TENNESSEE
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION INVESTMENT REPORT
IMPROVE ACT

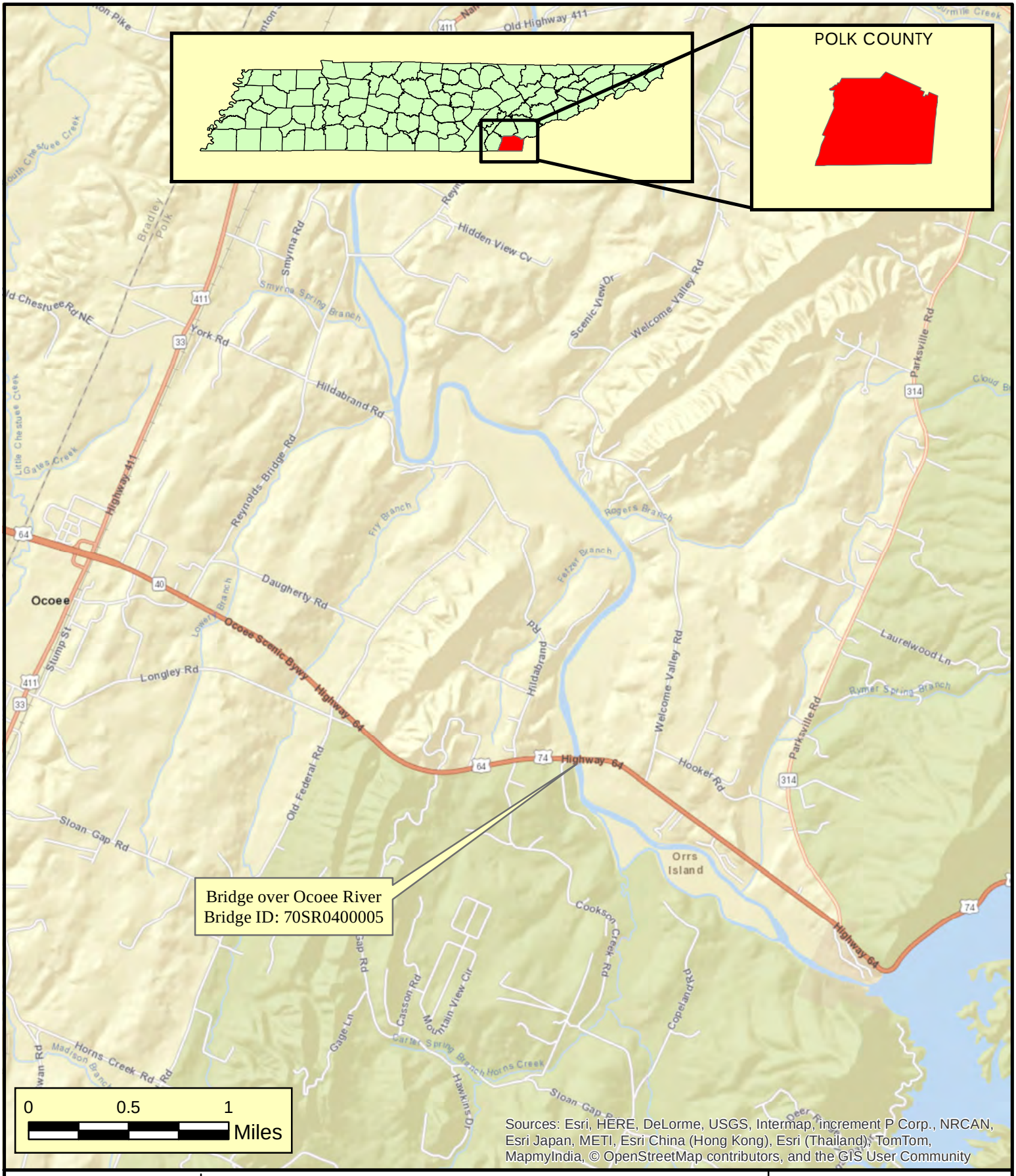
STATE ROUTE 40
Bridge (70SR0400005) over Ocoee River,
Log Mile 3.12 Polk County
PIN 124102.00

PREPARED BY ARCADIS U.S.
FOR THE
TENNESSEE DEPARTMENT OF TRANSPORTATION

Approved by _____ *Date* 8.16.18 *Approved by* _____ *Date* 8/16/18
Chief of Environment and Planning *Deputy Commissioner and Chief Engineer*

