

DIVISION 3 – CONCRETE
SECTION 03 30 00 – CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Cast-in-place concrete for:
 - 1. Pipe thrust restraint.
 - 2. Restoration of disturbed/damaged concrete curbs and sidewalk.
 - 3. Miscellaneous concrete.

1.02 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. 301- Specifications for Structural Concrete for Buildings.
 - 2. 305- Hot Weather Concreting.
 - 3. 306- Cold Weather Concreting.
 - 4. 318- Building Code Requirements for reinforced concrete.
 - 5. 347- Recommended practice for concrete formwork.
- B. American Society for Testing and Materials (ASTM)
 - 1. A615- Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
 - 2. C31- Making and Curing Concrete Test Specimens in the Field.
 - 3. C39- Compressive Strength of Cylindrical Concrete Specimens.
 - 4. C94- Ready-Mixed Concrete.
 - 5. C143- Slump of Portland Cement Concrete.
 - 6. C173- Air Content of Freshly Mixed Concrete by the Volume Method.
- C. Pennsylvania Department of Transportation (PENNDOT) Publication 408, latest edition
 - 1. 704- Cement Concrete.
 - 2. 711- Concrete Curing Material and Admixtures.

3. 1001- Cement Concrete Structures.

1.03 REQUIREMENTS

- A. Contractor shall be responsible for replacing or restoring all concrete damaged or disturbed in performing work to match original conditions in addition to those requirements specified herein.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Concrete: Class A cement concrete as specified in PENNDOT Publication 408, Section 704.1 (b), 3,000 psi minimum compressive strength at 28 days.
- B. Concrete Admixtures: Curing Materials and Admixtures: As specified in PENNDOT Publication 408, Section 711.
- C. Liquid Membrane-Forming Curing Compound: As specified in PENNDOT Publication 408, Section 711.
- D. Reinforcing Bars: 60 ksi yield grade, ASTM A615, deformed billet steel bars
- E. Curb and Sidewalk Restoration Materials: Materials shall comply with Municipal Specifications.
- F. Epoxy Bonding Compound: Use product equivalent to A.C. Horn AEpoxyte Binder or Skia Chemical Sikadur 32 Hi-Mod.
- G. Form coatings: Provide commercial formulation form-coating compounds that will not bond with, nor affect concrete surfaces, and will not impair subsequent treatment of concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify requirements for concrete cover over reinforcement.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.02 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- B. Accurately place and adequately support embedded items and joint materials in pour.
- C. Sprinkle sufficient water over subgrade to prevent water loss from concrete.

3.03 FORMING

- A. Construct forms according to ACI 347 to required dimensions, plumb and straight.
 - 1. Securely brace and shore forms to prevent displacement, bowing and pillowing, and to safely support imposed concrete load.
 - 2. Fabricate forms for easy removal without harming or prying against concrete surfaces.
- B. Provide openings in concrete formwork of the correct size and in the proper location to accommodate piping and other construction work items. Accurately place and securely support items to be built into forms.
- C. Where soil conditions will permit excavation to accurate sizes without bracing, and where cave-ins can be prevented during the concrete pour, earth forms may be used. Earth forms shall be wetted, but not muddy before concrete is placed.

3.04 REINFORCING

- A. Place reinforcing steel accurately and securely brace against displacement using reinforcing accessories according to ACI 318.
- B. Splice bars according to ACI 318.

3.05 PLACING CONCRETE

- A. Place concrete in accordance with ACI 117, 301, 304, 305, 306 and 318.
- B. Notify Authority minimum 24-hours prior to commencing concrete pour.
- C. Ensure reinforcement, inserts, embedded parts, and formed expansion and contraction joints, are not disturbed during concrete placement.
- C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken for each structural pour.
- D. Place concrete continuously between predetermined expansion, control, and construction joints.
- E. Do not interrupt successive placement; do not permit cold joints to occur.

- F. Maintain concrete at joints in walls continuously wet for 12 hours prior to pour. Place minimum 3 inches grout above joint.
- G. Consolidate concrete by vibration, spading, rodding or other manual methods.
- H. Perform concrete work in cold and hot weather according to ACI 306 and ACI 305, respectively.

3.06 CONCRETE FINISHING

- A. Finish concrete to match original conditions or as directed by the Authority.

3.07 PROTECTION AND CURING

- A. Protection:
 - 1. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
 - 2. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- B. Cure concrete with Liquid Membrane-Forming Curing Compound. Apply curing compound in accordance with PENNDOT Publication 408, Section 1001.3.

3.08 CURB AND SIDEWALK RESTORATION

- A. Restore curbs and sidewalks damaged by construction to conform to municipal or PENNDOT specifications, as appropriate.
- B. Saw cut and reconstruct sidewalks to the first expansion joint on either side of the damaged section.
- C. Saw cut and reconstruct curbs to a minimum of one (1) foot beyond each side of the damaged section. Match original lines and grades.

END OF SECTION