SW-11-054-7 9228 20010521 P-0

Permit:	92-28
Name:	Red Rock Disposal Landfill
County:	Wake
Shipped Date:	
Box:	SW-11-054
Document Type:	Other (O)
Document Date:	5/21/2001
Division:	Waste Management (WM)
Sub-Division:	Solid Waste (SW)
Document Category:	Facility (F)
Document Group:	Authorization or Permit (P)
Description:	Map: . Maps in Roll: 14

Wake
Red Rock

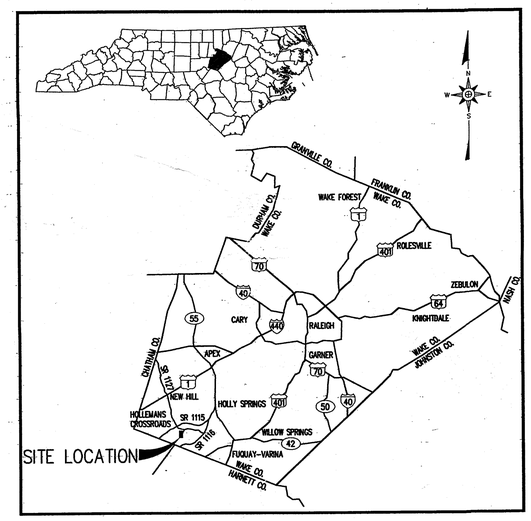
RED ROCK DISPOSAL, LLC
WAKE COUNTY, NORTH CAROLINA

CONSTRUCTION & DEMOLITION DEBRIS (C&D) LANDFILL
PHASE 1
ENGINEERING DRAWINGS

MAY 2001

14 sheets

92-28



VICINITY MAP
N.T.S.

SHEET NO.	DRAWING NO.	DRAWING TITLE
1	1	TITLE/COVER SHEET
2	E1	EXISTING SITE CONDITIONS
3	E2	FACILITY PLAN – BASE GRADES
4	E3	FACILITY PLAN – FINAL COVER GRADES
5	E4	PHASE 1 – SUBGRADE
6	E5	PHASE 1 – FINAL GRADING AND DRAINAGE PLAN
7	G1	PHASE 1 – DETAILS
8	X1	PHASE 1 – ENGINEERING CROSS SECTIONS (SHEET 1 OF 2)
9	X2	PHASE 1 – ENGINEERING CROSS SECTIONS (SHEET 2 OF 2)
10	EC1	PHASE 1 – EROSION AND SEDIMENTATION CONTROL DETAILS (SHEET 1 OF 4)
11	EC2	PHASE 1 – EROSION AND SEDIMENTATION CONTROL DETAILS (SHEET 2 OF 4)
12	EC3	PHASE 1 – EROSION AND SEDIMENTATION CONTROL DETAILS (SHEET 3 OF 4)
13	EC4	PHASE 1 – EROSION AND SEDIMENTATION CONTROL DETAILS (SHEET 4 OF 4)
14	P1	PHASE 1 – FILLING SEQUENCE

5/21/01

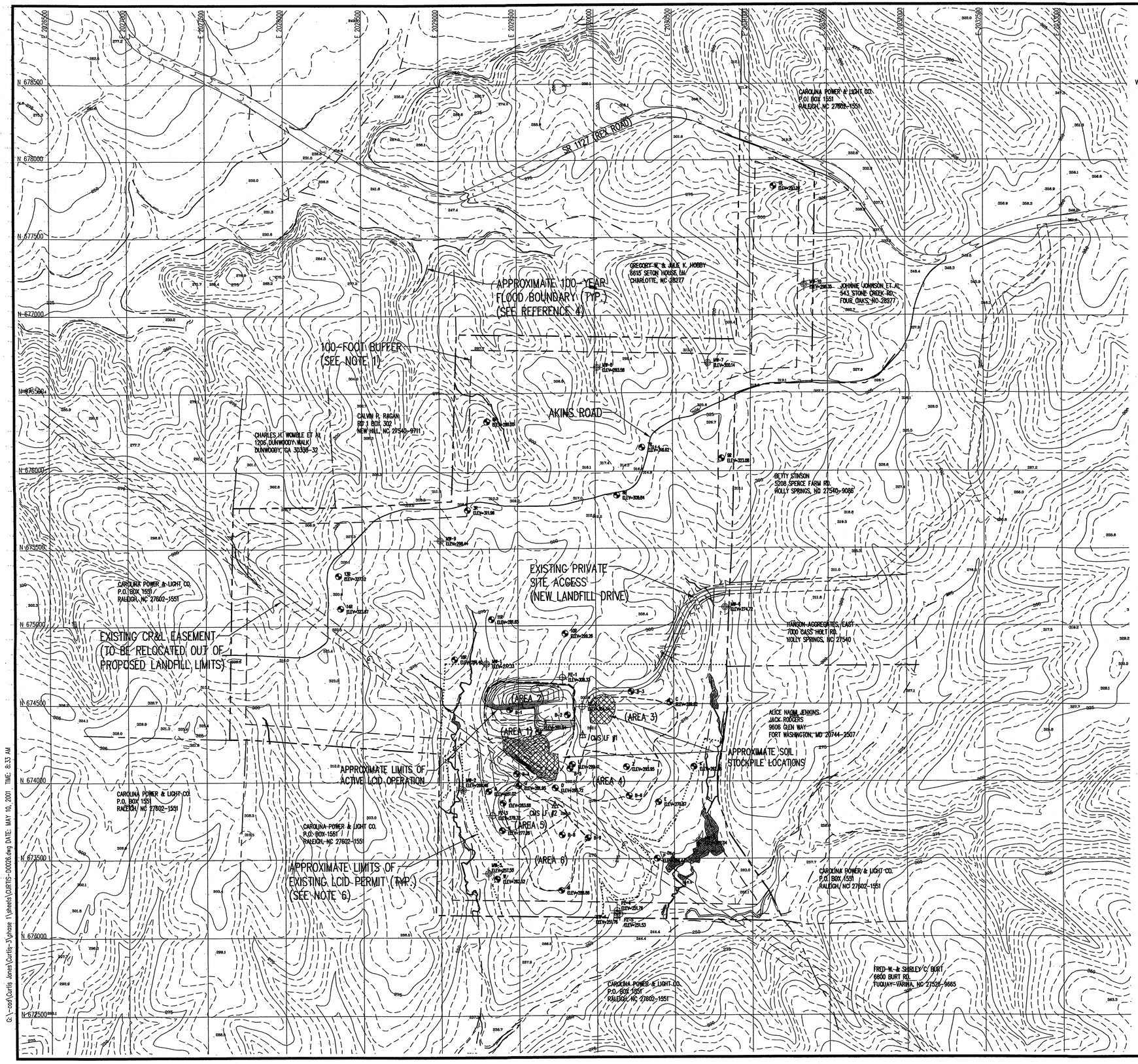
Wake

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
425 N. BOYLAN AVENUE RALEIGH, N.C. 27603
PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

CAROLINA PROFESSIONAL SEAL 021666 ENGINEER PETER K. SCHEER
5/21/01

FILE NAME
CURTIS-D0025

G:\r-ccd\Curtis Jones\Curtis-3\phase 1\sheets\CURTIS-D0025.dwg DATE: MAY 17, 2001 TIME: 5:01 PM



SURVEY MONUMENTS			
MONUMENT	NORTHING	EASTING	ELEV.
OWS LF #1	674301.66	2029911.23	303.10
OWS LF #2	673847.32	2029733.41	299.04

LEGEND

300	EXISTING 25' CONTOUR
	EXISTING 5' CONTOUR
	PROPERTY LINE (PER REFERENCE 2)
	WATER COURSE (PER REFERENCE 3)
	APPROXIMATE PROPERTY LINE FOR EXISTING LCID LANDFILL
	100-YEAR FLOOD BOUNDARY (PER REFERENCE 4)
MW-1	MONITORING WELLS INSTALLED BY THE HUTCHINSON GROUP, LTD. JULY-NOV. 2000
PZ-1	PIEZOMETERS INSTALLED BY THE HUTCHINSON GROUP, LTD. JULY-NOV. 2000
C & 2R	BORINGS INSTALLED BY THE HUTCHINSON GROUP, LTD. JULY-NOV. 2000
B-1	BORINGS INSTALLED BY TAI & ASSOCIATES JULY 1996
	SURVEY MONUMENT
ELEV=	EXISTING GROUND SURFACE ELEVATION AT THE TIME OF DRILLING (SEE NOTE 1)
	DELINEATED WETLAND AREAS (SEE NOTE 5)
(AREA 4)	SIX CELL AREAS WITHIN EXISTING LCID LANDFILL

NOTES:

1. THIS BUFFER REPRESENTS A TYPE A BUFFER YARD AND A TRANSITIONAL BUFFER IN ACCORDANCE WITH WAKE COUNTY ZONING REQUIREMENTS. THIS 100-FOOT BUFFER ALSO INCLUDES, BUT DOES NOT SHOW, A 50-FOOT UNDISTURBED BUFFER ALSO PER WAKE COUNTY ZONING REQUIREMENTS.
2. ELEVATIONS REFERENCE U.S.G.S. VERTICAL DATUM (MSL).
3. GRID COORDINATES REFERENCE NC STATE PLANE SYSTEM (NAD 1983).
4. WELL MW-4 WAS USED AS A PUMP TEST WELL WITH PZ-4 AND PZ-5 AS OBSERVATION WELLS.
5. USACOE ACTION I.D. #199820776 SECTION 404 PERMIT HAS BEEN SUPERCEDED BY A DELINEATION PERFORMED BY SOIL & ENVIRONMENTAL CONSULTANTS; SURVEYED BY SURVEYING SOLUTIONS, P.C., DATED APRIL 2001.
6. THE CURRENT PERMIT FOR THE RED ROCK DISPOSAL, LLC LCID LANDFILL INCLUDES AREAS 1 THROUGH 6. HOWEVER, THE PERMIT TO CONSTRUCT (DATED 7/21/98) WAS ISSUED ONLY FOR AREAS 1 AND 2.

REFERENCES:

1. TOPOGRAPHY REFERENCES WAKE COUNTY G.I.S.
2. THE PROPERTY LINE SHOWN REFERENCES DRAWING TITLED, "BOUNDARY SURVEY FOR WASTE INDUSTRIES, INC.", PREPARED BY SURVEY SOLUTIONS, P.C. DATED 12/27/00, SCALE 1"=400'.
3. NATURAL WATERWAYS SHOWN DEPICT STREAMS PER THE MOST RECENT U.S.G.S. QUADRANGLE MAP (1993).
4. 100-YEAR FLOOD BOUNDARY FROM MAPS #354, 355, 370, 371 USACOE/FEMA RESTUDY WORKSHEETS (1989-1992)
5. DRAWING TITLED "EXCAVATION PLAN", DATED (REV.) AUGUST 14, 1998, PREPARED BY BRETHAUER CONSULTING ENGINEERING, SCALE 1"=100'.