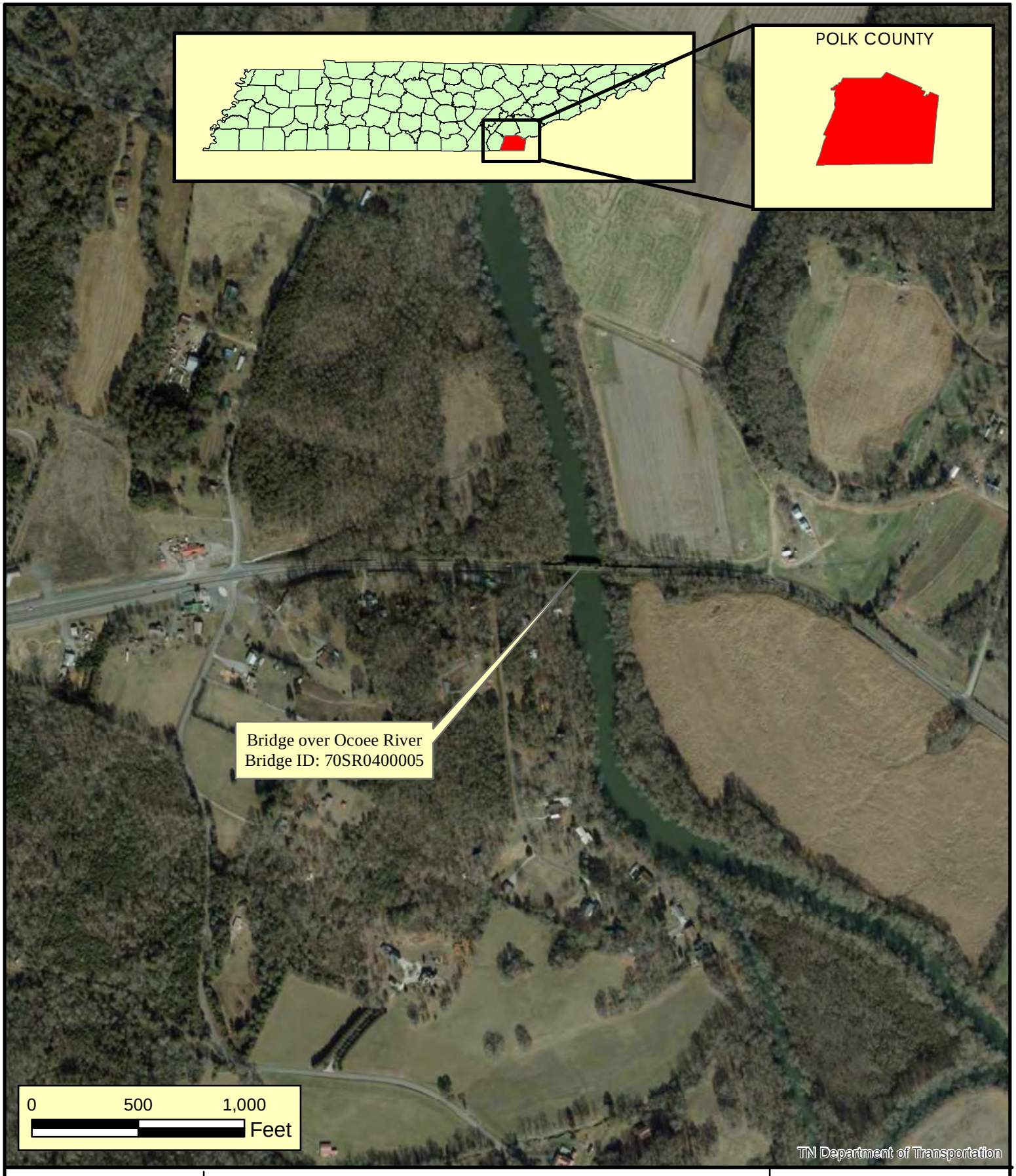
Approved by:	Signature	DATE
TRANSPORTATION DIRECTOR STRATEGIC TRANSPORTATION INVESTMENTS DIVISION		8-14-18
ENGINEERING DIRECTOR REGION 2 PROJECT DEVELOPMENT DIVISION		8-15-18
ENGINEERING DIRECTOR STRUCTURES DIVISION		8/14/18

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
STATE ROUTE 40 (US-64/74)
BRIDGE OVER OCOEE RIVER
LOG MILE 3.12
POLK COUNTY

TN TDOT Department of Transportation



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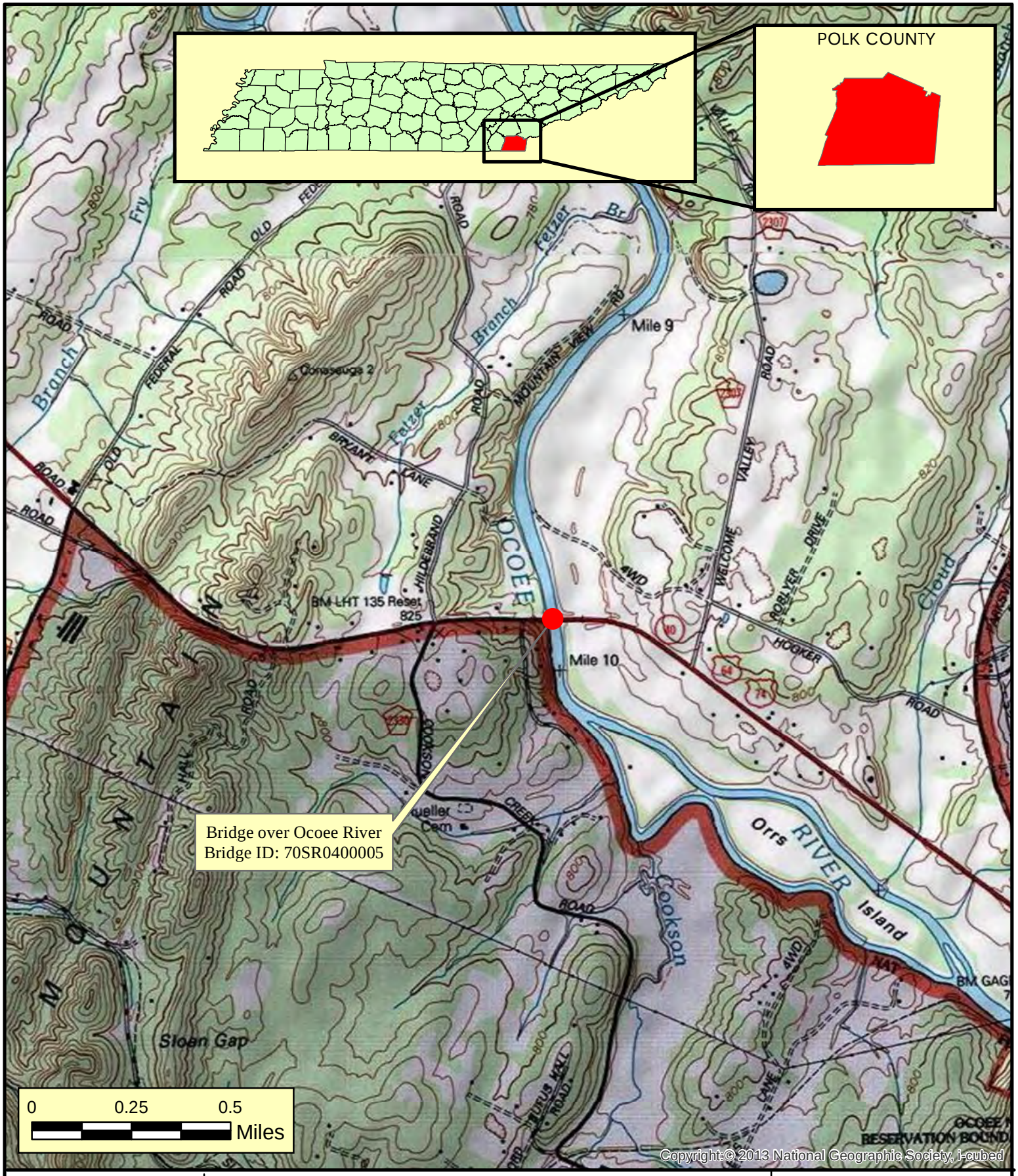
LOCATION MAP
STATE ROUTE 40 (US-64/74)
BRIDGE OVER OCOEE RIVER
LOG MILE 3.12
POLK COUNTY

TN TDOT Department of Transportation



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TOPOGRAPHIC MAP
STATE ROUTE 40 (US-64/74)
BRIDGE OVER OCOEE RIVER
LOG MILE 3.12
POLK 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: Emily Burgess, Transportation Project Specialist
Strategic Transportation Investments Division

DATE: August 8, 2018

SUBJECT: TIR Field Review
S.R. 40, Bridge over Ocoee River
Bridge ID: 70SR0400005
Log Mile 3.12
Polk County
PIN: 124102.00

A field review was held for the above-mentioned project on December 13, 2017.

