SECTION I - BARRIER

B-1 (2010) - GUARDRAIL APPLICATIONS (TYPES 1-31, 2-31, AND 3-31)

B-2 - GRADING FOR GUARDRAIL END TREATMENTS (TYPES 1, 2, AND 3)

B-3 - GUARDRAIL OVER CULVERTS (TYPES 1-31, 2-31, AND 3-31)

B-4 (2012) - END ANCHORAGE, TYPE 31

B-5 - GUARDRAIL TO BARRIER CONNECTION (TYPES 1-31, 2-31, AND EXIT TYPE 31)

B-6 - BRIDGE RAIL RETROFIT (TYPES 1, 2, 3, AND 4)

B-7 (2010) - W-BEAM, TYPE 1-27 TO TYPE 1-31 TRANSITION SECTION

B-13 - HARDWARE

B-14 - CONCRETE SAFETY BARRIER (F SHAPE)

B-15 - GUARDRAIL APPLICATIONS (TYPES 1-27, 2-27, AND 3-27)
### SECTION I - BARRIER (CONT'D)

<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-16</td>
<td>GUARDRAIL OVER CULVERTS (TYPES 1-27, 2-27, AND 3-27)</td>
</tr>
<tr>
<td>(2013) - 1</td>
<td>GUARDRAIL OVER CULVERTS, TYPE 1-27</td>
</tr>
<tr>
<td>(2013) - 2</td>
<td>GUARDRAIL OVER CULVERTS, TYPE 2-27</td>
</tr>
<tr>
<td>(2013) - 3</td>
<td>GUARDRAIL OVER CULVERTS, TYPE 3-27</td>
</tr>
</tbody>
</table>

| B-17 (2010) | GUARDRAIL END TREATMENT (TYPE 4-27) |
| B-18 (2010) | CURVED GUARDRAIL SECTION |
| B-19 (2012) | END ANCHORAGE (TYPE 27) |

<table>
<thead>
<tr>
<th>B-20</th>
<th>BURIED END SECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2010) - 1</td>
<td>BURIED END SECTION - SINGLE RAIL</td>
</tr>
<tr>
<td>(2010) - 2</td>
<td>BURIED END SECTION - DOUBLE RAIL</td>
</tr>
<tr>
<td>(2010) - 3</td>
<td>POST, CONCRETE BLOCK, AND RUBRAIL DETAILS</td>
</tr>
</tbody>
</table>

| B-21      | GUARDRAIL TO BARRIER CONNECTION (TYPES 1-27, 2-27, AND EXIT TYPE 27) |

### SECTION II - CURB & GUTTER

<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1</td>
<td>P.C.C. CURB AND INTEGRAL P.C.C. CURB &amp; GUTTER</td>
</tr>
<tr>
<td>(2013) - 1</td>
<td>P.C.C. CURB, TYPICAL CURB SECTION, AND TYPICAL TAPER SECTION AT NOSE OF MEDIANS</td>
</tr>
<tr>
<td>(2012) - 2</td>
<td>INTEGRAL P.C.C. CURB &amp; GUTTER</td>
</tr>
<tr>
<td>C-2</td>
<td>CURB RAMPS</td>
</tr>
<tr>
<td>(2013) - 1</td>
<td>TYPE 1</td>
</tr>
<tr>
<td>(2013) - 2</td>
<td>TYPE 2, 3, AND 4</td>
</tr>
<tr>
<td>(2013) - 3</td>
<td>TYPE 5</td>
</tr>
</tbody>
</table>

| C-3 (2012) | ENTRANCES |
| C-4 (2012) | CURB OPENING DETAILS |
| C-5 (2011) | CURB OPENING WITH SIDEWALK DETAIL |

### SECTION III - DRAINAGE

<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-1</td>
<td>6:1 SAFETY END STRUCTURE</td>
</tr>
<tr>
<td>(2012) - 1</td>
<td>DETAIL VIEWS</td>
</tr>
<tr>
<td>(2001) - 2</td>
<td>SCHEDULES</td>
</tr>
<tr>
<td>D-2</td>
<td>10:1 SAFETY END STRUCTURE</td>
</tr>
<tr>
<td>(2012) - 1</td>
<td>DETAIL VIEWS</td>
</tr>
<tr>
<td>(2001) - 2</td>
<td>SCHEDULES</td>
</tr>
<tr>
<td>D-3</td>
<td>SAFETY GRATES</td>
</tr>
<tr>
<td>(2005) - 1</td>
<td>SAFETY END STRUCTURE GRATE AND ASSEMBLY DETAIL</td>
</tr>
<tr>
<td>(2007) - 2</td>
<td>PERSONNEL SAFETY GRATE FOR PIPE INLET DETAIL</td>
</tr>
</tbody>
</table>

| D-R (2012) | DRAINAGE INLET REFERENCE SHEET |
| D-4 (2009) | INLET BOX DETAILS |
| D-5 (2010) | DRAINAGE INLET DETAILS |

<p>| (2010) - 1 | DRAINAGE INLET ASSEMBLY |
| (2010) - 2 | DRAINAGE INLET FRAME AND GRATES |
| (2012) - 3 | DRAINAGE INLET TOP UNITS |
| (2010) - 4 | DRAINAGE INLET COVER SLAB DETAILS |
| (2010) - 5 | DOUBLE INLET COVER SLAB DETAILS |
| (2012) - 6 | 34&quot; x 24&quot; DRAINAGE INLET AND COVER SLAB DETAILS |
| (2010) - 7 | 34&quot; x 18&quot; DRAINAGE INLET DETAILS |
| (2010) - 8 | DRAINAGE INLET TOP UNIT, TYPE 5 |
| (2010) - 9 | DOGHOUSE INLET BOX |</p>
<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-6</td>
<td>MAHOLE DETAILS</td>
</tr>
<tr>
<td></td>
<td>(2009) - 1 BOX MANHOLE ASSEMBLY</td>
</tr>
<tr>
<td></td>
<td>(2001) - 2 ROUND MANHOLE ASSEMBLY</td>
</tr>
<tr>
<td></td>
<td>(2007) - 3 MANHOLE TOP UNIT, FRAME AND COVER,</td>
</tr>
<tr>
<td></td>
<td>(2007) - 4 BOX MANHOLE COVER SLAB,</td>
</tr>
<tr>
<td>D-7</td>
<td>JUNCTION BOX DETAILS</td>
</tr>
<tr>
<td></td>
<td>(2009) - 1 JUNCTION BOX ASSEMBLY</td>
</tr>
<tr>
<td></td>
<td>(2007) - 2 JUNCTION BOX COVER SLAB,</td>
</tr>
<tr>
<td>D-8</td>
<td>PIPE BEDDING</td>
</tr>
<tr>
<td>D-9</td>
<td>PERFORATED PIPE UNDERDRAIN</td>
</tr>
<tr>
<td>D-10</td>
<td>PIPE PLUUGING DETAIL</td>
</tr>
</tbody>
</table>

