Permit No.	Date	Document ID No.
3612	**December 7, 2010**	**12362**

526 South Church Street
Charlotte, NC 28202

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980-373-6707

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RECEIVED
December 6, 2010
Solid Waste Section
Asheville Regional Office

APPROVED DOCUMENT
Division of Waste Management
Solid Waste Section
Date **December 7, 2010** By **LY Frost**

December 6, 2010

Mr. Larry Frost
Regional Engineer
North Carolina Department of Environment and Natural Resources
Solid Waste Section
Division of Waste Management
Asheville Regional Office
2090 US Highway 70
Swannanoa, NC 28778

Subject: **Cells 1 and 2 Financial Assurance Cost Estimates**
Retired Ash Basin (RAB) Ash Landfill, Permit No. 36-12
Duke Energy Carolinas, LLC– Allen Steam Station
253 Plant Allen Road, Belmont, Gaston County, North Carolina

Dear Mr. Frost:

Duke Energy Corporation is pleased to submit for your review financial assurance cost estimates for the closure, post-closure, and any potential assessment and corrective action costs associated with Cells 1 and 2 of Allen Steam Station's Retired Ash Basin Landfill. Some of the following items are from the Permit to Construct (PTC) Application for Phase 1 of the Allen Steam Station – RAB Ash Landfill (dated March 2008):

Cover System Drawings from the PTC:

- C13 Phase 1 Interim Cover & Stormwater Management Plan
- D6 Final Cover System Details
- D8 E&SC Details II
- D9 Final Closure Stormwater Details

Financial Assurance Cost Estimate Tables:

- Table 1. Closure Cost Estimate
- Table 2. Post-Closure Cost Estimate
- Table 3. Potential Assessment and Corrective Action Cost Estimate

Please note, that for Cells 1 and 2, there is a stormwater management plan, and that a final cover plan was not developed for these cells alone. A final cover plan was prepared for the entire (final build-out) landfill Phases 1 and 2, which includes Cells 1 through 4. Closure costs were estimated by converting stormwater management features for Cells 1 and 2 to final cover system features (converting tack-on benches to rain gutters and adding a geosynthetic cover

system). A summary of the costs provided in the financial assurance cost estimate tables is presented below:

- Cells 1 and 2 closure, Table 1 - $3,213,900 ($119,000 per acre);
- Cells 1 and 2 post-closure, Table 2 - $1,380,900 ($46,000 annually over a 30 year period);
- Cells 1 and 2 potential assessment and corrective action, Table 3 - $211,800 ($7,100 annually over a 30 year period) (this is less than the minimum required amount of $3,000,000).

The total financial assurance cost estimate for Cells 1 and 2 is $7,594,800.

If you have any questions or comments, or need any additional information during your review, please do not hesitate to contact me at (980) 373-6707.

Very truly yours,

Andrew F. Tinsley

Andrew F. Tinsley
Waste and Remediation

Attachments

pdf: Ted Manes, Duke Energy
Don Scuggs, Duke Energy
Kyle Baucom, S&ME, Inc.
Ken Daly, S&ME, Inc.

EHS File No. 2-2-2
Retention No. 508558

TABLE 1
CLOSURE COST ESTIMATE
DUKE ENERGY - ALLEN STEAM STATION INDUSTRIAL LANDFILL NO. 1
PERMIT NO. 36-12
GASTON COUNTY, NC
DECEMBER 2010

	Quantity	Unit	Unit Cost	Total Cost
Final Cover System Construction Costs				
Demolition of Interim Cover Measures	27	AC	$1,000.00	$27,000
Fine Grading of Interim Cover	27	AC	$3,800.00	$102,600
40 mil LLDPE Geomembrane	1,176,120	SF	$0.50	$588,060
Geocomposite Drainage Layer	1,176,120	SF	$0.78	$917,374
6" Vegetative Layer	21,780	CY	$10.00	$217,800
18" Protective Cover	65,340	CY	$4.00	$261,360
Rain Gutter (12" Diameter with Geotextile and Stone)	6,118	LF	$20.00	$122,360
Down Drains (12" Diameter)	1,742	LF	$24.00	$41,801
Drop Inlets	10	EA	$5,000.00	$50,000
Outlet Protection Aprons	10	EA	$2,000.00	$20,000
Surveys	27.0	AC	$1,400.00	$37,800
Final Landscaping (Seeding, Fertilizing, and Mulching)	27.0	AC	$1,800.00	$48,600
Subtotal				$2,434,755
Mobilization/Demobilization (5% of Subtotal)				$121,738
Engineering Services, CQA/CQC (12% of Subtotal)				$292,171
Contingency (15% of Subtotal)				$365,213
Total				**$3,213,900**
Cost Per Acre (for 27 acres)				**$119,000**

