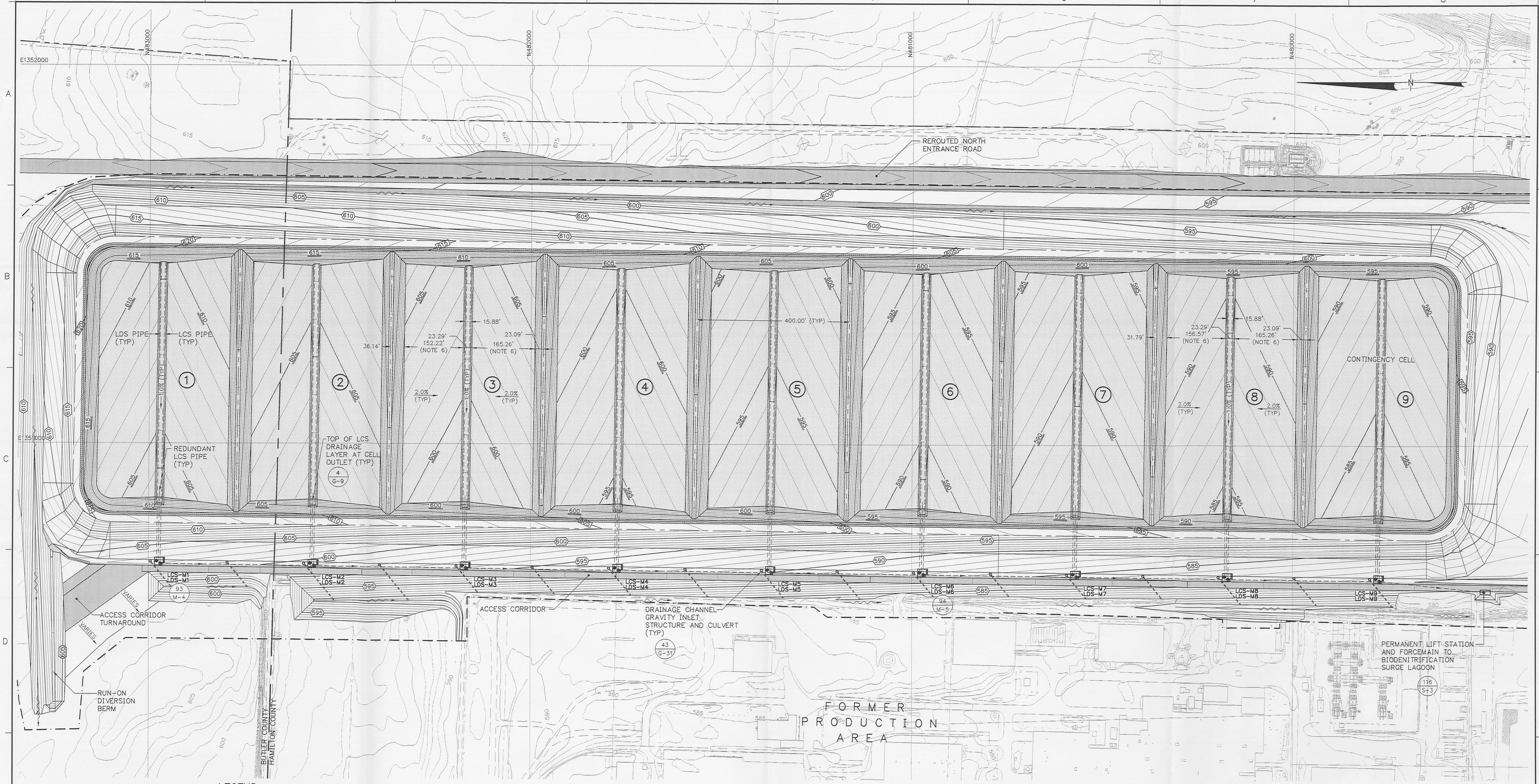


LEGEND

- EXISTING GROUND ELEVATION (FEET) — 600
- SUBGRADE ELEVATION (FEET) (NOTE 4) — 580
- COMPACTED CLAY LINER ELEVATION (FEET) — 585
- LEACHATE COLLECTION SYSTEM ELEVATION (FEET) — 580
- BUTLER COUNTY/HAMILTON COUNTY LINE
- FEMP PROPERTY LINE
- BATTERY LIMIT
- PERIMETER BERM BASELINE
- LEACHATE TRANSMISSION SYSTEM GRAVITY LINE
- LEACHATE TRANSMISSION SYSTEM MANHOLES (LDS AND LCS) AND HORIZONTAL MONITORING WELL COVER SLAB
- LEACHATE TRANSMISSION SYSTEM PERMANENT LIFT STATION
- (1) CELL DESIGNATION
- ACCESS CORRIDOR OR REROUTED NORTH ENTRANCE ROAD
- CREST OF LDS
- LIMIT OF LEACHATE COLLECTION SYSTEM DRAINAGE LAYER
- DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND CULVERT
- DRAINAGE FLOW DIRECTION

NOTES:

1. TOPOGRAPHIC MAP BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. GRID COORDINATE SYSTEM CORRESPONDS TO STATE PLANAR NORTH AMERICAN DATUM (NAD) 1983 OHIO SOUTH.
4. SUBGRADE ELEVATIONS CORRESPOND TO THE TOP OF PREPARED SUBGRADE, INCLUDING ANY COMPACTED FILL. CONSTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWING G-5.
5. CELLS SHALL BE DEVELOPED STARTING WITH CELL 1 AND ENDING WITH CELL 8. THE SCHEDULE OF CELL CONSTRUCTION WILL DEPEND ON THE AVAILABILITY OF IMPACTED MATERIAL FROM THE OPERABLE UNITS.
6. DIMENSIONS SHOWN IN CELL 3 ARE TYPICAL FOR CELLS 1 THROUGH 6. DIMENSIONS SHOWN IN CELL 8 ARE TYPICAL FOR CELLS 7 THROUGH 9.

FINAL DESIGN PACKAGE

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

100 50 0 100 200
SCALE IN FEET

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO Fernald Environmental Restoration Management Corporation

PROJECT:
ON-SITE DISPOSAL FACILITY 456

TITLE:
LEACHATE COLLECTION SYSTEM GRADING PLAN
24007_2

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
5 Oct 1996
DATE

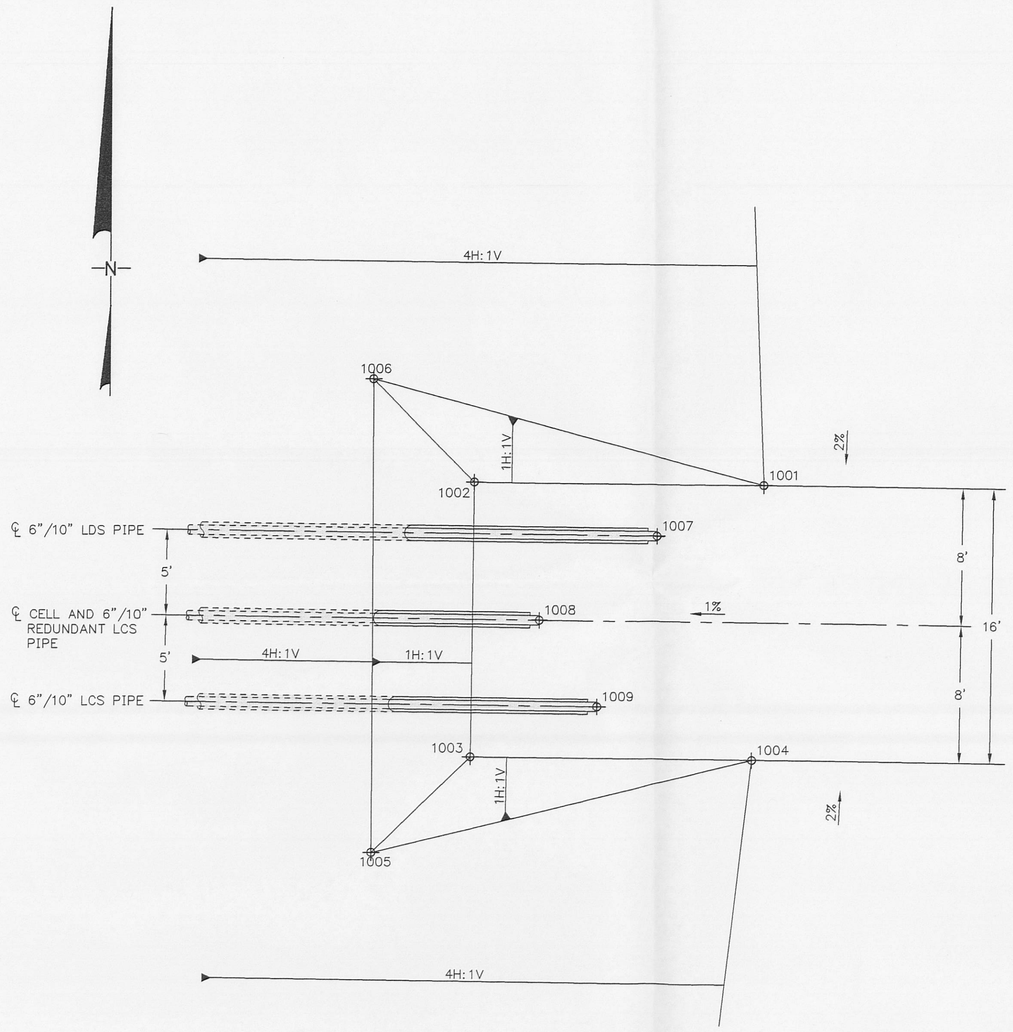
STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER
SEAL

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

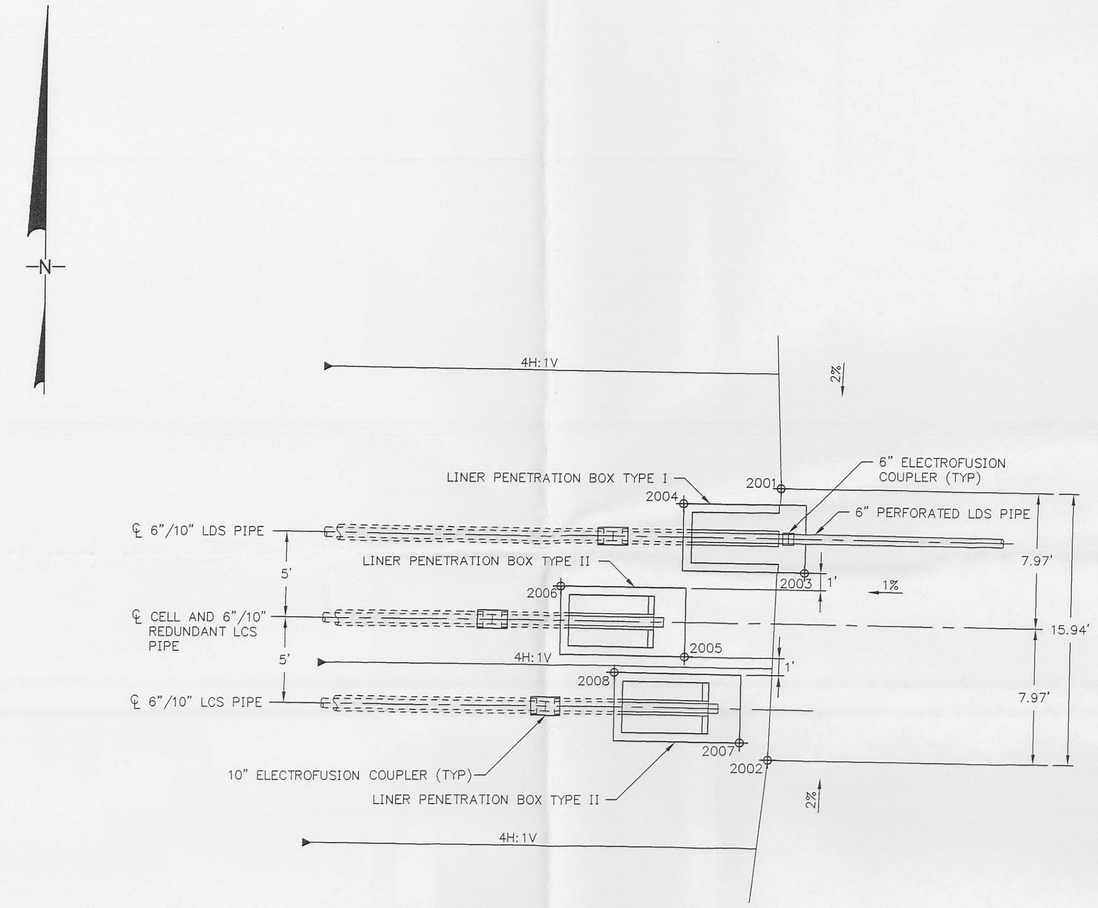
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00020
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G078
SHEET NO.:	G-8
REVISION NO.:	G

M:\GRAPHICS\GE3900-13\F96-G078 Tue Oct 08 10:28:40 1996 FERMCO/DUNN

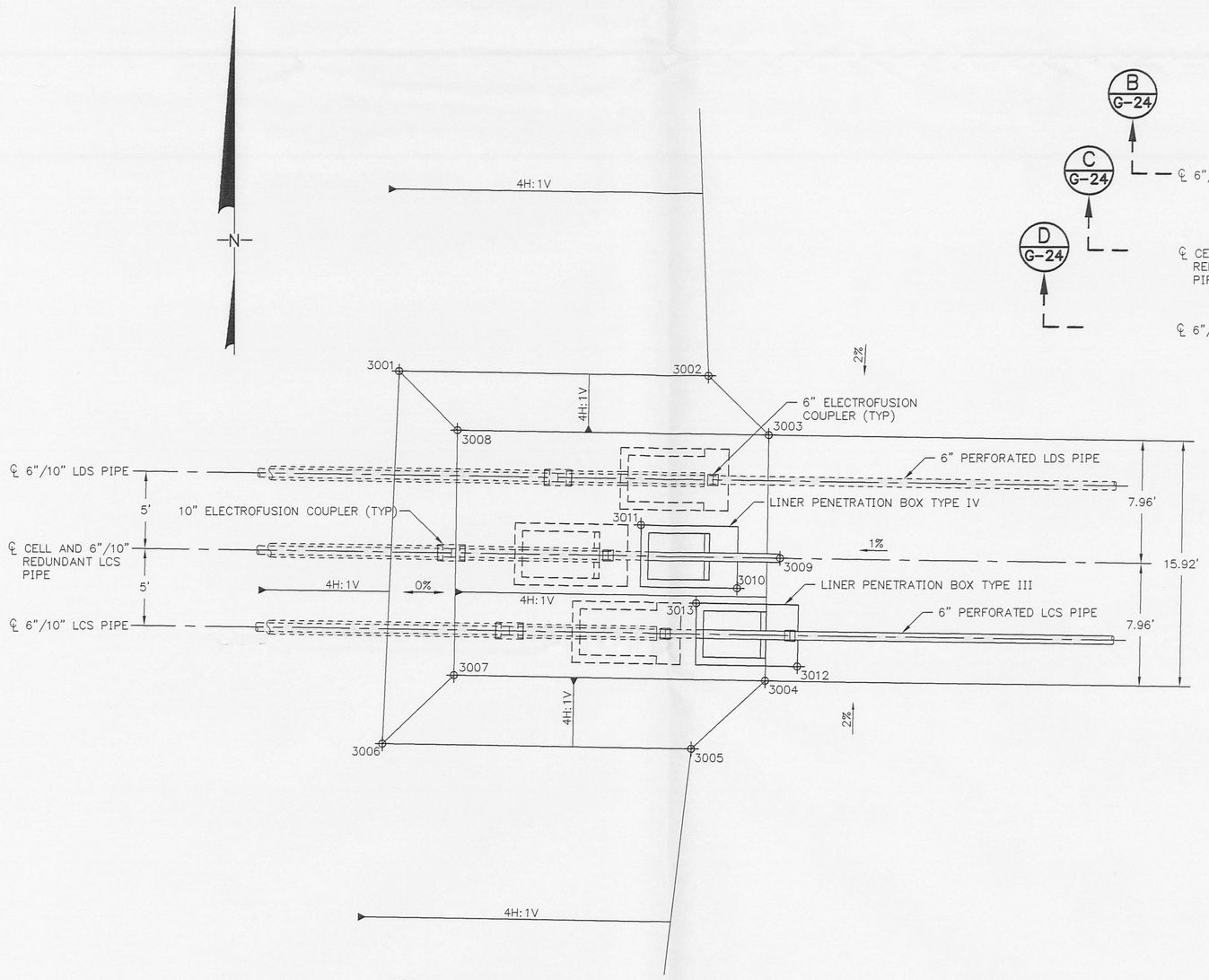
452



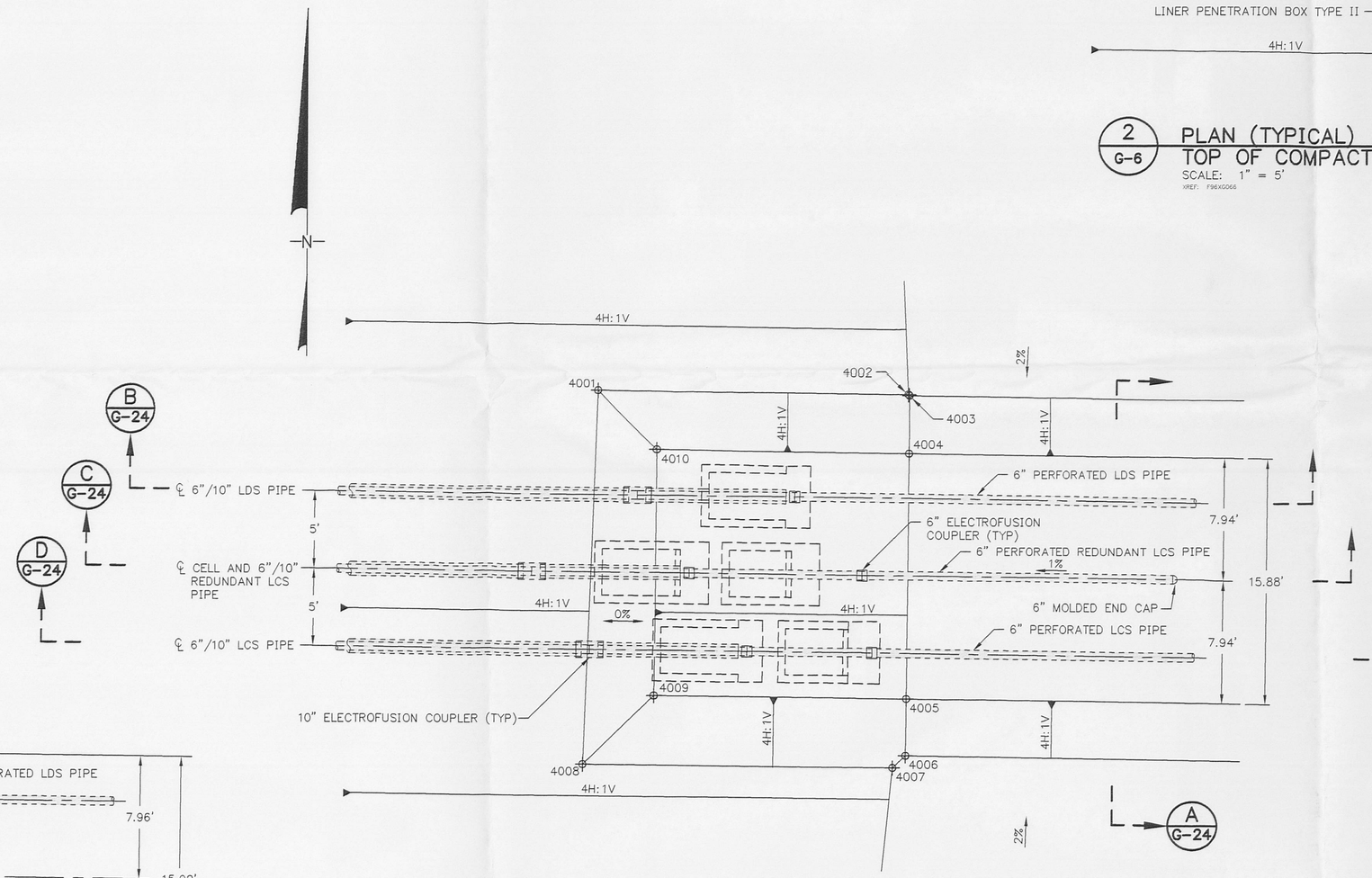
1 / G-5 PLAN (TYPICAL)
TOP OF SUBGRADE AT CELL OUTLET
SCALE: 1" = 5'
XREF: F96X0065



2 / G-6 PLAN (TYPICAL)
TOP OF COMPACTED CLAY LINER AT CELL OUTLET
SCALE: 1" = 5'
XREF: F96X0065



3 / G-7 PLAN (TYPICAL)
TOP OF LDS DRAINAGE LAYER AT CELL OUTLET
SCALE: 1" = 5'
XREF: F96X0067



4 / G-8 PLAN (TYPICAL)
TOP OF LCS DRAINAGE LAYER AT CELL OUTLET
SCALE: 1" = 5'
XREF: F96X0111

LEGEND

2008 ⊕ CONSTRUCTION CONTROL POINT (NOTE 2)

NOTES:

1. CELL OUTLET GRADING PLANS ARE TYPICAL FOR CELLS 1 THROUGH 9.
2. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.
3. LCS AND LDS PIPES SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS.
4. SEE DRAWINGS G-24 AND G-25 FOR LINER PENETRATION BOX DETAILS.
5. TRENCH FOR LDS AND LCS PIPES IS NOT SHOWN ON THIS DRAWING FOR CLARITY. TRENCHING AND BACKFILLING FOR LDS AND LCS PIPES SHALL BE IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.
6. HORIZONTAL MONITORING WELL IS NOT SHOWN ON THIS DRAWING FOR CLARITY. SEE DRAWING G-40 FOR HORIZONTAL MONITORING WELL DETAILS.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	BD	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

5 2.5 0 5 10
SCALE IN FEET

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO — FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
CELL OUTLET GRADING PLANS 457
240617-2

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

STATE OF OHIO — RUDOLPH BONAPARTE — E-56679 — REGISTERED PROFESSIONAL ENGINEER

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00021
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G053
SHEET NO.:	G-9
REVISION NO.:	G

FINAL DESIGN PACKAGE

M:\GAGA\DOC\GE3900--13\F96-G053 Sat Oct 05 10:52:01 1996 John C.

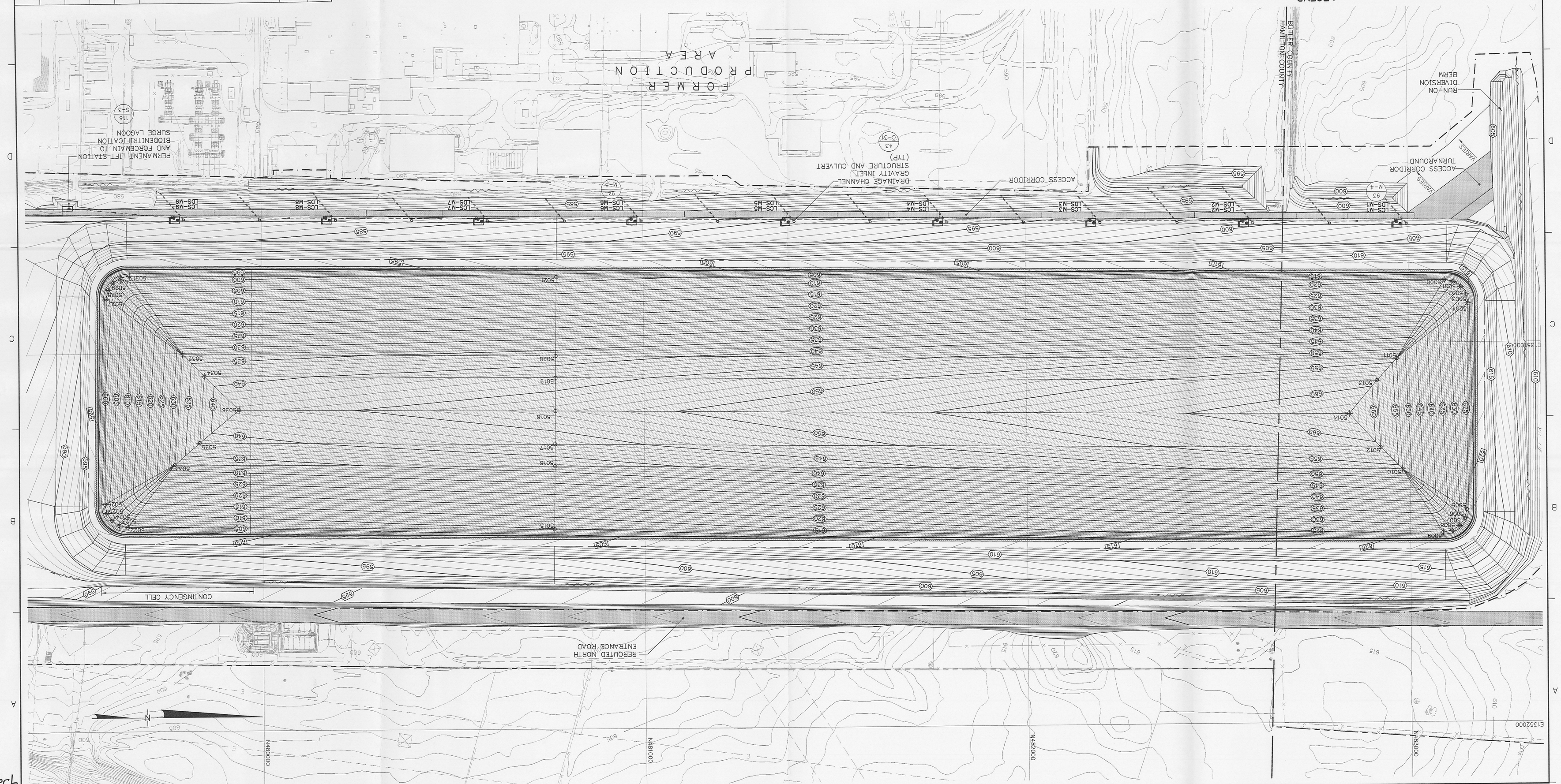
FINAL DESIGN PACKAGE

LEGEND

- EXISTING GROUND ELEVATION (FEET) — 600
- SUBGRADE ELEVATION (FEET) (NOTE 4) — 580
- COMPACTED CLAY LINER ELEVATION (FEET) — 585
- CONTOURING LAYER ELEVATION (FEET) — 585
- BUTLER COUNTY/HAMILTON COUNTY LINE
- FEMP PROPERTY LINE
- BATTERY LIMIT
- IMPACTED MATERIAL DISPOSAL LIMIT
- PERIMETER BERM BASELINE
- LEACHATE TRANSMISSION SYSTEM GRAVITY LINE
- LEACHATE TRANSMISSION SYSTEM MANHOLES (LDS AND LCS) AND HORIZONTAL MONITORING WELL COVER SLAB
- LEACHATE TRANSMISSION SYSTEM PERMANENT LIFT STATION
- ACCESS CORRIDOR OR REROUTED NORTH ENTRANCE ROAD
- CREST OF LEAK DETECTION SYSTEM DRAINAGE LAYER
- CREST OF LEACHATE COLLECTION SYSTEM DRAINAGE LAYER
- LIMIT OF CONTOURING LAYER
- DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND CULVERT
- DRAINAGE FLOW DIRECTION
- 5010 — CONSTRUCTION CONTROL POINT (NOTE 6)

NOTES:

1. TOPOGRAPHIC MAP BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD])
3. GRID COORDINATE SYSTEM CORRESPONDS TO STATE PLANAR NORTH AMERICAN DATUM (NAD) 1983 OHIO SOUTH.
4. SUBGRADE ELEVATIONS CORRESPOND TO THE TOP OF PREPARED SUBGRADE, INCLUDING ANY COMPACTED FILL. CONSTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWING G-5.
5. CELLS SHALL BE DEVELOPED STARTING WITH CELL 1 AND ENDING WITH CELL 8. THE SCHEDULE OF CELL CONSTRUCTION WILL DEPEND ON THE AVAILABILITY OF IMPACTED MATERIAL FROM THE OPERABLE UNITS.
6. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.



REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
F	25.06.96	PRELIMINARY SUBMITTAL TO EPA					
G	11.10.96	FINAL SUBMITTAL TO EPA	DLL	JSM	LA	KWC	RB

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
Restoration Management Corporation

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
CONTOURING LAYER GRADING PLAN

458

d40017_3

FEMPO PROJECT NO.: 20100
FEMPO SUBCONTRACT NO.: 95P500502G28
FEMPO DRAWING NO.: 90X-6000-G-00028
GEOSYNTEC PROJECT NO.: GE3300-13.1
GEOSYNTEC DOCUMENT NO.: P96-0087
SHEET NO.: G-10
REVISION NO.: G

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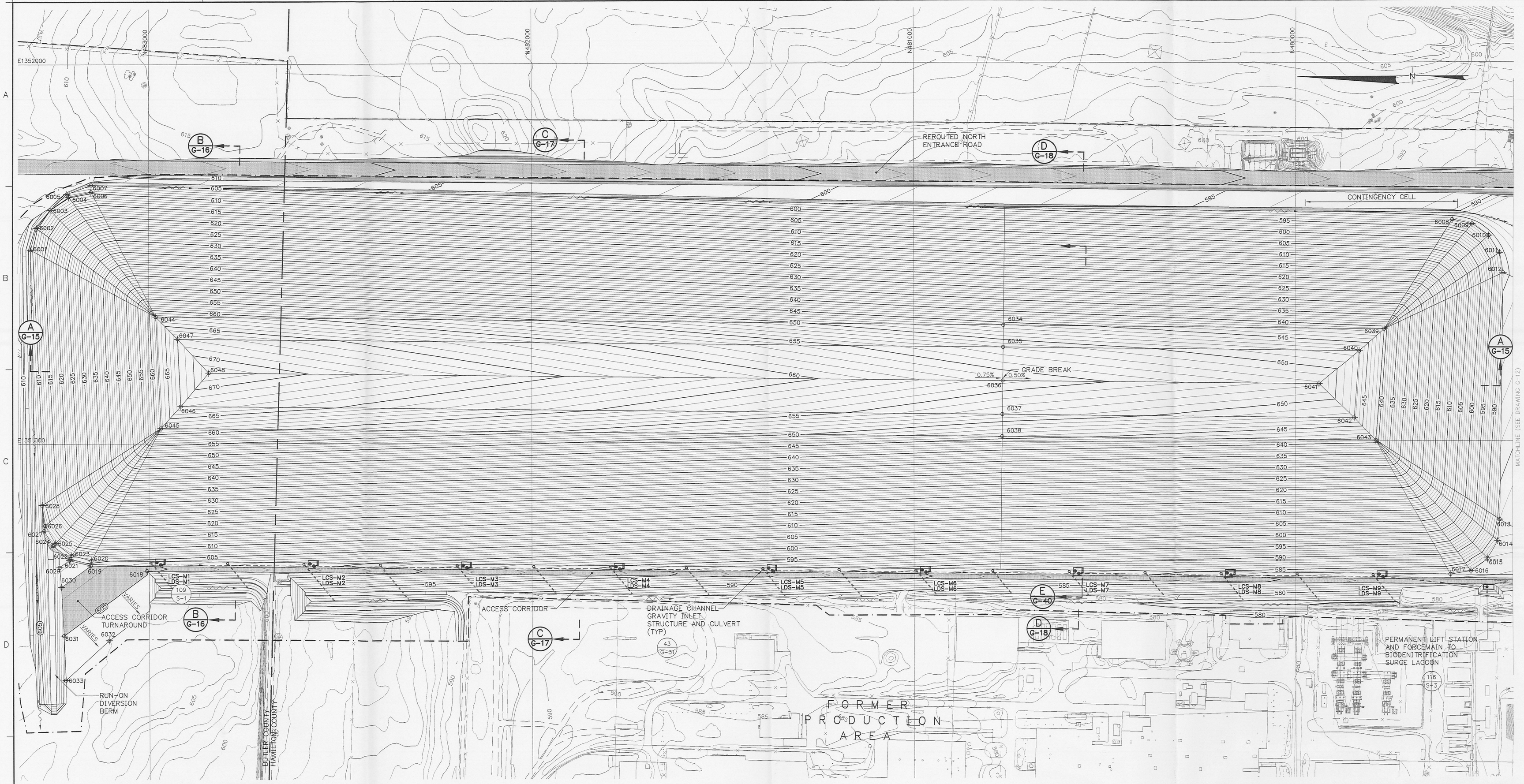
REGISTERED RUDOLPH BOUNAPARTE E-56679 STATE OF OHIO PROFESSIONAL ENGINEER

Rudolph Bounaparte
SIGNATURE
5.01.1996
DATE

GeoSyntec CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

M:\GA\A2D2\GE3300\-13\F96-0087 Tue, Oct 08 10:53:56 1996 FERMCO\DRAWN



LEGEND

600	EXISTING GROUND ELEVATION (FEET)
595	FINISHED GRADE ELEVATION (FEET)
	BUTLER COUNTY/HAMILTON COUNTY LINE
	FEMP PROPERTY LINE
	BATTERY LIMIT
	BASELINE OR CENTERLINE
	LEACHATE TRANSMISSION SYSTEM GRAVITY LINE
	LEACHATE TRANSMISSION SYSTEM MANHOLES (LDS AND LCS) AND HORIZONTAL MONITORING WELL COVER SLAB
	LEACHATE TRANSMISSION SYSTEM PERMANENT LIFT STATION
	ACCESS CORRIDOR OR REROUTED NORTH ENTRANCE ROAD
	DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND CULVERT
	DRAINAGE FLOW DIRECTION
6010	CONSTRUCTION CONTROL POINT (NOTE 5)

NOTES:

1. TOPOGRAPHIC MAP BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. GRID COORDINATE SYSTEM CORRESPONDS TO STATE PLANAR NORTH AMERICAN DATUM (NAD) 1983 OHIO SOUTH.
4. CELLS SHALL BE DEVELOPED STARTING WITH CELL 1 AND ENDING WITH CELL 8. THE SCHEDULE OF CELL CONSTRUCTION WILL DEPEND ON THE AVAILABILITY OF IMPACTED MATERIAL FROM THE OPERABLE UNITS.
5. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

100 50 0 100 200
SCALE IN FEET

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
FINAL COVER SYSTEM GRADING PLAN 459
240017_4

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
5 Oct 1996
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00023
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G081
SHEET NO.:	G-11
REVISION NO.:	G

FINAL DESIGN PACKAGE

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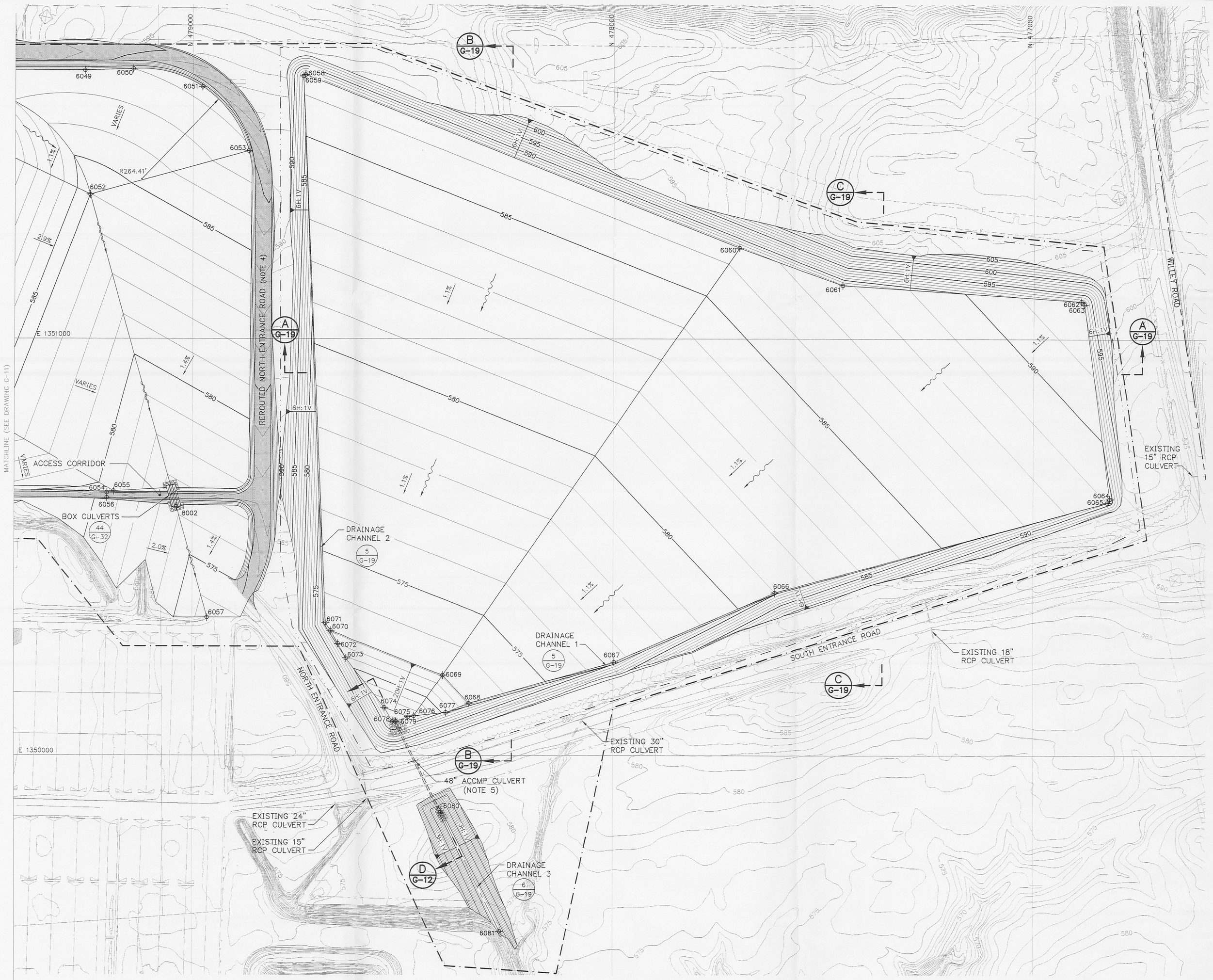
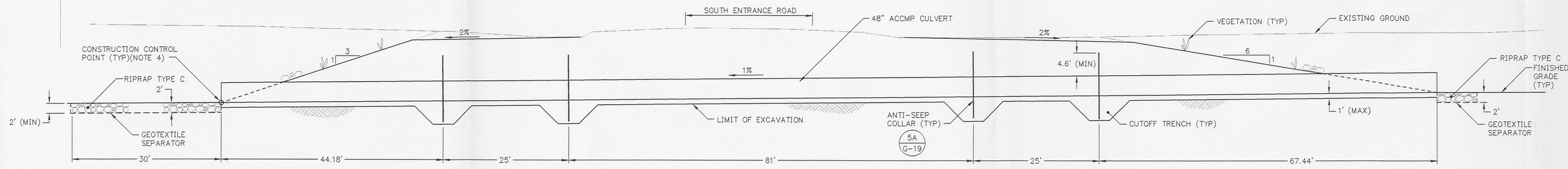




D / G-12 SECTION
BORROW AREA CULVERT
SCALE: 1" = 10' (NOTE 6)

LEGEND

- 600 — EXISTING GROUND ELEVATION (FEET)
- 570 — FINISHED GRADE ELEVATION (FEET)
- FEMP PROPERTY LINE
- BATTERY LIMIT
- BORROW AREA LIMIT
- DRAINAGE FLOW DIRECTION
- ACCESS CORRIDOR OR REROUTED NORTH ENTRANCE ROAD
- 6050 CONSTRUCTION CONTROL POINT (NOTE 4)

NOTES:

1. TOPOGRAPHIC MAP BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. GRID COORDINATE SYSTEM CORRESPONDS TO STATE PLANAR NORTH AMERICAN DATUM (NAD) 1983 OHIO SOUTH.
4. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.
5. SIZE AND MATERIAL OF CULVERT MAY BE REVISED BASED ON THE INSTALLATION METHOD REQUIRED TO NOT INTERRUPT TRAFFIC FLOW ON THE SOUTH ENTRANCE ROAD. REVISIONS MADE TO THE CULVERT SHALL NOT CHANGE THE DESIGN DISCHARGE FROM A 48-INCH ACCMP.
6. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	RD	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

100 50 0 100 200
SCALE IN FEET

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO — FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
BORROW AREA RESTORATION PLAN 460
24007_5

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
5 Oct 1996
DATE

STATE OF OHIO — RUDOLPH BONAPARTE — E-56679 — REGISTERED PROFESSIONAL ENGINEER

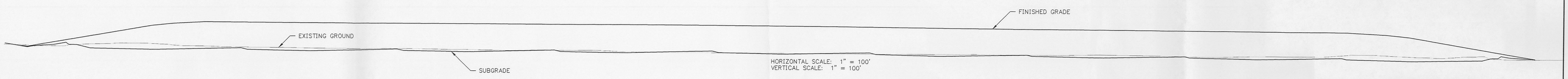
GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

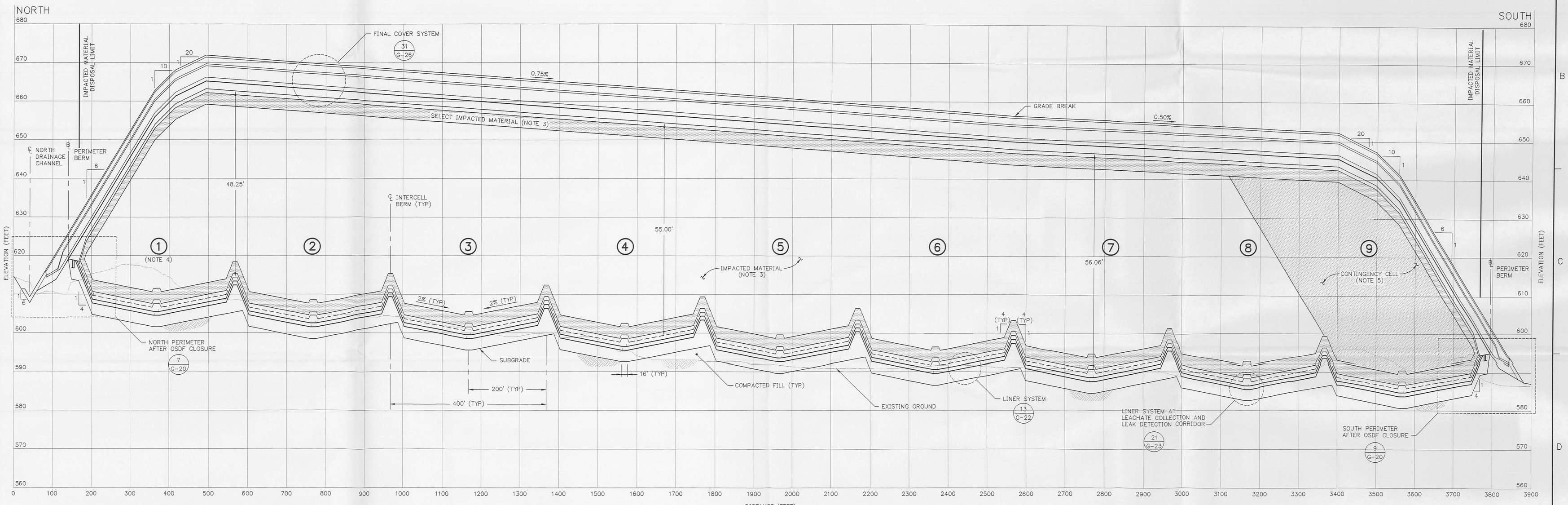
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00024
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G010
SHEET NO.:	G-12
REVISION NO.:	G

FINAL DESIGN PACKAGE

M:\GAC\A02\GE3900-13\F96-G010 Fri Oct 04 11:19:48 1996 FERMCO\DLMN

452





A G-11 **SECTION NORTH-SOUTH**
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THIS THICKNESS MAY BE REDUCED TO 2 FEET ABOVE THE PROTECTIVE LAYER IF THE FIRST LIFT OF IMPACTED MATERIAL PLACEMENT IS CATEGORY 1 OR 2 MATERIAL AS DEFINED BY THE OSDF IMPACTED MATERIAL PLACEMENT (IMP) PLAN. ALL IMPACTED MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SECTION 13010 OF THE OSDF SPECIFICATIONS AND THE IMP PLAN.
4. CELLS SHALL BE DEVELOPED STARTING WITH CELL 1 AND ENDING WITH CELL 8. THE SCHEDULE OF CELL CONSTRUCTION WILL DEPEND ON THE AVAILABILITY OF IMPACTED MATERIAL FROM THE OPERABLE UNITS.
5. CONTINGENCY CELL WILL ONLY BE CONSTRUCTED IF NEEDED. CONTINGENCY CELL VOLUME IS PROVIDED TO ACCOUNT FOR OVEREXCAVATION OF IMPACTED MATERIAL AND/OR IDENTIFICATION OF ADDITIONAL VOLUME OF IMPACTED MATERIAL AS A RESULT OF CONFIRMATORY SAMPLING ACTIVITIES. ONLY ON-SITE MATERIAL SATISFYING THE OSDF WASTE ACCEPTANCE CRITERIA WILL BE DISPOSED IN THE OSDF. IF THE CONTINGENCY CELL IS NOT DEVELOPED, THE SOUTHERN LIMIT OF THE OSDF WILL MOVE 400 FEET TO THE NORTH.

FINAL DESIGN PACKAGE

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

100 50 0 100 200 SCALE IN FEET
10 5 0 10 20 SCALE IN FEET

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
NORTH-SOUTH SECTION 461
24D017-6

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte SIGNATURE
5 Oct 1996 DATE

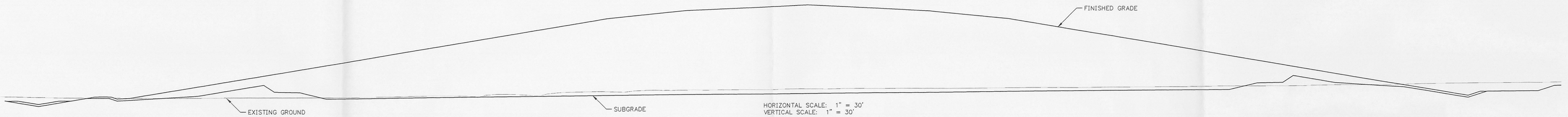
STATE OF OHIO RUDOLPH BONAPARTE E-56679 REGISTERED PROFESSIONAL ENGINEER

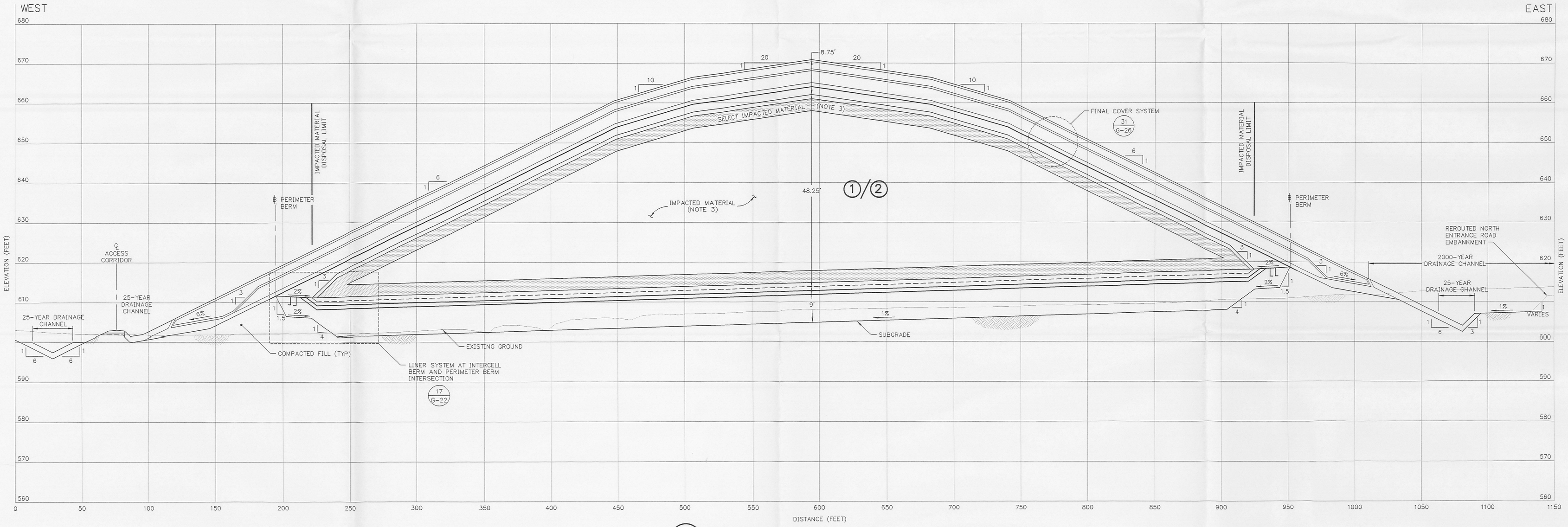
GeoSyntec Consultants
1100 LAKE HEARN DRIVE ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00025
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G020
SHEET NO.:	G-15
REVISION NO.:	G

M:\GACAD2CE\GE3900\-13\F96-G020 Fri Oct 04 10:23:28 1996 FERMCO/DWN

452





B / G-11 SECTION
WEST-EAST AT CELL 1 AND CELL 2 INTERCELL BERM
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'
XREF: F961044

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THIS THICKNESS MAY BE REDUCED TO 2 FEET ABOVE THE PROTECTIVE LAYER IF THE FIRST LIFT OF IMPACTED MATERIAL PLACEMENT IS CATEGORY 1 OR 2 MATERIAL AS DEFINED BY THE OSDF IMPACTED MATERIAL PLACEMENT (IMP) PLAN. ALL IMPACTED MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SECTION 13010 OF THE OSDF SPECIFICATIONS AND THE IMP PLAN.
4. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.

FINAL DESIGN PACKAGE

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

30 15 0 30 60 SCALE IN FEET
10 5 0 10 20 SCALE IN FEET

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO Fernald Environmental Restoration Management Corporation
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
WEST-EAST SECTION AT CELL 1 AND CELL 2 INTERCELL BERM 462
24001-7

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
5 Oct 1996
DATE

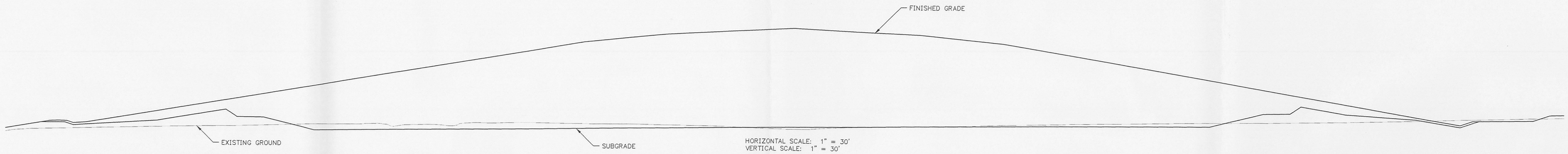
STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER

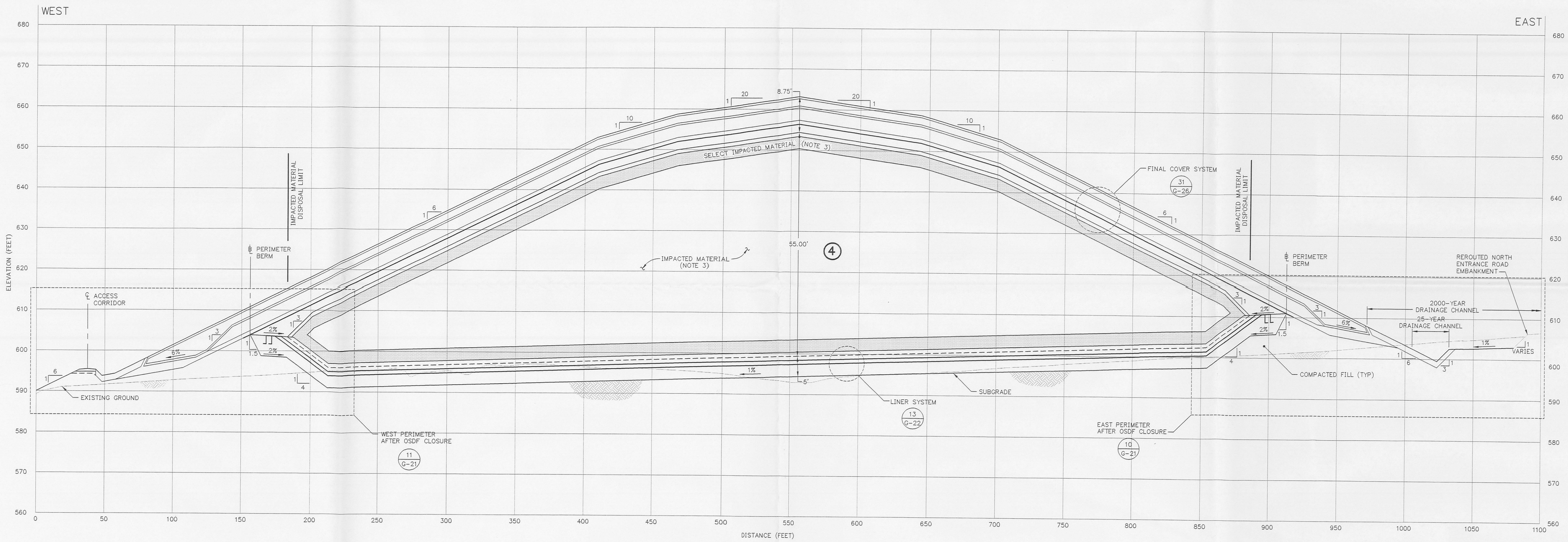
GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00026
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-0022
SHEET NO.:	G-16
REVISION NO.:	G

M:\GACADD\GE3900-13\F96-0022 Fri Oct 04 10:08:58 1996 FERMCO\DANN

452





C / G-11 SECTION
WEST-EAST AT CELL 4 BASE
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THIS THICKNESS MAY BE REDUCED TO 2 FEET ABOVE THE PROTECTIVE LAYER IF THE FIRST LIFT OF IMPACTED MATERIAL PLACEMENT IS CATEGORY 1 OR 2 MATERIAL AS DEFINED BY THE OSDF IMPACTED MATERIAL PLACEMENT (IMP) PLAN. ALL IMPACTED MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SECTION 13010 OF THE OSDF SPECIFICATIONS AND THE IMP PLAN.
4. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.

