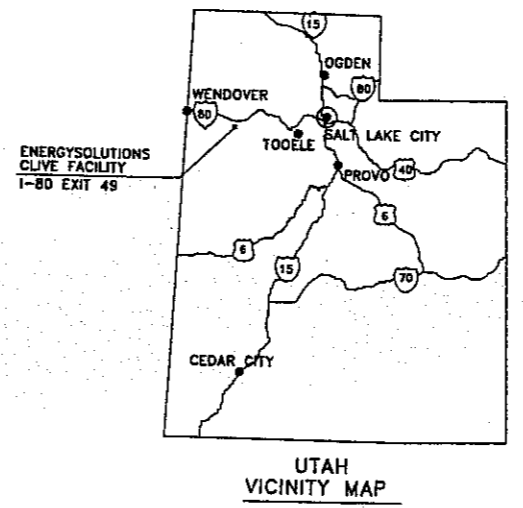


CLASS A SOUTH/11e.(2) DISPOSAL CELL	
DWG. NO.	DESCRIPTION
07021-G1	PROJECT TITLE SHEET
07021-U1	DISPOSAL CELL BUFFER ZONE
07021-U2	DISPOSAL CELL WASTE LIMITS--LATITUDES & LONGITUDES
07021-U3	DISPOSAL CELL ENVIRONMENTAL MONITORING
07021-V1	CELL LAYOUT
07021-V2	CELL COVER LAYOUT
07021-V3	CELL CROSS SECTIONS 1 OF 2
07021-V4	CELL CROSS SECTIONS 2 OF 2
07021-V5	CELL CONSTRUCTION DETAILS 1 OF 2
07021-V6	CELL CONSTRUCTION DETAILS 2 OF 2
07021-V7	COVER CROSS SECTIONS AND GRADATIONS
07021-V8	COLLECTION LYSIMETERS DETAILS



ENERGYSOLUTIONS
CLIVE FACILITY

CLASS A SOUTH/11e.(2) DISPOSAL CELL
PROJECT TITLE SHEET
CLIVE, UTAH

DATE	1/4/08	DF	ISSUED FOR PERMITTING
DATE		AS	NOTED BY DESCRIPTION OF CHANGE

LICENSED PROFESSIONAL ENGINEER
No. 189500
DAVID F. BOOTH
1/4/08
STATE OF UTAH

DESIGNED BY	D. BOOTH
CHECKED BY	G. DUTSON
PROJECT BY	D. BOOTH
DATE AS NOTED	01/04/08

07021
G1

CL A SOUTH-NW
 N 12191.88
 E 10252.83
 N 40° 41' 13.587"
 W 113° 07' 25.832"

11e.(2)-NW
 N 12149.28
 E 11769.86
 N 40° 41' 13.446"
 W 113° 07' 06.136"

CL A SOUTH-NE
 N 12148.94
 E 11781.85
 N 40° 41' 13.445"
 W 113° 07' 05.980"

11e.(2)-NE
 N 12123.11
 E 12701.87
 N 40° 41' 13.359"
 W 113° 06' 54.037"



LEGEND

- BUFFER ZONE LIMITS
- - - - SECTION LINE
- PROPERTY LINE
- PERMITTED WASTE LIMITS
- DISPOSAL CELL BREAK LINES
- [Hatched Box] BUFFER ZONE

500 0 500 1000

NOTE:
 THE BUFFER ZONES FOR THE CLASS A SOUTH AND 11e.(2) EMBANKMENTS OVERLAP AT THE CLAY BARRIER WHICH SEPARATES THE TWO WASTE TYPES. THE BUFFER LIMITS CORRESPOND WITH THE EAST LIMITS OF THE BARRIER FOR THE CLASS A SOUTH AND WITH THE WEST LIMITS FOR THE 11e.(2).

CLASS A SOUTH

11e.(2)

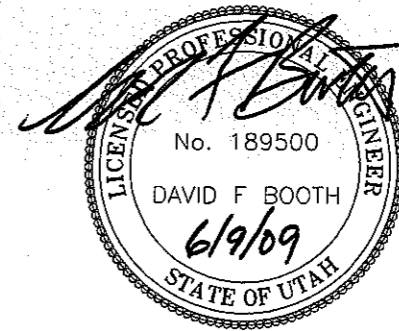
CL A SOUTH-SW
 N 10217.66
 E 10197.40
 N 40° 40' 54.077"
 W 113° 07' 26.070"

11e.(2)-SW
 N 10175.06
 E 11714.43
 N 40° 40' 53.936"
 W 113° 07' 06.378"

CL A SOUTH-SE
 N 10174.72
 E 11726.42
 N 40° 40' 53.935"
 W 113° 07' 06.222"

11e.(2)-SE
 N 10148.89
 E 12646.44
 N 40° 40' 53.849"
 W 113° 06' 54.279"

CLAY BARRIER
 (12' WIDE WALL)



ENERGY SOLUTIONS

CLIVE FACILITY

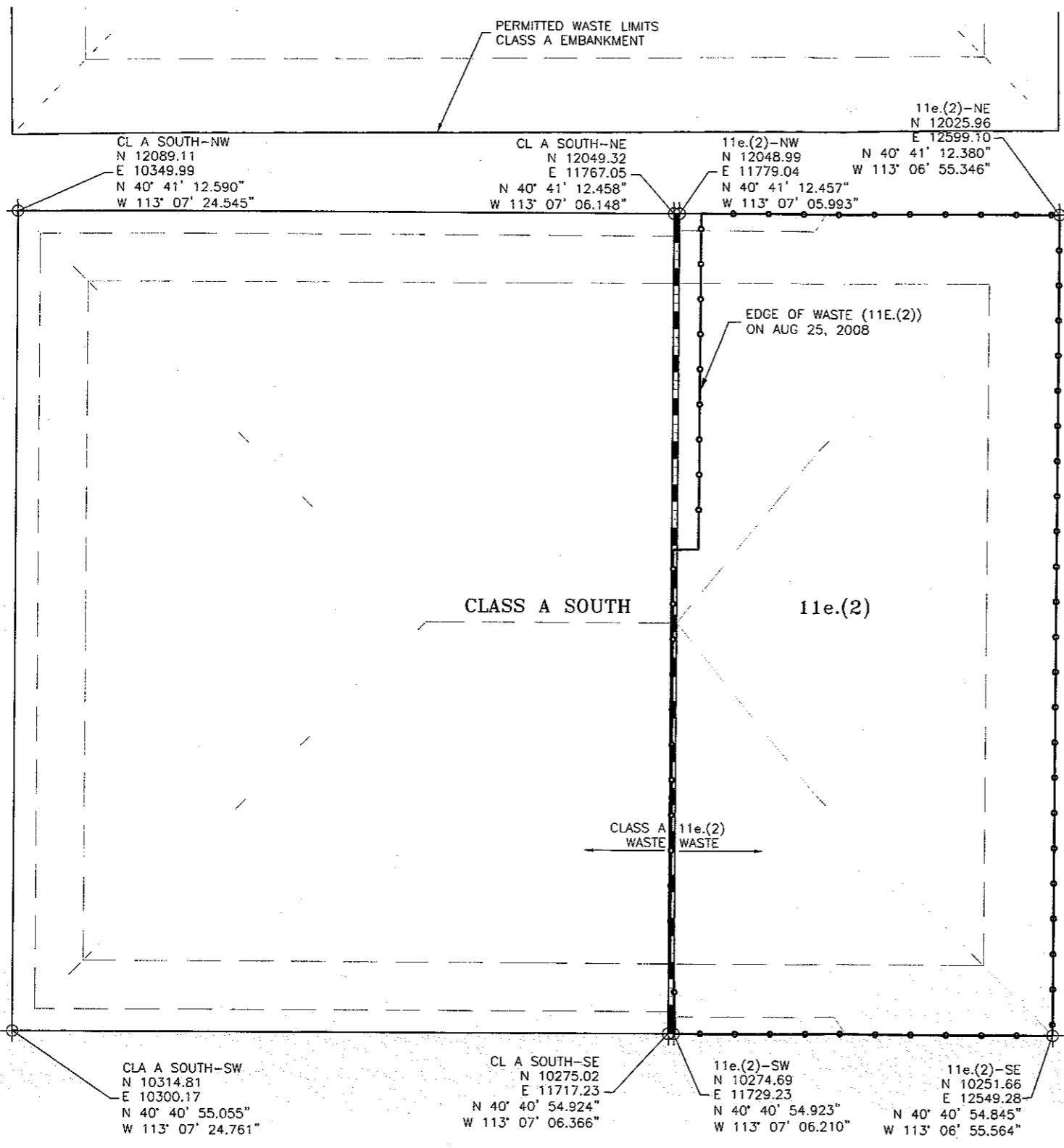
CLASS A SOUTH/11e.(2) DISPOSAL CELL
 DISPOSAL CELL BUFFER ZONE
 CLIVE, UTAH

DATE	BY
6/9/09	DFB
1/4/08	DFB
INCREASED CLAY BARRIER THICKNESS & GW MONITORING ISSUED FOR PERMITTING	
DESCRIPTION OF CHANGE	