TABLE 2
POST-CLOSURE COST ESTIMATE
DUKE ENERGY - ALLEN STEAM STATION INDUSTRIAL LANDFILL NO. 1
PERMIT NO. 36-12
GASTON COUNTY, NC
DECEMBER 2010

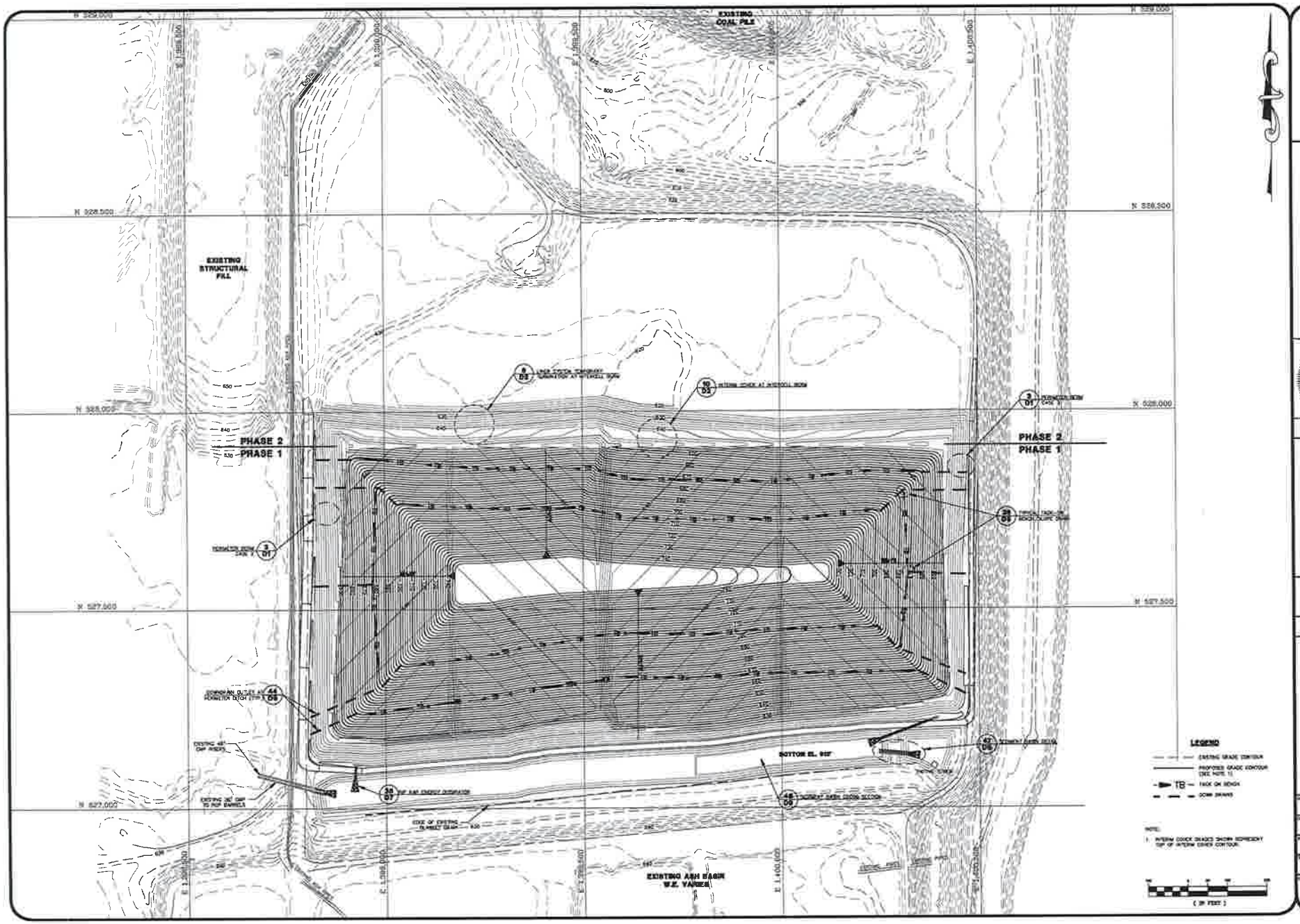
	Quantity	Unit	Unit Cost	Total Cost
Administration/Inspection/Recordkeeping[1]				
Staff Professional (80 Hrs/Yr @ $85/Hr)	30	Yr	$6,800.00	$204,000
Technician (40 Hrs/Yr @ $60/Hr)	30	Yr	$2,400.00	$72,000
Clerical (8 Hrs/Yr @ $50/hr)	30	Yr	$400.00	$12,000
Maintenance				
Fencing, Gates, Signs, Etc.	30	Yr	$1,000.00	$30,000
Access Roads	30	Yr	$2,000.00	$60,000
Mowing ($100 per acre per quarter over 19.5 acres)	30	Yr	$10,800.00	$324,000
Stormwater Structures	30	Yr	$5,000.00	$150,000
Leachate Collection and Storage	30	Yr	$1,000.00	$30,000
Final Cover System ($1,500 per acre)[2]	30	Yr	$10,125.00	$303,750
Fees				
Annual Permit Fee	30	Yr	$500.00	$15,000
Subtotal				$1,200,750
Contingency (15% of Subtotal)				$180,113
30 Year Total				**$1,380,900**
30 Year Total Per Acre (for 27 acres)				**$51,100**
Cost Per Year (Includes 15% Contingency)				**$46,000**
Cost Per Year Per Acre (for 27 acres)				**$1,704**