0 300' 600' 900'

NO.	DATE	REVISION

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
425 N. BOYLAN AVENUE RALEIGH, N.C. 27603
PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

SEAL

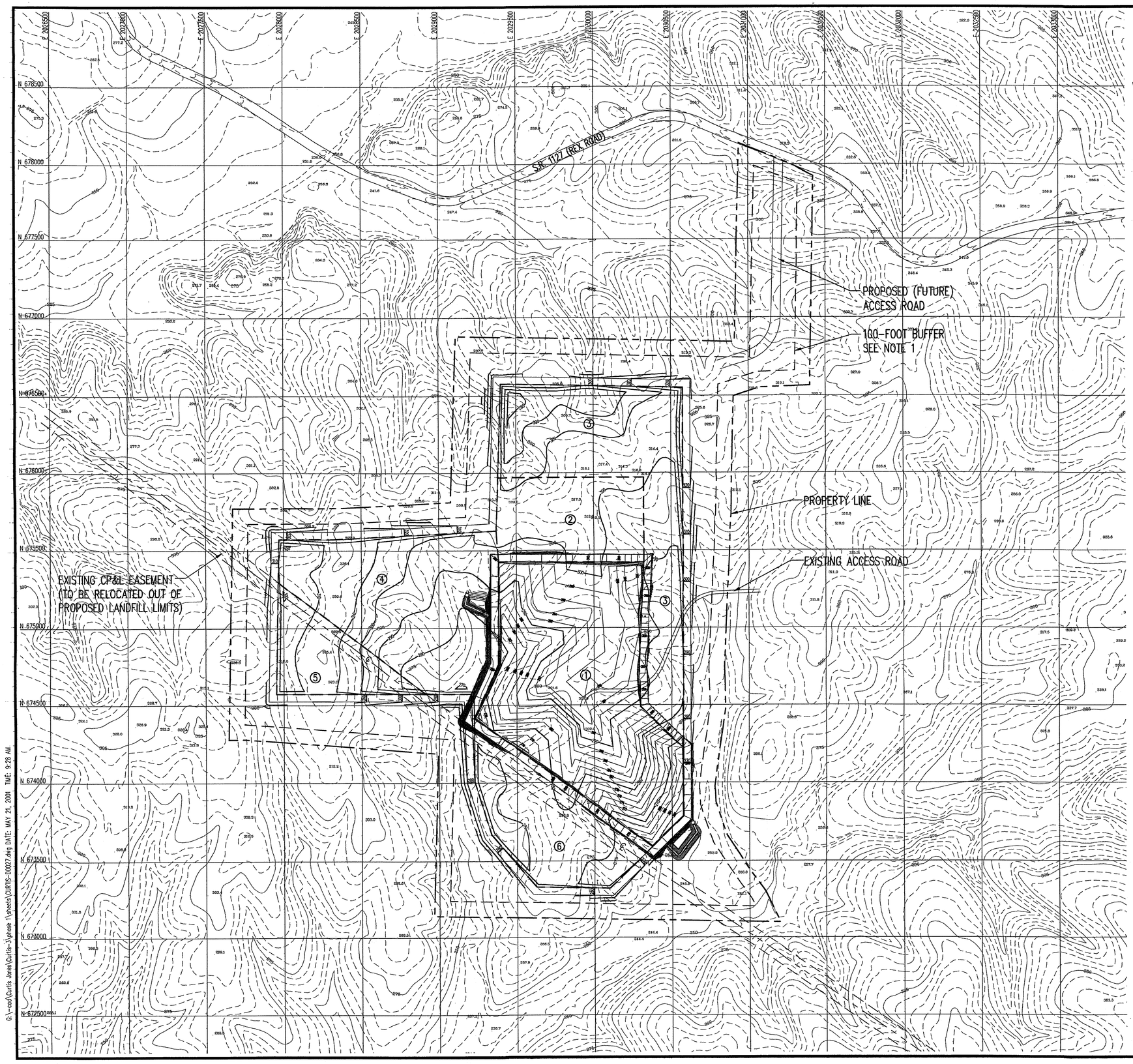
SEAL

PROJECT TITLE: RED ROCK DISPOSAL, LLC CONSTRUCTION/DEMOLITION LANDFILL PHASE 1 WAKE COUNTY, NC

DRAWING TITLE: EXISTING SITE CONDITIONS

DESIGNED BY: J.M.G.	DRAWN BY: C.T.J.
CHECKED BY: G.N.R.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME CURTIS-D0026	
SHEET NO. 2	DRAWING NO. E1

G:\-cad\Curtis Jones\Curtis-3\phase 1\sheets\CURTIS-D0026.dwg DATE: MAY 10, 2001 TIME: 8:33 AM



LEGEND

300	EXISTING 25' CONTOUR
	EXISITING 5' CONTOUR
	PROPERTY LINE (PER REFERENCE 2)
	PROPOSED PHASING

NOTES:

1. THIS BUFFER REPRESENTS A TYPE A BUFFER YARD AND A TRANSITIONAL BUFFER IN ACCORDANCE WITH WAKE COUNTY ZONING REQUIREMENTS. THIS 100-FOOT BUFFER ALSO INCLUDES, BUT DOES NOT SHOW, A 50-FOOT UNDISTURBED BUFFER ALSO PER WAKE COUNTY ZONING REQUIREMENTS.
2. ELEVATIONS REFERENCE U.S.G.S. VERTICAL DATUM (MSL).
3. GRID COORDINATES REFERENCE NC STATE PLANE SYSTEM (NAD 1983).

REFERENCES:

1. TOPOGRAPHY REFERENCES WAKE COUNTY G.I.S.
2. THE PROPERTY LINE SHOWN REFERENCES DRAWING TITLED, "BOUNDARY SURVEY FOR WASTE INDUSTRIES, INC.", PREPARED BY SURVEY SOLUTIONS, P.C. DATED 12/27/00, SCALE 1"=400'.

0 300' 600' 900'

DATE	NO.	REVISION

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
425 N. BOYLAN AVENUE RALEIGH, N.C. 27603
PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

SEAL

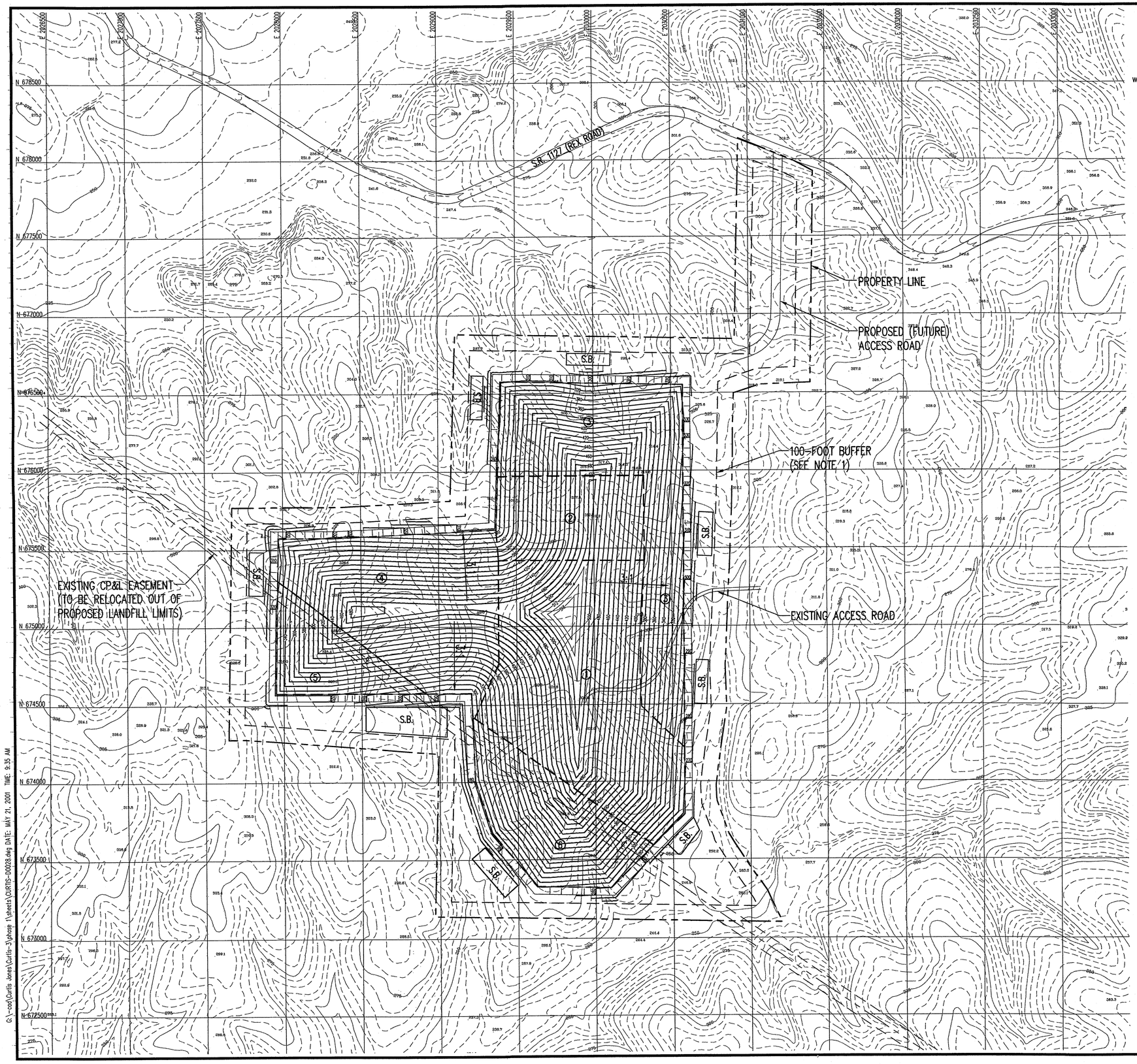
SEAL

PROJECT TITLE: RED ROCK DISPOSAL, LLC CONSTRUCTION/DEMOLITION LANDFILL PHASE 1 WAKE COUNTY,NC

DRAWING TITLE: FACILITY PLAN BASE GRADES

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: J.M.G.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME CURTIS-D0027	
SHEET NO. 3	DRAWING NO. E2

G:\-cad\Curtis Jones\Curtis-3\phase 1\sheets\CURTIS-D0027.dwg DATE: MAY 21, 2001 TIME: 9:28 AM



LEGEND

300	EXISTING 25' CONTOUR
	EXISTING 5' CONTOUR
	PROPERTY LINE (PER REFERENCE 2)
	PROPOSED PHASING
S.B.	CONCEPTUAL SEDIMENT BASIN LOCATION (FINAL LOCATION TO BE DETERMINED)

NOTES:

1. THIS BUFFER REPRESENTS A TYPE A BUFFER YARD AND A TRANSITIONAL BUFFER IN ACCORDANCE WITH WAKE COUNTY ZONING REQUIREMENTS. THIS 100-FOOT BUFFER ALSO INCLUDES, BUT DOES NOT SHOW, A 50-FOOT UNDISTURBED BUFFER ALSO PER WAKE COUNTY ZONING REQUIREMENTS.
2. ELEVATIONS REFERENCE U.S.G.S. VERTICAL DATUM (MSL).
3. GRID COORDINATES REFERENCE NC STATE PLANE SYSTEM (NAD 1983).

REFERENCES:

1. TOPOGRAPHY REFERENCES WAKE COUNTY G.I.S.
2. THE PROPERTY LINE SHOWN REFERENCES DRAWING TITLED, "BOUNDARY SURVEY FOR WASTE INDUSTRIES, INC.", PREPARED BY SURVEY SOLUTIONS, P.C. DATED 12/27/00, SCALE 1"=400'.

0 300' 600' 900'

NO.	DATE	REVISION

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
425 N. BOYLAN AVENUE RALEIGH, N.C. 27603
PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

SEAL

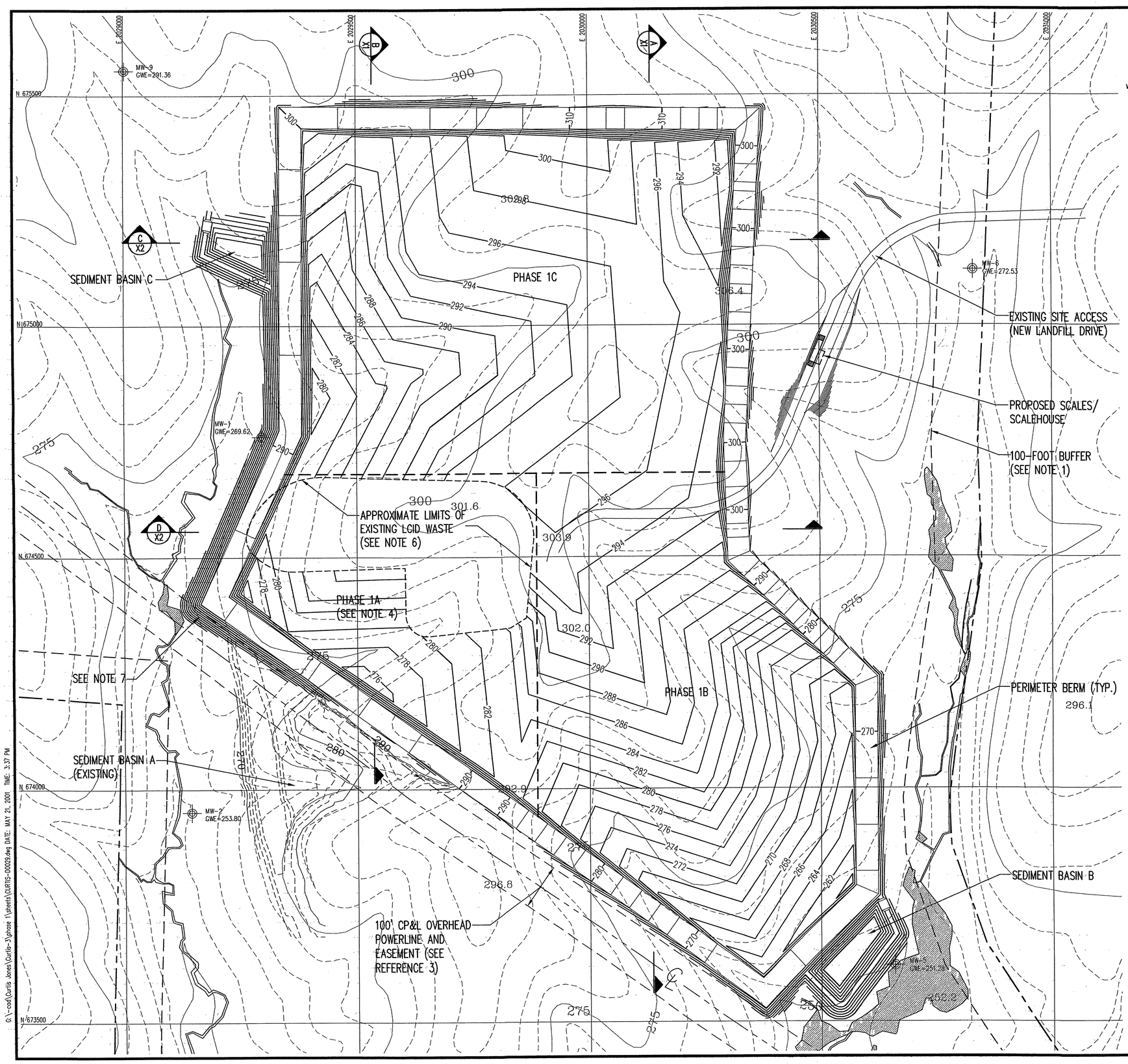
SEAL

PROJECT TITLE:
RED ROCK DISPOSAL, LLC
CONSTRUCTION/DEMOLITION
LANDFILL PHASE 1
WAKE COUNTY, NC

DRAWING TITLE:
FACILITY PLAN
FINAL COVER GRADES

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: J.M.G.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME: CURTIS-D0028	
SHEET NO. 4	DRAWING NO. E3

