Butler County, Kansas

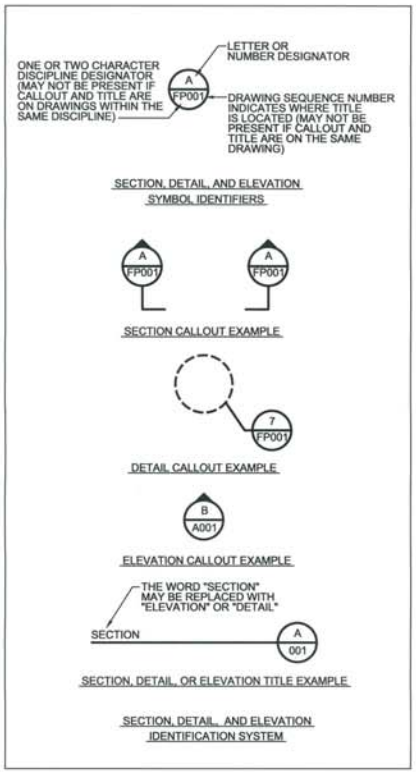
Sanitary Landfill Horizontal and Vertical Expansion Permit Modification

March 2013

67062

2963 SW 40TH STREET
EL DORADO, KANSAS 67042

VICINITY MAP
NOT TO SCALE



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DWG. NO.	TITLE
R001	EXISTING GAS COLLECTION SYSTEM

CHRISTOPHER J. MCDONNELL — LICENSED — 18304 — KANSAS PROFESSIONAL ENGINEER — 1/9/2015

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	DBN	SAM	KDHE COMMENTS

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ABBREVIATIONS

APPROX.	APPROXIMATELY
AVE.	AVENUE
℄	CENTERLINE
BV	BALL VALVE
C & D	CONSTRUCTION AND DEMOLITION
CM	CENTIMETER
CMP	CORRUGATED METAL PIPE
CO	LEACHATE COLLECTION CLEANOUT
CONC.	CONCRETE
CONT.	CONTINUED
CTR	CENTER
CU.	CUBIC
DIA.	DIAMETER
DWG.	DRAWING
E	EAST / EASTING
ECC	ECCENTRIC
EL.	ELEVATION
EX.	EXISTING
°F	FAHRENHEIT
FM	FORCEMAIN OR FLOWMETER
FML	FLEXIBLE MEMBRANE LINER
FRP	FIBERGLASS-REINFORCED PLASTIC
FT.	FOOT, FEET
GALV.	GALVANIZED
GCL	GEOSYNTHETIC CLAY LINER
GPM	GALLONS PER MINUTE
HDPE	HIGH DENSITY POLYETHYLENE
HV	HORIZONTAL VERTICAL
INC.	INCORPORATED
ID	IDENTIFICATION
I.D.	INSIDE DIAMETER
INV.	INVERT
KDHE	KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT
KDOT	KANSAS DEPARTMENT OF TRANSPORTATION
LBS	POUNDS
LC	LEACHATE COLLECTION
L.F.	LINEAR FEET
LFG	LANDFILL GAS
LRFM	LEACHATE RECIRCULATION FORCE MAIN
MAX.	MAXIMUM
MIL	MILLI-INCH
NE	NORTHEAST
NO.	NUMBER
NPT	NATIONAL PIPE THREAD
NW	NORTHWEST

ABBREVIATIONS (CONT.)

O.D.	OUTSIDE DIAMETER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OZ	OUNCE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
R	RANGE OR RADIUS
RCAP	REINFORCED CONCRETE ARCH PIPE
R/W	RIGHT-OF-WAY
REV.	REVISION
RGS	RIGID GALVANIZED STEEL
SBR	STYRENE-BUTADIENE RUBBER
SCH	SCHEDULE
SDR	STANDARD DENSITY RATIO
SE	SOUTHEAST
SEC	SECOND OR SECTION
S	SOUTH OR SLOPE
SS	SANITARY SEWER
S.S.	STAINLESS STEEL
ST.	STREET
STD.	STANDARD
SY	SQUARE YARD
SW	SOUTHWEST
T	TOWNSHIP
TRM	TURF REINFORCEMENT MAT
TYP.	TYPICAL
W	WEST
W/	WITH
W.S.	WATER SURFACE ELEVATION
WT	WEIGHT
YDS.	YARDS
YD 2	SQUARE YARD

LEGEND

- PROPERTY BOUNDARY
- RIGHT OF WAY
- ROADS
- FENCE
- CELL LINER EXTENT
- LC — LEACHATE COLLECTION LINE
- 4352 — 2' CONTOUR LINES
- 4350 — 10' CONTOUR LINES
- FML, GEOMEMBRANE, GCL OR GEOTEXTILE
- DRAINAGE TERRACE
- 4352 — EXISTING 10' CONTOUR
- 4350 — EXISTING 2' CONTOUR
- LRFM — LEACHATE RECIRCULATION FORCEMAIN LINE
- LS-201 — LEACHATE SEWER LINE
- G — LFG HEADER
- HDPE SDR11 AIR LINE
- CENTERLINE
- XXXXXXXXXXX DOUBLE-SIDED DRAINAGE GEOCOMPOSITE OR GEONET GEOTEXTILE
- AGGREGATE ROAD BASE, CLEAN AGGREGATE BEDDING MATERIAL OR PRIMARY FILTER PACK
- PROTECTIVE COVER
- GRANULAR DRAINAGE MATERIAL
- RIPRAP
- COMPACTED SOIL LINER
- CONCRETE
- WASTE
- PREPARED SUBGRADE/COMPACTED EARTH
- SOIL BACKFILL MATERIAL
- NOMINALLY COMPACTED SOIL
- DRAINAGE LAYER, SAND OR SECONDARY FILTER PACK
- VEGETATIVE SOIL OR TOPSOIL
- RAILROAD BALLAST
- OPEN GRADED CLEAN ROCK
- BENTONITE
- PROTECTIVE COVER SAND WINDOWS

LEGEND (CONT.)

- BM-1 △ CONTROL POINT
- MONITORING WELL
- PIEZOMETER
- GAS RECOVERY
- LIFT STATION
- CS-1 ● CONDENSATE SUMP
- FUTURE LFG BLOWER FLARE STATION
- BH-1 ● BORE HOLES
- TEST PIT
- MH-1 ● MANHOLE
- 1264.2 × SPOT ELEVATION
- SIGN
- LFG WELLHEAD
- GAS MONITORING PROBES

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date MARCH 2013	detailed M. COCHRAN
designed S. MARTIN	checked C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

LEGEND AND ABBREVIATIONS

project 67062	contract
drawing G001	rev. 1
sheet 2 of 29 sheets	
file 67062LF EXPG001PD.dwg	

CHRISTOPHER J. LOCKHART 18304 LICENSED PROFESSIONAL ENGINEER Kansas 1/9/2015

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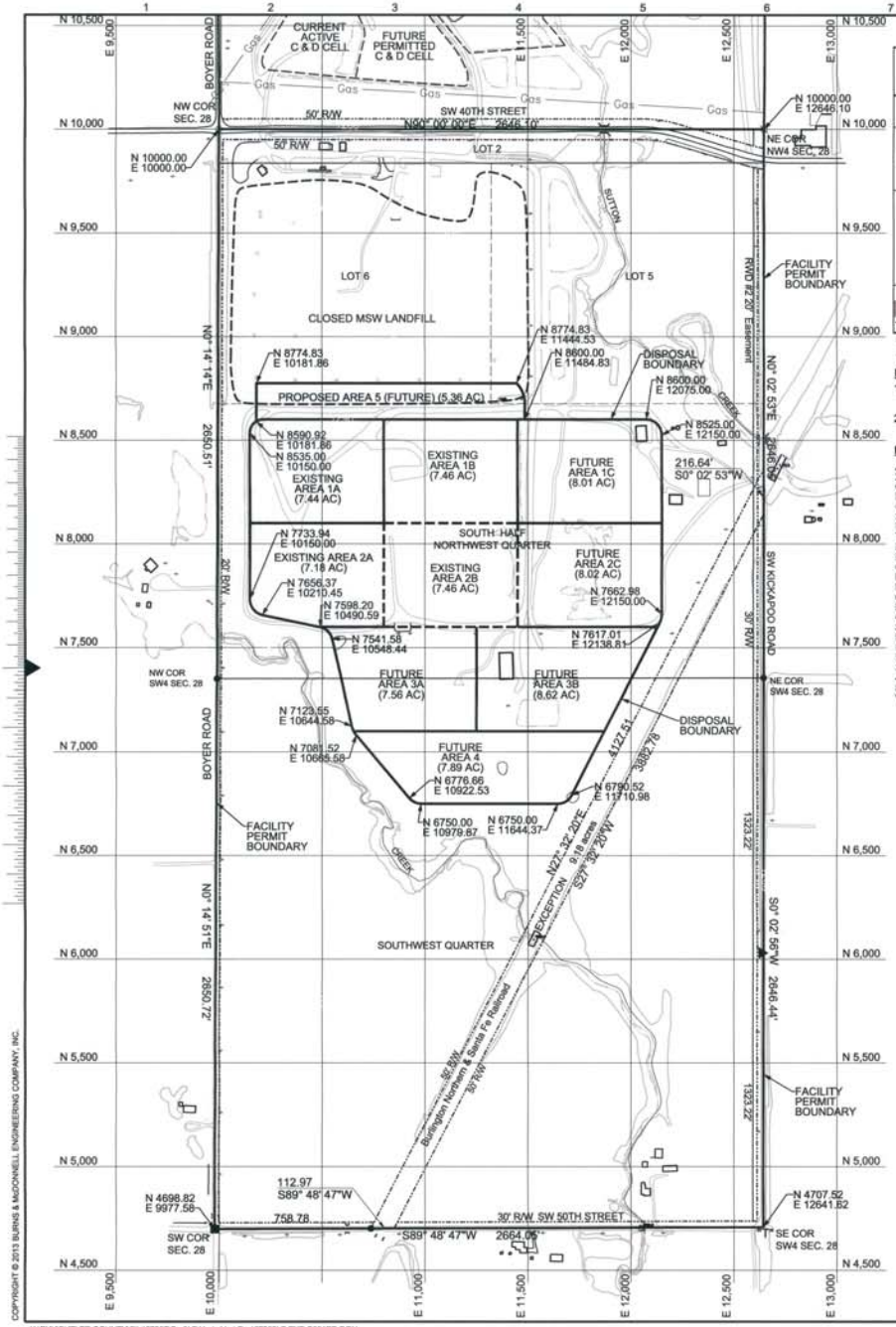

BUTLER COUNTY SANITARY LANDFILL - AREA / CAPACITY TABLE

Development Phase		Development Area	Gross Capacity (CY)	Final Cover Volume (CY)	Leachate Drainage & Protective Cover Volume (CY)	Net Capacity (CY)**	Additional Information
Closed	Pre-Subtitle D	33.5 Acres	1,892,461	135,117	-	1,757,344	Closed in 1996, Net Capacity calculated based on historical engineering calculations
Existing	Area 1A	7.4 Acres	2,534,210	43,073	24,613	2,263,465	Constructed in 1996, CQA Approved in 1996
	Area 2A	7.5 Acres		43,655	24,946		Constructed in 1999, CQA Approved 2000
	Area 1B	7.2 Acres		41,909	23,948		Constructed in 2003-2004, CQA Approved 2004
	Area 2B	7.5 Acres		43,655	24,946		Constructed in 2009-2010, CQA Approved 2010
Future	Area 5	5.2 Acres	1,258,439	30,268	8,648	1,219,524	Not Yet Constructed
	Area 1C	8.0 Acres	711,727	46,565	26,609	638,553	Not Yet Constructed
	Area 2C	8.0 Acres	1,713,186	46,565	26,609	1,640,011	Not Yet Constructed
	Area 3A	7.6 Acres	908,942	44,237	25,278	839,427	Not Yet Constructed
	Area 3B	8.6 Acres	2,693,779	50,058	28,604	2,615,116	Not Yet Constructed
	Area 4	7.9 Acres	1,403,875	45,983	26,276	1,331,615	Not Yet Constructed
		108.4 Acres	**13,116,618**	**571,086**	**240,477**	**12,305,055**	
Temporary Leachate Pond		0.63 Acres	**6,055**			**3,463*** **	Constructed in 2003-2004, CQA Approved 2004

**Less Final Cover, Protective cover and Leachate Drainage Layer

*** Leachate Pond Net Capacity is based inclusion of the volume below freeboard elevation and subtracting approx. 1 foot of pond depth for sediment accumulation

NOTE:

1. REFER TO INTERMEDIATE PHASING DRAWINGS C006 THROUGH C009 FOR ADDITIONAL INFORMATION RELATED TO DISPOSAL PHASING AND CAPACITY.
2. DUE TO THE OVERLAP OF THE PRE-SUBTITLE D AREA AND AREA 5, THE ACTUAL GROSS DISPOSAL AREA IS APPROXIMATELY 106 ACRES.

LEGAL DESCRIPTION

A TRACT OF LAND LOCATED IN SECTION NUMBERED 28, TOWNSHIP NUMBERED 26 SOUTH, RANGE NUMBERED 5 EAST OF THE 6" PRINCIPAL MERIDIAN, BUTLER COUNTY, KANSAS MORE PARTICULARLY DESCRIBED AS: ALL OF GOVERNMENT LOTS NUMBERED 2, 5, AND 8, THE SOUTH HALF OF THE NORTHWEST QUARTER OF SAID SECTION NUMBERED 28 AND ALL OF THE SOUTHWEST QUARTER OF SAID SECTION NUMBERED 28. ALSO KNOWN AS THE WEST HALF OF SECTION NUMBERED 28, TOWNSHIP NUMBERED 26 SOUTH, RANGE NUMBERED 5 EAST OF THE PRINCIPAL MERIDIAN, BUTLER COUNTY, KANSAS.
EXCEPT: THE RIGHT OF WAY FOR THE BURLINGTON & SANTA FE RAILROAD DESCRIBED AS: BEGINNING AT A POINT 758.78 FEET EAST OF THE SOUTHWEST CORNER OF THE SOUTHWEST QUARTER OF SAID SECTION NUMBERED 28, POINT BEING ON THE WESTERLY RIGHT OF WAY FOR THE BURLINGTON NORTHERN & SANTA FE RAILROAD AND THE SOUTH LINE OF SAID SOUTHWEST QUARTER, THENCE NORTH 27D 32' 20" EAST ON SAID RIGHT OF WAY A DISTANCE OF 4127.51 FEET TO A POINT ON THE EAST LINE OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF SAID SECTION NUMBERED 28, THENCE SOUTH 0D 02' 53" WEST ON SAID EAST LINE A DISTANCE OF 216.64 FEET TO THE EASTERLY RIGHT OF WAY OF THE BURLINGTON NORTHERN & SANTA FE RAILROAD, THENCE SOUTH 27D 32' 20" WEST ON SAID RIGHT OF WAY A DISTANCE OF 3882.78 FEET TO A POINT ON THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION NUMBERED 28, THENCE SOUTH 89D 48'47" WEST ON SAID SOUTH LINE A DISTANCE OF 112.97 FEET TO THE POINT OF BEGINNING. SAID TRACT CONTAINS 313.64 ACRES INCLUDING PUBLIC RIGHT OF WAY, RAILROAD EXCLUDED.

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

1. EXISTING TOPOGRAPHY WAS FLOWN ON APRIL 2, 2008 BY WESTERN AIR MAPS, INC., OVERLAND PARK, KANSAS.
2. REFER TO ALTERNATIVE FINAL COVER DESIGN - APPENDIX I FOR PROPOSED ALTERNATIVE SOIL STOCKPILE AREAS A AND B.
3. PROPERTY LINE, PROPERTY OWNERSHIP, AND EASEMENT SURVEYED INFORMATION WAS PROVIDED BY GOEDECKE ENGINEERING CO. - ROGER L. CUTSINGER, A REGISTERED LAND SURVEYOR IN THE STATE OF KANSAS, DATED JUNE 26, 2008 AND REVISED JULY 10, 2008 TO ADD PROPERTY OWNERS.
4. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF KANSAS, WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

NORTH

0 300' 600'
SCALE IN FEET

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MARCH 2013	M. COCHRAN
designed	checked
S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

SITE LAYOUT, LEGAL DESCRIPTION, AND AREA/CAPACITY SUMMARY

project	contract
67062	

drawing **C001** – rev. **1**

sheet 3 of 29 sheets

file 67062LF EXP C001PD.dgn

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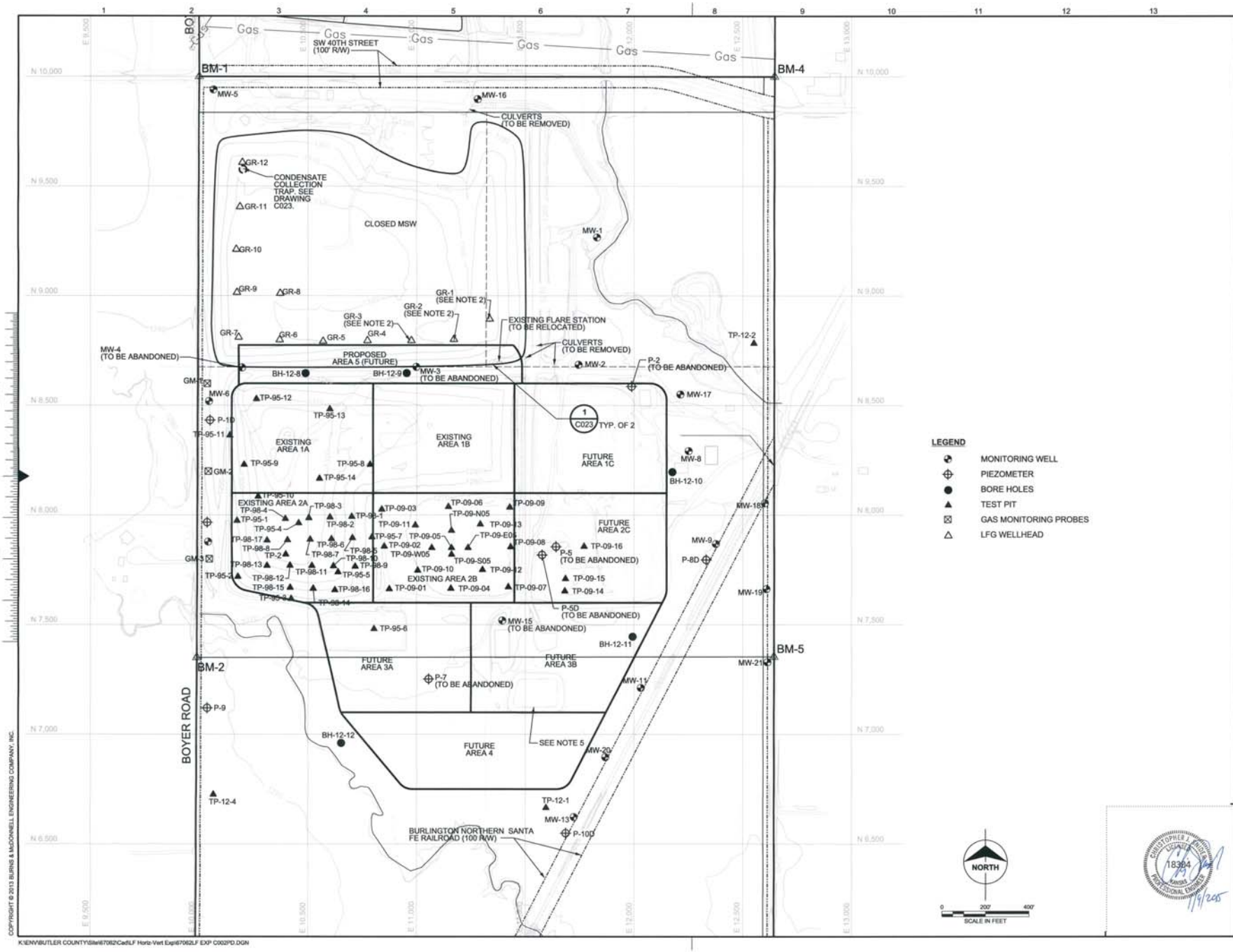

LEGEND

- MONITORING WELL
- PIEZOMETER
- BORE HOLES
- TEST PIT
- GAS MONITORING PROBES
- LFG WELLHEAD

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

1. EXISTING TOPOGRAPHY WAS FLOWN ON APRIL 2, 2008 BY WESTERN AIR MAPS, INC., OVERLAND PARK, KANSAS.
2. EXISTING GR-1, GR-2 AND GR-3 TO BE EXTENDED TO NEW GROUND SURFACE, SEE VERTICAL EXPANSION PLAN ON C009)
3. EXISTING FEATURES IDENTIFIED AS 'TO BE REMOVED', 'TO BE RELOCATED', OR 'TO BE ABANDONED' WILL OCCUR CORRESPONDING TO THE APPLICABLE CELL CONSTRUCTION ACTIVITY THAT WOULD NECESSITATE REMOVAL, RELOCATION, OR ABANDONMENT. FOR EXAMPLE, P-7 WILL BE ABANDONED CORRESPONDING TO THE COMMENCEMENT OF AREA 3A CELL CONSTRUCTION.
4. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF KANSAS ,WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.
5. EXISTING WELLHEADS IN THE SUBTITLE D LANDFILL FOOTPRINT ARE SHOWN ON DRAWING C010.
6. PRIOR TO THE COMMENCEMENT OF NEW CELL CONSTRUCTION ACTIVITIES, HISTORICAL GROUNDWATER ELEVATIONS SHALL BE REVIEWED TO DETERMINE IF THERE ARE ANY CONFLICTS WITH THE PERMITTED 5 FEET OF GROUNDWATER SEPARATION REQUIREMENT POLICY 02-02, REVISED IN MARCH 2008).

