TYP. HDPE TO HDPE FUSION WELD CONNECTION, SEE SHEET A320

ECI 6-12 ASSEMBLY, SEE SHEET A328

TYP. FUSION WELDED VENT/DRAIN, SEE SHEET A439 FOR ALL COMBINATIONS OF VENT & DRAIN DETAILS

TYP. HDPE TO HDPE ELECTROFUSION CONNECTION, SEE SHEET A319

3" DR-17 HDPE PIPE

NOTES:
1. CONNECTIONS & MATERIALS SHOWN IN EITHER CONFIGURATION CAN BE USED INTERCHANGEABLE, OMITTING ANY CONNECTIONS NOT REQUIRED FOR A PARTICULAR JOB.
2. HOT/BENT MINIMUM BEND-RADIUS FOR 3" HOPE PIPE WITH 12 STRANDS IS 8'-0", REFER TO HOPE PIPE HEATED PRE-BENDING PROCEDURE.
3. COLD/FIELD MINIMUM BEND RADIUS FOR 3" HDPE PIPE IS 16'-0".
4. HOT/PRE-BENT MINIMUM BEND RADIUS FOR 3" HDPE PIPE WITH 12 STRANDS IS 8'-0". REFER TO HDPE PIPE HEATED PRE-BENDING PROCEDURE.
INSTALLATION PROCEDURES (INSTALLATION PROCEDURE IS GENERIC. FOLLOW THE PROJECT SPECIFIC REQUIREMENTS AND THE FOOT SPECIFICATIONS):

1. ASSEMBLE TRUMPET INTO THE BEARING PLATE. APPLY 1/4" BONDUIT PIPE THREAD SEALANT TO ALL THREADS PRIOR TO INSTALLING TRUMPET.
2. INSTALL AND SECURE SPIRAL AND TRUMPETS TO BEARING PLATE ASSEMBLY WITH ANCHORAGE CAP BOLTS. USE CARE NOT TO DAMAGE THREADS.
3. INSTALL A Welded TRUMPET INSERTION TOOL AND A VACUUM TEST IS REQUIRED PRIOR TO CONCRETE PLACEMENT. PER FDOT SPECIFICATION SECTION 462-8.2.1.2, A VACUUM TEST IS REQUIRED PRIOR TO CONCRETE PLACEMENT.
4. INSTALL AND SECURE SPIRAL AND TRUMPETS TO BEARING PLATE ASSEMBLY WITH ANCHORAGE CAP BOLTS. USE CARE NOT TO DAMAGE THREADS.
5. INSTALL FILLER PORT CONNECTIONS. SEAL ALL TEMPORARY CONNECTIONS WITH PIPE DOPE/SILICONE GREASE (BY OTHERS), AND SEAL ALL PERMANENT CONNECTIONS WITH BONDUIT OR SIMILAR (BY OTHERS).
6. INSTALL STRANDS. LEAVE SUFFICIENT STRAND SPACE TO ALLOW FOR TENSIONING.
7. INSTALL ANCHOR HEADS AND WEDGES. MAKE SURE WEDGE CAVITIES ARE CLEAN AND RUST FREE. USE WIRE BRUSH TO CLEAN IF NECESSARY. ALIGN ANCHOR HEAD TO BEARING PLATE USING A LOCKING TABS ENGAGE. INSTALL AND SECURE BEARING PLATE ASSEMBLY WITH ANCHORAGE CAP BOLTS. USE CARE NOT TO DAMAGE THREADS.
8. INSTALL ANCHOR HEADS AND WEDGES. MAKE SURE WEDGE CAVITIES ARE CLEAN AND RUST FREE. USE WIRE BRUSH TO CLEAN IF NECESSARY. ALIGN ANCHOR HEAD TO BEARING PLATE USING A LOCKING TABS ENGAGE. INSTALL AND SECURE BEARING PLATE ASSEMBLY WITH ANCHORAGE CAP BOLTS. USE CARE NOT TO DAMAGE THREADS.
9. INSTALL SPIRAL AND TRUMPETS TO BEARING PLATE ASSEMBLY WITH ANCHORAGE CAP BOLTS. USE CARE NOT TO DAMAGE THREADS.
10. INSTALL SPIRAL AND TRUMPETS TO BEARING PLATE ASSEMBLY WITH ANCHORAGE CAP BOLTS. USE CARE NOT TO DAMAGE THREADS.
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NOTE: ITEMS MARKED WITH A "T" ARE TEMPORARY AND ARE NOT A PERMANENT PART OF THE SYSTEM.

