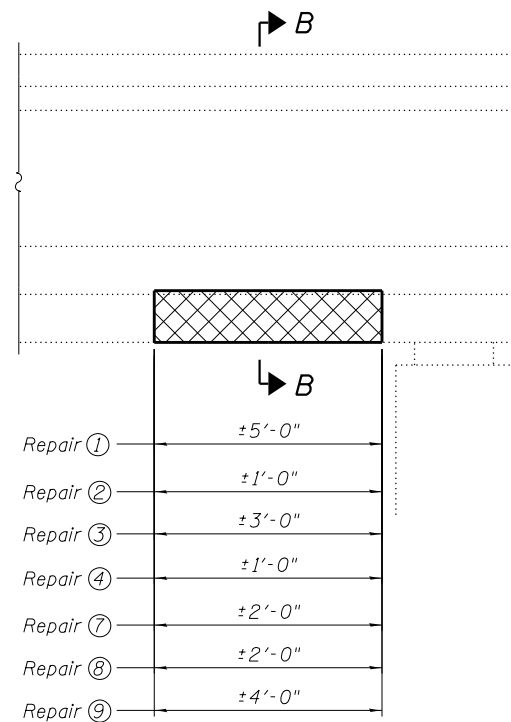


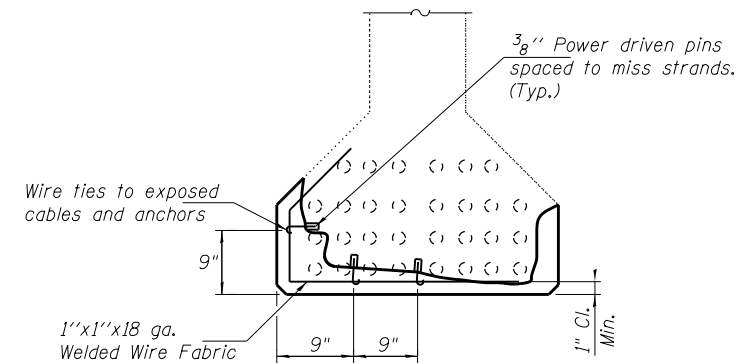
**BEAM ELEVATION AT REPAIRS 5, 6, 10 & 11**

See Preloading Requirements Below.  
 Cross-Hatched areas indicate areas to be patched.  
 Actual repair to be determined in the field.

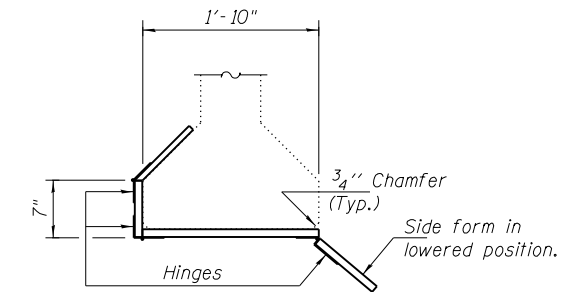


**BEAM ELEVATION AT REPAIRS 1-4 & 7-9**

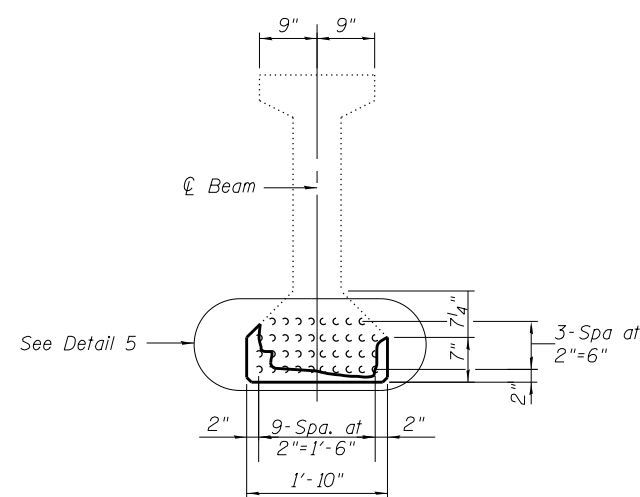
Cross-Hatched areas indicate areas to be patched.  
 Actual repair to be determined in the field.



