TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION INVESTMENT REPORT
IMPROVE Act

State Route 87
Bridge over Overflow,
Log Mile 3.88 Lauderdale County
PIN 124637.00

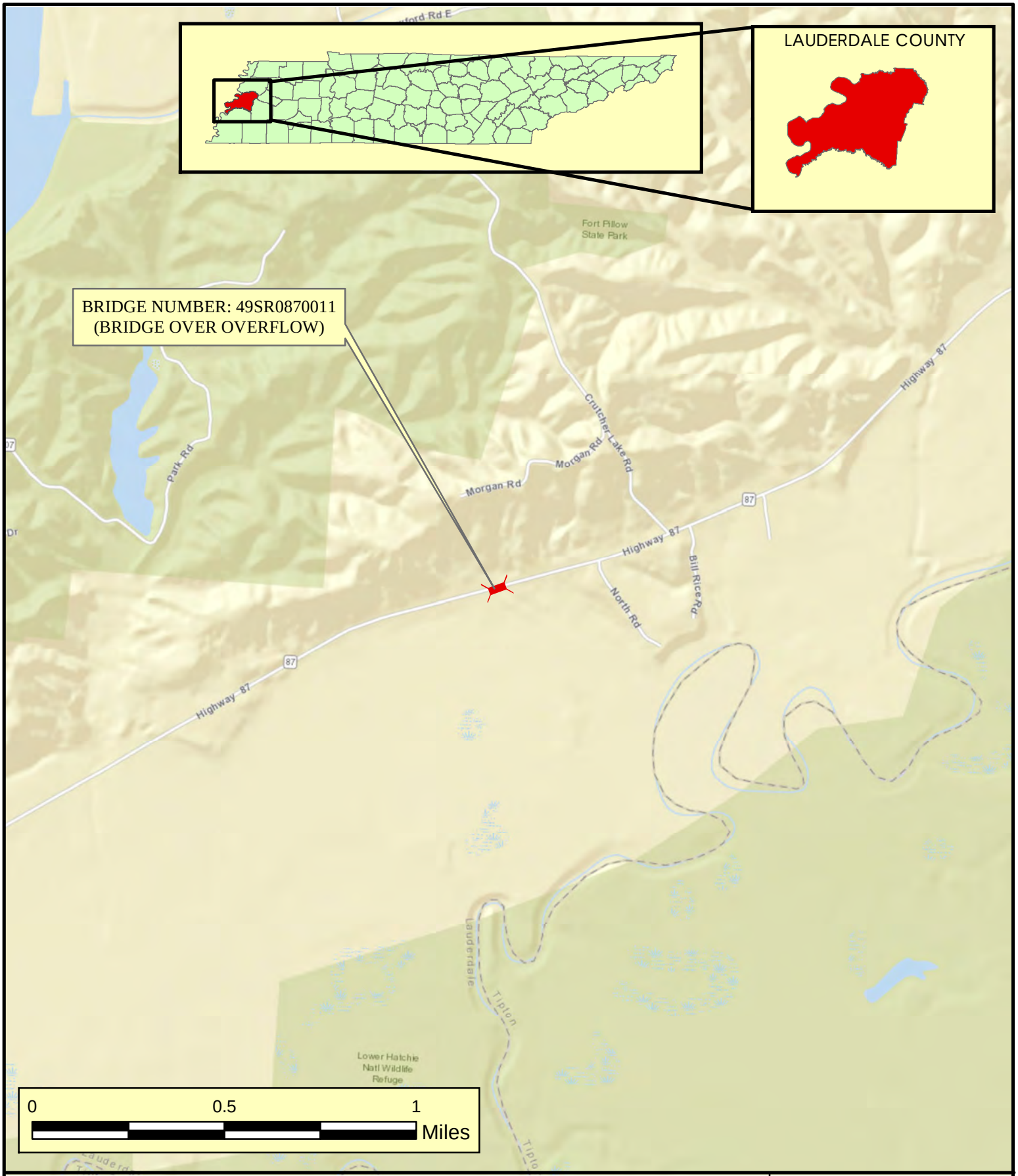
PREPARED BY KCI TECHNOLOGIES INC. FOR THE TENNESSEE DEPARTMENT OF TRANSPORTATION

Approved by _____ *Date* 04.02.18
Chief of Environment and Planning

Approved by _____ *Date* 4/2/18
Deputy Commissioner and Chief Engineer

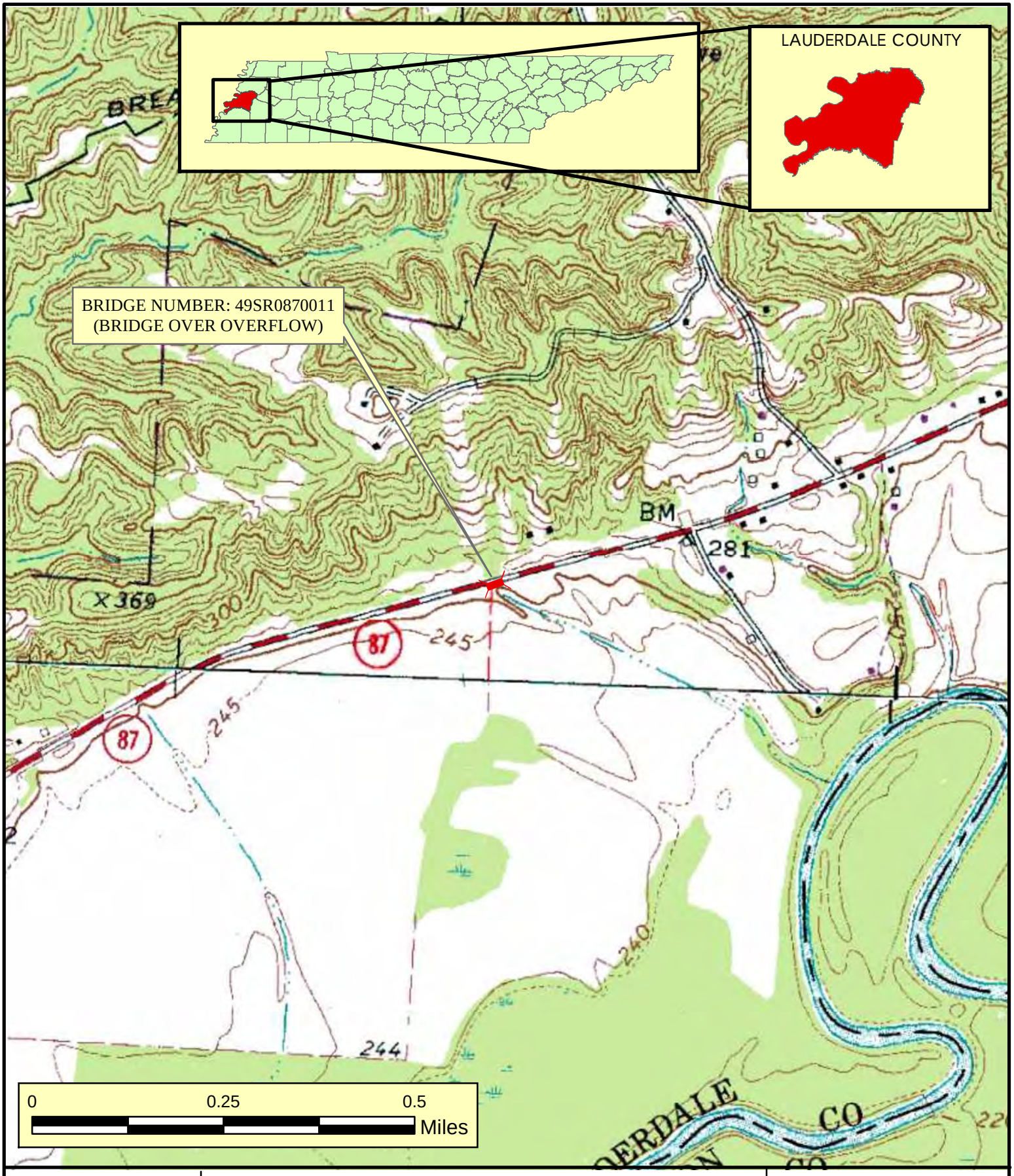
Approved by:	Signature	DATE
TRANSPORTATION DIRECTOR STRATEGIC TRANSPORTATION INVESTMENTS DIVISION		3-26-18
ENGINEERING DIRECTOR DESIGN DIVISION	Tabitha S. Cavaness	03/22/18
ENGINEERING DIRECTOR STRUCTURES DIVISION		3/27/18