FINAL DESIGN PACKAGE

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

30 15 0 30 60 SCALE IN FEET
10 5 0 10 20 SCALE IN FEET

INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
Fernald Environmental Restoration Management Corporation
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
WEST-EAST SECTION AT CELL 4 BASE 463
240017.8

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

STATE OF OHIO
RUDOLPH BONAPARTE
E-56879
REGISTERED PROFESSIONAL ENGINEER
SEAL

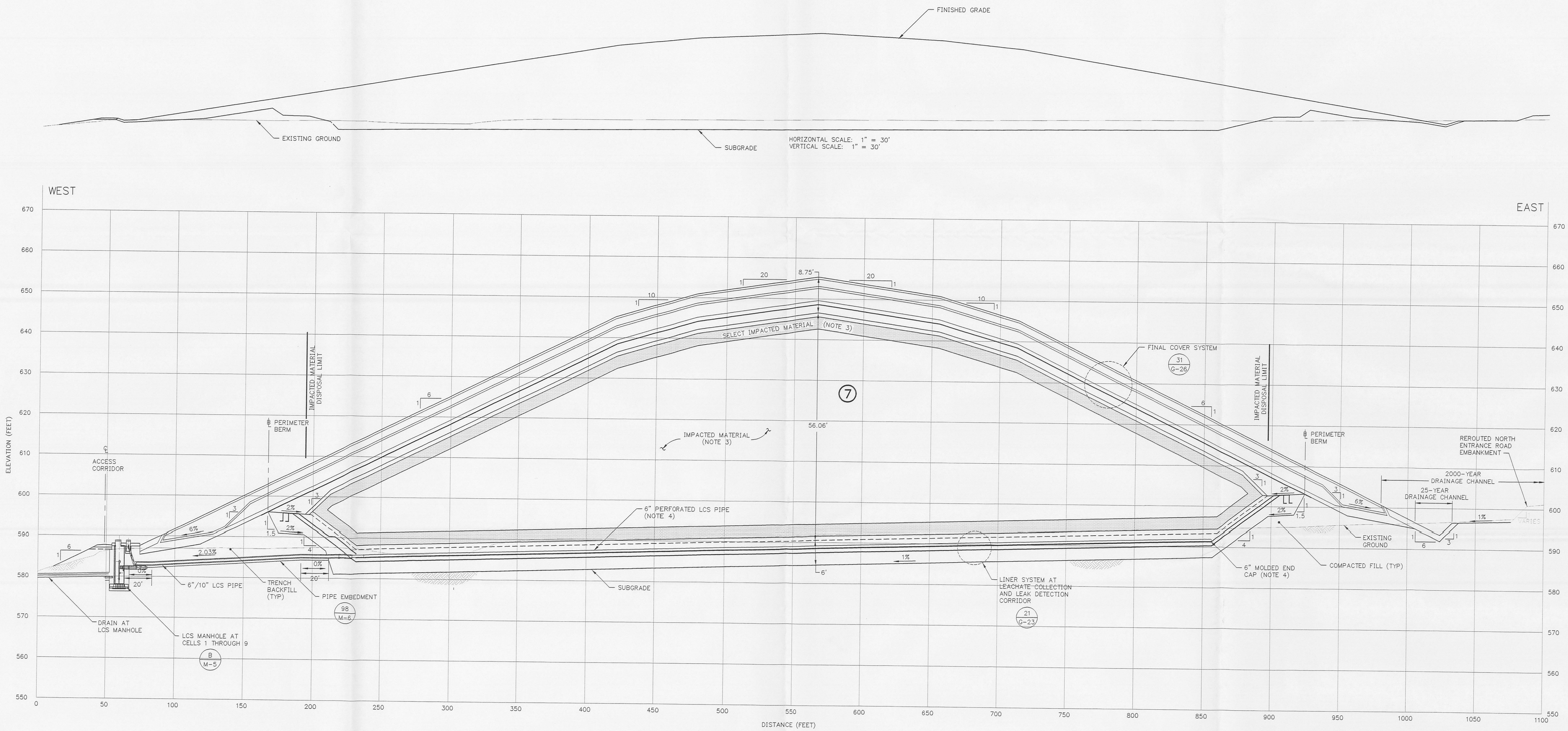
Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00027
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G023
SHEET NO.:	G-17
REVISION NO.:	G

M:\GACAD\GE3900\-13\F96-G023 Sat Oct 05 09:46:51 1996 FERMCO\DWN

452



D G-11 SECTION
WEST-EAST AT CELL 7 DRAINAGE CORRIDOR
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'

FOR INFORMATION ONLY

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THIS THICKNESS MAY BE REDUCED TO 2 FEET ABOVE THE PROTECTIVE LAYER IF THE FIRST LIFT OF IMPACTED MATERIAL PLACEMENT IS CATEGORY 1 OR 2 MATERIAL AS DEFINED BY THE OSDF IMPACTED MATERIAL PLACEMENT (IMP) PLAN. ALL IMPACTED MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SECTION 13010 OF THE OSDF SPECIFICATIONS AND THE IMP PLAN.
4. LCS AND LDS PIPES SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS AND TERMINATE AT THE UPGRADIENT END OF THE DRAINAGE CORRIDOR WITH A 6-INCH MOLDED END CAP. (LDS PIPE NOT SHOWN IN THIS SECTION.)
5. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.

FINAL DESIGN PACKAGE

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

30 15 0 30 60 SCALE IN FEET
10 5 0 10 20 SCALE IN FEET

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
WEST-EAST SECTION AT CELL 7 DRAINAGE CORRIDOR

240017-9 464

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

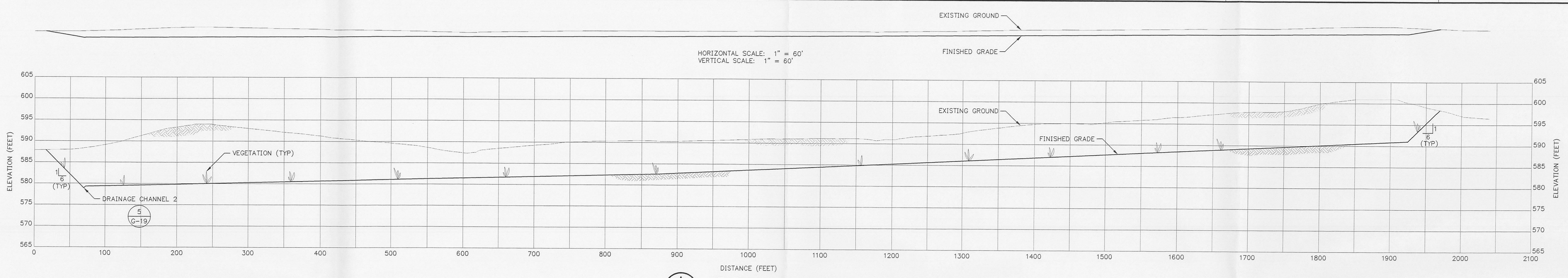
Rudolph Bonaparte
SIGNATURE
5 Oct 1996
DATE

STATE OF OHIO RUDOLPH BONAPARTE E-56679 REGISTERED PROFESSIONAL ENGINEER

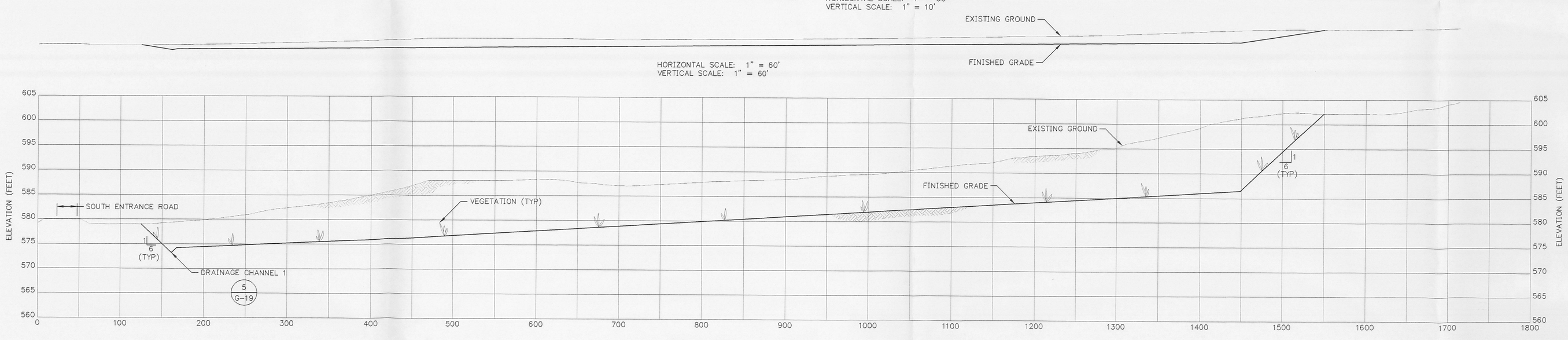
GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00028
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G021
SHEET NO.:	G-18
REVISION NO.:	G

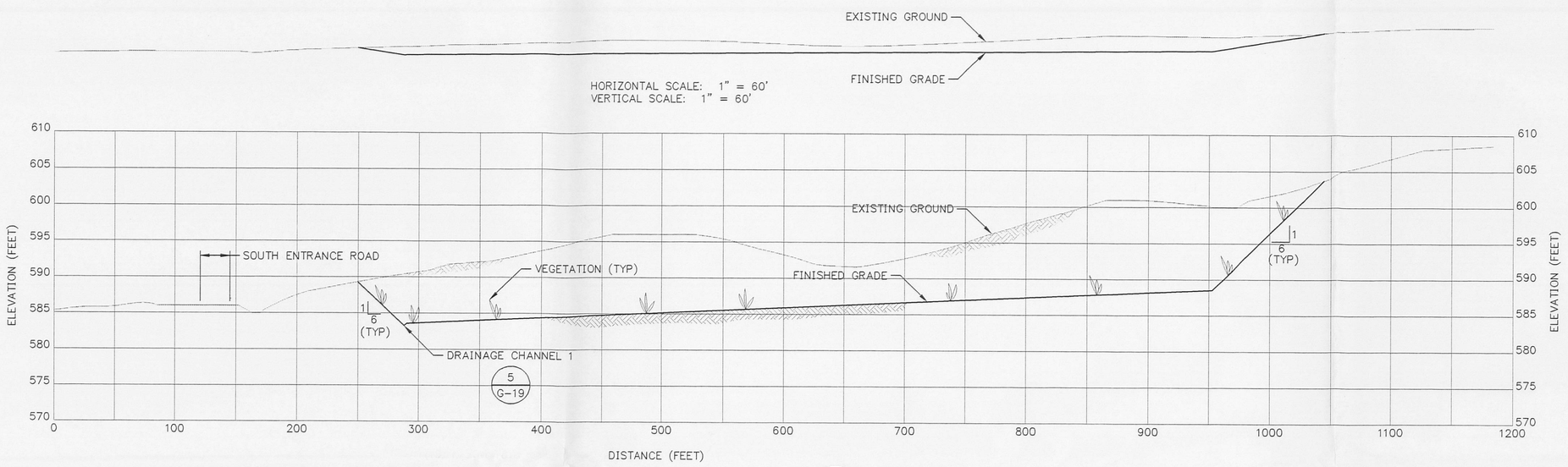
M:\GACADD2\GE3900-13\F96-G021 Fri Oct 04 08:48:07 1996 FERMCO/DUNN



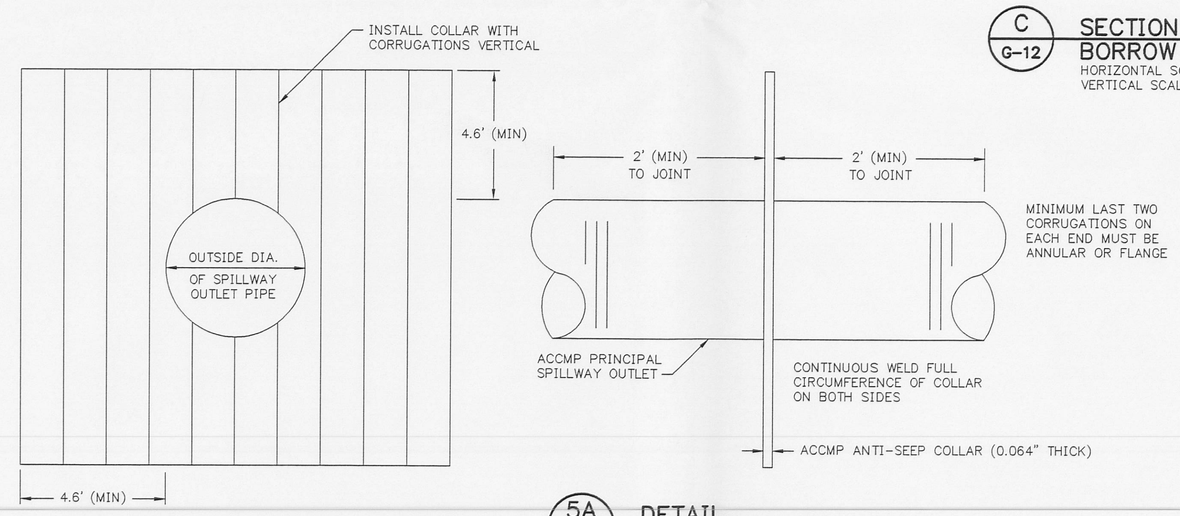
A G-12 SECTION
BORROW AREA
HORIZONTAL SCALE: 1" = 60'
VERTICAL SCALE: 1" = 10'



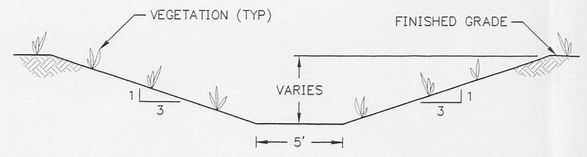
B G-12 SECTION
BORROW AREA
HORIZONTAL SCALE: 1" = 60'
VERTICAL SCALE: 1" = 10'



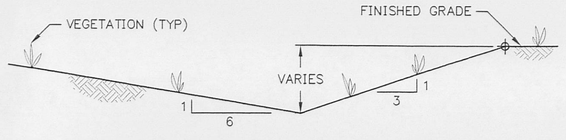
C G-12 SECTION
BORROW AREA
HORIZONTAL SCALE: 1" = 60'
VERTICAL SCALE: 1" = 10'



5A G-12 DETAIL
ANTI-SEEP COLLAR
SCALE: NTS



6 G-12 DETAIL
DRAINAGE CHANNEL 3
SCALE: 1" = 5'



5 G-12 DETAIL (TYPICAL)
DRAINAGE CHANNEL 1 AND 2
SCALE: 1" = 5'

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. CONSTRUCTION CONTROL POINT TABLES FOR BORROW AREA PROVIDED ON DRAWING G-39.

FINAL DESIGN PACKAGE

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	RD	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE IN FEET (60 30 0 60 120) SCALE IN FEET (10 5 0 10 20)

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
BORROW AREA SECTIONS AND DETAILS

465

24D017_10

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

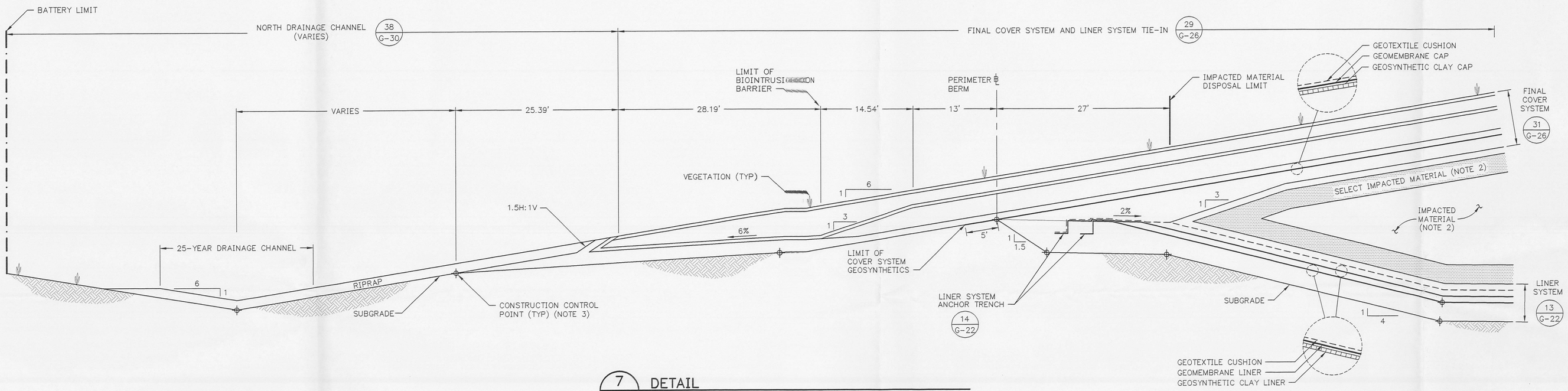
Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER

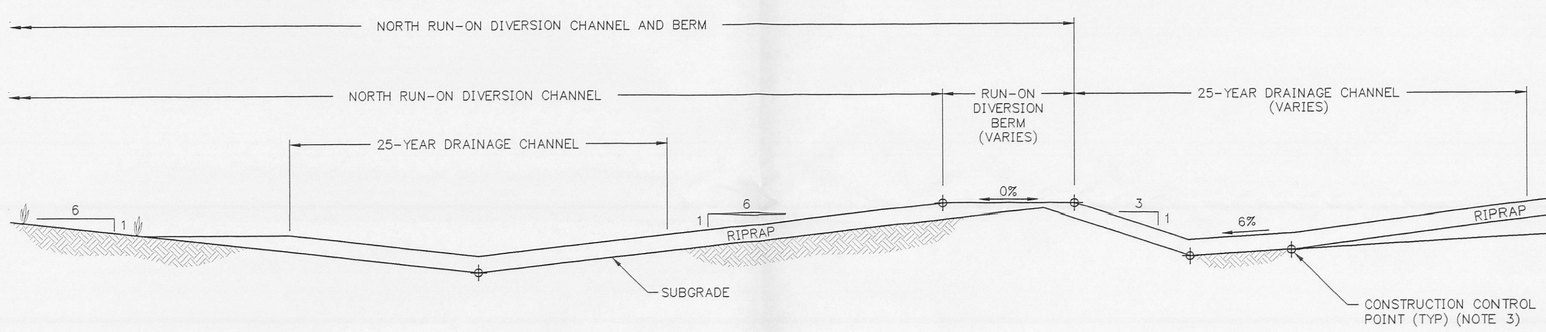
GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

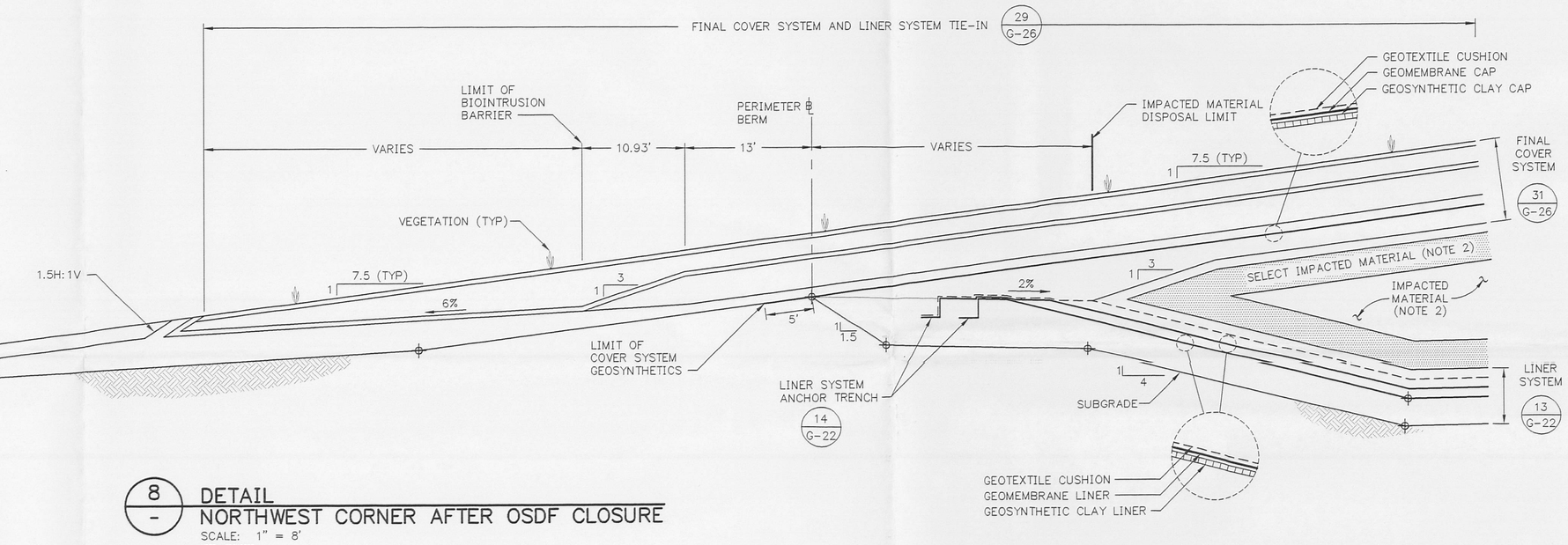
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00029
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G061
SHEET NO.:	G-19
REVISION NO.:	G

H:\F96-G061 Mon Oct 07 17:34:05 1996 J MILLER

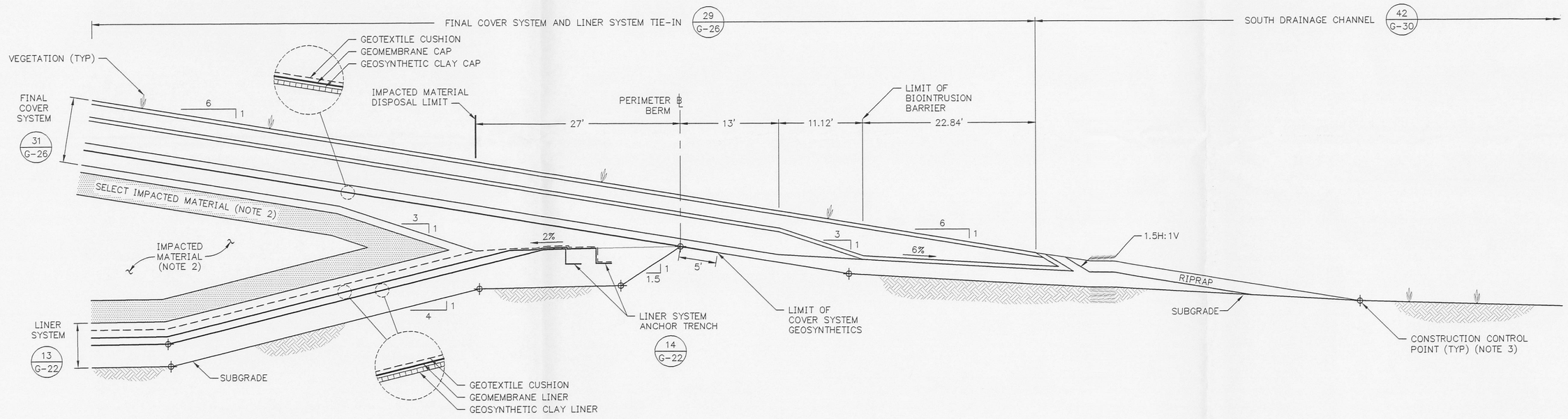


7 G-15 **DETAIL**
NORTH PERIMETER AFTER OSDF CLOSURE
SCALE: 1" = 8'
REF: 756H3304





8 – **DETAIL**
NORTHWEST CORNER AFTER OSDF CLOSURE
SCALE: 1" = 8'
REF: 756H3302



9 G-15 **DETAIL**
SOUTH PERIMETER AFTER OSDF CLOSURE
SCALE: 1" = 8'
REF: 756H3335

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
2. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THIS THICKNESS MAY BE REDUCED TO 2 FEET ABOVE THE PROTECTIVE LAYER IF THE FIRST LIFT OF IMPACTED MATERIAL PLACEMENT IS CATEGORY 1 OR 2 MATERIAL AS DEFINED BY THE OSDF IMPACTED MATERIAL PLACEMENT (IMP) PLAN. ALL IMPACTED MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SECTION 13010 OF THE OSDF SPECIFICATIONS AND THE IMP PLAN.
3. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO Fernald Environmental Restoration Management Corporation
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
CELL PERIMETER DETAILS I

24007-77

466

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

STATE OF OHIO RUDOLPH BONAPARTE E-58579 REGISTERED PROFESSIONAL ENGINEER

Rudolph Bonaparte
SIGNATURE

5 Oct 1996
DATE

GEO SYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00030
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	FS6-G137
SHEET NO.:	G-20
REVISION NO.:	G

FINAL DESIGN PACKAGE

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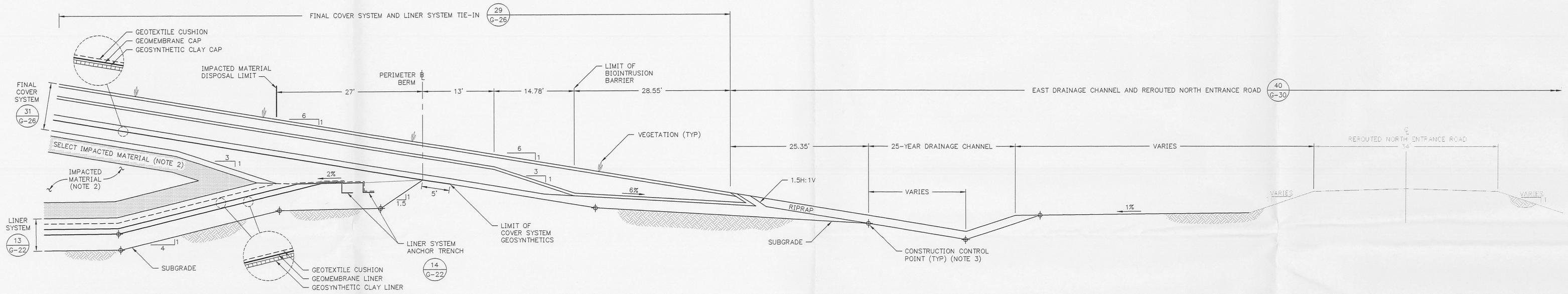
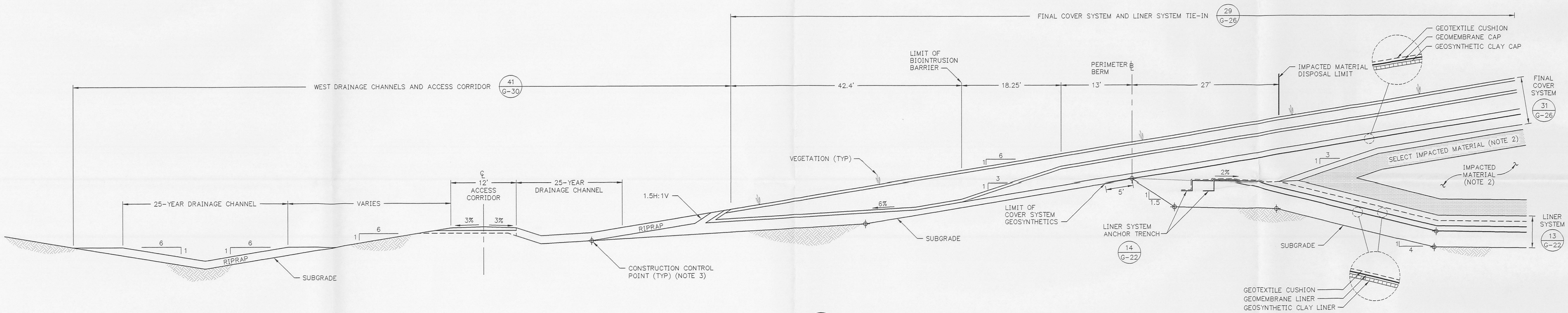
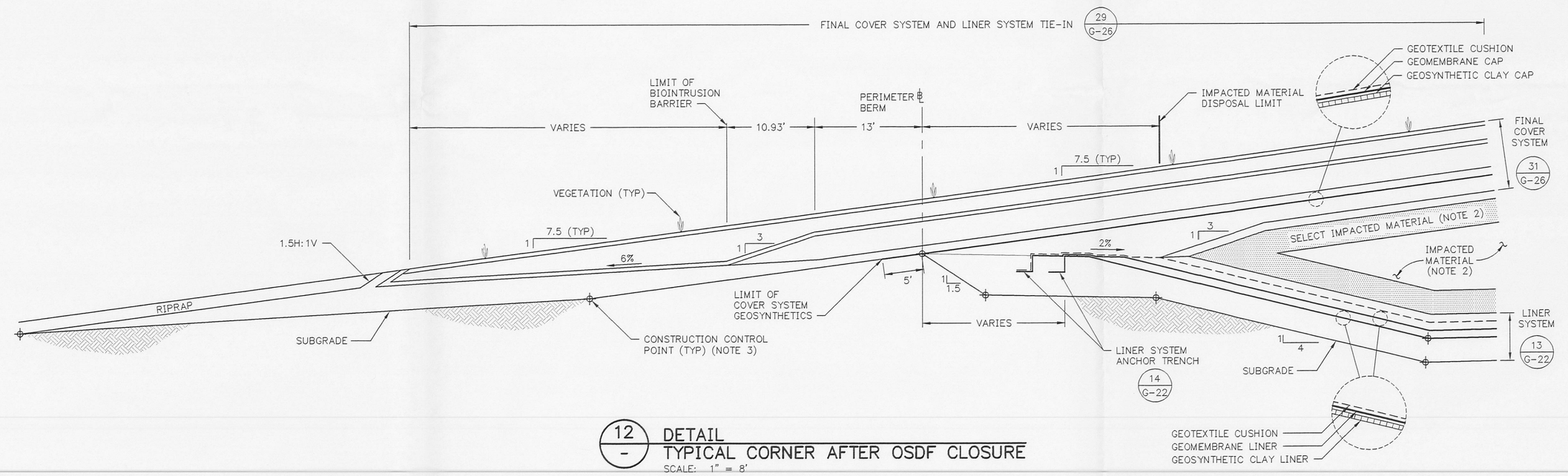


10 G-17 **DETAIL**
EAST PERIMETER AFTER OSDF CLOSURE
SCALE: 1" = 8'



11 G-17 **DETAIL**
WEST PERIMETER AFTER OSDF CLOSURE
SCALE: 1" = 8'



12 - **DETAIL**
TYPICAL CORNER AFTER OSDF CLOSURE
SCALE: 1" = 8'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
2. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THIS THICKNESS MAY BE REDUCED TO 2 FEET ABOVE THE PROTECTIVE LAYER IF THE FIRST LIFT OF IMPACTED IMPACTED MATERIAL PLACEMENT IS CATEGORY 1 OR 2 MATERIAL AS DEFINED BY THE OSDF IMPACTED MATERIAL PLACEMENT (IMP) PLAN. ALL IMPACTED MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SECTION 13010 OF THE OSDF SPECIFICATIONS AND THE IMP PLAN.
3. CONSTRUCTION CONTROL POINT TABLES PROVIDED ON DRAWINGS G-38 AND G-39.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	RD	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
CELL PERIMETER DETAILS II

467
240017.12

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

STATE OF OHIO
RUDOLPH BONAPARTE
E-56579
REGISTERED PROFESSIONAL ENGINEER

Rudolph Bonaparte
SIGNATURE
5 Oct 1996
DATE

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95P5005028
FERMCO DRAWING NO.:	90X-6000-G-00031
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G138
SHEET NO.:	G-21
REVISION NO.:	G

FINAL DESIGN PACKAGE

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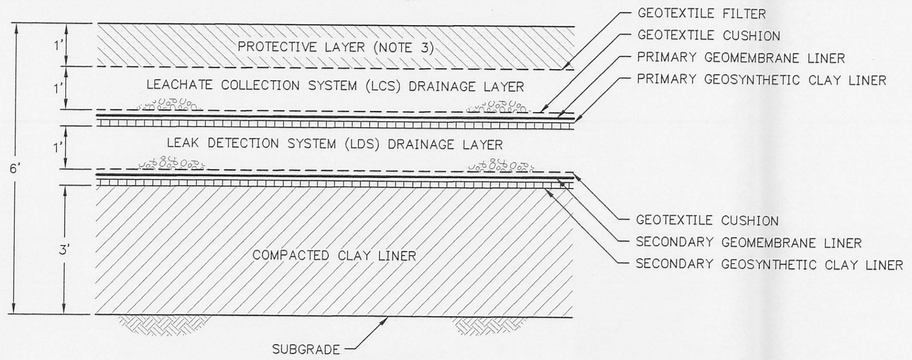
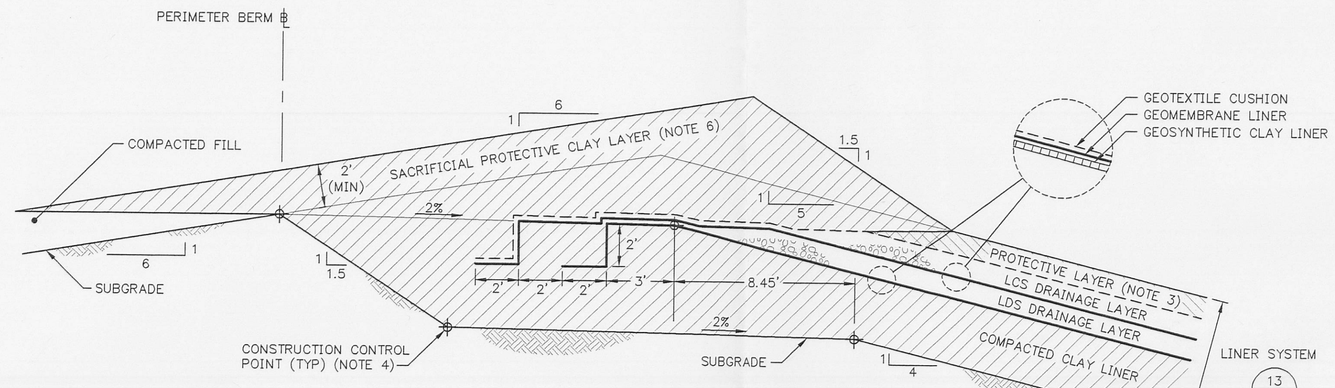
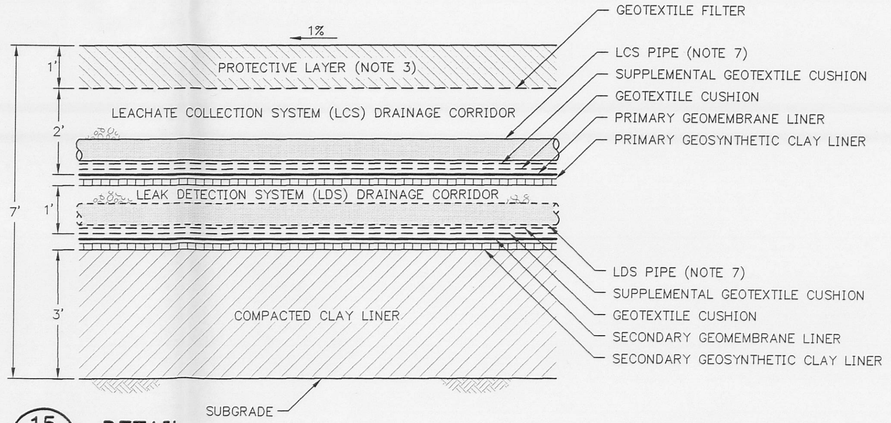


13 / G-15 **DETAIL**
LINER SYSTEM
SCALE: 1" = 2'

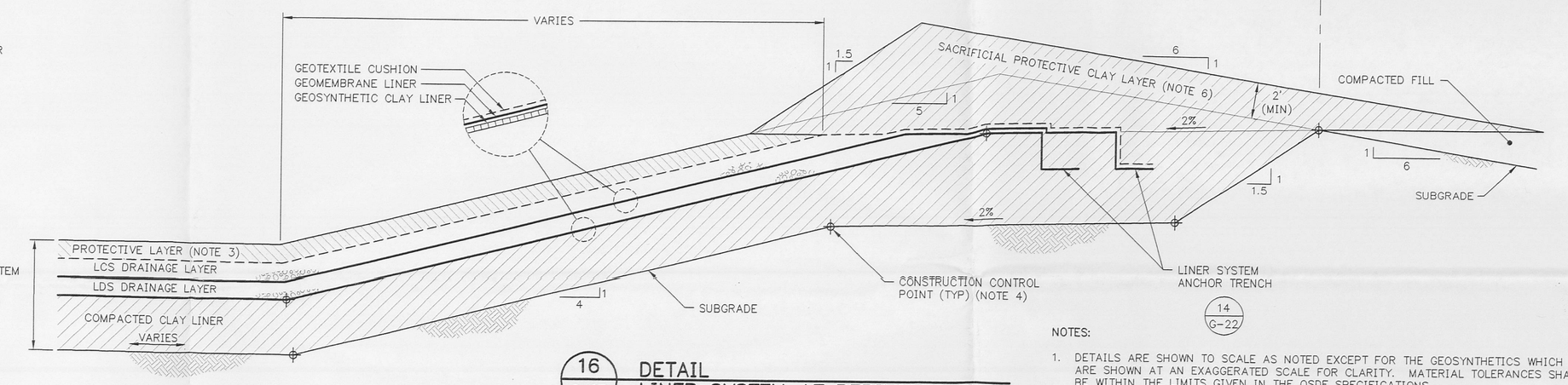


14 / G-20 **DETAIL**
LINER SYSTEM ANCHOR TRENCH
(NOTE 9)
SCALE: 1" = 4'

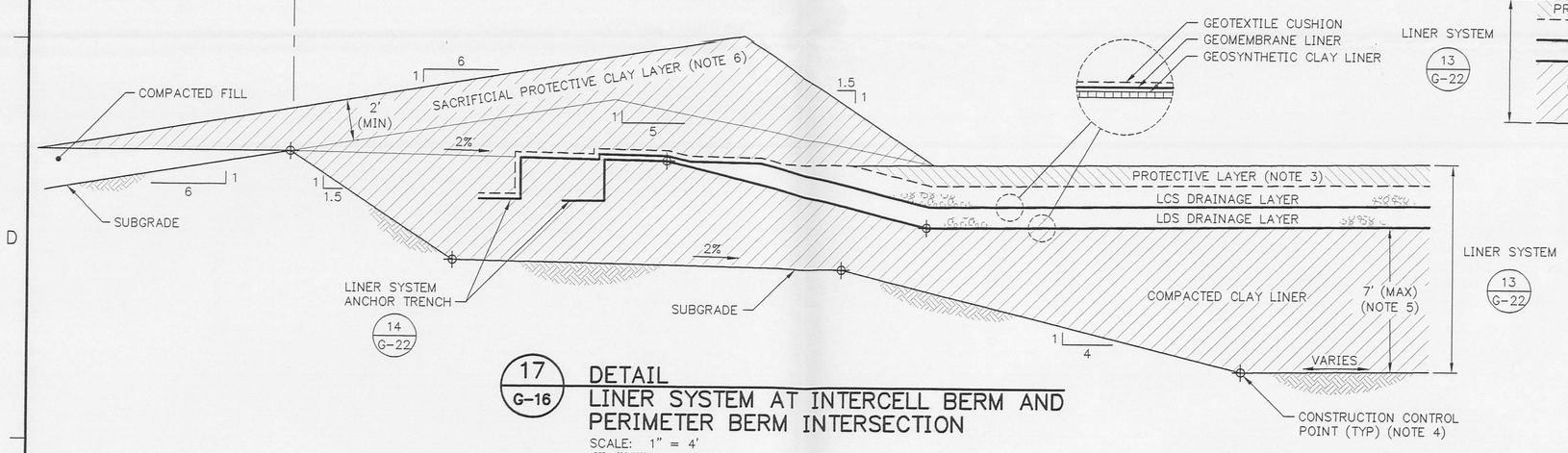
LINER SYSTEM COMPONENT SUMMARY (NOTE 2)		
GEOSYNTHETICS		
COMPONENT	MATERIAL	SPECIFICATION SECTION
PRIMARY GEOMEMBRANE LINER	TEXTURED 80-mil HDPE	02770
SECONDARY GEOMEMBRANE LINER	TEXTURED 80-mil HDPE	02770
PRIMARY GEOSYNTHETIC CLAY LINER	INTERNALLY-REINFORCED SODIUM MONTMORILLONITE CORE WITH WOVEN GEOTEXTILE SIDE AGAINST OVERLYING GEOMEMBRANE AND NONWOVEN SIDE AGAINST UNDERLYING SOIL, OR SODIUM MONTMORILLONITE CORE WITH 40-mil TEXTURED HDPE BACKING AGAINST UNDERLYING SOIL	02772
SECONDARY GEOSYNTHETIC CLAY LINER	INTERNALLY-REINFORCED SODIUM MONTMORILLONITE CORE WITH WOVEN GEOTEXTILE SIDE AGAINST OVERLYING GEOMEMBRANE AND NONWOVEN SIDE AGAINST UNDERLYING SOIL, OR SODIUM MONTMORILLONITE CORE WITH 40-mil TEXTURED HDPE BACKING AGAINST UNDERLYING SOIL	02772
GEOTEXTILE FILTER	POLYPROPYLENE OR POLYESTER NEEDLE-PUNCHED NONWOVEN GEOTEXTILE	02714
GEOTEXTILE CUSHION	POLYPROPYLENE OR POLYESTER NEEDLE-PUNCHED NONWOVEN GEOTEXTILE	02714
SUPPLEMENTAL GEOTEXTILE CUSHION	POLYPROPYLENE OR POLYESTER NEEDLE-PUNCHED NONWOVEN GEOTEXTILE	02714
SOILS		
COMPONENT	SOURCE	SPECIFICATION SECTION
PREPARED SUBGRADE/COMPACTED FILL	ON-SITE BORROW	02200
COMPACTED CLAY LINER	ON-SITE BORROW	02225
LDS DRAINAGE LAYER	OFF-SITE BORROW	02710
LDS DRAINAGE CORRIDOR	OFF-SITE BORROW	02710
LCS DRAINAGE LAYER	OFF-SITE BORROW	02710
LCS DRAINAGE CORRIDOR	OFF-SITE BORROW	02710
PROTECTIVE LAYER (NON-GRANULAR)	ON-SITE IMPACTED MATERIAL OR ON-SITE BORROW	02240
PROTECTIVE LAYER (GRANULAR)	ON-SITE IMPACTED MATERIAL OR OFF-SITE BORROW	02240



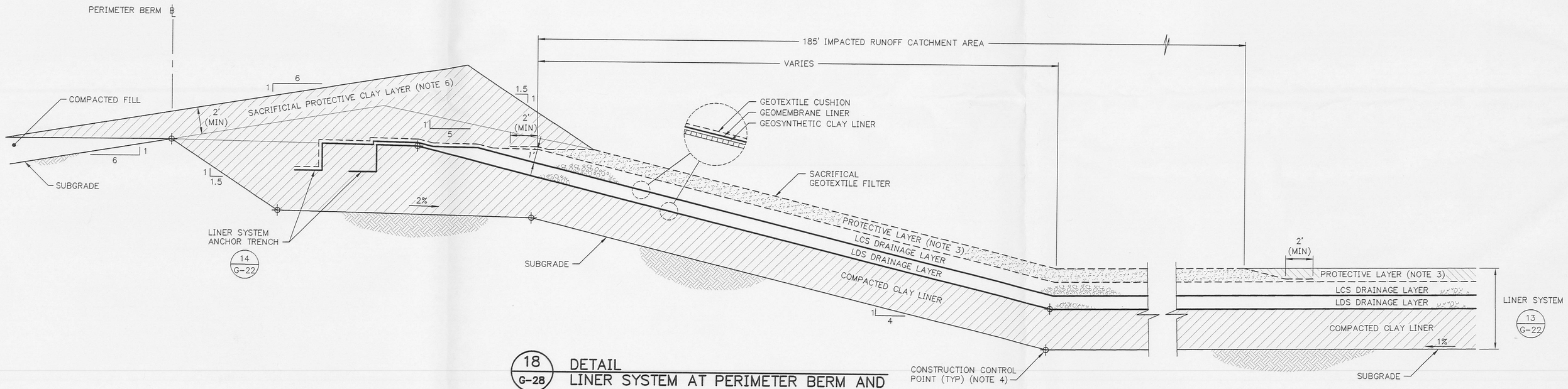
15 / - **DETAIL**
LINER SYSTEM WITH LCS AND LDS PIPES
(NOTE 8)
SCALE: 1" = 2'



16 / G-27 **DETAIL**
LINER SYSTEM AT PERIMETER BERM
SCALE: 1" = 4'



17 / G-16 **DETAIL**
LINER SYSTEM AT INTERCELL BERM AND PERIMETER BERM INTERSECTION
SCALE: 1" = 4'



18 / G-28 **DETAIL**
LINER SYSTEM AT PERIMETER BERM AND IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
2. LINER SYSTEM COMPONENT SUMMARY IS PROVIDED FOR INFORMATION PURPOSES ONLY. THE OSDF SPECIFICATIONS SHALL BE REFERENCED FOR DETAILED MINIMUM REQUIREMENTS FOR EACH MATERIAL.
3. PROTECTIVE LAYER IN ACTIVE CELLS SHALL CONSIST OF IMPACTED OR NON-IMPACTED GRANULAR MATERIAL IN THE IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED NON-GRANULAR MATERIAL IN REMAINING AREAS. PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SECTION 02240 OF THE OSDF SPECIFICATIONS.
4. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.
5. THICKNESS OF COMPACTED CLAY LINER ALONG CENTERLINE OF INTERCELL BERM VARIES FROM A MINIMUM OF 3 FEET TO A MAXIMUM OF 7 FEET.
6. SACRIFICIAL PROTECTIVE CLAY LAYER SHALL BE OVERBUILT A MINIMUM OF 2 FEET ABOVE TOP OF COMPACTED CLAY CAP ELEVATIONS AND CUT BACK JUST PRIOR TO CONSTRUCTION OF THE FINAL COVER SYSTEM. SACRIFICIAL PROTECTIVE CLAY LAYER SHALL BE IN ACCORDANCE WITH SECTION 02200 OF THE OSDF SPECIFICATIONS.
7. LCS AND LDS PIPES SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS.
8. THIS DETAIL IS CONCEPTUAL TO DEMONSTRATE COMPLIANCE WITH THE FEMP OPERABLE UNIT 2 RECORD OF DECISION.
9. TRENCHING AND BACKFILLING OF LINER SYSTEM ANCHOR TRENCH SHALL BE IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	RD	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO Fernald Environmental Restoration Management Corporation

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
LINER SYSTEM DETAILS I 468
240017_13

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

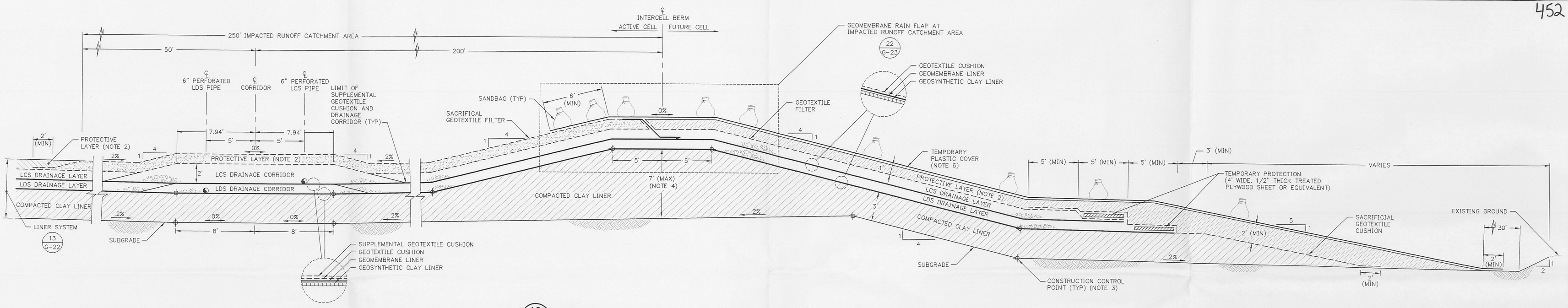
STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

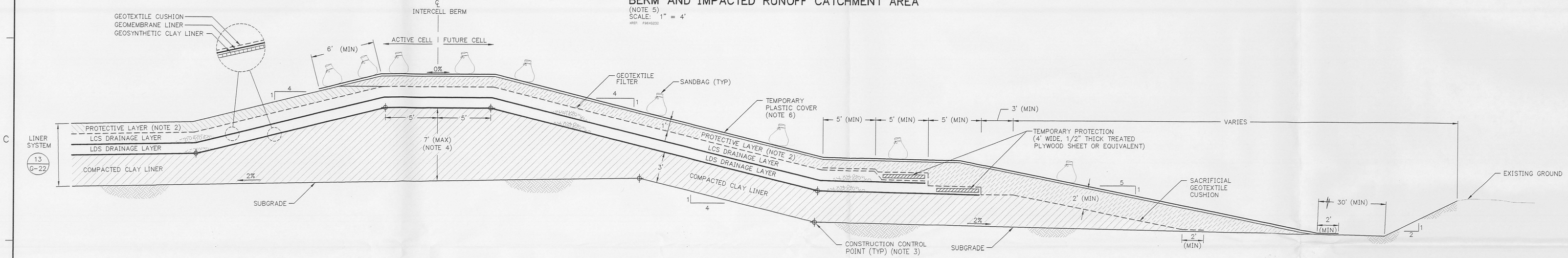
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-00032
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G094
SHEET NO.:	G-22
REVISION NO.:	G

FINAL DESIGN PACKAGE

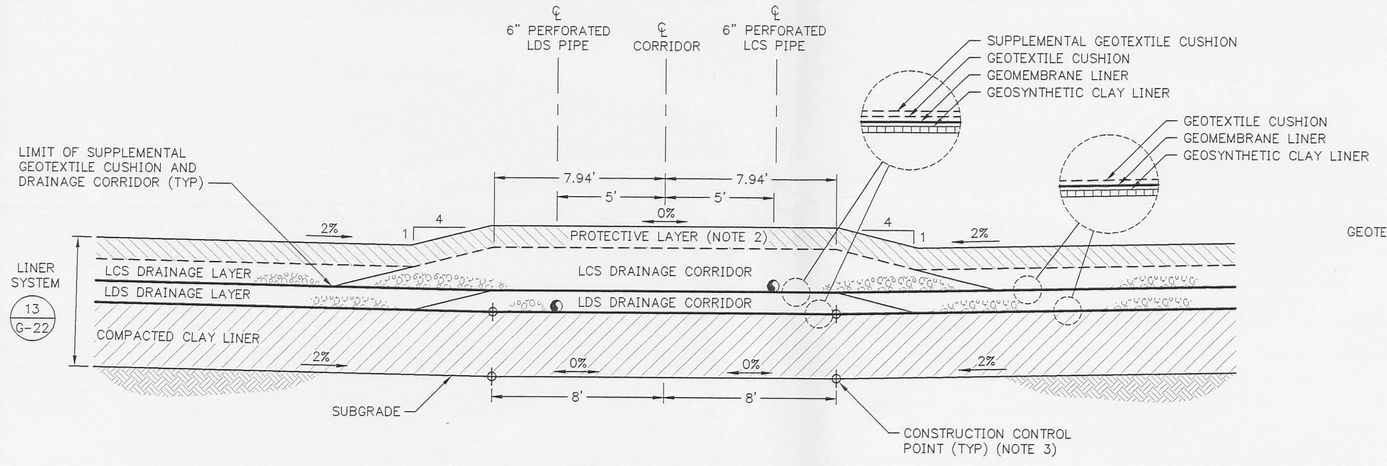
H:\F96-g094 Wed Oct 09 15:26:11 1996 J MILLER



