741

SYMBOLS LEGEND

EXISTING		PROPOSED
— x — x — x —	FENCE	— x — x — x —
— xx — xx —	SECURITY FENCE	— xx — xx —
	FENCE GATE	
	PAVED ROAD, SIDEWALK, OR PARKING LOT	
	UNPAVED ROAD, SIDEWALK, OR PARKING LOT	
	CENTERLINE OR BASELINE	
	LEACHATE TRANSMISSION SYSTEM GRAVITY LINE	
	LEACHATE TRANSMISSION SYSTEM TEMPORARY GRAVITY LINE	— T G L — T G L —
	WATER TABLE OR PIEZOMETRIC SURFACE	
	VEGETATION	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	TRAILER OR BUILDING	
	POST	
	SLOPE INDICATOR	CREST / TOE
	CONSTRUCTION CONTROL POINT	
	CULVERT	
	POWER POLE	
	PIPELINE MARKER SIGN	
	CLEANOUT	
	LEACHATE TRANSMISSION SYSTEM MANHOLES (LDS AND LCS) AND HORIZONTAL MONITORING WELL COVER SLAB	

CONTOUR LEGEND

EXISTING		PROPOSED
— 590 —	EXISTING GROUND ELEVATION (FEET)	
	FINISHED GRADE ELEVATION (FEET)	— 590 —

UTILITY LEGEND

EXISTING		PROPOSED
— UE —	ELECTRICAL DUCT	
— T —	TELEPHONE	
— FG —	FUEL GAS	
— FT —	FILTRATE OR EFFLUENT	
— OHE —	OVERHEAD ELECTRIC	
— UG —	UNDERGROUND UTILITY	
— UGE —	UNDERGROUND CONCRETE DUCT BANK OR DIRECT BURIAL CABLE	
— DW —	DRINKING WATER	
— SN —	SANITARY	

ABBREVIATIONS

ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BOP	BOTTOM OF PIPE
℄	CENTERLINE
CMP	CORRUGATED METAL PIPE
DIA	DIAMETER
DOE	DEPARTMENT OF ENERGY
DOT	DEPARTMENT OF TRANSPORTATION
EL	ELEVATION
HDPE	HIGH DENSITY POLYETHYLENE
ID	INSIDE DIAMETER
IPS	IRON PIPE SIZE
LCS	LEACHATE COLLECTION SYSTEM
LCS-M*	LEACHATE COLLECTION SYSTEM MANHOLE DESIGNATION
LDS	LEAK DETECTION SYSTEM
LDS-M*	LEAK DETECTION SYSTEM MANHOLE DESIGNATION
LIC	LEVEL INDICATOR CONTROLLER
LT	LEVEL TRANSMITTER
LTS	LEACHATE TRANSMISSION SYSTEM
mA	MILLIAMP
(MAX)	MAXIMUM
(MIN)	MINIMUM
NAD	NORTH AMERICAN DATUM
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NO.	NUMBER
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OSDF	ON-SITE DISPOSAL FACILITY
P	PANEL
PVC	POLY VINYL CHLORIDE
RGS	RIGID GALVANIZED STEEL
(TYP)	TYPICAL
WAC	WASTE ACCEPTANCE CRITERIA
WWF	WELDED WIRE FABRIC
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLTS DIRECT CURRENT
Y	RELAY

DETAIL AND SECTION IDENTIFICATION LEGEND

SEQUENTIAL DETAIL NUMBER — 29
SHEET ON WHICH ABOVE DETAIL IS PRESENTED — M-6A

SEQUENTIAL DETAIL NUMBER — 29
SHEET ON WHICH ABOVE DETAIL IS REFERENCED — M-5A

DETAIL
SAMPLING AND MONITORING PORTS
SCALE: 1" = 2'
F95SA100

EXAMPLE: DETAIL NUMBER 29, WHICH IS PRESENTED ON SHEET M-6A, WAS REFERENCED ON SHEET M-5A.

C M-5A

C M-5A — SECTION LETTER — SHEET ON WHICH ABOVE SECTION IS PRESENTED

SECTION LETTER — C
SHEET ON WHICH ABOVE SECTION IS REFERENCED — M-5A

SECTION
LCS MANHOLE AT CELLS 2 AND 3
SCALE: 1" = 2'
F95SA100

EXAMPLE: SECTION LETTER "C", WHICH IS PRESENTED ON SHEET M-5A, WAS REFERENCED ON SHEET M-5A.

23

FOR INFORMATION ONLY

GENERAL NOTES

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. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS, WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY.
5. SURVEY COORDINATES AND DIMENSIONS SHOWN SHALL BE USED FOR CONSTRUCTION. DRAWING SHALL NOT BE SCALED TO OBTAIN LOCATIONS AND DIMENSIONS.
6. THE TERM "IMPACTED MATERIAL" REFERS TO THAT MATERIAL MEETING OSDF WASTE ACCEPTANCE CRITERIA (WAC) DESTINED FOR OSDF DISPOSAL.
7. THE TERM "SUBCONTRACTOR" REFERS TO THE PARTY SUBCONTRACTED BY FERMCO TO CONSTRUCT THE LEACHATE CONVEYANCE SYSTEM FOR THE OSDF.
8. THIS LEGEND AND SYMBOLS DRAWING APPLIES TO THE FOLLOWING DRAWINGS: G-8A; G-8B; G-8C; E-4A; E-7A; M-2A; M-4A; M-5A; M-6A; M-6B; M-9A; S-1A; S-3A; AND S-5B.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	LA	JRM	BJ	KWC	RB

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

CLIENT:
FERMCO — FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
LEACHATE CONVEYANCE SYSTEM

TITLE:
LEGEND AND SYMBOLS

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

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

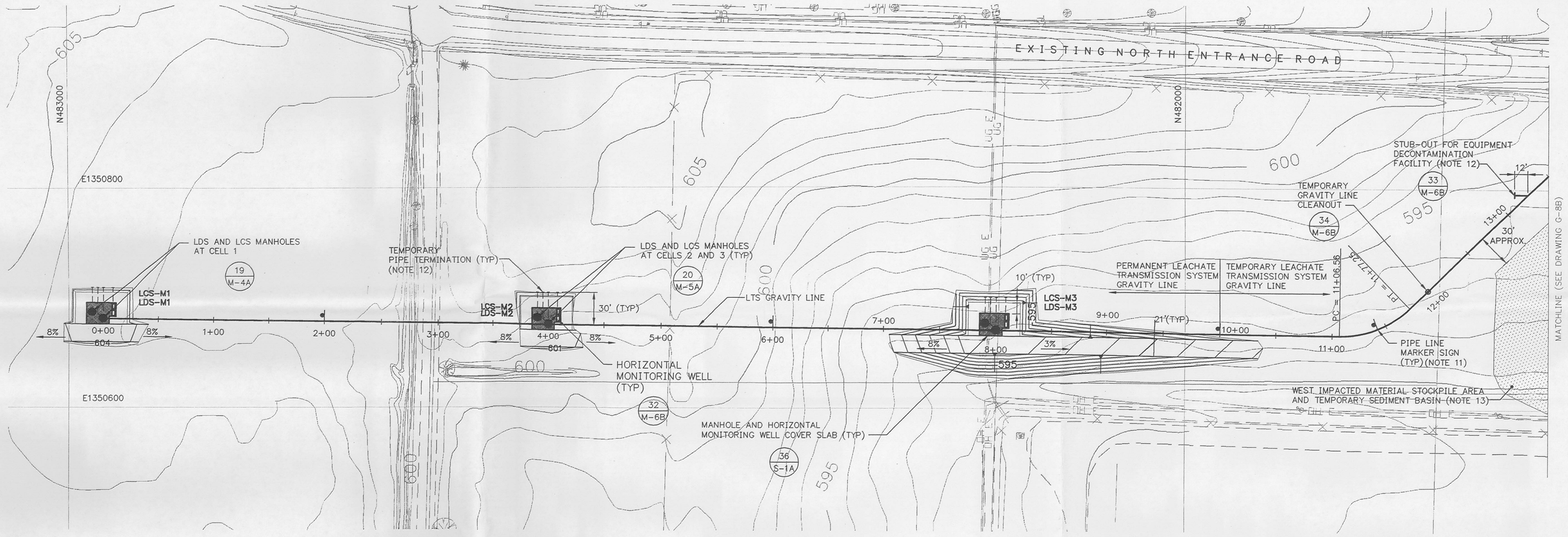
STATE OF OHIO — RUDOLPH BONAPARTE — E-56579 — REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95P5005028
FERMCO DRAWING NO.:	90X-6000-X-00056
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2017
SHEET NO.:	X-2A
REVISION NO.:	0

CERTIFIED FOR CONSTRUCTION

M:\GACADD\GE3900\22\F96-2017 Mon Oct 07 13:13:04 1996 URGOLAW



1 PLAN
LEACHATE TRANSMISSION SYSTEM
SCALE: 1" = 50'

LEGEND

600	EXISTING GROUND ELEVATION (FEET)
600	FINISHED GROUND ELEVATION (FEET)
	POWER POLE
	PIPE LINE MARKER SIGN
	TEMPORARY GRAVITY LINE CLEANOUT
	LEACHATE TRANSMISSION SYSTEM MANHOLES (LDS AND LCS) AND HORIZONTAL MONITORING WELL COVER SLAB

CURVE REPORT - LTS GRAVITY LINE

Project: Fermco
Horizontal Alignment Station and Curve Report.
Alignment: LTS-line Desc: LEACHATE TRANSMISSION SYSTEM