This document is covered by 23 USC § 409 and its production pursuant to fulfilling public planning requirements does not waive the provisions of § 409.



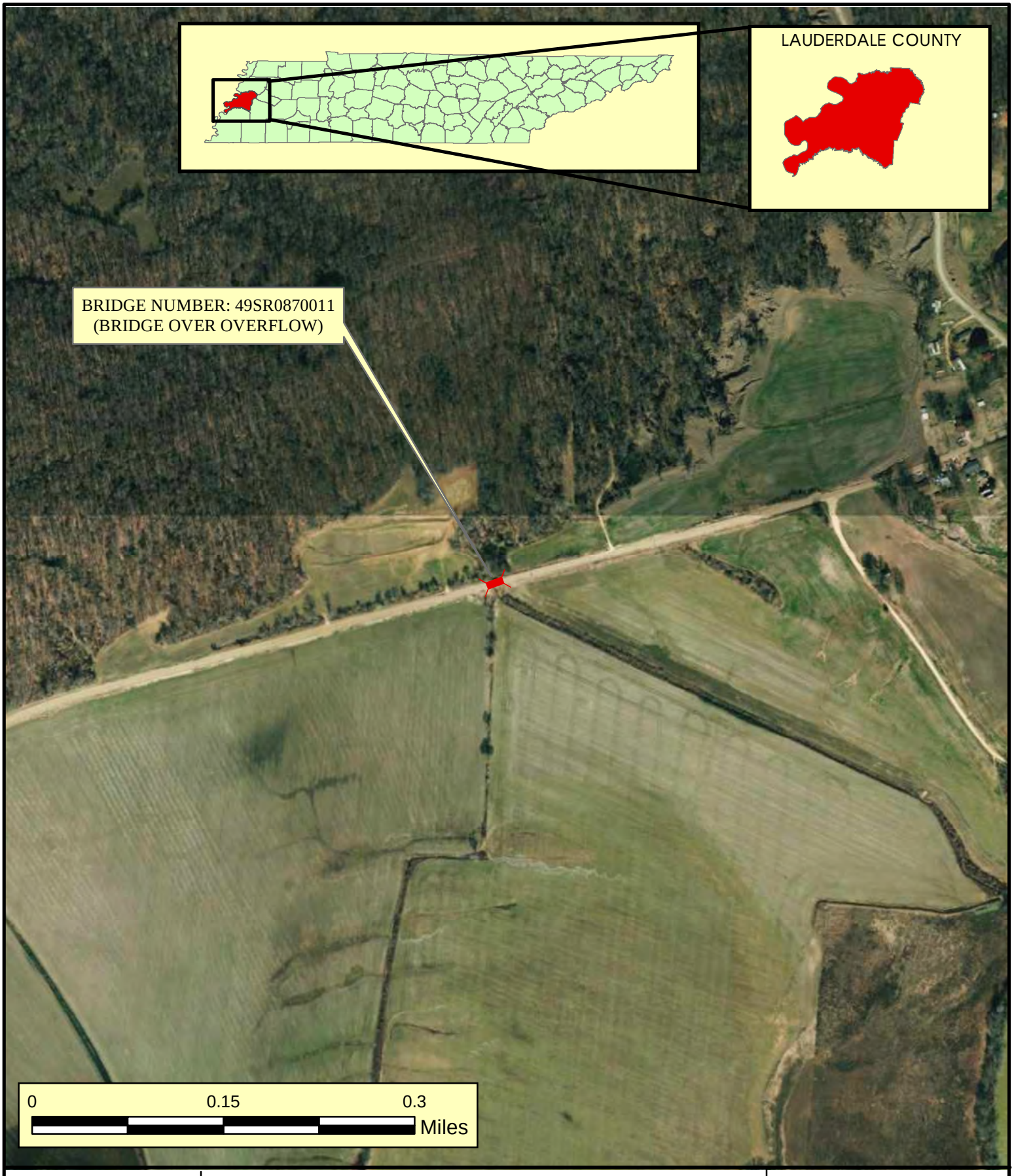
AREA MAP
BRIDGE TIR
STATE ROUTE 87 (SR087)
BRIDGE OVER OVERFLOW (LM 3.88)
LAUDERDALE COUNTY

TN TDOT Department of Transportation



TOPO MAP
BRIDGE TIR
STATE ROUTE 87 (SR087)
BRIDGE OVER OVERFLOW (LM 3.88)
LAUDERDALE COUNTY

TN TDOT Department of Transportation



PROJECT MAP
BRIDGE TIR
STATE ROUTE 87 (SR087)
BRIDGE OVER OVERFLOW (LM 3.88)
LAUDERDALE COUNTY

TN TDOT Department of Transportation

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
SUITE 1000, JAMES K. POLK BUILDING
505 DEADERICK STREET
NASHVILLE, TN 37243
(615) 741-2208

JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

MEMORANDUM

TO: Steve Allen, Transportation Director
Strategic Transportation Investments Division

FROM: David Duncan P.E., C.E. Manager 1
Strategic Transportation Investments Division

DATE: March 14, 2018

SUBJECT: TIR Field Review (IMPROVE Act)
State Route 87 (SR087), Bridge over Overflow
Bridge ID: 49SR0870011
Log Mile 3.88
Lauderdale County
PIN: 124637.00

A field review was held for the above-mentioned project on January 11, 2018.

