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**DELAWARE DEPARTMENT OF TRANSPORTATION**

**SHT. 1 OF 5**

06/28/2004
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<td>E-6</td>
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<td>SEDIMENT TRAP, USING DRAINAGE INLET AS OUTLET</td>
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</tr>
<tr>
<td>P-4</td>
<td>full depth patch, section views</td>
<td></td>
</tr>
<tr>
<td>P-5</td>
<td>full depth patch, sealant details, crack retention disk, and dowel bar</td>
<td></td>
</tr>
<tr>
<td>P-6</td>
<td>full depth patch, dowel, bar placement tolerances</td>
<td></td>
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<td>T-9 (2000)</td>
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<td>2004-1</td>
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<td>2004-2</td>
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<tr>
<td>ITEM NO.</td>
<td>DESCRIPTION</td>
</tr>
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<td>---------</td>
<td>-------------</td>
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<tr>
<td>1</td>
<td>W-BEAM</td>
</tr>
<tr>
<td>2</td>
<td>W6 X 9 (W50 x 13.5) STEEL POST</td>
</tr>
<tr>
<td>3</td>
<td>WOOD OFFSET BLOCK</td>
</tr>
<tr>
<td>4</td>
<td>SPLICE - REQUIRES EIGHT (8) ½&quot; (16) GUARDRAIL BOLTS (L=1/4&quot; (35)) WITH RECESS NUTS, AND ONE (1) ¾&quot; (16) GUARDRAIL BOLT (L=10&quot; (255)) WITH RECESS NUT.</td>
</tr>
<tr>
<td>5</td>
<td>W-BEAM TERMINAL CONNECTOR</td>
</tr>
<tr>
<td>6</td>
<td>¾&quot; (16) GUARDRAIL BOLT (L=1/4&quot; (35)) AND RECESS NUT</td>
</tr>
<tr>
<td>7</td>
<td>¾&quot; (16) GUARDRAIL BOLT (L=10&quot; (255)) AND RECESS NUT</td>
</tr>
<tr>
<td>8</td>
<td>¾&quot; (16) GUARDRAIL BOLT (L=10&quot; (255)), STEEL WASHER, AND RECESS NUT</td>
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<td>9</td>
<td>½&quot; (22) HIGH STRENGTH STRUCTURAL HEX BOLT (L=VARIES) AND HEX NUT</td>
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<td>10</td>
<td>¾&quot; (16) CARRIAGE BOLT (L=VARIES), STEEL WASHER, AND HEX NUT</td>
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</table>
**TYPE 1 GUARDRAIL**

**TYPICAL GUARDRAIL TREATMENT**

When the required 4' (1200) clearance to obstruction is available

**TYPE 2 GUARDRAIL**

**TYPICAL GUARDRAIL TREATMENT**

When 2' (600) to 4' (1200) of clearance to obstruction is available

**TYPE 3 GUARDRAIL**

**TYPICAL GUARDRAIL TREATMENT**

When a minimum of 10' (3000) is available for median

**NOTES:**

1. The distance from the edge of the travel lane or shoulder to the face of guardrail should be maximized. This area shall be graded 10:1 or flatter.

2. Place guardrail reflector every fifth post.

---

**FLARE RATES**

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<th>DESIGN SPEED</th>
<th>FLARE RATE</th>
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<td>70 MPH (110 km/h)</td>
<td>6d</td>
</tr>
<tr>
<td>60 MPH (100 km/h)</td>
<td>6d</td>
</tr>
<tr>
<td>55 MPH (90 km/h)</td>
<td>6d</td>
</tr>
<tr>
<td>50 MPH (80 km/h)</td>
<td>9d</td>
</tr>
<tr>
<td>45 MPH (70 km/h)</td>
<td>9d</td>
</tr>
<tr>
<td>40 MPH (60 km/h)</td>
<td>9d</td>
</tr>
<tr>
<td>30 MPH (50 km/h)</td>
<td>9d</td>
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</tbody>
</table>

**GUARDRAIL APPLICATIONS**

B-1 (2004)
NOTE: OVERLAP W-BEAMS IN DIRECTION OF TRAVEL.
NOTES:
1. FLARE THE END TREATMENT AT 250 BEGINNING 50'0"5 M FROM THE END OF THE IMPACT HEAD, UNLESS THE CONSTRUCTION PLANS OR SPECIFICATIONS SPECIFY A SMALLER FLARE.
2. THIS DETAIL WAS SOLELY CREATED TO SHOW THE GRADING REQUIRED FOR THIS TYPE OF ATTENUATOR.
3. THE GUARDRAIL END TREATMENT ATTENUATOR SHALL BE INSTALLED AS PER THE MANUFACTURER'S AND THE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

GRADE FOR GUARDRAIL END TREATMENT ATTENUATOR, TYPE I
NOTES:
1. FLARE SHALL BE 4' (1200) UNLESS THE CONSTRUCTION PLANS OR SPECIFICATIONS SPECIFY A SMALLER FLARE. FLARE MAY BE PARABOLIC OR STRAIGHT BASED ON MANUFACTURER'S SPECIFICATIONS.
2. THIS DETAIL WAS SOLELY CREATED TO SHOW THE GRADING REQUIRED FOR THIS TYPE OF ATTENUATOR. THE GUARDRAIL END TREATMENT ATTENUATOR SHALL BE INSTALLED AS PER THE MANUFACTURER'S AND THE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

SECTION A-A

GRADING FOR GUARDRAIL END TREATMENT ATTENUATOR, TYPE 2

DELWARE DEPARTMENT OF TRANSPORTATION

GUARDRAIL APPLICATIONS

STANDARD NO. B-1 (2002) SHT. 5 OF 6

APPROVED

RECOMMENDED

01/31/2002
NOTES:
1. THIS DETAIL WAS SOLELY CREATED TO SHOW THE GRADING REQUIRED FOR THIS TYPE OF ATTENUATOR.
2. IG OR FLATTER GRADING IS ALLOWABLE WHEN THE BARRIER IS LOCATED 2' (600 mm) OR MORE FROM THE OUTSIDE EDGE OF THE SHOULDER.
3. THIS END TREATMENT CAN ALSO BE USED IN RAMPS CORES OR OTHER AREAS WHERE 2 RAILS OF W-BEAM COME TOGETHER AND TERMINATE WITH ONE END TREATMENT.
4. WHEN OPPOSING ROADWAYS HAVE EQUAL ELEVATIONS THE TRAFFIC BARRIER SYSTEM SHOULD BE PLACED ON THE OPPOSITE SIDE OF THE DITCH LINE FROM APPROACHING TRAFFIC.
5. THE GUARDRAIL END TREATMENT ATTENUATOR SHALL BE INSTALLED AS PER THE MANUFACTURER'S AND THE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.
NOTES:
1. ALL W-BEAMS ARE 12'-6" (3810) IN LENGTH.
2. PLACE GUARDRAIL REFLECTOR EVERY FIFTH POST.
DELAWARE
DEPARTMENT OF TRANSPORTATION

GUARDRAIL OVER CULVERTS, TYPE 2

APPROVED

STANDARD NO.  B-3  (2004)  SHT.  1  OF  1

RECOMMENDED

DATE  11/10/05

NOTES:
1. ALL W-BEAMS ARE 18'-9" (5715) IN LENGTH.
2. PLACE GUARDRAIL REFLECTOR EVERY FIFTH POST.

SINCE NO POST OR OFFSET BLOCK IS PRESENT AT THIS LOCATION, 3/4"-16 GUARDRAIL BOLT (L=29"(736)) IS NOT REQUIRED.

THREE SECTIONS OF W-BEAM, ONE NESTED INSIDE THE OTHER
DELAWARE
DEPARTMENT OF TRANSPORTATION

CURVED GUARDRAIL SECTION

STANDARD NO. B-4 (2004) SHT. 1 OF 1

APPROVED

CURVED GUARDRAIL SECTION

SCALE: N.T.S.

AREA BEHIND GUARDRAIL TO BE MAINTAINED FREE OF FIXED OBJECTS OR OTHER HAZARDS.

TYPE 1 GUARDRAIL PLACEMENT OR APPROPRIATE END TREATMENT OR GUARDRAIL TO BARRIER CONNECTION

AREA BEHIND GUARDRAIL TO BE MAINTAINED FREE OF FIXED OBJECTS OR OTHER HAZARDS.

RAIL NOT BOLTED TO THE POST AT THE CENTER OF THE CURVED SECTION

NOTES:
1. NO WASHERS ARE USED ON THE RAIL SIDE OF THE LONG WOOD BREAKAWAY POSTS.
2. THE CURVED GUARDRAIL SECTION SHALL BE SHAPED AS TREATED.
3. PLACE GUARDRAIL REFLECTOR EVERY FIFTH POST.

<table>
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<tr>
<th>RADIUS</th>
<th>MIN. REQUIRED AREA FREE OF FIXED OBJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>8'-6&quot; (2600)</td>
<td>25' x 15' (7600 x 4500)</td>
</tr>
<tr>
<td>17'-0&quot; (5200)</td>
<td>30' x 15' (9144 x 4500)</td>
</tr>
<tr>
<td>25'-6&quot; (7800)</td>
<td>40' x 20' (1200 x 6000)</td>
</tr>
<tr>
<td>35'-0&quot; (10700)</td>
<td>50' x 20' (15200 x 6000)</td>
</tr>
</tbody>
</table>

SLOPE = 15:1 OR FLATTER

RADIUS = 6'-3" (1905)

L x W

LONG WOOD BREAKAWAY POST

SECTION A-A

NOTES:
1. NO WASHERS ARE USED ON THE RAIL SIDE OF THE LONG WOOD BREAKAWAY POSTS.
2. THE CURVED GUARDRAIL SECTION SHALL BE SHAPED AS TREATED.
3. PLACE GUARDRAIL REFLECTOR EVERY FIFTH POST.
END SECTION PLAN

END SECTION ELEVATION

NOTES:
1. ADDITIONAL HOLES FOR ANCHOR PLATE SHALL BE DRILLED PRIOR TO GALVANIZING. SEE STANDARD HARDWARE SHEET FOR HOLE SPACING INFORMATION.
2. CONTRACTOR HAS THE OPTION OF USING A 6' (830) STEEL TUBE WITHOUT A SOIL PLATE OR A 5' (625) STEEL TUBE WITH A SOIL PLATE.

DELWARE DEPARTMENT OF TRANSPORTATION

END ANCHORAGE

STANDARD NO. B-5 (2002) SHT. 1 OF 1

APPROVED

01/01/2002

RECOMMENDED
**FLARE RATES**

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<th>DESIGN SPEED (MPH)</th>
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<td>60</td>
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<td>13d</td>
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<td>12d</td>
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<td>40</td>
<td>10d</td>
</tr>
<tr>
<td>30</td>
<td>9d</td>
</tr>
</tbody>
</table>

**NOTES:**
1. BURIED END SECTION PAYMENT INCLUDES THE CONCRETE OR POST ANCHORAGE, EXCAVATION, BACKFILL, AND ALL APPROPRIATE ITEMS INCLUDING LABOR NECESSARY TO COMPLETE END ANCHORAGE.
2. THE CONTRACTOR HAS THE OPTION OF USING EITHER A CONCRETE BLOCK ANCHOR OR A POST ANCHOR TO TERMINATE THE BURIED END SECTION.
3. WHEN PLACING GUARDRAIL ON A 10% OR FLATTER SLOPE, THE HEIGHT OF THE GUARDRAIL MUST BE HELD CONSTANT RELATIVE TO THE GROUND DIRECTLY UNDER THE FACE OF THE GUARDRAIL.
4. ALL POSTS SHALL BE 6'-0" (1800 MM) FOR SINGLE RAIL INSTALLATION.
5. WHEN USING THE BURIED END SECTION, THE DESIGN MUST PROVIDE A MINIMUM OF 15'-0" (4570 MM) FROM WHERE THE GUARDRAIL CROSSES THE DITCH LINE TO THE BEGINNING OF THE HAZARD.
6. MAINTAIN THE FLARE OF THE GUARDRAIL UNTIL THE 12" (3050 MM) COVER HAS BEEN ATTAINED. IF THE 12" (3050 MM) COVER CANNOT BE ATTAINED BEFORE THE RAIL IS 1'-0" (300 MM) BEHIND THE BOTTOM OF THE DITCH, THEN SLIDE THE GUARDRAIL FROM THE POINT WHERE IT CROSSES THE DITCH TO WHERE IT IS 1'-0" (300 MM) BEHIND THE DITCH, SO THAT IT HAS 12" (3050 MM) COVER.