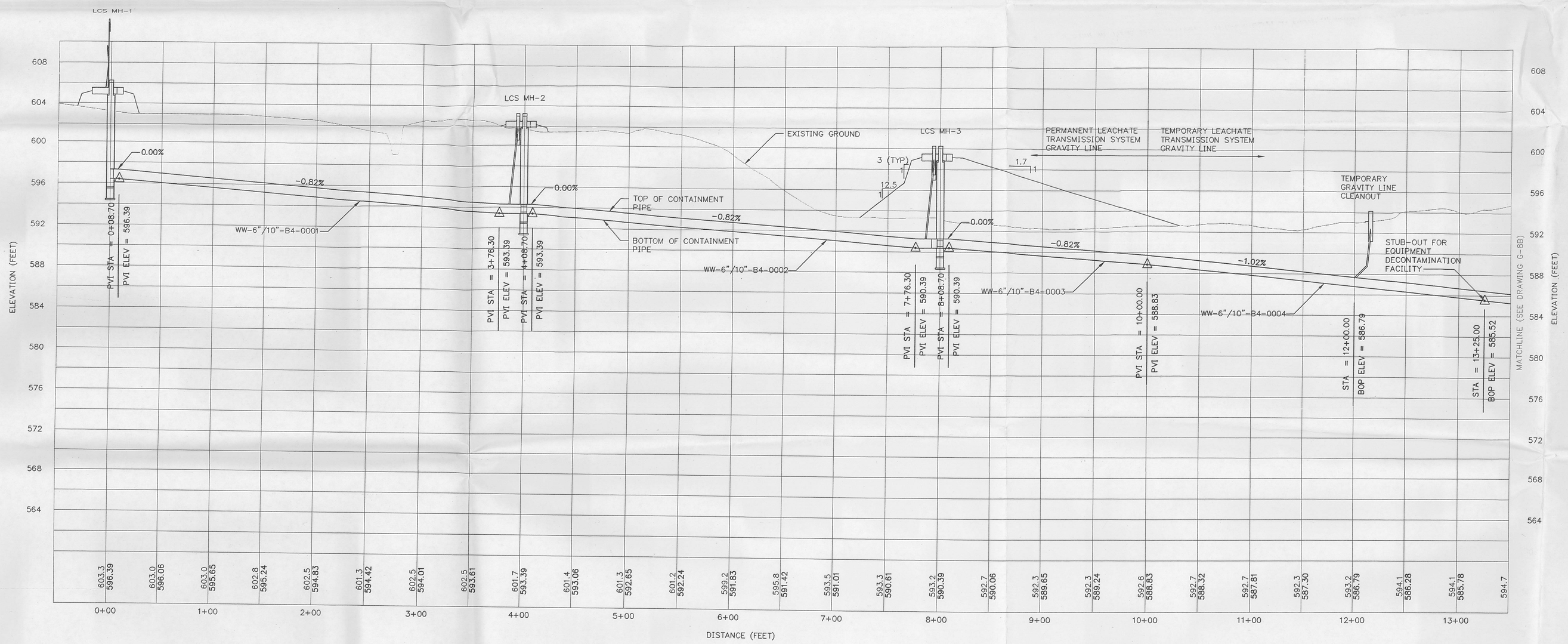
Desc.	Station	Spiral/Curve Data		Northing	Easting
PI	0+00			482969.33	1350680.21
	Length:	1143.84	Course:	S 00-42-01 W	
PI	11+43.84			481825.58	1350666.23
	Length:	286.98	Course:	S 44-17-59 E	
	Delta:	45-00-00			
		Tangent Data			
	0+00			482969.33	1350680.21
	11+06.56			481862.85	1350666.68
	Length:	1106.56	Course:	S 00-42-01 W	
		Circular Curve Data			
PC	11+06.56			481862.85	1350666.68
RP				481861.75	1350756.68
PT	11+77.25			481798.90	1350692.26
	Delta:	45-00	Type:	LEFT	
	Radius:	90.00	DOC:	63-40	
	Length:	70.69	Tangent:	37.28	
	Mid-Ord:	6.85	External:	7.42	
	Chord:	68.88	Course:	S 21-47-59 E	
	Es:	7.42			
PI	14+26.95			481620.19	1350866.66
	Length:	1903.94	Course:	S 01-33-34 W	
	Delta:	45-51-33			

FOR INFORMATION ONLY

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. LOCATION AND ELEVATION OF EXISTING ACTIVE AND ABANDONED UNDERGROUND UTILITIES SHOWN ON CONSTRUCTION DRAWINGS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE SUBCONTRACTOR PRIOR TO START OF CONSTRUCTION. SUBCONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SUPPORT AS REQUIRED TO MAINTAIN AND PROTECT EXISTING ACTIVE UTILITIES. VERIFY THAT UTILITIES IDENTIFIED BY THE CONSTRUCTION MANAGER AS ABANDONED ARE SUCH PRIOR TO EXCAVATION. REMOVE ABANDONED UTILITIES WITHIN LIMIT OF EXCAVATION.
5. SUBCONTRACTOR SHALL FIELD VERIFY EXISTING TOPOGRAPHY PRIOR TO START OF CONSTRUCTION.
6. LEACHATE TRANSMISSION SYSTEM TEMPORARY GRAVITY LINE SHALL HAVE A MINIMUM SOIL COVER OF 36 INCHES.
7. CONSTRUCTION CONTROL POINTS FOR MANHOLES ARE PROVIDED ON DRAWINGS M-4A AND M-5A.
8. CLEARING ZONE SHALL NOT EXCEED 15 FEET FROM LIMIT OF EXCAVATION WORK.
9. CONSTRUCTION CONTROL POINTS FOR HORIZONTAL MONITORING WELLS ARE PROVIDED ON DRAWING M-6B.
10. PIPING AND INSTRUMENTATION CODE INFORMATION ARE PROVIDED ON DRAWING M-2A.
11. SUBCONTRACTOR SHALL INSTALL PIPE LINE MARKER SIGNS AT THE LOCATIONS SHOWN ON CONSTRUCTION DRAWINGS. PIPE LINE MARKER SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH DRAWING 92X-5900-G-00257.
12. SUBCONTRACTOR SHALL SURVEY AND RECORD LOCATION OF TEMPORARY END OF PIPE AND PROVIDE ABOVE GROUND MARKER FOR FUTURE REFERENCE IN ACCORDANCE WITH SECTION 02100 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS. SUBCONTRACTOR SHALL PROTECT TEMPORARY END OF PIPE TO PREVENT LIQUID, SOIL OR DEBRIS FROM ENTERING PIPE AT ALL TIMES DURING INSTALLATION AND SUBSEQUENT EXCAVATION FOR FUTURE EXTENSION OF PIPE.

    ARE PART OF A SEPARATE DESIGN PACKAGE. THE APPROXIMATE AREA OF THESE STRUCTURES IS SHOWN FOR CLARITY. SEE REFERENCE DRAWING 75X-5500-G-00441.
14. REMOVE ABANDONED UTILITIES WITHIN LIMIT OF EXCAVATION.



2 PROFILE
LEACHATE TRANSMISSION SYSTEM
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'

CERTIFIED FOR CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	LA	JRM	BJ	KWC	RB

SCALE IN FEET: 5 2.5 0 5 10 — 50 25 0 50 100

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

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
LEACHATE CONVEYANCE SYSTEM

TITLE:
LEACHATE TRANSMISSION SYSTEM
PLAN AND PROFILE DATA I

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-00057
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2009
SHEET NO.:	G-8A
REVISION NO.:	0

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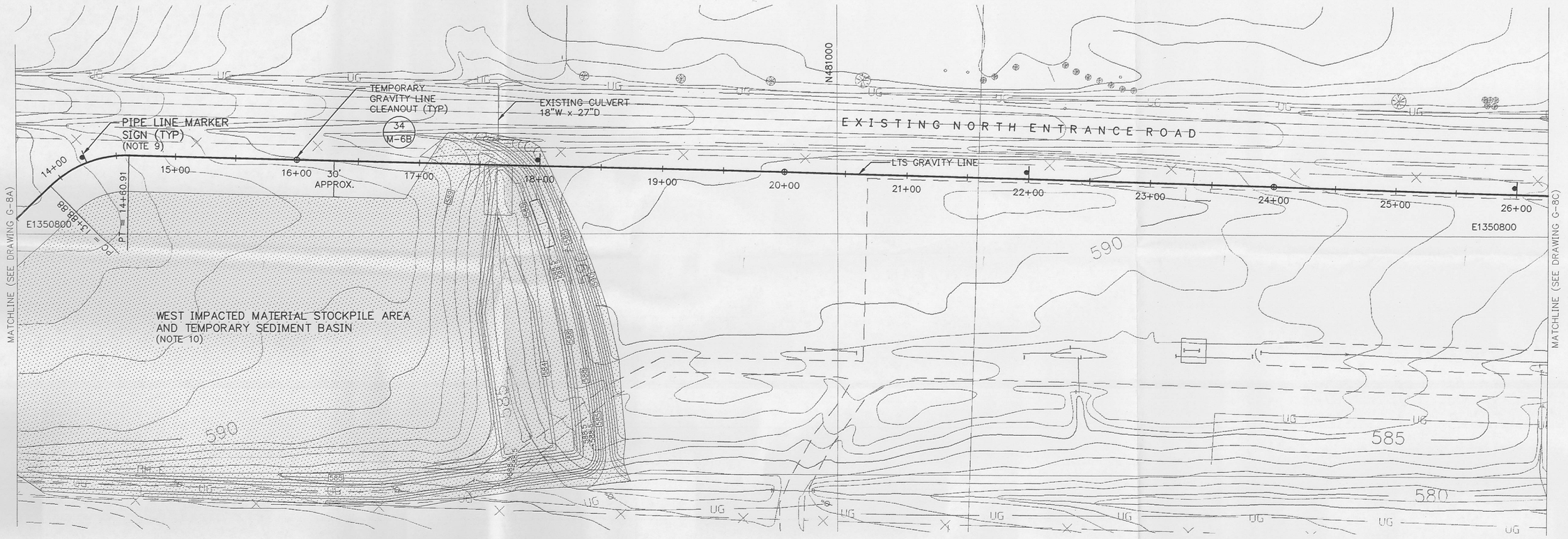
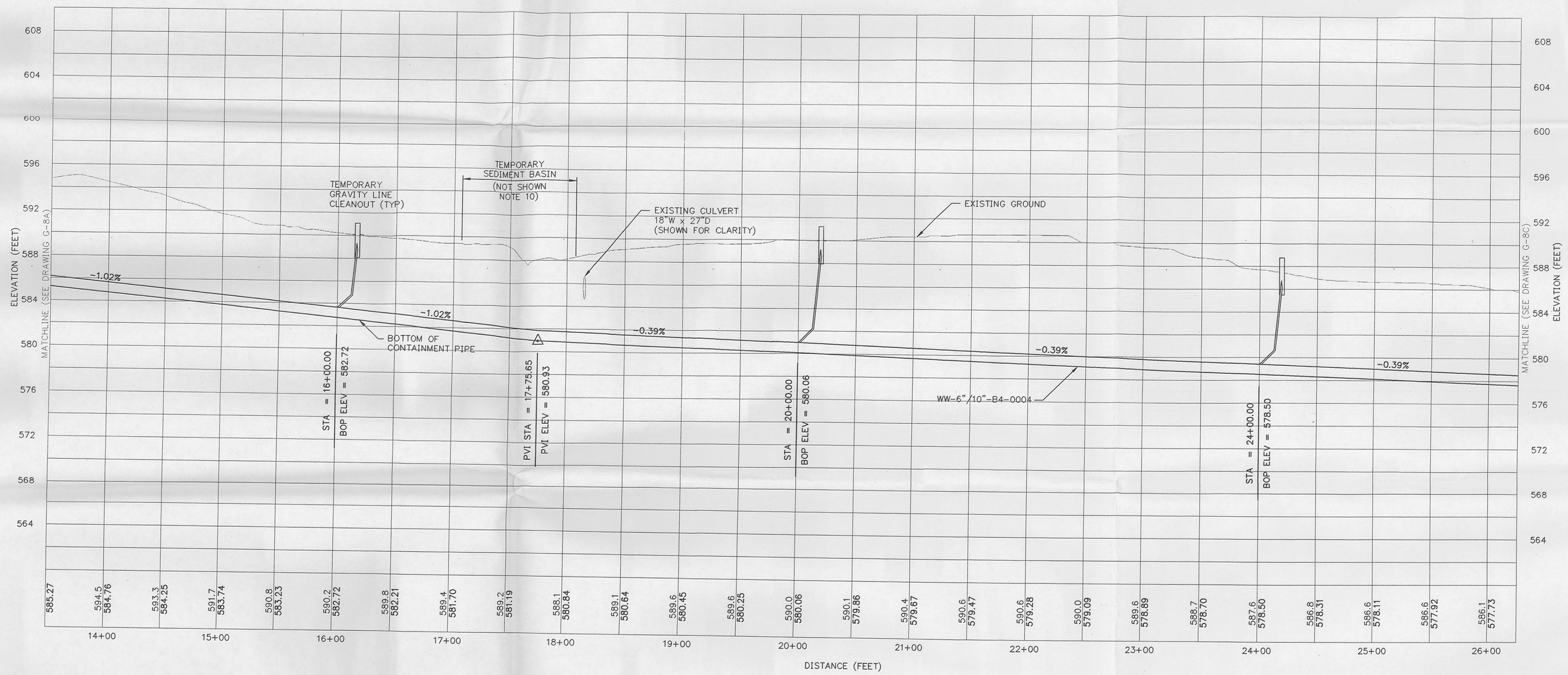


