



ENVIRONMENTAL SERVICES, INC.

GRASSY MOUNTAIN FACILITY LANDFILL CELLS 8-13 PERMIT DRAWINGS

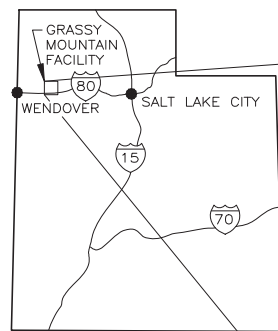
FACILITY LOCATION

KNOLLS, UTAH
Phone: (435) 884-8900

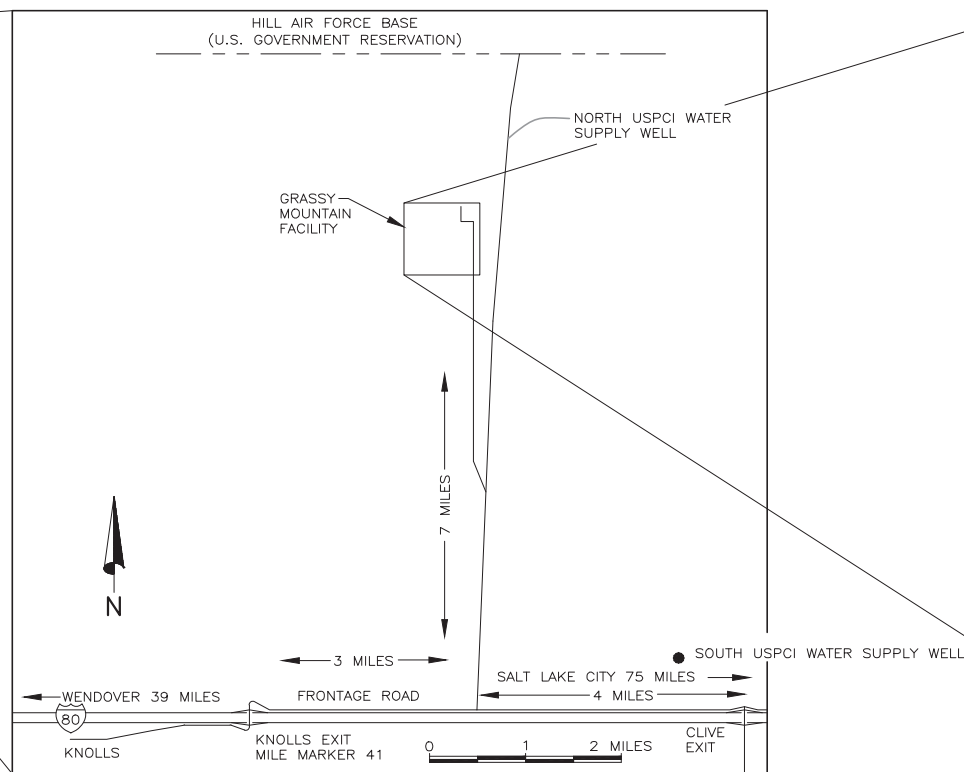
AUGUST 2018 REV 1

REGIONAL HEADQUARTERS

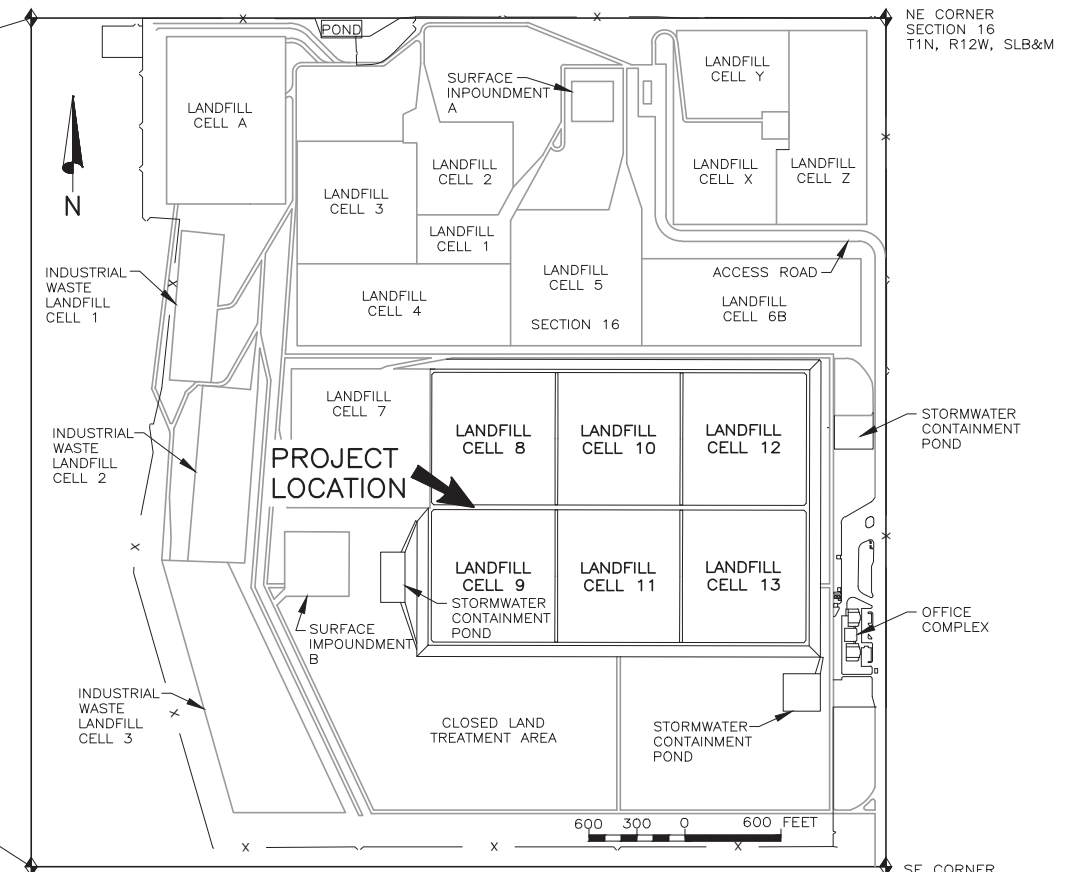
42 LONGWATER DRIVE
NORWELL, MA 02061
Phone: (781) 792-5000



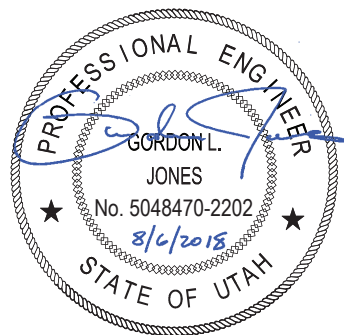
STATE OF UTAH



VICINITY MAP



PROJECT LOCATION



FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\G-1 COVER_R1.DWG
FILE DATE: 8.6.2018 10:40:54 (CAH)



CONSULTANTS
ENGINEERS
Salt Lake City
Utah

GENERAL NOTES

- COORDINATES AND ELEVATIONS PROVIDED ARE BASED ON SITE SPECIFIC COORDINATE SYSTEM AND DATUM CONTROL ESTABLISHED AT THE EAST 1/4 CORNER OF SECTION 16, T1N, R2W (N 0.00, E 0.00, EL. 4238.66). ELEVATIONS ARE APPROXIMATE FEET ABOVE MEAN SEA LEVEL.
- ALL ELEVATIONS PROVIDED ARE BASED ON ORIGINAL EMBANKMENT DESIGN AND CONSTRUCTION ELEVATIONS. ADJUSTMENTS SHALL BE MADE PRIOR TO CLOSURE TO ACCOUNT FOR SETTLEMENT.

LINING SYSTEM SUBGRADES & SOIL FILL

- ALL SURFACES PROVIDING SUBGRADES FOR LINING SYSTEMS SHALL BE PROOF ROLLED FOR SOFT AND/OR YIELDING SURFACES. SOFT AND/OR YIELDING SURFACES SHALL BE COMPACTED TO PROVIDE A FIRM SUBGRADE FOR LINING SYSTEMS.
- ALL CLAY LINER MATERIALS SHALL BE COMPACTED TO 95% OF ASTM D-698 AT A MOISTURE CONTENT TYPICALLY BETWEEN MINUS 2% AND PLUS 4% OF OPTIMUM. ALL CLAY LINER SHALL MEET THE REQUIRED PERMEABILITY OF 1 X 10⁻⁷ CM/SEC.
- THE SUB-GRADE FOR THE GEOSYNTHETIC MATERIALS SHALL BE FREE OF PROTRUDING ROCKS AND DEBRIS THAT MAY POTENTIALLY CAUSE DAMAGE TO THE GEOSYNTHETIC MATERIALS. THE SUBGRADE SHALL ALSO BE ROLLED WITH A SMOOTH DRUM ROLLER TO LEAVE THE SURFACE SMOOTH.
- ALL FILL MATERIALS REQUIRING COMPACTION SHALL BE COMPACTED TO 95% OF ASTM D-698.
- PIPE BACKFILL AND ANCHOR TRENCH BACKFILL SHALL BE COMPACTED TO 90% OF ASTM D-698.
- COMPACTED CLAY SOIL ON ABOVE THE HDPE LINER THE PERIMETER SLOPES OF THE CLOSURE CAP HAS NO PERMEABILITY REQUIREMENT AND SHALL BE COMPACTED TO 95% OF ASDM D-698.

GENERAL GEOSYNTHETICS

- MANUFACTURER'S CERTIFICATIONS SHALL BE PROVIDED FOR ALL RAW AND MANUFACTURED MATERIALS. CERTIFICATIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S MATERIAL SPECIFICATIONS AND PROJECT CQA PLAN CRITERIA AND SHALL INCLUDE ALL TEST DATA FOR MATERIALS DELIVERED AND MEET THE MINIMUM TEST FREQUENCIES DESIGNATED IN THE MANUFACTURER'S QUALITY ASSURANCE MANUALS AND SPECIFICATIONS AND THE CQA PLAN.
- ALL GEOSYNTHETIC MATERIALS SHALL BE LOADED, TRANSPORTED, OFF-LOADED, STORED, AND HANDLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
- AT A MINIMUM, ALL GEOSYNTHETIC MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION GUIDES AND IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND CQA PLAN.

GEOSYNTHETIC CLAY LINER (GCL)

- ALL GCL MATERIALS SHALL BE NEEDLE PUNCH REINFORCED.
- GCL SHALL BE DEPLOYED WITH NON-WOVEN GEOTEXTILE SIDE UP.
- ALL DEPLOYED GCL MATERIALS SHALL BE COVERED BY THE END OF EACH WORK DAY TO MINIMIZE EVAPORATION OF MOISTURE WITHIN THE BENTONITE AND TO PROTECT THE GCL MATERIALS FROM EXPOSURE TO RAINY AND SNOWY WEATHER.
- SEAMING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, THE PROJECT SPECIFICATIONS, AND THE CQA PLAN.
- GCL MATERIALS THAT ARE MANUFACTURED TO PROVIDE SELF-SEALING SEAMS AND DO NOT REQUIRE A BENTONITE BEAD SHALL RECEIVE A BENTONITE BEAD WHEN THE SELF-SEALING DESIGN IS COMPROMISED ON THE ENDS OF PANELS AND WHERE THE SELF-SEALING GROOVE (IF PART OF THE SELF-SEALING DESIGN) HAS BEEN REMOVED FROM PARTIAL WIDTH ROLLS.
- GCL MATERIALS THAT HAVE NOT BEEN MANUFACTURED TO PROVIDE SELF SEALING SEAMS SHALL RECEIVE A BENTONITE BEAD TO PROVIDE THE SEAM SEAL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

GEOMEMBRANE LINER

- ALL GEOMEMBRANE MATERIALS SHALL BE TEXTURED ON BOTH SIDES.
- NO GEOMEMBRANE MATERIALS SHALL BE DEPLOYED IN SUB-FREEZING TEMPERATURES UNLESS APPROVED BY OWNER WITH AN APPROVED COLD WEATHER DEPLOYMENT PLAN.
- NO SEAMING SHALL BE ALLOWED IN SUB-FREEZING TEMPERATURES WITHOUT OWNER APPROVAL OF AN APPROPRIATE COLD WEATHER SEAMING PLAN AND ONLY AFTER PROPER DEMONSTRATION OF PRE-QUALIFIED TEST SEAMS.
- FIELD TESTING AND QUALITY CONTROL SHALL FOLLOW, AT A MINIMUM, THE REQUIREMENTS PROVIDED IN THE MOST RECENT VERSION MANUFACTURERS INSTALLATION PROCEDURES, AND/OR THE PROJECT SPECIFICATIONS AND CQA PLAN, WHICHEVER IS MOST STRINGENT.

GEOCOMPOSITE

- GEOCOMPOSITE SHALL HAVE A TRANSMISSIVITY OF 6.0 X 10⁻⁴ M²/SEC.
- DOUBLE-SIDED GEOCOMPOSITE SHALL CONSIST OF 8 OZ. NON-WOVEN GEOTEXTILE BONDED TO BOTH SIDES OF GEONET.
- GEOMEMBRANE MATERIALS SHALL BE CLEANED OF DIRT AND DEBRIS PRIOR TO DEPLOYMENT OF GEOCOMPOSITE.
- GEOCOMPOSITE SHALL BE FASTENED OR SECURED WITH HEAT BONDING, SEWING OR OTHER APPROVED METHOD, BETWEEN GEOTEXTILE FABRIC MATERIALS ALONG THE ENTIRE LENGTH OF THE SEAMS.
- OVERLAPS OF SEAMS SHALL BE, AT A MINIMUM, THE DIMENSIONS RECOMMENDED BY THE MANUFACTURERS.

PROTECTIVE SOIL COVER

- CARE SHALL BE EXERCISED DURING PLACEMENT OF PROTECTIVE SOIL COVER MATERIALS. A MINIMUM COVER THICKNESS AS DESIGNATED IN THE PROJECT SPECIFICATIONS AND/OR THE CQA PLAN SHALL BE MAINTAINED AT ALL TIMES BETWEEN THE TIRES OR TRACKS OF EQUIPMENT AND THE UNDERLYING GEOSYNTHETIC MATERIALS.
- NO SHARP, ABRUPT, OR PIVOTING TURNS SHALL BE ALLOWED BY EQUIPMENT USED ABOVE THE PROTECTIVE SOIL COVER THAT MAY CAUSE SOIL DISPLACEMENT AND DAMAGE TO UNDERLYING GEOSYNTHETIC MATERIALS.
- ANY WAVES OR WRINKLES THAT BEGIN TO FORM SHALL BE TRAPPED BY PLACING SUFFICIENT PROTECTIVE SOIL COVER BEYOND THE WAVES OR WRINKLES TO HOLD THEM IN PLACE AND KEEP THEM FROM COMBINING INTO LARGER WAVES OR WRINKLES.

GRAVEL ARMOR PLATING (STONE MULCH)

- STONE MULCH SHALL BE PLACED TO A MINIMUM THICKNESS OF 6 INCHES ON ALL SURFACES.
- MINIMUM D50 SIZE FOR STONE MULCH SHALL BE 1.0 INCH AND SHALL BE VERIFIED BY TESTING.

STORM DRAINAGE SYSTEM

- ALL MANHOLES, LIDS, AND RINGS AND COVERS SHALL BE RATED FOR H2O LOADINGS.
- RINGS AND COVERS AND GRATED COVERS SHALL PROVIDE A MINIMUM OPENING FOR ACCESS OF 30 INCHES.
- GRATED COVERS SHALL BE USED FOR EMBANKMENT DRAINAGE DITCH INLETS
- A 10' X 10' CONCRETE APRON SHALL BE PLACED AROUND ALL MANHOLE COVERS.
- RIPRAP APRON AT CONCRETE BAFFLED OUTLETS TO EXTEND A MINIMUM DISTANCE OF 5 FEET, TO BE 12 INCHES THICK, AND HAVE A D₅₀=3".

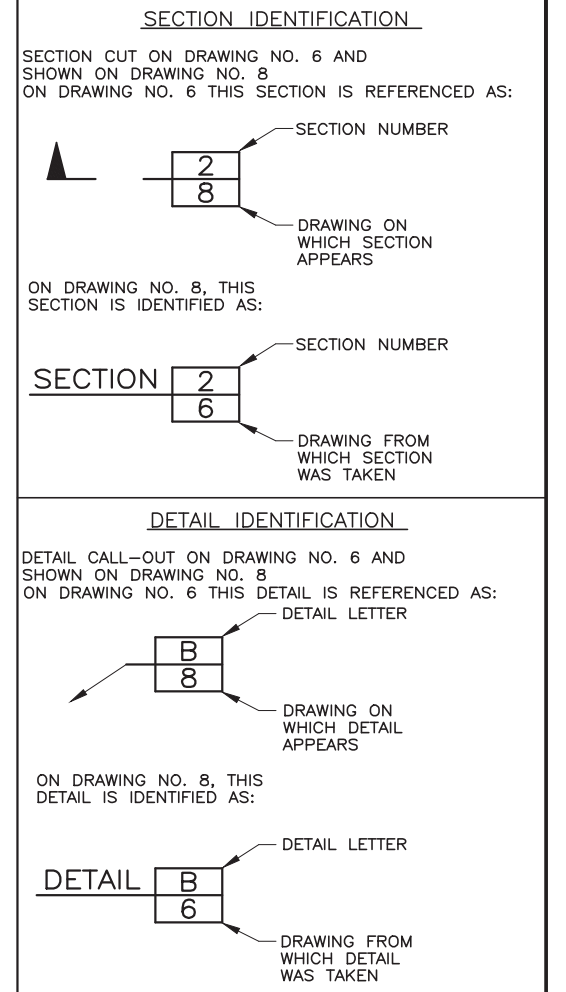
CLOSURE GCL COMPATIBILITY

- BORROW SOURCES FOR 6-INCH THICK SAND LAYER AND 2-FOOT THICK PROTECTIVE SOIL COVER LAYERS TO BE APPROVED BASED ON THE FOLLOWING TESTS USING LIQUID OBTAINED FROM SYNTHETIC LEACHATE PRODUCED USING BORROW SOURCE SOILS: 1. SCREENING CLAY PORTION OF GEOSYNTHETIC CLAY LINER FOR CHEMICAL COMPATIBILITY TO LIQUIDS (ASTM D6141); TESTING RESULTS SHALL DEMONSTRATE THAT THE MAXIMUM HYDRAULIC CONDUCTIVITY OF GCL SHALL MEET AN EQUIVALENCY OF A 2-FOOT THICK COMPACTED CLAY LINER WITH A HYDRAULIC CONDUCTIVITY OF 1X10⁻⁷ CM/SEC.

INDEX OF DRAWINGS

SHEET NO.	GENERAL
G-1	COVER SHEET
G-2	GENERAL NOTES, LEGEND & INDEX OF DRAWINGS
G-3	OVERALL FLOOR PLAN
G-4	OVERALL CLOSURE PLAN
LANDFILL	
LF-1	PLAN VIEW CELL 8
LF-2	PLAN VIEW CELL 9
LF-3	PLAN VIEW CELL 10
LF-4	PLAN VIEW CELL 11
LF-5	PLAN VIEW CELL 12
LF-6	PLAN VIEW CELL 13
LF-7	DETAILS
LF-8	TYPICAL ACCESS RAMPS
LCRS	
LS-1	SUMP PLANS
LS-2	SUMP SECTIONS
LS-3	LCRS DETAILS
CLOSURE	
CL-1	PLAN VIEW CELL 8
CL-2	PLAN VIEW CELL 9
CL-3	PLAN VIEW CELL 10
CL-4	PLAN VIEW CELL 11
CL-5	PLAN VIEW CELL 12
CL-6	PLAN VIEW CELL 13
CL-7	HIGH-LOW SECTIONS CELL 8
CL-8	HIGH-LOW SECTIONS CELLS 9-13
STORM DRAIN	
SD-1	DRAINAGE PLAN
SD-2	DRAINAGE SECTIONS
SD-3	BAFFLED OUTLET BOX

SECTION & DETAIL IDENTIFICATION



- NOTES:**
- IF SECTION AND DETAILS ARE SHOWN ON THE SAME DRAWING AS SECTION CUTS AND SECTION OR DETAIL CALL-OUTS DRAWING NUMBER IS REPLACED BY A LINE.
 - DETAIL LETTERS "I" AND "O" NOT USED.