**buried end section**

---

DELWARE DEPARTMENT OF TRANSPORTATION

STANDARD NO. B-6 (2002)

SHT. 1 OF 3

APPROVED

RECOMMENDED

01/31/2002
NOTES:

1. W BEAM IS NOT BOLTED TO POSTS AT POSTS 2 THROUGH 4.
2. RUB RAIL IS NOT BOLTED AT POSTS 2 AND 4.
3. POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER WOOD BLOCKS AND/OR RUBRAIL AND WOOD BLOCK.
4. USE APPROPRIATE EPOXY BOLT ANCHORS TO REDUCE THE CHANCE OF SPLITTING THE CONCRETE.
5. ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZING.
6. PLACE GUARDRAIL REFLECTOR EVERY FIFTH POST.
7. APPROVED CONCRETE INSERTS MAY BE USED IN NEW CONSTRUCTION.

---

**SECTION B-B**

- DRILL 3/4" (20) DIAM HOLE IN W BEAM TO MOUNT STEEL SPACER TUBE. ATTACH WITH (20) CARRIAGE BOLT (L=250).
- PLACED WOOD BLOCKS NO. 3, BETWEEN BOLT HEADS AND RUB RAIL.
- PLACE STEEL WASHER & LAG BOLT.
- POSTS NO. 1, 3, AND 5: RUB RAIL AND WOOD BLOCKS MOUNTED TO POSTS.
- POSTS NO. 2 AND 4: WOOD BLOCKS ONLY MOUNTED TO POSTS.
- GUARDRAIL REFLECTOR EVERY FIFTH POST.
- ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZING.
- PLACE GUARDRAIL REFLECTOR EVERY FIFTH POST.
- APPROVED CONCRETE INSERTS MAY BE USED IN NEW CONSTRUCTION.

**SECTION A-A**

- DRILL 3/4" (20) DIAM HOLE IN W BEAM TO MOUNT STEEL SPACER TUBE. ATTACH WITH (20) CARRIAGE BOLT (L=250).
- PLACED WOOD BLOCKS NO. 3, BETWEEN BOLT HEADS AND RUB RAIL.
- PLACE STEEL WASHER & LAG BOLT.
- POSTS NO. 1, 3, AND 5: RUB RAIL AND WOOD BLOCKS MOUNTED TO POSTS.
- GUARDRAIL REFLECTOR EVERY FIFTH POST.
- ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZING.
- PLACE GUARDRAIL REFLECTOR EVERY FIFTH POST.
- APPROVED CONCRETE INSERTS MAY BE USED IN NEW CONSTRUCTION.

---

**PLAN**

- BETWEEN BOLT HEADS AND RUB RAIL.
- POSTS NO. 1, 3, AND 5: RUB RAIL AND WOOD BLOCKS MOUNTED TO POSTS.
- GUARDRAIL REFLECTOR EVERY FIFTH POST.
- ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZING.
- PLACE GUARDRAIL REFLECTOR EVERY FIFTH POST.
- APPROVED CONCRETE INSERTS MAY BE USED IN NEW CONSTRUCTION.
RUB RAIL WOOD BLOCKS

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<tr>
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<th>WIDTH</th>
<th>BOLT LENGTH</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>4'6&quot; (138)</td>
<td>6&quot; (152)</td>
</tr>
<tr>
<td>2</td>
<td>3'3½&quot; (102)</td>
<td>4&quot; (102)</td>
</tr>
<tr>
<td>3</td>
<td>2' (61)</td>
<td>4&quot; (102)</td>
</tr>
<tr>
<td>4</td>
<td>1' (30)</td>
<td>2&quot; (50)</td>
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</tbody>
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NOTES:
1. THE RUB RAIL TO BARRIER CONNECTION END MUST BE ATTACHED FLUSH WITH THE SLOPED TOE OF THE SAFETY BARRIER INSTALLATION CAN BE SIMPLIFIED BY FABRICATING OR SHOP TWISTING THE RUB RAIL END TO BE CONSISTENT WITH THE SLOPE OF THE BARRIER, HOWEVER, FIELD BENDING USING HEAT IS PERMITTED.

2. STEEL SPACER TUBE IS SCHEDULE 40 GALVANIZED PIPE, 6" (152) ID X 3' (915)

DELTA EIRI
DEPARTMENT OF TRANSPORTATION

GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 1

STANDARD NO. B-7 (2001)  SHT. 2 OF 3  APPROVED [Signature] DATED 6/12/04

04/05/2001
NOTES:

1). CURB SHALL NOT BE USED AT THE FACE OF RAIL WITHIN THE LIMITS OF THIS INSTALLATION.
2). POSTS 1, 2, 3, 4, AND 6 REQUIRE AN ADDITIONAL HOLE TO ATTACH WOOD BLOCKS AND/OR BENT RAIL.
3). DO NOT ATTACH RAILS TO POSTS 1, 2, 3, 5, OR 7.
4). WHEN PLACED OVER CURB (MIN 8" (200) HIGH), BOTTOM RAIL CAN BE ELIMINATED.
5). ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZING.
6). BENT RAIL MAY BE SHOP BENT TO FACILITATE INSTALLATION OR MAY BE FIELD BENT USING HEAT.
7). APPROVED CONCRETE INSERTS MAY BE USED IN NEW CONSTRUCTION TO ATTACH TERMINAL CONNECTORS TO PARAPET.
8). PLACE GUARDRAIL REFLECTOR EVERY FIFTH POST.
9). WHEN PLACED OVER CURB MIN 8" (200) HIGH, BOTTOM RAIL CAN BE ELIMINATED.
10). PLACE GUARDRAIL REFLECTOR EVERY FIFTH POST.

DELAWARE
DEPARTMENT OF TRANSPORTATION

GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 2

STANDARD NO.  B-8 (2004)  SHT.  1  OF  2

APPROVED  11/05

RECOMMENDED  11/05
BENT RAIL WOOD BLOCKS
1'-2" (360) x 4½" (115)

<table>
<thead>
<tr>
<th>BLOCK</th>
<th>WIDTH</th>
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<tr>
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<td>5&quot; (125)</td>
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<td>3</td>
<td>3&quot; (75)</td>
<td>6&quot; (150)</td>
</tr>
<tr>
<td>4</td>
<td>2&quot; (50)</td>
<td>4&quot; (100)</td>
</tr>
</tbody>
</table>

NOTE: BOTTOM WOOD BLOCKS LOCATED ON POSTS 1-4 ARE OFFSET DRILLED TO SIT SQUARELY ON THE POST FLANGE AND SECURED WITH 3/8" (9.6) CARRIAGE BOLTS. W, LENGTH VARY, SEE BENT RAIL WOOD BLOCKS TABLE.
DELWARE DEPARTMENT OF TRANSPORTATION  
GUARDRAIL TO BARRIER CONNECTION, EXIT TYPE  
STANDARD NO. B-9 (2002)  
SHT. 1 OF 1  
APPROVED  
RECOMMENDED  
04/23/2002

NOTES:  
1. CONCRETE INSERTS MAY BE USED IN NEW CONSTRUCTION TO ATTACH TERMINAL CONNECTOR TO PARAPET.  
2. GUARDRAIL SECTION AND TERMINAL CONNECTORS SHALL BE OVERLAPPED IN THE DIRECTION OF TRAVEL.  
3. INSTALLATION SHOWN ABOVE WITH AN ‘F-TYPE’ BARRIER FACE. GUARDRAIL SECTION OF BARRIER CONNECTION SHALL BE ADJUSTED HORIZONTALLY IN ORDER TO MEET FLUSH AGAINST VARIOUS TYPES OF WALLS AND BARRIERS.
THREE BEAM GUARDRAIL WITH WOOD POSTS SPACED AT 6'-3"(1905)
SEE NOTE

END OF SIDEWALK

EXISTING BRIDGE PARAPET

ENTRANCE END APPLICATION

SEE NOTE

W-THREE BEAM TRANSITION SECTION

THREE BEAM GUARDRAIL WITH WOOD POSTS SPACED AT 6'-3"(1905)
SEE NOTE

SECTION A-A

NOTES:
1. THE INSTALLATION SHALL BE USED WHEN THE EXISTING SIDEWALK IS 6'-3"(1905) OR LESS.
2. USE A THREE BEAM EXPANSION SECTION AT BRIDGE EXPANSION JOINTS.
3. PLACE GUARDRAIL REFLECTOR IN THE UPPER VALLEY OF THE THREE BEAM EVERY FIFTH POST.
4. TIMBER BLOCK THICKNESS SHALL BE ADJUSTED TO ALLOW FACE OF THE THREE BEAM TO BE FLUSH WITH BOTTOM OF CURB. MINIMUM THICKNESS SHALL BE 4"(100).
5. THE EXIT END APPLICATION SHALL BE USED ONLY ON DIVIDED HIGHWAYS. FOR ALL OTHER SITUATIONS, THE ENTREANCE END APPLICATION SHALL BE USED ON BOTH ENDS OF THE BRIDGE PARAPET.
6. SPACING OF WOOD POSTS MAY NEED TO BE REDUCED TO ACCOMMODATE LINING UP POSTS AT THE END OF THE PARAPET.
THREE BEAM GUARDRAIL WITH STEEL POSTS SPACED AT 6'-3" (1905) CENTER TO CENTER

THREE BEAM GUARDRAIL WITH STEEL POSTS SPACED AT 6'-3" (1905) CENTER TO CENTER

EXISTING CURB LINE BOTTOM OF CURB

SEE NOTE

END OF SIDEWALK

SEE NOTE

DIRECTION OF TRAVEL

NOTE:

1. THIS INSTALLATION SHALL BE USED WHEN THE EXISTING SIDEWALK IS 18" (450) OR WIDER, AND DEAD LOAD CONSIDERATIONS ARE A CONCERN WHEN USING BRIDGE RAIL RETROFIT, TYPE 3.

2. ADHESIVE ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND SHALL BE GALVANIZED.

3. USE A THREE BEAM EXPANSION SECTION AT BRIDGE EXPANSION JOINTS.

4. PLACE GUARDRAIL REFLECTOR IN THE UPPER VALLEY OF THE THREE BEAM EVERY FIFTH POST.

5. THE EXIT END APPLICATION SHALL BE USED ONLY ON DIVIDED HIGHWAYS. FOR ALL OTHER SITUATIONS, THE ENTRANCE END APPLICATION SHALL BE USED ON BOTH ENDS OF THE BRIDGE PARAPET.

6. SPACING OF STEEL POSTS MAY NEED TO BE REDUCED TO ACCOMMODATE LINING UP POSTS AT THE END OF THE PARAPET.

SECTION A-A
NOTE: STANDARD GUARDRAIL TO BARRIER CONNECTIONS SHALL BE CONNECTED TO THE ENDS OF THE NEW BRIDGE BARRIER AND TRANSITIONED TO THE EXISTING GUARDRAIL.
W-BEAM ELEVATION

W-BEAM SECTION

NOTES: 1. TWO ADDITIONAL 3/8" x 2 3/4" (65) SLOTS SHALL BE PROVIDED AT 6'-3" (1905) SPACING FOR BEAM LENGTH OF 26'-1/2" (7940L).

DELWARE DEPARTMENT OF TRANSPORTATION

HARDWARE

STANDARD NO. B-13 (2004) SHT. 1 OF 13

APPROVED

PRESENTED WITH 11/14/05

RECOMMEND

09/31/2004
NOTE: WHERE CONDITIONS REQUIRE, ALTERNATE LENGTHS IN INCREMENTS OF 6" (150) MAY BE USED.

W-BEAM STEEL POST AND WOOD OFFSET BLOCK

HARDWARE

STANDARD NO. B-13 (2004) SHT. 2 OF 13 APPROVED

NOTE: ALL HOLES SHALL BE 5/8" (20) DBL. BOLT
HOLE PATTERN IS SYMMETRICAL WITH RESPECT TO THE VERTICAL AXIS OF THE POST.
NOTE: WHERE CONDITIONS REQUIRE, USE ALTERNATE LENGTHS IN INCREMENTS OF 6" (150)

THREE BEAM STEEL POST AND WOOD OFFSET BLOCK

NOTE:

ALL HOLES SHALL BE 5/8" (20) O.D. BOLT HOLE PATTERN IS SYMMETRICAL WITH RESPECT TO THE VERTICAL AXIS OF THE POST.
W-THRIE BEAM TRANSITION SECTION

STANDARD W-BEAM SECTION

7'-3½" (2229)
3'-6½" (929.5)
2'-10½" MIN.

