TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION INVESTMENT REPORT
IMPROVE Act

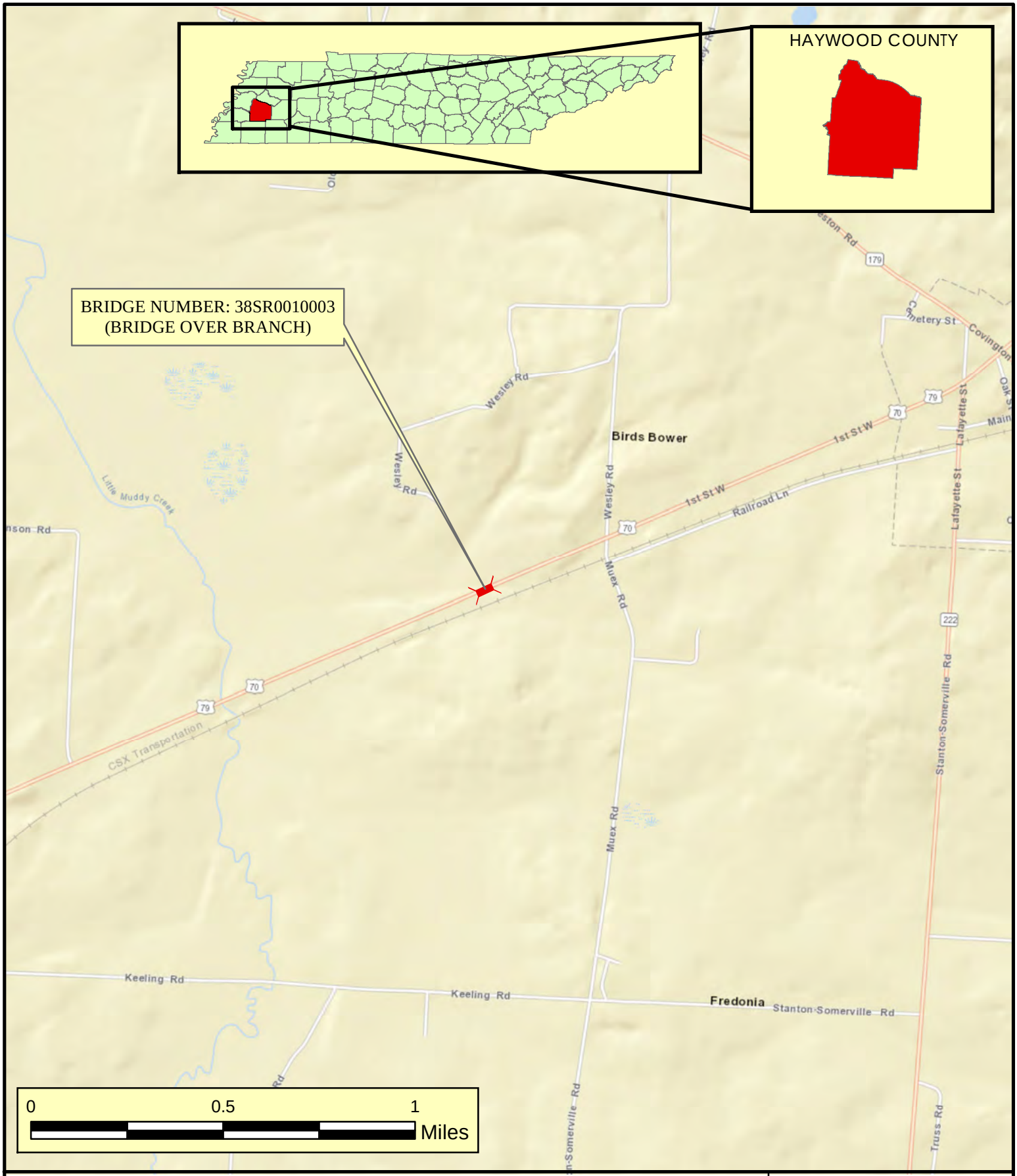
State Route 1
Bridge over Branch,
Log Mile 2.89 Haywood County
PIN 124503.00

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

Approved by _____ *Date* 04-02-18 *Approved by* _____ *Date* 4/2/18
Chief of Environment and Planning *Deputy Commissioner and Chief Engineer*

Approved by:	Signature	DATE
TRANSPORTATION DIRECTOR STRATEGIC TRANSPORTATION INVESTMENTS DIVISION		3-26-18
ENGINEERING DIRECTOR DESIGN DIVISION	Tabitha P. 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

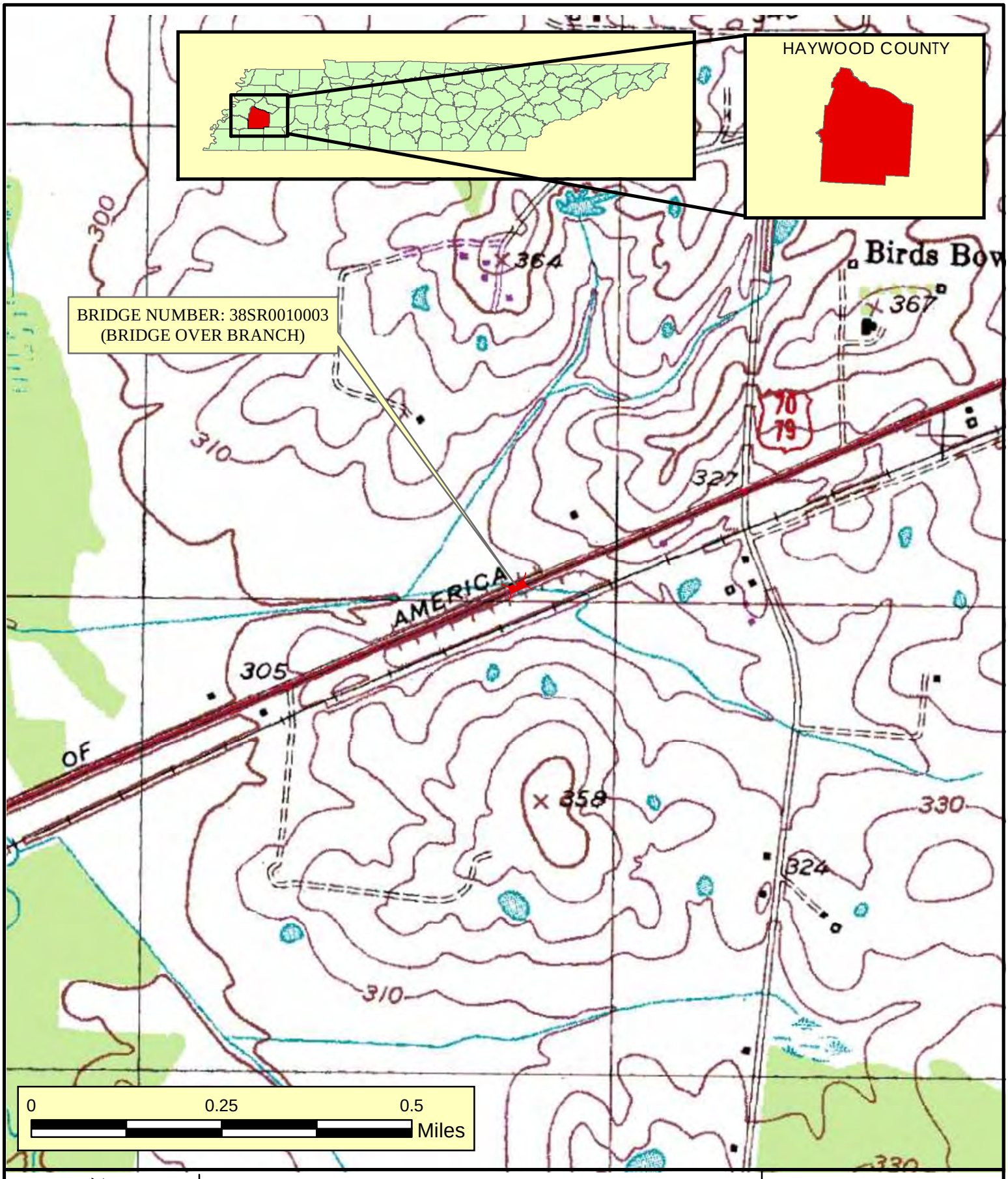
BRIDGE TIR

STATE ROUTE 1 (US HWY 70)