3 / - PLAN
LEACHATE TRANSMISSION SYSTEM
SCALE: 1" = 50'



4 / - PROFILE
LEACHATE TRANSMISSION SYSTEM
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'

LEGEND

—600—	EXISTING GROUND ELEVATION (FEET)
—600—	FINISHED GROUND ELEVATION (FEET)
	POWER POLE
	PIPE LINE MARKER SIGN
	TEMPORARY GRAVITY LINE CLEANOUT

CURVE REPORT - LTS GRAVITY LINE

Project: Fermco
Horizontal Alignment Station and Curve Report.
Alignment: LTS-line Desc: LEACHATE TRANSMISSION SYSTEM

Desc.	Station	Spiral/Curve Data		Northing	Easting
PI	14+26.95			481620.19	1350866.66
	Length:	1903.94	Course:	S 01-33-34 W	
	Delta:	45-51-33			
		Tangent Data			
	11+77.25			481798.90	1350692.26
	13+88.88			481647.44	1350840.07
	Length:	211.63	Course:	S 44-17-59 E	
		Circular Curve Data			
PC	13+88.88			481647.44	1350840.07
RP				481584.58	1350775.65
PT	14+60.91			481582.13	1350865.62
	Delta:	45-52	Type:	RIGHT	
	Radius:	90.00	DOC:	63-40	
	Length:	72.04	Tangent:	38.07	
	Mid-Ord:	7.11	External:	7.72	
	Chord:	70.13	Course:	S 21-22-13 E	
	Es:	7.72			
PI	33+26.78			479716.95	1350814.85
	Length:	281.61	Course:	S 45-42-01 W	
	Delta:	44-08-27			
		Tangent Data			
	14+60.91			481582.13	1350865.62
	32+90.29			479753.43	1350815.84

FOR INFORMATION ONLY

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. LOCATION AND ELEVATION OF EXISTING ACTIVE AND ABANDONED UNDERGROUND UTILITIES SHOWN ON CONSTRUCTION DRAWINGS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE SUBCONTRACTOR PRIOR TO START OF CONSTRUCTION. SUBCONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SUPPORT AS REQUIRED TO MAINTAIN AND PROTECT EXISTING ACTIVE UTILITIES. VERIFY THAT UTILITIES IDENTIFIED BY THE CONSTRUCTION MANAGER AS ABANDONED ARE SUCH PRIOR TO EXCAVATION. REMOVE ABANDONED UTILITIES WITHIN LIMIT OF EXCAVATION.
5. SUBCONTRACTOR SHALL FIELD VERIFY EXISTING TOPOGRAPHY PRIOR TO START OF CONSTRUCTION.
6. LEACHATE TRANSMISSION SYSTEM TEMPORARY GRAVITY LINE SHALL HAVE A MINIMUM SOIL COVER OF 36 INCHES.
7. CLEARING ZONE SHALL NOT EXCEED 15 FEET FROM LIMIT OF EXCAVATION WORK.
8. PIPING AND INSTRUMENTATION CODE INFORMATION ARE PROVIDED ON DRAWING M-2A.
9. SUBCONTRACTOR SHALL INSTALL PIPE LINE MARKER SIGNS AT THE LOCATIONS SHOWN ON CONSTRUCTION DRAWINGS. PIPE LINE MARKER SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH DRAWING 92X-5900-G-00257.
10. CONSTRUCTION OF WEST IMPACTED MATERIAL STOCKPILE AND TEMPORARY SEDIMENT BASIN ARE PART OF A SEPARATE DESIGN PACKAGE. THE APPROXIMATE AREA OF THESE STRUCTURES IS SHOWN FOR CLARITY. SEE REFERENCE DRAWING 75X-5500-G-00441.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	LA	JRM	BJ	KWC	RB

5 2.5 0 5 10 SCALE IN FEET
50 25 0 50 100 SCALE IN FEET

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

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
LEACHATE CONVEYANCE SYSTEM

TITLE:
LEACHATE TRANSMISSION SYSTEM
PLAN AND PROFILE DATA II

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.:	95P5005028
FERMCO DRAWING NO.:	90X-6000-G-00058
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2009
SHEET NO.:	G-8B
REVISION NO.:	0

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CERTIFIED FOR CONSTRUCTION

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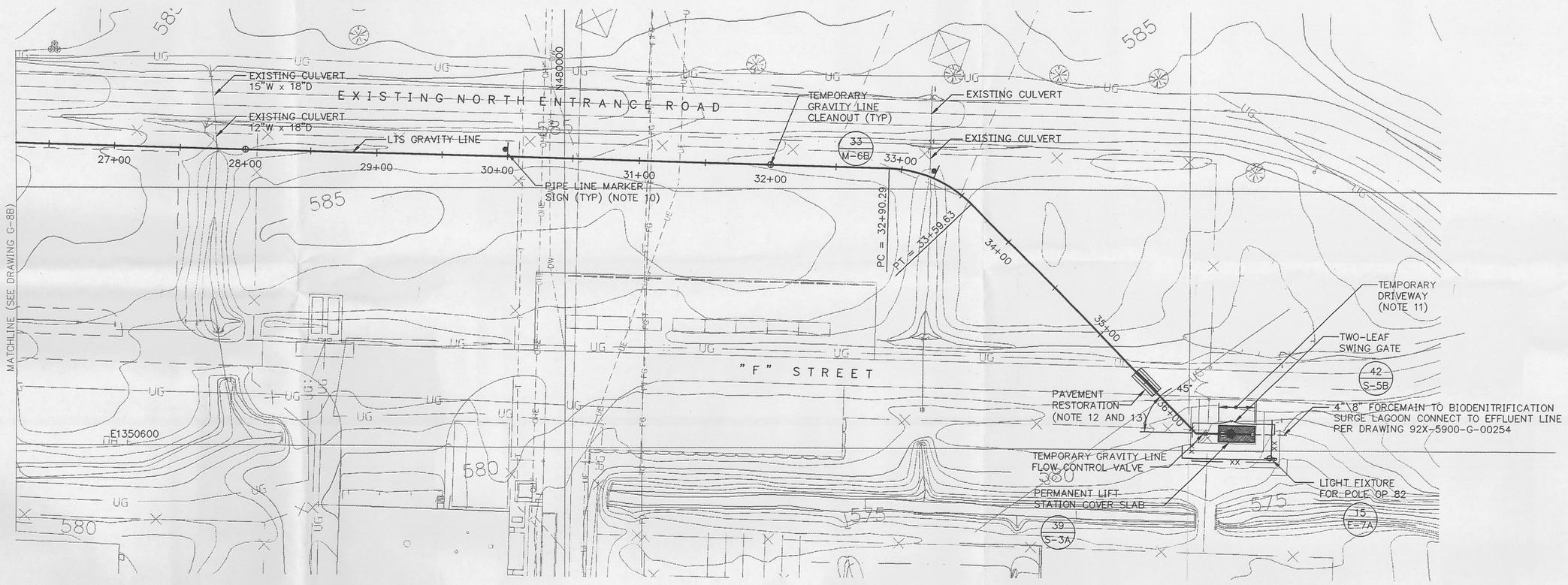


5 / - PLAN
LEACHATE TRANSMISSION SYSTEM
SCALE: 1" = 50'

LEGEND

600	EXISTING GROUND ELEVATION (FEET)
600	FINISHED GROUND ELEVATION (FEET)
	POWER POLE
	PIPE LINE MARKER SIGN
	TEMPORARY GRAVITY LINE CLEANOUT
xx xx xx	SECURITY FENCE
	PERMANENT LIFT STATION COVER SLAB

CURVE REPORT - LTS GRAVITY LINE

Project: Fermco
Horizontal Alignment Station and Curve Report.
Alignment: LTS-line Desc: LEACHATE TRANSMISSION SYSTEM