END VIEW
ELEVATION VIEW

INSTALLATION PROCEDURE (SEE MANUFACTURER INSTRUCTION MANUAL FOR DETAILED INSTALLATION INSTRUCTIONS):
1. CUT SQUARE ENDS ON PIPE TO BE FUSED
2. CLEAN BOTH PIPE ENDS
3. SCRAPE BOTH PIPE ENDS MINIMUM 0.07" WITH PROVIDED SCRAPING TOOL
4. CLEAN BOTH PIPE ENDS USING 90% OR GREATER ISOPROPYL ALCOHOL
5. USE REROUNDING TOOLS PROVIDED TO CORRECT OVAL PIPE IF NECESSARY
6. USE ALIGNMENT CLAMPS PROVIDED TO ENSURE PIPE IS ALIGNED WITH COUPLER
7. SUPPORT PIPE AND COUPLER AND RESTRAIN PIPE TO PREVENT MOVEMENT
8. CHECK FOR GAPS AND ELIMINATE AS NECESSARY
9. ATTACH LEADS OF THE PROVIDED FUSION PROCESSOR TO THE COUPLER
10. SCAN THE BARCODE ON THE COUPLER
11. START FUSION PROCESS
12. WHEN FUSION PROCESS IS COMPLETE, UNPLUG THE LEADS
13. DO NOT MOVE OR PRESSURIZE THE JOINT COMPONENTS BEFORE COOLING TIME HAS COMPLETED

NOTE:
FOLLOW COUPLER MANUFACTURER'S INSTALLATION INSTRUCTIONS

ITEM | QTY | DESCRIPTION | MATERIAL | INVENTORY # | DWG # |
--- | --- | --- | --- | --- | --- |
1 | - | 3" HDPE PIPE DR-17 | HDPE BLACK | C882A | C882 |
2 | 1 | 3" ELECTROFUSION COUPLER | COMPOSITE | 02EF0003 | C882 |
TYPICAL 3" HDPE PIPE TO 3" HDPE PIPE FUSION WELDED CONNECTION

NOTES:
1. HDPE 3" IPS/DR-17 MEETS FDOT 960 SPEC.
2. SEE VSL BUTT-WELDING PROCEDURE IN APPENDIX

FUSION BUTT WELD
USE INSPECTED & APPROVED FUSION PIPE WELDER

1.200" 3.500"
3.064"

ITEM  QTY  DESCRIPTION  MATERIAL  DWG #
1  2  3" HDPE PIPE DR-17  HDPE BLACK PER ASTM D355  C882A

NOTES:
1. HDPE 3" IPS/DR-17 MEETS FDOT 960 SPEC.
2. SEE VSL BUTT-WELDING PROCEDURE IN APPENDIX
ECI 6-12 ANCHORAGE CAP

NOTE: ITEMS MARKED WITH A "T" ARE TEMPORARY AND ARE NOT A PERMANENT PART OF THE SYSTEM.

