1. Personnel safety grates (PSG) shall only be installed on the inlets of storm water pipes 2" (50) or larger in diameter that are not straight from the inlet to the open outlet, regardless of the length.

2. The grate shall be made to fit the outside perimeter of the flared end section (FES) ±1/2" (13).

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" (150) above invert of FES.

6. All hardware attached to concrete shall be attached using approved tamper proof anchors.

NOTES:

1/2" x 2, 1/2" x 164 x 1" (355) flat w/ hasp hole & two 1/2" (16) field-drilled bolt holes (typ)

S-5 1/8 (16) plain bar (typ)

S-5 (16) plain bar perimeter, crossmembers, & stiffeners (typ)

SEE NOTE 4

6" (150) O.C.

FLARED END SECTION (FES)

PERSONNEL SAFETY GRATE

PAD LOCK

1/2" x 2'' x 1' (355) flat w/ hasp hole & hinge

1/2" x 2" x 164 x 1 (355) flat w/ hasp hole & two 1/2" (16) field-drilled bolt holes

SEE NOTE 5

FLAT W/ HASP HOLE & HINGE

FLAT W/ HINGE & TWO 1/2" (16) FIELD DRILLED BOLT HOLES

FLAT W/ HINGE & TWO 1/2" (16) FIELD DRILLED BOLT HOLES (TYP)

