

**CITY OF RANCHO SANTA MARGARITA, CA - BRIDGE PREVENTATIVE MAINTENANCE PLAN  
PM00035**

**I. Final Bridge Preventative Maintenance Priority List**

Priority (Lowest Number Is Top Priority)	County Location	Implementing Agency	Bridge number from Inspection Report	Local Agency Bridge ID	Facility Carried	Feature Intersected	Location	Sufficiency Rating	SD/ FO Status	Work Description Legend (see "Legend" below)	Work Description	Deck Area (ft <sup>2</sup> )	Total Participating Cost (see "Notes" below)	Unit Cost (\$/ft <sup>2</sup> )	Federal Share	Running Fed Summary	Local Share	Running Local Share
1	Orange	City of Rancho Santa Margarita	55C0520L		W/B SANTA MARGARITA PARKWAY	ARROYO TRABUCO CREEK	0.2 MI E/O ALICIA PARKWAY	67.8	-	1	- The joints at abutments are clogged with dust and dirt, which is preventing the joints from performing their intended function. <b>Repair Strategy: This work shall consist of removing existing joint sealant, backer rod, cleaning existing joint reservoirs and placing new joint sealant.</b>	70,147	\$ 4,427,500	\$ 63.12	\$ 3,920,000	\$ 3,920,000	\$ 507,500	\$ 507,500
										2, 6	- Aggregate exposure at several locations on the bridge deck. - Visible alligator cracks at several locations on the bridge deck. <b>Repair Strategy - This work includes abrasive blast cleaning of the concrete deck surface with steel shot and blowing the deck surface clean, and then applying a high molecular weight methacrylate (HMWM) resin system with sand and absorbent material to bridge deck. In addition, unsound concrete on the existing deck shall be removed, rebar coated with epoxy, and patching with rapid setting concrete.</b>							
										3	- The sliding gap at sidewalk expansion joint is filled with concrete, which is preventing the sliding function of the joint armor checkered plate. <b>Repair Strategy - This work includes abrasive blast cleaning of the concrete deck surface with steel shot and blowing the sidewalk surface clean followed by reconstructing the blockout area to maintain the gap for joint armor checker plate to slide.</b>							
										4	- Significant opening between cantilever and suspended spans of approximately 6" at hinge. The cantilever span is vertically offset from the suspended span which requires deck grinding to even the deck surfaces across the hinge joint. - Spalling of concrete at bridge soffit at the hinge. <b>Reason: During a previous seismic event the bridge has experienced significant seismic movement. The suspended span at the hinge has slipped off the undersized elastomeric bearing pads and locked at the corners at the skewed corners. Due to significant concrete to concrete friction and locking at the skewed corners, the hinge is unable to move. This is also clearly evident from the observation of the gap at the hinge at the peak of summer. This gap which is supposed to be almost closed was wide open approximately 6 inches.</b>							
										4	- Significant opening at abutment 1 bridge joint (approximately 4"). <b>Repair Strategy: Both cantilever and suspended spans must be supported on temporary towers and the entire hinge must be replaced lane by lane. The suspended span must be jacked into place to lineup with the cantilever span.</b>							

**Work Description Legend (Corresponds to Bridge General Plan)**

- 1 Remove and Replace Joint Seals at Abutments & Hinges
- 2 Bridge Deck Methacrylate Resin Treatment
- 3 Reconstruct Sidewalk Joint Armor Blockout
- 4 Hinge Reconstruction
- 5 Limits of Existing AC Removal & Placement of New Structure
- 6 Rapidset Concrete Patches
- 7 Replace High Strength Tie-Rod

**Notes - Total Participating Costs Includes:**

Preliminary Engineering = \$622,000  
 Construction = \$2,537,000  
 Construction Engineering = \$1,014,800 (40%)  
 Contingency = \$253,700 (10%)

Contingency of 10% to account for higher risk in cost variance for maintenance projects  
 Construction Engineering of 40% to account for smaller complex projects and include: construction management & inspection, habitat restoration design & maintenance, public outreach, and designer construction support.

