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

NOTES:
1. COVER SLABS SHALL BE PRE-CAST.
2. ALL BARS SHALL BE 5 (46) SPACED AT 6"(150) UNLESS NOTED OTHERWISE.
3. MINIMUM BAR COVER = 1/2" (13).
   = 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
NOTES:
1. COVER SLABS ARE TO BE PRE-CAST.
2. ALL BARS ARE TO BE #5 (16G) SPACED.
   • 2" (50G) UNLESS NOTED OTHERWISE.
3. MINIMUM BAR COVER = 65/8" (200G).
   • DIMENSIONS TO WATCH OUTSIDE TO OUTSIDE DIMENSIONS OF BOX.

SECTION A-A

SECTION B-B

JUNCTION BOX COVER SLAB DETAILS
NOTES:
0. THE PERFORATED PIPE UNDERRAIN 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 UNDERRAIN TRENCH AND LAPPED AS SHOWN.
2. SLOPE OF UNDERRAINS 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'
   000 TO DIRECT UNDERRAIN 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 UP FITTING TIGHT TO THE BOTTOM FLOW LINE.
5. A #12003 FLEXIBLE DELINATOR 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 UNDERRAIN DRAIN TO A LOW POINT, EACH PIPE MUST HAVE ITS OWN OUTLET.
7. PERFORATED PIPE UNDERRAIN SHALL NOT BE PLACED UNDER GUARDRAIL IN ORDER TO AVOID PUNCTURING.
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 TRIMMED 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' (3000MM) MEASURED ALONG THE SLOPE.

4) CROSS SLOPES SHALL BE 2% MINIMUM, 6% MAXIMUM.
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 TURNED UPSLOPE TO CONTAIN RunOFF.
3. REINFORCING STRIP IS TO BE ONE COMPLETE STRIP COVERING ALL GEOTEXTILE FABRIC AT POST.
2" x 4" x 150 x 100 (Nominal) frame, nailed at joints

NOTE: IF THE INLET IS NOT AT A LOW POINT, INSTALL SEDIMENT CONTROL EARTH Dike DOWNSTREAM FROM INLET.

EXCAVATE AND RE-COMPACT SOIL

POST DRIVEN INTO GROUND

EXISTING GROUND

A

GEOTEXTILE

WIRE MESH

1/8" x 3/16 x 1/3" AR Gage 60

IF THE INLET IS NOT AT A LOW POINT, INSTALL SEDIMENT CONTROL EARTH Dike DOWNSTREAM FROM INLET.

EXCAVATE AND RE-COMPACT SOIL

PLAN SYMBOL
NOTES:
1. For ditches less than 30" (750 mm) in depth, place dam as directed by the engineer.
2. The check dam height must not exceed 2' (600) at the center of the weir.
3. The check dam is to be constructed so that the center is 6' (600) min.
4. Lower than the outer edges, forming a weir that water can flow across.
5. Geotextile fabric is to be installed underneath riprap on permanent check dams only.
6. The maximum spacing between dams shall be the distance in the ditch where the toe of the upstream dam is at the same elevation as the top of the downstream dam at the center of the weir.
NOTES:
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. SEEP 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 PILETS 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 CUT 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.

PLAN SYMBOL
S.T.
NOTES:
1. THE WORK SHALL CONSIST OF THE CONSTRUCTION OF A SEDIMENT TRAP AROUND A DRAINAGE INLET TO ALLOW SEDIMENTATION TO OCCUR BEFORE RUNOFF ENTERS THE DRAINAGE INLET.

2. DRAINAGE INLET SEDIMENT TRAPS SHALL BE LIMITED TO A THREE (3) ACRE 0.2 HECTARE (H) 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 (2.0 HECTARES) OR LESS. LARGER DRAINAGE AREAS REQUIRE AN ENGINEERED DESIGN.
3. THE HEIGHT OF THE SKIMMER DWATERING DEVICE SHALL BE SPECIFIED BY THE ENGINEER IN THE FIELD.
STABILIZATION OF EMBANKMENTS

NOTES:
1. STAPLES TO BE STAGGERED AT 18" x 150" 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. STAPLES ARE TO BE STAGGERED.
3. TOPSOIL UNDER EROSION CONTROL BLANKET IS TO BE TRACKED AND SEEDED.