G:\-cad\Curtis Jones\Curtis-3\phase 1\sheets\CURTIS-D0028.dwg DATE: MAY 21, 2001 TIME: 9:35 AM



LEGEND

300	EXISTING 25' CONTOUR
	EXISTING 5' CONTOUR
280	PROPOSED SUBGRADE CONTOUR (BASE OF WASTE)
	PROPERTY LINE (PER REFERENCE 2)
MW-1	MONITORING WELLS INSTALLED BY THE HUTCHINSON GROUP, LTD. JULY-NOV. 2000
ELEV=	EXISTING GROUND SURFACE ELEVATION AT THE TIME OF DRILLING
	DELINEATED WETLAND AREAS (PER REFERENCE 4)
	DELINEATED CHANNEL (PER REFERENCE 4)

NOTES:

1. THIS BUFFER REPRESENTS A TYPE A BUFFER YARD AND A TRANSITIONAL BUFFER IN ACCORDANCE WITH WAKE COUNTY ZONING REQUIREMENTS. THIS 100-FOOT BUFFER ALSO INCLUDES, BUT DOES NOT SHOW, A 50-FOOT UNDISTURBED BUFFER ALSO PER WAKE COUNTY ZONING REQUIREMENTS.
2. ELEVATIONS REFERENCE U.S.G.S. VERTICAL DATUM (MSL).
3. GRID COORDINATES REFERENCE NC STATE PLANE SYSTEM (NAD 1983).
4. THE SUBGRADE ELEVATIONS IN PHASE 1A HAVE BEEN ESTABLISHED BASED ON A CONSERVATIVE ISOLATION DISTANCE ABOVE SEASONAL HIGH GROUND WATER LEVEL (I.E. 6 FEET).
5. SUBGRADE ELEVATION IN PHASE 1 (WITH THE EXCEPTION OF SUBCELL 1A) WILL BE ESTABLISHED AT A LATER DATE BASED ON FUTURE GROUND WATER LEVEL MEASUREMENTS. THE FINAL SUBGRADE IN THESE AREAS MAY VARY FROM THAT SHOWN HERE.
6. THE PHASE 1 C&D WASTE WILL LAY OVER THE EXISTING LCID WASTE.
7. CP&L APROVAL WILL BE RECEIVED PRIOR TO PLACEMENT OF ANY SOIL OR WASTE MATERIAL WITHIN THE 100' UTILITY EASEMENT.

REFERENCES:

1. TOPOGRAPHY REFERENCES WAKE COUNTY G.I.S.
2. THE PROPERTY LINE SHOWN REFERENCES DRAWING TITLED, "BOUNDARY SURVEY FOR WASTE INDUSTRIES, INC.", PREPARED BY SURVEY SOLUTIONS, P.C. DATED 12/27/00, SCALE 1"=400'.
3. CP&L POWERLINE/EASEMENT REFERENCES THE BOUNDARY SURVEY.
4. DELINEATION PERFORMED BY SOIL & ENVIRONMENTAL CONSULTANTS; SURVEYED BY SURVEYING SOLUTIONS, P.C., DATED APRIL 2001.

0 100' 200' 300'

DATE	NO.	REVISION

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
426 N. BOYLAN AVENUE RALEIGH, N.C. 27603
PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

SEAL

PROJECT TITLE: RED ROCK DISPOSAL, LLC CONSTRUCTION/DEMOLITION LANDFILL PHASE 1 WAKE COUNTY,NC

DRAWING TITLE: PHASE 1 SUBGRADE

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: J.M.G.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME: CURTIS-D0029	
SHEET NO. 5	DRAWING NO. E4

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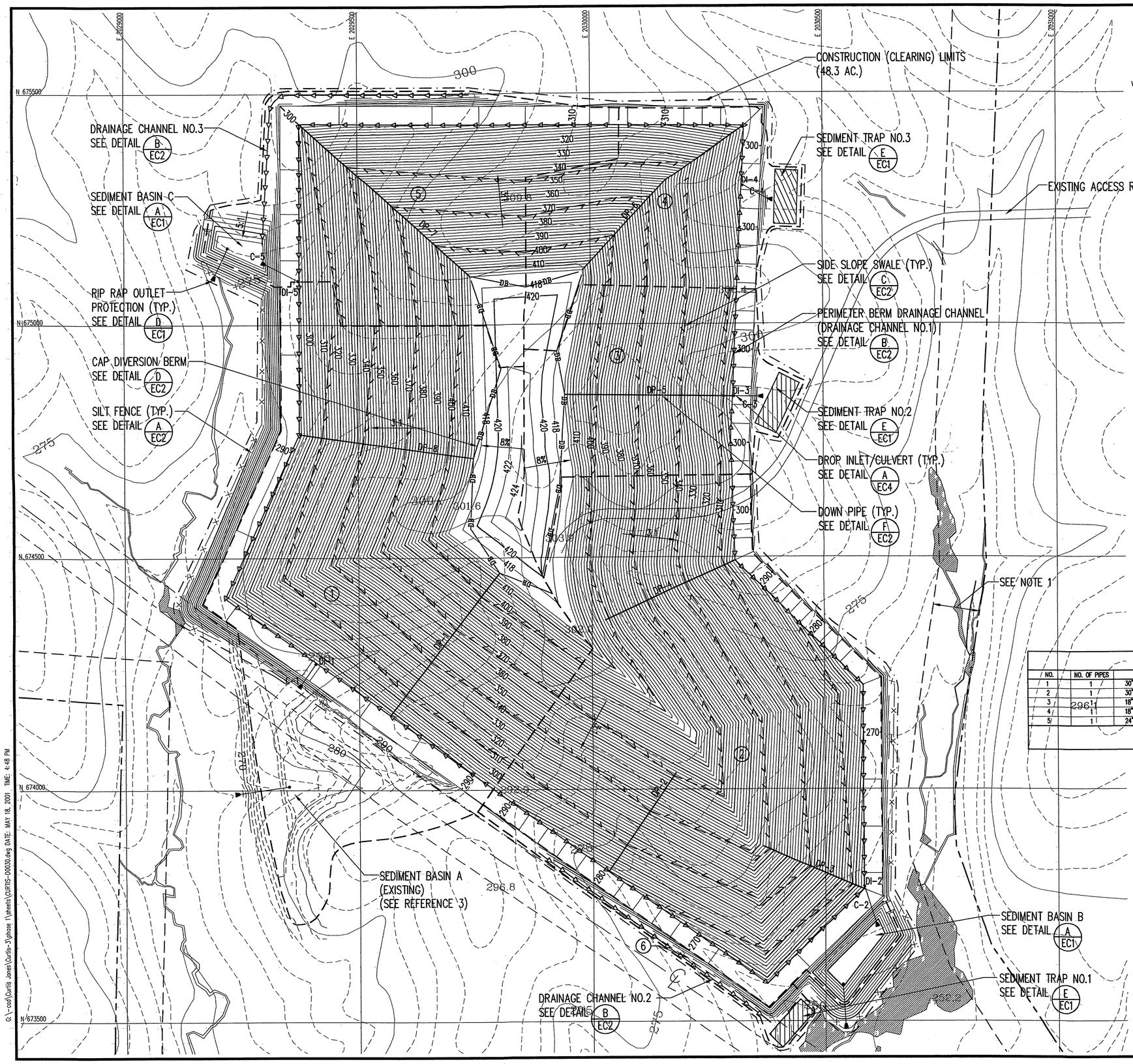

WATERSHED SUMMARY	
WATERSHED NO.	AREA (ACRES)
1	15.5
2	15.0
3	4.9
4	4.6
5	7.4
6	0.7

DOWN PIPE SCHEDULE	
NO.	SIZE
1	18"
2	18"
3	18"
4	18"
5	18"
6	18"
7	18"
8	18"

LEGEND

- 300 — EXISITING 25' CONTOUR
- EXISITING 5' CONTOUR
- PROPERTY LINE (PER REFERENCE 2)
- WATERSHED BOUNDARY
- SIDE SLOPE SWALE
- DRAINAGE CHANNEL
- DB — CAP DIVERSION BERM
- SILT FENCE
- DP-8 — DOWN PIPE
- DROP INLET/CULVERT

CULVERT SCHEDULE							
NO.	NO. OF PIPES	SIZE/TYPE	LENGTH	SLOPE	INV. IN	INV. OUT	REMARKS
1	1	30" RCP (CLASS III) WITH FES (OUTLET)	55'	2.0%	277.1'	276.0'	USE TYPE 3 INSTALLATION
2	1	30" RCP (CLASS III) WITH FES (OUTLET)	85'	8.4%	257.1'	250.0'	USE TYPE 3 INSTALLATION
3	1	18" RCP (CLASS III) WITH FES (OUTLET)	55'	1.5%	289.3'	288.5'	USE TYPE 3 INSTALLATION
4	1	18" RCP (CLASS III) WITH FES (OUTLET)	65'	4.3%	289.8'	287.0'	USE TYPE 3 INSTALLATION
5	1	24" RCP (CLASS III) WITH FES (OUTLET)	75'	15.1%	287.3'	276.0'	USE TYPE 3 INSTALLATION

NOTE: FOR CONCRETE PIPE INSTALLATION SEE DETAIL B EC4

NOTES:

1. THIS BUFFER REPRESENTS A TYPE A BUFFER YARD AND A TRANSITIONAL BUFFER IN ACCORDANCE WITH WAKE COUNTY ZONING REQUIREMENTS. THIS 100-FOOT BUFFER ALSO INCLUDES, BUT DOES NOT SHOW, A 50-FOOT UNDISTURBED BUFFER ALSO PER WAKE COUNTY ZONING REQUIREMENTS.
2. ELEVATIONS REFERENCE U.S.G.S. VERTICAL DATUM (MSL).
3. GRID COORDINATES REFERENCE NC STATE PLANE SYSTEM (NAD 1983).

REFERENCES:

1. TOPOGRAPHY REFERENCES WAKE COUNTY G.I.S.
2. THE PROPERTY LINE SHOWN REFERENCES DRAWING TITLED, "BOUNDARY SURVEY FOR WASTE INDUSTRIES, INC.", PREPARED BY SURVEY SOLUTIONS, P.C. DATED 12/27/00, SCALE 1"=400'.
3. SURVEY BY SURVEYING SOLUTIONS, P.C., DATED MAY 3, 2001.