DRAWN BY	NO.
D. BOOTH	189500
CHECKED BY	DATE
G. DUTSON	6/9/09
APPROVED BY	STATE OF UTAH
D. BOOTH	DAVID F. BOOTH

SCALE AS NOTED 01/04/08

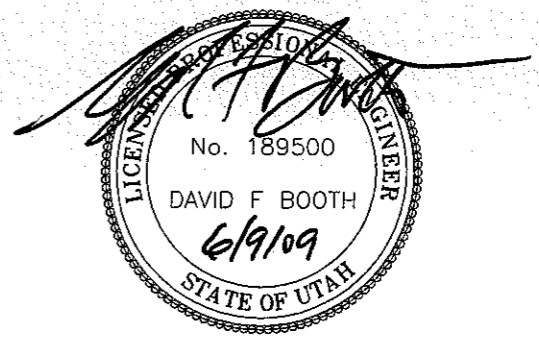
07021
U1



LEGEND

- PERMITTED WASTE LIMITS
- - - WASTE BREAK LINES
- CLAY BARRIER CENTERLINE
- - - SECTION LINE
- - - PROPERTY LINE
- EDGE OF 11e.(2) WASTE (AUG 25, 2008)

150 0 150 300



DATE	BY	DESCRIPTION OF CHANGE
6/9/09	DFB	INCREASED CLAY BARRIER THICKNESS & GW MONITORING
1/4/08	DFB	ISSUED FOR PERMITTING

ENERGYSOLUTIONS

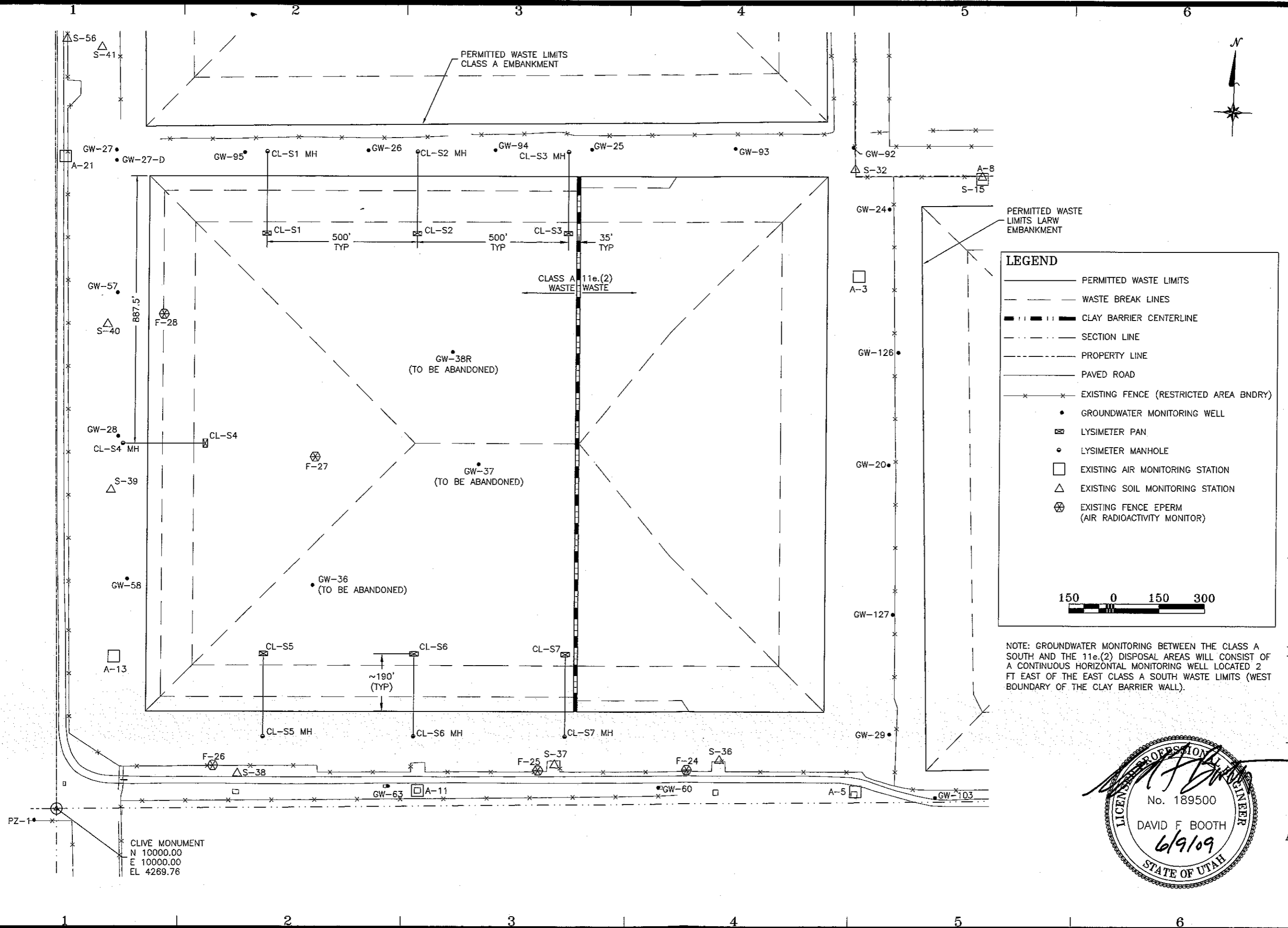
CLIVE FACILITY

CLASS A SOUTH/11e.(2) DISPOSAL CELL

DISPOSAL CELL WASTE LIMITS-LATITUDES & LONGITUDES

CLIVE, UTAH

DESIGNED BY	D. BOOTH
DRAWN BY	C. DUTSON
CHECKED BY	D. BOOTH
SCALE	AS SHOWN
DATE	01/04/08
PROJECT NO.	07021 U2

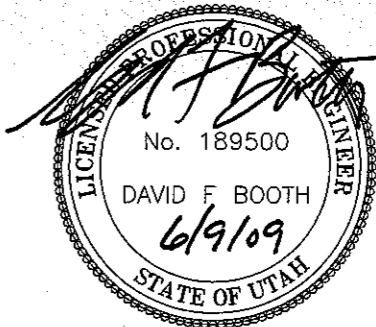


LEGEND

- PERMITTED WASTE LIMITS
- - - WASTE BREAK LINES
- ■ — CLAY BARRIER CENTERLINE
- · - · - SECTION LINE
- · - · - PROPERTY LINE
- PAVED ROAD
- × × × EXISTING FENCE (RESTRICTED AREA BNDRY)
- GROUNDWATER MONITORING WELL
- ⊠ LYSIMETER PAN
- LYSIMETER MANHOLE
- EXISTING AIR MONITORING STATION
- △ EXISTING SOIL MONITORING STATION
- ⊗ EXISTING FENCE EPERM (AIR RADIOACTIVITY MONITOR)

150 0 150 300

NOTE: GROUNDWATER MONITORING BETWEEN THE CLASS A SOUTH AND THE 11e.(2) DISPOSAL AREAS WILL CONSIST OF A CONTINUOUS HORIZONTAL MONITORING WELL LOCATED 2 FT EAST OF THE EAST CLASS A SOUTH WASTE LIMITS (WEST BOUNDARY OF THE CLAY BARRIER WALL).



ENERGYSOLUTIONS
CLIVE FACILITY

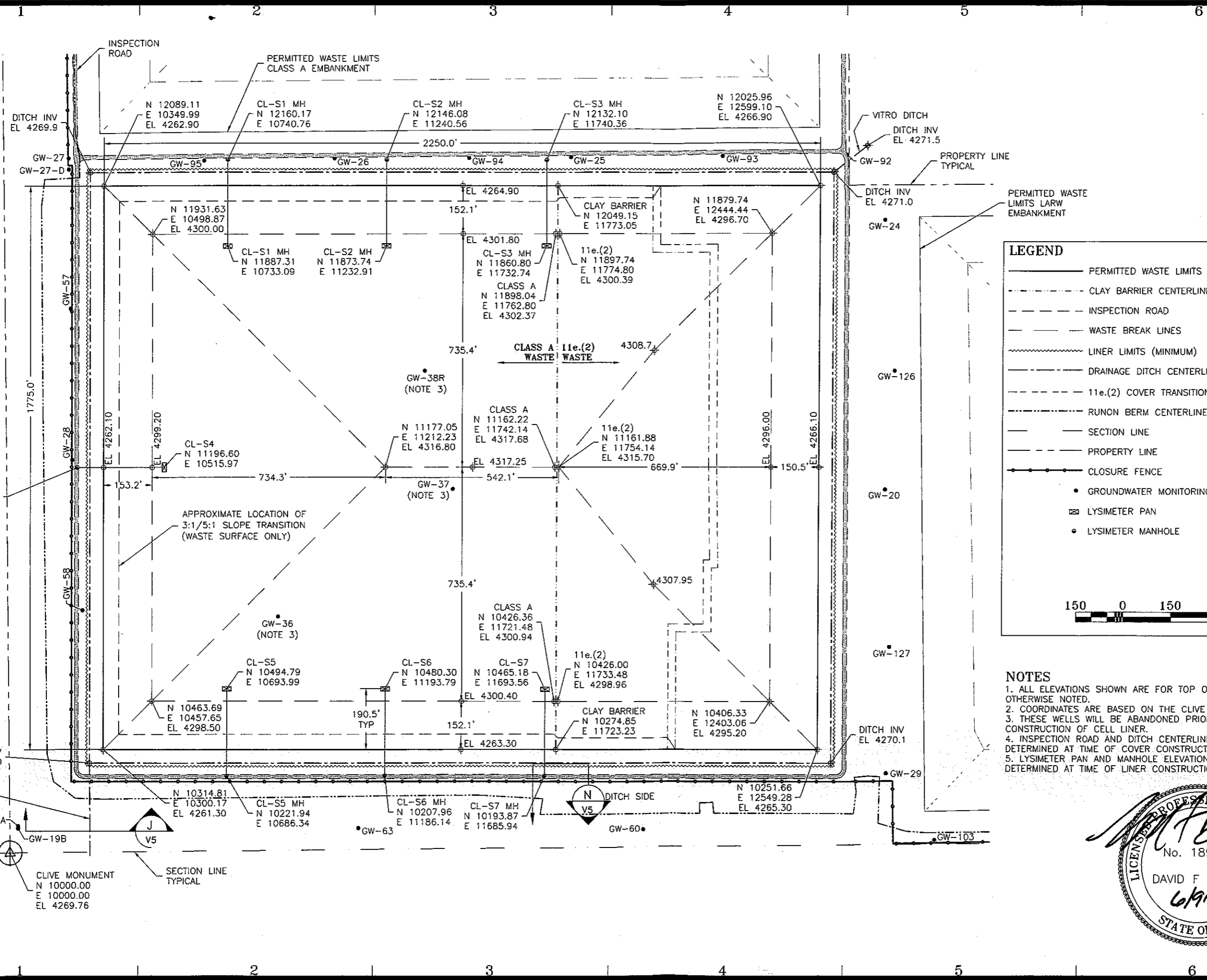
CLASS A SOUTH/11e.(2) DISPOSAL CELL
DISPOSAL CELL ENVIRONMENTAL MONITORING
CLIVE, UTAH

