Concept Report Form

The Concept Report Form develops an initial project vision, basis of design and report (e.g., the Concept Report) to transition into the subsequent design stages (Stages 1 through 4 in the Project Delivery Network [PDN]). This form summarizes all project components using information to complete the Concept Report.

General Project Information

Project Name	Interstate 24 Westbound - Bridge over Shellmound Rd								
PIN	130900.00								
Route Information	**Route**	**NHS (Y/N)**	**Functional Class**		**City**		**County**		
	I-24 WB	Yes	Rural Interstate				Marion		
Project Information	**Begin Log Mile**	**End Log Mile**	**AADT[1]**	**Design Hour Vol. (DHV)[1]**	**Truck %[1]**	**Design Speed (MPH)**	**Posted Speed (MPH)**	**Base Year**	**Design Year**
	1.29	1.40	1,930	232	2.00	40	30	2026	2046
Project Description & Standard Drawings Used	A field review was held for the above-mentioned project on August 3, 2021. The proposed bridge is to be a 120' long concrete beam bridge with 3 spans and a maximum span of 60'. The typical section on the proposed structure will consist of 2-12' lanes with a 24' inside shoulder, which can accommodate a future travel lane, a 12' outside shoulder, and concrete parapets for an out-to-out width of 61' 3". The proposed finished grade of the bridge will need to be raised approximately 3' to increase the clearance to 16' 6". The roadway centerline will be shifted 18' and the structure centerline will be shifted 24', both to the south. Standard RD11-TS-5A								Project Details
Important Project History or Related Projects	The replacement of the Shellmound Rd Bridge over I-24 EB (Pin# 130902.00) located 0.25 miles south of the proposed I-24 WB Bridge over Shellmound Rd will need to be considered when scheduling construction. Existing bridge specifications: 3 span, 106' long, 40' 4" out-to-out, 15' 6" clearance, 32 tons load limit. Marion County Highway Department is planning to resurface Shellmound Rd in 2023.								
Project Purpose/Need	The need to replace this bridge is due to the present condition of the existing bridge: - Built in 1965. - Sufficiency rating is 74.9 (FAIR) – July 14, 2020 - Typical section does not meet current TDOT standards.								
Major Environmental Considerations	There are no major environmental considerations.								

Multi-Modal Considerations	- Shellmound Road under the proposed bridge will feature a 60' span which is wider than the existing 42' span and will better accommodate pedestrian and bicycle traffic traveling along the shoulder. TDOT Multimodal Project Scoping Manual, Roadway Design Guidelines, MM-TS-1, MM-BPR-1			
Major Project Risks	Utilities: Distribution lines, communications cable			
Concept Estimate and Timeline	**Total Current Project Cost**		**Construction Year Estimate**	Preliminary Estimates
	[redacted]		[redacted]	
	Proposed Construction Year		**Estimated Construction Duration**	
	2027		TBD	

[1] Traffic numbers reflect identified design year

Approvals

Executed for approval of this Concept Report

Steve Allen (Nov 18, 2022 05:19 CST) — Nov 18, 2022

STID Director — Date

The following individuals to execute if a bridge concept report:

APPROVED
By Ted A. Kniazewycz at 6:04 pm, Nov 19, 2022 — 11/19/2022

Structures Director — Date

12/12/2022

Regional Project Development Director — Date

Feb 7, 2023

Bureau Chief of Engineering — Date

PRESTON J ELLIOTT Digitally signed by PRESTON J ELLIOTT Date: 2022.12.12 12:46:04 -06'00'

Bureau Chief of Environment and Planning — Date

Action Checklist			
0SD1 Initiate Concept Report and Request Funding			
Complete	**NA**		**Date Completed**
	✓	Request and Finalize Safety Data	
✓		Request Project Number, PIN, and Task Profile Numbers	10/02/2020
	✓	Coordinate with Long Range Planning	
✓		Request and Finalize Traffic Data	04/26/2021
	✓	Request Preliminary Survey Data	
✓		Initiate Division Reviews	11/29/2021
✓		Schedule Site Review (with appropriate Divisions)	07/09/2021
0EN1 Conduct Environmental Desktop Review			
Complete	**NA**		**Date Completed**
✓		Confirm Environmental Desktop Review is Complete	01/06/2022
0MM1 Conduct Multimodal Review			
Complete	**NA**		**Date Completed**
✓		Confirm Multimodal Review is Complete	09/27/2022
✓		Review Multimodal Considerations & Recommendations	09/27/2022
0TO1 Conduct Initial Traffic Ops/TSMO Review *(include HQ Traffic Ops and Regional Traffic Office)*			
Complete	**NA**		**Date Completed**
✓		Confirm Transportation Systems Management & Operations (TSMO) Alignment & Operations Review is Complete	09/27/2022
	✓	Request Concept Report Review	
0ST1 Develop Structures Recommendations			
Complete	**NA**		**Date Completed**
✓		Confirm Recommended Structure Type for Concept Report is Complete	03/31/2022
✓		Confirm Hydraulic Recommendations for Concept Report is Complete	04/06/2021
0SY1 Provide Preliminary Survey Data			
Complete	**NA**		**Date Completed**
	✓	Confirm Control Ground Survey Set	
	✓	Review Preliminary Survey Data	
	✓	Determine Time to Complete the Aerial Survey	
0GT1 Conduct Preliminary Geotechnical Assessment			
Complete	**NA**		**Date Completed**
	✓	Confirm Geotechnical Division Review is Complete	
0RD1 Provide Roadway Desktop Review			
Complete	**NA**		**Date Completed**
	✓	Confirm Roadway Division Review is Complete	

Action Checklist			
0SD2 Develop Draft Concept Report			
Complete	**NA**		**Date Completed**
	✓	Conduct Intersection and Interchange Evaluation (IIE)	
	✓	Complete Conceptual Signal Warrants	
✓		Develop Draft Conceptual Layouts/Crash Figures for Site Visit	07/06/2021
	✓	Compile Initial Divisional Reviews for Site Visit	
✓		Prepare & Send Site Visit Packet	07/09/2021
✓		Lead Site Visit	08/03/2021
	✓	Initiate Interstate Access Requests (IAR) Concept Coordination with FHWA (if applicable)	
✓		Develop, Compile, and Distribute the Draft Concept Report	11/03/2021
0TO2 Develop TSMO Scope Items *(include HQ Traffic Ops and Regional Traffic Office)*			
Complete	**NA**		**Date Completed**
	✓	Confirm Signal Warrants Analysis is Complete	
	✓	Confirm Lighting Warrants Analysis is Complete	
	✓	Review and Confirm TSMO & ITS Scope and Budget	
0RW1 Complete Preliminary Right-of-Way Estimates			
Complete	**NA**		**Date Completed**
✓		Review and Confirm Preliminary Right-of-Way Cost Estimates	11/03/2021
0UT1 Complete Utility Preliminary Estimates			
Complete	**NA**		**Date Completed**
✓		Review and Confirm Preliminary Utility Estimate	11/03/2021
	✓	Review and Confirm Preliminary Railroad Cost Estimate	
0SD3 Finalize Concept Report			
Complete	**NA**		**Date Completed**
	✓	Compile and Review Initial Risk Assessment	
✓		Finalize Conceptual Layouts	09/27/2022
✓		Develop Environmental Technical Study Area (ETSA)	09/27/2022
✓		Address Comments and Finalize Concept Report	09/29/2022
	✓	Address Comments and Finalize Interstate Access Requests (IAR) Document and Memo (if applicable)	
	✓	Develop Roadway Safety Audit (RSA) No Plans Document	
✓		Submit the final Concept Report for Review and Signatures (as needed; see 0SD3 for additional information)	09/29/2022
	✓	Finalize Document and Upload All Needed Electronic Files	
	✓	Notify the Project Management Director or Assigned Project Manager to Set Up Project (1PM1)	