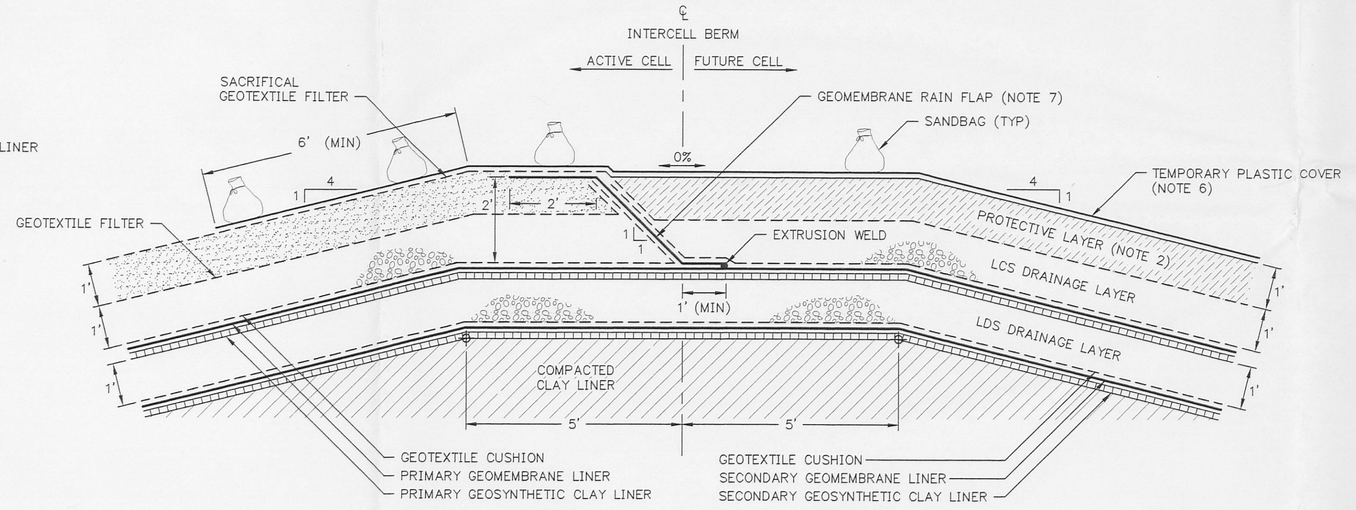
19 G-29 DETAIL
LINER SYSTEM SEASONAL TERMINATION AT INTERCELL BERM AND IMPACTED RUNOFF CATCHMENT AREA
(NOTE 5)
SCALE: 1" = 4'
XREF: F96H0232



20 G-29 DETAIL
LINER SYSTEM SEASONAL TERMINATION AT INTERCELL BERM
SCALE: 1" = 4'
XREF: F96H0274



21 G-15 DETAIL
LINER SYSTEM AT LEACHATE COLLECTION AND LEAK DETECTION CORRIDOR
(NOTE 5)
SCALE: 1" = 4'
XREF: F96H0295



22 G-23 DETAIL
GEOMEMBRANE RAIN FLAP AT IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 2'
XREF: F96H0360

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
2. PROTECTIVE LAYER IN ACTIVE CELLS SHALL CONSIST OF IMPACTED OR NON-IMPACTED GRANULAR MATERIAL IN THE IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED NON-GRANULAR MATERIAL IN REMAINING AREAS. PROTECTIVE LAYER IN FUTURE CELLS SHALL CONSIST OF NON-IMPACTED NON-GRANULAR MATERIAL. PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SECTION 02240 OF THE OSDF SPECIFICATIONS.
3. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.
4. THICKNESS OF COMPACTED CLAY LINER ALONG CENTERLINE OF INTERCELL BERM VARIES FROM A MINIMUM OF 3 FEET TO A MAXIMUM OF 7 FEET.
5. LCS AND LDS PIPES SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS.
6. TEMPORARY PLASTIC COVER SHALL CONSIST OF 10-mil THICK (MIN) POLYETHYLENE, POLYVINYL CHLORIDE, OR OTHER SHEETING APPROVED BY THE CONSTRUCTION MANAGER. SUBCONTRACTOR SHALL WEIGHT TEMPORARY PLASTIC COVER WITH SANDBAGS, OR EQUIVALENT, TO PREVENT DAMAGE FROM WIND.
7. RAIN FLAP SHALL BE CONTINUOUSLY WELDED TO THE PRIMARY GEOMEMBRANE LINER ALONG THE INTERCELL BERM. FLAP SHALL TIE-IN TO THE GEOMEMBRANE AT THE CREST OF THE PERIMETER BERM AND EXTEND 185 FEET TO THE EAST FROM THE WEST PERIMETER BERM BASELINE.
8. MATERIAL IN DRAINAGE LAYERS AND DRAINAGE CORRIDORS SHALL BE IN ACCORDANCE WITH SECTION 02710 OF THE OSDF SPECIFICATIONS.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	RD	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO Environmental Restoration Management Corporation
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
LINER SYSTEM DETAILS II 469
24001214

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Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

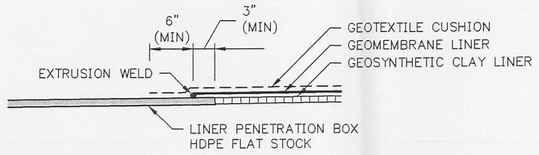
STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEO SYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

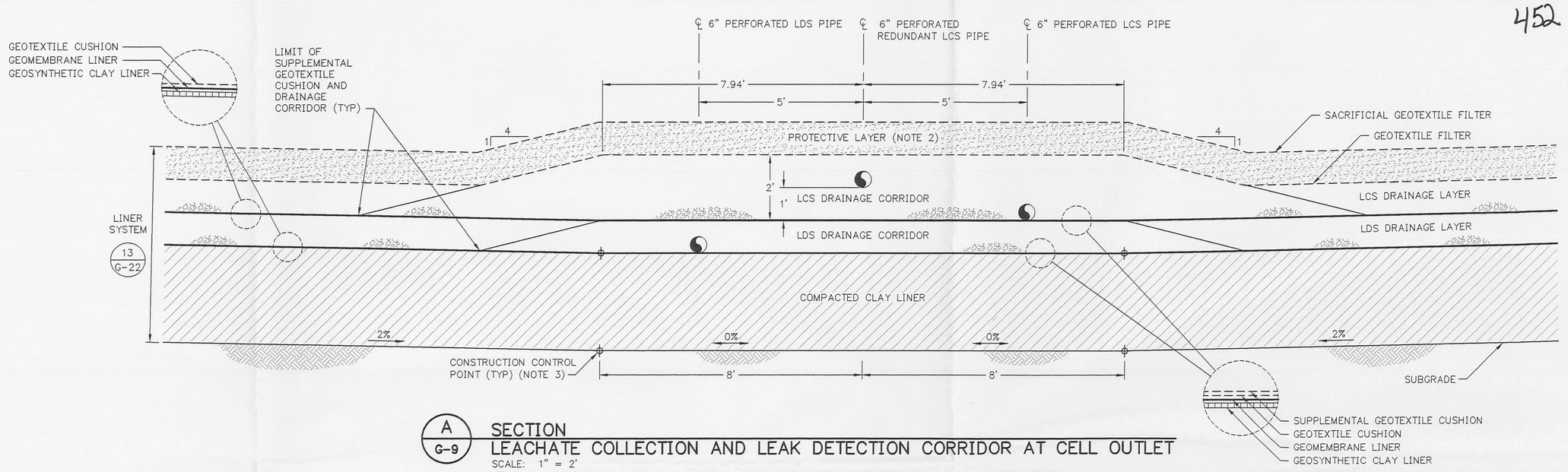
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00033
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-0095
SHEET NO.:	G-23
REVISION NO.:	G

FINAL DESIGN PACKAGE

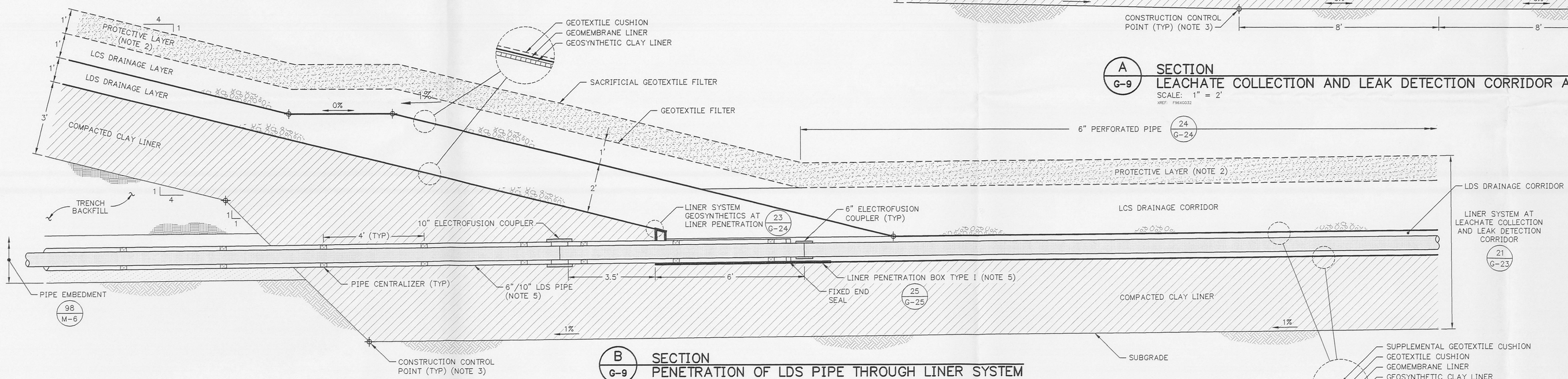
M:\ACAD\GE3900-13\F96-0095 Sat Oct 05 12:12:20 1996 FERNCO/DUAN



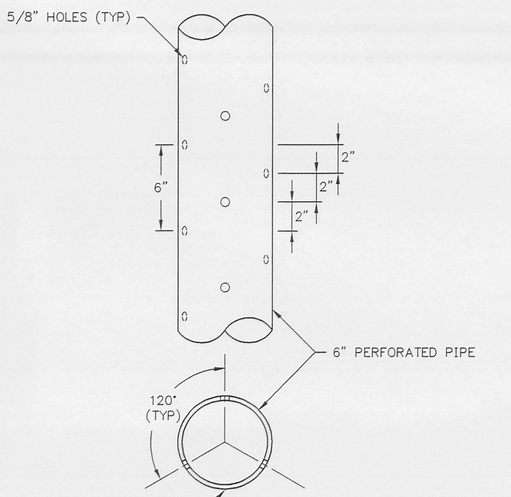
23 / G-24 **DETAIL**
LINER SYSTEM GEOSYNTHETICS AT LINER PENETRATION
SCALE: 1" = 1'



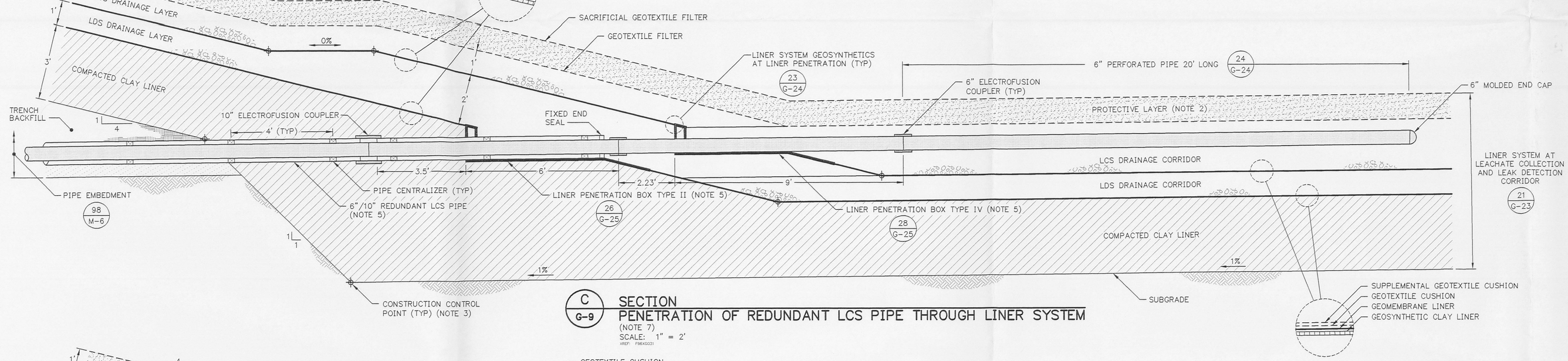
A / G-9 **SECTION**
LEACHATE COLLECTION AND LEAK DETECTION CORRIDOR AT CELL OUTLET
SCALE: 1" = 2'



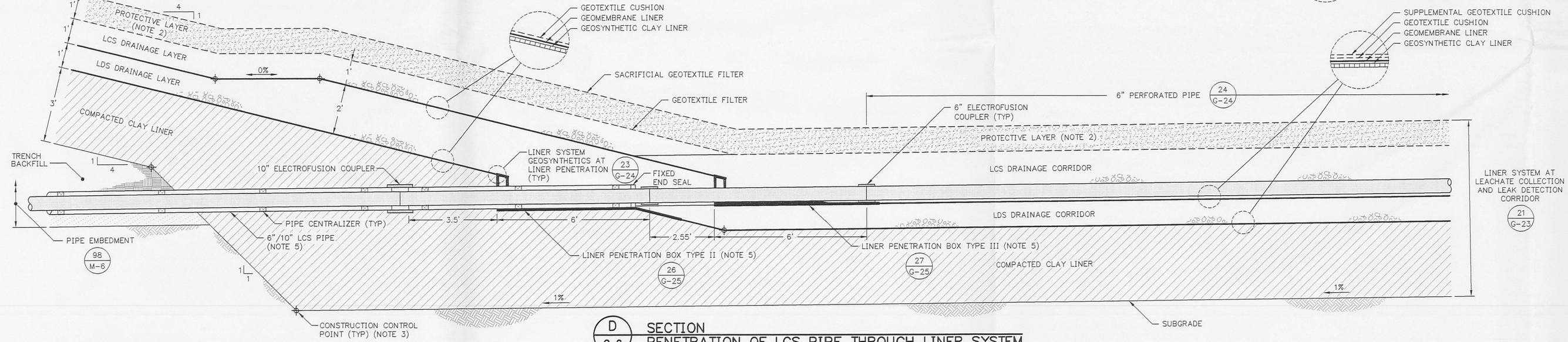
B / G-9 **SECTION**
PENETRATION OF LDS PIPE THROUGH LINER SYSTEM
(NOTE 7)
SCALE: 1" = 2'



24 / G-24 **DETAIL**
PERFORATED PIPE
SCALE: 1" = 6"



C / G-9 **SECTION**
PENETRATION OF REDUNDANT LCS PIPE THROUGH LINER SYSTEM
(NOTE 7)
SCALE: 1" = 2'



D / G-9 **SECTION**
PENETRATION OF LCS PIPE THROUGH LINER SYSTEM
(NOTE 7)
SCALE: 1" = 2'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
2. PROTECTIVE LAYER IN ACTIVE CELLS SHALL CONSIST OF IMPACTED MATERIAL OR NON-IMPACTED GRANULAR MATERIAL IN THE IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED NON-GRANULAR MATERIAL IN REMAINING AREAS. PROTECTIVE LAYER IN FUTURE CELLS SHALL CONSIST OF NON-IMPACTED NON-GRANULAR MATERIAL. PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SECTION 02240 OF THE OSDF SPECIFICATIONS.
3. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.
4. LCS AND LDS PIPES SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS.
5. LINER PENETRATION BOXES SHALL BE IN ACCORDANCE WITH SECTION 13005 OF THE OSDF SPECIFICATIONS.
6. MATERIAL IN DRAINAGE LAYERS AND DRAINAGE CORRIDORS SHALL BE IN ACCORDANCE WITH SECTION 02710 OF THE OSDF SPECIFICATIONS.
7. HORIZONTAL MONITORING WELL IS NOT SHOWN IN THIS SECTION FOR CLARITY.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	BD	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
LINER SYSTEM DETAILS III 470
240017_15

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

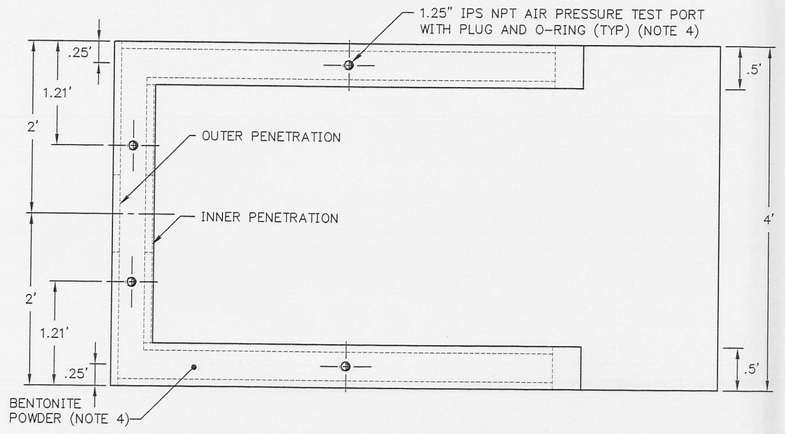
STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER

GEO SYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

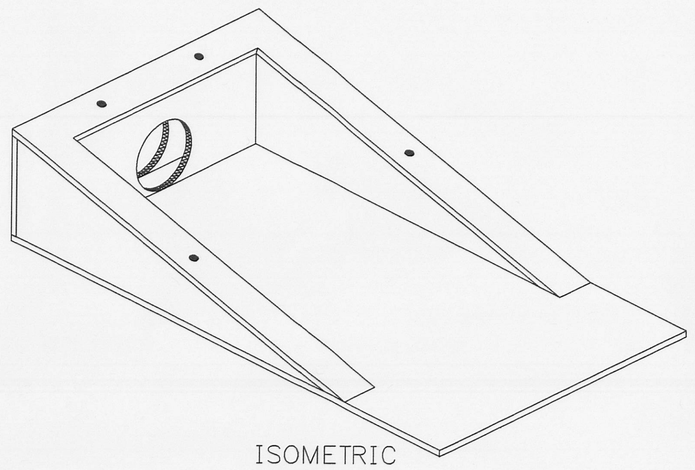
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95P5005028
FERMCO DRAWING NO.:	90X-6000-G-00034
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G029
SHEET NO.:	G-24
REVISION NO.:	G

FINAL DESIGN PACKAGE

M:\GAZADOC\GE3900-13\F96-G029 Sat Oct 05 09:29:42 1996 John C.



PLAN VIEW



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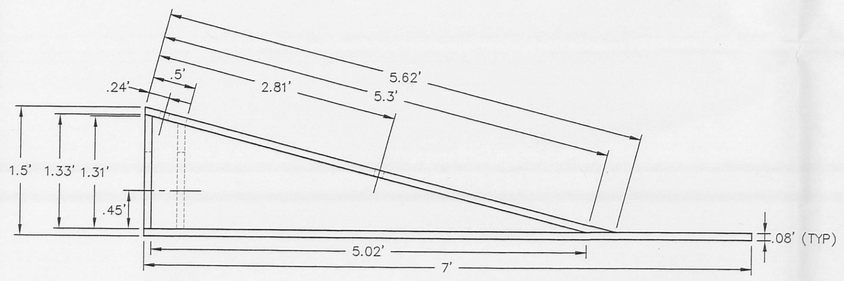
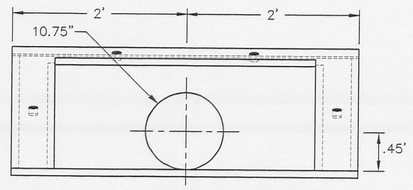
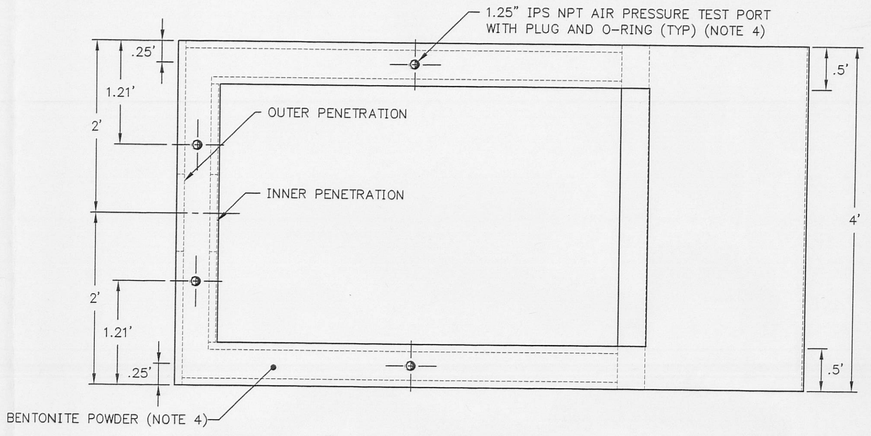


FRONT ELEVATION

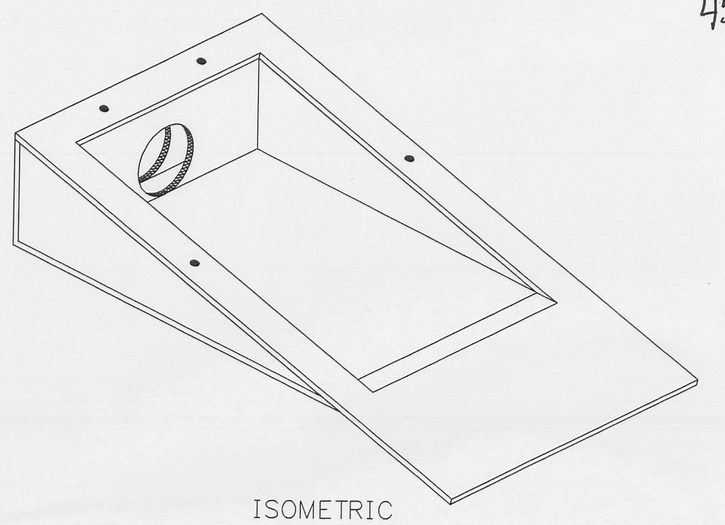


RIGHT ELEVATION

25 G-24 DETAIL
LINER PENETRATION BOX TYPE I
SCALE: 1" = 1'



PLAN VIEW



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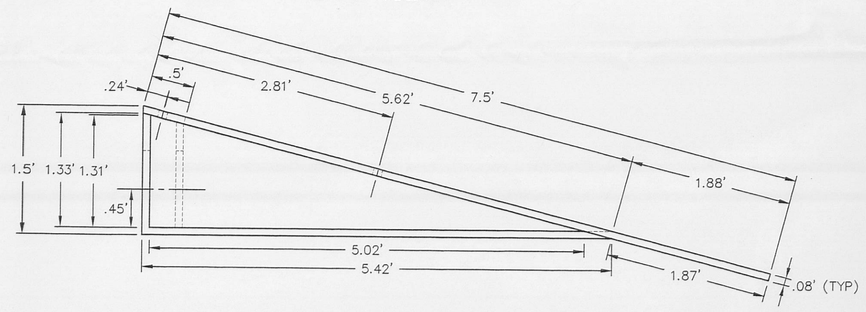

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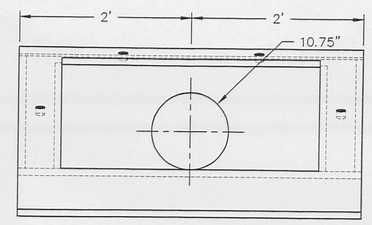
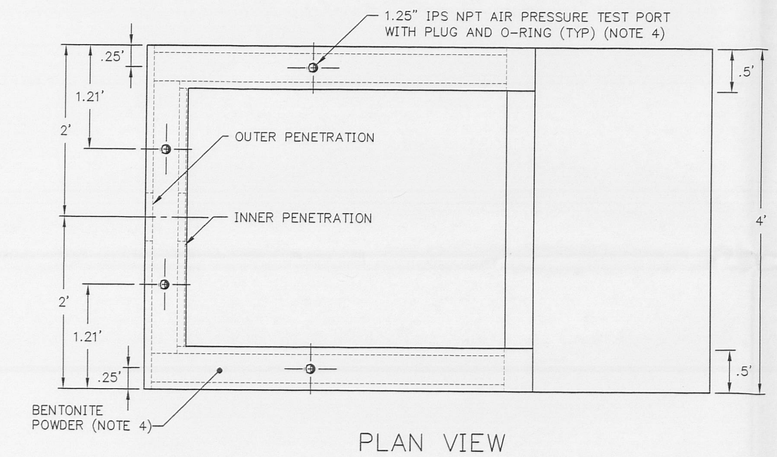
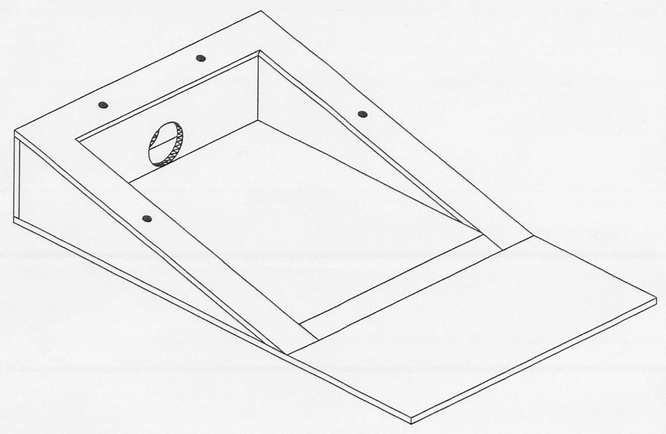


RIGHT ELEVATION

26 G-24 DETAIL
LINER PENETRATION BOX TYPE II
SCALE: 1" = 1'



PLAN VIEW



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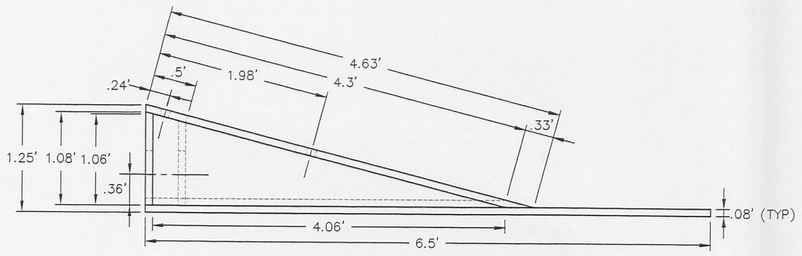
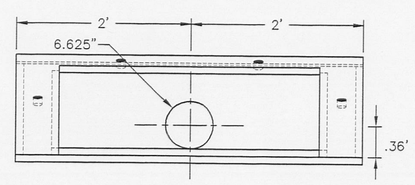
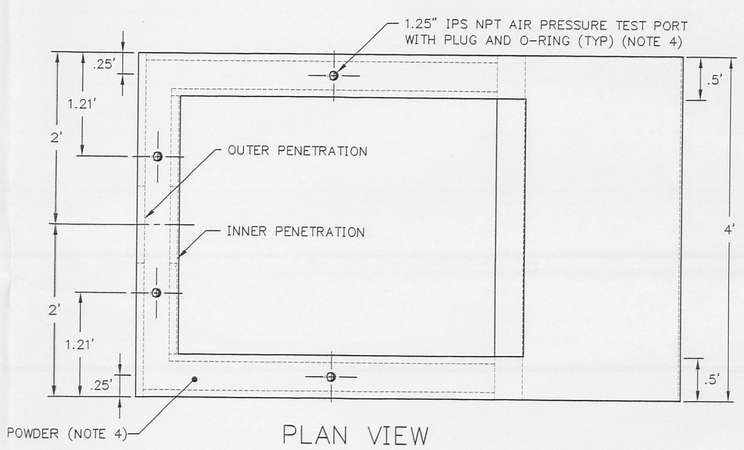


FRONT ELEVATION

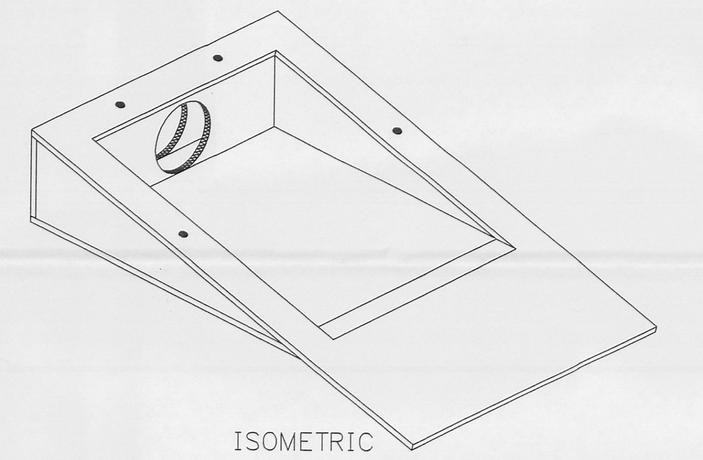


RIGHT ELEVATION

27 G-24 DETAIL
LINER PENETRATION BOX TYPE III
SCALE: 1" = 1'



PLAN VIEW



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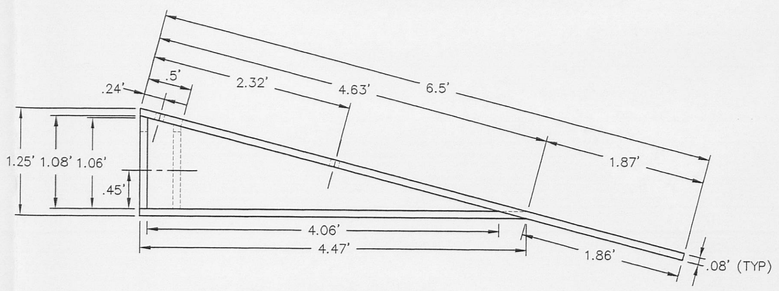
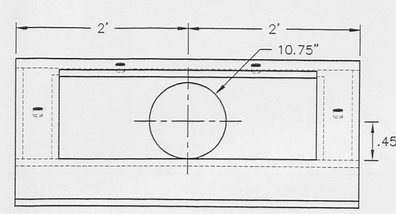


FRONT ELEVATION



RIGHT ELEVATION

28 G-24 DETAIL
LINER PENETRATION BOX TYPE IV
SCALE: 1" = 1'

FOR INFORMATION ONLY

NOTES:

1. LINER PENETRATION BOXES SHALL BE IN ACCORDANCE WITH SECTION 13005 OF THE OSDF SPECIFICATIONS.
2. PIPES ARE NOT SHOWN FOR CLARITY. SEE DRAWING G-24 FOR LENGTH OF PIPES
3. LINER PENETRATION BOXES SHALL BE CONSTRUCTED USING 1-INCH THICK HDPE FLAT STOCK.
4. LINER PENETRATION BOXES SHALL BE AIR PRESSURE TESTED IN THE FIELD AFTER INSTALLATION. AIR PRESSURE TEST CHAMBER SHALL BE BACKFILLED WITH BENTONITE POWDER AFTER AIR PRESSURE TESTING AND SEAMING OF GEOMEMBRANE TO LINER PENETRATION BOXES IS COMPLETED. PLUG SHALL BE SEALED WITH HDPE EXTRUDATE AFTER BACKFILLING WITH BENTONITE POWDER.

FINAL DESIGN PACKAGE

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	UMW	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

1 5 0 1 2
SCALE IN FEET

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO Fernald Environmental Restoration Management Corporation
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
LINER SYSTEM DETAILS IV 471
24D017-16

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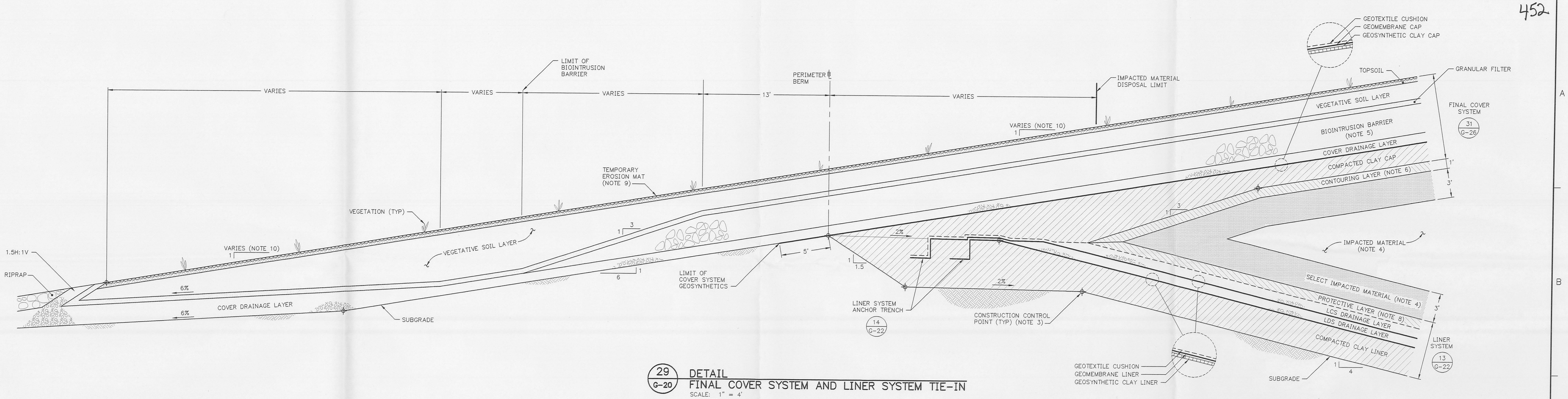
Rudolph Bonaparte
SIGNATURE
5 Oct 1996
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER
SEAL

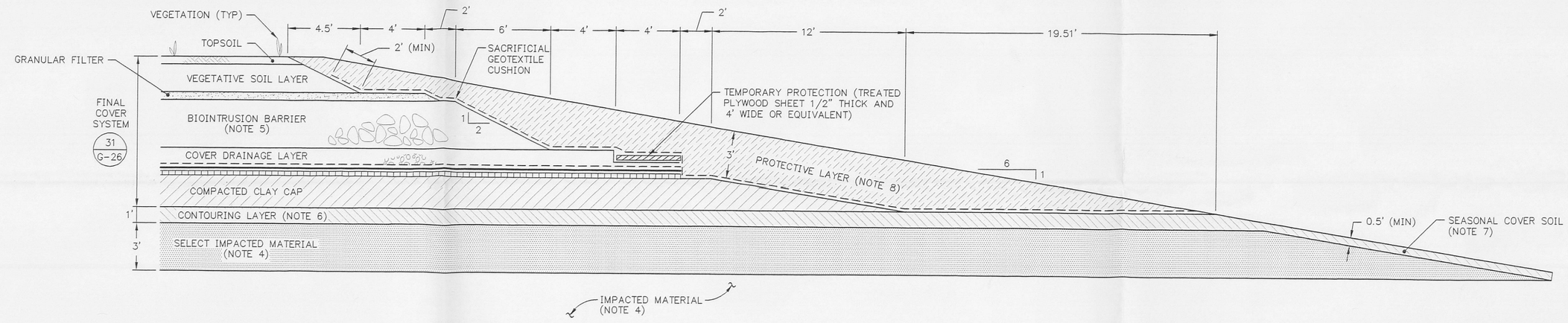
GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00035
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G113
SHEET NO.:	G-25
REVISION NO.:	G

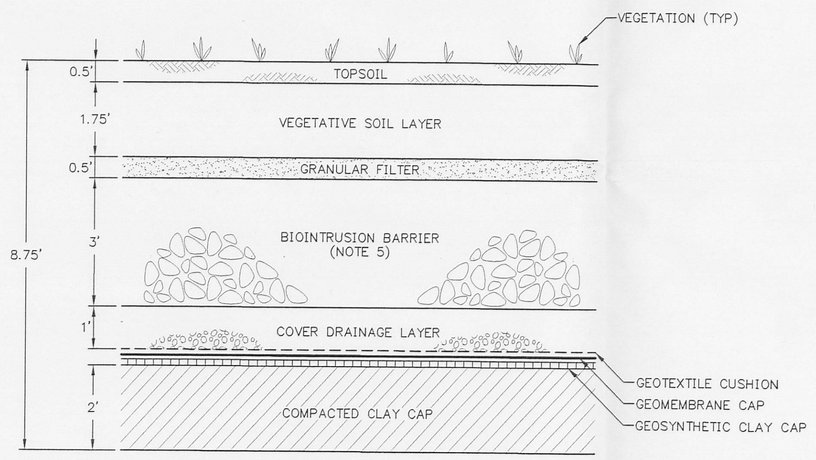
H:\96-g113 Tue Oct 08 09:35:18 1996 J.MILLER



29 G-20 **DETAIL**
FINAL COVER SYSTEM AND LINER SYSTEM TIE-IN
SCALE: 1" = 4'
IREF: F96I0220



30 G-29 **DETAIL**
FINAL COVER SYSTEM WITH SEASONAL CLOSURE
SCALE: 1" = 4'
IREF: F96I0078



31 G-15 **DETAIL**
FINAL COVER SYSTEM
SCALE: 1" = 2'
IREF: F96I0229

COVER SYSTEM COMPONENT SUMMARY (NOTE 2)		
GEOSYNTHETICS		
COMPONENT	MATERIAL	SPECIFICATION SECTION
GEOMEMBRANE CAP	TEXTURED 60-mil HDPE	02770
GEOSYNTHETIC CLAY CAP	INTERNALLY-REINFORCED SODIUM MONTMORILLONITE CORE WITH WOVEN GEOTEXTILE SIDE AGAINST OVERLYING GEOMEMBRANE AND NONWOVEN SIDE AGAINST UNDERLYING SOIL; OR SODIUM MONTMORILLONITE CORE WITH 40-mil TEXTURED HDPE BACKING AGAINST UNDERLYING SOIL	02772
GEOTEXTILE CUSHION	POLYPROPYLENE OR POLYESTER NEEDLE-PUNCHED NONWOVEN GEOTEXTILE	02714
SOILS		
COMPONENT	SOURCE	SPECIFICATION SECTION
COMPACTED CLAY CAP	ON-SITE BORROW	02225
COVER DRAINAGE LAYER	OFF-SITE BORROW	02710
BIOINTRUSION BARRIER	OFF-SITE BORROW	02280
GRANULAR FILTER	OFF-SITE BORROW	02712
VEGETATIVE SOIL LAYER	ON-SITE BORROW	02250
TOPSOIL	ON-SITE OR OFF-SITE BORROW	02920
PROTECTIVE LAYER (GRANULAR)	OFF-SITE BORROW	02240

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
2. COVER SYSTEM COMPONENT SUMMARY IS PROVIDED FOR INFORMATION PURPOSES ONLY. THE OSDF SPECIFICATIONS SHALL BE REFERENCED FOR DETAILED MINIMUM REQUIREMENTS FOR EACH MATERIAL.
3. CONSTRUCTION CONTROL POINT TABLES WILL BE PROVIDED ON DRAWINGS G-38 AND G-39.
4. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THIS THICKNESS MAY BE REDUCED TO 2 FEET ABOVE THE PROTECTIVE LAYER IF THE FIRST LIFT OF IMPACTED MATERIAL PLACEMENT IS CATEGORY 1 OR 2 MATERIAL AS DEFINED BY THE OSDF IMPACTED MATERIAL PLACEMENT (IMP) PLAN. ALL IMPACTED MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SECTION 13010 OF THE OSDF SPECIFICATIONS AND THE IMP PLAN.
5. A GRAVEL CHOKE LAYER SHALL BE COMPACTED INTO THE TOP 6 INCHES OF THE BIOINTRUSION BARRIER IN ACCORDANCE WITH SECTION 02280 OF THE OSDF SPECIFICATIONS.
6. CONTOURING LAYER SHALL CONSIST OF NON-GRANULAR IMPACTED MATERIAL IN ACCORDANCE WITH SECTION 02240 OF THE OSDF SPECIFICATIONS.
7. SEASONAL COVER SOIL SHALL BE IN ACCORDANCE WITH SECTION 13030 OF THE OSDF SPECIFICATIONS.
8. PROTECTIVE LAYER IN ACTIVE CELLS SHALL CONSIST OF IMPACTED OR NON-IMPACTED GRANULAR MATERIAL IN THE IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED NON-GRANULAR MATERIAL IN REMAINING AREAS. PROTECTIVE LAYER AT FINAL COVER SYSTEM WITH SEASONAL CLOSURE SHALL BE NON-IMPACTED NON-GRANULAR MATERIAL. PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SECTION 02240 OF THE OSDF SPECIFICATIONS.
9. TEMPORARY EROSION MAT SHALL BE IN ACCORDANCE WITH SECTION 02270 OF THE OSDF SPECIFICATIONS.
10. THE SLOPE OF THE LOWER PORTION OF THE FINAL COVER SYSTEM IS 6H:1V FOR THE NORTH, SOUTH, EAST, AND WEST PERIMETERS OF THE OSDF AND TRANSITIONS FROM 6H:1V TO 7H:1V AND BACK TO 6H:1V IN THE CORNERS OF THE OSDF.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	UMW	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
COVER SYSTEM DETAILS I 472
240017_16

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

STATE OF OHIO · RUDOLPH BONAPARTE · E-56579 · REGISTERED PROFESSIONAL ENGINEER

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

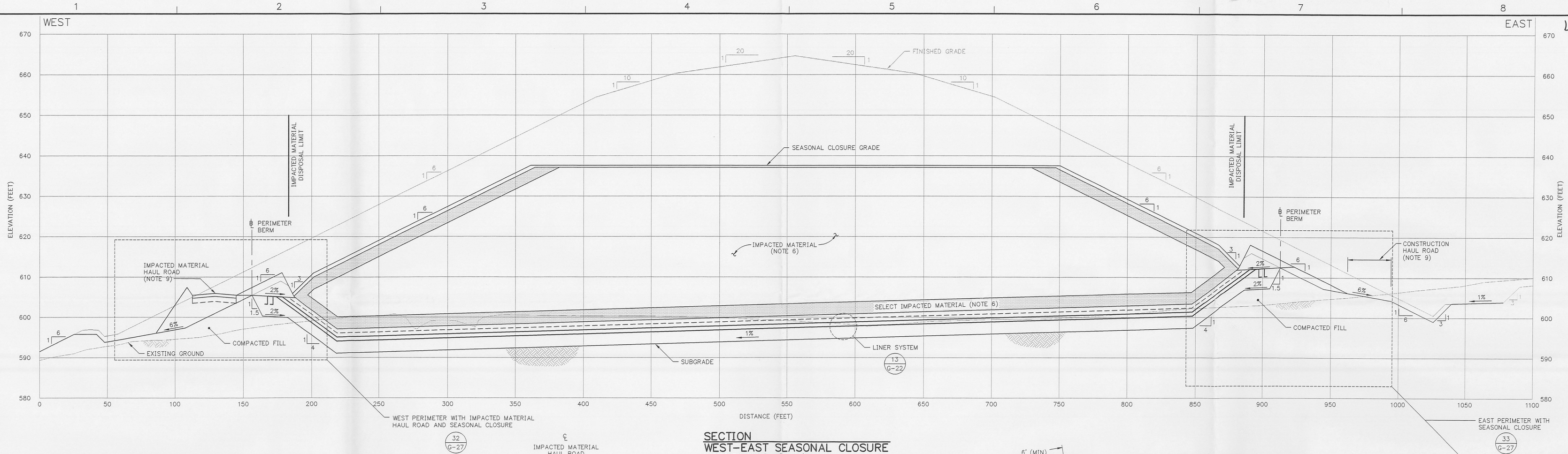
GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00036
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G098
SHEET NO.:	G-26
REVISION NO.:	G

FINAL DESIGN PACKAGE

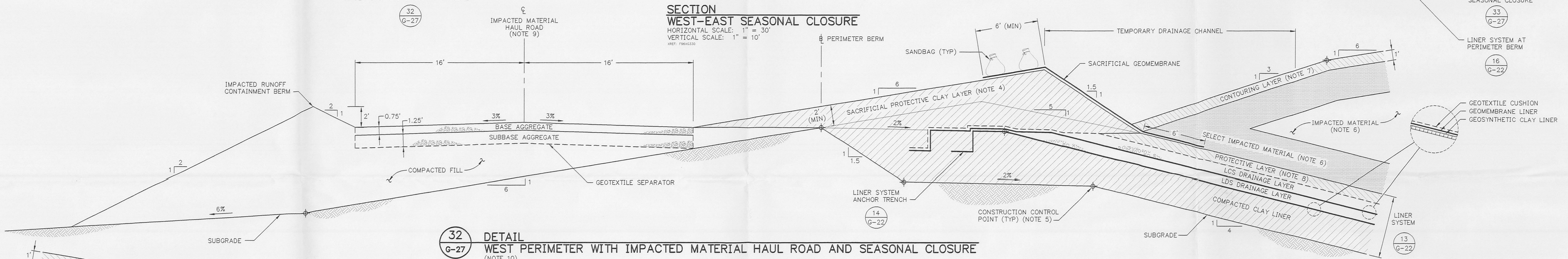
M:\CAD\ODC\GE3900 - 13\F96-G098 Sat Oct 05 09:53:17 1996 John C.

452



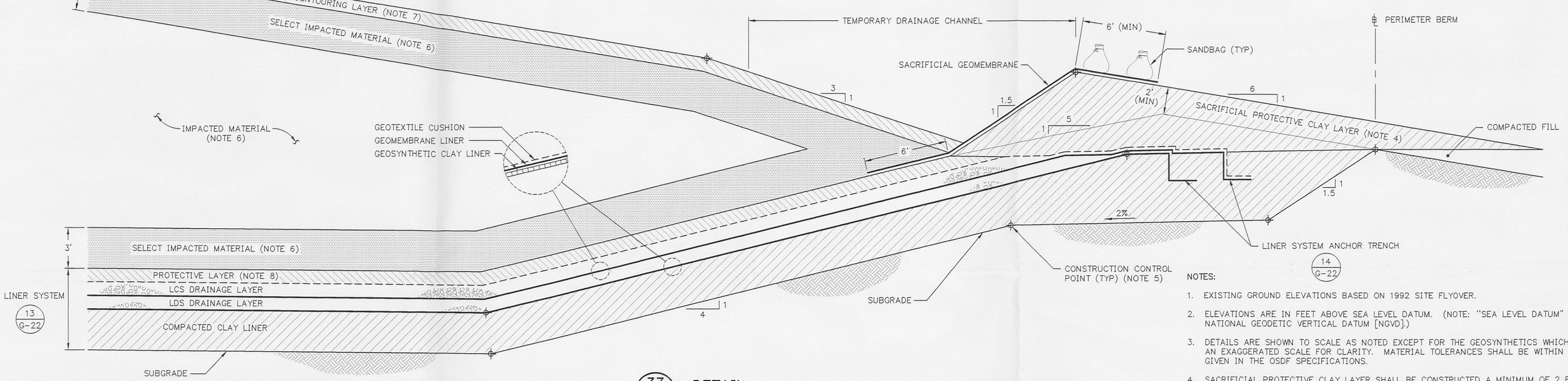
SECTION
WEST-EAST SEASONAL CLOSURE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'
XREF: F96A0330



32 G-27 DETAIL
WEST PERIMETER WITH IMPACTED MATERIAL HAUL ROAD AND SEASONAL CLOSURE

(NOTE 10)
SCALE: 1" = 4'
XREF: F96A0346



33 G-27 DETAIL
EAST PERIMETER WITH SEASONAL CLOSURE

(NOTE 10)
SCALE: 1" = 4'
XREF: F96A0255

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
4. SACRIFICIAL PROTECTIVE CLAY LAYER SHALL BE CONSTRUCTED A MINIMUM OF 2 FEET ABOVE TOP OF COMPACTED CLAY CAP ELEVATIONS AND CUT BACK JUST PRIOR TO CONSTRUCTION OF THE FINAL COVER SYSTEM. SACRIFICIAL PROTECTIVE CLAY LAYER SHALL BE IN ACCORDANCE WITH SECTION 02200 OF THE OSDF SPECIFICATIONS.
5. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.
6. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THIS THICKNESS MAY BE REDUCED TO 2 FEET ABOVE THE PROTECTIVE LAYER IF THE FIRST LIFT OF IMPACTED MATERIAL PLACEMENT IS CATEGORY 1 OR 2 MATERIAL AS DEFINED BY THE OSDF IMPACTED MATERIAL PLACEMENT (IMP) PLAN. ALL IMPACTED MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SECTION 13010 OF THE OSDF SPECIFICATIONS AND THE IMP PLAN.
7. CONTOURING LAYER SHALL CONSIST OF NON-GRANULAR IMPACTED MATERIAL IN ACCORDANCE WITH SECTION 02240 OF THE OSDF SPECIFICATIONS.
8. PROTECTIVE LAYER IN ACTIVE CELLS SHALL CONSIST OF IMPACTED OR NON-IMPACTED GRANULAR MATERIAL IN THE IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED NON-GRANULAR MATERIAL IN REMAINING AREAS. PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SECTION 02240 OF THE OSDF SPECIFICATIONS.
9. SUBCONTRACTOR SHALL ESTABLISH ACCESS TO CELL LINER SYSTEM CONSTRUCTION, FINAL COVER SYSTEM CONSTRUCTION, AND IMPACTED MATERIAL PLACEMENT IN ACCORDANCE WITH THE APPROVED CONSTRUCTION SITE ACCESS PLAN.

FINAL DESIGN PACKAGE

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	RD	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
COVER SYSTEM DETAILS II 473
24017_18

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

STATE OF OHIO — RUDOLPH BONAPARTE — E-56679 — REGISTERED PROFESSIONAL ENGINEER

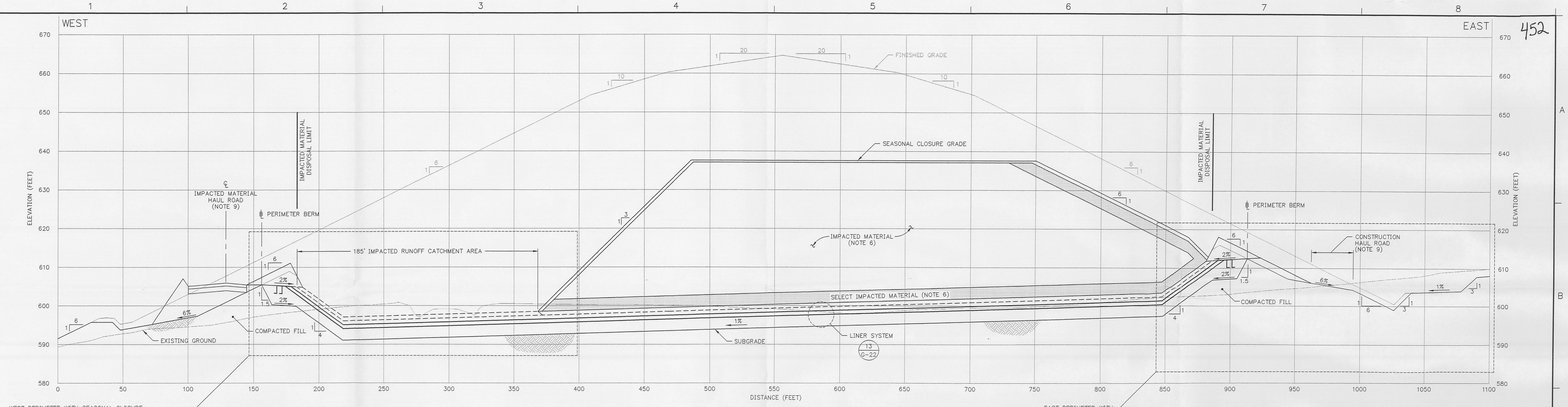
Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00037
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G133
SHEET NO.:	G-27
REVISION NO.:	G

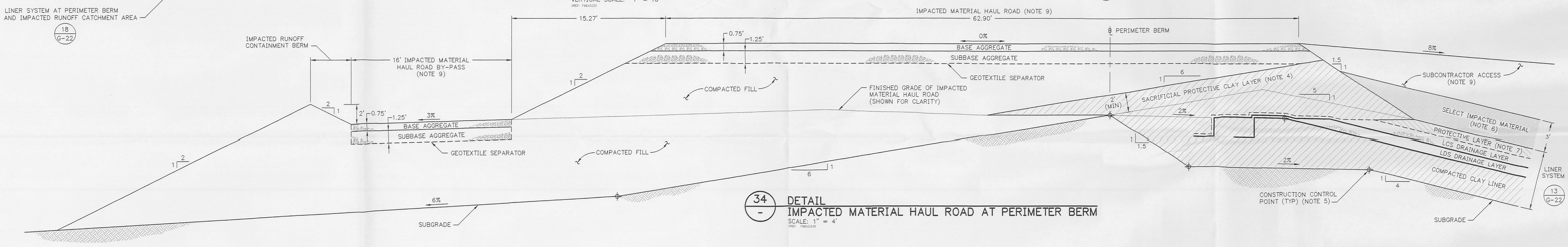
M:\VACADDE\GE3900\F-13\96-G133 Tue Oct 08 09:14:45 1996 John C.