DATE	BY	DESCRIPTION OF CHANGE
5/9/08	DFB	INCREASED CLAY BARRIER THICKNESS & GW MONITORING
1/4/08	DFB	ISSUED FOR PERMITTING

DATE: 01/04/08

AS SHOWN

07021
U3

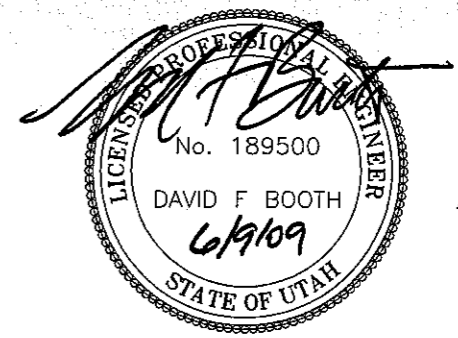


LEGEND

- PERMITTED WASTE LIMITS
- - - CLAY BARRIER CENTERLINE
- - - INSPECTION ROAD
- - - WASTE BREAK LINES
- ~~~~~ LINER LIMITS (MINIMUM)
- - - DRAINAGE DITCH CENTERLINE
- - - 11e.(2) COVER TRANSITION
- - - RUNON BERM CENTERLINE
- - - SECTION LINE
- - - PROPERTY LINE
- CLOSURE FENCE
- GROUNDWATER MONITORING WELL
- ⊠ LYSIMETER PAN
- LYSIMETER MANHOLE

150 0 150 300

- NOTES**
1. ALL ELEVATIONS SHOWN ARE FOR TOP OF WASTE UNLESS OTHERWISE NOTED.
 2. COORDINATES ARE BASED ON THE CLIVE MONUMENT.
 3. THESE WELLS WILL BE ABANDONED PRIOR TO CONSTRUCTION OF CELL LINER.
 4. INSPECTION ROAD AND DITCH CENTERLINE TO BE DETERMINED AT TIME OF COVER CONSTRUCTION.
 5. LYSIMETER PAN AND MANHOLE ELEVATIONS WILL BE DETERMINED AT TIME OF LINER CONSTRUCTION.

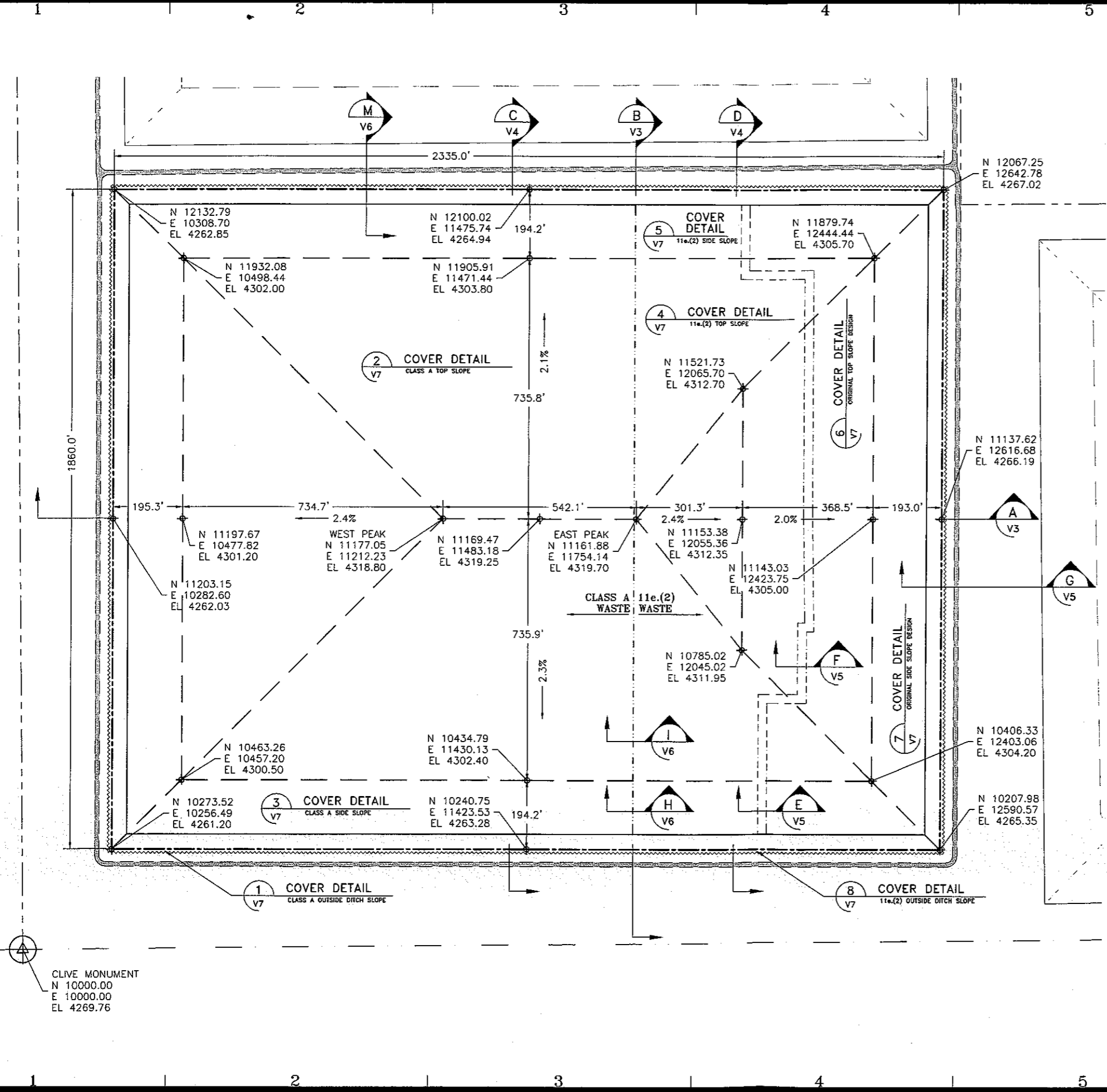


DATE	BY	DESCRIPTION OF CHANGE
6/9/09	DFB	INCREASED CLAY BARRIER THICKNESS & GW MONITORING
1/4/08	DFB	ISSUED FOR PERMITTING

ENERGYSOLUTIONS

CLIVE FACILITY
CLASS A SOUTH/11e.(2) DISPOSAL CELL
CELL LAYOUT
CLIVE, UTAH

DESIGNED BY	D. BOOTH
CHECKED BY	G. DUTSON
APPROVED BY	D. BOOTH
DATE	01/04/08
PROJECT NO.	07021 V1



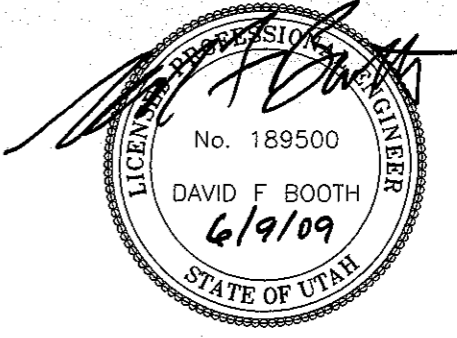
LEGEND

- PERMITTED WASTE LIMITS
- RADON BARRIER LIMITS
- - - CLAY BARRIER CENTERLINE
- - - INSPECTION ROAD
- - - RADON BARRIER BREAK LINES
- ~ LINER LIMITS (MINIMUM)
- - - 11e.(2) COVER TRANSITION
- SECTION LINE
- - - PROPERTY LINE

150 0 150 300

NOTES

- ELEVATIONS SHOWN ARE FOR TOP OF RADON BARRIER (5x10-8 CM/SEC) LAYER UNLESS OTHERWISE NOTED.
- COORDINATES ARE BASED ON THE CLIVE MONUMENT.



