> (Exhib              |   |   |   |           |  |
| Passenger-car equivalents for truc                          | i   |   | 1.2   |           |  |
| Passenger-car equivalents for RV                            | s, E <sub>R</sub> (Exhibit 20-9)  |   | 1.0   |           |  |
| Heavy-vehicle adjustment factor, f                          | $_{HV}$ =1/ (1+ $P_T$ ( $E_T$ -1)+ $P_R$ ( $E_R$ -1) )  |   | 0.994   |           |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ ( | PHF * f <sub>G</sub> * f <sub>HV</sub> )  |   | 608   |           |  |
| v <sub>p</sub> * highest directional split propo            |   |   | 353   |           |  |
| Free-Flow Sp  | eed from Field Measurement  |   | Estimated Free-Flow Speed                                 |           |  |
| Field Managurad appead S                                    | mi/h  | Base free-flow speed, BFF                 | S <sub>FM</sub>   | 45.0 mi/h |  |
| Field Measured speed, S <sub>FM</sub>                       |   | Adj. for lane width and sho               | ulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h  |  |
| Observed volume, V <sub>f</sub>                             | veh/h   | Adj. for access points, f <sub>A</sub> (I | Exhibit 20-6)   | 2.5 mi/h  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +                  | $0.00776(V_f/f_{HV})$ mi/h  | Free-flow speed, FFS (FS                  |   | 41.2 mi/h |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi</i>      | /h) (Exhibit 20-11)   |   | 3.9   |           |  |
| Average travel speed, ATS ( mi/h)                           | ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>  |   | 32.6  |           |  |
| Percent Time-Spent-Following                                |   |   |   |           |  |
| Grade Adjustment factor, f <sub>G</sub> (Exhi               | pit 20-8)   |   | 1.00  |           |  |
| Passenger-car equivalents for trud                          | cks, E <sub>T</sub> (Exhibit 20-10)   |   | 1.1   |           |  |
| Passenger-car equivalents for RV                            | s, E <sub>R</sub> (Exhibit 20-10)   |   | 1.0   |           |  |
| Heavy-vehicle adjustment factor, f                          | <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |   | 0.997   |           |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ ( | PHF * f <sub>G</sub> * f <sub>HV</sub> )  |   | 606   |           |  |
| v <sub>p</sub> * highest directional split propo            | rtion <sup>2</sup> (pc/h)   |   | 351   |           |  |
| Base percent time-spent-following                           | , BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)   |   | 41.3  |           |  |
| Adj. for directional distribution and                       | no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  |   | 20.5  |           |  |
| Percent time-spent-following, PTS                           | F(%)=BPTSF+f <sub>d/np</sub>  |   | 61.8  |           |  |
| Level of Service and Other Perf                             |   |   |   |           |  |
| Level of service, LOS (Exhibit 20-                          |   |   | C   |           |  |
| /olume to capacity ratio, v/c=V <sub>p</sub> / 3            |   |   | 0.19  |           |  |
| Peak 15-min veh-miles of travel, \                          | <u> </u>  |   | 151   |           |  |
| Peak-hour vehicle-miles of travel,                          |   |   | 544   |           |  |
| Peak 15-min total travel time, TT <sub>1</sub>              | <sub>5</sub> (veh-h)= VMT <sub>15</sub> /ATS  |   | 4.6   |           |  |
| Notes   |   |   |   |           |  |

Generated: 4/20/2011 11:13 AM

| General Information  | TWO-WAY TWO-LANE  | Site Information                                |   |  |  |
|--|---|---|---|--|--|
| Analyst  | SKB   | Highway   | SR 222  |  |  |
| Agency or Company Date Performed   | TDOT/TranSystems<br>04/18/2011                                  | From/To   | North of I-40   |  |  |
| Analysis Time Period   | 04/18/2011<br>PM Peak Hour                                      | Jurisdiction<br>Analysis Year                   | Fayette County<br>2034  |  |  |
| Project Description: Existing Co   |   | i many oto 1 com                                |   |  |  |
| nput Data  |   |   |   |  |  |
|  |   | l I   | Class I highway   |  |  |
|  |   | 4   |   |  |  |
|  | Shoulder width  | <del>-</del>                                    | Ferrain   |  |  |
|  | Lane width  |   | Directional split 61 / 39   |  |  |
|  | Lane width  |   | Peak-hour factor, PHF 0.90  |  |  |
|  | Shoulder width  | 1   | Io-passing zone 100<br>% Trucks and Buses , P <sub>T</sub> 10 %     |  |  |
| Segment  | length, L <sub>t</sub> mi                                       | 5024  | •   |  |  |
| Segment  | rengal, 4 III   | .  %  | 6 Recreational vehicles, P <sub>R</sub> 0%                          |  |  |
|  |   | A   | access points/ mi 10  |  |  |
| Verage Travel Speed  |   | <u>'</u>  |   |  |  |
| Grade adjustment factor, f <sub>G</sub> (Exh                               | ibit 20-7)  |   | 1.00  |  |  |
| Passenger-car equivalents for tru  | icks, E <sub>T</sub> (Exhibit 20-9)                             |   | 1.1   |  |  |
| Passenger-car equivalents for R\   | /s, E <sub>R</sub> (Exhibit 20-9)                               |   | 1.0   |  |  |
| Heavy-vehicle adjustment factor,   | $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$                            |   | 0.990   |  |  |
| Fwo-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ ) |   |   | 1507  |  |  |
| /p * highest directional split propo                                       | ortion <sup>2</sup> (pc/h)                                      |   | 919   |  |  |
| Free-Flow S  | peed from Field Measurement                                     |   | Estimated Free-Flow Speed   |  |  |
| Gold Maggurad appead C   | mi/l  | Base free-flow speed, BFF                       | FS <sub>FM</sub> 45.0 mi/h  |  |  |
| Field Measured speed, S <sub>FM</sub>                                      |   | Adj. for lane width and sho                     | oulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) 1.3 mi/h |  |  |
| Observed volume, V <sub>f</sub>  | veh/  | /h<br>Adj. for access points, f <sub>A</sub> (I |   |  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub>                                   | $+0.00776(V_f/f_{HV})$ mi/l                                     | h Free-flow speed, FFS (FS                      |   |  |  |
| Adj. for no-passing zones, $f_{np}$ ( $r$                                  | <i>ni/h</i> ) (Exhibit 20-11)                                   |   | 1.6   |  |  |
| Average travel speed, ATS ( mi/h   |   |   | 27.9  |  |  |
| Percent Time-Spent-Following   | h uh  | <u> </u>  |   |  |  |
| Grade Adjustment factor, f <sub>G</sub> (Exh                               | ibit 20-8)  |   | 1.00  |  |  |
|  |   |   |   |  |  |
| Passenger-car equivalents for tru  | 1.1   |   | 1.0   |  |  |
| Passenger-car equivalents for R\   |   |   | 1.0   |  |  |
| Heavy-vehicle adjustment factor,   |   |   | 1.000   |  |  |
| Γwo-way flow rate <sup>1</sup> , ν <sub>p</sub> (pc/h)=V/                  |   |   | 1492  |  |  |
| v <sub>p</sub> * highest directional split propo                           |   |   | 910   |  |  |
|  | g, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)                    | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \           | 73.1  |  |  |
|  | d no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12             | )   | 7.5   |  |  |
| Percent time-spent-following, PTS  | **  |   | 80.6  |  |  |
| Level of Service and Other Per<br>Level of service, LOS (Exhibit 20-       | -3 for Class I or 20-4 for Class II)                            |   | D   |  |  |
| Volume to capacity ratio, v/c=V <sub>p</sub> / 3,200                       |   |   | 0.47  |  |  |
|  | VMT <sub>15</sub> (veh- <i>mi</i> )= 0.25L <sub>t</sub> (V/PHF) |   | 373   |  |  |
| Peak-hour vehicle-miles of travel  |   |   | 1343  |  |  |
| Peak 15-min total travel time, TT.   |   |   | 13.4  |  |  |
| Notes  | 15' '0  | <u> </u>  |   |  |  |
|  | analysis-the LOS is F.  |   |   |  |  |

|   | WAY SEGMENT WORKSHEET  |                       |
|---|--|-----------------------|
| General Information Analyst SKB   | Site Information  Highway SR 222   |                       |
| Agency or Company TDOT/TranSystems Date Performed 04/18/2011  | From/To I-40 to Pilot Dwy. Jurisdiction Fayette County   |                       |
| Analysis Time Period PM Peak Hour  Project Description: Existing Conditions (No Build)  | Analysis Year 2034   |                       |
| Input Data  |  |                       |
| Shoulder widthft  | Class I highway Class II  Terrain Level Ro  Two-way hourly volume 8150  Directional split 5374                                     | olling<br>veh/h       |
| Lane widthtt  Shoulder widthtt  Segment length, L <sub>t</sub> mi   | Peak-hour factor, PHF 0.90 No-passing zone 100 % Trucks and Buses , P <sub>T</sub> 48 % % Recreational vehicles, P <sub>R</sub> 0% | )<br>)<br>⁄6          |
|   | Access points/ mi 10   | )                     |
| Average Travel Speed  | <u> </u>   |                       |
| Grade adjustment factor, f <sub>G</sub> (Exhibit 20-7)  | 1.00   |                       |
| Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-9)   | 1.2  |                       |
| Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-9)  | 1.0  |                       |
| Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$   | 0.912  |                       |
| Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ )  | 992  |                       |
| v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h)   | 526  |                       |
| Free-Flow Speed from Field Measurement  | Estimated Free-Flow Speed  |                       |
| Field Measured speed, S <sub>FM</sub> mi/h  Observed volume, V. veh/h   | Base free-flow speed, BFFS <sub>FM</sub> Adj. for lane width and shoulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5)      | 45.0 mi/h<br>1.3 mi/h |
|   | Adj. for access points, f <sub>A</sub> (Exhibit 20-6)  | 2.5 mi/h              |
| Free-flow speed, FFS FFS= $S_{FM}$ +0.00776( $V_{f}$ / $f_{HV}$ ) mi/h  | Free-flow speed, FFS (FSS=BFFS- $f_{LS}$ - $f_A$ )   | 41.2 mi/h             |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi/h</i> ) (Exhibit 20-11)  | 2.6  |                       |
| Average travel speed, ATS ( <i>mi/h</i> ) ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>  | 30.9   |                       |
| Percent Time-Spent-Following  | T  |                       |
| Grade Adjustment factor, f <sub>G</sub> (Exhibit 20-8)  | 1.00   |                       |
| Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-10)  | 1.1  |                       |
| Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-10)   | 1.0  |                       |
| Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )  | 0.954  |                       |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (PHF * f <sub>G</sub> * f <sub>HV</sub> )   | 949  |                       |
| v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h)   | 503  |                       |
| Base percent time-spent-following, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)  | 56.6   |                       |
| Adj. for directional distribution and no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  | 13.3   |                       |
| Percent time-spent-following, PTSF(%)=BPTSF+f d/np  | 69.9   |                       |
| Level of Service and Other Performance Measures  Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)  | С  |                       |
| Volume to capacity ratio, v/c=V <sub>p</sub> / 3,200  | 0.31   |                       |
| Peak 15-min veh-miles of travel, VMT <sub>15</sub> (veh- mi)= 0.25L <sub>t</sub> (V/PHF)  | 226  |                       |
| Peak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh- <i>mi</i> )=V*L <sub>t</sub>   | 815  |                       |
| Peak 15-min total travel time, TT <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS   | 7.3  |                       |
| Notes   |  |                       |
| <ol> <li>If Vp &gt;= 3,200 pc/h, terminate analysis-the LOS is F.</li> <li>If highest directional split Vp&gt;= 1,700 pc/h, terminated anlysis-the LOS is F.</li> </ol> |  |                       |

Generated: 4/20/2011 11:14 AM

| General Information   | TWO-WAY TWO-LANE  | Site Information                          |  |  |  |
|---|---|---|--|--|--|
| Analyst   | SKB   | Highway                                   | SR 222   |  |  |
| Agency or Company Date Performed  | TDOT/TranSystems<br>04/18/2011                                  | From/To<br>Jurisdiction                   | South of Pilot Dwy.<br>Fayette County                              |  |  |
| Analysis Time Period  | PM Peak Hour  | Analysis Year                             | 2034   |  |  |
| Project Description: Existing Co  | nditions (No Build)   |   |  |  |  |
| nput Data   |   |   |  |  |  |
|   |   |   | Class I highway Class II highway                                   |  |  |
|   | 1 Shoulder width  |   | errain Level Rolling   |  |  |
| •   | Lane width  | tt Tv                                     | wo-way hourly volume 500 veh/h                                     |  |  |
|   | Lane width  |   | irectional split 63 / 37 eak-hour factor, PHF 0.90                 |  |  |
|   | \$\ Shoulder width  | _ <u>tt</u>                               | o-passing zone 100   |  |  |
| +   | V   | Show North Arrow %                        | 6 Trucks and Buses , P <sub>T</sub> 3 %                            |  |  |
| Segment   | t length, L <sub>t</sub> mi                                     | %   | Recreational vehicles, P <sub>R</sub> 0%                           |  |  |
|   |   | Ac  | ccess points/ mi 10  |  |  |
| Average Travel Speed  |   |   |  |  |  |
| Grade adjustment factor, f <sub>G</sub> (Exh                              | ibit 20-7)  |   | 1.00   |  |  |
| Passenger-car equivalents for tru   | ucks, E <sub>T</sub> (Exhibit 20-9)                             |   | 1.7  |  |  |
| Passenger-car equivalents for R\  | Vs, E <sub>R</sub> (Exhibit 20-9)                               |   | 1.0  |  |  |
| Heavy-vehicle adjustment factor,  | $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$                            |   | 0.979  |  |  |
| wo-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ ) |   |   | 567  |  |  |
| v <sub>p</sub> * highest directional split propo                          | p * highest directional split proportion <sup>2</sup> (pc/h)    |   | 357  |  |  |
| Free-Flow S   | Speed from Field Measurement                                    |   | Estimated Free-Flow Speed  |  |  |
| Field Measured speed S  | mi/h  | Base free-flow speed, BFFS                | S <sub>FM</sub> 45.0 mi/h  |  |  |
| Field Measured speed, S <sub>FM</sub>                                     |   | Adj. for lane width and shou              | ulder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) 1.3 mi/h |  |  |
| Observed volume, V <sub>f</sub>   | veh/t   | Adj. for access points, f <sub>Δ</sub> (E | Exhibit 20-6) 2.5 <i>mi/h</i>                                      |  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub>                                  | $+0.00776(V_{f}/f_{HV})$ mi/h                                   | Free-flow speed, FFS (FSS                 |  |  |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>m</i>                     | ni/h) (Exhibit 20-11)   |   | 4.0  |  |  |
| Average travel speed, ATS ( mi/h  | n) ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>               |   | 32.8   |  |  |
| Percent Time-Spent-Following  |   |   |  |  |  |
| Grade Adjustment factor, f <sub>G</sub> (Exh                              | nibit 20-8)   |   | 1.00   |  |  |
| Passenger-car equivalents for tru   |   |   | 1.1  |  |  |
| Passenger-car equivalents for R\  | 1.1   |   | 1.0  |  |  |
| Heavy-vehicle adjustment factor,  | •   |   | 0.997  |  |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/                 |   |   | 557  |  |  |
| /p * highest directional split propo                                      | -   |   | 351  |  |  |
| •   | g, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)                    |   | 38.7   |  |  |
| Adj. for directional distribution an                                      | d no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)            |   | 21.1   |  |  |
| Percent time-spent-following, PT  | SF(%)=BPTSF+f <sub>d/np</sub>                                   |   | 59.8   |  |  |
| Level of Service and Other Per  |   |   |  |  |  |
| ·   | -3 for Class I or 20-4 for Class II)                            |   | C  |  |  |
| /olume to capacity ratio, v/c=V <sub>p</sub> /                            |   |   | 0.18   |  |  |
|   | VMT <sub>15</sub> (veh- <i>mi</i> )= 0.25L <sub>t</sub> (V/PHF) |   | 139  |  |  |
| Peak-hour vehicle-miles of travel   |   |   | 500  |  |  |
| Peak 15-min total travel time, TT.  Votes                                 | <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS                   |   | 4.2  |  |  |
| <b>V</b> U(で3   |   |   |  |  |  |

| General Information   |   | Site Information                                     |  |  |  |
|---|---|--|--|--|--|
| Analyst   | SKB   | Highway  | Dancyville Road  |  |  |
| Agency or Company   | TDOT/TranSystems  | From/To  | North of I-40  |  |  |
| Date Performed<br>Analysis Time Period                                    | 04/18/2011<br>AM Peak Hour  | Jurisdiction<br>Analysis Year                        | Fayette County<br>2014                                   |  |  |
| Project Description: Existing Co  |   | ranaryolo roan                                       | 2011   |  |  |
| Input Data  |   |  |  |  |  |
|   |   | Class I  | highway Class II highway                                 |  |  |
| <b>+</b>  |   | -4   | Level Rolling  |  |  |
|   | \$\$ Shoulder width   | tt Terrain Two-way ho                                | <del>-</del>   |  |  |
|   | Lane width  | Directional s  | split 56 / 44  |  |  |
| -   | Lane width Shoulder width   | Peak-hour fa No-passing                              |  |  |  |
|   | I Shoulder width ft _   |  | nd Buses , P <sub>T</sub> 2 %                            |  |  |
| Segmen  | t length, L <sub>t</sub> mi   | 500000000000000000000000000000000000000              | , I  |  |  |
| 1   | 5   |  | nal vehicles, P <sub>R</sub> 0%                          |  |  |
|   |   | Access poin  | ts/ <i>mi</i> 10   |  |  |
| Average Travel Speed  |   |  |  |  |  |
| Grade adjustment factor, f <sub>G</sub> (Exh                              |   |  | 1.00   |  |  |
| Passenger-car equivalents for tru   | •   |  | 1.7  |  |  |
| Passenger-car equivalents for R   |   |  | 1.0  |  |  |
|   | $f_{HV} = 1/(1 + P_T(E_{T}-1) + P_R(E_{R}-1))$  |  | 0.986  |  |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/                 | (PHF * f <sub>G</sub> * f <sub>HV</sub> )   |  | 224  |  |  |
| v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h) |   |  | 125  |  |  |
| Free-Flow Speed from Field Measurement                                    |   | Estimate   | Estimated Free-Flow Speed                                |  |  |
| Field Measured speed, S <sub>FM</sub> mi/h                                |   | Base free-flow speed, BFFS <sub>FM</sub>             | 45.0 mi/h  |  |  |
| Observed volume, V <sub>f</sub>   | veh/h   | Adj. for lane width and shoulder width               | n <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) 1.3 mi/h |  |  |
| '   |   | Adj. for access points, f <sub>A</sub> (Exhibit 20-6 | 6) 2.5 mi/h  |  |  |
| Free-flow speed, FFS FFS=S <sub>FN</sub>                                  | $_{\rm H}+0.00776(V_{\rm f}/f_{\rm HV})$ mi/h   | Free-flow speed, FFS (FSS=BFFS-f <sub>L</sub>        | _S <sup>-f</sup> A) 41.2 mi/h                            |  |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>r</i>                     | ni/h) (Exhibit 20-11)   |  | 3.6  |  |  |
| Average travel speed, ATS ( mi/l  |   |  | 35.8   |  |  |
| Percent Time-Spent-Following  | , ,   |  |  |  |  |
| Grade Adjustment factor, f <sub>G</sub> (Exh                              | nibit 20-8)   |  | 1.00   |  |  |
| Passenger-car equivalents for tru   | ucks, E <sub>T</sub> (Exhibit 20-10)  |  | 1.1  |  |  |
| Passenger-car equivalents for R   | Vs, E <sub>R</sub> (Exhibit 20-10)  |  | 1.0  |  |  |
|   | , f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |  | 0.998  |  |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/                 |   |  | 222  |  |  |
| v <sub>p</sub> * highest directional split prop                           |   |  | 124  |  |  |
| '   | ng, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)   |  | 17.7   |  |  |
|   | nd no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)   |  | 23.0   |  |  |
| Percent time-spent-following, PT  | · · · · · · · · · · · · · · · · · · ·   |  | 40.7   |  |  |
| Level of Service and Other Per  | *   |  |  |  |  |
|   | 1-3 for Class I or 20-4 for Class II)   |  | В  |  |  |
| Volume to capacity ratio, v/c=V <sub>p</sub> /                            | 7 3,200   |  | 0.07   |  |  |
| Peak 15-min veh-miles of travel,  | VMT <sub>15</sub> (veh- <i>mi</i> )= 0.25L <sub>t</sub> (V/PHF)                                   |  | 55   |  |  |
| Peak-hour vehicle-miles of trave  | I, VMT <sub>60</sub> (veh- <i>mi</i> )=V*L <sub>t</sub>   |  | 199  |  |  |
| Peak 15-min total travel time, TT   | <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS   |  | 1.5  |  |  |
| Notes   |   |  |  |  |  |
| 1. If Vp >= 3,200 pc/h, terminate   | analysis-the LOS is F.  |  |  |  |  |

| General Information  |  | Site Information                          |  |  |  |
|--|--|---|--|--|--|
| Analyst  | SKB  | Highway                                   | Dancyville Road  |  |  |
| Agency or Company Date Performed   | TDOT/TranSystems<br>04/18/2011                         | From/To                                   | South of I-40  |  |  |
| Analysis Time Period   | 04/18/2011<br>AM Peak Hour                             | Jurisdiction<br>Analysis Year             | Fayette County<br>2014   |  |  |
| Project Description: Existing Con-   |  | , manyoto i can                           |  |  |  |
| nput Data  |  |   |  |  |  |
|  |  | Г   | Class I highway Class II highway   |  |  |
|  |  | 4   _                                     |  |  |  |
|  | Shoulder width   |   | Ferrain Level Rolling wo-way hourly volume 206 veh/h   |  |  |
| -  | Lane width   |   | irectional split 250 Verim |  |  |
|  | Lane width   |   | eak-hour factor, PHF 0.90  |  |  |
|  | Shoulder width   |   | o-passing zone 100   |  |  |
| Segment I  | ength, L <sub>t</sub> mi                               | 5024                                      | % Trucks and Buses , P <sub>T</sub> 2 %  |  |  |
| Segment  | engui, L   | %   | Recreational vehicles, P <sub>R</sub> 0%   |  |  |
|  |  | A   | ccess points/ mi 10  |  |  |
| Average Travel Speed   |  | •   |  |  |  |
| Grade adjustment factor, f <sub>G</sub> (Exhib                             | oit 20-7)  |   | 1.00   |  |  |
| Passenger-car equivalents for truc   | ks, E <sub>T</sub> (Exhibit 20-9)                      |   | 1.7  |  |  |
| Passenger-car equivalents for RVs  | s, E <sub>R</sub> (Exhibit 20-9)                       |   | 1.0  |  |  |
| Heavy-vehicle adjustment factor, f   | $_{HV}$ =1/ (1+ $P_{T}(E_{T}$ -1)+ $P_{R}(E_{R}$ -1) ) |   | 0.986  |  |  |
| Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ ) |  |   | 232  |  |  |
| $v_{ m p}^{-*}$ highest directional split propor                           | tion <sup>2</sup> (pc/h)                               |   | 151  |  |  |
| Free-Flow Sp   | eed from Field Measurement                             |   | Estimated Free-Flow Speed  |  |  |
| Field Measured appeal C  | mi/h   | Base free-flow speed, BFF                 | S <sub>FM</sub> 45.0 mi/h  |  |  |
| Field Measured speed, S <sub>FM</sub>                                      |  | Adj. for lane width and sho               | ulder width <sup>3</sup> , f <sub>IS</sub> (Exhibit 20-5) 1.3 mi/h   |  |  |
| Observed volume, V <sub>f</sub>  | veh/l  | Adj. for access points, f <sub>A</sub> (E |  |  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +6                                | $0.00776(V_f/f_{HV})$ mi/h                             | Free-flow speed, FFS (FS                  |  |  |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi/</i>                    | /b) (Exhibit 20-11)                                    | Tree now speed, 110 (10)                  | 3.7  |  |  |
| Average travel speed, ATS ( <i>mi/h</i> )                                  |  |   | 35.7   |  |  |
| Percent Time-Spent-Following   | 7.1.6_1.1.6_0.0077.6vp                                 |   |  |  |  |
|  | :: 20 a)   | T   | 1.00   |  |  |
| Grade Adjustment factor, f <sub>G</sub> (Exhib                             | DIT 20-8)  |   | 1.00   |  |  |
| Passenger-car equivalents for truc   | ks, E <sub>T</sub> (Exhibit 20-10)                     |   | 1.1  |  |  |
| Passenger-car equivalents for RVs  | s, E <sub>R</sub> (Exhibit 20-10)                      |   | 1.0  |  |  |
| Heavy-vehicle adjustment factor, f   | $_{HV}$ =1/(1+ $P_{T}(E_{T}$ -1)+ $P_{R}(E_{R}$ -1))   |   | 0.998  |  |  |
| Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (F                        | PHF * f <sub>G</sub> * f <sub>HV</sub> )               |   | 229  |  |  |
| v <sub>p</sub> * highest directional split propor                          | tion <sup>2</sup> (pc/h)                               |   | 149  |  |  |
| Base percent time-spent-following,   | , BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)            |   | 18.2   |  |  |
| Adj. for directional distribution and                                      | no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)     |   | 24.3   |  |  |
| Percent time-spent-following, PTS  | **   |   | 42.6   |  |  |
| Level of Service and Other Perfo   |  |   | В  |  |  |
| evel of service, LOS (Exhibit 20-3   | ·  |   | 0.07   |  |  |
| /olume to capacity ratio, v/c=V <sub>p</sub> /3                            |  |   |  |  |  |
| Peak 15-min veh-miles of travel, V   |  |   | 57   |  |  |
| Peak-hour vehicle-miles of travel,   |  |   | 206  |  |  |
| Peak 15-min total travel time, TT <sub>15</sub><br><b>Votes</b>            | <sub>5</sub> (veh-h)= VMT <sub>15</sub> /ATS           |   | 1.6  |  |  |
| voies  |  |   |  |  |  |

| General Information   |  | Site Information                                   |   |  |  |
|---|--|--|---|--|--|
| Analyst   | SKB  | Highway  | Dancyville Road   |  |  |
| Agency or Company   | TDOT/TranSystems                                     | From/To  | North of I-40   |  |  |
| Date Performed<br>Analysis Time Period  | 04/18/2011<br>PM Peak Hour                           | Jurisdiction<br>Analysis Year                      | Fayette County<br>2014                                      |  |  |
| Project Description: Existing Con-  | ditions  | ,  |   |  |  |
| nput Data   |  |  |   |  |  |
|   |  | Class  | s I highway 🔽 Class II highway                              |  |  |
| <u> </u>  | 1 Shoulder width                                     | - 4  | ✓ Level ☐ Rolling   |  |  |
|   |  |  | hourly volume 169 veh/h                                     |  |  |
|   |  | Directiona   |   |  |  |
|   |  | tt No-passin                                       | •   |  |  |
|   |  | Show North Arrow % Trucks                          | and Buses , P <sub>T</sub> 2 %                              |  |  |
| Segment I   | ength, L <sub>t</sub> mi                             | % Recrea   | tional vehicles, P <sub>R</sub> 0%                          |  |  |
|   |  | Access po  | .,  |  |  |
| Average Travel Speed  |  | <u>'</u>   |   |  |  |
| Grade adjustment factor, f <sub>G</sub> (Exhib  | it 20-7)   |  | 1.00  |  |  |
| Passenger-car equivalents for truc  | ks, E <sub>T</sub> (Exhibit 20-9)                    |  | 1.7   |  |  |
| Passenger-car equivalents for RVs   | ·  |  | 1.0   |  |  |
| Heavy-vehicle adjustment factor, f  |  |  | 0.986   |  |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (F  | PHF * f <sub>G</sub> * f <sub>HV</sub> )             |  | 190   |  |  |
| /p * highest directional split propor   | tion <sup>2</sup> (pc/h)                             |  | 106   |  |  |
| Free-Flow Sp  | eed from Field Measurement                           | Estima   | ated Free-Flow Speed  |  |  |
|   |  | Base free-flow speed, BFFS <sub>FM</sub>           | 45.0 mi/h   |  |  |
| Field Measured speed, S <sub>FM</sub>   | mi/h   | Adj. for lane width and shoulder wid               | dth <sup>3</sup> , f <sub>I,S</sub> (Exhibit 20-5) 1.3 mi/h |  |  |
| Observed volume, V <sub>f</sub>   | veh/h  | Adj. for access points, f <sub>A</sub> (Exhibit 20 |   |  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +0   | $0.00776(V_f/f_{HV})$ mi/h                           | Free-flow speed, FFS (FSS=BFFS                     |   |  |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi/</i>   | (h) (Exhibit 20-11)                                  |  | 3.3   |  |  |
| Average travel speed, ATS ( mi/h)   | ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>       |  | 36.4  |  |  |
| Percent Time-Spent-Following  |  |  |   |  |  |
| Grade Adjustment factor, f <sub>G</sub> (Exhib  | it 20-8)   |  | 1.00  |  |  |
| Passenger-car equivalents for truc  | ks, E <sub>T</sub> (Exhibit 20-10)                   |  | 1.1   |  |  |
| Passenger-car equivalents for RVs   | s, E <sub>R</sub> (Exhibit 20-10)                    |  | 1.0   |  |  |
| Heavy-vehicle adjustment factor, f  | $_{HV}$ =1/(1+ $P_{T}(E_{T}$ -1)+ $P_{R}(E_{R}$ -1)) |  | 0.998   |  |  |
| Γwo-way flow rate <sup>1</sup> , ν <sub>p</sub> (pc/h)=V/ (F  | PHF * f <sub>G</sub> * f <sub>HV</sub> )             |  | 188   |  |  |
| $v_{ m p}^{*}$ highest directional split propor   | tion <sup>2</sup> (pc/h)                             |  | 105   |  |  |
| Base percent time-spent-following,  | BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)            |  | 15.2  |  |  |
| Adj. for directional distribution and   | no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)   |  | 22.9  |  |  |
| Percent time-spent-following, PTS   | * 1  |  | 38.2  |  |  |
| Level of Service and Other Performance Level of Service, LOS (Exhibit 20-3)   |  |  | A   |  |  |
| /olume to capacity ratio, v/c=V <sub>p</sub> / 3  |  |  | 0.06  |  |  |
| Peak 15-min veh-miles of travel, V  |  |  | 47  |  |  |
|   |  |  | 169   |  |  |
| Peak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh- mi)=V*L <sub>t</sub> Peak 15-min total travel time, TT <sub>15</sub> (veh-h)= VMT <sub>15</sub> /ATS |  |  | 1.3   |  |  |
| eak 15-min total travel time 11   |  |  |   |  |  |

Generated: 4/20/2011 11:01 AM

| General Information                                       |  | Site Information                       |   |           |  |
|---|--|--|---|-----------|--|
| Analyst   | SKB  | Highway                                | Dancyville Road   |           |  |
| Agency or Company<br>Date Performed                       | TDOT/TranSystems<br>04/18/2011                       | From/To Jurisdiction                   | South of I-40<br>Fayette County   |           |  |
| Analysis Time Period                                      | PM Peak Hour   | Analysis Year                          | 2014  |           |  |
| Project Description: Existing Co.                         | nditions   |  |   |           |  |
| nput Data   |  | 1                                      |   |           |  |
|   |  |  | Class I highway Class II  Terrain Level Ro  Two-way hourly volume 212 v |           |  |
|   |  |  | Directional split 61 / 3  |           |  |
|   |  |  | Peak-hour factor, PHF 0.90 No-passing zone 100                          |           |  |
|   |  | Show North Arrow                       | % Trucks and Buses , P <sub>T</sub> 2 %                                 |           |  |
| Segment   | length, L <sub>t</sub> mi                            |  | % Recreational vehicles, P <sub>R</sub> 0%                              |           |  |
|   |  |  | Access points/ mi 10  | )         |  |
| Average Travel Speed                                      |  |  | <u> </u>  |           |  |
| Grade adjustment factor, f <sub>G</sub> (Exhi             | bit 20-7)  |  | 1.00  |           |  |
| Passenger-car equivalents for tru                         |  |  | 1.7   |           |  |
| Passenger-car equivalents for RV                          | <u>·</u>   |  | 1.0   |           |  |
| Heavy-vehicle adjustment factor,                          |  |  | 0.986   |           |  |
| Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/          |  |  | 239   |           |  |
| v <sub>p</sub> * highest directional split propo          |  |  | 146   |           |  |
|   | peed from Field Measurement                          | Estimated Free-Flow Speed              |   |           |  |
|   |  | Base free-flow speed, BF               | FS <sub>EM</sub>  | 45.0 mi/h |  |
| Field Measured speed, S <sub>FM</sub>                     | mi/h   |  | oulder width <sup>3</sup> , f <sub>IS</sub> (Exhibit 20-5)              | 1.3 mi/h  |  |
| Observed volume, V <sub>f</sub>                           | veh/h  | Adj. for access points, f <sub>A</sub> | 20  | 2.5 mi/h  |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub> -                | $+0.00776(V_f/f_{HV})$ mi/h                          | Free-flow speed, FFS (FS               |   | 41.2 mi/h |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>m</i>     | <i>i/h</i> ) (Exhibit 20-11)                         |  | 3.7   |           |  |
| Average travel speed, ATS ( mi/h                          | ) ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>     |  | 35.7  |           |  |
| Percent Time-Spent-Following                              |  | ,                                      |   |           |  |
| Grade Adjustment factor, f <sub>G</sub> (Exh              | ibit 20-8)   |  | 1.00  |           |  |
| Passenger-car equivalents for tru                         | cks, E <sub>T</sub> (Exhibit 20-10)                  |  | 1.1   |           |  |
| Passenger-car equivalents for RV                          | 's, E <sub>R</sub> (Exhibit 20-10)                   |  | 1.0   |           |  |
| Heavy-vehicle adjustment factor,                          | $f_{HV} = 1/(1 + P_T(E_T-1) + P_R(E_R-1))$           |  | 0.998   |           |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ | (PHF * f <sub>G</sub> * f <sub>HV</sub> )            |  | 236   |           |  |
| v <sub>p</sub> * highest directional split propo          | rtion <sup>2</sup> (pc/h)                            |  | 144   |           |  |
| Base percent time-spent-following                         | g, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)         |  | 18.7  |           |  |
| Adj. for directional distribution and                     | d no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12) |  | 23.6  |           |  |
| Percent time-spent-following, PTS                         | * 1  |  | 42.3  |           |  |
| Level of Service and Other Per                            |  |  |   |           |  |
| evel of service, LOS (Exhibit 20-                         |  |  | B   |           |  |
| /olume to capacity ratio, v/c=V <sub>p</sub> /            |  |  | 0.07  |           |  |
| Peak 15-min veh-miles of travel, '                        |  |  | 59  |           |  |
| Peak-hour vehicle-miles of travel,                        |  |  | 212   |           |  |
| Peak 15-min total travel time, TT <sub>1</sub>            | <sub>5</sub> (veh-h)= VMT <sub>15</sub> /ATS         |  | 1.7   |           |  |
| Votes   |  |  |   |           |  |

Generated: 4/20/2011 11:02 AM

| General Information   |   | Site Information                           |   |             |  |
|---|---|--|---|-------------|--|
| Analyst   | SKB   | Highway                                    | Dancyville Road   |             |  |
| Agency or Company Date Performed                                  | TDOT/TranSystems<br>04/18/2011  | From/To<br>Jurisdiction                    | North of I-40<br>Fayette County                             |             |  |
| Analysis Time Period  | AM Peak Hour  | Analysis Year                              | 2034  |             |  |
| Project Description: Existing Co.                                 | nditions  |  |   |             |  |
| nput Data   |   | 1  |   |             |  |
| 9   |   | 91   | Class I highway Class II                                    | highway     |  |
|   | 🕽 Shoulder widtht   |  | errain 🔽 Level 🔲 Ro   | -           |  |
| <del>-</del>  | Lane widtht   |  | vo-way hourly volume 250 rectional split 54 / 4             | veh/h<br>46 |  |
|   |   | Pe   | ak-hour factor, PHF 0.90                                    | )           |  |
|   | Shoulder widthf   | - 1 I \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \  | p-passing zone 100<br>Trucks and Buses , P <sub>T</sub> 2 % |             |  |
| Segment   | length, L <sub>t</sub> mi   |  | · 1   |             |  |
| -   |   |  | , K   |             |  |
| Average Travel Speed  |   | AC   | cess points/ mi 10  | )           |  |
| Grade adjustment factor, f <sub>G</sub> (Exhi                     | bit 20-7)   |  | 1.00  |             |  |
| Passenger-car equivalents for tru                                 |   |  | 1.7   |             |  |
|   |   |  | 1.0   |             |  |
| Passenger-car equivalents for R\ Heavy-vehicle adjustment factor, |   |  | 0.986   |             |  |
| Fwo-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/                  |   |  | 282   |             |  |
| $v_p$ * highest directional split propo                           |   |  | 152   |             |  |
|   | peed from Field Measurement   |  | Estimated Free-Flow Speed                                   |             |  |
|   |   | Base free-flow speed, BFFS                 | ·   | 45.0 mi/h   |  |
| Field Measured speed, S <sub>FM</sub>                             | mi/h  |  | rilder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5)  | 1.3 mi/h    |  |
| Observed volume, V <sub>f</sub>                                   | veh/h   | Adj. for access points, f <sub>A</sub> (E. | 20  | 2.5 mi/h    |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub>                          | $+0.00776(V_f/f_{HV})$ mi/h   | Free-flow speed, FFS (FSS                  |   | 41.2 mi/h   |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>m</i>             | <i>i/h</i> ) (Exhibit 20-11)  |  | 3.9   |             |  |
| Average travel speed, ATS ( mi/h                                  | ) ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>  |  | 35.1  |             |  |
| Percent Time-Spent-Following                                      |   | •  |   |             |  |
| Grade Adjustment factor, f <sub>G</sub> (Exh                      | ibit 20-8)  |  | 1.00  |             |  |
| Passenger-car equivalents for tru                                 | cks, E <sub>T</sub> (Exhibit 20-10)   |  | 1.1   |             |  |
| Passenger-car equivalents for R\                                  | 's, E <sub>R</sub> (Exhibit 20-10)  |  | 1.0   |             |  |
| Heavy-vehicle adjustment factor,                                  | f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |  | 0.998   |             |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/         | (PHF * f <sub>G</sub> * f <sub>HV</sub> )   |  | 278   |             |  |
| , * highest directional split propo                               | rtion <sup>2</sup> (pc/h)   |  | 150   |             |  |
| Base percent time-spent-following                                 | g, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)  |  | 21.7  |             |  |
| Adj. for directional distribution and                             | d no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  |  | 23.0  |             |  |
| Percent time-spent-following, PTS                                 | SF(%)=BPTSF+f <sub>d/np</sub>   |  | 44.7  |             |  |
| evel of Service and Other Per                                     |   |  |   |             |  |
| evel of service, LOS (Exhibit 20-                                 |   |  | В   |             |  |
| /olume to capacity ratio, v/c=V <sub>p</sub> /                    | 3,200   |  | 0.09  |             |  |
| Peak 15-min veh-miles of travel,                                  | /MT <sub>15</sub> (veh- <i>mi</i> )= 0.25L <sub>t</sub> (V/PHF)                                 |  | 69  |             |  |
| Peak-hour vehicle-miles of travel,                                | VMT <sub>60</sub> (veh- <i>mi</i> )=V*L <sub>t</sub>  |  | 250   |             |  |
| Peak 15-min total travel time, TT,                                | <sub>5</sub> (veh-h)= VMT <sub>15</sub> /ATS  |  | 2.0   |             |  |
| Votes   |   |  | <del></del>   |             |  |

Generated: 4/20/2011 11:03 AM

| General Information   |   | HIGHWAY SEGMENT WOR  |   |                 |  |
|---|---|--|---|-----------------|--|
| Analyst   | SKB   | Highway  | Dancyville Road                                   |                 |  |
| Agency or Company<br>Date Performed   | TDOT/TranSystems<br>04/18/2011  | From/To<br>Jurisdiction  | South of I-40<br>Fayette County                   |                 |  |
| Analysis Time Period  | AM Peak Hour  | Analysis Year  | 2034  |                 |  |
| Project Description: Existing Con   | ditions   |  |   |                 |  |
| nput Data   |   |  |   |                 |  |
| L   |   |  | ss I highway Class II                             |                 |  |
|   | \$\frac{1}{2} Shoulder width  | tt Terrain   | Level Ro  | olling<br>veh/h |  |
|   |   | Direction  | al split 65/3                                     | 35              |  |
| -   |   | tt Peak-nou<br>No-passi  | or factor, PHF 0.90<br>ng zone 100                |                 |  |
|   |   | Show North Arrow % Trucks  | s and Buses , P <sub>T</sub> 2 %                  |                 |  |
| Segment   | ength, L <sub>t</sub> mi  | - seed to be a seed of the see | ational vehicles, P <sub>R</sub> 0%               |                 |  |
|   |   | Access p   |   | )               |  |
| verage Travel Speed   |   |  |   |                 |  |
| Grade adjustment factor, f <sub>G</sub> (Exhib                              | oit 20-7)   |  | 1.00  |                 |  |
| Passenger-car equivalents for truc  | ks, E <sub>T</sub> (Exhibit 20-9)   |  | 1.7   |                 |  |
| Passenger-car equivalents for RV  | s, E <sub>R</sub> (Exhibit 20-9)  |  | 1.0   |                 |  |
| Heavy-vehicle adjustment factor, f  | HV=1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) |  | 0.986   |                 |  |
| Two-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (                 | PHF * f <sub>G</sub> * f <sub>HV</sub> )  |  | 296   |                 |  |
| v <sub>p</sub> * highest directional split propor                           |   |  | 192   |                 |  |
| Free-Flow Sp  | eed from Field Measurement  | Estim  | ated Free-Flow Speed                              |                 |  |
| Field Measured speed, S <sub>FM</sub>                                       | mi/h  | Base free-flow speed, BFFS <sub>FM</sub>   |   | 45.0 mi/h       |  |
| Observed volume, V <sub>f</sub>   | veh/h   | Adj. for lane width and shoulder wi  | dth <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h        |  |
| Free-flow speed, FFS FFS=S <sub>FM</sub> +                                  |   | Adj. for access points, f <sub>A</sub> (Exhibit 2  | 20-6)   | 2.5 mi/h        |  |
| Tee new speed, 11 o 11 o-o <sub>FM</sub> 1                                  | 0.50776(v# 1HV)   | Free-flow speed, FFS (FSS=BFFS   | S-f <sub>LS</sub> -f <sub>A</sub> )               | 41.2 mi/h       |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi</i>                      | /h) (Exhibit 20-11)   |  | 4.0   |                 |  |
| Average travel speed, ATS ( mi/h)   | ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub>                                    |  | 34.9  |                 |  |
| Percent Time-Spent-Following  |   |  |   |                 |  |
| Grade Adjustment factor, f <sub>G</sub> (Exhit                              | pit 20-8)   |  | 1.00  |                 |  |
| Passenger-car equivalents for truc  | ks, E <sub>T</sub> (Exhibit 20-10)  |  | 1.1   |                 |  |
| Passenger-car equivalents for RV  | s, E <sub>R</sub> (Exhibit 20-10)   |  | 1.0   |                 |  |
| Heavy-vehicle adjustment factor, f  | $_{HV}$ =1/(1+ $P_{T}(E_{T}$ -1)+ $P_{R}(E_{R}$ -1))                              |  | 0.998   |                 |  |
| Fwo-way flow rate <sup>1</sup> , v <sub>p</sub> (pc/h)=V/ (                 | PHF * f <sub>G</sub> * f <sub>HV</sub> )  |  | 293   |                 |  |
| 'p * highest directional split propor                                       |   |  | 190   |                 |  |
| Base percent time-spent-following   |   |  | 22.7  |                 |  |
| Adj. for directional distribution and                                       | no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)                                |  | 23.7  |                 |  |
| Percent time-spent-following, PTS   | *   |  | 46.4  |                 |  |
| Level of Service and Other Performance Level of service, LOS (Exhibit 20-3) |   |  | В   |                 |  |
| /olume to capacity ratio, v/c=V <sub>p</sub> /3                             |   |  | 0.09  |                 |  |
| Peak 15-min veh-miles of travel, V  |   |  | 73  |                 |  |
| Peak-hour vehicle-miles of travel,  |   |  | 263   |                 |  |
| Peak 15-min total travel time, TT <sub>18</sub>                             |   |  | 2.1   |                 |  |
|   | יי, וס" -   |  |   |                 |  |

Generated: 4/20/2011 11:04 AM

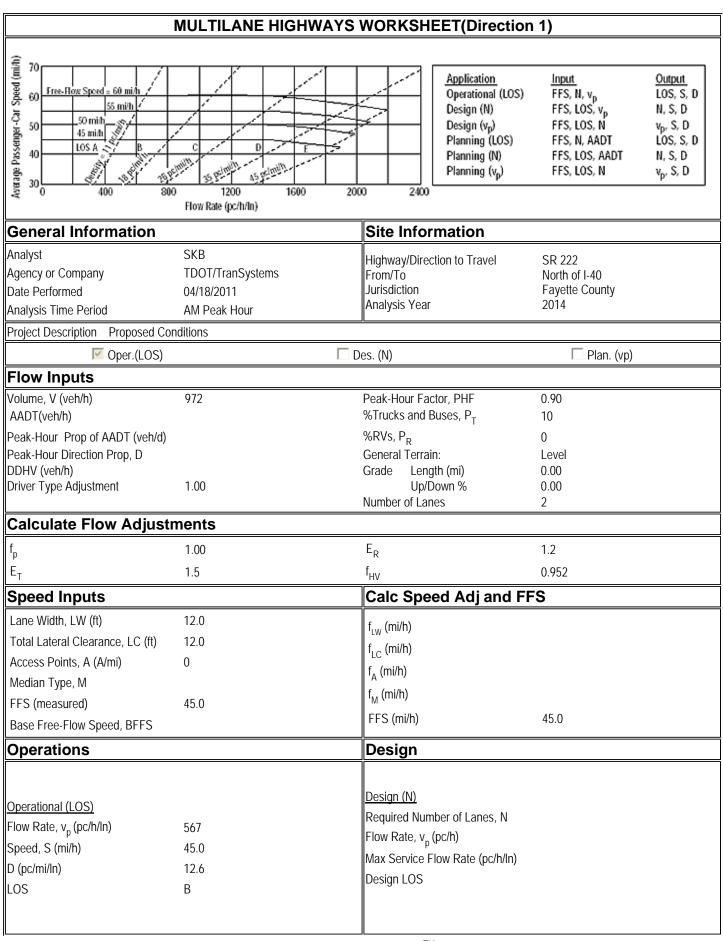
|   | TWO-WAY TWO-LANE                               |   |  |           |  |
|---|--|---|--|-----------|--|
| General Information   | 01/0   | Site Information                            |  |           |  |
| Analyst<br>Agency or Company  | SKB<br>TDOT/TranSystems                        | Highway<br>From/To                          | Dancyville Road<br>North of I-40                       |           |  |
| Date Performed  | 04/18/2011                                     | Jurisdiction                                | Fayette County   |           |  |
| Analysis Time Period Project Description: Existing Cond   | PM Peak Hour                                   | Analysis Year                               | 2034   |           |  |
| Input Data  |  |   |  |           |  |
|   |  |   | Class I highway Class I                                | Lhighway  |  |
| L   |  | -4 _  |  |           |  |
|   | \$\frac{1}{2}\$ Shoulder width                 | tt Terr<br>Two-                             |  | veh/h     |  |
|   | Lane width                                     | Direct                                      | ctional split 54/                                      | 46        |  |
|   | \$ Shoulder width                              |   | k-hour factor, PHF 0.9 oassing zone 10                 |           |  |
|   |  | Show North Arrow % T                        | rucks and Buses , P <sub>T</sub> 2 %                   | b         |  |
| Segment le  | ngth, L <sub>t</sub> mi                        | % R   | ecreational vehicles, P <sub>R</sub> 0%                | )         |  |
|   |  | Acce  | ess points/ mi 1                                       | 0         |  |
| Average Travel Speed  |  |   |  |           |  |
| Grade adjustment factor, f <sub>G</sub> (Exhibit 20-7)  |  |   | 1.00   |           |  |
| Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-9)   |  |   | 1.7  |           |  |
| Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-9)  |  |   | 1.0  |           |  |
| Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T$ ( $E_T$ -1)+ $P_R$ ( $E_R$ -1) )                                    |  |   | 0.986  |           |  |
| Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ )  |  |   | 237  |           |  |
| v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h)   |  |   | 128  |           |  |
| Free-Flow Spe   | ed from Field Measurement                      | Е   | Stimated Free-Flow Speed                               |           |  |
| Field Massurad apood S  | mi/h   | Base free-flow speed, BFFS <sub>F</sub>     | М  | 45.0 mi/h |  |
| Field Measured speed, S <sub>FM</sub>   |  | Adj. for lane width and should              | er width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h  |  |
| Observed volume, $V_f$ veh/h  Free-flow speed, FFS FFS= $S_{FM}$ +0.00776( $V_f$ / $f_{HV}$ ) mi/h                          |  | Adj. for access points, f <sub>A</sub> (Exh | nibit 20-6)  | 2.5 mi/h  |  |
|   |  | Free-flow speed, FFS (FSS=                  | BFFS-f <sub>LS</sub> -f <sub>A</sub> )                 | 41.2 mi/h |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi/h</i> ) (Exhibit 20-11)  |  |   | 3.7  |           |  |
| Average travel speed, ATS ( mi/h) A   | ATS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub> |   | 35.7   |           |  |
| Percent Time-Spent-Following  |  |   |  |           |  |
| Grade Adjustment factor, f <sub>G</sub> (Exhibit 20-8)  |  |   | 1.00   |           |  |
| Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-10)  |  |   | 1.1  |           |  |
| Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-10)   |  |   | 1.0  |           |  |
| Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T$ ( $E_T$ -1)+ $P_R$ ( $E_R$ -1))                                     |  |   | 0.998  |           |  |
| Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ )  |  |   | 234  |           |  |
| v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h)   |  |   | 126  |           |  |
| Base percent time-spent-following, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)  |  |   | 18.6   |           |  |
| Adj. for directional distribution and no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)                                    |  |   | 22.8   |           |  |
| Percent time-spent-following, PTSF(%)=BPTSF+f <sub>d/np</sub>   |  |   | 41.4   |           |  |
| Level of Service LOS (Exhibit 20-3)   |  | <u> </u>                                    | В  |           |  |
| Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)  Volume to capacity ratio, v/c=V <sub>p</sub> / 3,200 |  |   | 0.07   |           |  |
| Peak 15-min veh-miles of travel, VMT <sub>15</sub> (veh- $mi$ )= 0.25L <sub>t</sub> (V/PHF)                                 |  |   | 58   |           |  |
| Peak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh- mi)=V*L <sub>t</sub>   |  |   | 210  |           |  |
| Peak 15-min total travel time, TT <sub>15</sub> (   |  |   | 1.6  |           |  |
|   | 15//10   |   |  |           |  |
| Notes   |  |   |  |           |  |