TABLE OF ABBREVIATIONS

●	= AIR GAS VENT	MH	= MANHOLE
⊙	= AT	MIN.	= MINIMUM
AVG.	= AVERAGE	N.	= NORTH
C.C.	= CENTER TO CENTER	N.T.S.	= NOT TO SCALE
℄	= CENTER LINE	O.C.	= ON CENTER
CLR.	= CLEARANCE	PC	= POINT OF CURVE
CONT.	= CONTINUOUS	PI	= POINT OF INTERSECTION
CPP	= CORRUGATED POLYETHYLENE PIPE	PSI	= POUND PER SQUARE INCH
DIA.	= DIAMETER	PT	= POINT OF TANGENT
DWG	= DRAWING	REINF	= REINFORCEMENT
E.	= EAST	SDR	= STANDARD DIMENSIONAL RATIO
EF	= EACH FACE	SF	= SQUARE FEET
EL.	= ELEVATION	SQ.	= SQUARE
E.W.	= EACH WAY	STA.	= STATION
FL	= FLOW LINE	TL	= TOP OF LINER
HDPE	= HIGH DENSITY POLYETHYLENE	T.O.C.	= TOP OF CONCRETE
ID	= INSIDE DIAMETER	TYP.	= TYPICAL
MAX.	= MAXIMUM	UBC	= UNTREATED BASE COURSE

FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\G-2 INDEX SHEET_R1.DWG
FILE DATE: 8.6.2018 11:01:16 (CAH)

DESIGNED	KCS	3	
DRAFTED	CAH	2	
CHECKED	GLJ	1	
DATE	AUGUST 2018	REV 1	NO. DATE

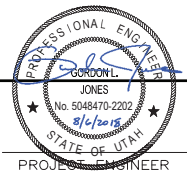
NO.	REVISIONS	BY	APVD.

SCALE
NOT
TO
SCALE

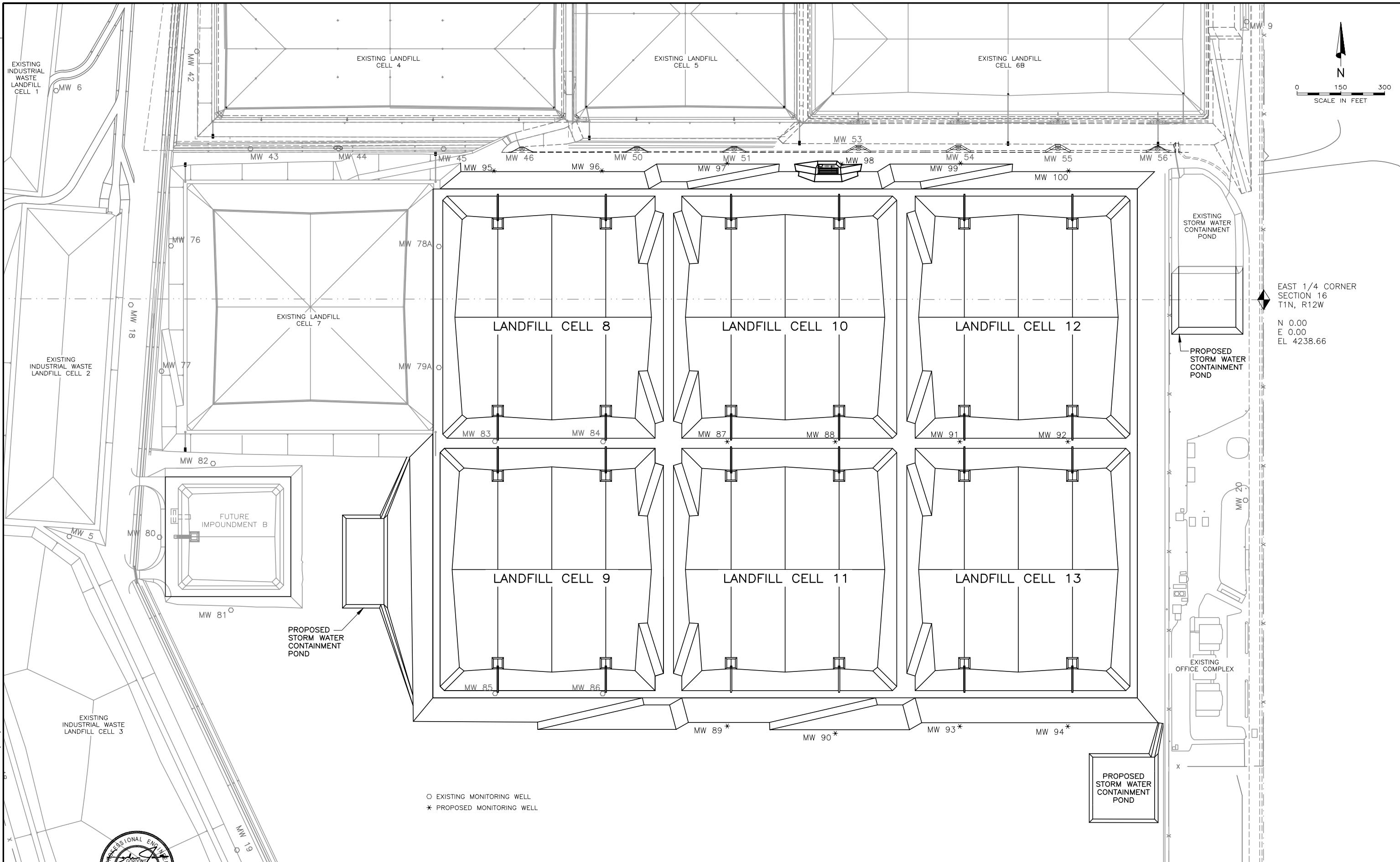


GRASSY MOUNTAIN FACILITY CELLS 8-13
GENERAL
GENERAL NOTES, LEGEND & INDEX OF DRAWINGS

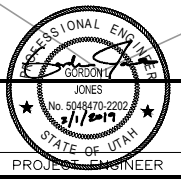
SHEET
G-2
064.85.100



FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\G-3 OVERALL SITE PLAN_R1.DWG
 FILE DATE: 8.6.2018 11:02:53 (CAH)



○ EXISTING MONITORING WELL
 * PROPOSED MONITORING WELL



DESIGNED	KCS	3			
DRAFTED	CAH	2			
CHECKED	GLJ	1	2/2019	MODIFIED LOCATION OF MW's 80-94 TO CONSTRUCTED AND PROPOSED LOCATIONS AND ADDED PROPOSED MW's 95-100	
DATE	AUGUST 2018	NO.	DATE	REVISIONS	BY
					APVD.

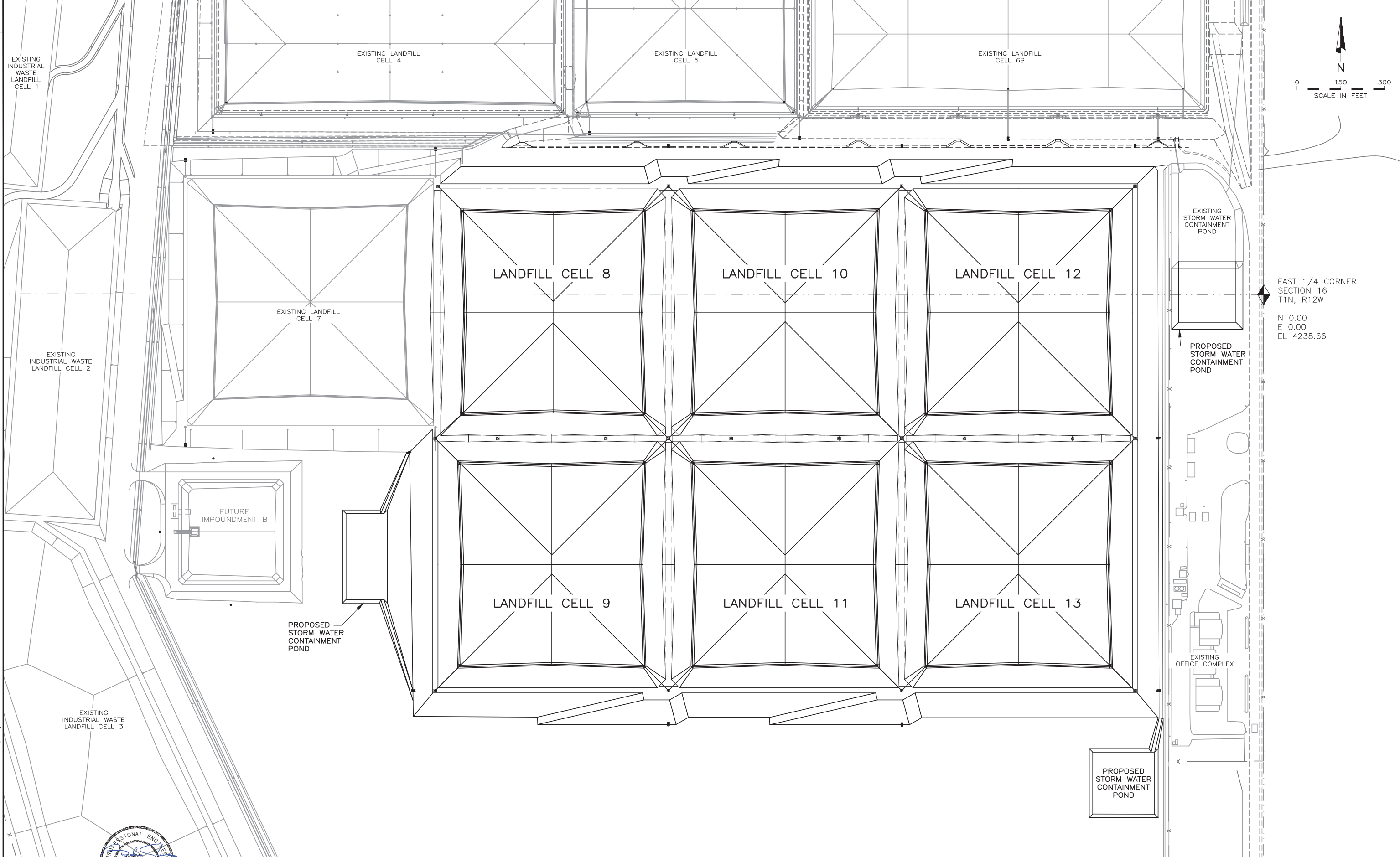
SCALE
 NOT
 TO
 SCALE



GRASSY MOUNTAIN FACILITY CELLS 8-13
 GENERAL
 OVERALL FLOOR PLAN

SHEET
 G-3
 064.85.100

FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\G-4 - OVERALL CLOSURE PLAN - R1.DWG
 FILE DATE: 8.6.2018 11:03:57 (CAH)



10/07



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.

NO.	DATE	REVISIONS	BY	APVD.

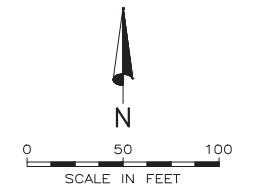
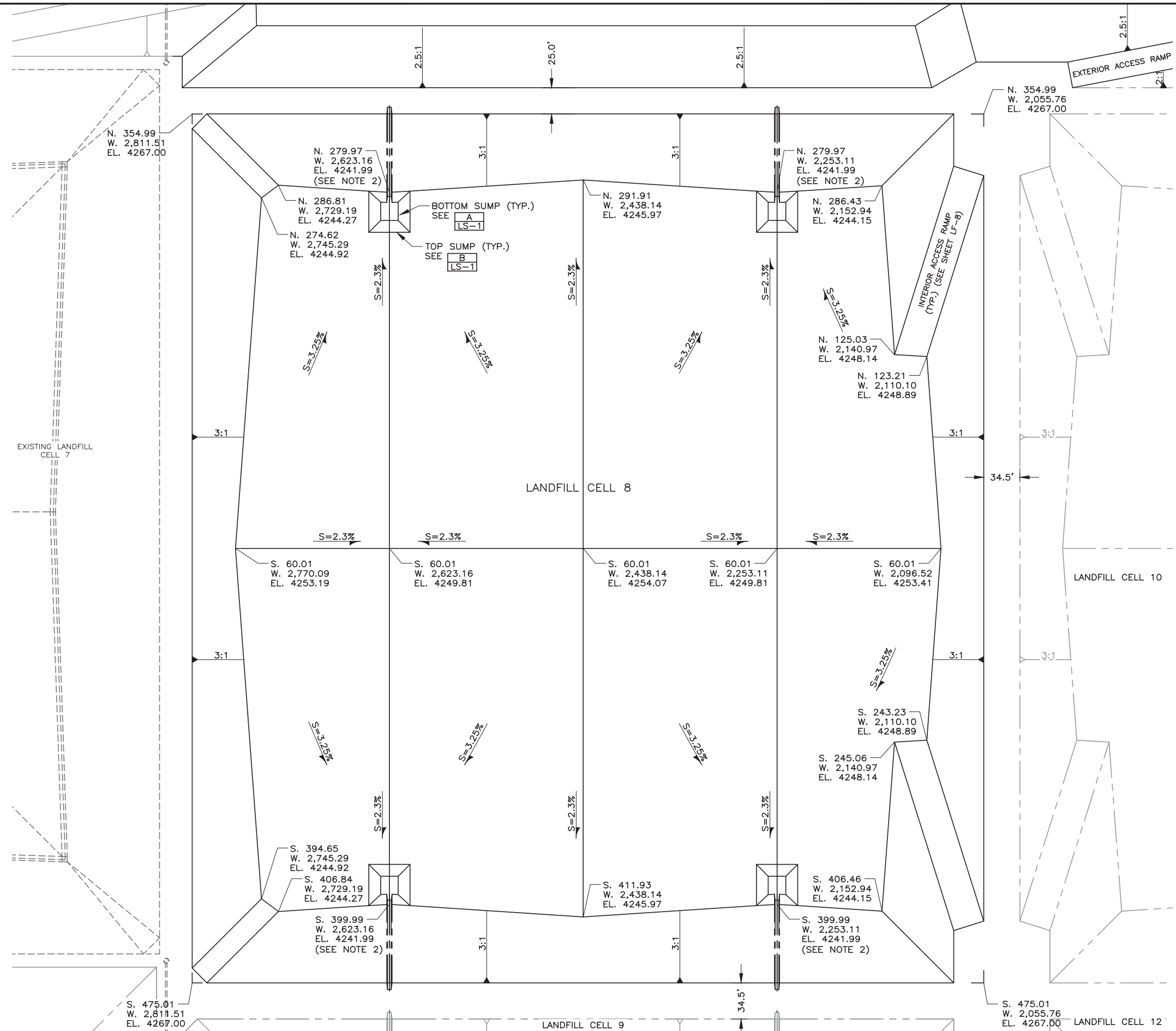
SCALE
NOT
TO
SCALE



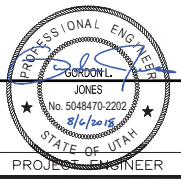
GRASSY MOUNTAIN FACILITY CELLS 8-13
GENERAL
OVERALL CLOSURE PLAN

SHEET
G-4
064.85.100

FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\LF-1 CELL 8 PLAN VIEW_R1.DWG
 FILE DATE: 8.6.2018 11:32:47 (CAH)



- NOTES:
1. COORDINATES & ELEVATIONS ARE TOP OF COMPACTED CLAY LINER.
 2. SUMP REFERENCE POINT SEE SHEET LS-1 FOR SUMP PLAN.
 3. ALL LINES SHOWING THE INSIDE OF LANDFILL CELLS ARE DEPICTING TOP OF CLAY SURFACE.



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.
		DATE

NO.	DATE	REVISIONS	BY	APVD.

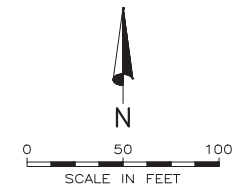
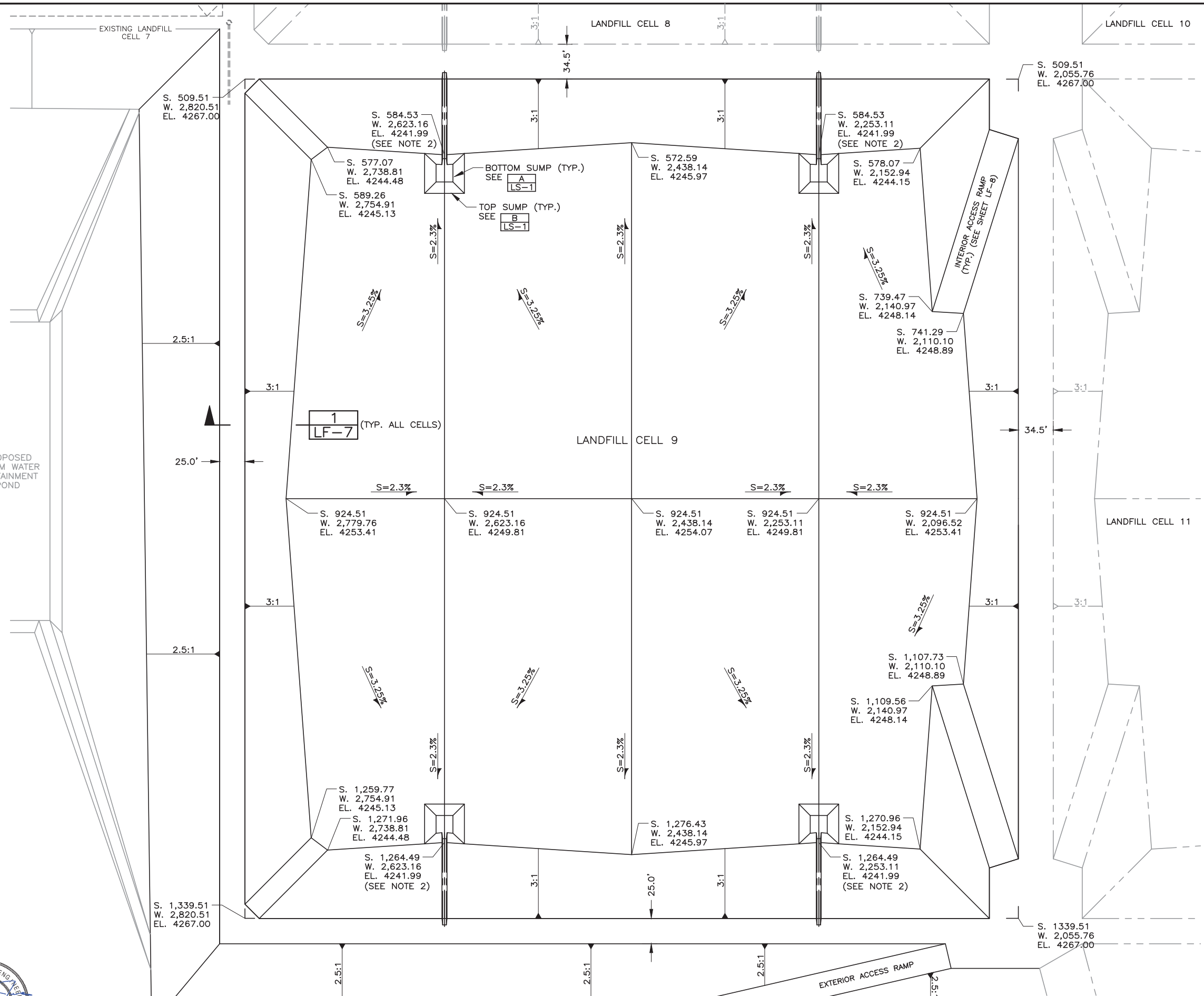
SCALE
NOT
TO
SCALE



GRASSY MOUNTAIN FACILITY CELLS 8-13
 LANDFILL
 PLAN VIEW CELL 8

SHEET
LF-1
064.85.100

FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\LF-2 CELL 9 PLAN VIEW_R1.DWG
 FILE DATE: 8.6.2018 11:33:47 (CAH)



- NOTES:
1. COORDINATES & ELEVATIONS ARE TOP OF COMPACTED CLAY LINER.
 2. SUMP REFERENCE POINT SEE SHEET LS-1 FOR SUMP PLAN.
 3. ALL LINES SHOWING THE INSIDE OF LANDFILL CELLS ARE DEPICTING TOP OF CLAY SURFACE.