12" GAGE

POST BOLT SLOTS

¾" (20) x ¾" (20) SPICE BOLT SLOTS

HARDWARE

B-13 (2004)

DELTA W-THRIE BEAM TRANSITION SECTION

DELAWARE
DEPARTMENT OF TRANSPORTATION

SHT. 6 OF 13
RECOMMENDED

APPROVED

SCALE: 1/8" = 1'-0"

DATE: 11/04/05

DATE: 11/04/05
NOTES:
1. ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZING.
2. ALL WOOD SIZES ARE NOMINAL DIMENSIONS.
ANCHOR PLATE TO W-BEAM CONNECTION DETAIL

SWAGED CABLE ASSEMBLAGE AND RELATED HARDWARE ASSEMBLY

NOTES:
1. TO ENSURE THAT THE TIMBER BEARING PLATE REMAINS IN POSITION,
   SHORT TIMBER BREAKAWAY POST, AND BENT OVER BEARING PLATE.
2. DRILL 4 HOLES-
   (UPPER BOLT L)
   AND NUTS
3. ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZING.

STEEL POST SLEEVE

POST SLEEVE

TIMBER BEARING PLATE

END PLATE

ANCHOR PLATE

ANCHOR PLATE TO TIMBER BEARING PLATE

SECURE BEARING PLATE TO PREVENT ROTATION
WITH TWO 10d GALVANIZED NAILS
GUARDRAIL REFLECTOR

MOUNTING POSITION

BEARING PLATE DETAIL

HARDWARE

STANDARD NO. B-13 2004  SHT. 9  OF 15  APPROVED

DELAWARE
DEPARTMENT OF TRANSPORTATION

HARDWARE

STANDARD NO. B-13 2004  SHT. 9  OF 15  APPROVED
RECESSSED NUT
(FOR 5/8" (16) GUARDRAIL BOLT)

STEEL WASHER (FOR 5/8" (16) GUARDRAIL BOLT)
NOTE: DIMENSIONS FOR WASHER THICKNESS IS APPROXIMATE BASED ON METAL THICKNESS.

GUARDRAIL BOLT

NOTES:
1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF R/4 (1/2).
2. IF THE BOLT EXTENDS MORE THAN 5/8" BEYOND THE NUT, THE BOLT SHALL BE TRIMMED BACK AS PER THE DEPARTMENT'S SPECIFICATIONS.

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<tr>
<th>L</th>
<th>T (MM)</th>
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<td>FULL THREAD LENGTH</td>
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<td>7/32&quot; (5.6)</td>
<td>FULL THREAD LENGTH</td>
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<td>1/8&quot; (3.2)</td>
<td>FULL THREAD LENGTH</td>
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<td>3/32&quot; (2.4)</td>
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<td>1/16&quot; (1.6)</td>
<td>4&quot; (100) THREAD LENGTH</td>
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DIMENSION FOR WASHER THICKNESS IS APPROXIMATE BASED ON METAL THICKNESS.
NOTE: DIMENSION FOR WASHER THICKNESS IS APPROXIMATE BASE METAL THICKNESS.
Steel Washer

Notes:
1. For use with swaged cable assemblage.
2. Dimension for washer thickness is approximate base metal thickness.

5/8" (16) Hex Nut

Note: For use with swaged cable assemblage.
TYPICAL CAST-IN-PLACE OR SLIP-FORM CONSTRUCTION

* BAR SHALL BE CUT AT EVERY JOINT IF MADE CONTINUOUS FOR SLIP-FORM CONSTRUCTION
STEEL CONNECTOR PLATE

CONCRETE SAFETY BARRIER, PRECAST CONSTRUCTION
9" SHAPE BARRIER SECTION

SECTION A-A

SECTION B-B
1. When integral P.C.C. curb and gutter is placed adjacent to Portland cement concrete pavement, construct the joint as per the longitudinal joint sealant detail on Standard P-2, Sheet 3 of 5. Use approved joint filler to seal. Work to be paid under respective curb and gutter item.
2. Depress curb at driveways as detailed.
3. Depress curb flush with pavement at curb ramps. Maximum slope of depressed curb is 1:12.
DETECTABLE WARNING TRUNCATED DOMES DETAILS

1. The area of detectable warning truncated domes shall be 24" (600) long and the full width of the ramp.
2. See specification for additional information.

PERPENDICULAR CURB RAMP

1. Where a 12:1 maximum slope ramp will not meet the sidewalk grade within a length of 15' (4570) due to steep adjacent roadway, the ramp length may be limited to 15' (4570), and the ramp slope allowed to exceed 12:1.
2. Ramp width shall be 4' (1200) minimum, however, 5' (1525) is preferred.
CURB RAMP, TYPE 2
PARALLEL CURB RAMP

CURB RAMP, TYPE 3
DIAGONAL CURB RAMP

CURB RAMP, TYPE 4
PERPENDICULAR CURB RAMP

NOTES:
1. WHERE A 12:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 15' (4570) DUE TO STEEP ADJACENT ROADWAY, THE RAMP LENGTH MAY BE LIMITED TO 15' (4570), AND THE RAMP SLOPE ALLOWED TO EXCEED 12:1.

2. TRANSITION TO EXISTING SIDEWALK WIDTH OVER THE LENGTH OF THE RAMP.

3. RAMP WIDTH SHALL BE 4' (1200) MINIMUM, HOWEVER, 5' (1525) IS PREFERRED.

NOTE: THE DIAGONAL CURB RAMP IS NOT THE PREFERRED TREATMENT.

DETECTABLE WARNING
TRUNCATED DOMES

LANDING
60" (1525) MIN.

SIDEWALK
SIDEWALK

DETECTABLE WARNING
TRUNCATED DOMES

DIAGONAL CURB RAMP

SIDEWALK

NOTE: THE DIAGONAL CURB RAMP IS NOT THE PREFERRED TREATMENT.

DETECTABLE WARNING
TRUNCATED DOMES

LANDING
60" (1525) MIN.

SIDEWALK

DETECTABLE WARNING
TRUNCATED DOMES

PERPENDICULAR CURB RAMP

SIDEWALK

DETECTABLE WARNING
TRUNCATED DOMES

LANDING
60" (1525) MIN.

SIDEWALK

DETECTABLE WARNING
TRUNCATED DOMES

CURB RAMP 12:1 MAX

TAPER RAMP 12:1 MAX
SEE NOTE 3

RAMP WIDTH SHALL BE 4' (1200) MINIMUM, HOWEVER, 5' (1525) IS PREFERRED.

TAPER RAMP 12:1 MAX
SEE NOTE 3

RAMP WIDTH SHALL BE 4' (1200) MINIMUM, HOWEVER, 5' (1525) IS PREFERRED.

TAPER RAMP 12:1 MAX
SEE NOTE 3

RAMP WIDTH SHALL BE 4' (1200) MINIMUM, HOWEVER, 5' (1525) IS PREFERRED.
CURB RAMP SECTIONS FOR TYPES 2 & 3

NOTE: CURB RAMP WIDTH SHALL BE 4' (1200) MINIMUM, HOWEVER, 5' (1525) IS PREFERRED.
DELAWARE
DEPARTMENT OF TRANSPORTATION

SCALE: N.T.S.

CHIEF ENGINEER
DESIGN ENGINEER

RECOMMENDED
APPROVED

N.T.S.

SHT.                                         OF
STANDARD NO.

CURB RAMP TYPE 5 & SECTIONS

TAPER RAMP 12:1 MAX
(SEE NOTE 2)

TAPER RAMP 12:1 MAX
(SEE NOTE 2)

INLAND AS NECESSARY TO
FACILITATE LANDING.

LANDING, 20:1 MAX. SLOPE

SPOKED CONCRETE ISLAND AS NECESSARY TO
FACILITATE LANDING.

C-2 (2004)
SHT. 4 OF 4

NOTE 1: A CUT-THROUGH LEVEL WITH THE STREET IS THE PREFERRED TREATMENT FOR ISLANDS, ALTHOUGH RAMPS
CAN BE USED WHERE THE ISLAND WIDTH IS SUFFICIENT TO ACCOMMODATE THEM. POSITIVE SURFACE DRAINAGE
MUST BE PROVIDED FOR EITHER TREATMENT. EITHER TREATMENT IS ACCEPTABLE.

2. WHERE A 20:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 6' (1829)
DUE TO STEEP ADJACENT ROADWAY, THE RAMP LENGTH MAY BE LIMITED TO 6' (1829) AND THE RAMP SLOPE
ALLOWED TO EXCEED 20:1.

3. A CONTINUOUS PATH MUST BE PROVIDED BETWEEN ADJACENT CURB RAMPS IN ISLANDS AND MEDIANS, WITH
A MAXIMUM RUNNING SLOPE OF 20:1.

4. RAMP WIDTH SHALL BE A MINIMUM OF 4' (1200), HOWEVER 5' (1525) IS PREFERRED. WHEN USING CUT-THROUGH
STYLE RAMP, WITH CURBING ON BOTH SIDES OF THE RAMP, THE WIDTH SHALL BE A MINIMUM OF 5' (1525).

CURB RAMP TYPE 5

(WARP TYPE 5 & SECTIONS)

WARP CONCRETE ISLAND AS NECESSARY TO
FACILITATE LANDING.

LANDING, 20:1 MAX. SLOPE

SPOKED CONCRETE ISLAND AS NECESSARY TO
FACILITATE LANDING.

ELEVATION H-H

NOTES:

1. A CUT-THROUGH LEVEL WITH THE STREET IS THE PREFERRED TREATMENT FOR ISLANDS, ALTHOUGH RAMPS
CAN BE USED WHERE THE ISLAND WIDTH IS SUFFICIENT TO ACCOMMODATE THEM. POSITIVE SURFACE DRAINAGE
MUST BE PROVIDED FOR EITHER TREATMENT. EITHER TREATMENT IS ACCEPTABLE.

2. WHERE A 20:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 6' (1829)
DUE TO STEEP ADJACENT ROADWAY, THE RAMP LENGTH MAY BE LIMITED TO 6' (1829) AND THE RAMP SLOPE
ALLOWED TO EXCEED 20:1.

3. A CONTINUOUS PATH MUST BE PROVIDED BETWEEN ADJACENT CURB RAMPS IN ISLANDS AND MEDIANS, WITH
A MAXIMUM RUNNING SLOPE OF 20:1.

4. RAMP WIDTH SHALL BE A MINIMUM OF 4' (1200), HOWEVER 5' (1525) IS PREFERRED. WHEN USING CUT-THROUGH
STYLE RAMP, WITH CURBING ON BOTH SIDES OF THE RAMP, THE WIDTH SHALL BE A MINIMUM OF 5' (1525).