BRIDGE OVER BRANCH (LM 2.89)

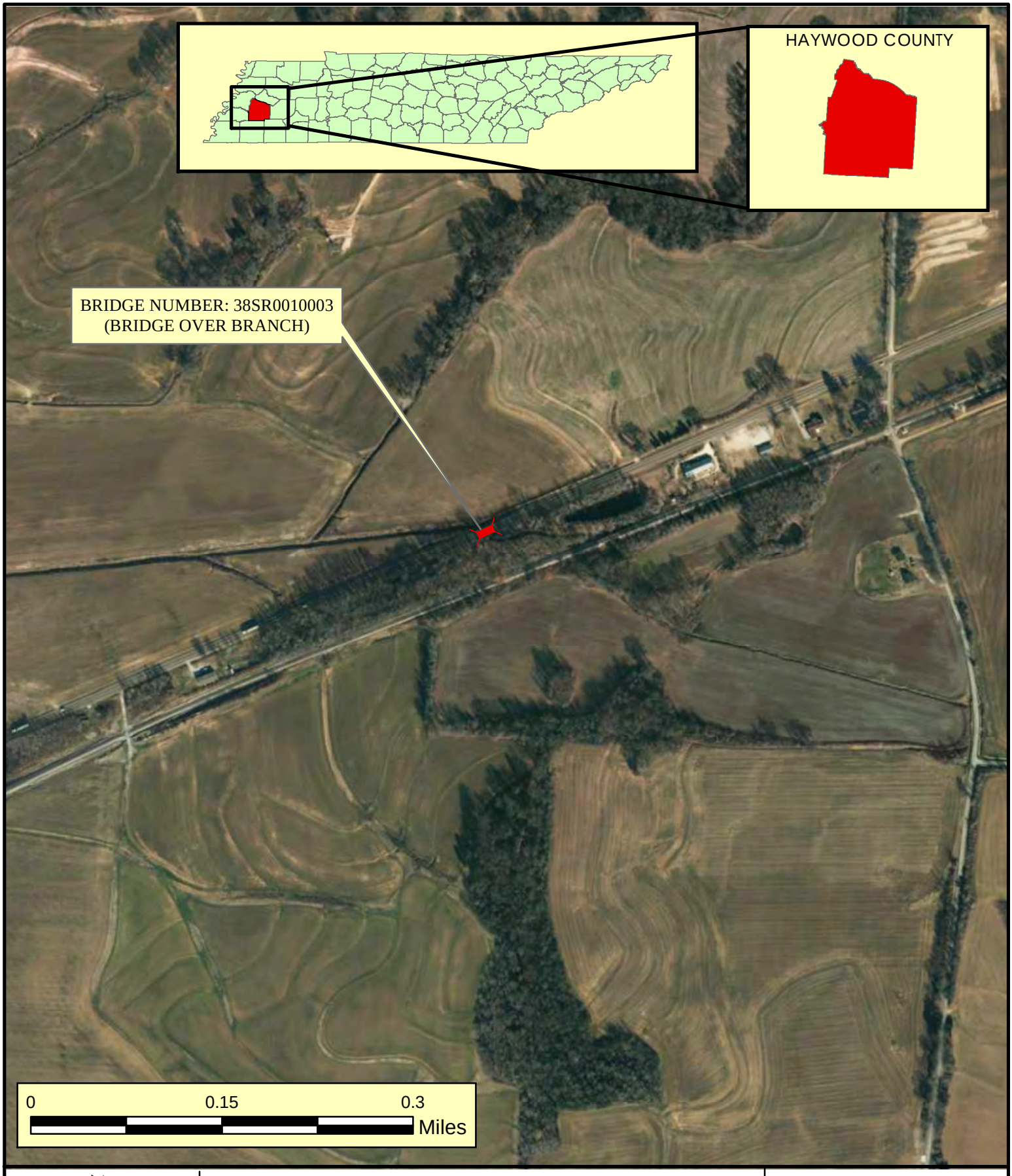
HAYWOOD COUNTY

TN TDOT Department of Transportation



TOPO MAP
BRIDGE TIR
STATE ROUTE 1 (US HWY 70)
BRIDGE OVER BRANCH (LM 2.89)
HAYWOOD COUNTY

TN TDOT Department of Transportation



PROJECT MAP
BRIDGE TIR
STATE ROUTE 1 (US HWY 70)
BRIDGE OVER BRANCH (LM 2.89)
HAYWOOD 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 9, 2018

SUBJECT: TIR Field Review (IMPROVE Act)
State Route 1/US-70 (SR001), Bridge over Branch
Bridge ID: 38SR0010003
Log Mile 2.89
Haywood County
PIN: 124503.00

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

The existing structure, built in 1926, is a single span precast concrete slab bridge crossing a branch of Muddy Creek. The structure has an out-to-out width of 34 feet 5 inches. The overall structure length is 46 feet, and the sufficiency rating for this structure is 37.6 based on the Bridge Inspection Report from December 17, 2015.

The discharges for the drainage basin were determined using StreamStats, which used a drainage area of 0.52 square miles. The 10-year discharge rate (Q10) was 512 cubic feet per second (cfs), Q50 was 676 cfs, and Q100 was 742 cfs.

The bridge project will potentially need a bat survey to be performed and an endangered plant study 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 45-degree skew with the river channel. There is a 55 mph posted speed limit on State Route 1, 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 18 feet and a total clearance of 16 feet (2 @ 18’ x 16’) giving a total structure length of 38 feet 4 inches per TDOT structures standard STD-17-88. It is estimated that two (2) tracts of land will be affected resulting in approximately 0.34 acres of right-of-way (ROW) acquisition. It is also estimated that underground and overhead utilities will need to be relocated. Construction phasing for both bridges on State Route 1 (Bridge over Muddy Creek at LM 2.13 and Bridge over Branch at LM 2.89) need to accommodate access to the property located in between the two (2) bridges in Haywood County. Detour routes are provided in report. The official detour will be the only detour route that is signed.