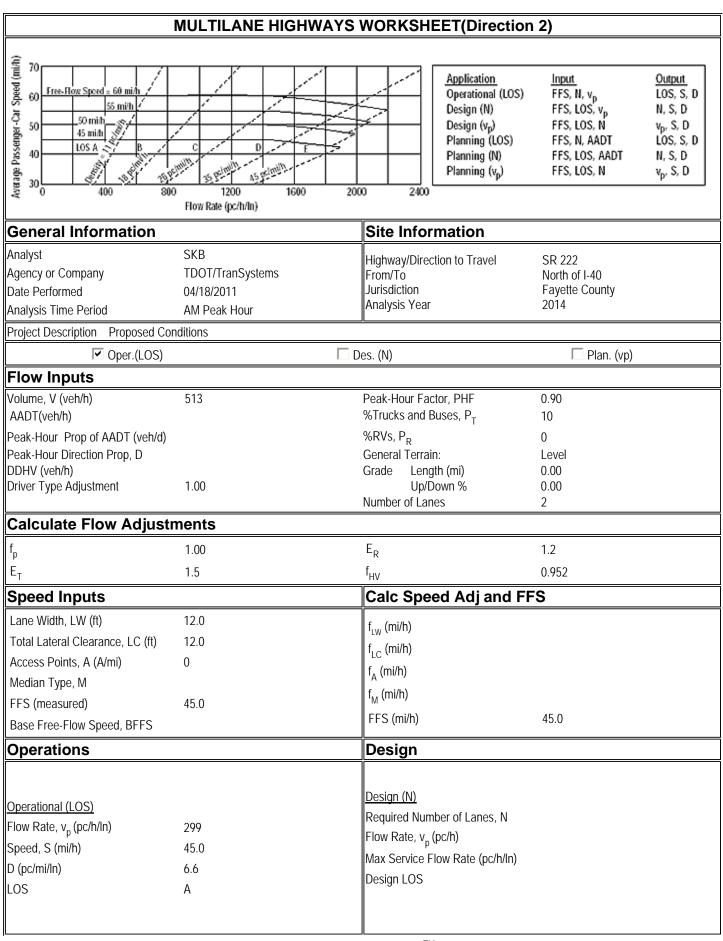
Generated: 4/20/2011 11:05 AM

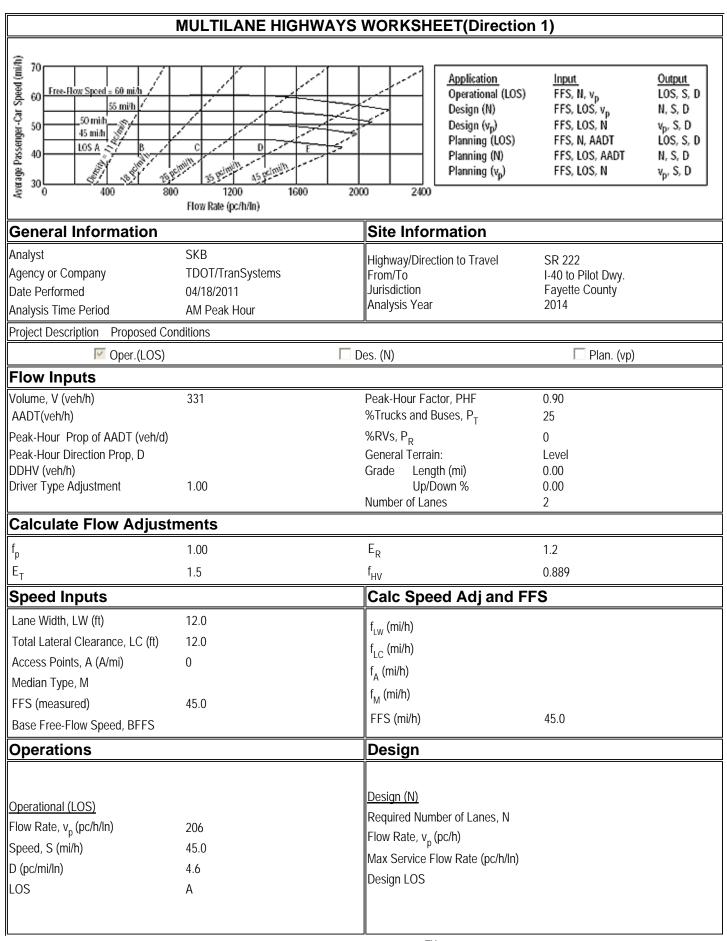
|   | WO-WAY TWO-LANE                               |  |  |           |  |  |
|---|---|--|--|-----------|--|--|
| General Information   | CVD   | Site Information                           | D  |           |  |  |
| Analyst<br>Agency or Company  | SKB<br>TDOT/TranSystems                       | Highway<br>From/To                         | Dancyville Road<br>South of I-40                         |           |  |  |
| Date Performed  | 04/18/2011                                    | Jurisdiction                               | Fayette County   |           |  |  |
| Analysis Time Period  Project Description: Existing Condi   | PM Peak Hour                                  | Analysis Year                              | 2034   |           |  |  |
| Input Data  |   |  |  |           |  |  |
|   |   |  | Class I highway Class I                                  | Lhighwoy  |  |  |
| L4  |   |  | _  |           |  |  |
|   | \$\ Shoulder width Lane width                 |  |  | veh/h     |  |  |
|   | Lane width                                    | Dir  | rectional split 60 /                                     | 40        |  |  |
|   | \$ Shoulder width                             |  | ak-hour factor, PHF 0.9<br>-passing zone 10              |           |  |  |
|   |   | Show North Arrow %                         | Trucks and Buses , P <sub>T</sub> 2 %                    | b         |  |  |
| Segment le  | ngth, L <sub>t</sub> mi                       | %  | Recreational vehicles, P <sub>R</sub> 0%                 | )         |  |  |
|   |   | Ac   | cess points/ mi 1  | 0         |  |  |
| Average Travel Speed  |   |  |  |           |  |  |
| Grade adjustment factor, f <sub>G</sub> (Exhibit 20-7)  |   |  | 1.00   |           |  |  |
| Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-9)   |   |  | 1.7  |           |  |  |
| Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-9)  |   |  | 1.0  |           |  |  |
| Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T$ ( $E_T$ -1)+ $P_R$ ( $E_R$ -1) )  |   |  | 0.986  |           |  |  |
| Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ )  |   |  | 308  |           |  |  |
| v <sub>p</sub> * highest directional split proportion <sup>2</sup> (pc/h)   |   |  | 185  |           |  |  |
| Free-Flow Spee  | ed from Field Measurement                     |  | Estimated Free-Flow Speed                                |           |  |  |
| Field Maggurad appeal C   | mi/h  | Base free-flow speed, BFFS                 | FM   | 45.0 mi/h |  |  |
| Field Measured speed, S <sub>FM</sub>   |   | Adj. for lane width and shou               | lder width <sup>3</sup> , f <sub>LS</sub> (Exhibit 20-5) | 1.3 mi/h  |  |  |
| Observed volume, $V_f$ $veh/h$ Free-flow speed, FFS FFS=S <sub>FM</sub> +0.00776( $V_f/f_{HV}$ ) $mi/h$   |   | Adj. for access points, f <sub>A</sub> (Ex | xhibit 20-6)   | 2.5 mi/h  |  |  |
|   |   | Free-flow speed, FFS (FSS                  | S=BFFS-f <sub>LS</sub> -f <sub>A</sub> )                 | 41.2 mi/h |  |  |
| Adj. for no-passing zones, f <sub>np</sub> ( <i>mi/h</i> ) (Exhibit 20-11)  |   |  | 4.0  |           |  |  |
| Average travel speed, ATS ( mi/h) A   | TS=FFS-0.00776v <sub>p</sub> -f <sub>np</sub> |  | 34.8   |           |  |  |
| Percent Time-Spent-Following  |   | 1  |  |           |  |  |
| Grade Adjustment factor, f <sub>G</sub> (Exhibit 20-8)  |   |  | 1.00   |           |  |  |
| Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 20-10)  |   |  | 1.1  |           |  |  |
| Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 20-10)   |   |  | 1.0  |           |  |  |
| Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T$ ( $E_T$ -1)+ $P_R$ ( $E_R$ -1) )  |   |  | 0.998  |           |  |  |
| Two-way flow rate <sup>1</sup> , $v_p$ (pc/h)=V/ (PHF * $f_G$ * $f_{HV}$ )  |   |  | 304  |           |  |  |
| v <sub>p</sub> * highest directional split proportion   | on <sup>2</sup> (pc/h)                        |  | 182  |           |  |  |
| Base percent time-spent-following, BPTSF(%)=100(1-e <sup>-0.000879v</sup> p)  |   |  | 23.4   |           |  |  |
| Adj. for directional distribution and no-passing zone, f <sub>d/hp</sub> (%)(Exh. 20-12)  |   |  | 22.9   |           |  |  |
| Percent time-spent-following, PTSF(%)=BPTSF+f d/np  |   |  | 46.4   |           |  |  |
| Level of Service and Other Perfor   |   |  | В  |           |  |  |
| Level of service, LOS (Exhibit 20-3 for Class I or 20-4 for Class II)  Volume to capacity ratio, v/c=V <sub>p</sub> / 3,200   |   |  | 0.10   |           |  |  |
| ·   |   |  | 76   |           |  |  |
| Peak 15-min veh-miles of travel, VMT <sub>15</sub> (veh- $mi$ )= 0.25L <sub>t</sub> (V/PHF)  Peak-hour vehicle-miles of travel, VMT <sub>60</sub> (veh- $mi$ )=V*L <sub>t</sub> |   |  | 273  |           |  |  |
|   |   |  | 2.2  |           |  |  |
| Peak 15-min total travel time, TT <sub>15</sub> (v  | 7611-11)= VIVI 1 <sub>15</sub> /A13           |  | ۷.۷  |           |  |  |
| Notes   |   |  |  |           |  |  |

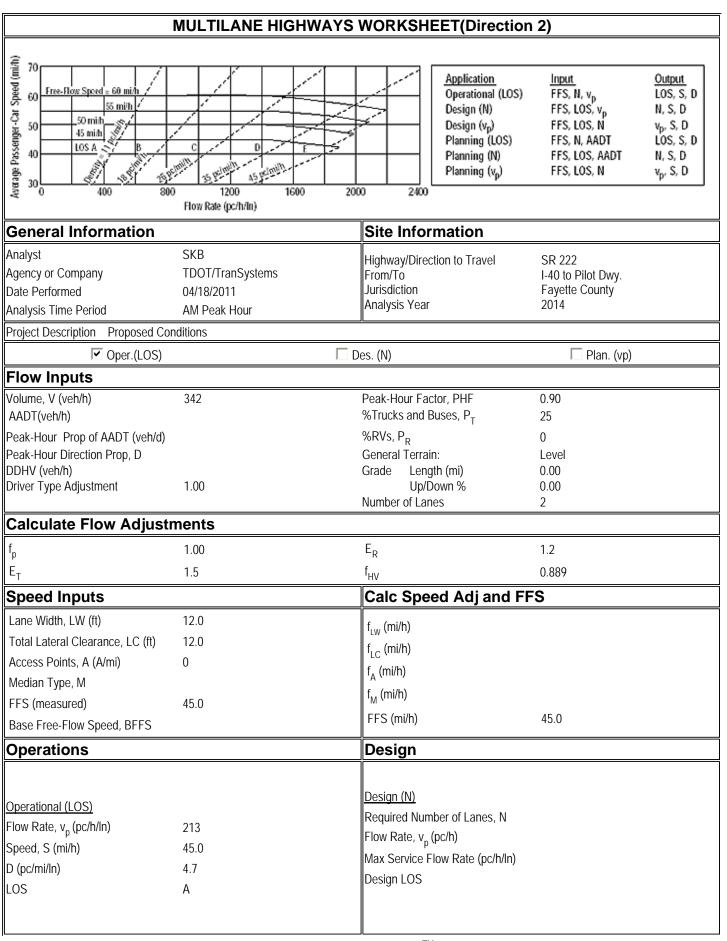
Generated: 4/20/2011 11:05 AM

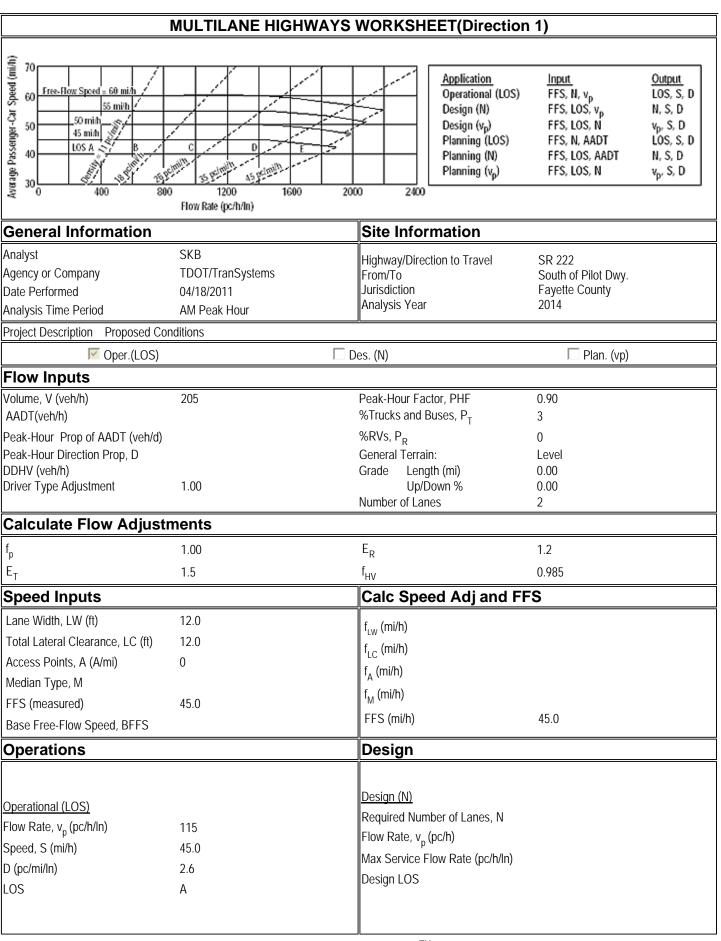
## Multilane Segments Highway Capacity Software Computer Printouts

