

CITY OF AUGUSTA
ENGINEERING & ENVIRONMENTAL SERVICES DEPARTMENT
DEANS BRIDGE ROAD LANDFILL - PHASE III
STAGE II SOUTH CELL 2 PHASE I CONSTRUCTION
BLYTHE, GEORGIA
APRIL 2026



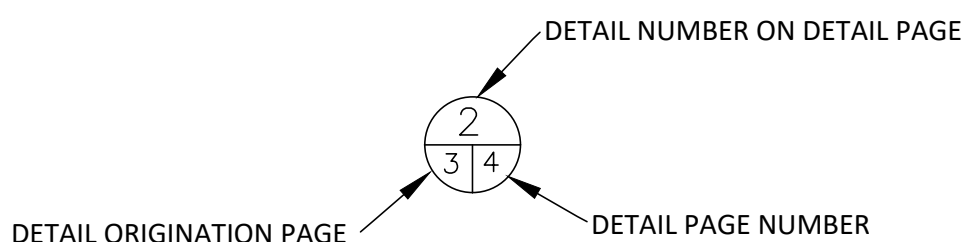
PREPARED FOR:
CITY OF AUGUSTA
ENGINEERING & ENVIRONMENTAL SERVICES
DEPARTMENT
4330 DEANS BRIDGE ROAD
BLYTHE, GEORGIA 30805



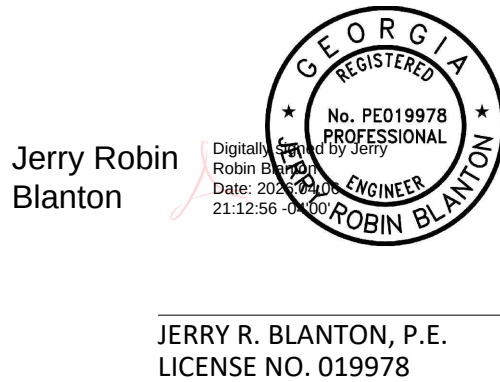
LOCATION MAP

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS, INC.
3175 SATELLITE BOULEVARD, BLDG 600 SUITE 100
DULUTH, GA 30096
PH. (678) 319-9849
GEORGIA CERTIFICATE OF AUTHORIZATION NO. K630165
WWW.SCSENGINEERS.COM
SCS PROJECT NO. 09221050.30

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- GENERAL PROJECT DESCRIPTION:

- ## GENERAL NOTES

1. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL CONSTRUCTION WASTE AND DEBRIS FROM THE PROJECT SITE.
5. THE CONTRACTOR SHALL NOT ENTER BUFFER, RESTORATION, OR RESTRICTED AREAS WITHOUT PRIOR OWNER APPROVAL.
6. LOCATIONS OF UTILITIES AND GAS SYSTEM COMPONENTS ARE APPROXIMATE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD LOCATE UTILITIES AND GAS SYSTEM COMPONENTS PRIOR TO CONSTRUCTION.
7. THE CONTRACTOR SHALL PROTECT WETLANDS, BUFFERS, AND WELLS FROM DISTURBANCE. ANY DAMAGE TO MONITORING WELLS OR SYSTEMS RESULTING FROM THE CONTRACTOR'S OPERATION WILL BE REPAIRED OR REPLACED (AT THE OWNER'S DISCRETION) AT THE CONTRACTOR'S EXPENSE.
8. TREE LINES SHOWN ON THE PLAN ARE APPROXIMATE AND MAY NOT REPRESENT ACTUAL CONDITIONS.
9. THE CONTRACTOR SHALL CLEAN ACCUMULATED SEDIMENT FROM ALL AFFECTED EXISTING AND PROPOSED PONDS AT THE DIRECTION OF THE ENGINEER.
10. UNSUITABLE MATERIALS SHALL BE BLENDED INTO COMMON SOILS STOCKPILED AND COORDINATED WITH AUGUSTA SANITATION.
11. CLEARING DEBRIS SHALL BE PLACED IN THE COMPOSTING AREA. STUMPS SHALL BE CLEAN OF DIRT OR THEY SHALL BE HAULED IN THE C&D AREA AND COORDINATED WITH RICHMOND COUNTY SANITATION.
12. IT IS THE CONTRACTORS' RESPONSIBILITY TO VERIFY ALL SOIL PROPERTIES USED FOR STRUCTURAL FILL. SEE SPECIFICATIONS FOR EARTHWORK.
13. ALL STRUCTURAL FILL SHALL BE TAKEN FROM THE SITE BORROW AREA.
14. IT IS THE CONTRACTORS' RESPONSIBILITY TO PROVIDE ANY NPDES SAMPLING. THE COUNTY WILL PROVIDE MONITORING OF EROSION AND SEDIMENT CONTROL DEVICES THROUGH THE COA FIRM WHICH EMPLOYS QUALIFIED E&S INSPECTORS.
15. BOUNDARY INFORMATION FROM THE BOUNDARY SURVEY EXTRACTED FROM THE PHASE III DESIGN AND OPERATION PLAN PREPARED BY ACC, MAKING USE OF THE BOUNDARY SURVEY PREPARED BY W.R.TOOLE ENGINEERS, INC. DATED FEBRUARY 1, 2002, AND REVISED ON SEPTEMBER 3, 2002.
16. TOPOGRAPHIC INFORMATION BASED ON AERIAL PHOTOGRAPHY PROVIDED BY FIRMATEK LLC, DATED JULY 25, 2025.
17. LOCATIONS OF PIEZOMETERS/BORINGS, ROCK OUTCROPS, EXISTING WELLS FROM SHEET 2 OF THE 5-YR PERMIT RENEWAL REVISION OF THE DEANS BRIDGE ROAD MSW LANDFILL PHASE III DESIGN & OPERATION PLAN, BY ACC, DATED JULY, 2004.
18. EXCESS MATERIAL SHALL BE PLACED IN THE STOCKPILE AREA INDICATED ON THE DRAWINGS.
19. PROPOSED LANDFILL CELL SLOPES SHALL NOT BE STEEPER THAN 3:1 UNLESS SPECIFIED.
20. SOD SHALL BE USED ON ALL INTERIOR POND SLOPES AND IN ALL GRASSED DITCHES.
21. THE CONTRACTOR SHALL OPERATE STORMWATER PUMPS DURING CONSTRUCTION UNTIL EPD ACCEPTANCE OF CELL CONSTRUCTION.
22. EXISTING GRADES SHOWN REPRESENT THE TOPOGRAPHIC INFORMATION BASED ON AERIAL PHOTOGRAPHY PROVIDED BY FIRMATEK, DATED JULY 25, 2025. PROPOSED GRADES SHOWN WITHIN THE LIMITS OF LINER REPRESENT THE TOP OF THE PRIMARY 60-MIL LINER. PROPOSED GRADES SHOWN OUTSIDE THE LIMITS OF LINER ARE FINISHED GRADES PER THE DETAILS.
23. NECESSARY BARRICADES, SUFFICIENT LIGHTS, SIGNS, AND OTHER TRAFFIC CONTROL METHODS AS MAY BE NECESSARY FOR THE PROTECTION AND SAFETY OF THE PUBLIC SHALL BE PROVIDED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT. THIS ALSO INCLUDES ANY TRAFFIC CONTROL NECESSARY FROM THE BORROW AREA.
24. PIPING MAY BE DEFLECTED SLIGHTLY AS NECESSARY TO UTILIZE STANDARD FITTINGS, PER MANUFACTURER'S SPECS.
25. NO EQUIPMENT OR MATERIAL STORAGE IS ALLOWED IN GEORGIA POWER EASEMENT, ATLANTA GAS LIGHT EASEMENT, OR SEWER EASEMENT WITHOUT NECESSARY PERMITS.
26. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL LOCATE AND/OR FIELD VERIFY EXISTING MONITORING WELL, BORINGS, PIEZOMETERS, UTILITIES, AND ACCESS ROADS.
27. THIS PROJECT WILL NOT UTILIZE BUILDING MATERIALS AND PRODUCTS, GEOSYNTHETIC MATERIALS ON SITE WILL BE COVERED PER SECTION 3.2 AND 3.4 OF THE TECHNICAL SPECIFICATIONS FOR HDPE POLYETHYLENE GEOMEMBRANE LINER (S02776) AND GEOSYNTHETIC CLAY LINER (S02077), RESPECTIVELY.

1. PROPERTY LINE INFORMATION FROM "DEANS BRIDGE ROAD LANDFILL PHASE III STAGE II CELL 2 PHASE I CONSTRUCTION DRAWINGS", SHEET 3, WAS UPDATED ON SEPTEMBER 3, 2002.
2. NO GRADING SHALL OCCUR WITHIN 25' OF ANY POWER POLES, GUY WIRES, OR ANY OTHER FEATURE ASSOCIATED WITH THE STRUCTURAL SUPPORT OF THE EXISTING POWER LINES. NECESSARY PERMITS ARE REQUIRED.
3. ANY ROCK ENCOUNTERED IN THE BORROW PIT SHALL BE REMOVED BY AN EXCAVATOR OR A DOZER. NO ROCK SHALL BE BLASTED IN THE BORROW PIT AREA. ANY ROCK ENCOUNTERED IN THE BORROW PIT AREA SHALL BE LOCATED AND REPORTED TO THE ENGINEER IMMEDIATELY.

1. CONTRACTOR SHALL NOT BEGIN CLEARING, GRUBBING, OR SEDIMENT PONDS UNTIL AFTER PROPER EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
2. THE LOCATION OF SOME OF THE EROSION CONTROL DEVICES MAY BE FIELD LOCATED IF DRAINAGE PATTERNS DURING CONSTRUCTION ARE DIFFERENT FROM THE FINAL PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING ANY PHASE OF CONSTRUCTION. ANY CHANGES TO THE PROPOSED DRAINAGE PATTERNS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
3. THE LOCATIONS OF EROSION CONTROL DEVICES SHALL BE ADJUSTED AS CONSTRUCTION PROGRESSES IN ORDER TO MAINTAIN A FUNCTIONING EROSION CONTROL SYSTEM.

- POLLUTION CONTROL AND WASTE DISPOSAL NOTES:

PRODUCT SPECIFIC PRACTICES

PETROLEUM BASED PRODUCTS - CONTAINERS FOR PRODUCTS SUCH AS FUELS, LUBRICANTS AN TARS WILL BE INSPECTED DAILY FOR LEAKS AND SPILLS. THIS INCLUDES ON-SITE VEHICLE AN MACHINERY DAILY INSPECTIONS AND REGULAR PREVENTATIVE MAINTENANCE OF SUCH EQUIPMENT. EQUIPMENT MAINTENANCE AREAS WILL BE LOCATED AWAY FROM STATE WATER, NATURAL DRAINS AND STORM WATER DRAINAGE INLETS. IN ADDITION, TEMPORARY FUELING TANKS SHALL HAVE SECONDARY CONTAINMENT LINER TO PREVENT/MINIMIZE CONTAMINATION. DISCHARGE OF OILS, FUELS AN LUBRICANTS IS PROHIBITED. PROPER DISPOSAL METHODS WILL INCLUDE COLLECTION IN A SUITABLE CONTAINER AND DISPOSAL AS REQUIRED BY LOCAL AN STATE REGULATIONS.

PAINTS / FINISHES / SOLVENTS - ALL PRODUCTS WILL BE STORED IN TIGHTLY SEALED ORIGINAL CONTAINERS WHEN NOT IN USE. EXCESS PRODUCT WILL NOT BE DISCHARGED TO THE STORM WATER COLLECTION SYSTEM. EXCESS PRODUCT, MATERIALS USED WITH THESE PRODUCTS AND PRODUCT CONTAINERS WILL BE DISPOSED OF ACCORDING TO MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.

THE ENTIRE SITE IS WITHIN THE SAME ULTIMATE DRAINAGE BASIN. THE DRAINAGE BASIN DOES NOT CHANGE WITH THE PROPOSED CONSTRUCTION. THE POST CONSTRUCTION DRAINAGE AREA FOR THE SITE FLOWS TO SPIRIT CREEK.

1. HEAVY VEHICULAR TRAFFIC ON THE EXISTING GEOMEMBRANE LINER OR RAIN TARP IS NOT PERMITTED. RUBBER-TIRED ATVS AND TRUCKS ARE PERMITTED IF WHEEL CONTACT IS A MAXIMUM OF 5 PSI.
2. THE PROTECTIVE COVER OR DRAINAGE SAND LAYER SHALL BE PLACED BY LIGHT, WIDE-TRACKED EQUIPMENT HAVING A MAXIMUM CONTACT OF 5 PSI ON A MINIMUM OF 2 FEET OF PROTECTIVE COVER. ONLY NOMINAL COMPACTION SHALL BE APPLIED TO THE DRAINAGE LAYER. OVER COMPACTION DUE TO EQUIPMENT TRAFFIC MUST BE AVOIDED. CARE MUST BE EXERCISED TO ELIMINATE ANY POSSIBILITY OF DAMAGE TO THE GEOSYNTHETICS DURING LINE PROTECTIVE COVER LAYER PLACEMENT. WRINKLES NOTED IN THE GEOSYNTHETICS DURING DRAINAGE LAYER PLACEMENT SHOULD BE RELAXED AND CORRECTED TO THE ENGINEER'S SATISFACTION.
3. ANY DAMAGE TO THE EXISTING GEOSYNTHETICS SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.
4. CONTRACTOR SHALL NOT PUSH PROTECTIVE COVER SAND/DRAINAGE MATERIAL DOWNHILL DURING CONSTRUCTION.
5. UV-RESISTANT SAND BAGS SHALL BE SPACED AT INTERVALS ON A 50-FOOT BY 50-FOOT GRID AND ON A MINIMUM 10-FOOT SPACING ALONG PANEL OVERLAPS AND PANEL EDGES.
6. NO EQUIPMENT SHALL BE ALLOWED TO OPERATE ON THE RAIN TARP, AND ANY TEARS OR DAMAGE TO THE RAIN TARP SHALL BE REPAIRED PRIOR TO PLACEMENT. THE SURFACE OF THE RAIN TARP SHALL BE KEPT RELATIVELY CLEAN AND FREE OF DEBRIS DURING INSTALLATION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING STORMWATER RUNOFF FROM THE ADJACENT LANDFILL SLOPES THROUGH THE USE OF BERMS, DIKES, SWALES, OR OTHER ACCEPTABLE METHODS TO DIRECT STORMWATER AWAY FROM CONSTRUCTION AREAS TO AREAS WHERE THE CONTRACTOR SHALL REMOVE STORMWATER THROUGH THE USE OF TEMPORARY PUMPS OR OTHER MEANS AND METHODS AS DETERMINED BY THE CONTRACTOR.
8. ANY DAMAGE TO THE EXISTING SITE MONITORING WELLS AND GCCS COMPONENTS SHALL BE REPAIRED BY THE CONTRACTOR AT NO COST TO THE OWNER.

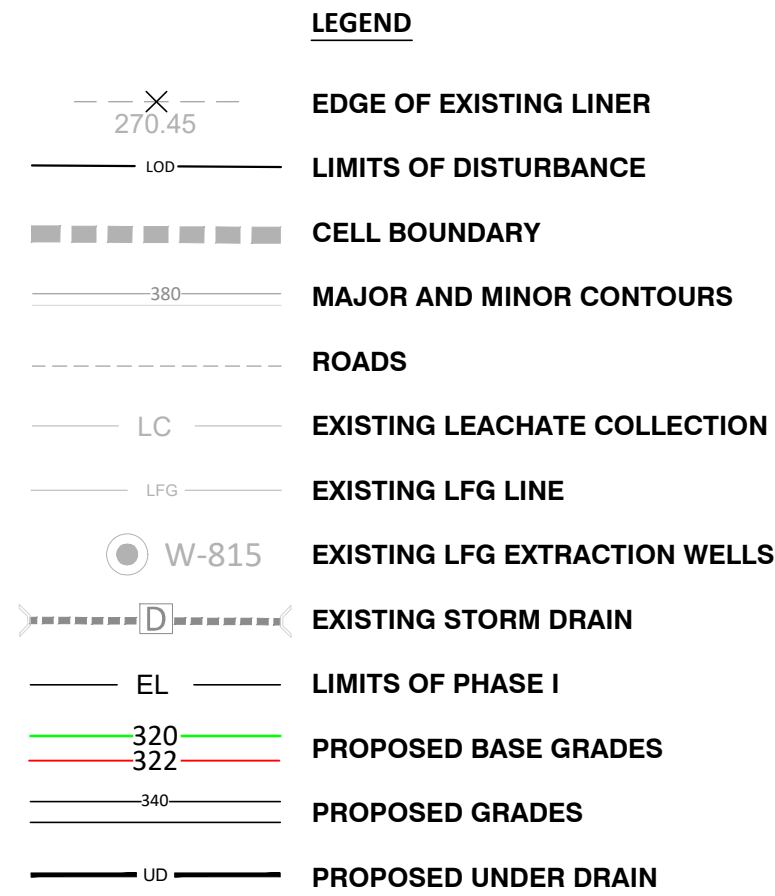
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SCS ENGINEERS STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 3175 SATELLITE BLVD., BLDG 600 SUITE 100 DULUTH, GA 30096 PH. 678 319-8849	DWG NO. SS/CVI PROJ. NO. 02Z1.05D.3D ISS. BY: JRB		Q/A REVIEW BY: APPR BY: JRB		
	CADD FILE:	02 NOTES			
	DATE:	APRIL 2026			
	SCALE:	AS SHOWN			
	DRAWING NO.				
	SHEET	2 of 21			

Blanton,
Jerry R.
Date: 2/26/2026
21-ES-06-0407

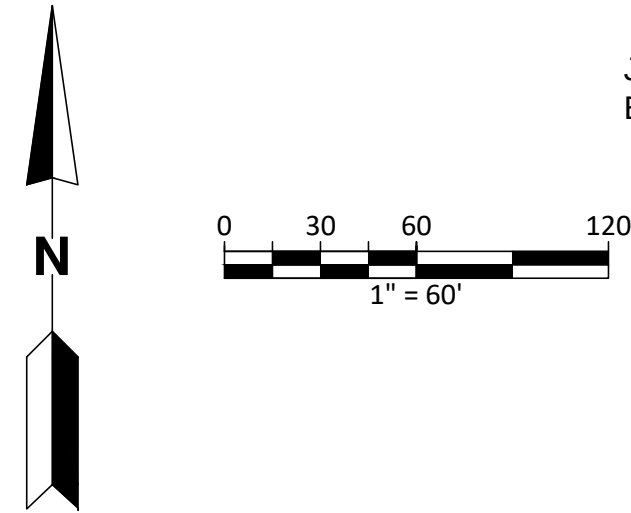
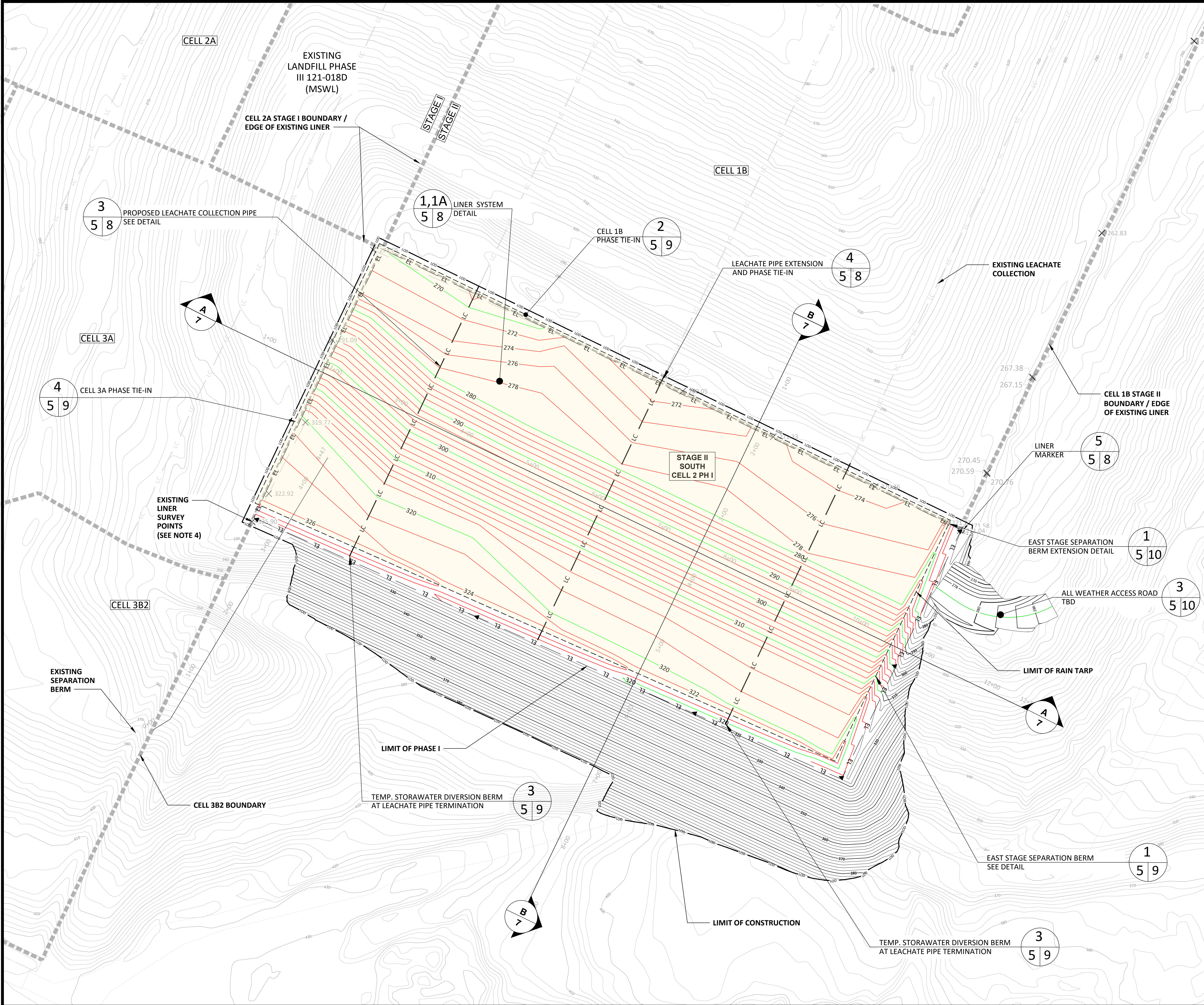
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AUGUSTA-RICHMOND COUNTY LANDFILL 4330 DEANS BRIDGE RD BLYTHE, GEORGIA 30805						
PROJECT TITLE		DEANS BRIDGE ROAD LANDFILL PHASE III STAGE II SOUTH CELL 2 PHASE I CONSTRUCTION	△	04/06/26	ISSUED FOR BID	JRB
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JERRY R. BLANTON, P.E.
 LICENSE NO. 019978



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4/6/2026

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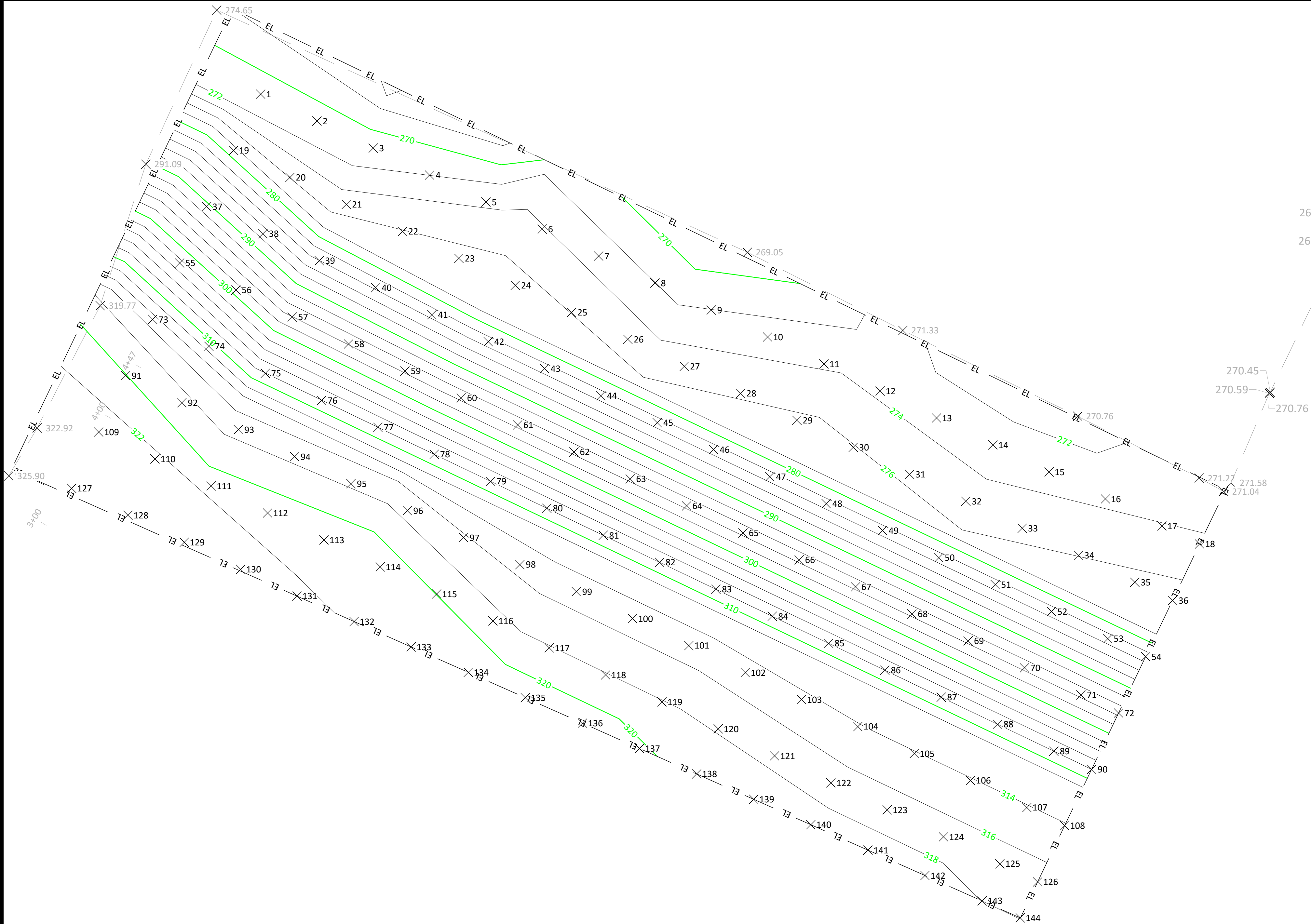
LEGEND	
	EDGE OF EXISTING LINER
	LIMITS OF DISTURBANCE
	CELL BOUNDARY
	MAJOR AND MINOR CONTOURS
	ROADS
	EXISTING LEACHATE COLLECTION
	LIMITS OF PHASE I
	PROPOSED PC GRADES
	PROPOSED GRADES
	PROPOSED LINER MARKER
	PROPOSED LIMIT OF RAIN TARP

- NOTES:
- AERIAL TOPOGRAPHIC SURVEY BY FIRMATEK LLC, DATED JULY 25, 2025. CONTRACTORS AND SUB-CONTRACTORS ARE RESPONSIBLE FOR VERIFICATION OF FIELD CONDITIONS.
 - PROPOSED GRADES ARE TOP OF PROTECTIVE COVER.
 - CARE SHALL BE TAKEN TO AVOID DAMAGING EXISTING FEATURES AND STRUCTURES DURING CONSTRUCTION ACTIVITIES, INCLUDING EXISTING GCCS COMPONENTS, TRAFFIC SIGNS, LITTER FENCE, ETC. IF ANY DAMAGE IS MADE DUE TO CONTRACTOR ACTIVITIES, CONTRACTOR SHALL RESTORE THE DAMAGED STRUCTURE TO PRE-CONSTRUCTION CONDITIONS AT NO COST TO THE CLIENT.
 - ANY STORMWATER DITCH OR CULVERT SHALL BE RETURNED TO ITS ORIGINAL STATE BY THE CONTRACTOR IF DISTURBED DURING CONSTRUCTION.
 - EXISTING LINER SURVEY POINTS COMPLETED BY MORGAN CORP., DATED AUGUST 8, 2025. CONTRACTORS AND SUB-CONTRACTORS ARE RESPONSIBLE FOR VERIFICATION OF FIELD CONDITIONS.
 - CELL 3A AS-BUILT SURVEY COMPLETED BY JAMES G. SWIFT & ASSOCIATES CONSULTING ENGINEERS, DATED DECEMBER 19, 2018, AND CELL 1B AS-BUILT SURVEY COMPLETED BY DAVID L. GARRISON DESIGN PROJECTS SURVEYORS, DATED JULY 29, 2010. CONTRACTORS AND SUB-CONTRACTORS ARE RESPONSIBLE FOR VERIFICATION OF FIELD CONDITIONS.

Jerry Robi
Blanton

CHK BY	JRB
DESCRIPTION	ISSUED FOR BID
DATE	04/06/26
REV	1
SHEET TITLE PROTECTIVE COVER GRADING PLAN	
PROJECT TITLE DEANS BRIDGE ROAD LANDFILL PHASE III STAGE II SOUTH CELL 2 PHASE I CONSTRUCTION	
CLIENT AUGUSTA-RICHMOND COUNTY LANDFILL 4330 DEANS BRIDGE RD BLYTHE, GEORGIA 30805	
SCS ENGINEERS STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 3175 SATELLITE BLVD, BLDG 600 SUITE 100 DULUTH, GA 30096 PH 404 678 319-9849 FAX 404 678 319-9849 C/O A/RW INC. JRB DWG. NO. 09221050.30 CHK BY: SS APP BY: JRB	
CADD FILE: 05 PROTECTIVE COVER	
DATE: APRIL 2026	
SCALE: AS SHOWN	
DRAWING NO.	
SHEET 5 of 21	

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NOTES:

1. EXISTING LINER SURVEY POINTS COMPLETED BY MORGAN CORP., DATED AUGUST 8, 2025. CONTRACTORS AND SUB-CONTRACTORS ARE RESPONSIBLE FOR VERIFICATION OF FIELD CONDITIONS.

Point Table			
Point #	Northing	Easting	Elevation
1	1218164.4554	669739.0081	271.005
2	1218142.8453	669784.0969	270.878
3	1218121.2352	669829.1857	270.909
4	1218099.6251	669874.2746	271.981
5	1218078.0149	669919.3634	273.535
6	1218056.4048	669964.4522	274.147
7	1218034.7947	670009.5410	273.107
8	1218013.1845	670054.6299	272.034
9	1217991.5744	670099.7187	272.035
10	1217969.9643	670144.8075	272.943
11	1217948.3542	670189.8963	273.744
12	1217926.7440	670234.9852	273.749
13	1217905.1339	670280.0740	273.310
14	1217883.5238	670325.1628	272.986
15	1217861.9136	670370.2517	273.221
16	1217840.3035	670415.3405	273.677
17	1217818.6934	670460.4293	274.122
18	1217804.2024	670490.6642	274.458
19	1218119.3666	669717.3979	278.721
20	1218097.7565	669762.4868	275.961
21	1218076.1464	669807.5756	275.132
22	1218054.5362	669852.6644	276.079
23	1218032.9261	669897.7533	276.552
24	1218011.3160	669942.8421	276.597
25	1217989.7058	669987.9309	275.949
26	1217968.0957	670033.0197	275.105
27	1217946.4856	670078.1086	275.048
28	1217924.8755	670123.1974	275.735
29	1217903.2653	670168.2862	276.348
30	1217881.6552	670213.3750	276.126
31	1217860.0451	670258.4639	275.574
32	1217838.4349	670303.5527	275.092
33	1217816.8248	670348.6415	275.447
34	1217795.2147	670393.7304	275.959
35	1217773.6046	670438.8192	276.508
36	1217759.1136	670469.0541	276.753
37	1218074.2778	669695.7878	290.695
38	1218052.6677	669740.8766	287.107
39	1218031.0575	669785.9655	284.069
40	1218009.4474	669831.0543	283.677
41	1217987.8373	669876.1431	283.273
42	1217966.2271	669921.2320	282.996
43	1217944.6170	669966.3208	282.996
44	1217923.0069	670011.4096	282.996
45	1217901.3968	670056.4984	282.996
46	1217879.7866	670101.5873	282.996
47	1217858.1765	670146.6761	282.996
48	1217836.5664	670191.7649	282.996
49	1217814.9562	670236.8537	282.996
50	1217793.3461	670281.9426	282.996
51	1217771.7360	670327.0314	282.996
52	1217750.1259	670372.1202	282.996
53	1217728.5157	670417.2091	282.996
54	1217714.0248	670447.4439	282.996
55	1218029.1890	669674.1777	302.666
56	1218007.5788	669719.2665	299.081
57	1217985.9687	669764.3553	296.074
58	1217964.3586	669809.4442	295.863
59	1217942.7484	669854.5330	295.645
60	1217921.1383	669899.6218	295.496
61	1217899.5282	669944.7107	295.496
62	1217877.9181	669989.7995	295.496
63	1217856.3079	670034.8883	295.496
64	1217834.6978	670079.9771	295.496
65	1217813.0877	670125.0660	295.496
66	1217791.4775	670170.1548	295.496
67	1217769.8674	670215.2436	295.496
68	1217748.2573	670260.3324	295.496
69	1217726.6472	670305.4213	295.496
70	1217705.0370	670350.5101	295.496
71	1217683.4269	670395.5989	295.496
72	1217668.9360	670425.8338	295.496

Point Table			
Point #	Northing	Easting	Elevation
73	1217984.1001	669652.5676	314.721
74	1217962.4900	669697.6564	311.132
75	1217940.8799	669742.7452	308.071
76	1217919.2697	669787.8340	308.043
77	1217897.6596	669832.9229	308.015
78	1217876.0495	669878.0117	307.996
79	1217854.4394	669923.1005	307.996
80	1217832.8292	669968.1894	307.996
81	1217811.2191	670013.2782	307.996
82	1217789.6090	670058.3670	307.996
83	1217767.9988	670103.4558	307.996
84	1217746.3887	670148.5447	307.996
85	1217724.7786	670193.6335	307.996
86	1217703.1685	670238.7223	307.996
87	1217681.5583	670283.8111	307.996
88	1217659.9482	670328.9000	307.996
89	1217638.3381	670373.9888	307.996
90	1217623.8471	670404.2237	307.996
91	1217939.0113	669630.9574	320.051
92	1217917.4012	669676.0463	318.596
93	1217895.7910	669721.1351	317.254
94	1217874.1809	669766.2239	317.458
95	1217852.5708	669811.3127	317.671
96	1217830.9607	669856.4016	317.334
97	1217809.3505	669901.4904	316.216
98	1217787.7404	669946.5792	315.328
99	1217766.1303	669991.6681	314.996
100	1217744.5201	670036.7569	314.989
101	1217722.9100	670081.8457	314.982
102	1217701.2999	670126.9345	314.742
103	1217679.6898	670172.0234	314.426
104	1217658.0796	670217.1122	314.154
105	1217636.4695	670262.2010	314.119
106	1217614.8594	670307.2898	314.120
107	1217593.2492	670352.3787	314.121
108	1217578.7583	670382.6136	314.121
109	1217893.9225	669609.3473	322.503
110	1217872.3123	669654.4361	322.176
111	1217850.7022	669699.5250	321.127
112	1217829.0921	669744.6138	320.977
113	1217807.4820	669789.7026	320.753
114	1217785.8718	669834.7914	320.554
115	1217764.2617	669879.8803	319.954
116	1217742.6516	669924.9691	318.690
117	1217721.0414	669970.0579	318.123
118	1217699.4313	670015.1467	318.112
119	1217677.8212	670060.2356	318.068
120	1217656.2111	670105.3244	317.790
121	1217634.6009	670150.4132	317.386
122	1217612.9908	670195.5021	317.000
123	1217591.3807	670240.5909	316.948
124	1217569.7705	670285.6797	316.949
125	1217548.1604	670330.7685	316.687
126	1217533.6852	670360.9706	316.687
127	1217848.8336	669587.7372	323.816
128	1217827.2235	669632.8260	323.772
129	1217805.6134	669677.9148	323.701
130	1217784.0033	669723.0037	323.574
131	1217762.5003	669768.1438	323.223
132	1217742.1663	669813.8443	321.978
133	1217721.8322	669859.5447	321.896
134	1217701.4981	669905.2451	321.768
135	1217681.1641	669950.9455	321.628
136	1217660.8300	669996.6460	321.514
137	1217640.4960	670042.3464	321.263
138	1217620.1619	670088.0468	319.948
139	1217599.8279	670133.7472	319.842
140	1217579.4938	670179.4477	319.673
141	1217559.1598	670225.1481	319.523
142	1217538.8257	670270.8485	319.394
143	1217518.4917	670316.5489	319.265
144	1217504.8987	670347.0990	319.136

ISSUED FOR BID
NOT FOR CONSTRUCTION
4/6/2026

Jerry Robin Blanton

Digitally signed by Jerry Robin Blanton
Date: 2026.04.06 21:19:54
No. 0619978
JERRY R. BLANTON, P.E.
LICENSE NO. 013978

CHK BY: JRB

DESCRIPTION: ISSUED FOR BID

DATE: 04/06/26

REV: 1

SHEET TITLE: LINER CERTIFICATION PLAN

PROJECT TITLE: DEANS BRIDGE ROAD LANDFILL PHASE III STAGE II SOUTH CELL 2 PHASE I CONSTRUCTION

CLIENT: AUGUSTA-RICHMOND COUNTY LANDFILL 4330 DEANS BRIDGE RD BLYTHE, GEORGIA 30805

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
3175 SATELLITE BLVD, BLDG 600 SUITE 100
DULUTH, GA 30096
PH. 678.319-9849