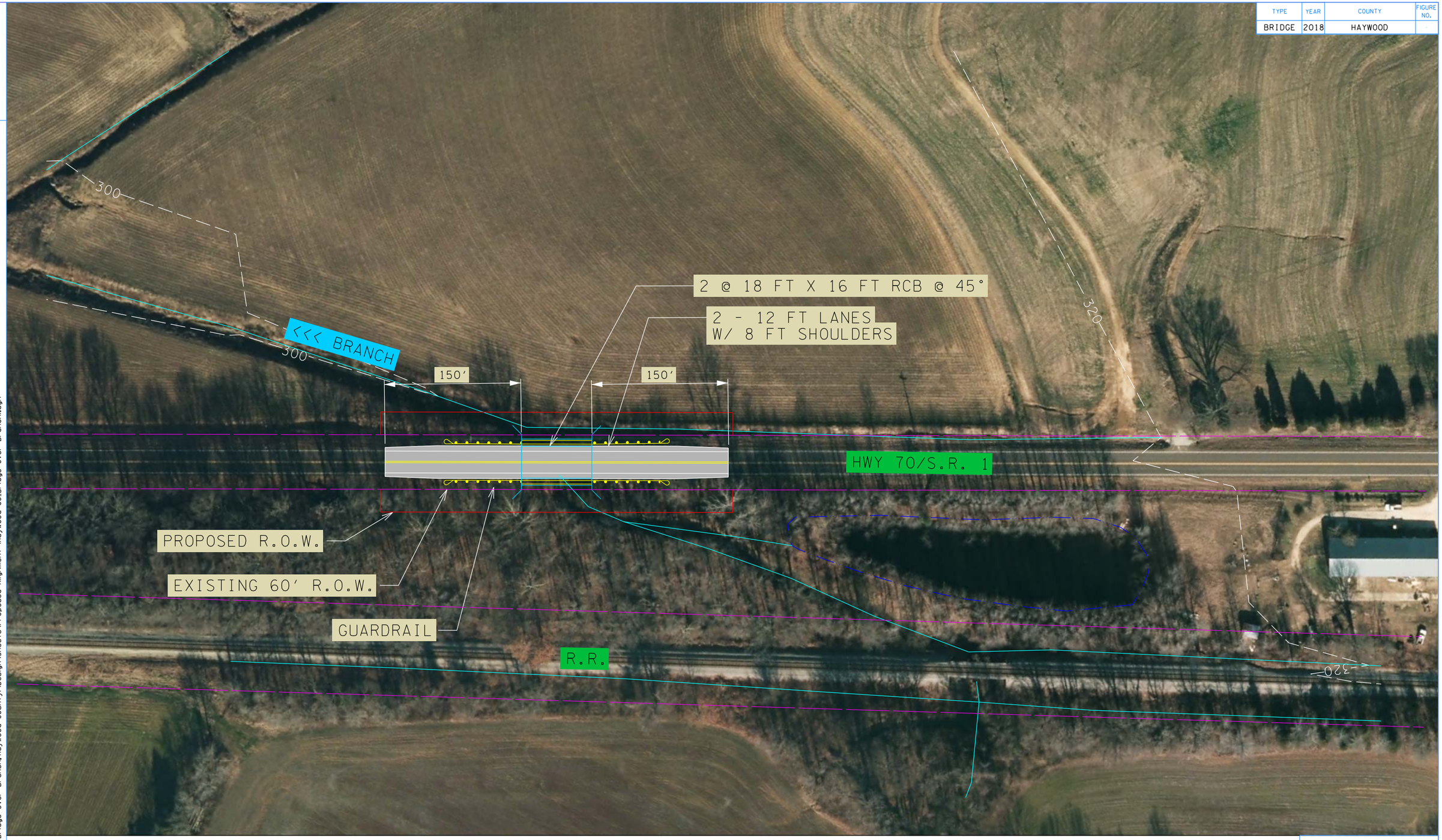
The route has a base year 2022 AADT of 1,650 and a design year 2042 AADT of 1,980. The existing structure and roadway approaches consist of two (2) 12-foot travel lanes. The route is classified as a Rural Arterial Road and Standard Drawing RD01-TS-3 was used for design considerations. Based on Table II from the standard drawing, it is recommended that the proposed curb-to-curb width over the structure will be 40 feet based on a design year AADT between 1,500-2,000 and a design speed of 55 MPH. Therefore, the typical section on the proposed structure will consist of two (2) 12-foot travel lanes with eight (8) foot shoulders and guardrail per TDOT structures standard STD-17-7 giving an out-to-out structure width of 45 feet 6 inches. The project will extend 150 feet from the structure to the east and to the west in order to install guardrail and to taper the paved shoulders back into the existing roadway.

The total cost for the estimated required approach work, estimated replacement and estimated preliminary engineering for this bridge replacement is approximately $763,000.

cc: File

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

TYPE	YEAR	COUNTY	FIGURE NO.
BRIDGE	2018	HAYWOOD	-



0' 100' 200' 300'

N

BRIDGE TIR

STATE ROUTE 1 (US HWY 70)
BRIDGE OVER BRANCH @ L.M. 2.89
HAYWOOD COUNTY

55 MPH DESIGN SPEED

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

BRIDGE REPLACEMENT
SR001
L.M. 2.89

3/23/2018 3:48:37 PM
M:\2017\160408O.03 (TDOT TIR - Bridge over Branch, Haywood County)\Design\Sheets\Proposed Alignment (Haywood Co.Bridge Over Branch).dgn

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

TYPE	YEAR	COUNTY	FIGURE NO.
BRIDGE	2018	HAYWOOD	1

STUDY AREA BEGINS 300 FEET BEFORE BEGINNING OF PROJECT

STUDY AREA IS APPROX. 105 FEET FROM EXISTING CENTERLINE (50.0 FEET FROM PROP. R.O.W.)

STUDY AREA ENDS 300 FEET AFTER END OF PROJECT

<<< BRANCH

END PROJECT

150'

150'

HWY 70/S.R. 1

BEGIN PROJECT

PROPOSED R.O.W.

EXISTING 60' R.O.W.

STUDY AREA IS APPROX. 105 FEET FROM EXISTING CENTERLINE (50.0 FEET FROM PROP. R.O.W.)

R.R.