ITEM | QTY | DESCRIPTION | MATERIAL | INVENTORY # | DWG # |
--- | --- | --- | --- | --- | --- |
1A | 1 | ECI 6-12 ANCHORAGE CAP W/ 1/4" VERT. PORT | ABS LUSTRAN 633 PER ASTM D4673 | 02GC61203 | C739 |
1B | 1 | ECI 6-12 ANCHORAGE CAP W/ 1/4" HORIZ. PORT | ABS LUSTRAN 633 PER ASTM D4673 | 02GC61202 | C749 |
2 | 1 | 1/4" NPT STEEL NIPPLE | SCH 80 STEEL | 02DT01534 | C744 |
3 | 1 | STEEL 1/4 TURN BALL VALVE W/ 1/4" FNPT | SCH 80 STEEL | 02DT01535 | C744 |
4 | 1 | 3/16" PAN HEAD SCREW | (316L) STAINLESS PER ASTM A240 | 02WX7001 | A336 |
5 | 1 | 1/4" NPT PE PLUG | HDPE BLACK PER ASTM D3350 | 02DT01536 | C693 |
NOTES:
1. ITEMS MARKED WITH A "T" ARE TEMPORARY AND ARE NOT A PERMANENT PART OF THE SYSTEM.
2. ALL COMPONENTS MUST BE PRESSURE RATED FOR 150 PSI.
3. CONCRETE COVER MUST MEET FDOT STRUCTURES DESIGN GUIDELINES SECTION 1.4.2.

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<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>MATERIAL</th>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1/4&quot; NPT FF PLUG</td>
<td>HDPE BLACK PER ASTM D3350</td>
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<tr>
<td>2</td>
<td>1</td>
<td>1&quot; NPT PP PLUG</td>
<td>BLACK POLYPROPYLENE PER ASTM D4101</td>
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<td>3</td>
<td>1</td>
<td>ECI 6-12 BEARING PLATE W/ 1&quot; NPT PORT GALVANIZED PER ASTM A123</td>
<td>CAST IRON GR80-55-06 PER ASTM A536</td>
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<td>1</td>
<td>ECI 6-12 ANCHORAGE CAP W/ 1&quot; VERT. PORT</td>
<td>ABS L/STRAIN 65 PER ASTM D436</td>
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<td>5</td>
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<td>BUNN 70 D PER FDOT TABLE 2 3 T 1 11</td>
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<td>6</td>
<td>1</td>
<td>3/16&quot; PAN HEAD SCREW</td>
<td>316 STAINLESS STEEL PER ASTM A240</td>
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<tr>
<td>9</td>
<td>1</td>
<td>STEEL 1/4 TURN BALL VALVE W/ 1&quot; NPT</td>
<td>SOH 40 STEEL</td>
</tr>
<tr>
<td>10</td>
<td>--</td>
<td>BONDUIT</td>
<td>COMMERCIALLY AVAILABLE</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>1&quot; NPT F/F COUPLER</td>
<td>SOH 40 STEEL</td>
</tr>
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</table>

SEE SHEET A341 FOR ANCHORAGE CAP ALTERNATIVE VENTING DETAILS

NOTES:
1. ITEMS MARKED WITH A "T" ARE TEMPORARY AND ARE NOT A PERMANENT PART OF THE SYSTEM.
2. ALL COMPONENTS MUST BE PRESSURE RATED FOR 150 PSI.
3. CONCRETE COVER MUST MEET FDOT STRUCTURES DESIGN GUIDELINES SECTION 1.4.2.
**STEP 1**
1. Orient bearing plate in vertical position.
2. Apply Bonduit around outside of end of pipe (2" min.) that will be inserted into bearing plate. Total pipe length should be 2'-0" min.

**STEP 2**
1. Insert pipe into bearing plate.
2. Wait min. 1 hour for Bonduit to set.

**STEP 3**
1. After Bonduit has set for 1 hour, wrap heat shrink sleeve around bearing plate and pipe as shown.

**STEP 4**
1. Follow heat shrink installation instructions (provided as a separate appendix).
NOTES

1. ITEMS MARKED WITH A "T" ARE TEMPORARY AND ARE NOT A PERMANENT PART OF THE SYSTEM.
2. THIS ASSEMBLY CAN BE APPLIED IN ANY REQUIRED ORIENTATION TO CREATE EITHER A VENT OR A DRAIN.
3. ALL COMPONENTS MUST BE PRESSURE RATED FOR 150 PSI.
4. CONCRETE COVER MUST MEET FDOT STRUCTURES DESIGN GUIDELINES SECTION 1.4.2