452



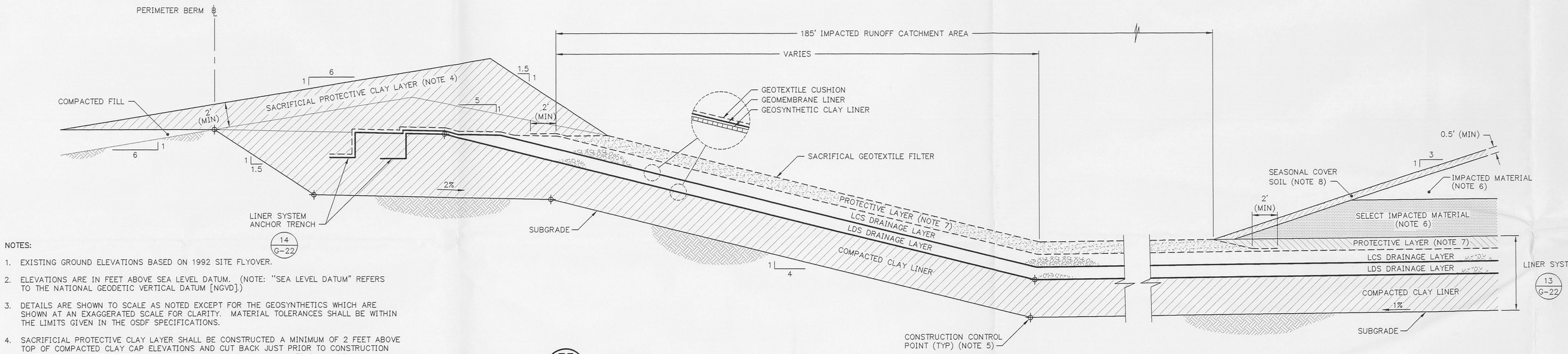
SECTION
WEST–EAST SEASONAL CLOSURE AT IMPACTED RUNOFF CATCHMENT AREA

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'



34 - DETAIL
IMPACTED MATERIAL HAUL ROAD AT PERIMETER BERM

SCALE: 1" = 4'



35 G-28 DETAIL
WEST PERIMETER WITH SEASONAL CLOSURE AND IMPACTED RUNOFF CATCHMENT AREA

SCALE: 1" = 4'

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
4. SACRIFICIAL PROTECTIVE CLAY LAYER SHALL BE CONSTRUCTED A MINIMUM OF 2 FEET ABOVE TOP OF COMPACTED CLAY CAP ELEVATIONS AND CUT BACK JUST PRIOR TO CONSTRUCTION OF THE FINAL COVER SYSTEM. SACRIFICIAL PROTECTIVE CLAY LAYER SHALL BE IN ACCORDANCE WITH SECTION 02200 OF THE OSDF SPECIFICATIONS.
5. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.
6. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THIS THICKNESS MAY BE REDUCED TO 2 FEET ABOVE THE PROTECTIVE LAYER IF THE FIRST LIFT OF IMPACTED MATERIAL PLACEMENT IS CATEGORY 1 OR 2 MATERIAL AS DEFINED BY THE OSDF IMPACTED MATERIAL PLACEMENT (IMP) PLAN. ALL IMPACTED MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SECTION 13010 OF THE OSDF SPECIFICATIONS AND THE IMP PLAN.
7. PROTECTIVE LAYER IN ACTIVE CELLS SHALL CONSIST OF IMPACTED OR NON-IMPACTED GRANULAR MATERIAL IN THE IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED NON-GRANULAR MATERIAL IN REMAINING AREAS. PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SECTION 02240 OF OSDF SPECIFICATIONS.
8. SEASONAL COVER SOIL SHALL BE IN ACCORDANCE WITH SECTION 13030 OF THE OSDF SPECIFICATIONS.
9. SUBCONTRACTOR SHALL ESTABLISH ACCESS TO CELL LINER SYSTEM CONSTRUCTION, FINAL COVER SYSTEM CONSTRUCTION, AND IMPACTED MATERIAL PLACEMENT IN ACCORDANCE WITH THE APPROVED CONSTRUCTION SITE ACCESS PLAN.
10. MATERIAL IN DRAINAGE LAYERS AND DRAINAGE CORRIDORS SHALL BE IN ACCORDANCE WITH SECTION 02710 OF THE OSDF SPECIFICATIONS.

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:

FERNCO Fernald Environmental Restoration Management Corporation

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
COVER SYSTEM DETAILS III 474
24017_19

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER

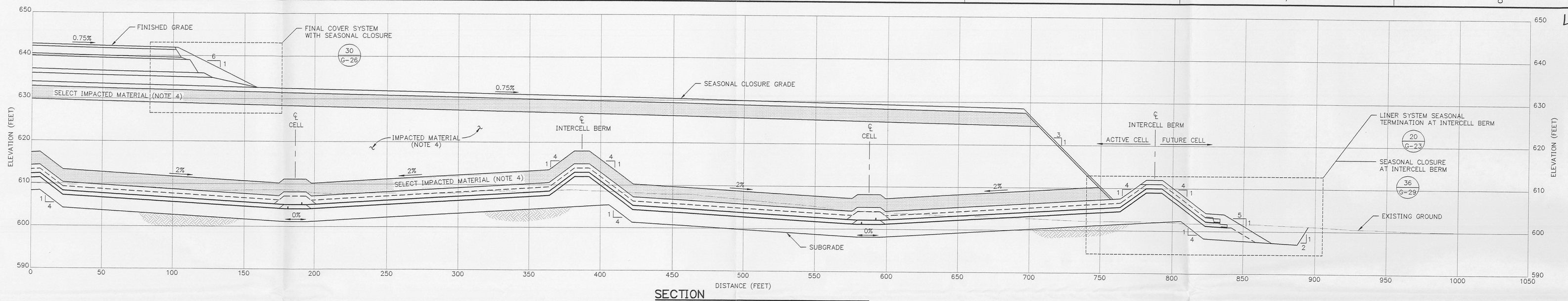
GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00038
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G135
SHEET NO.:	G-28
REVISION NO.:	G

FINAL DESIGN PACKAGE

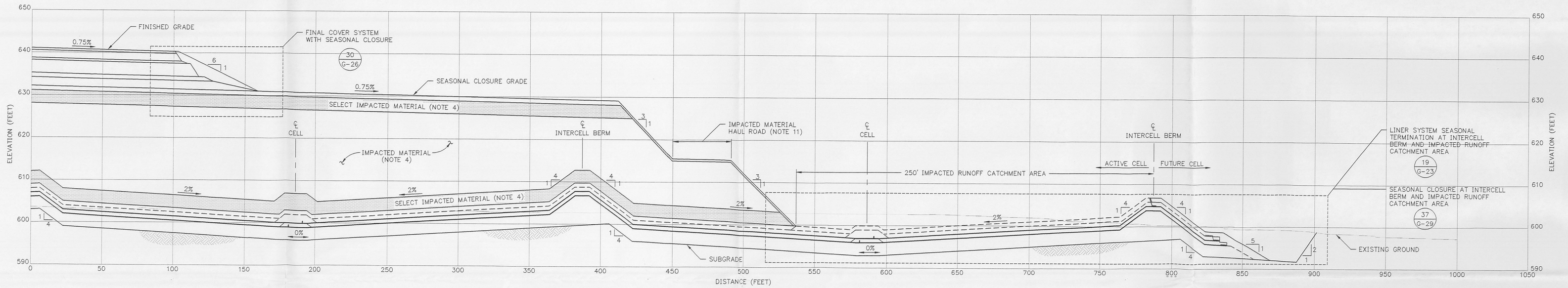
M:\GAC\ADD\GE3900-13\96-6135 Tue Oct 08 09:04:49 1996 John C.

452



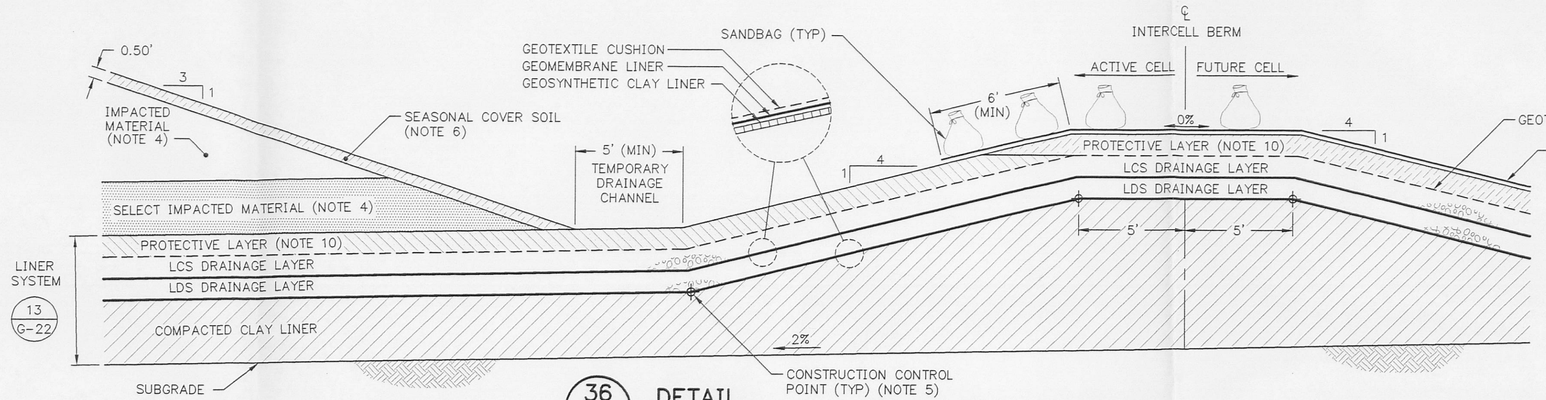
SECTION
NORTH-SOUTH SEASONAL CLOSURE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'



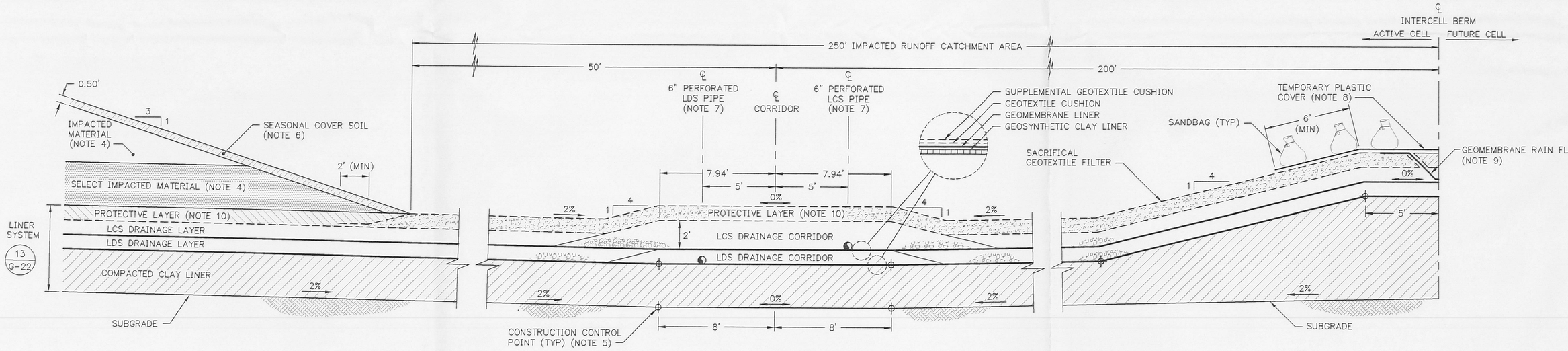
SECTION
NORTH-SOUTH SEASONAL CLOSURE AT IMPACTED RUNOFF CATCHMENT AREA

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 10'



36 G-29 **DETAIL**
SEASONAL CLOSURE AT INTERCELL BERM

SCALE: 1" = 4'



37 G-29 **DETAIL**
SEASONAL CLOSURE AT INTERCELL BERM AND IMPACTED RUNOFF CATCHMENT AREA

SCALE: 1" = 4'

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
4. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THIS THICKNESS MAY BE REDUCED TO 2 FEET ABOVE THE PROTECTIVE LAYER IF THE FIRST LIFT OF IMPACTED MATERIAL PLACEMENT IS CATEGORY 1 OR 2 MATERIAL AS DEFINED BY THE OSDF IMPACTED MATERIAL PLACEMENT (IMP) PLAN. ALL IMPACTED MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SECTION 13010 OF THE OSDF SPECIFICATIONS AND THE IMP PLAN.
5. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.
6. SEASONAL COVER SOIL SHALL BE IN ACCORDANCE WITH SECTION 13030 OF THE OSDF SPECIFICATIONS.
7. LCS AND LDS PIPES SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS.
8. TEMPORARY PLASTIC COVER SHALL CONSIST OF 10-mil THICK (MIN) POLYETHYLENE, POLYVINYL CHLORIDE MATERIAL, OR OTHER SHEETING ACCEPTABLE TO THE CONSTRUCTION MANAGER. SUBCONTRACTOR SHALL WEIGHT TEMPORARY PLASTIC COVER WITH SANDBAGS, OR EQUIVALENT, TO PREVENT DAMAGE FROM WIND.
9. RAIN FLAP SHALL BE HDPE AND CONTINUOUSLY WELDED TO THE PRIMARY GEOMEMBRANE LINER ALONG THE INTERCELL BERM. FLAP SHALL TIE-IN TO THE GEOMEMBRANE AT THE CREST OF THE PERIMETER BERM AND EXTEND 185 FEET TO THE EAST FROM THE WEST PERIMETER BERM BASELINE.
10. PROTECTIVE LAYER IN ACTIVE CELLS SHALL CONSIST OF IMPACTED OR NON-IMPACTED GRANULAR MATERIAL IN THE IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED NON-GRANULAR MATERIAL IN REMAINING AREAS. PROTECTIVE LAYER IN FUTURE CELLS SHALL CONSIST OF NON-IMPACTED NON-GRANULAR MATERIAL. PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SECTION 02240 OF THE OSDF SPECIFICATIONS.
11. SUBCONTRACTOR SHALL ESTABLISH ACCESS TO CELL LINER SYSTEM CONSTRUCTION, FINAL COVER SYSTEM CONSTRUCTION, AND IMPACTED MATERIAL PLACEMENT IN ACCORDANCE WITH THE APPROVED CONSTRUCTION SITE ACCESS PLAN.

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	RD	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
COVER SYSTEM DETAILS IV
240017_20

475

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
E-56579
REGISTERED PROFESSIONAL ENGINEER

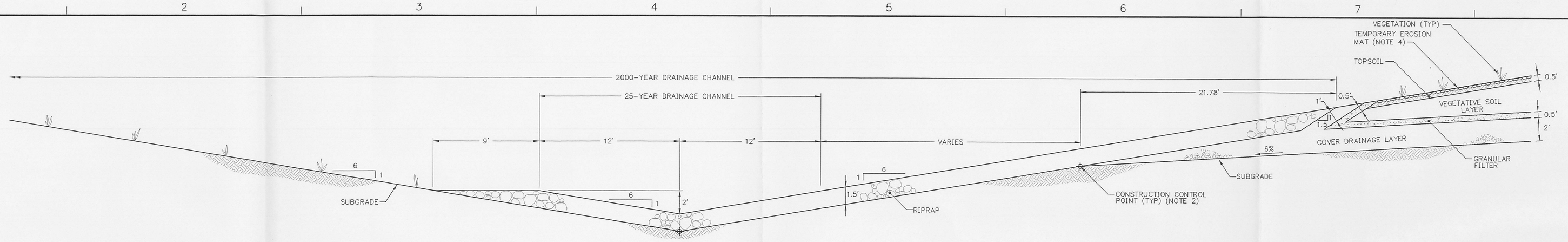
GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00039
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G136
SHEET NO.:	G-29
REVISION NO.:	G

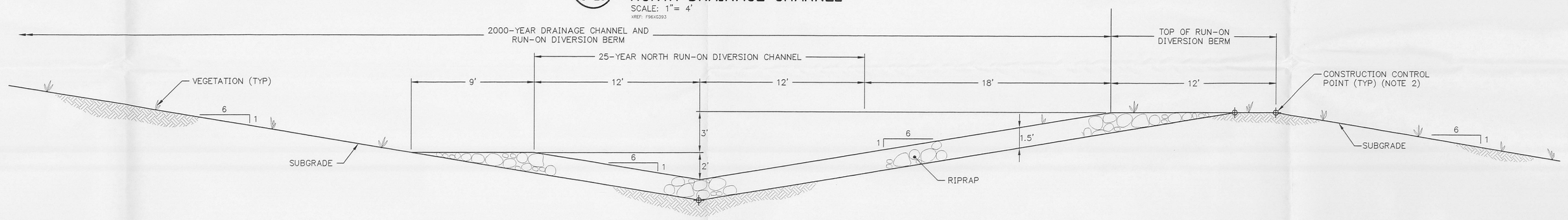
FINAL DESIGN PACKAGE

M:\GAC\ADD\GE3900-13\F96-6136 Sat Oct 05 11:29:28 1996 FERMCO/DUNN

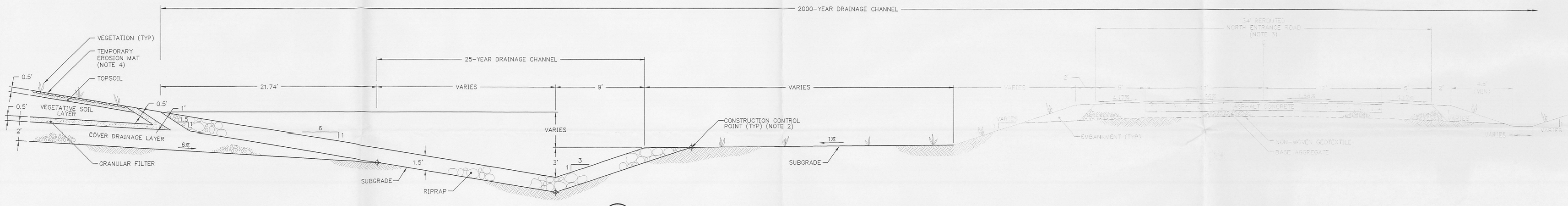
452



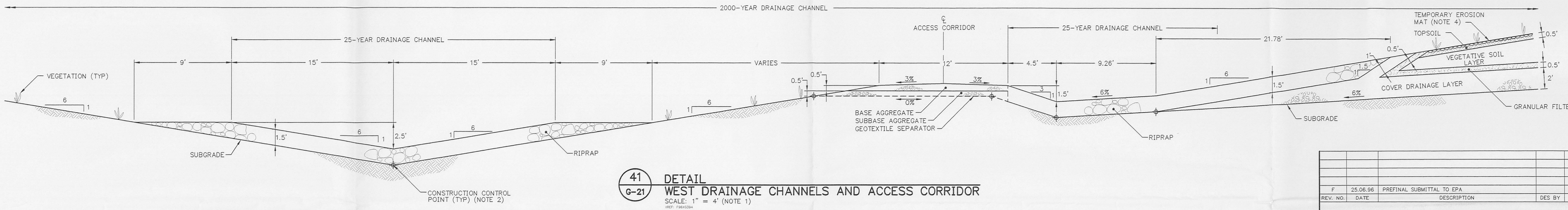
38 / G-20 DETAIL
NORTH DRAINAGE CHANNEL
SCALE: 1" = 4'
XREF: F96HS293



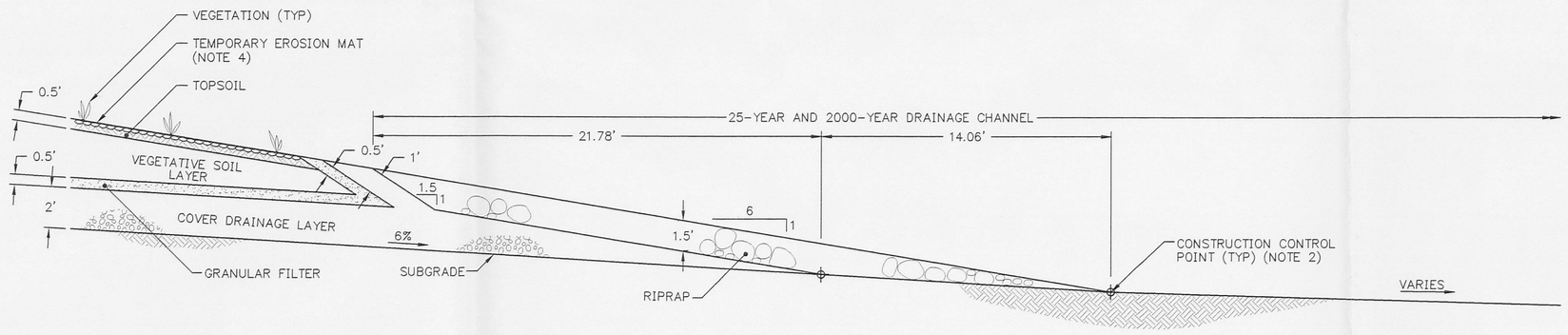
39 / - DETAIL
NORTH RUN-ON DIVERSION CHANNEL AND BERM
SCALE: 1" = 4'
XREF: F96HS295



40 / G-21 DETAIL
EAST DRAINAGE CHANNEL AND REROUTED NORTH ENTRANCE ROAD
SCALE: 1" = 4' (NOTE 1)
XREF: F96HS304



41 / G-21 DETAIL
WEST DRAINAGE CHANNELS AND ACCESS CORRIDOR
SCALE: 1" = 4' (NOTE 1)
XREF: F96HS294



42 / G-20 DETAIL
SOUTH DRAINAGE CHANNEL
SCALE: 1" = 4'
XREF: F96HS296

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
2. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.
3. SECTION OF REROUTED NORTH ENTRANCE ROAD OBTAINED FROM DRAWING G0004, "CIVIL TYPICAL SECTION", OF THE "REROUTED NORTH ENTRANCE ROAD CONSTRUCTION DRAWINGS, OPERABLE UNIT 2, PROJECT ORDER 158, REVISION D", PARSONS, APRIL 1996.
4. TEMPORARY EROSION MAT SHALL MEET THE REQUIREMENTS OF SECTION 02270 OF THE OSDF SPECIFICATIONS.

FINAL DESIGN PACKAGE

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 476

TITLE:
STORMWATER MANAGEMENT SYSTEM DETAILS I

24007-21

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

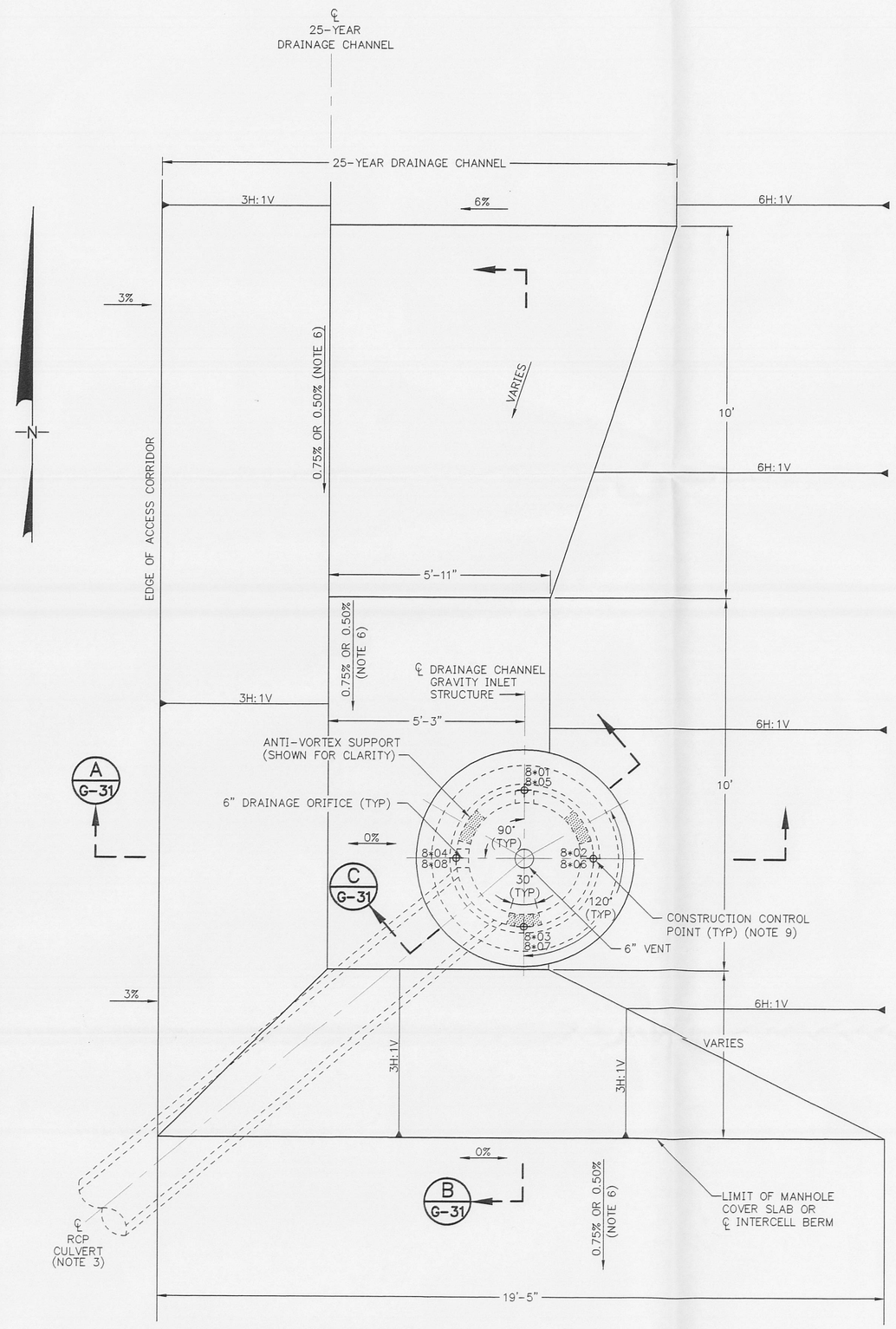
STATE OF OHIO — RUDOLPH BONAPARTE — E-56679 — REGISTERED PROFESSIONAL ENGINEER

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

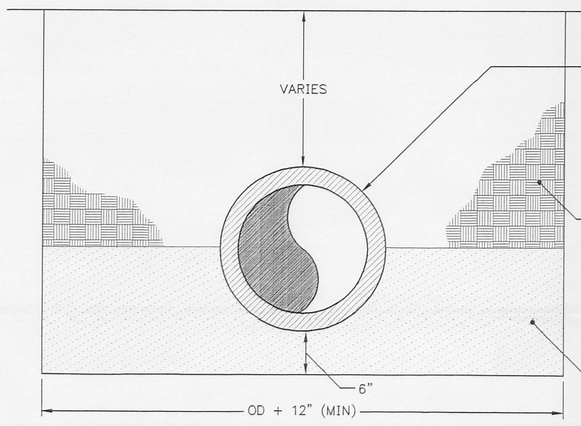
GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00040
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G118
SHEET NO.:	G-30
REVISION NO.:	G

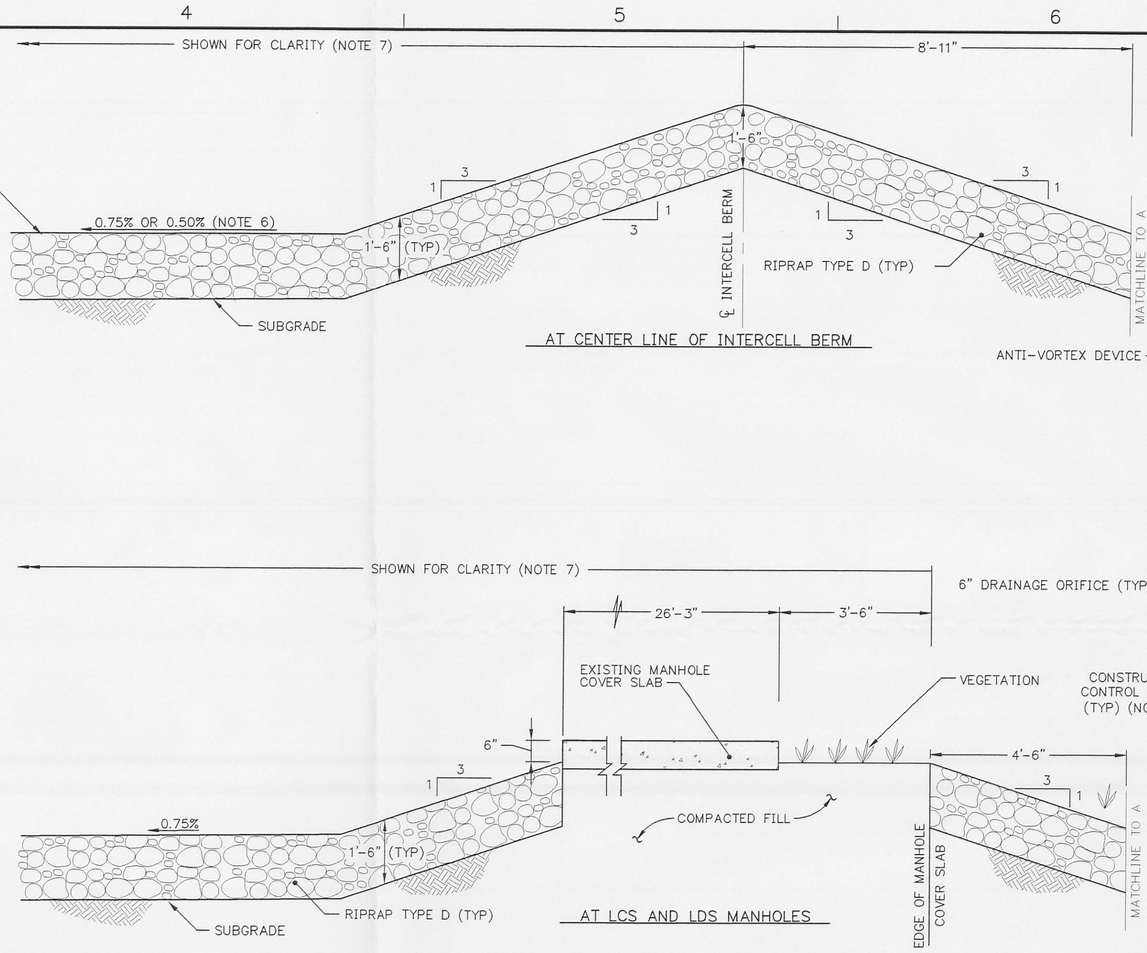
M:\GACADD\GE3900\-13\F96-G118 Sat Oct 05 09:56:54 1996 John C.

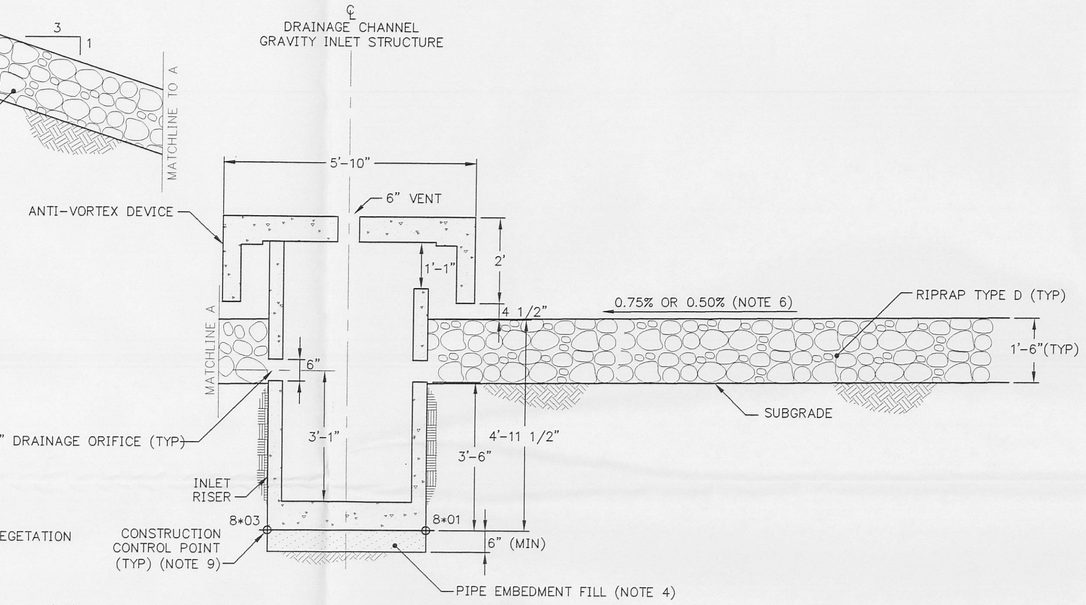


43 G-7 PLAN
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND CULVERT
SCALE: 1" = 2'
XREF: F96IG463

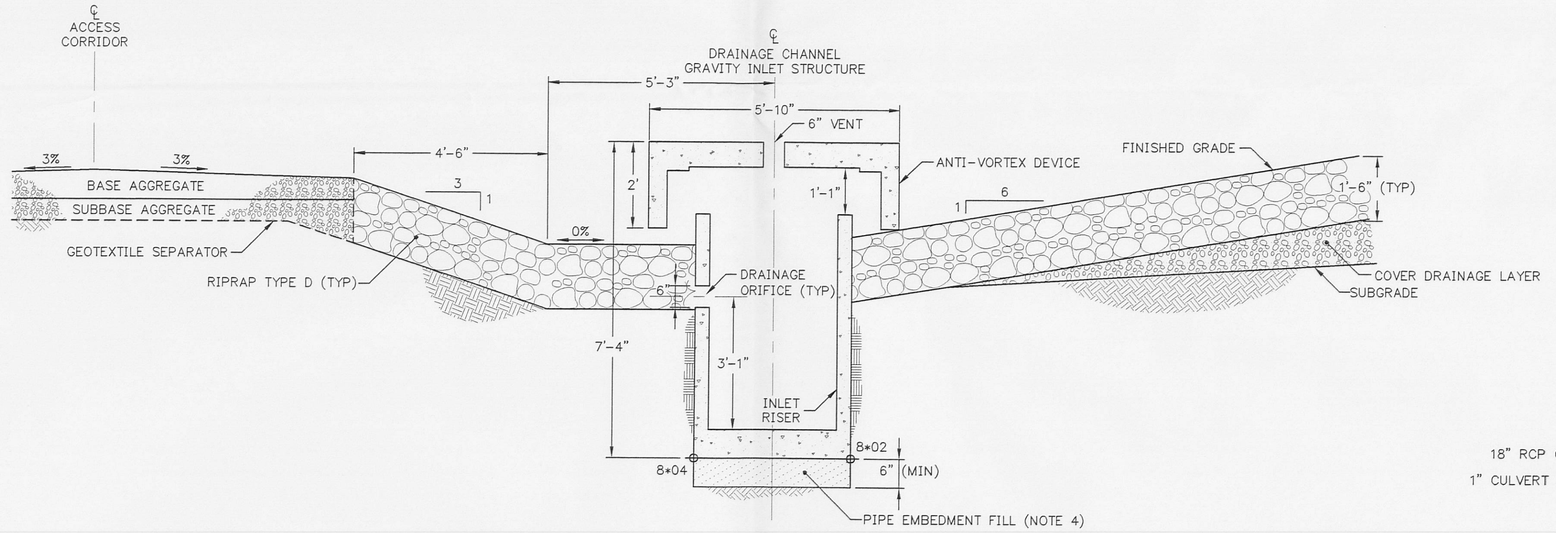


D G-31 SECTION
DRAINAGE CHANNEL GRAVITY INLET CULVERT
SCALE: NTS
XREF: F96IG386

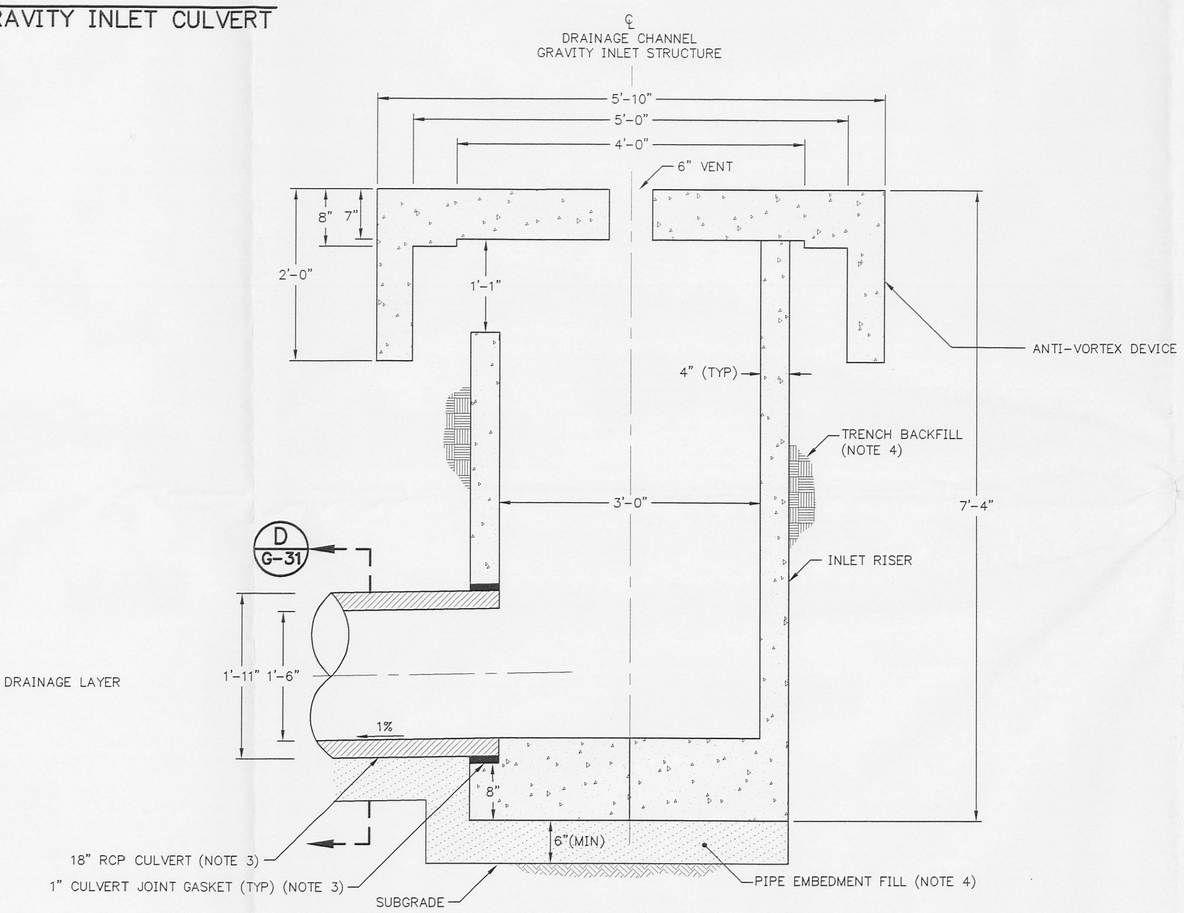




B G-31 SECTION
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE
SCALE: 1" = 2'
XREF: F96IG385



A G-31 SECTION
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE
(NOTE 1)
SCALE: 1" = 2' (NOTE 1)
XREF: F96IG464



C G-31 SECTION
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND CULVERT
(NOTE 8)
SCALE: 1" = 1'
XREF: F96IG386

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS, WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
2. GRAVITY DRAINAGE INLET STRUCTURES SHALL BE IN ACCORDANCE WITH SECTION 03100 OF THE OSDF SPECIFICATIONS
3. REINFORCED CONCRETE PIPE CULVERTS AND JOINTS SHALL BE IN ACCORDANCE WITH SECTION 02721 OF THE OSDF SPECIFICATIONS.
4. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.
5. ANTI-VORTEX SUPPORTS DO NOT APPEAR IN ALL SECTIONS. SEE PLAN ON THIS SHEET FOR LOCATIONS.
6. DRAINAGE CHANNEL SLOPE OF 0.75 PERCENT IS TYPICAL FOR CELLS 1 THROUGH 6 AND DRAINAGE CHANNEL SLOPE OF 0.50 PERCENT IS TYPICAL FOR CELLS 7 THROUGH 9.
7. MANHOLE COVER SLAB, MANHOLE EMBEDMENT FILL AND 25-YEAR DRAINAGE CHANNEL SHOWN FOR CLARITY. LEACHATE COLLECTION SYSTEM AND LEACHATE DETECTION SYSTEM MANHOLES ARE NOT SHOWN IN THIS SECTION.
8. RIPRAP TYPE D IS NOT SHOWN IN THIS SECTION.
9. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWING G-38. THE "*" SYMBOL REPRESENTS THE CELL AT WHICH THE APPROPRIATE GRAVITY DRAINAGE INLET STRUCTURES ARE LOCATED. ONE GRAVITY DRAINAGE INLET STRUCTURE IS LOCATED ADJACENT TO EACH MANHOLE COVER SLAB AND ONE GRAVITY DRAINAGE INLET STRUCTURE IS LOCATED AT THE CENTER LINE OF THE INTERCELL BERM. THERE WILL BE EIGHT GRAVITY DRAINAGE INLET STRUCTURE CONSTRUCTION CONTROL POINTS PER CELL, EXCEPT FOR CELL NO. 9 WHICH HAS 4 CONSTRUCTION CONTROL POINTS.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
G	11.10.96	FINAL SUBMITTAL TO EPA	PR	RD	DLVL	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 477

TITLE:
STORMWATER MANAGEMENT SYSTEM DETAILS II
240017_22

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

STATE OF OHIO RUDOLPH BONAPARTE E-56879 REGISTERED PROFESSIONAL ENGINEER

Rudolph Bonaparte SIGNATURE
8 Oct 1996 DATE

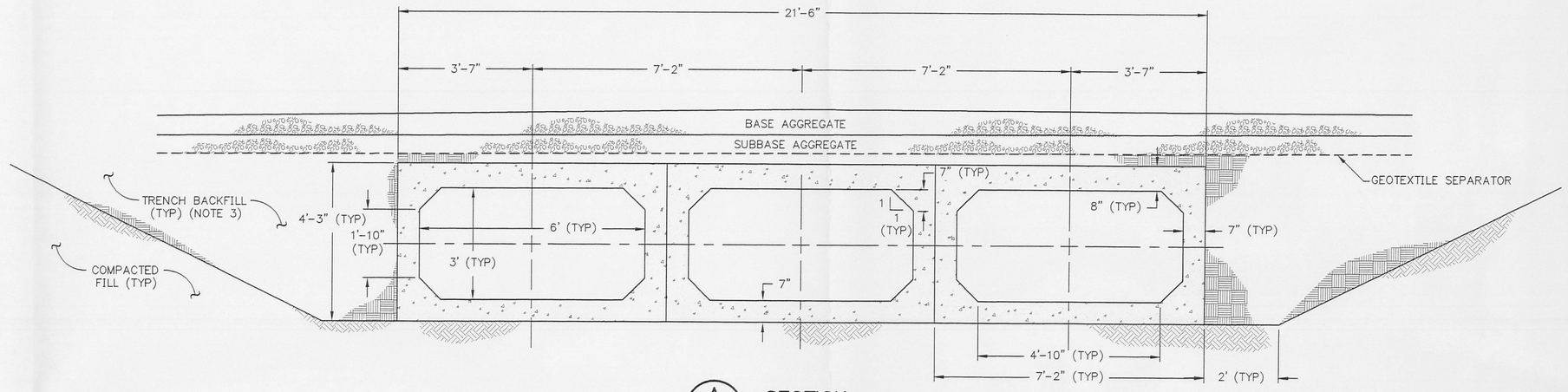
GeoSyntec Consultants
1100 LAKE HEARN DRIVE ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00041
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G142
SHEET NO.:	G-31
REVISION NO.:	G

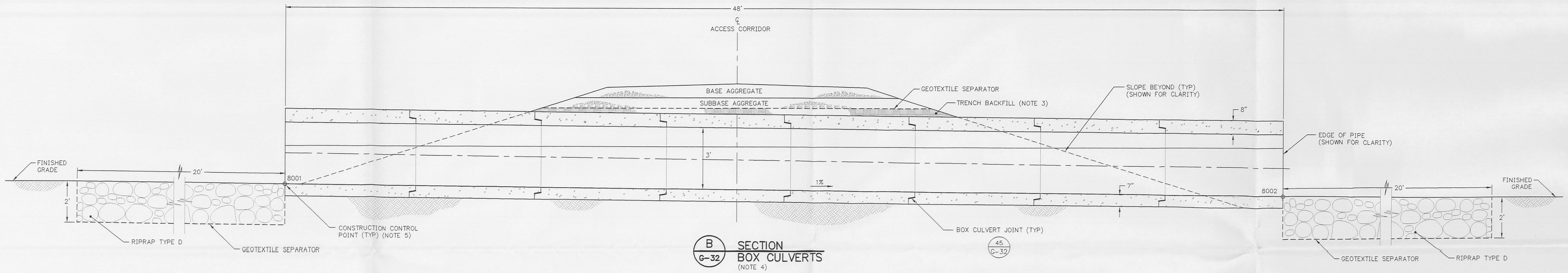
FINAL DESIGN PACKAGE

H:\F96-6142 Wed Oct 09 12:07:50 1996 J MILLER

452

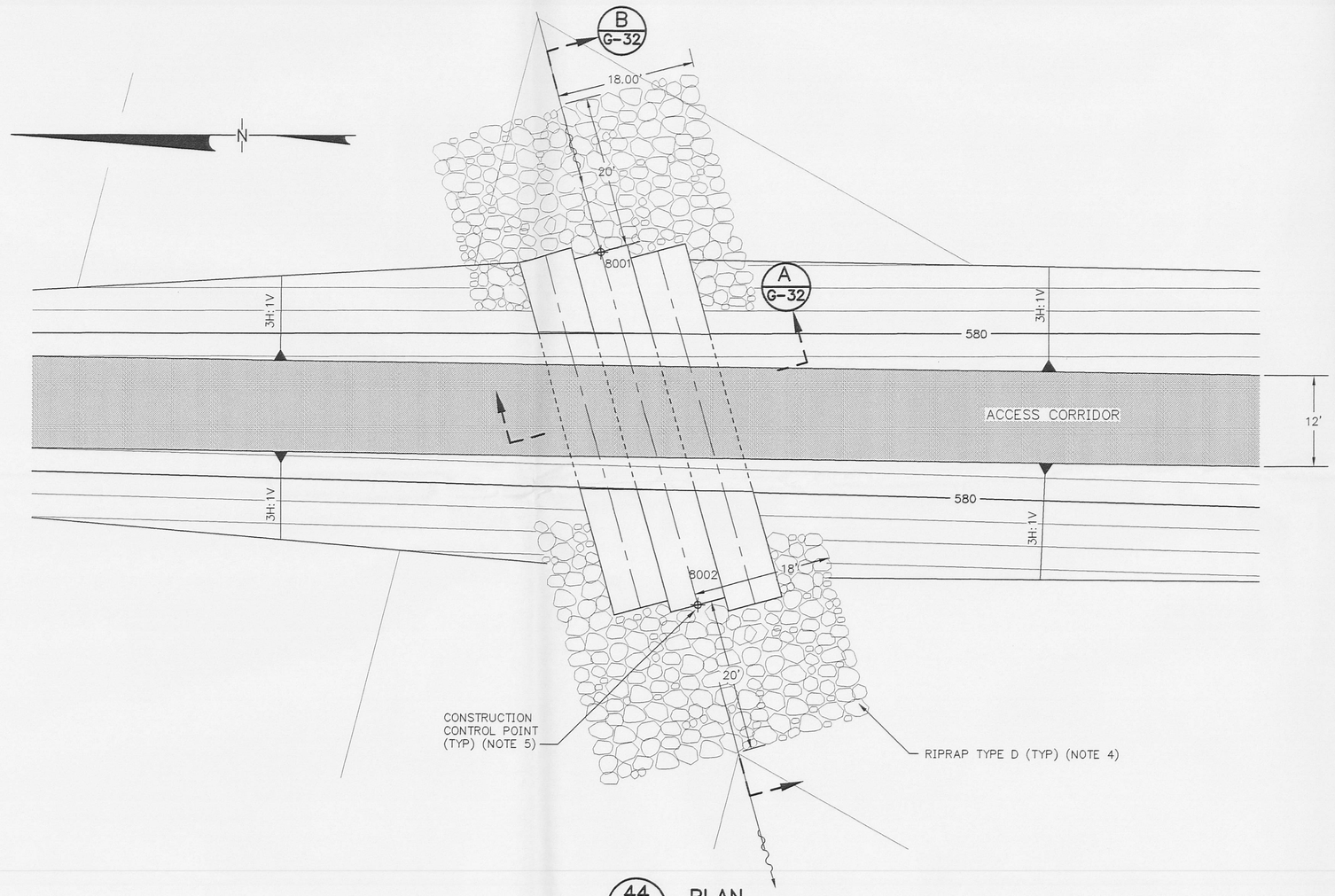


A / G-32 SECTION
BOX CULVERTS
SCALE: 1" = 2' (NOTE 1)
XREF: F96X0452

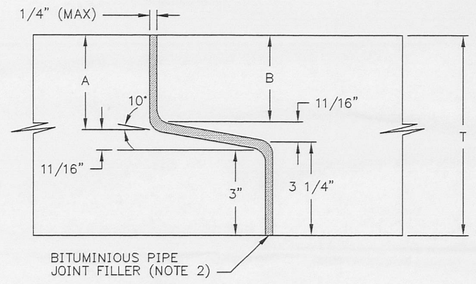


B / G-32 SECTION
BOX CULVERTS
(NOTE 4)
SCALE: 1" = 2' (NOTE 1)
XREF: F96X0453

45 / G-32



44 / G-12 PLAN
BOX CULVERTS
(NOTE 4)
SCALE: 1" = 10'
XREF: F96X5496



	T	A	B
SIDEWALL	7"	3 5/16"	3 1/16"
TOP SLAB	8"	4 5/16"	4 1/16"
BOTTOM SLAB	7"	3 5/16"	3 1/16"

45 / G-32 DETAIL
BOX CULVERT JOINT
SCALE: 1" = 3"
XREF: F96X0453

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE SPECIFICATIONS.
2. BOX CULVERTS AND JOINTS SHALL BE IN ACCORDANCE WITH SECTION 02721 OF THE OSDF SPECIFICATIONS.
3. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.
4. RIPRAP SHALL EXTEND 2 FEET VERTICALLY UP THE ACCESS CORRIDOR EMBANKMENT AT THE BOX CULVERT ENTRANCE AND EXIT.
5. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38 AND G-39.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	PR	RD	DLVL	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:

FERMCO Fernald Environmental Restoration Management Corporation
PROJECT:
ON-SITE DISPOSAL FACILITY 478

TITLE:
STORMWATER MANAGEMENT SYSTEM DETAILS III
24007-23

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00042
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-0151
SHEET NO.:	G-32
REVISION NO.:	G

