Northwest Bridge Bundle

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PROCUREMENT – PROJECT OVERVIEW





PROCUREMENT – PROJECT GOALS

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Safely deliver the project within the program budget of \$30 million on or before December 31, 2026. Use innovative and practical design to maximize the number of locations to be addressed.



Minimize the traveling public's inconvenience through diligent, construction efforts, flexibility in scheduling, and proactive communication.



Provide quality, low maintenance structures and roadway approaches.



PROCUREMENT – PROJECT BUDGET

Total Program: \$29.917 million

Includes: Engineering, Right-of-Way, Stipends, DB Contract Design-Build Contract: \$24.154 million



PROCUREMENT – BRIDGE OVERVIEW



Alternate Bridges (21)





PROCUREMENT – PRIMARY BRIDGES



9 Possible Superstructure Replacements

3 span, Precast Channel Beams (pictured) 1 early completion

o 4 Required Replacements

1 added last minute





PROCUREMENT – ALTERNATE BRIDGES



o 21 Required Replacements



PROCUREMENT – RISK ALLOCATION

ENVIRONMENTAL

RIGHT-OF-WAY

HYDROLOGY & HYDRAULICS

DESIGN EXCEPTIONS (64)



PROCUREMENT – DBE & WORKFORCE

OBE Goal

o6% Construction Activitieso9% Professional Services

$\circ \textbf{Workforce Goals}$

04.0% minorities per trade06.9% females per trade01 OJT for construction labor hours



PROCUREMENT – SCORING (100 POINTS)

\circ Bridge Definition

(65 points)

o 50 points from DB-903ao 15 points for most bridges

OBridge Quality & Longevity

(20 points)

OMaintenance of Traffic

(15 points)

- Bridge Definition
- Bridge Quality & Longevity
- Maintenance of Traffic







Savings to spend at additional sites



Hydraulics, Quantities, Settlement, Foundations



DESIGN - SAVINGS

Minimize Roadway Work

- Minimize Profile Grade changes
- Multi-span Simple for Dead, Continuous for Live
- Superstructure Replacements
- Shorten Bridges
 - Hydraulics
- Eliminate Bridges
 - <20' opening







• Empirical Slab Design (AASHTO, TxDOT)

• Reduced amount of rebar in slab



NORTHWES BRIDGE



TxDOT SSTR barrier

- Compatible with Empirical
 Deck design
- Less expensive than Type H



Simple for Dead Continuous for Live Load

• Evolving Details





- Simple for Dead Continuous for Live Load
 - Shorter, galvanizing kettles
 - Simpler fabrication details







DESIGN – BUILD INNOVATION

Additional Applicable Standards (AASs)

- Continuously Paved Approach Slabs
- Simple for Dead Load Continuous for Live Load (SDCL)
- Single Stage Abutments
- Static Closure Signs



CONT. PAVED APPROACH SLABS



To be used if approach slab is poured continuous with bridge deck. Not to Scale



The Contractor shall prepare and seal the joint according to the manufacturer's recommendation. Before sealing the joint wall surfaces shall be sandblasted to remove any deleterious material.

After sandblasting the entire joint shall be cleaned with compressed air having a minimum pressure of 90 psi. The compressed air shall be free of any contaminates. The joint shall be dry at the time of sealing.



CONT. PAVED APPROACH SLABS



NORTHWEST BRIDGE BUNDLE

SIMPLE FOR DEAD CONTINUOUS FOR LIVE

Ease of construction & accelerates schedule by eliminating traditional field splices.

- Beam Weights (steel vs. concrete)
 - W18x158 @ 60' = 9480 lbs.
 - MoDOT Type 3 Prestressed @ 60' = 23,869 lbs
- Thinner superstructure (no grade raise, "no-rise" cert.) reduce roadway costs



INNOVATIVE SOLUTION - SDCL

Simple details make steel much more competitive

- Certified Bridge Fabricator Simple (SBR)
- Certified Bridge Fabricator Intermediate (IBR)
- Certified Bridge Fabricator Advanced (ABR)
- Shorter beams allow for additional type/coating options





GIRDER COATING OPTIONS

- Shorter Girders Allow Additional Type / Coating Options
 - Weathering steel (when conditions allow)
 - Painted steel
 - Galvanized



INNOVATION DURING DELIVERY



DETAIL B

* Galvanizing material shall be omitted or removed one inch clear of weld locations in accordance with Sec 702.



Single-stage Abutment Caps



SIMPLE FOR DEAD, CONTINUOUS FOR LIVE





OVERHANG FALSEWORK

- Shorter Girders Require Alternate Overhang Construction Methods
 - Needle beam overhang falsework is needed for beams with webs smaller than 18".





OVERHANG FALSEWORK





OVERHANG FALSEWORK

Girders With Webs 18" and Larger Allow Use Of Traditional C-49 Overhang Supports





VIBRATORY SCREED

- Shallow girders require lighter construction methods
 - Vibratory screed usage for finishing bridge deck reduces risk of twisting outside beams.
 - Vibratory screed usage reduces amount of bracing and falsework.
- Vibratory Screed Usage Requires:
 - Maintaining and exceeding minimum rate of pour called out in plans.
 - Ensure good consolidation of concrete.
 - Maintaining consistent vibration in front of screed.
 - Additional straight edging behind screed



INNOVATION DURING DELIVERY



POST-CLOSURE W/MILEAGE & ROUTE PLAQUE



COLD WEATHER CONSTRUCTION

Portable hydronic heat machine allows work to continue during winter months and utilize cellular con cure nodes and sensors to monitor and control internal concrete temperature.



COLD WEATHER CONSTRUCTION

Structured schedule to continue through winter months.