0 100' 200' 300'

DATE	NO.	REVISION

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
426 N. BOYLAN AVENUE RALEIGH, N.C. 27603
PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

SEAL

SEAL

PROJECT TITLE: RED ROCK DISPOSAL, LLC CONSTRUCTION/DEMOLITION LANDFILL PHASE 1 WAKE COUNTY, NC

DRAWING TITLE: PHASE 1 FINAL COVER AND DRAINAGE PLAN

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: J.M.G.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME: CURTIS-D0030	
SHEET NO. 6	DRAWING NO. E5

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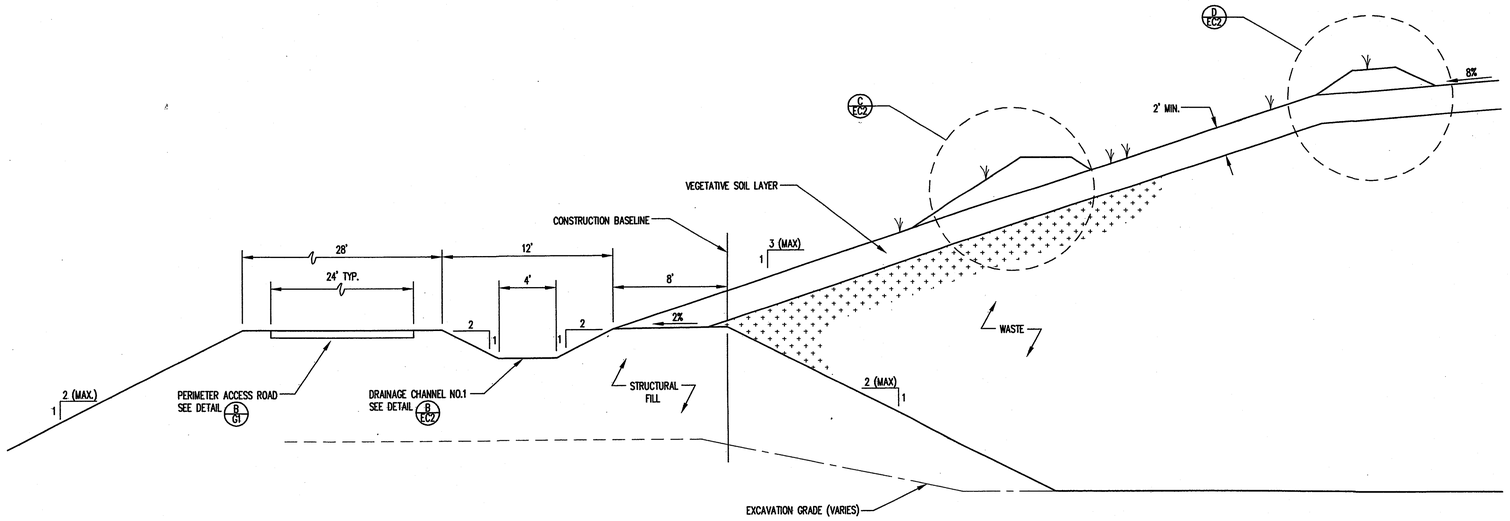
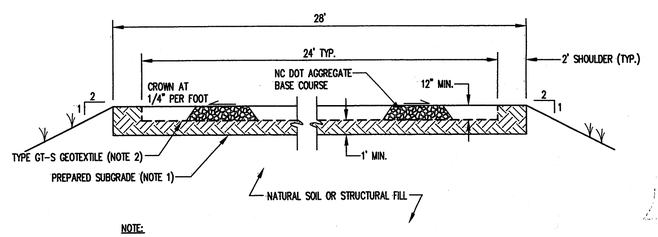


PERIMETER BERM CROSS SECTION (TYP.)

DETAIL A/G1
SCALE: 1"= 5'



NOTE:

1. IN FILL AREAS, PREPARED SUBGRADE IS EQUIVALENT TO STRUCTURAL FILL. FOR CUT AREAS, REMOVE AND REPLACE WITH STRUCTURAL FILL (SEE PROJECT SPECIFICATIONS).
2. DEPENDING ON SUBGRADE CONDITIONS, THE ENGINEER MAY ALLOW INSTALLATION WITHOUT A GEOTEXTILE.

TYPICAL ROADWAY CROSS SECTION

DETAIL B/G1
SCALE: 1"= 5'

G:\-cad\Curtis Jones\Curtis-3\phase 1\sheets\CURTIS-D0031.dwg DATE: MAY 18, 2001 TIME: 4:05 PM

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
425 N. BOYLAN AVENUE RALEIGH, N.C. 27603
PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

DATE	NO.	REVISION

SEAL

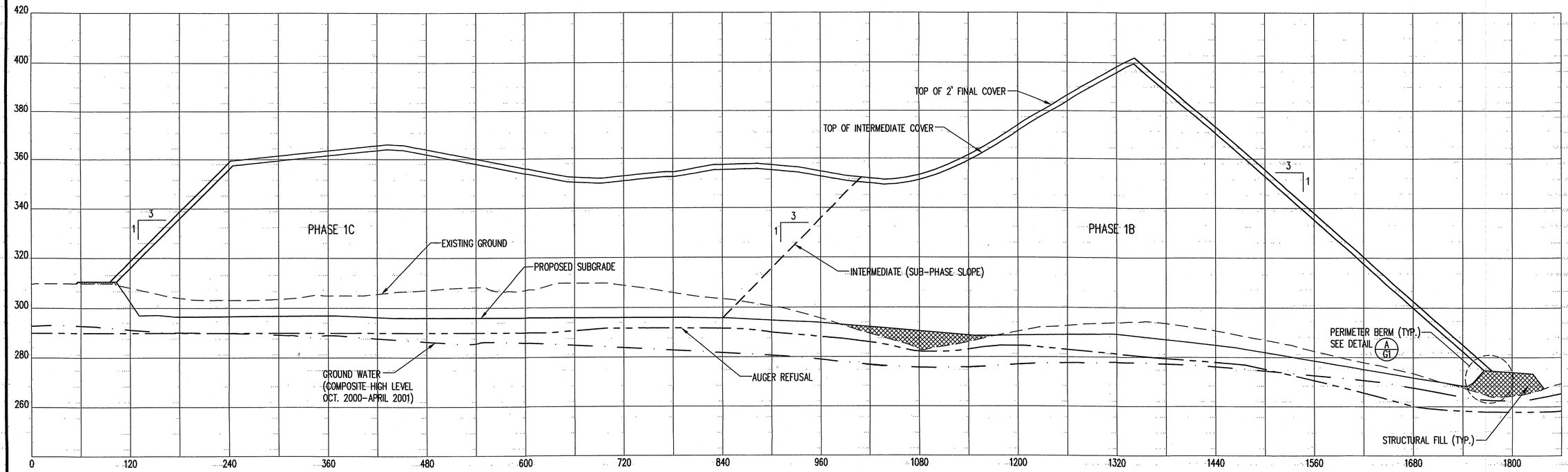
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 021666 ENGINEER PIETER K. SCHEER 5/21/01

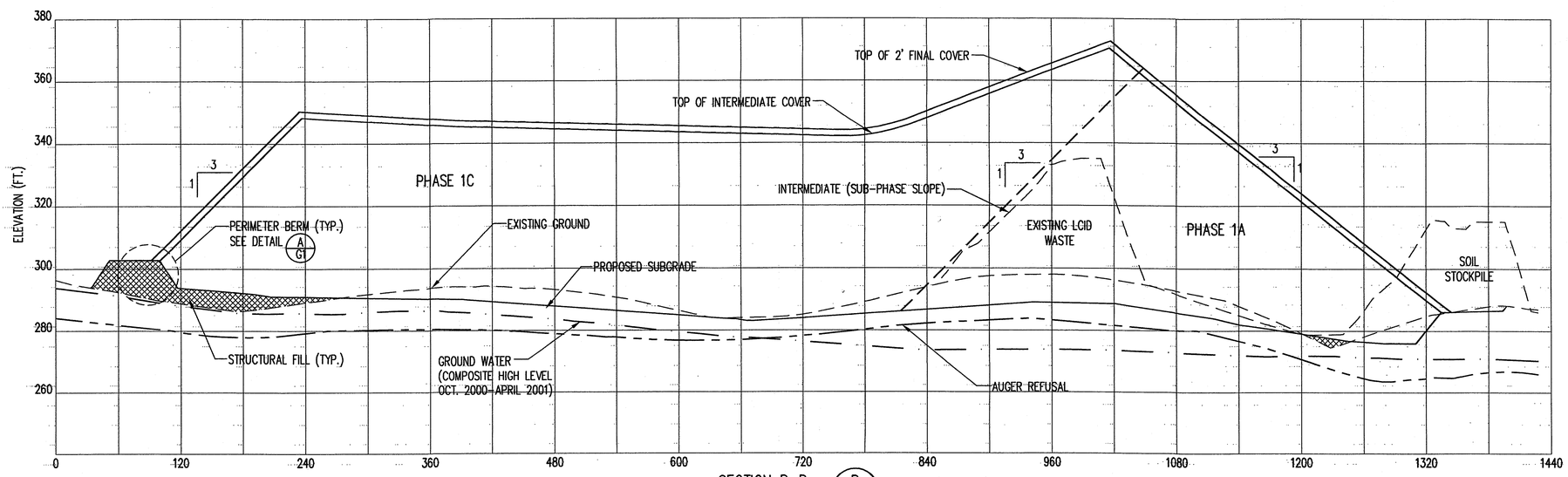
PROJECT TITLE:
RED ROCK DISPOSAL, LLC
CONSTRUCTION/DEMOLITION
LANDFILL PHASE 1
WAKE COUNTY, NC

DRAWING TITLE:
PHASE 1 – DETAILS

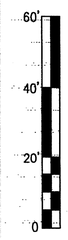
DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: J.M.G.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME CURTIS-D0031	
SHEET NO. 7	DRAWING NO. G1

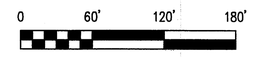


SECTION A-A (A/X1)



SECTION B-B (B/X1)





G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
425 N. BOYLAN AVENUE RALEIGH, N.C. 27603
PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