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BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

EXISTING CONDITIONS AND ABANDONMENT PLAN

project	contract
67062	

drawing **C002** — rev. **1**

sheet 4 of 29 sheets

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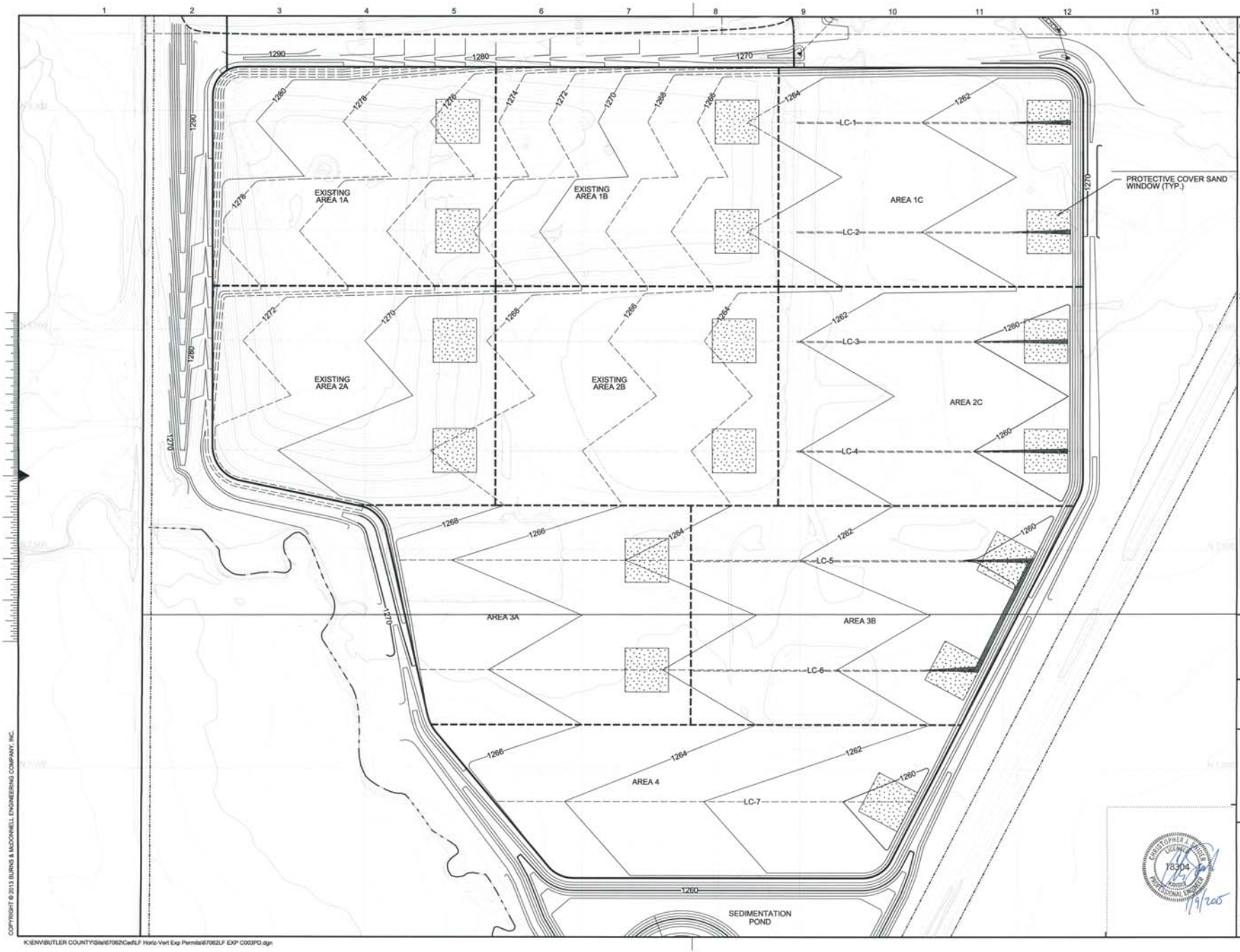

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

1. THE EXISTING PERMITTED BASE GRADES WERE DEVELOPED IN 1995 AND APPROVED BY KDHE IN 1996. MODIFICATIONS TO THE EXISTING PERMITTED BASE GRADES ARE NOT BEING REQUESTED IN THIS MODIFICATION.
2. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF KANSAS, WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.
3. PRIOR TO THE COMMENCEMENT OF NEW CELL CONSTRUCTION ACTIVITIES, HISTORICAL GROUNDWATER ELEVATOR SHALL BE REVIEWED TO DETERMINE IF THERE ARE CONFLICTS WITH THE PERMITTED 5 FEET OF GROUNDWATER SEPARATION REQUIREMENT (KDHE POLICY 02-02, REVISED IN MARCH 2008).

NORTH

0 100' 200'
SCALE IN FEET

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BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

EXISTING PERMITTED BASE GRADE

project	contract
67062	

drawing **C003** – rev. **1**

sheet 5 of 29 sheets

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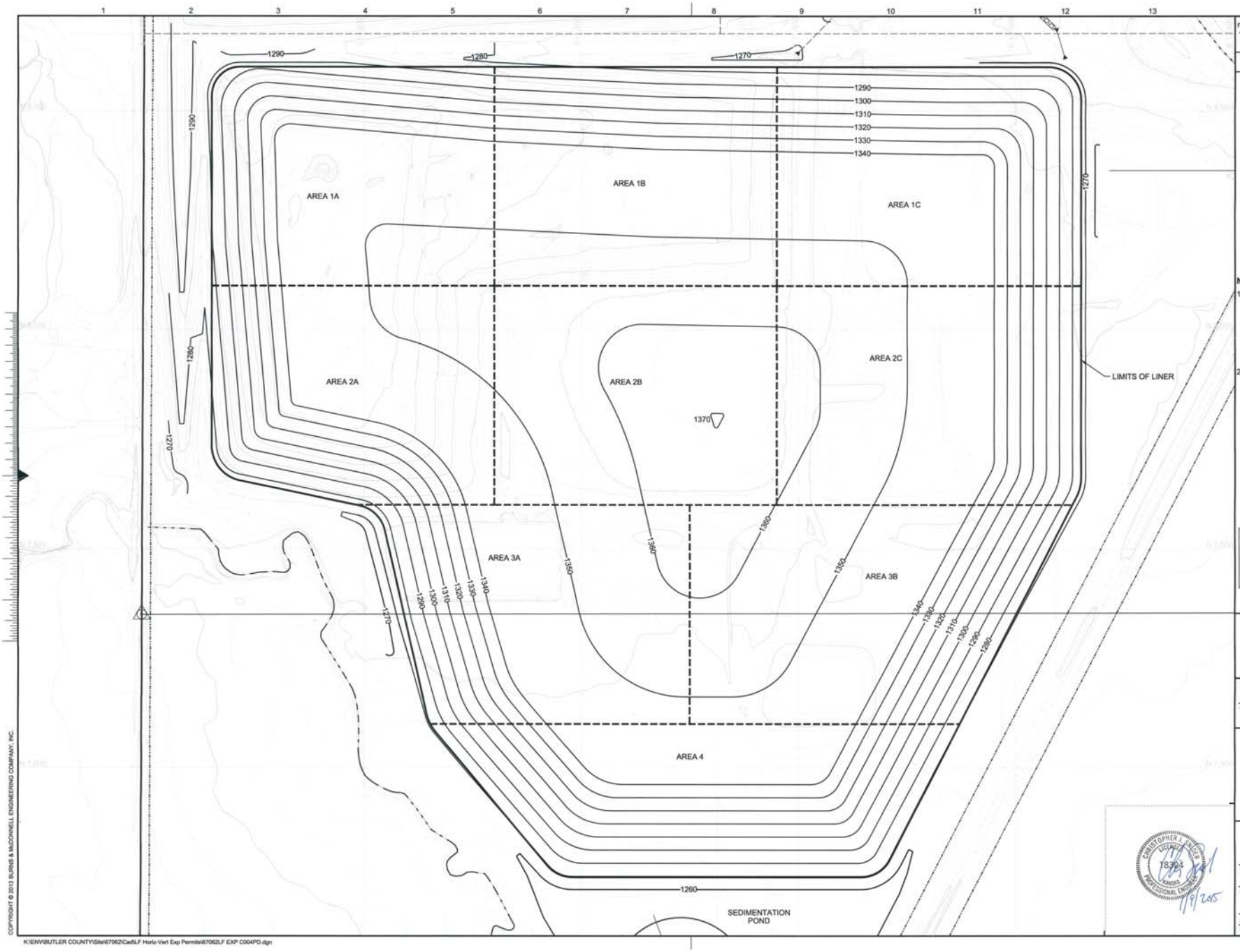

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

1. THE EXISTING PERMITTED FINAL COVER GRADES WERE DEVELOPED IN 1995 AND APPROVED BY KDHE IN 1996. THE EXISTING PERMITTED FINAL COVER GRADES ARE PROPOSED TO BE MODIFIED AS PER THE SUBSEQUENT DRAWINGS CONTAINED HEREIN (REFER TO C009) AND THE ASSOCIATED PERMIT MODIFICATION REPORT WHICH ACCOMPANIES THE PERMIT DRAWINGS.
2. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF KANSAS, WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

NORTH

0 100' 200'
SCALE IN FEET

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designed S. MARTIN	checked C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

EXISTING PERMITTED FINAL COVER

project 67062	contract
drawing C004	rev. 1
sheet 6 of 29 sheets	
file 67062LF EXP C004PD.dgn	

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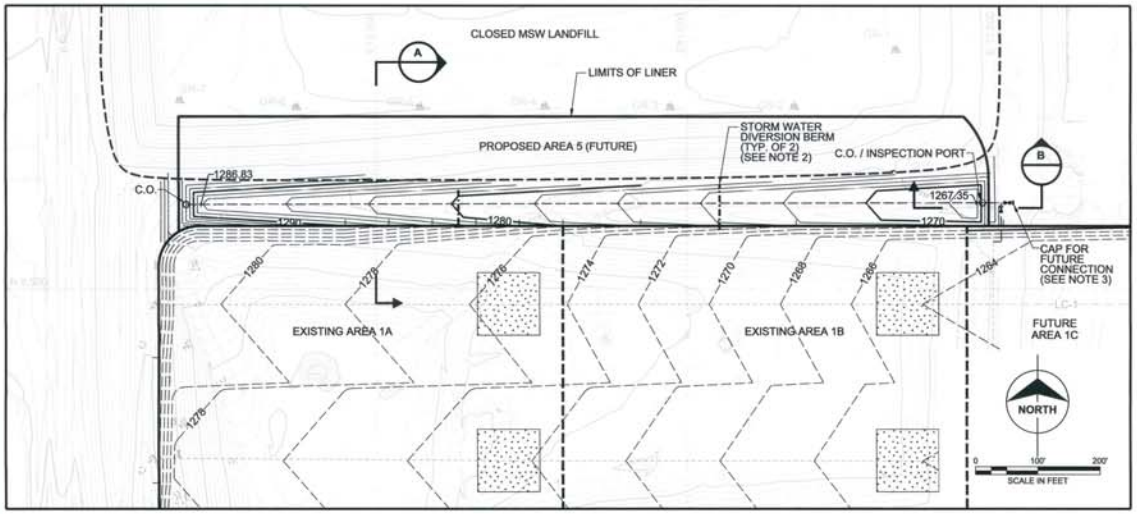

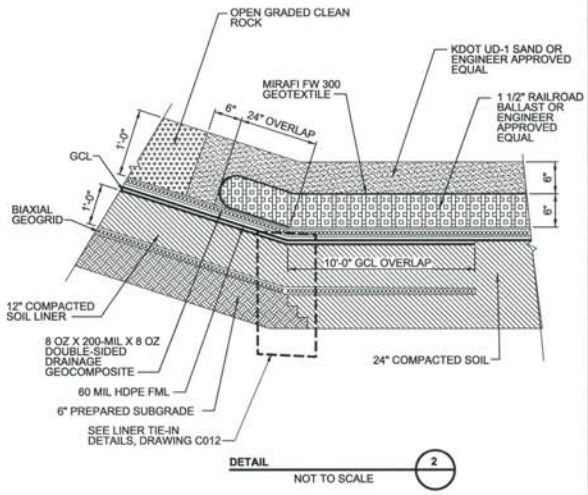

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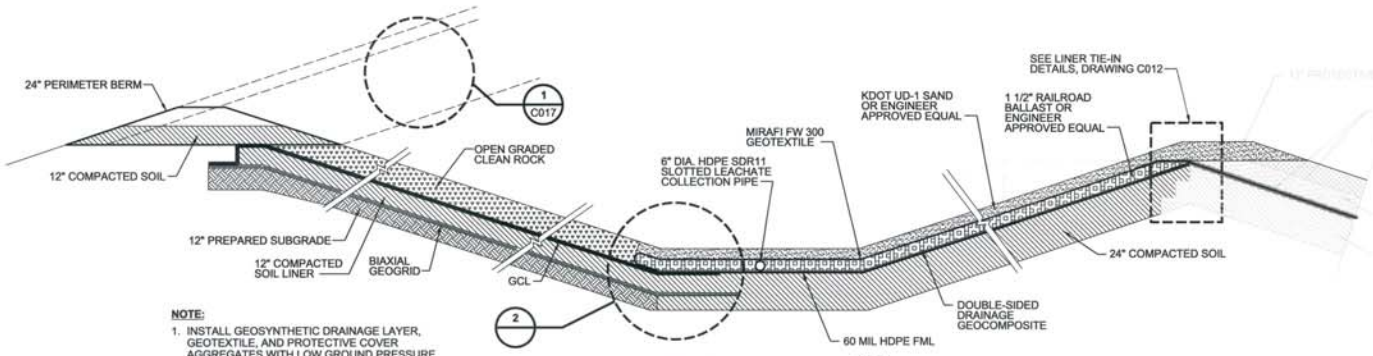
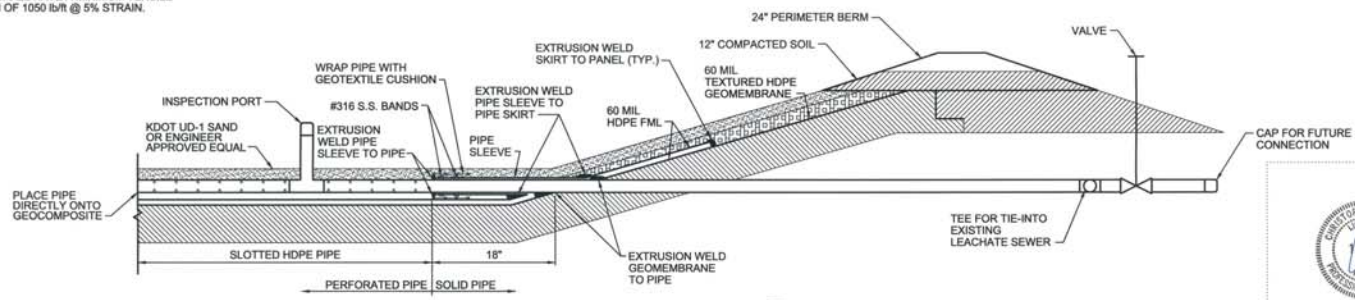


NOTE:

1. INSTALL GEOSYNTHETIC DRAINAGE LAYER, GEOTEXTILE, AND PROTECTIVE COVER AGGREGATES WITH LOW GROUND PRESSURE EQUIPMENT.
2. GCL SHALL BE FABRIC ENCASED BOUBLE-SIDED, NEEDLE PUNCHED, NON-WOVEN GEOTEXTILE.
3. GEOGRID SHALL HAVE A MINIMUM TENSILE STRENGTH OF 1050 lb/ft @ 5% STRAIN.

SECTION A
AREA 5 ANCHOR TRENCH AND SIDE SLOPE LINER
NOT TO SCALE



SECTION B
NOT TO SCALE

NOTES:

1. USE S.S. BANDS TO CLAMP LINER TO PIPE AFTER APPLYING MANUFACTURER RECOMMENDED LINER-TO-PIPE SEALANT LIBERALLY AROUND ENTIRE AREA TO BE CLAMPED.
2. CONSTRUCT LINER PENETRATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

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NOTES:

1. EXISTING TOPOGRAPHY WAS FLOWN ON APRIL 2, 2008 BY WESTERN AIR MAPS, INC., OVERLAND PARK, KANSAS.
2. STORM WATER DIVERSION BERM SHALL BE APPROXIMATELY 4 FEET HIGH AT CENTERLINE. HOLD TOP OF BERM AT A CONSTANT ELEVATION. SEAL (VIA ANCHOR TRENCH) 60-MIL TEXTURE HDPE STORM WATER RAIN FLAP TO GCL.
3. SEE DRAWING CO10 FOR FUTURE LEACHATE SEWER CONNECTION DRAWING.
4. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF KANSAS, WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

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date	detailed
MARCH 2013	H. FELLOWS
designed	checked
S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

AREA 5 LIMITS OF LINER AND DETAILS

project	contract
67062	

drawing **C005 – 1** rev.

sheet 7 of 29 sheets

file 67062LF EXP C005PD.dgn

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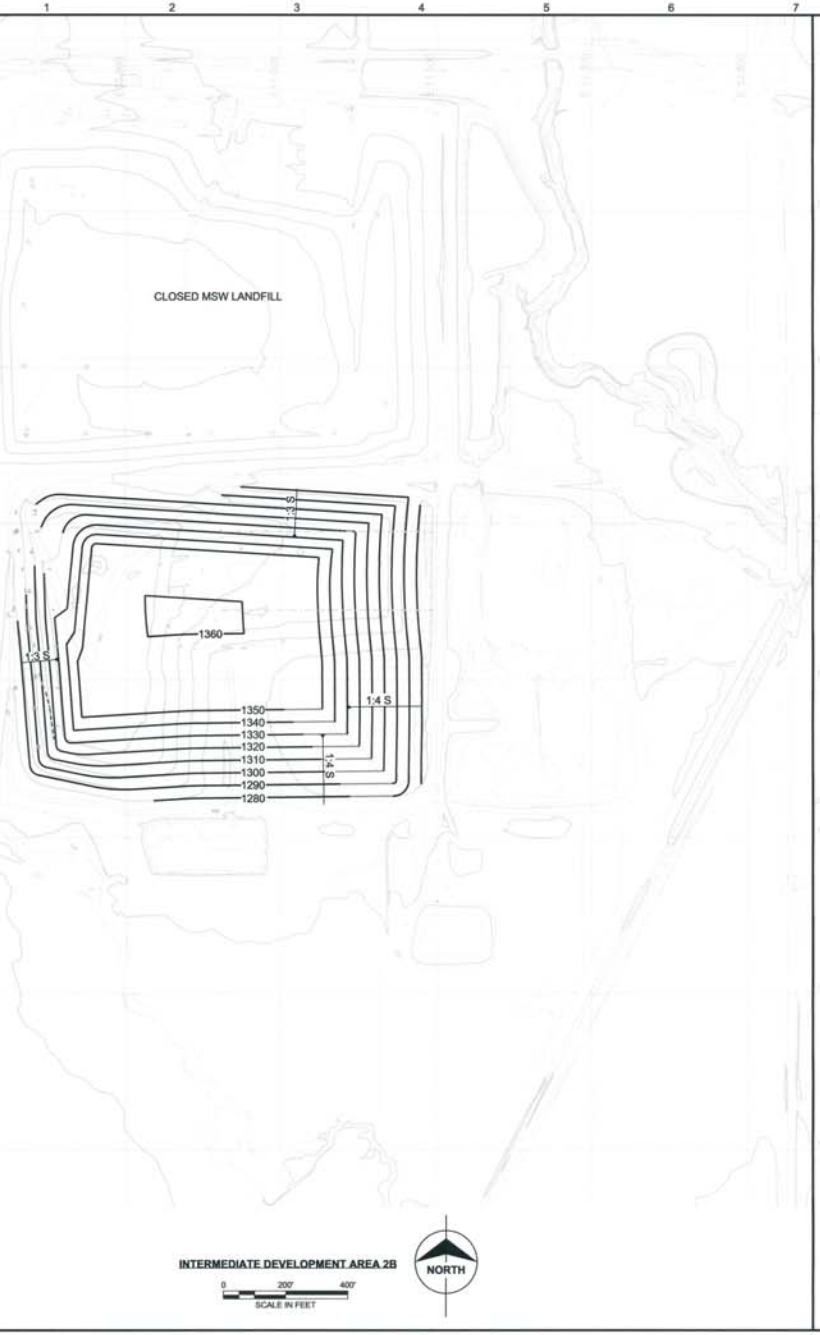
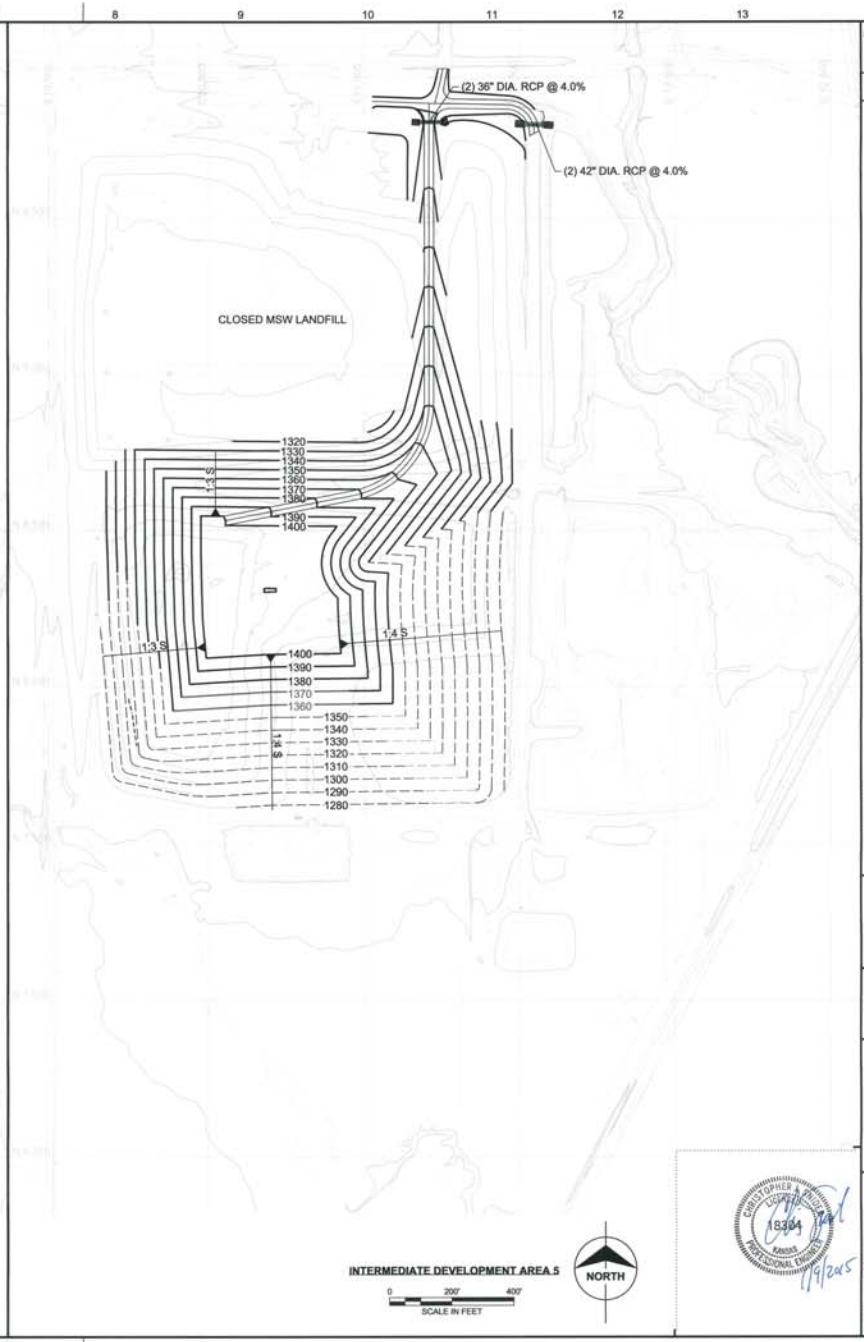