NA Justification

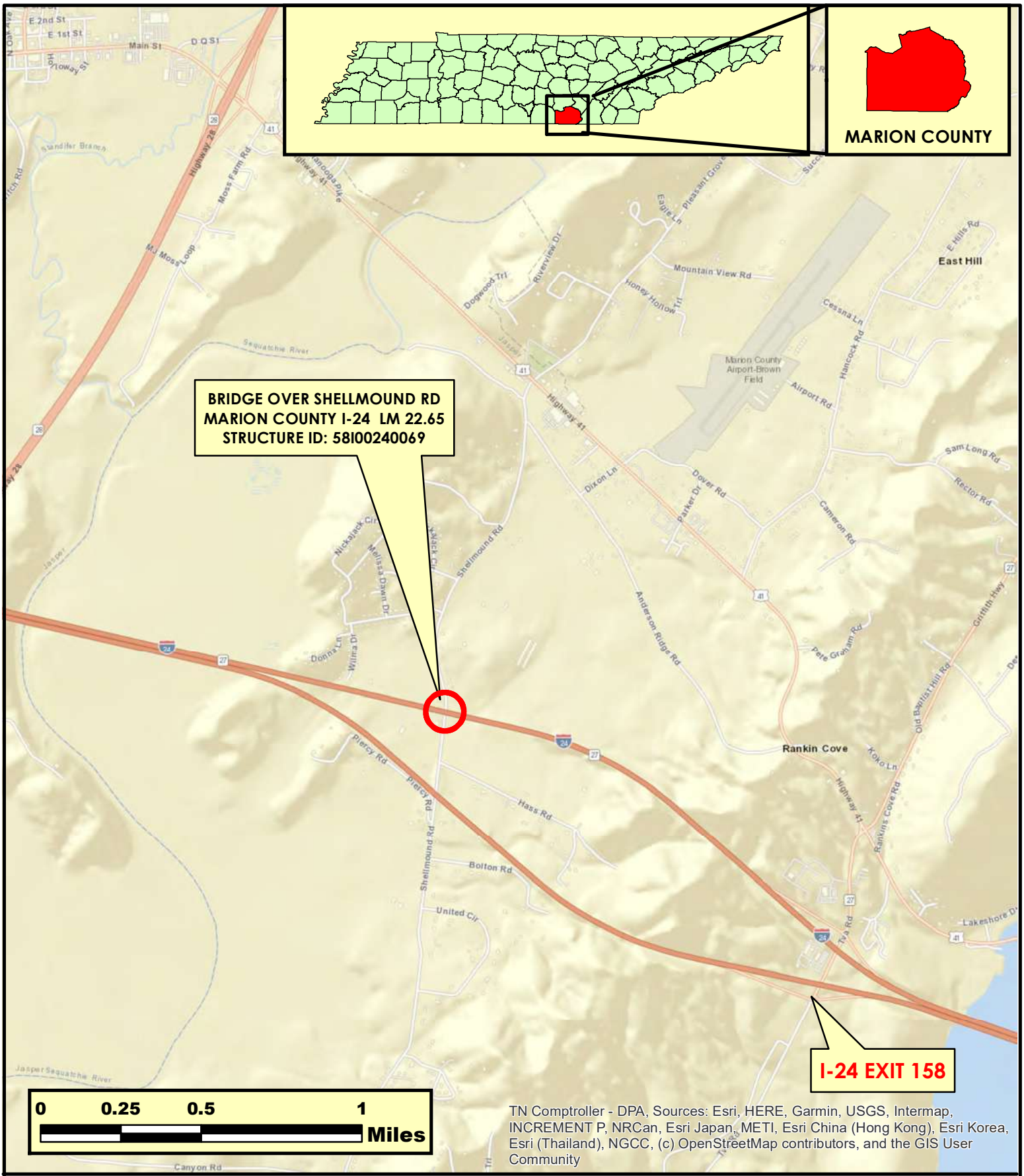
- Conduct Intersection and Interchange Evaluation (IIE) – No interchange within the limits of the project
- Complete Conceptual Signal Warrants – Signal warrants not needed for the low AADT
- Initiate Interstate Access Requests (IAR) Concept Coordination with FHWA (if applicable) – Not applicable
- Confirm Signal Warrants Analysis is Complete - AADT too low for signal warrant
- Review and Confirm TSMO & ITS Scope and Budget – No ITS within project limits
- Review and Confirm Preliminary Railroad Cost Estimate – No railway within project limits
- Address Comments and Finalize Interstate Access Requests (IAR) Document and Memo (if applicable) – Not applicable
- Develop Roadway Safety Audit (RSA) No Plans Document – RSA outside the scope of this BTIR

Concept Report Table of Contents/Attachments		
	Included	NA
One-Page Summary (with project location map)	✓	
Conceptual Layout(s) and Cross Section	✓	
Environmental Technical Study Area (ETSA) Layout	✓	
Concept Cost Estimate (Construction Year Estimate)	✓	
TSMO & ITS Scope and Budget[1]		✓
ROW Form 44-A[1]		✓
Crash Packet[1]		✓
Crash Prediction Analysis[1]		✓
Site Visit Attendee List	✓	
Environmental Desktop Review Form[1]	✓	
Multimodal Considerations & Recommendations[1]	✓	
Existing Structure Summary[1]	✓	
Email or memo containing Structure Type Recommendations[1]		✓
Email or memo containing Hydraulic Recommendations[1]		✓
Hydraulic Data		✓
Intersection and Interchange Evaluation (IIE) Analysis and Summary Form		✓
Traffic Analysis Summary/Tables	✓	
Forecasted Traffic Sheets[1]	✓	
Traffic Modeling (e.g., Synchro, VISSIM, Highway Capacity Software (HCS) Output)[1]		✓
Signal Warrant[1]		✓
Lighting Warrant[1]		✓
Initial Risk Assessment using the Risk Assessment Form		✓
Final Interstate Access Request (IAR) Document and Memo with Letter from STID Director		✓
Road Safety Audit (RSA) No Plans[1]		✓