ENVIRONMENTAL TECHNICAL STUDY AREA

0' 100' 200' 300'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

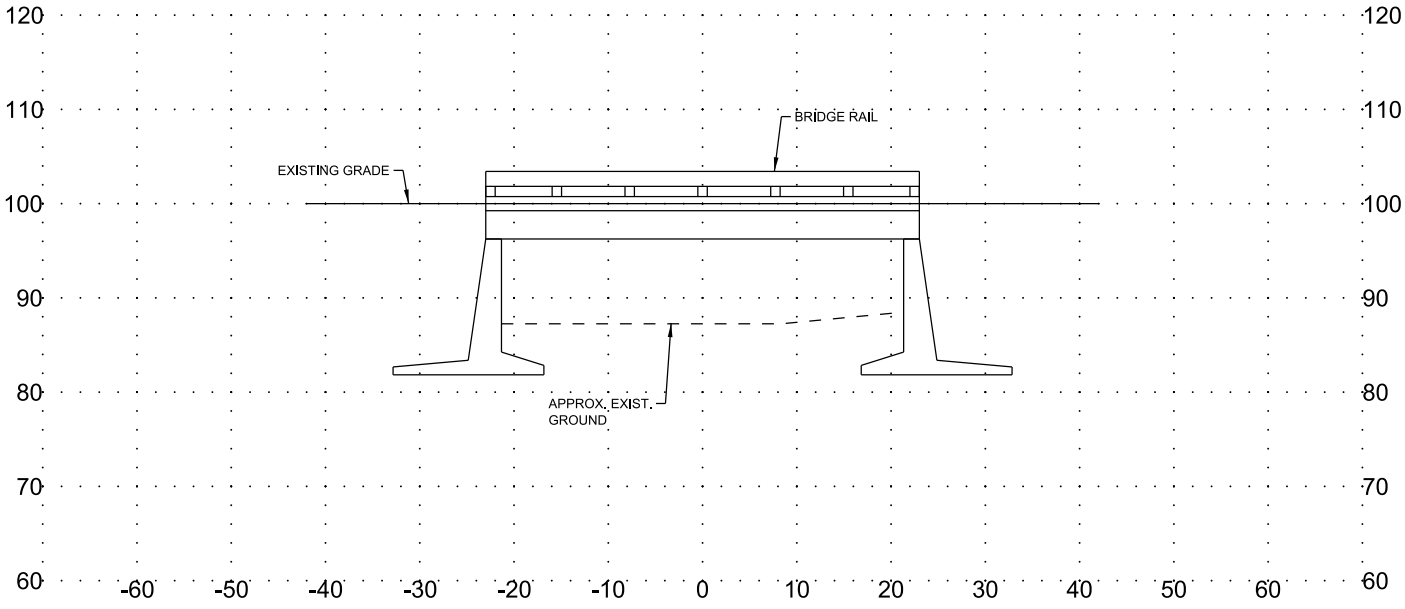
STATE ROUTE 1 (US HWY 70)
BRIDGE OVER BRANCH @ L.M. 2.89
HAYWOOD COUNTY

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

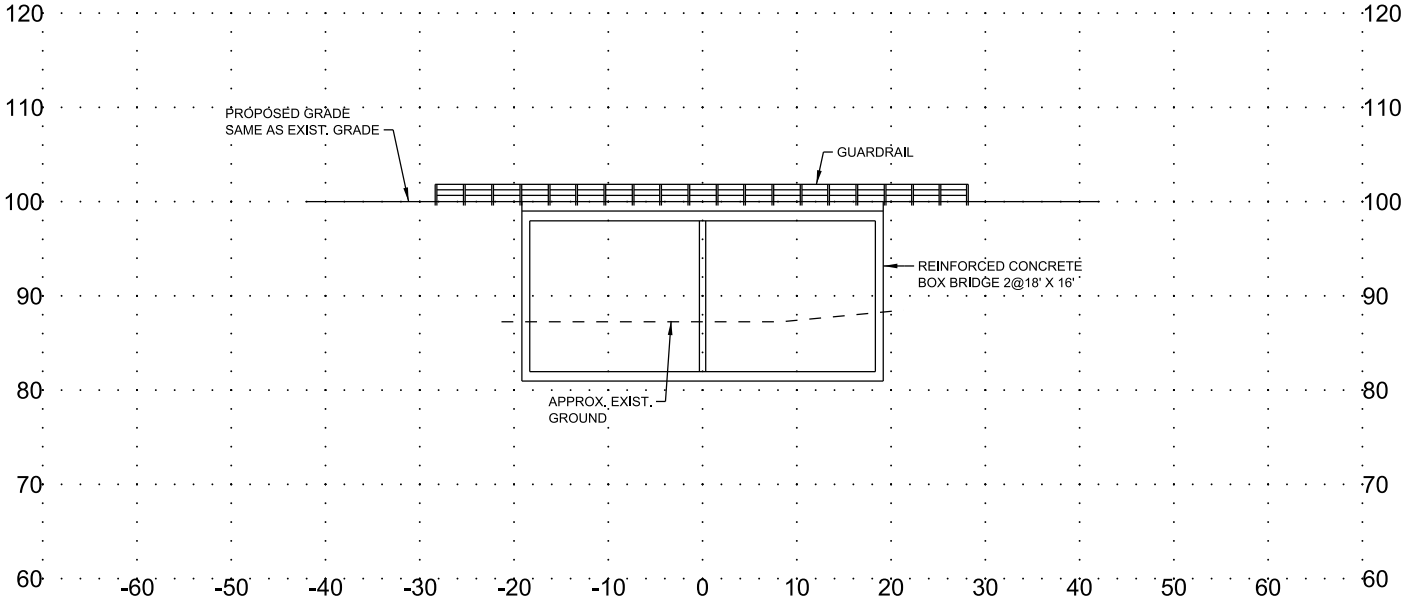
FIGURE 1
BRIDGE REPLACEMENT
SR001
L.M. 2.89

3/23/2018 3:49:57 PM
M:\2017\604080.03 (TDOT TIR - Bridge over Branch, Haywood County)\Design\Sheets\Proposed EnvironmentalLayout (Haywood Co.Bridge Over Branch).dgn

EXISTING STRUCTURE (INLET)



PROPOSED STRUCTURE (INLET)



0' 10' 20' 30'

SCALE: 1" = 20'

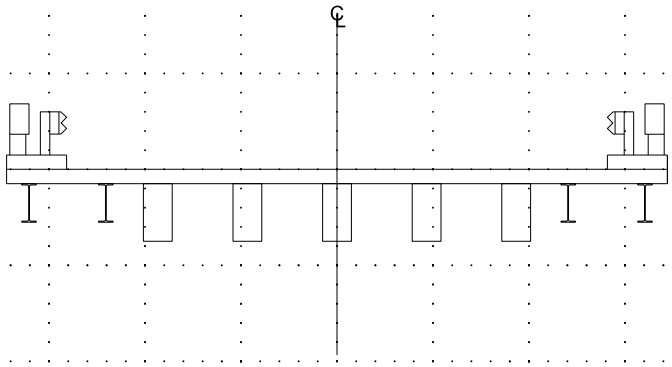
PROPOSED PROFILE

STATE ROUTE 1 (US HWY 70) HAYWOOD COUNTY

BRIDGE OVER BRANCH @ L.M. 2.89

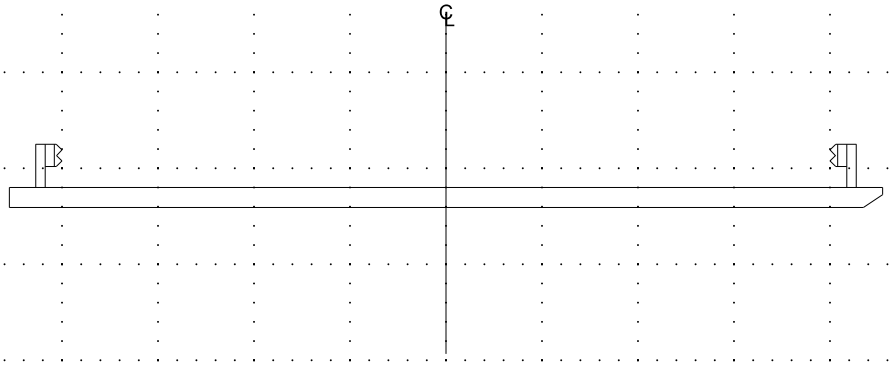
BRIDGE ID: 38SR0010003

EXISTING STRUCTURE



TOTAL WIDTH: 34'-5"

PROPOSED STRUCTURE



TOTAL WIDTH: 45'-6"

0' 5' 10' 15'