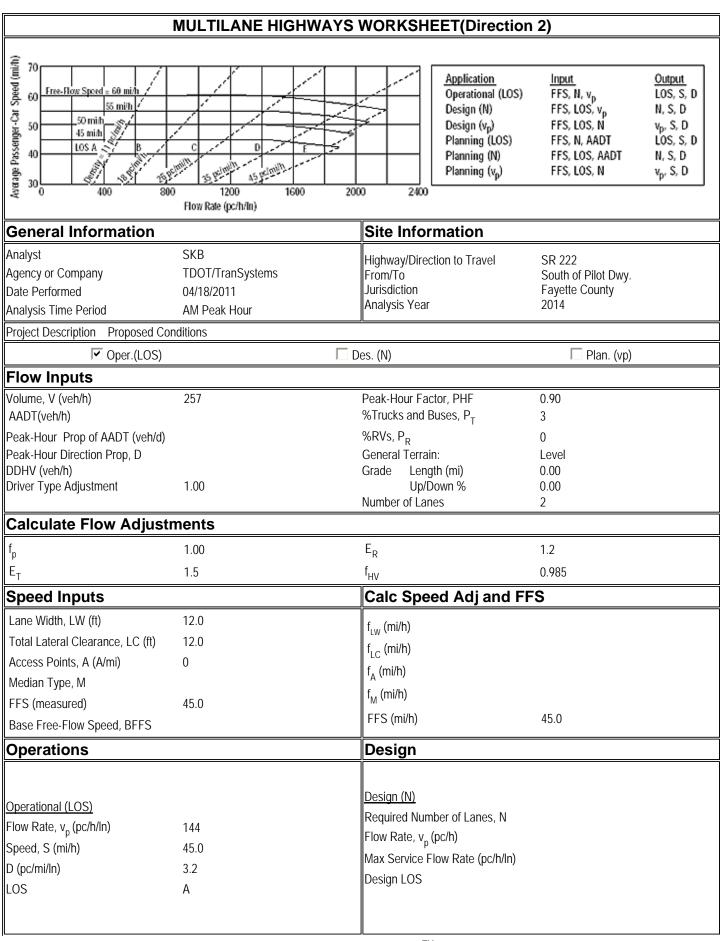


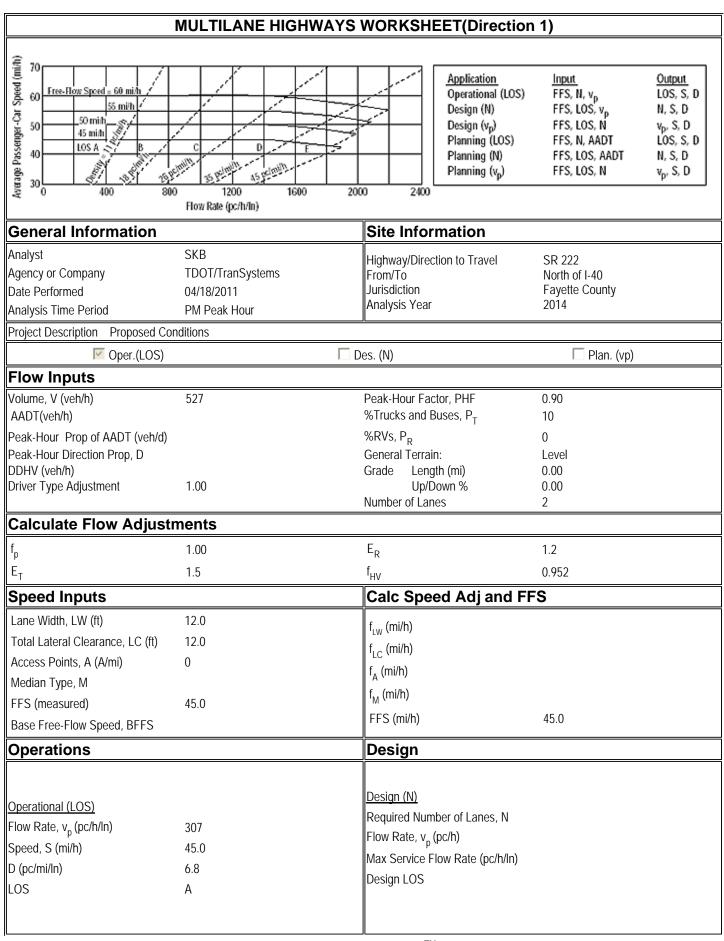


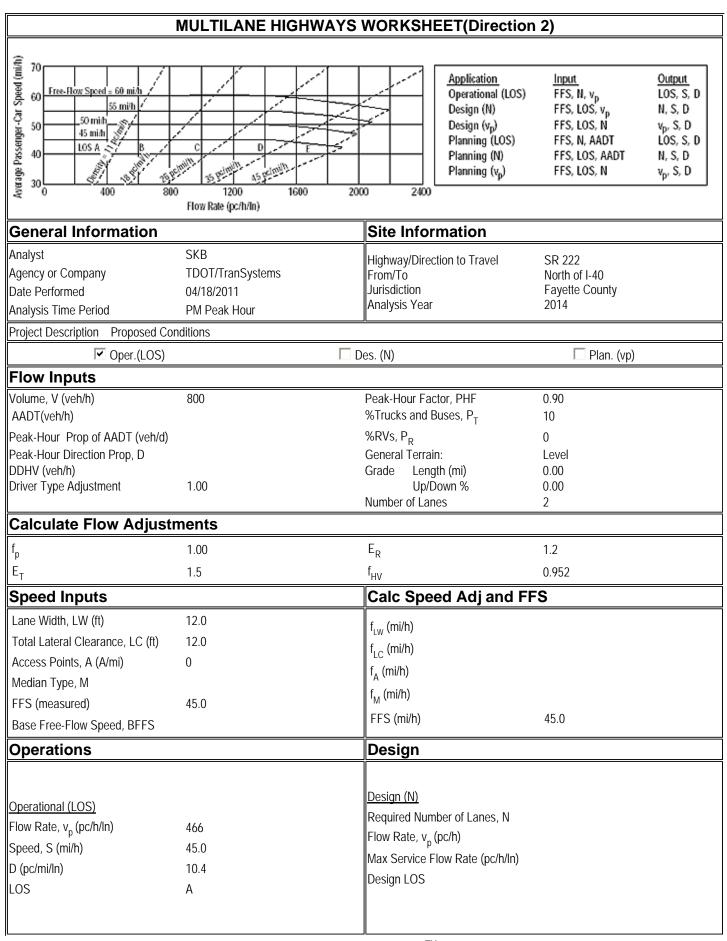


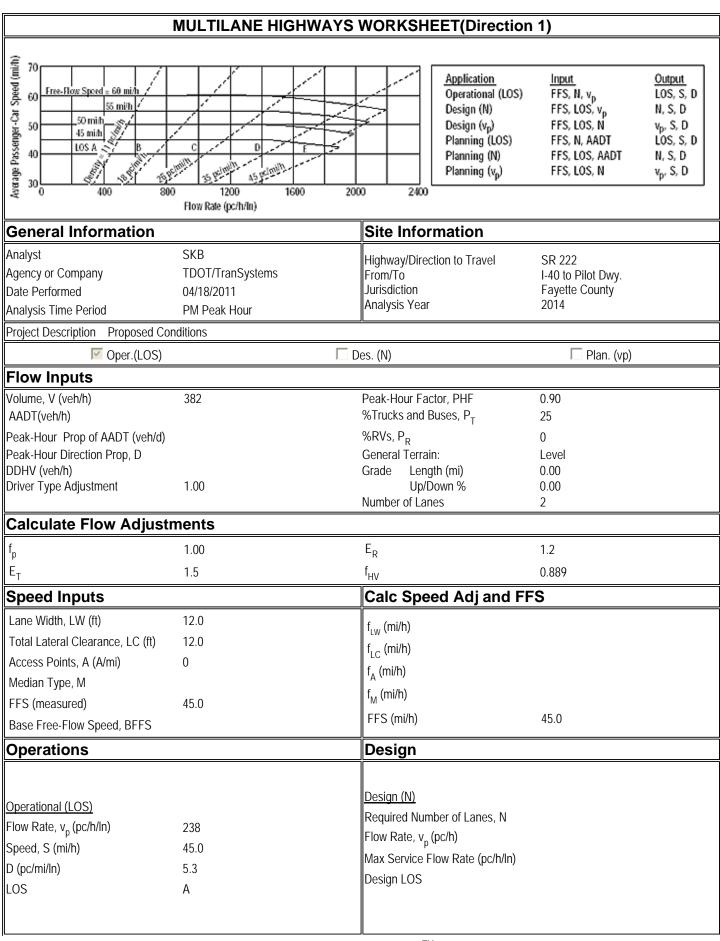


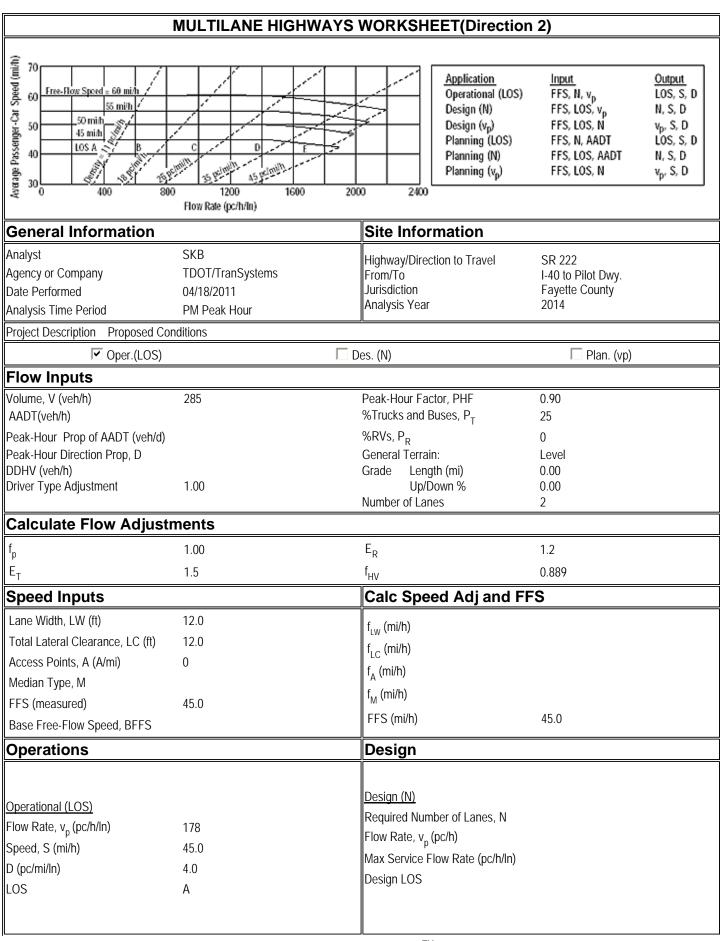


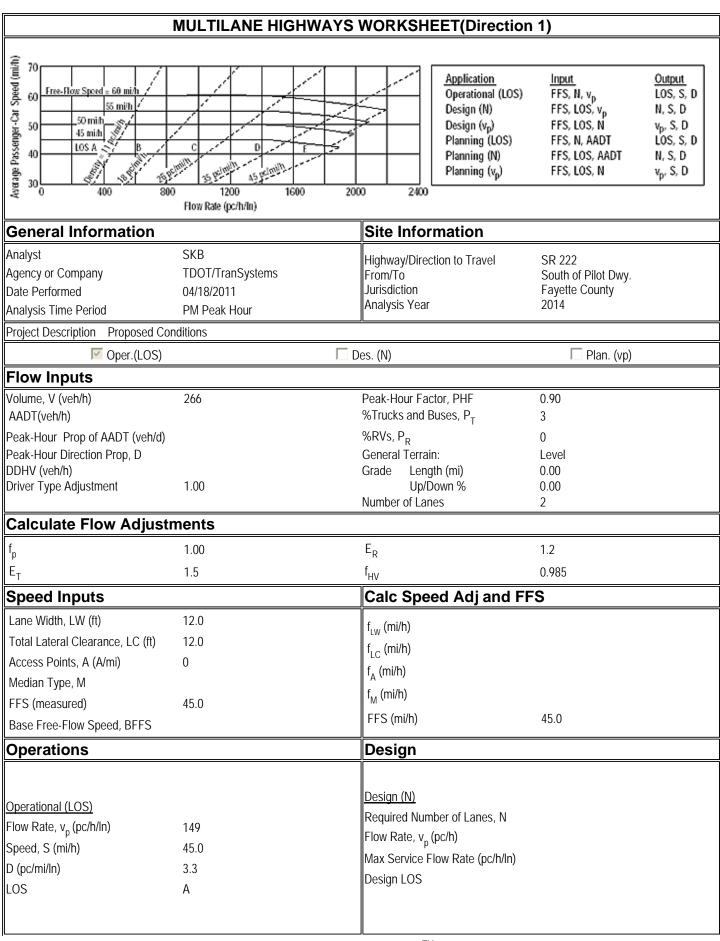


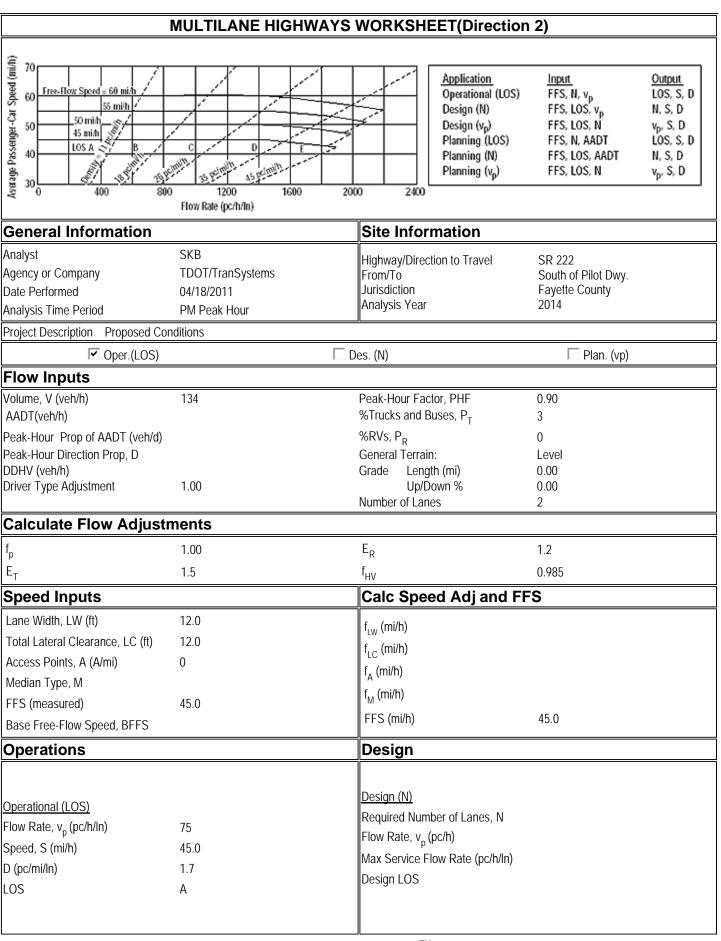


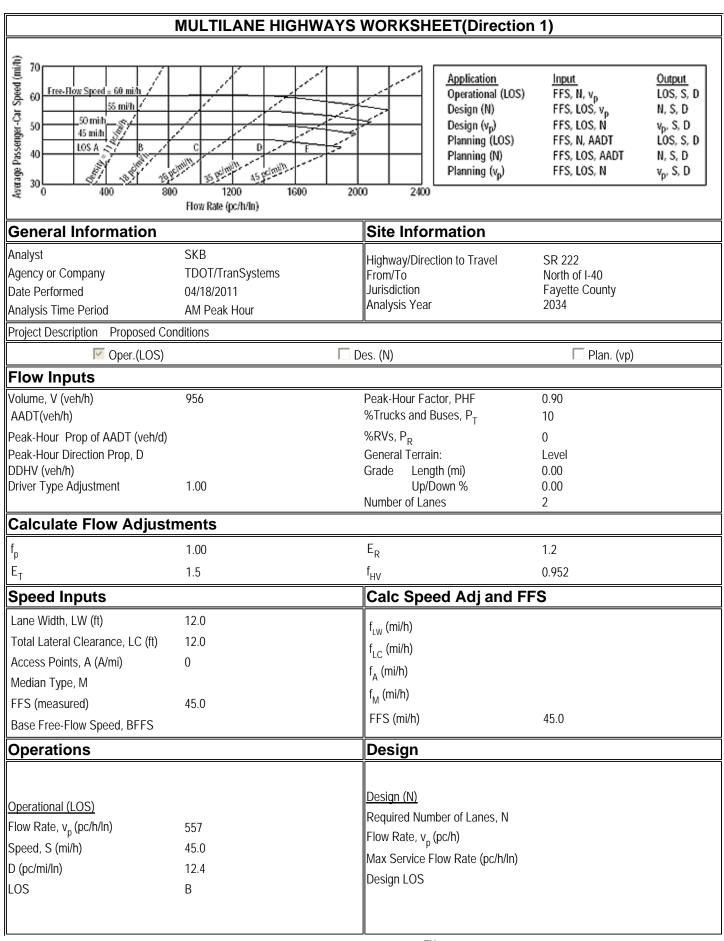


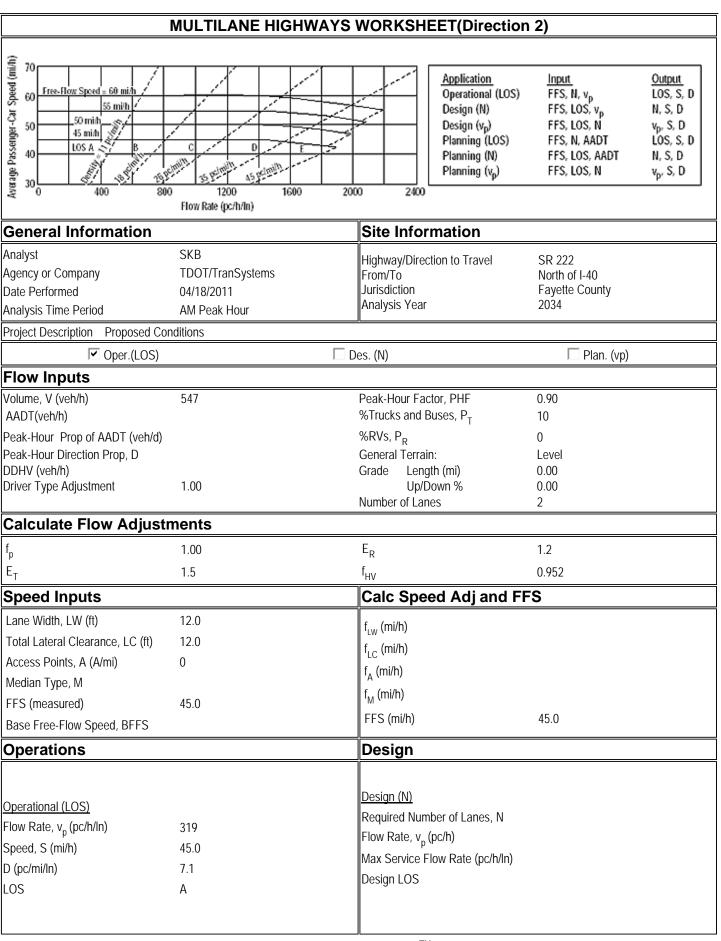


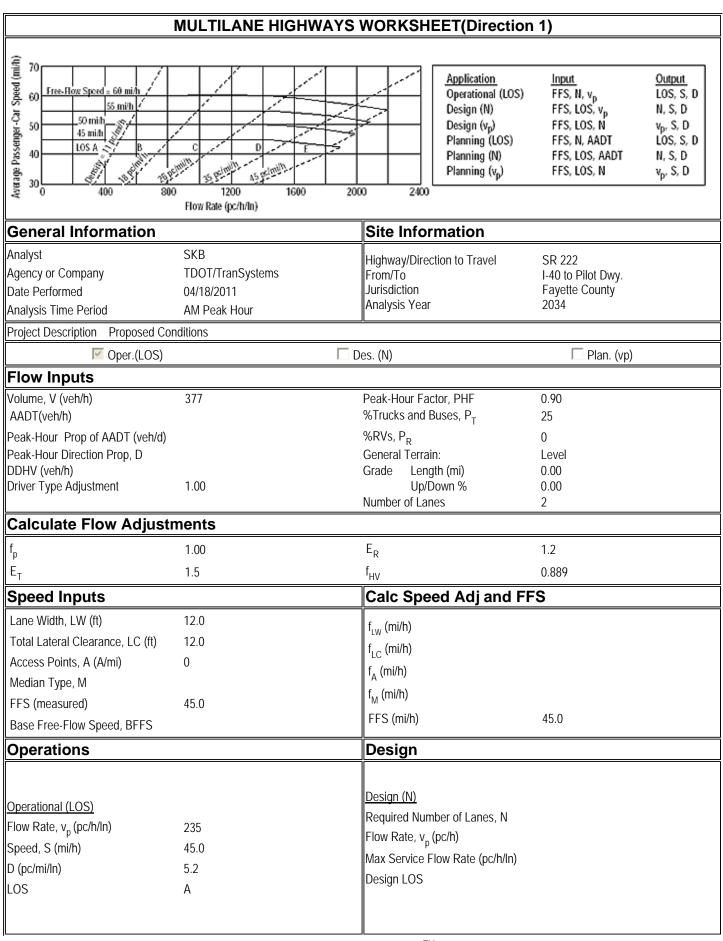


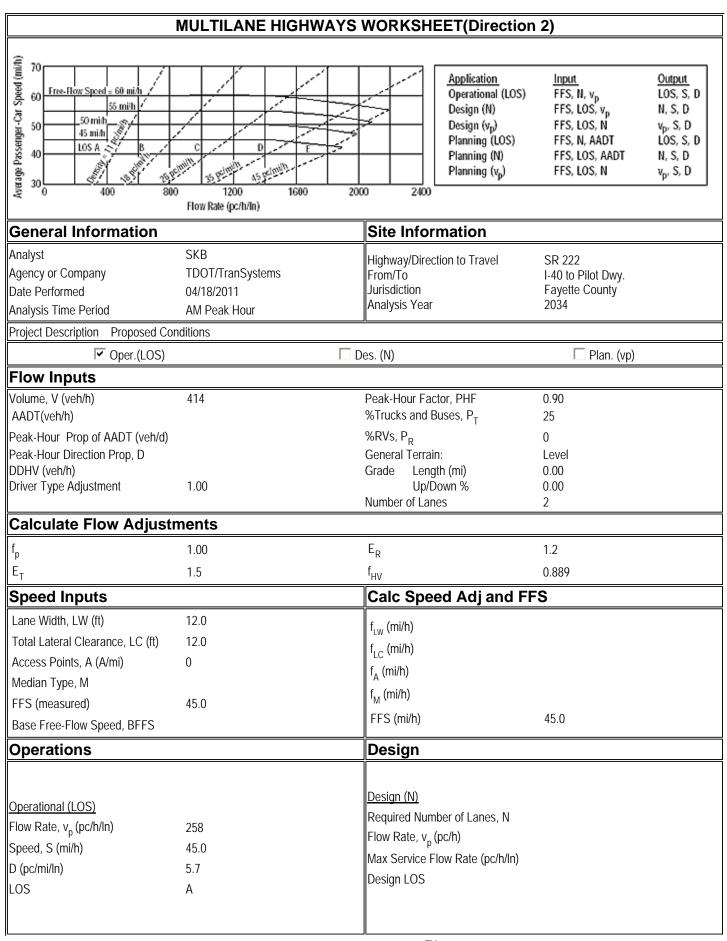


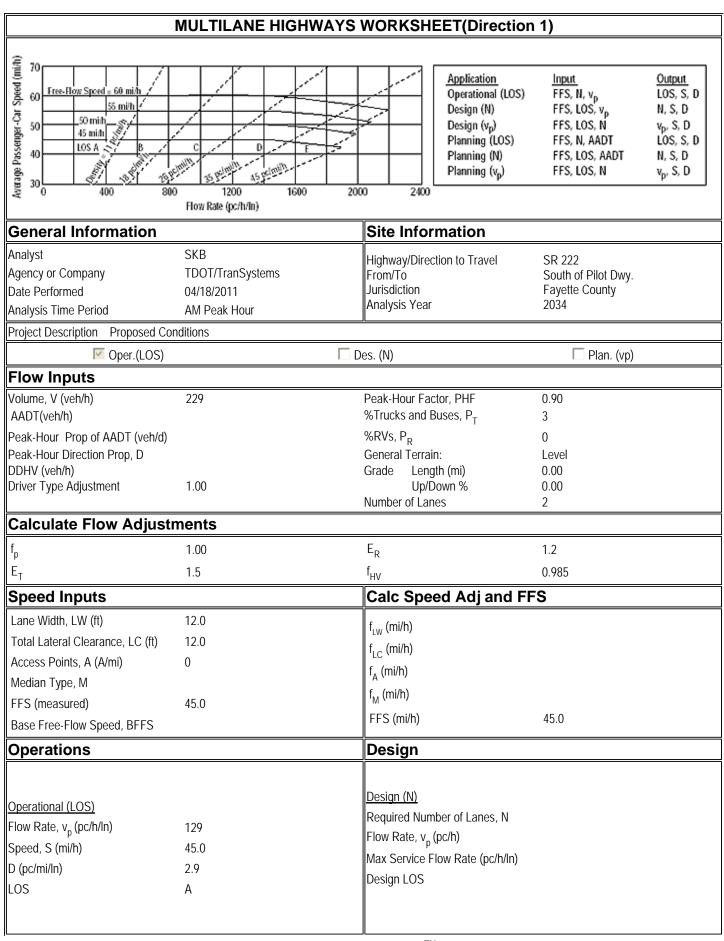


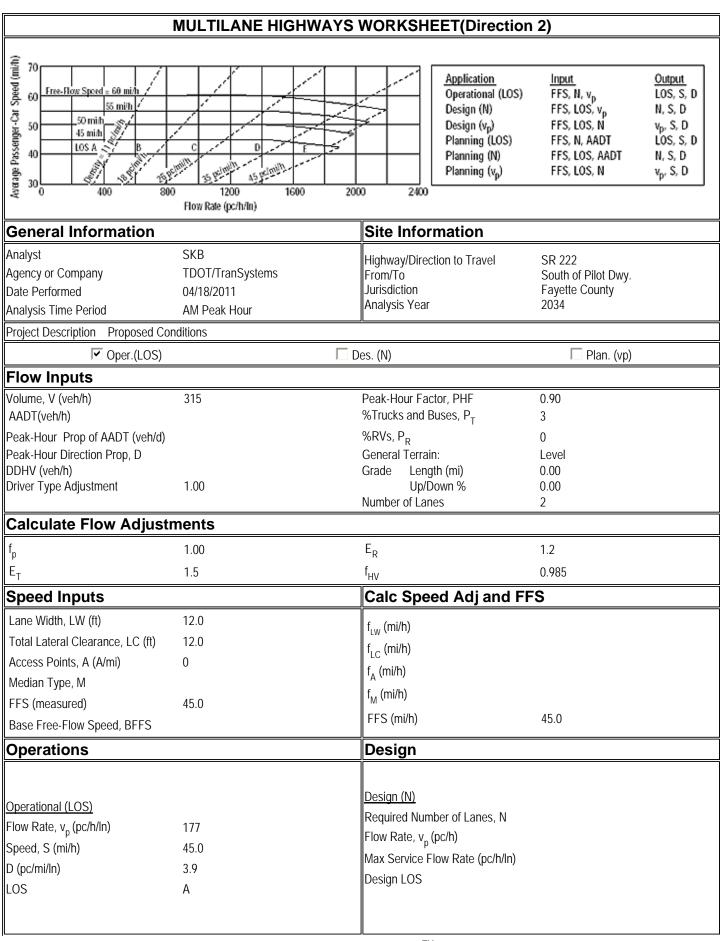


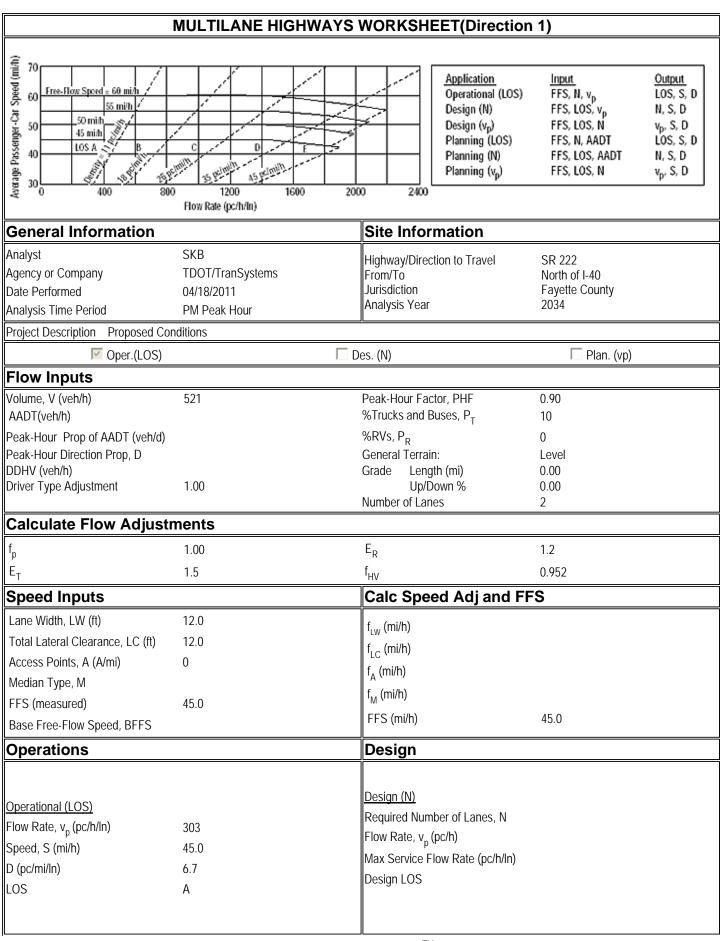


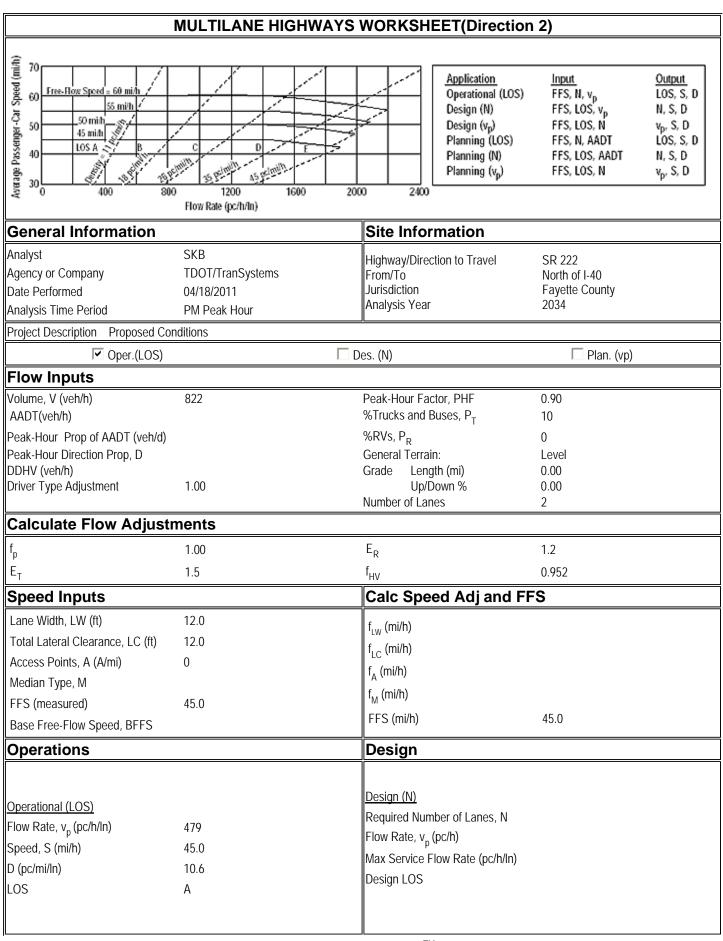


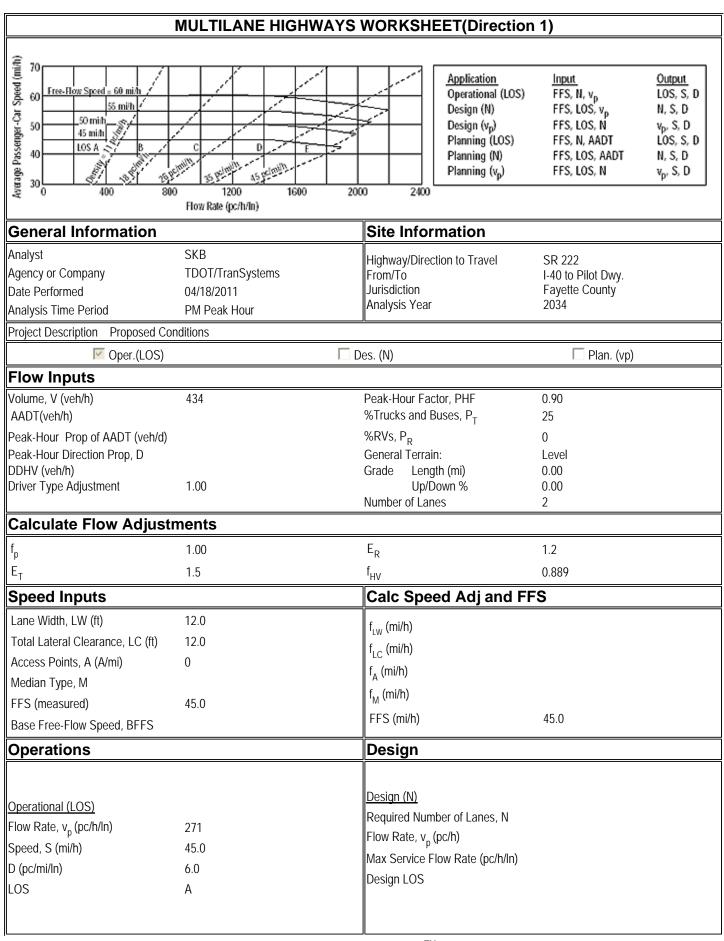


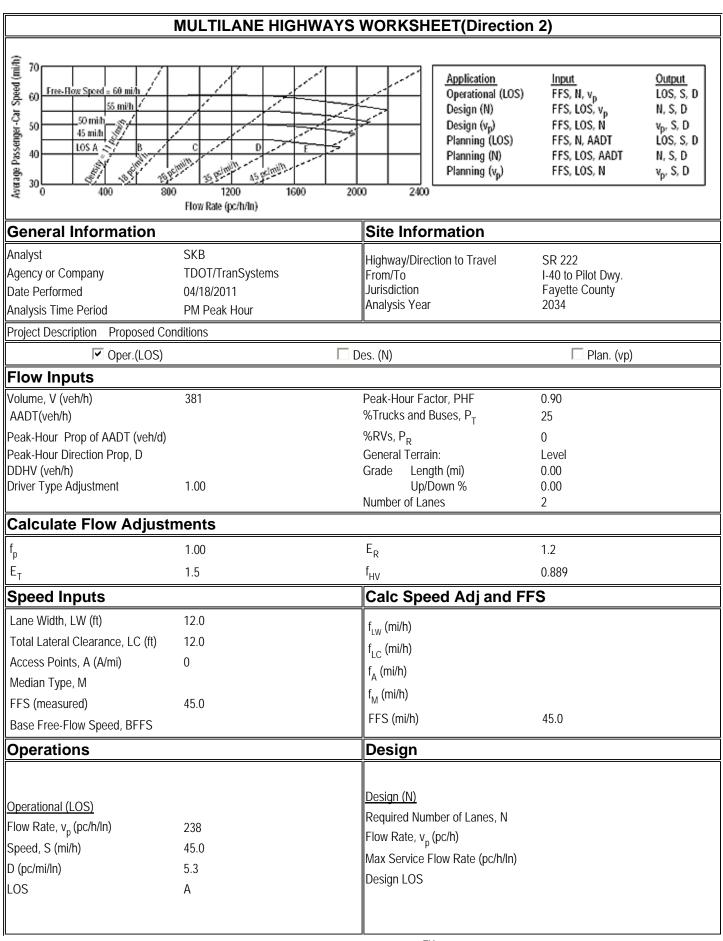


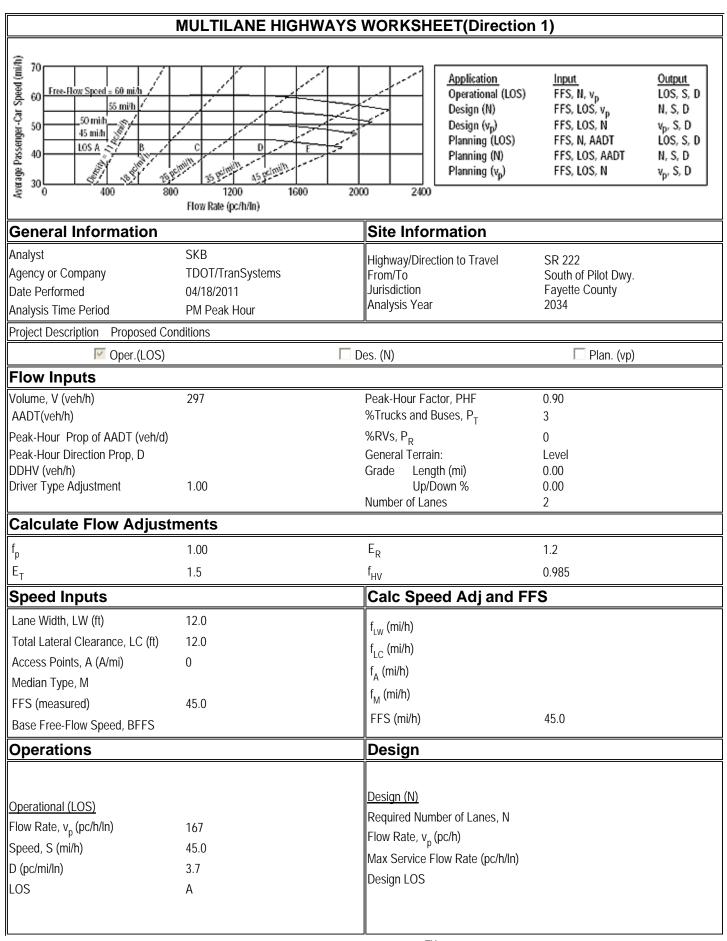


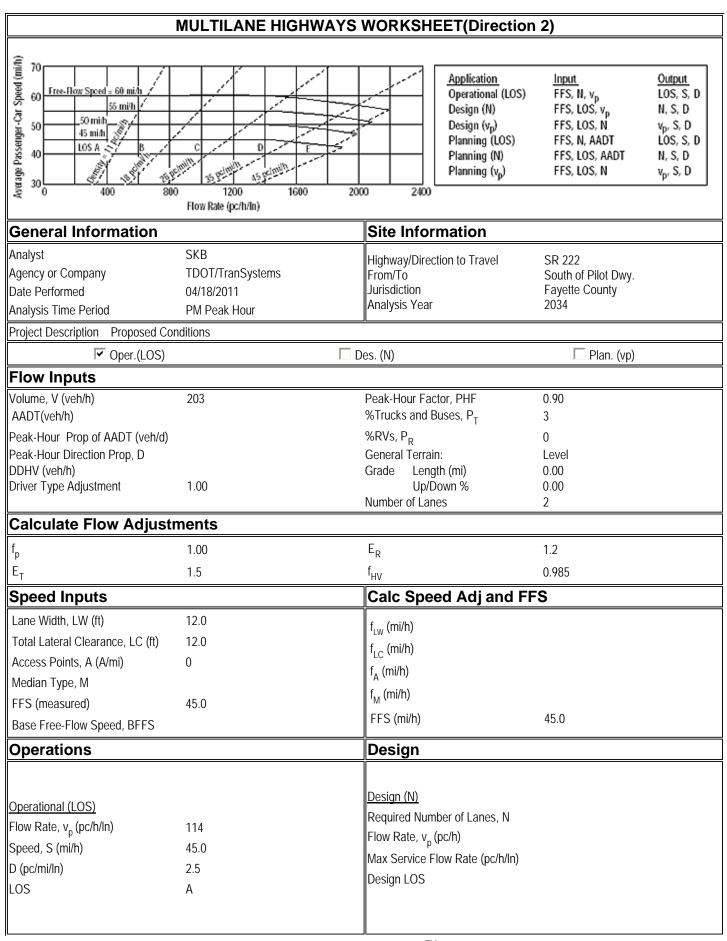












Unsignalized Intersections
Highway Capacity Software
Computer Printouts

|                                  | TW                    | O-WAY STOP | CONTR   | OL S   | UMN    | IARY     |  |               |       |
|----------------------------------|-----------------------|------------|---------|--|--------|----------|--|---------------|-------|
| General Informatio               | n                     |            | Site I  | nforn  | natio  | n        |  |               |       |
| Analyst                          | SKB                   |            | Interse | ection   |        |          | SR 59 @  | 1-40 EB F     | Ramps |
| Agency/Co.                       | TDOT/Tra              | anSystems  | Jurisdi | ction  |        |          | Fayette C  |               | •     |
| Date Performed                   | 04/18/20 <sup>-</sup> |            | Analys  | sis Yea  | ar     |          | 2014   |               |       |
| Analysis Time Period             | AM Peak               | Period     |         |  |        |          |  |               |       |
| Project Description E.           |                       | าร         |         |  |        |          |  |               |       |
| East/West Street: I-40           |                       |            |         |  |        | :: SR 59 |  |               |       |
| Intersection Orientation:        | North-South           |            | Study I | Period   | (hrs): | 0.25     |  |               |       |
| Vehicle Volumes a                | nd Adjustme           | ents       |         |  |        |          |  |               |       |
| Major Street                     |                       | Northbound |         |  |        |          | Southboo   | ınd           |       |
| Movement                         | 1                     | 2          | 3       |  |        | 4        | 5  |               | 6     |
|                                  | L                     | Т          | R       |  |        | L        | Т  |               | R     |
| Volume (veh/h)                   |                       | 154        | 101     |  |        | 100      | 68   |               |       |
| Peak-Hour Factor, PHF            | 0.90                  | 0.90       | 0.90    | )  |        | 0.90     | 0.90   |               | 0.90  |
| Hourly Flow Rate, HFR<br>(veh/h) | 0                     | 171        | 112     |  |        | 111      | 75   |               | 0     |
| Percent Heavy Vehicles           | 0                     |            |         |  |        | 3        |  |               |       |
| Median Type                      |                       |            |         | Undi   | vided  |          |  |               |       |
| RT Channelized                   |                       |            | 0       |  |        |          |  |               | 0     |
| Lanes                            | 0                     | 1          | 0       |  |        | 0        | 1  |               | 0     |
| Configuration                    |                       |            | TR      |  |        | LT       |  |               |       |
| Upstream Signal                  |                       | 0          |         |  |        |          | 0  |               |       |
| Minor Street                     |                       | Eastbound  |         |  |        |          | Westbou  | ınd           |       |
| Movement                         | 7                     | 8          | 9       |  |        | 10       | 11   |               | 12    |
|                                  | L                     | Т          | R       |  |        | L        | Т  |               | R     |
| Volume (veh/h)                   | 90                    |            | 94      |  |        |          |  |               |       |
| Peak-Hour Factor, PHF            | 0.90                  | 0.90       | 0.90    | )  |        | 0.90     | 0.90   |               | 0.90  |
| Hourly Flow Rate, HFR (veh/h)    | 100                   | 0          | 104     |  |        | 0        | 0  |               | 0     |
| Percent Heavy Vehicles           | 3                     | 0          | 3       |  |        | 0        | 0  |               | 0     |
| Percent Grade (%)                |                       | 0          |         |  |        |          | 0  |               |       |
| Flared Approach                  |                       | N          |         |  |        |          | N  |               |       |
| Storage                          |                       | 0          |         |  |        |          | 0  |               |       |
| RT Channelized                   |                       | i          | 0       |  |        |          |  |               | 0     |
| Lanes                            | 0                     | 0          | 0       |  |        | 0        | 0  | $\neg \vdash$ | 0     |
| Configuration                    |                       | LR         |         |  |        |          | 1  |               |       |
| Delay, Queue Length,             | and Level of Se       | ervice     | *       |  |        |          | R  |               |       |
| Approach                         | Northbound            | Southbound | ,       | Westb  | ound   |          | 1  | Eastbound     |       |
| Movement                         | 1                     | 4          | 7       | 8  |        | 9        | 10   | 11            | 12    |
| Lane Configuration               |                       | LT         | •       | ٣  |        |          | <del>                                     </del> | LR            | † ·-  |
| v (veh/h)                        |                       | 111        |         |  |        |          | 1  | 204           | †     |
| C (m) (veh/h)                    |                       | 1274       |         | <del>                                     </del> |        |          | 1  | 638           | +     |
| v/c                              |                       | 0.09       |         | <del>                                     </del> |        |          |  | 0.32          | +     |
| 95% queue length                 |                       | 0.09       |         | <del>                                     </del> |        |          |  | 1.38          | +     |
|                                  |                       |            |         |  |        |          |  |               | +     |
| Control Delay (s/veh)            |                       | 8.1        |         | <u> </u>   |        |          |  | 13.3          | -     |
| LOS                              |                       | Α          |         | <u> </u>   |        |          |  | В             |       |
| Approach Delay (s/veh)           |                       |            |         |  |        |          |  | 13.3          |       |
| Approach LOS                     |                       |            |         |  |        |          |  | В             |       |

|                                  |           | TWC             | -WAY STOP  | CONTR   | OL S     | UMN    | <b>MARY</b>     |           |   |              |  |  |
|----------------------------------|-----------|-----------------|------------|---------|----------|--------|-----------------|-----------|---|--------------|--|--|
| <b>General Information</b>       | n n       |                 |            | Site II | nform    | natio  | n               |           |   |              |  |  |
| Analyst                          | SKI       | 3               |            | Interse | ction    |        |                 | SR 59 @   | I-40 EB I   | Ramps        |  |  |
| Agency/Co.                       | TD        | OT/Tra          | nSystems   | Jurisdi | ction    |        |                 | Fayette ( |   | ,            |  |  |
| Date Performed                   |           | 18/201          |            | Analys  | is Yea   | r      |                 | 2014      |   |              |  |  |
| Analysis Time Period             | PM        | Peak I          | Period     |         |          |        |                 |           |   |              |  |  |
| Project Description Ex           |           |                 | S          |         |          |        |                 |           |   |              |  |  |
| East/West Street: I-40           |           |                 |            |         |          |        | :: <i>SR 59</i> |           |   |              |  |  |
| Intersection Orientation:        | North-S   | outh            |            | Study F | Period   | (hrs): | 0.25            |           |   |              |  |  |
| Vehicle Volumes a                | nd Adju   | stme            | nts        |         |          |        |                 |           |   |              |  |  |
| Major Street                     |           |                 | Northbound |         |          |        |                 |           | und   |              |  |  |
| Movement                         |           | 1               | 2          | 3       |          |        | 4               |           |   | 6            |  |  |
|                                  |           | _               | T          | R       |          |        | <u>L</u>        |           |   | R            |  |  |
| Volume (veh/h)                   |           | 20              | 100        | 79      |          |        | 77              |           |   | 0.00         |  |  |
| Peak-Hour Factor, PHF            | 0.9       | 90              | 0.90       | 0.90    |          |        | 0.90            | 0.90      |   | 0.90         |  |  |
| Hourly Flow Rate, HFR (veh/h)    | (         | )               | 111        | 87      |          |        | 85              | 107       |   | 0            |  |  |
| Percent Heavy Vehicles           | C         | )               |            |         |          |        | 3               |           |   |              |  |  |
| Median Type                      |           |                 |            |         | Undi     | vided  | 1               |           | T 97 0.90 0.90 107  1 0 Nestbound 11 T 0.90 0 0 0 N 0 0 N 0 |              |  |  |
| RT Channelized                   |           |                 |            | 0       |          |        |                 |           |   | 0            |  |  |
| Lanes                            | (         | )               | 1          | 0       |          |        | 0               | 1         |   | 0            |  |  |
| Configuration                    |           |                 |            | TR      |          |        | LT              |           |   |              |  |  |
| Upstream Signal                  |           |                 | 0          |         |          |        |                 | 0         |   |              |  |  |
| Minor Street                     |           |                 | Eastbound  |         |          |        |                 | Westbou   | ınd   |              |  |  |
| Movement                         |           | 7               | 8          | 9       |          |        | 10              | 11        |   | 12           |  |  |
|                                  |           | L               | Т          | R       |          |        | L               | Т         |   | R            |  |  |
| Volume (veh/h)                   | 11        |                 |            | 122     |          |        |                 |           |   |              |  |  |
| Peak-Hour Factor, PHF            | 0.9       | 90              | 0.90       | 0.90    |          |        | 0.90            | 0.90      |   | 0.90         |  |  |
| Hourly Flow Rate, HFR<br>(veh/h) | 13        | 30              | 0          | 135     |          |        | 0               | 0         |   | 0            |  |  |
| Percent Heavy Vehicles           | 3         | 3               | 0          | 3       |          |        | 0               | 0         |   | 0            |  |  |
| Percent Grade (%)                |           |                 | 0          |         |          |        |                 | 0         |   |              |  |  |
| Flared Approach                  |           |                 | N          |         |          |        |                 | N         |   |              |  |  |
| Storage                          |           |                 | 0          |         |          |        |                 | 0         |   |              |  |  |
| RT Channelized                   |           |                 |            | 0       |          |        |                 |           |   | 0            |  |  |
| Lanes                            | (         | )               | 0          | 0       |          |        | 0               | 0         |   | 0            |  |  |
| Configuration                    |           |                 | LR         |         |          |        |                 |           |   |              |  |  |
| Delay, Queue Length, a           | and Level | of Se           | rvice      |         |          |        |                 |           |   |              |  |  |
| Approach                         | Northbo   | und             | Southbound | 1       | Nestbo   | ound   |                 |           | Eastboun  | d            |  |  |
| Movement                         | 1         |                 | 4          | 7       | 8        |        | 9               | 10        | 11  | 12           |  |  |
| Lane Configuration               |           |                 | LT         |         |          |        |                 |           | LR  |              |  |  |
| v (veh/h)                        |           |                 | 85         |         |          |        |                 |           | 265   |              |  |  |
| C (m) (veh/h)                    |           |                 | 1369       |         |          |        |                 |           | 693   |              |  |  |
| v/c                              |           |                 | 0.06       |         |          | T      |                 |           | 0.38  |              |  |  |
| 95% queue length                 |           | $\neg \uparrow$ | 0.20       |         |          |        |                 |           | 1.80  |              |  |  |
| Control Delay (s/veh)            |           | $\neg \uparrow$ | 7.8        |         |          |        |                 |           | 13.4  |              |  |  |
| LOS                              |           | $\overline{}$   | A          |         |          |        |                 | 1         | В   | 1            |  |  |
| Approach Delay (s/veh)           |           | $\dashv$        |            |         | <u> </u> |        |                 |           | 13.4  | <u> </u>     |  |  |
| Approach LOS                     |           | <del>-  </del>  |            |         |          |        |                 |           | B   |              |  |  |
| Copyright © 2009 University of E |           |                 |            |         |          |        |                 |           |   | 011 12:20 DM |  |  |

| TW             | O-WAY STOP   | CONTR   | OL SUMI       | MARY  |  |  |                  |  |
|----------------|--------------|---------|---------------|---|--|--|------------------|--|
| 1              |              | Site I  | nformation    | on  |  |  |                  |  |
| SKB            |              | Interse | ction         |   | SR 59 @  | ) I-40 WB  | Ramps            |  |
| TDOT/Tra       | anSystems    |         |               |   |  |  | ,                |  |
|                |              | Analys  | is Year       |   | 2014   |  |                  |  |
| AM Peak        | Period       |         |               |   |  |  |                  |  |
|                | าร           |         |               |   |  |  |                  |  |
|                |              |         |               |   |  |  |                  |  |
| North-South    |              | Study F | Period (hrs)  | ): 0.25   |  |  |                  |  |
| nd Adjustme    |              |         |               |   |  |  |                  |  |
| <u> </u>       |              |         |               |   | 1  | und  |                  |  |
|                |              |         |               | 4   |  |  | 6                |  |
|                |              | R       |               | L   |  |  | R                |  |
|                |              | 0.00    |               | 0.00  | _  |  | 134              |  |
| 0.90           | 0.90         | 0.90    |               | 0.90  | 0.90   |  | 0.90             |  |
| 155            | 115          | 0       |               | 0   | 115  |  | 148              |  |
| 3              |              |         |               |   |  |  |                  |  |
|                |              |         | Undivided     | <u>d</u>  |  |  |                  |  |
| 1              |              | _       |               |   |  |  | 0                |  |
|                | 1            | 0       |               | 0   | 1  |  | 0                |  |
| LT             |              | ļ       |               |   |  | TF   |                  |  |
|                |              |         |               |   | 0  |  |                  |  |
|                | Eastbound    | _       |               |   |  | ınd  |                  |  |
| 7              |              |         |               | 10  |  |  | 12               |  |
| L              | Т            | R       |               | L   | T  |  | R                |  |
|                |              |         |               |   |  |  | 62               |  |
| 0.90           | 0.90         | 0.90    |               | 0.90  | 0.90   |  | 0.90             |  |
| 0              | 0            | 0       |               | 71  | 0  |  | 68               |  |
| 3              | 0            | 3       |               | 3   | 0  | 0  |                  |  |
|                | 0            |         |               |   | 0  |  |                  |  |
|                | N            |         |               |   | N  |  |                  |  |
|                | 0            | 1       |               |   | 0  |  |                  |  |
| 1              | <u> </u>     | 0       | $\overline{}$ |   | 1  |  | 0                |  |
| 0              | 0            | 0       |               | 0   | 0  |  | 0                |  |
| 1              | 1            | †       |               | -   | LR   |  |                  |  |
| nd Level of Se | ervice       |         |               |   |  |  |                  |  |
|                | 1            | 1       | Nesthound     | l   |  | Easthoun   |                  |  |
|                |              |         |               |   |  | 1  | 12               |  |
|                | <del>-</del> | '       |               | -   | 10   | <del>  ''</del>                                  | 12               |  |
|                | <del> </del> |         |               | <del>                                     </del>                    | +  | <del>                                     </del> | +                |  |
|                |              |         |               | -   | +  | -  | -                |  |
|                |              |         |               |   |  |  | +                |  |
|                |              |         |               |   |  |  |                  |  |
| 0.41           |              |         | 0.98          |   |  |  |                  |  |
| 8.2            |              |         | 13.6          |   |  |  |                  |  |
| Α              |              |         | В             |   |  |  |                  |  |
|                | 1            |         |               |   | 1  |  |                  |  |
|                |              |         | 13.6          |   |  |  |                  |  |
|                | SKB          | SKB     | SKB           | SKB   TDOT/TranSystems   O4/18/2011   Analysis Year   Analysis Year | SKB   TDOT/TranSystems   Q4/18/2011   AM Peak Period   Analysis Year   Analy | SKB  | Site Information |  |

|   | TV                | VO-WAY STOP  | CONTR   | OL SI    | JMI  | MARY   |                       |               |      |          |
|---|-------------------|--------------|---------|----------|--|--------|-----------------------|---------------|------|----------|
| <b>General Informatio</b>               | n                 |              | Site I  | nform    | atio   | on     |                       |               |      |          |
| Analyst                                 | SKB               |              | Interse | ection   |  |        | SR 59 @               | 1-40 V        | VB R | amps     |
| Agency/Co.                              |                   | ranSystems   | Jurisdi |          |  |        |                       | County        |      | ·        |
| Date Performed                          | 04/18/20          |              | Analys  | sis Year | r  |        | 2014                  |               |      |          |
| Analysis Time Period                    |                   | k Period     |         |          |  |        |                       |               |      |          |
| Project Description Ex                  |                   | ons          |         |          |  |        |                       |               |      |          |
| East/West Street: I-40                  |                   |              |         |          |  |        |                       |               |      |          |
| Intersection Orientation:               |                   |              | Study I | Period ( | (hrs)  | : 0.25 |                       |               |      |          |
| Vehicle Volumes a                       | <u>nd Adjustm</u> |              |         |          |  |        |                       |               |      |          |
| Major Street                            |                   | Northbound   | 1       |          | SR 59 @ I-40 Will   Fayette County   Tayette County   Tayette County   Tayette County   Tayette   Tayett |        |                       |               |      |          |
| Movement                                | 1 1               | 2            | 3       |          |  |        |                       | $\rightarrow$ |      | 6        |
| \/aluma (uah/h)                         | 91                | 126          | R       | -        |  | L      |                       | $\rightarrow$ |      | R<br>86  |
| Volume (veh/h)<br>Peak-Hour Factor, PHF | 0.90              | 0.90         | 0.90    | , +      |  | 0.00   |                       | -+            |      | 0.90     |
| Hourly Flow Rate, HFR                   |                   | i            |         | +        |  |        |                       | $\dashv$      |      |          |
| (veh/h)                                 | 101               | 140          | 0       |          |  | 0      | 91                    |               |      | 95       |
| Percent Heavy Vehicles                  | 3                 |              |         |          |  | 3      | 91 1 0 Westbound 11 T |               |      |          |
| Median Type                             |                   |              |         | Undiv    | rided  | 1      |                       |               |      |          |
| RT Channelized                          |                   |              | 0       |          |  |        |                       |               |      | 0        |
| Lanes                                   | 0                 | 1            | 0       |          |  | 0      | 1                     |               |      | 0        |
| Configuration                           | LT                |              |         |          |  |        |                       |               |      | TR       |
| Upstream Signal                         |                   | 0            |         |          |  |        | 0                     |               |      |          |
| Minor Street                            |                   | Eastbound    |         |          |  |        | Westbou               | ınd           |      |          |
| Movement                                | 7                 | 8            | 9       |          |  |        |                       |               |      | 12       |
|   | L                 | Т            | R       |          |  |        | Т                     |               |      | R        |
| Volume (veh/h)                          |                   |              | ļ       |          |  |        |                       |               |      | 90       |
| Peak-Hour Factor, PHF                   | 0.90              | 0.90         | 0.90    | <u> </u> |  | 0.90   | 0.90                  | _             | (    | 0.90     |
| Hourly Flow Rate, HFR (veh/h)           | 0                 | 0            | 0       |          |  | 102    | 0                     |               |      | 100      |
| Percent Heavy Vehicles                  | 3                 | 0            | 3       |          |  | 3      | 0                     |               |      | 3        |
| Percent Grade (%)                       |                   | 0            |         |          |  |        | 0                     |               |      |          |
| Flared Approach                         |                   | N            |         |          |  |        | N                     |               |      |          |
| Storage                                 |                   | 0            |         |          |  |        | 0                     |               |      |          |
| RT Channelized                          |                   |              | 0       |          |  |        |                       |               |      | 0        |
| Lanes                                   | 0                 | 0            | 0       |          |  | 0      | 0                     |               |      | 0        |
| Configuration                           |                   |              | 1       |          |  |        | LR                    |               |      |          |
| Delay, Queue Length, a                  | and Level of S    | Service      |         |          |  |        |                       |               |      |          |
| Approach                                | Northbound        | Southbound   | 1       | Westbo   | und  |        |                       | Eastbo        | und  |          |
| Movement                                | 1                 | 4            | 7       | 8        |  | 9      | 10                    | 1             | 1    | 12       |
| Lane Configuration                      | LT                |              |         | LR       |  |        |                       |               |      |          |
| v (veh/h)                               | 101               |              |         | 202      |  |        |                       |               |      |          |
| C (m) (veh/h)                           | 1382              |              |         | 645      | ;  |        |                       |               |      |          |
| v/c                                     | 0.07              |              |         | 0.31     | 1  |        |                       |               |      |          |
| 95% queue length                        | 0.24              |              |         | 1.34     |  |        |                       |               |      |          |
| Control Delay (s/veh)                   | 7.8               |              |         | 13.1     |  |        |                       |               |      |          |
| LOS                                     | A                 | 1            |         | В        |  |        |                       |               |      |          |
| Approach Delay (s/veh)                  |                   | <del> </del> |         | 13.1     | 1  |        |                       |               |      | <u> </u> |
| Approach LOS                            |                   |              |         | B        |  |        |                       |               |      |          |
| Converight © 2009 University of F       |                   | _l           |         | 00 TM 1  |  |        | Conor                 |               |      |          |

| Site Information   |      |
|--|------|
| Agency/Co.   TDOT/TranSystems   Date Performed   O4/18/2011   Analysis Time Period   AM Peak Period   Am Peak Period   Am Peak Period   Am Peak Period   Am Peak Period   Analysis Year   2034   |      |
| Date Performed   |      |
| Analysis Time Period   |      |
| Project Description  |      |
| East/West Street: I-40 EB Ramps   North/South Street: SR 59     Intersection Orientation: North-South   Study Period (hrs): 0.25   |      |
| North-South   Study Period (hrs): 0.25   |      |
| Vehicle Volumes and Adjustments         Northbound         Southbound           Major Street         Northbound         Southbound           Movement         1         2         3         4         5           Volume (veh/h)         L         T         R         L         T           Volume (veh/h)         229         119         118         87           Peak-Hour Factor, PHF         0.90         0.90         0.90         0.90           Hourly Flow Rate, HFR (veh/h)         0         254         132         131         96           Hourly Flow Rate, HFR (veh/h)         0           3            Percent Heavy Vehicles         0           3            Median Type         Undivided           RT Channelized         0         1         0         1           Lanes         0         1         0         1           Configuration         TR         LT         Undivided           Westbound         0         0         0           Minor Street         Eastbound         Westbound           Movement         7         8         9         10   |      |
| Major Street         Northbound         Southbound           Movement         1         2         3         4         5           Volume (veh/h)         L         T         R         L         T           Volume (veh/h)         229         119         118         87           Peak-Hour Factor, PHF         0.90         0.90         0.90         0.90           Hourly Flow Rate, HFR (veh/h)         0         254         132         131         96           Hourly Flow Rate, HFR (veh/h)         0           3            Percent Heavy Vehicles         0           3            Median Type         Undivided           RT Channelized         0         1         0         1           Lanes         0         1         0         0         1           Configuration         TR         LT         0         0           Upstream Signal         0         0         0         0           Minor Street         Eastbound         Westbound           Movement         7         8         9         10         11           L         T <td></td>  |      |
| Movement         1         2         3         4         5           Volume (veh/h)         L         T         R         L         T           Volume (veh/h)         229         119         118         87           Peak-Hour Factor, PHF         0.90         0.90         0.90         0.90           Hourly Flow Rate, HFR (veh/h)         0         254         132         131         96           Hourly Flow Rate, HFR (veh/h)         0           3            Percent Heavy Vehicles         0           3            Median Type         Undivided           RT Channelized         0         0         1           Lanes         0         1         0         0         1           Configuration         TR         LT         Undivided         0         0         0         0           Upstream Signal         0         0         0         0         0         0         0           Minor Street         Eastbound         Westbound         0         11         0         0         11         0           Volume (veh/h)         134 <td></td>   |      |
| L  | _    |
| Volume (veh/h)         229         119         118         87           Peak-Hour Factor, PHF         0.90         0.90         0.90         0.90           Hourly Flow Rate, HFR (veh/h)         0         254         132         131         96           Percent Heavy Vehicles         0           3            Median Type         Undivided           RT Channelized         0         1         0         0         1           Lanes         0         1         0         0         1           Configuration         TR         LT         LT         Upstream Signal         0         0         0           Minor Street         Eastbound         Westbound         Movement         7         8         9         10         11           L         T         R         L         T         T           Volume (veh/h)         134         140         140         140  | 6    |
| Peak-Hour Factor, PHF         0.90 | R    |
| Hourly Flow Rate, HFR (veh/h)  |      |
| (veh/h)         0         254         132         131         96           Percent Heavy Vehicles         0          3            Median Type         Undivided           RT Channelized         0         0         1           Lanes         0         1         0         0         1           Configuration         TR         LT         LT         Upstream Signal         0         0         0         0           Minor Street         Eastbound         Westbound         Westbound         Movement         7         8         9         10         11         1           L         T         R         L         T <td>0.90</td>  | 0.90 |
| Median Type         Undivided           RT Channelized         0         0         1           Lanes         0         1         0         0         1           Configuration         TR         LT         0         0         0         0           Upstream Signal         0 </td <td>0</td>   | 0    |
| RT Channelized         0         1         0         0         1           Lanes         0         1         0         0         1           Configuration         TR         LT         LT         Upstream Signal         0         0         0           Minor Street         Eastbound         Westbound         Westbound         Movement         T         8         9         10         11         T           L         T         R         L         T         T         Volume (veh/h)         134         140   |      |
| Lanes         0         1         0         0         1           Configuration         TR         LT         LT           Upstream Signal         0         0         0           Minor Street         Eastbound         Westbound           Movement         7         8         9         10         11           L         T         R         L         T           Volume (veh/h)         134         140         140  |      |
| Configuration         TR         LT           Upstream Signal         0         0           Minor Street         Eastbound         Westbound           Movement         7         8         9         10         11           L         T         R         L         T           Volume (veh/h)         134         140         140   | 0    |
| Upstream Signal         0         0           Minor Street         Eastbound         Westbound           Movement         7         8         9         10         11           L         T         R         L         T           Volume (veh/h)         134         140         140   | 0    |
| Minor Street         Eastbound         Westbound           Movement         7         8         9         10         11           L         T         R         L         T           Volume (veh/h)         134         140         140   |      |
| Movement         7         8         9         10         11           L         T         R         L         T           Volume (veh/h)         134         140         140  |      |
| L         T         R         L         T           Volume (veh/h)         134         140   |      |
| Volume (veh/h) 134 140   | 12   |
|  | R    |
| Peak-Hour Factor, PHF 0.90 0.90 0.90 0.90 0.90   |      |
|  | 0.90 |
| Hourly Flow Rate, HFR (veh/h) 0 155 0  | 0    |
| Percent Heavy Vehicles 3 0 3 0 0   | 0    |
| Percent Grade (%) 0 0  |      |
| Flared Approach N N  |      |
| Storage 0 0  |      |
| RT Channelized 0   | 0    |
| Lanes 0 0 0 0 0  | 0    |
| Configuration LR   |      |
| Delay, Queue Length, and Level of Service  |      |
| Approach Northbound Southbound Westbound Eastbou   |      |
| Movement 1 4 7 8 9 10 11   |      |
| Lane Configuration LT LR   |      |
| v (veh/h) 131 303  |      |
|  | _    |
| C (m) (veh/h) 1167 538<br>v/c 0.11 0.56  |      |
| 95% queue length 0.38 3.46   |      |
| ' '  |      |
|  |      |
| LOS A C  |      |
| Approach Delay (s/veh) 20.0  | 0    |
| Approach LOS Conviget © 2008 University of Florida, All Rights Reserved HCS TM Version 5.4 Generated: 4/20   | 0    |

|   |                | TW       | O-WAY STOP | CONTR       | OL S         | UMN   | <b>JARY</b>     |             |           |       |
|---|----------------|----------|------------|-------------|--------------|-------|-----------------|-------------|-----------|-------|
| General Informatio                      | n              |          |            | Site I      | nforn        | natio | on .            |             |           |       |
| Analyst                                 | SŁ             | KB       |            | Interse     | ection       |       |                 | SR 59 @     | I-40 EB I | Ramps |
| Agency/Co.                              | TL             | OOT/Tra  | anSystems  | Jurisdi     | ction        |       |                 | Fayette C   | County    |       |
| Date Performed                          |                | 1/18/201 |            | Analys      | is Yea       | ır    |                 | 2034        |           |       |
| Analysis Time Period                    | PI             | И Peak   | Period     |             |              |       |                 |             |           |       |
| Project Description Ex                  |                |          | S          |             |              |       |                 |             |           |       |
| East/West Street: I-40                  |                |          |            |             |              |       | t: <i>SR 59</i> |             |           |       |
| Intersection Orientation:               |                |          |            | Study I     | Period       | (hrs) | : 0.25          |             |           |       |
| Vehicle Volumes a                       | <u>nd Adjı</u> | ustme    |            |             |              |       |                 |             |           |       |
| Major Street                            |                |          | Northbound |             |              |       |                 | Southbou    | nd        |       |
| Movement                                |                | <u>1</u> | 2          | 3           |              |       | 4               | 5           |           | 6     |
| \/a aa (ab./b)                          | -              | L        | T          | R 100       |              |       | L               | T 110       |           | R     |
| Volume (veh/h)<br>Peak-Hour Factor, PHF |                | 0.90     | 0.90       | 103<br>0.90 |              |       | 101<br>0.90     | 116<br>0.90 |           | 0.90  |
| Hourly Flow Rate, HFR                   | + -            |          |            | 1           |              |       |                 |             | _         |       |
| (veh/h)                                 |                | 0        | 165        | 114         |              |       | 112             | 128         |           | 0     |
| Percent Heavy Vehicles                  |                | 0        |            |             |              |       | 3               |             |           |       |
| Median Type                             |                |          | •          | •           | Undi         | videa | l               |             | •         |       |
| RT Channelized                          |                |          |            | 0           |              |       |                 |             |           | 0     |
| Lanes                                   |                | 0        | 1          | 0           |              |       | 0               | 1           |           | 0     |
| Configuration                           |                |          |            | TR          |              |       | LT              |             |           |       |
| Upstream Signal                         |                |          | 0          |             |              |       |                 | 0           |           |       |
| Minor Street                            |                |          | Eastbound  |             |              |       |                 | Westbou     | nd        |       |
| Movement                                |                | 7        | 8          | 9           |              |       | 10              | 11          |           | 12    |
|   |                | L        | Т          | R           |              |       | L               | Т           |           | R     |
| Volume (veh/h)                          |                | 174      |            | 181         |              |       |                 |             |           |       |
| Peak-Hour Factor, PHF                   | C              | 0.90     | 0.90       | 0.90        |              |       | 0.90            | 0.90        |           | 0.90  |
| Hourly Flow Rate, HFR<br>(veh/h)        | 1              | 193      | 0          | 201         |              |       | 0               | 0           |           | 0     |
| Percent Heavy Vehicles                  |                | 3        | 0          | 3           |              |       | 0               | 0           |           | 0     |
| Percent Grade (%)                       |                |          | 0          |             |              |       |                 | 0           |           |       |
| Flared Approach                         |                |          | N          |             |              |       |                 | N           |           |       |
| Storage                                 |                |          | 0          |             |              |       |                 | 0           |           |       |
| RT Channelized                          |                |          |            | 0           |              |       |                 |             |           | 0     |
| Lanes                                   | 1              | 0        | 0          | 0           |              |       | 0               | 0           |           | 0     |
| Configuration                           |                |          | LR         |             |              |       |                 |             |           |       |
| Delay, Queue Length, a                  | and Leve       | el of Se | rvice      | ,           |              |       |                 |             |           |       |
| Approach                                | Northb         | T T      | Southbound | 1           | <b>Nestb</b> | ound  |                 | Е           | astboun   |       |
| Movement                                | 1              |          | 4          | 7           | 8            |       | 9               | 10          | 11        | 12    |
| Lane Configuration                      |                |          | LT         |             |              |       |                 |             | LR        |       |
| v (veh/h)                               |                |          | 112        |             |              |       |                 |             | 394       |       |
| C (m) (veh/h)                           |                |          | 1278       |             |              |       |                 |             | 597       |       |
| v/c                                     |                |          | 0.09       |             |              |       |                 |             | 0.66      | †     |
| 95% queue length                        |                |          | 0.29       |             |              |       |                 |             | 4.88      | +     |
| Control Delay (s/veh)                   |                |          | 8.1        |             |              |       |                 |             | 22.0      | +     |
| LOS                                     |                |          | A. 1       |             |              |       |                 |             | 22.0<br>C | +     |
|   |                |          |            |             |              |       |                 |             |           |       |
| Approach Delay (s/veh)                  |                |          |            |             |              |       |                 |             | 22.0      |       |
| Approach LOS                            |                |          |            |             |              |       |                 |             | C         |       |

|  | TW              | O-WAY STOP   | CONTR    | OL SUM                 | MARY            |           |                  |  |  |  |
|--|-----------------|--------------|----------|------------------------|-----------------|-----------|------------------|--|--|--|
| General Informatio                             | n               |              | Site I   | nformati               | ion             |           |                  |  |  |  |
| Analyst  | SKB             |              | Interse  | ection                 |                 | SR 59 @   | ) I-40 WB F      | Ramps  |  |  |
| Agency/Co.                                     | TDOT/Tra        | anSystems    | Jurisd   | iction                 |                 | Fayette ( |                  | •  |  |  |
| Date Performed                                 | 04/18/20        |              | Analys   | sis Year               |                 | 2034      |                  |  |  |  |
| Analysis Time Period                           | AM Peak         | Period       |          |                        |                 |           |                  |  |  |  |
| Project Description Ex                         |                 | าร           |          |                        |                 |           |                  |  |  |  |
| East/West Street: I-40                         |                 |              |          |                        | et: SR 59       | )         |                  |  |  |  |
| ntersection Orientation:                       | North-South     |              | Study    | Period (hrs            | s): <i>0.25</i> |           |                  |  |  |  |
| Vehicle Volumes a                              | nd Adjustme     | ents         |          |                        |                 |           |                  |  |  |  |
| Major Street                                   |                 | Northbound   |          |                        |                 | Southbo   | und              |  |  |  |
| Movement                                       | 1               | 2            | 3        |                        | 4               | 5         |                  | 6  |  |  |
|  | L               | T            | R        |                        | L               | T         |                  | R  |  |  |
| /olume (veh/h)                                 | 209             | 154          | 0.00     |                        | 0.00            | 124       |                  | 199  |  |  |
| Peak-Hour Factor, PHF<br>Hourly Flow Rate, HFR | 0.90            | 0.90         | 0.90     | <u>'</u>               | 0.90            | 0.90      |                  | 0.90   |  |  |
| veh/h)   | 232             | 171          | 0        |                        | 0               | 137       |                  | 221  |  |  |
| Percent Heavy Vehicles                         | 3               |              |          |                        | 3               |           |                  |  |  |  |
| Median Type                                    |                 |              |          | Undivide               | ed              |           |                  |  |  |  |
| RT Channelized                                 |                 |              | 0        | ļ                      |                 |           |                  | 0  |  |  |
| anes   | 0               | 1            | 0        |                        | 0               | 1         |                  | 0  |  |  |
| Configuration                                  | LT              |              |          |                        |                 |           |                  | TR   |  |  |
| Jpstream Signal                                |                 | 0            |          |                        |                 | 0         | <u> </u>         |  |  |  |
| Minor Street                                   |                 | Eastbound    |          |                        |                 | Westbou   | ınd              |  |  |  |
| Movement                                       | 7               | 8            | 9        |                        | 10              | 11        |                  | 12   |  |  |
|  | L               | Т            | R        |                        | L               | Т         |                  | R  |  |  |
| /olume (veh/h)                                 |                 |              |          |                        | 81              |           |                  | 78   |  |  |
| Peak-Hour Factor, PHF                          | 0.90            | 0.90         | 0.90     |                        | 0.90            | 0.90      |                  | 0.90   |  |  |
| Hourly Flow Rate, HFR veh/h)                   | 0               | 0            | 0        |                        | 90              | 0         |                  | 86   |  |  |
| Percent Heavy Vehicles                         | 3               | 0            | 3        |                        | 3               | 0         |                  | 3  |  |  |
| Percent Grade (%)                              |                 | 0            |          |                        |                 | 0         |                  |  |  |  |
| lared Approach                                 |                 | N            |          |                        |                 | N         |                  |  |  |  |
| Storage  | 1               | 0            |          |                        |                 | 0         |                  |  |  |  |
| RT Channelized                                 | 1               | 1            | 0        | <u> </u>               |                 | 1         | $\neg$           | 0  |  |  |
| _anes  | 0               | 0            | 0        | <del>-  </del>         | 0               | 0         | <del>-   -</del> | 0  |  |  |
| Configuration                                  | <del> </del>    | <del> </del> | † *      | <del>-  </del>         |                 | LR        | +                | -  |  |  |
| Delay, Queue Length, a                         | and Level of Se | ervice       | 1        |                        |                 |           |                  |  |  |  |
| Approach                                       | Northbound      | Southbound   | ,        | Westbound              |                 |           | Eastbound        |  |  |  |
| Movement                                       | 1               | 4            | 7        | 8                      | 9               | 10        | 11               | 12   |  |  |
|  | LT              | <del></del>  | '        | LR                     | + 3             | 10        | ''               | <del>                                     </del> |  |  |
| Lane Configuration                             |                 |              |          |                        | -               |           | -                | -  |  |  |
| / (veh/h)                                      | 232             |              |          | 176                    |                 |           |                  | —  |  |  |
| C (m) (veh/h)                                  | 1195            |              |          | 388                    |                 |           |                  | <u> </u>   |  |  |
| ı/c  | 0.19            |              |          | 0.45                   |                 |           |                  | <u> </u>   |  |  |
| 95% queue length                               | 0.72            |              |          | 2.29                   |                 |           |                  |  |  |  |
| Control Delay (s/veh)                          | 8.7             |              |          | 21.8                   |                 |           |                  |  |  |  |
| _OS  | Α               |              |          | С                      |                 |           |                  |  |  |  |
| Approach Delay (s/veh)                         |                 |              |          | 21.8                   | 1               | 1         | <u>I</u>         |  |  |  |
| Approach LOS                                   |                 |              |          | C                      |                 | +         |                  |  |  |  |
| Copyright © 2008 University of F               |                 |              | <u> </u> | CS+ <sup>TM</sup> Vers |                 |           | rated: 4/20/20   |  |  |  |

|  | TW   | O-WAY STOP   | CONTR  | OL SUM                 | MARY     |  |  |              |
|--|--|--------------|--|------------------------|----------|--|--|--------------|
| General Informatio                             | n  |              | Site I   | nformati               | on       |  |  |              |
| Analyst  | SKB  |              | Interse  | ection                 |          | SR 59 @  | . I-40 WB F                                    | Ramps        |
| Agency/Co.                                     | TDOT/Tra   | anSystems    | Jurisdi  | ction                  |          | Fayette (  |  | ,            |
| Date Performed                                 | 04/18/20   |              | Analys   | sis Year               |          | 2034   |  |              |
| Analysis Time Period                           | PM Peak  | Period       |  |                        |          |  |  |              |
| Project Description Ex                         | kisting Condition                                | าร           |  |                        |          |  |  |              |
| East/West Street: I-40                         |  |              |  | South Stre             |          | )  |  |              |
| ntersection Orientation:                       | North-South                                      |              | Study  | Period (hrs            | s): 0.25 |  |  |              |
| Vehicle Volumes a                              | nd Adjustme                                      | ents         |  |                        |          |  |  |              |
| Major Street                                   |  | Northbound   |  |                        |          | Southbo  | und  |              |
| Movement                                       | 1  | 2            | 3  |                        | 4        | 5  |  | 6            |
|  | L  | T            | R  |                        | L        | T  |  | R            |
| Volume (veh/h)                                 | 135  | 188          | 0.00   |                        | 0.00     | 108  |  | 128          |
| Peak-Hour Factor, PHF<br>Hourly Flow Rate, HFR | 0.90   | 0.90         | 0.90   | <u>'</u>               | 0.90     | 0.90   |  | 0.90         |
| veh/h)   | 150  | 208          | 0  |                        | 0        | 120  |  | 142          |
| Percent Heavy Vehicles                         | 3  |              |  |                        | 3        |  |  |              |
| Median Type                                    |  |              |  | Undivide               | d        |  |  |              |
| RT Channelized                                 |  |              | 0  |                        |          |  |  | 0            |
| _anes  | 0  | 1            | 0  |                        | 0        | 1  |  | 0            |
| Configuration                                  | LT   |              |  |                        |          |  |  | TR           |
| Upstream Signal                                |  | 0            |  |                        |          | 0  |  |              |
| Minor Street                                   |  | Eastbound    |  |                        |          | Westbou  | ınd  |              |
| Movement                                       | 7  | 8            | 9  |                        | 10       | 11   |  | 12           |
|  | L  | Т            | R  |                        | L        | Т  |  | R            |
| /olume (veh/h)                                 |  |              |  |                        | 109      |  |  | 107          |
| Peak-Hour Factor, PHF                          | 0.90   | 0.90         | 0.90   |                        | 0.90     | 0.90   |  | 0.90         |
| Hourly Flow Rate, HFR veh/h)                   | 0  | О            | 0  |                        | 121      | О  |  | 118          |
| Percent Heavy Vehicles                         | 3  | 0            | 3  |                        | 3        | 0  |  | 3            |
| Percent Grade (%)                              |  | 0            |  |                        |          | 0  | <u>,                                      </u> |              |
| Flared Approach                                |  | N            |  |                        |          | N  |  |              |
| Storage  |  | 0            |  |                        |          | 0  |  |              |
| RT Channelized                                 | <del> </del>                                     | <del> </del> | 0  |                        |          | <del>                                     </del> | <del>-  </del> -                               | 0            |
| Lanes  | 0  | 0            | 0  | <del></del>            | 0        | 0  |  | 0            |
| Configuration                                  | <del>                                     </del> | <del> </del> | <del>                                     </del> | <del>-  -</del>        |          | LR   | _  |              |
| Delay, Queue Length, a                         | and Lovel of Se                                  |              |  |                        |          |  |  |              |
| Approach                                       | Northbound                                       | Southbound   | 1 ,  | Westbound              | ٦        | 1  | Eastbound                                      |              |
| Movement                                       | 1  | 4            | 7  | 8                      | 9        | 10   | 11   | 12           |
|  |  | 4            | /  |                        | 9        | 10   | ''   | 12           |
| _ane Configuration                             | LT<br>450  |              |  | LR                     | 1        | +  | -  | _            |
| / (veh/h)                                      | 150  |              |  | 239                    |          |  |  | <del> </del> |
| C (m) (veh/h)                                  | 1296   |              |  | 498                    | <u> </u> |  |  |              |
| //c  | 0.12   |              |  | 0.48                   |          |  |  |              |
| 95% queue length                               | 0.39   |              |  | 2.57                   |          |  |  |              |
| Control Delay (s/veh)                          | 8.1  |              |  | 18.7                   |          |  |  |              |
| _OS  | Α  |              |  | С                      | 1        |  |  |              |
| Approach Delay (s/veh)                         |  |              |  | 18.7                   | •        |  |  |              |
| Approach LOS                                   |  |              |  | С                      |          | 1  |  |              |
| Copyright © 2008 University of F               |  |              | I  | CS+ <sup>TM</sup> Vers |          |  | ated: 4/20/20                                  | 14 400       |

|                                  | TW              | O-WAY STOP    | CONTR    | OL SI    | JMI   | MARY           |  |            |         |            |
|----------------------------------|-----------------|---------------|----------|----------|-------|----------------|--|------------|---------|------------|
| General Information              | n               |               | Site I   | nform    | natio | on             |  |            |         |            |
| Analyst                          | SKB             |               | Interse  | ection   |       |                | SR 222 (   | @ Pilo     | t Dw    | /.         |
| Agency/Co.                       | TDOT/Tra        | anSystems     | Jurisd   | iction   |       |                |  |            |         |            |
| Date Performed                   | 04/18/20        | 11            | Analys   | sis Yea  | r     |                | 2014   |            |         |            |
| Analysis Time Period             | AM Peak         | Period        |          |          |       |                |  |            |         |            |
|                                  |                 | is (No Build) | ,        |          |       |                |  |            |         |            |
| East/West Street: Pilot          | Dwy.            |               |          |          |       |                | 2  |            |         |            |
| Intersection Orientation:        | North-South     |               | Study    | Period   | (hrs) | : <i>0.</i> 25 |  |            |         |            |
|                                  | SKB             |               |          |          |       |                |  |            |         |            |
| Major Street                     |                 |               |          |          |       |                | 7  | <u>und</u> |         |            |
| Movement                         |                 |               |          |          |       |                |  |            |         | 6          |
|                                  | <u> </u>        | <u> </u>      |          |          |       |                |  |            |         | R          |
| Volume (veh/h)                   | 0.00            | _             |          | ,        |       |                |  |            |         | 0.00       |
| Peak-Hour Factor, PHF            | 0.90            | 0.90          | 0.90     | <u>'</u> |       | 0.90           | 0.90   | $\dashv$   |         | 0.90       |
| Hourly Flow Rate, HFR (veh/h)    | 0               | 217           | 10       |          |       | 100            | 280  |            |         | 0          |
| Percent Heavy Vehicles           | 0               |               |          |          |       |                |  |            |         |            |
| Median Type                      |                 |               |          | Undiv    | /idec | 1              |  |            |         |            |
| RT Channelized                   |                 |               | 0        |          |       |                |  |            |         | 0          |
| Lanes                            | 0               | 1             | 0        |          |       |                | 1  |            |         | 0          |
| Configuration                    |                 |               | TR       |          |       | LT             |  |            |         |            |
| Upstream Signal                  |                 | 0             |          |          |       |                | 0  |            |         |            |
| Minor Street                     |                 | Eastbound     |          |          |       |                | Westbou  | ınd        |         |            |
| Movement                         | 7               | _             | _        |          |       |                |  |            |         | 12         |
|                                  | L               | Т             | R        |          |       |                | Т  |            |         | R          |
| Volume (veh/h)                   |                 |               |          |          |       |                |  |            |         | 135        |
| Peak-Hour Factor, PHF            | 0.90            | 0.90          | 0.90     | )        |       | 0.90           | 0.90   |            | (       | 0.90       |
| Hourly Flow Rate, HFR (veh/h)    | 0               | 0             | 0        |          |       | 5              | 0  |            |         | 150        |
| Percent Heavy Vehicles           | 3               | 0             | 3        |          |       | 25             | 0  |            |         | 25         |
| Percent Grade (%)                |                 | 0             |          |          |       |                | 0  |            |         |            |
| Flared Approach                  |                 | N             |          |          |       |                | N  |            |         |            |
| Storage                          |                 | 0             |          |          |       |                | 0  |            |         |            |
| RT Channelized                   |                 |               | 0        |          |       |                |  |            |         | 0          |
| Lanes                            | 0               | 0             | 0        |          |       | 0              | 0  |            |         | 0          |
| Configuration                    |                 |               |          |          |       |                | LR   |            |         |            |
| Delay, Queue Length, a           | and Level of Se | ervice        |          |          |       |                |  |            |         |            |
| Approach                         | Northbound      | Southbound    | ,        | Westbo   | ound  |                | I  | Eastbo     | ound    |            |
| Movement                         | 1               | 4             | 7        | 8        |       | 9              | 10   | 1          | 1       | 12         |
| Lane Configuration               |                 | LT            |          | LR       |       |                |  |            |         |            |
| v (veh/h)                        |                 | 100           |          | 155      | 5     |                |  |            |         |            |
| C (m) (veh/h)                    |                 | 1217          |          | 734      | 1     |                |  |            |         |            |
| v/c                              |                 | 0.08          |          | 0.21     | 1     |                |  |            |         |            |
| 95% queue length                 |                 | 0.27          |          | 0.79     | 9     |                |  |            |         |            |
| Control Delay (s/veh)            |                 | 8.2           |          | 11.2     | 2     |                |  |            |         |            |
| LOS                              |                 | A             |          | В        |       |                |  |            |         | †          |
| Approach Delay (s/veh)           |                 |               |          | 11.2     |       | <u>I</u>       |  |            |         | <u> </u>   |
| Approach LOS                     |                 |               |          | B        | _     |                | <del>                                     </del> |            |         |            |
| Copyright @ 2009 University of E |                 | ļ             | <u> </u> | oo TM v  |       |                |  |            | /20/201 | 1 12:42 DA |