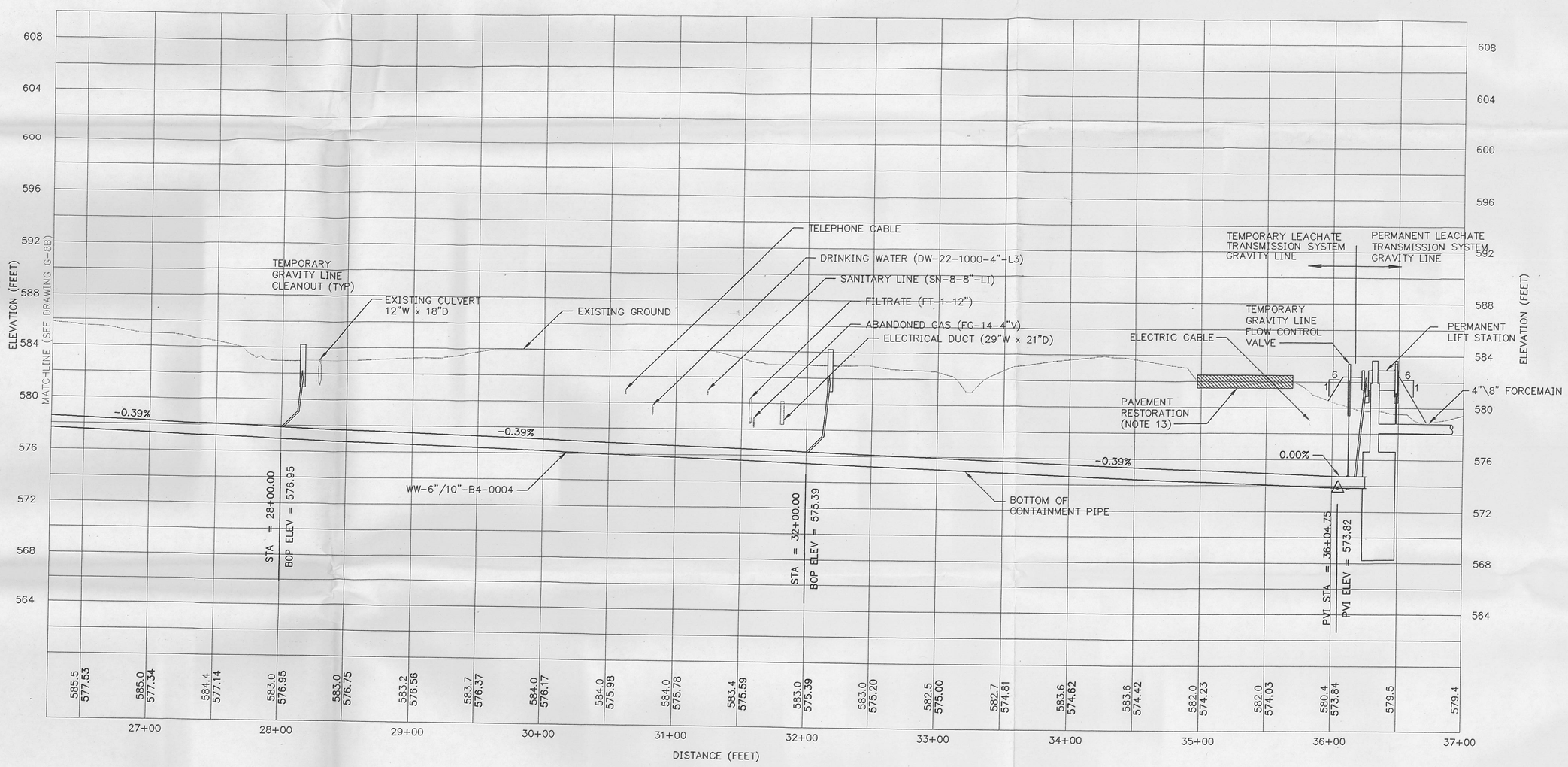
Desc.	Station	Spiral/Curve Data		Northing	Easting
PI	33+26.78			479716.95	1350814.85
	Length:	281.61	Course:	S 45-42-01 W	
	Delta:	44-08-27			
		Tangent Data			
	14+60.91			481582.13	1350865.62
	32+90.29			479753.43	1350815.84

Desc.	Station	Spiral/Curve Data		Northing	Easting
	Length:	1829.38	Course:	S 01-33-34 W	
		Circular Curve Data			
PC	32+90.29			479753.43	1350815.84
RP				479755.88	1350725.87
PT	33+59.63			479691.46	1350788.73
	Delta:	44-08	Type:	RIGHT	
	Radius:	90.00	DOC:	63-40	
	Length:	69.34	Tangent:	36.49	
	Mid-Ord:	6.59	External:	7.12	
	Chord:	67.63	Course:	S 23-37-47 W	
	Es:	7.12			
PI	36+04.75			479520.27	1350613.30
	Length:	21.51	Course:	S 00-42-01 W	
	Delta:	45-00-00			
		Tangent Data			
	33+59.63			479691.46	1350788.73
	36+04.75			479520.27	1350613.30
	Length:	245.12	Course:	S 45-42-01 W	
PI	36+26.26			479498.76	1350613.04
		Tangent Data			
	36+04.75			479520.27	1350613.30
	36+26.26			479498.76	1350613.04
	Length:	21.51	Course:	S 00-42-01 W	

FOR INFORMATION ONLY

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. LOCATION AND ELEVATION OF EXISTING ACTIVE AND ABANDONED UNDERGROUND UTILITIES SHOWN ON CONSTRUCTION DRAWINGS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE SUBCONTRACTOR PRIOR TO START OF CONSTRUCTION. SUBCONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SUPPORT AS REQUIRED TO MAINTAIN AND PROTECT EXISTING ACTIVE UTILITIES. VERIFY THAT UTILITIES IDENTIFIED BY THE CONSTRUCTION MANAGER AS ABANDONED ARE SUCH PRIOR TO EXCAVATION. REMOVE ABANDONED UTILITIES WITHIN LIMIT OF EXCAVATION.
5. SUBCONTRACTOR SHALL FIELD VERIFY EXISTING TOPOGRAPHY PRIOR TO START OF CONSTRUCTION.
6. LEACHATE TRANSMISSION SYSTEM TEMPORARY GRAVITY LINE SHALL HAVE A MINIMUM SOIL COVER OF 36 INCHES.
7. CONSTRUCTION CONTROL POINTS FOR PERMANENT LIFT STATION ARE PROVIDED ON DRAWING M-9A.
8. CLEARING ZONE SHALL NOT EXCEED 15 FEET FROM LIMIT OF EXCAVATION WORK.
9. PIPING AND INSTRUMENTATION CODE INFORMATION ARE PROVIDED ON DRAWING M-2A.
10. SUBCONTRACTOR SHALL INSTALL PIPE LINE MARKER SIGNS AT THE LOCATIONS SHOWN ON CONSTRUCTION DRAWINGS. PIPE LINE MARKER SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH DRAWING 92X-5900-G-00257.
11. TEMPORARY DRIVEWAY SHALL EXTEND FROM PERMANENT LIFT STATION COVER SLAB TO EDGE OF "F" STREET. SEE DRAWING M-9A FOR TEMPORARY DRIVEWAY CONSTRUCTION REQUIREMENTS.
12. SUBCONTRACTOR SHALL NOT DISRUPT OR BLOCK TRAFFIC FLOW ON "F" STREET EXCEPT DURING TIMES APPROVED BY CONSTRUCTION MANAGER.
13. SUBCONTRACTOR SHALL RESTORE DISTURBED AREA OF "F" STREET AFTER INSTALLATION OF LTS TEMPORARY GRAVITY LINE IN ACCORDANCE WITH DETAIL SHOWN ON DRAWING 92X-5900-G-00257.



6 / - PROFILE
LEACHATE TRANSMISSION SYSTEM
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 5'

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	LA	JRM	BJ	KWC	RB

SCALE IN FEET (5 2.5 0 5 10) — SCALE IN FEET (50 25 0 50 100)

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

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT: LEACHATE CONVEYANCE SYSTEM

TITLE: LEACHATE TRANSMISSION SYSTEM PLAN AND PROFILE DATA III

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-G-00059
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2009
SHEET NO.:	G-8C
REVISION NO.:	0

26

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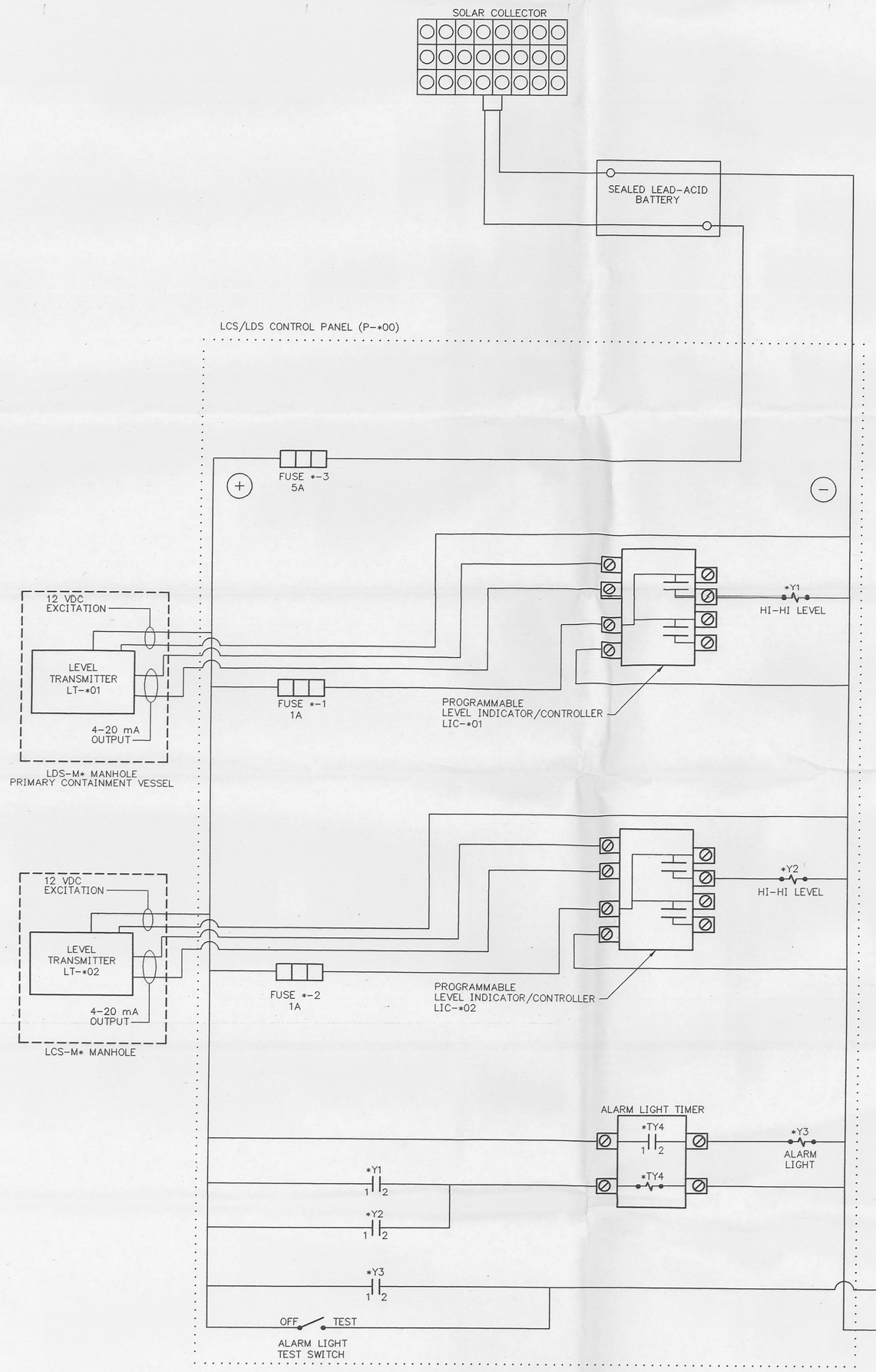
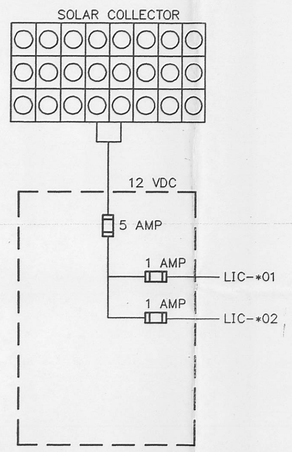


