TENNESSEE DEPARTMENT OF TRANSPORTATION QUALIFIED PRODUCTS LIST EVALUATION PROCEDURES

MATERIALS AND TESTS DIVISION

RESEARCH AND PRODUCT EVALUATION SECTION

August, 2015

FOREWORD

The purpose of the Qualified Products List is to make available to Construction and Maintenance personnel a list of products which perform satisfactorily. Inclusion on the QPL must not be considered as prior approval, and in no way precludes Departmental testing and approval requirements. Products on the QPL are products which have been evaluated and found that they could be acceptable for use, provided all testing and/or certification requirements have been met and provided the products are used in accordance with the manufacturer's recommendations. Since there is not a QPL covering every type of product, some products which are found to perform satisfactorily are not placed on a Qualified Products List. As the need arises, new QPLs may be developed for some of these products.

The Department reserves the right to reject any product which does not demonstrate satisfactory performance in any of the tests outlined in the Evaluation Procedures. The Department also reserves the right to remove any product from the Qualified Products List that does not perform satisfactorily under real life conditions.

The Department may at any time recall all products from a particular list for an information update (name address, product information, specification change, etc.). A letter will be sent to all listed manufacturers detailing these procedures and the Department's need to update our information.

The manufacturer will be asked to supply a certified letter stating that no changes have been made to the product since the original product evaluation submittal. If any changes have been made, the product will be evaluated again as per QPL procedures. If the manufacturer cannot supply this letter due to changes made to their product then the product in question will be evaluated again following all pertinent procedures as per a new submittal.

Manufacturers will be given 3 months' time from initial mailing to respond to this request. Update letters are to first be mailed to the manufacturers address as it appears on the QPL. If a reply has not been made within 1 month of mailing or if a letter is undeliverable then an effort will be made to secure a mailing address from any easily assessable source such as the internet or phone call to a contact.

After 3 months' time, if the manufacturer has not produced the requested information then the product will be removed from the QPL. Any action taken as a result of this update will be recorded in the update spreadsheet.

This publication shall be used in conjunction with the Tennessee Standard Specifications, Maintenance Specifications, Special Provisions, Plans and all supplementary documents effective at the time of usage. Any future corrections, additions or revisions made in the contents of this publication will be forwarded to the holders of this publication so that the publication is maintained up to date.

Any questions concerning this publication or its use should be directed to the following address:

Tennessee Department of Transportation
Research and Product Evaluation Section, Materials and Tests Division
6601 Centennial Boulevard
Nashville, TN 37243-0360

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QPL 1 TRAFFIC CONTROL MATERIALS

SECTION: A. RAISED, SNOWPLOWABLE REFLECTIVE PAVEMENT MARKERS AND REPLACEMENT LENS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for **Snowplowable, Permanent and Temporary Raised Pavement Markers** used for marking pavement lines for project and in work zones.

SPECIFICATIONS

716.01 Pavement Markings
918.20 Snowplowable Pavement Markers
918.26 Raised Pavement Markers

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Test. The Department bases product approval on a review of NTPEP data and a **1**-year field evaluation **if deemed necessary.**

Review of NTPEP Evaluation Data

Permanent and Temporary Raised Pavement Markers

Laboratory Evaluation will follow ASTM D4280, Compressive Strength, Adhesive Bond Strength, Lens Impact Strength, and Resistance to Temperature Cycling and Coefficient of Luminous Intensity.
Field Observation consist of visual observation of the markers for Marker case condition, Lens surface conditions, Lens internal condition

Snowplowable Pavement Markers

Laboratory Evaluation will follow ASTM D4383, Coefficient of Luminous Intensity section 10.1, Abrasion resistance section 1.2.
Field Observation will follow the NTPEP rating of field observations for Housing, Lens, and Night Visibility. Retroreflectivity will follow ASTM E1696

Lens Replacement will follow the procedures for the snowplowable markers, **Hence** a lens used in an approved snowplowble marker will be placed on the lens replacement list.

Raised and Temporary Pavement Markers

Laboratory Evaluation:

ASPHALT / CONCRETE

Testing of markers shall be in accordance with ASTM D4280

No minimums set forth, However the Departments' Traffic Control Products Materials Committee shall review the laboratory data if deemed necessary.

Field Observations:

The Field Observation will be based on a rating scale from NTPEP for Marker Case Condition, Lens Surface Condition and Lens Internal conditions as follows.

Marker Case Condition:

5= Excellent, Completely intact, "Like New" condition
4= Good, Minor scrapes and scratches
3= Fair, Obvious damage but still functional
2= Poor, Major damage, marginally functional
1= Very Poor, Non-functional
0= Missing

Lens Surface Condition:

5= Excellent, Completely intact, "Like New" condition
4= Good, Minor scrapes and scratches
3= Fair, Some abrasions and scares
2= Poor, Scarring over large areas
1= Very Poor, Non-functional
0= Missing

Lens Internal Condition:

5= Excellent, Completely intact, "Like New" condition
4= Good, Minimal delamination
3= Fair Moderate delamination
2= Poor, Major delamination
1= Very Poor, Non-functional
0= Missing

The following minimums shall be met after the two-year evaluation is completed from a NTPEP test deck

Average of the 100 markers tested on Asphalt (50) and Concrete (50) for each category listed below

Marker Case Condition: Minimum rating of **3.0**

Lens Surface Condition: Minimum rating of **3.0**

Lens Internal Condition: Minimum rating of **3.0**

Snowplowable Pavement Markers

ASPHALT / CONCRETE

Laboratory Evaluation:

Testing of markers shall be in accordance with ASTM D4383

No minimums set forth, However the Departments' Traffic Control Products Materials Committee shall review the laboratory data if deemed necessary.

Field Observations:

The Field Observation will be base on a rating scale from NTPEP for **Housing (or Holder) Condition, Lens Face Condition and Night Visibility** as follows.

Housing:
5= Excellent, Completely intact, In "Like New" condition, good adhesion
4= Good, Minor Scrapes/Scratches visible on close examination of surfaces
3= Fair, Some cuts but none larger than 10 mm
2= Poor, Some cuts larger than 10mm
1= Very Poor, Showing significant wear, no longer protecting reflector
0= Missing, or damaged beyond use

Lens Face Condition:
5= Excellent, Completely intact, In "Like New" condition
4= Good, Minor scrapes/scratches visible on close examination of surfaces
3= Fair, Some abrasions, none greater than 5 mm
2= Poor, Some large cuts/cracks/chips greater than 5 mm
1= Very Poor, Showing significant wear, significant discoloration
0= Missing, or damaged beyond use

Night Visibility:
5= Excellent, Completely intact, Bright, in "Like New" condition
4= Good, Clearly visible from greater than 100 m
3= Fair, Some loss in reflectivity, barely visible from 100 mm
2= Poor, Significant loss of reflectivity, visible from 50 mm
1= Very Poor, Significant loss of reflectivity, barely visible, discoloration
0= Missing, or totally non-reflective

The following minimums shall be met after the two-year evaluation is completed from a NTPEP test deck

Average of the 100 markers tested on Asphalt (50) and Concrete (50) for each category listed below

Housing: Minimum rating of **3.0**

Lens Face Condition: Minimum rating of **3.0**

Night Visibility: Minimum rating of **3.0**

Lens Replacement will follow the procedures for the snowplowable markers, **Hence** a lens used in an approved snowplowble marker will be placed on the lens replacement list

SECTION B. PREFORMED PLASTIC PAVEMENT MARKINGS

PROCEDURES

GENERAL:

This evaluation procedure outlines the Department's approval process for preformed plastic pavement markings used for marking pavement lines, dimensions, patterns, locations and other details shown on the plans.

SPECIFICATIONS

TDOT 716.05 and 918.08
MUTCD

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Product approval is based on certification that the material meets applicable TDOT specifications. In addition, a 6 month to 1 year field evaluation may be required at the Department's discretion.

Products meeting the above requirements will be presented to the Department's Traffic Control Products Materials Committee (TCPMC) which will make a recommendation as to whether the product will be added to the Qualified Products List.

NOTE: This procedure is currently under review by the Department. TDOT's intent is to utilize National Transportation Product Evaluation Program (NTPEP) data for approval of these products

SECTION C. TEMPORAY TAPE (REMOVABLE AND NON REMOVABLE)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for temporary tapes used for marking pavement lines of a temporary nature in work zones.

SPECIFICATIONS

NONE

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Product approval is based on a review of NTPEP data and a 4 to 6 month field evaluation by the Department if deemed necessary.

REVIEW of NTPEP EVALUATION DATA

Submittal of product to one or more NTPEP evaluation decks, in the past 5 years (latest is a 1997 test deck).
All products must be reevaluated at a minimum of 5 years, with a 1 year grace period after the fifth year. Hence a product from a 1997 test deck will be up for retest in 2002, the product will be given a grace period of one year from the end of that fifth year to retest on one or more NTPEP evaluation decks.
Evaluation period 4 months (120 days).
Retroreflectivity to be measured with an instrument (i.e. LTL 2000) designed to measure data at a simulated distance of 30 meters, with an illumination angle of 1.24 degrees and an observation angle of 2.29 degrees.
The following minimum values shall be achieved for inclusion on the Departments' Qualified Products List.

ASPHALT/CONCRETE

RETROREFLECTIVITY
(Minimum)

Skip Line
Longitudinal or Transverse

	Initial	Final (120 Days)
White	500	250
Yellow	350	175

Wheel Path
Longitudinal or Transverse

	Initial	Finial (120 Days)
White	500	100
Yellow	350	50

SECTION D. THERMOPLASTIC PAVEMENT MARKING MATERIALS

PROCEDURES

Effective June 1st, 2010

GENERAL

This evaluation procedure outlines the Department's approval process for thermoplastic pavement markings used for marking pavement lines, dimensions, patterns, locations and other details shown on the plans.

SPECIFICATIONS

TDOT 716.03 and 918.23
MUTCD

Component QPL

A component replacement for thermoplastic systems shall be evaluated by the Division of Materials and Test and submitted to the Pavement Marking Committee for consideration as a component replacement.

The following products have been approved for component replacement.
*The manufacturer shall meet the requirements set forth in **716.03** and **918.23** as set forth in the Tennessee Department of Transportation Standard Specifications for Road and Bridges.*

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Product approval is based on certifications that the material meets applicable TDOT specifications. In addition, a 6 month to 1 year field evaluation may be required at the Department's discretion.

Products meeting the above requirements will be presented to the Department's Traffic Control Products Materials Committee (TCPMC) which will make a recommendation as to whether the product will be added to the Qualified Products List.

NOTE: This procedure is currently under review by the Department. TDOT's intent is to utilize National Transportation Product Evaluation Program (NTPEP) data for approval of these products.

SECTION E. BITUMINOUS PAVEMENT MARKER ADHESIVE

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for adhesives used to bond pavement markers to portland cement concrete pavement, hot bituminous pavement and chip-sealed surfaces.

SPECIFICATIONS

TDOT 918.26

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Product approval is based on certifications that the material meets the applicable TDOT specifications.
In addition, the Department will verify the flash point(ASTM D 92), penetration(ASTM D 5), viscosity(ASTM D 2669) and softening point(ASTM D 36).

SECTION F. FLEXIBLE SURFACE AND GROUND MOUNTED DELINEATOR POSTS

PROCEDURES

GENERAL

This specification covers the use of flexible delineator post, both surface and ground mounted, for use on Tennessee highway projects.

SPECIFICATIONS

TDOT 916.08
Standard Drawing T-PBR-2

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, and NTPEP test data, must be submitted to the Division of Materials and Tests. The Department bases product approval on a review of NTPEP data and additional weathering criteria.

Review of NTPEP Evaluation Data

Field Evaluation

Based on both Winter and Summer Impact Data at least 5 of the 8 post shall:

- **Final Degree List :** Remain intact and securely anchored and return to their original vertical orientation within an Angle of ± 10°

- **Sheeting Loss %:** In addition, each post meeting the **Final Degree List** requirement above shall have no more than 50% sheeting loss and show minimal signs of distress (cracking, loss of rigidity).

- The manufacturer shall certify that the materials to be supplied are formulated the same as when tested by NTPEP and will conform to the requirements of this specification.

Additional Criteria

Weathering: The delineator post shall be capable of withstanding 1,000 hours of UV exposure without significant color change or physical deterioration as might be exhibited by splitting, cracking, delaminating, etc.

SECTION G. GUARDRAIL AND BARRIER/PARAPET DELINEATION

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for Guardrail and Barrier wall delineation.

SPECIFICATIONS

TDOT Standard Drawing S-SSMB-1
TDOT Standard Drawing S-SSMB-2
TDOT Standard Drawing STD-1-1
TDOT Standard Drawing T-WZ-11,12,14,16,18,19,32

PROCEDURES

A completed Product Evaluation Form, MSDS sheets (if applicable), product data information, and a sample of the product being tested must be submitted to the Division of Materials and Tests.

Product approval is based on delineators meeting requirements of Standard Drawing and a 6 month field evaluation. At the end of the 6-month field evaluation, a minimum of 95% of the delineators must be functional.

Item Numbers

CONCRETE BARRIER/PARAPET/PORTABLE BARRIER RAIL DELINEATION		
713-02.25	**MEDIAN BARRIER DELINEATOR (DOUBLE)**	**EACH**
713-02.26	**CONCRETE BARRIER/PARAPET DELINEATOR**	**EACH**
713-02.27	**CONCRETE BARRIER/PARAPET DELINEATOR (BI-DIRECTIONAL)**	**EACH**
705-04.50	**PORTABLE BARRIER RAIL DELINEATOR**	**EACH**
712-04.50	**PORTABLE BARRIER RAIL DELINEATOR**	**EACH**
GUARDRAIL POST DELINEATION		
705-04.25	**GUARDRAIL & BARRIER DELINEATOR**	**EACH**
GUARDRAIL BEAM DELINEATION		
705-04.25	**GUARDRAIL & BARRIER DELINEATOR**	**EACH**
CONCRETE BARRIER/PARAPET DELINEATION ENHANCEMENT		
713-02.22	**BARRIER WALL DELINEATION ENHANCEMENT**	**L.F**
713-02.23	**BARRIER WALL DELINEATION ENHANCEMENT (BI-DIRECTIONAL)**	**L.F**
GUARDRAIL BEAM DELINEATION ENHANCEMENT		
705-04.21	**GUARDRAIL DELINEATION ENHANCEMENT**	**L.F**
705-04.23	**GUARDRAIL DELINEATION ENHANCEMENT (BI-DIRECTIONAL)**	**L.F**

SECTION H. WORKZONE TRAFFIC DRUMS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for flexible traffic drums.

SPECIFICATIONS

TDOT 712.02 and 916.06

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, and NTPEP test data, must be submitted to the Division of Materials and Tests. The Department bases product approval on a review of NTPEP data and additional weathering criteria.

Review of NTPEP Evaluation Data

Based on both Winter and Summer Impact Data

- No permanent deformation or damage to the drum, i.e., splits, breaks or cracks that impairs its function or mars its physical appearance, thereby rendering the drum unusable;
- No significant loss of effectiveness of the reflective sheeting;
- A non-hazardous separation of the drum from its removable base/ballast;
- Drums shall be re-stackable.

The manufacturer shall certify that the material to be supplied, to include the design of the drum and formulation of plastics used in the manufacture are the same as when tested by the NTPEP and will conform to the requirements of this specification.

The Department reserves the right to periodically sample and test flexible drums.

QPL 2 WATERPROOFING MEMBRANES & MATERIALS

SECTION A. BRIDGE DECK WATERPROOFING MEMBRANES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for materials used in damp proofing and waterproofing concrete bridge deck surfaces.

SPECIFICATION

TDOT 906

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

The manufacturer must submit certified test results stating that the material meets the above specifications.

LIST 2 SECTION B. JOINT WATERPROOFING MEMBRANES (12” PLUS WIDTH)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department’s approval process for materials used in damp proofing and waterproofing joints in concrete surfaces.

SPECIFICATION

TDOT 906

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

The manufacturer must submit certified test results stating that the material meets the above specifications.

QPL 3 PAINT - INORGANIC ZINC PRIMERS AND TOPCOATS

PAINT-INORGANIC ZINC PRIMERS AND TOPCOATS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for inorganic paint systems for steel structures used on Tennessee Department of Transportation projects.

SPECIFICATION

TDOT 910.03

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests. Prior to approval and use of any inorganic paint system, the manufacturer shall submit in triplicate to the Department a certified test report from an approved testing laboratory showing specific test results conforming to all requirements of these Specifications.

QPL 4 AIR-ENTRAINING AND CHEMICAL ADMIXTURES FOR CONCRETE

SECTION A. AIR-ENTRAINING ADMIXTURES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for air-entraining admixtures used to enhance or modify the properties of portland cement concrete.

SPECIFICATIONS

TDOT 918.09

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information must be submitted to the Division of Materials and Tests.

The manufacturer shall also submit 56 day test data from a certified laboratory along with a certified letter stating that the product meets the above specifications.

SECTION B. CHEMICAL ADMIXTURES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for chemical admixtures used to enhance or modify the properties of portland cement concrete.

This procedure applies to the following chemical additives used in concrete on Tennessee highway projects.

Type:
A. Water Reducing Admixtures
B. Retarding Admixtures
C. Accelerating Admixtures
D. Water Reducing and Retarding Admixtures
E. Water Reducing and Accelerating Admixtures
F. Water Reducing High Range Admixtures
G. Water Reducing, High Range, and Retarding Admixtures
S. Type S Admixtures

SPECIFICATIONS

TDOT 918.09
AASHTO M 194

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information must be submitted to the Division of Materials and Tests.

The manufacturer shall also submit one-year test data from a certified laboratory along with a certified letter stating that the product meets the above specifications.

SECTION C. CHEMICAL ADMIXTURES FOR PRECAST CONCRETE

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for chemical admixtures for precast concrete.

SPECIFICATION

Must be reviewed by the Division of Materials and Tests

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information must be submitted to the Division of Materials and Tests.

SECTION D. MISCELLANEOUS CHEMICAL ADMIXTURES FOR CONCRETE

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for chemical admixtures for precast concrete.

SPECIFICATION

Must be reviewed by the Division of Materials and Tests

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information must be submitted to the Division of Materials and Tests.

QPL 5 JOINT SEALERS AND FILLERS

SECTION A. COLD POUR (ONE COMPONENT JOINT SEALER)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for silicone materials used for sealing longitudinal and transverse joints and random cracks in Portland cement concrete pavement.

SPECIFICATIONS

TDOT 905.05, section (b), part 2

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

The manufacturer shall submit a sample of the product and informational material along with certified test results from an independent lab stating that the material meets the above specifications. In addition, the Department also reviews the products' ability to bond to hardened concrete and flexibility in below freezing temperatures.

SECTION B. COLD POUR (TWO COMPONENT JOINT SEALERS)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for materials used for sealing joints in Portland cement concrete pavement and bridge decks.

SPECIFICATIONS

None

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

The Department will review the products' ability to bond to hardened concrete and flexibility in varying temperatures. A minimum elongation of 600% will be required. Flexibility will be measured by mixing the product according to the manufacturer's recommendations and filling a 1" gap between two concrete cylinder halves. The material will be allowed to cure according to manufacturer's recommendation prior to pulling to determine elongation.