FINAL DESIGN PACKAGE

M:\GACADD\GE3900-13\F96-0151 Sat Oct 05 11:34:40 1996 FERMCO/DUNN

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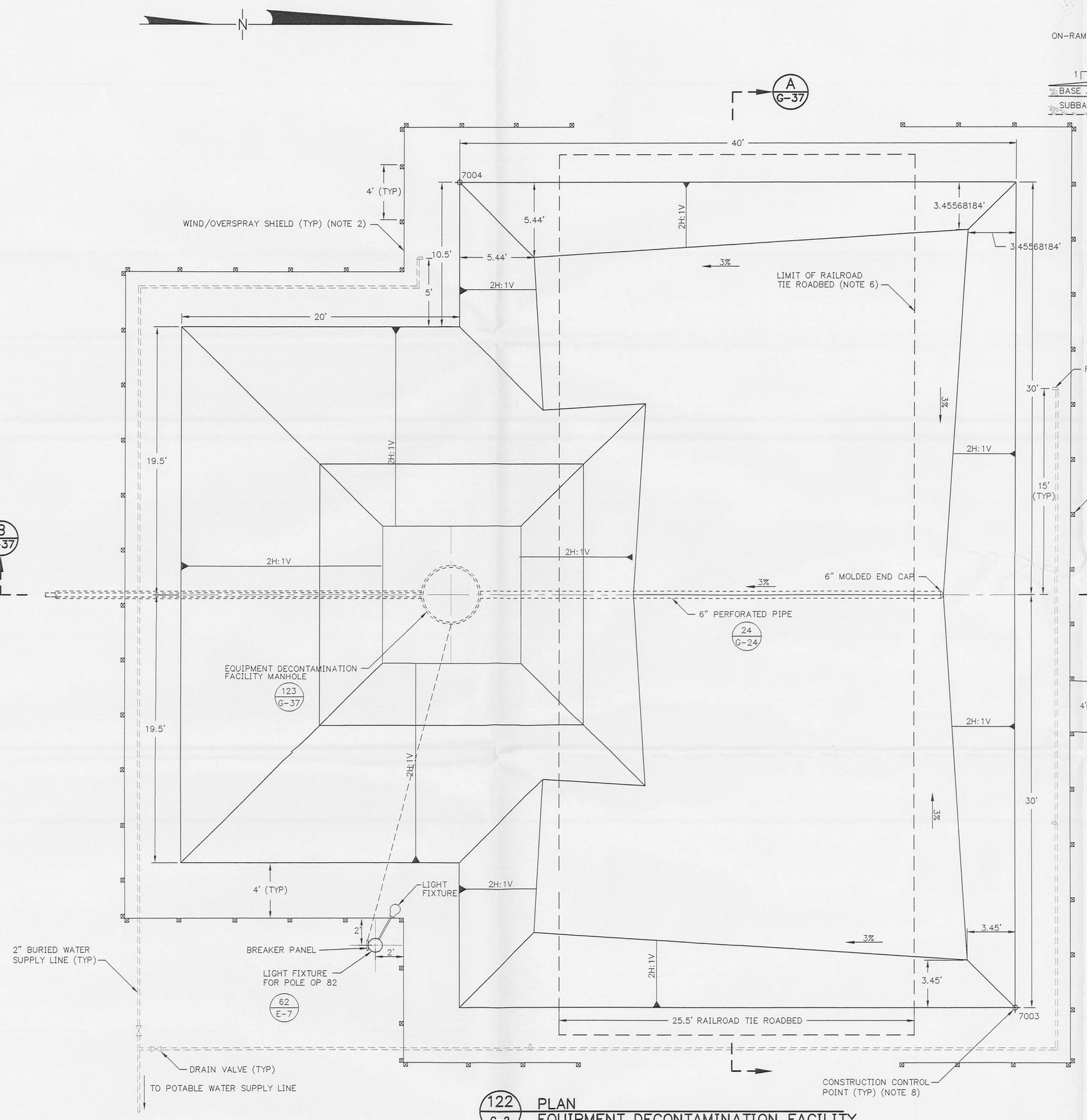
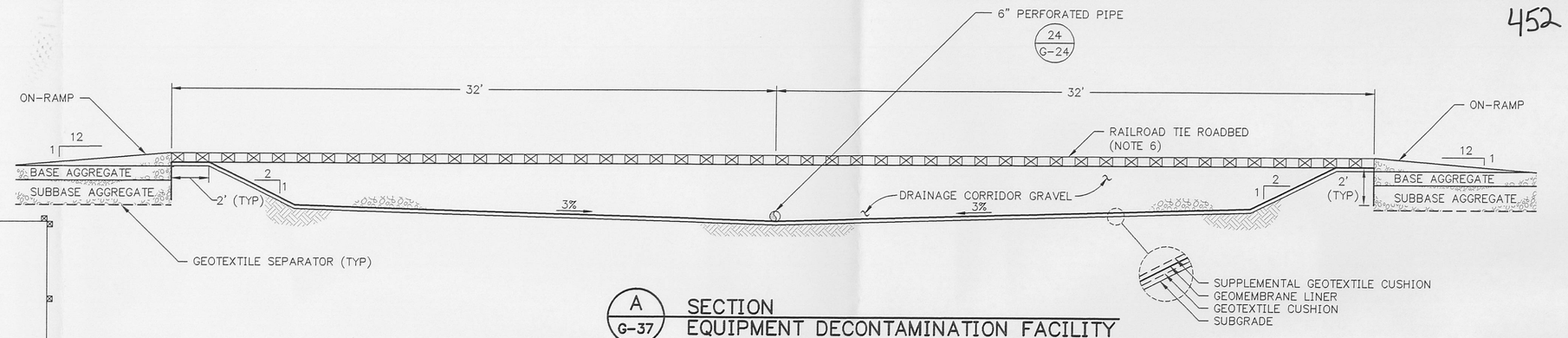
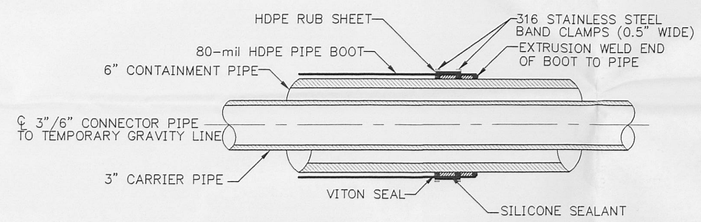


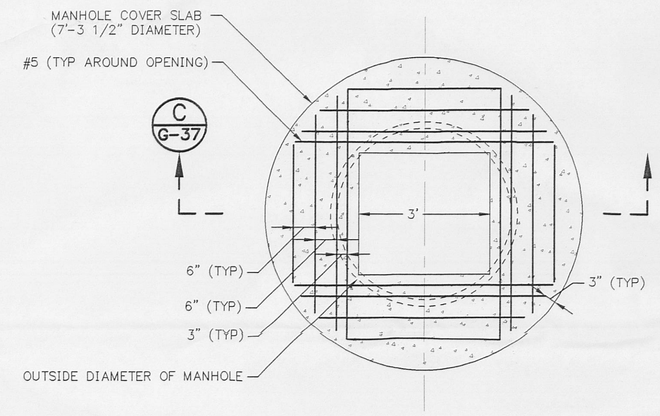
122 G-2 **PLAN**
EQUIPMENT DECONTAMINATION FACILITY
(NOTE 8)
SCALE 1" = 4'
XREF: F96XG003



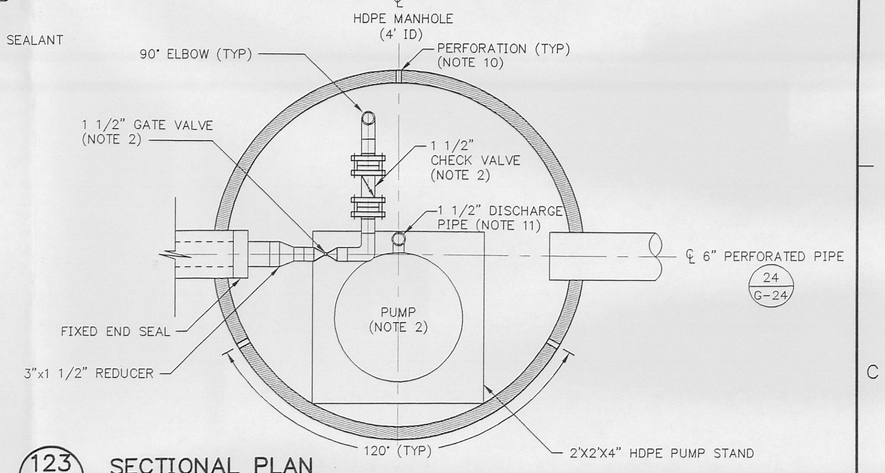
A G-37 **SECTION**
EQUIPMENT DECONTAMINATION FACILITY
(NOTES 3 AND 4)
SCALE: 1" = 4'
XREF: F96XG004



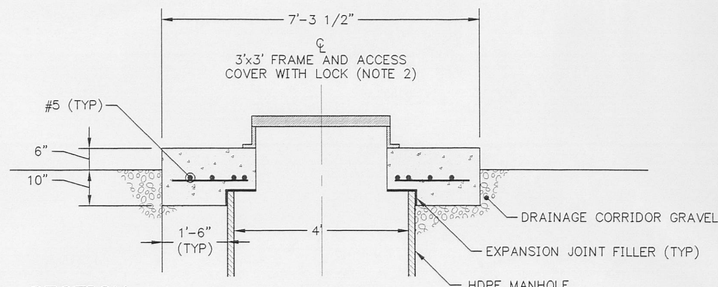
125 G-37 **DETAIL**
PIPE COLLAR
(NOTE 1)
SCALE: 1" = 6"
XREF: F96XG002



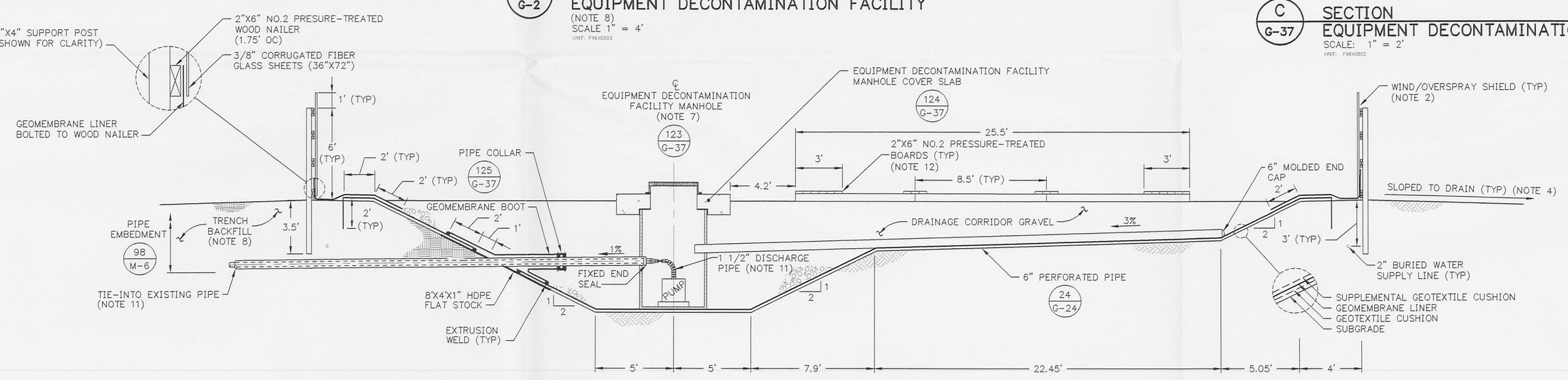
124 G-37 **SECTIONAL PLAN**
EQUIPMENT DECONTAMINATION FACILITY MANHOLE COVER SLAB
SCALE: 1" = 2'
XREF: F96XG002



123 G-37 **SECTIONAL PLAN**
EQUIPMENT DECONTAMINATION FACILITY MANHOLE
(NOTES 2 AND 5)
SCALE: 1" = 1'
XREF: F96XG005



C G-37 **SECTION**
EQUIPMENT DECONTAMINATION FACILITY MANHOLE COVER SLAB
SCALE: 1" = 2'
XREF: F96XG002



B G-37 **SECTION**
EQUIPMENT DECONTAMINATION FACILITY
(NOTES 1, 2, AND 7)
SCALE: 1" = 4'
XREF: F96XG003

NOTES:

1. MANHOLE, PIPES, AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS.
2. FRAME AND ACCESS COVER, PUMP, WIND/OVERSPRAY SHIELD, VALVES, AND CONNECTION FROM PUMP OUTLET TO CHECK VALVE SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE OSDF SPECIFICATIONS.
3. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT OF THE GEOSYNTHETICS WHICH ARE SHOWN TO AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
4. SUBCONTRACTOR SHALL SLOPE GROUND SURROUNDING EQUIPMENT DECONTAMINATION FACILITY TO PREVENT STORMWATER RUNON.
5. SUBCONTRACTOR SHALL PERIODICALLY REMOVE SEDIMENT FROM THE EQUIPMENT DECONTAMINATION FACILITY MANHOLE TO MAINTAIN EFFICIENT OPERATIONS.
6. RAILROAD TIES SHALL BE 6"X8" CRESOTE-TREATED. RAILROAD TIE JOINTS SHALL BE STAGGERED IN ROADBED.
7. MECHANICAL COMPONENTS INSIDE MANHOLE ARE NOT SHOWN IN THIS SECTION.
8. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWINGS G-38.
9. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.
10. PERFORATIONS IN EQUIPMENT DECONTAMINATION MANHOLE SHALL BE 5/8-INCH DIAMETER SPACED 120 DEGREES ON CENTER HORIZONTALLY AND 2-INCHES ON CENTER VERTICALLY. OFFSET PERFORATIONS IN ADJACENT ROWS BY 60 DEGREES.
11. FLEXIBLE STAINLESS STEEL DISCHARGE PIPE SHALL BE CONNECTED AT THE 90° ELBOW (AT CHECK VALVE) AND 1 1/2-INCH PUMP OUTLET, AND SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13000.
12. 2"X6" NO. 2 PRESSURE TREATED BOARDS SHALL BE NAILED TO RAILROAD TIES USING 20d NAILS.

REV. NO:	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	KLO	AHF	LA	KWC	LA
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 479

TITLE:
EQUIPMENT DECONTAMINATION FACILITY DETAILS
240017_24

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

STATE OF OHIO — RUDOLPH BONAPARTE — E-56679 — REGISTERED PROFESSIONAL ENGINEER

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00043
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-0161
SHEET NO.:	G-37
REVISION NO.:	G

FINAL DESIGN PACKAGE

H:\F96-0161 Wed Oct 09 16:08:19 1996 J MILLER

452

SUBGRADE AT CELL OUTLET CONSTRUCTION CONTROL POINTS

CELL 1 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1001	482980.20	1350855.06	598.22
1002	482980.40	1350838.33	598.06
1003	482964.40	1350838.14	598.06
1004	482964.20	1350854.40	598.22
1005	482958.83	1350832.48	603.64
1006	482986.39	1350832.55	603.92
1007	482977.27	1350848.90	598.16
1008	482972.36	1350842.10	598.09
1009	482967.31	1350845.45	598.13

CELL 2 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1010	482580.23	1350850.17	595.22
1011	482580.43	1350833.44	595.06
1012	482564.43	1350833.25	595.06
1013	482564.23	1350849.52	595.22
1014	482558.86	1350827.60	600.64
1015	482586.42	1350827.66	600.92
1016	482577.30	1350844.02	595.16
1017	482572.38	1350837.22	595.09
1018	482567.34	1350840.56	595.13

CELL 3 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1019	482180.26	1350845.28	592.22
1020	482180.46	1350828.56	592.06
1021	482164.46	1350828.36	592.06
1022	482164.26	1350844.63	592.22
1023	482158.89	1350822.71	597.64
1024	482186.45	1350822.77	597.92
1025	482177.33	1350839.13	592.16
1026	482172.41	1350832.33	592.09
1027	482167.37	1350835.68	592.13

CELL 4 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1028	481780.29	1350840.40	589.22
1029	481780.49	1350823.67	589.06
1030	481764.49	1350823.47	589.06
1031	481764.29	1350839.74	589.22
1032	481758.92	1350817.82	594.64
1033	481786.48	1350817.88	594.92
1034	481777.36	1350834.24	589.16
1035	481772.44	1350827.44	589.09
1036	481767.40	1350830.79	589.13

CELL 5 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1037	481380.32	1350835.51	586.22
1038	481380.52	1350818.78	586.06
1039	481364.52	1350818.58	586.06
1040	481364.32	1350834.85	586.22
1041	481358.95	1350812.93	591.64
1042	481386.51	1350812.99	591.92
1043	481377.39	1350829.35	586.16
1044	481372.47	1350822.55	586.09
1045	481367.43	1350825.90	586.13

CELL 6 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1046	480980.35	1350830.62	583.22
1047	480980.55	1350813.89	583.06
1048	480964.55	1350813.69	583.06
1049	480964.35	1350829.96	583.22
1050	480958.98	1350808.04	588.64
1051	480986.54	1350808.10	588.92
1052	480977.42	1350824.46	583.16
1053	480972.50	1350817.66	583.09
1054	480967.46	1350821.01	583.13

CELL 7 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1055	480580.40	1350823.73	581.20
1056	480580.60	1350807.08	581.04
1057	480564.61	1350806.88	581.04
1058	480564.41	1350823.23	581.20
1059	480558.99	1350801.19	586.67
1060	480586.55	1350801.34	586.85
1061	480577.48	1350817.58	581.14
1062	480572.56	1350810.77	581.07
1063	480567.52	1350814.12	581.11

CELL 8 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1064	480180.43	1350818.84	579.20
1065	480180.63	1350802.19	579.04
1066	480164.64	1350802.00	579.04
1067	480164.44	1350818.34	579.20
1068	480159.02	1350796.30	584.67
1069	480186.58	1350796.45	584.85
1070	480177.51	1350812.69	579.14
1071	480172.59	1350805.89	579.07
1072	480167.55	1350809.23	579.11

CELL 9 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1073	479780.46	1350813.96	577.20
1074	479780.66	1350797.30	577.04
1075	479764.67	1350797.11	577.04
1076	479764.47	1350813.45	577.20
1077	479759.05	1350791.41	582.67
1078	479786.61	1350791.56	582.85
1079	479777.54	1350807.80	577.14
1080	479772.62	1350801.00	577.07
1081	479767.58	1350804.35	577.11

COMPACTED CLAY LINER AT CELL OUTLET CONSTRUCTION CONTROL POINTS

CELL 1 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
2001	482980.16	1350855.42	601.23
2002	482964.23	1350854.76	601.22
2003	482975.18	1350856.84	601.24
2004	482979.26	1350849.88	602.60
2005	482970.26	1350850.00	602.48
2006	482974.35	1350842.79	604.32
2007	482965.22	1350853.17	601.63
2008	482969.31	1350845.96	603.48

CELL 2 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
2009	482580.19	1350850.53	598.23
2010	482564.26	1350849.87	598.22
2011	482575.21	1350851.95	598.24
2012	482579.29	1350845.00	599.60
2013	482570.29	1350845.11	599.48
2014	482574.38	1350837.91	601.32
2015	482565.25	1350848.28	598.63
2016	482569.34	1350841.07	600.48

CELL 3 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
2017	482180.22	1350845.64	595.23
2018	482164.29	1350844.99	595.22
2019	482175.24	1350847.06	595.24
2020	482179.32	1350840.11	596.60
2021	482170.32	1350840.23	596.48
2022	482174.41	1350833.02	598.32
2023	482165.28	1350843.39	595.63
2024	482169.37	1350836.18	597.48

CELL 4 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
2025	481780.25	1350840.75	592.23
2026	481764.32	1350840.10	592.22
2027	481775.26	1350842.17	592.24
2028	481779.35	1350835.22	593.60
2029	481770.35	1350835.34	593.48
2030	481774.44	1350828.13	595.32
2031	481765.31	1350838.50	592.63
2032	481769.40	1350831.29	594.48

CELL 5 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
2033	481380.28	1350835.86	589.23
2034	481364.35	1350835.21	589.22
2035	481375.29	1350837.28	589.24
2036	481379.38	1350830.33	590.60
2037	481370.38	1350830.45	590.48
2038	481374.47	1350823.24	592.32
2039	481365.34	1350833.61	589.63
2040	481369.43	1350826.41	591.48

CELL 6 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
2041	480980.31	1350830.97	586.23
2042	480964.38	1350830.32	586.22
2043	480975.32	1350832.39	586.24
2044	480979.41	1350825.44	587.60
2045	480970.41	1350825.56	587.48
2046	480974.50	1350818.35	589.32
2047	480965.37	1350828.73	586.63
2048	480969.46	1350821.52	588.48

CELL 7 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
2049	480580.37	1350824.09	584.21
2050	480564.43	1350823.59	584.20
2051	480575.38	1350825.51	584.22
2052	480579.46	1350818.56	585.58
2053	480570.46	1350818.67	585.46
2054	480574.55	1350811.46	587.30
2055	480565.42	1350821.84	584.61
2056	480569.51	1350814.63	586.46

CELL 8 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
2057	480180.40	1350819.20	582.21
2058	480164.46	1350818.70	582.20
2059	480175.41	1350820.62	582.22
2060	480179.49	1350813.67	583.58
2061	480170.49	1350813.78	583.46
2062	480174.58	1350806.58	585.30
2063	480165.45	1350816.95	582.61
2064	480169.54	1350809.74	584.46

CELL 9 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
2065	479780.43	1350814.31	580.21
2066	479764.49	1350813.81	580.20
2067	479775.44	1350815.73	580.22
2068	479779.52	1350808.78	581.58
2069	479770.52	1350808.90	581.46
2070	479774.61	1350801.69	583.30
2071	479765.48	1350812.06	580.61
2072	479769.57	1350804.85	582.46

LEAK DETECTION SYSTEM AT CELL OUTLET CONSTRUCTION CONTROL POINTS

CELL 1 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
3001	482984.17	1350835.55	607.27
3002	482983.92	1350855.40	602.30
3003	482980.11	1350859.27	602.27
3004	482964.19	1350859.08	602.27
3005	482959.75	1350854.35	602.31
3006	482959.99	1350834.53	607.27
3007	482964.43	1350839.08	607.27
3008	482980.35	1350839.27	607.27
3009	482972.14	1350860.01	602.27
3010	482970.17	1350857.27	602.74
3011	482974.25	1350851.03	604.31
3012	482965.12	1350861.11	602.29
3013	482969.20	1350854.66	603.39

CELL 2 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
3014	482584.20	1350830.66	604.27
3015	482583.95	1350850.51	599.30
3016	482580.14	1350854.38	599.27
3017	482564.22	1350854.19	599.27
3018	482559.78	1350849.46	599.31
3019	482560.02	1350829.64	604.27
3020	482564.46	1350834.19	604.27
3021	482580.38	1350834.38	604.27
3022	482572.17	1350855.12	599.27
3023	482570.20	1350852.38	599.74
3024	482574.28	1350846.14	601.31
3025	482565.15	1350856.22	599.29
3026	482569.23	1350849.77	600.39

CELL 3 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
3027	482184.23	1350825.77	601.27
3028	482183.98	1350845.62	596.30
3029	482180.17	1350849.49	596.27
3030	482164.25	1350849.30	596.27
3031	482159.81	1350844.57	596.31
3032	482160.05	1350824.75	601.27
3033	482164.49	1350829.30	601.27
3034	482180.41	1350829.49	601.27
3035	482172.20	1350850.23	596.27
3036	482170.23	1350847.49	596.74
3037	482174.31	1350841.25	598.31
3038	482165.18	1350851.33	596.29
3039	482169.26	1350844.88	597.39

CELL 4 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
3040	481784.26	1350820.88	598.27
3041	481784.01	1350840.73	593.30
3042	481780.20	1350844.60	593.27
3043	481764.28	1350844.41	593.27
3044	481759.84	1350839.69	593.31
3045	481760.08	1350819.86	598.27
3046	481764.52	1350824.41	598.27
3047	481780.44	1350824.61	598.27
3048	481772.23	1350845.34	593.27
3049	481770.26	1350842.60	593.74
3050	481774.34	1350836.36	595.31
3051	481765.21	1350846.44	593.29
3052	481769.29	1350839.99	594.39

CELL 5 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
3053	481384.29	1350815.99	595.27
3054	481384.04	1350835.85	590.30
3055	481380.23	1350839.72	590.27
3056	481364.31	1350839.52	590.27
3057	481359.87	1350834.80	590.31
3058	481360.11	1350814.97	595.27
3059	481364.55	1350819.52	595.27
3060	481380.47	1350819.72	595.27
3061	481372.26	1350840.45	590.27
3062	481370.29	1350837.71	590.74
3063	481374.37	1350831.47	592.31
3064	481365.24	1350841.55	590.29
3065	481369.32	1350835.10	591.39

CELL 6 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
3066	480984.32	1350811.10	592.27
3067	480984.07	1350830.96	587.30
3068	480980.26	1350834.83	587.27
3069	480964.34	1350834.63	587.27
3070	480959.90	1350829.91	587.31
3071	480960.14	1350810.08	592.27
3072	480964.58	1350814.63	592.27
3073	480980.50	1350814.83	592.27
3074	480972.29	1350835.56	587.27
3075	480970.32	1350832.83	587.74
3076	480974.40	1350826.59	589.31
3077	480965.27	1350836.66	587.29
3078	480969.35	1350830.21	588.39

CELL 7 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
3079	480584.49	1350804.18	590.25
3080	480584.24	1350824.03	585.28
3081	480580.31	1350828.02	585.25
3082	480564.39	1350827.82	585.25
3083	480560.08	1350823.23	585.29
3084	480560.32	1350803.40	590.25
3085	480564.63	1350807.82	590.25
3086	480580.55	1350808.02	590.25
3087	480572.34	1350828.75	585.25
3088	480570.37	1350826.01	585.72
3089	480574.45	1350819.77	587.29
3090	480565.33	1350829.85	585.27
3091	480569.40	1350823.40	586.37

CELL 8 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
3092	480184.52	1350799.29	588.25
3093	480184.27	1350819.14	583.28
3094	480180.34	1350823.13	583.25
3095	480164.42	1350822.93	583.25
3096	480160.11	1350818.34	583.29
3097	480160.35	1350798.51	588.25
3098	480164.66	1350802.94	588.25
3099	480180.58	1350803.13	588.25
3100	480172.37	1350823.86	583.25
3101	480170.40	1350821.13	583.72
3102	480174.48	1350814.89	585.29
3103	480165.35	1350824.97	583.27
3104	480169.43	1350818.51	584.37

CELL 9 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
3105	479784.55	1350794.40	586.25
3106	479784.30	1350814.25	581.28
3107	479780.37	1350818.24	581.25
3108	479764.45	1350818.05	581.25
3109	479760.14	1350813.45	581.29
3110	479760.38	1350793.62	586.25
3111	479764.69	1350798.05	586.25
3112	479780.61	1350798.24	586.25
3113	479772.40	1350818.98	581.25
3114	479770.43	1350816.24	581.72
3115	479774.51	1350810.00	583.29
3116	479765.38	1350820.08	581.27
3117	479769.46	1350813.63	582.37

LEACHATE COLLECTION SYSTEM AT CELL OUTLET CONSTRUCTION CONTROL POINTS

CELL 1 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
4001	482984.14	1350835.67	608.26
4002	482983.90	1350855.52	603.30
4003	482983.83	1350855.59	603.30
4004	482980.13	1350855.54	604.23
4005	482964.25	1350855.35	604.23
4006	482960.55	1350855.30	603.30
4007	482959.77	1350854.47	603.31
4008	482960.01	1350834.65	608.26
4009	482964.45	1350839.20	608.26
4010	482980.33	1350839.39	608.26

CELL 2 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
4011	482584.17	1350830.78	605.26
4012	482583.93	1350850.63	600.30
4013	482583.86	1350850.70	600.30
4014	482580.16	1350850.65	601.23
4015	482564.28	1350850.46	601.23
4016	482560.58	1350850.41	600.30
4017	482559.80	1350849.58	600.31
4018	482560.04	1350829.76	605.26
4019	482564.48	1350834.31	605.26
4020	482580.36	1350834.51	605.26

CELL 3 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
4021	482184.20	1350825.89	602.26
4022	482183.96	1350845.74	597.30
4023	482183.89	1350845.81	597.30
4024	482180.19	1350845.76	598.23
4025	482164.31	1350845.57	598.23
4026	482160.61	1350845.53	597.30
4027	482159.83	1350844.69	597.31
4028	482160.07	1350824.87	602.26
4029	482164.51	1350829.42	602.26
4030	482180.39	1350829.62	602.26

CELL 4 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
4031	481784.23	1350821.01	599.26
4032	481783.99	1350840.85	594.30
4033	481783.92	1350840.92	594.30
4034	481780.22	1350840.88	595.23
4035	481764.34	1350840.68	595.23
4036	481760.64	1350840.64	594.30
4037	481759.86	1350839.81	594.31
4038	481760.10	1350819.99	599.26
4039	481764.54	1350824.53	599.26
4040	481780.42	1350824.73	599.26

CELL 5 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
4041	481384.26	1350816.12	596.26
4042	481384.02	1350835.97	591.30
4043	481383.95	1350836.03	591.30
4044	481380.25	1350835.99	592.23
4045	481364.37	1350835.79	592.23
4046	481360.67	1350835.75	591.30
4047	481359.89	1350834.92	591.31
4048	481360.13	1350815.10	596.26
4049	481364.57	1350819.65	596.26
4050	481380.45	1350819.84	596.26

CELL 6 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
4051	480984.29	1350811.23	593.26
4052	480984.05	1350831.08	588.30
4053	480983.98	1350831.15	588.30
4054	480980.28	1350831.10	589.23
4055	480964.40	1350830.91	589.23
4056	480960.70	1350830.86	588.30
4057	480959.92	1350830.03	588.31
4058	480960.16	1350810.21	593.26
4059	480964.60	1350814.76	593.26
4060	480980.48	1350814.95	593.26

CELL 7 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
4061	480584.35	1350804.30	591.24
4062	480584.11	1350824.15	586.28
4063	480584.04	1350824.16	586.28
4064	480580.34	1350824.18	587.21
4065	480564.46	1350823.98	587.21
4066	480560.76	1350823.94	586.28
4067	480560.22	1350823.36	586.29
4068	480560.46	1350803.53	591.24
4069	480564.65	1350807.84	591.24
4070	480580.53	1350808.03	591.24

CELL 8 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
4071	480184.38	1350799.42	589.24
4072	480184.14	1350819.26	584.28
4073	480184.07	1350819.27	584.28
4074	480180.37	1350819.29	585.21
4075	480164.49	1350819.09	585.21
4076	480160.78	1350819.05	584.28
4077	480160.25	1350818.48	584.29
4078	480160.49	1350798.65	589.24
4079	480164.68	1350802.95	589.24
4080	480180.56	1350803.14	589.24

CELL 9 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
4081	479784.41	1350794.53	587.24
4082	479784.17	1350814.38	582.28
4083	479784.10	1350814.38	582.28
4084	479780.40	1350814.40	583.21
4085	479764.52	1350814.21	583.21
4086	479760.81	1350814.16	582.28
4087	479760.28	1350813.59	582.29
4088	479760.52	1350793.76	587.24
4089	479764.71	1350798.06	587.24
4090	479780.59	1350798.25	587.24

LDS AND LCS MANHOLES CONSTRUCTION CONTROL POINTS

CELL 1 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7101	482983.26	1350688.79	594.34
7102	482979.20	1350691.03	594.34
7103	482975.26	1350683.86	594.34
7104	482973.33	1350682.67	594.34
7105	482969.28	1350684.91	594.34
7106	482965.33	1350677.74	594.34

CELL 2 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7201	482583.29	1350683.91	591.34
7202	482579.23	1350686.14	591.34
7203	482575.29	1350678.97	591.34
7204	482573.36	1350677.78	591.34
7205	482569.31	1350680.02	591.34
7206	482565.36	1350672.85	591.34

CELL 3 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7301	482183.32	1350679.02	588.34
7302	482179.26	1350681.25	588.34
7303	482175.32	1350674.08	588.34
7304	482173.39	1350672.90	588.34
7305	482169.34	1350675.13	588.34
7306	482165.39	1350667.96	588.34

CELL 4 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7401	481783.35	1350674.13	585.34
7402	481779.29	1350676.36	585.34
7403	481775.35	1350669.19	585.34
7404	481773.42	1350668.01	585.34
7405	481769.37	1350670.24	585.34
7406	481765.42	1350663.07	585.34

CELL 5 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7501	481383.38	1350669.24	582.34
7502	481379.32	1350671.47	582.34
7503	481375.38	1350664.31	582.34
7504	481373.45	1350663.12	582.34
7505	481369.40	1350665.35	582.34
7506	481365.45	1350658.18	582.34

CELL 6 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7601	480983.41	1350664.35	579.34
7602	480979.35	1350666.59	579.34
7603	480975.41	1350659.42	579.34
7604	480973.48	1350658.23	579.34
7605	480969.43	1350660.46	579.34
7606	480965.48	1350653.30	579.34

CELL 7 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7701	480583.44	1350659.46	576.84
7702	480579.38	1350661.70	576.84
7703	480575.44	1350654.53	576.84
7704	480573.51	1350653.34	576.84
7705	480569.46	1350655.58	576.84
7706	480565.51	1350648.41	576.84

CELL 8 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7801	480183.47	1350654.58	574.84
7802	480179.41	1350656.81	574.84
7803	480175.47	1350649.64	574.84
7804	480173.54	1350648.45	574.84
7805	480169.49	1350650.69	574.84
7806	480165.54	1350643.52	574.84

CELL 9 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7901	479783.50	1350649.69	572.84
7902	479779.44	1350651.92	572.84
7903	479775.50	1350644.75	572.84
7904	479773.57	1350643.57	572.84
7905	479769.51	1350645.80	572.84
7906	479765.57	1350638.63	572.84

DRAINAGE CHANNEL GRAVITY INLET STRUCTURES CONSTRUCTION CONTROL POINTS

CELL 1 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
8101	482996.85	1350685.80	598.71
8102	482994.99	1350687.61	598.71
8103	482993.18	1350685.76	598.71
8104	482995.04	1350683.95	598.71
8105	482796.87	1350683.36	597.37
8106	482795.01	1350685.17	597.37
8107	482793.20	1350683.31	597.37
8108	482795.05	1350681.50	597.37

CELL 2 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
8201	482596.88	1350680.91	595.71
8202	482595.02	1350682.72	595.71
8203	482593.21	1350680.87	595.71
8204	482595.07	1350679.06	595.71
8205	482396.90	1350678.47	594.37
8206	482395.04	1350680.28	594.37
8207	482393.23	1350678.42	594.37
8208	482395.08	1350676.61	594.37

CELL 3 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
8301	482196.91	1350676.02	592.71
8302	482195.05	1350677.84	592.71
8303	482193.24	1350675.98	592.71
8304	482195.10	1350674.17	592.71
8305	481996.93	1350673.58	591.37
8306	481995.07	1350675.39	591.37
8307	481993.26	1350673.54	591.37
8308	481995.11	1350671.72	591.37

CELL 4 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
8401	481796.94	1350671.14	589.71
8402	481795.08	1350672.95	589.71
8403	481793.27	1350671.09	589.71
8404	481795.13	1350669.28	589.71
8405	481596.95	1350668.69	588.37
8406	481595.10	1350670.50	588.37
8407	481593.29	1350668.65	588.37
8408	481595.14	1350666.84	588.37

CELL 5 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
8501	481396.97	1350666.25	586.71
8502	481395.11	1350668.06	586.71
8503	481393.30	1350666.20	586.71
8504	481395.16	1350664.39	586.71
8505	481196.98	1350663.80	585.37
8506	481195.13	1350665.61	585.37
8507	481193.32	1350663.76	585.37
8508	481195.17	1350661.95	585.37

CELL 6 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
8601	480997.00	1350661.36	583.71
8602	480995.14	1350663.17	583.71
8603	480993.33	1350661.31	583.71
8604	480995.19	1350659.50	583.71
8605	480797.01	1350658.92	582.37
8606	480795.16	1350660.73	582.37
8607	480793.35	1350658.87	582.37
8608	480795.20	1350657.06	582.37

CELL 7 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
8701	480597.03	1350656.47	581.16
8702	480595.17	1350658.28	581.16
8703	480593.36	1350656.43	581.16
8704	480595.22	1350654.62	581.16
8705	480397.04	1350654.03	580.27
8706	480395.19	1350655.84	580.27
8707	480393.38	1350653.98	580.27
8708	480395.23	1350652.17	580.27

CELL 8 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
8801	480197.06	1350651.58	579.16
8802	480195.20	1350653.39	579.16
8803	480193.39	1350651.54	579.16
8804	480195.25	1350649.73	579.16
8805	479997.07	1350649.14	578.27
8806	479995.22	1350650.95	578.27
8807	479993.41	1350649.09	578.27
8808	479995.26	1350647.28	578.27

CELL 9 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
8901	479797.09	1350646.69	577.16
8902	479795.23	1350648.50	577.16
8903	479793.42	1350646.65	577.16
8904	479795.28	1350644.84	577.16

HORIZONTAL MONITORING WELLS CONSTRUCTION CONTROL POINTS

CELL 1 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
9101	482960.27	1350685.30	592.97
9102	482984.28	1350848.38	595.67

CELL 2 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
9201	482560.30	1350680.42	589.97
9202	482584.31	1350843.50	592.67

CELL 3 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
9301	482160.33	1350675.53	586.97
9302	482184.34	1350838.61	589.67

CELL 4 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
9401	481760.36	1350670.64	583.97
9402	481784.37	1350833.72	586.67

CELL 5 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
9501	481360.39	1350665.75	580.97
9502	481384.40	1350828.83	583.67

CELL 6 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
9601	480960.42	1350660.86	577.97
9602	480984.43	1350823.94	580.67

CELL 7 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
9701	480560.45	1350655.97	575.47
9702	480584.46	1350819.05	578.17

CELL 8 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
9801	480160.48	1350651.09	573.47
9802	480184.49	1350814.17	576.17

CELL 9 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
9901	479760.51	1350646.20	571.47
9902	479784.52	1350809.28	574.17

BOX CULVERT CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
8001	479050.62	1350642.67	576.68
8002	479037.87	1350596.39	576.20

PERMANENT LIFT STATION CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7001	479503.10	1350605.84	568.08
7002	479475.60	1350613.30	568.08

EQUIPMENT DECONTAMINATION FACILITY

POINT NO.	NORTHING	EASTING	ELEVATION
7003	481796.53	1350855.16	598.00
7004	481758.22	1350794.08	598.00

NOTE:

1. CONSTRUCTION SURVEY CONTROL IS GIVEN TO THE NEAREST HUNDREDTH OF A FOOT. CONSTRUCTION TOLERANCES SHALL BE IN ACCORDANCE WITH THE OSDF SPECIFICATIONS.

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	AH	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

OWNER/FACILITY: UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT: FERMCO Restoration Management Corporation — FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT: ON-SITE DISPOSAL FACILITY 480

TITLE: CONSTRUCTION CONTROL POINTS I

24007-25

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

STATE OF OHIO — RUDOLPH BONAPARTE — E-56679 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.: 20100
FERMCO SUBCONTRACT NO.: 95PS005028
FERMCO DRAWING NO.: 90X-6000-G-00044
GEOSYNTEC PROJECT NO.: GE3900-13.1
GEOSYNTEC DOCUMENT NO.: F96-G159
SHEET NO.: G-38
REVISION NO.: G

FINAL DESIGN PACKAGE

SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
1082	483136.95	1350896.76	601.77	1116	480733.51	1351460.43	590.77	1149	483230.15	1350862.76	610.27	1182	483220.61	1350315.43	604.00
1083	483093.07	1350851.02	600.43	1117	480745.38	1351472.84	593.90	1150	483221.57	1350816.73	609.38	1183	483275.28	1350305.18	604.00
1084	482753.39	1350829.50	602.22	1118	480764.50	1351471.09	593.49	1151	483196.04	1350777.49	608.48	1184	483260.00	1350305.45	606.55
1085	482736.84	1350844.56	598.28	1119	480956.76	1351451.44	589.43	1152	483157.43	1350751.00	607.58	1185	483289.70	1350287.99	601.46
1086	482353.42	1350824.61	599.22	1120	480972.76	1351451.13	589.43	1153	483111.62	1350741.30	606.69	1186	483295.30	1350280.66	602.38
1087	482336.87	1350839.67	595.28	1121	481129.18	1351461.20	592.64	1154	483100.61	1350741.16	606.51	1187	483283.84	1350280.87	602.38
1088	481953.45	1350819.72	596.22	1122	481145.35	1351477.93	596.90	1155	483279.88	1350892.31	607.82	1188	483280.13	1350280.93	603.00
1089	481936.90	1350834.78	592.28	1123	481356.73	1351456.32	592.43	1156	483280.48	1350843.28	607.14	1189	483259.68	1350287.17	603.50
1090	481553.48	1350814.83	593.22	1124	481372.73	1351456.02	592.43	1157	483269.76	1350785.74	606.32	1190	483244.68	1350287.44	603.50
1091	481536.93	1350829.90	589.28	1125	481529.15	1351466.08	595.64	1158	483237.84	1350736.69	605.50	1191	483016.24	1350674.78	604.31
1092	481153.51	1350809.94	590.22	1126	481545.32	1351482.82	599.90	1159	483189.58	1350703.58	604.69	1192	483016.44	1350658.28	604.31
1093	481136.96	1350825.01	586.28	1127	481756.70	1351461.21	595.43	1160	483132.32	1350691.46	603.87	1193	482999.47	1350658.07	604.18
1095	480772.62	1350807.31	586.86	1128	481772.70	1351460.91	595.43	1161	483101.22	1350691.08	603.44	1194	482959.14	1350619.05	597.45
1096	480753.54	1350805.24	587.22	1129	481929.12	1351470.97	598.64	1162	483276.18	1350770.56	605.69	1197	482999.01	1350580.86	604.00
1097	480741.38	1350816.42	584.33	1130	481945.29	1351487.71	602.90	1163	483253.23	1350731.30	605.02	1198	482970.82	1350580.09	604.00
1098	480353.57	1350800.35	585.22	1131	482156.67	1351466.10	598.43	1164	483207.47	1350696.74	604.20	1199	482747.61	1350619.63	596.40
1099	480341.41	1350811.53	582.33	1132	482172.67	1351465.80	598.43	1165	483153.05	1350682.45	603.31	1201	482639.25	1350653.67	601.47
1100	479953.60	1350795.46	583.22	1133	482329.09	1351475.86	601.64	1166	483279.40	1350768.23	607.00	1202	482566.94	1350583.92	589.45
1101	479941.44	1350806.64	580.33	1134	482345.26	1351492.60	605.90	1167	483263.12	1350722.50	609.35	1203	482618.08	1350534.04	598.00
1102	479651.79	1350801.23	579.35	1135	482556.64	1351470.99	601.43	1168	483251.76	1350710.68	610.00	1204	482224.63	1350583.87	589.24
1103	479593.67	1350853.45	581.03	1136	482572.64	1351470.68	601.43	1169	483231.80	1350707.33	606.66	1206	480773.17	1350761.67	597.21
1104	479587.02	1351397.70	586.47	1137	482729.06	1351480.75	604.64	1170	483210.05	1350691.42	606.13	1207	480773.77	1350712.73	589.05
1105	479643.87	1351449.14	585.83	1138	482745.23	1351497.48	608.90	1171	483155.68	1350676.48	605.35	1208	480774.38	1350662.64	586.05
1106	479756.82	1351438.77	583.45	1139	482956.61	1351475.88	604.43	1172	483257.94	1350696.16	610.00	1209	480774.57	1350647.38	587.49
1107	479772.83	1351438.63	583.45	1140	482972.61	1351475.57	604.43	1173	483251.94	1350696.27	610.00	1210	480774.77	1350630.88	587.49
1108	479933.57	1351450.65	586.77	1141	483085.35	1351482.83	606.74	1174	483174.36	1350662.82	605.35	1211	480309.12	1350582.22	578.00
1109	479945.44	1351463.07	589.90	1142	483130.29	1351441.00	607.21	1175	483224.83	1350625.93	605.35	1212	480309.25	1350572.22	577.50
1110	480156.79	1351443.66	585.45	1143	483198.78	1350891.32	616.09	1176	483254.39	1350496.19	609.00	1213	480309.37	1350562.22	578.00
1111	480172.80	1351443.52	585.45	1144	483191.62	1350852.97	615.73	1177	483248.39	1350496.30	609.00	1215	479968.07	1350558.04	576.29
1112	480333.54	1351455.54	588.77	1145	483170.34	1350820.27	615.37	1178	483218.38	1350498.20	604.00	1216	479945.04	1350567.76	575.68
1113	480345.41	1351467.96	591.90	1146	483138.17	1350798.20	615.02	1179	483217.71	1350376.76	603.64	1217	479732.70	1350575.16	575.12
1114	480556.76	1351448.55	587.45	1147	483100.01	1350790.10	614.66	1180	483251.17	1350314.89	608.09	1218	479646.25	1350747.89	591.58
1115	480572.77	1351448.41	587.45	1148	483229.79	1350891.70	610.82	1181	483245.17	1350315.00	608.09	1219	479607.90	1350755.04	591.70

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
1220	479575.20	1350776.32	591.83	1253	479635.79	1351604.22	587.33	1286	483090.37	1351578.34	616.42
1221	479553.12	1350808.50	591.96	1254	479586.70	1351603.58	587.03	1287	483101.39	1351578.48	616.42
1222	479545.04	1350846.66	592.09	1255	479659.72	1351618.18	592.00	1288	483147.42	1351569.91	616.41
1223	479644.54	1350698.93	583.47	1256	479599.11	1351615.34	591.00	1289	483186.67	1351544.37	616.40
1224	479598.51	1350707.50	584.53	1257	479576.16	1351614.91	590.00	1290	483213.15	1351505.76	616.40
1225	479559.26	1350733.03	585.59	1258	479547.38	1351617.13	589.00	1291	483222.85	1351459.95	616.39
1226	479532.77	1350771.64	586.65	1259	479511.93	1351618.93	588.00	1292	483222.99	1351448.33	616.39
1227	479523.08	1350817.45	587.72	1260	479859.65	1351620.62	593.00	1293	483089.76	1351628.43	613.41
1228	479522.72	1350846.39	588.37	1261	480059.60	1351623.06	594.00	1294	483120.87	1351628.81	613.41
1229	479645.16	1350648.84	580.40	1262	480259.55	1351625.51	595.00	1295	483178.40	1351618.08	613.40
1230	479590.75	1350648.17	581.63	1263	480459.50	1351627.95	596.00	1296	483227.45	1351586.16	613.40
1231	479536.24	1350656.60	581.54	1264	480659.45	1351630.40	597.00	1297	483260.56	1351537.91	613.39
1232	479491.78	1350687.71	581.98	1265	480763.93	1351518.28	604.24	1298	483272.69	1351480.66	613.39
1233	479464.85	1350735.65	582.84	1266	480763.54	1351549.91	598.97	1299	483273.08	1351448.94	613.38
1234	479459.23	1350791.71	583.98	1267	480762.93	1351599.99	595.96	1300	483151.95	1351664.99	607.92
1235	479458.57	1350845.65	584.52	1268	480762.71	1351617.99	592.96	1301	483210.41	1351652.00	608.21
1236	479538.23	1351403.30	597.65	1269	480859.39	1351634.29	598.00	1302	483259.47	1351617.38	608.50
1237	479545.39	1351441.65	597.89	1270	481059.30	1351639.73	599.00	1303	483296.11	1351569.78	608.04
1238	479566.67	1351474.34	598.13	1271	481259.21	1351645.18	600.00	1304	483331.43	1351511.94	607.58
1239	479598.84	1351496.42	598.36	1272	481459.12	1351650.62	601.00	1305	483151.46	1351682.98	604.92
1240	479637.00	1351504.51	598.60	1273	481659.03	1351656.06	602.00	1306	483215.68	1351659.29	606.82
1241	479515.92	1351403.02	593.93	1274	481858.93	1351661.50	603.00	1307	483218.32	1351662.94	608.23
1242	479515.78	1351414.65	593.90	1275	482058.84	1351666.95	604.00	1308	483151.22	1351691.98	607.92
1243	479524.37	1351460.67	593.76	1276	482258.75	1351672.39	605.00	1309	479510.00	1350614.42	581.00
1244	479549.90	1351499.91	593.62	1277	482458.66	1351677.83	606.00	1310	479510.18	1350599.93	581.00
1245	479588.51	1351526.39	593.48	1278	482658.57	1351683.27	607.00	1311	479476.69	1350599.52	581.00
1246	479634.30	1351536.11	593.34	1279	482858.48	1351688.72	608.00	1312	479475.49	1350615.00	581.00
1247	479451.77	1351402.24	590.09	1280	483058.36	1351694.16	609.00	1313	479406.79	1350614.16	581.65
1248	479451.51	1351423.95	590.10	1281	483090.76	1351546.72	621.69	1314	479406.79	1350630.66	580.65
1249	479462.95	1351485.32	590.15	1282	483129.12	1351539.58	621.68				
1250	479496.99	1351537.64	590.20	1283	483161.82	1351518.30	621.67				
1251	479548.47	1351572.96	590.25	1284	483183.89	1351486.12	621.66				
1252	479609.54	1351585.90	590.30	1285	483191.97	1351447.95	621.65				

COMPACTED CLAY LINER CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
2073	483093.06	1350851.37	603.43	2105	479941.04	1350807.01	583.32	2137	481559.24	1351497.24	606.66
2074	482795.26	1350834.80	604.43	2106	479651.79	1350801.58	582.35	2138	481569.25	1351497.05	606.66
2075	482777.65	1350816.93	608.71	2107	479594.07	1350853.46	584.02	2139	481587.30	1351478.14	602.01
2076	482767.65	1350816.52	608.70	2108	479587.42	1351397.70	589.46	2140	481756.73	1351460.83	598.43
2077	482736.43	1350844.93	601.27	2109	479643.88	1351448.76	588.82	2141	481772.68	1351460.52	598.42
2078	482395.29	1350829.91	601.43	2110	479756.86	1351438.38	586.45	2142	481928.73	1351470.56	601.63
2079	482377.68	1350812.04	605.71	2111	479772.80	1351438.25	586.45	2143	481959.21	1351502.13	609.66
2080	482367.68	1350811.63	605.70	2112	479933.17	1351450.24	589.76	2144	481969.22	1351501.94	609.66
2081	482336.46	1350840.04	598.27	2113	479959.36	1351477.64	596.66	2145	481987.27	1351483.03	605.01
2082	481995.32	1350825.02	598.43	2114	479969.37	1351477.55	596.66	2146	482156.70	1351465.71	601.43
2083	481977.71	1350807.15	602.71	2115	479987.42	1351458.83	592.01	2147	482172.65	1351465.41	601.42
2084	481967.71	1350806.74	602.70	2116	480156.83	1351443.27	588.45	2148	482328.70	1351475.45	604.63
2085	481936.49	1350835.15	595.27	2117	480172.77	1351443.14	588.45	2149	482359.18	1351507.02	612.66
2086	481595.35	1350820.13	595.43	2118	480333.14	1351455.13	591.76	2150	482369.19	1351506.83	612.66
2087	481577.74	1350802.26	599.71	2119	480359.33	1351482.52	598.66	2151	482387.25	1351487.92	608.01
2088	481567.74	1350801.85	599.70	2120	480369.34	1351482.44	598.66	2152	482556.67	1351470.60	604.43
2089	481536.52	1350830.26	592.27	2121	480387.39	1351463.72	594.01	2153	482572.62	1351470.30	604.42
2090	481195.38	1350815.25	592.43	2122	480556.80	1351448.16	590.45	2154	482728.67	1351480.34	607.63
2091	481177.77	1350797.37	596.71	2123	480572.74	1351448.02	590.45	2155	482759.15	1351511.91	615.66
2092	481167.77	1350796.96	596.70	2124	480733.11	1351460.02	593.76	2156	482769.16	1351511.72	615.66
2093	481136.55	1350825.38	589.27	2125	480759.30	1351487.41	600.66	2157	482787.22	1351492.81	611.01
2094	480795.41	1350810.36	589.43	2126	480769.31	1351487.27	600.66	2158	482956.64	1351475.49	607.43
2095	480777.80	1350792.49	593.71	2127	480787.36	1351468.37	596.01	2159	482972.59	1351475.19	607.42
2096	480767.80	1350792.12	593.70	2128	480956.79	1351451.05	592.43	2160	483085.35	1351482.44	609.74
2097	480740.98	1350816.79	587.32	2129	480972.74	1351450.75	592.42	2161	483129.89	1351441.00	610.20
2098	480395.44	1350805.25	587.43	2130	481128.79	1351460.79	595.63				
2099	480377.83	1350787.55	591.71	2131	481159.27	1351492.35	603.66				
2100	480367.83	1350787.24	591.70	2132	481169.28	1351492.16	603.66				
2101	480341.01	1350811.90	585.32	2133	481187.33	1351473.26	599.01				
2102	479995.47	1350800.36	585.43	2134	481356.76	1351455.94	595.43				
2103	479977.86	1350782.66	589.71	2135	481372.71	1351455.63	595.42				
2104	479967.86	1350782.35	589.70	2136	481528.76	1351465.68	598.63				

CONTOURING LAYER CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
5000	483093.26	1350835.11	620.10	5019	480769.37	1351073.09	643.23
5001	483116.63	1350840.02	620.47	5020	480770.07	1351015.26	637.45
5002	483136.32	1350853.50	620.85	5021	480772.62	1350806.75	602.70
5003	483149.35	1350873.49	621.22	5022	479643.75	1351459.50	604.12
5004	483153.73	1350896.96	621.60	5023	479620.35	1351454.61	603.84
5005	483147.14	1351441.21	627.02	5024	479600.64	1351441.14	603.56
5006	483142.18	1351464.58	627.04	5025	479587.60	1351421.14	603.29
5007	483128.65	1351484.26	627.07	5026	479583.21	1351397.65	603.02
5008	483108.62	1351497.24	627.10	5027	479589.92	1350853.40	597.59
5009	483085.12	1351501.56	627.13	5028	479594.88	1350830.05	597.46
5010	482979.65	1351333.90	654.05	5029	479608.39	1350810.38	597.34
5011	482966.48	1351042.10	653.92	5030	479628.41	1350797.39	597.21
5012	482923.15	1351275.37	659.40	5031	479651.89	1350793.05	597.09
5013	482915.20	1351099.31	659.33	5032	479789.35	1351003.27	632.55
5014	482842.54	1351186.40	663.19	5033	479767.75	1351294.64	632.46
5015	480764.48	1351473.20	609.72	5034	479846.05	1351061.80	638.62
5016	480766.51	1351306.85	637.45	5035	479833.02	1351237.60	638.56
5017	480767.22	1351249.02	643.23	5036	479937.44	1351150.90	643.48
5018	480768.29	1351161.05	647.63				

FINAL COVER SYSTEM CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
6001	483311.43	1351511.94	609.08	6025	483246.17	1350737.57	607.08
6002	483296.11	1351569.78	609.54	6026	483273.43	1350784.19	607.92
6003	483259.47	1351617.38	610.00	6027	483276.18	1350770.56	608.14
6004	483210.41	1351652.00	609.71	6028	483281.11	1350837.94	608.77
6005	483215.68	1351659.29	608.32	6029	483235.35	1350673.69	607.20
6006	483151.95	1351664.99	606.42	6030	483230.88	1350621.50	606.34
6007	483151.46	1351682.98	606.42	6031	483224.43	1350493.78	605.00
6008	479586.92	1351585.88	591.59	6032	483106.00	1350481.26	604.00
6009	479534.20	1351574.02	591.32	6033	483219.86	1350376.76	604.00
6010	479489.91	1351543.13	591.05	6034	480766.50	1351308.01	646.13
6011	479460.79	1351497.60	590.78	6035	480767.21	1351249.67	651.96
6012	479451.26	1351444.36	590.51	6036	480768.29	1351161.05	656.99
6013	479459.23	1350791.71	583.98	6037	480769.38	1351072.43	651.96
6014	479464.85	1350735.65	582.84	6038	480770.09	1351014.10	646.13
6015	479491.78	1350687.71	581.98	6039	479765.96	1351295.78	641.13
6016	479536.24	1350656.60	581.54	6040	479831.79	1351238.24	647.28
6017	479590.75	1350648.17	581.63	6041	479836.99	1351150.89	652.24
6018	483005.77	1350664.15	605.23	6042	479844.92	1351061.13	647.34
6019	483153.66	1350677.96	606.34	6043	479787.73	1351002.10	641.22
6020	483151.80	1350691.69	605.38	6044	482981.25	1351335.07	662.74
6021	483209.47	1350692.62	607.20	6045	482967.97	1351040.96	662.61
6022	483207.47	1350696.74	605.70	6046	482916.25	1351098.67	668.07
6023	483203.35	1350705.23	606.25	6047	482924.26	1351276.04	668.14
6024	483253.23	1350731.30	606.53	6048	482843.05	1351186.41	671.96

BORROW AREA CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
6049	479257.52	1351642.92	587.70	6066	477614.67	1350389.97	581.00
6050	479141.88	1351646.73	588.00	6067	477996.95	1350223.69	576.67
6051	478976.93	1351604.20	588.34	6068	478344.26	1350125.08	573.13
6052	479244.45	1351346.43	583.98	6069	478406.35	1350192.00	573.13
6053	478866.50	1351450.94	587.90	6070	478672.62	1350298.95	573.13
6054	479202.87	1350629.67	506.13	6071	478684.72	1350317.06	573.27
6055	479187.10	1350633.69	579.32	6072	478655.18	1350267.59	572.00
6056	479203.01	1350617.67	506.13	6073	478636.18	1350233.41	570.77
6057	478964.62	1350330.43	573.44	6074	478543.38	1350114.92	567.00
6058	478733.35	1351632.95	586.50	6075	478486.89	1350092.23	567.00
6059	478738.08	1351629.83	586.45	6076	478473.18	1350094.80	567.37
6060	477700.72	1351218.19	586.50	6077	478398.79	1350102.77	570.37
6061	477455.92	1351128.28	587.80	6078	478524.38	1350081.23	567.00
6062	476886.74	1351090.31	592.11	6079	478516.47	1350081.48	567.00
6063	476879.26	1351083.23	592.11	6080	478410.80	1349863.32	564.59
6064	476817.66	1350615.78	589.11	6081	478269.72	1349578.09	563.00
6065	476823.27	1350606.65	589.00				

NOTE:
1. CONSTRUCTION SURVEY CONTROL IS GIVEN TO THE NEAREST HUNDREDTH OF A FOOT. CONSTRUCTION TOLERANCES SHALL BE IN ACCORDANCE WITH THE OSDF SPECIFICATIONS.