The existing structure, built in 1937, is a six-span concrete bridge crossing the Ocoee River in Polk County. The bridge is 546 feet long with an out-to-out width of 27 feet 2 inches and a weight limit of 20 tons. The existing structure has several animal-related issues including barn owls, cliff swallows, snail darter (fish) and bats. As per the Bridge Inspection Report from April 20, 2016, the structure has a sufficiency rating of 32.9.

The discharges for the drainage basin were determined using StreamStats Version 3.0 which used a drainage area of 612.9 square miles. The 10-year discharge rate (Q10) was 33,000 cubic feet per second (cfs), Q50 was 46,200 cfs, and Q100 was 52,300 cfs.

The proposed alignment and grade for the replacement structure will shift to the north of the existing structure on a new alignment. Proposed alignments shown in this report are for graphical purposes only and are not a final horizontal alignment. The bridge will have a 90-degree skew with the river channel. There is a 45 mph posted speed limit on S.R. 40 however the design speed will be 55 mph. The proposed structure will be a four-span steel I-beam structure

with a total length of 570 feet including a 210 foot main span over the river and a 120 foot span on the west end and two (2) 120 foot spans on the east end. FEMA regulations apply to this structure. It is estimated that two (2) tracts of land will be affected resulting in 5.27 acres of estimated ROW.

The route has a base year 2022 AADT of 5,790 and a design year 2042 AADT of 6,950. The existing structure and roadway approaches have two (2) twelve (12) foot travel lanes with less than one (1) foot shoulders. The state route is classified as a Rural Principal Arterial and Standard Drawing RD01-TS-3 was used for design considerations. The typical section on the proposed structure will consist of two (2) twelve (12) foot travel lanes and a twelve (12) foot two-way left turn lane with shoulder widths of 10 feet and concrete parapets for a total out-to-out width of 57'- 3" on the structure. The project will extend approximately to the intersection of S.R. 40 and Hildebrand Road to the west and will extend to approximately the intersection of S.R. 40 and Welcome Valley Road to the east in order to tie the roadway back in to existing roadway. This structure should be configured in a way so that it could be widened in the future to a five (5) lane facility. No detours or phasing will be required. The existing structure and roadway will remain open to traffic until completion of the proposed structure and realignment of S.R. 40 after which the existing approach roadway and structure will be removed.

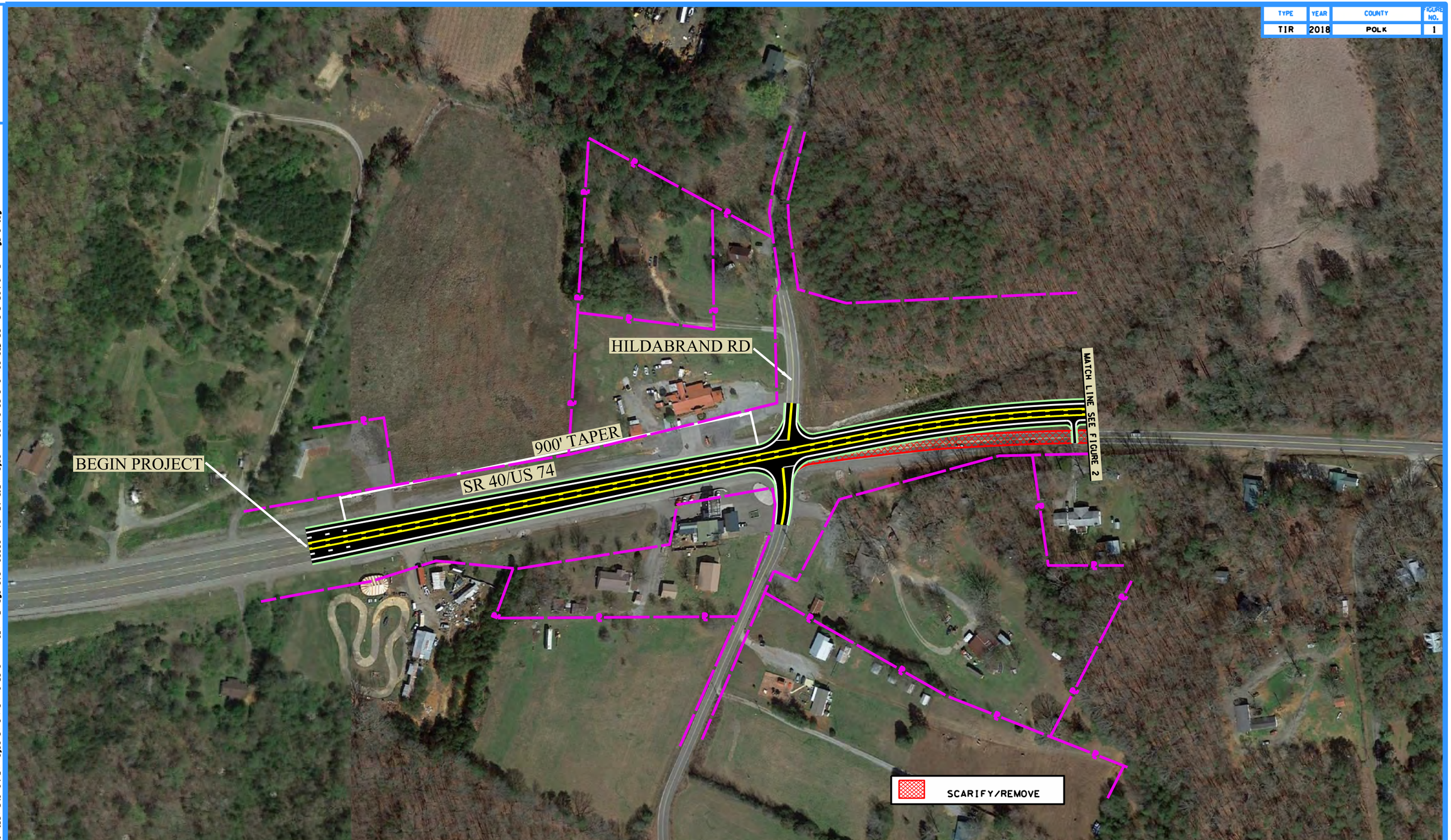
The cost for the estimated required approach work, estimated replacement, and estimated preliminary engineering for this bridge replacement is approximately $19,603,000.

