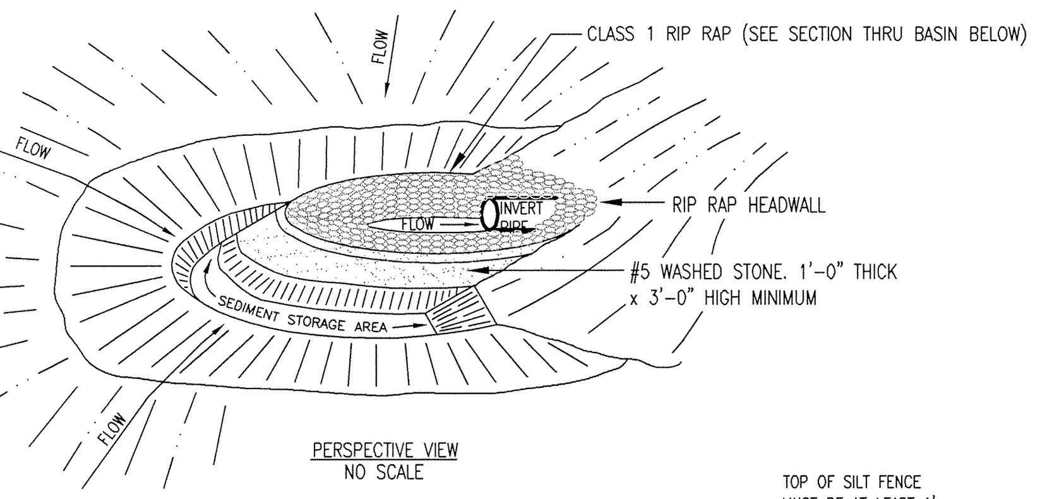
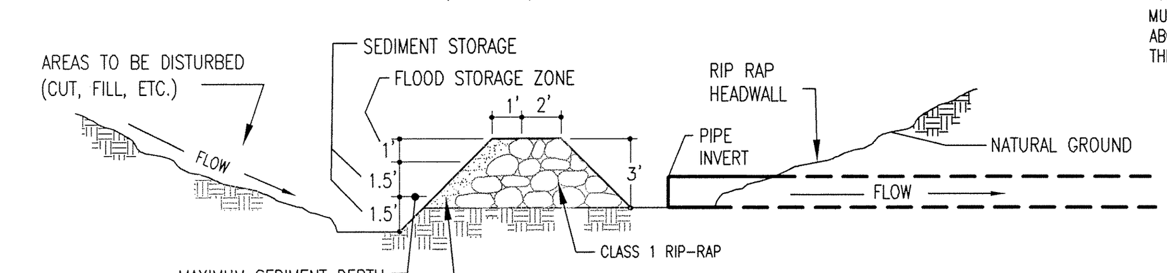


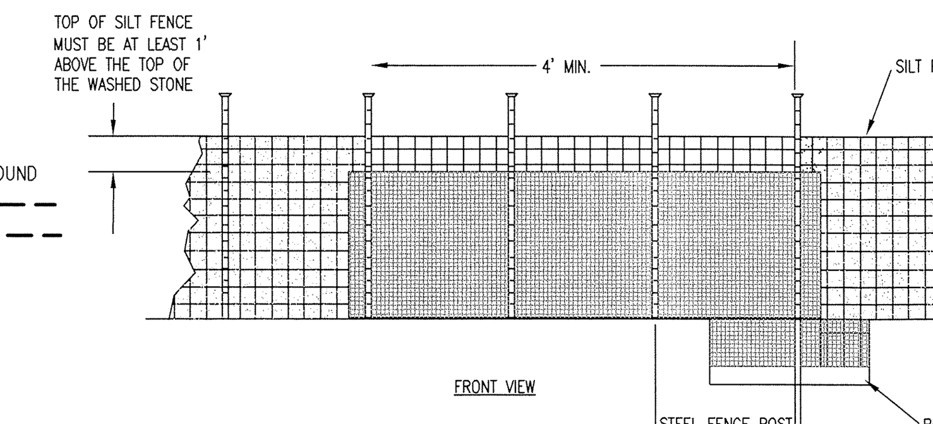
MAINTENANCE:
INSPECT INLET PROTECTION ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION. REPAIR THE CHANNEL LINING AS NECESSARY PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS. CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED TO AVOID GULLY FORMATION. WHEN THE AREA ABOVE THE INLET PROTECTION IS PERMANENTLY STABILIZED, REMOVE THE PROTECTION AND FILL AND STABILIZE THE CHANNEL TO BLEND WITH THE NATURAL SURFACE.

PERSPECTIVE VIEW
NO SCALE



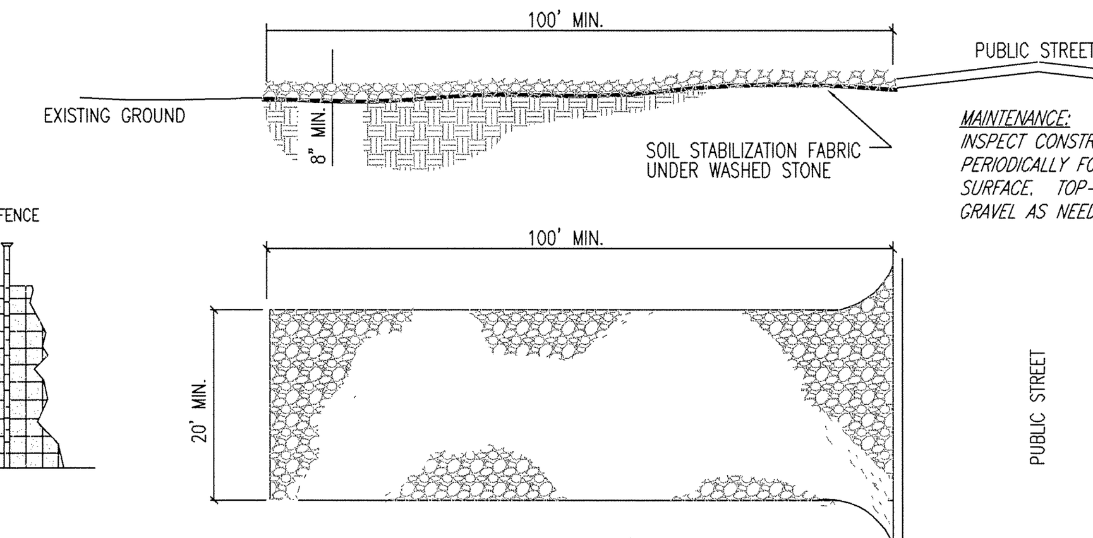
SECTION THRU CATCH BASIN, FILTER AND CULVERT PIPE
NO SCALE

6 / C-9 HORSESHOE INLET PROTECTION
NOT TO SCALE



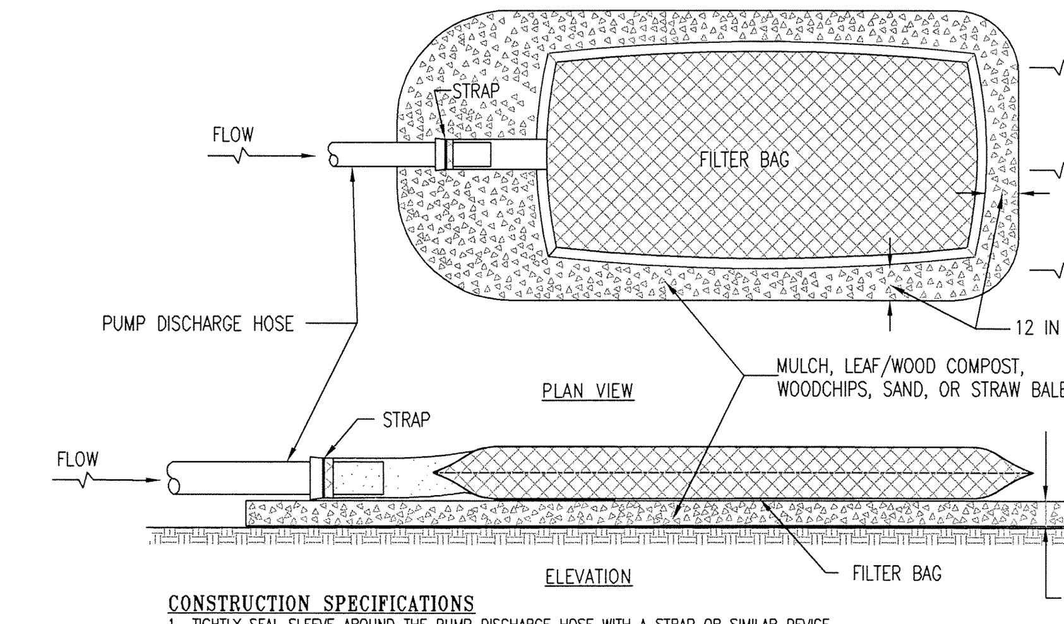
3 / C-9 SILT FENCE OUTLET
NOT TO SCALE

GENERAL NOTES:
1. A STABILIZED PAD OF CRUSHED STONE SHALL BE LOCATED WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE TO OR FROM A PUBLIC STREET.
2. STONE TO BE 2"-3" WASHED STONE
3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC STREETS OR EXISTING PAVEMENT. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
4. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC STREETS MUST BE REMOVED IMMEDIATELY. WHEN NECESSARY WHEELS MUST BE CLEANED TO PREVENT SEDIMENT PRIOR TO ENTERING A PUBLIC STREET. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN.
5. FILTER FABRIC SHALL BE MIRAFI 500 OR EQUAL.
6. ENTRANCE SHALL BE A MINIMUM OF 20' IN WIDTH OR THE WIDTH OF THE EXIT, WHICHEVER IS GREATER.



MAINTENANCE:
INSPECT CONSTRUCTION ENTRANCE PERIODICALLY FOR CONDITION OF SURFACE. TOP-DRESS WITH NEW GRAVEL AS NEEDED.

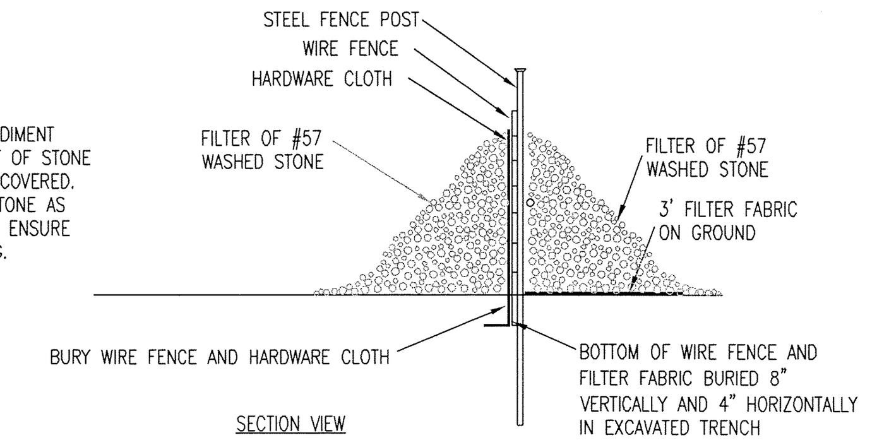
4 / C-9 CONSTRUCTION ENTRANCE
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS
1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE
6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

11 / C-9 FILTER BAG
NOT TO SCALE

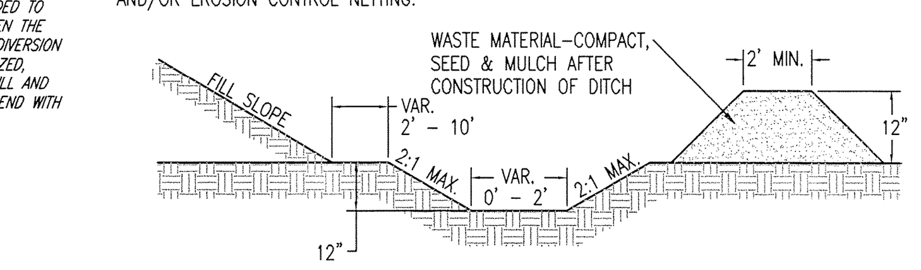
NOTES:
1. REMOVE SEDIMENT WHEN HALF OF STONE OUTLET IS COVERED.
2. REPLACE STONE AS NEEDED TO ENSURE DEWATERING.



