

02522..... **SIDEWALKS, ADA RAMPS, AND DRIVEWAYS**

1.0 SCOPE OF WORK

1.1 This work shall consist of constructing portland cement concrete sidewalk, ADA ramps or driveway on a prepared subgrade in accordance with the plans and specifications. Lines and grades shall be as shown on the plans. "Subgrade" in this section shall mean the prepared foundation on which the sidewalk or driveway is constructed.

1.2 All pedestrian traffic areas including sidewalks and ramps shall conform to the requirements of the Americans with Disabilities Act (ADA).

1.3 Specified Elsewhere.

2.0 MATERIALS

2.1 Concrete — Class B, MDOT Specifications

2.2 Reinforcement

Driveways — 6 x 6 No. 6 WWF or Fiber additive as approved by Engineer.

Sidewalks and Ramps — if required, it will be specified on the plans.

2.3 Pre-Molded Expansion Joint Filler — Bituminous, ½ inch thick, per AASHTO M-213.

2.4 Curing Compound — ASTM C-309

2.5 Detectable / Tactile Warning Surfaces – Both cast-in-place and surface applied detectable / tactile warning surface tile shall be produced of a vitrified polymer composite (VPC) such as Armor-Tile as manufactured by Engineered Plastics, Inc. (800-682-2525). If not indicated otherwise on the plans, the color of the product shall be yellow conforming to Federal Color No. 33538.

2.5.1 For surface applied detectable / tactile warning surface tiles, the following or an approved equivalent shall be used:

- a) Fasteners: Color matched, corrosion resistant, flat head drive anchor: ¼" diameter x 1 ½" long as supplied by Engineered Plastics, Inc.

- b) Adhesive: Armor-Bond as supplied by Engineered Plastics, Inc.
- c) Sealant: Armor-Seal as supplied by Engineered Plastics, Inc.

### 3.0 CONSTRUCTION REQUIREMENTS

#### 3.1 Excavation and In-Grade Preparation

3.1.1 Excavation shall be made to the required depth and to a width that will permit the installation and bracing of forms. The foundation shall be shaped and compacted at the proper moisture content to a firm, even surface conforming to the lines, grades and sections shown on the plans. All soft, spongy, or other unsuitable materials encountered shall be removed and replaced with acceptable material. The foundation shall be shaped and compacted to 90% Standard Proctor at the proper moisture.

#### 3.2 Setting Forms

3.2.1 Forms shall be set to the required line and grade and rigidly held in place by stakes or braces. Ends of adjoining form sections shall be flush. Forms and division plates shall be cleaned and oiled before placing concrete against them.

#### 3.3 Placing Concrete

3.3.1 A template resting upon the side forms and having its lower edge at the elevation of the subgrade shall be drawn along the forms to shape and grade the subgrade before concrete is deposited. The subgrade shall be moist and free of debris and foreign material before concrete is deposited upon it. The concrete mixture shall be placed on the prepared subgrade to the depth required to complete the sidewalk or driveway in one course. It shall then be vibrated and/or tamped and struck off with an approved straight-edge resting upon the side forms and drawn forward with a sawing motion. The surface shall be given a float finish.

3.3.2 The edges of the sidewalk shall be rounded with an edging tool having a radius of ½ inch. Expansion joints shall be edged with an edger having a radius of ¼ inch.

3.3.3 The edges of driveways at expansion joints shall be edged with an edger having a radius of ½ inch.

3.4 Joints

3.4.1 Expansion joints shall be of the dimensions specified and shall be filled with the type of premolded expansion joint filler specified. Sidewalks shall be divided into sections by dummy joints formed by a jointing tool or other acceptable means. These dummy joints shall extend into the concrete for at least one-inch and shall be approximately 1/8 inch wide. Joints shall match as nearly as possible adjacent joints in curb or pavements. Dummy joints may be sawed in lieu of forming with a joint tool.

3.4.2 Construction joints shall be formed around all appurtenances such as manholes, utility poles, etc., extending into and through the sidewalk. Premolded expansion joint filler 1/4-inch thick shall be installed in these joints. Expansion joint filler of the thickness indicated shall be installed between concrete sidewalks and fixed structure, such as a building or bridge. This expansion joint material shall extend for the full length of the walk.