EB

cc: File

TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TIR	2018	POLK	1



0' 200' 400' 600'

N

BRIDGE TIR
STATE ROUTE 40
US 74
L.M. 3.12
POLK COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION
INVESTMENTS DIVISION

FIGURE 1
SR 40
L.M.3.12

8/6/2018 9:26:17 AM
\\AG0350C8F00008.ad.dot.state.tn.us\FUNCTIONAL\Projects\Polk\SR 40 US 64 74\POLK - Bridge over Ocoee River LM 3.12\Project Files\Microstation\Conceptual Plans (DGN & PDF)\Figure 1.dgn

TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TIR	2018	POLK	2

PROPOSED 4 SPAN BRIDGE WITH STEEL I-BEAMS: 570' LONG AND 57'-3" WIDE

PROPOSED R.O.W.

MATCH LINE SEE FIGURE 1

2 - 12' LANES W/ 12' TWLTL AND 10' SHOULDERS

EXISTING BRIDGE

<<< OCOEE RIVER

WELCOME VALLEY RD

SR 40/US 74

PROPOSED R.O.W.

END PROJECT

SCARIFY/REMOVE

0' 200' 400' 600'

N

BRIDGE TIR

STATE ROUTE 40
US 74
L.M. 3.12
POLK COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 2
SR 40
L.M. 3.12

8/8/2018 10:30:28 AM
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TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TIR	2018	POLK	3

APPROX. 35 FEET FROM EXIST. CL (PRES. ROW)

STUDY AREA IS APPROX. 350 FEET FROM EXISTING CENTERLINE (PRES. ROW)

STUDY AREA BEGINS 300 FEET BEFORE BEGIN PROJECT

STUDY AREA IS APPROX. 100 FEET FROM EXISTING CENTERLINE (PRES. ROW)

SR 40/US 74

MATCH LINE SEE FIGURE 4

STUDY AREA IS APPROX. 100 FEET FROM EXISTING CENTERLINE (PRES. ROW)

STUDY AREA IS APPROX. 100 FEET FROM EXISTING CENTERLINE (PRES. ROW)

APPROX. 20 FEET FROM EXIST. CL (PRES. ROW)

APPROX. 80 FEET FROM EXIST. CL (PRES. ROW)

APPROX. 150 FEET FROM END OF SIDE ROAD

ENVIRONMENTAL TECHNICAL STUDY AREA

SCARIFY/REMOVE

0' 200' 400' 600'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

STATE ROUTE 40
US 74
L.M. 3.12
POLK COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

FIGURE 3
SR 40
L.M.3.12

8/6/2018 10:40:50 AM
\\AG0350CIF00008.ad.state.tn.us\FUNCTIONAL\Projects\Polk\SR 40 US 64 74\POLK - Bridge over Ocoee River LM 3.12\Project Files\Microstation\ConceptualPlans (DGN & PDF)\Figure 3.dgn

TENNESSEE D.O.T.
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION
FILE NO.

TYPE	YEAR	COUNTY	FIGURE NO.
TIR	2018	POLK	4

STUDY AREA IS APPROX. 350 FEET FROM EXISTING CENTERLINE (50 FEET FROM PROP. ROW)

PROPOSED 4 SPAN BRIDGE
570' LONG AND 57'-3" WIDE

STUDY AREA IS APPROX. 190 FEET FROM EXISTING CENTERLINE (50 FEET FROM PROP. ROW)

PROPOSED R.O.W.

MATCH LINE SEE FIGURE 3

APPROX. 150 FEET FROM END OF SIDE ROAD

APPROX. 25 FEET FROM EXIST. CL (PRES. ROW)

STUDY AREA IS APPROX. 40 FEET FROM EXISTING CENTERLINE (PRES. ROW)

EXISTING BRIDGE

OCOEE RIVER

SR 40/US 74

PROPOSED R.O.W.

STUDY AREA ENDS 300 FEET AFTER END PROJECT

ENVIRONMENTAL TECHNICAL STUDY AREA

SCARIFY/REMOVE

0' 200' 400' 600'

N

ENVIRONMENTAL TECHNICAL STUDY AREA

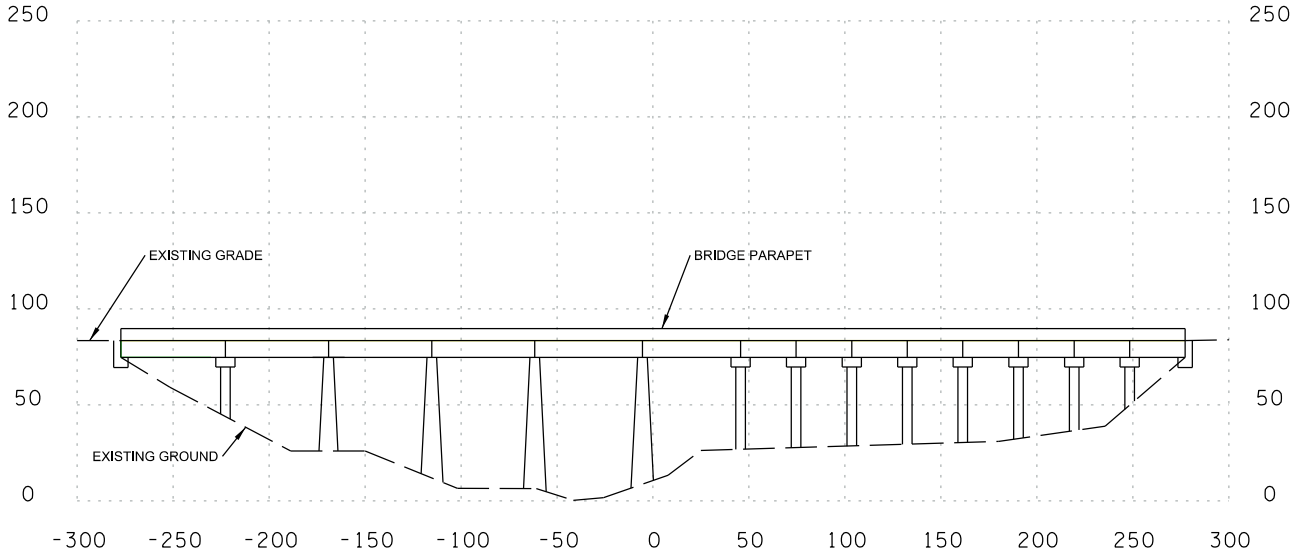
STATE ROUTE 40
US 74
L.M. 3.12
POLK COUNTY