NOTE: This procedure is currently under review by the Department for modification.

SECTION C. HOT POUR JOINT SEALERS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for materials used for sealing longitudinal and transverse joints and random cracks in Portland cement concrete pavement and asphalt surfaces.

SPECIFICATIONS

TDOT 905.05, section (a)

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Product approval is based on certifications that the material meets the applicable TDOT specifications.
In addition, the Department will verify the flash point (ASTM D 92), penetration (ASTM D 5), ductility(AASHTO T 51) and softening point(ASTM D 36).

SECTION D. WATER ACTIVATED POLYURETHANE FOAM GROUTS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for foam grouts used for sealing voids to stop water infiltration.

SPECIFICATIONS

None

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Product approval is based on mixing in accordance with manufacturer's recommendations and confirming that the material expands to form a rigid foam.

SECTION E. PREFORMED JOINT FILLERS (BITUMINOUS AND NON-BITUMINOUS)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for preformed joint fillers(Bituminous and Non-bituminous) for use in expansion and construction joints in accordance with the Standard Specifications.

SPECIFICATIONS

TDOT 701.06 and 905.01

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Product approval is based on Departmental testing for compliance with AASHTO M 213 and AASHTO M 153.

QPL 6 TRAFFIC CONTROL DETECTION LOOP SEALANTS

TRAFFIC CONTROL DETECTION LOOP SEALANTS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for detector loop sealants used for embedding traffic signal loop wires in bituminous or Portland cement concrete pavement.

SPECIFICATIONS

None

Procedure

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

The sealant must have the following properties:
One or two components
Become tack-free in one hour or less at 25 degrees C (77 degrees F).
Minimum hardness (Shore A) of 15
No sand is to be used as part of the sealant mixture.
The material shall be environmentally safe.

The manufacturer shall install their product on a test deck provided by the Department.
The cured sealant shall remain flexible without melting and neither crack, become tacky, nor deteriorate over the normal range of pavement temperatures and weather conditions or when exposed to gasoline, hydraulic brake fluid, motor oil, calcium chloride or deicing chemicals.

After six months, a visual inspection of 4-inch cored test samples taken from the bituminous pavement shall be made to ensure that there are no visible air voids in the sealant, no chemical reactions with the pavement (deterioration of the bituminous material) and no loss of bonding to the paving material.

Simulated concrete pavement testing will be done in the Materials and Tests Laboratory. Saw cuts will be made in a concrete beam with loop wire being placed at the bottom of the slot. The sealant will be allowed to cure completely at room temperature. The beam will be cut normal to the saw slot and a visual inspection of the sample made. The same requirements noted above will apply.

QPL 7 PREFORMED COMPRESSIVE JOINT SEALS WITH LUBRICANT ADHESIVES

SECTION A. PREFORMED COMPRESSIVE JOINT SEALSWITH LUBRICANT ADHESIVES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for preformed compressive joint seals for use in joints in concrete pavements and bridge decks in accordance with the Standard Drawings.

SPECIFICATIONS

Std. Dwg. RP-J-13
AASHTO M 220

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Product approval is based on certification that the product meets the above specifications

SECTION B. PREFORMED GLAND JOINT SEALSWITH LUBRICANT ADHESIVES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for preformed gland joint seals for use in joints in concrete pavements and bridge decks in accordance with the Standard Drawings.

SPECIFICATIONS

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

QPL 8 EPOXY RESIN SYSTEMS

EPOXY RESIN SYSTEMS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for epoxy resin systems used as outlined below:

Type I: For use in non-load bearing applications for bonding hardened concrete to hardened concrete and other materials, and as a binder in epoxy mortars or epoxy concrete.
Type II: For use in non-load bearing applications for bonding freshly mixed concrete to hardened concrete.
Type III: For use in bonding skid-resistant materials to hardened concrete, and as a binder in epoxy mortars or epoxy concrete used on traffic bearing surfaces (or surfaces subject to thermal or mechanical movements).
Type IV: For use in load bearing applications for bonding hardened concrete to hardened concrete and other materials and as a binder for epoxy mortars and concrete.
Type V: For use in load bearing applications for bonding freshly mixed concrete to hardened concrete.
Type VI: For bonding and sealing segmental pre-cast elements with internal tendons and for span-by-span erection when temporary post tensioning is applied.
Type VII: For use as a non-stress carrying sealer for segmental pre-cast elements when temporary post tensioning is not applied as in span-by-span erection.

Grade 1: Low viscosity
Grade 2: Medium viscosity
Grade 3: Non-sagging consistency

Class A: For use below 40°F (4.5°C) the lowest allowable temperature to be defined by the manufacturer of the product.
Class B: For use between 40° and 60°F (4.5° and 15.5°C).
Class C: For use above 60°F (15.5°C) the highest allowable temperature to be defined by the manufacturer of the product.
Class D: For use between 40° and 65°F (4.5° and 18.0°C).
Class E: For use between 60° and 80°F (15.5° and 26.5°C).
Class F: For use between 75° and 90°F (24.0° and 32.0°C).

SPECIFICATIONS

ASTM C 881 and 882
AASHTO M 235

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Acceptance will be based on manufacturer's certification and corroborative Departmental test data performed in accordance with ASTM C 882.

QPL 9 ELASTOMERIC BRIDGE JOINTS AND BRIDGE JOINT SYSTEMS

SECTION A. ELASTOMERIC BRIDGE JOINTS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for elastomeric bridge joints.

SPECIFICATIONS

None

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

The manufacturer shall install their product on a test deck provided by the Department. The joint shall remain flexible and neither crack, become tacky, debond nor deteriorate over the normal range of temperatures and weather conditions or when exposed to gasoline, hydraulic brake fluid, motor oil, calcium chloride or deicing chemicals.

After one year, a visual inspection shall be made to ensure that there is no visible evidence of deterioration in regards to the above mentioned properties. In addition, the Department also reviews, in the lab, the products' ability to bond to hardened concrete and flexibility in below freezing temperatures.

SECTION B. EXPANSION JOINT SYSTEMS FOR REINFORCED CONCRETE PAVEMENT AT BRIDGE ENDS (STD-1-5)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for expansion joint systems for reinforced concrete pavement at bridge ends.

SPECIFICATIONS

STD-1-5

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

The manufacturer shall install their product on a test deck provided by the Department. The joint shall remain flexible and neither crack, become tacky, debond nor deteriorate over the normal range of temperatures and weather conditions or when exposed to gasoline, hydraulic brake fluid, motor oil, calcium chloride or deicing chemicals.

After one year, a visual inspection shall be made to ensure that there is no visible evidence of deterioration in regards to the above mentioned properties. In addition, the Department also reviews, in the lab, the products' ability to bond to hardened concrete and flexibility in below freezing temperatures.

QPL 10 REFLECTIVE SHEETING

SECTION A. REFLECTIVE SHEETING

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for flexible, non-exposed glass bead lens and microprismatic, retroreflective sheeting designed for use on traffic control signs, barricades delineators and other devices.

SPECIFICATIONS

TDOT 712.02 and 916.06
AASHTO M 268 (ASTM D 4956-09)

PROCEDURE

TENNESSEE DEPARTMENT OF TRANSPORTATION EVALUATION AND APPROVAL PROCEDURE FOR TEMPORARY AND PERMANENT REFLECTIVE SHEETING

The following procedures will be used to evaluate and approve all reflective sheeting products that are used by the Tennessee Department of Transportation.

Any producer or vendor manufacturing reflective sheeting signs for the Tennessee Department of Transportation shall use only the systems or any combination of systems that have completed a full evaluation cycle (3-years for permanent sheeting, 1-year for temporary) by the National Transportation Product Evaluation Program (NTPEP). The systems shall be defined as System A, sign sheeting colors (direct applied copy); System B, inks (screening); System C, (overlay films).

Upon conclusion of the full evaluation cycle by the NTPEP, the prospective producer or vendor must provide complete data on the materials evaluated from the test decks to the Division of Materials and Tests.

The Division of Materials and Tests will review the vendor's request and verify the accuracy of the NTPEP data. The verified data shall then be evaluated for compliance with AASHTO M 268, ASTM D 4956-09 and the Department's Standard Specifications for Road and Bridge

Construction. The Division of Materials and Tests may also request that the vendor provide additional information for review.
Upon conclusion of the NTPEP evaluation cycle, verification of data and evaluation for compliance with Specifications and if found acceptable the Division of Materials and Tests will place the product on the Department's Qualified Products List (QPL). Sign sheeting products placed on the QPL may be used on Department Contracts from that day forward. Use of these products will not be considered on projects previously let to Contract. Placement of a product on the QPL in no way implies the Department's intent to make specific use of the product.

The manufacturer shall submit 3-year National Transportation Product Evaluation Program (NTPEP) data for the Department’s review. Data will be reviewed for full compliance with TDOT Specifications and AASHTO M 268 (ASTM D 4956). Product must be in full compliance at the beginning and end of the three year period.

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

SECTION B. WORKZONE SHEETING

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for, microprismatic, retroreflective sheeting designed for use on traffic control signs, delineators, barricades and other devices.

SPECIFICATIONS

TDOT 712.02 and 916.06
AASHTO M 268 (ASTM D 4956-09)

PROCEDURE

TENNESSEE DEPARTMENT OF TRANSPORTATION EVALUATION AND APPROVAL PROCEDURE FOR TEMPORARY AND PERMANENT REFLECTIVE SHEETING

The following procedures will be used to evaluate and approve all reflective sheeting products that are used by the Tennessee Department of Transportation.

Any producer or vendor manufacturing reflective sheeting signs for the Tennessee Department of Transportation shall use only the systems or any combination of systems that have completed a full evaluation cycle (3-years for permanent sheeting, 1-year for temporary) by the National Transportation Product Evaluation Program (NTPEP). The systems shall be defined as System A, sign sheeting colors (direct applied copy); System B, inks (screening); System C, (overlay films).

Upon conclusion of the full evaluation cycle by the NTPEP, the prospective producer or vendor must provide complete data on the materials evaluated from the test decks to the Division of Materials and Tests.

The Division of Materials and Tests will review the vendor's request and verify the accuracy of the NTPEP data. The verified data shall then be evaluated for compliance with AASHTO M 268, ASTM D 4956-09 and the Department's Standard Specifications for Road and Bridge Construction. The Division of Materials and Tests may also request that the vendor provide additional information for review.
Upon conclusion of the NTPEP evaluation cycle, verification of data and evaluation for compliance with Specifications and if found acceptable the Division of Materials and Tests will place the product on the Department's Qualified Products List (QPL). Sign sheeting products

placed on the QPL may be used on Department Contracts from that day forward. Use of these products will not be considered on projects previously let to Contract. Placement of a product on the QPL in no way implies the Department's intent to make specific use of the product.
A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

The manufacturer shall submit 1-year National Transportation Product Evaluation Program (NTPEP) data for the Department's review. Data will be reviewed for full compliance with TDOT Specifications. Product must be in full compliance at the beginning and end of the one year period.

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

SECTION C. ROLL UP SIGNS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for Retroreflective Roll Up Signs used for projects in work zones.

SPECIFICATIONS

AASHTO M-268, ASTM 4956-09

PROCEDURE

The following procedures will be used to evaluate and approve all reflective sheeting products that are used by the Tennessee Department of Transportation.

Any producer or vendor manufacturing reflective sheeting signs for the Tennessee Department of Transportation shall use only the systems or any combination of systems that have completed a full evaluation cycle (3-years for permanent sheeting, 1-year for temporary) by the National Transportation Product Evaluation Program (NTPEP). The systems shall be defined as System A, sign sheeting colors (direct applied copy); System B, inks (screening); System C, (overlay films).

Upon conclusion of the full evaluation cycle by the NTPEP, the prospective producer or vendor must provide complete data on the materials evaluated from the test decks to the Division of Materials and Tests.

The Division of Materials and Tests will review the vendor's request and verify the accuracy of the NTPEP data. The verified data shall then be evaluated for compliance with AASHTO M 268, ASTM D 4956-09 and the Department's Standard Specifications for Road and Bridge Construction. The Division of Materials and Tests may also request that the vendor provide additional information for review.
Upon conclusion of the NTPEP evaluation cycle, verification of data and evaluation for compliance with Specifications and if found acceptable the Division of Materials and Tests will place the product on the Department's Qualified Products List (QPL). Sign sheeting products placed on the QPL may be used on Department Contracts from that day forward. Use of these products will not be considered on projects previously let to Contract. Placement of a product on the QPL in no way implies the Department's intent to make specific use of the product.
A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

The manufacturer shall submit 1-year National Transportation Product Evaluation Program (NTPEP) data for the Department's review. Data will be reviewed for full compliance with TDOT Specifications. Product must be in full compliance at the beginning and end of the one year period.

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Test. The Department bases product approval of a review of NTPEP data and a one-year field evaluation if deemed necessary.

QPL 11 BIODEGRADABLE ASPHALT SOLVENTS

BIODEGRADABLE ASPHALT SOLVENTS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for biodegradable asphalt solvents used for extraction of bituminous mixes.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, product data information,
and a 5 gallon sample of the product being tested must be submitted to the Division of Materials and Tests.

To be placed on the Departments Qualified Products List a biodegradable solvent must meet the following requirements:

1. Flash point of 140° F or above.
2. Extract asphalt cement from a standard asphalt mix within 0.2% of the amount of asphalt used to construct the standard mix.
   a) Using an amount of solvent not to exceed two gallons.
   b) Using an amount of rinse water not to exceed two gallons.
3) Must be capable of being used by laboratory personnel using normal ventilation procedures without causing nausea.
4) Must rinse through filter without evidence of clumping or coagulation of the solvent.
5) A maximum Specific Gravity of 0.90

QPL 12 COATINGS FOR CONCRETE

SECTION: A. APPLIED TEXTURE COATINGS FOR CONCRETE

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for texture coatings for concrete.

SPECIFICATIONS

TDOT 604.02 and 918.30

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

Approval is based on the manufacturer submitting a notarized certificate and a certified test report from an accredited lab stating that the texture coating meets the above specifications.

SECTION: B. CONCRETE CURING COMPOUNDS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for Concrete Curing Compounds.

SPECIFICATIONS

ASTM C 309

PROCEDURES

A completed Product Evaluation Form, MSDS sheets (if applicable), product data information, and NTPEP Test Data must be submitted to the Division of Materials and Tests. The manufacturer must also submit a certification that their product meets ASTM C 309-03. The Department bases product approval on certification and a review of NTPEP data.

Review of NTPEP Evaluation Data

To be included on the QPL, the product must meet or exceed these requirements as tested by NTPEP:

- **Deleterious Reaction with Concrete** – There shall be no softening of the treated concrete after 72 hours of testing when compared to a sample that has been moist cured for half that time.

- **Water Retention** – The compound shall restrict the loss of water to no more than 0.55 kg/m^2 when tested for 72 hours.

- **Drying Time** – The compound shall be dry to the touch in less than 4 hours.

- **Flash Point** – The volatile portion of the compound shall be of materials that are neither toxic nor have a flash point less than 50° F.

Type 1-D Requirements:

- Type 1-D curing compounds shall be certified by the manufacturer to be Class B resins as defined in ASTM D 883.

CONCRETE CURING COMPOUNDS PROCEDURES (Cont.)

Type 2 Requirements:

- **Reflectance** – The compound shall exhibit a daytime reflectance of no less than 60%.
- **Long Term Settling** – The compound shall settle no more than 2 mL in three days

QPL 13 PATCHING MATERIALS

SECTION A. ASPHALT PATCHING MATERIALS

SECTION A: HIGH PERFORMANCE COLD PATCH MATERIALS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for asphalt cold-mix patching materials composed of a suitable aggregate and additives for the repair of both asphalt and concrete surfaces.

SPECIFICATIONS

M-108.10 and 100.02

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

Following receipt of the submitted information, the manufacturer shall be required to install his product(s) on both asphalt and concrete surfaces as directed by the Division of Materials and Tests. The cold patch material shall be installed in either November or December and the evaluation will continue through the end of May of the following year. At the completion of the evaluation period, if the test patch areas in both the concrete and asphalt surfaces have remained intact and performed satisfactorily, the material will be added to the Qualified Products List.

NOTE: This procedure is currently under review by the Department and is subject to change.

SECTION A: ELASTOMERIC PATCHING MATERIALS HOT APPLIED

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for elastomeric patching materials used for patching potholes in asphalt and concrete pavements.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

Following receipt of the submitted information, the manufacturer shall be required to install his product(s) on an asphalt and/or concrete surface as directed by the Division of Materials and Tests. The patching material shall be left in the field for 6 months to 1 year, at the discretion of the Division. At the completion of the evaluation period, if the test patch area has remained intact and performed satisfactorily, the material will be added to the Qualified Products List.

SECTION A: ELASTOMERIC PATCHING MATERIALS COLD APPLIED

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for elastomeric patching materials used for patching potholes in asphalt and concrete pavements.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

Following receipt of the submitted information, the manufacturer shall be required to install his product(s) on an asphalt and/or concrete surface as directed by the Division of Materials and Tests. The patching material shall be left in the field for 6 months to 1 year, at the discretion of the Division. At the completion of the evaluation period, if the test patch area has remained intact and performed satisfactorily, the material will be added to the Qualified Products List.

SECTION B. CONCRETE PATCHING MATERIALS

SECTION B: RAPID SET CEMENTITIOUS PATCHING MATERIALS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for rapid setting cementitious patching materials used in bridge and concrete repair.

SPECIFICATIONS

TDOT M 105.05 and 105.06
ASTM C-109
ASTM C-157
ASTM C-928
ASTM C-1042

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

The product will be tested according to the above specifications and must meet the following requirements.

1. Compressive Strength:

Age	PSI
3 Hours	1000
1 Day	3000
7 Days	4000
28 Days Greater than 7 Days	

2) Length Change in Air: Age Allowable decrease % 28 Days -0.06

3) Slant Shear Hardened to Plastic Concrete

Age	PSI
1 Day	1000
7 Days	1500

NOTE: This procedure is currently under review by the Department and is subject to change.

LIST 13. SECTION B: HIGH PERFORMANCE COLD PATCH MATERIALS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for asphalt cold-mix patching materials composed of a suitable aggregate and additives for the repair of both asphalt and concrete surfaces.

SPECIFICATIONS

M-108.10 and 100.02

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

Following receipt of the submitted information, the manufacturer shall be required to install his product(s) on both asphalt and concrete surfaces as directed by the Division of Materials and Tests. The cold patch material shall be installed in either November or December and the evaluation will continue through the end of May of the following year. At the completion of the evaluation period, if the test patch areas in both the concrete and asphalt surfaces have remained intact and performed satisfactorily, the material will be added to the Qualified Products List.

NOTE: This procedure is currently under review by the Department and is subject to change.

SECTION B: TWO COMPONENT EPOXY TYPE PATCHING MATERIALS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for two component-epoxy type patching materials used in bridge and concrete repair.

SPECIFICATIONS

ASTM C 881 and 882

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

The product will be mixed according to the manufacturer's recommendations and must meet the following requirements.