## SECTION IV - EROSION

<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-1</td>
<td>INCREMENTAL STABILIZATION</td>
</tr>
<tr>
<td>E-2</td>
<td>SILT FENCE</td>
</tr>
<tr>
<td>E-3</td>
<td>DRAINAGE INLET SEDIMENT CONTROL</td>
</tr>
<tr>
<td>E-4</td>
<td>RESERVED</td>
</tr>
<tr>
<td>E-5</td>
<td>STONE CHECK DAM</td>
</tr>
<tr>
<td>E-6</td>
<td>SEDIMENT TRAP</td>
</tr>
<tr>
<td>E-7</td>
<td>SEDIMENT TRAP, USING DRAINAGE INLET AS OUTLET</td>
</tr>
<tr>
<td>E-8</td>
<td>RISER PIPE ASSEMBLY FOR SEDIMENT TRAP</td>
</tr>
<tr>
<td>E-9</td>
<td>EROSION CONTROL BLANKET APPLICATIONS</td>
</tr>
<tr>
<td>E-10</td>
<td>RIPRAPP DITCH</td>
</tr>
<tr>
<td>E-11</td>
<td>TEMPORARY SWALE</td>
</tr>
<tr>
<td>E-12</td>
<td>PERIMETER DIKE/SWALE</td>
</tr>
<tr>
<td>E-13</td>
<td>EARTH DIKE</td>
</tr>
<tr>
<td>E-14</td>
<td>TEMPORARY SLOPE DRAIN</td>
</tr>
<tr>
<td>E-15</td>
<td>STILLING WELL</td>
</tr>
<tr>
<td>E-16</td>
<td>SUMP PIT, TYPES 1 AND 2</td>
</tr>
<tr>
<td>E-17</td>
<td>DEWATERING BASIN</td>
</tr>
<tr>
<td>E-18</td>
<td>GEOTEXTILE-LINED CHANNEL DIVERSION</td>
</tr>
<tr>
<td>E-19</td>
<td>SANDBAG DIVERSION</td>
</tr>
<tr>
<td>E-20</td>
<td>SANDBAG DIKE</td>
</tr>
<tr>
<td>E-21</td>
<td>STABILIZED CONSTRUCTION ENTRANCE</td>
</tr>
<tr>
<td>E-22</td>
<td>SKIMMER DEWATERING DEVICE</td>
</tr>
<tr>
<td>E-23</td>
<td>TURBIDITY CURTAIN</td>
</tr>
<tr>
<td></td>
<td>(2005) - 1 FLOATING TURBIDITY CURTAIN</td>
</tr>
<tr>
<td></td>
<td>(2005) - 2 STAKED TURBIDITY CURTAIN</td>
</tr>
<tr>
<td>E-24</td>
<td>PORTABLE SEDIMENT TANK</td>
</tr>
<tr>
<td>E-25</td>
<td>TURF REINFORCEMENT MAT APPLICATIONS</td>
</tr>
<tr>
<td>E-26</td>
<td>RIPRAPP ENERGY DISSIPATOR DETAIL</td>
</tr>
</tbody>
</table>
# SECTION V - LANDSCAPING

<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>NAME</th>
<th>SHEET NO.</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-1</td>
<td>PLANTING DETAILS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2006)</td>
<td>1 ROADSIDE SHRUB PLANTING DETAIL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2006)</td>
<td>2 TREE PLANTING DETAIL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2006)</td>
<td>3 PERENNIAL/GROUND COVER PLANTING DETAIL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

# SECTION VI - MISCELLANEOUS

<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>NAME</th>
<th>SHEET NO.</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-1 (2001)</td>
<td>RIGHT-OF-WAY FENCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-2 (2011)</td>
<td>RIGHT-OF-WAY MONUMENTATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-3 (2013)</td>
<td>SHARED-USE PATH &amp; SIDEWALK DETAILS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-4 (2011)</td>
<td>BIKE RACK LAYOUT DETAILS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-5 (2004)</td>
<td>WOOD RAIL FENCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-6 (2011)</td>
<td>PATTERNED HOT-MIX OR CONCRETE &amp; BRICK PAVER DETAILS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-7 (2006)</td>
<td>CHAIN LINK FENCE DETAILS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-8 (2007)</td>
<td>P.C.C. PARKING BUMPER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-9 (2013)</td>
<td>1 BUS STOP PAD DETAILS, TYPES 1, 1 &amp; 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 BUS STOP PAD WITH SHIELD DETAILS, TYPES 1 &amp; 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

# SECTION VII - PAVEMENT

<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>NAME</th>
<th>SHEET NO.</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-1</td>
<td>P.C.C. PAVEMENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2001)</td>
<td>1 SLAB PLAN WITH DOWEL AND TIE LOCATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2004)</td>
<td>2 JOINT AND SEALANT DETAILS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2001)</td>
<td>3 W BOLT, HOOK BOLT, DOWEL AND TIE BAR DETAILS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2001)</td>
<td>4 DOWEL SUPPORT BASKET</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2001)</td>
<td>5 DOWEL AND TIE BAR PLACEMENT TOLERANCES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-2</td>
<td>P.C.C. PAVEMENT PATCHING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2008)</td>
<td>1 FULL DEPTH PATCH, PLAN VIEW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2008)</td>
<td>2 FULL DEPTH PATCH, SECTION VIEWS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2004)</td>
<td>3 FULL DEPTH PATCH, SEALANT DETAILS, GROUT RETENTION DISK, AND DOWEL BAR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2001)</td>
<td>4 FULL DEPTH PATCH, DOWEL AND TIE BAR PLACEMENT TOLERANCES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2001)</td>
<td>5 PARTIAL DEPTH PATCH, PLAN AND SECTION VIEWS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-3 (2012)</td>
<td>BUTT JOINTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-4 (2013)</td>
<td>PERMANENT CROSS-ROAD PATCH OVER PIPE TRENCH DETAIL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHEET NO.</td>
<td>NAME</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-1</td>
<td>CONDUIT JUNCTION WELLS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 1 TYPE 1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 3 TYPE 5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-2 (2011)</td>
<td>JUNCTION WELL, GROUNDING &amp; BONDING FOR STEEL FRAMES &amp; LIDS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-3</td>
<td>CONDUIT JUNCTION WELLS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 1 TYPE 15.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2012) - 3 TYPE 15.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-4</td>
<td>CABINET BASES.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 1 TYPES M &amp; F.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 2 TYPE &quot;P &amp; K&quot;.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-5</td>
<td>POLE BASES.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 1 ROUND BASE &amp; ROUND BASE WITH SQUARE FOUNDATION HEADER.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 2 TYPICAL SECTION AND INSTALLATION (BASES 1, 2, 2A, 2B, 3, 3A, AND 3B).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 3 TYPICAL SECTION (BASES 6) AND POLE BASE DATA CHART.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 4 TYPICAL SECTION (BASE 4A AND 4B) AND ANCHOR DETAIL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-6 (2011)</td>
<td>SPECIAL POLE BASE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-7 (2005)</td>
<td>SIGN FOUNDATION.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-8</td>
<td>LOOP DETECTOR LEAD-IN WIRE INSTALLATION.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 1 JUNCTION WELL BEHIND CURB OR CURB AND GUTTER WITH GRASS STRIP.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 2 JUNCTION WELL BEHIND CURB OR CURB &amp; GUTTER WITH SIDEWALK AND JUNCTION WELL DIRECTLY BEHIND CURB OR CURB &amp; GUTTER.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 3 JUNCTION WELL IN CONCRETE ISLAND.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 4 JUNCTION WELL WITHOUT CURB OR CURB &amp; GUTTER WITH SIDEWALK AND GRASS STRIPS AND JUNCTION WELL DIRECTLY ADJACENT TO PAVED SURFACE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-9</td>
<td>LOOP DETECTOR INSTALLATION.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 1 LOOP DETECTOR SAWCUT TYPICAL, HOT MIX SURFACE TYPICAL SECTION, AND SPICE KIT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 2 TYPICAL INTERSECTION LAYOUT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2013) - 3 PEDESTRIAN CROSSING TYPICAL LAYOUT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-10</td>
<td><strong>DETAIL REMOVED IN 2012 REVISION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-11</td>
<td>MESSER WIRE ATTACHMENT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2005) - 1 INTERMEDIATE MESSENGER WIRE ATTACHMENT ON WOOD POLES.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2005) - 2 ANGULAR INTERMEDIATE MESSENGER WIRE ATTACHMENT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-12</td>
<td>MESSER WIRE ATTACHMENT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2005) - 1 SPAN WIRE ATTACHMENT BETWEEN POLES.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2005) - 2 DEAD END MESSENGER WIRE ATTACHMENT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-14</td>
<td>EMERGENCY PREEMPTION RECEIVER.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2006) - 1 UPRIGHT MOUNT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2005) - 2 INVERTED MOUNT.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-15 (2013)</td>
<td>BREAKAWAY SIGN POST AND PIN ASSEMBLY DETAILS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-16 (2010)</td>
<td>WOOD BARRICADE DETAILS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T-17 (2013)</td>
<td>ELECTRICAL SERVICE PEDESTAL - LIGHTING, SIGNAL &amp; ITMS' COMPONENT INSTALLATIONS.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Grading for Guardrail End Treatment Attenuator, Type 1

**Notes:**

1. Flare the end treatment at 25:1 beginning 5'-0" 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 and is applicable regardless of the height of the guardrail system.
3. The guardrail end treatment attenuator shall be installed as per the manufacturer's and the Department of Transportation's specifications.
4. If curb is present, depress the curb to a maximum height of 2" within the limits of the end treatment and throughout the length of the taper grading.