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

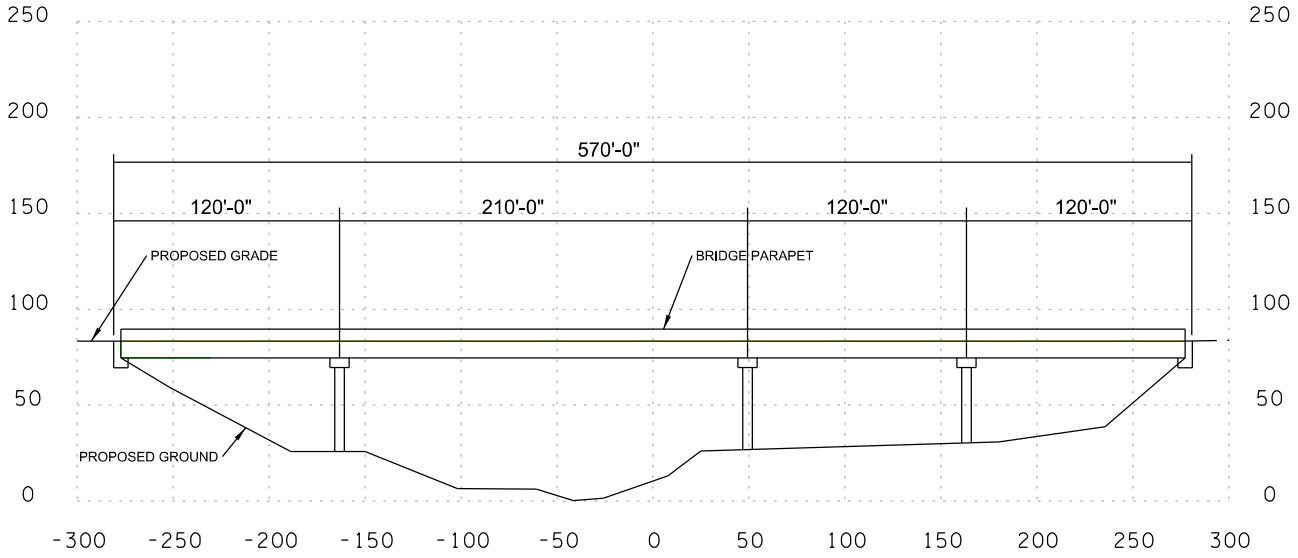
FIGURE 4
SR 40
L.M.3.12

8/13/2018 2:03:55 PM
\\AD0350CRF00008.red.osis.state.tn.us\FUNCTIONAL\Projects\Polk\SR 40 US 64 74\POLK - Bridge over Ocoee River LW 3.12\Project Files\Microstation\ConceptualPlans\DGN & PDF\Figure 4.dgn

EXISTING STRUCTURE



PROPOSED STRUCTURE



0' 50' 100' 150'

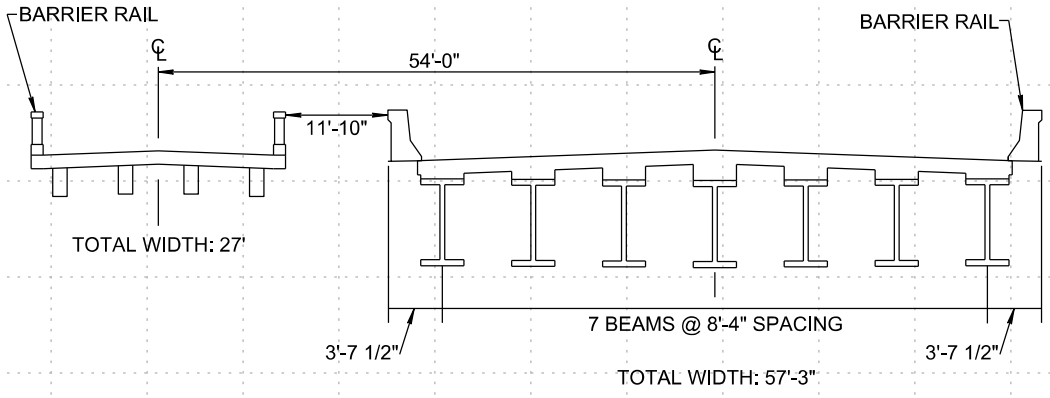
SCALE: 1" = 100'

PROPOSED PROFILE

STATE ROUTE 40
BRIDGE OVER OCOEE RIVER, L.M. 3.12
BRIDGE ID: 70SR0400005
POLK COUNTY, TN

EXISTING STRUCTURE

PROPOSED STRUCTURE



0 10 20 30

SCALE: 1"= 20' H
1"= 10' V

PROPOSED TYPICAL SECTION

STATE ROUTE 40
BRIDGE OVER OCOEE RIVER, L.M. 3.12
BRIDGE ID: 70SR0400005
POLK COUNTY, TN

COST ESTIMATE SUMMARY

Route:	SR 40
Description:	Bridge over Ocoee River
County:	Polk
Length:	0.85 mi
Date:	August 8, 2018

DESCRIPTION	LOCAL 0%	STATE 0%	FEDERAL 0%	TOTAL
Construction Items				
Pavement Removal	$0	$0	$0	$104,200
Asphalt Paving	$0	$0	$0	$1,810,700
Concrete Pavement	$0	$0	$0	$0
Drainage	$0	$0	$0	$141,400
Appurtenances	$0	$0	$0	$0
Structures	$0	$0	$0	$8,471,100
Fencing	$0	$0	$0	$0
Signalization	$0	$0	$0	$0
Railroad Crossing or Separation	$0	$0	$0	$0
Earthwork	$0	$0	$0	$1,463,200
Clearing and Grubbing	$0	$0	$0	$0
Seeding & Sodding	$0	$0	$0	$44,000
Rip-Rap or Slope Protection	$0	$0	$0	$0
Guardrail	$0	$0	$0	$75,100
Signing	$0	$0	$0	$12,100
Pavement Markings	$0	$0	$0	$27,800
Maintenance of Traffic	$0	$0	$0	$162,000
Mobilization (5%)	$0	$0	$0	$615,600
Other Items = 15%	$0	$0	$0	$1,939,100
Const. Contingency = 25%	$0	$0	$0	$1,598,800
Construction Estimate	$0	$0	$0	$16,465,100
Interchanges & Unique Intersections				
Roundabouts	$0	$0	$0	$0
Interchanges	$0	$0	$0	$0
Right-of-Way & Utilties	**LOCAL 0%**	**STATE 0%**	**FEDERAL 0%**	**TOTAL**
Right-of-Way	$0	$0	$0	$29,500
Utilities	$0	$0	$0	$0
Preliminary & Construction Engineering and Inspection				
Prelim. Eng. 9%	$0	$0	$0	$1,459,000
Const. Eng. & Inspec. 10%	$0	$0	$0	$1,649,500
Total Project Cost	$0	$0	$0	$ 19,603,000