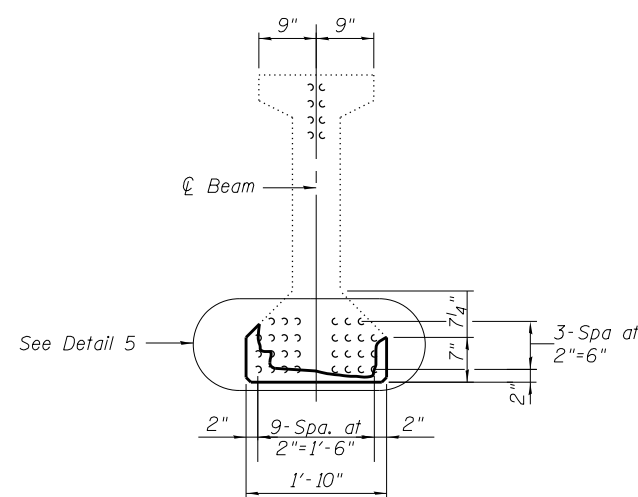
**DETAIL 5**



**SUGGESTED FORM DETAIL**



**SECTION A-A  
 PATCHING DETAIL**



**SECTION B-B  
 PATCHING DETAIL**

**PPC I-BEAM REPAIR PROCEDURE:**

- The damaged area of the beam shall be cleaned of all loose and spalled concrete. Hand tools shall be used for the removal of concrete adjacent to the prestressing strands. While a 15 pound chipping hammer may be used away from prestressing strands, extreme care shall be taken not to damage the exposed prestressing strands. Any exposed portions of the strands shall be sandblasted.
- Using the same tools, remove the existing concrete to sound concrete along the edges of the damaged area to a depth of 1" min. to 1 1/2" max. The edges shall be saw cut 3/4" deep or less.
- Power driven pins as shown in Detail A shall be placed at 9" alternate centers along damaged length of beam at locations shown in Detail 5. Use wire ties in areas where the strands are exposed as shown in Detail 5. Place 1" x 1" x 18 gauge welded wire fabric in repair areas and attach it to the pins or strands with wire ties. The clearance between the finished surface of the new concrete and the welded wire fabric shall be 1" minimum. All beams involved in this work shall be rebuilt to their original dimensions.
- All surfaces of the existing concrete in the areas to be repaired shall be prepared in accordance with Art. 503.09 (b) of the Standard Specs. The concrete beam to be repaired must be at a temperature of at least 50° F. or higher.
- The repair shall be made using a concrete meeting all the requirements specified in Section 1020 of the Standard Specifications for Class PS Concrete for precast prestressed concrete members, except the maximum size of the aggregate shall be 1/2". Place the lower form on the bottom of the beam and compact by vibrating (or other approved methods) the concrete mix into the voids. After accessible voids have been filled and compacted, the top vertical form shall be raised into position and the remaining voids filled and compacted. The sloping upper surface shall be finished to the configuration of the existing PPC I-Beam flange.

**Note:**  
 The cost of preloading, concrete removal, Class PS Concrete, power driven pins, wire ties, wire mesh, epoxy bonding agent, epoxy crack sealing and all other work required to preform repairs at locations 1-11 shall be included in the unit cost Lump Sum of Precast Prestressed Concrete I-Beam Repairs.

**PRELOADING FOR PPC I-BEAM REPAIRS**

(Service Moment)

Prior to beginning any work, the Contractor shall be responsible for providing a preloading system on the bridge deck over the existing damaged beams. The preloading system should produce a total maximum service load moment (including impact) as tabulated below at the centerline of the damaged areas. The Contractor's proposed preloading system, with computations, shall be submitted to the Bureau of Bridge's and Structures for approval. The preloading system shall be placed shortly after bridge closure for repairs.

Span	Beam	Location		* Moment (kip-ft)
		From	Distance	
8	N8.15	☐ Pier 8	38'-5"	543.9*
15	R15.6	☐ Pier 15	34'-1 1/16"	664.1*
21	S21.4	☐ Pier 21	29'-8"	515.7
21	S21.8	☐ Pier 21	29'-8"	446.1

\*The magnitude of the moments to be applied were obtained by assuming a simple span behavior between the fascia and first interior beams (2002 AASHTO 3.23.2.3.1.2) for Live Load + Impact. The effect of the proposed preload system shall be determined using the same assumption.

**Note:**  
 Preloading shall be kept in place for at least three (3) days after completion of concrete repair or until the concrete has reached an ultimate strength of 5,000 psi.

**BILL OF MATERIAL**

ITEM DESCRIPTION	UNIT	QUANTITY
Precast Prestressed Concrete I-Beam Repairs	L. Sum	1