

**SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION****Drainage Structure Miscellaneous Components**

(See also QPL14 for precast drainage structure components)

This policy covers the material and loading requirements for miscellaneous drainage structure components not covered on **Qualified Product List 14**, including frames, risers, grates, hoods, rings, covers, riser rings, and steps. This list is to assist contractors in finding available products and does not indicate SCDOT design approval.

**[G] Heavy Duty Gray Cast Iron** (*uncoated*):

All gray iron castings shall be manufactured in accordance with AASHTO M 105, Class 35B. They shall be smooth and thoroughly cleaned by shot blasting. Machine contact surfaces when necessary. Unless light duty is specified on the Standard Drawing, proof load test in accordance with AASHTO M 306, with a proof loading test rating that exceeds 40,000 lbs.

**[D] Heavy Duty Ductile Cast Iron** (*uncoated*):

All ductile iron castings shall be manufactured in accordance with ASTM A 536. They shall be smooth and thoroughly cleaned by shot blasting. Machine contact surfaces when necessary. Proof load test in accordance with AASHTO M 306, with a proof loading test rating that exceeds 40,000 lbs.

**[S] Heavy Duty Structural Steel** (*galvanized or powder coated*):

Structural Steel frames, grates, and covers shall conform to the requirements of AASHTO M 270, Grade 36 minimum. Proof load test in accordance with AASHTO M 306, with a proof loading test rating that exceeds 40,000 lbs. Use only galvanized structural steel as an alternate to heavy duty cast iron sections when custom opening size (bicycle, ADA, or utility) grates are specified. Detail overall grate geometry and contact surfaces equal to the cast iron system. Circular steel risers may be adjustable.

**[T] Ductile Cast Iron Heavy Duty Trench Drains** (*uncoated*):

All ductile iron castings shall be manufactured in accordance with ASTM A 536. They shall be smooth and thoroughly cleaned by shot blasting. Proof load test all ductile iron trench drains to AASHTO M306 40,000 proof loading.

**[L] Light Duty Gray Cast Iron** (*uncoated*):

Manufacture as described above for gray cast iron. Light duty, out-of-traffic items only shall meet specifications given in AASHTO M 306, with a proof loading test rating that exceeds the federal specification CID A-A-60005 for 25000 lbs.

**[P] Light Duty Steel Pipe Grate** (*powder coated or painted*):

Pipe Steel frames, grates, and covers shall conform to the requirements of AASHTO M 270, Grade 36 minimum. Proof load test in accordance with AASHTO M 306, with a proof loading test rating that exceeds 25,000 lbs.

**[M] Molded or Preformed Trench Drain Channels:**

The preformed trench drain shall be manufactured using [C] polyester polymer concrete or [H] high density polyethylene with carbon black UV Inhibitor. [M] Molded trench drain systems must form a smooth hydraulic channel consistent with the standard drawings. Provide trench drain system that transfers loading requirements listed in (T) above from the grate and frame directly into surrounding concrete. All trench drain system must be fabricated with an internal clear width in the channel equal to or greater than the specified width show on the Standard Drawings and pay items. Preformed trench drains shall conform to ASTM test method specified below:

| Polymer Concrete                            |                  |             |
|---|------------------|-------------|
| Property                                    | ASTM Test Method | Value       |
| Tensile Strength, PSI                       | C307             | 1,200 Min.  |
| Compressive Strength, PSI                   | C579             | 12,000 Min. |
| Bending Strength, PSI                       | C580             | 2,000 Min.  |
| Moisture Absorption, %                      | C140             | 0.5% Max.   |
| Chemical Resistance                         | C267             | Pass        |
| Freeze/Thaw, # of cycles<br>w/o weight loss | C666             | 1,600 Min.  |

| High Density Polyethylene                         |                  |                    |
|---|------------------|--------------------|
| Property  | ASTM Test Method | Value              |
| Density (g /cc)                                   | D-1505           | .934 - .935        |
| Melt Index (g /10min)                             | D-1238           | 5 - 10             |
| Flexural Modulus (ksi)                            | D-790            | 40,000 - 50,000    |
| Tensile Strength @ yield,<br>2"/minute (psi)      | D-638            | 1,200 - 2,000      |
| Elongation @ Break<br>2"/minute %                 | D-638            | 10                 |
| Hydrostatic Design Basis                          | D-2837           | Not Pressure Rated |
| Tensile Impact Strength ft-<br>lb/in <sup>2</sup> | D-256            | 0.70 - 0.80        |
| Load rating                                       | H-25             | exceeds            |