MAINTENANCE NOTES:
1. *FILTER OUTLETS SHALL BE INSPECTED BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS NEEDED SHALL BE MADE IMMEDIATELY.*
2. *THE STONE SHALL BE REPLACED PROMPTLY AFTER ANY EVENT THAT HAS CLOGGED OR REMOVED IT.*
3. *SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH HALF THE HEIGHT OF THE BARRIER. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OUTLET IS REMOVED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.*

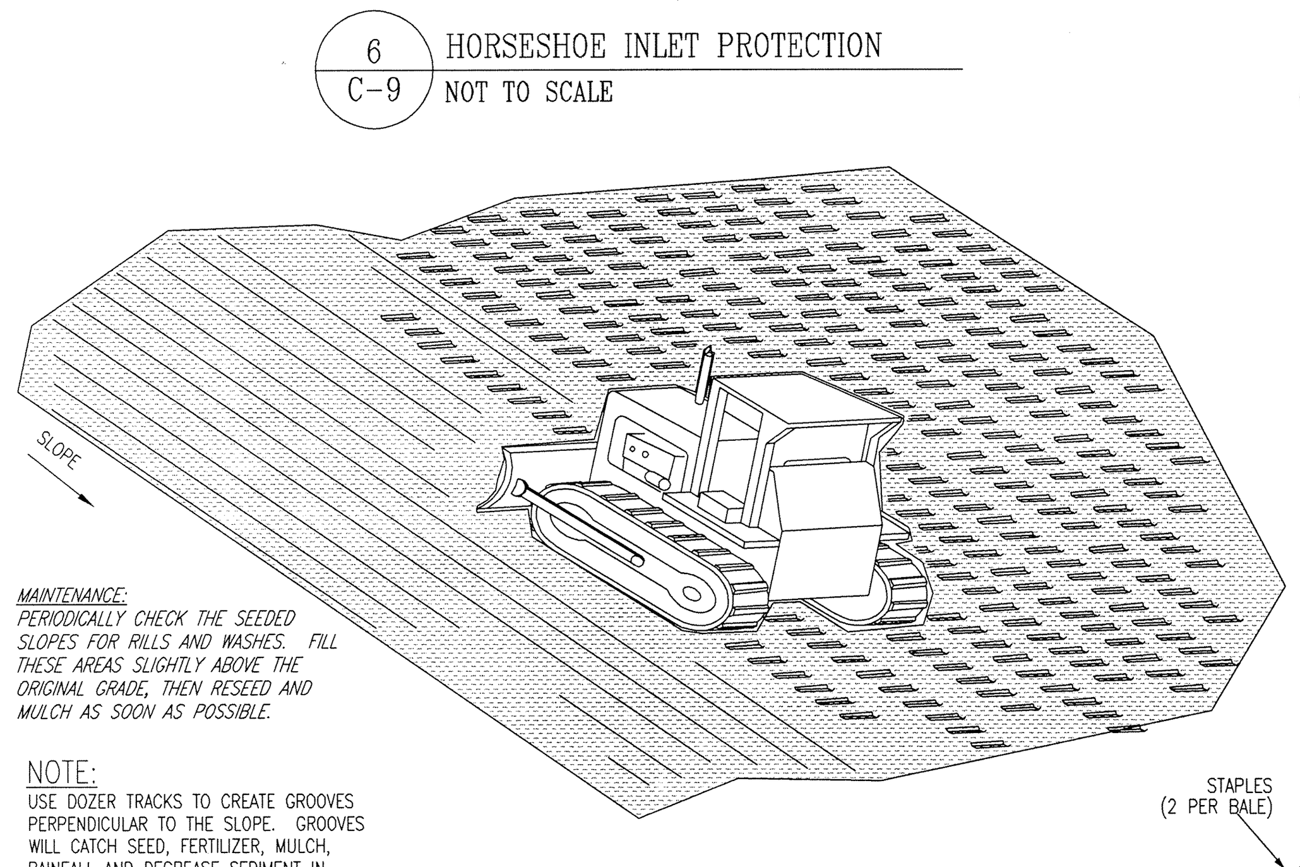
MAINTENANCE:
INSPECT TEMPORARY DIVERSION DITCH ONCE A WEEK AND AFTER EVERY RAINFALL. IMMEDIATELY REMOVE SEDIMENT FROM THE FLOW AREA AND REPAIR THE DIVERSION. REPAIR THE CHANNEL LINING AS NECESSARY PER THE MANUFACTURER'S INSTALLATION REQUIREMENTS. CHECK OUTLETS AND MAKE TIMELY REPAIRS AS NEEDED TO AVOID GULLY FORMATION. WHEN THE AREA ABOVE THE TEMPORARY DIVERSION DITCH IS PERMANENTLY STABILIZED, REMOVE THE DIVERSION AND FILL AND STABILIZE THE CHANNEL TO BLEND WITH THE NATURAL SURFACE.

NOTES:
1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
4. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAC, AND/OR EROSION CONTROL NETTING.



CROSS SECTIONAL VIEW

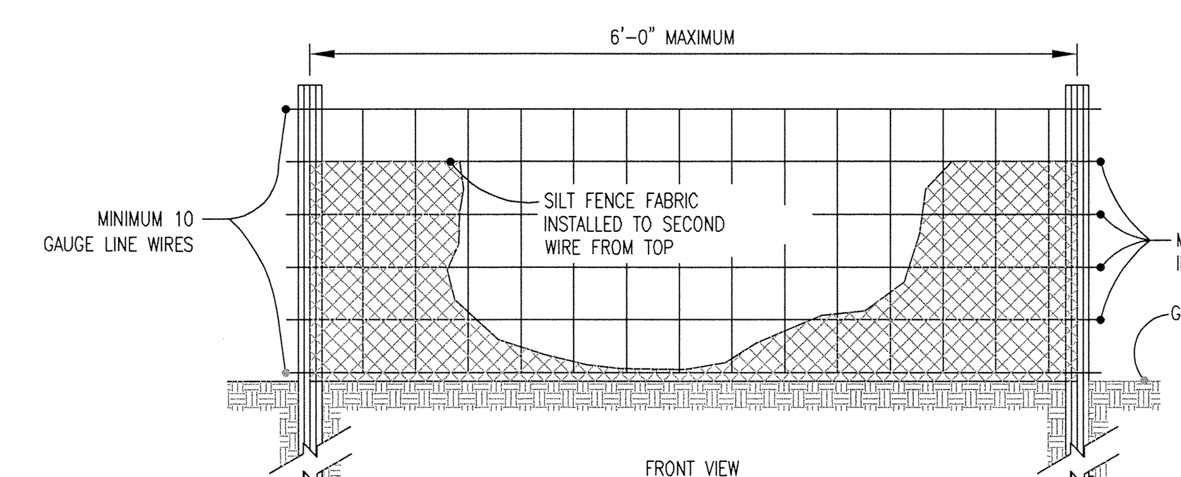
2 / C-9 TEMPORARY DIVERSION DITCH
NOT TO SCALE



MAINTENANCE:
PERIODICALLY CHECK THE SEEDED SLOPES FOR RILLS AND WASHES. FILL THESE AREAS SLIGHTLY ABOVE THE ORIGINAL GRADE, THEN RESEED AND MULCH AS SOON AS POSSIBLE.

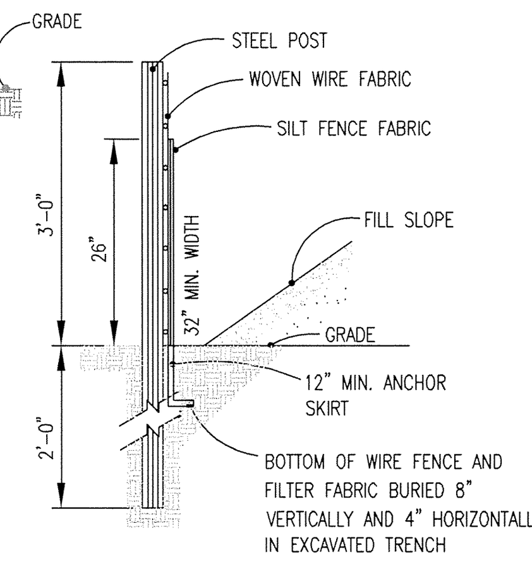
NOTE:
USE DOZER TRACKS TO CREATE GROOVES PERPENDICULAR TO THE SLOPE. GROOVES WILL CATCH SEED, FERTILIZER, MULCH, RAINFALL AND DECREASE SEDIMENT IN RUNOFF.

7 / C-9 SLOPE TRACKING DETAIL
NOT TO SCALE



NOTE:
USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.

REMOVE SEDIMENT DEPOSITED AS NEEDED TO PROVIDE STORAGE VOLUME FOR THE NEXT RAIN AND TO REMOVE PRESSURE ON THE SILT FENCE.



MAINTENANCE NOTES:
1. *FILTER OUTLETS SHALL BE INSPECTED BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS NEEDED SHALL BE MADE IMMEDIATELY.*
2. *THE STONE SHALL BE REPLACED PROMPTLY AFTER ANY EVENT THAT HAS CLOGGED OR REMOVED IT.*
3. *SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH 6 INCHES. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OUTLET IS REMOVED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.*

5 / C-9 SILT FENCE
NOT TO SCALE

TEMPORARY SEEDING SPECIFICATIONS/SCHEDULE

Date	Type	Planting Rate
March - Oct.	Browntop Millet	40 lbs/acre
Nov. - Feb.	Winter Rye	120 lbs/acre

SEEDING SPECIFICATIONS/SCHEDULE

FOR SHOULDERS, SIDE DITCHES, SLOPES (MAX 3:1)

Date	Type	Planting Rate
Aug 15 - Nov 1	Tall Fescue	300 lbs/acre
Nov 1 - Mar 1	Tall Fescue & Abruzzi Rye	300 lbs/acre
Mar 1 - Apr 15	Tall Fescue	300 lbs/acre
Apr 14 - Jun 30	Hulled Common Bermuda Grass	25 lbs/acre
Jul 1 - Aug 15	Tall Fescue & Browntop Millet or Sorghum-Sudan Hybrids	240 lbs/acre-Tall Fescue; 35 lbs/acre Browntop Millet 30 lbs/acre Sorghum-Sudan Hybrids

FOR SHOULDERS, SIDE DITCHES, SLOPES (3:1 - 2:1)

Date	Type	Planting Rate
Mar 1 - Jun 1	Sericea Lespedeza (scarified) & use the following combinations:	50 lbs/acre (Serica Lespedeza)
Mar 1 - Apr 15	Add Tall Fescue	240 lbs/acre
Mar 1 - Jun 30	Or add Julled Common Bermuda Grass	25 lbs/acre
Jun 1 - Sep 1	Tall Fescue & Browntop Millet or Sorghum-Sudan Hybrids	240 lbs/acre Tall Fescue 35 lbs/acre Browntop Millet 30 lbs/acre Sorghum-Sudan Hybrids
Sep 1 - Mar 1	Sericea Lespedeza (Unhulled-Unscarafied & Tall Fescue	70 lbs/acre Sericea Lespedeza 240 lbs/acre Tall Fescue
Nov 1 - Mar 1	Add Abruzzi Rye	25 lbs/acre

