Permit No.	Date	Document ID No.
60-13	**November 4, 2008**	**5048**

RECEIVED
June 30, 2008
Solid Waste Section
Asheville Regional Office

NORTH CAROLINA

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

DIVISION OF WASTE MANAGEMENT

CLOSURE MODIFICATION

FOR

NORTH MECKLENBURG

C&D LANDFILL EXPANSION II

PREPARED FOR:

NORTH MECKLENBURG C&D LANDFILL, INC.

19109 WEST CATAWBA AVENUE SUITE 200

CORNELIUS, NORTH CAROLINA 28031

PREPARED BY:

BP BARBER

10430 HARRIS OAKS BLVD, SUITE A

CHARLOTTE, NORTH CAROLINA 28269-7511

PROJECT NO. 05185-NM

TABLE OF CONTENTS

1.0 Closure and Post-Closure Plan

The following is a specific plan for closure and post-closure that complies with the requirements Rule 0543 of 5A NCAC 13B. It will establish scheduling and documentation of closure and monitoring and maintenance of the facility following closure.

2.0 Closure

2.1.1 Closure Cap System

The closure cap system is designed to minimize infiltration and erosion. To minimize infiltration the cap system will consist of 18 inches of soil having a permeability less than or equal to the soils underlying the landfill, or no greater than 1.0×10^{-5} cm/sec, whichever is less. The low permeability layer will be installed in three (3) 6 inch lifts. To minimize erosion and to protect the low-permeability barrier from root penetration, 18 inches of earthen material that is capable of sustaining native plant growth will overlay the low-permeability layer. The vegetative layer will be installed in three (3) 6 inch lifts and seeded according to the details on the closure drawings (Drawing C4).

2.1.2 Landfill Passive Gas System

A landfill gas venting system is provided in the final cover system. The system includes a series of passive collection wells placed within the waste immediately below the cover system. The wells should be placed before the low permeability soils are placed. The location of the landfill gas wells are depicted on the closure drawings (Drawing C4).

2.1.3 Estimated Inventory of Waste

The estimated maximum inventory of waste on-sight over the active life of this phase of the facility is 1,100,000 cubic yards.

2.1.4 Closure Schedule

Prior to beginning closure activities, the Division will be notified of the intent to close the unit and place such notification in the operating record. No later than 30 days after the date the unit receives the known final receipt of waste, closure activities will commence unless an extension has been granted from the Division. The closure activities will be complete 180 days following the beginning of closure activities unless the Division grants an extension.

Following closure of a unit, the Division will be notified that a Construction Quality Assurance (CQA) report signed by the project engineer verifying closure has been completed in accordance with the closure plan, and has been placed in the operating record. This report will describe the observations and test used before, during, and upon completion of construction, to ensure that the construction materials meet the final cover design specifications and the construction and certification requirements.

Following closure of the Construction and Demolition Landfill, a notation on the deed to the facility property will be recorded with the local Register of Deeds office, or some other instrument that is normally examined during a title search, and a copy of the notation will be placed in the operating record. The notation will, in perpetuity, notify any potential purchaser that the land has been used as a Construction and Demolition Landfill and is restricted under the closure plan approved by the Division.

2.1.5 Closure Cost Estimate

The table shown below summarizes the estimated closure costs associated with maintenance activities as required under Rule .0546 of 5A NCAC 13B. The estimate is based upon a private (third) party providing the required services. The costs are to be reviewed and updated to account for inflation, increased costs for closure care and any adjustments made to the closure plan.

ENGINEER'S OPINION OF COSTS

2008 DOLLARS
FOR POST-CLOSURE
OF THE
NORTH MECKLENBURG C&D LANDFILL

Item Number	Description	Estimated Quantity	Unit	Unit Price	Extended Total
Cover Cap Construction					
1	Fine-Grade Existing Intermediate Cover	84,061	SY	$ 1.00	$ 84,061.00
2	18" Thick 1 x 10 cm/sec Clay Liner	84,061	SY	$ 5.50	$ 462,335.50
3	18" Thick Vegetative Soil Layer	84,061	SY	$ 4.00	$ 336,244.00
7	Permanent Diversion Channel	2,200	LF	$ 10.50	$ 23,100.00
8	Temporary Silt Fence	2,800	LF	$ 3.50	$ 9,800.00
9	Temporary Erosion Controls	2	LS	$ 5,000.00	$ 10,000.00
10	Seeding & Mulching	84,061	SY	$ 0.50	$ 42,030.50
11	Remove Unsuitable Materials	7,820	SY	$ 10.50	$ 82,110.00
12	Bonds, Insurance, Mobilization	1	LS	$ 10,000.00	$ 10,000.00
13	Closure Engineering Design, Bidding, and CQA Services	1	LS	$ 40,000.00	$ 40,000.00
	Subtotal Cover Cap Construction				$ 1,099,681.00
LFG System Construction					
14	LFG Passive Wells	22	EA	$ 77.00	$ 1,694.00
15	Gas Contractor Bonds, Insurance, Mobilization	1	LS	$ 1,000.00	$ 1,000.00
16	LFG Engineering and CQA Services	1	LS	$ 10,000.00	$ 10,000.00
	Subtotal LFG System Construction				$ 12,694.00
17	10% Contingency of Subtotal	1	LS	$ 111,237.50	$ 111,237.50
				Total Closure Cost	**$ $1,223,612.50**

3.0 Post-Closure

Following closure of each unit post-closure care will be conducted for 30 years unless:

- It is decreased by the Division because it has been demonstrated that a reduced period is sufficient to protect human health and the environment.

- It is increased by the Division to protect human health and the environment.

The owner, North Mecklenburg's representative, Michael Griffin will be responsible for the facility during the post-closure period

3.1.1 Post-Closure Maintenance

The final cover will be seeded, fertilized and mulched to provide a dense stand of grass. The grass should not be mowed more than twice a year until dense vegetation is established. The final cover will be inspected for signs of settlement, erosion, vector damage, and bare spots on a quarterly basis. Additional inspections will be performed after large storm events. Depressions in the cover that pond will be regraded as needed to promote positive drainage.

Areas subject to regrading or any bare spots will be reseeded in accordance with permanent seeding specification. Any deep-rooted vegetation will be removed so that deep rooted vegetation will not compromise the integrity of the final cover.

3.1.1.1 Erosion Repair

Should erosion occur on the final cover during the post-closure, the eroded area(s) are to be reseeded after being repaired as necessary. Rolled Erosion Control Products (RECPs) are to be used on an as needed basis to accelerate rapid revegetation of slopes to secure topsoil.

3.1.1.2 Run-Off/Run-On Control Structure Repair

All perimeter channels, drainage swales, and ditches are to be cleaned, repaired, and/or realigned such that their original condition is maintained. Culverts that are damaged are to be repaired or replaced.

3.1.1.3 Repair of Security Control Devices

Any security devices are to be inspected and maintained as required to ensure a controlled access to the site. All gates, fencing, and locking mechanisms are to be replaced should they no longer function properly. Warning signs are to be kept visible and legible at all times and are to be replaced if damaged.

3.1.1.4 Settlement, Subsidence, and Displacement Corrections

All slopes with a minimum of five percent are to be maintained after settlement to prevent ponding and allowance of proper drainage without infiltration. Should horizontal or vertical displacement occur due to differential settlement, cracks shall be filled with proper material and final cover is to be reestablished. Disproportionate vertical displacement is not anticipated.

4.0 Post-Closure Monitoring

4.1.1 Groundwater Monitoring Plan

Practices outlined in the current Water Quality Monitoring Plan (WQM) or current approved revision takes precedence. All groundwater monitoring wells shall be installed with concrete pads and protective casings to prevent accidental damage caused by vehicles and equipment. All wells shall have locking caps to dissuade vandalism.

Regular inspections of the groundwater wells will occur to verify the wells integrity; these inspections can coincide with regular sampling. Well inspectors shall verify the overall condition of the well, including but not limited to tampering, degradation or cracking of the concrete pad. Should a well be found defective, and need to be replaced, the well shall be abandoned in accordance with the current WQM plan and a new well be installed at a DWM approved location.

4.1.2 Methane Monitoring Plan

The Methane Monitoring system will be operated and maintained by North Mecklenburg C&D landfill. The system shall be subject to periodic testing of the subsurface monitoring wells located about the perimeter of the landfill project site. Should landfill gas wells not function properly due to irregular settlement, binding or corrosion, or accumulation of liquids, replacement wells can be installed in accordance with the current Methane Monitoring Plan.

Inspections shall be performed to identify subsurface migration (if any) of landfill gas at volatile levels for all present on-site structures or in the project property limits. The Methane concentrations shall not exceed twenty-five (25) percent of the lower explosive limit (LEL) 1.25 CH_4 in on-site structures, such as scale houses, or one hundred (100) percent of the LEL 5% CH_4 at the project property limits.

Additional wells shall be installed as necessary and will be consistent with the landfill expansion.

Should landfill Gas Levels exceed the aforementioned limits the following actions shall be performed:

- Notify DWM, neighboring properties, and all staff and personnel for protection.
- Following the detection event a recorded description of events shall be placed in the operation log within seven (7) days.
- Within sixty (60) days, a remediation plan shall be implemented for the explosive gas release. A copy is to be placed in the operating record, and the DWM shall be notified that the plan has been put into practice.

5.0 Monitoring Schedules

The closed site shall be monitored for a minimum time period of 30-years. During that time a series of inspections will be scheduled and performed to verify the effectiveness and integrity of the closure cap as well as the surface water systems and groundwater monitoring systems, as well as to protect the surrounding environment and human health.

5.1.1 Post Closure Inspection Schedule

Below is a table listing the inspections and the frequency at which they are to be preformed during the 30-year monitoring period.