CJA:RAW:JRB
DWA:JRB
SS/CM
SS

CJA:RAW:JRB
DWA:JRB
SS/CM
SS

CADD FILE: 06 LINER CERT

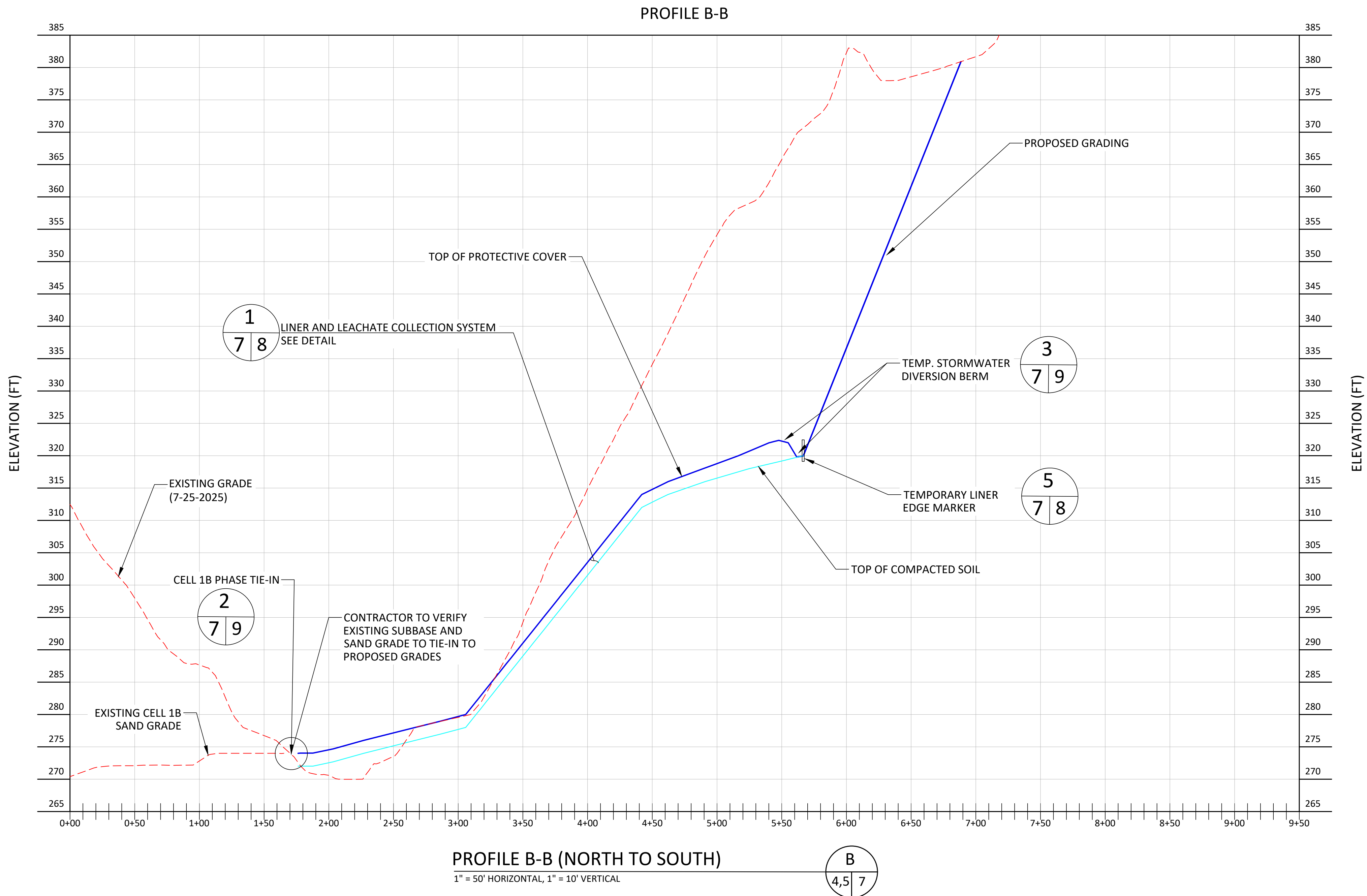
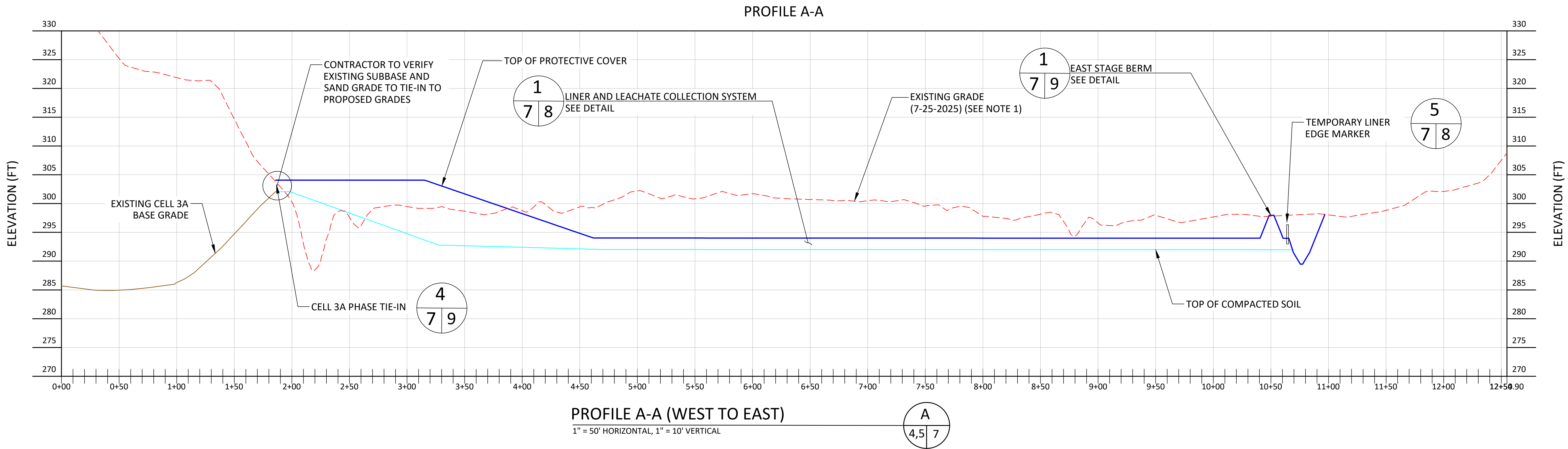
DATE: APRIL 2026

SCALE: AS SHOWN

DRAWING NO.

SHEET 6 of 21

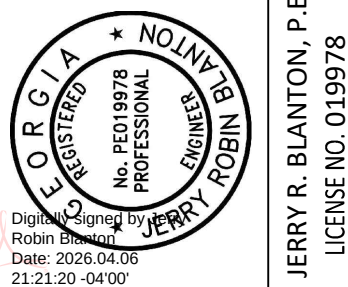
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NOTES:

- AERIAL TOPOGRAPHIC SURVEY BY FIRMATEK LLC, DATED JULY 25, 2025.
- CELL 3A AS-BUILT SURVEY COMPLETED BY JAMES G. SWIFT & ASSOCIATES CONSULTING ENGINEERS, DATED DECEMBER 19, 2018, AND CELL 1B AS-BUILT SURVEY COMPLETED BY DAVID L. GARRISON DESIGN PROJECTS SURVEYORS, DATED JULY 29, 2010.

Jerry Robin Blanton



CHK BY	DESCRIPTION	DATE	REV
JRB	ISSUED FOR BID	04/06/26	1
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SHEET TITLE	PROJECT TITLE
PROFILES	DEANS BRIDGE ROAD LANDFILL PHASE III STAGE II SOUTH CELL 2 PHASE I CONSTRUCTION

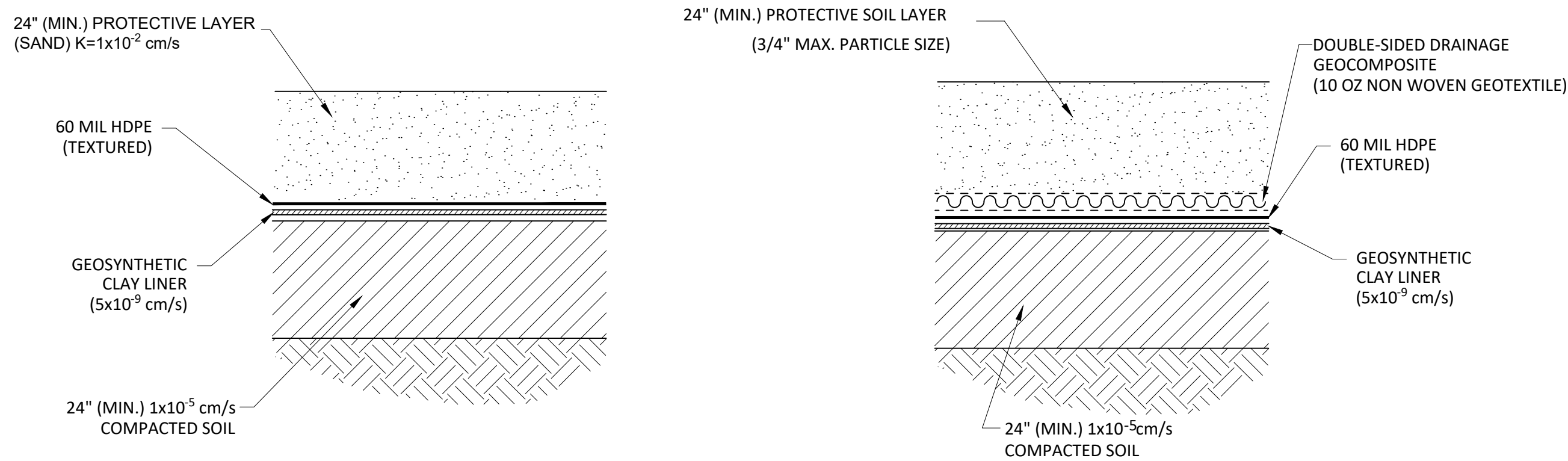
CLIENT
AUGUSTA-RICHMOND COUNTY LANDFILL 4330 DEANS BRIDGE RD BLYTHE, GEORGIA 30805

SCS ENGINEERS	DATE
STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 3175 SATELLITE BLVD, BLDG 600 SUITE 100 DULUTH, GA 30096 PH. 678 319-9849	APRIL 2026
PROJ. NO. 09221050.30 DWN. BY: SS/CM CHK. BY: JRB	SCALE: AS SHOWN
DRAW. BY: JRB APP. BY: JRB	DRAWING NO.

CADD FILE:	SHEET
07 PROFILES	7 of 21

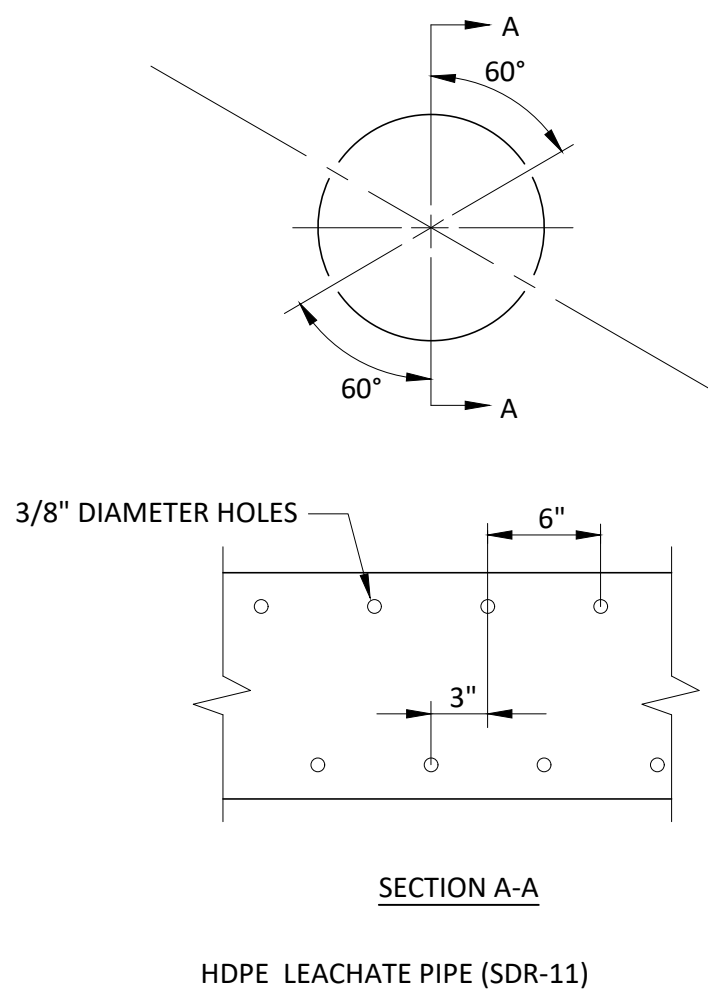
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NOT FOR CONSTRUCTION
4/6/2026

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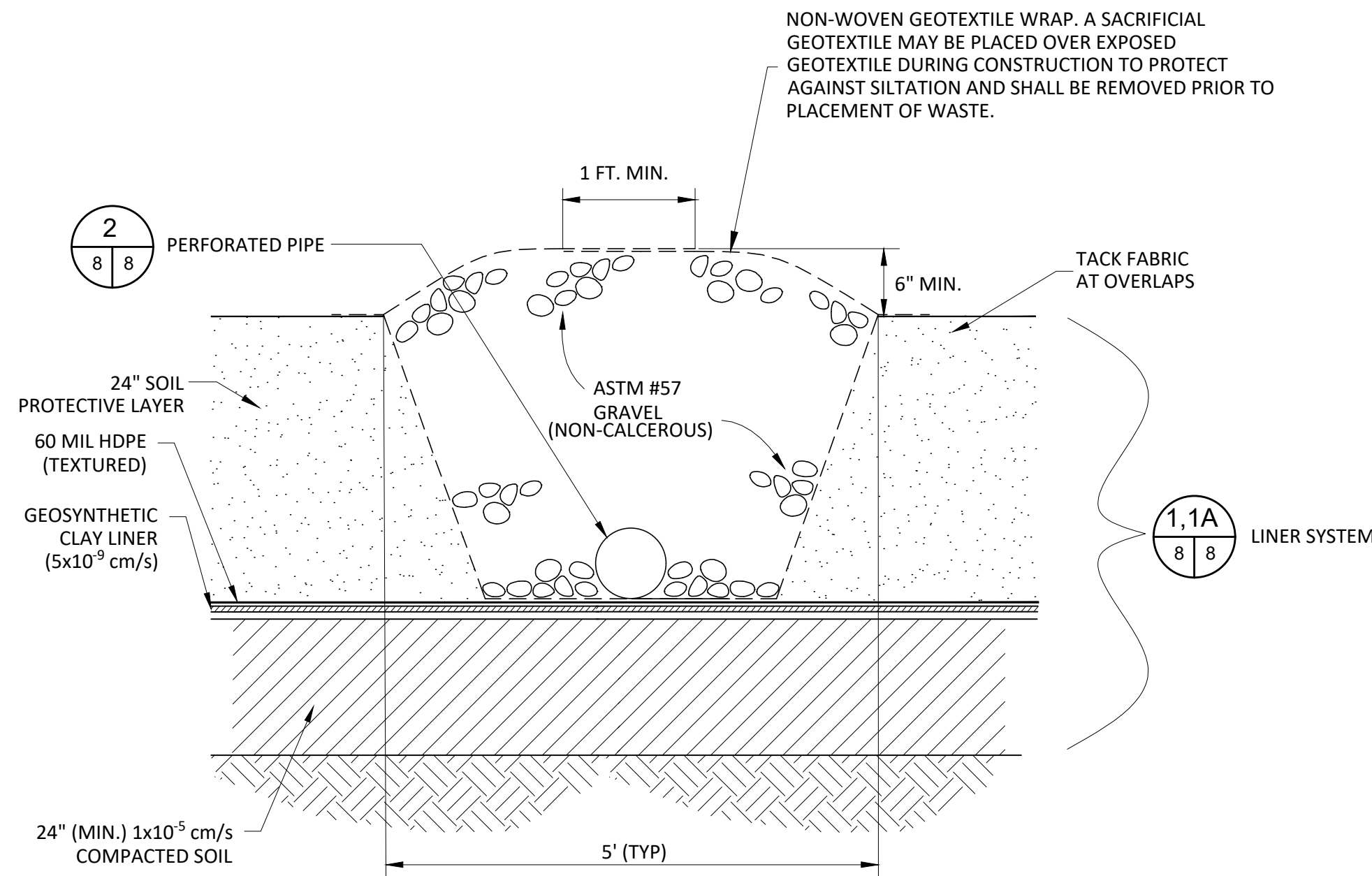


LINER SYSTEM DETAIL
NOT TO SCALE

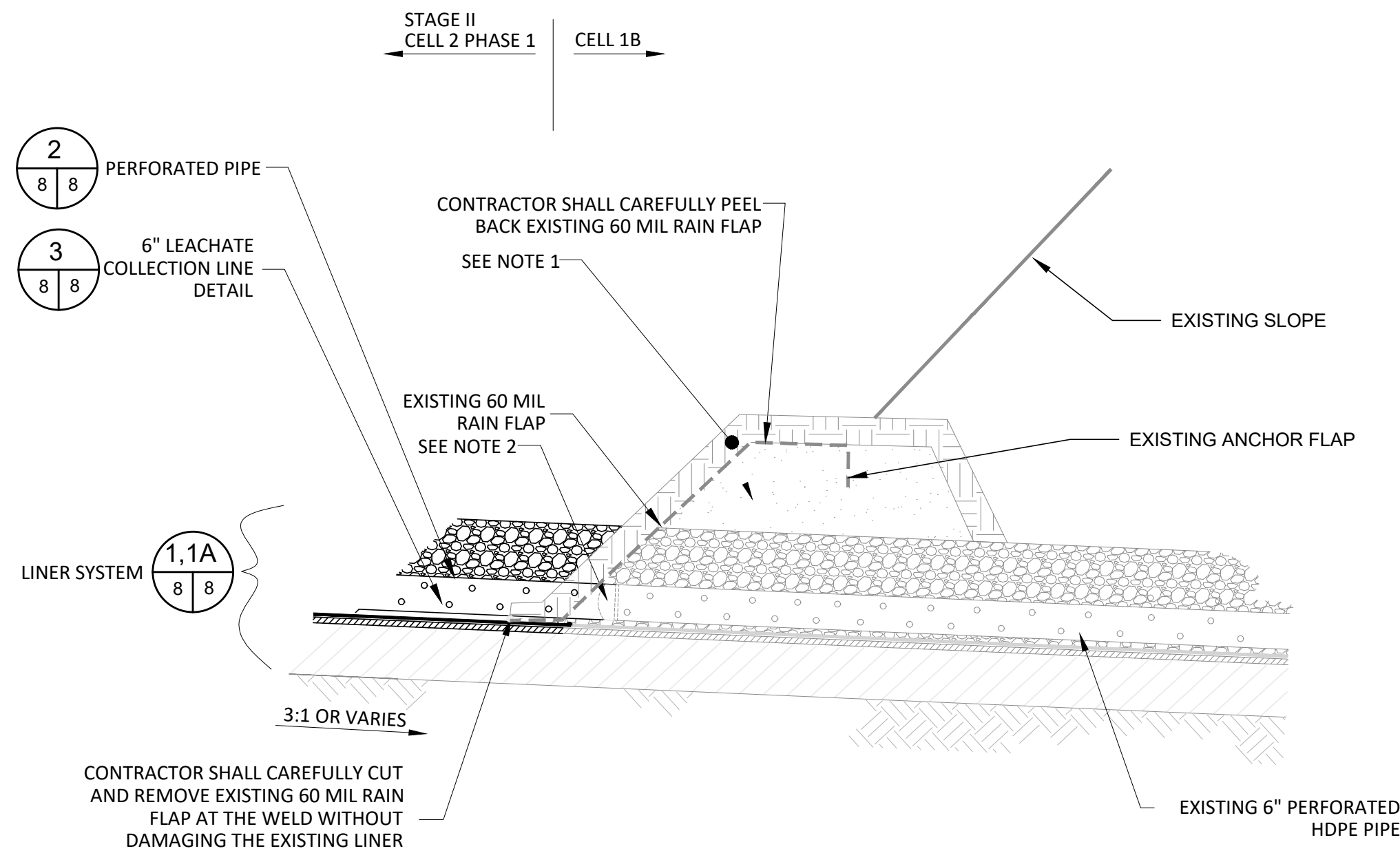
ALTERNATE LINER SYSTEM DETAIL
NOT TO SCALE



PERFORATED PIPE
NOT TO SCALE

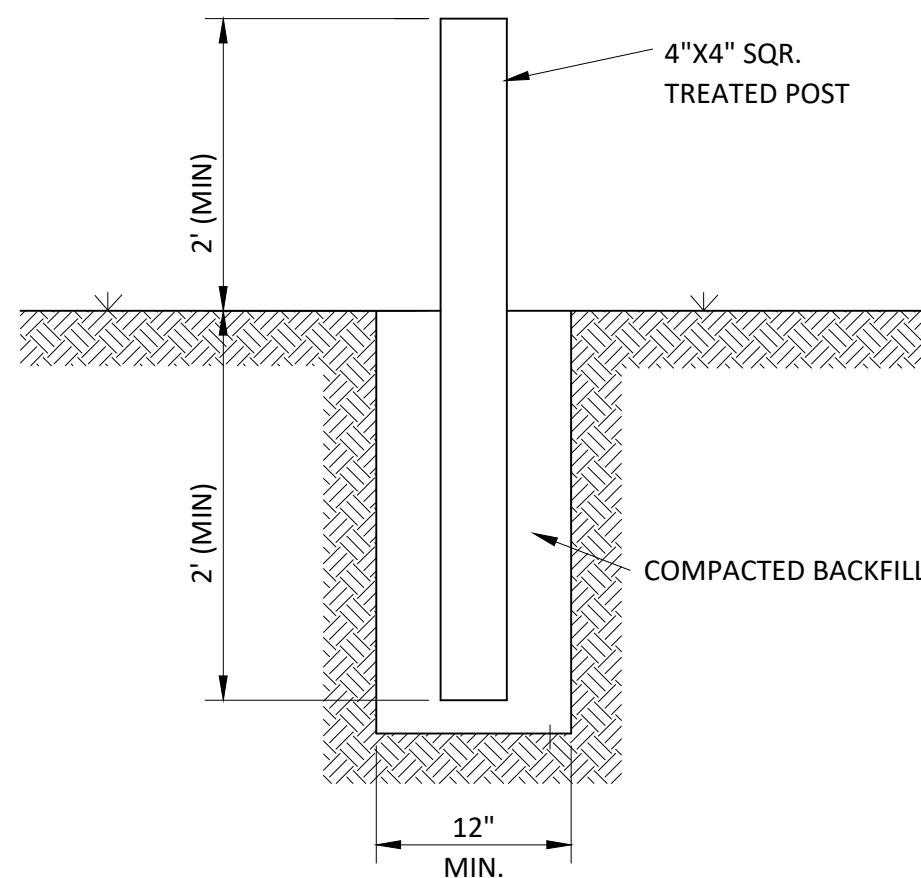


6" LEACHATE COLLECTION LINE DETAIL
NOT TO SCALE



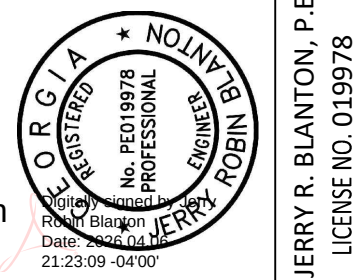
- NOTES:
- REMOVE RAIN FLAP AND COMPACTED SOIL ABOVE RAIN FLAP WITH OUT CREATING SLOPE STABILITY ISSUE.
 - CONTRACTOR SHALL REMOVE EXISTING END CAPS FOR LEACHATE PIPE AND FUSE THE 6" LEACHATE COLLECTION LINES FOR PHASE 1 AS PER ABOVE DETAIL.

LEACHATE PIPE EXTENSION AND PHASE TIE-IN
NOT TO SCALE



TEMPORARY LINER
EDGE MARKER DETAIL
NOT TO SCALE

Jerry Robin Blanton



CHK BY	DESCRIPTION	DATE	REV
JRB	ISSUED FOR BID	04/06/26	1
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SHEET TITLE	PROJECT TITLE
CONSTRUCTION DETAILS - 1	DEANS BRIDGE ROAD LANDFILL PHASE III STAGE II SOUTH CELL 2 PHASE I CONSTRUCTION

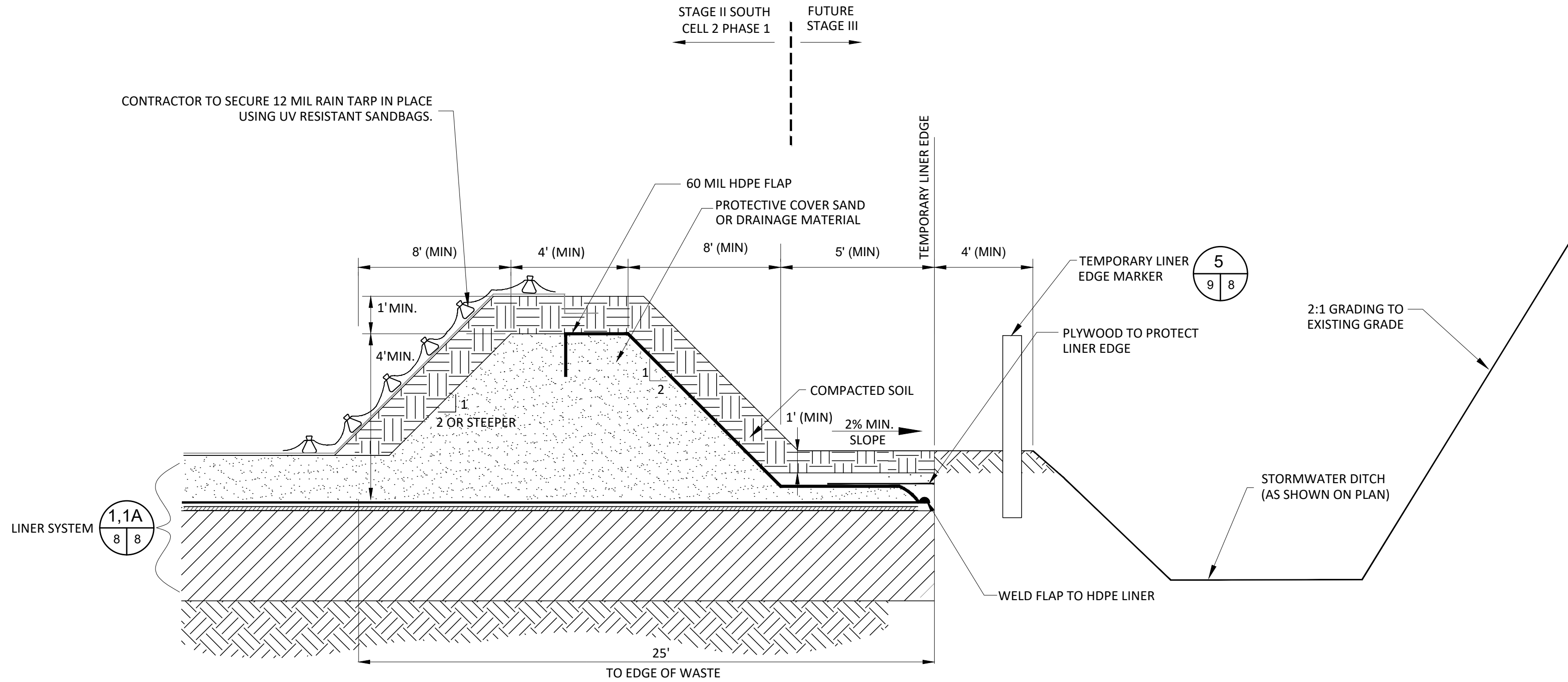
CLIENT
AUGUSTA-RICHMOND COUNTY LANDFILL 4330 DEANS BRIDGE RD BLYTHE, GEORGIA 30805

SCS ENGINEERS	CADD FILE:
STEARN, CONRAD AND SCHMIDT CONSULTING ENGINEERS 3175 SATELLITE BLVD, BLDG 600 SUITE 100 DULUTH, GA 30096 PH. 678 319-9849	08-10 DTLs
DATE:	APRIL 2026
SCALE:	AS SHOWN
DRAWING NO.	

DATE:	SCALE:	DRAWING NO.
APRIL 2026	AS SHOWN	
SHEET	8	of 21

ISSUED FOR BID
NOT FOR CONSTRUCTION
4/6/2026

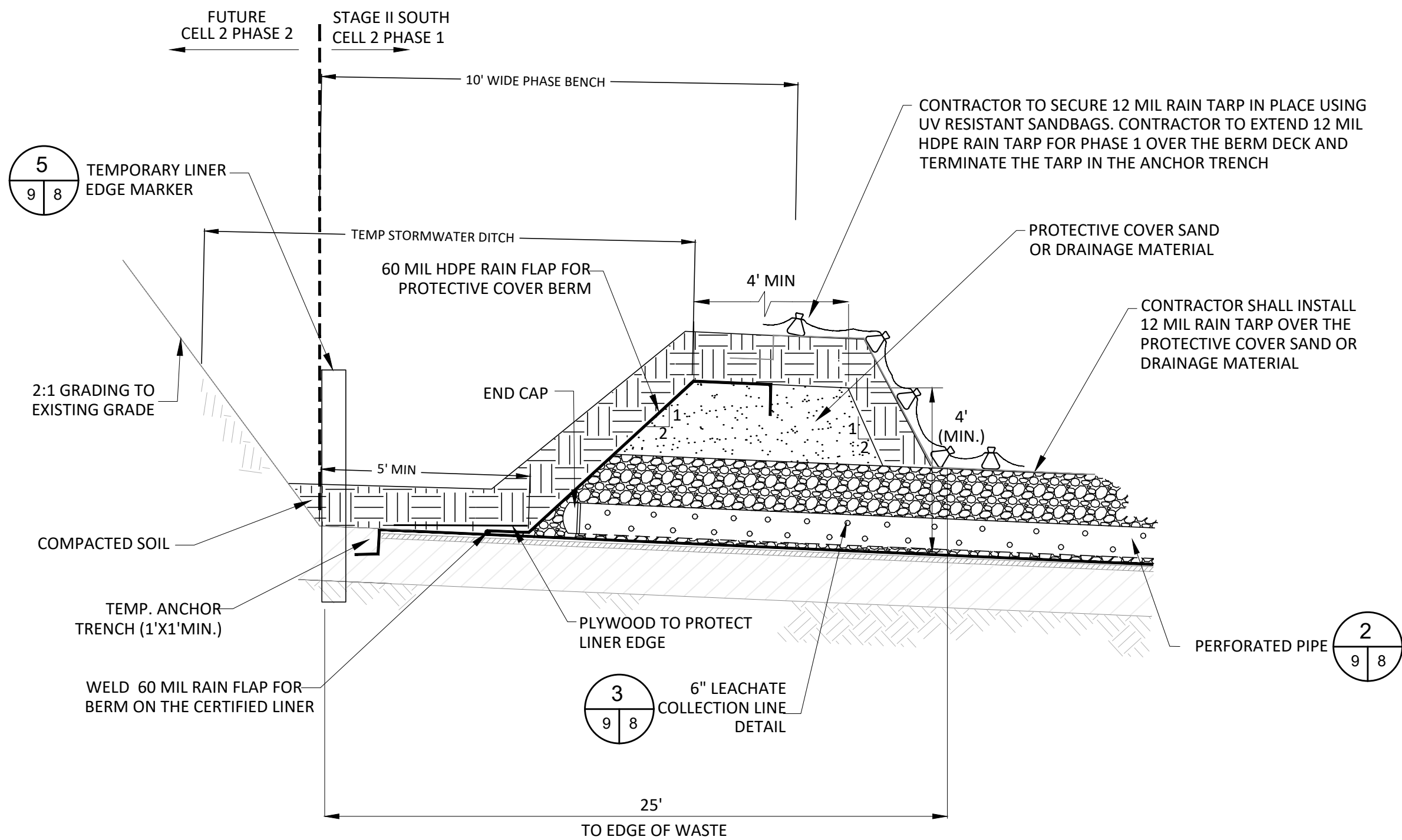
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- NOTES:
- ANY STORMWATER DITCH OR CULVERT SHALL BE RETURNED TO ITS ORIGINAL STATE BY THE CONTRACTOR IF DISTURBED DURING CONSTRUCTION.

EAST STAGE SEPARATION BERM DETAIL

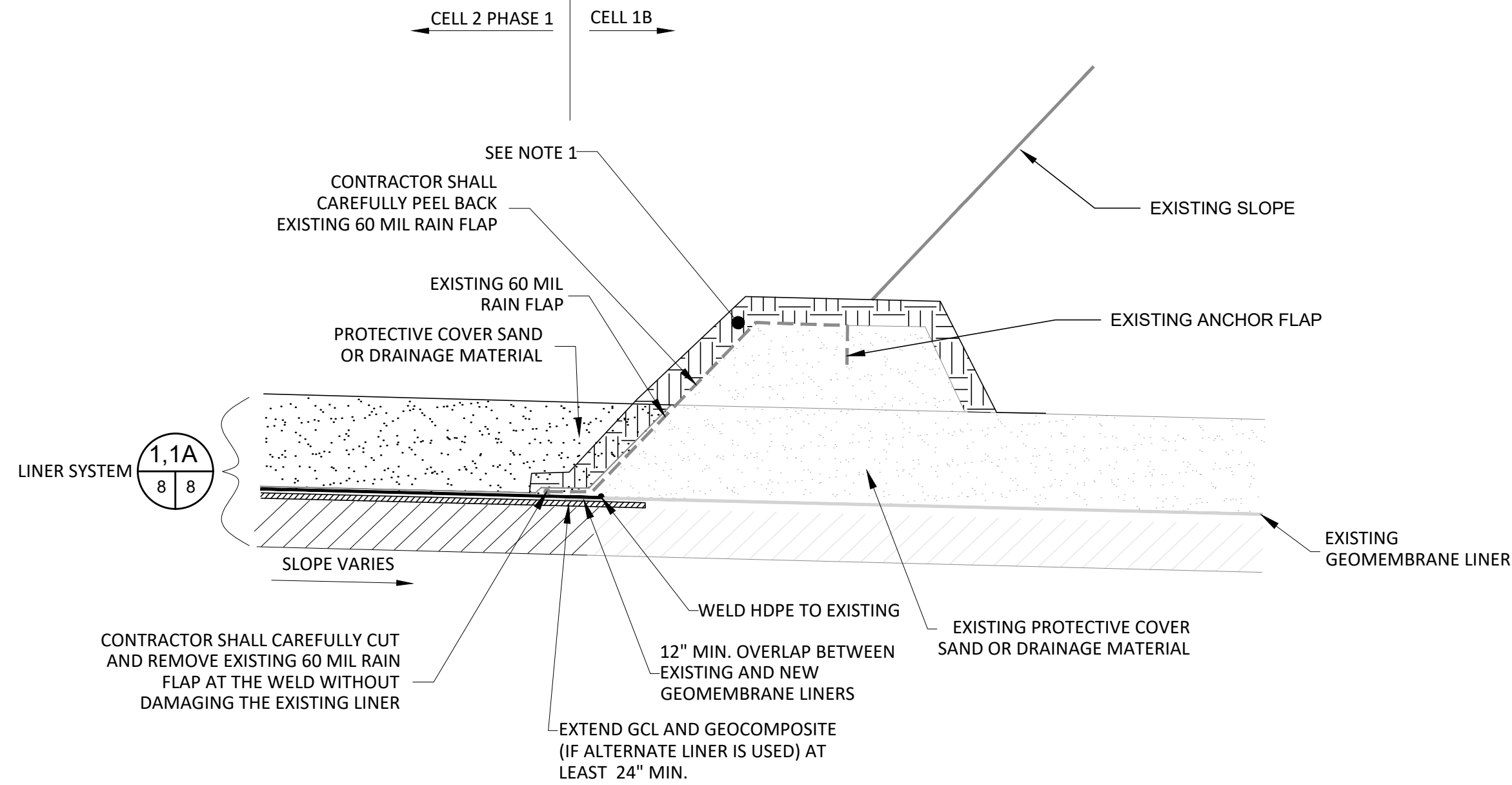
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TEMPORARY STORMWATER DIVERSION BERM AT LEACHATE PIPE TERMINATION

NOT TO SCALE

SECTION SHOWN AT LEACHATE COLLECTION LINE

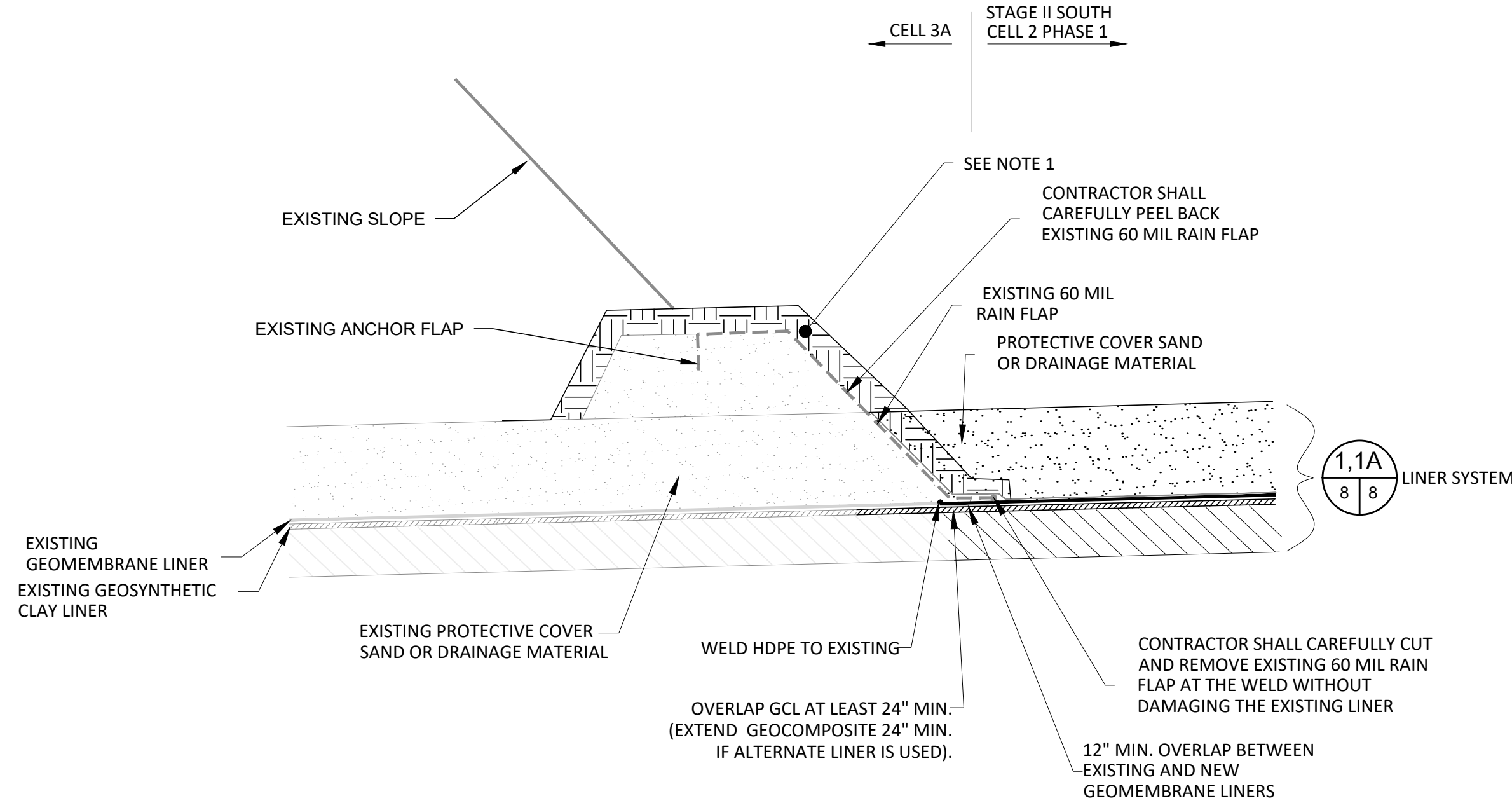


NOTES:

- REMOVE RAIN FLAP AND COMPACTED SOIL ABOVE RAIN FLAP WITH OUT CREATING SLOPE STABILITY ISSUE.