3.5 Protection and Curing

3.5.1 After finishing and texturing operations have been completed and immediately after free water has evaporated, the surface of the slab and any exposed edges shall be uniformly coated with the membrane-curing compound. It can be applied by a pressure sprayer, with a maximum coverage of 200 ft<sup>2</sup>/gal. Two applications at 90° offset may be required on windy days.

3.5.2 Contractor shall have materials available at all times for the protection of unhardened concrete against rain. During the curing period, all traffic, both pedestrian and vehicular, shall be kept off the concrete. Vehicular traffic shall be kept off for such additional time as Engineer may direct. Contractor shall protect the work from damage until final acceptance. All sections which are damaged before final acceptance shall be removed and reconstructed by Contractor without additional compensation.

3.6 Detectable / Tactile Warning Surfaces. Detectable / Tactile Warning surface tiles shall be either cast-in-place for new construction or surface applied to existing improvements. Installation will not be allowed on asphalt surfaces.

3.6.1 Cast-In-Place Installation

3.6.1.1 The specifications of the structural embedment flange system and related materials shall be in strict accordance with the contract documents and the guidelines set by their manufacturers.

- 3.6.1.2 The physical characteristics of the concrete shall be consistent with the contract specifications while maintaining a slump range of 4 – 7 to permit solid placement of the Cast-In-Place Tile system. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (25 lb) shall be placed on each tile.
- 3.6.1.3 The concrete pouring and finishing operations require typical mason's tools, however, a four (4) inch long level with electronic slope readout, 25 lb. Weights, and a large non-marring rubber mallet are specific to the installation of the Cast-In-Place Tile system. A vibrating mechanism such as that manufactured by Vibco can be employed, if desired. The vibrating unit should be fixed to a soft base such as wood, at least one (1) foot square.
- 3.6.1.4 The factory-installed plastic sheeting shall remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile.
- 3.6.1.5 The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. Immediately after finishing concrete, a level should be used to check that the required slope is achieved. The tile shall be placed true and square to the curb edge in accordance with the drawings. The Cast-In-Place tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the field level of the tile is flush to the adjacent concrete surface. The embedment process shall not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface. The contract drawings indicate that the tile field level (base of truncated dome) is flush to adjacent surfaces to permit proper water drainage and eliminate tripping hazards between adjacent finishes.
- 3.6.1.6 Immediately after placement, the tile elevation is to be checked to adjacent concrete. The elevations and slope should be set consistent with contract drawings to permit water drainage to curb as the design dictates. 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.
- 3.6.1.7 While concrete is workable, a 3/8" radius edging tool shall be used to create a finished edge of concrete, then a steel trowel shall be used to finish the concrete around the tile's perimeter, flush to the field level of the tile.
- 3.6.1.8 Following tile placement, review installation tolerances to contract drawings and adjust tile before the concrete sets. Two (2) suitable

weights of 25 lbs. each may be required to be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.

3.6.1.9 Following the concrete curing stage, protective plastic wrap is to be removed from the tile surface by curing the plastic with a sharp knife, tight to the concrete/tile interface. If concrete bled under the plastic, a soft brass wire brush will clean the residue without damage to the tile surface.

3.6.1.10 Individual tiles can be bolted together using ¼ inch or equivalent hardware. This can help to ensure that adjacent tiles are flush to each other during the installation process. Tape or caulking can be placed on the underside of the bolted butt joint to ensure that concrete does not rise up between the tiles during installation. Any protective plastic wrap which was peeled back to facilitate bolting or cutting, should be replaced and taped to ensure that the tile surface remains free of concrete during the installation process.

### 3.7 Backfilling and Cleaning Up

3.7.1 When the concrete has set sufficiently, all forms, bracing, etc., shall be removed and the sides of the walk or driveway shall be backfilled and compacted to the required elevation with suitable material. All surplus material shall be disposed of as directed, and the completed work and the site shall be left in a neat and presentable condition.

3.7.1.1 Set the tile true and square to the curb ramp area as detailed in the design drawings, so that its location can be marked on the concrete surface.