|                              |  | O-WAY STOP                                       |  |  |                   |             |                  |             |  |
|------------------------------|--|--|--|--|-------------------|-------------|------------------|-------------|--|
| General Information          | n  |  | Site   | Inform   | ation             |             |                  |             |  |
| Analyst                      | SKB  |  | Inters   | ection   |                   | SR 222      | @ Pilot Dw       | у.          |  |
| Agency/Co.                   |  | anSystems  |  | diction  |                   | Fayette (   | County           |             |  |
| Date Performed               | 04/18/20 <sup>-</sup>                            |  | Analy  | sis Year   |                   | 2014        |                  |             |  |
| Analysis Time Period         | PM Peak  | Period   |  |  |                   |             |                  |             |  |
| Project Description Ex       |  | ns (No Build)                                    |  |  |                   |             |                  |             |  |
| East/West Street: Pilot      |  |  |  |  | reet: SR 22       | 22          |                  |             |  |
| ntersection Orientation:     | North-South                                      |  | Study  | Period (   | hrs): <i>0.25</i> |             |                  |             |  |
| Vehicle Volumes au           | nd Adjustme                                      | ents   |  |  |                   |             |                  |             |  |
| Major Street                 |  | Northbound                                       |  |  |                   | -           | outhbound        |             |  |
| Movement                     | 1  | 2  | 3  |  | 4                 | 5           |                  | 6           |  |
|                              | L  | Т  | R  |  | L                 | T           |                  | R           |  |
| Volume (veh/h)               |  | 255  | 11   |  | 153               | 132         |                  |             |  |
| Peak-Hour Factor, PHF        | 0.90   | 0.90   | 0.9  | 0  | 0.90              | 0.90        |                  | 0.90        |  |
| Hourly Flow Rate, HFR veh/h) | 0  | 283  | 12   | · [  | 170               | 146         |                  | 0           |  |
| Percent Heavy Vehicles       | 0  |  | <del> </del>                                     | <del></del>                                      | 25                | <del></del> | -+               |             |  |
| Median Type                  | <del>                                     </del> |  |  | Undivi   |                   |             |                  |             |  |
| RT Channelized               | 1  | <u> </u>   | 1 (  |  |                   |             |                  | 0           |  |
| _anes                        | 0  | 1  | 0  | <del>-  </del>                                   | 0                 | 1           | $\dashv$         | 0           |  |
| Configuration                | <del>                                     </del> | <del>'</del>                                     | TF   | , +  | LT                | + '         | -+               |             |  |
| Jpstream Signal              |  | 0  | <del>  ''</del>                                  | <del>`                                    </del> |                   | 0           |                  |             |  |
| Minor Street                 | <u> </u>   |  | <u> </u>   | <del></del>                                      |                   | Westbou     |                  |             |  |
| Movement                     | 7  | Eastbound 8                                      | ] 9  | -  | 10                | 11          | ina              | 12          |  |
| viovernent                   | , , , , , , , , , , , , , , , , , , ,            |  | R  |  | IU                | T T         |                  | R           |  |
| /olume (veh/h)               | <del>                                     </del> | <u>'</u>   |  | ·  | 2                 | <u> </u>    |                  | 127         |  |
| Peak-Hour Factor, PHF        | 0.90   | 0.90   | 0.9  | 0  | 0.90              | 0.90        |                  | 0.90        |  |
| Hourly Flow Rate, HFR        |  |  |  | <del>'  </del>                                   |                   |             |                  |             |  |
| (veh/h)                      | 0  | 0  | 0  |  | 2                 | 0           |                  | 141         |  |
| Percent Heavy Vehicles       | 3  | 0  | 3  |  | 25                | 0           |                  | 25          |  |
| Percent Grade (%)            |  | 0  |  |  |                   | 0           |                  |             |  |
| Flared Approach              | 1  | N  |  |  |                   | N           |                  |             |  |
| Storage                      | <del>-</del>                                     | 0  | †  | +  |                   | 0           |                  |             |  |
| RT Channelized               | +  | <del>                                     </del> |  | <del>,                                    </del> |                   | + -         | -+               | 0           |  |
| Lanes                        | 0  | 0  | 0  |  | 0                 | 0           | <del>-  </del> - | 0           |  |
| Configuration                | +  |  | <del>                                     </del> | +  | U                 | LR          | -                | U           |  |
| Delay, Queue Length, a       | and Lovel of Co                                  |  |  |  |                   | LIN         |                  |             |  |
| Approach                     | Northbound                                       | Southbound                                       |  | Westbo   | und               |             | Eastbound        |             |  |
|                              |  | <b></b>  | 7  |  | 9                 |             | 1                | 12          |  |
| Movement                     | 1  | 4  | - /  | 8  | 9                 | 10          | 11               | 12          |  |
| _ane Configuration           |  | LT   |  | LR   |                   |             |                  | _           |  |
| v (veh/h)                    |  | 170  |  | 143  |                   |             |                  | <del></del> |  |
| C (m) (veh/h)                |  | 1146   |  | 685  |                   |             |                  |             |  |
| //c                          |  | 0.15   |  | 0.21   |                   |             |                  |             |  |
| 95% queue length             |  | 0.52   |  | 0.78   |                   |             |                  |             |  |
| Control Delay (s/veh)        |  | 8.7  |  | 11.6   |                   |             |                  |             |  |
| _OS                          |  | A  |  | В  |                   | 1           |                  |             |  |
| Approach Delay (s/veh)       |  |  |  | 11.6   |                   | +           |                  | 1           |  |
| , , ,                        |  | <u> </u>   |  |  |                   | +           |                  |             |  |
| Approach LOS                 |  |  | В  |  |                   | 1           |                  |             |  |

|                               | TW                | O-WAY STOP    | CONTRO   | OL SUM           | MARY             |  |             |                |
|-------------------------------|-------------------|---------------|----------|------------------|------------------|--|-------------|----------------|
| General Informatio            | n                 |               | Site Ir  | nformati         | on               |  |             |                |
| Analyst                       | SKB               |               | Interse  | ction            |                  | SR 222 (   | @ I-40 EB F | =====<br>Ramps |
| Agency/Co.                    | TDOT/Tra          | anSystems     | Jurisdio | ction            |                  | Fayette C  |             |                |
| Date Performed                | 04/18/201         | 11            | Analys   | is Year          |                  | 2014   |             |                |
| Analysis Time Period          | AM Peak           | Period        |          |                  |                  |  |             |                |
| Project Description Ex        | kisting Conditior | ns (No Build) |          |                  |                  |  |             |                |
| East/West Street: I-40        | EB Ramps          |               | North/S  | outh Stree       | et: <i>SR 22</i> | 2  |             |                |
| Intersection Orientation:     | North-South       |               | Study F  | Period (hrs      | ): <i>0.</i> 25  |  |             |                |
| Vehicle Volumes ar            | nd Adiustme       | nts           |          |                  |                  |  |             |                |
| Major Street                  | 1                 | Northbound    |          |                  |                  | Southbou   | und         |                |
| Movement                      | 1                 | 2             | 3        |                  | 4                | 5  |             | 6              |
|                               | L                 | Т             | R        |                  | L                | Т  |             | R              |
| Volume (veh/h)                |                   | 217           | 114      |                  | 118              | 208  |             |                |
| Peak-Hour Factor, PHF         | 0.90              | 0.90          | 0.90     |                  | 0.90             | 0.90   | (           | 0.90           |
| Hourly Flow Rate, HFR (veh/h) | 0                 | 241           | 126      |                  | 131              | 231  |             | 0              |
| Percent Heavy Vehicles        | 0                 |               |          |                  | 10               |  |             |                |
| Median Type                   |                   |               |          | Undivide         | d                |  |             |                |
| RT Channelized                |                   |               | 0        |                  |                  |  |             | 0              |
| Lanes                         | 0                 | 1             | 0        |                  | 0                | 1  | $\neg$      | 0              |
| Configuration                 |                   |               | TR       |                  | LT               |  |             |                |
| Upstream Signal               |                   | 0             |          |                  |                  | 0  |             |                |
| Minor Street                  | <del>-</del>      | Eastbound     |          | <del>-  -</del>  |                  | Westbou  | ınd         |                |
| Movement                      | 7                 | 8             | 9        |                  | 10               | 11   |             | 12             |
|                               | Ĺ                 | T             | R        |                  | L                | T  |             | R              |
| Volume (veh/h)                | 581               | <del></del>   | 134      |                  |                  | <del>†                                      </del> | _           |                |
| Peak-Hour Factor, PHF         | 0.90              | 0.90          | 0.90     |                  | 0.90             | 0.90   |             | 0.90           |
| Hourly Flow Rate, HFR         |                   |               |          | $\neg$           |                  |  |             |                |
| (veh/h)                       | 645               | 0             | 148      |                  | 0                | 0  |             | 0              |
| Percent Heavy Vehicles        | 10                | 0             | 25       |                  | 0                | 0  |             | 0              |
| Percent Grade (%)             |                   | 0             |          |                  |                  | 0  |             |                |
| Flared Approach               |                   | N             |          |                  |                  | N  |             |                |
| Storage                       | 1                 | 0             |          |                  |                  | 0  |             |                |
| RT Channelized                | +                 |               | 0        |                  |                  | +  |             | 0              |
| Lanes                         | 0                 | 0             | 0        | _                | 0                | 0  | -+          | 0              |
| Configuration                 | + -               | LR            | + -      | _                | U                | + -  | -+          |                |
|                               | and Lovert of Co  |               |          |                  |                  |  |             |                |
| Delay, Queue Length, a        |                   | 1 2           | · ·      | N/o o 4 lo o o a | ı                | <del></del>  |             |                |
| Approach                      | Northbound        | Southbound    |          | Vestbound        |                  |  | Eastbound   | T 42           |
| Movement                      | 1                 | 4             | 7        | 8                | 9                | 10   | 11          | 12             |
| Lane Configuration            |                   | LT            |          |                  |                  |  | LR          |                |
| v (veh/h)                     |                   | 131           |          |                  |                  |  | 793         |                |
| C (m) (veh/h)                 |                   | 1149          |          |                  |                  |  | 344         |                |
| v/c                           |                   | 0.11          |          |                  |                  | 1  | 2.31        |                |
| 95% queue length              |                   | 0.38          |          |                  |                  | <del>                                     </del>   | 61.00       |                |
| Control Delay (s/veh)         |                   | 8.5           |          |                  | 1                | +  | 620.8       | 1              |
| LOS                           |                   |               |          |                  |                  | +  |             |                |
|                               |                   | Α             |          |                  |                  | +  | F           | <u></u>        |
| Approach Delay (s/veh)        |                   |               |          |                  |                  | <del> </del>                                       | 620.8       |                |
| Approach LOS                  |                   |               | F        |                  |                  |  |             |                |

|                                      | TW                    | O-WAY STOP    | CONTRO      | OL SUMI     | MARY            |             |                  |          |
|--------------------------------------|-----------------------|---------------|-------------|-------------|-----------------|-------------|------------------|----------|
| General Information                  | n                     |               | Site Ir     | nformati    | on              |             |                  |          |
| Analyst                              | SKB                   |               | Interse     | ction       |                 | SR 222      | @ I-40 EB F      | Ramps    |
| Agency/Co.                           |                       | anSystems     | Jurisdi     |             |                 | Fayette (   | County           |          |
| Date Performed                       | 04/18/20 <sup>-</sup> |               | Analys      | is Year     |                 | 2014        |                  |          |
| Analysis Time Period                 | PM Peak               |               |             |             |                 |             |                  |          |
| Project Description Ex               |                       | ns (No Build) |             |             |                 |             |                  |          |
| East/West Street: I-40               |                       |               |             | outh Stree  |                 | 2           |                  |          |
| ntersection Orientation:             | North-South           |               | Study F     | Period (hrs | ): <i>0.</i> 25 |             |                  |          |
| Vehicle Volumes au                   | nd Adjustme           |               |             |             |                 |             |                  |          |
| Major Street                         |                       | Northbound    |             |             |                 | Southbo     | und              |          |
| Movement                             | 1 1                   | 2             | 3           |             | 4               | 5           |                  | 6        |
| / - l / l - /l- \                    | L                     | T             | R           |             | L               | T 450       |                  | R        |
| Volume (veh/h) Peak-Hour Factor, PHF | 0.90                  | 240<br>0.90   | 142<br>0.90 |             | 225<br>0.90     | 159<br>0.90 | <del>-   ,</del> | 0.90     |
| Hourly Flow Rate, HFR                |                       |               | 1           |             |                 |             |                  |          |
| veh/h)                               | 0                     | 266           | 157         |             | 250             | 176         |                  | 0        |
| Percent Heavy Vehicles               | 0                     |               |             |             | 10              |             |                  |          |
| Median Type                          |                       |               |             | Undivided   | d               |             |                  |          |
| RT Channelized                       |                       |               | 0           |             |                 |             |                  | 0        |
| _anes                                | 0                     | 1             | 0           |             | 0               | 1           |                  | 0        |
| Configuration                        |                       |               | TR          |             | LT              |             |                  |          |
| Jpstream Signal                      |                       | 0             |             |             |                 | 0           |                  |          |
| Minor Street                         |                       | Eastbound     |             |             |                 | Westbou     | ınd              |          |
| Movement                             | 7                     | 8             | 9           |             | 10              | 11          |                  | 12       |
|                                      | L                     | T             | R           |             | L               | T           |                  | R        |
| /olume (veh/h)                       | 271                   |               | 126         |             |                 |             |                  |          |
| Peak-Hour Factor, PHF                | 0.90                  | 0.90          | 0.90        |             | 0.90            | 0.90        | (                | 0.90     |
| Hourly Flow Rate, HFR                | 301                   | 0             | 140         |             | 0               | 0           |                  | 0        |
| (veh/h)                              |                       |               | <u> </u>    |             |                 |             |                  |          |
| Percent Heavy Vehicles               | 10                    | 0             | 25          |             | 0               | 0           |                  | 0        |
| Percent Grade (%)                    |                       | 0             | 1           |             |                 | 0           |                  |          |
| Flared Approach                      |                       | N             |             |             |                 | N           |                  |          |
| Storage                              |                       | 0             |             |             |                 | 0           |                  |          |
| RT Channelized                       |                       |               | 0           |             |                 |             |                  | 0        |
| Lanes                                | 0                     | 0             | 0           |             | 0               | 0           |                  | 0        |
| Configuration                        |                       | LR            |             |             |                 |             |                  |          |
| Delay, Queue Length, a               |                       |               |             |             |                 |             |                  |          |
| Approach                             | Northbound            | Southbound    | V           | Vestbound   |                 |             | Eastbound        | <b>1</b> |
| Movement                             | 1                     | 4             | 7           | 8           | 9               | 10          | 11               | 12       |
| ane Configuration                    |                       | LT            |             |             |                 |             | LR               |          |
| / (veh/h)                            |                       | 250           |             |             |                 |             | 441              |          |
| C (m) (veh/h)                        |                       | 1095          |             |             |                 |             | 257              |          |
| r/c                                  |                       | 0.23          |             |             | <u> </u>        | †           | 1.72             |          |
| 95% queue length                     |                       | 0.88          |             |             |                 | +           | 28.75            |          |
| Control Delay (s/veh)                |                       | 9.3           |             |             | -               | +           | 371.8            |          |
| OS                                   |                       | <b></b>       |             |             | -               | +           | 571.6<br>F       |          |
|                                      |                       | Α             |             |             | <u> </u>        | +           | <u> </u>         |          |
| Approach Delay (s/veh)               |                       |               |             |             |                 | +           | 371.8            |          |
| Approach LOS                         |                       |               |             | F           |                 |             |                  |          |

|                                  | TW             | O-WAY STOP                                       | CONTR   | OL SI         | JMI   | MARY      |  |                |         |         |     |     |
|----------------------------------|----------------|--|---------|---------------|-------|-----------|--|----------------|---------|---------|-----|-----|
| <b>General Informatio</b>        | n              |  | Site I  | nform         | atio  | on        |  |                |         |         |     |     |
| Analyst                          | SKB            |  | Interse | ection        |       |           | SR 222 (   | @ <b>I-4</b> 0 | WB      | Ramps   |     |     |
| Agency/Co.                       | TDOT/Tr        | ranSystems                                       | Jurisdi |               |       |           | Fayette 0  | County         | /       | ·       |     |     |
| Date Performed                   | 04/18/20       |  | Analys  | sis Yea       | r     |           | 2014   |                |         |         |     |     |
| Analysis Time Period             | AM Peak        |  |         |               |       |           |  |                |         |         |     |     |
| Project Description Ex           |                | ns (No Build)                                    |         |               |       |           |  |                |         |         |     |     |
| East/West Street: I-40           |                |  |         |               |       | t: SR 222 |  |                |         |         |     |     |
| Intersection Orientation:        |                |  | Study I | Period        | (hrs) | : 0.25    |  |                |         |         |     |     |
| Vehicle Volumes a                | nd Adjustme    |  |         |               |       |           |  |                |         |         |     |     |
| Major Street                     |                | Northbound                                       | 1 0     |               |       |           | Southbou   | ınd T          |         |         |     |     |
| Movement                         | 1 1            | 2<br>  | 3<br>R  | $\rightarrow$ |       | 4         | 5<br>T   |                |         | 6<br>R  |     |     |
| Volume (veh/h)                   | 83             | 715  | R       |               |       | L         | 209  |                |         | 304     |     |     |
| Peak-Hour Factor, PHF            | 0.90           | 0.90   | 0.90    |               |       | 0.90      | 0.90   | -+             |         | 0.90    |     |     |
| Hourly Flow Rate, HFR            |                |  |         |               |       |           | i e  | $\overline{}$  |         |         |     |     |
| (veh/h)                          | 92             | 794  | 0       |               |       | 0         | 232  |                |         | 337     |     |     |
| Percent Heavy Vehicles           | 25             |  |         |               |       | 3         |  |                |         |         |     |     |
| Median Type                      |                |  |         | Undiv         | ⁄idec | 1         |  |                |         |         |     |     |
| RT Channelized                   |                |  | 0       |               |       |           |  |                |         | 0       |     |     |
| Lanes                            | 0              | 1  | 0       |               |       | 0         | 1  |                |         | 0       |     |     |
| Configuration                    | LT             |  |         |               |       |           |  |                |         | TR      |     |     |
| Upstream Signal                  |                | 0  |         |               |       |           | 0  |                |         |         |     |     |
| Minor Street                     |                | Eastbound  |         |               |       |           | Westbou  | ınd            |         |         |     |     |
| Movement                         | 7              | 8  | 9       |               |       | 10        | 11   |                |         | 12      |     |     |
|                                  | L              | Т  | R       |               |       | L         | Т  |                |         | R       |     |     |
| Volume (veh/h)                   |                |  |         |               |       | 117       |  |                | ·       |         | 257 |     |
| Peak-Hour Factor, PHF            | 0.90           | 0.90   | 0.90    | <u> </u>      |       | 0.90      | 0.90   |                | 0.90 0. |         |     |     |
| Hourly Flow Rate, HFR (veh/h)    | 0              | 0  | 0       |               |       | 130       | 0  |                | 0       |         |     | 285 |
| Percent Heavy Vehicles           | 3              | 0  | 3       |               |       | 25        | 0  |                | 0       |         |     | 10  |
| Percent Grade (%)                |                | 0  |         |               |       |           | 0  |                |         |         |     |     |
| Flared Approach                  |                | N  |         |               |       |           | N  |                |         |         |     |     |
| Storage                          |                | 0  |         |               |       |           | 0  |                |         |         |     |     |
| RT Channelized                   |                |  | 0       |               |       |           |  |                |         | 0       |     |     |
| Lanes                            | 0              | 0  | 0       |               |       | 0         | 0  |                |         | 0       |     |     |
| Configuration                    |                |  |         |               |       |           | LR   |                |         |         |     |     |
| Delay, Queue Length, a           | and Level of S | ervice   |         |               |       |           |  |                |         |         |     |     |
| Approach                         | Northbound     | Southbound                                       | 1       | Westbo        | ound  |           | I  | Eastbo         | ound    |         |     |     |
| Movement                         | 1              | 4  | 7       | 8             |       | 9         | 10   | 1              | 1       | 12      |     |     |
| Lane Configuration               | LT             |  |         | LR            |       |           |  |                |         |         |     |     |
| v (veh/h)                        | 92             |  |         | 415           | 5     |           |  |                |         |         |     |     |
| C (m) (veh/h)                    | 899            |  |         | 233           | }     |           |  |                |         |         |     |     |
| v/c                              | 0.10           |  |         | 1.78          | 3     |           |  |                |         |         |     |     |
| 95% queue length                 | 0.34           |  |         | 28.2          |       |           |  |                |         |         |     |     |
| Control Delay (s/veh)            | 9.5            |  |         | 404.          |       |           |  |                |         |         |     |     |
| LOS                              | A              | <del>                                     </del> |         | F             | _     |           | <del>                                     </del> |                |         |         |     |     |
| Approach Delay (s/veh)           |                |  |         | 404.:         | 2     |           |  | <u> </u>       |         | <u></u> |     |     |
| Approach LOS                     |                |  |         | F             |       |           |  |                |         |         |     |     |
| Converget © 2009 University of F |                |  |         |               |       |           | Conor  |                | 20/201  |         |     |     |

|                                      | I W           | O-WAY STOP    | CONTR       | OL SUM       | MARY             |                    |                |  |  |
|--------------------------------------|---------------|---------------|-------------|--------------|------------------|--------------------|----------------|--|--|
| General Information                  | n             |               | Site II     | nformati     | ion              |                    |                |  |  |
| Analyst                              | SKB           |               | Interse     | ction        |                  | SR 222 @ I-40 WB R |                |  |  |
| Agency/Co.                           | TDOT/Tr       | anSystems     |             | Jurisdiction |                  |                    | Fayette County |  |  |
| Date Performed                       | 04/18/20      |               | Analys      | is Year      |                  | 2014               |                |  |  |
| Analysis Time Period                 | PM Peak       |               |             |              |                  |                    |                |  |  |
| Project Description Ex               |               | ns (No Build) | •           |              |                  |                    |                |  |  |
| East/West Street: I-40               |               |               |             |              | et: SR 22        | ?2                 |                |  |  |
| ntersection Orientation:             |               |               | Study I     | Period (hrs  | s): <i>0.</i> 25 |                    |                |  |  |
| /ehicle Volumes ar                   | nd Adjustme   |               |             |              |                  |                    |                |  |  |
| Major Street                         | ļ             | Northbound    |             |              |                  | Southbo            | und            |  |  |
| Movement                             | 1             | 2             | 3           |              | 4                | 5                  |                | 6  |  |
| ( - 1 ( 1 - // - )                   | L             | T 105         | R           |              | L                | T                  |                | R  |  |
| Volume (veh/h) Peak-Hour Factor, PHF | 106<br>0.90   | 405<br>0.90   | 0.90        |              | 0.90             | 286<br>0.90        |                | 514<br>0.90                                      |  |
| Hourly Flow Rate, HFR                |               | 0.90          | 0.90        | _            | 0.90             |                    |                |  |  |
| veh/h)                               | 117           | 450           | 0           |              | 0                | 317                |                | 571  |  |
| Percent Heavy Vehicles               | 25            |               | <del></del> |              | 3                |                    |                |  |  |
| Median Type                          | 1             | •             |             | Undivide     | d                |                    |                |  |  |
| RT Channelized                       |               |               | 0           |              |                  |                    |                | 0  |  |
| _anes                                | 0             | 1             | 0           |              | 0                | 1                  |                | 0  |  |
| Configuration                        | LT            |               |             |              |                  |                    | TR             |  |  |
| Jpstream Signal                      | 1             | 0             | 1           |              |                  | 0                  |                |  |  |
| Minor Street                         |               | Eastbound     |             |              |                  | Westbou            | ınd            |  |  |
| Movement                             | 7             | 8             | 9           | 9 10         |                  | 11                 |                | 12   |  |
|                                      | L             | Т             | R           |              | L                | Т                  |                | R  |  |
| Volume (veh/h)                       |               | 1             | 1           |              | 98               |                    |                | 122  |  |
| Peak-Hour Factor, PHF                | 0.90          | 0.90          | 0.90        |              | 0.90             | 0.90               |                | 0.90   |  |
| Hourly Flow Rate, HFR                | 0             | 0             | 0           |              | 108              | 0                  |                | 135  |  |
| (veh/h)                              |               |               |             |              |                  |                    |                |  |  |
| Percent Heavy Vehicles               | 3             | 0             | 3           |              | 25               | 0                  |                | 10   |  |
| Percent Grade (%)                    |               | 0             | 1           |              |                  | 0                  |                |  |  |
| Flared Approach                      |               | N             |             |              |                  | N                  |                |  |  |
| Storage                              |               | 0             | ļ           |              |                  | 0                  |                |  |  |
| RT Channelized                       |               |               | 0           |              |                  |                    |                | 0  |  |
| _anes                                | 0             | 0             | 0           |              | 0                | 0                  |                | 0  |  |
| Configuration                        |               |               |             |              |                  | LR                 |                |  |  |
| Delay, Queue Length, a               | nd Level of S | ervice        |             |              |                  |                    |                |  |  |
| Approach                             | Northbound    | Southbound    | 1           | Nestbound    | d                |                    | Eastbound      |  |  |
| Movement                             | 1             | 4             | 7           | 8            | 9                | 10                 | 11             | 12   |  |
| _ane Configuration                   | LT            |               |             | LR           |                  |                    |                | 1  |  |
| / (veh/h)                            | 117           |               |             | 243          |                  | <b>†</b>           | †              |  |  |
| C (m) (veh/h)                        | 675           |               |             | 236          |                  | +                  |                | <del>                                     </del> |  |
| //C                                  | 0.17          |               |             | 1.03         |                  |                    | -              | $\vdash$   |  |
|                                      |               | -             |             |              |                  | +                  | -              | $\vdash$   |  |
| 95% queue length                     | 0.62          | ļ             |             | 9.99         |                  |                    | -              | ├─   |  |
| Control Delay (s/veh)                | 11.4          | ļ             |             | 111.3        |                  |                    |                | <b>├</b>   |  |
| _OS                                  | В             | <u> </u>      |             | F            |                  |                    | <u> </u>       |  |  |
| Approach Delay (s/veh)               |               |               |             | 111.3        |                  |                    |                |  |  |
| Approach LOS                         |               |               | F           |              |                  |                    |                |  |  |

|                                  | TW             | O-WAY STOP    | CONTR   | OL SI  | UMI   | MARY      |           |               |         |            |
|----------------------------------|----------------|---------------|---------|--------|-------|-----------|-----------|---------------|---------|------------|
| General Informatio               | n              |               | Site I  | nform  | natio | on        |           |               |         |            |
| Analyst                          | SKB            |               | Interse | ection |       |           | SR 222 (  | @ Pilot       | t Dwy   | <i>'</i> . |
| Agency/Co.                       | TDOT/Tr        | anSystems     | Jurisdi | ction  |       |           | Fayette ( |               |         |            |
| Date Performed                   | 04/18/20       |               | Analys  | is Yea | r     |           | 2034      |               |         |            |
| Analysis Time Period             | AM Peak        | Period        |         |        |       |           |           |               |         |            |
| Project Description Ex           |                | ns (No Build) |         |        |       |           |           |               |         |            |
| East/West Street: Pilot          |                |               |         |        |       | t: SR 222 | ?         |               |         |            |
| Intersection Orientation:        |                |               | Study I | Period | (hrs) | ): 0.25   |           |               |         |            |
| Vehicle Volumes a                | nd Adjustme    |               |         |        |       |           |           |               |         |            |
| Major Street                     |                | Northbound    | 1 0     |        |       | 4         | Southbou  | und T         |         |            |
| Movement                         | 1              | 2             | 3<br>R  |        |       | 4<br>     | 5<br>T    | $\rightarrow$ |         | 6<br>R     |
| Volume (veh/h)                   | L              | 218           | 11      |        |       | 105       | 309       | -             |         | ĸ          |
| Peak-Hour Factor, PHF            | 0.90           | 0.90          | 0.90    | ,      |       | 0.90      | 0.90      | $\dashv$      |         | 0.90       |
| Hourly Flow Rate, HFR            |                |               |         |        |       |           |           | $\dashv$      |         |            |
| (veh/h)                          | 0              | 242           | 12      |        |       | 116       | 343       |               |         | 0          |
| Percent Heavy Vehicles           | 0              |               |         |        |       | 25        |           |               |         |            |
| Median Type                      |                |               |         | Undi   | /idec | 1         |           |               |         |            |
| RT Channelized                   |                |               | 0       |        |       |           |           |               |         | 0          |
| Lanes                            | 0              | 1             | 0       |        |       | 0         | 1         |               |         | 0          |
| Configuration                    |                |               | TR      |        |       | LT        |           |               |         |            |
| Upstream Signal                  |                | 0             |         |        |       |           | 0         |               |         |            |
| Minor Street                     |                | Eastbound     |         |        |       |           | Westbou   | ınd           |         |            |
| Movement                         | 7              | 8             | 9       |        |       | 10        | 11        |               |         | 12         |
|                                  | L              | Т             | R       |        |       | L         | Т         |               |         | R          |
| Volume (veh/h)                   |                |               |         |        |       | 6         |           |               | 1.      |            |
| Peak-Hour Factor, PHF            | 0.90           | 0.90          | 0.90    | '      |       | 0.90      | 0.90      |               | 0.90 0. |            |
| Hourly Flow Rate, HFR<br>(veh/h) | 0              | 0             | 0       |        |       | 6         | 0         |               | 0 1     |            |
| Percent Heavy Vehicles           | 3              | 0             | 3       |        |       | 25        | 0         |               |         | 25         |
| Percent Grade (%)                |                | 0             |         |        |       |           | 0         |               |         |            |
| Flared Approach                  | 1              | N             |         |        |       |           | N         |               |         |            |
| Storage                          | 1              | 0             |         |        |       |           | 0         |               |         |            |
| RT Channelized                   |                |               | 0       |        |       |           | ĺ         |               |         | 0          |
| Lanes                            | 0              | 0             | 0       |        |       | 0         | 0         |               |         | 0          |
| Configuration                    |                |               |         |        |       |           | LR        |               |         |            |
| Delay, Queue Length, a           | and Level of S | ervice        |         |        |       |           |           |               |         |            |
| Approach                         | Northbound     | Southbound    | ,       | Westbo | ound  |           |           | Eastbo        | und     |            |
| Movement                         | 1              | 4             | 7       | 8      |       | 9         | 10        | 1             | 1       | 12         |
| Lane Configuration               |                | LT            |         | LR     | )     |           |           |               |         |            |
| v (veh/h)                        |                | 116           |         | 182    | 2     |           |           |               |         |            |
| C (m) (veh/h)                    |                | 1188          |         | 701    | 1     |           |           |               |         |            |
| v/c                              |                | 0.10          |         | 0.26   | 6     |           |           |               |         |            |
| 95% queue length                 |                | 0.32          |         | 1.04   | 4     |           |           |               |         |            |
| Control Delay (s/veh)            |                | 8.4           |         | 11.9   | 9     |           |           |               |         |            |
| LOS                              |                | A             |         | В      |       |           |           |               |         |            |
| Approach Delay (s/veh)           |                |               |         | 11.9   | 9     | 1         | †         |               |         | <u> </u>   |
| Approach LOS                     |                |               |         | В      |       |           |           |               |         |            |
| Copyright © 2008 University of F |                | <u> </u>      |         | Cs.TM  |       |           | 0         |               | 00/004  | 1 12·45 PI |

|   | TW                   | O-WAY STOP    | CONTR   | OL SI    | JMI   | MARY        |           |               |         |            |     |
|---|----------------------|---------------|---------|----------|-------|-------------|-----------|---------------|---------|------------|-----|
| General Informatio                      | n                    |               | Site I  | nform    | natio | on          |           |               |         |            |     |
| Analyst                                 | SKB                  |               | Interse | ection   |       |             | SR 222 (  | @ Pilo        | t Dwy   | <i>'</i> . |     |
| Agency/Co.                              | TDOT/Ti              | ranSystems    | Jurisdi | ction    |       |             | Fayette ( |               |         |            |     |
| Date Performed                          | 04/18/20             |               | Analys  | is Yea   | r     |             | 2034      |               |         |            |     |
| Analysis Time Period                    | PM Peal              | k Period      |         |          |       |             |           |               |         |            |     |
| Project Description Ex                  |                      | ns (No Build) |         |          |       |             |           |               |         |            |     |
| East/West Street: Pilot                 |                      |               |         |          |       | t: SR 222   | ?         |               |         |            |     |
| Intersection Orientation:               |                      |               | Study I | Period   | (hrs) | : 0.25      |           |               |         |            |     |
| Vehicle Volumes a                       | nd Adjustm           |               |         |          |       |             |           |               |         |            |     |
| Major Street                            |                      | Northbound    | 1 -     |          |       |             | Southbou  | und r         |         |            |     |
| Movement                                | 1 1                  | 2             | 3       |          |       | 4           | 5<br>T    | $\rightarrow$ |         | 6          |     |
| \/ a   /                                | L L                  | T 204         | R 13    |          |       | L 200       | 181       |               |         | R          |     |
| Volume (veh/h)<br>Peak-Hour Factor, PHF | 0.90                 | 284<br>0.90   | 0.90    | <u> </u> |       | 200<br>0.90 | 0.90      |               |         | 0.90       |     |
| Hourly Flow Rate, HFR                   |                      |               | 0.90    | <u>'</u> |       |             |           | $\rightarrow$ |         |            |     |
| (veh/h)                                 | 0                    | 315           | 14      |          |       | 222         | 201       |               |         | 0          |     |
| Percent Heavy Vehicles                  | 0                    |               |         |          |       | 25          |           |               |         |            |     |
| Median Type                             |                      |               |         | Undi     | /idea | 1           |           |               |         |            |     |
| RT Channelized                          |                      |               | 0       |          |       |             |           |               |         | 0          |     |
| Lanes                                   | 0                    | 1             | 0       |          |       | 0           | 1         |               |         | 0          |     |
| Configuration                           |                      |               | TR      |          |       | LT          |           |               |         |            |     |
| Upstream Signal                         |                      | 0             |         |          |       |             | 0         |               |         |            |     |
| Minor Street                            |                      | Eastbound     | _       |          |       |             | Westbou   | ınd           |         |            |     |
| Movement                                | 7                    | 8             | 9       |          |       | 10          | 11        | $\rightarrow$ |         | 12         |     |
|   | L                    | T             | R       |          |       | L           | Т         |               |         | R          |     |
| Volume (veh/h)                          |                      |               |         |          |       | 3           |           |               |         |            | 150 |
| Peak-Hour Factor, PHF                   | 0.90                 | 0.90          | 0.90    | '        |       | 0.90        | 0.90      |               | 0.90 0. |            |     |
| Hourly Flow Rate, HFR<br>(veh/h)        | 0                    | 0             | 0       |          |       | 3           | 0         |               | 0 16    |            |     |
| Percent Heavy Vehicles                  | 3                    | 0             | 3       |          |       | 25          | 0         |               |         | 25         |     |
| Percent Grade (%)                       | 1                    | 0             |         |          |       |             | 0         |               |         |            |     |
| Flared Approach                         |                      | N             | 1       |          |       |             | N         |               |         |            |     |
| Storage                                 |                      | 0             | 1       |          |       |             | 0         |               |         |            |     |
| RT Channelized                          |                      |               | 0       |          |       |             |           |               |         | 0          |     |
| Lanes                                   | 0                    | 0             | 0       |          |       | 0           | 0         |               |         | 0          |     |
| Configuration                           |                      |               |         |          |       |             | LR        |               |         |            |     |
| Delay, Queue Length, a                  | and Level of S       | ervice        |         |          |       |             |           |               |         |            |     |
| Approach                                | Northbound           | Southbound    | ,       | Westbo   | ound  |             |           | Eastbo        | ound    |            |     |
| Movement                                | 1                    | 4             | 7       | 8        |       | 9           | 10        | 1             | 1       | 12         |     |
| Lane Configuration                      |                      | LT            |         | LR       |       |             |           |               |         |            |     |
| v (veh/h)                               |                      | 222           |         | 169      | )     |             |           |               |         |            |     |
| C (m) (veh/h)                           |                      | 1112          |         | 643      | 3     |             |           |               |         |            |     |
| v/c                                     |                      | 0.20          |         | 0.26     | 6     |             |           |               |         |            |     |
| 95% queue length                        |                      | 0.74          |         | 1.0      | 5     |             |           |               |         |            |     |
| Control Delay (s/veh)                   |                      | 9.0           |         | 12.6     | 6     |             |           |               |         |            |     |
| LOS                                     |                      | Α             |         | В        |       |             |           |               |         |            |     |
| Approach Delay (s/veh)                  |                      |               |         | 12.6     | 6     |             |           |               |         |            |     |
| Approach LOS                            |                      |               |         | В        |       |             | †         |               |         |            |     |
| Copyright © 2008 University of F        | lavida All Diabta Da |               |         | Cs.TM    |       |             | 0         | -41- 4:       | 1001004 | 1 12·45 Pi |     |

|   | TW                 | O-WAY STOP    | CONTRO   | OL SUMI      | MARY   |  |             |       |
|---|--------------------|---------------|----------|--------------|--|--|-------------|-------|
| General Information                         | n                  |               | Site Ir  | formation    | on   |  |             |       |
| Analyst                                     | SKB                |               | Interse  | ction        |  | SR 222   | @ I-40 EB F | Ramps |
| Agency/Co.                                  |                    | anSystems     | Jurisdio |              |  | Fayette County                                   |             |       |
| Date Performed                              | 04/18/201          |               | Analys   | is Year      |  | 2034   |             |       |
| Analysis Time Period                        | AM Peak            |               |          |              |  |  |             |       |
| Project Description Ex                      |                    | ns (No Build) | h        |              |  |  |             |       |
| East/West Street: I-40                      |                    |               |          | outh Stree   |  | 2  |             |       |
| ntersection Orientation:                    |                    |               | Study F  | Period (hrs) | ): 0.25  |  |             |       |
| Vehicle Volumes au                          | <u>nd Adjustme</u> |               |          |              |  |  |             |       |
| Major Street                                | <u> </u>           | Northbound    | 1 -      |              |  | Southboo   | <u>und</u>  |       |
| Movement                                    | 1                  | 2<br>T        | 3        |              | 4  | 5<br>T   |             | 6     |
| /aluma (vah/h)                              | L                  | 222           | R<br>155 | _            | 120  | 246  |             | R     |
| Volume (veh/h) Peak-Hour Factor, PHF        | 0.90               | 0.90          | 0.90     |              | 0.90   | 0.90   |             | 0.90  |
| Hourly Flow Rate, HFR                       | 0.90               | 246           | 172      |              | 133  | 273  |             | 0     |
| veh/h)                                      |                    |               |          |              |  | <del>                                     </del> |             |       |
| Percent Heavy Vehicles                      | 0                  |               |          | ,, ,, ,,     | 10   |  |             |       |
| Median Type                                 | _                  |               | 1 -      | Undivided    | d  | 1  | <del></del> |       |
| RT Channelized                              |                    | <u> </u>      | 0        |              |  | 1  |             | 0     |
| _anes                                       | 0                  | 1             | 0        |              | 0  | 1  |             | 0     |
| Configuration                               |                    |               | TR       |              | LT   | <del>                                     </del> |             |       |
| Jpstream Signal                             |                    | 0             |          |              |  | 0  |             |       |
| Minor Street                                | <del></del>        | Eastbound     | 1 .      |              | 4.0  | Westbound  |             | 10    |
| Movement                                    | 7                  | 8             | 9        |              | 10   | 11   |             | 12    |
|   | L                  | Т             | R        |              | L  | T  | R           |       |
| Volume (veh/h)                              | 586                | 0.00          | 168      |              | 0.00   | 0.00   |             | 2.00  |
| Peak-Hour Factor, PHF Hourly Flow Rate, HFR | 0.90               | 0.90          | 0.90     | -+           | 0.90   | 0.90   | 0.90        |       |
| veh/h)                                      | 651                | 0             | 186      |              | 0  | 0  |             | 0     |
| Percent Heavy Vehicles                      | 10                 | 0             | 25       |              | 0  | 0  |             | 0     |
| Percent Grade (%)                           |                    | 0             |          |              |  | 0  |             |       |
| Flared Approach                             |                    | N             |          |              |  | N  |             |       |
| Storage                                     |                    | 0             |          |              |  | 0  |             |       |
| RT Channelized                              |                    |               | 0        |              |  |  |             | 0     |
| Lanes                                       | 0                  | 0             | 0        |              | 0  | 0  |             | 0     |
| Configuration                               |                    | LR            |          |              |  |  |             |       |
| Delay, Queue Length, a                      | and Level of Se    | ervice        |          |              |  |  |             |       |
| Approach                                    | Northbound         | Southbound    | V        | Vestbound    | 1  |  | Eastbound   |       |
| Movement                                    | 1                  | 4             | 7        | 8            | 9  | 10   | 11          | 12    |
| _ane Configuration                          |                    | LT            |          |              | ĺ  |  | LR          |       |
| v (veh/h)                                   |                    | 133           |          |              | <u> </u>   | 1  | 837         |       |
| C (m) (veh/h)                               |                    | 1099          |          |              | <del>                                     </del> | 1  | 316         |       |
| //C   |                    | 0.12          | +        |              | <del>                                     </del> | +  | 2.65        |       |
|   |                    | 0.41          |          |              |  | +  |             |       |
| 95% queue length                            |                    |               |          |              |  | +  | 69.63       |       |
| Control Delay (s/veh)                       |                    | 8.7           |          |              |  |  | 776.2       |       |
| _OS   |                    | Α             |          |              |  | <del>                                     </del> | F           |       |
| Approach Delay (s/veh)                      |                    |               |          |              |  |  | 776.2       |       |
| Approach LOS                                |                    |               |          |              |  | 1  | F           |       |

|  | TV             | VO-WAY STOP    | CONTR    | OL S   | UMMARY      | ,         |            |             |
|--|----------------|----------------|----------|--|-------------|-----------|------------|-------------|
| General Information                            | n              |                | Site I   | nforn  | nation      |           |            |             |
| Analyst  | SKB            |                | Interse  | ection   |             | SR 222 (  | ② I-40 EB  | Ramps       |
| Agency/Co.                                     | TDOT/1         | ranSystems     | Jurisdi  | ction  |             | Fayette C |            | ,           |
| Date Performed                                 | 04/18/2        |                | Analys   | is Yea   | ır          | 2034      |            |             |
| Analysis Time Period                           | PM Pea         | k Period       |          |  |             |           |            |             |
| Project Description Ex                         |                | ons (No Build) |          |  |             |           |            |             |
| East/West Street: I-40                         |                |                |          |  | Street: SR  |           |            |             |
| Intersection Orientation:                      | North-South    | 1              | Study I  | Period   | (hrs): 0.25 | 5         |            |             |
| Vehicle Volumes a                              | nd Adjustm     | ents           |          |  |             |           |            |             |
| Major Street                                   |                | Northbound     |          |  |             | Southbou  | ınd        |             |
| Movement                                       | 1              | 2              | 3        |  | 4           | 5         |            | 6           |
|  | L              | T              | R        |  | L           | T         |            | R           |
| Volume (veh/h)                                 | 0.00           | 250            | 184      |  | 226         | 208       |            | 0.00        |
| Peak-Hour Factor, PHF<br>Hourly Flow Rate, HFR | 0.90           | 0.90           | 0.90     |  | 0.90        | 0.90      | _          | 0.90        |
| (veh/h)  | 0              | 277            | 204      |  | 251         | 231       |            | 0           |
| Percent Heavy Vehicles                         | 0              |                |          |  | 10          |           | 1          |             |
| Median Type                                    |                |                |          | Undi   | vided       | <u> </u>  |            |             |
| RT Channelized                                 |                |                | 0        |  |             |           |            | 0           |
| Lanes  | 0              | 1              | 0        |  | 0           | 1         |            | 0           |
| Configuration                                  |                |                | TR       |  | LT          |           |            |             |
| Upstream Signal                                |                | 0              |          |  |             | 0         |            |             |
| Minor Street                                   |                | Eastbound      |          |  |             | Westbou   | nd         |             |
| Movement                                       | 7              | 8              | 9        |  | 10          | 11        |            | 12          |
|  | L              | Т              | R        |  | L           | Т         |            | R           |
| Volume (veh/h)                                 | 276            |                | 173      |  |             |           |            |             |
| Peak-Hour Factor, PHF                          | 0.90           | 0.90           | 0.90     | 1  | 0.90        | 0.90      |            | 0.90        |
| Hourly Flow Rate, HFR<br>(veh/h)               | 306            | 0              | 192      |  | 0           | 0         |            | 0           |
| Percent Heavy Vehicles                         | 10             | 0              | 25       |  | 0           | 0         |            | 0           |
| Percent Grade (%)                              |                | 0              |          |  |             | 0         |            |             |
| Flared Approach                                |                | N              |          |  |             | N         |            |             |
| Storage  |                | 0              |          |  |             | 0         |            |             |
| RT Channelized                                 |                |                | 0        |  |             |           |            | 0           |
| Lanes  | 0              | 0              | 0        |  | 0           | 0         |            | 0           |
| Configuration                                  |                | LR             |          |  |             |           |            |             |
| Delay, Queue Length, a                         | and Level of S | Service        |          |  |             |           |            |             |
| Approach                                       | Northbound     | Southbound     | ,        | <b>Vestb</b>                                     | ound        | E         | astbound   |             |
| Movement                                       | 1              | 4              | 7        | 8  | 9           | 10        | 11         | 12          |
| Lane Configuration                             |                | LT             |          |  |             |           | LR         |             |
| v (veh/h)                                      |                | 251            |          |  |             |           | 498        |             |
| C (m) (veh/h)                                  |                | 1041           |          |  |             |           | 241        |             |
| v/c  |                | 0.24           |          |  |             |           | 2.07       |             |
| 95% queue length                               |                | 0.94           |          |  | $\neg$      |           | 37.15      |             |
| Control Delay (s/veh)                          |                | 9.6            |          |  |             |           | 527.2      |             |
| LOS  |                | A              |          | <del>                                     </del> | _           | <u> </u>  | F          |             |
| Approach Delay (s/veh)                         |                |                |          |  |             | +         | 527.2      | ı           |
| Approach LOS                                   |                |                |          |  |             | +         | 527.2<br>F |             |
| Capyright © 2008 University of F               |                |                | <u> </u> | oo TM  |             |           |            | 14 12:50 DM |

|                               | TW             | O-WAY STOP                                       | CONTR    | OL SI             | JMI   | MARY      |                |                |         |  |             |     |
|-------------------------------|----------------|--|----------|-------------------|-------|-----------|----------------|----------------|---------|--|-------------|-----|
| <b>General Informatio</b>     | n              |  | Site I   | nform             | atio  | on        |                |                |         |  |             |     |
| Analyst                       | SKB            |  | Interse  | ection            |       |           | SR 222 (       | @ <b>I-4</b> 0 | WB      | Ramps  |             |     |
| Agency/Co.                    | TDOT/Tr        | anSystems  | Jurisdi  |                   |       |           | Fayette County |                | County  |  |             |     |
| Date Performed                | 04/18/20       |  | Analys   | sis Yea           | r     |           | 2034           |                |         |  |             |     |
| Analysis Time Period          | AM Peak        |  |          |                   |       |           |                |                |         |  |             |     |
| Project Description Ex        |                | ns (No Build)                                    |          |                   |       |           |                |                |         |  |             |     |
| East/West Street: I-40        |                |  |          |                   |       | t: SR 222 |                |                |         |  |             |     |
| Intersection Orientation:     |                |  | Study    | Period            | (hrs) | : 0.25    |                |                |         |  |             |     |
| Vehicle Volumes a             | nd Adjustmo    |  |          |                   |       |           |                |                |         |  |             |     |
| Major Street                  | 1              | Northbound                                       | 1 2      |                   |       | 4         | Southbound     |                |         |  |             |     |
| Movement                      | 1<br>L         | 2<br>  | 3<br>R   | $\longrightarrow$ |       | 4<br>     | 5<br>T         | $\rightarrow$  |         | 6<br>R   |             |     |
| Volume (veh/h)                | 110            | 698  | <u> </u> | $\dashv$          |       |           | 232            | $\rightarrow$  |         | 32 <i>4</i>                                      |             |     |
| Peak-Hour Factor, PHF         | 0.90           | 0.90   | 0.90     |                   |       | 0.90      | 0.90           | $\dashv$       |         | 0.90   |             |     |
| Hourly Flow Rate, HFR         |                |  |          |                   |       |           | i e            | <del></del>    |         |  |             |     |
| (veh/h)                       | 122            | 775  | 0        |                   |       | 0         | 257            |                |         | 360  |             |     |
| Percent Heavy Vehicles        | 25             |  |          |                   |       | 3         |                |                |         |  |             |     |
| Median Type                   |                |  |          | Undi              | /idea | l         |                |                |         |  |             |     |
| RT Channelized                |                |  | 0        |                   |       |           |                |                |         | 0  |             |     |
| Lanes                         | 0              | 1  | 0        |                   |       | 0         | 1              |                |         | 0  |             |     |
| Configuration                 | LT             |  |          |                   |       |           |                |                |         |  |             | TR  |
| Upstream Signal               |                | 0  |          |                   |       |           | 0              |                | 0       |  |             |     |
| Minor Street                  |                | Eastbound  |          |                   |       |           | Westbou        | ınd            |         |  |             |     |
| Movement                      | 7              | 8  | 9        |                   |       | 10        | 11             |                |         | 12   |             |     |
|                               | L              | T  | R        |                   |       | L         | Т              |                |         | R  |             |     |
| Volume (veh/h)                |                |  |          |                   |       | 143       |                |                |         |  | 258<br>0.90 |     |
| Peak-Hour Factor, PHF         | 0.90           | 0.90   | 0.90     | )                 |       | 0.90      | 0.90           |                | 0.90    |  |             |     |
| Hourly Flow Rate, HFR (veh/h) | 0              | 0  | 0        |                   |       | 158       | 0              |                | 0       |  |             | 286 |
| Percent Heavy Vehicles        | 3              | 0  | 3        |                   |       | 25        | 0              |                | 0       |  |             | 10  |
| Percent Grade (%)             |                | 0  |          |                   |       |           | 0              |                |         |  |             |     |
| Flared Approach               |                | N  |          |                   |       |           | N              |                |         |  |             |     |
| Storage                       |                | 0  |          |                   |       |           | 0              |                |         |  |             |     |
| RT Channelized                |                |  | 0        |                   |       |           |                |                |         | 0  |             |     |
| Lanes                         | 0              | 0  | 0        |                   |       | 0         | 0              |                |         | 0  |             |     |
| Configuration                 |                |  |          |                   |       |           | LR             |                |         |  |             |     |
| Delay, Queue Length, a        | and Level of S | ervice   |          |                   |       |           |                |                |         |  |             |     |
| Approach                      | Northbound     | Southbound                                       | 1        | Westbo            | ound  |           |                | Eastbo         | ound    |  |             |     |
| Movement                      | 1              | 4  | 7        | 8                 |       | 9         | 10             | 1              | 1       | 12   |             |     |
| Lane Configuration            | LT             |  |          | LR                |       |           |                |                |         |  |             |     |
| v (veh/h)                     | 122            |  |          | 444               | 1     |           |                |                |         |  |             |     |
| C (m) (veh/h)                 | 861            |  |          | 203               | }     |           |                |                |         | 1  |             |     |
| v/c                           | 0.14           |  |          | 2.19              | 9     |           |                |                |         |  |             |     |
| 95% queue length              | 0.49           |  |          | 34.9              |       |           | <u> </u>       |                |         | <u> </u>   |             |     |
| Control Delay (s/veh)         | 9.9            |  |          | 587.              |       |           |                | $\vdash$       |         |  |             |     |
| LOS                           | A.             | <del>                                     </del> |          | 507.<br>F         |       |           | -              | $\vdash$       |         | <del>                                     </del> |             |     |
| Approach Delay (s/veh)        |                |  |          | 587.              |       |           |                |                |         | <u>I</u>   |             |     |
| Approach LOS                  |                | -  |          | 567.<br>F         | 9     |           |                |                |         |  |             |     |
| Approach LOS                  |                |  |          |                   |       |           |                |                | /20/204 |  |             |     |