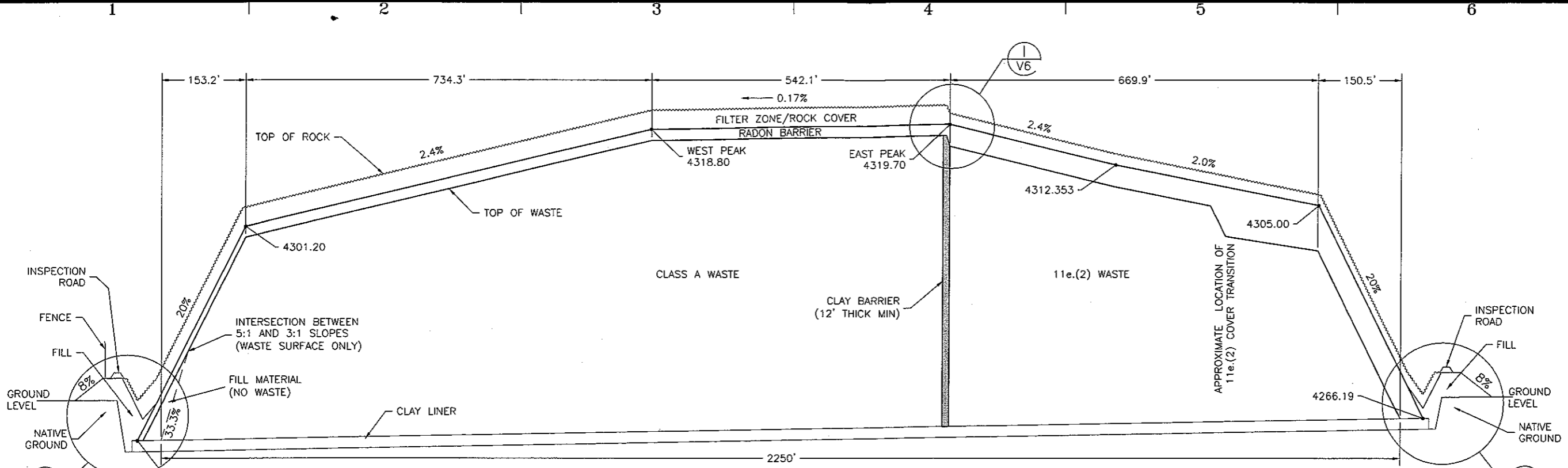
DATE	BY	DESCRIPTION OF CHANGE
6/9/09	DFB	INCREASED CLAY BARRIER THICKNESS & GW MONITORING
1/4/08	DFB	ISSUED FOR PERMITTING

ENERGYSOLUTIONS
CLIVE FACILITY
CLASS A SOUTH/11e.(2) DISPOSAL CELL
CELL COVER LAYOUT
CLIVE, UTAH

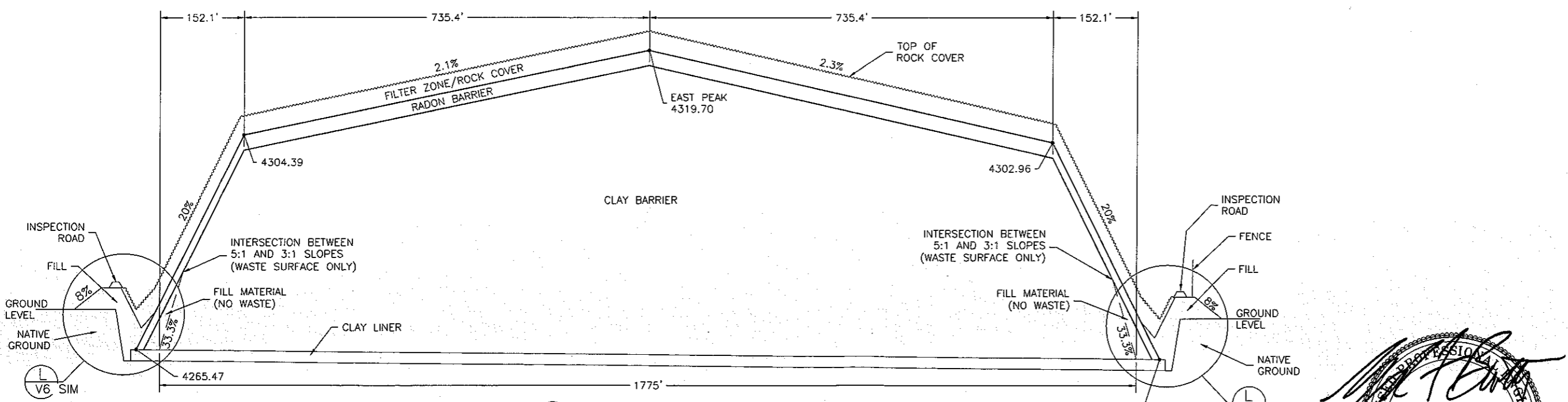
DESIGNED BY	D. BOOTH
CHECKED BY	G. DUTSON
APPROVED BY	D. BOOTH
SCALE	AS NOTED
DATE	01/04/08

07021
V2

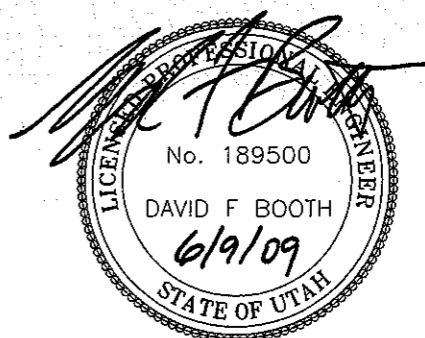
CLIVE MONUMENT
N 10000.00
E 10000.00
EL 4269.76



A WEST-EAST CROSS SECTION
 HORIZONTAL SCALE: 1" = 200'
 VERTICAL SCALE: 1" = 20'



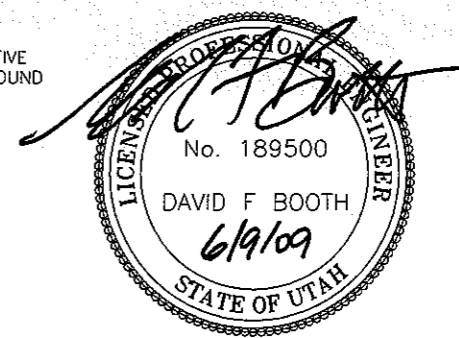
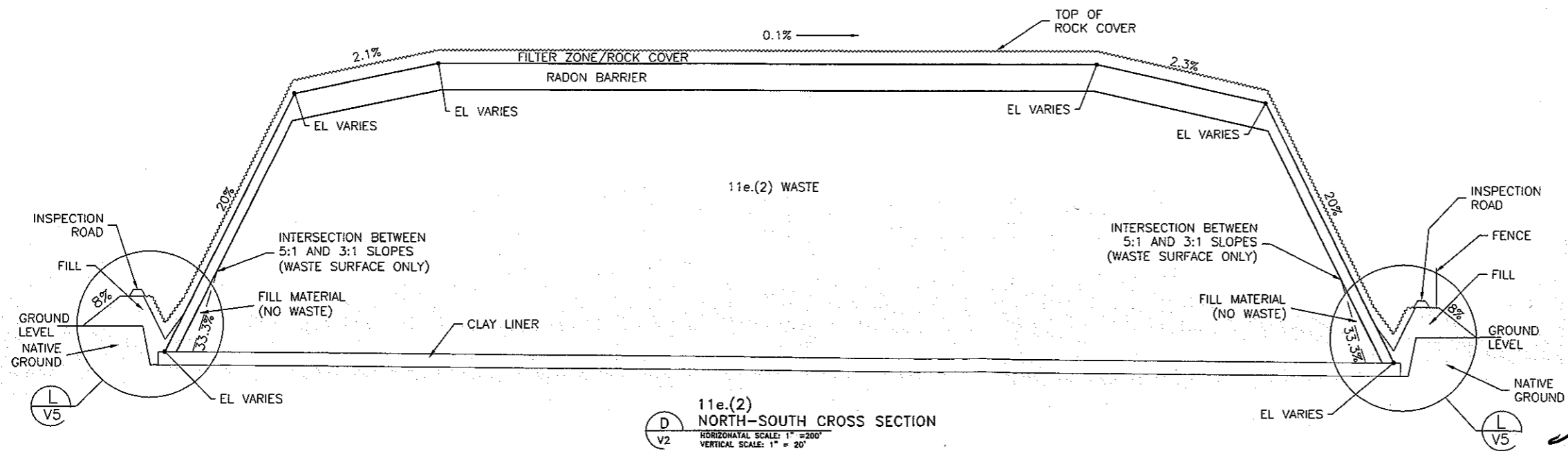
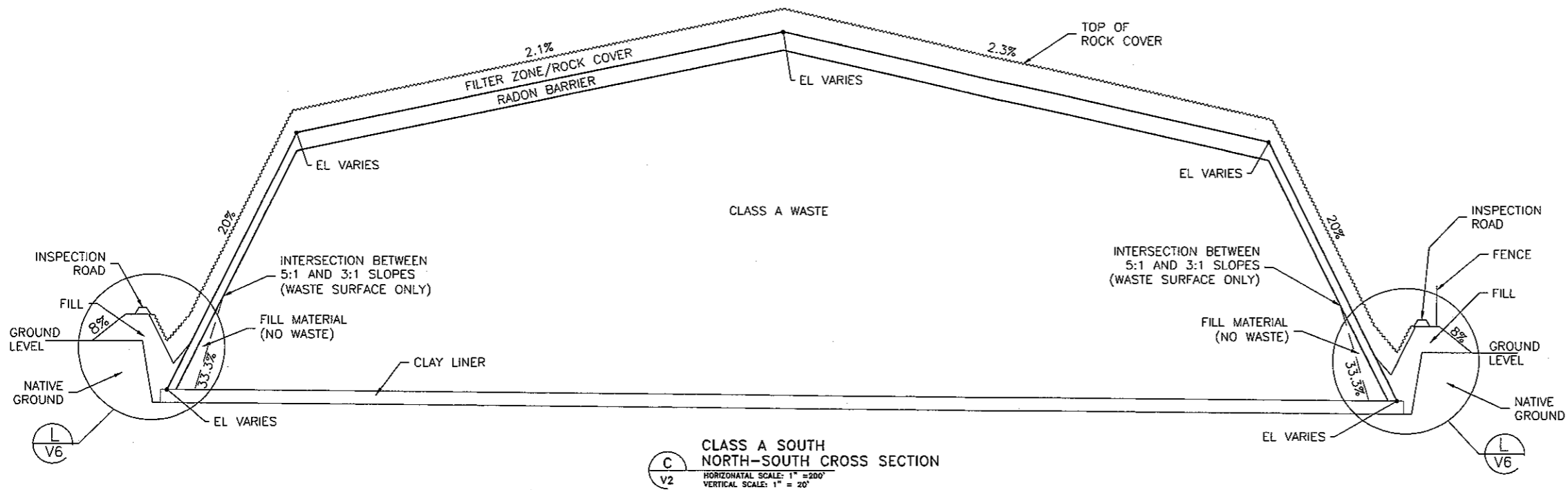
B NORTH-SOUTH CROSS SECTION
 HORIZONTAL SCALE: 1" = 200'
 VERTICAL SCALE: 1" = 20'



DATE	BY	DESCRIPTION OF CHANGE
6/9/08	DFB	INCREASED CLAY BARRIER THICKNESS & GW MONITORING
1/4/08	DFB	ISSUED FOR PERMITTING

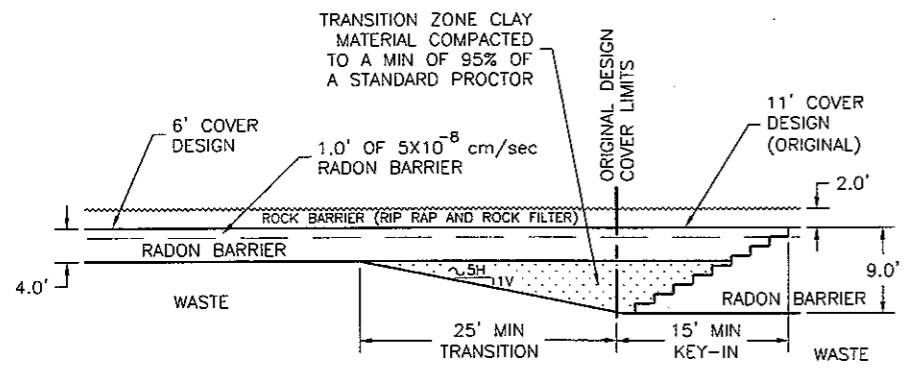
ENERGYSOLUTIONS
 CLIVE FACILITY
 CLASS A SOUTH/11e.(2) DISPOSAL CELL
 CELL CROSS SECTIONS 1 OF 2
 CLIVE, UTAH

DESIGNED BY	D. BOOTH
CHECKED BY	G. DUTSON
PROVED BY	D. BOOTH
DATE	01/04/08
SCALE	NTS
PROJECT NO.	07021 V3

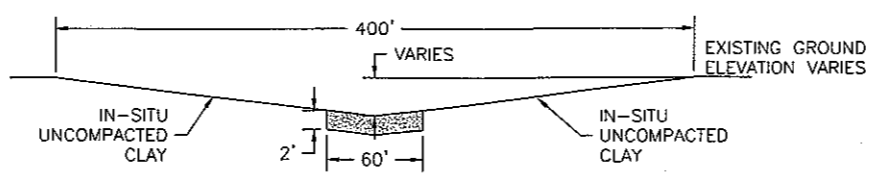


ENERGYSOLUTIONS	
CLIVE FACILITY	
CLASS A SOUTH/11e.(2) DISPOSAL CELL	
CELL CROSS SECTIONS 2 OF 2	
CLIVE, UTAH	
DATE	BY
1/4/08	DFB
ISSUED FOR PERMITTING	
DATE	
BY	
DESCRIPTION OF CHANGE	
DATE	BY
01/04/08	NTS
07021	
V4	

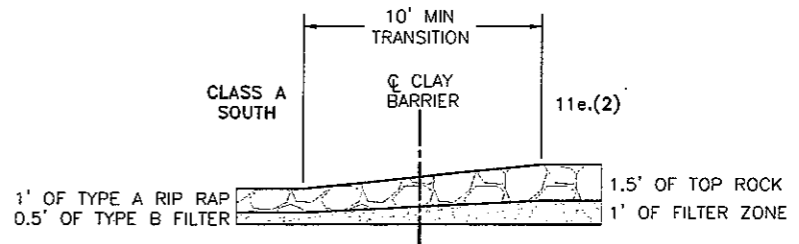
DATE	BY
01/04/08	NTS
07021	
V4	



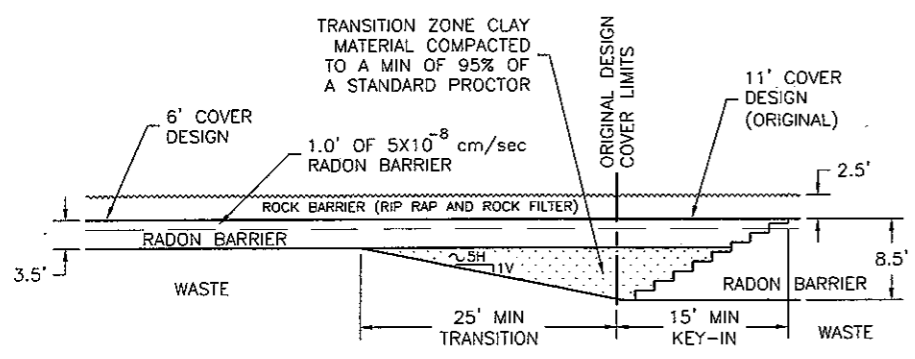
11e.(2) TOP SLOPE COVER TRANSITION
 (F) V2 NOT TO SCALE



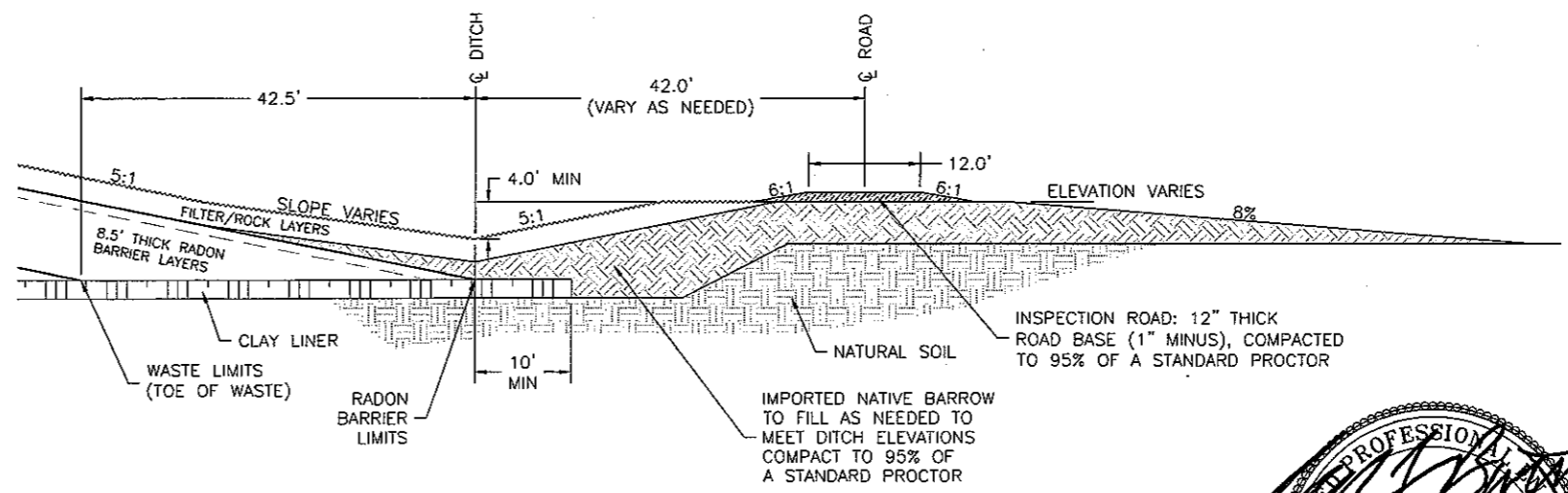
(J) V1 DISPERSION DITCH CROSS SECTION
 HORIZONTAL SCALE: 1" = 120'
 VERTICAL SCALE: 1" = 20'