NA Justification

- TSMO & ITS Scope and Budget* - No ITS at site
- Crash Packet* -Crash packets are not typically provided for Bridge replacements
- Intersection and Interchange Evaluation (IIE) Analysis and Summary Form - No intersection or interchange
- Traffic Modeling (e.g., Synchro, VISSIM, Highway Capacity Software (HCS) Output)* - AADT too low to model
- Signal Warrant* - No intersection to signal warrant
- Road Safety Audit (RSA) No Plans* - RSA outside the scope of this BTIR

* External document to STID

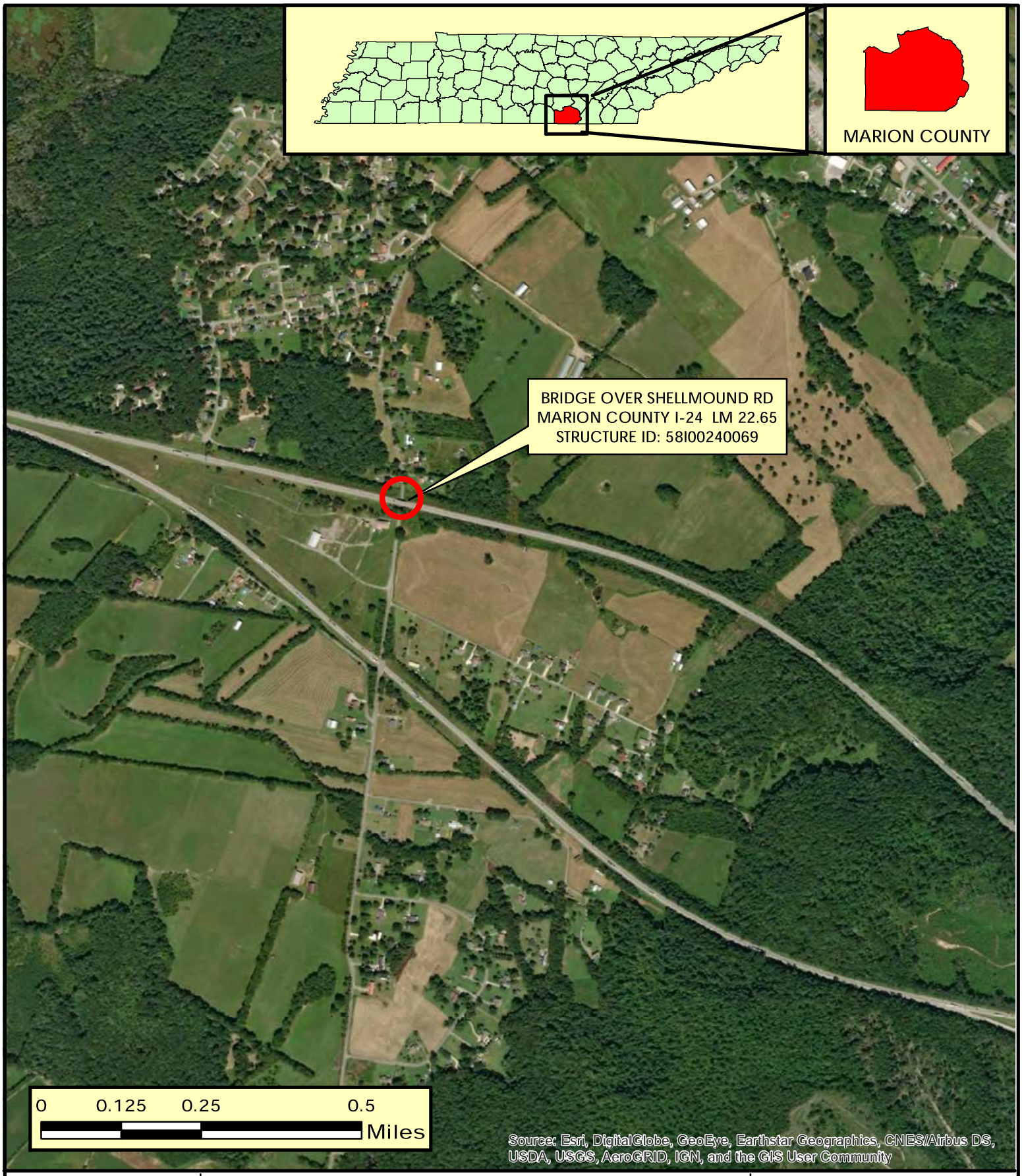


TN Comptroller - DPA, Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