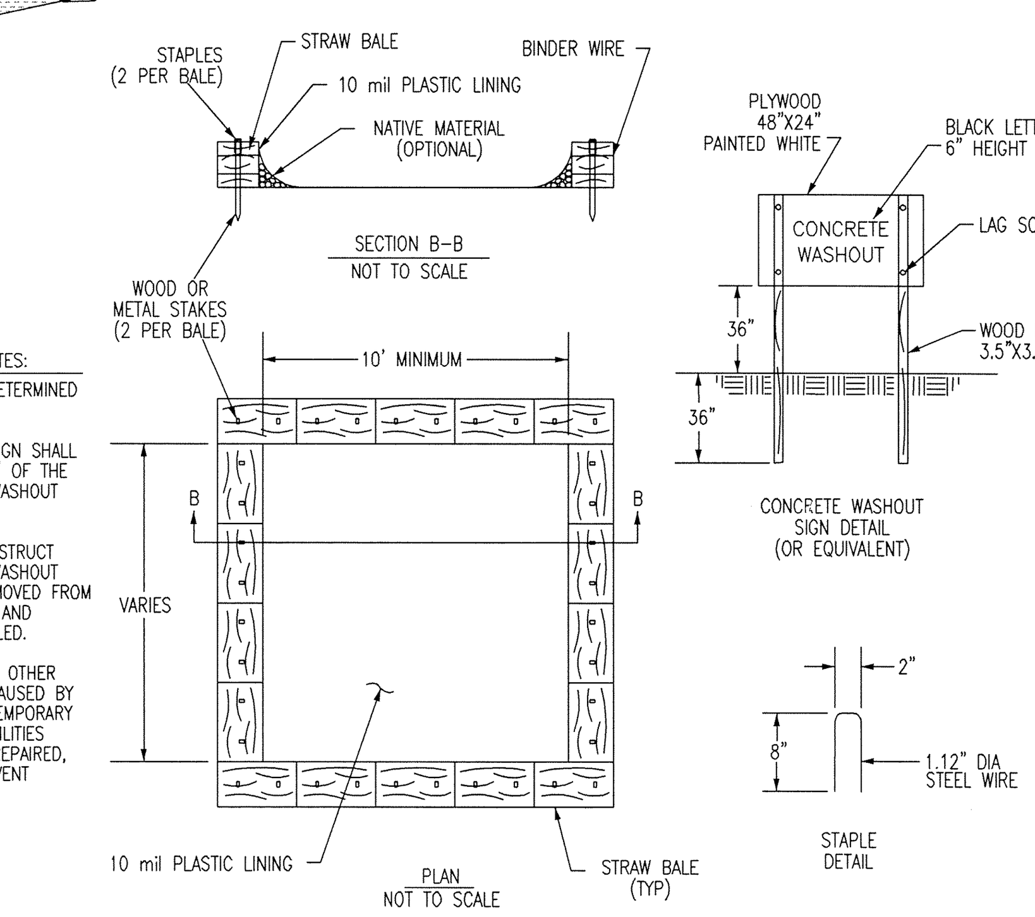
CONSULT S&EC ENGINEER FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTERNATIVES FOR VEGETATION OF DENUDED AREAS. THE ABOVE VEGETATION RATES ARE THOSE THAT DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.

*** TEMPORARY: RESEED ACCORDING TO OPTIMUM SEASON FOR DESIRED PERMANENT VEGETATION. DO NOT ALLOW TEMPORARY COVER TO GROW MORE THAN 12" IN HEIGHT BEFORE MOWING; OTHERWISE, FESCUE MAY BE SHADED OUT.

SEEDBED PREPARATION:
1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL THREE INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO SIX INCHES DEEP.
3. REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS, LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE SEEDING MIXTURE).
5. CONTINUE TILLAGE UNITL A WELL-PULVERIZED, FIRM, REASONABLY UNIFORM SEEDBED IS PREPARED FOUR TO SIX INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE MORE THAN 60% DAMAGED, RE-ESTABLISH FOLLOWING THE ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
9. CONSULT S&EC ENVIRONMENTAL ENGINEERS ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

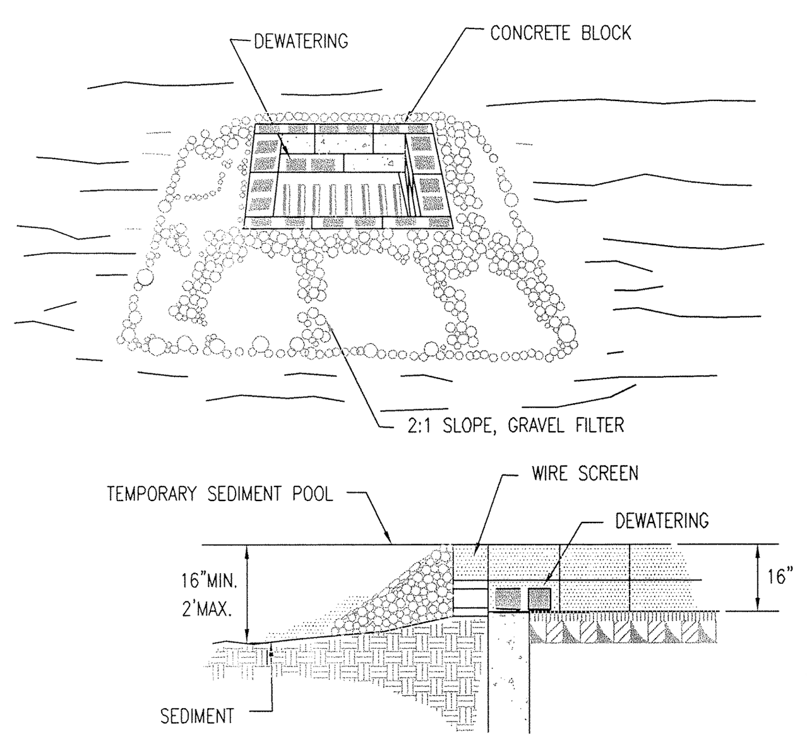
SEEDING MIXTURE:

AGRICULTURE LIMESTONE:	2 TONS/ACRE (3 TONS/ACRE IN CLAY SOILS)
FERTILIZER:	1,000 LBS/ACRE - 10-10-10
SUPERPHOSPHATE:	500 LBS/ACRE - 20% ANALYSIS
MULCH:	2 TONS/ACRE - SMALL GRAIN STRAW
ANCHOR:	ASPHALT EMULSION AT 400 GALS/ACRE



CONCRETE WASH AREA NOTES:
1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.

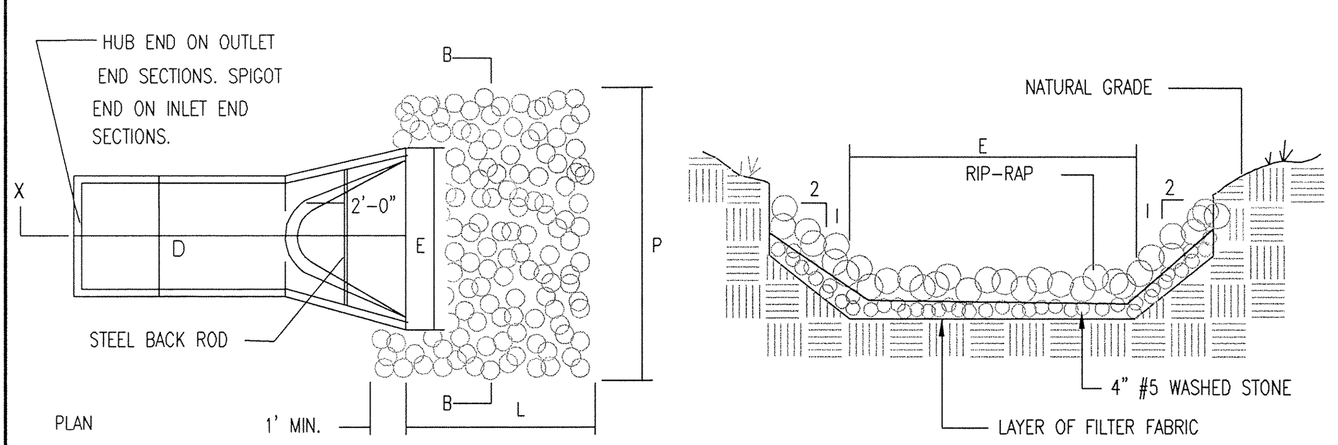
10 / C-9 CONCRETE WASH AREA
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS
1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE ON THE BOTTOM ROW TO ALLOW POOL DRAINAGE. THE FOUNDATION SHOULD BE EXCAVATED AT LEAST 2 INCH BELOW THE CREST OF THE STORM DRAIN. PLACE THE BOTTOM ROW OF THE BLOCK AGAINST THE EDGE OF THE STORM DRAIN FOR LATERAL SUPPORT AND TO AVOID WASHOUTS WHEN OVERFLOW OCCURS. IF NEEDED, GIVE LATERAL SUPPORT TO SUBSEQUENT ROWS BY PLACING 2x4 WOOD STUDS THROUGH BLOCK OPENINGS.
2. CAREFULLY FIT HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2-INCH OPENING OVER ALL BLOCK OPENING TO HOLD GRAVEL IN PLACE.
3. USE CLEAN GRAVEL,3/4-TO 1/2-INCH IN DIAMETER, PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER AND SMOOTH IT TO AN EVEN GRADE. DOT #57 WASHED STONE IS RECOMMENDED.

MAINTENANCE SPECIFICATIONS
INSPECT INLETS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT. CLEAR THE MESH WIRE OF ANY DEBRIS OR OTHER OBJECTS TO PROVIDE ADEQUATE FLOW FOR SUBSEQUENT RAINS. TAKE CARE NOT TO DAMAGE OR UNDERCUT THE WIRE MESH DURING SEDIMENT REMOVAL. REPLACE STONE AS NEEDED.

8 / C-9 TEMPORARY INLET PROTECTION
NOT TO SCALE



NOTES
RIPRAP SHOULD EXTEND UP BOTH SIDES OF THE APRON AND AROUND THE END OF THE PIPE OR CULVERT AT THE DISCHARGE OUTLET AT A MAXIMUM SLOPE OF 2:1 AND A HEIGHT NOT LESS THAN TWO THIRDS THE PIPE DIAMETER OR CULVERT HEIGHT.

THERE SHALL BE NO OVERFLOW FROM THE END OF THE APRON TO THE SURFACE OF THE RECEIVING CHANNEL. THE AREA TO BE PAVED OR RIP-RAPPED SHALL BE UNDERCUT SO THAT THE INVERT OF THE APRON SHALL BE AT THE SAME GRADE (FLUSH) WITH THE SURFACE OF THE RECEIVING CHANNEL. THE APRON SHALL HAVE A CUTOFF OR TOE WALL AT THE DOWNSTREAM END.

MAXIMUM TAPER TO RECEIVING CHANNEL 5:1.

THE WIDTH OF THE END OF THE APRON SHALL BE EQUAL TO THE BOTTOM WIDTH OF THE RECEIVING CHANNEL.

ALL SUBGRADE STRUCTURE TO BE COMPACTED TO 95% OR GREATER.

THE PLACING OF FILL, EITHER LOOSE OR COMPACTED IN THE RECEIVING CHANNEL SHALL NOT BE ALLOWED.

NO BENDS OR CURVES IN THE HORIZONTAL ALIGNMENT OF THE APRON WILL BE PERMITTED.

MAINTENANCE:
INSPECT RIP-RAP APRON AT REGULAR INTERVALS AS WELL AS AFTER MAJOR RAINS, AND MAKE REPAIRS PROMPTLY. GIVE SPECIAL ATTENTION TO THE POINT WHERE CONCENTRATED STORM WATER FROM DRAINAGE PIPE SYSTEMS ENTER THE APRON. CAREFULLY CHECK STABILITY OF RIP-RAP AND LOOK FOR INDICATIONS OF PIPING, SCOUR HOLES, OR BANK FAILURES. MAKE REPAIRS IMMEDIATELY.