| Expanded Polypropylene |                  |           |
|------------------------|------------------|-----------|
| Property               | ASTM Test Method | Value     |
| Density (pcf)          | D-3575           | 1.6 - 3.7 |
| Tensile Strength (psi) | D-3575           | 22 - 28   |
| Tensile Elongation %   | D-3575           | 12 - 15   |
| Load Rating            | H-25             | exceeds   |

**[C] Climbing Ladder Steps - Copolymer Polypropylene Coated Steel:**

Manufactured ladder steps shall conform to ASTM C 478, AASHTO M 199 section 16, and OSHA requirements.

**[R] Manhole Internal Circular Fixed Size Riser Rings (galvanized steel or gray or ductile cast iron):**

Manufactured internal riser rings shall conform to ASTM D 3575, D 2240, and a proof load test rating that exceeds AASHTO M 306 section 6.

**[J] Manhole Internal Circular Adjustable Riser Rings (galvanized steel):**

Manufactured internal riser rings shall conform to ASTM D 3575, D 2240, and a proof load test rating that exceeds AASHTO M 306 section 6.

**[I] Internal Risers Noncircular (Galvanized Steel or Gray or Ductile Cast Iron):**

Manufactured internal risers shall conform to ASTM D 3575, D 2240, and a proof load test rating that exceeds AASHTO M 306 section 6.

**[B] Below Base Risers (circular or rectangular):**

Manufacturers submitting products as Below Base Risers for either circular or rectangular castings must provide the following:

Below Base Risers must be able to carry the full design load of the casting, and must be made of materials that do not degrade and are resistant to chemical and temperature conditions found in storm sewer applications. Provide documentation supporting these claims.

Below base riser manufacturers must also address the conditional limits of exiting box (below the riser) as well as necessary repairs to masonry or concrete structures that may be required before installing the riser. SCDOT preference will usually lean toward internal riser rings to minimize the excavation required, but if those are not available or inappropriate for the site conditions, below base risers are allowed. Manufacturers that do not address the condition of existing structures will be required to demonstrate how the product works when the substructure is deteriorated.

Provide a complete installation procedure for Below Base Risers. SCDOT reserves the right to publish these installation procedures on the SCDOT Standard Drawing website as “manufacturer” literature, and it is the manufacturer’s responsibility to notify the QPP15 contact below of any changes to the product or installation procedure prior to selling any updated version for use within SCDOT ROW.

Manufacturers of Below Base Risers will be required to coordinate a live product demonstration (in South Carolina, but not required in SCDOT ROW) prior to inclusion on QPL 15.

**[0] Uncoated Surfaces:**

Uncoated surfaces must be corrosion and UV resistant. Uncoated materials must be inherently stable in wet environments or develop a stable patina.

**[1] Galvanized Surfaces:**

Seal or otherwise prepare all welds as required for galvanizing process. Galvanize in accordance with AASHTO M 111.

**[2] Powder Coated Surfaces:**

Powder coat surfaces with two coats of super durable powder applied in accordance with powder manufacturer’s specifications. Color black unless otherwise specified.

*[3] Painted Surfaces:*

Prepare all surfaces in accordance with paint manufacturer's specifications. Paint with two coats of marine epoxy paint. Color black unless otherwise specified.

All drainage structure components shall meet the specifications and dimensions given on SCDOT Standard Drawings and Standard Specifications. All manufacturing and fabrication shall occur in the United States of America. The frames, grates, hoods, rings, and covers shall be designed to be interchangeable with other corresponding pieces shown on the SCDOT Standard Drawing.