AREA MAP

BRIDGE OVER SHELLMOUND RD
INTERSTATE 24
L.M. 22.65
PIN: 130900.00
MARION COUNTY

TN TDOT Department of Transportation



N

LOCATION MAP

BRIDGE OVER SHELLMOUND RD

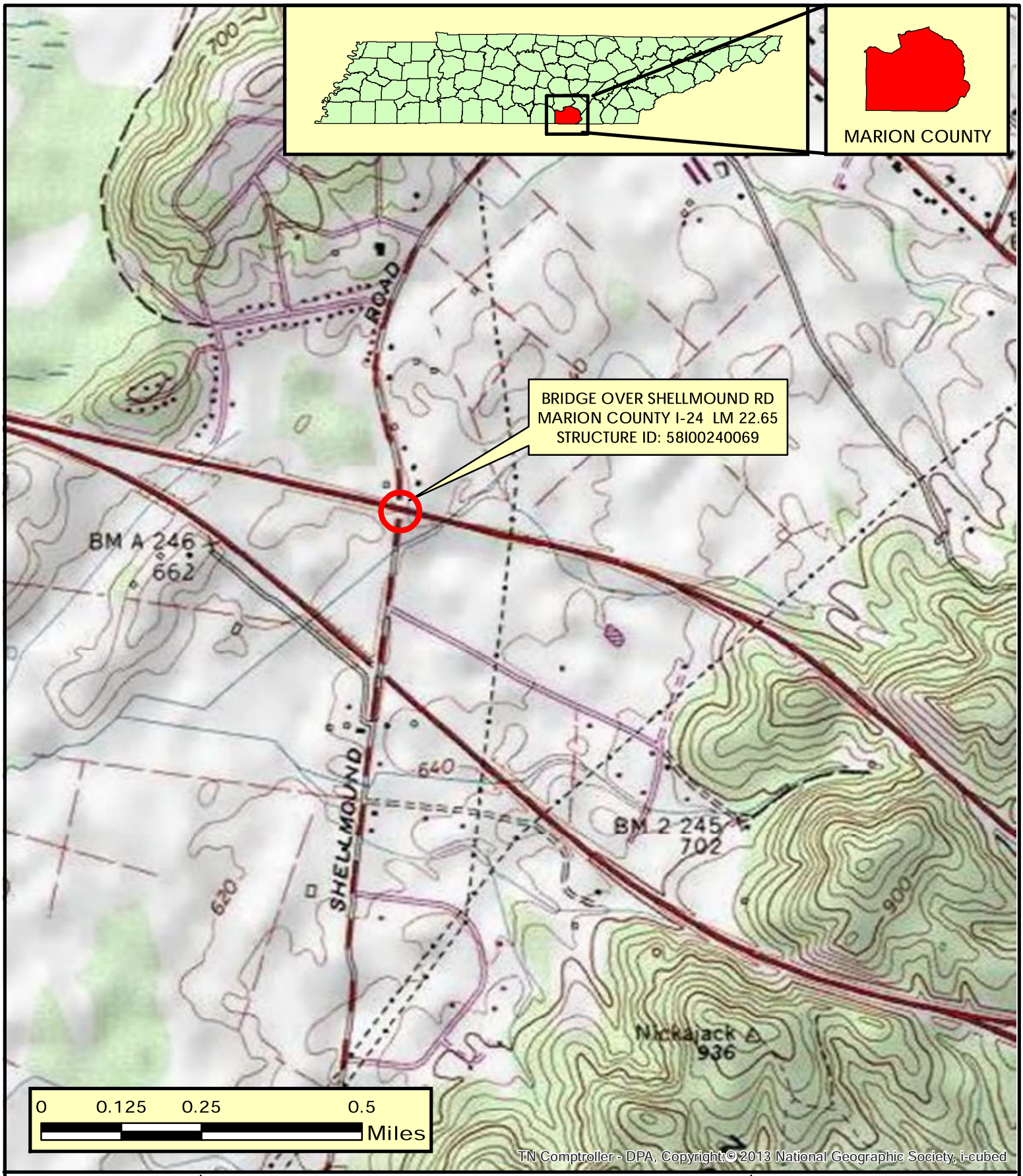
INTERSTATE 24

L.M. 22.65

PIN: 130900.00

MARION COUNTY

TN TDOT Department of Transportation



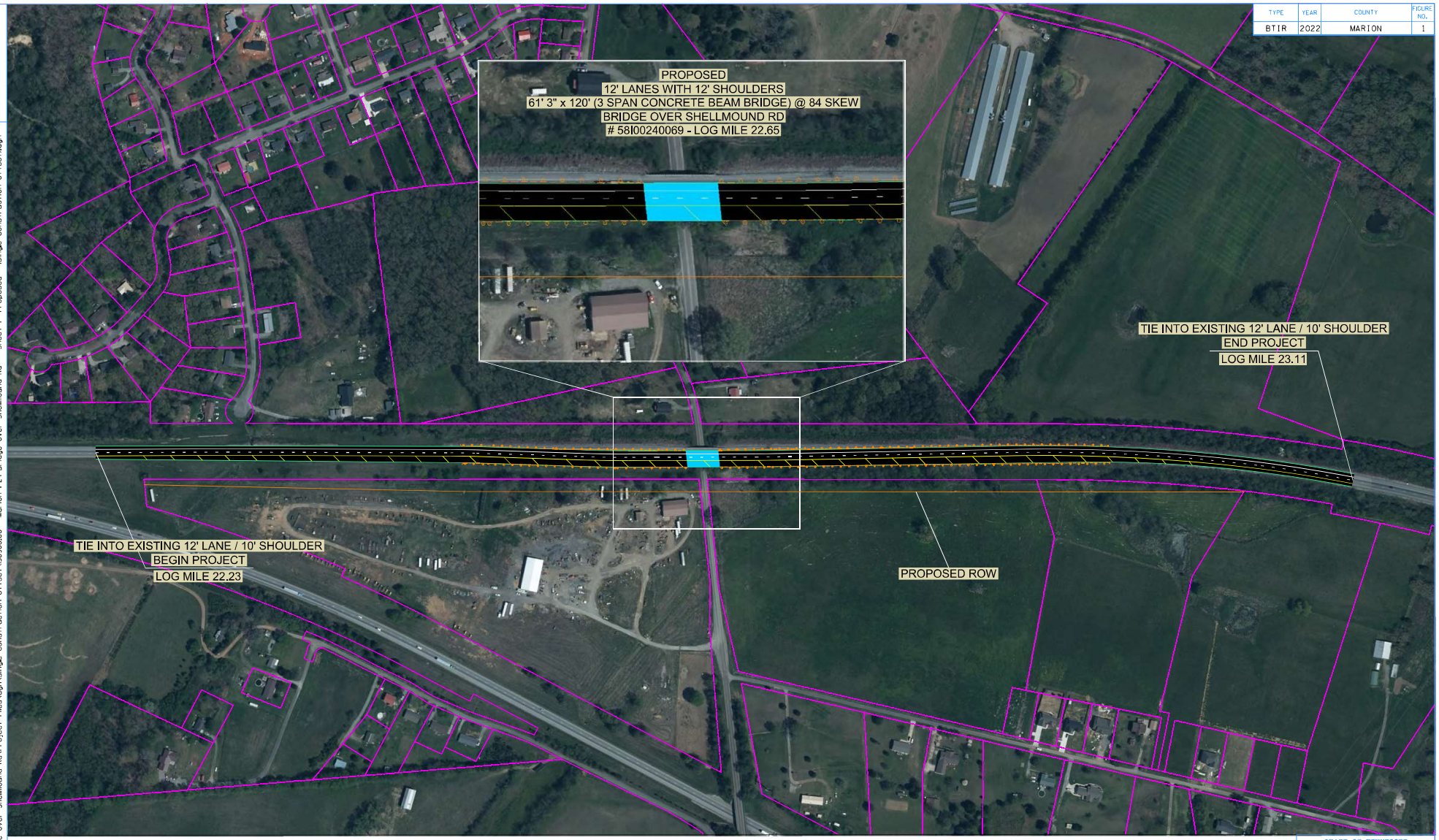
N

TOPOGRAPHIC MAP
BRIDGE OVER SHELLMOUND RD
INTERSTATE 24
L.M. 22.65
PIN: 130900.00
MARION COUNTY

TN TDOT Department of Transportation

TENNESSEE D.O.T.
S.T.I.D.
FILE NO. ____

TYPE	YEAR	COUNTY	FIGURE NO.
BTIR	2022	MARION	1



0' 500' 1000'