Compressive Strength:

Age	PSI
3 Hours	1000
1 Day	3000
7 Days	4000

28 Days Greater than 7 Days

Slant Shear Hardened to Plastic Concrete

Age	PSI
1 Day	1000
7 Days	1500

SECTION B: COSMETIC REPAIR EPOXY TYPE PATCHING MATERIALS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for epoxy type patching materials used to make cosmetic bridge and concrete repairs.

SPECIFICATIONS

ASTM C 881 and 882

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

The product will be mixed according to the manufacturer's recommendations and must meet the following requirements.

Slant Shear Hardened to Plastic Concrete

Age	PSI
1 Day	1000
7 Days `	1500

NOTE: This procedure is currently under review by the Department and is subject to change.

SECTION B: STRUCTURAL MATERIALS AND COMPONENTS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for cementitious patching materials used in bridge and concrete repair.

SPECIFICATIONS

ASTM C-109
ASTM C-157
ASTM C-928
ASTM C-1042

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

The product will be tested according to the above specifications and must meet the following requirements.

Compressive Strength:

Age	PSI
1 Day	3000
7 Days	4000

28 Days Greater than 7 Days

Length Change in Air:

Age	Allowable decrease %
28 Days	-0.15

Slant Shear Hardened to Plastic Concrete

Age	PSI
1 Day	1000
7 Days	1500

SECTION B: POLYMER-MODIFIED CEMENTITIOUS STRUCTURAL PATCHING VERTICAL AND OVERHEAD

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for polymer modified cementitious patching materials used for overhead and vertical structural repair of bridge members.

SPECIFICATIONS

ASTM C-109
ASTM C-928
ASTM C-1042

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

The product will be tested according to the above specifications and must meet the following requirements. The product can be extended with aggregate as recommended by the manufacturer.

Compressive Strength:

Age	PSI
1 Day	2000
7 Days	4000

28 Days Greater than 7 Days

Length Change in Air:
Age Allowable decrease %
28 Days -0.15

Slant Shear Hardened to Plastic Concrete

Age	PSI
1 Day	1000
7 Days	1500

4. Working Time
10 minutes, minimum

SECTION B: ELASTOMERIC PATCHING MATERIALS HOT AND COLD APPLIED

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for elastomeric patching materials used for patching potholes in asphalt and concrete pavements.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

Following receipt of the submitted information, the manufacturer shall be required to install his product(s) on an asphalt and/or concrete surface as directed by the Division of Materials and Tests. The patching material shall be left in the field for 6 months to 1 year, at the discretion of the Division. At the completion of the evaluation period, if the test patch area has remained intact and performed satisfactorily, the material will be added to the Qualified Products List.

SECTION B: METHACRYLATE BINDER RESIN SYSTEM

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for methacrylate binder resin systems used for
sealing cracks in concrete surfaces.

SPECIFICATIONS

TDOT 604CR
ASTM C 882

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

In this process of testing methacrylate resin, take a 3"x 6"(75x 150-mm) portland cement mortar cylinder and cut in half at 30 degree angle. Clean both surfaces of cut halves, by either brushing or sandblasting. Place the two halves of the specimen together, forming a gap approximately 0.02in. (0.5mm). Silicone the periphery of the specimen close to each end. Place additional silicone along joint. Support the specimen so that the cylinder is vertical. Leave a slit exposed approximately ¾ in. (20 mm) of the upper portion of the joint. Slowly pour resin-bonding system into the exposed joint until it is completely filled. Keep the joint vertical for 48 hours. After suitable curing of the bonding agent, the test is performed by determining the compressive strength of the composite cylinder.

A minimum compressive strength of 1500 psi must be achieved for approval of the product.

QPL 14 ANTI-STRIPPING ADDITIVES

SECTION A. LIQUID ADDITIVES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for anti-stripping additives used to prevent stripping of asphalt cement from aggregates in asphalt mixes.

SPECIFICATIONS

TDOT 918.09 Section B Sub-Section 1

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests

In house testing consists of 10-min boil test using materials of limestone, gravel, and slag. Material shall be a course aggregate passing 5/8 sieve and retained on no. 4 sieve.

Dry 500 grams of course aggregate. Weigh 100 grams of course aggregate into three 400 ml beakers and place in oven for 30 minutes at 300 plus or minus 10 degrees F. Place a quart can, approximately ¾ full of hot asphalt cement into oven for 30 minutes at 300 plus or minus degrees F. Using 3 smaller containers, place the following amounts of anti-strip, 0 grams, 0.3 grams and 0.5grams in the containers and add asphalt to arrive at a total of 100 grams, stir thoroughly and place back in oven for 30 minutes to insure proper temperature at this time. Place a container of approximately 100 grams of asphalt cement with no anti-strip to be used as a control sample. This will now yield us 3 containers with 0%, o.3% and o.5% anti-strip additives. At this time get one beaker containing 100 grams of hot aggregate, add 5 grams of asphalt cement containing 0% anti-strip additive and stir thoroughly to insure all aggregate particles are completely covered. Pour out the coated aggregate particles onto a piece of wax paper and allow to cool to room temperature. Place the coated particles with the wax paper into a beaker of boiling water. (a 600 ml. Beaker is recommended). Remove the wax paper with tongs and allow the coated particles to remain in the boiling water for 10 minutes. After 10 minutes pour off the water and place the coated aggregate particles on a piece of cardboard to cool. Repeat the above procedure for the remaining containers containing the 0.3% and 0.5% anti-strip additive. The final results must show at least 95 % coverage for approval.

SECTION B. POWDER ADDITIVES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for anti-stripping additives used to prevent stripping of asphalt cement from aggregates in asphalt mixes.

SPECIFICATIONS

TDOT 918.09 Section B Sub-Section 1

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests

In house testing consists of 10-min boil test using materials of limestone, gravel, and slag. Material shall be a course aggregate passing 5/8 sieve and retained on no. 4 sieve.

Dry 500 grams of course aggregate. Weigh 100 grams of course aggregate into three 400 ml beakers and place in oven for 30 minutes at 300 plus or minus 10 degrees F. Place a quart can, approximately ¾ full of hot asphalt cement into oven for 30 minutes at 300 plus or minus degrees F. Using 3 smaller containers, place the following amounts of anti-strip, 0 grams, 0.3 grams and 0.5grams in the containers and add asphalt to arrive at a total of 100 grams, stir thoroughly and place back in oven for 30 minutes to insure proper temperature at this time. Place a container of approximately 100 grams of asphalt cement with no anti-strip to be used as a control sample. This will now yield us 3 containers with 0%, o.3% and o.5% anti-strip additives. At this time get one beaker containing 100 grams of hot aggregate, add 5 grams of asphalt cement containing 0% anti-strip additive and stir thoroughly to insure all aggregate particles are completely covered. Pour out the coated aggregate particles onto a piece of wax paper and allow to cool to room temperature. Place the coated particles with the wax paper into a beaker of boiling water. (a 600 ml. Beaker is recommended). Remove the wax paper with tongs and allow the coated particles to remain in the boiling water for 10 minutes. After 10 minutes pour off the water and place the coated aggregate particles on a piece of cardboard to cool. Repeat the above procedure for the remaining containers containing the 0.3% and 0.5% anti-strip additive. The final results must show at least 95 % coverage for approval.

SECTION C. FIBER ADDITIVES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for slag wool or cellulose fiber additive to increase durability and prevent drain down in hot mix asphalt (HMA) mixtures.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, product data information and a1pound sample of the product being tested must be submitted to the Division of Materials and Tests.

In house testing consists of 10-min boil test using materials of limestone, gravel, and slag. Material shall be a course aggregate passing 5/8 sieve and retained on no. 4 sieve.

Mix and prepare laboratory specimens of open-graded friction course (OGFC) in accordance with AASHTO T 305. Specimens should meet all requirements listed for OGFC aggregate blends in SP411OGFC. At least one specimen shall be prepared with no fiber additive, and a second minimum of one specimen shall be prepared with the fiber additive. Cellulose fiber additives shall be added at a rate of 0.3% by weight of total mixture, and slag wool fiber additives shall be added at a rate of 0.4% by weight of total mixture. Complete the drain down test procedure as presented in AASHTO T 305. The final results must show that mixtures with additive exhibit less than 0.3% drain down.

QPL 15 HYDRAULIC CEMENT SOURCES

SECTION A: DOMESTIC (TYPE I)

SECTION B: FOREIGN (TYPE I)

SECTION C: DOMESTIC (TYPE III)

SECTION D: BLENDED HYDRAULIC CEMENT (TYPE I SM)

SECTION E: DOMESTIC (TYPE I L)

SECTION A: DOMESTIC (TYPE I)

Acceptance Requirements for Domestic Cement (Type I)

General:
This evaluation procedure outlines the Department's approval process for domestic cement sources used in concrete mix designs.

Specifications:
1. TDOT 901.01
2. AASHTO M 85
3. AASHTO M 240

Procedures:
For a domestic cement to be accepted onto the TDOT Qualified Product List, the manufacturer must provide the following:
1. Proof of laboratory accreditation
2. A complete Product Evaluation Form
3. MSDS
4. A 1-gallon sample submitted to the Division of Materials and Tests
5. A Material Certification including:
    a. Name of manufacturer
    b. Location and name of plant
    c. Type and trade name of cement
    d. A mill test report of chemical and physical analyses
    e. A certification stating that the product meets the above specifications
    f. Six (6) consecutive months of mill test results

Verification testing will be performed by the Department to verify that the material meets the above specifications prior to adding to the QPL.

In order to remain on the QPL, mill test reports and 1-gallon composite samples (for each plant listed) must be submitted to the Division of Materials and Tests monthly.

Domestic manufacturers must be accredited through the AASHTO Accreditation Program (AAP). This is a comprehensive accreditation program consisting of :
1. Establishment of a quality management system program
2. Participation in a proficiency testing program
3. A laboratory inspection program including
    a. Observation of testing proficiency
    b. Inspection of laboratory equipment

The manufacture's accreditation shall include the following AASHTO (ASTM) test methods: T105 (C114), T106 (C109), T107 (C151), T127 (C183), T129 (C187), T131 (C191), T137 (C185), T153 (C204), T154 (C266), T162 (C305), T186 (C451), T192 (C430), --- (C1437), --- (C1506).

SECTION B: FOREIGN (TYPE I)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for foreign cement sources used in concrete mix designs.

SPECIFICATIONS

TDOT 901.01
AASHTO M 85
AASHTO M 240

PROCEDURES

For a foreign cement to be accepted onto the TDOT Qualified Product List, the manufacturer must provide the following:

1. Proof of laboratory accreditation
2. A completed Product Evaluation Form
3. MSDS
4. Six (6) consecutive months of test data
5. A 1-gallon composite sample from all holds on the ship submitted to the Division of Materials and Tests
6. A Material Certification Report including:
    a. Name of manufacturer
    b. Location and name of plant
    c. Port of entry and ship name
    d. Type and trade name of cement
    e. A mill test report of chemical and physical analyses
    f. The Certification stating that the product meets the above specifications

Testing on the composite sample will be performed by the Department to verify that the material meets the above specifications prior to adding to the QPL.

In order to remain on the QPL, test reports including physical and chemical data (for a composite sample form ship holds) and a 1-gallon composite sample from ship holds (identifying the original plant, the ship name and port of entry) must be submitted to the Department monthly until all material is depleted.

Foreign manufacturers must be accredited through a recognized accreditation program for the following AASHTO (ASTM) test methods: T105 (C114), T106 (C109), T107 (C151), T127 (C183), T129 (C187), T131 (C191), T137 (C185), T153 (C204), T154 (C266), T162 (C305), T186 (C451), T192 (C430), --- (C1437), --- (C1506).

Cont.

Foreign manufacturers of cement must be accredited through a comprehensive accreditation program consisting of:

1. Proficiency testing done through the ASTM's Cement and Concrete Reference Laboratory (CCRL)
2. A laboratory inspection program through either the AASHTO Accreditation Program (AAP), the International Laboratory Accreditation Cooperation (ILAC) or the Asia-Pacific Accreditation Cooperation (APLAC)
3. An accreditation process requiring the following;
    a. Observation of testing proficiency (through ILAC or APLAC)
    b. Establishment of a quality management system (ILAC, APLAC, ISO/AEC17025, or ISO/AEC9001)

SECTION C: DOMESTIC (TYPE III)

Acceptance Requirements for Domestic Cement (Type III)

General:
This evaluation procedure outlines the Department's approval process for domestic cement sources used in concrete mix designs.

Specifications:
1. TDOT 901.01
2. AASHTO M 85
3. AASHTO M 240

Procedures:
For a domestic cement to be accepted onto the TDOT Qualified Product List, the manufacturer must provide the following:
1. Proof of laboratory accreditation
2. A complete Product Evaluation Form
3. MSDS
4. A 1-gallon sample submitted to the Division of Materials and Tests
5. A Material Certification including:
    a. Name of manufacturer
    b. Location and name of plant
    c. Type and trade name of cement
    d. A mill test report of chemical and physical analyses
    e. A certification stating that the product meets the above specifications
    f. Six (6) consecutive months of mill test results

Verification testing will be performed by the Department to verify that the material meets the above specifications prior to adding to the QPL.

In order to remain on the QPL, mill test reports and 1-gallon composite samples (for each plant listed) must be submitted to the Division of Materials and Tests monthly.

Domestic manufacturers must be accredited through the AASHTO Accreditation Program (AAP). This is a comprehensive accreditation program consisting of :
1. Establishment of a quality management system program
2. Participation in a proficiency testing program
3. A laboratory inspection program including
    a. Observation of testing proficiency
    b. Inspection of laboratory equipment
4. Six (6) consecutive months of test data or documentation that no grinding of cement that month.

The manufacture's accreditation shall include the following AASHTO (ASTM) test methods: T105 (C114), T106 (C109), T107 (C151), T127 (C183), T129 (C187), T131 (C191), T137 (C185), T153 (C204), T154 (C266), T162 (C305), T186 (C451), T192 (C430), --- (C1437), --- (C1506).

SECTION D: BLENDED HYDRAULIC DOMESTIC (TYPE IS, IP, IL)

Acceptance Requirements for Blended Hydraulic Cement (Type IS, IP, IL)

General:
This evaluation procedure outlines the Department's approval process for domestic cement sources used in concrete mix designs.

Specifications:
1. TDOT 901.01
2. AASHTO M 85
3. AASHTO M 240

Procedures:
For a domestic cement to be accepted onto the TDOT Qualified Product List, the manufacturer must provide the following:
1. Proof of laboratory accreditation
2. A complete Product Evaluation Form
3. MSDS
4. A 1-gallon sample submitted to the Division of Materials and Tests
5. A Material Certification including:
    a. Name of manufacturer
    b. Location and name of plant
    c. Type and trade name of cement
    d. A mill test report of chemical and physical analyses
    e. A certification stating that the product meets the above specifications
    f. Six (6) consecutive months of mill test results

Verification testing will be performed by the Department to verify that the material meets the above specifications prior to adding to the QPL.

In order to remain on the QPL, mill test reports and 1-gallon composite samples (for each plant listed) must be submitted to the Division of Materials and Tests monthly.

Domestic manufacturers must be accredited through the AASHTO Accreditation Program (AAP). This is a comprehensive accreditation program consisting of :
1. Establishment of a quality management system program
2. Participation in a proficiency testing program
3. A laboratory inspection program including
    a. Observation of testing proficiency
    b. Inspection of laboratory equipment
4. Six (6) consecutive months of test data or documentation that no grinding of cement that month.

The manufacture's accreditation shall include the following AASHTO (ASTM) test methods: T105 (C114), T106 (C109), T107 (C151), T127 (C183), T129 (C187), T131 (C191), T137 (C185), T153 (C204), T154 (C266), T162 (C305), T186 (C451), T192 (C430), --- (C1437), --- (C1506).

QPL 16 SUPPLEMENTARY CEMENTING MATERIALS

SECTION A: POZZOLANS (FLY ASH CLASS C)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for pozzolans used as supplementary cementing material for use in concrete mix designs

SPECIFICATIONS

TDOT 918.31
AASHTO M 295

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a one-gallon sample of the product being tested must be submitted to the Division of Materials and Tests.

Also the manufacturer shall submit six consecutive months of test data and a letter of certification stating the material type, and that the product meets the above specifications. Verification testing will be performed by the Department in accordance with the above specifications prior to adding to the QPL.

In order to remain on the QPL, a material certification (for each source listed) including chemical and physical analysis and uniformity requirements must be submitted to the Department monthly.

SECTION B: POZZOLANS (FLY ASH CLASS F)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for pozzolans used as supplementary cementing material for use in concrete mix designs

SPECIFICATIONS

TDOT 918.31
AASHTO M 295

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a one-gallon sample of the product being tested must be submitted to the Division of Materials and Tests.

Also the manufacturer shall submit six consecutive months of test data and a letter of certification stating the material type, and that the product meets the above specifications. Verification testing will be performed by the Department in accordance with the above specifications prior to adding to the QPL.

In order to remain on the QPL, a material certification (for each source listed) including chemical and physical analysis and uniformity requirements must be submitted to the Department monthly.

SECTION C: GROUND GRANULATED BLAST FURNACE SLAG

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for GGBFS used as supplementary cementing material for use in concrete mix designs.

SPECIFICATIONS

TDOT 604.03 and 916.32
AASHTO M 240
AASHTO M 302

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a one-gallon sample of the product being tested must be submitted to the Division of Materials and Tests.

Also the manufacturer shall submit six consecutive months of test data and a letter of certification stating the material type, and that the product meets the above specifications. Verification testing will be performed by the Department in accordance with the above specifications prior to adding to the QPL.

In order to remain on the QPL, a material certification (for each source listed) including chemical and physical analysis and uniformity requirements must be submitted to the Department monthly.

QPL 17 EROSION PREVENTION AND SEDIMENT CONTROL

SECTION: A. EROSION PREVENTION AND SEDIMENT CONTROL PRODUCTS FOR USE IN STANDARD DRAWINGS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for Erosion Prevention and Sediment Control Products used for Standard Drawings.

SPECIFICATIONS

Tennessee Department of Transportation Standard Drawings Library

Tennessee Department of Transportation Statewide Storm Water Management Program

Manual for Management of Strom water Discharges Associated with Construction Activities

Erosion Prevention and Sediment Control Device Certification

PROCEDURES

The products for each of the sections have been pre-qualified for use. The products on this list must meet the material requirements set forth in the standard drawings. Upon any change of the product the manufacturer must submit the changes for approval and placement on the Qualified Products List.

(EC-STR-1) DEWATERING STRUCTURE

LIST 17. SECTION A: (EC-STR-1) DEWATERING STRUCTURE

Component QPL

Installation shall be according to the standard drawing.

Refer to QPL 36 Geotextiles & Geosynthetics (Type III)

System Replacement QPL

System Replacements are only applicable when EC-STR-1 is specified and shall not be substituted for other drawings. System Replacement would include replacement of Geotextile Fabric, Wood Stake, Steel Post, Machined Riprap, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:

Shall provide equivalent or better sediment capture (filtration) than the Dewatering Structure specified on standard drawing.

