STRUCTURES
STANDARDS

JANUARY 1982
GENERAL NOTES FOR PRECAST PANELS

1. Shop drawings shall be submitted showing complete detail panels for the Precast Concrete Panels. Details shall indicate reinforcement, reinforcing bars, panel dimensions, etc. Precast Concrete Reinforcing Steel (PCRS) shall be Type Full-Flame-Cut of the manufacturer's specifications and the reinforcing schedule that will be submitted should have the concrete curvature of the Panel. Method of Placement and method of Consolidation of concrete around reinforcing bars shall be indicated on drawings.

2. MATERIALS:

3. Covers shall be Class 21 (1.00 ksi) (Class 20 ksi) (Class 100 ksi) Pre-Stressed Strand, and the manufacturer shall indicate the concrete is reinforced with a minimum compressive strength of 4,000 psi. Covers shall meet the requirements of Standard Specifications. All reinforcing shall be classified per AASHTO-A13. See Table.

4. Covers for Precast Panel Covers shall be Class 20 ksi or 40 ksi. All reinforcing shall be in accordance with the requirements of Section 401. All reinforcing shall be designated and marked in accordance with Standard Specifications. See Table.

5. The Embedding of the Rebars shall be in accordance with the requirements of Standard Specifications. See Table.

6. Mechanical Reinforcement shall not be affected by the hot pre-stressing steel rebar. Mechanical reinforcement shall be provided in accordance with the requirements of Standard Specifications. See Table.

7. The ultimate tensile strength of the bars shall be determined by the hot pre-stressing steel rebar. All bars shall be provided in accordance with the requirements of Standard Specifications. See Table.

8. The Ultimate Tensile Strength of the bars shall be determined by the hot pre-stressing steel rebar. All bars shall be provided in accordance with the requirements of Standard Specifications. See Table.

9. All mechanical reinforcement that will be exposed shall be in accordance with Standard Specifications. See Table.

10. All pre-stressed concrete panels shall be designed in accordance with Standard Specifications. See Table.

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FUTURE WEARING SURFACE: An allowance of 16 lbs. per sq. ft. is included for future wearing surfaces.

REINFORCING STEEL: All reinforcing steel shall conform to ASTM A-615 Grade 40 or Grade 60 unless otherwise noted.

PILEING: piles shall be of Drilled Postcasts Concrete Piles. For quantities see Summary of Bridge Pile Items. Minimum pile loads shall be as follows:

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<thead>
<tr>
<th>BRIDGE WIDTH</th>
<th>SPAN LENGTH</th>
<th>LOCATION</th>
<th>PILE LOAD (tons)</th>
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<tr>
<td>40 FT ROADWAY</td>
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CONCRETE: Class II Concrete (C1 = 1400 psi) shall be used throughout the Substructure. Class II Concrete (C1 = 1400 psi) shall be used for field cast portions of the Substructure. Class II Concrete (C1 = 1400 psi) shall be used for precast members.

CONCRETE FINISH: Concrete shall be finished in accordance with Specifications. All exposed top, grade and curb surfaces of Cast-in-Place Magnolite and Concrete Molded Barrier and surface of Subbase units shall receive a Type 5 Applied Finishing Compound.

ENVIRONMENT: These plans shall only be structures located in corrosive (E5) General environments.

LIMITATIONS FOR USE: These drawings shall not be used for structures located in Superenvironmental (S) or Structures in alignment where the slope (Center not used) of the Subbase or the bedding is greater than 0.04 feet per foot.

BTUMINOUS MATERIAL: For Type of Bituminous Material, Extended Quantities, and Payment. See roadway plans.

ALTERNATE SECTIONS: All sections of the Contractor's work units may be furnished provided the amount of precasting per foot of width is maintained.

**PRESERVED MEMBERS**

FINISH: The top of all precast members shall be finished smooth by brushing or power brushing. All other surfaces of the precast members shall receive a Type 5 Applied Finishing Compound. The surface of all the above finished shall be finished by use of a bit or a small finish wheel.

CONCRETE STRENGTH: At the time of the precasting load, the cylinder strength of the concrete shall be 4000 psi.

HANDLING AND STORAGE: During handling and storage, the precast members must be maintained in an upright position at all times. The units must be picked up at the ends of the units to prevent damage.

FORMS AND PALETTES: All precast members shall be cast on concrete base forms and placed on metal forms.

STRANDS: In the opinion of the Contractor, stranded strands may be used in lieu of stress-relieved strands. Calculations are to be submitted showing the strain-compression tester, the following requirements:

- The strands meet all requirements of ASTM A-416 Grade 270.
- The net compressive areas in the cables after all losses are stress as least as large as those required by the PCI stress relieved strands.
- The ultimate strength of the structure meets the requirements of the applicable AASHTO Specifications.