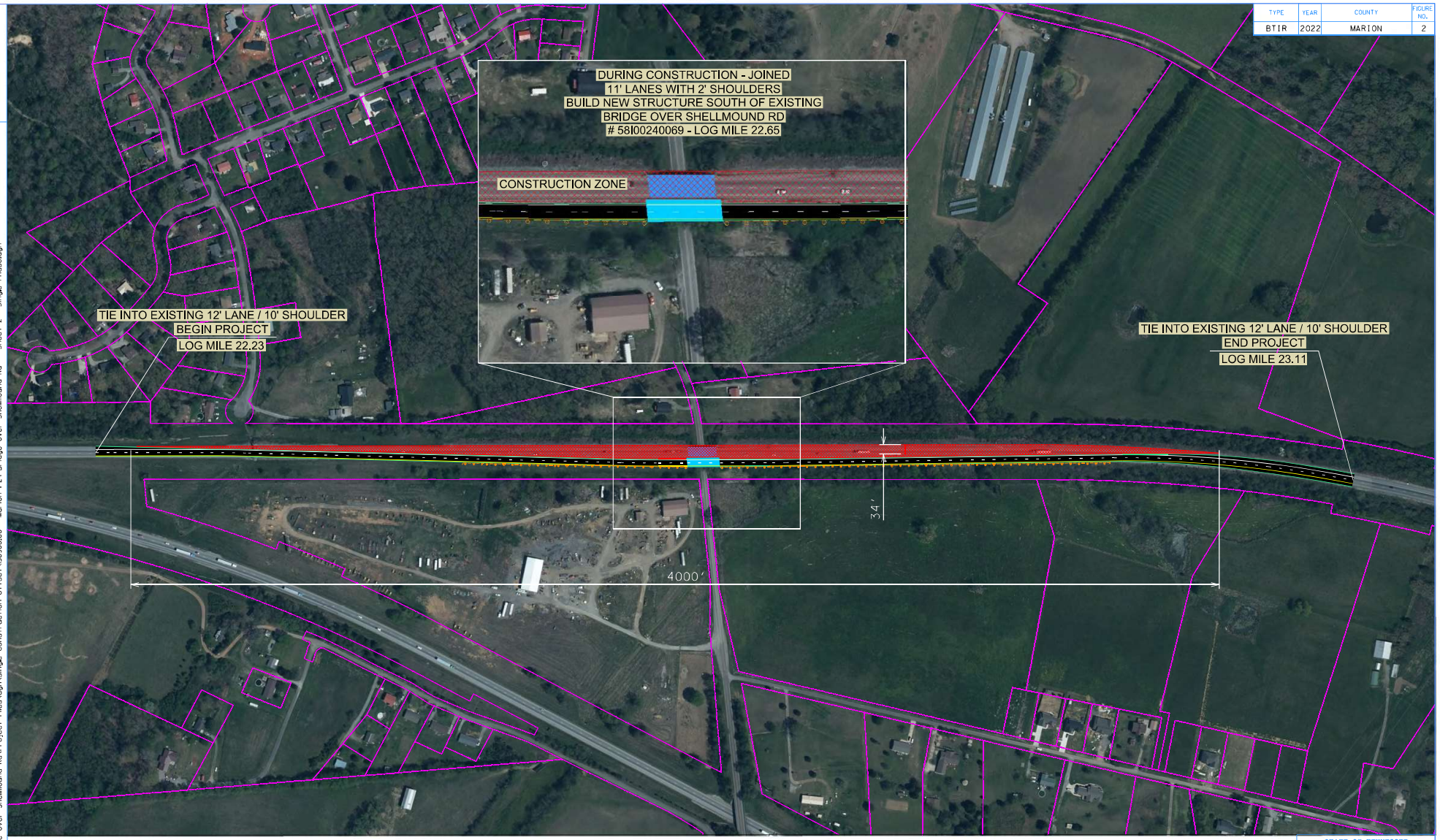
BRIDGE TRANSPORTATION INVESTMENT REPORT

INTERSTATE 24 WESTBOUND
L.M. 22.23 TO L.M. 23.11
MARION COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

FIGURE 1
I-24 WB
L.M. 22.23 to
L.M. 23.11

9/7/2022 1:35:25 AM
X:\Projects\Marion\I-24\Bridge over Shellmound Rd\Project Files\dgn\single construction offset\30900.00 - Marion I-24 Bridge over Shellmound Rd - Sheet 1- Proposed - single construction offset.dgn



TYPE	YEAR	COUNTY	FIGURE NO.
BTIR	2022	MARION	2

TENNESSEE D.O.T.
S.T.I.D.
FILE NO.

0' 500' 1000'

BRIDGE TRANSPORTATION INVESTMENT REPORT

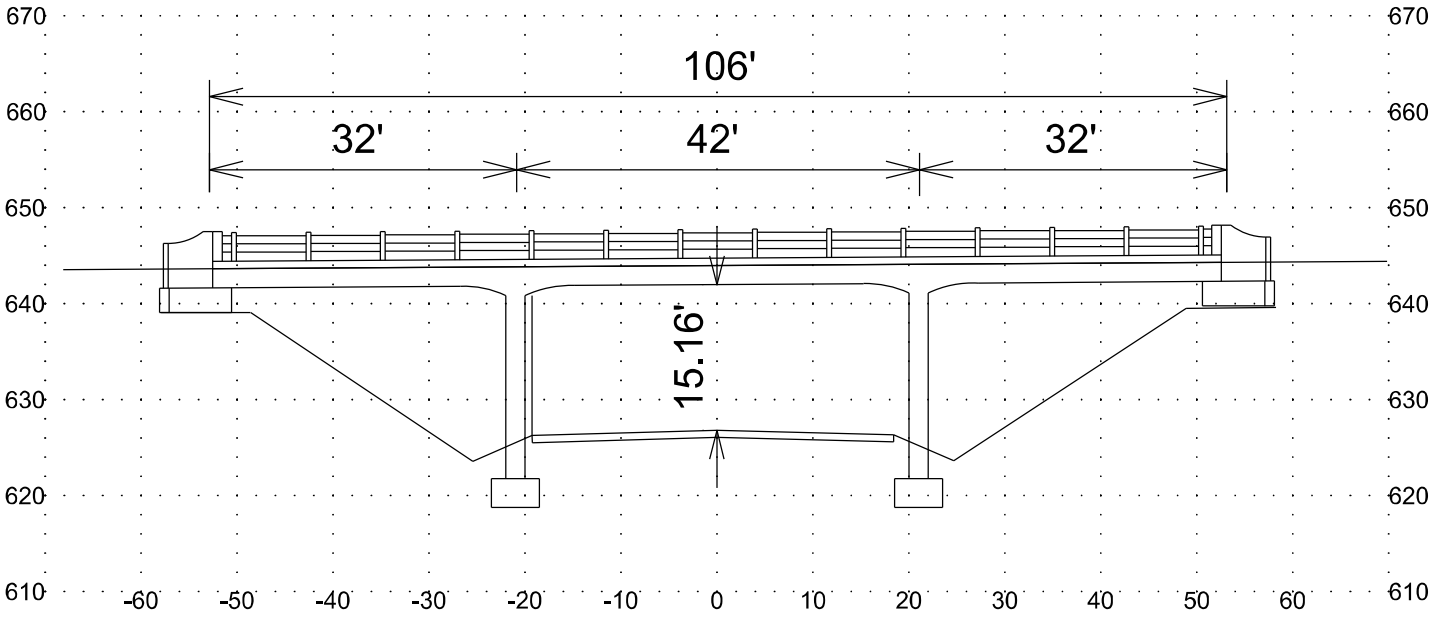
INTERSTATE 24 WESTBOUND
L.M. 22.23 TO L.M. 23.11
MARION COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
S.T.I.D.

