SECTION III - DRAINAGE (CONT'D)

D-6
- MANHOLE DETAILS
  0200 - 1 BOX MANHOLE ASSEMBLY
  0200 - 2 ROUND MANHOLE ASSEMBLY
  0200 - 3 MANHOLE FRAME AND COVER
  0200 - 4 BOX MANHOLE COVER SLAB

D-7
- JUNCTION BOX DETAILS
  0200 - 1 JUNCTION BOX ASSEMBLY
  0200 - 2 JUNCTION BOX COVER SLAB

D-8 (0200) - PIPE BEDING
D-9 (0204) - PERFORATED PIPE UNDERDRAIN

SECTION IV - EROSION

E-1 (0200) - INCREMENTAL STABILIZATION
E-2 (0200) - SILT FENCE
E-3 (0205) - DRAINAGE INLET SEDIMENT CONTROL
E-4 (0206) - CURB INLET SEDIMENT CONTROL
E-5 (0200) - STONE CHECK DAM
E-6 (0205) - SEDIMENT TRAP
E-7 (0205) - SEDIMENT TRAP, USING DRAINAGE INLET AS OUTLET
E-8 - RISER PIPE ASSEMBLY FOR SEDIMENT TRAP
  0200 - 1 ELEVATION
  0200 - 2 TRASH HOLE DETAILS
E-9 (0205) - EROSION CONTROL BLANKET APPLICATIONS
E-10 (0205) - REGRAP DETAIL
E-11 (0205) - TEMPORARY SWALE
E-12 (0205) - PERIMETER Dike/SWALE
E-13 (0205) - EARTH Dike
E-14 (0205) - TEMPORARY SLOPE DRAIN
E-15 (0205) - STILLING WELL
E-16 (0205) - SUMP PIT, TYPE 1 & 2
E-17 (0205) - DEWATERING BASIN
E-18 (0205) - GEOTEXTILE-LINED CHANNEL DIVERSION
E-19 (0205) - SANDBAG DIVERSION
E-20 (0205) - SANDBAG Dike
E-21 (0205) - STABILIZED CONSTRUCTION ENTRANCE
E-22 (0200) - SUMMER Dewatering Device
E-23 - TURBIDITY CURTAIN
  0205 - 1 FLOATING TURBIDITY CURTAIN
  0205 - 2 STAGED TURBIDITY CURTAIN
E-24 (0205) - PORTABLE SEDIMENT TANK
E-25 (0205) - TURF REFRENCEMENT MAT APPLICATIONS
SECTION V - MISCELLANEOUS

M-1 (2000)  -- RIGHT-OF-WAY FENCE
M-2 (2000)  -- CONCRETE MONUMENT
M-3 (2000)  -- REMOVABLE BOLLARD
M-4 (2004)  -- BIKE RACK
M-5 (2004)  -- WOOD RAIL FENCE
M-6 (2004)  -- PATTERNED HOT-MIX OR CONCRETE & BRICK PAVER

SECTION VI - PAVEMENT

P-1  -- P.C.C. PAVEMENT...
  02001  -- SLAB PLAN WITH DOWEL AND TIE LOCATIONS...
  02001  -- JOINT AND SEALANT DETAILS
  02001  -- # BOLT, HOOK BOLT, DOWEL & TIE BAR
  02001  -- DOWEL SUPPORT BASKET
  02001  -- DOWEL & TIE BAR PLACEMENT TOLERANCES

P-2  -- P.C.C. PAVEMENT PATCHING...
  02001  -- FULL DEPTH PATCH PLAN CSK...
  02001  -- FULL DEPTH PATCH SECTION VIEWS
  02001  -- FULL DEPTH PATCH SEALANT DETAILS, GROUT RETENTION BOX, AND DOWEL BAR
  02001  -- FULL DEPTH PATCH DOWEL BAR PLACEMENT TOLERANCES
  02001  -- PARTIAL DEPTH PATCH PLAN AND SECTION VIEWS...

SECTION VII - TRAFFIC

T-1 (2005)  -- CONDUIT JUNCTION WELL, TYPES L2, AND 3
T-2 (2005)  -- CONDUIT JUNCTION WELL, TYPE 4
T-3 (2005)  -- CONDUIT JUNCTION WELL, TYPE 5
T-4 (2005)  -- CABINET BASES (TYPES "A" AND "B")
T-5  -- POLE BASES...
  02001  -- ROUND BASE, SQUARE BASE...
  02001  -- TYPICAL SECTION BASES 0, 2, 4, 6, 8, 10, 12, 16, 20, 24, 30, 36, 42, AND 48...
  02001  -- TYPICAL SECTION BASES 6 AND 12 ANCHOR BOLT DATA CHART AND DETAILS
T-6 (2005)  -- SPECIAL POLE BASE
T-7 (2005)  -- SIGN FOUNDATION
T-8 (2005)  -- LOOP DETECTOR TO CONDUIT JUNCTION WELL CONNECTION
T-9 (2005)  -- TYPE M LOOP DETECTOR
T-10 (2005) -- TYPE M2 LOOP DETECTOR
## SECTION VII - TRAFFIC (CONT'D)

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<tr>
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<tbody>
<tr>
<td>T-1</td>
<td>MESSENGER WIRE ATTACHMENT</td>
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<tr>
<td>02001-1</td>
<td>INTERMEDIATE MESSENGER WIRE ATTACHMENT ON WOOD POLES</td>
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<td>02001-2</td>
<td>ANGULAR INTERMEDIATE MESSENGER WIRE ATTACHMENT</td>
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<td>T-2</td>
<td>MESSENGER WIRE ATTACHMENT</td>
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<td>02002-1</td>
<td>SPAN WIRE ATTACHMENT BETWEEN POLES</td>
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<tr>
<td>02002-2</td>
<td>DEAD END MESSENGER WIRE ATTACHMENT</td>
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<tr>
<td>T-3</td>
<td>CONDUIT JUNCTION WELLS</td>
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<tr>
<td>02003-1</td>
<td>TYPE 6</td>
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<td>TYPE T</td>
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<td>02004-2</td>
<td>TYPES B &amp; BD</td>
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<td>T-4</td>
<td>EMERGENCY PREEMPTION RECEIVER</td>
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<td>02005-1</td>
<td>UPRIGHT MOUNT</td>
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<td>02005-2</td>
<td>INVERTED MOUNT</td>
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DELAWARE DEPARTMENT OF TRANSPORTATION

INDEX OF SHEETS (2006)
# BARRIER LEGEND

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td>W-BEAM</td>
</tr>
<tr>
<td>2</td>
<td>W6 X 9 (W150 x I3.5) STEEL POST</td>
</tr>
<tr>
<td>3</td>
<td>WOOD OFFSET BLOCK</td>
</tr>
<tr>
<td>4</td>
<td>SPlice - REquires EIGHT(8) 5/8&quot;(16) GUARDRAIL BOLTS (L=6/4&quot;(35)) with RECESS NUTS, and ONE(1) 3/8&quot;(16) GUARDRAIL BOLT (L=10&quot;(255)) with RECESS NUT.</td>
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<tr>
<td>5</td>
<td>W-BEAM TERMINAL CONNECTOR</td>
</tr>
<tr>
<td>6</td>
<td>5/8&quot;(16) GUARDRAIL BOLT (L=6/4&quot;(35)) and RECESS NUT</td>
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<td>7</td>
<td>5/8&quot;(16) GUARDRAIL BOLT (L=10&quot;(255)) and RECESS NUT</td>
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<tr>
<td>8</td>
<td>5/8&quot;(16) GUARDRAIL BOLT (L=10&quot;(255)), STEEL WASHER, and RECESS NUT</td>
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<tr>
<td>9</td>
<td>5/8&quot;(22) HIGH STRENGTH STRUCTURAL HEX BOLT (L=VARIES) and HEX NUT</td>
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<td>10</td>
<td>5/8&quot;(16) CARRIAGE BOLT (L=VARIES), STEEL WASHER, and HEX NUT</td>
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<tr>
<td>11</td>
<td>BEARING PLATE</td>
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TYPE 1 GUARDRAIL
POST SPACING 6'-3" (1905)

TYPICAL GUARDRAIL TREATMENT
WHEN THE REQUIRED 4' (1200) CLEARANCE TO OBSTRUCTION IS AVAILABLE

TYPE 2 GUARDRAIL
POST SPACING 3'-6" (1005.5)

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.
NOTE: OVERLAP W-BEAMS IN DIRECTION OF TRAVEL.
NOTES:
1. FLARE THE END TREATMENT AT 25' BEGINNING 50' OR 65' 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.