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.
		DATE

NO.	DATE	REVISIONS	BY	APVD.

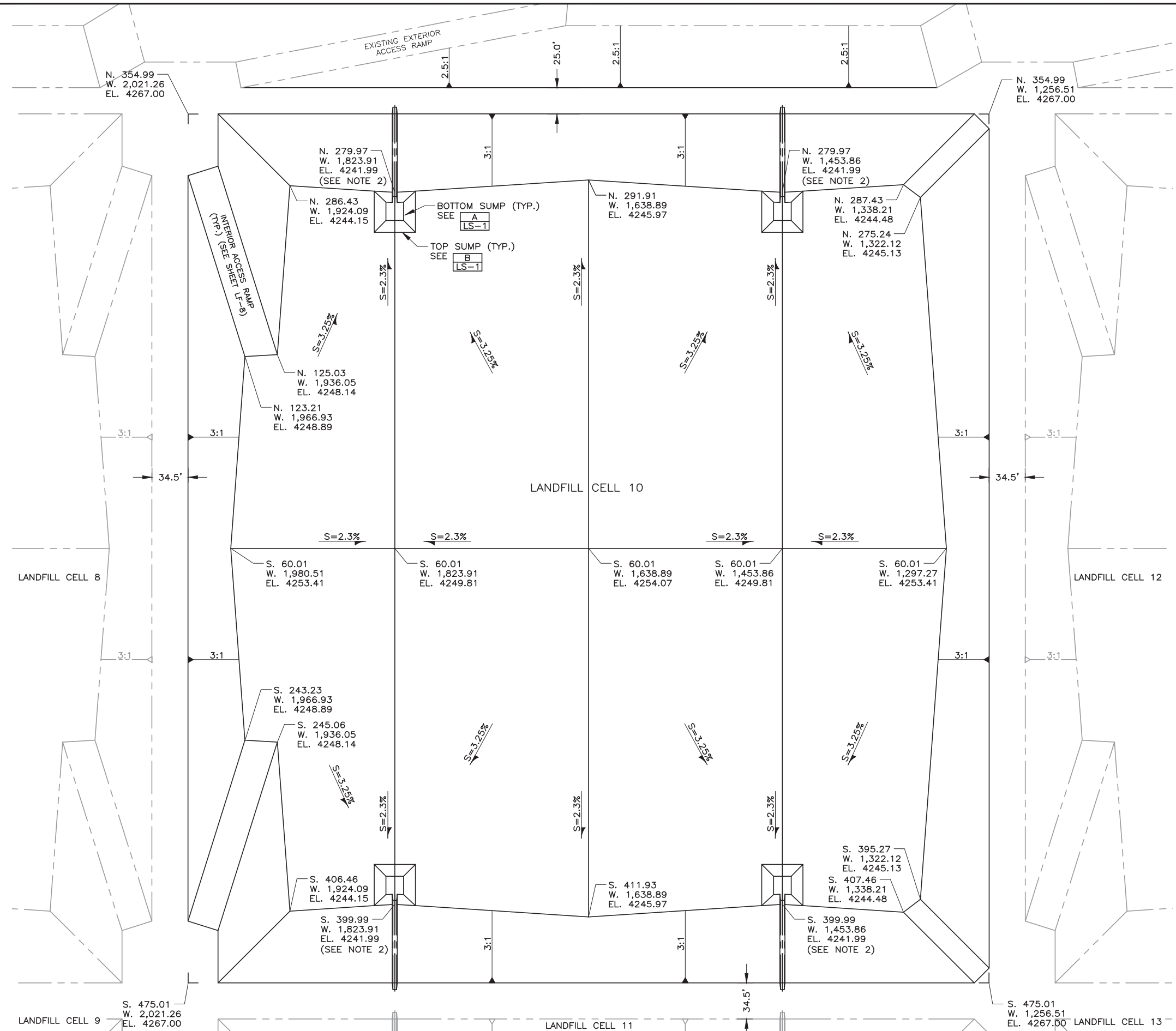
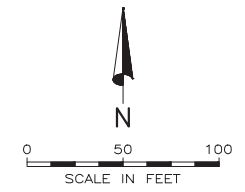
SCALE
NOT
TO
SCALE



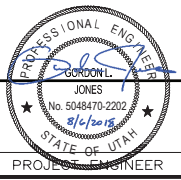
GRASSY MOUNTAIN FACILITY CELLS 8-13
 LANDFILL
 PLAN VIEW CELL 9

SHEET
LF-2
064.85.100

FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\LF-3 CELL 10 PLAN VIEW...R1.DWG
 FILE DATE: 8.6.2018 11:34:33 (CAH)



- NOTES:
1. COORDINATES & ELEVATIONS ARE TOP OF COMPACTED CLAY LINER.
 2. SUMP REFERENCE POINT SEE SHEET LS-1 FOR SUMP PLAN.
 3. ALL LINES SHOWING THE INSIDE OF LANDFILL CELLS ARE DEPICTING TOP OF CLAY SURFACE.



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.

NO.	DATE	REVISIONS	BY	APVD.

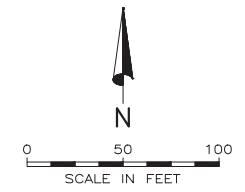
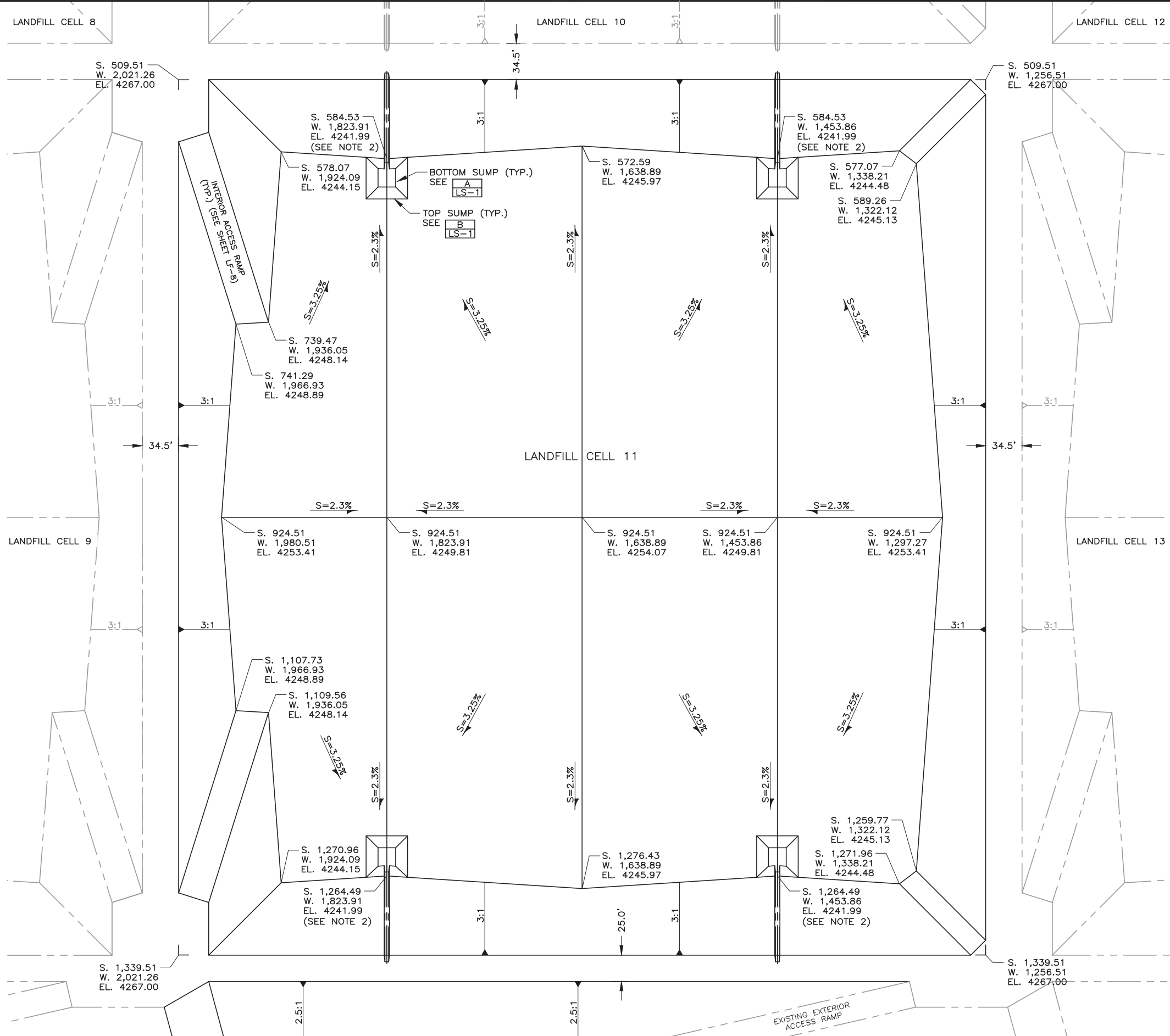
SCALE
NOT
TO
SCALE



GRASSY MOUNTAIN FACILITY CELLS 8-13
 LANDFILL
 PLAN VIEW CELL 10

SHEET
LF-3
064.85.100

FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\LF-4 CELL 11 PLAN VIEW_R1.DWG
 FILE DATE: 8.6.2018 11:35:36 (CAH)



- NOTES:
1. COORDINATES & ELEVATIONS ARE TOP OF COMPACTED CLAY LINER.
 2. SUMP REFERENCE POINT SEE SHEET LS-1 FOR SUMP PLAN.
 3. ALL LINES SHOWING THE INSIDE OF LANDFILL CELLS ARE DEPICTING TOP OF CLAY SURFACE.



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.
		DATE

NO.	DATE	REVISIONS	BY	APVD.

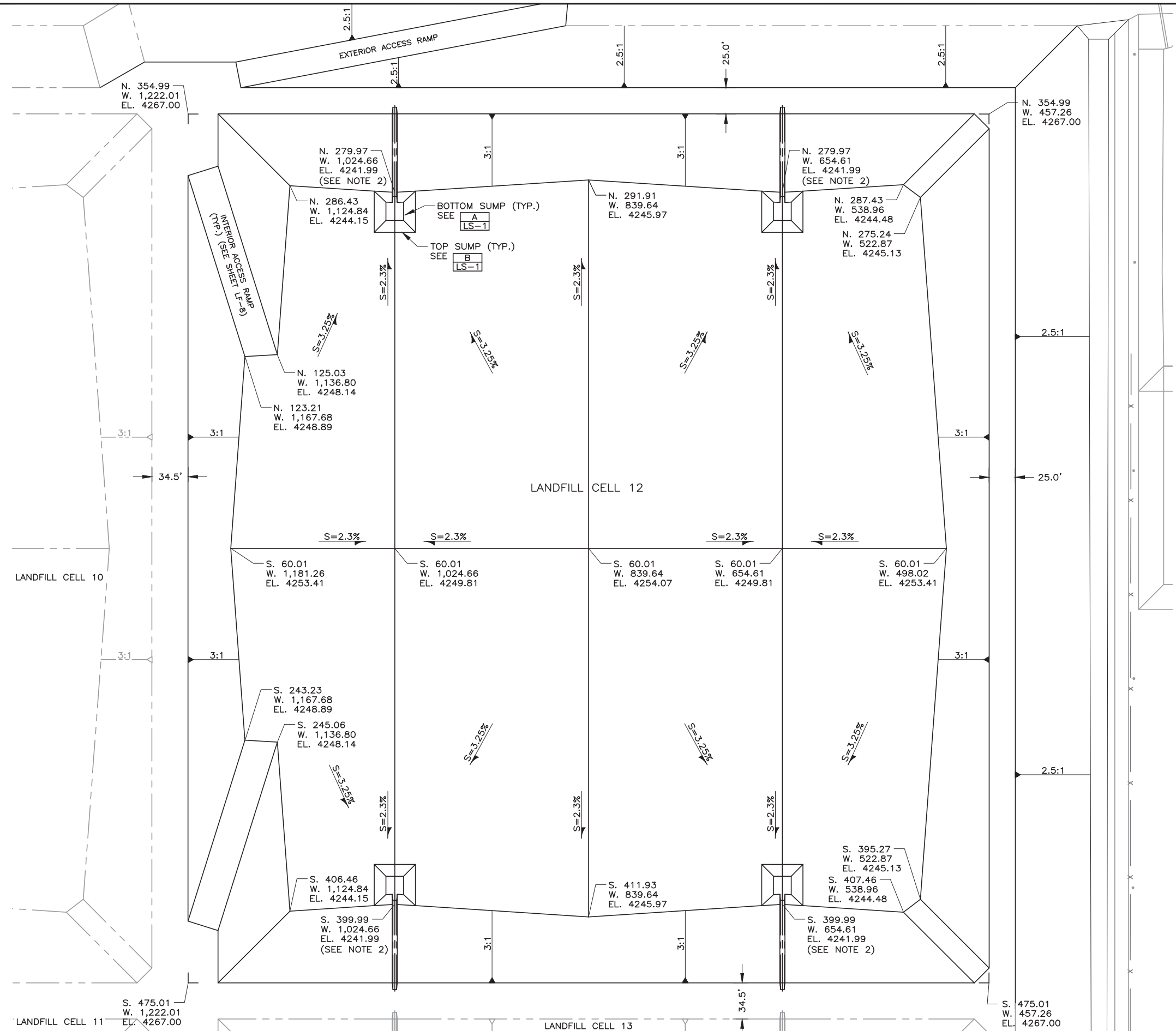
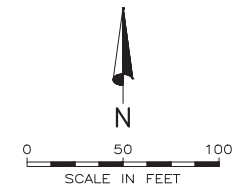
SCALE
NOT
TO
SCALE



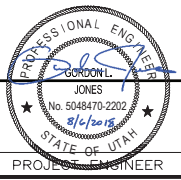
GRASSY MOUNTAIN FACILITY CELLS 8-13
 LANDFILL
 PLAN VIEW CELL 11

SHEET
LF-4
064.85.100

FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\LF-5 CELL 12 PLAN VIEW...R1.DWG
 FILE DATE: 8.6.2018 11:36:35 (CAH)



- NOTES:
1. COORDINATES & ELEVATIONS ARE TOP OF COMPACTED CLAY LINER.
 2. SUMP REFERENCE POINT SEE SHEET LS-1 FOR SUMP PLAN.
 3. ALL LINES SHOWING THE INSIDE OF LANDFILL CELLS ARE DEPICTING TOP OF CLAY SURFACE.



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.
		DATE

NO.	DATE	REVISIONS	BY	APVD.

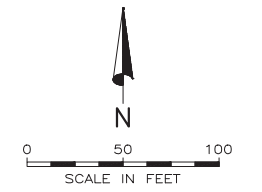
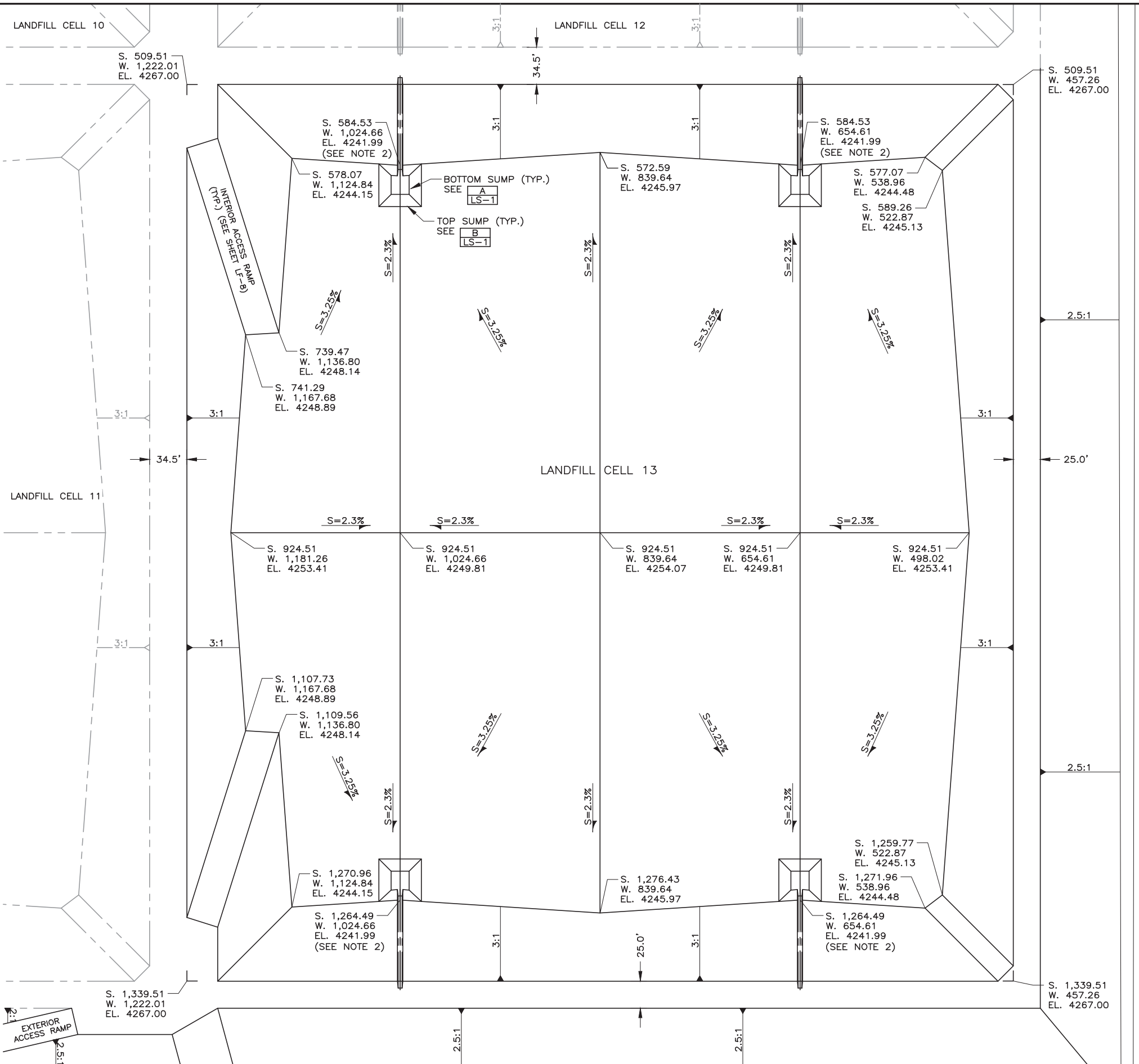
SCALE
NOT
TO
SCALE



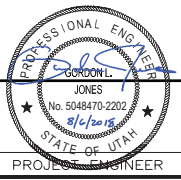
GRASSY MOUNTAIN FACILITY CELLS 8-13
 LANDFILL
 PLAN VIEW CELL 12

SHEET
LF-5
064.85.100

FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\LF-6 CELL 13 PLAN VIEW_R1.DWG
 FILE DATE: 8.6.2018 11:37:47 (CAH)



- NOTES:
1. COORDINATES & ELEVATIONS ARE TOP OF COMPACTED CLAY LINER.
 2. SUMP REFERENCE POINT SEE SHEET LS-1 FOR SUMP PLAN.
 3. ALL LINES SHOWING THE INSIDE OF LANDFILL CELLS ARE DEPICTING TOP OF CLAY SURFACE.