DELTA RAMP 5 & SECTIONS

APPROVED

C-2 (2004)
SHT. 4 OF 4

RECOMMENDED

CURB RAMP TYPE 5 & SECTIONS

APPROVED

11/05

DELAWARE
DEPARTMENT OF TRANSPORTATION

SHT. 4 OF 4

RECOMMENDED

11/05
PLAN VIEW
SHOWN WITHOUT GRATE

NOTE: 61 SAFETY END STRUCTURE TO BE PRECAST

SECTION A-A

FRONT VIEW
**DIMENSIONS**

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<th>B</th>
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<tbody>
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<td>2&quot; (525)</td>
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</table>

**CONCRETE CFT**

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>CONCRETE CFT (cu ft)</th>
<th>CONC. PIPE</th>
<th>CAL. PIPE</th>
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<td>40.75 (1.20)</td>
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**REINFORCING STEEL LBS. (kg)**

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>NO. OF GRATES</th>
<th>LENGTH TO BE CUT FROM 1 GRATE</th>
<th>WEIGHT OF FULL SIZE GRATE LBS. (kg)</th>
<th>WEIGHT OF CUT GRATE LBS. (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot; (1575)</td>
<td>2</td>
<td>2&quot; H16350</td>
<td>270.92 (122.89)</td>
<td>270.92 (122.89)</td>
</tr>
<tr>
<td>8&quot; (150)</td>
<td>3</td>
<td>2&quot; H16350</td>
<td>270.92 (122.89)</td>
<td>270.92 (122.89)</td>
</tr>
</tbody>
</table>

**APPROXIMATE QUANTITIES**

**SCHEDULE OF REINFORCING STEEL**

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>A-BARS</th>
<th>B-BARS</th>
<th>C-BARS</th>
<th>D-BARS</th>
<th>E-BARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>NO. SPA</td>
<td>LENGTH</td>
<td>SIZE</td>
<td>NO. SPA</td>
<td>LENGTH</td>
</tr>
<tr>
<td>6&quot; (1575)</td>
<td>4 (M3)</td>
<td>2</td>
<td>6&quot; (150)</td>
<td>4 (M3)</td>
<td>5</td>
</tr>
<tr>
<td>8&quot; (150)</td>
<td>4 (M3)</td>
<td>2</td>
<td>6&quot; (150)</td>
<td>4 (M3)</td>
<td>5</td>
</tr>
<tr>
<td>2&quot; (525)</td>
<td>4 (M3)</td>
<td>2</td>
<td>6&quot; (150)</td>
<td>4 (M3)</td>
<td>5</td>
</tr>
</tbody>
</table>

**BENDING DIAGRAM**

- **B-BARS**
  - 15" (375)
  - 10" (250)
- **C-BARS**
  - 15" (375)
  - 10" (250)
- **D-BARS**
  - 15" (375)
  - 10" (250)
- **E-BARS**
  - 15" (375)
  - 10" (250)

**DEPARTMENT OF TRANSPORTATION**

**61 SAFETY END STRUCTURE**

**STANDARD NO.** D-1 (2001) **SHT. 2 OF 2**

**APPROVED**

**RECOMMENDED**

**SCALE: N.T.S.**

**DATE: 04/17/2001**
PLAN VIEW
SHOWN WITHOUT GRATE

NOTE: ID SAFETY END STRUCTURE TO BE PRECAST

SECTION A-A
* REQUIRED ONLY FOR PPE SIZE OF 24" (625) OR 24" (625)

DELAWARE
DEPARTMENT OF TRANSPORTATION

101 SAFETY END STRUCTURE

STANDARD NO. D-2 (2001) SHT. 1 OF 2

APPROVED

RECOMMENDED
### Dimensions

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<tbody>
<tr>
<td>8&quot; (1575)</td>
<td>5&quot;-4&quot; (1470)</td>
<td>2&quot;-4&quot; (1720)</td>
<td>4&quot;-7&quot; (1445)</td>
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<tr>
<td>8&quot; (1575)</td>
<td>5&quot;-4&quot; (1470)</td>
<td>2&quot;-4&quot; (1720)</td>
<td>4&quot;-7&quot; (1445)</td>
</tr>
<tr>
<td>2&quot; (5250) OR 24&quot; (6000)</td>
<td>24&quot;-0&quot; (6100)</td>
<td>2&quot;-4&quot; (1720)</td>
<td>22&quot;-4&quot; (6100)</td>
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</table>

### Approximate Quantities

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Concrete FT³</th>
<th>Reinforced Steel LBS</th>
<th>No. of Grates</th>
<th>Length to Be Cut from 1 Grate</th>
<th>Weight of Full Size Grate LBS</th>
<th>Weight of Cut Grate LBS</th>
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</thead>
<tbody>
<tr>
<td>8&quot; (1575)</td>
<td>46.35 (1311)</td>
<td>41.78 (1883)</td>
<td>4</td>
<td>2&quot;-1&quot; (1630)</td>
<td>216.38 (3391)</td>
<td>154.47 (6845)</td>
</tr>
<tr>
<td>8&quot; (1575)</td>
<td>50.08 (1439)</td>
<td>43.68 (1935)</td>
<td>5</td>
<td>2&quot;-1&quot; (1630)</td>
<td>216.38 (3391)</td>
<td>154.47 (6845)</td>
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<tr>
<td>2&quot; (5250) OR 24&quot; (6000)</td>
<td>168.43 (4900)</td>
<td>170.31 (9380)</td>
<td>6</td>
<td>2&quot;-1&quot; (1630)</td>
<td>216.38 (3391)</td>
<td>154.47 (6845)</td>
</tr>
</tbody>
</table>

### Bending Diagram

- **Pipe Size**
  - 15" (375)
  - 8" (1575)
  - 2" (5250) OR 24" (6000)

- **X**
  - 15" (375)
  - 8" (1575)
  - B-Bars

- **Y**
  - 8" (1575)
  - G-Bars

- **Pipe Size**
  - 15" (375) VARIES
  - 8" (1575) VARIES
  - 2" (5250) OR 24" (6000) VARIES

### Schedule of Reinforcing Steel

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>A-Bars</th>
<th>B-Bars</th>
<th>C-Bars</th>
<th>D-Bars</th>
<th>G-Bars</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Size</strong></td>
<td><strong>No.</strong></td>
<td><strong>Spa</strong></td>
<td><strong>Length</strong></td>
<td><strong>Size</strong></td>
<td><strong>No.</strong></td>
</tr>
<tr>
<td>15&quot; (375)</td>
<td>4 (M)</td>
<td>1</td>
<td>72&quot;(1830)</td>
<td>4 (M)</td>
<td>5</td>
</tr>
<tr>
<td>8&quot; (1575)</td>
<td>4 (M)</td>
<td>1</td>
<td>72&quot;(1830)</td>
<td>4 (M)</td>
<td>5</td>
</tr>
<tr>
<td>2&quot; (5250) OR 24&quot; (6000)</td>
<td>4 (M)</td>
<td>2</td>
<td>72&quot;(1830)</td>
<td>4 (M)</td>
<td>5</td>
</tr>
</tbody>
</table>

**Delaware Department of Transportation**

**161 Safety End Structure**

**Standard No.** D-2 (2001)  **Sht. 2 of 2**

**Approved**

**Recommended**

04/17/2001
1. INLET BOXES SHALL BE PRE-CAST OR CAST-IN-PLACE.
2. OUTSIDE OF PIPE MUST FIT INTO THE INTERIOR OF THE BOX.
3. STEPS ARE TO BE INSTALLED IN BACK WALL AS PER SPECIFICATIONS.
4. NO PIPES WITH AN OUTSIDE DIAMETER LARGER THAN 6" (152 MM) WILL BE PERMITTED TO ENTER THE BACK WALL OF A DRAINAGE INLET OR MANHOLE TO ACCOMMODATE STEPS IF REQUIRED. A LARGER BOX MAY BE USED IN ORDER TO FIT THE STEPS AND A LARGER PIPE IN THE BACK WALL, IF NECESSARY.
NOTES:

1) STEPS SHALL BE INSTALLED IN BACK WALL AS PER SPECIFICATIONS.
2) NO PIPES WITH AN OUTSIDE DIAMETER LARGER THAN 4" (102 MM) WILL BE PERMITTED TO ENTER THE BACK WALL OF A DRAINAGE INLET, IF IT IMPEDES THE INSTALLATION OF STEPS IN THE BACK WALL.
3) IF NECESSARY, A LARGER BOX MAY BE USED IN ORDER TO FIT THE STEPS AND A LARGER PIPE IN THE BACK WALL.

DELaware DEPARTMENT OF TRANSPORTATION

DRAINAGE INLET DETAILS

STANDARD NO. D-5 (2002) SHIT. 1 OF 8

APPROVED

RECOMMENDED

05/02/2002
SECTION C-C  DRAINAGE INLET GRATE
    TYPE I

SECTION B-B  DRAINAGE INLET FRAME

SECTION D-D  DRAINAGE INLET GRATE
    TYPE 2

SECTION G-G  DRAINAGE INLET GRATE
    TYPE 3

SECTION A-A

SECTION F-F

DRAINAGE INLET FRAME AND GRATES
NOTE: 1. BOTTOM OF TYPE I GRADE TO BE FLAT AND TRUE.
2. TYPE 2 GRADE SHALL NOT BE INSTALLED WHERE
   BICYCLE TRAFFIC MAY BE PRESENT.
**DRAINAGE INLET TOP UNITS**

NOTE: TOP UNIT IS TO BE CAST-IN-PLACE TO GRADE AS SPECIFIED ON PLAN SHEETS OR AS DIRECTED BY ENGINEER.

**INLET TOP UNIT APPLICATIONS**

<table>
<thead>
<tr>
<th>TOP UNIT</th>
<th>CURB</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE A</td>
<td>USE IN DRAINAGE SWALE</td>
</tr>
<tr>
<td>TYPE B</td>
<td>INTERNAL PCC CURB &amp; GUTTER, TYPE 1 &amp; 3, PCC CURB TYPE 1</td>
</tr>
<tr>
<td>TYPE C</td>
<td>INTERNAL PCC CURB &amp; GUTTER, TYPE 2, PCC CURB TYPE 2</td>
</tr>
<tr>
<td>TYPE D</td>
<td>PCC CURB TYPE 2</td>
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</tbody>
</table>

**S501 BENDING DIAGRAM**

S501 IS NOT REQUIRED TO BE ONE CONTINUOUS BAR. IF MORE THAN ONE BAR IS USED, THERE MUST BE A 12" (300) OVERLAP BETWEEN BARS.

**DRAINAGE INLET TOP UNITS**

NOTE: TOP UNIT IS TO BE CAST-IN-PLACE TO GRADE AS SPECIFIED ON PLAN SHEETS OR AS DIRECTED BY ENGINEER.

**ISOMETRIC VIEW**

TYPE E UNIT SHOWN

**NOTE:** TOP UNIT IS TO BE CAST-IN-PLACE TO GRADE AS SPECIFIED ON PLAN SHEETS OR AS DIRECTED BY ENGINEER.
NOTE:
1. 4"*100" THROAT IS FOR TYPES B AND C TOP UNITS ONLY.
2. RELOCATE END DRAWING REINFORCING BARS WHEN USING TYPES B & C TOP UNITS.
3. COVER SLABS ARE TO BE PRE-CAST AND MUST BE SIZED TO FIT INLET BOX DIMENSIONS.
4. ALL BARS ARE TO BE #5 (16G) SPACED @ 6" (150) UNLESS NOTED OTHERWISE.
5. MINIMUM BAR COVER = 6" (150).

5502 BENDING DIAGRAM:
5502 IS NOT REQUIRED TO BE ONE CONTINUOUS BAR. IF MORE THAN ONE BAR IS USED, THERE MUST BE A 32" (800) OVERLAP BETWEEN BARS.

DELaware
DEPARTMENT OF TRANSPORTATION

DOUBLE INLET COVER SLAB DETAILS

STANDARD NO. D-5 (2002) SHT. 5 OP 8

APPROVED
34" (865) x 24" (610) DRAINAGE INLET DETAILS

NOTE: REFER TO PREVIOUS SHEETS FOR REINFORCING REQUIREMENTS
NOTE:
1. REINFORCEMENT SHALL BE 4" x 4" x 4" (102 x 102 x 102)
2. INLET BOXES ARE TO BE PRE-CAST OR CAST-IN-PLACE.
ROUND MANHOLE ASSEMBLY

NOTE: ROUND MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199.
NOTE: TOP UNIT IS TO BE CAST IN PLACE TO GRADE AS SPECIFIED ON PLAN SHEETS OR AS DIRECTED BY ENGINEER.

SECTION A-A

SECTION B-B

SECTION C-C

TOP UNIT

FRAME

COVER

DELTAHORE
DEPARTMENT OF TRANSPORTATION

MANHOLE DETAILS

STANDARD NO.  D-6 (2001)  SHT.  3  OF  4  RECOMMENDED

APPROVED  

05/2/2001
**MANHOLE DETAILS**

**DELTA MANHOLE (760) X 48" (1220) MANHOLE**

**66" (1675) X 30" (760) MANHOLE**

**66" (1675) X 48" (1220) MANHOLE**

**NOTES:**
1. COVER SLABS SHALL BE PRE-CAST.
2. ALL BARS SHALL BE 5' (M6) SPACED AT 6' (160) UNLESS NOTED OTHERWISE.
3. MINIMUM BAR COVER = 1/2" (12).

