

DIVISION 2 – SITE WORK

SECTION 02520

PORTLAND CEMENT CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete, integral curbs, parking areas and roads.

1.02 RELATED SECTIONS

- A. Section 02100 - Site Preparation.
- B. Section 02505 - Paving Base Course.
- C. Section 02525 - Curb and Sidewalk and Sidewalks.
- D. Section 02584 - Pavement Markings.
- E. Section 03300 - Cast-in-place Concrete.
- F. Construction Drawings.

1.03 REFERENCES

- A. ACI 301 - Specifications for Structural Concrete for Buildings.
- B. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- C. ANSI/ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- D. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural construction.
- E. ANSI/ASTM D1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
- F. ASTM A615 - Deformed and Plain Billet-Steel for Concrete Reinforcement.
- G. ASTM C33 - Concrete Aggregates.
- H. ASTM C94 - Ready Mix Concrete.
- I. ASTM C150 - Portland Cement
- J. ASTM C260 - Air-Entraining Admixtures for Concrete.
- K. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.

L. ASTM C494 - Chemical Admixtures for Concrete.

M. FS TT-C-800 - Curing Compound, Concrete, for New and Existing Surfaces.

1.05 PERFORMANCE REQUIREMENTS

A. Contractor shall maintain access for vehicular and pedestrian traffic as required for other construction activities. Utilize temporary striping, flagmen, barricades, warning signs, and warning lights as required.

PART 2 PRODUCTS

2.01 MATERIALS

A. Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required. Coat forms with non-staining type coating that will not discolor or deface surface of concrete.

B. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A 185. Furnish in flat sheets, not rolls, unless otherwise acceptable to Owner.

C. Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 40.

D. Concrete Materials: Comply with requirements of Cast-in-place Concrete Section for concrete materials, admixtures, bonding materials, curing materials, and others as required. **No flyash is to be used.**

E. Joint Fillers: Resilient premolded bituminous impregnated fiberboard units complying with ASTM D 1751 FS HH-F-341, Type II, Class A; or AASHTO M 153, Type I.

F. Joint Sealants: Non-priming, pourable, self-leveling polyurethane. Acceptable sealants are Sonneborn "Sonolastic Paving Joint Sealant" Sonneborn "Sonomeric CT 1 Sealant", Sonneborn "Sonomeric CT 2 Sealant", Mameco "Vulken 45", or Woodmont Products "Chem-Caulk".

2.02 MIX DESIGN AND TESTING

A. Concrete mix design and testing shall comply with requirements of applicable Cast-in-place Concrete Section.

B. Design mix to produce normal weight concrete consisting of Portland cement, aggregate, water-reducing admixture, air-entraining admixture, and water to produce the following properties:

1. Compressive Strength: 3,500 psi, minimum at 28 days, unless otherwise indicated on the Drawings.
2. Slump Range: 3"-5" at time of placement
3. Air Entrainment: 5% to 8%.

PART 3 EXECUTION

3.01 PREPARATION

A. Compaction testing for the base material shall be completed prior to the placement of the paving.

- B. Surface Preparation: Remove loose material from compacted base material surface to produce a firm, smooth surface immediately before placing concrete.
- C. Contractor shall submit a joint layout plan and pouring sequence to Engineer for approval.

3.02 INSTALLATION

A. Form Construction

1. Set forms to required grades and lines, rigidly braced and secured.
2. Install sufficient quantity of forms to allow continuance of work and so that forms remain in place a minimum of 24 hours after concrete placement.
3. Check completed formwork for grade and alignment to following tolerances: Top of forms not more than 1/8" in 10'-0". Vertical face on longitudinal axis, not more than 1/4" in 10'-0".
3. Clean forms after each use, and coat with form release agent as often as required to ensure separation from concrete without damage.

B. Reinforcement: Locate, place and support reinforcement per applicable Cast-in-place Concrete Section.

C. Concrete Placement

1. Comply with applicable requirements of Cast-in-place Concrete Section.
2. Do not place concrete until base material and forms have been checked for line and grade. Moisten base material if required to provide uniform dampened condition at time concrete is placed. Concrete shall not be placed around manholes or other structures until they are at the required finish elevation and alignment.
3. Place concrete using methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.
3. Deposit and spread concrete in continuous operation between transverse joints, as far as possible. If interrupted for more than 1/2 hour, place construction joint.

D. Joint Construction: Construct expansion, weakened-plane Control (contraction), and construction joints straight with face perpendicular to concrete surface. Construct transverse joints perpendicular to centerline, unless otherwise detailed.

1. Weakened-Plane Control (Contraction) Joints: Provide joints at a spacing of 15'-0" o.c. maximum each way. Construct control joints for depth equal to at least 1/4 concrete thickness, as follows:
 - a. Form tooled joints in fresh concrete by grooving top portion with recommended tool and finishing edges with jointer.
 - b. Form sawed joints using powered saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut joints into hardened concrete as soon as surface will not be torn, abraded, or otherwise damaged by cutting action.
2. Construction Joints: Place concrete joints at end of placements and at locations where placement operations are stopped for period of more than 1/2 hour, except where such placements terminate at expansion joints. Construct

joints using standard metal keyway-section forms.

3. Expansion Joints: Locate expansion joints at 120'-0" o.c. maximum each way. Provide pre-molded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, walks, and other fixed objects.
- E. Joint Fillers: Extend joint fillers full-width and depth of joint, and not less than 1/2" or more than 1" below finished surface where joint sealer is indicated. Furnish joint fillers in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together.
- F. Joint Sealants: All joints shall be sealed with approved exterior pavement joint sealants and shall be installed per manufacturer's recommendations.

3.03 CONCRETE FINISHING

- A. After striking off and consolidating concrete, smooth surface by screeding and floating. Adjust floating to compact surface and produce uniform texture. After floating, test surface for trueness with 10'-0" straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide continuous smooth finish.
- B. Work edges of slabs, gutters, back top edge of integral curb, and formed joints with an edging tool, and round to 1/2" radius. Eliminate tool marks on concrete surface. After completion of floating and troweling when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:
 1. Inclined Slab Surfaces: Provide coarse, non-slip finish by scoring surface with stiff-bristled broom perpendicular to line of traffic.
 2. Paving: Provide coarse, non-slip finish by scoring surface with stiff-bristled broom perpendicular to line of traffic.
- C. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point up any honeycombed areas. Remove and replace areas or sections with major defects, as directed.
- D. Protect and cure finished concrete paving using acceptable moist-curing methods, more particularly described in the "water-curing" section of ACI 308-81.

3.04 CLEANING AND ADJUSTING

- A. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just prior to final inspection.
- B. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials.

3.05 FIELD QUALITY CONTROL

- A. An independent testing laboratory shall randomly core the pavement at a minimum rate of one core per 10,000 square feet of pavement.

END OF SECTION 02520