FLAT W/ ROUND HASP & TWO 1/2" (16) FIELD DRILLED BOLT HOLES

6" (150) SEE NOTE 5

PLAN VIEW

SECTION A-A

SEE NOTE 4

DATE 08/01/2007
<table>
<thead>
<tr>
<th>INLET BOX SIZE</th>
<th>COVER SLAB SIZE (L x W)</th>
<th>DRAINAGE INLET TOP UNIT</th>
<th>INLET TOP UNIT REBAR LENGTH</th>
<th>INLET TOP UNIT LIMIT OF PAYMENT</th>
<th>INLET TOP UNIT BAR BENDING DIAGRAM</th>
<th>MAXIMUM PIPE SIZE (SEE NOTE 1)</th>
<th>MAXIMUM HEIGHT (TO TOP OF BOX)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 7/8&quot; x 11 5/8&quot;</td>
<td>NO COVER SLAB</td>
<td>TYPE 5 (FRAME &amp; GRATE COMBO)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>TYPE 5 (FRAME &amp; GRATE COMBO)</td>
<td>N/A</td>
</tr>
<tr>
<td>24&quot; x 24&quot;</td>
<td>NO COVER SLAB</td>
<td>TYPE 6 (FRAME &amp; GRATE COMBO)</td>
<td>N/A</td>
<td>N/A</td>
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<td>TYPE 6 (FRAME &amp; GRATE COMBO)</td>
<td>15&quot;</td>
</tr>
<tr>
<td>34&quot; x 18&quot;</td>
<td>NO COVER SLAB</td>
<td>TYPES A, C, D, &amp; E (DETAIL D-S, SHEET 3)</td>
<td>79&quot;</td>
<td>82&quot;</td>
<td></td>
<td>TYPES 1 THRU 4 GRATE STANDARD DRAINAGE INLET FRAME</td>
<td>24&quot;</td>
</tr>
<tr>
<td>34&quot; x 24&quot;</td>
<td>46&quot; x 36&quot; (SEE NOTE 3)</td>
<td>TYPES A, B, C, D, &amp; E (DETAIL D-S, SHEET 3)</td>
<td>79&quot;</td>
<td>82&quot;</td>
<td></td>
<td>TYPES 1 THRU 4 GRATE STANDARD DRAINAGE INLET FRAME</td>
<td>24&quot;</td>
</tr>
<tr>
<td>48&quot; x 30&quot;</td>
<td>60&quot; x 42&quot; (DETAIL D-S, SHEET 4)</td>
<td>TYPES A, B, C, D, &amp; E (DETAIL D-S, SHEET 3)</td>
<td>93&quot;</td>
<td>96&quot;</td>
<td></td>
<td>TYPES 1 THRU 4 GRATE STANDARD DRAINAGE INLET FRAME</td>
<td>36&quot;</td>
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<tr>
<td>48&quot; x 48&quot;</td>
<td>60&quot; x 60&quot; (DETAIL D-S, SHEET 4)</td>
<td>TYPES A, B, C, D, &amp; E (DETAIL D-S, SHEET 3)</td>
<td>93&quot;</td>
<td>96&quot;</td>
<td></td>
<td>TYPES 1 THRU 4 GRATE STANDARD DRAINAGE INLET FRAME</td>
<td>36&quot;</td>
</tr>
<tr>
<td>66&quot; x 30&quot;</td>
<td>78&quot; x 42&quot; (DETAIL D-S, SHEET 4)</td>
<td>TYPES A, B, C, D, &amp; E (DETAIL D-S, SHEET 3)</td>
<td>111&quot;</td>
<td>114&quot;</td>
<td></td>
<td>TYPES 1 THRU 4 GRATE STANDARD DRAINAGE INLET FRAME</td>
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<td>78&quot; x 60&quot; (DETAIL D-S, SHEET 4)</td>
<td>TYPES A, B, C, D, &amp; E (DETAIL D-S, SHEET 3)</td>
<td>111&quot;</td>
<td>114&quot;</td>
<td></td>
<td>TYPES 1 THRU 4 GRATE STANDARD DRAINAGE INLET FRAME</td>
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<tr>
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<td>78&quot; x 78&quot; (DETAIL D-S, SHEET 4)</td>
<td>TYPES A, B, C, D, &amp; E (DETAIL D-S, SHEET 3)</td>
<td>111&quot;</td>
<td>114&quot;</td>
<td></td>
<td>TYPES 1 THRU 4 GRATE STANDARD DRAINAGE INLET FRAME</td>
<td>48&quot;</td>
</tr>
<tr>
<td>72&quot; x 24&quot;</td>
<td>84&quot; x 36&quot; (DETAIL D-S, SHEET 5)</td>
<td>TYPES A, B, C, D, &amp; E (DETAIL D-S, SHEET 3)</td>
<td>113&quot;</td>
<td>120&quot;</td>
<td></td>
<td>TYPES 1 THRU 4 GRATE STANDARD DRAINAGE INLET FRAME</td>
<td>54&quot;</td>
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<tr>
<td>72&quot; x 48&quot;</td>
<td>84&quot; x 60&quot; (DETAIL D-S, SHEET 5)</td>
<td>TYPES A, B, C, D, &amp; E (DETAIL D-S, SHEET 3)</td>
<td>113&quot;</td>
<td>120&quot;</td>
<td></td>
<td>TYPES 1 THRU 4 GRATE STANDARD DRAINAGE INLET FRAME</td>
<td>54&quot;</td>
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<tr>
<td>72&quot; x 72&quot;</td>
<td>84&quot; x 84&quot; (DETAIL D-S, SHEET 5)</td>
<td>TYPES A, B, C, D, &amp; E (DETAIL D-S, SHEET 3)</td>
<td>113&quot;</td>
<td>120&quot;</td>
<td></td>
<td>TYPES 1 THRU 4 GRATE STANDARD DRAINAGE INLET FRAME</td>
<td>54&quot;</td>
</tr>
</tbody>
</table>

**NOTES:**
1. MAXIMUM PIPE SIZES ARE CALCULATED USING REINFORCED CONCRETE PIPE PERPENDICULAR TO THE BOX WALL. FOR OTHER PIPE SIZES, TYPES AND SKEW ANGLES OTHER THAN PERPENDICULAR, SEE CHART ON DELDOT DESIGN RESOURCE CENTER.
2. STEPS ARE REQUIRED ON ALL BOXES WHOSE DEPTH IS GREATER THAN 4'-0" (1219).
3. FOR A 34" x 24" DRAINAGE INLET BOX, NO COVER SLAB IS NEEDED FOR A TYPE B TOP UNIT.
4. SEE DETAIL D-4 OR APPROPRIATE DETAIL SHEET FOR ADDITIONAL NOTES.
**Inlet Box Schedule**

<table>
<thead>
<tr>
<th>L</th>
<th>H</th>
<th>Fabrication Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>17½&quot;</td>
<td>450</td>
<td>+1&quot; (-25)</td>
</tr>
<tr>
<td>24&quot;</td>
<td>450</td>
<td>+1&quot; (-25)</td>
</tr>
<tr>
<td>34&quot;</td>
<td>453</td>
<td>-1&quot; (+25)</td>
</tr>
<tr>
<td>48&quot;</td>
<td>453</td>
<td>+1&quot; (-25)</td>
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</tbody>
</table>