|  | TW              | O-WAY STOP    | CONTR  | OL SUM  | MARY            |                |  |       |
|--|-----------------|---------------|--|---|-----------------|----------------|--|-------|
| General Informatio   | n               |               | Site I   | nformati  | ion             |                |  |       |
| Analyst  | SKB             |               | Interse  | ection  |                 | SR 222 (       | @ <i>I-40 WB</i>                                 | Ramps |
| Agency/Co.   | TDOT/Tra        | anSystems     | Jurisd   | iction  |                 | Fayette County |  |       |
| Date Performed   | 04/18/20        |               | Analys   | sis Year  |                 | 2034           |  |       |
| Analysis Time Period   | PM Peak         | Period        |  |   |                 |                |  |       |
| Project Description Ex   |                 | ns (No Build) |  |   |                 |                |  |       |
| East/West Street: I-40   |                 |               |  |   | et: SR 22       | 22             |  |       |
| ntersection Orientation:   | North-South     |               | Study  | Period (hrs                                       | s): <i>0.25</i> |                |  |       |
| Vehicle Volumes a  | nd Adjustme     | ents          |  |   |                 |                |  |       |
| Major Street   |                 | Northbound    |  |   |                 | Southboo       | und  |       |
| Movement   | 1               | 2             | 3  |   | 4               | 5              |  | 6     |
|  | L               | T             | R  |   | L               | T              |  | R     |
| Volume (veh/h)   | 130             | 396           | 0.00   | $\leftarrow$                                      | 0.00            | 302            |  | 520   |
| Peak-Hour Factor, PHF<br>Hourly Flow Rate, HFR                           | 0.90            | 0.90          | 0.90   | <del>'                                     </del> | 0.90            | 0.90           | <u> </u>   | 0.90  |
| (veh/h)  | 144             | 440           | 0  |   | 0               | 335            |  | 577   |
| Percent Heavy Vehicles   | 25              |               |  |   | 3               |                |  |       |
| Median Type  |                 |               |  | Undivide  | ed              |                |  |       |
| RT Channelized   |                 |               | 0  |   |                 |                |  | 0     |
| _anes  | 0               | 1             | 0  |   | 0               | 1              |  | 0     |
| Configuration  | LT              |               |  |   |                 |                | TR   |       |
| Jpstream Signal  |                 | 0             |  |   |                 | 0              |  |       |
| Minor Street   |                 | Eastbound     |  |   |                 | Westbou        | ınd  |       |
| Movement   | 7               | 8             | 9  |   | 10              | 11             |  | 12    |
|  | L               | Т             | R  |   | L               | T              | R  |       |
| /olume (veh/h)   |                 |               |  |   | 132             |                |  | 125   |
| Peak-Hour Factor, PHF  | 0.90            | 0.90          | 0.90   | )   | 0.90            | 0.90           | (  | 0.90  |
| Hourly Flow Rate, HFR (veh/h)  | 0               | 0             | 0  |   | 146             | 0              | 0  |       |
| Percent Heavy Vehicles   | 3               | 0             | 3  |   | 25              | 0              |  | 10    |
| Percent Grade (%)  |                 | 0             |  |   |                 | 0              |  |       |
| Flared Approach  |                 | N             | 1  |   |                 | N              |  |       |
| Storage  |                 | 0             |  |   |                 | 0              |  |       |
| RT Channelized   | 1               | 1             | 0  |   |                 | 1              | $\overline{}$                                    | 0     |
| Lanes  | 0               | 0             | 0  |   | 0               | 0              | <del>-  </del> -                                 | 0     |
| Configuration  | <del> </del>    | 1             | <del>                                     </del> | <del>-  </del>                                    |                 | LR             | <del>-  -</del>                                  |       |
| Delay, Queue Length, a   | and Level of Se | ervice        |  |   |                 |                |  |       |
| Approach   | Northbound      | Southbound    |  | Westboun  | d               |                | Eastbound  |       |
| Movement   | 1               | 4             | 7  | 8   | 9               | 10             | 11   | 12    |
| _ane Configuration   | LT              | <del></del>   | <del>  '</del>                                   | LR  | + -             | 10             | <del>  ''</del>                                  | 12    |
|  |                 | -             | <del>                                     </del> |   | +               | +              | <del>                                     </del> | -     |
| / (veh/h)  | 144             |               | -  | 284   | 1               | -              | -  | ├──   |
| C (m) (veh/h)  | 660             |               |  | 191   |                 |                |  |       |
| //c  | 0.22            |               | ļ  | 1.49  | ļ               |                | ļ  |       |
| 95% queue length   | 0.83            |               | ļ  | 17.66   |                 |                |  |       |
| Control Delay (s/veh)  | 12.0            |               |  | 290.3   |                 |                |  |       |
| LOS  | В               |               |  | F   |                 |                |  |       |
| Approach Delay (s/veh)   |                 |               | ĺ  | 290.3   | -               |                | -  |       |
|  |                 |               | 1  |   |                 |                |  |       |
| LOS Approach Delay (s/veh) Approach LOS Copyright © 2008 University of F |                 |               | Н  |   | ion 5.4         | Gener          | ated: 4/20/201                                   | _     |

|   | T              | WO-WAY STOP       | CONTR       | OL S   | UMM      | ARY      |             |  |           |  |
|---|----------------|-------------------|-------------|--|----------|----------|-------------|--|-----------|--|
| General Information                     | n              |                   | Site I      | nforn  | nation   | )        |             |  |           |  |
| Analyst                                 | SKB            |                   | Interse     | ection   |          |          | SR 222 (    | @ I-40 EI  | B Ramps   |  |
| Agency/Co.                              |                | TranSystems       | Jurisdi     | ction  |          |          | Fayette C   | County   | ·         |  |
| Date Performed                          | 04/18/2        | 2011              | Analys      | sis Yea  | ar       |          | 2014        |  |           |  |
| Analysis Time Period                    | AM Pe          | ak Period         |             |  |          |          |             |  |           |  |
| Project Description Tr                  | aditional Diai | mond + SE Loop Ra |             |  |          |          |             |  |           |  |
| East/West Street: I-40                  |                | -                 |             |  |          | SR 222   | ?           |  |           |  |
| Intersection Orientation:               |                |                   | Study I     | Period   | (hrs):   | 0.25     |             |  |           |  |
| Vehicle Volumes a                       | nd Adjustr     |                   |             |  |          |          |             |  |           |  |
| Major Street                            |                | Northbound        | 1           |  |          |          | Southbou    | ınd  |           |  |
| Movement                                | 1 1            | 2                 | 3           |  |          | 4        | 5           |  | 6         |  |
| \/a aa (ab./b)                          | <u>L</u>       | T                 | R           |  |          | L        | T           |  | R         |  |
| Volume (veh/h)<br>Peak-Hour Factor, PHF | 0.90           | 217<br>0.90       | 114<br>0.90 |  |          | 18<br>90 | 208<br>0.90 |  | 0.90      |  |
| Hourly Flow Rate, HFR                   |                | 0.90              | <u> </u>    |  |          |          |             | _  |           |  |
| (veh/h)                                 | 0              | 241               | 126         |  | 1        | 31       | 231         |  | 0         |  |
| Percent Heavy Vehicles                  | 0              |                   |             |  | 1        | 10       |             |  |           |  |
| Median Type                             |                | •                 |             |  |          |          |             |  |           |  |
| RT Channelized                          |                |                   | 0           |  |          |          |             |  | 0         |  |
| Lanes                                   | 0              | 2                 | 0           |  |          | 0        | 2           |  | 0         |  |
| Configuration                           |                | T                 | TR          |  |          | .T       | Т           |  |           |  |
| Upstream Signal                         |                | 0                 |             |  |          |          | 0           |  |           |  |
| Minor Street                            |                | Eastbound         |             |  |          |          | Westbound   |  |           |  |
| Movement                                | 7              | 8                 | 9           |  |          | 10       | 11          |  | 12        |  |
|   | L              | Т                 | R           |  |          | L        | Т           |  | R         |  |
| Volume (veh/h)                          |                |                   | 134         |  |          |          |             |  |           |  |
| Peak-Hour Factor, PHF                   | 0.90           | 0.90              | 0.90        |  | 0.       | 90       | 0.90        |  | 0.90      |  |
| Hourly Flow Rate, HFR (veh/h)           | 0              | 0                 | 148         |  |          | 0        | 0           |  | 0         |  |
| Percent Heavy Vehicles                  | 10             | 0                 | 25          |  |          | 0        | 0           |  | 0         |  |
| Percent Grade (%)                       |                | 0                 |             |  |          |          | 0           |  | -         |  |
| Flared Approach                         |                | N                 |             |  |          |          | N           |  |           |  |
| Storage                                 | +              | 0                 | +           |  |          |          | 0           |  |           |  |
| RT Channelized                          | <del> </del>   |                   | 0           |  |          |          |             |  | 0         |  |
| Lanes                                   | 0              | 0                 | 1           |  |          | 0        | 0           |  | 0         |  |
| Configuration                           | <u> </u>       |                   | R           |  |          |          |             |  |           |  |
| Delay, Queue Length, a                  | nd Level of    | Service           |             |  | l        |          | <u> </u>    |  |           |  |
| Approach                                | Northbound     |                   | ,           | Westb  | ound     |          | Ι ι         | Eastbour   | nd        |  |
| Movement                                | 1              | 4                 | 7           | 8  |          | 9        | 10          | 11   | 12        |  |
| Lane Configuration                      |                | LT                | <u> </u>    |  |          |          |             | <del></del>                                      | R         |  |
| v (veh/h)                               |                | 131               |             |  |          |          |             |  | 148       |  |
| C (m) (veh/h)                           |                | 1133              | 1           |  |          |          |             | 1  | 865       |  |
| v/c                                     |                | 0.12              |             |  | $\dashv$ |          |             |  | 0.17      |  |
| 95% queue length                        |                | 0.39              | <u> </u>    | <del>                                     </del> | $\dashv$ |          |             | <u> </u>   | 0.62      |  |
| Control Delay (s/veh)                   |                | 8.6               |             | _  |          |          |             | _  | 10.0      |  |
| LOS                                     |                | A A               | -           |  |          |          |             | <del>                                     </del> | 10.0<br>B |  |
|   |                |                   | -           |  |          |          | -           | 10.0   | <i>D</i>  |  |
| Approach Delay (s/veh)                  |                | _                 | <u> </u>    |  |          |          |             |  |           |  |
| Approach LOS                            |                |                   | I           | oo TM  |          |          |             | B at a d : 4/20/                                 |           |  |

|                                  | TW                | O-WAY STOP       | CONTR   | OL S   | UMMARY   | ,       |                |         |  |  |
|----------------------------------|-------------------|------------------|---------|--|--|---------|----------------|---------|--|--|
| General Informatio               | n                 |                  | Site II | nforn  | nation   |         |                |         |  |  |
| Analyst                          | SKB               |                  | Interse | ection   |  | SR 222  | @ I-40 E       | B Ramps |  |  |
| Agency/Co.                       |                   | ranSystems       | Jurisdi |  |  | Fayette | County         |         |  |  |
| Date Performed                   | 04/18/20          |                  | Analys  | sis Yea  | ır   | 2014    |                |         |  |  |
| Analysis Time Period             | PM Peak           |                  |         |  |  |         |                |         |  |  |
| Project Description Tr           |                   | ond + SE Loop Ra |         |  |  |         |                |         |  |  |
| East/West Street: I-40           |                   |                  |         |  | Street: SR                                       |         |                |         |  |  |
| Intersection Orientation:        |                   |                  | Study I | erioa  | (hrs): 0.25                                      | )       |                |         |  |  |
| Vehicle Volumes a                | <u>nd Adjustm</u> |                  |         |  |  |         |                |         |  |  |
| Major Street                     |                   | Northbound       | 1       |  |  | Southbo | und            |         |  |  |
| Movement                         | 1 1               | 2<br>            | 3<br>R  |  | 4  | 5T      |                | 6       |  |  |
| Volume (veh/h)                   | L                 | 240              | 142     |  | 225  | 159     |                | R       |  |  |
| Peak-Hour Factor, PHF            | 0.90              | 0.90             | 0.90    |  | 0.90   | 0.90    |                | 0.90    |  |  |
| Hourly Flow Rate, HFR            | <u> </u>          |                  | 1       |  |  |         | <del>-  </del> |         |  |  |
| (veh/h)                          | 0                 | 266              | 157     |  | 250  | 176     |                | 0       |  |  |
| Percent Heavy Vehicles           | 0                 |                  |         |  | 10   |         |                |         |  |  |
| Median Type                      |                   | Undivided        |         |  |  |         |                |         |  |  |
| RT Channelized                   |                   |                  | 0       |  |  |         |                | 0       |  |  |
| Lanes                            | 0                 | 2                | 0       |  | 0  | 2       |                | 0       |  |  |
| Configuration                    |                   | T                | TR      |  | LT   | T       |                |         |  |  |
| Upstream Signal                  |                   | 0                |         |  |  | 0       |                |         |  |  |
| Minor Street                     |                   | Eastbound        |         |  |  | Westbo  | Westbound      |         |  |  |
| Movement                         | 7                 | 8                | 9       |  | 10   | 11      |                | 12      |  |  |
|                                  | L                 | Т                | R       |  | L  | Т       |                | R       |  |  |
| Volume (veh/h)                   |                   |                  | 126     |  |  |         |                |         |  |  |
| Peak-Hour Factor, PHF            | 0.90              | 0.90             | 0.90    |  | 0.90   | 0.90    |                | 0.90    |  |  |
| Hourly Flow Rate, HFR<br>(veh/h) | 0                 | 0                | 140     |  | 0  | 0       |                | 0       |  |  |
| Percent Heavy Vehicles           | 10                | 0                | 25      |  | 0  | 0       |                | 0       |  |  |
| Percent Grade (%)                |                   | 0                |         |  |  | 0       |                |         |  |  |
| Flared Approach                  |                   | N                |         |  |  | N       |                |         |  |  |
| Storage                          |                   | 0                |         |  |  | 0       |                |         |  |  |
| RT Channelized                   |                   |                  | 0       |  |  |         |                | 0       |  |  |
| Lanes                            | 0                 | 0                | 1       |  | 0  | 0       |                | 0       |  |  |
| Configuration                    |                   |                  | R       |  |  |         |                |         |  |  |
| Delay, Queue Length, a           | and Level of S    | ervice           |         |  |  |         |                |         |  |  |
| Approach                         | Northbound        | Southbound       | 1       | Westb  | ound   |         | Eastbou        | nd      |  |  |
| Movement                         | 1                 | 4                | 7       | 8  | 9  | 10      | 11             | 12      |  |  |
| Lane Configuration               |                   | LT               |         |  | <del>                                     </del> |         | 1              | R       |  |  |
| v (veh/h)                        |                   | 250              |         |  |  |         | 1              | 140     |  |  |
| C (m) (veh/h)                    |                   | 1078             |         | _  | +  |         | 1              | 899     |  |  |
| v/c                              |                   | 0.23             |         | <del>                                     </del> | _  |         | 1              | 0.16    |  |  |
| 95% queue length                 |                   | 0.90             |         | <del>                                     </del> |  |         | +              | 0.75    |  |  |
| Control Delay (s/veh)            |                   | 9.3              |         | <del>                                     </del> | +  |         | +              | 9.7     |  |  |
|                                  |                   | <del></del>      |         |  |  |         | +              |         |  |  |
| LOS                              |                   | Α                |         |  |  |         | A              |         |  |  |
| Approach Delay (s/veh)           |                   |                  |         |  |  |         | 9.7            |         |  |  |
| Approach LOS                     |                   |                  |         |  | Varsian F 4                                      |         | Α              |         |  |  |

|   | TW                    | O-WAY STOP      | CONTR   | OL S         | UMMARY       |           |  |              |  |
|---|-----------------------|-----------------|---------|--------------|--------------|-----------|--|--------------|--|
| <b>General Informatio</b>               | n                     |                 | Site I  | nforn        | nation       |           |  |              |  |
| Analyst                                 | SKB                   |                 | Interse | ection       |              | SR 222 (  | @ I-40 EB  | Ramps        |  |
| Agency/Co.                              | TDOT/Tra              | anSystems       | Jurisdi | ction        |              | Fayette ( |  | ,            |  |
| Date Performed                          | 04/18/20 <sup>-</sup> |                 | Analys  | is Yea       | r            | 2034      |  |              |  |
| Analysis Time Period                    | AM Peak               | Period          |         |              |              |           |  |              |  |
|   |                       | nd + SE Loop Ra |         |              |              |           |  |              |  |
| East/West Street: I-40                  |                       |                 |         |              | Street: SR 2 | 222       |  |              |  |
| Intersection Orientation:               | North-South           |                 | Study F | Period       | (hrs): 0.25  |           |  |              |  |
| Vehicle Volumes a                       | nd Adjustme           | ents            |         |              |              |           |  |              |  |
| Major Street                            |                       | Northbound      |         |              |              | Southbou  | und  |              |  |
| Movement                                | 1                     | 2               | 3       |              | 4            | 5         |  | 6            |  |
| \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \   | L L                   | T               | R       |              | L            | T         |  | R            |  |
| Volume (veh/h)<br>Peak-Hour Factor, PHF | 0.90                  | 222             | 155     |              | 120          | 246       |  | 0.90         |  |
| Hourly Flow Rate, HFR                   |                       | 0.90            | 0.90    |              | 0.90         | 0.90      | -+   |              |  |
| (veh/h)                                 | 0                     | 246             | 172     |              | 133          | 273       |  | 0            |  |
| Percent Heavy Vehicles                  | 0                     |                 |         |              | 10           |           |  |              |  |
| Median Type                             |                       | •               | •       | Undi         | vided        | •         | •  |              |  |
| RT Channelized                          |                       |                 | 0       |              |              |           |  | 0            |  |
| Lanes                                   | 0                     | 2               | 0       |              | 0            | 2         |  | 0            |  |
| Configuration                           |                       | T               | TR      |              | LT           | T         |  |              |  |
| Upstream Signal                         |                       | 0               |         |              |              | 0         |  |              |  |
| Minor Street                            |                       | Eastbound       |         |              |              | Westbou   | Westbound  |              |  |
| Movement                                | 7                     | 8               | 9       |              | 10           | 11        |  | 12           |  |
|   | L                     | Т               | R       |              | L            | Т         |  | R            |  |
| Volume (veh/h)                          |                       |                 | 168     |              |              |           |  |              |  |
| Peak-Hour Factor, PHF                   | 0.90                  | 0.90            | 0.90    | 1            | 0.90         | 0.90      |  | 0.90         |  |
| Hourly Flow Rate, HFR<br>(veh/h)        | 0                     | 0               | 186     |              | 0            | 0         |  | 0            |  |
| Percent Heavy Vehicles                  | 10                    | 0               | 25      |              | 0            | 0         |  | 0            |  |
| Percent Grade (%)                       |                       | 0               |         |              |              | 0         |  |              |  |
| Flared Approach                         |                       | N               |         |              |              | N         |  |              |  |
| Storage                                 |                       | 0               |         |              |              | 0         |  |              |  |
| RT Channelized                          |                       |                 | 0       |              |              |           |  | 0            |  |
| Lanes                                   | 0                     | 0               | 1       |              | 0            | 0         |  | 0            |  |
| Configuration                           |                       |                 | R       |              |              |           |  |              |  |
| Delay, Queue Length, a                  | and Level of Se       | ervice          | ,       |              |              |           | •  |              |  |
| Approach                                | Northbound            | Southbound      | 1       | <b>Vestb</b> | ound         |           | Eastbound  | d            |  |
| Movement                                | 1                     | 4               | 7       | 8            | 9            | 10        | 11   | 12           |  |
| Lane Configuration                      |                       | LT              |         |              | 1            |           |  | R            |  |
| v (veh/h)                               |                       | 133             |         |              |              |           |  | 186          |  |
| C (m) (veh/h)                           |                       | 1083            |         |              |              |           |  | 841          |  |
| v/c                                     |                       | 0.12            |         |              |              |           | <u> </u>   | 0.22         |  |
| 95% queue length                        |                       | 0.42            |         |              |              |           |  | 0.84         |  |
| Control Delay (s/veh)                   |                       | 8.8             |         | _            | +            |           | <del>                                     </del> | 10.5         |  |
| LOS                                     |                       | A               |         |              | +            |           |  | 10.5<br>B    |  |
|   |                       |                 |         |              | [            | _         | 10.5   | В            |  |
| Approach Delay (s/veh)                  |                       |                 |         |              |              |           | 10.5   |              |  |
| Approach LOS                            | lorido All Bighto Boo | <u></u>         |         |              |              |           | B at ad: 4/20/2/                                 | 044 40:E7 DM |  |

|                              | TW   | O-WAY STOP                                       | CONTR   | OL SU          | MMARY             |           |           |       |
|------------------------------|--|--|---------|----------------|-------------------|-----------|-----------|-------|
| General Informatio           | n  |  | Site I  | nforma         | ation             |           |           |       |
| Analyst                      | SKB  |  | Interse | ection         |                   | SR 222    | @ I-40 EB | Ramps |
| Agency/Co.                   | TDOT/Tra   | anSystems  | Jurisdi | ction          |                   | Fayette ( | County    |       |
| Date Performed               | 04/18/20   |  | Analys  | is Year        |                   | 2034      |           |       |
| Analysis Time Period         | PM Peak  | Period   |         |                |                   |           |           |       |
|                              |  | nd + SE Loop Ra                                  |         |                |                   |           |           |       |
| East/West Street: I-40       |  |  |         |                | reet: SR 22       | 22        |           |       |
| ntersection Orientation:     | North-South                                      |  | Study I | Period (h      | nrs): <i>0.25</i> |           |           |       |
| Vehicle Volumes a            | nd Adjustme                                      | ents   |         |                |                   |           |           |       |
| Major Street                 |  | Northbound                                       |         |                |                   | Southbo   | und       |       |
| Movement                     | 1  | 2  | 3       |                | 4                 | 5         |           | 6     |
|                              | L  | T  | R       |                | L                 | T         |           | R     |
| /olume (veh/h)               | 0.00   | 250  | 184     |                | 226               | 208       |           | 0.00  |
| Peak-Hour Factor, PHF        | 0.90   | 0.90   | 0.90    | <del>'  </del> | 0.90              | 0.90      |           | 0.90  |
| Hourly Flow Rate, HFR veh/h) | 0  | 277  | 204     |                | 251               | 231       |           | 0     |
| Percent Heavy Vehicles       | 0  |  |         |                | 10                |           |           |       |
| Median Type                  |  |  |         | Undivi         | ded               |           |           |       |
| RT Channelized               |  |  | 0       |                |                   |           |           | 0     |
| _anes                        | 0  | 2  | 0       |                | 0                 | 2         |           | 0     |
| Configuration                |  | Т  | TR      |                | LT                | T         |           |       |
| Jpstream Signal              |  | 0  |         |                |                   | 0         |           |       |
| linor Street                 |  | Eastbound  |         |                |                   | Westbou   | ınd       |       |
| Movement                     | 7  | 8  | 9       |                | 10                | 11        |           | 12    |
|                              | L  | Т  | R       |                | L                 | T         |           | R     |
| /olume (veh/h)               |  |  | 173     |                |                   |           |           |       |
| Peak-Hour Factor, PHF        | 0.90   | 0.90   | 0.90    |                | 0.90              | 0.90      |           | 0.90  |
| Hourly Flow Rate, HFR veh/h) | 0  | 0  | 192     |                | 0                 | 0         |           | 0     |
| Percent Heavy Vehicles       | 10   | 0  | 25      |                | 0                 | 0         |           | 0     |
| Percent Grade (%)            |  | 0  |         |                |                   | 0         |           |       |
| Flared Approach              |  | N  |         |                |                   | N         |           |       |
| Storage                      |  | 0  |         |                |                   | 0         |           |       |
| RT Channelized               |  | <del>-</del>                                     | 0       | <del></del>    |                   | +         |           | 0     |
| -anes                        | 0  | 0  | 1       |                | 0                 | 0         |           | 0     |
| Configuration                | <del>                                     </del> | <del>                                     </del> | R       |                | U                 | +         |           |       |
|                              | and Lovel of Co                                  | <u>l</u>   | 1 /     |                |                   |           | <u> </u>  |       |
| Delay, Queue Length, a       | Northbound                                       | Southbound                                       | ,       | Westbou        | ınd               | 1         | Eastbound |       |
| Approach                     |  |  |         |                |                   |           | Т         | 1     |
| Movement                     | 1  | 4  | 7       | 8              | 9                 | 10        | 11        | 12    |
| ane Configuration            |  | LT   |         |                |                   |           |           | R     |
| / (veh/h)                    |  | 251  |         |                |                   |           |           | 192   |
| C (m) (veh/h)                |  | 1023   |         |                |                   |           |           | 865   |
| r/c                          |  | 0.25   |         |                |                   |           |           | 0.22  |
| 95% queue length             |  | 0.97   |         |                |                   |           |           | 0.85  |
| Control Delay (s/veh)        |  | 9.7  |         |                |                   |           |           | 10.3  |
| _OS                          |  | A  |         |                |                   | †         |           | В     |
| Approach Delay (s/veh)       |  |  |         | ]              | <u> </u>          | +         | 10.3      |       |
|                              |  |  |         |                |                   | +         | 10.5<br>B |       |
| Approach LOS                 |  |  |         |                |                   |           | В         |       |

|                               |        | TW           | O-W      | AY STOP    | CON  | TR                | OL S     | UMI    | MARY      |  |      |        |                |      |
|-------------------------------|--------|--------------|----------|------------|------|-------------------|----------|--------|-----------|--|------|--------|----------------|------|
| <b>General Informatio</b>     | n      |              |          |            | Sit  | te l              | nform    | natio  | on        |  |      |        |                |      |
| Analyst                       |        | SKB          |          |            | Int  | erse              | ection   |        |           |  |      | e Rd ( | @ <i>I-4</i> ( | ) EB |
| Agency/Co.                    |        | TDOT/Tra     | anSvs    | stems      |      |                   |          |        |           | Ramp   |      |        |                |      |
| Date Performed                |        | 04/18/201    |          |            | - 11 |                   | ction    |        |           |  | ood  | Coun   | ity            |      |
| Analysis Time Period          |        | AM Peak      | Perio    | nd         |      | alys              | sis Yea  | ır     |           | 2014   |      |        |                |      |
| Project Description Ex        | iotino | . Condition  | 20       |            |      |                   |          |        |           |  |      |        |                |      |
| East/West Street: <i>I-40</i> |        |              | 18       |            | No   | rth/ <sup>c</sup> | South 9  | Stroo  | t: Dancyv | ille Ros   | nd . |        |                |      |
| Intersection Orientation:     |        |              |          |            |      |                   |          |        | : 0.25    | me ree   | 10   |        |                |      |
| Vehicle Volumes a             |        |              | nts      |            | 1010 | au y i            | 0.104    | (1110) | . 0.20    |  |      |        |                |      |
| Major Street                  |        | ајазине      |          | lorthbound |      |                   |          |        |           | South  | bou  | ınd    |                |      |
| Movement                      |        | 1            |          | 2          |      | 3                 |          |        | 4         | î .  | 5    |        |                | 6    |
|                               |        | L            |          | T          |      | R                 |          |        | L         |  | Т    |        |                | R    |
| Volume (veh/h)                |        |              |          | 121        |      | 14                |          |        | 15        | 2  | 21   |        |                |      |
| Peak-Hour Factor, PHF         |        | 0.90         |          | 0.90       |      | 0.90              | )        |        | 0.90      | 0.   | 90   |        | С              | .90  |
| Hourly Flow Rate, HFR (veh/h) |        | 0            |          | 134        |      | 15                |          |        | 16        | 2  | 23   |        |                | 0    |
| Percent Heavy Vehicles        |        | 0            |          |            |      |                   |          |        | 2         |  |      |        |                |      |
| Median Type                   |        |              |          |            |      |                   | Undi     | vided  | 1         | -  |      |        |                |      |
| RT Channelized                |        |              |          |            |      | 0                 |          |        |           |  |      |        |                | 0    |
| Lanes                         |        | 0            |          | 1          |      | 0                 |          |        | 0         |  | 1    |        |                | 0    |
| Configuration                 |        |              |          |            |      | TR                |          |        | LT        |  |      |        |                |      |
| Upstream Signal               |        | <del> </del> |          | 0          |      |                   |          |        |           | ,  | 0    |        |                |      |
| Minor Street                  |        |              | E        | astbound   | ,    |                   |          |        |           | West   | bou  | nd     |                |      |
| Movement                      |        | 7            |          | 8          |      | 9                 |          |        | 10        | 1  | 11   |        |                | 12   |
|                               |        | L            |          | Т          |      | R                 |          |        | L         |  | Т    |        |                | R    |
| Volume (veh/h)                |        | 52           |          |            |      | 50                |          |        |           |  |      |        |                |      |
| Peak-Hour Factor, PHF         |        | 0.90         |          | 0.90       | (    | 0.90              | )        |        | 0.90      | 0.   | 90   |        | С              | .90  |
| Hourly Flow Rate, HFR (veh/h) |        | 57           |          | 0          |      | 55                |          |        | 0         |  | 0    |        |                | 0    |
| Percent Heavy Vehicles        |        | 2            |          | 0          |      | 2                 |          |        | 0         | (  | 0    |        |                | 0    |
| Percent Grade (%)             |        |              |          | 0          |      |                   |          |        |           |  | 0    |        |                |      |
| Flared Approach               |        |              |          | N          |      |                   |          |        |           |  | N    |        |                |      |
| Storage                       |        |              |          | 0          |      |                   |          |        |           | ,  | 0    |        |                |      |
| RT Channelized                | 1      |              | 十        |            | 1    | 0                 |          |        |           |  |      | 一十     |                | 0    |
| Lanes                         | 1      | 0            | $\top$   | 0          | +    | 0                 |          |        | 0         |  | 0    | $\neg$ |                | 0    |
| Configuration                 |        |              |          | LR         | 1    |                   |          |        |           |  |      |        |                |      |
| Delay, Queue Length, a        | and L  | evel of Se   | ervice   |            |      |                   |          |        |           |  |      |        |                |      |
| Approach                      |        | hbound       | ir .     | uthbound   |      | 1                 | Westbo   | ound   |           |  | E    | astbo  | ound           |      |
| Movement                      |        | 1            |          | 4          | 7    |                   | 8        |        | 9         | 10   |      | 1      | 1              | 12   |
| Lane Configuration            |        | •            |          | LT         |      |                   |          |        |           | 1  |      | LF     |                |      |
| v (veh/h)                     |        |              |          | 16         |      |                   | _        |        |           | <del>                                     </del> |      | 11.    |                |      |
|                               |        |              |          | 1432       |      |                   |          |        |           |  |      | 89     |                |      |
| C (m) (veh/h)                 |        |              |          |            |      |                   |          |        |           |  |      |        |                |      |
| V/C                           |        |              |          | 0.01       |      |                   | <u> </u> |        |           |  |      | 0.1    |                |      |
| 95% queue length              |        |              |          | 0.03       |      |                   | <u> </u> |        |           |  |      | 0.4    |                |      |
| Control Delay (s/veh)         |        |              | <u> </u> | 7.5        | ļ    |                   | ļ        |        |           | <u> </u>   |      | 9.0    |                |      |
| LOS                           |        |              |          | Α          |      |                   |          | _      |           |  |      | Α      |                |      |
| Approach Delay (s/veh)        |        |              |          |            |      |                   |          |        |           |  |      | 9.6    | 3              |      |
| Approach LOS                  |        | -            |          |            |      |                   |          |        |           |  |      | Α      |                |      |

|  |          | TW         | O-WAY ST   | OP       | CONTR     | OL S     | UMI  | MARY        |           |         |        |          |
|--|----------|------------|------------|----------|-----------|----------|--|-------------|-----------|---------|--------|----------|
| General Informatio                               | n        |            |            |          | Site I    | nforn    | natio  | on          |           |         |        |          |
| Analyst  |          | SKB        |            |          | Interse   | ection   |  |             | Dancyvill | e Rd @  | 1-40   | ) EB     |
| Agency/Co.                                       |          |            | anSystems  |          | —         |          |  |             | Ramps     |         |        |          |
| Date Performed                                   |          | 04/18/201  |            |          | - Jurisdi |          |  |             | Haywood   | County  | /      |          |
| Analysis Time Period                             |          | PM Peak    |            |          | — Analys  | sis Yea  | ar   |             | 2014      |         |        |          |
|  | ela tina | •          |            |          |           |          |  |             |           |         |        |          |
| Project Description Ex<br>East/West Street: I-40 |          |            | is         |          | North/9   | South    | Stroc  | et: Dancyv  | illa Paad |         |        |          |
| Intersection Orientation:                        |          |            |            |          |           |          |  | ): 0.25     | ille Noau |         |        |          |
| Vehicle Volumes a                                |          |            | nte        |          | jotady i  | Onou     | (1110)                                       | ).          |           |         |        |          |
| Major Street                                     |          | ајазине    | Northbou   | ınd      |           |          |  |             | Southbou  | ınd     |        |          |
| Movement   |          | 1          | 2          |          | 3         |          |  | 4           | 5         |         |        | 6        |
|  |          | L          | Т          |          | R         |          |  | L           | Т         |         |        | R        |
| Volume (veh/h)                                   |          |            | 68         |          | 15        |          |  | 24          | 34        |         |        |          |
| Peak-Hour Factor, PHF                            |          | 0.90       | 0.90       |          | 0.90      |          |  | 0.90        | 0.90      |         | 0      | .90      |
| Hourly Flow Rate, HFR (veh/h)                    |          | 0          | 75         |          | 16        |          |  | 26          | 37        |         |        | 0        |
| Percent Heavy Vehicles                           |          | 0          |            |          |           |          |  | 2           |           |         |        |          |
| Median Type                                      |          |            | •          |          | ļ.        | Undi     | vided  | <del></del> |           |         |        |          |
| RT Channelized                                   |          |            |            |          | 0         |          |  |             |           |         |        | 0        |
| Lanes  |          | 0          | 1          |          | 0         |          |  | 0           | 1         |         |        | 0        |
| Configuration                                    |          |            |            |          | TR        |          |  | LT          |           |         |        |          |
| Upstream Signal                                  |          |            | 0          |          |           |          |  |             | 0         |         |        |          |
| Minor Street                                     |          |            | Eastbou    | nd       |           |          |  |             | Westbou   | nd      |        |          |
| Movement   |          | 7          | 8          |          | 9         |          |  | 10          | 11        |         |        | 12       |
|  |          | L          | Т          |          | R         |          |  | L           | Т         |         |        | R        |
| Volume (veh/h)                                   |          | 72         |            |          | 95        |          |  |             |           |         |        |          |
| Peak-Hour Factor, PHF                            |          | 0.90       | 0.90       |          | 0.90      | )        |  | 0.90        | 0.90      |         | 0      | .90      |
| Hourly Flow Rate, HFR (veh/h)                    |          | 80         | 0          |          | 105       |          |  | 0           | 0         |         |        | 0        |
| Percent Heavy Vehicles                           |          | 2          | 0          |          | 2         |          |  | 0           | 0         |         |        | 0        |
| Percent Grade (%)                                |          |            | 0          |          |           |          |  |             | 0         |         |        |          |
| Flared Approach                                  |          |            | N          |          |           |          |  |             | N         |         |        |          |
| Storage  |          |            | 0          |          |           |          |  |             | 0         |         |        |          |
| RT Channelized                                   |          |            |            |          | 0         |          |  |             |           |         |        | 0        |
| Lanes  |          | 0          | 0          |          | 0         |          |  | 0           | 0         |         |        | 0        |
| Configuration                                    | 1        | -          | LR         |          |           |          |  |             |           |         |        | -        |
| Delay, Queue Length, a                           | and L    | evel of Se |            |          |           |          | <u>'                                    </u> |             |           |         |        |          |
| Approach   |          | thbound    | Southbound | d        | ١         | Westb    | ound   |             | [         | Eastbou | nd     |          |
| Movement   |          | 1          | 4          |          | 7         | 8        |  | 9           | 10        | 11      |        | 12       |
| Lane Configuration                               |          |            | LT         | <u> </u> |           |          |  |             |           | LR      | $\neg$ | <u> </u> |
| v (veh/h)  |          |            | 26         |          |           |          |  |             |           | 185     | $\neg$ |          |
| C (m) (veh/h)                                    |          |            | 1504       |          |           |          |  |             |           | 921     |        |          |
| v/c  |          |            | 0.02       | $\dashv$ |           |          |  | -           | -         | 0.20    |        |          |
|  |          |            |            |          |           |          |  |             |           |         |        |          |
| 95% queue length                                 |          |            | 0.05       |          |           | <u> </u> |  |             | -         | 0.75    |        |          |
| Control Delay (s/veh)                            |          |            | 7.4        | ļ        |           |          |  |             |           | 9.9     |        |          |
| LOS  |          |            | Α          |          |           |          |  |             |           | A       |        |          |
| Approach Delay (s/veh)                           |          |            |            |          |           |          |  |             |           | 9.9     |        |          |
| Approach LOS                                     |          |            | -          |          |           |          |  |             |           | Α       |        |          |

|  |          | TW         | 0-        | WAY STOP     | СО   | NTR      | OL      | SUM                  | MAI          | RY     |  |        |      |          |          |
|--|----------|------------|-----------|--------------|--|----------|---------|----------------------|--------------|--------|--|--------|------|----------|----------|
| General Informatio                               | n        |            |           |              | (  | Site I   | nfo     | rmati                | on           |        |  |        |      |          |          |
| Analyst  |          | SKB        |           |              | $\neg \llbracket$                                | Interse  | ectio   | n<br>n               |              |        |  |        | e Ro | l @ l-4  | 0 WB     |
| Agency/Co.                                       |          | TDOT/Tra   | ans       | Svstems      | —   <u> </u>                                     |          |         |                      |              |        | Ran  |        |      |          |          |
| Date Performed                                   |          | 04/18/20   |           |              | 115  | Jurisdi  |         |                      |              |        |  | wood   | Col  | ınty     |          |
| Analysis Time Period                             |          | AM Peak    |           | eriod        |  | Analys   | sis Y   | rear                 |              |        | 201  | 4      |      |          |          |
|  | .i ( i   | •          |           |              |  |          |         |                      |              |        |  |        |      |          |          |
| Project Description Ex<br>East/West Street: I-40 |          |            | าร        |              | I <sub>N</sub>                                   | Jorth/9  | Sout    | th Ctro              | a+: /        | Jonala | illo D   | ood    |      |          |          |
| Intersection Orientation:                        |          |            |           |              |  |          |         | th Stree             |              |        | ille K   | oau    |      |          |          |
|  |          |            |           |              |  | Study I  | en      | ou (IIIs             | ). U         | .20    |  |        |      |          |          |
| Vehicle Volumes a Major Street                   | na A     | ajustme    | nı        | Northbound   |  |          |         | 1                    |              |        | Sou  | ıthbou | ınd  |          |          |
| Movement   | _        | 1          |           | 2            | $\overline{}$                                    | 3        |         |                      | 4            |        | T 300  | 5      | ina  | 1        | 6        |
| MOVEMENT   | ╅        | <u> </u>   | $\dashv$  | <u>2</u><br> | ╁  | R        |         | _                    | L            |        |  | T      |      | +        | R        |
| Volume (veh/h)                                   |          | 104        | ┪         | 69           | ╫  | - 11     |         |                      |              |        |  | 16     |      |          | 95       |
| Peak-Hour Factor, PHF                            | $\dashv$ | 0.90       | ┪         | 0.90         | +  | 0.90     | )       |                      | 0.90         | )      |  | 0.90   |      |          | 0.90     |
| Hourly Flow Rate, HFR (veh/h)                    |          | 115        |           | 76           |  | 0        |         |                      | 0            |        |  | 17     |      | 1        | 105      |
| Percent Heavy Vehicles                           |          | 2          |           |              | $\top$   |          |         |                      | 3            |        |  |        |      |          |          |
| Median Type                                      |          |            |           |              |  | Ur       | ndivide | d                    |              |        |  |        |      |          |          |
| RT Channelized                                   |          |            |           |              |  | 0        |         |                      |              |        |  |        |      |          | 0        |
| Lanes  | 1        | 0          | $\exists$ | 1            | ╅  | 0        |         |                      | 0            |        |  | 1      |      |          | 0        |
| Configuration                                    |          | LT         | П         |              | +  |          |         |                      |              |        |  |        |      |          | TR       |
| Upstream Signal                                  |          |            | П         | 0            | +  |          |         |                      |              |        |  | 0      |      |          |          |
| Minor Street                                     |          |            | =         | Eastbound    |  |          |         | <u> </u>             |              |        | ۱ ۱۸۷۵   | stbou  | nd   | <u>'</u> |          |
| Movement   | +        | 7          |           | 8            | Т  | 9        |         |                      | 10           | )      | Τ  | 11     |      | Τ        | 12       |
| Movement   |          | i          | П         | T            | +-   | R        |         |                      | L            |        |  | T      |      |          | R        |
| Volume (veh/h)                                   | _        |            | ┪         |              | ╫  |          |         |                      | 20           |        |  | -      |      |          | 19       |
| Peak-Hour Factor, PHF                            |          | 0.90       |           | 0.90         | 1  | 0.90     | )       |                      | 0.90         |        |  | 0.90   |      |          | 0.90     |
| Hourly Flow Rate, HFR (veh/h)                    |          | 0          |           | 0            |  | 0        |         |                      | 22           |        |  | 0      |      |          | 21       |
| Percent Heavy Vehicles                           |          | 3          |           | 0            | 1  | 3        |         |                      | 2            |        |  | 0      |      |          | 2        |
| Percent Grade (%)                                |          |            |           | 0            |  |          |         |                      |              |        |  | 0      |      |          |          |
| Flared Approach                                  |          |            |           | N            | П  |          |         |                      |              |        |  | N      |      |          |          |
| Storage  | _        |            | $\neg$    | 0            | +  |          |         |                      |              |        |  | 0      |      |          |          |
| RT Channelized                                   | ╁        |            | $\dashv$  |              | ╁  | 0        |         | _                    |              |        |  |        |      | $\vdash$ | 0        |
| Lanes  | +        | 0          | $\dashv$  | 0            | ╫  | 0        |         |                      | 0            |        |  | 0      |      | $\vdash$ | 0        |
| Configuration                                    | ╅        |            | ᅱ         | 0            | ╫  |          |         | _                    |              |        |  | LR     |      | $\vdash$ |          |
| Delay, Queue Length,                             | and L    | oval of Sa | )rv       | vice         | <u> </u>   |          |         | ļ                    |              |        |  | LIX    |      |          |          |
| Approach   |          | hbound     | 1         | Southbound   | 1  |          | Mes     | stbound              | 1            |        | Π  | F      | actl | oound    |          |
| Movement   | 14010    | 1          | H         | 4            | <del>                                     </del> | 7        | I       | 8                    | <del>1</del> | 9      | 1  | 0      |      | 11       | 12       |
| Lane Configuration                               |          | LT         |           | <del>-</del> |  | <u>'</u> |         | LR                   |              | 3      | '  | U      |      | 11       | 12       |
| v (veh/h)  |          | 115        |           |              |  |          | _       | 43                   |              |        |  |        |      |          |          |
| C (m) (veh/h)                                    |          | 465        | ├         |              |  |          | _       | <del>43</del><br>723 | ╁            |        | -  |        | _    |          |          |
| v/c  |          | 0.08       |           |              |  |          | _       |                      | ╁            |        |  |        |      |          | <u> </u> |
|  |          |            |           |              |  |          | _       | 0.06                 | ╀            |        |  |        |      |          |          |
| 95% queue length                                 |          | 0.26       |           |              |  |          | _       | 0.19                 | _            |        | <del>                                     </del> |        |      |          |          |
| Control Delay (s/veh)                            |          | 7.7        | <u> </u>  |              |  |          | 1       | 10.3                 |              |        | <u> </u>   |        |      |          |          |
| LOS  |          | Α          |           |              |  |          |         | В                    |              |        |  |        |      |          |          |
| Approach Delay (s/veh)                           |          |            |           |              |  | 1        | 10.3    |                      |              |        |  |        |      |          |          |
| Approach LOS                                     |          |            |           |              |  |          |         | В                    |              |        |  |        |      |          |          |

|                                  | TW               | 10-      | WAY STOP   | CONTR    | OL S   | UMI      | MARY      |  |  |        |            |
|----------------------------------|------------------|----------|------------|----------|--------|----------|-----------|--|--|--------|------------|
| General Information              |                  |          |            | Site I   |        |          |           |  |  |        |            |
| Analyst                          | SKB              |          |            | Interse  | ection |          |           | Dancyville<br>Ramps                              | e Rd   | @ I-40 | ) WB       |
| Agency/Co.                       | TDOT/T           |          | Systems    | Jurisdi  | ction  |          |           | Haywood  | Соц  | ntv    |            |
| Date Performed                   | 04/18/20         |          |            | — Analys |        | ar       |           | 2014   | Cou  | ity    |            |
| Analysis Time Period             | PM Pear          | k Pe     | eriod      |          |        | <u> </u> |           |  |  |        |            |
| Project Description Ex           | kistina Conditio | ns       |            |          |        |          |           |  |  |        |            |
| East/West Street: I-40           |                  |          |            | North/S  | South  | Stree    | t: Dancyv | rille Road                                       |  |        |            |
| Intersection Orientation:        | North-South      |          |            | Study I  | Period | l (hrs)  | : 0.25    |  |  |        |            |
| Vehicle Volumes ar               | nd Adjustm       | ent      | ts         |          |        |          |           |  |  |        |            |
| Major Street                     |                  |          | Northbound |          |        |          |           | Southbou   | ınd  |        |            |
| Movement                         | 1                |          | 2          | 3        |        |          | 4         | 5  |  |        | 6          |
|                                  | L                |          | Т          | R        |        | ┞        | L         | Т  |  |        | R          |
| Volume (veh/h)                   | 63               | _        | 79         |          |        | —        |           | 33   |  |        | 41         |
| Peak-Hour Factor, PHF            | 0.90             | -        | 0.90       | 0.90     |        | -        | 0.90      | 0.90   |  | C      | ).90       |
| Hourly Flow Rate, HFR (veh/h)    | 70               |          | 87         | 0        |        |          | 0         | 36   |  |        | <b>4</b> 5 |
| Percent Heavy Vehicles           | 2                | $\dashv$ |            |          |        |          | 3         |  |  |        |            |
| Median Type                      | 1                |          | ļ          |          | Und    | ivided   | 1         |  |  |        |            |
| RT Channelized                   | 1                |          |            | 0        |        |          |           |  |  |        | 0          |
| Lanes                            | 0                |          | 1          | 0        |        |          | 0         | 1  |  |        | 0          |
| Configuration                    | LT               |          |            | 1        |        |          |           |  |  |        | TR         |
| Upstream Signal                  | 1                |          | 0          |          |        |          |           | 0  |  |        |            |
| Minor Street                     | İ                |          | Eastbound  |          |        | ĺ        |           | Westbou  | nd   |        |            |
| Movement                         | 7                |          | 8          | 9        |        |          | 10        | 11   |  |        | 12         |
|                                  | L                |          | Т          | R        |        |          | L         | Т  |  |        | R          |
| Volume (veh/h)                   | 1                |          |            |          |        |          | 25        |  |  |        | 16         |
| Peak-Hour Factor, PHF            | 0.90             |          | 0.90       | 0.90     | )      |          | 0.90      | 0.90   |  | С      | .90        |
| Hourly Flow Rate, HFR<br>(veh/h) | 0                |          | 0          | 0        |        |          | 27        | 0  |  |        | 17         |
| Percent Heavy Vehicles           | 3                |          | 0          | 3        |        |          | 2         | 0  |  |        | 2          |
| Percent Grade (%)                |                  |          | 0          |          |        |          |           | 0  |  |        |            |
| Flared Approach                  |                  |          | N          |          |        |          |           | N  |  |        |            |
| Storage                          |                  |          | 0          |          |        |          |           | 0  |  |        |            |
| RT Channelized                   |                  |          |            | 0        |        |          |           | ĺ  |  |        | 0          |
| Lanes                            | 0                |          | 0          | 0        |        |          | 0         | 0  |  |        | 0          |
| Configuration                    |                  |          |            |          |        |          |           | LR   |  |        |            |
| Delay, Queue Length, a           | and Level of S   | erv      | ice        |          |        |          |           |  |  |        |            |
| Approach                         | Northbound       |          | Southbound | ,        | Westb  | ound     |           | E  | astb   | ound   |            |
| Movement                         | 1                | 十        | 4          | 7        | 8      | 3        | 9         | 10   | 1  | 1      | 12         |
| Lane Configuration               | LT               | $\top$   |            |          | LF     | ₹        |           |  |  |        |            |
| v (veh/h)                        | 70               | 十        |            |          | 44     |          |           |  |  |        |            |
| C (m) (veh/h)                    | 1517             | ╁        |            |          | 76     |          |           |  |  |        |            |
| v/c                              | 0.05             | $\top$   |            |          | 0.0    |          |           |  |  |        |            |
| 95% queue length                 | 0.15             | +        |            |          | 0.1    |          |           | <del>                                     </del> | <del>                                     </del> |        |            |
| Control Delay (s/veh)            | 7.5              | +        |            |          | 10.    |          |           |  | <del></del>                                      |        |            |
|                                  |                  | +        |            |          |        |          |           |  | <del>-   -  </del>                               |        |            |
| LOS                              | Α                | ╁        |            |          | E      |          |           |  | <u> </u>   |        |            |
| Approach Delay (s/veh)           |                  | ╀        |            |          | 10     |          |           |  |  |        |            |
| Approach LOS                     |                  |          |            |          | Е      | }        |           |  |  |        |            |