Notes:
1. Assumes quarterly monitoring and reporting, preparation of annual report, and managing site activities.
2. Assumes erosion repair and seeding for 25 percent of the cover annually.

TABLE 3
POTENTIAL ASSESMENT AND CORRECTIVE ACTION COST ESTIMATE
DUKE ENERGY - ALLEN STEAM STATION INDUSTRIAL LANDFILL NO. 1
PERMIT NO. 36-12
GASTON COUNTY, NC
DECEMBER 2010

	Quantity	Unit	Unit Cost	Total Cost
Compliance Monitoring				
Staff Professional (24 Hrs/Yr @ $85/Hr)[1]	30	Yr	$2,040.00	$61,200
Clerical (2 Hrs/Yr @ $50/hr)	30	Yr	$100.00	$3,000
Analytical				
4 LDS Sumps Sampled and Analyzed Semi-Annually for 30 Years	240	Event	$500.00	$120,000
Subtotal				$184,200
Contingency (15% of Subtotal)				$27,630
30 Year Total				**$211,800**
30 Year Total Per Acre (for 27 acres)				**$7,800**
Cost Per Year (Includes 15% Contingency)				**$7,100**
Cost Per Year Per Acre (for 27 acres)				**$263**

Notes:
1. Assumes semi-annual compliance monitoring and reporting.