**DIMENSIONS TO MATCH OUTSIDE TO OUTSIDE DIMENSIONS OF BOX.**
48" (1220) x 30" (760) JUNCTION BOX

48" (1220) x 48" (1220) JUNCTION BOX

66" (1675) x 30" (760) JUNCTION BOX

66" (1675) x 48" (1220) JUNCTION BOX

SECTION A-A

SECTION B-B

JUNCTION BOX COVER SLAB DETAILS

NOTES:
1. COVER SLABS ARE TO BE PRE-CAST.
2. ALL BARS ARE TO BE #5 (16mm) SPACED
   @ 2'-0" (600mm) UNLESS NOTED OTHERWISE.
3. MINIMUM BAR COVER = 3/4" C.B.D.
   *= DIMENSIONS TO WATCH OUTSIDE
   TO OUTSIDE DIMENSIONS OF BOX

DELAWARE DEPARTMENT OF TRANSPORTATION

JUNCTION BOX DETAILS

STANDARD NO. D-7 (2002) SHT. 2 OF 2

APPROVED

RECOMMENDED

04/24/2002
CLASS A BEDDING

CONCRETE 2000 P.S.I. 15 MPa (MIN.)

CLASS C BEDDING

NOTE: USE CLASS C BEDDING UNLESS OTHERWISE INDICATED
NOTES:

1. Geotextile filter fabric shall be placed entirely over the top of underdrain trench and lapped as shown.

2. Slopes of underdrains shall match roadway grade, unless otherwise directed by the engineer.

3. Outlet pipe configurations shall use 45 degree elbows or shall use straight pipe with a minimum radius of 3' (900) to direct underdrain pipe into side of drainage inlet or to positive grade. Pipe shall also be non-perforated and have a smooth interior.

4. Rodent screen shall snugly fit the provided slot with the screen lip fitting tight to the bottom flow line.

5. A 4' (1200) flexible delineator shall be furnished and installed at the direction of the engineer to mark the location of the concrete headwall. Cost incidental to downspout splash apron item.

6. When two lines of pipe underdrain drain to a low point, each pipe must have its own outlet.

DELIVERABLES

DELAWARE
DEPARTMENT OF TRANSPORTATION

PERFORATED PIPE UNDERDRAIN DETAIL

APPROVED

SIGNED WITH DATED

STANDARD NO. D-9 (2004)  SHT. 1  OF 1  RECOMMENDED
NOTES:
1) EDGE BERM AND TEMPORARY SLOPE DRAINS SHALL BE CONSTRUCTED ALONG THE TOP OF ALL SLOPES TO INTERCEPT RUNOFF AND CONVEY IT DOWN THE SLOPE FACES WITHOUT CREATE GULLIES OR WASHOUTS.

2) SLOPE FACES SHALL BE TRUCKED WITH CLEATED EQUIPMENT SUCH THAT THE CLEAT MARKS ARE ORIENTED HORIZONTALLY.

3) ALL CUT AND FILL SLOPES OF THE HIGHWAY EMBANKMENT SHALL BE PERMANENTLY STABILIZED AS THE WORK PROGRESSES IN INCREMENTS NOT TO EXCEED 10' (3000) MEASURED ALONG THE SLOPE.

4) CROSS SLOPES SHALL BE 2% MINIMUM, 6% MAXIMUM.
Fasten at 4 places, equally spaced.

Embed approx. 12" (300) of geotextile, backfill trench with soil and compact thoroughly.

Flow

Section A-A

Section B-B

Wire Mesh Detail
(Reinforced Silt Fence Only)

NOTE: This device is intended to control sheet flow only, it shall not be used in areas of concentrated flow.

Connection Detail
For use with joining two adjacent silt fence sections

Plan Symbol
Reinforced

Delaware Department of Transportation

Approved

Recommended

05/2/2001
IF THE INLET IS NOT AT A LOW POINT, INSTALL SEDIMENT CONTROL EARTH DIKE DOWNSTREAM FROM INLET.

EXCAVATE AND RE-COMPACT SOIL
POST DRIVEN INTO GROUND

EXISTING GROUND

NOTE: IF THE INLET IS NOT IN A LOW POINT, CONSTRUCT A SEDIMENT CONTROL EARTH DIKE IN THE DITCHLINE DOWNSTREAM FROM IT. SEE STANDARD SHEET FOR ADDITIONAL INFORMATION.

PLAN SYMBOL

DELWARE
DEPARTMENT OF TRANSPORTATION

DRAINAGE INLET SEDIMENT CONTROL

STANDARD NO. E-5 (2001)  SHT. 1 OF 1  APPROVED

05/2/2001
NOTES: 8. STONE CHECK DAMS ARE INTENDED FOR USE IN EXISTING, PROPOSED, AND TEMPORARY DITCHES OF ALL TYPES AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.
2. FOR DITCHES LESS THAN 32" IN DEPTH, PLACE DAM AS DIRECTED.
NOTES:

1. SEDIMENT TRAPS ARE INTENDED FOR USE IN EXISTING, PROPOSED, AND TEMPORARY DITCHES OF ALL TYPES WITH A MAXIMUM DRAINAGE AREA OF 6 ACRES (6.6 HECTARES) AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

2. SIDE SLOPES SHALL BE STABILIZED WITH "TEMPORARY GRASS SEEDING, DRY GROUND" AND STRAW MULCH.

3. AN OUTLET STRUCTURE IS REQUIRED. STONE CHECK DAMS, PERFORATED RISER PIPES, SUMP WATER DEWATERING DEVICES, OR DRAINAGE PLETS MAY BE USED. SEE APPROPRIATE STANDARD SHEET FOR ADDITIONAL INFORMATION.

4. FOR SIZE, LOCATION, ETC. OF SEDIMENT TRAP, SEE CONSTRUCTION PHASING, M.O.T., AND EROSION CONTROL PLANS.

5. ALL FILL SLOPES SHALL BE 2:1.

6. A D/L LENGTH TO WIDTH RATIO SHOULD BE ACHIEVED WHERE POSSIBLE. IF THIS IS NOT POSSIBLE, THE USE OF BAFFLES OR OTHER SPECIAL DESIGNS SHOULD BE INCORPORATED TO INCREASE FLOW TIME.

PLAN SYMBOL

S.T.
NOTES:
1. THE WORK SHALL CONSIST OF THE CONSTRUCTION OF A SEDIMENT TRAP AROUND A DRAINAGE INLET TO ALLOW SEDIMENTATION TO OCCUR BEFORE RUNOFF ENTRIES THE DRAINAGE INLET.
2. DRAINAGE INLET SEDIMENT TRAPS SHALL BE LIMITED TO A THREE CUBED 0.2 HECTARES MAXIMUM DRAINAGE AREA.
3. THE DIMENSIONS OF THE DRAINAGE INLET SEDIMENT TRAP ARE TO BE AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
ELEVATION

NOTES:
1. THIS DEVICE IS INTENDED TO BE USED AS AN OUTLET FOR SEDIMENT TRAPS.
2. PERFORATIONS SHALL BE 2" O.D. IN DIAMETER, LOCATED IN CONCAVE PORTIONS OF PIPE, SPACED 6" O.D. HORIZONTALLY AND VERTICALLY, AND SHALL NOT BE MORE THAN 6" O.D. ABOVE THE TOP OF THE OUTLET PIPE.
3. THE PIPE OUTLET SHOWN SHALL ONLY BE USED WITH SEDIMENT TRAPS WITH DRAINAGE AREAS OF 5 ACRES (12.0 HECTARES) OR LESS. LARGER DRAINAGE AREAS WILL REQUIRE AN ENGINEERED DESIGN.

PLAN SYMBOL

DELaware DEPARTMENT OF TRANSPORTATION

RISER PIPE ASSEMBLY FOR SEDIMENT TRAP

STANDARD NO. E-8 (2001) SHT. 1 OF 2

APPROVED

RECOMMENDED

04/07/2002
STABILIZATION OF EMBANKMENTS

NOTES:
1. STAPLES TO BE STAGGERED AT 18"x150" SPACING.
2. TOPSOIL UNDER EROSION CONTROL BLANKET IS TO BE TRACED AND SEEDED.
3. WHEN OFFSITE RUNOFF OCCURS, ADDITIONAL MEASURES AS DIRECTED BY THE ENGINEER SHALL BE USED TO ENSURE STABILITY OF EMBANKMENT.

STABILIZATION OF DITCHES

PLAN

NOTES:
1. ADDITIONAL STAPLES NOT SHOWN ARE REQUIRED AT OVERLAPS.
2. SEE OVERLAP DETAIL FOR STAPLE PLACEMENT.
3. STAPLES ARE TO BE STAGGERED.
4. TOPSOIL UNDER EROSION CONTROL BLANKET IS TO BE TRACED AND SEEDED.

EROSION CONTROL BLANKET APPLICATIONS

STANDARD NO. E-9 (2001)

APPROVED

DEPARTMENT OF TRANSPORTATION
DELWARE

PLAN SYMBOL
ECB
SECTION A-A

SECTION B-B

SECTION DETAILS

PLAN

NOTE:

1. Securing pins are to be placed at locations shown and at 24" (600) longitudinal and lateral spacing.

2. See plans for location, dimensions, grades, etc.

3. Use of R-7 riprap will require a separate professional engineering design for sight specific conditions.

DELAWARE DEPARTMENT OF TRANSPORTATION

RIPRAP DITCH

STANDARD NO. E-10 (2001) SHT. 1 OF 1

APPROVED

RECOMMENDED

05/3/2001
STABILIZE IN ACCORDANCE WITH NOTES 3 AND 4

EXISTING GROUND

LEVEL BOTTOM

# SEE CHART B

SECTION A-A

---

## CHART A - STABILIZATION

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>SWALE GRADE</th>
<th>TYPE OF TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5-2.0%</td>
<td>DRAINAGE AREA A (5 AC 12 h&gt;0 OR LESS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SEED USED WITH EROSION CONTROL BLANKET</td>
</tr>
<tr>
<td>2</td>
<td>2.0-8.0%</td>
<td>DRAINAGE AREA B (2 h&gt;0 - 4 h&gt;0)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R-4 RRRAAP</td>
</tr>
<tr>
<td>3</td>
<td>8.0-20%</td>
<td>ENGINEERED DESIGN</td>
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</table>

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## CHART B - SWALE DIMENSIONS

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>SWALE A</th>
<th>SWALE B</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1' (300 MIN)</td>
<td>1' (300 MIN)</td>
</tr>
<tr>
<td>D</td>
<td>4' (1200 MIN)</td>
<td>6' (1800 MIN)</td>
</tr>
</tbody>
</table>

---

NOTES:

1. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.

2. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.

3. IF TEMPORARY SWALES OR CLEAN WATER DIVERSIONS ARE TO BE OPERATIONAL FOR LESS THAN 14 DAYS, THEY SHALL BE STABILIZED IN ACCORDANCE WITH CHART A PRIOR TO BECOMING OPERATIONAL.

4. IF TEMPORARY SWALES OR CLEAN WATER DIVERSIONS ARE TO BE OPERATIONAL FOR LESS THAN 14 DAYS, THEY SHALL BE STABILIZED WITH GEOTEXTILE IN ACCORDANCE WITH THE STANDARD DETAIL "GEOTEXTILE LINER CHANNEL DIVERSION."

---

PLAN SYMBOL

```
A - 2 (CWD)  B - 3 (CWD)
CLEAN WATER DIVERSION
```

```
A - 2  B - 3
TEMPORARY SWALE
```
CHART A - SWALE STABILIZATION

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>SWALE GRADE</th>
<th>TYPE OF TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1</td>
<td>0.5-2.0%</td>
<td>SEED AND EROSION CONTROL BLANKET</td>
</tr>
<tr>
<td>A-2</td>
<td>2.1-8.0%</td>
<td>LINED R-4 RIPRAP</td>
</tr>
<tr>
<td>A-3</td>
<td>8.1-20%</td>
<td>ENGINEERED DESIGN</td>
</tr>
</tbody>
</table>

MAXIMUM DRAINAGE AREA: 2 ACRES (0.8 ha)

SECTION A-A

OUTLET AS REQUIRED SEE NOTES 1 & 2.

NOTES:
1. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.

2. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.

3. IF PERIMETER DIKE SWALES ARE TO BE OPERATIONAL FOR MORE THAN 45 DAYS, THEY SHALL BE STABILIZED IN ACCORDANCE WITH CHART A PRIOR TO BECOMING OPERATIONAL.

4. IF Temporary Dike or Clean Water Diversions are to be operational for less than 45 days, they shall be stabilized with Geotextile in accordance with the standard detail "Geotextile-lined Channel Diversion."