Wall Reinforcement Schedule

<table>
<thead>
<tr>
<th>Interior Wall Reinforcement</th>
<th>Area of Horizontal Reinforcement Per Foot (mm²)</th>
<th>Area of Vertical Reinforcement Per Foot (mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 4&quot; (102)</td>
<td>0.132 (86)</td>
<td>0.132 (86)</td>
</tr>
<tr>
<td>4&quot; (102) to 4½&quot; (112)</td>
<td>0.255 (160)</td>
<td>0.255 (160)</td>
</tr>
<tr>
<td>4½&quot; (112) to 5½&quot; (140)</td>
<td>0.358 (220)</td>
<td>0.358 (220)</td>
</tr>
<tr>
<td>5½&quot; (140) to 6½&quot; (170)</td>
<td>0.239 (150)</td>
<td>0.239 (150)</td>
</tr>
<tr>
<td>6½&quot; (170) to 6½&quot; (190)</td>
<td>0.284 (185)</td>
<td>0.284 (185)</td>
</tr>
</tbody>
</table>

Notes:

1. Inlet Boxes shall be Precast or Cast-In-Place.
2. Pipes shall not be installed through any corner of the inlet box.
3. Riser sections may be used for deep inlet boxes.
4. Pipes may be installed near or through joints for riser sections.
5. When the cover above the pipe is less than 4½" (112), the cover slab or top unit opening, the portion of box wall above the pipe may be removed as shown in the optional pipe opening detail. The area above the pipe shall then be formed and filled with high-strength, non-shrink grout mixed with coarse aggregate in a 1:6 ratio by weight.
6. Concrete flow channel shall be graded for positive drainage.
7. When inlet box is Precast, pipe opening shall be between 3½" (90) and 4½" (112) larger than outside diameter of pipe and shall not encroach on adjacent wall.
8. Reinforcement for Lawn Inlet Boxes shall be 4" (102) X 4" (102), #4 X #4 (26 X 26) Welded Wire.
INLET TOP UNIT APPLICATIONS

<table>
<thead>
<tr>
<th>TOP UNIT</th>
<th>CURB</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE A</td>
<td>USE IN DRAINAGE SWALE</td>
</tr>
<tr>
<td>TYPE B</td>
<td>INTEGRAL PCC CURB &amp; GUTTER, TYPES 1-8 &amp; 3-8, PCC CURB TYPE 1-8</td>
</tr>
<tr>
<td>TYPE C</td>
<td>INTEGRAL PCC CURB &amp; GUTTER, TYPES 1-8, 3-8, 1-4, 3-4, 1-2, 3-2, 1-2 &amp; 3-2 AND PCC CURB TYPE 1-8, 3-8, 1-4, 3-4 &amp; 1-2.</td>
</tr>
<tr>
<td>TYPE D</td>
<td>INTEGRAL PCC CURB &amp; GUTTER, TYPE 1</td>
</tr>
<tr>
<td>TYPE E</td>
<td>PCC CURB TYPE 1</td>
</tr>
</tbody>
</table>

NOTE: LENGTH OF #4 REBAR SHALL BE THE OUTSIDE OF THE DRAINAGE INLET BOX PLUS 2'-9".

#4 REBAR LENGTH VARIES - SEE NOTE (TYP.)

NOTES:
- THE DIMENSION VARIES BASED ON THE HEIGHT OF THE CURB AND GUTTER OR CURB USED:
  - INTEGRAL P.C.C. CURB AND GUTTER, TYPES 1-6 AND 3-6 & CURB, TYPE 1-6 - 12" MIN.
  - INTEGRAL P.C.C. CURB AND GUTTER, TYPES 1-8 AND 3-8 & CURB, TYPE 1-8 - 12" MIN.
- INTEGRAL P.C.C. CURB AND GUTTER, TYPES 1-4 AND 3-4 & CURB, TYPE 1-4 - 10" MIN.
- INTEGRAL P.C.C. CURB AND GUTTER, TYPES 3-2 AND 3-2 & CURB, TYPE 1-2 - 8" MIN.

