

QUALIFIED PRODUCTS POLICY FOR  
STORMWATER MANUFACTURED TREATMENT DEVICES (MTDs)  
QUALIFIED PRODUCTS LIST 78

1. General

This policy covers Stormwater Manufactured Treatment Devices (MTDs) for use as post construction water quality management. Only use Manufacturers that appear on *Qualified Products List 78* by the SCDOT Office of Materials and Research. Prior to inclusion on *SCDOT Qualified Product List 78* provide the Office of Materials and Research (OMR) with the following information from the Manufacturer for each specific Type of MTD (Type 1 or Type 3):

- Written Quality Control program conforming to the requirements of the specification.
- Documentation of laboratory testing that quantifies the water quality performance of the MTD conforming to the requirements of the specification.
  - Independent 3<sup>rd</sup> party testing evaluator identification (EPA ETV Program, ASTM, NJCAT, USGS, or other private, federal, state, local or university entities etc.) The evaluator cannot be the manufacturer.
  - Test facility name and location,
  - Signature of responsible person or party certifying the test results,
  - MTD manufacturer,
  - MTD name and model number tested,
  - Test ID number, and
  - Test date.
- Provide Structural Plans for each specific MTD model and size submitted. Provide plans that are legible and neatly drawn showing all structural details of the MTD along with all necessary dimensions. Clearly show reinforcing steel placement, lap splice lengths, bar spacing, and clear cover. Provide reinforcing steel schedules with bar marks, number of each type of bar required, bend dimensions, and overall dimensions. Provide reinforcing steel bending details table showing all bending details. Indicate materials used in the MTD and their properties (AASHTO or ASTM designations and material strengths). Provide estimated quantities of materials used. Indicate design criteria used for the design of the MTD, including year and/or edition. Ensure that each structural plan sheet bears the seal and signature of a *South Carolina* registered Professional Engineer and meets the requirements of SCDOT *Supplemental Technical Specification for MTDs (SC-M-815-13)*.
- Provide Structural design calculations for each MTD model and size submitted indicating design criteria and bearing the seal and signature of a *South Carolina* registered Professional Engineer and meeting the requirements of SCDOT *Supplemental Technical Specification for MTDs (SC-M-815-13)*. Use *AASHTO LRFD Bridge Design Specifications*, latest edition to the design of each MTD submitted. Design MTDs to support an AASHTO HL-93 Live Loading for the worst case situation for cover up to six (6) feet. Indicate maximum diameters of holes allowed to accept pipes and still maintain structural integrity.
- Additional Detailing Requirements
  - Ensure the base slab and any required separation slab concrete is poured monolithically with the wall or a water-stop is cast into the bottom for the joint to the wall.
  - Joints. Ensure all joints meet the requirements of *SCDOT Supplemental Technical Specification for Permanent Pipe Culverts (SC-M-714)* or latest revision and passes laboratory 13 psi pressure test.
  - Use an appropriate Heavy Duty manhole cover supplied by the manufacturer engraved with unique MTD markings including MTD Name and Model number. Ensure the manhole cover meets the load and testing requirements found in *SCDOT Standard Drawings Drainage Access Manhole Heavy Duty Casting 719-505-03 & 719-505-04*. It is acceptable to increase the size, location of the manhole cover, and markings from the SCDOT standard.

- Internal Component Fasteners. Use stainless steel fasteners to attach internal MTD components to the pre-cast structure walls. Use bonded or expansion type fasteners. Pre-drill holes, evacuate dust, and use a grout or chemical bond system to ensure a sturdy and watertight connection.
- Certification that the specific MTD performs to the minimum performance standards under the specific conditions stated in SCDOT *Supplemental Technical Specification for MTDs (SC-M-815-13)*.
- Instructions on the proper assembly and maintenance of the MTD.

When requested by the OMR, provide field maintenance and cleaning recommendations based on MTD sizing models, MTD performance curves, MTD load reduction curves or from maintenance records on at least five installations showing a minimum of two years performance data in South Carolina or similar climatological area.