## All QPP15 Product Submittals:

To be added and retained on the Qualified Product List 15 as a qualified manufacturer, provide the following documentation:

1. Load test results showing compliance with loading standards indicated in this qualified product policy
2. Product Information Form QPL15DSMC for Drainage Structure Misc Components
3. For each item, provide
  - .pdf and 1:1 scale CAD drawings (.dwg,.dxf, or .dgn only)
  - statement indicating where the item is to be fabricated (if different than plant location indicated on form)
  - material specification (Specify in brackets [] by each part #, the Material and Surface treatment used with these letters and numbers indicated above.)  
Examples:     Gray Cast Iron, uncoated = [G0]  
                  Steel, galvanized = [S1]  
                  Ductile Cast Iron, Powder coated = [D2]
  - manufacturer's installation specification
4. A signed statement (**required biennially by October 1, even numbered years**) indicating conformance to SCDOT Standard Drawings, load testing described in this policy, and that no changes have been made to the item.

Resubmit all required information,

- if changes have been made to the drainage structure component
- if fabrication facility is relocated
- if ownership changes and production is impacted
- if manufacturer's installation instructions or drawings are changed

Resubmit page 1 of form QPL15DSMC if manufacturer contact information changes.

Submit the above items to:

[d8designstandards@scdot.org](mailto:d8designstandards@scdot.org)

Henry Cross, P.E.

SCDOT - Preconstruction Support

955 Park Street Room 409

Columbia, SC 29201

fax (803) 737-0608

If requested by the department, third party suppliers shall provide documentation to verify that the products were manufactured by a source listed on QPL 15.

Schedule:

**Grandfathered Items:**

SCDOT will continue to list products and manufacturers formerly included on QPL45 and QPL48. Manufacturers for these items must submit required documentation by September 1, 2016 in order to remain on QPL15.

**Beginning October 1, 2016:**

Contractors shall use only item listed for and produced by manufacturers listed on QPL 15.

SCDOT Purchase orders for inventory should reference only parts listed on QPL 15.

Existing in-house inventory may be installed until depleted (no date restriction.)

**Beginning June 1, 2021:**

In order to minimize confusion of maintenance obligations, SCDOT Logo will only be allowed on cast-iron parts when the item is installed within SCDOT Rights-of-Way. QPL15 will list a NO-LOGO variation of corresponding parts that conforms to SCDOT Specifications that may be used outside of SCDOT ROW.

**Product Information Form QPL15DSMC Miscellaneous Drainage Structure Components**

Manufacturer Name: \_\_\_\_\_

Company Website: \_\_\_\_\_

Plant Address: \_\_\_\_\_

City, State, Postal Code: \_\_\_\_\_

Contact Name: \_\_\_\_\_

Contact Email: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

Contact Signature/date: \_\_\_\_\_

Contact Mail (if different): \_\_\_\_\_

Contact Mail C,S,P (if different): \_\_\_\_\_

The company above wishes to be included on Qualified Product List 15 for the items checked below. We understand that the items checked will be placed on QPL 15 and agree to comply with the SCDOT Standard Drawings and Specifications. It will be the manufacture’s responsibility to make sure that the information listed on QPL 15 is up-to-date. When needed please complete an updated Product Information Form if any information listed on QPL 15 has changed.

**LIGHT DUTY**

| <b>Light Duty Manhole</b> | <b>STD. DRAWING</b> | <b>PART NUMBER</b> |
|---------------------------|---------------------|--------------------|
| _____ Ring                | 719-510-02          | _____              |
| _____ Cover               | 719-510-01          | _____              |
| _____ Assembly            | 719-510-XX          | _____              |

| <b>LD Pipe Steel DI Type 112<sup>a</sup></b> | <b>STD. DRAWING</b> | <b>PART NUMBER</b> |
|--|---------------------|--------------------|
| _____ Angle Frame                            | 719-112-02          | _____              |
| _____ Pipe Grate                             | 719-112-02          | _____              |
| _____ Assembly                               | 719-112-02          | _____              |

<sup>a</sup> Drop Inlet Type 112 is scheduled for redesign in late 2016 – early 2017. SCDOT will contact manufacturers once redesign is complete.

