

**SECTION 02520
PORTLAND CEMENT CONCRETE PAVING**

PART 1 - GENERAL

1.1 SUMMARY:

A. Section Includes:

1. Concrete paving.
2. Curbs and gutters.
3. Sidewalks.
4. Cross-pans.
5. Dumpster pads at all new trash collection facilities.

B. Related Sections:

1. Section 02200 - Earthwork.
2. Section 03300 - Cast-in-Place Concrete.

1.2 SYSTEM DESCRIPTION:

- A. For handicap accessible curb ramps, conform to the Campus Standard Curb Ramp detail following this section.

1.3 SUBMITTALS:

- A. Shop Drawings: Submit sections and details where not fully dimensioned on the drawings.
- B. Manufacturer's Data: Submit for proprietary products.
- C. Mix Design: Submit mix design for review by the Architect / Engineer.

LEED MRc5: Regional Materials

Provide a statement from the manufacturer stating the materials provided were manufactured within a 500 mile radius of the project site. Include the location in the submittal.

1.4 QUALITY ASSURANCE:

- A. Record of Work: Provide record of time and date of placement, temperature, and weather conditions.
- B. Conform to applicable requirements of ACI 301.

1.5 JOB CONDITIONS:

- A. Cold Weather: Cease concreting when descending air temperature in shade and away from artificial heat falls below 35 degrees F., and there is frost in subgrade.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Ready Mixed Concrete: ASTM C94.
- B. Cement: ASTM C150, Type I except use Type II or V as required by Soils Report, 6 sacks per cubic yard minimum.
- C. Aggregates: ASTM C33, 0.75" maximum size.
- D. Water: Potable.
- E. Slump: 1" to 4".
- F. Water Cement Ratio: 0.44-0.48 maximum.
- G. Compressive Strength: 4000 psi minimum.
- H. Admixtures:

Note: THE USE OF UP TO 20% OF THE WIRGHT OF CEMENT IN CLASS F FLYASH WILL BE CONSIDERED ON A PROJECT BY PROJECT BASIS.

- 1. Air Entraining Agent: ASTM C260, certified by manufacturer to be compatible with other required admixtures, to achieve 5 to 7 percent entrained air.
- 2. Water-Reducing Admixture: ASTM C494, Type A.

LEED MRc4: Recycled Content

100% post-industrial fly ash. Fly ash should make up 5% of the concrete mixture, by weight.

- 3. Prohibited Admixtures: Calcium chloride or thiocyanate.

A. Reinforcing:

- 1. Reinforcing Bars: ASTM A615 and Supplement 1, Grade 60.
- 2. Reinforcing Bars: ASTM A615 and Supplement 1, Grade 60, epoxy coated for entrance and exit points to parking facilities.
- 3. Welded Wire Fabric: ASTM A185. Supply 6" x 6"/W1.4 x W1.4 in flat sheets minimum.

USE BARS ONLY WHERE REQUIRED. GENERALLY PROVIDE EITHER WELDED WIRE FABRIC OR FIBROUS REINFORCEMENT. ONE TYPE IS REQUIRED FOR ALL ON-GRADE SLABS.

- 1. Fibrous Reinforcement: Collated fibrillated, polypropylene fibers containing no reprocessed olefin materials and having a tensile strength of 70,000 psi. Use 1.5 lbs. per cubic yard of concrete minimum.

USE WHERE STRUCTURAL CAPACITY TO BRIDGE POTENTIAL BACKFILL/ SETTLEMENT IS NOT ANTICIPATED.

- B. Joint Material: 0.5" thick, closed cell polyethylene foam, Texmastic "Vinyltex 3600", Sonneborn "Sonoflex F", or approved substitute.
- C. Curing Materials:
 - 1. Burlap Cloth: AASHTO M 182, Class 2.
 - 2. Liquid Membrane Type: ASTM C309, Type 1, Class B.
 - 3. Sheet Materials: Waterproof paper, polyethylene film or white burlap-polyethylene sheet complying with ASTM C171.

PART 3 - EXECUTION

3.1 PREPARATION:

- A. Check for soft spots prior to setting forms. Remove soft yielding material and replace. Compact to specifications.
- B. Test for crown and elevation by subgrade planer to assure specified thickness.
- C. Forms shall be capable of supporting loads imposed by construction equipment:
 - 1. Maximum deflection of 1/4".
 - 2. Straight and free from warp, with maximum deviation of surface 1/8.
- D. Set dowels, expansion joints, preformed construction joints, and header boards and preformed baskets.

3.2 PLACEMENT:

- A. Deposit concrete near final position on grade with minimum segregation and without damage of subgrade.
- B. Final surfaces shall not have holes or honeycombs.
- C. Minimum Thicknesses:
 - 1. Sidewalks not Subject to Vehicle Traffic: 4".
 - 2. Sidewalks and Drives Subject to Vehicle Traffic: 5".

3. Structurally Supported Slabs (Such as Over Tunnels): As required to meet potential loading conditions.

3.3 FINISHING:

- A. Use equipment designed to spread, consolidate, screed and float freshly placed concrete in one pass, providing well consolidated, homogeneous mixture, requiring minimum of hand finishing to meet surface tolerances.
- B. Finished surface tolerances:
 1. Tested with 10' straight edge parallel to center line immediately following first floating of surface.
 2. Advance straight edge 5'; space under straight edge shall not exceed 3/16".
- B. Curbs, gutter and cross pans finished with burlap drag or wood float. Do not plaster surfaces.
- C. Immediately after float finishing sidewalks and ramps, slightly roughen the concrete surface by brooming in the direction perpendicular to the main traffic route. Use fine hair fiber-bristle broom except on inclined slab surfaces provide a coarse, non-slip finish by scoring surface with a stiff-bristled broom, perpendicular to the line of traffic.

SPECIAL FINISHES: DO NOT USE SPECIAL FINISHES SUCH AS COLORED CONCRETE, EXPOSED AGGREGATE, ETC. UNLESS SPECIFIC APPROVAL FROM UCCS STAFF IS OBTAINED. EVALUATION WILL BE MADE ON A JOB-BY-JOB BASIS. DO NOT USE METAL NOSINGS ON EXTERIOR CONCRETE STAIRS.

3.4 JOINTS:

- A. Contraction joints, minimum depth 1/4 thickness of concrete. Space at even intervals and match existing adjacent work (if any).
- B. Longitudinal joints in conformance with drawings.
- C. Expansion joints with preformed joint filler in a vertical position, deviating not more than 1/4" from a straight line. Install at all existing and proposed structures projecting through, into, or against pavement, in accordance with drawings.

3.5 CURING:

- A. Apply curing compounds, sheets, or burlap immediately after finishing and water film has evaporated from surface. Do not use liquid membrane type on surfaces to receive mortar bed finishes.

3.6 PROTECTION:

- A. Protect fresh uncured surfaces from rain.
- B. Cold Weather: Maintain temperature of concrete above 50 degrees F. for minimum five

days from placement.

- A. No vehicle loads exceeding design loading. No equipment permitted on new pavement until design strength is attained.

ENGINEER TO SPECIFY CURE OF 3 TO 7
DAYS MINIMUM UNLESS SPECIAL
USE / MIX.

END OF SECTION 02520