9 / C-9 RIP-RAP APRON
NOT TO SCALE

Rip-Rap Apron#1

	DIMENSIONS	
ENTRY WIDTH	3.0	FT
LENGTH	6.0	FT
EXIT WIDTH	7.0	FT
MIN. THICKNESS	22	IN
MIN. STONE DIAMETER	6	IN
STONE CLASS	B	

Rip-Rap Apron#2

	DIMENSIONS	
ENTRY WIDTH	3.0	FT
LENGTH	5.0	FT
EXIT WIDTH	5.0	FT
MIN. THICKNESS	22	IN
MIN. STONE DIAMETER	6	IN
STONE CLASS	B	

Rip-Rap Apron#3

	DIMENSIONS	
ENTRY WIDTH	3.0	FT
LENGTH	5.0	FT
EXIT WIDTH	5.0	FT
MIN. THICKNESS	22	IN
MIN. STONE DIAMETER	6	IN
STONE CLASS	B	

Rip-Rap Apron#4

	DIMENSIONS	
ENTRY WIDTH	3.0	FT
LENGTH	5.0	FT
EXIT WIDTH	5.0	FT
MIN. THICKNESS	22	IN
MIN. STONE DIAMETER	6	IN
STONE CLASS	B	

Rip-Rap Apron#5

	DIMENSIONS	
ENTRY WIDTH	3.0	FT
LENGTH	5.0	FT
EXIT WIDTH	5.0	FT
MIN. THICKNESS	22	IN
MIN. STONE DIAMETER	6	IN
STONE CLASS	B	

Rip-Rap Apron#6

	DIMENSIONS	
ENTRY WIDTH	3.8	FT
LENGTH	7.5	FT
EXIT WIDTH	8.8	FT
MIN. THICKNESS	22	IN
MIN. STONE DIAMETER	22	IN
STONE CLASS	B	

Rip-Rap Apron#7

	DIMENSIONS	
ENTRY WIDTH	3.8	FT
LENGTH	7.5	FT
EXIT WIDTH	8.8	FT
MIN. THICKNESS	22	IN
MIN. STONE DIAMETER	6	IN
STONE CLASS	B	

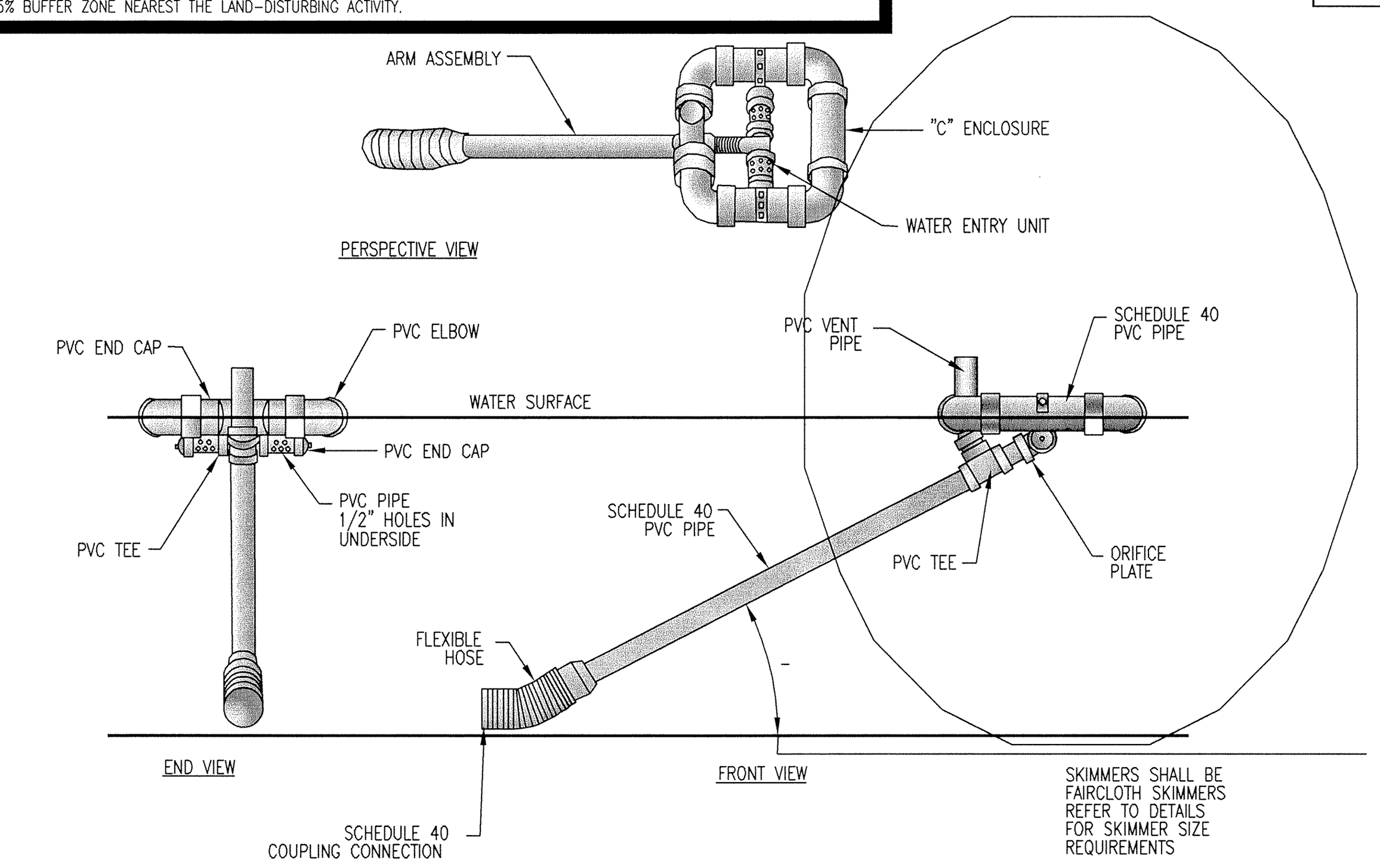
SEDIMENT BASIN REQUIREMENTS:
SEDIMENT BASINS AND TRAPS SHALL MEET THE FOLLOWING REQUIREMENTS:
A) OUTLET STRUCTURES SHALL BE UTILIZED THAT WITHDRAW WATER FROM THE SURFACE.
B) FOR BASINS OR TRAPS THAT HAVE A DRAINAGE AREA OF LESS THAN 1.0 ACRE, DRAW-DOWN DESIGNS SPECIFIED IN THE DIVISION OF LAND RESOURCES OR DELEGATED LOCAL PROGRAM REQUIREMENTS ARE ACCEPTABLE.
C) CHEMICAL TREATMENT:
   1) ALL TREATMENT CHEMICALS MUST BE STORED IN LEAK-PROOF CONTAINERS THAT ARE KEPT UNDER STORM-RESISTANT COVER OR SURROUNDED BY SECONDARY CONTAINMENT STRUCTURES DESIGNED TO PROTECT ADJACENT SURFACE WATERS.
   2) ALL TREATMENT CHEMICALS MUST BE USED IN ACCORDANCE WITH DOSING SPECIFICATIONS AND APPLICATION RATES PROVIDED BY THE MANUFACTURER, SUPPLIER AND AS SPECIFIED BY THE DIVISION OF WATER QUALITY.
   3) THE PERMITTEE MUST ONLY USE CHEMICALS THAT HAVE BEEN APPROVED BY THE NC DIVISION OF WATER QUALITY AND POSTED ON THEIR "NORTH CAROLINA DIVISION OF WATER QUALITY APPROVED PAMS/FLOCCULANTS LIST" FOUND ON THEIR WEB SITE AT: http://portal.ncdenr.org/web/wq/ws/su.
   4) THE PERMITTEE MUST ROUTE STORMWATER TREATED WITH POLYMERS, FLOCCULANTS, OR OTHER TREATMENT CHEMICALS THROUGH SEDIMENT TRAPPING, FILTERING, AND/OR SETTLING DEVICES(S) TO ENSURE ADEQUATE REMOVAL OF SEDIMENT FLOCCULENT PRIOR TO DISCHARGE TO SURFACE WATERS.
D) DISCHARGE REQUIREMENT - DISCHARGES MUST MEET THE STATUTORY REQUIREMENTS OF THE SEDIMENT POLLUTION CONTROL ACT AND UTILIZE THE PROVISIONS OF SECTION 6.74 OF THE EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL TO ASSURE THAT BUFFERS AND VEGETATED AREAS WILL BE USED TO REDUCE THE POTENTIAL FOR VISIBLE SILTATION OUTSIDE OF THE 25% BUFFER ZONE NEAREST THE LAND-DISTURBING ACTIVITY.

SKIMMER CONTACT INFORMATION

J.W. FAIRCLOTH & SONS, INC.
P.O. BOX 757
HILLSBOROUGH, NC 27278
919-732-1244
919-732-1266 FX

Skimmer Basin

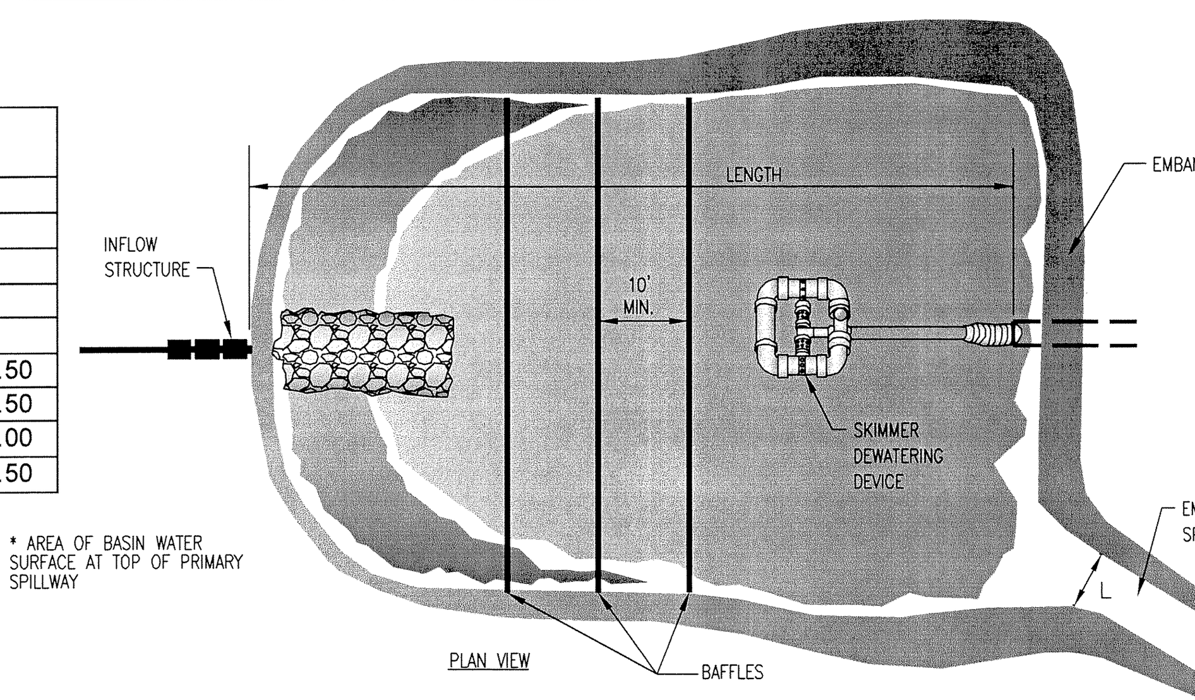
SURFACE AREA REQUIRED		1,755		SF	
SURFACE AREA PROVIDED		1,760		SF	
VOLUME REQUIRED		2,700		CF	
VOLUME PROVIDED		2,888		CF	
STORAGE DEPTH		2.0		FT	
STORAGE ELEVATION	55	x	32	FT	404.50
TOP OF DAM	63	x	40	FT	406.50
EMGY. SPILLWAY LENGTH		10		FT	405.00
BOTTOM OF BASIN	47	x	24	FT	402.50



SKIMMERS SHALL BE FAIRCLOTH SKIMMERS REFER TO DETAILS FOR SKIMMER SIZE REQUIREMENTS

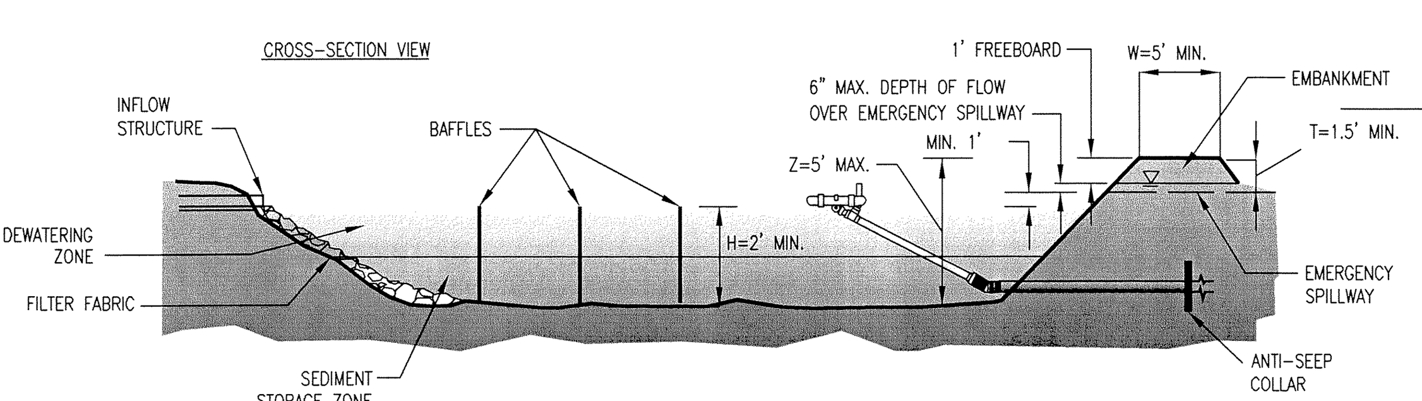
STANDARD SKIMMER DETAIL

SKIMMER SIZE	SKIMMER ORIFICE RADIUS	SKIMMER ORIFICE DIAMETER
1.5 IN	*0.6 IN*	*1.1 IN*



* AREA OF BASIN WATER SURFACE AT TOP OF PRIMARY SPILLWAY

CROSS-SECTION VIEW



DATA BLOCK

BASIN	DRAINAGE AREA (ACRES)	DENUDED AREA (ACRES)	Q_{10}	BASIN VOLUME REQUIRED (CUBIC FT.)	BASIN VOLUME PROVIDED (CUBIC FT.)	BASIN SURFACE AREA REQUIRED (SQ FT.)	BASIN SURFACE AREA PROVIDED (SQ FT.)	CLEANOUT DEPTH (FT.) H/2	H (FEET)	Z (FEET)	L (FEET)	T (FEET)	W (FEET)
BASIN	*1.5*	*1.5*	*5.4*	*2,700*	*2,888*	*1,755*	*1,760*	*1.0*	*2.0*	*4.0*	*10*	*1.5*	*5.0*

