

Drawings

# Colon Mine Site Structural Fill

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Charah, Inc.

*Sanford, NC*

**November 2014**

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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. 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

Civil

HDR Project No.  
00000000235691

Sanford, North Carolina  
November 2014

## INDEX OF DRAWINGS

### GENERAL

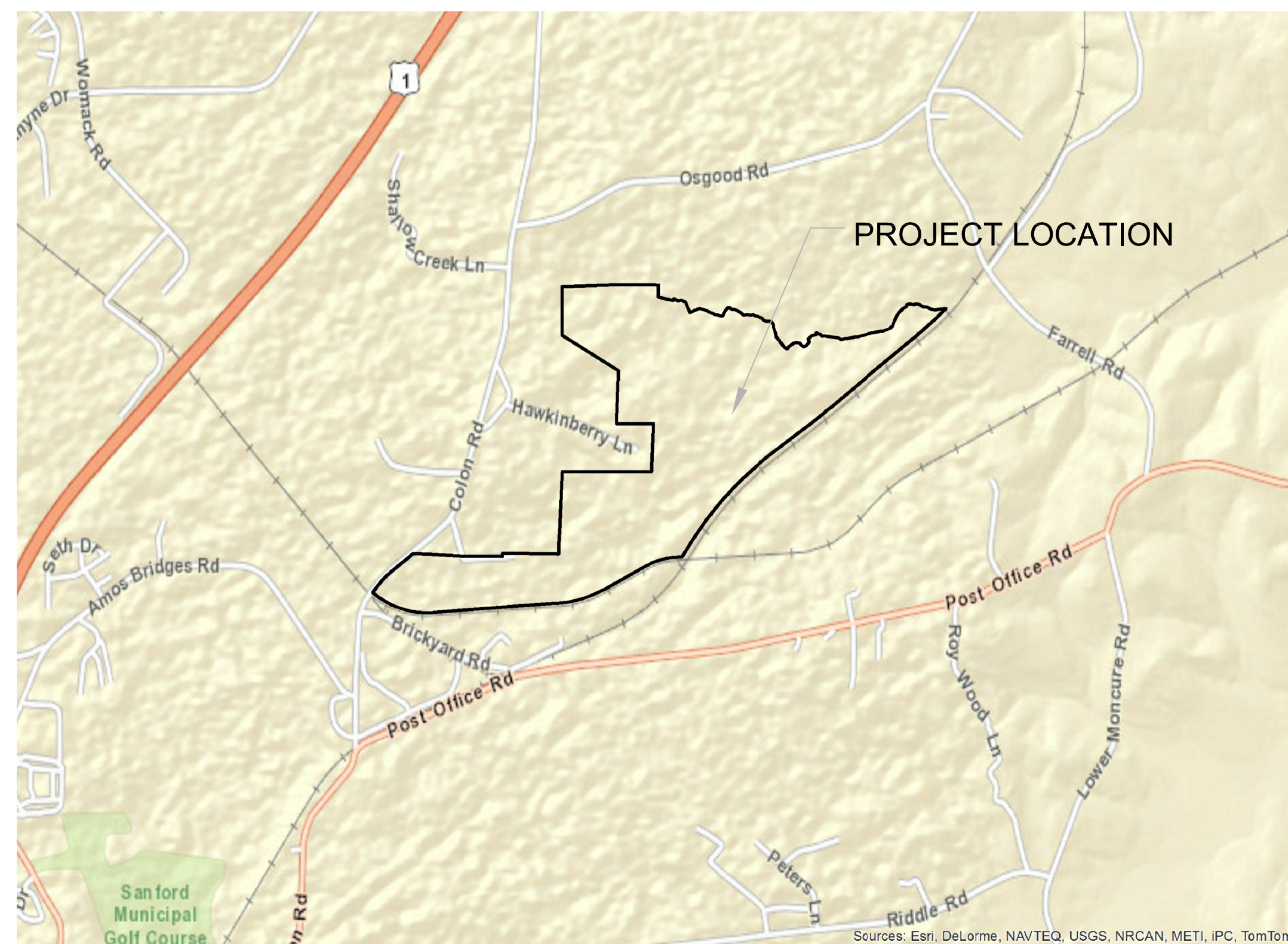
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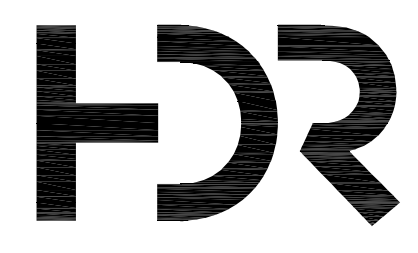
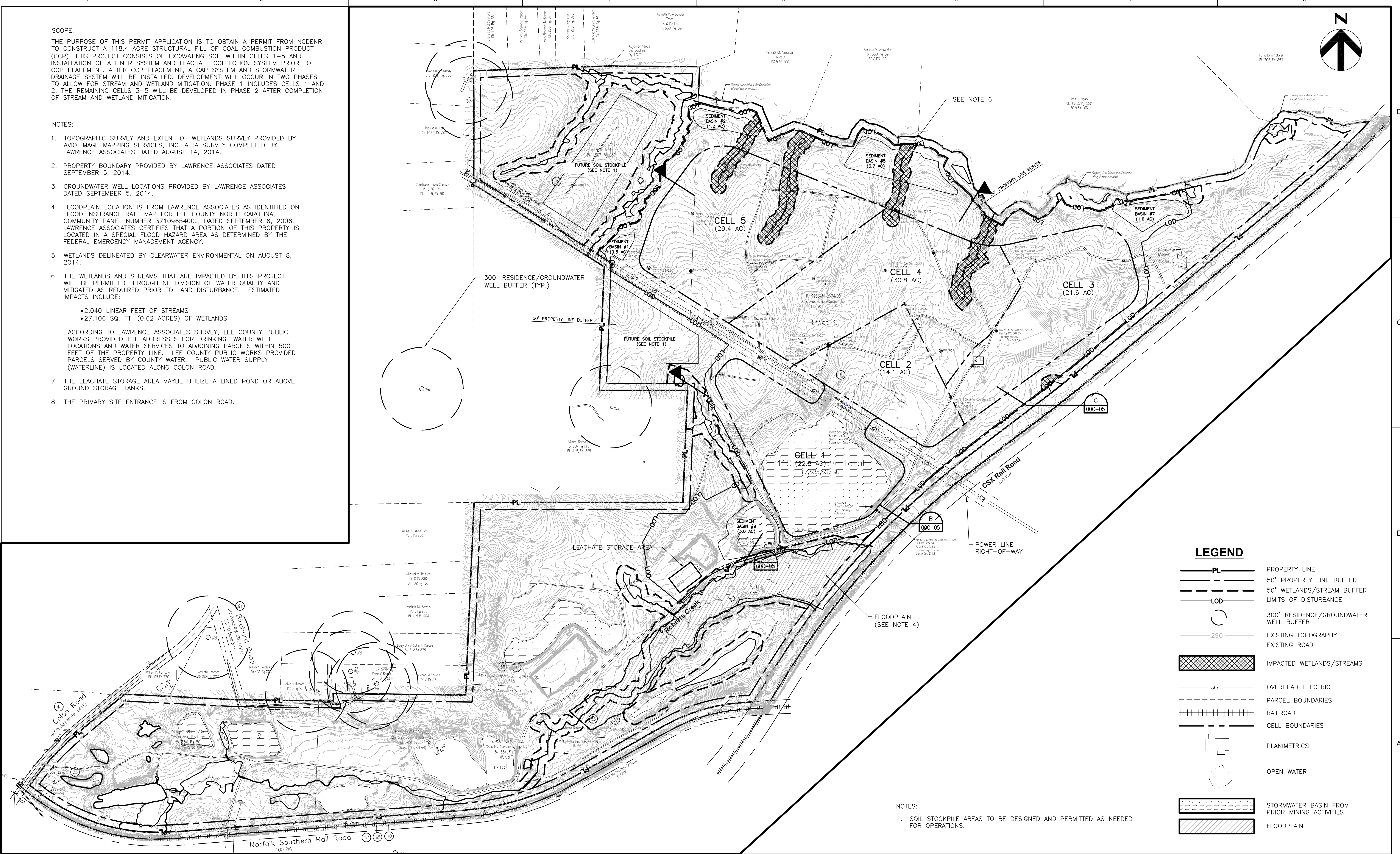
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**SCOPE:**  
 THE PURPOSE OF THIS PERMIT APPLICATION IS TO OBTAIN A PERMIT FROM NCDENR TO CONSTRUCT A 118.4 ACRE STRUCTURAL FILL OF COAL COMBUSTION PRODUCT (CCP). THIS PROJECT CONSISTS OF EXCAVATING SOIL WITHIN CELLS 1-5 AND INSTALLATION OF A LINER 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:**
1. TOPOGRAPHIC SURVEY AND EXTENT OF WETLANDS SURVEY PROVIDED BY AVIO IMAGE MAPPING SERVICES, INC. ALTA SURVEY COMPLETED BY LAWRENCE ASSOCIATES DATED AUGUST 14, 2014.
  2. PROPERTY BOUNDARY PROVIDED BY LAWRENCE ASSOCIATES DATED SEPTEMBER 5, 2014.
  3. GROUNDWATER WELL LOCATIONS PROVIDED BY LAWRENCE ASSOCIATES DATED SEPTEMBER 5, 2014.
  4. FLOODPLAIN LOCATION IS FROM LAWRENCE ASSOCIATES AS IDENTIFIED ON FLOOD INSURANCE RATE MAP FOR LEE COUNTY NORTH CAROLINA, COMMUNITY PANEL NUMBER 3710965400J, 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.
  5. WETLANDS DELINEATED BY CLEARWATER ENVIRONMENTAL ON AUGUST 8, 2014.
  6. 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:
    - 2,040 LINEAR FEET OF STREAMS
    - 27,106 SQ. FT. (0.62 ACRES) OF WETLANDS
  7. 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.
  8. THE LEACHATE STORAGE AREA MAYBE UTILIZE A LINED POND OR ABOVE GROUND STORAGE TANKS.
  9. THE PRIMARY SITE ENTRANCE IS FROM COLON ROAD.



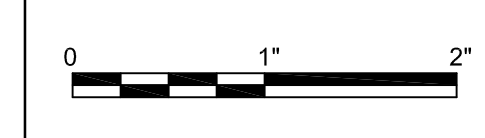
HDR Engineering, Inc.  
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 704.338.6700  
 N.C.B.E.L.S. License Number F-0116

ISSUE	DATE	DESCRIPTION
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



**Charah**  
 COLON MINE SITE STRUCTURAL FILL  
 SANFORD, NC



**FACILITY PLAN AND BUFFERS**

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

SHEET  
**00G-02**

C:\working\11152014\0253925\00G.dwg, Plot: 11/20/14 2:29:49 PM, pwestmor



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COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

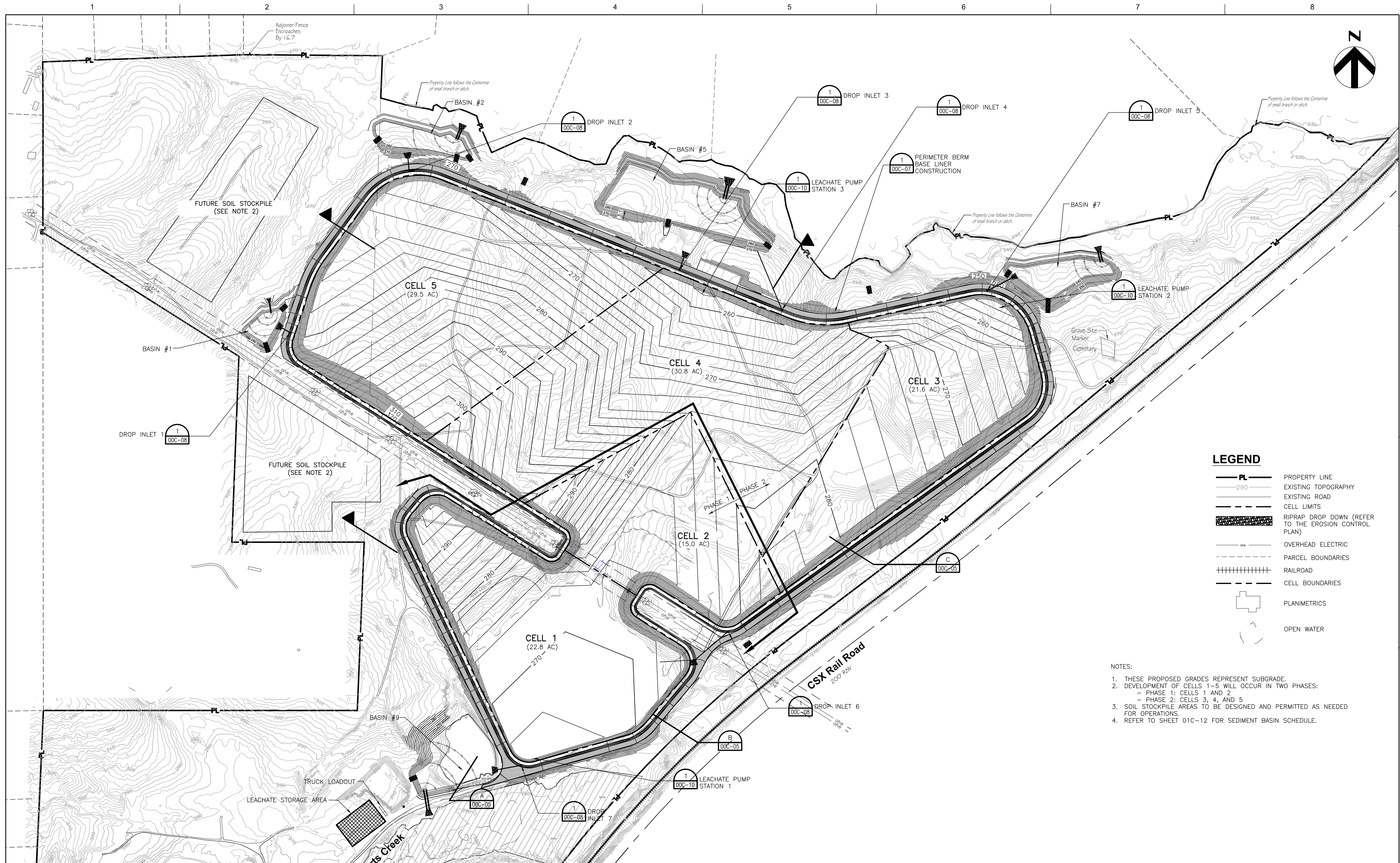


FILENAME | 00C-01.dwg  
SCALE | 1" = 300'

SHEET  
00C-01

EXISTING CONDITIONS





**LEGEND**

	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:**
- THESE PROPOSED GRADES REPRESENT SUBGRADE.
  - DEVELOPMENT OF CELLS 1-5 WILL OCCUR IN TWO PHASES:
    - PHASE 1: CELLS 1 AND 2
    - PHASE 2: CELLS 3, 4, AND 5
  - SOIL STOCKPILE AREAS TO BE DESIGNED AND PERMITTED AS NEEDED FOR OPERATIONS.
  - REFER TO SHEET 01C-12 FOR SEDIMENT BASIN SCHEDULE.



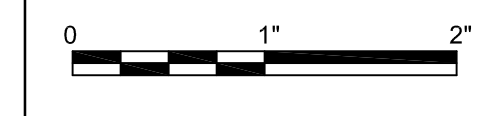
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SANFORD, NC

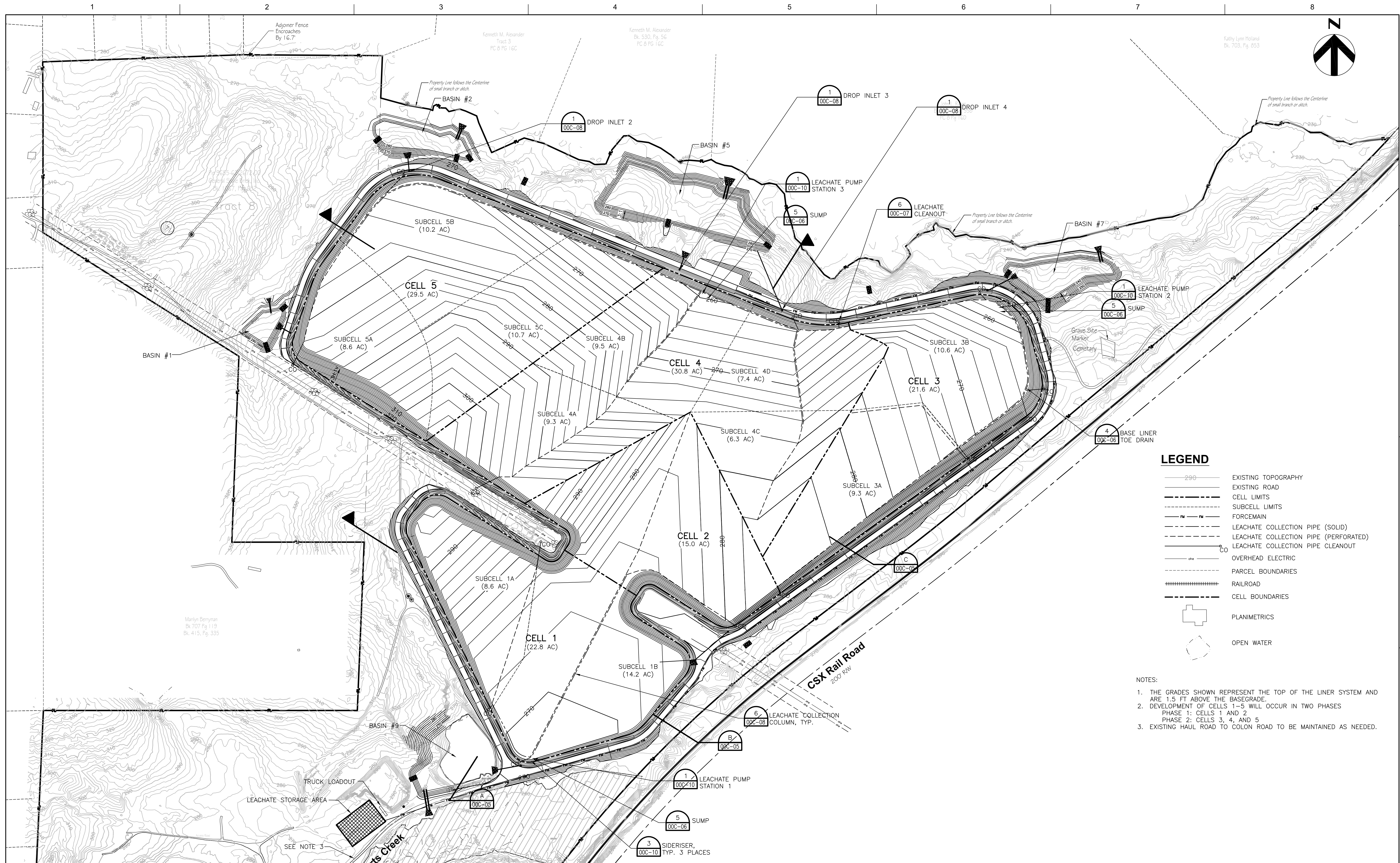


**BASEGRADE PLAN  
(BOTTOM OF SOIL LINER)**

FILENAME 00C-02.dwg  
SCALE 1"=200'

SHEET  
**00C-02**





**LEGEND**

- EXISTING TOPOGRAPHY
- EXISTING ROAD
- CELL LIMITS
- SUBCELL LIMITS
- FORCEMAIN
- LEACHATE COLLECTION PIPE (SOLID)
- LEACHATE COLLECTION PIPE (PERFORATED)
- LEACHATE COLLECTION PIPE CLEANOUT
- OVERHEAD ELECTRIC
- PARCEL BOUNDARIES
- 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 TWO PHASES  
 PHASE 1: CELLS 1 AND 2  
 PHASE 2: CELLS 3, 4, AND 5
  - EXISTING HAUL ROAD TO COLON ROAD TO BE MAINTAINED AS NEEDED.



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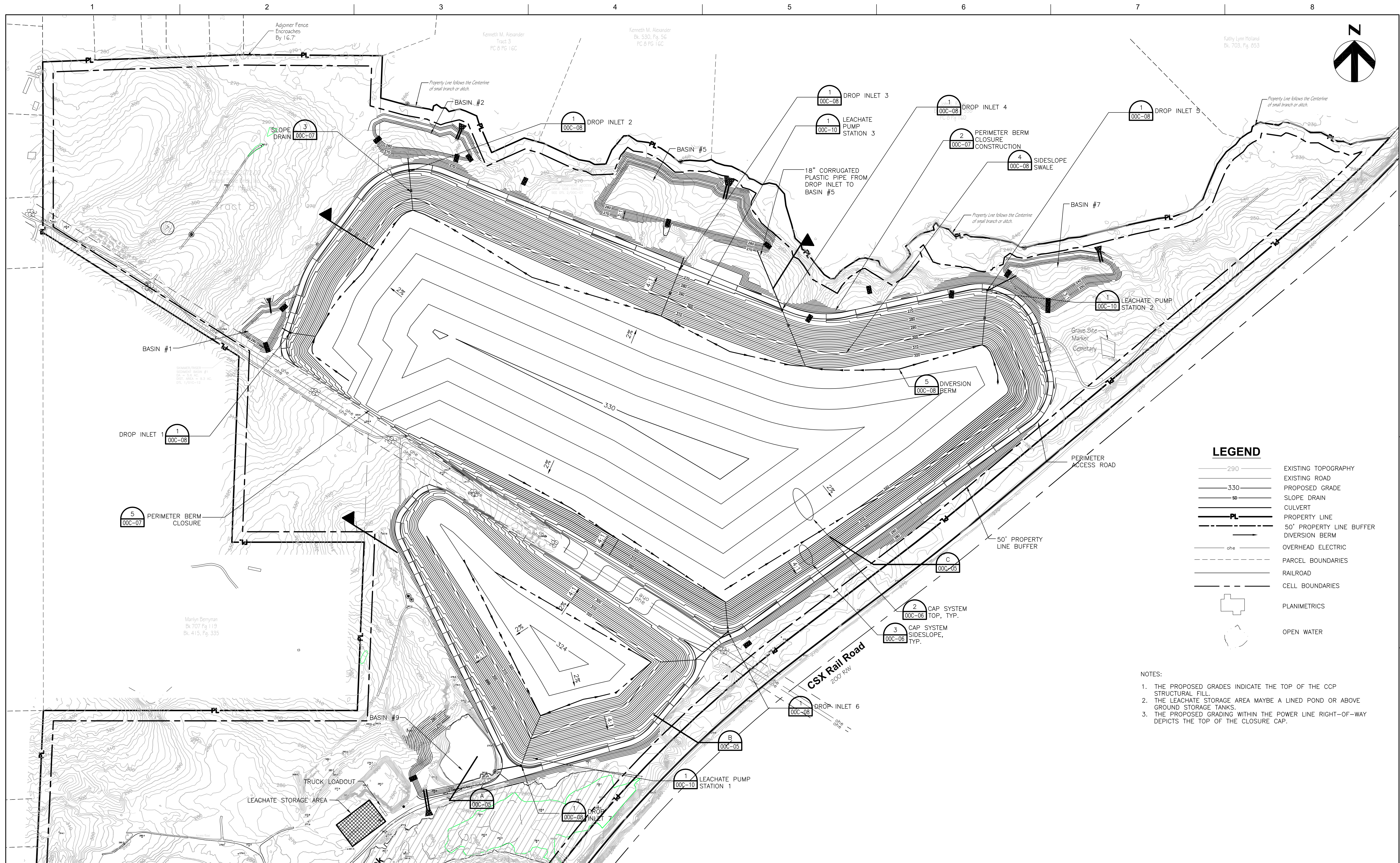


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**TOP OF LINER**  
  
FILENAME | 00C-03.dwg  
SCALE | 1"=200'

SHEET  
**00C-03**





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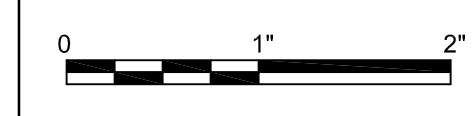
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COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

RECLAMATION PLAN

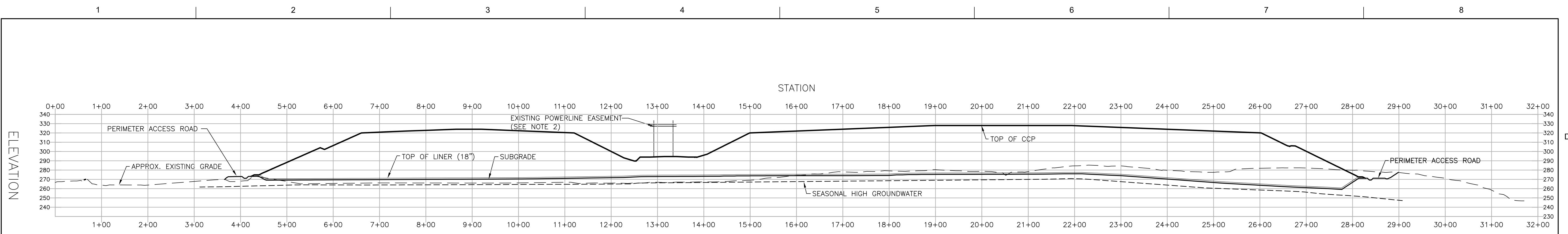


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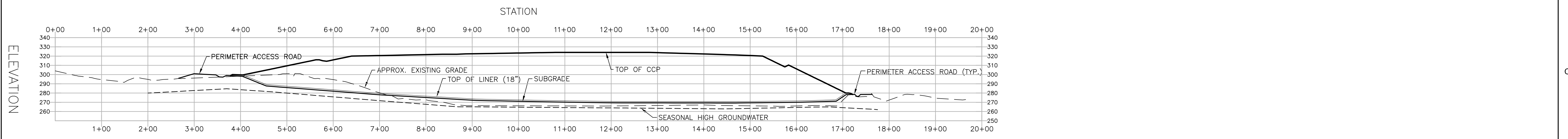
SHEET

00C-04

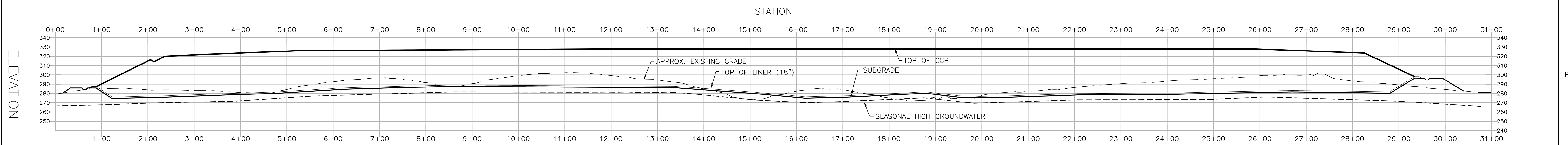




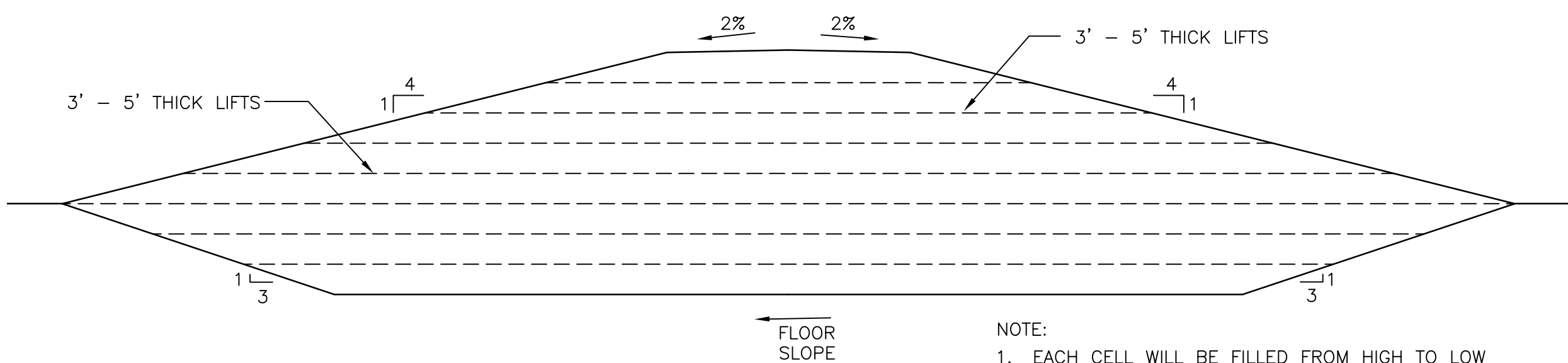
**SECTION A**  
HORIZONTAL: 1"=100'; VERTICAL: 1"=50'



**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.



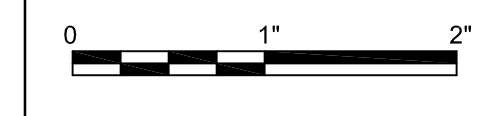
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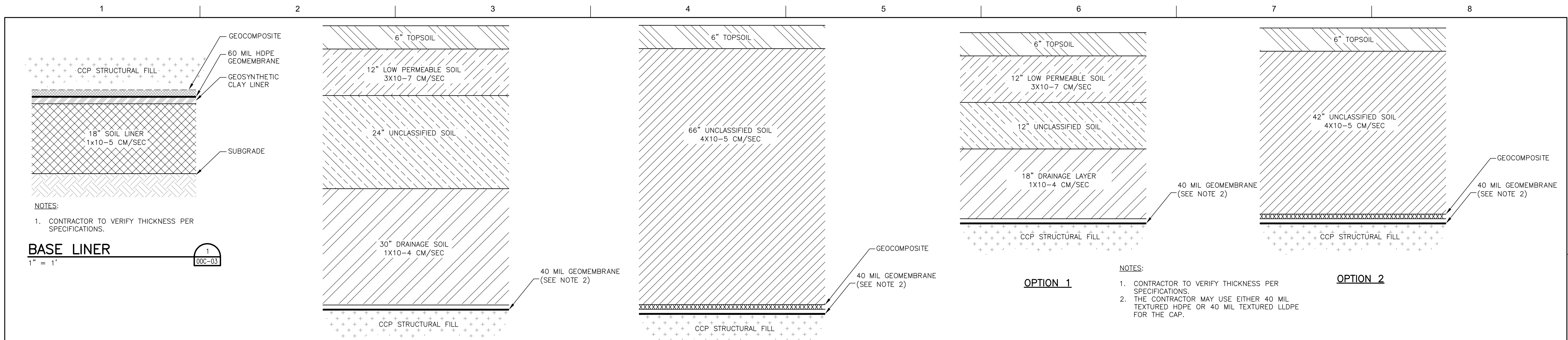
**Charah**  
COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC



FILENAME: 00C-05.dwg  
SCALE: 1"=100'

SHEET  
**00C-05**





**BASE LINER**  
1" = 1' (00C-03)

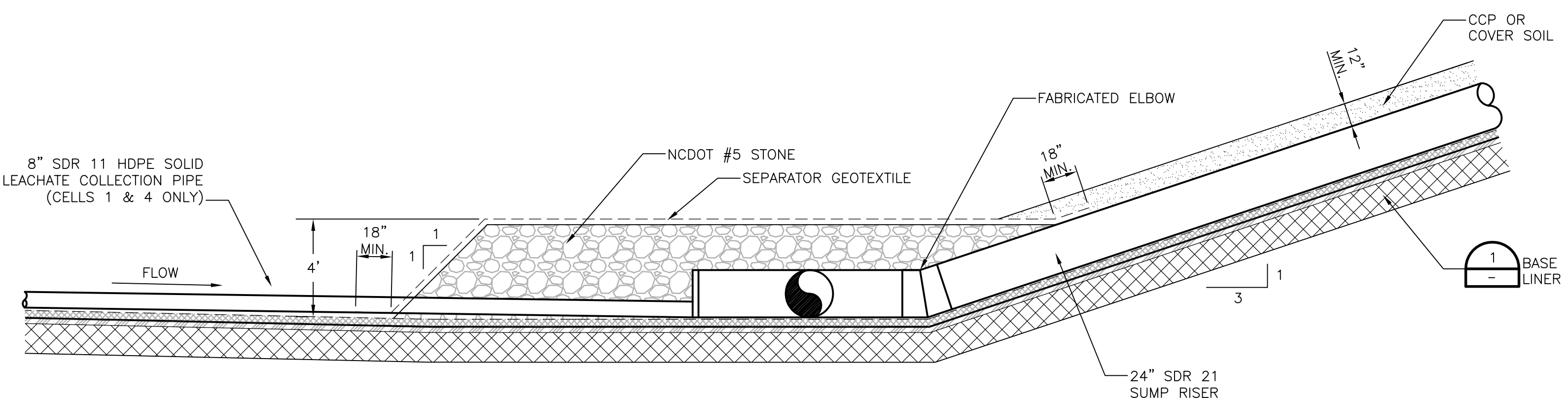
**OPTION 1**

**OPTION 2**

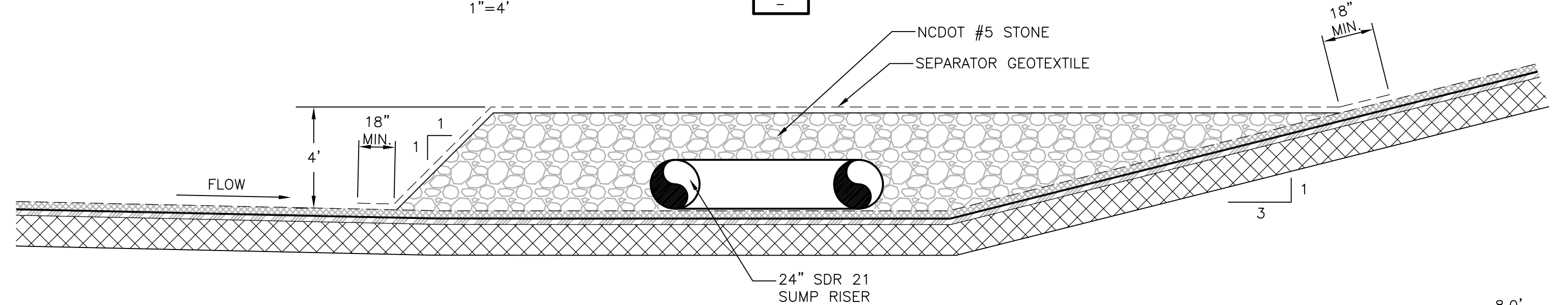
**OPTION 1**

**OPTION 2**

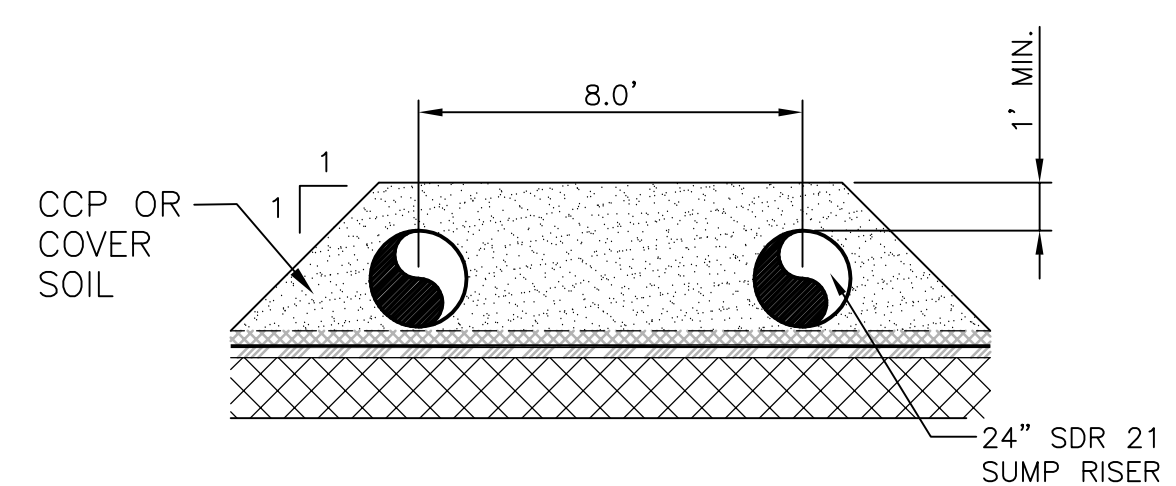
**CAP SYSTEM - TOP**  
1" = 1' (00C-04)



**SECTION A**  
1" = 4'



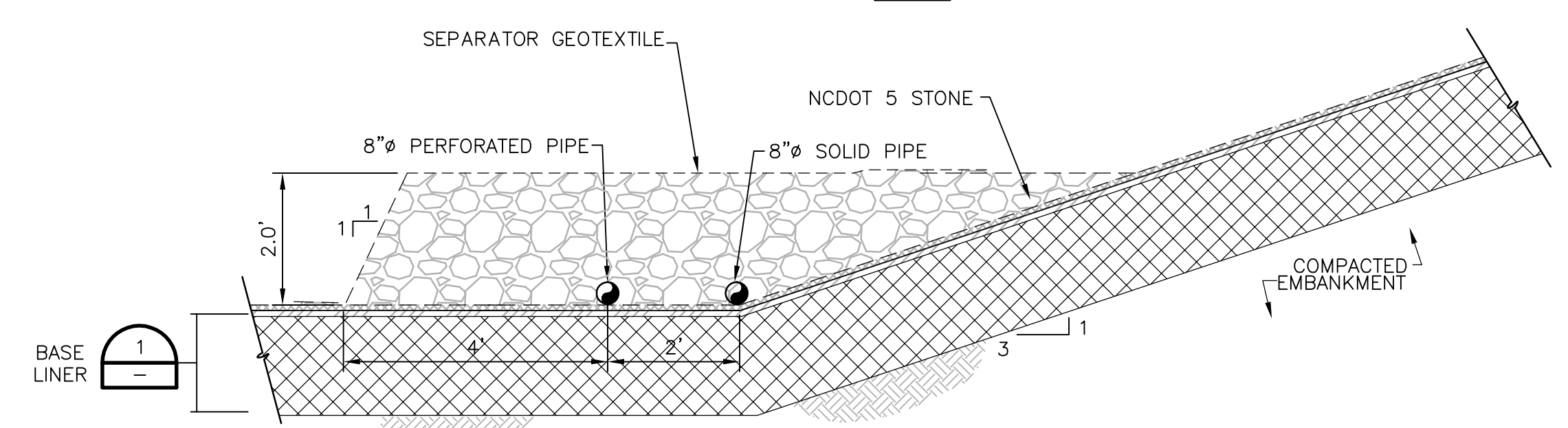
**SECTION B**  
1" = 4'



NOTES:  
1. PROVIDE A MINIMUM COVER OF 1' OVER ALL PIPES.

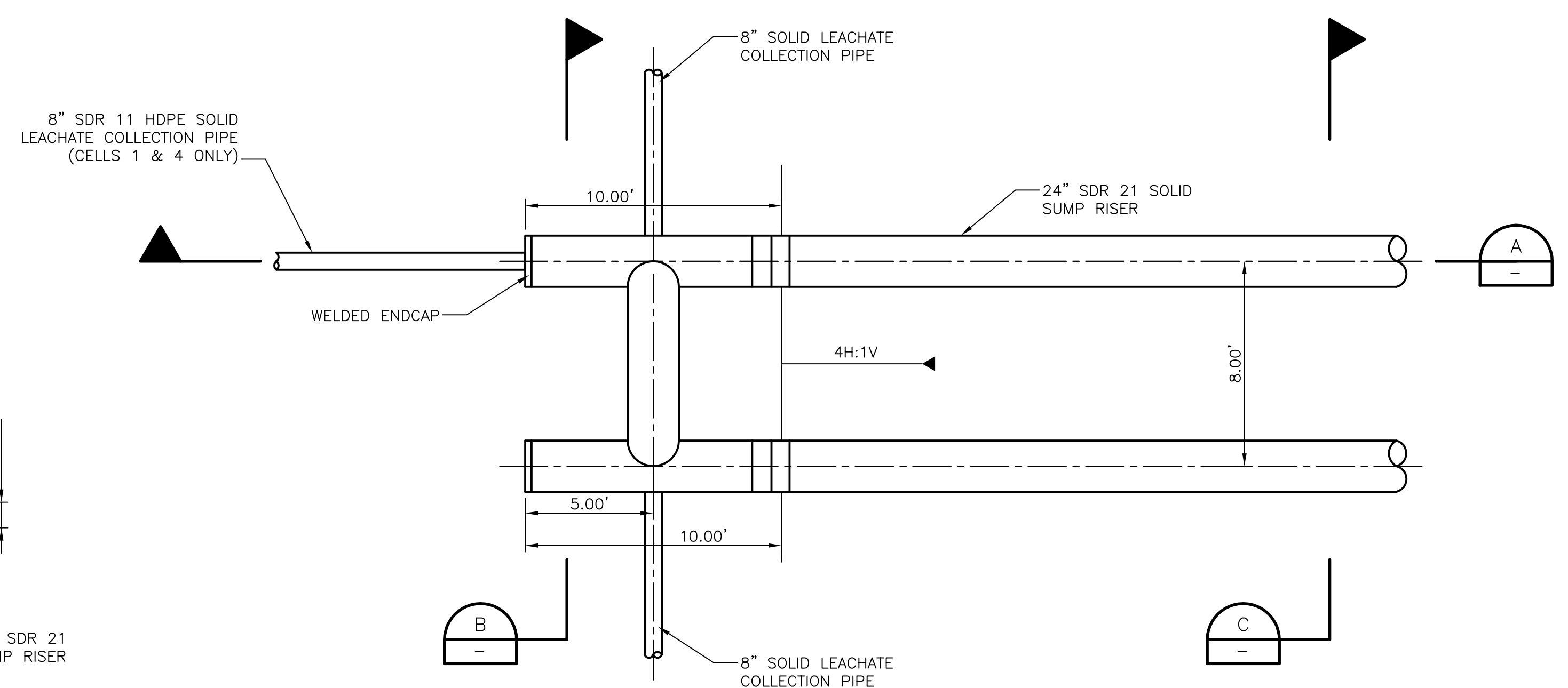
**SECTION C**  
1" = 4'

**CAP SYSTEM - SIDESLOPE**  
1" = 1' (00C-04)



NOTES:  
1. THE SEPARATOR GEOTEXTILE WRAPS THE NCDOT #5 STONE.

**BASE LINER TOE DRAIN**  
1" = 2' (00C-03)



**SUMP**  
1" = 4' (00C-03)



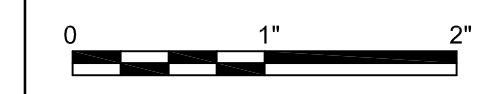
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COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

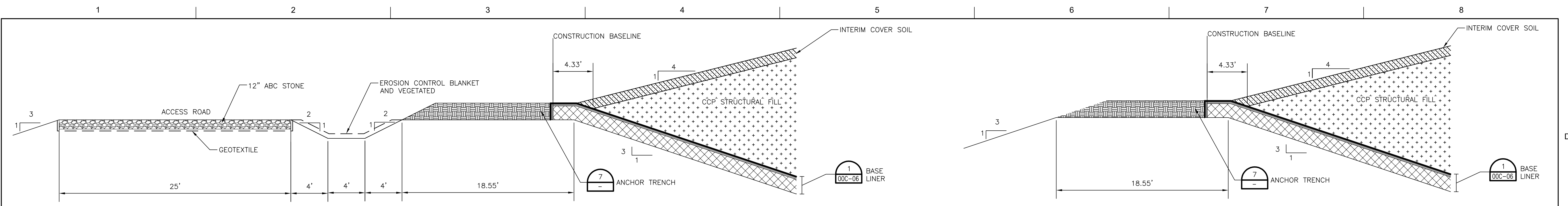


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SCALE: AS SHOWN

SHEET  
**00C-06**

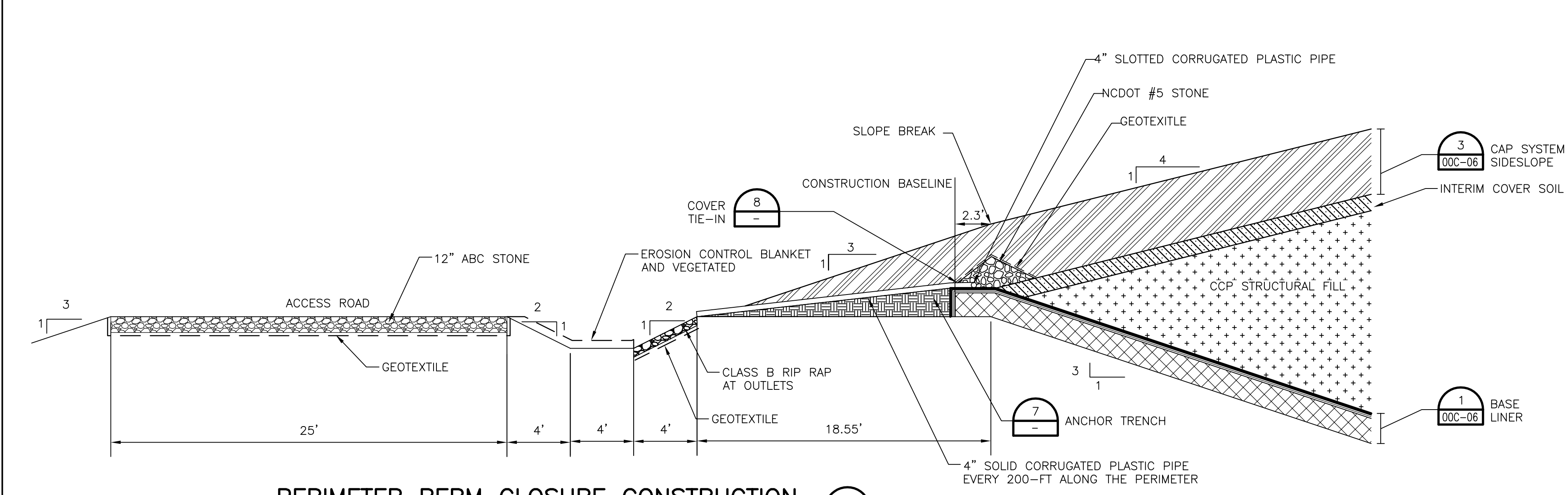
**LINER SYSTEM AND SUMP**



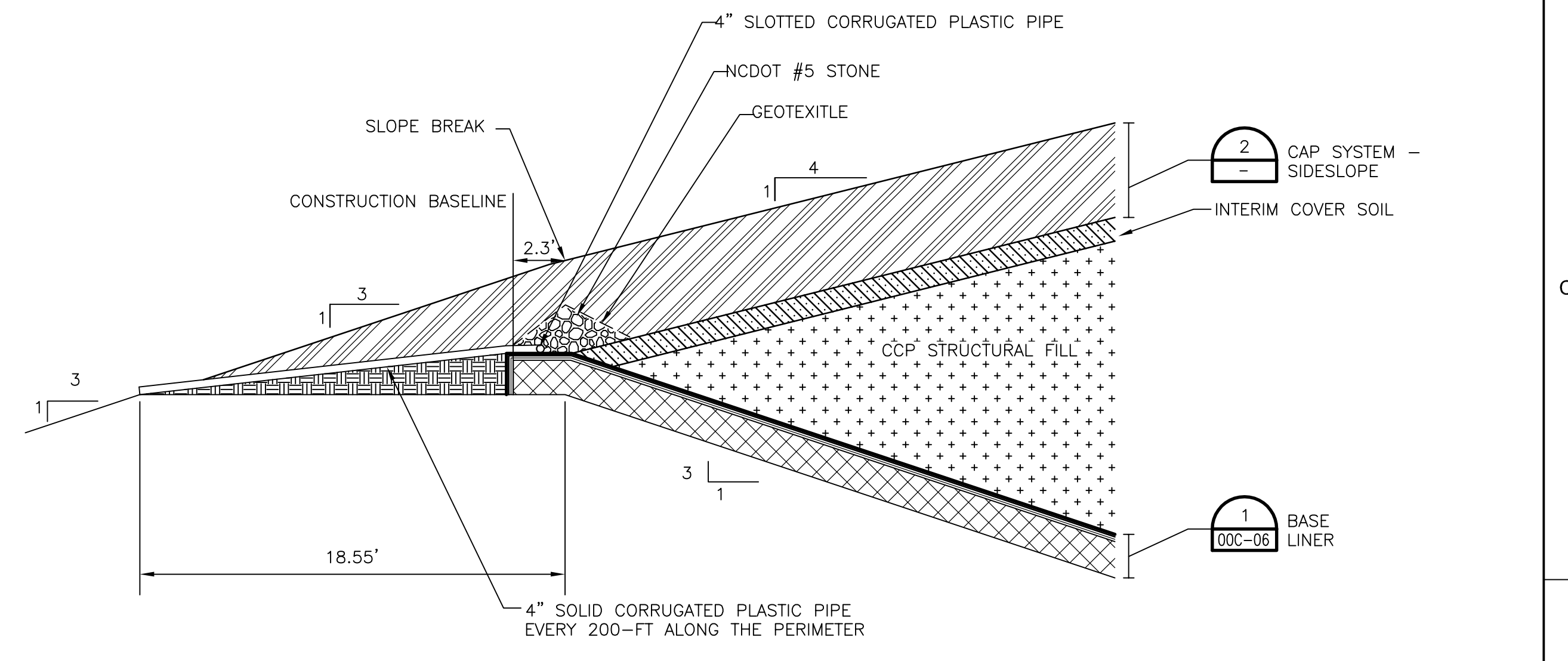


**PERIMETER BERM BASE LINER CONSTRUCTION** (1)  
1"=5'

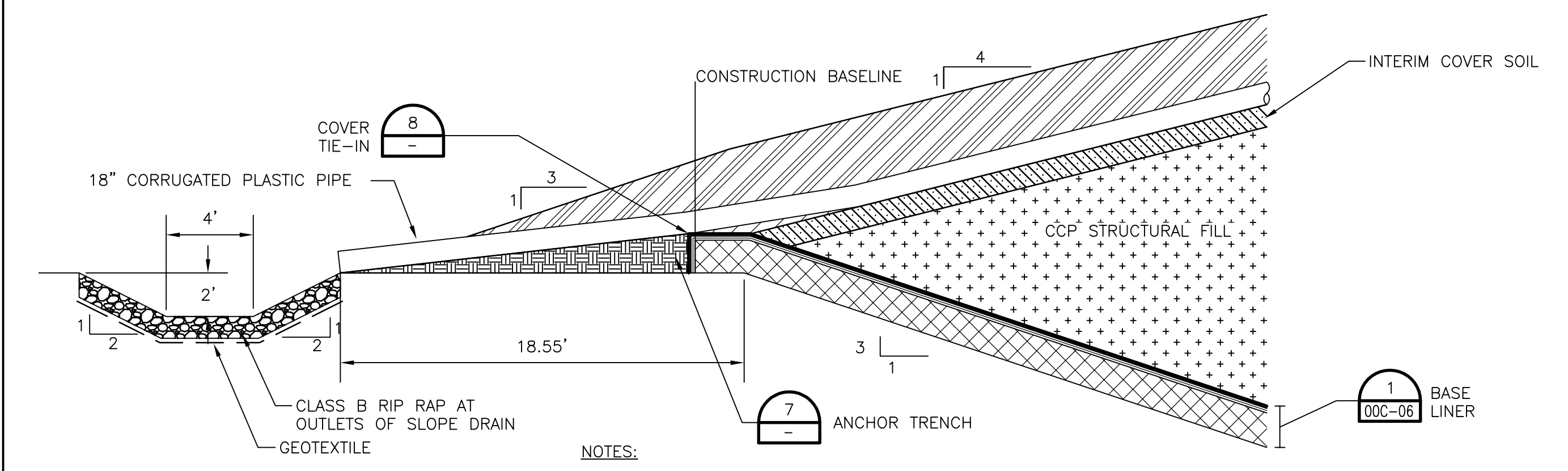
**PERIMETER BERM BASE LINER CONSTRUCTION** (4)  
1"=5'



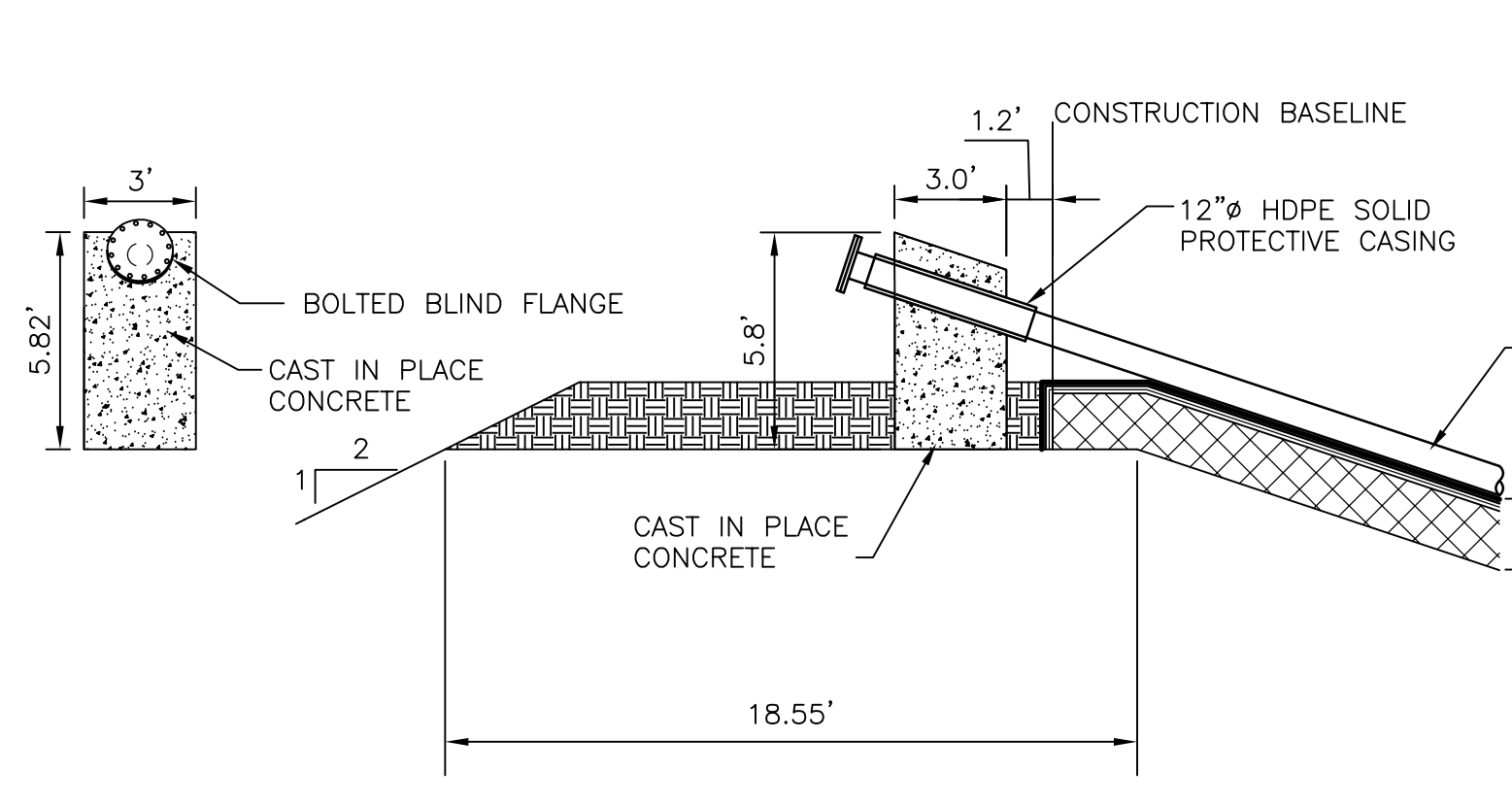
**PERIMETER BERM CLOSURE CONSTRUCTION** (2)  
1"=5'



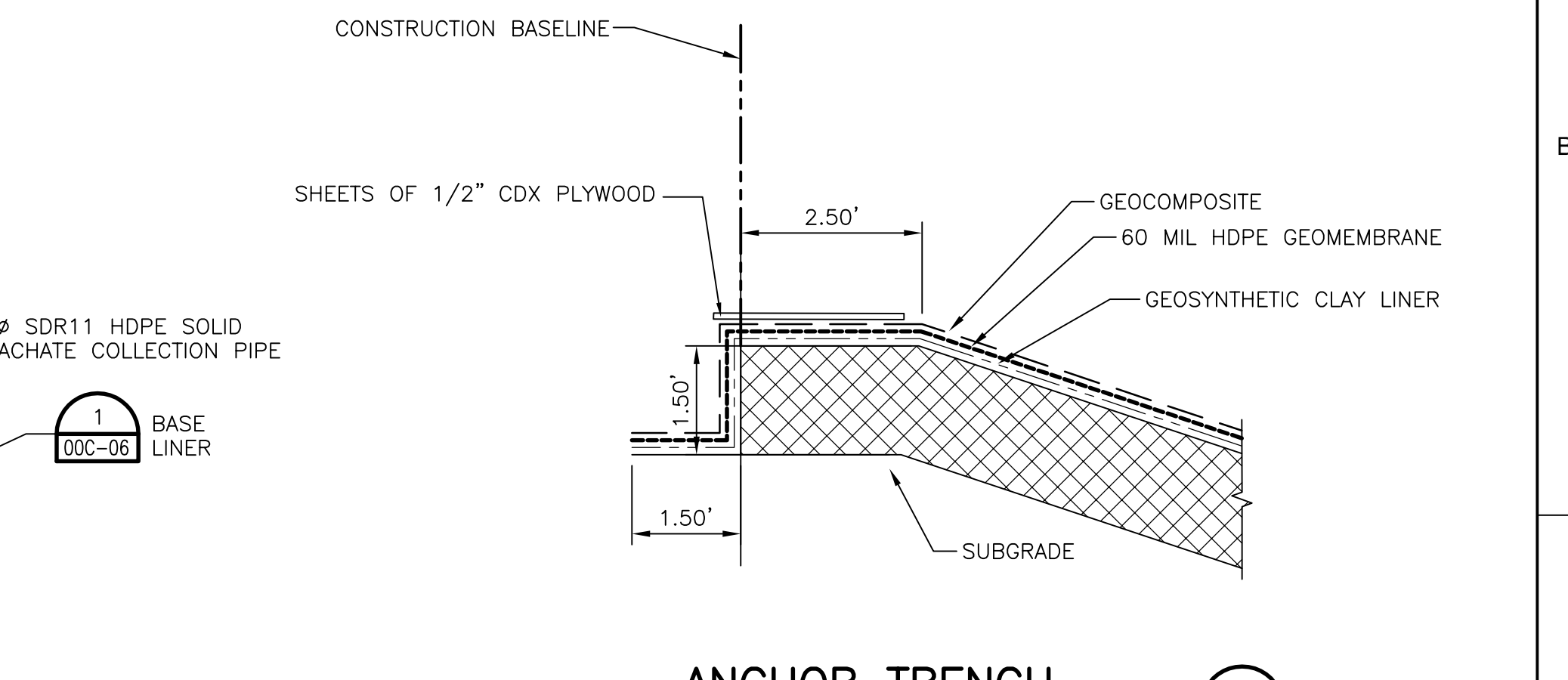
**PERIMETER BERM CLOSURE CONSTRUCTION** (5)  
1"=5'



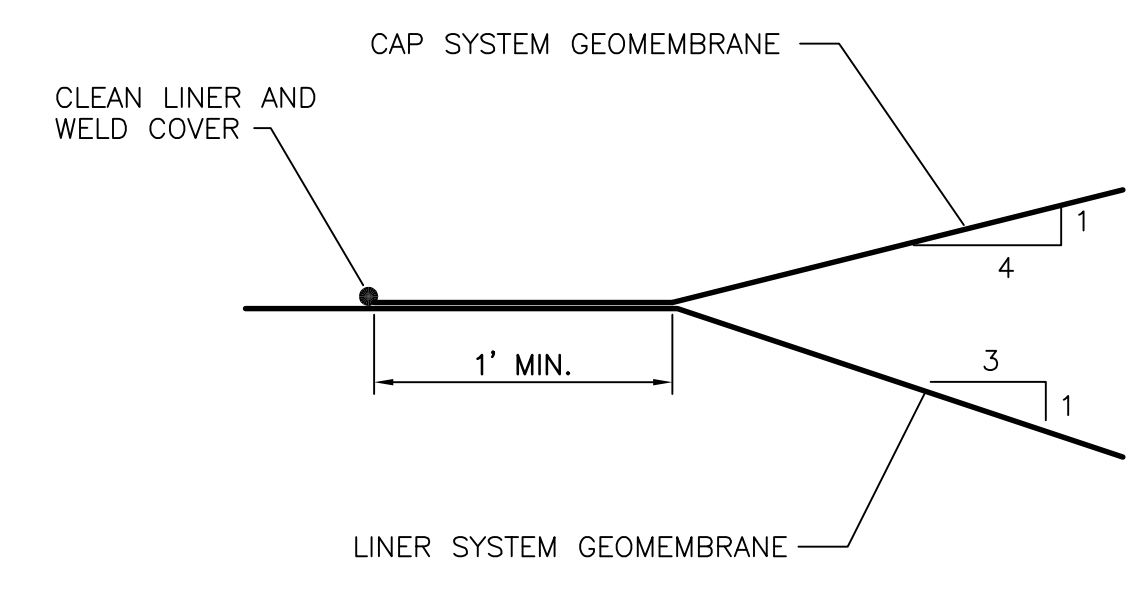
**SLOPE DRAIN** (3)  
1"=5'



**LEACHATE CLEANOUT** (6)  
1"=5'



**ANCHOR TRENCH** (7)  
1"=2'



**COVER TIE-IN** (8)  
NTS

NOTES:  
1. TOE DRAIN ENDS ON EACH SIDE OF THE SLOPE DRAIN.

NOTES:  
1. ALL LEACHATE CLEANOUT HARDWARE TO BE STAINLESS STEEL.

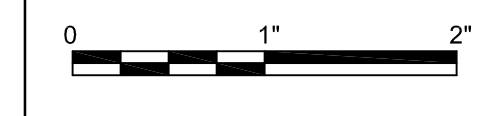


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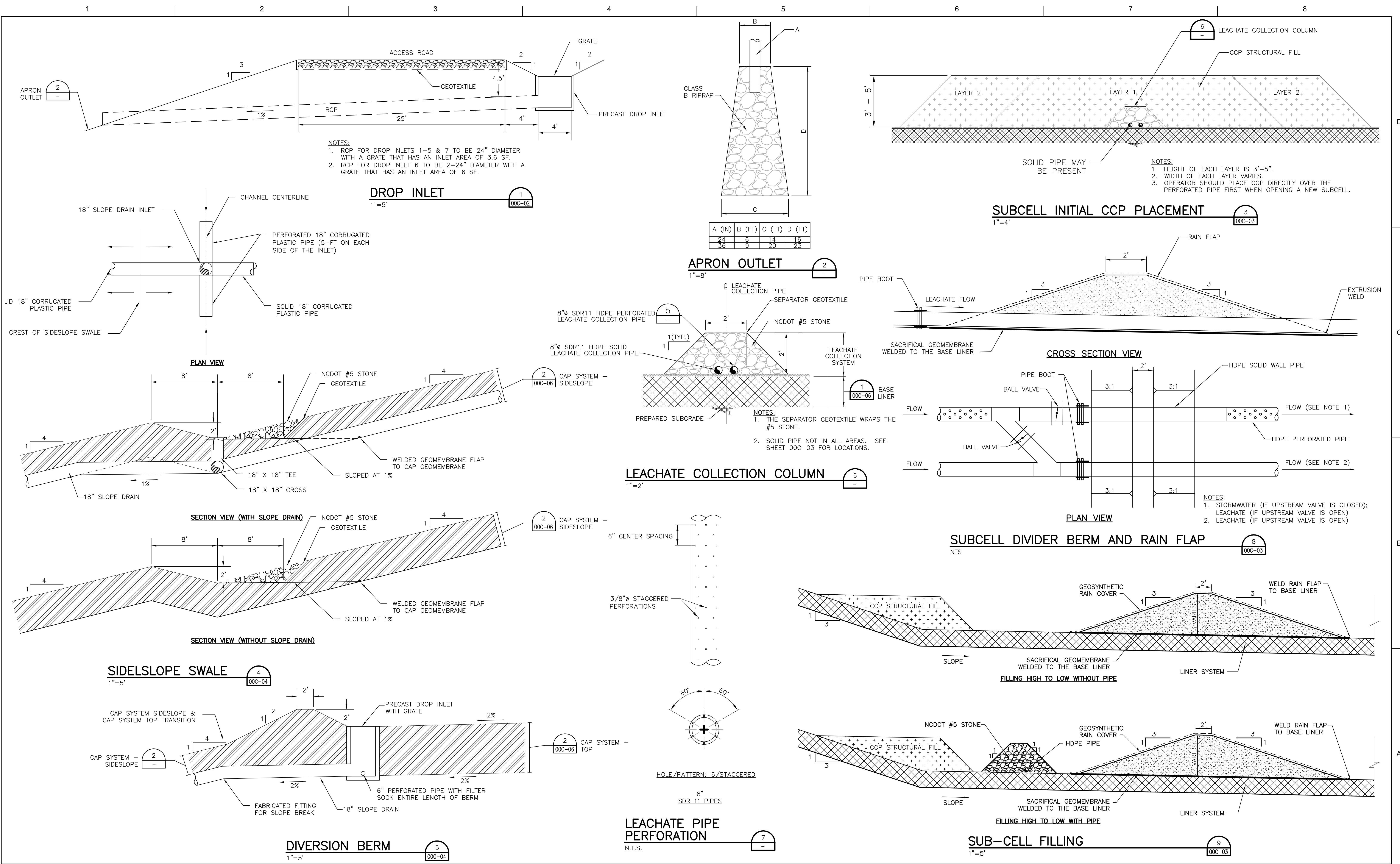


**PERIMETER CONTAINMENT**

FILENAME | 00C-07.dwg  
SCALE | AS SHOWN

SHEET  
**00C-07**





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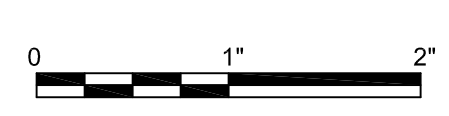
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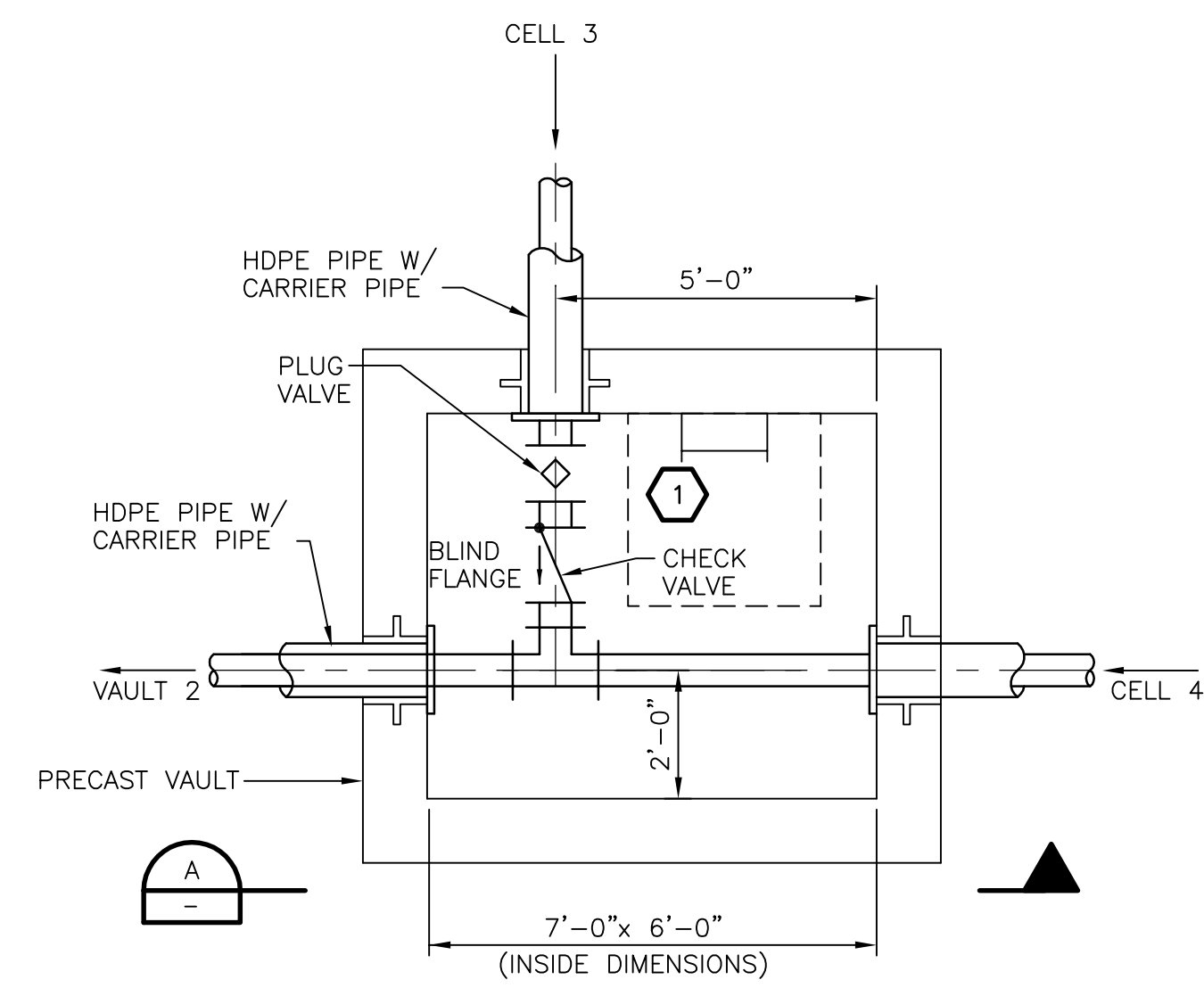
MISCELLANEOUS DETAILS



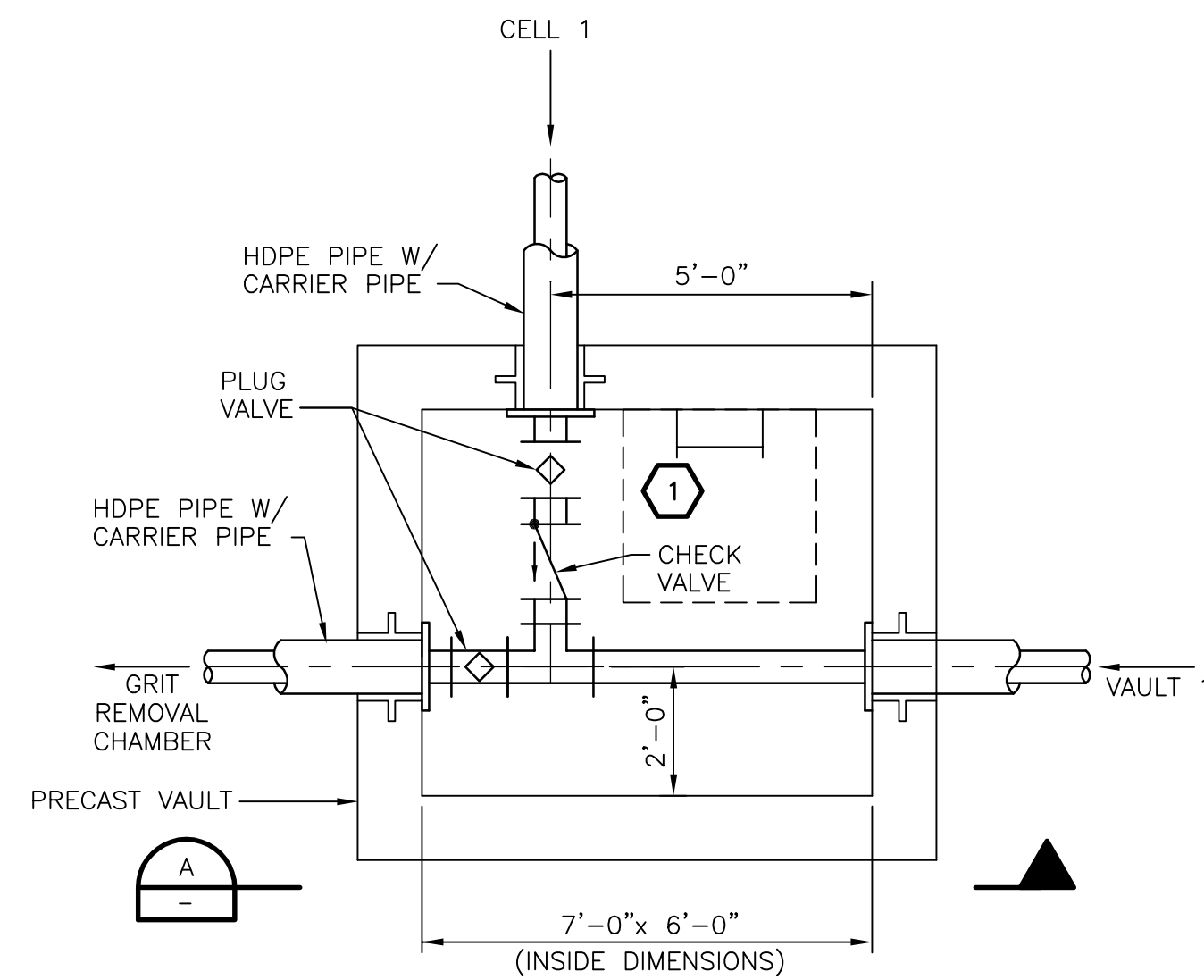
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SHEET  
**00C-08**

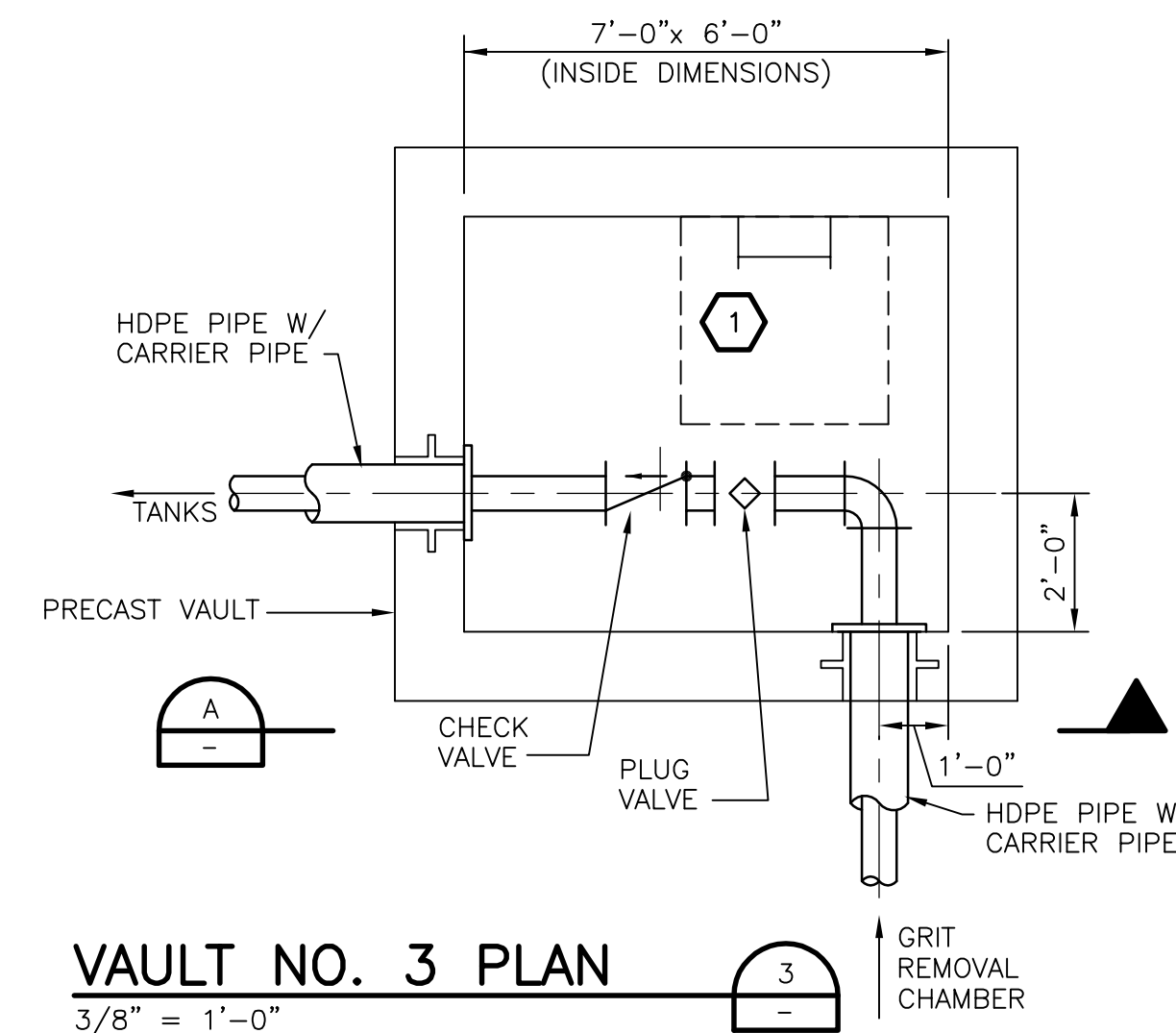




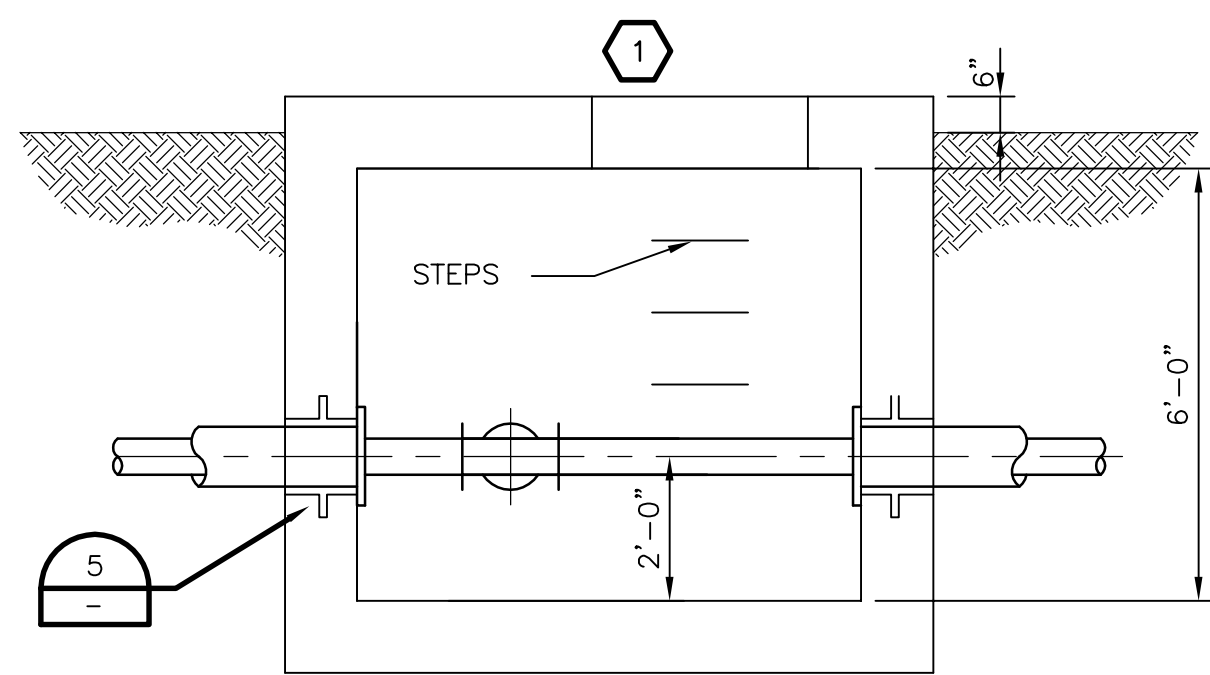
**VAULT NO. 1 PLAN**  
3/8" = 1'-0"



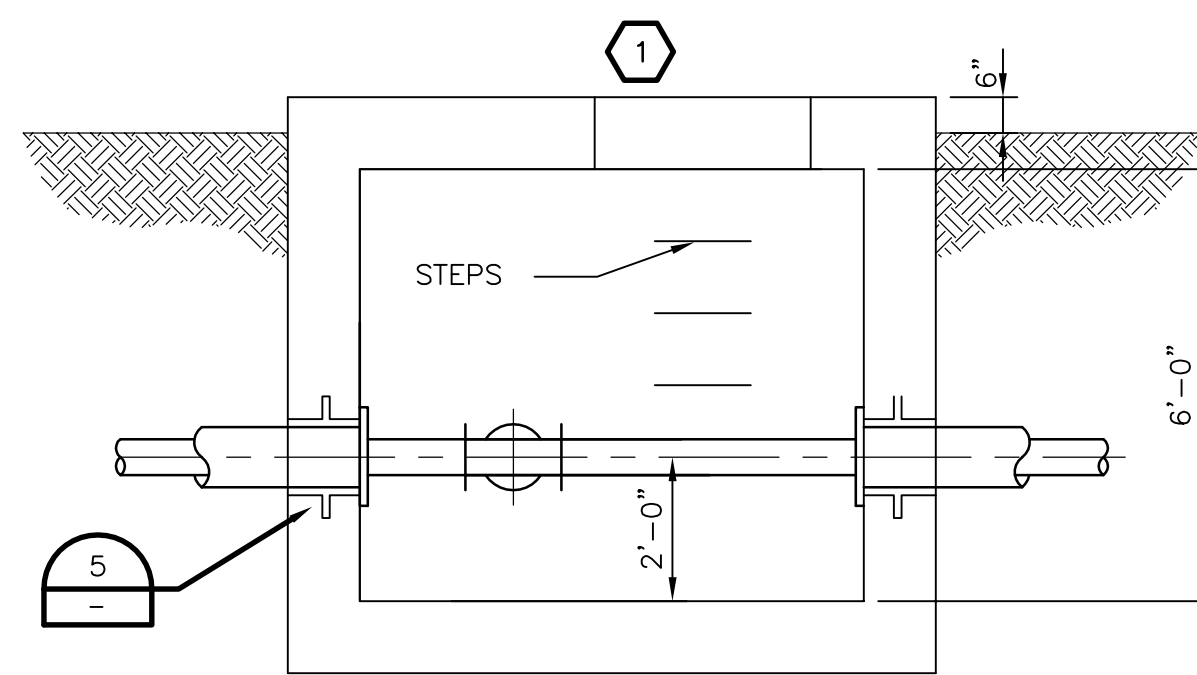
**VAULT NO. 2 PLAN**  
3/8" = 1'-0"



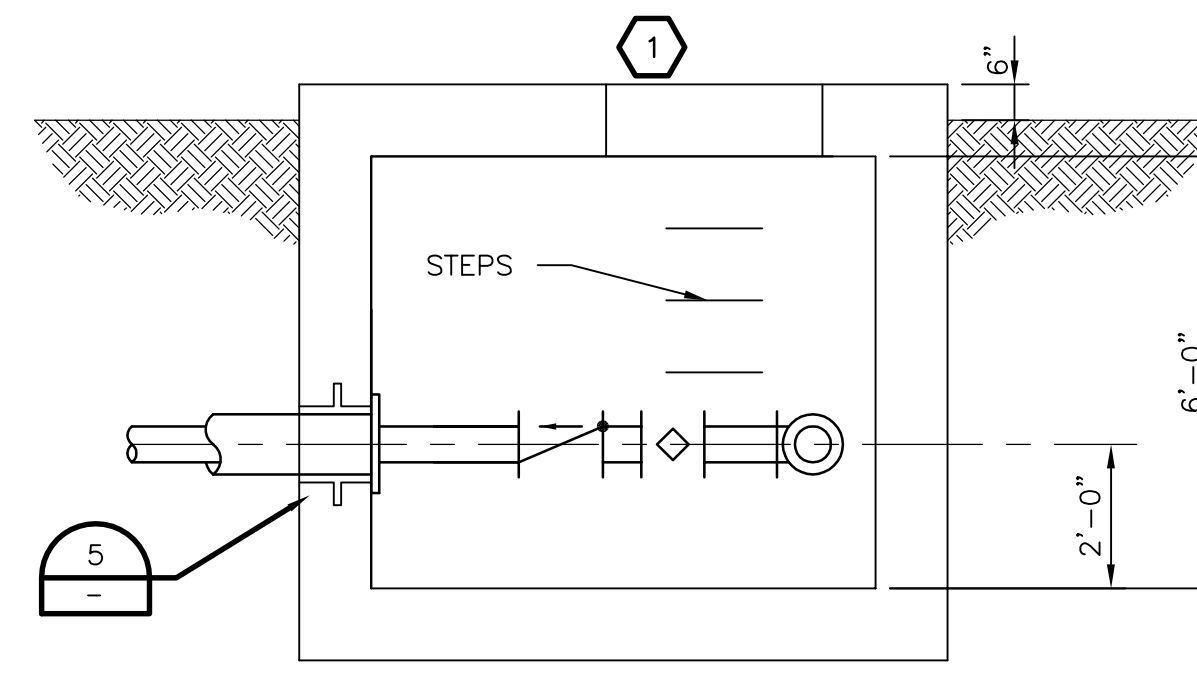
**VAULT NO. 3 PLAN**  
3/8" = 1'-0"



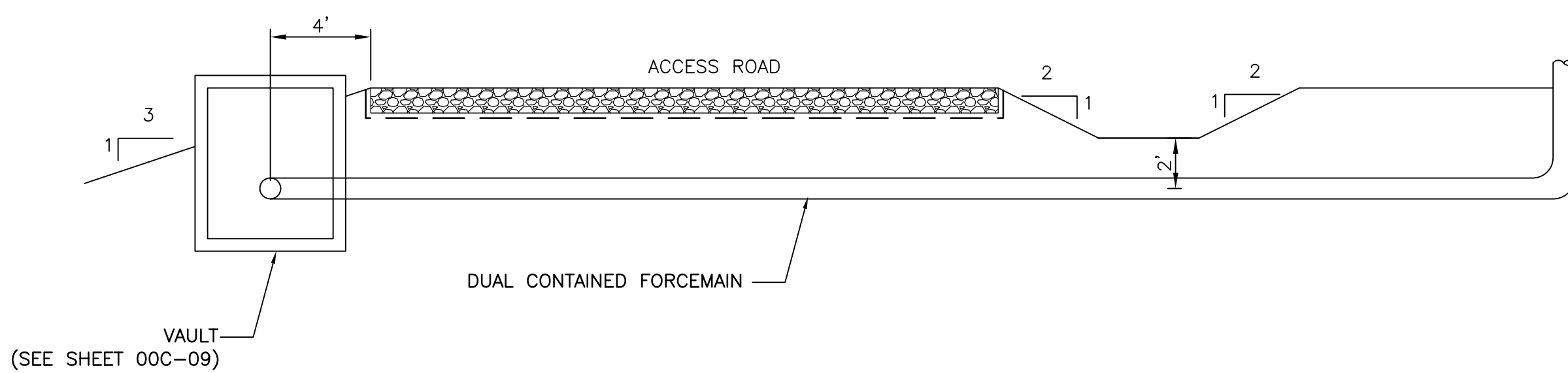
**SECTION**  
3/8" = 1'-0"



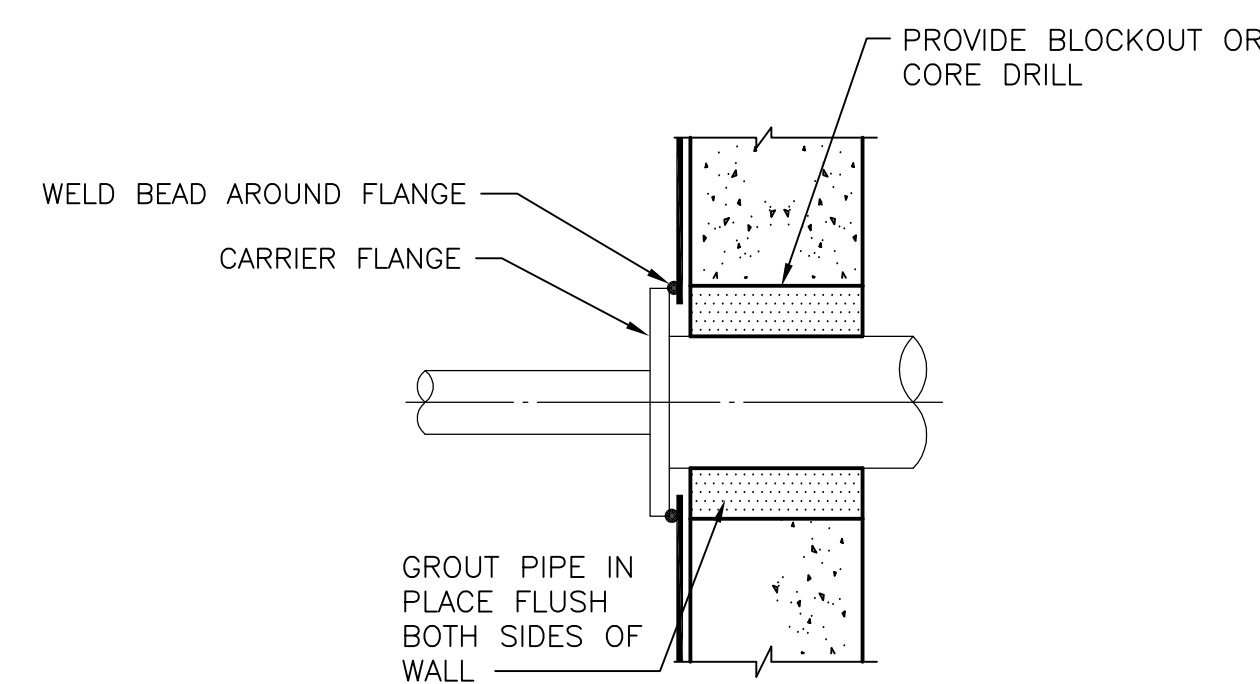
**SECTION**  
3/8" = 1'-0"



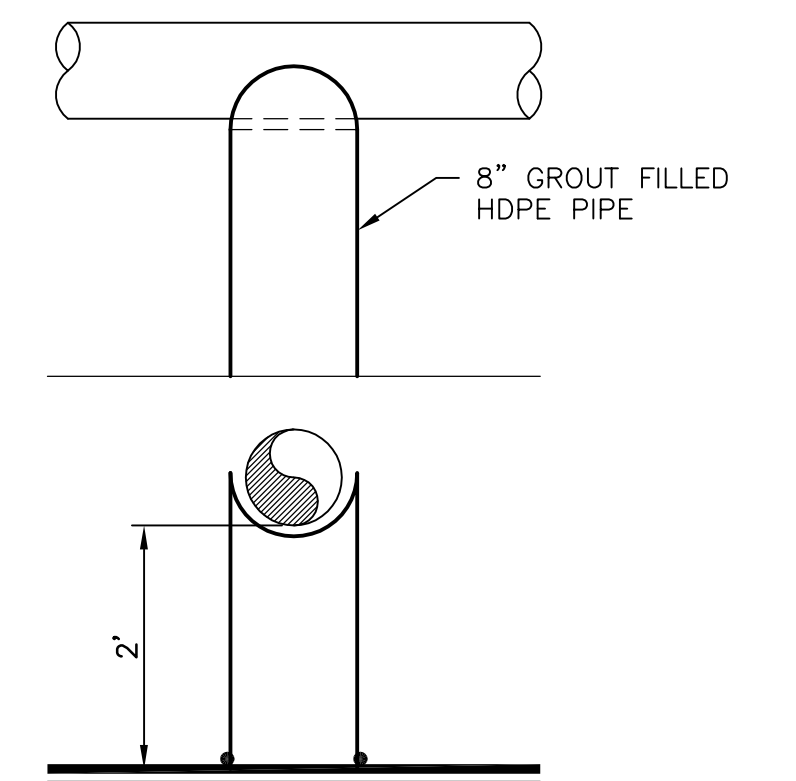
**SECTION**  
3/8" = 1'-0"



**VAULT & FORCE MAIN LOCATION**  
1" = 5'



**PIPE PENETRATION**  
NO SCALE



**PIPE SUPPORT**  
NO SCALE

**KEY NOTE**  
1 ALL VAULTS AND HATCHES TO BE H-20 RATED.

**NOTES**  
1. THESE DETAILS ARE PROVIDED FOR INFORMATION ONLY AND ARE NOT INTENDED FOR CONSTRUCTION. THESE DETAILS ARE TO BE EVALUATED PRIOR TO CONSTRUCTION.  
2. LOCATIONS OF VAULTS ALONG FORCEMAIN TO BE EVALUATED DURING CONSTRUCTION.



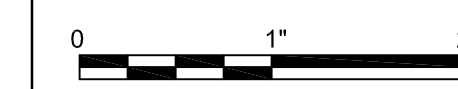
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of the Carolinas  
440 S. Church St. Suite 1000  
Charlotte, NC 28202-2075  
704.338.6700  
N.C.B.E.L.S. License Number F-0116

ISSUE	DATE	DESCRIPTION
A	11/2014	ISSUED FOR APPROVAL

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

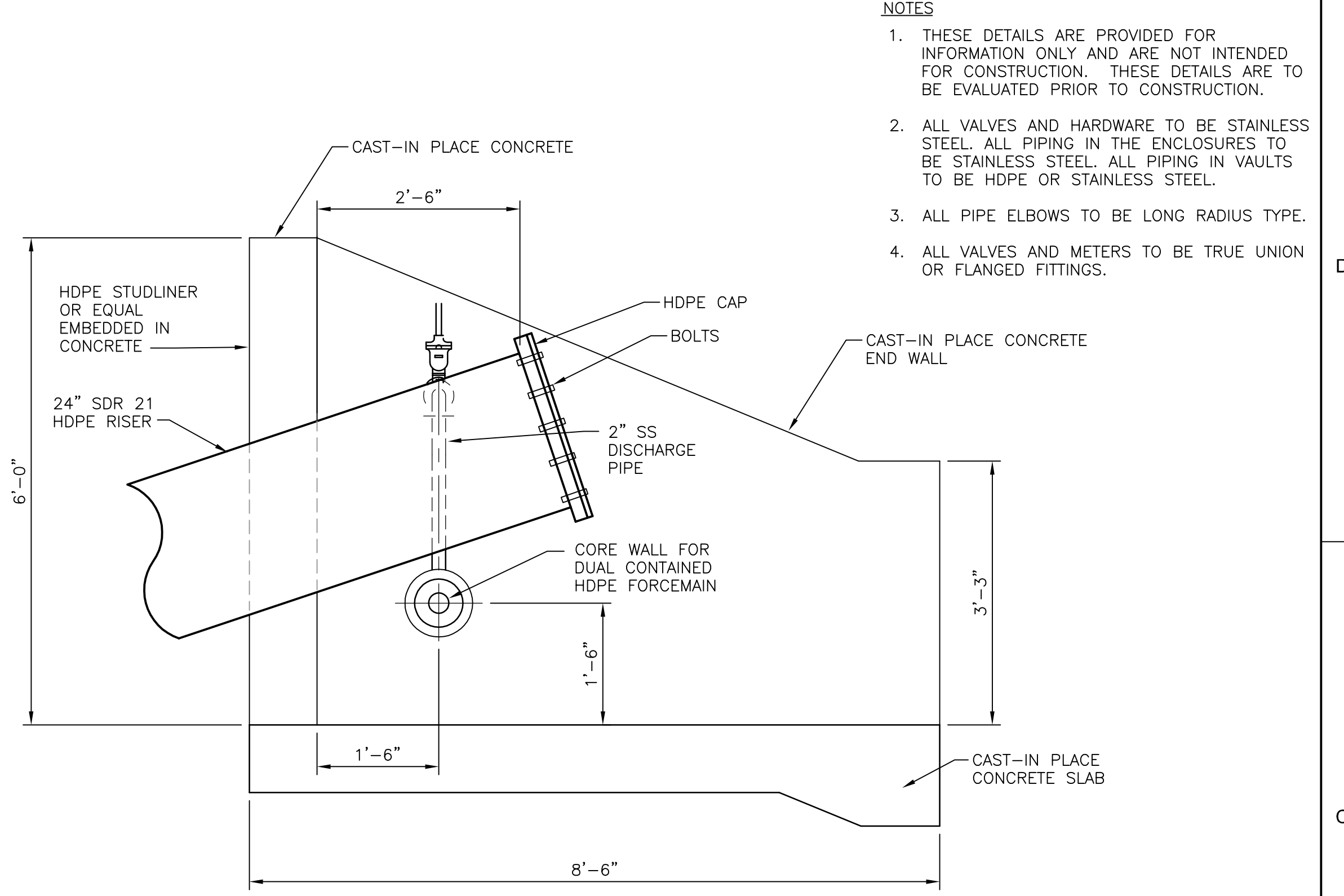
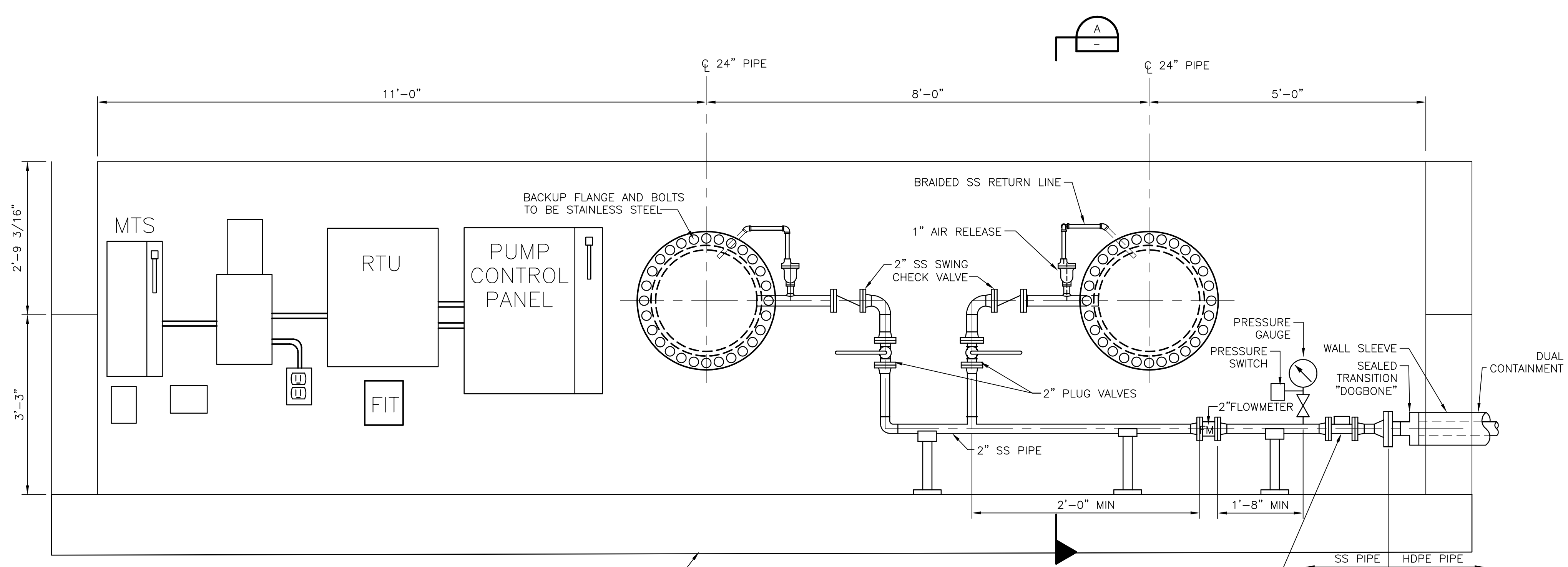


COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC



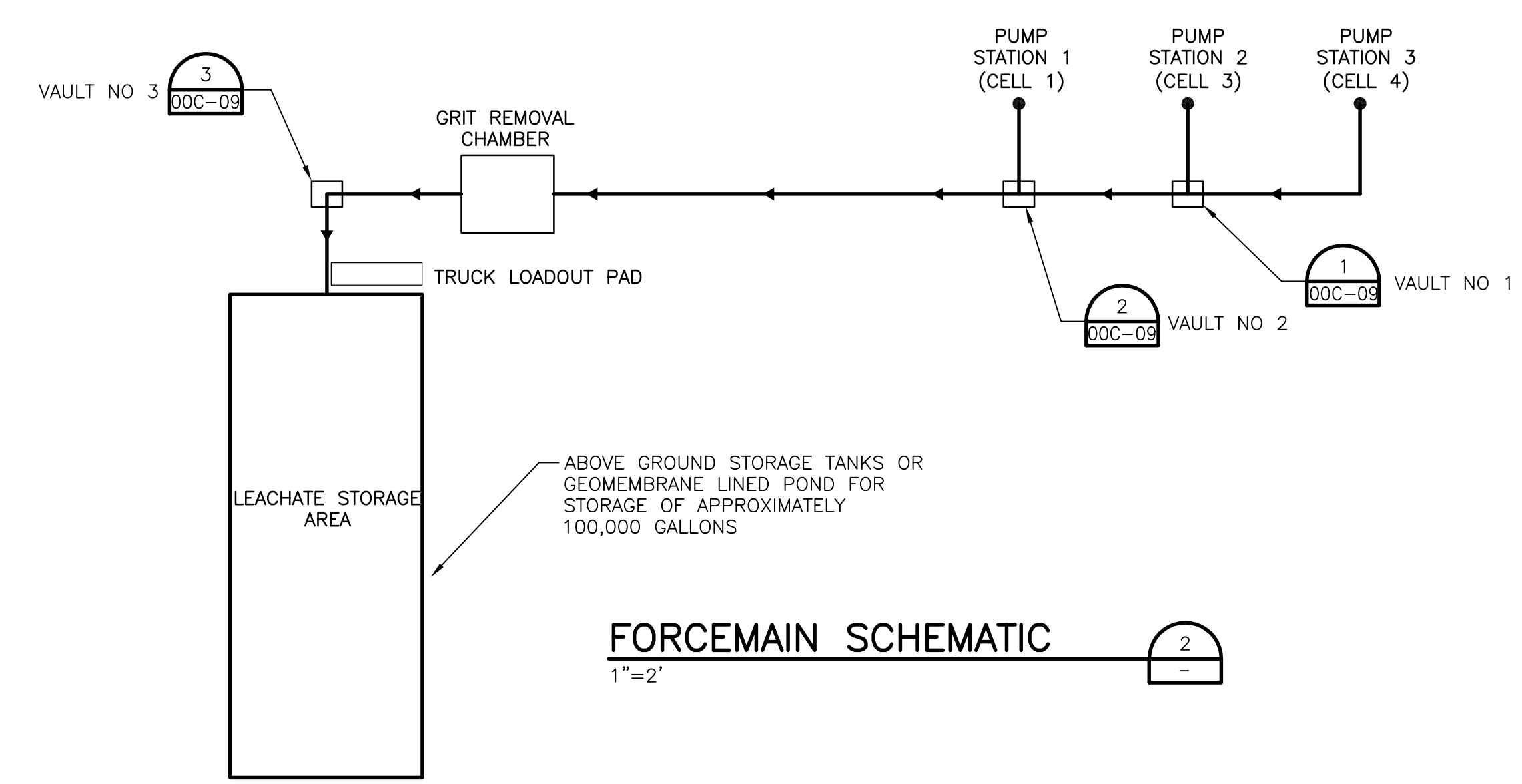
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SCALE | AS SHOWN

SHEET  
**00C-09**

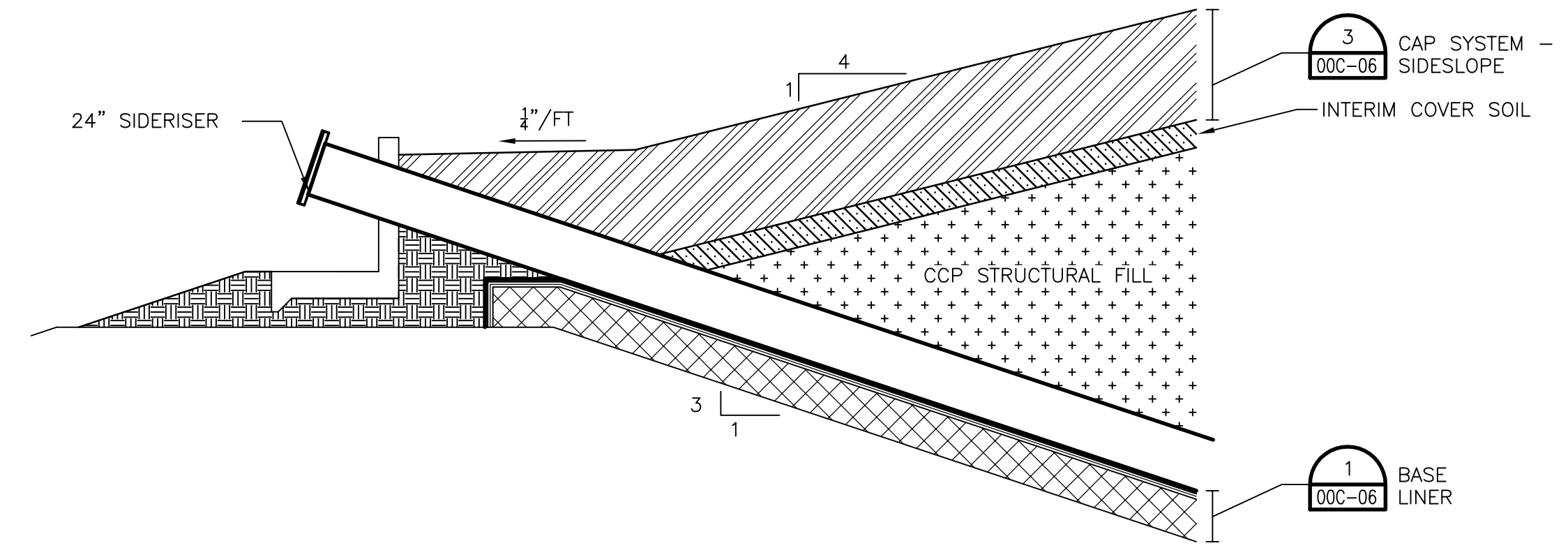


- NOTES:
1. VERIFY EQUIPMENT DIMENSIONS AND LAYOUT PRIOR TO CONSTRUCTING THIS CAST IN PLACE CONCRETE STRUCTURE.
  2. HDPE CAPS TO BE FABRICATED FROM HDPE (NO BACKUP RING) WITH GASKET BETWEEN HDPE SURFACES. HARDWARE TO BE STAINLESS STEEL. USE STANDARD ANSI BOLT PATTERN.
  3. HEAT TRACE AND INSULATE ALL STAINLESS STEEL PIPE AND AIR RELEASE VALVE.
  4. PENETRATIONS FOR AIR RELEASE RETURN, POWER CABLE, SENSOR CABLE AND STAINLESS STEEL SECURITY CABLE TO BE IN UPPER HALF OF RISER PIPE. PENETRATIONS SHALL PROVIDE GAS TIGHT SEAL. ALLOW FOR REMOVAL OF CABLES AS REQUIRED.
  5. ATTACH PUMP TO STAINLESS STEEL CABLE THAT IS ATTACHED TO CONCRETE WALL TO AID IN RETRIEVAL OF PUMP.

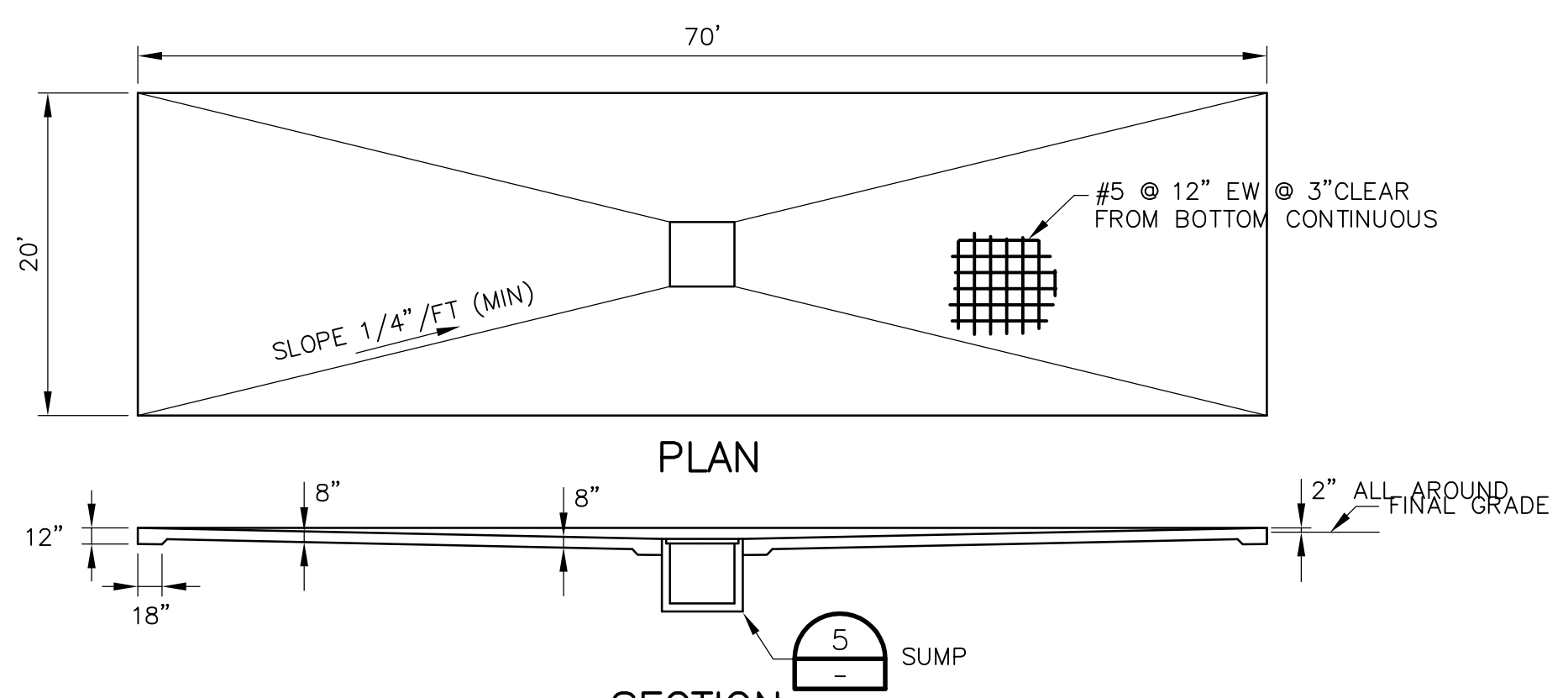
**LEACHATE PUMP STATION**  
3/4"=1'-0"



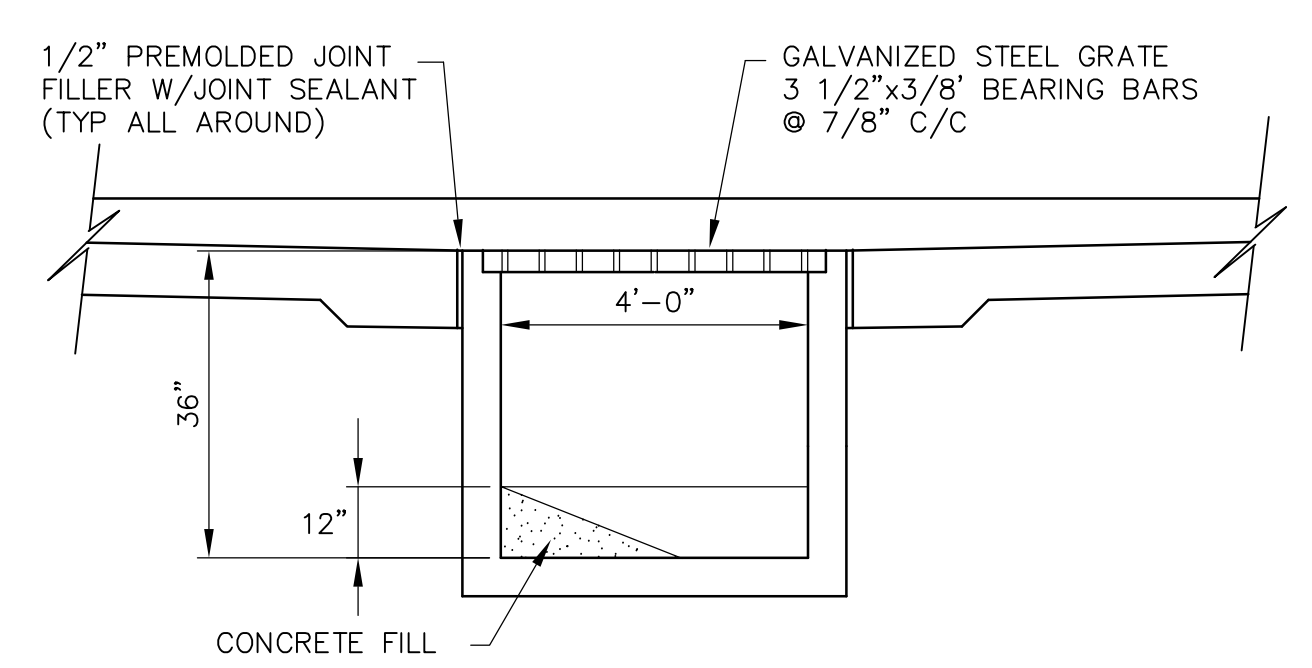
**FORCEMAIN SCHEMATIC**  
1"=2"



**SIDE RISER**  
1"=5'



**LEACHATE TANK LOADOUT PAD**  
NO SCALE



**SUMP**  
NO SCALE

- NOTES:
1. THESE DETAILS ARE PROVIDED FOR INFORMATION ONLY AND ARE NOT INTENDED FOR CONSTRUCTION. THESE DETAILS ARE TO BE EVALUATED PRIOR TO CONSTRUCTION.
  2. ALL VALVES AND HARDWARE TO BE STAINLESS STEEL. ALL PIPING IN THE ENCLOSURES TO BE STAINLESS STEEL. ALL PIPING IN VAULTS TO BE HDPE OR STAINLESS STEEL.
  3. ALL PIPE ELBOWS TO BE LONG RADIUS TYPE.
  4. ALL VALVES AND METERS TO BE TRUE UNION OR FLANGED FITTINGS.



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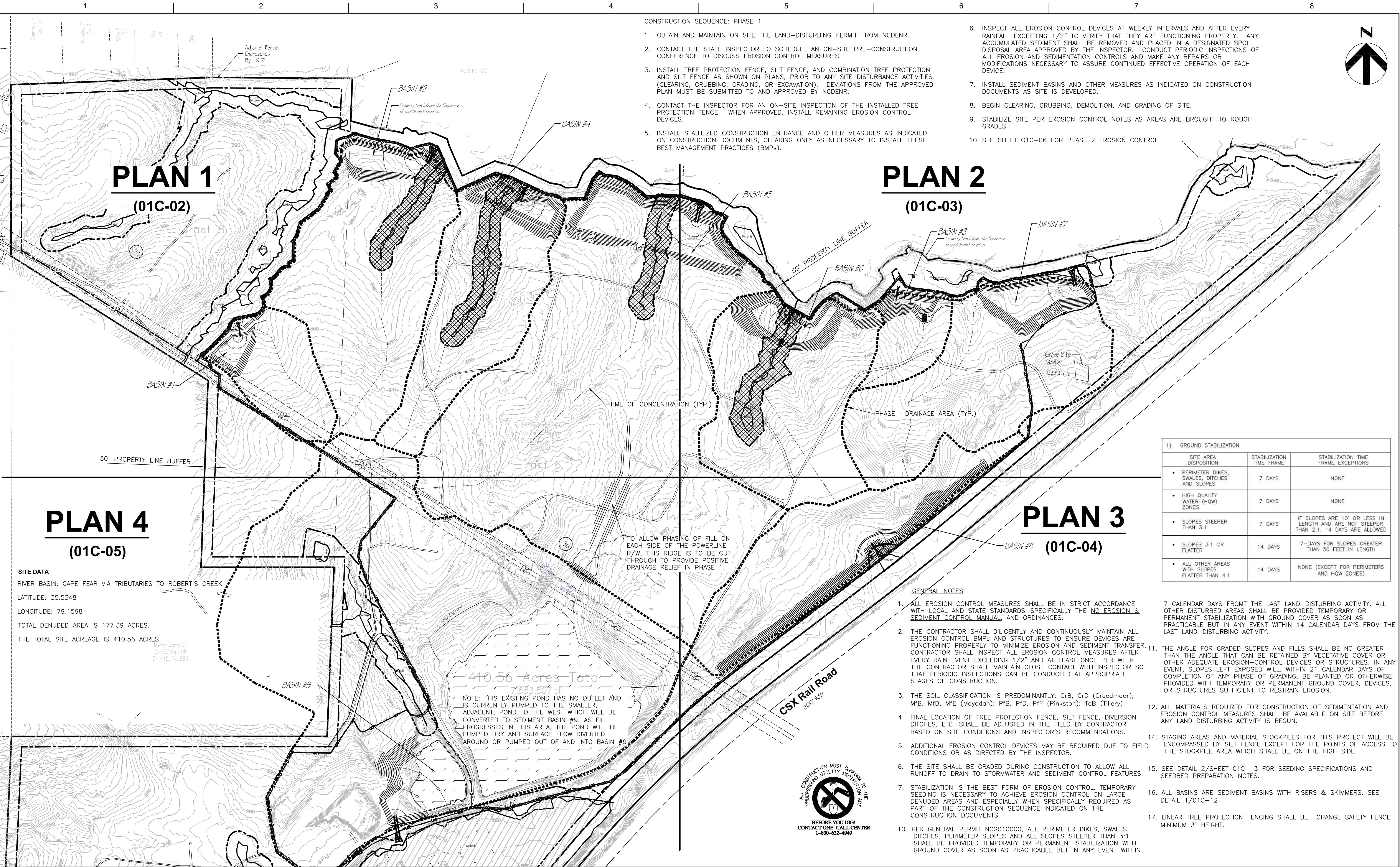
**LEACHATE PUMP SYSTEM**

SCALE: AS SHOWN

FILENAME: 00C-10.dwg

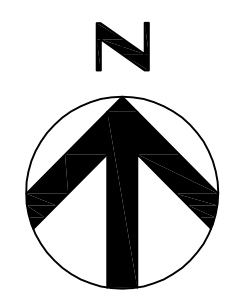
SHEET: 00C-10





CONSTRUCTION SEQUENCE: PHASE 1

1. OBTAIN AND MAINTAIN ON SITE THE LAND-DISTURBING PERMIT FROM NCDENR.
2. CONTACT THE STATE INSPECTOR TO SCHEDULE AN ON-SITE PRE-CONSTRUCTION CONFERENCE TO DISCUSS EROSION CONTROL MEASURES.
3. INSTALL TREE PROTECTION FENCE, SILT FENCE, AND COMBINATION TREE PROTECTION AND SILT FENCE AS SHOWN ON PLANS, PRIOR TO ANY SITE DISTURBANCE ACTIVITIES (CLEARING, GRUBBING, GRADING, OR EXCAVATION). DEVIATIONS FROM THE APPROVED PLAN MUST BE SUBMITTED TO AND APPROVED BY NCDENR.
4. CONTACT THE INSPECTOR FOR AN ON-SITE INSPECTION OF THE INSTALLED TREE PROTECTION FENCE. WHEN APPROVED, INSTALL REMAINING EROSION CONTROL DEVICES.
5. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND OTHER MEASURES AS INDICATED ON CONSTRUCTION DOCUMENTS, CLEARING ONLY AS NECESSARY TO INSTALL THESE BEST MANAGEMENT PRACTICES (BMPs).
6. 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.
7. INSTALL SEDIMENT BASINS AND OTHER MEASURES AS INDICATED ON CONSTRUCTION DOCUMENTS AS SITE IS DEVELOPED.
8. BEGIN CLEARING, GRUBBING, DEMOLITION, AND GRADING OF SITE.
9. STABILIZE SITE PER EROSION CONTROL NOTES AS AREAS ARE BROUGHT TO ROUGH GRADES.
10. SEE SHEET 01C-06 FOR PHASE 2 EROSION CONTROL



**PLAN 1**  
(01C-02)

**PLAN 2**  
(01C-03)

**PLAN 4**  
(01C-05)

**PLAN 3**  
(01C-04)

**SITE DATA**  
 RIVER BASIN: CAPE FEAR VIA TRIBUTARIES TO ROBERT'S CREEK  
 LATITUDE: 35.5348  
 LONGITUDE: 79.1598  
 TOTAL DENUDED AREA IS 177.39 ACRES.  
 THE TOTAL SITE ACREAGE IS 410.56 ACRES.

Design: Benjamin  
 Bk 707 Pg 119  
 Dk 415, Pg 335

410.56 Acres Total  
 17883.807 sf  
 NOTE: THIS EXISTING POND HAS NO OUTLET AND IS CURRENTLY PUMPED TO THE SMALLER, ADJACENT, POND TO THE WEST WHICH WILL BE CONVERTED TO SEDIMENT BASIN #9. AS FILL PROGRESSES IN THIS AREA, THE POND WILL BE PUMPED DRY AND SURFACE FLOW DIVERTED AROUND OR PUMPED OUT OF AND INTO BASIN #9

**GENERAL NOTES**

1. ALL EROSION CONTROL MEASURES SHALL BE IN STRICT ACCORDANCE WITH LOCAL AND STATE STANDARDS—SPECIFICALLY THE NC EROSION & SEDIMENT CONTROL MANUAL, AND ORDINANCES.
2. THE CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL BMPs AND STRUCTURES TO ENSURE DEVICES ARE FUNCTIONING PROPERLY TO MINIMIZE EROSION AND SEDIMENT TRANSFER. CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES AFTER EVERY RAIN EVENT EXCEEDING 1/2" AND AT LEAST ONCE PER WEEK. THE CONTRACTOR SHALL MAINTAIN CLOSE CONTACT WITH INSPECTOR SO THAT PERIODIC INSPECTIONS CAN BE CONDUCTED AT APPROPRIATE STAGES OF CONSTRUCTION.
3. THE SOIL CLASSIFICATION IS PREDOMINANTLY: CrB, CrD (Creedmoor); MfB, MfD, MfE (Mayodan); PfB, PfD, PfF (Pinkston); ToB (Tillery)
4. FINAL LOCATION OF TREE PROTECTION FENCE, SILT FENCE, DIVERSION DITCHES, ETC. SHALL BE ADJUSTED IN THE FIELD BY CONTRACTOR BASED ON SITE CONDITIONS AND INSPECTOR'S RECOMMENDATIONS.
5. ADDITIONAL EROSION CONTROL DEVICES MAY BE REQUIRED DUE TO FIELD CONDITIONS OR AS DIRECTED BY THE INSPECTOR.
6. THE SITE SHALL BE GRADED DURING CONSTRUCTION TO ALLOW ALL RUNOFF TO DRAIN TO STORMWATER AND SEDIMENT CONTROL FEATURES.
7. STABILIZATION IS THE BEST FORM OF EROSION CONTROL. TEMPORARY SEEDING IS NECESSARY TO ACHIEVE EROSION CONTROL ON LARGE DENUDED AREAS AND ESPECIALLY WHEN SPECIFICALLY REQUIRED AS PART OF THE CONSTRUCTION SEQUENCE INDICATED ON THE CONSTRUCTION DOCUMENTS.
10. PER GENERAL PERMIT NCG010000, 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

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

7. 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.
11. THE ANGLE FOR GRADED SLOPES AND FILLS SHALL BE NO GREATER THAN THE ANGLE THAT CAN BE RETAINED BY VEGETATIVE COVER OR OTHER ADEQUATE EROSION-CONTROL DEVICES OR STRUCTURES. IN ANY EVENT, SLOPES LEFT EXPOSED WILL, WITHIN 21 CALENDAR DAYS OF COMPLETION OF ANY PHASE OF GRADING, BE PLANTED OR OTHERWISE PROVIDED WITH TEMPORARY OR PERMANENT GROUND COVER, DEVICES, OR STRUCTURES SUFFICIENT TO RESTRAIN EROSION.
12. ALL MATERIALS REQUIRED FOR CONSTRUCTION OF SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE AVAILABLE ON SITE BEFORE ANY LAND DISTURBING ACTIVITY IS BEGUN.
14. STAGING AREAS AND MATERIAL STOCKPILES FOR THIS PROJECT WILL BE ENCOMPASSED BY SILT FENCE EXCEPT FOR THE POINTS OF ACCESS TO THE STOCKPILE AREA WHICH SHALL BE ON THE HIGH SIDE.
15. SEE DETAIL 2/SHEET 01C-13 FOR SEEDING SPECIFICATIONS AND SEEDBED PREPARATION NOTES.
16. ALL BASINS ARE SEDIMENT BASINS WITH RISERS & SKIMMERS. SEE DETAIL 1/01C-12
17. LINEAR TREE PROTECTION FENCING SHALL BE ORANGE SAFETY FENCE MINIMUM 3' HEIGHT.



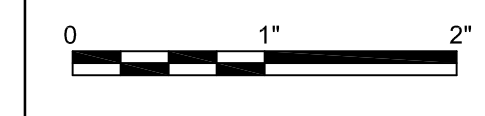
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DESIGNED BY	R. BAYSDEN, P.E.
DRAWN BY	R. BAYSDEN, P.E.
CHECKED BY	J. READLING, P.E.
PROJECT NUMBER	453925-235691-018



**Charah**  
 COLON MINE SITE STRUCTURAL FILL  
 SANFORD, NC

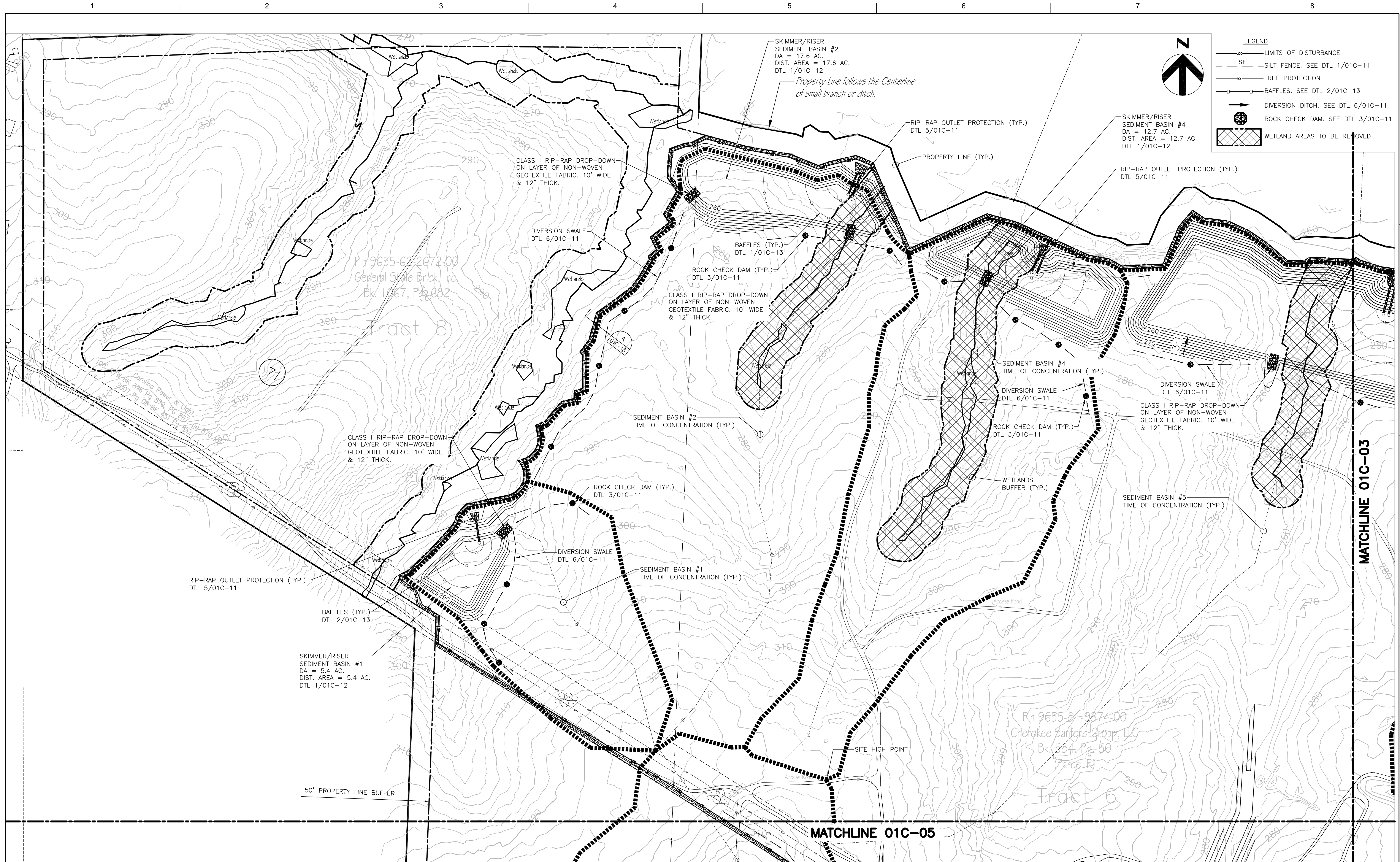


FILENAME 01C-01.dwg  
 SCALE 1"=200'

SHEET  
**01C-01**

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





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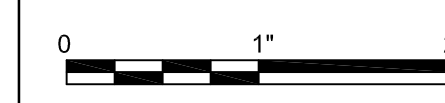
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COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

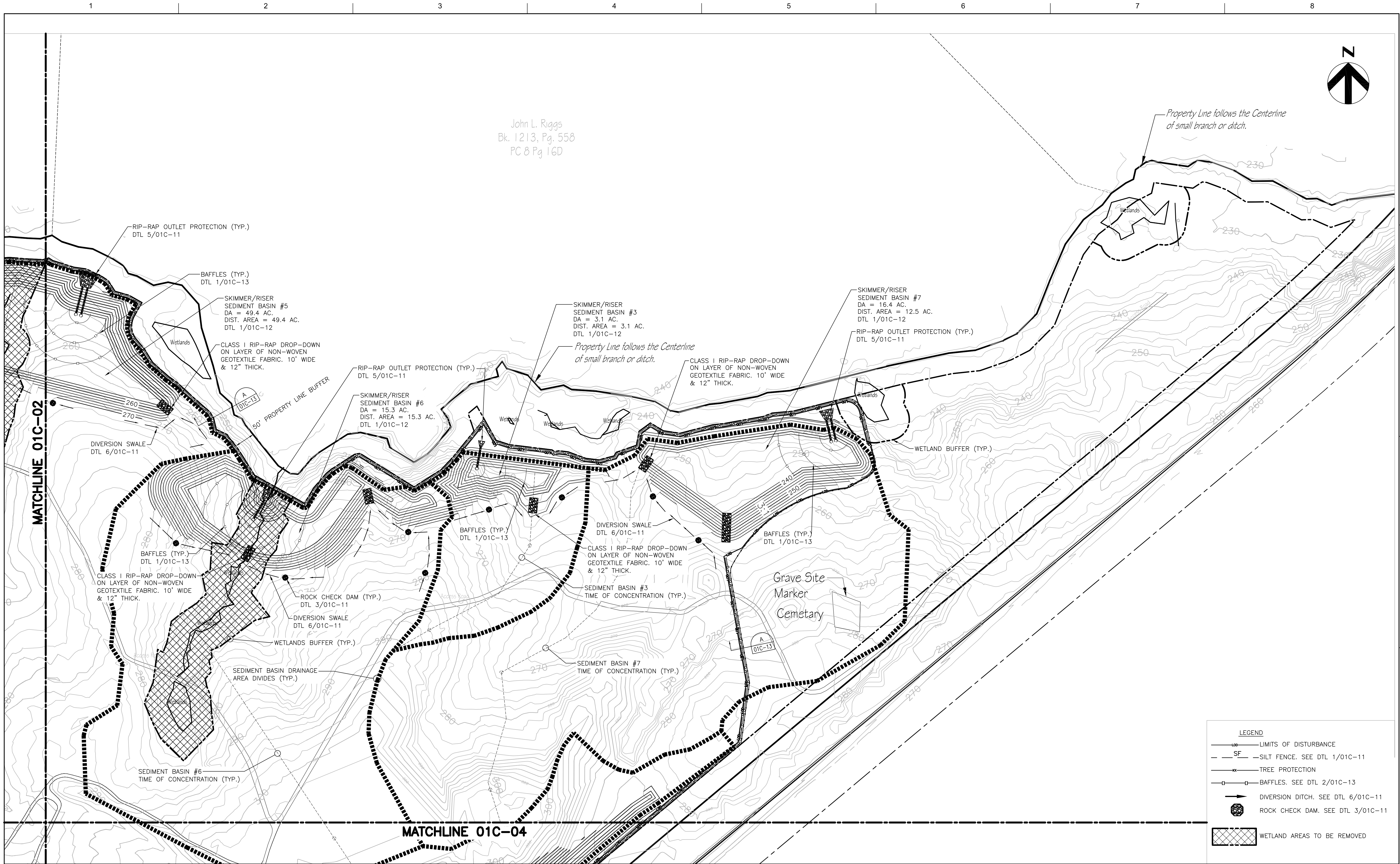
EROSION AND SEDIMENTATION  
CONTROL PLAN - PHASE 1  
PLAN 1



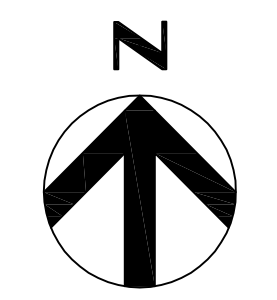
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SCALE 1"=100'

SHEET  
01C-02





John L. Riggs  
Bk. 1213, Pg. 558  
PC 8 Pg 16D



Property Line follows the Centerline of small branch or ditch.

Property Line follows the Centerline of small branch or ditch.

MATCHLINE 01C-02

MATCHLINE 01C-04

LEGEND	
	LIMITS OF DISTURBANCE
	SILT FENCE. SEE DTL 1/01C-11
	TREE PROTECTION
	BAFFLES. SEE DTL 2/01C-13
	DIVERSION DITCH. SEE DTL 6/01C-11
	ROCK CHECK DAM. SEE DTL 3/01C-11
	WETLAND AREAS TO BE REMOVED



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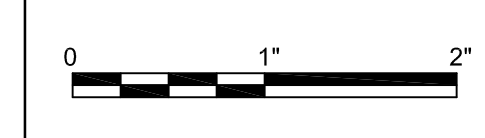
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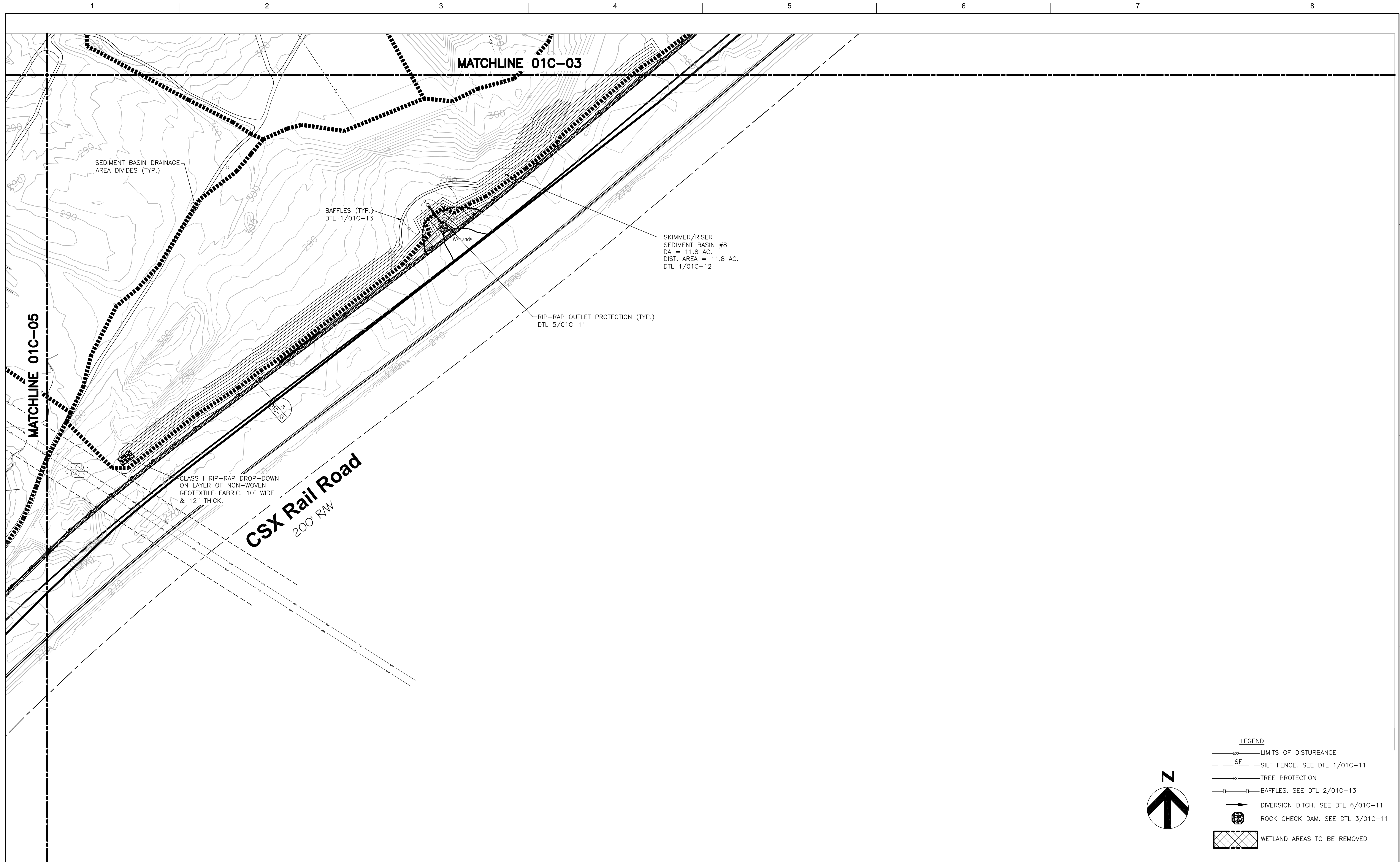
EROSION AND SEDIMENTATION  
CONTROL PLAN - PHASE 1  
PLAN 2



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SHEET  
01C-03





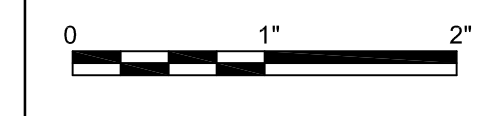
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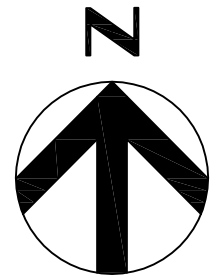
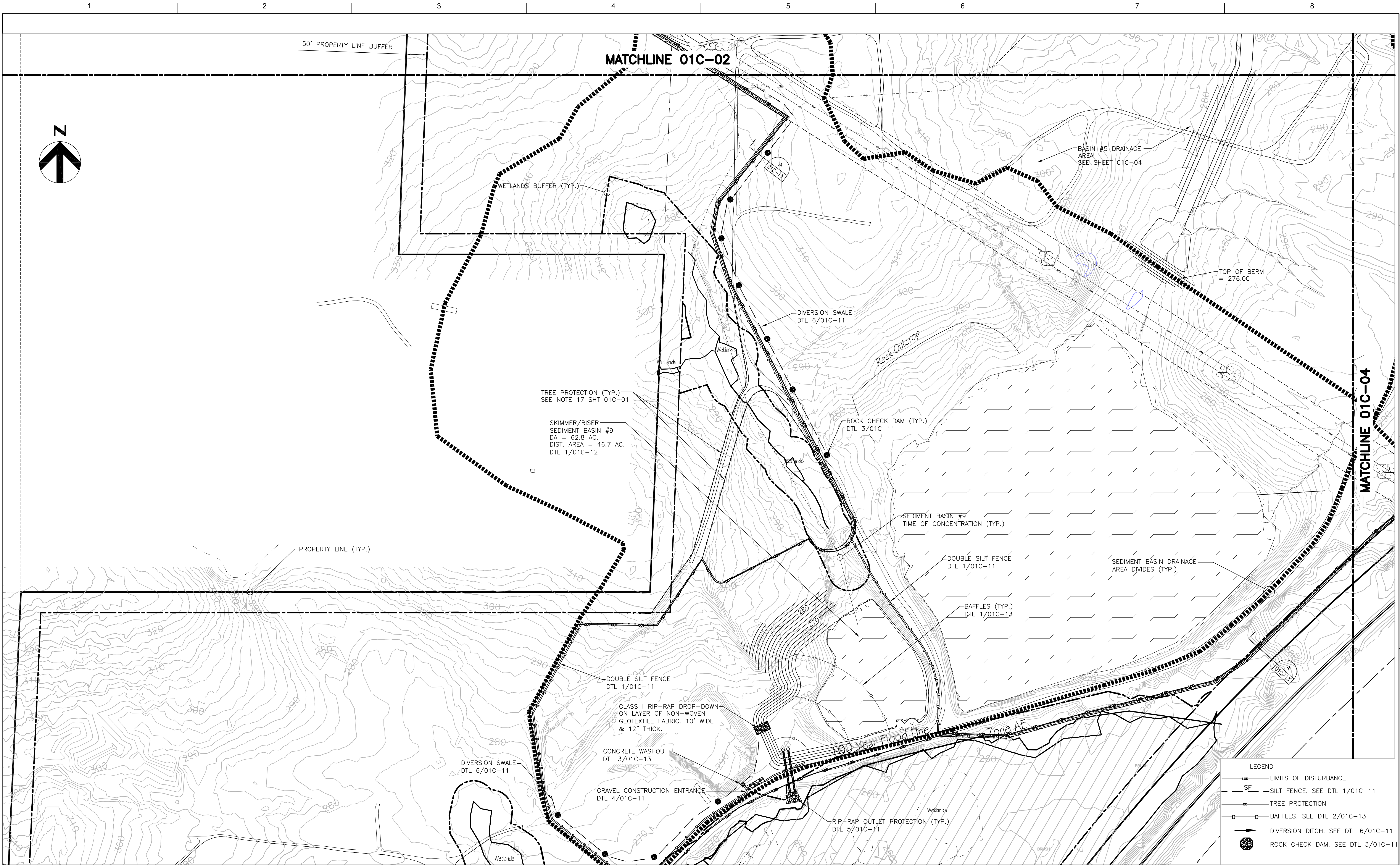


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SHEET  
**01C-04**

**EROSION AND SEDIMENTATION  
CONTROL PLAN - PHASE 1  
PLAN 3**





**LEGEND**

- LIMITS OF DISTURBANCE
- SF SILT FENCE. SEE DTL 1/01C-11
- TREE PROTECTION
- BAFFLES. SEE DTL 2/01C-13
- DIVERSION DITCH. SEE DTL 6/01C-11
- ROCK CHECK DAM. SEE DTL 3/01C-11



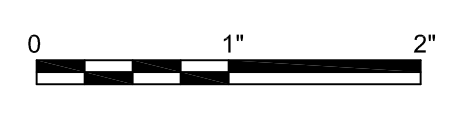
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COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC

**EROSION AND SEDIMENTATION  
CONTROL PLAN - PHASE 1  
PLAN 4**



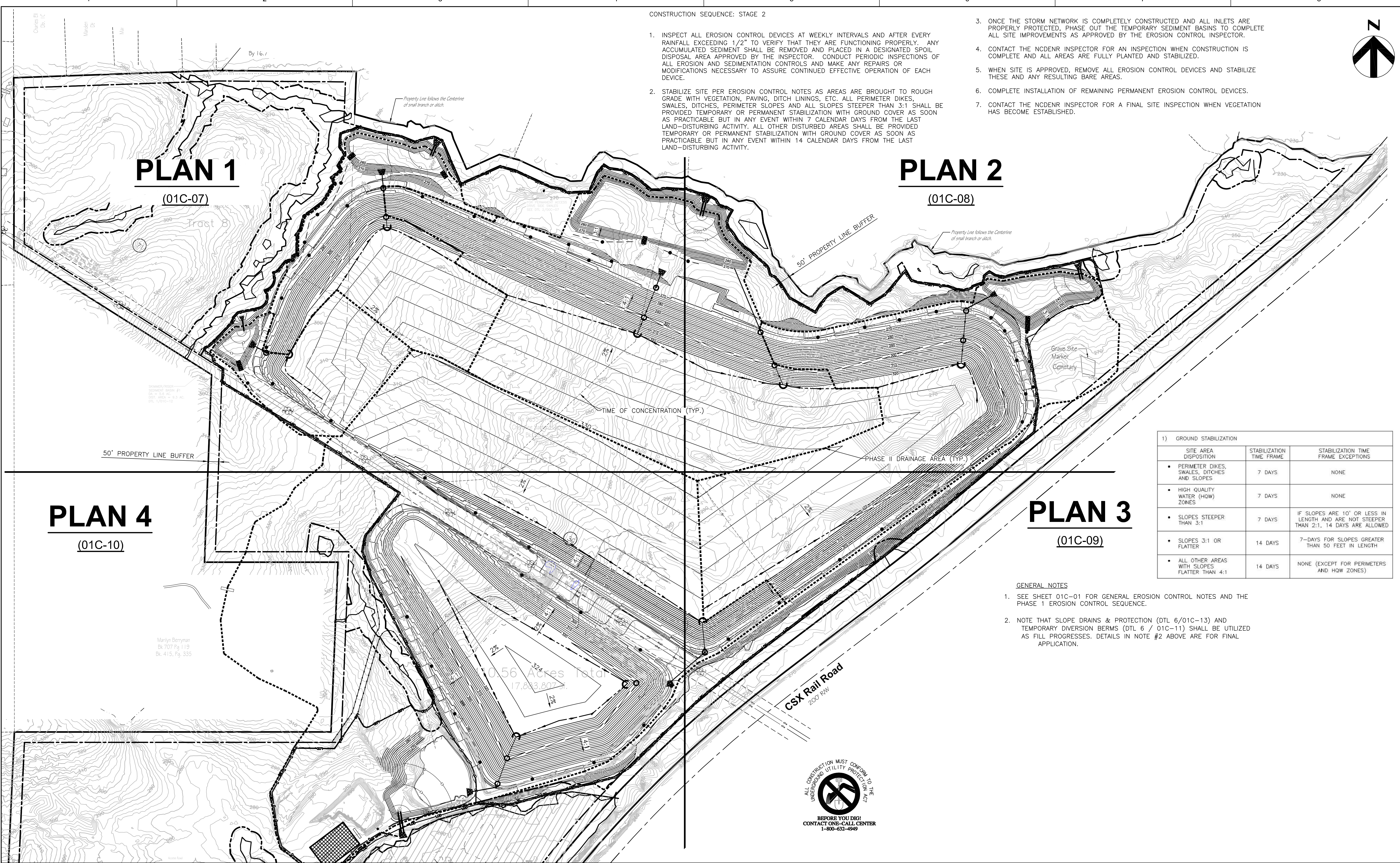
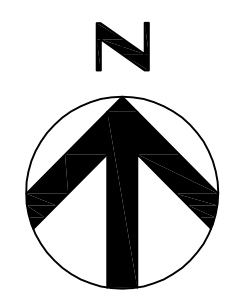
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SCALE 1"=100'

SHEET  
**01C-05**



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 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.

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 NCDENR 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.
6. COMPLETE INSTALLATION OF REMAINING PERMANENT EROSION CONTROL DEVICES.
7. CONTACT THE NCDENR INSPECTOR FOR A FINAL SITE INSPECTION WHEN VEGETATION HAS BECOME ESTABLISHED.



1) GROUND STABILIZATION		
SITE AREA DISPOSITION	STABILIZATION TIME FRAME	STABILIZATION TIME FRAME EXCEPTIONS
• PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
• HIGH QUALITY WATER (HOW) ZONES	7 DAYS	NONE
• SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
• SLOPES 3:1 OR FLATTER	14 DAYS	7-DAYS FOR SLOPES GREATER THAN 50 FEET IN LENGTH
• ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE (EXCEPT FOR PERIMETERS AND HOW 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.



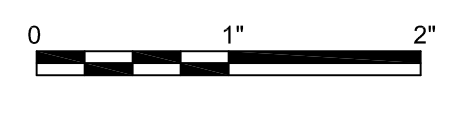
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**Charah**  
COLON MINE SITE STRUCTURAL FILL  
SANFORD, NC



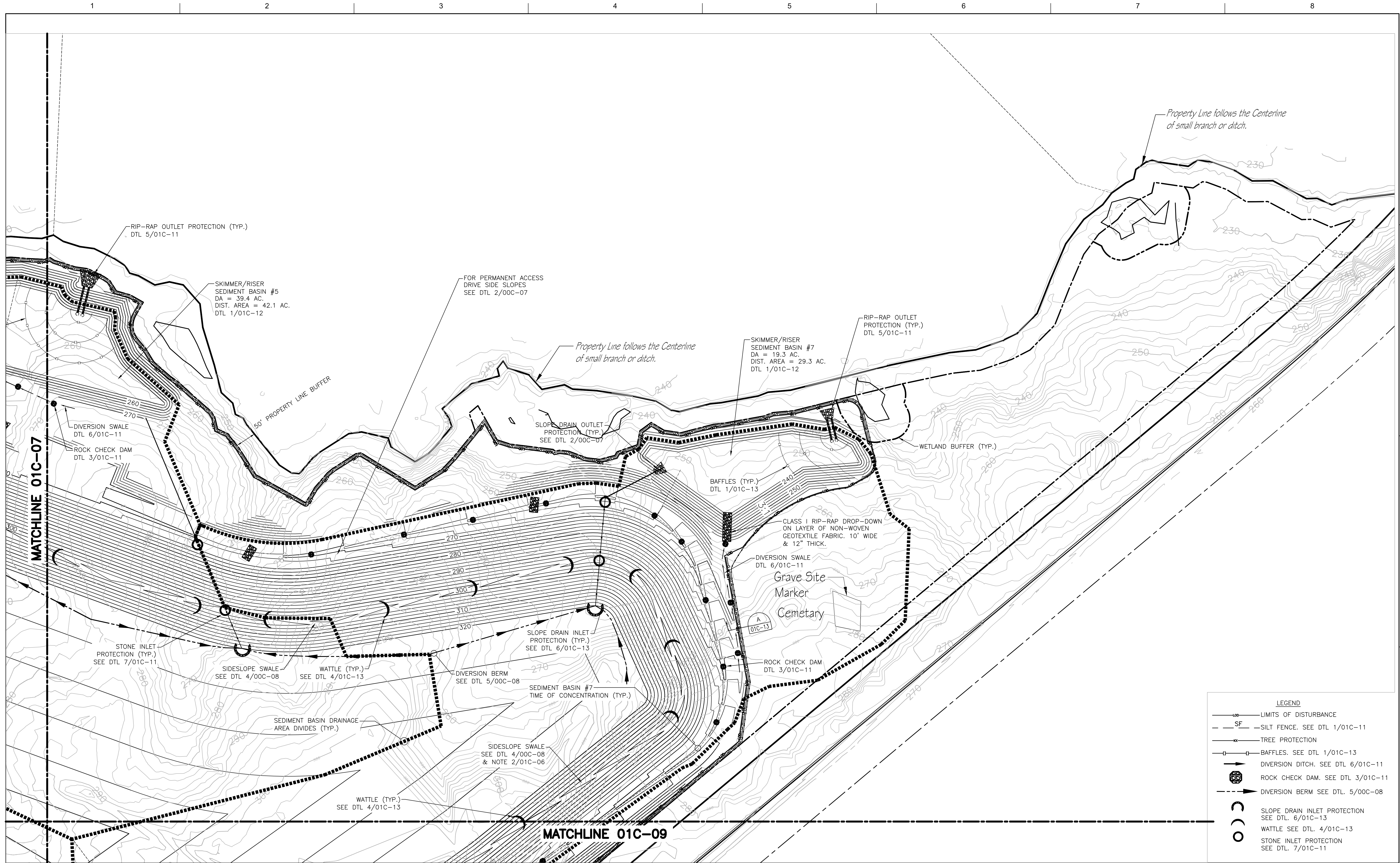
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**01C-06**









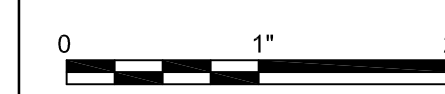
HDR Engineering, Inc.  
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440 S. Church St. Suite 1000  
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704.338.6700  
N.C.B.E.L.S. License Number F-0116

PROJECT MANAGER	M. 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	
ISSUE	DATE	DESCRIPTION
A	11/2014	ISSUED FOR APPROVAL



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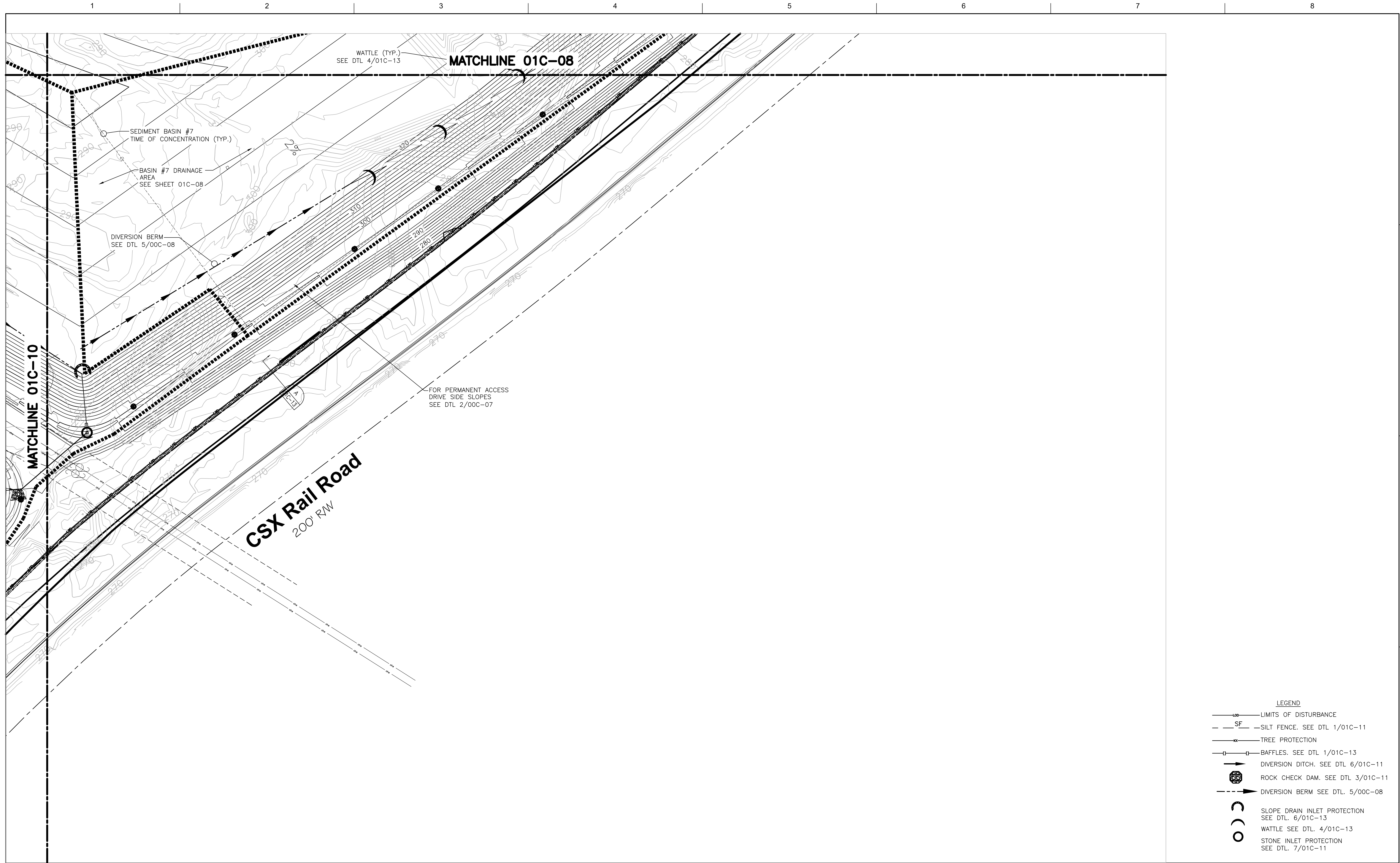
EROSION AND SEDIMENTATION  
CONTROL PLAN - PHASE 2  
PLAN 2



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SHEET  
01C-08





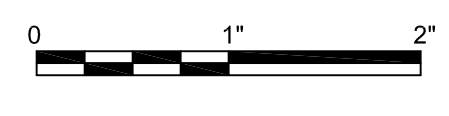
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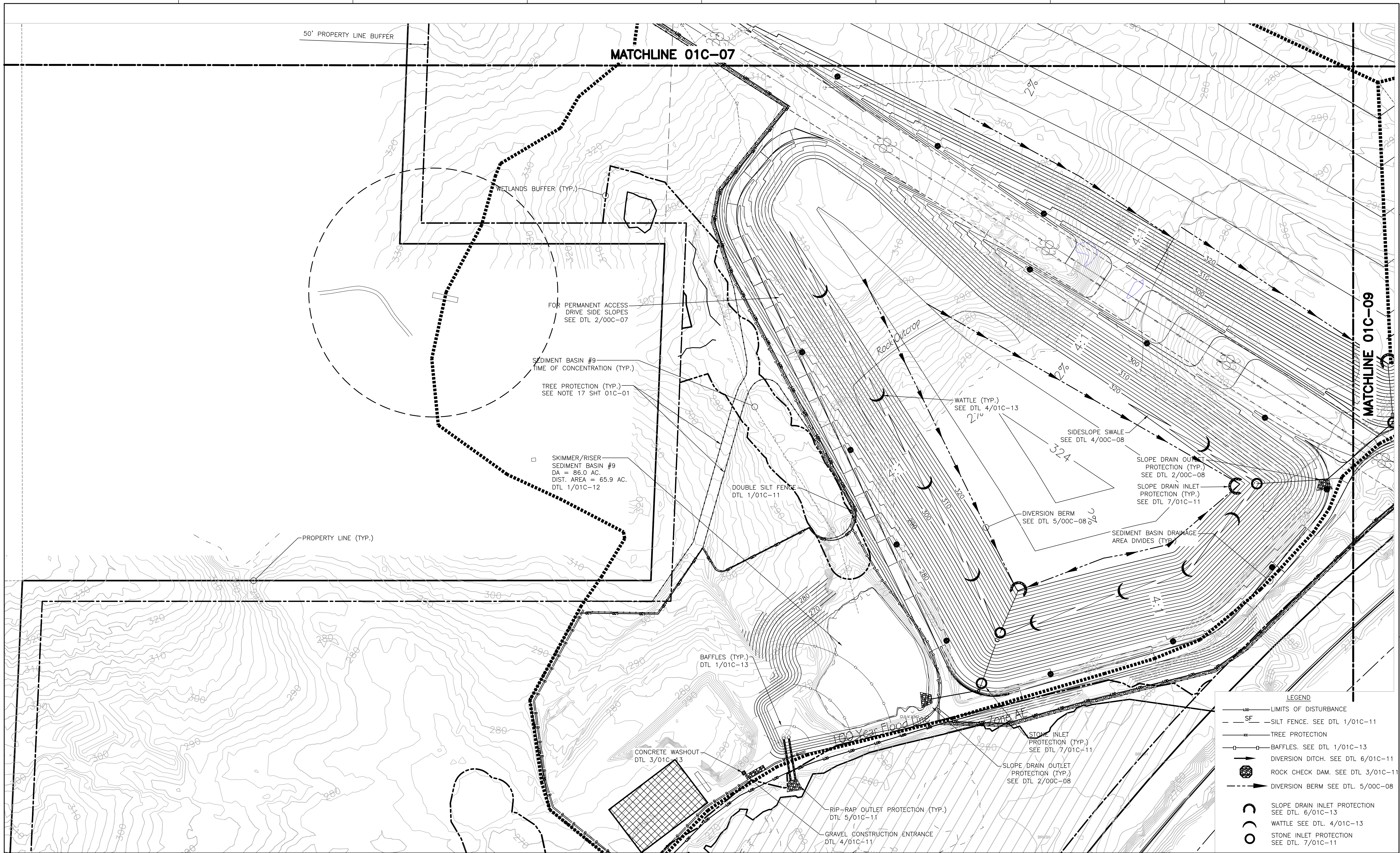
**EROSION AND SEDIMENTATION  
CONTROL PLAN - PHASE 2  
PLAN 3**



FILENAME 01C-09.dwg  
SCALE 1"=100'

SHEET  
**01C-09**





**LEGEND**

- LIMITS OF DISTURBANCE
- - - SF SILT FENCE. SEE DTL 1/01C-11
- - - TREE PROTECTION
- - - BAFFLES. SEE DTL 1/01C-13
- - - DIVERSION DITCH. 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

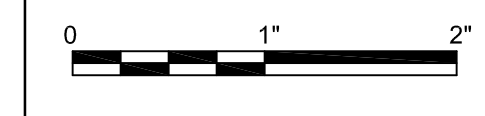


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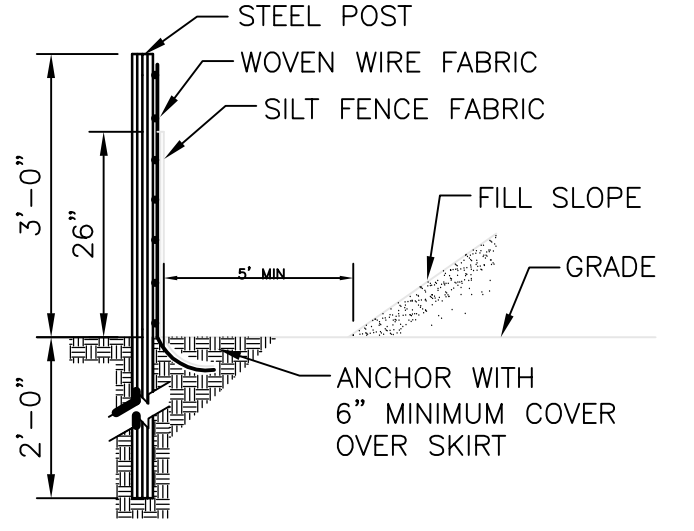
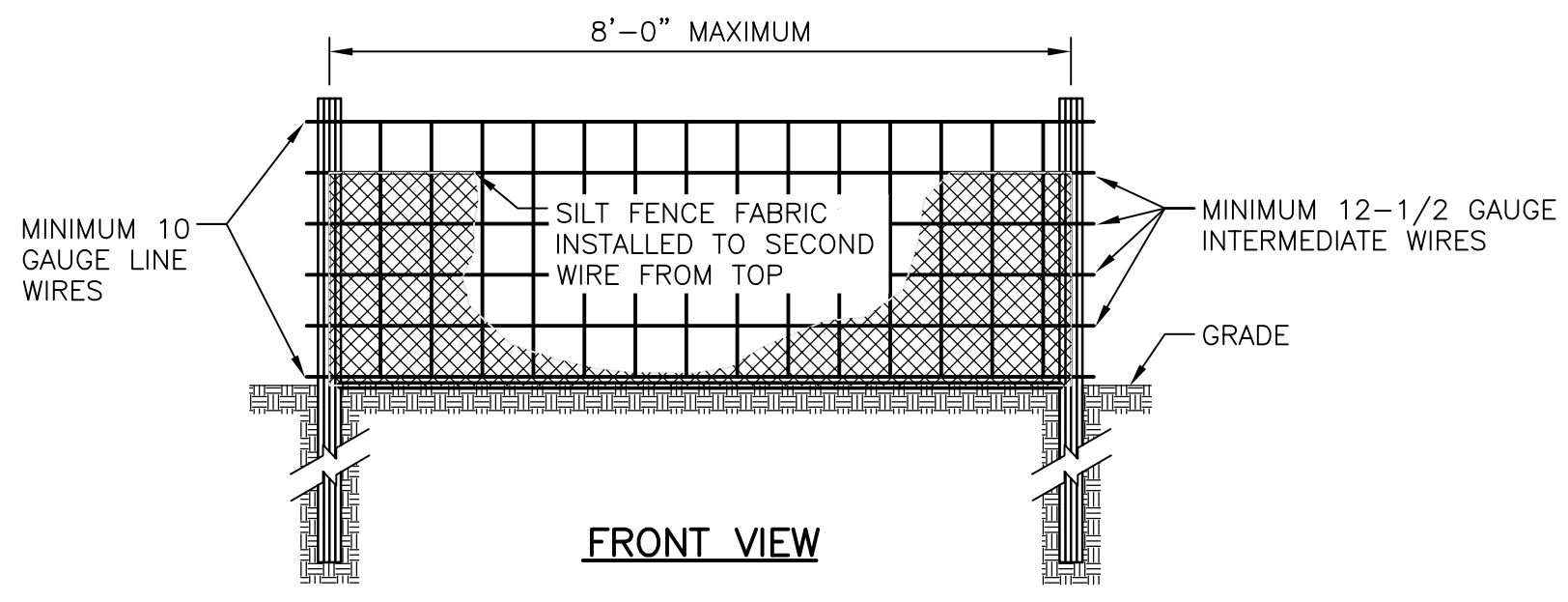


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**01C-10**

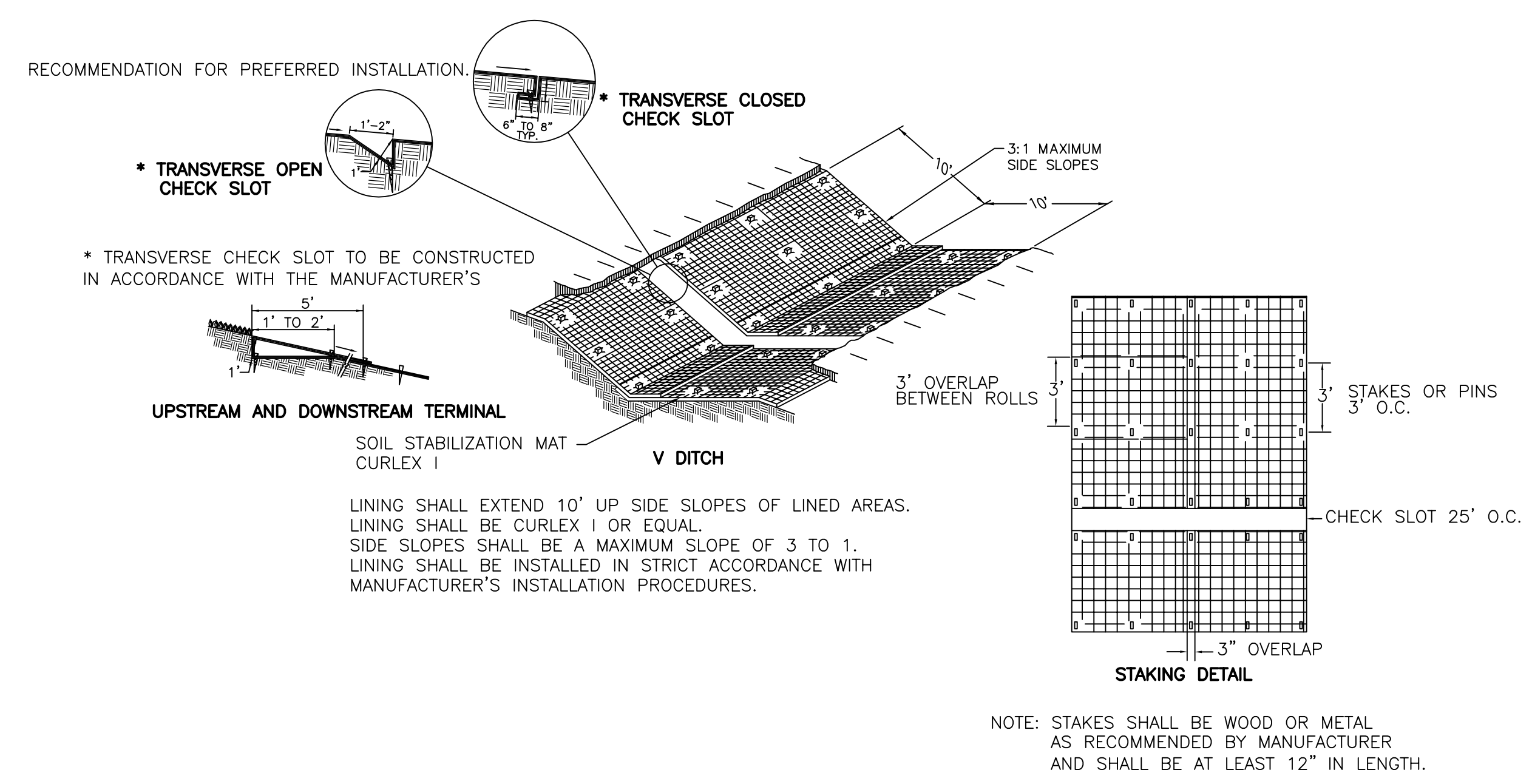
**EROSION AND SEDIMENTATION  
CONTROL PLAN - PHASE 2  
PLAN 4**





**TEMPORARY SILT FENCE DETAIL**  
NOT TO SCALE

- NOTE:**
- USE SILT FENCE ONLY WHEN DRAINAGE AREA DOES NOT EXCEED 1/4 ACRE AND NEVER IN AREAS OF CONCENTRATED FLOW.
  - 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.
  - INSPECT FREQUENTLY AND REPAIR OR REPLACE PROMPTLY AS NEEDED.
  - 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.

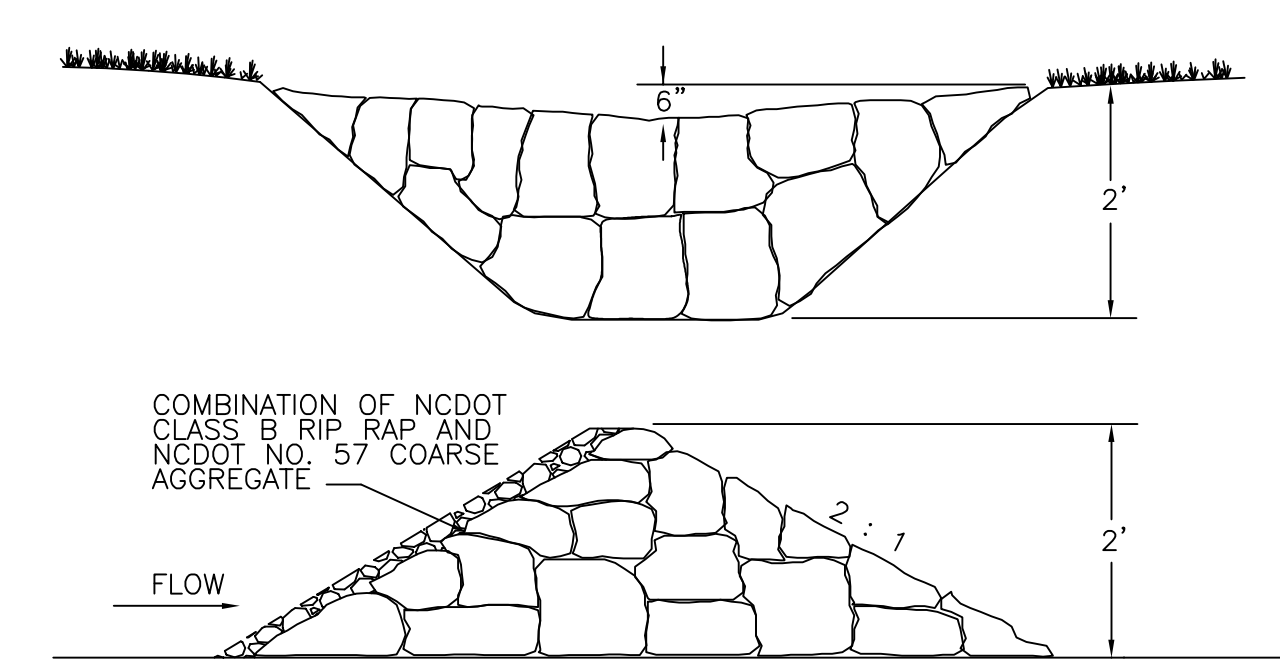


**SLOPE INSTALLATION-EROSION CONTROL BLANKET NOTES:**

- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF FERTILIZER AND SEED.
- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP x 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
- ROLL THE BLANKETS DOWN OR HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED BY PLACING STAPLES/STAKES IN APPROXIMATE LOCATIONS, SEE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH.

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

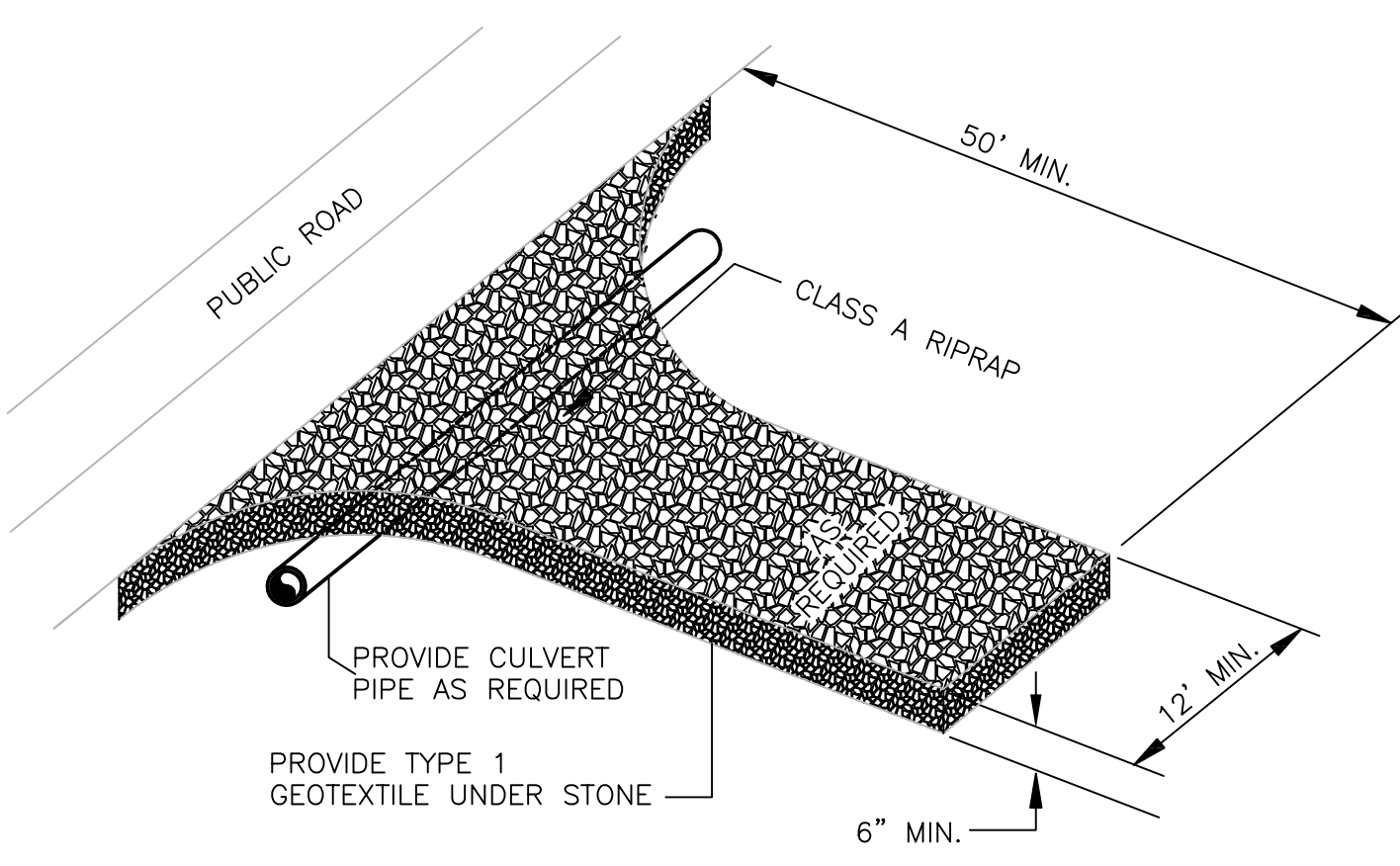
**TYPICAL SECTION FOR SOIL STABILIZATION MAT LINED AREAS (TYP.)**  
NTS



**ROCK CHECK DAM**  
NTS

COMBINATION OF NCDOT CLASS 'B' RIP RAP AND NCDOT NO. 57 COARSE AGGREGATE

NOTE: PLACE EVERY 100' ALONG FLOW PATH.



**TEMPORARY GRAVEL CONSTRUCTION ENTRANCE DETAIL**  
NOT TO SCALE

**NOTES:**

CLASS OR MEDIAN SIZE OF RIPRAP AND LENGTH, WIDTH AND DEPTH OF APRON TO BE SHOWN ON PLANS.

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

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

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

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

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

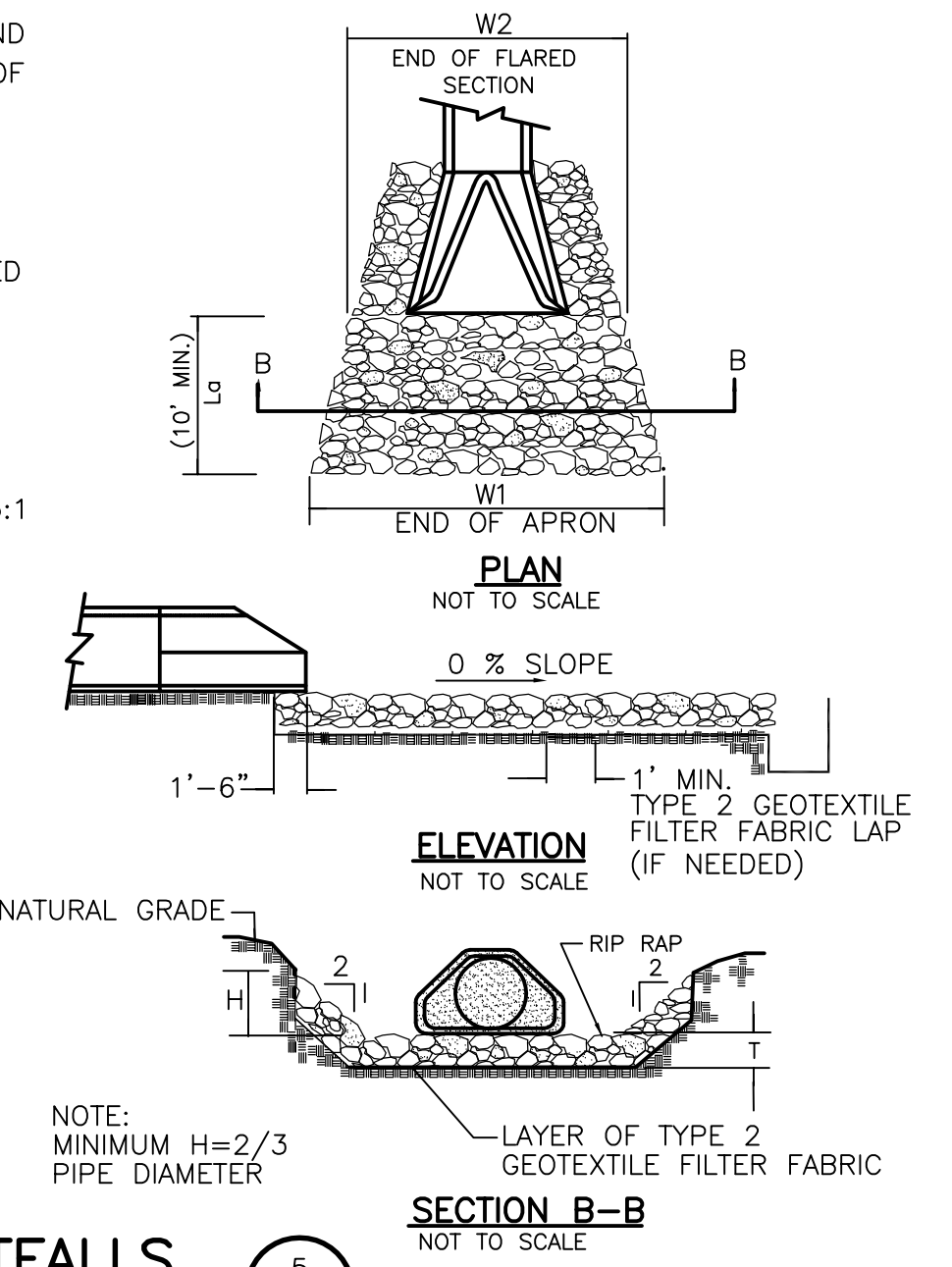
NO BENDS OR CURVES IN THE HORIZONTAL ALIGNMENT OF THE APRON UNLESS OTHERWISE SHOWN.

TYPE 2 GEOTEXTILE FILTER FABRIC SHALL BE INSTALLED ON COMPACTED SUBGRADE PRIOR TO PLACEMENT OF RIP RAP.

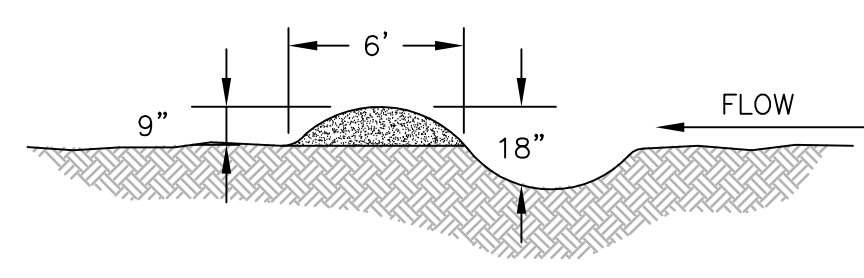
ANY DISTURBED AREA FROM END OF APRON TO RECEIVING CHANNEL MUST BE STABILIZED.

$T = 1.5 \times d_{max}$

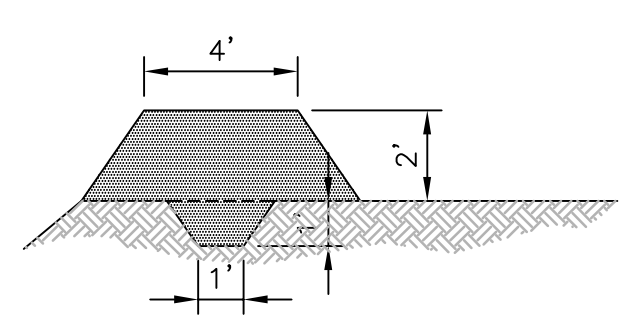
ID	W1	W2	L <sub>a</sub>	D50	D <sub>max</sub>	T
B1	23'	9'	20'	7"	11"	18"
B2	38'	20'	26'	11"	16"	24"
B3	16'	6'	14'	6"	9"	12"
B4	29'	15'	20'	7"	11"	18"
B5	53'	25'	38'	12"	18"	24"
B6	30'	12'	26'	11"	16"	24"
B7	35'	18'	24'	8"	12"	18"
B8	30'	12'	26'	11"	16"	24"
B9	38'	20'	26'	11"	16"	24"



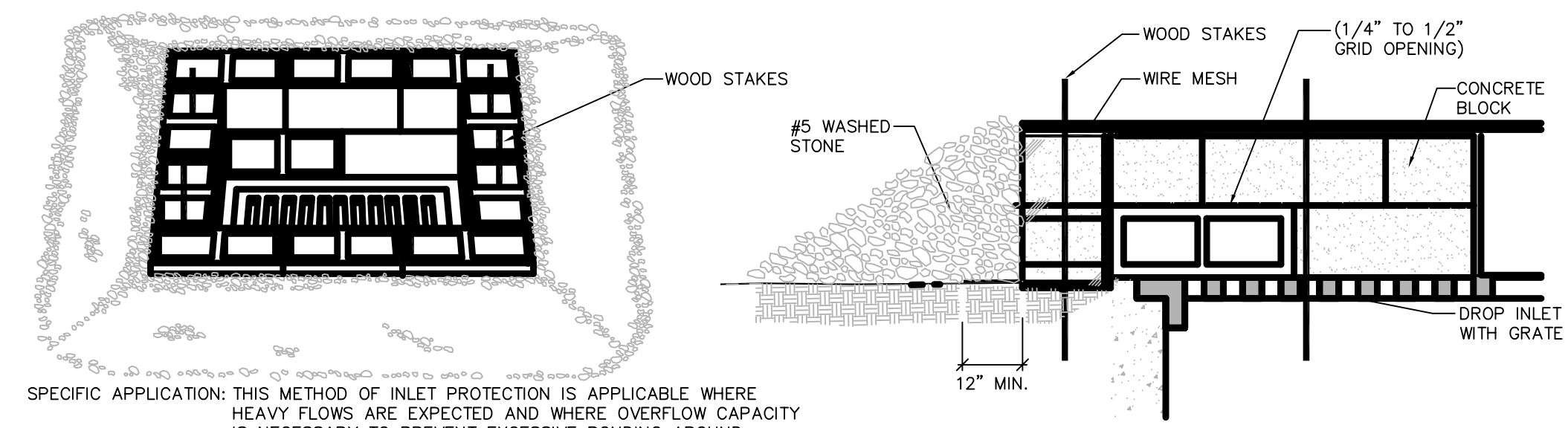
**RIPRAP APRON AT PIPE OUTFALLS**  
NTS



**TEMPORARY DIVERSION CHANNEL**  
N.T.S.

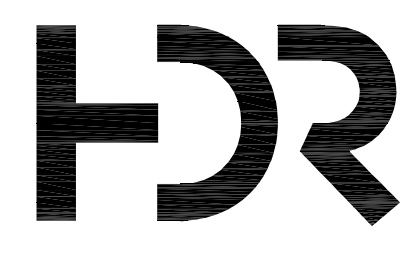


**DIVERSION DIKE**  
N.T.S.



SPECIFIC APPLICATION: THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED AND WHERE OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING AROUND THE STRUCTURE.

**BLOCK AND GRAVEL STONE INLET SEDIMENT FILTER**  
NOT TO SCALE



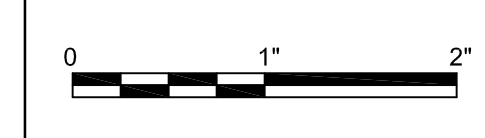
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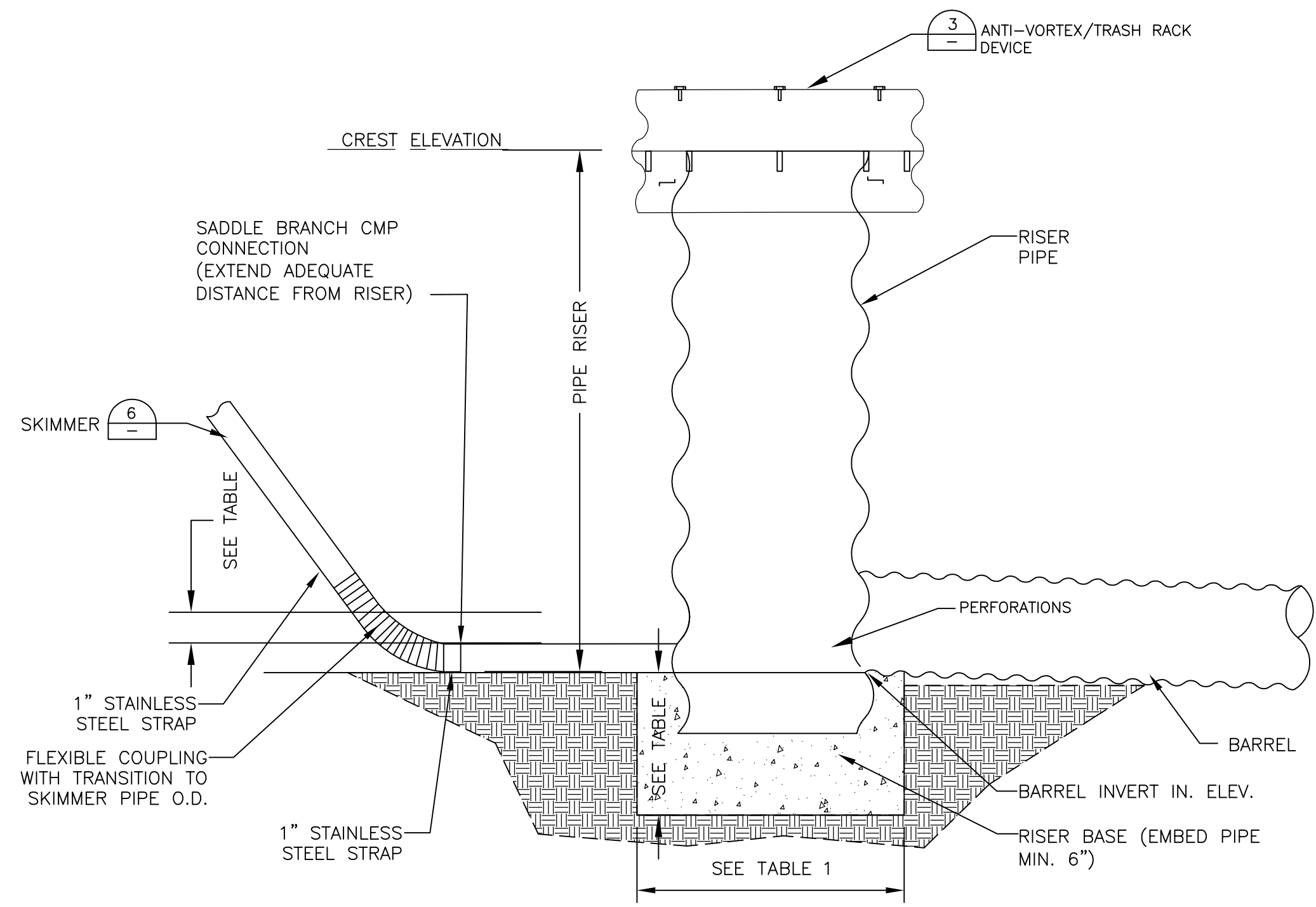


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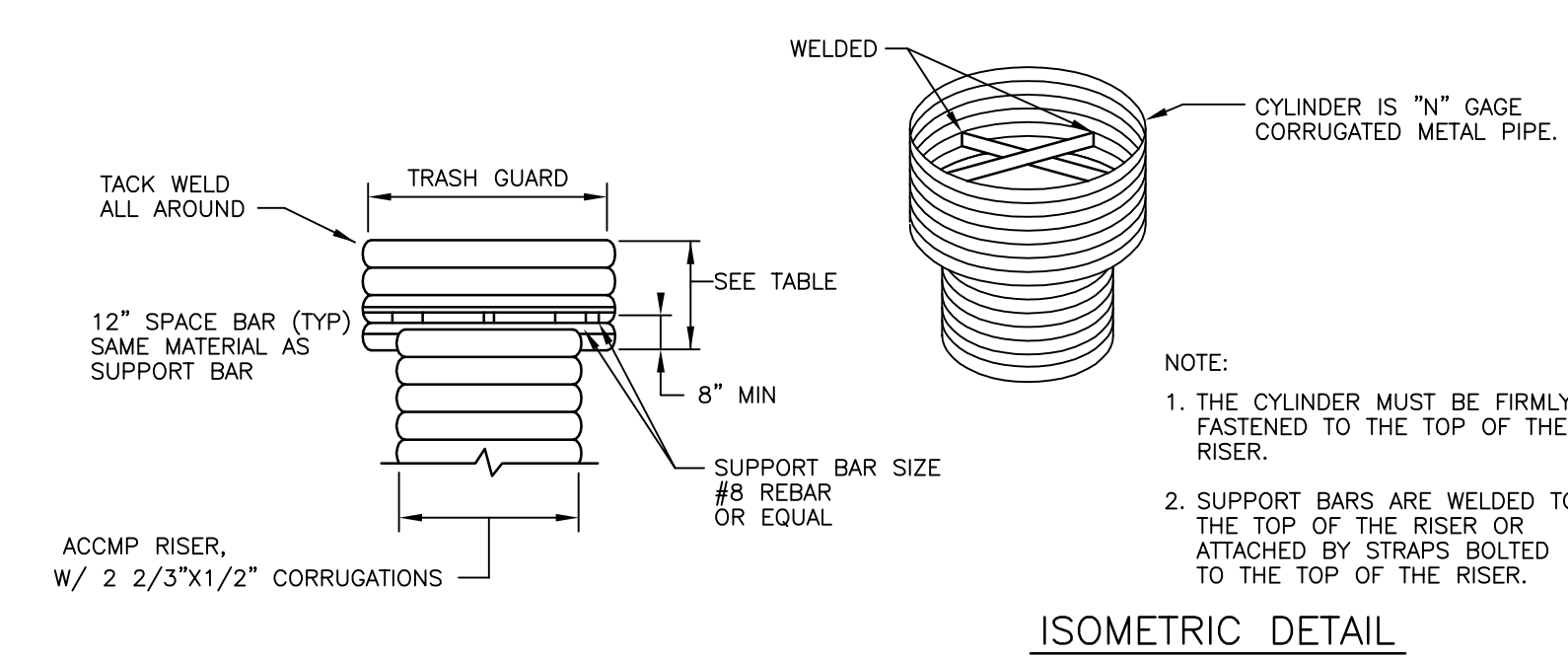
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**EROSION AND SEDIMENTATION CONTROL DETAILS (1 OF 3)**

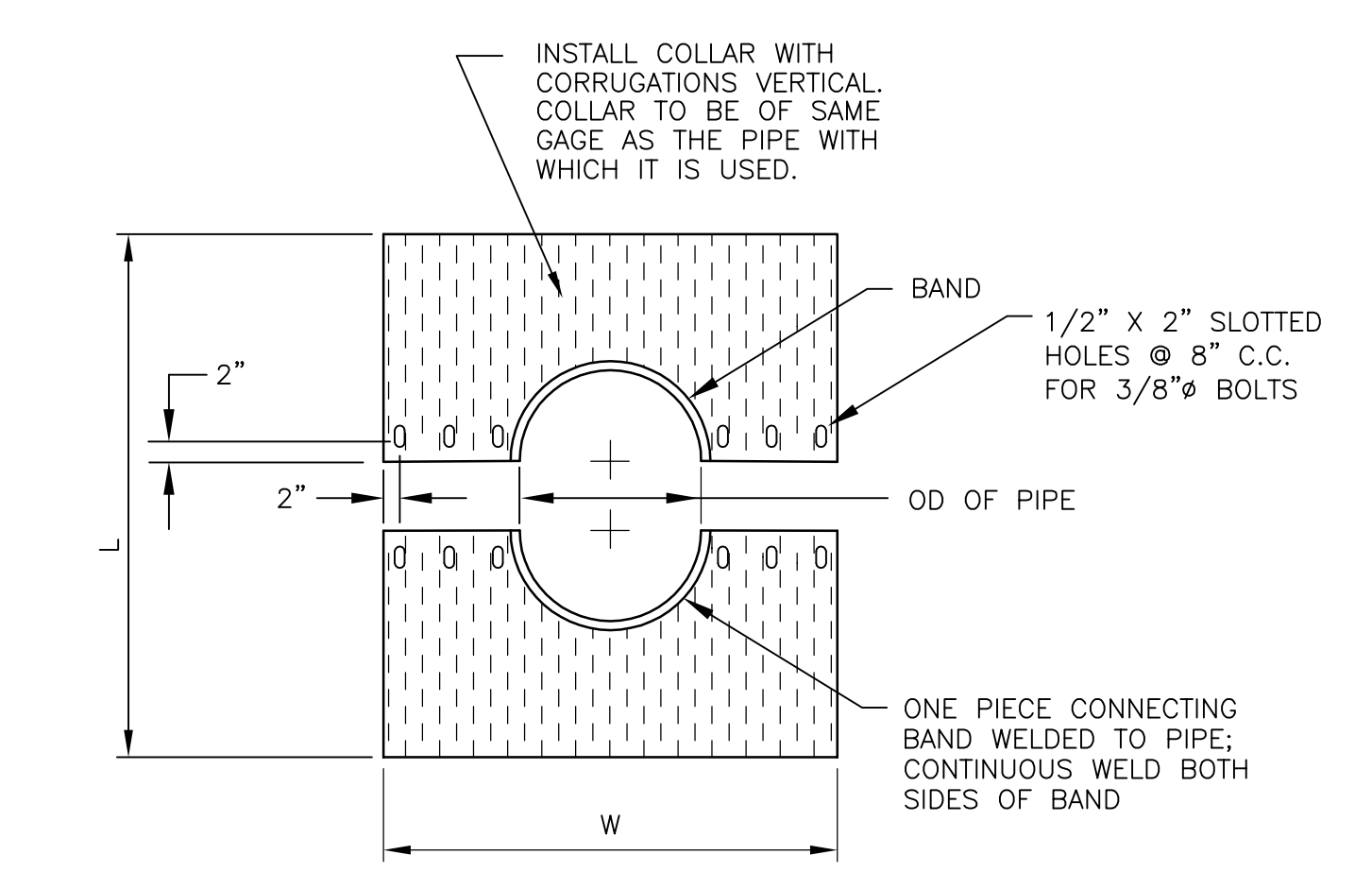




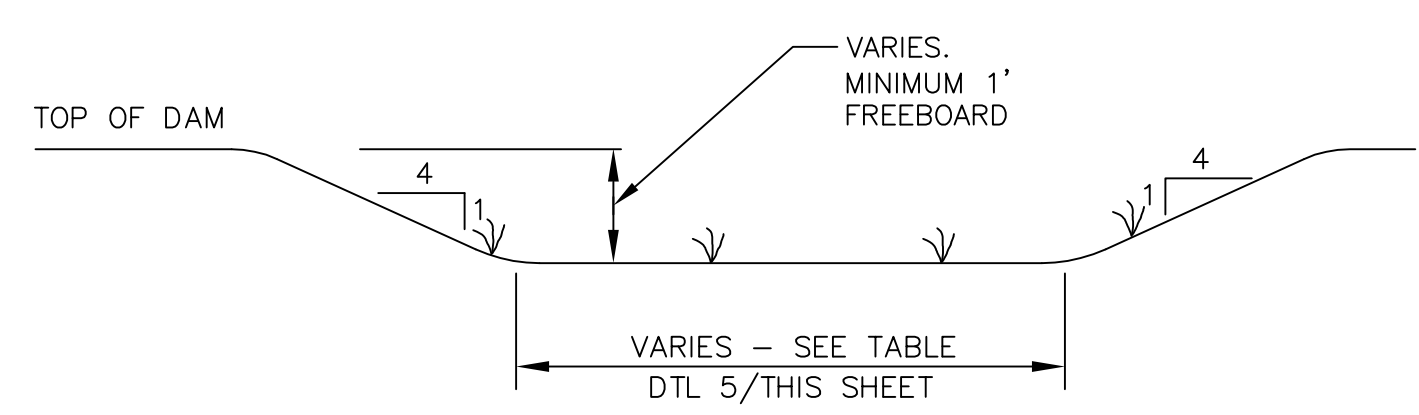
**OUTLET STRUCTURE ENLARGEMENT**  
N.T.S.



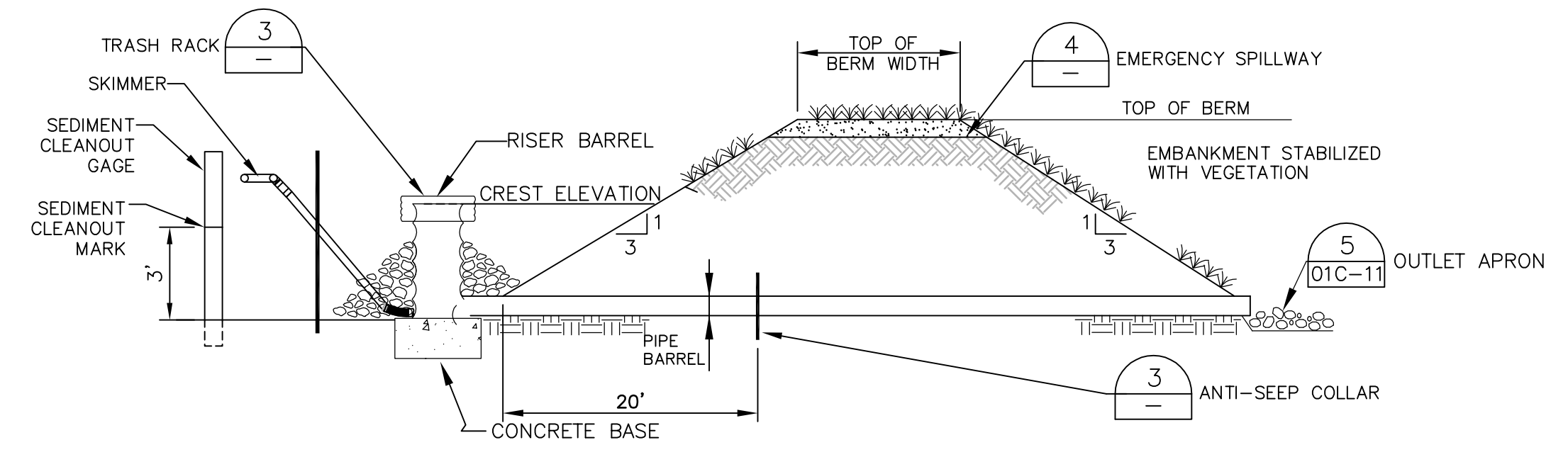
**TRASH RACK DETAIL**  
N.T.S.



**ANTI-SEEP COLLAR DETAIL**  
N.T.S.



**EMERGENCY SPILLWAY TYPICAL**  
N.T.S.



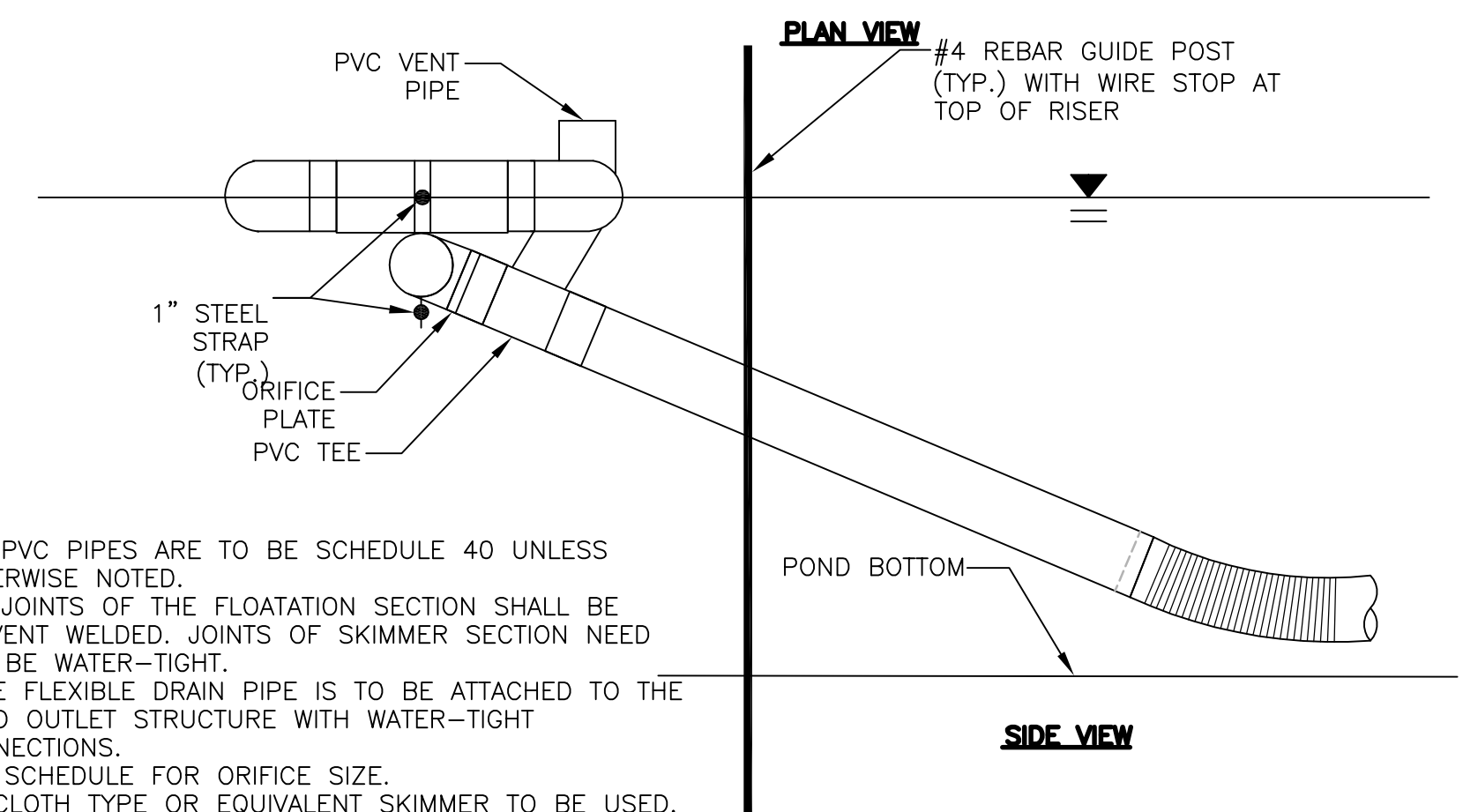
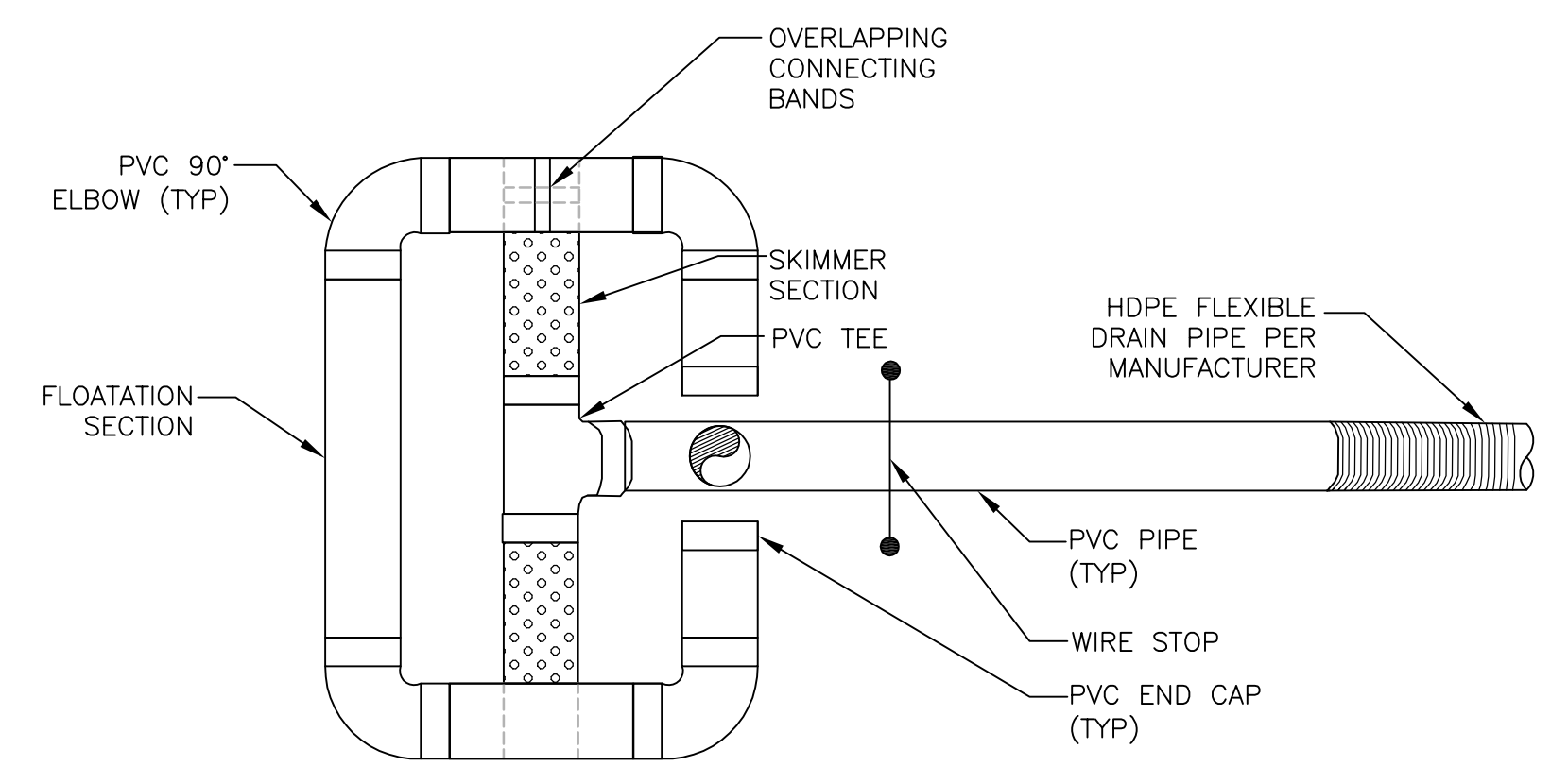
**TABLE 1 - SEDIMENT POND DATA (CONTROLLING PHASE SHOWN)**

SEDIMENT BASIN #	BOTTOM ELEVATION (MSL)	TOP OF BERM ELEVATION (MSL)	TOP OF BERM WIDTH (FT)	EMERGENCY SPILLWAY		CONCRETE BASE DIMENSIONS (FT.)	PIPE RISER			PIPE BARREL		ANTI-SEEP COLLAR		SKIMMER		
				ELEV. (MSL)	WIDTH (FT.)		DIAMETER (IN.)	CREST ELEVATION (MSL)	TRASH GUARD DIAMETER (IN.)	DIAMETER (IN.)	INVERT IN ELEV. (MSL)	INVERT OUT ELEV. (MSL)	L (FT)	W (FT)	SIZE (IN)	ORIFICE (IN)
1	283	289	12	287	19	6x6x1.75	48	286	60	36	283	282.5	5	5	4	2
* 2	259	265	12	263	14	7x7x2	60	262	72	48	259	258.5	6	6	4	2
3	244	250	12	248	10	4.5x4.5x1.5	30	247	42	24	244	243.5	4	4	3	1.25
* 4	261	267	12	265	22	6x6x1.75	48	264	60	36	261	260.5	5	5	3	1.75
* 5	255	262	12	260	52	8x8x2.5	72	258	84	60	255	253.75	7	7	4	3.25
6	249	256	12	254	16	7x7x2	60	252	72	48	249	248.5	6	6	4	2.5
* 7	238	245	12	243	24	7x7x2	54	241	66	42	238	237.50	5.5	5.5	4	2.75
8	273	279	12	277	10	7.5x7.5x2	60	276	72	48	273	272	6	6	3	2.5
* 9	262	269	12	267	50	8x8x2	72	265	84	54	262	260.75	6.5	6.5	5	4.25

\* THESE BASINS ARE SIZED WITH TWO RISER/BARREL OUTLETS. DIMENSIONS SHOWN ARE PER OUTLET.

**MAINTENANCE AND INSPECTION**

1. INSPECT SEDIMENT BASINS AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT AND REPAIR IMMEDIATELY.
2. REMOVE SEDIMENT AND RESTORE THE BASIN TO ITS ORIGINAL DIMENSIONS WHEN IT ACCUMULATES TO ONE-HALF THE DESIGN DEPTH. PLACED REMOVED SEDIMENT IN AN AREA WITH SEDIMENT CONTROLS
3. CHECK EMBANKMENT, SPILLWAYS, AND OUTLET FOR EROSION DAMAGE, AND INSPECT THE EMBANKMENT FOR PIPING AND SETTLEMENT. MAKE ALL NECESSARY REPAIRS IMMEDIATELY. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE RISER AND POOL AREA.
4. ALL CMP SHALL BE FULLY ASPHALT COATED, 16 GA. OR HEAVIER
5. DO NOT PLACE STONE OVER SKIMMER CONNECTION AND FLEXIBLE PIPING



- NOTES:
1. ALL PVC PIPES ARE TO BE SCHEDULE 40 UNLESS OTHERWISE NOTED.
  2. ALL JOINTS OF THE FLOATION 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 POND OUTLET 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.

NOTES:  
1. MSL = MEAN SEA LEVEL  
2. ALL PIPES ARE ASPHALT COATED 16GA OR HEAVIER

**SEDIMENT BASIN SCHEDULE DETAIL**  
N.T.S.



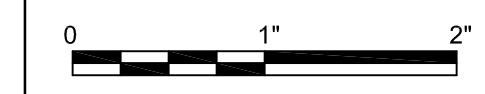
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SCALE | AS SHOWN

SHEET  
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**EROSION AND SEDIMENTATION CONTROL DETAILS (2 OF 3)**