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	RD	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO Fernald Environmental Restoration Management Corporation
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 481

TITLE:
CONSTRUCTION CONTROL POINTS II
24007_26

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED
PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.: 20100
FERMCO SUBCONTRACT NO.: 95PS005028
FERMCO DRAWING NO.: 90X-6000-G-00045
GEOSYNTEC PROJECT NO.: GE3900-13.1
GEOSYNTEC DOCUMENT NO.: F96-G160
SHEET NO.: G-39
REVISION NO.: G

FINAL DESIGN PACKAGE

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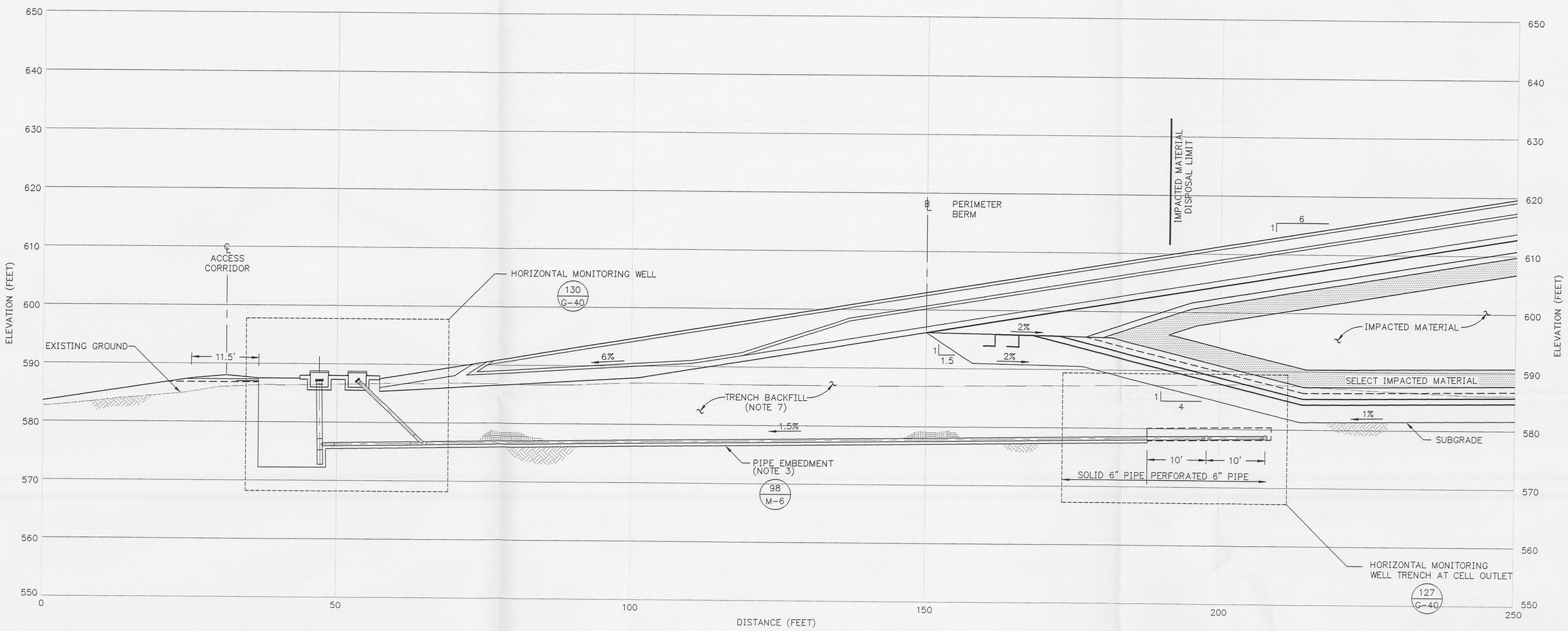
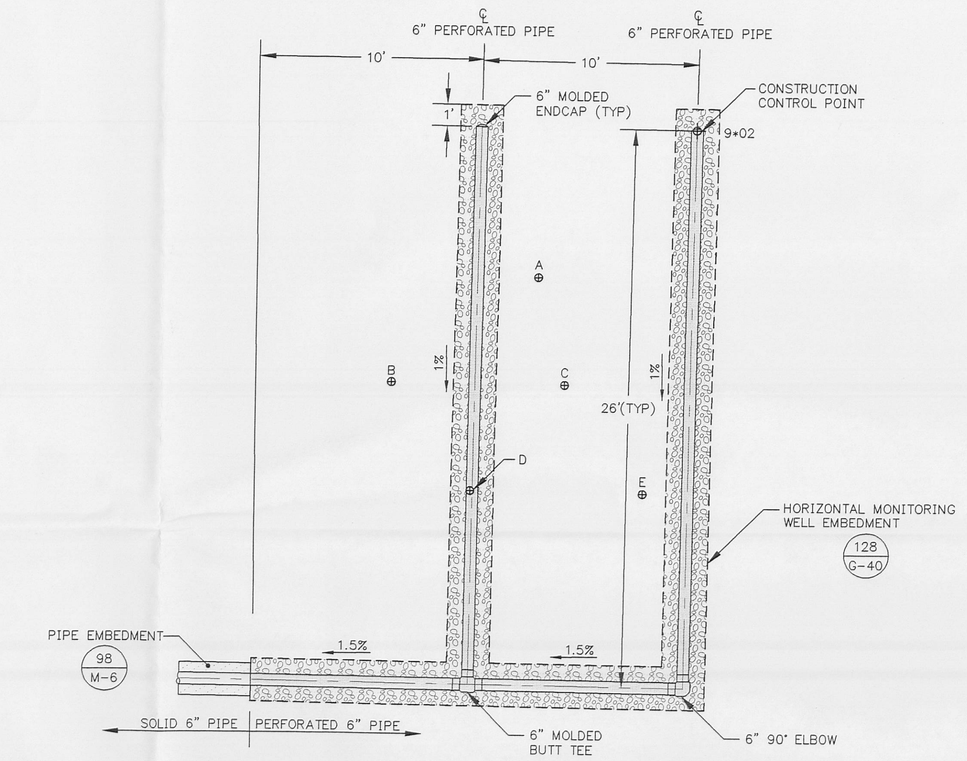
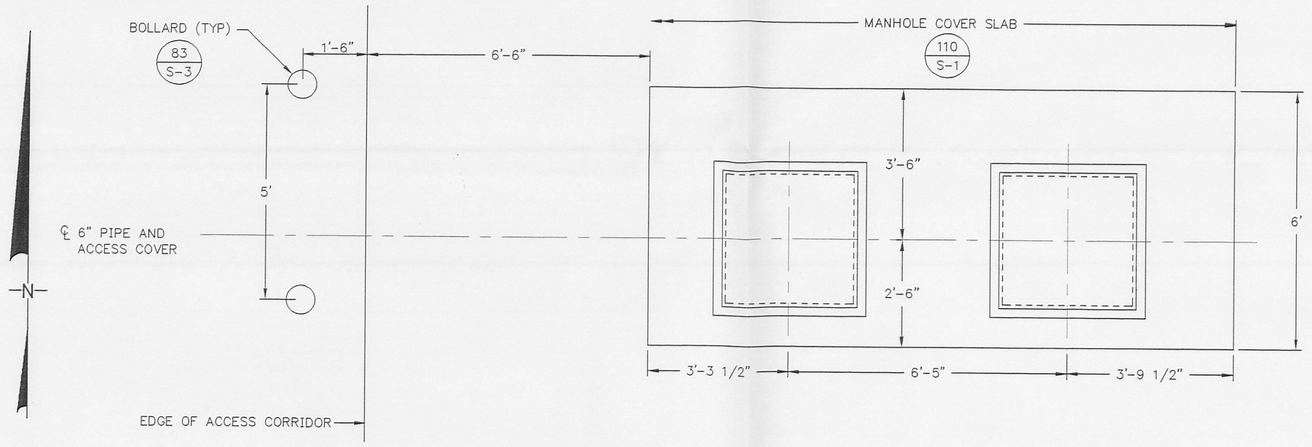
452



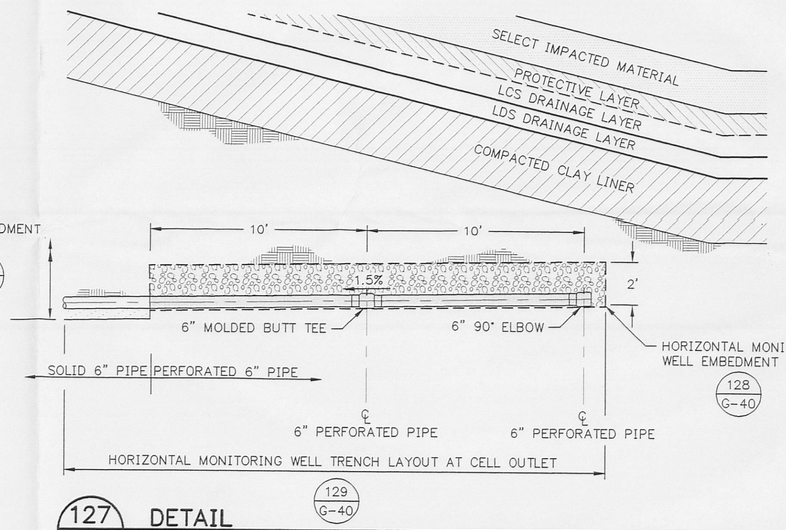
E G-11 SECTION
HORIZONTAL MONITORING WELL
SCALE: 1" = 10' HORIZONTAL
1" = 10' VERTICAL



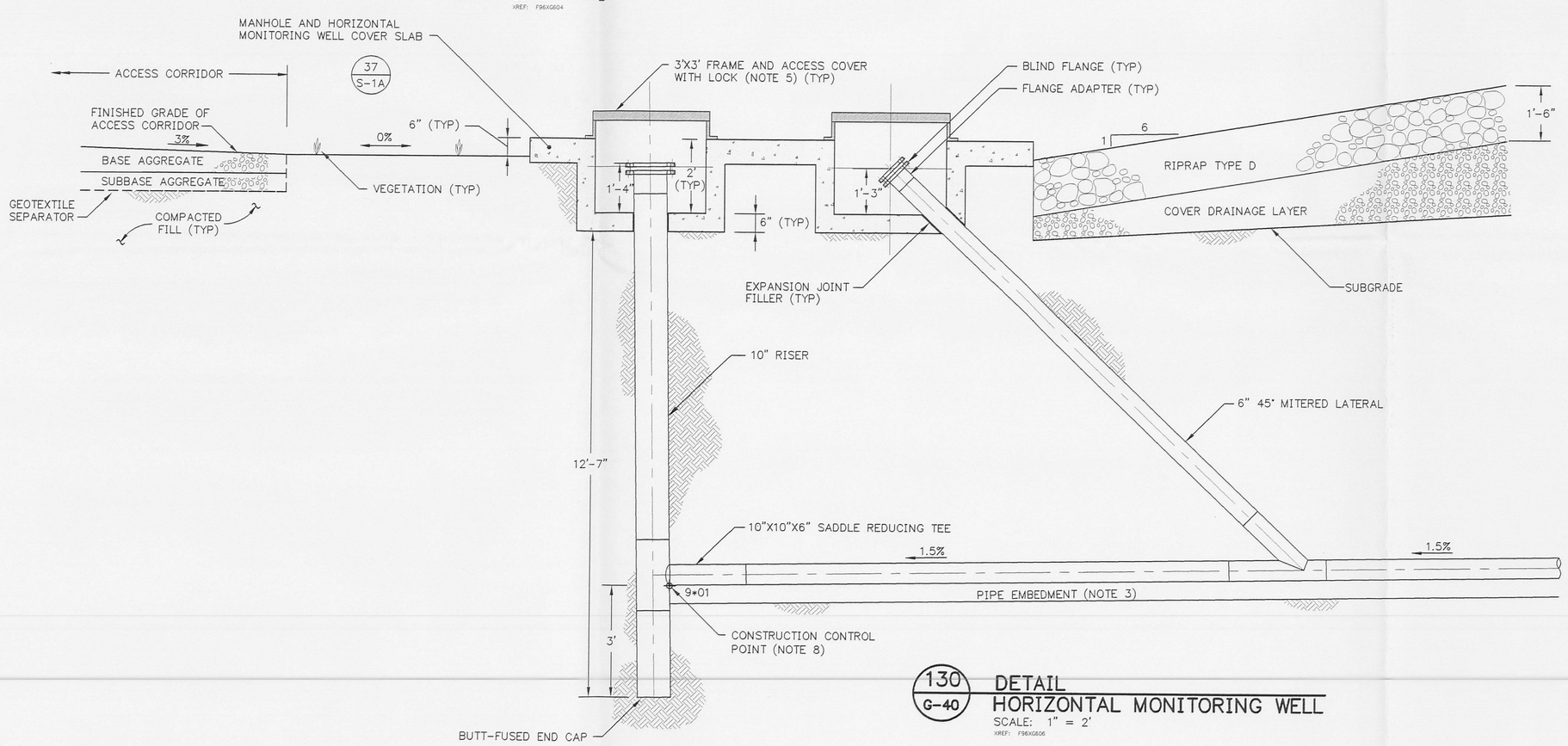
129 G-40 PLAN
HORIZONTAL MONITORING WELL TRENCH LAYOUT AT CELL OUTLET
SCALE: 1" = 4'



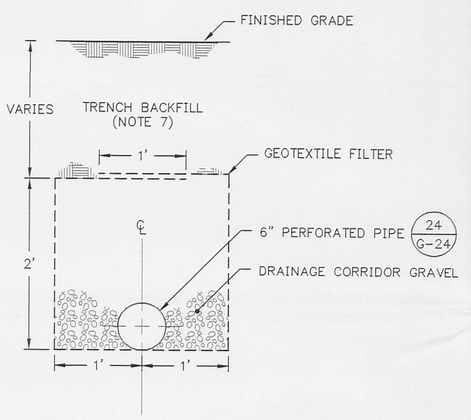
126 G-40 PLAN
HORIZONTAL MONITORING WELL COVER SLAB
SCALE: 1" = 2'



127 G-40 DETAIL
HORIZONTAL MONITORING WELL TRENCH AT CELL OUTLET
SCALE: 1" = 4'



130 G-40 DETAIL
HORIZONTAL MONITORING WELL
SCALE: 1" = 2'



128 G-40 DETAIL
HORIZONTAL MONITORING WELL EMBEDMENT
SCALE: 1" = 1'

LOCATION OF OVERLYING FEATURE RELATIVE TO TRENCH

LEGEND:

- ⊕A LDS PIPE SECONDARY LINER PENETRATION
- ⊕B REDUNDANT LCS PIPE SECONDARY LINER PENETRATION
- ⊕C REDUNDANT LCS PIPE PRIMARY LINER PENETRATION
- ⊕D LCS PIPE SECONDARY LINER PENETRATION
- ⊕E LCS PIPE PRIMARY LINER PENETRATION

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD].)
3. PIPE EMBEDMENT ALONG SECTION OF SOLID PIPE IN HORIZONTAL MONITORING WELL SHALL BE CONSTRUCTED WITH SOIL BENTONITE PLUGS LOCATED 50 FEET ON CENTER.
4. HORIZONTAL MONITORING WELLS ARE NOT SHOWN ON OSDF GRADING DRAWINGS G-5 TO G-11.
5. FRAME AND ACCESS COVERS SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE OSDF SPECIFICATIONS.
6. PIPES AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE 15000 OF THE OSDF SPECIFICATIONS.
7. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTION OF THE 02215 OF THE OSDF SPECIFICATIONS.
8. CONSTRUCTION CONTROL POINTS ARE PROVIDED ON DRAWING G-38. THE "+" SYMBOL REPRESENTS THE APPROPRIATE MANHOLE NUMBER FOR EACH CELL. CONSTRUCTION CONTROL POINTS REFER TO BOTTOM OF PIPE.

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	UMW	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 482

TITLE:
HORIZONTAL MONITORING WELL DETAILS
24D017_26

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

STATE OF OHIO — RUDOLPH BONAPARTE — E-56679 — REGISTERED PROFESSIONAL ENGINEER — SEAL

Rudolph Bonaparte SIGNATURE
8 Oct 1996 DATE

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-001707
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G166
SHEET NO.:	G-40
REVISION NO.:	G

FINAL DESIGN PACKAGE

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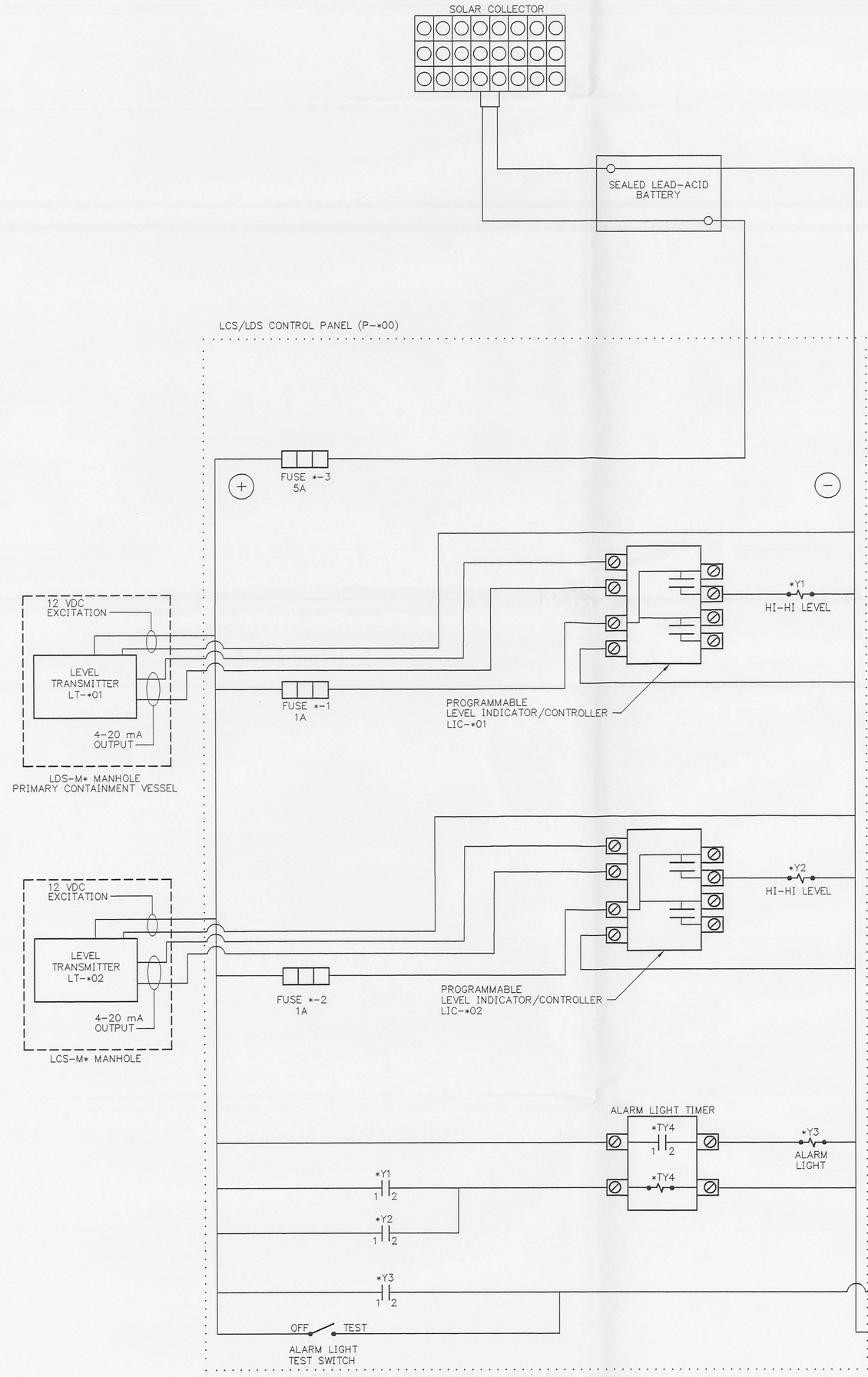
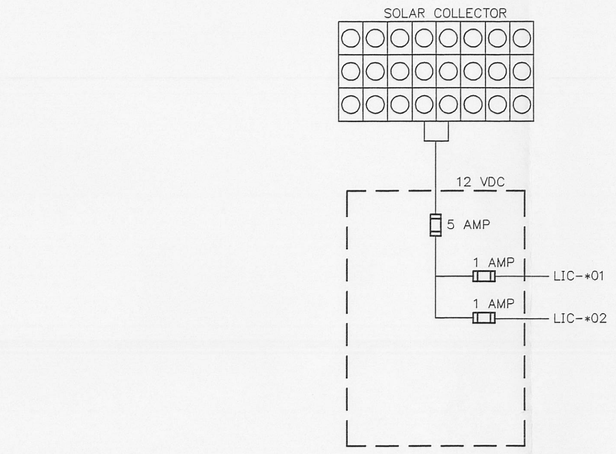


72 / - DETAIL
LDS AND LCS MANHOLES CONTROL SCHEMATIC
SCALE: NTS



74 / - DETAIL
LDS AND LCS MANHOLE SINGLE LINE DIAGRAM
SCALE: NTS

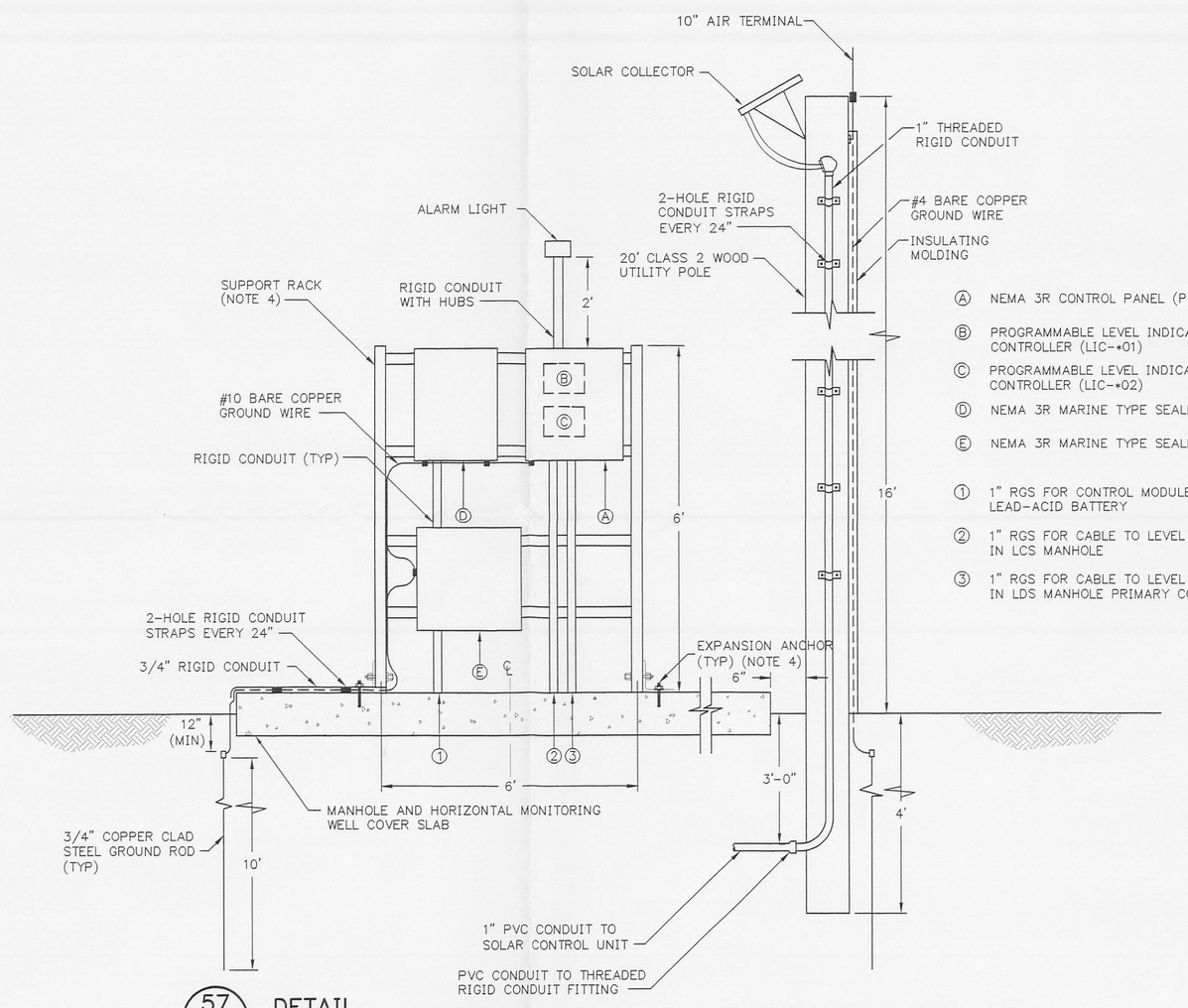
RELAY NUMBER - *Y1 : LDS-M* HI-HI LEVEL			
COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 - 2	X		ENERGIZE (*TY4) ALARM LIGHT TIMER
NOTES: 1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE			

RELAY NUMBER - *Y2 : LCS-M* HI-HI LEVEL			
COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 - 2	X		ENERGIZE (*TY4) ALARM LIGHT TIMER
NOTES: 1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE			

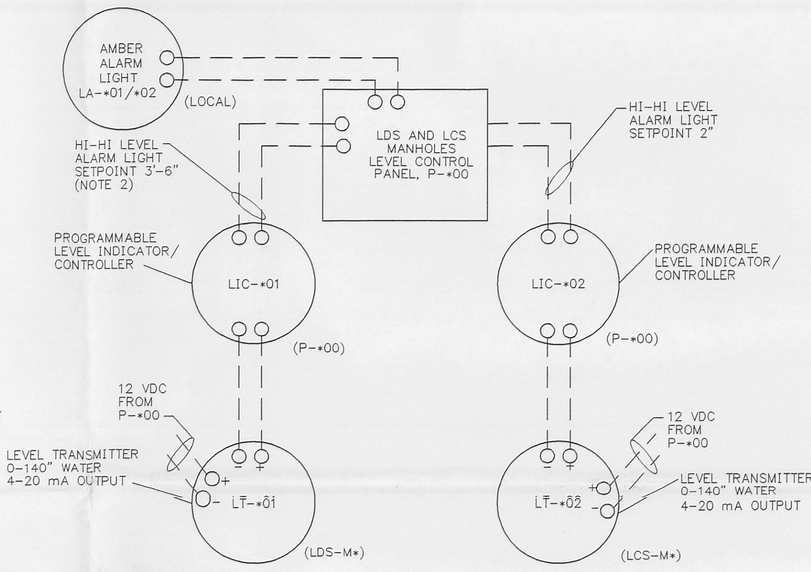
RELAY NUMBER - *Y3 : LDS-M*, LCS-M* ALARM LIGHT ENERGIZED			
COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 - 2	X		ALARM LIGHT (LA-*01) ON
NOTES: 1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE			

RELAY NUMBER - *TY4 : LDS-M*, LCS-M* ALARM LIGHT TIMER			
COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 - 2	X		ACTIVATE ALARM LIGHT TIMER ENERGIZE (*Y3) ALARM LIGHT
NOTES: 1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE			

73 / - DETAIL
LDS AND LCS MANHOLE CONTROL RELAY CONTACT CONFIGURATION
SCALE: NTS



57 / - DETAIL
LDS AND LCS MANHOLES ELECTRIC SERVICE PANEL AND POLE
SCALE: NTS
XREF: F96X0506



72A / - DETAIL
LDS AND LCS MANHOLES LEVEL INSTRUMENTATION LOOP DIAGRAM
SCALE: NTS
XREF: F96X0505

NOTES:

1. THE "*" SYMBOL REPRESENTS THE APPROPRIATE MANHOLE NUMBER FOR EACH CELL.
2. SETPOINT SHALL BE ADJUSTED IN ACCORDANCE WITH THE SYSTEMS PLAN.
3. MECHANICAL AND ELECTRICAL CONSTRUCTION SHALL BE IN ACCORDANCE WITH DIVISIONS 15 AND 16 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
4. SUPPORT RACK SHALL BE IN ACCORDANCE WITH SECTION 16100 OF THE OSDF SPECIFICATIONS.

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	LF	BD	BJ	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:

FERMCO Fernald Environmental Restoration Management Corporation

PROJECT:
ON-SITE DISPOSAL FACILITY 483

TITLE:
LEACHATE TRANSMISSION SYSTEM
ELECTRICAL DETAILS I
24007-23

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-E-00060
GEOSYNTEC PROJECT NO.:	GE3900-14.1
GEOSYNTEC DOCUMENT NO.:	F96-G126
SHEET NO.:	E-4
REVISION NO.:	G

FINAL DESIGN PACKAGE

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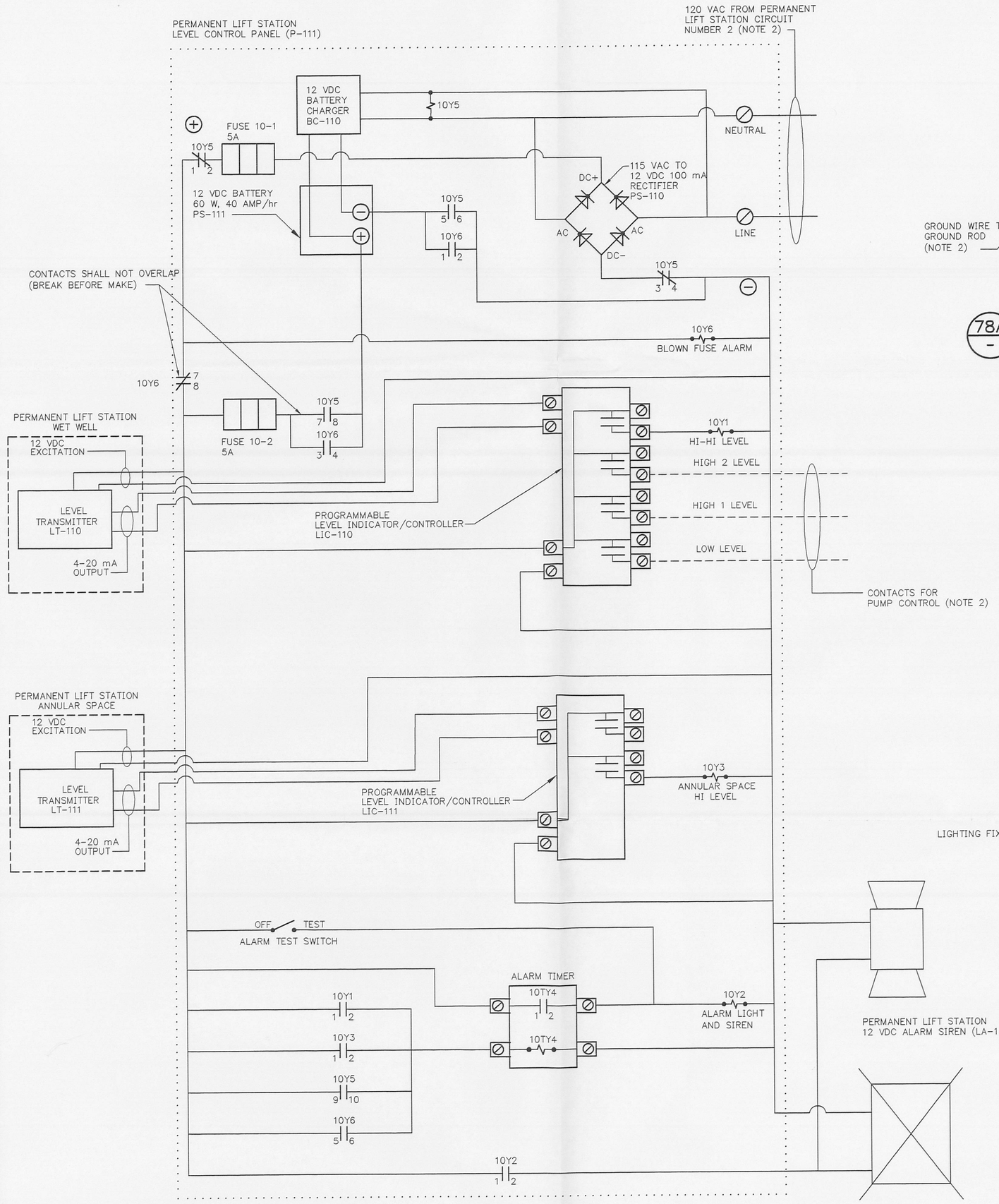
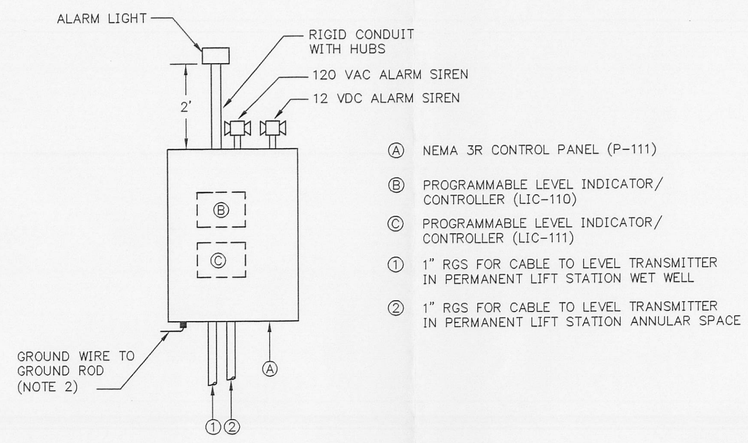


78A / - DETAIL
PERMANENT LIFT STATION CONTROL PANEL
(NOTE 1)
SCALE: NTS



RELAY NUMBER – 10Y1 : PERMANENT LIFT STATION HI-HI LEVEL

COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 – 2	X		ENERGIZE (10TY4) ALARM TIMER
3 – 4		X	MOTOR OPERATED VALVE (V-001) CLOSE

NOTE:
1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE

RELAY NUMBER – 10Y2 : PERMANENT LIFT STATION ALARMS ON

COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 – 2	X		ALARM LIGHT (LA-110) AND 12 VDC ALARM SIREN (LA-111B) ON
3 – 4	X		120 VAC ALARM SIREN (LA-111A) ON

NOTE:
1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE

RELAY NUMBER – 10Y3 : PERMANENT LIFT STATION ANNULAR SPACE HI-LEVEL

COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 – 2	X		ENERGIZE (10TY4) ALARM TIMER
3 – 4		X	MOTOR OPERATED VALVE (V-001) CLOSE

NOTE:
1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE

RELAY NUMBER – 10TY4: PERMANENT LIFT STATION ALARM TIMER

COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 – 2	X		ENERGIZE (10Y2) ALARM LIGHT AND SIREN

NOTE:
1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE

RELAY NUMBER – 10Y5: PERMANENT LIFT STATION LOSS OF 120 VAC POWER

COIL L 120 VAC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 – 2	X		NORMAL 12 VDC HOT LEG
3 – 4	X		NORMAL 12 VDC COMMON
5 – 6		X	BATTERY 12 VDC COMMON
7 – 8		X	BATTERY 12 VDC HOT LEG
9 – 10		X	ENERGIZE (10TY4) ALARM TIMER

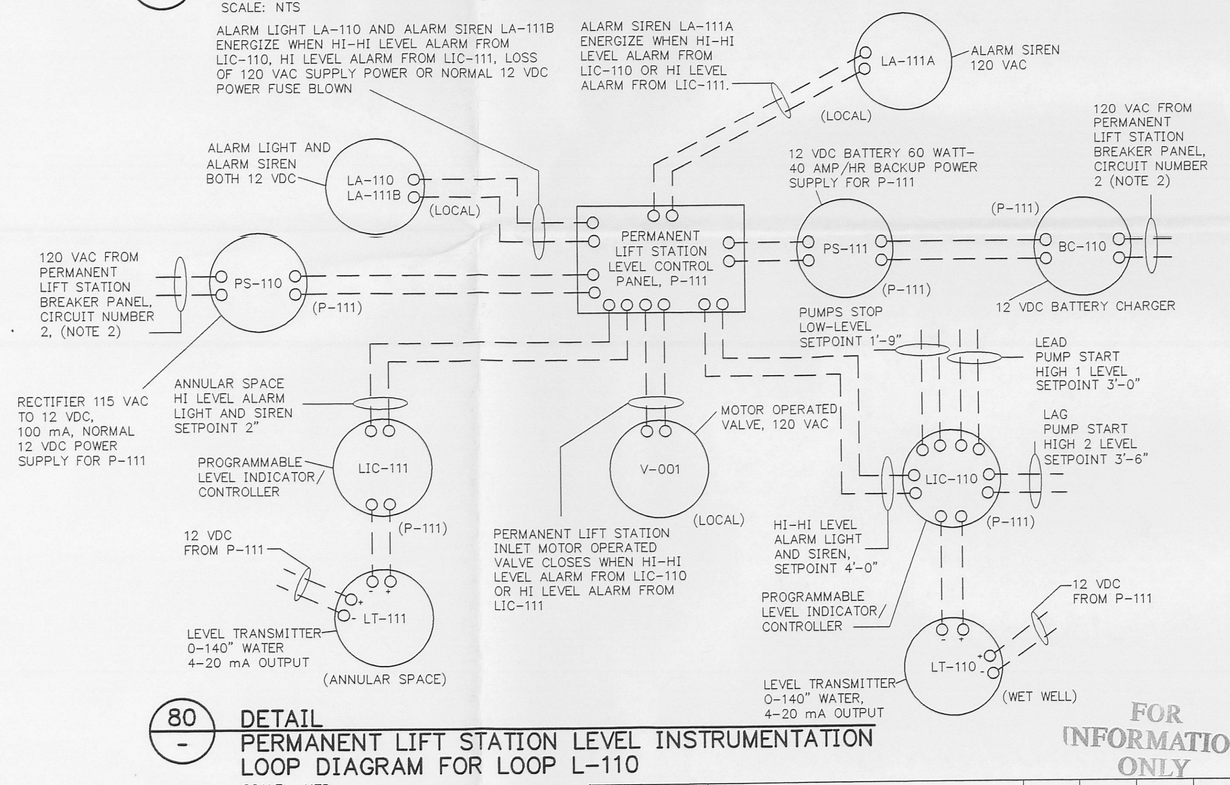
NOTE:
1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE

RELAY NUMBER – 10Y6: PERMANENT LIFT STATION NORMAL 12 VDC POWER FUSE BLOWN

COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 – 2		X	BATTERY 12 VDC COMMON
3 – 4		X	BATTERY 12 VDC HOT LEG
5 – 6		X	ENERGIZE (10TY4) ALARM TIMER
7 – 8	X		BLOWN FUSE LATCH

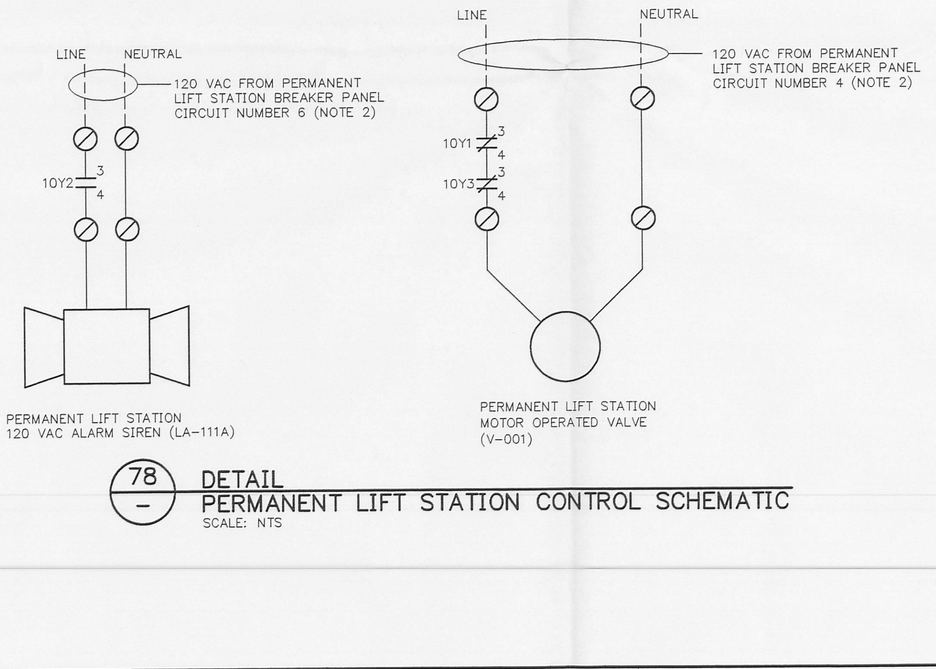
NOTE:
1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE

79 / - DETAIL
PERMANENT LIFT STATION CONTROL RELAY CONTACT CONFIGURATION
SCALE: NTS



80 / - DETAIL
PERMANENT LIFT STATION LEVEL INSTRUMENTATION
LOOP DIAGRAM FOR LOOP L-110
SCALE: NTS

62 / S-3 DETAIL
LIGHT FIXTURE FOR POLE OP 82
(NOTE 3)
SCALE: NTS



78 / - DETAIL
PERMANENT LIFT STATION CONTROL SCHEMATIC
SCALE: NTS

NOTES:

1. REFER TO DRAWING E-00325 FOR PANEL LOCATION ON EQUIPMENT RACK.
2. REFER TO DRAWING E-00324 FOR DISTRIBUTION PANEL DETAILS.
3. REFER TO DRAWINGS E-00500 AND E-00501 FOR POLE LOCATION AND ELECTRIC POWER DETAILS.
4. FURNISH OUTDOOR AREA DIE CAST ALUMINUM LIGHTING FIXTURE WITH 70-WATT HIGH PRESSURE SODIUM LAMP. BALLAST WIRED FOR 110 VAC. PHOTOCELL CONTROL FOR DUSK TO DAWN OPERATION. GLASS REFRACTOR LENS. POLE-MOUNTED ON 2 FOOT ALUMINUM ARM. FURNISH COMPLETE WITH FIXTURE, LAMP, ARM, HOOK-UP WIRE, PHOTO CONTROL AND MOUNTING HARDWARE.