PLAN SYMBOL

A

DELAWARE DEPARTMENT OF TRANSPORTATION

PERIMETER DIKE / SWALE

STANDARD NO. E-12 (2001) SHT. 1 OF 1

APPROVED

RECOMMENDED

04/17/2001
SEED AND MULCH

2X SLOPE OR FLATTER

FLOW

EXISTING GROUND

STABILIZE IN ACCORDANCE WITH CHART A
PRIOR TO BECOMING OPERATIONAL.
EXCAVATE TO PROVIDE REQUIRED FLOW
WIDTH AT FLOW DEPTH IN ACCORDANCE
WITH CHART B.

SECTION A-A

PLAN

CHART A - FLOW CHANNEL STABILIZATION

<table>
<thead>
<tr>
<th>TYPE</th>
<th>CHANNEL GRADE</th>
<th>TYPE OF TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5-2.0%</td>
<td>SEED AND EROSION</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CONTROL BLANKET</td>
</tr>
<tr>
<td>2</td>
<td>2.0-6.0%</td>
<td>R-4 RPRAPI</td>
</tr>
<tr>
<td>3</td>
<td>8.0-20%</td>
<td>ENGINEERED DESIGN</td>
</tr>
</tbody>
</table>

CHART B - EARTH DIKE DIMENSIONS

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DIKE A (5 cc/2 hals or less)</th>
<th>DIKE B (5-10 cc/2-4 hals)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-DIKE HEIGHT</td>
<td>2&quot; (50)</td>
<td>18&quot; (450)</td>
</tr>
<tr>
<td>C-DIKE WIDTH</td>
<td>12&quot; (300)</td>
<td>24&quot; (600)</td>
</tr>
<tr>
<td>C-FLOW WIDTH</td>
<td>48&quot; (1200)</td>
<td>72&quot; (1800)</td>
</tr>
<tr>
<td>C-FLOW DEPTH</td>
<td>44&quot; (1100)</td>
<td>27&quot; (680)</td>
</tr>
</tbody>
</table>

NOTES:
1. IF DESIRED, TOP WIDTH MAY BE WIDER AND SIDE SLOPES MAY BE FLATTER TO FACILITATE CROSSING BY CONSTRUCTION TRAFFIC.
2. FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO INSURE A STABILIZED OUTFALL.

PLAN SYMBOL

A-2
B-3

DELTAEDERE OF TRANSPORTATION

EARTH DIKE

APPROVED

STANDARD NO. E-15 (2001)
SHT. 1 OF 1
RECOMMENDED

04/13/2001
NOTES:

1. ALL TEMPORARY SLOPE DRAINS SHALL DISCHARGE INTO THE BACK OF SEDIMENT TRAPS, INTO SEDIMENT BASINS OR DITCHES DISCHARGING INTO TRAPS OR BASINS.

2. TEMPORARY SLOPE DRAINS SHALL BE USED AT THE TOP OF FILL SLOPES AS EMBANKMENT IS CONSTRUCTED, TO PREVENT EXCESSIVE EROSION UNTIL SHOULDERS ARE CONSTRUCTED AND THE SLOPES ARE SEEDED AND MULCHED.

PLAN SYMBOL

T.S.D.
NOTES:
1. THE WORK SHALL CONSIST OF CONSTRUCTING A STILLING WELL FOR THE PURPOSE OF PUMPING CLEAN WATER AROUND A DISTURBED CONSTRUCTION AREA TO A STABILIZED OUTFALL.

2. THE DIMENSIONS OF THE STILLING WELL SHALL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
NOTES:
1. THE WORK SHALL CONSIST OF CONSTRUCTING A SUMP PIT FOR THE PURPOSE OF FILTERING AND PUMPING WATER TO A STABILIZED OUTFALL.
2. GEOTEXTILE FOR THE 36' (9000) CMP SHALL BE REPLACED WHEN CLOGGED WITH SEDEMENT.
3. ½" x ½" x 13 x 30 GAGE STEEL WIRE MESH SHALL BE PLACED AROUND THE REMOVABLE 36' (9000) CMP BEFORE ATTACHING THE GEOTEXTILE TO INCREASE FLOW THROUGH THE GEOTEXTILE.
4. ALL PERFORATIONS SHALL BE 1'-25" IN DIAMETER AND 1'-0" (300) ON CENTER IN ALL DIRECTIONS.
5. TYPE I SUMP PIT SHALL BE USED ONLY WHEN PUMPING IS NEEDED FOR LESS THAN 7 DAYS.
NOTES:

1. A Dewatering Basin (DB) is used to remove sediment from sediment-laden water pumped from a construction site before the water re-enters the waterway. The DB shall have a minimum top width of 5' (1524 mm) and a minimum depth of 3' (914 mm). The minimum top length shown in the plan is used only for quantity calculations by the engineer. The actual top length in the field shall be calculated by the equation:

   US Customary: top length (feet) = 26' + 0.25 x Y
   Metric: top length (mm) = 7920 + 4800 x Y

   where Y is the maximum capacity in gallons per minute (cubic meters per second) of the dewatering pump.

2. The outfall from the basin to the receiving waters shall be stabilized. Pumping into the DB shall cease when the effluent from the basin becomes sediment-laden.

3. A Sump Pit or Stilling Well (see standard sheets) shall be used in conjunction with a DBW. The basin may be bypassed into the stabilized outfall. If the water being pumped is non-sediment-laden, direct discharge to the receiving waters shall cease and be redirected to the DBW when effluent from the pump becomes sediment-laden.

4. Maintenance must be performed in order for the DBW to function properly. Accumulated sediment shall be removed and disposed of in an approved disposal area when the basin is filled to within 2' (610 mm) from thecrest.

5. When used in conjunction with a Cofferdam, dewatering shall begin no sooner than 12 hours after Cofferdam installation in order to allow sediment produced during installation to settle completely.

DELAWARE
DEPARTMENT OF TRANSPORTATION

DEWATERING BASIN

STANDARD NO. E-17 (2001) SHT. 1 OF 1

APPROVED

RECOMMENDED
DELAWARE
DEPARTMENT OF TRANSPORTATION

GEOTEXTILE-LINED CHANNEL DIVERSION

STANDARD NO. E-18 (2000) SHT. 1 OF 1

APPROVED

RECOMMENDED

04/17/2001
NOTES:
1. The work shall consist of installing flow diversions for the purpose of erosion control when construction activities take place within the stream channel such as bank stabilization or bridge abutment construction.
2. The diversion structure shall be installed from upstream to downstream.
3. The effective channel width shall be sized to pass a one year storm event peak flow, or 1/3 of stream width, whichever is greater.
4. The sandbag diversion height (h) shall be 1' (300mm) above the peak elevation of the one year storm.

DELWARE DEPARTMENT OF TRANSPORTATION

SANDBAG DIVERSION

STANDARD NO. E-19 (2001)
SHT. 1 OF 1
APPROVED
RECOMMENDED

09/27/01
04/17/2001
NOTES:
1. THE WORK SHALL CONSIST OF INSTALLING A SANDBAG DIKE FOR THE PURPOSE OF EROSION CONTROL. WHEN CONSTRUCTION ACTIVITIES TAKE PLACE WITHIN THE STREAM CHANNEL SUCH AS BANK STABILIZATION OR BRIDGE ABUTMENT CONSTRUCTION.
2. THE SANDBAG DIKE SHALL BE INSTALLED AT THE UPSTREAM LOCATION FIRST.
3. THE HEIGHT OF THE SANDBAG DIKE SHALL BE IF 5000 ABOVE THE PEAK ELEVATION OF THE ONE YEAR STORM OR EQUAL WITH THE TOP OF BANK, WHICHER IS LESS. SEE PLANS FOR INFORMATION.
4. THE SPILLWAY SHALL BE SIZED TO PASS A (1) ONE YEAR STORM EVENT PEAK FLOW, SEE PLANS.
5. THE PIPE, WHEN UTILIZED, SHALL BE SIZED TO PASS THE STREAM BASE FLOW.
NOTES:
1. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED UNDER THE ENTRANCE, IF NECESSARY. A MOUNTABLE BERM WITH 5% SLOPES SHALL BE ALLOWED TO FACILITATE PLACEMENT OF PIPES IN SHALLOW CONDITIONS.
2. THE LOCATION AND NUMBER OF STABILIZED CONSTRUCTION ENTRANCES SHALL BE AS INDICATED ON THE PLANS. ANY CHANGE IN LOCATION, ADDITION, OR DELETION OF AN ENTRANCE SHALL BE APPROVED IN ADVANCE BY THE ENGINEER.
3. DRAINAGE PIPE, IF UTILIZED, SHALL BE PAID FOR SEPARATELY UNDER THE APPROPRIATE BID ITEM.
4. THE TOP 2" (50) OF STONE SHALL BE REMOVED AND REPLACED WITH 2" (50) OF CLEAN STONE WHEN VODO ARE FILLED OR AS DIRECTED BY THE ENGINEER.
NOTES:
1. ALL P.V.C. PIPES ARE TO BE 4" 1000 LD. SCHEDULE 40.
2. ALL JOINTS OF THE FLOATATION SECTION SHALL
   BE SOLVENT WELDED. JOINTS OF SKIMMER SECTION
   NEED NOT BE WATER-TIGHT.
3. 4" 1000 HDPE FLEXIBLE DRAIN PIPE IS TO BE ATTACHED
   TO THE POND OUTLET STRUCTURE WITH WATER-TIGHT
   CONNECTIONS.
4. ORIFICE IS TO BE SIZED ACCORDING TO STORAGE
   VOLUME AND TO SLOWLY RELEASE 1/25 IN RUNOFF
   FOR AT LEAST 24 HOURS.

DELAWARE
DEPARTMENT OF TRANSPORTATION

SKIMMER DEWATERING DEVICE

STANDARD NO. E-22 (2001)  SHT. 1 OF 1

APPROVED

RECOMMENDED

05/2/2001
FLOATING TURBIDITY CURTAIN

NOTE:
1) ADDITIONAL PANEL REQUIRED FOR DEPTHS GREATER THAN 5' (1500) CM.
2) FLOATING TURBIDITY CURTAIN SHALL REACH BOTTOM UP TO DEPTHS OF 10' (3000) CM.
3) DEPTHS GREATER THAN 10' (3000) CM SHALL REQUIRE SPECIAL DEPTH CURTAINS SPECIFICALLY CALLED FOR IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

PLAN SYMBOL

FTC
SECTION

FASTEN AT 4 PLACES EQUALLY SPACED
TURBID WATER

CLEAR WATER

BOTTOM LOAD LINE

ELEVATION

TOP LOAD LINE

80' 12000 MAX.

TURBIDITY CURTAIN

STAKE

BOTTOM LOAD LINE

PLAN VIEW

STAKED TURBIDITY CURTAIN

LIMITS OF CONSTRUCTION

WETLANDS

STREAM

PLAN SYMBOL

STAKED TURBIDITY CURTAIN

LIMITS OF CONSTRUCTION

WETLANDS

DELAWARE
DEPARTMENT OF TRANSPORTATION

TURBIDITY CURTAIN

STANDARD NO. E-25 (2001) SHT. 2 OF 2

APPROVED

RECOMMENDED

04/17/2001
NOTES:

8. The portable sediment tank shown may be used in sites where space is limited to construct a dewatering basin.

2L. The maximum pump discharge into this typical portable sediment tank shall be 425 gallons per minute (1,605 liters per second). The filter fabric shall be replaced when the portable sediment tank can no longer allow this flow rate, when there is a tear, or when directed by the engineer.

3L. Several un-connected or connected in parallel portable sediment tanks may be used when a higher flow rate is needed to de-water the job.

4L. Other designs may be used provided the hydraulic design is submitted to and approved by the stormwater engineer.
DETAILED 'A'

INTERMEDIATE OR LINE POST:
STUDDED T*: 733 LBS/FT/LIN FT, 0.38 kg/m,
H = 2.77 LBS/FT/LIN FT, 1.38 kg/m

END POST: 2½" (64) O.D.
3.65 LBS/FT/LIN FT, 15.43 kg/m

FASTEN WITH 5 CLAMPS OR
* 9 GAGE GALV. WIRE TIES

12½" CAGE, (2) 7/16 PT. BARB, 5" (127) C.C.,
ONE STRAND BARBED WIRE 7

CORNER OR PULL POST: 2½" (64) O.D.
3.65 LBS/FT/LIN FT, 15.43 kg/m

STRECH FENCE TO CORNER POST
AND TIE WITH 5 WRAPS

SEE DETAIL 'A'

DELAWARE
DEPARTMENT OF TRANSPORTATION

RIGHT-OF-WAY FENCE

STANDARD NO. M-1 (2001) SHT. 1 OF 1

APPROVED

RECOMMENDED
LONGITUDINAL STEEL 6 GAGE 14.9 WIRE SPACED 3" (15) C.C. 26" (1650) LONG (TYP.)