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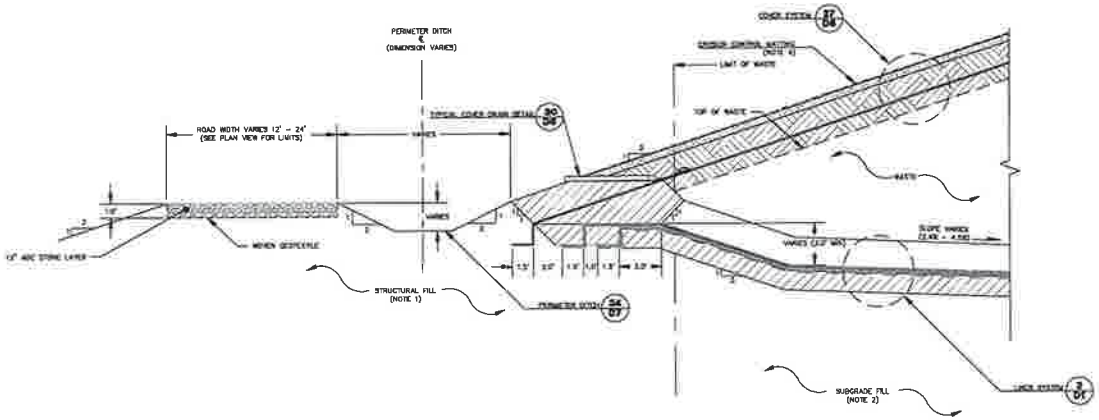
PHASE I INTERIM COVER & STORMWATER MANAGEMENT PLAN
RETIRED ASH BASIN IRASI - ASH LANDFILL

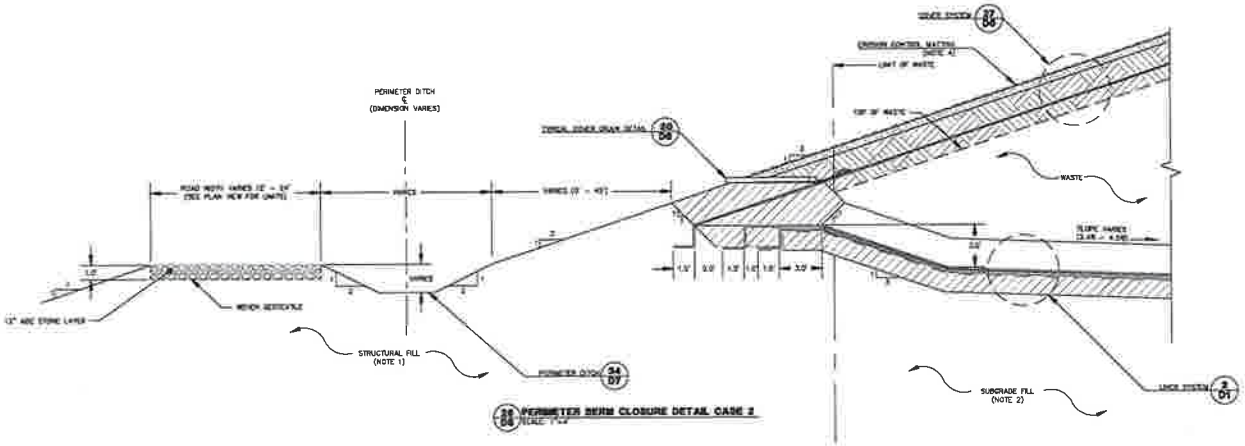
DUKE ENERGY - ALLEN STEAM STATION
BELMONT, NORTH CAROLINA

DRAWN BY: CLD	CHECKED BY:
DESIGNED BY: CFS	APPROVED BY:
PROJECT NUMBER: 1356-06-025	
SCALE: 1" = 100'	DATE: 3-12-08
DRAWING: C13	SH: 24

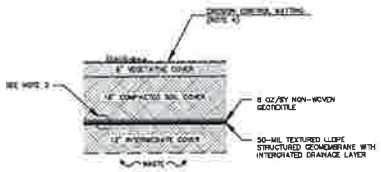


26 D6 PERIMETER BERM CLOSURE DETAIL CASE 1
SCALE: 1"=4'

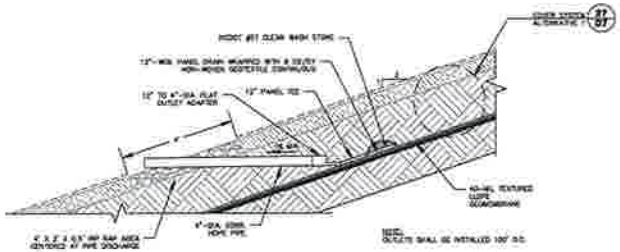
27 D6 COVER SYSTEM DETAIL - ALTERNATIVE 1
SCALE: 1"=2'