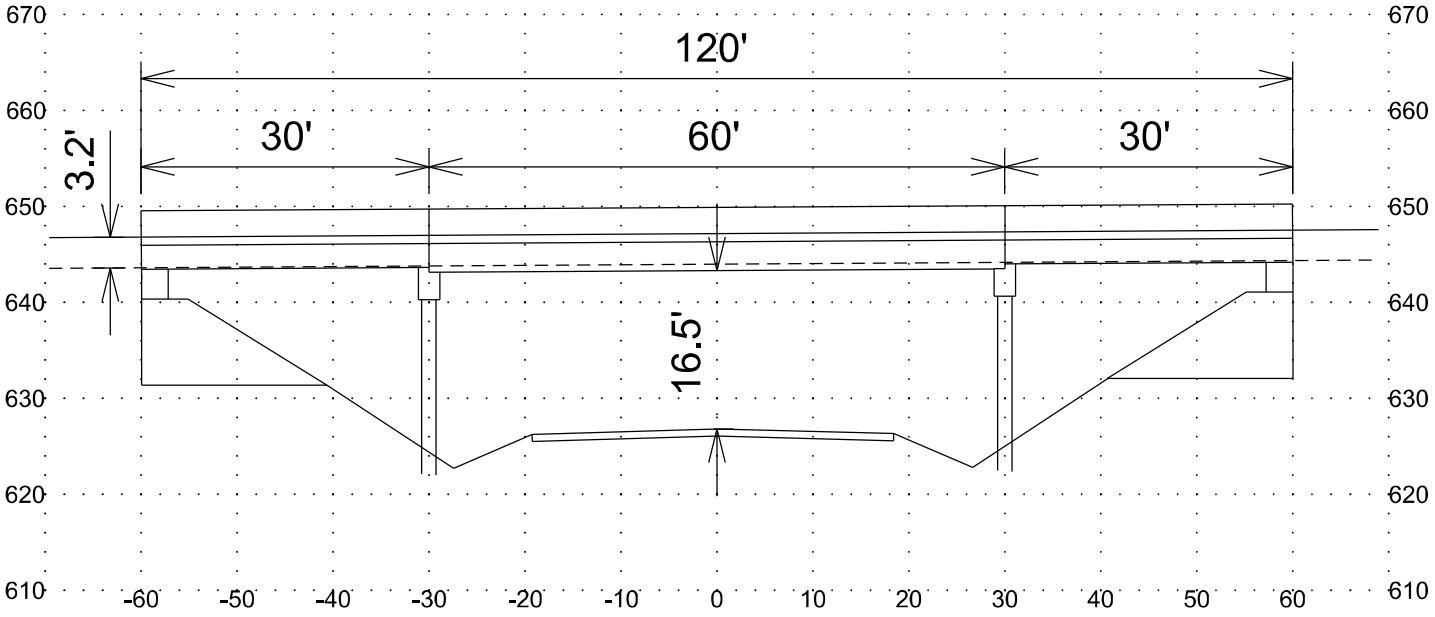
FIGURE 2
I-24 WB
L.M. 22.23 to
L.M. 23.11

9/7/2022 2:33:33 PM
X:\Projects\Marion\I-24\Bridge over Shellmound Rd\Project Files\dgn\single construction offset\30900.00 - Marion I-24 Bridge over Shellmound Rd - Sheet 2 - Single Phase.dgn

EXISTING STRUCTURE



PROPOSED STRUCTURE



0' 10' 20' 30'

SCALE: 1" = 20'

BRIDGE PROFILE

I-24 WESTBOUND

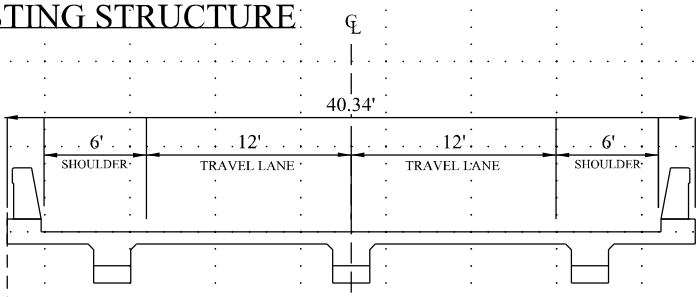
BRIDGE OVER SHELLMOUND RD - L.M. 22.65

BRIDGE ID: 58I00240069

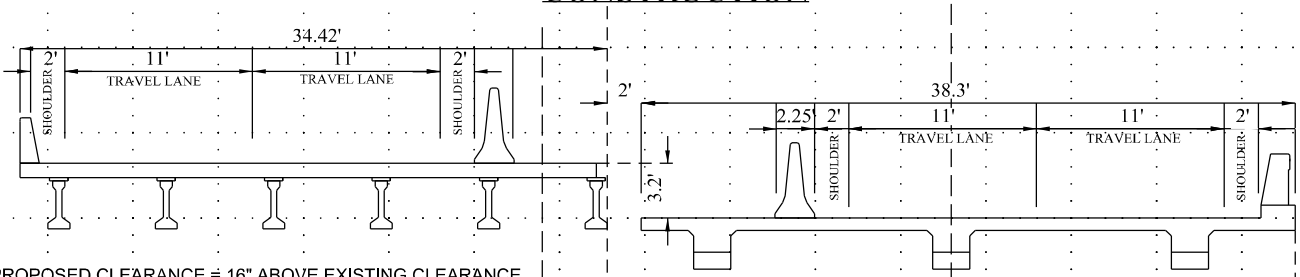
MARION COUNTY, TN

FACING WEST IN DIRECTION OF TRAVEL ALONG WESTBOUND I-24

EXISTING STRUCTURE

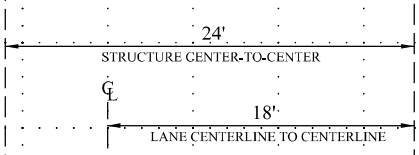


CONSTRUCTION

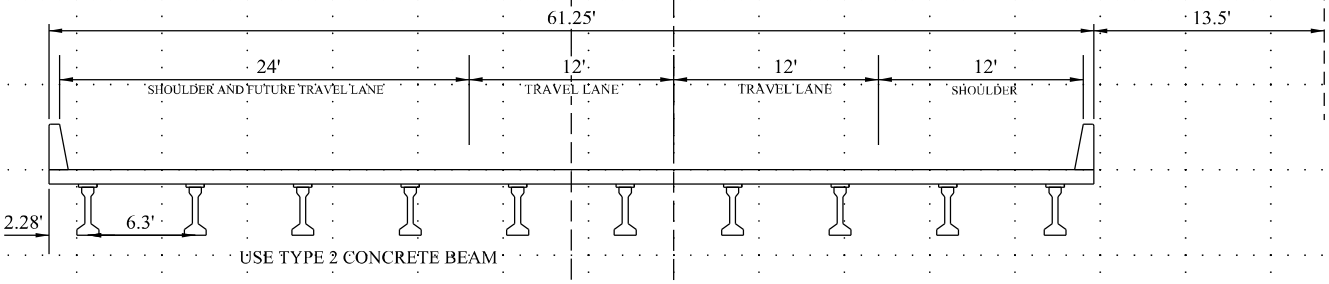


PROPOSED CLEARANCE = 16" ABOVE EXISTING CLEARANCE

PROPOSED GRADE = 3.2' ABOVE EXISTING GRADE



PROPOSED COMPLETED



USE TYPE 2 CONCRETE BEAM

0' 5' 10' 15'