**DELWARE DEPARTMENT OF TRANSPORTATION**

**GRADING FOR GUARDRAIL END TREATMENT ATTENUATOR, TYPE 1**

**STANDARD NO.** B-2 (2013)  **SHT.** 1  **OF** 3  **APPROVED**  **RECOMMENDED**

**SCALE:** NTS

**SIGNATURE ON FILE**

**DATE** 02/14/2014  01/14/2014

**SIGNATURE ON FILE**

**DATE** 01/9/2014
NOTES:

1. FLARE SHALL BE 4'-0" 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 AND IS APPLICABLE REGARDLESS OF THE HEIGHT OF THE GUARDRAIL SYSTEM.

3. THE GUARDRAIL END TREATMENT ATTENUATOR SHALL BE INSTALLED AS PER THE MANUFACTURER'S AND THE DEPARTMENT OF TRANSPORTATION'S SPECIFICATIONS.

4. IF CURB IS PRESENT, DEPRESS THE CURB TO A MAXIMUM HEIGHT OF 2" WITHIN THE LIMITS OF THE END TREATMENT AND THROUGHOUT THE LENGTH OF THE TAPER GRADING.
GUARDRAIL OVER CULVERTS, TYPE 1-31

NOTES:
1. ALL W-BEAMS ARE 13'-6" IN LENGTH.
2. PLACE GUARDRAIL DELINATORS AT THE INTERVALS SPECIFIED IN THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
3. POSTS 1 THROUGH 6 ARE TO BE TYPE 31 LONG, WOOD BREAKAWAY POSTS. POST 7 IS TO BE A W6x9 STEEL POST.
4. THE RAIL SHALL BE ATTACHED AT POSTS 1 THROUGH 6 WITH A 3/8" x 22" GUARDRAIL BOLT, STEEL WASHER, AND RECESS NUT.
5. CULVERT HEADWALL SHALL NOT EXTEND MORE THAN 2" ABOVE GRADE.
6. THERE SHALL BE A MINIMUM OF 8" FROM THE BACK OF POST TO THE CULVERT WINGWALLS.
NOTE 4

NOTE 5

NOTE 6

SEE HEADWALL CULVERT

THE RAIL SHALL BE ATTACHED AT POSTS 2 THROUGH 6 WITH A 3/8" x 22" GUARDRAIL BOLT, STEEL WASHER, AND RECESS NUT.

4. THE RAIL SHALL BE ATTACHED AT POSTS 2 THROUGH 6 WITH A 3/8" x 22" GUARDRAIL BOLT, STEEL WASHER, AND RECESS NUT.

5. CULVERT HEADWALL SHALL NOT EXTEND MORE THAN 2" ABOVE GRADE.

6. THERE SHALL BE A MINIMUM OF 8" FROM THE BACK OF POST TO THE CULVERT WINGWALL.
NOTES:

1). All W-beams are 13'-6" in length.

2). Place guardrail delineators at the intervals specified in the Delaware manual on uniform traffic control devices.

3). Posts 1, 2, 9, & 10 are to be Type 31 steel posts. Posts 3 through 8 are to be Type 31 long, wood breakaway posts.

4). The rail shall be attached at posts 3 through 8 with a 3/8" x 22" guardrail bolt, steel washer, and recess nut.

5). Culvert headwall shall not extend more than 37" above grade.

6). There shall be a minimum of 8" from the back of post to the culvert wingwalls.
NOTES:

1). PLACE GUARDRAIL DELINERATORS AT THE INTERVALS SPECIFIED IN THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2). POSTS 1 THRU 4 AND 11 THRU 14 ARE TO BE W6X9 STEEL POSTS. POSTS 5 THRU 10 ARE TO BE 6'x8'x6'-0" BREAKAWAY WOOD POSTS WITH 2 WOOD BLOCKS AT EACH OF THESE 6 POSTS.
3). THE SPLICES AT POSTS 5, 7, 8, & 10 ARE TO USE "GUARDRAIL BOLT (L=26")."
4). TOP OF HEADWALL SHALL NOT EXCEED 2" ABOVE FINISHED GRADE.
5). TOP OF HEADWALL OR TOP OF BANK SHALL NOT BE CLOSER THAN 5'-0" TO FACE OF GUARDRAIL,

DELAWARE DEPARTMENT OF TRANSPORTATION

GUARDRAIL OVER CULVERTS, TYPE 1-27

STANDARD NO. B-16 (2013) SIHT. 1 OF 3

APPROVED

SIGNATURE ON FILE 02/14/2014

RECOMMENDED

SIGNATURE ON FILE 01/14/2014
NOTES:
1. PLACE GUARDRAIL DELINEATORS AT THE INTERVALS SPECIFIED IN THE DELAWARE MANUAL.
2. POSTS 1 THRU 4 AND 11 THRU 15 ARE TO BE W6X9 STEEL POSTS. POSTS 5 THRU 10 ARE TO BE 6"X8"X6'-0" BREAKAWAY WOOD POSTS WITH 2 WOOD BLOCKS AT EACH OF THESE 6 POSTS.
3. THE SPLICES AT POSTS 5, 7, & 9 ARE TO USE 3/8" GUARDRAIL BOLT (L=26").
4. TOP OF HEADWALL SHALL NOT EXCEED 2" ABOVE FINISHED GRADE.
5. TOP OF HEADWALL OR TOP OF BANB SHALL NOT BE CLOSER THAN 5'-0" TO FACE OF GUARDRAIL.

GROUND LINE

TO CULVERT (TYP.)

2'-0" MIN.

SEE NOTE 4

27 3/8" - 28 3/8"

SIX SECTIONS OF W-BEAM, ONE NESTED INSIDE THE OTHER

BEAM 1 (NESTED W-BEAM)
26'-0"

BEAM 2 (NESTED W-BEAM)
13'-6"

BEAM 3 (NESTED W-BEAM)
13'-6"

BEAM 4 (NESTED W-BEAM)
13'-6"

BEAM 5 (NESTED W-BEAM)
13'-6"

BEAM 6 (NESTED W-BEAM)
26'-0"

APPROPRIATE END TREATMENT

101'-0" LIMIT OF PAYMENT

TREATMENT

APPROPRIATE END TREATMENT

PLAN

ELEVATION

DELTAW DELAWARE
DEPARTMENT OF TRANSPORTATION

GUARDRAIL OVER CULVERTS, TYPE 2-27

STANDARD NO.
B-16 (2013)

APPROVED
SIGNATURE ON FILE
02/14/2014

RECOMMENDED
SIGNATURE ON FILE
01/14/2014

SHT. 2
OF 3

01/9/2014

1/9/2014

02/14/2014
NOTES:

1) PLACE GUARDRAIL DELINEATORS AT THE INTERVALS SPECIFIED IN THE DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

2) POSTS 1 THRU 4 AND 11 THRU 14 ARE TO BE W6X9 STEEL POSTS. POSTS 5 THRU 10 ARE TO BE 6"x8"x6'-0" BREAKAWAY WOOD POSTS WITH 2 WOOD BLOCKS AT EACH OF THESE 6 POSTS.

3) THE SPlices AT POSTS 5, 7, 8, & 10 ARE TO USE "GUARDRAIL BOLT (L=26")".

4) TOP OF HEADWALL SHALL NOT EXCEED 2" ABOVE FINISHED GRADE.