INTERMEDIATE DEVELOPMENT AREA 2B

0 200' 400'
SCALE IN FEET

NORTH



INTERMEDIATE DEVELOPMENT AREA 5

0 200' 400'
SCALE IN FEET

NORTH

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

1. EXISTING TOPOGRAPHY WAS FLOWN ON APRIL 2, 2008 BY WESTERN AIR MAPS, INC., OVERLAND PARK, KANSAS.
2. PHASING SHOWN AND THE GRADES INDICATED HEREIN ARE CONCEPTUAL AND MAY CHANGE IN THE FUTURE. REFER TO THE PLAN OF OPERATIONS FOR ADDITIONAL INFORMATION.
3. REFER TO THE GEOTECHNICAL CALCULATIONS CONTAINED WITHIN THE PERMIT MODIFICATION REPORT FOR ADDITIONAL INFORMATION.
4. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF KANSAS, WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

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date	detailed
MARCH 2013	M. COCHRAN
designed	checked
S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

INTERMEDIATE DEVELOPMENT PHASING PLAN - 1

project	contract
67062	

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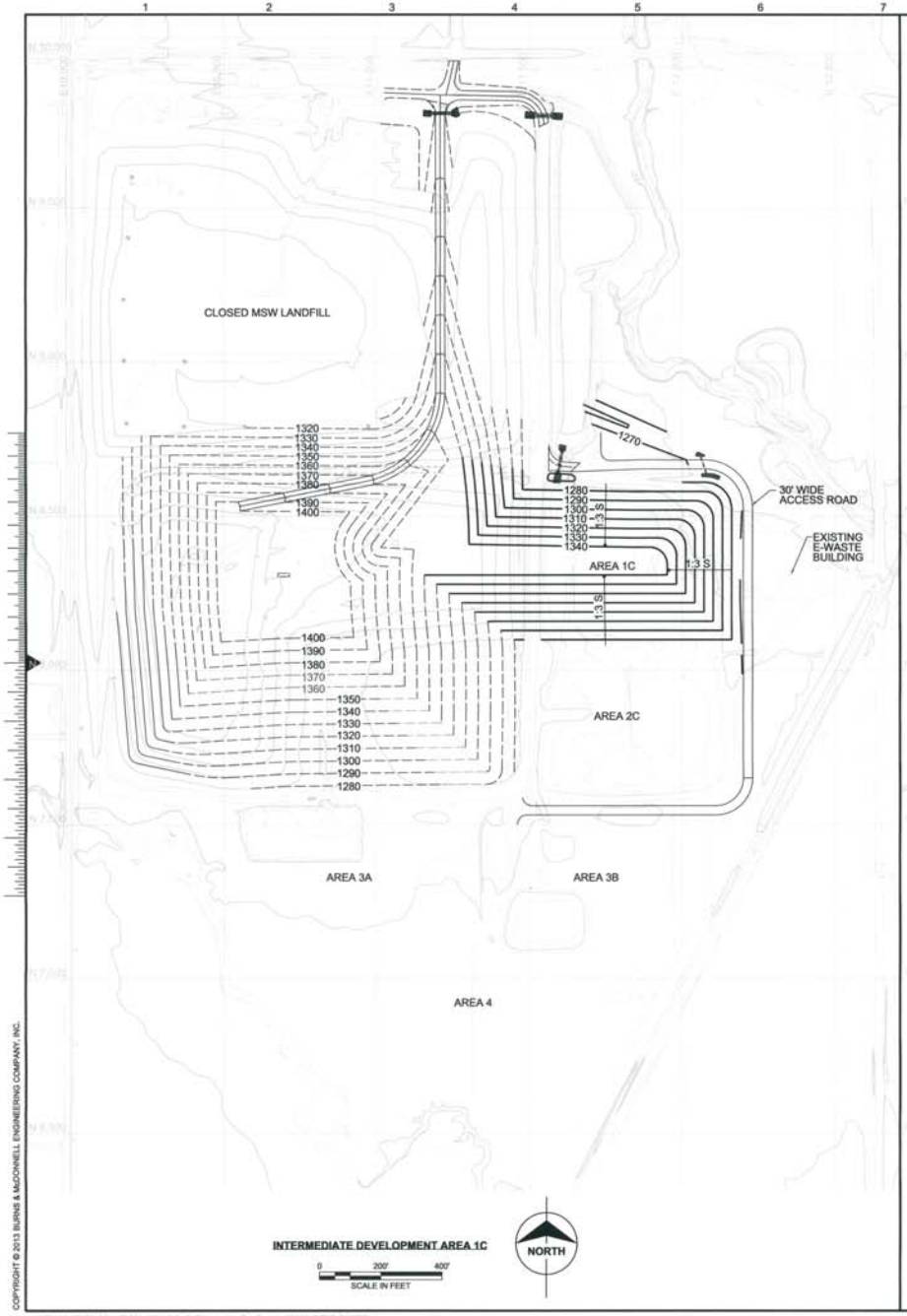
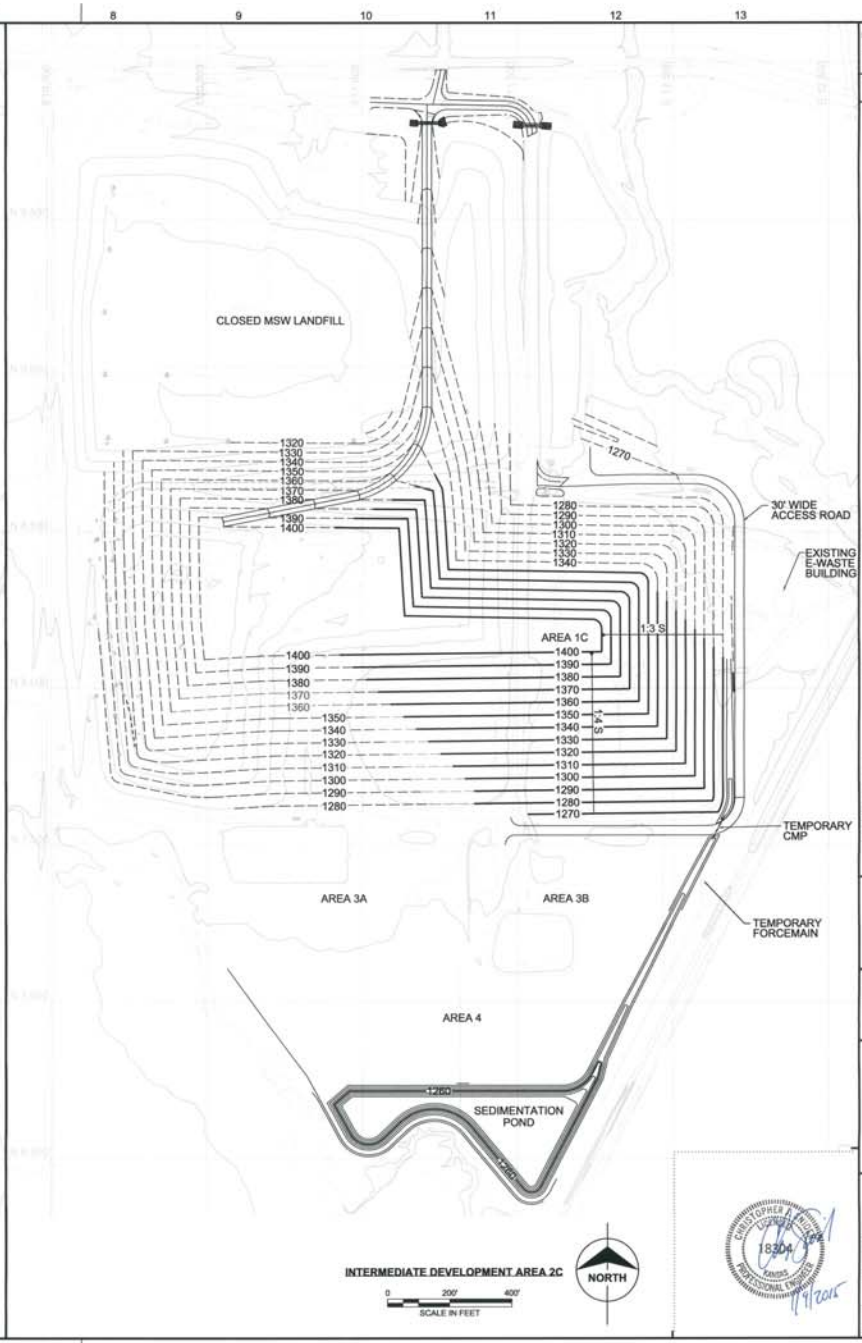


INTERMEDIATE DEVELOPMENT AREA 1C

0 200' 400'

SCALE IN FEET

NORTH



INTERMEDIATE DEVELOPMENT AREA 2C

0 200' 400'

SCALE IN FEET

NORTH

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

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MARCH 2013	H. FELLOWS
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S. MARTIN	C. SNIDER

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BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

INTERMEDIATE DEVELOPMENT PHASING PLAN - 2

project	contract
67062	

drawing **C007 – 1** rev.

sheet 9 of 29 sheets

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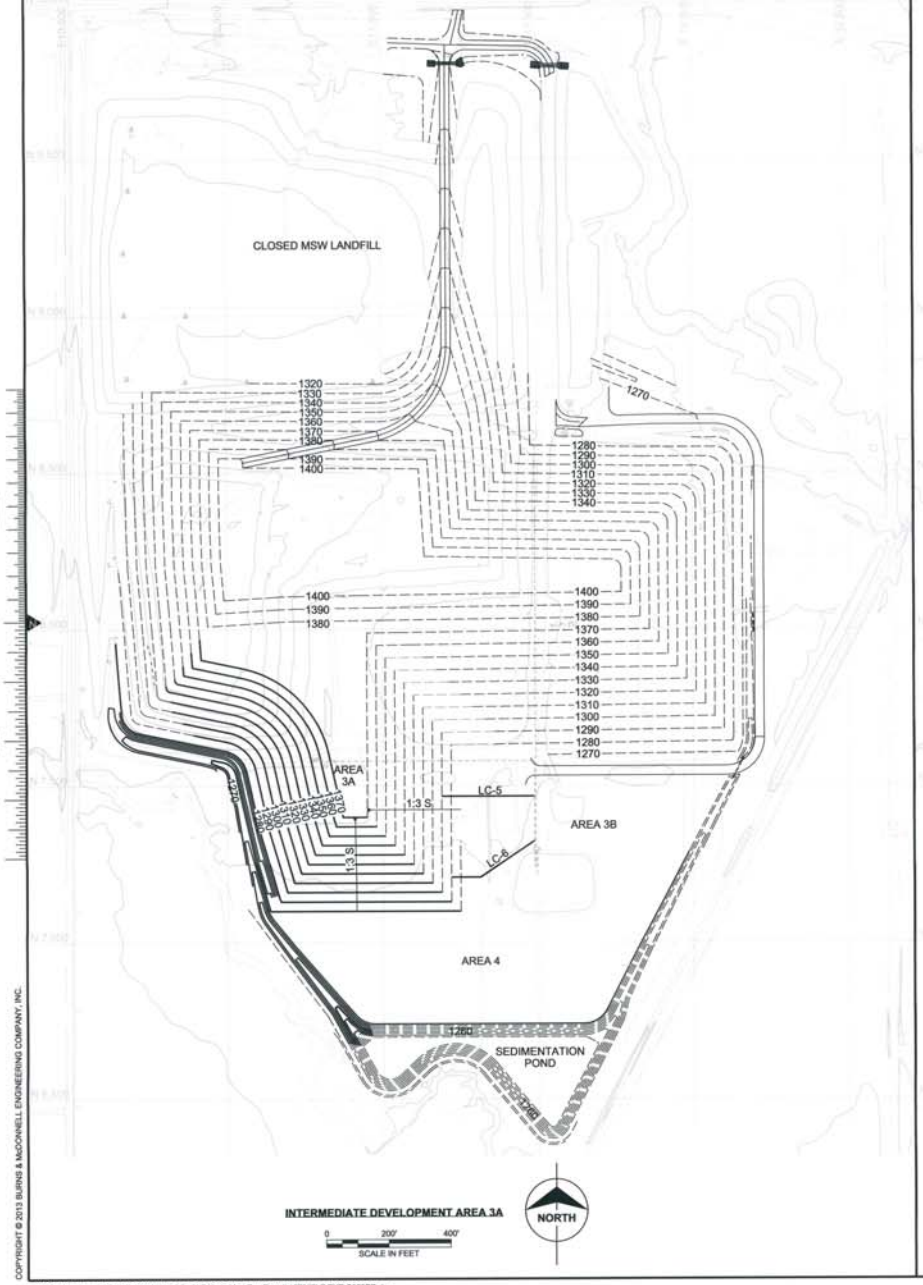
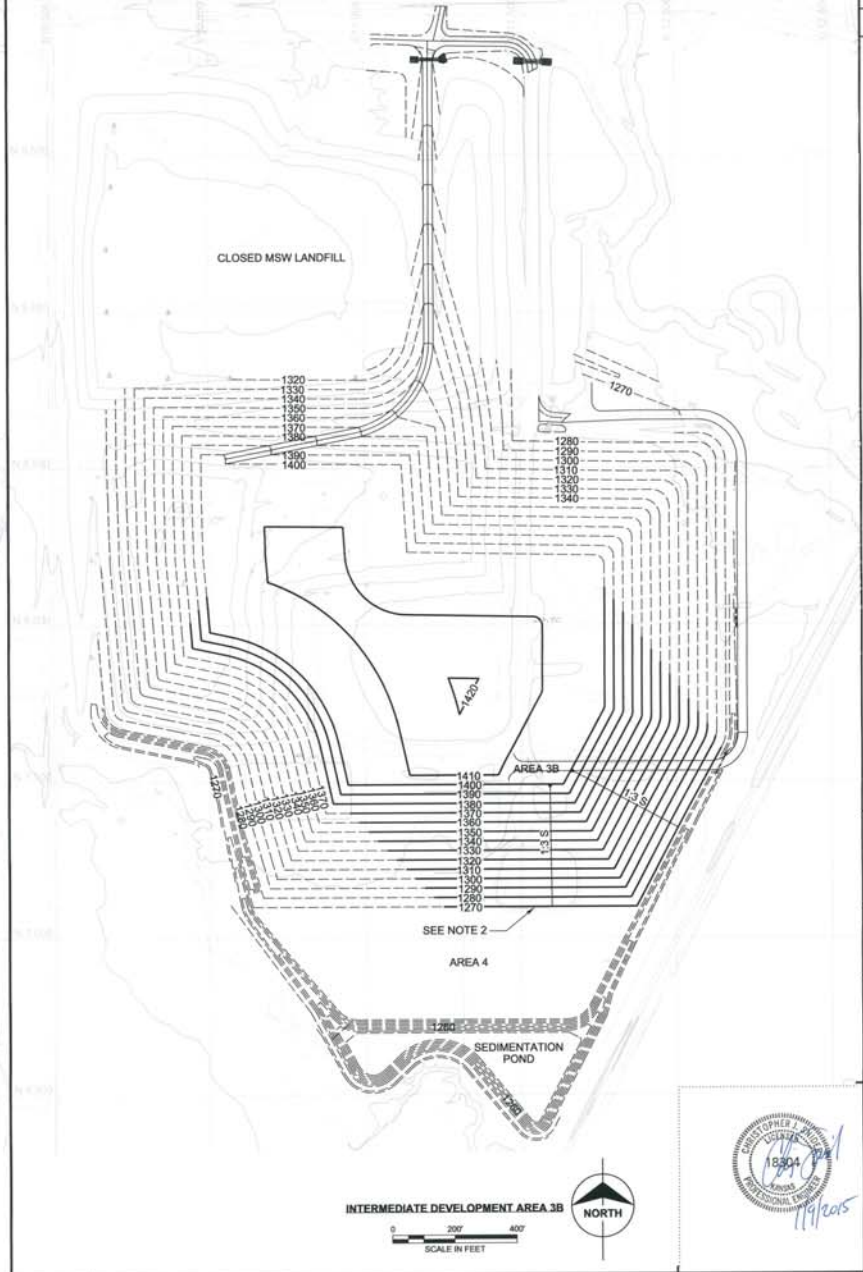


INTERMEDIATE DEVELOPMENT AREA 3A

0 200' 400'
SCALE IN FEET

NORTH



INTERMEDIATE DEVELOPMENT AREA 3B

0 200' 400'
SCALE IN FEET

NORTH

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

1. EXISTING TOPOGRAPHY WAS FLOWN ON APRIL 2, 2008 BY WESTERN AIR MAPS, INC., OVERLAND PARK, KANSAS.
2. LEACHATE POND WILL BE REMOVED PRIOR TO AREA 3B BEING PLACED INTO ACTIVE SERVICE. PLEASE REFER TO APPENDIX K OF THE PERMIT NARRATIVE FOR ADDITIONAL DETAILS.
3. PHASING SHOWN AND THE GRADES INDICATED HEREIN ARE CONCEPTUAL AND MAY CHANGE IN THE FUTURE. REFER TO THE PLAN OF OPERATIONS FOR ADDITIONAL INFORMATION.
4. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF KANSAS, WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

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MARCH 2013	H. FELLOWS
designed	checked
S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