EROSION CONTROL Blanket Applications

STANDARD NO. E-9 (2001)  SHT. 1 OF 1
APPROVED 6/12/01  RECOMMENDED 6/12/01
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 sight specific conditions.

PLAN SYMBOL

DELWARE DEPARTMENT OF TRANSPORTATION

RIPRAP DITCH

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

APPROVED

RECOMMENDED

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

EXISTING GROUND

LEVEL BOTTOM

D •

* SEE CHART B

SECTION A-A

---

**CHART A - STABILIZATION**

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>SWALE GRADE</th>
<th>TYPE OF TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5-2.0%</td>
<td>DRAINAGE AREA A (15 AC, 12 HSL OR LESS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DRAINAGE AREA B (15 AC, 10 AC)</td>
</tr>
<tr>
<td>2</td>
<td>2.0-8.0%</td>
<td>SEED USED WITH EROSION CONTROL BLANKET</td>
</tr>
<tr>
<td>3</td>
<td>8.0-20%</td>
<td>R-4 RRAP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R-4 RRAP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ENGINEERED DESIGN</td>
</tr>
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**CHART B - SWALE DIMENSIONS**

<table>
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<tr>
<th>SYMBOL</th>
<th>SWALE A</th>
<th>SWALE B</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>4' (3000 MIN)</td>
<td>4' (3000 MIN)</td>
</tr>
<tr>
<td>D</td>
<td>4' (2000 MIN)</td>
<td>6' (3000 MIN)</td>
</tr>
</tbody>
</table>

SEE SECTION A-A

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**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 DIVERGIONS ARE TO BE OPERATIONAL FOR LESS THAN 4 DAYS, THEY SHALL BE STABILIZED IN ACCORDANCE WITH CHART A PRIOR TO BECOMING OPERATIONAL.

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

---

**PLAN SYMBOL**

A - 2 (CON) B - 3 (CON)

CLEAN WATER DIVERGION

A - 2 B - 3

TEMPORARY SWALE

---

**DELAWARE DEPARTMENT OF TRANSPORTATION**

<table>
<thead>
<tr>
<th>STANDARD NO.</th>
<th>SHT. 1 OF 1</th>
<th>APPROVED</th>
<th>RECOMMENDED</th>
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</tr>
</tbody>
</table>

04/17/2001

---

**SIGNED:**

[Signature] 01/12/01

[Signature] 04/17/01
**SECTION A-A**

- **Outlet as required**
- **See Notes 1 & 2.**

**CHART A - SWALE STABILIZATION**

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>SWALE GRADING</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 &amp; Lined 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 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 18 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 18 days, they shall be stabilized with geotextile in accordance with the standard detail: "Geotextile-lined Channel Diversion."

**PLAN SYMBOL**

- **A-1**
- **A-1 (CWD)**

**DELAWARE DEPARTMENT OF TRANSPORTATION**

**PERIMETER DIKE / SWALE**

**STANDARD NO:** E-12 (2001)  **SHT:** 1 OF 1  **APPROVED:**  **RECOMMENDED:**

**Approved By:** [Signature]  6/18/01  **Recommended By:** [Signature]  6/18/01

**04/17/2001**
STABILIZE IN ACCORDANCE WITH CHART A
PRIOR TO BECOMING OPERATIONAL
EXCAVATE TO PROVIDE REQUIRED FLOW
WIDTH AT FLOW DEPTH IN ACCORDANCE
WITH CHART A.