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.
		DATE

REVISIONS		BY	APVD.

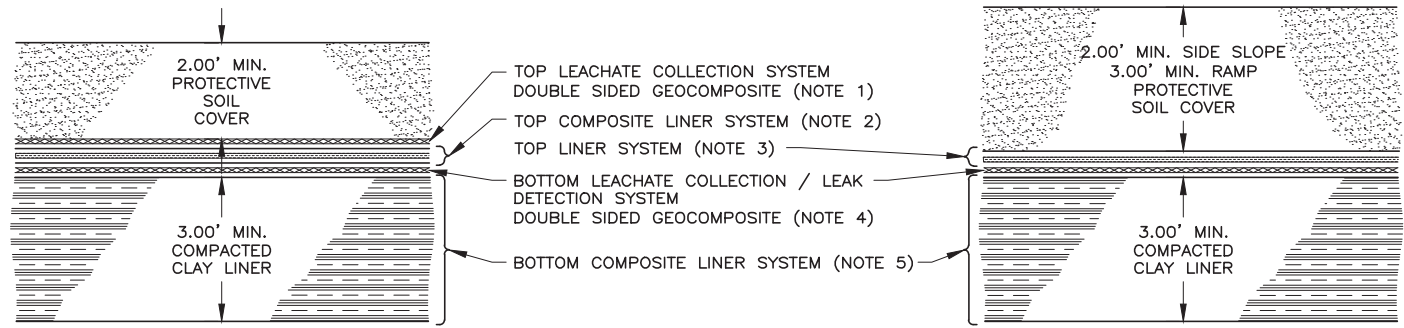
SCALE
NOT
TO
SCALE



GRASSY MOUNTAIN FACILITY CELLS 8-13
 LANDFILL
 PLAN VIEW CELL 13

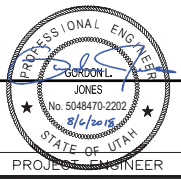
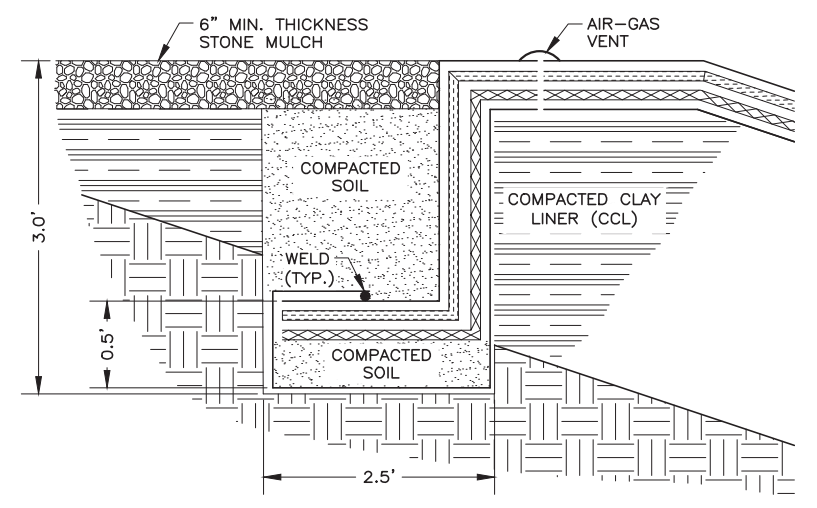
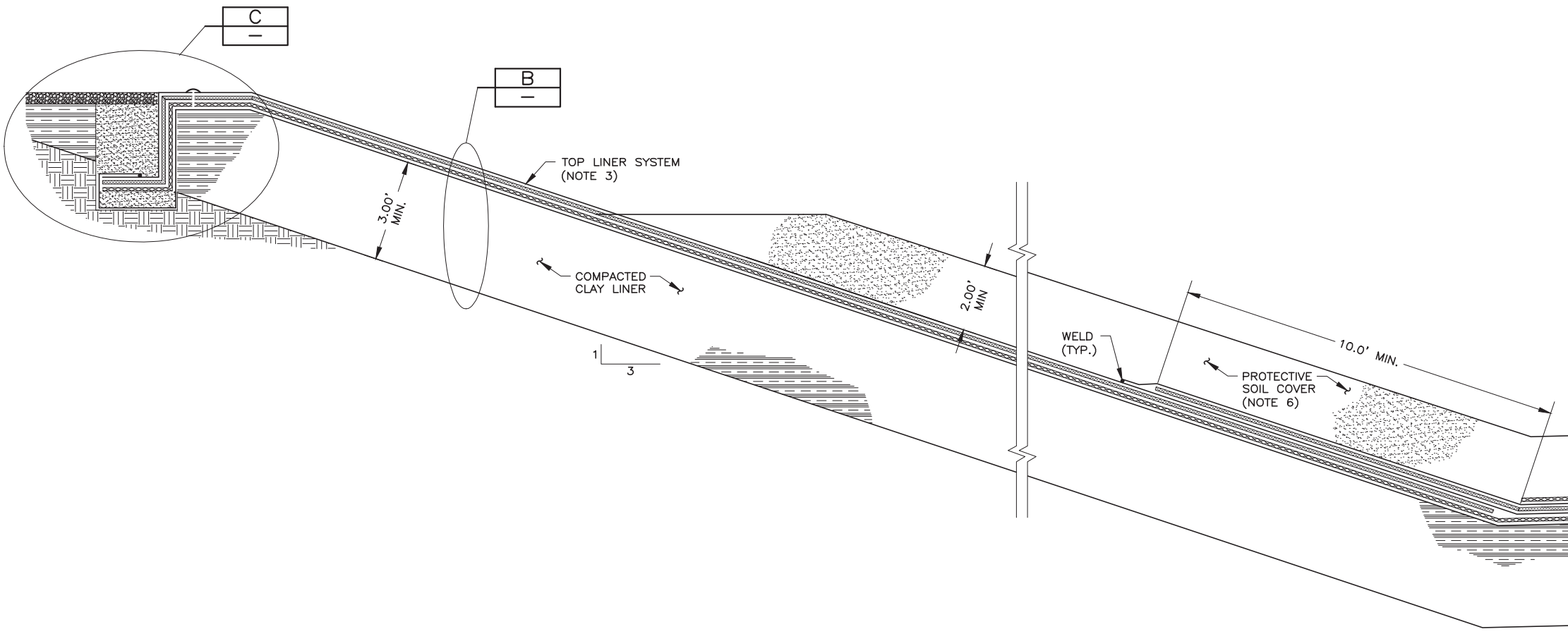
SHEET
LF-6
064.85.100

FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\LF-7 DETAILS_R1.DWG
 FILE DATE: 8.6.2018 11:38:39 (CAH)



- NOTES:
- TOP LEACHATE COLLECTION SYSTEM CONSISTS OF DOUBLE SIDED GEOCOMPOSITE AS FOLLOWS:
 8 OZ. NON-WOVEN GEOTEXTILE } MIN. GEOCOMPOSITE TRANSMISSIVITY OF
 8 OZ. NON-WOVEN GEOTEXTILE } $6.0 \times 10^{-4} \text{ M}^2/\text{SEC. (TYP.)}$
 - TOP COMPOSITE LINER SYSTEM ON THE FLOOR AND TO A DISTANCE OF 10 FEET UP THE INTERIOR SLOPES CONSISTS OF:
 80-MIL HDPE GEOMEMBRANE (TEXTURED)
 GEOSYNTHETIC CLAY LINER (GCL)
 80-MIL HDPE GEOMEMBRANE (TEXTURED)
 - TOP LINER SYSTEM ON THE INTERIOR SIDESLOPES FROM A DISTANCE OF 10 FEET UP THE SLOPES TO THE ANCHOR TRENCH AT THE TOP OF THE SLOPES CONSISTS OF:
 80-MIL HDPE GEOMEMBRANE (TEXTURED)
 GEOSYNTHETIC CLAY LINER (GCL)
 - BOTTOM LEACHATE COLLECTION / LEAK DETECTION SYSTEM CONSISTS OF DOUBLE SIDED GEOCOMPOSITE AS FOLLOWS:
 8 OZ. NON-WOVEN GEOTEXTILE } MIN. GEOCOMPOSITE TRANSMISSIVITY OF
 8 OZ. NON-WOVEN GEOTEXTILE } $2.7 \times 10^{-4} \text{ M}^2/\text{SEC. (TYP.)}$
 - BOTTOM COMPOSITE LINER SYSTEM CONSISTS OF:
 60-MIL HDPE GEOMEMBRANE (TEXTURED)
 COMPACTED CLAY LINER (CCL)

- PROTECTIVE SOIL COVER PLACED ON THE INTERIOR SLOPES SHALL ONLY BE PLACED TO A VERTICAL HEIGHT OF 10- FEET ABOVE THE LEVEL OF THE COVER ON WASTE MATERIALS IN THE LANDFILL CELLS.
- PROTECTIVE SOIL COVER ON RAMP TO CONSIST OF 18 INCHES OF COMPACTED SOIL (95% ASTM D-698) AND 18 INCHES OF ROAD BASE AGGREGATE AS SHOWN ON SHEET LF-8.
- PROTECTIVE SOIL COVER ON FLOOR EXTENDING A DISTANCE OF 20 FEET FROM THE BASE OF THE RAMP TO CONSIST OF 12 INCHES OF COMPACTED SOIL (95% ASTM D-698) AND 12 INCHES OF ROAD BASE AGGREGATE AS SHOWN ON SHEET LF-8.



DESIGNED	KCS	3							
DRAFTED	CAH	2							
CHECKED	GLJ	1							
DATE	AUGUST 2018	REV	1	NO.		DATE		REVISIONS	
				BY		APVD.			

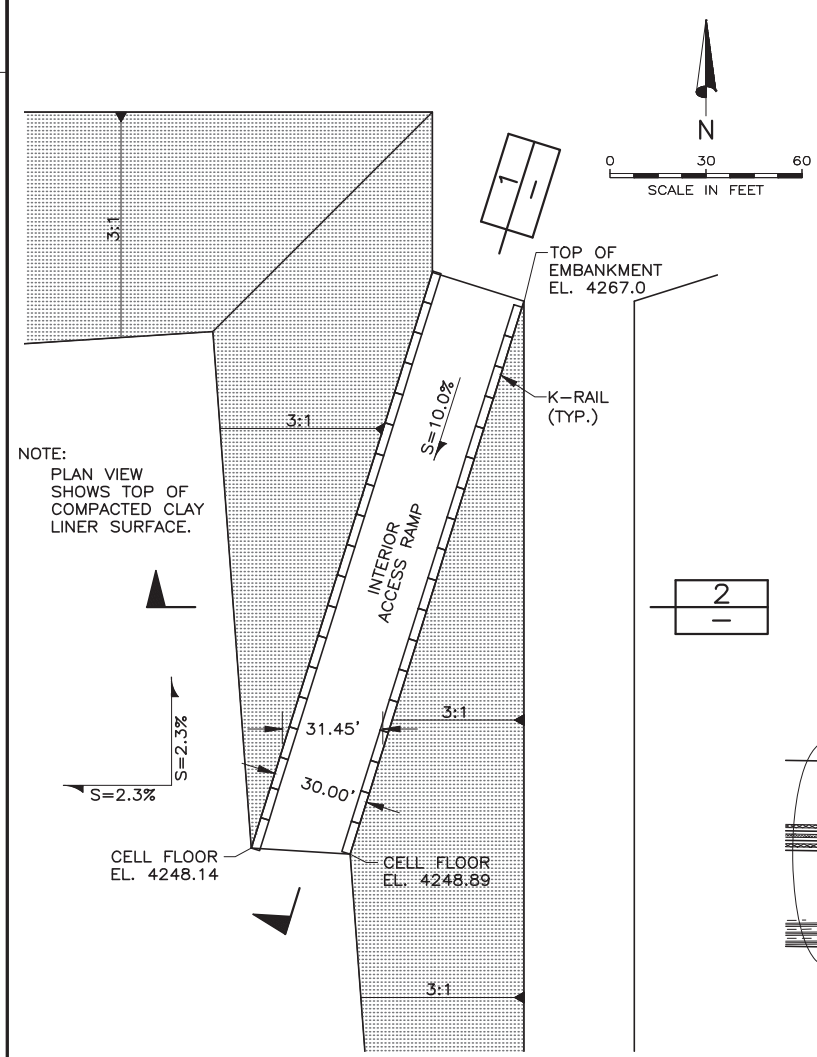
SCALE
AS SHOWN



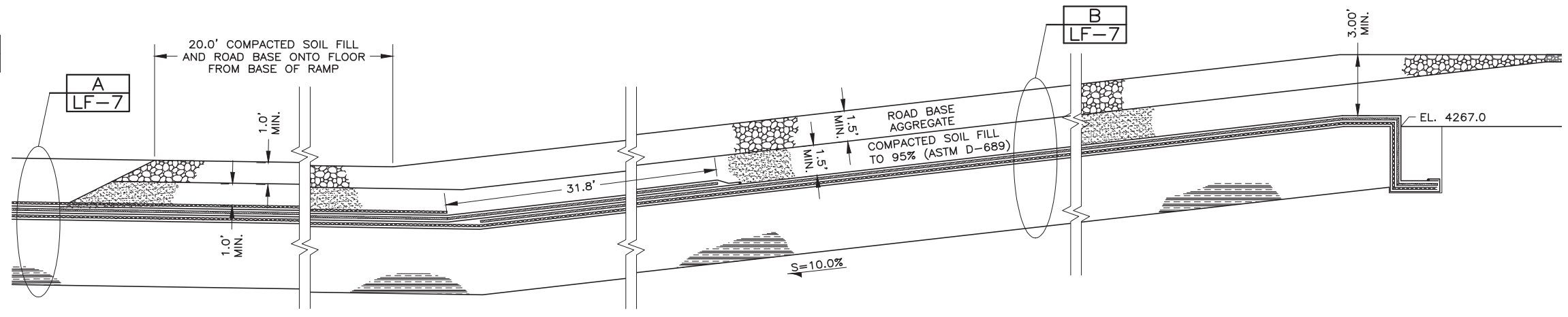
GRASSY MOUNTAIN FACILITY CELLS 8-13
 LANDFILL
 DETAILS

SHEET
LF-7
064.85.100

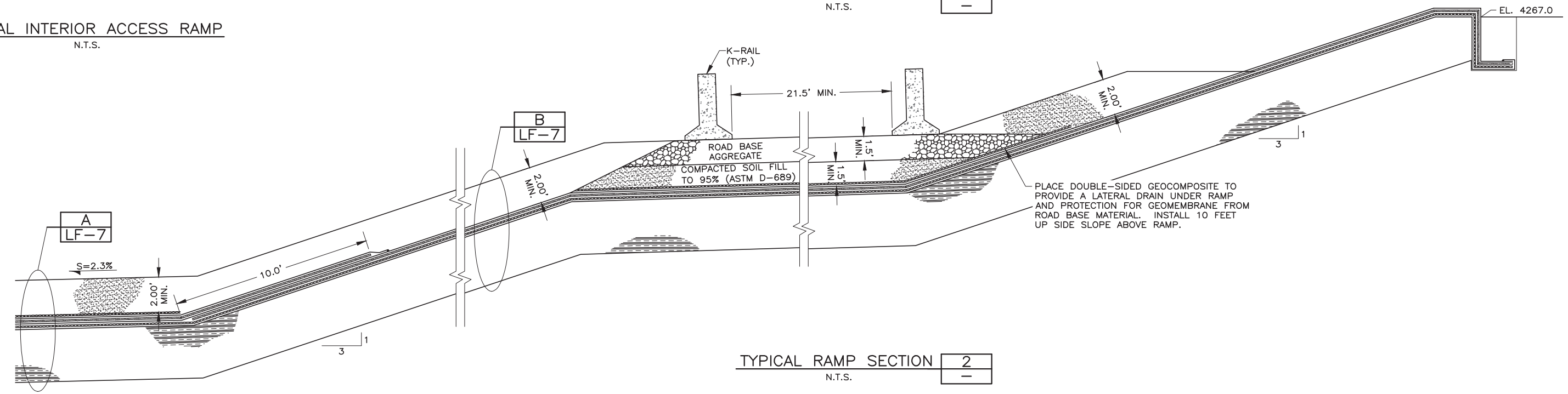
FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\LF-8 RAMP SECTIONS...R1.DWG
 FILE DATE: 8.6.2018 11:39:28 (CAH)



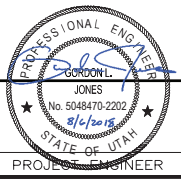
TYPICAL INTERIOR ACCESS RAMP
 N.T.S.



TYPICAL RAMP SECTION 1
 N.T.S.



TYPICAL RAMP SECTION 2
 N.T.S.



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.
		DATE

NO.	DATE	REVISIONS	BY	APVD.