TRANSVERSE STEEL 7 GAGE 14.9 WIRE SPACED 8" (200) C.C.

SECTION A-A

NOTES:
1. LONGITUDINAL STEEL SHALL BE HELD IN PLACE BY CRADLES.
2. LETTERS AND CROSS TO BE COUNTERSUNK IN TOP OF MARKER 1/4" (6).
**NOTES:**

1. The 4"x100) concrete shared-use path shall be finished to include a textured warning surface by using a joint strike to produce a 1/8" deep V-joint at 6"OC. Payment for installing the grooved finish shall be incidental to the sidewalk construction.
2. For 8' (2450) and 10' (3050) path width, the outside dimension from center of bollard to edge of path shall be 24" (600) and 30" (750) respectively.
3. If the shared use path ends at a roadway, then detectable warning truncated domes 30" (750) long and the full width of the path shall be installed. See sheet C-2.
4. Steel tube to extend 6" (150) above ground with concrete to slope away from tube to keep water and sediment from draining into tube.

**SHARED USE PATH INTERSECTION**

**REMOVABLE BOLLARD**

**BOLLARD DETAILS**

**DELAWARE DEPARTMENT OF TRANSPORTATION**

**STANDARD NO.** M-3 (2004) **SHT. 1 OF 1**

**APPROVED 1/10/05**

**RECOMMENDED 1/10/05**

**DATE 09/07/2004**
BIKE RACK DETAILS

- 5 BIKES: N = 30" (760)
- 7 BIKES: N = 60" (150)
- 9 BIKES: N = 80" (203)
- 11 BIKES: N = 100" (255)

- W = 36" (915) MIN.
- 6" (150) DIA. REBAR
- 9.6" (244) DIA. (TYP.)
- 2 3/8 " (60) DIA. TUBING
- SLOPE TO DRAIN
- OUTER EDGE OF CONCRETE FOOTING TO BE FLUSH WITH SURROUNDING GRADE (TYP.)
- CONCRETE (TYP.)
- STONE (TYP.)
- 24" (610) MIN.

BICYCLE RACK

STANDARD NO. M-4 (2000)
SHT. 1 OF 1
WOOD RAIL FENCE DETAILS


1. ALL RAIL JOINTS SHALL BE CENTERED AT THE POSTS.
2. ALL JOINTS SHALL BE ATTACHED WITH 3 - 12d NAILS AND TWO ADJACENT RAILS SHALL NOT END ON THE SAME POST.
3. RAILS SHALL BE FLUSH TO THE POSTS AT THE END POSTS.

NOTES:

1. TYPICAL JOINT DETAIL
   - ATTACH WITH 4-12d HOT DIP GALVANIZED RING NAILS (TYPJ)
   - 4" (100) x 4" (100) (NOMINAL) TREATED POSTS (TYPJ)

SECTION A-A

- CLASS B CONCRETE
- WATER TOP AT 3% SLOPE
- SLOPE TO DRAIN
- PATH
- 24" (610) MIN.
- 12" (305) DIA. MIN.

POSTS 8' (2.4m) O.C. ON STRAIGHT RUNS, 4' (1.2m) O.C. AROUND CURVES

PATH

TYPICAL JOINT DETAIL

1. ALL RAIL JOINTS SHALL BE CENTERED AT THE POSTS.
2. ALL JOINTS SHALL BE ATTACHED WITH 3 - 12d NAILS AND TWO ADJACENT RAILS SHALL NOT END ON THE SAME POST.
3. RAILS SHALL BE FLUSH TO THE POSTS AT THE END POSTS.

NOTES:

1. TYPICAL JOINT DETAIL
   - ATTACH WITH 4-12d HOT DIP GALVANIZED RING NAILS (TYPJ)
   - 4" (100) x 4" (100) (NOMINAL) TREATED POSTS (TYPJ)

SECTION A-A

- CLASS B CONCRETE
- WATER TOP AT 3% SLOPE
- SLOPE TO DRAIN
- PATH
- 24" (610) MIN.
- 12" (305) DIA. MIN.

POSTS 8' (2.4m) O.C. ON STRAIGHT RUNS, 4' (1.2m) O.C. AROUND CURVES

PATH

TYPICAL JOINT DETAIL

1. ALL RAIL JOINTS SHALL BE CENTERED AT THE POSTS.
2. ALL JOINTS SHALL BE ATTACHED WITH 3 - 12d NAILS AND TWO ADJACENT RAILS SHALL NOT END ON THE SAME POST.
3. RAILS SHALL BE FLUSH TO THE POSTS AT THE END POSTS.

NOTES:

1. TYPICAL JOINT DETAIL
   - ATTACH WITH 4-12d HOT DIP GALVANIZED RING NAILS (TYPJ)
   - 4" (100) x 4" (100) (NOMINAL) TREATED POSTS (TYPJ)
PATTERNED HOT-MIX OR CONCRETE & BRICK PAVER DETAILS

**NOTES:**

1. Actual pattern to be used shall be specified on the plans. Color is to be "brick red" unless otherwise noted on the plans.
2. Materials and pavement box vary depending on plans.
3. For crosswalk applications, 8" (200) white lines should be placed on both sides.
4. The patterns above are the preferred patterns available for sidewalk or crosswalk applications.

**NOTES:**

1. All pavers are to be "brick red" unless otherwise specified on the plans. The pattern shall be specified on the plans.
2. Expansion joint may be needed on non-curb side of brick paver sidewalk if there is against building or other confining feature.
NOTES:
2. "T" REFERS TO THE ACTUAL CONSTRUCTED SLAB THICKNESS.
3. TOLERANCE ON ALL JOINT SEALANT DETAIL DIMENSIONS SHOWN WITHOUT RANGE SHALL BE PLUS 3/8" MINUS 0.10".
4. THE TOP EDGES OF THE CONTACT SURFACES OF THE SEALANT MATERIAL ON BOTH SIDES OF THE JOINT RESERVOIR SHALL BE AT THE SAME ELEVATION.
5. TRANSVERSE JOINT MATERIAL SHALL BE PLACED BEFORE LONGITUDINAL JOINT MATERIAL. THE TRANSVERSE JOINT MATERIAL SHALL BE CONTINUOUS FOR THE FULL WIDTH OF ALL ADJACENT P.C.C. PAVEMENT SLABS.
6. LONGITUDINAL JOINT MATERIAL SHALL BE PLACED WITHOUT GAPS WHEREVER INTERRUPTED BY THE TRANSVERSE JOINT MATERIAL.
7. TRANSVERSE JOINT SEAL TO BE RECESSED 3/4" TO 3/4" BELOW THE TOP OF THE SLAB.
8. A 45° CHAMFER SHALL BE CUT 3/16" TO 1/8" DEEP AT THE TOP OF THE SLAB ALONG BOTH SIDES OF THE TRANSVERSE SEALANT RESERVOIR.
9. THE TOP EDGES OF THE COMPRESSION SEAL SHALL BE IN FULL CONTACT WITH THE SLAB SIDES.

LONGITUDINAL SAW-CUT JOINT DETAIL
TRANSVERSE SAW-CUT JOINT DETAIL
TRANSVERSE CONSTRUCTION JOINT DETAIL
LONGITUDINAL CONSTRUCTION JOINT DETAIL
SEALANT DETAIL - LONGITUDINAL JOINT
SEALANT DETAIL - TRANSVERSE JOINT
KEYWAY DETAIL
Dowel & Tie Bar Placement Tolerances

- Transverse Joint
- Top of Slab
- Position Specified
- Position Allowed

Vertical Translation

Vertical Rotation

Horizontal Translation

Longitudinal Translation

Horizontal Rotation
PLAN

* - Proposed locations for transverse joints shall exactly match
the alignment of the final existing or relocated transverse
joints in all immediately adjacent lanes.

NOTES:
1. When repairing existing transverse joints, the patch shall extend a minimum of 24"x6000
through the existing joint, which will relocate the joint.
2. Proposed locations for transverse joints, when not aligned with the final expected
transverse joint locations in the immediately adjacent lanes, shall be offset a minimum
of 24"x6000 from the aforementioned joints.
3. The longitudinal joint alignment shall be straight and
continuous through the repaired area.

FULL DEPTH PATCH
SECTION A-A

SECTION B-B

SECTION C-C

FULL DEPTH PATCH
LONGITUDINAL JOINT SEALANT DETAIL:

- HOT-POURED JOINT SEALANT
- Top of Slab
- Existing P.C.C.
- P.C.C. Patch
- GROUT RETENTION DISK
- DOVEL BAR

TRANSVERSE SAW-CUT JOINT SEALANT DETAIL:

- HOT-POURED JOINT SEALANT
- Top of Slab
- Backer Rod (Uncompressed Diameter = 7/8" (19MM))
- Initial Saw Cut
- P.C.C. Patch
- P.C.C. Patch
- EXISTING P.C.C.
- HOT-POURED JOINT SEALANT
- HOT-POURED JOINT SEALANT

TRANSVERSE CONSTRUCTION JOINT SEALANT DETAIL:

- HOT-POURED JOINT SEALANT
- Top of Slab
- Backer Rod (Uncompressed Diameter = 7/8" (19MM))
- Bond Breaker Tape

NOTES:
1. AS DIMENSIONED, THE WIDTH OF THE TRANSVERSE SEALANT RESERVOIR IS APPLICABLE WHEN THE TEMPERATURE OF THE PAVEMENT SURFACE IS BETWEEN 60°F (16°C) AND 80°F (27°C). WHEN THE TEMPERATURE IS BELOW 60°F (16°C), THE SEALANT RESERVOIR SHALL BE CUT Æ" (2) WIDER.
2. "T" REFERS TO THE EXISTING "AS-BUILT" SLAB THICKNESS.
3. TOLERANCE ON ALL JOINT SEALANT DETAIL DIMENSIONS SHOWN WITHOUT RANGES SHALL BE PLUS/.MINUS 0.3T.
4. THE TOP EDGES OF THE CONTACT SURFACES OF THE SEALANT MATERIAL ON BOTH SIDES OF THE JOINT RESERVOIR SHALL BE AT THE SAME ELEVATION.
DOWEL & TIE BAR PLACEMENT TOLERANCES

FULL DEPTH PATCH
NOTE: CLOSED CELL POLYETHYLENE FOAM SHALL BE THE SAME WIDTH AS THE JOINT AND 2"X150" IN DEPTH. AFTER THE CONCRETE IN THE REPAIR AREA HAS ACHIEVED THE SPECIFIED STRENGTH, THE FOAM SHALL BE REMOVED AND REPLACED WITH BACKER ROD AND HOT-POUR SEALANT MEETING ALL APPLICABLE STANDARD DETAILS AND SPECIFICATIONS.

SECTION WITH SPALL ADJACENT TO JOINT

PARTIAL DEPTH PATCH

NOTE: WHEN X > 12" (300MM), THEN Y=1'-0" (305) AND POLYETHYLENE FOAM IS NOT USED. WHEN X ≤ 12" (300MM), THEN Y=X AND POLYETHYLENE FOAM IS USED.

DELAWARE DEPARTMENT OF TRANSPORTATION

P.C.C. PAVEMENT PATCHING

STANDARD NO. P-2 (2001) SHT. 5 OF 5

APPROVED

RECOMMENDED

05/02/2001
SECTION A-A

NOTES:
1. TYPE 1 CONDUIT JUNCTION WELL SHALL BE PRECAST CONCRETE, AT LEAST ONE HOLE IN PRECAST WELLS WILL BE OF A 5" ID (125MM) DIAMETER COMPLETELY THROUGH THE WALL, UNUSED HOLES SHALL BE PLUGGED.

2. TYPE 2 AND TYPE 3 CONDUIT JUNCTION WELLS SHALL BE BRICK AND WILL CONFORM TO STANDARD SPECIFICATIONS FOR BRICK MASONRY. JOINTS SHALL BE CONCEALED. TYPE 2 WALLS WILL BE A NOMINAL 4" (100MM) THICK. TYPE 3 WALLS WILL BE A NOMINAL 8" (200MM) THICK.