GRADING 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

DELTAWS
DEPARTMENT OF TRANSPORTATION

GUARDRAIL APPLICATIONS

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

APPROVED

RECOMMENDED

01/31/2002
NORMAL DOUBLE FACE W-Beam Barrier
ON TRANSITION TO CONCRETE BARRIER

50' 05" m LIMIT OF PAYMENT

DIRECTION OF TRAFFIC

SHOULDER

10' (3000 mn)

TRANITION GRADING

SHOWN ON PLANS
OF REQUIRED

SHOULDER

DIRECTION OF TRAFFIC

PLAN VIEW

SECTION B-B

GRADING FOR END TREATMENT ATTENUATOR, TYPE 3

NOTES:
1. THIS DETAIL WAS SOLELY CREATED TO SHOW THE GRADING REQUIRED FOR THIS TYPE OF ATTENUATOR.
2. IF/FR FLATTER GRADING IS ALLOWABLE WHEN THE BARRIER IS LOCATED 0' 0650" IN OR MORE FROM THE OUTSIDE EDGE OF THE SHOULDER.
3. THIS END TREATMENT CAN ALSO BE USED IN RAMP 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.

SINCE NO POST OR OFFSET BLOCK IS PRESENT AT THIS LOCATION, 
3/4" (19) GUARDRAIL BOLT (L=16'12"") IS NOT REQUIRED.
NOTES:
1. ALL W-BEAMS ARE 11'-6" (3500) IN LENGTH.
2. PLACE GUARDRAIL REFLECTOR EVERY FIFTH POST.
**DELAWARE DEPARTMENT OF TRANSPORTATION**

**CURVED GUARDRAIL SECTION**

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

**APPROVED**

**RECOMMENDED**

**DATE**

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

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

**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.**

**PLAN**

**NOTES:**

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

**SECTION A-A**

**LONG WOOD BREAKAWAY POST**

**SLOPE**: = 15:1 OR FLATTER

**4' Rounding**

**AREA**

<table>
<thead>
<tr>
<th>RADUS</th>
<th>MIN. REQUIRED AREA FREE OF FIXED OBJECTS</th>
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<tbody>
<tr>
<td>8'-6&quot; (2600)</td>
<td>35' x 15' (10700 x 4500)</td>
</tr>
<tr>
<td>17'-0&quot; (5200)</td>
<td>40' x 15' (12200 x 4500)</td>
</tr>
<tr>
<td>25'-6&quot; (7800)</td>
<td>50' x 20' (15200 x 6000)</td>
</tr>
<tr>
<td>35'-0&quot; (10700)</td>
<td>60' x 20' (18700 x 6000)</td>
</tr>
</tbody>
</table>
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" (152.40) STEEL TUBE WITHOUT A SOIL PLATE OR A 5" (125.00) STEEL TUBE WITH A SOIL PLATE.

DELAWARE
DEPARTMENT OF TRANSPORTATION

END ANCHORAGE

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

APPROVED

RECOMMENDED

01/31/2002
**FLARE RATES**

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<th>Flare Rate</th>
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<tbody>
<tr>
<td>70</td>
<td>15d</td>
</tr>
<tr>
<td>60</td>
<td>14d</td>
</tr>
<tr>
<td>55</td>
<td>12d</td>
</tr>
<tr>
<td>50</td>
<td>11d</td>
</tr>
<tr>
<td>45</td>
<td>10d</td>
</tr>
<tr>
<td>40</td>
<td>9d</td>
</tr>
<tr>
<td>30</td>
<td>7d</td>
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</table>

**NOTES:**
1. Buried End Section Payment includes the concrete or post anchorages, excavation, backfill, and all applicable 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 shall be held constant relative to the ground directly under the face of the guardrail.
4. All posts shall be 6" (150 mm) for single rail installation.
5. When using the buried end section, the design must provide a minimum of 375 cubic feet of concrete where the guardrail crosses the ditch line to the beginning of the hazard.
6. Maintain the flare of the guardrail until the 12" (300 mm) cover has been attained. If the 375 cubic foot cover cannot be attained before the rail is 7' (2100 mm) behind the bottom of the ditch, then slope the guardrail from the point where it crosses the ditch to where it is 7' (2100 mm) behind the ditch, so that it has 12" (300 mm) of cover.

**DELTA BLOCKS**

**SECTION B-B**

**SECTION C-C**

**SECTION D-D**

**CONCRETE ANCHOR END ANCHORAGE SEE NOTE II**

**POST END ANCHORAGE**

**DEPARTMENT OF TRANSPORTATION**

**STANDARD NO. B-6 (2002)**

**APPROVED**

**RECOMMENDED**

**01/31/2002**
RUB RAIL TO BARRIER CONNECTION

RUB RAIL WOOD BLOCKS

<table>
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<tr>
<th>POST NO.</th>
<th>WIDTH</th>
<th>BOLT LENGTH</th>
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<tbody>
<tr>
<td>1</td>
<td>4&quot;x2&quot;(100)</td>
<td>6&quot;(150)</td>
</tr>
<tr>
<td>2</td>
<td>3/4&quot;(183)</td>
<td>4&quot;(100)</td>
</tr>
<tr>
<td>3</td>
<td>2&quot;(50)</td>
<td>4&quot;(100)</td>
</tr>
<tr>
<td>4</td>
<td>1&quot;(25)</td>
<td>2&quot;(50)</td>
</tr>
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</table>

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"(150) OD X 3"(75) ID

DELTA DEPARTMENT OF TRANSPORTATION

GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 1

STANDARD NO. B-7(2001) SHT. 2 OF 3

APPROVED

RECOMMENDED

04/05/2001
CUT FLANGE, BEND AND WELD

PLAN

SECTION C-C

SPLICE BOLT SLOTS, 3/8" (20) x 3/4" (30) (TYP.)

ELEVATION

POST BOLT SLOTS, 5/8" (20) x 2 1/2" (16) (TYP.)

BENT PLATE RUB RAIL
BENT RAIL WOOD BLOCKS
1'-2" (360) x 4 1/2" (115)

<table>
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<tr>
<th>BLOCK</th>
<th>WIDTH</th>
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<tr>
<td>1</td>
<td>5&quot; (125)</td>
<td>8&quot; (200)</td>
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<tr>
<td>2</td>
<td>4&quot; (100)</td>
<td>6&quot; (150)</td>
</tr>
<tr>
<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>
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NOTE: BOTTOM WOOD BLOCKS LOCATED ON POSTS 1-4 ARE OFFSET DRILLED TO SIT SQUARELY ON THE POST FLANGE AND SECURED WITH 5/16" CARRIAGE BOLTS. WIDTH VARIES; SEE BENT RAIL WOOD BLOCKS TABLE.

ELEVATION
RIGHT SIDE

CUT FLANGE, BEND AND WELD (SEE NOTE NO. 9)

DELAWARE
DEPARTMENT OF TRANSPORTATION

GUARDRAIL TO BARRIER CONNECTION, APPROACH TYPE 2
STANDARD NO. B-8 (2001)

APPROVED

RECOMMENDED

04/05/2001
**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.

**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. THIS INSTALLATION SHALL BE USED WHEN THE EXISTING SIDEWALK IS 6'-6" (1980) OR LESS.
2. USE A THRIE BEAM EXPANSION SECTION AT BRIDGE EXPANSION JOINTS.
3. PLACE GUARDRAIL REFLECTOR IN THE UPPER VALLEY OF THE THRIE BEAM EVERY FIFTH POST.
4. TIMBER BLOCK THICKNESS SHALL BE ADJUSTED TO ALLOW FACE OF THE THRIE 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 EXTRANCE 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.
**NOTES:**
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 THRIE BEAM EXPANSION SECTION AT BRIDGE EXPANSION JOINTS.
4. PLACE GUARDRAIL REFLECTOR IN THE UPPER VALLEY OF THE THRIE 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.

**PLAN**

- **SECTION A-A**
  - **18" (450) GUARDRAIL BOLT (1/2" x 40D, NUT, WASHER (TYP.))**
  - **W6 x 15 (W150 x 22) STEEL GUARDRAIL POST**
  - **1/2" x 200 BASE PLATE**
  - **1/2" x 400 GROUT PAD-FILL WITH WASHERS AS NECESSARY TO LEVEL PLATE**
  - **CHIP OUT 1/2" x 400 DEEP RECESS FOR GROUT**
  - **DRILL FOR 2 - 1/2" x 120 GAL BOLTS (ASHTO M64)**
  - **ADHESIVE ANCHORS 50,000 lbs (22,500 kg) ULTIMATE ADHESIVE BOND STRENGTH, 1" x 120 MIN. EMBEDMENT**

**TYPE 3 GUARDRAIL PLACEMENT OR APPROPRIATE END TREATMENT**

- **LIMIT OF PAYMENT**
  - **TWO SECTIONS OF THRIE BEAM, ONE NESTED INSIDE THE OTHER**
  - **ENTRANCE END APPLICATION**
  - **SEE NOTE**

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

- **SEE NOTE**

**END OF SIDEWALK**

**EXIT END APPLICATION**

**SEE NOTE**

**DIRECTION OF TRAVEL**

**END OF BRIDGE PARAPET**

**EXISTING CURB LINE (BOTTOM OF CURB)**

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

- **SEE NOTE**

**ENTRANCE END APPLICATION**

**SEE NOTE**

**PLAN**

**SECTION A-A**

**NOTES:**
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 THRIE BEAM EXPANSION SECTION AT BRIDGE EXPANSION JOINTS.
4. PLACE GUARDRAIL REFLECTOR IN THE UPPER VALLEY OF THE THRIE 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.