The existing structure, built in 1986, is a single span steel I-beam bridge with a timber deck and asphalt overlay crossing an overflow of the Hatchie River. The structure has an out-to-out width of 28 feet 6 inches. The overall structure length is 29 feet, and the sufficiency rating for this structure is 40.7 based on the Bridge Inspection Report from April 5, 2016.

The discharges for the drainage basin were determined using StreamStats, which used a drainage area of 0.04 square miles. The 10-year discharge rate (Q10) was 128 cubic feet per second (cfs), Q50 was 162 cfs, and Q100 was 176 cfs.

The bridge project will potentially need a bat survey to be performed and a fish sweep since these studies may be required by TWRA as part of the project.

The proposed alignment and grade for the replacement structure will remain the same as the existing structure including the 90-degree skew with the river channel. There is a 55 mph posted speed limit on State Route 87, which will also be the design speed based on the tangent

alignment. The TDOT Hydraulics Section has recommended that the proposed structure be a reinforced concrete box bridge with two (2) barrels with a length of 16 feet and a total clearance of 9 feet (2 @ 16’ x 9’) giving a total structure length of 34 feet per TDOT structures standard STD-17-83. However, this bridge will likely not pass TWRA permitting standards due to the proximity of the project area to the Lower Hatchie National Wildlife Refuge and the design standards of a box culvert could have a negative impact on the stream. Based on the TDOT recommendations after TWRA input it was determined that the proposed structure be a single span pre-stressed box beam structure with a total length of 32 feet 3 inches. The new pre-stressed box beam bridge will also require the grade of the roadway to be raised 2.5 inches. An additional option that may be considered at the time of design is to lower the vertical clearance of the proposed bridge by 2.5 inches. TDOT Hydraulics would need to determine if lowering the vertical clearance is feasible due to the drainage area being 0.04 square miles. Lowering of the vertical clearance will keep the roadway on grade and lessen the potential impacts to TWRA land. It is estimated that four (4) tracts of land will be affected resulting in approximately 0.14 acres of right-of-way (ROW) acquisition. It is also estimated that overhead utilities will need to be relocated. It is recommended that this bridge be stage constructed since no viable detour route is available.

The route has a base year 2022 AADT of 410 and a design year 2042 AADT of 490. The existing structure and roadway approaches consist of two (2) 10-foot travel lanes. The route is classified as a Rural Collector Road and Standard Drawing RD01-TS-2 was used for design considerations. Based on Tables I and II from the standard drawing, it is recommended that the proposed curb-to-curb width over the structure will be 28 feet based on a design year AADT between 400-1,500 and a design speed of 55 MPH. Therefore, the typical section on the proposed structure will consist of two (2) 11-foot travel lanes, three (3) foot shoulders, and single slope concrete parapets giving an out-to-out structure width of 29 feet 4.5 inches. The additional 1.5 inches of bridge width is due to the phasing required for construction of the bridge. The project will extend 100 feet from the structure to the east and to the west in order to install 75 feet of guardrail each direction and provide the necessary length for the vertical curve run out.

The total cost for the estimated required approach work, estimated replacement and estimated preliminary engineering for this bridge replacement is approximately $581,000.

cc: File

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

TYPE	YEAR	COUNTY	FIGURE NO.
BRIDGE	2018	LAUDERDALE	-

0' 100' 200' 300'

N

BRIDGE TIR

STATE ROUTE 87 (SR087)
BRIDGE OVER OVERFLOW @ L.M. 3.88
LAUDERDALE COUNTY

55 MPH DESIGN SPEED

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

BRIDGE REPLACEMENT
SR087
L.M. 3.88

3/23/2018 3:52:30 PM
M:\2017\1604080.04 (TDOT TIR - SR-87 Bridge over Overflow,Lauderdale County)\Design\Sheets\Proposed Alignment (Lauderdale Co.Bridge Over Over-flow).dgn

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

TYPE	YEAR	COUNTY	FIGURE NO.
BRIDGE	2018	LAUDERDALE	1

STUDY AREA IS APPROX. 95 FEET FROM EXISTING CENTERLINE (50.0 FEET FROM PROP. R.O.W.)

STUDY AREA BEGINS 300 FEET BEFORE BEGINNING OF PROJECT

BEGIN PROJECT

END PROJECT

STUDY AREA ENDS 300 FEET AFTER END OF PROJECT

100'

100'

SR 87

EXISTING 50' R.O.W.

PROPOSED R.O.W.

STUDY AREA IS APPROX. 95 FEET FROM EXISTING CENTERLINE (50.0 FEET FROM PROP. R.O.W.)

OVERFLOW

ENVIRONMENTAL TECHNICAL STUDY AREA

0' 100' 200' 300'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 87 (SR087)
BRIDGE OVER OVERFLOW @ L.M. 3.88
LAUDERDALE COUNTY