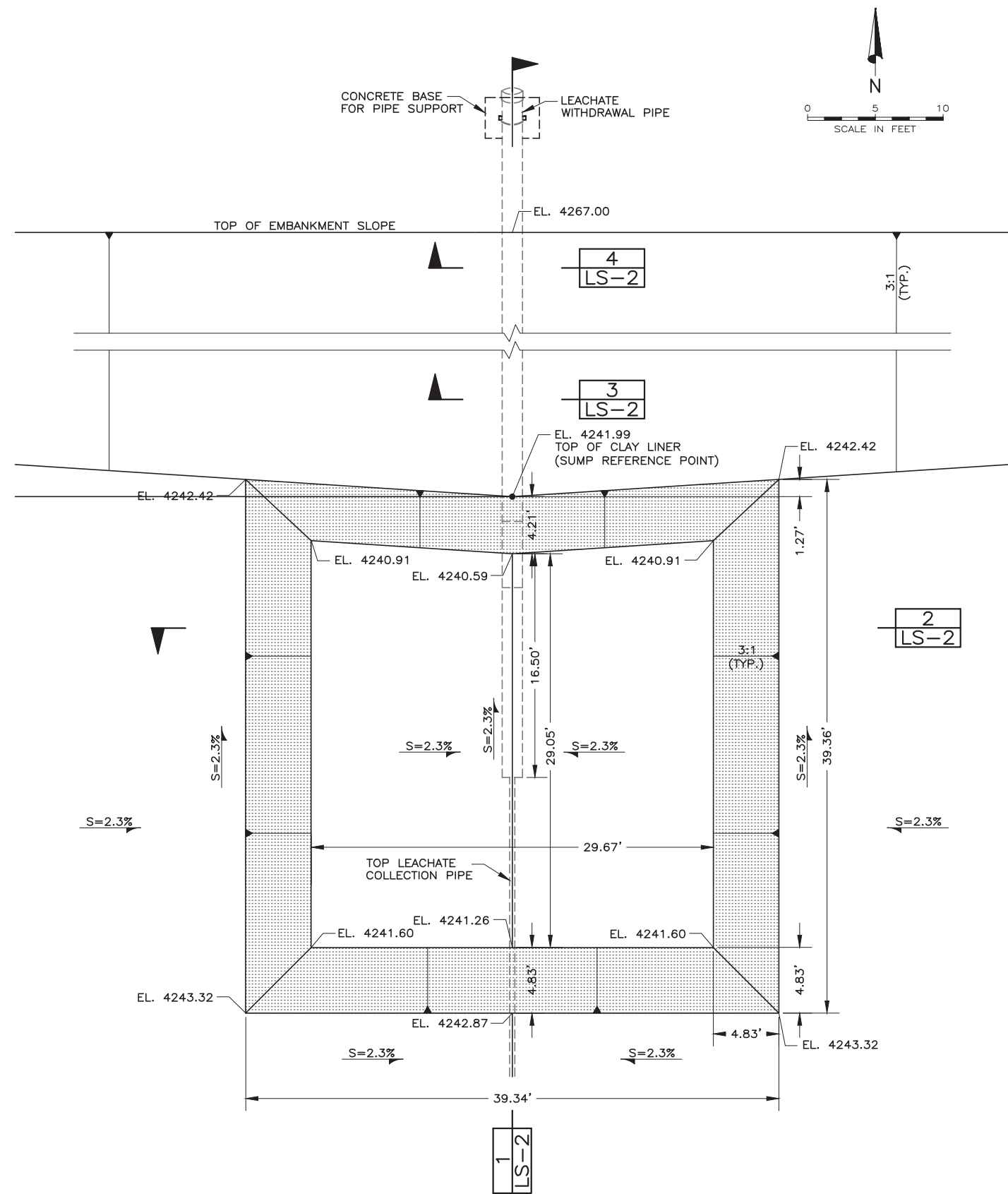
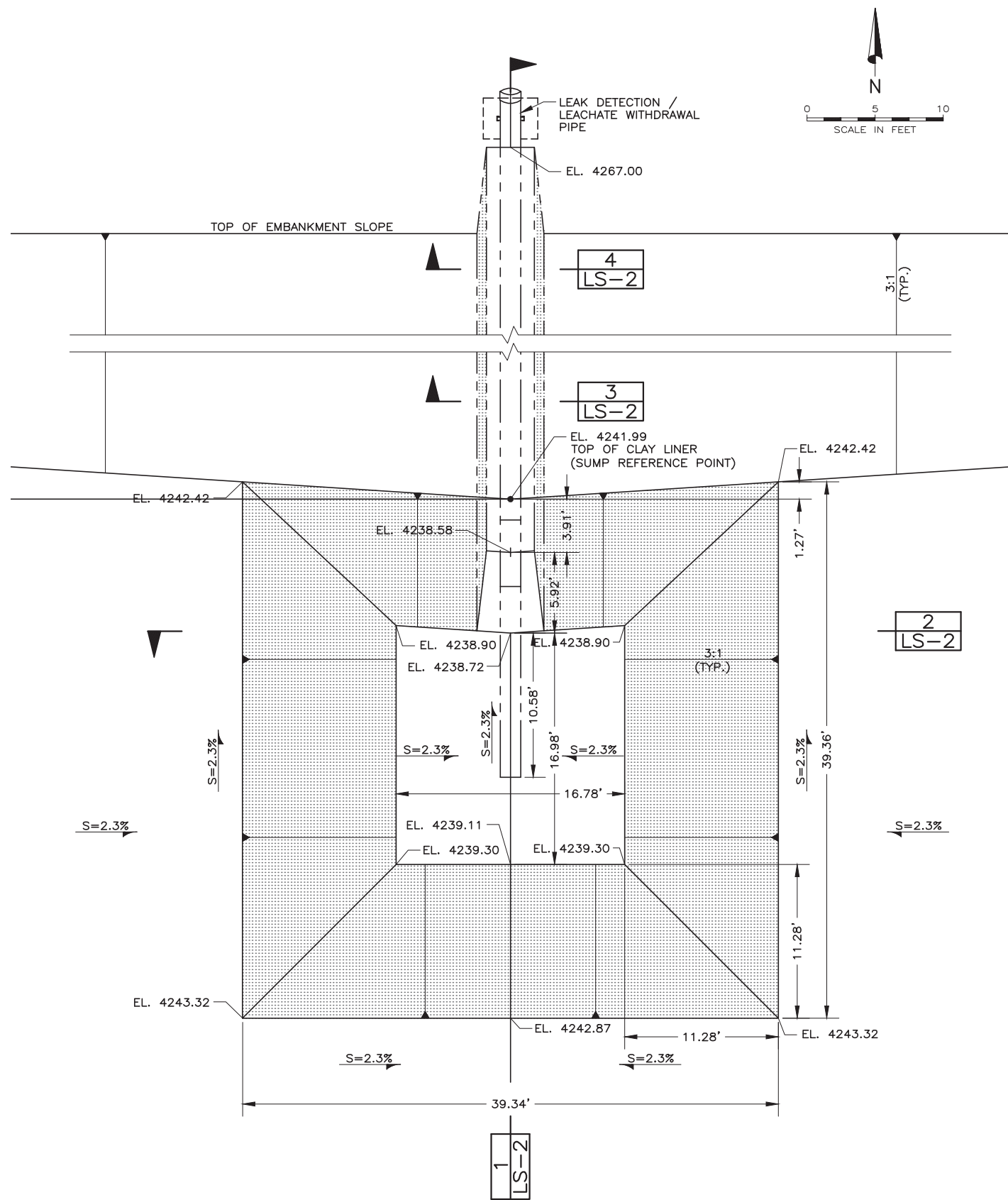
SCALE
 AS SHOWN



GRASSY MOUNTAIN FACILITY CELLS 8-13
 LANDFILL
 TYPICAL ACCESS RAMPS

SHEET
 LF-8
 064.85.100

FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\LS-1 SUMP PLANS-R1.DWG
 FILE DATE: 8.6.2018 11:40:41 (CAH)



TYPICAL BOTTOM (LEAK DETECTION) SUMP N.T.S.

A	A	A	A	A	A
LF-1	LF-2	LF-3	LF-4	LF-5	LF-6

TYPICAL TOP (LEACHATE COLLECTION) SUMP N.T.S.

B	B	B	B	B	B
LF-1	LF-2	LF-3	LF-4	LF-5	LF-6



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.

NO.	DATE	REVISIONS	BY	APVD.

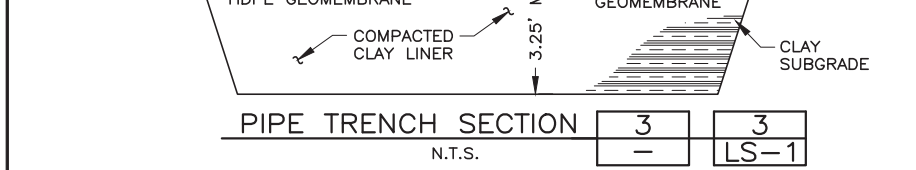
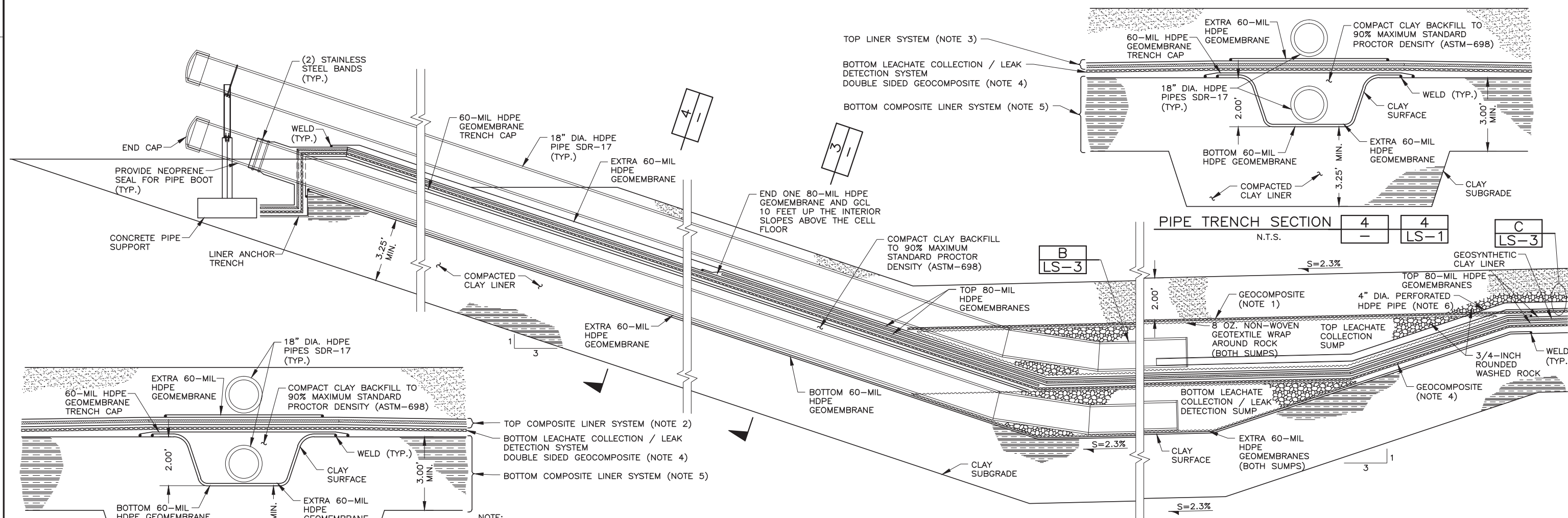
SCALE NOT TO SCALE



GRASSY MOUNTAIN FACILITY CELLS 8-13
 LCRS
 SUMP PLANS

SHEET LS-1
 064.85.100

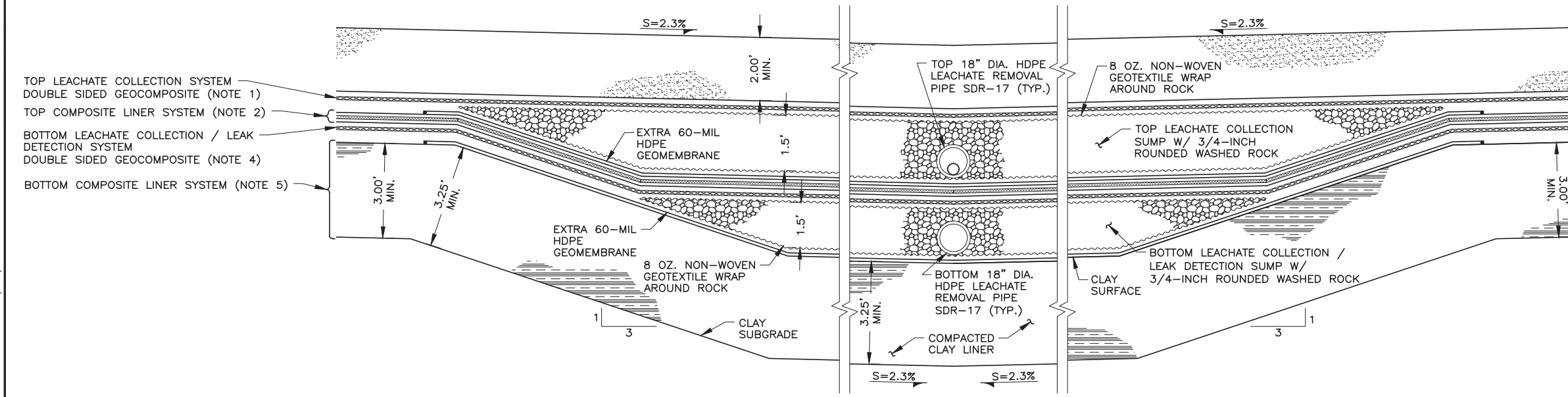
FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\LS-2 SUMP SECTIONS_R1.DWG
 FILE DATE: 8.6.2018 11:44:55 (CAH)



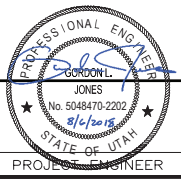
NOTE:
 DIMENSIONS AND GRADES IN THE TRENCH ON THE CLAY SURFACE MAY BE ADJUSTED BY THE ENGINEER. ADJUSTMENTS OF DIMENSIONS AND GRADES SHALL RESULT IN MINIMUM CLAY THICKNESS AS DESIGNATED ON THIS SECTION.

TYPICAL SUMP SECTION 1
 N.T.S. LS-1

- NOTES:
- TOP LEACHATE COLLECTION SYSTEM CONSISTS OF DOUBLE SIDED GEOCOMPOSITE AS FOLLOWS:
 8 OZ. NON-WOVEN GEOTEXTILE } MIN. GEOCOMPOSITE
 GEONET } TRANSMISSIVITY OF
 8 OZ. NON-WOVEN GEOTEXTILE } $6.0 \times 10^{-4} \text{ M}^2/\text{SEC, TYP.}$
 - TOP COMPOSITE LINER SYSTEM ON THE FLOOR AND TO A DISTANCE OF 10 FEET UP THE INTERIOR SLOPES CONSISTS OF:
 80-MIL HDPE GEOMEMBRANE (TEXTURED)
 GEOSYNTHETIC CLAY LINER (GCL)
 80-MIL HDPE GEOMEMBRANE (TEXTURED)
 - TOP LINER SYSTEM ON THE INTERIOR SIDESLOPES FROM A DISTANCE OF 10 FEET UP THE SLOPES TO THE ANCHOR TRENCH AT THE TOP OF THE SLOPES CONSISTS OF:
 80-MIL HDPE GEOMEMBRANE (TEXTURED)
 GEOSYNTHETIC CLAY LINER (GCL)
 - BOTTOM LEACHATE COLLECTION / LEAK DETECTION SYSTEM CONSISTS OF DOUBLE SIDED GEOCOMPOSITE AS FOLLOWS:
 8 OZ. NON-WOVEN GEOTEXTILE } MIN. GEOCOMPOSITE
 GEONET } TRANSMISSIVITY OF
 8 OZ. NON-WOVEN GEOTEXTILE } $2.7 \times 10^{-4} \text{ M}^2/\text{SEC, TYP.}$
 - BOTTOM COMPOSITE LINER SYSTEM CONSISTS OF:
 60-MIL HDPE GEOMEMBRANE (TEXTURED)
 COMPACTED CLAY LINER (CCL)
 - EXTEND 4" DIA. PERFORATED HDPE PIPE THE FULL LENGTH OF THE VALLEY EXTENDING ACROSS THE CELL FLOOR FROM THE SUMPS.



TYPICAL SUMP SECTION 2
 N.T.S. LS-1



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.
		DATE

NO.	DATE	REVISIONS	BY	APVD.

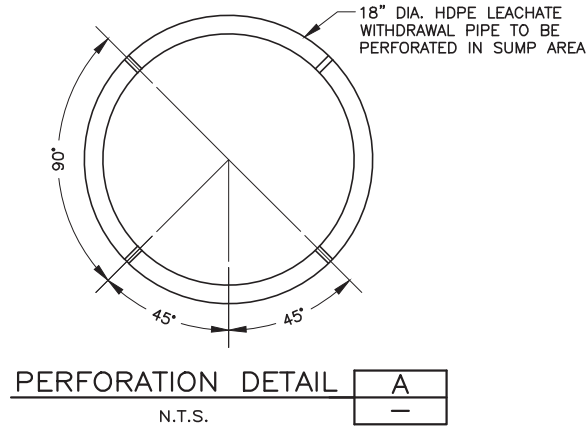
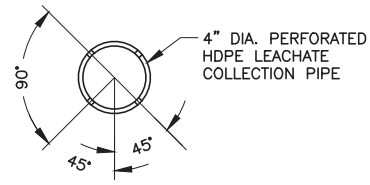
SCALE
 AS SHOWN



GRASSY MOUNTAIN FACILITY CELLS 8-13
 LCRS
 SUMP SECTIONS

SHEET
 LS-2
 064.85.100

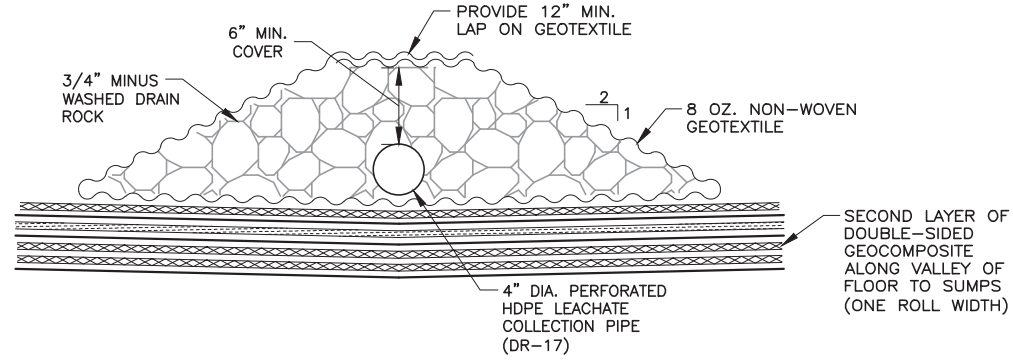
FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\LS-3 LCRS DETAILS...R1.DWG
 FILE DATE: 8.6.2018 11:45:47 (CAH)



PERFORATION DETAIL

A
-

N.T.S.

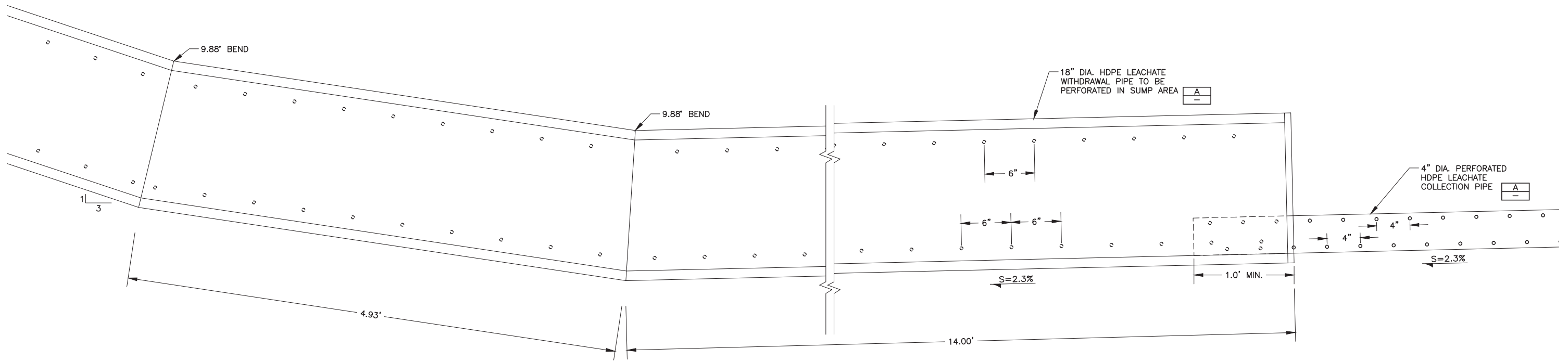


TYPICAL LEACHATE CONVEYANCE PIPE WRAP DETAIL

C
LS-2

N.T.S.