**DELWARE DEPARTMENT OF TRANSPORTATION**

**BRIDGE RAIL RETROFIT, TYPE 2**

**STANDARD NO. B-11 (2004)**

**SHT. 1 OF 4**

**APPROVED**

**RECOMMENDED**

**DATE:** 11/10/05

**DATE:** 10/15
W6 x 15 (W150 x 22) STEEL GUARDRAIL POST

BASE PLATE DETAIL

WEED ALL AROUND INCLUDING EXTERIOR FLANGE SURFACE

SIDE

FRONT

SECTION B-B

PLAN

DELWARE
DEPARTMENT OF TRANSPORTATION

BRIDGE RAIL RETROFIT, TYPE 2

STANDARD NO. B-II (2001) SHT. 2 OF 2

APPROVED

RECOMMENDED

04/05/2001
TYPE I GUARDRAIL PLACEMENT OR APPROPRIATE END TREATMENT
GUARDRAIL TO BARRIER CONNECTION
LIMIT OF PAYMENT

END OF SIDEWALK

TAPER END OF WALL TO TOP OF GUARDRAIL AT A SLOPE OF 4:1 OR FLATTER

12'-10" MAX.

EXISTING BRIDGE RAIL

CONTRACTION JOINTS

BRIDGE BARRIER

DIRECTION OF TRAVEL

PLAN

2'-0" (J000)

NOTE:

STANDARD GUARDRAIL TO BARRIER CONNECTIONS SHALL BE CONNECTED TO THE ENDS OF THE NEW BRIDGE BARRIER AND TRANSITIONED TO THE EXISTING GUARDRAIL.

SECTION A-A

DRILL 3/8" DIA. HOLE, FILL WITH HIGH STRENGTH NON-SHRINK CEMENT

#6 (5/8") BARS SPACED 15" (5/15") LONGITUDINALLY, FRONT AND BACK ROWS SHALL BE STAGGERED

DELAWARE DEPARTMENT OF TRANSPORTATION
BRIDGE RAIL RETROFIT, TYPE 3
STANDARD NO. B-12 (2001)
SHT. 1 OF 1
APPROVED
RECOMMENDED
05/2/2001
NOTES: B. TWO ADDITIONAL 1/4" (20) x 2# (65) SLOTS SHALL BE PROVIDED AT 6'-3" (1905) SPACING FOR BEAM LENGTH OF 26'-1/2" (7940).
NOTE: WHERE CONDITIONS REQUIRE, ALTERNATE LENGTHS IN INCREMENTS OF 6" (150) MAY BE USED.

NOTE: ALL HOLES SHALL BE \( \frac{3}{8} \)" (20) DIA. BOLT. HOLE PATTERN IS SYMMETRICAL WITH RESPECT TO THE VERTICAL AXIS OF THE POST.

**W-BEAM STEEL POST AND WOOD OFFSET BLOCK**

- **POST**: 6' (1830) MIN. + 1" (25)
- **SIDE**: 7" (180) + 1"
- **TOP**: 8" (200) + 1"
- **FRONT**: 6" (150) + 1"
- **OFFSET BLOCK**: 12" (300) + 1"

**CONNECTIONS**
- **TYPE 1**: WHERE RUB RAIL IS USED.
- **TYPE 2**: LOWER HOLES ONLY REQUIRED WHERE HUB RAIL IS USED.

**HARDWARE**
- B-13 (2004)
- W6x9 (W150x13.5)
W-BEAM TERMINAL CONNECTOR

1/4" (20 GAGE) HOLE

3/8" x 2 1/2" (85) SLOTS

2 1/2" (75) HOLE

1 1/2" (40 GAGE) HOLE

3/8" (30) SLOTS

3/4" (25) HOLE

2" (50)

ELEVATION

PLAN

HARDWARE

B-13 (2004)

STANDARD NO.

SHT. OF 3

DELAWARE DEPARTMENT OF TRANSPORTATION

APPROVED

RECOMMENDED

DATE

DATE
NOTE: WHERE CONDITIONS REQUIRE, USE ALTERNATE LENGTHS IN INCREMENTS OF 6' (1800)

THREE BEAM STEEL POST AND WOOD OFFSET BLOCK

NOTE: ALL HOLES SHALL BE 5/16" (20) 0.01 BOLT HOLE PATTERN IS SYMMETRICAL WITH RESPECT TO THE VERTICAL AXIS OF THE POST.
W-THREE BEAM TRANSITION SECTION

<table>
<thead>
<tr>
<th>Post Bolt Slots</th>
<th>Splice Bolt Slots</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8&quot; x 1/2&quot; x 12&quot;</td>
<td>5/8&quot; x 1/4&quot; x 130&quot;</td>
</tr>
</tbody>
</table>

**Hardware**

- B-13 (2004)

**Recommended**: Not mentioned on the page.
NOTES:
1. ALL HOLES SHALL BE DRILLED PRIOR TO GALVANIZING.
2. ALL WOOD SIZES ARE NOMINAL DIMENSIONS.
SWAGED CABLE ASSEMBLY AND RELATED HARDWARE ASSEMBLY

NOTES:
1. TO ENSURE THAT THE TIMBER BEARING PLATE REMAINS IN POSITION, WELD END PLATE TO ANCHOR PLATE ON THREE SIDES.
2. DRILL 4 HOLES - \( \frac{1}{2} \)" (12.7) DIA. UN. DIA. (UPPER BOLT L)
3. DRILL 4 HOLES - \( \frac{1}{2} \)" (12.7) DIA. UN. DIA. (LOWER BOLT L)

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

END PLATE

ANCHOR PLATE TO W-BEAM CONNECTION DETAIL

HARDWARE

DELWARE
DEPARTMENT OF TRANSPORTATION


APPROVED  RECOMMENDED  (3000)

9/30/2004
RECOMMENDED
APPROVED

DELAWARE
DEPARTMENT OF TRANSPORTATION

GUARDRAIL BOLT

STEEL WASHER (FOR 5/8" (16) GUARDRAIL BOLT)

NOTE: DIMENSION FOR WASHER THICKNESS IS APPROXIMATE BASED ON METAL THICKNESS.

GUARDRAIL BOLT

NOTES:
1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 1/6" (3). IF THE BOLT EXTENDS MORE THAN 1/6" BEYOND THE NUT, THE BOLT SHALL BE TRIMMED BACK AS PER THE DEPARTMENT'S SPECIFICATIONS.

HARDWARE


APPROVED

SCALE: N.T.S.

DATE

DATE

DATE
NOTE: DIMENSION FOR WASHER THICKNESS IS APPROXIMATE BASE METAL THICKNESS.
STEEL WASHER

NOTES:
1. FOR USE WITH SWAGED CABLE ASSEMBLY.
2. DIMENSION FOR WASHER THICKNESS IS APPROXIMATE BASE METAL THICKNESS.

5/8" (16) CARRIAGE BOLT

5/8" (24) HEX NUT

NOTE:
FOR USE WITH SWAGED CABLE ASSEMBLY.
NOTES:
1. RAIL SHALL BE MOUNTED ON GUARDRAIL ADJACENT TO A BIKEWAY OR SIDEWALK.
2. ALL COMPONENTS OF THE RAIL SHALL BE SHOP FABRICATED. ALL CUTTING AND DRILLING SHALL BE DONE IN THE SHOP.
3. ALL EXPOSED THREAD HARDWARE SHALL BE BURIED.
4. GUARDRAIL POSTS UPON WHICH RAIL IS TO BE INSTALLED SHALL BE SHOP DRILLED FOR THE RAIL BRACKETS DURING FABRICATION.
5. ALL RAIL SPICES WILL BE AT RAIL SUPPORT BRACKETS. THE SAME BOLT USED TO ATTACH THE RAIL TO THE BRACKET WILL BE USED TO SECURE THE SPICE TUBE.
6. RAILS SHALL BE INSTALLED ONLY ON STANDARD WBEAM SECTIONS AND AT LEAST ONE POST AWAY FROM THE PAYMENT LIMITS OF THE END TREATMENT.
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

SLOT DIMENSIONS
CONCRETE SAFETY BARRIER, PRECAST CONSTRUCTION
9" SHAPE BARRIER SECTION

SECTION A-A

SECTION B-B
NOTES:
1. WHEN P.C.C. CURB OR 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 ENTRANCES AS DETAILED ON THIS SHEET.
3. DEPRESS CURB FLUSH WITH PAVEMENT AT CURB RAMPS. MAXIMUM SLOPE OF CURB AT CURB RAMPS IS 20 IN THE DIRECTION OF PEDESTRIAN TRAVEL. SEE STANDARD NO C-2; OR 4.

DELTADE OF TRANSPORTATION
P.C.C. CURB, P.C.C. CURB & GUTTER, AND HOT-MIX CURB
STANDARD NO. C-1 (2006) SHMT. 1 OF 1
APPROVED By: John Doe 12/5/05
RECOMMENDED By: Jane Smith 11/28/05
01/19/2006
Curb Ramp, Type 1 and Sections

Notes:
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.

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.

Detectable Warning Truncated Dome Details

Notes:
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.