INTERMEDIATE DEVELOPMENT PHASING PLAN - 3

project	contract
67062	

drawing **C008** – rev. **1**

sheet 10 of 29 sheets

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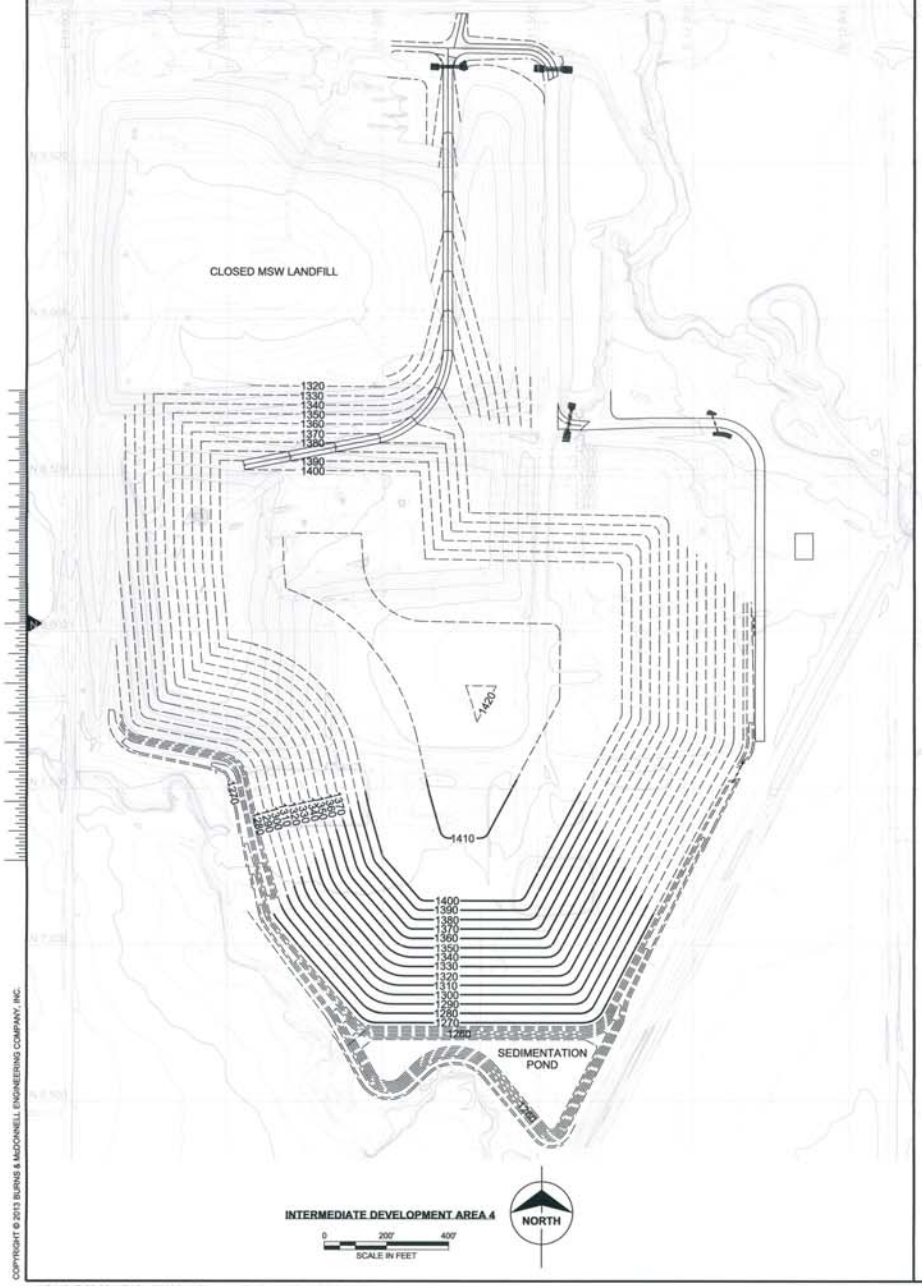
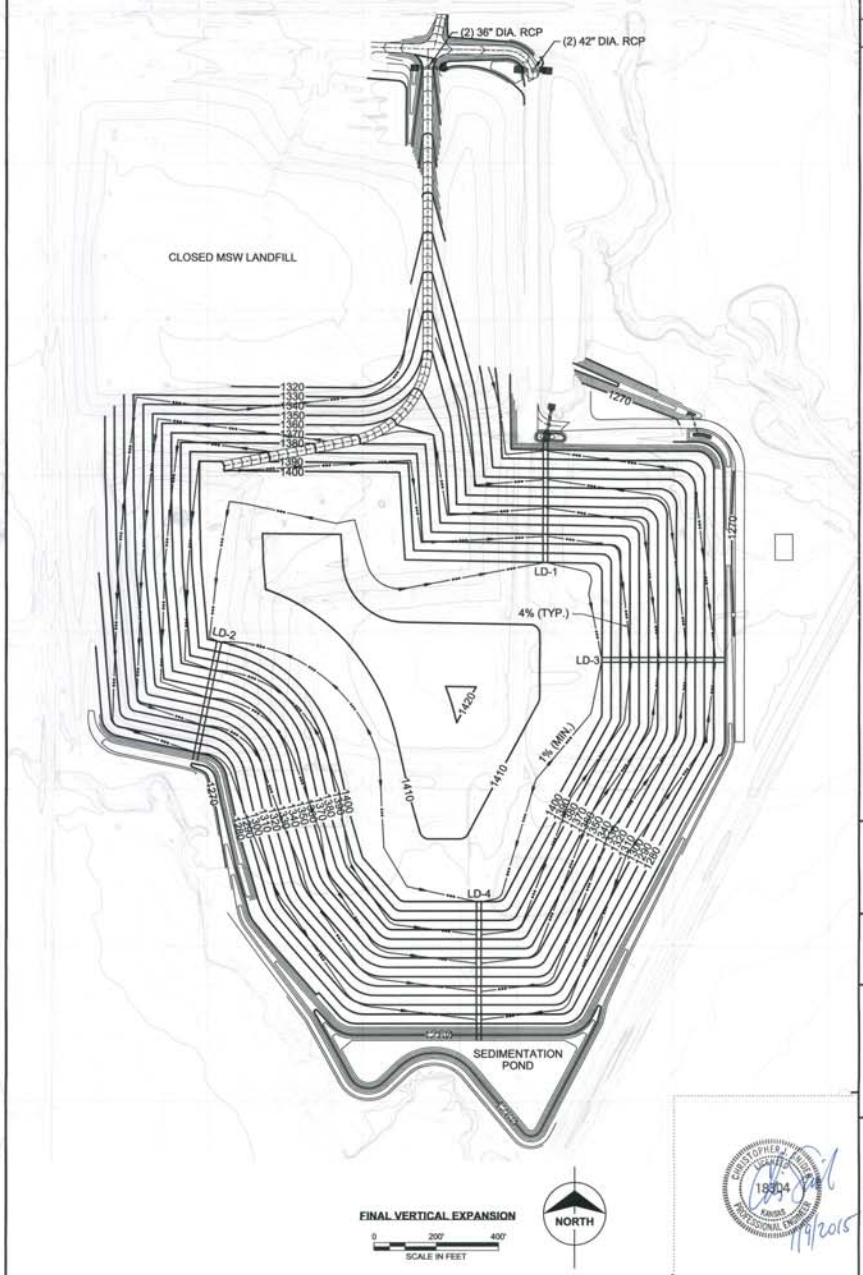


INTERMEDIATE DEVELOPMENT AREA 4



FINAL VERTICAL EXPANSION

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

1. EXISTING TOPOGRAPHY WAS FLOWN ON APRIL 2, 2008 BY WESTERN AIR MAPS, INC., OVERLAND PARK, KANSAS.
2. PHASING SHOWN AND THE GRADES INDICATED HEREIN ARE CONCEPTUAL AND MAY CHANGE IN THE FUTURE. REFER TO THE PLAN OF OPERATIONS FOR ADDITIONAL INFORMATION.
3. THE MAXIMUM PERMISSIBLE HEIGHT OF THE LANDFILL IS 1422 FEET. CONTOURS SHOWN REPRESENT PERMITTED TOP OF COVER.
4. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF KANSAS, WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

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date MARCH 2013	detailed H. FELLOWS
designed S. MARTIN	checked C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION
INTERMEDIATE DEVELOPMENT PHASING PLAN - 4 AND PERMIT MODIFICATION FINAL COVER

project 67062	contract
drawing C009	rev. 1
sheet 11 of 29	sheets
file 67062LF EXP C009PD.dgn	

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1/9/2015

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no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

1. EXISTING TOPOGRAPHY WAS FLOWN ON APRIL 2, 2008 BY WESTERN AIR MAPS, INC., OVERLAND PARK, KANSAS.
2. LEACHATE FORCEMAIN VALVE LOCATIONS AT LEACHATE RECIRCULATION INJECTION PORTS WILL BE PROTECTED VIA VALVE BOX OR MANHOLE.
3. THE LEACHATE RECIRCULATION DESIGN IS VOLUNTARY, CONCEPTUAL IN NATURE, AND MAY CHANGE IN THE FUTURE. REFER TO THE PERMIT APPLICATION TEXT AND PLAN OF OPERATIONS FOR ADDITIONAL INFORMATION.
4. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF KANSAS, WITH CONCURRENCE FORM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

LEGEND:

- ○ LCR INJECTION WELL PORT LOCATION
- △ LFG WELLHEAD

NORTH

0 100' 200'
SCALE IN FEET

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MARCH 2013	M. COCHRAN
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S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

LEACHATE RECIRCULATION AND LFG SYSTEM LAYOUT

project	contract
67062	

drawing **C010** — rev. **1**

sheet 12 of 29 sheets

file 67062LF EXP C010PD.dgn

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1/9/2015

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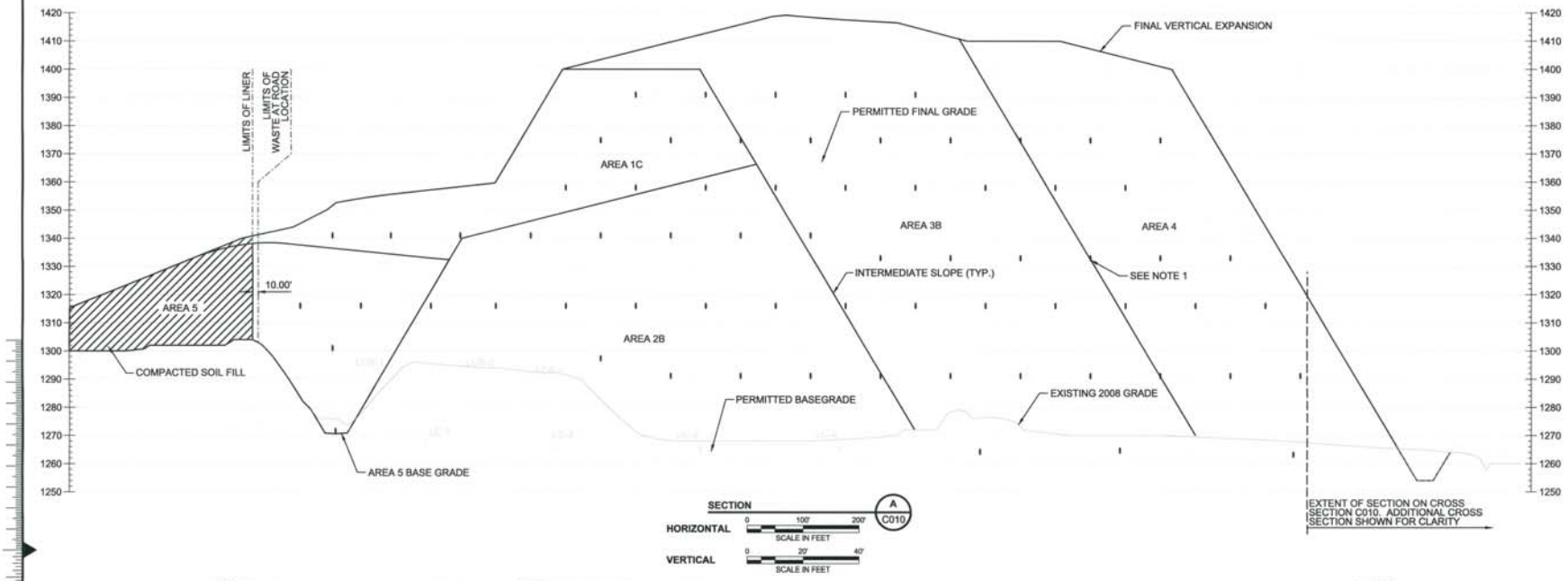

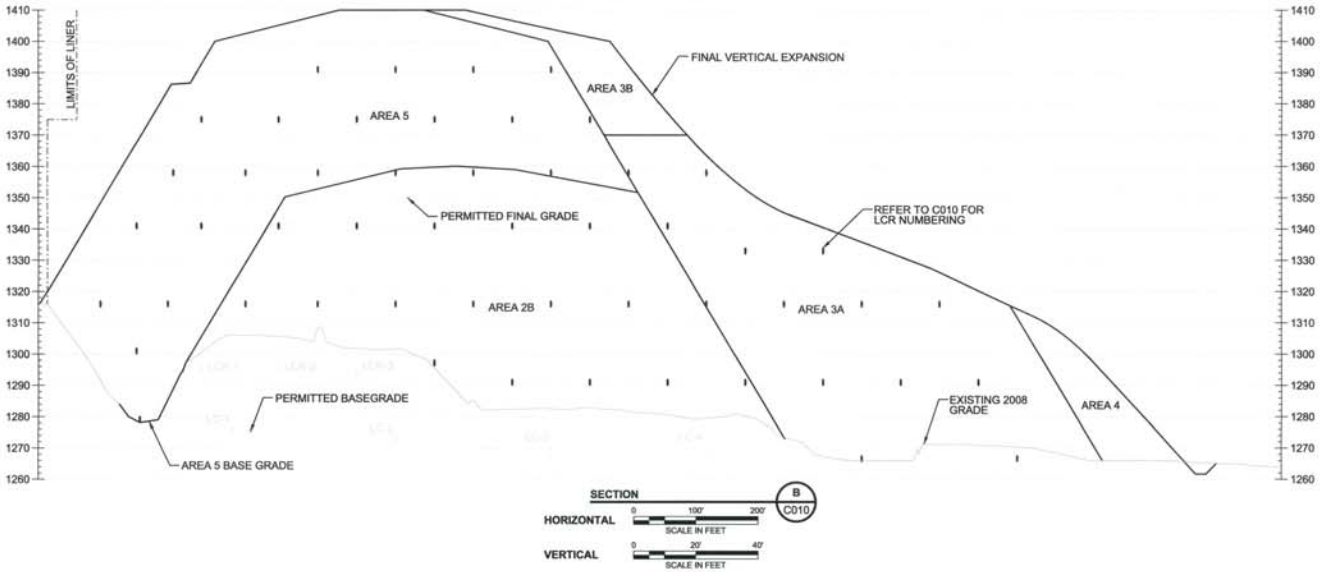

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

1. TRENCH LOCATIONS / ELEVATIONS SHOWN CONCEPTUALLY. ACTUAL LOCATIONS / ELEVATIONS WILL BE DETERMINED BASED ON INTERMEDIATE FILL GRADES AT THE TIME OF CONSTRUCTION.
2. THE LEACHATE RECIRCULATION DESIGN IS VOLUNTARY, CONCEPTUAL IN NATURE, AND MAY CHANGE IN THE FUTURE. REFER TO THE PERMIT APPLICATION TEXT AND PLAN OF OPERATIONS FOR ADDITIONAL INFORMATION.
3. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF KANSAS, WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

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MARCH 2013	M. COCHRAN
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S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

LEACHATE RECIRCULATION SYSTEM CROSS SECTIONS

project	contract
67062	

drawing **C011 – 1** rev.

sheet 13 of 29 sheets

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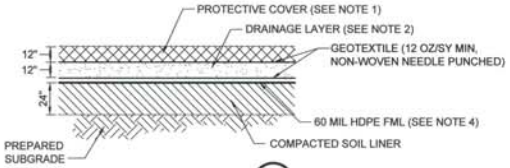
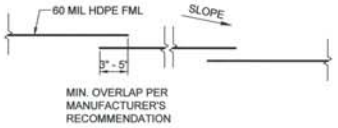


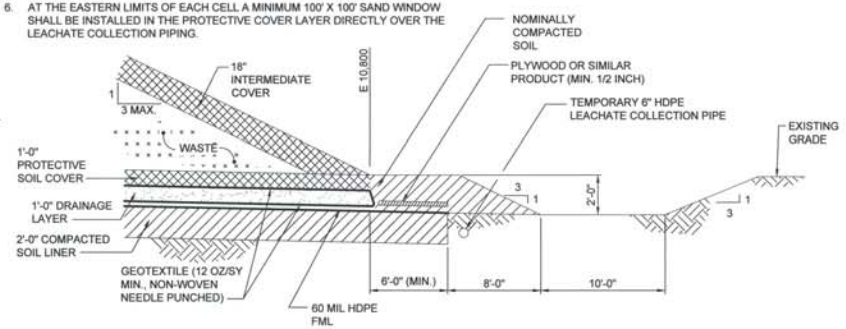
DETAIL 2 C017
EXISTING AND FUTURE BOTTOM LINER (AREAS 1A, 1B, 1C, 2A, 2B, 2C, 3A, 3B, AND 4)
NOT TO SCALE



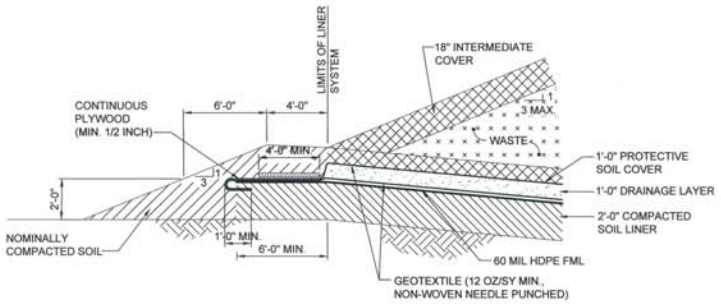
LINER PANEL OVERLAP DETAIL
NOT TO SCALE

NOTES:

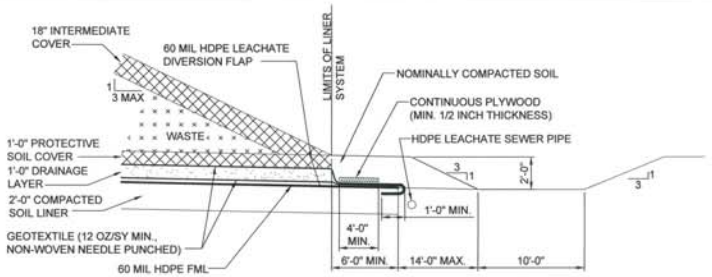
1. ON SITE MATERIAL FROM THE BORROW SOURCES WILL BE USED AS PROTECTIVE COVER EXCEPT WHERE DESIGNATED. THE ON-SITE MATERIAL SHALL BE CLASSIFIED AS GRAVELLY OR SANDY SOIL UNDER THE UNIFIED CLASSIFICATION SYSTEM. THIS MATERIAL WILL RECEIVE MINIMAL COMPACTION.
2. GRANULAR MATERIAL USED FOR DRAINAGE LAYER AND PROTECTIVE COVER SAND WINDOW SHALL BE A CLEAN AGGREGATE WITH A MINIMUM HYDRAULIC CONDUCTIVITY OF 1 X 10^{-2} CM/SEC.
3. LAYER THICKNESSES FOR BOTTOM LINER ARE MINIMUM THICKNESS. PLACE SOIL MATERIALS IN LIFTS AS SPECIFIED.
4. USE TEXTURED 60 MIL HDPE ON 3:1 SLOPE WITH A MINIMUM 5 FEET OVERLAP OF TEXTURED OVER SMOOTH FML AT TOE OF SLOPE. SEE LEACHATE COLLECTION CLEANOUT PIPE DETAIL ON DRAWING C013.
5. FUTURE CELLS NOT YET CONSTRUCTED SHALL UTILIZE TEXTURED 60 MIL HDPE FML (AREAS 1C, 2C, 3A, 3B AND 4).
6. AT THE EASTERN LIMITS OF EACH CELL A MINIMUM 100' X 100' SAND WINDOW SHALL BE INSTALLED IN THE PROTECTIVE COVER LAYER DIRECTLY OVER THE LEACHATE COLLECTION PIPING.



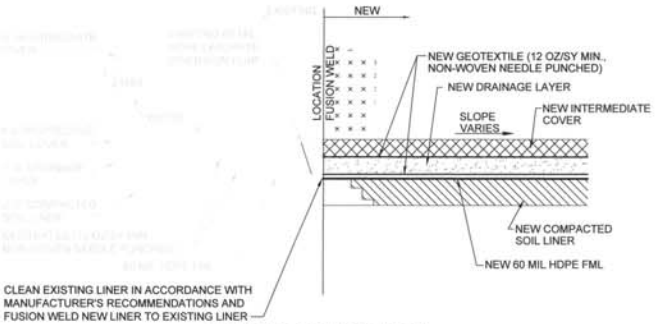
EXISTING EAST EDGE OF AREA 1A
NOT TO SCALE



TYPICAL SOUTH EDGE LINER TIE-IN DETAIL
NOT TO SCALE



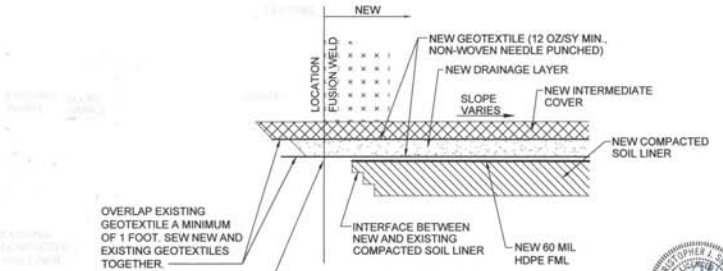
TYPICAL EAST EDGE LINER TIE-IN DETAIL
(AREAS 1B, 2A, 2B AND 3A)
NOT TO SCALE



TYPICAL EAST EDGE LINER TIE-IN DETAIL
(AREAS 1A, 1B, 2A, 2B AND 3A)
NOT TO SCALE

NOTES:

1. TRIM GEOSYNTHETICS AS REQUIRED.
2. STEP INTERFACE BETWEEN NEW AND EXISTING COMPACTED SOIL LINER. OFFSET VERTICAL SEAMS BY A MINIMUM OF 12 INCHES, BEING CAREFUL NOT TO DAMAGE EXISTING HDPE GEOMEMBRANE.
3. REMOVE PLYWOOD AND FUSION WELD NEW 60 MIL HDPE GEOMEMBRANE TO EXISTING 60 MIL HDPE GEOMEMBRANE.
4. REMOVE EXISTING LEACHATE SEWER AND ANY GRANULAR BEDDING MATERIAL. REPLACE EXCAVATION WITH COMPACTED SOIL LINER.
5. CONTRACTOR SHALL EXPOSE AND MAINTAIN THE EXISTING 60-MIL HDPE DIVERSION FLAP SO THAT LEACHATE AND STORM WATER REMAIN SEPARATED THROUGH CONSTRUCTION ACTIVITIES.
6. OWNER SHALL REMOVE DIVERSION FLAP PRIOR TO THE ACCEPTANCE OF WASTE IN AREA 2B (NOT IN CONTRACT).