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

FIGURE 1
BRIDGE REPLACEMENT
SR087
L.M. 3.88

3/23/2018 3:53:38 PM
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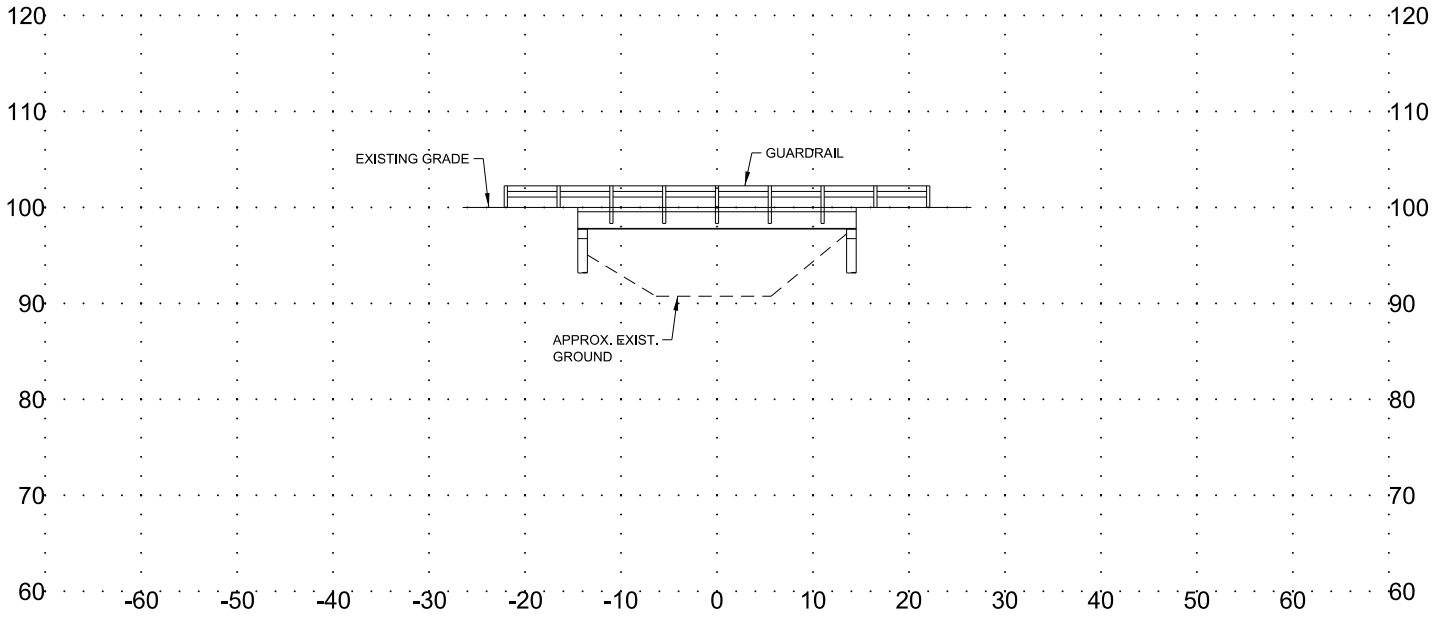
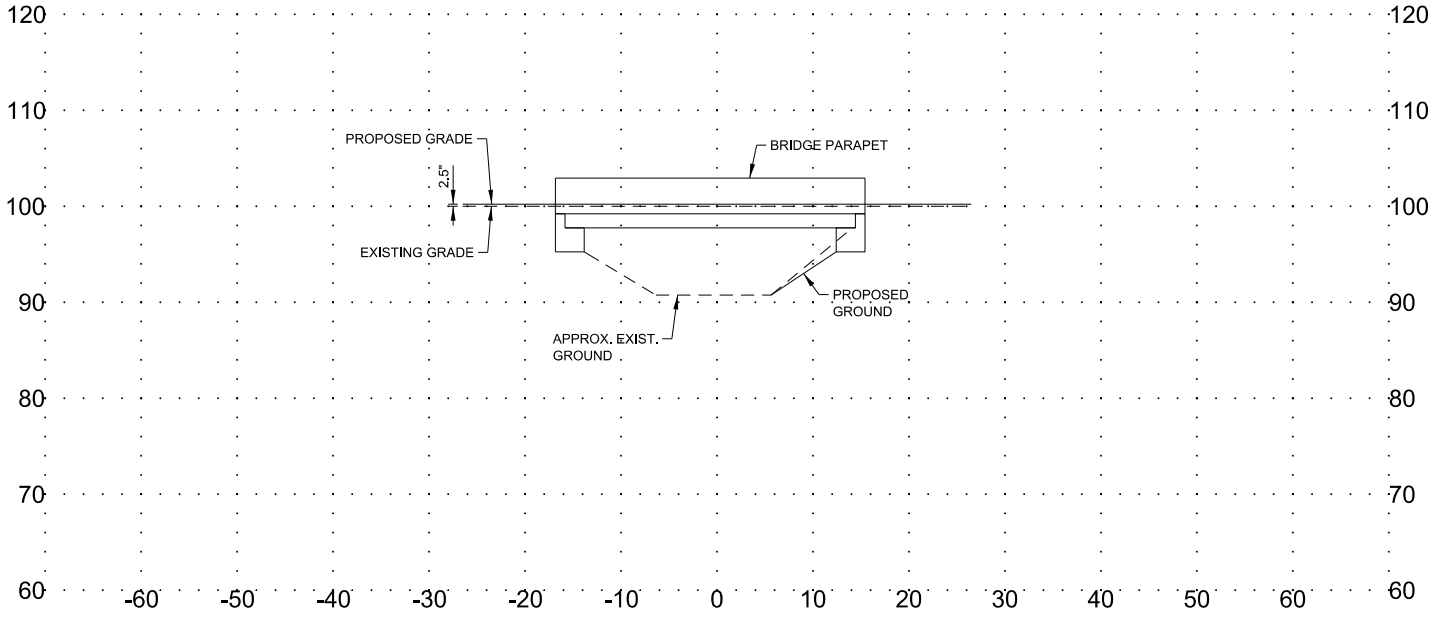
EXISTING STRUCTURE (INLET)



PROPOSED STRUCTURE (INLET)



0' 10' 20' 30'

SCALE: 1" = 20'

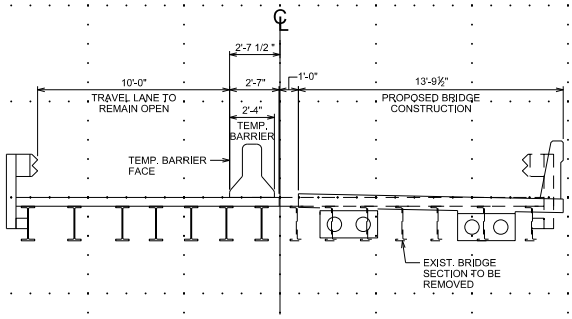
PROPOSED PROFILE

STATE ROUTE 87(SR087) LAUDERDALE COUNTY

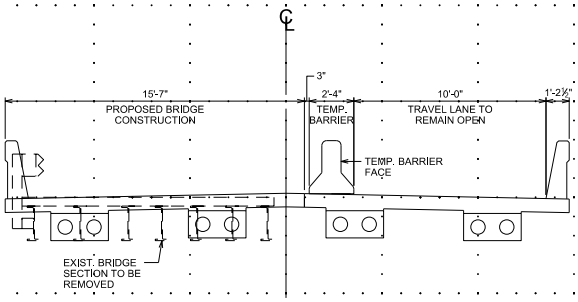
BRIDGE OVER OVERFLOW L.M. 3.88

BRIDGE ID: 49SR0870011

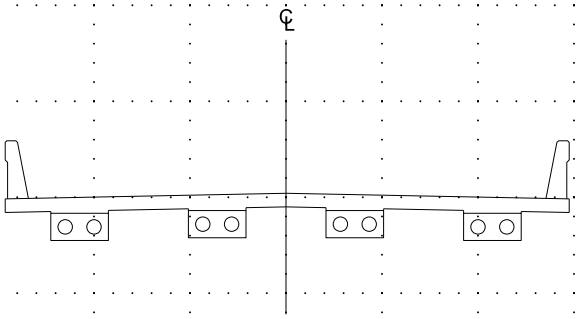
PHASE ONE



PHASE TWO



COMPLETED PROPOSED STRUCTURE



TOTAL WIDTH: 29'-4½"

0' 5' 10' 15'

SCALE: 1" = 10'

