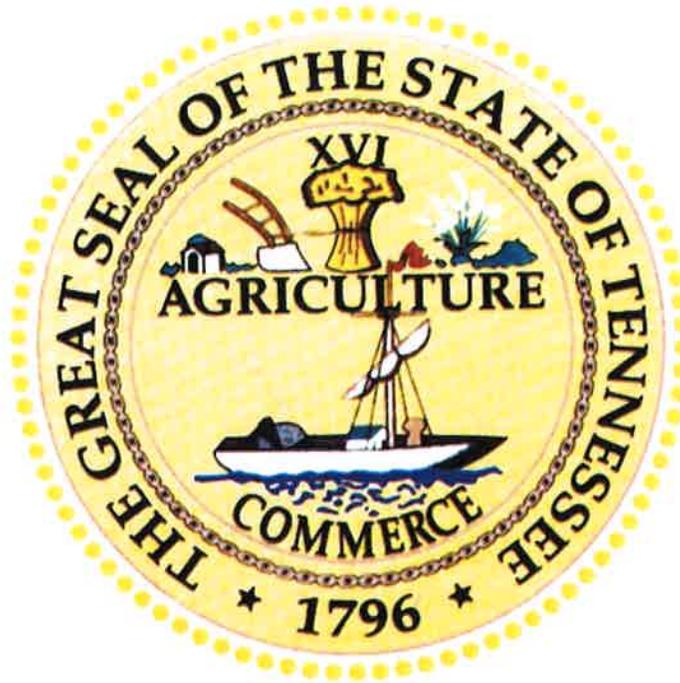


**TENNESSEE**  
**DEPARTMENT OF TRANSPORTATION**



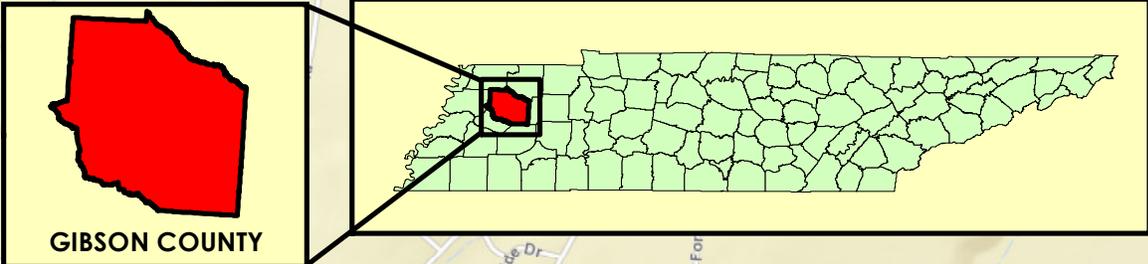
**TRANSPORTATION INVESTMENT REPORT**  
**Special Bridge Replacement Program**  
**Local Route 0B112 – Salem Street**  
**Bridge over Roe Creek,**  
**Log Mile 0.68 Gibson County**  
**PIN 122135.00**

PREPARED BY TENNESSEE DEPARTMENT OF TRANSPORTATION  
Strategic Transportation Investments Division

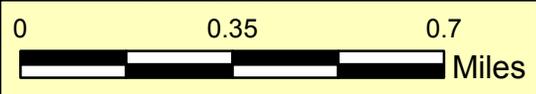
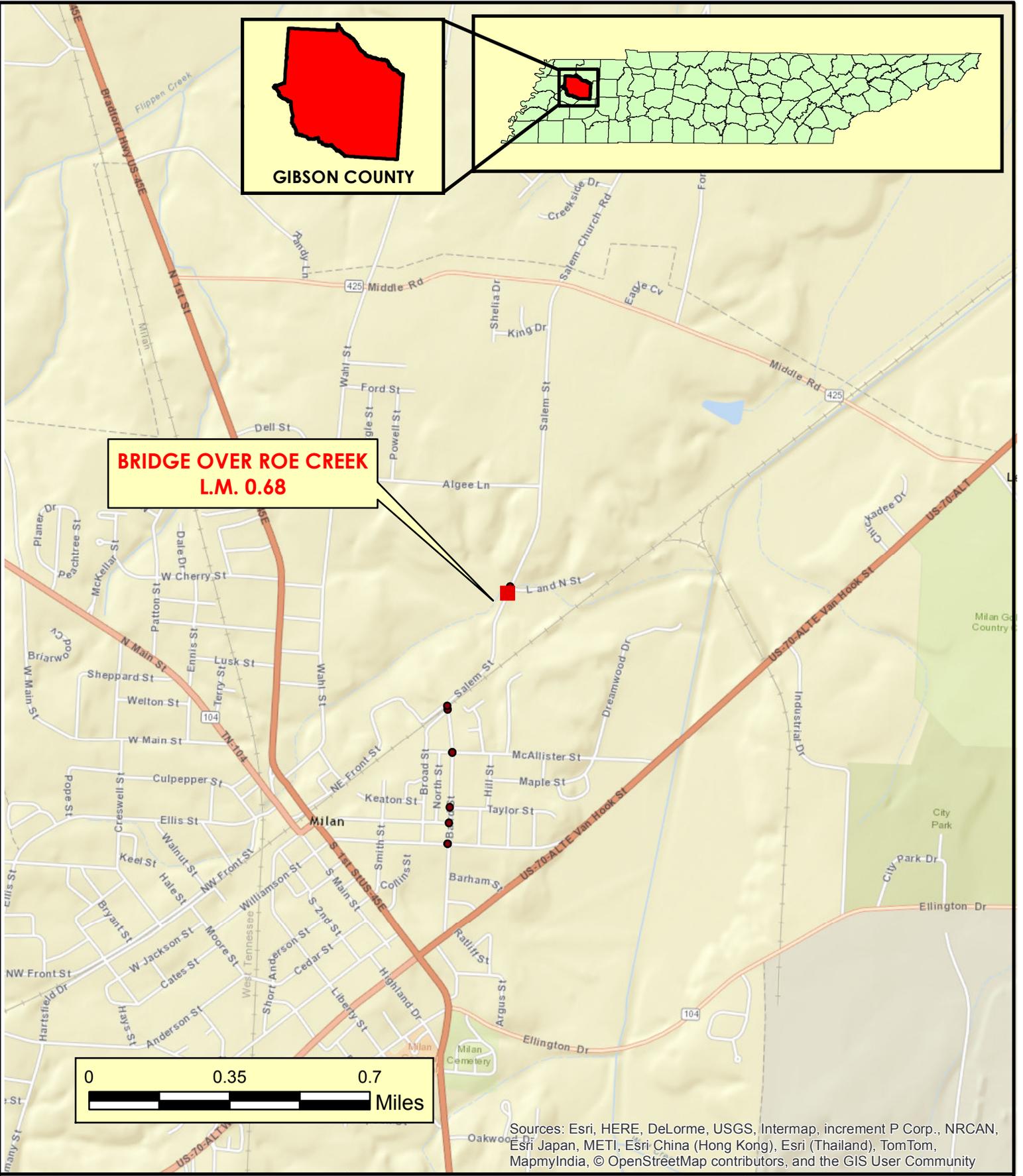
Approved by [Signature] Date 1-5-16 Approved by [Signature] Date 2/9/16  
Chief of Environment and Planning Deputy Commissioner and Chief Engineer