Modified Curb (flush with pavement)

Detectable Warning Truncated Domes

Sidewalk

P.C.C. Sidewalk

Base

Pavement

Detectable Warning Truncated Domes

Section B-B

Elevation A-A

Notes:
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.

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.

Detectable Warning Truncated Dome Details

Notes:
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.

Modified Curb (flush with pavement)

Detectable Warning Truncated Domes

Sidewalk

P.C.C. Sidewalk

Base

Pavement

Detectable Warning Truncated Domes

Section C-C

Notes:
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.

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.
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.

DETECTABLE WARNING TRUNCATED DOMES

NOTE: THE DIAGONAL CURB RAMP IS NOT THE PREFERRED TREATMENT.
SECTION E-E

SECTION F-F

ELEVATION D-D

ELEVATION G-G

NOTE: CURB RAMP WIDTH SHALL BE 4' (1200) MINIMUM, HOWEVER, 5' (1525) IS PREFERRED.
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 other treatment. Other treatment is acceptable.
2. Where a maximum slope ramp will not meet the sidewalk grade within a length of 5' (1500) due to steep adjacent roadway, the ramp length may be limited to 5' (1500) and the ramp slope allowed to exceed 20%. ISLANDS OF INSUFFICIENT WIDTH (W<21' (6400) FOR 8" (200) CURB, W<17' (5200) FOR 6" (150) CURB, ETC.) TO ACCOMMODATE TYPE 5 RAMPS SHALL HAVE A CUT-THROUGH FLUSH WITH ADJOINING PAVEMENT WITH A MAXIMUM RUNNING SLOPE OF 20% AND MAXIMUM CROSS SLOPE OF 50% TO BE PAID FOR UNDER RESPECTIVE BID ITEMS.
3. A CONTINUOUS PATH MUST BE PROVIDED BETWEEN ADJACENT CURB RAMPS IN ISLANDS AND MEDIANS, WITH A MAXIMUM RUNNING SLOPE OF 20%.
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).
TYPE D
INTEGRAL P.C.C. CURB AND GUTTER, TYPE 1

TYPE E
INTEGRAL P.C.C. CURB AND GUTTER, TYPE 2
PLAN VIEW
SHOWN WITHOUT GRATE

NOTE: 61 SAFETY END STRUCTURE TO BE PRECAST
### Dimensions

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>8×1375</td>
<td>9×6×2 (890)</td>
<td>2×5×1 (730)</td>
<td>8×4×2 (7540)</td>
</tr>
<tr>
<td>8×1450</td>
<td>8×5×2 (505)</td>
<td>2×9×4 (840)</td>
<td>10×5×3 (375)</td>
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<tr>
<td>20×1525 OR 24×1600</td>
<td>14×8×4 (1375)</td>
<td>3×2×4 (980)</td>
<td>12×6×3 (980)</td>
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</tbody>
</table>

### Approximate Quantities

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>CONCRETE FT³(ft³)</th>
<th>REINFORCING 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>
</tr>
</thead>
<tbody>
<tr>
<td>8×1375</td>
<td>25 (0.709)</td>
<td>25.43 (0.720)</td>
<td>2</td>
<td>--</td>
<td>215.92</td>
<td>202.98</td>
</tr>
<tr>
<td>8×1450</td>
<td>35 (0.892)</td>
<td>32.07 (0.908)</td>
<td>3</td>
<td>2×1 (635)</td>
<td>215.92</td>
<td>202.98 (15.47 64.45)</td>
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<tr>
<td>20×1525 OR 24×1600</td>
<td>40×75 (6.541)</td>
<td>59.87 (8.296)</td>
<td>3</td>
<td>--</td>
<td>215.92</td>
<td>202.98</td>
</tr>
</tbody>
</table>

### Bending Diagram

- **X**
  - **B-BARS**
  - **Y**
    - **C-BARS**
    - **VARYES**
    - **VARYES**
      - **VARYES**

### Schedule of Reinforcing Steel

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>A-BARS</th>
<th></th>
<th>B-BARS</th>
<th></th>
<th>C-BARS</th>
<th></th>
<th>D-BARS</th>
<th></th>
<th>G-BARS</th>
<th></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>
<td>SIZE</td>
<td>NO. SPA.</td>
<td>LENGTH</td>
<td>SIZE</td>
<td>NO. SPA.</td>
</tr>
<tr>
<td>8×(375)</td>
<td>A4 (M3)</td>
<td>2</td>
<td>8×(200)</td>
<td>72×1830</td>
<td>2</td>
<td>8×(200)</td>
<td>9×9×(2870)</td>
<td>2</td>
<td>8×(200)</td>
<td>4</td>
</tr>
<tr>
<td>8×(450)</td>
<td>A4 (M3)</td>
<td>2</td>
<td>8×(200)</td>
<td>72×1830</td>
<td>2</td>
<td>8×(200)</td>
<td>9×9×(3580)</td>
<td>2</td>
<td>8×(200)</td>
<td>6</td>
</tr>
<tr>
<td>20×(1525 OR 24×1600)</td>
<td>A4 (M3)</td>
<td>2</td>
<td>8×(200)</td>
<td>72×1830</td>
<td>2</td>
<td>8×(200)</td>
<td>9×9×(4445)</td>
<td>2</td>
<td>8×(200)</td>
<td>6</td>
</tr>
</tbody>
</table>

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**DELAWARE DEPARTMENT OF TRANSPORTATION**

**61 SAFETY END STRUCTURE**

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

**APPROVED**

**RECOMMENDED**

04/17/2001
PLAN VIEW
SHOWN WITHOUT GRATE

NOTE: SAFETY END STRUCTURE TO BE PRECAST

SECTION A-A
* REQUIRED ONLY FOR PPE SIZE OF 24" (525) OR 24" (600)

DELWARE
DEPARTMENT OF TRANSPORTATION

181 SAFETY END STRUCTURE

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

APPROVED

RECOMMENDED
**Plan View**

- 1/2"(13) x 2 1/2"(64) x 1"(35)
  - Flat w/ hasp & two 3/8"(16)
  - Field-drilled bolt holes (typ)

**Section A-A**

- Pad lock
- 1/2"(13) x 2 1/2"(64) x 1"(35)
  - Flat w/ hasp & hinge
- Personnel safety grate
- 1/2"(13) x 2 1/2"(64) x 1"(35)
  - Flat w/ hasp, two 3/8"(16)
  - Field-drilled bolt holes

**Notes:**

1. Personnel safety grates (PSG) shall only be installed on storm water pipe inlets.
2. The grate shall be made to fit the outside perimeter of the flared end section (FES) + 1/4"(6).
3. All bolt holes are to be drilled in the field.
4. A stiffener is to be installed where two or more bars are used.
5. Bottom bar shall be 6"(152) above invert of FES.

**Delaware Department of Transportation**

**Safety Grates**

- Standard No.: D-3 (2000D)
- Sh. 2 of 2
- Approved: 12/15/05
- Recommended: 11/20/06

01/18/2006
Notes:
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 8"(203) 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" (100MM) 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-6 (2002) SH. 1 OF 8
APPROVED
RECOMMENDED

CAST-IN-PLACE CONCRETE FLOW CHANNEL (TYP.)

SECTION A-A

DRAINAGE INLET ASSEMBLY

SECTION B-B

TYPE 1 JOINT (TYP.)

TYPE 2 JOINT (TYP.)

TYPE 3 JOINT (TYP.)

HEIGHT (M) 6 (150)

INLET BOX (PRE-CAST)

COVER SLAB (PRE-CAST)

TOP UNIT (CAST IN PLACE)

CAST IN PLACE

TYPE 1 JOINT

TYPE 3 JOINT

W 2'-1500 MIN.

L 5'-000 MIN.

2'-1500 MAX.

6'-050 TYP.

4'-000 MIN.

6'-050 TYP.

18" (455) x 34" (865) OPENING (22" (560) x 34" (865) OPENING WHEN CURB THROAT REQUIRED - TYPES B & C ONLY)

DIMENSIONS WILL VARY

** JOINT SEALANT AS PER SPECIFICATIONS

COVER SLAB

BOX WALL

9/4/00

05/02/002
DRAINAGE INLET DETAILS

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

- **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**
  - **TOP UNIT**
    - **Curb**
      - Type A: Use in drainage swale
      - Type B: Integral PCC curb & gutter, Type 1 & 3, PCC curb Type 1
      - Type C: Integral PCC curb & gutter, Type 4, PCC curb Type 3
      - Type D: PCC curb Type 2
      - Type E: PCC curb Type 2

- **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.

- **PAY LIMIT FOR TYPE B, C, D, & E UNITS**
  - 1" (25) R.
  - 2" (50) TYP.
  - 8" (200) MIN.
  - 28" (700) (TYP.)

- **TRANSITION**
  - 38" (965) MIN.
  - 11" (280) MIN.