PROPOSED TYPICAL SECTION

STATE ROUTE 87 (SR087) LAUDERDALE COUNTY

BRIDGE OVER OVERFLOW L.M. 3.88

BRIDGE ID: 49SR0870011

COST ESTIMATE SUMMARY

Route: SR087 STATE ROUTE 87
Description: REPLACEMENT OF BRIDGE OVER OVERFLOW
County: LAUDERDALE
Length: 0.038 MILES
Date: March 14, 2018

DESCRIPTION		LOCAL 0%	STATE 100%	FEDERAL 0%	TOTAL
Construction Items					
Pavement Removal		$0	$3,900	$0	$3,900
Asphalt Paving		$0	$21,600	$0	$21,600
Concrete Pavement		$0	$0	$0	$0
Drainage		$0	$5,800	$0	$5,800
Appurtenances		$0	$0	$0	$0
Structures		$0	$151,800	$0	$151,800
Fencing		$0	$0	$0	$0
Signalization		$0	$40,000	$0	$40,000
Railroad Crossing or Separation		$0	$0	$0	$0
Earthwork		$0	$74,600	$0	$74,600
Clearing and Grubbing		$0	$10,600	$0	$10,600
Seeding & Sodding		$0	$2,200	$0	$2,200
Rip-Rap or Slope Protection		$0	$0	$0	$0
Guardrail		$0	$31,500	$0	$31,500
Signing		$0	$300	$0	$300
Pavement Markings		$0	$900	$0	$900
Maintenance of Traffic		$0	$16,500	$0	$16,500
Mobilization (5%)		$0	$18,000	$0	$18,000
Other Items =	10%	$0	$37,800	$0	$37,800
Const. Contingency =	15%	$0	$39,600	$0	$39,600
Construction Estimate		$0	$455,100	$0	$455,100
Interchanges & Unique Intersections					
Roundabouts		$0	$0	$0	$0
Interchanges		$0	$0	$0	$0

Right-of-Way & Utilties	LOCAL 0%	STATE 100%	FEDERAL 0%	TOTAL
Right-of-Way	$0	$14,800	$0	$14,800
Utilities	$0	$14,300	$0	$14,300
Preliminary & Construction Engineering and Inspection				
Prelim. Eng. 10%	$0	$48,400	$0	$48,400
Const. Eng. & Inspec. 10%	$0	$48,400	$0	$48,400
Total Project Cost	$0	$581,000	$0	$ 581,000

PAY ITEM SUMMARY

TDOT PAY ITEM	TDOT DESCRIPTION	UNIT	TOOL QUANTITIES	ADDITIONAL QUANTITIES	TOOL QUANTITIES + ADDITIONAL QUANTITIES	Statewide UNIT COST	TOTAL COST
Pavment Removal							
202-03.01	Removal of Asphalt Pavement	SY	16		16	$ 25.99	$ 404.25
415-01.02	Cold Planning Bituminous Pavement	SY	446		446	$ 7.64	$ 3,405.36
						PAVEMENT REMOVAL TOTAL (ROUNDED)	$ 3,900
Asphalt Roads							
303-01	Mineral Aggregate, Type A Base, Grading D	TON	446		446	$ 32.06	$ 14,310.37
307-02.01	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading A	TON	8		8	$ 101.35	$ 779.48
307-02.02	Asphalt Cement (PG70-22)(BPMB-HM) Grading A-S	TON	0		0	$ 727.27	$ 131.33
307-02.03	Aggregate (BPMB-HM) Grading A-S Mix	TON	6		6	$ 74.36	$ 434.17
307-02.08	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading B-M2	TON	5		5	$ 113.85	$ 573.62
402-01	Bituminous Material For Prime Coat (PC)	TON	0		0	$ 713.81	$ 176.35
402-02	Aggregate For Cover Material (PC)	TON	1		1	$ 66.16	$ 59.00
403-01	Bituminous Material For Tack Coat (TC)	TON	0		0	$ 781.30	$ 137.23
411-01.07	ACS (PG64-22) GR "E"	TON	11		11	$ 112.59	$ 1,214.22
411-02.10	ACS Mix(PG70-22) Grading D	TON	32		32	$ 115.33	$ 3,747.35
						PAVING TOTAL (ROUNDED)	$ 21,600
Concrete Roads							
						CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)	$ -
Drainage							
607-05.02	24" Concrete Pipe Culvert (Class III)	LF	24		24	$ 85.56	$ 2,048.22
611-07.01	Class A Concrete (Pipe Endwalls)	CY	1		1	$ 1,055.18	$ 1,291.12
611-07.02	Steel Bar Reinforcement (Pipe Endwalls)	LB	116		116	$ 2.31	$ 268.69
710.02	Aggregate Underdrains (with pipe)	LF	401		401	$ 5.46	$ 2,190.99
						DRAINAGE TOTAL (ROUNDED)	$ 5,800
Appurtenances							
						ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)	$ -
Earthwork & Mineral							
105-01	Constrction Stakes, Lines, and Grades	LS	1	-0.7	0.3	$ 112,407.96	$ 33,722.39
203-01	Road & Drainage Excavation (Unclassified)	CY	1391		1391	$ 16.79	$ 23,357.35
203-03	Borrow Excavation (Unclassified)	CY	1159		1159	$ 15.04	$ 17,436.79
						EARTHWORK & MINERAL TOTAL (ROUNDED)	$ 74,600
Structures							
N/A	Removal of Bridge	SF	827	827	1654	$ 20.00	$ 33,070.00
N/A	New Bridge (Concrete Girder):	SF	950		950	$ 125.00	$ 118,702.50
						STRUCTURES TOTAL (ROUNDED)	$ 151,800
Interchanges and Unique Intersections							
						INTERCHANGES AND UNIQUE INTERSECTIONS TOTAL (ROUNDED)	$ -
Lighting & Signalization							
730-40	Temporary Traffic Signal System	EA		2	2	$ 20,000.00	$ 40,000.00
						LIGHTING & SIGNALIZATION TOTAL (ROUNDED)	$ 40,000
Guardrail							
705-01.01	Guardrail at Bridge Ends	LF	100		100	$ 73.64	$ 7,364.49
705-02.02	Single Guardrail (Type 2)	LF	110		110.352	$ 18.82	$ 2,077.32
705-04.04	Guardrail Terminal (Type 21)	EA		4	4	$ 1,866.97	$ 7,467.87
705-04.07	Tan Energy Absg Term (NCHRP, 350, TL3)	EA	5	-1	4	$ 2,352.59	$ 9,410.38
705-04.09	Earth Pad for Type 38 GR End Treatment	EA	5	-1	4	$ 1,294.80	$ 5,179.21
						GUARDRAIL TOTAL (ROUNDED)	$ 31,500
Seeding and Sodding							
801-01	Seeding (With Mulch)	UNIT	18		18	$ 78.33	$ 1,375.14
801-01.07	Temporary Seeding (With Mulch)	UNIT	13		13	$ 29.95	$ 394.29
801-02	Seeding (Without Mulch)	UNIT	13		13	$ 28.54	$ 375.78
						SODDING TOTAL (ROUNDED)	$ 2,200
Maintenace of Traffic							
N/A	Traffic Control	LS	1		1		$ 13,728.00
712-02.02	Interconnected Portable Barrier Rail	LF	10	75	85	$ 31.96	$ 2,717.57
						MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)	$ 16,500
Signs							
Not Listed	Signs (Construction)	LS	1		1	$ -	$ 300
						SIGNING TOTAL (ROUNDED)	$ 300
Pavement Markings							
716-13.06	Spray Thermo P.M. (40 mil 4")	LM	0.3		0.3	$ 2,889.50	$ 834.49
						PAVEMENT MARKINGS TOTAL (ROUNDED)	$ 900
Fencing							
						FENCE TOTAL (ROUNDED)	$ -
Rip-Rap							
						RIP-RAP & SLOPE PROTECTION TOTAL (ROUNDED)	$ -
Clearing and Grubing							
201-01	Clearing and Grubbing	LS		0.04	0.04	$ 264,380.06	$ 10,575.20
						CLEAR AND GRUBBING TOTAL (ROUNDED)	$ 10,600.00
Railroad At-Grade Crossing							
						RAILROAD CROSSING OR SEPARATION TOTAL (ROUNDED)	$ -
Utilties							
N/A	Overhead Distribution	LM	0.038		0.038	$ 375,000	$ 14,250
						UTILITIES TOTAL (ROUNDED)	$ 14,300.00
Right-of-Way							
N/A	Right-of-Way	LS	1	7	8	$ 1,842.42	$ 14,739.39
						RIGHT-OF-WAY TOTAL (ROUNDED)	$ 14,800.00