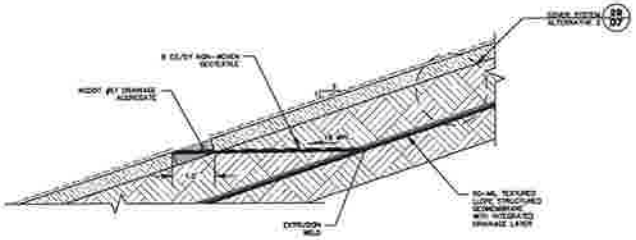
28 D6 PERIMETER BERM CLOSURE DETAIL CASE 2
SCALE: 1"=4'



29 D6 COVER SYSTEM DETAIL - ALTERNATIVE 2
SCALE: 1"=2'



30 D6 TYPICAL COVER DRAIN DETAIL - ALTERNATIVE 1
SCALE: 1"=2'



31 D6 TYPICAL COVER SYSTEM DRAIN DETAIL - ALTERNATIVE 2
SCALE: 1"=2'

NOTES:

1. STRUCTURAL FILL SHALL CONSIST OF BORROW SOILS CONSISTENT WITH SPECIFICATION SECTION 02320
2. SUBGRADE FILL SHALL CONSIST OF BORROW SOILS AND/OR ASH FILL CONSISTENT WITH SPECIFICATION SECTION 02320
3. DETAIL IS DRAWN TO SCALE WITH THE EXCEPTION OF THE GEOSYNTHETIC COMPONENTS WHICH ARE EXAGGERATED FOR CLARITY.
4. FINAL SLOPES OF 3H:1V OR GREATER SHALL BE COVERED WITH EROSION CONTROL MATTING.
5. ANCHOR TRENCH BACKFILL SHALL CONSIST OF SAME MATERIAL USED TO CONSTRUCT SOIL LINER

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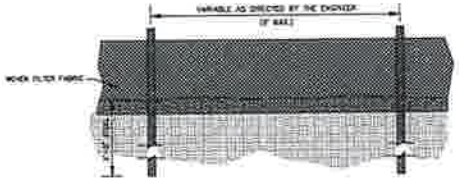
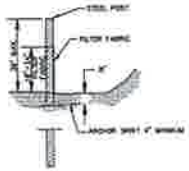
NO	DATE	DESCRIPTION	BY

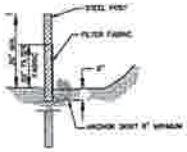
FINAL COVER SYSTEM DETAILS
RETIRED ASH BASIN (RAB) - ASH LANDFILL

DUKE ENERGY - ALLEN STEAM STATION
BELMONT, NORTH CAROLINA

DRAWN BY: ELH	DESIGNED BY: KRD
CHECKED BY: CFS	APPROVED BY:
PROJECT NUMBER: 1356-06-625	
SCALE: AS SHOWN	DATE: 3/12/08
DRAWING: D6	OF: 24







GENERAL NOTES

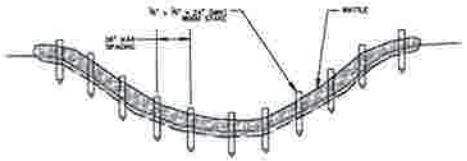
1. PREFABRICATED SILT FENCE IS NOT ACCEPTABLE ON THIS PROJECT.
2. STEEL POSTS SHALL BE USED ON THIS PROJECT INSTEAD OF WOOD POSTS.
3. FILTER FABRIC FENCE SHALL BE A MINIMUM OF 32" IN WIDTH AND SHALL HAVE A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
4. WOVEN FILTER FABRIC SHALL BE USED WHERE SILT FENCE IS TO REMAIN FOR A PERIOD OF MORE THAN 30 DAYS.
5. STEEL POSTS SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-FASTENER ANGLE STEEL TYPE.
6. TURN SILT FENCE UP SLOPE AT ENDS.
7. SILT FENCE SHALL BE STANDARD STRENGTH FILTER FABRIC WITH WIRE MESH REINFORCEMENT OR EXTRA STRENGTH FILTER FABRIC.
8. WHEN FABRIC IS USED WITH WIRE MESH, 6' HARDWOOD POSTS MAY BE USED.
9. THE USE OF SILT FENCE IN AREAS OF CONCENTRATED FLOW IS INAPPROPRIATE.

