

# Queen Isabella Memorial Causeway Structural Repairs

CSJ: 0031-04-065



Prepared by Rex A. Costley

# Project Fact Sheet

- \* Project Scope of Work: Concrete Structural Repair, Cleaning and Sealing Joints, Beam End Repair, Column Fiber Wrap, Railing Retrofit, and Silane Treatment
- \* Project Cost: \$ 2,000,000.00 (Engineer's Est.)
- \* Letting Date: July 2012
- \* Contract Time: 14 months

# Queen Isabella Memorial Causeway

The Queen Isabella Memorial Causeway is a safe bridge. The work being performed in this contract is part of continued preventive maintenance and remediation strategies to maintain the bridge's extended service life.

## Condition and Service Life Assessment (08/2009)



### QUEEN ISABELLA MEMORIAL CAUSEWAY Condition and Service Life Assessment

South Padre Island, Texas



**Final Report**  
August 25, 2009  
WJE No. 2008.5102.1



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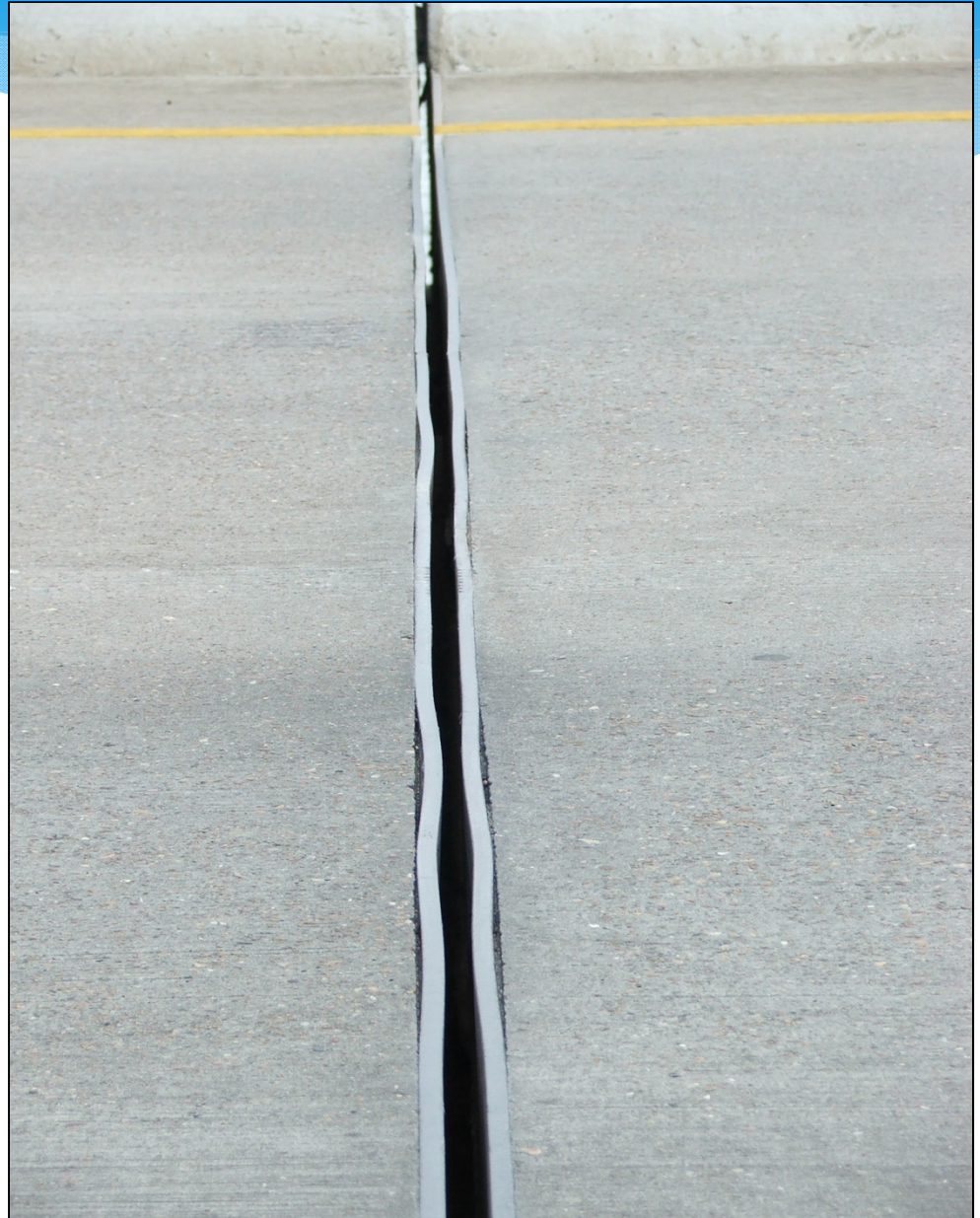
# Existing Conditions