3/4" FNPT SMOOTH GROUT PORT INSTALLATION

1. CLEAN PIPE PRIOR TO GROUT PORT INSTALLATION.
2. DRILL Ø7/8" HOLE INTO PIPE.
3. CONNECT THE SOCKET WELDING DEVICE TO THE POWER SOURCE.
4. ALLOW THE SOCKET WELDING DEVICE TO REACH ITS WORKING TEMPERATURE.
5. SIMULTANEOUSLY, INSERT MALE ADAPTER OF SOCKET WELDING DEVICE FROM DRILLED HOLE AND GROUT PORT FROM FEMALE ADAPTER.
6. APPLY LIGHT PRESSURE FOR 20-25 SECONDS BY PUSHING THE GROUT PORT WITH THE PALM OF HAND.
7. SIMULTANEOUSLY, REMOVE SOCKET WELDING DEVICE FROM DRILLED HOLE AND GROUT PORT FROM FEMALE ADAPTER.
8. INSERT GROUT PORT INTO HOLE UNTIL THE SHOULDER IS REACHED.
9. THIS OPERATION SHOULD BE CARRIED OUT AS QUICKLY AND CAREFULLY AS POSSIBLE, WITHIN 5 SECONDS. FIRMLY HOLD THE PIECES TOGETHER FOR A MINIMUM OF 10 SECONDS.

ITEMS OF NOTE

- EPOXY GROUT POUR-BACK AREA (TYPICAL): REFER TO FDOT STANDARD PLANS INDEX 462-003 FOR POST-TENSIONING ANCHORAGE AND TENDON FILLING DETAILS

EXTERNAL OPTION

INTERNAL OPTION

ITEM | QTY | DESCRIPTION | MATERIAL | INVENTORY # | DWG #
--- | --- | --- | --- | --- | ---
1 | 1 | DR-17 PIPE (SIZE VARIES) | HDPE BLACK PER ASTM D3350 | 30710283 | C745
2 | 1 | 3/4" FNPT STEEL NIPPLE | SCH 40 STEEL | 30710125 | C787
3 | 1 | 3/4" FNPT SMOOTH GROUT PORT | HDPE YELLOW PER ASTM D3350 | 02DT0253 | C743
4 | 1 | 3/4" NPT FIT COUPLER | SCH 40 STEEL | 02DT01952 | C728
5 | 1 | STEEL 1/4 TURN BALL VALVE W/ 3/4" FNPT | HDPE BLACK PER ASTM D3350 | 02DT01925 | C745
6 | 2 | RIBBED CAP 3/4" FNPT | HDPE BLACK PER ASTM D4101 | 02DT01912 | C701
7 | 1 | 3/4" FNPT X MNPT STEEL ELBOW | SCH 40 STEEL | 02DT01954 | C750
8 | 1 | 3/4" NPT PE PLUG | HDPE BLACK PER ASTM D3350 | 02DT01913 | C787
9 | | SILICONE GREASE | - | - | -
10 | | BONDUIT | - | - | -
0.6" DIA. MULTIWEDGES
TYPE 1.6G

SECTION A-A

MATERIAL
INVENTORY #

0.6" MULTIWEDGE TYPE 1.6G
AISI 11-L-17/12L14 PER ASTM A108, PRODUCED IN STRICT ACCORDANCE WITH VSL MS 3.1.006, CASE HARDENED 02WG0008
SECTION A-A

DATE CODE, FOUNDRY MARK, AND TYPE "VSL ECI 6-12" STAMPED THIS SURFACE. MUST BE RECESSED.