CELL 1B PHASE TIE-IN

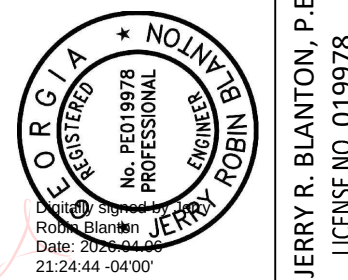
NOT TO SCALE



CELL 3A PHASE TIE-IN

NOT TO SCALE

Jerry Robn
Blanton



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JRB	ISSUED FOR BID	04/06/26	1
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CONSTRUCTION DETAILS - 2

DEANS BRIDGE ROAD LANDFILL
PHASE III STAGE II SOUTH CELL 2
PHASE I CONSTRUCTION

AUGUSTA-RICHMOND COUNTY LANDFILL
4330 DEANS BRIDGE RD
BLYTHE, GEORGIA 30805

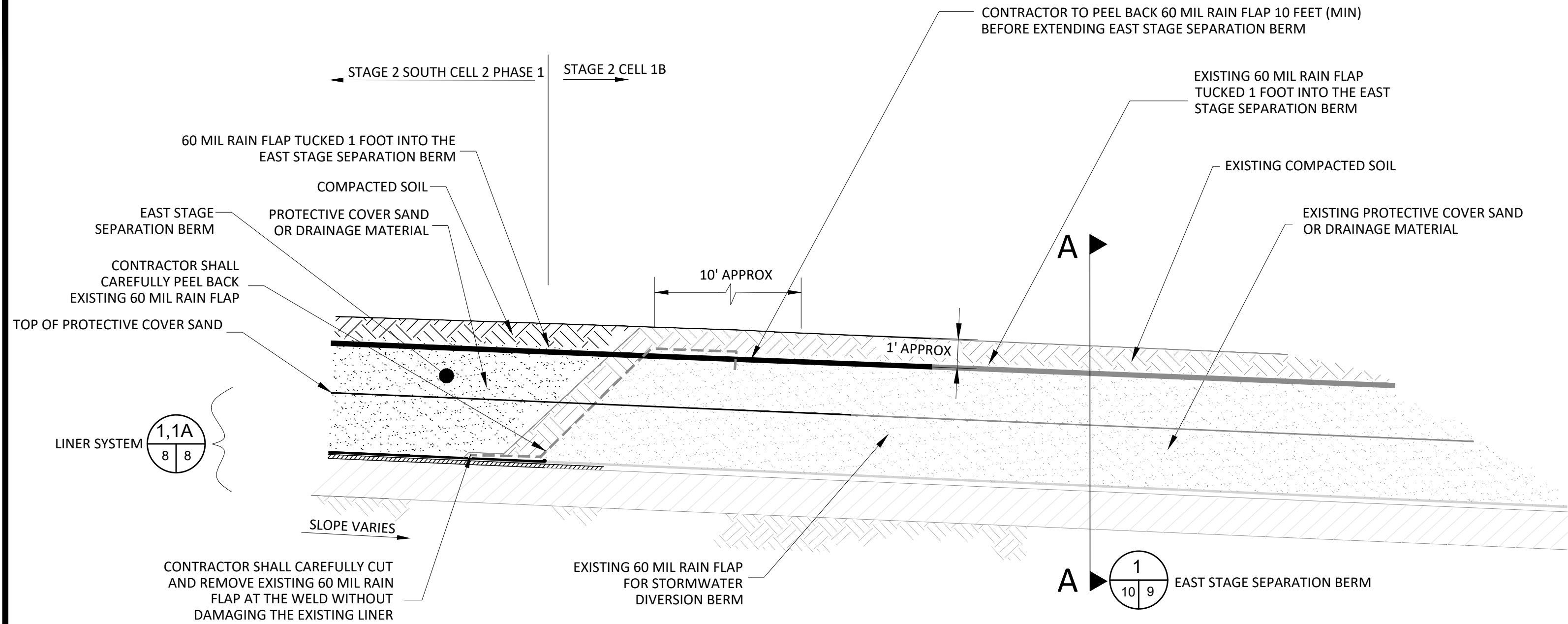
SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
3175 SATELLITE BLVD, BLDG 600 SUITE 100
DULUTH, GA 30096
PH 404 678 319-9849
FAX 404 678 319-9849
C/O A/RW INC. JRB
C/O A/RW INC. JRB
C/O A/RW INC. JRB
C/O A/RW INC. JRB

CADD FILE: 08-10 DTLS
DATE: APRIL 2026
SCALE: AS SHOWN
DRAWING NO.

ISSUED FOR BID
NOT FOR CONSTRUCTION
4/6/2026

SHEET 9 of 21

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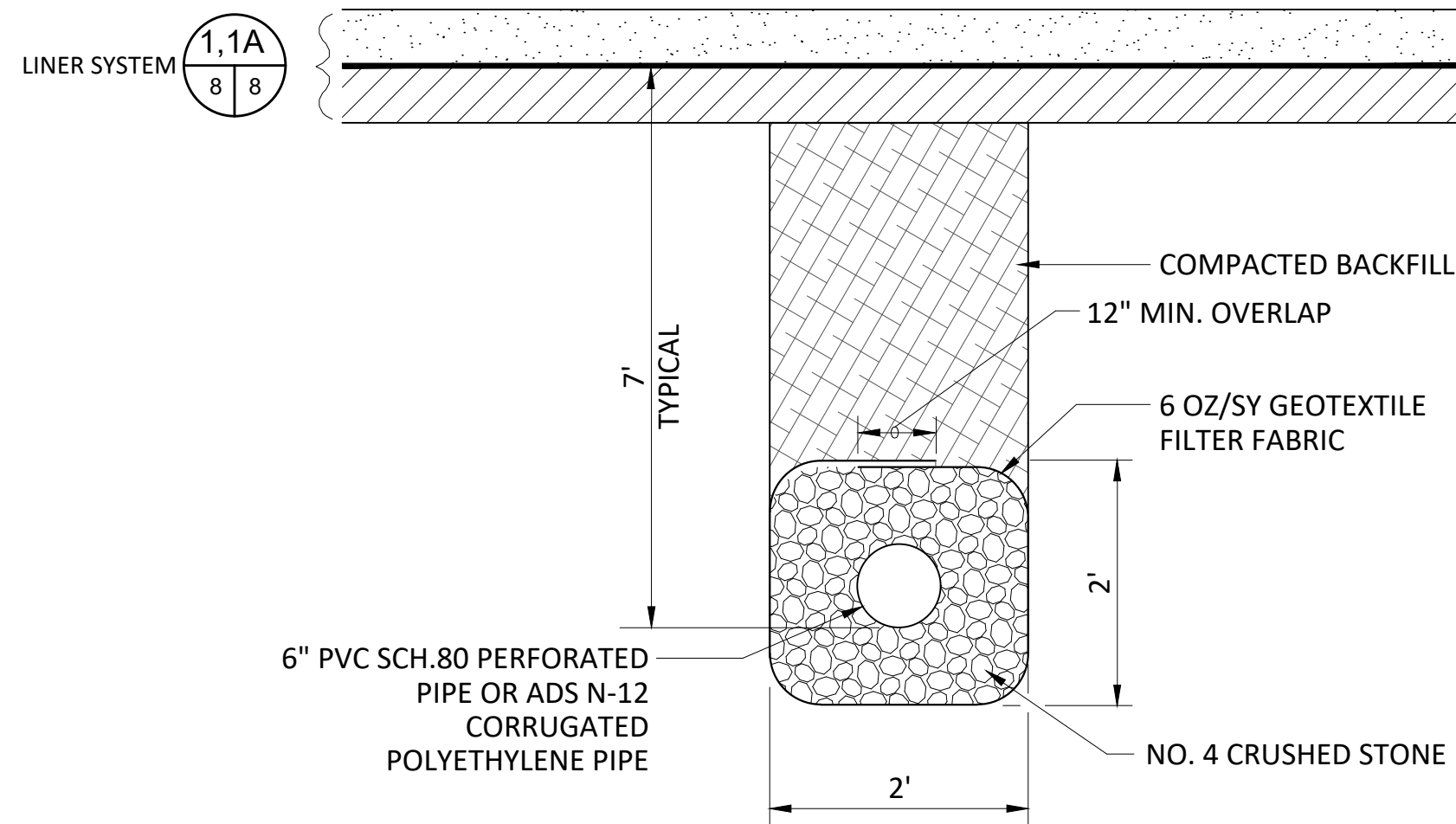
NOTES:

1. ABOVE DETAIL IS REPRESENTATIONAL. FIELD CONDITIONS MAY VARY. CONTRACTOR SHALL REVIEW FIELD CONDITIONS AND NOTIFY THE ENGINEER TO APPROVE ADJUSTMENTS TO FIELD INSTALLATION
2. CONTRACTOR SHALL CAREFULLY PEEL BACK AND CUT EXISTING 60 MIL RAIN FLAP INSTALLED ON THE PROTECTIVE COVER DIVERSION BERM FOR CELL 1B WITHOUT DAMAGING THE EXISTING GEOMEMBRANE LINER. EXISTING PROTECTIVE COVER GRADES IN CELL 1B SHALL TIE IN TO CONSTRUCTED PROTECTIVE COVER GRADES FOR PHASE 1.

EAST STAGE SEPARATION BERM EXTENSION DETAIL

NOT TO SCALE

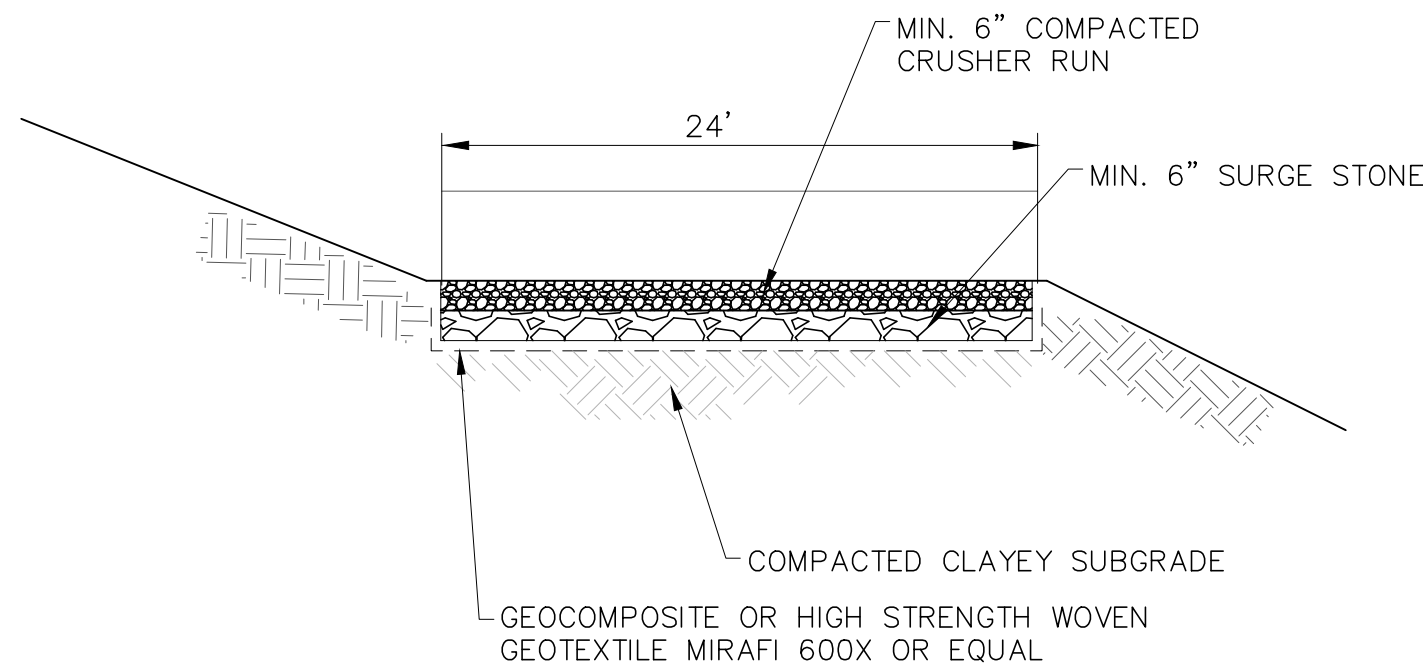
1
5 10



UNDER DRAIN DETAIL

NOT TO SCALE

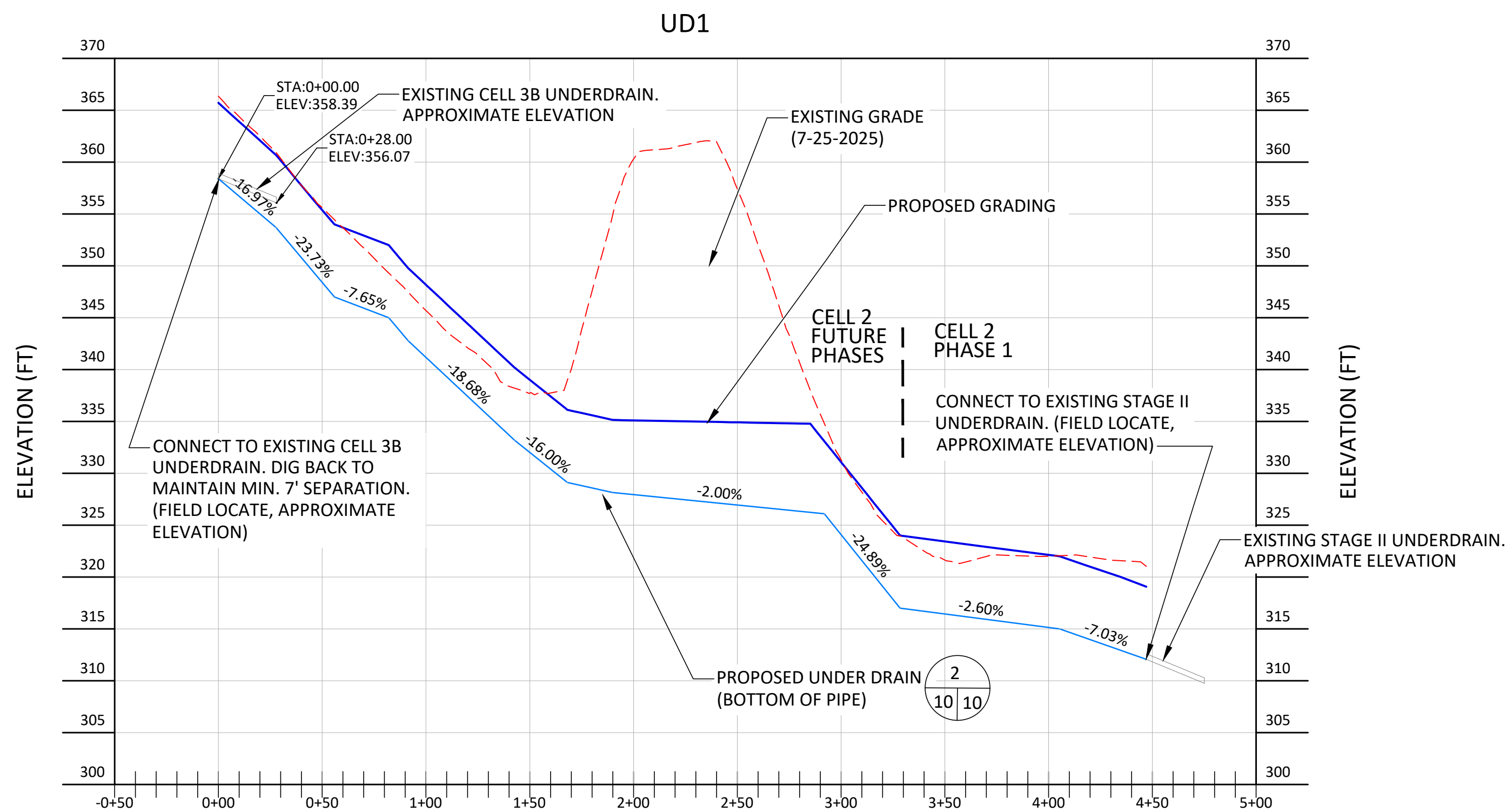
2
4 10



ALL WEATHER ACCESS ROAD DETAIL

NOT TO SCALE

3
5 10



UNDERDRAIN PROFILE

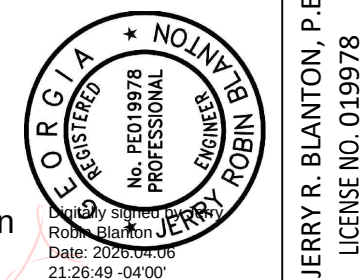
1" = 50' HORIZONTAL, 1" = 10' VERTICAL

2
10 10

NOTES:

1. AERIAL TOPOGRAPHIC SURVEY BY FIRMATEK LLC, DATED JULY 25, 2025.

Jerry Robn
Blanton



CHK BY	DESCRIPTION	DATE	REV
JRB	ISSUED FOR BID	04/06/26	1
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SHEET TITLE
CONSTRUCTION DETAILS - 3

PROJECT TITLE
DEANS BRIDGE ROAD LANDFILL
PHASE III STAGE II SOUTH CELL 2
PHASE I CONSTRUCTION

CLIENT

AUGUSTA-RICHMOND COUNTY LANDFILL
4330 DEANS BRIDGE RD
BLYTHE, GEORGIA 30805

SCS ENGINEERS STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 3175 SATELLITE BLVD, BLDG 600 SUITE 100 DULUTH, GA 30096 PH: 678 319-9849	DRAWN BY: JRB CHECKED BY: SS DATE: 09/21/2025	DATE: 04/06/26 BY: JRB
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CADD FILE:

08-10 DTLs

DATE:

APRIL 2026

SCALE:

AS SHOWN

DRAWING NO.

SHEET 10 of 21

ISSUED FOR BID
NOT FOR CONSTRUCTION
4/6/2026

C:\Users\ssin\AppData\Local\Temp\AcPublish_33924\11-14 CQA PLAN.dwg Apr 06, 2026 - 10:48am Layout Name: CQA-1 By: ssin

DEANS BRIDGE ROAD LANDFILL – PHASE III
CONSTRUCTION QUALITY ASSURANCE (CQA) PLAN

1.0 PURPOSE AND SCOPE

THIS CONSTRUCTION QUALITY ASSURANCE (CQA) PROGRAM IS FOR THE CONSTRUCTION OF THE AUGUSTA–RICHMOND COUNTY – DEANS BRIDGE ROAD – PHASE III MSW LANDFILL IN RICHMOND COUNTY, GEORGIA. THE PURPOSE IS TO SPECIFY THE METHODS, PROCEDURES, AND FREQUENCY OF CONSTRUCTION OBSERVATIONS AND TESTING ACTIVITIES IN ORDER TO DOCUMENT CONSTRUCTION OPERATIONS IN ACCORDANCE WITH THE ENGINEERING DRAWINGS, CONSTRUCTION SPECIFICATION AND PERMIT FOR THE AUGUSTA–RICHMOND COUNTY – DEANS BRIDGE ROAD – PHASE III MSW LANDFILL.

QUALITY ASSURANCE AND QUALITY CONTROL ARE DEFINED AS FOLLOWS:

QUALITY ASSURANCE – A PLANNED AND SYSTEMATIC PATTERN OF ALL MEANS AND ACTIONS DESIGNED TO PROVIDE ADEQUATE CONFIDENCE THAT MATERIALS OR SERVICES MEET CONTRACTUAL AND REGULATORY REQUIREMENTS. THIS IS TYPICALLY PERFORMED TO ASSURE THE PURCHASER, OWNER, AND/OR REGULATORY AGENCIES THAT DELIVERED MATERIALS OR SERVICES ARE OF DESIRED QUALITY.

QUALITY CONTROL – THOSE ACTIONS THAT PROVIDE A MEANS TO MEASURE AND REGULATE THE CHARACTERISTICS OF A MATERIAL OR SERVICE TO MEET CONTRACTUAL AND REGULATORY REQUIREMENTS. THIS TYPICALLY IS PERFORMED BY OR FOR THE PROVIDER OF MATERIALS OR SERVICES AS A CONTROL MECHANISM ON THE QUALITY OF THE PROVIDER'S EFFORTS.

THIS DOCUMENT HAS BEEN PREPARED BASED ON THE DRAWING SET ENTITLED "DEANS BRIDGE ROAD MSW LANDFILL PHASE III DESIGN AND OPERATION PLAN" BY JORDAN, JONES AND GOULDING DATED JULY 2005. IT ALSO ADDRESSES EXISTING RULES OF SOLID WASTE MANAGEMENT ESTABLISHED BY THE GEORGIA DEPARTMENT OF NATURAL RESOURCES, ENVIRONMENTAL PROTECTION DIVISION (EPD).

2.0 RESPONSIBILITY AND AUTHORITY

2.1 PARTIES INVOLVED IN CQA PROGRAM

THE CONSTRUCTION AT THE DEANS BRIDGE ROAD MSW LANDFILL PHASE III IS DEPENDENT ON THE INTERACTION OF MANY QUALIFIED PARTIES. THESE PARTIES INCLUDE THOSE ASSOCIATED WITH OWNERSHIP, DESIGN AND SPECIFICATION PREPARATION, MANUFACTURE, FABRICATION, TRANSPORTATION, INSTALLATION AND QUALITY ASSURANCE OF THE GEOSYNTHETICS, AND THE CONSTRUCTION AND QUALITY ASSURANCE OF THE EARTHEN MATERIALS.

WITHIN EACH OF THE FOLLOWING PARTY DESCRIPTIONS, REFERENCE IS MADE TO TITLE AND, WHERE APPLICABLE, TO THE INDIVIDUALS WITHIN THAT PARTY RESPONSIBLE FOR CARRYING OUT THE PROVISIONS OF THIS CQA PROGRAM.

2.1.1 FACILITY OWNER/OPERATOR

AUGUSTA–RICHMOND COUNTY BOARD OF COMMISSIONERS IS THE CURRENT OWNER AND OPERATOR OF THE LANDFILL FACILITY. THE TERM "PROJECT MANAGER" IS USED THROUGHOUT THIS DOCUMENT TO INDICATE THE OFFICIAL REPRESENTATIVE OF AUGUSTA–RICHMOND COUNTY.

2.1.2 DESIGN ENGINEER

THE DESIGN ENGINEER IS THE COMPANY OR COMPANIES HIRED BY THE OWNER/OPERATOR TO FURNISH THE DESIGN, DRAWINGS, PLANS AND SPECIFICATIONS FOR THE LANDFILL FACILITY. THE TERM "ENGINEER" IS USED THROUGHOUT THIS DOCUMENT TO INDICATE THE OFFICIAL REPRESENTATIVE OF THE DESIGN ENGINEER.

2.1.3 CONTRACTOR

THE OWNER/OPERATOR WILL SELECT THE GENERAL CONTRACTOR TO FURNISH EARTHWORK CONSTRUCTION AND OVERALL CONSTRUCTION RESPONSIBILITY FOR THE COMPLETION OF THE LANDFILL FACILITY. THE TERM "CONTRACTOR" IS USED THROUGHOUT THIS DOCUMENT WHEN REFERENCE IS MADE TO THE TASKS AND RESPONSIBILITIES FOR THIS ROLE.

2.1.4 GEOSYNTHETICS INSTALLER

THE GEOSYNTHETICS INSTALLERS ARE THE COMPANIES HIRED BY THE CONTRACTOR OR OWNER TO INSTALL THE GEOSYNTHETIC COMPONENTS REFERENCED IN THIS MANUAL, AND PERFORMS THE NONDESTRUCTIVE SEAM TESTING OF THE GEOMEMBRANES AS REQUIRED BY THIS PROGRAM. THE TERM "INSTALLER" IS USED THROUGHOUT THIS DOCUMENT WHEN REFERENCE IS MADE TO THE TASKS AND RESPONSIBILITIES OF A GEOSYNTHETIC INSTALLER.

2.1.5 GEOSYNTHETIC MANUFACTURERS

THE GEOSYNTHETIC MANUFACTURERS ARE THOSE COMPANIES HIRED TO FURNISH THE GEOSYNTHETIC COMPONENTS REFERENCED IN THIS MANUAL. THE TERM "MANUFACTURER" IS USED THROUGHOUT THIS DOCUMENT TO INDICATE THE SPECIFIC COMPANY SUPPLYING MATERIALS TO THE JOB SITE.

THIS CQA PROGRAM INCLUDES SPECIFIC QUALITY ASSURANCE AND QUALITY CONTROL REQUIREMENTS FOR THE GEOSYNTHETIC MANUFACTURERS, IN THEIR RELATIONSHIPS TO RESIN SUPPLIERS (SEE BELOW), IN ADDITION TO THEIR ROLE OF PROVIDING THE QUALITY CONTROL FOR THE GEOSYNTHETIC MATERIALS. IT SHOULD BE NOTED THAT SEVERAL GEOSYNTHETIC MANUFACTURERS, MOST NOTABLY THOSE MANUFACTURING GEOMEMBRANES, MIGHT ALSO PERFORM THE ROLE OF THE GEOSYNTHETIC INSTALLER.

2.1.6 GEOSYNTHETIC QUALITY ASSURANCE CONSULTANT

THE GEOSYNTHETIC QUALITY ASSURANCE CONSULTANT IS THE INDEPENDENT PARTY HIRED BY THE OWNER/OPERATOR TO OBSERVE AND DOCUMENT ACTIVITIES RELATED TO THE QUALITY ASSURANCE OF THE INSTALLATION OF THE GEOSYNTHETIC COMPONENTS OF THE LANDFILL.

THE TERM "GEOSYNTHETIC QUALITY ASSURANCE MANAGER" IS THE TITLE USED TO DESCRIBE THE OFFICIAL REPRESENTATIVE OF THE GEOSYNTHETIC QUALITY ASSURANCE CONSULTANT. THE GEOSYNTHETIC QUALITY ASSURANCE CONSULTANT WILL HAVE A STAFF OF PERSONNEL (MONITORS) ASSIGNED TO THE JOB SITE DURING GEOSYNTHETIC INSTALLATION.

THIS PROGRAM DETAILS RESPONSIBILITIES FOR THE GEOSYNTHETIC QUALITY ASSURANCE CONSULTANT. IN GENERAL, THESE RESPONSIBILITIES INCLUDE THE OBSERVATION, SAMPLE COLLECTION, TESTING AND DOCUMENTATION OF ACTIVITIES RELATED TO THE INSTALLATION OF THE GEOSYNTHETIC COMPONENTS OF THE LANDFILL FACILITY.

2.1.7 GEOSYNTHETIC TESTING LABORATORY

THE GEOSYNTHETIC TESTING LABORATORY IS THE INDEPENDENT LABORATORY HIRED BY THE OWNER/OPERATOR OR GEOSYNTHETIC QUALITY ASSURANCE CONSULTANT TO PERFORM CONFORMANCE TESTING AND DESTRUCTIVE TESTING ON GEOMEMBRANE SEAMS. THE TERM "GEOSYNTHETIC TESTING LABORATORY" IS USED TO DENOTE THE OFFICIAL REPRESENTATIVE OF THAT LABORATORY THROUGHOUT THIS MANUAL.

2.1.8 RESIN SUPPLIER

THE RESIN SUPPLIER(S) IS (ARE) THE COMPANY(IES) SELECTED BY THE GEOMEMBRANE MANUFACTURER, AND PIPE MANUFACTURER TO FURNISH THE POLYETHYLENE RESIN USED IN FABRICATING THE AFOREMENTIONED COMPONENTS. THE TERM "RESIN SUPPLIER" IS USED IN THIS MANUAL TO DENOTE, INDIVIDUALLY, EACH RESPECTIVE SUPPLIER.

2.1.9 SOILS QUALITY ASSURANCE CONSULTANT

THE SOILS QUALITY ASSURANCE CONSULTANT IS THE INDEPENDENT PARTY HIRED BY THE OWNER/OPERATOR TO OBSERVE, TEST, AND DOCUMENT ACTIVITIES RELATED TO THE QUALITY ASSURANCE OF THE WORK INVOLVING EARTHEN MATERIALS.

THE TERM "SOILS QUALITY ASSURANCE MANAGER" IS THE TITLE USED TO DESCRIBE THE OFFICIAL REPRESENTATIVE OF THE SOILS QUALITY ASSURANCE CONSULTANT. THE SOILS QUALITY ASSURANCE CONSULTANT WILL HAVE A STAFF OF PERSONNEL (MONITORS) ASSIGNED TO THE JOB SITE DURING CONSTRUCTION ACTIVITIES.

THIS PROGRAM DETAILS MANY RESPONSIBILITIES OF THE SOILS QUALITY ASSURANCE MANAGER. IN GENERAL, THESE RESPONSIBILITIES INCLUDE THE OBSERVATION, SAMPLE COLLECTION, TESTING AND DOCUMENTATION OF ACTIVITIES RELATED TO THE USE OF EARTHEN MATERIALS FOR THE LANDFILL CONSTRUCTION.

2.1.10 SOILS TESTING LABORATORY

THE SOILS TESTING LABORATORY IS THE INDEPENDENT LABORATORY HIRED BY THE OWNER/ OPERATOR OR SOILS QUALITY ASSURANCE CONSULTANT TO PERFORM QUALITY ASSURANCE SOILS TESTS. THE TERM "SOILS TESTING LABORATORY" IS USED TO DENOTE THE OFFICIAL REPRESENTATIVE OF THAT LABORATORY THROUGHOUT THIS MANUAL.

2.2 QUALIFICATIONS OF PARTIES

THE FOLLOWING QUALIFICATIONS SHOULD BE REQUIRED OF ALL PARTIES INVOLVED WITH THE DESIGN, MANUFACTURE, FABRICATION, INSTALLATION, TRANSPORTATION AND QUALITY ASSURANCE FOR THE CONSTRUCTION OF THE DEANS BRIDGE ROAD MSW LANDFILL PHASE III.

2.2.1 CERTIFYING ENGINEER

THE CERTIFYING ENGINEER MUST BE A QUALIFIED, PROFESSIONAL ENGINEER LICENSED IN THE STATE OF GEORGIA. THE ENGINEER SHOULD HAVE A HISTORY, WHICH DEMONSTRATES FAMILIARITY WITH LANDFILL COMPONENTS AND CONSTRUCTION TECHNIQUES, INCLUDING SOILS AND GEOSYNTHETICS, AND WITH DETAILED GEOSYNTHETIC DESIGN METHODS AND PROCEDURES.

2.2.2 PROJECT MANAGER

THE SELECTION OF THE PROJECT MANAGER FOR CONSTRUCTION IS THE DIRECT RESPONSIBILITY OF THE OWNER/OPERATOR. QUALIFICATIONS FOR THIS POSITION ARE THEREFORE DETERMINED BY THE OWNER/OPERATOR INDEPENDENTLY OF THIS PROGRAM.

2.2.3 CONTRACTOR

THE CONTRACTOR (MAY BE FULFILLED BY THE OWNER/OPERATOR) WILL BE EXPERIENCED IN LANDFILL CONSTRUCTION, KNOWLEDGEABLE ABOUT COMPACTED LINER BASE CONSTRUCTION TECHNIQUES, AND FAMILIAR WITH GEOSYNTHETIC CONSTRUCTION.

2.2.4 GEOSYNTHETIC INSTALLER

THE INSTALLER WILL BE TRAINED AND QUALIFIED TO INSTALL THE VARIOUS GEOSYNTHETIC COMPONENTS COVERED BY THIS PROGRAM. THE INSTALLER OF THE GEOMEMBRANES WILL BE APPROVED AND/OR LICENSED BY THE MANUFACTURER. A COPY OF THE APPROVAL LETTER OR LICENSE WILL BE SUBMITTED BY THE INSTALLER TO THE GEOSYNTHETIC QUALITY ASSURANCE MANAGER.

ALL PERSONNEL PERFORMING GEOMEMBRANE SEAMING OPERATIONS WILL BE QUALIFIED BY EXPERIENCE OR BY SUCCESSFULLY PASSING SEAMING TESTS FOR THE SEAMING METHODS TO BE USED. AT LEAST ONE SEAMER AT THE SITE WILL HAVE EXPERIENCE SEAMING A MINIMUM OF 10,000,000 FT² OF POLYETHYLENE GEOMEMBRANE USING THE SAME TYPE OF SEAMING APPARATUS IN USE AT THE SITE. THE MOST EXPERIENCED SEAMER, THE "MASTER SEAMER", WILL PROVIDE DIRECT SUPERVISION, AS REQUIRED, OVER LESS EXPERIENCED SEAMERS. NO FIELD SEAMING WILL TAKE PLACE WITHOUT AN EXPERIENCED SEAMER (MEETING THE SEAMING CRITERIA STATED ABOVE) BEING PRESENT.

2.2.5 GEOSYNTHETIC MANUFACTURERS

THE GEOSYNTHETIC MANUFACTURERS WILL BE ABLE TO PROVIDE SUFFICIENT PRODUCTION CAPACITY AND QUALIFIED PERSONNEL TO MEET THE DEMAND OF THE PROJECT. THE GEOSYNTHETIC MANUFACTURERS WILL BE PRE–QUALIFIED AND APPROVED BY THE OWNER/OPERATOR.

2.2.6 GEOSYNTHETIC QUALITY ASSURANCE CONSULTANT

THE GEOSYNTHETIC QUALITY ASSURANCE CONSULTANT WILL BE AN EXPERIENCED ENGINEERING FIRM DEALING WITH GEOSYNTHETIC INSTALLATION INCLUDING GEOMEMBRANES, GEOTEXTILES, GEOCOMPOSITES AND PIPING. THE GEOSYNTHETIC QUALITY ASSURANCE CONSULTANT WILL BE EXPERIENCED IN QUALITY ASSURANCE, INCLUDING INSTALLATION QUALITY ASSURANCE OF GEOMEMBRANES, PIPING AND GEOTEXTILES. THE GEOSYNTHETIC QUALITY ASSURANCE CONSULTANT SHALL BE EXPERIENCED IN THE PREPARATION OF QUALITY ASSURANCE DOCUMENTATION, WHICH WILL INCLUDE QUALITY ASSURANCE FORMS, REPORTS, CERTIFICATIONS AND MANUALS.

THE GEOSYNTHETIC QUALITY ASSURANCE MANAGER WILL BE A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF GEORGIA. THE GEOSYNTHETIC QUALITY ASSURANCE MANAGER WILL BE SPECIFICALLY EXPERIENCED IN THE INSTALLATION OF GEOSYNTHETICS. GEOSYNTHETIC QUALITY ASSURANCE MONITORS WILL BE QUALITY ASSURANCE PERSONNEL WHO HAVE BEEN SPECIFICALLY TRAINED IN QUALITY ASSURANCE OF GEOSYNTHETICS AND WHO WILL REPORT TO THE GEOSYNTHETIC QUALITY ASSURANCE MANAGER.

2.2.7 GEOSYNTHETIC TESTING LABORATORY

THE GEOSYNTHETIC TESTING LABORATORY WILL HAVE EXPERIENCE IN TESTING GEOSYNTHETICS AND WILL BE FAMILIAR WITH TESTING STANDARDS PROMULGATED BY THE AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM), NATIONAL SANITATION FOUNDATION (NSF), GEOSYNTHETIC RESEARCH INSTITUTE (GRI) AND OTHER APPLICABLE TEST STANDARDS. THE GEOSYNTHETIC TESTING LABORATORY WILL BE RESPONSIVE TO THE TESTING NEEDS OF THE PROJECT BY PROVIDING TEST RESULTS WITHIN A REASONABLE TIME.

2.2.8 RESIN SUPPLIER

QUALIFICATIONS OF THE RESIN SUPPLIER ARE SPECIFIC TO THE MANUFACTURER'S REQUIREMENTS. THE RESIN SUPPLIER SHOULD HAVE A DEMONSTRATED HISTORY OF PROVIDING CONSISTENT RESIN PROPERTIES.

