

DIVISION 600
INCIDENTAL CONSTRUCTION

SECTION 601
MINOR CONCRETE STRUCTURES

601.02 **MATERIAL** – Remove and delete the following subsections:

Concrete Coloring Agents
Joint Fillers
Precast Concrete Curbing
Precast concrete units
Structural Steel

The following are added to this subsection:

Non-Shrink Grout – Furnish approved commercial non-metallic, non-corrosive, non-shrinkage type with a yield of 0.90 cu. ft. per 100-pound bag. Deliver the product to the site in original sealed containers, each bearing the trade name and manufacturer's name. The grout shall have a compressive strength of 8,000 psi. Mix and apply grout in strict accordance with the manufacturer's printed instructions. Exposed surfaces shall be water cured with wet burlap for a minimum of 7 days. Perform measurement of non-shrink grout the field from the time the water is added and the mix is placed as shown in the plans.

Epoxy Binder – Furnish Type I epoxy binder shall be Type I, conforming to Federal Specifications MM-B-350.

Other Embedded Items – Place or install all sleeves, inserts, anchors and embedded items before concrete pouring as shown or specified. Furnish hot-dipped galvanized after fabrication conforming to AASHTO M 111-80 or AASHTO M 232-82.

601.03 **CONCRETE COMPOSITION** – Remove and delete items (f) and (i) entirely.

Amend Table 601-1 and add the following to read as:

The class of concrete to be is specified herein. Before start of construction, the Contractor shall submit design mix of all concrete strength for approval. The Contractor, at his own expense, shall have samples of mix designs prepared for the class of concrete to be used in the work or furnish satisfactory evidence that specified mix have been previously prepared and results obtained. Unless otherwise provided herein, specification ACI-211-1-74 shall be used in proportioning the mix. Bid prices for concrete shall be based on the proposed mix including any use of admixture, if permitted. The design mix, including certified test reports for the material to be incorporated to the mix and the results of the 7-day and 28-day compressive strength test shall be submitted for approval at least 30 days before furnishing of concrete.

The class of concrete to be used on this project is listed below and shall have the corresponding 28-day compressive strength and maximum aggregate size.

<u>Strength</u>	Max. Aggregate <u>Size</u>	Max. <u>Slump</u>	<u>Placement</u>
3,000	0.75"	4"	Other Minor Concrete Structures.

Add the following to this subsection:

Use of admixture will be at the Contractor's option subject to the approval of the CO. Before use of admixture, the mix design with certified test reports shall be submitted to the CO for approval.

CONSTRUCTION REQUIREMENTS

601.04 **GENERAL** - The following are amendments to this subsection:

Delete and remove the second sentence of the first paragraph.

Delete the last paragraph/sentence.

The following is added to this subsection:

- a. Setting Miscellaneous Material - Anchors, frames or edging, pipe sleeves, pipes passing through walls, metal ties, conduits, drain and other materials concerning concrete construction shall, where practicable, be placed and secured in position when the concrete is placed.
- b. Reinforcing Steel - Shall be provided as indicated. Any placement or movement after placement other than indicated or specified shall be subject to approval.
- c. Bonding and Grouting - Before depositing new concrete against old concrete or concrete that has set, the existing surface shall be roughened and immediately before placing the new concrete, the old surface shall be hosed down with water and thoroughly cleaned, using compressed air. All laitance, coatings, stains, debris and other foreign material shall be removed from the surface, and the surface shall be coated with epoxy binder, Type I, conforming to Specification MMM-B-350 immediately before the new concrete is deposited.
- d. Mortar for Patching - Cement mortar for patching shall conform to the requirement of these specifications. Cement mortar shall be applied with putty knife while the prime-coat is still soft or tacky. The repairing materials shall be applied flush with the adjacent surfaces.
- e. Finishing Concrete Surfaces - The following shall be exercised in finishing concrete surface.
 1. Rubbed Finish - Unless otherwise specified all exposed concrete surfaces specified.

2. All Exposed Corner - Shall be chamfered 3/4 inch except otherwise noted.
3. Repair of Defects on Concrete - All defects consisting of cracks, spalls, voids, cleavages, holes, honeycombed areas and all other defects that occur during the one-year guarantee period shall be repaired as herein specified. Except otherwise specified, the repairing material shall be two-component, mineral-filled, epoxy-resin-base, grout conforming to Specification MMM-G-650, Type I, Grade C, or repaired with a two-component, epoxy-resin-base material conforming to Specification MMM-B-350, Type I, mixed with fine aggregate.
4. Design Mix for Repairing Materials - The two-component mineral filled, epoxy-resin-base grout shall be mixed without adding any aggregate in strict accordance with the manufacturer's printed instructions. Epoxy mortar shall consist of a two-component, epoxy-resin-base binder material mixed with dry silica sand or stone aggregate in proportions strictly recommended by the manufacturer. The Contractor shall mix trial batches on the job in the presence of the CO in strict accordance with the manufacturer's printed instructions that will ensure that the proportions of materials will be controlled and accurately maintained during the progress of the repair work. Mortar materials shall be mixed in proportions by volume as recommended. The epoxy-resin-base binder adhesive and the aggregate shall be introduced and mixed in such a manner the materials will be distributed uniformly throughout the mass. Boxes and pans for mixing shall be kept clean and free of debris or dried mortar. Once the components of the epoxy mortar are mixed, the compounds shall be used before the initial setting of the binder has taken place.
5. Preparation of Surfaces - All concrete surfaces to be repaired shall be dry, free of grease, oil, dirt, and deficiency in the strength of the concrete produced. Additional tests at the contractor's expense shall be made and adjust mixes as required to obtain the specified strength.
6. Method of Application - Following the preparation and cleaning concrete surfaces to be repaired, the repairing material of the design mix as recommended by the manufacturer shall be applied.

Thin Hairline Cracks - Thin hairline cracks not measurable by ordinary means (0.01 inch and under) shall be sealed with epoxy grout. The repairing material of the design mix as recommended by the manufacturer shall be applied.

Large Cracks and Voids - Large cracks and voids shall be square cut, cleaned and primed with pure epoxy-resin binder adhesive to ensure a weld bond, after which the epoxy mortar shall be applied with a trowel or putty knife flush with the adjoining surface.

Deep Cracks or Cleavages - Where the size of the openings permit, the crack shall be filled with epoxy grout, allowed to harden, then surface-coated with epoxy mortar. To rejoin narrow voids at maximum depth, the cracked surface shall be sealed with epoxy grout and allowed to harden;

then, through this sealed surface, holes large enough to permit insertion of caulking gun tips shall be drilled and epoxy grout without aggregate shall be pumped into the void with the caulking gun. The sealed surface will prevent the outflow of the epoxy grout and force it into the fissure, providing a weld-joint of maximum strength.

Spalls - Defects caused by spalls shall be repaired by providing with a prime coating of pure epoxy binder and then filled with epoxy mortar (with aggregate) by means of steel trowel or as specified for non-shrink grouting of mortar. Surfaces to receive non-shrink grouting mortar shall be thoroughly clean.

601.05 PLACING CONCRETE – Remove and delete the last paragraph/sentence.

601.08 MEASUREMENT – Add the following to this subsection:

Unless stipulated in the contract, concrete used in other sections will not be measured for direct payment.

601.09 PAYMENT – Remove and delete the last paragraph/sentence. Add the following to this subsection.

Payment will be made under:

Pay Item No.	Pay Item	Pay Unit
60101	Reinforced Concrete Headwall Complete-in-place	Each

END OF SECTION 601