Armor-Tile
Tactile Systems

SECTION 32 17 26 - TACTILE WARNING SURFACE
DETECTABLE WARNING SURFACE PANELS
CAST-IN-PLACE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Division 1 Specifications Section, apply to this Section.

1.02 DESCRIPTION

A. This Section specifies furnishing and installing Cast-In-Place Detectable Warning Surface Panels where indicated. Not recommended for asphalt applications.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's literature describing products, installation procedures, and routine maintenance.

B. Samples for Verification Purposes: Submit two (2) samples minimum 12" x 12" (305 x 305 mm) of the kind proposed for use.

C. Shop drawings are required for products specified showing fabrication details, panel surface profile, fastener locations, plans of panel placement including joints, and material to be used as well as outlining installation materials and procedure.

D. Material Test Reports: Submit complete test reports from qualified accredited independent testing laboratories to qualify that materials proposed for use are in compliance with requirements and meet or exceed the properties indicated on the specifications.

E. Maintenance Instructions: Submit copies of manufacturer's specified installation and maintenance practices for each type of detectable warning surface panel.

1.04 QUALITY ASSURANCE

A. Provide Cast-In-Place Detectable Warning Surface Panels and accessories as produced by a single manufacturer with a minimum of three (3) years experience in the manufacturing of tactile walking surface products.

B. Installer's Qualifications: Engage an experienced installer who has successfully completed installations similar in material, design, and extent to that indicated for Project.

C. Cast-In-Place Detectable Warning Surface Panels shall be compliant with the following guidelines and requirements (applicability may be dependent on project location):

[APPLICABLE TO UNITED STATES]

a. American Barriers Act (ABA) Accessibility Standards
b. ADA Accessibility Guidelines (ADAAG)
c. Department of Transportation ADA Standards for Transportation Facilities (2006)
d. Department of Justice ADA Standards (2010)
e. Public Rights-of-Way Accessibility Guidelines (PROWAG)
f. California Building Standards Code, Title 24, California Code of Regulations
g. Texas Accessibility Standards (TAS) 2012
h. AASHTO M 333 Standard Specification for Detectable Warning Surfaces
i. International Code Council (ICC) A117.1 Accessible and Usable Buildings and Facilities

[APPLICABLE TO CANADA]

a. ISO 23599:2012(E): Assistive Products for Blind and Vision Impaired Persons – Tactile Walking Surface Indicators
b. CSA B651-18: Accessible Design for the Built Environment Standard – Section 4.3.5
c. Integrated Accessibility Standards Regulation 191/11 – Sections 80.25 to 80.29
d. Ontario Building Code 3.8.3.18. Tactile Attention Indicators
e. National Building Code of Canada: Section 3.3.1.19 Tactile Walking Surface Indicators

D. Cast-In-Place Detectable Warning Surface Panels shall be manufactured from fiberglass reinforced polymer composite. Panels shall incorporate the following design elements:

a. In-line pattern of truncated domes oriented parallel to panel edges
b. Dome height of 0.20” (5 mm)
c. Dome base diameter of 0.9” (23 mm)
d. Dome top diameter of 0.45” (12 mm)
e. Dome spacing of 2.35” (60 mm) to 2.40” (61 mm) center to center
f. Traction elements on top of domes and in the field between dome bases shall consist of a micro texture of raised points 0.05” high (1.2 mm)

E. Cast-In-Place Detectable Warning Surface Panels shall meet or exceed the following test criteria using the most current test methods:

Test Method	Test Description	Value
ASTM D 695	Compressive Strength	≥ 28,900 psi
ASTM D 790	Flexural Strength	≥ 21,000 psi
ASTM D 638	Tensile Strength	≥ 11,000 psi
ASTM D 570	Water Absorption	≤ 0.05%
ASTM C 1028	Slip Resistance	≥ 0.80 wet/dry
ASTM E 84	Flame Spread Index	≤ 25
ASTM B 117	Salt Spray	No Effect
ASTM 1308	Chemical Stain	No Effect
ASTM C 501	Abrasion Resistance (lw)	> 500
ASTM G 155	Accelerated Weathering (2000hrs)	ΔE < 5
AASHTO-H20	Load Bearing at 10,410 lbs.	No Effect
ASTM C 1026	Freeze/Thaw/Heat	No Effect
ASTM D 1037	Accelerated Aging	No Effect

1.05 DELIVERY, STORAGE AND HANDLING

A. Cast-In-Place Detectable Warning Surface Panels shall be packaged to prevent damage in shipment or handling. Finished surfaces shall be protected by sturdy wrappings and products shall be identified by part number.