Inspection	**1st Year**	**Years 2-30**
Erosion Damage	Quarterly	Quarterly
Vegetative Cover Condition	Quarterly	Quarterly
Security Control Devices	Quarterly	Quarterly
Surface Water System	Quarterly	Quarterly
Cover Settlement, Subsidence & Displacement	Quarterly	Semi-Annually
Cover Drainage System	Quarterly	Semi-Annually
Landfill Gas Control System	Quarterly	Semi-Annually
Benchmark Integrity	Annually	Annually
Groundwater Monitoring System	Semi-Annually	Semi-Annually

5.1.2 Planned Use

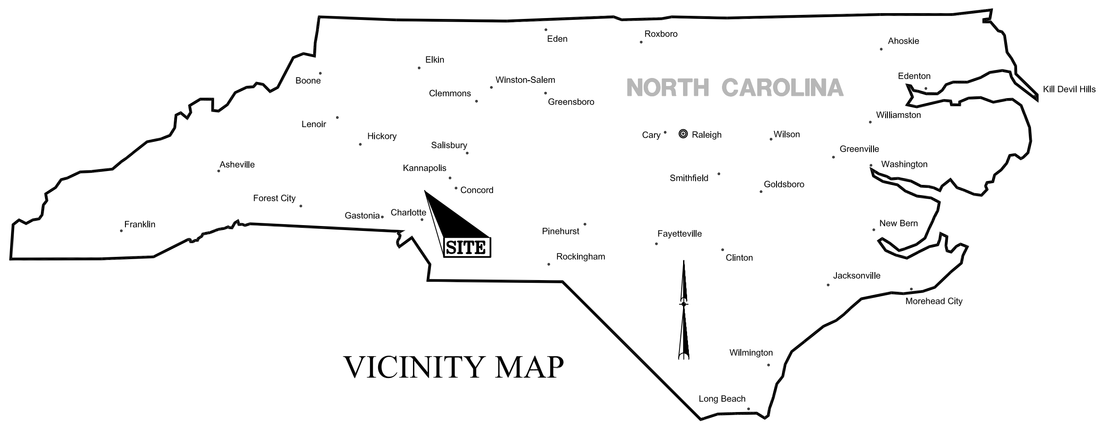
Once the facility is closed in accordance with Rule 0543 of 5A NCAC 13B, the entire facility will be offered to Mecklenburg County for possible use as a park and recreation facility.

5.1.3 Post-Closure Cost Estimate

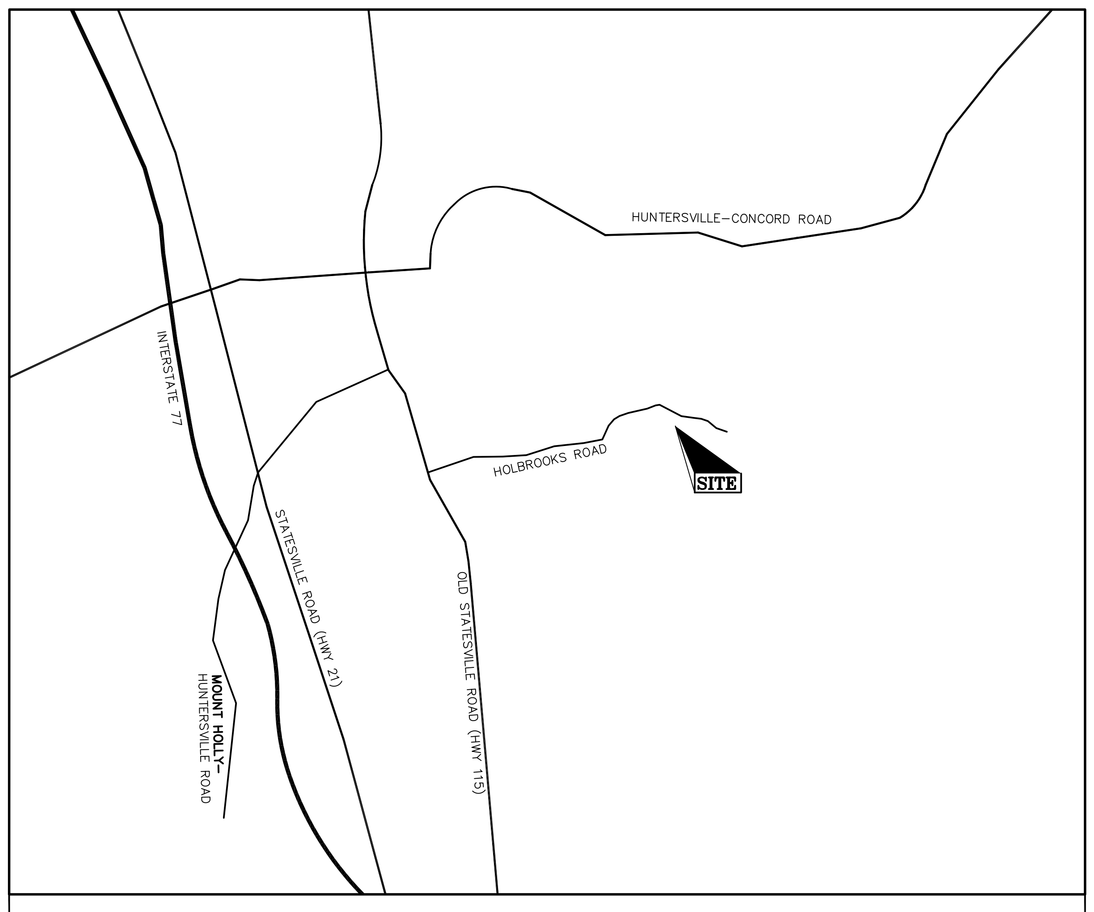
The table shown below summarizes the estimated post-closure costs associated with maintenance activities as required under Rule .0546 of 5A NCAC 13B. The estimate is based upon a private (third) party providing the required services. The costs are to be reviewed and updated to account for inflation, increased costs for closure care and any adjustments made to the post-closure plan.

ENGINEER'S OPINION OF COSTS
2008 DOLLARS
FOR POST-CLOSURE
OF THE
NORTH MECKLENBURG C&D LANDFILL

Item Number	Description	Estimated Quantity	Unit Price	Extended Total	Annual Quantity	Annual Costs	30 Yr Cost
1	Administrative/Recordkeeping	80 HRS/YR	$ 125.00 /HR	$ 10,000.00	1 /Yr	$ 10,000.00	$ 300,000.00
2	Groundwater Monitoring	31 EA	$ 900.00 /EA	$ 27,900.00	2 /Yr	$ 55,800.00	$ 1,674,000.00
3	Gas Monitoring	1 EA	$ 650.00 /EA	$ 650.00	2 /Yr	$ 1,300.00	$ 39,000.00
4	Stormwater Samples	3 EA	$ 1,500.00 /EA	$ 4,500.00	1 /Yr	$ 4,500.00	$ 135,000.00
5	Mowing	4 EA	$ 125.00 /AC	$ 500.00	2 /Yr	$ 1,000.00	$ 30,000.00
6	Wetlands Repair/Monitoring	2 EA	$ 5,000.00 /EA	$ 10,000.00	1 /Yr	$ 10,000.00	$ 300,000.00
7	Final Cover Systems Repair	4 AC	$ 5,250.00 /AC	$ 21,000.00	1 /Yr	$ 21,000.00	$ 630,000.00
8	Gas Management System	1 LS	$ 230.00 /LS	$ 230.00	1 /Yr	$ 230.00	$ 6,900.00
9	Annual Contingency (10%)	1 LS	$ 1,378.00 /LS	$ 1,378.00	1 /Yr	$ 1,378.00	$ 41,340.00
						Total Post Closure Cost	**$ 3,156,240.00**



VICINITY MAP



LOCATION MAP SCALE: 1" = 2000'

NORTH MECKLENBURG C&D LANDFILL EXPANSION II CLOSURE MODIFICATION

PREPARED FOR

NORTH MECKLENBURG LANDFILL, INC.

SHEET INDEX

OWNER/DEVELOPER:

GRIFFIN BROTHERS COMPANIES
19109 WEST CATAWBA AVE.
SUITE 200
CORNELIUS, NC 28031-5614
CONTACT: MIKE GRIFFIN
PHONE: 704.895.4506

SEAL — NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT — B.P. BARBER & ASSOCIATES, P.A. — No. P1263 — DATE

SEAL — SIGNATURE

BP Barber
Engineering • Experience • Excellence
10430 HARRIS OAKS BOULEVARD
CHARLOTTE, NC 28269-7511
P: (704) 926-0981
F: (704) 926-0982

JUNE 2008

PROJECT NO. 05185NM

FILE NO.

NOTES:

REFERENCE IS MADE TO THE FOLLOWING:

1. EXISTING CONTOURS BASED ON INFORMATION OBTAINED FROM MECKLENBURG COUNTY SEPTEMBER 2005.
2. ALL ELEVATIONS SHOWN ARE BASED ON MEAN SEA LEVEL DATUM.
3. GROUNDWATER DATA BASED ON INFORMATION PROVIDED BY GRIFFIN BROTHERS DATED SEPTEMBER 2005 AND NOVEMBER 2005.
4. NO COMPLETE BOUNDARY OR TOPOGRAPHIC SURVEY HAS BEEN PERFORMED BY B.P. BARBER & ASSOCIATES, INC. AT THIS TIME.