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	4428		4428	$ 23.51	$ 104,113.74
						PAVEMENT REMOVAL TOTAL (ROUNDED)	$ 104,200
Asphalt Roads							
303-01	Mineral Aggregate, Type A Base, Grading D	TON	25907		25907	$ 29.27	$ 758,426.31
307-02.01	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading A	TON	3461		3461	$ 96.16	$ 332,805.20
307-02.02	Asphalt Cement (PG70-22)(BPMB-HM) Grading A-S	TON	81		81	$ 725.60	$ 58,961.99
307-02.03	Aggregate (BPMB-HM) Grading A-S Mix	TON	2627		2627	$ 70.87	$ 186,215.32
307-02.08	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading B-M2	TON	2267		2267	$ 108.57	$ 246,143.57
402-01	Bituminous Material For Prime Coat (PC)	TON	33		33	$ 690.22	$ 22,774.05
402-02	Aggregate For Cover Material (PC)	TON	119		119	$ 61.15	$ 7,283.15
403-01	Bituminous Material For Tack Coat (TC)	TON	18		18	$ 770.60	$ 14,055.83
411-01.07	ACS (PG64-22) GR "E"	TON	303		303	$ 111.21	$ 33,666.44
411-02.10	ACS Mix(PG70-22) Grading D	TON	1329		1329	$ 113.07	$ 150,293.93
						PAVING TOTAL (ROUNDED)	$ 1,810,700
Concrete Roads							
						CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)	$ -
Drainage							
607-05.02	24" Concrete Pipe Culvert (Class III)	LF	704		704	$ 83.29	$ 58,595.55
611-07.01	Class A Concrete (Pipe Endwalls)	CY	27		27	$ 1,017.96	$ 27,861.56
611-07.02	Steel Bar Reinforcement (Pipe Endwalls)	LB	2601		2601	$ 2.27	$ 5,897.00
710.02	Aggregate Underdrains (with pipe)	LF	8976		8976	$ 5.46	$ 49,008.96
						DRAINAGE TOTAL (ROUNDED)	$ 141,400
Appurtenances							
						ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)	$ -
Earthwork & Mineral							
105-01	Constrction Stakes, Lines, and Grades	LS	1		1	$ 112,407.96	$ 112,407.96
203-01	Road & Drainage Excavation (Unclassified)	CY	46980		46980	$ 16.42	$ 771,357.84
203-03	Borrow Excavation (Unclassified)	CY	39150		39150	$ 14.80	$ 579,384.63
						EARTHWORK & MINERAL TOTAL (ROUNDED)	$ 1,463,200
Structures							
N/A	Removal of Bridge	SF	15288		15288	$ 20.00	$ 305,760.00
N/A	New Bridge (Steel Girder):	SF	32661		32661	$ 250.00	$ 8,165,250.00
						STRUCTURES TOTAL (ROUNDED)	$ 8,471,100
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	2468		2468.4	$ 18.54	$ 45,757.27
705-04.07	Tan Energy Absg Term (NCHRP, 350, TL3)	EA	6		6	$ 2,350.94	$ 14,105.65
705-04.09	Earth Pad for Type 38 GR End Treatment	EA	6		6	$ 1,297.93	$ 7,787.58
						GUARDRAIL TOTAL (ROUNDED)	$ 75,100
Seeding and Sodding							
801-01	Seeding (With Mulch)	UNIT	393		393	$ 70.00	$ 27,489.77
801-01.07	Temporary Seeding (With Mulch)	UNIT	295		295	$ 29.21	$ 8,602.36
801-02	Seeding (Without Mulch)	UNIT	295		295	$ 26.65	$ 7,848.59
						SODDING TOTAL (ROUNDED)	$ 44,000
Maintenace of Traffic							
N/A	Traffic Control	LS	1		1		$ 154,766.88
712-02.02	Interconnected Portable Barrier Rail	LF	224		224	$ 31.95	$ 7,170.64
						MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)	$ 162,000
Signs							
Not Listed	Signs (Construction)	LS	1		1	$ -	$ 12,100
						SIGNING TOTAL (ROUNDED)	$ 12,100
Pavement Markings							
716-13.06	Spray Thermo P.M. (40 mil 4")	LM	9.8		9.8	$ 2,826.07	$ 27,752.00
						PAVEMENT MARKINGS TOTAL (ROUNDED)	$ 27,800
Fencing							
						FENCE TOTAL (ROUNDED)	$ -
Rip-Rap							
						RIP-RAP & SLOPE PROTECTION TOTAL (ROUNDED)	$ -
Clearing and Grubing							
						CLEAR AND GRUBBING TOTAL (ROUNDED)	$ -
Railroad At-Grade Crossing							
						RAILROAD CROSSING OR SEPARATION TOTAL (ROUNDED)	$ -
Utilties							
						UTILITIES TOTAL (ROUNDED)	$ -
Right-of-Way							
N/A	Right-of-Way	LS	1		1	$ 29,427.27	$ 29,427.27
						RIGHT-OF-WAY TOTAL (ROUNDED)	$ 29,500.00

BRIDGE TIR

LOCATION			
Bridge #:	70SR0400005	Feature Crossed:	Ocoee River
Road Name:	SR 40	Log mile:	3.12
Route ID:	SR 40	System:	State Route
City:	Ocoee	Functional Class:	Rural Principle Arterial
County:	Polk		
PIN:	124102.00		

ROADWAY		
	Existing	**Proposed (Preliminary Design Estimate)**
Design Standard		RD01-TS-3
Route Characteristics		
AADT:	6390	6950
AADT Year:	2016	2042
Terrain:	Rolling	Rolling
No. Lanes:	2	3
Speed(Posted):	45	45
Speed (Design):		55
Approach Character.		
Lane Width (ft):	12	12 ft lanes with 12 ft TWLTL
Shoulder Width (ft):	0	10
ROW Width (ft):	Varies 70-425	Varies 100-425
ROW Tracts Affected		2
ROW Required (acre)		5.27
Cross Section Width (ft):	24/24/70-425	36/56/100-425
Approach Length (ft):		0.43 mi (west), 0.33 mi (east)
Alignment:	Tangent	*New Alignment
Grade:		N/A
Surface Material:	Asphalt overlaying concrete deck	Concrete deck
Sidewalks (R/L):	No	No
App. Lower Than Structure	No	No
Utilities (list)	UG: Water, Gas OH: Electric, Telephone	
Utilities to be Relocated		
Comments	No utilities are attached to the structure	*Note: The proposed alignment shown in this report is for graphical purposes only and is not a final horizontal alignment.