|  |        | TW           | O-W            | AY STOP    | CO            | NTR     | OL S    | UMI  | MARY                        |           |                    |                 |                |      |
|--|--------|--------------|----------------|------------|---------------|---------|---------|--|-----------------------------|-----------|--------------------|-----------------|----------------|------|
| General Informatio                               | n      |              |                |            | S             | Site I  | nforn   | natio  | on                          |           |                    |                 |                |      |
| Analyst  |        | SKB          |                |            | $\neg \Gamma$ | nterse  | ection  |  |                             |           |                    | e Rd (          | @ <i>I-4</i> ( | ) EB |
| Agency/Co.                                       |        | TDOT/Tra     | anSv           | stems      | ╗             |         |         |  |                             | Ram       |                    |                 |                |      |
| Date Performed                                   |        | 04/18/201    |                |            | 111           | Jurisdi |         |  |                             |           |                    | Coun            | ty             |      |
| Analysis Time Period                             |        | AM Peak      |                | od         | —   <i>-</i>  | Analys  | sis Yea | ar   |                             | 2034      |                    |                 |                |      |
|  |        | 0 1'''       |                |            |               |         |         |  |                             |           |                    |                 |                |      |
| Project Description Ex<br>East/West Street: I-40 |        | Condition    | าร             |            | lN            | lorth/9 | South   | Ctroo  | t: Danau                    | illo Do   | -d                 |                 |                |      |
| Intersection Orientation:                        |        |              |                |            |               |         |         |  | t: <i>Dancy\</i><br>): 0.25 | rille Rua | 1U                 |                 |                |      |
|  |        |              | n40            |            |               | ituuy i | enou    | (1113)   | 1. 0.20                     |           |                    |                 |                |      |
| Vehicle Volumes and Major Street                 | na A   | ajustme      |                | Northbound |               |         |         | 1  |                             | South     | hou                | ınd             |                |      |
| Movement   | +      | 1            | <del>- '</del> | 2          | 1             | 3       |         | _  | 4                           | T         | 5                  | П               |                | 6    |
| Movement   | ╁      | <del>_</del> | $\dashv$       | <u>2</u>   | ╁             | R       |         | ┢  | L                           |           | T                  | $\overline{}$   |                | R    |
| Volume (veh/h)                                   | $\top$ |              | ╁              | 149        |               | 21      |         | <del>                                     </del> | 22                          |           | <del>.</del><br>32 |                 |                | 11   |
| Peak-Hour Factor, PHF                            | $\top$ | 0.90         | $\dashv$       | 0.90       |               | 0.90    | )       |  | 0.90                        |           | .90                | $\neg \uparrow$ | - 0            | 0.90 |
| Hourly Flow Rate, HFR (veh/h)                    |        | 0            |                | 165        |               | 23      |         |  | 24                          |           | 35                 |                 |                | 0    |
| Percent Heavy Vehicles                           |        | 0            |                |            |               |         |         |  | 2                           |           |                    |                 |                |      |
| Median Type                                      |        |              | -              |            | ,             |         | Undi    | vided  | 1                           |           |                    |                 |                |      |
| RT Channelized                                   |        |              |                |            |               | 0       |         |  |                             |           |                    |                 |                | 0    |
| Lanes  |        | 0            |                | 1          |               | 0       |         |  | 0                           |           | 1                  |                 |                | 0    |
| Configuration                                    |        |              |                |            |               | TR      |         |  | LT                          |           |                    |                 |                |      |
| Upstream Signal                                  |        |              |                | 0          |               |         |         |  |                             |           | 0                  |                 |                |      |
| Minor Street                                     |        |              | ,              | Eastbound  |               |         |         |  |                             | West      | tbou               | nd              |                |      |
| Movement   |        | 7            |                | 8          |               | 9       |         |  | 10                          | 1         | 11                 |                 |                | 12   |
|  |        | L            |                | Т          |               | R       |         |  | L                           |           | Т                  |                 |                | R    |
| Volume (veh/h)                                   |        | 63           |                |            |               | 61      |         |  |                             |           |                    |                 |                |      |
| Peak-Hour Factor, PHF                            |        | 0.90         |                | 0.90       |               | 0.90    | )       |  | 0.90                        | 0.        | .90                |                 | C              | ).90 |
| Hourly Flow Rate, HFR (veh/h)                    |        | 70           |                | 0          |               | 67      |         |  | 0                           |           | 0                  |                 |                | 0    |
| Percent Heavy Vehicles                           |        | 2            |                | 0          |               | 2       |         |  | 0                           |           | 0                  |                 |                | 0    |
| Percent Grade (%)                                |        |              |                | 0          |               |         |         |  |                             |           | 0                  |                 |                |      |
| Flared Approach                                  |        |              |                | Ν          |               |         |         |  |                             |           | N                  |                 |                |      |
| Storage  |        |              |                | 0          |               |         |         |  |                             |           | 0                  |                 |                |      |
| RT Channelized                                   |        |              |                |            |               | 0       |         |  |                             |           |                    |                 |                | 0    |
| Lanes  |        | 0            | $\neg \vdash$  | 0          |               | 0       |         |  | 0                           |           | 0                  |                 |                | 0    |
| Configuration                                    |        |              | $\neg \vdash$  | LR         |               |         |         |  |                             | ĺ         |                    |                 |                |      |
| Delay, Queue Length, a                           | and Lo | evel of Se   | rvic           | e          |               |         |         |  |                             |           |                    |                 |                |      |
| Approach   |        | hbound       | ir -           | uthbound   |               | ,       | Westb   | ound   |                             |           | E                  | astbo           | und            |      |
| Movement   |        | 1            |                | 4          |               | 7       | 8       | 3  | 9                           | 10        |                    | 11              | 1              | 12   |
| Lane Configuration                               |        |              |                | LT         |               |         |         |  |                             |           |                    | LF              |                |      |
| v (veh/h)  |        |              |                | 24         |               |         |         |  |                             |           |                    | 13              |                |      |
| C (m) (veh/h)                                    |        |              | <del> </del>   | 1386       |               |         |         |  |                             |           |                    | 84              |                |      |
| v/c  |        |              | <del> </del>   | 0.02       |               |         |         |  |                             |           |                    | 0.1             |                |      |
|  |        |              |                |            |               |         |         |  |                             |           |                    |                 |                |      |
| 95% queue length                                 |        |              | <u> </u>       | 0.05       |               |         |         |  |                             |           |                    | 0.5             |                |      |
| Control Delay (s/veh)                            |        |              | <u> </u>       | 7.6        |               |         |         |  |                             |           |                    | 10.             |                |      |
| LOS  |        |              | <u> </u>       | Α          | <u> </u>      |         |         |  |                             |           |                    | В               |                |      |
| Approach Delay (s/veh)                           |        |              |                |            |               |         |         |  |                             |           |                    | 10.1            | 1              |      |
| Approach LOS                                     |        |              |                |            |               |         |         |  |                             |           |                    | В               |                |      |

|                               |          | TW          | O-W      | AY STOP    | CON  | NTR    | OL S     | SUMI    | MARY     |            |      |       |        |      |
|-------------------------------|----------|-------------|----------|------------|--|--------|----------|---------|----------|------------|------|-------|--------|------|
| General Informatio            | n        |             |          |            | S  | ite lı | nfor     | mati    | on       |            |      |       |        |      |
| Analyst                       |          | SKB         |          |            |  | nterse | ection   |         |          |            |      | e Rd  | @ 1-40 | ) EB |
| Agency/Co.                    |          | TDOT/Tra    | anSy     | stems      |  | '!'    | -4:      |         |          | Ram        |      |       |        |      |
| Date Performed                |          | 04/18/20    |          |            | - 11 -   | urisdi |          |         |          |            |      | Cou   | nty    |      |
| Analysis Time Period          |          | PM Peak     | Peri     | od         |  | naiys  | is Ye    | ar      |          | 2034       |      |       |        |      |
| Project Description Ex        | vistina  | a Condition | 20       |            |  |        |          |         |          |            |      |       |        |      |
| East/West Street: I-40        |          |             | 13       |            | ΙΝ   | orth/S | South    | Stree   | t: Dancy | ille Ro    | ad   |       |        |      |
| Intersection Orientation:     |          |             |          |            |  |        |          |         | ): 0.25  | 1110 7 101 |      |       |        |      |
| Vehicle Volumes a             | nd A     | diustme     | nts      |            |  |        |          |         |          |            |      |       |        |      |
| Major Street                  | <u> </u> | ajaomi      |          | Northbound |  |        |          | Τ       |          | Soutl      | hbou | ınd   |        |      |
| Movement                      |          | 1           |          | 2          |  | 3      |          |         | 4        | 1          | 5    |       |        | 6    |
|                               |          | L           |          | T          |  | R      |          |         | L        |            | Т    |       |        | R    |
| Volume (veh/h)                |          |             |          | 87         |  | 22     |          |         | 36       |            | 50   |       |        |      |
| Peak-Hour Factor, PHF         |          | 0.90        | _        | 0.90       |  | 0.90   | )        | ╄       | 0.90     | 0          | .90  |       |        | ).90 |
| Hourly Flow Rate, HFR (veh/h) |          | 0           |          | 96         |  | 24     |          |         | 40       | ,          | 55   |       |        | 0    |
| Percent Heavy Vehicles        |          | 0           |          |            |  |        |          |         | 2        |            |      |       |        |      |
| Median Type                   |          |             |          |            |  |        | Unc      | livided | 1        | -          |      |       |        |      |
| RT Channelized                |          |             |          |            |  | 0      |          |         |          |            |      |       |        | 0    |
| Lanes                         |          | 0           |          | 1          |  | 0      |          |         | 0        |            | 1    |       |        | 0    |
| Configuration                 |          |             |          |            |  | TR     |          |         | LT       |            |      |       |        |      |
| Upstream Signal               |          |             |          | 0          |  |        |          |         |          |            | 0    |       |        |      |
| Minor Street                  |          |             |          | Eastbound  |  |        |          |         |          | Wes        | tbou | nd    |        |      |
| Movement                      |          | 7           |          | 8          |  | 9      |          |         | 10       |            | 11   |       |        | 12   |
|                               |          | L           |          | Т          |  | R      |          |         | L        |            | Т    |       |        | R    |
| Volume (veh/h)                |          | 83          |          |            |  | 114    |          |         |          |            |      |       |        |      |
| Peak-Hour Factor, PHF         |          | 0.90        | _        | 0.90       |  | 0.90   | )        | ļ       | 0.90     | 0          | .90  |       |        | 0.90 |
| Hourly Flow Rate, HFR (veh/h) |          | 92          |          | 0          |  | 126    |          |         | 0        |            | 0    |       |        | 0    |
| Percent Heavy Vehicles        |          | 2           |          | 0          |  | 2      |          |         | 0        |            | 0    |       |        | 0    |
| Percent Grade (%)             |          |             |          | 0          |  |        |          |         |          |            | 0    |       |        |      |
| Flared Approach               |          |             |          | Ν          |  |        |          |         |          |            | Ν    |       |        |      |
| Storage                       |          |             |          | 0          |  |        |          |         |          |            | 0    |       |        |      |
| RT Channelized                |          |             |          |            |  | 0      |          |         |          |            |      |       |        | 0    |
| Lanes                         |          | 0           |          | 0          |  | 0      |          |         | 0        |            | 0    |       |        | 0    |
| Configuration                 |          |             |          | LR         |  |        |          |         |          |            |      |       |        |      |
| Delay, Queue Length, a        | and L    | evel of Se  | ervic    | е          |  |        |          |         |          |            |      |       |        |      |
| Approach                      | Nor      | thbound     | So       | uthbound   |  | 1      | Westl    | oound   |          |            | E    | Eastb | ound   |      |
| Movement                      |          | 1           |          | 4          | 7  | 7      |          | 8       | 9        | 10         | )    | 1     | 1      | 12   |
| Lane Configuration            |          |             |          | LT         |  |        |          |         |          |            |      | L     | R      |      |
| v (veh/h)                     |          |             |          | 40         |  |        |          |         |          |            |      | 21    | 18     |      |
| C (m) (veh/h)                 |          |             |          | 1468       |  |        |          |         |          |            | 867  |       | 67     |      |
| v/c                           |          |             |          | 0.03       |  |        |          |         |          |            |      | 0.2   |        |      |
| 95% queue length              |          |             | $\vdash$ | 0.08       | <u> </u>   |        | $\vdash$ |         |          |            |      |       | 20     |      |
| Control Delay (s/veh)         |          |             |          | 7.5        |  |        | $\vdash$ |         |          |            |      |       | 0.5    |      |
| LOS                           |          |             | _        | A A        | <del>                                     </del> |        | $\vdash$ |         |          |            |      | E     |        |      |
|                               |          |             | _        |            |  |        | <u> </u> |         | <u> </u> |            |      | 10.   |        |      |
| Approach LOS                  |          |             | <u> </u> |            |  |        |          |         |          | <u> </u>   |      |       |        |      |
| Approach LOS                  |          |             |          |            |  |        |          |         |          | <u> </u>   |      | В     | i      |      |

|   |          | TW         | O-  | WAY STOP   | СО   | NTR     | 0        | L SU    | JMN      | /IARY                      |  |        |          |          |      |
|---|----------|------------|-----|------------|------|---------|----------|---------|----------|----------------------------|--|--------|----------|----------|------|
| General Information                             | <u>1</u> |            |     |            | 5    | Site II | ní       | form    | atio     | n                          |  |        |          |          |      |
| Analyst   |          | SKB        |     |            | ٦ĺ٦  | nterse  | 20       | tion    |          |                            |  |        | e Ra     | l @ l-4  | 0 WB |
| Agency/Co.                                      |          | TDOT/Tra   | ans | Systems    |      |         |          |         |          |                            |  | mps    |          |          |      |
| Date Performed                                  |          | 04/18/201  |     | Systems    | 1115 | Jurisdi |          |         |          |                            |  | ywood  | l Cοι    | ınty     |      |
| Analysis Time Period                            |          | AM Peak    |     | eriod      |      | Analys  | Sis      | s Year  | •        |                            | 203  | 34     |          |          |      |
|   |          |            |     |            |      |         |          |         |          |                            |  |        |          |          |      |
| Project Description Ex East/West Street: I-40 I |          |            | s   |            | - In | lorth/C | -        | outh C  | troo     | t. Donor                   | illo E   | Pood   |          |          |      |
| Intersection Orientation:                       |          |            |     |            |      |         |          |         |          | t: <i>Dancy\</i><br>: 0.25 | /IIIe R  | toau   |          |          |      |
| Vehicle Volumes ar                              |          |            | nt  | · c        |      | rtady i |          | crioa ( | (1113)   | . 0.20                     |  |        |          |          |      |
| Major Street                                    | T A      | ujusiiile  | 111 | Northbound |      |         |          | Т       |          |                            | Soi  | uthbou | ınd      |          |      |
| Movement  | +        | 1          |     | 2          | Т    | 3       |          |         |          | 4                          | T  | 5      |          | 1        | 6    |
|   |          | Ĺ          | ┪   | T          |      | R       |          |         |          | L                          |  | T      |          |          | R    |
| Volume (veh/h)                                  |          | 124        | ┪   | 88         |      |         |          |         |          |                            |  | 24     |          |          | 110  |
| Peak-Hour Factor, PHF                           | 1        | 0.90       | ヿ   | 0.90       | 1    | 0.90    | )        |         |          | 0.90                       |  | 0.90   |          | +        | 0.90 |
| Hourly Flow Rate, HFR                           | ĺ        | 137        | ヿ   | 97         |      | 0       |          |         |          | 0                          |  | 26     |          |          | 122  |
| (veh/h)   |          |            | 4   |            |      |         |          |         |          |                            | <u> </u>   |        |          |          |      |
| Percent Heavy Vehicles                          | -        | 2          |     |            |      |         |          | ,, ,,   | . ,      | 3                          |  |        |          |          |      |
| Median Type                                     | _        |            |     |            |      |         | Undiv    | idea    |          | т —                        |  |        | 1        |          |      |
| RT Channelized                                  |          |            | 4   | ,          |      | 0       |          |         |          |                            |  |        |          |          | 0    |
| Lanes   |          | 0          | 4   | 1          | _    | 0       |          |         |          | 0                          | <u> </u>   | 1      |          |          | 0    |
| Configuration                                   |          | LT         | _   |            |      |         |          |         |          |                            | <u> </u>   |        |          | <u> </u> | TR   |
| Upstream Signal                                 |          |            |     | 0          |      |         |          |         |          |                            |  | 0      |          |          |      |
| Minor Street                                    |          |            |     | Eastbound  |      |         |          |         |          |                            | We   | estbou | nd       |          |      |
| Movement  |          | 7          | Ц   | 8          |      | 9       |          |         |          | 10                         |  | 11     |          |          | 12   |
|   |          | L          |     | Т          |      | R       |          |         |          | L                          |  | Т      |          |          | R    |
| Volume (veh/h)                                  |          |            |     |            |      |         |          |         |          | 30                         |  |        |          |          | 28   |
| Peak-Hour Factor, PHF                           |          | 0.90       |     | 0.90       |      | 0.90    | <u> </u> |         |          | 0.90                       | <u> </u>   | 0.90   |          | (        | 0.90 |
| Hourly Flow Rate, HFR (veh/h)                   |          | 0          |     | 0          |      | 0       |          |         |          | 33                         |  | 0      |          |          | 31   |
| Percent Heavy Vehicles                          |          | 3          |     | 0          |      | 3       |          |         |          | 2                          |  | 0      |          |          | 2    |
| Percent Grade (%)                               |          |            |     | 0          |      |         |          |         |          |                            |  | 0      |          |          |      |
| Flared Approach                                 |          |            |     | N          |      |         |          |         |          |                            |  | Ν      |          |          |      |
| Storage   |          |            |     | 0          |      |         |          |         |          |                            |  | 0      |          |          |      |
| RT Channelized                                  |          |            | ヿ   |            |      | 0       |          |         |          |                            |  |        |          |          | 0    |
| Lanes   | 1        | 0          | ┪   | 0          | 1    | 0       |          |         |          | 0                          |  | 0      |          |          | 0    |
| Configuration                                   | 1        |            | ╗   |            | 1    |         |          |         |          |                            |  | LR     |          |          |      |
| Delay, Queue Length, a                          | nd L     | evel of Se | rv  | ice        |      |         |          |         |          |                            | •  |        |          | •        |      |
| Approach  |          | hbound     |     | Southbound |      | \       | W        | /estbo  | und      |                            |  |        | Easth    | oound    |      |
| Movement  |          | 1          |     | 4          |      | 7       | T        | 8       |          | 9                          | <del>                                     </del> | 10     | T        | 11       | 12   |
| Lane Configuration                              |          | LT         |     | · ·        |      | •       | t        | LR      |          |                            |  |        |          | ••       | - '- |
| v (veh/h)                                       |          | 137        |     |            |      |         | ╁        | 64      | $\dashv$ |                            | $\vdash$   |        |          |          |      |
|   |          | 434        |     |            |      |         | ╀        |         | .        |                            | ╁  |        |          |          |      |
| C (m) (veh/h)                                   |          |            |     |            |      |         | ╀        | 657     |          |                            | ├  |        | ├─       |          |      |
| v/c   |          | 0.10       |     |            |      |         | Ļ        | 0.10    |          |                            | <u> </u>   |        | <u> </u> |          |      |
| 95% queue length                                |          | 0.32       |     |            |      |         | Ļ        | 0.32    |          |                            | <u> </u>   |        |          |          |      |
| Control Delay (s/veh)                           |          | 7.8        |     |            |      |         | L        | 11.1    |          |                            |  |        |          |          |      |
| LOS   |          | Α          | L   |            |      |         |          | В       | ]        |                            |  |        |          |          |      |
| Approach Delay (s/veh)                          |          |            |     |            |      |         |          | 11.1    |          |                            |  |        |          |          |      |
| Approach LOS                                    |          |            |     |            |      |         |          | В       |          |                            |  |        |          |          |      |

|                               | TV               | /O·    | -WAY STOP  | CONTR        | OL  | SUMN     | MARY      |  |  |        |      |
|-------------------------------|------------------|--------|------------|--------------|---|----------|-----------|--|--|--------|------|
| General Informatio            |                  |        |            | Site I       |   |          |           |  |  |        |      |
| Analyst                       | SKB              |        |            | Interse      | ectio   | n        |           | Dancyville<br>Ramps                              | e Rd   | @ I-40 | ) WB |
| Agency/Co.                    |                  |        | Systems    | Jurisd       | iction  | າ        |           | Haywood  | Соц  | ntv    |      |
| Date Performed                | 04/18/20         |        |            | Analys       |   |          |           | 2034   | 004  | nty .  |      |
| Analysis Time Period          | PM Pea           | k P    | eriod      |              |   |          |           |  |  |        |      |
| Project Description Ex        | ristina Conditio | ns     |            |              |   |          |           |  |  |        |      |
| East/West Street: I-40        |                  |        |            | North/S      | South   | h Stree  | t: Dancyv | rille Road                                       |  |        |      |
| Intersection Orientation:     | North-South      | 1      |            | Study        | Peric   | od (hrs) | : 0.25    |  |  |        |      |
| Vehicle Volumes a             | nd Adjustm       | en     | ts         |              |   |          |           |  |  |        |      |
| Major Street                  |                  |        | Northbound | -            |   |          |           | Southbou   | ınd  |        |      |
| Movement                      | 1                |        | 2          | 3            |   |          | 4         | 5  |  |        | 6    |
|                               | L                |        | Т          | R            |   |          | L         | Т  |  |        | R    |
| Volume (veh/h)                | 80               |        | 90         | 0.00         |   |          | 0.00      | 49   |  |        | 47   |
| Peak-Hour Factor, PHF         | 0.90             |        | 0.90       | 0.90         | <u>,                                     </u> | +        | 0.90      | 0.90   |  |        | 0.90 |
| Hourly Flow Rate, HFR (veh/h) | 88               |        | 100        | 0            |   |          | 0         | 54   |  |        | 52   |
| Percent Heavy Vehicles        | 2                |        |            | <del> </del> |   |          | 3         |  |  |        |      |
| Median Type                   | 1                |        |            |              | Un  | divided  | I         |  |  |        |      |
| RT Channelized                |                  |        |            | 0            |   |          |           |  |  |        | 0    |
| Lanes                         | 0                |        | 1          | 0            |   | 1        | 0         | 1  |  |        | 0    |
| Configuration                 | LT               |        | 1          | 1            |   |          |           |  |  |        | TR   |
| Upstream Signal               | 1                |        | 0          | 1            |   |          |           | 0  |  |        |      |
| Minor Street                  |                  |        | Eastbound  | ,            |   |          |           | Westbou  | nd   |        |      |
| Movement                      | 7                |        | 8          | 9            |   |          | 10        | 11   |  |        | 12   |
|                               | L                |        | Т          | R            |   |          | L         | Т  |  |        | R    |
| Volume (veh/h)                |                  |        |            | 1            |   |          | 37        |  |  |        | 24   |
| Peak-Hour Factor, PHF         | 0.90             |        | 0.90       | 0.90         | )   |          | 0.90      | 0.90   |  | С      | .90  |
| Hourly Flow Rate, HFR (veh/h) | 0                |        | 0          | 0            |   |          | 41        | 0  |  |        | 26   |
| Percent Heavy Vehicles        | 3                |        | 0          | 3            |   |          | 2         | 0  |  |        | 2    |
| Percent Grade (%)             |                  |        | 0          |              |   |          |           | 0  |  |        |      |
| Flared Approach               |                  |        | N          |              |   |          |           | N  |  |        |      |
| Storage                       |                  |        | 0          |              |   |          |           | 0  |  |        |      |
| RT Channelized                |                  |        |            | 0            |   |          |           |  |  |        | 0    |
| Lanes                         | 0                |        | 0          | 0            |   |          | 0         | 0  |  |        | 0    |
| Configuration                 |                  |        |            |              |   |          |           | LR   |  |        |      |
| Delay, Queue Length, a        | and Level of S   | er\    | /ice       | ,            |   | ,        |           | ·  |  |        |      |
| Approach                      | Northbound       |        | Southbound | ,            | Wes   | tbound   |           | E  | astb   | ound   |      |
| Movement                      | 1                | T      | 4          | 7            |   | 8        | 9         | 10   | 1  | 11     | 12   |
| Lane Configuration            | LT               | T      |            |              |   | LR       |           |  |  |        |      |
| v (veh/h)                     | 88               | ╅      |            |              |   | 67       |           |  |  |        |      |
| C (m) (veh/h)                 | 1485             | ╅      |            |              | <b>├</b>                                      | 705      |           | <u> </u>   |  |        |      |
| v/c                           | 0.06             | 十      |            |              | -   | 0.10     |           | †  |  |        |      |
| 95% queue length              | 0.19             | ╁      |            |              | <b>├</b>                                      | 0.31     |           | <del>                                     </del> | <del>                                     </del> |        |      |
| Control Delay (s/veh)         | 7.6              | ╁      |            |              | -   | 0.6      |           | <del>                                     </del> | <del></del>                                      |        |      |
|                               |                  | ╀      |            |              | <b>├</b>                                      |          |           | <u> </u>   | <del>-   -  </del>                               |        |      |
| LOS                           | Α                | +      |            |              |   | В        |           | -  | <u> </u>   |        |      |
| Approach Delay (s/veh)        |                  | $\bot$ |            |              |   | 0.6      |           | <u> </u>   |  |        |      |
| Approach LOS                  |                  |        |            |              |   | В        |           |  |  |        |      |

# Signalized Intersections Highway Capacity Software Computer Printouts

### SHORT REPORT **General Information** Site Information Analyst SKB SR 222 @ I-40 EB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction 04/18/2011 Fayette County Performed Analysis Year 2014 Time Period AM Peak Period Volume and Timing Input

| volume and Timing Input            |      |     |      |     |     |        |     |          |           |               |      |    |
|------------------------------------|------|-----|------|-----|-----|--------|-----|----------|-----------|---------------|------|----|
|                                    |      | EB  | _    |     | WB  |        |     | NB       |           |               | SB   |    |
|                                    | LT   | TH  | RT   | LT  | TH  | RT     | LT  | TH       | RT        | LT            | TH   | RT |
| Number of Lanes                    | 2    |     | 1    |     |     |        |     | 2        | 1         | 1             | 2    |    |
| Lane Group                         | L    |     | R    |     |     |        |     | T        | R         | L             | T    |    |
| Volume (vph)                       | 581  |     | 134  |     |     |        |     | 217      | 114       | 118           | 208  |    |
| % Heavy Vehicles                   | 10   |     | 48   |     |     |        |     | 48       | 48        | 10            | 10   |    |
| PHF                                | 0.90 |     | 0.90 |     |     |        |     | 0.90     | 0.90      | 0.90          | 0.90 |    |
| Pretimed/Actuated (P/A)            | Α    |     | Α    |     |     |        |     | Α        | Α         | Α             | Α    |    |
| Startup Lost Time                  | 2.0  |     | 2.0  |     |     |        |     | 2.0      | 2.0       | 2.0           | 2.0  |    |
| Extension of Effective Green       | 2.0  |     | 2.0  |     |     |        |     | 2.0      | 2.0       | 2.0           | 2.0  |    |
| Arrival Type                       | 3    |     | 3    |     |     |        |     | 3        | 3         | 3             | 3    |    |
| Unit Extension                     | 3.0  |     | 3.0  |     |     |        |     | 3.0      | 3.0       | 3.0           | 3.0  |    |
| Ped/Bike/RTOR Volume               | 0    | 0   | 0    | 0   | 0   |        | 0   | 0        | 0         | 0             | 0    |    |
| Lane Width                         | 12.0 |     | 12.0 |     |     |        |     | 12.0     | 12.0      | 12.0          | 12.0 |    |
| Parking/Grade/Parking              | Ν    | 0   | Ν    | Ν   | 0   | N      | Ν   | 0        | Ν         | Ν             | 0    | Ν  |
| Parking/Hour                       |      |     |      |     |     |        |     |          |           |               |      |    |
| Bus Stops/Hour                     | 0    |     | 0    |     |     |        |     | 0        | 0         | 0             | 0    |    |
| Minimum Pedestrian Time            |      | 3.2 |      |     | 3.2 |        |     | 3.2      |           |               | 3.2  |    |
| Phasing EB Only                    | 02   | (   | 03   | 04  | ļ   | SB O   | าly | NS Peri  | m         | 07            | 0    | 8  |
| Timing $G = 25.0$ $G$              |      | G = |      | G = |     | G = 8. | 0   | G = 23.0 |           |               | G =  |    |
| Y = 5 Y                            |      | Y = |      | Y = |     | Y = 4  |     | Y = 5    | Y =       |               | Y =  |    |
| Duration of Analysis (hrs) = $0$ . | 25   |     |      |     |     |        |     | Cycle Le | ength C = | = <i>70.0</i> |      |    |

| Baration of 7 that you (1110)    | 0.20         |            |            |          | 10,0.0 20. | <u>.g c</u> |       |       |  |
|----------------------------------|--------------|------------|------------|----------|------------|-------------|-------|-------|--|
| Lane Group Capacity              | y, Control I | Delay, and | LOS Determ | ninatio  | n          |             |       |       |  |
|                                  |              | EB         | WB         |          | NB         |             |       | SB    |  |
| Adjusted Flow Rate               | 646          | 149        |            |          | 241        | 127         | 131   | 231   |  |
| Lane Group Capacity              | 1138         | 390        |            |          | 803        | 358         | 551   | 1645  |  |
| v/c Ratio                        | 0.57         | 0.38       |            |          | 0.30       | 0.35        | 0.24  | 0.14  |  |
| Green Ratio                      | 0.36         | 0.36       |            |          | 0.33       | 0.33        | 0.51  | 0.50  |  |
| Uniform Delay d <sub>1</sub>     | 18.1         | 16.7       |            |          | 17.5       | 17.9        | 9.1   | 9.4   |  |
| Delay Factor k                   | 0.16         | 0.11       |            |          | 0.11       | 0.11        | 0.11  | 0.11  |  |
| Incremental Delay d <sub>2</sub> | 0.7          | 0.6        |            |          | 0.2        | 0.6         | 0.2   | 0.0   |  |
| PF Factor                        | 1.000        | 1.000      |            |          | 1.000      | 1.000       | 1.000 | 1.000 |  |
| Control Delay                    | 18.8         | 17.4       |            |          | 17.7       | 18.5        | 9.3   | 9.5   |  |
| Lane Group LOS                   | В            | В          |            |          | В          | В           | Α     | Α     |  |
| Approach Delay                   | 1            | 18.5       |            |          | 18.0       |             |       | 9.4   |  |
| Approach LOS                     |              | В          |            |          | В          |             |       | Α     |  |
| Intersection Delay               | 1            | 16.2       | l          | ntersect | tion LOS   |             |       | В     |  |

# **General Information**

Project Description Traditional Diamond

Average Back of Queue

|                             |         | EB     |        |           | WB |    |    | NB    |       |       | SB    |    |
|-----------------------------|---------|--------|--------|-----------|----|----|----|-------|-------|-------|-------|----|
|                             | LT      | TH     | RT     | LT        | TH | RT | LT | TH    | RT    | LT    | TH    | RT |
| Lane Group                  | L       |        | R      |           |    |    |    | T     | R     | L     | T     |    |
| Initial Queue/Lane          | 0.0     |        | 0.0    |           |    |    |    | 0.0   | 0.0   | 0.0   | 0.0   |    |
| Flow Rate/Lane Group        | 646     |        | 149    |           |    |    |    | 241   | 127   | 131   | 231   |    |
| Satflow/Lane                | 1641    |        | 1091   |           |    |    |    | 1283  | 1091  | 1071  | 1727  |    |
| Capacity/Lane Group         | 1138    |        | 390    |           |    |    |    | 803   | 358   | 551   | 1645  |    |
| Flow Ratio                  | 0.2     |        | 0.1    |           |    |    |    | 0.1   | 0.1   | 0.1   | 0.1   |    |
| v/c Ratio                   | 0.57    |        | 0.38   |           |    |    |    | 0.30  | 0.35  | 0.24  | 0.14  |    |
| I Factor                    | 1.000   |        | 1.000  |           |    |    |    | 1.000 | 1.000 | 1.000 | 1.000 |    |
| Arrival Type                | 3       |        | 3      |           |    |    |    | 3     | 3     | 3     | 3     |    |
| Platoon Ratio               | 1.00    |        | 1.00   |           |    |    |    | 1.00  | 1.00  | 1.00  | 1.00  |    |
| PF Factor                   | 1.00    |        | 1.00   |           |    |    |    | 1.00  | 1.00  | 1.00  | 1.00  |    |
| Q1                          | 5.2     |        | 2.2    |           |    |    |    | 1.8   | 1.9   | 1.3   | 1.3   |    |
| kв                          | 0.4     |        | 0.3    |           |    |    |    | 0.4   | 0.3   | 0.4   | 0.5   |    |
| Q2                          | 0.6     |        | 0.2    |           |    |    |    | 0.2   | 0.2   | 0.1   | 0.1   |    |
| Q Average                   | 5.8     |        | 2.4    |           |    |    |    | 2.0   | 2.1   | 1.4   | 1.4   |    |
| Percentile Back of Queu     | e (95th | n perc | entile | <u></u> ) |    |    |    |       |       |       |       |    |
| fB%                         | 1.9     |        | 2.0    |           |    |    |    | 2.0   | 2.0   | 2.1   | 2.1   |    |
| Back of Queue               | 11.2    |        | 4.8    |           |    |    |    | 4.0   | 4.2   | 2.9   | 2.8   |    |
| Queue Storage Ratio         | -       |        |        | -         | -  |    | -  |       |       | •     |       |    |
| Queue Spacing               | 25.0    |        | 25.0   |           |    |    |    | 25.0  | 25.0  | 25.0  | 25.0  |    |
| Queue Storage               | 0       |        | 0      |           |    |    |    | 0     | 0     | 0     | 0     |    |
| Average Queue Storage Ratio |         |        |        |           |    |    |    |       |       |       |       |    |
| 95% Queue Storage Ratio     |         |        |        |           |    |    |    |       |       |       |       |    |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:15 PM

### SHORT REPORT **General Information** Site Information SKB Analyst SR 222 @ I-40 EB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction Analysis Year 04/18/2011 Fayette County Performed 2014 Time Period PM Peak Period Volume and Timing Input

|                |                |        | EB |     |       |     | WB  |        |     | NB       |     |     |      | SB   |    |
|----------------|----------------|--------|----|-----|-------|-----|-----|--------|-----|----------|-----|-----|------|------|----|
|                |                | LT     |    | TH  | RT    | LT  | TH  | RT     | LT  | TH       | R   | T   | LT   | TH   | RT |
| Number of L    | anes           | 2      |    |     | 1     |     |     |        |     | 2        | 1   |     | 1    | 2    |    |
| Lane Group     |                | L      |    |     | R     |     |     |        |     | T        | R   |     | L    | T    |    |
| Volume (vph    | )              | 271    |    |     | 126   |     |     |        |     | 240      | 14  | 2   | 225  | 159  |    |
| % Heavy Ve     | hicles         | 10     |    |     | 48    |     |     |        |     | 48       | 48  | 3   | 10   | 10   |    |
| PHF            |                | 0.90   |    |     | 0.90  |     |     |        |     | 0.90     | 0.9 | 0   | 0.90 | 0.90 |    |
| Pretimed/Act   | tuated (P/A)   | Α      |    |     | Α     |     |     |        |     | Α        | Α   |     | Α    | Α    |    |
| Startup Lost   | Time           | 2.0    |    |     | 2.0   |     |     |        |     | 2.0      | 2.0 | )   | 2.0  | 2.0  |    |
| Extension of   | Effective Gree | en 2.0 |    |     | 2.0   |     |     |        |     | 2.0      | 2.0 | )   | 2.0  | 2.0  |    |
| Arrival Type   |                | 3      |    |     | 3     |     |     |        |     | 3        | 3   |     | 3    | 3    |    |
| Unit Extension | on             | 3.0    |    |     | 3.0   |     |     |        |     | 3.0      | 3.0 | )   | 3.0  | 3.0  |    |
| Ped/Bike/RT    | OR Volume      | 0      |    | 0   | 0     | 0   | 0   |        | 0   | 0        | 0   |     | 0    | 0    |    |
| Lane Width     |                | 12.0   |    |     | 12.0  |     |     |        |     | 12.0     | 12. | .0  | 12.0 | 12.0 |    |
| Parking/Grad   | de/Parking     | N      |    | 0   | Ν     | N   | 0   | N      | N   | 0        | N   | '   | N    | 0    | N  |
| Parking/Hou    | r              |        |    |     |       |     |     |        |     |          |     |     |      |      |    |
| Bus Stops/H    | our            | 0      |    |     | 0     |     |     |        |     | 0        | 0   | )   | 0    | 0    |    |
| Minimum Pe     | destrian Time  |        | (  | 3.2 |       |     | 3.2 |        |     | 3.2      |     |     |      | 3.2  |    |
| Phasing        | EB Only        | 02     |    | `   | )3    | 04  | 1   | SB O   | nly | NS Perr  | m   |     | 07   | 0    | 8  |
| Timing         | G = 23.0       | G =    |    | G = |       | G = |     | G = 8. | 0   | G = 25.0 | 0   | G=  |      | G =  |    |
| 7 iiiiiiig     | Y = 5          | Y =    |    | Y = | Y = ' |     |     | Y = 4  |     | Y = 5    |     | Y = | 70.0 | Y =  |    |

Cycle Length C = Duration of Analysis (brs) = 0.25

| Duration of Analysis (hrs)       | = 0.25     |            |               | Cycle Ler   | igth C = | 70.0  |       |  |
|----------------------------------|------------|------------|---------------|-------------|----------|-------|-------|--|
| Lane Group Capacit               | y, Control | Delay, and | LOS Determina | ntion       |          |       |       |  |
|                                  |            | EB         | WB            | NB          |          |       | SB    |  |
| Adjusted Flow Rate               | 301        | 140        |               | 267         | 158      | 250   | 177   |  |
| Lane Group Capacity              | 1047       | 358        |               | 873         | 390      | 568   | 1738  |  |
| v/c Ratio                        | 0.29       | 0.39       |               | 0.31        | 0.41     | 0.44  | 0.10  |  |
| Green Ratio                      | 0.33       | 0.33       |               | 0.36        | 0.36     | 0.54  | 0.53  |  |
| Uniform Delay d <sub>1</sub>     | 17.4       | 18.1       |               | 16.2        | 16.9     | 8.8   | 8.2   |  |
| Delay Factor k                   | 0.11       | 0.11       |               | 0.11        | 0.11     | 0.11  | 0.11  |  |
| Incremental Delay d <sub>2</sub> | 0.2        | 0.7        |               | 0.2         | 0.7      | 0.5   | 0.0   |  |
| PF Factor                        | 1.000      | 1.000      |               | 1.000       | 1.000    | 1.000 | 1.000 |  |
| Control Delay                    | 17.6       | 18.8       |               | 16.4        | 17.6     | 9.3   | 8.2   |  |
| Lane Group LOS                   | В          | В          |               | В           | В        | Α     | Α     |  |
| Approach Delay                   |            | 18.0       |               | 16.9        |          |       | 8.9   |  |
| Approach LOS                     |            | В          |               | В           |          |       | Α     |  |
| Intersection Delay               |            | 14.6       | Inter         | section LOS |          |       | В     |  |

# **General Information**

Project Description Traditional Diamond

Average Back of Queue

| Lane Group                  | LT TH RT |      |         |    |    |    |    |       |       |       |       |    |
|-----------------------------|----------|------|---------|----|----|----|----|-------|-------|-------|-------|----|
| Lane Group                  |          |      | RT      | LT | TH | RT | LT | TH    | RT    | LT    | TH    | RT |
| Lane Group                  | L        |      | R       |    |    |    |    | T     | R     | L     | T     |    |
| Initial Queue/Lane          | 0.0      |      | 0.0     |    |    |    |    | 0.0   | 0.0   | 0.0   | 0.0   |    |
| Flow Rate/Lane Group        | 301      |      | 140     |    |    |    |    | 267   | 158   | 250   | 177   |    |
| Satflow/Lane                | 1641     |      | 1091    |    |    |    |    | 1283  | 1091  | 1045  | 1727  |    |
| Capacity/Lane Group         | 1047     |      | 358     |    |    |    |    | 873   | 390   | 568   | 1738  |    |
| Flow Ratio                  | 0.1      |      | 0.1     |    |    |    |    | 0.1   | 0.1   | 0.2   | 0.1   |    |
| v/c Ratio                   | 0.29     |      | 0.39    |    |    |    |    | 0.31  | 0.41  | 0.44  | 0.10  |    |
| I Factor                    | 1.000    |      | 1.000   |    |    |    |    | 1.000 | 1.000 | 1.000 | 1.000 |    |
| Arrival Type                | 3        |      | 3       |    |    |    |    | 3     | 3     | 3     | 3     |    |
| Platoon Ratio               | 1.00     |      | 1.00    |    |    |    |    | 1.00  | 1.00  | 1.00  | 1.00  |    |
| PF Factor                   | 1.00     |      | 1.00    |    |    |    |    | 1.00  | 1.00  | 1.00  | 1.00  |    |
| Q1                          | 2.2      |      | 2.1     |    |    |    |    | 2.0   | 2.3   | 2.3   | 0.9   |    |
| kв                          | 0.4      |      | 0.3     |    |    |    |    | 0.4   | 0.3   | 0.4   | 0.6   |    |
| Q2                          | 0.2      |      | 0.2     |    |    |    |    | 0.2   | 0.2   | 0.3   | 0.1   |    |
| Q Average                   | 2.4      |      | 2.3     |    |    |    |    | 2.1   | 2.5   | 2.7   | 1.0   |    |
| Percentile Back of Queue    | e (95th  | perc | entile) | )  | Į. |    |    |       |       |       |       |    |
| fB%                         | 2.0      |      | 2.0     |    |    |    |    | 2.0   | 2.0   | 2.0   | 2.1   |    |
| Back of Queue               | 4.8      |      | 4.7     |    |    |    |    | 4.3   | 5.1   | 5.4   | 2.0   |    |
| Queue Storage Ratio         |          |      |         |    |    |    |    |       |       |       |       |    |
| Queue Spacing               | 25.0     |      | 25.0    |    |    |    |    | 25.0  | 25.0  | 25.0  | 25.0  |    |
| Queue Storage               | 0        |      | 0       |    |    |    |    | 0     | 0     | 0     | 0     |    |
| Average Queue Storage Ratio |          |      |         |    |    |    |    |       |       |       |       |    |
| 95% Queue Storage Ratio     |          |      |         |    |    |    |    |       |       |       |       |    |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:19 PM

### SHORT REPORT **General Information** Site Information Analyst SKB SR 222 @ I-40 WB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction 04/18/2011 Fayette County Performed Analysis Year 2014 Time Period AM Peak Period

| Volume and Timing Input        |      |       |    |      |     |        |      |                 |         |        |      |      |
|--------------------------------|------|-------|----|------|-----|--------|------|-----------------|---------|--------|------|------|
|                                |      | EB    |    |      | WB  |        |      | NB              |         |        | SB   |      |
|                                | LT   | TH    | RT | LT   | TH  | RT     | LT   | TH              | RT      | LT     | TH   | RT   |
| Number of Lanes                |      |       |    | 1    |     | 1      | 1    | 2               |         |        | 2    | 1    |
| Lane Group                     |      |       |    | L    |     | R      | L    | T               |         |        | T    | R    |
| Volume (vph)                   |      |       |    | 117  |     | 257    | 83   | 715             |         |        | 209  | 304  |
| % Heavy Vehicles               |      |       |    | 48   |     | 10     | 48   | 48              |         |        | 10   | 10   |
| PHF                            |      |       |    | 0.90 |     | 0.90   | 0.90 | 0.90            |         |        | 0.90 | 0.90 |
| Pretimed/Actuated (P/A)        |      |       |    | Α    |     | Α      | Α    | Α               |         |        | Α    | Α    |
| Startup Lost Time              |      |       |    | 2.0  |     | 2.0    | 2.0  | 2.0             |         |        | 2.0  | 2.0  |
| Extension of Effective Green   |      |       |    | 2.0  |     | 2.0    | 2.0  | 2.0             |         |        | 2.0  | 2.0  |
| Arrival Type                   |      |       |    | 3    |     | 3      | 3    | 3               |         |        | 3    | 3    |
| Unit Extension                 |      |       |    | 3.0  |     | 3.0    | 3.0  | 3.0             |         |        | 3.0  | 3.0  |
| Ped/Bike/RTOR Volume           | 0    | 0     |    | 0    | 0   | 0      | 0    | 0               |         | 0      | 0    | 0    |
| Lane Width                     |      |       |    | 12.0 |     | 12.0   | 12.0 | 12.0            |         |        | 12.0 | 12.0 |
| Parking/Grade/Parking          | N    | 0     | N  | N    | 0   | N      | N    | 0               | N       | N      | 0    | N    |
| Parking/Hour                   |      |       |    |      |     |        |      |                 |         |        |      |      |
| Bus Stops/Hour                 |      |       |    | 0    |     | 0      | 0    | 0               |         |        | 0    | 0    |
| Minimum Pedestrian Time        |      | 3.2   |    |      | 3.2 |        |      | 3.2             |         |        | 3.2  |      |
| Phasing WB Only                | 02   | 02 03 |    |      | )4  | NB O   | nly  | NS Perm         |         | 07     |      | 08   |
| Limina                         | i =  |       |    |      |     | G = 8. |      | $\theta = 25.0$ | G =     |        | G =  |      |
| Y = 5 Y                        | Y =  |       |    |      |     |        |      |                 |         |        |      |      |
| Duration of Analysis (hrs) = 0 | ).25 |       |    |      |     |        | 10   | ycle Len        | gth C = | = 70.0 | )    |      |

| Lane Group Capacity, C           | ontrol Delay | y, and | LOS [ | Detern | ninatio | n       |       |      |       |       |
|----------------------------------|--------------|--------|-------|--------|---------|---------|-------|------|-------|-------|
|                                  | EB           |        |       | WB     |         |         | NB    |      | SB    |       |
| Adjusted Flow Rate               |              |        | 130   |        | 286     | 92      | 794   |      | 232   | 338   |
| Lane Group Capacity              |              |        | 401   |        | 482     | 437     | 1292  |      | 1175  | 524   |
| v/c Ratio                        |              |        | 0.32  |        | 0.59    | 0.21    | 0.61  |      | 0.20  | 0.65  |
| Green Ratio                      |              |        | 0.33  |        | 0.33    | 0.54    | 0.53  |      | 0.36  | 0.36  |
| Uniform Delay d <sub>1</sub>     |              |        | 17.7  |        | 19.6    | 8.0     | 11.5  |      | 15.6  | 18.8  |
| Delay Factor k                   |              |        | 0.11  |        | 0.18    | 0.11    | 0.20  |      | 0.11  | 0.22  |
| Incremental Delay d <sub>2</sub> |              |        | 0.5   |        | 2.0     | 0.2     | 0.9   |      | 0.1   | 2.7   |
| PF Factor                        |              |        | 1.000 |        | 1.000   | 1.000   | 1.000 |      | 1.000 | 1.000 |
| Control Delay                    |              |        | 18.1  |        | 21.6    | 8.2     | 12.4  |      | 15.6  | 21.5  |
| Lane Group LOS                   |              |        | В     |        | С       | Α       | В     |      | В     | С     |
| Approach Delay                   |              |        | 20.5  |        |         | 12.0    |       | 19.1 |       |       |
| Approach LOS                     |              |        | С     |        |         |         | В     |      | В     |       |
| Intersection Delay               | 16.0         |        |       |        | ntersec | tion LO | S     |      | В     |       |

# **General Information**

Project Description Traditional Diamond

Average Back of Queue

|                             |        | EB    |        |       | WB |       |       | NB    |    |    | SB    |       |
|-----------------------------|--------|-------|--------|-------|----|-------|-------|-------|----|----|-------|-------|
|                             | LT     | TH    | RT     | LT    | TH | RT    | LT    | TH    | RT | LT | TH    | RT    |
| Lane Group                  |        |       |        | L     |    | R     | L     | Τ     |    |    | Τ     | R     |
| Initial Queue/Lane          |        |       |        | 0.0   |    | 0.0   | 0.0   | 0.0   |    |    | 0.0   | 0.0   |
| Flow Rate/Lane Group        |        |       |        | 130   |    | 286   | 92    | 794   |    |    | 232   | 338   |
| Satflow/Lane                |        |       |        | 1220  |    | 1468  | 806   | 1283  |    |    | 1727  | 1468  |
| Capacity/Lane Group         |        |       |        | 401   |    | 482   | 437   | 1292  |    |    | 1175  | 524   |
| Flow Ratio                  |        |       |        | 0.1   |    | 0.2   | 0.1   | 0.3   |    |    | 0.1   | 0.2   |
| v/c Ratio                   |        |       |        | 0.32  |    | 0.59  | 0.21  | 0.61  |    |    | 0.20  | 0.65  |
| I Factor                    |        |       |        | 1.000 |    | 1.000 | 1.000 | 1.000 |    |    | 1.000 | 1.000 |
| Arrival Type                |        |       |        | 3     |    | 3     | 3     | 3     |    |    | 3     | 3     |
| Platoon Ratio               |        |       |        | 1.00  |    | 1.00  | 1.00  | 1.00  |    |    | 1.00  | 1.00  |
| PF Factor                   |        |       |        | 1.00  |    | 1.00  | 1.00  | 1.00  |    |    | 1.00  | 1.00  |
| Q1                          |        |       |        | 1.9   |    | 4.6   | 0.8   | 5.7   |    |    | 1.6   | 5.5   |
| kв                          |        |       |        | 0.3   |    | 0.4   | 0.4   | 0.5   |    |    | 0.4   | 0.4   |
| Q2                          |        |       |        | 0.2   |    | 0.5   | 0.1   | 0.7   |    |    | 0.1   | 0.7   |
| Q Average                   |        |       |        | 2.1   |    | 5.2   | 0.9   | 6.4   |    |    | 1.7   | 6.2   |
| Percentile Back of Queu     | e (95t | h per | entile | e)    | ,  |       |       |       |    | •  |       | •     |
| fB%                         |        |       |        | 2.0   |    | 1.9   | 2.1   | 1.9   |    |    | 2.0   | 1.9   |
| Back of Queue               |        |       |        | 4.2   |    | 10.1  | 1.9   | 12.3  |    |    | 3.5   | 11.9  |
| Queue Storage Ratio         |        |       |        |       |    |       |       |       |    |    |       |       |
| Queue Spacing               |        |       |        | 25.0  |    | 25.0  | 25.0  | 25.0  |    |    | 25.0  | 25.0  |
| Queue Storage               |        |       |        | 0     |    | 0     | 0     | 0     |    |    | 0     | 0     |
| Average Queue Storage Ratio |        |       |        |       |    |       |       |       |    |    |       |       |
| 95% Queue Storage Ratio     |        |       |        |       |    |       |       |       |    |    |       |       |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:26 PM

### SHORT REPORT **General Information** Site Information SKB Analyst SR 222 @ I-40 WB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction 04/18/2011 Fayette County Performed Analysis Year 2014 Time Period PM Peak Period

| Volume and Timing Inpu     | ıt    |       |     |     |      |     |        |      |          |         |        |      |      |
|----------------------------|-------|-------|-----|-----|------|-----|--------|------|----------|---------|--------|------|------|
|                            |       |       | EB  |     |      | WB  |        |      | NB       |         |        | SB   |      |
|                            |       | LT    | TH  | RT  | LT   | TH  | RT     | LT   | TH       | RT      | LT     | TH   | RT   |
| Number of Lanes            |       |       |     |     | 1    |     | 1      | 1    | 2        |         |        | 2    | 1    |
| Lane Group                 |       |       |     |     | L    |     | R      | L    | T        |         |        | T    | R    |
| Volume (vph)               |       |       |     |     | 98   |     | 122    | 106  | 405      |         |        | 286  | 514  |
| % Heavy Vehicles           |       |       |     |     | 48   |     | 10     | 48   | 48       |         |        | 10   | 10   |
| PHF                        |       |       |     |     | 0.90 |     | 0.90   | 0.90 | 0.90     |         |        | 0.90 | 0.90 |
| Pretimed/Actuated (P/A)    |       |       |     |     | Α    |     | Α      | Α    | Α        |         |        | Α    | Α    |
| Startup Lost Time          |       |       |     |     | 2.0  |     | 2.0    | 2.0  | 2.0      |         |        | 2.0  | 2.0  |
| Extension of Effective Gre | en    |       |     | 2.0 |      | 2.0 | 2.0    | 2.0  |          |         | 2.0    | 2.0  |      |
| Arrival Type               |       |       |     |     | 3    |     | 3      | 3    | 3        |         |        | 3    | 3    |
| Unit Extension             |       |       |     |     | 3.0  |     | 3.0    | 3.0  | 3.0      |         |        | 3.0  | 3.0  |
| Ped/Bike/RTOR Volume       |       | 0     | 0   |     | 0    | 0   | 0      | 0    | 0        |         | 0      | 0    | 0    |
| Lane Width                 |       |       |     |     | 12.0 |     | 12.0   | 12.0 | 12.0     |         |        | 12.0 | 12.0 |
| Parking/Grade/Parking      |       | Ν     | 0   | N   | N    | 0   | N      | N    | 0        | Ν       | Ν      | 0    | N    |
| Parking/Hour               |       |       |     |     |      |     |        |      |          |         |        |      |      |
| Bus Stops/Hour             |       |       |     |     | 0    |     | 0      | 0    | 0        |         |        | 0    | 0    |
| Minimum Pedestrian Time    | 9     |       | 3.2 |     |      | 3.2 |        |      | 3.2      |         |        | 3.2  |      |
| Phasing WB Only            |       | 02 03 |     |     | (    | )4  | NB O   | nly  | NS Perm  |         | 07     |      | 08   |
| Timing $G = 15.0$          | G =   |       |     |     | G =  |     | G = 8. |      | 6 = 33.0 | G =     |        | G =  |      |
| Y = 5                      |       |       |     |     |      |     |        |      |          |         |        |      |      |
| Duration of Analysis (hrs) | = 0.2 | 25    |     |     |      |     |        | (    | ycie Len | gtn C = | = 70.0 | 1    |      |

| Lane Group Capacity, C           | ontrol Delay | , and | LOS [   | Detern | ninatio | n       |       |      |      |       |
|----------------------------------|--------------|-------|---------|--------|---------|---------|-------|------|------|-------|
|                                  | EB           |       |         | WB     |         |         | NB    |      | SB   |       |
| Adjusted Flow Rate               |              |       | 109     |        | 136     | 118     | 450   | 3    | 318  | 571   |
| Lane Group Capacity              |              |       | 261     |        | 315     | 490     | 1571  | 1    | 551  | 692   |
| v/c Ratio                        |              |       | 0.42    |        | 0.43    | 0.24    | 0.29  | 0    | .21  | 0.83  |
| Green Ratio                      |              |       | 0.21    |        | 0.21    | 0.66    | 0.64  | 0    | .47  | 0.47  |
| Uniform Delay d <sub>1</sub>     |              |       | 23.7    |        | 23.8    | 4.7     | 5.5   | 1    | 0.8  | 16.0  |
| Delay Factor k                   |              |       | 0.11    |        | 0.11    | 0.11    | 0.11  | 0    | .11  | 0.36  |
| Incremental Delay d <sub>2</sub> |              |       | 1.1     |        | 1.0     | 0.3     | 0.1   |      | 0.1  | 8.1   |
| PF Factor                        |              |       | 1.000   |        | 1.000   | 1.000   | 1.000 | 1.   | .000 | 1.000 |
| Control Delay                    |              |       | 24.8    |        | 24.8    | 4.9     | 5.6   | 1    | 10.9 | 24.1  |
| Lane Group LOS                   |              |       | С       |        | С       | Α       | Α     |      | В    | С     |
| Approach Delay                   |              |       | 24.8    |        |         | 5.4     | 1     | 19.4 |      |       |
| Approach LOS                     |              |       | С       |        |         |         | Α     | -    | В    |       |
| Intersection Delay               | 15.5         |       | Interse |        |         | tion LO | S     |      | В    |       |