Approved by:	Signature	DATE
TRANSPORTATION DIRECTOR STRATEGIC TRANSPORTATION INVESTMENTS DIVISION	<u>[Signature]</u>	12-21-15
ENGINEERING DIRECTOR DESIGN DIVISION	<u>[Signature]</u>	12/4/15
ENGINEERING DIRECTOR STRUCTURES DIVISION	<u>[Signature]</u>	12/14/15

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



**BRIDGE OVER ROE CREEK  
L.M. 0.68**

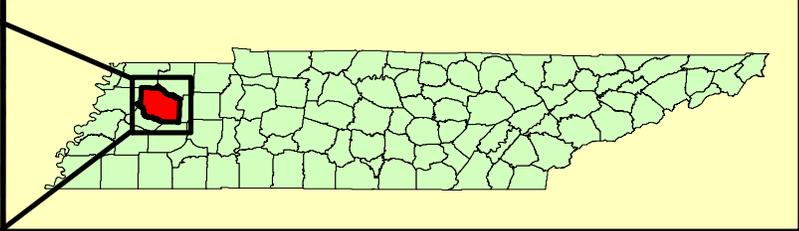


Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

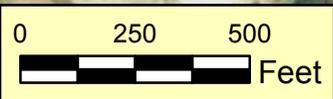


**AREA MAP**  
**BRIDGE TIR**  
**LOCAL ROUTE B112 (SALEM STREET)**  
**BRIDGE OVER ROE CREEK L.M. 0.68**  
**GIBSON COUNTY**





**BRIDGE OVER ROE CREEK  
L.M. 0.68**



**LOCATION MAP**  
**BRIDGE TIR**  
**LOCAL ROUTE B112 (SALEM STREET)**  
**BRIDGE OVER ROE CREEK L.M. 0.68**  
**GIBSON COUNTY**



### BRIDGE REPLACEMENT SUMMARY

County: Gibson Route: Salem Street (0B112) Log Mile: 0.68  
Feature Crossed: Roe Creek System: Local Road  
Functional Class: Urban Local Bridge ID: 27015850001

### EXISTING CONDITIONS

2020 AADT: 1,020 App. Cross Section: 20' / 24' / As Req'd No. Lanes: 2  
Approach Alignment: Tangent Year Built: 1975  
Width (out to out): 24.92 ft Sidewalks: Right -- Left -- Length: 64 ft  
No. Spans: Approach: -- Main: 3  
Substructure: Timber Piers Vertical Clearance: 17.2 ft Sufficiency Rating: 37.0

### PROPOSED IMPROVEMENTS

STANDARDS FROM RD01-TS-1 Type of Work: Replacement  
Design Year: 2040 Design AADT: 1,280 Terrain Rolling ADL (F): -- (R): --  
Project Length: 540 ft Bridge Length: 75 ft Approach Length: 150' South / 210' North  
Design Speed (MPH): 35 Posted Speed (MPH): 30  
Approach Width: 20' / 26' / As Req'd Bridge Width (O to O): 28 ft No. Lanes: 2  
Right-of-Way Required: 0.1 Acre Tract(s) 4 Structure Type: Box Bridge

### MAINTENANCE OF TRAFFIC

Temporary Detour:  Temporary Runaround:  Stage Construct:   
Alternate Route: It is recommended to close Salem Street during construction and detour traffic via SR-425 to SR-77 (US-79) to McAllister Street. (See detour map)

### ESTIMATED COST

Right-of-Way: \$18,700 Approaches: \$343,700 Structure: \$453,200  
Preliminary Engineering: \$115,700 Utilities: \$111,300 Misc./Cont.: \$311,300  
Mobilization: \$34,100 Total: \$1,388,000

### Field Review Attendees

Field Investigation by: Jason Moody (Region 4 Traffic), Amy Rauch, David Duncan, and Michelle Edwards (STID), Richard Adkission (Dist. Op. Manager), Seth Hendren (Region 4 PD Manager), Stephanie Kissell (Region 4 PD)



**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, Transportation Manager 1  
Project Coordination and Investigation Office

**DATE:** November 17, 2015

**SUBJECT:** TIR Field Review (Special Bridge Replacement Program)  
Salem Street (0B112), Bridge over Roe Creek  
Log Mile 0.68  
Gibson County  
PIN: 122135.00

A field review was held for the above-mentioned project on July 16, 2015.

The existing structure is a 64 foot, 3-span concrete bridge with an out-to-out width of 24.92 feet and a curb-to-curb width of 23.92 feet. The bridge has a sufficiency rating of 37.0. The 10-year and 100-year discharges and depths of flow for the drainage basin were determined using the appropriate regression equations. The 100-year flow depth is 11.7 feet and the 10-year flow depth is 8.7 feet. The bridge has approximately 17.2 feet of vertical clearance.

The recommended proposed replacement structure will be 75 foot concrete box-beam bridge. The proposed structure will remain on the existing alignment; however, the grade will be raised approximately 2.5 feet in order to maintain the existing vertical clearance.

The route has a base year 2020 AADT of 1,020 and a design year 2040 AADT of 1,280. The posted speed limit on Salem Street is 35 mph, and the route is functionally classified as an Urban Local Road; therefore, it is recommended to design according to TDOT design standard RD01-TS-1. The existing bridge's curb-to-curb width is twenty-four (24) feet. The proposed structure is recommended to have a curb-to-curb width of twenty-six (26) feet and an out-to-out width of twenty-eight (28) feet. The typical section will consist of two (2) ten (10) foot travel lanes (the

existing traveled way) with three (3) foot outside shoulders which is in accordance with TDOT Standard RD01-TS-1, Table I for new and reconstructed bridges. It is estimated that a small amount of additional ROW (land only) will be required to widen the bridge approaches.

