

SECTION 32 17 00 - PAVING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pavement markings.
2. Precast concrete parking bumpers.
3. Precast concrete bollards.
4. Metal bollards.
5. Tactile warning surfacing.

1.2 SUBMITTALS

- A. Product Data: Manufacturer's printed product data for each product specified.
- B. Samples: For each product specified to match color as specified in Division 01 Sections.
 1. Provide 6 inch (150 mm) by 6 inch (150 mm) sample showing finish for concrete bollards.

1.3 QUALITY ASSURANCE

- A. Americans with Disabilities Act (ADA): Title III Regulations, 28 CFR Part 36 ADA Standards For Accessible Design, Appendix A, Section 4.29.2 Detectable Warnings On Walking Surfaces.

1.4 JOB CONDITIONS

- A. Environmental Requirements: Apply marking paint in dry weather when temperature is 50 deg F (10 deg C) or above and anticipated to remain above 50 deg F (10 deg C) for four hours after completing application.

PART 2 - PRODUCTS

2.1 PAVEMENT MARKING PAINT

- A. Marking paint: High solids, water based acrylic paint containing ultraviolet resistant pigments.
 1. Products:
 - a. Benjamin Moore and Co.; INSL-X, TP-22XX Latex Traffic Paint.
 - b. PPG Paints; Zoneline Traffic & Zone Marking Paint, 11-53 Series.

- c. The Sherwin Williams Co.; Pro-Park Traffic Marking Paint, B97 Series
- 2. Colors: As specified in Division 01 Section "Exterior Finishes and Colors."
 - a. Verify all colors meet requirements of authorities having jurisdiction.

2.2 PARKING BUMPERS

- A. Precast Concrete Parking Bumpers: Precast, air-entrained concrete, 2500-psi (17.2-MPa) minimum compressive strength, 4-1/2 inches (115 mm) high by 9 inches (225 mm) wide by 72 inches (1800 mm) long. Provide chamfered corners and drainage slots on underside and holes for anchoring to substrate.
 - 1. Dowels: Galvanized steel, 3/4-inch (19-mm) diameter, 10-inch (254-mm) minimum length.

2.3 CONCRETE BOLLARDS

- A. Basis-of-Design Manufacturer: Day Precast Company, Toledo, Ohio, 419-536-2909 or a comparable product meeting Detail B on ASD-161 from a local precast concrete company.
 - 1. Product meeting Detail B on ASD-161 from a local precast concrete company is encouraged by Owner.
- B. Concrete Materials:
 - 1. Portland gray cement conforming to ASTM C-150 Type 1. Air content 5-7 percent. Minimum 4000 psi compression strength at 28 days.
 - 2. Aggregates: All aggregates to meet ASTM C33 specifications, to be cleaned of foreign matter and properly graded to size.
- C. Size and Shape: As indicated on Drawings.
- D. Finish and Color: Light sandblast, natural gray.
- E. Reinforcing: Manufacturer's standard neoprene fibers or reinforcing bars, ASTM A 615/A 615M, Grade 60 (Grade 420), #3, deformed.
- F. Provide PVC insert for #9 dowel.
- G. Installation Dowel: Galvanized Reinforcing Bars, ASTM A 615/A 615M, Grade 60 (Grade 420), #9 deformed bar, ASTM A 767/A 767M, Class I zinc coated after fabrication and bending.

2.4 METAL BOLLARDS

- A. Fabricate from ASTM A-53, Type E or S, Grade B, Schedule 40 steel pipe.
- B. Color: As specified in Division 01 Section "Exterior Finishes and Colors."

1. Verify all colors meet requirements of authorities having jurisdiction.

2.5 TACTILE WARNING SURFACE

A. General:

1. Pattern: In-line pattern of truncated domes measuring nominal 0.2 inch (5 mm) height, 0.9 inch (23 mm) base diameter, and 0.45 inch (11 mm) top diameter, spaced center-to-center 2.35 inches (60 mm) as measured side by side.
2. Field Area: Non-slip surface with a minimum of 40 - 90 degree raised points 0.045 inches (11 mm) high, per square inch;
3. Dimensions: 2 feet (610 mm) by 3 feet (915 mm) unless indicated otherwise.