# **General Information**

Project Description Traditional Diamond

Average Back of Queue

|                             |        | EB    |        |              | WB |       |       | NB    |    |    | SB    |          |
|-----------------------------|--------|-------|--------|--------------|----|-------|-------|-------|----|----|-------|----------|
|                             | LT     | TH    | RT     | LT           | TH | RT    | LT    | TH    | RT | LT | TH    | RT       |
| Lane Group                  |        |       |        | L            |    | R     | L     | Τ     |    |    | Τ     | R        |
| Initial Queue/Lane          |        |       |        | 0.0          |    | 0.0   | 0.0   | 0.0   |    |    | 0.0   | 0.0      |
| Flow Rate/Lane Group        |        |       |        | 109          |    | 136   | 118   | 450   |    |    | 318   | 571      |
| Satflow/Lane                |        |       |        | 1220         |    | 1468  | 747   | 1283  |    |    | 1727  | 1468     |
| Capacity/Lane Group         |        |       |        | 261          |    | 315   | 490   | 1571  |    |    | 1551  | 692      |
| Flow Ratio                  |        |       |        | 0.1          |    | 0.1   | 0.2   | 0.2   |    |    | 0.1   | 0.4      |
| v/c Ratio                   |        |       |        | 0.42         |    | 0.43  | 0.24  | 0.29  |    |    | 0.21  | 0.83     |
| I Factor                    |        |       |        | 1.000        |    | 1.000 | 1.000 | 1.000 |    |    | 1.000 | 1.000    |
| Arrival Type                |        |       |        | 3            |    | 3     | 3     | 3     |    |    | 3     | 3        |
| Platoon Ratio               |        |       |        | 1.00         |    | 1.00  | 1.00  | 1.00  |    |    | 1.00  | 1.00     |
| PF Factor                   |        |       |        | 1.00         |    | 1.00  | 1.00  | 1.00  |    |    | 1.00  | 1.00     |
| Q1                          |        |       |        | 1.8          |    | 2.3   | 0.8   | 2.0   |    |    | 1.9   | 9.6      |
| kв                          |        |       |        | 0.3          |    | 0.3   | 0.4   | 0.5   |    |    | 0.5   | 0.5      |
| Q2                          |        |       |        | 0.2          |    | 0.2   | 0.1   | 0.2   |    |    | 0.1   | 2.0      |
| Q Average                   |        |       |        | 2.0          |    | 2.5   | 0.9   | 2.2   |    |    | 2.0   | 11.6     |
| Percentile Back of Queu     | e (95t | h per | entile | <del>)</del> | ,  | •     |       |       |    | •  |       | <u> </u> |
| fB%                         |        |       |        | 2.0          |    | 2.0   | 2.1   | 2.0   |    |    | 2.0   | 1.8      |
| Back of Queue               |        |       |        | 4.1          |    | 5.1   | 1.9   | 4.5   |    |    | 4.1   | 21.0     |
| Queue Storage Ratio         |        |       |        |              |    |       |       |       |    |    |       |          |
| Queue Spacing               |        |       |        | 25.0         |    | 25.0  | 25.0  | 25.0  |    |    | 25.0  | 25.0     |
| Queue Storage               |        |       |        | 0            |    | 0     | 0     | 0     |    |    | 0     | 0        |
| Average Queue Storage Ratio |        |       |        |              |    |       |       |       |    |    |       |          |
| 95% Queue Storage Ratio     |        |       |        |              |    |       |       |       |    |    |       |          |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:28 PM

### SHORT REPORT Site Information General Information Analyst SKB Intersection SR 222 @ I-40 EB Ramps Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction 04/18/2011 Fayette County Performed Analysis Year 2034 Time Period AM Peak Period **Volume and Timing Input** WB ΕB NB SB LT TH RT LT TH RT LT TH RT LT TH RT Number of Lanes 2 1 2 1 2 L Lane Group R Т R L Τ Volume (vph) 586 168 222 155 120 246 10 48 48 10 10 % Heavy Vehicles 48 PHF 0.90 0.90 0.90 0.90 0.90 0.90 Pretimed/Actuated (P/A) Α Α Α Α Α Α Startup Lost Time 2.0 2.0 2.0 2.0 2.0 2.0 Extension of Effective Green 2.0 2.0 2.0 2.0 2.0 2.0 3 3 Arrival Type 3 3 3 Unit Extension 3.0 3.0 3.0 3.0 3.0 3.0 Ped/Bike/RTOR Volume 0 0 0 0 0 0 0 0 0 0 Lane Width 12.0 12.0 12.0 12.0 12.0 12.0 Parking/Grade/Parking Ν 0 Ν Ν 0 Ν Ν 0 Ν Ν Parking/Hour

| Minimum Pe    | destrian Time   |        | 3.2 | 3.2 |         | 3.2         |             | 3.2 |   |
|---------------|-----------------|--------|-----|-----|---------|-------------|-------------|-----|---|
| Phasing       | EB Only         | 02     | 03  | 04  | SB Only | y NS Perm   | 07          | 30  | 3 |
| Timing        | G = 25.0        | G =    | G = | G = | G = 8.0 | G = 23.0    | G =         | G = |   |
| riming        | Y = 5           | Y =    | Y = | Y = | Y = 4   | Y = 5       | Y =         | Y = |   |
| Duration of A | nalvsis (hrs) = | = 0.25 |     |     |         | Cycle Lengt | th C = 70.0 |     |   |

0

0

| = |           |              |            |          | - 7      |       |       |       |  |
|---|-----------|--------------|------------|----------|----------|-------|-------|-------|--|
| Lane Group Capacit                      | y, Contro | l Delay, and | LOS Detern | ninatio  | n        |       |       |       |  |
|   |           | EB           | WB         |          | NB       |       |       | SB    |  |
| Adjusted Flow Rate                      | 651       | 187          |            |          | 247      | 172   | 133   | 273   |  |
| Lane Group Capacity                     | 1138      | 390          |            |          | 803      | 358   | 548   | 1645  |  |
| v/c Ratio                               | 0.57      | 0.48         |            |          | 0.31     | 0.48  | 0.24  | 0.17  |  |
| Green Ratio                             | 0.36      | 0.36         |            |          | 0.33     | 0.33  | 0.51  | 0.50  |  |
| Uniform Delay d <sub>1</sub>            | 18.2      | 17.5         |            |          | 17.6     | 18.7  | 9.1   | 9.5   |  |
| Delay Factor k                          | 0.17      | 0.11         |            |          | 0.11     | 0.11  | 0.11  | 0.11  |  |
| Incremental Delay d <sub>2</sub>        | 0.7       | 0.9          |            |          | 0.2      | 1.0   | 0.2   | 0.0   |  |
| PF Factor                               | 1.000     | 1.000        |            |          | 1.000    | 1.000 | 1.000 | 1.000 |  |
| Control Delay                           | 18.9      | 18.4         |            |          | 17.8     | 19.8  | 9.3   | 9.6   |  |
| Lane Group LOS                          | В         | В            |            |          | В        | В     | Α     | Α     |  |
| Approach Delay                          |           | 18.8         |            |          | 18.6     |       |       | 9.5   |  |
| Approach LOS                            |           | В            |            |          | В        |       |       | Α     |  |
| Intersection Delay                      |           | 16.5         |            | ntersect | tion LOS |       |       | В     |  |

Bus Stops/Hour

0

0

0

0

# **General Information**

Project Description Traditional Diamond

Average Back of Queue

|         |  |   |  |   |  | 1   |  |  |  |  |   |
|---------|--|---|--|---|--|---|--|--|--|--|---|
|         |  |   |  |   |  |   |  |  | ļ  |  |   |
|         | TH   | _   | LT   | TH  | RT   | LT  | _  |  | LT   | _  | RT  |
| L       |  | R   |  |   |  |   | T  | R  | L  | T  |   |
| 0.0     |  | 0.0   |  |   |  |   | 0.0  | 0.0  | 0.0  | 0.0  |   |
| 651     |  | 187   |  |   |  |   | 247  | 172  | 133  | 273  |   |
| 1641    |  | 1091  |  |   |  |   | 1283   | 1091   | 1064   | 1727   |   |
| 1138    |  | 390   |  |   |  |   | 803  | 358  | 548  | 1645   |   |
| 0.2     |  | 0.2   |  |   |  |   | 0.1  | 0.2  | 0.1  | 0.1  |   |
| 0.57    |  | 0.48  |  |   |  |   | 0.31   | 0.48   | 0.24   | 0.17   |   |
| 1.000   |  | 1.000   |  |   |  |   | 1.000  | 1.000  | 1.000  | 1.000  |   |
| 3       |  | 3   |  |   |  |   | 3  | 3  | 3  | 3  |   |
| 1.00    |  | 1.00  |  |   |  |   | 1.00   | 1.00   | 1.00   | 1.00   |   |
| 1.00    |  | 1.00  |  |   |  |   | 1.00   | 1.00   | 1.00   | 1.00   |   |
| 5.3     |  | 2.8   |  |   |  |   | 1.9  | 2.7  | 1.3  | 1.5  |   |
| 0.4     |  | 0.3   |  |   |  |   | 0.4  | 0.3  | 0.4  | 0.5  |   |
| 0.6     |  | 0.3   |  |   |  |   | 0.2  | 0.3  | 0.1  | 0.1  |   |
| 5.8     |  | 3.1   |  |   |  |   | 2.0  | 3.0  | 1.4  | 1.6  |   |
| e (95th | perd   | entile  | )  |   |  |   |  |  |  |  |   |
| 1.9     |  | 2.0   |  |   |  |   | 2.0  | 2.0  | 2.1  | 2.0  |   |
| 11.3    |  | 6.3   |  |   |  |   | 4.1  | 5.9  | 2.9  | 3.3  |   |
|         |  |   |  |   |  |   |  |  |  |  |   |
| 25.0    |  | 25.0  |  |   |  |   | 25.0   | 25.0   | 25.0   | 25.0   |   |
| 0       |  | 0   |  |   |  |   | 0  | 0  | 0  | 0  |   |
|         |  |   |  |   |  |   |  |  |  |  |   |
|         |  |   |  |   |  |   |  |  |  |  |   |
|         | 651<br>1641<br>1138<br>0.2<br>0.57<br>1.000<br>3<br>1.00<br>1.00<br>5.3<br>0.4<br>0.6<br>5.8<br>e (95th<br>1.9<br>11.3 | L 0.0 651 1641 1138 0.2 0.57 1.000 3 1.00 1.00 5.3 0.4 0.6 5.8 e (95th perc | LT         TH         RT           L         R           0.0         0.0           651         187           1641         1091           1138         390           0.2         0.2           0.57         0.48           1.000         1.000           3         3           1.00         1.00           5.3         2.8           0.4         0.3           0.6         0.3           5.8         3.1           e (95th percentile)           1.9         2.0           11.3         6.3 | LT         TH         RT         LT           L         R         0.0         0.0           651         187         187         187           1641         1091         1138         390         0.2           0.2         0.2         0.2         0.2         0.2         0.2         0.2         0.2         0.2         0.2         0.0         0.3         0.0         1.000         1.000         1.000         1.000         1.000         1.000         1.000         1.00 | LT         TH         RT         LT         TH           0.0 | LT         TH         RT         LT         TH         RT           0.0 | LT       TH       RT       LT       TH       RT       LT         0.0 | LT         TH         RT         LT         TH         RT         LT         TH           0.0         0.0         0.0         0.0         0.0           651         187         247           1641         1091         1283           1138         390         803           0.2         0.2         0.1           0.57         0.48         0.31           1.000         1.000         1.000           3         3         3           1.00         1.00         1.00           5.3         2.8         1.9           0.4         0.3         0.4           0.6         0.3         0.2           5.8         3.1         2.0           e (95th percentile)           1.9         2.0         2.0           11.3         6.3         4.1 | LT         TH         RT         LT         TH         RT         LT         TH         RT           0.0         < | LT         TH         RT         LT         TH         RT         LT         TH         RT         LT         TH         RT         L           0.0         0.1         0.0         0.1         0.0         0.1         0.0         0.1         0.0         0. | LT         TH         RT         LT         TH         RT         LT         TH         RT         LT         TH         RT         LT         TH         LT         TH         LT         TH         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         R         L         T         T         R         L         T         T         R         L         T         T         R         L         T         T         R         L         T         T         R         L         T         T         R         L         T         T         R         L         T         T         R         L         T         R         L         T         R         L         T |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:29 PM

### SHORT REPORT General Information Site Information Analyst SKB SR 222 @ I-40 EB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date 04/18/2011 Jurisdiction Fayette County Performed Analysis Year 2034 Time Period PM Peak Period **Volume and Timing Input** WB ΕB NB SB LT TH RT LT TH RT LT TH RT LT TH RT Number of Lanes 2 1 2 1 2 L Lane Group R Т R L Τ Volume (vph) 276 173 250 184 226 208 10 10 % Heavy Vehicles 48 48 48 10 PHF 0.90 0.90 0.90 0.90 0.90 0.90 Pretimed/Actuated (P/A) Α Α Α Α Α Α Startup Lost Time 2.0 2.0 2.0 2.0 2.0 2.0 Extension of Effective Green 2.0 2.0 2.0 2.0 2.0 2.0 3 Arrival Type 3 3 3 3 Unit Extension 3.0 3.0 3.0 3.0 3.0 3.0 Ped/Bike/RTOR Volume 0 0 0 0 0 0 0 0 0 0

| <b>Lane Group Capacit</b>        | y, Control | Delay, and | LOS Detern | ninatio | n        |       |       |       |  |
|----------------------------------|------------|------------|------------|---------|----------|-------|-------|-------|--|
|                                  |            | EB         | WB         |         | NB       |       |       | SB    |  |
| Adjusted Flow Rate               | 307        | 192        |            |         | 278      | 204   | 251   | 231   |  |
| Lane Group Capacity              | 1047       | 358        |            |         | 873      | 390   | 561   | 1738  |  |
| v/c Ratio                        | 0.29       | 0.54       |            |         | 0.32     | 0.52  | 0.45  | 0.13  |  |
| Green Ratio                      | 0.33       | 0.33       |            |         | 0.36     | 0.36  | 0.54  | 0.53  |  |
| Uniform Delay d <sub>1</sub>     | 17.5       | 19.2       |            |         | 16.3     | 17.8  | 8.8   | 8.4   |  |
| Delay Factor k                   | 0.11       | 0.14       |            |         | 0.11     | 0.13  | 0.11  | 0.11  |  |
| Incremental Delay d <sub>2</sub> | 0.2        | 1.6        |            |         | 0.2      | 1.3   | 0.6   | 0.0   |  |
| PF Factor                        | 1.000      | 1.000      |            |         | 1.000    | 1.000 | 1.000 | 1.000 |  |
| Control Delay                    | 17.6       | 20.8       |            |         | 16.5     | 19.1  | 9.4   | 8.4   |  |
| Lane Group LOS                   | В          | С          |            |         | В        | В     | Α     | Α     |  |
| Approach Delay                   | 1          | 18.8       |            |         | 17.6     |       |       | 8.9   |  |
| Approach LOS                     |            | В          |            |         | В        |       |       | Α     |  |
| Intersection Delay               | 1          | 15.2       | ı          | ntersec | tion LOS |       |       | В     |  |

12.0

Ν

0

02

G =

Y =

0

3.2

G =

Y =

12.0

Ν

0

03

Ν

G =

<u>Y</u> =

0

3.2

04

Ν

SB Only

G = 8.0

Y = 4

Ν

Lane Width

Parking/Hour
Bus Stops/Hour

Phasing

Timing

Parking/Grade/Parking

Minimum Pedestrian Time

EB Only

G = 23.0

Y = 5

Duration of Analysis (hrs) = 0.25

12.0

0

0

3.2

NS Perm

G = 25.0

Y = 5

12.0

0

Cycle Length C = 70.0

12.0

Ν

0

07

G =

Y =

12.0

0

0

3.2

G =

Y =

80

Ν

# **General Information**

Project Description Traditional Diamond

Average Back of Queue

|                             | EB<br>LT TH RT |      |         |    |    |    |    | NB    |       |       | SB    |    |
|-----------------------------|----------------|------|---------|----|----|----|----|-------|-------|-------|-------|----|
|                             |                | TH   | RT      | LT | TH | RT | LT | TH    | RT    | LT    | TH    | RT |
| Lane Group                  | L              |      | R       |    |    |    |    | T     | R     | L     | T     |    |
| Initial Queue/Lane          | 0.0            |      | 0.0     |    |    |    |    | 0.0   | 0.0   | 0.0   | 0.0   |    |
| Flow Rate/Lane Group        | 307            |      | 192     |    |    |    |    | 278   | 204   | 251   | 231   |    |
| Satflow/Lane                | 1641           |      | 1091    |    |    |    |    | 1283  | 1091  | 1033  | 1727  |    |
| Capacity/Lane Group         | 1047           |      | 358     |    |    |    |    | 873   | 390   | 561   | 1738  |    |
| Flow Ratio                  | 0.1            |      | 0.2     |    |    |    |    | 0.1   | 0.2   | 0.2   | 0.1   |    |
| v/c Ratio                   | 0.29           |      | 0.54    |    |    |    |    | 0.32  | 0.52  | 0.45  | 0.13  |    |
| I Factor                    | 1.000          |      | 1.000   |    |    |    |    | 1.000 | 1.000 | 1.000 | 1.000 |    |
| Arrival Type                | 3              |      | 3       |    |    |    |    | 3     | 3     | 3     | 3     |    |
| Platoon Ratio               | 1.00           |      | 1.00    |    |    |    |    | 1.00  | 1.00  | 1.00  | 1.00  |    |
| PF Factor                   | 1.00           |      | 1.00    |    |    |    |    | 1.00  | 1.00  | 1.00  | 1.00  |    |
| Q1                          | 2.3            |      | 3.0     |    |    |    |    | 2.1   | 3.1   | 2.4   | 1.2   |    |
| kв                          | 0.4            |      | 0.3     |    |    |    |    | 0.4   | 0.3   | 0.4   | 0.6   |    |
| Q2                          | 0.2            |      | 0.4     |    |    |    |    | 0.2   | 0.4   | 0.3   | 0.1   |    |
| Q Average                   | 2.5            |      | 3.4     |    |    |    |    | 2.2   | 3.5   | 2.7   | 1.3   |    |
| Percentile Back of Queue    | e (95th        | perc | entile) | )  | Į. |    |    | ·!    |       |       |       |    |
| fB%                         | 2.0            |      | 2.0     |    |    |    |    | 2.0   | 2.0   | 2.0   | 2.1   |    |
| Back of Queue               | 5.0            |      | 6.8     |    |    |    |    | 4.5   | 7.0   | 5.4   | 2.6   |    |
| Queue Storage Ratio         |                |      |         |    |    |    |    |       |       | ,     |       |    |
| Queue Spacing               | 25.0           |      | 25.0    |    |    |    |    | 25.0  | 25.0  | 25.0  | 25.0  |    |
| Queue Storage               | 0              |      | 0       |    |    |    |    | 0     | 0     | 0     | 0     |    |
| Average Queue Storage Ratio |                |      |         |    |    |    |    |       |       |       |       |    |
| 95% Queue Storage Ratio     |                |      |         |    |    |    |    |       |       |       |       |    |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:31 PM

### SHORT REPORT **General Information** Site Information Analyst SKB SR 222 @ I-40 WB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction 04/18/2011 Fayette County Performed Analysis Year 2034 Time Period AM Peak Period

| Volume and     | Timing Input        |    |     |    |      |     |        |      |           |         |        |          |      |
|----------------|---------------------|----|-----|----|------|-----|--------|------|-----------|---------|--------|----------|------|
|                |                     |    | EB  |    |      | WB  |        |      | NB        |         |        | SB       |      |
|                |                     | LT | TH  | RT | LT   | TH  | RT     | LT   | TH        | RT      | LT     | TH       | RT   |
| Number of La   | anes                |    |     |    | 1    |     | 1      | 1    | 2         |         |        | 2        | 1    |
| Lane Group     |                     |    |     |    | L    |     | R      | L    | T         |         |        | T        | R    |
| Volume (vph)   | )                   |    |     |    | 143  |     | 258    | 110  | 698       |         |        | 223      | 324  |
| % Heavy Vel    | nicles              |    |     |    | 48   |     | 10     | 48   | 48        |         |        | 10       | 10   |
| PHF            |                     |    |     |    | 0.90 |     | 0.90   | 0.90 | 0.90      |         |        | 0.90     | 0.90 |
| Pretimed/Act   | uated (P/A)         |    |     |    | Α    |     | Α      | Α    | Α         |         |        | Α        | Α    |
| Startup Lost   | Time                |    |     |    | 2.0  |     | 2.0    | 2.0  | 2.0       |         |        | 2.0      | 2.0  |
| Extension of   | Effective Green     |    |     |    | 2.0  |     | 2.0    | 2.0  | 2.0       |         |        | 2.0      | 2.0  |
| Arrival Type   |                     |    |     |    | 3    |     | 3      | 3    | 3         |         |        | 3        | 3    |
| Unit Extension | on                  |    |     |    | 3.0  |     | 3.0    | 3.0  | 3.0       |         |        | 3.0      | 3.0  |
| Ped/Bike/RT    | OR Volume           | 0  | 0   |    | 0    | 0   | 0      | 0    | 0         |         | 0      | 0        | 0    |
| Lane Width     |                     |    |     |    | 12.0 |     | 12.0   | 12.0 | 12.0      |         |        | 12.0     | 12.0 |
| Parking/Grad   | de/Parking          | N  | 0   | N  | N    | 0   | N      | N    | 0         | Ν       | N      | 0        | N    |
| Parking/Hour   | ſ                   |    |     |    |      |     |        |      |           |         |        |          |      |
| Bus Stops/Ho   | our                 |    |     |    | 0    |     | 0      | 0    | 0         |         |        | 0        | 0    |
| Minimum Ped    | destrian Time       |    | 3.2 |    |      | 3.2 |        |      | 3.2       |         |        | 3.2      |      |
| Phasing        | WB Only             | 02 |     | 03 |      | )4  | NB O   | nly  | NS Perm   |         | 07     |          | 08   |
| Timing         | G = 23.0 G:         |    | G : |    | G =  |     | G = 8. |      | S = 25.0  | G =     |        | G =      |      |
| _              | Y = 5 Y =           |    | Y = | •  | Y =  |     | Y = 4  |      | ′ = 5     | Y =     |        | Y =      |      |
| Duration of A  | nalysis (hrs) = 0.2 | 25 |     |    |      |     |        |      | Cycle Len | gth C = | = 70.0 | <u> </u> |      |

| Lane Group Capacity, C           | ontrol | Delay | , and | LOS [ | Detern | ninatio | n       |       |  |       |       |
|----------------------------------|--------|-------|-------|-------|--------|---------|---------|-------|--|-------|-------|
|                                  |        | EB    |       |       | WB     |         |         | NB    |  | SB    |       |
| Adjusted Flow Rate               |        |       |       | 159   |        | 287     | 122     | 776   |  | 248   | 360   |
| Lane Group Capacity              |        |       |       | 401   |        | 482     | 430     | 1292  |  | 1175  | 524   |
| v/c Ratio                        |        |       |       | 0.40  |        | 0.60    | 0.28    | 0.60  |  | 0.21  | 0.69  |
| Green Ratio                      |        |       |       | 0.33  |        | 0.33    | 0.54    | 0.53  |  | 0.36  | 0.36  |
| Uniform Delay d <sub>1</sub>     |        |       |       | 18.1  |        | 19.6    | 8.2     | 11.4  |  | 15.6  | 19.2  |
| Delay Factor k                   |        |       |       | 0.11  |        | 0.18    | 0.11    | 0.19  |  | 0.11  | 0.26  |
| Incremental Delay d <sub>2</sub> |        |       |       | 0.6   |        | 2.0     | 0.4     | 0.8   |  | 0.1   | 3.8   |
| PF Factor                        |        |       |       | 1.000 |        | 1.000   | 1.000   | 1.000 |  | 1.000 | 1.000 |
| Control Delay                    |        |       |       | 18.8  |        | 21.6    | 8.6     | 12.2  |  | 15.7  | 22.9  |
| Lane Group LOS                   |        |       |       | В     |        | С       | Α       | В     |  | В     | С     |
| Approach Delay                   |        |       |       |       | 20.6   |         |         | 11.7  |  | 20.0  |       |
| Approach LOS                     |        |       |       |       | С      |         |         | В     |  | В     |       |
| Intersection Delay               |        | 16.3  |       |       |        | ntersec | tion LO | S     |  | В     |       |

# **General Information**

Project Description Traditional Diamond

Average Back of Queue

|                             |        | EB    |        |       | WB |       |       | NB    |    |    | SB    |       |
|-----------------------------|--------|-------|--------|-------|----|-------|-------|-------|----|----|-------|-------|
|                             | LT     | TH    | RT     | LT    | TH | RT    | LT    | TH    | RT | LT | TH    | RT    |
| Lane Group                  |        |       |        | L     |    | R     | L     | Τ     |    |    | Τ     | R     |
| Initial Queue/Lane          |        |       |        | 0.0   |    | 0.0   | 0.0   | 0.0   |    |    | 0.0   | 0.0   |
| Flow Rate/Lane Group        |        |       |        | 159   |    | 287   | 122   | 776   |    |    | 248   | 360   |
| Satflow/Lane                |        |       |        | 1220  |    | 1468  | 792   | 1283  |    |    | 1727  | 1468  |
| Capacity/Lane Group         |        |       |        | 401   |    | 482   | 430   | 1292  |    |    | 1175  | 524   |
| Flow Ratio                  |        |       |        | 0.1   |    | 0.2   | 0.2   | 0.3   |    |    | 0.1   | 0.2   |
| v/c Ratio                   |        |       |        | 0.40  |    | 0.60  | 0.28  | 0.60  |    |    | 0.21  | 0.69  |
| I Factor                    |        |       |        | 1.000 |    | 1.000 | 1.000 | 1.000 |    |    | 1.000 | 1.000 |
| Arrival Type                |        |       |        | 3     |    | 3     | 3     | 3     |    |    | 3     | 3     |
| Platoon Ratio               |        |       |        | 1.00  |    | 1.00  | 1.00  | 1.00  |    |    | 1.00  | 1.00  |
| PF Factor                   |        |       |        | 1.00  |    | 1.00  | 1.00  | 1.00  |    |    | 1.00  | 1.00  |
| Q1                          |        |       |        | 2.4   |    | 4.7   | 1.1   | 5.5   |    |    | 1.8   | 6.0   |
| kв                          |        |       |        | 0.3   |    | 0.4   | 0.4   | 0.5   |    |    | 0.4   | 0.4   |
| Q2                          |        |       |        | 0.2   |    | 0.6   | 0.1   | 0.7   |    |    | 0.1   | 0.8   |
| Q Average                   |        |       |        | 2.6   |    | 5.2   | 1.3   | 6.2   |    |    | 1.9   | 6.8   |
| Percentile Back of Queu     | e (95t | h per | entile | e)    |    | •     |       |       |    | •  |       |       |
| fB%                         |        |       |        | 2.0   |    | 1.9   | 2.1   | 1.9   |    |    | 2.0   | 1.9   |
| Back of Queue               |        |       |        | 5.3   |    | 10.2  | 2.6   | 11.9  |    |    | 3.8   | 13.0  |
| Queue Storage Ratio         |        |       |        |       |    |       |       |       |    |    |       |       |
| Queue Spacing               |        |       |        | 25.0  |    | 25.0  | 25.0  | 25.0  |    |    | 25.0  | 25.0  |
| Queue Storage               |        |       |        | 0     |    | 0     | 0     | 0     |    |    | 0     | 0     |
| Average Queue Storage Ratio |        |       |        |       |    |       |       |       |    |    |       |       |
| 95% Queue Storage Ratio     |        |       |        |       |    |       |       |       |    |    |       |       |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:33 PM

### SHORT REPORT **General Information** Site Information SKB Analyst SR 222 @ I-40 WB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction 04/18/2011 Fayette County Performed Analysis Year 2034 Time Period PM Peak Period

| Volume and T    | iming Input        |    |     |    |      |     |        |      |          |         |        |      |      |
|-----------------|--------------------|----|-----|----|------|-----|--------|------|----------|---------|--------|------|------|
|                 |                    |    | EB  |    |      | WB  |        |      | NB       |         |        | SB   |      |
|                 |                    | LT | TH  | RT | LT   | TH  | RT     | LT   | TH       | RT      | LT     | TH   | RT   |
| Number of Lan   | nes                |    |     |    | 1    |     | 1      | 1    | 2        |         |        | 2    | 1    |
| Lane Group      |                    |    |     |    | L    |     | R      | L    | T        |         |        | T    | R    |
| Volume (vph)    |                    |    |     |    | 132  |     | 125    | 130  | 396      |         |        | 302  | 520  |
| % Heavy Vehic   | cles               |    |     |    | 48   |     | 10     | 48   | 48       |         |        | 10   | 10   |
| PHF             |                    |    |     |    | 0.90 |     | 0.90   | 0.90 | 0.90     |         |        | 0.90 | 0.90 |
| Pretimed/Actua  | ated (P/A)         |    |     |    | Α    |     | Α      | Α    | Α        |         |        | Α    | Α    |
| Startup Lost Ti | ime                |    |     |    | 2.0  |     | 2.0    | 2.0  | 2.0      |         |        | 2.0  | 2.0  |
| Extension of E  | ffective Green     |    |     |    | 2.0  |     | 2.0    | 2.0  | 2.0      |         |        | 2.0  | 2.0  |
| Arrival Type    |                    |    |     |    | 3    |     | 3      | 3    | 3        |         |        | 3    | 3    |
| Unit Extension  | 1                  |    |     |    | 3.0  |     | 3.0    | 3.0  | 3.0      |         |        | 3.0  | 3.0  |
| Ped/Bike/RTO    | R Volume           | 0  | 0   |    | 0    | 0   | 0      | 0    | 0        |         | 0      | 0    | 0    |
| Lane Width      |                    |    |     |    | 12.0 |     | 12.0   | 12.0 | 12.0     |         |        | 12.0 | 12.0 |
| Parking/Grade   | /Parking           | Ν  | 0   | Ν  | N    | 0   | N      | N    | 0        | Ν       | N      | 0    | N    |
| Parking/Hour    |                    |    |     |    |      |     |        |      |          |         |        |      |      |
| Bus Stops/Hou   | ır                 |    |     |    | 0    |     | 0      | 0    | 0        |         |        | 0    | 0    |
| Minimum Pede    | estrian Time       |    | 3.2 |    |      | 3.2 |        |      | 3.2      |         |        | 3.2  |      |
| Phasing         | WB Only            | 02 |     | 03 |      | )4  | NB O   | nly  | NS Perm  |         | 07     |      | 80   |
| IIImina 🗀       | G = 16.0 G:        |    | G : |    | G =  |     | G = 8. |      | 6 = 32.0 | G =     |        | G =  |      |
| Y               | Y = 5 Y =          |    | Y = |    | Y =  |     | Y = 4  |      | ′ = 5    | Y =     |        | Y =  |      |
| Duration of Ana | alysis (hrs) = 0.2 | 25 |     |    |      |     |        |      | ycle Len | gth C = | = 70.0 | )    |      |

| Lane Group Capacity, C           | ontrol        | Delay | , and | LOS [ | <b>Detern</b> | ninatio | n       |       |  |       |       |
|----------------------------------|---------------|-------|-------|-------|---------------|---------|---------|-------|--|-------|-------|
|                                  |               | EB    |       |       | WB            |         |         | NB    |  | SB    |       |
| Adjusted Flow Rate               |               |       |       | 147   |               | 139     | 144     | 440   |  | 336   | 578   |
| Lane Group Capacity              |               |       |       | 279   |               | 336     | 470     | 1536  |  | 1504  | 671   |
| v/c Ratio                        |               |       |       | 0.53  |               | 0.41    | 0.31    | 0.29  |  | 0.22  | 0.86  |
| Green Ratio                      |               |       |       | 0.23  |               | 0.23    | 0.64    | 0.63  |  | 0.46  | 0.46  |
| Uniform Delay d <sub>1</sub>     |               |       |       | 23.7  |               | 23.0    | 5.2     | 5.9   |  | 11.5  | 17.0  |
| Delay Factor k                   |               |       |       | 0.13  |               | 0.11    | 0.11    | 0.11  |  | 0.11  | 0.39  |
| Incremental Delay d <sub>2</sub> |               |       |       | 1.9   |               | 0.8     | 0.4     | 0.1   |  | 0.1   | 11.1  |
| PF Factor                        |               |       |       | 1.000 |               | 1.000   | 1.000   | 1.000 |  | 1.000 | 1.000 |
| Control Delay                    |               |       |       | 25.5  |               | 23.8    | 5.6     | 6.0   |  | 11.6  | 28.1  |
| Lane Group LOS                   |               |       |       | С     |               | С       | Α       | Α     |  | В     | С     |
| Approach Delay                   | pproach Delay |       |       |       | 24.7          |         |         | 5.9   |  | 22.0  |       |
| Approach LOS                     |               |       |       |       | С             |         |         | Α     |  | С     |       |
| Intersection Delay               |               | 17.2  |       |       |               | ntersec | tion LO | S     |  | В     |       |

# **General Information**

Project Description Traditional Diamond

Average Back of Queue

|                             |        | EB     |       |       | WB |       |       | NB    |    |    | SB    |       |
|-----------------------------|--------|--------|-------|-------|----|-------|-------|-------|----|----|-------|-------|
|                             | LT     | TH     | RT    | LT    | TH | RT    | LT    | TH    | RT | LT | TH    | RT    |
| Lane Group                  |        |        |       | L     |    | R     | L     | T     |    |    | Τ     | R     |
| Initial Queue/Lane          |        |        |       | 0.0   |    | 0.0   | 0.0   | 0.0   |    |    | 0.0   | 0.0   |
| Flow Rate/Lane Group        |        |        |       | 147   |    | 139   | 144   | 440   |    |    | 336   | 578   |
| Satflow/Lane                |        |        |       | 1220  |    | 1468  | 732   | 1283  |    |    | 1727  | 1468  |
| Capacity/Lane Group         |        |        |       | 279   |    | 336   | 470   | 1536  |    |    | 1504  | 671   |
| Flow Ratio                  |        |        |       | 0.1   |    | 0.1   | 0.2   | 0.2   |    |    | 0.1   | 0.4   |
| v/c Ratio                   |        |        |       | 0.53  |    | 0.41  | 0.31  | 0.29  |    |    | 0.22  | 0.86  |
| I Factor                    |        |        |       | 1.000 |    | 1.000 | 1.000 | 1.000 |    |    | 1.000 | 1.000 |
| Arrival Type                |        |        |       | 3     |    | 3     | 3     | 3     |    |    | 3     | 3     |
| Platoon Ratio               |        |        |       | 1.00  |    | 1.00  | 1.00  | 1.00  |    |    | 1.00  | 1.00  |
| PF Factor                   |        |        |       | 1.00  |    | 1.00  | 1.00  | 1.00  |    |    | 1.00  | 1.00  |
| Q1                          |        |        |       | 2.5   |    | 2.3   | 1.0   | 2.0   |    |    | 2.1   | 10.1  |
| kв                          |        |        |       | 0.3   |    | 0.3   | 0.4   | 0.5   |    |    | 0.5   | 0.5   |
| Q2                          |        |        |       | 0.3   |    | 0.2   | 0.2   | 0.2   |    |    | 0.1   | 2.4   |
| Q Average                   |        |        |       | 2.8   |    | 2.5   | 1.2   | 2.2   |    |    | 2.2   | 12.5  |
| Percentile Back of Queu     | e (95t | h perd | entil | e)    | ,  |       |       |       | •  |    |       | •     |
| fB%                         |        |        |       | 2.0   |    | 2.0   | 2.1   | 2.0   |    |    | 2.0   | 1.8   |
| Back of Queue               |        |        |       | 5.7   |    | 5.1   | 2.5   | 4.6   |    |    | 4.5   | 22.4  |
| Queue Storage Ratio         |        |        |       |       |    |       |       |       |    |    |       |       |
| Queue Spacing               |        |        |       | 25.0  |    | 25.0  | 25.0  | 25.0  |    |    | 25.0  | 25.0  |
| Queue Storage               |        |        |       | 0     |    | 0     | 0     | 0     |    |    | 0     | 0     |
| Average Queue Storage Ratio |        |        |       |       |    |       |       |       |    |    |       |       |
| 95% Queue Storage Ratio     |        |        |       |       |    |       |       |       |    |    |       |       |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

- ...

Generated: 4/20/2011 3:35 PM

### SHORT REPORT General Information Site Information Analyst SKB SR 222 @ I-40 EB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction Analysis Year 04/18/2011 Fayette County Performed 2014 Time Period AM Peak Period

| Volume and    | d Timing Inpu                    | t   |      |     |            |      |     |     |        |     |          |        |      |     |    |
|---------------|----------------------------------|-----|------|-----|------------|------|-----|-----|--------|-----|----------|--------|------|-----|----|
|               |                                  |     |      | EB  | -          |      | WI  |     |        |     | NB       |        |      | SB  |    |
|               |                                  |     | LT   | TH  | RT         | LT   | T   | H   | RT     | LT  | TH       | RT     | LT   | TH  | RT |
| Number of L   | anes                             |     | 2    |     | 2          | 2    |     |     |        |     | 2        |        |      |     |    |
| Lane Group    |                                  |     | L    |     | R          | L    |     |     |        |     | T        |        |      |     |    |
| Volume (vpł   | າ)                               |     | 581  |     | 134        | 326  |     |     |        |     | 331      |        |      |     |    |
| % Heavy Ve    | hicles                           |     | 10   |     | <b>4</b> 8 | 10   |     |     |        |     | 48       |        |      |     |    |
| PHF           |                                  |     | 0.90 |     | 0.90       | 0.90 |     |     |        |     | 0.90     |        |      |     |    |
| Pretimed/Ac   | tuated (P/A)                     |     | Α    |     |            | Α    |     |     |        |     | Α        |        |      |     |    |
| Startup Lost  | Time                             |     | 2.0  |     | 2.0        | 2.0  |     |     |        |     | 2.0      |        |      |     |    |
| Extension of  | f Effective Gre                  | en  | 2.0  |     | 2.0        | 2.0  |     |     |        |     | 2.0      |        |      |     |    |
| Arrival Type  |                                  |     | 3    |     | 3          | 3    |     |     |        |     | 3        |        |      |     |    |
| Unit Extensi  | on                               |     | 3.0  |     | 3.0        | 3.0  |     |     |        |     | 3.0      |        |      |     |    |
| Ped/Bike/R1   | TOR Volume                       |     | 0    | 0   | 0          | 0    | 0   |     |        | 0   | 0        |        | 0    | 0   |    |
| Lane Width    |                                  |     | 12.0 |     | 12.0       | 12.0 |     |     |        |     | 12.0     |        |      |     |    |
| Parking/Gra   | de/Parking                       |     | N    | 0   | Ν          | N    | 0   |     | Ν      | Ν   | 0        | Ν      | Ν    | 0   | Ν  |
| Parking/Hou   | ır                               |     |      |     |            |      |     |     |        |     |          |        |      |     |    |
| Bus Stops/H   | lour                             |     | 0    |     | 0          | 0    |     |     |        |     | 0        |        |      |     |    |
| Minimum Pe    | edestrian Time                   |     |      | 3.2 |            |      | 3.2 | 2   |        |     | 3.2      |        |      | 3.2 |    |
| Phasing       | Excl. Left                       | (   | )2   | 0   | 3          | 04   |     | N   | B Only |     | 06       | (      | )7   | 0   | 8  |
| Timing        | G = 30.0                         | G = |      | G = |            | G =  |     |     | = 30.0 |     |          | G =    |      | G = |    |
|               | Y = 5                            | Y = |      | Y = |            | Y =  |     | Υ = | = 5    | Υ = |          | Y =    |      | Y = |    |
| Duration of A | uration of Analysis (hrs) = 0.25 |     |      |     |            |      |     |     |        | Cy  | cle Leng | th C = | 70.0 |     |    |

| Duration of Analysis (1113) = 0  | Coup Capacity, Control Delay, and LOS Determination           EB         WB           Flow Rate         646         149         362           up Capacity         1366         828         1366           up Capacity         0.47         0.18         0.27           dio         0.43         0.43         0.43           elay d <sub>1</sub> 14.3         12.4         12.9           tor k         0.11         0.11         0.11 |      |        |             | Cycle Le | ingui O – | 70.0     |  |  |    |  |
|----------------------------------|---|------|--------|-------------|----------|-----------|----------|--|--|----|--|
| Lane Group Capacity,             | Contro  | Dela | y, and | LOS I       | Detern   | ninatio   | n        |  |  |    |  |
|                                  |   | EB   |        |             | WB       |           | NB       |  |  | SB |  |
| Adjusted Flow Rate               | 646   |      | 149    | 362         |          |           | 368      |  |  |    |  |
| Lane Group Capacity              | 1366  |      | 828    | 1366        |          |           | 1047     |  |  |    |  |
| v/c Ratio                        | 0.47  |      | 0.18   | 0.27        |          |           | 0.35     |  |  |    |  |
| Green Ratio                      | 0.43  |      | 0.43   | 0.43        |          |           | 0.43     |  |  |    |  |
| Uniform Delay d <sub>1</sub>     | 14.3  |      | 12.4   | + + + + + + |          | 13.5      |          |  |  |    |  |
| Delay Factor k                   | 0.11  |      | 0.11   | + + +       |          | 0.11      |          |  |  |    |  |
| Incremental Delay d <sub>2</sub> | 0.3   |      | 0.1    | 0.1         |          |           | 0.2      |  |  |    |  |
| PF Factor                        | 1.000   |      | 1.000  | 1.000       |          |           | 1.000    |  |  |    |  |
| Control Delay                    | 14.6  |      | 12.5   | 13.0        |          |           | 13.7     |  |  |    |  |
| Lane Group LOS                   | В   |      | В      | В           |          |           | В        |  |  |    |  |
| Approach Delay                   |   | 14.2 |        |             | 13.0     |           | 13.7     |  |  |    |  |
| Approach LOS                     |   | В    |        |             | В        |           | В        |  |  |    |  |
| Intersection Delay               |   | 13.8 |        |             | I        | ntersec   | tion LOS | 368<br>1047<br>0.35<br>0.43<br>13.5<br>0.11<br>0.2<br>1.000<br>13.7<br>B |  | В  |  |

# **General Information**

Average Back of Queue

| Average back of Queue       |         | EB   |         |       | WB |    |    | NB    |    |    | SB |    |
|-----------------------------|---------|------|---------|-------|----|----|----|-------|----|----|----|----|
|                             | LT      | TH   | RT      | LT    | TH | RT | LT | TH    | RT | LT | TH | RT |
| Lane Group                  | L       |      | R       | L     |    |    |    | T     |    |    |    |    |
| Initial Queue/Lane          | 0.0     |      | 0.0     | 0.0   |    |    |    | 0.0   |    |    |    |    |
| Flow Rate/Lane Group        | 646     |      | 149     | 362   |    |    |    | 368   |    |    |    |    |
| Satflow/Lane                | 1641    |      | 1091    | 1641  |    |    |    | 1283  |    |    |    |    |
| Capacity/Lane Group         | 1366    |      | 828     | 1366  |    |    |    | 1047  |    |    |    |    |
| Flow Ratio                  | 0.2     |      | 0.1     | 0.1   |    |    |    | 0.2   |    |    |    |    |
| v/c Ratio                   | 0.47    |      | 0.18    | 0.27  |    |    |    | 0.35  |    |    |    |    |
| I Factor                    | 1.000   |      | 1.000   | 1.000 |    |    |    | 1.000 |    |    |    |    |
| Arrival Type                | 3       |      | 3       | 3     |    |    |    | 3     |    |    |    |    |
| Platoon Ratio               | 1.00    |      | 1.00    | 1.00  |    |    |    | 1.00  |    |    |    |    |
| PF Factor                   | 1.00    |      | 1.00    | 1.00  |    |    |    | 1.00  |    |    |    |    |
| Q1                          | 4.6     |      | 1.0     | 2.3   |    |    |    | 2.5   |    |    |    |    |
| kв                          | 0.5     |      | 0.4     | 0.5   |    |    |    | 0.4   |    |    |    |    |
| Q2                          | 0.4     |      | 0.1     | 0.2   |    |    |    | 0.2   |    |    |    |    |
| Q Average                   | 5.1     |      | 1.1     | 2.5   |    |    |    | 2.7   |    |    |    |    |
| Percentile Back of Queu     | e (95th | perc | entile) | )     | ,  |    | •  | •     |    |    |    | ,  |
| fB%                         | 2.0     |      | 2.1     | 2.0   |    |    |    | 2.0   |    |    |    |    |
| Back of Queue               | 9.9     |      | 2.3     | 5.1   |    |    |    | 5.5   |    |    |    |    |
| Queue Storage Ratio         |         |      |         |       |    |    |    |       |    |    |    |    |
| Queue Spacing               | 25.0    |      | 25.0    | 25.0  |    |    |    | 25.0  |    |    |    |    |
| Queue Storage               | 0       |      | 0       | 0     |    |    |    | 0     |    |    |    |    |
| Average Queue Storage Ratio |         |      |         |       |    |    |    |       |    |    |    |    |
| 95% Queue Storage Ratio     |         |      |         |       |    |    |    |       |    |    |    |    |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:03 PM

### SHORT REPORT General Information Site Information Analyst SKB SR 222 @ I-40 EB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction Analysis Year Fayette County 04/18/2011 Performed 2014 Time Period PM Peak Period

| Volume and    | d Timing Inpu    | t     |      |     |      |      |     |    |         |     |          |        |      |     |    |
|---------------|------------------|-------|------|-----|------|------|-----|----|---------|-----|----------|--------|------|-----|----|
|               |                  |       |      | EB  |      |      | WI  |    |         |     | NB       |        |      | SB  |    |
|               |                  |       | LT   | TH  | RT   | LT   | Т   | H_ | RT      | LT  | TH       | RT     | LT   | TH  | RT |
| Number of L   | anes             |       | 2    |     | 2    | 2    |     |    |         |     | 2        |        |      |     |    |
| Lane Group    |                  |       | L    |     | R    | L    |     |    |         |     | T        |        |      |     |    |
| Volume (vph   | າ)               |       | 271  |     | 126  | 384  |     |    |         |     | 382      |        |      |     |    |
| % Heavy Ve    | hicles           |       | 10   |     | 48   | 10   |     |    |         |     | 48       |        |      |     |    |
| PHF           |                  |       | 0.90 |     | 0.90 | 0.90 |     |    |         |     | 0.90     |        |      |     |    |
| Pretimed/Ac   | tuated (P/A)     |       | Α    |     |      | Α    |     |    |         |     | Α        |        |      |     |    |
| Startup Lost  | Time             |       | 2.0  |     | 2.0  | 2.0  |     |    |         |     | 2.0      |        |      |     |    |
| Extension of  | f Effective Gre  | en    | 2.0  |     | 2.0  | 2.0  |     |    |         |     | 2.0      |        |      |     |    |
| Arrival Type  |                  |       | 3    |     | 3    | 3    |     |    |         |     | 3        |        |      |     |    |
| Unit Extensi  | on               |       | 3.0  |     | 3.0  | 3.0  |     |    |         |     | 3.0      |        |      |     |    |
| Ped/Bike/RT   | OR Volume        |       | 0    | 0   | 0    | 0    | 0   |    |         | 0   | 0        |        | 0    | 0   |    |
| Lane Width    |                  |       | 12.0 |     | 12.0 | 12.0 |     |    |         |     | 12.0     |        |      |     |    |
| Parking/Gra   | de/Parking       |       | N    | 0   | Ν    | N    | 0   |    | N       | Ν   | 0        | Ν      | Ν    | 0   | Ν  |
| Parking/Hou   | ır               |       |      |     |      |      |     |    |         |     |          |        |      |     |    |
| Bus Stops/H   | lour             |       | 0    |     | 0    | 0    |     |    |         |     | 0        |        |      |     |    |
| Minimum Pe    | edestrian Time   |       |      | 3.2 |      |      | 3.2 | 2  |         |     | 3.2      |        |      | 3.2 |    |
| Phasing       | Excl. Left       |       | 02   |     | 3    | 04   |     | N  | IB Only |     | 06       |        | )7   | 0   | 8  |
| Timing        | G = 30.0         | G =   |      | G = |      | G =  |     |    | = 30.0  |     |          | G =    |      | G = |    |
|               | Y = 5            | Y =   |      | Y = |      | Y =  |     | Υ: | = 5     | Y = |          | Y =    |      | Y = |    |
| Duration of A | Analysis (hrs) : | = 0.2 | ?5   |     |      |      |     |    |         | Су  | cle Leng | th C = | 70.0 |     |    |

| Duration of Arialysis (1115) =   | 0.20    |       |        |       |        |         | Cycle L  |   | . 70.0 |    |  |
|----------------------------------|---------|-------|--------|-------|--------|---------|----------|---|--------|----|--|
| Lane Group Capacity,             | Control | Delay | y, and | LOS I | Detern | ninatio | n        |   |        |    |  |
|                                  |         | EB    |        |       | WB     |         | NB       |   |        | SB |  |
| Adjusted Flow Rate               | 301     |       | 140    | 427   |        |         | 424      |   |        |    |  |
| Lane Group Capacity              | 1366    |       | 828    | 1366  |        |         | 1047     |   |        |    |  |
| v/c Ratio                        | 0.22    |       | 0.17   | 0.31  |        |         | 0.40     |   |        |    |  |
| Green Ratio                      | 0.43    |       | 0.43   | 0.43  |        |         | 0.43     |   |        |    |  |
| Uniform Delay d <sub>1</sub>     | 12.6    |       | 12.3   | 13.2  |        |         | 13.8     |   |        |    |  |
| Delay Factor k                   | 0.11    |       | 0.11   | 0.11  |        |         | 0.11     |   |        |    |  |
| Incremental Delay d <sub>2</sub> | 0.1     |       | 0.1    | 0.1   |        |         | 0.3      |   |        |    |  |
| PF Factor                        | 1.000   |       | 1.000  | 1.000 |        |         | 1.000    | ) |        |    |  |
| Control Delay                    | 12.7    |       | 12.4   | 13.3  |        |         | 14.1     |   |        |    |  |
| Lane Group LOS                   | В       |       | В      | В     |        |         | В        |   |        |    |  |
| Approach Delay                   |         | 12.6  |        |       | 13.3   |         | 14.1     |   |        |    |  |
| Approach LOS                     |         | В     |        |       | В      |         | В        |   |        |    |  |
| Intersection Delay               |         | 13.3  |        |       |        | ntersec | tion LOS |   |        | В  |  |