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2	Orange	City of Rancho Santa Margarita	55C0520R		E/B SANTA MARGARIT A PARKWAY	ARROYO TRABUCO CREEK	0.2 MI SE/O ALICIA PARKWAY	83.0	-	1	- The joints at abutments are clogged with dust and dirt, which is preventing the joints from performing their intended function. <b>Repair Strategy: This work shall consist of removing existing joint sealant, backer rod, cleaning existing joint reservoirs and placing new joint sealant.</b>	80,981	\$ 1,436,000	\$ 13.20	\$ 1,271,291	\$ 5,191,291	\$ 164,709	\$ 672,209
										2, 6	- Aggregate exposure at several locations on the bridge deck. - Visible alligator cracks at several locations on the bridge deck. <b>Repair Strategy - This work includes abrasive blast cleaning of the concrete deck surface with steel shot and blowing the deck surface clean, and then applying a high molecular weight methacrylate (HMWM) resin system with sand and absorbent material to bridge deck. In addition, unsound concrete on the existing deck shall be removed, rebars coated with epoxy, and patching with rapid setting concrete.</b>							
										3	- The sliding gap at sidewalk expansion joint is filled with concrete, which is preventing the sliding function of the joint armor checkered plate. <b>Repair Strategy - This work includes abrasive blast cleaning of the concrete deck surface with steel shot and blowing the sidewalk surface clean followed by reconstructing the blockout area to maintain the gap for joint armor checker plate to slide.</b>							
										5	- There are no existing approach slabs. The approach settlements are creating significant distress in the abutment joints. Per Caltrans MTD 5-3 Attachment B, approach slabs are required. <b>Rehabilitation Strategy - Rehabilitate the approaches with Type R (10S).</b>							
										7	- Significant opening at abutment 8 bridge joint (approximately 8"). - Joint opening between cantilever and suspended spans appear to be locked. <b>Reason: It appears the cantilever and suspended spans at the hinge are locked together preventing thermal movement at the hinge. This has resulted in all the movements occurring at the abutments and compromising the integrity of the expansion joints at the abutments. Repair Strategy: Verify through inspection that the high strength rods are not locking the spans together preventing thermal movements. Replace as required.</b>							

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**Notes - Total Participating Costs Includes:**

Summation of estimated cost for each item under Work Description  
 Mobilization of 20% to account for small, remote projects.  
 Contingency of 25% to account for higher risk in cost variance for maintenance project  
 Preliminary Engineering of 25%  
 Construction Engineering of 15%

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3	Orange	City of Rancho Santa Margarita	55C0605		ANTONIO PARKWAY	TIJERAS CREEK	0.8 MI SW/O AVENIDA DE LAS BANDERAS	87.7	-	1	- The joints at abutments are clogged with dust and dirt, which is preventing the joints from performing their intended function. <b>Repair Strategy: This work shall consist of removing existing joint sealant, backer rod, cleaning existing joint reservoirs and placing new joint sealant.</b>	49,560	\$ 589,000	\$ 8.54	\$ 521,442	\$ 5,712,733	\$ 67,558	\$ 739,767
										2, 5	- Aggregate exposure at several locations on the bridge deck. - Visible alligator cracks at several locations on the bridge deck. <b>Repair Strategy - This work includes abrasive blast cleaning of the concrete deck surface with steel shot and blowing the deck surface clean, and then applying a high molecular weight methacrylate (HMWM) resin system with sand and absorbent material to bridge deck. In addition, unsound concrete on the existing deck shall be removed, rebars coated with epoxy, and patching with rapid setting concrete.</b>							
										3	- Significant concrete spalling and exposed/corroded reinforcing bars at post-pockets of tubular hand railing post 20 feet north of the existing light post on the east barrier. <b>Repair Strategy: This work shall consist of the removal and disposal of unsound portland cement concrete, repair using rapid setting concrete, and epoxy coating of all exposed reinforcement.</b>							
										4	- The sliding gap at sidewalk expansion joint is filled with concrete, which is preventing the sliding function of the joint armor checkered plate. <b>Repair Strategy - This work includes abrasive blast cleaning of the concrete deck surface with steel shot and blowing the sidewalk surface clean followed by reconstructing the blockout area to maintain the gap for joint armor checker plate to slide.</b>							

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