LEGEND

	EXISTING	NEW
CONTOURS (2')	82	82
CONTOURS (10')	90	90
GROUNDWATER CONTOURS	90	N/A
EDGE OF DIRT ROAD		N/A
EDGE OF PAVEMENT		N/A
PROPERTY LINE		N/A
IRON PIN FOUND	IPF	N/A
POWER POLE	PP	N/A
GROUNDWATER MONITORING WELL	MW	N/A
OUTLET STRUCTURE	N/A	
SILT FENCE LINE	N/A	SF

SPECIAL NOTES:

INSPECTIONS SHALL BE CONDUCTED AS PRESCRIBED BY THE MAINTENANCE COVENANT. ADDITIONAL INSPECTIONS MAY BE CONDUCTED BY THE MECKLENBURG COUNTY LAND USE AND ENVIRONMENTAL SERVICES AGENCY ON ANY REASONABLE BASIS, INCLUDING BUT NOT LIMITED TO: ROUTINE INSPECTIONS; RANDOM INSPECTIONS; INSPECTIONS BASED UPON COMPLAINTS OR OTHER NOTICE OF POSSIBLE VIOLATIONS; INSPECTIONS OF DRAINAGE BASINS OR AREAS IDENTIFIED AS HIGHER THAN TYPICAL SOURCES OF SEDIMENT OR OTHER CONTAMINANTS OR POLLUTANTS; INSPECTIONS OF BUSINESSES OR INDUSTRIES OF A TYPE ASSOCIATED WITH HIGHER THAN USUAL DISCHARGERS OF CONTAMINANTS OR POLLUTANTS OR WITH DISCHARGES OF A TYPE WHICH ARE MORE LIKELY THAN THE TYPICAL DISCHARGE TO CAUSE VIOLATIONS OF STATE OR FEDERAL WATER QUALITY STANDARDS OR THE NPDES STORM WATER PERMIT; AND JOINT INSPECTIONS WITH OTHER AGENCIES INSPECTING UNDER ENVIRONMENTAL AND SAFETY LAWS. INSPECTIONS MAY INCLUDE, BUT ARE NOT LIMITED TO: REVIEWING MAINTENANCE AND REPAIR RECORDS; SAMPLING DISCHARGES, SURFACE WATER, GROUNDWATER, AND MATERIAL OR WATER IN BMPS; EVALUATING THE CONDITION OF BMPS AND STORM WATER MANAGEMENT PRACTICES.

RIGHT-OF-ENTRY FOR INSPECTION. WHEN ANY NEW BMP IS INSTALLED ON PRIVATE PROPERTY, THE PROPERTY OWNER SHALL GRANT TO THE MECKLENBURG COUNTY LAND USE AND ENVIRONMENTAL SERVICES AGENCY THE RIGHT TO ENTER THE PROPERTY AT REASONABLE TIMES AND IN A REASONABLE MANNER FOR THE PURPOSE OF INSPECTION. THIS INCLUDES THE RIGHT TO ENTER A PROPERTY WHEN THE MECKLENBURG COUNTY LAND USE AND ENVIRONMENTAL SERVICES AGENCY HAS A REASONABLE BASIS TO BELIEVE THAT A VIOLATION OF THIS REGULATION IS OCCURRING OR HAS OCCURRED, AND TO ENTER WHEN NECESSARY FOR ABATEMENT OF A PUBLIC NUISANCE OR CORRECTION OF A VIOLATION OF THIS REGULATION.

AREAS:

DISPOSAL FOOTPRINT: 756,549 SQ. FT. – 17.37 AC.

TOTAL AREA: 1,072,364 SQ. FT. – 24.62 AC.

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: SLB
DESIGNED BY: WRK
DRAWN BY: WRK
CHECKED BY: SLB
APPROVED: SLB

NORTH CAROLINA ENGINEERING CERTIFICATE OF AUTHORIZATION B.P. BARBER & ASSOCIATES, INC. No. C-1058

DATE

SIGNATURE

bpb BP Barber
Engineering • Experience • Excellence
COLUMBIA • SPARTANBURG • CHARLESTON
FLORENCE • CHARLOTTE • SAVANNAH

SHEET TITLE
EROSION CONTROL PLAN

SCALE: AS SHOWN
DATE: JUNE 2008

PROJECT
NORTH MECKLENBURG C&D LANDFILL EXPANSION II
FOR
NM LANDFILL, INC.
MECKLENBURG COUNTY NORTH CAROLINA

DWG NAME 05185C6
N.B. NO.
REF.
PROJECT NO. 05185NM

SHEET C3 OF 4

FILE NO.

NOTES:

REFERENCE IS MADE TO THE FOLLOWING:

1. EXISTING CONTOURS BASED ON INFORMATION OBTAINED FROM MECKLENBURG COUNTY SEPTEMBER 2005.
2. ALL ELEVATIONS SHOWN ARE BASED ON MEAN SEA LEVEL DATUM.
3. GROUNDWATER DATA BASED ON INFORMATION PROVIDED BY GRIFFIN BROTHERS DATED SEPTEMBER 2005 AND NOVEMBER 2005.
4. NO COMPLETE BOUNDARY OR TOPOGRAPHIC SURVEY HAS BEEN PERFORMED BY B.P. BARBER & ASSOCIATES, INC. AT THIS TIME.

WETLANDS NOTE:

1. WETLANDS TO BE FILLED ACCORDING TO THE 404 PERMIT. SEE ENGINEERING PERMIT.

BUFFER NOTES:

1. ON THE LANDFILL SIDE OF THE STREAM, THE BUFFER WIDTH WILL BE MEASURED HORIZONTALLY AND WILL BE SURVEYED BY A LICENSED LAND SURVEYOR ON A LINE PARALLEL TO THE SURFACE WATER, LANDWARD FROM THE TOP OF THE BANK.
2. THE SURVEYED OUTSIDE BUFFER BOUNDARY, INCLUDING ALL BUFFER ZONES, WILL BE CLEARLY MARKED ON-SITE WITH ORANGE "TREE PROTECTION" OR "HIGH-HAZARD" FENCE PRIOR TO ANY LAND DISTURBING ACTIVITIES.
3. THE SURVEYED OUTSIDE BOUNDARY OF THE BUFFER WILL BE PERMANENTLY MARKED WITH AN IRON PIN AT THE INTERSECTION OF THE WATERSHED BUFFER AND EACH PROPERTY LINE AND AT A MAXIMUM OF 100' INTERVALS FOLLOWING THE COMPLETION OF LAND DISTURBING ACTIVITIES.

LEGEND

	EXISTING
CONTOURS (2')	82
CONTOURS (10')	90
EDGE OF DIRT ROAD	
EDGE OF PAVEMENT	
PROPERTY LINE	
IRON PIN FOUND	
POWER POLE	
GROUNDWATER MONITORING WELL	
SWIM BUFFER LIMITS	
SWIM BUFFER UPLAND ZONE	
SWIM BUFFER MANAGED USE ZONE	
SWIM BUFFER STREAM SIDE ZONE	

REVISIONS

NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: SLB
DESIGNED BY: WRK
DRAWN BY: WRK
CHECKED BY: SLB
APPROVED: SLB

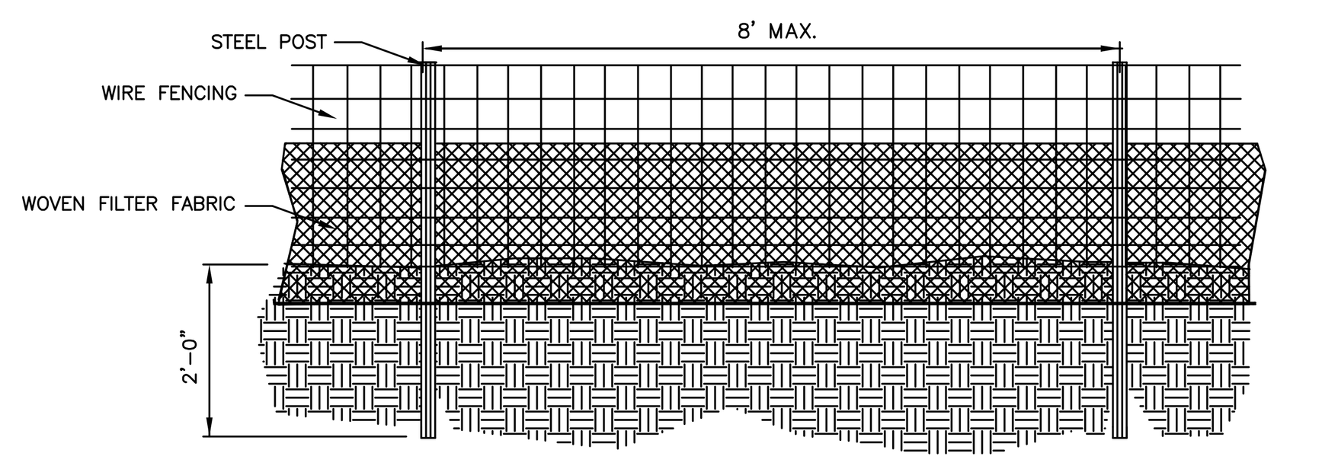
NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT
B.P. BARBER & ASSOCIATES, INC.
P.A. 1000
CERTIFICATE OF AUTHORIZATION
DATE
SIGNATURE

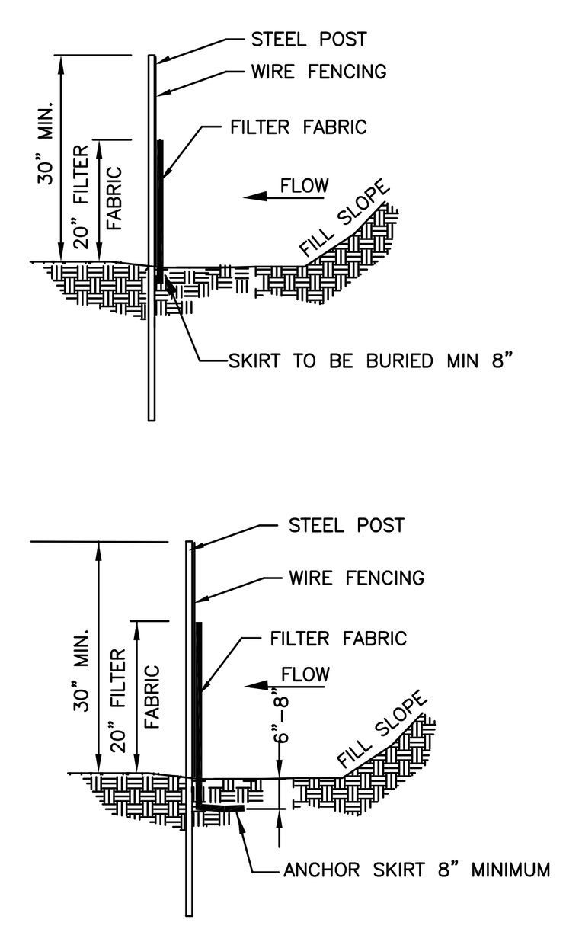
bpb
BP Barber
Engineering • Experience • Excellence
COLUMBIA • SPARTANBURG • CHARLESTON
FLORENCE • CHARLOTTE • SAVANNAH

SHEET TITLE
SITE PLAN
DATE: JUNE 2008
SCALE: AS SHOWN

PROJECT:
NORTH MECKLENBURG C&D
LANDFILL EXPANSION II
FOR
NM LANDFILL, INC.
MECKLENBURG COUNTY NORTH CAROLINA

.DWG NAME	05185C4
N.B. NO.	
REF.	
PROJECT NO.	05185NM
SHEET	C1
OF	4
FILE NO.	