- \* Deck has minor to moderate transverse cracking.
- \* Majority of armor joints contain minor to moderate plate deformation.
- \* Exposed beam strands are corroding.
- \* Caps and diaphragms have spalls throughout the bridge with exposed reinforcement.
- \* Majority of railing has corroded anchor bolts and so

**Span #1 WB Underside Bridge Deck  
Spalled concrete with exposed  
reinforcement.**



**Armor Joint Throughout Bridge  
Plate deformation at anchor  
stud locations.**





**End Diaphragm – Various Locations  
Cracked diaphragm with exposed  
reinforcement.**



**Beam End at Various Locations  
Deteriorated epoxy coating and  
exposed/corroded strands.**





**Beam End at Various Locations  
Deteriorated epoxy coating and  
exposed/corroded strands.**





**Bent #26 Cracked Column**  
**Minor map cracking along**  
**column.**



**Existing Rail Connection - Typical  
Existing anchor bolts and  
hardware severely corroded.**





# Maintenance Improvements

- \* Remove deficient deck and replace with new. Span #1 (WB Side) will be removed and replaced.
- \* Remove failed armor joints and replace with new. All existing joints shall be cleaned and sealed.
- \* Repair spalled concrete areas (beams, diaphragms, and caps) with approved concrete patch material.
- \* Remove existing epoxy coating at beam ends and apply surface treatment the surface area of the beam.
- \* Remove existing aluminum posts and anchor new steel posts into concrete pedestal.