3.7.1.2 The surface to receive the tile shall be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material. This cleaning and roughening of the concrete surface should include at least four (4) inches around the perimeter of the area to receive the tile, and also along the cross pattern established by the corresponding areas on the backside of the tile. Those same areas should then be cleaned with a clean rag soaked in Acetone.

3.7.1.3 Immediately prior to installing the tile, the concrete surfaces shall be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound and cured for a minimum of thirty (30) days.

3.7.1.4 Using Acetone, wipe the backside of the tile around the perimeter and along the internal cross pattern, to remove any dirt or dust particles from the area to receive the adhesive.

- 3.7.1.5 Apply adhesive to the backside of the tile, following the perimeter and internal cross pattern established by the tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the two (2) inch width of the adhesive locator and shall be applied to within ¼" continuously around the perimeter edge of the tile. The entire tube of adhesive shall be applied to the back of each tile, sizes 24" x 36" and greater.
- 3.7.1.6 Set the tile true and square to the curb ramp area as detailed in the design drawings.
- 3.7.1.7 Working from the center of the tile outwards, proceed to drill and install all fasteners in the tile's molded recesses.
- 3.7.1.8 Standing with both feet, applying pressure around the molded recess provided in the tile, drill a hole true and straight to a depth of 3 ½" using a ¼" masonry drill bit. Drill through the tile without hammer option (on the drill) until the tile has been successfully penetrated, then with the hammer option (on the drill) to drill into the concrete.
- 3.7.1.9 Immediately after drilling each hole, before moving on to the next, and while still applying foot pressure, mechanically fasten tiles to the concrete substrate using a leather bound or hard plastic mallet to set the fasteners. Ensure the fastener has been placed to full depth in the dome, straight, and flush to the top of dome.
- 3.7.1.10 Following the installation of the fasteners, the concrete dust should be vacuumed, brushed or blown away from the tile's surface and adjacent concrete. Using Acetone on a rag, wipe the concrete around the tile's perimeter to ensure a clean, dry surface to receive perimeter sealant.
- 3.7.1.11 Perimeter caulking sealant shall be applied following the sealant manufacturer's recommendations. Tape all perimeter edges of the tile back 1/16" from the tile's perimeter edge and tape the adjacent concrete back ½" from the tile's perimeter edge to maintain a straight and even caulking line. Apply sealant around the perimeter using care to work sealant into any void between the tile and concrete interface. Tool the perimeter caulking with a rounded plastic applicator or spatula to create a cove profile between the tile and adjacent concrete. Remove tape immediately after tooling perimeter caulking sealant.
- 3.7.1.12 Do not allow foot traffic on installed tiles until the perimeter caulking sealant has cured sufficiently to avoid tracking. Adhesive or caulking on the surface of the tile can be removed with Acetone.

3.7.1.13 If installing adjacent tiles, note the orientation of each tile. Careful attention will reveal that one of the long edges of the tile is different than the other in regard to the tiny dotted texture. You may also note a larger perimeter margin before the tiny dotted texture pattern begins. Consistent orientation of each Armor-tile is required in order that the truncated domes on adjacent tiles line up with each other.

3.7.1.14 In order to maintain proper spacing between truncated domes on adjacent tiles, the tapered edge should be trimmed off using a continuous rim diamond blade in a circular saw or mini-grinder. The use of a straightedge to guide the cut is required. All cuts should be made prior to installation of the tiles. If installing adjacent tiles, care should be taken to leave a 1/8 inch gap between each tile to allow for expansion and contraction.

4.0 METHOD OF MEASUREMENT

4.1 Complete and accepted concrete sidewalks, ADA ramps and driveways will be measured for payment by the square yard. Ramps shall be considered as sidewalks for payment.

4.2 Detectable / Tactile Warning Surface Tiles shall be measured by the square foot and shall be paid for according to the installation method.