2.2.9 SOILS QUALITY ASSURANCE CONSULTANT

THE SOILS QUALITY ASSURANCE CONSULTANT WILL BE AN EXPERIENCED ENGINEERING FIRM DEALING WITH GEOTECHNICAL ENGINEERING AND CONSTRUCTION. THE SOILS QUALITY ASSURANCE MANAGER WILL BE A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF GEORGIA WITH EXPERIENCE IN GEOTECHNICAL CONSTRUCTION AND INTERPRETATION OF THE RESULTS OF FIELD AND LABORATORY TESTING.

2.2.10 SOILS TESTING LABORATORY

THE SOILS TESTING LABORATORY WILL HAVE EXPERIENCE IN TESTING SOILS AND WILL BE FAMILIAR WITH ASTM AND OTHER APPLICABLE TEST STANDARDS. THE SOILS TESTING LABORATORY WILL BE RESPONSIVE TO THE TESTING NEEDS OF THE PROJECT BY PROVIDING TEST RESULTS WITHIN A REASONABLE TIME.

3.0 ORGANIZATION AND DOCUMENTATION REQUIREMENTS

3.1 ORGANIZATION OF CQA PROGRAM

OVERALL RESPONSIBILITY FOR CARRYING OUT THE PROVISIONS OF THIS CQA PROGRAM IS WITH THE CQA MANAGERS. THE CQA MANAGERS ARE RESPONSIBLE FOR DOCUMENTING, PURSUANT TO THIS CQA PROGRAM, THAT THE CONSTRUCTION AT THE DEANS BRIDGE ROAD MSW LANDFILL PHASE III IS CONSISTENT WITH THE PERMIT APPLICATION.

THE SOILS AND GEOSYNTHETIC QUALITY ASSURANCE MANAGERS BOTH REPORT TO THE OWNER/OPERATOR. THIS INCLUDES THE SUBMITTAL OF REPORTS AND OTHER DOCUMENTS DETAILED THROUGHOUT THIS CQA PROGRAM, IN ADDITION TO ANY OTHER RESPONSIBILITIES DESCRIBED IN THIS DOCUMENT. THE SOILS AND GEOSYNTHETIC QUALITY ASSURANCE MANAGERS ARE RESPONSIBLE FOR COMPLETING ALL DOCUMENTS AND REPORTS DETAILED THROUGHOUT THIS PROGRAM, AND SUBMITTING THEM TO THE OWNER/OPERATOR ON A TIMELY BASIS.

THE SOILS AND GEOSYNTHETIC TESTING LABORATORIES ARE EACH RESPONSIBLE TO THE SOILS AND GEOSYNTHETIC QUALITY ASSURANCE MANAGERS, RESPECTIVELY. TEST DATA AND REPORTS COMPLETED BY OUTSIDE TESTING LABORATORIES WILL BE SUBMITTED DIRECTLY TO THE RESPECTIVE QUALITY ASSURANCE MANAGER. IT IS THE RESPONSIBILITY OF THE RESPECTIVE QUALITY ASSURANCE MANAGERS TO RESOLVE ANY DISPUTES BETWEEN THE TESTING LABORATORIES AND THE CONTRACTOR, INSTALLERS, OR GEOSYNTHETIC MANUFACTURERS.

THE CONTRACTOR (INCLUDING ANY SUBCONTRACTORS THAT MAY BE BROUGHT TO THE SITE) AND THE INSTALLERS REPORT TO THE OWNER/OPERATOR FOR MATTERS RELATING TO THE CQA PROGRAM.

3.2 DAILY CONSTRUCTION REPORTS

THE SOILS AND GEOSYNTHETIC QUALITY ASSURANCE MONITORS WILL COMPLETE A DAILY SUMMARY REPORT OF EACH DAY'S CONSTRUCTION ACTIVITIES. EACH CONSTRUCTION REPORT WILL CONTAIN, AT A MINIMUM, THE FOLLOWING INFORMATION:

- DATE, PROJECT NAME, LOCATION AND REPORT PREPARER'S NAME;
- THE NUMBER AND NAME OF PEOPLE ON–SITE UNDER THE DIRECTION OF THE PREPARER FOR CONDUCTING CQA TASKS;
- TIME WORK STARTS AND ENDS EACH CONSTRUCTION WORK DAY. THIS INFORMATION SHOULD ALSO INCLUDE ANY WORK STOPPAGES DUE TO INCLEMENT WEATHER OR INSUFFICIENT EQUIPMENT OR PERSONNEL;
- SUMMARIES OF ANY MEETINGS HELD AND ACTIONS RECOMMENDED OR TAKEN;
- DATA ON WEATHER CONDITIONS INCLUDING TEMPERATURE, WIND DIRECTION AND SPEED, CLOUD COVER, AND ANY PRECIPITATION EVENTS;
- CONTRACTOR'S OR INSTALLER'S WORK FORCE, TYPE OF EQUIPMENT IN USE, WEIGHT OF COMPACTOR, AND MATERIALS DELIVERED TO OR REMOVED FROM THE JOB SITE;
- CHRONOLOGICAL DESCRIPTION OF WORK IN PROGRESS INCLUDING ANY NOTICES TO OR REQUESTS FROM THE CONTRACTOR AND/OR INSTALLER;
- RESULTS OR A CLEAR REFERENCE TO WHERE THE RESULTS CAN BE FOUND, FOR TESTING PERFORMED ON–SITE BY PERSONNEL UNDER THE DIRECTION OF THE PREPARER;
- PROBLEM/DEFICIENCY IDENTIFICATION AND CORRECTIVE ACTION SECTION TO DOCUMENT FIELD PROBLEMS AND NON–CONFORMING MATERIALS OR WORK AS DISCUSSED IN SUBSECTION 3.2.3;
- SAMPLES, WHICH WERE COLLECTED, MARKED, AND SENT TO THE OUTSIDE TESTING LABORATORIES. THESE WILL BE CLEARLY INDICATED IN THE DAILY REPORT BY DIRECT INCLUSION OR BY REFERENCE TO THE DOCUMENT CONTAINING SUCH INFORMATION. LIKEWISE, REFERENCE SHOULD BE INCLUDED FOR ANY TEST DATA SUBMITTED BY ANY OF THE OUTSIDE TESTING LABORATORIES;
- AN ACCURATE RECORD OF COMMUNICATIONS WITH OTHER CQA PROGRAM PARTIES, OR ANY OTHER OUTSIDE COMPANIES, REGULATORY AGENCIES, OR CONSULTANTS REGARDING THE DAY'S CONSTRUCTION ACTIVITIES, AND;
- AN ACCURATE RECORD OF CALIBRATIONS OR STANDARDIZATIONS PERFORMED ON FIELD TESTING EQUIPMENT, INCLUDING ACTIONS TAKEN AS A RESULT OF RECALIBRATIONS. IN ADDITION, THE RESULTS OF OTHER DATA RECORDING, SUCH AS GEOMEMBRANE BARREL OR WEDGE TEMPERATURES, WILL BE KEPT IN THE DAILY LOG OR WILL BE ADEQUATELY CROSS–REFERENCED FOR EACH LOCATION.

3.2.1 FORMS, CHECKLISTS, AND DATA SHEETS

IT IS THE RESPONSIBILITY OF THE SOILS AND GEOSYNTHETICS QUALITY ASSURANCE CONSULTANTS TO PREPARE IN ADVANCE ANY FORMS, CHECKLISTS, AND/OR DATA SHEETS THAT WILL ALLOW FOR A MORE EXPEDIENT HANDLING OF DATA, COMMUNICATIONS, AND ROUTINE OBSERVATIONS. ANY FORM, CHECKLIST, OR DATA SHEET PREPARED BY THE SOILS AND GEOSYNTHETICS QUALITY ASSURANCE CONSULTANT MUST BE APPROVED BY THE OWNER/OPERATOR PRIOR TO THE START OF ANY CONSTRUCTION WORK. THEREFORE, SUBMITTAL OF THESE DOCUMENTS FOR APPROVAL SHOULD BE MADE PRIOR TO THE PRE–CONSTRUCTION MEETING DISCUSSED IN SUBSECTION 2.2.1 OF THIS PLAN.

3.2.2 PROBLEM/DEFICIENCY IDENTIFICATION AND CORRECTIVE ACTION

PROBLEM AND/OR DEFICIENCY IDENTIFICATION AND CORRECTIVE ACTION WILL BE DOCUMENTED IN THE DAILY CONSTRUCTION REPORTS BY EITHER/OR BOTH THE SOILS AND GEOSYNTHETICS QUALITY ASSURANCE MONITORS WHEN ANY CONSTRUCTION MATERIAL OR ACTIVITY IS OBSERVED OR TESTED THAT DOES NOT MEET THE REQUIREMENTS SET FORTH IN THIS PLAN. THE DOCUMENTATION REPORTS SHOULD BE CROSS–REFERENCED TO THE APPLICABLE FORMS, DATA SHEETS, CHECKLISTS, AND OTHER REPORTS THAT CONTAIN DATA OR OBSERVATIONS LEADING TO THE DETERMINATION OF A PROBLEM OR DEFICIENCY. PROBLEM/DEFICIENCY IDENTIFICATION AND CORRECTIVE ACTION DOCUMENTATION MAY INCLUDE THE FOLLOWING INFORMATION:

- A DESCRIPTION OF THE PROBLEM OR DEFICIENCY, INCLUDING REFERENCE TO ANY SUPPLEMENTAL DATA OR OBSERVATIONS RESPONSIBLE FOR DETERMINING THE PROBLEM OR DEFICIENCY;
- LOCATION OF THE PROBLEM OR DEFICIENCY, INCLUDING HOW AND WHEN THE PROBLEM OR DEFICIENCY WAS DISCOVERED. IN ADDITION, AN ESTIMATE OF HOW LONG THE PROBLEM OR DEFICIENCY HAS EXISTED SHOULD BE INCLUDED;
- AN OPINION AS TO THE PROBABLE CAUSE OF THE PROBLEM OR DEFICIENCY;
- A RECOMMENDED CORRECTIVE ACTION FOR RESOLVING THE PROBLEM OR DEFICIENCY. IF THE CORRECTIVE ACTION HAS ALREADY BEEN IMPLEMENTED, THE OBSERVATIONS AND DOCUMENTATION TO SHOW THAT THE PROBLEM OR DEFICIENCY HAS BEEN RESOLVED SHOULD BE INCLUDED. IF THE PROBLEM OR DEFICIENCY HAS NOT BEEN RESOLVED BY THE END OF THE DAY UPON WHICH IT WAS DISCOVERED, THEN THE REPORT WILL CLEARLY STATE THAT IT IS AN UNRESOLVED PROBLEM OR DEFICIENCY. IF THE PROBLEM OR DEFICIENCY HAS NOT BEEN RESOLVED, THE CQA MANAGER, PROJECT MANAGER AND THE MONITOR WILL DISCUSS THE NECESSARY CORRECTIVE ACTIONS TO RESOLVE THE PROBLEM OR DEFICIENCY AS SOON AS POSSIBLE.

THE PROJECT MANAGER, WORKING WITH EITHER THE SOILS AND/OR GEOSYNTHETICS QUALITY ASSURANCE MANAGERS, WILL DETERMINE IF THE PROBLEM OR DEFICIENCY IS AN INDICATION OF A SITUATION THAT MIGHT REQUIRE CHANGES TO THE PLANS AND/OR THE CQA PROGRAM. IF THIS SITUATION DEVELOPS, THEN A MEETING WILL BE HELD WITH THE APPROPRIATE PEOPLE, INCLUDING THE ENGINEER, TO DETERMINE IF REVISIONS TO THE PLANS OR CQA PROGRAM SHOULD BE MADE. ANY REVISIONS TO THE PLANS OR THE CQA PROGRAM MUST BE APPROVED BY THE OWNER/OPERATOR, ENGINEER, AND EITHER THE SOILS OR GEOSYNTHETICS QUALITY ASSURANCE MANAGER BASED UPON WHO HAS RESPONSIBILITY FOR THE PROPOSED REVISIONS.

3.2.3 PHOTOGRAPHIC DOCUMENTATION

PHOTOGRAPHS WILL BE TAKEN DURING CONSTRUCTION TO DOCUMENT OBSERVATIONS, PROBLEMS, DEFICIENCIES, AND WORK IN PROGRESS.

3.2.4 CONSTRUCTION DOCUMENTATION REPORTS

A CONSTRUCTION DOCUMENTATION REPORT WILL BE ASSEMBLED BY THE CQA MANAGERS. ONE CONSTRUCTION DOCUMENTATION REPORT WILL BE ASSEMBLED FOR THE ENTIRE CONSTRUCTION PROJECT BY COMBINING THE DATA AND REPORTS GENERATED BY THE SOILS AND GEOSYNTHETICS QUALITY ASSURANCE MANAGERS.

AT A MINIMUM, THE CONSTRUCTION DOCUMENTATION REPORT WILL CONTAIN THE FOLLOWING INFORMATION:

1. DOCUMENTATION (AS–BUILT) SET OF DRAWINGS REPRESENTING ACTUAL INSTALLATION OF EACH MATERIAL (EXCAVATED GRADE, TOP OF LINER, AND TOP OF PROTECTIVE COVER) AS IT RELATES TO THE PLAN VIEWS AND INDIVIDUAL DETAILS;
2. DOCUMENTATION (AS–BUILT) SET OF DRAWINGS REPRESENTING ACTUAL INSTALLATION OF LEACHATE COLLECTION LINES, ANCHOR TRENCHES, AND TIE–INS (HORIZONTAL AND VERTICAL LOCATIONS) AS IT RELATES TO THE PLAN VIEWS AND INDIVIDUAL DETAILS;
3. SUMMARY OF FIELD OBSERVATIONS AND TESTS PERFORMED, LABORATORY SAMPLES COLLECTED, AND TEST RESULTS REPORTED BY THE RESPECTIVE OUTSIDE TESTING LABORATORY;
4. SUMMARY OF ANY PROBLEMS AND/OR DEFICIENCIES ENCOUNTERED AND THEIR RESOLUTION DURING THE CONSTRUCTION, INCLUDING ANY RECURRING PROBLEMS OR DEFICIENCIES THAT WERE DISCOVERED;
5. DOCUMENTATION THAT ACCEPTANCE CRITERIA WERE MET, INCLUDING COMPARISON OF PROCEDURE DATA WITH PERMIT PLANS AND REQUIREMENTS SET FORTH IN THIS CQA PROGRAM; AND,
6. CERTIFICATION BY THE CQA MANAGERS THAT THE CONSTRUCTION MEETS THE REQUIREMENTS OF THE APPROVED PERMIT PLANS AND THIS CQA PROGRAM.
7. CONSTRUCTION CERTIFICATION BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF GEORGIA.
8. COPIES OF ALL THE DAILY REPORTS
9. DATA ON THE INSTALLED SYNTHETIC LINER. (E.G. ROLL NUMBERS, REQUIRED DESTRUCTIVE TEST, LOCATION OF REPAIRS, NAMES OF SEAMING CREW, ETC.)

3.2.5 EPD NOTIFICATION

IT IS THE RESPONSIBILITY OF THE PROJECT MANAGER TO NOTIFY EPD REGARDING EACH CONSTRUCTION ACTIVITY THAT REQUIRES CERTIFICATION. EPD SHALL BE NOTIFIED AT THE BEGINNING OF THE CONSTRUCTION ACTIVITY WITH INFORMATION REGARDING THE PLANNED ACTIVITY AND PRELIMINARY SCHEDULE. ALSO, EPD SHALL BE NOTIFIED AT THE COMPLETION OF CONSTRUCTION OF EACH LAYER OF THE BASE LINER OR FINAL COVER SYSTEMS.

4.0 MATERIALS

THE MATERIALS REFERENCED HEREIN ARE DESCRIBED IN THE CONSTRUCTION SPECIFICATIONS AND ENGINEERING DRAWINGS FOR THE DEANS BRIDGE ROAD MSW LANDFILL PHASE III PREPARED BY THE ENGINEER AND MUST BE PREQUALIFIED PRIOR TO CONSTRUCTION TO DOCUMENT CONFORMANCE WITH THE DESIGN STANDARDS INCLUDED IN THE PERMIT APPLICATION.

4.1 SUBGRADE

SUBGRADE MATERIALS ARE THE EXISTING SOILS FOUND AT THE LIMITS OF EXCAVATION FOR EACH CELL.

4.2 STRUCTURAL FILL

STRUCTURAL FILL MATERIALS SHALL CONSIST OF SOILS THAT CAN, WHEN COMPACTED, PROVIDE A FIRM, SOLID FOUNDATION FOR OVERLAYING MATERIALS.

4.3 GEOMEMBRANES

THE DEANS BRIDGE ROAD MSW LANDFILL PHASE III CONSTRUCTION FOR THE MSW FACILITIES WILL INCLUDE 40 MIL., 50 MIL. AND 60 MIL TEXTURED HDPE AS SHOWN ON THE FACILITY DAO PLANS. REQUIRED GEOMEMBRANE PROPERTIES ARE SHOWN IN TABLE 2(A) OF THE LATEST EDITION OF GRI'S GM 13 OR GM 17 (AS APPROPRIATE). HOWEVER, THE CELL BOTTOM GEOMEMBRANE SHALL HAVE A 60 MIL MINIMUM THICKNESS. IN ADDITION TO THE PROPERTIES IN THE TABLES 2(A), FOR THE STRUCTURED GEOMEMBRANE IN THE ALTERNATE II FINAL COVER CROSS SECTION, THE MINIMUM AVERAGE VALUE FOR THE DRAINAGE STUD HEIGHT ACCORDING TO THE ASTM D7468 SHOULD BE 130 MILS.

4.3.1 MANUFACTURING

4.3.1.1 RAW MATERIALS

THE MANUFACTURER WILL PROVIDE THE PROJECT MANAGER OR GEOSYNTHETIC QUALITY ASSURANCE MANAGER WITH THE FOLLOWING INFORMATION:

- A. THE ORIGIN (RESIN SUPPLIER'S NAME, IDENTIFICATION BRAND NAME, NUMBER) AND PRODUCTION DATE OF THE RESIN;
- B. A COPY OF THE QUALITY CONTROL CERTIFICATE ISSUED BY THE RESIN SUPPLIER;
- C. SUMMARY REPORTS OF THE TEST RESULTS, INCLUDING THE TEST FREQUENCY USED BY THE MANUFACTURER TO VERIFY THE QUALITY OF EACH RESIN BATCH USED TO MANUFACTURE GEOMEMBRANE ROLLS ASSIGNED TO THE PROJECT. AT A MINIMUM, ONE SERIES OF TESTS WILL BE CONDUCTED FOR EACH RESIN BATCH.
- D. A STATEMENT THAT NO RECLAIMED POLYMER IS ADDED TO THE RESIN (HOWEVER, THE USE OF POLYMER RECYCLED DURING THE MANUFACTURING PROCESS MAY BE PERMITTED IF DONE WITH APPROPRIATE CLEANLINESS AND APPROVED BY THE GEOSYNTHETIC QUALITY ASSURANCE CONSULTANT).

BASED ON THE DATA SUPPLIED BY THE MANUFACTURER, THE GEOSYNTHETICS QUALITY ASSURANCE MANAGER WILL NOTIFY THE PROJECT MANAGER OF ANY DEVIATION FROM THE PROJECT SPECIFICATIONS.

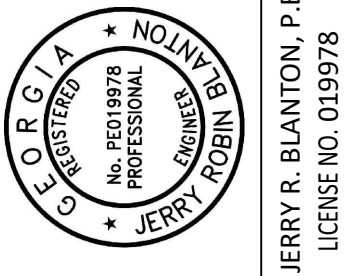
4.3.1.2 GEOMEMBRANE ROLLS

THE MANUFACTURER WILL PROVIDE THE PROJECT MANAGER OR GEOSYNTHETICS QUALITY ASSURANCE MANAGER WITH A QUALITY CONTROL CERTIFICATE FOR THE GEOMEMBRANE PRODUCED. THE QUALITY CONTROL CERTIFICATE SHOULD BE SIGNED BY A RESPONSIBLE PARTY EMPLOYED BY THE MANUFACTURER. THE QUALITY CONTROL CERTIFICATE SHALL INCLUDE:

- A. ROLL NUMBER AND IDENTIFICATION, AND;
 - B. SAMPLING PROCEDURES, FREQUENCY, AND RESULTS OF QUALITY CONTROL TESTS. TESTING SHALL CONFIRM THE GEOMEMBRANE MEETS MINIMUM REQUIREMENTS AS LISTED IN TABLE 2(A) OF LATEST EDITION OF THE GRI'S GM13 OR GM17 (AS APPROPRIATE). HOWEVER, THE CELL BOTTOM GEOMEMBRANE SHALL HAVE A 60 MIL MIN. THICKNESS. THESE TESTS SHOULD BE CONDUCTED USING THE METHODS AND TEST FREQUENCY INDICATED IN TABLE 2.
- THE MANUFACTURER WILL PROVIDE THE PROJECT MANAGER OR GEOSYNTHETICS QUALITY ASSURANCE MANAGER WITH MANUFACTURING QUALITY CONTROL DATA FOR ALL THE GEOMEMBRANE ROLLS. THE FREQUENCY OF THESE TESTS, QUALITY ASSURANCE MANAGER, SHALL INCLUDE THICKNESS (ASTM D–5994), TENSILE STRENGTH AND ELONGATION (ASTM D–6693), PUNCTURE RESISTANCE (ASTM D4833), TEAR RESISTANCE (ASTM D–1004), SHEET DENSITY (ASTM D1505 OR ASTM D792), AND CARBON BLACK CONTENT (ASTM D1603).
- B. OBTAIN CONFORMANCE TEST SAMPLES, AT THE PLACE OF MANUFACTURE OR AS THE ROLLS ARE DELIVERED TO THE SITE, IF REQUIRED;
 - C. REVIEW THE QUALITY CONTROL CERTIFICATES, TEST METHODS USED, AND THE MEASURED ROLL PROPERTIES FOR CONFORMANCE TO THE SPECIFICATIONS;
 - D. VERIFY THAT THE QUALITY CONTROL CERTIFICATES HAVE BEEN PROVIDED FOR ALL ROLLS; AND,
 - E. REVIEW THE CONFORMANCE TEST RESULTS BEFORE DEPLOYMENT OF GEOMEMBRANE.

TABLE 2
REQUIRED QUALITY CONTROL PRE–SHIPMENT
TESTING OF GEOMEMBRANE LINER

PROPERTY	TEST METHOD	FREQUENCY
THICKNESS	ASTM D5994	EACH ROLL
DENSITY	ASTM D1505 OR ASTM D792	ONCE EVERY BATCH OF RESIN
TENSILE PROPERTIES	ASTM D6693	EVERY 50,000 FT ²
TEAR RESISTANCE	ASTM D1004	EVERY 50,000 FT ²
PUNCTURE RESISTANCE	ASTM D4833	EVERY 50,000 FT ²
STRESS CRACK RESISTANCE	ASTM D5397	ONCE EVERY BATCH OF RESIN
CARBON BLACK CONTENT	ASTM D1603	EVERY 50,000 FT ²

	
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DESCRIPTION	ISSUED FOR BID
DATE	04/06/26
REV	1
SHEET TITLE CONSTRUCTION QUALITY ASSURANCE PLAN - 1	
PROJECT TITLE DEANS BRIDGE ROAD LANDFILL PHASE III STAGE II SOUTH CELL 2 PHASE I CONSTRUCTION	
CLIENT	AUGUSTA-RICHMOND COUNTY LANDFILL 4330 DEANS BRIDGE RD BLYTHE, GEORGIA 30805
SCS ENGINEERS	STEARN, CONRAD AND SCHMIDT CONSULTING ENGINEERS 3175 SATELLITE BLVD, BLDG 600 SUITE 100 DULUTH, GA 30096 PH. 678 319-9849
CADD FILE:	11-14 CQA PLAN
DATE:	APRIL 2026
SCALE:	AS SHOWN
DRAWING NO.	11 of 21

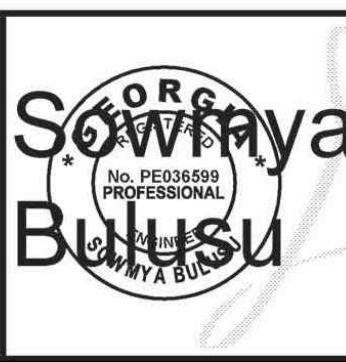


NO.	DATE	DESCRIPTION OF REVISION
1	04-09-18	EPD COMMENT – GCL MINOR MOD
0	02-23-18	EPD SUBMITTAL – GCL MINOR MOD

SCS ENGINEERS
STEARN, CONRAD AND SCHMIDT
CONSULTING ENGINEERS 3175
SATELLITE BLVD, BLDG 600 SUITE 100
DULUTH, GA 30096
PH. 678 319-9849 FAX 678 319-9851

NO.	DATE	DESCRIPTION OF REVISION	HW/VSS BY/CJK
2	11-30-20	REVISED FOR FIVE YEAR PERMIT REVIEW	

AUGUSTA – RICHMOND
COUNTY, GEORGIA



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DEANS BRIDGE ROAD MSW LANDFILL PHASE III DESIGN & OPERATION PLAN			
CONTRUCTION QUALITY ASSURANCE PLAN			
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DEANS BRIDGE ROAD MSWLF – PHASE III
CONSTRUCTION QUALITY ASSURANCE (CQA) PLAN (CONTINUED)

4.3.2 ACCEPTANCE CRITERIA

TABLES 2A OF GM13 AND GM17 AND 2 ABOVE LIST THE TESTS, TEST METHODS AND FREQUENCIES TO BE PERFORMED ON GEOMEMBRANE ROLLS SAMPLED BY THE MANUFACTURER.

RESULTS FOR TEAR RESISTANCE, AND EACH OF THE TENSILE PROPERTY TESTS WILL BE REPORTED FOR BOTH THE MACHINE AND CROSS DIRECTION.

RETESTING OF GEOMEMBRANE ROLLS BECAUSE OF FAILURE TO MEET ANY OF THESE SPECIFICATIONS CAN ONLY BE AUTHORIZED BY THE PROJECT MANAGER.

TABLE 2A OF GM13 AND GM17, LATEST EDITION, LISTS THE ACCEPTANCE SPECIFICATIONS FOR THE GEOMEMBRANE TO BE USED FOR THE PROJECT. FOR THOSE TESTS WHERE RESULTS ARE REPORTED FOR BOTH MACHINE AND CROSS DIRECTION, EACH RESULT WILL BE COMPARED TO THE LISTED SPECIFICATION TO DETERMINE ACCEPTANCE. THE FOLLOWING PROCEDURE WILL BE USED FOR INTERPRETING RESULTS:

- IF THE VALUE MEETS THE STATED SPECIFICATION, THEN THE ROLL AND THE LOT WILL BE ACCEPTED FOR USE IN THE LINERS FOR THE JOB SITE.
- IF THE RESULT DOES NOT MEET THE SPECIFICATION, THEN THE ROLL AND ALL OTHER ROLLS BETWEEN OTHER PASSING TESTS SHALL BE REJECTED. THE ROLL OR ROLLS MAY BE RETESTED USING ADDITIONAL SAMPLES, WHICH BOUND THE FAILED TEST. TWO ADDITIONAL TESTS MUST BE PERFORMED FOR THE FAILED TEST PROCEDURE. IF BOTH OF THE RETESTS ARE ACCEPTABLE, THEN THE MATERIAL BETWEEN PREVIOUS AND SUBSEQUENT PASSING TESTS IS UNSUITABLE AND SHALL BE REJECTED.

4.4 COMPACTED LINER BASE

THE COMPACTED LINER BASE IN THE MSW AREA AS SHOWN ON THE DRAWINGS SHALL CONSIST OF A MINIMUM OF 2 FEET OF LOW PERMEABILITY NATURAL OR AMENDED SOIL LINER MATERIAL.

PRIOR TO ACCEPTANCE OF ANY MATERIAL FOR USE AS COMPACTED LINER BASE, THE SOILS QUALITY ASSURANCE MANAGER WILL VISIT THE POTENTIAL BORROW AREA(S) TO VISUALLY OBSERVE AND FIELD CLASSIFY THE MATERIAL. UPON PRELIMINARY ACCEPTANCE BY THE SOILS QUALITY ASSURANCE MANAGER, BASED ON FIELD CLASSIFICATION, A SAMPLE OF REPRESENTATIVE MATERIAL FROM EACH BORROW SOURCE WILL BE OBTAINED AND TRANSPORTED TO THE SOILS TESTING LABORATORY FOR PREQUALIFICATION TESTING.

EACH SERIES OF PREQUALIFICATION TESTS WILL CONSIST OF DETERMINATIONS OF NATURAL MOISTURE CONTENT, GRAIN SIZE DISTRIBUTION, ATTERBERG LIMITS, MOISTURE-DENSITY RELATIONSHIP AND HYDRAULIC CONDUCTIVITY. THE COMPACTED LINER BASE MATERIAL SHALL HAVE AN IN-PLACE COMPACTED SATURATED HYDRAULIC CONDUCTIVITY EQUAL TO OR LESS THAN 1×10^{-7} CM/SEC, OR EQUAL TO OR LESS THAN 1×10^{-8} CM/SEC IF USING A GCL THAT HAS A SATURATED HYDRAULIC CONDUCTIVITY EQUAL TO OR LESS THAN 5×10^{-9} CM/SEC, ALL WITHIN THE DENSITY AND MOISTURE CONTENT RANGE SPECIFIED FOR CONSTRUCTION. THE UPPER 6 INCHES OF THE COMPACTED LINER BASE SHALL BE FREE OF PARTICLES GREATER THAN 0.25-INCHES. THE LOWER 18 INCHES OF COMPACTED LINER BASE SHALL BE FREE OF STONES OR OTHER PARTICLES GREATER THAN THREE INCHES IN DIAMETER. COMPACTED LINER BASE SHALL BE FREE OF DEBRIS, PLANT MATERIALS, ROOTS OR OTHER FOREIGN MATERIALS.

TABLE 3 PRESENTS THE MINIMUM TESTING FREQUENCY OF PREQUALIFICATION TESTS FOR THE BORROW SOURCE.

TABLE 3
MATERIAL PROPERTY REQUIREMENTS BORROW SOURCE
COMPACTED LINER BASE

ITEM	ASTM	MINIMUM REQUIREMENTS
MOISTURE CONTENT	D2216, D4643 D4944	1 TEST PER 1,000 CU YD AND EACH CHANGE IN MATERIAL TYPE.
ATTERBERG LIMITS	D4318–84	1 TEST PER 5,000 CU YD AND EACH CHANGE IN MATERIAL TYPE.
SIEVE ANALYSIS	D6913	1 TEST PER 1,000 CU YD AND EACH CHANGE IN MATERIAL TYPE.
STANDARD PROCTOR	D698	1 TEST PER 5,000 CU YD AND EACH CHANGE IN MATERIAL TYPE.
RECOMPACTED HYDRAULIC CONDUCTIVITY	D5084	1 TEST PER 10,000 CU YD AND EACH CHANGE IN MATERIAL TYPE.

4.5 LEACHATE COLLECTION LAYER

LEACHATE COLLECTION LAYER: THE LEACHATE COLLECTION LAYER USED AS PART OF THE LEACHATE COLLECTION SYSTEM SHALL CONSIST OF A MINIMUM 2 FOOT LAYER OF MATERIAL WITH A MINIMUM HYDRAULIC CONDUCTIVITY OF 1×10^{-2} CM/SEC. THE MATERIAL SHALL BE SUBSTANTIALLY FREE OF AGGREGATE, ROCKS, DEBRIS, PLANT MATERIAL, OR OTHER SOLID MATERIAL LARGER THAN 1/4-INCH IN DIAMETER. THE LEACHATE COLLECTION MATERIAL CALCIUM CARBONATE CONTENT SHALL BE LESS THAN 5 PERCENT BY WEIGHT. DURING CONSTRUCTION OR STOCKPILING, BULK SAMPLES SHALL BE OBTAINED AND TESTED IN ACCORDANCE WITH THE FOLLOWING TABLE. ADDITIONALLY, ONE SAMPLE WILL BE TESTED FOR CALCIUM CARBONATE CONTENT (ASTM D-3042).

ITEM	ASTM	MINIMUM REQUIREMENTS
SIEVE ANALYSIS	D6913	1,500 CU YD
HYDRAULIC CONDUCTIVITY	D2434	3,000 CU YD
CALCIUM CARBONATE	D3042	1 PER SOURCE

4.6 ALTERNATE LEACHATE COLLECTION LAYER

THE ALTERNATE LEACHATE COLLECTION LAYER THAT MAY BE USED INSTEAD OF THE 1×10^{-2} CM/SEC GRANULAR MATERIAL CONSISTS OF A DOUBLE-SIDED GEOMEMPOSITE DRAIN (A GEONET HEAT BONDED TO A GEOTEXTILE ON EACH SIDE) OVERLAIN BY A MINIMUM OF 2 FEET OF COVER SOIL.

4.6.1 SOIL COVER MATERIAL

COVER SOIL SHALL CONSIST OF 24-INCHES OF EITHER ON-SITE OR OFF-SITE MATERIAL WITH A MAXIMUM PARTICLE SIZE OF 3/4-INCH. THE SOIL HAS NO SPECIFIED PERMEABILITY. THE FOLLOWING IS THE MINIMUM TESTING FOR THE SOIL COVER MATERIAL.

ITEM	ASTM	MINIMUM REQUIREMENTS
SIEVE ANALYSIS	D6913	1,500 CU YD

4.6.2 GEOTEXTILE AND GEONET

THE GEOMEMPOSITE SHALL BE MANUFACTURED BY HEAT BONDING A 6 OZ/SY NON-WOVEN GEOTEXTILE TO BOTH SIDES OF AN HDPE GEONET. THE GEOTEXTILE SHALL MEET THE REQUIREMENTS FOR BOTH FILTER AND CUSHION GEOTEXTILE AS IDENTIFIED IN SECTION 4.8. THE GEONET WILL BE MANUFACTURED TO MEET MINIMUM PHYSICAL, MECHANICAL, AND CHEMICAL PROPERTIES REQUIRED TO PROVIDE LONG-TERM DRAINAGE PERFORMANCE. THE FOLLOWING PROPERTIES, TEST METHODS AND TEST FREQUENCIES SHALL BE USED BY THE MANUFACTURERS AND QUALITY ASSURANCE MANAGER:

GEONET PROPERTY	TEST METHOD	MANUFACTURER QC TEST FREQUENCY	CONFORMANCE QA TEST FREQUENCY	REQUIRED TEST VALUE
DENSITY (MIN. AVE.)	ASTM D792 OR ASTM D1505	1 PER 100,000 SF	1 PER 250,000 SF	0.95 G/CC
COMPRESSIVE STRENGTH (MIN. AVE.)	ASTM D6364	1 PER 100,000 SF	1 PER 250,000 SF	(SEE NOTE 3)
CARBON BLACK CONTENT (RANGE)	ASTM D1603 ⁽²⁾	2 PER 100,000 SF	2 PER 250,000 SF	2–3%
GEOMEMPOSITE PROPERTY	TEST METHOD	MANUFACTURER QC TEST FREQUENCY	CONFORMANCE QA TEST FREQUENCY	REQUIRED TEST VALUE
PEEL STRENGTH (MIN. AVE.)	ASTM D7005	1 PER 100,000 SF	1 PER 250,000 SF	0.75 LB/N
TRANSMISSIVITY ⁽¹⁾	ASTM D4716	1 PER 100,000 SF	1 PER 250,000 SF	(SEE NOTE 1)

NOTES:

- TRANSMISSIVITY SHALL BE MEASURED IN A 12-INCH X 12-INCH BOX WITH ADJACENT CONDITIONS MATCHING DETAIL 100 HOUR DURATION AND 0.1 GRADIENT. THE VALUE SHALL BE AT LEAST 5.35×10^{-4} M²/SEC AT 1,050 PSF, 1.58×10^{-4} M²/SEC AT 3,500 PSF, 2.10×10^{-4} M²/SEC AT 10,500 PSF, 2.95×10^{-4} M²/SEC AT 14,000 PSF, 2.46×10^{-4} M²/SEC AT 24,500 PSF AND 2.40×10^{-4} M²/SEC AT 25,950 PSF.
- OTHER METHODS SUCH AS D4218 (MUFFLE FURNACE) OR MICROWAVE METHODS ARE ACCEPTABLE IF AN APPROPRIATE CORRELATION TO D1603 (TUBE FURNACE) CAN BE ESTABLISHED.
- COMPRESSIVE STRENGTH REQUIRED VARIES BY LOCATION. BASE LINER GEONET WITH MAXIMUM WASTE HEIGHT OF 200 FEET SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 15,000 PSF. BASE LINER GEONET WITH MAXIMUM WASTE HEIGHT BETWEEN 200 FEET AND 350 FEET SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 25,000. BASE LINER GEONET WITH MAXIMUM WASTE HEIGHT OF MORE THAN 350 FEET SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 26,000 PSF.

4.6.3 ROCK TOE DRAIN

THE ROCK TOE DRAIN REQUIRED FOR THE ALTERNATE LINER COLLECTION LAYER AT THE TOE OF THE SLOPE AT THE LOW END OF THE STAGE, AS SHOWN ON THE DRAWINGS, SHALL CONSIST OF ASTM #57 STONE. THE STONE SHALL BE LESS THAN 5 PERCENT CALCIUM CARBONATE BY WEIGHT. EACH SOURCE SHALL BE TESTED AT LEAST ONCE FOR GRADATION AND CALCIUM CARBONATE CONTENT.