- **COVERSLAB WIDTH**
  - 3" (75) CLEAR
  - 6" (150) (TYP)

- **CURB OPENING DETAIL**
  - Frame
  - Back of curb

- **ISOMETRIC VIEW**
  - PCC curb Type 2
  - Pay limit for Type B, C, D, & E units

- **DATE**
  - 11/14/05

- **DELAWARE DEPARTMENT OF TRANSPORTATION**
  - Sh. 3 of 8

- **APPROVED**
  - 11/14/05

- **CHIEF ENGINEER**
  - 11/14/05

- **DESIGN ENGINEER**
  - 11/14/05
NOTE:
1. 4" 100% THROAT IS FOR TYPES B & C TOP UNITS ONLY.
2. RELOCATE ENCROACHING REINFORCING BARS WHEN USING TYPES B & C TOP UNITS.
3. COVER SLABS SHALL BE POUR-CAST AND MUST BE SIZED TO FIT INLET BOX DIMENSIONS.
4. ALL BARS ARE TO BE #5 MILD STEEL 6" O.C. UNLESS NOTED OTHERWISE.
5. MINIMUM BAR COVER = 1/2" (38).

* - DIMENSIONS TO MATCH OUTSIDE TO OUTSIDE DIMENSIONS OF BOX

SCALE: N.T.S.

DELAWARE DEPARTMENT OF TRANSPORTATION

DRAINAGE INLET COVER SLAB DETAILS

SECTION A-A

SECTION B-B

DRAINAGE INLET DETAILS

STANDARD NO. D-5 (2002) SHT. 4 OF 8

APPROVED

JUDICIAL WATCH, INC. 9/24/02

04/29/2002
NOTE:
1. 4" x 100" THROAT IS FOR TYPES B AND C TOP UNITS ONLY.
2. RELocate ENCROCking 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" (125MM) SPACED @ 6" (150MM) UNLESS NOTED OTHERWISE.
5. MINIMUM BAR COVER = 6" (150MM).

SECTION B-B

SECTION A-A

SS02 BENDING DIAGRAM

SS02 IS NOT REQUIRED TO BE ONE CONTINUOUS BAR IF MORE THAN ONE BAR IS USED, THERE MUST BE A 12" (300MM) OVERLAP BETWEEN BARS.
34" (865) x 24" (610) DRAINAGE INLET DETAILS
NOTE REFER TO PREVIOUS SHEETS FOR REINFORCING REQUIREMENTS

TOP UNIT DETAILS

COVER SLAB DETAILS

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D

SECTION E-E

NOTE: REFER TO PREVIOUS SHEETS FOR REINFORCING REQUIREMENTS
NOTE: 1. REINFORCEMENT SHALL BE 4'0"X2"X1/2" X 4 #4 (W26 X W26)
2. INLET BOXES ARE TO BE PRE-CAST OR CAST-IN-PLACE.

SECTION A-A

SECTION B-B

DELAWARE
DEPARTMENT OF TRANSPORTATION

LAWN INLET

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

05/02/2002

APPROVED

RECOMMENDED
ROUND MANHOLE ASSEMBLY

NOTE: ROUND MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 195.
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

DELWARE DEPARTMENT OF TRANSPORTATION

MANHOLE DETAILS

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

APPROVED

RECOMMENDED

05/2/2001
48" (1220) x 30" (760) MANHOLE

48" (1220) x 48" (1220) MANHOLE

66" (1675) x 30" (760) MANHOLE

66" (1675) x 48" (1220) MANHOLE

SECTION A-A

SECTION B-B

BOX MANHOLE COVER SLAB DETAILS

NOTES:
1. COVER SLABS SHALL BE PRE-CAST.
2. ALL BARS SHALL BE #5 (6M) SPACED AT 6" (150) UNLESS NOTED OTHERWISE.
3. MINIMUM COVER = 1/2" (38).

DIMENSIONS TO MATCH OUTSIDE TO OUTSIDE DIMENSIONS OF BOX.

DELAWARE DEPARTMENT OF TRANSPORTATION

MANHOLE DETAILS

STANDARD NO. D-6 (2002) SHT. 4 OF 4

APPROVED

06/1/2002
48" x 30" (760)
JUNCTION BOX

48" x 48" (1220)
JUNCTION BOX

66" x 30" (760)
JUNCTION BOX

66" x 675" (1220)
JUNCTION BOX

SECTION A-A

SECTION B-B

NOTES:
1. COVER SLABS ARE TO BE PRE-CAST.
2. ALL BARS ARE TO BE 5 (56) SPACED @ 2" (50) UNLESS NOTED OTHERWISE.
3. MINIMUM BAR COVER = 1½" (38).
4. DIMENSIONS TO WATCH OUTSIDE TO OUTSIDE DIMENSIONS OF BOX

DELaware DEPARTMENT OF TRANSPORTATION

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

DELWARE DEPARTMENT OF TRANSPORTATION

PIPE BEDDING

STANDARD NO. D-8 (2001) SHT. 1 OF 1 RECOMMENDED

APPROVED
NOTES:

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

2. Slope 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 ft 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 ft 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 aprons item.

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

CONCRETE HEADWALL FOR UNDERDRAIN OUTLET

NOT TO SCALE
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 CREATING GULLIES OR WASHOUTS.
2) SLOPE FACES SHALL BE TRACED WITH CLEATED EQUIPMENT SUCH THAT THE CLEAT MARKS ARE ORIENTED HORIZONTALLY.
3) ALL CUT AND FILL SLOPES OF THE HIGHWAY EMANKMENT SHALL BE PERMANENTLY STABILIZED AS THE WORK PROGRESSES IN INCREMENTS NOT TO EXCEED 10 FT (3000) MEASURED ALONG THE SLOPE.
4) CROSS SLOPES SHALL BE 2% MINIMUM, 6% MAXIMUM.
ISOMETRIC VIEW

CONSTRUCTION AREA

GEOTEXTILE

GEOTEXTILE

WIRE MESH POST

GEOTEXTILE

FASTEN GEOTEXTILE TO WIRE MESH AT 6'-0" TYP.

6' x 6' (600 x 600)
14 GAUGE (2.0) WIRE MESH

SECURE WITH WIRE OR STAPLES

FLOW

SECTION B-B

WIRE MESH DETAIL
(REFINERCO SALT FENCE ONLY)

NOTE: THIS DEVICE IS INTENDED TO CONTROL SHEET FLOW ONLY, IT SHALL NOT BE USED IN AREAS OF CONCENTRATED FLOW.

EXISTING GROUND

6' (1500)

6' (1500)

SECTION A-A

CONNECTON DETAIL
FOR USE WITH JOINING TWO ADJACENT SALT FENCE SECTIONS

PLAN SYMBOL

S.F.  S.F.
R.S.F.  R.S.F.

DELWARE
DEPARTMENT OF TRANSPORTATION

STANDARD NO.  E-2 (2001)

SHT.  1 OF 1

APPROVED  01/12/01

RECOMMENDED  01/12/01

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

2" X 4" (50 X 100) NOMINAL)
FRAME, NAILED AT JOINTS

WIRE MESH,
3/4" X 2" X 4/18 (2) CASE (3)

EXISTING GROUND

EXCAVATE AND
RE-COMPACT SOIL

POST DRIVEN
INTO GROUND

EXCAVATE AND
RE-COMPACT SOIL

ISOMETRIC VIEW

SECTION A-A
1. Sediment traps are intended for use in existing, proposed, and temporary ditches of all types with a maximum drainage area of 16 acres (6.5 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/dewatering devices, or drainage inlets 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 2/1 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.
NOTES:
1. THE WORK SHALL CONSIST OF THE CONSTRUCTION OF A SEDIMENT TRAP AROUND A DRAINAGE INLET TO ALLOW SEGMENTATION TO OCCUR BEFORE RUNOFF ENTERS THE DRAINAGE INLET.
2. DRAINAGE INLET SEDIMENT TRAPS SHALL BE LIMITED TO A THREE (3) ACRE (0.2 HECTARE) 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.
STABILIZATION OF EMBANKMENTS

NOTES:
1. STAPLES TO BE STAGGERED AT 8"x150" SPACING.
2. TOPSOIL UNDER EROSION CONTROL BLANKET IS TO BE TRACKED 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 TRACKED AND SEEDED.

EROSION CONTROL BLANKET APPLICATIONS

DELAWARE DEPARTMENT OF TRANSPORTATION


APPROVED 12/5/05

RECOMMENDED 11/6/05

08/10/2005
**PLAN**

NOTES:
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 specific conditions.