SECTION A-A

CHART A - FLOW CHANNEL STABILIZATION

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

CHART B - EARTH DIKE DIMENSIONS

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DIKE A</th>
<th>DIKE B</th>
</tr>
</thead>
<tbody>
<tr>
<td>c-OKE HEIGHT</td>
<td>6&quot;(150)</td>
<td>10&quot;(250)</td>
</tr>
<tr>
<td>b-OKE WIDTH</td>
<td>12&quot;(300)</td>
<td>12&quot;(300)</td>
</tr>
<tr>
<td>c-OKE WIDTH</td>
<td>6&quot;(150)</td>
<td>10&quot;(250)</td>
</tr>
<tr>
<td>c-OKE DEPTH</td>
<td>14&quot;(350)</td>
<td>27&quot;(680)</td>
</tr>
</tbody>
</table>

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

PLAN SYMBOL

DELAWARE DEPARTMENT OF TRANSPORTATION

EARTH DIKE

STANDARD NO. E-13 (2001)  SHT. 1 OF 1  RECOMMENDED

APPROVED

04/17/2001
**NOTES:**
1. All temporary slope drains shall discharge into the back of sediment traps, into sediment basins, or ditches discharging into traps or basins.
2. Temporary slope drains shall be used at the top of fill slopes as embankment is constructed, to prevent excessive erosion until shoulders are constructed and the slopes are seeded and mulched.

**PLAN SYMBOL**

**SLOPE DRAIN PROFILE**

*FOR FILL SLOPES*

**DESCRIPTION:**
- Discharge into a stabilized ditch - Geotextile, stone or gravel or a sediment trap.
- R-4 Riprap: 3 SY 3 m³ min.
- Corrugated pipe - see plans for locations or as directed by the engineer.
- Edge Berm at top of fill slope.
- Anti-seep collar at top of fill slope.
- Temporary flow line.
- Intercept Berm: 30' (900) min.
- Height, length as required to contain surface drainage and direct into temp. slope drain.

**ELEVATION**

**PLAN**

**ANTI-SEEP COLLAR**

*PLAN SYMBOL*
NOTES:
1. THE WORK SHALL CONSIST OF CONSTRUCTING A STILLING WELL FOR THE PURPOSE OF PUMPING CLEAN WATER AROUN 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.

PLAN SYMBOL

DELWARE
DEPARTMENT OF TRANSPORTATION

STILLING WELL

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

04/07/2001
NOTES:

II. 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. \(\frac{1}{2"} \times \frac{1}{2"} \times 16\) GAGE STEEL 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" (000) ON CENTER IN ALL DIRECTIONS.

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

DELWARE DEPARTMENT OF TRANSPORTATION

SUMP PIT, TYPE 1 & 2

STANDARD NO. E-16 (2001) SHT. 1 OF 1

APPROVED

RECOMMENDED

05/2/2001
NOTES:
1. A Dewatering Basin (DWB) is used to remove sediment from the sediment-laden water pumped from a construction site before the water re-enters the waterway. The DBW shall have a minimum top width of 0' (0.000) and a minimum depth of 3' (0.900). 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' + 0.01 x Y
   Metric: Top Length (m) = 7.93 + 0.03 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 sheets) shall be used in conjunction with a DBW. The basin may be bypassed into the stabilized outfall. If the water being pumped is non-sediment-laden, direct discharge to the receiving waters shall cease and be redirected to the DBW when effluent from the pump becomes sediment-laden.

4. Maintenance must be performed in order for the DBW to function properly. Accumulated sediment shall be removed and disposed of in an approved disposal area when the basin is filled to within 0' (0.000) 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.

DELAWARE
DEPARTMENT OF TRANSPORTATION

DEWATERING BASIN

STANDARD NO. E-17 (2000)  SHT. 1 OF 1

APPROVED

RECOMMENDED

05/2/2001
NOTES:
1. The work shall consist of installing flow diversions for the purpose of erosion control, when construction activities take place within the stream channel such as bank stabilization or bridge abutment construction.
2. The diversion structure shall be installed from upstream to downstream.
3. The effective channel width shall be sized to pass a one-year storm event peak flow, or 1/3 of stream width, whichever is greater.
4. The sandbag diversion height (H) shall be 1' (300mm) above the peak elevation of the one-year storm.

PLAN SYMBOL
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 5' (1500) ABOVE THE PEAK ELEVATION OF THE ONE YEAR STORM, OR EQUAL WITH THE TOP OF BANK, WHICHER IS LESS. SEE PLANS FOR INFORMATION.