MAINTENANCE NOTES

1. INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
2. SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
3. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. TAKE CARE TO AVOID UNDERMINING THE FENCE DURING CLEANOUT.
4. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
*REF: 6.62.7 NC Erosion and Sediment Control Planning and Design Manual, 2006

36/D8 TYPICAL SILT FENCE INSTALLATION DETAIL
NTS

38/D8 TYPICAL TACK-ON BENCH/SLOPE DRAIN DETAIL
SCALE: 1" = 2'



GENERAL NOTES

1. SPACE WATTLES ACCORDING TO TABLE I ALONG ANY PORTION OF DITCHLINE WITH A SLOPE OF 5 PERCENT OR GREATER AND A SLOPE LENGTH OF 50 FEET OR GREATER.

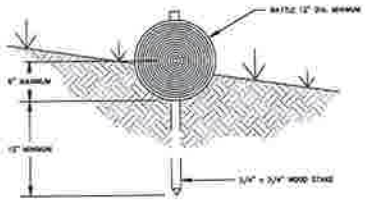
TABLE 1: WATTLE SPACING

SLOPE (%)	SPACING DISTANCE (FT. O.C.) 12" DIA.	18" DIA.
5	20	30
6	17	25
7	14	21
8	13	19
9	11	17
10	10	15

2. PLACE FIRST WATTLE 1/2 SPACING DISTANCE FROM CREST OF QUALIFYING SLOPE
3. SPACE WOODEN STAKES 3 FEET O.C.
4. PLACE CHECK DAMS OR WATTLES AT THE LOWER LIMITS OF EACH DAYS WORK.

MAINTENANCE NOTES

1. IT IS IMPERATIVE THAT WATTLES BE INSPECTED AFTER INSTALLATION AND SIGNIFICANT (0.5" OR GREATER) RAINFALL EVENTS.
2. THERE ARE TO BE NO GAPS BETWEEN ADJACENT WATTLES OR BETWEEN SOIL SURFACE AND WATTLE BOTTOM.
3. REPAIR ANY UPSLOPE OR UNDERCUTTING DEFICIENCIES FOR PROPER PERFORMANCE.
4. REMOVE ALL FILTRATION IMPEDIMENTS INCLUDING SEDIMENT DEPOSITS AND LOOSE DEBRIS WHEN SUCH CONDITIONS IMPACT WATTLE FUNCTIONALITY.
5. SEDIMENT BUILD UP SHOULD NOT BE ALLOWED TO EXCEED ONE THIRD OF WATTLE HEIGHT.
6. MONITOR CHANGING CONDITIONS TO ANTICIPATE WATTLE REMOVAL OR REPLACEMENT.
*REF: EASTCOAST EROSIONBLANKETS INSPECTION AND MAINTENANCE WWW.EROSIONBLANKETS.COM