4.7 HDPE PIPING

THE HDPE PIPING HAS BEEN DESIGNED BASED ON ASTM D3350 CELL CLASSIFICATION 445474C MATERIALS. ANY HDPE PIPING USED FOR THIS FACILITY SHALL MEET OR EXCEED THOSE REQUIREMENTS. LEACHATE COLLECTION PIPING SHALL BE 6" HDPE (PE 4710, SDR 11 OR BETTER) PERFORATED AS SHOWN ON THE DRAWINGS. LEACHATE SUMP AND CLEANOUT PIPE SHALL BE 6", 8" OR 10" HDPE AS SHOWN ON THE DRAWINGS (PE 4710, SDR 17 OR BETTER). DUAL CONTAINED FORCEMAIN SHALL BE 2" HDPE (SDR 17 OR BETTER) BY 4" HDPE (SDR 17 OR BETTER) OR 3" HDPE (SDR 17 OR BETTER) BY 6" HDPE (SDR 17 OR BETTER) AS SHOWN ON THE DRAWINGS. UNDERDRAIN PIPING SHALL BE 6" HDPE (SDR 11 OR BETTER) PERFORATED AS SHOWN ON THE DRAWINGS. THE STONE ENVELOPE AROUND THE LEACHATE COLLECTION PIPING AND UNDERDRAIN PIPING SHALL MEET REQUIREMENTS OF SECTION 4.9.

LEACHATE GRAVITY COLLECTION PIPING SHALL BE PRESSURE TESTED UPON INSTALLATION IN ACCORDANCE WITH THE CONSTRUCTION PLANS AND SPECIFICATIONS.

4.8 GEOTEXTILES

THE GEOTEXTILES USED IN CONSTRUCTION SHALL MEET THE REQUIREMENTS OF TABLE 4. GEOTEXTILE SHALL BE QUALITY CONTROL TESTED AT A MINIMUM OF EVERY 100,000 SQUARE FEET.

THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL VISUALLY INSPECT THE MATERIAL AS IT ARRIVES AT THE SITE. THE REQUIRED GEOTEXTILE MATERIAL PROPERTIES ARE LISTED BELOW:

TABLE 4

APPLICATION/PROPERTY	UNIT	QUALIFIER	TEST METHOD	VALUE
MASS PER UNIT AREA	OZ/YD ²	MINIMUM	ASTM D5261	6 8 10 16
APPARENT OPENING SIZE	MM	MAXIMUM	ASTM D4751	0.25 0.25
PERMITTIVITY	/S	MINIMUM	ASTM D4491	0.2 0.2
GRAB STRENGTH	LB	MINIMUM	ASTM D4632	157 200 230 370
PUNCTURE STRENGTH	LB	MINIMUM	ASTM D6241	310 430 700 900
TRAPEZOIDAL TEAR STRENGTH	LB	MINIMUM	ASTM D4533	135 95

4.9 LEACHATE COLLECTION GRAVEL

THE LEACHATE COLLECTION GRAVEL ENVELOPE SURROUNDING THE LEACHATE COLLECTION PIPES SHALL CONSIST OF WASHED GRAVEL AND SHALL BE CLEAN, EITHER CRUSHED OR NATURALLY ROUNDED, SUBSTANTIALLY NON-CARBONATE AGGREGATE, SIZE NO. 4 PER GEORGIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES, TABLE 800.01.H. THE LEACHATE COLLECTION GRAVEL CALCIUM CARBONATE CONTENT SHALL BE LESS THAN 5 PERCENT BY WEIGHT.

THE MATERIAL SUPPLIER SHALL PROVIDE THE QUALITY ASSURANCE MONITOR A REPRESENTATIVE SAMPLE OF MATERIAL FOR QUALITY ASSURANCE TESTING. EACH SOURCE SHALL BE TESTED AT LEAST ONCE FOR GRADATION AND CALCIUM CARBONATE CONTENT.

4.11 FINAL COVER COMPACTED SOIL

FINAL COVER: THE COMPACTED SOIL MATERIAL SHALL BE MINIMUM 18 INCHES OF EITHER ON-SITE OR OFF-SITE MATERIAL WITH A MAXIMUM PARTICLE SIZE OF 3/4-INCH. THE SOIL COVER SHOULD HAVE A MAXIMUM PERMEABILITY OF 1×10^{-8} CM/SEC. THE SOIL SHALL BE COMPACTED TO 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED BY ASTM D698, STANDARD PROCTOR DURING COMPACTION. THE THICKNESS OF THE COMPACTED LIFTS SHALL NOT EXCEED 6 INCHES.

ALTERNATE 1 FINAL COVER: THE COMPACTED SOIL MATERIAL SHALL BE MINIMUM 18 INCHES OF EITHER ON-SITE OR OFF-SITE MATERIAL WITH A MAXIMUM PARTICLE SIZE OF 3/4-INCH. THE SOIL COVER SHOULD HAVE A MAXIMUM PERMEABILITY OF 1×10^{-8} CM/SEC. THE THICKNESS OF COMPACTED LIFTS SHALL NOT EXCEED 6-INCHES.

ALTERNATE 2 FINAL COVER: THE COMPACTED SOIL MATERIAL SHALL BE MINIMUM 12 INCHES OF EITHER ON-SITE OR OFF-SITE MATERIAL WITH A MAXIMUM PARTICLE SIZE OF 3/4-INCH. THE SOIL COVER HAS NO SPECIFIED PERMEABILITY AND SHALL BE COMPACTED TO 90 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED BY ASTM D698, STANDARD PROCTOR DURING COMPACTION. THE THICKNESS OF COMPACTED LIFTS SHALL NOT EXCEED 6-INCHES.

PRIOR TO ACCEPTANCE OF ANY MATERIAL FOR USE AS COMPACTED CLAYEY SOIL, THE SOILS QUALITY ASSURANCE MANAGER WILL VISIT THE POTENTIAL BORROW AREA(S) TO VISUALLY OBSERVE AND FIELD CLASSIFY THE MATERIAL. UPON PRELIMINARY ACCEPTANCE BY THE SOILS QUALITY ASSURANCE MANAGER, BASED ON FIELD CLASSIFICATION, A SAMPLE OF REPRESENTATIVE MATERIAL FROM EACH BORROW SOURCE WILL BE OBTAINED AND TRANSPORTED TO THE SOILS TESTING LABORATORY FOR TESTING.

4.12 GENERAL FILL – FINAL COVER

THE GENERAL FILL MATERIAL SHALL CONSIST OF EITHER ON-SITE OR OFF-SITE MATERIAL WITH A MAXIMUM PARTICLE SIZE OF 3/4 INCH. THE SOIL COVER HAS NO SPECIFIED PERMEABILITY. THE FOLLOWING IS THE MINIMUM TESTING FOR THE GENERAL FILL MATERIAL.

ITEM	TEST METHOD	MINIMUM REQUIREMENTS
SIEVE ANALYSIS	ASTM D6913	1,500 CU.YD.

4.13 TOP SOIL – FINAL COVER

TOP SOIL SHALL HAVE A MINIMUM THICKNESS OF 6 INCHES. TOP SOIL MUST SUSTAIN VEGETATIVE GROWTH, MINIMIZE EROSION, AND PROTECT THE INTEGRITY OF THE UNDERLYING COMPONENTS OF THE FINAL COVER SYSTEM. TOPSOIL SHOULD BE A RICH, FRIABLE LOAM CONTAINING A LARGE AMOUNT OF HUMUS AND SHALL BE ORIGINAL SURFACE SANDY LOAM, TOPSOIL OF GOOD, RICH, UNIFORM QUALITY, SUBSTANTIALLY FREE FROM ANY MATERIAL SUCH AS HARD CLODS, STIFF CLAY, HARDPAN, PARTIALLY DISINTEGRATED STONE, PEBBLES LARGER THAN 1/2-INCH IN DIAMETER, LIME, CEMENT, BRICKS, ASHES, CINDERS, SLAG, CONCRETE, BITUMEN OR ITS RESIDUE, BOARDS, STICKS, CHIPS OR OTHER UNDESIRABLE MATERIAL HARMFUL OR UNNECESSARY TO PLANT GROWTH. THE PH SHALL RANGE FROM 5.5 TO 6.0.

4.14 VEGETATIVE/EROSION LAYER – FINAL COVER

VEGETATIVE/EROSION LAYER SHALL HAVE A MINIMUM THICKNESS OF 18 INCHES. VEGETATIVE/EROSION LAYER MUST SUSTAIN VEGETATIVE GROWTH, MINIMIZE EROSION, AND PROTECT THE INTEGRITY OF THE UNDERLYING COMPONENTS OF THE FINAL COVER SYSTEM. VEGETATIVE/EROSION LAYER SHOULD BE A RICH, FRIABLE LOAM CONTAINING A LARGE AMOUNT OF HUMUS AND SHALL BE ORIGINAL SURFACE SANDY LOAM, TOPSOIL OF GOOD, RICH, UNIFORM QUALITY, SUBSTANTIALLY FREE FROM ANY MATERIAL SUCH AS HARD CLODS, STIFF CLAY, HARDPAN, PARTIALLY DISINTEGRATED STONE, PEBBLES LARGER THAN 1/2-INCH IN DIAMETER, LIME, CEMENT, BRICKS, ASHES, CINDERS, SLAG, CONCRETE, BITUMEN OR ITS RESIDUE, BOARDS, STICKS, CHIPS OR OTHER UNDESIRABLE MATERIAL HARMFUL OR UNNECESSARY TO PLANT GROWTH. THE PH SHALL RANGE FROM 5.5 TO 6.0.

4.15 GEOSYNTHETIC CLAY LINER (GCL)

THE CONSTRUCTION CONTROL OF GCL INCLUDES VISUAL OBSERVATION AND RECORD KEEPING FOR SUBGRADE CONTROL, MATERIAL DEPLOYMENT, SEAM OVERLAP AND AUGMENTATION (IF REQUIRED). THE QUALITY ASSURANCE MONITOR WILL VISUALLY INSPECT THE MATERIAL AS IT ARRIVES AT THE SITE.

THE QUALITY ASSURANCE MONITOR SHALL CONFIRM THE MATERIAL AND INSTALLATION ARE IN ACCORDANCE WITH THE CONSTRUCTION PLANS, SPECIFICATIONS, THE CONSTRUCTION QUALITY ASSURANCE PLAN AND THE MANUFACTURER'S RECOMMENDATIONS.

THE QUALITY ASSURANCE MONITOR SHALL REVIEW AND APPROVE THE QUALIFICATIONS OF THE GCL MANUFACTURER AND GCL INSTALLER.

THE QUALITY ASSURANCE MONITOR WILL REVIEW THE GCL MANUFACTURER'S QUALITY CONTROL CERTIFICATES (MQCC) TO VERIFY THAT THE MQCC HAVE BEEN PROVIDED AT THE SPECIFIED FREQUENCY AND THAT EACH CERTIFICATE IDENTIFIES THE RELS RELATED TO IT AND THAT THE CERTIFIED PROPERTIES MEET THE PROJECT SPECIFICATIONS. GCL WILL MEET OR EXCEED THE SPECIFICATION LISTED IN THE LATEST VERSION OF TABLE 10.0 OF GRI-G2.3. *STANDARD SPECIFICATION FOR TEST METHODS, REQUIRED PROPERTIES, AND TESTING FREQUENCIES OF GEOSYNTHETIC CLAY LINERS (GCLs). THE REQUIRED GCL MATERIAL PROPERTIES ARE LISTED BELOW:

GCL PROPERTIES AND TEST METHODS

APPLICATION/PROPERTY	UNIT	QC TEST FREQUENCY	TEST METHOD	VALUE
BENTONITE MASS/UNIT AREA	LBS/FT ²	1 PER 45,000 FT ²	ASTM D5993	0.75 (1)
PERMEABILITY (MAX.)	CM/SEC	1 PER 100,000 FT ²	ASTM D5887	5×10^{-9} (2)
FLUID LOSS, MAX. (BENTONITE PROPERTY)	ML	1 PER 100,000 LBS	ASTM D5891	18 (3)
PEEL STRENGTH (MIN. AVE.)	(4)	1 PER 45,000 FT ²	ASTM D6496	(4)

- BENTONITE MASS PER UNIT AREA TO BE REPORTED AT 0% MOISTURE CONTENT.
- PERMEABILITY TESTING TO BE PERFORMED WITH WATER @ 10 PSI MAXIMUM EFFECTIVE CONFINING STRESS AND 2 PSI HEAD.
- TYPICAL PEAK VALUE FOR SPECIMEN, HYDRATED 24 HOURS AT 200 PSF AND SHEARED AT 200 PSF NORMAL STRESS.
- REQUIRED VALUE SHALL BE TAKEN FROM MANUFACTURER'S STANDARD MATERIAL SPECIFICATION SHEET FOR THE SELECTED GCL MATERIAL. GCL SELECTION SHALL BE BASED ON THE MATERIAL'S ABILITY TO MEET OR EXCEED THE REQUIREMENTS IDENTIFIED IN THE SITE'S DESIGN.
- GEOTEXTILE COMPONENTS OF GCL SHALL BE QC TESTED IN ACCORDANCE WITH THE MANUFACTURER'S QUALITY CONTROL PROGRAM.

4.16 LINER SYSTEM INTERFACE FRICTION REQUIREMENTS

PRIOR TO STARTING MSW CELL FLOOR OR FINAL COVER CONSTRUCTION PROJECT, THE SELECTED MATERIALS SHALL BE TESTED BY DIRECT SHEAR METHODS. FOR GEOSYNTHETIC INTERFACES, TESTING SHALL BE IN ACCORDANCE WITH ASTM D5321. FOR GCL INTERFACES, TESTING SHALL BE IN ACCORDANCE WITH ASTM D6243. THE COHESIVE SOIL LINER MATERIAL SHALL BE REMODELED IN ACCORDANCE WITH THE PERMEABILITY TESTING REQUIREMENTS. THE CONDITIONS FOR THE SOIL LINER AND GCL AGAINST THE GEOMEMBRANE AND THE GCL VS THE SOIL LINER MATERIAL SHALL BE AS FOLLOWS: CONSOLIDATED AND INUNDATED FOR 24 HOURS AND SHEAR AT 0.04 IN/IN WITH AN UNDRAINED CONDITION. THE NORMAL STRESSES USED FOR ALL TESTS SHALL INCLUDE THE FOLLOWING: 5 PSF, 30 PSF AND 140 PSF. THE MINIMUM HORIZONTAL DISPLACEMENT SHOULD BE 3 INCHES. ALL TESTING SHALL BE COMPLETED AND RESULTS APPROVED BY THE ENGINEER PRIOR TO FINAL APPROVAL OF THE PROPOSED CONSTRUCTION MATERIALS. AT MINIMUM, ONE SET OF TESTS SHALL BE PERFORMED PER CONSTRUCTION EVENT (CELL OR FINAL CLOSURE). THE RESULTS SHALL DEMONSTRATE THAT THE MINIMUM PEAK FRICTION ANGLE FOR ANY INTERFACE CONDITION IN THE BASE LINER SYSTEM IS 17.5° OR GREATER. IF THE RESULTS DO NOT MEET THE MINIMUM REQUIREMENTS, THE DESIGN ENGINEER MAY EVALUATE ALTERNATE MATERIALS OR RE-EVALUATE THE SYSTEM STABILITY AND MINIMUM ϕ REQUIREMENTS.

5.0 CONSTRUCTION

5.1 EARTHWORK

5.1.1 SUBGRADE PREPARATION & STRUCTURAL FILL PLACEMENT

THE CONTRACTOR WILL BE RESPONSIBLE FOR PREPARING THE SUBGRADE FOR CONSTRUCTION OF OVERLYING COMPONENTS ACCORDING TO THE APPROVED GRADES. THE SOILS QUALITY ASSURANCE MANAGER WILL REPRESENT TO THE PROJECT MANAGER THAT:

- A LICENSED GEORGIA PROFESSIONAL ENGINEER OR LAND SURVEYOR HAS DETERMINED THAT LINES AND GRADES ARE IN ACCORDANCE WITH DESIGN PLANS;
- THERE ARE NO AREAS EXCESSIVELY SOFTENED BY HIGH WATER CONTENT; AND,
- THE SUBGRADE AREAS, WHICH WERE UNSTABLE UNDER THE LOADING OF THE COMPACTION EQUIPMENT, HAVE BEEN CORRECTED BY RECOMPACTION OR REMOVAL AND REPLACEMENT WITH STRUCTURAL FILL.

AFTER EXCAVATION TO SUBGRADE ELEVATION, THE CONTRACTOR SHALL PROOF-ROLL THE ENTIRE SUBGRADE WITH LOADED, RUBBER-TIRED SCRAPERS OR EQUIVALENT. UNSTABLE AREAS IDENTIFIED DURING PROOF-ROLLING SHALL BE REMOVED TO PROVIDE A SUBGRADE SUFFICIENTLY STABLE TO SUPPORT THE COMPACTION OF OVERLYING MATERIALS. REMOVED MATERIALS WILL BE REPLACED WITH STRUCTURAL FILL MATERIALS CAPABLE OF SUPPORTING THE COMPACTION OF OVERLYING MATERIALS, AND SHALL BE COMPACTED TO A MAXIMUM 6-INCH THICK COMPACTED LIFT AT A MINIMUM 95% OF MAXIMUM DRY DENSITY DETERMINED FROM ASTM D-698, STANDARD PROCTOR.

IN-PLACE DENSITY TESTS ON THE STRUCTURAL FILL AND SUBGRADE WILL BE PERFORMED BY A SOILS QUALITY ASSURANCE MONITOR WITH A NUCLEAR DENSITY METER OR A DRIVE CYLINDER APPARATUS. THE REQUIRED DEGREE OF COMPACTION IS A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY, AS DETERMINED BY ASTM D698, STANDARD PROCTOR. TABLE 5 SUMMARIZES THE MINIMUM TESTING AND FREQUENCY REQUIREMENTS FOR THE COMPACTED STRUCTURAL FILL:

TABLE 5

STRUCTURAL FILL TESTING REQUIREMENTS	
ITEM	MINIMUM REQUIREMENTS
SOIL CLASSIFICATION	NONE
NUCLEAR DENSITY/MOISTURE (ASTM D6938)	1 TEST PER 10,000 SQUARE FEET PER LIFT
DENSITY (ASTM D1556 OR D2937)	EVERY 25TH NUCLEAR DENSITY TEST
MOISTURE (ASTM D2216 OR D4643)	EVERY 10TH NUCLEAR MOISTURE TEST
ATTERBERG LIMITS (ASTM D4318–84)	1 TEST PER 10,000 CU. YD. OR WHENEVER SOIL TYPE CHANGES
SIEVE ANALYSIS (ASTM D6913)	1 TEST PER 10,000 CU. YD.
STANDARD PROCTOR SOIL COMPACTION CURVE (ASTM D698–91)	1 TEST PER 10,000 CU. YD OR WHENEVER SOIL TYPE CHANGES
SUBGRADE ELEVATIONS	100 FT. GRID INTERVAL

* TEST FREQUENCIES RELATED TO SUBGRADE AND STRUCTURAL FILL VOLUME SHALL BE BASED ON IN-PLACE CUBIC YARDS.

THE SOILS QUALITY ASSURANCE MONITOR WILL MAINTAIN AN ON-GOING SAMPLING AND TESTING PROGRAM DURING CONSTRUCTION TO DOCUMENT THAT MOISTURE/DENSITY CURVES ARE REPRESENTATIVE OF THE COMPACTED SOIL. MORE FREQUENT DENSITY TESTS MAY BE PERFORMED AT THE DISCRETION OF THE SOILS QUALITY ASSURANCE CONSULTANT TO PROPERLY CONTROL FIELD COMPACTION OPERATIONS.

5.1.2 COMPACTED LINER BASE

THE CONTRACTOR WILL BE RESPONSIBLE FOR CONSTRUCTING THE COMPACTED LINER BASE ACCORDING TO THE FOLLOWING SPECIFICATIONS, AND MAINTAINING THE LINES AND GRADES SHOWN ON THE DRAWINGS.

5.1.2.1 MATERIAL PROPERTIES

THE COMPACTED LINER BASE MATERIALS SHALL MEET THE REQUIREMENTS AS OUTLINED IN SECTION 4.4. DURING CONSTRUCTION OF THE COMPACTED LINER BASE, THE SOILS QUALITY ASSURANCE MONITOR WILL OBTAIN SAMPLES OF ON-SITE LINER MATERIAL JUST BEFORE COMPACTION. SAMPLES WILL BE OBTAINED ON A MORE FREQUENT BASIS WHEN, IN THE JUDGMENT OF THE SOILS QUALITY ASSURANCE MONITOR, THE COMPACTED LINER BASE MATERIAL HAS CHANGED.

THE FOLLOWING TABLE 6 SUMMARIZES THE MINIMUM LABORATORY TESTING REQUIREMENTS FOR THE COMPACTED LINER BASE JUST AFTER COMPACTION:

TABLE 6

COMPACTED LINER BASE CONSTRUCTION TESTING REQUIREMENTS		
PARAMETER	TEST METHOD	MINIMUM TESTING FREQUENCY
PERMEABILITY	ASTM D5084	1 TEST PER 40,000 SF PER LIFT AND 1 TEST PER 800 LF PER LIFT OF SIDEWALL
ATTERBERG LIMITS	ASTM D4318	1 TEST PER 40,000 SF PER LIFT AND 1 TEST PER 800 LF PER LIFT OF SIDEWALL
DRY DENSITY	ASTM D6938	1 TEST PER 40,000 SF PER LIFT AND 1 TEST PER 800 LF PER LIFT OF SIDEWALL
MOISTURE CONTENT	ASTM D2216	1 TEST PER 40,000 SF PER LIFT AND 1 TEST PER 800 LF PER LIFT OF SIDEWALL
CONSTRUCTION OVERSIGHT	OBSERVATION	CONTINUOUS

THE SOILS QUALITY ASSURANCE MONITOR WILL MAINTAIN AN ON-GOING SAMPLING AND TESTING PROGRAM DURING CONSTRUCTION TO MONITOR MOISTURE/DENSITY CURVES SO THAT REPRESENTATIVE SOIL DATA IS BEING USED TO ESTIMATE RELATIVE COMPACTION. MORE FREQUENT COMPACTION CURVES OR ONE-POINT MOISTURE/DENSITY TESTS MAY BE PERFORMED AT THE DISCRETION OF THE SOILS QUALITY ASSURANCE CONSULTANT TO PROPERLY CONTROL FIELD COMPACTION OPERATIONS. THE SOILS QUALITY ASSURANCE CONSULTANT WILL VISUALLY CHECK LINER MATERIALS ENTERING THE SITE FOR COLOR, TEXTURE, ROCKS AND FOREIGN DEBRIS.

5.1.2.2 CONSTRUCTION

THE COMPACTED LINER BASE WILL BE PLACED AND COMPACTED ACCORDING TO THE FOLLOWING REQUIREMENTS:

- THE COMPACTED LINER BASE LIFTS SHALL BE UNIFORM IN THICKNESS AND SHALL NOT EXCEED SIX INCHES IN THICKNESS AFTER COMPACTION. THE COMPACTION EQUIPMENT SHALL BE A SHEEPSFOOT COMPACTOR WITH A PEG LENGTH THAT WILL FULLY PENETRATE THE LOOSE LIFTS.
- ALL LIFTS SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY, AND ABOVE THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698, STANDARD PROCTOR TO ACHIEVE A MAXIMUM HYDRAULIC CONDUCTIVITY OF 1×10^{-7} CM/SEC (OPTION 1), OR 1×10^{-8} CM/SEC (OPTION 2).
- ADJUSTMENTS TO THE MOISTURE CONTENT MAY BE ALLOWED IF IT IS FOUND BY LABORATORY REMOULDED PERMEABILITIES THAT A HIGHER IN-PLACE DENSITY OR CHANGE IN MOISTURE CONTENT IS REQUIRED TO MAINTAIN A MAXIMUM HYDRAULIC CONDUCTIVITY OF 1×10^{-7} CM/SEC (OPTION 1), OR 1×10^{-8} CM/SEC (OPTION 2).
- COMPACTION SHALL BE PERFORMED WITH AN APPROPRIATELY HEAVY, PROPERLY BALLASTED, PENETRATING FOOT COMPACTOR.
- HAND MANIPULATED COMPACTION EQUIPMENT (VIBRATING DRUMS OR MECHANICAL TAMPERS) SHALL BE USED FOR WORKING IN CONFINED AREAS AND ADJACENT TO STRUCTURES.
- THE DAILY WORK AREA SHOULD EXTEND TO SUCH A DISTANCE NECESSARY TO MINIMIZE DESICCATION AND CRUSTING OF THE LIFT SURFACE. THE FINISHED SURFACE SHOULD BE SMOOTH ROLLED AT THE END OF THE DAY TO PROMOTE PRECIPITATION RUNOFF.
- IF DESICCATION, CRUSTING, OR SEALING BY ROLLING OF THE LIFT SURFACE OCCURS PRIOR TO PLACEMENT OF THE NEXT LIFT, THE AREA SHALL BE SCARIFIED TO A MINIMUM DEPTH OF ONE INCH OR UNTIL SUFFICIENTLY MOIST MATERIALS ARE ENCOUNTERED, WHICHEVER IS GREATER. ALSO, THE ADDITION OF WATER TO SURFACES PRIOR TO PLACEMENT OF ADDITIONAL CLAY MAY BE UTILIZED WHEN NECESSARY TO MAINTAIN UNIFORMLY MOIST SOIL CONDITIONS.

5.1.2.3 COMPACTION CONTROL

IN ORDER TO CONTROL THE MOISTURE CONTENT AND DENSITY OF THE COMPACTED LINER BASE, THE SOILS QUALITY ASSURANCE MONITOR WILL:

- CONDUCT IN-PLACE DENSITY AND MOISTURE CONTENT TESTS UTILIZING THE NUCLEAR DENSITY GAUGE AND/OR DRIVE CYLINDER METHODS. AT A MINIMUM FREQUENCY OF ONE TEST PER 10,000 SQUARE FEET PER 6-INCH LIFT OF SOIL AND ONE TEST PER 200 LINEAR FEET OF PERMANENT SIDEWALL PER 6-INCH LIFT OF SOIL. A GRID PATTERN OF 100-FOOT WILL BE ESTABLISHED THAT INCLUDES SIDE SLOPES TO LOCATE SAMPLES.
- CONDUCT A DIRECT OR MICROWAVE OVEN MOISTURE CONTENT TEST (ASTM D2216 OR ASTM D4643) FOR EVERY TEN (10) NUCLEAR MOISTURE CONTENT TEST (ASTM D6938);
- CONDUCT A DRIVE CYLINDER TEST (ASTM D2937) FOR EVERY TWENTY-FIVE (25) NUCLEAR DENSITY TESTS (ASTM D6938);
- COLLECT UNDISTURBED SAMPLES AT A FREQUENCY OF ONE TEST PER 40,000 SQUARE FEET PER 6-INCH LIFT OF SOIL LINER PLUS ONE TEST PER 800 LINEAR FEET PER 6-INCH LIFT OF SOIL LINER ON PERMANENT SIDEWALL. UNDISTURBED SAMPLES SHALL BE TESTED FOR MOISTURE CONTENT (ASTM D-5084), ATTERBERG LIMITS (ASTM D4318), UNIT WEIGHT (ASTM D6938), HYDRAULIC CONDUCTIVITY (ASTM D5084);
- ALL PENETRATIONS IN THE COMPACTED LINER BASE SHALL BE FILLED WITH BENTONITE PELLETS PRIOR TO PLACEMENT OF NEXT LIFT.

IF SAMPLES FAIL TO MEET THE REQUIREMENTS, THE AREAS OF THE COMPACTED LINER BASE FROM WHICH THE SAMPLES WERE OBTAINED SHALL BE REWORKED AND RETESTED UNTIL PASSING RESULTS ARE OBTAINED OR THE FAILING MATERIAL WILL BE REMOVED FROM THE SITE. THE REPAIRED AREA MUST BE RETESTED TO DEMONSTRATE COMPLIANCE WITH THE SPECIFICATIONS. PASSING TESTS ARE REQUIRED BEFORE SUBSEQUENT LIFTS OF SOIL LINER MATERIAL MAY BE PLACED.



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DEANS BRIDGE ROAD LANDFILL – PHASE III
CONSTRUCTION QUALITY ASSURANCE (CQA) PLAN (CONTINUED)

5.1.2.4 PROTECTION OF WORK

DURING CONSTRUCTION, THE COMPACTED LINER BASE SHOULD BE PROTECTED FROM DETRIMENTAL CLIMATIC EFFECTS BY INCORPORATING THE FOLLOWING PROCEDURE:

A. NO FROZEN COMPACTED LINER BASE MATERIAL SHALL BE PLACED.

B. COMPACTED LINER BASE MATERIAL SHALL NOT BE PLACED ON A PREVIOUS LIFT OF COMPACTED LINER BASE MATERIAL, WHICH IS FROZEN. FROZEN IN-PLACE COMPACTED LINER BASE MATERIAL SHALL BE REMOVED PRIOR TO PLACEMENT OF ADDITIONAL COMPACTED LINER BASE MATERIAL.

C. COMPACTED LINER BASE MATERIAL WHICH HAS BEEN SUBJECTED TO A FREEZE/THAW CYCLE(S) SHALL BE SCARIFIED AND/OR DISKED PRIOR TO RECOMPACTION AND PRIOR TO PLACEMENT OF SUBSEQUENT LIFTS OF COMPACTED LINER BASE MATERIAL.

D. EXPOSED FINISHED LIFTS OF COMPACTED LINER BASE MATERIAL SHOULD BE SPRINKLED WITH WATER DAILY TO MINIMIZE DESICCATION, AS NECESSARY.

E. AT THE END OF EACH DAY'S CONSTRUCTION ACTIVITIES, COMPLETED LIFTS OR SECTIONS OF COMPACTED LINER BASE SHOULD BE SEALED BY ROLLING WITH A RUBBER TIRE OR SMOOTH-DRUM ROLLER OR BY BACK DRAGGING WITH A BULLDOZER, AND SHOULD BE SPRINKLED WITH WATER, AS NEEDED.

F. PROPER GRADING SHOULD BE PROVIDED AT THE END OF EACH WORKDAY TO ASSURE ADEQUATE RUNOFF IN THE EVENT OF OVERNIGHT RAIN.

5.2 GEOSYNTHETIC CLAY LAYER (GCL) INSTALLATION

THE GCL INSTALLER WILL STORE, HANDLE AND PLACE ALL GCL IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND THE MANUFACTURER'S RECOMMENDATIONS.

ALL GCL WILL BE SEALED OR OVERLAPPED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS ASTM D6102 AND THE MANUFACTURER'S RECOMMENDATIONS OR AS APPROVED BY THE QUALITY ASSURANCE MONITOR.

ANY REPAIRS, HOLES OR TEARS IN THE GCL SHALL BE REPAIRED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS ASTM D6102 AND THE MANUFACTURER'S RECOMMENDATIONS. THE QUALITY ASSURANCE MONITOR WILL OBSERVE AND DOCUMENT GCL REPAIRS.

MATERIALS INSTALLED OVER THE GCL SHALL BE PLACED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS ASTM D6102 AND THE CQA PLAN.

5.3 GEOMEMBRANE INSTALLATION

5.3.1 TRANSPORTATION, HANDLING, AND STORAGE

TRANSPORTATION OF THE GEOMEMBRANE IS THE RESPONSIBILITY OF THE MANUFACTURER, THE GEOMEMBRANE INSTALLER, OR OTHER PARTY AS DECIDED AT THE PRE-CONSTRUCTION MEETING. ALL HANDLING ON-SITE AFTER UNLOADING IS THE RESPONSIBILITY OF THE GEOMEMBRANE INSTALLER. THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL MONITOR THE HANDLING PROCEDURES WITH REGARD TO:

A. THE ADEQUACY OF ON-SITE HANDLING OF EQUIPMENT TO MINIMIZE RISK OF DAMAGE TO BOTH THE GEOMEMBRANE AND UNDERLYING COMPACTED LINER BASE; AND,

B. THE CAREFUL HANDLING OF THE GEOMEMBRANE BY THE INSTALLER'S PERSONNEL.

UPON DELIVERY AT THE SITE, THE GEOMEMBRANE INSTALLER, IN THE PRESENCE OF THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR (ACTING AS AN OBSERVER), WILL OBSERVE EXPOSED ROLL SURFACES FOR DEFECTS AND/OR DAMAGE. VISUAL OBSERVATION SHOULD BE CONDUCTED WITHOUT UNROLLING (UNFOLDING) ROLLS UNLESS DEFECTS OR DAMAGE ARE FOUND ON THE SURFACE OR ARE SUSPECTED. THE ROLLS SHALL BE STORED IN A SECURE AREA AND PROTECTED FROM DAMAGE. THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL INDICATE/REPORT TO THE PROJECT MANAGER:

A. THAT THE ROLLS ARE TAGGED WITH THE PROPER IDENTIFICATION, INCLUDING ROLL NUMBERS;

B. ROLLS OR PORTIONS THEREOF, WHICH IN THE OPINION OF THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR SHOULD BE REJECTED AND REMOVED FROM THE SITE BECAUSE OF VISUALLY OBVIOUS FLAWS; AND,

C. ROLLS WHICH INCLUDE FLAWS, WHICH MAY BE REPAIRABLE.

SELECTED SAMPLES OF THE GEOMEMBRANE MATERIAL MAY BE OBTAINED BY THE GEOSYNTHETIC QUALITY ASSURANCE MANAGER FOR PHYSICAL TESTING TO DOCUMENT THAT THE GEOMEMBRANE MATERIAL TESTED SATISFIES THE MINIMUM MATERIAL PROPERTY REQUIREMENTS ESTABLISHED IN SECTION 4.3.

5.3.2 SURFACE PREPARATION

THE CONTRACTOR WILL BE RESPONSIBLE FOR PREPARING THE SURFACE TO RECEIVE GEOMEMBRANE ACCORDING TO THE SPECIFICATIONS. THE QUALITY ASSURANCE MONITOR WILL DOCUMENT THAT:

A. A QUALIFIED PROFESSIONAL ENGINEER OR LAND SURVEYOR HAS DETERMINED THAT LINES AND GRADES ARE IN CONFORMANCE WITH DESIGN PLAN;

B. THE SURFACES TO BE LINED HAVE BEEN ROLLED AND COMPACTED SO AS TO BE FREE OF MAJOR IRREGULARITIES, PROTRUSIONS, LOOSE SOIL, AND ABRUPT CHANGES IN GRADES;

C. THE SURFACE SHALL BE FREE OF STONES OR OTHER PARTICLES GREATER THAN 0.25-INCHES IN DIAMETER, WHICH MAY BE DAMAGING TO THE GEOMEMBRANE;

D. THERE ARE NO AREAS EXCESSIVELY SOFTENED BY HIGH WATER CONTENT;

E. AREAS, WHICH WERE UNSTABLE UNDER THE LOADING OF THE COMPACTION EQUIPMENT, HAVE BEEN CORRECTED BY RECOMPACTION OR REMOVAL AND REPLACEMENT WITH APPROPRIATE MATERIAL; AND

F. THE MAXIMUM ROLLER INDENTATION OR RUTS WILL BE LIMITED TO 0.25 INCHES.

THE GEOMEMBRANE INSTALLER WILL CERTIFY THAT THE SURFACE ON WHICH EACH GEOMEMBRANE WILL BE INSTALLED IS ACCEPTABLE. THIS WRITTEN SUBGRADE ACCEPTANCE WILL BE GIVEN BY THE GEOMEMBRANE INSTALLER TO THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR PRIOR TO COMMENCEMENT OF GEOMEMBRANE INSTALLATION OVER A GIVEN AREA.

AFTER THE SURFACE HAS BEEN ACCEPTED BY THE GEOMEMBRANE INSTALLER, IT WILL BE THE GEOMEMBRANE INSTALLER'S RESPONSIBILITY TO INDICATE TO THE PROJECT MANAGER OR GEOSYNTHETICS QUALITY ASSURANCE MONITOR ANY CHANGE IN THE COMPACTED LINER BASE SUBGRADE CONDITIONS THAT MAY REQUIRE REPAIR WORK. IF THE QUALITY ASSURANCE MONITOR CONCURS WITH THE GEOMEMBRANE INSTALLER, THEN THE QUALITY ASSURANCE MONITOR WILL IDENTIFY THE NECESSARY REPAIR WORK TO BE PERFORMED BY THE CONTRACTOR.

AT ANY TIME PRIOR TO OR DURING THE GEOMEMBRANE INSTALLATION, THE QUALITY ASSURANCE MONITOR WILL NOTIFY THE PROJECT MANAGER AND CONTRACTOR OF LOCATIONS WHICH, IN THE OPINION OF THE QUALITY ASSURANCE MONITOR, WILL REQUIRE CORRECTIVE ACTION PRIOR TO GEOMEMBRANE INSTALLATION.

5.3.3 ANCHORAGE SYSTEM

THE ANCHOR TRENCHES WILL BE EXCAVATED TO THE LINES AND DEPTH SHOWN ON THE DESIGN DRAWINGS, PRIOR TO GEOMEMBRANE PLACEMENT. THE QUALITY ASSURANCE MONITOR WILL DOCUMENT THE ANCHOR TRENCHING OPERATION.

ROUNDED CORNERS SHALL BE PROVIDED IN THE TRENCHES WHERE THE GEOMEMBRANE ENTERS THE TRENCH TO ALLOW THE GEOMEMBRANE TO BE UNIFORMLY SUPPORTED BY THE SUBGRADE AND TO AVOID SHARP BENDS IN THE GEOMEMBRANE. NO LOOSE SOIL WILL BE ALLOWED TO UNDERLIE THE GEOMEMBRANE IN THE ANCHOR TRENCHES. THE GEOMEMBRANE SHOULD BE SEALED COMPLETELY TO THE ENDS OF ALL PANELS TO MINIMIZE THE POTENTIAL FOR TEAR PROPAGATION ALONG THE SEAM. BACKFILLING OF THE ANCHOR TRENCHES WILL BE CONDUCTED USING THE SAME MATERIALS SPECIFIED FOR THE COMPACTED LINER BASE IN SECTION 4.4. THE MATERIAL SHALL BE PLACED AND COMPACTED USING THE METHODS DESCRIBED IN SECTION 5.1.2.2.E, EXCEPT THAT THE COMPACTION EQUIPMENT SHOULD BE COMPATIBLE WITH THE DIMENSIONS OF THE ANCHOR TRENCH AND SHOULD NOT DAMAGE THE GEOMEMBRANE PLACED IN THE ANCHOR TRENCH.