SCALE: 1" = 10'

STAGE CONSTRUCTION DETAIL

I-24 WESTBOUND - L.M. 22.65

BRIDGE OVER SHELLMOUND RD

BRIDGE ID: 58I00240069

MARION COUNTY, TN

BRIDGE TRANSPORTATION INVESTMENT REPORT (TIR)

MARION COUNTY
I-24 WB
LM 22.65

LOCATION			
Bridge #:	58I00240069	Feature Crossed:	Shellmound Rd
Road Name:	I-24 WB	Log mile:	22.65
Route ID:	0A966	System:	State Highway Agency
City:	Jasper	Functional Class:	Rural Interstate
County:	Marion		
PIN:	130900.00		

ROADWAY		
	Existing	**Proposed (Preliminary Design Estimate)**
Design Standard		RD11-TS-5A
Route Characteristics		
AADT:	27,400	32,880
AADT Year:	2026	2046
Terrain:	Flat	Flat
No. Lanes:	2	2
Speed(Posted):	75	70
Speed (Design):		80
Approach Character.		
Lane Width (ft):	12	12
Shoulder Width (ft):	4' outside / 10' inside (6' over structure)	10' (12' over structure)
ROW Width (ft):	200'	250'
ROW Tracts Affected		2
ROW Required (acre)		3.0
Cross Section Width (ft):	24/36/200	24/60/250
Western Approach Length (ft)		2370
Eastern Approach Length (ft):		2160
Alignment:	Centerline	Offset Bridge Centerline 24' (Offset Lane 18')
Grade:	N/A	raise 3.2'
Surface Material:	Asphalt Concrete	Asphalt Concrete
App. Lower Than Structure	NO	NO
Utilities (list)	above ground communication utilities run under bridge	
Comments		

BRIDGE TRANSPORTATION INVESTMENT REPORT (TIR)

MARION COUNTY
I-24 WB
LM 22.65

STRUCTURE		
	Existing	**Proposed (Preliminary Design Estimate)**
Bridge Characteristics		
Year Built	1965	
Load Limit	32 tons	
Sufficiency Rating	74.9 (FAIR)	
Skew	84	84
Structure Type	Concrete Deck Girder	Type 2 Concrete Beam
Structures in Channel	YES	YES
Length (ft)	106'	120'
No. Spans (App./Main)	3 Main (42' max span)	3 Main (60' max span)
Width (curb to curb) (ft)	36.25'	60'
Width (o to o) (ft)	40.3'	61.25'
Sidewalks on Structure	NO	NO
Superstructure Depth (in)	81"/69"	73" / 79"
Girder Depth (in)	36"/24"	30" / 36"
Finish Grade-Low Girder (in)	45"/33"	40" / 46"
Bridge Rail Type	Concrete parapet	Concrete barrier
Bridge Rail Height (ft)	36"	33"
Indication Overtopping	NO	
Local Scour	NO	
Obstructions	NO	
Other Structures	Existing Bridge clearance is 15' 2". TDOT Std Minimum clearance is 16' 6". Clearance under the proposed bridge will be increased 16", which will raise the proposed roadway 3' 2".	
Comments		

BRIDGE TRANSPORTATION INVESTMENT REPORT (TIR)

MARION COUNTY
I-24 WB
LM 22.65

MAINTENANCE OF TRAFFIC	
Method of Maintaining Traffic	stage construct
Description	Phase One: Build 34.42' of new structure south of existing. Phase 2: Shift both lanes of traffic onto new bridge. Demolish remaining existing stucture and complete proposed bridge.
Comments	

BRIDGE TRANSPORTATION INVESTMENT REPORT (TIR)

MARION COUNTY
I-24 WB
LM 22.65

SITE VISIT ATTENDEES			DATE: 8/3/2021
Name	Organization	Phone	Email
Michael Cloud	TDOT - STID	615-532-7696	michael.cloud@tn.gov
Michael Gilbert	TDOT - STID	615-741-0772	michael.gilbert@tn.gov
David Duncan	TDOT - STID	615-532-6131	david.duncan@tn.gov
Alan Wolfe	R2 - Traffic	423-510-1139	Alan.Wolfe@tn.gov
Chester Sutherland	R2 - ETO	423-510-1229	Chester.Sutherland@tn.gov
Marykate Collins	R2 - Traffic	423-510-1139	marykate.collins@tn.gov
Ann Casseus	R2- Survey	423-510-1233	Ann.Casseus@tn.gov
Jackson Collette	R2- Traffic	423-510-1139	Jackson.Collette@tn.gov
Tami Johnson-Praino	R2 - Survey	423-510-1233	Tami.Johnson-Praino@tn.gov

North of Bridge Facing south from Shellmound Rd

Northern Edge of Bridge

Closeup of damage under bridge

Closeup of damage under bridge

Underside of bridge looking east

Underside of bridge looking west (featuring utilities)

South edge of bridge from Shellmound Rd

Drainage feature on Shellmound Rd

Eastern Approach Looking West

On Bridge Looking North

On Bridge Looking South

Western Approach Looking East

CHECK LIST OF DETERMINANTS FOR LOCATION STUDY

If any of the following facilities or ESE categories are located within the project area or corridor, place an "x" in the blank opposite the item. Where more than one alternate is to be considered, place its letter designation in the blank.

1.	Agricultural land usage	✓
2.	Airport (existing or proposed)	
3.	Commercial area, shopping center	
4.	Floodplains	
5.	Forested land	
6.	Historical, cultural, or natural landmark	✓
7.	Industrial park, factory	
8.	Institutional usages	
	a. School or other educational institution	
	b. Church or other religious institution (Cemetery)	
	c. Hospital or other medical facility	
	d. Public building, e.g., fire station	
	e. Defense installation	
9.	Recreation usages	
	a. Park or recreational area	
	b. Game preserve or wildlife area	
10.	Residential establishment	✓
11.	Urban area, town, city, or community	
12.	Waterway, lake, pond, river, stream, spring	
	Permit required: Coast Guard	
	Section 404	
	TVA Section 26a review	
	NPDES	
	Aquatic Resource Alteration	
13.	Other	✓
14.	Location coordinated with local officials	
15.	Railroad crossings	
16.	Hazardous materials site	

PIN 130900.00

I-24

Marion County

Region 2

NEPA Comments

If they're taking 2.5 acres of ROW, this project will be a D-List and will require and additional 4-weeks for preparation (18-weeks in total).