7 / - DETAIL
LDS AND LCS MANHOLES CONTROL SCHEMATIC
SCALE: NTS



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

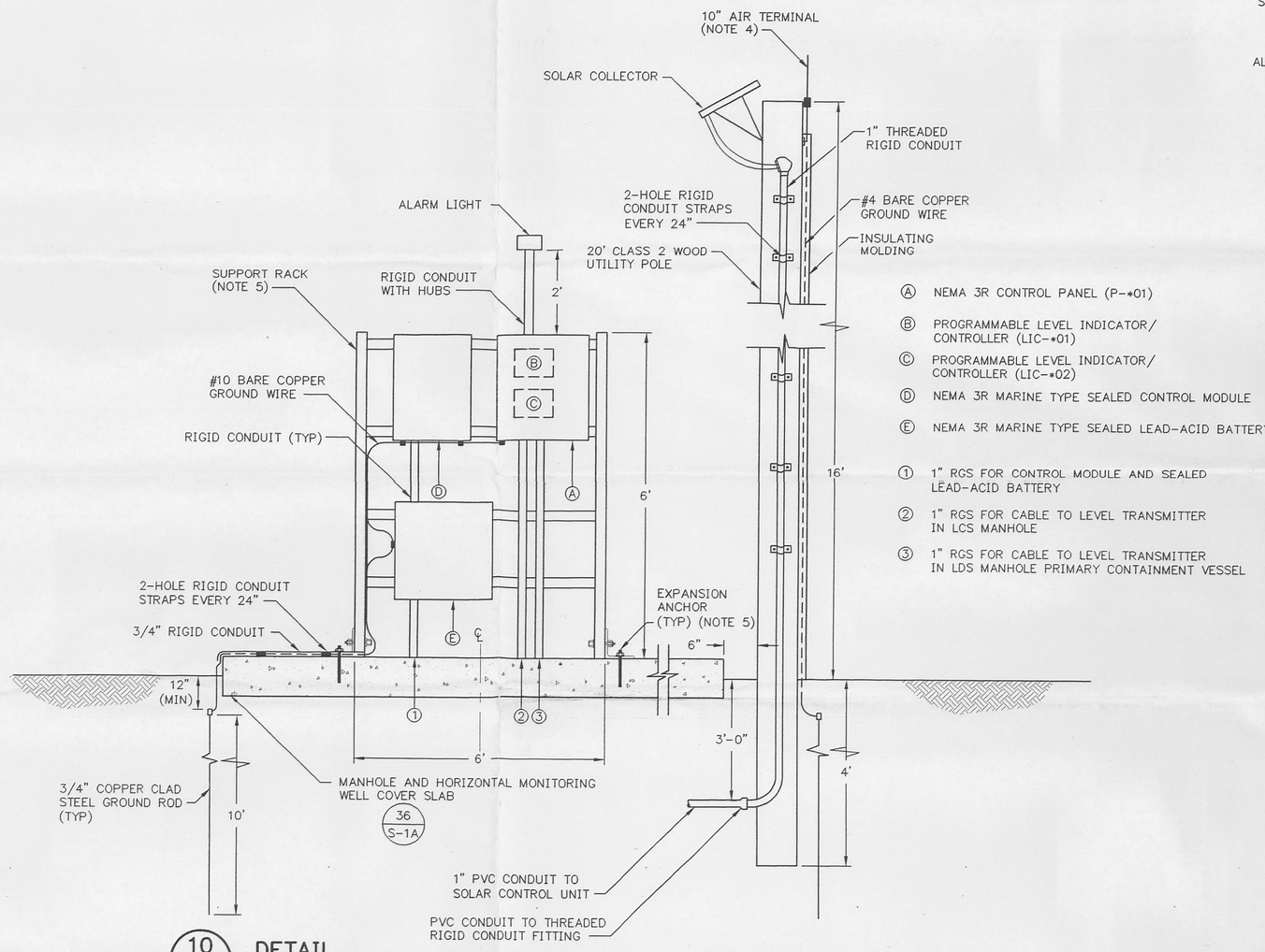
RELAY NUMBER - *Y1 : LDS-M* HI-HI LEVEL			
COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 - 2	X		ENERGIZE (*TY4) ALARM LIGHT TIMER
NOTES: 1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE			

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			

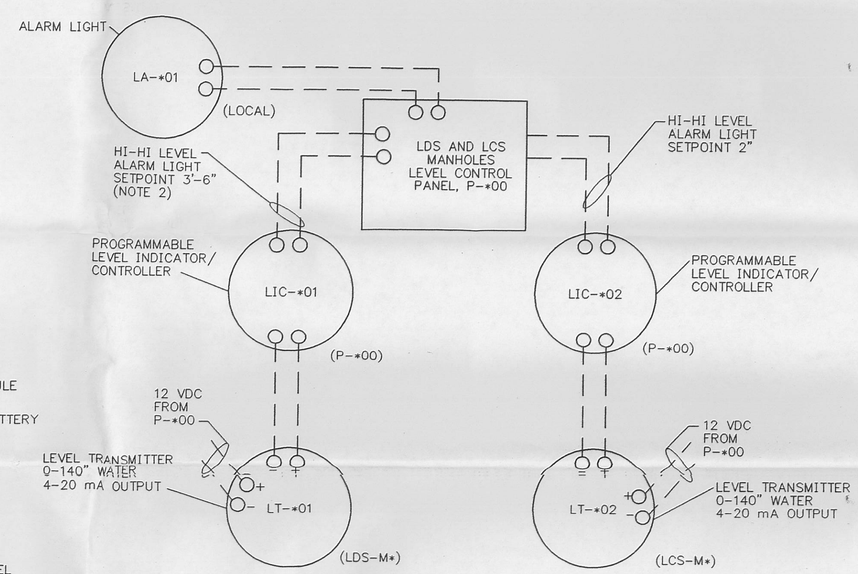
RELAY NUMBER - *Y3 : LDS-M*, LCS-M* ALARM LIGHT ENERGIZED			
COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 - 2	X		ALARM LIGHT (LA-*01) ON
NOTES: 1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE			

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			

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



10 / S-1A DETAIL
LDS AND LCS MANHOLES ELECTRIC SERVICE PANEL AND POLE
(NOTE 3)
SCALE: NTS
REF: F96X2003



11 / - DETAIL
LDS AND LCS MANHOLES LEVEL INSTRUMENTATION LOOP DIAGRAM
SCALE: NTS
REF: F96X1012

FOR INFORMATION ONLY

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. AIR TERMINAL SHALL BE IN ACCORDANCE WITH SECTION 16370 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
5. SUPPORT RACK SHALL BE IN ACCORDANCE WITH SECTION 16050 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	LF	AHF	BJ	KWC	RB

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:
LEACHATE CONVEYANCE SYSTEM

TITLE:
LEACHATE TRANSMISSION SYSTEM
ELECTRICAL DETAILS I

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

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

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FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-E-00060
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2004
SHEET NO.:	E-4A
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27

