

# Bridge Design Memorandum

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**To:** Bridge Design  
**From:** JMW/sww  
**Date:** 12/1/2014  
**Re:** Detour Bridges – REV. 12-1-14

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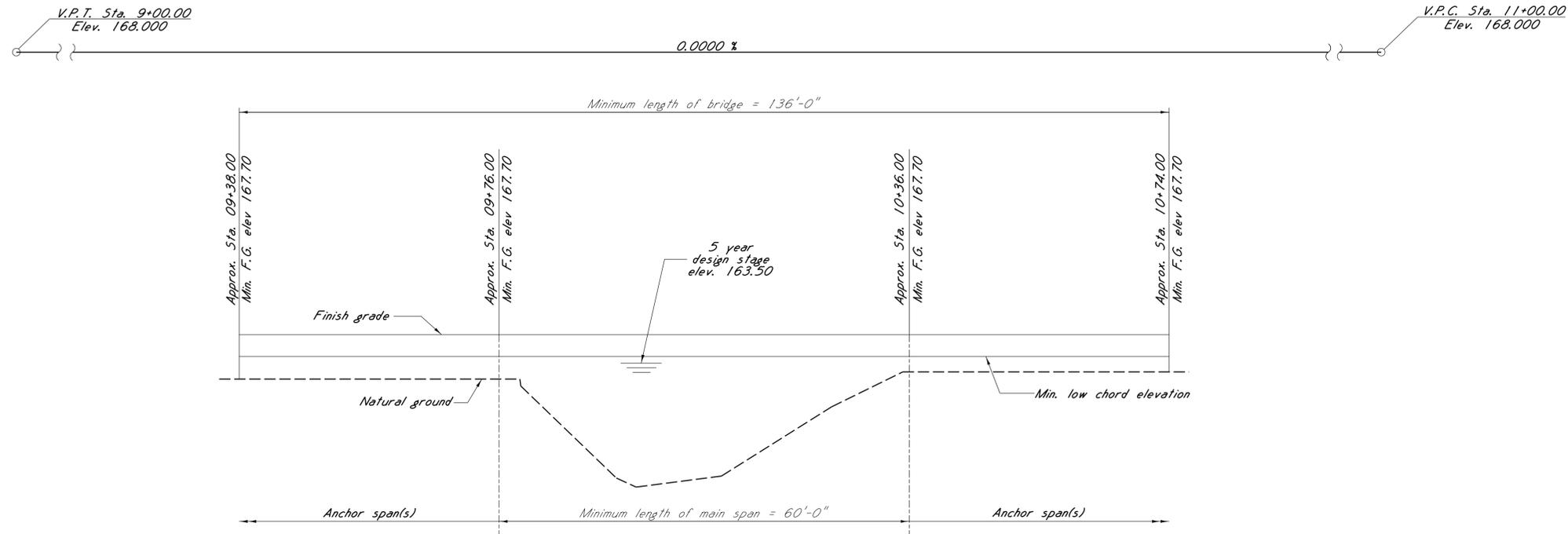
As per JMW and SWW,

1. All detour bridge submittals shall be reviewed by the hydraulics section before distribution. This is to ensure the detour bridge meets the minimum hydraulic requirements.
2. The Detour Bridge Recommendation Form has been revised by Hydraulics Division. **Please note that data on this form has changed.**
3. The way Detour Bridge is depicted on the Detour Bridge sheet has been revised. General Notes and Drainage Data on the Detour Bridge sheet have been revised as well. Please see the attached sheet as an example.
4. The Drainage Data should read as follows:

**DRAINAGE DATA:**

Drainage Area..... sq. mi.  
Q5 (U.S.G.S.)..... c.f.s  
Min. Low Chord Elevation.....  
Minimum anchor span length.....19'-0"

STATE	PROJECT NO.
MISS.	BR-0070-01(006)