It is recommended to close Salem Street during construction since detour time will be minimal (See Detour Map), and it will reduce construction costs and expedite the construction process. Multiple detour options will be available to the public during construction; however, it is recommended to assign SR-425, SR-77 (US-79), and McAllister Street as the primary detour route.

The required approach work, estimated replacement, utility relocations, right-of-way acquisition, and preliminary engineering costs for this bridge replacement are approximately \$1,186,000.

DD

cc: File

Route:		Salem Street (0B112)			
Description:		Bridge Over Roe Creek @ L.M. 0.84			
County:		Gibson			
Length:		540 feet			
Date:		August 4, 2015			
DESCRIPTION	LOCAL 20%	STATE 0%	FEDERAL 80%	TOTAL	
<b>Construction Items</b>					
Pavement Removal	\$2,100	\$0	\$8,500	\$10,600	
Asphalt Paving	\$8,200	\$0	\$32,900	\$41,100	
Concrete Pavement	\$2,700	\$0	\$11,000	\$13,700	
Drainage	\$2,200	\$0	\$8,800	\$11,000	
Appurtenances	\$0	\$0	\$0	\$0	
Structures	\$90,600	\$0	\$362,600	\$453,200	
Fencing	\$0	\$0	\$0	\$0	
Signalization	\$0	\$0	\$0	\$0	
Railroad Crossing or Separation	\$0	\$0	\$0	\$0	
Earthwork	\$21,600	\$0	\$86,200	\$107,800	
Clearing and Grubbing	\$0	\$0	\$0	\$0	
Seeding & Sodding	\$600	\$0	\$2,600	\$3,200	
Rip-Rap or Slope Protection	\$0	\$0	\$0	\$0	
Guardrail	\$3,500	\$0	\$14,200	\$17,700	
Signing	\$100	\$0	\$500	\$600	
Pavement Markings	\$400	\$0	\$1,600	\$2,000	
Maintenance of Traffic	\$4,100	\$0	\$16,600	\$20,700	
Mobilization (5%)	\$6,800	\$0	\$27,300	\$34,100	
Other Items 25%	\$35,800	\$0	\$143,100	\$178,900	
Const. Contingency = 30%	\$26,500	\$0	\$105,900	\$132,400	
<b>Construction Estimate</b>	<b>\$205,400</b>	<b>\$0</b>	<b>\$821,600</b>	<b>\$1,027,000</b>	
<b>Interchanges &amp; Unique Intersections</b>					
Roundabouts	\$0	\$0	\$0	\$0	
Interchanges	\$0	\$0	\$0	\$0	
<b>Right-of-Way &amp; Utilities</b>					
Right-of-Way	\$3,700	\$0	\$15,000	\$18,700	
Utilities	\$22,300	\$0	\$89,000	\$111,300	
<b>Preliminary &amp; Construction Engineering and Inspection</b>					
Prelim. Eng. (10%)	\$23,100	\$0	\$92,600	\$115,700	
Const. Eng. & Inspec. (10%)	\$23,100	\$0	\$92,600	\$115,700	
<b>Total Project Cost</b>	<b>\$277,600</b>	<b>\$0</b>	<b>\$1,110,400</b>	<b>\$ 1,388,000</b>	