- NOTES:
- 3/4" MINUS WASHED DRAIN ROCK TO BE PLACED AROUND PERFORATED HDPE LEACHATE COLLECTION. A MINIMUM COVER OF 6 INCHES TO BE PROVIDED OVER PIPES.
 - PERFORATED HDPE PIPE TO EXTEND ENTIRE LENGTH OF THE VALLEY OF EACH SUMP DRAINAGE AREA.
 - 18-INCH AND 4-INCH DIA. PERFORATED HDPE PIPES TO RECEIVE 4 ROWS OF 3/8-INCH DIA. PERFORATIONS STAGGERED AS SHOWN. PERFORATIONS IN 18-INCH DIA. HDPE PIPE ONLY REQUIRED FOR THE PORTION OF THE PIPE WITHIN THE SUMPS. PERFORATIONS IN THE 4-INCH DIA. HDPE PIPE TO BE ALONG THE FULL LENGTH OF THE PIPE.

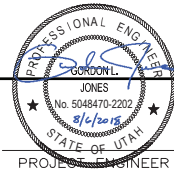


HDPE PIPE "TIE-IN" DETAIL

B
LS-2

N.T.S.

10/07



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.

NO.	DATE	REVISIONS	BY	APVD.

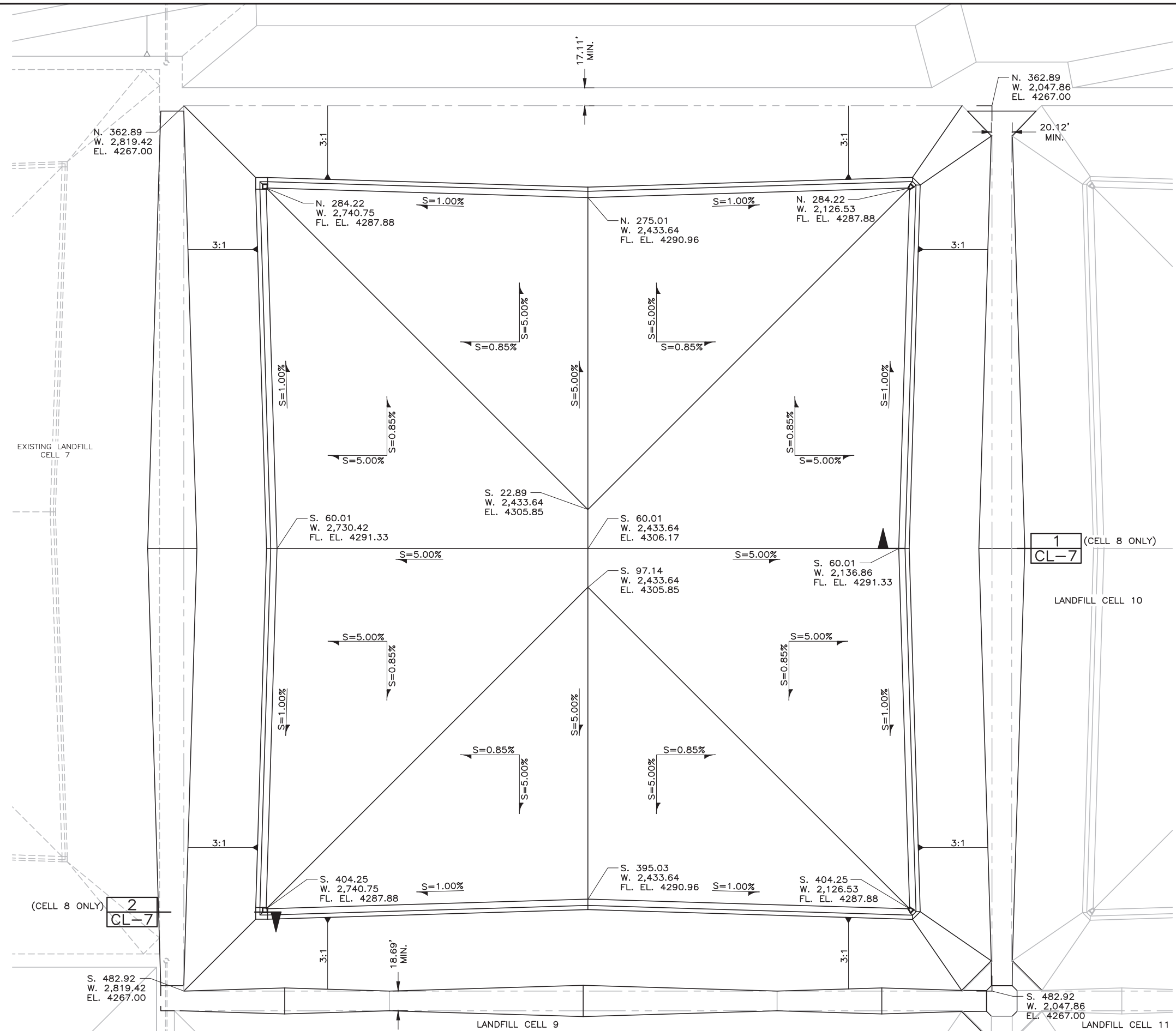
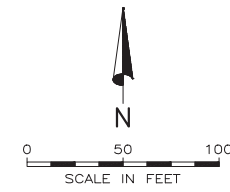
SCALE
AS SHOWN



GRASSY MOUNTAIN FACILITY CELLS 8-13
LCRS
LCRS DETAILS

SHEET
LS-3
064.85.100

FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\CL-1 CELL 8 CLOSURE PLAN_R1.DWG
 FILE DATE: 8.6.2018 11:47:04 (CAH)



10/07



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.
		DATE

REVISIONS		BY	APVD.

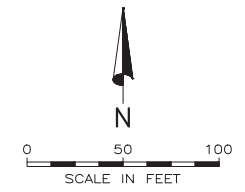
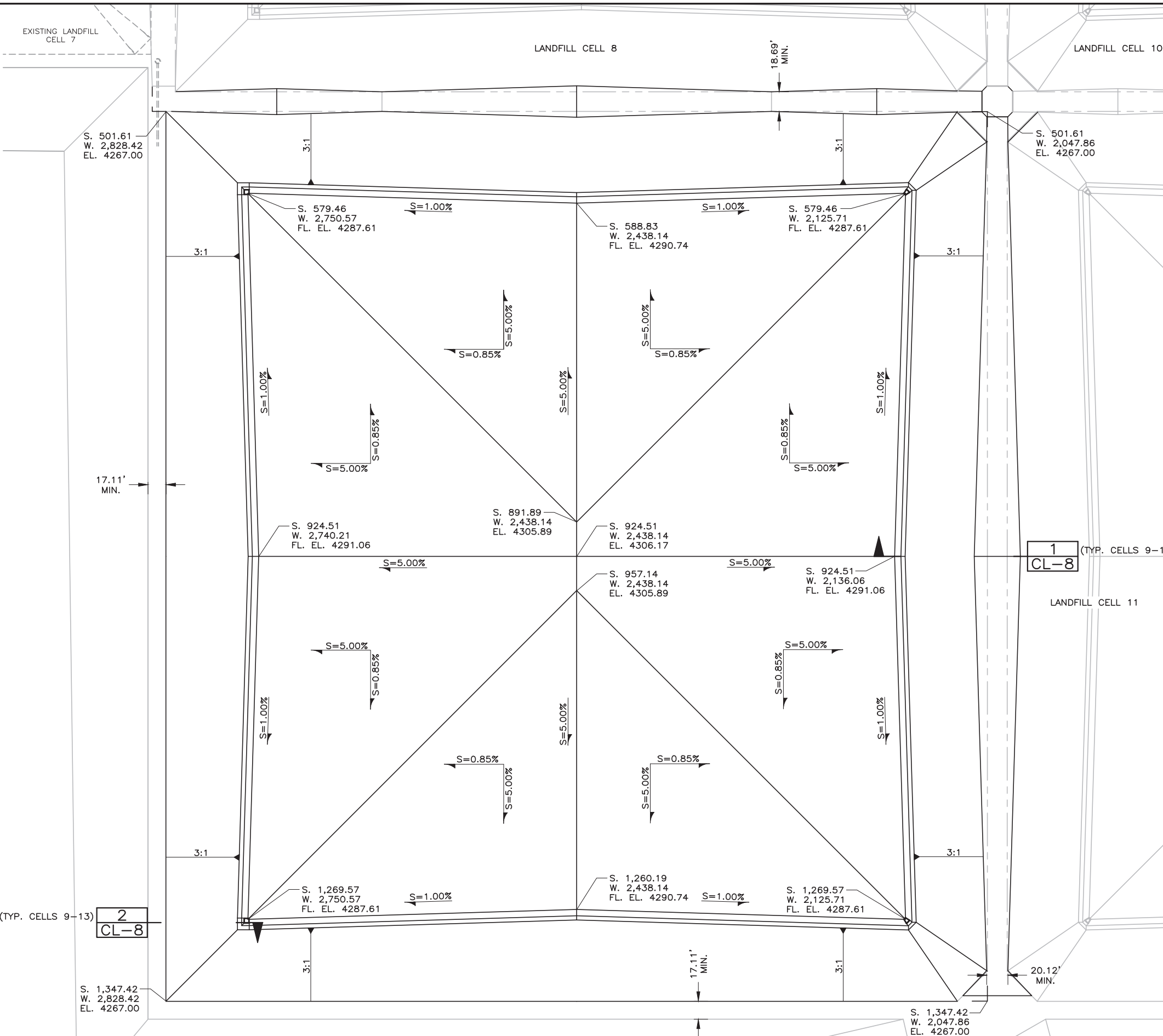
SCALE
NOT
TO
SCALE



GRASSY MOUNTAIN FACILITY CELLS 8-13
 CLOSURE
 PLAN VIEW CELL 8

SHEET
CL-1
064.85.100

FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\CL-2 CELL 9 CLOSURE PLAN_R1.DWG
 FILE DATE: 8.6.2018 11:50:50 (CAH)



NOTE:
 COORDINATES & ELEVATIONS ARE
 TOP OF FINAL CLOSURE CAP
 SURFACE (TOP OF STONE MULCH).



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.
		DATE

REVISIONS		BY	APVD.

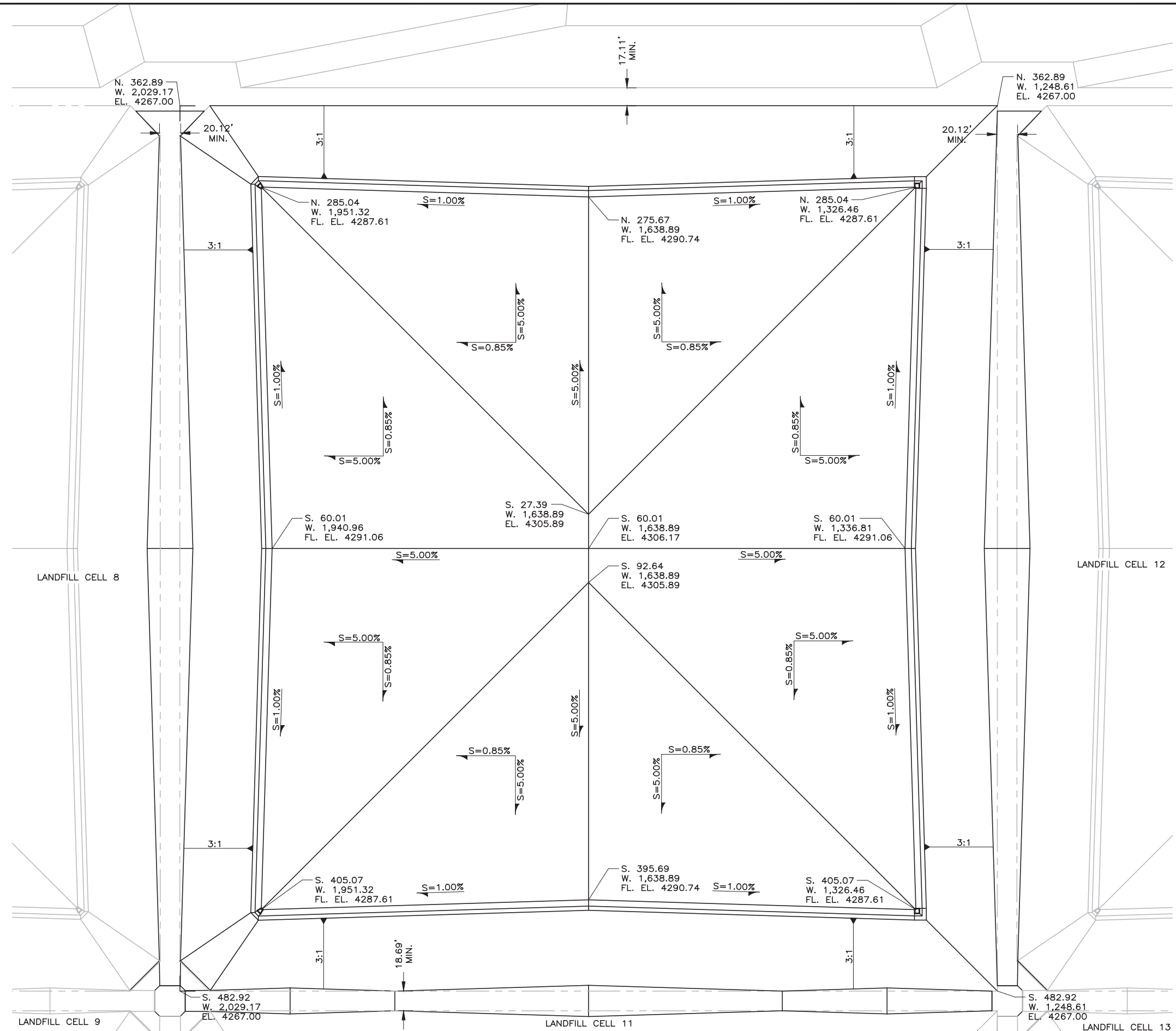
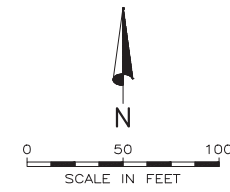
SCALE
 NOT
 TO
 SCALE



GRASSY MOUNTAIN FACILITY CELLS 8-13
 CLOSURE
 PLAN VIEW CELL 9

SHEET
 CL-2
 064.85.100

FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\CL-3 CELL 10 CLOSURE PLAN_R1.DWG
 FILE DATE: 8.6.2018 11:51:43 (CAH)



NOTE:
 COORDINATES & ELEVATIONS ARE
 TOP OF FINAL CLOSURE CAP
 SURFACE (TOP OF STONE MULCH).



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018	REV 1

NO.	DATE	REVISIONS	BY	APVD.

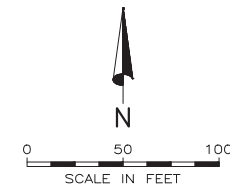
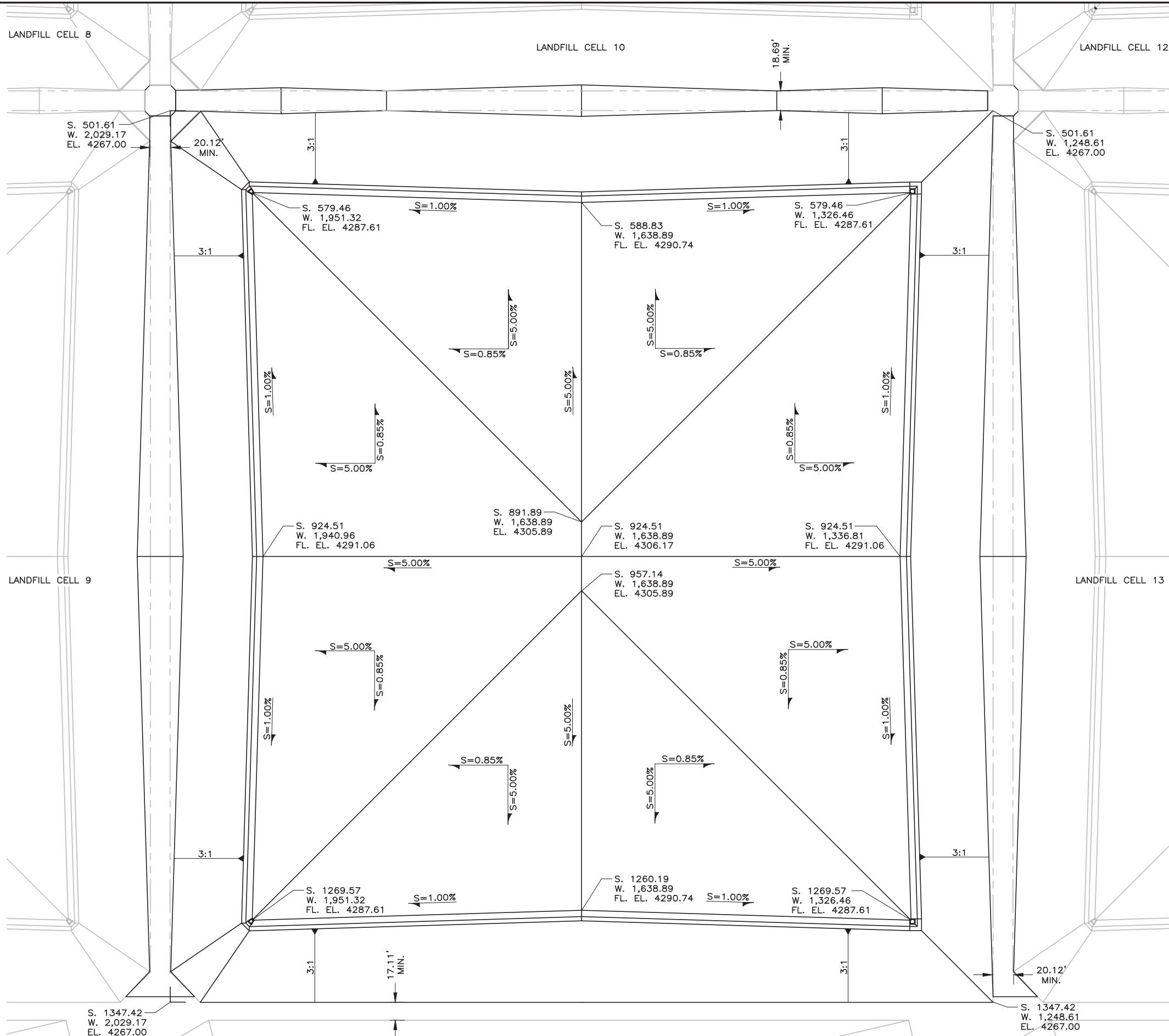
SCALE
 NOT
 TO
 SCALE



GRASSY MOUNTAIN FACILITY CELLS 8-13
 CLOSURE
 PLAN VIEW CELL 10

SHEET
 CL-3
 064.85.100

FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\CL-4 CELL 11 CLOSURE PLAN_R1.DWG
 FILE DATE: 8.6.2018 11:52:45 (CAH)



NOTE:
 COORDINATES & ELEVATIONS ARE
 TOP OF FINAL CLOSURE CAP
 SURFACE (TOP OF STONE MULCH).



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.

NO.	DATE	REVISIONS	BY	APVD.