FINAL DESIGN PACKAGE

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	LF	RD	BJ	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 434

TITLE:
LEACHATE TRANSMISSION SYSTEM
ELECTRICAL DETAILS IV
240017-29

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

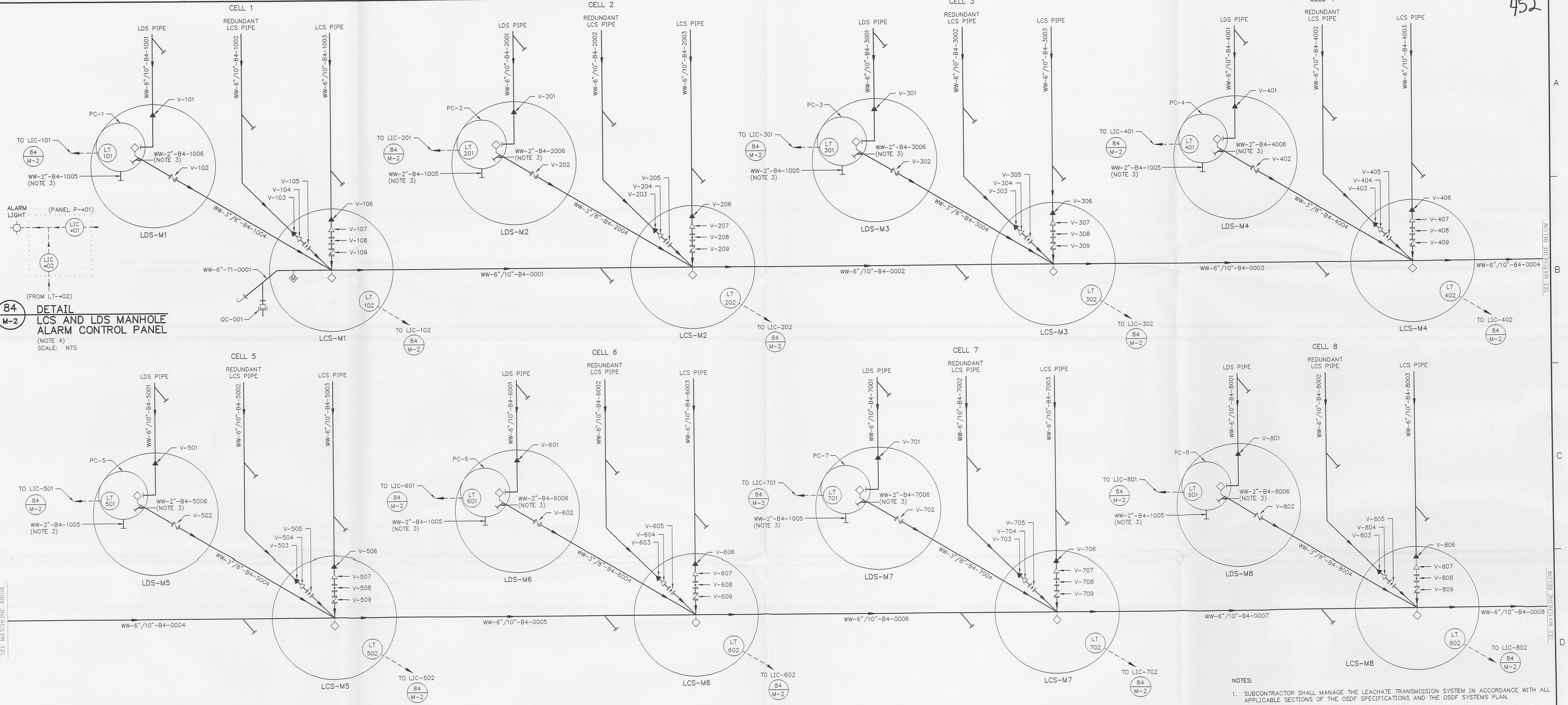
STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

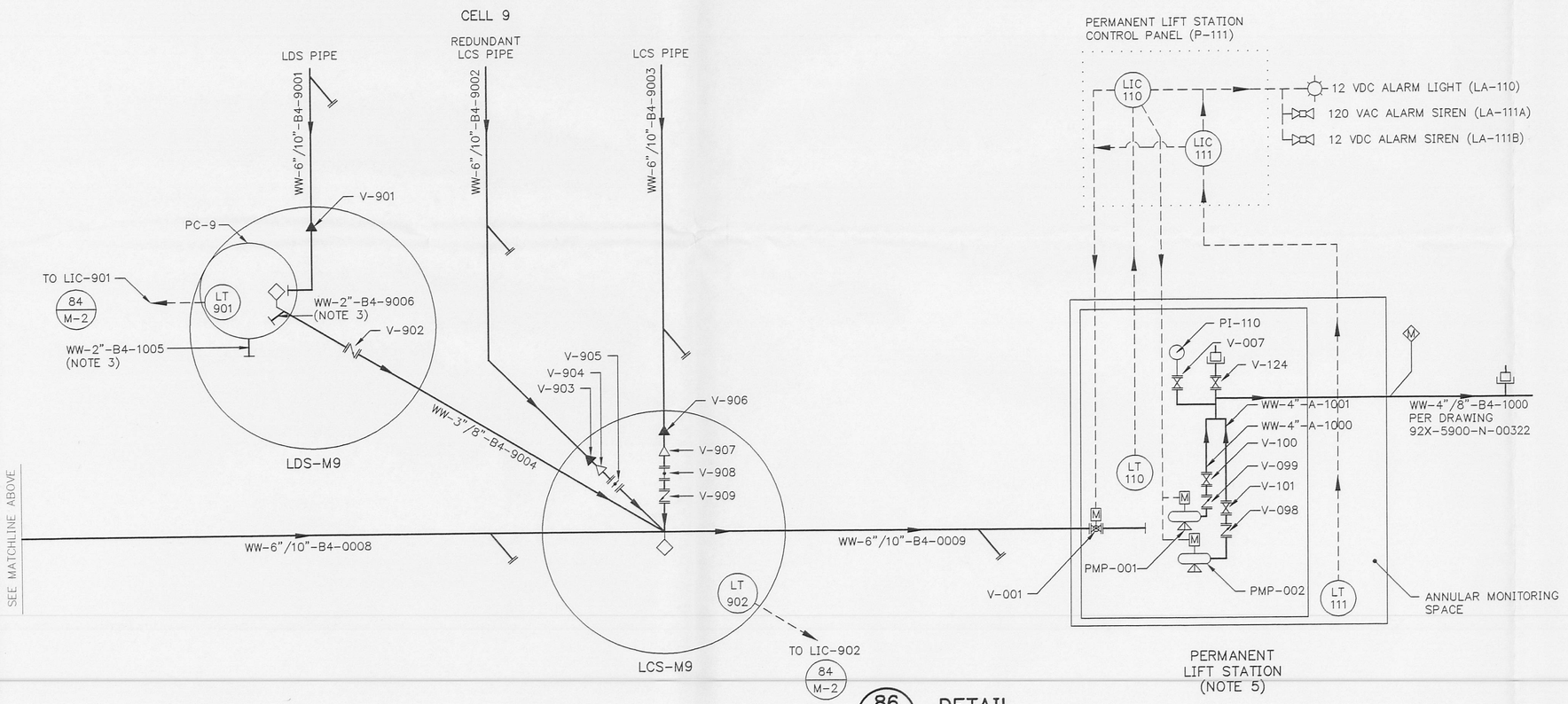
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-5000-E-00061
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G158
SHEET NO.:	E-7
REVISION NO.:	G

M:\GACAD2\GE3900-~13\F96-G158 Mon Oct 07 18:15:10 1996 PULU

452



84 / M-2 DETAIL
LCS AND LDS MANHOLE ALARM CONTROL PANEL
(NOTE 4)
SCALE: NTS



86 / - DETAIL
PIPING AND INSTRUMENTATION DIAGRAM POST CLOSURE
SCALE: NTS

PIPING CODES

MC - PS - MT - LN

- MC = FLOW MEDIUM CODE
- PS = NOMINAL PIPE SIZE (CARRIER/CONTAINMENT)
- MT = PIPE MATERIAL STANDARD ABBREVIATION
- LN = PIPELINE NUMBER

EXAMPLE: WW-6"/10"-B4-0006

- WW = WASTEWATER
- 6"/10" = 6"/10" NOMINAL PIPE SIZE (CARRIER/CONTAINMENT)
- B4 = HDPE
- 0006 = PIPELINE NUMBER 0006

STANDARD ABBREVIATIONS

A	A53, GRADE A SEAMLESS STEEL PIPE
AWG	AMERICAN WIRE GAUGE
B4	HIGH DENSITY POLYETHYLENE
GPM	GALLONS PER MINUTE
HDPE	HIGH DENSITY POLYETHYLENE
mA	MILLIAMP
SDR	STANDARD DIMENSION RATIO
T1	TYPE 316L, STAINLESS STEEL PIPE
WW	WASTEWATER

EQUIPMENT ABBREVIATIONS

FM	FORCEMAIN
LA	ALARM LIGHT
LIC	PROGRAMMABLE LEVEL INDICATOR/CONTROLLER
LT	LEVEL TRANSMITTER
P	CONTROL PANEL
PC	PRIMARY CONTAINMENT VESSEL
QC	QUICK CONNECT
PMP	SUBMERSIBLE PUMP
V	VALVE

INSTRUMENT CODES

AAA - BCC

- AAA = EQUIPMENT ABBREVIATION
- B = CELL NUMBER
- CC = INSTRUMENT NUMBER

EXAMPLE: V-304

- V = VALVE
- 3 = CELL 3
- 04 = INSTRUMENT NUMBER 04

SYMBOLS

- BALL VALVE
- BLIND FLANGE
- BUTTERFLY VALVE (CLOSED POSITION)
- BUTTERFLY VALVE (OPEN POSITION)
- CHECK VALVE
- ELECTRICAL CONTROL PANEL
- ELECTRICAL SIGNAL
- FLOW DIRECTION
- LOCAL MOUNTED INSTRUMENT
- MATERIAL CODE BREAK
- MONITORING PORT (WITH VALVE) (NOTE 2)
- MOTOR OPERATOR
- OPEN PIPE END
- PIPE SIZE BREAK
- QUICK CONNECT
- SAMPLING PORT (WITH VALVE) (NOTE 2)
- SUBMERSIBLE PUMP
- VENT WITH SCREEN
- PRESSURE INDICATOR

FINAL DESIGN PACKAGE

NOTES:

1. SUBCONTRACTOR SHALL MANAGE THE LEACHATE TRANSMISSION SYSTEM IN ACCORDANCE WITH ALL APPLICABLE SECTIONS OF THE OSDF SPECIFICATIONS AND THE OSDF SYSTEMS PLAN.
2. MONITORING PORT IS LOCATED ON 10-INCH CONTAINMENT PIPE. SAMPLING PORT IS LOCATED ON 6-INCH CARRIER PIPE.
3. PUMP SUCTION AND DISCHARGE CONNECTIONS SHALL BE USED TO CONVEY LIQUID FROM THE PRIMARY CONTAINMENT VESSEL TO THE LEACHATE TRANSMISSION SYSTEM PIPE:
   LINE NUMBERS WW-2"-B4-*005: SUCTION
   LINE NUMBERS WW-2"-B4-*006: DISCHARGE
4. THE "*" SYMBOL REPRESENTS THE APPROPRIATE MANHOLE NUMBER FOR EACH CELL.
5. SEE SEPARATE DESIGN PACKAGE FOR THE DESIGN OF VALVES V-002 THROUGH V-005, THE PERMANENT LIFT STATION PUMPS, AND THE FORCEMAIN (LEACHATE TRANSMISSION SYSTEM CONNECTOR) TO THE BIODENITRIFICATION SURGE LAGOON.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	BJ	RD	LA/DS	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

FOR INFORMATION ONLY

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO — FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 485

TITLE:
LEACHATE TRANSMISSION SYSTEM PIPING AND INSTRUMENTATION DIAGRAM
24007-30

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

STATE OF OHIO — RUDOLPH BONAPARTE — E-56679 — REGISTERED PROFESSIONAL ENGINEER — SEAL

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-M-00048
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G043
SHEET NO.:	M-2
REVISION NO.:	G

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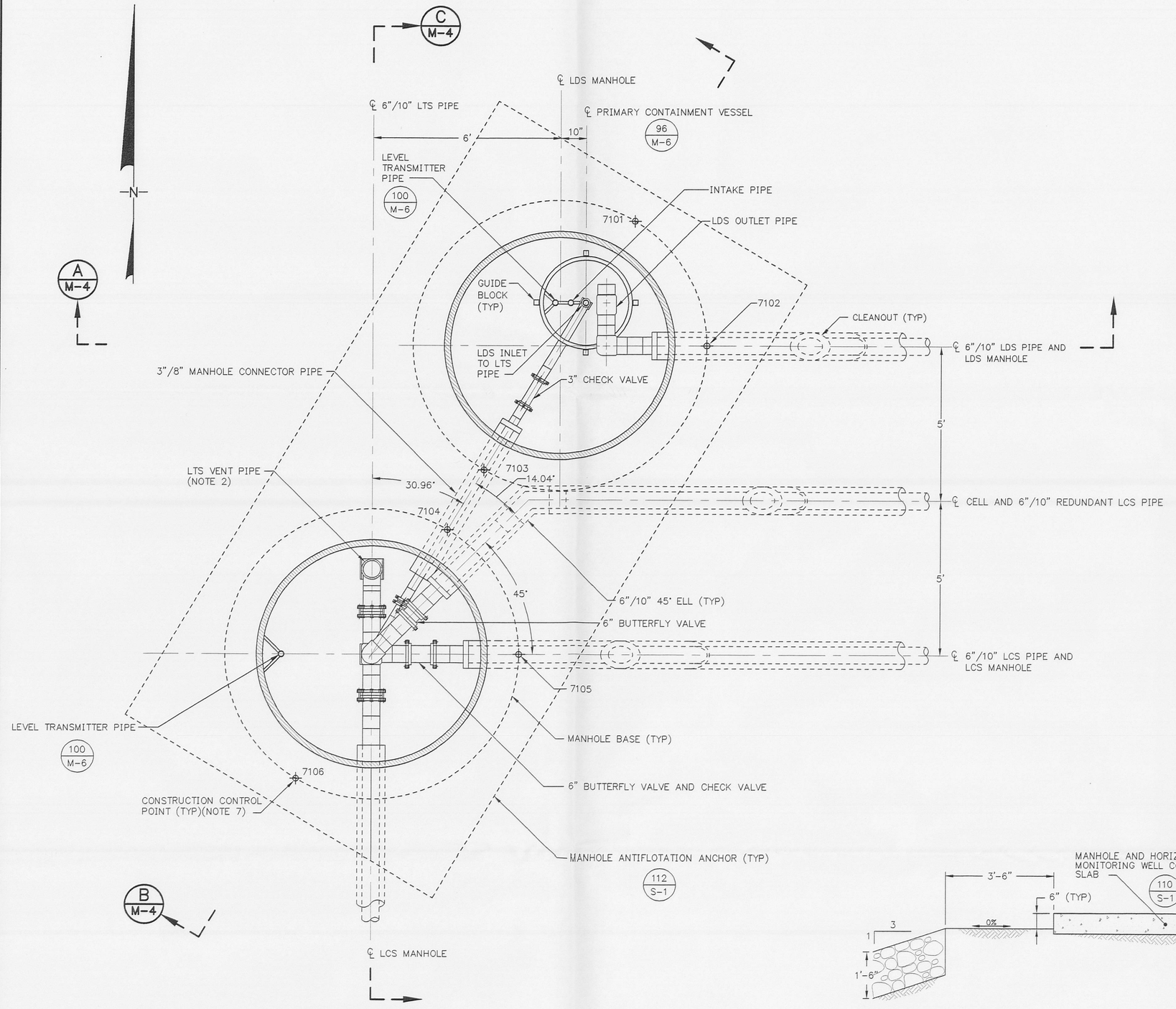
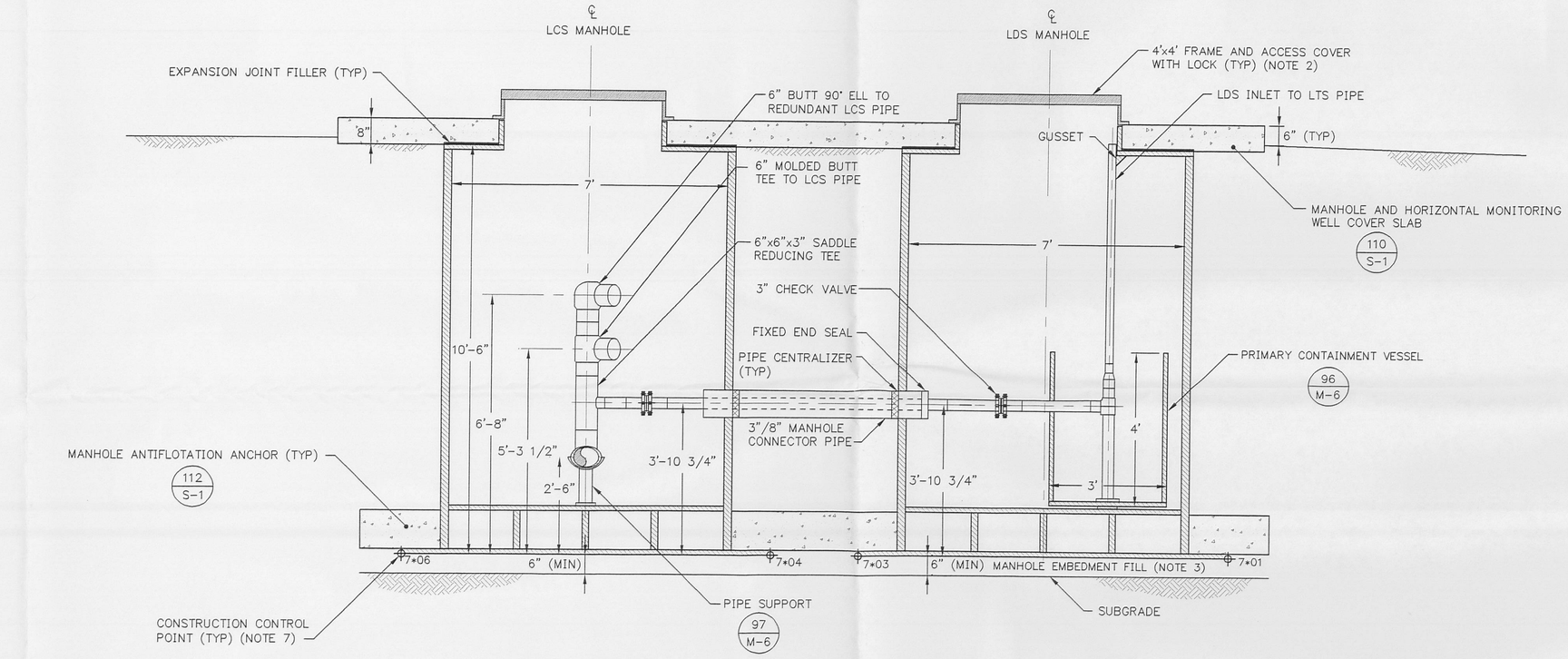
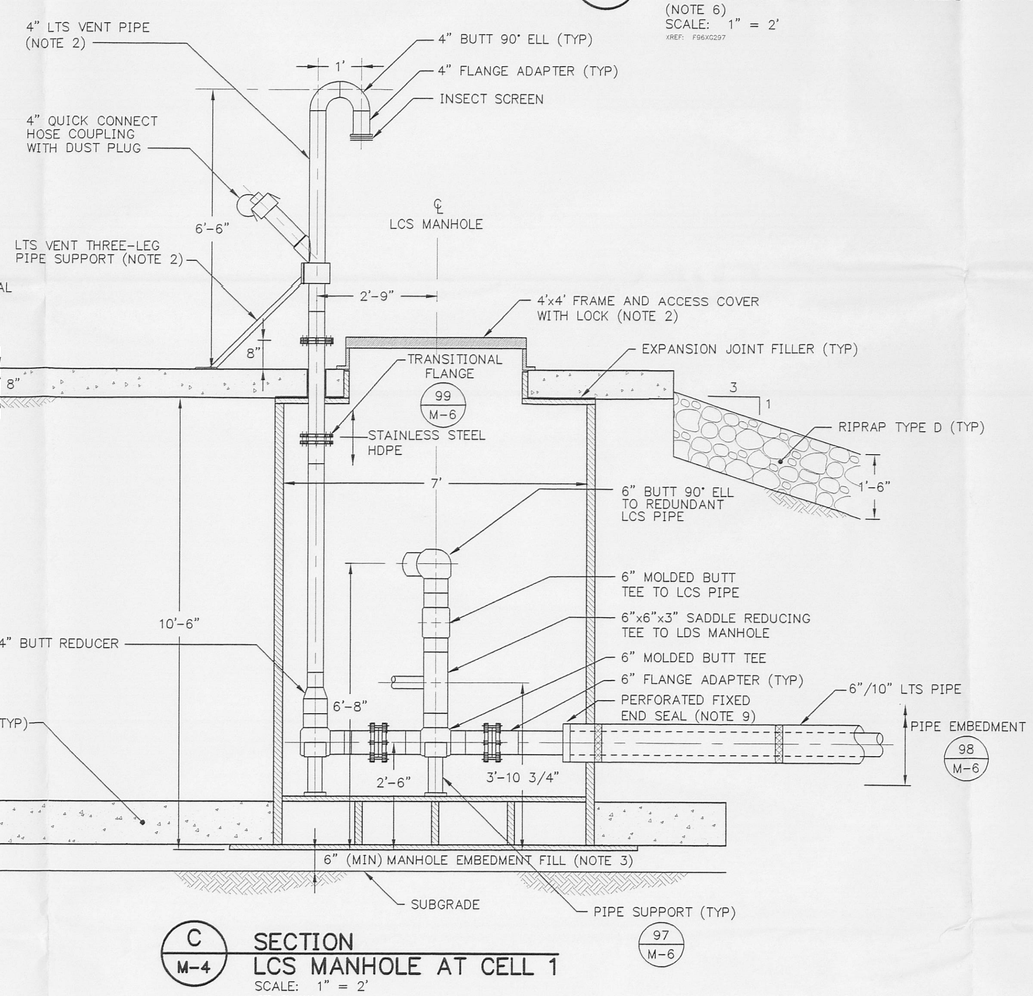


93 G-5 **SECTIONAL PLAN**
LDS AND LCS MANHOLES AT CELL 1
(NOTES 1 AND 5)
SCALE: 1" = 2'
XREF: F96X0273

SECTION (TYPICAL)
LDS MANHOLE AT CELLS 1 THROUGH 9
(NOTE 8)
SCALE: 1" = 2'
XREF: F96X0084



B M-4 **SECTION (TYPICAL)**
LCS AND LDS MANHOLES AT CELLS 1 THROUGH 9
(NOTE 6)
SCALE: 1" = 2'
XREF: F96X0297



C M-4 **SECTION**
LCS MANHOLE AT CELL 1
SCALE: 1" = 2'
XREF: F96X0298

NOTES:

1. MANHOLES, PIPES, AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS.
2. FRAME AND ACCESS COVERS, VALVES, LEACHATE TRANSMISSION SYSTEM VENT PIPE, AND LEACHATE TRANSMISSION SYSTEM VENT PIPE SUPPORT SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE OSDF SPECIFICATIONS.
3. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.
4. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
5. PIPE CENTRALIZERS ARE NOT SHOWN IN THIS PLAN.
6. FINISHED GRADES ARE NOT SHOWN IN THIS SECTION.
7. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWING G-38. THE "+" SYMBOL REPRESENTS THE APPROPRIATE MANHOLE NUMBER FOR EACH CELL.
8. PRIMARY CONTAINMENT VESSEL IS NOT SHOWN IN THIS SECTION.
9. FIXED END SEAL ON LTS PIPE SHALL BE PERFORATED WITH 6X5/8-INCH-DIAMETER HOLES EVENLY SPACED AT 60 DEGREES APART.

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G	11.10.96	FINAL SUBMITTAL TO EPA	BJ	AF	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
Fernald Environmental Restoration Management Corporation
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 486

TITLE:
LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLE MECHANICAL DETAILS I
24017-31

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Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
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REGISTERED PROFESSIONAL ENGINEER
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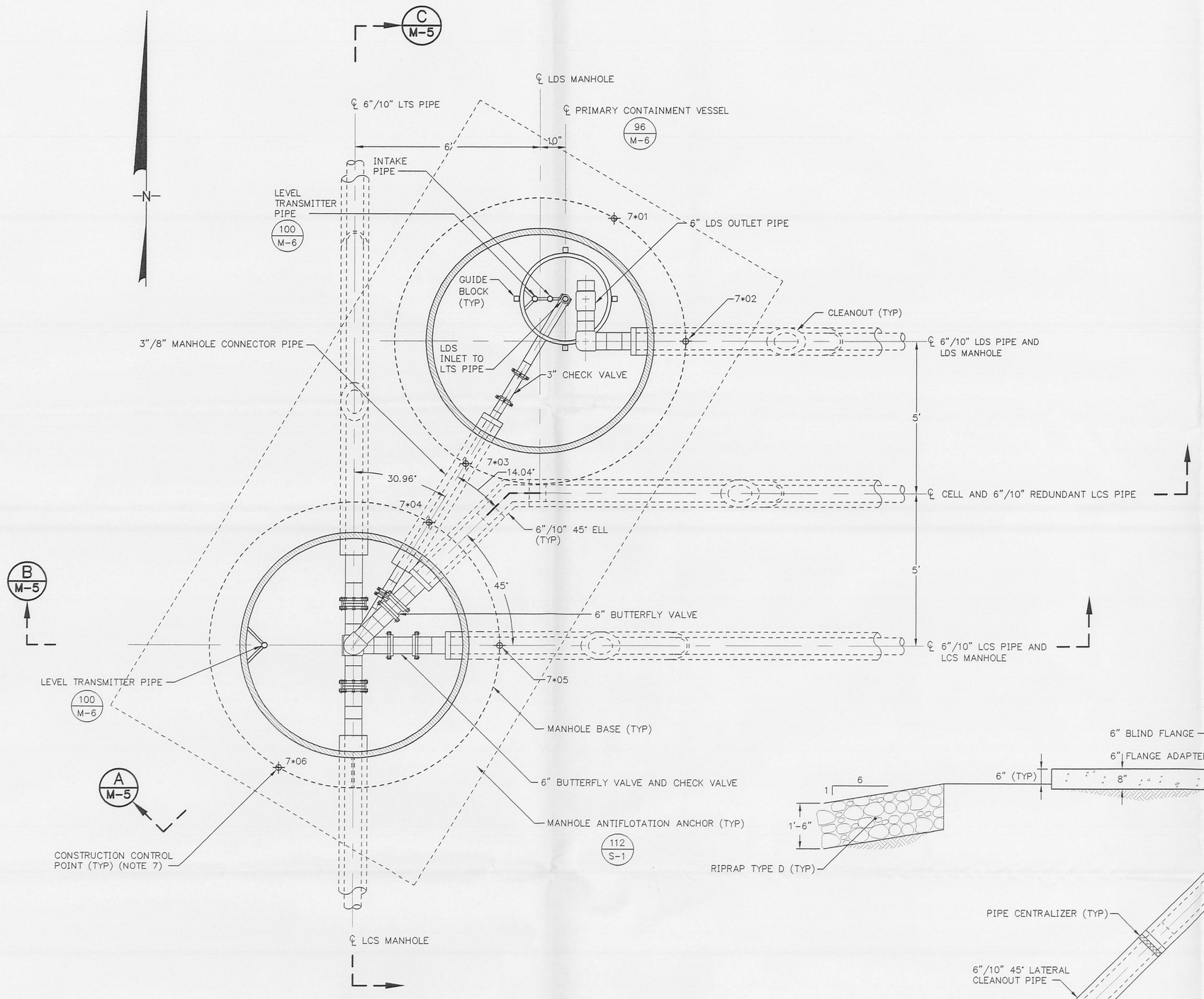
GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-M-00049
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G056
SHEET NO.:	M-4
REVISION NO.:	G

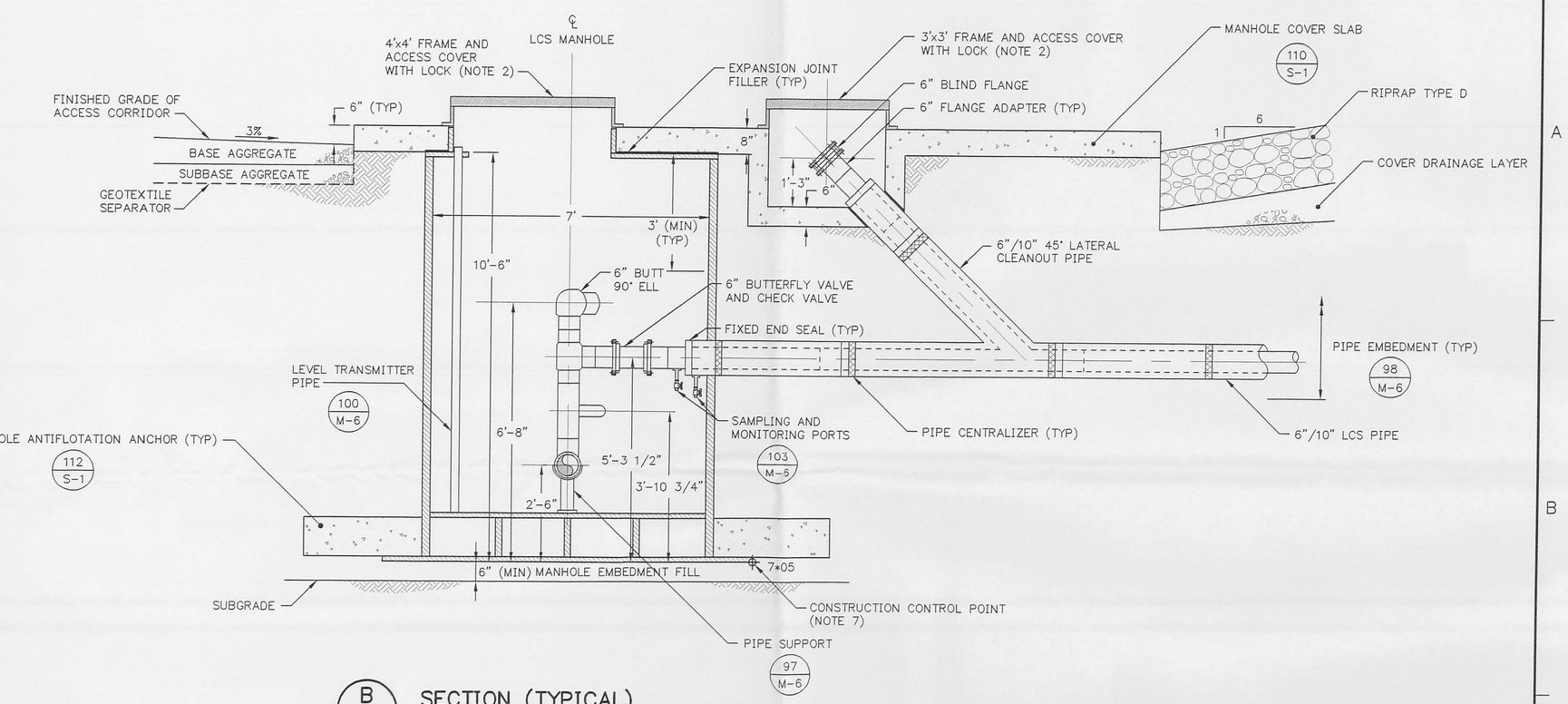
FINAL DESIGN PACKAGE

Wed Oct 09 16:37:32 1996 J MILLER

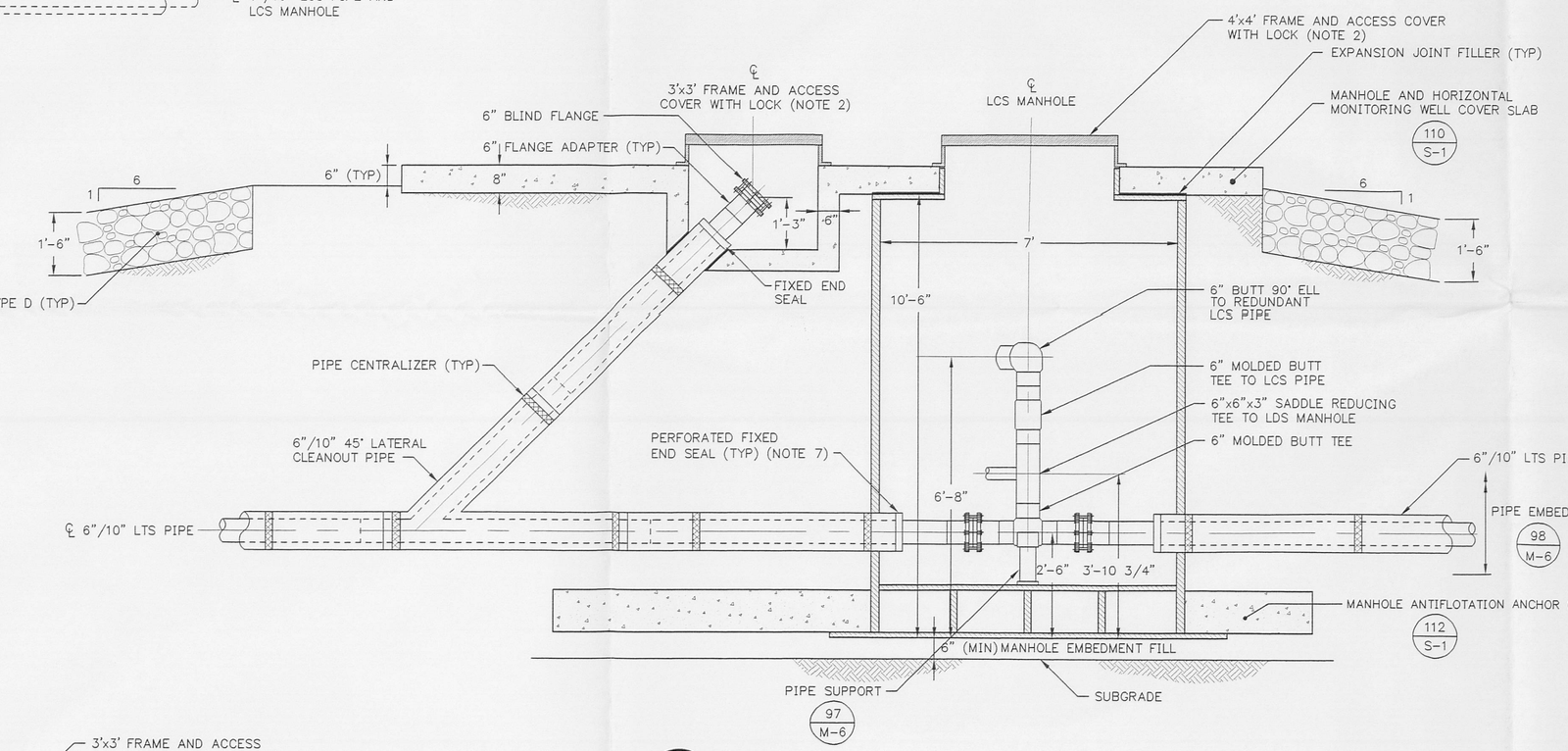
452



94 G-5 **SECTIONAL PLAN**
LDS AND LCS MANHOLES AT CELLS 2 THROUGH 9
(NOTES 1 AND 6)
SCALE: 1" = 2'
XREF: F96X0104

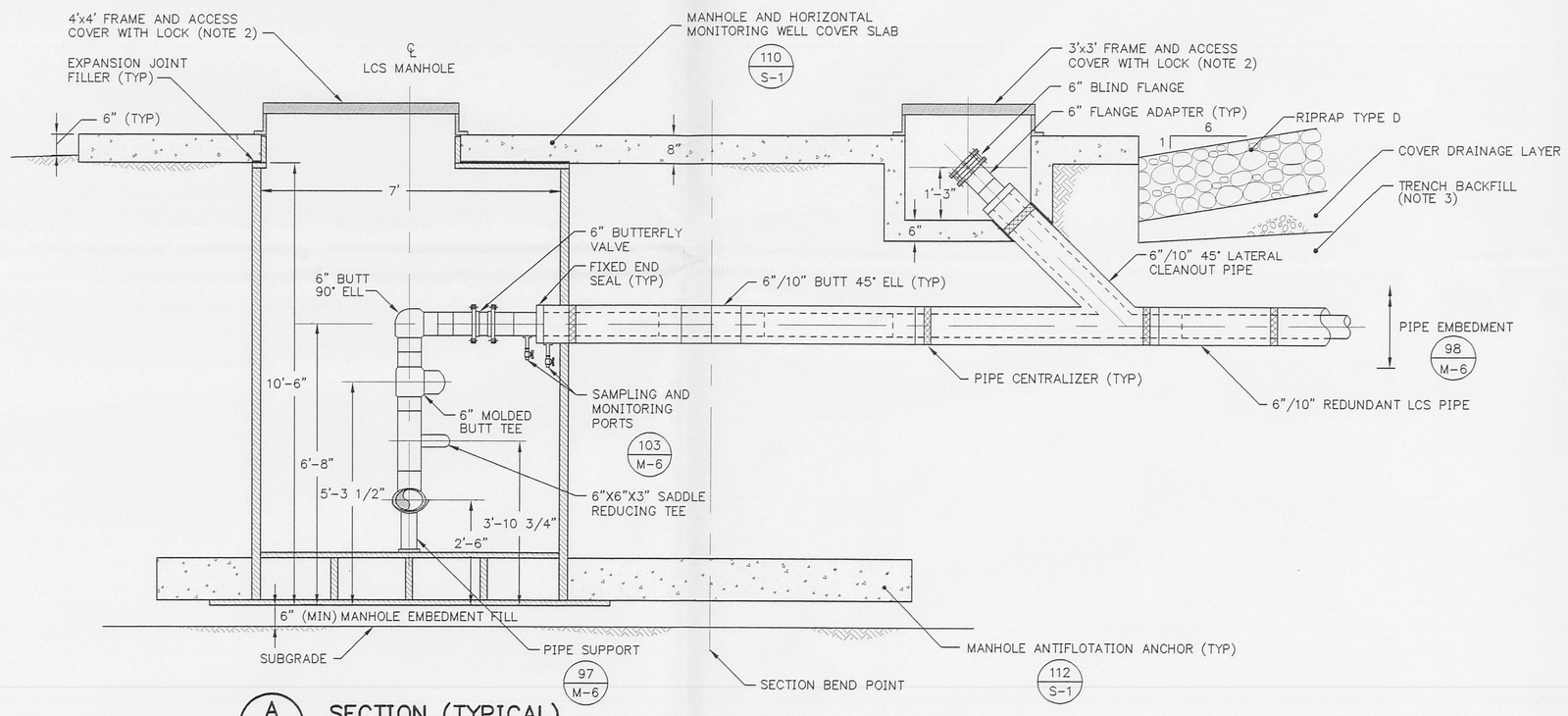


B M-5 **SECTION (TYPICAL)**
LCS MANHOLE AT CELLS 1 THROUGH 9
SCALE: 1" = 2'
XREF: F96X0091



C M-5 **SECTION**
LCS MANHOLE AT CELLS 2 THROUGH 9
SCALE: 1" = 2'
XREF: F96X0091

101 - **DETAIL**
CLEANOUT AND AUXILIARY CONNECTION
(NOTE 2)
SCALE: 1" = 2'
XREF: F96X0477



A M-5 **SECTION (TYPICAL)**
LCS MANHOLE AT CELLS 1 THROUGH 9
(NOTE 6)
SCALE: 1" = 2'
XREF: F96X0234

NOTES:

1. MANHOLES, PIPES, AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS.
2. FRAME AND ACCESS COVERS, VALVES, AND AUXILIARY CONNECTION TO LEACHATE TRANSMISSION SYSTEM SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE OSDF SPECIFICATIONS. AUXILIARY CONNECTION TO LTS CLEANOUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE SYSTEMS PLAN OR AT THE DIRECTION OF THE CONSTRUCTION MANAGER.
3. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.
4. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
5. PIPE CENTRALIZERS ARE NOT SHOWN IN THIS PLAN.
6. FINISHED GRADES ARE NOT SHOWN IN THIS SECTION.
7. CONSTRUCTION CONTROL POINT TABLES ARE PROVIDED ON DRAWING G-38. THE "+" SYMBOL REPRESENTS THE APPROPRIATE MANHOLE NUMBER FOR EACH CELL.

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW BY	APP. BY
C	11.10.96	FINAL SUBMITTAL TO EPA	BJ	JRM	LA/DS	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
Fernald Environmental Restoration Management Corporation

PROJECT:
ON-SITE DISPOSAL FACILITY 487

TITLE:
LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLE MECHANICAL DETAILS II
240017-32

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Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER
SEAL

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-M-00050
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G057
SHEET NO.:	M-5
REVISION NO.:	G

FINAL DESIGN PACKAGE

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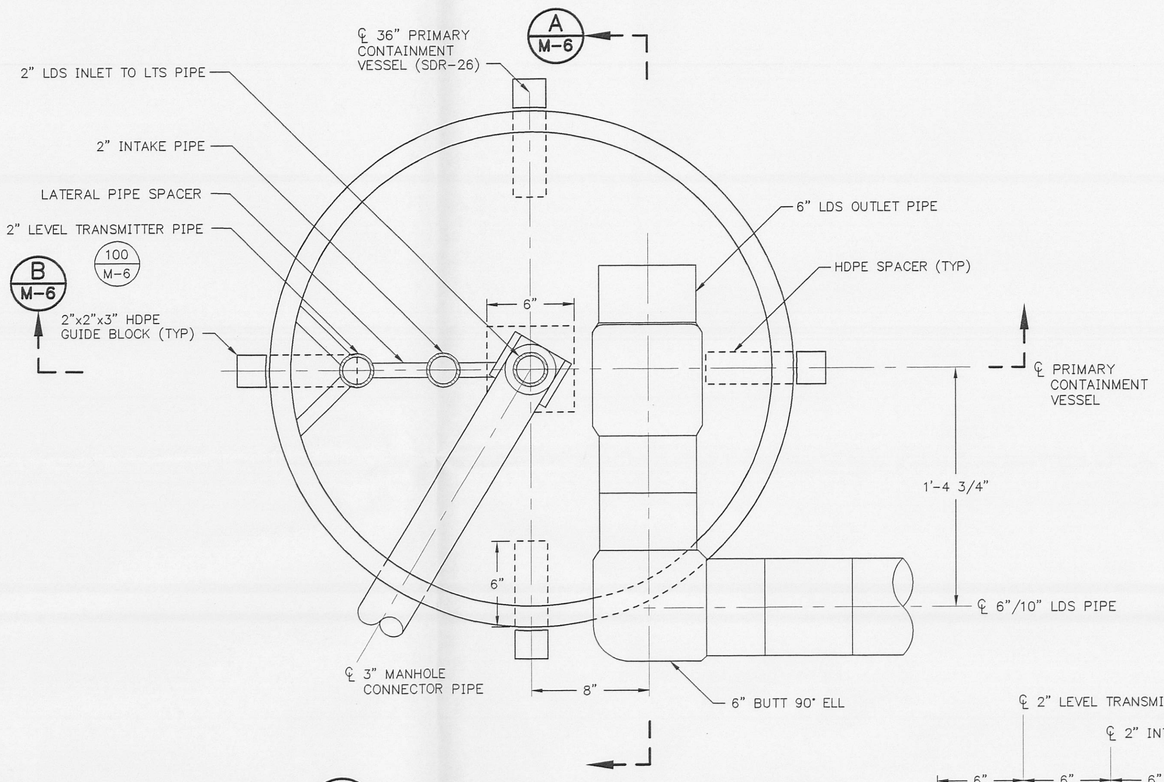
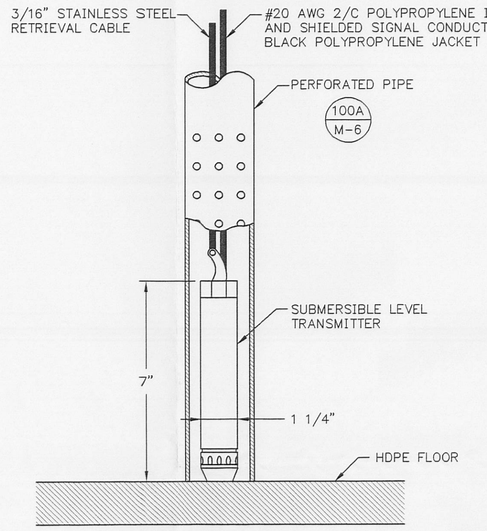
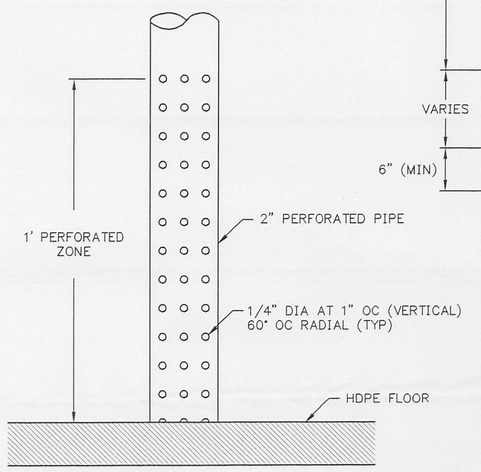


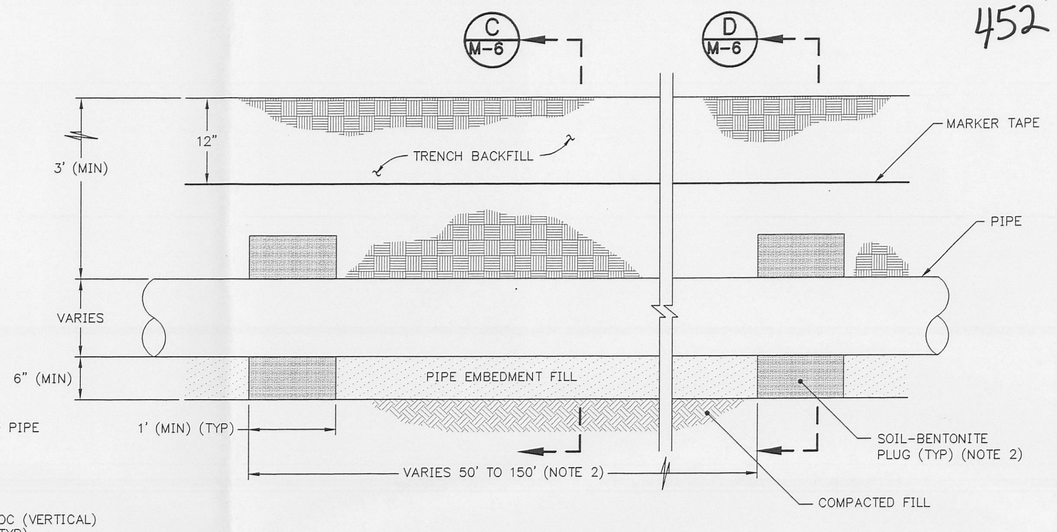
96 M-4 SECTIONAL PLAN
PRIMARY CONTAINMENT VESSEL
SCALE: 1" = 6"
XREF: F9641358



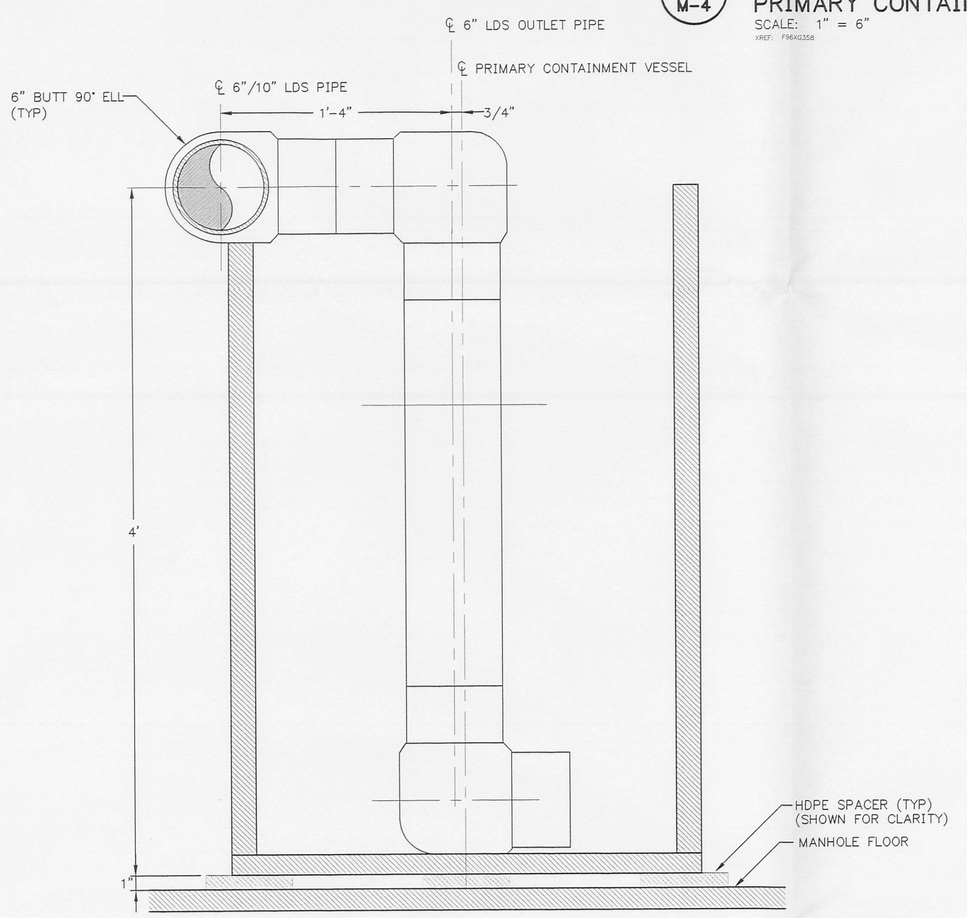
100 M-4 DETAIL
LEVEL TRANSMITTER PIPE
SCALE: NTS
XREF: F9650279



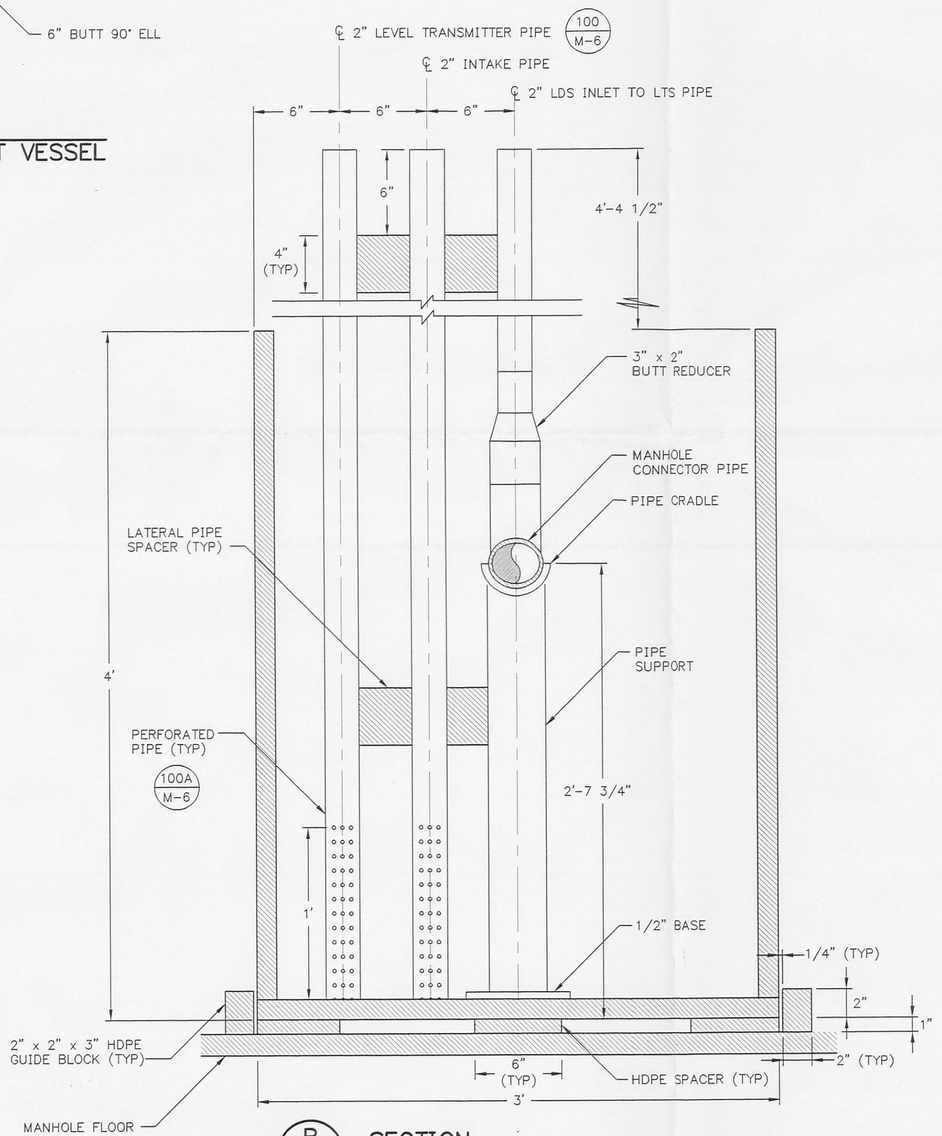
100A M-6 DETAIL
PERFORATED PIPE
SCALE: 1" = 3"
XREF: F9640279



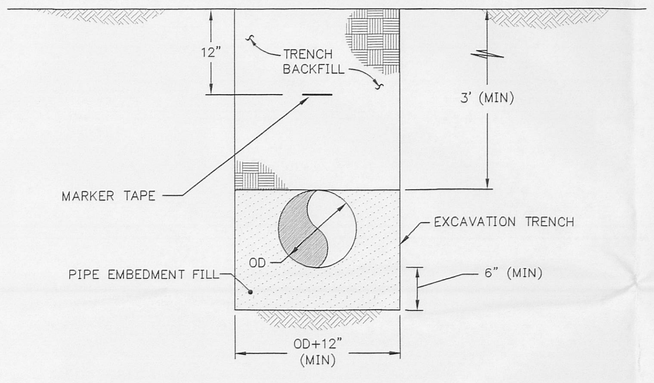
98 G-18 DETAIL
PIPE EMBEDMENT
(NOTE 3)
SCALE: 1" = 1'
XREF: F9630446



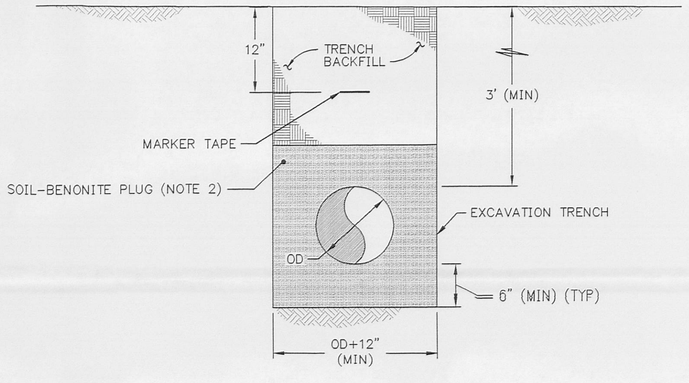
A M-6A SECTION
LDS OUTLET PIPE
SCALE: 1" = 6"
XREF: F9641358



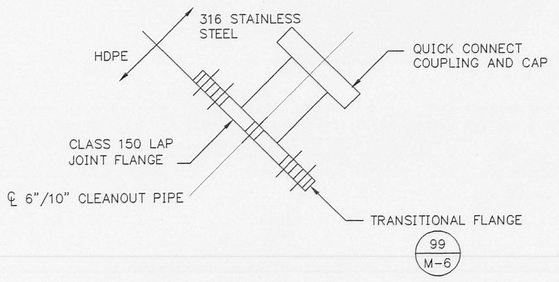
B M-6 SECTION
PRIMARY CONTAINMENT VESSEL
(NOTE 4)
SCALE: 1" = 6"
XREF: F9641358



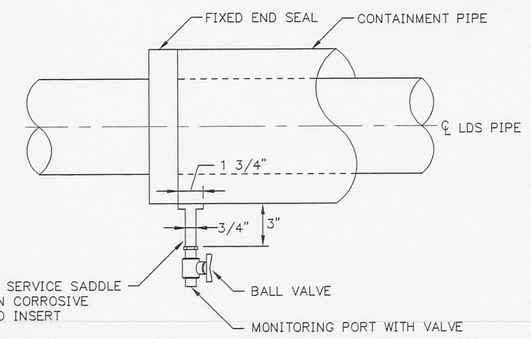
C M-6 DETAIL
PIPE EMBEDMENT
(NOTE 3)
SCALE: 1" = 1'
XREF: F9640126



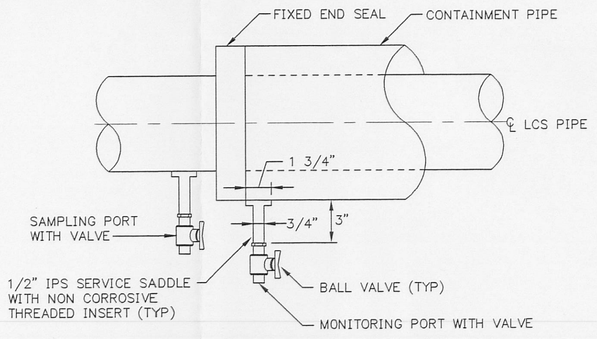
D M-6 DETAIL
PIPE EMBEDMENT AT
SOIL-BENTONITE PLUG
(NOTE 3)
SCALE: 1" = 1'
XREF: F9640126



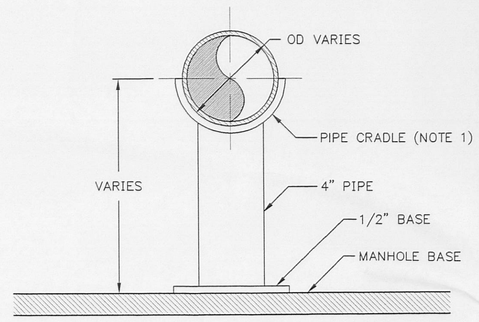
101A M-5 DETAIL
AUXILIARY CONNECTION
SCALE: 1" = 6"
XREF: F9641287



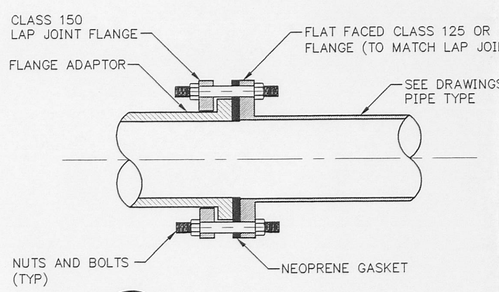
102 M-4 DETAIL
MONITORING PORT
SCALE: 1" = 6"
XREF: F9641238



103 M-5 DETAIL
SAMPLING AND MONITORING PORTS
SCALE: 1" = 6"
XREF: F9641238



97 M-4 DETAIL
PIPE SUPPORT
SCALE: 1" = 6"
XREF: F9640087



99 M-4 DETAIL
TRANSITIONAL FLANGE
SCALE: 1" = 6"
XREF: F9640278

NOTES:

1. PIPES, PIPE SUPPORTS, AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02605 THE OSDF SPECIFICATIONS. PIPE CRADLE SHALL NOT BE WELDED TO PIPE WHICH SUPPORTS.
2. UNLESS OTHERWISE NOTED, SOIL-BENTONITE PLUG SHALL BE CONSTRUCTED AT 150 FOOT INTERVAL ALONG THE PIPE EMBEDMENT FILL LAYER, IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.
3. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.
4. LEACHATE DETECTION SYSTEM OUTLET PIPE IS NOT SHOWN IN THIS SECTION.