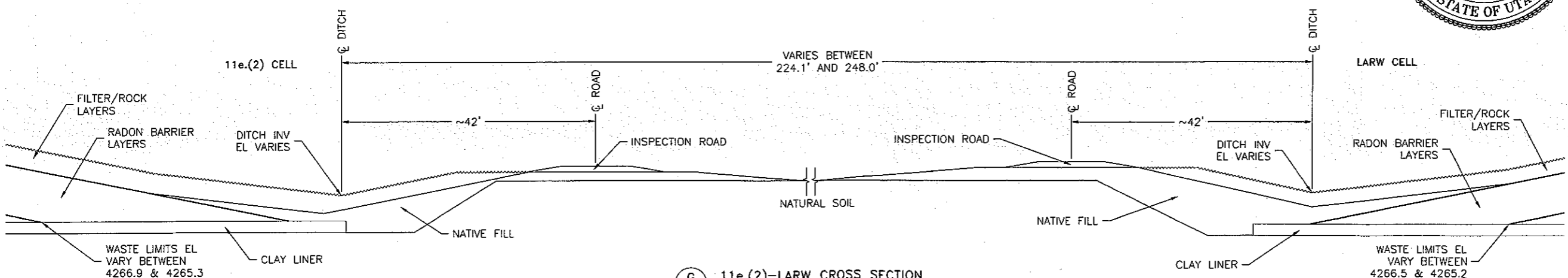
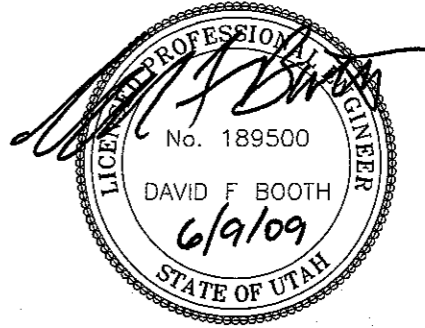
(N) V1 DITCH SIDE SLOPE TRANSITION OUTSIDE OF CENTERLINE
 HORIZONTAL SCALE: 1" = 8'



11e.(2) SIDE SLOPE COVER TRANSITION
 (E) V2 NOT TO SCALE



(K) V3 ORIGINAL DITCH CROSS SECTION
 10 0 10 20



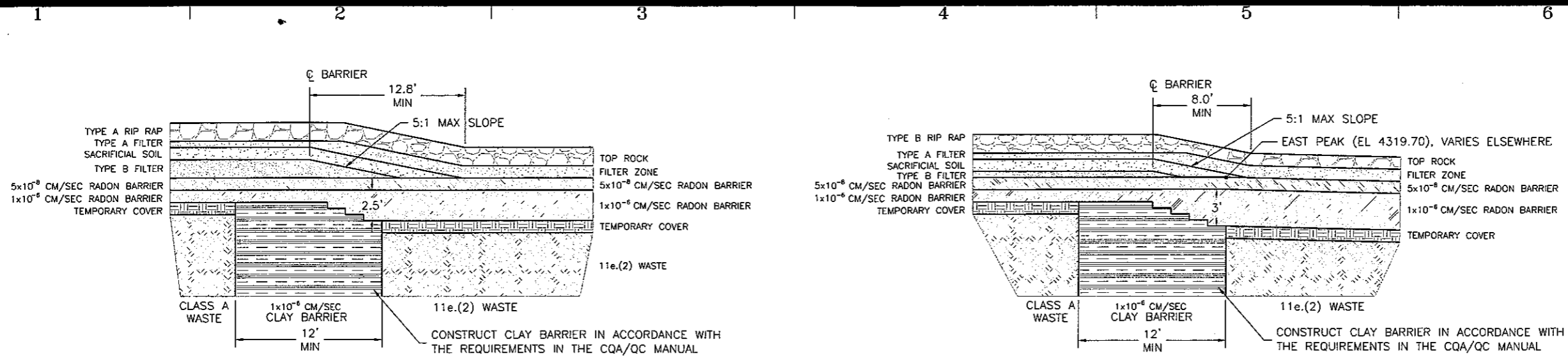
(G) V2 11e.(2)-LARW CROSS SECTION
 10 0 10 20

ENERGYSOLUTIONS

CLIVE FACILITY
 CLASS A SOUTH/11e.(2) DISPOSAL CELL
 CELL CONSTRUCTION DETAILS 1 OF 2
 CLIVE, UTAH

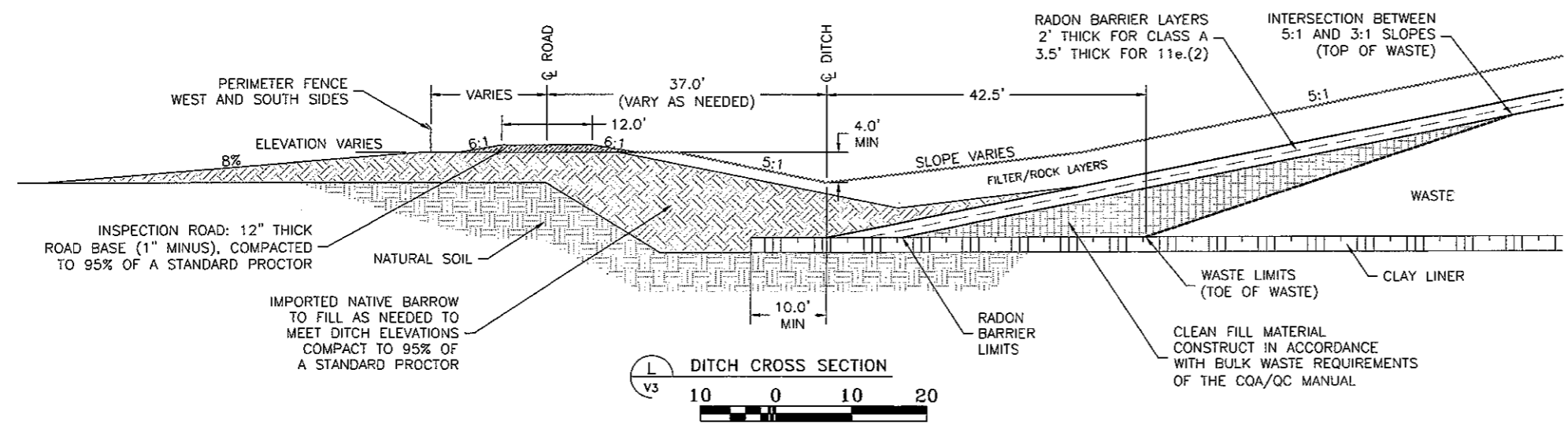
DESIGNED BY	D. BOOTH
CHECKED BY	G. DUTSON
APPROVED BY	D. BOOTH
SCALE	NTS
DATE	01/04/08
PROJECT NO.	07021
	V5

1/4/08 DATE BY DESCRIPTION OF CHANGE

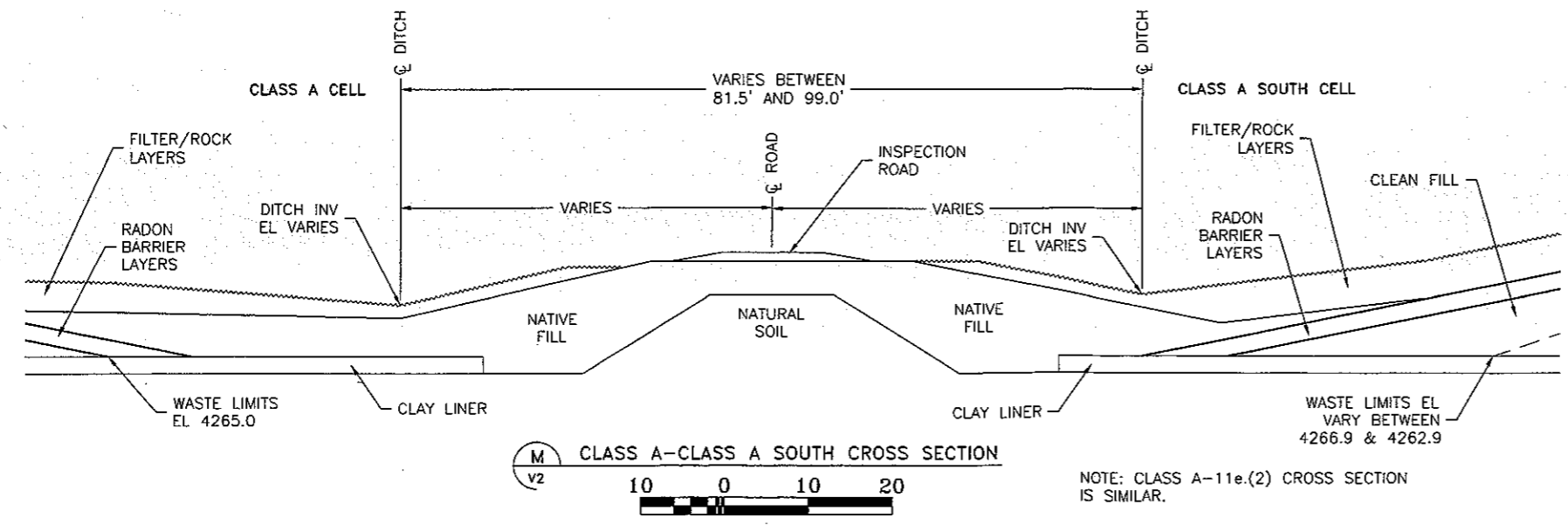


H SIDE SLOPE COVER TRANSITION @ CLAY BARRIER
SCALE: 1" = 10'

I TOP SLOPE COVER TRANSITION @ CLAY BARRIER
SCALE: 1" = 10'

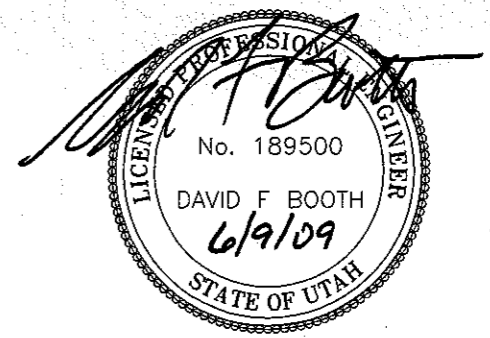


L DITCH CROSS SECTION
SCALE: 1" = 10'



M CLASS A - CLASS A SOUTH CROSS SECTION
SCALE: 1" = 10'

NOTE: CLASS A-11e.(2) CROSS SECTION IS SIMILAR.



DATE	BY	DESCRIPTION OF CHANGE
6/9/09	DFB	INCREASED CLAY BARRIER THICKNESS
1/4/08	DFB	ISSUED FOR PERMITTING

ENERGYSOLUTIONS
CLIVE FACILITY
CLASS A SOUTH/11e.(2) DISPOSAL CELL
CELL CONSTRUCTION DETAILS 2 OF 2
CLIVE, UTAH

DESIGNED BY	D. BOOTH
CHECKED BY	G. DUTSON
APPROVED BY	D. BOOTH
DATE	01/04/08
PROJECT NO.	07021
REV.	V6

11e.(2) COVER DESIGNS

ROCK
12" THICK TOP ROCK
12" THICK FILTER ZONE
12" OF 5 X 10⁻⁸ CM/SEC RADON BARRIER

CLAY
3' OF 1 X 10⁻⁵ CM/SEC RADON BARRIER

4 11e.(2) TOP SLOPES
V2

ROCK
12" THICK TOP ROCK
12" THICK FILTER ZONE
12" OF 5 X 10⁻⁸ CM/SEC RADON BARRIER

CLAY
8' OF 1 X 10⁻⁵ CM/SEC RADON BARRIER

6 11e.(2) TOP SLOPES
V2 ORIGINAL DESIGN

ROCK
18" THICK SIDE ROCK
12" THICK FILTER ZONE
NATURAL GROUND OR IMPORTED NATIVE BARROW MATERIAL