**Product Information Form QPL15DSMC Miscellaneous Drainage Structure Components**

Contact Signature/date: \_\_\_\_\_

LIGHT DUTY

|                                 |                     |                         |                   |
|---------------------------------|---------------------|-------------------------|-------------------|
| <b>LD 18" Pipe Safety Grate</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
| _____ Angle Frame               | 719-615-00          | [__ __]_____            | _____             |
| _____ Pipe Grate                | 719-615-00          | [__ __]_____            | _____             |
| _____ Assembly                  | 719-615-00          | [__ __]_____            | _____             |

|                                 |                     |                         |                   |
|---------------------------------|---------------------|-------------------------|-------------------|
| <b>LD 24" Pipe Safety Grate</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
| _____ Angle Frame               | 719-615-00          | [__ __]_____            | _____             |
| _____ Pipe Grate                | 719-615-00          | [__ __]_____            | _____             |
| _____ Assembly                  | 719-615-00          | [__ __]_____            | _____             |

|                                 |                     |                         |                   |
|---------------------------------|---------------------|-------------------------|-------------------|
| <b>LD 30" Pipe Safety Grate</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
| _____ Angle Frame               | 719-615-00          | [__ __]_____            | _____             |
| _____ Pipe Grate                | 719-615-00          | [__ __]_____            | _____             |
| _____ Assembly                  | 719-615-00          | [__ __]_____            | _____             |

|                                 |                     |                         |                   |
|---------------------------------|---------------------|-------------------------|-------------------|
| <b>LD 36" Pipe Safety Grate</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
| _____ Angle Frame               | 719-615-00          | [__ __]_____            | _____             |
| _____ Pipe Grate                | 719-615-00          | [__ __]_____            | _____             |
| _____ Assembly                  | 719-615-00          | [__ __]_____            | _____             |

|                                 |                     |                         |                   |
|---------------------------------|---------------------|-------------------------|-------------------|
| <b>LD 42" Pipe Safety Grate</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
| _____ Angle Frame               | 719-615-00          | [__ __]_____            | _____             |
| _____ Pipe Grate                | 719-615-00          | [__ __]_____            | _____             |
| _____ Assembly                  | 719-615-00          | [__ __]_____            | _____             |

|                                 |                     |                         |                   |
|---------------------------------|---------------------|-------------------------|-------------------|
| <b>LD 48" Pipe Safety Grate</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
| _____ Angle Frame               | 719-615-00          | [__ __]_____            | _____             |
| _____ Pipe Grate                | 719-615-00          | [__ __]_____            | _____             |
| _____ Assembly                  | 719-615-00          | [__ __]_____            | _____             |

|                                 |                     |                         |                   |
|---------------------------------|---------------------|-------------------------|-------------------|
| <b>LD 54" Pipe Safety Grate</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
| _____ Angle Frame               | 719-615-00          | [__ __]_____            | _____             |
| _____ Pipe Grate                | 719-615-00          | [__ __]_____            | _____             |
| _____ Assembly                  | 719-615-00          | [__ __]_____            | _____             |

|                                 |                     |                         |                   |
|---------------------------------|---------------------|-------------------------|-------------------|
| <b>LD 60" Pipe Safety Grate</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
| _____ Angle Frame               | 719-615-00          | [__ __]_____            | _____             |
| _____ Pipe Grate                | 719-615-00          | [__ __]_____            | _____             |
| _____ Assembly                  | 719-615-00          | [__ __]_____            | _____             |

**Product Information Form QPL15DSMC Miscellaneous Drainage Structure Components**

Contact Signature/date: \_\_\_\_\_

**HEAVY DUTY**

| <b>HD Catch Basin Type 1</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
|------------------------------|---------------------|-------------------------|-------------------|
| _____ Frame                  | 719-001-04          | [__ __]_____            | _____             |
| _____ Grate                  | 719-001-05          | [__ __]_____            | _____             |
| _____ Hood                   | 719-001-05          | [__ __]_____            | _____             |
| _____ Assembly               |                     | [__ __]_____            | _____             |

| <b>HD Catch Basin Type 15<sup>b</sup></b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
|---|---------------------|-------------------------|-------------------|
| _____ Frame                               | 719-015-02          | [__ __]_____            | _____             |
| _____ Grate (buy in pairs only)           | 719-015-02          | [__ __]_____            | _____             |
| _____ Assembly                            |                     | [__ __]_____            | _____             |
| _____ Custom Steel Riser                  |                     | [__ __]_____            | _____             |

<sup>b</sup>Catch Basin Type 15 has been replaced by Catch Basin Type 25. Confirm usage before supplying.