Shall remain structurally stable when filled to capacity.

Shall be installed per manufacturer's specifications.

Shall be Completely Removed after final stabilization.

(EC-STR-3B) TEMPORARY SILT FENCE

LIST 17. SECTION A: (EC-STR-3B) TEMPORARY SILT FENCE

Component QPL

Installation shall be according to the standard drawing.

Refer to QPL 36 Section B.1: Temporary Silt Fence (EC-STR-3B).

System Replacement QPL

System Replacements are only applicable when EC-STR-3B is specified and shall not be substituted for other drawings. System Replacement would include replacement of Geotextile Fabric, Post, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following.

Shall provide equivalent or better sediment capture (filtration) than Geotextile fabric specified on standard drawing.

Minimum Drainage Area shall be 1/4 acre per 100 Linear Feet.

Minimum Height of Fence shall be 26 Inches.

Shall pass the flow from the 5yr-24hr storm event prior to overtopping the fence.

Shall remain structurally stable during the 5yr-24hr storm event.

Shall be installed per manufacturer's specifications.

Shall be Completely Removed after final stabilization.

(EC-STR-3C) TEMPORARY SILT FENCE WITH WIRE BACKING

LIST 17. SECTION A: (EC-STR-3C) TEMPORARY SILT FENCE WITH BACKING

Component QPL

Installation shall be according to the standard drawing.

Refer to QPL 36 Section B.2: Temporary Silt Fence with Wire Backing(EC-STR-3C).

System Replacement QPL

System Replacements are only applicable when EC-STR-3C is specified and shall not be substituted for other drawings. System Replacement would include replacement of Geotextile Fabric, Post, Wire Backing, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:

Shall provide equivalent or better sediment capture (filtration) than Geotextile fabric specified on standard drawing.

Minimum Drainage Area shall be 1 acre per 150 Linear Feet.

Minimum Height of Fence shall be 26 Inches.

Shall pass the flow from the 5yr-24hr storm event prior to overtopping the fence.

Shall remain structurally stable during the 5yr-24hr storm event.

Shall be installed per manufacturer's specifications.

Shall be Completely Removed after final stabilization.

(EC-STR-3D) ENHANCED SILT FENCE

LIST 17. SECTION A: (EC-STR-3D) ENHANCED SILT FENCE

Component QPL

Installation shall be according to the standard drawing.

Refer to QPL 36 Section B.3: Enhanced Silt Fence (EC-STR-3D).

System Replacement QPL

System Replacements are only applicable when EC-STR-3D is specified and shall not be substituted for other drawings. System Replacement would include replacement of Geotextile Fabric, Post, Wire Backing, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:]

Shall provide equivalent or better sediment capture (filtration) than Geotextile fabric specified on standard drawing.

Minimum Drainage Area shall be 1 acre per 150 Linear Feet.

Minimum Height of Fence shall be 26 Inches.

Shall pass the flow from the 5yr-24hr storm event prior to overtopping the fence.

Shall remain structurally stable during the 5yr-24hr storm event.

Shall be installed per manufacturer's specifications.

Shall be Completely Removed after final stabilization.

(EC-STR-4 AND EC-STR-4A) ENHANCED SILT FENCE CHECK

LIST 17. SECTION A: (EC-STR-4 AND EC-STR-4A) ENHANCED SILT FENCE CHECK

Component QPL

Installation shall be according to the standard drawing.

Refer to QPL 36 Geotextiles & Geosynthetics (Type III)

Refer to QPL 36 Section B.3: Enhanced Silt Fabric (EC-STR-3D).

System Replacement QPL

System Replacements are only applicable when EC-STR-4 or EC-STR-4A is specified and shall not be substituted for other drawings. System Replacement would include replacement of Geotextile Fabric, Wire Backing, Steel Post, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:

Shall provide equivalent or better sediment capture (filtration) than Geotextile fabric specified on standard drawing.

Shall pass the flow from 5yr-24hr storm event prior to overtopping the weir.

Shall remain structurally stable during the 5yr-24hr storm event.

Shall be installed per manufacturer's specifications.

Shall be Completely Removed after final stabilization.

EC-STR-6 ROCK CHECK DAM

LIST 17. SECTION A: (EC-STR-6) ROCK CHECK DAM

Component QPL

Installation shall be according to the standard drawing.

Refer to QPL 36 Geotextiles & Geosynthetics (Type III)

System Replacement QPL

System Replacements are only applicable when EC-STR-6 is specified and shall not be substituted for other drawings. System Replacement would include replacement of Geotextile Fabric, Riprap, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:

Minimum Drainage Area shall be 10 acres.

Weir Height shall be 1.0' minimum to 3.0' maximum for 2yr-24hr storm event.

Weir Height shall be 2.0' minimum to 3.0' maximum for 5yr-24hr storm event.

Weir shall be a minimum of 1.0' lower than outer edges of check dam.

Shall pass the flow from the 2yr-24hr storm event over the weir prior to overtopping the structure for 2yr-24hr storm event.

Shall pass the flow from the 5yr-24hr storm event over the weir prior to overtopping the structure for 5yr-24hr storm event.

Shall remain structurally stable during the 5yr-24hr storm event for both the 2yr-24hr and 5yr-24hr storm events.

Shall be installed per Standard Drawing EC-STR-6.

Shall be Completely Removed after final stabilization.

EC-STR-6A ENHANCE ROCK CHECK DAM

LIST 17. SECTION A: (EC-STR-6A) ENHANCED ROCK CHECK DAM

Component QPL

Installation shall be according to the standard drawing.

Refer to QPL 36 Geotextiles & Geosynthetics (Type III)

System Replacement QPL

System Replacements are only applicable when EC-STR-6A is specified and shall not be substituted for other drawings. System Replacement would include replacement of Geotextile Fabric, Riprap, Mineral Aggregate and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:

Shall provide equivalent or better sediment capture than structure specified on standard drawing.

Minimum Drainage Area shall be 30 acres for the 2yr-24hr storm event.

Minimum Drainage Area shall be 20 acres for the 5yr-24hr storm event.

Weir Height shall be 1.5' minimum to 3.0' maximum.

Weir Shall be a minimum of 1.0' Lower than outer edges of Check Dam when used in ditches.

Weir Shall be a minimum of 2.0' Lower than outer edges of Check Dam when used in channels.

Shall pass the flow from the 2yr-24hr storm event over the weir prior to overtopping the structure for 2yr-24hr storm event.

Shall pass the flow from the 5yr-24hr storm event over the weir prior to overtopping the structure for 5yr-24hr storm event.

Shall remain structurally stable during the 5yr-24hr storm event for both the 2yr-24hr and 5yr-24hr storm events.

Shall be installed per Standard Drawing EC-STR-6.

Shall be Completely Removed after final stabilization.

EC-STR-8 FILTER SOCK

LIST 17. SECTION A: (EC-STR-8) FILTER SOCK

Component QPL

Installation shall be according to the standard drawing.

System Replacement QPL

System Replacements are only applicable when EC-STR-8 is specified and shall not be substituted for other drawings. System Replacement would include replacement of Filter Sock, Post, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:

Shall provide equivalent or better sediment capture than Filter Sock specifications shown on standard drawing.

Minimum Drainage Area shall be 1/4 acre per 100 Linear Feet for slope applications.

Minimum Drainage Area for ditch applications shall be 15 acres for the 2yr-24hr storm event.

Minimum Drainage Area for ditch applications shall be 10 acres for the 5yr-24hr storm event.

Minimum Height shall be 8 Inches.

Maximum Height shall be 24 Inches.

Minimum Height shall be 19 Inches for ditch applications

Shall pass the flow from the 5yr-24hr storm event over the weir prior to overtopping the structure.

Shall remain structurally stable during the 5yr-24hr storm event.

Shall be installed per manufacturer's specifications.

Shall be Completely Removed after final stabilization.

(EC-STR-19) CATCH BASIN PROTECTION

LIST 17. SECTION A: (EC-STR-19) CATCH BASIN PROTECTION

Component QPL

Installation shall be according to the standard drawing.

Refer to QPL for Sediment Tube for Type D.

Refer to QPL for Filter Sock for Type D.

Refer to QPL 36 Section B.2: Silt Fence With Wire Backing (EC-STR-3C) for Type E.

System Replacement QPL

System Replacements are only applicable when EC-STR-19 is specified and shall not be substituted for other drawings. System Replacement would include replacement of Riprap, Geotextile Fabric, Mineral Aggregate (Size 57), Wire Mesh, Post, Sediment Tube, Filter Sock, Silt Fence With Wire Backing, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:

Shall provide equivalent or better sediment capture than Catch Basin Protection shown on standard drawing.
Minimum Drainage Area shall be 2 acre for Type A.
Minimum Drainage Area shall be 1 acre for Type B, Type C, Type D, and Type E.
Minimum Height shall be 24 Inches for Type A.
Minimum Height shall be 12 Inches for Type B and Type C.
Minimum Height shall be 18 Inches for Type D.
Minimum Height shall be 26 Inches for Type E.
Type E shall pass the flow from the 5yr-24hr storm event prior to overtopping.
Shall remain structurally stable during the 5yr-24hr storm event.
Shall be installed per manufacturer's specifications.
Shall be Completely Removed after final stabilization.

EC-STR-35 FILTER BERMS

LIST 17. SECTION A: (EC-STR-35) FILTER BERMS

Component QPL

Installation shall be according to the standard drawing.

System Replacement QPL

System Replacements are only applicable when EC-STR-35 is specified and shall not be substituted for other drawings. System Replacement would include replacement of Mulch Filter Berm, Compost Filter Berm, Silt Fence, Silt Fence with Wire Backing, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:

Shall provide equivalent or better sediment capture than Filter Berm shown on standard drawing.

Minimum Drainage Area shall be 1/4 acre per 100 Linear Feet.

Minimum Height shall be 12 Inches.

Maximum Height shall be 36 Inches.

Shall pass the flow from the 5yr-24hr storm event prior to overtopping the Filter Berm.

Shall remain structurally stable during the 5yr-24hr storm event.

Shall be installed per manufacturer's specifications.

Non biodegradable components shall be Completely Removed after final stabilization.

Biodegradable components may remain in place after final stabilization.

EC-STR-37 SEDIMENT TUBES

LIST 17. SECTION A: (EC-STR-37) SEDIMENT TUBES

Component QPL

Installation shall be according to the standard drawing.

System Replacement QPL

System Replacements are only applicable when EC-STR-37 is specified and shall not be substituted for other drawings. System Replacement would include replacement of Sediment Tube, Post, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:

Shall be 100% Biodegradable.

Shall provide equivalent or better sediment capture than Sediment Tube specifications shown on standard drawing.

Minimum Drainage Area shall be 1/4 acre per 100 Linear Feet for slope applications.

Minimum Drainage Area for ditch applications shall be 15 acres for the 2yr-24hr storm event.

Minimum Drainage Area for ditch applications shall be 10 acres for the 5yr-24hr storm event.

Minimum Height shall be 8 Inches.

Maximum Height shall be 24 Inches.

Minimum Height shall be 20 Inches for ditch applications

For ditch applications shall pass the flow from the 5yr-24hr storm event over the weir prior to overtopping the structure.

Shall remain structurally stable during the 5yr-24hr storm event.

Shall be installed per manufacturer's specifications.

For slope applications may remain in place after final stabilization.

For ditch applications shall be Completely Removed after final stabilization.

EC-STR-39 & 39A CURB INLET PROTECTION

LIST 17. SECTION A: (EC-STR-39 & 39A) CURB INLET PROTECTION

Component QPL

Installation shall be according to the standard drawing.

Refer to QPL 36 Geotextiles & Geosynthetics (Type III)

System Replacement QPL

System Replacements are only applicable when EC-STR-39&39A is specified and shall not be substituted for other drawings. System Replacement would include replacement of Mineral Aggregate (Size 57), Wire Mesh, Concrete Block, Sand Bag, Gravel Bag, Wooden Frame, Geotextile Fabric, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:

Shall provide equivalent or better sediment capture than Curb Inlet Protection shown on standard drawing.

Minimum Drainage Area shall be 1 acre for Curb Inlet Protection.

Shall remain structurally stable during the 5yr-24hr.

Shall be installed per manufacturer's specifications.

Shall be Completely Removed after final stabilization.

EC-STR-40 THUR 51A CATCH BASIN FILTER ASSEMBLY

LIST 17. SECTION A: (EC-STR-40 THUR 51A) CATCH BASIN FILTER ASSEMBLY

Component QPL

Installation shall be according to the standard drawing.

System Replacement QPL

System Replacements are only applicable when EC-STR-40 Thru 51A is specified and shall not be substituted for other drawings. System Replacement would include replacement of Mineral Aggregate (Size 57), Wire Mesh, Wooden Frame, Geotextile Fabric, and/or Installation Details.

All system replacements shall meet the requirements of the Erosion Prevention and Sediment Control Device Certification along with the following:

Shall provide equivalent or better sediment capture than Catch Basin Filter Assembly shown on standard drawing.

Shall pass the flow from the 5yr-24hr storm event.

Shall remain structurally stable during the 5yr-24hr storm event.

Shall be installed per manufacturer's specifications.

Shall be Completely Removed after final stabilization.

ALERT
Changes to RECP New requirements as of MAY 1st, 2015
See Specifications below

SECTION B: ROLLED EROSION CONTROL PRODUCTS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for **Rolled Erosion Control Products (RECP)**.

SPECIFICATIONS

As of May 1, 2015, TDOT Specifications for RECPs shall follow and be certified by the Erosion Control Technical Council (ECTC) Standard Specifications for Temporary Rolled Erosion Control Products with changes noted below.
Also RECPs currently listed shall have been evaluated or must be submitted to the National Product Evaluation Program (NTPEP) for evaluation between May 1st, 2015 to May 1st, 2016 for inclusion on the Tennessee Department of Transportation – TDOT Qualified Products List.

The TDOT type designation and C Factor for Rolled Erosion Control Products will be as follows:

TDOT	ECTC	C FACTOR
Type I	**Type 2c**	**≤0.15@3:1**
Type II	**Type 2d**	**≤0.14@3:1**
Type III	**Type 3b**	**≤0.14@3:1**
Type IV	**Type 4**	**≤0.11@3:1**

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information **including roll dimensions and weights**, ECTC certification and NTPEP bench top and large scale test data must be submitted to the Division of Materials and Tests.

Approval is based on manufacturer's certification and NTPEP test results. Field Testing may be required based on Department findings.

If Field Testing is required, the product shall be installed at the Manufacturer's recommended application rates on a test deck to be provided by the Department. Evaluation period shall be 3 to 6 months during the growing season.

ALERT
Changes to TRM New Requirements as of JULY 1st, 2008
See Specifications below

SECTION C: TURF REINFORCEMENT MATTING

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for **Turf Reinforcement Matting** used for erosion protection in ditches and channels.

SPECIFICATIONS

Standard Drawing EC-STR-36

Tennessee Department of Transportation – TDOT Specifications for Turf Reinforcement Matting as of July 1st, 2009 shall follow the Erosion Control Technical Council (ECTC) Standard Specifications for Turf Reinforcement Matting.

The new type designation for Turf Reinforcement Matting will be as follows:

ECTC	Shear Stress	TDOT	Shear Stress
Type 5A	6.0 lbs/ft^2 (288 Pa)	Class I	6.0 lbs/ft^2 (288 Pa)
Type 5B	8.0 lbs/ft^2 (384 Pa)	Class II	8.0 lbs/ft^2 (384 Pa)
Type 5C	10.0 lbs/ft^2 (480 Pa)	Class III	10.0 lbs/ft^2 (480 Pa)

A letter will be sent out by August 30th, 2008 to each manufacturer informing them of this change for the 2009 construction season.

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Approval is based on manufacture's certification that the product meets the minimum shear stress requirements (under vegetated conditions) for the applicable class.

NOTE: This procedure is currently under review by the Department and is subject to change.

SECTION D BONDED FIBER MATRIX

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for **Bonded Fiber Matrix.**

SPECIFICATIONS

Tennessee Department of Transportation Standard Drawings Library

Tennessee Department of Transportation Statewide Storm Water Management Program

Manual for Management of Strom water Discharges Associated with Construction Activities

Erosion Prevention and Sediment Control Device Certification

PROCEDURE

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

The manufacturer shall install the product on a test deck to be provided by the Department. Evaluation period shall be 3 to 6 months during the growing season.

Approval will be based on the product performing equivalent to the blanket it is proposed to replace.

- These products can be used in lieu of Type I or Type II Blankets

SECTION: E. POLYACRYLAMIDE

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for **Polyacrylamide**

SPECIFICATIONS

Tennessee Department of Transportation Standard Drawings Library

Tennessee Department of Transportation Statewide Storm Water Management Program

Manual for Management of Strom water Discharges Associated with Construction Activities

Erosion Prevention and Sediment Control Device Certification

PROCEDURES

The products for each of the sections have been pre-qualified for use. The products on this list must meet the material requirements set forth in the standard drawings. Upon any change of the product the manufacturer must submit the changes for approval and placement on the Qualified Products List.

SECTION: F. SOIL BINDERS & TACKIFIERS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for **Soli Binders and Tackifiers**

SPECIFICATIONS

Tennessee Department of Transportation Standard Drawings Library

Tennessee Department of Transportation Statewide Storm Water Management Program

Manual for Management of Strom water Discharges Associated with Construction Activities

Erosion Prevention and Sediment Control Device Certification

PROCEDURES

The products for each of the sections have been pre-qualified for use. The products on this list must meet the material requirements set forth in the standard drawings. Upon any change of the product the manufacturer must submit the changes for approval and placement on the Qualified Products List.

SECTION: G. DUST PALLIATIVES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for **Dust Palliatives.**

SPECIFICATIONS

Tennessee Department of Transportation Standard Drawings Library

Tennessee Department of Transportation Statewide Storm Water Management Program

Manual for Management of Strom water Discharges Associated with Construction Activities

Erosion Prevention and Sediment Control Device Certification

PROCEDURES

The products for each of the sections have been pre-qualified for use. The products on this list must meet the material requirements set forth in the standard drawings. Upon any change of the product the manufacturer must submit the changes for approval and placement on the Qualified Products List.

QPL 18 MANHOLE STEPS

MANHOLE STEPS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for manhole steps.

SPECIFICATIONS

TDOT 918.22
Std. Drawing D-MH-4

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Approval is based on certification provided by the manufacturer that the products meets the applicable specifications.

QPL 19 EPOXY POWDER FOR REINFORCING STEEL

EPOXY POWDER FOR REINFORCING STEEL

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for epoxy powder used in coating reinforcing steel.

SPECIFICATIONS

TDOT 907.01
ASTM D 3963
ASTM A 775

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

Approval is based on certification provided by the manufacturer that the product meets the applicable specifications.

QPL 20 STRESSED CABLE GROUT

STRESSED CABLE GROUT

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for stressed cable grout used to fill post-tensioning ducts.

SPECIFICATIONS

TDOT 615.16 and 616.09

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

The product will be tested against the manufacturers' recommended minimum requirements for compressive strength, length change in air and bond strength (pull-out). Approval will be based on the product meeting the manufacturers' minimum requirements.