## 2. Acceptance

- 2.1. Complete the MTD Submittal Form supplied with this policy and provide the required information highlighted in the Form. This form is used in the evaluation to ensure compliance with the QPP and specifications. The information required in this form is the minimum acceptable requirements for compliance with the MTD specification. Any deviations from this form are considered grounds for rejection of the submittal.
- 2.2. Provide third party test documentation and test data demonstrating 80% TSS removal is achieved for the specified Particle Size Distribution and particle concentration as specified in *SCDOT Supplemental Technical Specification for MTDs (SC-M-815-13)*.
- 2.3. Provide a detailed drawing of the typical MTD supplied. Indicate the bypass flow route around the treatment and storage area if this is provided. A drawing for each size of a typical MTD model is not required.
- 2.4. If there is no bypass flow route around the treatment and storage area is provided for MTD Type 1, then submit third party test documentation demonstrating at what flow rate that re-suspension and loss of trapped sediments occurs for the test Particle Size Distribution. Include this flow rate in the table, chart, or graph required in Section 2.5.
- 2.5. Provide a table, chart or graph indicating the maximum flow rate where 80% TSS removal is achieved for the specified Particle Size Distribution and particle concentration and the maximum storm sewer design flow rate that the MTD can pass for each specific MTD Type 1 that is supported by the third party test data.
- 2.6. Provide a table indicating the maximum flow rate where 80% TSS removal is achieved for the specified Particle Size Distribution and particle concentration and the maximum sediment storage capacity for each specific MTD Type 3 that is supported by the third party test data.
- 2.7. Approval of Structural Drawings and Design Calculations by the Department.
- 2.8. The manufacturer of the MTD Type 1 pre-cast structure must be listed on QPL14.
- 2.9 MTD Type 1 Material Design Specifications.

Use Class 4000P concrete (minimum) for all MTD precast concrete elements.

Use reinforcing bars conforming to the requirements of ASTM A706, Grade 60.

Use welded wire fabric meeting the requirements of AASHTO M55 and AASHTO M221, ASTM A185, or ASTM A497.

Ensure all materials, manufacturing, testing and product performance for precast concrete components and accessories are in accordance with AASHTO M199 and **Section 719** of the *South Carolina Department of Transportation (SCDOT) Standard Specifications for Highway Construction, 2007 Edition, or latest revision* except as noted otherwise in this QPP.

3. Identification

Mark each specific MTD produced and delivered by the Manufacturer by either stamping or etching, with the following minimum information:

- MTD name, model, and/or serial number.
- SCDOT Project specific structure number.

4. Shipment

4.1 Submit a completed material certification form for each shipment to a SCDOT project. The form includes a statement certifying the products were manufactured, tested, and accepted in accordance with SCDOT specifications.

4.2 Do not ship MTDs from the fabrication plant/stockyard to SCDOT projects until they have met all acceptance criteria.

5. Requests for Qualification.

Submit requests for qualification to:

G. Michael Lockman  
Geotechnical Materials Engineer  
SCDOT Office of Materials and Research  
PO Box 191  
Columbia, SC 29202  
(803) 737-6692

**MTD Type 1 SUBMITTAL FORM**

Manufacturer Information	
Name:	
Address/location:	
Web page:	
Contact Name:	
Telephone Number:	
Fax Number:	
e-mail address:	
MTD Type 1 Information (Submit a separate form for each specific MTD)	
Specific MTD Name:	
Written description of the Manufacturer's Quality Control program:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Instructions on the proper assembly and maintenance of the MTD:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Certification that the MTD performs to the minimum performance standards under the specific conditions stated in the MTD specification:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Detail drawing for each MTD submitted signed by registered SC PE:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Structural design calculations for each MTD submitted signed by registered SC PE:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Internal high flow bypass capability around treatment/storage area :	Yes <input type="checkbox"/> No <input type="checkbox"/>
If Yes, detailed drawing must show this flow path:	Yes <input type="checkbox"/> No <input type="checkbox"/>
If No, provide independent test results demonstrating when scour/re-suspension occurs:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Performance Evaluation Testing	
Independent testing evaluator:	
Test facility name:	
Test facility location:	
Test ID:	
Test Date:	
Report Date:	
Signature of responsible evaluator included on test report:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Performance Evaluation Laboratory Testing Data	
Max Flow Rate at which 80% removal efficiency is achieved:	cfs
Testing Hydraulic Loading Rate ):	gpm/SF
Particle Size Distribution (PSD) used:	
<input type="checkbox"/> 125-micron-mean size <input type="checkbox"/> OK-110 <input type="checkbox"/> F-95 Silica Sand <input type="checkbox"/> Sil-Co-Sil 106 <input type="checkbox"/> NJDEP PSD <input type="checkbox"/> Other (describe)	
Concentration of PSD (Type 1 100 mg/L-300 mg/L)	mg/L
Total Suspended Solids (TSS) removal efficiency (ASTM D-3977-97 SSC):	%
Scaling	
Table, chart, or graph indicating maximum water quality flow rate (WQE) for 80% TSS removal and indicating max peak storm sewer design flow rate of MTD (Section 2.5 and 2.6):	Yes <input type="checkbox"/> No <input type="checkbox"/>
Hydraulic loading rate used in MTD Type 1 scaling (if > 25 gpm/SF, independent laboratory testing must verify removal efficiency at the higher loading rate):	gpm/SF
Manufacturer's Signature:	