BRIDGE TIR

LOCATION			
Bridge #:	49SR0870011	Feature Crossed:	Overflow
Road Name:	State Route 87	Log mile:	3.88
Route ID:	SR087	System:	5-STP Rural, State
City:	Fulton	Functional Class:	Rural Collector
County:	Lauderdale	State Project Number	49006-0240-04
PIN:	124637.00		

ROADWAY		
	Existing	**Proposed (Preliminary Design Estimate)**
Design Standard		RD01-TS-2 / 2011 Green Book
Route Characteristics		
AADT:	410	490
AADT Year:	2022	2042
Terrain:	Rolling	Rolling
No. Lanes:	2	2
Speed(Posted):	55	55
Speed (Design):		55
Approach Character.		
Lane Width (ft):	10	11
Shoulder Width (ft):	4	3
ROW Width (ft):	50	90
ROW Tracts Affected		4
ROW Required (acre)		0.14
Cross Section Width (ft):	20/28/50	22/28/90
Approach Length (ft):		100' (east), 100' (west)
Alignment:	tangent	tangent
Grade:		raising grade 2.5"
Surface Material:	Pavement	Pavement
Sidewalks (R/L):	No	No
App. Lower Than Structure	No	Yes
Utilities (list)	OH electric	N/A
Utilities to be Relocated	N/A	OH Electric
Comments		Bridge to be built in a phased construction since no detour is available.

BRIDGE TIR

Lauderdale
State Route 87

STRUCTURE		
	Existing	**Proposed (Preliminary Design Estimate)**
Bridge Characteristics		
Year Built	1986	
Load Limit	17 tons(inspection report), 40 tons(signed)	
Sufficiency Rating	40.7	
Skew	90	90
Structure Type	Steel I-beam	Prestressed Box Beam
Structures in Channel	No	No
Length (ft)	29	32.3
No. Spans (App./Main)	0 | 1	0 | 1
Width (curb to curb) (ft)	25.3	28
Width (o to o) (ft)	28.5	29.4
Sidewalks on Structure	No	No
Vert. Clearance (ft)	7	7
Superstructure Depth (in)	54	62.3
Girder Depth (in)	21	17
Finish Grade-Low Girder (in)	27	29.5
High Water Marks	N/A	
Bridge Rail Type	Guardrail	Single Slope Concrete Parapet
Bridge Rail Height (ft)	2.25	3
Indication Overtopping	No	
Local Scour	No	
Obstructions	No	
Other Structures	N/A	N/A
Comments	Timber substructure in poor condition. Approach #2 A/C has up to 1" settlement & up to half inch cracks. Medium weathering on timber structure, deck boards & nailed timber. Steel I-beams have light corrision.	

BRIDGE TIR

Lauderdale
State Route 87

FLOW RATES (from USGS StreamStats)	
Drainage Area (sq. miles)	0.04
10 Year Discharge Rate (Q10) cfs	128
50 Year Discharge Rate (Q50) cfs	162
100 Year Discharge Rate (Q100) cfs	176

CHANNEL	
Depth (ft)	N/A
Width of Normal Flow (ft)	9
Depth of Normal Flow (ft)	N/A
Skew of Channel with Roadway	90
Type of Material in Stream Bed	silt
Type of Vegetation on Banks	low growth, large timber
Are Channel Banks Stable	No
Signs of Stream Aggradation	No
Signs of Stream Degradation	No
Drift or Drift Potential	Yes
Comments	

FLOODPLAIN	
Skew Same as Channel	Yes
Symmetrical About Channel	Yes
Approx. Floor Elevations	N/A
Type of Vegetation in Floodplain	low growth, large timber, grass
Any Buildings in Floodplain	No
Flood Information From Locals	N/A
Comments	

MAINTENANCE OF TRAFFIC	
Method of Maintaining Traffic	stage construct
Description	The phased construction will consist of one lane closed while the other remains open with temporary traffic signals and temporary barriers being utilized for traffic control. The remaining travel lane must have a width of at least 10 feet.
Comments	

TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

PROJECT NO.: 49006-0240-04 ROUTE: S.R. 87
COUNTY: LAUDERDALE CITY:
PROJECT PIN NUMBER: 124637.00
PROJECT DESCRIPTION: BRIDGE OVER OVERFLOW (L.M. 3.88)

DIVISION REQUESTING:

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

YEAR PROJECT PROGRAMMED FOR CONSTRUCTION:
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
410	2022	490	64	13	2042	65-35	9	14		

