DELAWARE DEPARTMENT OF TRANSPORTATION

34" (860) x 18" (455) DRAINAGE INLET DETAILS

STANDARD NO. D-5 (2009) SHT. 7 OF 8

APPROVED

SIGNATURE ON FILE 01/19/2010

RECOMMENDED

SIGNATURE ON FILE 01/14/2020

NOTES:
1. REFER TO PREVIOUS SHEETS FOR REINFORCEMENT REQUIREMENTS.
2. THE HEIGHT OF THIS INLET IS LIMITED TO 4'-10½" MAXIMUM, THEREFORE STEPS WILL NOT BE REQUIRED AND SHOULD NOT BE INSTALLED ON THIS INLET.
3. REFER TO DETAIL D-5, SHEET 3 OF 8 FOR INLET TOP UNIT APPLICATION.

5504 BENDING DIAGRAM
5504 IS NOT REQUIRED TO BE ONE CONTINUOUS BAR. IF MORE THAN ONE BAR IS USED, THERE MUST BE A 12'-1300 OVERLAP BETWEEN BARS.
SINGLE GRAPE SETUP

DOUBLE GRAPE SETUP

NOTES:
1. MINIMUM BOX SIZE TO BE 34"x1800 x 24"x1800.
2. PIPE OPENINGS IN THE FRONT WALL SHALL NOT INTERFERE WITH THE STEPS. THE PIPE SHALL BE SHAVED HORIZONTALLY TO AVOID THE STEPS. IT MAY BE NECESSARY TO USE A LARGER BOX TO AVOID CONFLICT BETWEEN STEPS AND PIPE OPENING.
3. SEE DETAIL D-5, SHEET 3 OF 9, FOR 550I BAR DIAGRAM.
4. THE REBAR IN THE HEAD IS PREFERRED TO BE CONTINUOUS PIECE. HOWEVER, IF MULTIPLE PIECES ARE TO BE USED, EACH PIECE SHALL OVERLAP BY 12"x1000 MINIMUM AND THE FINAL LENGTH OF THE SPLUED REBAR SHALL BE AS NOTED ON THIS DETAIL.
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
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
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 DETAILS

DELWARE DEPARTMENT OF TRANSPORTATION

JUNCTION BOX DETAILS

STANDARD NO. D-7 (2007) SHT. 2 OF 2

APPROVED RECOMMENDED

DATE 08/01/2007 10/23/07
LIMIT OF PAY FOR EXCAVATION OF PIPE TRENCHES = O.D. + 24" (600)

CLASS A BEDDING

1/4(O.D. 16" (400) MIN. IN ROCK)

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

CLASS C BEDDING

NOTE: USE CLASS C BEDDING UNLESS OTHERWISE INDICATED

LIMIT OF PAY ITEMS 206 AND/OR 208

EARTH CUSHION

6" (150) MIN. WHEN H.C. ≥ 58" (1530)
AND 0.50 OF H.WHEN H.C. < 58" (1530)
OF LOOSE SAND OR TYPE C BORROW

PIECE BEDDING

STANDARD NO. D-8 (2000) SHT. 1 OF 1 RECOMMENDED

DELAPWARE DEPARTMENT OF TRANSPORTATION

APPROVED
NOTES:
0. THE PERFORATED PIPE UNDERDRAIN SHALL BE LOCATED AS SHOWN ON THE TYPICAL SECTIONS OF THE CONSTRUCTION PLANS.
2. GEOTEXTILE FILTER FABRIC SHALL BE PLACED ENTIRELY OVER THE TOP OF UNDERDRAIN TRENCH AND LAPPED AS SHOWN.
3. SLOPE OF UNDERDRAINS SHALL MATCH ROADWAY GRADE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. OUTLET PIPE CONFIGURATIONS SHALL USE 45 DEGREE ELBOWS OR SHAPE 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.
5. RODENT SCREEN SHALL SNUGLY FIT THE PROVIDED SLOT WITH THE SCREEN UP FITTING TIGHT TO THE BOTTOM FLOW LINE.
6. A #12000 FLEXIBLE DELINEATOR SHALL BE FURNISHED AND INSTALLED AT THE DIRECTION OF THE ENGINEER TO MARK THE LOCATION OF THE CONCRETE HEADWALL.
7. WHEN TWO LINES OF PIPE UNDERDRAIN DRAIN TO A LOW POINT, EACH PIPE MUST HAVE ITS OWN OUTLET.
8. PERFORATED PIPE UNDERDRAIN SHALL NOT BE PLACED UNDER GUARDRAIL, IN ORDER TO AVOID PUNCTURING.
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.
CUT SECTION

LIMIT OF CONSTRUCTION

EXISTING GROUND

PHASE I EXCAVATION

INTERMEDIATE PHASE I EXCAVATION

FINAL PHASE EXCAVATION

PERIMETER/DRAIN SWALE
USED AS A CLEAN
WATER DIVERSION,
SEE STANDARD SHEET

NOTE: 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 TRACED 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.