**DETOUR BRIDGE OVER KAY BAYOU**  
Scale 1" = 10'-0"

**GENERAL NOTES:**  
 Specifications: MISSISSIPPI Standard Specifications for Road and Bridge Construction, 2004.  
 The detour bridge shall be designed and furnished by the Contractor (see NOTE TO CONTRACTOR).  
 The detour bridge deck surface shall be of concrete, asphalt, or other skid resistant material subject to approval by MDTOT.  
 The detour bridge superstructure shall be constructed of new or used precast concrete units, steel beams, steel framing or prestressed concrete units. Used units or components shall be in good, sound condition having no visible defects. All elements shall be compatible. Use of open-grid bridge decking will not be permitted.  
 The bridge railing shall have a minimum LRFD rating of test level two (TL-2).  
 Rough, untreated hardwood timber may be used for the construction of bulkheads or bent caps.  
 Used timber shall be in good, sound condition.  
 Untreated timber piles may be used.  
 Piling size shall be as designated in Section 719 of the Specifications. Piling shall be driven to bearing sufficient to meet pile bearing requirements and ensure stability of the substructure.  
 During the time the detour bridge is in place, the waterway shall be kept free of all obstructions to the free flow of water.  
 After the permanent structure has been opened to traffic, the detour bridge shall be removed by the Contractor.  
 All material furnished by the Contractor and used in construction with the detour bridge shall remain the property of the Contractor and shall be removed from the site.  
 Test piles shall be driven out of position and shall be removed to a minimum of one foot (1.00) below the ground line upon acceptance by the Project Engineer.  
 Minimum requirements for location and number of test piles are as follows:  
 (1) The number of intermediate bent test piles shall be calculated by dividing the total detour bridge length by 120 ft, rounded to the nearest whole number and shall be a minimum of one test pile.  
 (2) One abutment test pile is required for bridge lengths less than 400 ft.  
 (3) One abutment test pile at each abutment is required for bridge lengths greater than or equal to 400 ft.  
 Detour bridge piles shall be pulled or cut off a minimum of one foot (1.00) below the ground line.  
 The Contractor's detour bridge submittal shall include a plan to address potential scour and drift effects by utilizing methodologies such as substructure bracing/strengthening, rip rap protection, brush deflectors, deeper pile penetration, stronger/more durable pile types and bridge inspection with drift removal during storm events.  
 The detour bridge length shown hereon utilizes a bulkhead abutment configuration to meet the minimum effective opening requirements. Use of bridge configurations that incorporate spill-through slopes may require additional bridge length to meet the minimum effective opening requirements. Additional bridge length, span length and/or other bridge adjustments required to address minimum effective opening requirements, site conditions and/or erosion control requirements will not be cause for additional compensation.  
 Payment for the detour bridge will be made under the pay items in Special Provision 907-61B.  
 Work for which no pay item is provided in the proposal will not be paid for directly and compensation therefor will be included in the prices and payments for bid items.