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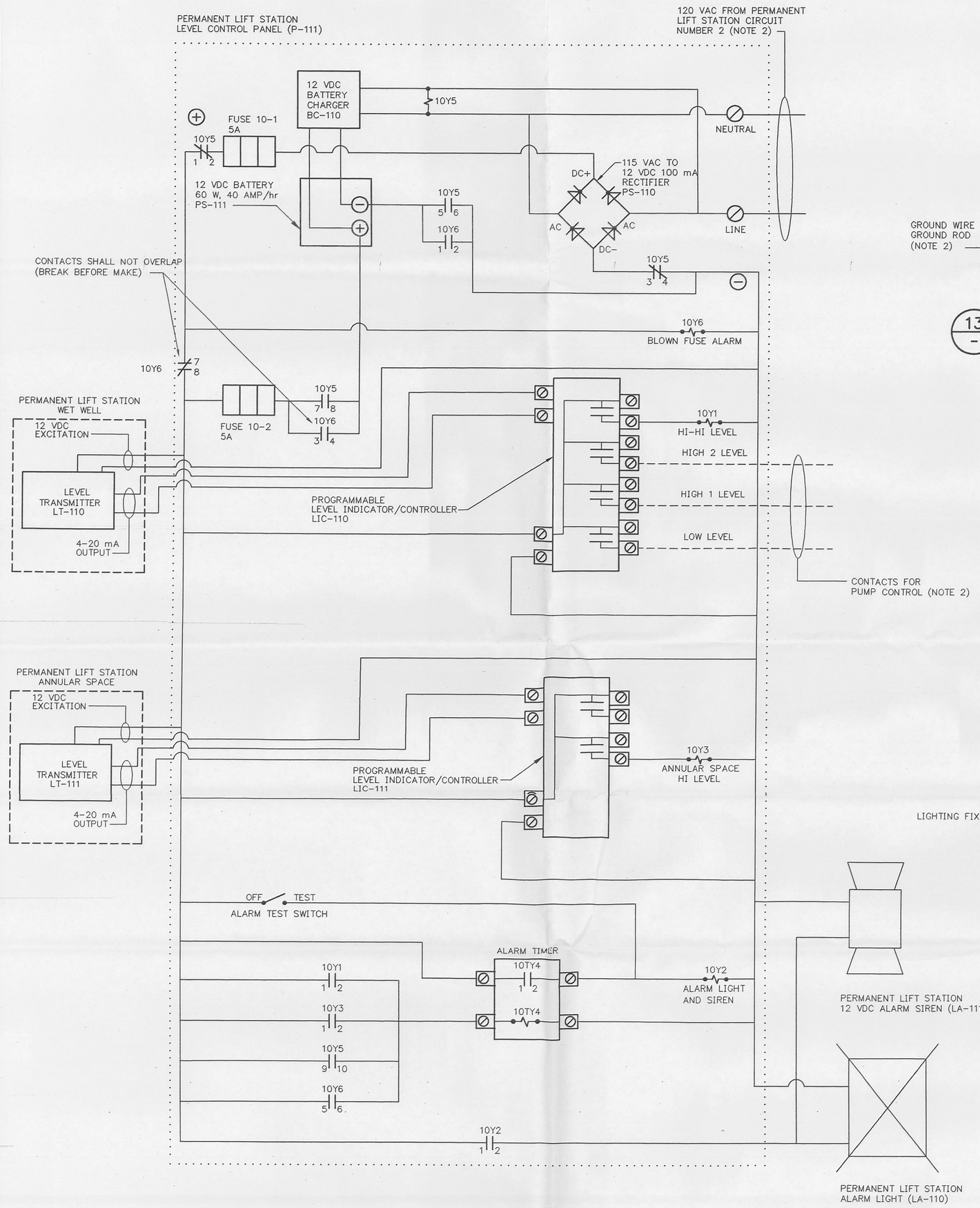
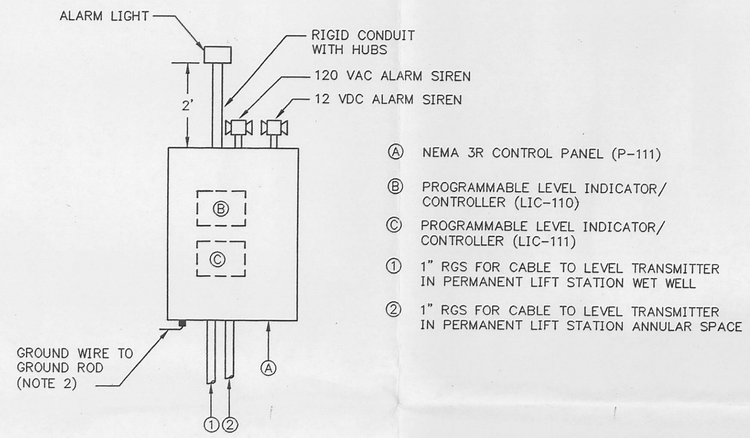




13 - DETAIL
PERMANENT LIFT STATION CONTROL PANEL
(NOTE 1)
SCALE: NTS

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

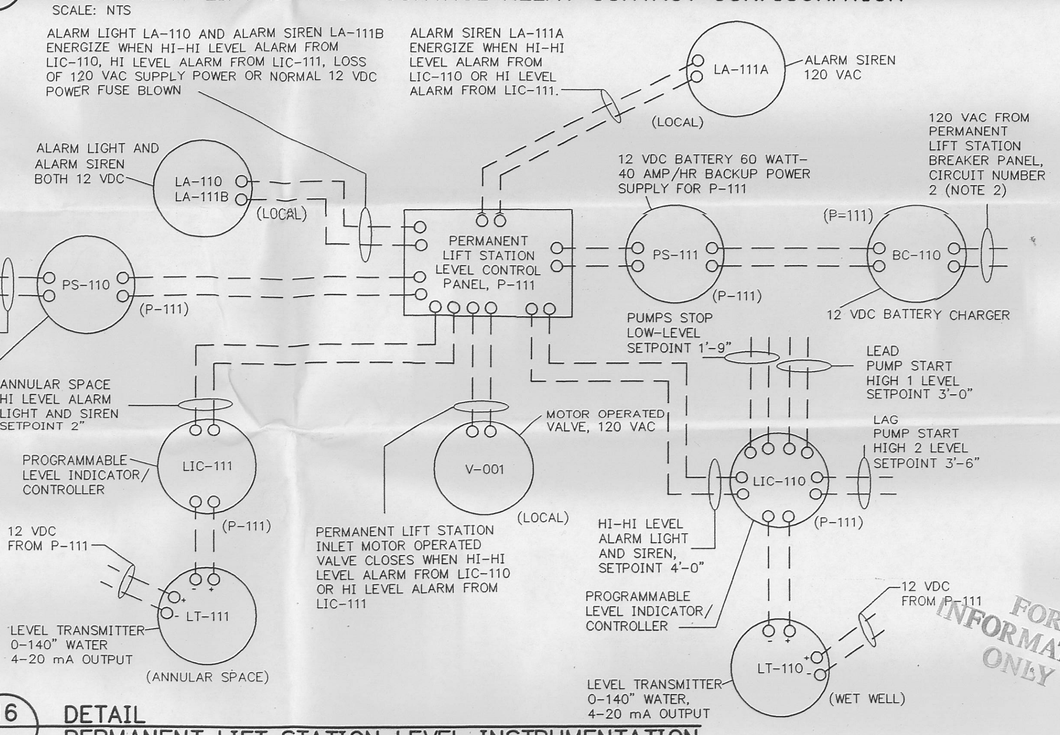
RELAY NUMBER – 10Y5: PERMANENT LIFT STATION LOSS OF 120 VAC POWER			
COIL L 120 VAC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 – 2	X		NORMAL 12 VDC HOT LEG
3 – 4	X		NORMAL 12 VDC COMMON
5 – 6		X	BATTERY 12 VDC COMMON
7 – 8		X	BATTERY 12 VDC HOT LEG
9 – 10		X	ENERGIZE (10TY4) ALARM TIMER

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

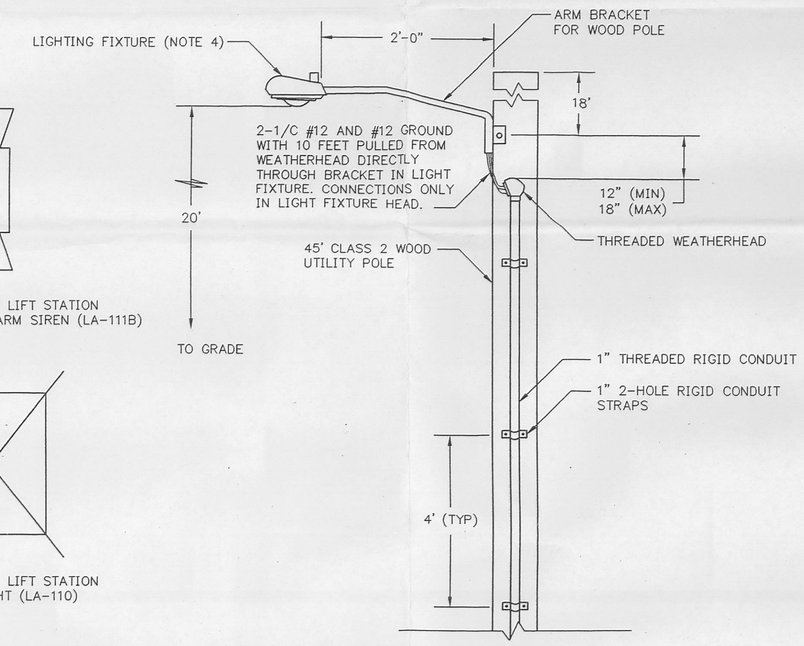
RELAY NUMBER – 10Y6: PERMANENT LIFT STATION NORMAL 12 VDC POWER FUSE BLOWN			
COIL L 12 VDC N	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 – 2		X	BATTERY 12 VDC COMMON
3 – 4		X	BATTERY 12 VDC HOT LEG
5 – 6		X	ENERGIZE (10TY4) ALARM TIMER
7 – 8	X		BLOWN FUSE LATCH

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

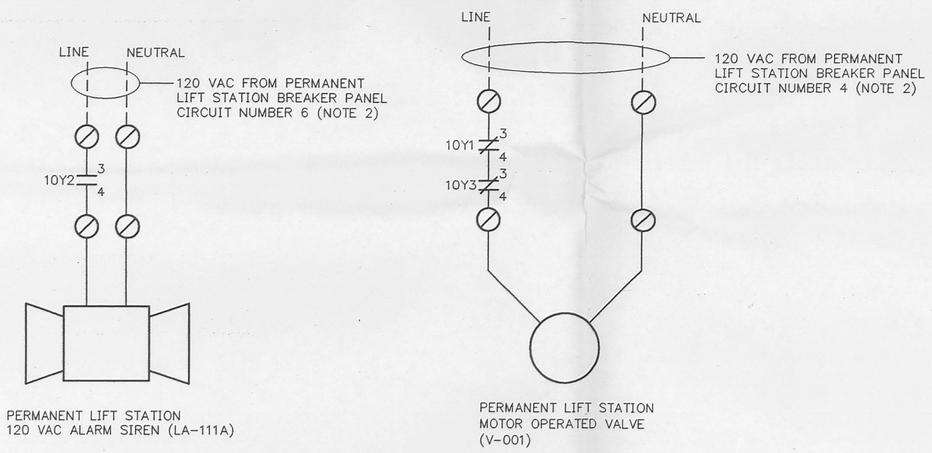
14 - DETAIL
PERMANENT LIFT STATION CONTROL RELAY CONTACT CONFIGURATION
SCALE: NTS



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



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



12 - 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.