FILL SECTION

FINAL PHASE EMBANKMENT

INTERMEDIATE PHASE I EMBANKMENT

PHASE I EMBANKMENT

EXISTING GROUND

TEMPORARY SWALE, SEE STANDARD SHEET

MINIMUM 5' (1500) OFFSET
FROM TOE OF SLOPE

SLT FENCE, SEE STANDARD SHEET

DELAWARE
DEPARTMENT OF TRANSPORTATION

INCREMENTAL STABILIZATION

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

APPROVED

RECOMMENDED

05/30/2001
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 turned upslope to contain runoff.
3. Reinforcing strip is to be one complete strip covering all geotextile fabric at post.
SECTION B-B

LENGTH
2' (0.600) MIN.

6' (1.800) MIN
SEE NOTE 3

RIPRAP, R-4

GEOTEXTILE FABRIC
SEE NOTE 4

SECTION A-A

GRASS-LINED OR VEGETATED DITCH

NOTES:
1. FOR DITCHES LESS THAN 30" (760) IN DEPTH, PLACE DAM AS DIRECTED BY THE ENGINEER.
2. THE CHECK DAM HEIGHT MUST NOT EXCEED 2' (0.600) AT THE CENTER OF THE WER.
3. THE CHECK DAM IS TO BE CONSTRUCTED SO THAT THE CENTER IS 6' (1.800) MIN.
   LOWER THAN THE OUTER EDGES, FORMING A WER THAT WATER CAN FLOW ACROSS.
4. GEOTEXTILE FABRIC IS TO BE INSTALLED UNDERNEATH RIPRAP ON PERMANENT CHECK
   DAMS ONLY.
5. THE MAXIMUM SPACING BETWEEN DAMS SHALL BE THE DISTANCE IN THE DITCH WHERE
   THE TOP OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE TOP OF THE
   DOWNSTREAM DAM AT THE CENTER OF THE WER.
NOTES:
1. SEDIMENT TRAPS ARE INTENDED FOR USE IN EXISTING, PROPOSED, AND TEMPORARY DITCHES OF ALL TYPES WITH A MAXIMUM DRAINAGE AREA OF 8 ACRES (3.2 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, SEWER DewaterING 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 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 sedimentation to occur before runoff enters the drainage inlet.
2. Drainage inlet sediment traps shall be limited to a three (3) acre (1.2 hectares) maximum drainage area.
3. The dimensions of the drainage inlet sediment trap are to be as indicated on the plans or as directed by the engineer.
FOR SEDIMENT TRAP, SEE STANDARD NO. E-6 OR E-7

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 Dewatering DEVICE SHALL BE SPECIFIED BY THE ENGINEER IN THE FIELD.

RISER PIPE ASSEMBLY FOR SEDIMENT TRAP

DELAWARE DEPARTMENT OF TRANSPORTATION
STANDARD NO. E-8 (2006) SHT. 1 OF 2

MAX. DRAINAGE AREA ACRES (ha)

<table>
<thead>
<tr>
<th>OUTFALL PIPE DIA.</th>
<th>RISER PIPE DIA.</th>
<th>MAX. DRAINAGE AREA ACRES (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot; (150)</td>
<td>6&quot; (150)</td>
<td>1 (0.42)</td>
</tr>
<tr>
<td>8&quot; (200)</td>
<td>8&quot; (200)</td>
<td>2 (0.82)</td>
</tr>
<tr>
<td>10&quot; (250)</td>
<td>10&quot; (250)</td>
<td>3 (1.22)</td>
</tr>
<tr>
<td>12&quot; (300)</td>
<td>12&quot; (300)</td>
<td>4 (1.61)</td>
</tr>
<tr>
<td>24&quot; (600)</td>
<td>24&quot; (600)</td>
<td>5 (2.0)</td>
</tr>
</tbody>
</table>