GENERAL NOTES:

1. FILTER FABRIC FENCE SHALL BE A MINIMUM OF 32" IN WIDTH AND SHALL HAVE A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING. FILTER FABRIC SHOULD ADHERE TO SPECIFICATIONS IN THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.
2. WOVEN FILTER FABRIC BE USED WHERE SILT FENCE IS TO REMAIN FOR A PERIOD OF MORE THAN 30 DAYS.
3. STEEL POSTS SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-FASTENER ANGLE STEEL TYPE. POSTS SHOULD BE BURIED 24".
4. WIRE FENCING SHALL BE AT LEAST #14 GAGE WITH A MINIMUM OF 6 LINE WIRES WITH 6" STAY SPACING.
5. TURN SILT FENCE UP SLOPE AT ENDS.
6. ENSURE IMPOUNDMENT WATER DEPTH IS NO GREATER THAN 1.5FT.
7. DRAINAGE AREA CAN NOT BE GREATER THAN 1/4 ACRE PER 100FT OF FENCE.
8. SLOPE LENGTHS CAN NOT EXCEED CRITERIA SHOWN IN TABLE 6.62A NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.
9. DO NOT INSTALL SEDIMENT FENCE ACROSS STREAMS, DITCHES, WATERWAYS OR OTHER AREAS OF CONCENTRATED FLOW.

MAINTENANCE NOTES:

1. FILTER BARRIERS 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. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL IS NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROX. HALF THE HEIGHT OF THE BARRIER. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS REMOVED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

Temporary Silt Fencing Detail

SCALE: NTS

	GENTLE SLOPES	STEEP SLOPES
SEEDING MIXTURE	80 lbs/acre of tall fesue	100 lbs/acre tall fescue 30 lbs/acre Sericea lespedeza (unscarified after August 15) 10 lbs/acre Kobe lespedeza
SEEDING DATES	FALL: August 25 – October Late winter: February 15 – April 15 To extend spring seeding into June, add 15 lbs/acre hulled Bermudagrass Overseeding of Kobe lespedeza over fall-seeded tall fescue is very effective.	FALL: August 25 – October 15 Late winter: February 15 – April 15 To extend spring seeding into June, add 15 lbs/acre hulled Bermudagrass Overseeding of Kobe lespedeza over fall-seeded tall fescue is very effective.
SEEDING AMENDMENTS	Apply lime and fertilizer per soil tests, or 4000 lbs/acre limestone and 1000 lbs/acre 10-10-10 fertilizer.	Apply lime and fertilizer per soil tests, or 4000 lbs/acre limestone and 1000 lbs/acre 10-10-10 fertilizer.

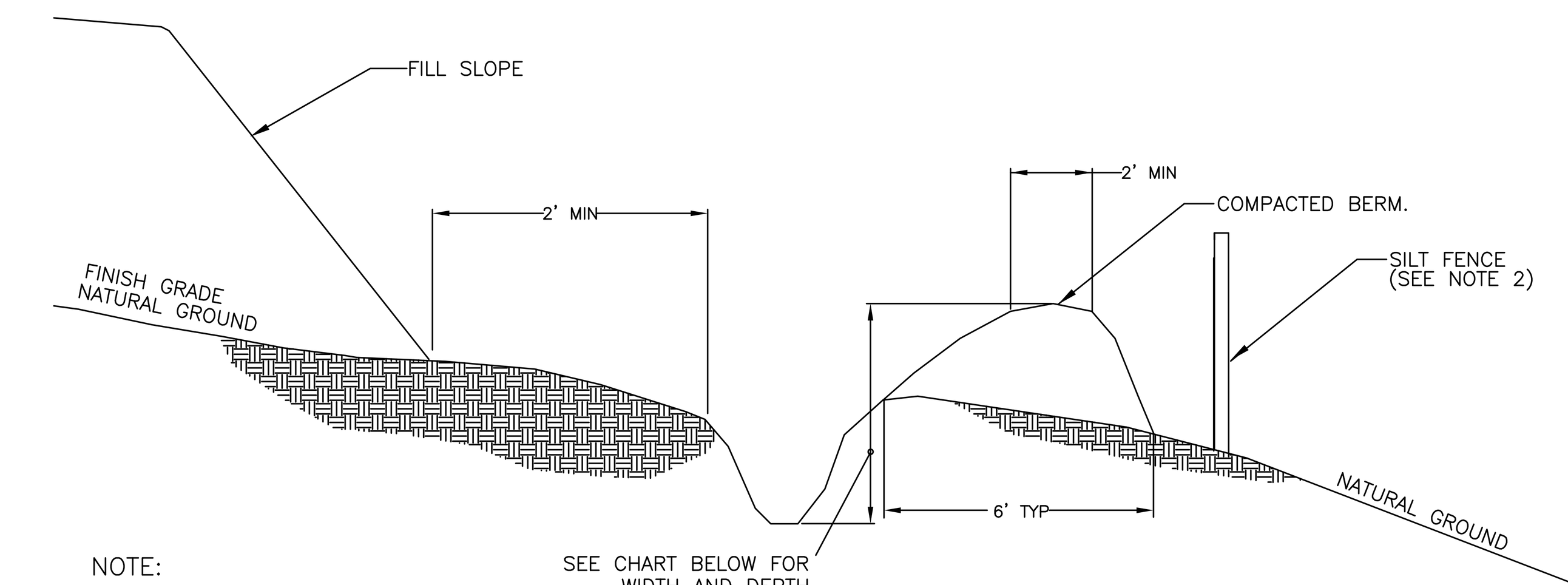
NOTE 1
Ground Cover-- Protective cover must be established on all disturbed areas within 21 calendar days after land disturbing activity is completed or has temporarily ceased.
NOTE 2
Graded slopes and fills--Protective cover must be established on all graded slopes and fills within 21 calendar days after a phase of grading is completed or has temporarily ceased.

TEMPORARY SEEDING FOR WARM AND COOL SEASON

	EARLY SUMMER SEASON	STEEP SLOPES
SEEDING MIXTURE	40 lbs/acre of German millet 80 lbs/acre of tall fesue	120 lbs/acre Rye (grain) 80 lbs/acre tall fesue
SEEDING DATES	May 1 – August 15 Refertilize if growth is not fully adequate. Apply 90 lbs. per 1000 sq. ft. straw or equivalent hydroseeding.	October 25 – December 30 Between December 30 – February 15, add 50 lbs/acre of annual Kobe lespedeza. Apply 90 lbs. per 1000 sq. ft. straw or equivalent hydroseeding.
SEEDING AMENDMENTS	Apply lime and fertilizer per soil tests, or 2000 lbs/acre limestone and 750 lbs/acre 10-10-10 fertilizer.	Apply lime and fertilizer per soil tests, or 2000 lbs/acre limestone and 750 lbs/acre 10-10-10 fertilizer.

Erosion Control Seeding Schedules

SCALE: NTS



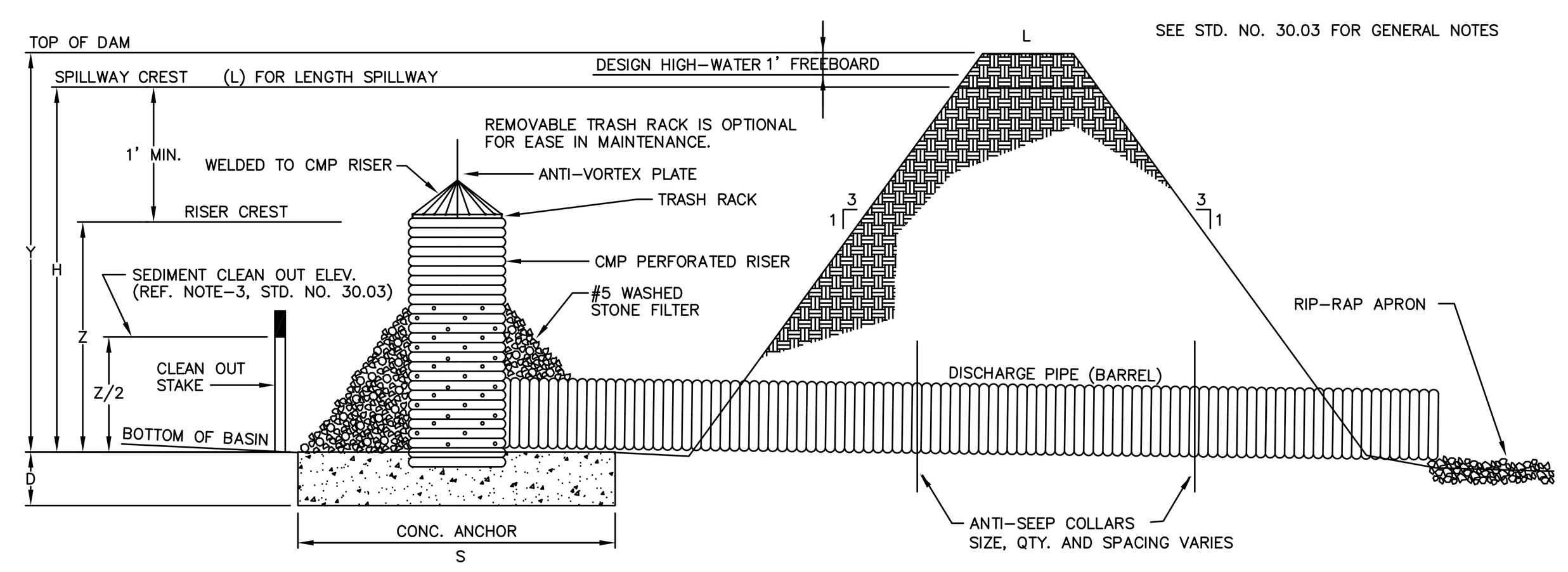
NOTE:

1. DITCH SHOULD HAVE LONGITUDINAL SLOPE OF 1%.
2. SILT FENCE MAY BE REQUIRED BEHIND BERM.
3. DITCH SHOULD BE PROPERLY LINED WITH EROSION CONTROL MATTING. SHOULD MEET ALL REQUIREMENTS SET FORTH IN THE NORTH CAROLINA EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.
4. VEGETATE BERM UNLESS IT WILL BE USED FOR LESS THAN 30 DAYS.
5. INSPECT LINING AFTER HEAVY RAIN OR EVERY 3 MONTHS.