| <b>HD Catch Basin Type 25</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
|-------------------------------|---------------------|-------------------------|-------------------|
| _____ Frame                   | 719-025-03          | [__ __]_____            | _____             |
| _____ 2" Riser                | 719-025-03          | [__ __]_____            | _____             |
| _____ 3" Riser                | 719-025-03          | [__ __]_____            | _____             |
| _____ Grate                   | 719-025-04          | [__ __]_____            | _____             |
| _____ Assembly                |                     | [__ __]_____            | _____             |
| _____ Custom Steel Riser      |                     | [__ __]_____            | _____             |
| _____ Custom Steel Grate      |                     | [__ __]_____            | _____             |

| <b>HD Drop Inlet 2X2</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
|--------------------------|---------------------|-------------------------|-------------------|
| _____ Frame              | 719-105-01          | [__ __]_____            | _____             |
| _____ Grate              | 719-105-01          | [__ __]_____            | _____             |
| _____ Assembly           |                     | [__ __]_____            | _____             |
| _____ 2" Riser           |                     | [__ __]_____            | _____             |
| _____ 3" Riser           |                     | [__ __]_____            | _____             |

| <b>HD Drop Inlet 2X3</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
|--------------------------|---------------------|-------------------------|-------------------|
| _____ Frame              | 719-110-01          | [__ __]_____            | _____             |
| _____ Grate              | 719-110-01          | [__ __]_____            | _____             |
| _____ Assembly           |                     | [__ __]_____            | _____             |
| _____ 2" Riser           |                     | [__ __]_____            | _____             |
| _____ 3" Riser           |                     | [__ __]_____            | _____             |

| <b>HD Drop Inlet Type 125 Bicycle</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
|---------------------------------------|---------------------|-------------------------|-------------------|
| _____ Alt. Steel Bicycle Grate        | 719-125-XX          | [__ __]_____            | _____             |

| <b>Heavy Duty Manhole</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
|---------------------------|---------------------|-------------------------|-------------------|
| _____ Ring                | 719-505-03          | [__ __]_____            | _____             |
| _____ Cover               | 719-505-04          | [__ __]_____            | _____             |
| _____ Assembly            | 719-505-XX          | [__ __]_____            | _____             |
| _____ 2" Riser            |                     | [__ __]_____            | _____             |
| _____ 3" Riser            |                     | [__ __]_____            | _____             |



**Product Information Form QPL15DSMC Miscellaneous Drainage Structure Components**

Contact Signature/date: \_\_\_\_\_

**TRENCH DRAINS**

| <b>4" Trench Drain</b>        | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
|-------------------------------|---------------------|-------------------------|-------------------|
| _____ Ductile Frame           | 719-205-XX          | [__ __]_____            | _____             |
| _____ Ductile Grate           | 719-205-XX          | [__ __]_____            | _____             |
| _____ 4" Span Polymer Trench  | 719-205-XX          | [__ __]_____            | _____             |
| _____ 4" Span HDPE Trench     | 719-205-XX          | [__ __]_____            | _____             |
| <b>12" Trench Drain</b>       | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> | <b>BOLT/LOCK?</b> |
| _____ Ductile Frame           | 719-215-XX          | [__ __]_____            | _____             |
| _____ Ductile Grate           | 719-215-XX          | [__ __]_____            | _____             |
| _____ 12" Span Polymer Trench | 719-215-XX          | [__ __]_____            | _____             |
| _____ 12" Span HDPE Trench    | 719-215-XX          | [__ __]_____            | _____             |

**ACCESS DEVICES**

| <b>Copolymer Step</b> | <b>STD. DRAWING</b> | <b>[MAT]PART NUMBER</b> |
|-----------------------|---------------------|-------------------------|
| _____ Step            | 719-550-00          | [__ __]_____            |

**OTHER DRAINAGE COMPONENTS**

**Indicate**

|  |                         |
|--|-------------------------|
| <b>Manhole Internal Riser Ring/s:</b> (size/s in inches) | <b>[MAT]PART NUMBER</b> |
| _____  | [__ __]_____            |
| _____  | <b>[MAT]PART NUMBER</b> |
| _____  | [__ __]_____            |
| _____  | <b>[MAT]PART NUMBER</b> |
| _____  | [__ __]_____            |
| _____  | <b>[MAT]PART NUMBER</b> |
| _____  | [__ __]_____            |

**Below Base Risers:**

Provide a list of the available sizes and compatible SCDOT Standard Castings for each item.