4. THE SPILLWAY SHALL BE SIZED TO PASS A (1) ONE YEAR STORM EVENT PEAK FLOW, SEE PLANS.

5. THE PIPE, WHEN UTILIZED, SHALL BE SIZED TO PASS THE STREAM BASE FLOW.
NOTES:
1. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED UNDER THE ENTRANCE, IF NECESSARY. A MOUNTABLE BERM WITH 5:1 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 VODS ARE FILLED OR AS DIRECTED BY THE ENGINEER.
NOTES:
1. ALL P.V.C. PIPES ARE TO BE 4" I.D., SCHEDULE 40
2. ALL JOINTS OF THE FLOATATION SECTION SHALL
   BE SOLVENT WELDED, JOINTS OF SKIMMER SECTION
   NEED NOT BE WATER-TIGHT.
3. 4" I.D. HOPE FLEXIBLE GRAY PIPE IS TO BE ATTACHED
   TO THE POND OUTLET STRUCTURE WITH WATER-TIGHT
   CONNECTIONS.
4. ORIFICES TO BE SIZED ACCORDING TO STORAGE
   VOLUME AND TO SLOWLY RELEASE #25 RUNOFF
   FOR AT LEAST 24 HOURS.

PLAN VIEW

SIDE VIEW

END CAP

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

4" HOPE X 6" HOPE DELAWARE
(2) STONE RIES FOR SKIMMER,
4" DIAM MINIMUM THICKNESS.

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

#4 RIBON GUIDE POST (TYPE)
WITH WIRE STOP AT TOP OF RISER

OVERLAPPING CONNECTING
BANDS

SMIEMER
SECTION

FLOATATION
SECTION

PVC 90°
ELBOW (TPV)

PVC END
CAP (TPV)

PVC PIPE
(TPV)

END CAP

POND OUTLET
STRUCTURE

4" HOPE FLEXIBLE GRAY PIPE

WIRE STOP

END CAP

12 ROWS OF 3/16" DIAL
HOLES, 3/4" X 3/32 C.C.

ORIFICE DRILLED
IN END CAP
(SEE NOTE 4)

DELAWARE
DEPARTMENT OF TRANSPORTATION

SKINNER DEWATERING DEVICE

APPROVED

RECOMMENDED

10/02/2006
CLEAR WATER

50' (15000) OR
100' (30000)

ANCHOR (TYP.)

PLAN VIEW
OPEN WATER APPLICATION

TURBID WATER

MOORING LINE WITH
FLOATATION (TYP.)

DREDGE,
FILL AREA OR
BRIDGE PIER

PLAN VIEW
SHORELINE APPLICATION

AREA OF CONSTRUCTION

SHORELINE

STAKE

STAKE

FLOW

50' (15000) OR
100' (30000)

ANCHOR (TYP.)

MOORING LINE WITH
FLOATATION (TYP.)

CLEAR WATER

ELEVATION

TOP LOAD LINE

FLOATATION UNIT

BOTTOM LOAD LINE

TURBID WATER

TURBIDITY CURTAIN

NOTE:
1) ADDITIONAL PANEL REQUIRED FOR DEPTHS GREATER THAN 5' (1500).
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.

PLAN SYMBOL

FTC

DELWARE
DEPARTMENT OF TRANSPORTATION

TURBIDITY CURTAIN

STANDARD NO. E-23 (2001) SHT. 1 OF 2

APPROVED

RECOMMENDED

04/17/2001
SECTION

ELEVATION

PLAN VIEW
SHALLOW WATER/MARSH APPLICATION

STAKED TURBIDITY CURTAIN

DELAWARE
DEPARTMENT OF TRANSPORTATION

TURBIDITY CURTAIN

STANDARD NO. E-22 (2001)  SHT.  2 OF 2

APPROVED  RECOMMENDED

04/17/2001

SCALE: 1" = 100'
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 425 gallons per minute (0.56 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.
NOTES:
1. RIFFRAP IS TO BE PLACED PRIOR TO PLACING PIPE.
2. PLACE DELAWARE NO. 3 STONE UNDER PIPE.
3. ELEVATION (EL) SHOULD NOT BE HIGHER THAN PIPE INVERT.
4. REFER TO THE PIPE ENERGY DISSIPATOR SCHEDULE ON THE CONSTRUCTION PLANS FOR THE VALUE OF DIMENSION VARIABLES.
Roadside Shrub Planting Detail