BRIDGE TIR

STRUCTURE		
	Existing	**Proposed (Preliminary Design Estimate)**
Bridge Characteristics		
Year Built	1937	
Load Limit	20	
Sufficiency Rating	32.9	
Skew	90	90
Structure Type	Concrete T-beam	Steel I-beam
Structures in Channel	Yes	No
Length (ft)	546	570
No. Spans (App./Main)	8 | 6	3 | 1
Width (curb to curb) (ft)	23'-11"	56'
Width (o to o) (ft)	27'-2"	57'-3"
Sidewalks on Structure	No	No
Vert. Clearance (ft)	N/A	N/A
Superstructure Depth (in)	N/A	N/A
Girder Depth (in)	N/A	N/A
Finish Grade-Low Girder (in)	N/A	N/A
High Water Marks	No	
Bridge Rail Type	Concrete Parapet	Concrete Parapet
Bridge Rail Height (ft)	3	3
Indication Overtopping	No	
Local Scour	N/A	
Obstructions	No	
Other Structures		
Comments		Main span 210' and approach spans of 120'. FEMA regulations apply.

FLOW RATES (from USGS StreamStats Program Version 3)	
Drainage Area (sq. miles)	612.9
10 Year Discharge Rate (Q10) cfs	33000
50 Year Discharge Rate (Q50) cfs	46200
100 Year Discharge Rate (Q100) cfs	52300

CHANNEL	
Depth (ft)	N/A
Width of Normal Flow (ft)	180
Depth of Normal Flow (ft)	N/A
Skew of Channel with Roadway	80 degrees
Type of Material in Stream Bed	rock, gravel, boulders
Type of Vegetation on Banks	low growth, large timber
Are Channel Banks Stable	Moderate bank erosion
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
Any Buildings in Floodplain	Yes
Flood Information From Locals	N/A
Comments	

MAINTENANCE OF TRAFFIC	
Method of Maintaining Traffic	Stage Construct
Description	Existing structure to remain open during construction while proposed structure is constructed north of the existing structure on new alignment. Future bicycle/pedestrian plans may utilize the existing structure (To Be Determined).
Comments	

TENNESSEE DEPARTMENT OF TRANSPORTATION
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION

PROJECT NO.: 70068-0211-94 ROUTE: S.R. 40
COUNTY: POLK CITY: OCOEE
PROJECT PIN NUMBER: 124102.00
PROJECT DESCRIPTION: BRIDGE OVER OCOEE RIVER @ L.M. 3.12. (DESIGN BUILD)

BRIDGE ID: 70SR0400005

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
5,790	2022	6,950	695	10	2042	65-35	6	9		

REQUESTED BY: NAME EMILY BURGESS DATE 11/3/17
DIVISION S.T.I.D.
ADDRESS 1000 J. K. POLK BUILDING
NASHVILLE TN 37243

REVIEWED BY: TONY ARMSTRONG Tony Armstrong DATE 11-28-17
TRANSPORTATION MANAGER I
SUITE 1000, JAMES K. POLK BUILDING

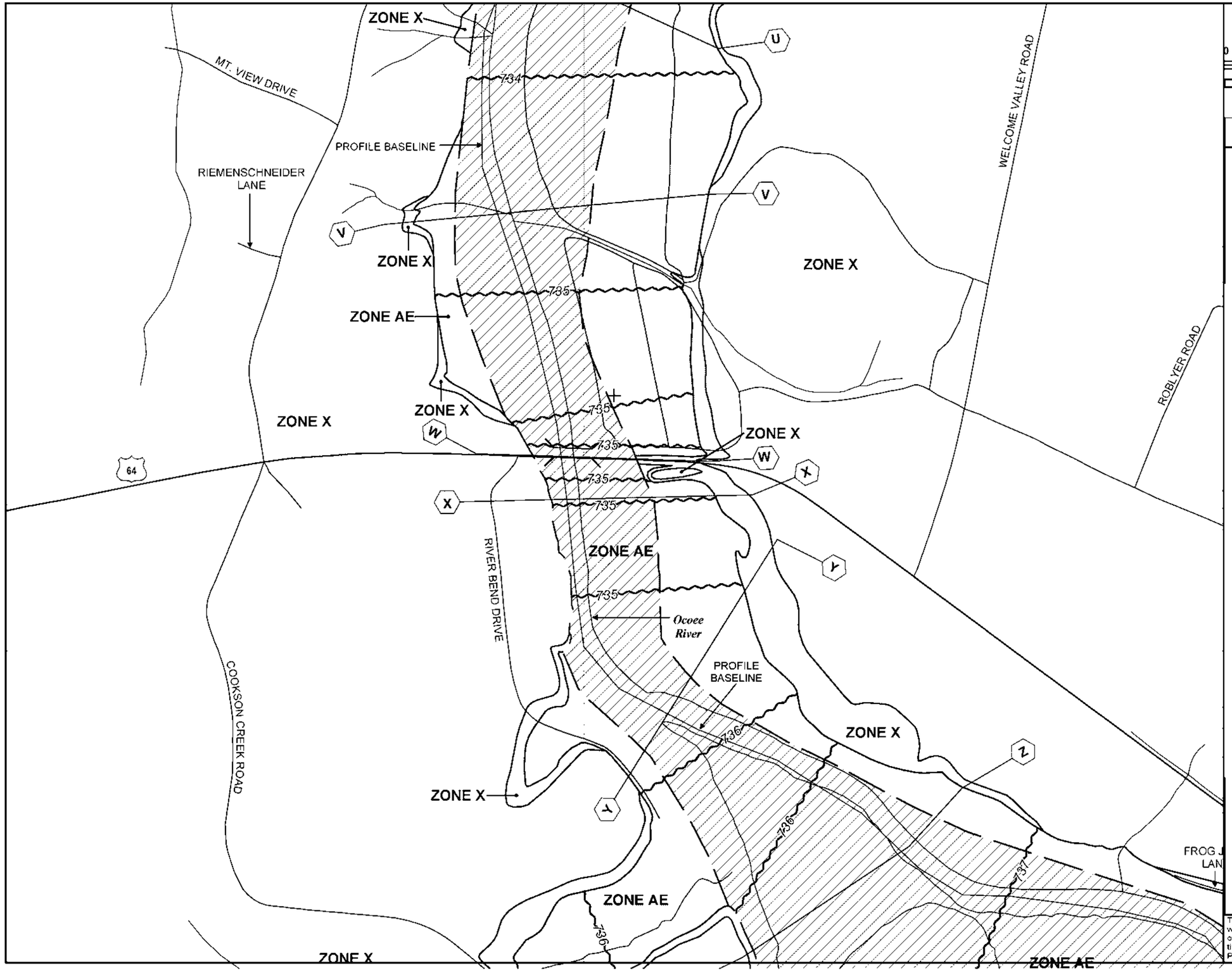
APPROVED BY: JIM WATERS DATE 11/29/17
ASSISTANT DIRECTOR
SUITE 1000, JAMES K. POLK BUILDING