**NOTE TO CONTRACTOR:**

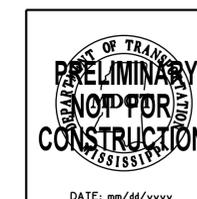
The Contractor shall employ the service of a registered Professional Engineer who is knowledgeable and proficient in the field of bridge design.  
 The Contractor's Design Engineer shall determine the required ultimate pile bearing capacities based on the use of Pile Dynamic Analysis (PDA) for the condition/bearing resistance determination method per the AASHTO LRFD Bridge Design Specifications.  
 The Contractor's Design Engineer will be responsible for providing the Pile Dynamic Analysis (PDA) and for establishing the production pile driving criteria.  
 The Contractor's Design Engineer shall determine the lengths of all test piles and production piles.  
 The following exceptions to the AASHTO LRFD Bridge Design Specifications will be allowed for the design of Detour Bridges:  
 (1) The design of the substructure of the Detour Bridge shall be made to satisfy the requirements of the following Limit States: Strength I, Strength III, Strength V, and Service I.  
 (2) With PDA pile tests for the Detour Bridge Piling being performed and analyzed by the Contractor's Design Engineer, a value of 0.85 for the condition/resistance Factor for Driven Piles may be used to set final Detour Bridge pile lengths.  
 (3) The Design Vehicular Loading (Truck + Lane) used may be 75% of the HL-93 Live Loading.  
 A complete set of bridge detail drawings, bearing the official seal of the Contractor's Design Engineer, along with design calculations, shall be submitted to the Project Engineer and the Director of Structures, State Bridge Engineer for review. The submittal shall specify the bridge span arrangement, configuration, location, minimum geometric and loading requirements, verification of ground line elevations and effective area of opening. The submittal shall also specify the LRFD factored pile loading (Strength I), the required ultimate pile bearing capacities based on the condition/resistance determination method used, type and estimated length of test and production piling, the stationing and finish grade at each bent and total length of the detour bridge.  
 The Contractor's erosion control plan shall address the construction, maintenance, and removal of the detour bridge. The detour bridge shall be long enough such that spill-through slopes of abutments do not spill over into the channel.  
 Prior to opening the detour bridge to traffic, the Contractor shall submit test pile data and pile records to the Engineer for review and shall provide MDTOT written certification from the Contractor's Design Engineer that construction of the bridge was in full accordance with the design plans.  
 Any deviations in construction of the detour bridge from the detour bridge design plans shall require the Contractor's Design Engineer to provide corrected calculations and corresponding revisions made to the detour bridge plans which shall be stamped by the Contractor's Design Engineer.

**DRAINAGE DATA:**

Drainage area . . . . . 2.49 sq. mi.  
 05 (U.S.G.S.) . . . . . 350 c.f.s.  
 Min. low chord elevation . . . 164.50 ft.  
 Anchor span minimum length . . . 19'-0"

**DESIGN DATA:**

Specifications . . . . . A.A.S.H.T.O., LRFD 2012 with 2013 Int. Revs.  
 Loading . . . . . 75% of HL-93  
 Minimum roadway width . . . 24'-0" gutter to gutter



BY		MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
		S.R. 6 ACROSS KAY BAYOU	
		PROJECT 102733/308000 BR-0070-01(006)	
		COAHOMA COUNTY	
		WORKING NUMBER	DBA-1
DESIGNER		MAIL KIRKLAND	CHECKER
DETAILER		MAIL KIRKLAND	ISSUE DATE
DIRECTOR OF STRUCTURES, STATE BRIDGE ENGINEER - JUSTIN WALKER, P.E.		DEP. DIR. OF STRUCTURES, ASST. STATE BRIDGE ENGINEER - SCOTT WESTERFIELD, P.E.	
		SHEET NUMBER	
		8037	

**STATUS: CONCEPTUAL**

# Bridge Design Memorandum

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**To:** Bridge Design  
**From:** NJA/sww  
**Date:** 2/2/2012  
**Re:** Detour Bridges

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As per NJA and JMW,

1. All detour bridge submittals shall be reviewed by the hydraulics section before distribution. This is to ensure the detour bridge meets the minimum hydraulic opening.
2. The Drainage Data provided on detour bridge sheets shall state that the effective opening is calculated below the 5 year design stage (Q5). This is to ensure the contractor calculates the effective opening from the 5 year design stage and not the low chord of the bridge.

Example:

**DRAINAGE DATA:**

Drainage Area.....45.3 sq. mi.  
Q5 (U.S.G.S.).....6900 c.f.s  
Min. Effective Area Required.....1183 sq. ft.  
(Calculated Below 5 Year Design Stage)  
Min. Low Chord Elevation.....6" Above Q5 Design Stage Elev.  
Effective Area Provided.....1183 sq. ft.  
(Calculated Below 5 Year Design Stage)  
Skew Angle.....0 Degrees