8 PERIMETER DITCH
V2 OUTSIDE SLOPE ONLY

ROCK
18" THICK SIDE ROCK
12" THICK FILTER ZONE
12" OF 5 X 10⁻⁸ CM/SEC RADON BARRIER

CLAY
2.5' OF 1 X 10⁻⁵ CM/SEC RADON BARRIER

5 11e.(2) SIDE SLOPES
V2

ROCK
18" THICK SIDE ROCK
12" THICK FILTER ZONE
12" OF 5 X 10⁻⁸ CM/SEC RADON BARRIER

CLAY
7.5' OF 1 X 10⁻⁵ CM/SEC RADON BARRIER

7 11e.(2) SIDE SLOPES
V2 ORIGINAL DESIGN

GRADATIONS - ASTM C-136

TOP ROCK
D₁₀₀ 2-1/2 TO 4-1/2 INCHES
D₅₀ 1-1/8 TO 3 INCHES
D₁₅ 3/4 TO 1-1/2 INCHES

SIDE ROCK
D₁₀₀ 12 TO 16 INCHES
D₉₅ 8 TO 12 INCHES
D₅₀ 4-1/2 TO 8 INCHES
D₁₅ 2 TO 4 INCHES

FILTER ZONE
D₁₀₀ = 1.5 TO 3.0 INCHES
D₈₅ = 1.0 TO 2.5 INCHES
D₅₀ = 0.75 TO 2.0 INCHES
D₁₅ = 0.3125 TO 0.625 INCHES
D₁₀ >= #10 SIEVE (2.0 mm)
D₅ >= #200 SIEVE (0.074 mm)

CLASS A SOUTH COVER DESIGNS

12" THICK TYPE A RIP RAP
6" THICK TYPE A FILTER ZONE
NATURAL GROUND OR IMPORTED NATIVE BARROW MATERIAL

1 PERIMETER DITCH
V2 OUTSIDE SLOPE ONLY

ROCK
18" THICK TYPE B RIP RAP
6" THICK TYPE A FILTER ZONE
12" THICK SACRIFICIAL SOIL
6" THICK TYPE B FILTER ZONE

CLAY
12" OF 5 X 10⁻⁸ CM/SEC RADON BARRIER
12" OF 1 X 10⁻⁵ CM/SEC RADON BARRIER

2 CLASS A SOUTH TOP SLOPES
V2

ROCK
18" THICK TYPE A RIP RAP
6" THICK TYPE A FILTER ZONE
12" THICK SACRIFICIAL SOIL
18" THICK TYPE B FILTER ZONE

CLAY
12" OF 5 X 10⁻⁸ CM/SEC RADON BARRIER
12" OF 1 X 10⁻⁵ CM/SEC RADON BARRIER

3 CLASS A SOUTH SIDE SLOPES
V2

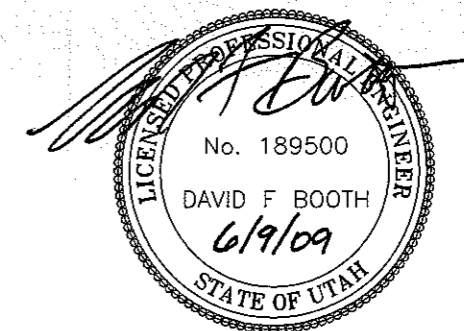
GRADATIONS - ASTM C-136

TYPE A RIP RAP
D₁₀₀ <= 16 INCH
D₉₀ <= 12 INCH
D₅₀ >= 4-1/2 INCH
D₁₀ >= 2 INCH
D₅ >= NO. 200 SIEVE

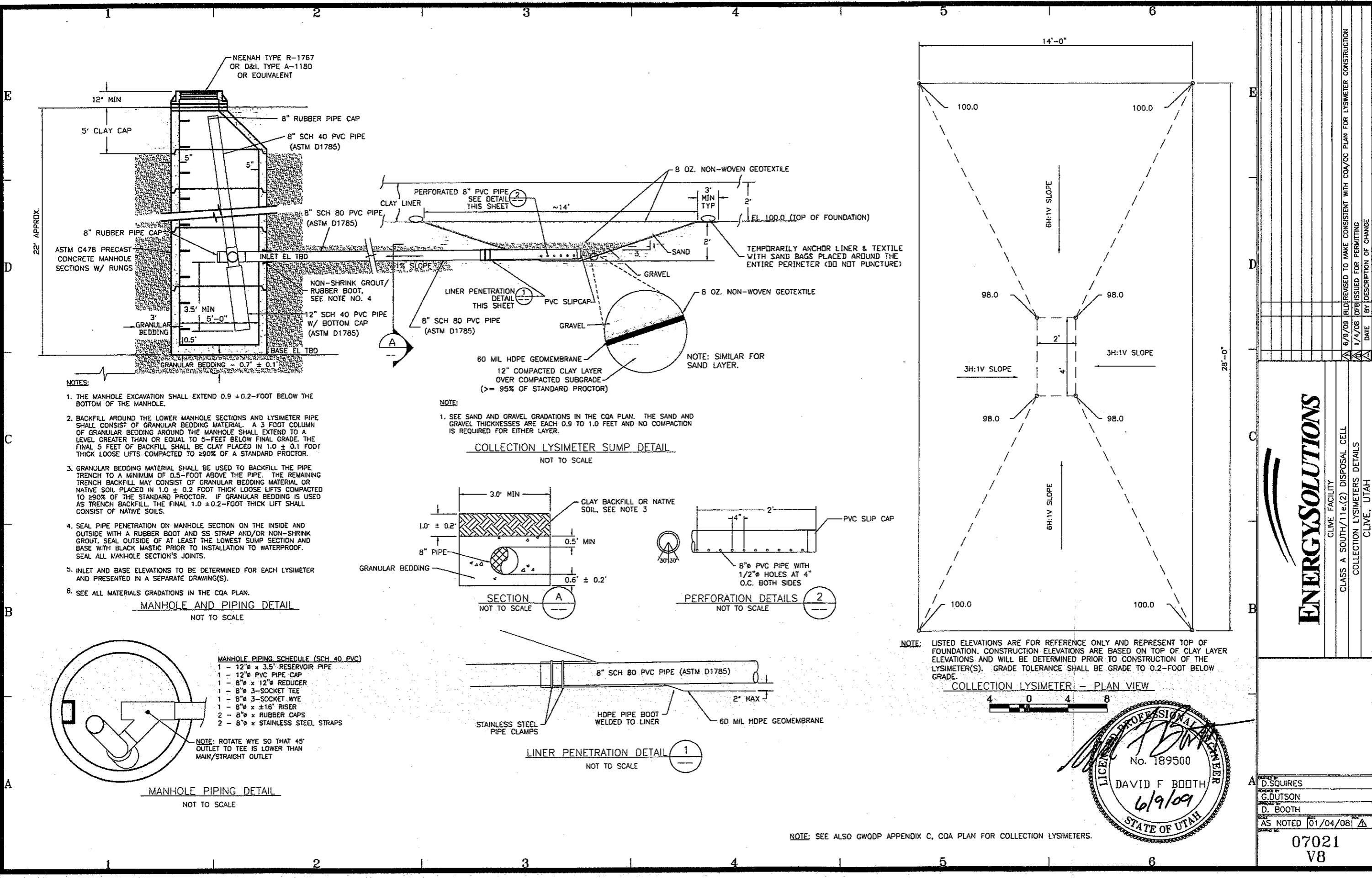
TYPE B RIP RAP
D₁₀₀ <= 4-1/2 INCH
D₅₀ >= 1-1/4 INCH
D₁₀ >= 3/4 INCH
D₅ >= NO. 200 SIEVE

TYPE A FILTER ZONE
D₁₀₀ <= 6 INCH
D₇₀ <= 3 INCH
D₅₀ <= 1.57 INCH (40 mm)