COMMENTS:

THIS TRAFFIC WAS TAKEN FROM A PREVIOUS PROJECT PREPARED FOR THE ENVIRONMENTAL DIVISION DATED 10/17/2017.

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)


ZONE X
MT. VIEW DRIVE
PROFILE BASELINE
RIEMENSCHNEIDER LANE
734
U
V
V
ZONE X
735
ZONE AE
ZONE X
ZONE X
W
735
ZONE X
W
X
735
X
735
ZONE AE
735
Ocoee River
RIVER BEND DRIVE
COOKSON CREEK ROAD
PROFILE BASELINE
Y
736
ZONE X
ZONE X
Z
736
ZONE AE
736
737
ZONE AE
ZONE X
64
WELCOME VALLEY ROAD
ROBLYER ROAD
FROG J
LAN
MAP SCALE 1" = 500'
0
0
500
1000
FEET
METERS
0
150
300
NFIP
NATIONAL FLOOD INSURANCE PROGRAM
PANEL 0206F
FIRM
FLOOD INSURANCE RATE MAP
POLK COUNTY, TENNESSEE
AND INCORPORATED AREAS
PANEL 206 OF 425
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
POLK COUNTY 470261 0206 F
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
47139C0206F
EFFECTIVE DATE
MAY 18, 2009
Federal Emergency Management Agency
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

StreamStats Version 3.0

Basin Characteristics Ungaged Site Report

Date: Tues Jan 9, 2018 2:04:02 PM GMT-5
Study Area: Tennessee
NAD 1983 Latitude: 35.1115 (35 06 41)
NAD 1983 Longitude: -84.6746 (-84 40 29)

Label	Value	Units	Definition
DRNAREA	612.9	square miles	Area that drains to a point on a stream

StreamStats Version 3.0

Flow Statistics Ungaged Site Report

Date: Tues Jan 9, 2018 2:05:47 PM GMT-5
Study Area: Tennessee
NAD 1983 Latitude: 35.1115 (35 06 41)
NAD 1983 Longitude: -84.6746 (-84 40 29)
Drainage Area: 613 mi2

Peak Flow Region Basin Characteristics			
100% MultiVariable Area 1 (613 mi2)			
Parameter	**Value**	**Regression Equation Valid Range**	
		Min	**Max**
Contributing Drainage Area (square miles)	613	0.2	9000
Stream Slope 10 and 85 Method (feet per mi)	14.81	3.29	950
Tennessee Climate Factor 2 Year (dimensionless)	2.322 (above max value 2.32)	2.06	2.32

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Low-flow Regions Basin Characteristics			
100% Low Flow Central and East Regions 2009 5159 (613 mi2)			
Parameter	**Value**	**Regression Equation Valid Range**	
		Min	**Max**
Drainage Area (square miles)	613	1.3	14441
Recession Index (days per log cycle)	143	32	175
2 Yr climate factor LK1990 (dimensionless)	2.322	2.056	2.46
Average Soil Permeability (inches per hour)	2.855	0.45	9.72
Percent permeability gte 2 in per hr (percent)	55.902	2	100

Peak Flow Region Statistics						
Statistic	**Value**	**Unit**	**Prediction Error (percent)**	**Equivalent years of record**	**90-Percent Prediction Interval**	
					Min	**Max**
PK2	18500	ft3/s				
PK5	27100	ft3/s				
PK10	33000	ft3/s				
PK25	40600	ft3/s				
PK50	46200	ft3/s				
PK100	52300	ft3/s				
PK500	66300	ft3/s				

http://pubs.usgs.gov/wri/wri034176/ (http://pubs.usgs.gov/wri/wri034176/)
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.

Low-flow Regions Statistics						
Statistic	**Value**	**Unit**	**Prediction Error (percent)**	**Equivalent years of record**	**90-Percent Prediction Interval**	
					Min	**Max**
M7D10Y	160	ft3/s	89			
M30D5Y	205	ft3/s	70			
QA	1140	ft3/s	26			
MNSUMMER	649	ft3/s	43			
D99 5	153	ft3/s	86			

D99	164	ft3/s	78			
D98	183	ft3/s	72			
D95	220	ft3/s	66			
D90	268	ft3/s	60			
D80	343	ft3/s	54			
D70	423	ft3/s	51			
D60	521	ft3/s	49			
D50	667	ft3/s	43			
D40	870	ft3/s	36			
D30	1140	ft3/s	28			
D20	1480	ft3/s	23			
D10	2300	ft3/s	21			

http://pubs.usgs.gov/sir/2009/5159/ (http://pubs.usgs.gov/sir/2009/5159/)
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.

TN TDOT Department of Transportation

Date 12/13/2017 at 9:30AM EST

Meeting Location * SR 40 Polk County

Project

RE: Transportation Investment Report (TIR) Field Review

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Eastbound Bridge Approach

Bent 5

Bent 1

Super/Sub Structure – Abutment 1

Bent 2

Super/Sub Structure

Super/Sub Structure – Abutment 1

Undercut – Abutment 1