TYPICAL NORTH EDGE LINER TIE-IN DETAIL
(AREAS 2A, 2B, 2C, 3A, 3B AND 4)
NOT TO SCALE

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

1. FUTURE CELLS THAT ARE CONSTRUCTED WITH TIE-IN'S TO FUTURE EXISTING COMPOSITE LINER SHALL HAVE THE COMPOSITE LINER SYSTEM EXTEND A MINIMUM OF 15 FEET BEYOND THE LIMITS OF THE CELL. THIS INCLUDES: AREA 1C, AREA 2C, AREA 3A, AND AREA 3B.
2. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF KANSAS, WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

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Burns & McDonnell
SINCE 1898

date	detailed
MARCH 2013	M. COCHRAN
designed	checked
S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

LANDFILL LINER DETAILS - 1

project	contract
67062	

drawing **C012 – 1** rev.

sheet 14 of 29 sheets

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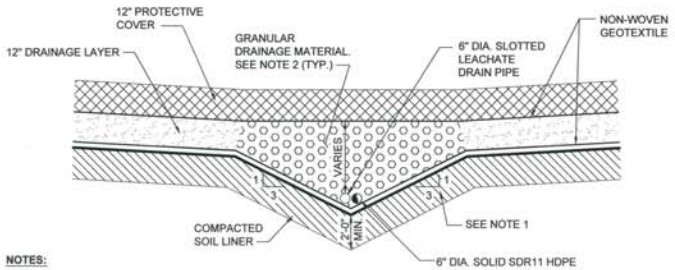
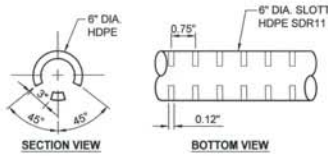


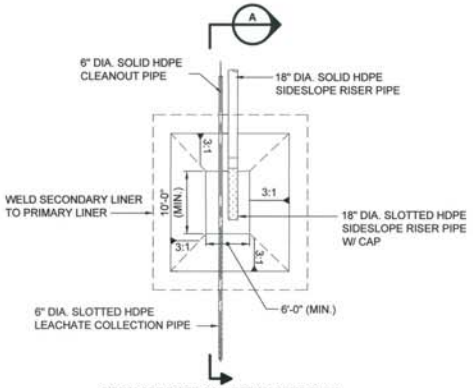
NOTES:

1. DEPTH OF TRENCH WILL VARY AS INDICATED ON DRAWING C003. ACTUAL SLOPE OF TRENCH SIDEWALL MAY BE REDUCED FOR CONSTRUCTABILITY PURPOSES.
2. GRANULAR DRAINAGE MATERIAL SHALL CONFORM TO AASHTO M43 TYPE 8 OR COARSER.

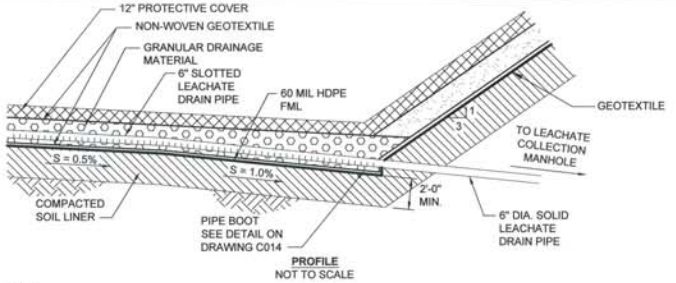
DETAIL 1
LEACHATE COLLECTION TRENCH
NOT TO SCALE



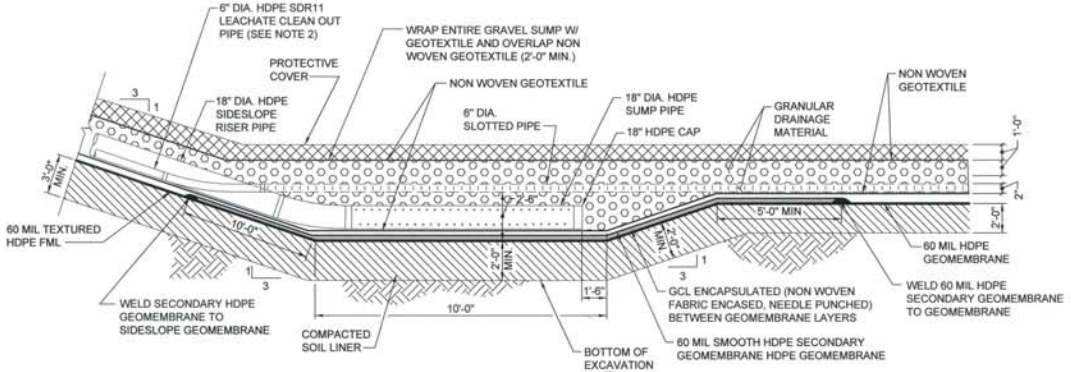
LEACHATE COLLECTION PIPE
NOT TO SCALE



SIDESLOPE RISER COLLECTION SUMP PLAN
NOT TO SCALE



PROFILE
NOT TO SCALE



SECTION A
AREA 4 SIDESLOPE RISER COLLECTION SUMP
NOT TO SCALE

NOTE:

1. GUARD POSTS WILL BE PROVIDED TO PROTECT CLEAN OUT PIPE AND SUMP ABOVE GROUND SURFACE.
2. CLEANOUT SHALL BE EXTENDED BEYOND CELL LIMIT BY 3 FEET AND CAPPED WITH THREADED HDPE CAP

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTE:

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date	detailed
MARCH 2013	M. COCHRAN
designed	checked
S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY
KANSAS
SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION
LANDFILL LINER DETAILS - 2

project	contract
67062	

drawing **C013 – 1** rev.

sheet 15 of 29 sheets

file 67062LF EXPC013PD.dwg

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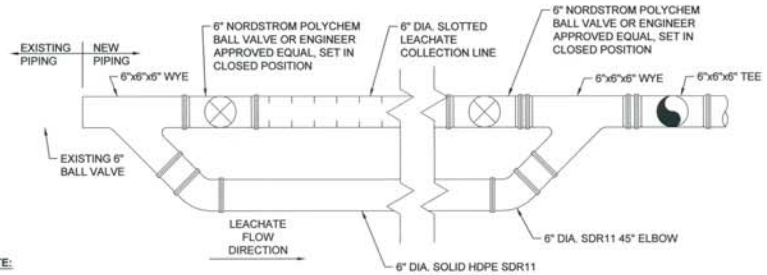
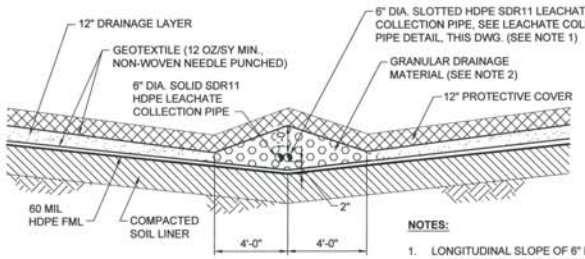


NOTE:

1. SOLID LINE TO BE USED UNTIL PORTION LANDFILL CELL IS PLACED INTO ACTIVE SERVICE. IMMEDIATELY PRIOR TO FILLING OF WASTE COMMENCES, THE VALVES SHALL BE OPENED TO PLACE THE LEACHATE COLLECTION SYSTEM INTO ACTIVE SERVICE.

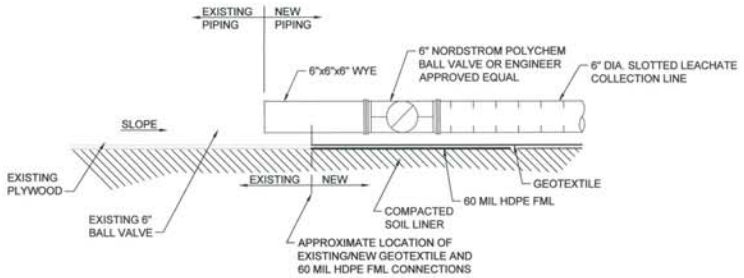
TYPICAL AREAS 1C, 2B, 2C, AND 3B LEACHATE BYPASS LINE
NOT TO SCALE



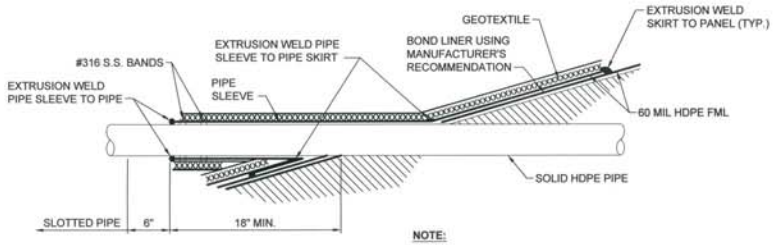
NOTES:

1. LONGITUDINAL SLOPE OF 6" DIA. SLOTTED HDPE PIPE IS THE SAME AS THE EXCAVATED GRADE.
2. PROVIDE 2" OF GRANULAR DRAINAGE MATERIAL BETWEEN THE PIPE AND THE LINER.

EXISTING AND FUTURE LEACHATE COLLECTION LINE DETAIL (AREAS 1C, 2B, 2C AND 3B)
NOT TO SCALE



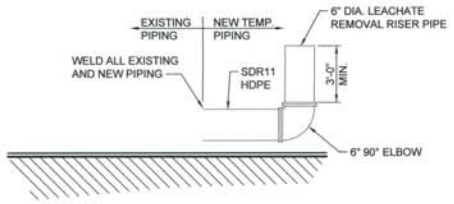
WEST LEACHATE COLLECTION TIE-IN DETAIL FOR AREAS 1B, 1C, 2B, 2C AND 3B
NOT TO SCALE



NOTE:

1. USE S.S. BANDS TO CLAMP LINER TO PIPE AFTER APPLYING MANUFACTURER'S RECOMMENDED LINER-TO-PIPE SEALANT LIBERALLY AROUND ENTIRE AREA TO BE CLAMPED.

TYPICAL PIPE BOOT DETAIL
FOR FUTURE AREAS 1C, 2C, 3A, 3B, 4
NOT TO SCALE



NOTES:

1. AFTER COMPOSITE LINER INSTALLATION (COMPACTED SOIL, HDPE, & GEOTEXTILE) ACCEPTANCE BY ENGINEER, CONTRACTOR SHALL REMOVE TEMPORARY PIPING AND INSTALL WEST LEACHATE TIE-IN. SEE THIS DRAWING.
2. LOW HEAD PUMP SHALL BE UTILIZED THROUGH ACTIVE SERVICE TO MAINTAIN 12" MAX. LEACHATE HEAD ON EXISTING LINER.

TEMPORARY LEACHATE REMOVAL DETAIL
(DURING NEW CONSTRUCTION FOR AREAS 1C, 2B, 2C, AND 3B)
NOT TO SCALE

no.	date	by	ckd	description
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designed	checked
S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

LANDFILL LINER DETAILS - 3

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sheet 16 of 29 sheets

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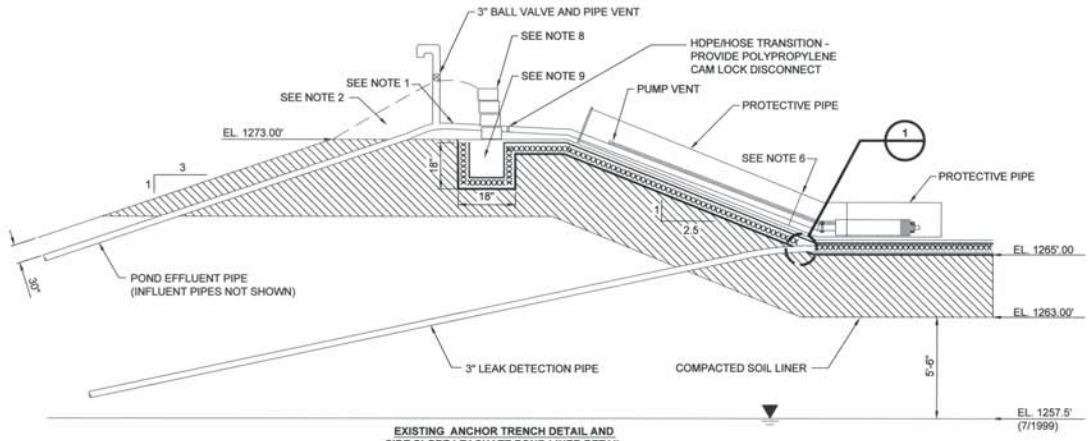
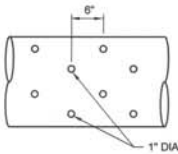


EXISTING ANCHOR TRENCH DETAIL AND SIDE SLOPE LEACHATE POND LINER DETAIL
NOT TO SCALE

NOTES:

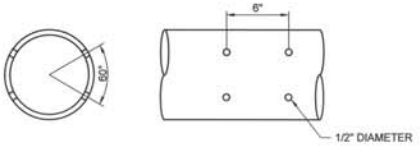
1. PROVIDE POSITIVE DRAINAGE INTO POND FOR INFLUENT AND EFFLUENT PIPES TO PROTECT FROM FREEZING. INFLUENT PIPES NOT SHOWN - SEE PROTECTIVE MAT DETAIL. HIGH POINT IN ALL PIPES SHALL BE AT LEAST 4 FEET FROM INSIDE RETAINING WALL EDGE.
2. COVER INFLUENT AND EFFLUENT PIPES WITH SOIL TO PROTECT FROM FREEZING.
3. LEAK DETECTION EFFLUENT PIPE CONNECTED TO GEONET VIA PERFORATED PIPE SECTION.
4. SLOPE POND BOTTOM TOWARD LEAK DETECTION EFFLUENT PIPE AT 1 PERCENT GRADE.
5. PROVIDE ANSI 150 BLIND FLANGE WITH POLYPROPYLENE CAM LOCK EFFLUENT LINE DISCONNECTS FOR INTERIOR AND EXTERIOR SIDES OF FLANGE. PROVIDE 1/8" S.S. PULL CABLE WITH S.S. EYEBOLT, WASHERS, AND NUTS.
6. PROVIDE CUSTOM FABRICATED HDPE FITTING TO TRANSITION PIPE FROM 2.5H:1V SLOPE TO POND BOTTOM SLOPE. SUGGESTED SUPPLIER: ISCO PIPE, SHANE SCHUESSLER 618-655-4020.
7. LINER ELEVATIONS SHOWN ARE NOT ADJUSTED FOR 1% POND BOTTOM SLOPE.
8. PROVIDE VERSA-LOC RETAINING WALL (OR APPROVED EQUAL) TO RETAIN PROTECTIVE SOIL AT PIPE ENTRANCE TO POND.
9. SOIL IN ANCHOR TRENCH SHALL BE COMPACTED TO 90% OF MAXIMUM DRY DENSITY AS DETERMINED BY MODIFIED PROCTOR.
10. PROVIDE 3/16" DIAMETER WEEP HOLE IN PUMP CHECK VALVE TO ALLOW EFFLUENT LINE TO DRAIN. HOLE IN PUMP CHECK VALVE SHALL BE DRILLED BY PUMP MANUFACTURER.
11. PROVIDE STORAGE POND GAUGE TO MEASURE WATER SURFACE DISTANCE BELOW POND BERM. SUBMIT GAUGE DETAIL TO ENGINEER FOR APPROVAL.



EXISTING PROTECTIVE PIPE PERFORATION PATTERN DETAIL
NOT TO SCALE

NOTES:

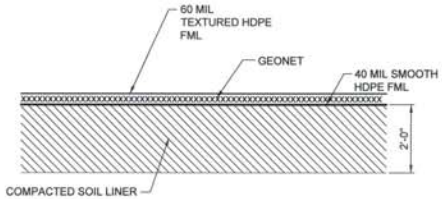
1. PROVIDE 1" DIAMETER PERFORATIONS IN PROTECTIVE PIPE 6" ON CENTERS AROUND THE PIPE AND 3" CENTERS LONGITUDINALLY.
2. PIPE SHALL BE DRILLED WITH A MACHINE DESIGNED TO PERFORATE HDPE PIPE.



EXISTING LEAK DETECTION PIPE PERFORATION PATTERN DETAIL
NOT TO SCALE

NOTES:

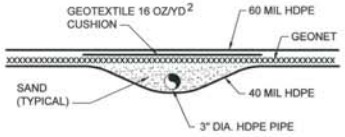
1. PROVIDE 2" SAND COVER ABOVE PIPE HAUNCH.
2. EXTEND PERFORATED PIPE SECTION 20' INTO POND LEAK DETECTION SYSTEM.
3. WRAP PERFORATED PIPE WITH SINGLE SIDED GEOCOMPOSITE TO PROHIBIT SAND INFILTRATION INTO PIPE. GEONET SHALL BE ADJACENT TO PIPE.
4. PIPE SHALL BE DRILLED WITH A MACHINE DESIGNED TO PERFORATE HDPE PIPE.



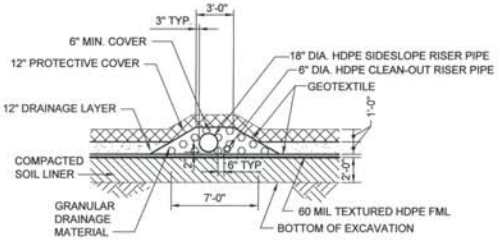
LEACHATE POND LINER DETAIL
NOT TO SCALE

NOTES:

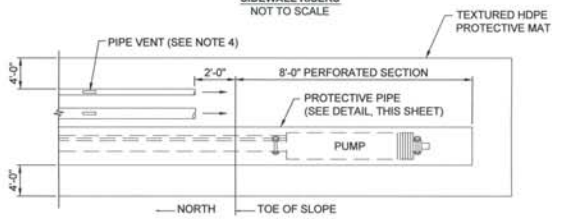
1. 60 MIL HDPE GEOMEMBRANE SHALL BE GSE HD TEXTURED OR APPROVED EQUAL.
2. GEONET SHALL BE GSE HYPERNET OR APPROVED EQUAL.
3. 40 MIL SMOOTH HDPE GEOMEMBRANE SHALL BE GSE HD OR APPROVED EQUAL. RECOMMENDED SUPPLIER/ INSTALLER: BOB RAINS MANHATTAN ENVIRONMENTAL, INC. 918-582-7078.
4. COMPACTED SOIL LINER HAS HYDRAULIC CONDUCTIVITY OF LESS THAN OR EQUAL TO 1X10 $^{-7}$ CM/SEC.



LEAK DETECTION EFFLUENT PIPE SECTION
NOT TO SCALE



SIDEWALL RISERS
NOT TO SCALE



EXISTING PROTECTIVE MAT PLAN
NOT TO SCALE

NOTES:

1. EXTRUSION WELD PROTECTIVE MAT TO FML. PROTECTIVE MAT SHALL BE TEXTURED 60 MIL HDPE.
2. WELD PROTECTIVE PIPE TO MAT. PROTECTIVE PIPE SHALL BE SDR17 18" 0.D. PROVIDE PROTECTIVE PIPE BRACING DETAIL FOR ENGINEERS APPROVAL.
3. ATTACH INFLUENT PIPES TO MAT. SUBMIT ATTACHMENT DETAIL TO ENGINEER FOR APPROVAL.
4. PROVIDE 1/4" AIR VENTS TO ALLOW POND INFLUENT PIPE DRAINAGE. PIPE VENTS SHALL BE HDPE. EXTEND PIPE VENT END TO POND FREEBOARD AREA. ATTACH PIPE VENTS TO PIPE. INSTALL VENTS ON PIPE CROWN NEAR RETAINING WALL.
5. WELD END CAP TO PROTECTIVE PIPE. DO NOT PERFORATE END CAP.
6. WELD HDPE STEPS TO PROTECTIVE MAT IF NECESSARY FOR BETTER TRACTION. SUBMIT DETAIL TO ENGINEER FOR APPROVAL.

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

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MARCH 2013	M. COCHRAN
designed	checked
S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

EXISTING LEACHATE POND DETAILS

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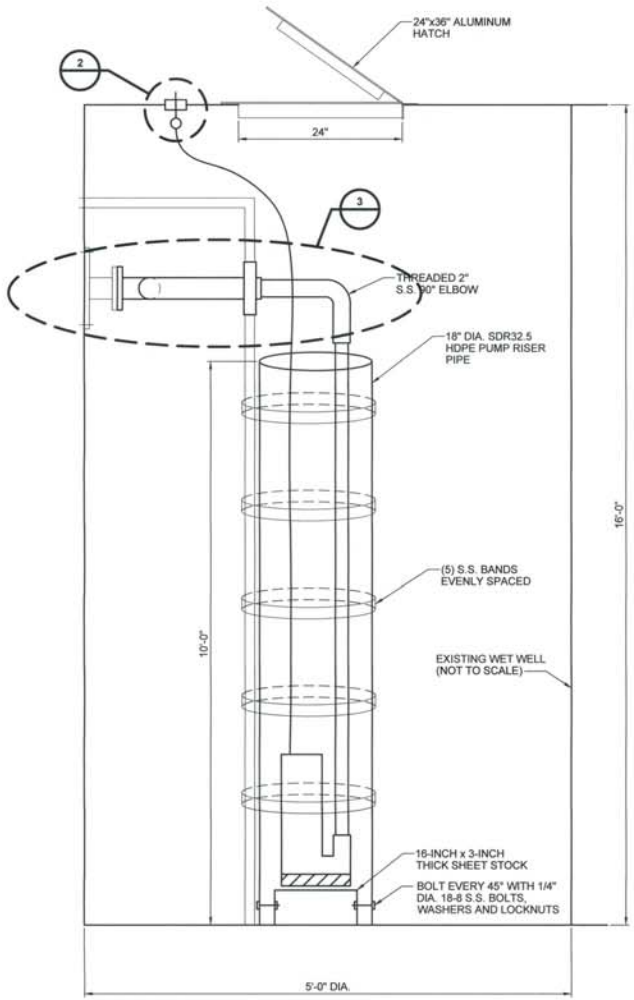
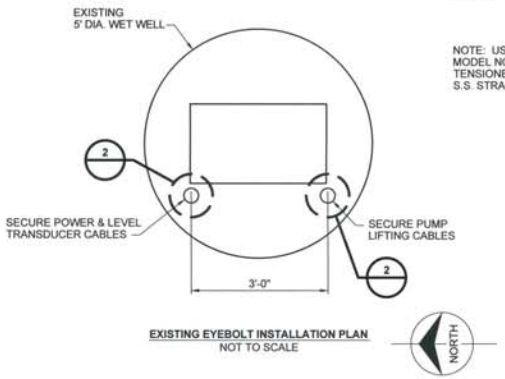


DETAIL 1
EXISTING HDPE PUMP RISER PIPE
NOT TO SCALE

NOTE:

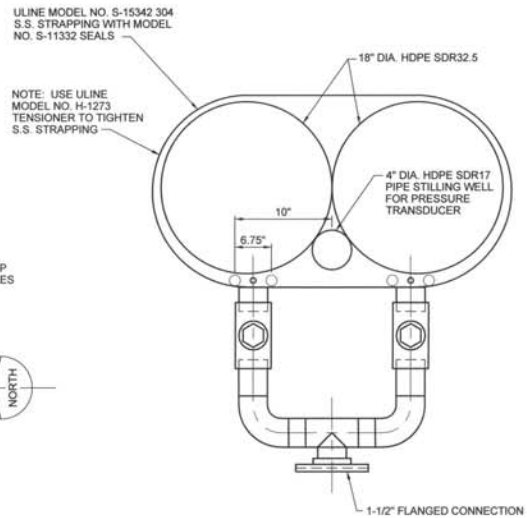
1. OWNER TO FIELD FABRICATE PIPING PERFORATIONS.