- All dead, broken, & crossing branches shall be pruned off following installation.
- Rootball shall be set flush to grade or 1\(\frac{1}{2}\) to 2\(\frac{1}{2}\)\(\frac{1}{2}\) above grade if soils are slow to drain. Do not cover the top of the rootball with soil.
- Mulch in accordance with specifications. Do not place mulch against the shrub stems.
- Rootball shall be placed on tamped or undecavated soil.
- Remove burlap & wire baskets to 1\(\frac{1}{2}\) of the rootball. Do not leave burlap, basket, or rope debris in the pit.
- All soil shall be excavated from the pit, mixed with approved amendments and used as backfill during installation of shrub.

Notes:
1. Base of planting pit shall be a minimum width of twice the rootball size and a maximum of three times the rootball size.
2. Shrub shall be installed in masses of no less than 3 plants. A minimum of 6\(\frac{1}{2}\)\(\frac{1}{2}\) width is required from the back of curb to the edge of sidewalk for installation of shrubs.
3. All pruning shall be done by an LCA, Certified Arborist, Certified Nursery Professional, or under the direction thereof. Do not heavily prune shrubs at planting.
4. Auger holes shall be hand dug to final width and to eliminate glazing.
5. All shrub masses shall be mulched as one continuous bed.
DO NOT PRUNE THE DORMANT LEADER OR TERMINAL BUDS OF THE CROWN.

NOTES:
1. ALL PRUNING SHALL BE DONE BY OR UNDER THE DIRECTION OF AN L.S.A. CERTIFIED ARBORIST OR CERTIFIED NURSERY PROFESSIONAL. DO NOT HEAVILY PRUNE TREES AT PLANTING.
2. ALL DEAD, BROKEN, & CROSSING BRANCHES SHALL BE PRUNED OFF FOLLOWING INSTALLATION.
3. BASE OF PLANTING PIT SIZE SHALL BE A MINIMUM WIDTH OF TWICE THE ROOT BALL SIZE AND A MAXIMUM OF THREE TIMES THE ROOT BALL SIZE.
5. WHEN PLANTING TREES ALONG SIDEWALKS, THE TREE SHALL BE LIMED TO 7' (2100) FOR PEDESTRIAN CLEARANCE.

STAKE & GUY TREES, GUY WIRE, STAKES, A RUBBER HOSE SHALL BE AS SPECIFIED IN SECTION 1ST.

SET ROOT BALL FLUSH TO GRADE OR 1/2 TO 2" (50) ABOVE GRADE IF SOILS ARE SLOW TO DRAIN, PLANT TREES SUCH THAT THE TRUNK FLARE IS VISIBLE. ANY TREE WHERE TRUNK FLARE IS NOT VISIBLE SHALL BE REJECTED. DO NOT COVER THE TOP OF THE ROOT BALL WITH SOIL.

TAMP SOIL AROUND THE ROOT BALL BASE WITH FOOT PRESSURE SO ROOT BALL DOES NOT SHIFT.

ALL SOIL SHALL BE EXCAVATED FROM THE PIT, MIXED WITH APPROVED AMENDMENTS AS PER SPECIFICATIONS AND USED AS BACKFILL. DURING INSTALLATION OF TREES, PLACE ROOT BALL ON TAMPAED OR UNEXCAVATED SOIL.

REMOVE BURLAP AND BASKETS TO 1/2 OF THE ROOT BALL. DO NOT BURY EXCESS BURLAP, ROPE OR REMNANTS OF BASKET IN THE PLANTING HOLE.

DELAWARE DEPARTMENT OF TRANSPORTATION

PLANTING DETAILS

STANDARD NO. L-1 (2006) SH. 2 OF 3

APPROVED RECOMMENDED

08/04/2006