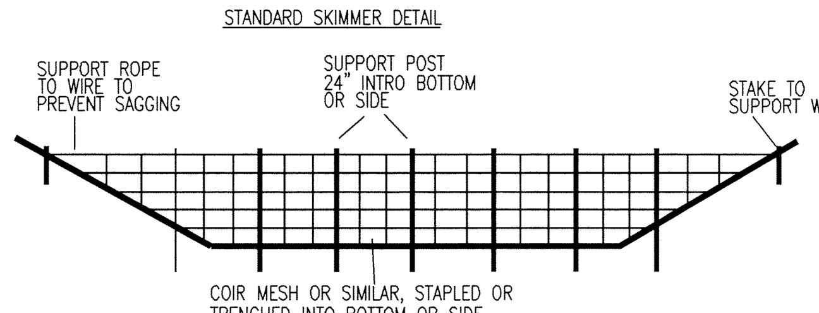
NOTES:
1. BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
2. MOST OF THE SEDIMENT WILL ACCUMULATE IN THE 1ST BAY, WHICH SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.
3. PROVIDE 3 BAFFLES (USE TWO IF LESS THAN 20 FEET IN LENGTH). PROVIDE 5 BAFFLES FOR DRAINAGE AREAS GREATER THAN 10 ACRES.
4. BAFFLE SHALL BE 700 G/M2 COIR EROSION BLANKET.
5. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERMS
6. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH RAINFALL

BAFFLE MAINTENANCE
INSPECT BAFFLES AT LEAST ONE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.

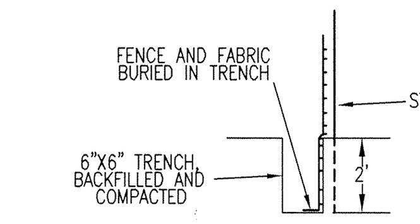
BE SURE TO MAINTAIN ACCESS TO THE BAFFLES. SHOULD THE FABRIC OF A BAFFLE COLLAPSE, TEAR, DECOMPOSE, OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.

REMOVE SEDIMENT DEPOSITS WHEN IT REACHES HALF FULL TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE BAFFLES. TAKE CARE TO AVOID DAMAGING THE BAFFLES DURING CLEANOUT. SEDIMENT DEPTH SHOULD NEVER EXCEED HALF THE DESIGNED STORAGE DEPTH.

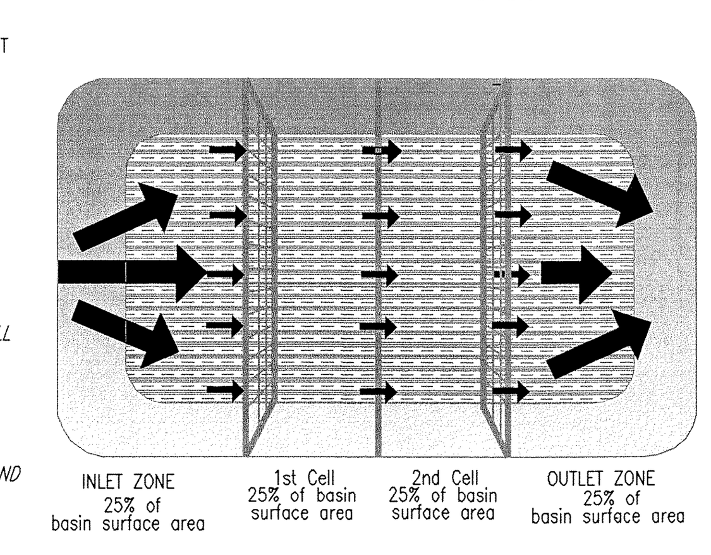
AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED, REMOVE ALL BAFFLE MATERIALS AND UNSTABLE SEDIMENT DEPOSITS, BRING THE AREA TO GRADE, AND STABILIZE IT.



CROSS SECTION



SECTION VIEW AT OPENING



PLAN VIEW

SKIMMER BASIN MAINTENANCE
INSPECT SKIMMER SEDIMENT BASIN AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (ONE-HALF INCH OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY. REMOVE SEDIMENT AND RESTORE THE BASIN TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT ACCUMULATES TO ONE-HALF THE HEIGHT OF THE FIRST BAFFLE. PULL THE SKIMMER TO ONE SIDE SO THAT THE SEDIMENT UNDERNEATH IT CAN BE EXCAVATED. EXCAVATE THE SEDIMENT FROM THE ENTIRE BASIN, NOT JUST AROUND THE SKIMMER OR THE FIRST CELL. MAKE SURE VEGETATION GROWING IN THE BOTTOM OF THE BASIN DOES NOT HOLD DOWN THE SKIMMER.

REPAIR THE BAFFLES IF THEY ARE DAMAGED. RE-ANCHOR THE BAFFLES IF WATER IS FLOWING UNDERNEATH OR AROUND THEM.

IF THE SKIMMER IS CLOGGED WITH TRASH AND THERE IS WATER IN THE BASIN, USUALLY JERKING ON THE ROPE WILL MAKE THE SKIMMER BOB UP AND DOWN AND DISLODGE THE DEBRIS AND RESTORE FLOW. IF THIS DOES NOT WORK, PULL THE SKIMMER OVER TO THE SIDE OF THE BASIN AND REMOVE THE DEBRIS. ALSO CHECK THE ORIFICE INSIDE THE SKIMMER TO SEE IF IT IS CLOGGED; IF SO REMOVE THE DEBRIS.

IF THE SKIMMER ARM OR BARREL PIPE IS CLOGGED, THE ORIFICE CAN BE REMOVED AND THE OBSTRUCTION CLEARED WITH A PLUMBER'S SNAKE OR BY FLUSHING WITH WATER. BE SURE AND REPLACE THE ORIFICE BEFORE REPOSITIONING THE SKIMMER.

CHECK THE FABRIC LINED SPILLWAY FOR DAMAGE AND MAKE ANY REQUIRED REPAIRS WITH FABRIC THAT SPANS THE FULL WIDTH OF THE SPILLWAY. CHECK THE EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. MAKE ALL NECESSARY REPAIRS IMMEDIATELY. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE SKIMMER AND POOL AREAS.

FREEZING WEATHER CAN RESULT IN ICE FORMING IN THE BASIN. SOME SPECIAL PRECAUTIONS SHOULD BE TAKEN IN THE WINTER TO PREVENT THE SKIMMER FROM PLUGGING WITH ICE.

CONSTRUCTION SPECIFICATIONS:
1. CLEAR, GRUB, AND STRIP THE AREA UNDER THE EMBANKMENT OF ALL VEGETATION AND ROOT MAT. REMOVE ALL SURFACE SOIL CONTAINING HIGH AMOUNTS OF ORGANIC MATTER, AND STOCKPILE OR DISPOSE OF IT PROPERLY. HAUL ALL OBJECTIONABLE MATERIAL TO THE DESIGNATED DISPOSAL AREA.
2. ENSURE THAT FILL MATERIAL FOR THE EMBANKMENT IS FREE OF ROOTS, WOODY VEGETATION, ORGANIC MATTER, AND OTHER OBJECTIONABLE MATERIAL. PLACE THE FILL IN LIFTS NOT TO EXCEED 9 INCHES, AND MACHINE COMPACT IT. OVER FILL THE EMBANKMENT 6 INCHES TO ALLOW FOR SETTLEMENT.
3. CONSTRUCT THE OUTLET SECTION IN THE EMBANKMENT. PROTECT THE CONNECTION BETWEEN THE RIP-RAP AND THE SOIL FROM PIPING BY USING FILTER FABRIC OR A KEYWAY CUTOFF TRENCH BETWEEN THE RIP-RAP STRUCTURE AND SOIL
   - PLACE THE FILTER FABRIC BETWEEN THE RIP-RAP AND THE SOIL. EXTEND THE FABRIC ACROSS THE SPILLWAY FOUNDATION AND SIDES TO THE TOP OF THE DAM; OR
   - EXCAVATE A KEYWAY TRENCH ALONG THE CENTER LINE OF THE SPILLWAY FOUNDATION EXTENDING UP THE SIDES TO THE HEIGHT OF THE DAM. THE TRENCH SHOULD BE AT LEAST 2 FEET DEEP AND 2 FEET WIDE WITH 1:1 SIDE SLOPES.
4. CLEAR THE POND AREA BELOW THE ELEVATION OF THE CREST OF THE SPILLWAY TO FACILITATE SEDIMENT CLEANOUT.
5. ALL CUT AND FILL SLOPES SHOULD BE 2:1 OR FLATTER.
6. ENSURE THAT THE STONE (DRAINAGE) SECTION OF THE EMBANKMENT HAS A MINIMUM BOTTOM WIDTH OF 3 FEET AND A MAXIMUM SIDE SLOPE OF 1:1 THAT EXTENDS TO THE BOTTOM OF THE SPILLWAY SECTION.
7. CONSTRUCT THE MINIMUM FINISHED STONE SPILLWAY BOTTOM WIDTH, AS SHOWN ON THE PLANS, WITH 2:1 SIDE SLOPES EXTENDING TO THE TOP OF THE OVER FILLED EMBANKMENT. KEEP THE THICKNESS OF THE SIDES OF THE SPILLWAY OUTLET STRUCTURE AT A MINIMUM OF 21 INCHES. THE WEIR MUST BE LEVEL AND CONSTRUCTED TO GRADE TO ASSURE DESIGN CAPACITY.
8. MATERIAL USED IN THE STONE SECTION SHOULD BE A WELL-GRADED MIXTURE OF STONE WITH A D50 SIZE OF 9 INCHES (CLASS B CONTROL STONE IS RECOMMENDED) AND A MAXIMUM STONE SIZE OF 14 INCHES. THE STONE MAY BE MACHINE PLACED AND THE SMALLER STONES WORKED INTO THE VOIDS OF THE LARGER STONES. THE STONE SHOULD BE HARD, ANGULAR, AND HIGHLY WEATHER-RESISTANT.
9. DISCHARGE INLET WATER INTO THE BASIN IN A MANNER TO PREVENT EROSION. USE TEMPORARY SLOPE DRAINS OR DIVERSIONS WITH OUTLET PROTECTION TO DIVERT SEDIMENT-LADEN WATER TO THE UPPER END OF THE POOL AREA TO IMPROVE BASIN TRAP EFFICIENCY.
10. ENSURE THAT THE STONE SPILLWAY OUTLET SECTION EXTENDS DOWNSTREAM PAST THE TOE OF THE EMBANKMENT UNTIL STABLE CONDITIONS ARE REACHED AND OUTLET VELOCITY IS ACCEPTABLE FOR THE RECEIVING STREAM. KEEP THE EDGES OF THE STONE OUTLET SECTION FLUSH WITH THE SURROUNDING GROUND, AND SHAPE THE CENTER TO CONFINE THE OUTFLOW STREAM.
11. DIRECT EMERGENCY BYPASS TO NATURAL, STABLE AREAS. LOCATE BYPASS OUTLETS SO THAT FLOW WILL NOT DAMAGE THE EMBANKMENT.
12. STABILIZE THE EMBANKMENT AND ALL DISTURBED AREAS ABOVE THE SEDIMENT POOL AND DOWNSTREAM FROM THE TRAP IMMEDIATELY AFTER CONSTRUCTION.
13. SHOW THE DISTANCE FROM THE TOP OF THE SPILLWAY TO THE SEDIMENT CLEANOUT LEVEL (½ THE DESIGN DEPTH) ON THE PLANS AND MARK IT IN THE FIELD.
14. INSTALL POROUS BAFFLES AS SPECIFIED IN PRACTICE 6.65, POROUS BAFFLES.