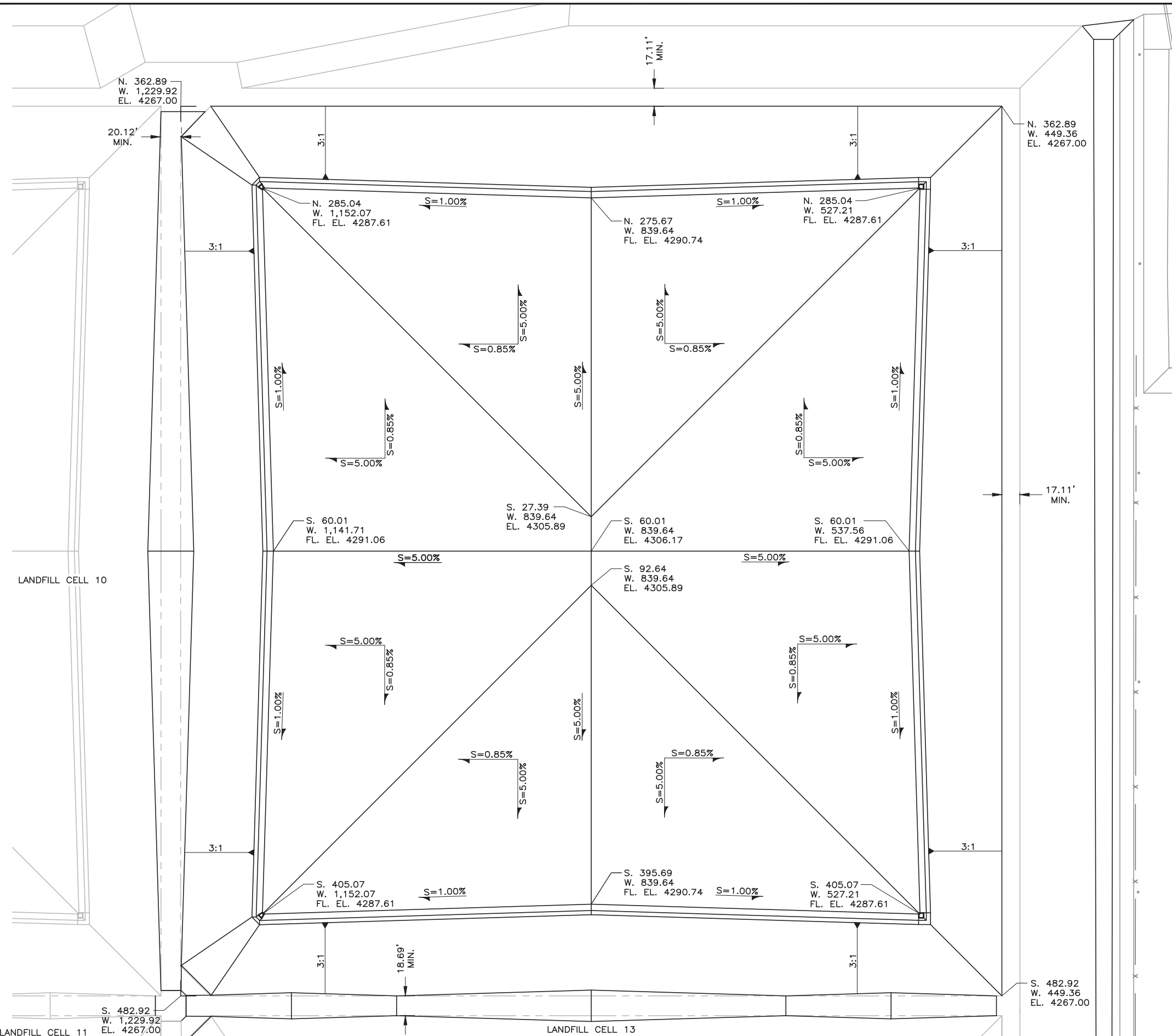
SCALE
 NOT
 TO
 SCALE



GRASSY MOUNTAIN FACILITY CELLS 8-13
 CLOSURE
 PLAN VIEW CELL 11

SHEET
 CL-4
 064.85.100

FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\CL-5 CELL 12 CLOSURE PLAN_R1.DWG
 FILE DATE: 8.6.2018 11:53:48 (CAH)



NOTE:
 COORDINATES & ELEVATIONS ARE
 TOP OF FINAL CLOSURE CAP
 SURFACE (TOP OF STONE MULCH).



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018	REV 1

NO.	DATE	REVISIONS	BY	APVD.

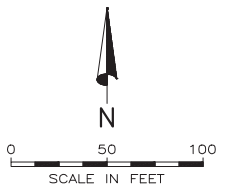
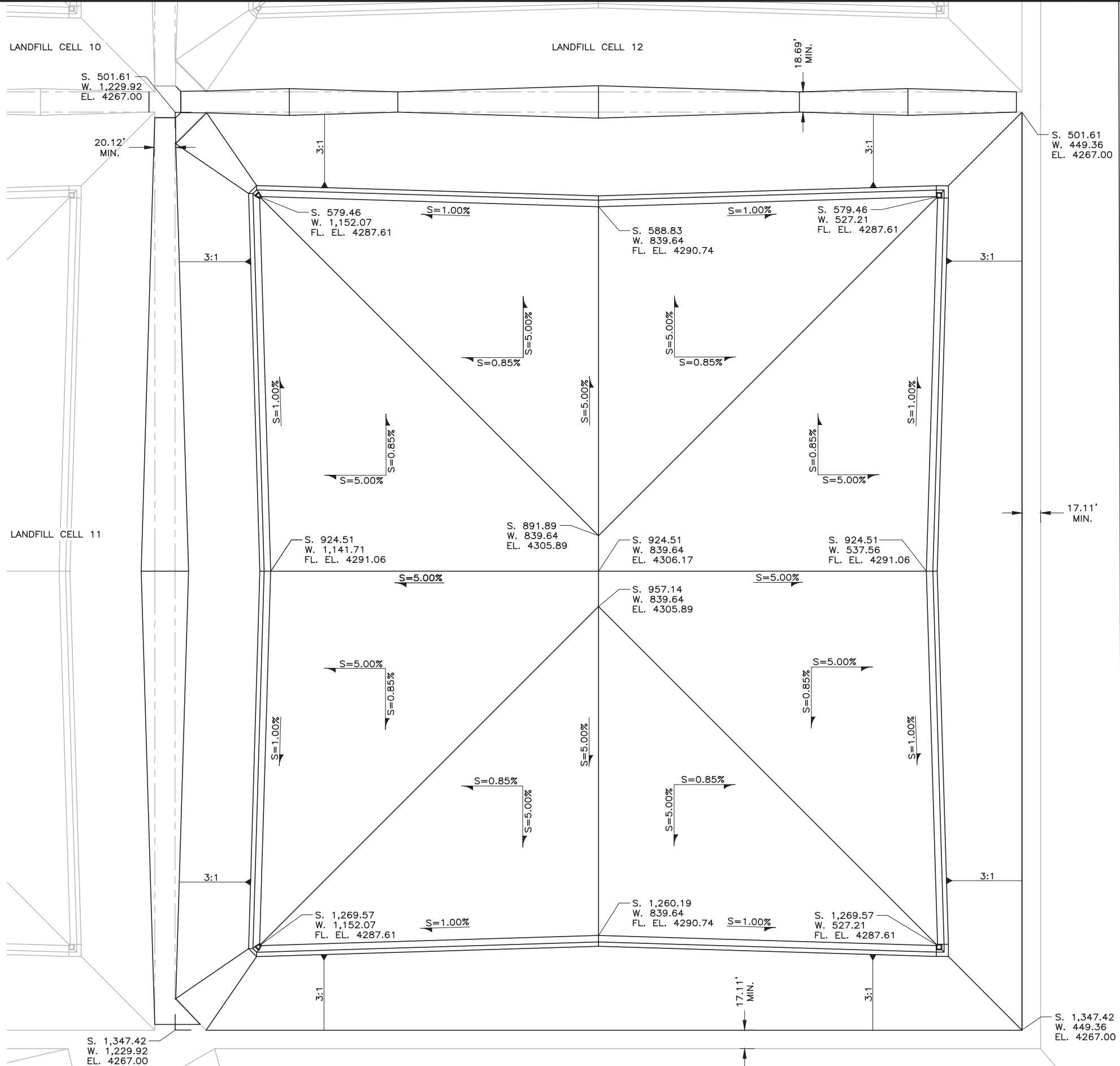
SCALE
 NOT
 TO
 SCALE



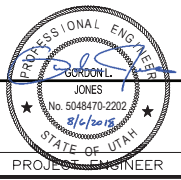
GRASSY MOUNTAIN FACILITY CELLS 8-13
 CLOSURE
 PLAN VIEW CELL 12

SHEET
 CL-5
 064.85.100

FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\CL-6 CELL 13 CLOSURE PLAN_R1.DWG
 FILE DATE: 8.6.2018 11:54:59 (CAH)



NOTE:
 COORDINATES & ELEVATIONS ARE
 TOP OF FINAL CLOSURE CAP
 SURFACE (TOP OF STONE MULCH).



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.

NO.	DATE	REVISIONS	BY	APVD.

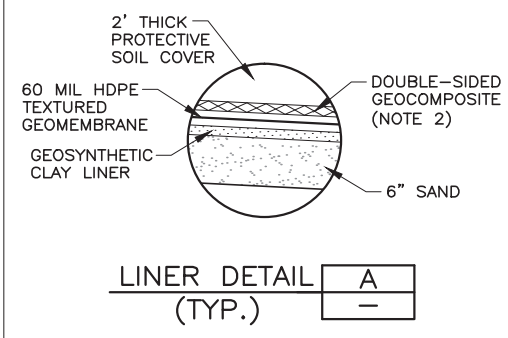
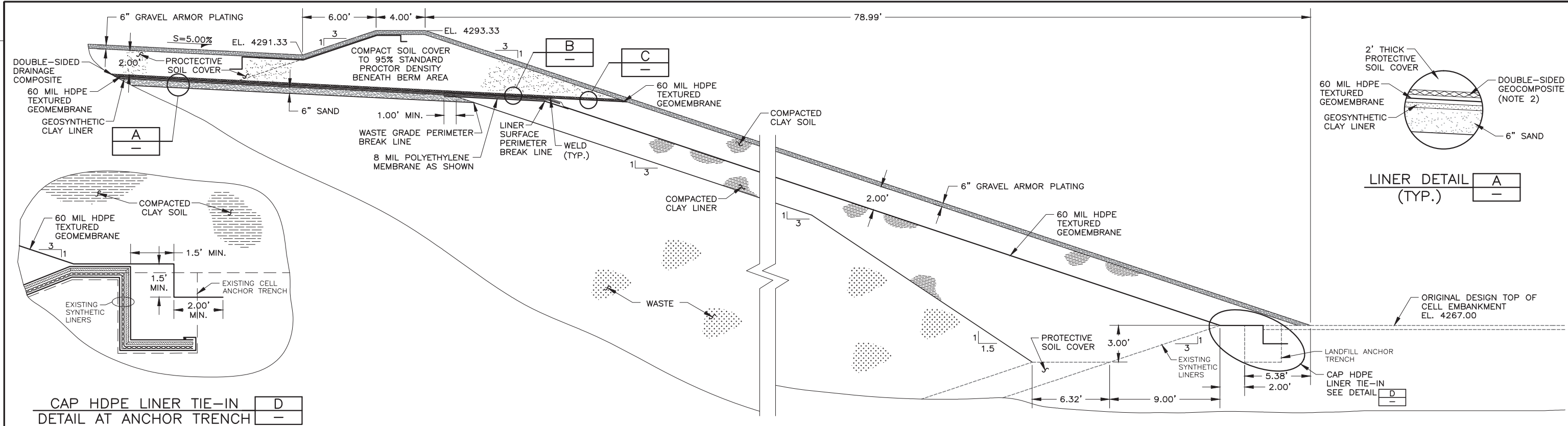
SCALE
 NOT
 TO
 SCALE



GRASSY MOUNTAIN FACILITY CELLS 8-13
 CLOSURE
 PLAN VIEW CELL 13

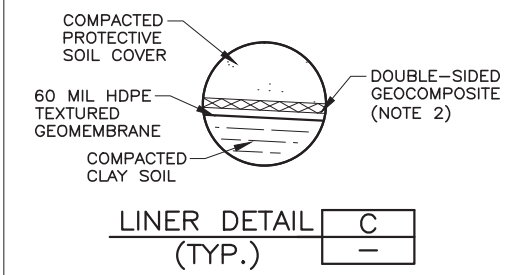
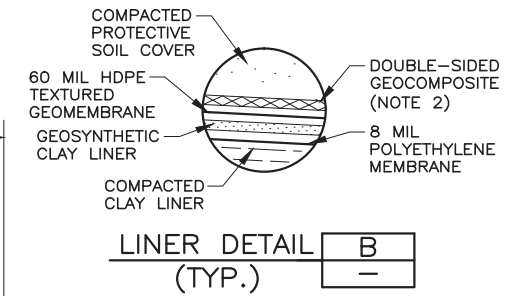
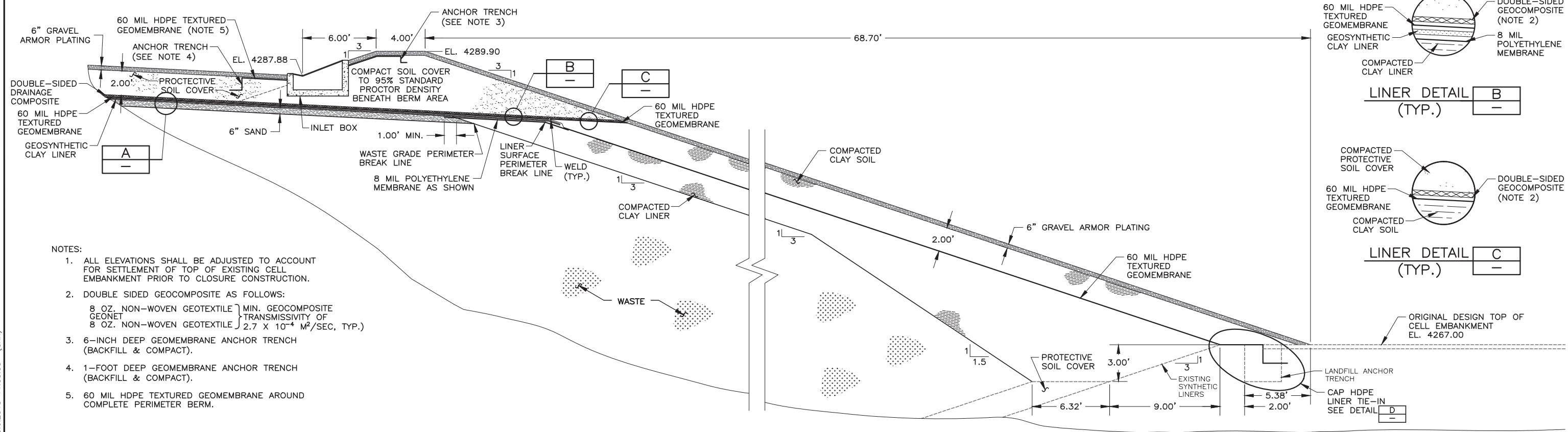
SHEET
 CL-6
 064.85.100

FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\CL-7 HIGH LOW SECTIONS 8-13.R1.DWG
 FILE DATE: 8.6.2018 11:55:53 (CAH)



CAP HDPE LINER TIE-IN
 DETAIL AT ANCHOR TRENCH **D**

TYPICAL EAST & WEST HIGH SECTION **1**
 CL-1



- NOTES:
1. ALL ELEVATIONS SHALL BE ADJUSTED TO ACCOUNT FOR SETTLEMENT OF TOP OF EXISTING CELL EMBANKMENT PRIOR TO CLOSURE CONSTRUCTION.
 2. DOUBLE SIDED GEOCOMPOSITE AS FOLLOWS:
 8 OZ. NON-WOVEN GEOTEXTILE } MIN. GEOCOMPOSITE
 GEONET } TRANSMISSIVITY OF
 8 OZ. NON-WOVEN GEOTEXTILE } $2.7 \times 10^{-4} \text{ M}^2/\text{SEC. (TYP.)}$
 3. 6-INCH DEEP GEOMEMBRANE ANCHOR TRENCH (BACKFILL & COMPACT).
 4. 1-FOOT DEEP GEOMEMBRANE ANCHOR TRENCH (BACKFILL & COMPACT).
 5. 60 MIL HDPE TEXTURED GEOMEMBRANE AROUND COMPLETE PERIMETER BERM.

TYPICAL LOW SECTION **2**
 CL-1



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.

NO.	DATE	REVISIONS	BY	APVD.

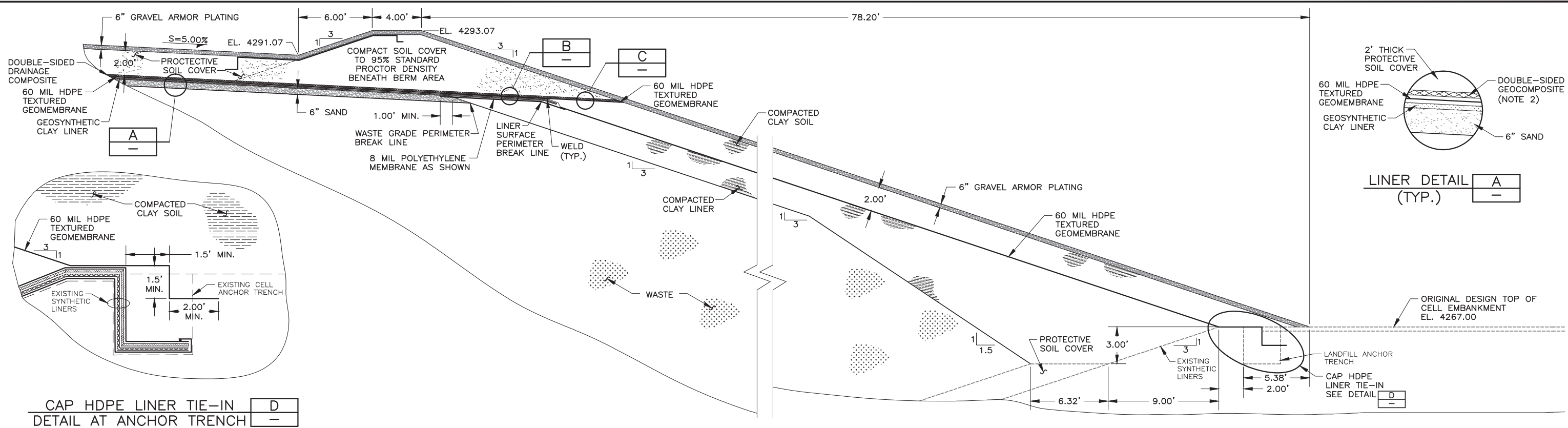
SCALE
 NOT TO SCALE



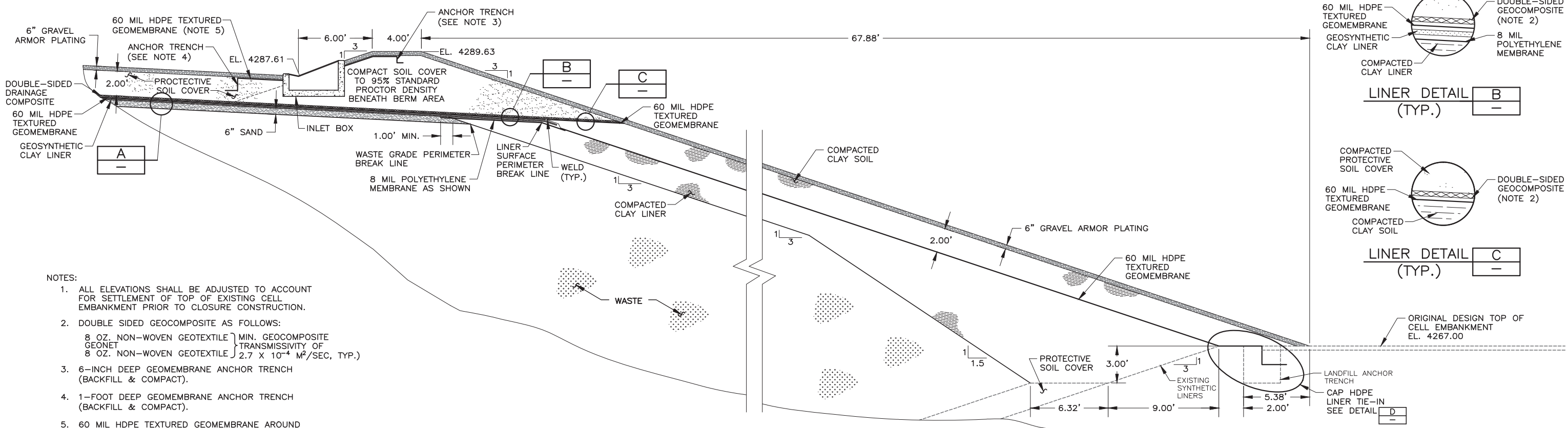
GRASSY MOUNTAIN FACILITY CELLS 8-13
 CLOSURE
 HIGH-LOW SECTIONS CELL 8

SHEET
 CL-7
 064.85.100

FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\CL-8 HIGH LOW SECTIONS 9-13.R1.DWG
 FILE DATE: 8.6.2018 11:56:51 (CAH)

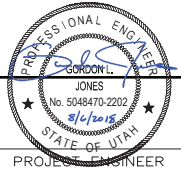


TYPICAL EAST & WEST HIGH SECTION 1
CL-2



TYPICAL LOW SECTION 2
CL-2

- NOTES:
- ALL ELEVATIONS SHALL BE ADJUSTED TO ACCOUNT FOR SETTLEMENT OF TOP OF EXISTING CELL EMBANKMENT PRIOR TO CLOSURE CONSTRUCTION.
 - DOUBLE SIDED GEOCOMPOSITE AS FOLLOWS:
 8 OZ. NON-WOVEN GEOTEXTILE } MIN. GEOCOMPOSITE
 GEONET } TRANSMISSIVITY OF
 8 OZ. NON-WOVEN GEOTEXTILE } $2.7 \times 10^{-4} \text{ M}^2/\text{SEC, TYP.}$
 - 6-INCH DEEP GEOMEMBRANE ANCHOR TRENCH (BACKFILL & COMPACT).
 - 1-FOOT DEEP GEOMEMBRANE ANCHOR TRENCH (BACKFILL & COMPACT).
 - 60 MIL HDPE TEXTURED GEOMEMBRANE AROUND COMPLETE PERIMETER BERM.