3. TYPE 2 AND TYPE 3 CONDUIT JUNCTION WELLS SHALL NOT BE PLACED UNDER ANY TYPE OF PAVEMENT.

4. ALL CONDUIT JUNCTION WELLS CONSTRUCTED WITHIN PAVEMENT, SIDEWALKS, ETC. WILL BE CONSTRUCTED FLUSH WITH THE SURFACE OF THE SAME. INSTALLATION IN UNPAVED AREAS WILL BE CONSTRUCTED ABOVE GRADE AND GRADED TO DRAIN AWAY FROM CONDUIT JUNCTION WELL.
NOTES:
1. TYPE 4 CONDUIT JUNCTION WELL SHALL BE PRECAST CONCRETE, AT LEAST ONE HOLE IN PRECAST WELLS WILL BE OF A 5" (125) DIAMETER COMPLETELY THROUGH THE WALL. UNUSED HOLES SHALL BE PLUGGED.
2. ALL CONDUIT JUNCTION WELLS CONSTRUCTED WITHIN PAVEMENT, SIDEWALKS, ETC. WILL BE CONSTRUCTED FLUSH WITH THE SURFACE OF THE SAME. INSTALLATION IN UNPAVED AREAS WILL BE CONSTRUCTED ABOVE GRADE AND GRADED TO DRAIN AWAY FROM CONDUIT JUNCTION WELL.

DELaware DEPARTMENT OF TRANSPORTATION

CONDUIT JUNCTION WELL, TYPE 4

STANDARD NO. T-2 (2002) SHT. 1 OF 1 APPROVED

RECOMMENDED

01/31/2002
NOTES:

0. Type 5 conduit junction well shall be precast concrete. At least one hole in precast wells will be of a 5" (125mm) diameter completely through the wall. Unused holes shall be plugged.

2. All conduit junction wells constructed in pavement, sidewalks, etc. will be constructed flush with the surface of the same. Installation in unpaved areas will be constructed above grade and graded to drain away from conduit junction well.

SECTION A-A

DEL. 57 STONE

CONDUIT JUNCTION WELL, TYPE 5

DELAWARE
DEPARTMENT OF TRANSPORTATION

STANDARD NO. T-5 (2002) SHT. 1 OF 1

APPROVED

01/31/2002

PLAN SYMBOL
A plan view of a concrete cabinet base is shown, with dimensions and annotations indicating installation details. Key annotations include:

- **Plan Symbol**
- **Concrete Cabinet Base**
- **Finished Grade**
- **Expansion Bolt (6)**
- **Ground Rods**
- **Ground Rods (6) 2" (50) Min. - 3" (75) Max.**
- **2" (50) Conduit**
- **2" (50) Min. - 3" (75) Max.**
- **Section A-A**
- **Concrete Base**
- **Raised Concrete Base**
- **Concrete Cabinet Base**

The drawing includes various measurements and notes for installation, ensuring proper alignment and dimensions are met. The scale is indicated as N.T.S. (Natural True Scale).
ROUND BASE

SQUARE BASE

NOTE: BASE DEPENDENT ON POLE AND EQUIPMENT TO BE ATTACHED.

DELaware
department of transportation

POLE BASES

APPROVED

STANDARD NO. T-5 (2002)  SHT. 1 OF 3  RECOMMENDED
SECTION A-A

NOTES:
1. UNDERGROUND CONDUIT ENDS SHALL BE CAPPED WITH A GALVANIZED THREADED CONDUIT PLUG UNLESS CONNECTED TO AN EXISTING CONDUIT.
2. PLACE 2 EACH 6" (150) X ½" (13) P.V.C. SCHEDULE 40 (TYP) VENTS IN THE GROUT AS DIRECTED IN THE FIELD BY THE ENGINEER.
1 - #3 (1/4") SPIRAL BAR, 58'-4" (17800) LONG AT 8'-2" (2440) PITCH
8 - #5 (3/8") BARS, 4'-0" (1200) LONG

NOTE: (a) STUB POST TO BE SUPPLIED BY THE DEPARTMENTS TRAFFIC, ENGINEERING, AND MANAGEMENT SECTION.

SECTION A-A

PLAN SYMBOL

DELWARE DEPARTMENT OF TRANSPORTATION

SIGN FOUNDATION

STANDARD NO. T-7 (2003) SHT. 1 OF 1

APPROVED

RECOMMENDED

07/27/2003

01/31/2002
1. The contractor shall be responsible for protecting the conduit against any possible damage in paving operations.

2. The weatherproof fitting shall consist of a galvanized 1/2" C80 coupling containing a steel threaded reducing bushing 1/2" C80 to 1/2" C80 and a 1/2" C80 watertight connector for service entrance cable.

3. The lead-in wire shall be run through the rubber of the weatherproof fitting.

**Detail A - Typical Installation Under Integral Curb and Gutter**

**Detail B - Typical Installation Under Curbing**

**Detail C - Typical Installation Without Curbing**

**Plan Symbol**

---

DELTAWARE DEPARTMENT OF TRANSPORTATION

LOOP DETECTOR TO CONDUIT JUNCTION WELL CONNECTION

STANDARD NO. T-9 (2002) SHT. 1 OF 1

APPREOVED

RECOMMENDED

01/31/2002
1. Saw cuts for wire slot construction shall be extended beyond the corners so that the slot is full depth at turn points. A forty-five (45) degree angle shall be cut 12" (300) back from the point of the extended corner.

2. The diagonal cut shall be stopped approximately 2" (50) from the corner to prevent the triangular portion of the pavement from breaking.

3. A maximum of two loop detectors can be spliced to one lead-in cable. The detail illustrates the method of splicing two loop detectors (Loop #1 and Loop #2) to a lead-in cable.

4. Loop detector shall be centered in travel lane.

NOTES:
NOTES:
1. SAW CUTS FOR WIRE SLOT CONSTRUCTION SHALL BE EXTENDED BEYOND THE CORNERS SO THAT THE SLOT IS FULL DEPTH AT TURN POINTS. A FORTY-FIVE (45) DEGREE ANGLE SHALL BE CUT 1' (0.3m) BACK FROM THE POINT OF THE EXTENDED CORNER.
2. THE DIAGONAL CUT SHALL BE STOPPED APPROXIMATELY 2" (50) FROM THE CORNER TO PREVENT THE TRIANGULAR PORTION OF THE PAVEMENT FROM BREAKING.
3. A MAXIMUM OF TWO LOOP DETECTORS CAN BE SPLICED TO ONE LEAD-IN CABLE. THE DETAIL ILLUSTRATES THE METHOD OF SPLICING TWO LOOP DETECTORS (LOOP #1 AND LOOP #2) TO A LEAD-IN CABLE.
4. LOOP DETECTOR SHALL BE CENTERED IN TRAVEL LANE.

SECTION A - A

SECTION B - B

PLAN SYMBOL

DETAILS FOR INSTALLING LOOP DETECTOR WIRE

(SEE NOTE 2)
DELAWARE
DEPARTMENT OF TRANSPORTATION

INTERMEDIATE MESSENGER WIRE ATTACHMENT ON WOOD POLES

SHT. 1 OF 2

APPROVED

INTERMEDIATE

SEE DETAIL "A"

COORDINATION CABLE

GALVANIZED 3/8" X 16 NUTS

GALVANIZED 3/8" X 16 CENTER THRU-BOLT

WOOD POLE

MESSENGER CLAMP

CLAMP BOLT

GALVANIZED 1/2" X 13 NUT

MESSENGER WIRE

SIDE VIEW

DETAIL "A"

GALVANIZED GUY CLAMP

GALVANIZED 3/8" X 16 CENTER THRU-BOLT

GALVANIZED 1/2" X 13 CLAMP BOLT

GALVANIZED 1/2" X 13 NUT

MESSENGER WIRE

FRONT VIEW

GALVANIZED GUY CLAMP

MESSENGER WIRE

CABLE SPACER

LASHING WIRE

WOOD POLE

TOP VIEW

COORDINATION CABLE

MESSENGER WIRE

CABLE SPACER

LASHING WIRE

WOOD POLE

PLAN SYMBOL

C -- C

SEE DETAIL "A"
SPAN WIRE ATTACHMENT BETWEEN POLES

MATCH LINE A - A

NOTE: SPAN WIRE ATTACHMENT BETWEEN METAL POLES IS THE SAME AS SHOWN FOR WOOD POLES EXCEPT THAT THE STRAIN PLATES AND GUY HOOKS ARE NOT USED. FOR DETAIL SEE T-14 SHEET 2 - "DEAD END MESSENER WIRE ATTACHMENT, METAL POLES".

PLAN SYMBOL

X O
WOOD POLES

- Service Wedge Clamp
- Messenger Wire
- Messenger Clamp
- Lashing Wire
- Cable Spacer
- Electrical Cable

METAL POLES

- Service Sleeve
- Metal Pole
- Messenger Wire
- Metal Pole

NOTES:
1. Installation method shown for dead end messenger wire attachment to metal poles shall be used for span wire attachment between metal poles.

PLAN SYMBOL

36" (914) Min.
6" (150)
30" (762)
1. Type 6 conduit junction well shall be precast polymer concrete.

2. All conduit junction wells constructed within pavement, sidewalks, etc. will be constructed flush with the surface of the same. Installation in unpaved areas will be constructed above grade and graded to drain away from the conduit junction well.

3. Polymer concrete covers shall be the heavy-duty type with a design load of 6,000 lbs (6600 kg) over a 10" (250) square.
1. Type T Conduit Junction Well shall be precast polymer concrete.

2. All Conduit Junction Wells constructed with pavement, sidewalks, etc. will be constructed flush with the surface of the same. Installation in unpaved areas will be constructed above grade and graded to drain away from the Conduit Junction Well.

3. Polymer concrete covers shall be the heavy duty type with a design load of 20,000 lbs (6800 kg) over a 10' x 10' square.
1. Types 8 & 10 conduit junction wells shall be precast polymer concrete.
2. All conduit junction wells constructed within pavement, sidewalks, etc., will be constructed flush with the surface of the same. Installation in unpaved areas will be constructed above grade and graded to drain away from the conduit junction well.
3. Polymer concrete covers shall be the heavy-duty type with a design load of 15,000 lbs (6800 kg) over a 10" (255) square.

### Section A-A

**Plan Symbol**

**Dimensions**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Type 8</th>
<th>Type 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover A</td>
<td>47 3/8&quot; (120)</td>
<td>35 3/8&quot; (90)</td>
</tr>
<tr>
<td>Cover B</td>
<td>30 3/8&quot; (78)</td>
<td>24&quot; (60)</td>
</tr>
<tr>
<td>Cover C</td>
<td>49 3/8&quot; (125)</td>
<td>37 3/8&quot; (95)</td>
</tr>
<tr>
<td>Cover D</td>
<td>32 3/8&quot; (84)</td>
<td>26&quot; (66)</td>
</tr>
<tr>
<td>Cover E</td>
<td>45 3/8&quot; (115)</td>
<td>33 3/8&quot; (85)</td>
</tr>
<tr>
<td>Cover F</td>
<td>28 3/8&quot; (72)</td>
<td>22 3/8&quot; (56)</td>
</tr>
<tr>
<td>Cover G</td>
<td>36&quot; (90)</td>
<td>30&quot; (75)</td>
</tr>
<tr>
<td>Cover H</td>
<td>33&quot; (83)</td>
<td>27&quot; (68)</td>
</tr>
<tr>
<td>Cover I</td>
<td>58&quot; (147)</td>
<td>46&quot; (116)</td>
</tr>
<tr>
<td>Cover J</td>
<td>40&quot; (100)</td>
<td>34&quot; (86)</td>
</tr>
</tbody>
</table>

**Notes:**

- Silicone sealer installed dry (Typ) - hole saw with trade size
- Galv. conduit installed dry (Typ) - hole saw with trade size
NOTES:

1. UPRIGHT CONFIGURATION SHALL BE USED FOR MOUNTING ON MAST ARMS, SIGNAL HEAD FRAMEWORKS AND PEDESTALS.

2. UPRIGHT MOUNTING HARDWARE SHALL BE SUPPLIED BY THE DEPARTMENT.

3. TEFLON TAPE SHALL BE APPLIED TO THREADS BEFORE MOUNTING.

1. Inverted configuration shall be used for span mount.
2. Span wire mounting hardware shall be supplied by the Department.
3. Teflon tape shall be applied to threads before mounting.
4. Route the lead-in cable through the metal cap and the rubber plug, replace the metal cap, sealing the cable entry port. Tighten the metal cap so the cable will not slide through the rubber plug.

5. Wraps of Scotch Super 33 tape around cable connections to terminal strip.