1 / C-9 SKIMMER BASIN
NOT TO SCALE

TRIANGLE SITE DESIGN

CONSULTANT:
Triangle Site Design, PLLC
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Raleigh, NC 27609
(919)553-6570
mlowder@trianglesitedesign.com
NC LICENSE #P-0619

SEAL:
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24434 MATTHEW E. LOWDER 2-14-14

DOLLAR GENERAL
US Highway 401
Youngsville, North Carolina
Franklin County

OWNER/DEVELOPER:
GLANDON FOREST EQUITY, LLC
3900 Merton Drive
Suite 210
Raleigh, NC 27609
919-459-2601
919-459-2604 fx
gbarnes@vanguardpg.com

REVISIONS:

2/14/14	*Revised per NCDENR review comments*

LAYOUT COORD:	MEL
PLANNING MGR.	MEL
DRAWING BY:	MEL
DATE:	01/10/14
JOB NUMBER:	004067

TITLE:
EROSION CONTROL DETAILS

SHEET NUMBER:
C-9

COMMENTS:

BMP element:	Potential problem:	How I will remediate the problem
The entire BMP	Trash/debris is present	Remove the trash/debris
The perimeter of the bio-retention cell	Areas of bare soil and/or erosive gullies have formed	Regrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide lime and a one-time fertilizer application Maintain vegetation at a height of approximately six inches.
The inlet device: pipe, stone verge or swale	The pipe is clogged.	Unclog the pipe. Dispose of the sediment off-site.
	The pipe is cracked or otherwise damaged	Replace the pipe.
	Erosion is occurring in the swale.	Regrade the swale if necessary to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.
	Stone verge is clogged or covered in sediment	Remove sediment and clogged stone and replace with clean stone.
The pretreatment area	Flow is bypassing pretreatment area and/or gullies have formed	Re-grade if necessary to route all flow to the pretreament area. Restabilize the area after grading.
	Sediment has accumulated to a depth greater than three inches	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and restabilize the pretreatment area.
	Erosion has occured	Provide additional erosion protection such as reinforced turf matting or rip-rap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand.
The bio-retention cell: Vegetation	Best professional practices show that pruning is needed to maintain optimal plant health.	Prune according to best professional practices
	Plants are dead, diseased or dying.	Determine the source of the problem: soils, hydrology, disease, etc. Remedy the problem and replace plants. Provide a one-time fertilizer application to establish the ground cover if a soil test indicates it is necessary.
	Tree stakes/wires are present six months after planting.	Remove tree stakes/wires (which can kill the tree if not removed)
The bio-retention cell: soils and mulch	Mulch is breaking down or has floated away.	Spot mulch it there are only random void areas. Replace whole mulch layer if necessary. Remove the remaining mulch and replace with triple shredded hard wood mulch at a maximum depth of three inches.
	Soils and/or mulch are clogged with sediment	Determine the extend of the clogging. Remove and replace either just the top layers or the entire media as needed. Dispose of the spoil in an appropriate off-site location. Use triple shredded hard wood mulch at a maximum depth of three inches. Search for the source of the sediment and remedy the problem if possible.
	An annual soil test shows that pH has dropped or heavy metals have accumulated in the soil media	Dolomitic lime shall be applied as recommended per the soil test and toxic soils shall be removed, disposed of properly and replaced with new planting material.
The underdrain system	Clogging has occurred.	Wash out the underdrain system
The drop inlet	Clogging has occured	Clean out the drop inlet. Dispose of the sediment off-site.
	The drop inlet is damaged.	Repair or replace the drop inlet.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the local NC Division of Water Quality Regional Office, or the 401 Oversight Unit at 919-733-1786.

BIO-RETENTION SOIL MIXTURE

ITEM	PERCENT BY VOLUME	MATERIAL
SAND	85%-88%	CONSTRUCTION SAND
FINES	8%-12%	SILT
ORGANIC MATTER	3%-5%	COMPOST/PEAT MOSS
PERMEABILITY	THE PERMEABILITY SHOULD FALL BETWEEN 1 AND 6 INCHES PER HOUR, AND 1-2 INCHES PER HOUR IS PREFERRED.	
PHOSPHOROUS INDEX	RANGE BETWEEN 10 AND 30 (CONFIRM WITH SOIL ANALYSIS REPORT FROM NCDA LAB)	

GRASS SOD NOTE:

GRASS SOD SHALL BE EITHER HYBRID BERMUDA GRASS OR CENTIPEDE THAT HAS BEEN GROWN IN A SOIL THAT IS FREE OF AN IMPERMEABLE LAYER (SUCH AS CLAY).

BIO-RETENTION SOIL MIXTURE:

Bio-retention Soil Mixture (BSM): shall be placed and graded using low ground-contact pressure equipment or by excavators and/or backhoes operating on the ground adjacent to the bio-retention facility. No heavy equipment shall be used within the perimeter of the bio-retention facility before, during, or after the placement of the BSM. The BSM shall be placed in horizontal layers not to exceed 12 inches for the entire area of the bio-retention facility. The BSM shall be compacted by saturating the entire area of the bio-retention facility after each lift of BSM is placed until water flows from the under-drain. Water for saturation shall be applied by spraying or sprinkling. An appropriate sediment control device shall be used to treat any sediment-laden water discharged from the under-drain. If the BSM becomes contaminated during the construction of the facility, the contaminated material shall be removed and replaced with uncontaminated material at no additional cost to the Administration. Final grading of the BSM shall be performed after a 24-hour settling period. Final elevations shall be within 2 inches of elevations shown on the Contract Plans.

The Bio-retention Soil Mixture (BSM) shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bio-retention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations.

Prior to placing the under-drain and the BSM, the bottom of the excavation shall be rota-tilled to a minimum depth of 6 inches to alleviate any compaction of the facility bottom. Any substitute method for rota-tilling must be approved by the Engineer prior to use. Any ponded water shall be removed from the bottom of the facility and the soil shall be friable before rota-tilling.

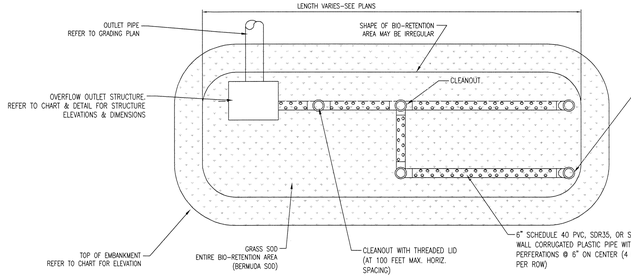
Once the BSM has been placed the entire bio-retention area shall be sodded with grass that has been grown in sandy soils or that has the roots washed clean of any clay or other materials that could clog the function of the bio-retention system.

OPERATION AND MAINTENANCE

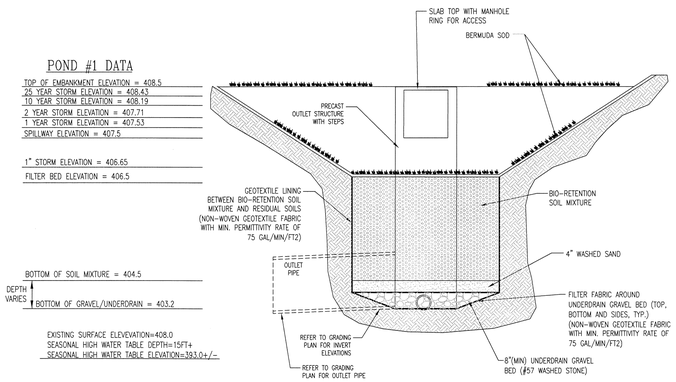
North Carolina storm water rules require annual inspections by the regulating agency of bio-retention areas as a minimum. More frequent inspections by the land owner or system operator are strongly encouraged to ensure the proper operation of bio-retention areas.

A. Rainfall Event
   1. Inspect the basin after every runoff-producing rainfall event.
B. Monthly Inspection
   1. Inspect the basin monthly
   2. Check the bio-retention area side slopes; remove trash and repair eroded areas before the next rainfall event.
   3. Check the vegetative and rock filters for sediment accumulation, erosion and proper operation of the flow spreader mechanism and repair as necessary.
C. Quarterly Inspection
   1. Inspect the collection system (i.e. catch basin, pipes and grass swales) for proper functioning. Clear accumulated trash from basin grates and basin bottoms. Check piping for obstructions.
   2. Check pond inlet pipes for undercutting, replace rip-rap and repair broken pipes.
   3. Reseed grassed swales, including the vegetated filter if applicable, twice a year as necessary. Repair eroded areas immediately.
D. Six Month Inspection
   1. Remove accumulated sediment from the bottom of the outlet structure or other areas where accumulated sediment is noted.
   2. Inspect the embankment taking note of any wet areas where water may be seeping through the soil.
E. General Inspection
   1. Maximum grass height is to be 6in.
   2. No woody vegetation shall be allowed to grow in the bio-retention area.
   3. Debris shall be removed from blocking the inlet and outlet structures and from areas of potential clogging.
   4. Periodic removal of dead vegetation shall be accomplished.
   5. All components of the bio-retention system must be kept in good working order.

1 / C-10 BIO-RETENTION DETAILS
N.T.S.



PLAN VIEW



POND #1 DATA

TOP OF EMBANKMENT ELEVATION = 408.5
25 YEAR STORM ELEVATION = 408.43
10 YEAR STORM ELEVATION = 408.19
2 YEAR STORM ELEVATION = 407.71
1 YEAR STORM ELEVATION = 407.53
SPILLWAY ELEVATION = 407.5

1" STORM ELEVATION = 406.65

FILTER BED ELEVATION = 406.5

BOTTOM OF SOIL MIXTURE = 404.5

DEPTH VARIES

BOTTOM OF GRAVEL/UNDERDRAIN = 403.2

EXISTING SURFACE ELEVEVATION=408.0
SEASONAL HIGH WATER TABLE DEPTH=15FT+
SEASONAL HIGH WATER TABLE ELEVATION=393.0+/-

POND #2 DATA

TOP OF EMBANKMENT ELEVATION = 407.7
25 YEAR STORM ELEVATION = 407.25
10 YEAR STORM ELEVATION = 407.12
2 YEAR STORM ELEVATION = 406.83
1 YEAR STORM ELEVATION = 406.71
SPILLWAY ELEVATION = 406.7

1" STORM ELEVATION = 406.08

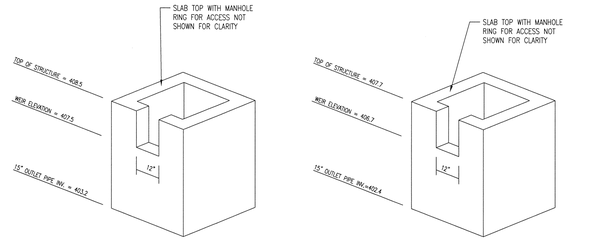
FILTER BED ELEVATION = 405.7

BOTTOM OF SOIL MIXTURE = 403.7

BOTTOM OF GRAVEL/UNDERDRAIN = 402.4

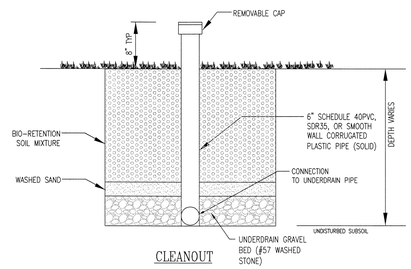
EXISTING SURFACE ELEVEVATION=405.5
SEASONAL HIGH WATER TABLE DEPTH=15FT+
SEASONAL HIGH WATER TABLE ELEVATION=390.5+/-

BIO-RETENTION CONTROL STRUCTURE



OUTLET CONTROL STRUCTURE-POND#1
SCALE: N.T.S.