HARDNESS TEST

FRONT VIEW

ECI 6-12 ANCHOR HEAD
IRON GR 80-55-06 PER ASTM A536

G/O/90037

HARDNESS TEST

3.00"
0.38"
3.38"
Ø6.85"
Ø4.79"
Ø4.01"
1.30"
1.30"
30°
VSL POST TENSIONING 0.6" BARE STRAND
LOW-RELAXATION STEEL, SEVEN WIRE STRAND PER ASTM A416, 270KSI
VA02SD0013
### System Drawing

**Project Information:**
- **Sheet No:**
- **Electronics File Location:**
- **File Name:** C693 1/4in NPT PE Plug FDOT 02DT01919.dwg
- **Plot Date/Time:** 11:50 AM 29 Jan 2020

**Scale:** NTS

**Project No:**

**Description:**

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<td>1/4&quot; NPT PE PLUG</td>
<td>HDPE BLACK PER ASTM D3350</td>
<td>02DT01919</td>
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**Note:** Material meets or exceeds FDOT Specification 960 1/4" NPT.

---

**Front View**

**Side View**

---

**Description:**

- **Material:** HDPE Black Per ASTM D3350
- **Inventory #:** 02DT01919

---

**Structural Technologies LLC**
- **Corporate Office:** 10150 Old Columbia Rd, Columbia, MD 21046
- **Phone:** (410) 850-7000
- **Website:** structuraltechnologies.com
RIBBED CAP W/ 3/4" FNPT

DESCRIPTION
BLACK POLYPROPYLENE PER ASTM D4101

INVENTORY #
02DT01912

NOTE: MATERIAL MEETS OR EXCEEDS FDOT SPECIFICATION 960

TOP VIEW
SIDE VIEW

23/32"
SIDE VIEW

VARES BY PROJECT

1.05"

DESCRIPTION

MATERIAL

INVENTORY #

3/4" NPT NIPPLE

SCH 40 STEEL

-

SIDE VIEW
DESCRIPTION |
1" NPT STEEL NIPPLE

MATERIAL |
SCH 40 STEEL

INVENTORY # |
-
END VIEW

SIDE VIEW

3/4" NPT F/F COUPLER
SCH 40 STEEL
0205771052

These shop drawings illustrate the details of the Structural Technologies, LLC post-tensioning system. They were prepared in conformance with the structural design provided to Structural Technologies, LLC by project owner or its representative. Structural Technologies, LLC took no part in the preparation or review of said structural design and structural technologies, LLC disclaims any liability for it. The stamp of a Structural Technologies, LLC employee on these shop drawings pertains only to the transfer of the forces required by the engineer of record on the structural drawings, and not to the adequacy of the structural design. No warranty, expressed or implied, as to the adequacy of the structural design is made by virtue of any such stamp or seal.
**ECI 6-12 SPIRAL**

**DESCRIPTION**

- **MATERIAL:** GR 60 STEEL AS PER ASTM A615
- **INVENTORY #:** 02BP0096

**ECI 6-12 SPIRAL #3500 (#5, DIA. 13", 2" PITCH, 7 TURNS)**

**NOTE:**
1. THESE SPIRALS ARE TO BE IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS AND CONTRACT DRAWINGS
2. CONCRETE STRENGTH SHOWN IN SPIRAL NAME AS #XXXX WHERE # = PSI

**APPENDIX:**

- **SIDE VIEW:**
  - Tie first 1/2 turns @ bearing plate side of spiral to achieve full development
  - APPROX. 13 1/2"

- **FRONT VIEW:**
  - OD Ø 13.0"

- **NOTE:**
  - THESE SPIRALS ARE TO BE IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS AND CONTRACT DRAWINGS
  - CONCRETE STRENGTH SHOWN IN SPIRAL NAME AS #XXXX WHERE # = PSI
ECI 6-12 BEARING PLATE W/ 1" NPT PORT GALVANIZED PER ASTM A123
CAST IRON GR80-55-06 PER ASTM A536
02BP0037V

SECTION A-A

SECTION B-B

LETTERING - DATE CODE, FOUNDRY MARK, AND "HEAT # "VSL ECI 6-12" STAMP "FF"

LETTERING - REVERSE SIDE, SEE DETAIL 1

1/2"-13 TAPPED HOLE (TYP. 4 PLACES)

HARDNESS TEST

1/2" NPT THREADED GROUT PORT

1/2" NPT THREADED GROUT PORT

A

A

B

B

0.48"