At the option of the Contractor, 250 ksi stress relieved strands may be substituted in lieu of the 270 ksi strands provided that calculations showing compliance with the requirements of the PCI are submitted. Where stress relieved strands are proposed, the required calculations shall be submitted with the Bid.

STRAIN EXTENSION: All strands shall be extended 2% beyond the only of the precast members.

TIE BARS: All tie bars shall be 3/8 x 6 ft. for post-tensioning and shall comply with the requirements of Section 933 of the Specifications. The tie bars shall be cleaned and coated with 125,000 lb. per square inch bitumen.

SHOP DRAWINGS: The contractor shall submit 2 sets of shop drawings, showing details of the proposed prestressing units. The drawings shall include reinforcing details, prestressing spread, detailing and exacting drawing schedules, and all computations required to control the work.

BEARING BASE: Insidious bearing pads shall be 2 1/2 x 4" tires in accordance with section 932-2 of the Specifications. The pads shall be continuous strips of wide of 2 1/2" minimum length. The pads can be cut from commercially available shears.

PAYMENT: The contract unit prices for the prestressed precasted units shall include the works, prestressed, reinforcing steel, shielding, holes in the units, the bars and enclosures, connecting bearing pads, prestressed extension material, and epoxy mortar.

TIE BAR ANCHORAGE: The fabricator shall submit details of the Tie Bar anchorage and anchorage reinforcement detail to the approval of the Shop Drawings.

**CONSTRUCTION NOTES**

EQUIPMENT ON UNITS: Before any heavy equipment is permitted in the structure during construction, inspection showing the safe spacing and calculated readings shall be submitted to and approved by the Engineer.

FILLING KEYWAYS: Quick placement of the unit, or prior to placing the joints between the units and keyways with epoxy mortar, the bottom of the opening shall be prepared to prevent damage during placement of the epoxy keys. The slab shall be raised upward from the bottom of the unit a maximum of one inch. The finished material for the slab shall be allowed to the shop plans for approval by the Engineer. After the slabs are in place for the entire superstructure, the joint and keyway shall be filled with easy mortar (Foss Epoxy Mortar Non-Bonded). Cured Pokered surface where the bar hitches and enclosures for the tie bars are to be in order to avoid lifting these bars.

TIE BARS: The aspheric post-tensioned in bars shall not be received until the epoxy mortar in the joint and keyways has been cured for a minimum of 72 hours. The bars shall be secured, anti-distortion, and anchored to 150,000 psi.

GROUTING BARS: The bars shall be grouted in accordance with section 950-6 of the Specifications. The grouted tie bars shall not be disturbed, nor shall the areas locate in the span for a period of 72 hours following grouting.

FILLING ANCHORAGE BLOCKOUTS: All recesses and blockouts for post-tensioned bars shall be filled with self-stressing grout.

**CONTINUED**

PLACING BARRIER WALLS & SURFACING: After all barias have been graded and the minimum 12 hours have passed for all bars, the barrier walls and wearing course shall be placed.

SAMED JOINTS: A control crack shall be provided by sawing at all supports, joints at the wearing surface, from gutter to gutter. The joint shall be covered with the concrete of the concrete joint and shall be sawn in accordance with the following requirements.

EPOXY MORTAR MIX: The epoxy mortar shall be composed of the mixed epoxy binder and sand mix.

(a) BINDER: The binder shall be a two component (1:1 ratio water-solvent) material designed for the following requirements:

- The material shall be moisture resistant.
- The material shall adhere to concrete.

(b) SAND: The sand filler shall be kiln dried or same meeting these production requirements.

STANDARD SAND

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ALTERNATE SAND

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(c) MORTAR: The epoxy mortar shall be composed in strict accordance with the manufacturer's directions.

(d) Joint covers shall be placed in a combination of three parts of sand to one of binder.

(e) Prior to mortar being placed the ends can be jointed into the joint and keyways in a period of 29% of 64%. Any material that is placed and not cured of 29% of 64% horizontally following shall be discarded.

(f) For joints where the above mix will not flow the mix may be mixed by adding additional binder to this mix.

(g) STONE: The strength of the epoxy mortar shall be considered acceptable provided 3 in. cubes of the material demonstrate a compressive strength of 6000 psi when tested. The mix proportions for the first cubes shall consist of 2 parts mortar and 1 part water. The specimens shall be cured at a temperature of 60°F in 50% and shall be tested in accordance with Section 933 of the Specifications.