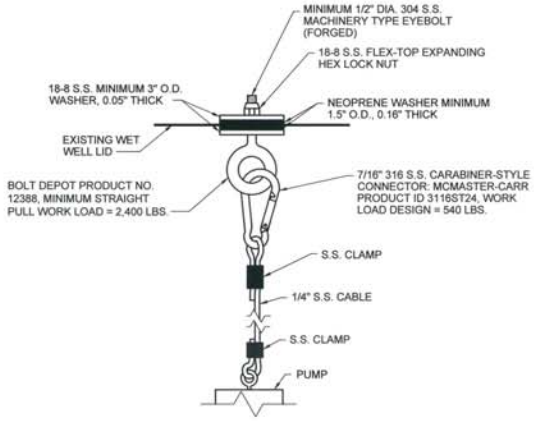
EXISTING EYEBOLT INSTALLATION PLAN
NOT TO SCALE

NOTE:

1. ALL DIMENSIONS ARE APPROXIMATE.



DETAIL 3
NOT TO SCALE



DETAIL 2
EXISTING PUMP SUPPORT
NOT TO SCALE

NOTE:

1. ALL WASHERS AND HEXNUTS SHALL BE MCMASTER-CARR OR ENGINEER APPROVED EQUAL.

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

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S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

EXISTING LEACHATE WETWELL DETAILS

project	contract
67062	

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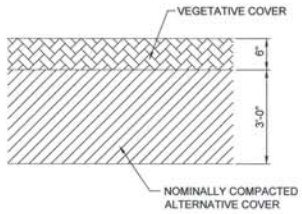
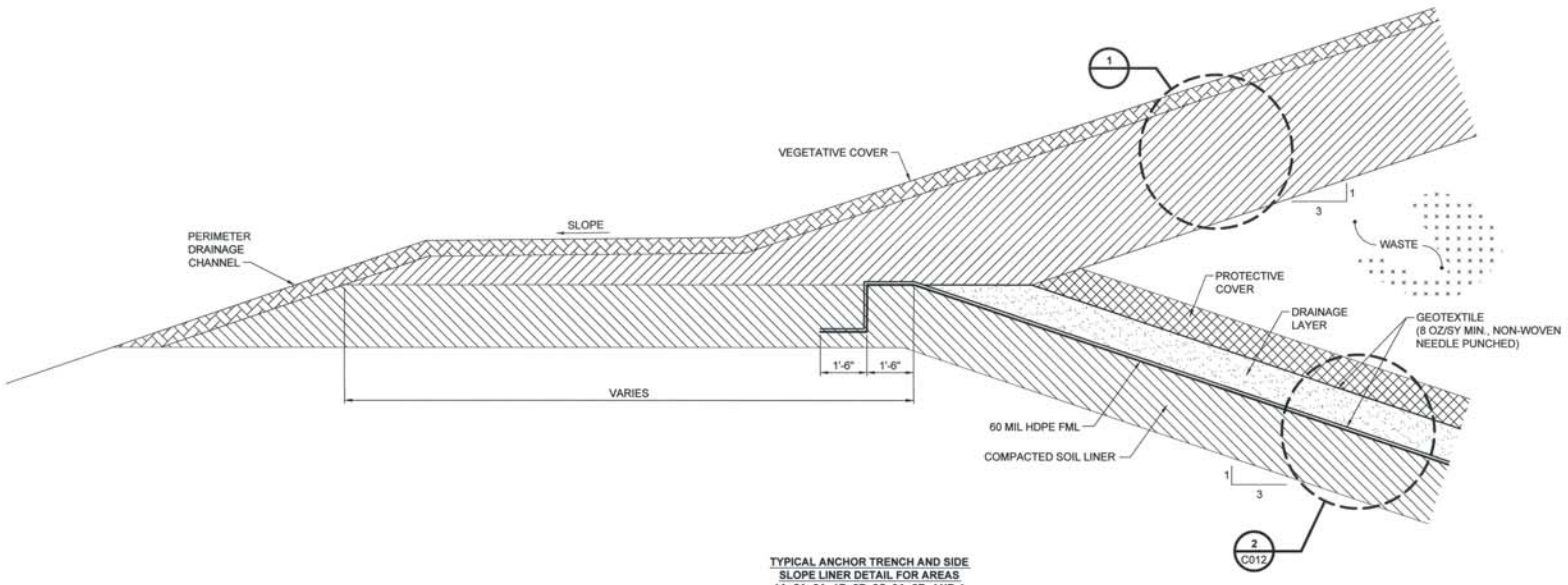


DETAIL 1 C005, C018, C025

PROPOSED ALTERNATIVE FINAL COVER SYSTEM DETAIL
NOT TO SCALE



TYPICAL ANCHOR TRENCH AND SIDE SLOPE LINER DETAIL FOR AREAS 1A, 2A, 3A, 1B, 2B, 2C, 3A, 3B, AND 4
NOT TO SCALE

NOTE:

1. SEE C004 FOR AREA 5 ANCHOR TRENCH AND SIDESLOPE LINER DETAIL.

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
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BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

FINAL COVER SYSTEM DETAILS

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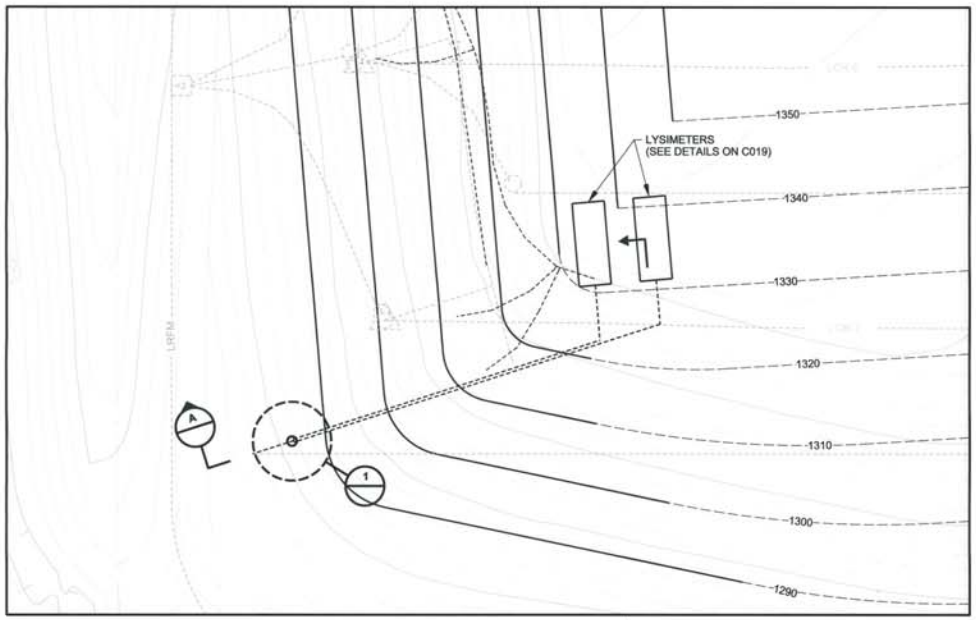

LYSIMETER PLAN

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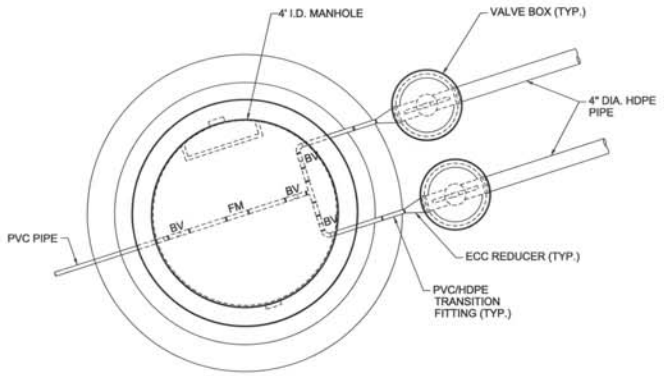
SCALE IN FEET

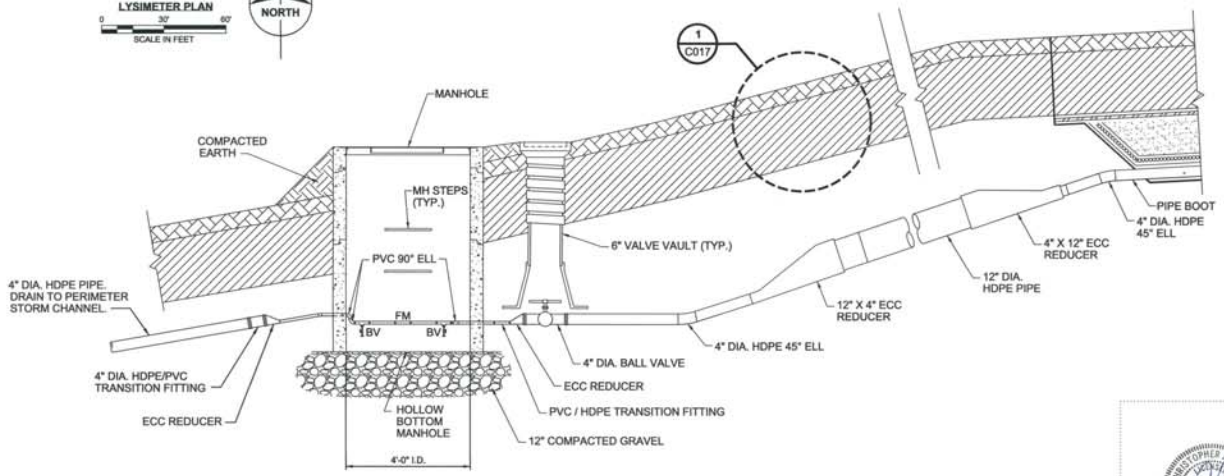
NORTH



DETAIL 1

NOT TO SCALE

NORTH



SECTION A

NOT TO SCALE

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTES:

1. EXISTING TOPOGRAPHY WAS FLOWN ON APRIL 2, 2008 BY WESTERN AIR MAPS, INC., OVERLAND PARK, KANSAS.
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S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

LYSIMETER PLAN AND DETAILS

project	contract
67062	

drawing **C018** – rev. **1**

sheet 20 of 29 sheets

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1/9/2015

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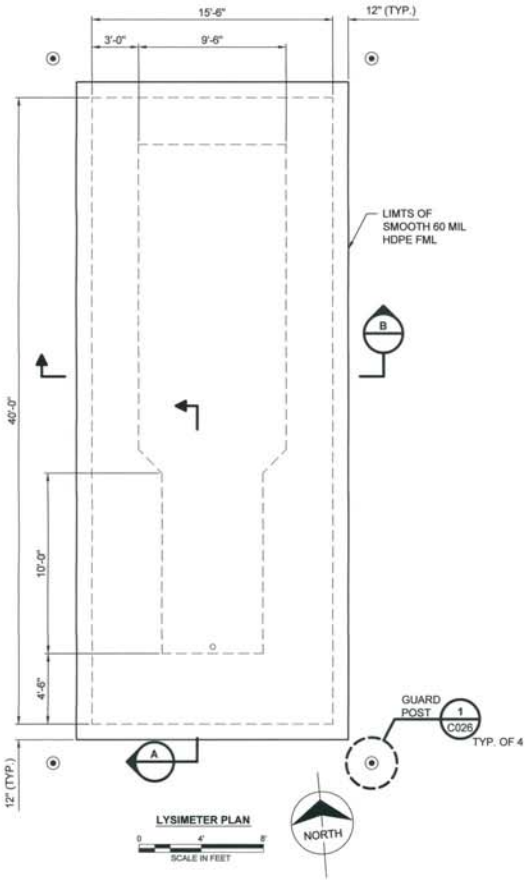

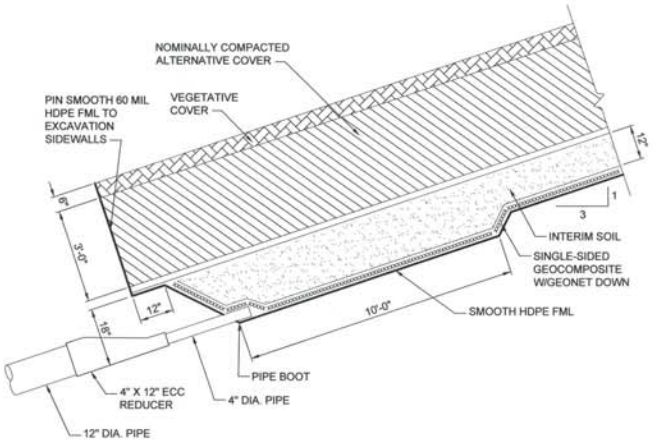

SECTION A
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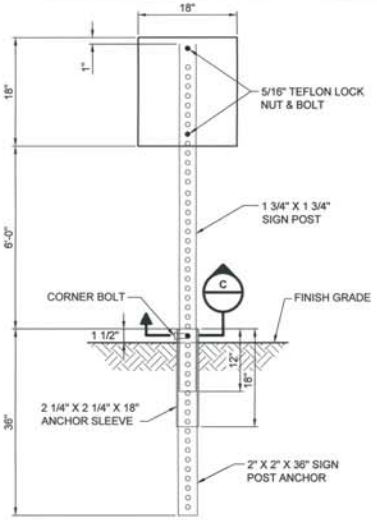
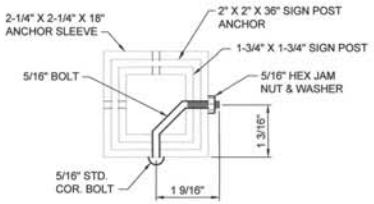


DETAIL 1
SIGN POST DETAIL
NOT TO SCALE



SECTION C
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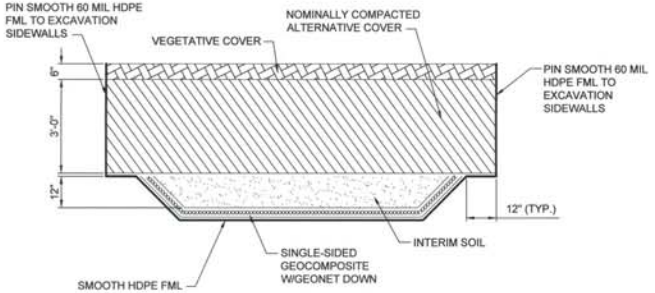

SECTION B
NOT TO SCALE

NOTES:

1. INTERIM SOIL SHALL BE INTERMEDIATE COVER SOIL MATERIAL.
2. LYSIMETER DRAIN PIPE SHALL BE INSTALLED AT A CONSTANT UNIFORM SLOPE.
3. ALTERNATIVE COVER CONSTRUCTION MEANS AND METHODS OVER THE LYSIMETER SHALL BE IDENTICAL TO THE MEANS AND METHODS OF THE ALTERNATIVE COVER CONSTRUCTION OUTSIDE THE LYSIMETER.

NOTES:

1. A TOTAL OF 4 SIGNS ARE REQUIRED. SIGNS SHALL BE LABELED AS FOLLOWS EDGE OF LYSIMETER.
2. DRIVE SIGN POST ANCHOR INTO SUBGRADE.
3. DRIVE ANCHOR SLEEVE OVER THE SIGN POST.
4. INSERT SIGN POST INTO THE SIGN POST ANCHOR AND BOLT IN PLACE.
5. IN ALL INSTALLATIONS THE FIRST HOLE ABOVE THE FINISHED GRADE LEVEL IN ALL THREE UNITS MUST BE IN LINE FOR INSERTION OF THE ANCHOR BOLT.

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTE:

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MARCH 2013	M. COCHRAN
designed	checked
S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

LYSIMETER DETAILS

project	contract
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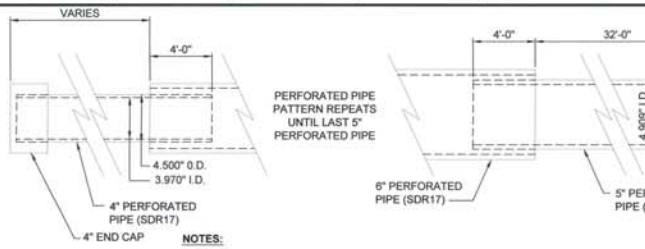
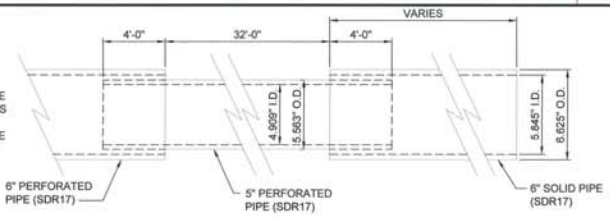


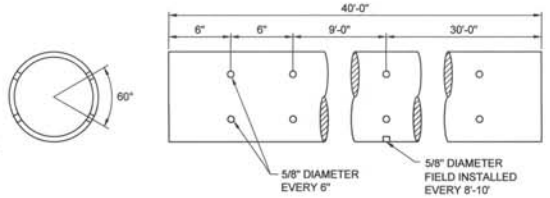
PERFORATED PIPE PATTERN REPEATS UNTIL LAST 5" PERFORATED PIPE



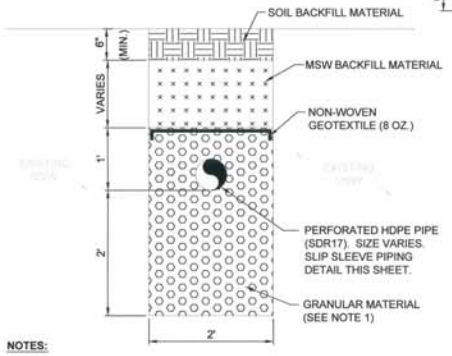
NOTES:

1. HDPE PIPE AND FITTINGS SHALL BE SUBMITTED FOR APPROVAL TO ENGINEER PRIOR TO CONSTRUCTION ACTIVITIES. RECOMMENDED SUPPLIER: ISCO PIPE, 800-345-4726.
2. HDPE PIPE SHALL BE MADE FROM A HIGH DENSITY, EXTRA HIGH MOLECULAR WEIGHT MATERIAL WITH A BROAD RANGE MOLECULAR WEIGHT DISTRIBUTION DESIGNATED AS PE 3408 / PE 3608 WITH ASTM D3350-99 CELL CLASSIFICATION NUMBER OF 345464C.
3. FIRST SECTION OF NEW PIPING ON LCR-1, 2, 3, AND 4 SHALL BE 5" PERFORATED PIPE (SDR17).

CONCEPTUAL SLIP SLEEVE PIPING DETAIL
NOT TO SCALE



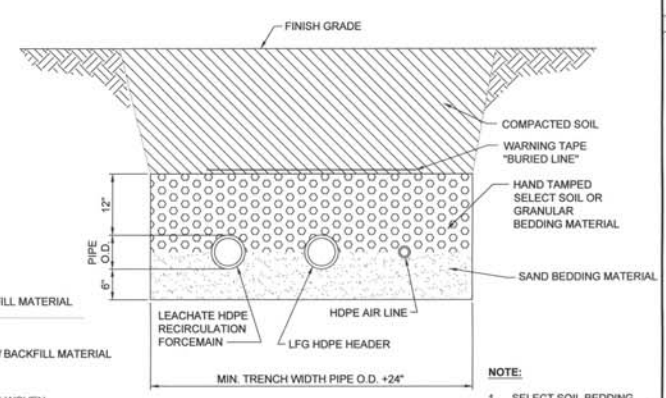
TYPICAL LEACHATE RECIRCULATION PIPE PERFORATION PATTERN DETAIL
NOT TO SCALE



NOTES:

1. THE GRANULAR MATERIAL SHALL CONTAIN NO MORE THAN 5% PASSING A 5/8" SCREEN.
2. GRANULAR MATERIAL SHALL MEET OR EXCEED THE FOLLOWING REQUIREMENTS OR AS APPROVED BY ENGINEER:
   SOUNDNESS: 0.90 MINIMUM
   WEAR: 40% MAXIMUM
   ABSORPTION: 4.0% MAXIMUM

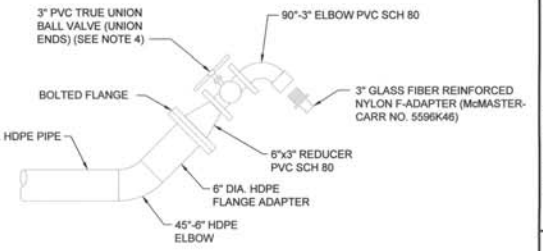
LEACHATE RECIRCULATION TRENCH DETAIL
NOT TO SCALE



SECTION C / C009
NOT TO SCALE

NOTE:

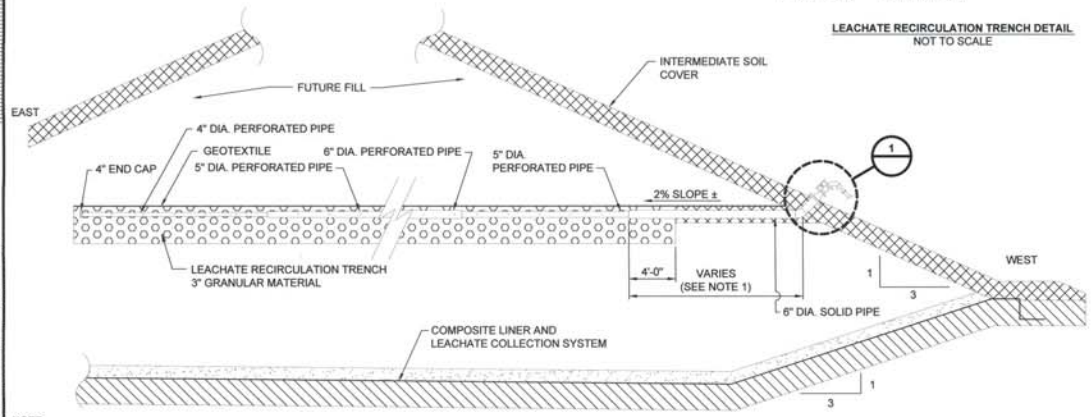
1. SELECT SOIL BEDDING AND BACKFILL MATERIALS MAY ALSO BE USED.