DITCH	DRAINAGE AREA (ACRES)	BOTTOM WIDTH (LF)	DEPTH (FT)	SIDE SLOPE (H:V)	DESIGN FLOW (CFS)	SHAPE	PERMANENT LINING
PD-1	3.42	2.0	2.0	3:1	7.80	TRAPEZOIDAL	SC250
PD-2	6.25	2.0	2.0	3:1	14.25	TRAPEZOIDAL	C350
PD-3	3.38	2.0	2.0	3:1	7.71	TRAPEZOIDAL	SC250
PD-4	3.18	2.0	2.0	3:1	7.25	TRAPEZOIDAL	SC250
PD-5	5.19	2.0	2.0	3:1	11.83	TRAPEZOIDAL	SC250
PD-6	3.87	2.0	2.0	3:1	8.82	TRAPEZOIDAL	SC250

Permanent Diversion Channel Detail

SCALE: NTS



PERFORATION NOTES:

1. A_0 =TOTAL AREA OF RISER PERFORATIONS
2. A_0 =0.47 SQ. FT. (BASIN 1)
3. A_0 =0.73 SQ. FT. (BASIN 2)

DATA BLOCK

	RISER DIAMETER	BARREL DIAMETER	BARREL SLOPE	D	S	Y	H	Z	L	SEDIMENT STORAGE REQUIRED
SEDIMENT BASIN 1	36"	30"	0.5%	1.5'	6'	7'	5'	4'	24'	14,850 (CF)
SEDIMENT BASIN 2	36"	30"	0.7%	1.5'	6'	7'	5'	4'	44'	45,378 (CF)

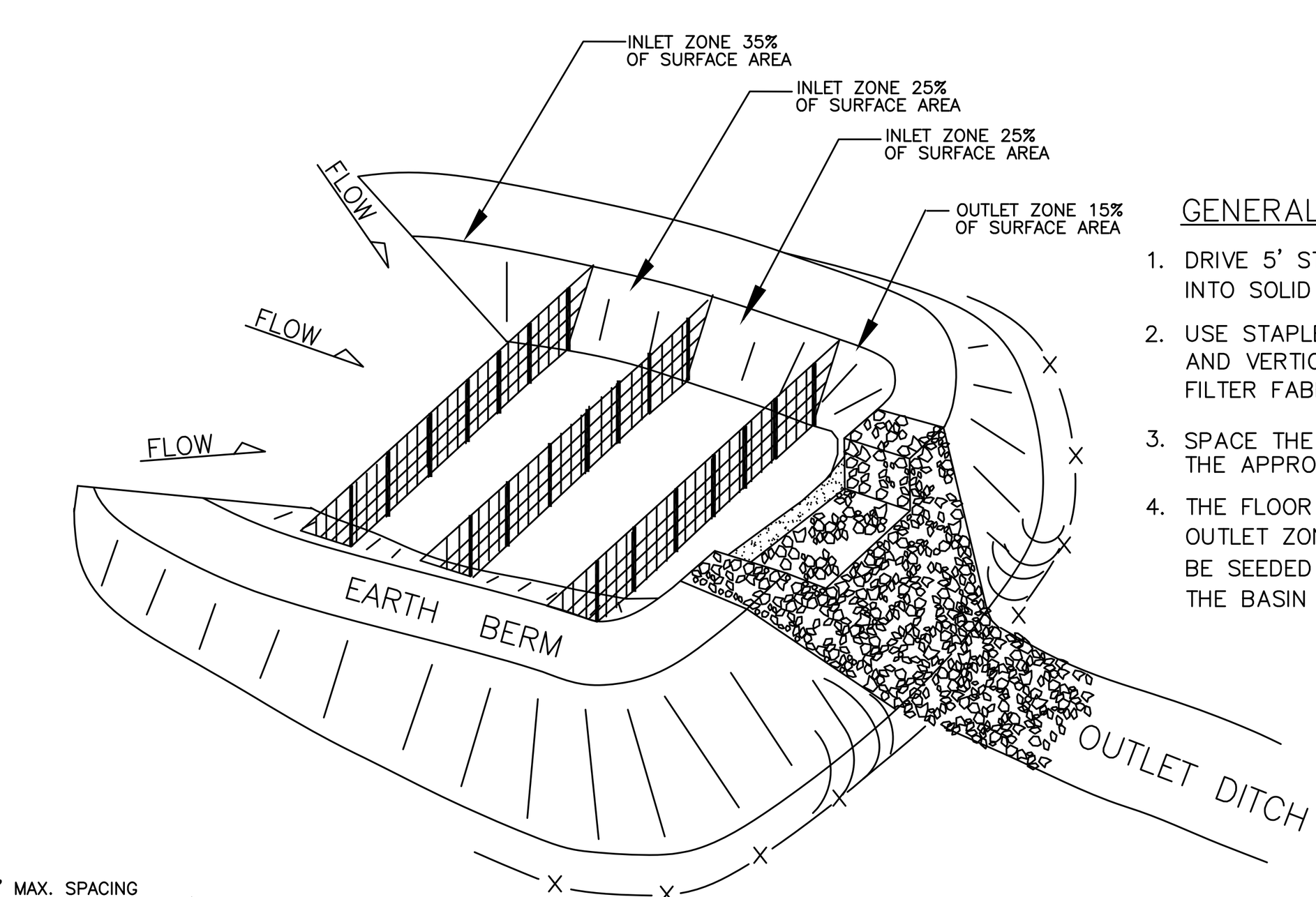
DATA BLOCK TO BE COMPLETED BY DESIGNER AND SUBMITTED WITH EROSION CONTROL PLANS.

GENERAL NOTES:

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED, AND STRIPPED OF ANY VEGETATION AND ROOT MATERIAL. THE BASIN AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION AS WELL AS OVERSIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE BEING CONSTRUCTED. SPILLWAYS SHOULD NOT BE CONSTRUCTED THROUGH FILL SECTIONS. ALL SPILLWAYS SHOULD BE LINED AND/OR RIPRAPPED.
3. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO DEPTH SHOWN ON STANDARD. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA IN SUCH A MANNER THAT IT WILL NOT ERODE.
4. THE TRAP SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NECESSARY.
5. CONSTRUCTION OPERATION SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION IS MINIMIZED.
6. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER, UNLESS CERTIFIED BY REGISTERED GEOTECHICAL ENGINEER.
7. SEDIMENT BASIN EMBANKMENTS SHOULD BE PROVIDED WITH EROSION CONTROL AND STABILIZATION. SEE APPROPRIATE SEEDING SPECS.
8. STORAGE AREA IS SHOWN AS RECTANGULAR FOR ILLUSTRATIVE PURPOSES ONLY, AND MAY BE CONSTRUCTED IN ANY SHAPE PROVIDED THE MINIMUM STORAGE VOLUME REQUIREMENT IS MET. THE BASIN SHOULD ALSO BE ORIENTED SUCH THAT THE FILTER AND THE MAIN FLOW OF WATER AND SEDIMENT ARE ON OPPOSITE ENDS ON THE LONGER BASIN DIMENSIONS.
9. REQUIRED STORAGE IS 1800 CUBIC FEET OF STORAGE VOLUME PER ACRES OF DRAINAGE AREA. IF CLEAR WATER FROM UNDISTURBED ARES IN DRAINAGE BASIN ARE TAKEN AROUND OR THROUGH THE DENUDED AREA BY NON EROSIVE MEASURES THEN BASINS MAY BE SIZED BY DENUDED ACRES. RECOMMENDED STORAGE IS 1800 CUBIC FEET OF STORAGE PER ACRE OF DRAINAGE AREA.
10. THE LENGTH OF THE STONE OUTLET (SPILLWAY) IS TO BE BASED ON A 25 YEAR STORM.
11. WHENEVER TOPOGRAPHY ALLOWS, THE BASIN LENGTH SHOULD BE TWICE (2X) THE BASIN WIDTH, TO ALLOW FOR SETTLING. A MINIMUM OF 3 BAFFLES SHALL BE INSTALLED IN ALL BASINS.
12. CLEANOUT STAKES SHALL BE PLACED IN ALL SEDIMENT BASINS AT THE LOW POINT IN THE BASIN. THE STAKES SHALL BE MARKED SHOWING THE HALF FULL, CLEANOUT POINT, OF THE BASIN.
13. SAFETY FENCING 3' HIGH SHOULD BE PLACED AROUND ALL SEDIMENT BASINS.
14. FOR DESIGN OF RISER TYPE SEDIMENT BASINS, REFER TO THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT, HEALTH, AND NATURAL RESOURCES, EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.
15. FOR SLOPES GREATER THAN 10' IN LENGTH AND PROTECTED BY SILT FENCE AT THE TOE OF THE SLOPE, SLOPE TERRACING WILL BE REQUIRED.
16. THE BERM ON SEDIMENT BASINS SHALL BE SEEDED ONCE FINAL GRADE HAS BEEN REACHED. THE SILT FENCE MAY BE REMOVED IF PERMISSION HAS BEEN GRANTED BY THE STATE EROSION CONTROL INSPECTOR AFTER THE GRASS HAS GERMINATED AND STABLE GROUND HAS BEEN ESTABLISHED.
17. WASHED STONE AND WIRE BACKING SHALL BE USED WITH SILT FENCE WHENEVER SILT FENCE IS PLACED AT THE TOE OF A SLOPE > 10' VERTICAL OR ALONG ANY CHANNEL OR WATER COURSE WHERE 50' OF BUFFER IS NOT PROVIDED.
18. CONSTRUCTED HEIGHT SHOULD BE 10% GREATER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT.