**SECTION A-A**
- Geotextile
- Securing pins
- Limit of excavation
- Riprap
- Geotextile

**SECTION B-B**
- Geotextile
- Securing pin
- Ditch flow

**SECTION DETAILS**
- Geotextile
- Toe wall

**CLASS RIPRAP**
- R-4 d = 14"(350) min.
- R-5 d = 26"(650) min.
- R-6 d = 34"(850) min.

**DELAWARE DEPARTMENT OF TRANSPORTATION**

<table>
<thead>
<tr>
<th>STANDARD NO.</th>
<th>E-10 (2005)</th>
<th>SHT. 1 OF 1</th>
<th>APPROVED</th>
<th>RECOMMENDED</th>
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</thead>
</table>

08/10/2005
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>SEED USED WITH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EROSION CONTROL BLKET</td>
</tr>
<tr>
<td>2</td>
<td>2.5-8.0%</td>
<td>R-4 RRAP</td>
</tr>
<tr>
<td>3</td>
<td>8.1-20.0%</td>
<td>ENGINEERED DESIGN</td>
</tr>
</tbody>
</table>

DRAINAGE AREA A
(5 AC - 12 Ho or LESS)

DRAINAGE AREA B
(5 AC - 10 AC)

(2 Ho - 4 Pu)

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>F' 5000 MIN.</td>
<td>F' 5000 MIN.</td>
</tr>
<tr>
<td>D</td>
<td>4' 10000 MIN.</td>
<td>6' 0800 MIN.</td>
</tr>
</tbody>
</table>

SEE SECTION A - A

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 MORE 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-LINED CHANNEL DIVERSION."
SECTION A-A

OUTLET AS REQUIRED SEE NOTES 1 & 2.

PLAN

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>2.0-8.0%</td>
<td>LINED R-4 RIPRAP</td>
</tr>
<tr>
<td>A-3</td>
<td>8.0-20%</td>
<td>ENGINEERED DESIGN</td>
</tr>
</tbody>
</table>

MAXIMUM DRAINAGE AREA: 2 ACRES (0.8 ha)

NOTES:
1. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVI.
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 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-LINED CHANNEL DIVERSION".
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 CONTROL BLANKET</td>
</tr>
<tr>
<td>2</td>
<td>2.1-8.0%</td>
<td>R-4 RIPRIP</td>
</tr>
<tr>
<td>3</td>
<td>8.1-20%</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 hcf or less)</th>
<th>DIKE B (5-600 cc 2-4 hcf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a-DIKE HEIGHT</td>
<td>12&quot; (300)</td>
<td>18&quot; (450)</td>
</tr>
<tr>
<td>b-DIKE WIDTH</td>
<td>2&quot; (600)</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>4&quot; (100)</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.
SLOPE DRAIN PROFILE

FOR FILL SLOPES

PLAN

ELEVATION

ANTI-SEEP COLLAR

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.
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.
DELAWARE NO. 5T STONE.

PIPE 1
(TYPE 1 & 2)

PIPE 2
(TYPE 2 ONLY)

2" (50) X 4" (100)
WOOD WEDGE
(TYPE 2 ONLY)

2" (50) X 4" (100)
WOOD WEDGE
(TYPE 2 ONLY)

POPE

(SEE CHART)

4' (1200) MIN.

6' (1800) MIN.

8' (2400) MIN.

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" (900) CMP SHALL BE REPLACED WHEN CLOGGED WITH SEDIMENT.

3. 1/2" x 1/2" x 15' x 15' GAGE 60 WIRE MESH SHALL BE PLACED AROUND THE REMOVABLE 36" (900) CMP BEFORE ATTACHING THE GEOTEXTILE TO INCREASE FLOW THROUGH THE GEOTEXTILE.

4. ALL PERFORATIONS SHALL BE 1" (25) IN DIAMETER AND 12" (300) ON CENTER IN ALL DIRECTIONS.

5. TYPE I SUMP PIT SHALL BE USED ONLY WHEN PUMPING IS NEEDED FOR LESS THAN 7 DAYS.

### SUMP PIT CHART

<table>
<thead>
<tr>
<th>TYPE</th>
<th>PIPE 1</th>
<th>PIPE 2</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PERFORATED 24&quot; (600) CMP WITH PERFORATED CAP WELDED ON BOTTOM AND COMPLETELY WRAPPED WITH GEOTEXTILE.</td>
<td>N/A</td>
<td>4&quot; (1000) MIN.</td>
<td>12&quot; (3000)</td>
</tr>
<tr>
<td>2</td>
<td>PERFORATED 48&quot; (1200) CMP WITH PERFORATED CAP WELDED ON BOTTOM</td>
<td>REMOVABLE PERFORATED 36&quot; (900) CMP WITH PERFORATED CAP WELDED ON BOTTOM AND COMPLETELY WRAPPED WITH GEOTEXTILE.</td>
<td>8&quot; (2000) MIN.</td>
<td>24&quot; (6000)</td>
</tr>
</tbody>
</table>

DEPARTMENT OF TRANSPORTATION

SUMP PIT, TYPE 1 & 2

STANDARD NO. E-16 (2005) SHT. 1 OF 1

APPROVED

RECOMMENDED
NOTES:
1. A Dewatering Basin (DWB) is used to remove sediment from sediment-laden water pumped from a construction site before the water re-enters the waterway. The DBW shall have a minimum top width of 20' (6000) and a minimum depth of 3.5' (1050). 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' + 0.2 X Y

Metric: Top Length (mm) = 7900 + 48300 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 DBW shall cease when the effluent from the basin becomes sediment-laden.

3. A sump pit or stilling well (see standard sheet) 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 12' (3600) from the crest.

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.
OBlique View

Flow

STONE TRENCH

2'-6" (600) OVERLAP

PINS

2'-6" (600) MAX. LATERAL SPACING

8" (200) MAX. LONGITUDINAL SPACING

SAND BAG DIKE

(SEE STANDARD SHEET)

EXISTING CHANNEL

WORK AREA

PLAN

TRENCHING DETAIL

DEL. NO. 3 STONE

3/4" (19) DIA. WASHER

3/4" (19) DIA. WASHER

GEOTEXTILE

GEOTEXTILE

STONE TRENCH

STONE TRENCH

SECTION A-A

NOTE: SEE PLANS FOR LOCATION, DIMENSIONS, GRADES, ETC.

DELWARE
DEPARTMENT OF TRANSPORTATION

GEOTEXTILE-LINED CHANNEL DIVERSION

STANDARD NO. E-18 (2005)

SHT. 1 OF 1

APPROVED

RECOMMENDED

09/08/05

12/5/05
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 (#0) SHALL BE 1' (300) ABOVE THE PEAK ELEVATION OF THE ONE YEAR STORM.
NOTES:
0. 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 AT LEAST 1' ABOVE THE PEAK ELEVATION OF THE ONE YEAR STORM, OR EQUAL WITH THE TOP OF BANK, WHICHEVER IS LESS, SEE PLANS FOR INFORMATION.

4. THE SPILLWAY SHALL BE SIZED TO PASS A 1 IN 10 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 5:1 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 voids are filled or as directed by the engineer.
NOTES:
2. ALL PVC/CPVC PIPES ARE TO BE 4" Schedule 40.
3. ALL JOINTS OF THE FLOATATION SECTION SHALL BE SOLENT WELDED. JOINTS OF SKIMMER SECTION NEED NOT BE WATER-TIGHT.
4. 4" PVC FLEXIBLE DRAIN PIPE IS TO BE ATTACHED TO THE POND OUTLET STRUCTURE WITH WATER-TIGHT CONNECTIONS.
5. ORIFICE IS TO BE SIZED ACCORDING TO STORAGE VOLUME AND TO SLOWLY RELEASE P"(25) RUNOFF FOR AT LEAST 24 HOURS.

PLAN VIEW

FLATEGATION SECTION

SKIMMER SECTION

SIDE VIEW

END CAP

PVC END CAP (TYP)

0.5"-16 DIA.
BOLT (TYP)

PVC 90°
EL BOW (TYP)

PVC PIPE (TYP)

4" FLEXIBLE DRAIN PIPE

POND OUTLET STRUCTURE

END CAP

12 ROWS OF 7/8" O.D.
HOLES, 1/16" 500 C.C.

ORIFICE DRILLED IN END CAP
SEE NOTE 5

ATTACH FLEXIBLE PIPE TO PVC
WITH TWO NO. 8 WOOD SCREWS

FLANGE WITH RUBBER GASKET MATERIAL
ATTACH TO STRUCTURE WITH CONCRETE SCREWS OR OTHER SUITABLE ATTACHMENT AS APPROVED BY THE ENGINEER

DELAWARE
DEPARTMENT OF TRANSPORTATION

SKIMMER Dewatering DEVICE

APPROVED

STANDARD NO. E-22 (2001)

SHT. 1 OF 1

RECOMMENDED

05/2/2001
FLOATING TURBIDITY CURTAIN

NOTE: 1. ADDITIONAL PANEL REQUIRED FOR DEPTHS GREATER THAN 5' (5000).  
2. FLOATING TURBIDITY CURTAIN SHALL REACH BOTTOM UP TO  
DEPTHS OF 10' (3000) BY USING TWO PANELS. DEPTHS GREATER  
THAN 10' (3000) SHALL REQUIRE SPECIAL DEPTH CURTAINS SPECIFICALLY  
CALLED FOR IN THE PLANS OR AS DIRECTED BY THE ENGINEER.
NOTES:
1. THE PORTABLE SEDIMENT TANK SHOWN MAY BE USED IN SITES WHERE SPACE IS LIMITED TO CONSTRUCT A DEWATERING BASIN.

2. THE MAXIMUM PUMP DISCHARGE INTO THIS TYPICAL PORTABLE SEDIMENT TANK SHALL BE 426 GALLONS PER MINUTE 296 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.

3. 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.