5.3.4 GEOMEMBRANE PLACEMENT

5.3.4.1 PANEL IDENTIFICATION

A PANEL IS THE UNIT AREA OF GEOMEMBRANE, WHICH IS SEALED IN THE FIELD. THE UNIT AREA CAN CONSIST OF A ROLL OR A PORTION OF A ROLL CUT IN THE FIELD.

PRIOR TO OR DURING THE INITIAL MEETING, THE GEOMEMBRANE INSTALLER WILL PROVIDE THE PROJECT MANAGER AND GEOSYNTHETICS QUALITY ASSURANCE CONSULTANT WITH A DRAWING OF THE CELL TO BE LINED SHOWING THE ORIENTATION OF THE GEOMEMBRANE PANELS. THE QUALITY ASSURANCE MANAGER WILL REVIEW THE PANEL LAYOUT AND DOCUMENT THAT IT IS CONSISTENT WITH THE ACCEPTED STATE OF PRACTICE.

EACH PANEL WILL BE GIVEN AN "IDENTIFICATION CODE" (NUMBER OR LETTER-NUMBER) CONSISTENT WITH THE LAYOUT PLAN. THIS IDENTIFICATION CODE WILL BE AGREED UPON BY THE GEOMEMBRANE INSTALLER AND THE QUALITY ASSURANCE MONITOR. THIS IDENTIFICATION CODE SHALL BE SIMPLE AND LOGICAL (NOTE THAT ROLL NUMBERS ESTABLISHED IN THE MANUFACTURING PLANT MAY BE CUMBERSOME AND ARE UNRELATED TO LOCATION IN THE FIELD).

THE QUALITY ASSURANCE MONITOR WILL ESTABLISH A TABLE OR CHART SHOWING CORRESPONDENCE BETWEEN ROLL NUMBERS AND PANEL IDENTIFICATION CODES. THE IDENTIFICATION CODES WILL BE USED FOR ALL QUALITY ASSURANCE RECORDS.

5.3.4.2 PANEL PLACEMENT

THE QUALITY ASSURANCE MONITOR WILL DOCUMENT THAT PANEL INSTALLATION IS CONSISTENT WITH REGARD TO LOCATIONS INDICATED IN THE GEOMEMBRANE INSTALLER'S LAYOUT PLAN, AS APPROVED OR MODIFIED AT THE INITIAL MEETING.

INSTALLATION:

A. ONLY THOSE PANELS WHICH CAN BE EXPECTED TO BE ANCHORED AND SEALED TOGETHER IN ONE DAY ARE TO BE UNROLLED. PANELS MAY BE INSTALLED USING ANY OF THE FOLLOWING SCHEDULES:

1. ALL PANELS PLACED PRIOR TO FIELD SEAMING.

2. PANELS PLACED ONE AT A TIME AND EACH PANEL SEALED IMMEDIATELY AFTER ITS PLACEMENT.

3. ANY COMBINATION OF THE ABOVE, HOWEVER, NO DEPLOYED PANELS WILL BE LEFT UNSEALED AT THE END OF A WORK DAY.

B. THE QUALITY ASSURANCE MONITOR WILL RECORD ON A DRAWING THE IDENTIFICATION CODE, LOCATION, AND DATE OF INSTALLATION OF EACH GEOMEMBRANE PANEL.

WEATHER CONDITIONS:

A. GEOMEMBRANE PANEL DEPLOYMENT OR SEAMING SHALL NOT TAKE PLACE DURING ANY PRECIPITATION, IN THE PRESENCE OF EXCESSIVE MOISTURE (E.G. FOG, DEW), IN AN AREA OF PONDED WATER, OR IN THE PRESENCE OF HIGH WINDS.

B. THE QUALITY ASSURANCE MONITOR WILL INFORM THE PROJECT MANAGER WHEN THE ABOVE CONDITIONS ARE NOT FULFILLED. THE QUALITY ASSURANCE MONITOR WILL INFORM THE PROJECT MANAGER OF OBSERVED COMPACTED LINER BASE DAMAGE CAUSED BY ADVERSE WEATHER CONDITIONS.

C. THE GEOMEMBRANE INSTALLER WILL INFORM THE PROJECT MANAGER IF THE WEATHER CONDITIONS ARE NOT ACCEPTABLE FOR GEOMEMBRANE DEPLOYMENT OR SEAMING.

D. THE INSTALLER SHALL PROVIDE SUITABLE WIND PROTECTION AS NECESSARY TO MAINTAIN THE INTEGRITY OF THE INSTALLATION.

THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL:

A. OBSERVE EQUIPMENT DAMAGE TO THE GEOMEMBRANE AS A RESULT OF HANDLING, TRAFFIC, LEAKAGE OF HYDROCARBONS, OR OTHER MEANS;

B. OBSERVE DEVIATIONS FROM THE REQUIREMENT THAT NO ONE IS PERMITTED TO SMOKE, WEAR DAMAGING SHOES, OR ENGAGE IN OTHER ACTIVITIES, WHICH COULD DAMAGE THE GEOMEMBRANE;

C. OBSERVE SCRATCHES, CRIMPS, OR WRINKLES IN THE GEOMEMBRANE AND ANY DAMAGE TO THE COMPACTED LINER BASE; AND,

D. OBSERVE DAMAGE CAUSED BY LOADING WHICH MAY BE NECESSARY TO PREVENT UPLIFT BY WIND.

THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL INFORM THE PROJECT MANAGER OF THE ABOVE CONDITIONS.

AFTER PLACEMENT, THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL OBSERVE EACH PANEL FOR DAMAGE. THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL ADVISE THE GEOMEMBRANE INSTALLER AND PROJECT MANAGER WHICH PANELS, OR PORTIONS OF PANELS, SHOULD BE REJECTED, REPAIRED, OR ACCEPTED. DAMAGED PANELS OR PORTIONS OF DAMAGED PANELS, WHICH HAVE BEEN REJECTED, WILL BE MARKED AND THEIR REMOVAL FROM THE WORK AREA RECORDED BY THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR. REPAIRS SHOULD BE MADE ACCORDING TO PROCEDURES DESCRIBED IN SECTION 5.2.7.

5.3.5 FIELD SEAMING

5.3.5.1 SEAM LAYOUT

A. THE GEOMEMBRANE INSTALLER WILL PROVIDE THE PROJECT MANAGER AND GEOSYNTHETICS QUALITY ASSURANCE MANAGER WITH DRAWINGS OF THE CELL TO BE LINED SHOWING FIELD SEAMS IN A MANNER WHICH DIFFERENTIATES THE SEAM TYPES, IF ANY. THE GEOSYNTHETICS QUALITY ASSURANCE MANAGER WILL REVIEW THE SEAM LAYOUTS.

B. SEAMS SHALL BE ORIENTED PARALLEL TO THE LINE OF MAXIMUM SLOPE, I.E., ORIENTED UP AND DOWN, NOT ACROSS, THE SLOPE. IN CORNERS AND ODD-SHAPED GEOMETRIC LOCATIONS, THE NUMBER OF FIELD SEAMS SHALL BE MINIMIZED.

C. NO HORIZONTAL SEAM SHALL BE WITHIN FIVE FEET FROM THE TOE OF THE SLOPE OR THE CREST OF THE SLOPE.

D. A SEAM NUMBERING SYSTEM COMPATIBLE WITH THE PANEL NUMBERING SYSTEM SHOULD BE AGREED UPON AT THE INITIAL MEETING.

5.3.5.2 REQUIREMENTS OF PERSONNEL

ALL PERSONNEL PERFORMING SEAMING OPERATIONS MUST BE QUALIFIED BY EXPERIENCE OR BY SUCCESSFULLY PASSING SEAMING TESTS. AT LEAST ONE SEAMER WILL HAVE A MINIMUM OF 10,000,000 FT² OF GEOMEMBRANE SEAMING EXPERIENCE USING THE SAME TYPE OF SEAMING APPARATUS IN USE AT THE SITE. THE PROJECT MANAGER OR QUALITY ASSURANCE MONITOR HAS THE RIGHT TO REJECT A SEAMER IF THEY CANNOT DEMONSTRATE SUITABLE EXPERIENCE AND QUALIFICATIONS.

5.3.5.3 OVERLAPPING

THE QUALITY ASSURANCE MONITOR WILL OBSERVE THAT GEOMEMBRANE PANELS WERE PROPERLY OVERLAPPED FOR FUSION WELDING (MINIMUM OF 6-INCHES) AND EXTRUSION WELDING (MINIMUM OF 3-INCHES).

5.3.5.4 SEAM PREPARATION

SEAMS MUST BE PREPARED SO THAT:

A. PRIOR TO SEAMING, THE SEAM AREA WILL BE CLEAN AND FREE OF MOISTURE, DUST, DIRT, DEBRIS OF ANY KIND, AND FOREIGN MATERIAL.

B. SEAM OVERLAP GRINDING (FOR EXTRUSION WELDING ONLY) WILL BE COMPLETED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AND IN A WAY THAT DOES NOT DAMAGE THE GEOMEMBRANE.

C. SEAMS WILL BE ALIGNED WITH THE FEWEST POSSIBLE NUMBER OF WRINKLES AND "FISHMOUTHS".

5.3.5.5 SEAMING EQUIPMENT

A. THE APPROVED PROCESSES FOR FIELD SEAMING ARE FUSION AND EXTRUSION WELDING.

B. THE APPARATUS USED FOR WELDING THE MAJOR SEAMS WILL BE EQUIPPED WITH GAUGES INDICATING THE TEMPERATURE IN THE APPARATUS OR AT THE APPLICATION POINT. THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL OBSERVE APPARATUS TEMPERATURES AND AMBIENT TEMPERATURES AT APPROPRIATE INTERVALS.

THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL OBSERVE THAT:

A. EQUIPMENT USED FOR SEAMING IS NOT LIKELY TO DAMAGE THE GEOMEMBRANE;

B. THE EXTRUDER IS PURGED PRIOR TO BEGINNING A SEAM UNTIL THE HEAT-DEGRADED EXTRUDATE HAS BEEN REMOVED FROM THE BARREL;

C. THE ELECTRIC GENERATOR IS PLACED ON A SMOOTH BASE SUCH THAT MINIMAL DAMAGE OCCURS TO THE GEOMEMBRANE;

D. A SMOOTH INSULATING PLATE OR FABRIC IS PLACED BENEATH THE WELDING APPARATUS AFTER USAGE; AND,

E. THE GEOMEMBRANE IS PROTECTED FROM DAMAGE IN HEAVILY TRAFFICKED AREAS.

5.3.5.6 WEATHER CONDITIONS FOR SEAMING

THE TYPICAL WEATHER CONDITIONS REQUIRED FOR SEAMING ARE AS FOLLOWS:

A. NO SEAMING SHALL BE ATTEMPTED ABOVE 104°F AMBIENT AIR TEMPERATURE OR BELOW 41°F AMBIENT AIR TEMPERATURE. AMBIENT TEMPERATURE SHALL BE MEASURED 8 INCHES ABOVE THE LINER.

B. IN ALL CASES, THE GEOMEMBRANE SHALL BE DRY AND PROTECTED FROM WIND DAMAGE.

C. THE GEOSYNTHETIC QUALITY ASSURANCE MONITOR REPRESENTATIVE WILL OBSERVE THE SEAMING TECHNIQUES APPROPRIATE FOR THE PREVAILING WEATHER CONDITIONS ARE EMPLOYED AND WILL ADVISE THE PROJECT MANAGER OF DEVIATION. THE FINAL DECISION AS TO WHETHER OR NOT SEAMING MAY BE PERFORMED WILL BE MADE BY THE PROJECT MANAGER.

5.3.5.7 TEST SEAMS

TEST SEAMS WILL BE PREPARED EACH DAY PRIOR TO COMMENCING GEOMEMBRANE FIELD SEAMING. SUCH TEST SEAMS WILL BE MADE AT THE BEGINNING OF EACH SEAMING PERIOD, AT THE DISCRETION OF THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR, AND AT LEAST ONCE EVERY FOUR TO SIX HOURS OF CONTINUOUS WELDING FOR EACH SEAMING APPARATUS USED THAT DAY. THE TEST SEAM SAMPLE WILL BE AT LEAST THREE FEET LONG BY ONE FOOT WIDE WITH THE SEAM CENTERED LENGTHWISE. SIX ADJOINING 1.0 INCH WIDE SPECIMENS WILL BE CUT FROM THE SEAM SAMPLE. THREE SPECIMENS WILL BE IMMEDIATELY TESTED WITH A TENSIOMETER IN THE FIELD FOR PEEL BY THE GEOMEMBRANE INSTALLER, AND SHOULD NOT FAIL IN THE SEAM. THE THREE REMAINING SPECIMENS SHALL BE FIELD TESTED BY THE GEOMEMBRANE INSTALLER FOR SHEAR. IF ANY OF THE TEST SEAM SPECIMENS FAILS TO MEET THE REQUIREMENTS OF GR1 TEST METHOD GM19, LATEST EDITION, THE ENTIRE OPERATION WILL BE REPEATED. IF THE ADDITIONAL TEST SEAM FAILS, THE SEAMING APPARATUS OR SEAMER WILL NOT BE ACCEPTED AND WILL NOT BE USED FOR SEAMING UNTIL THE DEFICIENCIES ARE CORRECTED AND TWO CONSECUTIVE SUCCESSFUL FULL TEST SEAMS ARE ACHIEVED. TEST SEAM FAILURE IS DEFINED AS FAILURE OF ANY ONE OF THE SPECIMENS TESTED IN SHEAR OR PEEL. THE GEOSYNTHETIC QUALITY ASSURANCE MONITOR WILL OBSERVE ALL TEST SEAM PROCEDURES.

5.3.5.8 GENERAL SEAMING PROCEDURE

UNLESS OTHERWISE SPECIFIED, THE GENERAL SEAMING PROCEDURE USED BY THE GEOMEMBRANE INSTALLER SHALL BE AS FOLLOWS:

A. IF REQUIRED, A MOVEABLE PROTECTIVE LAYER OF PLASTIC MAY BE PLACED DIRECTLY BELOW EACH OVERLAP OF GEOMEMBRANE THAT IS TO BE SEALED. THE PURPOSE OF THE PROTECTIVE LAYER IS TO PREVENT ANY MOISTURE BUILD-UP BETWEEN THE SHEETS TO BE WELDED. NO PROTECTIVE LAYERS MAY BE LEFT BENEATH THE GEOMEMBRANE.

B. NO MATERIAL, WHICH MAY PREVENT CONTACT BETWEEN THE GEOMEMBRANE AND COMPACTED LINER BASE, MAY BE LEFT IN PLACE.

C. SEAMING SHALL EXTEND TO THE OUTSIDE EDGE OF PANELS TO BE PLACED IN ANCHOR TRENCHES.

D. IF REQUIRED, A FIRM SUBSTRATA SHOULD BE PROVIDED BY USING A FLAT BOARD, A CONVEYER BELT, OR SIMILAR HARD SURFACE DIRECTLY UNDER THE SEAM OVERLAP TO ACHIEVE PROPER SUPPORT.

E. FISHMOUTHS OR LARGE DIFFERENTIAL WRINKLES AT THE SEAM OVERLAPS SHOULD BE CUT ALONG THE RIDGE OF THE WRINKLE IN ORDER TO ACHIEVE A FLAT OVERLAP. THE CUT FISHMOUTHS OR WRINKLES WILL BE SEALED OVER THE ENTIRE LENGTH AND WILL THEN BE PATCHED WITH AN OVAL OR ROUND PATCH OF THE SAME TYPE OF GEOMEMBRANE EXTENDING A MINIMUM OF SIX INCHES BEYOND THE CUT IN ALL DIRECTIONS.

THE GEOSYNTHETICS QUALITY ASSURANCE MANAGER WILL OBSERVE THAT THE ABOVE SEAMING PROCEDURES (OR ANY OTHER PROCEDURES AGREED UPON) ARE FOLLOWED, AND WILL INFORM THE PROJECT MANAGER IF THEY ARE NOT.

5.3.6 SEAM TESTING

5.3.6.1 NON-DESTRUCTIVE SEAM TESTING

THE GEOMEMBRANE INSTALLER WILL NON-DESTRUCTIVELY TEST ALL FIELD SEAMS OVER THEIR FULL LENGTH FOR CONTINUITY. CONTINUITY TESTING SHALL BE PERFORMED USING SEAM PRESSURE TESTS, VACUUM BOXES, AIR LANCES, OR OTHER PRESCRIBED METHODS, AS APPLICABLE TO THE TYPE AND THICKNESS OF THE GEOMEMBRANE. THE PURPOSE OF THIS TESTING IS TO CHECK THE CONTINUITY OF SEAMS; IT DOES NOT PROVIDE INFORMATION ON SEAM STRENGTH. CONTINUITY TESTING WILL BE DONE AS THE SEAMING WORK PROGRESSES. THE QUALITY ASSURANCE MONITOR WILL:

A. OBSERVE ALL CONTINUITY TESTING;

B. RECORD LOCATION, DATE, TEST UNIT NUMBER, NAME OF TESTER, AND OUTCOME OF ALL TESTING; AND,

C. INFORM THE GEOMEMBRANE INSTALLER AND PROJECT MANAGER OF ANY REQUIRED REPAIRS.

THE GEOMEMBRANE INSTALLER WILL COMPLETE ANY REQUIRED REPAIRS IN ACCORDANCE WITH SECTION 5.3.7. IF REPAIRS ARE REQUIRED, THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL:

A. OBSERVE THE REPAIR AND THE RETESTING OF THE REPAIR;

B. MARK ON THE GEOMEMBRANE THAT THE REPAIR HAS BEEN MADE; AND,

C. DOCUMENT THE REPAIR, LOCATION AND RETESTING RESULTS.

SEAMS MUST BE CONSTRUCTED IN A FASHION THAT ALLOWS THEM TO BE NON-DESTRUCTIVELY TESTED. ANY PATCHES, SEAMS AROUND LINER PENETRATIONS, OR SEAMS NEAR SHARP CORNERS MUST BE CAPPED OR PATCHED WITH GEOMEMBRANE OF SUFFICIENT SIZE TO ALLOW NON-DESTRUCTIVE TESTING OF ALL SEAMS.

THE SEAM NUMBER, DATE OF OBSERVATION, NAME OF TESTER, AND OUTCOME OF THE TEST OR OBSERVATION WILL BE RECORDED BY THE QUALITY ASSURANCE MONITOR.

SEAM PRESSURE TEST PROCEDURE:

A. THE SEAM PRESSURE TEST IS DESIGNED TO DETECT LEAKS OF DOUBLE-WEDGE THERMALLY WELDED SEAMS WHERE AN AIR CHANNEL EXISTS BETWEEN THE SEAMS. AFTER THE SEAM HAS BEEN FABRICATED FOR A GIVEN LENGTH, BOTH ENDS OF THE AIR CHANNEL ARE SEALED. A NEEDLE ATTACHED TO A PRESSURE GAUGE/AIR VALVE ASSEMBLY IS INSERTED INTO THE AIR CHAMBER AND AIR IS APPLIED TO ACHIEVE A PRESSURE OF AT LEAST 30 PSI FOR 90 MIN. HOPE. THE GAUGE IS MONITORED FOR DROP IN AIR PRESSURE OVER TIME AS AN INDICATOR OF SEAM LEAKS. SEAM PRESSURE AND ALLOWABLE DROP SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.

B. THE INITIAL STARTING PRESSURE MAY BE READ AFTER A TWO MINUTE "RELAXING" PERIOD, WHICH WILL ALLOW THE AIR WITHIN THE CHAMBER TO REACH AMBIENT LINER TEMPERATURE. THE FINAL PRESSURE WILL THEN BE READ AFTER FIVE ADDITIONAL MINUTES WITH THE PRESSURE LOSS NOT TO EXCEED 3 PSI.

C. IF FAILURE OCCURS (I.E., PRESSURE REDUCTION OVER THE SCHEDULED TIME PERIOD IS GREATER THAN THE MAXIMUM ALLOWABLE), THE END SEALS WILL BE CHECKED AND THE SEAM RETESTED. IF FAILURE RECURS, THE EXPOSED FUSION AREA WILL BE VISUALLY OBSERVED AND VACUUM TESTED TO LOCATE LEAKS. IF LEAK AREAS ARE LOCATED, THESE AREAS WILL BE PATCHED AND PRESSURE TESTED ON BOTH SIDES OF THE PATCHED AREA. THE PATCHED AREA WILL ALSO BE VACUUM TESTED.

D. IF FAILURE OCCURS AND NO APPARENT BREAK IN THE CONTINUITY OF THE SEAM FUSION IS OBSERVED, THE ENTIRE FIELD SEAM LENGTH WILL BE REPAIRED BY MEANS OF A CAP-STRIP OVER THE ENTIRE LENGTH OF THE SEAM. NO TOPPING OF THE EXISTING FUSION WELD WILL BE ALLOWED AS A MEANS OF REPAIR.

VACUUM BOX TEST EQUIPMENT CONSISTS OF:

A. A VACUUM BOX ASSEMBLY OF A RIGID HOUSING, A TRANSPARENT VIEWING WINDOW, A SOFT NEOPRENE GASKET ATTACHED TO THE BOTTOM, A PORT HOLE OR VALVE ASSEMBLY, AND A VACUUM GAUGE;

B. A STEEL VACUUM TANK AND PUMP ASSEMBLY EQUIPPED WITH A PRESSURE CONTROLLER AND PIPE CONNECTIONS;

C. A RUBBER PRESSURE/VACUUM HOSE WITH FITTINGS AND CONNECTIONS; AND,

D. A SOAPY SOLUTION (MILD DETERGENT).

THE FOLLOWING PROCEDURES SHALL BE PERFORMED FOR VACUUM TESTING:

E. ENERGIZE THE VACUUM PUMP.

F. WET A STRIP OF GEOMEMBRANE TO BE TESTED WITH THE SOAPY SOLUTION.

G. PLACE THE VACUUM BOX OVER THE WETTED AREA.

H. CLOSE THE BLEED VALVE AND OPEN THE VACUUM VALVE.

I. MAINTAIN A VACUUM PRESSURE OF AT LEAST 5PSI.

J. CHECK THAT A LEAK TIGHT SEAL IS CREATED.

K. FOR A PERIOD OF NOT LESS THAN 30 SECONDS, EXAMINE THE GEOMEMBRANE THROUGH THE VIEWING WINDOW FOR THE PRESENCE OF SOAP BUBBLES.

L. IF NO BUBBLE(S) APPEARS AFTER 15 SECONDS, CLOSE THE VACUUM VALVE AND OPEN THE BLEED VALVE. MOVE THE BOX OVER THE NEXT ADJOINING AREA WITH A MINIMUM THREE- INCH OVERLAP, AND REPEAT THE PROCESS.

M. ALL AREAS WHERE SOAP BUBBLES APPEAR WILL BE MARKED AND REPAIRED IN ACCORDANCE WITH SECTION 5.3.7.

5.3.6.2 DESTRUCTIVE SEAM STRENGTH TESTING

LOCATIONS AND FREQUENCY:

A. THE GEOMEMBRANE INSTALLER SHALL CUT A MINIMUM OF ONE 1.0-INCH SPECIMEN AT THE END OF EACH PRODUCTION SEAM, AND TEST IT IN PEEL TO DOCUMENT CONSISTENCY OF THE WELDING. A FILM TEAR BOND IS REQUIRED TO CONTINUE WELDING.

B. THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL SELECT THE LOCATIONS WHERE SEAM SAMPLES ARE TO BE CUT FOR LABORATORY TESTING. THE SAMPLING SHOULD BE ESTABLISHED AS FOLLOWS:

1. A MINIMUM FREQUENCY OF ONE TEST LOCATION PER 500 LINEAR FEET OF FIELD SEAM LENGTH IS REQUIRED. THIS TEST FREQUENCY WILL APPLY TO BOTH FUSION AND EXTRUSION WELDS AND WILL INCLUDE LINEAR FOOTAGE OF EXTRUSION WELDS USED TO PERFORM REPAIRS ON THE LINER SYSTEM.

2. ADDITIONAL TEST LOCATIONS MAY BE SELECTED DURING SEAMING AT THE DISCRETION OF THE GEOSYNTHETICS QUALITY ASSURANCE MANAGER. SELECTION OF SUCH LOCATIONS MAY BE PROMPTED BY SUSPICION OF EXCESS CRYSTALLINITY, CONTAMINATION, OFFSET WELDS, OR ANY OTHER POTENTIAL CAUSE OF INADEQUATE WELDING.

C. THE GEOMEMBRANE INSTALLER WILL NOT BE INFORMED IN ADVANCE OF THE LOCATIONS WHERE THE SEAM SAMPLES WILL BE TAKEN.

SAMPLING PROCEDURES:

A. SAMPLES WILL BE CUT BY THE GEOMEMBRANE INSTALLER AS THE SEAMING PROGRESSES IN ORDER TO HAVE LABORATORY TEST RESULTS BEFORE COMPLETION OF LINER INSTALLATION. THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL:

1. OBSERVE SAMPLE CUTTING;

2. ASSIGN A NUMBER TO EACH SAMPLE AND MARK IT ACCORDINGLY; AND,

3. OBSERVE FIELD TENSIOMETER TESTING PERFORMED BY THE GEOMEMBRANE INSTALLER.

B. HOLES IN THE GEOMEMBRANE RESULTING FROM DESTRUCTIVE SEAM SAMPLING WILL BE IMMEDIATELY REPAIRED BY THE GEOMEMBRANE INSTALLER IN ACCORDANCE WITH REPAIR PROCEDURES DESCRIBED IN SECTION 5.3.7. THE CONTINUITY OF THE NEW SEAMS IN THE REPAIRED AREA WILL BE TESTED ACCORDING TO SECTION 5.3.6.

SIZE OF SAMPLES:

A. THE SAMPLES WILL BE A MINIMUM OF 12 INCHES WIDE BY ABOUT 48 INCHES LONG WITH THE SEAM CENTERED LENGTHWISE. TWO 1.0-INCH WIDE STRIPS WILL BE CUT FROM EACH END OF THE SAMPLE AND THESE WILL BE TESTED BY THE INSTALLER IN THE FIELD FOR PEEL AND SHEAR USING THE TENSIOMETER, AND SHOULD NOT FAIL IN THE SEAM. THE REMAINING SAMPLE WILL BE CUT INTO THREE PARTS AND DISTRIBUTED AS FOLLOWS:

CHK BY

DESCRIPTION

DATE

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DEANS BRIDGE ROAD LANDFILL — PHASE III
CONSTRUCTION QUALITY ASSURANCE (CQA) PLAN (CONTINUED)

1. ONE PORTION TO THE GEOMEMBRANE INSTALLER FOR LABORATORY TESTING, 12 IN. X 18 IN.;

2. ONE PORTION FOR GEOSYNTHETICS QUALITY ASSURANCE CONSULTANT FOR LABORATORY TESTING, 12 IN. X 18 IN.; AND,

3. ONE PORTION TO THE OWNER FOR ARCHIVE STORAGE, 12 IN. X 12. IN.

B. SAMPLES WILL BE CUT BY THE GEOMEMBRANE INSTALLER AT THE LOCATIONS DESIGNATED BY, AND UNDER THE OBSERVATION OF, THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR AS THE SEAMING PROGRESSES IN ORDER TO OBTAIN LABORATORY TEST RESULTS PRIOR TO COMPLETION OF LINER INSTALLATION.

C. THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL WITNESS FIELD TESTS AND MARK SAMPLES WITH THEIR NUMBER. THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL ALSO LOG THE DATE, NAME OF SEAMER, NUMBER OF SEAMING UNIT, AND PASS OR FAIL DESCRIPTION.

TESTING REQUIREMENTS:

A. LABORATORY TESTING OF SEAMS WILL COMMENCE AS SOON AS POSSIBLE AFTER THE FIELD SEAM SAMPLES (FSS) ARE RECEIVED. A MINIMUM OF FIVE SPECIMENS SHOULD BE TESTED EACH FOR SHEAR AND PEEL (BOTH SIDES FOR FUSION WELDS), FOR A TOTAL OF TEN (15 FOR FUSION WELDS) DESTRUCTIVE TESTS PER FSS. THE SHEAR AND PEEL TESTING OF THE SEAMS SHOULD BE CONDUCTED ACCORDING TO ASTM D6392 OR EQUIVALENT.

B. TESTING REQUIREMENTS ARE AS FOLLOWS: EACH SAMPLE SHALL BE LARGE ENOUGH TO TEST FIVE SPECIMENS IN PEEL AND FIVE SPECIMENS IN SHEAR, EXCEPT THAT FIVE PEEL SPECIMENS ARE REQUIRED FOR EACH TRACK OF A DOUBLE TRACK FUSION SEAM. ASSESSMENT OF THE TEST RESULTS SHALL BE IN ACCORDANCE WITH GRI TEST METHOD GM19.

DEFINITION OF PASS/FAIL CRITERIA FOR FUSION AND EXTRUSION WELDS SHALL BE IN ACCORDANCE WITH GRI TEST METHOD GM19.

PROCEDURES FOR DESTRUCTIVE TEST FAILURE:

A. THE FOLLOWING PROCEDURES WILL APPLY WHENEVER A SAMPLE FAILS THE FIELD DESTRUCTIVE TEST. THE GEOMEMBRANE INSTALLER HAS TWO OPTIONS:

1. THE GEOMEMBRANE INSTALLER CAN CAP-STRIP THE SEAM BETWEEN THE TWO PASSING LABORATORY TEST LOCATIONS ON EITHER SIDE OF THE FAILED LOCATION, OR BETWEEN THE BEGINNING AND END OF THE MACHINE'S SEAMING ON THE PROJECT USING THE PROCEDURES DESCRIBED IN SECTION 5.3.7. CAP-STRIPPING INVOLVES APPLYING A STRIP OF GEOMEMBRANE, A MINIMUM DISTANCE OF SIX INCHES ON ALL SIDES OF THE DEFECTIVE SEAMS, AND SEAMING IT TO THE SHEET MATERIAL.

2. THE GEOMEMBRANE INSTALLER CAN RETRACE THE WELDING PATH TO AN INTERMEDIATE LOCATION ON BOTH SIDES OF THE FAILED TEST LOCATION (10 FT. MINIMUM FROM THE LOCATION OF THE FAILED TEST) AND TAKE A MINIMUM OF TWO 8-IN. X 12 IN. SAMPLES (ONE PER EACH SIDE OF THE FAILING SAMPLE) FOR ADDITIONAL FIELD TESTS (SEE SECTION 5.3.7.2). IF THESE ADDITIONAL SAMPLES PASS THE FIELD TEST, THEN SPECIMENS SHALL BE LABORATORY TESTED FOR CONFIRMATION AND THE SEAM SHOULD BE RECONSTRUCTED BETWEEN THE PASSING LABORATORY TEST LOCATIONS. IF EITHER OF THESE SAMPLES FAIL, THEN THIS PROCEDURE SHOULD BE REPEATED UNTIL A PASSING RETEST SAMPLE ON BOTH SIDES OF THE ORIGINAL FAILURE IS OBTAINED OR UNTIL THE ENTIRE SEAM LENGTH IS RECONSTRUCTED BETWEEN TWO PREVIOUSLY PASSING LABORATORY TEST LOCATIONS.

B. ALL ACCEPTABLE RECONSTRUCTED SEAMS MUST BE BOUNDED BY TWO PASSING LABORATORY TEST LOCATIONS, (I.E., THE ABOVE PROCEDURE SHOULD BE FOLLOWED IN BOTH DIRECTIONS FROM THE ORIGINAL FAILED LOCATION), AND ONE LABORATORY TEST MUST BE TAKEN WITHIN THE RECONSTRUCTED AREA IF THE FAILED LENGTH EXCEEDS 150 FEET.

C. IN THE EVENT THAT A SAMPLE FAILS A LABORATORY DESTRUCTIVE TEST (WHETHER IT IS CONDUCTED BY THE INDEPENDENT LABORATORY OR BY THE GEOMEMBRANE INSTALLER'S LABORATORY), THEN THE ABOVE PROCEDURES SHOULD BE FOLLOWED, CONSIDERING LABORATORY TESTS EXCLUSIVELY. SINCE THE FINAL SEAM MUST BE BOUNDED BY TWO LABORATORY PASSED TEST LOCATIONS (ONE FROM EACH SIDE OF THE FAILURE LOCATION), IT MAY THEN BE NECESSARY TO TAKE ONE OR MORE NEW SAMPLES FOR LABORATORY TESTING IN ADDITION TO THE ONE REQUIRED IN THE RECONSTRUCTED SEAM AREA.

D. THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL OBSERVE AND NOTE ACTIONS TAKEN IN CONJUNCTION WITH DESTRUCTIVE TEST FAILURES.

5.3.7 DEFECTS AND REPAIRS

5.3.7.1 IDENTIFICATION

SEAMS AND NON-SEAM AREAS OF THE GEOMEMBRANE WILL BE EVALUATED BY THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR FOR IDENTIFICATION OF DEFECTS, HOLES, BLISTERS, UNDISPERSED RAW MATERIALS, AND SIGNS OF CONTAMINATION BY FOREIGN MATTER.

BECAUSE LIGHT REFLECTED BY THE GEOMEMBRANE AIDS IN THE DETECTION OF DEFECTS, THE SURFACE OF THE GEOMEMBRANE SHALL BE CLEAN AT THE TIME OF VISUAL OBSERVATION. THE GEOMEMBRANE SURFACE SHOULD BE BROOMED OR WASHED IF THE AMOUNT OF DUST OR MUD INHIBITS OBSERVATION AND TESTING. ADDITIONALLY, NO SEAM OR REPAIR WELDING SHOULD TAKE PLACE AFTER DARK.

5.3.7.2 EVALUATION

EACH SUSPECT LOCATION, BOTH IN SEAM AND NON-SEAM AREAS, WILL BE NON-DESTRUCTIVELY TESTED. EACH LOCATION, WHICH FAILS THE NON-DESTRUCTIVE TESTING, WILL BE MARKED BY THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR AND REPAIRED BY THE GEOMEMBRANE INSTALLER.

5.3.7.3 REPAIR PROCEDURES

REPAIR PROCEDURES SHOULD BE AGREED UPON BETWEEN THE PROJECT MANAGER, THE GEOMEMBRANE INSTALLER, AND THE GEOSYNTHETICS QUALITY ASSURANCE MANAGER. UNLESS OTHERWISE AGREED, THE REPAIR PROCEDURES WILL BE AS FOLLOWS:

A. DEFECTIVE SEAMS WILL BE REPAIRED BY CAP-STRIP RECONSTRUCTION.

B. TEARS OR HOLES WILL BE REPAIRED BY PATCHING.

C. PINHOLES WILL BE REPAIRED BY PATCHING.

D. BLISTERS, LARGER HOLES, UNDISPERSED RAW MATERIALS, AND CONTAMINATION BY FOREIGN MATTER WILL BE REPAIRED BY PATCHING.

E. ALL PANEL INTERSECTIONS OF THREE OR MORE PANELS WILL BE COVERED BY A PATCH.

F. PATCHES SHALL BE ROUND OR OVAL IN SHAPE, MADE OF THE SAME MATERIAL AS THE GEOMEMBRANE, AND EXTEND A MINIMUM OF SIX INCHES BEYOND ALL EDGES OF THE DEFECT. PATCHES WILL BE APPLIED USING THE APPROVED METHOD AS REQUIRED IN THE SPECIFICATIONS.

G. ALL SEAMS MADE IN REPAIRING DEFECTS WILL BE SUBJECTED TO THE SAME NON-DESTRUCTIVE TEST PROCEDURES AS OUTLINED FOR ALL OTHER SEAMS. ADDITIONALLY, REPAIR SEAMING IS SUBJECT TO THE SAME DESTRUCTIVE TESTING FREQUENCY AS A PANEL OR PRODUCTION SEAM. THUS ALL EXTRUSION WELDS, PANEL SEAMS OR REPAIR WORK, WILL BE LOGGED AND TESTED AT A MINIMUM FREQUENCY OF ONE TEST LOCATION PER 500 LINEAR FEET OF SEAM LENGTH.

5.3.7.4 SEAM RECONSTRUCTION PROCEDURES

SEAM SECTIONS WHICH NEED REPAIR DUE TO FAILING DESTRUCTIVE TEST RESULTS, OVERHEATING, BURN HOLES, AND UNSEAMED AREAS SHALL BE RECONSTRUCTED BY CAP-STRIPPING WITH THE SAME GEOMEMBRANE MATERIAL. CAP-STRIPPING INVOLVES APPLYING A STRIP OF GEOMEMBRANE, A MINIMUM DISTANCE OF SIX INCHES ON ALL SIDES OF THE DEFECTIVE SEAMS, AND SEAMING IT TO THE SHEET MATERIAL BY EXTRUSION WELDING. NO TOPPING OF EXISTING WELDS WILL BE ALLOWED.

5.3.7.5 DOCUMENTATION OF REPAIRS

EACH REPAIR WILL BE NON-DESTRUCTIVELY TESTED USING THE METHODS DESCRIBED IN SECTION 5.3.6.1, AS APPROPRIATE. REPAIRS, WHICH PASS THE NON-DESTRUCTIVE TEST, WILL BE TAKEN AS AN INDICATION OF AN ADEQUATE REPAIR. REPAIRS, WHICH FAIL, WILL BE REDONE AND RETESTED UNTIL A PASSING TEST IS ACHIEVED. THE GEOSYNTHETICS QUALITY ASSURANCE MONITOR WILL OBSERVE ALL NON-DESTRUCTIVE TESTING OF REPAIRS.

5.3.8 BACKFILLING OF ANCHOR TRENCHES

A. THE ANCHOR TRENCHES WILL BE BACKFILLED AND COMPACTED BY THE CONTRACTOR, TO A MINIMUM OF 90 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED BY ASTM D698, STANDARD PROCTOR.

B. CARE SHOULD BE TAKEN WHEN BACKFILLING THE TRENCHES TO PREVENT ANY DAMAGE TO THE GEOMEMBRANE.

5.4 LEACHATE COLLECTION SYSTEM

THE CONTRACTOR WILL BE RESPONSIBLE FOR CONSTRUCTION OF THE LEACHATE COLLECTION SYSTEM IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.