28

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	LF	AHF	BJ	KWC	RB

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:
LEACHATE CONVEYANCE SYSTEM

TITLE:
LEACHATE TRANSMISSION SYSTEM
ELECTRICAL DETAILS IV

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

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

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RUDOLPH BONAPARTE
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FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-E-00061
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2005
SHEET NO.:	E-7A
REVISION NO.:	0

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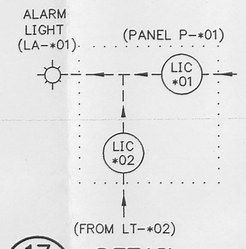
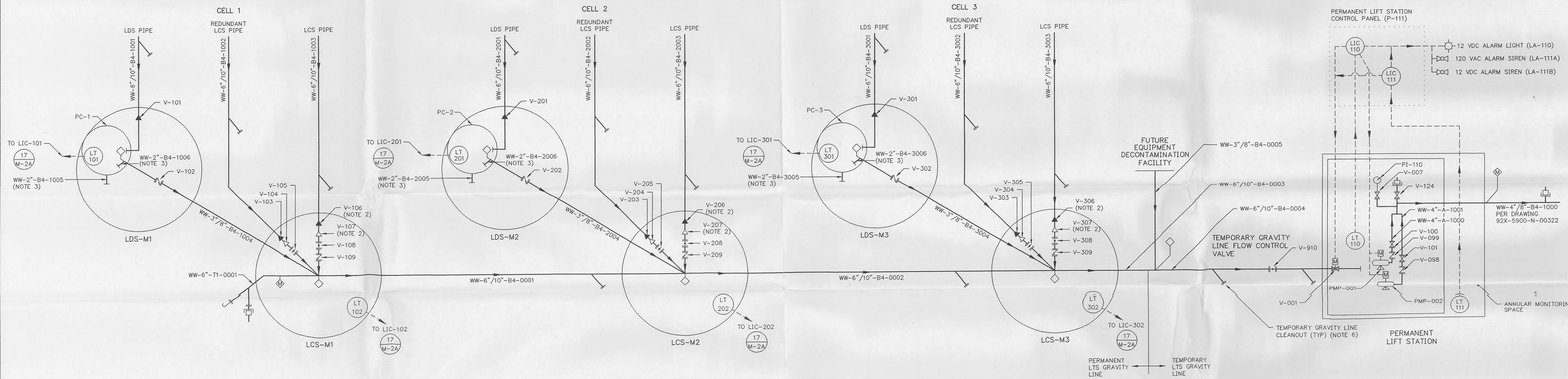


17 / M-2A DETAIL
LCS AND LDS MANHOLE ALARM CONTROL PANEL
(NOTE 4)
SCALE: NTS



18 / – DETAIL
PIPING AND INSTRUMENTATION DIAGRAM
(NOTE 1 AND 5)
SCALE: NTS

FOR INFORMATION ONLY

SYMBOLS

- BALL VALVE
- BLIND FLANGE
- BUTTERFLY VALVE (CLOSED POSITION)
- BUTTERFLY VALVE (OPEN POSITION)
- GATE VALVE
- 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

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

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

STANDARD ABBREVIATIONS

A	A53, GR, A, SEAMLESS STEEL PIPE
B4	HIGH DENSITY POLYETHYLENE
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
PI	PRESSURE INDICATOR
PMP	SUBMERSIBLE PUMP
QC	QUICK CONNECT
V	VALVE

NOTES:

1. SUBCONTRACTOR SHALL PROVIDE OPERATION MANUALS AND PERFORM START-UP OF THE LEACHATE TRANSMISSION SYSTEM IN ACCORDANCE WITH SECTIONS 02605 AND 15000 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
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. EACH VALVE SHALL BE IDENTIFIED WITH ITS UNIQUE VALVE NUMBER. LABEL SIZE SHALL BE MINIMUM 1/2-INCH LETTERS. LABELS SHALL BE CONSTRUCTED USING NON-REFLECTIVE MATERIALS. BLACK CHARACTERS ON A WHITE BACKGROUND OR VICE-VERSA OFFER THE BEST CONTRAST AND LEGIBILITY. IF WHITE-ON-BLACK ENGRAVED LABELS ARE USED, A CLEAR OVERCOATING SHALL BE APPLIED TO PREVENT DIRT FROM OBSCURING THE WHITE-ENGRAVED CHARACTERS. LABELS AND ATTACHMENTS SHALL BE CORROSION RESISTANT, AND SHALL BE COMPATIBLE WITH THE MATERIAL AND ENVIRONMENT WHERE THEY ARE USED.
6. SEVEN CLEANOUTS SHALL BE INSTALLED ALONG TEMPORARY GRAVITY LINE AS SHOWN ON DRAWINGS G-8A, G-8B, AND G-8C.

29

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	BJ	JRM	LA	KWC	RB

SCALE AS SHOWN

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

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

PROJECT:
LEACHATE CONVEYANCE SYSTEM

TITLE:
LEACHATE TRANSMISSION SYSTEM PIPING AND INSTRUMENTATION DIAGRAM

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
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FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95P5005028
FERMCO DRAWING NO.:	90X-6000-M-00062
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2003
SHEET NO.:	M-2A
REVISION NO.:	0

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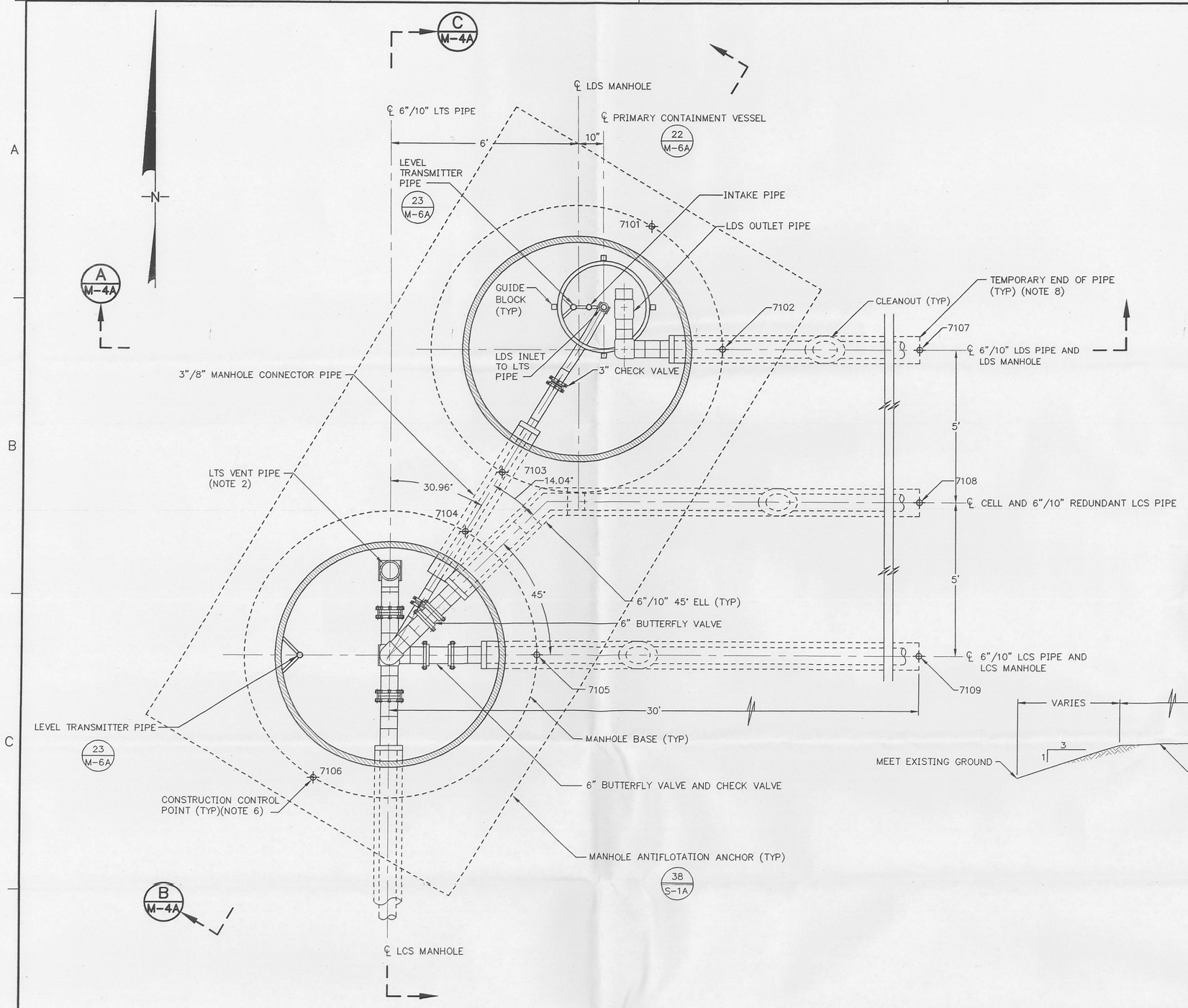
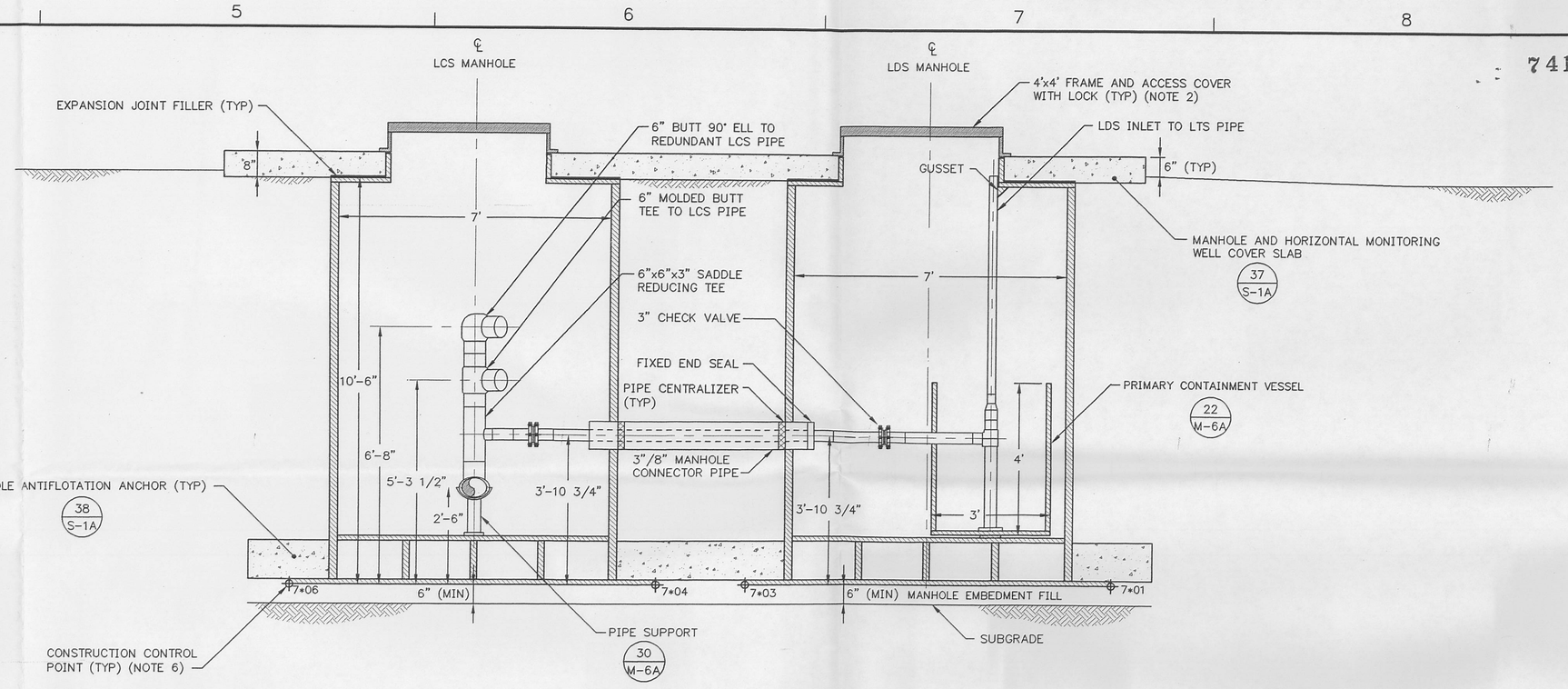
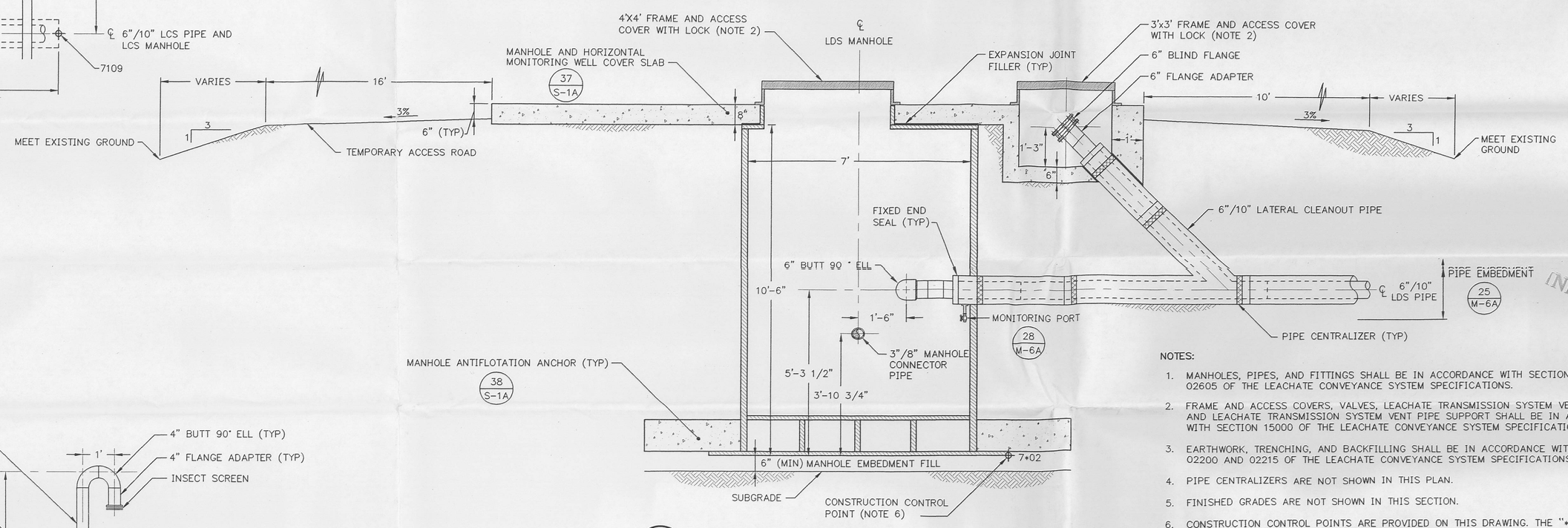
W:\GAGAUDOC\GE3900.22\F96-2003 Mon Oct 07 12:22:32 1996 John C.