OUTFALL PIPE DIAMETER MAY BE SAME SIZE AS RISER DIAMETER.
TRASH HOOD CHART

<table>
<thead>
<tr>
<th>RISER PIPE DIAMETER</th>
<th>D</th>
<th>H</th>
<th>TRASH HOOD SUPPORT BAR</th>
<th>MINIMUM SIZE</th>
<th>MINIMUM TOP SUPPORT BAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>16&quot; (1650)</td>
<td>2&quot; (550)</td>
<td>7&quot; (175)</td>
<td>16 (6.8)</td>
<td>(6) MIR REBAR</td>
<td>16 (6.8)</td>
</tr>
<tr>
<td>18&quot; (1750)</td>
<td>2&quot; (550)</td>
<td>8&quot; (200)</td>
<td>16 (6.8)</td>
<td>(6) MIR REBAR</td>
<td>16 (6.8)</td>
</tr>
<tr>
<td>20&quot; (1750)</td>
<td>2&quot; (550)</td>
<td>8&quot; (200)</td>
<td>16 (6.8)</td>
<td>(6) MIR REBAR</td>
<td>16 (6.8)</td>
</tr>
<tr>
<td>24&quot; (1900)</td>
<td>36&quot; (900)</td>
<td>10&quot; (250)</td>
<td>16 (6.8)</td>
<td>(6) MIR REBAR</td>
<td>14 (2.0)</td>
</tr>
<tr>
<td>27&quot; (1670)</td>
<td>42&quot; (1050)</td>
<td>10&quot; (250)</td>
<td>16 (6.8)</td>
<td>(6) MIR REBAR</td>
<td>14 (2.0)</td>
</tr>
<tr>
<td>36&quot; (8100)</td>
<td>54&quot; (1350)</td>
<td>14&quot; (2.0)</td>
<td>(6) (2.0)</td>
<td>(6) (2.0)</td>
<td>16 (6.8)</td>
</tr>
</tbody>
</table>

DELWARE DEPARTMENT OF TRANSPORTATION
RISE PIPE ASSEMBLY FOR SEDIMENT TRAP
STANDARD NO. E-8 (2006) SHT. 2 OF 2
APPROVED
RECOMMENDED
10/02/2006
STABILIZATION OF EMBANKMENTS

**NOTES:**
1. STAPLES TO BE STAGGERED AT 6" (150) SPACING.
2. TOPSOIL URBAN 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 URBAN EROSION CONTROL BLANKET IS TO BE TRACKED AND SEEDED.

EROSION CONTROL BLANKET APPLICATIONS

**STANDARD NO.:** E-9 (2006)

**APPROVED:**

**RECOMMENDED:**

DEPARTMENT OF TRANSPORTATION

**SHT. 1 OF 1**

08/30/2005

12/5/05
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 SIGHT SPECIFIC CONDITIONS.
CHART A - STABILIZATION

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>SWALE GRADE</th>
<th>TYPE OF TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DRAINAGE AREA A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5 AC (2 ft) or less)</td>
</tr>
<tr>
<td>1</td>
<td>0.5-2.0%</td>
<td>SEED USED WITH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EROSION CONTROL BLANKET</td>
</tr>
<tr>
<td>2</td>
<td>2.5-8.0%</td>
<td>R-4 RRRAAP</td>
</tr>
<tr>
<td>3</td>
<td>8.1-20%</td>
<td>ENGINEERED DESIGN</td>
</tr>
</tbody>
</table>

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>

NOTES:
1. Diverted runoff from an 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-erodive 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".

OUTLET AS REQUIRED SEE NOTES 1 & 2
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>0.5-2.0X</td>
<td>SEED AND EROSION CONTROL BLANKET</td>
</tr>
<tr>
<td>A-2</td>
<td>2.2-4.0X</td>
<td>LINED R-4 RIPRAP</td>
</tr>
<tr>
<td>A-3</td>
<td>8.0-20X</td>
<td>ENGINEERED DESIGN</td>
</tr>
</tbody>
</table>

MAXIMUM DRAINAGE AREA: 2 ACRES (0.8 ha)

SECTION A-A

OUTLET AS REQUIRED SEE NOTES 1 & 2.

NOTES:

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

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

3. IF PERIMETER DIKE SWALES ARE TO BE OPERATIONAL FOR MORE THAN 14 DAYS, THEY SHALL BE STABILIZED IN ACCORDANCE WITH CHART A PRIOR TO BECOMING OPERATIONAL.

4. IF TEMPORARY SWALES OR CLEANS 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

PLAN

CUT OR FILL SLOPE

SEED AND MULCH

2:1 SLOPE OR FLATTER

FLOW

2:1 SLOPE OR FLATTER

FLOW

EXISTING GROUND

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

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>2.1-6.0%</td>
<td>R-4 RIPRAP</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 oc (2 hal) or less</th>
<th>DIKE B 5-60ac (2-4 hal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>b-DEKE HEIGHT</td>
<td>18&quot; (450)</td>
<td>18&quot; (450)</td>
</tr>
<tr>
<td>b-DEKE WIDTH</td>
<td>24&quot; (600)</td>
<td>24&quot; (600)</td>
</tr>
<tr>
<td>b-DEKE WIDTH</td>
<td>48&quot; (1200)</td>
<td>72&quot; (1800)</td>
</tr>
<tr>
<td>b-DEKE DEPTH</td>
<td>21&quot; (550)</td>
<td>21&quot; (550)</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.
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.
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. 3/8" x 1/2" x 13 9/16" IRON 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 1/2" (12) ON CENTER IN ALL DIRECTIONS.