SEAL

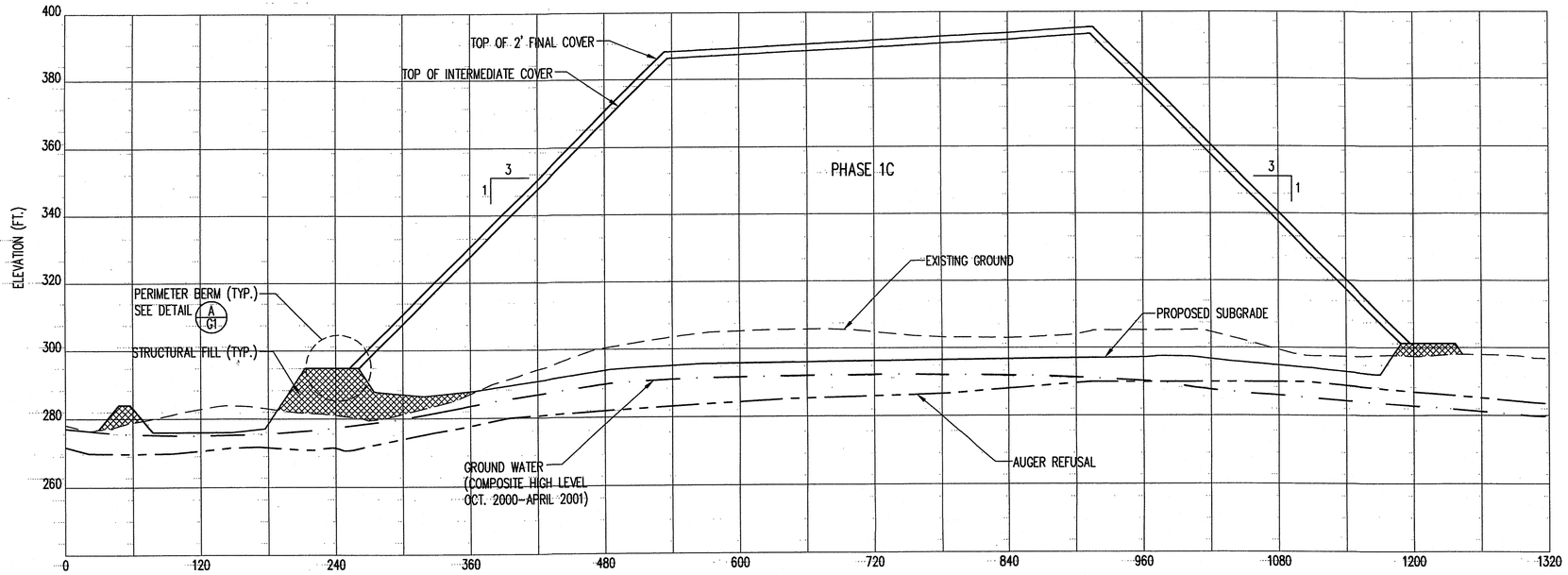
SEAL

PROJECT TITLE:
RED ROCK DISPOSAL, LLC
CONSTRUCTION/DEMOLITION
LANDFILL PHASE 1
WAKE COUNTY, NC

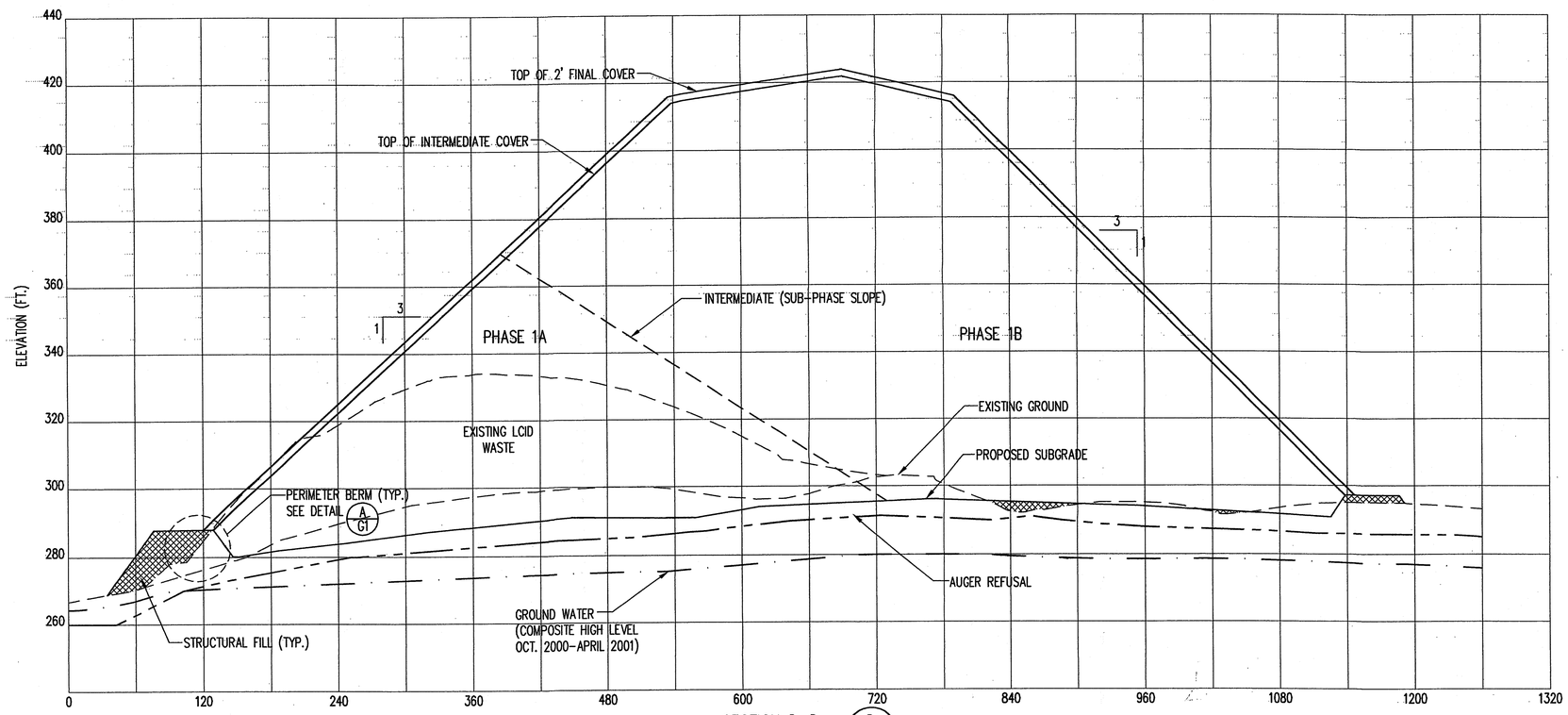
DRAWING TITLE:
PHASE 1
ENGINEERING CROSS SECTIONS
(SHEET 1 OF 2)

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: J.A.S.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME: CURTIS-D0032	
SHEET NO. 8	DRAWING NO. X1

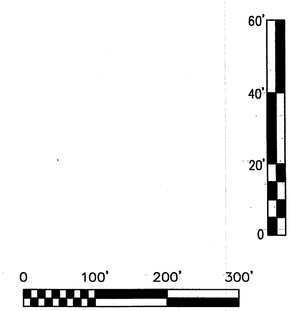
G:\--cad\Curtis Jones\Curtis-3\phase 1\sheets\CURTIS-D0032.dwg DATE: MAY 15, 2001 TIME: 10:06 AM



SECTION C-C (C/X2)



SECTION D-D (D/X2)



G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
425 N. BOYLAN AVENUE RALEIGH, N.C. 27603
PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

NO.	DATE	REVISION

SEAL

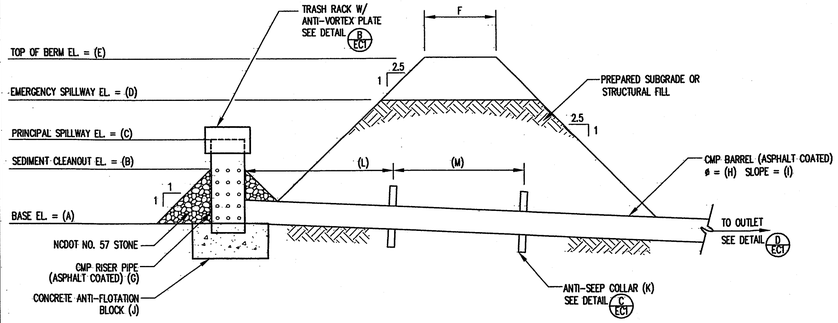
SEAL

PROJECT TITLE:
RED ROCK DISPOSAL, LLC
CONSTRUCTION/DEMOLITION
LANDFILL PHASE 1
WAKE COUNTY, NC

DRAWING TITLE:
PHASE 1
ENGINEERING CROSS SECTIONS
(SHEET 2 OF 2)

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: J.A.S.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME: CURTIS-D0033	
SHEET NO. 9	DRAWING NO. X2

G:\-cad\Curtis Jones\Curtis-3\phase 1\sheets\CURTIS-D0033.dwg DATE: MAY 15, 2001 TIME: 10:12 AM

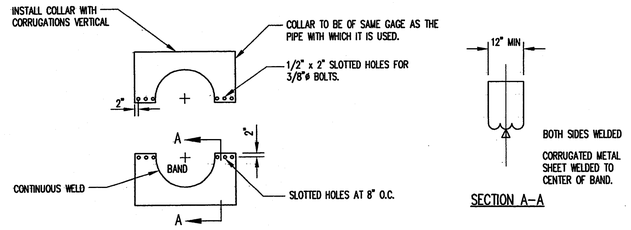


BASIN #	A	B	C	D	E	F	G	H	I	J	K	L	M
B	250.0'	254.1'	257.0'	258.0'	260.0'	10'	36"	18"	1.0%	4.5'x4.5'x2.0' THICK	5.0'x5.0'	10'	25'
C	276.0'	279.0'	281.0'	282.0'	284.0'	10'	36"	18"	2.0%	4.0'x4.0'x2.0' THICK	4.25'x4.25'	10'	20'

NOTE:
1. CMP RISER IS PERFORATED WITH 1/2" DIAMETER HOLES ON 4" CENTERS FROM BASE TO CLEANOUT ELEVATION.

TYPICAL SEDIMENT BASIN CROSS-SECTION

DETAIL A / EC1
N.T.S.

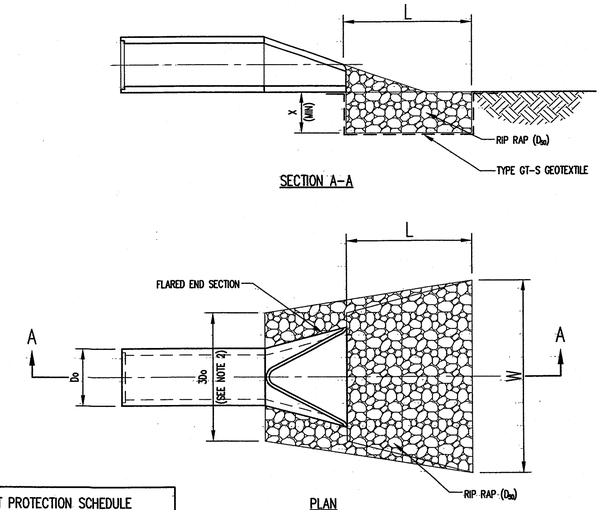


ELEVATION OF UNASSEMBLED COLLAR

NOTES:
1. ALL MATERIAL TO BE IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
2. ALL COLLARS ARE TO BE ASPHALT COATED.
3. UNASSEMBLED COLLARS SHALL BE MARKED BY PAINTING OR TAGGING TO IDENTIFY MATCHING PAIRS.
4. THE LAP BETWEEN THE TWO HALF SECTIONS AND BETWEEN THE PIPE AND CONNECTING BAND SHALL BE CAULKED WITH ASPHALT MASTIC AT TIME OF INSTALLATION.
5. EACH COLLAR SHALL BE FURNISHED WITH TWO 1/2"ø RODS WITH STANDARD TANK LUGS FOR CONNECTING COLLARS TO PIPE

CORRUGATED METAL ANTI-SEEP COLLAR

DETAIL C / EC1
N.T.S.

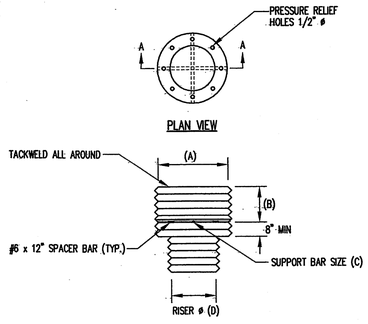


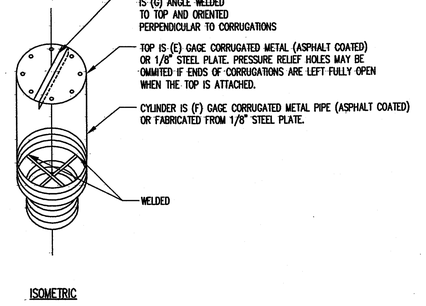
RIP RAP OUTLET PROTECTION SCHEDULE					
PIPE	D_0	L	W	X	D_{50}
CULVERT NO. 1	30"	16'	19'	1.0'	6"
CULVERT NO. 2	30"	19'	22'	1.5'	9"
CULVERT NO. 3	18"	14'	16'	1.0'	6"
CULVERT NO. 4	18"	12'	14'	1.0'	6"
CULVERT NO. 5	24"	12'	14'	1.0'	6"
DOWN PIPE NO. 1	18"	12'	14'	1.0'	6"
DOWN PIPE NO. 2	18"	10'	12'	1.0'	6"
DOWN PIPE NO. 3	18"	10'	12'	1.0'	6"
DOWN PIPE NO. 4	18"	12'	14'	1.0'	6"
DOWN PIPE NO. 5	18"	12'	14'	1.0'	6"
DOWN PIPE NO. 6	18"	10'	12'	1.0'	6"
DOWN PIPE NO. 7	18"	10'	12'	1.0'	6"
DOWN PIPE NO. 8	18"	14'	16'	1.0'	6"
SEDIMENT BASIN B	18"	18'	20'	1.5'	9"
SEDIMENT BASIN C	18"	10'	12'	1.0'	6"

RIP RAP OUTLET PROTECTION (OUTLET TO FLAT AREA)

DETAIL D / EC1
N.T.S.

NOTE:
1. D_{50} REFERS TO THE MINIMUM REQUIRED AVERAGE STONE SIZE
2. FOR MORE THAN ONE PIPE, EXTEND RIP RAP 1.0' MIN. BEYOND OUTSIDE EDGES OF PIPES.



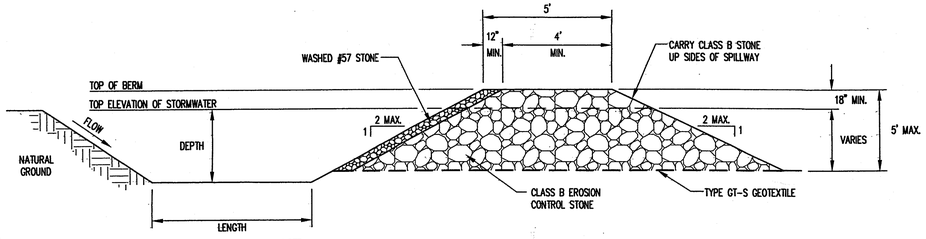


BASIN #	A	B	C	D	E	F	G
B	54"	17"	#8 REBAR	36"	14	14	NOT REQUIRED
C	54"	17"	#8 REBAR	36"	14	14	NOT REQUIRED

NOTES:
1. THE CYLINDER MUST BE FIRMLY FASTENED TO THE TOP OF THE RISER.
2. SUPPORT BARS ARE WELDED TO THE TOP OF THE RISER OR ATTACHED BY STRAPS BOLTED TO THE TOP OF THE RISER.