NOTE: LENGTH OF #4 REBAR SHALL BE THE OUTSIDE OF THE DRAINAGE INLET BOX PLUS 2'-9".

DELTA BEND DIAGRAM

SS01 IS NOT REQUIRED TO BE ONE CONTINUOUS BAR. IF MORE THAN ONE BAR IS USED, THERE MUST BE A 12" OVERLAP BETWEEN BARS.

INTEGRAL PCC CURB & GUTTER, TYPES 1-8 & 3-8, PCC CURB TYPE 1-8

INTEGRAL PCC CURB & GUTTER, TYPES 1-8, 3-8, 1-4, 3-4, 1-2 AND 3-2

INTEGRAL PCC CURB & GUTTER, TYPES 1-8, 3-8, 1-4, 3-4 & 1-2.

INTEGRAL PCC CURB & GUTTER, TYPES 1-6, 3-6, 1-4, 3-4, 1-2 AND 3-2

INTEGRAL PCC CURB & GUTTER, TYPES 1-6, 3-6, 1-4, 3-4, 1-2 AND 3-2

INTEGRAL PCC CURB & GUTTER, TYPES 1-6, 3-6, 1-4, 3-4, 1-2 AND 3-2
THROAT OPENING
TYP. SEE NOTE 1

48" (1220) x 30" (760) INLET

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

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

SECTION B-B
FOR TYPE B TOP UNITS

SECTION A-A
FOR TYPES A, C, D, & E TOP UNITS

NOTES:

1. RELOCATE ENCROACHING REINFORCING BARS WHEN USING TYPE B UNIT.
2. COVER SLABS SHALL BE PRECAST AND MUST BE SIZED TO FIT INLET BOX DIMENSIONS.
3. ALL BARS ARE TO BE #5 (#4) SPACED @ 6" (150) UNLESS NOTED OTHERWISE.
4. TOP REINFORCEMENT SHALL BE 0.11 in²/ft² (70 mm²/m²) HORIZONTAL REINFORCEMENT PER FOOT IN BOTH DIRECTIONS.
5. MINIMUM BAR COVER = 1 1/2" (38).

* DIMENSIONS TO MATCH OUTSIDE TO OUTSIDE DIMENSIONS OF BOX.

DELWARE DEPARTMENT OF TRANSPORTATION

DRAINAGE INLET COVER SLAB DETAILS

STANDARD NO. D-6 (2010) SHT. 4 OF 9

APPROVED

SIGNATURE ON FILE 12/28/2010

RECOMMENDED

SIGNATURE ON FILE 12/27/2010
**NOTES:**

1. REFER TO PREVIOUS SHEETS FOR REINFORCEMENT REQUIREMENTS.
2. THE HEIGHT OF THE INLET IS LIMITED TO 4" (1020) MAXIMUM.
3. STEPS WILL NOT BE REQUIRED AND SHOULD NOT BE INSTALLED ON THIS INLET.
4. REFER TO DETAIL D-5, SHEET 3 OF 9 FOR REINFORCED TOP UNIT APPLICATION.

---

**34" (865) x 18" (455) DRAINAGE INLET DETAILS**

**DELaware DEPARTMENT OF TRANSPORTATION**

**STANDARD NO.** D-5 (2010)  **SHT.** 7  OF 9  **APPROVED**

**SIGNATURE ON FILE** 12/28/2010

**RECOMMENDED**

**SIGNATURE ON FILE** 12/27/2010
PLAN VIEW

SECTION A-A

SECTION B-B

CAST-IN-PLACE BOTTOM

SECTION VIEW

ISOMETRIC VIEW

NOTES:

1. SEE DETAIL D-4, SHEET 1 OF 1 FOR BOX DETAILS AND NOTES.
2. ALL REINFORCEMENT SHALL HAVE A MINIMUM COVER OF 1 1/2 (38) UNLESS NOTED OTHERWISE.
3. PIPE SHALL BE SUPPORTED ON BOTH ENDS DURING THE CONSTRUCTION OF THE BASE.
4. VERTICAL WALL REINFORCEMENT SHALL COMPLY WITH A.S.T.M. A615, D.02 IN/FT IN EACH DIRECTION, VERTICALLY AND HORIZONTALLY.
5. DOGHOUSE OPENING SHALL BE FILLED WITH HIGH STRENGTH, NON-SHRINK GROUT MIXED WITH COARSE AGGREGATE IN A 1:1 RATION BY WEIGHT.
6. THE TOP OF THE DOGHOUSE OPENING SHALL, IN NO CIRCUMSTANCES, BE LESS THAN 4" (100) FROM THE TOP OF THE BOX.
7. DOGHOUSE OPENING WIDTH SHALL BE BETWEEN 3" (75) AND 4" (100) LARGER THAN THE OUTSIDE DIAMETER OF THE PIPE AND SHALL NOT ENCODACH ON THE ADJACENT WALL.
8. EXISTING PIPE IS TO EITHER BE COMPLETELY REMOVED BY SAWCUTTING AS CLOSE TO THE INSIDE BOX WALL, AS POSSIBLE, OR BY REMOVING THE TOP PORTION OF THE PIPE AND USING THE REMAINING PIPE SECTION AS THE BOTTOM OF THE FLOW CHANNEL, AS SHOWN IN SECTION B-B.
ROUND MANHOLE ASSEMBLY

NOTE: ROUND MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH AASHTO M 199.
NOTE: TOP UNIT IS TO BE CAST IN PLACE TO GRADE AS SPECIFIED ON PLAN SHEETS OR AS DIRECTED BY ENGINEER.
1. COVER SLABS SHALL BE PRE-CAST.
2. ALL BARS SHALL BE #5 (#16) SPACED AT 6" (150) UNLESS NOTED OTHERWISE.
3. MINIMUM BAR COVER = 1" (38).

- DIMENSIONS TO MATCH OUTSIDE TO OUTSIDE DIMENSIONS OF BOX.

**NOTES:**

**SECTION A-A**

**SECTION B-B**

**BOX MANHOLE COVER SLAB DETAILS**

DELTA TO DE LA WARE

DEPARTMENT OF TRANSPORTATION

MANHOLE DETAILS

STANDARD NO. D-6 (2007) SHT. 4 OF 4

APPROVED 10/23/67 RECOMMENDED 10/23/67

08/01/2007
NOTES:
1. COVER SLABS ARE TO BE PRE-CAST.
2. ALL BARS ARE TO BE #5 (#16) SPACED @ 12" (305) UNLESS NOTED OTHERWISE.
3. MINIMUM BAR COVER = 1" (25).
4. DIMENSIONS TO MATCH OUTSIDE TO OUTSIDE DIMENSIONS OF BOX.

SECTION A-A

SECTION B-B

JUNCTION BOX COVER SLAB DETAILS
LIMIT OF PAY FOR
EXCAVATION OF PIPE TRENCHES $ 0.00 + 35" (900)

4" 1000"

6" (152) WIN

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

SEE NOTE 2

CLASS A BEDDING

FINISHED GRADE

LIMIT OF PAYMENT

10" (250) WIN

18" (450) WIN

EARTH CUSHION

6" (150) WIN, LOOSE SAND OR TYPE C BORROW

NOTE:
1. USE CLASS C BEDDING UNLESS OTHERWISE INDICATED.
2. FOR CLASS A BEDDING, USE PIPE IN CONCRETE 6" (152) FOR PIPES SMALLER THAN 24" (600 MM), 10" (250) FOR PIPES 24" (600) TO 60" (1525), AND FOR PIPES LARGER THAN 60" (1525) SEE PROJECT DETAILS.
NOTES:
0. THE PERFORATED PIPE UNDERDRAIN SHALL BE LOCATED AS SHOWN ON THE TYPICAL SECTIONS OF THE CONSTRUCTION PLANS.
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' (900) TO DIRECT UNDERDRAIN PIPE INTO SIDE OF DRAINAGE INLET OR TO POSITIVE GRADE. PIPE SHALL ALSO BE NON-PERFORATED AND HAVE A SMOOTH INTERIOR.
4. RODENT SCREEN SHALL SNAP FIT THE PROVIDED SLOTS WITH THE SCREEN UP FITTING TIGHT TO THE BOTTOM FLOW LINE.
5. A #4-12001 FLEXIBLE DELINERATOR SHALL BE FURNISHED AND INSTALLED AT THE DIRECTION OF THE ENGINEER TO MARK THE LOCATION OF THE CONCRETE HEADWALL.
6. WHEN TWO LINES OF PIPE UNDERDRAIN DRAIN TO A LOW POINT, EACH PIPE MUST HAVE ITS OWN OUTLET.
7. PERFORATED PIPE UNDERDRAIN SHALL NOT BE PLACED UNDER GUARDRAIL, IN ORDER TO AVOID PUNCTURING.
CONCRETE PLUG DIAMETER IN DRAINAGE PIPES WITH CONCRETE AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL FURNISH MATERIAL AND PLUG ABANDONED DRAINAGE PIPES WITH CONCRETE AS DIRECTED BY THE ENGINEER.