TN - 2014						
TDOT PAY ITEM	TDOT DESCRIPTION	UNIT	QUANTITIES	UNIT COST	TOTAL COST	
<b>Pavment Removal</b>						
202-03.01	Removal of Asphalt Pavement	SY	1000	\$ 10.56	\$	10,560.00
<b>PAVEMENT REMOVAL TOTAL (ROUNDED)</b>						<b>\$ 10,600</b>
<b>Asphalt Roads</b>						
307-02.01	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading A	TON	173	\$ 78.76	\$	13,586.10
307-02.02	Asphalt Cement (PG70-22)(BPMB-HM) Grading A-S	TON	3	\$ 842.76	\$	2,730.54
307-02.03	Aggregate (BPMB-HM) Grading A-S Mix	TON	105	\$ 49.99	\$	5,236.95
307-02.08	Asphalt Concrete Mix (PG70-22) (BPMB-HM) Grading B-M2	TON	113	\$ 78.99	\$	8,925.87
402-01	Bituminous Material For Prime Coat (PC)	TON	1	\$ 497.96	\$	689.81
402-02	Aggregate For Cover Material (PC)	TON	5	\$ 23.81	\$	119.05
403-01	Bituminous Material For Tack Coat (TC)	TON	1	\$ 626.55	\$	569.59
411-01.07	ACS (PG64-22) GR "E"	TON	32	\$ 92.37	\$	2,978.93
411-02.10	ACS Mix(PG70-22) Grading D	TON	66	\$ 93.96	\$	6,224.85
<b>PAVING TOTAL (ROUNDED)</b>						<b>\$ 41,100</b>
<b>Concrete Roads</b>						
313-03	Treated Permeable Base	SY	213	\$ 18.31	\$	3,906.13
501-01.03	Portland Cement Concrete Pvmnt 10"	SY	160	\$ 61.06	\$	9,769.60
<b>CONCRETE RAMPS AND ROADWAYS TOTAL (ROUNDED)</b>						<b>\$ 13,700.00</b>
<b>Drainage</b>						
607-05.02	24" Concrete Pipe Culvert (Class III)	LF	60	\$ 63.38	\$	3,790.80
611-07.01	Class A Concrete (Pipe Endwalls)	CY	3	\$ 786.17	\$	2,435.58
611-07.02	Steel Bar Reinforcement (Pipe Endwalls)	LB	294	\$ 1.61	\$	474.00
710.02	Aggregate Underdrains (with pipe)	LF	1016	\$ 4.22	\$	4,287.52
<b>DRAINAGE TOTAL (ROUNDED)</b>						<b>\$ 11,000.00</b>
<b>Appurtenances</b>						
<b>ROADWAY AND PAVEMENT APPURTENANCES TOTAL (ROUNDED)</b>						<b>\$ -</b>
<b>Earthwork &amp; Mineral</b>						
105-01	Constrction Stakes, Lines, and Grades	LS	0.5	\$ 35,405.73	\$	17,702.87
203-01	Road & Drainage Excavation (Unclassified)	CY	10387	\$ 5.10	\$	52,975.03
203-03	Borrow Excavation (Unclassified)	CY	1039	\$ 5.20	\$	5,401.38
303-01	Mineral Aggregate, Type A Base, Grading D	TON	1669	\$ 19.00	\$	31,712.38
<b>EARTHWORK &amp; MINERAL TOTAL (ROUNDED)</b>						<b>\$ 107,800.00</b>
<b>Structures</b>						
N/A	Removal of Bridge	SF	1659	\$ 20.00	\$	33,177.60
N/A	New Bridge (Concrete Girder):	SF	2400	\$ 175.00	\$	420,000.00
<b>STRUCTURES TOTAL (ROUNDED)</b>						<b>\$ 453,200.00</b>
<b>Interchanges and Unique Intersections</b>						
<b>INTERCHANGES AND UNIQUE INTERSECTIONS TOTAL (ROUNDED)</b>						<b>\$ -</b>
<b>Lighting &amp; Signalization</b>						
<b>LIGHTING &amp; SIGNALIZATION TOTAL (ROUNDED)</b>						<b>\$ -</b>
<b>Guardrail</b>						
705-01.01	Guardrail at Bridge Ends	LF	100	\$ 64.44	\$	6,444.00
705-04.04	Guardrail Terminal (Type 21)	EA	4	\$ 1,813.42	\$	7,253.68
705-04.09	Earth Pad for Type 38 GR End Treatment	EA	4	\$ 991.02	\$	3,964.08
<b>GUARDRAIL TOTAL (ROUNDED)</b>						<b>\$ 17,700.00</b>
<b>Seeding and Sodding</b>						
803-01	Sodding (New Sod)	SY	1300	\$ 2.45	\$	3,185.00
<b>SODDING TOTAL (ROUNDED)</b>						<b>\$ 3,200.00</b>
<b>Maintenance of Traffic</b>						
N/A	Traffic Control	LS	1	\$ 20,000.00	\$	20,000.00
712-02.02	Interconnected Portable Barrier Rail	LF	25	\$ 26.47	\$	672.34
<b>MAINTENANCE OF TRAFFIC TOTAL (ROUNDED)</b>						<b>\$ 20,700.00</b>
<b>Signs</b>						
Not Listed	Signs	LS	3.85	\$ 150.00	\$	577.27
<b>SIGNING TOTAL (ROUNDED)</b>						<b>\$ 600.00</b>
<b>Pavement Markings</b>						
716-13.06	Spray Thermo P.M. (40 mil 4")	LM	1.45	\$ 1,376.74	\$	1,994.19
<b>PAVEMENT MARKINGS TOTAL (ROUNDED)</b>						<b>\$ 2,000.00</b>
<b>Fencing</b>						
<b>FENCE TOTAL (ROUNDED)</b>						<b>\$ -</b>
<b>Rip-Rap</b>						
<b>RIP-RAP &amp; SLOPE PROTECTION TOTAL (ROUNDED)</b>						<b>\$ -</b>
<b>Clearing and Grubbing</b>						
<b>CLEAR AND GRUBBING TOTAL (ROUNDED)</b>						<b>\$ -</b>
<b>Railroad At-Grade Crossing</b>						
<b>RAILROAD CROSSING OR SEPARATION TOTAL (ROUNDED)</b>						<b>\$ -</b>
<b>Utilities</b>						
N/A	Overhead Distribution	LM	0.1	\$ 375,000	\$	37,500
N/A	Underground Communication	LM	0.1	\$ 500,000	\$	50,000
N/A	Underground Water	LM	0.1	\$ 237,600	\$	23,760
<b>UTILITIES TOTAL (ROUNDED)</b>						<b>\$ 111,300.00</b>
<b>Right-of-Way</b>						
N/A	Right-of-Way	LS	1	\$ 18,659.32	\$	18,659.32
<b>RIGHT-OF-WAY TOTAL (ROUNDED)</b>						<b>\$ 18,700.00</b>

## 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                                      |   |
| 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                       | X |
| 11. Urban area, town, city, or community            |   |
| 12. Waterway, lake, pond, river, stream, spring     |   |
| 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       | X |
| 15. Railroad crossings                              |   |
| 16. Hazardous materials site                        |   |

**TENNESSEE DEPARTMENT OF TRANSPORTATION  
STRATEGIC TRANSPORTATION INVESTMENTS DIVISION**

PROJECT NO.: 99109-1453-04 ROUTE: Salem Street  
 COUNTY: Gibson CITY: -  
 PROJECT PIN NUMBER: 122135.00  
 PROJECT DESCRIPTION: Special Bridge Replacement Program  
Bridge over Roe Creek  
LM 0.68

**DIVISION REQUESTING:**

MAINTENANCE	<input type="checkbox"/>	PAVEMENT DESIGN	<input type="checkbox"/>
S.T.I.D.	<input checked="" type="checkbox"/>	STRUCTURES	<input type="checkbox"/>
PROG. DEVELOPMENT & ADM.	<input type="checkbox"/>	SURVEY & ROADWAY DESIGN	<input type="checkbox"/>
PUBLIC TRANS. & AERO.	<input type="checkbox"/>	TRAFFIC SIGNAL DESIGN	<input type="checkbox"/>
YEAR PROJECT PROGRAMMED FOR CONSTRUCTION:	_____	OTHER _____	<input type="checkbox"/>
PROJECTED LETTING DATE:	_____		

**TRAFFIC ASSIGNMENT:**

BASE YEAR		DESIGN YEAR					DESIGN ROADWAY % TRUCKS		DESIGN AVERAGE DAILY LOADS	
AA DT	YEAR	AA DT	DHV	%	YEAR	DIR.DIST.	DHV	AA DT	FLEX	RIGID
1,020	2020	1,280	166	13	2040	65-35	1	2		

REQUESTED BY: NAME Mike Gilbert DATE 7-14-15  
 DIVISION STID  
 ADDRESS Suite 1000 James K Polk Building  
Nashville, TN 37243

REVIEWED BY: TONY ARMSTRONG \_\_\_\_\_ DATE \_\_\_\_\_  
 TRANSPORTATION MANAGER 1  
 SUITE 1000, JAMES K. POLK BUILDING

APPROVED BY: MIKE PRESLEY \_\_\_\_\_ DATE \_\_\_\_\_  
 TRANSPORTATION MANAGER 2  
 SUITE 1000, JAMES K. POLK BUILDING

**COMMENTS:**

This traffic based on station 68 in Gibson County. Design year traffic based on a growth rate from the ADAM database.