D₁₅ <= .85 INCH (22 mm)
D₁₀ >= NO. 10 SIEVE (2mm)
D₅ >= NO. 200 SIEVE

TYPE B FILTER & SACRIFICIAL SOIL
TYPE B FILTER & SACRIFICIAL SOIL MATERIAL GRADATIONS ARE DETERMINED BY THE FOLLOWING SPECIFICATION:
D₁₅ (MAX) FILTER
D₈₅ (MIN) SOIL MUST BE < 5
D₅₀ (MAX) FILTER
D₅₀ (MIN) SOIL MUST BE ≤ 25
TYPE B FILTER MIN PERMEABILITY = 3.5 cm/sec
SACRIFICIAL SOIL MIN MOISTURE @ 15 atm = 3.5%



DATE	1/4/08	BY	DFB	ISSUED FOR	PERMITTING
DATE		BY		DESCRIPTION OF	CHANGE
CLIVE FACILITY CLASS A SOUTH/11e.(2) DISPOSAL CELL COVER CROSS SECTIONS AND GRADATIONS CLIVE, UTAH					
DESIGNED BY	D. BOOTH				
CHECKED BY	G. DUTSON				
APPROVED BY	D. BOOTH				
SCALE	NTS	DATE	01/04/08	PROJECT	07021
					V7

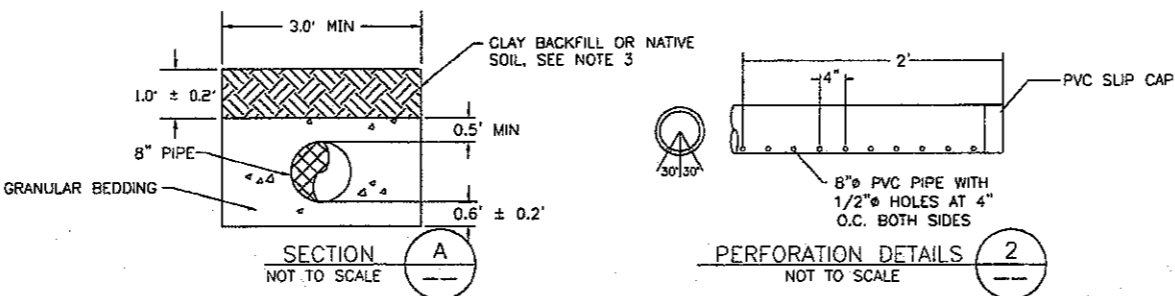


- NOTES:**
1. THE MANHOLE EXCAVATION SHALL EXTEND 0.9 ± 0.2-FOOT BELOW THE BOTTOM OF THE MANHOLE.
 2. BACKFILL AROUND THE LOWER MANHOLE SECTIONS AND LYSIMETER PIPE SHALL CONSIST OF GRANULAR BEDDING MATERIAL. A 3 FOOT COLUMN OF GRANULAR BEDDING AROUND THE MANHOLE SHALL EXTEND TO A LEVEL GREATER THAN OR EQUAL TO 5- FEET BELOW FINAL GRADE. THE FINAL 5 FEET OF BACKFILL SHALL BE CLAY PLACED IN 1.0 ± 0.1 FOOT THICK LOOSE LIFTS COMPACTED TO ≥90% OF A STANDARD PROCTOR.
 3. GRANULAR BEDDING MATERIAL SHALL BE USED TO BACKFILL THE PIPE TRENCH TO A MINIMUM OF 0.5-FOOT ABOVE THE PIPE. THE REMAINING TRENCH BACKFILL MAY CONSIST OF GRANULAR BEDDING MATERIAL OR NATIVE SOIL PLACED IN 1.0 ± 0.2 FOOT THICK LOOSE LIFTS COMPACTED TO ≥90% OF THE STANDARD PROCTOR. IF GRANULAR BEDDING IS USED AS TRENCH BACKFILL, THE FINAL 1.0 ± 0.2-FOOT THICK LIFT SHALL CONSIST OF NATIVE SOILS.
 4. SEAL PIPE PENETRATION ON MANHOLE SECTION ON THE INSIDE AND OUTSIDE WITH A RUBBER BOOT AND SS STRAP AND/OR NON-SHRINK GROUT. SEAL OUTSIDE OF AT LEAST THE LOWEST SUMP SECTION AND BASE WITH BLACK MASTIC PRIOR TO INSTALLATION TO WATERPROOF. SEAL ALL MANHOLE SECTION'S JOINTS.