4. OTHER DESIGNS MAY BE USED PROVIDED THE HYDRAULIC DESIGN IS SUBMITTED TO AND APPROVED BY THE STORMWATER ENGINEER.

SECTION B-B

SECTION A-A

DELAWARE DEPARTMENT OF TRANSPORTATION

PORTABLE SEDIMENT TANK

STANDARD NO. E-24 (2005) SHT. 1 OF 1

APPROVED

RECOMMENDED
INITIAL TRENCH ANCHOR DETAIL
APPLIED AT THE DOWNSTREAM END OF DITCH

TERMINAL TRENCH ANCHOR DETAIL
APPLIED AT THE UPSTREAM END OF DITCH

LONGITUDINAL TRENCH ANCHOR DETAIL

STABILIZATION OF DITCHES
PLAN

NOTES:
1. ADDITIONAL STAPLES NOT SHOWN ARE REQUIRED AT OVERLAPS, ENDS, CHECK SLOTS AND EDGES. SEE APPROPRIATE DETAILS
   FOR STAPLE PLACEMENT.
2. STAPLES ARE TO BE STAGGERED.
3. TOPSOL UNDER TURF REINFORCEMENT MAT IS TO BE TRAILED AND SEeded.

TURF REINFORCEMENT MAT APPLICATIONS

DELAWARE
DEPARTMENT OF TRANSPORTATION

STANDARD NO. E-25 (2005)
SHT. 1 OF 1

APPROVED

RECOMMENDED

09/08/2005
**DETAILED 'A'**

**TOP VIEW**

- Intermediate or line post: Studged T 7-1/2" x 4" x 4" x 7/8" with a 3/8" hole for 1/2" cage, 4 pt. Barb, 5" (127 mm) C.C., one strand barbed wire. 
- End post: 2-1/2" (64 mm) O.D., 3.65 lbs./lin.ft., 15.8 kg/m.
- Fasten with 5 clamps or 9 gage galv. wire ties.

**FRONT VIEW**

- Corner or pull post: 2-1/2" (64 mm) O.D., 3.65 lbs./lin.ft., 15.8 kg/m. 
- Stretcher fence to corner post and tie with 5 wraps.

**DIAGRAM**

- **Anchor Plate**
- **Diagonal Brace**: 7/8" x 1" O.D., 0.27 lbs./lin.ft., 0.38 kg/m. Length 7'-0" (2.13 m).
- **Stretch Fence to Corrner Post**
- **See Detail 'A'**

**DELTAWS DEPARTMENT OF TRANSPORTATION**

**RIGHT-OF-WAY FENCE**

- Standard No.: M-1 (2001)
- Sh. 1 of 1

**APPROVED**

- [Signature]

**RECOMMENDED**

- [Signature]
LONGITUDINAL STEEL 6 CAGE 14.10 WIRE SPACED 3' (15) C.C., 26' (1650) LONG (TYP.)

TRANSVERSE STEEL 7 CAGE 14.55 WIRE SPACED 8' (2400) C.C.

NOTES:
1. LONGITUDINAL STEEL SHALL BE HELD IN PLACE BY CRADLES.
2. LETTERS AND CROSS TO BE COUNTERSUNK IN TOP OF MARKER 1/4" (16A).
BICYCLE RACK

OUTER EDGE OF CONCRETE FOOTING TO BE FLUSH WITH SURROUNDING GRADE (TYP.)

SLOPE TO DRAIN

5 BIKES
W = 30" (750)

7 BIKES
W = 63" (1600)

9 BIKES
W = 90" (2275)

11 BIKES
W = 111" (2819)

BIKE RACK DETAILS


#4 REBAR 6" (150) LONG

2 3/8" (60) DIA. TUBING

24" (600) (TYP.)

3/4" (19) (TYP.)

3" (75)

5 BIKES
W = 63" (1600)

7 BIKES
W = 90" (2275)

9 BIKES
W = 111" (2819)

11 BIKES
W = 132" (3350)

24" (600) MIN.

12" (305)

DIA.

24" (600)

5 BIKES
W = 63" (1600)

7 BIKES
W = 90" (2275)

9 BIKES
W = 111" (2819)

11 BIKES
W = 132" (3350)

24" (600) MIN.

12" (305)

DIA.

BICYCLE RACK DETAILS

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

DELAWARE DEPARTMENT OF TRANSPORTATION

APPROVED

RECOMMENDED

DATE

DATE

DATE

DATE
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:
- See Note 2
- Posts 8' (2.4m) O.C. on straight runs, 4' (1.2m) O.C. around curves
- Posts 8' (2.4m) O.C. on straight runs, 4' (1.2m) O.C. around curves
- 4" (100) x 4" (100) (Nominal) treated posts (Typ.)
- Attach with 4-12d hot dip galvanized ring nails (Typ.)
- 4" (100) x 4" (100) (Nominal) treated posts (Typ.)
- Miter top at 3:12 slope
- Slope to drain
- Class B concrete
- Section A-A
- Typical joint detail
- Wood rail fence details
- SHT. 1 OF 1
- Approved: 1/27/05
- Recommended: 1/27/05

Delaware Department of Transportation
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, 2" (500) white lines should be placed on both sides.
4. The patterns above are the preferred patterns available for sidewalk or crosswalk applications.

BRICK PAVE SIDEWALK DETAIL

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 this is against building or other confining feature.
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

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 ½" (13) WIDER. WHEN THE TEMPERATURE IS ABOVE 80°F (27°C), THE SEALANT RESERVOIR SHALL BE CUT ¼" (6) NARROWER.
2. "T" REFERS TO THE ACTUAL CONSTRUCTED SLAB THICKNESS.
3. TOLERANCE ON ALL JOINT SEALANT DETAIL DIMENSIONS SHOWN WITHOUT RANGES SHALL BE PLUS ¼" (6), MINUS 0." (0).
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 ½" (13) TO ¼" (6) BELOW THE TOP OF THE SLAB.
8. A 45° CHAMFER SHALL BE CUT ¼" (6) TO ¼" (6) 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.

DELAWARE DEPARTMENT OF TRANSPORTATION

P.C.C. PAVEMENT

STANDARD NO. P-1 (2004) SHT. 2 OF 5

APPROVED

DELINTERMARKWITH 1/10/05

P.C.C. PAVEMENT

TEST MED DATES

RECOMMENDED

DELINTE MARK WITH 1/10/05

1/1/09
DOWEL & TIE BAR PLACEMENT TOLERANCES
**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 24'1500 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 24'1500 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

DELAWARE DEPARTMENT OF TRANSPORTATION

P.C.C. PAVEMENT PATCHING

APPROVED

RECOMMENDED
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 ¥" (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/¥" (0.13), MINUS ¥" (0.13).
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.

FULL DEPTH PATCH
VERTICAL TRANSLATION

HORIZONTAL TRANSLATION

LONGITUDINAL TRANSLATION

HORIZONTAL ROTATION

VERTICAL ROTATION

DOWEL & TIE BAR PLACEMENT TOLERANCES

FULL DEPTH PATCH

DELAWARE
DEPARTMENT OF TRANSPORTATION

P.C.C. PAVEMENT PATCHING

STANDARD NO. P-2 (2001)  SHT. 4 OF 5

APPROVED  RECOMMENDED

04/18/2001
NOTE: CLOSED CELL POLYETHYLENE FOAM SHALL BE THE SAME WIDTH AS THE JOINT AND 2"(50) 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"(300), THEN 1"(25) AND POLYETHYLENE FOAM IS NOT USED. WHEN X ≤ 12"(300), THEN 1"(25) AND POLYETHYLENE FOAM IS USED.
NOTES:

1. TYPE 1 CONDUIT JUNCTION WELL SHALL BE PRECAST CONCRETE. AT LEAST ONE HOLE IN PRECAST WELLS WILL BE OF A 5" 1/2 OD 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 CONCRETE TYPE.

3. TYPE 2 WALLS WILL BE A NOMINAL 4" 1/2 TO 5" 1/2 THICK. TYPE 3 WALL WILL BE A NOMINAL 8" 0/000 THICK.

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

5. 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 5⁄8 IN. 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 UNEVEN AREAS WILL BE CONSTRUCTED ABOVE GRADE AND GRADED TO DRAIN AWAY FROM CONDUIT JUNCTION WELL.

SECTION B-B
NOTES:
1. TYPE 5 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.