QPL 21 RELEASE COMPOUNDS FOR ASPHALT MIXES

RELEASE COMPOUNDS FOR ASPHALT MIXES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for asphalt release agents for use in truck beds.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, and NTPEP test data, must be submitted to the Division of Materials and Tests. The Department bases product approval on a review of NTPEP data.

Review of NTPEP Evaluation Data

The Asphalt Release Agent must be acceptable for submittal to NTPEP's Evaluation program and therefore must conform to these requirements:

- Contain components that do not exceed the acceptable limits and shall contain no polychlorinated biphenyls (PCB's) listed in the Resource Conservation and Recovery Act (RCRA) Hazardous Waste Code of Federal Regulations (CFR), Title 40, Part 261, Subpart D, List of Hazardous Waste.
- Have a rating no higher than zero (0) for all National Fire Protection Association (NFPA) Hazard Codes. If using the Hazardous Materials Identification System (HMIS), a rating no higher than one (1) is acceptable for Health and a zero (0) is required for both Flammability and Reactivity codes.
- Does not contain flammable materials, solvents, or petroleum elements, and
- Have a flash point greater than 400°F on the undiluted products as measured by ASTM D93-10.

RELEASE COMPOUNDS FOR ASPHALT MIXES PROCEDURES (Cont.)

To be included on the QPL for use on truck beds, the product must meet or exceed these requirements as tested by NTPEP:

- **7-Day Asphalt Stripping Test** – Shall have a rating of ***No Stripping*** for both Full Strength and Diluted Strength samples.

  Mixture Slide Test – Shall have **10 grams maximum** retained.

To be used on any other plant equipment the product must also meet or exceed these requirements:

- **Asphalt Performance Test** – Shall have **less than 10.0%** binder adhere after **third** pour.

QPL 22 MASONRY ANCHORS

SECTION A: MECHANICAL TYPE

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for masonry anchors.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

The following test method utilizes a mechanical device for masonry anchors. A hole is drilled into a 6" x 12" concrete cylinder the diameter and depth shall be specified by the manufacturer of the anchor. A brush and compressed air are used to remove dust from the drilled hole. The mechanical anchor is installed into the hole according to the manufacturer's recommendations. A threaded coupler is then attached to the mechanical anchor and tightened. A steel rod is threaded into the other end of the coupler and tightened. The unit is then tested for tensile pullout strength.

A passing test is indicated by the breaking of the concrete test specimen or by exceeding the manufacturer's recommended load capacity for the anchor.

SECTION B: CEMENTITIOUS TYPE

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for masonry anchors.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

This test method uses the product as a bonding agent for masonry anchors. A hole is drilled into a 6" x 12" concrete cylinder to a depth and diameter as recommended by the manufacturer. A brush and compressed air are used to remove dust from the hole. The product is mixed, if applicable, according to the manufacturer's recommendations and placed into the drilled hole. A rebar or threaded rod representative of the size and type application (to be agreed upon by the manufacturer and TDOT) is pushed into the hole using a twisting motion to insure that the product makes good contact with the concrete and steel. The product is allowed to cure according to the manufacturer's recommendations and then the unit is tested for tensile pullout strength.

A passing test is indicated by the breaking of the concrete test specimen or by exceeding the manufacturer's recommended load capacity.

SECTION C: EPOXY TYPE

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for masonry anchors.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

This test method uses the product as a bonding agent for masonry anchors. A hole is drilled into a 6" x 12" concrete cylinder to a depth and diameter as recommended by the manufacturer. A brush and compressed air are used to remove dust from the hole. The product is mixed, if applicable, according to the manufacturer's recommendations and placed into the drilled hole. A rebar or threaded rod representative of the size and type application (to be agreed upon by the manufacturer and TDOT) is pushed into the hole using a twisting motion to insure that the product makes good contact with the concrete and steel. The product is allowed to cure according to the manufacturer's recommendations and then the unit is tested for tensile pullout strength.

A passing test is indicated by the breaking of the concrete test specimen or by exceeding the manufacturer's recommended load capacity.

SECTION D: EPOXY TYPE (ENCAPSULATED)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for masonry anchors.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

This test method uses the product as a bonding agent for masonry anchors. A hole is drilled into a 6" x 12" concrete cylinder to a depth and diameter as recommended by the manufacturer. A brush and compressed air are used to remove dust from the hole. The product is mixed, if applicable, according to the manufacturer's recommendations and placed into the drilled hole. A rebar or threaded rod representative of the size and type application (to be agreed upon by the manufacturer and TDOT) is pushed into the hole using a twisting motion to insure that the product makes good contact with the concrete and steel. The product is allowed to cure according to the manufacturer's recommendations and then the unit is tested for tensile pullout strength.

A passing test is indicated by the breaking of the concrete test specimen or by exceeding the manufacturer's recommended load capacity.

SECTION E: EPOXY TYPE (INJECTION TECHNIQUE)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for masonry anchors.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and sample of the product being tested must be submitted to the Division of Materials and Tests.

This test method uses the product as a bonding agent for masonry anchors. A hole is drilled into a 6" x 12" concrete cylinder to a depth and diameter as recommended by the manufacturer. A brush and compressed air are used to remove dust from the hole. The product is mixed, if applicable, according to the manufacturer's recommendations and placed into the drilled hole. A rebar or threaded rod representative of the size and type application (to be agreed upon by the manufacturer and TDOT) is pushed into the hole using a twisting motion to insure that the product makes good contact with the concrete and steel. The product is allowed to cure according to the manufacturer's recommendations and then the unit is tested for tensile pullout strength.

A passing test is indicated by the breaking of the concrete test specimen or by exceeding the manufacturer's recommended load capacity.

QPL 23 CONCRETE WATERPROOFING

SECTION A: NON-PENETRATING TYPE SEALERS (NON-TRAFFIC BEARING)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for the use of penetrating type sealers for waterproofing concrete and non-penetrating type sealers used in waterproofing non-traffic bearing concrete.

SPECIFICATIONS

AASHTO T 259
AASHTOT T 260

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, a sample of the product being tested and manufacturer's recommended mixing instructions must be submitted to the Division of Materials and Tests.

A six-inch by twelve-inch hardened Portland cement concrete cylinder will be used as a test specimen. The six-inch by twelve-inch concrete cylinder will be sawed in half at an angle of ninety degrees from the twelve-inch axis. The concrete surface shall be abraded using sandblasting techniques. Next place a dam around the top edge of the concrete cylinder. The submitted product will be applied to the concrete surface as recommended by the manufacturer and allowed to cure. The concrete specimen will be covered with a 3% solution of NaCl to a depth of one-half inch and maintained for ninety days in accordance with AASHTO T 259.

After ninety days of exposure the specimen shall be allowed to dry and then the surface shall be wire brushed until all salt crystal buildup is completely removed. A test sample will be taken at the one-half to one-inch depth from each end of the test cylinder. The untreated end of the test cylinder will be the control. The chloride content of each sample shall be determined in accordance with the procedure in AASHTO T 260. The amount of NaCl absorbed into the test cylinder will be determined by subtracting the control from the sample taken from the area treated with the submitted product and covered with a 3% solution of NaCl.

The maximum amount of chloride ion penetration allowed is 1.0 pound per cubic yard of concrete.

SECTION B: PENETRATING TYPE SEALERS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for the use of penetrating type sealers for waterproofing concrete and non-penetrating type sealers used in waterproofing traffic bearing concrete.

SPECIFICATIONS

AASHTO T 259
AASHTOT T 260

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, a sample of the product being tested and manufacturer's recommended mixing instructions must be submitted to the Division of Materials and Tests.

A six-inch by twelve-inch hardened Portland cement concrete cylinder will be used as a test specimen. The six-inch by twelve-inch concrete cylinder will be sawed in half at an angle of ninety degrees from the twelve-inch axis. The concrete surface shall be abraded using sandblasting techniques. Next place a dam around the top edge of the concrete cylinder. The submitted product will be applied to the concrete surface as recommended by the manufacturer and allowed to cure. The concrete specimen will be covered with a 3% solution of NaCl to a depth of one-half inch and maintained for ninety days in accordance with AASHTO T 259.

After ninety days of exposure the specimen shall be allowed to dry and then the surface shall be wire brushed until all salt crystal buildup is completely removed. A test sample will be taken at the one-half to one-inch depth from each end of the test cylinder. The untreated end of the test cylinder will be the control. The chloride content of each sample shall be determined in accordance with the procedure in AASHTO T 260. The amount of NaCl absorbed into the test cylinder will be determined by subtracting the control from the sample taken from the area treated with the submitted product and covered with a 3% solution of NaCl.

The maximum amount of chloride ion penetration allowed is 1.0 pound per cubic yard of concrete.

SECTION C: NON-PENETRATING COAL TAR EPOXY SEALERS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for use of non-penetrating coal tar epoxy sealers used in waterproofing non-traffic bearing concrete.

SPECIFICATIONS

ASTM D 570
ASTM C 881, Table 1

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, a sample of the product being tested and manufacturer's recommended mixing instructions must be submitted to the Division of Materials and Tests.

A 3"x6" concrete cylinder dried to a constant weight will be used as a test specimen. The manufacturers' product will be applied to the test specimen and allowed to cure as recommended by the manufacturer.
After curing, the test specimen will be weighed, then submerged in water for 72 hours. At the end of 72 hours, the test specimen will be removed from the water and surfaced dried and weighed to determine water absorption according to ASTM D 570.

Approval will be based upon the product meeting the requirements for water absorption as set forth in ASTM C 881, Table 1.

SECTION D: THIN OVERLAY SYSTEMS FOR BRIDGE DECKS (1/2 INCH THICKNESS OR LESS)

SECTION D: POLYMER MODIFIED CEMENTITIOUS SYSTEM

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for polymer-modified cementitious, epoxy urethane and low modulus epoxy materials applied as thin overlays on bridge decks used to seal the decks and improve skid resistance.

SPECIFICATIONS

AASHTO T 259
AASHTO T 260

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

A six-inch by twelve-inch hardened Portland cement concrete cylinder will be used as a test specimen. The six-inch by twelve-inch concrete cylinder will be sawed in half at an angle of ninety degrees from the twelve-inch axis. The concrete surface shall be abraded using sandblasting techniques. Next place a dam around the top edge of the concrete cylinder. The submitted product will be applied to the concrete surface as recommended by the manufacturer and allowed to cure. The concrete specimen will be covered with a 3% solution of NaCl to a depth of one-half inch and maintained for ninety days in accordance with AASHTO T-259.

After ninety days of exposure the specimen shall be allowed to dry and then the surface shall be wire brushed until all salt crystal buildup is completely removed. A test sample will be taken at the one-half to one-inch depth from each end of the test cylinder. The untreated end of the test cylinder will be the control. The chloride content of each sample shall be determined in accordance with the procedure in AASHTO T-260. The amount of NaCl absorbed into the test cylinder will be determined by subtracting the control from the sample taken from the area treated with the submitted product and covered with a 3% solution of NaCl.

The maximum amount of chloride ion penetration allowed is 1.0 pound per cubic yard of concrete.

A one year field demonstration and evaluation period will be required prior to product approval. Smoothness, sealing capabilities and skid resistance will be evaluated on the in-place product.

SECTION D: TYPE 1 THIN OVERLAY (EPOXY-URETHANE)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for epoxy-urethane thin overlay systems applied as thin overlays on bridge decks used to seal the decks and improve skid resistance.

SPECIFICATIONS

AASHTO T 259
AASHTO T 260
AASHTO T 277
NTPEP Evaluation

Special Notes

(Note 1) TYPE 1 THIN EPOXY OVERLAY SYSTEM – USE DECK PRETREATMENT/PRIMER PER MANUFACTURER'S RECOMMENDATION, AND 2 LIFTS OF AN EPOXY-URETHANE COPOLYMER AND AGGREGATE. TYPE 1 OVERLAY SHALL BE APPLIED MECHANICALLY USING METERED EQUIPMENT; HAND MIXING OF MATERIAL IS NOT PERMITTED.

THIN OVERLAY SYSTEM SHALL BE FROM THE QUALIFIED PRODUCTS LIST 23, SECTION D2. MINIMUM OVERLAY THICKNESS SHALL BE 3/8 INCH.

APPLICATION EQUIPMENT SHOULD :

A) BE CAPABLE OF METERING, MIXING AND DISTRIBUTING THE POLYMER AND PRETREATMENT TO MANUFACTURER'S RECOMMENDATION.
B) USE AN APPLICATION MACHINE THAT FEATURES POSITIVE DISPLACEMENT VOLUMETRIC METERING PUMPS CONTROLLED BY A HYDRAULIC POWER UNIT.
C) STORE COMPONENTS IN TEMPERATURE CONTROLLED RESERVOIRS CAPABLE OF MAINTAINING 100 DEGREES FAHRENHEIT (PLUS OR MINUS 10 DEGREES) TO INSURE OPTIMAL MIXING.
D) CHECK MIXING RATIO AT THE PUMP OUTLETS AS WELL AS CYCLE COUNTING CAPABILITIES TO MONITOR OUTPUT ON STANDARD FEATURES.
E) USE MOTIONLESS IN-LINE MIXING SO AS TO NOT OVERLY SHEAR THE MATERIAL TO ENTRAP AIR IN THE MIX.
F) MAXIMIZE MATERIAL WORKING TIME BY MIXING IT IMMEDIATELY BEFORE DISPENSING.

AGGREGATE SHALL BE ANGULAR, HAVING LESS THAN 0.2% MOISTURE AND FREE OF DIRT, CLAY, ASPHALT AND OTHER FOREIGN OR ORGANIC MATERIALS. AGGREGATE FOR ALL LAYERS SHALL BE BAUXITE OR FLINT ROCK PRODUCTS FLINT AND MEETS THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING
NO. 6	95-100
NO. 10	10-35
NO. 20	0-3

FULL AND PARTIAL DEPTH DECK REPAIR SHALL CURE A MINIMUM OF 28 DAYS BEFORE THE OVERLAY IS PLACED. TRAFFIC SHALL BE ALLOWED TO USE THE BRIDGE DURING THE CURING PERIOD OF THE PATCHES BUT NOT AFTER SHOTBLASTING. MAGNESIUM PHOSPHATE BASED MATERIALS WILL NOT BE ALLOWED.

THE CONCRETE DECK SURFACE SHALL BE CLEANED BY SHOTBLASTING TO REMOVE ANY OIL, DIRT, RUBBER, TRAFFIC STRIPING, OR ANY OTHER POTENTIAL DETRIMENTAL MATERIAL SUCH AS CURING COMPOUND AND LAITANCES, WHICH THE MANUFACTURER AND ENGINEER'S OPINION WOULD PREVENT PROPER BONDING AND CURING OF THE MATERIAL. IN AREAS WHERE SHOTBLASTING EQUIPMENT CAN NOT REACH (I.E., ALONG CURBS AND BRIDGE RAILS) SANDBLASTING IS PERMITTED TO AN EXTENT TO THE ENGINEER'S AND MANUFACTURER'S APPROVAL. IMMEDIATELY BEFORE APPLICATION, ALL PREPARED SURFACES SHALL BE CLEANED WITH COMPRESSED AIR OR VACUUMED TO REMOVE DUST AND DEBRIS.
ALL SURFACES THAT ARE TREATED SHALL BE DRY AT THE TIME OF APPLICATION. THE OVERLAY SHALL NOT BE APPLIED WHEN IT HAS RAINED 24 HOURS PRIOR TO, OR RAIN IS FORECAST WITHIN 8 HOURS AFTER, APPLICATION. THE MOISTURE CONTENT IN THE DECK SUBSTRATE SHALL BE TESTED. MOISTURE IS NOT TO EXCEED 4.5 PERCENT WHEN MEASURED BY ELECTRONIC METER. IF THE TEST SHOWS EXCESS MOISTURE, THE DECK SHALL CONTINUE TO DRY BEFORE APPLICATION PROCEEDS.

BLUSHING (A WAXY SURFACE COATING ON THE EPOXY) IS CAUSED BY THE REACTION OF MOISTURE WITH THE HARDENING AGENT. BLUSHING CREATES A SURFACE THAT MAKES FUTURE LAYERS DIFFICULT TO ADHERE. LIFTS THAT SHOW SIGNS OF BLUSHING SHALL BE REMOVED AND REPLACED PRIOR TO APPLICATION OF THE NEXT. THE COST TO REMOVE AND REPLACE THESE AREAS SHALL BE AT THE CONTRACTOR'S EXPENSE.

TRAFFIC, OTHER THAN APPLICATION EQUIPMENT, SHALL NOT BE ALLOWED ON ANY PORTION OF THE DECK THAT HAS BEEN SHOTBLASTED OR WHERE PART OF THE APPLICATION HAS BEEN PLACED.

SEE MANUFACTURER'S RECOMMENDATIONS FOR REQUIRED AMBIENT AND SURFACE TEMPERATURES AND HUMIDITY LIMITS FOR APPLICATION.

THE MANUFACTURER SHALL HAVE A REPRESENTATIVE ON THE JOB SITE AT ALL TIMES DURING APPLICATION AND CURE TIME. THE REPRESENTATIVE, ALONG WITH CONSULTATION WITH ENGINEER, MAY SUSPEND ANY ITEM OF WORK THAT IS SUSPECT AND DOES NOT MEET THE REQUIREMENTS OF THE SPECIFICATIONS. WORK SHALL NOT RESUME UNTIL THE ENGINEER AND REPRESENTATIVE ARE SATISFIED THAT APPROPRIATE REMEDIAL ACTION HAS BEEN TAKEN BY THE CONTRACTOR.

ALL COSTS FOR AGGREGATE, EPOXY FOR MINIMUM OF TWO LIFTS, SURFACE PREPARATION, LABOR AND ANY OTHER MISCELLANEOUS MATERIALS REQUIRED TO PLACE THIN OVERLAY SHALL BE INCLUDED IN ITEM NO. 617-04.01, TYPE 1 THIN EPOXY OVERLAY (EPOXY URETHANE), SY; OR 617-04.02, TYPE 2 THIN EPOXY OVERLAY (LO-MOD EPOXY), SY, AS CALLED FOR ON THE QUANTITY SHEET.

THICKNESS VERIFICATION: THE PROJECT ENGINEER SHALL BE NOTIFIED OF THE NUMBER OF GALLONS USED ON THE PROJECT WITH NOTARIZED QUANTITY STATEMENTS FROM THE CONTRACTOR AND THE MANUFACTURER. THE CONTRACTOR SHALL VERIFY TO TDOT THAT THE OVERLAY IS AN AVERAGE OF AT LEAST 3/8 INCH THICK AT THREE RANDOM LOCATIONS AGREED UPON BY THE PROJECT ENGINEER AND THE MATERIAL MANUFACTURER REPRESENTATIVE. IF

3/8 INCH AVERAGE IN NOT ACHIEVED, A RETEST SHAL BE PERFORMED IN ADJOINING AREAS. THIN AREAS SHALL BE RE-COATED AS DESCRIBED ABOVE BY THE CONTRACTOR AND RE-VERIFIED AT NO ADDITIONAL COST TO TDOT. THIS VERIFICATION MAY CONSIST OF CORES, HOLES, ETC., BUT IN ALL CASES, ANY DESTRUCTIVELY TESTED AREAS SHALL BE REPAIRED BY THE CONTRACTOR BEFORE FINAL ACCEPTANCE BY THE PROJECT ENGINEER.