On the southwest corner of the bridge, it looks like there may be one relocation of a business, CCR Heavy Equipment. The proposed ROW gets close to a large building of CCR.

TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

PROJECT NO.: 58100-0186-44 ROUTE: I-24 WESTBOUND
COUNTY: MARION CITY:
PROJECT PIN NUMBER: 130900.00
PROJECT DESCRIPTION: BRIDGE OVER SHELLMOUND ROAD @ L.M. 22.65.

DIVISION REQUESTING:

		PAVEMENT DESIGN	☐
MAINTENANCE	☐	STRUCTURES	☐
S.T.I.D.	☒	SURVEY & ROADWAY DESIGN	☐
PROG. DEVELOPMENT & ADM.	☐	TRAFFIC SIGNAL DESIGN	☐
PUBLIC TRANS. & AERO.	☐	OTHER	☐

YEAR PROJECT PROGRAMMED FOR CONSTRUCTION: 2026
PROJECTED LETTING DATE:

TRAFFIC ASSIGNMENT:

BASE YEAR		DESIGN YEAR					DESIGN ROADWAY % TRUCKS		DESIGN AVERAGE DAILY LOADS	
AADT	YEAR	AADT	DHV	%	YEAR	DIR.DIST.	DHV	AADT	FLEX	RIGID
27,400	2026	32,880	2,630	8	2046	60-40	20	30		

REQUESTED BY: NAME MICHAEL CLOUD DATE 4/26/21
DIVISION S.T.I.D.
ADDRESS 1000 J. K. POLK BUILDING
NASHVILLER TN 37243

REVIEWED BY: DATE
TRANSPORTATION MANAGER 1
SUITE 1000, JAMES K. POLK BUILDING

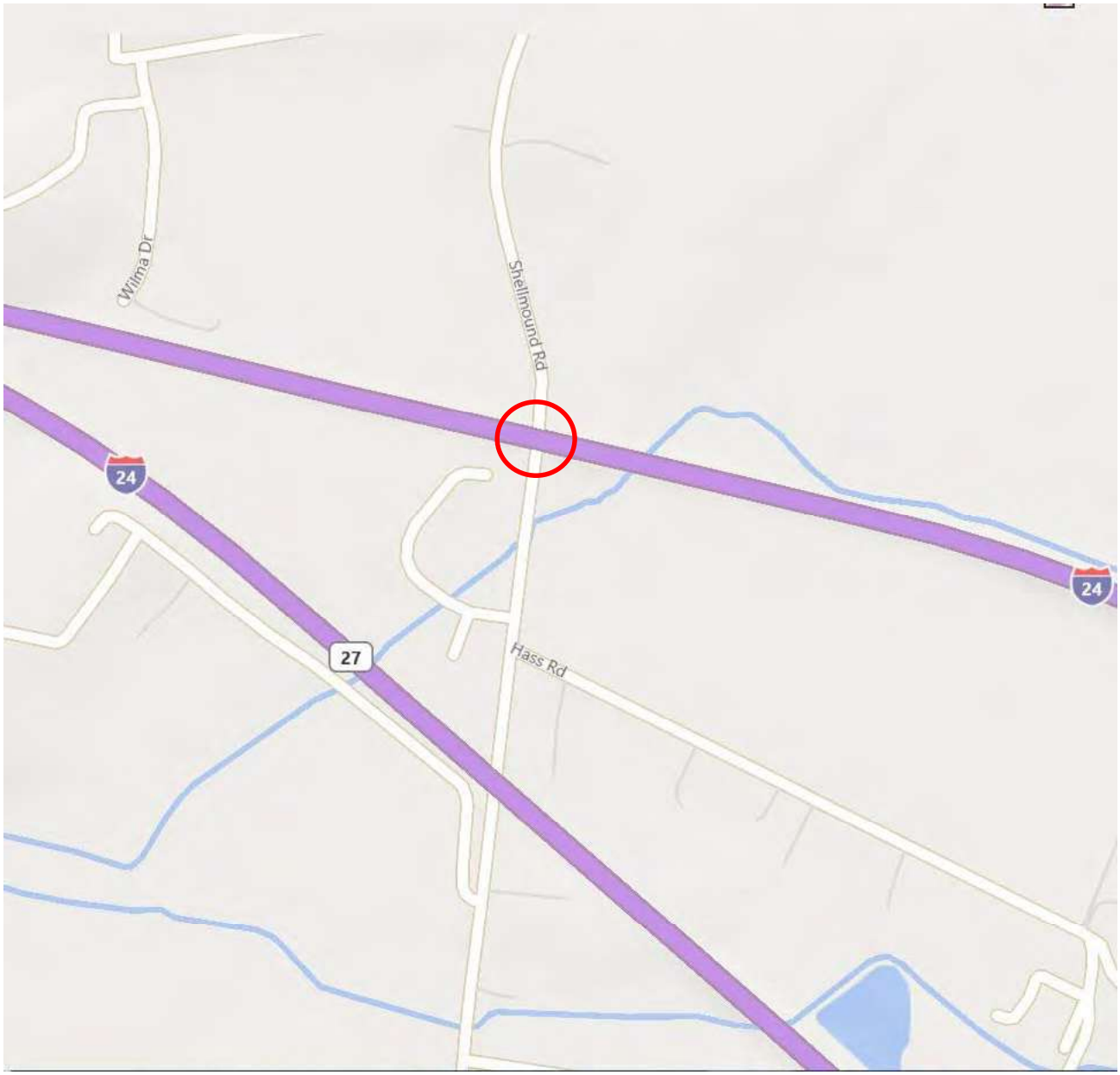
APPROVED BY: TONY ARMSTRONG Tony Armstrong DATE 4/26/2021
TRANSPORTATION MANAGER 2
SUITE 1000, JAMES K. POLK BUILDING

COMMENTS:

THIS TRAFFIC IS BASED ON A 2019 CYCLE COUNT. THE DESIGN YEAR TRAFFIC IS BASED ON GROWTH RATE FROM THE ADAM COMPUTER PROGRAM.

DHV'S ARE NOT REQUIRED FOR SIDE ROADS LESS THAN 1000 AADT.

NOTE: FOR BRIDGE REPLACEMENT PROJECTS, ADLs ARE NOT REQUIRED FOR ADTs OF 1000 OR LESS AND PERCENTAGE OF TRUCKS OF 7% OR LESS.
SEE ATTACHMENTS FOR TURNING MOVEMENTS AND/OR OTHER DETAILS. (REV. 3/1/21)



Marion County

I-24 Westbound Bridge over

Shellmound Road @ L.M. 22.65