B. Cast-In-Place Detectable Warning Surface Panels shall be delivered to a location at the building site for storage before installation. Store panels in an area that is within an acceptable temperature range 40°F - 90°F (4°C - 32°C) and maintain the storage facility in a clean, dry condition to prevent contamination or damage to the panels.

1.06 SITE CONDITIONS

A. Environmental Conditions and Protection: Maintain minimum temperature of 40°F (4°C) in spaces to receive Cast-In-Place Detectable Warning Surface Panels for at least 24 hours prior to installation, during installation, and for not less than 24 hours after installation.

1.07 WARRANTY

A. Cast-In-Place Detectable Warning Surface Panels shall be warranted by the manufacturer in writing for a period of five (5) years from date of final completion. The guarantee includes manufacturing defects, breakage, and deformation.
B. Cast-In-Place Detectable Warning Surface Panel installation shall be warranted in writing for two (2) years by the installer. Products must be guaranteed from defective work and loosening of panels.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. **Armor-Tile** Cast-In-Place Detectable Warning Surface Panels as manufactured by **SureWerx**, 325 Corporate Drive, Elgin, Illinois 60123. Phone 844-697-2920, orders.ci.usa@surewerx.com, www.armor-tile.com/

B. Panel Sizes:
   1. 36” x 48” (915 x 1220 mm)
   2. 36” x 60” (915 x 1524 mm)

C. Color: Color shall be single, homogeneous color throughout panel and be close approximation of the following AMS-STD-595 color numbers:
   1. Federal Yellow (YW), Color No. 33538

2.02 MATERIALS

A. Composition: Cast-In-Place Detectable Warning Surface Panels shall be manufactured using an exterior grade homogeneous (uniform color throughout thickness of product) fiberglass

reinforced polyester based composite material. Truncated domes must contain fiberglass reinforcement within the truncated dome for superior structural integrity and impact resistance. Use of tactile warning surface products employing colored coatings is expressly prohibited.

PART 3 EXECUTION

3.01 PREPARATION

A. During all concrete pouring and panel installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.

B. 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 panel.

C. An overly wet mix will cause the panel to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (25 pounds) shall be placed on each panel.

D. The concrete shall be poured and finished, true and smooth to the required dimensions and slope prior to panel placement.

3.02 EQUIPMENT

A. Contractor shall provide all tools, equipment, and services required for satisfactory installation per manufacturer's instruction as Incidental Work. Equipment which may be required include typical mason's tools, a 4-foot level with electronic slope readout, 25 lb. (11.4 kg) weights, vibrator, rubber mallet with 2" x 4" x 10" (51 mm x 102 mm x 254 mm) wood tamping plate, and a device for cutting the Detectable Warning Surface Panels.

3.03 INSTALLATION

A. Contractor will not be allowed to install panels until all submittals have been reviewed and approved by the Engineer. Panels shall be installed according to the manufacturer's instructions.

B. To the maximum extent possible, the panels shall be oriented such that the rows of in-line truncated domes are parallel with the direction of the ramp. When multiple panels regardless of size are used, the truncated domes shall be aligned between the panels and throughout the entire tactile warning surface installation.

C. In accordance with the Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way 2011, panels shall be located relative to the curb line as shown within Sections 304 and 305 of the Guidelines.

D. Panels shall be tamped or vibrated into the fresh concrete to ensure that there are no voids or air pockets, and the field level of the panel is flush to the adjacent concrete surface or as the

Drawings indicate to permit proper water drainage and eliminate tripping hazards between adjacent finishes.

E. Panels shall be cut into size and configuration indicated on the Drawings using a 60 tooth carbide blade on a table saw or equivalent cutting device. Minimize any cantilever effect (to the maximum extent practicable) when cutting between successive embedment ribs as concrete will tend to flow up and over the panels. The top of the body of the panel shall be fully seated and flush with the adjacent concrete substrate. For specific instructions for cutting and setting refer to Detectable Warning Surface manufacturer's written instructions.

3.02 CLEANING, PROTECTING, AND MAINTENANCE

A. Protect panels against damage during construction period.

B. Protect panels against damage from rolling loads following installation by covering them with plywood or other protective measures.

C. Clean panels not more than four days prior to scheduled date for inspection intended to establish date of substantial completion in each area of project. Clean panels by method specified by manufacturer.

D. Comply with manufacturer's maintenance manual for cleaning and maintaining panel surface and it is recommended to perform annual inspections for safety and panel integrity.

END OF SECTION