0.72"

0.5"

0.6"

1/2"

8.73"

0.48"

0.5"

0.6"

8.73"

9.9"

9.9"

Ø4.66"

Ø4.21"

Ø3.69"

Ø3.17"
C739 6-12 Anchorage Cap W 1/4" Vertical Port

SECTION A-A

- GATE RELIEF PER MOLDERS

SECTION B-B

- 8-1/2" NPT Shop Drilled & Tapped Hole

FRONT VIEW

- Ø1/8" THRU HOLE
- Ø9.57" Ø7.32"
- 0.24"
- 0.17"
- 0.35"
- 4.86"
- Ø0.55"
- 0.35"

MATERIAL: ABS LUSTTRAN 633 PER ASTM D4673
INVENTORY #: 02GC61203

STRUCTURAL TECHNOLOGIES, LLC
CORPORATE OFFICE
10150 OLD COLUMBIA RD
COLUMBIA, MD 21046
PHONE: (410) 850-7000
structuraltechnologies.com
DESCRIPTION | MATERIAL | INVENTORY #
--- | --- | ---
3/4" FNPT SMOOTH PORT | HDPE YELLOW PER ASTM D3350 | 2DT0253

NOTE: MATERIAL MEETS OR EXCEEDS FDOT SPECIFICATION 980.
SIDE VIEW

END VIEW

NOTE: THIS IS A TEMPORARY PART.

DESCRIPTION | MATERIAL | INVENTORY #
-------------|----------|-------------
1/4 TURN BALL VALVE W/ 1/4" FNPT | SCH 40 STEEL | S00747104

NOTE: THIS IS A TEMPORARY PART.
NOTE: THIS IS A TEMPORARY PART.
DESCRIPTION | MATERIAL | INVENTORY #
--- | --- | ---
1/4" NPT STEEL NIPPLE | SCH 40 STEEL | -
DESCRIPTION | MATERIAL | INVENTORY #
--- | --- | ---
3/4" F PT X MNPT STEEL ELBOW | SCH 40 STEEL | 003701654

END VIEW

SIDE VIEW
DESCRIPTION | MATERIAL | INVENTORY #
--- | --- | ---
1 1/2" FNPT x MNPT STEEL ELBOW | SCH 40 STEEL | C751 1in FNPT X MNPT Steel Elbow FDOT 02DT01955.dwg
1 15/16"

2 3/8"

END VIEW

SIDE VIEW

DESCRIPTION

MATERIAL

INVENTORY #

1" NPT F/F COUPLER

SCH 40 STEEL

C752 1'0" NPT F-F Coupler FDOT 02DT01953.dwg

11:45 AM

29Jan2020

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ADHESIVE FLAP

1.5"

5.3"

WRAPPED

UNWRAPPED
NOTE: MATERIAL MEETS OR EXCEEDS FOOT SPECIFICATION 966
DESCRIPTION | MATERIAL | INVENTORY #
--- | --- | ---
1" NPT PP CAP | BLACK POLYPROPYLENE PER ASTM D4111 | 02D071941

NOTE: MATERIAL MEETS OR EXCEEDS FDOT SPECIFICATION 960
DESCRIPTION: 1" NPT PP PLUG

MATERIAL: BLACK POLYPROPYLENE PER ASTM D4101

INVENTORY #: 02D10941

NOTE: MATERIAL MEETS OR EXCEEDS FDOT SPECIFICATION 960.
<table>
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<tr>
<th>DESCRIPTION</th>
<th>MATERIAL</th>
<th>INVENTORY #</th>
<th>DIM. &quot;A&quot;</th>
<th>DIM. &quot;B&quot;</th>
<th>MIN. BEND RADIUS</th>
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<tbody>
<tr>
<td>3&quot; HDPE PIPE</td>
<td>HDPE BLACK PER ASTM D3350</td>
<td>-</td>
<td>3.064&quot;</td>
<td>3.5&quot;</td>
<td>16'-0&quot;</td>
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