**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.

TYPE	YEAR	COUNTY NO.	FIGURE
BRIDGE	2015	GIBSON	1



10/7/2015 12:23:32 PM  
 X:\Projects\Gibson\Salem Street\Bridges\TIR Bridge over Roe Creek (L.M. 0.68)\Project Files\Microstation\DN Files\Proposed Alignment\_0B112.dgn



**BRIDGE REPLACEMENT**  
 SALEM ROAD (OB112)  
 BRIDGE OVER ROE CREEK @ L.M. 0.68  
 GIBSON COUNTY

STATE OF TENNESSEE  
 DEPARTMENT OF TRANSPORTATION  
 PROJECT PLANNING DIVISION

**FIGURE 1**  
 SALEM RD  
 (OB112)  
 L.M. 0.68

## SITE INSPECTION

INSPECTION MADE BY: David Duncan BRIDGE ID: 27015850001 COUNTY: Gibson  
 Date: 11/2/15 Route Name: Salem Street (0B112) Stream Name: Roe Creek

### CHANNEL

Approx depth and width of channel: Horizontal: 5'-15' Vertical: 6"  
 Depth of normal flow: 6" In Reservoir:  Yes  No  
 Depth of Ordinary High Water: --  
 Type of material in stream bed: Silt  
 Type of vegetation on banks: Heavy Brush  
 "N" factor of the channel: 0.035  
 Are channel banks stable: Yes  No   
 Skew of the channel with the roadway: 90 °



Channel Shape

### FLOODPLAIN

Is the skew same as the channel?  Yes  No  
 Is it symmetrical about the channel?  Yes  No  
 Type of vegetation in the floodplain and "N" factors  
 Left U.S.: 0.035 Right U.S.: 0.035  
 Left D.S.: 0.035 Right D.S.: 0.035  
 Are roadway approaches lower than the structure?  Yes  No  
 Are there any buildings in the floodplain?  Yes  No  
 Approx. floor elevations: --  
 Flood information from local residents:  
 (elevations & dates) --



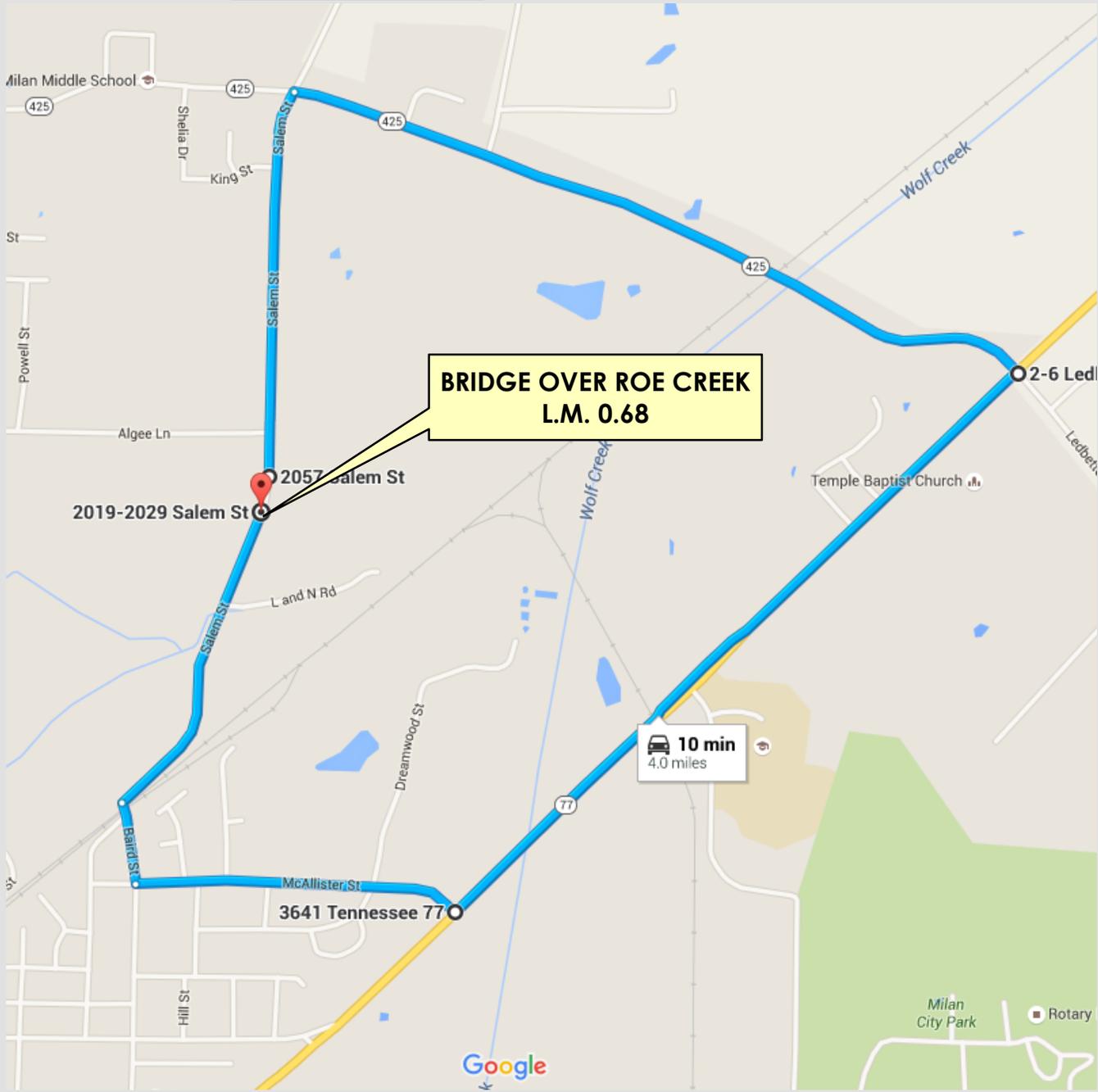
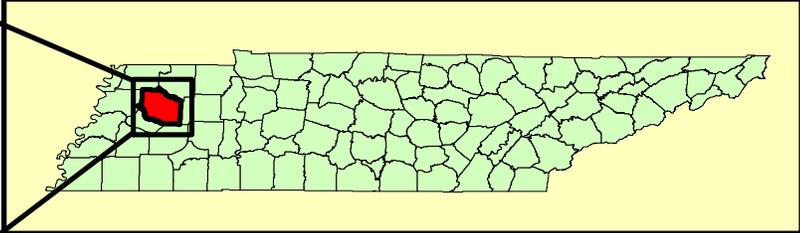
Floodplain

### EXISTING STRUCTURE

Length: 64 ft No. of spans: 3 Structure type: Timber/Conc. No. of lanes: 2 Skew: 90 °  
 Width (out to out): 24.92 ft Width (curb to curb): 23.92 ft Approach:  paved  graveled  
 Sidewalks on Structure:  Yes  No Bridgerail type: Guardrail Bridgerail height = 2.25'  
 Superstructure depth: 1.50 Finished Grade to low girder = 1.5' Girder depth = 1'  
 Are any substructures in the channel?  Yes  No Vertical Clearance = 17 ft  
 Indications of overtopping: None  
 High water marks: None  
 Local scour:  Yes, \_\_\_\_\_  No  
 Any signs of stream  aggradation or  degradation? None  
 Any drift or drift potential?  Yes, None  No  
 Any obstructions (pipes, stock fences, etc.)? pipes