NOTES:

1. 3" DIA. C-COUPLER (McMASTER-CARR NO. 5596K361), E-ADAPTED (McMASTER-CARR NO. 5596K76), DUST PLUG (McMASTER-CARR NO. 5596K85), AND DUST CAP (McMASTER-CARR NO. 5596K951).
2. MINIMIZE EXPOSED LENGTH OF LEACHATE RECIRCULATION HEADER.
3. FUTURE 3" DIA. VALVE MAY BE GATE, GLOBE, OR BALL - PVC OR S.S.

DETAIL 1
EXISTING AND FUTURE LEACHATE INJECTION PORT
NOT TO SCALE



NOTE:

1. HISTORICAL LINES TYPICALLY UTILIZED 40 L.F. OF SOLID PIPING. FUTURE LINES WILL TYPICALLY HAVE 75 L.F. - 100 L.F. OF SOLID PIPING.

TYPICAL HORIZONTAL SECTION FOR LEACHATE RECIRCULATION TRENCH
NOT TO SCALE

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LEACHATE RECIRCULATION DETAILS

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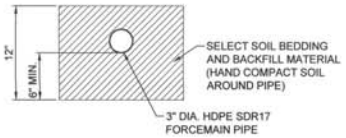
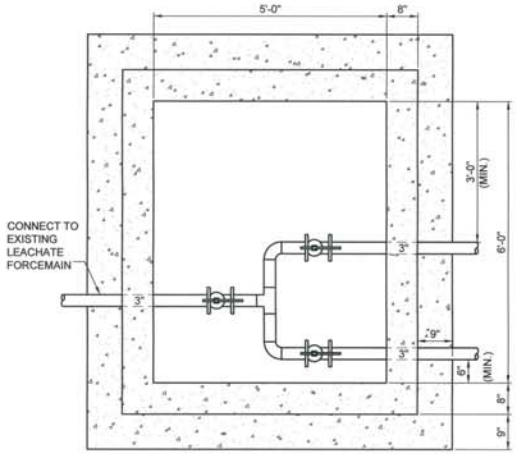
Scale For Microfilming: Millimeters / Inches



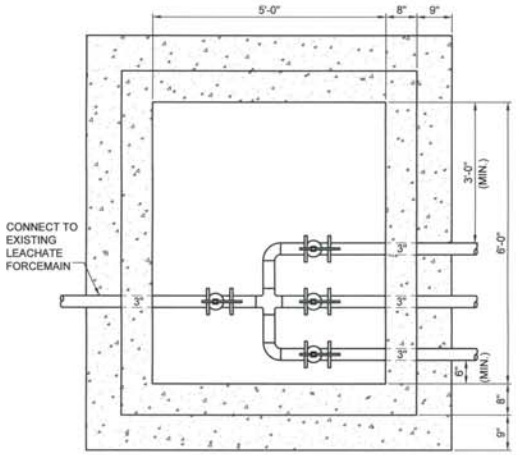
NOTE:

1. BEDDING / BACKFILL MATERIAL SHALL CONSIST OF CLEAN SOIL, FREE OF DELETERIOUS MATERIALS AND SOIL PARTICLES LARGER THAN 2" IN DIAMETER.

LEACHATE FORCEMAN TRENCH DETAIL
NOT TO SCALE



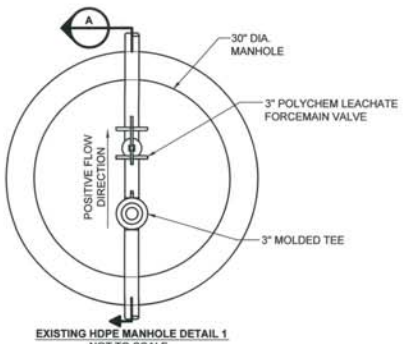
EXISTING VAULT 1 DETAIL AND PIPING CONFIGURATION
NOT TO SCALE



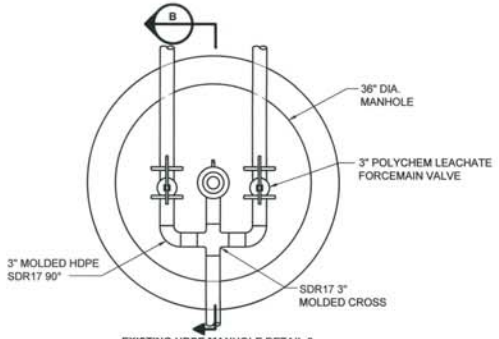
EXISTING VAULT 2 DETAIL AND PIPING CONFIGURATION
NOT TO SCALE

NOTES:

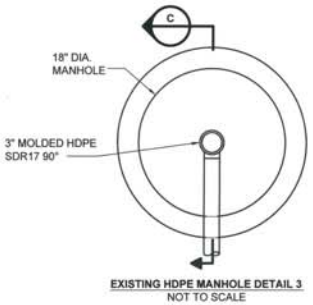
1. EACH VAULT WILL BE A MINIMUM OF 7'-4" X 6'-4" WITH MINIMUM INTERIOR DIMENSIONS OF 6'-0" X 5'-0".
2. LEACHATE FORCE MAIN PIPING AND VALVES SHALL BE 3" DIAMETER HDPE SDR17 WITH A MINIMUM PRESSURE RATING OF 100 PSI AT A TEMPERATURE OF 73.4° F.
3. ALL LEACHATE FORCE MAIN VALVES ARE TO BE NORDSTROM POLY-CHEM VALVES WITH CATEGORY "C" TRIM. CONTRACTOR SHALL PROVIDE ONE NEW T HANDLE FOR VALVE OPERATION.
4. THE VAULT SHALL BE WATERTIGHT AND APPROPRIATELY GRADED SO STORM WATER IS CONVEYED AWAY FROM THE VAULTS.
5. ALL VAULT PENETRATIONS SHALL USE LINK-SEAL MODULAR SEALS, MODEL LS-315-C-10 (INSTALLED IN A CORED HOLE) OR ENGINEER APPROVED EQUIVALENT.



EXISTING HDPE MANHOLE DETAIL 1
NOT TO SCALE



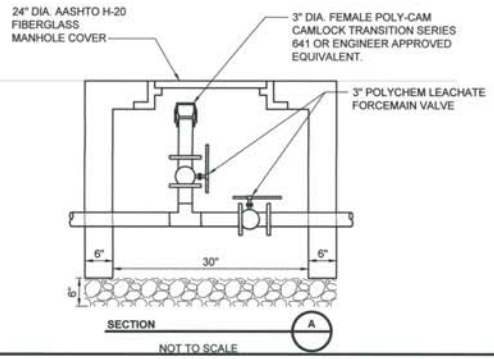
EXISTING HDPE MANHOLE DETAIL 2
NOT TO SCALE

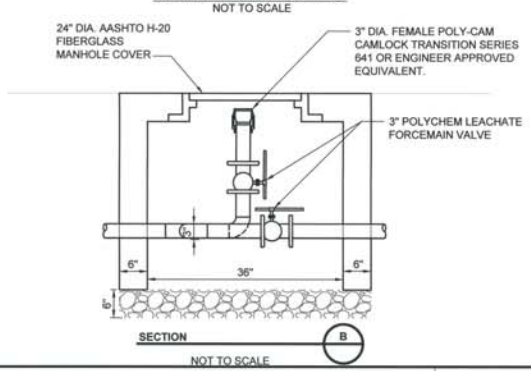


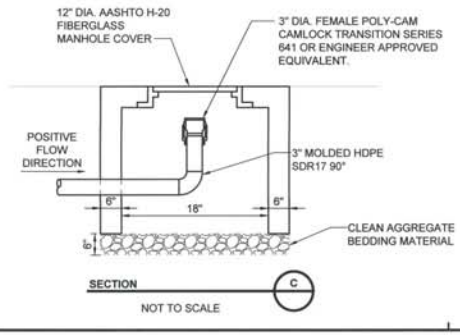
EXISTING HDPE MANHOLE DETAIL 3
NOT TO SCALE

MANHOLE NOTES:

1. ALL CONNECTIONS WITHIN MANHOLES SHALL BE PREFABRICATED OR JOINED USING ELECTROFUSION.
2. PROVIDE 10 FOOT LENGTHS OF 3" DIA. GENERAL PURPOSE MEDIUM - PRESSURE SBR WATER HOSE (MCMASTER - CARR NO. 5289K27) WITH 3" DIA. POLY-CAM STAINLESS STEEL CAM LOCK HOSE BARB, DUST PLUG, AND DUST CAP FOR EACH MANHOLE.







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SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

EXISTING LEACHATE RECIRCULATION VAULT AND MANHOLE DETAILS

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drawing	rev.
C021 –	1

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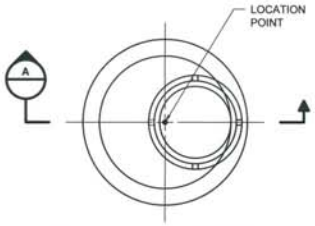
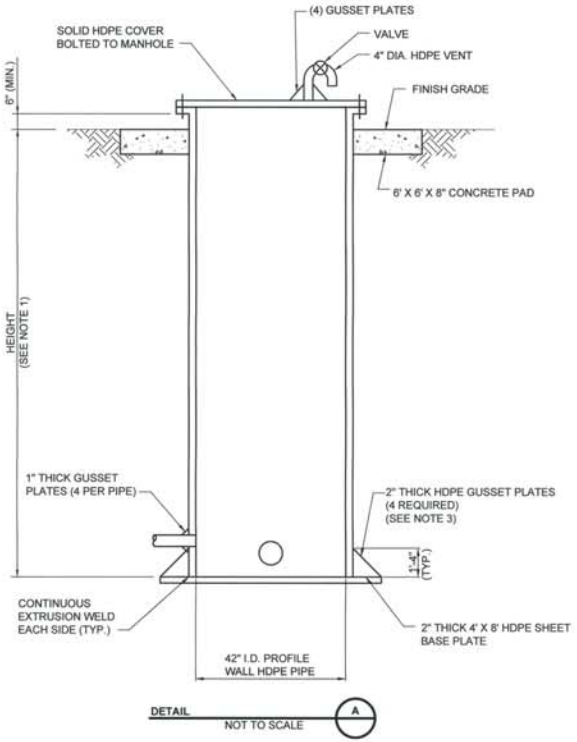
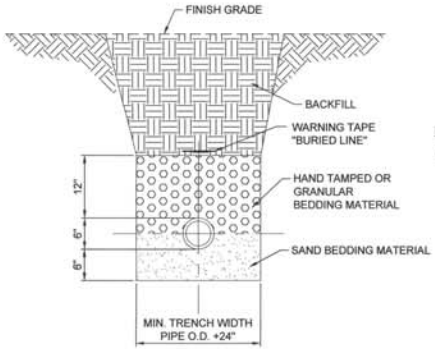


TYPICAL HDPE LEACHATE SEWER MANHOLE
NOT TO SCALE



HDPE MANHOLE NOTES:

1. FOR MANHOLE DEPTHS AND INVERTS SEE DRAWING C010.
2. STRUCTURE SHOWN IS TYPICAL FOR LEACHATE SEWER STRUCTURES MH-1 THROUGH MH-5.
3. STRUCTURE TO BE ORIENTED SUCH THAT IN INCOMING GRAVITY SEWERS AVOID INTERSECTION WITH GUSSET PLATES.
4. ASSEMBLE AND BACKFILL SEWER STRUCTURE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



LEACHATE SEWER PIPE BEDDING DETAIL
NOT TO SCALE

NOTE:

1. SELECT SOIL BEDDING AND BACKFILL MATERIALS MAY ALSO BE USED.

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SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

LEACHATE SEWER DETAILS

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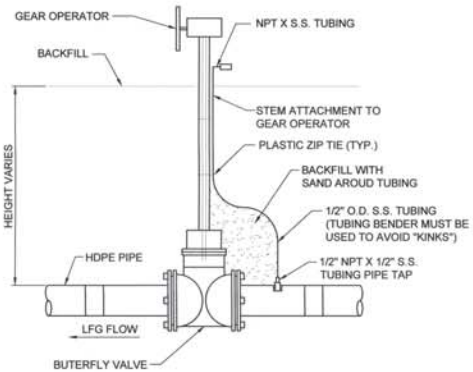
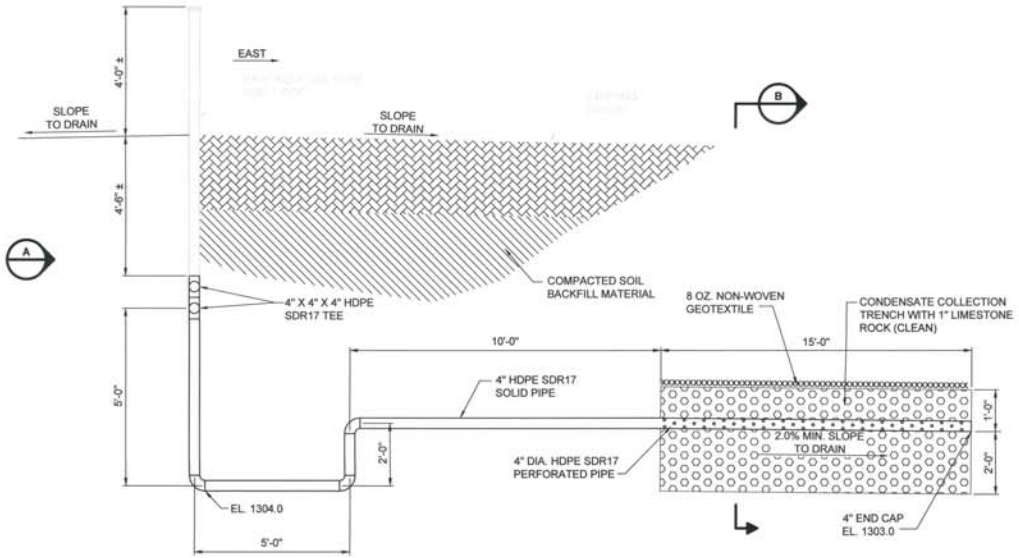
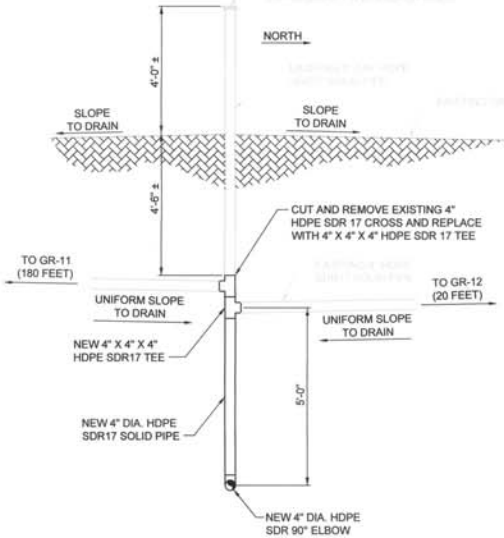


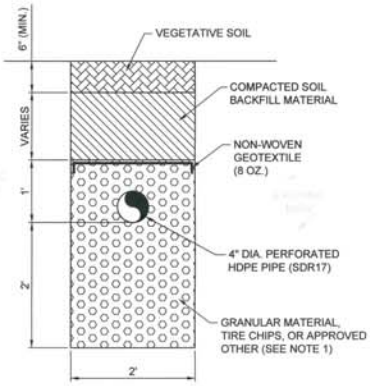
DETAIL 1/C002
EXISTING ISOLATION VALVE
NOT TO SCALE



EXISTING CONDENSATE COLLECTION TRENCH PROFILE
(PRE-SUBTITLE D LANDFILL)
NOT TO SCALE



ELEVATION A
EXISTING CONDENSATE COLLECTION TRAP
(PRE-SUBTITLE D LANDFILL)
NOT TO SCALE



NOTES:

1. THE GRANULAR MATERIAL SHALL CONTAIN NO MORE THAN 5% PASSING A 5/8" SCREEN. ALL GRANULAR MATERIAL SHOULD PASS A 1 1/4" SCREEN.
2. GRANULAR MATERIAL SHALL MEET OR EXCEED THE FOLLOWING REQUIREMENTS OR AS APPROVED BY ENGINEER.
   SOUNDNESS: 0.90 MINIMUM
   WEAR: 40% MAXIMUM
   ABSORPTION: 4.0% MAXIMUM
3. HAUL EXCAVATED MSW TO THE ACTIVE LANDFILL DISPOSAL AREA AT THE END OF EACH WORKING DAY.

SECTION B
EXISTING CONDENSATE COLLECTION TRENCH
NOT TO SCALE

no.	date	by	ckd	description
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SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

EXISTING LANDFILL GAS SYSTEM DETAILS

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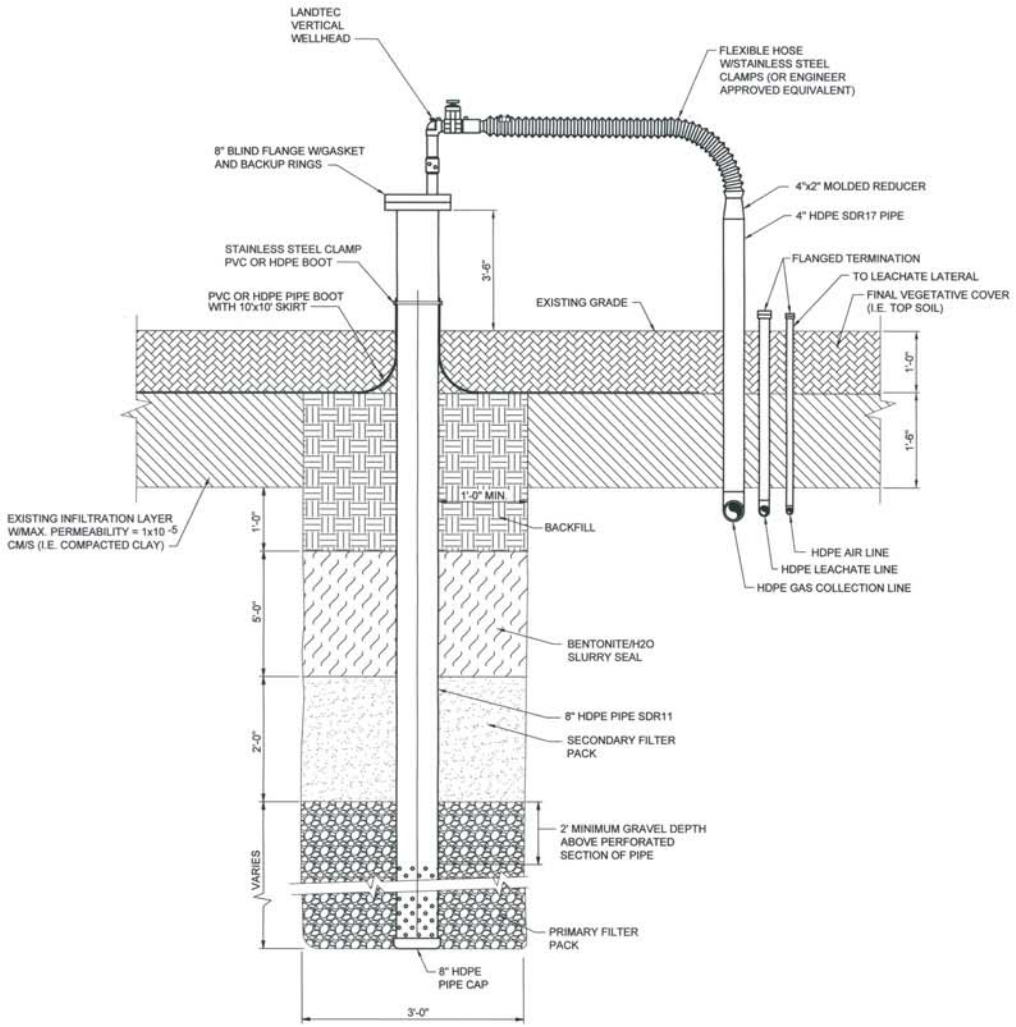

EXISTING GAS/LEACHATE RECOVERY WELL
NOT TO SCALE

NOTE:

1. GR-1, GR-2 AND GR-3 WILL BE EXTENDED IN THE FUTURE WITH FUTURE INCREASE IN ELEVATION.

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SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

EXISTING GAS/LEACHATE RECOVERY WELL DETAIL

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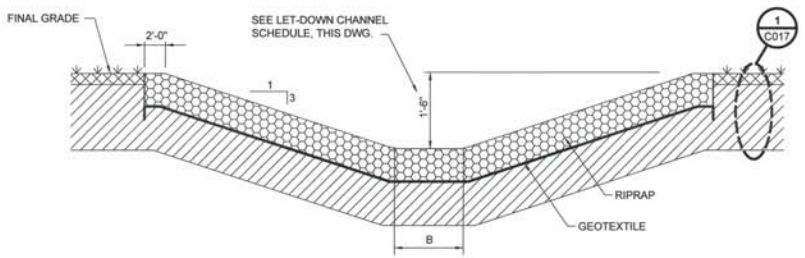
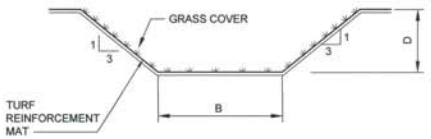


TYPICAL LET-DOWN CHANNEL DETAIL
NOT TO SCALE

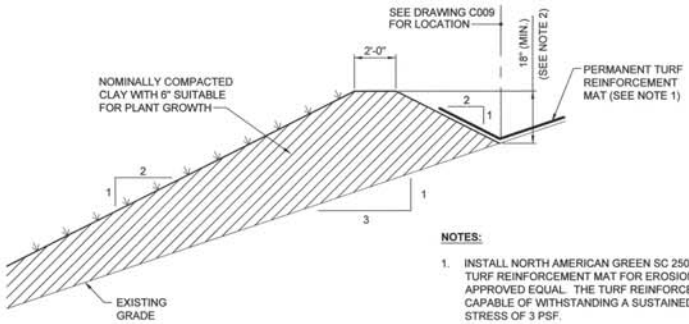
NOTE:

1. TRANSITION FROM UPPER LET-DOWN CHANNEL TO LOWER CHANNEL AT LEAST 10' UPSTREAM FROM THE ENTRANCE OF THE FINAL SIDESLOPE TERRACE CHANNELS.