PLAN VIEW

SECTION A-A

DEL. 57 STONE

DELAWARE
DEPARTMENT OF TRANSPORTATION

CONDUIT JUNCTION WELL, TYPE 5

APPROVED

STANDARD NO. T-5 (2005) SHT. 1 OF 1 RECOMMENDED

09/08/05
ROUND BASE

SQUARE BASE

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

<table>
<thead>
<tr>
<th>POLE BASE TYPE</th>
<th>DIAMETER</th>
<th>DEPTH</th>
<th>#4 (1/2&quot;) HORIZONTAL REINFORCING BARS</th>
<th>#8 (5/8&quot;) VERTICAL REINFORCING BARS</th>
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<tbody>
<tr>
<td>1</td>
<td>36&quot; (915)</td>
<td>7&quot; (1780)</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>36&quot; (915)</td>
<td>10&quot; (2550)</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>2A</td>
<td>48&quot; (1220)</td>
<td>8&quot; (2032)</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>2B</td>
<td>60&quot; (1525)</td>
<td>7&quot; (1780)</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>48&quot; (1220)</td>
<td>6&quot; (1524)</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>3A</td>
<td>60&quot; (1525)</td>
<td>5&quot; (1270)</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>3B</td>
<td>72&quot; (1830)</td>
<td>7&quot; (1780)</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>24&quot; (610)</td>
<td>2-1/2&quot; (64)</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>36&quot; (915)</td>
<td>4&quot; (1016)</td>
<td>4</td>
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<tr>
<td>6</td>
<td>24&quot; (610)</td>
<td>6&quot; (1524)</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>48&quot; (1220)</td>
<td>3-1/4&quot; (829)</td>
<td>7</td>
<td>8</td>
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</tbody>
</table>

* - ADDITIONAL DEPTH FOR POLE BASE EXTENSION, IF REQUIRED, TO BE DETERMINED BY TRAFFIC ENGINEERING AND MANAGEMENT (TEAM) FIELD REPRESENTATIVE.

**TYPICAL SECTION (BASES 5 AND 6)**

**ANCHOR BOLT DATA CHART AND DETAILS**

NOTE: ANCHOR BOLTS FOR POLE BASE TYPE shall conform to the City pole manufacturer's specifications.

**DELWARE DEPARTMENT OF TRANSPORTATION**

**POLE BASES**

**STANDARD NO.** T-6 (2005) **SHT.** 3 **OF** 3 **RECOMMENDED**

**APPROVED** (Signature) 12/5/05 **RECOMMENDED** (Signature) 11/27/05

02/08/2005
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"X500 X 1/2"X13 P.V.C., SCHEDULE 40 (TYP) VENTS IN THE GROUT AS DIRECTED IN THE FIELD BY THE ENGINEER.
NOTES:
1. STUB POST TO BE SUPPLIED BY THE DEPARTMENT'S TRAFFIC, ENGINEERING, AND MANAGEMENT SECTION.

SECTION A-A

- 1 - #3 (3/8") SPIRAL BAR, 504' (12800) long at 8" (200) pitch
- 8 - #5 (5/8") BARS, 4' (1200) long
- 3 #10 SPIRAL BAR
- 8 - #5 (5/8") BARS
NOTES:
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE CONDUIT AGAINST ANY POSSIBLE DAMAGE IN PAVING OPERATIONS.
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
WIRE SLOT CONSTRUCTION

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 12" (305mm) back from the point of the extended corner.

2. The longitudinal / transverse cut shall be stopped approximately 2" (50mm) 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

DELAWARE
DEPARTMENT OF TRANSPORTATION

STANDARD NO.  T-9 (2006)  SHT. 1 OF 1

APPROVED  12/15/05

RECOMMENDED  11/20/06

01/09/2006
**WIRE SLOT CONSTRUCTION**

**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 longitudinal / transverse cut shall be stopped approximately 2' (60) from the corner to prevent the trianglar 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**

- 1/4" (6) SEALANT

**SECTION B - B**

- 1/4" (6) BACKER ROD

---

**DELTAWARE**

**DEPARTMENT OF TRANSPORTATION**

**STANDARD NO.** T-10 (2005)

**SHT.** 1 **OF** 1

**APPROVED**

---

**RECOMMENDED**

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NOTES: 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 MESSENGER WIRE ATTACHMENT, METAL POLES ".

DELRAY BEACH
DEPARTMENT OF TRANSPORTATION

SPAN WIRE ATTACHMENT BETWEEN POLES

STANDARD NO. T-12 (2005) SH. OF 1 2

APPROVED 12/15/05

RECOMMENDED 11/05/05

09/09/2005
**WOOD POLES**

- **SERVICE WEDGE CLAMP**
- **MESSENGER WIRE**
- **MESSENGER CLAMP**
- **LASHING WIRE**
- **CABLE SPACER**
- **ELECTRICAL CABLE**
- **WOOD POLE**
- **GALVANIZED 5/16 x 1" NUTS**
- **GALVANIZED 3/4 x 1/8" WOOD HOLE**
- **GALVANIZED 5/16 x 1 1/2" EYEBOLT**
- **GALVANIZED 5/16 x 1 1/2" WOOD HOLE**

**METAL POLES**

- **SERVICE SLEEVE**
- **GALVANIZED 3-5/8" (56G) GUY CLAMPS**
- **GALVANIZED 3-5/8" (66G) GUY CLAMPS**
- **MESSENGER WIRE**
- **4 1/2 WRAPS AROUND POLE**
- **MEASUREMENTS:**
  - 6' (1.82m) MIN.
  - 1' (0.3m)
  - 30' (9.14m)

**NOTES:**
1. INSTALLATION METHOD SHOWN FOR DEAD END MESSENGER WIRE ATTACHMENT TO METAL POLES SHALL BE USED FOR SPAN WIRE ATTACHMENT BETWEEN METAL POLES.

---

**DELAWARE DEPARTMENT OF TRANSPORTATION**

**DEAD END MESSENGER WIRE ATTACHMENT**

**STANDARD NO.** T-12 (2005)  **SHT. 2 OF 2**  **APPROVED**

**DATE:** 12/5/05  **RECOMMENDED**

**DATE:** 11/29/05  **INITIAL:**

**DATE:** 09/09/05
NOTES:
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 PAVEMENT. 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' (3050) SQUARE.
1. **Type 7 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 20,000 lbs (6600 kg) over a 16" (406) square.

**NOTES:**

- Polymeric concrete with a heavy-weave fiberglass reinforcement
- 3/8"-16 UNC hex bolt & washers to be secured into the well frame
- ½" x 4" x 8'
- Pull slot

**FINISHED GRADE:**

- (Unpaved) 24" (610) min.
- (Pavement) 40" (1015) min. 60" (1524) max.

**POLYMER CONDUIT JUNCTION WELL, TYPE 7 T-13 (2004)**

**PLAN SYMBOL**

- DelDOT Traffic Fiber Optics
- Hand grips (2x)
- Galv. conduit bushing
- Nonmetallic conduit bushing
- Stone

**SECTION A-A**

- Plan view
- Plan symbol

**DELTA DEPARTMENT OF TRANSPORTATION**

**CONDUIT JUNCTION WELL, TYPE 7**

**STANDARD NO.** T-15 02040

**SHT. 2 OF 3**

**APPROVED**

- Cape May With 1/10/05
- Rejected 1/17/05

**RECOMMENDED**

- DelDOT Traffic Fiber Optics
- Hand grips (2x)
- Galv. conduit bushing
- Nonmetallic conduit bushing
- Stone

**SCALE:** N.T.S.
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.
Emergency Preemption Receiver, Upright Mount

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.
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.

Notes:

Plan Symbol

Front View

Side View

Cable Connections to Terminal Strip

Wiring Access Door, Weather Proof

Mast Arm

Cabinet

Metal Cap (See Note 4)

Cable Entry Port

4-Position Terminal Strip

Tube Shells

Tube Assemblies

Cap Screw

Base

Mounting Nut

Cable Connection to Terminal Strip

4-Conductor #18 AWG Shielded Lead-in Cable

Metal Cap Screw Hole

(At the Bottom of the Base)

1/4" ID Hole

To Mast Arm

To Controller Cabinet

4-Position Terminal Strip

Red

Green

Black

White

Access Door Screw Hole


SHT. 1 OF 2

Approved

Recommended

Delaware Department of Transportation

Emergency Preemption Receiver, Upright Mount


SHT. 1 OF 2

Recommended

Approved
CABLE CONNECTIONS TO TERMINAL STRIP

BASE

METAL CAP (SEE NOTE 4)

4-CONDUCTOR #8 AWG SHIELDED LEAD-IN CABLE

CABLE ENTRY PORT

TUBE SHELLS

CAP SCREW

SIDE VIEW

LOWER POINT OF DRIP LOOP MUST BE LOWER THAN CABLE ENTRY POINT

DRIP LOOP

TO CONTROLLER CABINET

5 WRAPS OF SCOTCH SUPER 33 TAPE

SPAN WIRE

SPAN WIRE CLAMP

MOUNTING NUT

WIRING ACCESS DOOR WEATHER PROOF

TWO 7/64" WEEP HOLES

4-POSITION TERMINAL STRIP

ACCESS DOOR SCREW HOLE

TUBE ASSEMBLIES

4/8" BID. WIRE MOUNTING HARDWARE SHALL BE SUPPLIED BY THE DEPARTMENT.
3L. TFE TAPES SHALL BE APPLIED TO THREADS BEFORE MOUNTING.
4L. 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.

NOTES:

0. INVERTED CONFIGURATION SHALL BE USED FOR SPAN MOUNT.

1. SPAN WIRE MOUNTING HARDWARE SHALL BE SUPPLIED BY THE DEPARTMENT.

2. TFE TAPES SHALL BE APPLIED TO THREADS BEFORE MOUNTING.