**US 281 SBML @ BUS 281  
Existing deck removal**





**US 83 @ Arroyo Dolores  
Completed deck repair and  
cleaning and sealing joint.**





**Completed Concrete  
Structure Repairs  
(Diaphragms)**





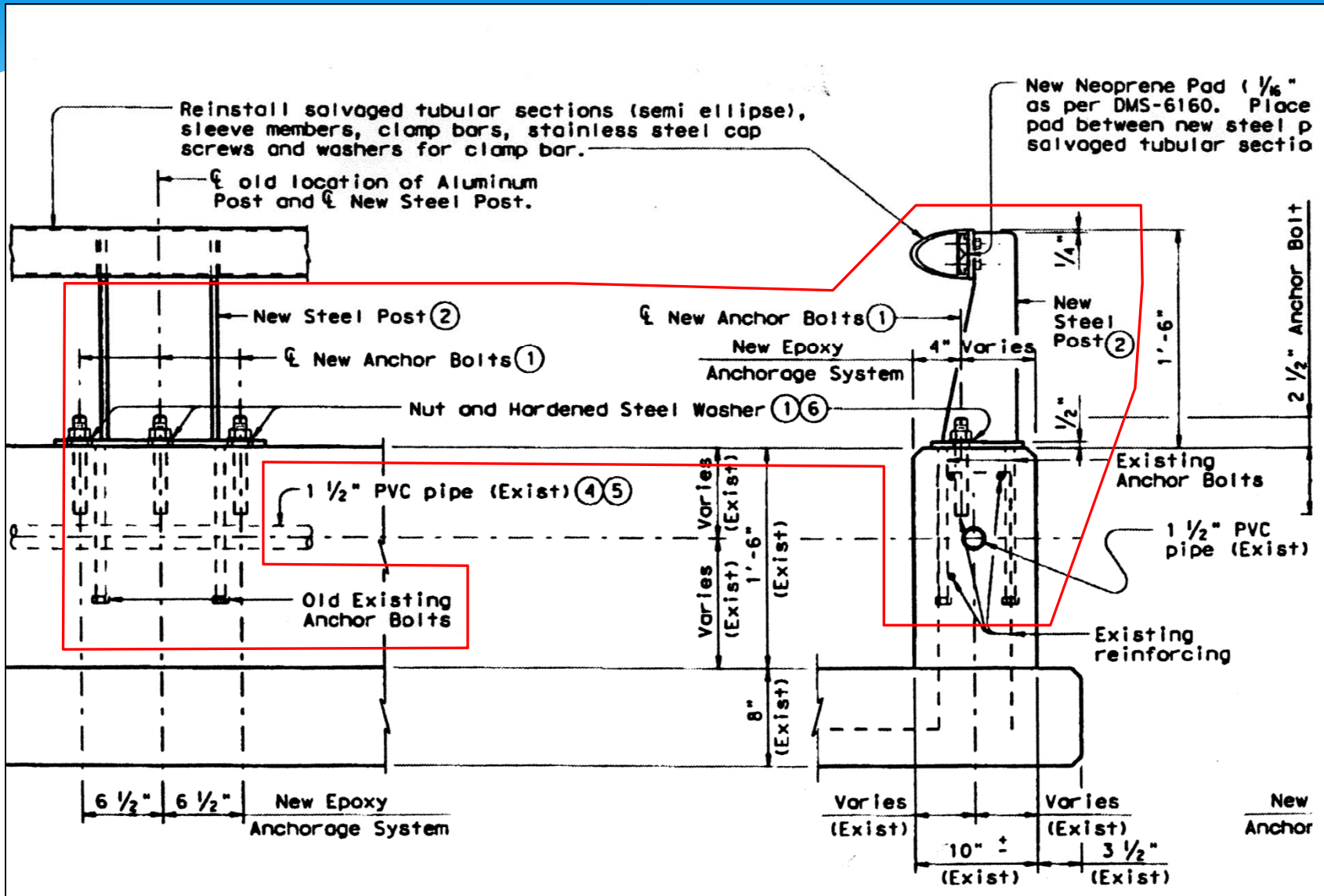
**Completed Concrete  
Structure Repairs  
(Beam)**



**Protective Beam End  
Pre-Stressing strands  
covered.**







**RAIL ELEVATION**

reinforcing not shown for clarity.

**SECTION WITH STEEL POST**

**NEW STEEL POST DETAILS**

**SECT**

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# Contractor Operations

Work to be done on **TOP** of the bridge:

- \* For concrete deck removal and armor joint replacement requires a one lane closure – stationary.
- \* Work shall be limited to November 1<sup>st</sup> to end of January.
- \* Railing retrofit requires a one lane closure and will be picked up at the end of the week.

Work to be done from **BELOW** the bridge:

- \* Limited to movable working platforms, and bucket lifts resting on barges.
- \* Work from below can begin at any time.

# Contractor Operations

**TxDOT Snooper Truck  
Equipment utilized to  
perform inspection and  
address repair needs.**



# Project Schedule

* Bids Received	July 2012
* Pre-Construction Meeting	August 2012 (Tentative)
* Initial Schedule	14 Months
Begin Work On Top	November 2012 (Tentative)
Begin Work Below	September 2012 (Tentative)
Completion of Work	December 2013

(No lane closures during major holidays and events)



# TxDOT's Investment

## Work Performed From 2001 to Present

2001 Emergency Repairs	\$ 5.9 M
2003 Cathodic Protection	\$ 3.5 M
2003 Early Warning Protection	\$ 0.9 M
2003 Pier Protection	\$ 12.3 M
2004 Cathodic Protection	\$ 1.3 M
2007 Dolphin and Fender Repairs	\$ 1.1 M
2010 Painting, Steel and Cathodic Protection	\$ 4.3 M
2010 Illumination Pole Replacement	\$ 0.7 M
2011 Fender Repairs	\$ 0.3 M
<b>2001 to Present Totals</b>	<b>\$ 30.3 M</b>