5) TOP OF HEADWALL OR TOP OF BANK SHALL NOT BE CLOSER THAN 5'-0" TO FACE OF GUARDRAIL.

6) GUARDRAIL OVER CULVERT, TYPE 3-27

SEE NOTE 4

THE HEADWALL SHALL BE A MINIMUM OF 7'-0" MIN. TO CULVERT (TYP.)
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 detail 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.


4. Depress curb flush with pavement or adjacent area at leading edge of triangular islands, tapering back to full height at a slope of 4:1.

5. Depress end of curb runs not part of an island or median flush with pavement or adjacent area at a slope of 12:1.

6. For subdivision applications, a minimum of 6" of stone is required.
NOTES:
A). THE AREA OF DETECTABLE WARNING TRUNCATED DOMES SHALL BE 2'-0" LONG AND THE FULL WIDTH OF THE RAMP OR DEPRESSED CURB.
B). SEE SPECIFICATION FOR ADDITIONAL INFORMATION.

SECTION A-A

MAXIMUM DIFFERENCE IN GRADE FOR ALL CURB RAMP TYPES
FOR EXAMPLE, IF THE CURB RAMP AND DEPRESSED CURB SLOPE AT THE FLOW LINE (X) IS 8.1% AND THE PAVEMENT SLOPE (Y) IS 4.2%, THEN TO DETERMINE THE DIFFERENCE IN GRADE, ADD X + Y TO GET 12.3%, WHICH IS GREATER THAN THE 11% PREFERRED BUT LESS THAN THE 13% MAXIMUM.

CURB RAMP, TYPE 1

DETECTABLE WARNING TRUNCATED DOME DETAILS

1). FOR ALTERATIONS WITHOUT A GRASS STRIP OR WHERE THE EXISTING ROAD PROFILE IS STEEPER THAN 7% AND A 12:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 15'-0", THE RAMP LENGTH MAY BE LIMITED TO 15'-0" AT A CONSTANT SLOPE, AND ALLOWED TO EXCEED 12:1.
2). RAMP AND SIDEWALK CROSS SLOPE SHALL BE 50:1 (2%) MAXIMUM. FOR REHABILITATION WORK, THE RAMP CROSS SLOPE SHALL MATCH THE SLOPE OF THE ADJACENT ROADWAY.
3). A 6:1 GRADE IS REQUIRED FOR A MINIMUM OF 2'-0" IMMEDIATELY ADJACENT TO RAMP. IF THAT IS NOT FEASIBLE, THEN A CURB OR RETAINING WALL SHOULD BE USED TO ELIMINATE THE NEED FOR THE STEEP SLOPE.
4). THE MAXIMUM DIFFERENCE IN GRADE BETWEEN THE CURB RAMP OR MODIFIED CURB AT THE FLOW LINE AND THE PAVEMENT SHALL BE 13%, HOWEVER 11% IS PREFERRED. SEE DETAIL ON THIS SHEET.
5). LANDING AREA SHALL BE EXTENDED 18" MIN BEYOND THE PEDESTRIAN PUSH BUTTON FOR ALL CURB RAMP TYPES. WHEN NO PEDESTRIAN PUSH BUTTON EXISTS, THE 18" EXTENSION CAN BE OMITTED.
6). LANDING AREA SHALL BE DELINEATED WITH JOINTS.
7). FOR REHABILITATION WORK, PLACE TRANSITION SLAB TO TRANSITION FROM THE NEW RAMP TO THE EXISTING SIDEWALK WHEN THE EXISTING SIDEWALK HAS A NON-CONFORMING RUNNING SLOPE, CROSS SLOPE, OR WIDTH. ADJACENT CURB TAPER SHOULD MATCH THE SLOPE OF THE TRANSITION SLAB.
8). REFER TO THE DELAWARE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES FOR DETAILS REGARDING THE LOCATION OF PEDESTRIAN PUSH BUTTONS.
9). CONSTRUCTION JOINTS ARE REQUIRED ON RAMPS AT THE INTERVAL SPECIFIED IN NOTE 6.
10). PEDESTRIAN SIGNALS SHALL BE ACCESSIBLE WITH A LEVEL LANDING, WHOSE EDGE IS NO MORE THAN 10" FROM ALL PEDESTRIAN PUSH BUTTONS.
NOTES:

1. FOR ALTERATIONS WITHOUT A GRASS STRIP OR WHERE THE EXISTING ROAD PROFILE IS STEEPER THAN 7% AND A
   12:1 MAXIMUM SLOPE RAMP WILL NOT MEET THE SIDEWALK GRADE WITHIN A LENGTH OF 10'-0", THE RAMP
   LENGTH MAY BE LIMITED TO 10'-0" AT A CONSTANT SLOPE, AND THE RAMP SLOPE ALLOWED TO EXCEED 12:1.
2. RAMP AND SIDEWALK CROSS SLOPE SHALL BE 50:1 [2%] MAXIMUM. FOR REHABILITATION WORK, THE RAMP CROSS SLOPE
   SHALL MATCH THE SLOPE OF THE ADJACENT ROADWAY.
3. IF GRAADING WILL BE STEEPER THAN 6:1 ADJACENT TO THE CURB RAMP OR SIDEWALK, THEN A TYPE 1-8 CURB OR
   RETAINING WALL SHOULD BE USED TO ELIMINATE THE NEED FOR THE STEEP SLOPE.
4. ENTIRE DEPRESSED AREA OF CURB SHALL HAVE DETECTABLE WARNING TRUNCATED DOMES.
5. THE MAXIMUM DIFFERENCE IN GRADE BETWEEN THE SIDEWALK OR CURB AND THE PAVEMENT SHALL BE 13%,
   HOWEVER 12% IS PREFERRED. SEE STANDARD NO. C-2, SHEET 1 OF 3.
6. REFER TO DELAWARE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES FOR DETAILS REGARDING THE LOCATION OF
   PEDESTRIAN PUSH BUTTONS.
7. LANDING AREA SHALL BE DELINEATED WITH JOINTS.
8. THE EDGE OF THE LANDING SHALL BE A MAXIMUM OF 10'-0" FROM THE FACE OF THE CURB.
9. FOR REHABILITATION WORK, PLACE TRANSITION SLAB TO TRANSITION FROM THE NEW RAMP TO THE EXISTING SIDEWALK.
   WHEN THE EXISTING SIDEWALK HAS A NON-CONFORMING RUNNING SLOPE, CROSS SLOPE, OR WIDTH, ADJACENT CURB
   SHOULD MATCH THE SLOPE OF THE TRANSITION SLAB.
10. LANDING AREAS SHALL BE EXTENDED 18" BEYOND THE PEDESTRIAN PUSH BUTTON FOR ALL CURB RAMP TYPES. WHEN
    NO PEDESTRIAN PUSH BUTTON EXISTS, THE 18" EXTENSION CAN BE OMITTED.
11. CONSTRUCTION JOINTS ARE REQUIRED AT THE INTERVALS SPECIFIED IN NOTE 6 ON DETAIL M-3, SHEET 1 OF 1. HOWEVER,
    EXPANSION MATERIAL SHALL NOT BE USED IN THE RAMP SECTION.
12. PEDESTRIAN SIGNALS SHALL BE ACCESSIBLE WITH A LEVEL LANDING, WHOSE EDGE IS NO MORE THAN 10" FROM ALL
    PEDESTRIAN BUTTONS.
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. For alterations without a grass strip or where the existing road profile is steeper than 7% and a 12:1 maximum slope ramp will not meet the sidewalk grade for a length of 3'-0", the ramp length may extend to 3'-0" at a constant slope, and allowed to exceed 12:1.

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 and sidewalk cross slopes shall be 30:1 (2%) maximum. For rehabilitation work, the ramp cross slope shall match the slope of the adjacent roadway.

5. Where there is no depressed curb at a cut-through or curb ramp, the detectable warning shall be installed 3" from the roadway pavement.