NTPEP Evaluation

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, and NTPEP test data, must be submitted to the Division of Materials and Tests. The Department bases product approval on a review of NTPEP data.

Review of NTPEP Evaluation Data

Laboratory Data

The results of the shall meet the minimum requirements for SPxxx Polymer Concrete Overlays

Field Data

A three year field evaluation period through the NTPEP PCO test deck will be required prior to product approval. Sealing capabilities, bond strength and skid resistance will be evaluated on the in-place product.

After one year of the evaluation a manufacturer may submit the product to the Division of Materials and Tests for inclusion on the Departments Qualified Products List

AASHTO T 259
AASHTO T 260

A six-inch by twelve-inch hardened Portland cement concrete cylinder will be used as a test specimen. The six-inch by twelve-inch concrete cylinder will be sawed in half at an angle of ninety degrees from the twelve-inch axis. The concrete surface shall be abraded using sandblasting techniques. Next place a dam around the top edge of the concrete cylinder. The submitted product will be applied to the concrete surface as recommended by the manufacturer and allowed to cure. The concrete specimen will be covered with a 3% solution of NaCl to a depth of one-half inch and maintained for ninety days in accordance with AASHTO T-259.

After ninety days of exposure the specimen shall be allowed to dry and then the surface shall be wire brushed until all salt crystal buildup is completely removed. A test sample will be taken at the one-half to one-inch depth from each end of the test cylinder. The untreated end of the test cylinder will be the control. The chloride content of each sample shall be determined in accordance with the procedure in AASHTO T-260. The amount of NaCl absorbed into the test cylinder will be determined by subtracting the control from the sample taken from the area treated with the submitted product and covered with a 3% solution of NaCl.

The maximum amount of chloride ion penetration allowed is 1.0 pound per cubic yard of concrete.

SECTION D: TYPE 2 THIN OVERLAY (LOW-MODULUS EPOXY)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for low modulus epoxy thin overlay systems applied as thin overlays on bridge decks used to seal the decks and improve skid resistance.

SPECIFICATIONS

AASHTO T 259
AASHTO T 260
AASHTO T 277
NTPEP Evaluation

Special Notes

(Note 2) TYPE 2 THIN EPOXY OVERLAY SYSTEM – USE 2 LIFTS OF LOW MODULUS EPOXY AND AGGREGATE. TYPE 2 HAS THE OPTION OF USING THE APPLICATION EQUIPMENT DESCRIBED BELOW OR HAND MIXING.

THIN OVERLAY SYSTEM SHALL BE FROM THE QUALIFIED PRODUCTS LIST 23, SECTION D3. MINIMUM OVERLAY THICKNESS SHALL BE 3/8 INCH.

APPLICATION EQUIPMENT SHOULD :

A) BE CAPABLE OF METERING, MIXING AND DISTRIBUTING THE POLYMER AND PRETREATMENT TO MANUFACTURER'S RECOMMENDATION.
B) USE AN APPLICATION MACHINE THAT FEATURES POSITIVE DISPLACEMENT VOLUMETRIC METERING PUMPS CONTROLLED BY A HYDRAULIC POWER UNIT.
C) STORE COMPONENTS IN TEMPERATURE CONTROLLED RESERVOIRS CAPABLE OF MAINTAINING 100 DEGREES FAHRENHEIT (PLUS OR MINUS 10 DEGREES) TO INSURE OPTIMAL MIXING.
D) CHECK MIXING RATIO AT THE PUMP OUTLETS AS WELL AS CYCLE COUNTING CAPABILITIES TO MONITOR OUTPUT ON STANDARD FEATURES.
E) USE MOTIONLESS IN-LINE MIXING SO AS TO NOT OVERLY SHEAR THE MATERIAL TO ENTRAP AIR IN THE MIX.
F) MAXIMIZE MATERIAL WORKING TIME BY MIXING IT IMMEDIATELY BEFORE DISPENSING.

AGGREGATE SHALL BE ANGULAR, HAVING LESS THAN 0.2% MOISTURE AND FREE OF DIRT, CLAY, ASPHALT AND OTHER FOREIGN OR ORGANIC MATERIALS. AGGREGATE FOR ALL LAYERS SHALL BE BAUXITE OR FLINT ROCK PRODUCTS FLINT AND MEETS THE FOLLOWING GRADATION:

SIEVE SIZE	% PASSING
NO. 6	95-100
NO. 10	10-35
NO. 20	0-3

FULL AND PARTIAL DEPTH DECK REPAIR SHALL CURE A MINIMUM OF 28 DAYS BEFORE THE OVERLAY IS PLACED. TRAFFIC SHALL BE ALLOWED TO USE THE BRIDGE DURING THE CURING PERIOD OF THE PATCHES BUT NOT AFTER SHOTBLASTING. MAGNESIUM PHOSPHATE BASED MATERIALS WILL NOT BE ALLOWED.

THE CONCRETE DECK SURFACE SHALL BE CLEANED BY SHOTBLASTING TO REMOVE ANY OIL, DIRT, RUBBER, TRAFFIC STRIPING, OR ANY OTHER POTENTIAL DETRIMENTAL MATERIAL SUCH AS CURING COMPOUND AND LAITANCES, WHICH THE MANUFACTURER AND ENGINEER'S OPINION WOULD PREVENT PROPER BONDING AND CURING OF THE MATERIAL. IN AREAS WHERE SHOTBLASTING EQUIPMENT CAN NOT REACH (I.E., ALONG CURBS AND BRIDGE RAILS) SANDBLASTING IS PERMITTED TO AN EXTENT TO THE ENGINEER'S AND MANUFACTURER'S APPROVAL. IMMEDIATELY BEFORE APPLICATION, ALL PREPARED SURFACES SHALL BE CLEANED WITH COMPRESSED AIR OR VACUUMED TO REMOVE DUST AND DEBRIS.

ALL SURFACES THAT ARE TREATED SHALL BE DRY AT THE TIME OF APPLICATION. THE OVERLAY SHALL NOT BE APPLIED WHEN IT HAS RAINED 24 HOURS PRIOR TO, OR RAIN IS FORECAST WITHIN 8 HOURS AFTER, APPLICATION. THE MOISTURE CONTENT IN THE DECK SUBSTRATE SHALL BE TESTED. MOISTURE IS NOT TO EXCEED 4.5 PERCENT WHEN MEASURED BY ELECTRONIC METER. IF THE TEST SHOWS EXCESS MOISTURE, THE DECK SHALL CONTINUE TO DRY BEFORE APPLICATION PROCEEDS.

BLUSHING (A WAXY SURFACE COATING ON THE EPOXY) IS CAUSED BY THE REACTION OF MOISTURE WITH THE HARDENING AGENT. BLUSHING CREATES A SURFACE THAT MAKES FUTURE LAYERS DIFFICULT TO ADHERE. LIFTS THAT SHOW SIGNS OF BLUSHING SHALL BE REMOVED AND REPLACED PRIOR TO APPLICATION OF THE NEXT. THE COST TO REMOVE AND REPLACE THESE AREAS SHALL BE AT THE CONTRACTOR'S EXPENSE.

TRAFFIC, OTHER THAN APPLICATION EQUIPMENT, SHALL NOT BE ALLOWED ON ANY PORTION OF THE DECK THAT HAS BEEN SHOTBLASTED OR WHERE PART OF THE APPLICATION HAS BEEN PLACED.

SEE MANUFACTURER'S RECOMMENDATIONS FOR REQUIRED AMBIENT AND SURFACE TEMPERATURES AND HUMIDITY LIMITS FOR APPLICATION.

THE MANUFACTURER SHALL HAVE A REPRESENTATIVE ON THE JOB SITE AT ALL TIMES DURING APPLICATION AND CURE TIME. THE REPRESENTATIVE, ALONG WITH CONSULTATION WITH ENGINEER, MAY SUSPEND ANY ITEM OF WORK THAT IS SUSPECT AND DOES NOT MEET THE REQUIREMENTS OF THE SPECIFICATIONS. WORK SHALL NOT RESUME UNTIL THE ENGINEER AND REPRESENTATIVE ARE SATISFIED THAT APPROPRIATE REMEDIAL ACTION HAS BEEN TAKEN BY THE CONTRACTOR.

ALL COSTS FOR AGGREGATE, EPOXY FOR MINIMUM OF TWO LIFTS, SURFACE PREPARATION, LABOR AND ANY OTHER MISCELLANEOUS MATERIALS REQUIRED TO PLACE THIN OVERLAY SHALL BE INCLUDED IN ITEM NO. 617-04.01, TYPE 1 THIN EPOXY OVERLAY (EPOXY URETHANE), SY; OR 617-04.02, TYPE 2 THIN EPOXY OVERLAY (LO-MOD EPOXY), SY, AS CALLED FOR ON THE QUANTITY SHEET.
THICKNESS VERIFICATION: THE PROJECT ENGINEER SHALL BE NOTIFIED OF THE NUMBER OF GALLONS USED ON THE PROJECT WITH NOTARIZED QUANTITY STATEMENTS FROM THE CONTRACTOR AND THE MANUFACTURER. THE CONTRACTOR SHALL VERIFY TO TDOT THAT THE OVERLAY IS AN AVERAGE OF AT LEAST 3/8 INCH THICK AT THREE RANDOM LOCATIONS AGREED UPON BY THE PROJECT ENGINEER AND THE MATERIAL MANUFACTURER REPRESENTATIVE. IF 3/8 INCH AVERAGE IN NOT ACHIEVED, A RETEST SHAL BE PERFORMED IN ADJOINING AREAS. THIN AREAS SHALL BE RE-COATED AS DESCRIBED ABOVE BY THE CONTRACTOR AND RE-VERIFIED AT NO ADDITIONAL COST TO TDOT. THIS VERIFICATION MAY CONSIST OF CORES, HOLES, ETC., BUT IN ALL CASES, ANY DESTRUCTIVELY TESTED AREAS SHALL BE REPAIRED BY THE CONTRACTOR BEFORE FINAL ACCEPTANCE BY THE PROJECT ENGINEER.

NTPEP Evaluation

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, and NTPEP test data, must be submitted to the Division of Materials and Tests. The Department bases product approval on a review of NTPEP data.

Review of NTPEP Evaluation Data

Laboratory Data

The results of the shall meet the minimum requirements for SPxxx Polymer Concrete Overlays

Field Data

A three year field evaluation period through the NTPEP PCO test deck will be required prior to product approval. Sealing capabilities, bond strength and skid resistance will be evaluated on the in-place product.

After one year of the evaluation a manufacturer may submit the product to the Division of Materials and Tests for inclusion on the Departments Qualified Products List

AASHTO T 259
AASHTO T 260

A six-inch by twelve-inch hardened Portland cement concrete cylinder will be used as a test specimen. The six-inch by twelve-inch concrete cylinder will be sawed in half at an angle of ninety degrees from the twelve-inch axis. The concrete surface shall be abraded using sandblasting techniques. Next place a dam around the top edge of the concrete cylinder. The submitted product will be applied to the concrete surface as recommended by the manufacturer and allowed to cure. The concrete specimen will be covered with a 3% solution of NaCl to a depth of one-half inch and maintained for ninety days in accordance with AASHTO T-259.

After ninety days of exposure the specimen shall be allowed to dry and then the surface shall be wire brushed until all salt crystal buildup is completely removed. A test sample will be taken at the one-half to one-inch depth from each end of the test cylinder. The untreated end of the test cylinder will be the control. The chloride content of each sample shall be determined in accordance with the procedure in AASHTO T-260. The amount of NaCl absorbed into the test cylinder will be determined by subtracting the control from the sample taken from the area treated with the submitted product and covered with a 3% solution of NaCl.

The maximum amount of chloride ion penetration allowed is 1.0 pound per cubic yard of concrete.

QPL 24 CONCRETE LATEX MODIFIERS

CONCRETE LATEX MODIFIERS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for concrete latex modifiers used to densify bridge deck concrete to protect the structural concrete from deterioration caused by absorption of deicing salts and water.

SPECIFICATIONS

TDOT 619
AASHTO T 259
AASHTO T 260

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

A six-inch by twelve-inch hardened Portland cement concrete cylinder will be used as a test specimen. The cylinder shallbe molded using the mix design specified in the above specifications. The six-inch by twelve-inch concrete cylinder will be sawed in half at an angle of ninety degrees from the twelve-inch axis. The concrete surface shall be abraded using sandblasting techniques. Next place a dam around the top edge of the concrete cylinder. The concrete specimen will be covered with a 3% solution of NaCl to a depth of one-half inch and maintained for ninety days in accordance with AASHTO T 259.

After ninety days of exposure the specimen shall be allowed to dry and then the surface shall be wire brushed until all salt crystal buildup is completely removed. A test sample will be taken at the one-half to one-inch depth from each end of the test cylinder. The untreated end of the test cylinder will be the control. The chloride content of each sample shall be determined in accordance with the procedure in AASHTO T 260. The amount of NaCl absorbed into the test cylinder will be determined by subtracting the control from the sample taken from the area treated with the submitted product and covered with a 3% solution of NaCl.

Approval of the product will be based on the following minimum criteria:

Results of 90 day ponding test - <0.5 lbs/cy chloride ion penetration.

Modifier shall contain a minimum of 46% solids.

QPL 25 PRESSURE INJECTED EPOXY SYSTEMS

PRESSURE INJECTED EPOXY SYSTEMS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for pressure injected epoxy systems used to make structural repairs to cracked concrete and other materials.

SPECIFICATIONS

ASTM C 881 and 882

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

The product will be mixed according to the manufacturer's recommendations and must meet the following requirements.

Slant Shear Hardened to Hardened Concrete

Age	PSI
2 Day	1000
14 Days	1500

QPL 26 ANTI GRAFFITI PRODUCTS

ANTI GRAFFITI PRODUCTS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for anti graffiti products pre-applied to concrete surfaces to allow removal of graffiti.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

Approval is based on a field demonstration by the manufacturer which shows that the product allows for the complete removal of paints from a concrete surface.

QPL 27 REBAR SPLICES

REBAR SPLICES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for mechanical rebar splices used for splicing of reinforcing steel.

SPECIFICATIONS

TDOT 907.01
ASTM A 615
ASTM D 3963

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and
a sample of the product being tested must be submitted to the Division of Materials and Tests.

The mechanical splice is installed on a rebar representative of the size and type application (to be agreed upon by the manufacturer and TDOT) according to the manufacturer's recommendations. The unit is then tested for tensile pullout strength.

A passing test is indicated by the breaking of the rebar or by exceeding the manufacturer's recommended load capacity for the splice.

QPL 28 PILE ACCESSORIES

PILE ACCESSORIES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for pile accessories (pile tips and splices) for steel piles.

SPECIFICATIONS

TDOT 606
TDOT 908.15
ASTM A 36
ASTM A148
ASTM A 27
Standard Drawing STD-5-1

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

Product approval is based on certification by the manufacturer that the product meets the above mentioned specifications.

QPL 29 FLASHING ARROW PANNELS/ARROW BOARDS

FLASHING ARROW PANNELS/ARROW BOARDS

PROCEDURES

GENERAL

This procedure outlines the Department's approval process for the use of Flashing Arrow Panels/Arrow boards used to provide additional warning and directional information to assist in merging and controlling road users through or around a temporary traffic control zone.

SPECIFICATIONS

Manual on Uniform Traffic Control Devices (MUTCD)

EVALUATION PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable and product data information must be submitted to the Division of Materials and Tests.

The Tennessee Department of Transportation utilizes National Transportation Product Evaluation Program data for approval of Flashing Arrow Panels/Arrow Boards. All units shall have completed a full evaluation cycle (1-year) by the NTPEP. Upon conclusion of the full evaluation cycle, the prospective producer or vendor must provide complete data on the unit evaluated from the test decks to the Division of Materials and Tests. All units meeting the following minimum requirements based on NTPEP data will be placed on the Department's Qualified Products List:

1) In the operating mode the unit shall be capable of performing all of the following displays:
   a) either flashing arrow, sequential arrow or sequential chevron.
   b) flashing double arrow.
   c) Flashing caution.
2) All elements shall be yellow. Minimum number of elements and size of sign panel shall be as follows:
   a) Type B – 13 elements, 60" x 30" sign panel.
   b) Type C – 15 elements, 96" x 48" sign panel
3) Minimum visibility and legibility distances shall be as follows for both day and night tests during both winter and summer seasons:
   a) Type B – visibility 3960 feet, legibility 2500 feet.
   b) Type C – visibility 5280 feet, legibility 3000 feet.
4) The unit must have a primary and backup power source.

LIST 29. FLASHING ARROW PANNELS/ARROW BOARDS (CONTINUED)

EVALUATION PROCEDURES (CONTINUED)

5) The unit must pass the NTPEP durability test.
6) The unit must be capable of adjusting it's brightness from daylight to night time conditions.
7) The unit must have a minimum reliability from it's primary power supply for a minimum of 20 days for solar units (24 hours for diesel units) for both the winter and summer tests. Gasoline powered units are not allowed.

In addition to the above, Type C Arrow Panels/Arrow Boards must include mounting and transporting equipment (trailer mounted with all applicable lights and hardware).

If the product meets all of the above requirements, it will be approved and added to the Department's Qualified Products List. The Department reserves the right to reject any product, which does not demonstrate satisfactory performance in any of the above tests. The Department also reserves the right to remove any product from the Qualified Products List that does not perform satisfactorily under real life traffic conditions.

NOTE: This procedure is considered tentative until approval by the Department's Specification Committee. Until sometime in the future to be determined to add products solely based on NTPEP evaluation, the Department will maintain this Qualified Products List based on this procedure and the current procedure of a one month evaluation of the unit by the Materials and Test Division. Products meeting approval under either evaluation procedure will be added to the QPL.

QPL 30 PORTABLE CHANGEABLE MESSAGE SIGNS

PORTABLE CHANGEABLE MESSAGE SIGNS

PROCEDURES

GENERAL

This procedure outlines the Department's approval process for the use of Portable Changeable Message Signs (PCMS) used to assist in the handling of traffic in work zones.

SPECIFICATIONS

Manual on Uniform Traffic Control Devices (MUTCD)

EVALUATION PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable and product data information must be submitted to the Division of Materials and Tests.

The Tennessee Department of Transportation utilizes National Transportation Product Evaluation Program data for approval of PCMS. All PCMS shall have completed a full evaluation cycle (1-year) by the NTPEP. Upon conclusion of the full evaluation cycle, the prospective producer or vendor must provide complete data on the unit evaluated from the test decks to the Division of Materials and Tests. All units meeting the following minimum requirements based on NTPEP data will be placed on the Department's Qualified Products List:

1) The control system must have a keyboard to allow programming of user defined messages.
2) The unit must have a primary and backup power source.
3) The unit must be capable of adjusting it's brightness from daylight to night time conditions.
4) The unit must pass the NTPEP durability test.
5) The unit must be capable displaying 3 lines of legend.
6) The unit must have a minimum reliability from it's primary power supply for a minimum of 14 days for solar units (5 days for diesel units) for both the winter and summer tests. Gasoline powered units are not allowed.
7) The unit must have a minimum visibility of 3000 feet for both day and night tests during both winter and summer seasons.
8) The unit must have a minimum legibility of 650 feet for both day and night tests during both winter and summer seasons.