### PROPOSED STRUCTURE

Replacement  Rehabilitate  Widening  New Location  
 Bridge length: 75 ft Bridge type: Concrete Girder Span arrangement: Single Skew: 90 °  
 Bridge width: 28.0 ft Sidewalks: No Design Speed (MPH): 35 ADT ( 2040 ) = 1,280  
 Proposed grade: (+) 2.5 feet Proposed alignment: Maintain existing  
 Method of maintaining traffic:  Stage construction  On site detour  Close road  Shift Centerline No



**DETOUR ROUTE: 4 Miles**  
**APPROX. DETOUR TRAVEL TIME: 10 Minutes**



**DETOUR MAP**  
**BRIDGE TIR**  
**LOCAL ROUTE B112 (SALEM STREET)**  
**BRIDGE OVER ROE CREEK L.M. 0.68**  
**GIBSON COUNTY**



**Bridge TPR Flow Calculations  
For Hydrologic Area 2  
Area > 300 Acres**

County: Gibson  
 Bridge ID: 270158500011  
 Route: Salem Street (0B112)  
 Feature Crossed: Roe  
 Log Mile: 0.68

By: DD  
 Date: 8/4/15  
 PIN: 122135.00

**DRAINAGE BASIN**

Measurement from quad = 7,891 acres  
 Contributing Drainage Area, CDA = acres/640 = 12.33 sq. mi.

**USGS REGRESSION EQUATIONS FOR FLOW**

$Q_2 = 207(CDA)^{0.725} =$  1,279 cfs  
 $Q_5 = 344(CDA)^{0.715} =$  2,073 cfs  
 $Q_{10} = 444(CDA)^{0.711} =$  2,649 cfs  
 $Q_{25} = 578(CDA)^{0.708} =$  3,422 cfs  
 $Q_{50} = 682(CDA)^{0.706} =$  4,018 cfs  
 $Q_{100} = 788(CDA)^{0.705} =$  4,631 cfs

**DEPTH OF FLOW EQUATIONS**

10-Year Flood Depth =  $5.33(CDA)^{0.197} =$  8.7 ft  
 100-Year Flood Depth =  $7.43(CDA)^{0.181} =$  11.7 ft

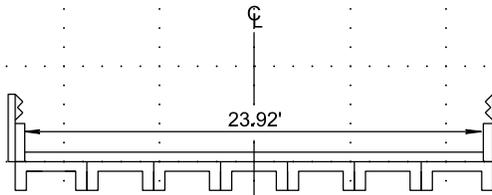
**AREAS**

Existing Area Below Low Chord = 566 ft<sup>2</sup>  
 Proposed Area Below Low Chord = 570 ft<sup>2</sup>  
 Proposed 10-Year Flood Area,  $A_{10} =$  183 ft<sup>2</sup>  
 Proposed 100-Year Flood Area,  $A_{100} =$  303 ft<sup>2</sup>

**VELOCITIES**

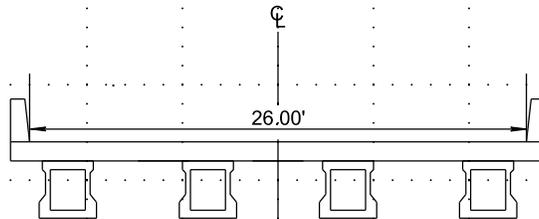
Proposed 10-Year Flood Velocity,  $V_{10} = Q_{10}/A_{10} =$  14.5 fps  
 Proposed 100-Year Flood Velocity,  $V_{100} = Q_{100}/A_{100} =$  15.3 fps

EXISTING STRUCTURE



TOTAL WIDTH: 24.92'

COMPLETED PROPOSED STRUCTURE



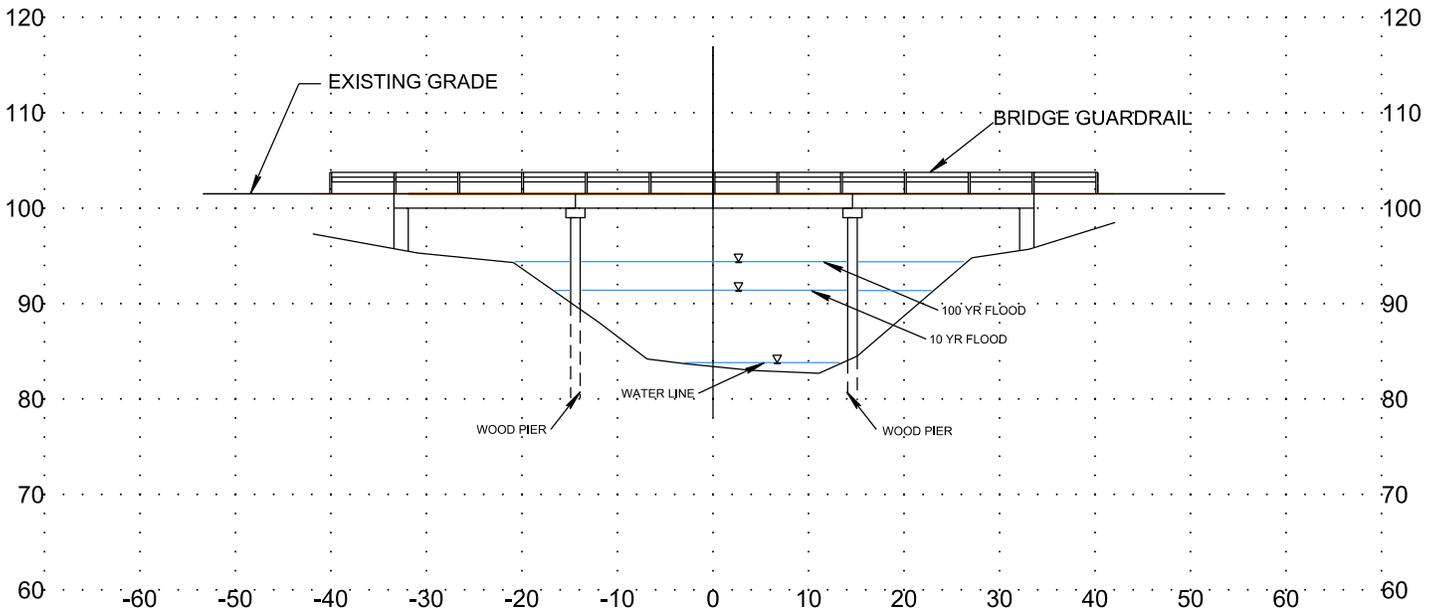
TOTAL WIDTH: 28'