TRASH RACK W/ ANTI-VORTEX PLATE

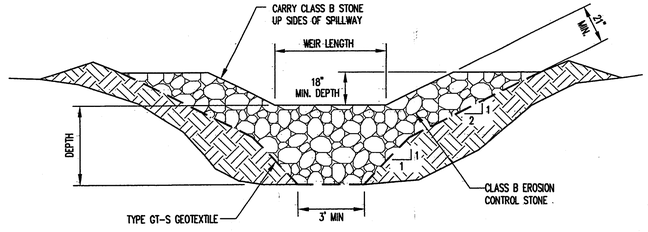
DETAIL B / EC1
N.T.S.



NOTE:
1. CLEAN TRAP WHEN SEDIMENT REACHES ONE-HALF OF THE DESIGN DEPTH.

SECTION THRU TRAP AND OUTLET

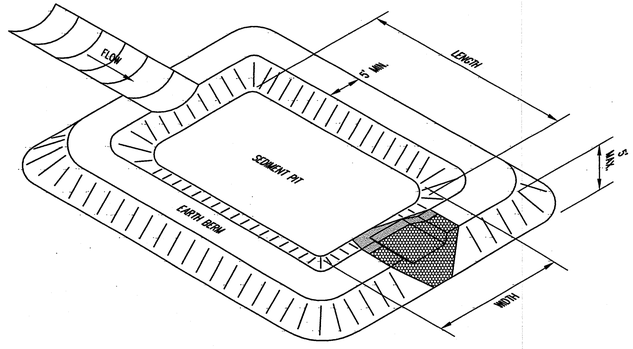
SEDIMENT TRAP SCHEDULE				
TRAP	WIDTH	LENGTH	DEPTH	WEIR LENGTH
1	18'	36'	3.5'	4'
2	46'	92'	3.5'	12'
3	44'	88'	3.5'	12'



SECTION THRU BERM AND OUTLET

SEDIMENT TRAP

DETAIL E / EC1
N.T.S.



PERSPECTIVE VIEW

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
425 N. BOYLAN AVENUE RALEIGH, N.C. 27603
PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

NO.	DATE	REVISION

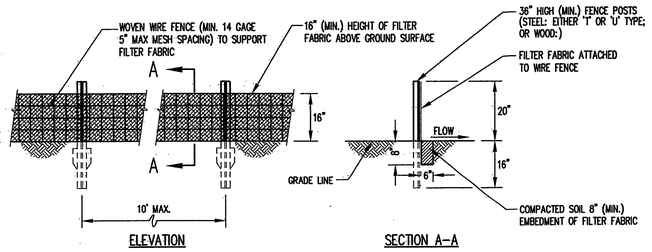
SEAL

PROJECT TITLE: RED ROCK DISPOSAL, LLC CONSTRUCTION/DEMOLITION LANDFILL PHASE 1 WAKE COUNTY, NC

DRAWING TITLE: PHASE 1 – EROSION & SEDIMENTATION CONTROL DETAILS (SHEET 1 OF 4)

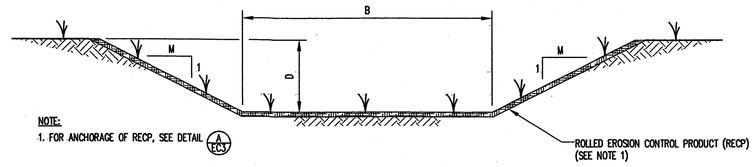
DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: J.M.G.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME: CURTIS-D0034	
SHEET NO. 10	DRAWING NO. EC1

G:\~cad\Curtis Jones\Curtis-3\phase 1\sheets\CURTIS-D0034.dwg DATE: MAY 18, 2001 TIME: 4:55 PM



SILT FENCE

DETAIL A EC2
N.T.S.



NOTE:
1. FOR ANCHORAGE OF RECP, SEE DETAIL A EC2

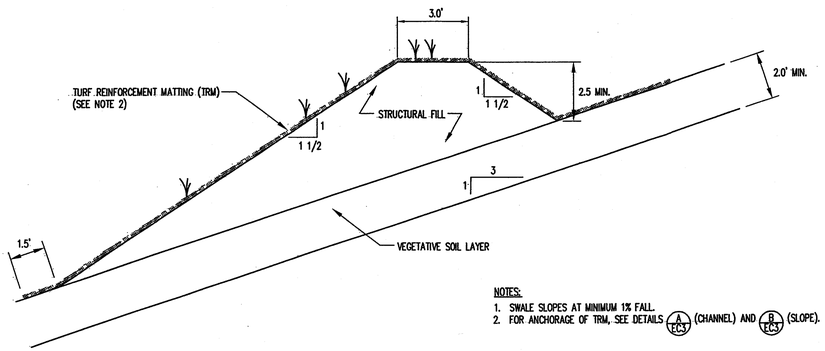
RECP LINED CHANNELS

DRAINAGE CHANNEL SCHEDULE				
DRAINAGE CHANNEL NO.	LINING	B	D	M
1	TRM*	4.0'	2.0'	2
2	TRM	0'	1.5'	2
3	TRM	0'	1.5'	2

*TRM = TURF REINFORCEMENT MATTING

DRAINAGE CHANNEL DETAILS

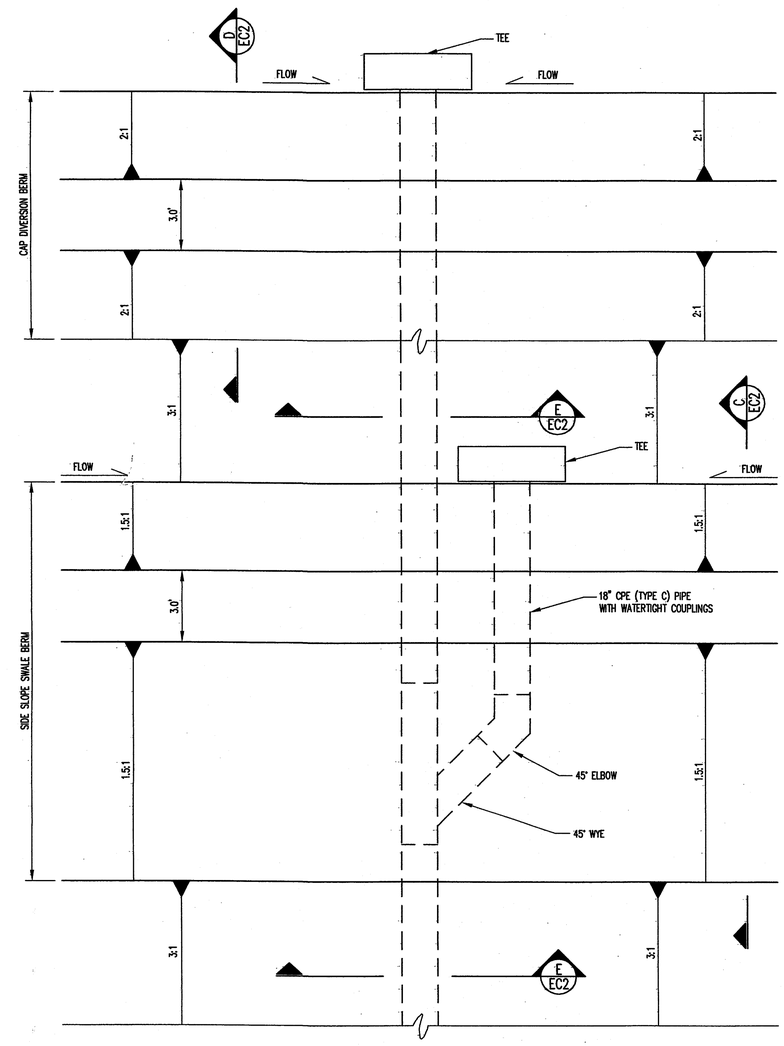
DETAIL B EC2
N.T.S.



NOTES:
1. SWALE SLOPES AT MINIMUM 1% FALL.
2. FOR ANCHORAGE OF TRM, SEE DETAILS A EC2 (CHANNEL) AND B EC2 (SLOPE).

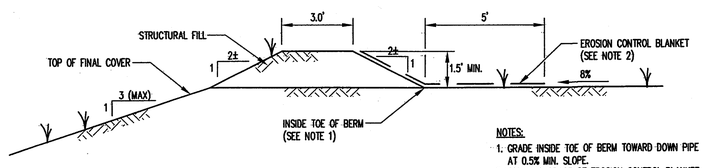
FINAL COVER – SIDE SLOPE SWALE

DETAIL C EC2
SCALE 1"=3'-0"



DOWN PIPE

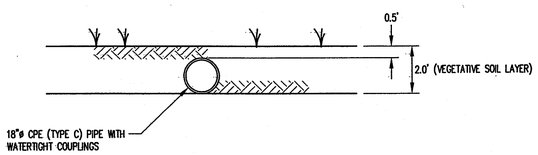
DETAIL F EC2
SCALE 1"=3'



NOTES:
1. GRADE INSIDE TOE OF BERM TOWARD DOWN PIPE AT 0.5% MIN. SLOPE.
2. FOR ANCHORAGE OF EROSION CONTROL BLANKET, SEE DETAIL A EC2.

CAP DIVERSION BERM

DETAIL D EC2
SCALE 1"= 3'



DOWN PIPE ON SLOPE

DETAIL E EC2
SCALE: 1"=3'

REVISION	DATE	NO.

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
425 N. BOYLAN AVENUE RALEIGH, N.C. 27603
PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

SEAL

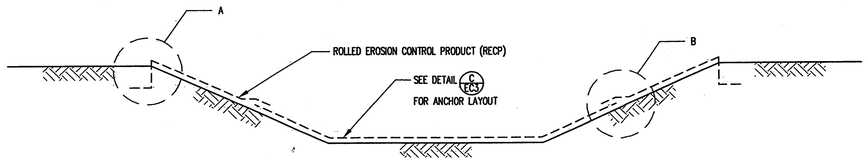
SEAL

PROJECT TITLE:
RED ROCK DISPOSAL, LLC
CONSTRUCTION/DEMOLITION
LANDFILL PHASE 1
WAKE COUNTY, NC

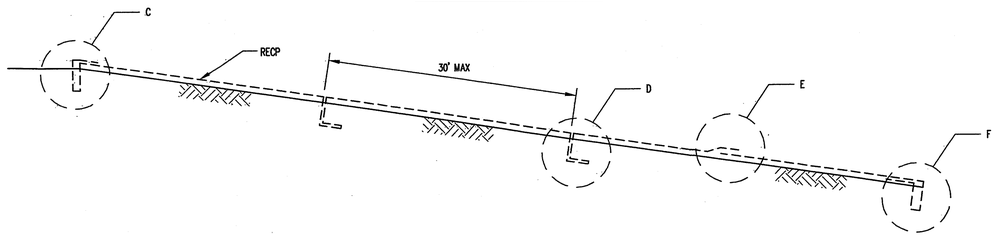
DRAWING TITLE:
PHASE 1 – EROSION & SEDIMENTATION CONTROL DETAILS (SHEET 2 OF 4)

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: J.M.G.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME: CURTIS-D0038	
SHEET NO. 11	DRAWING NO. EC2

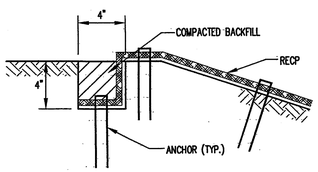
G:\-ccd\Curtis Jones\Curtis-3\phase 1\sheets\CURTIS-D0038.dwg DATE: MAY 18, 2001 TIME: 4:50 PM



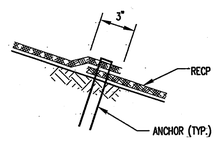
TYPICAL CHANNEL CROSS SECTION



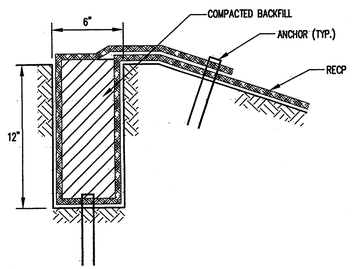
TYPICAL CHANNEL PROFILE



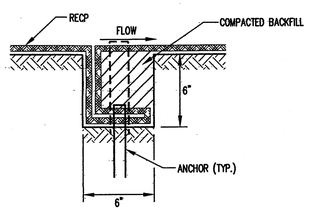
A. LONGITUDINAL ANCHOR TRENCH



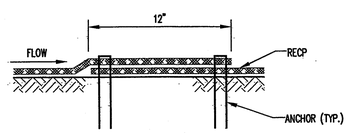
B. OVERLAP AT ADJACENT EDGES



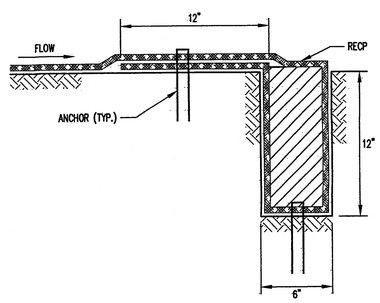
C. UPSTREAM TERMINAL ANCHOR TRENCH



D. INTERMITTENT CHECK SLOT



E. OVERLAP AT ROLL ENDS



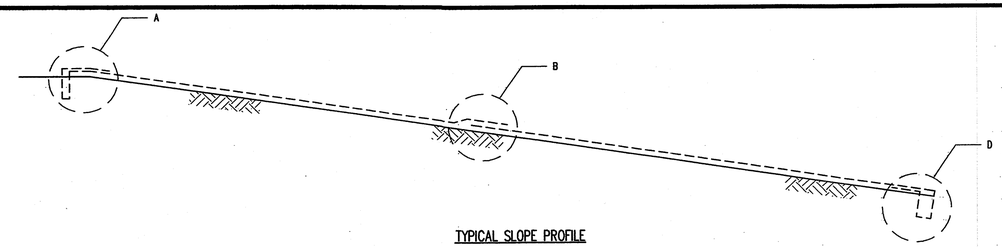
F. DOWNSTRAM TERMINAL ANCHOR TRENCH

NOTES:

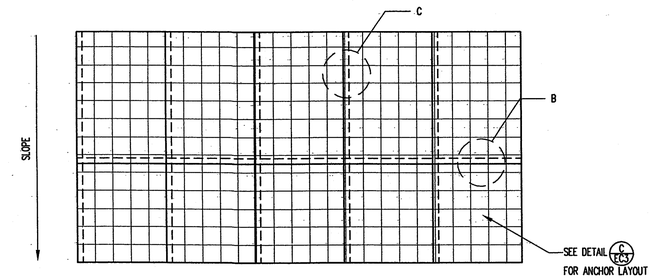
1. PLACE ANCHORS AT ANCHOR TRENCHES, OVERLAPS, AND CHECK SLOTS ON 1 FOOT CENTERS. IF APPLICABLE, STAGGER ANCHOR SPACING BETWEEN MULTIPLE ROWS OF ANCHORS.