LIST 30. PORTABLE CHANGEABLE MESSAGE SIGNS (CONTINUED)

EVALUATION PROCEDURES (CONTINUED)

In addition to the above the PCMS must be a self-contained unit including a control system with keyboard , primary and backup power source, mounting and transporting equipment (trailer mounted with all applicable lights and hardware) and a message sign panel whose bottom is capable of being raised a minimum of 7 feet above the roadway.

If the product meets all of the above requirements, it will be approved and added to the Department's Qualified Products List. The Department reserves the right to reject any product, which does not demonstrate satisfactory performance in any of the above tests. The Department also reserves the right to remove any product from the Qualified Products List that does not perform satisfactorily under real life traffic conditions.

NOTE: This procedure is considered tentative until approval by the Department's Specification Committee. Until sometime in the future to be determined to add products solely based on NTPEP evaluation, the Department will maintain this Qualified Products List based on this procedure. The Department currently utilizes Special Provisions in Contracts where PCMS are required. Products meeting approval under either of the above procedures will be acceptable for use on TDOT projects.

QPL 31 HIGH FRICTION SURFACE TREATMENTS FOR ROADWAYS

POLYMER MODIFIED EPOXY SYSTEMS

SECTION A: ASPHALT ROADWAY

SECTION B: CONCRETE ROADWAY

SECTION C: CONCRETE ABOVE GRADE SURFACES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for a high friction surface treatments for roadways, applied as thin overlays on bridge decks or roadways used to improve skid resistance using bauxite aggregate only.

SPECIFICATIONS

PP-79-14 Standard Practice for High Friction Surface Treatment for Asphalt and Concrete Pavements

SP406 HFST

AASHTO T 277

NTPEP Evaluation

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, and NTPEP test data, must be submitted to the Division of Materials and Tests. The Department bases product approval on a review of NTPEP data.

Review of NTPEP Evaluation Data

Laboratory Data

The results of the shall meet the minimum requirements for PP-79-14 Standard Practice for High Friction Surface Treatment for Asphalt and concrete Pavements and SP406 HFST

Field Data

A three year field evaluation period through the NTPEP PCO test deck will be required prior to product approval. Sealing capabilities, bond strength and skid resistance will be evaluated on the in-place product.

After one year of the evaluation a manufacturer may submit the product to the Division of Materials and Tests for inclusion on the Departments Qualified Products List

QPL 32 RECYCLED PLASTIC GUARDRAIL BLOCKOUTS

RECYCLED PLASTIC GUARDRAIL BLOCKOUTS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for recycled plastic guardrail blockouts.

SPECIFICATIONS

Refer to Standard Drawings S-GR-12 and S-GR-13

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information including letter from the FHWA stating that the product meets NCHRP-350 guidelines and a sample of the product being tested must be submitted to the Division of Materials and Tests. A field demonstration may also be required at the Department's discretion.

Products meeting the above requirements will be presented to the Department's Traffic Control Products Materials Committee (TCPMC) which will make a recommendation as to whether the product will be added to the Qualified Products List.

QPL 33 MASH OR NCHRP-350 TL-3 APPROVED SIGN POST HARDWARE

SECTION A: SMALL ROADSIDE SIGN SUPPORTS FOR USE IN STANDARD DRAWINGS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for Small Breakaway Roadside Sign Supports consisting of fracture or slip base systems.

SPECIFICATIONS

Tennessee Department of Transportation Roadway Standard Drawings Library
AASHTO Roadside Design Guide (See Chapter 4)
AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information including the FHWA Eligibility Letter stating that the product meets TL-3 criteria under either NCHRP-350 or MASH guidelines and a sample of the product being tested must be submitted to the Division of Materials and Tests. A field demonstration may also be required at the Department's discretion.

The products for each of the sections have been pre-qualified for use. The products on this list must meet the material requirements set forth in the standard drawings. Upon any change of the product the manufacturer must submit the changes for approval and placement on the Qualified Products List.

SECTION A: SMALL ROADSIDE SIGN SUPPORTS FOR USE IN STANDARD DRAWINGS
(CONT.)

Items Numbers

(T-S-23A) MULTI-DIRECTIONAL SLIP BASE BREAKAWAY SQUARE TUBE SIGN SUPPORT

713.11.21	P POST SLIP BASE	EACH

(T-S-23B) MULTI-DIRECTIONAL SLIP BASE BREAKAWAY STRUCTURAL PIPE SIGN SUPPORT

713.11.23	ROUND POST SLIP BASE	EACH

(T-S-23C) BREAKAWAY U-POST SIGN SUPPORTS

713.11.22	U POST SLIP BASE	EACH

(T-S-12) STEEL GROUND MOUNTED SIGNS, BREAK-AWAY TYPE POST FOOTING DETAILS, SQUARE TUBES

713.11.XX

(T-S-17) STANDARD GROUND MOUNTED SIGN USING PERFORATED/KNOCKOUT SQUARE TUBE

713.11.XX

(T-S-21) DETAILS FOR SIGNS MOUNTED ON CONCRETE MEDIAN BARRIERS

713-30.09	BARRIER MOUNTED SIGN SUPPORT (DESCRIPTION)	EACH
713-30.10	BARRIER MOUNTED SIGN SUPPORT (DESCRIPTION)	EACH

SECTION B: LARGE ROADSIDE SIGN SUPPORTS FOR USE IN STANDARD DRAWINGS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for Large Breakaway Roadside Sign Supports consisting of fracture or slip base systems.

SPECIFICATIONS

Tennessee Department of Transportation Roadway Standard Drawings Library

AASHTO Roadside Design Guide (See Chapter 4)

AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information including ~~letter from~~ the FHWA Eligibility Letter stating that the product meets TL-3 criteria under either NCHRP-350 or MASH guidelines and a sample of the product being tested must be submitted to the Division of Materials and Tests. A field demonstration may also be required at the Department's discretion.

The products for each of the sections have been pre-qualified for use. The products on this list must meet the material requirements set forth in the standard drawings. Upon any change of the product the manufacturer must submit the changes for approval and placement on the Qualified Products List.

QPL 34 APPROVED ROADSIDE SAFETY HARDWARE

SECTION A: ROADSIDE BARRIERS

LIST 34.SECTION A: GUARDRAIL SYSTEMS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for guardrail systems.

SPECIFICATIONS

TDOT Standard Operating Procedures

6. Specialty Items

6-1: Procedures and Qualifications for Guardrail Manufacturer and Supplier December 20, 2011

PROCEDURES

All guardrail systems specified on TDOT projects must be accepted as crashworthy by the FHWA in accordance with either *NCHRP Report 350* or the *AASHTO Manual for Assessing Safety Hardware (MASH).* A completed Product Evaluation Form, MSDS sheets, if applicable, product data information including acceptance letter from FHWA and a sample of the product being tested must be submitted to the Division of Materials and Tests. A field demonstration may also be required at the Department's discretion.

LIST 34.SECTION A: HIGH TENSION CABLE GUARDRAIL SYSTEMS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for high tension guardrail systems.

SPECIFICATIONS

Maintenance Division

SPECIAL NOTES REGARDING LONGITUDINAL CABLE BARRIER

SECTION B: W-BEAM GUARDRAIL END TERMINALS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for roadside hardware.

SPECIFICATIONS

None

PROCEDURES

Only tangential guard rail end terminals should be evaluated and used for the TDOT projects located on NHS.

All guardrail end terminals specified on TDOT projects must be accepted as crashworthy by the FHWA in accordance with either *NCHRP Report 350* or the *AASHTO Manual for Assessing Safety Hardware (MASH)* for Test Level 3 (TL-3). A completed Product Evaluation Form, MSDS sheets, if applicable, product data information including acceptance letter from FHWA and a sample of the product being tested must be submitted to the Division of Materials and Tests. A field demonstration may also be required at the Department's discretion.

Products meeting the above requirements will be presented to the Department's Traffic Control Products Materials Committee (TCPMC) which will make a recommendation as to whether the product will be added to the Qualified Products List.

SECTION C: CRASH CUSHIONS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for roadside hardware.

Crash cushion (impact attenuators) are used to shield fixed roadside objects located within the clear zone such as bridge piers, overhead sign supports, ends of retaining walls, concrete median barriers, bridge abutments, and bridge railings.

Crash cushions operate on the basis of energy absorption or energy transfer by either decelerating a vehicle to a controlled stop after a frontal impact, or by redirecting a vehicle away from a fixed object after a side impact.

SPECIFICATIONS

TDOT Roadway Design Guidelines
AASTHO, Roadside Design Guide

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information including acceptance letter from FHWA and a sample of the product being tested must be submitted to the Division of Materials and Tests. A field demonstration may also be required at the Department's discretion.

All crash cushions specified on TDOT projects must be accepted as crashworthy by the FHWA in accordance with either *NCHRP Report 350* or the *AASHTO Manual for Assessing Safety Hardware (MASH)* for Test Level 3 (TL-3). This requirement shall apply to all temporary work zone and permanent installations.

Products meeting the above requirements will be presented to the Product Evaluation Committee which will make a recommendation as to whether the product will be added to the Qualified Products List.

LIST 34. SECTION C: NON-GATING (REDIRECTIVE) SYSTEMS

GENERAL

Crash cushions of this type, referred to as compression crash cushions require a rigid support back-up structure or foundation to resist the impact force of the vehicle utilizing the energy-absorbing material. These types of crash cushions are considered non-gating, re-directive systems, in that they are not intended to capture the vehicle upon impact (unless frontal impact occurs); but rather, redirect the vehicle after collision. Various systems are available that offer re-directive capabilities on one or both sides of the system.

The two types of non-gating, re-directive crash cushion systems considered acceptable for use are reusable, and low maintenance (self-restoring).

LIST 34. SECTION C: NON-GATING, REUSEABLE SYSTEMS

A reusable system is to only be used on a roadway with ADT of less than 25,000 and a distance from travel way of greater than 10 feet. Only TL-3 systems must be used for TDOT projects.
A reusable system may be used at locations can be impacted a maximum of 1 or 2 times per year
All systems should have a reasonable repair time.

LIST 34. SECTION C: NON-GATING, LOW MAINTANANCE SYSTEMS

Self-restoring systems should be used at roadway locations, with ADT of more than 25,000 and/or a distance from travel way of less than 10 feet, where a high frequency of impact is expected. They should be installed in high-speed, high-traffic volume ramps or medians.

After an impact occurs low maintenance system should be restored to its original condition and length as soon as possible. All system components should be inspected for damage. Only TL-3 systems shall be used for TDOT projects.

LIST 34. SECTION C: GATING SAND-FILLED ARRAYS

GENERAL

For gating systems, a vehicle's kinetic energy is transferred to the cushion by accelerating and moving various components of the cushion during an impact. This expandable mass will normally consist of containers filled with sand. Sometimes referred to as inertial crash cushions, these types of systems require no rigid backup or support to resist a vehicle's impact force, and may be used for both temporary and permanent installations. Water filled systems must be used for temporary work zone applications only.
.

ONLY TL-3 SYSTEMS SHALL BE USED ON NATIONAL HIGHWAY SYSTEM

SECTION D: TEMPORARY WORK ZONE TRAFFIC CONTROL

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for roadside hardware.

SPECIFICATIONS

None

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information including acceptance letter from FHWA and a sample of the product being tested must be submitted to the Division of Materials and Tests. A field demonstration may also be required at the Department's discretion.

The FHWA guidance on crash testing of work zone traffic control devices is contained in two memoranda. The first, dated July 25, 1997, titled "INFORMATION: Identifying Acceptable Highway Safety Features," established four categories of work zone devices: Category I devices are those lightweight devices which are to be self-certified by the vendor, Category II devices are other lightweight devices which need individual crash testing but with reduced instrumentation, Category III devices are barriers and other fixed or heavy devices also needing crash testing with normal instrumentation, and Category IV devices are trailer-mounted lighted signs, arrow panels, etc. for which crash testing requirements have not yet been established. The second guidance memorandum was issued on August 28, 1998, and is titled "INFORMATION: Crash Tested Work Zone Traffic Control Devices." This later memorandum lists devices that are acceptable under Categories I, II, and III.

Other than the above categorization, all temporary work zone devices specified on TDOT projects must be accepted as crashworthy by the FHWA in accordance with either *NCHRP Report 350* or the *AASHTO Manual for Assessing Safety Hardware (MASH)* for Test Level 3 (TL-3).

Products meeting the above requirements will be presented to the Department's Traffic Control Products Materials Committee (TCPMC) which will make a recommendation as to whether the product will be added to the Qualified Products List.

LIST 34.SECTION D: NON-GATING, WORK ZONE ATTENUATORS (TL-3)

ALL NON-GATING ATTENUATOR SYSTEMS LISTED UNDER SECTION C MAY BE USED FOR TEMPORARY WORK ZONE APPLICATION. CONCRETE PAD MAY BE ELIMINATED FOR SYSTEMS PROVIDING ALTERNATIVE ATTACHMENT DETAIL.

LIST 34. SECTION D: GATING WATER FILLED CRASHED CUSHIONS

THEY MUST BE INSTALLED AT LOCATIONS WHERE PROPER BUFFER ZONE IS AVAILABLE. OTHERWISE A CRASH CUSHION FROM **SECTION C: NON-GATING SYSTEM SHALL BE USED.**

SECTION E: WORK ZONE CHANNELIZING DEVICES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for roadside hardware.

SPECIFICATIONS

Roadside Design Guideline

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information including acceptance letter from FHWA and a sample of the product being tested must be submitted to the Division of Materials and Tests. A field demonstration may also be required at the Department's discretion.

All crash cushions specified on TDOT projects must be accepted as crashworthy by the FHWA in accordance with either *NCHRP Report 350* or the *AASHTO Manual for Assessing Safety Hardware (MASH)* for Test Level 3 (TL-3). To be crashworthy, longitudinal barriers shall be able to contain, redirect, and shield vehicles from work zone areas.

Products meeting the above requirements will be presented to the Department's Traffic Control Products Materials Committee (TCPMC) which will make a recommendation as to whether the product will be added to the Qualified Products List.

LIST 34. SECTION E: WATER FILLED PLASTIC CHANNELIZING DEVICES

DEVICES UNDER THIS CATEGORY SHALL BE USED IN WORK ZONES AS TRAFFIC CHANNELIZING DEVICES ONLY. **THEY SHOULD BE NOT USED AS WORK ZONE BARRIERS.**

SECTION F: MISCELLANEOUS ROADSIDE HARDWARE

GENERAL

This evaluation procedure outlines the Department's approval process for roadside hardware.

SPECIFICATIONS

Roadside Design Guideline

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information including acceptance letter from FHWA and a sample of the product being tested must be submitted to the Division of Materials and Tests. A field demonstration may also be required at the Department's discretion.

All products specified on TDOT projects must be accepted as crashworthy by the FHWA in accordance with either *NCHRP Report 350* or the *AASHTO Manual for Assessing Safety Hardware (MASH).*

Products meeting the above requirements will be presented to the Department's Traffic Control Products Materials Committee (TCPMC) which will make a recommendation as to whether the product will be added to the Qualified Products List.

QPL 35 AGGREGATE

SECTION A: ROTARY KILN EXPANDED LIGHTWEIGHT AGGREGATE

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for lightweight aggregates used in structural concrete mix designs. The lightweight aggregate shall be produced by fusing raw shale, slate or clay in a rotary kiln producing particles conforming to the grading requirements for 19 millimeters (3/4 inch) to 4.75 millimeters (no. 4) as shown in Table 1 of AASHTO M 195.

SPECIFICATIONS

TDOT 604.03 and 903.19
AASHTO M 195
AASHTO T 85
AASHTO T 104
AASHTO T 96
AASHTO T 161

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, type of raw material, location of raw material and a 150 pound sample of the course material for which approval is requested must be submitted to the Division of Materials and Tests.

Also, the manufacturer shall certify that the material meets the above specifications and provide independent test results in accordance with the above specifications. Verification testing will be performed by the Department prior to adding the product to the Qualified Products List.

In order to remain on the QPL, 50 pounds of the material shall be submitted to TDOT every six months for verification testing.

QPL 36 GEOTEXTILES & GEOSYNTHETICS

SECTION: A. GEOTEXTILES & GEOSYNTHETICS (TYPE I, II, III & IV)

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for Geotextiles and Geosynthetics. This list **does not address** the Tennessee Department of Transportation Standard Drawings for Geotextiles and Geosynthetics.

SPECIFICATIONS

740.01 Geotextiles and Geosynthetics

PROCEDURES

The Tennessee Department of Transportation – TDOT utilizes The National Transportation Product Evaluation Program (NTPEP) as an engineering technical service program.

NTPEP is operated by the American Association of State Highway and Transportation Officials (AASHTO) with cooperative partnership from the geosynthetics industry, through the Geosynthetics Materials Association (GMA).

NTPEP is a voluntary program whereby manufacturers and suppliers of geotextiles for highway applications may submit their products for testing through GAI-LAP® accredited labs.

The NTPEP Geotextiles laboratory testing and reporting is conducted by AASHTO member departments on behalf of NTPEP. The lead member department is the New York State Department of Transportation - Geotechnical Engineering Bureau. Arizona Department of Transportation is a support state when additional products are submitting, which increase work loads.

Manufacturers/Suppliers may submit their Geotextiles to NTPEP throughout the year, by accessing the NTPEP Internet website, http://www.ntpep.org .

The Tennessee Department of Transportation – TDOT reviews the data from the NTPEP report and places the products on the QPL based on the tests results below that meet specification 740.01.

ASTM D4751 – Apparent Opening Size
ASTM D4491 – Permittivity
ASTM D4632 – Grab Strength
ASTM D4533 – Trapezoid Tearing Strength
ASTM D4833 – Puncture Resistance
ASTM D5261 – Mass/Unit Area

SECTION: B. GEOTEXTILES & GEOSYNTHETICS FOR USE IN STANDARD DRAWINGS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for Geotextiles and Geosynthetics used for Standard Drawings.

SPECIFICATIONS

740.01 Geotextiles and Geosynthetics

FILTER BARRIER (EC-STR-3A) & TEMPORARY SILT FENCE (EC-STR-3B)

TEMPORARY SILT FENCE WITH BACKING (EC-STR-3C)

ENHANCED SILT FABRIC (EC-STR-3D)

PROCEDURES

The products for each of the sections have been pre qualified for use. The products on this list must meet the material requirements set forth in the standard drawings. Upon any change of the product the manufacturer must submit the changes for approval and placement on the Qualified Products List.

QPL 37 ADA DETECTABLE WARNING TRUNCATED DOMES

ADA DETECTABLE WARNING TRUNCATED DOMES

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for ADA Truncated Detectable Warnings used for Standard Drawings.