OUTLET CONTROL STRUCTURE-POND#2
SCALE: N.T.S.



CLEANOUT

NOTE:
A PERMEABILITY SOIL REPORT SHALL BE PROVIDED AFTER BIO-RETENTION SOIL MIXTURE IS IN PLACE - REFER TO STORMWATER MANAGEMENT NOTES FOR REQUIREMENTS.

NOTES:

1. ALL BIO-RETENTION SHALL HAVE AN ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY.
2. ALL DRAINAGE AREAS TO A BIO-RETENTION FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF SOILS OR GRASS SOD.
3. WRAP PERFORATED UNDERDRAIN WITH FILTER FABRIC PRIOR TO BACKFILLING.
4. UNDERDRAIN PIPE SHOULD HAVE 3/8" PERFORATIONS SPACED AT 6" CENTERS, MIN. 4 HOLES PER ROW. MAX SPACING OF UNDERDRAIN PIPE IS 10 FEET ON CENTER.
5. UNDERDRAIN CLEANOUTS MUST EXTEND A MIN. OF 6 INCHES ABOVE TOP SURFACE OF GRASS LAYER, PREFERABLY TO THE TOP OF DESIGN MAXIMUM PONDING DEPTH IN THE BIO-RETENTION BASIN.

BIO-RETENTION CONSTRUCTION SEQUENCE:

Step 1. Construction of the bioretention area may only begin after the contributing drainage area has been stabilized. It may be necessary to block certain curb or other inlets while the bioretention area is being constructed. The proposed site should be checked for existing utilities prior to any excavation.

Step 2. Temporary E&S controls are needed during construction of the bioretention area to divert stormwater away from the bioretention area until it is completed. Maintain erosion control measures in place until bioretention area has been completed. Special protection measures such as erosion control fabrics may be needed to protect vulnerable side slopes from erosion during the construction process.

Step 3. Excavators or backhoes should work from the sides to excavate the bioretention area to its appropriate design depth and dimensions. Excavating equipment should have scoops with adequate reach so they do not have to sit inside the footprint of the bioretention area. Contractors should use a cell construction approach in larger bioretention basins, whereby the basin is split into 500 to 1,000 sq. ft. temporary cells with a 10-15 foot earth bridge in between, so that cells can be excavated from the side.

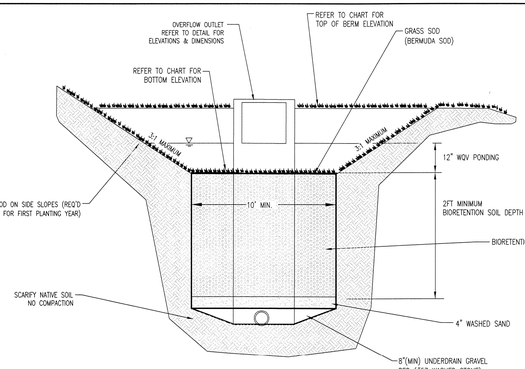
Step 4. It may be necessary to rip the bottom soils to a depth of 6 to 12 inches to promote greater infiltration.

Step 5. Place geotextile fabric on the sides of the bioretention area with a 6-inch overlap on the sides. Place the appropriate depth of stone on the bottom, install the perforated underdrain pipe, place stone above the underdrain pipe, and add sand layer between the underdrain and the soil media layer.

Step 6. Deliver the soil media from an approved vendor, and store it on an adjacent impervious area or plastic sheeting. Apply the media in 12-inch lifts until the desired top elevation of the bioretention area is achieved. Wait a few days to check for settlement, and add additional media, as needed, to achieve the design elevation.

Step 7. Install the vegetation, and water accordingly.

Step 8. Coordinate with inspector and engineer to conduct the final construction inspection. Upon completion of bioretention facility remove temporary erosion control measures and complete final stabilization of the project.



BIO-RETENTION CROSS-SECTION

STORMWATER MANAGEMENT DATA

RIVER BASIN:	TAR-PAMLICO
8-DIGIT HUC#:	03020101
12-DIGIT HUC#:	030201010404
HUC NAME:	CROOKED CREEK
RECEIVING STREAM NAME:	UT CLIFTONS POND TO CROOKED CREEK
INDEX #	28-30-1
CLASS	C;NSW
BIO-RETENTION POND#1:	
DRAINAGE AREA=	0.85AC (37,030SF)
IMPERVIOUS AREA=	0.61AC (26,515SF)
WATER QUALITY VOLUME REQUIRED=	2,147CF
WATER QUALITY VOLUME PROVIDED=	2,210CF
BIO-RETENTION POND#2:	
DRAINAGE AREA=	0.25AC (10,890SF)
IMPERVIOUS AREA=	0.20AC (8,710SF)
WATER QUALITY VOLUME REQUIRED=	699CF
WATER QUALITY VOLUME PROVIDED=	720CF

STORMWATER MANAGEMENT NOTES:

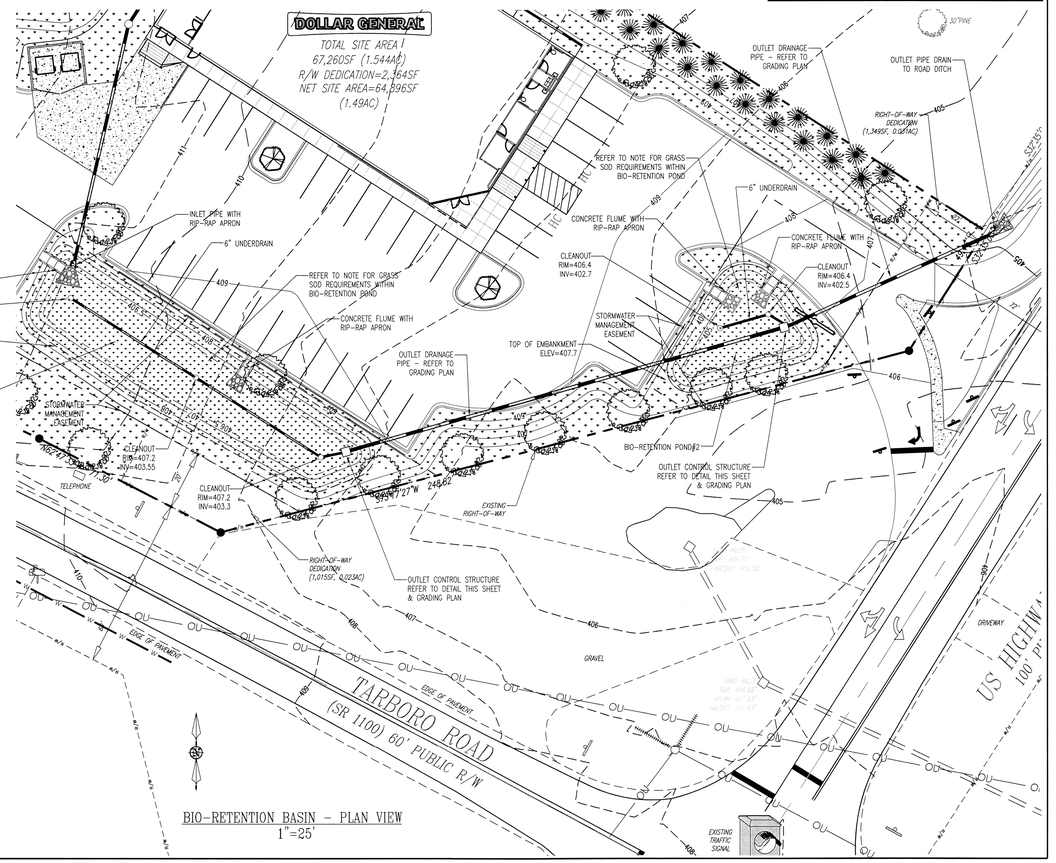
1. *THE DEVELOPER OR HIS AGENT SHALL CONTACT THE ENGINEER WHEN THE BEST MANAGEMENT PRACTICES) ARE CONSTRUCTED AND ABOUT TO BECOME OPERATIONAL SO A FINAL INSPECTION CAN BE PERFORMED TO DETERMINE COMPLIANCE WITH THE APPROVED PLAN CAN BE PERFORMED.*
2. *PRIOR TO CONSTRUCTION, A SOIL TEST OF THE BIO-RETENTION FILTER MEDIA SHALL BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD WITH A COPY SENT TO THE ENGINEER. THE TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR (P), PHOSPHORUS, MAGNESIUM, AND POTASSIUM AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. ALL TESTING RESULTS SHALL COME FROM THE SAME TESTING FACILITY. THE NC DEPARTMENT OF AGRICULTURE (NCDA) LAB IS THE PREFERRED TESTING FACILITY. SHOULD THE pH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR OR AS DIRECTED BY THE NCDA OR ENGINEER.*
3. *PRIOR TO CONSTRUCTION A COMPOSITION TEST OF THE BIO-RETENTION FILTER MEDIA SHALL BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD WITH A COPY SENT TO THE ENGINEER. FILTER MEDIA SHALL CONFORM TO THE FOLLOWING: 85-88% SAND (USDA TEXTURAL CLASSIFICATION), 8-12% FINES (SILT AND CLAY), AND 3-5% ORGANIC MATTER (PEATMOSS OR FINE BARK) BY VOLUME.*
4. *PERFORM A DOUBLE RING INFILTRATION TEST (MINIMUM OF 3 TESTS OR 1 PER 500 SF OF FILTER MEDIA WHICHEVER IS GREATER) AT THE COMPLETION OF THE BIO-RETENTION BMP. INFILTRATION RATE OF THE CONSTRUCTED BIO-RETENTION MEDIA SHALL BE BETWEEN 1-6 IN/HR. PROVIDE A COPY OF THE RESULTS TO THE ENGINEER.*
5. *ANNUAL MAINTENANCE INSPECTION AND REPORT REQUIRED - THE OWNER OF A PERMITTED STRUCTURAL STORMWATER BMP/CONTROL SHALL ANNUALLY SUBMIT A MAINTENANCE AND INSPECTION REPORT FOR EACH BMP TO THE STORMWATER ADMINISTRATOR. ANNUAL INSPECTIONS SHALL BEGIN WITHIN ONE YEAR OF THE RECORDATION OF ANY DEED(S) SHOWING STORMWATER BMPs/CONTROL STRUCTURES.*
6. *UPON COMPLETION OF THE PROJECT, AND BEFORE A CERTIFICATE OF OCCUPANCY SHALL BE GRANTED, THE ENGINEER OF RECORD SHALL CERTIFY THAT THE COMPLETED PROJECT IS IN ACCORDANCE WITH THE APPROVED STORMWATER MANAGEMENT PLANS AND DESIGNS.*
7. *A FINAL INSPECTION OF THE SITE AND STORMWATER MANAGEMENT BMP/CONTROLS TO BE SCHEDULED WITH AND COMPLETED BY THE ENGINEER & INSPECTOR.*
8. *THE "AS-BUILT" PLANS SHALL SHOW THE FINAL DESIGN SPECIFICATIONS FOR ALL STORMWATER MANAGEMENT FACILITIES AND PRACTICES AND THE FIELD LOCATION, SIZE, DEPTH, AND PLANTED VEGETATION OF ALL MEASURES, CONTROLS AND DEVICES, AS INSTALLED. THE ENGINEER OF RECORD FOR THE STORMWATER MANAGEMENT MEASURES AND PLANS SHALL CERTIFY, UNDER SEAL, THAT THE AS-BUILT STORMWATER MEASURES, CONTROLS AND DEVICES ARE IN COMPLIANCE WITH THE APPROVED STORMWATER MANAGEMENT PLANS AND DESIGNS AND WITH THE REQUIREMENTS OF THE MUNICIPALITY.*
9. *THE ENGINEER'S CERTIFICATION OF COMPLETION WILL BE REQUIRED PRIOR TO THE FINAL PLAT OR CERTIFICATE OF OCCUPANCY. THE STORMWATER CONTROL IS TO BE INSPECTED TO ENSURE IT IS FUNCTIONING AS DESIGNED AND HAS FULL DESIGN VOLUME PRIOR TO ISSUANCE OF THE FINAL CERTIFICATE OF OCCUPANCY.*