5.4.1 GEOTEXTILE

THE GEOTEXTILE SHALL CONSIST OF A NON-WOVEN MATERIAL. THE GEOTEXTILE ROLLS SHALL BE PLACED SO THAT THEIR LONG DIMENSION IS APPROXIMATELY PARALLEL TO THE DIRECTION OF THE SLOPE ON WHICH THEY LIE. THE ROLLS SHALL BE ROLLED DOWN SLOPE AND POSITIONED SO THAT THE OVERLAP IS A MINIMUM OF SIX INCHES. THE GEOTEXTILE IS TO BE CONTINUOUSLY SEWN BETWEEN SUCCESSIVE PANELS OR OVERLAPPED AND HEAT BONDED TO PREVENT WIND DAMAGE.

THE QUALITY ASSURANCE MONITOR WILL:

A. MONITOR DEPLOYMENT AND SEAMING TECHNIQUES TO OBSERVE COMPLIANCE WITH THE SPECIFICATIONS;

B. OBSERVE INSTALLATION OF THE GEOTEXTILE IN THE ANCHOR TRENCH; AND,

C. NOTIFY THE PROJECT MANAGER OF ANY MATERIAL OR INSTALLATION DEFICIENCIES.

5.4.2 LEACHATE COLLECTION LAYER

A. THE LEACHATE COLLECTION MATERIAL SHALL BE A MINIMUM TWO FEET THICK, MEETING THE REQUIREMENTS OF SECTION 4.5.

B. THE LEACHATE COLLECTION LAYER SHALL BE PLACED BY LIGHT, WIDE TRACKED EQUIPMENT HAVING A MAXIMUM OF 5 PSI ON A MINIMUM OF 2 FEET OF PROTECTIVE COVER MATERIAL. ONLY NOMINAL COMPACTION NEED BE APPLIED TO THE DRAINAGE LAYER. OVER COMPACTION DUE TO EQUIPMENT TRAFFIC MUST BE AVOIDED. CARE MUST BE EXERCISED TO ELIMINATE ANY POSSIBILITY OF DAMAGE TO THE GEOSYNTHETICS DURING LINER PROTECTIVE COVER LAYER PLACEMENT. WRINKLES NOTED IN THE GEOSYNTHETICS DURING DRAINAGE LAYER PLACEMENT SHOULD BE RELAXED AND CORRECTED IN ACCORDANCE WITH THE GEOMEMBRANE INSTALLER'S RECOMMENDATIONS. DRAINAGE MATERIAL SHALL NOT BE PLACED DOWN THE SLOPES.

C. THE QUALITY ASSURANCE MONITOR WILL MAKE A VISUAL OBSERVATION OF THE DRAINAGE LAYER MATERIAL PRIOR TO PLACEMENT. DRAINAGE LAYER PLACEMENT SHALL BE MONITORED THROUGHOUT EACH DAY BY THE QUALITY ASSURANCE MONITOR. THICKNESS MEASUREMENTS SHALL BE TAKEN ON A MINIMUM 100 FOOT GRID BY A REGISTERED LAND SURVEYOR IN THE STATE OF GEORGIA.

D. PRIOR TO CONSTRUCTION, BULK SAMPLES SHALL BE OBTAINED FOR EVERY 1,500 CUBIC YARDS OF MATERIAL BEING PLACED FOR A DETERMINATION OF GRAIN SIZE DISTRIBUTION (ASTM D6913) AND EVERY 3,000 CUBIC YARDS FOR A DETERMINATION OF HYDRAULIC CONDUCTIVITY (ASTM D2434), ADDITIONALLY, ONE SAMPLE WILL BE TESTED FOR CALCIUM CARBONATE CONTENT (ASTM D4373).

E. IF THE BORROW SOURCE IS CHANGED, OR A DIFFERENT MATERIAL FROM THE SAME BORROW SOURCE IS CONSIDERED, THESE MATERIALS WILL BE TESTED AT THE SAME FREQUENCY AS DESCRIBED IN (D).

5.4.3 DRAINAGE ENVELOPE AND LEACHATE COLLECTION PIPE

THE DRAINAGE ENVELOPE MATERIAL SHALL CONSIST OF A GRADED STONE PLACED TO THE DIMENSIONS SHOWN ON THE DRAWINGS. THE LEACHATE COLLECTION PIPE WILL CONSIST OF A SIX INCH DIAMETER, PERFORATED HDPE PIPE OR AN APPROVED ALTERNATE.

A. DRAINAGE ENVELOPE

BEDDING MATERIAL SHALL BE PLACED TO PROVIDE UNIFORM AND ADEQUATE LONGITUDINAL SUPPORT UNDER THE PIPE. THE CONTRACTOR SHALL PLACE MATERIAL UNDER THE PIPE HAUNCH TO PROVIDE ADEQUATE SIDE SUPPORT TO THE PIPE PRIOR TO THE DRAINAGE LAYER. THE PIPE SHALL BE TEMPORARILY PLUGGED TO PREVENT THE ENTRANCE OF WATER, MUD, OR FOREIGN MATTER, AND THE PIPE SHALL BE SECURED TO PREVENT ITS BEING DISLODGED.

B. LEACHATE COLLECTION PIPE

BEFORE BEING SET IN PLACE, EACH COMPONENT OF PIPING SHALL BE INSPECTED FOR DAMAGE AND CLEANED. DAMAGED COMPONENTS SHALL BE REJECTED OR REPAIRED. PIPE LAYING SHALL COMMENCE AT THE LOWEST ELEVATION AND SHALL TERMINATE ONLY AT MANHOLES, SERVICE BRANCHES, CAPS, OR CLEAN OUTS. WHENEVER PIPE LAYING IS INTERRUPTED, THE END OF THE PIPE SHALL BE TEMPORARILY PLUGGED TO PREVENT THE ENTRANCE OF WATER, MUD, OR FOREIGN MATTER, AND THE PIPE SHALL BE SECURED TO PREVENT ITS BEING DISLODGED.

THE LEACHATE PIPE SHALL BE TESTED BY THE PIPE MANUFACTURER TO SUBSTANTIATE THAT THE PIPE MEETS SPECIFICATIONS. A CERTIFICATION THAT THE MATERIAL PROPERTY VALUES ARE GUARANTEED BY THE MANUFACTURER SHALL BE PROVIDED IN THE MATERIAL PROPERTY SHEET. LEACHATE LINES EXTERNAL TO THE COLLECTION SYSTEM SHALL BE TESTED AND DEMONSTRATED TO BE LEAK PROOF.

AS DIRECTED BY THE ENGINEER, PRESSURE TESTING USING EITHER WATER OR AIR SHALL BE PERFORMED ON ALL NON-PERFORATED HDPE LEACHATE FORCE MAIN AND GRAVITY PIPING. THE TEST PRESSURES SHALL BE 10 PSI OR 1.5 TIMES THE DESIGN PRESSURE (WHICHEVER IS GREATER). THE PRESSURE SHALL BE MAINTAINED WITHIN A MAXIMUM VARIATION OF 5 PERCENT DURING THE ENTIRE LEAKAGE TEST. LEAKAGE MEASUREMENTS SHALL NOT BE STARTED UNTIL A CONSTANT TEST PRESSURE HAS BEEN ESTABLISHED. THE TEST SHALL BE CONDUCTED FOR A MINIMUM OF ONE HOUR.

PIPE AND FITTINGS SHALL BE INSTALLED WITH THE INVERT CONFORMING TO THE REQUIRED SLOPES AND ALIGNMENT, AND WITH THE PIPE BOTTOM UNIFORMLY AND CONTINUOUSLY SUPPORTED BY A FIRM BEDDING AND FOUNDATION.

FOR SHORTER THAN STANDARD PIPE LENGTHS, FIELD CUTS MAY BE MADE WITH EITHER HAND OR MECHANICAL SAWS, OR PLASTIC PIPE CUTTERS. ENDS SHALL BE CUT SQUARE AND PERPENDICULAR TO THE PIPE AXIS. BURRS SHALL BE REMOVED AND ENDS SMOOTHLY BEVELED BY A MECHANICAL BEVELER OR BY HAND WITH A RASP OR FILE.

THE CONTRACTOR SHALL ASSEMBLE ALL PIPE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPE MANUFACTURER USING THE BUTT-FUSION WELDING METHOD.

THE CONTRACTOR SHALL NOT USE COMPACTION EQUIPMENT DIRECTLY OVER THE PIPE UNTIL SUFFICIENT BACKFILL HAS BEEN PLACED TO ASSURE THAT SUCH EQUIPMENT WILL NOT DAMAGE OR DISTURB THE PIPE.

THE QUALITY ASSURANCE MONITOR WILL OBSERVE THE FOLLOWING CONTRACTOR ACTIVITIES:

A. A GEOTEXTILE WILL BE INSTALLED BETWEEN THE GEOMEMBRANE AND GRAVEL DRAINAGE ENVELOPE, AS SPECIFIED ON THE CONSTRUCTION DRAWINGS.

B. EQUIPMENT USED FOR PLACING GRANULAR MATERIAL WILL NOT BE DRIVEN DIRECTLY ON THE GEOMEMBRANE.

C. A MINIMUM THICKNESS OF TWO FOOT OF MATERIAL WILL BE MAINTAINED BETWEEN A LIGHT TRACKED VEHICLE AND THE GEOMEMBRANE.

D. PIPES WILL BE INSTALLED AT THE MINIMUM SLOPE INDICATED ON THE DRAWINGS.

E. PLACEMENT OF THE GEOTEXTILE FILTER, THE COLLECTION PIPES, AND THE GRAVEL DRAINAGE ENVELOPE, AND JOINTS AND CONNECTIONS OF THE COLLECTION SYSTEM WILL BE OBSERVED BY THE QUALITY ASSURANCE MONITOR.

THE QUALITY ASSURANCE MONITOR WILL INFORM THE PROJECT MANAGER IF THE ABOVE CONDITIONS ARE NOT MET.

5.4.4 ALTERNATE LEACHATE COLLECTION LAYER

A. THE GEOCOMPOSITE DRAIN SHALL BE INSTALLED DIRECTLY OVER THE GEOMEMBRANE THAT HAS BEEN CLEANED PRIOR TO PLACEMENT. ADJACENT ROLLS SHALL OVERLAP A MINIMUM OF 4 INCHES AND THE NET BE TIED TOGETHER WITH PLASTIC FASTENERS. FASTENERS SHALL BE PLACED EVERY FIVE FEET ALONG ADJACENT ROLLS, EVERY 6 INCHES IN THE ANCHOR TRENCH, AND EVERY 6 INCHES ALONG END TO END SEAMS. THE GEOTEXTILE SHALL BE SEWN OR HEAT BONDED.

B. THE SOIL COVER MATERIAL SHALL BE INSTALLED AS DESCRIBED IN SECTION 5.4.2 AND SHALL MEET THE REQUIREMENTS DESCRIBED IN SECTION 4.6.

5.5 FINAL COVER SYSTEM

THE CONTRACTOR WILL BE RESPONSIBLE FOR CONSTRUCTION OF THE FINAL COVER SYSTEM IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. ALTERNATE III FINAL COVER SYSTEM REQUIREMENTS ARE COVERED IN SHEETS 42-44.

5.5.1 FINAL COVER COMPACTED SOIL

THE FINAL COVER COMPACTED SOIL SHALL MEET REQUIREMENTS OF SECTION 4.11.

5.5.2 FINAL COVER GEOSYNTHETICS INSTALLATION

A. THE GEOMEMBRANE INSTALLATION FOR FINAL COVER, ALTERNATE I FINAL COVER, AND ALTERNATE II FINAL COVER SHALL MEET THE REQUIREMENTS OF SECTION 5.3.

B. THE GEOTEXTILE FOR ALTERNATE II FINAL COVER SHALL CONSIST OF A NON-WOVEN MATERIAL. THE GEOTEXTILE ROLLS SHALL BE PLACED SO THAT THEIR LONG DIMENSION IS APPROXIMATELY PARALLEL TO THE DIRECTION OF THE SLOPE ON WHICH THEY LIE. THE ROLLS SHALL BE ROLLED DOWN SLOPE AND POSITIONED SO THAT THE OVERLAP IS A MINIMUM OF SIX INCHES. THE GEOTEXTILE IS TO BE CONTINUOUSLY SEWN BETWEEN SUCCESSIVE PANELS OR OVERLAPPED AND HEAT BONDED TO PREVENT WIND DAMAGE.

THE QUALITY ASSURANCE MONITOR WILL:

I. MONITOR DEPLOYMENT AND SEAMING TECHNIQUES TO OBSERVE COMPLIANCE WITH THE SPECIFICATIONS;

II. OBSERVE INSTALLATION OF THE GEOTEXTILE IN THE ANCHOR TRENCH; AND,

III. NOTIFY THE PROJECT MANAGER OF ANY MATERIAL OR INSTALLATION DEFICIENCIES.

C. THE GEOCOMPOSITE FOR FINAL COVER AND ALTERNATE I FINAL COVER SHALL BE INSTALLED DIRECTLY OVER THE GEOMEMBRANE THAT HAS BEEN CLEANED PRIOR TO PLACEMENT. ADJACENT ROLLS SHALL OVERLAP A MINIMUM OF 4 INCHES AND THE NET BE TIED TOGETHER WITH PLASTIC FASTENERS. FASTENERS SHALL BE PLACED EVERY FIVE FEET ALONG ADJACENT ROLLS, EVERY 6 INCHES IN THE ANCHOR TRENCH, AND EVERY 6 INCHES ALONG END TO END SEAMS. THE GEOTEXTILE SHALL BE SEWN OR HEAT BONDED.

D. THE QUALITY ASSURANCE MONITOR WILL MAKE A VISUAL OBSERVATION OF THE GENERAL FILL & VEGETATIVE/EROSION LAYER PRIOR TO PLACEMENT. MATERIAL PLACEMENT SHALL BE MONITORED THROUGHOUT EACH DAY BY THE QUALITY ASSURANCE MONITOR. THICKNESS MEASUREMENTS SHALL BE TAKEN ON A MINIMUM 100 FOOT GRID BY A REGISTERED LAND SURVEYOR IN THE STATE OF GEORGIA.

5.5.3 FINAL COVER GENERAL FILL & VEGETATIVE/EROSION LAYER

A. THE FINAL COVER GENERAL FILL MATERIAL SHALL BE A MINIMUM ONE FOOT THICK AND SHALL MEET REQUIREMENTS OF SECTION 4.12.

B. THE FINAL COVER VEGETATIVE/EROSION LAYER SHALL MEET THE REQUIREMENTS OF SECTION 4.14.

C. THE GENERAL FILL & VEGETATIVE/EROSION LAYER SHALL BE PLACED BY LIGHT, WIDE TRACKED EQUIPMENT HAVING A MAXIMUM OF 5 PSI ON A MINIMUM OF ONE FEET OF COVER MATERIAL. ONLY NOMINAL COMPACTION NEED BE APPLIED TO THE GENERAL FILL & VEGETATIVE/EROSION LAYER. OVER COMPACTION DUE TO EQUIPMENT TRAFFIC MUST BE AVOIDED. CARE MUST BE EXERCISED TO ELIMINATE THE POSSIBILITY OF DAMAGE TO THE GEOSYNTHETICS DURING GENERAL FILL MATERIAL PLACEMENT. WRINKLES NOTED IN THE GEOSYNTHETICS DURING GENERAL FILL & VEGETATIVE/EROSION LAYER PLACEMENT SHOULD BE RELAXED AND CORRECTED IN ACCORDANCE WITH THE GEOMEMBRANE INSTALLER'S RECOMMENDATIONS. GENERAL FILL & VEGETATIVE/EROSION MATERIAL SHALL NOT BE PLACED DOWN THE SLOPES. LOADED TRUCK TRAFFIC ON THE FINAL COVER SHALL BE ON A MINIMUM 4 FEET OF COVER.

D. THE QUALITY ASSURANCE MONITOR WILL MAKE A VISUAL OBSERVATION OF THE GENERAL FILL & VEGETATIVE/EROSION LAYER PRIOR TO PLACEMENT. MATERIAL PLACEMENT SHALL BE MONITORED THROUGHOUT EACH DAY BY THE QUALITY ASSURANCE MONITOR. THICKNESS MEASUREMENTS SHALL BE TAKEN ON A MINIMUM 100 FOOT GRID BY A REGISTERED LAND SURVEYOR IN THE STATE OF GEORGIA.

SCS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS
3175 SATELLITE BLVD, BLDG 600 SUITE 100
DULUTH, GA 30096
PH 678 319-9849

REG. NO. 09221050-30
ISS. BY: SS

CJA/RWB/BC
JRB
APP. BY: IRB

CADD FILE:
11-14 CQA PLAN

DATE:
APRIL 2026

SCALE:
AS SHOWN

DRAWING NO.

DESIGNED: MAL

CHECKED:

DATE: FEB 2018

39

2

DRAWN: MAL

JOB NO. G003-109A

SCALE:

SHEET

REV

DEANS BRIDGE ROAD MSW LANDFILL
PHASE III DESIGN & OPERATION PLAN

CONSTRUCTION QUALITY ASSURANCE PLAN

AUGUSTA — RICHMOND
COUNTY, GEORGIA

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ATLANTIC COAST
CONSULTING, INC.

0 02-23-18 EPD SUBMITTAL - GCL MINOR MOD

NO. DATE DESCRIPTION OF REVISION

3CS ENGINEERS
STEARNS, CONRAD AND SCHMIDT
CONSULTING ENGINEERS 3175
SATELLITE BLVD, BLDG 600 SUITE 100
DULUTH, GA 30096
PH. 678 319-9849 FAX 678 319-9851

2 01-14-22 ADDRESSING EPD 5-YEAR PERMIT REVIEW COMMENTS SR/VSS

1 11-30-20 REVISED FOR FIVE YEAR PERMIT REVIEW HW/VSS

NO. DATE DESCRIPTION OF REVISION BY/CHK

REGISTERED
ENGINEER
JERRY R. BLANTON
No. F0019978
JERRY R. BLANTON
P.E.
LICENSE NO. 013978

CHK BY JRB

DESCRIPTION ISSUED FOR BID

DATE 04/06/26

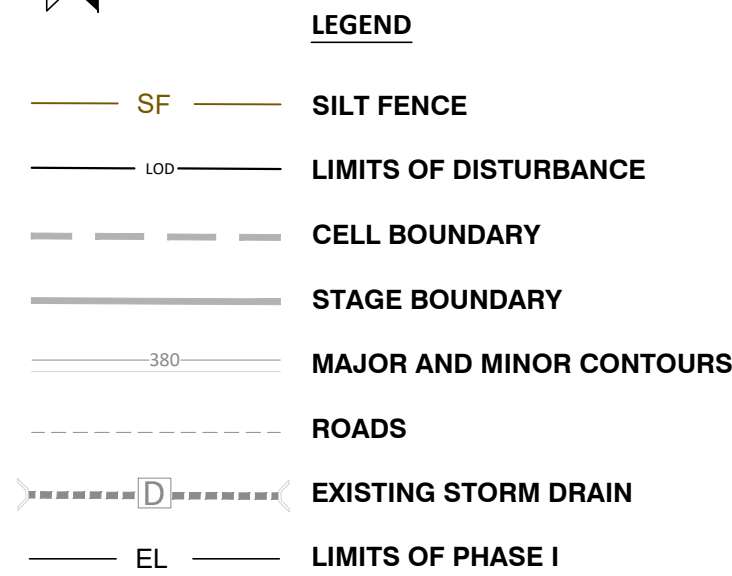
REV

SHEET TITLE CONSTRUCTION QUALITY ASSURANCE PLAN - 4

PROJECT TITLE DEANS BRIDGE ROAD LANDFILL PHASE III STAGE II SOUTH CELL 2 PHASE I CONSTRUCTION

CLIENT AUGUSTA-RICHMOND COUNTY LANDFILL 4330 DEANS BRIDGE RD BLYTHE, GEORGIA 30805

14 of 21



F. CONDUCT TURBIDITY SAMPLING AFTER EVERY RAIN EVENT OF 0.5 INCH OR GREATER WITHIN ANY 24 HOUR PERIOD. RECORD ALL DATA AND EXCEPTIONS SPECIFIED IN PART IV D.6.D. OF THIS PERMIT.

L. USE MULCH FILTER BERMS IN ADDITION TO A SILT FENCE AT THE SITE PERIMETER WHEREVER CONSTRUCTION STORMWATER (INCLUDING SHEET FLOW) MAY BE DISCHARGED. MULCH FILTER BERMS CANNOT BE PLACED IN WATERWAYS OR AREAS OF CONCENTRATED FLOW.

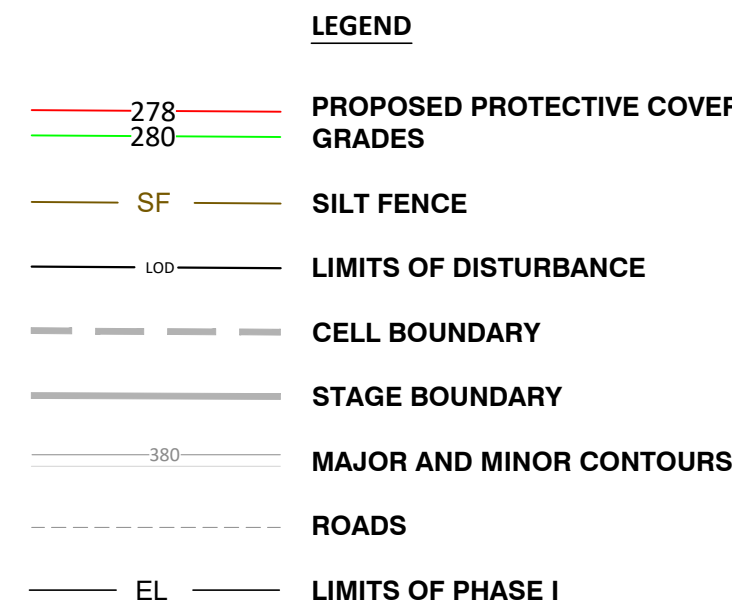
M. USE APPROPRIATE EROSION CONTROL SLOPE STABILIZATION INSTEAD OF CONCRETE IN ALL CONSTRUCTION STORMWATER DITCHES AND STORM DRAINAGES DESIGNED FOR A 25 YEAR, 24 HOUR RAINFALL EVENT.

T. CERTIFIED PERSONNEL SHALL CONDUCT INSPECTIONS AT LEAST TWICE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF THE PERMIT TERM THAT INCLUDES ALL RAINFALL OF GREATER THAN 0.5 INCHES IN ACCORDANCE WITH PART IV D.4.A.(3)(A)-(C) OF THIS PERMIT.

STORAGE PROVIDED IN EXISTING POND D: 9,160 CY

1. AERIAL TOPOGRAPHIC SURVEY BY FIRMATEK LLC, DATED JULY 25, 2025. CONTRACTORS AND SUB-CONTRACTORS ARE RESPONSIBLE FOR VERIFICATION OF FIELD CONDITIONS.
2. CARE SHALL BE TAKEN TO AVOID DAMAGING EXISTING FEATURES AND STRUCTURES DURING CONSTRUCTION ACTIVITIES, INCLUDING EXISTING GCCS COMPONENTS TRAFFIC SIGNS, LITTER FENCE, ETC. IF ANY DAMAGE IS MADE DUE TO CONTRACTOR ACTIVITIES, CONTRACTOR SHALL RESTORE THE DAMAGED STRUCTURE TO PRE-CONSTRUCTION CONDITIONS AT NO COST TO THE CLIENT.
3. ANY STORMWATER DITCH OR CULVERT SHALL BE RETURNED TO ITS ORIGINAL STATE BY THE CONTRACTOR IF DISTURBED DURING CONSTRUCTION.

SCS ENGINEERS STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 3175 SATELLITE BLVD, BLDG 600 SUITE 100 DULUTH, GA 30096 PH. 678 318-9849	CADD FILE: 15-17 EC PLAN		DATE: APRIL 2026		SCALE: AS SHOWN		DRAWING NO.		SHEET 15 of 21
	PROJ. NO.: 09/221050.30	DWG. BY: S5/CM	CHK. BY: JRB	APP. BY: JRB	DATE: 2026.04.06 21:28:10 - 04:00	REV. DATE DESCRIPTION 1 04/06/26 ISSUED FOR BID	CHK. BY: JRB	DATE: 2026.04.06 21:28:10 - 04:00	
AUGUSTA-RICHMOND COUNTY LANDFILL 4330 DEANS BRIDGE RD BLYTE, GEORGIA 30805			SHEET TITLE EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN - INITIAL		PROJECT TITLE DEANS BRIDGE ROAD LANDFILL PHASE III STAGE II SOUTH CELL 2 PHASE I CONSTRUCTION		JERRY R. BLANTON, P.E. LICENSE NO. 019978		



SEDIMENT STORAGE:

A MINIMUM OF 67 CUBIC YARDS OF SEDIMENT STORAGE PER ACRE DRAINED IS REQUIRED. SEDIMENT STORAGE VOLUME MUST BE IN PLACE PRIOR TO AND DURING ALL LAND DISTURBANCE ACTIVITIES UNTIL FINAL STABILIZATION OF THE SITE HAS BEEN ACHIEVED.

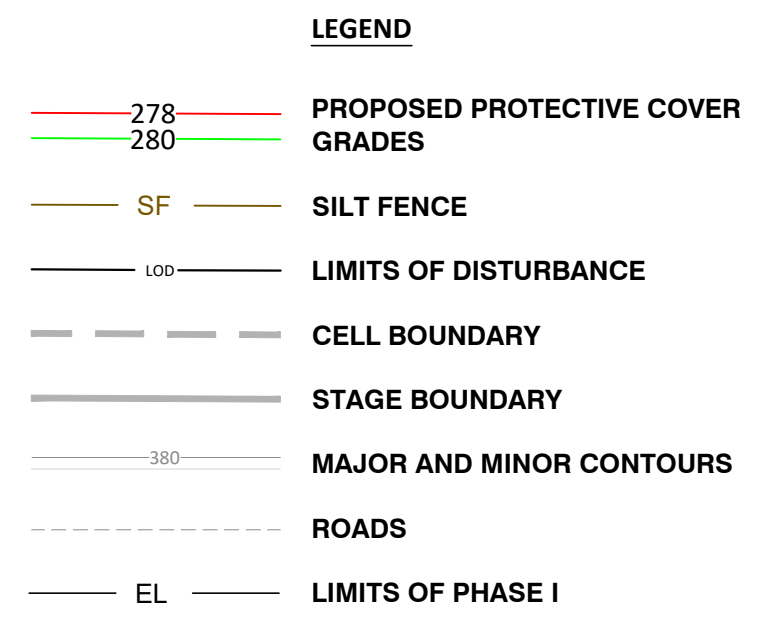
SEDIMENT STORAGE REQUIRED FOR THIS SITE:

16 AC * (67CY/AC) = 1,072 CY STORAGE TO BE PROVIDED

STORAGE PROVIDED IN EXISTING POND D: 9,160 CY

- NOTES:**
1. AERIAL TOPOGRAPHIC SURVEY BY FIRMATEK LLC, DATED JULY 25, 2025. CONTRACTORS AND SUB-CONTRACTORS ARE RESPONSIBLE FOR VERIFICATION OF FIELD CONDITIONS.
 2. CARE SHALL BE TAKEN TO AVOID DAMAGING EXISTING FEATURES AND STRUCTURES DURING CONSTRUCTION ACTIVITIES, INCLUDING EXISTING GCOS COMPONENTS, TRAFFIC SIGNS, LITTER FENCE, ETC. IF ANY DAMAGE IS MADE DUE TO CONTRACTOR ACTIVITIES, CONTRACTOR SHALL RESTORE THE DAMAGED STRUCTURE TO PRE-CONSTRUCTION CONDITIONS AT NO COST TO THE CLIENT.
 3. ANY STORMWATER DITCH OR CULVERT SHALL BE RETURNED TO ITS ORIGINAL STATE BY THE CONTRACTOR IF DISTURBED DURING CONSTRUCTION.

ISSUED FOR BID
NOT FOR CONSTRUCTION
4/6/2026



NOTES:

1. AERIAL TOPOGRAPHIC SURVEY BY FIRMATEK LLC, DATED JULY 25, 2025. CONTRACTORS AND SUB-CONTRACTORS ARE RESPONSIBLE FOR VERIFICATION OF FIELD CONDITIONS.
2. CARE SHALL BE TAKEN TO AVOID DAMAGING EXISTING FEATURES AND STRUCTURES DURING CONSTRUCTION ACTIVITIES, INCLUDING EXISTING GCOS COMPONENTS, TRAFFIC SIGNS, LITTER FENCE, ETC. IF ANY DAMAGE IS MADE DUE TO CONTRACTOR ACTIVITIES, CONTRACTOR SHALL RESTORE THE DAMAGED STRUCTURE TO PRE-CONSTRUCTION CONDITIONS AT NO COST TO THE CLIENT.
3. ANY STORMWATER DITCH OR CULVERT SHALL BE RETURNED TO ITS ORIGINAL STATE BY THE CONTRACTOR IF DISTURBED DURING CONSTRUCTION.

SHEET **17** of **21**

ITEM #35	ALL SAMPLING LOCATIONS, PERENNIAL AND INTERMITTENT, AND OTHER WATER BODIES INTO WHICH STORM WATER DISCHARGED ARE SHOWN ON SHEET 15.
ITEM #36	
INITIAL PHASE	- PRIOR TO THE LAND DISTURBING ACTIVITY, THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE AREA SITE DEVELOPMENT INSPECTOR. - THE CONTRACTOR SHALL OBSERVE THE PROJECT SEQUENCE SHOWN ON THE PLANS. THE CONTRACTOR SHALL MAINTAIN CAREFUL SCHEDULING AND PERFORMANCE TO INSURE THAT LAND STRIPPED OF ITS NATURAL COVER IS EXPOSED ONLY IN SMALL QUANTITIES. - NO STAGING AREAS, MATERIAL STORAGE, CONCRETE WASH OUT AREAS, OR DEBRIS BURN AND BURIAL HOLES SHALL BE LOCATED WITHIN 500 FT. OF DESIGNATED TREE PROTECTION AREAS OR STREAM BUFFERS. - THE OWNER AGREES TO PROVIDE AND MAINTAIN OFF-STREET PARKING ON THE SUBJECT PROPERTY DURING THE ENTIRE CONSTRUCTION PERIOD. - A COPY OF THE APPROVED LAND DISTURBANCE PLAN AND PERMIT SHALL BE PRESENT ON THE SITE AT ALL TIMES. POST ON DAY ONE. - THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES - PRIOR TO COMMENCING LAND DISTURBANCE ACTIVITY, THE LIMITS OF LAND DISTURBANCE SHALL BE CLEARLY AND ACCURATELY DEMARCATED WITH STAKES, RIBBONS, OR OTHER APPROPRIATE MEANS. THE LOCATION AND EXTENT OF ALL AUTHORIZED LAND DISTURBANCE ACTIVITY SHALL BE DEMARCATED FOR THE DURATION OF THE CONSTRUCTION ACTIVITY. NO LAND DISTURBANCE SHALL OCCUR OUTSIDE THE APPROVED LIMITS INDICATED ON THE APPROVED PLANS. - PRIOR TO ANY OTHER CONSTRUCTION, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED AT EACH POINT OF ENTRY TO OR EXIT FROM THE SITE OR ONTO ANY PUBLIC ROADWAY AS SHOWN ON PLANS. THE CONSTRUCTION ENTRANCE SHALL BE MINIMUM 20' X 50' AND CONSTRUCTED IN ACCORDANCE WITH THE APPROVED CD DETAIL ON THESE PLANS. - IMMEDIATELY AFTER THE ESTABLISHMENT OF CONSTRUCTION ENTRANCE/EXITS, ALL PERIMETER EROSION CONTROL AND STORMWATER MANAGEMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE CLEARING PHASE I EROSION & SEDIMENTATION CONTROL/SITE MAP PLAN. INITIAL EROSION CONTROL MEASURES INCLUDE PERIMETER SILT FENCE, BRUSH BARRIERS, TEMPORARY SEDIMENT POND AND ANY OTHER MEASURES REQUIRED TO TREAT SEDIMENT COLLECTION AND STORMWATER RUNOFF. - TYPE "C" SILT FENCE SHOULD BE INSTALLED AT THE PERIMETER OF THE DISTURBED AREA AS SHOWN ON THE PLAN. SILT SHOULD BE REMOVED WHEN ACCUMULATION REACHES ½ HEIGHT OF THE BARRIER. THE PERIMETER SILT FENCE SHOULD BE INSPECTED DAILY FOR ANY FAILURES. ANY FAILURES OF SAID FENCING SHOULD BE REPAIRED IMMEDIATELY. - TREE PROTECTION FENCING AND STREAM BUFFER LIMITS SHOULD BE INSTALLED PRIOR TO THE START OF ANY LAND DISTURBANCE ACTIVITY AND MAINTAINED UNTIL FINAL LANDSCAPE IS INSTALLED. THE TREE PROTECTION FENCING SHOULD BE INSPECTED DAILY. ANY FAILURES OF SAID FENCING SHOULD BE REPAIRED IMMEDIATELY. - ONCE THE INITIAL EROSION CONTROL MEASURES ARE IN PLACE THE CONTRACTOR SHALL REQUEST AN INSPECTION BY THE DESIGN PROFESSIONAL WITHIN 7 DAYS OF COMPLETING THE BMP INSTALLATION. NO OTHER CONSTRUCTION ACTIVITIES SHALL OCCUR UNTIL THE PROJECT PROFESSIONAL APPROVES THE INSTALLATION OF SAID EROSION CONTROL MEASURES. IF UNFORESEEN CONDITIONS EXIST IN THE FIELD THAT WARRANT ADDITIONAL EROSION CONTROL MEASURES, THE CONTRACTOR MUST CONSTRUCT ANY ADDITIONAL EROSION CONTROL DEVICES DEEMED NECESSARY BY THE SITE INSPECTION WITH CONSULTATION WITH DESIGN PROFESSIONAL. - NO BURN OR BURY PITS SHALL BE PERMITTED ON THE CONSTRUCTION SITE WITHOUT WRITTEN PERMISSION BY THE OWNER AND/OR THE ENGINEER OF RECORD. - MULCH OR TEMPORARY GRASSING SHALL BE APPLIED TO ALL EXPOSED AREAS WITHIN 14 DAYS OF LAND DISTURBANCE. - ALL DISTURBED AREAS LEFT MULCHED AFTER 30 DAYS SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT GRASSING. - CONTRACTOR SHALL INSPECT CONTROL MEASURES AT THE END OF EACH WORKING DAY TO ENSURE MEASURES ARE FUNCTIONING PROPERLY. - EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE. - FAILURE TO INSTALL, OPERATE, OR MAINTAIN ALL EROSION CONTROL MEASURES WILL RESULT IN ALL CONSTRUCTION BEING STOPPED ON THE JOB UNTIL SUCH MEASURES ARE CORRECTED BACK TO THE APPROVED EROSION CONTROL PLANS, I.E., MANDATORY STOP WORK ORDER.
INTERMEDIATE PHASE	- DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN CAREFUL SCHEDULING AND PERFORMANCE TO ENSURE THAT LAND STRIPPED OF ITS NATURAL GROUND COVER IS EXPOSED ONLY IN SMALL QUANTITIES AND THEREFORE LIMITED DURATIONS, BEFORE PERMANENT EROSION PROTECTION IS ESTABLISHED. - MAINTAIN FULL COORDINATION WITH THE DESIGN PROFESSIONAL, CONTRACTOR AND REGULATORY INSPECTOR AT ALL TIMES REGARDING PROJECT SEQUENCE. - SEDIMENT SHALL NOT BE WASHED INTO INLETS. IT SHALL BE REMOVED FROM THE SEDIMENT TRAPS AND DISPOSED OF AND STABILIZED SO THAT IT WILL NOT ENTER THE INLETS AGAIN. - ALL SLOPES STEEPER THAN 3:1 AND WITH A HEIGHT OF 10 FT. OR GREATER, AND CUTS AND FILLS WITHIN STREAM BUFFERS, SHALL BE STABILIZED WITH APPROPRIATE EROSION CONTROL MATTING OR BLANKETS. - STORM DRAIN OUTLET PROTECTION SHALL BE PLACED AT ALL OUTLET HEADWALLS AS SOON AS THE HEADWALL IS CONSTRUCTED. - MULCH OR TEMPORARY VEGETATION SHALL BE APPLIED TO ALL EXPOSED AREAS WITHIN 14 DAYS OF LAND DISTURBANCE. - ALL DISTURBED AREAS LEFT MULCHED AFTER 30 DAYS SHALL BE STABILIZED WITH TEMPORARY VEGETATION. - THE CONTRACTOR SHALL MAINTAIN THE SD3 TEMPORARY SEDIMENT POND UNTIL PERMANENT GROUND COVER IS ESTABLISHED. SEDIMENT SHALL BE CLEANED OUT OF THE POND WHEN IT REACHES THE 1/3 DEPTH OF BASIN. - SEDIMENT AND EROSION CONTROL MEASURES SHOULD BE CHECKED AFTER EACH RAIN EVENT. - THE CONSTRUCTION EXIT SHALL BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACK OR FLOW OF MUD ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 1-3" OF STONE, AS CONDITIONS DEMAND. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED FROM A VEHICLE ONTO PUBLIC ROADWAY OR INTO STORM DRAIN MUST BE REMOVED IMMEDIATELY. CONTRACTOR SHALL INSPECT CONTROL MEASURES AT THE END OF EACH WORKING DAY TO ENSURE MEASURES ARE FUNCTIONING PROPERLY. - EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE. - FAILURE TO INSTALL, OPERATE OR MAINTAIN ALL EROSION CONTROL MEASURES WILL RESULT IN ALL CONSTRUCTION BEING STOPPED ON THE JOB UNTIL SUCH MEASURES ARE CORRECTED BACK TO THE APPROVED EROSION CONTROL PLANS. NOTE: STOP WORK ORDER MAY BE ISSUED.
FINAL PHASE	- MAINTAIN FULL COORDINATION WITH THE DESIGN PROFESSIONAL, CONTRACTOR AND REGULATORY INSPECTOR AT ALL TIMES REGARDING PROJECT SEQUENCE. - SEDIMENT SHALL NOT BE WASHED INTO INLETS. IT SHALL BE REMOVED FROM THE SEDIMENT TRAPS AND DISPOSED OF AND STABILIZED SO THAT IT WILL NOT ENTER THE INLETS AGAIN. - MULCH OR TEMPORARY GRASSING SHALL BE APPLIED TO ALL EXPOSED AREAS WITHIN 14 DAYS OF LAND DISTURBANCE. - ALL DISTURBED AREAS LEFT MULCHED AFTER 30 DAYS SHALL BE STABILIZED WITH PERMANENT GRASSING. - PERMANENT GRASSING SHOULD BE INSTALLED. - THE CONTRACTOR SHALL MAINTAIN ALL SEDIMENT POND AND EROSION CONTROL MEASURES UNTIL PERMANENT GROUND COVER IS ESTABLISHED. - THE SILT FENCE AND BRUSH BARRIER SHOULD BE REMOVED ONCE THE INSPECTOR HAS APPROVED THE SITE FOR FINAL STABILIZATION. - EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
SEE BMP SYMBOL LEGEND ON 20	

ITEM #37 THE GRAPHIC SCALE AND NORTH ARROW ARE SHOWN ON SHEETS 15-17.
ITEM #38 EXISTING CONTOUR LINES AND PROPOSED CONTOUR LINES ARE DEPICTED ON SHEETS 15-17.
ITEM #39 THIS PROJECT DOES NOT USE ALTERNATIVE BMP'S WHOSE PERFORMANCE HAS BEEN DOCUMENTED TO BE EQUIVALENT TO OR SUPERIOR TO CONVENTIONAL BMP'S AS CERTIFIED BY A DESIGN PROFESSIONAL (UNLESS DISAPPROVED BY EPD OR THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION).
ITEM #40 THIS PROJECT DOES NOT USE ALTERNATIVE BMP'S FOR APPLICATION TO THE EQUIVALENT BMP LIST.
ITEM #41 THE DELINEATION OF THE APPLICABLE 25-FOOT OR 50-FOOT UNDISTURBED BUFFERS ADJACENT TO STATE WATERS AND ANY ADDITIONAL BUFFERS REQUIRED BY THE LOCAL ISSUING AUTHORITY ARE SHOWN ON SHEETS 15
ITEM #42 THERE ARE WETLANDS AND STATE WATERS ADJACENT TO THE PROJECT SITE, AREAS SHOWN ARE AS DELINEATED ON SHEET 15. ALL APPROPRIATE BUFFERS ARE SHOWN ON SHEET 15.
ITEM #43 THE DELINEATION AND ACREAGE OF CONTRIBUTING DRAINAGE BASINS ON THE PROJECT SITE ARE SHOWN ON SHEET 18.
ITEM #44 (HYDROLOGY APPROVED DURING THE MASTERPLAN APPROVAL BY THE STATE OF GEORGIA.)
ITEM #45 (HYDROLOGY APPROVED DURING THE MASTERPLAN APPROVAL BY THE STATE OF GEORGIA.)
ITEM #46 THERE ARE NO PROPOSED STORM PIPES. HYDROLOGY APPROVED DURING THE MASTERPLAN APPROVAL BY THE STATE OF GEORGIA.
ITEM #47 SOIL SERIES AND THEIR DELINEATIONS SHOWN ON SHEET 20
ITEM #48 LIMITS OF DISTURBANCE ARE SHOWN ON SHEETS 3-5
ITEM #49 A MINIMUM OF 67 CUBIC YARDS OF SEDIMENT STORAGE PER ACRE DRAINED IS REQUIRED. SEDIMENT STORAGE VOLUME MUST BE IN PLACE PRIOR TO AND DURING ALL LAND DISTURBANCE ACTIVITIES UNTIL FINAL STABILIZATION OF THE SITE HAS BEEN ACHIEVED. SEDIMENT STORAGE REQUIRED FOR THIS SITE: 16 AC * (67CY/AC) = 1,072 CY STORAGE TO BE PROVIDED STORAGE PROVIDED IN EXISTING POND D: 9,160 CY
ITEM #50 SHEETS 15-17 ADDRESS BMP'S FOR ALL PHASES OF CONSTRUCTION. THE PLANS SHOW THE LOCATION OF BEST MANAGEMENT PRACTICES THAT ARE CONSISTENT WITH AND NO LESS STRINGENT THAN THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA. USE UNIFORM CODING SYMBOLS FROM THE MANUAL, CHAPTER 6, WITH LEGEND.
ITEM #51 SEE SHEET 21 FOR EROSION CONTROL DETAILS FOR STRUCTURAL PRACTICES.

