

# BRIDGE MEMORANDUM

**Job No.:** XXXXXXXX  
**Route:** XXX (minor) over XXXXXX

**County:** XXXXXXXX

**Bridge No.:** XXXXX  
**Sheet:** 1 of 1

**Final Layout:** 2 (10' x 9') Reinforced Concrete Box Culvert

**Roadway Width:** 24' out-to-out of shoulders  
**Skew:** 48° Left Advance  
**Loading:** HL-93 minus Lane Load, Design Fill = 1.75'  
**Alignment:** Tangent  
**Profile Grade:** VPI Sta. 261+65.05, Elev. 704.55, +1.15% back, -1.09% ahead, L = 300'  
**Tie Station:** 261+65.00  $\Phi$  Rte. XX =  $\Phi$  Box Culvert

**Flow Line Elev.:** Upper Flow Line Elevation 692.08, Lower Flow Line Elevation 691.70  
**Traffic Handling:** Structure to be closed to traffic during construction  
**Existing Bridge:** XXXXX to be removed per standard specs, estimated cost \$10,000 (Bridge Item, included in estimate)  
**Channel Cleanout:** Provide grading of the channel bottom within the limits of the R/W as needed for the culvert flow line elevations and transition of the channel bed to the culvert opening. Taper channel banks to match end of culvert opening as required (Roadway Item).

**GENERAL NOTES:**

- Stationing and Profile Grade are located along  $\Phi$  Rte. XX.
- Extend 2% cross-slope from edge of shoulder for a distance of 3'-5" and then use 2.5:1 side slope down to headwalls.
- Upstream wings shall be straight and inside of headwall shall be parallel to  $\Phi$  Rte. XX and offset 19' right from  $\Phi$  Rte. XX.
- Downstream wings shall be straight and inside of headwall shall be parallel to  $\Phi$  Rte. XX and offset 19' left from  $\Phi$  Rte. XX.
- Provide Bridge Guardrail (Thrie Beam) over culvert in lieu of meeting clear zone requirements (Roadway Item).
- Provide Bridge Guardrail (Thrie Beam) post attachments to top slab of culvert on Eastside and Westside (Bridge Item).
- Bridge anchor sections will be required (Roadway Item).
- The Corp of Engineers requirements for safe passage of fish and aquatic organisms thru culverts are in compliance for this structure. The invert of the culvert is embedded a minimum of 1' below the natural stream bottom.
- If any part of the top slab is exposed, the roadway fill shall be warped to provide 12" minimum cover (Roadway Item).
- Streambed and embankment protection to be determined by District (Roadway Item).
- Realign roadside ditches as required (Roadway Item).
- Provide right-of-way as required for construction.
- Relocate all utilities as required for construction.
- No conduit, lighting, utility supports, sign supports, fencing or sidewalks are to be included in the final bridge plans.
- Route A: Const. AADT (2013) = 542 ; Design AADT (2034) = 785 ; AADTT = 11% ; Design Speed = 55 mph.
- Example Culvert Plans: XXXXXXXX - XXXXX, Example Guardrail Attachment Plans: XXXXXXXX - XXXXX
- This structure is not in an NFIP regulated floodplain. Therefore, a Floodplain Development Permit will not be required.

District contact is XXXXXXXXXX, TPM (XXX) XXX-XXXX

Bridge contact is XXXXXXXXXX, SPM (XXX) XXX-XXXX.

Estimated Working / Calendar Days = **25 / 38 (min.)**

**<sup>1</sup> FY15 Estimated Construction Cost = \$174,000**

<sup>1</sup> Does not include inflation from Planning (3% compounded annually)  
 Programmed Bridge STIP Amount = \$178,000

Hydrologic Data	Proposed	Existing
Drainage Area (sq. mi.)	1.99	
Design High Water (DHW) Elev.	700.28	
Design High Water Frequency (year)	50	
Design High Water Discharge (cfs)	1,221	
Backwater/Base Flood Data (100 year)		
High Water Elevation	700.60	
Design Discharge (cfs)	1,459	
Estimated Backwater (ft)	1.79	1.95
Outlet Velocity (ft/s)	8.63	9.03
Roadway Overtopping		
Design Elev. (1' below shoulder)	701.05	
Design Discharge (cfs)	1,270	1,075
Design Frequency (year)	60	33

Prepared by: \_\_\_\_\_ Date

Bridge: XXXXXXXX XXXXXXXX \_\_\_\_\_ Date

District: XXXXXXXX XXXXXXXX \_\_\_\_\_ Date

District: \_\_\_\_\_ Date