FOR INFORMATION ONLY

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G	11.10.96	FINAL SUBMITTAL TO EPA	BJ	RD	LA/DS	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO Fluor Environmental Restoration Management Corporation
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 488

TITLE:
LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLE MECHANICAL DETAILS III
24007-33

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Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

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E-56679
REGISTERED PROFESSIONAL ENGINEER

GeoSyntec Consultants
1100 LAKE HEARN DRIVE
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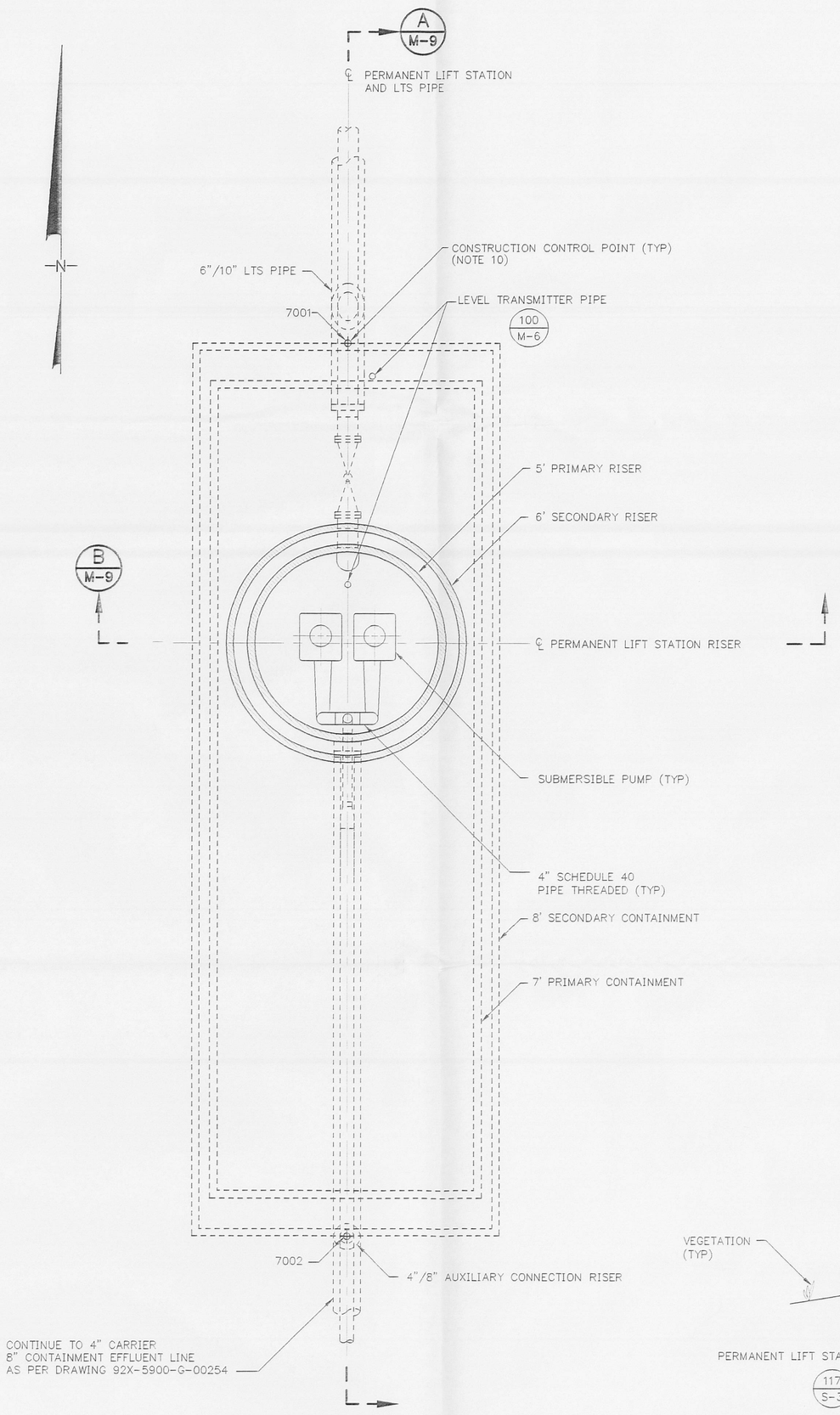
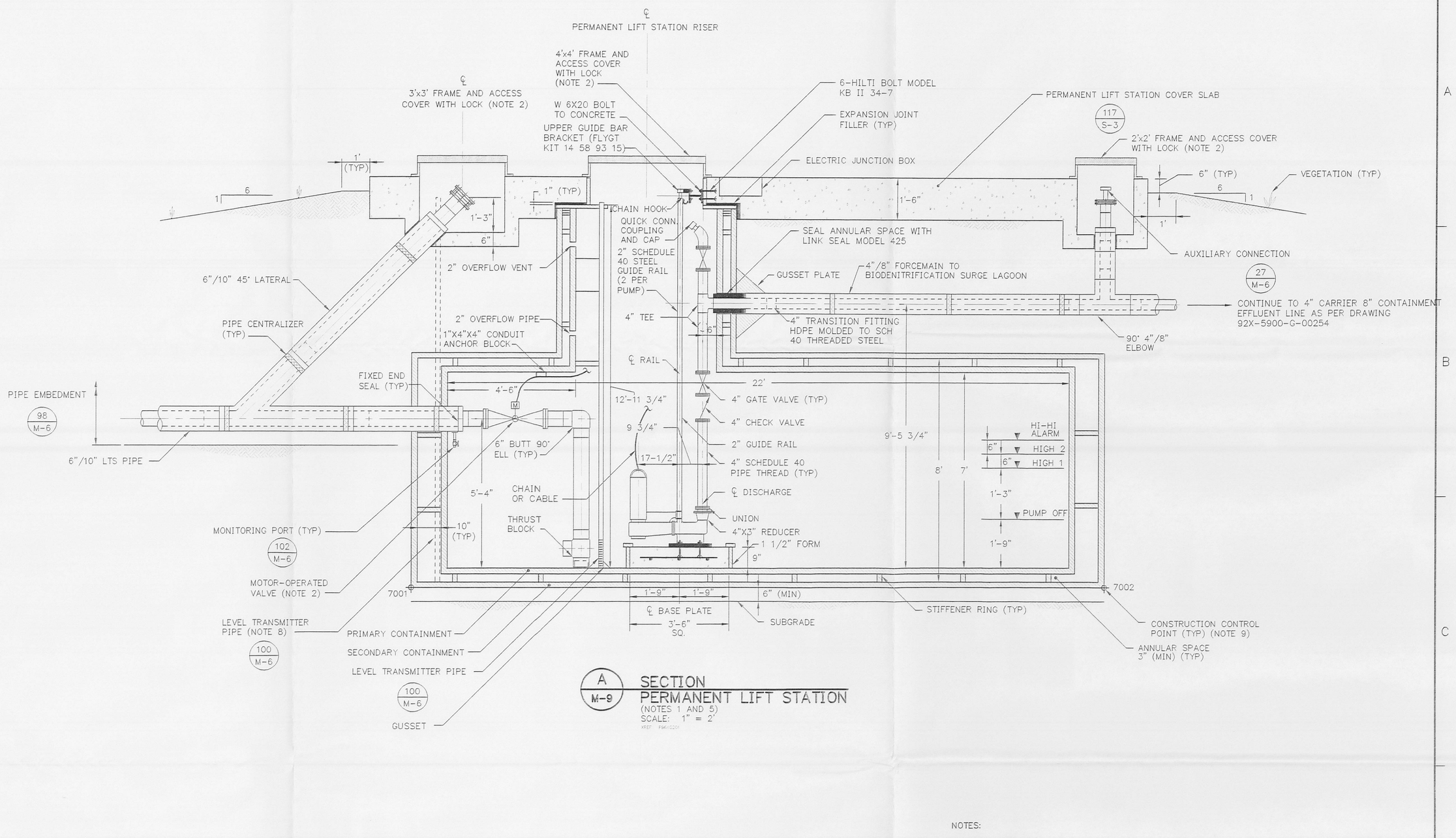
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95P5005028
FERMCO DRAWING NO.:	90-X-6000-M-00051
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G058
SHEET NO.:	M-6
REVISION NO.:	G

FINAL DESIGN PACKAGE

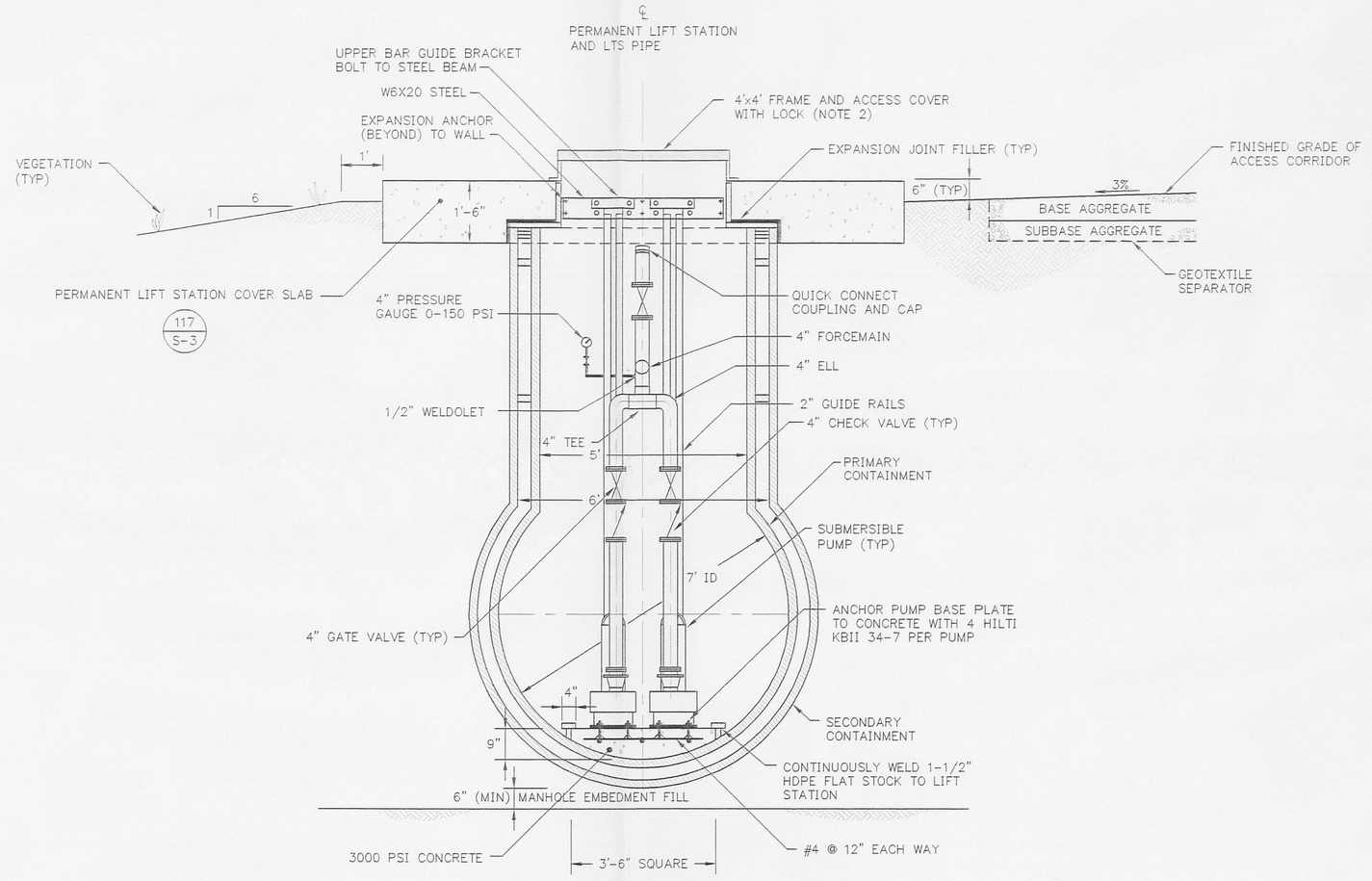
H:\F96-G058 Tue Oct 08 08:48:30 1996 J MILLER



108 / - SECTIONAL PLAN
PERMANENT LIFT STATION
(NOTES 1 AND 7)
SCALE: 1" = 2'



A M-9 SECTION
PERMANENT LIFT STATION
(NOTES 1 AND 5)
SCALE: 1" = 2'



B M-9 SECTION
PERMANENT LIFT STATION
(NOTE 6)
SCALE: 1" = 2'

NOTES:

1. PRIMARY CONTAINMENT, SECONDARY CONTAINMENT, PIPES, AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS.
2. FRAME, ACCESS COVERS, AND VALVES SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE OSDF SPECIFICATIONS.
3. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.
4. STIFFENER RINGS AROUND PRIMARY CONTAINMENT SHALL BE NOTCHED TO ALLOW LIQUID FLOW TO THE LEVEL TRANSMITTER PIPE.
5. SEE SEPARATE DESIGN PACKAGE FOR DESIGN OF SUBMERSIBLE PUMPS, PUMP VALVES, PERMANENT LIFT STATION PUMP ELECTRICAL DETAILS, AND FORCEMAIN TO BIODENITRIFICATION SURGE LAGOON.
6. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
7. PIPE CENTRALIZERS ARE NOT SHOWN IN THIS PLAN.
8. LEVEL TRANSMITTER PIPE IS SHOWN IN THIS SECTION FOR CLARITY.
9. CONSTRUCTION CONTROL POINTS TABLES ARE PROVIDED ON DRAWING G-38.

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	BJ	JRM	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 489

TITLE:
LEACHATE TRANSMISSION SYSTEM
LIFT STATION MECHANICAL DETAILS III

240017-34

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Rudolph Bonaparte
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8 Oct 1996
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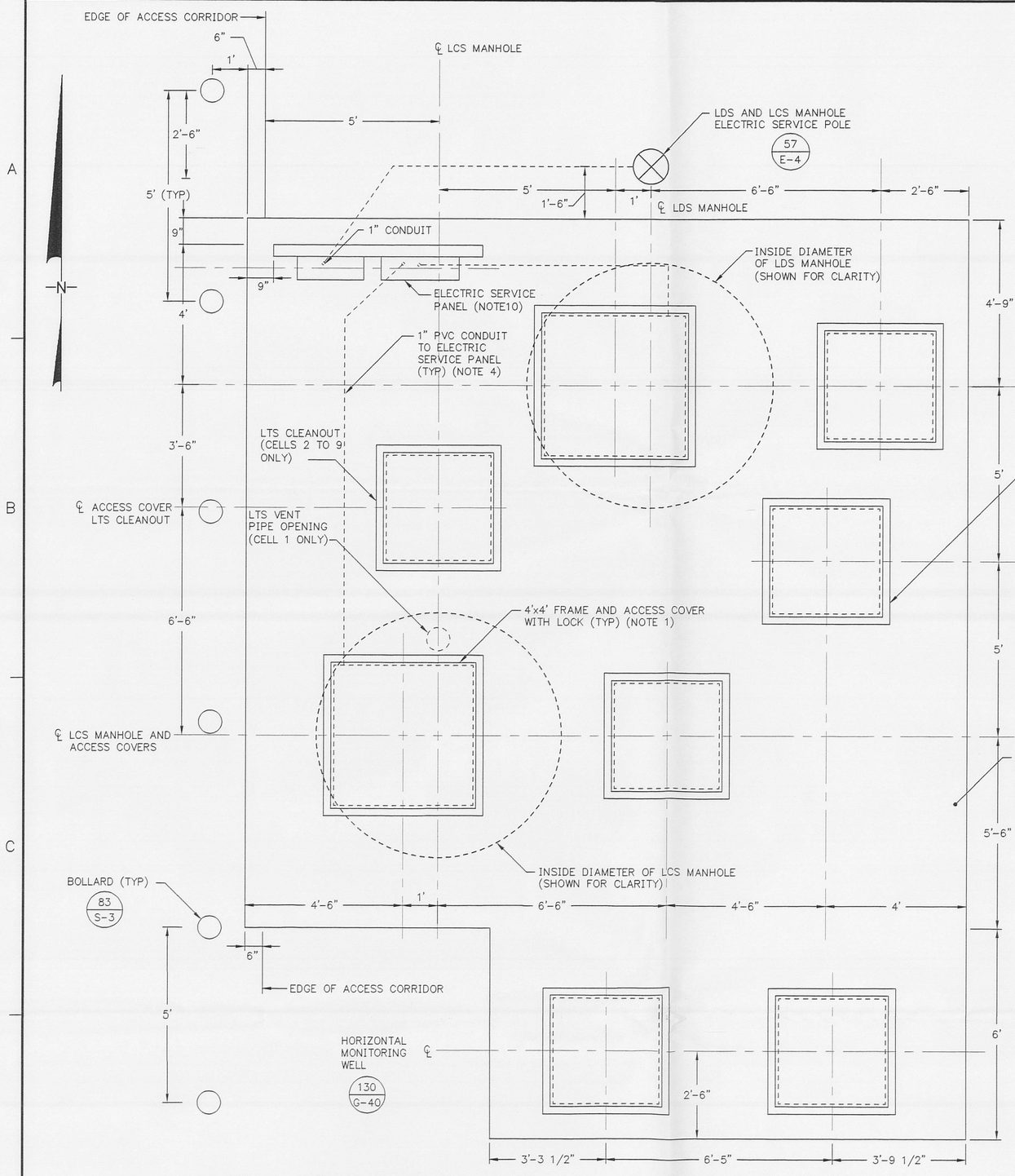
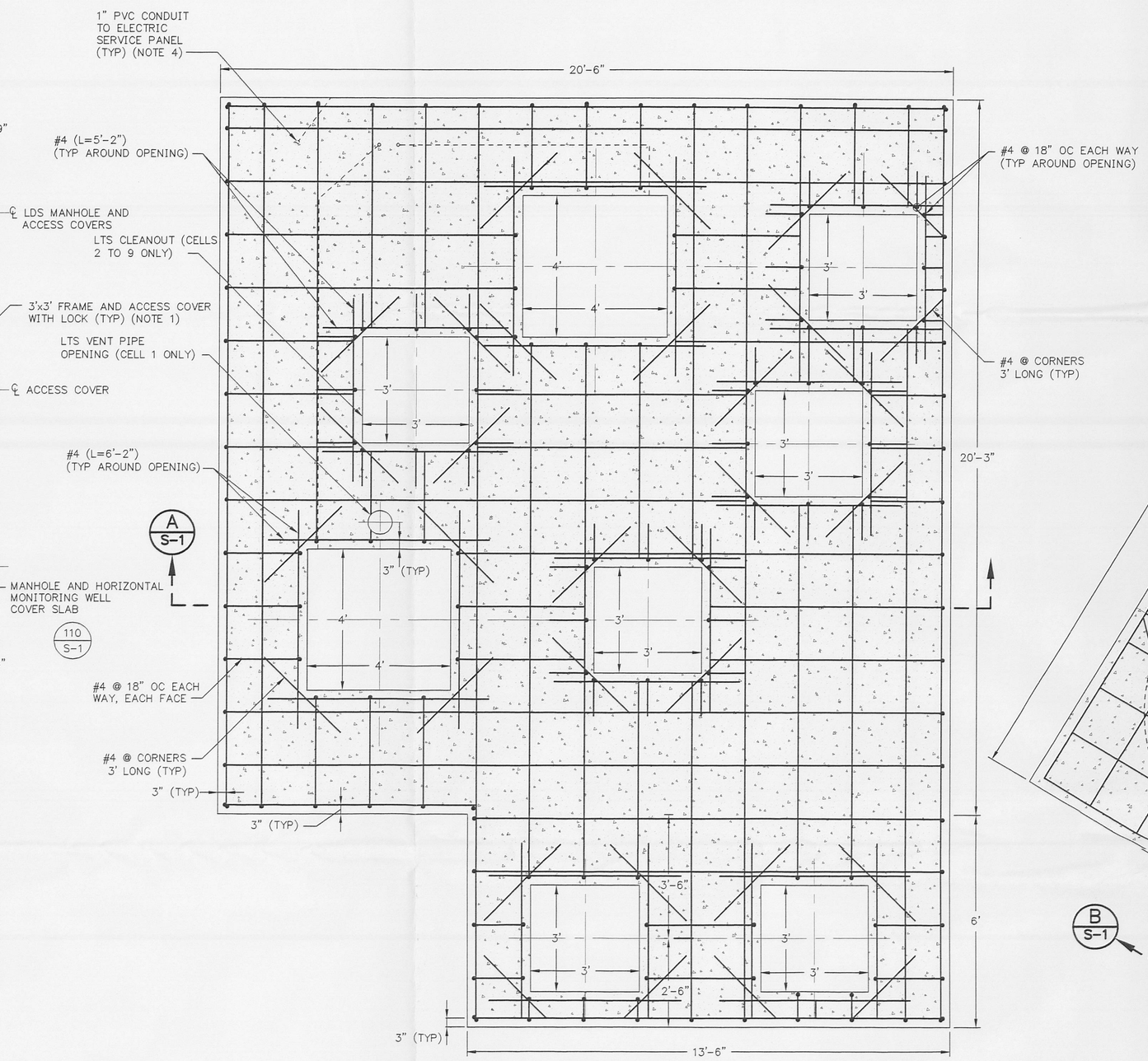
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95P5005028
FERMCO DRAWING NO.:	90X-6000-M-00052
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-0059
SHEET NO.:	M-9
REVISION NO.:	G

FINAL DESIGN PACKAGE

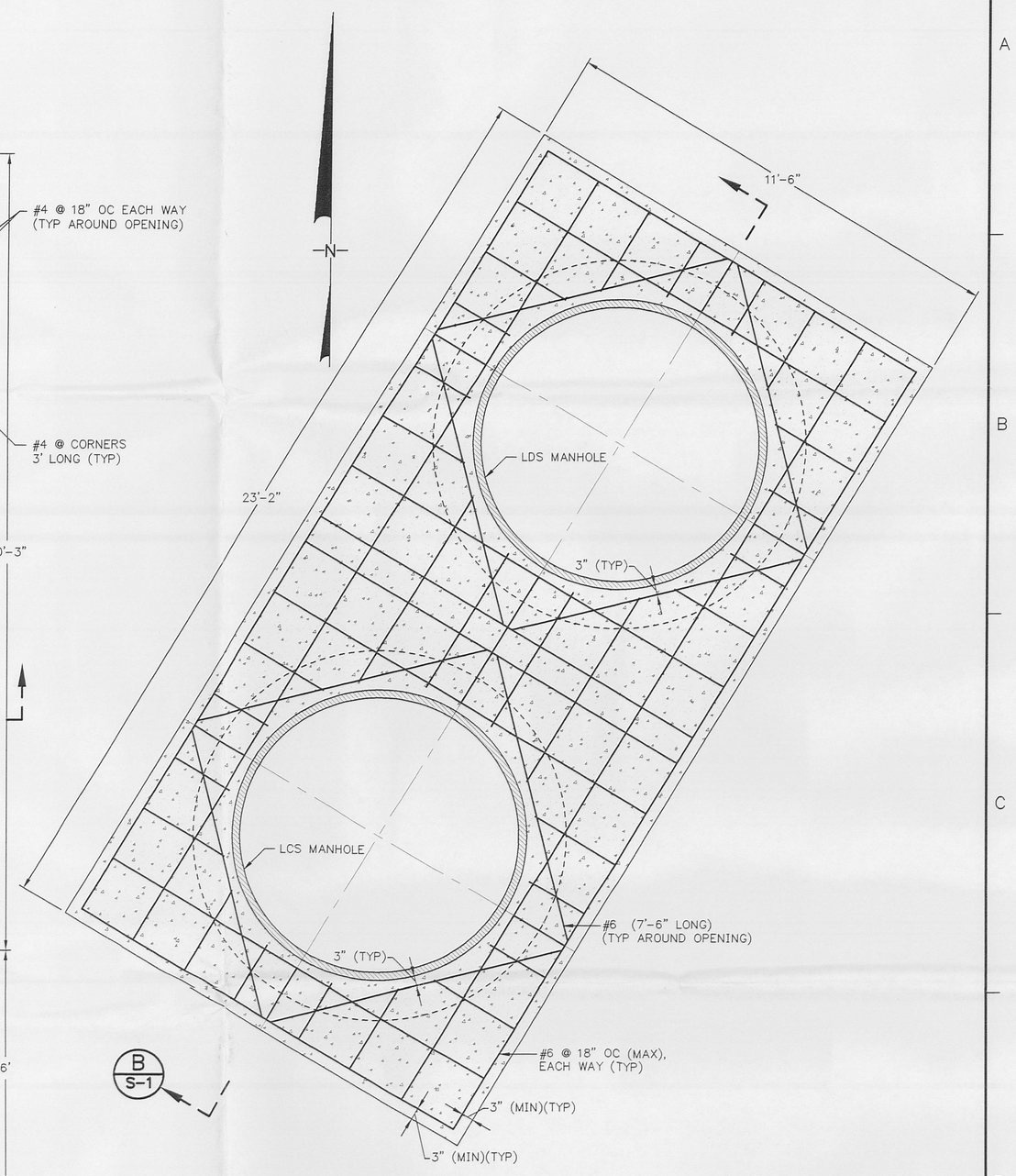
H:\F96-0059 Tue Oct 08 14:36:50 1996 J MILLER



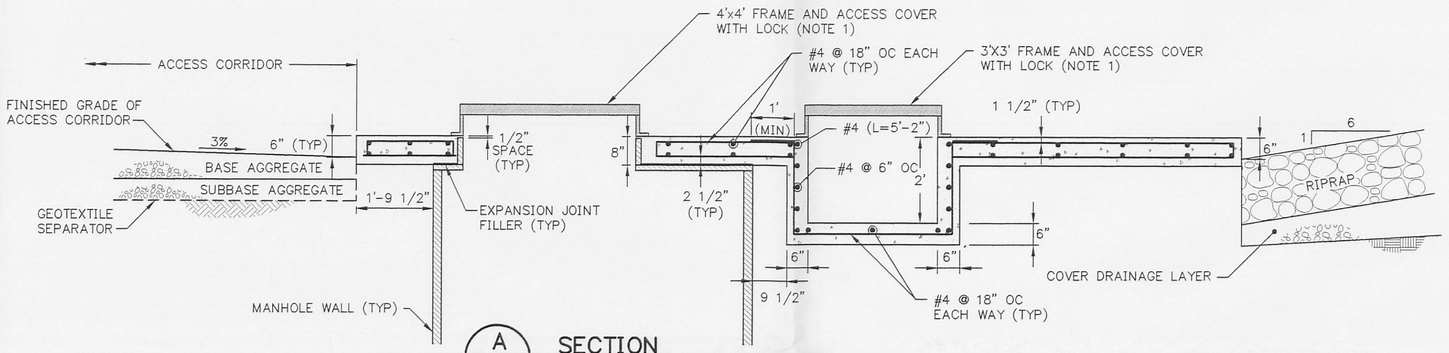
109 G-11 PLAN
MANHOLE AND HORIZONTAL MONITORING WELL COVER SLAB
SCALE: 1" = 2'
XREF: F96H0300



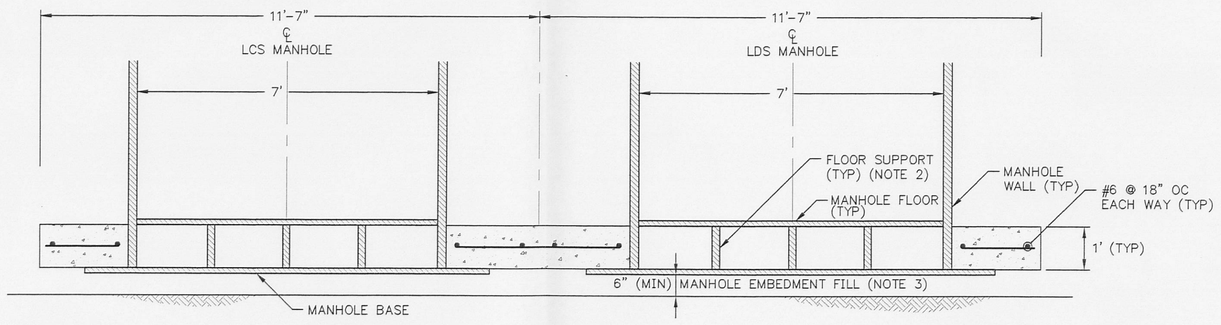
110 M-4 SECTIONAL PLAN
MANHOLE AND HORIZONTAL MONITORING WELL COVER SLAB
(NOTE 5)
SCALE: 1" = 2'
XREF: F96H0301



112 M-4 SECTIONAL PLAN
MANHOLE ANTIFLOTATION ANCHOR
(NOTES 7 AND 8)
SCALE: 1" = 2'
XREF: F96H0614



A S-1 SECTION
MANHOLE COVER SLAB
(NOTES 2, 5, AND 6)
SCALE: 1" = 2'
XREF: F96H0355



B S-1 SECTION
MANHOLE BASE AND ANTIFLOTATION ANCHOR
SCALE: 1" = 2'
XREF: F96H0382

NOTES:

1. FRAME AND ACCESS COVER SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE OSDF SPECIFICATIONS.
2. MANHOLE COVER SUPPORTS, AND MANHOLE FLOOR SUPPORTS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS.
3. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.
4. ELECTRICAL CONDUIT PENETRATIONS INTO MANHOLES SHALL BE IN ACCORDANCE WITH SECTIONS 02605 AND 16110 OF THE OSDF SPECIFICATIONS.
5. MANHOLE HDPE COVER SHALL BE TEMPORARILY SHORED DURING CONSTRUCTION OF MANHOLE COVER SLAB IN ACCORDANCE WITH SECTION 03100 OF THE OSDF SPECIFICATIONS.
6. VERTICAL CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE WITH SECTION 03100 OF THE OSDF SPECIFICATIONS.
7. MANHOLE FLOOR SUPPORTS ARE NOT SHOWN IN THIS PLAN.
8. SUBCONTRACTOR MAY PLACE CONCRETE AGAINST NATURAL GROUND WITH APPROVAL OF THE CONSTRUCTION MANAGER.
9. SEE SEPARATE DESIGN PACKAGE FOR THE DESIGN OF PERMANENT LIFT STATION PUMP AND ELECTRICAL DETAILS.
10. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE OSDF SPECIFICATIONS.
11. SUBCONTRACTOR SHALL INSTALL ELECTRICAL EQUIPMENT SUPPORTS IN ACCORDANCE WITH SECTION 16100 OF THE OSDF SPECIFICATIONS.

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	UMW	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 490

TITLE:
LEACHATE TRANSMISSION SYSTEM
STRUCTURAL DETAILS I
240017.35

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Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

STATE OF OHIO
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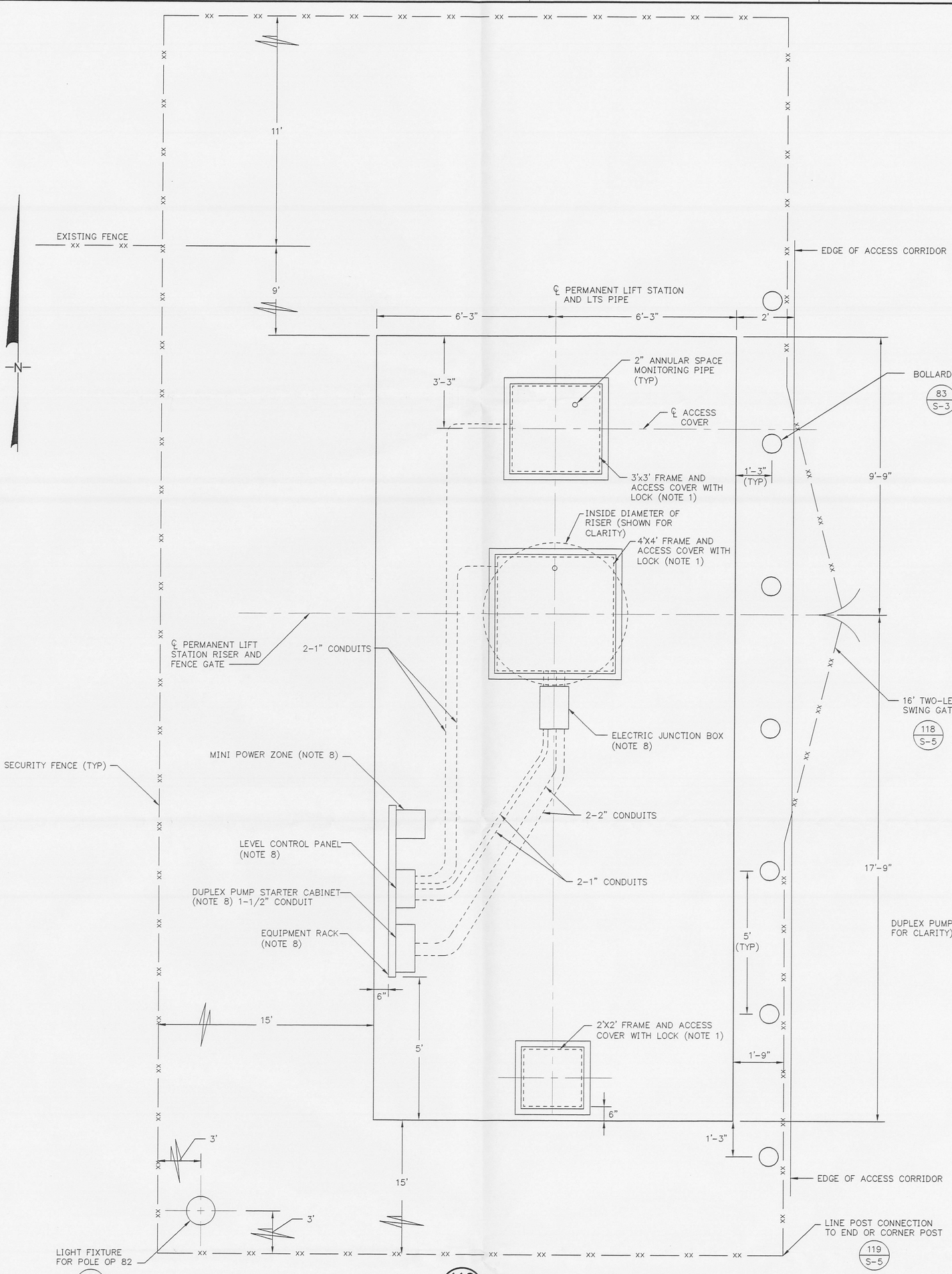
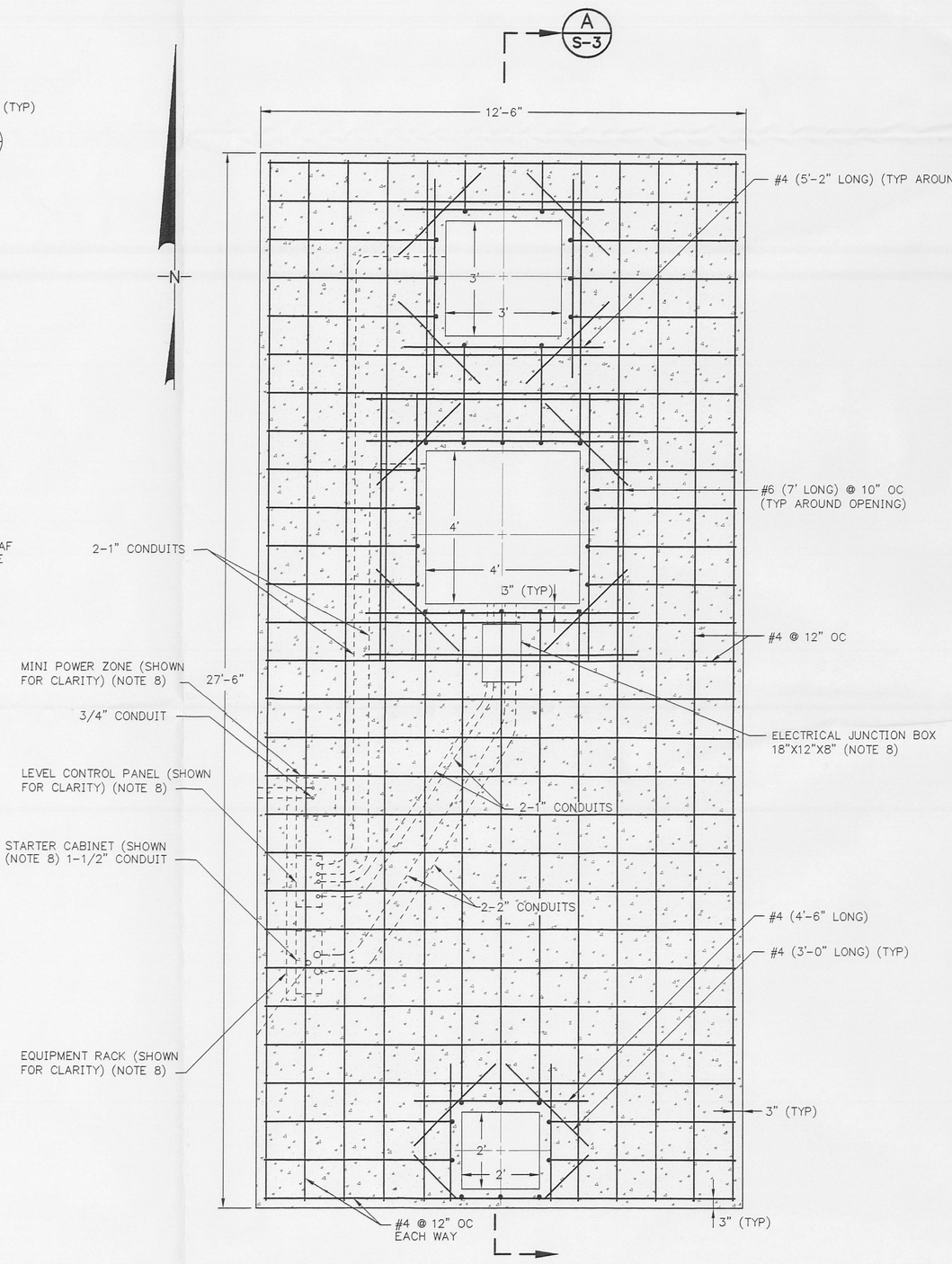
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95P5005028
FERMCO DRAWING NO.:	90X-6000-S-00053
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G148
SHEET NO.:	S-1
REVISION NO.:	G

FINAL DESIGN PACKAGE

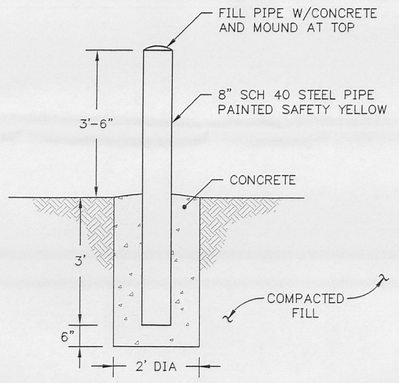
M:\GACADD\CVE3900\F-13\F96-G148 Tue Oct 08 13:45:20 1996 FERMCO\DUNN



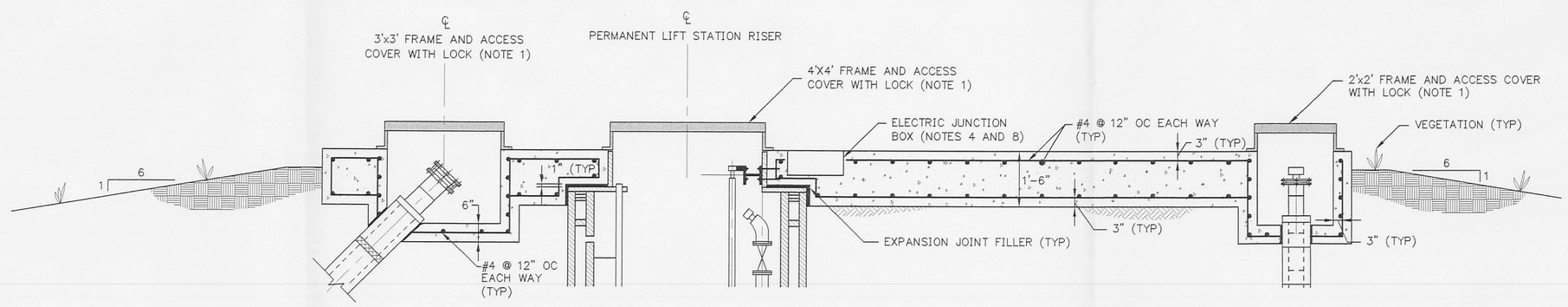
116 G-2 **PLAN**
PERMANENT LIFT STATION
SCALE: 1" = 2'
XREF: F96I0206



117 M-9 **SECTIONAL PLAN**
PERMANENT LIFT STATION COVER SLAB
SCALE: 1" = 2'
XREF: F96I0445



83 S-1 **DETAIL**
BOLLARD
(NOTE 9)
SCALE: 1" = 2'
XREF: F96I0509



A S-3 **SECTION**
PERMANENT LIFT STATION
SCALE: 1" = 2'
XREF: F96I0453

NOTES:

1. FRAME AND ACCESS COVER SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE OSDF SPECIFICATIONS.
2. HDPE GUSSETS, MANHOLE COVER SUPPORTS, AND MANHOLE FLOOR SUPPORTS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE OSDF SPECIFICATIONS.
3. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTION 02215 OF THE OSDF SPECIFICATIONS.
4. ELECTRICAL CONDUIT PENETRATIONS INTO MANHOLES SHALL BE IN ACCORDANCE WITH SECTIONS 02605 AND 16110 OF THE OSDF SPECIFICATIONS.
5. MANHOLE HDPE COVER SHALL BE TEMPORARILY SHORED DURING CONSTRUCTION OF MANHOLE COVER SLAB IN ACCORDANCE WITH SECTION 03100 OF THE OSDF SPECIFICATIONS.
6. VERTICAL CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE WITH SECTION 03100 OF THE OSDF SPECIFICATIONS.
7. SUBCONTRACTOR MAY PLACE CONCRETE AGAINST NATURAL GROUND WITH APPROVAL OF THE CONSTRUCTION MANAGER.
8. SEE SEPARATE DESIGN PACKAGE FOR THE DESIGN OF PERMANENT LIFT STATION PUMP AND ELECTRICAL DETAILS.
9. EXPOSED CONCRETE INCLUDING TOPS AND BASE OF BOLLARDS SHALL HAVE A 1-INCH CROWN TO PROMOTE DRAINAGE.

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G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA/DS	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

SCALE AS SHOWN

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 491

TITLE:
LEACHATE TRANSMISSION SYSTEM
STRUCTURAL DETAILS III
24007-36

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STATE OF OHIO
RUDOLPH BONAPARTE
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REGISTERED PROFESSIONAL ENGINEER

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

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1100 LAKE HEARN DRIVE
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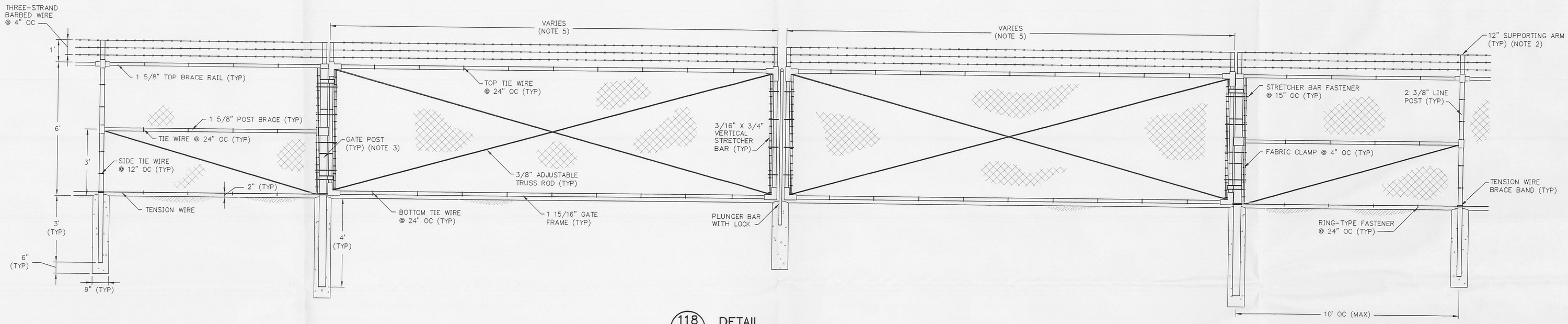
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-S-00054
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G155
SHEET NO.:	S-3
REVISION NO.:	G

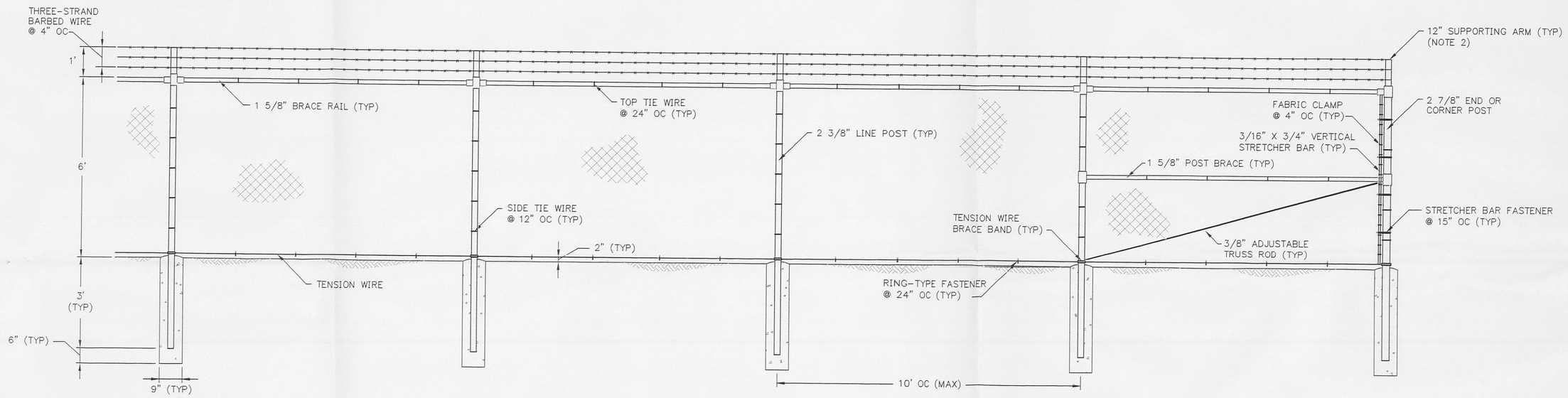
FINAL DESIGN PACKAGE

H:\F96-G155 Wed Oct 09 12:50:23 1996 J MILLER

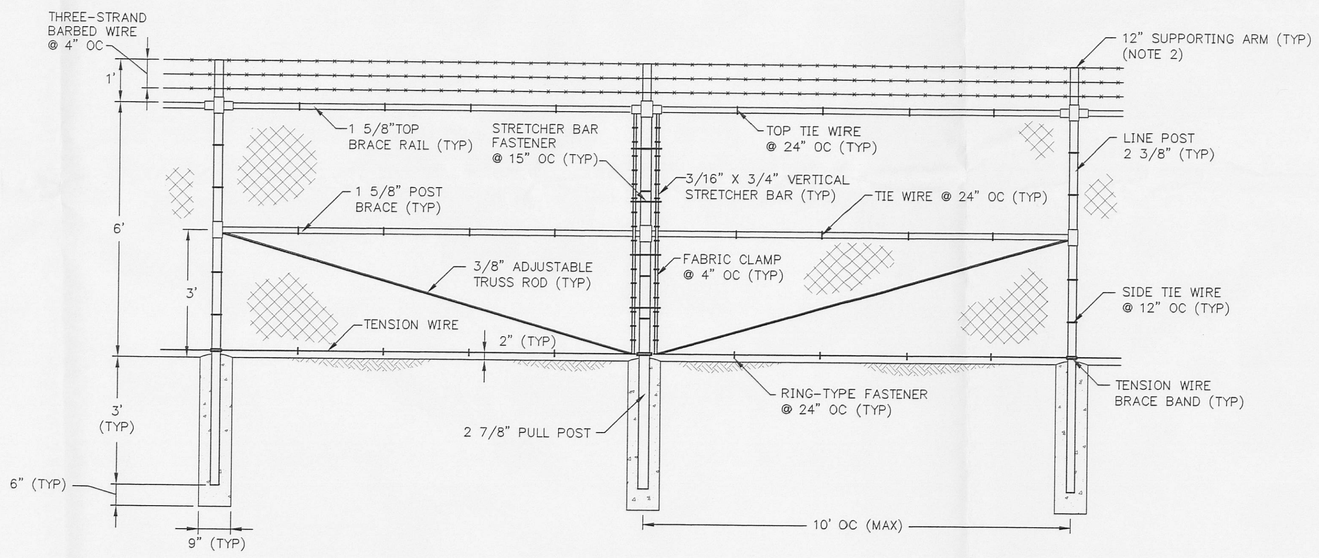
452



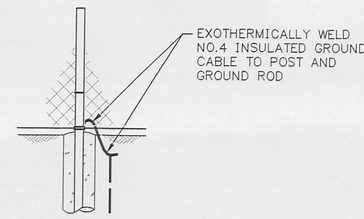
118 G-2 DETAIL
TWO-LEAF SWING GATE
SCALE: 1" = 2'
XREF: F96IG511



119 G-2 DETAIL
LINE POST CONNECTION TO END OR CORNER POST
SCALE: 1" = 2'
XREF: F96IG515



120 G-2 DETAIL
PULL POST
SCALE: 1" = 2'
XREF: F96IG513



121 - DETAIL
RIGHT-OF-WAY FENCE GROUND
SCALE: NTS
XREF: F96IG514

NOTES:

1. CHAIN LINK FENCE AND GATES SHALL BE IN ACCORDANCE WITH SECTION 02831 OF THE OSDF SPECIFICATIONS.
2. SUPPORTING ARMS SHALL SLOPE TO THE OUTSIDE OF THE FENCE AT 45 DEGREES FROM THE VERTICAL.
3. GATE POSTS SUPPORTING LEAF WIDTHS UP TO 6 FEET SHALL HAVE AN OUTSIDE DIAMETER OF 2 7/8 INCHES. GATE POSTS SUPPORTING LEAF WIDTHS GREATER THAN 6 FEET AND LESS THAN 13 FEET SHALL HAVE AN OUTSIDE DIAMETER OF 4 INCHES.
4. EXPOSED TOPS OF CONCRETE FOOTINGS SHALL HAVE A 1-INCH CROWN TO PROMOTE DRAINAGE.
5. SEE PLAN DRAWINGS FOR LOCATIONS OF CHAIN LINK FENCE AND GATES.
6. CHAIN LINK FENCE SHALL BE GROUNDED ON BOTH SIDES OF FENCE.

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G	11.10.96	FINAL SUBMITTAL TO EPA	DLVL	UMW	LA	KWC	RB
F	25.06.96	PREFINAL SUBMITTAL TO EPA					

OWNER/FACILITY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FERMCO Fernald Environmental Restoration Management Corporation
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY 492

TITLE:
CHAIN LINK FENCE AND GATE DETAILS
24007_37

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Rudolph Bonaparte
SIGNATURE
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STATE OF OHIO
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FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-S-00055
GEOSYNTEC PROJECT NO.:	GE3900-13.1
GEOSYNTEC DOCUMENT NO.:	F96-G165
SHEET NO.:	S-5
REVISION NO.:	G

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M:\GAACAD2\GE3900-13\F96-G165 Mon Oct 07 06:48:49 1996 UNSLAM