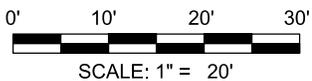
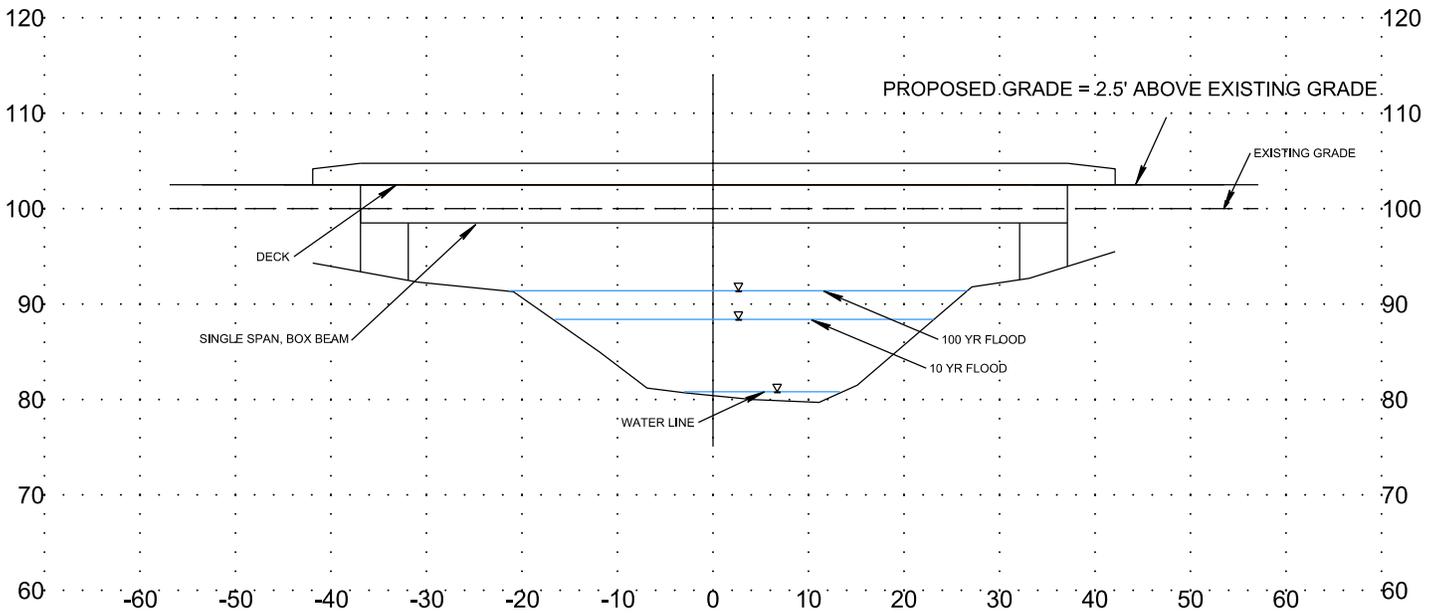
SCALE: 1" = 10'