# **General Information**

Average Back of Queue

|                             |         | EB   |         |       | WB |    |    | NB    |    |    | SB |    |
|-----------------------------|---------|------|---------|-------|----|----|----|-------|----|----|----|----|
|                             | LT      | TH   | RT      | LT    | TH | RT | LT | TH    | RT | LT | TH | RT |
| Lane Group                  | L       |      | R       | L     |    |    |    | T     |    |    |    |    |
| Initial Queue/Lane          | 0.0     |      | 0.0     | 0.0   |    |    |    | 0.0   |    |    |    |    |
| Flow Rate/Lane Group        | 301     |      | 140     | 427   |    |    |    | 424   |    |    |    |    |
| Satflow/Lane                | 1641    |      | 1091    | 1641  |    |    |    | 1283  |    |    |    |    |
| Capacity/Lane Group         | 1366    |      | 828     | 1366  |    |    |    | 1047  |    |    |    |    |
| Flow Ratio                  | 0.1     |      | 0.1     | 0.1   |    |    |    | 0.2   |    |    |    |    |
| v/c Ratio                   | 0.22    |      | 0.17    | 0.31  |    |    |    | 0.40  |    |    |    |    |
| I Factor                    | 1.000   |      | 1.000   | 1.000 |    |    |    | 1.000 |    |    |    |    |
| Arrival Type                | 3       |      | 3       | 3     |    |    |    | 3     |    |    |    |    |
| Platoon Ratio               | 1.00    |      | 1.00    | 1.00  |    |    |    | 1.00  |    |    | 1  |    |
| PF Factor                   | 1.00    |      | 1.00    | 1.00  |    |    |    | 1.00  |    |    |    |    |
| Q1                          | 1.9     |      | 0.9     | 2.8   |    |    |    | 3.0   |    |    |    |    |
| kв                          | 0.5     |      | 0.4     | 0.5   |    |    |    | 0.4   |    |    | 1  |    |
| Q2                          | 0.1     |      | 0.1     | 0.2   |    |    |    | 0.3   |    |    |    |    |
| Q Average                   | 2.0     |      | 1.0     | 3.0   |    |    |    | 3.3   |    |    |    |    |
| Percentile Back of Queu     | e (95th | perc | entile) | )     |    |    |    |       |    |    |    |    |
| fB%                         | 2.0     |      | 2.1     | 2.0   |    |    |    | 2.0   |    |    |    |    |
| Back of Queue               | 4.1     |      | 2.1     | 6.1   |    |    |    | 6.5   |    |    |    |    |
| Queue Storage Ratio         |         |      |         |       |    |    |    |       |    |    |    |    |
| Queue Spacing               | 25.0    |      | 25.0    | 25.0  |    |    |    | 25.0  |    |    |    |    |
| Queue Storage               | 0       |      | 0       | 0     |    |    |    | 0     |    |    |    |    |
| Average Queue Storage Ratio |         |      |         |       |    |    |    |       |    |    |    |    |
| 95% Queue Storage Ratio     |         |      |         |       |    |    |    |       |    |    |    |    |

### SHORT REPORT Site Information **General Information** Analyst SKB SR 222 @ I-40 WB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction 04/18/2011 Fayette County Performed Analysis Year 2014 Time Period AM Peak Period Volume and Timing Input

| Volume and Timing Inp     | ut      |      |     |    |      |     |          |     |          |        |      |      |    |
|---------------------------|---------|------|-----|----|------|-----|----------|-----|----------|--------|------|------|----|
|                           |         |      | EB  |    |      | WB  |          |     | NB       |        |      | SB   |    |
|                           |         | LT   | TH  | RT | LT   | TH  | RT       | LT  | TH       | RT     | LT   | TH   | RT |
| Number of Lanes           |         | 2    |     |    | 2    |     | 2        |     |          |        |      | 2    |    |
| Lane Group                |         | L    |     |    | L    |     | R        |     |          |        |      | T    |    |
| Volume (vph)              |         | 798  |     |    | 117  |     | 257      |     |          |        |      | 513  |    |
| % Heavy Vehicles          |         | 48   |     |    | 48   |     | 10       |     |          |        |      | 10   |    |
| PHF                       |         | 0.90 |     |    | 0.90 |     | 0.90     |     |          |        |      | 0.90 |    |
| Pretimed/Actuated (P/A)   |         | Α    |     |    | Α    |     |          |     |          |        |      | Α    |    |
| Startup Lost Time         |         | 2.0  |     |    | 2.0  |     | 2.0      |     |          |        |      | 2.0  |    |
| Extension of Effective G  | reen    | 2.0  |     |    | 2.0  |     | 2.0      |     |          |        |      | 2.0  |    |
| Arrival Type              |         | 3    |     |    | 3    |     | 3        |     |          |        |      | 3    |    |
| Unit Extension            |         | 3.0  |     |    | 3.0  |     | 3.0      |     |          |        |      | 3.0  |    |
| Ped/Bike/RTOR Volume      |         | 0    | 0   |    | 0    | 0   | 0        | 0   | 0        |        | 0    | 0    |    |
| Lane Width                |         | 12.0 |     |    | 12.0 |     | 12.0     |     |          |        |      | 12.0 |    |
| Parking/Grade/Parking     |         | Ν    | 0   | Ν  | Ν    | 0   | N        | Ν   | 0        | Ν      | N    | 0    | Ν  |
| Parking/Hour              |         |      |     |    |      |     |          |     |          |        |      |      |    |
| Bus Stops/Hour            |         | 0    |     |    | 0    |     | 0        |     |          |        |      | 0    |    |
| Minimum Pedestrian Tim    | ne      |      | 3.2 |    |      | 3.2 |          |     | 3.2      |        |      | 3.2  |    |
| Phasing Excl. Left        |         | 02   | 0   | 3  | 04   |     | SB Only  |     | 06       | _      | 07   | 0    | 8  |
| Timing $G = 33.0$         | G =     |      | G = |    | G =  |     | G = 27.0 |     |          | G =    |      | G =  |    |
| Y = 5                     | Y =     |      | Y = |    | Y =  |     | Y = 5    | Y = |          | Y =    |      | Y =  |    |
| Duration of Analysis (hrs | ) = 0.2 | 25   |     |    |      |     |          | Су  | cle Leng | th C = | 70.0 |      |    |

| _ =                              | **            |          |       |        |          | - 7   |   |       |  |
|----------------------------------|---------------|----------|-------|--------|----------|-------|---|-------|--|
| Lane Group Capacit               | y, Control De | lay, and | LOS D | etermi | nation   |       |   |       |  |
|                                  | E             | 3        |       | WB     |          | NE    | 3 | SB    |  |
| Adjusted Flow Rate               | 887           |          | 130   | 2      | 286      |       |   | 570   |  |
| Lane Group Capacity              | 1116          |          | 1116  | 1      | 002      |       |   | 1269  |  |
| v/c Ratio                        | 0.79          |          | 0.12  | 0.     | .29      |       |   | 0.45  |  |
| Green Ratio                      | 0.47          |          | 0.47  | 0.     | .39      |       |   | 0.39  |  |
| Uniform Delay d <sub>1</sub>     | 15.6          |          | 10.3  | 1.     | 4.8      |       |   | 16.0  |  |
| Delay Factor k                   | 0.34          |          | 0.11  | 0.     | .11      |       |   | 0.11  |  |
| Incremental Delay d <sub>2</sub> | 4.1           |          | 0.0   | (      | 0.2      |       |   | 0.3   |  |
| PF Factor                        | 1.000         |          | 1.000 | 1.     | .000     |       |   | 1.000 |  |
| Control Delay                    | 19.7          |          | 10.4  | 1      | 15.0     |       |   | 16.2  |  |
| Lane Group LOS                   | В             |          | В     |        | В        |       |   | В     |  |
| Approach Delay                   | 19.7          | 7        |       | 13.6   |          |       |   | 16.2  |  |
| Approach LOS                     | В             |          |       | В      |          |       |   | В     |  |
| Intersection Delay               | 17.3          | 3        |       | Int    | ersectio | n LOS |   | В     |  |

# **General Information**

Average Back of Queue

| -                           |         | EB   |        |            | WB |       |    | NB |    |    | SB    |    |
|-----------------------------|---------|------|--------|------------|----|-------|----|----|----|----|-------|----|
|                             | LT      | TH   | RT     | LT         | TH | RT    | LT | TH | RT | LT | TH    | RT |
| Lane Group                  | L       |      |        | L          |    | R     |    |    |    |    | Τ     |    |
| Initial Queue/Lane          | 0.0     |      |        | 0.0        |    | 0.0   |    |    |    |    | 0.0   |    |
| Flow Rate/Lane Group        | 887     |      |        | 130        |    | 286   |    |    |    |    | 570   |    |
| Satflow/Lane                | 1219    |      |        | 1219       |    | 1468  |    |    |    |    | 1727  |    |
| Capacity/Lane Group         | 1116    |      |        | 1116       |    | 1002  |    |    |    |    | 1269  |    |
| Flow Ratio                  | 0.4     |      |        | 0.1        |    | 0.1   |    |    |    |    | 0.2   |    |
| v/c Ratio                   | 0.79    |      |        | 0.12       |    | 0.29  |    |    |    |    | 0.45  |    |
| I Factor                    | 1.000   |      |        | 1.000      |    | 1.000 |    |    |    |    | 1.000 |    |
| Arrival Type                | 3       |      |        | 3          |    | 3     |    |    |    |    | 3     |    |
| Platoon Ratio               | 1.00    |      |        | 1.00       |    | 1.00  |    |    |    |    | 1.00  |    |
| PF Factor                   | 1.00    |      |        | 1.00       |    | 1.00  |    |    |    |    | 1.00  |    |
| Q1                          | 7.5     |      |        | 0.7        |    | 2.2   |    |    |    |    | 4.3   |    |
| kв                          | 0.4     |      |        | 0.4        |    | 0.4   |    |    |    |    | 0.5   |    |
| Q2                          | 1.5     |      |        | 0.1        |    | 0.2   |    |    |    |    | 0.4   |    |
| Q Average                   | 9.0     |      |        | 0.8        |    | 2.3   |    |    |    |    | 4.7   |    |
| Percentile Back of Queu     | e (95th | perc | entile | · <u> </u> | Į. |       |    |    | J. |    |       |    |
| fB%                         | 1.9     |      |        | 2.1        |    | 2.0   |    |    |    |    | 2.0   |    |
| Back of Queue               | 16.8    |      |        | 1.6        |    | 4.7   |    |    |    |    | 9.2   |    |
| Queue Storage Ratio         |         |      |        |            |    |       |    |    |    |    |       |    |
| Queue Spacing               | 25.0    |      |        | 25.0       |    | 25.0  |    |    |    |    | 25.0  |    |
| Queue Storage               | 0       |      |        | 0          |    | 0     |    |    |    |    | 0     |    |
| Average Queue Storage Ratio |         |      |        |            |    |       |    |    |    |    |       |    |
| 95% Queue Storage Ratio     |         |      |        |            |    |       |    |    |    |    |       |    |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

\_ . . .

Generated: 4/20/2011 3:06 PM

### SHORT REPORT **General Information** Site Information Analyst SKB SR 222 @ I-40 WB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction 04/18/2011 Fayette County Performed Analysis Year 2014 Time Period PM Peak Period Volume and Timing Input

| Volume and  | d Timing Input   |              |     |    |      |     |          |     |     |     | ,  |      |    |
|---|------------------|--------------|-----|----|------|-----|----------|-----|-----|-----|----|------|----|
|   |                  |              | EB  |    |      | WB  |          |     | NB  |     |    | SB   |    |
|   |                  | LT           | TH  | RT | LT   | TH  | RT       | LT  | TH  | RT  | LT | TH   | RT |
| Number of L   | ₋anes            | 2            |     |    | 2    |     | 2        |     |     |     |    | 2    |    |
| Lane Group  |                  | L            |     |    | L    |     | R        |     |     |     |    | T    |    |
| Volume (vpl   | า)               | 511          |     |    | 98   |     | 122      |     |     |     |    | 800  |    |
| % Heavy Ve  | ehicles          | 48           |     |    | 48   |     | 10       |     |     |     |    | 10   |    |
| PHF   |                  | 0.90         |     |    | 0.90 |     | 0.90     |     |     |     |    | 0.90 |    |
| Pretimed/Ad   | tuated (P/A)     | Α            |     |    | Α    |     |          |     |     |     |    | Α    |    |
| Startup Lost  | t Time           | 2.0          |     |    | 2.0  |     | 2.0      |     |     |     |    | 2.0  |    |
| Extension o   | f Effective Gree | n <i>2.0</i> |     |    | 2.0  |     | 2.0      |     |     |     |    | 2.0  |    |
| Arrival Type  |                  | 3            |     |    | 3    |     | 3        |     |     |     |    | 3    |    |
| Unit Extensi  | on               | 3.0          |     |    | 3.0  |     | 3.0      |     |     |     |    | 3.0  |    |
| Ped/Bike/R  | TOR Volume       | 0            | 0   |    | 0    | 0   | 0        | 0   | 0   |     | 0  | 0    |    |
| Lane Width  |                  | 12.0         |     |    | 12.0 |     | 12.0     |     |     |     |    | 12.0 |    |
| Parking/Gra   | de/Parking       | N            | 0   | N  | Ν    | 0   | N        | Ν   | 0   | N   | N  | 0    | N  |
| Parking/Hou   | ır               |              |     |    |      |     |          |     |     |     |    |      |    |
| Bus Stops/F   | Hour             | 0            |     |    | 0    |     | 0        |     |     |     |    | 0    |    |
| Minimum Pe  | edestrian Time   |              | 3.2 |    |      | 3.2 |          |     | 3.2 |     |    | 3.2  |    |
| Phasing   | Excl. Left       | 02           | 0   | 3  | 04   |     | SB Only  | ,   | 06  |     | 07 |      | 8  |
| Timing  |                  | G =          | G = |    | G =  |     | G = 30.0 |     |     | G = |    | G =  |    |
|   |                  | Y =          | Y = |    | Y =  |     | Y = 5    | Υ = |     | Y = |    | Y =  |    |
| Duration of Analysis (hrs) = $0.25$ Cycle Length C = $70.0$ |                  |              |     |    |      |     |          |     |     |     |    |      |    |

| Daration of Analysis (1115) =    | 0.20   |  |       |        |          | <u> </u> | 7010 201 | <del>1911 0 -</del> | 70.0  |  |
|----------------------------------|--------|--|-------|--------|----------|----------|----------|---------------------|-------|--|
| Lane Group Capacity,             | Contro | l Delay, and                                     | LOS [ | Detern | ninatio  | n        |          |                     |       |  |
|                                  |        | EB   |       | WB     |          |          | NB       |                     | SB    |  |
| Adjusted Flow Rate               | 568    |  | 109   |        | 136      |          |          |                     | 889   |  |
| Lane Group Capacity              | 1015   |  | 1015  |        | 1114     |          |          |                     | 1410  |  |
| v/c Ratio                        | 0.56   |  | 0.11  |        | 0.12     |          |          |                     | 0.63  |  |
| Green Ratio                      | 0.43   |  | 0.43  |        | 0.43     |          |          |                     | 0.43  |  |
| Uniform Delay d <sub>1</sub>     | 15.0   | <del>-                                    </del> |       |        | 12.1     |          |          |                     | 15.7  |  |
| Delay Factor k                   | 0.16   | <del>-                                    </del> |       |        | 0.11     |          |          |                     | 0.21  |  |
| Incremental Delay d <sub>2</sub> | 0.7    |  | 0.0   |        | 0.0      |          |          |                     | 0.9   |  |
| PF Factor                        | 1.000  |  | 1.000 |        | 1.000    |          |          |                     | 1.000 |  |
| Control Delay                    | 15.7   |  | 12.0  |        | 12.1     |          |          |                     | 16.6  |  |
| Lane Group LOS                   | В      |  | В     |        | В        |          |          |                     | В     |  |
| Approach Delay                   |        | 15.7   |       | 12.1   |          |          |          |                     | 16.6  |  |
| Approach LOS                     |        | В  |       | В      |          |          |          |                     | В     |  |
| Intersection Delay               |        | 15.6   |       |        | ntersect | tion LOS | 3        |                     | В     |  |

# **General Information**

Average Back of Queue

|                             |         | EB   |        |       | WB |       |    | NB |    |    | SB    |    |
|-----------------------------|---------|------|--------|-------|----|-------|----|----|----|----|-------|----|
|                             | LT      | TH   | RT     | LT    | TH | RT    | LT | TH | RT | LT | TH    | RT |
| Lane Group                  | L       |      |        | L     |    | R     |    |    |    |    | Τ     |    |
| Initial Queue/Lane          | 0.0     |      |        | 0.0   |    | 0.0   |    |    |    |    | 0.0   |    |
| Flow Rate/Lane Group        | 568     |      |        | 109   |    | 136   |    |    |    |    | 889   |    |
| Satflow/Lane                | 1219    |      |        | 1219  |    | 1468  |    |    |    |    | 1727  |    |
| Capacity/Lane Group         | 1015    |      |        | 1015  |    | 1114  |    |    |    |    | 1410  |    |
| Flow Ratio                  | 0.2     |      |        | 0.0   |    | 0.1   |    |    |    |    | 0.3   |    |
| v/c Ratio                   | 0.56    |      |        | 0.11  |    | 0.12  |    |    |    |    | 0.63  |    |
| I Factor                    | 1.000   |      |        | 1.000 |    | 1.000 |    |    |    |    | 1.000 |    |
| Arrival Type                | 3       |      |        | 3     |    | 3     |    |    |    |    | 3     |    |
| Platoon Ratio               | 1.00    |      |        | 1.00  |    | 1.00  |    |    |    |    | 1.00  |    |
| PF Factor                   | 1.00    |      |        | 1.00  |    | 1.00  |    |    |    |    | 1.00  |    |
| Q1                          | 4.3     |      |        | 0.7   |    | 0.9   |    |    |    |    | 7.1   |    |
| kв                          | 0.4     |      |        | 0.4   |    | 0.4   |    |    |    |    | 0.5   |    |
| Q2                          | 0.5     |      |        | 0.0   |    | 0.1   |    |    |    |    | 0.8   |    |
| Q Average                   | 4.8     |      |        | 0.7   |    | 1.0   |    |    |    |    | 7.9   |    |
| Percentile Back of Queue    | e (95th | perc | entile | )     |    | ,     | ,  |    |    |    | ,     |    |
| fB%                         | 2.0     |      |        | 2.1   |    | 2.1   |    |    |    |    | 1.9   |    |
| Back of Queue               | 9.3     |      |        | 1.5   |    | 2.0   |    |    |    |    | 14.9  |    |
| Queue Storage Ratio         |         |      |        |       |    |       |    |    |    |    |       |    |
| Queue Spacing               | 25.0    |      |        | 25.0  |    | 25.0  |    |    |    |    | 25.0  |    |
| Queue Storage               | 0       |      |        | 0     |    | 0     |    |    |    |    | 0     |    |
| Average Queue Storage Ratio |         |      |        |       |    |       |    |    |    |    |       |    |
| 95% Queue Storage Ratio     |         |      |        |       |    |       |    |    |    |    |       |    |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:07 PM

### SHORT REPORT **General Information** Site Information Analyst SKB SR 222 @ I-40 EB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction 04/18/2011 Fayette County Performed Analysis Year 2034 Time Period AM Peak Period

| Volume and Timing Input            |      |     |      |      |     |        |    |     |          |        |      |     |    |
|------------------------------------|------|-----|------|------|-----|--------|----|-----|----------|--------|------|-----|----|
|                                    |      | EB  |      |      | WE  |        |    |     | NB       | -      |      | SB  |    |
|                                    | LT   | TH  | RT   | LT   | TH  | H RT   | L  | _T_ | TH       | RT     | LT   | TH  | RT |
| Number of Lanes                    | 2    |     | 2    | 2    |     |        |    |     | 2        |        |      |     |    |
| Lane Group                         | L    |     | R    | L    |     |        |    |     | T        |        |      |     |    |
| Volume (vph)                       | 586  |     | 168  | 366  |     |        |    |     | 377      |        |      |     |    |
| % Heavy Vehicles                   | 10   |     | 48   | 10   |     |        |    |     | 48       |        |      |     |    |
| PHF                                | 0.90 |     | 0.90 | 0.90 |     |        |    |     | 0.90     |        |      |     |    |
| Pretimed/Actuated (P/A)            | Α    |     |      | Α    |     |        |    |     | Α        |        |      |     |    |
| Startup Lost Time                  | 2.0  |     | 2.0  | 2.0  |     |        |    |     | 2.0      |        |      |     |    |
| Extension of Effective Green       | 2.0  |     | 2.0  | 2.0  |     |        |    |     | 2.0      |        |      |     |    |
| Arrival Type                       | 3    |     | 3    | 3    |     |        |    |     | 3        |        |      |     |    |
| Unit Extension                     | 3.0  |     | 3.0  | 3.0  |     |        |    |     | 3.0      |        |      |     |    |
| Ped/Bike/RTOR Volume               | 0    | 0   | 0    | 0    | 0   |        | (  | )   | 0        |        | 0    | 0   |    |
| Lane Width                         | 12.0 |     | 12.0 | 12.0 |     |        |    |     | 12.0     |        |      |     |    |
| Parking/Grade/Parking              | N    | 0   | N    | N    | 0   | N      | 1  | V   | 0        | Ν      | Ν    | 0   | Ν  |
| Parking/Hour                       |      |     |      |      |     |        |    |     |          |        |      |     |    |
| Bus Stops/Hour                     | 0    |     | 0    | 0    |     |        |    |     | 0        |        |      |     |    |
| Minimum Pedestrian Time            |      | 3.2 |      |      | 3.2 |        |    |     | 3.2      |        |      | 3.2 |    |
| Phasing Excl. Left                 | 02   | 0   | 3    | 04   |     | NB On  | ly |     | 06       |        | )7   | 0   | 8  |
| Timing $G = 30.0$ $G$              |      | G = |      | G =  |     | G = 30 | .0 | G = |          | G =    |      | G = |    |
| Y = 5 Y                            |      | Y = |      | Y =  |     | Y = 5  |    | Y = |          | Y =    |      | Y = |    |
| Duration of Analysis (hrs) = $0$ . | 25   |     |      |      |     |        |    | Су  | cle Leng | th C = | 70.0 |     |    |

| Baration of 7 that yold (1110)   | 0.20       | <u> </u>   |       |         |         |         |   |  |    |  |
|----------------------------------|------------|------------|-------|---------|---------|---------|---|--|----|--|
| Lane Group Capacity              | y, Control | Delay, and | LOS E | Determi | natio   | n       |   |  |    |  |
|                                  |            | EB         |       | WB      |         | NB      |   |  | SB |  |
| Adjusted Flow Rate               | 651        | 187        | 407   |         |         | 419     |   |  |    |  |
| Lane Group Capacity              | 1366       | 828        | 1366  |         |         | 1047    |   |  |    |  |
| v/c Ratio                        | 0.48       | 0.23       | 0.30  |         |         | 0.40    |   |  |    |  |
| Green Ratio                      | 0.43       | 0.43       | 0.43  |         |         | 0.43    |   |  |    |  |
| Uniform Delay d <sub>1</sub>     | 14.4       | 12.7       | 13.1  |         |         | 13.8    |   |  |    |  |
| Delay Factor k                   | 0.11       | 0.11       | 0.11  |         |         | 0.11    |   |  |    |  |
| Incremental Delay d <sub>2</sub> | 0.3        | 0.1        | 0.1   |         |         | 0.3     |   |  |    |  |
| PF Factor                        | 1.000      | 1.000      | 1.000 |         |         | 1.000   |   |  |    |  |
| Control Delay                    | 14.6       | 12.8       | 13.2  |         |         | 14.0    |   |  |    |  |
| Lane Group LOS                   | В          | В          | В     |         |         | В       |   |  |    |  |
| Approach Delay                   | 1          | 14.2       |       | 13.2    |         | 14.0    |   |  |    |  |
| Approach LOS                     |            | В          |       | В       |         | В       |   |  |    |  |
| Intersection Delay               | 1          | 13.9       |       | Int     | tersect | ion LOS | В |  |    |  |

# **General Information**

Average Back of Queue

| Average back of Queue       | 1       | EB   |         |       | WB |    |    | NB    |    |    | SB |    |
|-----------------------------|---------|------|---------|-------|----|----|----|-------|----|----|----|----|
|                             | LT      | TH   | RT      | LT    | TH | RT | LT | TH    | RT | LT | TH | RT |
| Lane Group                  | L       |      | R       | L     |    |    |    | T     |    |    |    |    |
| Initial Queue/Lane          | 0.0     |      | 0.0     | 0.0   |    |    |    | 0.0   |    |    |    |    |
| Flow Rate/Lane Group        | 651     |      | 187     | 407   |    |    |    | 419   |    |    |    |    |
| Satflow/Lane                | 1641    |      | 1091    | 1641  |    |    |    | 1283  |    |    |    |    |
| Capacity/Lane Group         | 1366    |      | 828     | 1366  |    |    |    | 1047  |    |    |    |    |
| Flow Ratio                  | 0.2     |      | 0.1     | 0.1   |    |    |    | 0.2   |    |    |    |    |
| v/c Ratio                   | 0.48    |      | 0.23    | 0.30  |    |    |    | 0.40  |    |    |    |    |
| I Factor                    | 1.000   |      | 1.000   | 1.000 |    |    |    | 1.000 |    |    |    |    |
| Arrival Type                | 3       |      | 3       | 3     |    |    |    | 3     |    |    |    |    |
| Platoon Ratio               | 1.00    |      | 1.00    | 1.00  |    |    |    | 1.00  |    |    |    |    |
| PF Factor                   | 1.00    |      | 1.00    | 1.00  |    |    |    | 1.00  |    |    |    |    |
| Q1                          | 4.7     |      | 1.3     | 2.7   |    |    |    | 3.0   |    |    |    |    |
| kв                          | 0.5     |      | 0.4     | 0.5   |    |    |    | 0.4   |    |    |    |    |
| Q2                          | 0.4     |      | 0.1     | 0.2   |    |    |    | 0.3   |    |    |    |    |
| Q Average                   | 5.1     |      | 1.4     | 2.9   |    |    |    | 3.2   |    |    |    |    |
| Percentile Back of Queu     | e (95th | perc | entile) | )     | ,  |    |    | •     |    |    |    | ,  |
| fB%                         | 2.0     |      | 2.1     | 2.0   |    |    |    | 2.0   |    |    |    |    |
| Back of Queue               | 10.0    |      | 2.9     | 5.8   |    |    |    | 6.5   |    |    |    |    |
| Queue Storage Ratio         |         |      |         |       |    |    |    |       |    |    |    |    |
| Queue Spacing               | 25.0    |      | 25.0    | 25.0  |    |    |    | 25.0  |    |    |    |    |
| Queue Storage               | 0       |      | 0       | 0     |    |    |    | 0     |    |    |    |    |
| Average Queue Storage Ratio |         |      |         |       |    |    |    |       |    |    |    |    |
| 95% Queue Storage Ratio     |         |      |         |       |    |    |    |       |    |    |    |    |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:08 PM

### SHORT REPORT Site Information **General Information** Analyst SKB SR 222 @ I-40 EB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction Analysis Year 04/18/2011 Fayette County Performed 2034 PM Peak Period Time Period

| Volume and     | l Timing Inpu               | t   |      |     |      |           |     |       |                       |     |         |     |      |     |    |
|----------------|-----------------------------|-----|------|-----|------|-----------|-----|-------|-----------------------|-----|---------|-----|------|-----|----|
|                |                             |     |      | EB  |      |           | WI  |       |                       |     | NB      |     |      | SB  |    |
|                |                             |     | LT   | TH  | RT   | LT        | T   | Н     | RT                    | LT  | TH      | RT  | LT   | TH  | RT |
| Number of L    | anes                        |     | 2    |     | 2    | 2         |     |       |                       |     | 2       |     |      |     |    |
| Lane Group     |                             |     | L    |     | R    | L         |     |       |                       |     | T       |     |      |     |    |
| Volume (vph    | 1)                          |     | 276  |     | 173  | 434       |     |       |                       |     | 250     |     |      |     |    |
| % Heavy Ve     | hicles                      |     | 10   |     | 48   | 10        |     |       |                       |     | 48      |     |      |     |    |
| PHF            |                             |     | 0.90 |     | 0.90 | 0.90      |     |       |                       |     | 0.90    |     |      |     |    |
| Pretimed/Ac    | tuated (P/A)                |     | Α    |     |      | Α         |     |       |                       |     | Α       |     |      |     |    |
| Startup Lost   | Time                        |     | 2.0  |     | 2.0  | 2.0       |     |       |                       |     | 2.0     |     |      |     |    |
| Extension of   | Effective Gre               | en  | 2.0  |     | 2.0  | 2.0       |     |       |                       |     | 2.0     |     |      |     |    |
| Arrival Type   |                             |     | 3    |     | 3    | 3         |     |       |                       |     | 3       |     |      |     |    |
| Unit Extension | on                          |     | 3.0  |     | 3.0  | 3.0       |     |       |                       |     | 3.0     |     |      |     |    |
| Ped/Bike/RT    | OR Volume                   |     | 0    | 0   | 0    | 0         | 0   |       |                       | 0   | 0       |     | 0    | 0   |    |
| Lane Width     |                             |     | 12.0 |     | 12.0 | 12.0      |     |       |                       |     | 12.0    |     |      |     |    |
| Parking/Grad   | de/Parking                  |     | Ν    | 0   | N    | N         | 0   |       | N                     | Ν   | 0       | Ν   | N    | 0   | N  |
| Parking/Hou    | r                           |     |      |     |      |           |     |       |                       |     |         |     |      |     |    |
| Bus Stops/H    | our                         |     | 0    |     | 0    | 0         |     |       |                       |     | 0       |     |      |     |    |
| Minimum Pe     | destrian Time               |     |      | 3.2 |      |           | 3.2 | 2     |                       |     | 3.2     |     |      | 3.2 |    |
| Phasing        | Excl. Left                  |     | 02   |     | 3    | 04<br>G = |     | N     | B Only                |     | 06      |     | )7   | 08  |    |
| Timing         | G = 30.0                    | G = |      | G = | G =  |           |     |       | = 30.0                | G = |         | G = |      | G = |    |
|                | Y = 5 Y =                   |     |      | Y = |      | Y =       |     | Y = 5 |                       |     | Y = Y = |     | = Y= |     |    |
| Duration of A  | on of Analysis (hrs) = 0.25 |     |      |     |      |           |     |       | Cycle Length C = 70.0 |     |         |     |      |     |    |

| Baration of 7 that you (1110)    | 0.20       |            |       | 9,010 2011 | <del>g c</del> |         |   |  |    |  |
|----------------------------------|------------|------------|-------|------------|----------------|---------|---|--|----|--|
| Lane Group Capacity              | y, Control | Delay, and | LOS D | etermi     | natio          | n       |   |  |    |  |
|                                  |            | EB         |       | WB         |                | NB      |   |  | SB |  |
| Adjusted Flow Rate               | 307        | 192        | 482   |            |                | 278     |   |  |    |  |
| Lane Group Capacity              | 1366       | 828        | 1366  |            |                | 1047    |   |  |    |  |
| v/c Ratio                        | 0.22       | 0.23       | 0.35  |            |                | 0.27    |   |  |    |  |
| Green Ratio                      | 0.43       | 0.43       | 0.43  |            |                | 0.43    |   |  | 1  |  |
| Uniform Delay d <sub>1</sub>     | 12.6       | 12.7       | 13.5  |            |                | 12.9    |   |  | 1  |  |
| Delay Factor k                   | 0.11       | 0.11       | 0.11  |            |                | 0.11    |   |  |    |  |
| Incremental Delay d <sub>2</sub> | 0.1        | 0.1        | 0.2   |            |                | 0.1     |   |  |    |  |
| PF Factor                        | 1.000      | 1.000      | 1.000 |            |                | 1.000   |   |  |    |  |
| Control Delay                    | 12.7       | 12.8       | 13.6  |            |                | 13.0    |   |  |    |  |
| Lane Group LOS                   | В          | В          | В     |            |                | В       |   |  |    |  |
| Approach Delay                   |            | 12.8       |       | 13.6       |                | 13.0    |   |  |    |  |
| Approach LOS                     |            | В          |       | В          |                | В       |   |  |    |  |
| Intersection Delay               |            | 13.2       |       | Int        | ersect         | ion LOS | В |  |    |  |

# **General Information**

Average Back of Queue

| Average back of Queue       |         | EB   |         |       | WB |    |    | NB    |    | SB |    |    |
|-----------------------------|---------|------|---------|-------|----|----|----|-------|----|----|----|----|
|                             | LT      | TH   | RT      | LT    | TH | RT | LT | TH    | RT | LT | TH | RT |
| Lane Group                  | L       |      | R       | L     |    |    |    | T     |    |    |    |    |
| Initial Queue/Lane          | 0.0     |      | 0.0     | 0.0   |    |    |    | 0.0   |    |    |    |    |
| Flow Rate/Lane Group        | 307     |      | 192     | 482   |    |    |    | 278   |    |    |    |    |
| Satflow/Lane                | 1641    |      | 1091    | 1641  |    |    |    | 1283  |    |    |    |    |
| Capacity/Lane Group         | 1366    |      | 828     | 1366  |    |    |    | 1047  |    |    |    |    |
| Flow Ratio                  | 0.1     |      | 0.1     | 0.2   |    |    |    | 0.1   |    |    |    |    |
| v/c Ratio                   | 0.22    |      | 0.23    | 0.35  |    |    |    | 0.27  |    |    |    |    |
| I Factor                    | 1.000   |      | 1.000   | 1.000 |    |    |    | 1.000 |    |    |    |    |
| Arrival Type                | 3       |      | 3       | 3     |    |    |    | 3     |    |    |    |    |
| Platoon Ratio               | 1.00    |      | 1.00    | 1.00  |    |    |    | 1.00  |    |    |    |    |
| PF Factor                   | 1.00    |      | 1.00    | 1.00  |    |    |    | 1.00  |    |    |    |    |
| Q1                          | 1.9     |      | 1.3     | 3.2   |    |    |    | 1.8   |    |    |    |    |
| kв                          | 0.5     |      | 0.4     | 0.5   |    |    |    | 0.4   |    |    |    |    |
| Q2                          | 0.1     |      | 0.1     | 0.3   |    |    |    | 0.1   |    |    |    |    |
| Q Average                   | 2.1     |      | 1.4     | 3.5   |    |    |    | 2.0   |    |    |    |    |
| Percentile Back of Queu     | e (95th | perc | entile) | )     | ,  |    |    |       |    |    |    |    |
| fB%                         | 2.0     |      | 2.1     | 2.0   |    |    |    | 2.0   |    |    |    |    |
| Back of Queue               | 4.2     |      | 3.0     | 7.0   |    |    |    | 4.0   |    |    |    |    |
| Queue Storage Ratio         |         |      |         |       |    |    |    |       |    |    |    |    |
| Queue Spacing               | 25.0    |      | 25.0    | 25.0  |    |    |    | 25.0  |    |    |    |    |
| Queue Storage               | 0       |      | 0       | 0     |    |    |    | 0     |    |    |    |    |
| Average Queue Storage Ratio |         |      |         |       |    |    |    |       |    |    |    |    |
| 95% Queue Storage Ratio     |         |      |         |       |    |    |    |       |    |    |    |    |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

\_ \_\_\_

Generated: 4/20/2011 3:09 PM

### SHORT REPORT **General Information** Site Information Analyst SKB SR 222 @ I-40 WB Ramps Intersection Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction 04/18/2011 Fayette County Performed Analysis Year 2034 Time Period AM Peak Period

| Volume and     | l Timing Input     | <u> </u> |            |     |    |      |          |         |     |          |        |      |      |    |
|----------------|--------------------|----------|------------|-----|----|------|----------|---------|-----|----------|--------|------|------|----|
|                |                    |          |            | EB  |    |      | WB       |         |     | NB       |        |      | SB   |    |
|                |                    |          | LT         | TH  | RT | LT   | TH       | RT      | LT  | TH       | RT     | LT   | TH   | RT |
| Number of L    | anes               |          | 2          |     |    | 2    |          | 2       |     |          |        |      | 2    |    |
| Lane Group     |                    |          | L          |     |    | L    |          | R       |     |          |        |      | T    |    |
| Volume (vph    | )                  |          | 808        |     |    | 143  |          | 258     |     |          |        |      | 547  |    |
| % Heavy Ve     | hicles             |          | 48         |     |    | 48   |          | 10      |     |          |        |      | 10   |    |
| PHF            |                    |          | 0.90       |     |    | 0.90 |          | 0.90    |     |          |        |      | 0.90 |    |
| Pretimed/Act   | tuated (P/A)       |          | Α          |     |    | Α    |          |         |     |          |        |      | Α    |    |
| Startup Lost   | Time               |          | 2.0        |     |    | 2.0  |          | 2.0     |     |          |        |      | 2.0  |    |
| Extension of   | Effective Gree     | en       | 2.0        |     |    | 2.0  |          | 2.0     |     |          |        |      | 2.0  |    |
| Arrival Type   |                    |          | 3          |     |    | 3    |          | 3       |     |          |        |      | 3    |    |
| Unit Extension | on                 |          | 3.0        |     |    | 3.0  |          | 3.0     |     |          |        |      | 3.0  |    |
| Ped/Bike/RT    | OR Volume          |          | 0          | 0   |    | 0    | 0        | 0       | 0   | 0        |        | 0    | 0    |    |
| Lane Width     |                    |          | 12.0       |     |    | 12.0 |          | 12.0    |     |          |        |      | 12.0 |    |
| Parking/Grad   | de/Parking         |          | Ν          | 0   | Ν  | N    | 0        | N       | Ν   | 0        | Ν      | Ν    | 0    | Ν  |
| Parking/Hou    | r                  |          |            |     |    |      |          |         |     |          |        |      |      |    |
| Bus Stops/H    | our                |          | 0          |     |    | 0    |          | 0       |     |          |        |      | 0    |    |
| Minimum Pe     | destrian Time      |          |            | 3.2 |    |      | 3.2      |         |     | 3.2      |        |      | 3.2  |    |
| Phasing        | sing Excl. Left 02 |          | 02         | 0   | 03 |      |          | SB Only |     | 06       |        | 07   |      | 8  |
| Timing         | G = 33.0 $G =$     |          | G =<br>Y = |     |    |      | G = 27.0 |         | G = |          | G =    |      |      |    |
|                | Y = 5   Y =        |          |            |     |    | Y =  |          | Y = 5   |     |          |        |      |      |    |
| Duration of A  | Analysis (hrs) =   | = 0.2    | 5          |     |    |      |          |         | Су  | cle Leng | th C = | 70.0 |      |    |

| Lane Group Capacit               | y, Control | Delay, and | LOS D | eterm | ninatio  | n        |    |     |       |  |  |
|----------------------------------|------------|------------|-------|-------|----------|----------|----|-----|-------|--|--|
|                                  |            | EB         |       | WB    |          |          | NB |     | SB    |  |  |
| Adjusted Flow Rate               | 898        |            | 159   |       | 287      |          |    | 608 |       |  |  |
| Lane Group Capacity              | 1116       |            | 1116  |       | 1002     |          |    |     | 1269  |  |  |
| v/c Ratio                        | 0.80       |            | 0.14  |       | 0.29     |          |    |     | 0.48  |  |  |
| Green Ratio                      | 0.47       |            | 0.47  |       | 0.39     |          |    |     | 0.39  |  |  |
| Uniform Delay d <sub>1</sub>     | 15.8       |            | 10.5  |       | 14.8     |          |    |     | 16.2  |  |  |
| Delay Factor k                   | 0.35       |            | 0.11  |       | 0.11     |          |    |     | 0.11  |  |  |
| Incremental Delay d <sub>2</sub> | 4.4        |            | 0.1   |       | 0.2      |          |    |     | 0.3   |  |  |
| PF Factor                        | 1.000      |            | 1.000 |       | 1.000    |          |    |     | 1.000 |  |  |
| Control Delay                    | 20.2       |            | 10.5  |       | 15.0     |          |    |     | 16.5  |  |  |
| Lane Group LOS                   | С          |            | В     |       | В        |          |    |     | В     |  |  |
| Approach Delay                   |            | 20.2       |       | 13.4  |          |          |    |     | 16.5  |  |  |
| Approach LOS                     |            | С          |       | В     |          |          |    |     | В     |  |  |
| Intersection Delay               |            | 17.5       |       | I     | ntersect | tion LOS | 3  |     | В     |  |  |

# **General Information**

Average Back of Queue

|                             |         | EB   |        |       | WB |       |    | NB |    |    | SB    |    |
|-----------------------------|---------|------|--------|-------|----|-------|----|----|----|----|-------|----|
|                             | LT      | TH   | RT     | LT    | TH | RT    | LT | TH | RT | LT | TH    | RT |
| Lane Group                  | L       |      |        | L     |    | R     |    |    |    |    | Т     |    |
| Initial Queue/Lane          | 0.0     |      |        | 0.0   |    | 0.0   |    |    |    |    | 0.0   |    |
| Flow Rate/Lane Group        | 898     |      |        | 159   |    | 287   |    |    |    |    | 608   |    |
| Satflow/Lane                | 1219    |      |        | 1219  |    | 1468  |    |    |    |    | 1727  |    |
| Capacity/Lane Group         | 1116    |      |        | 1116  |    | 1002  |    |    |    |    | 1269  |    |
| Flow Ratio                  | 0.4     |      |        | 0.1   |    | 0.1   |    |    |    |    | 0.2   |    |
| v/c Ratio                   | 0.80    |      |        | 0.14  |    | 0.29  |    |    |    |    | 0.48  |    |
| I Factor                    | 1.000   |      |        | 1.000 |    | 1.000 |    |    |    |    | 1.000 |    |
| Arrival Type                | 3       |      |        | 3     |    | 3     |    |    |    |    | 3     |    |
| Platoon Ratio               | 1.00    |      |        | 1.00  |    | 1.00  |    |    |    |    | 1.00  |    |
| PF Factor                   | 1.00    |      |        | 1.00  |    | 1.00  |    |    |    |    | 1.00  |    |
| Q1                          | 7.7     |      |        | 0.9   |    | 2.2   |    |    |    |    | 4.7   |    |
| kв                          | 0.4     |      |        | 0.4   |    | 0.4   |    |    |    |    | 0.5   |    |
| Q2                          | 1.6     |      |        | 0.1   |    | 0.2   |    |    |    |    | 0.4   |    |
| Q Average                   | 9.2     |      |        | 1.0   |    | 2.3   |    |    |    |    | 5.1   |    |
| Percentile Back of Queu     | e (95th | perc | entile | )     |    |       | ,  |    |    | •  |       |    |
| fB%                         | 1.9     |      |        | 2.1   |    | 2.0   |    |    |    |    | 2.0   |    |
| Back of Queue               | 17.2    |      |        | 2.0   |    | 4.8   |    |    |    |    | 9.9   |    |
| Queue Storage Ratio         |         |      |        |       |    |       |    |    |    |    |       |    |
| Queue Spacing               | 25.0    |      |        | 25.0  |    | 25.0  |    |    |    |    | 25.0  |    |
| Queue Storage               | 0       |      |        | 0     |    | 0     |    |    |    |    | 0     |    |
| Average Queue Storage Ratio |         |      |        |       |    |       |    |    |    |    |       |    |
| 95% Queue Storage Ratio     |         |      |        |       |    |       |    |    |    |    |       |    |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:11 PM

### SHORT REPORT General Information Site Information Analyst SKB Intersection SR 222 @ I-40 WB Ramps Agency or Co. TDOT/TranSystems Area Type All other areas Date Jurisdiction 04/18/2011 Fayette County Performed Analysis Year 2034 Time Period PM Peak Period **Volume and Timing Input** WB ΕB NΒ SB LT TH RT LT TH RT LT TH RT TH RT Number of Lanes 2 2 2 2 L Lane Group L R Τ Volume (vph) 526 132 125 822 48 10 10 % Heavy Vehicles 48 PHF 0.90 0.90 0.90 0.90 Pretimed/Actuated (P/A) Α Α Α Startup Lost Time 2.0 2.0 2.0 2.0 2.0 Extension of Effective Green 2.0 2.0 2.0 3 Arrival Type 3 3 3

Bus Stops/Hour 0 0 0 0 Minimum Pedestrian Time 3.2 3.2 3.2 3.2 Phasing Excl. Left 02 03 04 SB Only 06 80 G = G = G = 30.0G = G = G = 30.0G = G = Timing Y = 5 Y = Y = <u>Y</u> = Y = 5 Y = Y = Y = Duration of Analysis (hrs) = 0.25Cycle Length C = 70.0

3.0

0

12.0

Ν

0

0

3.0

0

12.0

Ν

0

Ν

0

0

Ν

| Direction of Africago (1119) – 0.20 |            |            |       |              |        |   |    |  |       |  |
|-------------------------------------|------------|------------|-------|--------------|--------|---|----|--|-------|--|
| Lane Group Capacity                 | y, Control | Delay, and | LOS D | eterm        | inatio | n |    |  |       |  |
|                                     |            | EB         |       | WB           |        |   | NB |  | SB    |  |
| Adjusted Flow Rate                  | 584        |            | 147   |              | 139    |   |    |  | 913   |  |
| Lane Group Capacity                 | 1015       |            | 1015  |              | 1114   |   |    |  | 1410  |  |
| v/c Ratio                           | 0.58       |            | 0.14  |              | 0.12   |   |    |  | 0.65  |  |
| Green Ratio                         | 0.43       |            | 0.43  |              | 0.43   |   |    |  | 0.43  |  |
| Uniform Delay d <sub>1</sub>        | 15.2       |            | 12.2  |              | 12.1   |   |    |  | 15.8  |  |
| Delay Factor k                      | 0.17       |            | 0.11  |              | 0.11   |   |    |  | 0.23  |  |
| Incremental Delay d <sub>2</sub>    | 0.8        |            | 0.1   |              | 0.1    |   |    |  | 1.0   |  |
| PF Factor                           | 1.000      |            | 1.000 |              | 1.000  |   |    |  | 1.000 |  |
| Control Delay                       | 16.0       |            | 12.3  |              | 12.1   |   |    |  | 16.9  |  |
| Lane Group LOS                      | В          |            | В     |              | В      |   |    |  | В     |  |
| Approach Delay                      |            | 16.0       |       | 12.2         |        |   |    |  | 16.9  |  |
| Approach LOS                        |            | В          |       | В            |        |   |    |  | В     |  |
| Intersection Delay                  |            | 15.8       |       | Intersection |        |   |    |  | В     |  |

Unit Extension

Lane Width

Parking/Hour

Ped/Bike/RTOR Volume

Parking/Grade/Parking

3.0

0

12.0

Ν

0

0

Ν

3.0

0

12.0

0

Ν

0

Ν

# **General Information**

Average Back of Queue

|                             |         | EB   |        |       | WB |       |    | NB |    |    | SB    |    |
|-----------------------------|---------|------|--------|-------|----|-------|----|----|----|----|-------|----|
|                             | LT      | TH   | RT     | LT    | TH | RT    | LT | TH | RT | LT | TH    | RT |
| Lane Group                  | L       |      |        | L     |    | R     |    |    |    |    | Τ     |    |
| Initial Queue/Lane          | 0.0     |      |        | 0.0   |    | 0.0   |    |    |    |    | 0.0   |    |
| Flow Rate/Lane Group        | 584     |      |        | 147   |    | 139   |    |    |    |    | 913   |    |
| Satflow/Lane                | 1219    |      |        | 1219  |    | 1468  |    |    |    |    | 1727  |    |
| Capacity/Lane Group         | 1015    |      |        | 1015  |    | 1114  |    |    |    |    | 1410  |    |
| Flow Ratio                  | 0.2     |      |        | 0.1   |    | 0.1   |    |    |    |    | 0.3   |    |
| v/c Ratio                   | 0.58    |      |        | 0.14  |    | 0.12  |    |    |    |    | 0.65  |    |
| I Factor                    | 1.000   |      |        | 1.000 |    | 1.000 |    |    |    |    | 1.000 |    |
| Arrival Type                | 3       |      |        | 3     |    | 3     |    |    |    |    | 3     |    |
| Platoon Ratio               | 1.00    |      |        | 1.00  |    | 1.00  |    |    |    |    | 1.00  |    |
| PF Factor                   | 1.00    |      |        | 1.00  |    | 1.00  |    |    |    |    | 1.00  |    |
| Q1                          | 4.4     |      |        | 0.9   |    | 0.9   |    |    |    |    | 7.4   |    |
| kв                          | 0.4     |      |        | 0.4   |    | 0.4   |    |    |    |    | 0.5   |    |
| Q2                          | 0.5     |      |        | 0.1   |    | 0.1   |    |    |    |    | 0.9   |    |
| Q Average                   | 5.0     |      |        | 1.0   |    | 1.0   |    |    |    |    | 8.3   |    |
| Percentile Back of Queue    | e (95th | perc | entile | )     | Į. |       |    |    |    |    | · J   |    |
| fB%                         | 2.0     |      |        | 2.1   |    | 2.1   |    |    |    |    | 1.9   |    |
| Back of Queue               | 9.7     |      |        | 2.0   |    | 2.0   |    |    |    |    | 15.5  |    |
| Queue Storage Ratio         |         |      |        |       |    |       |    |    |    |    |       |    |
| Queue Spacing               | 25.0    |      |        | 25.0  |    | 25.0  |    |    |    |    | 25.0  |    |
| Queue Storage               | 0       |      |        | 0     |    | 0     |    |    |    |    | 0     |    |
| Average Queue Storage Ratio |         |      |        |       |    |       |    |    |    |    |       |    |
| 95% Queue Storage Ratio     |         |      |        |       |    |       |    |    |    |    |       |    |

Copyright © 2008 University of Florida, All Rights Reserved

HCS+TM Version 5.4

Generated: 4/20/2011 3:12 PM