6. Detectable warning shall be installed when the length W in the direction of pedestrian travel is 5'-0" or greater.

7. Pedestrian signals shall be accessible with a level landing, whose edge is no more than 10" from all pedestrian push buttons.

8. Landing area shall be extended 18" min beyond pedestrian push button for all curb ramp types. When no pedestrian push button exists, the 18" extension can be omitted.

9. Landing area shall be clearly delineated with joints.

10. Intermediate landing is only required when the two ramps intersect before reaching the full height.

11. Construction joints are required on ramp at the interval specified in Note 5 on detail M-3, Sheet 1 of 1. However, expansion material shall not be used in the ramp section.

DELAWARE DEPARTMENT OF TRANSPORTATION
STANDARD NO. C-2 (2013) SHT. 3 OF 3

CURB RAMP, TYPE 5 & SECTIONS
APPROVED 02/14/2014 SIGNATURE ON FILE 02/14/2014
RECOMMENDED 01/14/2014 SIGNATURE ON FILE 01/14/2014

SCALE: NTS 1/9/2014
SHARED-USE PATH & SIDEWALK DETAILS

NOTES:
2. THE LANDING SECTION SHALL BE A MINIMUM OF 5'-0" IN LENGTH AND SHALL HAVE A MAXIMUM CROSS SLOPE AND RUNNING SLOPE OF 2%. THE ENTIRE LANDING SECTION MUST ALSO BE CONCRETE.
3. THE RAMP SECTION SHALL HAVE A MAXIMUM CROSS SLOPE OF 2% AND A MAXIMUM RUNNING SLOPE OF 12:1. HOWEVER, IF A 12:1 RUNNING SLOPE DOES NOT ALLOW THE RAMP TO MEET EXISTING GRADE WITHIN 15'-0", THE RUNNING SLOPE MAY EXCEED 12:1.
4. A 6:1 MAX SLOPE IS REQUIRED FOR 2'-0" ON BOTH SIDES OF THE SHARED-USE PATH. WHERE A 6:1 SLOPE CANNOT BE ACHIEVED, AN APPROVED HANDRAIL OR HEADWALL SHALL BE REQUIRED.
5. TOPSOIL, SEED, & MULCH ANY DISTURBED AREA ADJACENT TO THE SHARED-USE PATH UP TO A MAXIMUM OF 2'-0".
6. FOR SIDEWALKS AND CONCRETE SHARED-USE PATHS, CONSTRUCTION JOINTS SHALL BE PLACED EVERY 15'-0" AND EXPANSION MATERIAL EVERY 20'-0". HOWEVER, EXPANSION MATERIAL SHALL NOT BE USED IN THE RAMP SECTION.

SIDEWALK

7. SEE DETAIL C-2, SHEETS 1, 2 OR 3 FOR CURB RAMP TREATMENTS WHEN THE SIDEWALK INTERSECTS WITH A TRAVELWAY.
8. A 6:1 MAX SLOPE IS REQUIRED FOR 2'-0" ON BOTH SIDES OF THE SIDEWALK.
9. TOPSOIL, SEED, & MULCH ANY DISTURBED AREA ADJACENT TO THE SIDEWALK UP TO A MAXIMUM OF 2'-0".
10. ON REHABILITATION PROJECTS, WHEN EXISTING OBLSTRUCTIONS (FIRE HYDRANT, UTILITY POLE, ETC...) ARE LOCATED IN THE SIDEWALK, THE SIDEWALK PATH SHALL NOT BE LESS THAN 32" WIDE AND THE OBSTRUCTION SHALL NOT EXTEND FOR MORE THAN 2'-0".

DELWARE DEPARTMENT OF TRANSPORTATION

<table>
<thead>
<tr>
<th>STANDARD NO.</th>
<th>M-3 (2013)</th>
<th>SHIT.</th>
<th>1 OF 1</th>
<th>APPROVED</th>
<th>RECOMMENDED</th>
</tr>
</thead>
</table>

SIGNATURE ON FILE 02/14/2014
SIGNATURE ON FILE 01/14/2014

SCALE: NTS
**BUS STOP PAD, TYPE 1**
- To be used when the pad is placed behind curbs and includes a sidewalk without a grass strip.
- Section A-A and B-B show typical details.

**BUY STOP PAD, TYPE 2**
- To be used when the pad is placed behind curbs and includes a sidewalk with a grass strip.
- See Note 5.

**NOTES:**
1. BUS STOP PAD LOCATIONS MUST BE APPROVED BY BOTH DART AND DELDOT PRIOR TO ANY CONSTRUCTION.
2. See Construction Plan Signing and Striping Sheets for specific sign and sign location details.
3. Typical bus stop pads may be used in conjunction with bus stop shelter locations in the event of land constraints at the shelter locations. An interconnecting pedestrian access path must exist that is accessible to bus stop alighting areas, shelters, curb ramps, crosswalks, and sidewalks.
4. 6:1 max slope is required for 2'-0" on all sides of the bus stop pad and approaching sidewalk.
5. Where this cannot be achieved, an approved handrail or curb/headwall is required.
6. Curb type varies, see plans for correct curb type.
7. See detail M-3, Sheet 1 of 1 for additional sidewalk details and requirements.
8. Ramps are only required when the vertical height of the approaching sidewalk differs from that of the adjacent curb and the bus stop pad must be raised or lowered to match the curb height.

**DELAWARE DEPARTMENT OF TRANSPORTATION**

**BUS STOP PAD DETAILS**

**STANDARD NO.** M-9 (2013)  
**SHT.** 1  
**OF** 2  
**APPROVED**  
**SIGNATURE ON FILE**  
**SIGNATURE ON FILE**  
**DATE** 02/14/2014  
**DATE** 01/14/2014  
**RECOMMENDED**  
**SIGNATURE ON FILE**  
**DATE** 01/14/2014  
**DATE** 1/9/2014
**Notes:**

1. Bus stop shelter pad locations must be approved by DART and DEP DOT prior to any construction. Reference the Delaware Manual on Uniform Traffic Control Devices for general information on placement of signs.
2. See construction plans signing and striping sheets for specific sign and sign location details.
3. Bus stop configurations may vary due to topographic obstructions or grades. Consult DART or DEP DOT for optional pad details.
4. Where this cannot be achieved, an approved handrail or headwall is required.
5. Curbs type varies. See plans for correct curb type.
6. Trash receptacle pad can be placed on either side of the shelter pad, at the direction of the engineer in the field.
7. See detail M-9, Sheet 1 for additional sidewalk details.

**Bus Stop Pad with Shelter Details**

1. Bus stop shelter pad locations must be approved by DART and DEP DOT prior to any construction.
2. Reference the Delaware Manual on Uniform Traffic Control Devices for general information on placement of signs.
3. See construction plans signing and striping sheets for specific sign and sign location details.
4. Bus stop configurations may vary due to topographic obstructions or grades. Consult DART or DEP DOT for optional pad details.
5. A 6:1 max slope is required for 2'-0" on all sides of the bus stop pad and approaching sidewalks. Where this cannot be achieved, an approved handrail or headwall is required.
6. Curbs type varies. See plans for correct curb type.
7. Trash receptacle pad can be placed on either side of the shelter pad, at the direction of the engineer in the field.
8. See detail M-9, Sheet 1 for additional sidewalk details.
LONGITUDINAL: FULL WIDTH OF LANE(S) DISTURBED

MIN) BCBC (PLACED IN TWO 6" Lifts

8" (MIN) CLASS A CONCRETE OR 12"

SAW CUT FULL DEPTH

SAW CUT FULL DEPTH

PERMANENT CROSS-ROAD OR LONGITUDINAL PATCH DETAIL

FULL DEPTH SAW CUT

8" (MIN) CLASS A CONCRETE OR 12"

MIN) BCBC (PLACED IN TWO 6" Lifts

BACKFILL BORROW TYPE C PLACED IN 8" Lifts LOOSE MEASUREMENT AND COMPACTED PER DELDOT SPECIFICATIONS

NOTES:
1) PATCH WIDTHS ARE MEASURED ALONG THE ROADWAY CENTERLINE AND SHALL BE THE FULL WIDTH OF THE LANE OR LANES DISTURBED.
2) THIS IS A MINIMUM PATCH. IF THE EXISTING ROADWAY HAS A HEAVIER CROSS SECTION THAN SHOWN HERE, IT WILL BE REPLACED WITH THAT CROSS SECTION, OR AS DIRECTED BY THE ENGINEER.
3) SEE DETAIL D-8, SHEET 1 FOR PIPE BEDDING DETAILS.