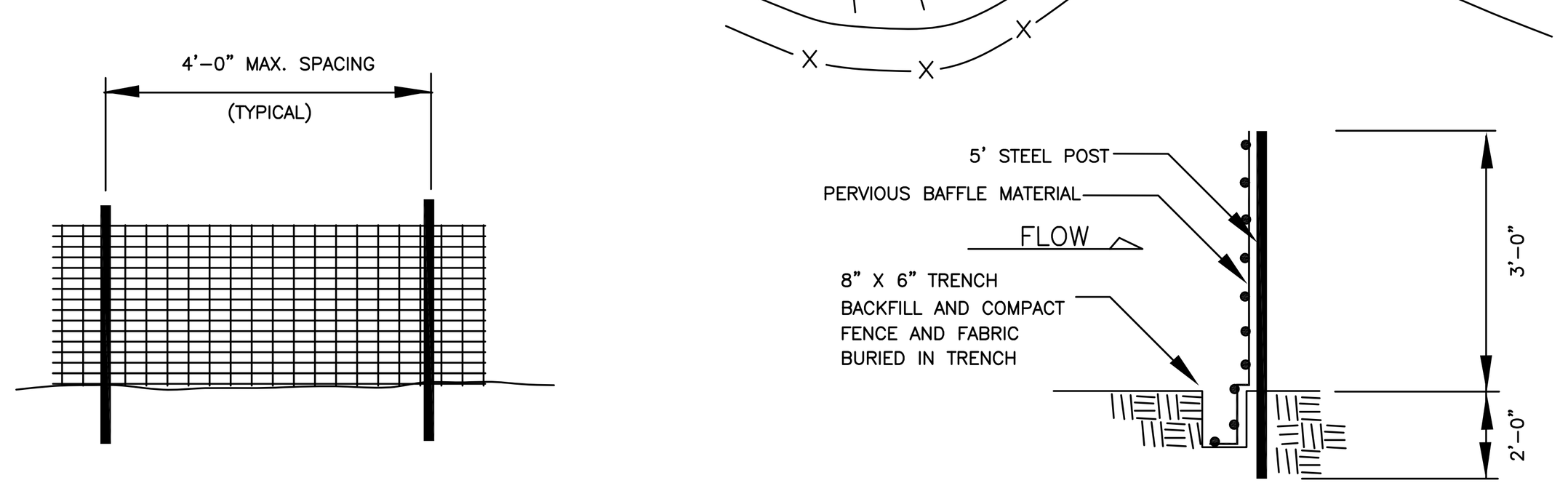
Riser Type Sediment Basin Detail

SCALE: NTS



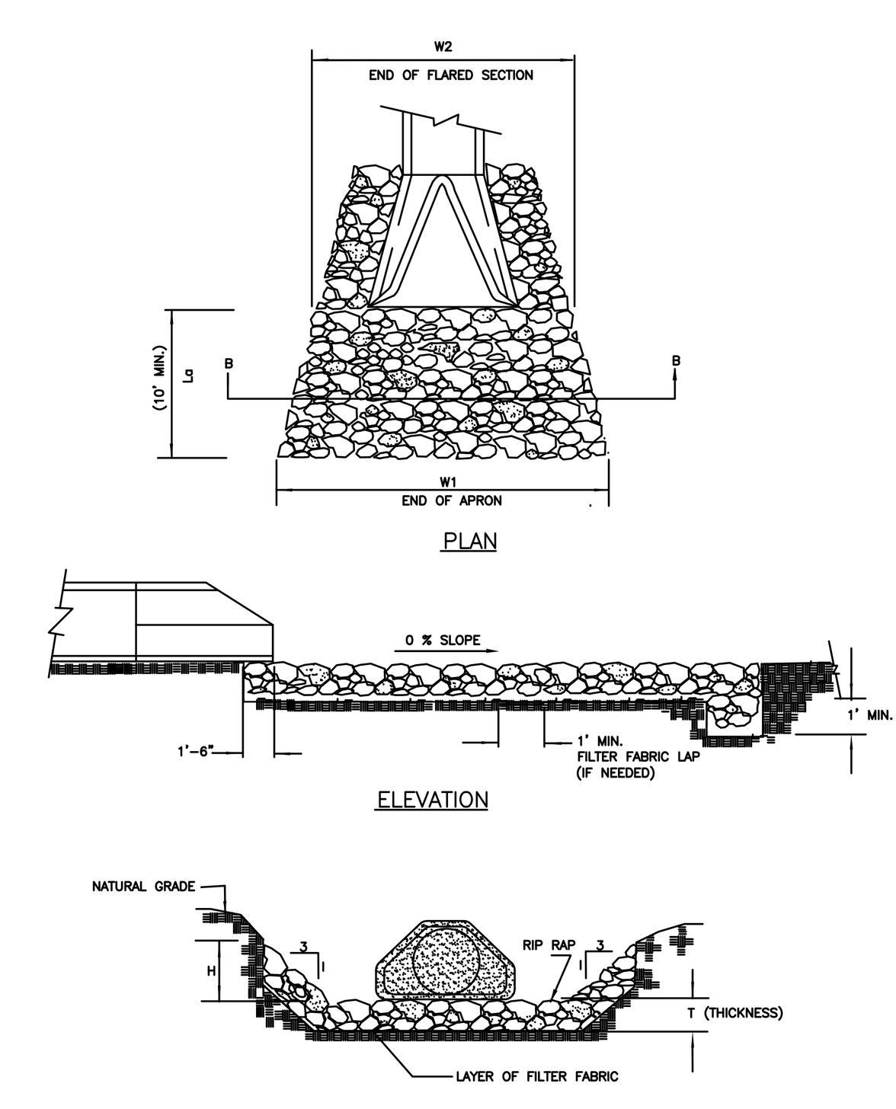
GENERAL NOTES:

1. DRIVE 5' STEEL POST AT LEAST 24" INTO SOLID GROUND.
2. USE STAPLES 1' APART HORIZONTLLY AND VERTICALLY TO ATTACH THE FILTER FABRIC TO THE WIRE FENCE.
3. SPACE THE BAFFLES ACCORDING TO THE APPROVED PLAN.
4. THE FLOOR OF THE BASIN IN THE OUTLET ZONE AND BERMS SHOULD BE SEEDED IMMEDIATELLY AFTER THE BASIN IS CONSTRUCTED.



Baffle Installation

SCALE: NTS



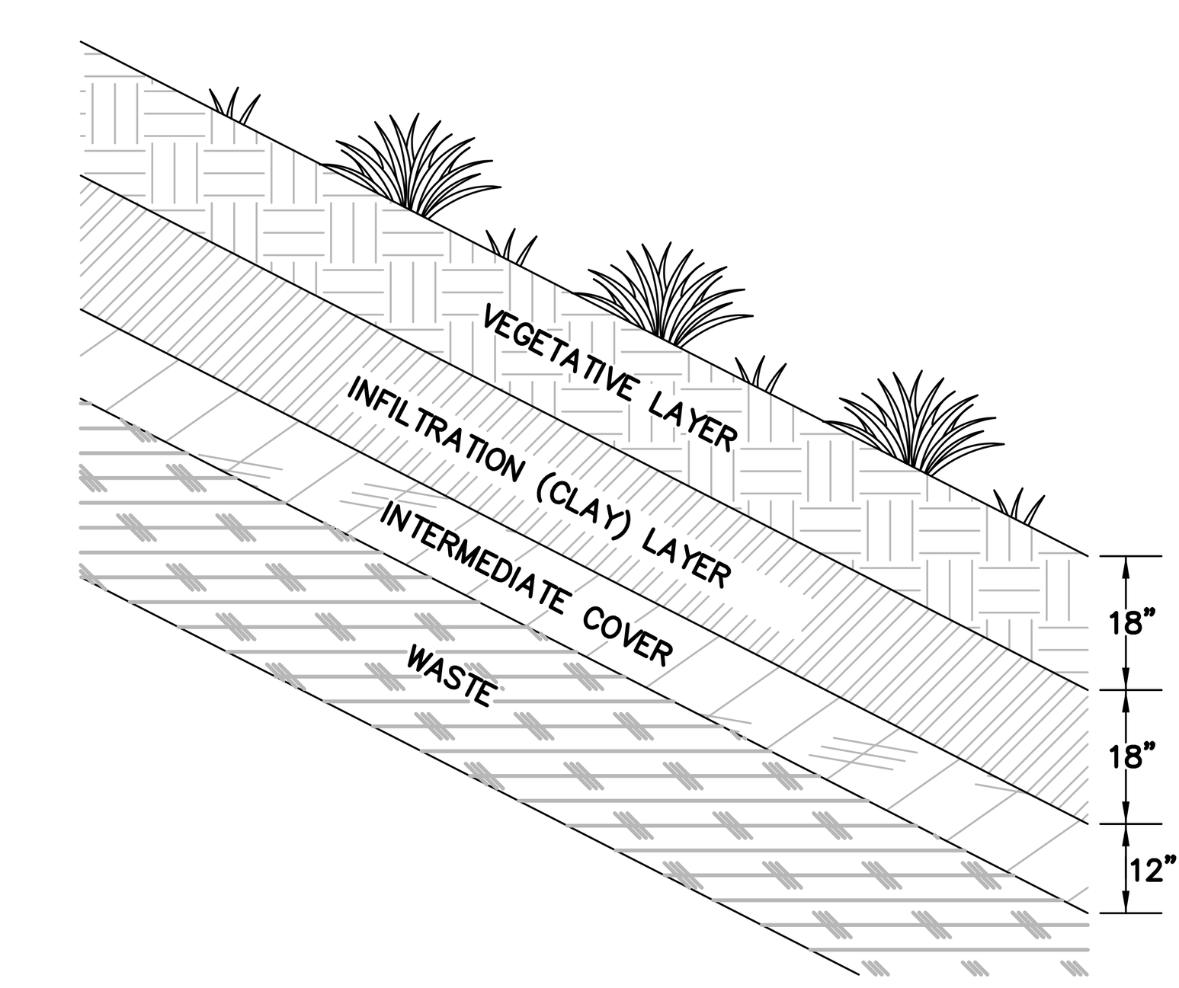
NOTES:

1. CLASS OR MEDIAN SIZE OF RIPRAP AND LENGTH, WIDTH AND DEPTH OF APRON TO BE DESIGNED BY THE ENGINEER AND ARE SUMMARIZED BELOW.
2. 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.
3. THERE SHALL BE NO OVERFLOW FROM THE END OF THE APRON TO THE SURFACE OF THE RECEIVING CHANNEL. THE AREA TO BE PAVED OR RIPRAPPED 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.
4. THE WIDTH OF THE END OF THE APRON SHALL BE EQUAL TO THE BOTTOM WIDTH OF THE RECEIVING CHANNEL. MAXIMUM TAPER TO RECEIVING CHANNEL 5:1
5. ALL SUBGRADE FOR STRUCTURE TO BE COMPACTED TO 95% OR GREATER.
6. THE PLACING OF FILL, EITHER LOOSE OR COMPACTED IN THE RECEIVING CHANNEL SHALL NOT BE ALLOWED.
7. NO BENDS OR CURVES IN THE HORIZONTAL ALIGNMENT OF THE APRON WILL BE PERMITTED.
8. FILTER FABRIC SHALL BE INSTALLED ON COMPACTED SUBGRADE PRIOR TO PLACEMENT OF RIP RAP.
9. ANY DISTURBED AREA FROM END OF APRON TO RECIEVING CHANNEL MUST BE STABILIZED.

USE USDA NOMOGRAPH FROM NC SEDIMENT AND EROSION CONTROL MANUAL

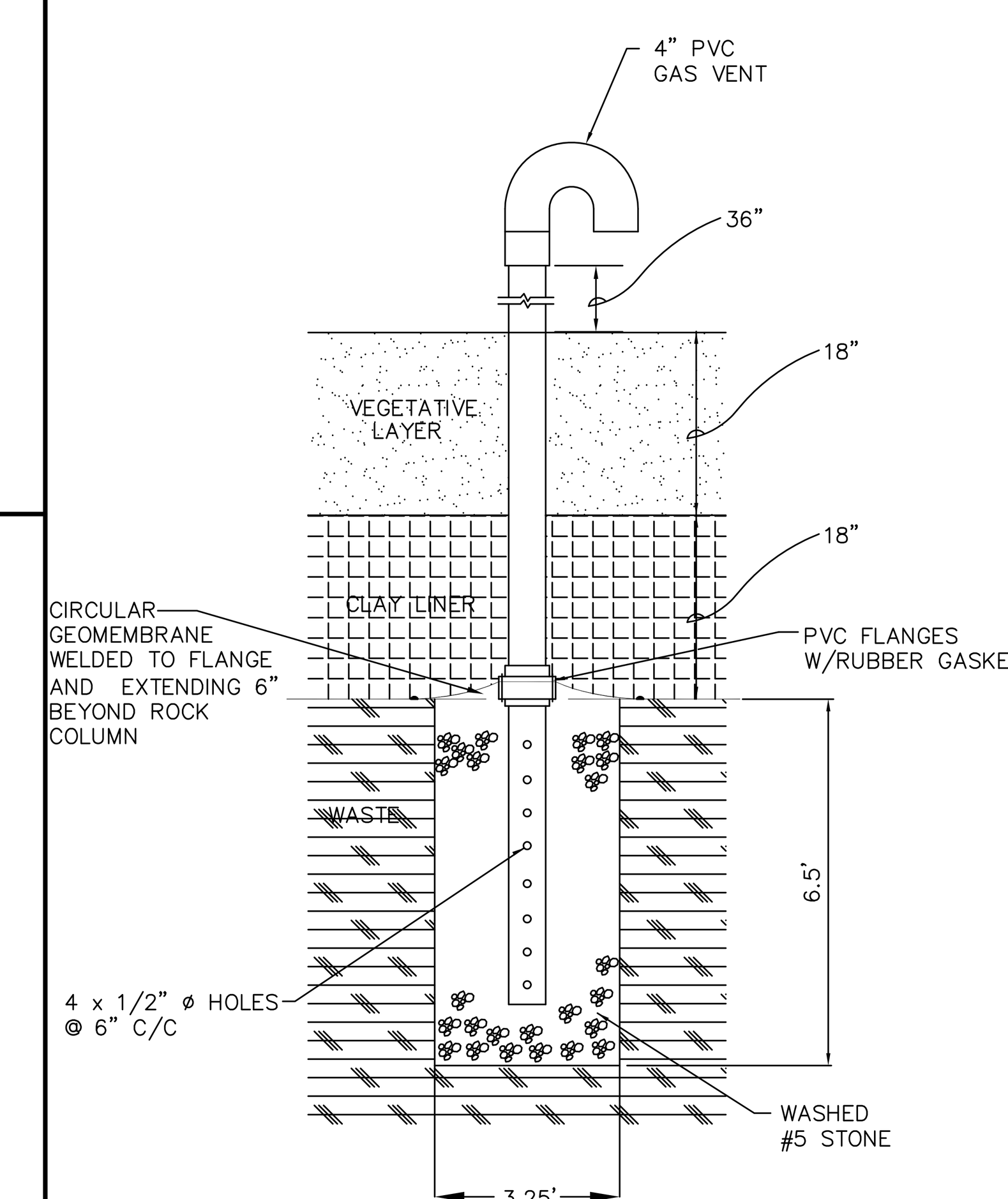
Rip Rap Apron Detail

SCALE: NTS



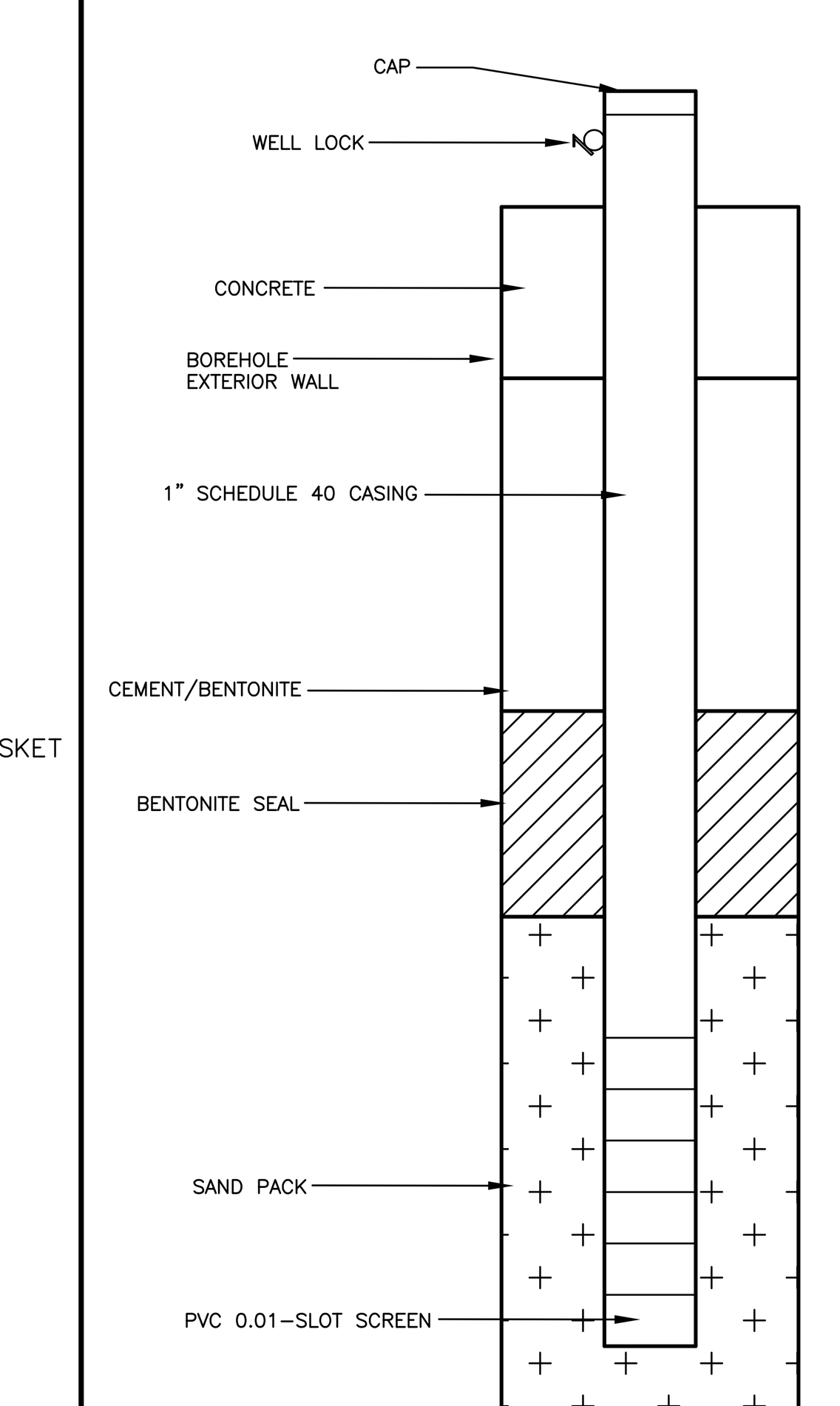
Final Cover System Detail

SCALE: NTS



Landfill Gas Monitoring Well Detail

SCALE: NTS



Methane Monitoring Well Detail

SCALE: NTS

REVISIONS			
NO.	DESCRIPTION	DATE	BY

APPROVALS
PROJECT ENG: SLB
DESIGNED BY: WRK
DRAWN BY: WRK
CHECKED BY: SLB
APPROVED: SLB

NORTH CAROLINA B.P. BARBER & ASSOCIATES, INC. No. F0636 CERTIFICATE OF AUTHORIZATION

DATE

SIGNATURE

BP Barber
Engineering • Experience • Excellence
COLUMBIA • SPARTANBURG • CHARLESTON
FLORENCE • CHARLOTTE • SAVANNAH

SHEET TITLE
SITE CONSTRUCTION DETAILS-2
DATE: JUNE 2008   SCALE: AS SHOWN

PROJECT
NORTH MECKLENBURG C&D LANDFILL CLOSURE MODIFICATIONS
FOR
NM LANDFILL, INC.
MECKLENBURG COUNTY   NORTH CAROLINA

DWG NAME: 05185_COV
N.B. NO.
REF.
PROJECT NO.: 05185NM
SHEET C4 OF 4
FILE NO.