5. TYPE 1 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; (100) MIN.</td>
<td>12&quot; (300)</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; (200) MIN.</td>
<td>24&quot; (600)</td>
</tr>
</tbody>
</table>

DELAWARE DEPARTMENT OF TRANSPORTATION

SUMP PIT, TYPE 1 & 2

STANDARD NO. E-16 (2003)

SHT. 1 OF 1

APPROVED

CHADWICK  12/5/05

RECOMMENDED

PHILIP WOLF  11/15/05

09/01/05
NOTES:
1. A DEWATERING BASIN (SUMP) IS USED TO REMOVE SEGMENT FROM SEGMENT-LADEN WATER. PUMPED FROM A CONSTRUCTION SITE BEFORE THE WATER RE-ENTERS THE WATERWAY. THE DBW SHALL HAVE A MINIMUM TOP WIDTH OF 30' (9150) AND A MINIMUM DEPTH OF 3.5' (1065). 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' + 0.3 x Y
METRIC: TOP LENGTH (METERS) = 7900 + 4800 x Y

WHERE Y IS THE MOUNT 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 BERM BECOMES SEGMENT-LADEN.

3. A SUMP PIT OR STILLING WELL (SEE STANDARD SHEETS) SHALL BE USED IN CONJUNCTION WITH A DBW. THE BASIN MAY BE BYPASSED INTO THE STABILIZED OUTFALL. IF THE WATER IS PUMPED IS NON-SEGMENT-LADEN, DIRECT DISCHARGE TO THE RECEIVING WATERS SHALL CEASE AND BE REJECTED TO THE DBW WHEN EFFLUENT FROM THE PUMP BECOMES SEGMENT-LADEN.

4. MAINTENANCE MUST BE PERFORMED IN ORDER FOR THE DBW TO FUNCTION PROPERLY. ACCUMULATED SEGMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED DISPOSAL AREA WHEN THE BASIN IS FILLED TO WITHIN 12" (300MM) 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 SEGMENT PRODUCED DURING INSTALLATION TO SETTLE COMPLETELY.
1. The work shall consist of installing flow diversions for the purpose of erosion control, when construction activities take place within the stream channel such as bank stabilization or bridge abutment construction.

2. The diversion structure shall be installed from upstream to downstream.

3. The effective channel width shall be sized to pass a one-year storm event peak flow, or 1/3 of stream width, whichever is greater.

4. The sandbag diversion height (H) shall be 1' (300 mm) above the peak elevation of the one-year storm.
NOTES:

1. THE WORK SHALL CONSIST OF INSTALLING A SANDBAG DIKE FOR THE PURPOSE OF EROSION CONTROL. WHEN CONSTRUCTION ACTIVITIES TAKE PLACE WITHIN THE STREAM CHANNEL SUCH AS BANK STABILIZATION OR BRIDGE ABUTMENT CONSTRUCTION.

2. THE SANDBAG DIKE SHALL BE INSTALLED AT THE UPSTREAM LOCATION FIRST.

3. THE HEIGHT OF THE SANDBAG DIKE SHALL BE NOT LESS THAN 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 111 ONE YEAR STORM EVENT PEAK FLOW, SEE PLANS.

5. THE PIPE, WHEN UTILIZED, SHALL BE SIZED TO PASS THE STREAM BASE FLOW.

DELaware

dEPARTMENT OF TRANSPORTATION

SANDBAG DIke

STANDARD NO. E-20 (2005)  SHT. 1 OF 1

APPROVED

RECOMMENDED
NOTES:
1. ALL SURFACE WATER FLOWING OR DIVERGED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED UNDER THE ENTRANCE. IF NEEDED, A MOUNTABLE BERM WITH 6:1 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 ELIMINATION 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:
1. ALL P.V.C. PIPES ARE TO BE 4" 000 LD, SCHEDULE 40
2. ALL JOINTS OF THE FLOATATION SECTION SHALL
   BE SOLVENT WELDED, JOINTS OF SKIMMER SECTION
   NEED NOT BE WATER-TIGHT.
3. 4" 000 HOPE FLEXIBLE DRAIN PIPE IS TO BE ATTACHED
   TO THE POND OUTLET STRUCTURE WITH WATER-TIGHT
   CONNECTIONS.
4. ORIFICE IS TO BE SIZED ACCORDING TO STORAGE
   VOLUME AND TO SLOWLY RELEASE 4" 025 RUNOFF
   FOR AT LEAST 24 HOURS.

DELAWARE
DEPARTMENT OF TRANSPORTATION

SKIMMER DEWATERING DEVICE

STANDARD NO. E-22 (2006)
SHR. 1 OF 1

APPROVED

RECOMMENDED

10/02/2006