TYPICAL SECTION DETAIL  
SALEM STREET (0B112) GIBSON COUNTY  
BRIDGE OVER ROE CREEK L.M. 0.68  
BRIDGE ID 270158500011

## EXISTING STRUCTURE (INLET)

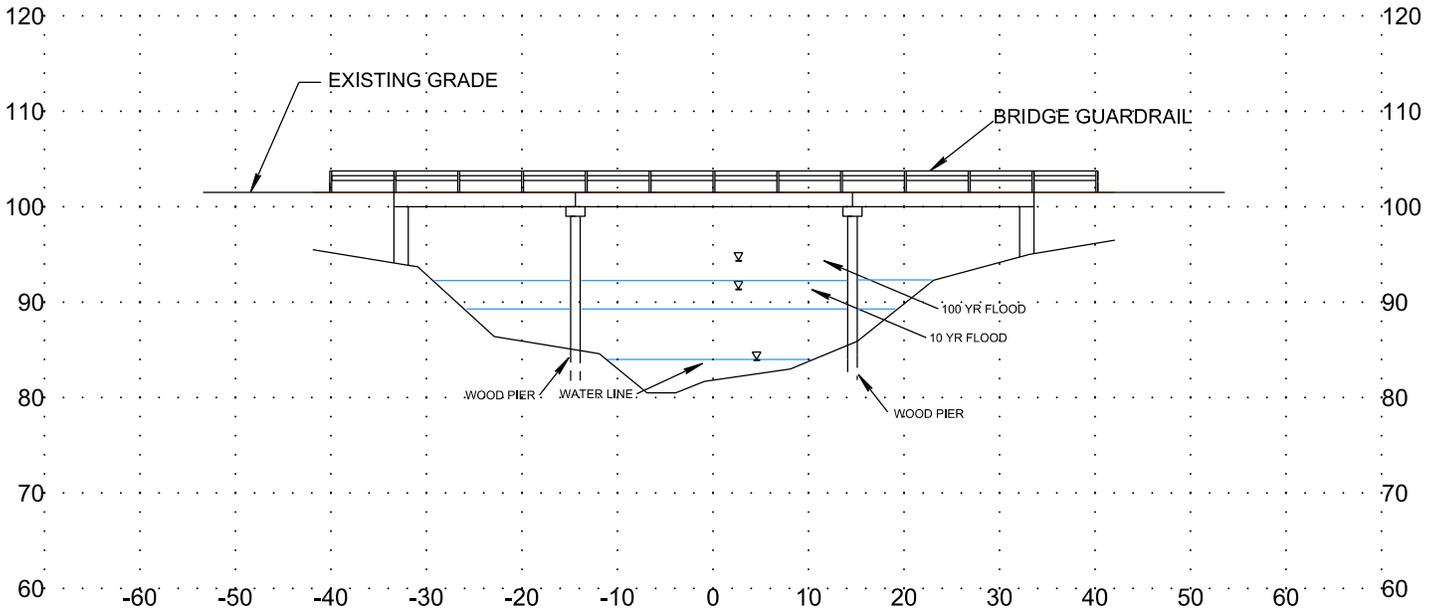


## PROPOSED STRUCTURE (INLET)

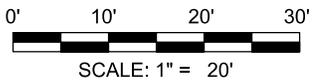
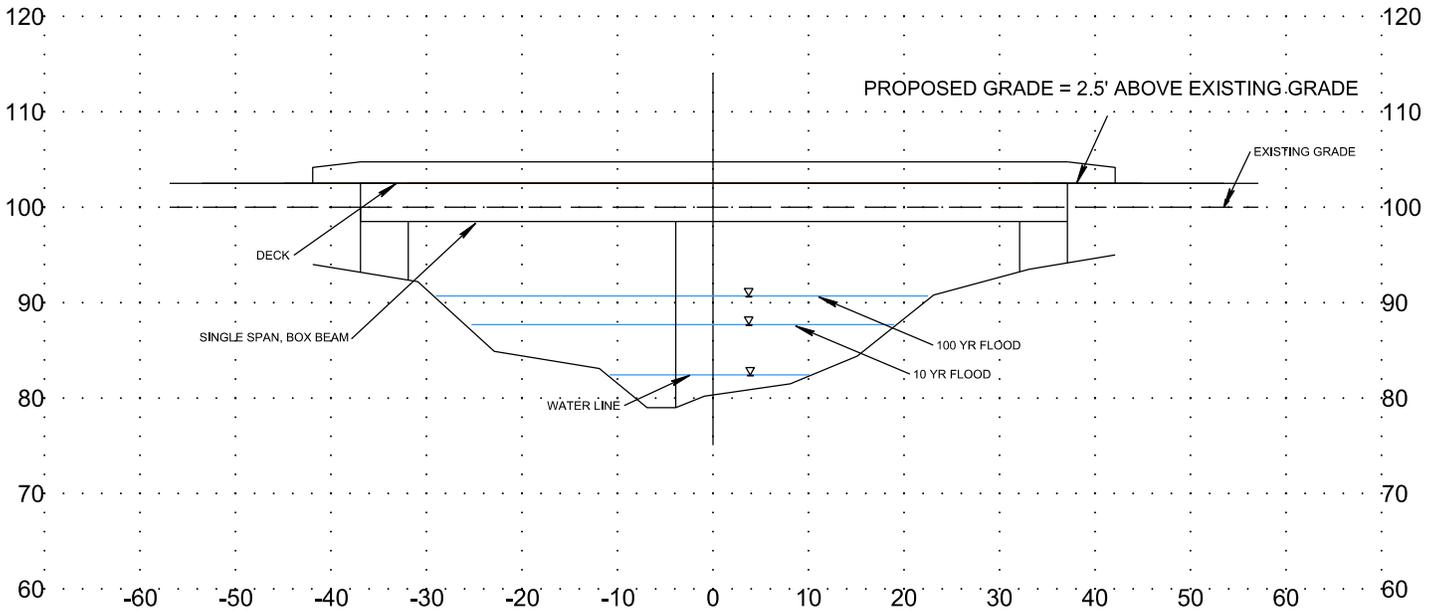


**BRIDGE SECTIONS**  
**SALEM STREET (0B112) GIBSON COUNTY**  
**BRIDGE OVER ROE CREEK @ L.M. 0.68**  
**BRIDGE ID: 27015850001**

## EXISTING STRUCTURE (OUTLET)



## PROPOSED STRUCTURE (OUTLET)



**BRIDGE SECTIONS**  
**SALEM STREET (0B112) GIBSON COUNTY**  
**BRIDGE OVER ROE CREEK @ L.M. 0.68**  
**BRIDGE ID: 27015850001**

Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13



**BRIDGE NUMBER**



**DIRECTION OF ROUTE**

**Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13**



**APPROACH # 1 RIGHT LOW SHOULDER (TYPICAL APPROACH # 2 RIGHT SHOULDER)**



**APPROACH # 1 LEFT LOW SHOULDER (TYPICAL APPROACH # 2 LEFT SHOULDER)**

**Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13**



**VIEW UPSTREAM**



**VIEW ACROSS DECK**

**Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13**



**VIEW DOWNSTREAM**



**OPPOSITE DIRECTION OF ROUTE**

**Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13**



**ABUTMENT # 2**



**ABUTMENT # 2**

Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13



**SPAN # 3 BOTTOM**



**BENT # 2 REAR**

Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13

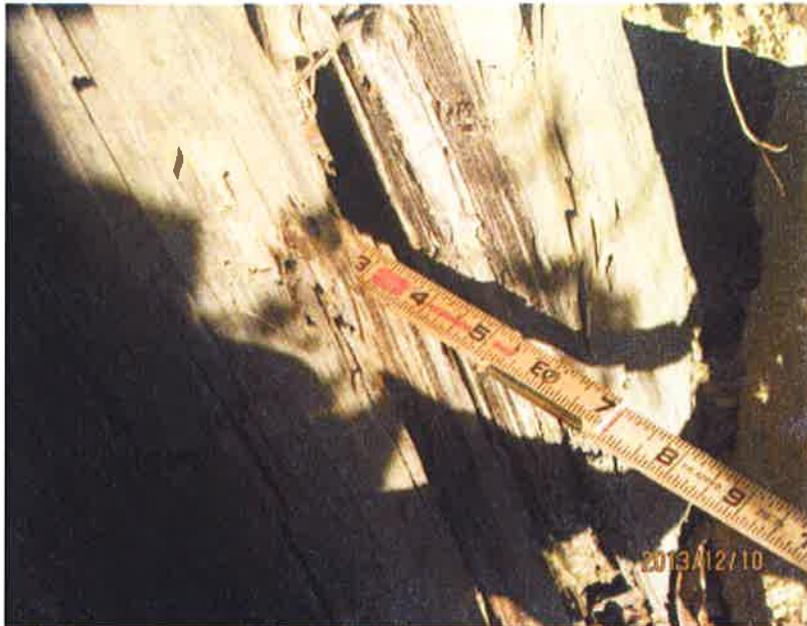


**BENT # 2 REAR**



**LEFT ELEVATION**

Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13



**BENT # 2 PILE "F" DECAYED**



**BENT # 2 PILE "F" DECAYED**

Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13



**BENT # 2 PILE "F" DECAYED**



**RIGHT ELEVATION**

Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13



**BENT # 1 REAR**



**BENT # 1 REAR**

Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13



**SPAN # 1 BOTTOM**



**ABUTMENT # 1**

**Bridge Loc. No: 27-0B112-00.67      Date: 12-11-13**



**ABUTMENT # 1**



**ABUTMENT # 2 RIGHT WINGWALL MISSING (TYPICAL ABUTMENT # 1  
RIGHT WINGWALL)**