NOTE:
THE CONTRACTOR SHALL FURNISH MATERIAL AND PLUG ABANDONED DRAINAGE PIPES WITH CONCRETE AS DIRECTED BY THE ENGINEER.
NOTES:

1) EDGE BERMS 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 TRACKED WITH CLEATED EQUIPMENT SUCH THAT THE CLEAT MARKS ARE ORIENTED HORIZONTALLY.

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

4) CROSS SLOPES SHALL BE 2% MINIMUM, 6% MAXIMUM.

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INCREMENTAL STABILIZATION

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

APPROVED
RECOMMENDED

05/30/2001
NOTES:
1. THIS DEVICE IS INTENDED TO CONTROL SHEET FLOW ONLY; IT SHALL NOT BE USED IN AREAS OF CONCENTRATED FLOW.
2. SILT FENCE ENDS SHALL BE TUNED IN SLOPE TO CONTAIN RUNOFF.
3. REINFORCING STRIP IS TO BE ONE COMPLETE STRIP COVERING ALL GEOTEXTILE FABRIC AT POST.

DELWARE
DEPARTMENT OF TRANSPORTATION

SILT FENCE

STANDARD NO. E-2 (2006) SHT. 1 OF 1

APPROVED

10/02/2006
SECTION B-B

SECTION A-A

NOTES:
1. FOR DITCHES LESS THAN 30" (750) IN DEPTH, PLACE DAM AS DIRECTED BY THE ENGINEER.
2. THE CHECK DAM HEIGHT MUST NOT EXCEED 2' (600) AT THE CENTER OF THE WEL.
3. THE CHECK DAM IS TO BE CONSTRUCTED SO THAT THE CENTER IS 6' (1800) MIN. LOWER THAN THE OUTER EDGES, FORMING A WEL THAT WATER CAN FLOW ACROSS.
4. GEOTEXTILE FABRIC IS TO BE INSTALLED UNDERNEATH RIPRAP ON PERMANENT CHECK DAMS ONLY.
NOTES:
1. SEDIMENT TRAPS ARE INTENDED FOR USE IN EXISTING, PROPOSED, AND TEMPORARY DITCHES OF ALL TYPES WITH A MAXIMUM DRAINAGE AREA OF 15 ACRES (6 HECTARES), AS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.
2. SIDE SLOPES SHALL BE STABILIZED WITH "TEMPORARY GRASS SEEDING, DRY GROUND" AND STRAW MULCH.
3. AN OUTLET STRUCTURE IS REQUIRED, STONE CHECK DAMS, PERFORATED RISER PIPES, SEMI-FULL DRAINING DEVICES, OR DRAINAGE PITS 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 Ditch 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 SEGREGATION 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.
**ELEVATION**

**NOTES:**
1. THIS DEVICE IS INTENDED TO BE USED AS AN OUTLET FOR SEDIMENT TRAPS.
2. THE PIPE OUTLET SHOWN SHALL ONLY BE USED WITH SEDIMENT TRAPS WITH DRAINAGE AREAS OF 5 ACRES (20 HECTARES) OR LESS. LARGER DRAINAGE AREAS REQUIRE AN ENGINEERED DESIGN.
3. THE HEIGHT OF THE SKimmer DEMATERING DEVICE SHALL BE SPECIFIED BY THE ENGINEER IN THE FIELD.