REQUESTED BY: NAME CALEB SMITH DATE 11/6/17
DIVISION S.T.I.D.
ADDRESS 505 DEADERICK STREET
NASHVILLE, TN. 37243

REVIEWED BY: TONY ARMSTRONG DATE 11·29·17
TRANSPORTATION MANAGER I
SUITE 1000, JAMES K. POLK BUILDING

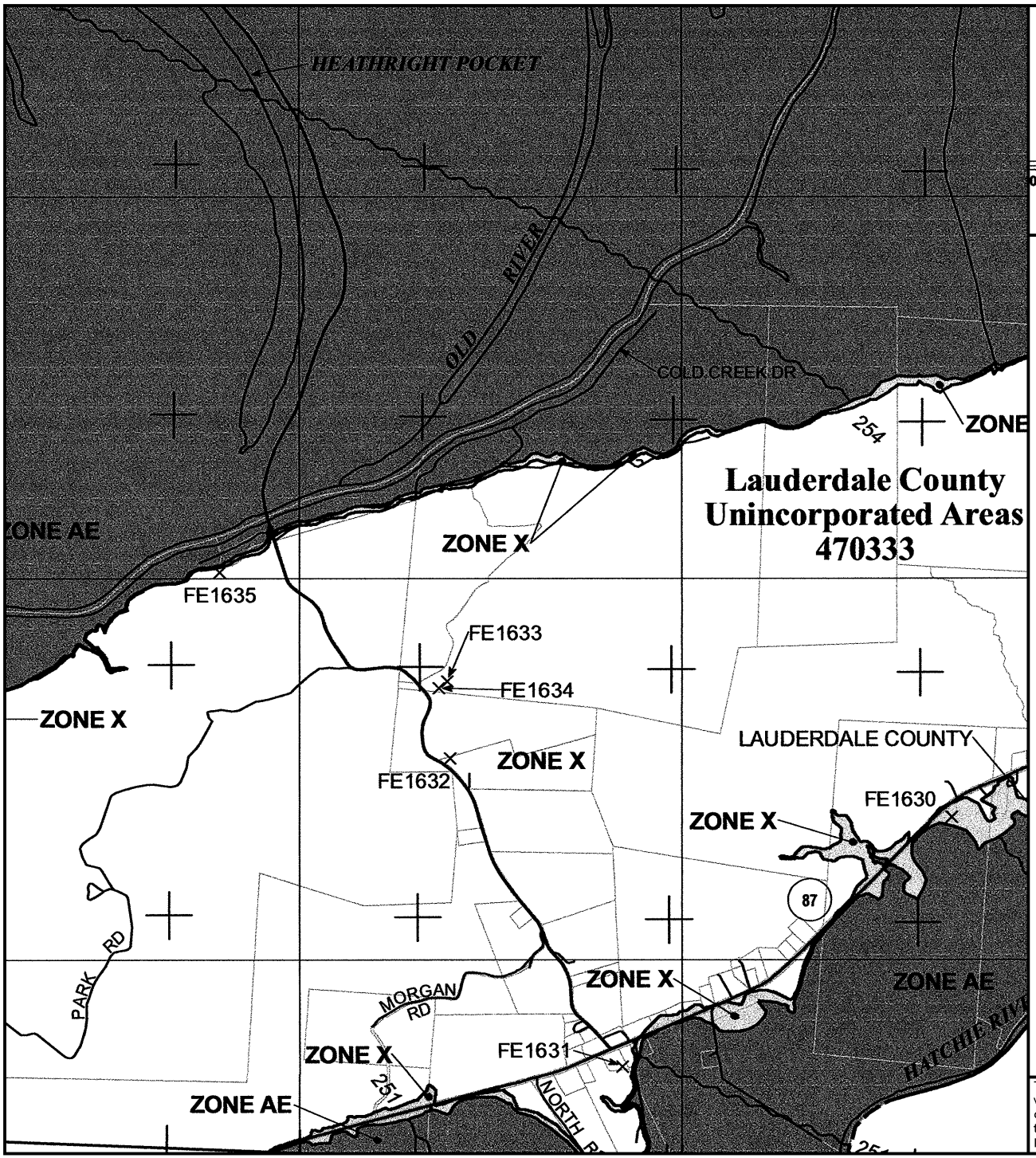
APPROVED BY: JIM WATERS DATE 11/29/17
ASSISTANT DIRECTOR
SUITE 1000, JAMES K. POLK BUILDING

COMMENTS:

THIS TRAFFIC BASED ON 2017 CYCLE COUNTS. 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. 2/22/17)



MAP SCALE 1" = 2000'

1,000 0 1,000 2,000 3,000 4,000 FEET

METE

0 600 1,200

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0325D

FIRM

FLOOD INSURANCE RATE MAP

LAUDERDALE COUNTY, TENNESSEE

AND INCORPORATED AREAS

PANEL 325 OF 500

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LAUDERDALE COUNTY	470333	0325	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
47097C0325D

EFFECTIVE DATE
SEPTEMBER 28, 2007

Federal Emergency Management Agency

StreamStats Report

Region ID: TN
Workspace ID: TN20180105150212737000
Clicked Point (Latitude, Longitude): 35.62688, -89.82609
Time: 2018-01-05 09:01:43 -0600

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CONTDA	Area that contributes flow to a point on a stream	0.0425	square miles
DRNAREA	Area that drains to a point on a stream	0.04	square miles
RECESS	Number of days required for streamflow to recede one order of magnitude when hydrograph is plotted on logarithmic scale	32	days per log cycle
PERMGTE2IN	Percent of area underlain by soils with permeability greater than or equal to 2 inches per hour	86.734	percent
CLIMFAC2YR	Two-year climate factor from Lichy and Karlinger (1990)	2.393	dimensionless
SOILPERM	Average Soil Permeability	1.212	inches per hour

Peak-Flow Statistics Parameters [DAOnly Area 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	0.0425	square miles	0.76	2308

Peak-Flow Statistics Disclaimers [DAOnly Area 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Peak-Flow Statistics Flow Report [DAOnly Area 4]

Statistic	Value	Unit
2 Year Peak Flood	82.5	ft^3/s
5 Year Peak Flood	111	ft^3/s
10 Year Peak Flood	128	ft^3/s
25 Year Peak Flood	148	ft^3/s
50 Year Peak Flood	162	ft^3/s
100 Year Peak Flood	176	ft^3/s
500 Year Peak Flood	206	ft^3/s

Peak-Flow Statistics Citations

Law, G.S., and Tasker G.D.,2003, Flood-Frequency Prediction Methods for Unregulated Streams of Tennessee, 2000: U.S. Geological Survey Water-Resources Investigations Report 03-4176, 79p. (http://pubs.usgs.gov/wri/wri034176/)

Low-Flow Statistics Parameters [Low Flow West Region 2009 5159]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.04	square miles	2	2405
RECESS	Recession Index	32	days per log cycle	32	350
PERMGTE2IN	Percent permeability gte 2 in per hr	86.734	percent	2	98

Low-Flow Statistics Disclaimers [Low Flow West Region 2009 5159]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report [Low Flow West Region 2009 5159]

Statistic	Value	Unit
7 Day 10 Year Low Flow	0.000195	ft^3/s
30 Day 5 Year Low Flow	0.000375	ft^3/s

Low-Flow Statistics Citations

Law, G.S., Tasker, G.D., and Ladd, D.E.,2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009–5159, 212 p., 1 pl. (http://pubs.usgs.gov/sir/2009/5159/)