SPECIFICATIONS

TDOT STANDARD DRAWING (RP-H-3): HANDICAP RAMP AND TRUNCATED DOME SURFACE DETAIL

PROCEDURES

The products for each of the sections have been pre qualified for use. The products on this list must meet the requirements set forth in the standard drawings. Upon any change of the product, the manufacturer must submit the changes for approval and placement on the Qualified Products List.

ALERT
Changes to RECP New requirements as of MAY 1st, 2015

Revised (04-01-13)

QPL 38: RETAINING WALL SYSTEMS

RETAINING WALL SYSTEMS

NON PROPRIETARY CAST-IN-PLACE CONCRETE CANTILEVER, GRAVITY WALLS AND SOLDIER PILE WALLS (NO ANCHORS)

SECTION A: PROPRIETARY GRAVITY WALL SYSTEMS
QPL.38.001: BIN/CRIB/PRECAST LARGE FORMAT BLOCKS

QPL.38.002 GABION WALLS

SECTION B: MECHANICALLY STABILIZED EARTH WALL SYSTEMS
QPL.38.003: MSE WALL (SEGMENTAL, PRECAST FACING)

QPL.38.004: MSE WALL (MODULAR BLOCK FACING)

QPL.38.008: MSE WALL (OTHER FACING TYPES)

SECTION C: SPECIALTY WALL TYPES
QPL.38.005: ANCHOR WALLS, SOIL NAIL WALLS, SECANT/TANGENT WALLS ENGINEERING/INSTALL

QPL.38.006: ANCHOR WALLS, SOIL NAIL WALLS, SECANT/TANGENT WALLS ENGINEERING

QPL.38.007: ANCHOR WALLS, SOIL NAIL WALLS, SECANT/TANGENT WALLS INSTALL

INTRODUCTION
TDOT Contract Plans will specify retaining wall locations and specific retaining wall type(s) which must be utilized for the given wall location. For a given retaining wall, a single wall type or several wall types may be listed. For non-proprietary retaining walls such as cast-in-place concrete cantilever walls or soldier pile lagging walls (no anchors) there will not be an approved QPL 38 list. General requirements for design and construction for the non-proprietary walls are summarized below. Further details regarding design and construction requirements can be seen in the project contract plans and Special Provision 624.

NON-PROPRIETARY WALLS: CAST-IN-PLACE CONCRETE CANTILEVER WALLS, CAST-IN-PLACE GRAVITY WALLS, SOLDIER PILE LAGGING WALLS (NO ANCHORS)

See contract plans and Special Provision 624 for design requirements of these walls and for contractor prepared plans (also known as Shop Drawings) and calculations. No Qualified Products List will be generated for these type walls. Wall designers, contractors and material suppliers must conform to applicable TDOT requirements.

Initial System Approval.

PROPRIETARY RETAINING WALL SYSTEMS APPROVAL PROCESS (Section A and B).

This document provides requirements for proprietary retaining wall systems as listed for Sections A and B that are desired to be TDOT approved retaining wall systems. All proprietary retaining walls constructed within TDOT right-of-way or maintained by TDOT must be on the Approved Retaining Wall Systems List-QPL 38.

For retaining wall systems to be included in the Approved Retaining Wall Systems List, the system must go through an approval process as outlined below:

Step 1: Request for Consideration

A proprietary wall system owner's representative shall request in writing to the New Product Evaluation Section-Division of Materials and Tests the desire to have the wall system reviewed and placed on the QPL 38. The request shall provide a brief summary of the wall system including its basic theory and past history of successful construction on transportation related projects.

The New Product Evaluation Section will distribute copies of the request to persons in the Structures Division, Materials and Tests Field Operations and Geotechnical Section and any other persons within TDOT whom it may be determined desirable to review the request. These persons will review the submittal and will base whether the wall system is acceptable for consideration on the following factors:

(A) Does the system have a sound theoretical and practical basis for the engineers to evaluate its claimed performance?
(B) Does the proposed system demonstrate acceptable past experience in construction and performance?
(C) Does the system demonstrate acceptable long term level of maintenance issues and maintenance costs?

Step 2: Wall System Submittal

If the wall system is determined to be accepted for consideration, the New Products Evaluation Section will contact the wall system representative to request a package to be submitted which must include one of the following three options for submittal:

Option I: A system evaluation final report prepared by the Highway Innovative Technology Evaluation Center (HITEC). For information regarding the HITEC process call Muhammad Amer (703) 295-6392, mamer@asce.org.

Option II:

A well-organized document including but not limited to (Note: for certain wall types some of the items listed below will not be applicable):

A. wall system history, including the year it was first used,

B. wall system theory and how the theory was developed,

C. laboratory and field experiments which support the theory,

D. practical applications with descriptions, color photos, and/or videotape,

E. details of wall elements, including facing unit, metallic/geosynthetics reinforcement, connection devices, backfill, leveling pad, bearing pad, filter fabric, drainage elements, coping traffic barrier, etc.,

F. analysis of structural elements, design calculations, factors of safety, estimated life,

G. corrosion design procedure for metallic reinforcement, including procedures and data for field and laboratory evaluation.,

H. creep, durability, installation damage factors for geosynthetics reinforcement, including procedures and data for field and laboratory evaluation,

I. detailed long hand internal and external design calculations for the design cases, using LRFD methodology as shown in Appendix A,

J. explanation of computer software used in the design process along with sample printout of input and output results, using LRFD methodology for the design cases shown in Appendix A,

K. limitations and disadvantages of the system,

L. performance history, any known problems or failures of the system, including where, when how and why it failed,

M. list of users (other states, etc.) including contact names, addresses and phone numbers.

N. documentation that at least 25,000 square feet of the specific wall system has been completed on either a Federal or State highway project.

O. sample material and construction control specifications-showing material type, quality, certifications, field testing, acceptance and rejection criteria (tolerances and placement procedures,

P. a well-documented field construction manual describing in detail, and with illustrations where necessary, the step by step construction sequence, and any special equipment required,

Q. typical unit costs, supported by data from actual projects,

R. quality control/quality assurance procedures for materials, wall system, and engineering,

S. an explanation of the design process used for actual project designs. That is, does the Wall System owner have in-house engineers who provide the designs for specific projects or does the Wall system Owner allow independent engineers to provide designs of the wall system. If the latter, does the Wall System Owner provide any quality control measures for design oversight. Is the Engineer–of-Record properly defined for the wall design?

T. Information on wall system warranties and insurance coverage for responsible party.

U. Independent Design Review: At no expense to TDOT, the Wall System Owner must have the total wall system reviewed by an independent professional engineer(s), who is registered in Tennessee and is acceptable to TDOT engineers. The independent professional engineer(s) shall

review all wall components, materials specifications, design concept, calculations, and construction procedures, for compliance with AASHTO and TDOT criteria. The independent professional engineer shall submit a formal evaluation report which determines if the wall system meets AASHTO and TDOT design, construction and material property criteria.

Option III: If the Wall System Owner has obtained approval from two other State DOT offices which utilize wall system approval procedures equivalent to Options I or II described above, the Wall System Owner may submit those documents as well as documentation of such approval by the two State DOT offices.

Regardless of the Option under which a retaining wall system is submitted to TDOT for review, TDOT reserves the right to request additional information regarding both technical and/or non-technical aspects of the wall system as deemed necessary for review and approval.

Department Action

The submittal package request will be disseminated by the New Products Evaluation Office to appropriate representatives of the Division of Structures, the Division of Materials and Tests and the Construction Division. The Department's position on the wall system (i.e., rejection or approval) will be provided to the Wall System Owner by written notification from the New Products Evaluation Office within ninety (90) days after receipt of all requirements of the submission including any additional information as requested by TDOT officials subsequent to the original submittal package.

After final review and approval by the appropriate TDOT officials, wall systems submitted under any Option, will be placed on the Qualified Products List by the New Products Evaluation Office.

In some instances a wall system may be given conditional approval which may limit the wall system to projects with a limited quantity of wall, a limited height of wall or some other special limitation (i.e. Wall is not approved for use in front of a bridge abutment.) The Wall System Owner will be informed of any conditional approval and the means by which the conditional approval will be removed.

Any changes/modifications to any particular wall system made subsequent to being on the approved list may necessitate a complete or partial re-submission by that Proprietor/Contractor and a re-evaluation by the Department. The Wall System Owner shall be responsible for informing the Department of any changes in a timely manner. The Department can disallow a particular wall system for let projects- even if it has been placed on QPL 38- if there have been changes made to the wall system that have not been evaluated by the Department.

The Department reserves the right to remove a wall system/supplier from the Approved Wall Systems list if, in the opinion of the Department, the wall system is not performing adequately, design and /or construction procedures are not being followed or other reasons that the Department deems justifiable cause for removal from the list. The Department will inform the wall system/supplier of the reasons for removal and will provide a means by which the wall system/supplier can request to be reinstated to the Approved Wall Systems list.

APPROVAL PROCEDURE FOR SECTION C, SPECIALTY TOP-DOWN WALL TYPES: ANCHOR WALLS, SOIL NAIL WALLS, SECANT/TANGENT WALLS

Firms requesting to be on approved List QPL 38.005 shall submit required information as described below to the New Products Evaluation Section. The information will be distributed to the appropriate persons in the Structures Division, the Materials and Tests Division and the Construction Division for review. Based on the results of review the New Products Evaluation Section will either place the Firm on QPL 38.005.X or inform the Firm that they are not approved or that additional information is required.

Approval and placement on QPL 38.005 will be based on Qualifications Requirements and will consist of the following three sub-categories:

QPL.38.005 Firms that have in-house personnel and equipment resources consisting of engineers/designers, technicians and subcontracting specialists associated with all aspects of Specialty Retaining Wall Construction. These firms are capable of completing wall designs, installing all components of the wall, provide required instrumentation/testing and demonstrate the ability to be responsible for all aspects of wall design and construction. Note: Firms meeting 38.005.1 automatically qualify for QPL.38.006 and QPL.38.007. Qualification Requirements 1,2,3,4 and 5 must be met.

QPL.38.006 Engineering Firms that have in-house personnel that are qualified in accordance with the applicable requirements below to provide specialty retaining wall design including all aspects and details of a wall design and oversight of implementation of the wall design. Qualification Requirements 2 and 5 must be met. .

QPL.38.007. Specialty Contractors/Subcontractors/Installers that have personnel and equipment resources which are qualified and capable of constructing and installing and testing ground anchors and/or soil nails. Qualification Requirements, 3,4 and 5 must be met.

Qualification Requirement 1.The Firm performing the design and construction of the work shall have a minimum of three (3) years of experience in anchored wall, soil nail, secant/tangent pile wall design and construction and shall submit evidence of successful completion of at least three (3) similar projects.

Qualification Requirement 2. The Firm's staff shall include at least one registered Professional Engineer licensed to perform work in the State of Tennessee. The Firm shall assign an engineer to supervise the work with at least three (3) years of experience in the design and construction of the specialty type walls for which qualification is desired.

Qualification Requirement 3. The Firm performing the work shall have installed permanent ground anchors,, soil nails or other applicable specialty ground improvement element for a minimum of three (3) years.

Qualification Requirement 4. The Firm shall assign a superintendent or foreman with a minimum of two (2) years experience in the supervision of anchored wall,, soil nail or the specialty type walls for which qualification is desired. The Firm may not use consultants or manufacturer's representatives in order to meet the requirements of this section.

Qualification Requirement 5. The Firm shall submit a list containing at least three (3) projects completed within the last three (3) years. For each project, the Firm shall include with this submittal,at a minimum: (1) name of client contact, address, and telephone number; (2) location of project; (3) contract value. (4), range of retaining wall dimensions for submitted projects.
Resumes of the Firm's staff shall be submitted to TDOT for review. Only those individuals designated as meeting the qualifications requirements shall be used for the project. The Firm cannot substitute for any of these individuals without written approval of the TDOT.

ADDITIONAL INFORMATION CONCERNING SPECIALTY WALL QUALIFICATIONS.

TDOT shall approve or reject the Firm's qualifications and staff within fifteen (15) working days after receipt of the submission.

Work shall not be started on any wall system nor materials ordered until the Firm's qualifications have been verified by TDOT. TDOT may suspend the work if the Firm substitutes unqualified personnel for approved personnel during design or construction. If work is suspended due to the substitution of unqualified personnel, the General Contractor shall be fully liable for additional costs resulting from the suspension of work and no adjustment in contract time resulting from the suspension of work will be allowed.

All Firms must also be approved in accordance and applicable with TDOT Consultant Pre-qualification requirements as administered by the Design Division and/or Contractor/Subcontractor pre-qualification requirements as administered by the Construction Division.

QPL 38 TIME LIMITATIONS

Placement on QPL 38 is valid for a three year time period. The entity requesting original approval shall submit request to the New Product Evaluation Section for re-qualification every three years. This submission shall consist of either:

1. A certified letter that states that the basis of original qualification, regarding product material properties, design details, software, or personnel (for those qualifications based on personnel requirements), has not changed.
2. A submittal package clearly explaining the nature of any changes made to the product, design details or qualified personnel. TDOT will review the submission and determine if re-qualification is approved.

It is the responsibility of the submitting entity to know when the qualification period expires. TDOT will not send notification of qualification expiration dates.

QPL 39 WARM MIX ASPHALT

WARM MIX ASPHALT

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for warm mix asphalt additives used to reduce mixing and compaction temperatures of bituminous plant mix.

SPECIFICATIONS

SS400, SS900

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, product data information, and a 1 gallon sample of the product being tested must be submitted to the Division of Materials and Tests. To be placed on the Departments Qualified Products List a warm mix additive must be certified by the National Center of Asphalt Technology (NCAT) Warm Mix Asphalt (WMA) Certification program or meet the following requirements:

1. Shall be capable of reducing typical hot mix asphalt mixing temperatures to a mixing temperature of 275ºF (135ºC) or less.

2. The additive supplier must be able to show that the additive has been used successfully in the United States on a project receiving an approved level of traffic in excess of one mile in length. The project must have been subjected to traffic loading for greater than one year, and exhibit the following:
   a) No visible cracking, rutting, or delamination.
   b) No measurable rutting in excess of 0.25 in (6.35mm).
   c) Documentation of the additive's successful ability to reduce mixing temperatures without being detrimental to the mixture's ability to achieve roadway density according to Departmental specifications.

3. The additive supplier must then demonstrate the additive on a TDOT project. The additive supplier will be responsible for identifying an existing or proposed project for demonstration of the additive, and will be responsible for coordinating the demonstration with the prime contractor. The project must be subjected to traffic loading for greater than one year, and must exhibit the following:

a) Details a through c listed above in item 2.

b) Documentation of the additive-modified mixture's ability to resist moisture damage by evaluation per TDOT's specification for Tensile Strength Ratio (TSR).

i) Test specimens will be prepared from freshly produced warm mix at the plant at temperatures comparable to that in which the mixture is intended to be placed in the field.

ii) Prepared specimens shall be tested per TDOT Standard Specification 407.03, by a TDOT certified testing technician.

QPL 40 PAVEMENT SEALERS

HIGH PERFORMANCE FOG SEALS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for the use of pavement preservation high performance fog seals (polymer or rubber modified)

SPECIFICATIONS

TDOT 402.03

PROCEDURES

High performance fog seals shall be hot-applied or emulsified bituminous or similar material capable of being placed with a standard asphalt distributor as described in TDOT standard specifications 402.03, paragraph 3. High performance fog seals shall seal and preserve pavements in a manner which is superior to standard fog sealing materials.

Products meeting the above requirements will be presented to the Department's Pavement Sealers Committee which will make a recommendation as to whether the product will be added to the Qualified Products List.

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, a sample of the product being tested and manufacturer's specifications must be submitted to the Division of Materials and Tests.

STANDARD FOG SEALS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for the use of pavement preservation standard fog sealers

SPECIFICATIONS

TDOT 402.03
TDOT 403
TDOT 904.03

PROCEDURES

Standard fog seals shall be emulsified bituminous or similar material capable of being placed with a standard asphalt distributor as described in TDOT standard specifications 402.03, paragraph 3.

Products meeting the above requirements will be presented to the Department's Pavement Sealers Committee which will make a recommendation as to whether the product will be added to the Qualified Products List.

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, a sample of the product being tested and manufacturer's specifications must be submitted to the Division of Materials and Tests.

REJUVENATING SEALERS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for the use of pavement preservation rejuvenating sealers

SPECIFICATIONS

TDOT 402.03

PROCEDURES

Rejuvenating seals shall be a combination of bituminous or similar material and a rejuvenating material capable of being placed with a standard asphalt distributor as described in TDOT standard specifications 402.03, paragraph 3. Rejuvenating seals shall be capable of partially restoring the existing pavement while concurrently sealing and preserving the pavement's integrity.

Products meeting the above requirements will be presented to the Department's Pavement Sealers Committee which will make a recommendation as to whether the product will be added to the Qualified Products List.

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, a sample of the product being tested and manufacturer's specifications must be submitted to the Division of Materials and Tests.

PAVEMENT REJUVENATORS:

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for the use of pavement preservation pavement rejuvenators.

SPECIFICATIONS

TDOT 402.03

PROCEDURES

Pavement rejuvenators shall be composed of a rejuvenating material capable of being placed with a standard asphalt distributor as described in TDOT standard specifications 402.03, paragraph 3. Pavement rejuvenators shall be capable of partially restoring the existing pavement's integrity.

Products meeting the above requirements will be presented to the Department's Pavement Sealers Committee which will make a recommendation as to whether the product will be added to the Qualified Products List.

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, a sample of the product being tested and manufacturer's specifications must be submitted to the Division of Materials and Tests.

BITUMINOUS PAVEMENT TREATMENTS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for the use of pavement preservation bituminous pavement treatments sealers (polymer or rubber modified)

SPECIFICATIONS

TDOT 402.03
TDOT 403
TDOT 904.03

PROCEDURES

Bituminous pavement treatments shall be composed of various materials including, but not required or limited to: rejuvenating materials, bituminous or similar materials, aggregates, fibers, or other materials contributing to the promotion or preservation of the integrity of the pavement surface being treated. Bituminous pavement treatments may be placed with standard highway paving equipment and bituminous distributors or specialty equipment defined by the treatment's manufacturer/supplier. Bituminous pavement treatments shall be capable of restoring the existing pavement's integrity in a manner which is superior to all treatments describved and listed under QPL 40, Pavement Sealers.

Products meeting the above requirements will be presented to the Department's Pavement Sealers Committee which will make a recommendation as to whether the product will be added to the Qualified Products List.

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information, a sample of the product being tested and manufacturer's specifications must be submitted to the Division of Materials and Tests.

QPL MISCELLANEOUS

MISCELLANEOUS

PROCEDURES

GENERAL

This evaluation procedure outlines the Department's approval process for miscellaneous products. Products not categorized in accordance with the previous lists may be placed on this list. As the need arises, the Department may create new lists to categorize these products.

SPECIFICATIONS

Varies

PROCEDURES

A completed Product Evaluation Form, MSDS sheets, if applicable, product data information and a sample of the product being tested must be submitted to the Division of Materials and Tests.

Approval procedures will vary depending on the product