Mn/DOT Submittal Requirements & Evaluation Procedure for Truncated Domes

12/10/2008

1.1 Scope

This submittal procedure describes the requirements and process used to evaluate truncated domes for consideration of inclusion on the Mn/DOT Approved Products List (APL). All truncated domes used on Mn/DOT, State Aid, and Federal Aid projects must be selected from Mn/DOT's (APL). **Surface applied truncated domes and stamped concrete are not allowed.**

1.2 Requirements

Each manufacturer shall provide the State Materials Engineer with:

- Technical contact name, address, phone number and email address
- A copy of their installation instructions and requirements.
- Test reports and documentation to verify compliance with this specification.
- Product Data Sheets with product name
- List of location for any field trials where your product is being evaluated
- List of state DOT Qualified Products Lists that lists your product
- Five square feet of truncated dome test sample. Sample shall be taken from production lot. Include the name and address of the manufacturing facility, date of manufacturer and lot number. Send sample to:

Mn/DOT Physical Testing Engineer
1400 Gervais Avenue
Maplewood, MN 55109
651-366-5456

2.1 Acceptances and Use

If the test results meet the requirements and documentation is available showing the truncated dome product has performed successfully over at least one winter (field evaluated) in a climate similar to Minnesota (as determined by the Materials Engineer), the product will be placed on the Mn/DOT (APL), which is listed on the website below:

http://www.dot.state.mn.us/products/miscmaterials/truncateddomes.html

If the manufacturer has met the requirements of Table A, but the product has not been field evaluated, a provisional approval will be granted pending a one-winter field evaluation on a Minnesota project. The manufacturer is limited to installing the product on only one project during the field evaluation period. The product will be given full approval after a successful one-year field evaluation. The product will continue to remain on the (APL) in successive years provided it continues to perform satisfactorily for the expected life of that product.

Any change in product formulation without Mn/DOT approval shall result in a product being removed from the (APL). Mn/DOT reserves the right to add additional tests at any time. In addition, Mn/DOT reserves the right to remove any manufacturer from the (APL) based on field performance of domes as observed by Mn/DOT or by another agency.

All truncated dome products submitted for use shall be accompanied by a certificate of compliance attached to each pallet of domes (Mn/DOT specification 1603). The certificate of compliance shall include the name and address of the manufacturing facility, date of manufacturer and lot number, in addition to other required information.

Table A

Requirements		**Spec**
ADA Physical Dimension Requirements (See Mn/DOT Standard Plates 7036F1 & 7036F2 http://www.dot.state.mn.us/design/standard-plates/7000.html		Must Meet Requirements
Wet cast concrete products shall be manufactured from a Certified Ready-Mix Plant		
Compressive Strength Mpa (PSI)		
	Average of 3 Units Minimum-Dry Cast	40 (5800)
	Individual Unit Minimum-Dry Cast	38 (5500)
	Mix Design Minimum-Wet Cast	27 (3900)
Air Content Mix Design Minimum-Wet Cast		6.5%
Freeze Thaw- ASTM C1262 -3% NaCl solution		For masonry units: < 1% loss at 90 Cycles of the 5 total samples, or <1.5% loss for 4 of the 5 samples and the 5th sample < 10% loss. For all products: No appreciable observed degradation after 100 cycles as determined by the Materials Engineer.
Absorption of Water - ASTM C 140 Section 14 (Dry Cast)		5% Maximum
Impact Resistance-ASTM D 5420- GE Geometry- 2 blows 55 inch-pound force @0^{o}F		No visible damage from blows to domes or base

Accelerated Weathering- ASTM G53 Cycles of 8hrsUV @140^{o}F & 4 hrs condensation @104^{o}F- 2000 hrs	
Appearance	No surface degradation or fading
Color Fastness –ASTM D 2244	Δ E< 5
Chemical Resistance-ASTM D543 Practice A Immersion Test Gasohol, Calcium Chloride, Antifreeze, Hydraulic Fluid	No weight or dimension change
Wear Index- ASTM C 501	25-
Friction	
ASTM C1028 Dry, Coefficient of Static Friction	0.60
ASTM C1028 Wet, Coefficient of Static Friction	0.60
Skid Steerer Equipped with Plow Abrasion Test, 50 Passes Domes are set in concrete and run over with the Material's Lab Skid Loader 25 times each in the front direction and the reverse direction. Mn/DOT may elect to accept another state's passing test results (Wisconsin has performed similar testing).	No dome loss greater than 25% by volume of any individual dome.