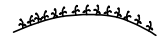
ITEM #52

VEGETATIVE PLANT				
SEEDING REQUIREMENTS				
VEGETATIVE PRACTICES		POUNDS PER ACRE	DEPTH OF COVER (INCHES)	DATE OF PLANTING
Ds3	PERMANENT SEEDING			
	BERMUDA GRASS - HULLED	10	0.25 - 0.5	2/15 - 7/1
	BERMUDA GRASS - UNHULLED	10	0.25 - 0.5	11/1 - 2/1
	PENSACOLA BAHIAGRASS	60	0.25 - 0.5	YEAR ROUND
Ds2	TEMPORARY SEEDING			
	ANNUAL RYEGRASS	40	0.25 - 0.5	2/15 - 6/15
	BROWNTOF MILLET	40	0.25 - 0.5	8/15 - 4/1
	FESCUE	40	0.25 - 0.5	4/1 - 7/15
Ds1	MULCHING ONLY FOR AREAS requiring STABILIZATION WHEN NO VEGETATION IS AVAILABLE, USE MULCHING UNTIL THE SEASON FOR PLANTING THE REQUIRED VEGETATION IS REACHED.			
DRY STRAW OR HAY SHALL BE SPREAD AT THE RATE OF 2 1/2 TONS PER ACRE. THE MULCH SHALL BE ANCHORED IN THE SOIL WITH A DISK HARROW, MECHANICALLY APPLIED CLAY AND ASPHALT EMULSION STRAW AND FIBER MESH ROLL PLACED AND ANCHORED WITH STAPLES				
NOTES:				
AREAS WITHOUT FINAL COVER THAT WILL BE EXPOSED FOR MORE THAN THREE MONTHS WILL BE PLANTED WITH TEMPORARY GRASS.				
SEEDING RATES ARE BASED ON 100% PURE LIVE SEED SCHEDULES FROM THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA.				
A TEMPORARY COVER SHOULD BE USED WHEN PLANTING UNHULLED BERMUDA GRASS AND PENSACOLA BAHIAGRASS.				
SEEDING RATES MAY VARY DEPENDING ON SOILS, SEASON, AND OTHER FACTORS.				
SEEDING MIXTURE MAY BE REVISED TO INCLUDE SPECIES OF GRASS THAT HAVE PROVEN SUCCESSFUL FOR THE SITE.				
FERTILIZER REQUIREMENTS				
SPECIES	ANALYSIS OR EQUIVALENT N-P-K	ANALYSIS OR EQUIVALENT N-P-K	ANALYSIS OR EQUIVALENT N-P-K	ANALYSIS OR EQUIVALENT N-P-K
BERMUDA GRASS - HULLED	FIRST SECOND MAINTENANCE	6-12-12 6-12-12 10-10-10	1500 800 400	50 - 100 50 - 100 30
BERMUDA GRASS - UNHULLED	FIRST SECOND MAINTENANCE	6-12-12 6-12-12 10-10-10	1500 1000 400	50 - 100 50 - 100 30
PENSACOLA BAHIAGRASS	FIRST SECOND MAINTENANCE	6-12-12 6-12-12 10-10-10	1500 800 400	50 - 100 50 - 100 30
SPLIT THE APPLICATION WHEN HIGH RATES ARE USED. APPLY WHEN PLANTS GROW TO A HEIGHT OF 2 TO 4 INCHES. APPLY IN THE SPRING AFTER SEEDING. N-P-K = NITROGEN-PHOSPHORUS-POTASSIUM.				

SCS ENGINEERS STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 3175 SATELLITE BLVD., BLDG 600 SUITE 100 DULUTH, GA 30096 PH. 678 315-9849	CADD FILE: 18-20 NPDES		DWG. NO. 18-211050.30 PREP. BY: JRB DATE: APR 2026		CLIENT AUGUSTA-RICHMOND COUNTY LANDFILL 4330 DEANS BRIDGE RD BLYTHE, GEORGIA 30805	SHEET TITLE NPDES NOTES - 2 PROJECT TITLE DEANS BRIDGE ROAD LANDFILL PHASE III STAGE II SOUTH CELL 2 PHASE I CONSTRUCTION	REV 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 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1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203
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GEORGIA SOIL AND WATER CONSERVATION COMMISSION

STRUCTURAL PRACTICES STRUCTURAL PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Bf	BUFFER ZONE			Strip of undisturbed original vegetation, enhanced or restored existing vegetation or the reestablishment of vegetation surrounding an area of disturbance or bordering streams.
Cs	COASTAL DUNE STABILIZATION (WITH VEGETATION)		Cs	Planting vegetation on dunes that are denuded or artificially constructed, or re-nourished.
Ds1	DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)		Ds1	Establishing temporary protection for disturbed areas where seedlings may not have a suitable growing season to produce an erosion retarding cover.
Ds2	DISTURBED AREA STABILIZATION (WITH TYPING SEEDS)		Ds2	Establishing a temporary vegetative cover with fast growing seedlings on disturbed areas.
Ds3	DISTURBED AREA STABILIZATION (WITH PLOW SEEDS)		Ds3	Establishing a permanent vegetative cover such as trees, shrubs, vines, grasses, or legumes on disturbed areas.
Ds4	DISTURBED AREA STABILIZATION (COCONUTS)		Ds4	A permanent vegetative cover using seeds on highly erodible or critically eroded lands.
Du	DUST CONTROL ON DISTURBED AREAS		Du	Controlling surface and air movement of dust on construction site, roadways and similar sites.
Fl-Co	FLOCCULANTS AND COAGULANTS		Fl-Co	Substance formulated to assist in the solids/liquid separation of suspended particles in solution.
Sb	STREAMBANK STABILIZATION (USING PLOW VEGETATION)		Sb	The use of readily available native plant material to maintain and enhance streambanks, or to prevent, or restore and repair small streambank erosion problems.
Ss	SLOPE STABILIZATION		Ss	A protective covering to prevent erosion and establish temporary or permanent vegetation on steep slopes, shore lines, or channels.
Tac	TACKERS AND BINDERS		Tac	Substance used to anchor straw or hay mulch by causing the organic material to bind together.

Hydrologic Soil Map—Richmond County, Georgia
(Phase III of Richmond County Landfill)

This map displays the hydrologic soil distribution for Phase III of the Richmond County Landfill. The map is overlaid on an aerial photograph and includes a coordinate grid. The map shows various soil types labeled with codes: DgA, BO, VaD, LLD, Ue, TwC, TwD, LKB, TwB, and Ue. A blue line indicates the location of Spring Creek. The map scale is 1:9,170 if printed on a landscape (11" x 8.5") sheet. The map projection is Web Mercator, and the corner coordinates are WGS84. The map is titled "Hydrologic Soil Map—Richmond County, Georgia (Phase III of Richmond County Landfill)".

Map Scale: 1:9,170 if printed on a landscape (11" x 8.5") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edges: UTM Zone 17N WGS84

Natural Resources Conservation Service National Cooperative Soil Survey

Web Soil Survey

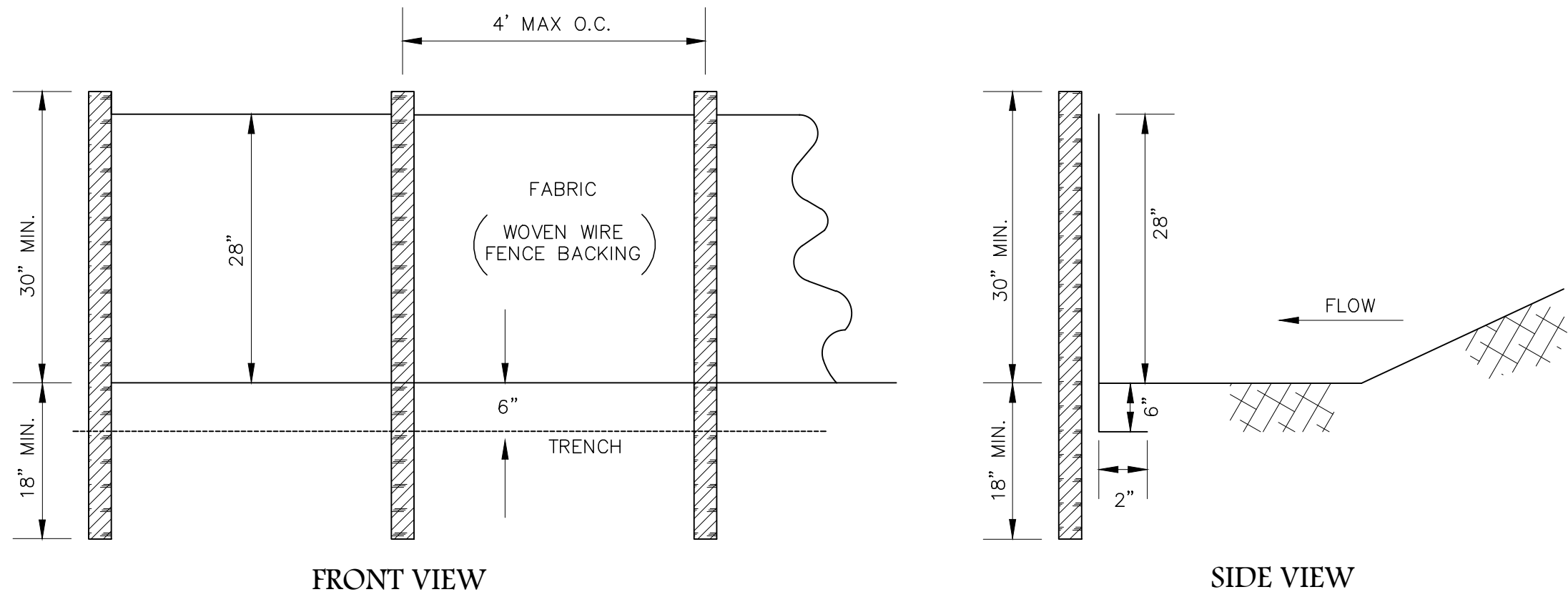
8/29/2022
Page 1 of 5

National Flood Hazard Layer FIRM Mette

82°7'37\"

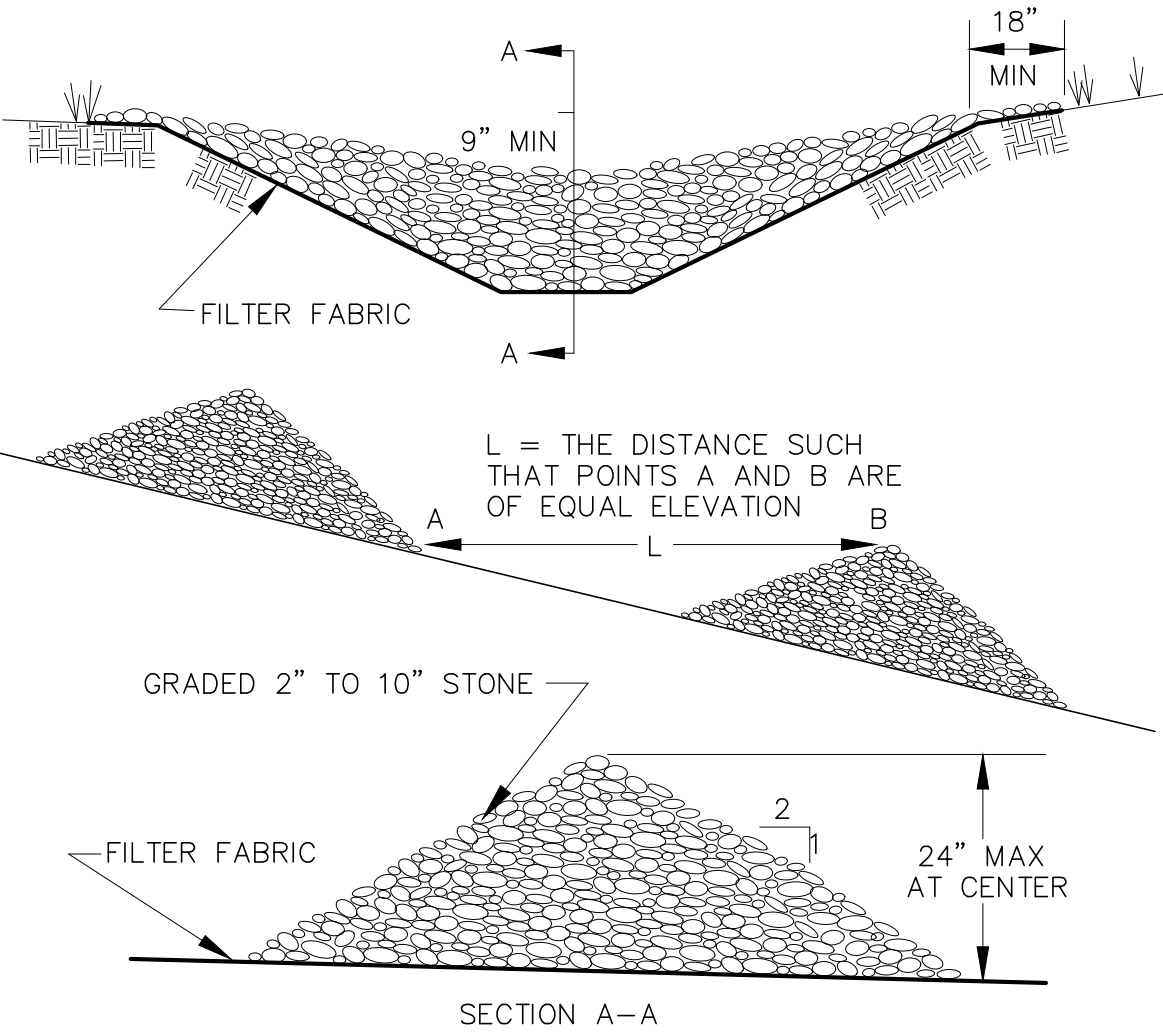
ISSUED FOR BID
NOT FOR CONSTRUCTION
4/6/2026

Jerry Robin
Blanton



SILT FENCE - TYPE C
N.T.S.

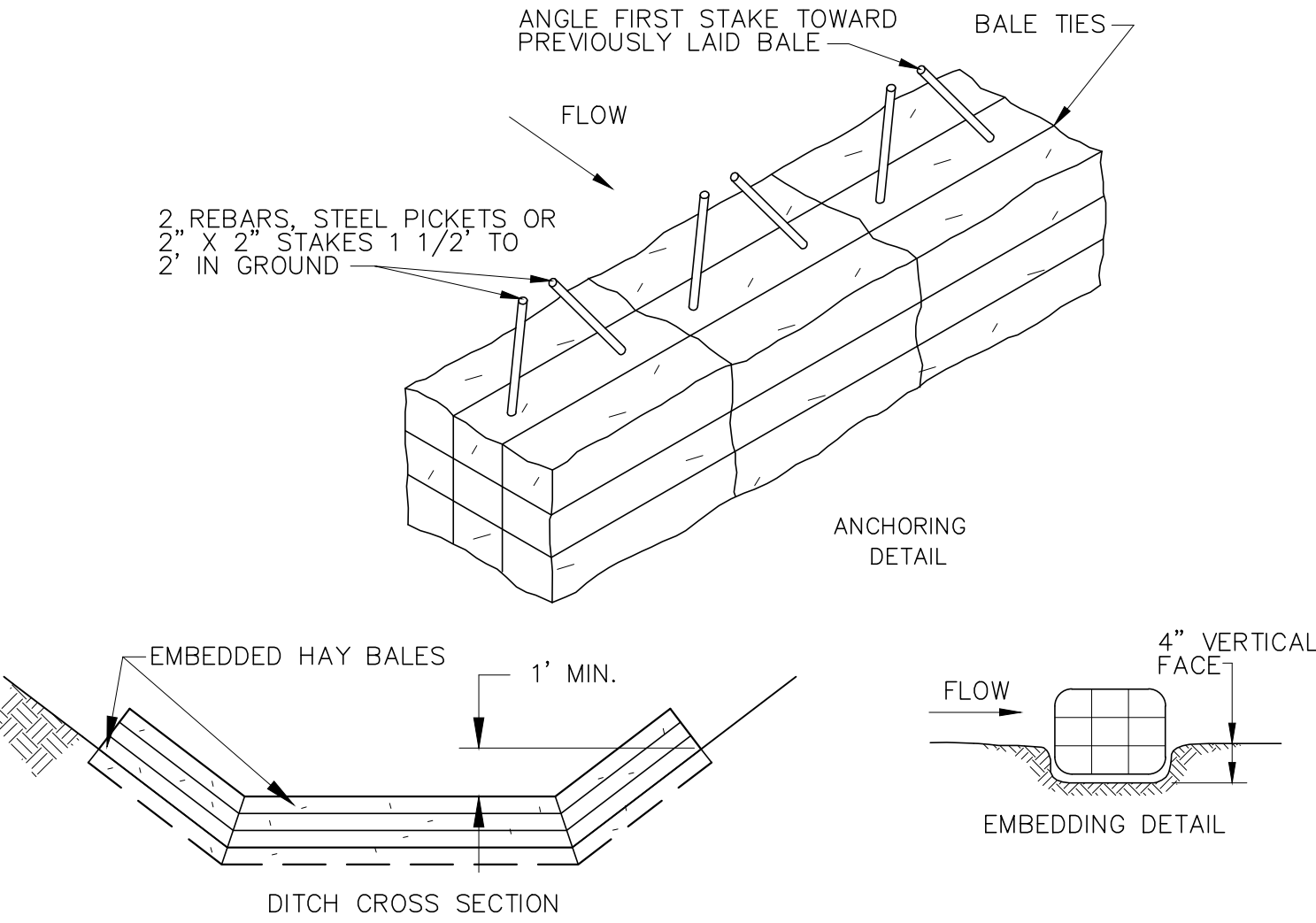
Sd1-C



NOTE: TO BE INSTALLED AS SHOWN ON PLANS AND/OR AS DIRECTED BY ENGINEER.

STONE CHECK DAM
N.T.S.

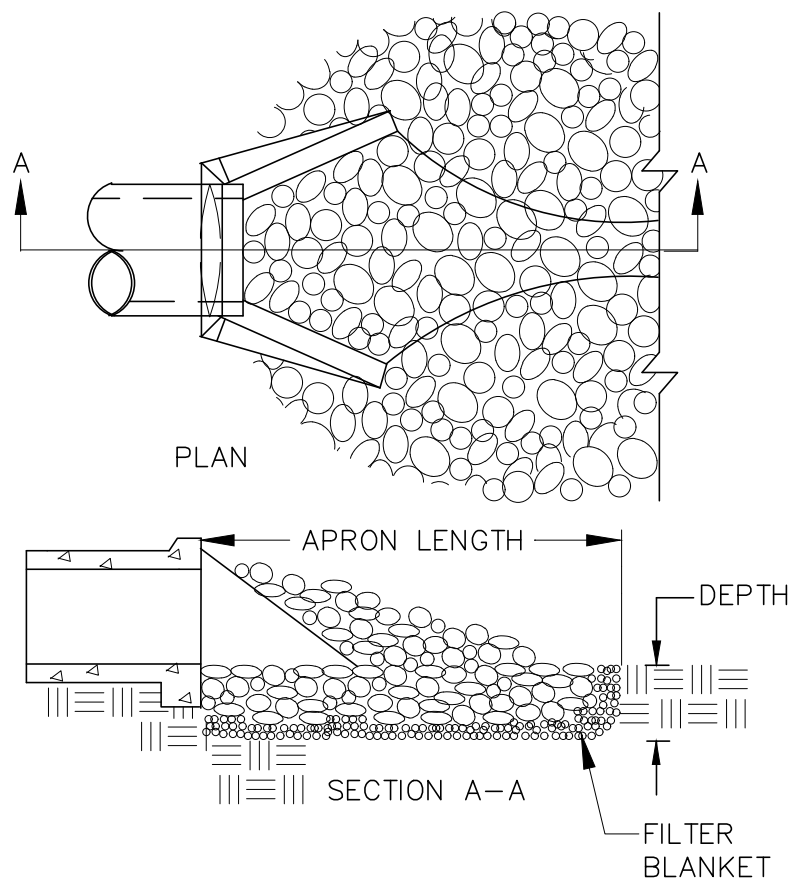
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NOTE: TO BE INSTALLED AS DIRECTED BY ENGINEER.

CHECK DAM - HAY BALES
N.T.S.

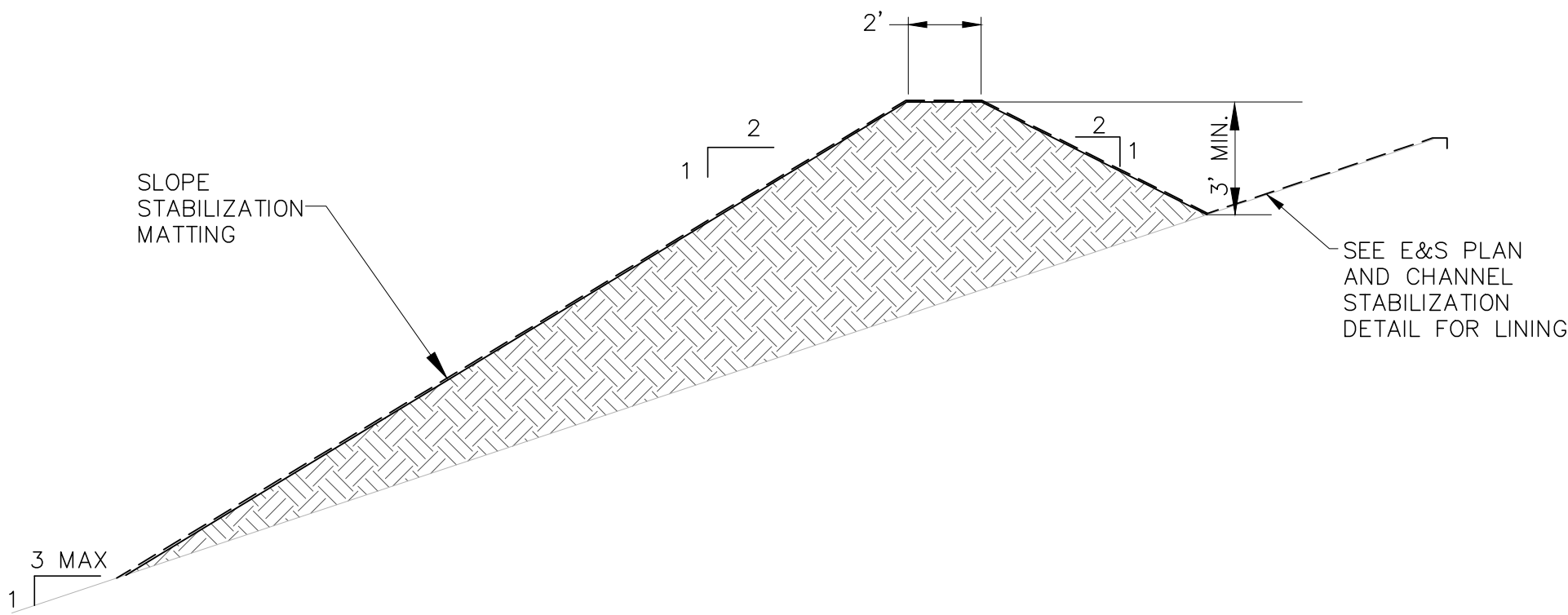
Cd-H



- NOTES:
1. D_{50} EQUALS MEDIAN RIPRAP SIZE IN FEET.
 2. RIPRAP DEPTH EQUAL TO 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 12".
 3. IN A WELL-DEFINED CHANNEL, EXTEND THE APRON UP IN THE CHANNEL BANKS TO AN ELEVATION OF 6" ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
 4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.

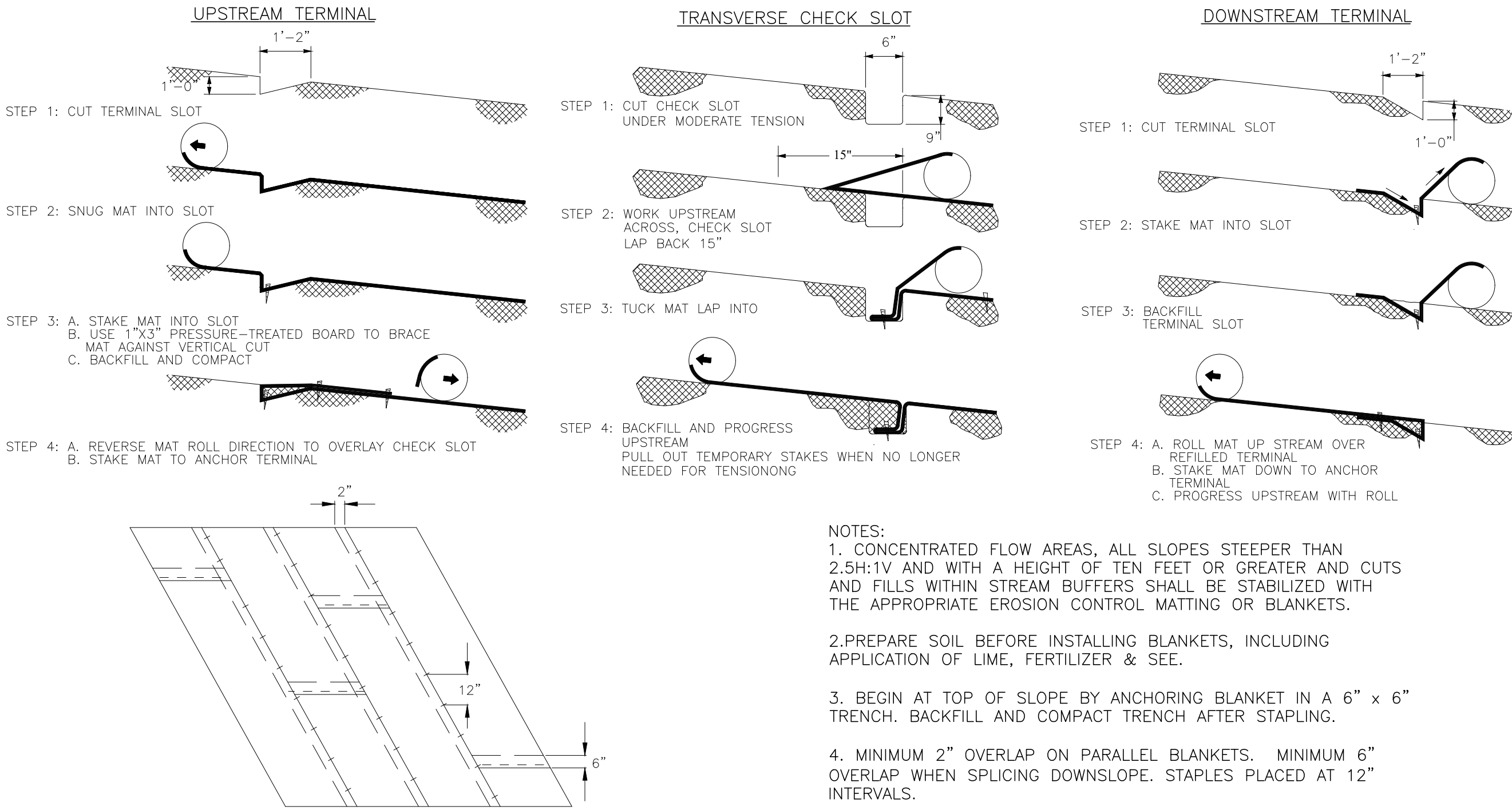
STORM DRAIN OUTLET PROTECTION
N.T.S.

St



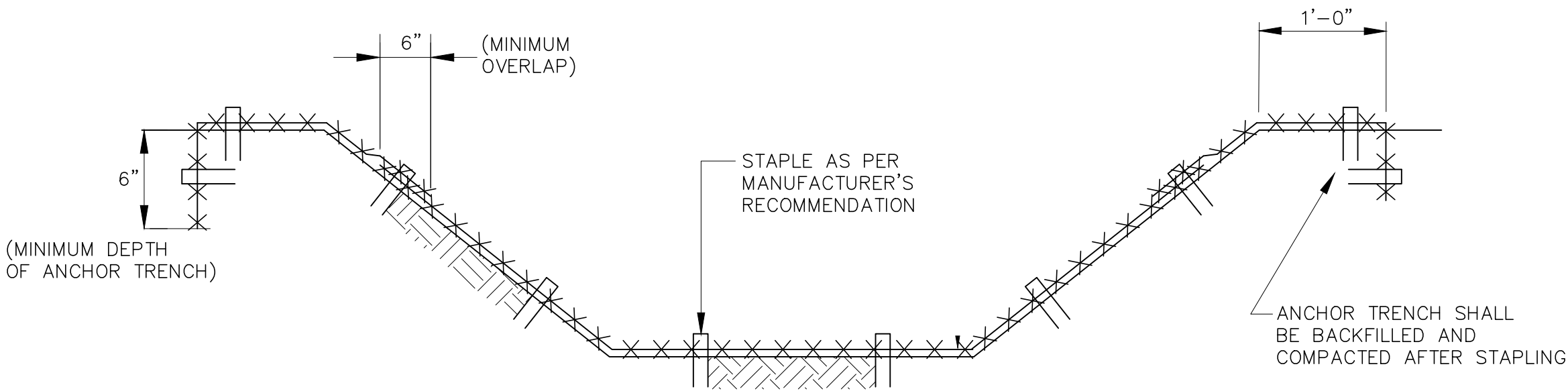
DIVERSION BERM
N.T.S.

Di



MATTING AND BLANKETS
N.T.S.

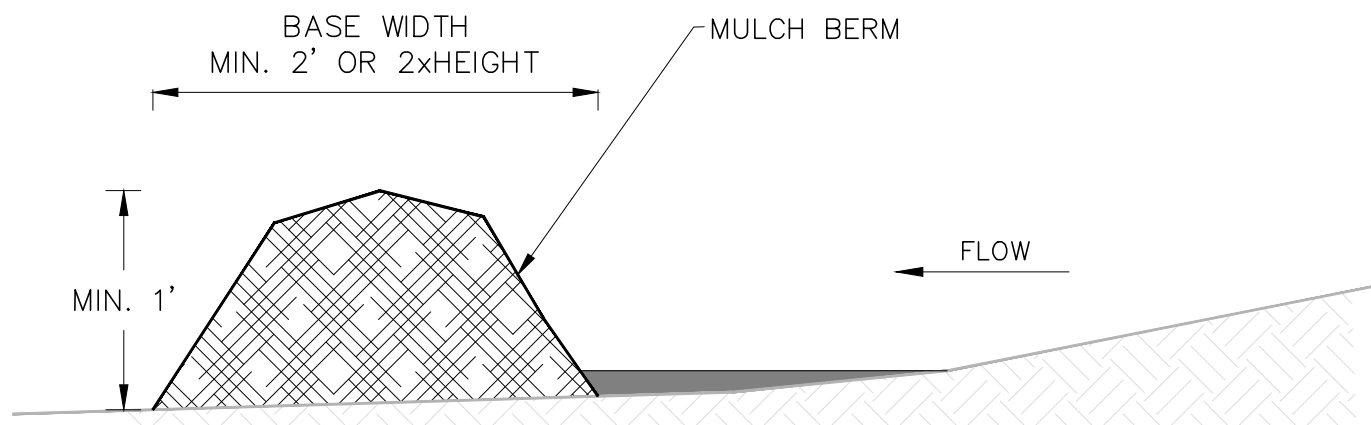
Mb



- NOTE:
1. SOIL SHALL BE PREPARED BEFORE INSTALLATION OF TURF REINFORCEMENT MAT, INCLUDING LIME, FERTILIZER AND SEED.
 2. TEMPORARY DITCH LINING SHALL BE A STRAW WITH SYNTHETIC NET HAVING A MINIMUM SHEAR STRESS OF 1.80 lb/ft².
 3. PERMANENT DITCH LINING SHALL BE SYNTHETIC TURF REINFORCEMENT MAT HAVING A MINIMUM SHEAR STRESS OF 7.00 lb/ft².

CHANNEL STABILIZATION WITH EROSION MAT
N.T.S.

Ch-2



MULCH BERM
N.T.S.

Sd1

ISSUED FOR BID
NOT FOR CONSTRUCTION
4/6/2026

JERRY R. BLANTON, P.E. LICENSE NO. 019978		JERRY R. BLANTON, P.E. LICENSE NO. 019978	
CHK BY	JRB	DESCRIPTION	ISSUED FOR BID
DATE	04/06/26	DATE	04/06/26
REV	Δ	REV	Δ
SHEET TITLE		PROJECT TITLE	
EROSION, SEDIMENTATION & POLLUTION CONTROL DETAILS		DEANS BRIDGE ROAD LANDFILL PHASE III STAGE II SOUTH CELL 2 PHASE I CONSTRUCTION	
CLIENT		AUGUSTA-RICHMOND COUNTY LANDFILL 4330 DEANS BRIDGE RD BLYTHE, GEORGIA 30805	
SCS ENGINEERS STEARNS, CONRAD AND SCHMIDT CONSULTING ENGINEERS 3175 SATHI BLVD, BLDG 600 SUITE 100 DULUTH, GA 30096 PH. 678 319-9849		CADD FILE: 21 ERO DETAILS	
DATE:		APRIL 2026	
SCALE:		AS SHOWN	
DRAWING NO.		SHEET	
21		21	