INSTALLATION OF ROLLED EROSION CONTROL PRODUCTS (CHANNELS)

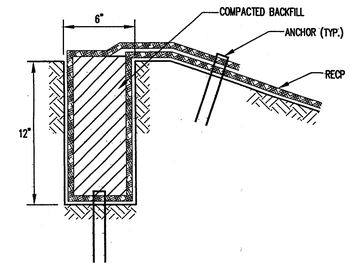
DETAIL A / EC3
N.T.S.



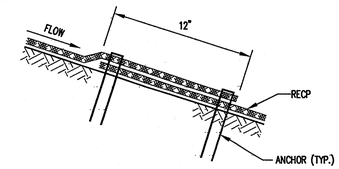
TYPICAL SLOPE PROFILE



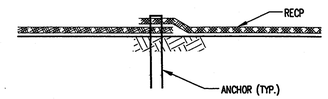
TYPICAL SLOPE PLAN VIEW



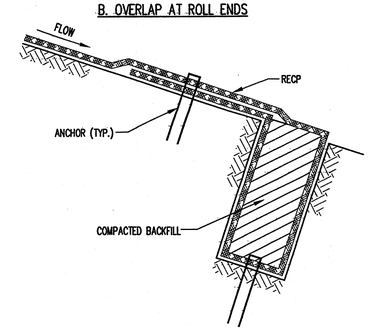
A. UPSLOPE TERMINAL ANCHOR TRENCH



B. OVERLAP AT ROLL ENDS



C. OVERLAP AT ADJACENT EDGES



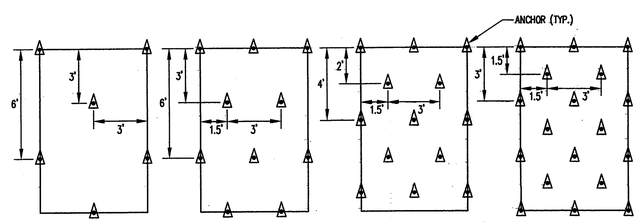
D. DOWNSLOPE TERMINAL ANCHOR TRENCH

NOTES:

1. PLACE ANCHORS AT ANCHOR TRENCHES, OVERLAPS, AND CHECK SLOTS ON 1 FOOT CENTERS. IF APPLICABLE, STAGGER ANCHOR SPACING BETWEEN MULTIPLE ROWS OF ANCHORS.

INSTALLATION OF ROLLED EROSION CONTROL PRODUCTS (SLOPES)

DETAIL B / EC3
N.T.S.



1 ANCHOR/YD² | 1.5 ANCHORS/YD² | 2 ANCHORS/YD² | 2.5 ANCHORS/YD²

ANCHOR LAYOUT

DETAIL C / EC3
N.T.S.

ANCHOR SPACING SCHEDULE	
LOCATION	REQUIRED ANCHOR SPACING (ANCHORS/YD²)
ALL CHANNELS	2.5
1.5H:1V SLOPES	2.0
2H:1V SLOPES	2.0
2.5H:1V SLOPES	1.5
3H:1V SLOPES	1.5
3.5H:1V SLOPES	1.0
4H:1V SLOPES	1.0

NO.	DATE	REVISION

G.N. RICHARDSON & ASSOCIATES, INC.
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PHONE-919-828-0577 FAX-919-828-3899 WWW.GNRA.COM

SEAL

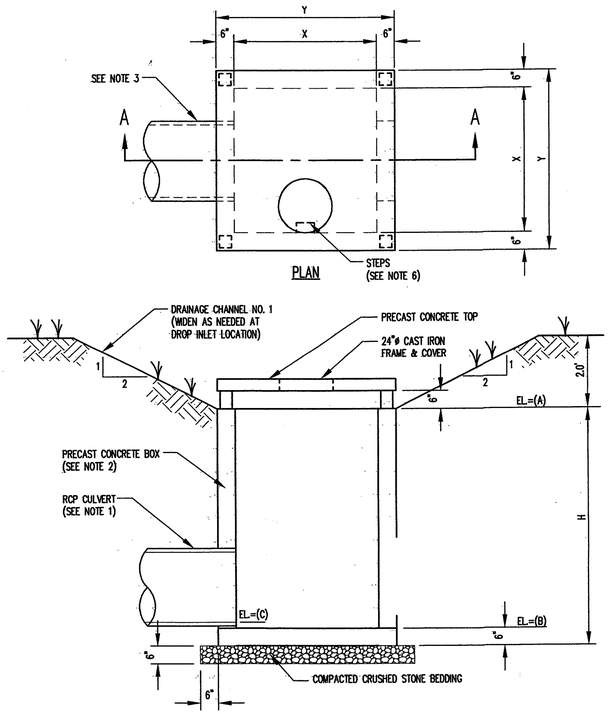
SEAL

PROJECT TITLE: RED ROCK DISPOSAL, LLC CONSTRUCTION/DEMOLITION LANDFILL PHASE 1 WAKE COUNTY, NC

DRAWING TITLE: PHASE 1 – EROSION & SEDIMENTATION CONTROL DETAILS (SHEET 3 OF 4)

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: J.M.G.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME: CURTIS-D0039	
SHEET NO. 12	DRAWING NO. EC3

G:\~ead\Curtis Jones\Curtis-3\phase 1\sheets\CURTIS-D0039.dwg DATE: MAY 18, 2001 TIME: 5:02 PM



SECTION A-A

DROP INLET SCHEDULE								
DROP INLET	CULVERT ø	X	Y	A	B	C	H
1	30"	4.0'	5.0'	281.8'	276.8'	277.1'	5.5'
2	30"	4.0'	5.0'	261.8'	256.8'	257.1'	5.5'
3	18"	3.0'	4.0'	293.0'	289.0'	289.3'	4.5'
4	18"	3.0'	4.0'	293.5'	289.5'	289.8'	4.5'
5	24"	3.0'	4.0'	291.0'	287.0'	287.3'	4.5'

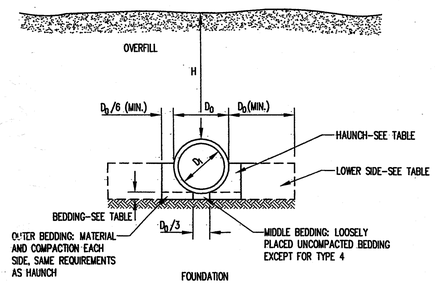
DROP INLET

DETAIL A / EC4

N.T.S.

NOTES:

1. PROVIDE WATERTIGHT JOINTS ON ALL PIPING.
2. PRECAST CONCRETE BOXES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
   A. CONCRETE: COMPRESSIVE STRENGTH 4000 PSI
   B. REINFORCING: ASTM A-615, GRADE 60
   C. MEETS H-20 LOADING.
3. PIPES MAY BE ORIENTED DIFFERENTLY WITH RESPECT TO THE THE CHANNEL THAN DISPLAYED HERE. SEE DRAWING EC1 FOR PROPER ORIENTATION.
4. THE CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION FROM SEDIMENTATION FOR ALL DROP INLETS USING GRAVEL AND WIRE MESH FILTERS OR OTHER METHOD AS APPROVED BY THE ENGINEER.
5. PROVIDE STEPS FOR DROP INLETS WITH H>4.5'. STEPS SHALL HAVE A 16" SPACING THE FULL HEIGHT OF THE DROP INLET. START FIRST STEP 6" BELOW TOP.



STANDARD EMBANKMENT INSTALLATIONS FOR CONCRETE PIPE

(BASED ON AMERICAN CONCRETE PIPE ASSOCIATION RECOMMENDATIONS)

DETAIL B / EC4

N.T.S.

STANDARD EMBANKMENT INSTALLATION SOILS AND MINIMUM COMPACTION REQUIREMENTS			
INSTALLATION TYPE	BEDDING THICKNESS	HAUNCH AND OUTER BEDDING	LOWER SIDE
TYPE 1	D_B/24"(600mm) MINIMUM, NOT LESS THAN 3"(75mm). IF ROCK FOUNDATION, USE D_B/12"(300mm) MINIMUM, NOT LESS THAN 6"(150mm).	95% SW, SP, GW, GP	90% SW, SP, GW, GP; 95% ML, SM, GM OR GC, SC WITH <20% PASSING NO.200 SIEVE; OR 100% CL, MH, SC, GC, CH.
TYPE 2	D_B/24"(600mm) MINIMUM, NOT LESS THAN 3"(75mm). IF ROCK FOUNDATION, USE D_B/12"(300mm) MINIMUM, NOT LESS THAN 6"(150mm).	90% SW, SP, GW, GP; OR 95% ML, SM, GM OR GC, SC WITH <20% PASSING NO.200 SIEVE	85% SW, SP, GW, GP; 90% ML, SM, GM OR GC, SC WITH <20% PASSING NO.200 SIEVE; OR 95% CL, MH, SC, GC, CH.
TYPE 3	D_B/24"(600mm) MINIMUM, NOT LESS THAN 3"(75mm). IF ROCK FOUNDATION, USE D_B/12"(300mm) MINIMUM, NOT LESS THAN 6"(150mm).	85% SW, SP, GW, GP; 90% ML, SM, GM OR GC, SC WITH <20% PASSING NO.200 SIEVE; OR 95% CL, MH, SC, GC, CH	85% SW, SP, GW, GP; 90% ML, SM, GM OR GC, SC WITH <20% PASSING NO.200 SIEVE; OR 95% CL, MH, SC, GC, CH.
TYPE 4	NO BEDDING REQUIRED, EXCEPT IF ROCK FOUNDATION, USE D_B/12"(300mm) MINIMUM, NOT LESS THAN 6"(150mm).	NO COMPACTION REQUIRED, EXCEPT IF CL, MH, SC, GC, CH USE 85%	NO COMPACTION REQUIRED, EXCEPT IF CL, MH, SC, GC, CH USE 85%.

NOTES:

1. COMPACTION AND SOIL SYMBOLS (95% SW) REFER TO SW SOIL MATERIAL (USCS CLASSIFICATION) WITH A MINIMUM STANDARD PROCTOR COMPACTION (ASTM D 698) OF 95%.
2. SOIL IN THE OUTER BEDDING, HAUNCH, AND LOWER SIDE ZONES, EXCEPT WITHIN D_B/3 FROM THE PIPE SPRINGLINE, SHALL BE COMPACTED TO AT LEAST THE SAME COMPACTION AS THE MAJORITY OF THE SOIL IN THE OVERFILL ZONE.
3. SUBTRENCHES:
   3.1 A SUBTRENCH IS DEFINED AS A TRENCH WITH ITS TOP BELOW FINISHED GRADE BY MORE THAN 0.1H OR, FOR ROADWAYS, ITS TOP IS AT AN ELEVATION LOWER THAN 1'(0.3m) BELOW THE BOTTOM OF THE PAVEMENT BASE MATERIAL.
   3.2 THE MINIMUM WIDTH OF A SUBTRENCH SHALL BE 1.33 D_B, OR WIDER IF REQUIRED FOR ADEQUATE SPACE TO ATTAIN THE SPECIFIED COMPACTION IN THE HAUNCH AND BEDDING ZONES.
   3.3 FOR SUBTRENCHES WITH WALLS OF NATURAL SOIL, ANY PORTION OF THE LOWER SIDE ZONE IN THE SUBTRENCH WALL SHALL BE AT LEAST AS FIRM AS AN EQUIVALENT SOIL PLACED TO THE COMPACTION REQUIREMENTS SPECIFIED FOR THE LOWER SIDE ZONE AND AS FIRM AS THE MAJORITY IF THE SOIL IN THE OVERFILL ZONE, OR SHALL BE REMOVED AND REPLACED WITH SOIL COMPACTED TO THE SPECIFIED LEVEL.

NO.	DATE	REVISION

G.N. RICHARDSON & ASSOCIATES, INC.
Engineering and Geological Services
425 N. BOYLAN AVENUE RALEIGH, N.C. 27603
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SEAL

SEAL 021666 PROFESSIONAL ENGINEER PATRICK K. SMITH 5/21/01

PROJECT TITLE: RED ROCK DISPOSAL, LLC CONSTRUCTION/DEMOLITION LANDFILL PHASE 1 WAKE COUNTY, NC

DRAWING TITLE: PHASE 1 – EROSION & SEDIMENTATION CONTROL DETAILS (SHEET 4 OF 4)

DESIGNED BY: P.K.S.	DRAWN BY: C.T.J.
CHECKED BY: J.M.G.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME: CURTIS-D0040	
SHEET NO. 13	DRAWING NO. EC4

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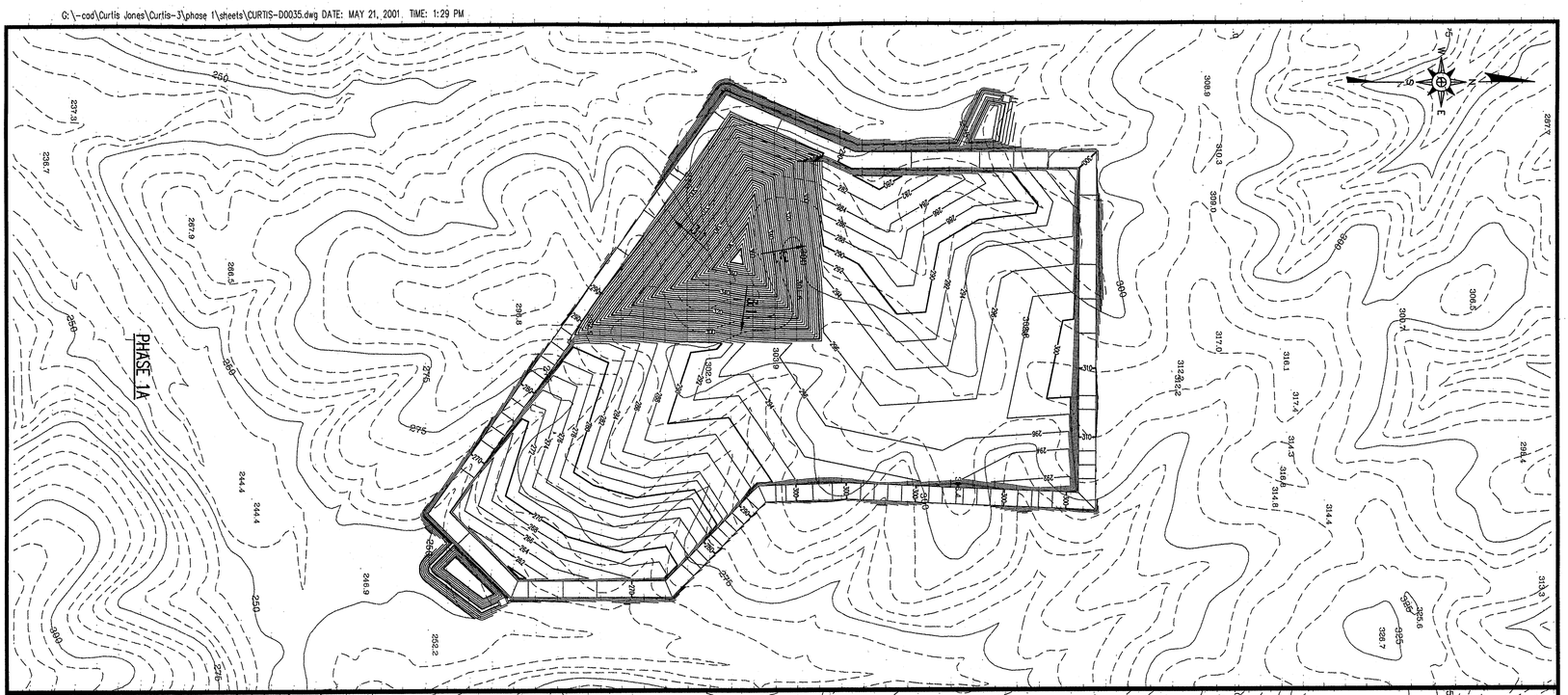
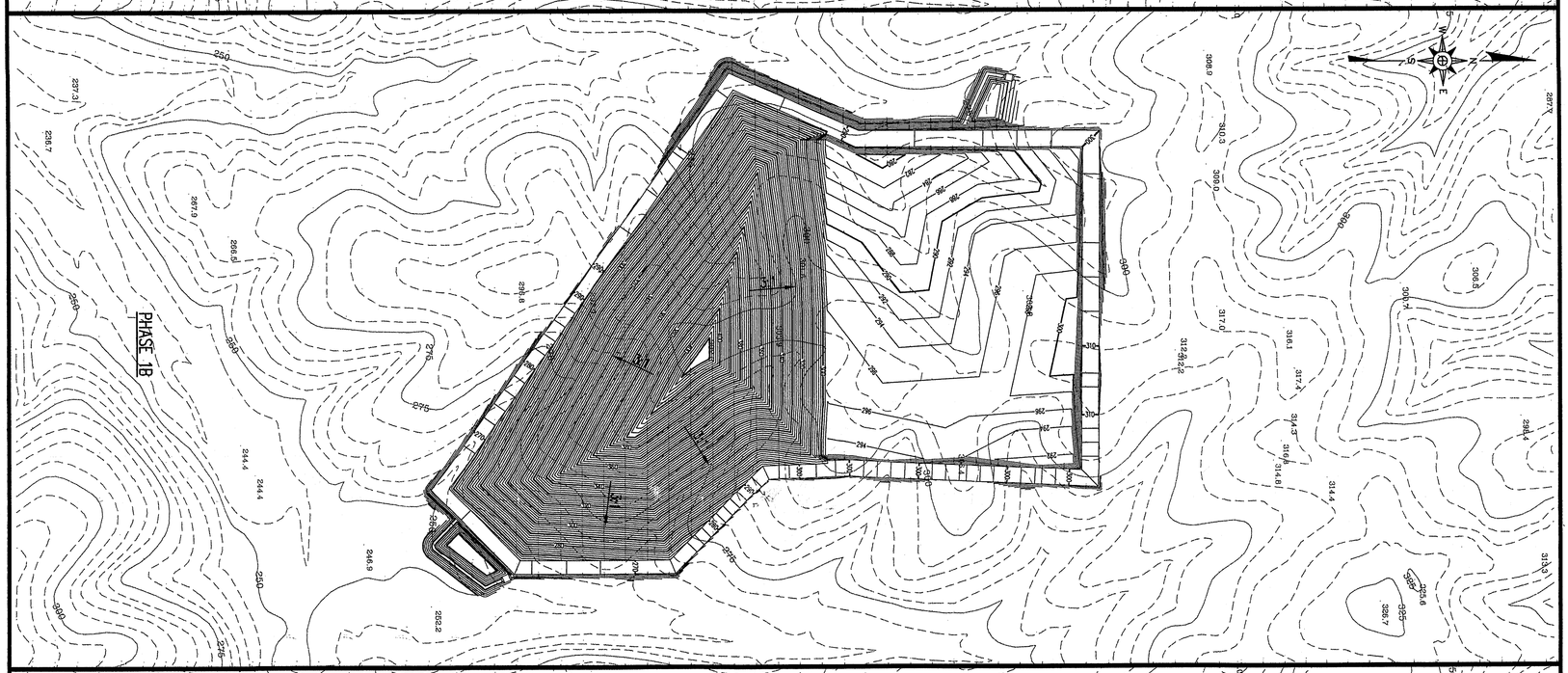
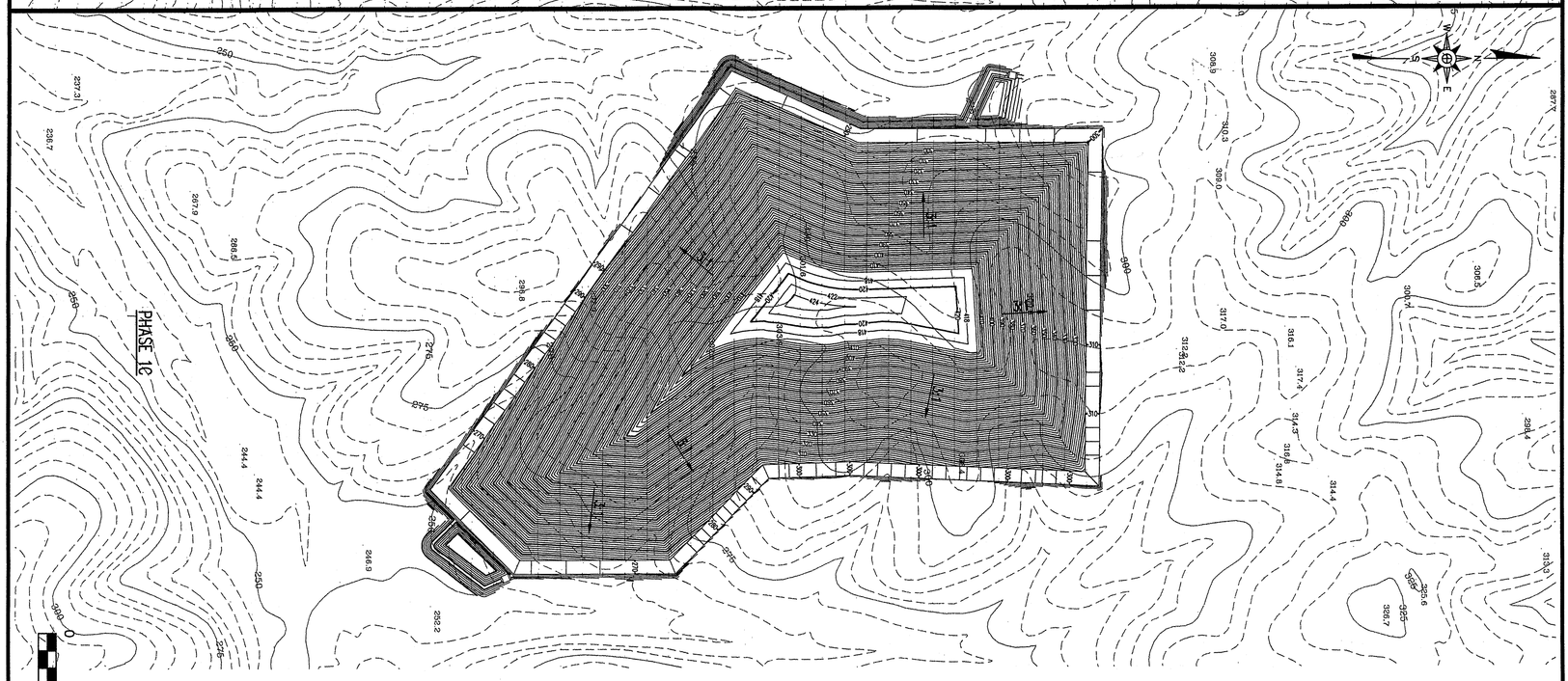
G:\-cad\Curtis Jones\Curtis-3\phase 1\sheets\CURTIS-D0035.dwg DATE: MAY 21, 2001 TIME: 1:29 PM







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DATE	NO.	REVISION

DRAWING TITLE:

FILLING SEQUENCE

PROJECT TITLE:

RED ROCK DISPOSAL, LLC
CONSTRUCTION/DEMOLITION
LANDFILL PHASE 1
WAKE COUNTY, NC

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 021668 ENGINEER PETER K. SCHEER 5/21/01

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CHECKED BY: J.M.G.	PROJECT NO.: CURTIS-3
SCALE: AS SHOWN	DATE: MAY 2001
FILE NAME: CURTIS-D0035	
SHEET NO. 14	DRAWING NO. P1