DELTA
STANDARD NO. P-4 (2013)
SHT. 1 OF 1

APPROVED
SIGNATURE ON FILE 02/14/2014

RECOMMENDED
SIGNATURE ON FILE 01/14/2014

1/9/2014
NOTES:
1. TYPE 1 CONDUIT JUNCTION WELL SHALL BE PRECAST CONCRETE. AT LEAST ONE HOLE IN PRECAST WELLS WILL BE OF A 5" DIAMETER COMPLETELY THROUGH THE WALL. UNUSED HOLES SHALL BE PLUGGED.
2. CONDUIT JUNCTION WELLS SHALL NOT BE PLACED UNDER A TRAVELWAY.
3. ALL CONDUIT JUNCTION WELLS PLACED IN PAVED AREAS SHALL BE CONSTRUCTED FLUSH WITH THE FINISHED GRADE. ALL CONDUIT JUNCTION WELLS PLACED IN UNPAVED AREAS SHALL BE CONSTRUCTED ABOVE FINISHED GRADE AND GRADED TO DRAIN AWAY FROM THE WELL, AS DETAILED.
4. ALL CRACKS, GAPS, OR OPENINGS IN JUNCTION WELL WALL SHALL BE SEALED WITH CONCRETE.
NOTES:

1. TYPE 4 CONDUIT JUNCTION WELL SHALL BE PRECAST CONCRETE. AT LEAST ONE HOLE IN PRECAST WELLS WILL BE OF A 5" DIAMETER COMPLETELY THROUGH THE WALL. UNUSED HOLES SHALL BE PLUGGED.

2. ALL CONDUIT JUNCTION WELLS PLACED IN PAVED AREAS SHALL BE CONSTRUCTED FLUSH WITH THE FINISHED GRADE. ALL CONDUIT JUNCTION WELLS PLACED IN UNPAVED AREAS SHALL BE CONSTRUCTED ABOVE FINISHED GRADE, AND GRADED TO DRAIN AWAY FROM THE WELL, AS DETAILED.

3. ALL CRACKS, GAPS, OR OPENINGS IN JUNCTION WELL WALL SHALL BE SEALED WITH CONCRETE.

DELWARE
DEPARTMENT OF TRANSPORTATION

CONDUIT JUNCTION WELL, TYPE 4

STANDARD NO. T-1 (2013) SHT. 2 OF 3

APPROVED SIGNATURE ON FILE DATE SIGNATURE ON FILE DATE

02/14/2014 02/14/2014

1/9/2014

SCALE: NTS
NOTES:
1) TYPE S CONDUIT JUNCTION WELL SHALL BE PRECAST CONCRETE. AT LEAST ONE HOLE IN PRECAST WELLS WILL BE OF A 5" DIAMETER COMPLETELY THROUGH THE WALL. UNUSED HOLES SHALL BE PLUGGED.
2) ALL CONDUIT JUNCTION WELLS PLACED IN PAVED AREAS SHALL BE CONSTRUCTED FLUSH WITH THE FINISHED GRADE. ALL CONDUIT JUNCTION WELLS PLACED IN UNPAVED AREAS SHALL BE CONSTRUCTED ABOVE GRADE AND GRADED TO DRAIN AWAY FROM THE WELL, AS DETAILED.
3) ALL CRACKS, GAPS, OR OPENINGS IN JUNCTION WELL WALL SHALL BE SEALED WITH CONCRETE.

SECTION B-B

CAST IRON COVER
CAST IRON FRAME
1 1/8" x 1 1/2" EYELETS
2' 0" BRAIDED STRAP WITH 1 1/8" EYELETS
3" x 13" STAINLESS STEEL BOLT WITH STAINLESS SPLIT LOCK WASHER AND NUT. DRILL AND TAP UP AND SUPPORT FRAME. ANTI-CORROSION COMPOUND SHALL BE APPLIED TO EACH ASSEMBLY.
NOTES:
1. TYPE 11 CONDUIT JUNCTION WELL LID SHALL BE PRECAST POLYMER CONCRETE WITH A HEAVY-WEAVE FIBERGLASS FRAME, INSTALLED ON A PRECAST CONCRETE WELL. AT LEAST ONE HOLE IN PRECAST WELLS WILL BE OF A 5" DIAMETER COMPLETELY THROUGH THE WALL. UNUSED HOLES SHALL BE PLUGGED.
2. ALL CONDUIT JUNCTION WELLS PLACED IN PAVED AREAS SHALL BE CONSTRUCTED FLUSH WITH THE FINISHED GRADE. ALL CONDUIT JUNCTION WELLS PLACED IN UNPAVED AREAS SHALL BE CONSTRUCTED ABOVE FINISHED GRADE AND GRADED TO DRAIN AWAY FROM THE WELL, AS DETAILED.
3. ALL CRACKS, GAPS, OR OPENING IN JUNCTION WELL WALL SHALL BE SEALED WITH CONCRETE.

POLYMER CONCRETE WITH A HEAVY-WEAVE FIBERGLASS REINFORCEMENT

1/2" - 16 UNC HEX BOLT WITH WASHERS TO BE SECURED INTO THE WELL FRAME

3/4" X 4" PULL SLOT

SKID RESISTANT SURFACE

SECTION A-A

PLAN VIEW

DELAWARE DEPARTMENT OF TRANSPORTATION

CONDUIT JUNCTION WELL, TYPE II

STANDARD NO. T-3 (2013) SHT. 1 OF 3

APPROVED SIGNATURE ON FILE 02/14/2014

RECOMMENDED SIGNATURE ON FILE 01/14/2014

1/9/2014
NOTE:
1. CONCRETE APRON IS REQUIRED ONLY WHEN CABINET BASE IS INSTALLED IN UNPAVED AREAS OR AS DIRECTED ON PLAN.
2. CONDUITS SHALL BE EVENLY SPACED, WITH MINIMUM 2" WIDTH SPACING ESTABLISHED BETWEEN ALL CONDUITS.

DELaware department of transportation

CABINET BASEs, TYPES m & f

NOTE:
1. CONCRETE APRON IS REQUIRED ONLY WHEN CABINET BASE IS INSTALLED IN UNPAVED AREAS OR AS DIRECTED ON PLAN.
2. CONDUITS SHALL BE EVENLY SPACED, WITH MINIMUM 2" WIDTH SPACING ESTABLISHED BETWEEN ALL CONDUITS.
NOTE:
1. CONCRETE APRON IS REQUIRED ONLY WHEN CABINET BASE IS INSTALLED IN EARTH AREAS OR AS DIRECTED ON PLAN.
2. CONDUITS SHALL BE EVENLY SPACED, WITH MINIMUM 2" WIDTH ESTABLISHED BETWEEN ALL CONDUITS.