 5. INLET AND BASE ELEVATIONS TO BE DETERMINED FOR EACH LYSIMETER AND PRESENTED IN A SEPARATE DRAWING(S).
 6. SEE ALL MATERIALS GRADATIONS IN THE COA PLAN.

MANHOLE AND PIPING DETAIL
NOT TO SCALE

- NOTE:**
1. SEE SAND AND GRAVEL GRADATIONS IN THE COA PLAN. THE SAND AND GRAVEL THICKNESSES ARE EACH 0.9 TO 1.0 FEET AND NO COMPACTION IS REQUIRED FOR EITHER LAYER.

COLLECTION LYSIMETER SUMP DETAIL
NOT TO SCALE



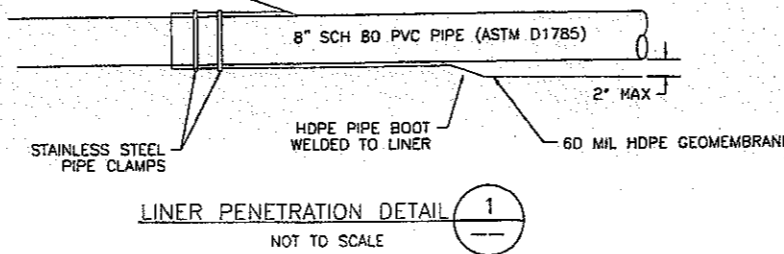
SECTION A
NOT TO SCALE

PERFORATION DETAILS 2
NOT TO SCALE

- MANHOLE PIPING SCHEDULE (SCH 40 PVC)**
- 1 - 12" x 3.5' RESERVOIR PIPE
 - 1 - 12" PVC PIPE CAP
 - 1 - 8" x 12" REDUCER
 - 1 - 8" 3-SOCKET TEE
 - 1 - 8" 3-SOCKET WYE
 - 1 - 8" x ±18" RISER
 - 2 - 8" x RUBBER CAPS
 - 2 - 8" x STAINLESS STEEL STRAPS

NOTE: ROTATE WYE SO THAT 45° OUTLET TO TEE IS LOWER THAN MAIN/STRAIGHT OUTLET

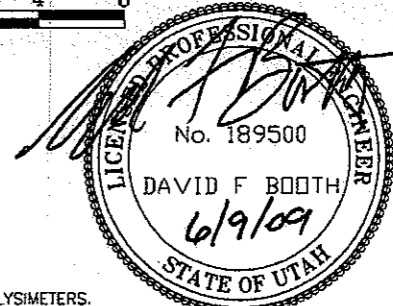
MANHOLE PIPING DETAIL
NOT TO SCALE



LINER PENETRATION DETAIL 1
NOT TO SCALE

NOTE: LISTED ELEVATIONS ARE FOR REFERENCE ONLY AND REPRESENT TOP OF FOUNDATION. CONSTRUCTION ELEVATIONS ARE BASED ON TOP OF CLAY LAYER ELEVATIONS AND WILL BE DETERMINED PRIOR TO CONSTRUCTION OF THE LYSIMETER(S). GRADE TOLERANCE SHALL BE GRADE TO 0.2-FOOT BELOW GRADE.

COLLECTION LYSIMETER - PLAN VIEW



NOTE: SEE ALSO GWDP APPENDIX C, COA PLAN FOR COLLECTION LYSIMETERS.

ENERGYSOLUTIONS
CLIVE FACILITY
CLASS A SOUTH/11e.(2) DISPOSAL CELL
COLLECTION LYSIMETERS DETAILS
CLIVE, UTAH

DATE	DESCRIPTION OF CHANGE
6/9/09	REVISION TO MAKE CONSISTENT WITH COA/CC PLAN FOR LYSIMETER CONSTRUCTION
1/4/08	ISSUED FOR PERMITTING

DATE: 01/04/08

AS NOTED

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