**MTD Type 3 SUBMITTAL FORM**

Manufacturer Information	
Name:	
Address/location:	
Web page:	
Contact Name:	
Telephone Number:	
Fax Number:	
e-mail address:	
MTD Type 3 Information (Submit a separate form for each specific MTD)	
Specific MTD Type 3 Name:	
Written description of the Manufacturer's Quality Control program:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Instructions on the proper assembly and maintenance of the MTD:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Certification that the MTD performs to the minimum performance standards under the specific conditions stated in the MTD specification:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Detail drawing for each MTD submitted signed by registered SC PE:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Structural design calculations for each MTD submitted signed by registered SC PE:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Internal high flow bypass capability around treatment/storage area (required for Type 3):	Yes <input type="checkbox"/> No <input type="checkbox"/>
If Yes, detailed drawing must show this flow path:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Performance Evaluation Testing	
Independent testing evaluator:	
Test facility name:	
Test facility location:	
Test ID:	
Test Date:	
Report Date:	
Signature of responsible evaluator included on test report:	Yes <input type="checkbox"/> No <input type="checkbox"/>
Performance Evaluation Laboratory Testing Data	
Max Flow Rate at which 80% removal efficiency is achieved:	
Particle Size Distribution (PSD) used:	
<input type="checkbox"/> 125-micron-mean size <input type="checkbox"/> OK-110 <input type="checkbox"/> F-95 Silica Sand <input type="checkbox"/> Sil-Co-Sil 106 <input type="checkbox"/> NJDEP PSD <input type="checkbox"/> Street Sweeping Sediment (200-micron-mean size) <input type="checkbox"/> Sediment Laden Construction Phase Sandy Loam or Loamy Sand (200-micron-mean size) <input type="checkbox"/> Other (describe)	
Concentration of PSD: Coarse sand 1,500 mg/L - 2,000 mg/L	
Street Sweepings 2.5%target concentration 24,000 mg/L to 26,000 mg/L	mg/L
Sediment Laden 6% to 8% target concentration	
Total Suspended Solids (TSS) removal efficiency (ASTM D-3977-97 SSC):	%
Scaling	
Table, chart, or graph indicating maximum water quality flow rate (WQE) for 80% TSS removal and indicating max peak flow rate (LOS) of MTD (Section 2.5 and 2.6):	Yes <input type="checkbox"/> No <input type="checkbox"/>
Manufacturer's Signature:	

**MTD TYPE 1 SUBMITTAL FORM**

**Maximum Water Quality Event (WQE) and  
Maximum Level of Service (LOS) Flow Rate Table**

MTD Type 1 Name and Model Number	Max WQE Flow Rate (CFS)	WQE Removal Efficiency (%)	Max LOS Flow Rate (CFS)

**MTD TYPE 3 SUBMITTAL FORM**

**Maximum Water Quality Flow Rate and  
Maximum Sediment Storage Table**

<b>MTD Type 3 Name and Model Number</b>	<b>Max WQ Flow Rate (CFS)</b>	<b>Max Sed Storage (CF)</b>