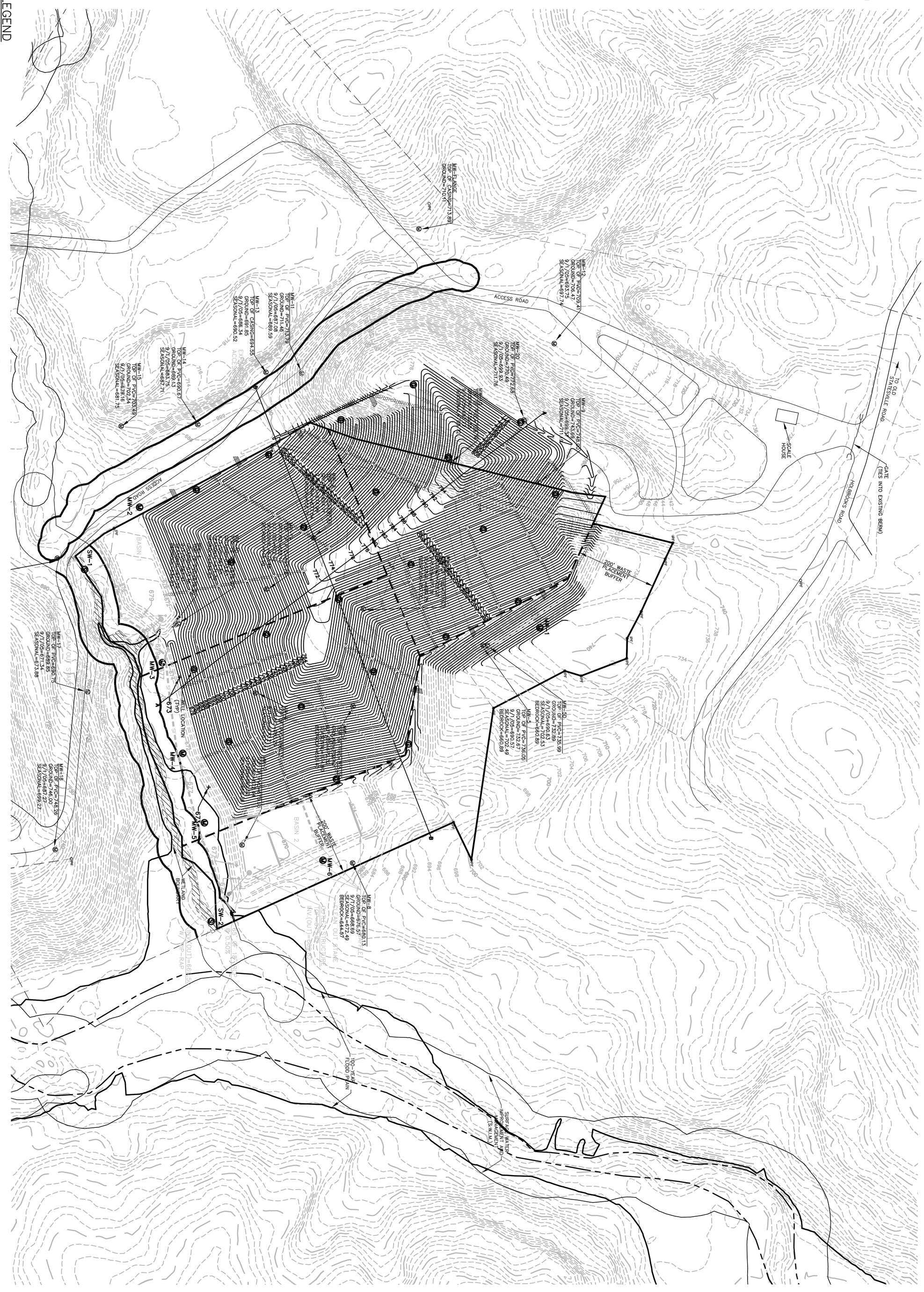
NOTES:

REFERENCE IS MADE TO THE FOLLOWING:

1. EXISTING CONTOURS BASED ON INFORMATION OBTAINED FROM MECKLENBURG COUNTY SEPTEMBER 2005.
2. ALL ELEVATIONS SHOWN ARE BASED ON MEAN SEA LEVEL DATUM.
3. GROUNDWATER DATA BASED ON INFORMATION PROVIDED BY GRIFFIN BROTHERS DATED SEPTEMBER 2005 AND NOVEMBER 2005.
4. NO COMPLETE BOUNDARY OR TOPOGRAPHIC SURVEY HAS BEEN PERFORMED BY B.P. BARBER & ASSOCIATES, INC. AT THIS TIME.

LEGEND

	EXISTING	NEW
CONTOURS (2')	82	82
CONTOURS (10')	90	90
GROUNDWATER CONTOURS	90	N/A
EDGE OF DIRT ROAD		N/A
EDGE OF PAVEMENT		N/A
PROPERTY LINE		N/A
IRON PIN FOUND	OIPF	N/A
POWER POLE	PP	N/A
GROUNDWATER MONITORING WELL	MW	N/A
OUTLET STRUCTURE	N/A	
SILT FENCE LINE	N/A	SF
LETDOWN CHANNEL		
CHECKDAMS		
PROPOSED LFG MONITORING WELL	N/A	LFG



SPECIAL NOTES:

INSPECTIONS SHALL BE CONDUCTED AS PRESCRIBED BY THE MAINTENANCE COVENANT. ADDITIONAL INSPECTIONS MAY BE CONDUCTED BY THE MECKLENBURG COUNTY LAND USE AND ENVIRONMENTAL SERVICES AGENCY ON ANY REASONABLE BASIS, INCLUDING BUT NOT LIMITED TO, ROUTINE INSPECTIONS, RANDOM INSPECTIONS, INSPECTIONS BASED UPON COMPLAINTS OR OTHER NOTICE OF POSSIBLE VIOLATIONS; INSPECTIONS OF DRAINAGE BASINS OR AREAS IDENTIFIED AS HIGHER THAN TYPICAL SOURCES OF SEDIMENT OR OTHER CONTAMINANTS OR POLLUTANTS; INSPECTIONS OF BUSINESSES OR INDUSTRIES OF A TYPE ASSOCIATED WITH HIGHER THAN USUAL DISCHARGERS OF CONTAMINANTS OR POLLUTANTS OR WITH DISCHARGES OF A TYPE WHICH ARE MORE LIKELY THAN THE TYPICAL DISCHARGE TO CAUSE VIOLATIONS OF STATE OR FEDERAL WATER QUALITY STANDARDS OR THE NPDES STORM WATER PERMIT; AND JOINT INSPECTIONS WITH OTHER AGENCIES INSPECTING UNDER ENVIRONMENTAL AND SAFETY LAWS. INSPECTIONS MAY INCLUDE, BUT ARE NOT LIMITED TO: REVIEWING MAINTENANCE AND REPAIR RECORDS; SAMPLING DISCHARGES, SURFACE WATER, GROUNDWATER, AND MATERIAL OR WATER IN BMPS; EVALUATING THE CONDITION OF BMPS AND STORM WATER MANAGEMENT PRACTICES.

RIGHT-OF-ENTRY FOR INSPECTION. WHEN ANY NEW BMP IS INSTALLED ON PRIVATE PROPERTY, THE PROPERTY OWNER SHALL GRANT TO THE MECKLENBURG COUNTY LAND USE AND ENVIRONMENTAL SERVICES AGENCY THE RIGHT TO ENTER THE PROPERTY AT REASONABLE TIMES AND IN A REASONABLE MANNER FOR THE PURPOSE OF INSPECTION. THIS INCLUDES THE RIGHT TO ENTER A PROPERTY WHEN THE MECKLENBURG COUNTY LAND USE AND ENVIRONMENTAL SERVICES AGENCY HAS A REASONABLE BASIS TO BELIEVE THAT A VIOLATION OF THIS REGULATION IS OCCURRING OR HAS OCCURRED, AND TO ENTER WHEN NECESSARY FOR ABATEMENT OF A PUBLIC NUISANCE OR CORRECTION OF A VIOLATION OF THIS REGULATION.

AREAS:

DISPOSAL FOOTPRINT: 756,549 SQ. FT. – 17.37 AC.

TOTAL AREA: 1,072,364 SQ. FT. – 24.62 AC.

FILE NO.

DWG. NAME: 05185C12
N.B. NO.:
REF.:
PROJECT NO.: 05185NM

SHEET C2 OF 4

PROJECT
NORTH MECKLENBURG C&D LANDFILL EXPANSION II
FOR
NM LANDFILL, INC.
MECKLENBURG COUNTY NORTH CAROLINA

SHEET TITLE
CLOSURE PLAN
DATE: JUNE 2008 SCALE: AS SHOWN

bpb
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FLORENCE • CHARLOTTE • SAVANNAH

SIGNATURE

NORTH CAROLINA CERTIFICATE OF AUTHORIZATION
B.P. BARBER & ASSOCIATES, INC. No. F0636
DATE

APPROVALS

PROJECT ENG:	SLB
DESIGNED BY:	WRK
DRAWN BY:	WRK
CHECKED BY:	SLB
APPROVED:	SLB

REVISIONS

NO.	DESCRIPTION	DATE	BY