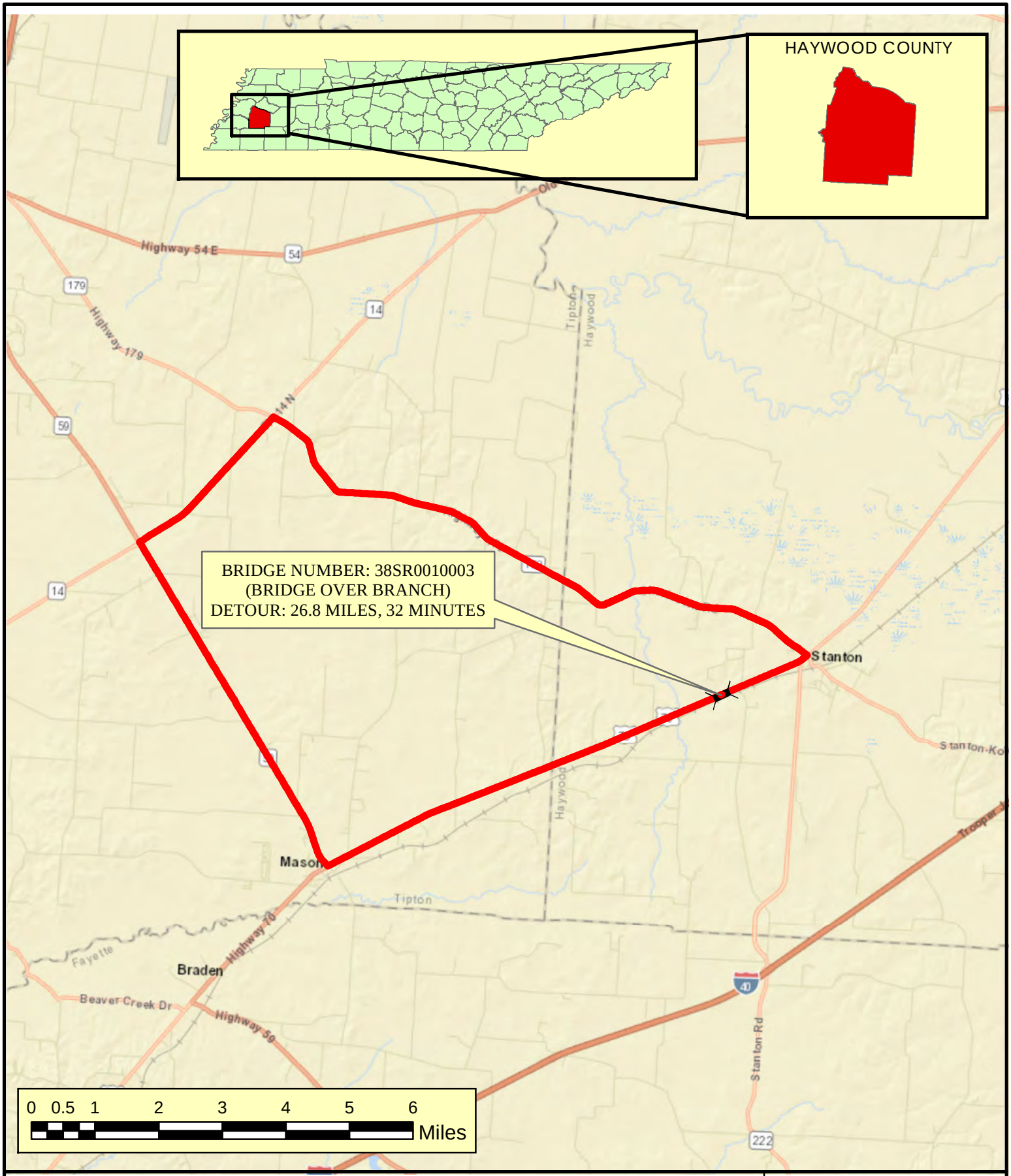
SCALE: 1" = 10'

PROPOSED TYPICAL SECTION

STATE ROUTE 1 (US HWY 70) HAYWOOD COUNTY

BRIDGE OVER BRANCH L.M. 2.89

BRIDGE ID: 38SR0010003



N

OFFICIAL DETOUR MAP

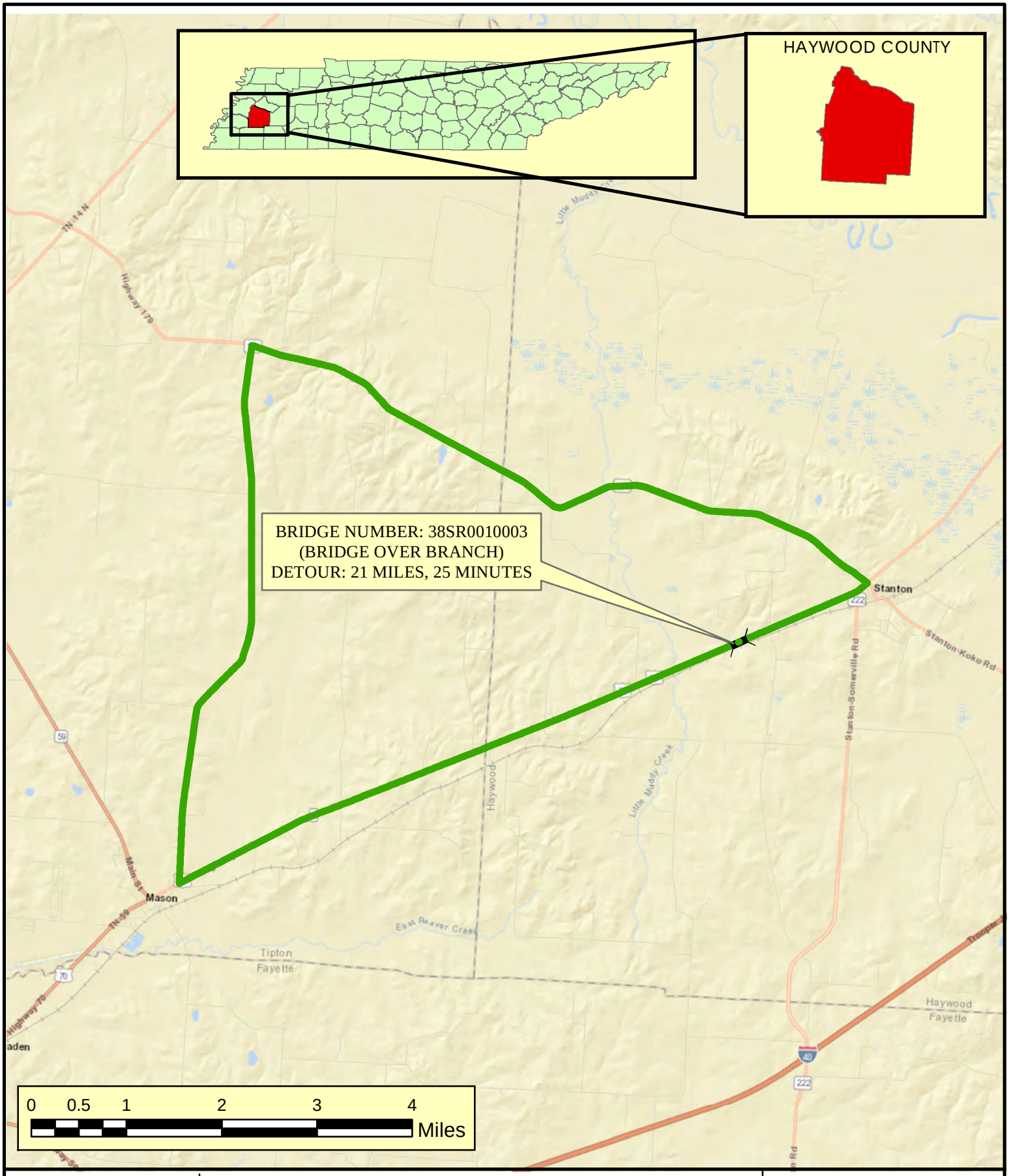
BRIDGE TIR

STATE ROUTE 1 (US HWY 70)

BRIDGE OVER BRANCH (LM 2.89)

HAYWOOD COUNTY

TN TDOT Department of Transportation



LOCAL ROUTE DETOUR MAP
BRIDGE TIR
STATE ROUTE 1 (US HWY 70)
BRIDGE OVER BRANCH (LM 2.89)
HAYWOOD COUNTY

TN TDOT Department of Transportation

COST ESTIMATE SUMMARY

Route: SR001 STATE ROUTE 1 (U.S. HIGHWAY 70)
Description: REPLACEMENT OF BRIDGE OVER BRANCH
County: HAYWOOD
Length: 0.064 MILES
Date: March 9, 2018

DESCRIPTION	LOCAL 0%	STATE 100%	FEDERAL 0%	TOTAL
Construction Items				
Pavement Removal	$0	$6,100	$0	$6,100
Asphalt Paving	$0	$31,000	$0	$31,000
Concrete Pavement	$0	$0	$0	$0
Drainage	$0	$5,900	$0	$5,900
Appurtenances	$0	$0	$0	$0
Structures	$0	$214,700	$0	$214,700
Fencing	$0	$0	$0	$0
Signalization	$0	$0	$0	$0
Railroad Crossing or Separation	$0	$0	$0	$0
Earthwork	$0	$88,800	$0	$88,800
Clearing and Grubbing	$0	$10,600	$0	$10,600
Seeding & Sodding	$0	$3,200	$0	$3,200
Rip-Rap or Slope Protection	$0	$0	$0	$0
Guardrail	$0	$25,100	$0	$25,100
Signing	$0	$400	$0	$400
Pavement Markings	$0	$1,700	$0	$1,700
Maintenance of Traffic	$0	$16,000	$0	$16,000
Mobilization (5%)	$0	$20,200	$0	$20,200
Other Items = 10%	$0	$42,400	$0	$42,400
Const. Contingency = 15%	$0	$37,700	$0	$37,700
Construction Estimate	$0	$503,800	$0	$503,800
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	$61,100	$0	$61,100
Utilities	$0	$71,300	$0	$71,300
Preliminary & Construction Engineering and Inspection				
Prelim. Eng. 10%	$0	$63,600	$0	$63,600
Const. Eng. & Inspec. 10%	$0	$63,600	$0	$63,600
Total Project Cost	$0	$763,400	$0	$ 763,000