BIO-RETENTION #1 STAGE/STORAGE TABLE

STAGE (FT)	ELEVATION (FT)	CONTOUR AREA (SF)	INCREMENTAL STORAGE (CF)	TOTAL STORAGE (CF)
0.0	406.5	2210	0	0
0.5	407.0	2620	1208	1208
1.0	407.5	3050	1418	2625
1.5	408.0	3480	1633	4258
2.0	408.5	3940	1855	6113

BIO-RETENTION #2 STAGE/STORAGE TABLE

STAGE (FT)	ELEVATION (FT)	CONTOUR AREA (SF)	INCREMENTAL STORAGE (CF)	TOTAL STORAGE (CF)
0.0	405.7	720	0	0
0.3	406.0	830	233	233
1.0	406.7	1080	669	901
1.3	407.0	1210	344	1245
2.0	407.7	1510	952	2197



BIO-RETENTION BASIN - PLAN VIEW
1"=25'

TRIANGLE SITE DESIGN

CONSULTANT:
Triangle Site Design, PLLC
4006 Barrett Drive
Suite 203
Raleigh, NC 27609
(919)553-6570
mlowder@trianglesitedesign.com
NC LICENSE #P-0619

SEAL:

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24434 01/10/14 MATTHEW B. LOWDER

DOLLAR GENERAL

US Highway 401
Youngsville, North Carolina
Franklin County

OWNER/DEVELOPER:
GLANDON FOREST EQUITY, LLC
3900 Merton Drive
Suite 210
Raleigh, NC 27609
919-459-2601
919-459-2604 fx
gbarnes@vanguardpg.com

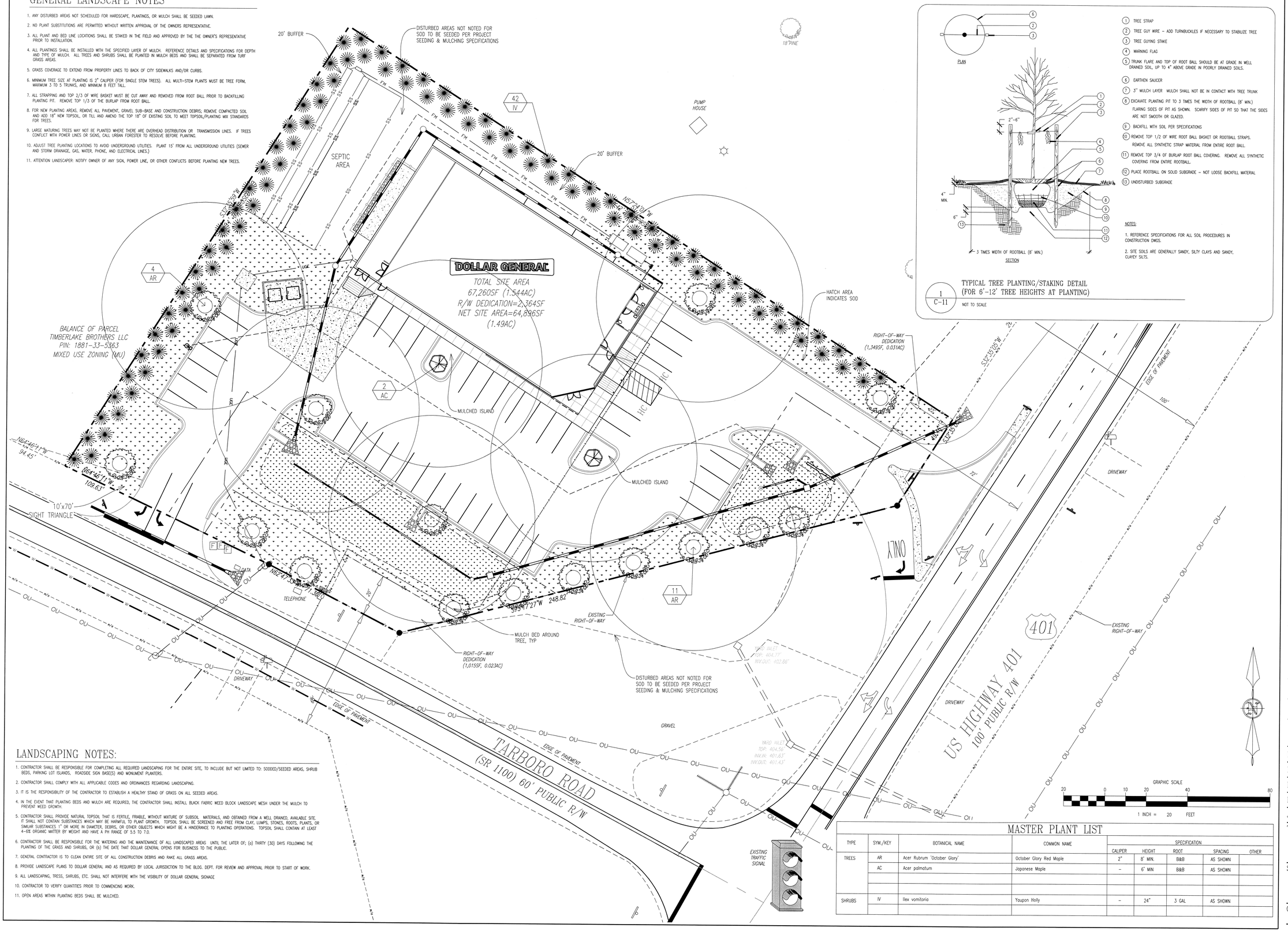
REVISIONS:

LAYOUT COORD:	MEL
PLANNING MGR.	MEL
DRAWING BY:	MEL
DATE:	01/10/14
JOB NUMBER:	004067
TITLE:	STORMWATER MANAGEMENT DETAILS
SHEET NUMBER:	C-10

COMMENTS:

GENERAL LANDSCAPE NOTES

1. ANY DISTURBED AREAS NOT SCHEDULED FOR HARDSCAPE, PLANTINGS, OR MULCH SHALL BE SEEDED LAWN.
2. NO PLANT SUBSTITUTIONS ARE PERMITTED WITHOUT WRITTEN APPROVAL OF THE OWNERS REPRESENTATIVE.
3. ALL PLANT AND BED LINE LOCATIONS SHALL BE STAKED IN THE FIELD AND APPROVED BY THE THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
4. ALL PLANTINGS SHALL BE INSTALLED WITH THE SPECIFIED LAYER OF MULCH. REFERENCE DETAILS AND SPECIFICATIONS FOR DEPTH AND TYPE OF MULCH. ALL TREES AND SHRUBS SHALL BE PLANTED IN MULCH BEDS AND SHALL BE SEPARATED FROM TURF GRASS AREAS.
5. GRASS COVERAGE TO EXTEND FROM PROPERTY LINES TO BACK OF CITY SIDEWALKS AND/OR CURBS.
6. MINIMUM TREE SIZE AT PLANTING IS 2" CALIPER (FOR SINGLE STEM TREES). ALL MULTI-STEM PLANTS MUST BE TREE FORM, MAXIMUM 3 TO 5 TRUNKS, AND MINIMUM 8 FEET TALL.
7. ALL STRAPPING AND TOP 2/3 OF WIRE BASKET MUST BE CUT AWAY AND REMOVED FROM ROOT BALL PRIOR TO BACKFILLING PLANTING PIT. REMOVE TOP 1/3 OF THE BURLAP FROM ROOT BALL.
8. FOR NEW PLANTING AREAS, REMOVE ALL PAVEMENT, GRAVEL SUB-BASE AND CONSTRUCTION DEBRIS; REMOVE COMPACTED SOIL AND ADD 18" NEW TOPSOIL, OR TILL AND AMEND THE TOP 18" OF EXISTING SOIL TO MEET TOPSOIL/PLANTING MIX STANDARDS FOR TREES.
9. LARGE MATURING TREES MAY NOT BE PLANTED WHERE THERE ARE OVERHEAD DISTRIBUTION OR TRANSMISSION LINES. IF TREES CONFLICT WITH POWER LINES OR SIGNS, CALL URBAN FORESTER TO RESOLVE BEFORE PLANTING.
10. ADJUST TREE PLANTING LOCATIONS TO AVOID UNDERGROUND UTILITIES. PLANT 15' FROM ALL UNDERGROUND UTILITIES (SEWER AND STORM DRAINAGE, GAS, WATER, PHONE, AND ELECTRICAL LINES.)
11. ATTENTION LANDSCAPER: NOTIFY OWNER OF ANY SIGN, POWER LINE, OR OTHER CONFLICTS BEFORE PLANTING NEW TREES.



1 / C-11 TYPICAL TREE PLANTING/STAKING DETAIL (FOR 6'-12' TREE HEIGHTS AT PLANTING)

NOT TO SCALE

LANDSCAPING NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING ALL REQUIRED LANDSCAPING FOR THE ENTIRE SITE, TO INCLUDE BUT NOT LIMITED TO: SODDED/SEEDED AREAS, SHRUB BEDS, PARKING LOT ISLANDS, ROADSIDE SIGN BASE(S) AND MONUMENT PLANTERS.
2. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES AND ORDINANCES REGARDING LANDSCAPING.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH A HEALTHY STAND OF GRASS ON ALL SEEDED AREAS.
4. IN THE EVENT THAT PLANTING BEDS AND MULCH ARE REQUIRED, THE CONTRACTOR SHALL INSTALL BLACK FABRIC WEED BLOCK LANDSCAPE MESH UNDER THE MULCH TO PREVENT WEED GROWTH.
5. CONTRACTOR SHALL PROVIDE NATURAL TOPSOIL THAT IS FERTILE, FRIABLE, WITHOUT MIXTURE OF SUBSOIL MATERIALS, AND OBTAINED FROM A WELL DRAINED, AVAILABLE SITE. IT SHALL NOT CONTAIN SUBSTANCES WHICH MAY BE HARMFUL TO PLANT GROWTH. TOPSOIL SHALL BE SCREENED AND FREE FROM CLAY, LUMPS, STONES, ROOTS, PLANTS, OR SIMILAR SUBSTANCES 1" OR MORE IN DIAMETER, DEBRIS, OR OTHER OBJECTS WHICH MIGHT BE A HINDERANCE TO PLANTING OPERATIONS. TOPSOIL SHALL CONTAIN AT LEAST 4-8% ORGANIC MATTER BY WEIGHT AND HAVE A PH RANGE OF 5.5 TO 7.0.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR THE WATERING AND THE MAINTENANCE OF ALL LANDSCAPED AREAS UNTIL THE LATER OF; (a) THIRTY (30) DAYS FOLLOWING THE PLANTING OF THE GRASS AND SHRUBS, OR (b) THE DATE THAT DOLLAR GENERAL OPENS FOR BUSINESS TO THE PUBLIC.
7. GENERAL CONTRACTOR IS TO CLEAN ENTIRE SITE OF ALL CONSTRUCTION DEBRIS AND RAKE ALL GRASS AREAS.
8. PROVIDE LANDSCAPE PLANS TO DOLLAR GENERAL AND AS REQUIRED BY LOCAL JURISDICTION TO THE BLDG. DEPT. FOR REVIEW AND APPROVAL PRIOR TO START OF WORK.
9. ALL LANDSCAPING, TRESS, SHRUBS, ETC. SHALL NOT INTERFERE WITH THE VISIBILITY OF DOLLAR GENERAL SIGNAGE
10. CONTRACTOR TO VERIFY QUANTITIES PRIOR TO COMMENCING WORK.
11. OPEN AREAS WITHIN PLANTING BEDS SHALL BE MULCHED.

MASTER PLANT LIST

TYPE	SYM./KEY	BOTANICAL NAME	COMMON NAME	SPECIFICATION				
				CALIPER	HEIGHT	ROOT	SPACING	OTHER
TREES	AR	Acer Rubrum 'October Glory'	October Glory Red Maple	2"	8' MIN.	B&B	AS SHOWN	
	AC	Acer palmatum	Japanese Maple	-	6' MIN	B&B	AS SHOWN	
SHRUBS	IV	Ilex vomitoria	Yaupon Holly	-	24"	3 GAL	AS SHOWN	

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REVISIONS:

2/14/14	Revised per NCDENR review comments
2/19/14	Revised per NCDOT review comments
3/10/14	Adjusted Tarboro Road driveway

LAYOUT COORD:	MEL
PLANNING MGR.	MEL
DRAWING BY:	MEL
DATE:	01/10/14
JOB NUMBER:	004067

TITLE:
LANDSCAPE PLAN

SHEET NUMBER:
C-11

COMMENTS: