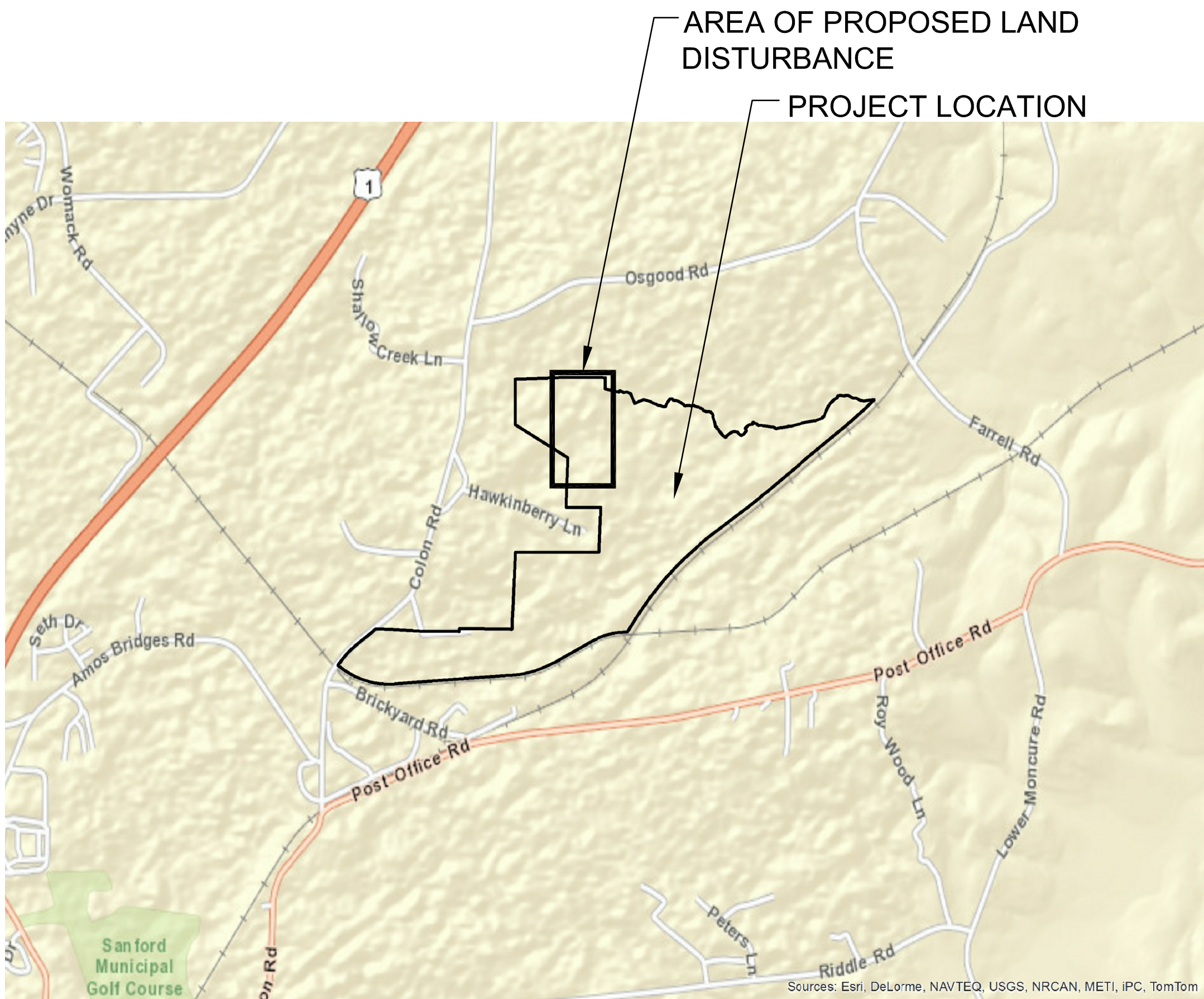




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440 S. Church St.  
Suite 1000  
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N.C.B.E.L.S. F-0116

Owner: Green Meadow, LLC  
Permittee / Operator: Charah, Inc.  
Engineer of Record: HDR Engineering, Inc. of the Carolinas



Permit Drawings For

# Colon Mine Site Structural Fill

## Erosion and Sedimentation Control Submittal for Northwest Area

HDR Project No.  
000000000235691

Sanford, North Carolina  
November 2014

Revised March 2015

### INDEX OF DRAWINGS

#### GENERAL

- 00G-01 COVER
- 00G-02 FACILITY PLAN AND BUFFERS

#### SITE WORK

- 00C-01 EXISTING CONDITIONS
- 00C-02 BASGRADE PLAN (BOTTOM OF SOIL LINER)
- 00C-03 TOP OF LINER
- 00C-04 RECLAMATION PLAN
- 00C-05 SITE CROSS SECTIONS
- ~~00C-06 LINER SYSTEM AND SUMP~~
- 00C-07 PERIMETER CONTAINMENT
- 00C-08 MISCELLANEOUS DETAILS
- ~~00C-09 LEACHATE FOREMAN~~
- ~~00C-10 LEACHATE PUMP SYSTEM~~

DRAWINGS WITH STRIKETHROUGH ARE  
NOT PERTINENT TO THIS EROSION  
CONTROL SUBMITTAL AND SO ARE NOT  
INCLUDED.

#### EROSION AND SEDIMENT CONTROL

- 01C-01 EROSION AND SEDIMENTATION CONTROL PLAN - PHASE 1 OVERALL
- 01C-02 EROSION AND SEDIMENTATION CONTROL PHASE 1 PLAN 1
- ~~01C-03 EROSION AND SEDIMENTATION CONTROL PHASE 1 PLAN 2~~
- ~~01C-04 EROSION AND SEDIMENTATION CONTROL PHASE 1 PLAN 3~~
- ~~01C-05 EROSION AND SEDIMENTATION CONTROL PHASE 1 PLAN 4~~
- 01C-06 EROSION AND SEDIMENTATION CONTROL PLAN - PHASE 2 OVERALL
- 01C-07 EROSION AND SEDIMENTATION CONTROL PHASE 2 PLAN 1
- ~~01C-08 EROSION AND SEDIMENTATION CONTROL PHASE 2 PLAN 2~~
- ~~01C-09 EROSION AND SEDIMENTATION CONTROL PHASE 2 PLAN 3~~
- ~~01C-10 EROSION AND SEDIMENTATION CONTROL PHASE 2 PLAN 4~~
- 01C-11 EROSION AND SEDIMENTATION CONTROL DETAILS (1 OF 3)
- 01C-12 EROSION AND SEDIMENTATION CONTROL DETAILS (2 OF 3)
- 01C-13 EROSION AND SEDIMENTATION CONTROL DETAILS (3 OF 3)

#### NOTE:

THESE DRAWINGS WERE ORIGINALLY PREPARED FOR THE COLON MINE  
STRUCTURAL FILL PERMITTING, DEMLR MINE PERMIT 53-05. AS IS TYPICAL, THE  
EROSION CONTROL MEASURES ARE INCLUDED AS PART OF THE MINE PERMIT  
APPLICATION AND COVERED WITHIN THE MINE PERMIT. HOWEVER, THE  
STRUCTURAL FILL PROJECT INCLUDES 11 ACRES OF PLANNED DISTURBANCE IN  
THE NORTH WEST PORTION OF THE PROPERTY THAT IS NOT CURRENTLY WITHIN  
THE PERMITTED MINE BOUNDARY. THEREFORE, THIS SEDIMENTATION AND EROSION  
CONTROL PLAN APPLICATION HAS BEEN COMPILED TO ADDRESS THE 11 ACRE  
AREA. ALSO REFER TO THE OVERALL APPLICATION FOR ADDITIONAL DETAILS.



SCOPE:

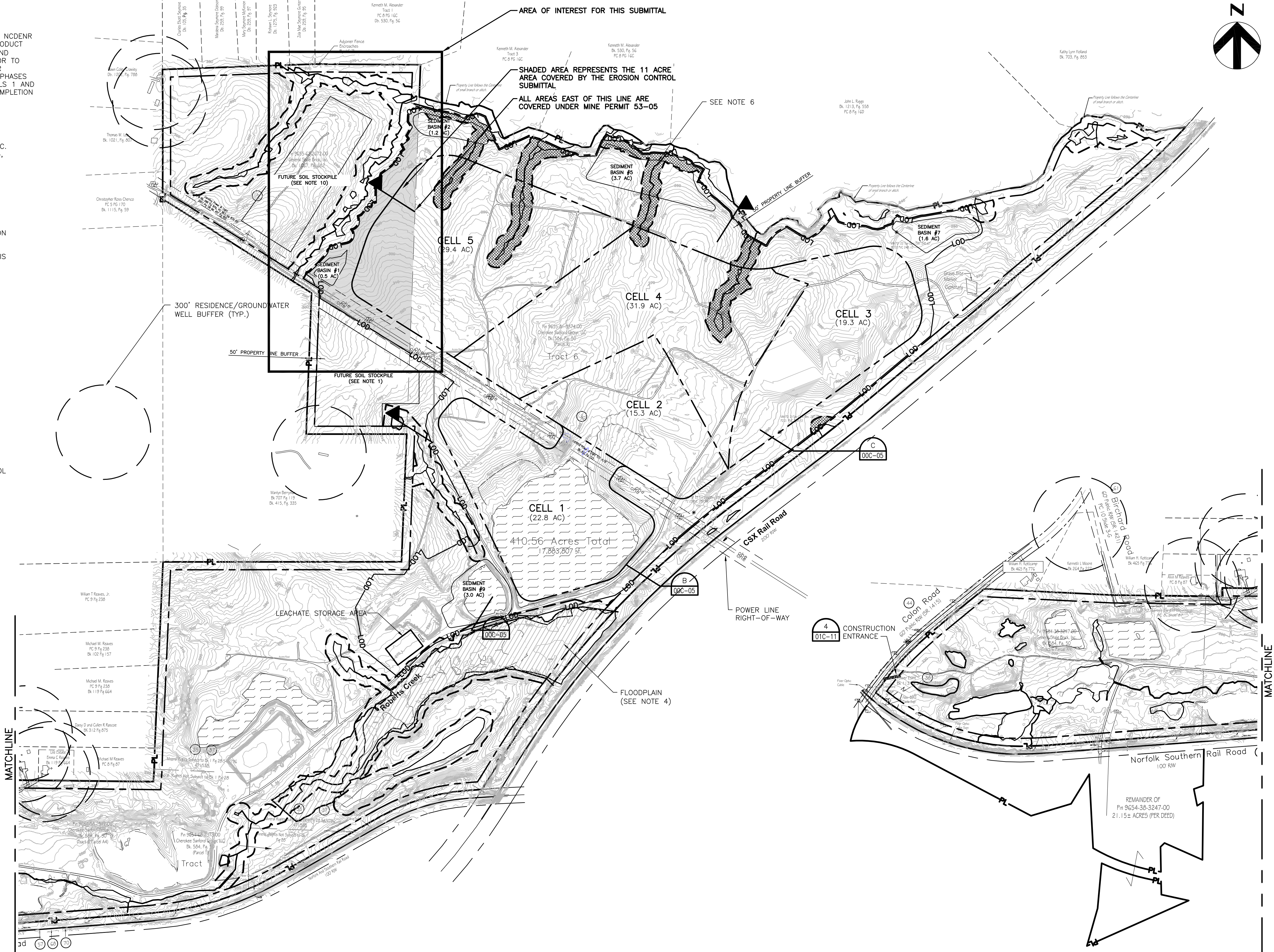
THE PURPOSE OF THIS PERMIT APPLICATION IS TO OBTAIN A PERMIT FROM NCDENR TO CONSTRUCT A 118.4 ACRE STRUCTURAL FILL OF COAL COMBUSTION PRODUCT (CCP). THIS PROJECT CONSISTS OF EXCAVATING SOIL WITHIN CELLS 1-5 AND INSTALLATION OF A LINER SYSTEM AND LEACHATE COLLECTION SYSTEM PRIOR TO CCP PLACEMENT. AFTER CCP PLACEMENT, A CAP SYSTEM AND STORMWATER DRAINAGE SYSTEM WILL BE INSTALLED. DEVELOPMENT WILL OCCUR IN TWO PHASES TO ALLOW FOR STREAM AND WETLAND MITIGATION. PHASE 1 INCLUDES CELLS 1 AND 2. THE REMAINING CELLS 3-5 WILL BE DEVELOPED IN PHASE 2 AFTER COMPLETION OF STREAM AND WETLAND MITIGATION.

NOTES:

- TOPOGRAPHIC SURVEY PROVIDED BY AVIO IMAGE MAPPING SERVICES, INC. ALTA SURVEY COMPLETED BY LAWRENCE ASSOCIATES DATED AUGUST 14, 2014. CLEARWATER ENVIRONMENTAL PROVIDED WETLAND LOCATIONS TO LAWRENCE ASSOCIATES FOR INCLUSION INTO THEIR SURVEY.
- PROPERTY BOUNDARY PROVIDED BY LAWRENCE ASSOCIATES DATED SEPTEMBER 5, 2014.
- GROUNDWATER WELL LOCATIONS PROVIDED BY LAWRENCE ASSOCIATES DATED SEPTEMBER 5, 2014.
- FLOODPLAIN LOCATION IS FROM LAWRENCE ASSOCIATES AS IDENTIFIED ON FLOOD INSURANCE RATE MAP FOR LEE COUNTY NORTH CAROLINA, COMMUNITY PANEL NUMBER 37109654000, DATED SEPTEMBER 6, 2006. LAWRENCE ASSOCIATES CERTIFIES THAT A PORTION OF THIS PROPERTY IS LOCATED IN A SPECIAL FLOOD HAZARD AREA AS DETERMINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
- WETLANDS DELINEATED BY CLEARWATER ENVIRONMENTAL ON JULY 21, 22, 23, 24, 30, 31, 2014 AND JANUARY 6, 2015.
- THE WETLANDS AND STREAMS THAT ARE IMPACTED BY THIS PROJECT WILL BE PERMITTED THROUGH NC DIVISION OF WATER QUALITY AND MITIGATED AS REQUIRED PRIOR TO LAND DISTURBANCE. ESTIMATED IMPACTS INCLUDE:
  - 2,158 LINEAR FEET OF STREAMS
  - 108,510 SQ. FT. (2.49 ACRES) OF WETLANDS
- ACCORDING TO LAWRENCE ASSOCIATES SURVEY, LEE COUNTY PUBLIC WORKS PROVIDED THE ADDRESSES FOR DRINKING WATER WELL LOCATIONS AND WATER SERVICES TO ADJOINING PARCELS WITHIN 500 FEET OF THE PROPERTY LINE. LEE COUNTY PUBLIC WORKS PROVIDED PARCELS SERVED BY COUNTY WATER. PUBLIC WATER SUPPLY (WATERLINE) IS LOCATED ALONG COLON ROAD.
- THE LEACHATE STORAGE WILL BE ABOVE GROUND STORAGE TANKS.
- THE PRIMARY SITE ENTRANCE IS FROM COLON ROAD.
- SOIL STOCKPILE AREAS TO BE DESIGNED AND PERMITTED AS NEEDED FOR OPERATIONS. THIS AREA IS NOT A PART OF THIS EROSION CONTROL SUBMITTAL.

LEGEND

- PL PROPERTY LINE
- 50' PROPERTY LINE BUFFER
- 50' WETLANDS/STREAM BUFFER
- LOD LIMITS OF DISTURBANCE
- 300' RESIDENCE/GROUNDWATER WELL BUFFER
- 290 EXISTING TOPOGRAPHY
- EXISTING ROAD
- IMPACTED WETLANDS/STREAMS
- OVERHEAD ELECTRIC
- PARCEL BOUNDARIES
- RAILROAD
- CELL BOUNDARIES
- PLANIMETRICS
- OPEN WATER
- STORMWATER BASIN FROM PRIOR MINING ACTIVITIES
- FLOODPLAIN



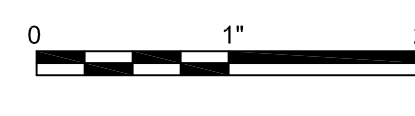
HDR Engineering, Inc.  
of the Carolinas  
440 S. Church St. Suite 1000  
Charlotte, NC 28202-2075  
704.338.6700  
N.C.B.E.L.S. License Number F-0116

ISSUE	DATE	DESCRIPTION	PROJECT MANAGER	DESIGNED BY	DRAWN BY	CHECKED BY	PROJECT NUMBER
D	03/19/15	EROSION CONTROL SUBMITTAL FOR NORTHWEST AREA	M.D. PLUMMER, P.E.	P. WESTMORELAND, P.E.	J. GAUL	J. READLING, P.E.	453925-235691-018
C	01/15/15	REVISED PER NCDENR COMMENTS					
B	12/31/14	REVISED PER NCDENR COMMENTS					
A	11/2014	ISSUED FOR APPROVAL					



COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

FACILITY PLAN  
AND  
BUFFERS



FILENAME 00G-02.dwg  
SCALE 1"=300'

SHEET  
00G-02





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704.338.6700  
N.C.B.E.L.S. License Number F-0116

			PROJECT MANAGER	M.D. PLUMMER, P.E.
			DESIGNED BY	P. WESTMORELAND, P.E.
			DRAWN BY	J. GAUL
			CHECKED BY	J. READLING, P.E.
			PROJECT NUMBER	453925-235691-018
D	03/19/15	EROSION CONTROL SUBMITTAL FOR NORTHWEST AREA		
C	01/15/15	REVISED PER NCDENR COMMENTS		
B	12/31/14	REVISED PER NCDENR COMMENTS		
A	11/2014	ISSUED FOR APPROVAL		
ISSUE	DATE	DESCRIPTION		



COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

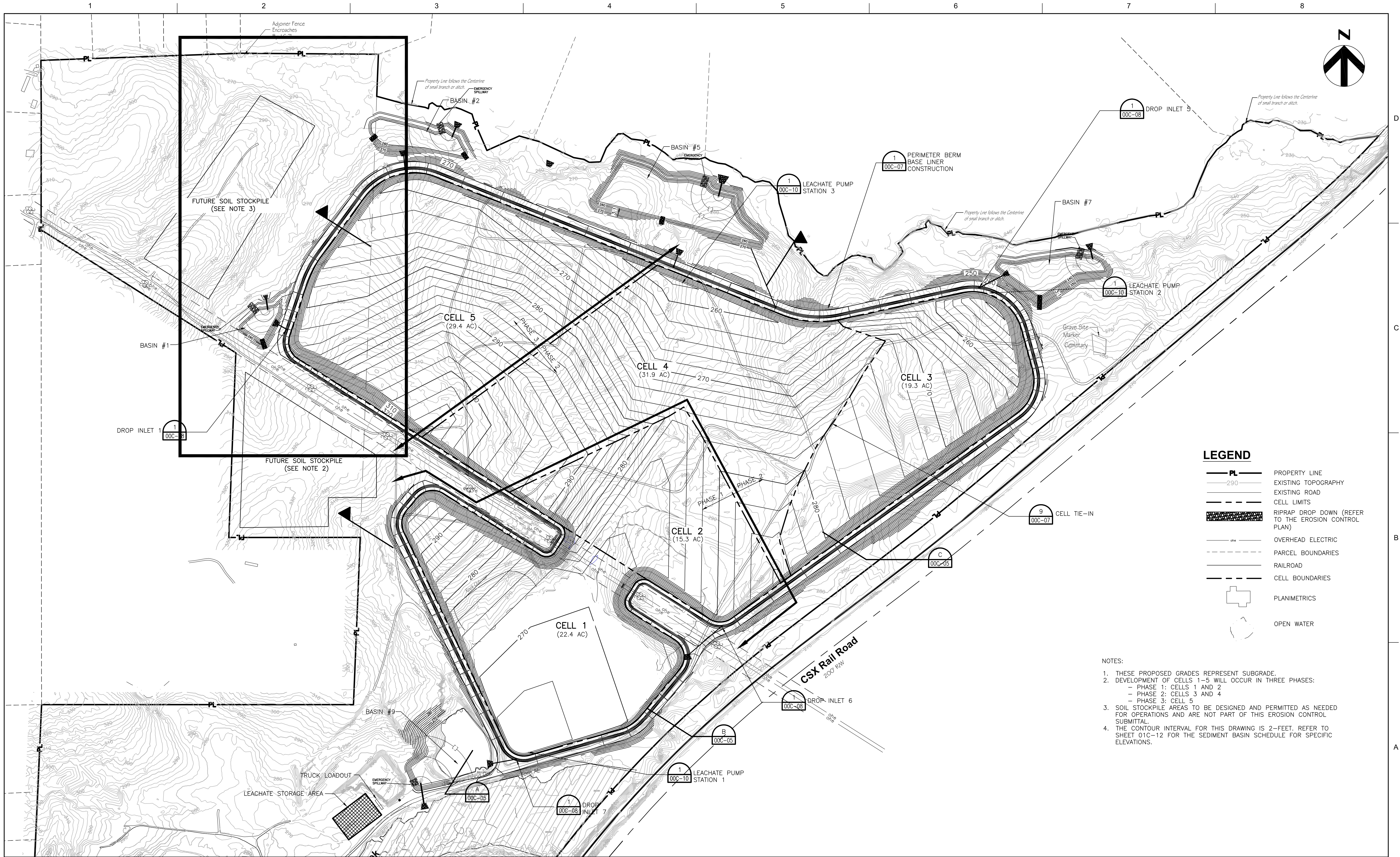
EXISTING CONDITIONS



FILENAME 00C-01.dwg  
SCALE 1" = 300'

SHEET  
00C-01





LEGEND

PL

EXISTING TOPOGRAPHY

EXISTING ROAD

CELL LIMITS

RIPRAP DROP DOWN (REFER TO THE EROSION CONTROL PLAN)

OVERHEAD ELECTRIC

PARCEL BOUNDARIES

RAILROAD

CELL BOUNDARIES

PLANIMETRICS

OPEN WATER

PROPERTY LINE

EXISTING TOPOGRAPHY

EXISTING ROAD

CELL LIMITS

RIPRAP DROP DOWN (REFER TO THE EROSION CONTROL PLAN)

OVERHEAD ELECTRIC

PARCEL BOUNDARIES

RAILROAD

CELL BOUNDARIES

PLANIMETRICS

OPEN WATER

- NOTES:
1. THESE PROPOSED GRADES REPRESENT SUBGRADE.

2. DEVELOPMENT OF CELLS 1-5 WILL OCCUR IN THREE PHASES:

- PHASE 1: CELLS 1 AND 2

- PHASE 2: CELLS 3 AND 4

- PHASE 3: CELL 5

3. SOIL STOCKPILE AREAS TO BE DESIGNED AND PERMITTED AS NEEDED FOR OPERATIONS AND ARE NOT PART OF THIS EROSION CONTROL SUBMITTAL.

4. THE CONTOUR INTERVAL FOR THIS DRAWING IS 2-FOOT. REFER TO SHEET 01C-12 FOR THE SEDIMENT BASIN SCHEDULE FOR SPECIFIC ELEVATIONS.



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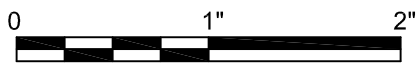
ISSUE	DATE	DESCRIPTION
D	03/19/15	EROSION CONTROL SUBMITTAL FOR NORTHWEST AREA
C	03/2015	RAISED FLOOR GRADES 6"
B	12/31/14	REVISED PER NCDENR COMMENTS
A	11/2014	ISSUED FOR APPROVAL

PROJECT MANAGER	M.D. PLUMMER, P.E.
DESIGNED BY	P. WESTMORELAND, P.E.
DRAWN BY	J. GAUL
CHECKED BY	J. READLING, P.E.
PROJECT NUMBER	453925-235691-018



COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

BASEGRADE PLAN  
(BOTTOM OF SOIL LINER)



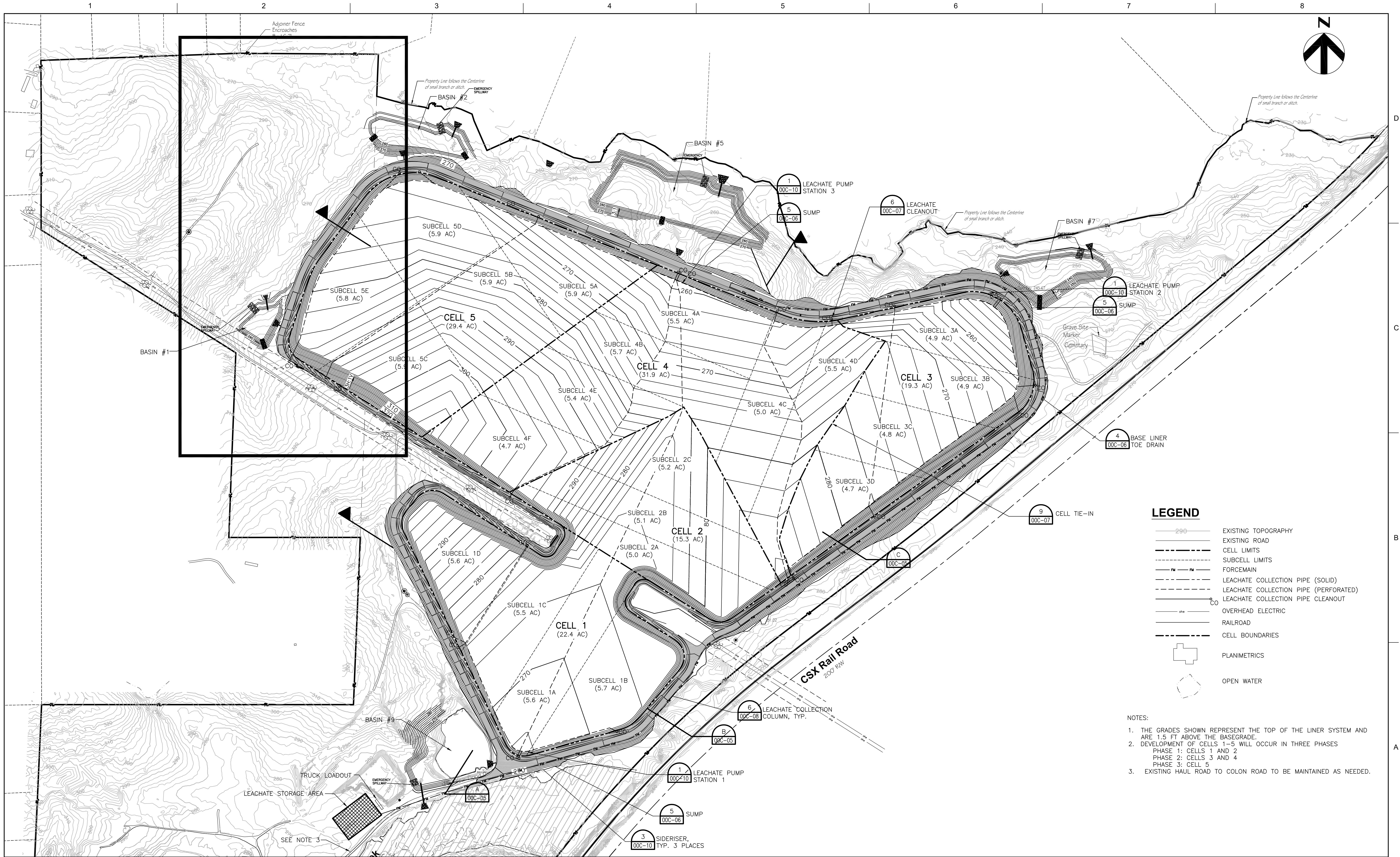
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SCALE1"=200'

SHEET

00C-02





C:\pwworking\hadr\2015\03\03\00C-03.dwg, Plt: 3/15/2015 11:55:45 AM, jgall



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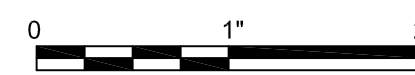
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D	03/19/15	EROSION CONTROL SUBMITTAL FOR NORTHWEST AREA
C	03/2015	RAISED FLOOR GRADES 6", RESIZED SUBCELLS
B	12/31/14	REVISED PER NCDENR COMMENTS
A	11/2014	ISSUED FOR APPROVAL

PROJECT MANAGER	M.D. PLUMMER, P.E.
DESIGNED BY	P. WESTMORELAND, P.E.
DRAWN BY	J. GAUL
CHECKED BY	J. READLING, P.E.
PROJECT NUMBER	453925-235691-018



COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

TOP OF LINER



FILENAME 00C-03.dwg  
SCALE 1"=200'

SHEET  
00C-03

### LEGEND

- EXISTING TOPOGRAPHY
- EXISTING ROAD
- CELL LIMITS
- SUBCELL LIMITS
- FORCEMAIN
- LEACHATE COLLECTION PIPE (SOLID)
- LEACHATE COLLECTION PIPE (PERFORATED)
- LEACHATE COLLECTION PIPE CLEANOUT
- OVERHEAD ELECTRIC
- RAILROAD
- CELL BOUNDARIES
- PLANIMETRICS
- OPEN WATER

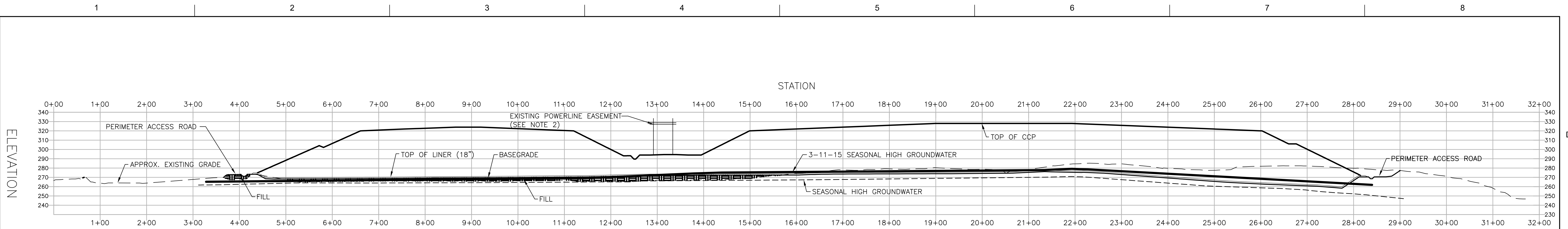
### NOTES:

- THE GRADES SHOWN REPRESENT THE TOP OF THE LINER SYSTEM AND ARE 1.5 FT ABOVE THE BASEGRADE.
- DEVELOPMENT OF CELLS 1-5 WILL OCCUR IN THREE PHASES  
PHASE 1: CELLS 1 AND 2  
PHASE 2: CELLS 3 AND 4  
PHASE 3: CELL 5
- EXISTING HAUL ROAD TO COLON ROAD TO BE MAINTAINED AS NEEDED.

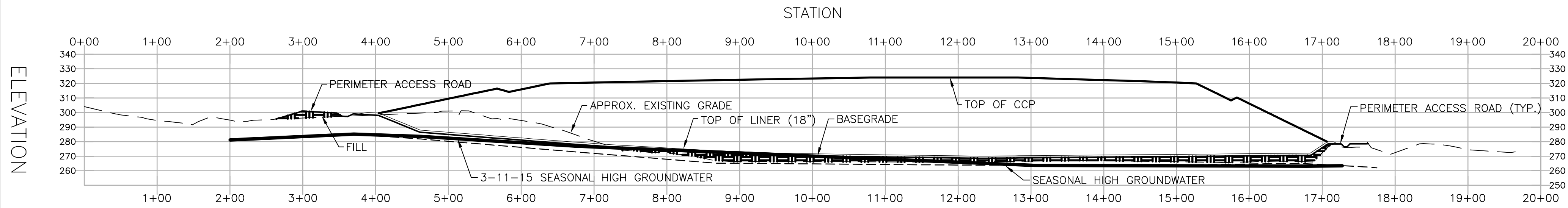




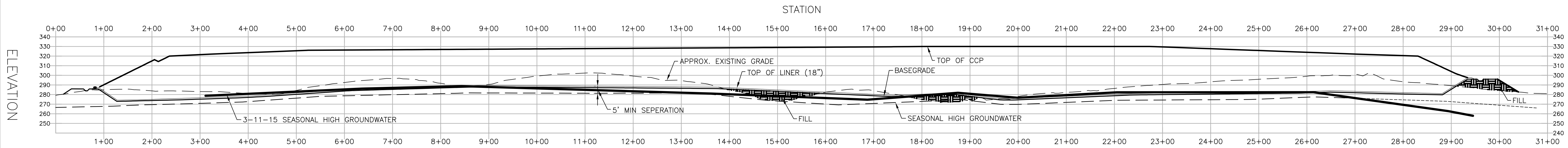




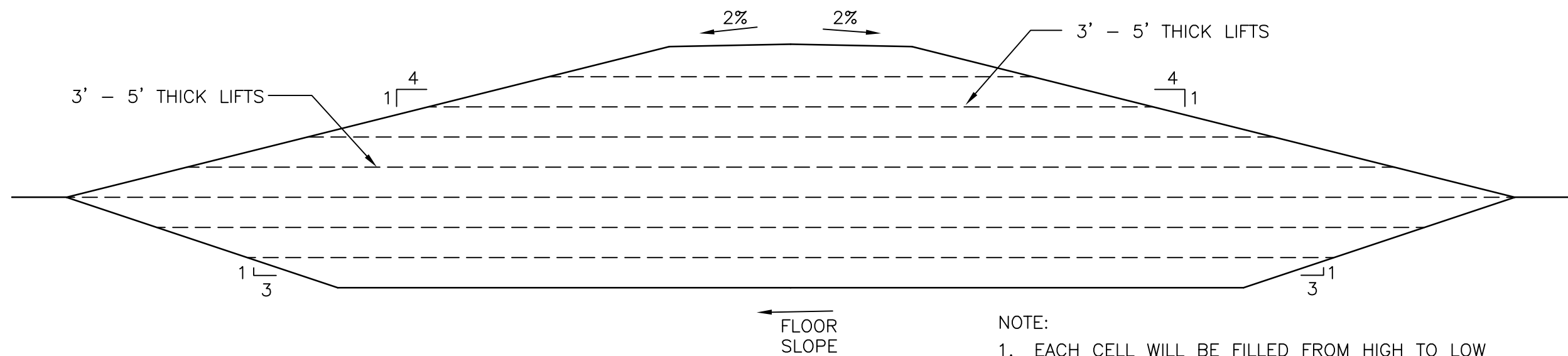
SECTION A  
HORIZONTAL: 1"=100'; VERTICAL: 1"=50'



SECTION B  
HORIZONTAL: 1"=100'; VERTICAL: 1"=50'



SECTION C  
HORIZONTAL: 1"=100'; VERTICAL: 1"=50'



FILL SEQUENCE  
3/4"=1'-0"

- NOTES:
1. IN THE AREAS WHERE SUBGRADE IS HIGHER THAN EXISTING GRADE, CLEAN SOIL WILL BE USED TO BRING EXISTING GRADE TO SUBGRADE. THE CLEAN SOIL WILL BE COMPACTED AS REQUIRED.
  2. THE SEPARATION BETWEEN THE TOP OF THE CAP SYSTEM AND THE OVERHEAD ELECTRICAL WILL BE MAINTAINED.
  3. REFER TO SHEET 00C-04 FOR SLOPE OF THE TOP OF THE CCP.



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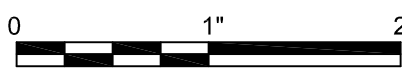
ISSUE	DATE	DESCRIPTION
D	03/19/15	EROSION CONTROL SUBMITTAL FOR NORTHWEST AREA
C	03/2015	RAISED SUBGRADE AND LINER 6"
B	12/31/14	REVISED PER NCDENR COMMENTS
A	11/2014	ISSUED FOR APPROVAL

PROJECT MANAGER	M.D. PLUMMER, P.E.
DESIGNED BY	P. WESTMORELAND, P.E.
DRAWN BY	J. GAUL
CHECKED BY	J. READLING, P.E.
PROJECT NUMBER	453925-235691-018



COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

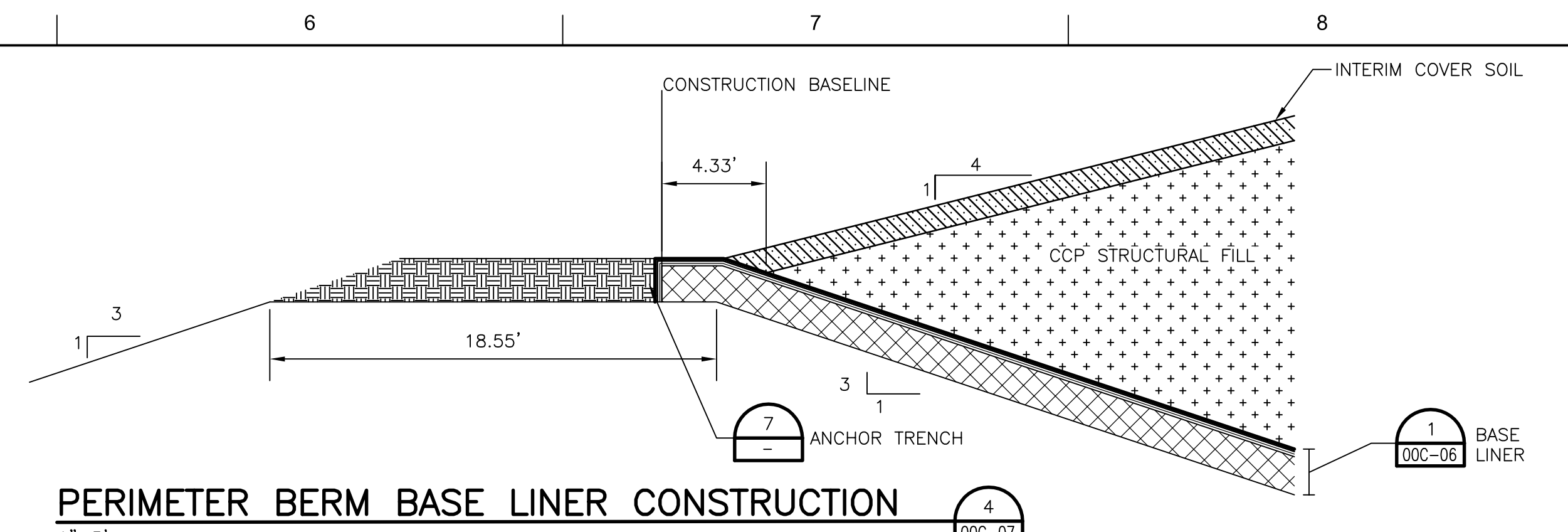
SITE CROSS SECTIONS



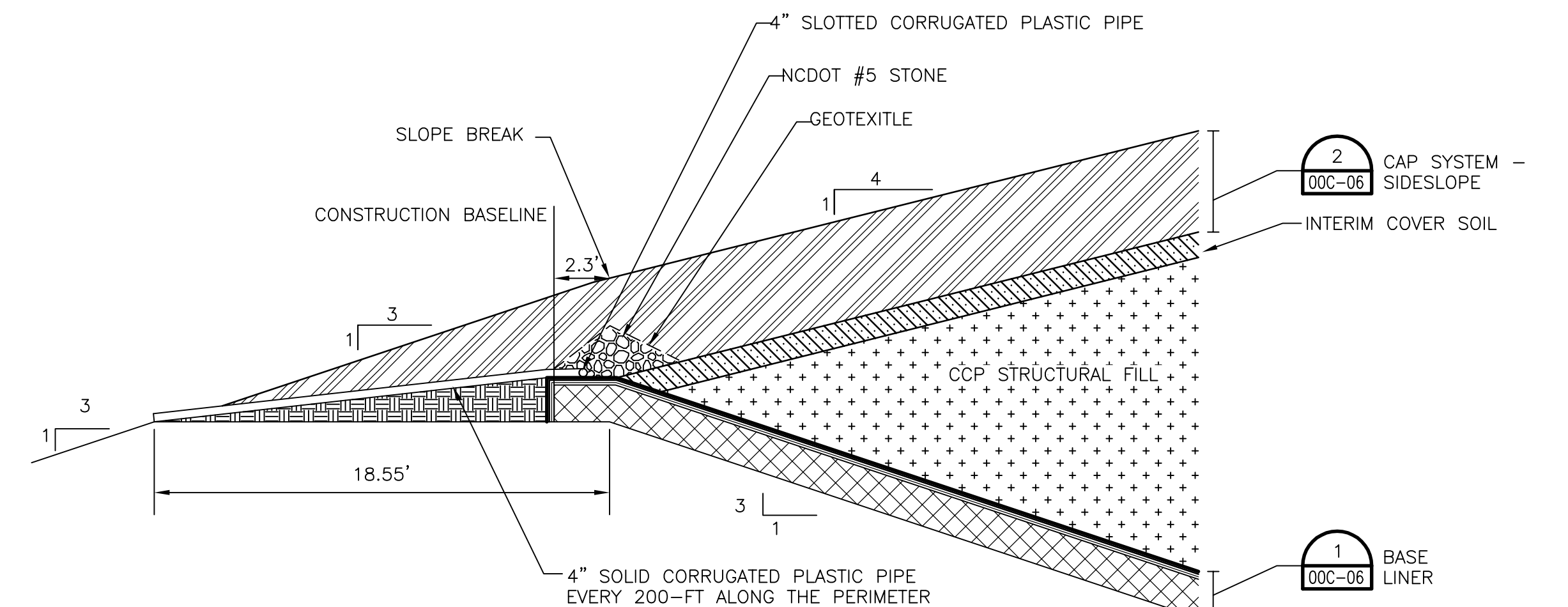
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SCALE 1"=100'

SHEET  
00C-05





PERIMETER BERM BASE LINER CONSTRUCTION



PERIMETER BERM CLOSURE CONSTRUCTION

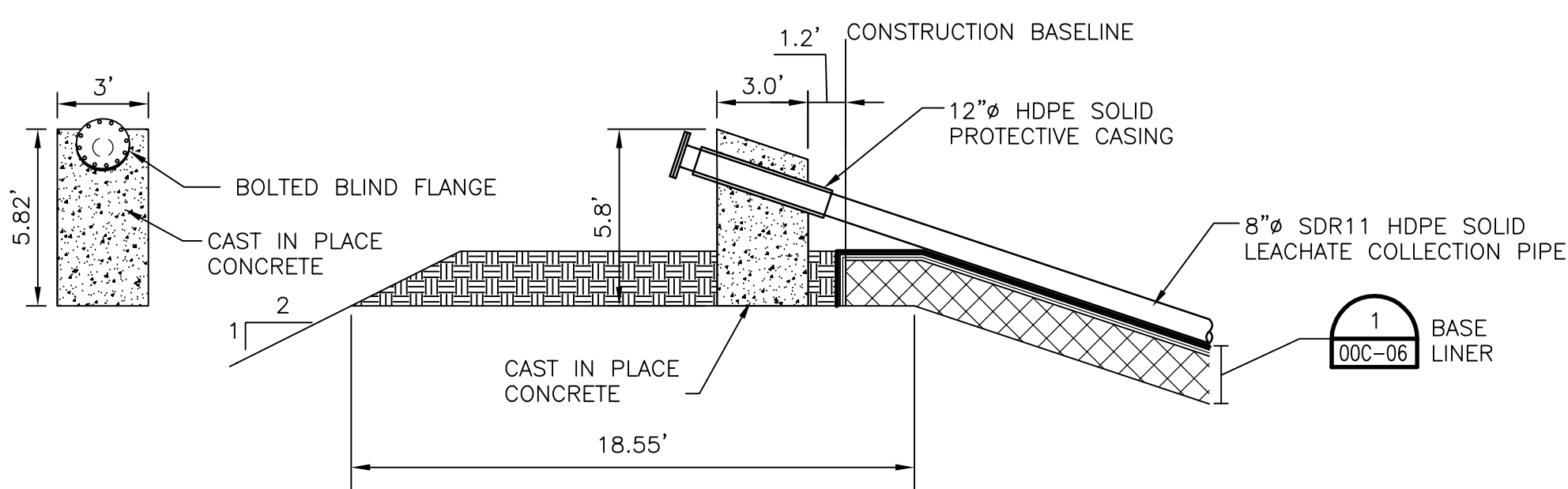


Diagram illustrating the cross-section of a lined embankment structure. The layers, from top to bottom, are:

- WOOD
- GEOCOMPOSITE
- 60 MIL HDPE GEOMEMBRANE
- GEOSYNTHETIC CLAY LINER
- SUBGRADE

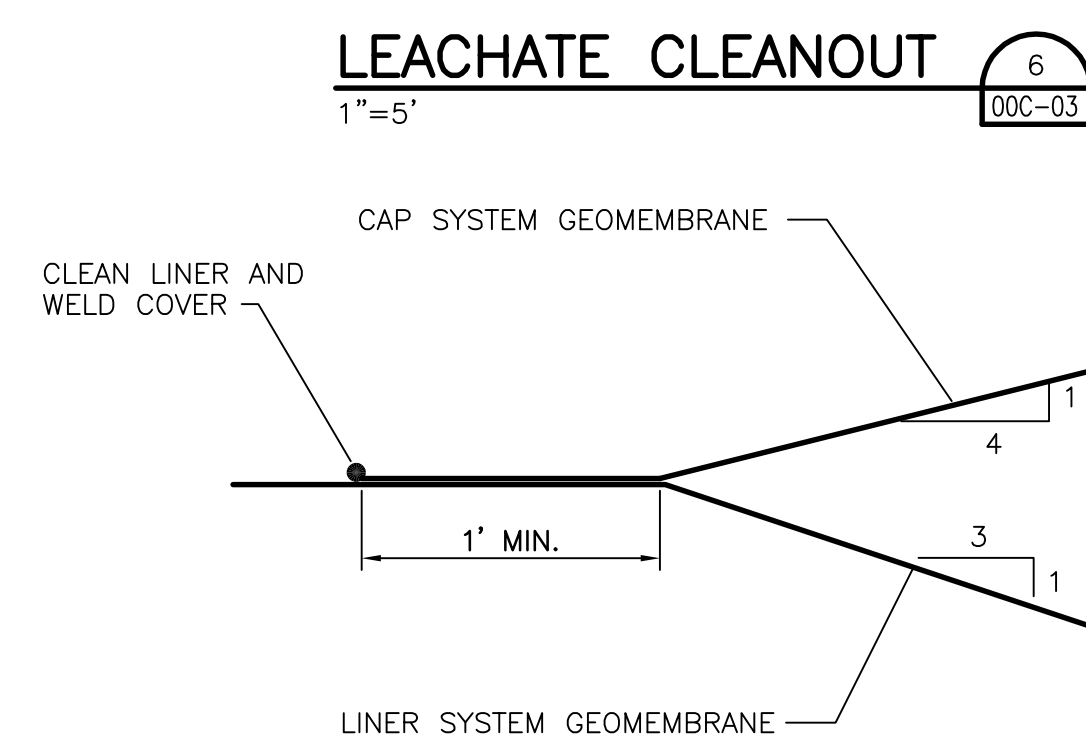
Dimensions shown:

- Horizontal distance from the wood face to the top of the liner: 2.50'
- Vertical distance from the wood face to the bottom of the liner: 1.50'
- Horizontal distance from the wood face to the bottom of the subgrade: 1.50'

**SLOPE DRAIN**

1"=5'

2  
02C-02

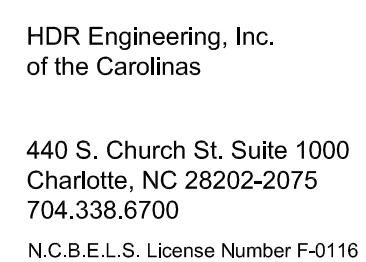


\*SACRIFICIAL GEOMEMBRANE IS USED TO PROTECT  
GEOCOMPOSITE UNTIL FUTURE CELL IS PLACED IN SERVICE.

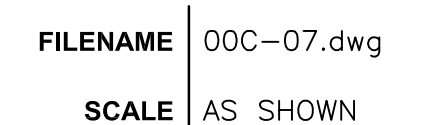
CELL TIE-IN

1"=5'

9  
00C-03



## PERIMETER CONTAINMENT



EET

**00C-07**

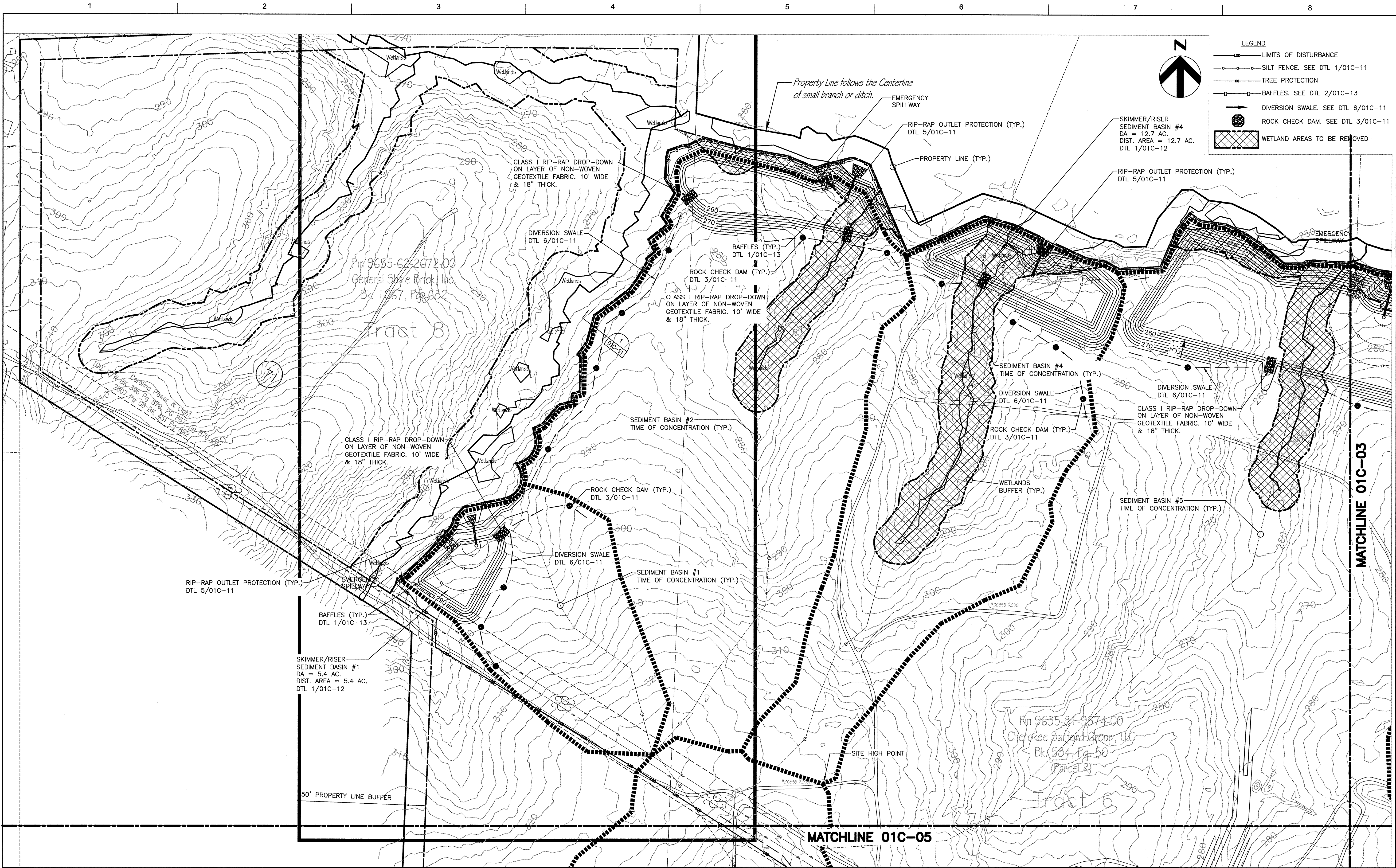








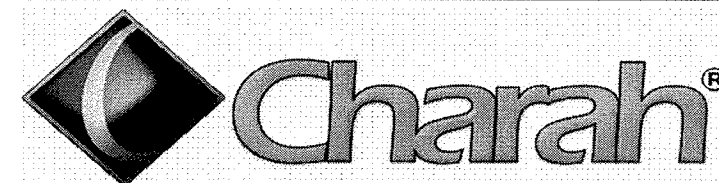
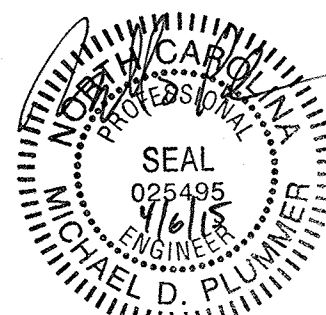




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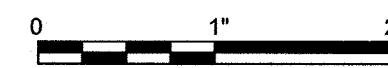
ISSUE	DATE	DESCRIPTION
E	04/02/15	REVISED PER NCDENR COMMENTS
D	03/19/15	EROSION CONTROL SUBMITTAL FOR NORTHWEST AREA
C	01/15/15	REVISED PER NCDENR COMMENTS
B	12/31/14	REVISED PER NCDENR COMMENTS
A	11/2014	ISSUED FOR APPROVAL

PROJECT MANAGER	M.D. PLUMMER, P.E.
DESIGNED BY	R. BAYSDEN, P.E.
DRAWN BY	R. BAYSDEN, P.E.
CHECKED BY	J. READLING, P.E.
PROJECT NUMBER	453925-235691-018



COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

EROSION AND SEDIMENTATION  
CONTROL PLAN - PHASE 1  
PLAN 1



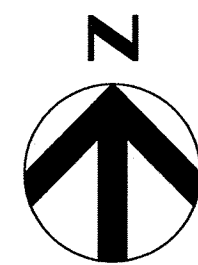
FILENAME 01C-02.dwg  
SCALE 1"=100'

SHEET  
01C-02



3. ONCE THE STORM NETWORK IS COMPLETELY CONSTRUCTED AND ALL INLETS ARE PROPERLY PROTECTED, PHASE OUT THE TEMPORARY SEDIMENT BASINS TO COMPLETE ALL SITE IMPROVEMENTS AS APPROVED BY THE EROSION CONTROL INSPECTOR.
4. CONTACT THE NCENR INSPECTOR FOR AN INSPECTION WHEN CONSTRUCTION IS COMPLETE AND ALL AREAS ARE FULLY PLANTED AND STABILIZED.
5. WHEN SITE IS APPROVED, REMOVE ALL EROSION CONTROL DEVICES AND STABILIZE THESE AND ANY RESULTING BARE AREAS. ALL WATER IN SEDIMENT BASINS SHALL BE DRAINED BY THE SKIMMER OR PUMPED INTO A SILT BAG.
6. COMPLETE INSTALLATION OF REMAINING PERMANENT EROSION CONTROL DEVICES.
7. CONTACT THE NCENR INSPECTOR FOR A FINAL SITE INSPECTION WHEN VEGETATION HAS BECOME ESTABLISHED.

1. INSPECT ALL EROSION CONTROL DEVICES AT WEEKLY INTERVALS AND AFTER EVERY RAINFALL EXCEEDING 1/2" TO VERIFY THAT THEY ARE FUNCTIONING PROPERLY. ANY ACCUMULATED SEDIMENT SHALL BE REMOVED AND PLACED IN A DESIGNATED SPOIL DISPOSAL AREA APPROVED BY THE INSPECTOR. CONDUCT PERIODIC INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS AND MAKE ANY REPAIRS OR MODIFICATIONS NECESSARY TO ASSURE CONTINUED EFFECTIVE OPERATION OF EACH DEVICE.
2. STABILIZE SITE PER EROSION CONTROL NOTES AS AREAS ARE BROUGHT TO ROUGH GRADE WITH VEGETATION, PAVING, DITCH LININGS, ETC. ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1 SHALL BE PROVIDED TEMPORARY OR PERMANENT STABILIZATION WITH GROUND COVER AS SOON AS PRACTICABLE BUT IN ANY EVENT WITHIN 7 CALENDAR DAYS FROM THE LAST LAND-DISTURBING ACTIVITY. ALL OTHER DISTURBED AREAS SHALL BE PROVIDED TEMPORARY OR PERMANENT STABILIZATION WITH GROUND COVER AS SOON AS PRACTICABLE BUT IN ANY EVENT WITHIN 14 CALENDAR DAYS FROM THE LAST LAND-DISTURBING ACTIVITY.



(01C-07)

(01C-08)

(01C-10)

(01C-09)

1) GROUND STABILIZATION		
SITE AREA DISPOSITION	STABILIZATION TIME FRAME	STABILIZATION TIME FRAME EXCEPTIONS
<ul style="list-style-type: none"> <li>PERIMETER DIKES, SWALES, DITCHES AND SLOPES</li> </ul>	7 DAYS	NONE
<ul style="list-style-type: none"> <li>HIGH QUALITY WATER (HQW) ZONES</li> </ul>	7 DAYS	NONE
<ul style="list-style-type: none"> <li>SLOPES STEEPER THAN 3:1</li> </ul>	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
<ul style="list-style-type: none"> <li>SLOPES 3:1 OR FLATTER</li> </ul>	14 DAYS	7-DAYS FOR SLOPES GREATER THAN 50 FEET IN LENGTH
<ul style="list-style-type: none"> <li>ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1</li> </ul>	14 DAYS	NONE (EXCEPT FOR PERIMETERS AND HQW ZONES)

### GENERAL NOTES

1. SEE SHEET 01C-01 FOR GENERAL EROSION CONTROL NOTES AND THE PHASE 1 EROSION CONTROL SEQUENCE.
2. NOTE THAT SLOPE DRAINS & PROTECTION (DTL 6/01C-13) AND TEMPORARY DIVERSION BERMS (DTL 6 / 01C-11) SHALL BE UTILIZED AS FILL PROGRESSES. DETAILS IN NOTE #2 ABOVE ARE FOR FINAL APPLICATION.

Marklyn Berryman  
Bk 707 Pg 119  
Bk. 415. Pa. 335

ALL CONSTRUCTION MUST CONFORM TO THE  
UNDERGROUND UTILITY PROTECTION ACT



**BEFORE YOU DIG!  
CONTACT ONE-CALL CENTER  
1-800-632-4949**

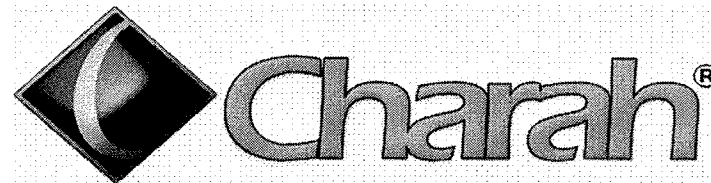
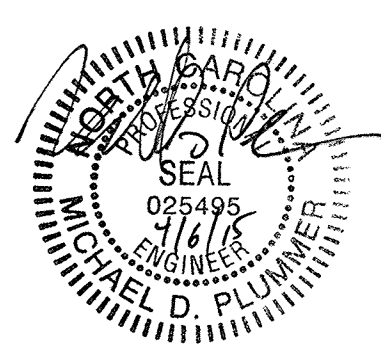


HDR Engineering, Inc.  
of the Carolinas

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Charlotte, NC 28202-2075  
704.338.6700  
N.C.B.E.L.S. License Number F-0116

D	04/02/15	REVISED PER NCDENR COMMENTS
C	03/19/15	EROSION CONTROL SUBMITTAL FOR NORTHWEST AREA
B	12/31/14	REVISED PER NCDENR COMMENTS
A	11/2014	ISSUED FOR APPROVAL
<b>ISSUE</b>	<b>DATE</b>	<b>DESCRIPTION</b>

<b>PROJECT MANAGER</b>	M. PLUMMER, P.E.
<b>DESIGNED BY</b>	R. BAYSDEN, P.E.
<b>DRAWN BY</b>	R. BAYSDEN, P.E.
<b>CHECKED BY</b>	J. READLING, P.E.
<b>PROJECT NUMBER</b>	453925-235691-018



COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

## EROSION AND SEDIMENTATION CONTROL PLAN - PHASE 2 OVERALL

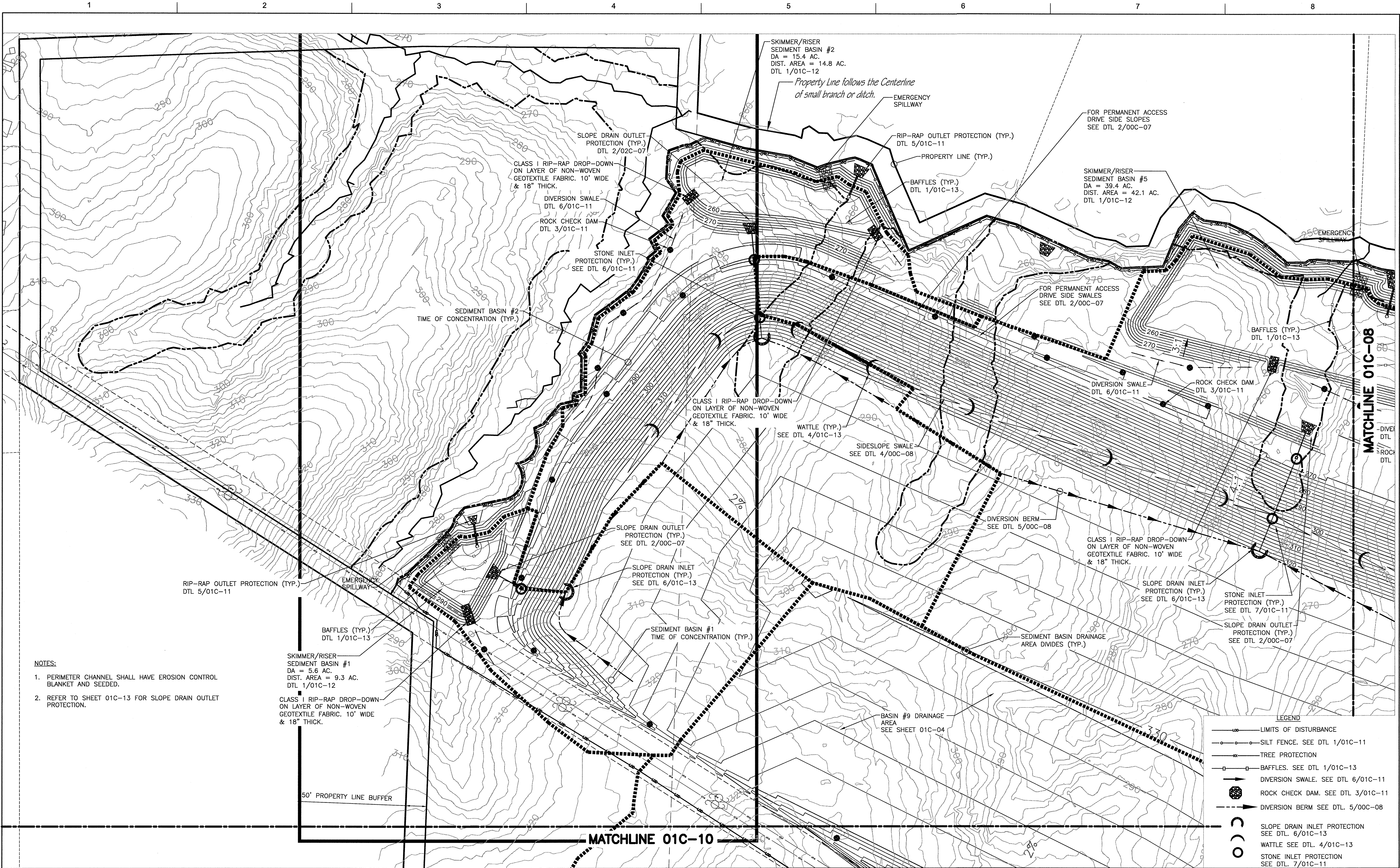


<b>FILENAME</b>	01C-06.dwg
<b>SCALE</b>	1"=200'

**SHEET**

**01C-06**





- NOTES:
1. PERIMETER CHANNEL SHALL HAVE EROSION CONTROL BLANKET AND SEEDED.
  2. REFER TO SHEET 01C-13 FOR SLOPE DRAIN OUTLET PROTECTION.

SKIMMER/RISER  
SEDIMENT BASIN #1  
DA = 5.6 AC.  
DIST. AREA = 9.3 AC.  
DTL 1/01C-12

CLASS I RIP-RAP DROP-DOWN  
ON LAYER OF NON-WOVEN  
GEOTEXTILE FABRIC. 10' WIDE  
& 18" THICK.

- LEGEND
- LIMITS OF DISTURBANCE
  - SILT FENCE. SEE DTL 1/01C-11
  - × TREE PROTECTION
  - BAFFLES. SEE DTL 1/01C-13
  - DIVERSION SWALE. SEE DTL 6/01C-11
  - ROCK CHECK DAM. SEE DTL 3/01C-11
  - DIVERSION BERM SEE DTL. 5/00C-08
  - SLOPE DRAIN INLET PROTECTION SEE DTL. 6/01C-13
  - WATTLE SEE DTL. 4/01C-13
  - STONE INLET PROTECTION SEE DTL. 7/01C-11

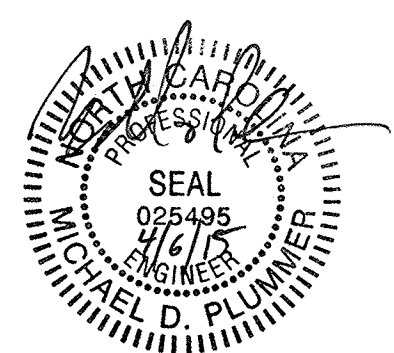


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DESIGNED BY	R. BAYSDEN, P.E.
DRAWN BY	R. BAYSDEN, P.E.
CHECKED BY	J. READING, P.E.
PROJECT NUMBER	453925-235691-018



**Charah**

COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

**EROSION AND SEDIMENTATION  
CONTROL PLAN - PHASE 2  
PLAN 1**

0 1" 2"

FILENAME 01C-07.dwg

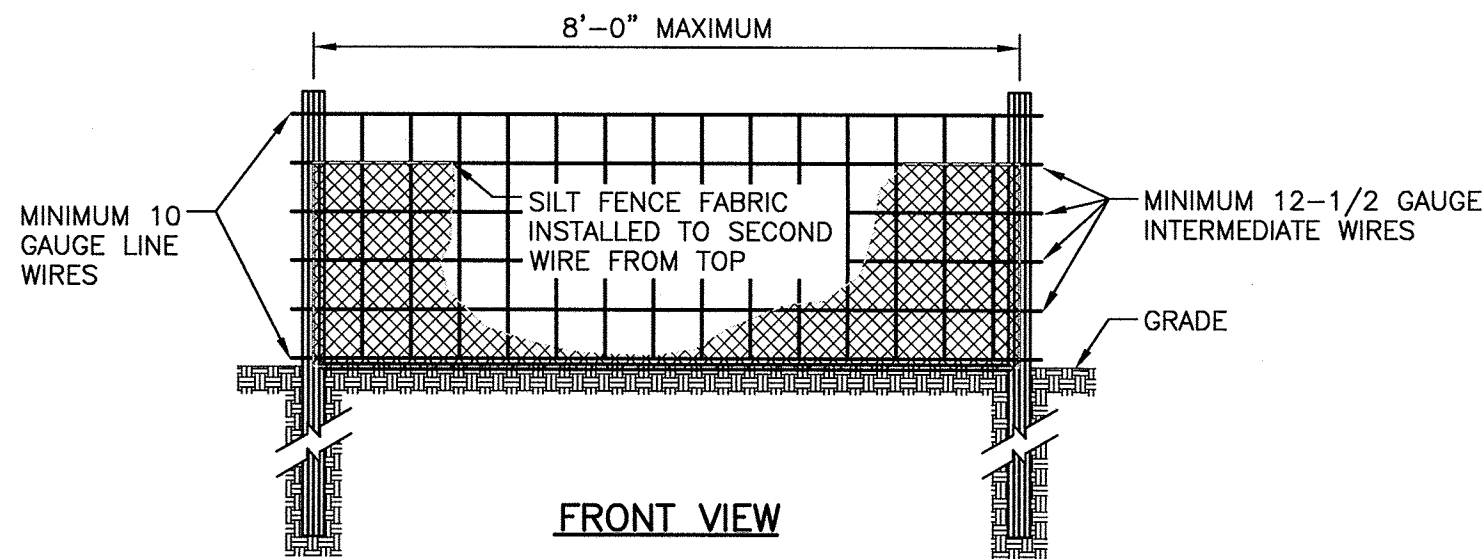
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SHEET  
**01C-07**

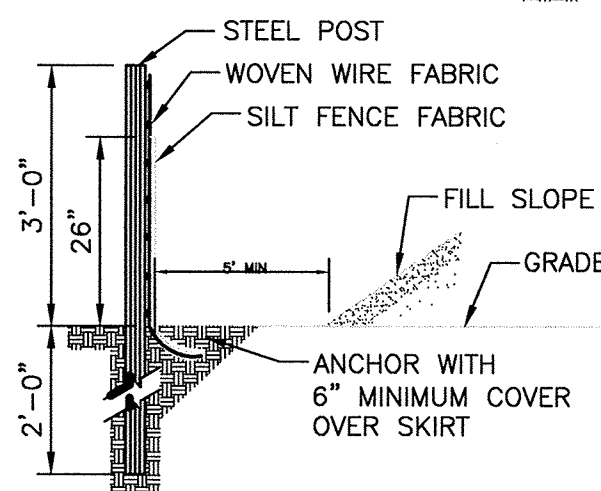


NOTE:

1. USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
2. SILT FENCE IS TO BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST.
3. INSPECT FREQUENTLY AND REPAIR OR REPLACE PROMPTLY AS NEEDED.
4. REMOVE SEDIMENT DEPOSITED AS NEEDED TO PROVIDE STORAGE VOLUME FOR THE NEXT RAIN AND TO REMOVE PRESSURE ON THE SILT FENCE. UNIFORMLY DISTRIBUTE ON THE SOURCE AREA PRIOR TO TOPSOILING.



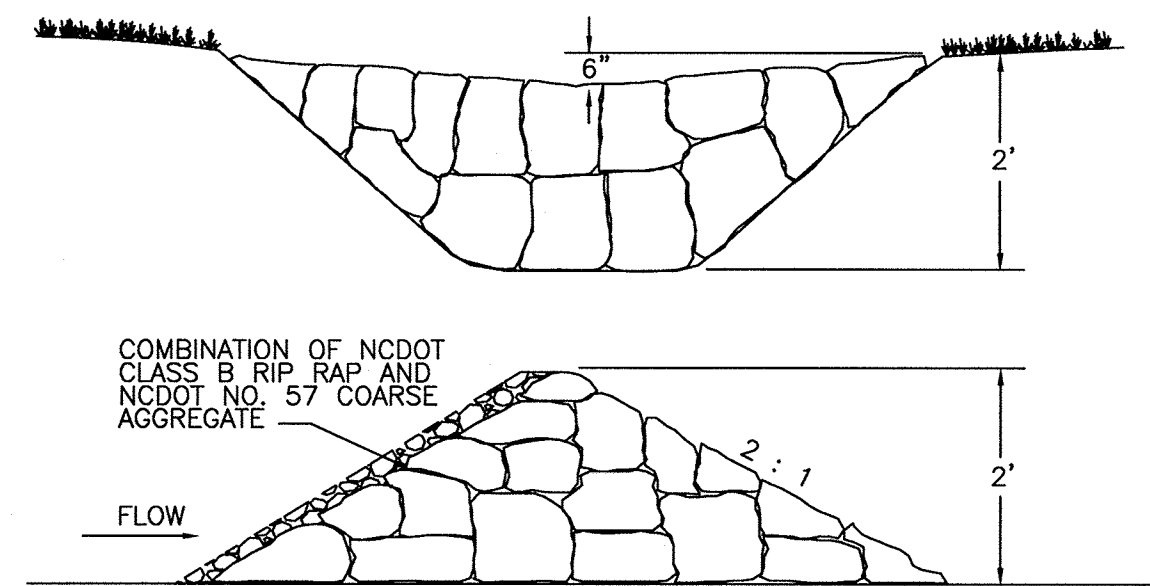
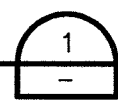
FRONT VIEW



SIDE VIEW

TEMPORARY SILT FENCE DETAIL

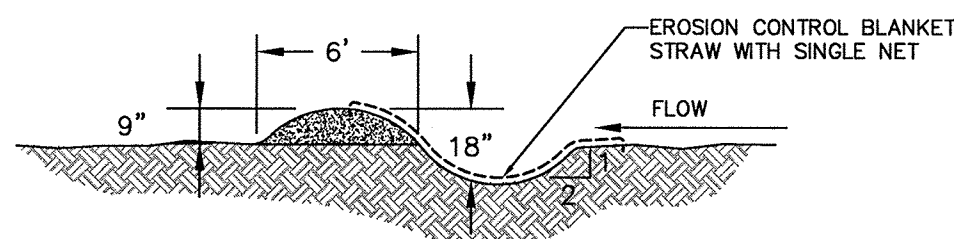
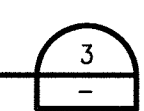
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NOTE: PLACE EVERY 100' ALONG FLOW PATH.

ROCK CHECK DAM

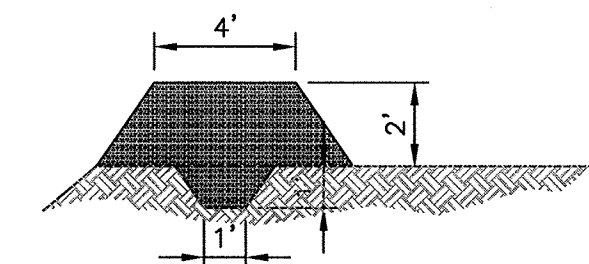
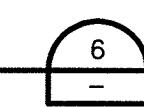
NTS



NOTE: SWALE SHOULD BE LINED IMMEDIATELY AFTER CONSTRUCTION.

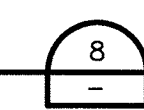
DIVERSION SWALE

N.T.S.



DIVERSION DIKE

N.T.S.



RECOMMENDATION FOR PREFERRED INSTALLATION

\* TRANSVERSE OPEN CHECK SLOT

\* TRANSVERSE CHECK SLOT TO BE CONSTRUCTED IN ACCORDANCE WITH THE MANUFACTURER'S

UPSTREAM AND DOWNSTREAM TERMINAL

SOIL STABILIZATION MAT CURLEX I

LINING SHALL EXTEND TO THE TOP OF THE CHANNEL SIDESLOPES. LINING SHALL BE CURLEX I OR EQUAL. SIDE SLOPES SHALL BE A MAXIMUM SLOPE OF 3 TO 1. LINING SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION PROCEDURES.

\* TRANSVERSE CLOSED CHECK SLOT

V DITCH

3:1 MAXIMUM SIDE SLOPES

3' OVERLAP BETWEEN ROLLS

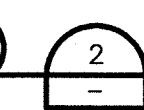
CHECK SLOT 25' O.C.

STAKING DETAIL

NOTE: STAKES SHALL BE WOOD OR METAL AS RECOMMENDED BY MANUFACTURER AND SHALL BE AT LEAST 12" IN LENGTH.

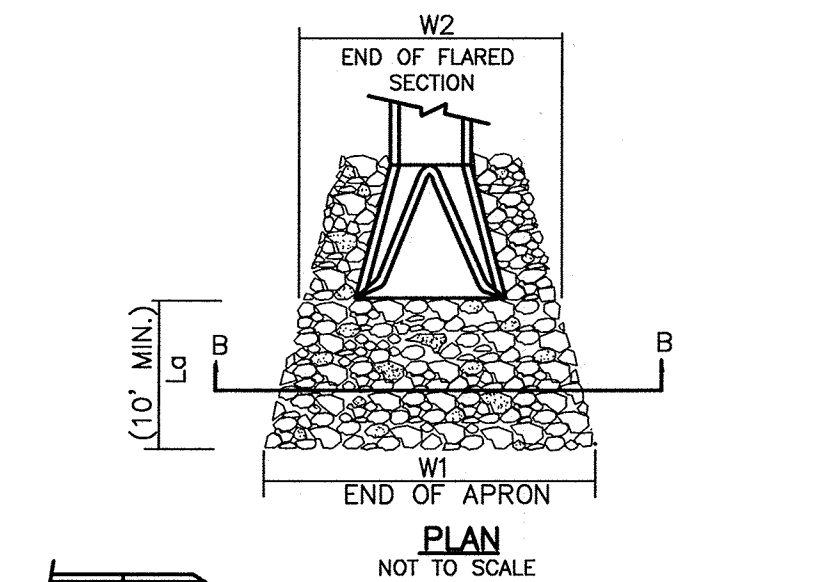
TYPICAL SECTION FOR SOIL STABILIZATION MAT LINED AREAS (TYP.)

NTS



NOTES:

1. CLASS OR MEDIAN SIZE OF RIP RAP AND LENGTH, WIDTH AND DEPTH OF APRON TO BE SHOWN ON PLANS.
2. RIP RAP 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 RIP RAPPED SHALL BE UNDERCUT SO THAT THE INVERT OF THE APRON SHALL BE 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 UNLESS OTHERWISE SHOWN.
8. TYPE 2 GEOTEXTILE FILTER FABRIC SHALL BE INSTALLED ON COMPACTED SUBGRADE PRIOR TO PLACEMENT OF RIP RAP.
9. ANY DISTURBED AREA FROM END OF APRON TO RECEIVING CHANNEL MUST BE STABILIZED.

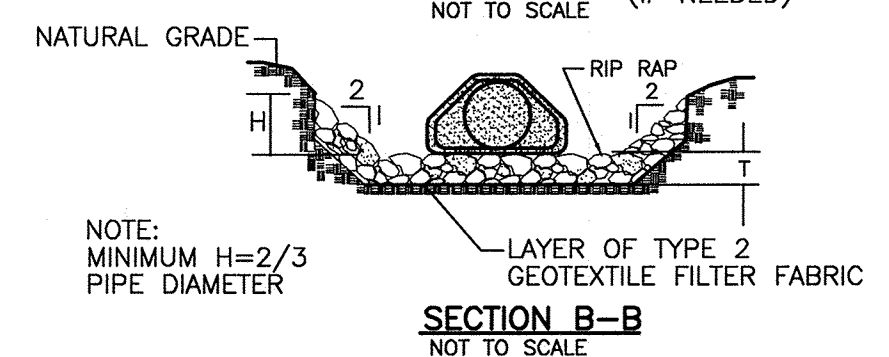


PLAN

NOT TO SCALE

ELEVATION

NOT TO SCALE



SECTION B-B

NOT TO SCALE

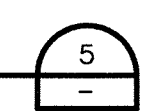
NOTE: MINIMUM H=2/3 PIPE DIAMETER

LOCATION	W1	W2	Ld	CLASS	T
SB1	12'	4.5'	10'	B	18"
SB2*	12'	6'	10'	B	18"
SB3	9'	3'	8'	B	18"
SB4	9'	3'	8'	B	18"
SB5*	12'	6'	10'	B	18"
SB6	9'	3'	8'	B	18"
SB7*	12'	6'	10'	B	18"
SB8	9'	3'	8'	B	18"
SB9*	26'	11'	22'	B	18"

1. SB = SEDIMENT BASIN
2. CLASS = NCDOT CLASS RIP RAP
3. \* = FOR EACH BARREL. SEE SEDIMENT BASIN SCHEDULE ON 01C-12.
4. CLASS A RIP RAP MIDRANGE = 4"
5. CLASS B RIP RAP MIDRANGE = 8"
6. CLASS 1 RIP RAP MIDRANGE = 10"
7. CLASS 2 RIP RAP MIDRANGE = 14"

RIPRAP APRON AT PIPE OUTFALLS

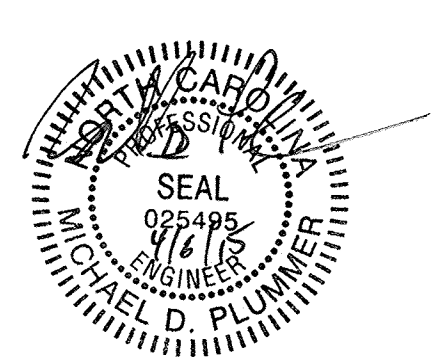
NTS



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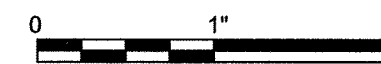
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PROJECT MANAGER	M.D. PLUMMER, P.E.
DESIGNED BY	R. BAYSDEN, P.E.
DRAWN BY	R. BAYSDEN, P.E.
CHECKED BY	J. READLING, P.E.
PROJECT NUMBER	453925-235691-018



COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

EROSION AND SEDIMENTATION  
CONTROL DETAILS  
(1 OF 3)



FILENAME | 01C-11.dwg  
SCALE | AS SHOWN

SHEET  
01C-11



1

2

3

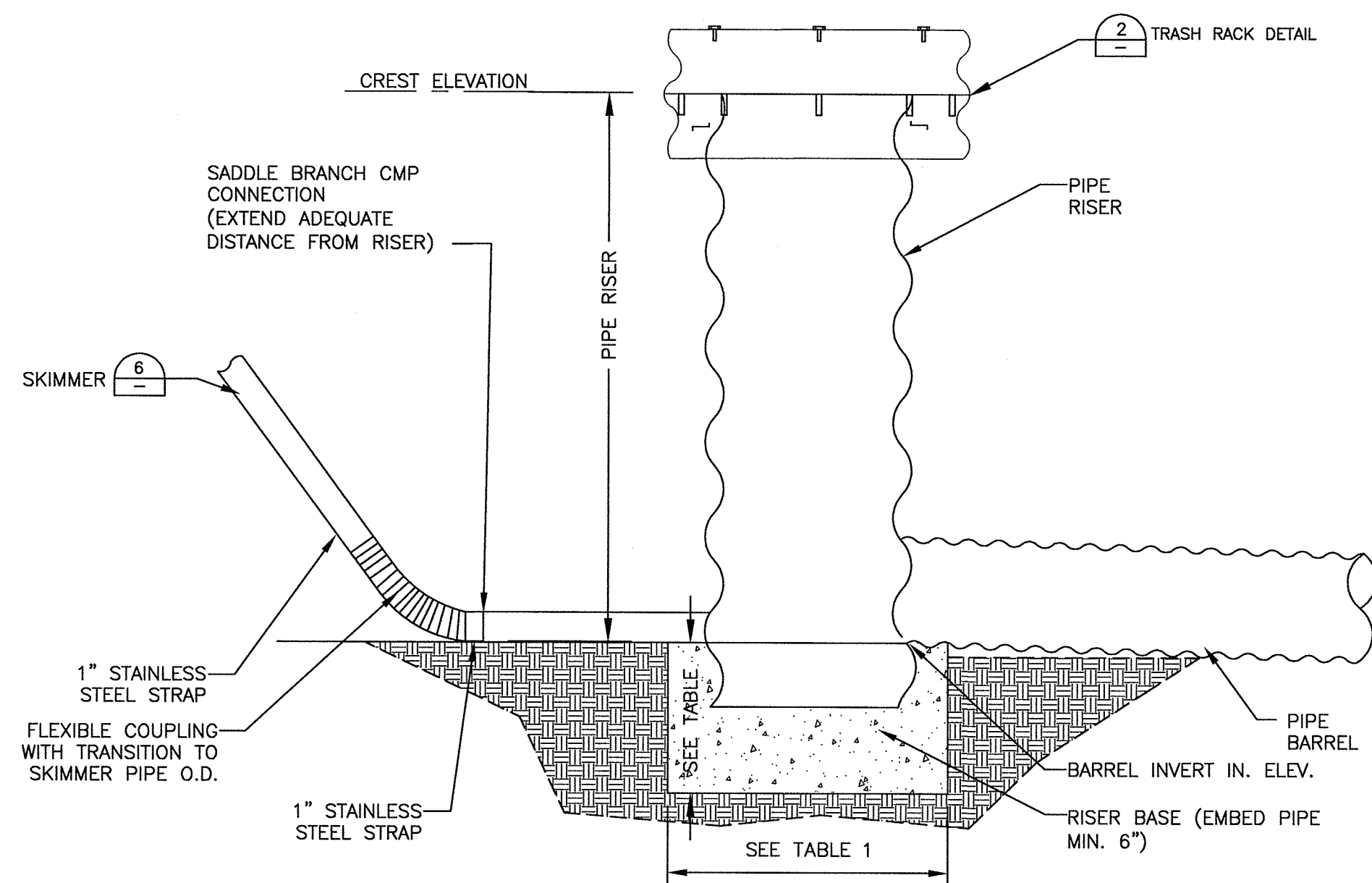
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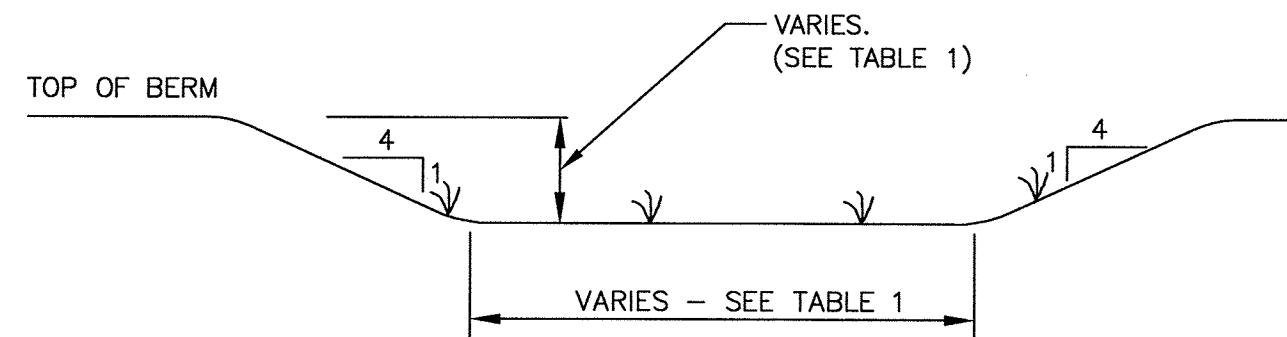
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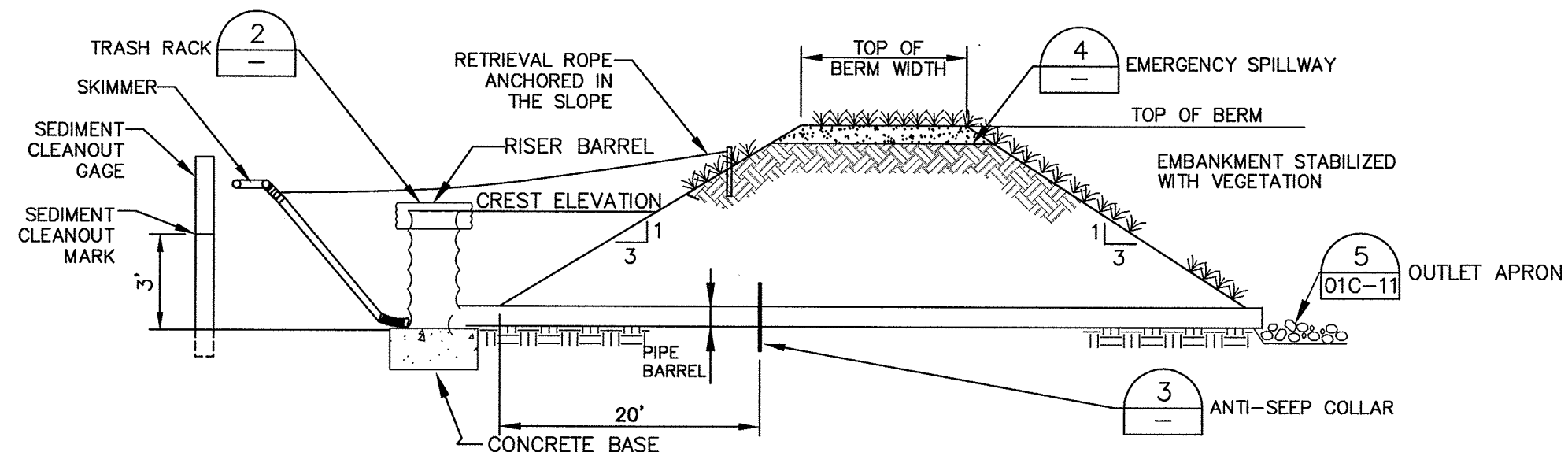
### OUTLET STRUCTURE ENLARGEMENT

N.T.S.



### EMERGENCY SPILLWAY TYPICAL

N.T.S.



Sediment Basin #	Useful Life (Phase)	Bottom Elevation (MSL)	Top of Berm Elevation (MSL)	Top of Berm Width (FT)	Emergency Spillway Width (MSL)	Emergency Spillway Width (FT)	Number of Riser/Barrel /Skimmer Assemblies	Riser Diameter (IN)	Riser Crest Elevation (MSL)	Trash Guard Diameter (IN)	Trash Guard Thickness (Gage)	Trash Guard Height (IN)	Concrete Ballast Dimension s (FT)	Barrel Diameter (IN)	Barrel Invert In (MSL)	Barrel Invert Out (MSL)	Antiseep Collar Size (FT)	Skimmer Size (IN)	Skimmer Orifice (IN)	Dewatering Time (days)
1	1 & 2	283.0	290.5	3	290.0	20	1	54	289.4	78	16	25	6x6x2	18	283.0	282.5	3x3	4	2.7	5
2	1 & 2	259.0	266.0	6	265.0	15	2	60	264.2	90	14	29	6x6x2	24	259.0	258.5	4x4	4	3.1	5
3	1	244.0	250.0	12	249.0	10	1	24	248.4	36	16	13	3x3x1	12	244.0	243.5	2x2	2.5	2	5
4	1	261.0	267.6	12	267.0	20	1	24	266.3	36	16	13	3x3x2	12	261.0	260.5	2x2	4	3.7	5
5	1 & 2	255.0	262.0	12	261.0	20	2	48	260.3	72	16	21	5x5x2	24	255.0	253.8	4x4	6	5.1	5
6	1	249.0	256.0	12	255.1	10	1	18	254.0	27	16	8	2.5x2.5x1	12	249.0	248.5	2x2	5	4	5
7	1 & 2	238.0	245.5	12	244.9	20	2	60	244.4	90	14	29	6x6x2.5	24	238.0	237.5	4x4	4	3.5	5
8	1	273.0	279.0	12	278.3	10	1	18	277.5	27	16	8	2.5x2.5x1	12	273.0	272.0	2x2	4	3.2	5
9	1 & 2	262.0	270.5	3	269.5	50	2	72	268.7	102	14	36	7x7x3	42	262.0	260.8	7x7	5	4.6	5

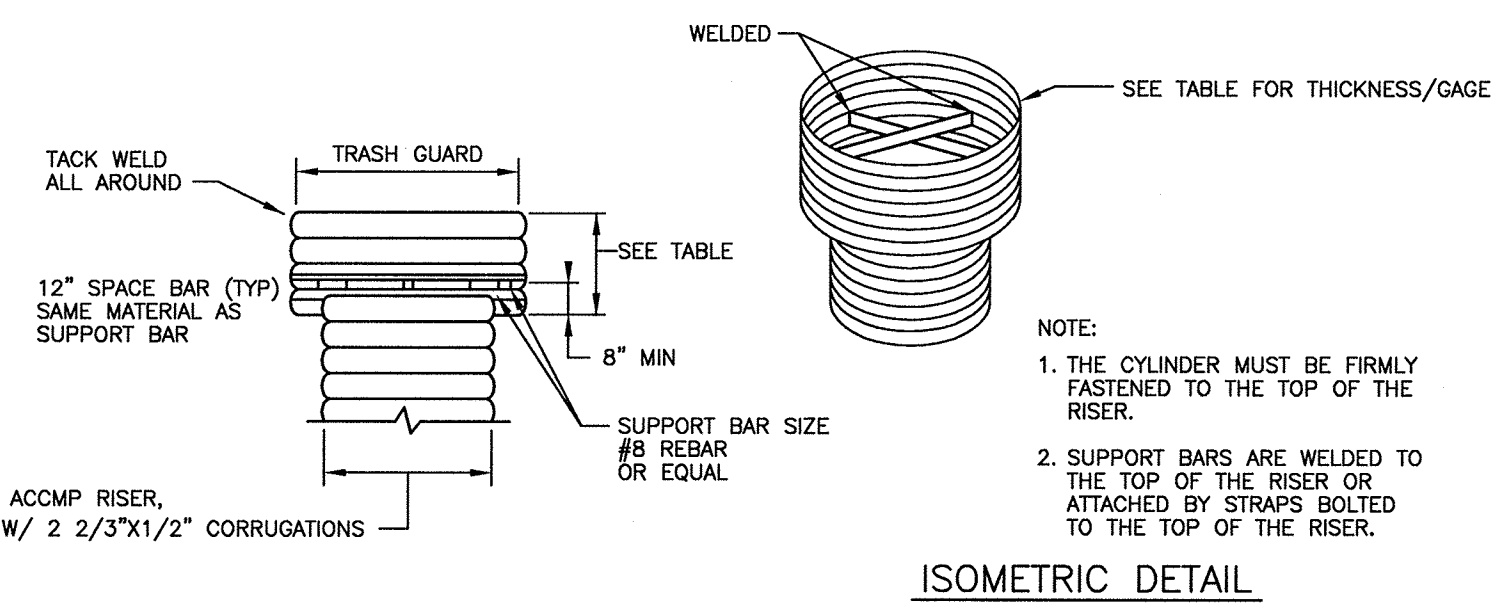
NOTES:

1. MSL = MEAN SEA LEVEL

2. ALL PIPES ARE ASPHALT COATED 16GA OR HEAVIER EXCEPT FOR SKIMMER

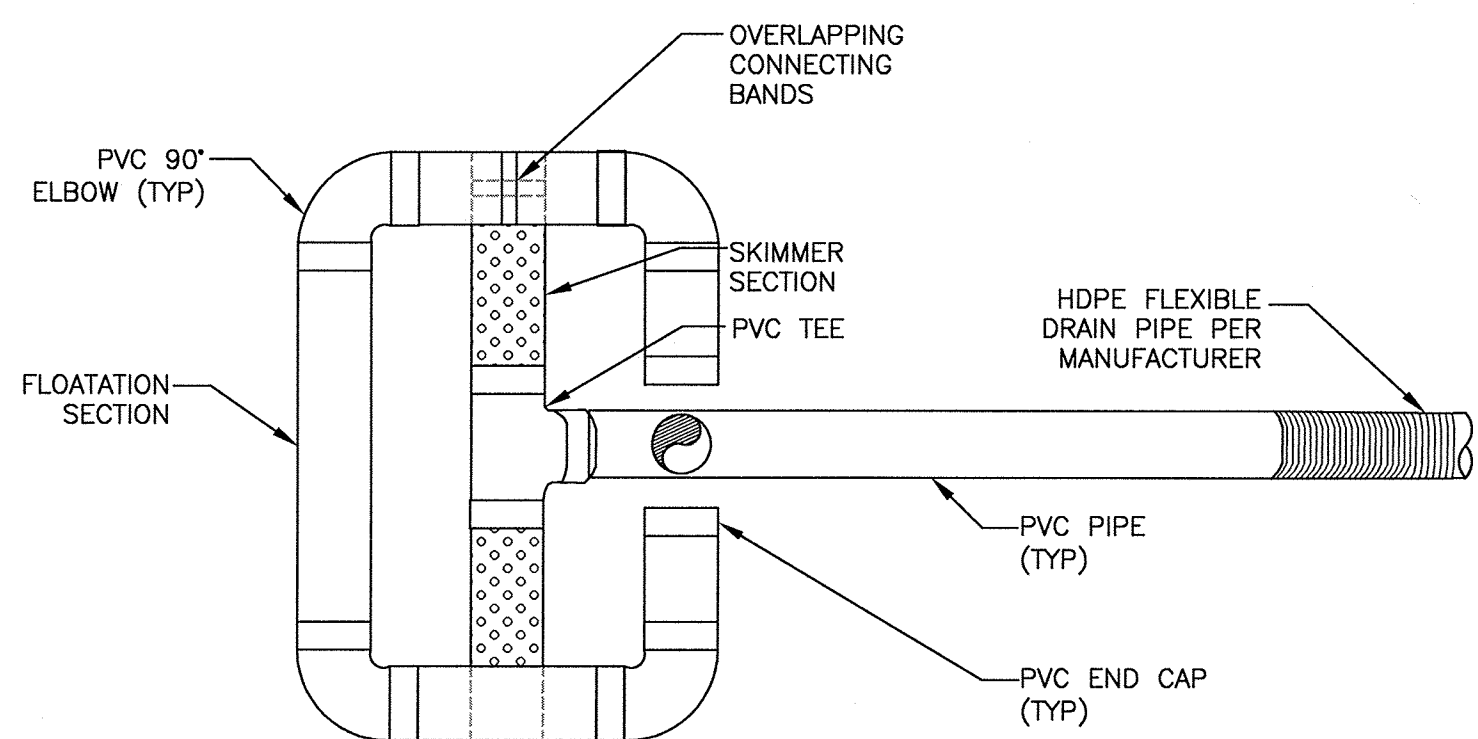
### SEDIMENT BASIN SCHEDULE DETAIL

N.T.S.

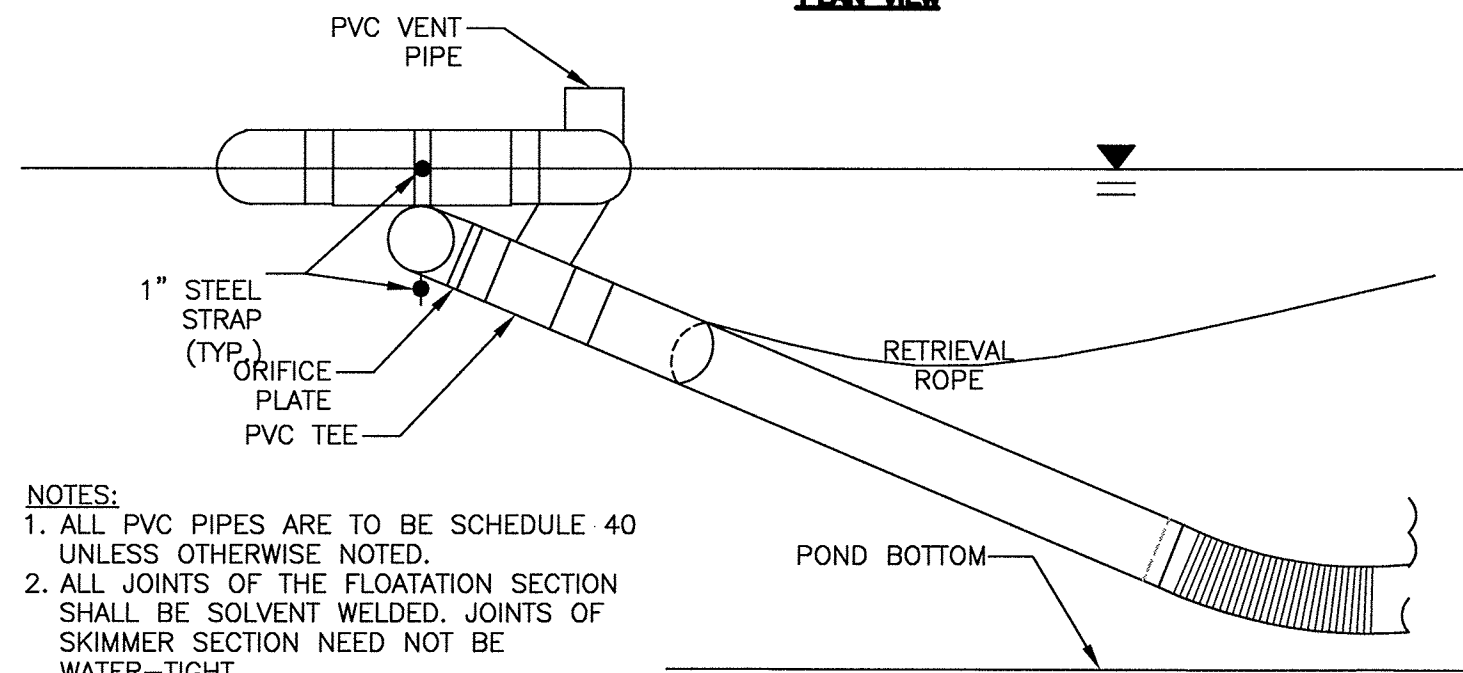


### TRASH RACK DETAIL

N.T.S.



### PLAN VIEW



### SIDE VIEW

NOTES:

1. ALL PVC PIPES ARE TO BE SCHEDULE 40 UNLESS OTHERWISE NOTED.

2. ALL JOINTS OF THE FLOATATION SECTION SHALL BE SOLVENT WELDED. JOINTS OF SKIMMER SECTION NEED NOT BE WATER-TIGHT.

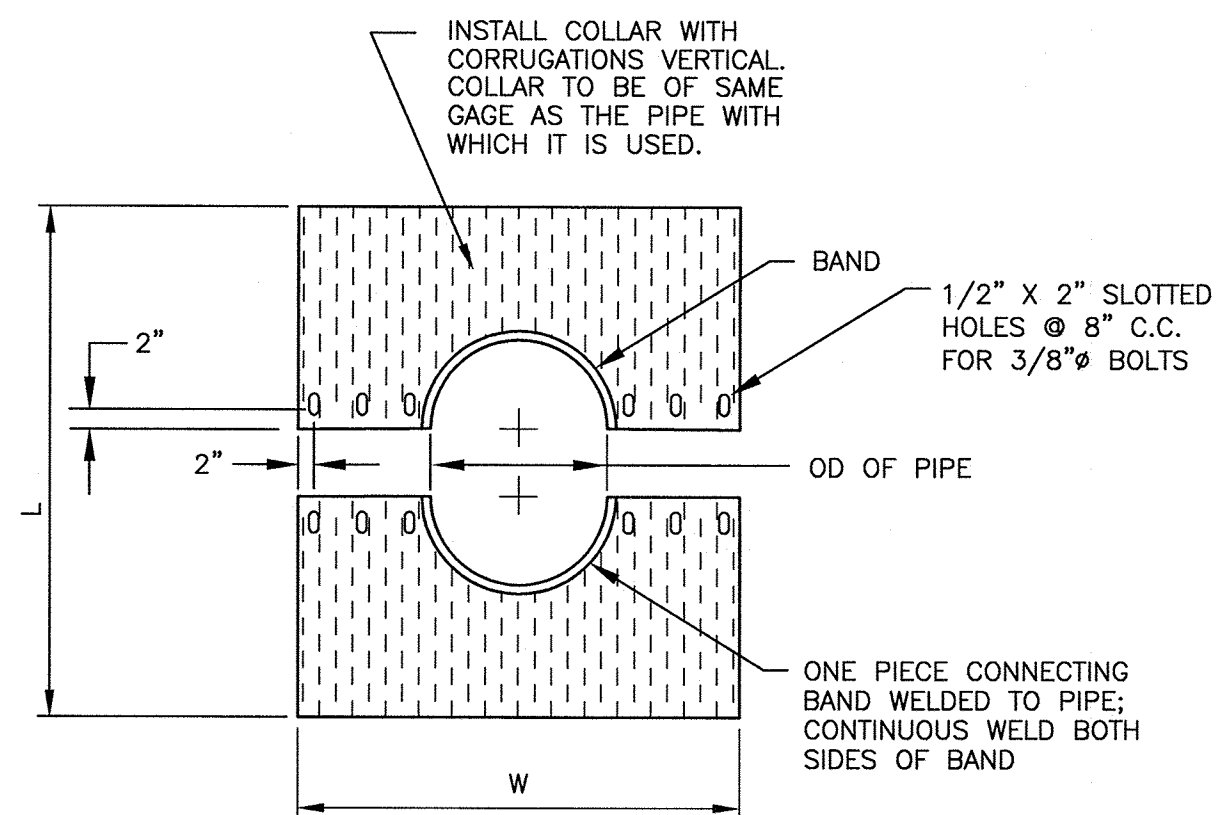
3. HDPE FLEXIBLE DRAIN PIPE IS TO BE ATTACHED TO THE PIPE BARREL STRUCTURE WITH WATER-TIGHT CONNECTIONS.

4. SEE SCHEDULE FOR ORIFICE SIZE.

5. FAIRCLOTH TYPE OR EQUIVALENT SKIMMER TO BE USED.

### FAIRCLOTH SKIMMER DETAIL

N.T.S.

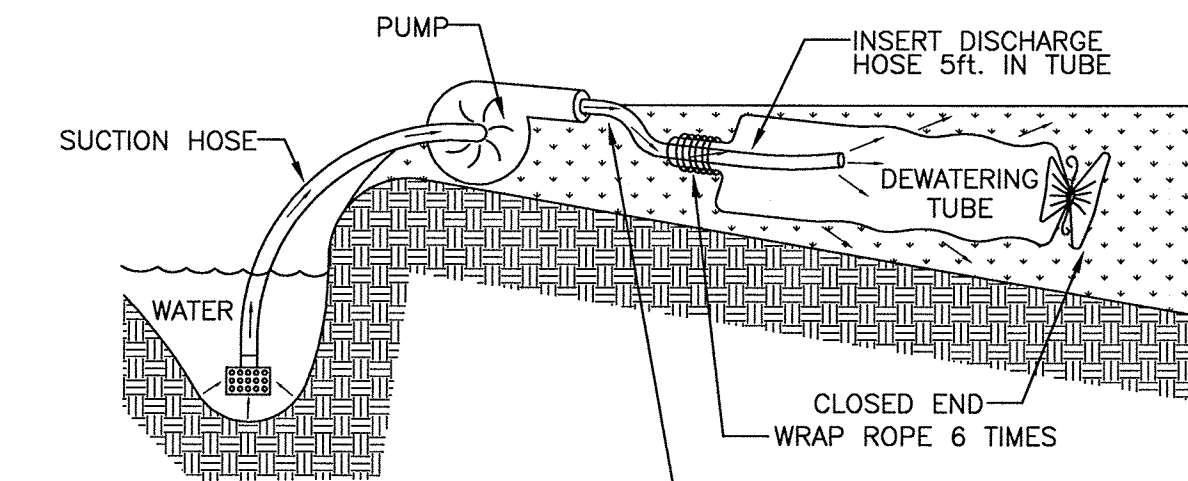


### ANTI-SEEP COLLAR DETAIL

N.T.S.

THE PURPOSE OF A DEWATERING TUBE IS TO COLLECT SEDIMENT CONTAINED IN THE DISCHARGED WATER, TO PREVENT THE SCOUR AND EROSION FROM WATER EXITING A PIPE AT HIGH VELOCITY, TO DEFUSE THE WATER OVER A WIDER AREA TO MINIMIZE EROSION AS THE WATER DRAINS AWAY, AND TO RETAIN OIL CONTAINED WITHIN EFFLUENT.

A SEDCATCH DEWATERING TUBE OR APPROVED EQUAL SHOULD BE USED TO DEWATER THE SEDIMENT BASINS.



### INSTALLATION AND USE:

1. PLACE SEDCATCH DEWATERING TUBE ON THE GROUND OR ON A TRAILER OVER A RELATIVELY LEVEL, STABILIZED AREA.
2. INSERT DISCHARGE PIPE A MINIMUM OF 5FT. INSIDE SEDCATCH DEWATERING TUBE AND SECURE WITH A ROPE (INCLUDED) WRAPPED 6 TIMES AROUND THE SNOUT OVER A 6" INCH WIDTH OF THE BAG. TO CLOSE AND OPEN END OF THE DEWATERING TUBE : OVERLAP THE TUBE 2 FT. FROM THE END. GATHER THE DISCHARGE HOSE DOUBLED-UP PORTION FORMING A BOW TIE. SECURE WITH A ROPE WRAPPED MULTIPLE TIMES.
3. EMPTY SEDCATCH DEWATERING TUBE WHEN HALF FULL OF SEDIMENT OR WHEN THE SEDIMENT HAS REDUCED THE FLOW RATE OF THE PUMP DISCHARGE TO AN IMPRACTICAL AMOUNT.

### MAINTENANCE AND DISPOSAL:

1. REMOVE AND DISPOSE OF ACCUMULATED SEDIMENT AWAY FROM WATERWAYS OR ENVIRONMENTALLY SENSITIVE AREAS. OPEN BOTH ENDS OF THE SEDCATCH DEWATERING TUBE , PICK IT UP IN THE CENTER AND DUMP ACCUMULATED SEDIMENT OUT OF BOTH ENDS. ALLOW TO DRY AND STORE FOR RE-USE OR; AS DIRECTED BY ENGINEER OR INSPECTOR.

### SILT BAG DETAIL

N.T.S.

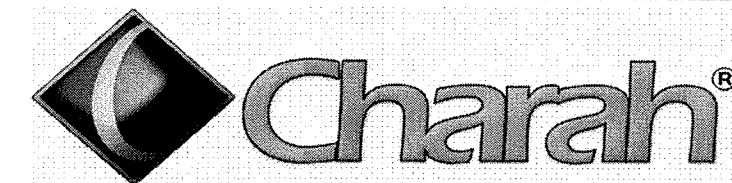
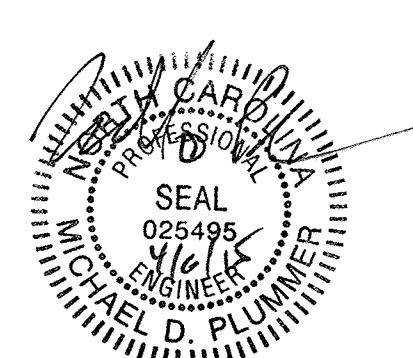


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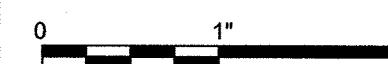
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COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

### EROSION AND SEDIMENTATION CONTROL DETAILS (2 OF 3)

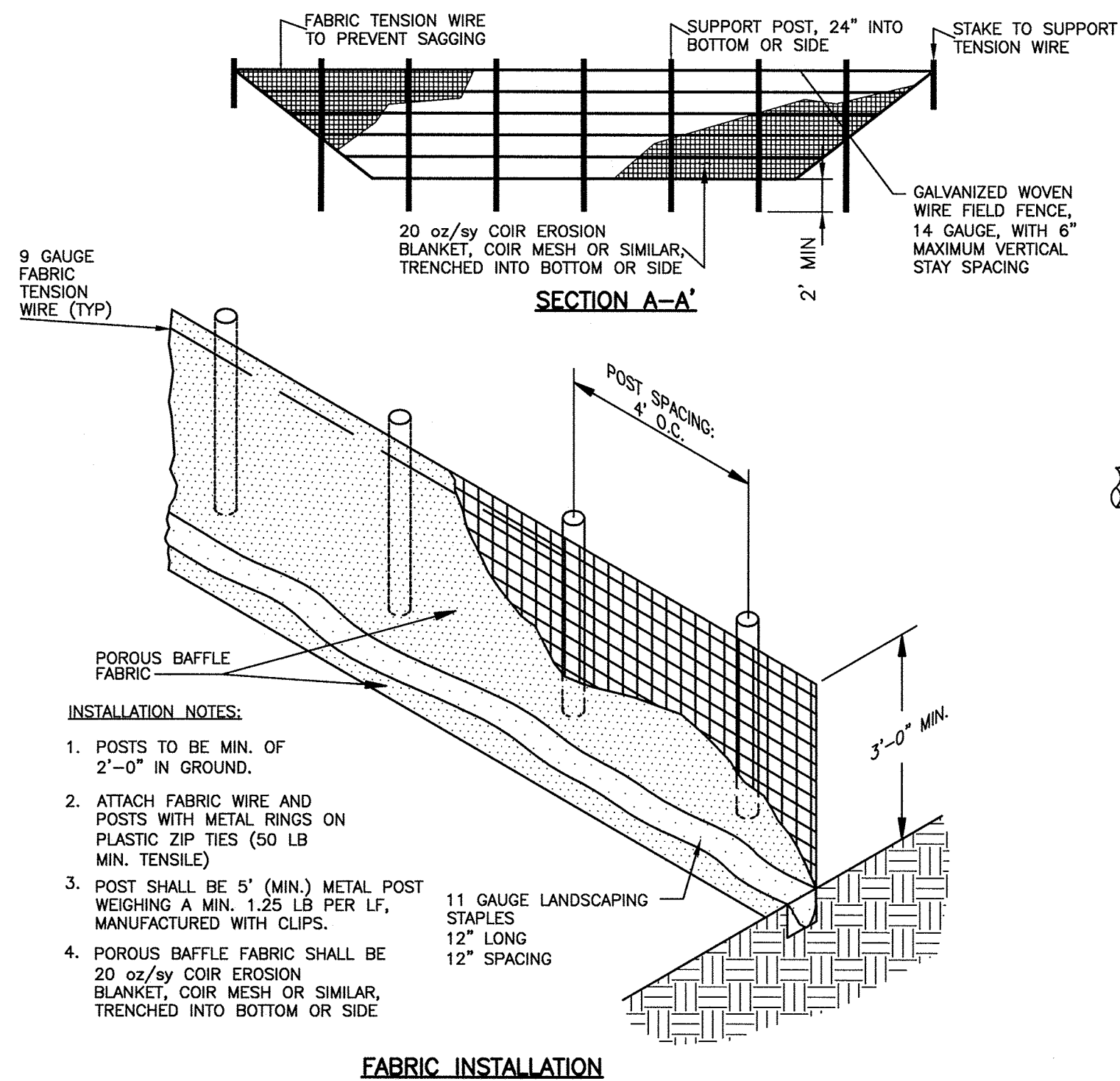


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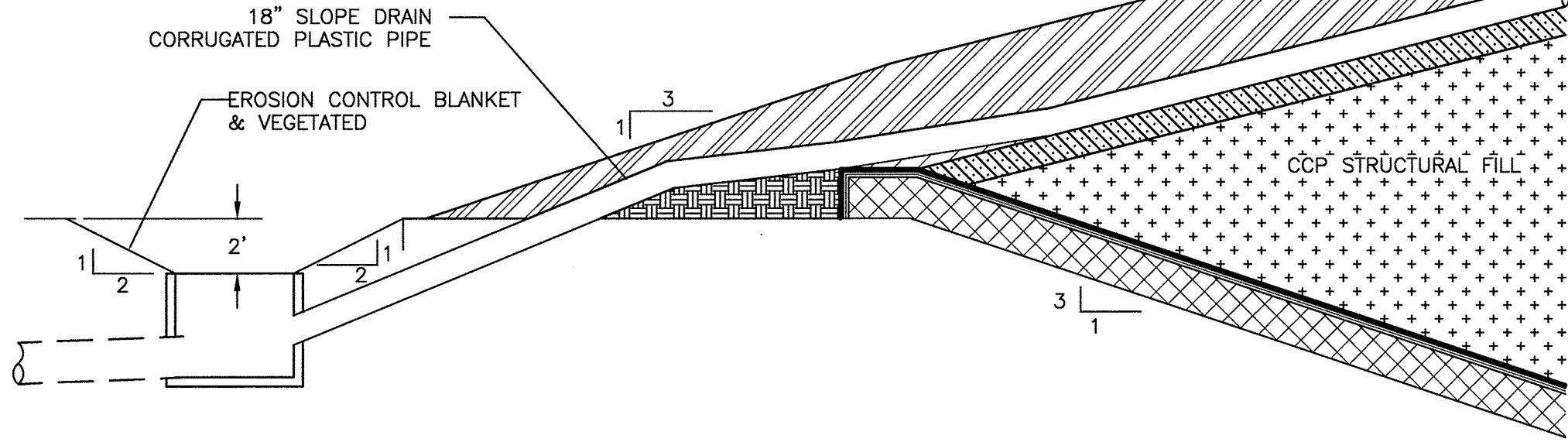
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01C-12

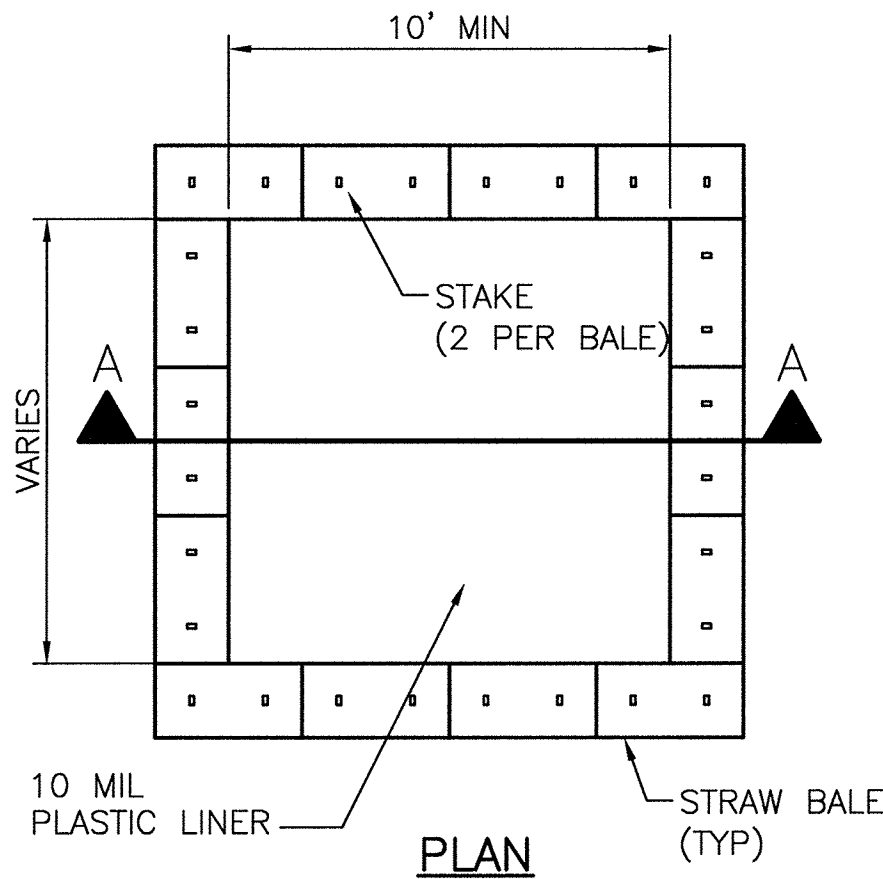




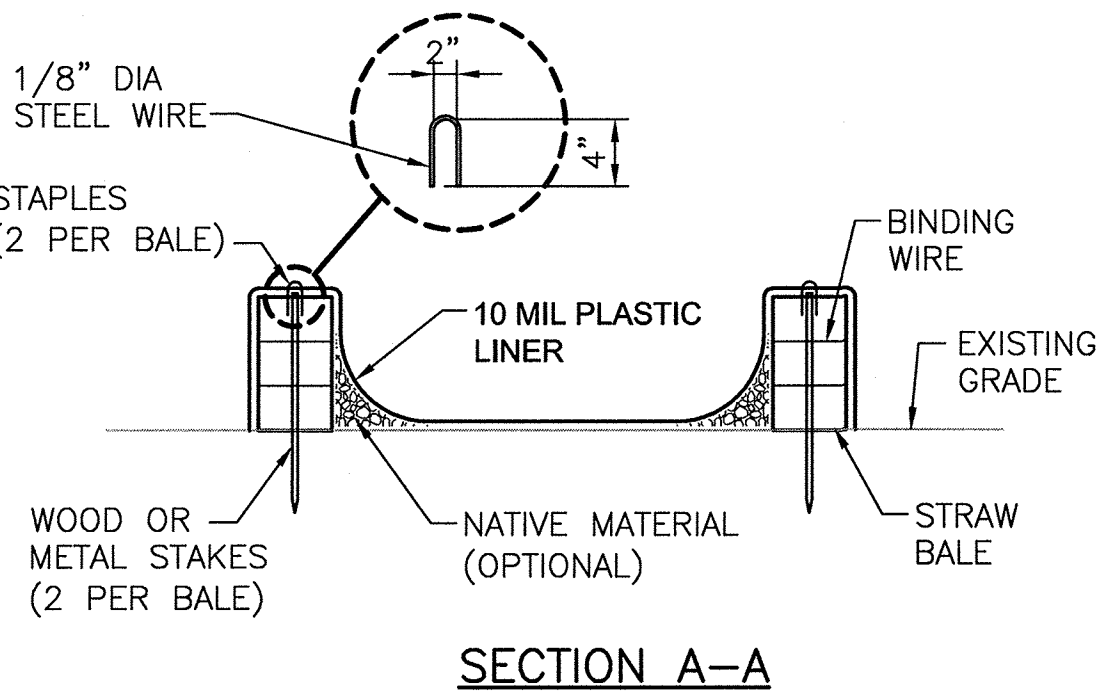
SEDIMENT BAFFLE  
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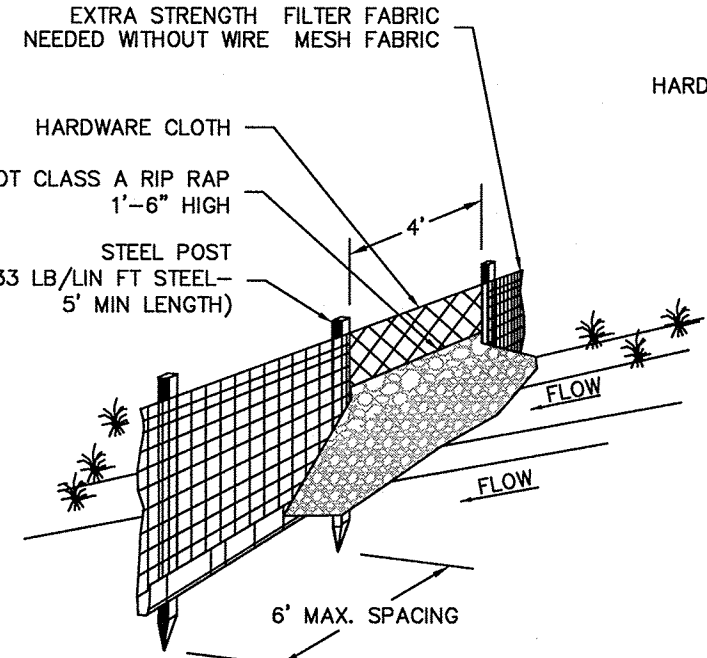
SLOPE DRAIN INLET / OUTLET PROTECTION  
NOT TO SCALE



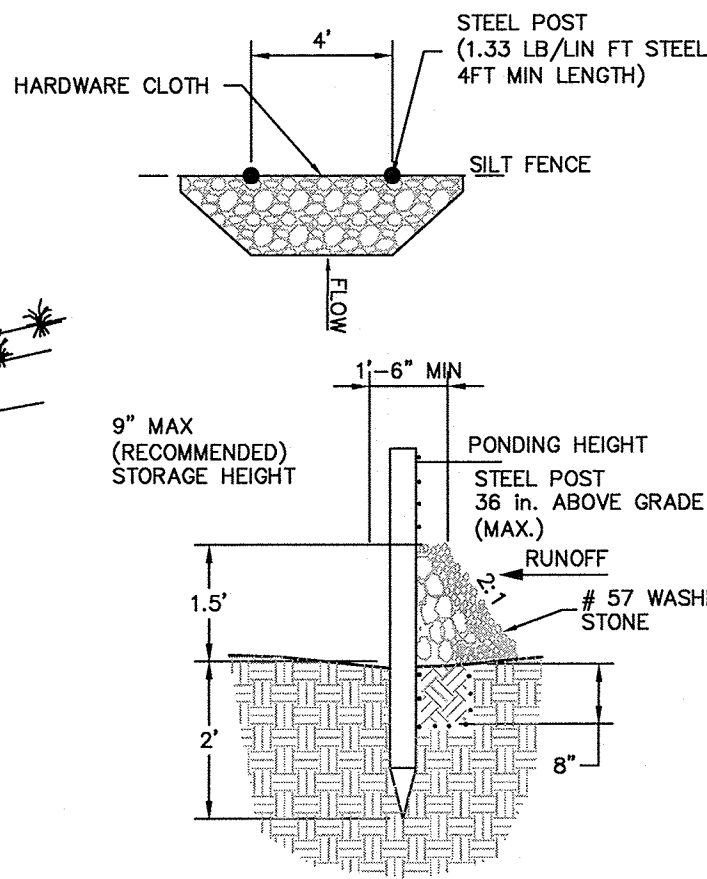
CONCRETE WASHOUT AREA DETAIL  
NOT TO SCALE



SECTION A-A



DESIGN TYPE	DRAINAGE AREA (APPROX.)	WEIR LENGTH (L) MIN.
1/4	1/2 ACRE	4.0 FT



ROCK SECTION DETAIL  
TRENCH WITH GRAVEL

SILT FENCE W/ ROCK OUTLET  
N.T.S.

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	HULLED COMMON BERMUDAGRASS	300 LBS/ACRE
APR 15 - JUN 30	TALL FESCUE AND BROWN TOP MILLET OR SORGHUM-SUDAN HYBRIDS***	300 LBS/ACRE
APR 15 - JUN 30	TALL FESCUE AND BROWN TOP MILLET OR SORGHUM-SUDAN HYBRIDS***	300 LBS/ACRE

\*\*\* 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.

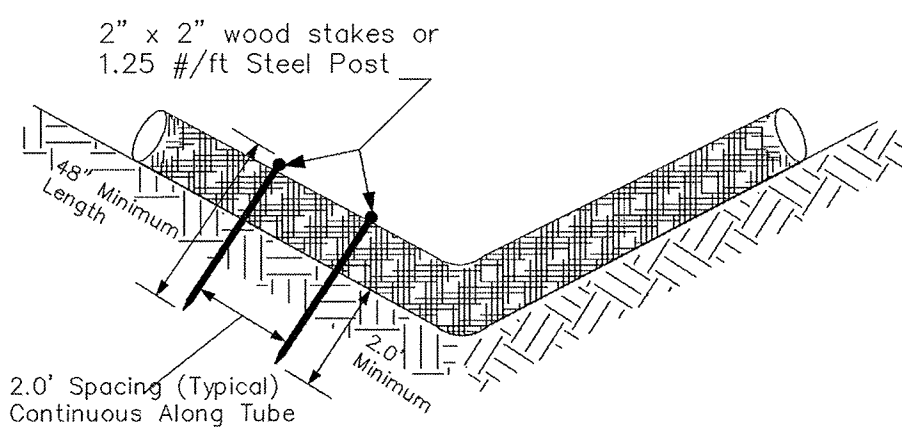
DATE	TYPE	PLANTING RATE
MAR 1 - JUN 1	SERICEA LESPEDEZA (SCARIFIED) AND USE THE FOLLOWING COMBINATIONS:	50 LBS/ACRE (SERICEA LESPEDEZA);
MAR 1 - APR 15	ADD TALL FESCUE	120 LBS/ACRE
MAR 1 - JUN 30	OR ADD WEEPING LOVE GRASS	10 LBS/ACRE
MAR 1 - JUN 30	OR ADD HULLED COMMON BERMUDAGRASS	25 LBS/ACRE
SEPT 1 - MAR 1	SERICEA LESPEDEZA (UNHULLED UNSCARIFIED) AND TALL FESCUE	70 LBS/ACRE (SERICEA LESPEDEZA); 120 LBS/ACRE (TALL FESCUE)
NOV 1 - MAR 1	AND ABRUZZI RYE	25 LBS/ACRE

IF SOIL CONDITIONS ARE NOT KNOWN, APPLY LIME AT A RATE OF 1 TO 1.5 TONS/ACRE ON COARSE TEXTURED SOILS AND 2-3 TONS/ACRE ON FINE-TEXTURED SOILS. APPLY LIMESTONE UNIFORMLY AND INCORPORATE INTO THE TOP 4-6 INCHES OF SOIL. APPLY 10-10-10 FERTILIZER AT 700-1000 LBS/ACRE MIXED INTO THE TOP 4-6 INCHES OF SOIL.

- SEEDBED PREPARATION NOTES
- SURFACE WATER CONTROL MEASURES TO BE INSTALLED ACCORDING TO PLAN.
  - AREAS TO BE SEEDED SHALL BE RIPPED AND SPREAD WITH AVAILABLE TOPSOIL 3" DEEP. TOTAL SEEDBED PREPARED DEPTH SHALL BE 4" TO 6" DEEP.
  - LOOSE ROCKS, ROOTS AND OTHER OBSTRUCTIONS SHALL BE REMOVED FROM THE SURFACE SO THAT THEY WILL NOT INTERFERE WITH ESTABLISHMENT AND MAINTENANCE OF VEGETATION. SURFACE FOR FINAL SEEDBED PREPARATION AT FINISHED GRADES SHOWN SHALL BE REASONABLY SMOOTH AND UNIFORM.
  - IF NO SOIL TEST IS TAKEN, FERTILIZER AND LIME TO BE ACCORDING TO SEEDING SPECIFICATIONS BELOW. IN ADDITION, PROVIDE 15 LBS/1000 S.F. OF SUPERPHOSPHATE.
  - IF SOIL TEST IS TAKEN, PROVIDE LIME AND FERTILIZER ACCORDING TO SOIL TEST REPORT.
  - LIME AND FERTILIZER SHALL BE APPLIED UNIFORMLY AND MIXED WITH THE SOIL DURING SEEDBED PREPARATION. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DEPENDING ON FIELD CONDITION.
  - MULCHING
    - STEP 1: 1/3 MULCH, ALL SEEDING AND ALL INOCULATE SPREAD IN ONE DIRECTION.
    - STEP 2: 2/3 MULCH RATE APPLIED IN OPPOSING DIRECTION.
  - ALL SLOPES GREATER THAN 2.5:1 SHALL BE STABILIZED WITH JUTE MESH.

SEEDING  
N.T.S.

### SEDIMENT TUBE INSTALLATION



### SEDIMENT TUBE SPACING

SLOPE	MAX. SEDIMENT TUBE SPACING
LESS THAN 2%	150- FEET
2%	100- FEET
3%	75- FEET
4%	50- FEET
5%	40- FEET
6%	30- FEET
GREATER THAN 6%	25- FEET

### SEDIMENT TUBES - GENERAL NOTES

- Sediment tubes may be installed along contours, in drainage conveyance channels, and around inlets to help prevent off-site discharge of sediment-laden stormwater runoff.
- Sediment tubes are elongated tubes of compacted geotextiles, curled excelsior wood, natural coconut fiber, or hardwood mulch. Straw, pine needle, and leaf mulch-filled sediment tubes are not permitted.
- The outer netting of the sediment tube should consist of seamless, high-density polyethylene photodegradable materials treated with ultraviolet stabilizers or a seamless, high-density polyethylene non-degradable material.
- Sediment tubes, when used as checks within channels, should range between 18-inches and 24-inches depending on channel dimensions. Diameters outside this range may be allowed where necessary when approved.
- Curled excelsior wood, or natural coconut products that are rolled up to create a sediment tube are not allowed.
- Sediment tubes should be staked using wooden stakes (2-inch X 2-inch) or steel posts (standard "I" or "H" sections with a minimum weight of 1.25 pounds per foot) at a minimum of 48-inches in length placed on 2-foot centers.
- Install all sediment tubes to ensure that no gaps exist between the soil and the bottom of the tube. Manufacturer's recommendations should always be consulted before installation.
- The ends of adjacent sediment tubes should be overlapped 6-inches to prevent flow and sediment from passing through the field joint.
- Sediment tubes should not be stacked on top of one another, unless recommended by manufacturer.
- Each sediment tube should be installed in a trench with a depth equal to 1/5 the diameter of the sediment tube.
- Sediment tubes should continue up the side slopes a minimum of 1-foot above the design flow depth of the channel.
- Install stakes at a diagonal facing incoming runoff.

### SEDIMENT TUBES - INSPECTION & MAINTENANCE

- The key to functional sediment tubes is weekly inspections, routine maintenance, and regular sediment removal.
- Regular inspections of sediment tubes shall be conducted once every calendar week and, as recommended, within 24-hours after each rainfall even that produces 1/2-inch or more of precipitation.
- Attention to sediment accumulations in front of the sediment tube is extremely important. Accumulated sediment should be continually monitored and removed when necessary.
- Remove accumulated sediment when it reaches 1/3 the height of the sediment tube.
- Removed sediment shall be placed in stockpile storage areas or spread thinly across disturbed area. Stabilize the removed sediment after it is relocated.
- Large debris, trash, and leaves should be removed from in front of tubes when found.
- If erosion causes the edges to fall to a height equal to or below the height of the sediment tube, repairs should be made immediately to prevent runoff from bypassing tube.
- Sediment tubes should be removed after the contributing drainage area has been completely stabilized. Permanent vegetation should replace areas from which sediment tubes have been removed.

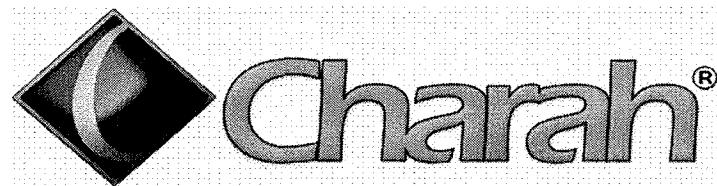
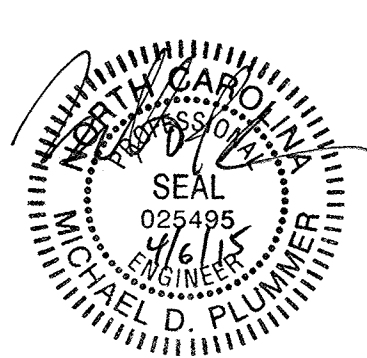
WATTLE INSTALLATION  
NOT TO SCALE



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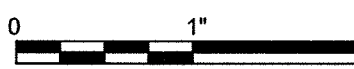
ISSUE	DATE	DESCRIPTION
D	04/02/15	REVISED PER NCDENR COMMENTS
C	03/19/15	EROSION CONTROL SUBMITTED FOR NORTHWEST AREA
B	12/31/14	REVISED PER NCDENR COMMENTS
A	11/2014	ISSUED FOR APPROVAL

PROJECT MANAGER	M.D. PLUMMER, P.E.
DESIGNED BY	R. BAYSDEN, P.E.
DRAWN BY	R. BAYSDEN, P.E.
CHECKED BY	J. READLING, P.E.
PROJECT NUMBER	453925-235691-018



COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

### EROSION AND SEDIMENTATION CONTROL DETAILS (3 OF 3)



FILENAME | 01C-13.dwg  
SCALE | AS SHOWN

SHEET

01C-13