PAY ITEM SUMMARY

TDOT PAY ITEM	TDOT DESCRIPTION	UNIT	TOOL QUANTITIES	ADDITIONAL QUANTITIES	TOOL QUANTITIES + ADDITIONAL QUANTITIES	Statewide UNIT COST	TOTAL COST
Pavment Removal							
415-01.02	Cold Planning Bituminous Pavement	SY	788		788	$ 7.63	$ 6,015.21
						PAVEMENT REMOVAL TOTAL (ROUNDED)	$ 6,100
Asphalt Roads							
303-01	Mineral Aggregate, Type A Base, Grading D	TON	600		600	$ 32.05	$ 19,235.58
402-01	Bituminous Material For Prime Coat (PC)	TON	1		1	$ 713.46	$ 519.53
402-02	Aggregate For Cover Material (PC)	TON	3		3	$ 66.09	$ 173.70
403-01	Bituminous Material For Tack Coat (TC)	TON	0		0	$ 781.26	$ 186.67
411-01.07	ACS (PG64-22) GR "E"	TON	42		42	$ 112.44	$ 4,765.36
411-02.10	ACS Mix(PG70-22) Grading D	TON	52		52	$ 115.30	$ 6,022.65
						PAVING TOTAL (ROUNDED)	$ 31,000
Concrete Roads							
						CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)	$ -
Drainage							
607-05.02	24" Concrete Pipe Culvert (Class III)	LF	42		42	$ 85.50	$ 3,590.85
611-07.01	Class A Concrete (Pipe Endwalls)	CY	2		2	$ 1,054.36	$ 1,901.22
611-07.02	Steel Bar Reinforcement (Pipe Endwalls)	LB	171		171	$ 2.31	$ 395.80
						DRAINAGE TOTAL (ROUNDED)	$ 5,900
Appurtenances							
						ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)	$ -
Earthwork & Mineral							
105-01	Constrction Stakes, Lines, and Grades	LS	1	-0.8	0.2	$ 112,407.96	$ 22,481.59
203-01	Road & Drainage Excavation (Unclassified)	CY	2260		2260	$ 16.78	$ 37,935.73
203-03	Borrow Excavation (Unclassified)	CY	1884		1884	$ 15.04	$ 28,323.13
						EARTHWORK & MINERAL TOTAL (ROUNDED)	$ 88,800
Structures							
N/A	Removal of Bridge	SF	1582		1582	$ 20.00	$ 31,648.00
N/A	New Bridge (Box):	SF	1743		1743	$ 105.00	$ 182,978.25
						STRUCTURES TOTAL (ROUNDED)	$ 214,700
Interchanges and Unique Intersections							
						INTERCHANGES AND UNIQUE INTERSECTIONS TOTAL (ROUNDED)	$ -
Lighting & Signalization							
						LIGHTING & SIGNALIZATION TOTAL (ROUNDED)	$ -
Guardrail							
705-01.01	Guardrail at Bridge Ends	LF	100		100	$ 73.64	$ 7,364.49
705-02.02	Single Guardrail (Type 2)	LF	163		162.624	$ 18.82	$ 3,060.28
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)	$ 25,100
Seeding and Sodding							
801-01	Seeding (With Mulch)	UNIT	26		26	$ 78.14	$ 2,021.75
801-01.07	Temporary Seeding (With Mulch)	UNIT	19		19	$ 29.93	$ 580.75
801-02	Seeding (Without Mulch)	UNIT	19		19	$ 28.50	$ 552.97
						SODDING TOTAL (ROUNDED)	$ 3,200
Maintenace of Traffic							
N/A	Traffic Control	LS	1		1		$ 15,500.00
712-02.02	Interconnected Portable Barrier Rail	LF	15		15	$ 31.96	$ 472.52
						MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)	$ 16,000
Signs							
Not Listed	Signs (Construction)	LS	1		1	$ -	$ 400
						SIGNING TOTAL (ROUNDED)	$ 400
Pavement Markings							
716-13.06	Spray Thermo P.M. (40 mil 4")	LM	0.6		0.6	$ 2,887.70	$ 1,617.11
						PAVEMENT MARKINGS TOTAL (ROUNDED)	$ 1,700
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	0.064		0.064	$ 375,000	$ 24,000
N/A	Underground Communication	LM	0.064		0.064	$ 500,000	$ 32,000
N/A	Underground Water	LM	0.064		0.064	$ 237,600	$ 15,206
						UTILITIES TOTAL (ROUNDED)	$ 71,300.00
Right-of-Way							
N/A	Right-of-Way	LS	1		1	$ 61,090.91	$ 61,090.91
						RIGHT-OF-WAY TOTAL (ROUNDED)	$ 61,100.00

BRIDGE TIR

Haywood
State Route 1

LOCATION			
Bridge #:	38SR0010003	Feature Crossed:	Branch
Road Name:	State Route 1	Log mile:	2.89
Route ID:	SR001	System:	5-STP Rural, State
City:	Stanton	Functional Class:	Rural Arterial
County:	Haywood	State Project Number	38002-0217-94
PIN:	124503.00		

ROADWAY		
	Existing	**Proposed (Preliminary Design Estimate)**
Design Standard		RD01-TS-3 / 2011 Green Book
Route Characteristics		
AADT:	1650	1980
AADT Year:	2022	2042
Terrain:	Rolling	Rolling
No. Lanes:	2	2
Speed(Posted):	55	55
Speed (Design):		55
Approach Character.		
Lane Width (ft):	12	12
Shoulder Width (ft):	4	8
ROW Width (ft):	60	110
ROW Tracts Affected		2
ROW Required (acre)		0.34
Cross Section Width (ft):	24/32/60	24/40/110
Approach Length (ft):		150' (east), 150' (west)
Alignment:	tangent	tangent
Grade:		grade to remain the same as existing
Surface Material:	Pavement	Pavement
Sidewalks (R/L):	No	No
App. Lower Than Structure	No	No
Utilities (list)	UG: Water, FOC OH: Electric	N/A
Utilities to be Relocated	N/A	UG: Water, FOC OH: Electric
Comments		

BRIDGE TIR

Haywood
State Route 1

STRUCTURE		
	Existing	**Proposed (Preliminary Design Estimate)**
Bridge Characteristics		
Year Built	1926	
Load Limit	16 tons(inspection report), 40 tons(signed)	
Sufficiency Rating	37.6	
Skew	45	45
Structure Type	Concrete Deck Girder/Steel Beam	Reinforced Concrete Box
Structures in Channel	No	No
Length (ft)	46	38.3
No. Spans (App./Main)	0 | 1	0 | 1
Width (curb to curb) (ft)	28.2	40
Width (o to o) (ft)	34.4	45.5
Sidewalks on Structure	No	No
Vert. Clearance (ft)	9	11.7
Superstructure Depth (in)	86	39.5
Girder Depth (in)	38	n/a
Finish Grade-Low Girder (in)	47	12.5
High Water Marks	N/A	
Bridge Rail Type	Concrete w/ Guardrail	Guardrail
Bridge Rail Height (ft)	2.67	2.25
Indication Overtopping	No	
Local Scour	No	
Obstructions	No	
Other Structures	N/A	N/A
Comments	App 2 cracking & spalling. Left emb wash. Span A/C spalling & left/right curb spalling. Deck fine cracks to surface steel. Steel I-beams section loss & hole in flange. Con I-beams scattered cracks, surface steel & spalled to steel areas. Abut. 1 2"joint crack & in channel. Abut. 2 1" joint crack.	