B. Tile System:

1. Basis of Design Manufacturer: ADA Solutions, Inc.
2. Configuration: Cast-in Place
3. Material: Vitrified polymer composite (VPC) epoxy polymer composition with an ultra violet stabilized coating employing aluminum oxide particles in the truncated domes.
4. Slip Resistance (Coefficient of Friction): 1.18 dry, 1.05 wet.
5. Fire Resistance: ASTM E 84-15B flame spread: Less than 15.
6. Color: Brick Red.

C. Liquid Applied System:

1. Basis of Design Manufacturer: Vanguard ADA Systems of America.
2. Material: Resins, reactive monomers, pigments, glass beads, and fillers, resistant to ultra-violet light.
3. Viscosity: 6000 - 12000 cps, ASTM D2196.
4. Tracking: None after 60 minutes max., ASTM D711.
5. VOC: 25 g/l maximum, ASTM D2205.
6. Hardness: Shore Durometer, A-1, 80 minimum after 24 hours.
7. Tensile Strength: 125 psi minimum at break, ASTM D638.
8. Percent Elongation: 20 percent minimum, ASTM D638.
9. Water Absorption: Maximum 0.5 percent, ASTM D570.
10. Skid Resistance: Minimum 45, ASTM E303.
11. Color: Red.

PART 3 - EXECUTION

3.1 PAVEMENT MARKING

- A. Verify that new asphalt is complete and has been accepted by Owner's Representative.
- B. Thoroughly clean surfaces free of dirt, sand, gravel, oil, and other foreign matter. Protect adjacent curbs, walks, and other items from paint application.
- C. Sweep and clean surface to eliminate loose material and dust.

- D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.381 mm).
- E. Apply stripes straight and even in accordance with Drawings.
- F. Remove overspray, spills, or drips from surfaces other than those requiring marking paint.
- G. Barricade marked areas until paint is dried and ready for traffic.

3.2 PARKING BUMPERS

- A. Securely attach precast concrete parking bumpers into pavement with not less than two galvanized steel dowels embedded in holes drilled or cast into parking bumpers at one-quarter to one-third points. Firmly bond each dowel to parking bumper and to pavement. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of parking bumper.

3.3 TACTILE WARNING SURFACE

- A. Install tactile warning surface as recommended by manufacturer and as follows:
 - 1. Tile System:
 - a. Pour concrete true and smooth to the required dimensions and slope prior to the tactile warning surface placement. Immediately after finishing concrete, the electronic level should be used to check that the required slope is achieved.
 - b. Place tile true and square to the curb edge in accordance with the Drawings.
 - c. Tamp or vibrate tactile warning surface tile into the fresh concrete so that the field level of the tactile warning surface is flush to the adjacent concrete surface. Do not embed by stepping on tactile warning surface tile.
 - d. Immediately after placement, check the tactile warning surface tile elevation to adjacent concrete. Ensure that the field surface of the tile is flush with the surrounding concrete and back of curb so that no ponding is possible on the tile at the back side of curb.
 - e. Keep traffic from tactile warning surface tile until concrete has set.
 - 2. Liquid Applied System:
 - a. Grind Concrete Surface.
 - b. Surface Temperatures: Do not exceed 88 deg. F, or be below 35 deg. F. Make adjustments in mixing ratios for extreme temperatures.
 - c. Apply base coat and dome pattern according to manufacturer's written instructions and as specified.

3.4 PRECAST CONCRETE BOLLARDS

- A. Install bollards as indicated on Drawings at locations shown on Drawings.

- B. Handle and install security planters/bollards in conformance with manufacturer's recommendations and as indicated on Drawings. Drill and dowel sidewalk, set bollards true and plumb in mastic, and install sealant at base to sidewalk.

3.5 METAL BOLLARDS

- A. Anchor bollards in place with concrete footings as indicated on Drawings. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.
- B. Fill bollards solidly with concrete, mounding top surface to shed water.

END OF SECTION 32 17 00