37/D8 TYPICAL WATTLE DETAIL
NTS

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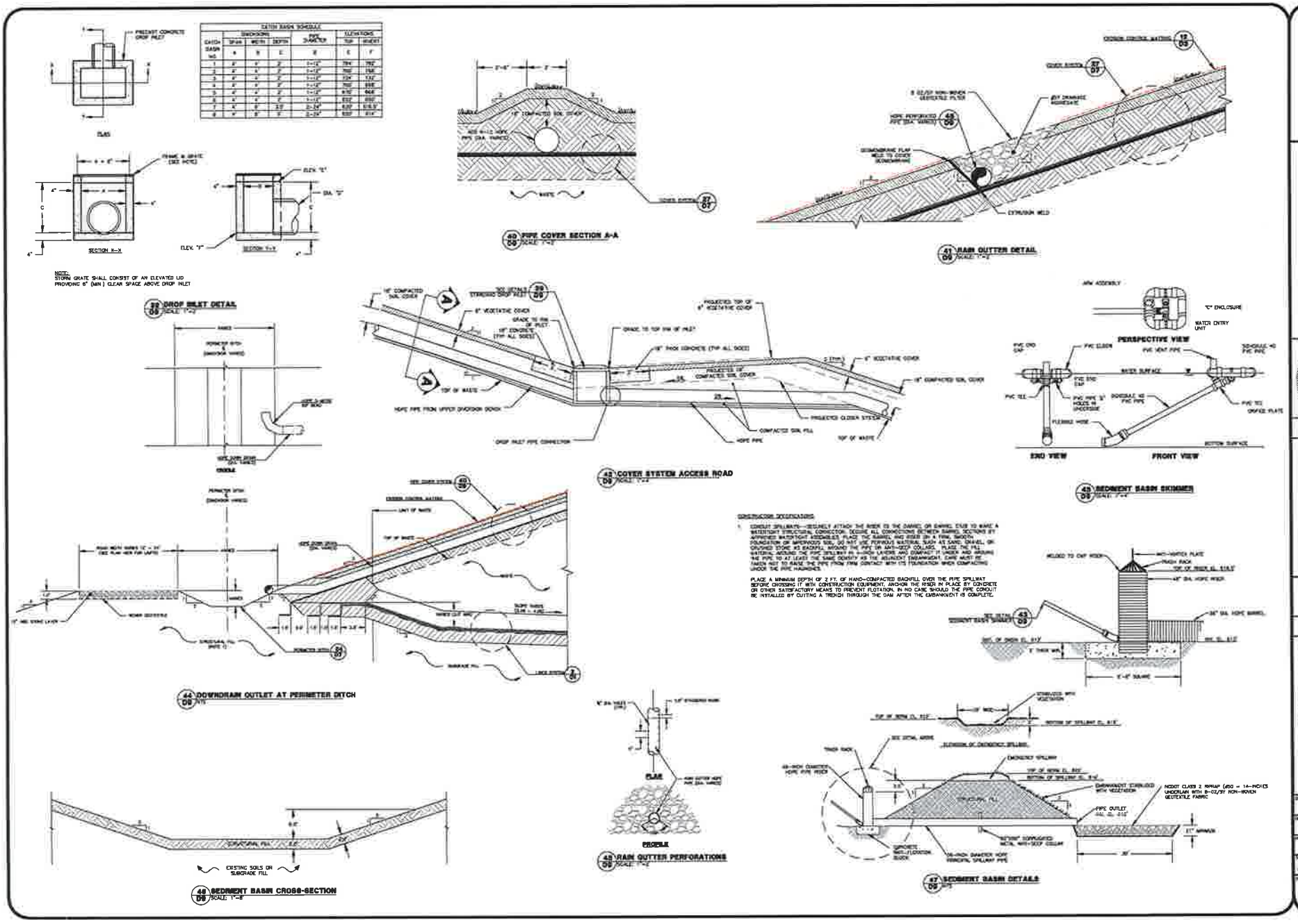
NO.	DATE	DESCRIPTION	BY

EROSION CONTROL DETAILS III
RETIRED ASH BASIN (RAB) - ASH LANDFILL

DUKE ENERGY - ALLEN STEAM STATION
BELMONT, NORTH CAROLINA

DRAWN BY: CLH
DESIGNED BY: KRD
REVIEWED BY: JAB
APPROVED BY:
PROJECT NUMBER: 1356-06-825
SCALE: AS SHOWN
DATE: 3/12/08
DRAWING: D8
OF: 24



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FINAL CLOSURE STORMWATER DETAILS RETIRED ASH BASIN (RAB) - ASH LANDFILL	DUKE ENERGY - ALLEN STEAM STATION BELMONT, NORTH CAROLINA
DRAWN BY: ELH	CHECKED BY: KRD
DESIGNED BY: JWB	APPROVED BY:
PROJECT NUMBER: 1356-06-825	
SCALE: AS SHOWN	DATE: 3/12/08
DRAWING: D9	NO.: 24

NO.	DATE	DESCRIPTION	BY