---

**DELWARE**

**DEPARTMENT OF TRANSPORTATION**

**RISER PIPE ASSEMBLY FOR SEDIMENT TRAP**

**STANDARD NO.** E-8 (2006)  **SHT. 1 OF 2**  **APPROVED**

10/02/2006
TRASH HOOD CHART

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<thead>
<tr>
<th>RISER PIPE DIAMETER</th>
<th>D</th>
<th>H</th>
<th>MINIMUM SIZE SUPPORT BAR</th>
<th>MINIMUM TOP SUPPORT BAR</th>
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</thead>
<tbody>
<tr>
<td>5&quot; (125)</td>
<td>2&quot;</td>
<td>7&quot;</td>
<td>16 (1.5) 61</td>
<td>16 (1.5) 61</td>
</tr>
<tr>
<td>6&quot; (150)</td>
<td>2.5</td>
<td>8&quot;</td>
<td>16 (1.5) 61</td>
<td>16 (1.5) 61</td>
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<tr>
<td>6&quot; (150)</td>
<td>3&quot;</td>
<td>10&quot;</td>
<td>16 (1.5) 61</td>
<td>16 (1.5) 61</td>
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<td>8&quot; (200)</td>
<td>4&quot;</td>
<td>12&quot;</td>
<td>16 (1.5) 61</td>
<td>16 (1.5) 61</td>
</tr>
<tr>
<td>8&quot; (200)</td>
<td>6&quot;</td>
<td>15&quot;</td>
<td>16 (1.5) 61</td>
<td>16 (1.5) 61</td>
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<tr>
<td>10&quot; (250)</td>
<td>8&quot;</td>
<td>18&quot;</td>
<td>16 (1.5) 61</td>
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</table>

PLAN

TRASH HOOD TOP

TYP.

SUPPORT BAR

TRASH HOOD

RISER PIPE

FRONT

ISOMETRIC VIEW

PRESSURE RELIEF HOLES

TACK WELD TOP TO TRASH HOOD IN THREE PLACES.

TYP.

TYP.

TACK WELD SUPPORT BAR TO RISER PIPE (TYP) AT FOUR LOCATIONS.

DELTA E-8 (3006)

DEPARTMENT OF TRANSPORTATION

RISER PIPE ASSEMBLY FOR SEDIMENT TRAP

STANDARD NO.  E-8 (3006)  SHT.  2  OF  2  RECOMMENDED

APPROVED  10/02/2006
STABILIZATION OF EMBANKMENTS

NOTES:
1. STAPLES TO BE STAGGERED AT 18" (450) 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. TOPSOIL UNDER EROSION CONTROL BLANKET IS TO BE TRACKED AND SEEDED.
SECTION A-A

SECTION B-B

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 site-specific conditions.

DELWARE DEPARTMENT OF TRANSPORTATION

RIPRAP DITCH

STANDARD NO. E-10 (2005) SHT. 1 OF 1

APPROVED

RECOMMENDED

08/10/2005
**CHART A - STABILIZATION**

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>SWALE GRADE</th>
<th>TYPE OF TREATMENT</th>
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<tr>
<td></td>
<td></td>
<td>DRAINAGE AREA A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(15 AC = 2 ho or less)</td>
</tr>
<tr>
<td>1</td>
<td>0.5-2.0X</td>
<td>SEED USED WITH EROSION CONTROL BLANKET</td>
</tr>
<tr>
<td>2</td>
<td>2.0-3.0X</td>
<td>R-4 RRRAPE</td>
</tr>
<tr>
<td>3</td>
<td>3.0-5.0X</td>
<td>ENGINEERED DESIGN</td>
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**CHART B - SWALE DIMENSIONS**

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>SWALE A</th>
<th>SWALE B</th>
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<tbody>
<tr>
<td>C</td>
<td>F’1500 MIN.</td>
<td>F’1500 MIN.</td>
</tr>
<tr>
<td>D</td>
<td>4’12000 MIN.</td>
<td>6’18000 MIN.</td>
</tr>
</tbody>
</table>

**NOTES:**

1. Diverted runoff from a disturbed area shall be conveyed to a sediment trapping device.

2. Diverted runoff from an undisturbed area shall outlet directly into an undisturbed stabilized area at non-erosive velocity.

3. If temporary swales or clean water diversions are to be operational for 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".