5.0 PAYMENT

5.1 Payment will be made in accordance with Pay Item No.

02522-A Concrete Sidewalk

\$ \_\_\_\_\_ per square yard

02522-B Concrete Driveway

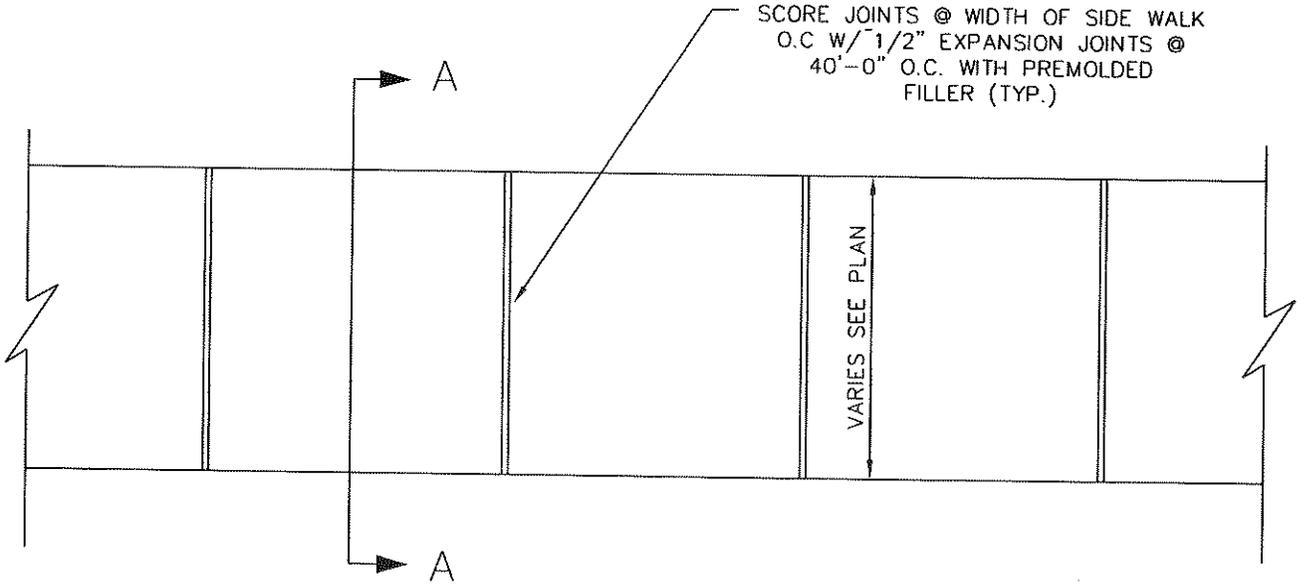
\$ \_\_\_\_\_ per square yard

02522-C Detectable / Tactile Warning Surface  
Tiles (Cast-In-Place)

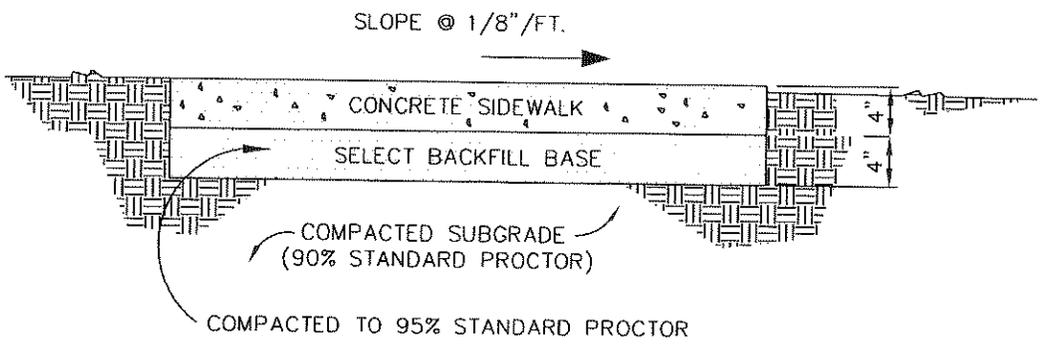
\$ \_\_\_\_\_ per square foot

02522-D Detectable / Tactile Warning Surface  
Tiles (Surface Applied)

\$ \_\_\_\_\_ per square foot



SIDEWALK PLAN



SECTION A-A

SIDEWALK DETAIL

DATE: 2/25/98	APPR. BY: BCM	REVISION	DATE	BY
SCALE: N.T.S.	DR. NO.: 02522			
DR. BY:	FILE: SIDEWALK			



CITY OF GULFPORT  
STANDARD CONSTRUCTION DETAILS