BRIDGE TIR

FLOW RATES (from USGS StreamStats)	
Drainage Area (sq. miles)	0.52
10 Year Discharge Rate (Q10) cfs	512
50 Year Discharge Rate (Q50) cfs	676
100 Year Discharge Rate (Q100) cfs	742

CHANNEL	
Depth (ft)	N/A
Width of Normal Flow (ft)	15
Depth of Normal Flow (ft)	N/A
Skew of Channel with Roadway	90
Type of Material in Stream Bed	clay, sand, and silt
Type of Vegetation on Banks	low growth, large timber, grass, dead trees
Are Channel Banks Stable	No
Signs of Stream Aggradation	No
Signs of Stream Degradation	No
Drift or Drift Potential	No
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	temporary detour
Description	Official Detour: Detour thru-traffic east of bridge onto State Route 179 heading west, next onto State Route 14 heading south, then onto State Route 59 heading east, lastly back onto State Route 1 heading west. Detour thru-traffic west of bridge using the same route in reverse order. This is the only detour route that will be signed.
Comments	Detour for Local Traffic: Detour thru-traffic east of bridge onto State Route 179 heading west, next onto Charleston-Mason Rd heading south, then back onto State Route 1 heading west. Detour thru-traffic west of bridge using the same route in reverse order. Construction phasing for both bridges on State Route 1 (Bridge over Muddy Creek at LM 2.13 and Bridge over Branch at LM 2.89) need to accommodate access to the property located in between the two (2) bridges in Haywood County.

TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

PROJECT NO.: 38002-1217-94 ROUTE: S.R. 1
COUNTY: HAYWOOD CITY:
PROJECT PIN NUMBER: 124503.00
PROJECT DESCRIPTION: HWY. 70 E. BRIDGE OVER BRANCH (L.M. 2.89)
BRIDGE ID: 38SR0010003

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
1,650	2022	1,980	218	11	2042	65-35	9	13		

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

REVIEWED BY: TONY ARMSTRONG Tony Armstrong DATE 11-30-17
TRANSPORTATION MANAGER 1
SUITE 1000, JAMES K. POLK BUILDING

APPROVED BY: JIM WATERS DATE 12/1/17
ASSISTANT DIRECTOR
SUITE 1000, JAMES K. POLK BUILDING

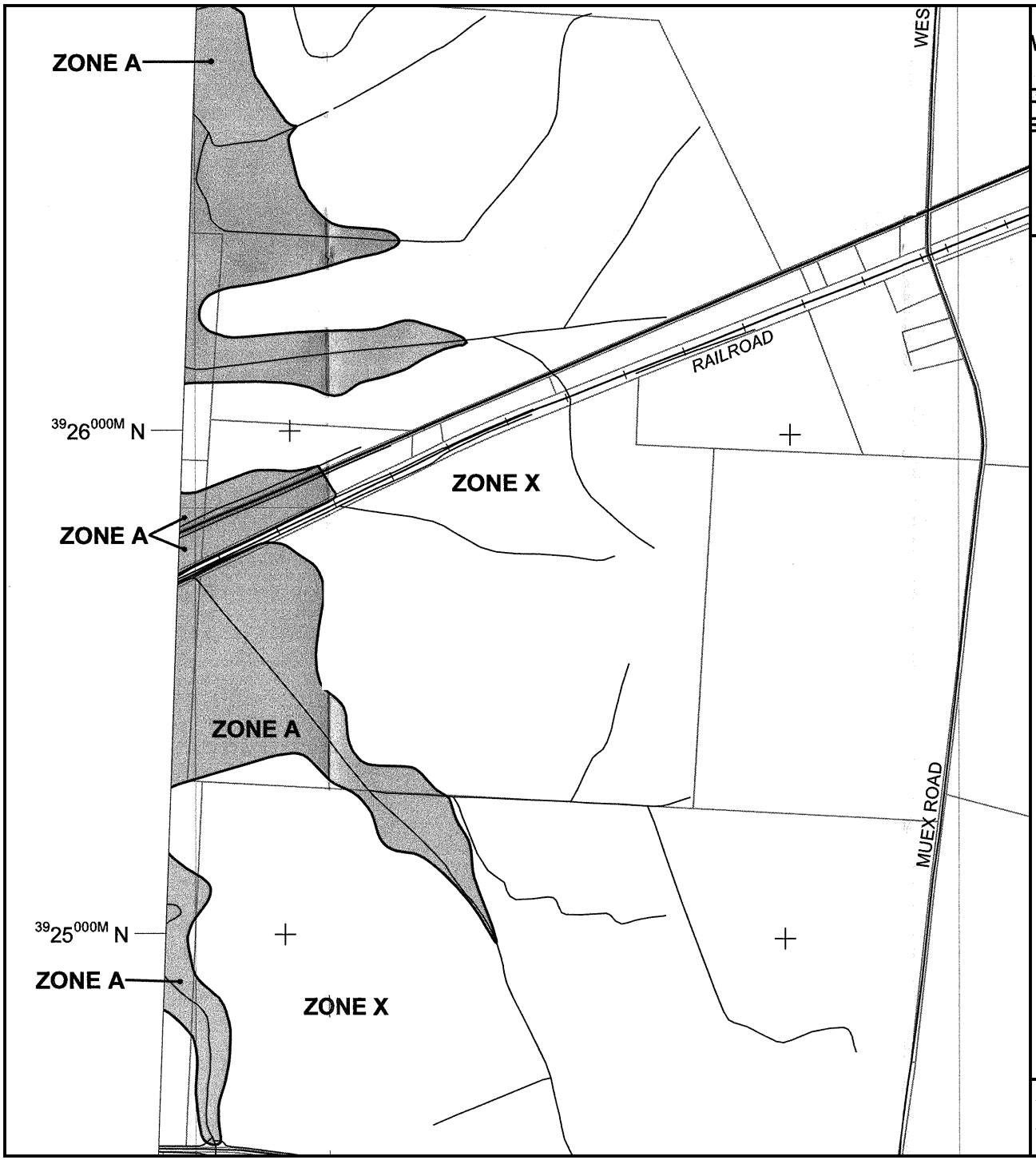
COMMENTS:

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" = 1000'

1000 2000 FEET

0 300 600 METERS

PANEL 0310D

FIRM

FLOOD INSURANCE RATE MAP

HAYWOOD COUNTY, TENNESSEE
AND INCORPORATED AREAS

PANEL 310 OF 400
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HAYWOOD COUNTY	470227	0310	D
STANTON, TOWN OF	470256	0310	D