LET-DOWN CHANNEL SCHEDULE				
CHANNEL	LENGTH (L.F.)	SLOPE %	B (FT.)	D_{50}(FT.)
LD-1	384	33	15	1.0
LD-2	384	33	15	1.0
LD-3	396	33	15	1.0
LD-4	444	33	15	1.0



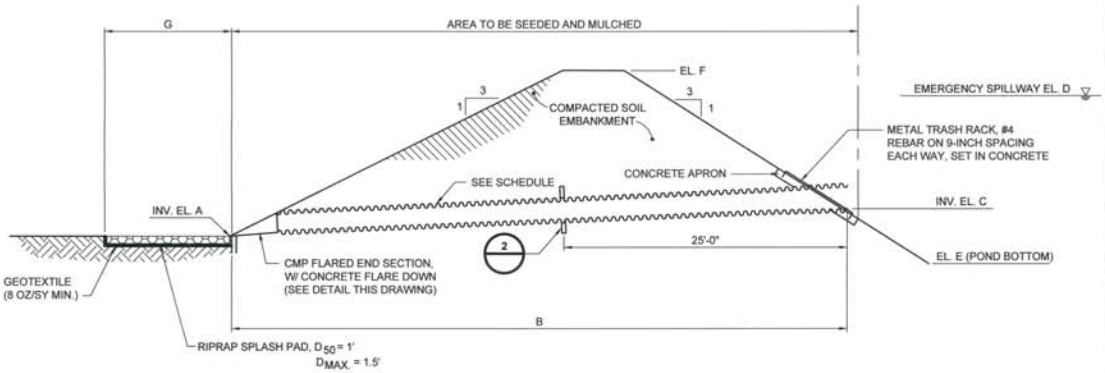
DRAINAGE CHANNEL DETAIL
NOT TO SCALE



NOTES:

1. INSTALL NORTH AMERICAN GREEN SC 250 PATTERN E PERMANENT TURF REINFORCEMENT MAT FOR EROSION CONTROL OR ENGINEER APPROVED EQUAL. THE TURF REINFORCEMENT MAT SHALL BE CAPABLE OF WITHSTANDING A SUSTAINED UNVEGETATED SHEAR STRESS OF 3 PSF.
2. TOP TERRACES ABOVE ELEVATION 1400 SHALL BE A MINIMUM OF 18" DEEP, SIDE SLOPE TERRACES SHALL BE A MINIMUM OF 24" DEEP.

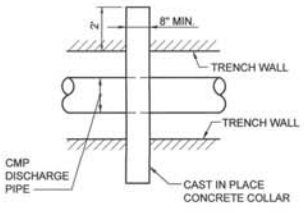
TYPICAL DRAINAGE TERRACE
NOT TO SCALE



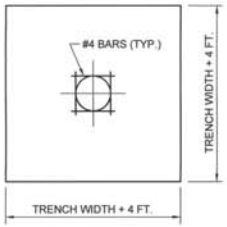
NOTE:

1. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF KANSAS, WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

THESE DRAWINGS ARE INTENDED FOR USE AS PERMIT DRAWINGS ONLY AND SHALL NOT BE USED FOR CONSTRUCTION. CONTRACT DOCUMENTS (DRAWINGS AND SPECIFICATIONS) WILL BE PREPARED PRIOR TO CONSTRUCTION.



DETAIL 2
CONCRETE COLLAR
NOT TO SCALE



SECTION A
NOT TO SCALE

SEDIMENTATION BASIN SCHEDULE										
PRIMARY SPILLWAY	DISCHARGE PIPE DIA	DISCHARGE PIPE	SLOPE	A	B (FT.)	C	D	E	F	G (FT.)
1 (TEMPORARY)	15"	CMP	1.0%	1266.0	105	1267.0	1270.0	1265.0	1272.0	0
2	15"	CMP	0.9%	1259.0	57	1259.5	1264.0	1254.0	1266.0	30

TYPICAL SEDIMENTATION BASIN DISCHARGE PIPE DETAIL
NOT TO SCALE

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

Burns & McDonnell SINCE 1898

date	detailed
MARCH 2013	H. FELLOWS
designed	checked
S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

STORM WATER MANAGEMENT DETAILS

project	contract
67062	

drawing **C025 – 1** rev.

sheet 27 of 29 sheets

file 67062LF EXPC025PD.dwg

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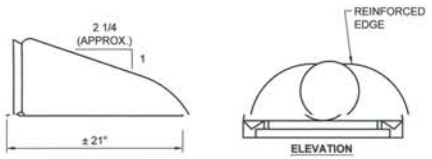
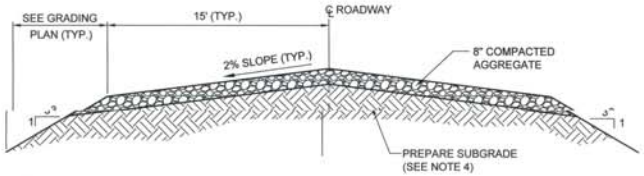


CROSS SECTION ELEVATION

CMP FLARED CULVERT END SECTION DETAIL
NOT TO SCALE

NOTES:

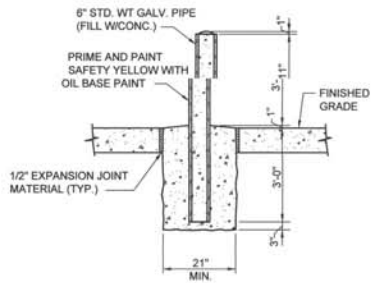
1. CMP CULVERT AND END SECTION SHALL BE 14 GAUGE GALVANIZED CMP.
2. MATCH EXISTING DITCH SLOPE.



NOTES:

1. CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ACCESS ROAD THROUGHOUT CONSTRUCTION. ROAD SHALL BE IN AS GOOD OR BETTER CONDITION WHEN CONTRACTOR DEMOBILIZES FROM SITE AND RETURNS MAINTENANCE RESPONSIBILITIES TO OWNER AS WHEN INITIALLY COMPLETED.
2. ALL SIDE SLOPES SHALL BE A MAXIMUM OF 3:1.
3. LOCATE DITCHES IMMEDIATELY ADJACENT TO ROADWAY EXCEPT AS OTHERWISE NOTED.
4. PROOFROLL SUBGRADE PRIOR TO ROCK PLACEMENT. REMOVE AND REPLACE UNSUITABLE SUBGRADE MATERIAL.

TYPICAL ACCESS ROAD SECTION
NOT TO SCALE



DETAIL 1 / C019

TYPICAL GUARD POST
NOT TO SCALE

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTE:

1. THE DESIGNS CONTAINED HEREIN MAY BE REVISED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF KANSAS, WITH CONCURRENCE FROM THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT.

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Burns & McDonnell SINCE 1898

date	detailed
MARCH 2013	M. COCHRAN
designed	checked
S. MARTIN	C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION
MISCELLANEOUS DETAILS

project	contract
67062	

drawing **C026** – rev. **1**

sheet 28 of 29 sheets

file 67062LF EXPC026PD.dwg

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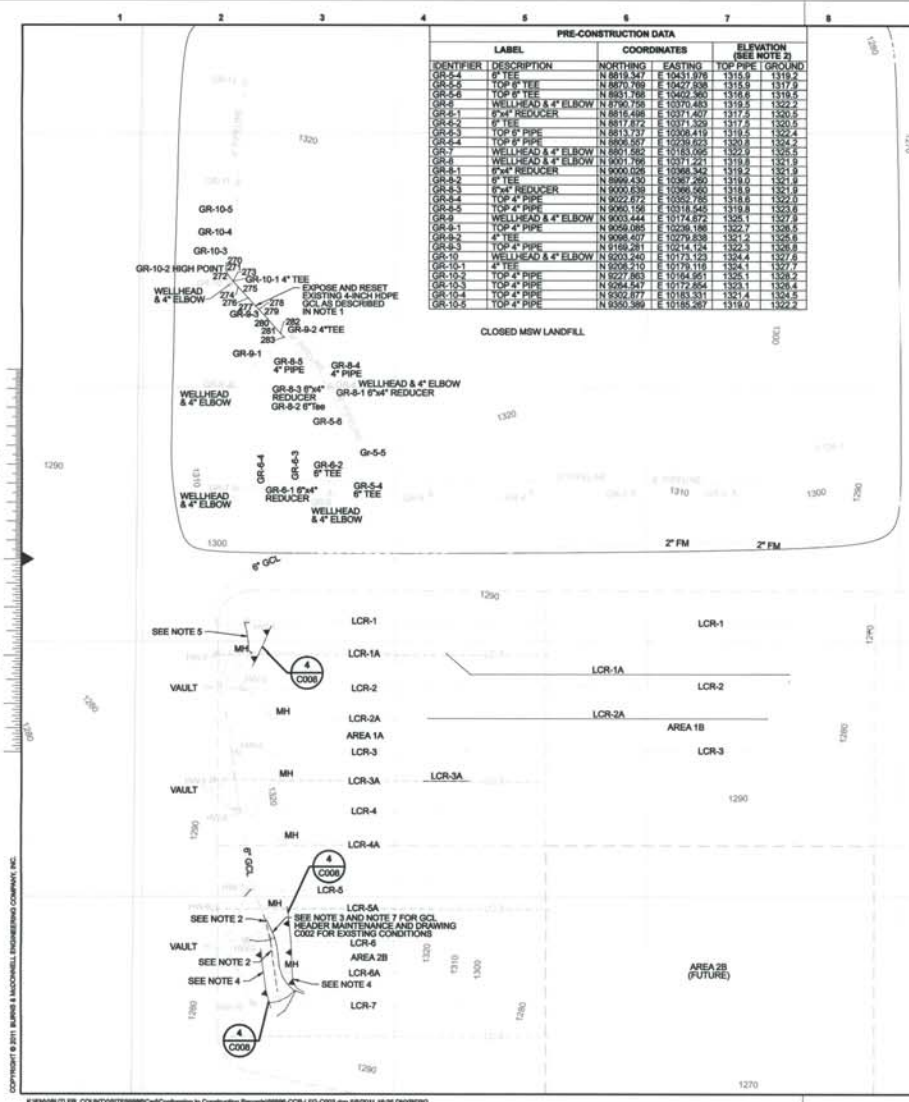

PRE-CONSTRUCTION DATA

LABEL		COORDINATES		ELEVATION (SEE NOTE 2)	
IDENTIFIER	DESCRIPTION	NORTHING	EASTING	TOP PIPE	GROUND
GR-5-4	6" TEE	N 8619.347	E 10431.976	1315.9	1319.2
GR-5-5	TOP 6" TEE	N 8670.769	E 10427.938	1315.5	1317.9
GR-5-6	TOP 6" TEE	N 8931.756	E 10402.380	1316.6	1319.5
GR-8	WELLHEAD & 4" ELBOW	N 8790.758	E 10370.483	1319.5	1322.2
GR-8-1	6"x4" REDUCER	N 8816.498	E 10371.407	1317.5	1320.5
GR-8-2	6" TEE	N 8817.872	E 10371.329	1317.5	1320.5
GR-8-3	TOP 6" PIPE	N 8813.737	E 10368.419	1318.5	1322.4
GR-8-4	TOP 6" PIPE	N 8808.557	E 10239.923	1320.8	1324.2
GR-7	WELLHEAD & 4" ELBOW	N 8801.582	E 10183.056	1322.9	1325.5
GR-8	WELLHEAD & 4" ELBOW	N 9001.796	E 10371.221	1319.8	1321.9
GR-9-1	6"x4" REDUCER	N 9000.026	E 10368.342	1319.2	1321.9
GR-9-2	6" TEE	N 8999.430	E 10367.269	1319.0	1321.9
GR-9-3	6"x4" REDUCER	N 9000.639	E 10366.060	1318.9	1321.9
GR-9-4	TOP 4" PIPE	N 9022.672	E 10362.785	1318.6	1322.0
GR-9-5	TOP 4" PIPE	N 9060.156	E 10318.545	1319.8	1323.6
GR-9	WELLHEAD & 4" ELBOW	N 9003.444	E 10174.572	1325.1	1327.9
GR-9-1	TOP 4" PIPE	N 9059.085	E 10236.186	1322.7	1326.5
GR-9-2	4" TEE	N 9066.407	E 10279.838	1321.2	1326.6
GR-9-3	TOP 4" PIPE	N 9169.281	E 10214.124	1322.3	1326.9
GR-10	WELLHEAD & 4" ELBOW	N 9203.240	E 10173.123	1324.4	1327.6
GR-10-1	4" TEE	N 9208.210	E 10173.116	1324.1	1327.7
GR-10-2	TOP 4" PIPE	N 9227.563	E 10164.951	1325.1	1328.2
GR-10-3	TOP 4" PIPE	N 9284.547	E 10172.854	1323.1	1328.4
GR-10-4	TOP 4" PIPE	N 9302.877	E 10183.331	1321.4	1324.5
GR-10-5	TOP 4" PIPE	N 9350.389	E 10185.267	1319.0	1322.2

NOTES:

1. EXISTING 4-INCH HDPE GCL HAS EXPERIENCED SETTLEMENT BETWEEN GR-10 AND WHERE THE GR-9 LATERAL COLLECTION LINE JOINS THE 4-INCH HDPE GCL (SURVEY POINT IDENTIFIER GR-9-2). CONTRACTOR SHALL EXPOSE THE 4-INCH GCL BETWEEN THESE TWO POINTS, SURVEY AT 15-FOOT INTERVALS, AND RESET THE EXISTING 4-INCH GCL TO PROMOTE CONDENSATE DRAINAGE FROM GR-10 TOWARDS GR-9-2. CONTRACTOR SHALL REPORT EXISTING SURVEYED GROUND AND TOP OF PIPE ELEVATIONS TO ENGINEER PRIOR TO RESETTING 4-INCH GCL. ENGINEER WILL PROVIDE DESIGN ELEVATIONS CORRESPONDING TO THE 15-FOOT SURVEYED INTERVALS. THE RESET GCL SLOPE SHALL BE UNIFORM BETWEEN ENGINEER PROVIDED DESIGN ELEVATIONS. SURVEY AS-BUILT PIPING ON 15-FOOT INTERVALS. PROVIDE 6" OF COMPACTED SELECT FINE SOIL BEDDING MATERIAL AND BACKFILL WHEN RESETTING PIPE. BUCKET COMPACT BACKFILL STARTING 12" ABOVE THE RESET PIPE. REPLACE SOIL LANDFILL CAP TO MATCH EXISTING (MINIMUM OF 24 INCHES).
2. THE SURVEY POINTS ARE PROVIDED FOR PURPOSES OF INDICATING THE GENERAL LOCATION OF EXISTING PIPING. NOTE THAT THE GCL WAS INSTALLED IN 2002-2004 AND GENERAL LANDFILL SETTLEMENT HAS OCCURRED OVER THE ENTIRE AREA. CONTRACTOR SHALL CONSIDER THESE LOCATIONS APPROXIMATE. ADDITIONAL FILL HAS BEEN ADDED IN THE AREA SINCE THAT TIME.
3. EXISTING 6-INCH GCL HAS EXPERIENCED LOCALIZED SETTLEMENT SINCE BEING INSTALLED. NOTE THAT THE 6-INCH GCL IS INSTALLED BELOW THE 3-INCH LCR DISTRIBUTION FORCEMAINS. CONTRACTOR SHALL RESET OR REPLACE EXISTING GCL SECTION AT A MINIMUM UNIFORM SLOPE OF 3 PERCENT. CONTRACTOR SHALL EXTEND EXISTING 3-INCH HDPE SDR 11 LATERAL COLLECTION LINES FROM HW-9 AND HW-10 TO NEW/RESET 6-INCH GCL LOCATION. ALL LATERAL PIPING EXTENSIONS SHALL BE INSTALLED AT A UNIFORM SLOPE. SURVEY AS-BUILT PIPING ON 15-FOOT INTERVALS. PROVIDE 6" OF COMPACTED SELECT FINE SOIL BEDDING MATERIAL AND BACKFILL WHEN RE-SETTING PIPE. BUCKET COMPACT BACKFILL STARTING 12" ABOVE THE RESET PIPE. PROVIDE A MINIMUM OF 18" OF SOIL COVER OVER THE TOP OF PIPING.
4. SILT FENCE SHALL BE INSTALLED AS INDICATED TO PREVENT EROSION PRIOR TO SEEDING ACTIVITIES.
5. CONTRACTOR SHALL INSTALL NEW 4-INCH HDPE SDR17 GAS COLLECTION PIPE FROM MANHOLE AT LCR-1A TO MANHOLE AT LCR-1. SLOPE SHALL BE UNIFORM AND PIPE SHALL DAYLIGHT AT ABOVE LCR-1 MANHOLE. OWNER WILL PROVIDE ADDITIONAL FILL AS NECESSARY IN PROXIMITY TO LCR-1 TO ALLOW FOR DAYLIGHTING ABOVE LCR-1 MANHOLE.
6. ALL NEW AND RESET GAS COLLECTION PIPING SHALL BE BURIED A MINIMUM OF 18 INCHES UNLESS OTHERWISE APPROVED BY ENGINEER. CONTRACTOR SHALL UTILIZE SAND OR SELECT FINE GRAINED SOILS FROM THE SITE FOR BEDDING AND BACKFILL MATERIALS. BEDDING AND BACKFILL MATERIALS SHALL BE FREE OF DELETERIOUS MATERIALS. COMPACT BEDDING PRIOR TO PLACEMENT OF GAS COLLECTION PIPING. BACKFILL SHALL BE NOMINALLY COMPACTED SO AS TO NOT EXERT UNDUE STRESSES ON THE UNDERLYING PIPING.
7. LEACHATE RECIRCULATION DISTRIBUTION LINES ARE INSTALLED ABOVE LFG HEADER.
8. EXISTING TOPOGRAPHY WAS FLOWN ON APRIL 2, 2008 BY WESTERN AIR MAPS, INC., OVERLAND PARK, KANSAS.
9. AS-BUILT SURVEY POINTS DATED FEBRUARY 22, 2011 ARE FROM GOEDECKE ENGINEERING CO.

FEBRUARY 22, 2011 AS-BUILT POINTS

POINT NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
270	9244.43	10166.08	1322.49	4" ASBUILT
271	9231.85	10164.81	1323.12	4" ASBUILT
272	9220.59	10168.85	1323.26	4" ASBUILT
273	9208.41	10179.35	1323.69	4" ASBUILT TEE
274	9197.63	10188.67	1324.35	4" ASBUILT
275	9186.37	10199.16	1324.71	4" ASBUILT
276	9175.50	10209.36	1325.02	4" ASBUILT
277	9164.50	10219.04	1324.93	4" ASBUILT
278	9152.74	10230.26	1323.96	4" ASBUILT
279	9141.17	10241.09	1323.20	4" ASBUILT
280	9129.83	10251.00	1322.87	4" ASBUILT
281	9117.17	10262.12	1321.98	4" ASBUILT
282	9105.82	10272.75	1321.05	4" ASBUILT
283	9098.00	10280.09	1320.85	4" ASBUILT TEE

no.	date	by	ckd	description
0	01/11/11	DBN	CJS	ISSUED FOR CONSTRUCTION
1	5/11/11	DBN	SAM	CONFORMING TO CONSTRUCTION RECORDS

NORTH

0 100' 200'
SCALE IN FEET

Burns & McDonnell SINCE 1898

date: MAY 2011 | detailed: D. NYBERG
designed: S. MARTIN | checked: C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

CONFORMING TO CONSTRUCTION RECORDS

LANDFILL GAS SYSTEM MAINTENANCE - 1

project: 56886 | contract:
drawing: C003 — rev. 1
sheet 5 of 11 sheets
file 56886-CCR-LFG-C003.dgn

no.	date	by	ckd	description
0	3/29/13	MCC	SAM	ISSUED FOR PERMIT
1	1/9/15	LRD	SAM	KDHE COMMENTS

NOTE:

1. REFER TO CONFORMING TO CONSTRUCTION RECORDS DRAWINGS DATED MAY 2011 FOR THE LOCATION OF THE EXISTING GAS COLLECTION SYSTEM.

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Burns & McDonnell SINCE 1898

date: MARCH 2013 | detailed:
designed: S. MARTIN | checked: C. SNIDER

BUTLER COUNTY

BUTLER COUNTY KANSAS SANITARY LANDFILL

SANITARY LANDFILL VERTICAL AND HORIZONTAL EXPANSION

EXISTING GAS COLLECTION SYSTEM

project: 67062 | contract:
drawing: R001 — rev. 1
sheet 29 of 29 sheets
file 67062LF EXPR001PD.dwg

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