CABINET BASES, TYPES P & R

DELAWARE DEPARTMENT OF TRANSPORTATION

STANDARD NO. T-4 (2013) SHT. 2 OF 2

APPROVED SIGNATURE ON FILE 02/14/2014

RECOMMENDED SIGNATURE ON FILE 01/14/2014

1/9/2014
ROUND BASE

CONNECTED TO AN EXISTING CONDUIT THREADED CONDUIT PLUG UNLESS SHALL BE CAPPED WITH A GALVANIZED UNDERGROUND CONDUIT ENDS 6" M IN. #8 REINFORCING BARS 8 EQUALLY SPACED #4 REINFORCING BARS EQUALLY SPACED 3" x 240") GROUND ROD (BE ATTACHED TO GROUND FOR POLE TO 3" CONDUIT SWEEPS (MAST ARM OR SPAN) DIRECTION OF LOAD REQUIREMENTS BY POLE MANUFACTURE TO BE AS DIRECTED BOLT CIRCLE DIAMETER

ROUND BASE w/ SQUARE FOUNDATION HEADER

UNDERGROUND CONDUIT ENDS SHALL BE CAPPED WITH A GALVANIZED THREADED CONDUIT PLUG UNLESS CONNECTED TO AN EXISTING CONDUIT EQUALLY SPACED #4 REINFORCING BARS GROUND FOR POLE TO BE ATTACHED TO GROUND ROD (6" x 240") BOLT CIRCLE DIAMETER TO BE AS DIRECTED BY POLE MANUFACTURE REQUIREMENTS DIRECTION OF LOAD (MASTARM OR SPAN) 3" CONDUIT SWEEPS

NOTE: SQUARE FOUNDATION HEADER SHALL HAVE A 6" MINIMUM DEPTH.
ANCHOR BOLTS INSTALLATION IN SOIL

ROUNDED CORNERS FOR AREA TO BE GROUTED

FINISHED GRADE

HEX NUT
ANCHOR BOLT
COVER

AS DIRECTED BY THE ENGINEER.

PLUMB OR CANT POLE

SQUARE NUT USED TO CONDUIT GRADE (SOIL)

FINISHED

7"
3"
5"
24" 
1"
2"

238"
3"

3" CONDUIT SWEEP

BAR (TYP.)

#8 REINFORCING

3"

3" CONDUIT SWEEP

EMBED 8'-0" INTO UNDISTURBED SOIL

TYPICAL INSTALLATION (BASES 1, 2, 2A, 2B, 3, 3A, AND 3B)

NOTES:

1) PLACE 2 EACH 6" LONG X 8" DIA. P.V.C, SCHEDULE 40 (TYP) VENTS IN THE GROUT AS DIRECTED IN THE FIELD BY ENGINEER.

2) SEE POLE BASE DATA CHART ON DETAIL T-5, SHEET 3 OF 4, FOR POLE BASE DIMENSIONS.

3) ANCHOR BOLTS AND BOLT PATTERN TO BE PROVIDED BY DELDOT'S SIGNAL CONSTRUCTION INSPECTOR UNLESS NOTED OTHERWISE.
### POLE BASE DATA CHART

<table>
<thead>
<tr>
<th>POLE BASE TYPE</th>
<th>DIAMETER</th>
<th>DEPTH</th>
<th>#4 HORIZONTAL REINFORCING BARS</th>
<th>#8 VERTICAL REINFORCING BARS</th>
<th>CONDUITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>36&quot;</td>
<td>7'-0&quot;</td>
<td>5</td>
<td>8</td>
<td>2 - 3&quot;</td>
</tr>
<tr>
<td>2</td>
<td>36&quot;</td>
<td>9'-0&quot;</td>
<td>6</td>
<td>8</td>
<td>2 - 3&quot;</td>
</tr>
<tr>
<td>2A</td>
<td>48&quot;</td>
<td>8'-0&quot;</td>
<td>5</td>
<td>8</td>
<td>2 - 3&quot;</td>
</tr>
<tr>
<td>2B</td>
<td>60&quot;</td>
<td>7'-0&quot;</td>
<td>5</td>
<td>8</td>
<td>2 - 3&quot;</td>
</tr>
<tr>
<td>3</td>
<td>48&quot;</td>
<td>10'-0&quot;</td>
<td>6</td>
<td>8</td>
<td>2 - 3&quot;</td>
</tr>
<tr>
<td>3A</td>
<td>60&quot;</td>
<td>9'-0&quot;</td>
<td>6</td>
<td>8</td>
<td>2 - 3&quot;</td>
</tr>
<tr>
<td>3B</td>
<td>72&quot;</td>
<td>7'-0&quot;</td>
<td>5</td>
<td>8</td>
<td>2 - 3&quot;</td>
</tr>
<tr>
<td>4A &amp; 4B</td>
<td>24&quot;</td>
<td>2'-4&quot;</td>
<td>NONE</td>
<td>NONE</td>
<td>2 - 2.5&quot;</td>
</tr>
<tr>
<td>5</td>
<td>24&quot;</td>
<td>6'-0&quot;</td>
<td>4</td>
<td>8</td>
<td>2 - 3&quot;</td>
</tr>
</tbody>
</table>

**NOTE:**

ANCHOR BOLTS AND BOLT PATTERN FOR TYPES 5, 6, & 7 POLE BASES TO BE PROVIDED BY THE MANUFACTURER.
EXPANSION MATERIAL 24" DIAMETER 1'-3"

BOLT PATTERN TO BE PROVIDED BY DELDOT'S SIGNAL CONSTRUCTION INSPECTOR.

NOTE:
- BOLT PATTERN TO BE PROVIDED BY DELDOT'S SIGNAL CONSTRUCTION INSPECTOR.

TYPICAL SECTION (BASE 4A)

TYPICAL SECTION (BASE 4B)

ANCHOR DETAIL

NOTE:
- BOLT PATTERN TO BE PROVIDED BY DELDOT'S SIGNAL CONSTRUCTION INSPECTOR.

DELAWARE
DEPARTMENT OF TRANSPORTATION

STANDARD NO. T-5 (2013)

APPROVED

SIGNATURE ON FILE 02/14/2014

DATE 01/14/2014

SIGNATURE ON FILE 01/14/2014

DATE 02/14/2014

SIGNATURE ON FILE 02/14/2014

DATE 01/14/2014

BOLT PATTERN TO BE PROVIDED BY DELDOT'S SIGNAL CONSTRUCTION INSPECTOR.

NOTE:
- BOLT PATTERN TO BE PROVIDED BY DELDOT'S SIGNAL CONSTRUCTION INSPECTOR.
NOTES:
1. ALL SAWCUTS SHALL BE A DEPTH OF 3/8" ON ALL SURFACES.
2. CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
3. ALL SAWCUTS SHALL BE PATCHED WITH NON-SHRINK CONCRETE CAULK.
4. CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3/8".
5. CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.
6. CONTRACTOR SHALL INSTALL DETECTABLE WARNING TAPE IN TRENCH FOR LEAD-IN CONDUIT.
NOTES:
1. ALL SAWCUTS SHALL BE A DEPTH OF 3/8" ON ALL SURFACES.
2. CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
3. ALL SAWCUTS SHALL BE PATCHED WITH NON-SHRINK CONCRETE CAULK.
4. CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3/8".
5. CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.
NOTES:
1. ALL SAWCUTS SHALL BE A DEPTH OF 3/8" ON ALL SURFACES.
2. CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
3. ALL SAWCUTS SHALL BE PATCHED WITH NON-SHRINK CONCRETE CAULK.
4. CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3/8".
5. CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.
NOTES:
1. ALL SAWCUTS SHALL BE A DEPTH OF 3/4" ON ALL SURFACES.
2. CONTRACTOR SHALL INSTALL LEAD-IN WIRE IN THE MOST DIRECT ROUTE TO THE JUNCTION WELL USING THE CLOSEST CONCRETE CURB JOINT.
3. ALL SAWCUTS SHALL BE SEALED WITH AN APPROVED LOOP DETECTOR SEALANT.
4. CONTRACTOR SHALL CORE AT FULL DEPTH OF SAWCUT, 3/4".
5. CONTRACTOR SHALL CONSOLIDATE LEAD-INS TO A SINGLE DRILL HOLE, WHENEVER FEASIBLE.
6. CONTRACTOR SHALL INSTALL DETECTABLE WARNING TAPE IN TRENCH FOR LEAD-IN CONDUIT.
LOOP DETECTOR SAWCUT TYPICAL

REFER TO DETAIL T-8, SHEETS 1 THROUGH 4 FOR LOOP DETECTOR LEAD-IN INSTALLATION REQUIREMENTS.