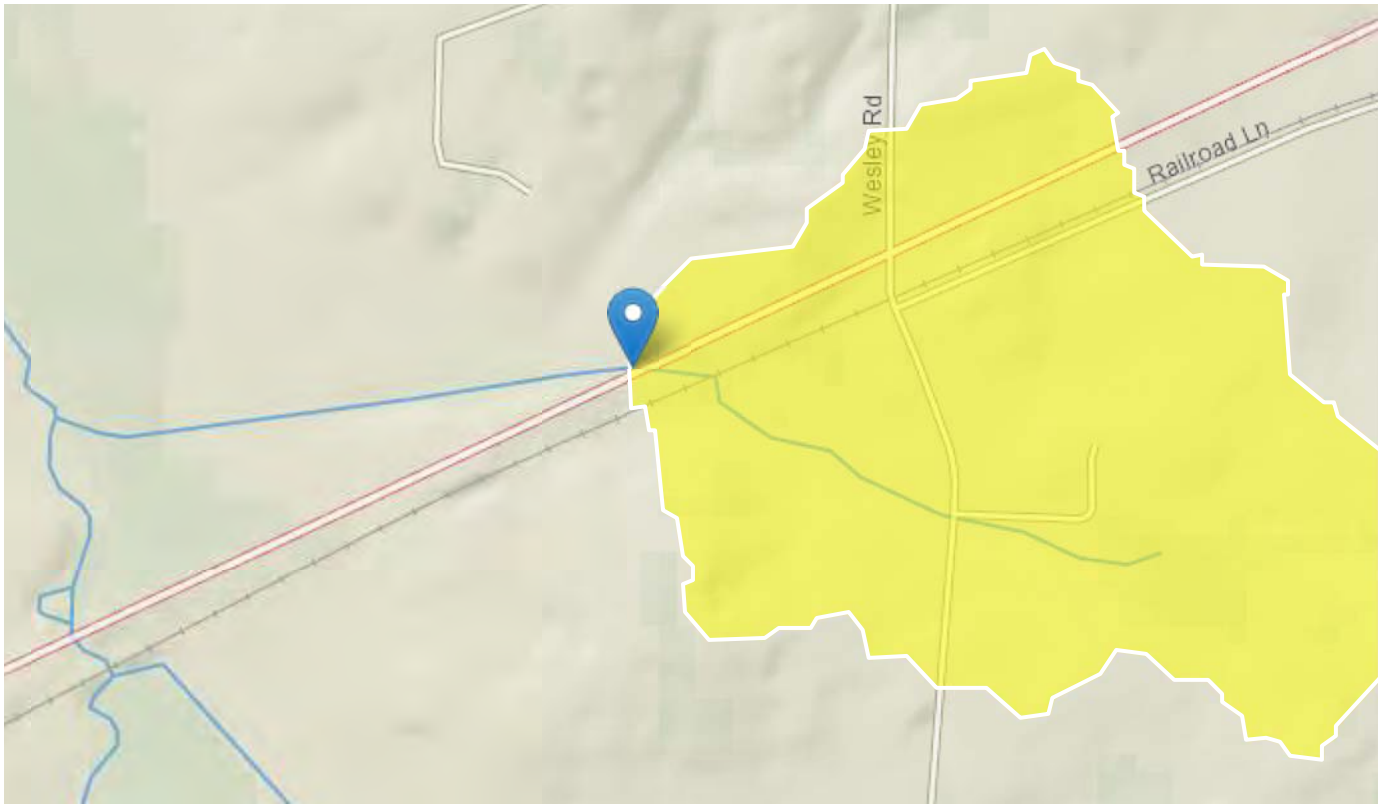
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
47075C0310D
EFFECTIVE DATE
APRIL 16, 2008

Federal Emergency Management Agency

StreamStats Report

Region ID: TN
Workspace ID: TN20180105165149004000
Clicked Point (Latitude, Longitude): 35.45529, -89.42674
Time: 2018-01-05 10:51:19 -0600



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CONTDA	Area that contributes flow to a point on a stream	0.52	square miles
DRNAREA	Area that drains to a point on a stream	0.52	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	37.002	percent
CLIMFAC2YR	Two-year climate factor from Lichy and Karlinger (1990)	2.402	dimensionless
SOILPERM	Average Soil Permeability	1.07	inches per hour

Peak-Flow Statistics Parameters [DAOnly Area 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	0.52	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	309	ft^3/s
5 Year Peak Flood	433	ft^3/s
10 Year Peak Flood	512	ft^3/s
25 Year Peak Flood	607	ft^3/s
50 Year Peak Flood	676	ft^3/s
100 Year Peak Flood	742	ft^3/s
500 Year Peak Flood	893	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	0.52	square miles	2	2405
RECESS	Recession Index	32	days per log cycle	32	350
PERMGTE2IN	Percent permeability gte 2 in per hr	37.002	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	0.000579	ft^3/s
30 Day 5 Year Low Flow	0.00169	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	0.52	square miles	2	2405
RECESS	Recession Index	32	days per log cycle	32	350
CLIMFAC2YR	Tennessee Climate Factor 2 Year	2.402	dimensionless	2.307	2.455
PERMGTE2IN	Percent permeability gte 2 in per hr	37.002	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	0.604	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	0.52	square miles	2	2405
RECESS	Recession Index	32	days per log cycle	32	350
PERMGTE2IN	Percent permeability gte 2 in per hr	37.002	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	0.0901	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	0.52	square miles	2	2405
RECESS	Recession Index	32	days per log cycle	32	350
PERMGTE2IN	Percent permeability gte 2 in per hr	37.002	percent	2	98
CLIMFAC2YR	Tennessee Climate Factor 2 Year	2.402	dimensionless	2.307	2.455
SOILPERM	Average Soil Permeability	1.07	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	0.000532	ft^3/s
99 Percent Duration	0.00085	ft^3/s
98 Percent Duration	0.00121	ft^3/s
95 Percent Duration	0.00182	ft^3/s
90 Percent Duration	0.00258	ft^3/s
80 Percent Duration	0.00428	ft^3/s
70 Percent Duration	0.00715	ft^3/s
60 Percent Duration	0.0147	ft^3/s
50 Percent Duration	0.0253	ft^3/s
40 Percent Duration	0.0545	ft^3/s
30 Percent Duration	0.159	ft^3/s
20 Percent Duration	0.522	ft^3/s
10 Percent Duration	1.12	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	
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	X
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	

BRIDGE TIR

Haywood
State Route 1

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: 38SR0010003
Haywood County
State Route 1

Bridge Number

Upstream

Transportation Investment Report for Bridge ID: 38SR0010003
Haywood County
State Route 1

Downstream

Inlet

Transportation Investment Report for Bridge ID: 38SR0010003
Haywood County
State Route 1

Outlet

Floodplain Upstream

Transportation Investment Report for Bridge ID: 38SR0010003
Haywood County
State Route 1

View of Floodplain Downstream from West of Bridge

Looking West from Bridge

Transportation Investment Report for Bridge ID: 38SR0010003
Haywood County
State Route 1

Looking East from Bridge

Eastbound Approach to Bridge

Transportation Investment Report for Bridge ID: 38SR0010003
Haywood County
State Route 1

Westbound Approach to Bridge

Weight Limit Sign at East Approach

Extensive Corrosion on I-Beams at Inlet

West Abutment Decay and Cracking

Transportation Investment Report for Bridge ID: 38SR0010003
Haywood County
State Route 1

Extensive Corrosion of inner I-Beam at Inlet

Extensive Corrosion of inner I-Beam at Inlet

Transportation Investment Report for Bridge ID: 38SR0010003
Haywood County
State Route 1

Washout and Vegetation on West Abutment at Inlet

Severe Corrosion of Flange in Outer I-Beam at Outlet

Transportation Investment Report for Bridge ID: 38SR0010003
Haywood County
State Route 1

Pavement Cracking and Spalling along Surface from West Abutment

Spalling and Cracking along Surface

Transportation Investment Report for Bridge ID: 38SR0010003
Haywood County
State Route 1

Poor conditions of Railing and Shoulder (Vegetation and Decay)

Fiber Optic Cable Utility Sign, Southwest of Bridge

Transportation Investment Report for Bridge ID: 38SR0010003
Haywood County
State Route 1

Utility Poles on North side (Downstream) of Bridge

West Abutment

Transportation Investment Report for Bridge ID: 38SR0010003
Haywood County
State Route 1

East Abutment

Bridge Beams