Annual Flow Statistics Parameters [Low Flow West Region 2009 5159]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.04	square miles	2	2405
RECESS	Recession Index	32	days per log cycle	32	350
CLIMFAC2YR	Tennessee Climate Factor 2 Year	2.393	dimensionless	2.307	2.455
PERMGTE2IN	Percent permeability gte 2 in per hr	86.734	percent	2	98

Annual Flow Statistics Disclaimers [Low Flow West Region 2009 5159]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Annual Flow Statistics Flow Report [Low Flow West Region 2009 5159]

Statistic	Value	Unit
Mean Annual Flow	0.052	ft^3/s

Annual Flow Statistics Citations

Law, G.S., Tasker, G.D., and Ladd, D.E.,2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009–5159, 212 p., 1 pl. (http://pubs.usgs.gov/sir/2009/5159/)

Seasonal Flow Statistics Parameters [Low Flow West Region 2009 5159]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.04	square miles	2	2405
RECESS	Recession Index	32	days per log cycle	32	350
PERMGTE2IN	Percent permeability gte 2 in per hr	86.734	percent	2	98

Seasonal Flow Statistics Disclaimers [Low Flow West Region 2009 5159]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Seasonal Flow Statistics Flow Report [Low Flow West Region 2009 5159]

Statistic	Value	Unit
Summer Mean Flow	0.0115	ft^3/s

Seasonal Flow Statistics Citations

Law, G.S., Tasker, G.D., and Ladd, D.E.,2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009–5159, 212 p., 1 pl. (http://pubs.usgs.gov/sir/2009/5159/)

Flow-Duration Statistics Parameters [Low Flow West Region 2009 5159]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.04	square miles	2	2405
RECESS	Recession Index	32	days per log cycle	32	350
PERMGTE2IN	Percent permeability gte 2 in per hr	86.734	percent	2	98
CLIMFAC2YR	Tennessee Climate Factor 2 Year	2.393	dimensionless	2.307	2.455
SOILPERM	Average Soil Permeability	1.212	inches per hour	0.97	2.44

Flow-Duration Statistics Disclaimers [Low Flow West Region 2009 5159]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Flow-Duration Statistics Flow Report [Low Flow West Region 2009 5159]

Statistic	Value	Unit
99.5 Percent Duration	0.000176	ft^3/s
99 Percent Duration	0.000234	ft^3/s
98 Percent Duration	0.000291	ft^3/s
95 Percent Duration	0.000388	ft^3/s
90 Percent Duration	0.000485	ft^3/s
80 Percent Duration	0.000718	ft^3/s
70 Percent Duration	0.000994	ft^3/s
60 Percent Duration	0.000983	ft^3/s
50 Percent Duration	0.00178	ft^3/s
40 Percent Duration	0.00375	ft^3/s
30 Percent Duration	0.011	ft^3/s
20 Percent Duration	0.0366	ft^3/s
10 Percent Duration	0.079	ft^3/s

Flow-Duration Statistics Citations

Law, G.S., Tasker, G.D., and Ladd, D.E.,2009, Streamflow-characteristic estimation methods for unregulated streams of Tennessee: U.S. Geological Survey Scientific Investigations Report 2009–5159, 212 p., 1 pl. (http://pubs.usgs.gov/sir/2009/5159/)

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	X
2.	Airport (existing or proposed)	
3.	Commercial area, shopping center	
4.	Floodplains	X
5.	Forested land	X
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	X
	b. Game preserve or wildlife area	X
10.	Residential establishment	
11.	Urban area, town, city, or community	
12.	Waterway, lake, pond, river, stream, spring	X

Permit required:		
	Coast Guard	
	Section 404	X
	TVA Section 26a review	
	NPDES	X
	Aquatic Resource Alteration	X

13.	Other	
14.	Location coordinated with local officials	
15.	Railroad crossings	
16.	Hazardous materials site	

Comments: Additional environmental information includes perform a bat survey and fish sweep.

BRIDGE TIR

Lauderdale
State Route 87

SITE VISIT ATTENDEES			DATE: 1/11/2018
Name	Organization	Phone	Email
David Duncan	TDOT (STID)	615-532-6131	david.a.duncan@tn.gov
Joseph Clement	TDOT (STID)	615-770-1035	joseph.clement@tn.gov
Willie Coleman	TDOT Utilities	731-935-0160	willie.coleman@tn.gov
Robert Hope	TDOT Survey	731-935-0241	robert.hope@tn.gov
Branden Garcia	TDOT Operations	731-695-5776	branden.garcia@tn.gov
Burt Hutchins	R4 Project Dev.	731-935-0142	burt.hutchins@tn.gov
Nicholas Stephens	R4 Project Dev.	731-935-0133	nicholas.stephens@tn.gov
Evelyn DiOrio	R4 Env. Tech	731-935-0302	evelyn.diorio@tn.gov
Eric Philipps	R4 Env. Tech	731-935-0174	eric.philipps@tn.gov
Derek Ryan	R4 Traffic		derek.ryan@tn.gov
Brandon Taylor	KCI	615-559-0158	brandon.taylor@kci.com
Daniel Keener	KCI	980-288-6763	daniel.keener@kci.com
Drew Randolph	KCI	615-559-0157	drew.randolph@kci.com

Transportation Investment Report for Bridge ID: 49SR0870011
Lauderdale County
State Route 87

Bridge Number

Upstream

Transportation Investment Report for Bridge ID: 49SR0870011
Lauderdale County
State Route 87

Downstream

Inlet

Outlet

Floodplain Right (West) Downstream

Floodplain Left (East) Downstream

Floodplain Right (East) Upstream

Transportation Investment Report for Bridge ID: 49SR0870011
Lauderdale County
State Route 87

Floodplain Left (West) Upstream

East Approach of Bridge Looking West

Transportation Investment Report for Bridge ID: 49SR0870011
Lauderdale County
State Route 87

West Approach of Bridge looking East

Looking West From Bridge

Transportation Investment Report for Bridge ID: 49SR0870011
Lauderdale County
State Route 87

Looking East From Bridge

Weight Limit Sign at East Approach

Utility Poles West of Bridge Downstream

Utility Poles East of Bridge Downstream

East Abutment at Outlet

West Abutment at Outlet

Corrosion of Girders at Outlet

Corrosion and Vegetation of Girders at Inlet

Transportation Investment Report for Bridge ID: 49SR0870011
Lauderdale County
State Route 87

Cracking and Spalling of Pavement at West Approach

Cracking and Poor pavement patching conditions at East approach

Transportation Investment Report for Bridge ID: 49SR0870011
Lauderdale County
State Route 87

Severe Cracking on Bridge Surface

East Abutment

Transportation Investment Report for Bridge ID: 49SR0870011
Lauderdale County
State Route 87

West Abutment

Bridge Beams