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.

NO.	DATE	REVISIONS	BY	APVD.

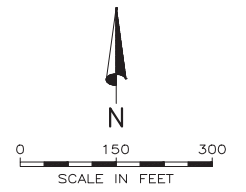
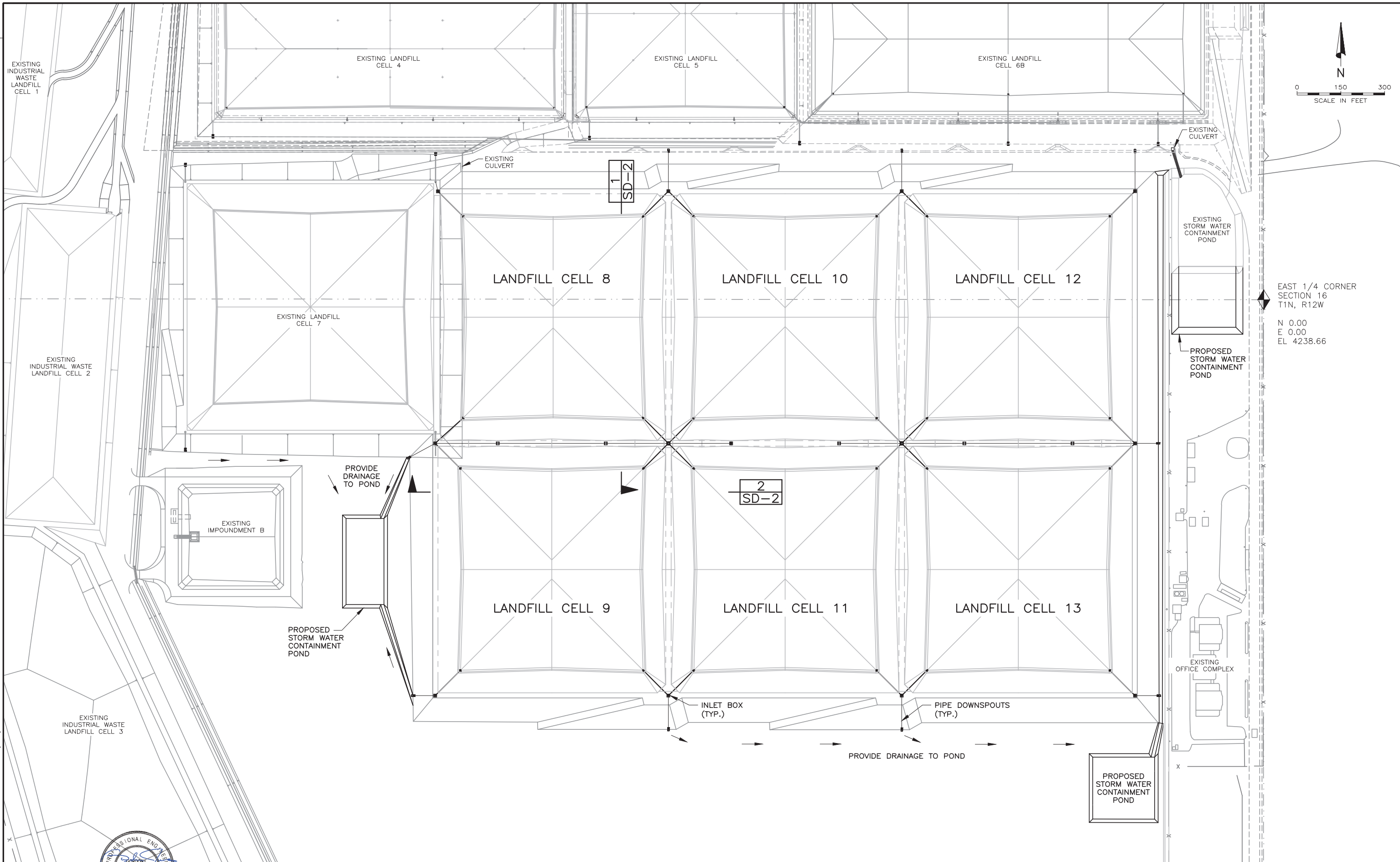
SCALE
NOT TO SCALE



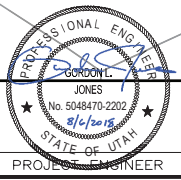
GRASSY MOUNTAIN FACILITY CELLS 8-13
 CLOSURE
 HIGH-LOW SECTIONS CELLS 9-13

SHEET
CL-8
064.85.100

FILE NAME: PROJECTS\064 - CLEAN HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\SD-1 DRAINAGE PLAN_R1.DWG
 FILE DATE: 8.6.2018 11:57:49 (CAH)



EAST 1/4 CORNER
 SECTION 16
 T1N, R12W
 N 0.00
 E 0.00
 EL 4238.66



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.
		DATE

NO.	DATE	REVISIONS	BY	APVD.

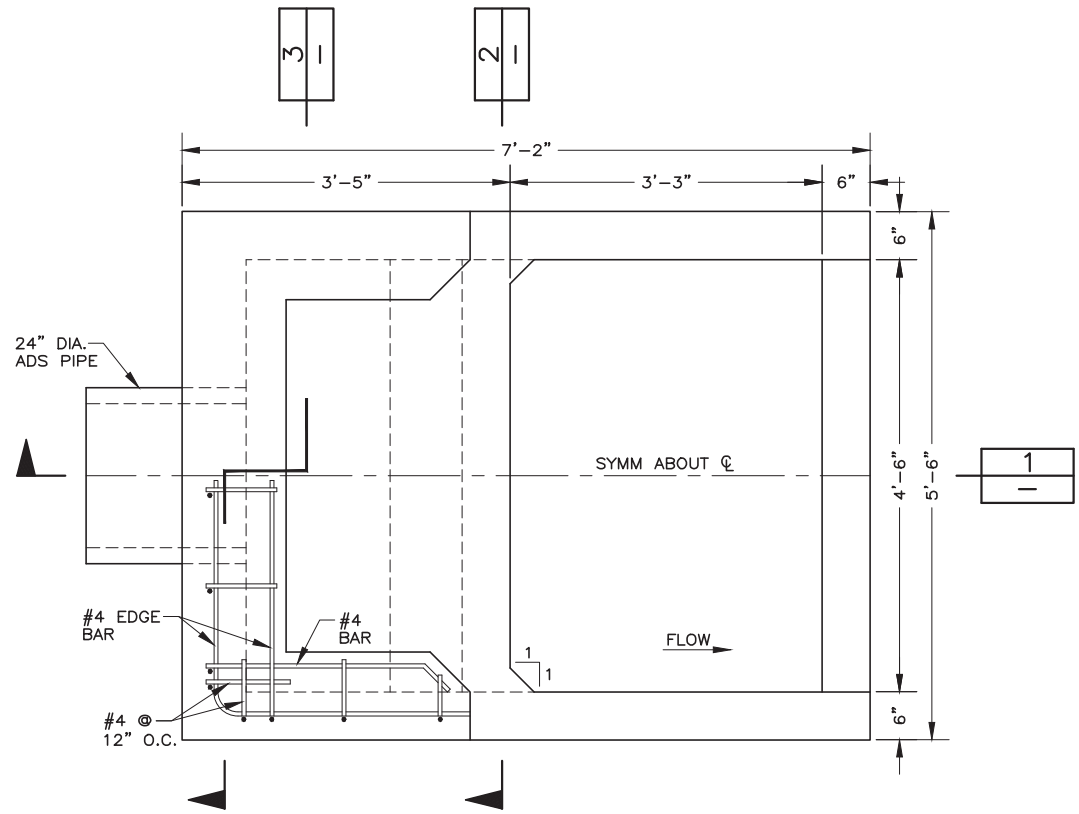
SCALE
 NOT
 TO
 SCALE



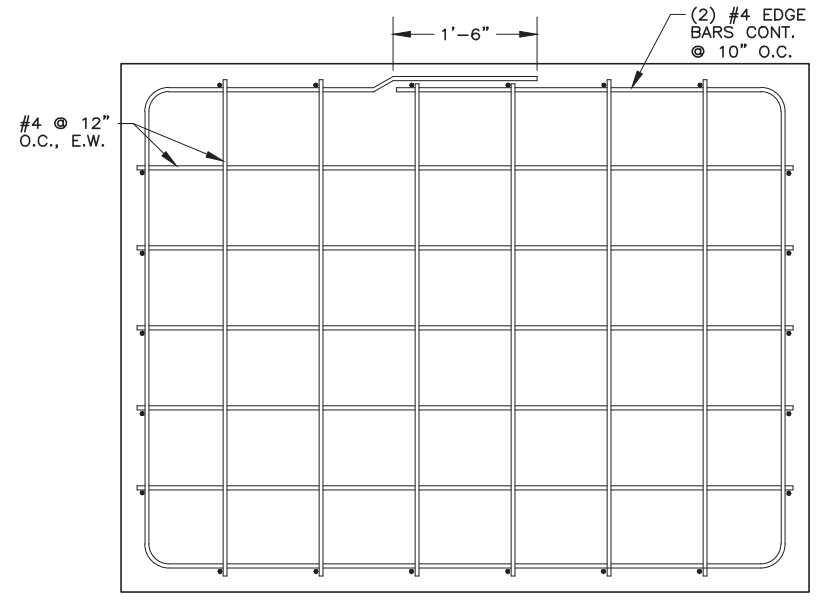
GRASSY MOUNTAIN FACILITY CELLS 8-13
 STORM DRAIN
 DRAINAGE PLAN

SHEET
 SD-1
 064.85.100

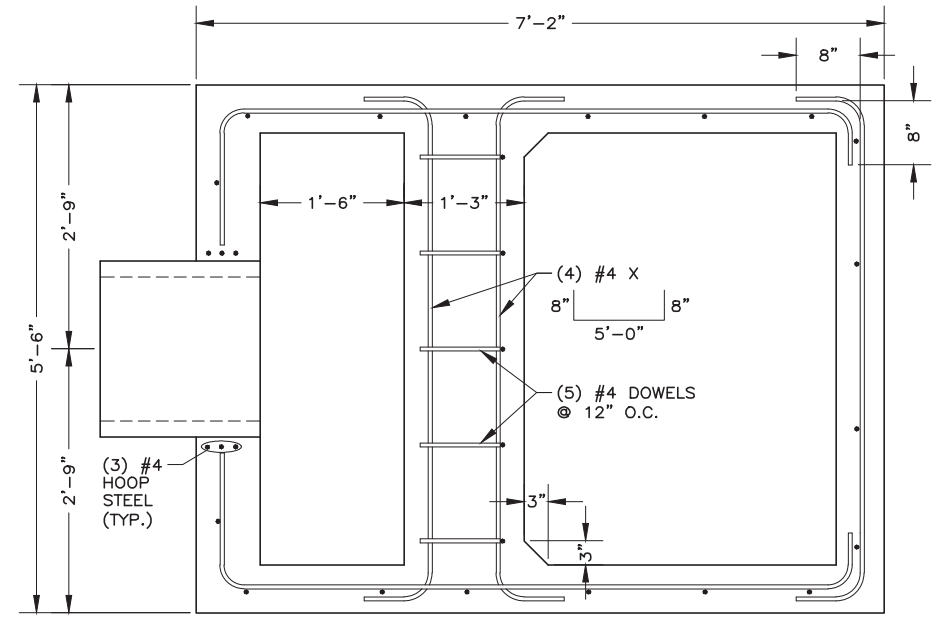
FILE NAME: PROJECTS\064 - CLEAN_HARBORS\85.100 - CELL 8 AND 9 DESIGN\CAD\WORKING\SD-3 BAFFLE BOX...R1.DWG
 FILE DATE: 8.6.2018 12:00:00 (CAH)



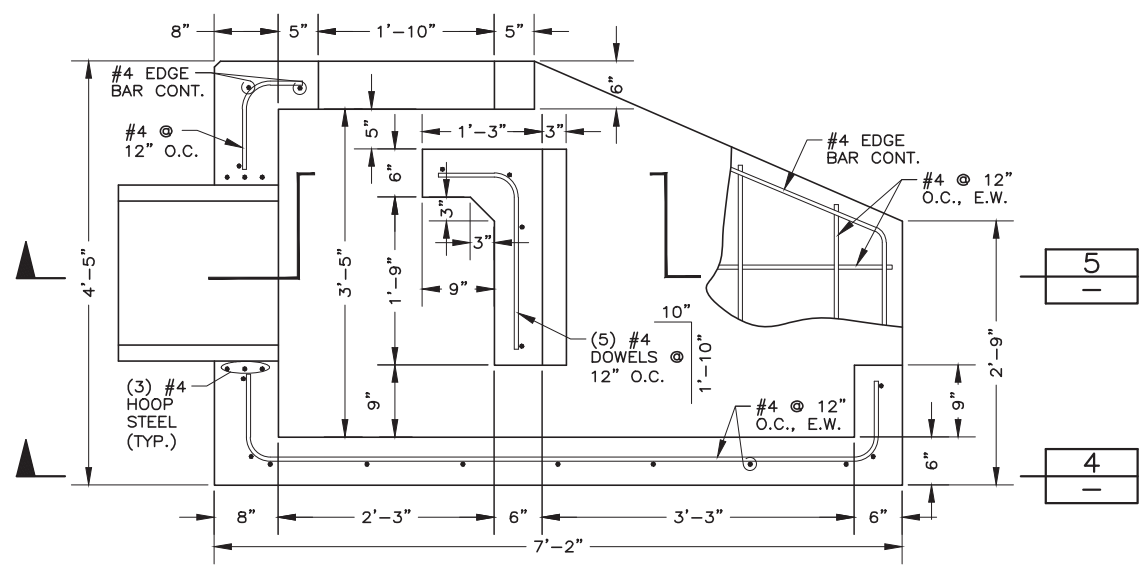
PLAN VIEW **A**
N.T.S. SD-2



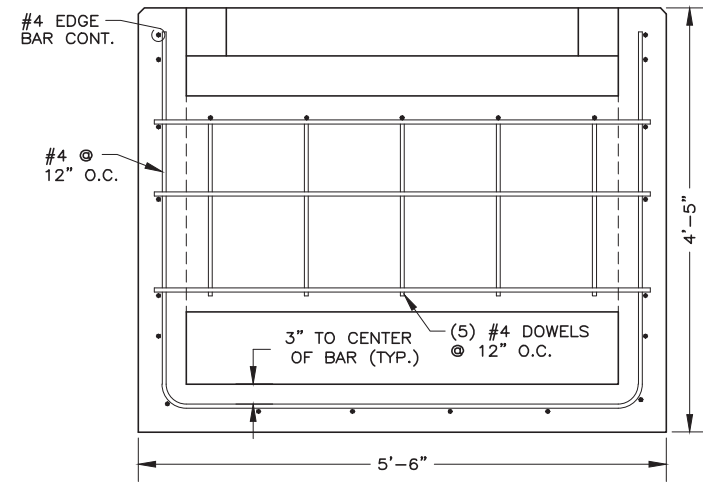
SECTION **4**
N.T.S. -



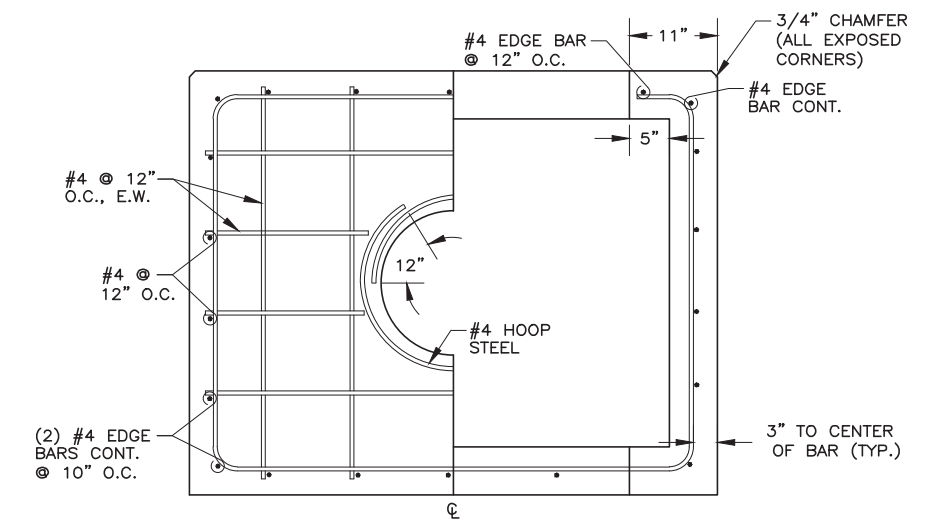
SECTION **5**
N.T.S. -



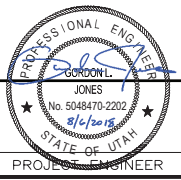
SECTION **1**
N.T.S. -



SECTION **2**
N.T.S. -



SECTION **3**
N.T.S. -



DESIGNED	KCS	3
DRAFTED	CAH	2
CHECKED	GLJ	1
DATE	AUGUST 2018 REV 1	NO.

NO.	DATE	REVISIONS	BY	APVD.

SCALE



GRASSY MOUNTAIN FACILITY CELLS 8-13
 STORM DRAIN
 BAFFLED OUTLET BOX

SHEET
 SD-3
 064.85.100