NOTES:

1. WHEN A PROPOSED LOOP DETECTOR SAWCUT CROSSES A LATERAL ROADWAY JOINT OR OTHER OBSTRUCTION (VALVE COVER, MANHOLE, JUNCTION WELL, ETC.), LOOP DETECTOR INSTALLATION SHALL BE MODIFIED INTO TWO SEPARATE LOOP DETECTORS WHICH SHALL NOT TRAVERSE JOINTS OR OBSTRUCTION.

2. THE LOOPS SHALL BE PLACED IN THE CENTER OF THE LANE UNLESS NOTED OTHERWISE ON PLANS.

3. PRESENCE OF LOOP DETECTORS ARE TO BE PLACED 12" BEHIND THE EXISTING OR PROPOSED STOP LINE.

4. LOOP DETECTOR AND LEAD-IN SAWCUTS SHALL BE 6" WIDE.
NOTES
1) ORANGE BANDS SHALL DESIGNATE THE LANE ASSIGNMENT. ALL LANES SHALL BE DESIGNATED FROM LEFT TO RIGHT IN THE DIRECTION OF TRAVEL. EXAMPLE: FOR A DOUBLE LEFT TURN WITH 2 THRU LANES FOR NORTHBOUND, THE CABLES WILL BE IDENTIFIED AS 1-RED W/ 1-ORANGE (LT LANE 1), 1-RED W/ 2-ORANGE (LT LANE 2), 2-RED W/ 1-ORANGE (THRU LANE 1) AND 2-RED W/ 2-ORANGE (THRU LANE 2). THIS CODE IS THEN FOLLOWED FOR THE REMAINING APPROACHES TO THE INTERSECTION.

2) THE OPTICAL PRE-EMPTION DETECTOR "HOME RUN" CABLE(S) SHALL BE IDENTIFIED WITHIN THE CONTROL CABINET BY A VIOLET BAND PLUS A COLOR BAND, AS NOTED TO DENOTE THE DIRECTION OF THE DETECTOR.

DELARWAE DEPARTMENT OF TRANSPORTATION

LOOP DETECTOR INSTALLATION & SPLICE KIT

STANDARD NO. T-9 (2013) SHT. 2 OF 3

APPROVED SIGNATURE ON FILE 2/14/2014
RECOMMENDED SIGNATURE ON FILE 1/14/2014

1/9/2014
Notes:
1. One five conductor wire will be pulled to each ped module of the intersection.
2. Each five conductor wire will have color bands indicating the corner of the ped:
   - One grey band identifying main street
   - Two grey bands identifying side street.
POLYMER CONCRETE WITH A
HEAVY-WEAVE FIBERGLASS
REINFORCEMENT

\( \frac{3}{16} \) - 16 UNC HEX BOLT
WITH WASHERS TO BE SECURED
INTO THE WELL FRAME

\( \frac{3}{4} \times 4" \)
PULL SLOT

NOTES:
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 15,000 LBS OVER A 10" SQUARE.
SQUARE POST SHALL NOT BE LESS THAN 2" x 2" WITH A WALL THICKNESS OF 0.1092".

STREET BLADES MUST BE PINNED TOGETHER AT EACH END.

NOTE: THE PIN ASSEMBLY IS TO BE USED WITH THE INSTALLATION OF BACK TO BACK STREET BLADE SIGNS WITH 6" LETTERS.

2" SQUARE TUBING

STREET BLADES

PIN ASSEMBLY

Typical Assembly

CONCRETE SIDEWALK

SOIL INSTALLATION

CONCRETE

STONE

PVC SLEEVE

2 1/2" SQUARE TUBING

3 6" LONG

" SQUARE TUBING

2" MIN TO 1" MAX

BREAK-AWAY ASSEMBLY

SECTION VIEW

BREAKWAY SIGN POST AND PIN ASSEMBLY DETAILS


SHT. 1 OF 1

APPROVED

SIGNATURE ON FILE 02/14/2014

DELTA WING

DEPARTMENT OF TRANSPORTATION

SIGNATURE ON FILE 01/14/2014

SCALE: NTS

NOTE: THE PIN ASSEMBLY IS TO BE USED WITH THE INSTALLATION OF BACK TO BACK STREET BLADE SIGNS WITH 6" LETTERS.

NOTES:
1. SQUARE TUBES ARE TO BE FORMED FROM GALVANIZED SHEET STRUCTURAL (PHYSICAL) QUALITY, ASTM A 446, GRADE A, COATING DESIGNATION G 90, REGULAR SPANGLE, OR HOT ROLLED CARBON SHEET STEEL STRUCTURAL (PHYSICAL) QUALITY, ASTM A 57, GRADE 33.

2. NOMINAL OUTSIDE DIMENSIONS ARE AS FOLLOWS:
A). 2" x 2" +/- 0.008
B). 2 1/2" x 2 1/2" +/- 0.010
C). 2 1/2" x 2 1/2" +/- 0.020

3. ALL FOUR SIDES ARE TO HAVE EVENLY SPACED 1/8" DIAMETER HOLES ON 1" CENTERS THE ENTIRE LENGTH OF THE TUBE.

4. STANDARD CORNER RADIUS SHALL BE 1/16".

5. THE FASTENERS TO BE SUPPLIED UNDER THIS SPECIFICATION SHALL BE 3/8" UNC CORNER BOLTS WITH CADIUM OR ZINC PLATING. INSTALLATION OF SIGNS SHALL BE WITH 3/8" x 2 1/2" BOLT WITH LOCKNUT AND WASHER.

6. THE CONTRACTOR SHALL PROVIDE AND INSTALL PVC SLEEVES (4" INSIDE DIAMETER MINIMUM, 6" INSIDE DIAMETER MAXIMUM) IN PROPOSED CONCRETE SIDEWALKS, ISLANDS, AND MEDIANS FOR FUTURE TRAFFIC SIGN POSTS AS DIRECTED BY THE ENGINEER. THE LOWER END OF THE SLEEVE SHALL BE SET ON TOP OF THE SOIL.

7. THE SIGN POST SHALL EXTEND A MINIMUM OF 4" INTO THE 2 1/2" SQUARE TUBING.
NOTES:

1. INSTALLATION OF EQUIPMENT BETWEEN SERVICE PEDESTAL AND LIGHTING/CONTROLLER CABINET SHALL BE AS PER CONTRACT DRAWINGS/DETAILS.
2. SEE DETAIL T-15, SHEET 1, FOR SIGN POST AND BREAKAWAY ASSEMBLY DETAILS.
3. ATTACH ALUMINUM PANEL TO SIGN POSTS WITH (6) 3/8" x 2 1/2" LONG GRADE 5 BOLTS, FLAT WASHERS, AND NYLON LOCK NUTS, 3 ON EACH SIDE.
4. MOUNT METER SOCKET TO ALUMINUM PANEL WITH (4) 5/16" x 5" STAINLESS STEEL BOLTS AND NYLON LOCK NUTS.
5. MOUNT DISCONNECT SWITCH TO ALUMINUM PANEL WITH (4) 5/16" x 1" STAINLESS STEEL BOLTS AND NYLON LOCK NUTS.
6. ALL CONDUIT, CONDULETS AND OTHER ASSOCIATED PIECES SHALL BE 2" GALVANIZED UNLESS SPECIFIED DIFFERENTLY ON THE PLANS OR BY LOCAL UTILITY COMPANY.
7. FOR SIGNAL AND TIME'S COMPONENT INSTALLATIONS, TYPE 'C' CONDULET SHALL HOUSE INLINE FUSE KITS FOR EACH DEVICE POWERED.

SCALE: NTS

DELAWARE DEPARTMENT OF TRANSPORTATION

ELECTRICAL SERVICE PEDESTAL - LIGHTING, SIGNAL & ITS' COMPONENT INSTALLATIONS

STANDARD NO. T-17 (2013) SHT. 1 OF 1 APPROVED 02/14/2014

CHIEF ENGINEER SIGNATURE ON FILE

DESIGN ENGINEER SIGNATURE ON FILE

DATE 01/14/2014 1/9/2014