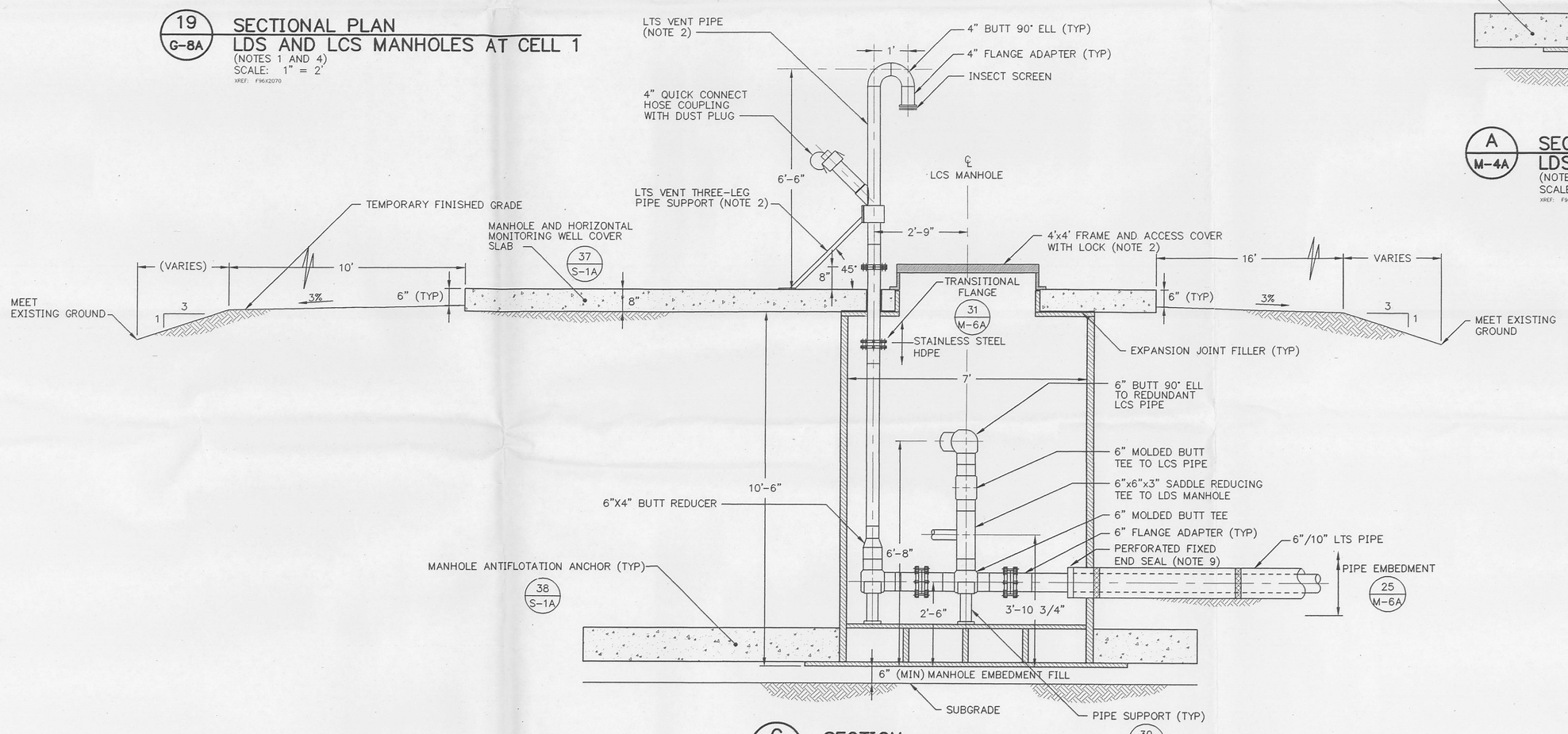
19 G-8A **SECTIONAL PLAN**
LDS AND LCS MANHOLES AT CELL 1
(NOTES 1 AND 4)
SCALE: 1" = 2'
XREF: F96X2070



B M-4A **SECTION (TYPICAL)**
LCS AND LDS MANHOLES AT CELLS 1 THROUGH 3
(NOTES 3 AND 5)
SCALE: 1" = 2'
XREF: F96X2071



A M-4A **SECTION (TYPICAL)**
LDS MANHOLE AT CELLS 1 THROUGH 3
(NOTES 3 AND 7)
SCALE: 1" = 2' (NOTE 4)
XREF: F96X2069



C M-4A **SECTION**
LCS MANHOLE AT CELL 1
(NOTE 3)
SCALE: 1" = 2'
XREF: F96X2072

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
7107	482978.97	1350710.33	599.19
7108	482973.97	1350710.26	600.58
7109	482968.97	1350710.20	599.19
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
7207	482579.00	1350705.44	596.19
7208	482574.00	1350705.38	597.58
7209	482569.00	1350705.31	596.19
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
7307	482179.03	1350700.55	593.19
7308	482174.03	1350700.49	594.58
7309	482169.03	1350700.43	593.19

30

NOTES:

1. MANHOLES, PIPES, AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE LEACHATE CONVEYANCE SYSTEM 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 LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
3. EARTHWORK, TRENCHING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTIONS 02200 AND 02215 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
4. PIPE CENTRALIZERS ARE NOT SHOWN IN THIS PLAN.
5. FINISHED GRADES ARE NOT SHOWN IN THIS SECTION.
6. CONSTRUCTION CONTROL POINTS ARE PROVIDED ON THIS DRAWING. THE "+" SYMBOL REPRESENTS THE APPROPRIATE MANHOLE NUMBER FOR EACH CELL.
7. PRIMARY CONTAINMENT VESSEL IS NOT SHOWN IN THIS SECTION.
8. SUBCONTRACTOR SHALL SURVEY AND RECORD LOCATION OF TEMPORARY END OF PIPE AND PROVIDE ABOVE GROUND MARKER FOR FUTURE REFERENCE IN ACCORDANCE WITH SECTION 02100 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS. SUBCONTRACTOR SHALL PROTECT TEMPORARY END OF PIPE TO PREVENT LIQUID, SOIL OR DEBRIS FROM ENTERING PIPE AT ALL TIMES DURING INSTALLATION AND SUBSEQUENT EXCAVATION FOR FUTURE EXTENSION OF PIPE.
9. FIXED END SEAL ON LTS PIPE SHALL BE PERFORATED WITH 6-5/8-INCH DIAMETER HOLES EVENLY SPACED AT 60 DEGREES APART.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	BJ	JRM	LA/DS	KWC	RB

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:
LEACHATE CONVEYANCE SYSTEM

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

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
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REGISTERED PROFESSIONAL ENGINEER
SEAL

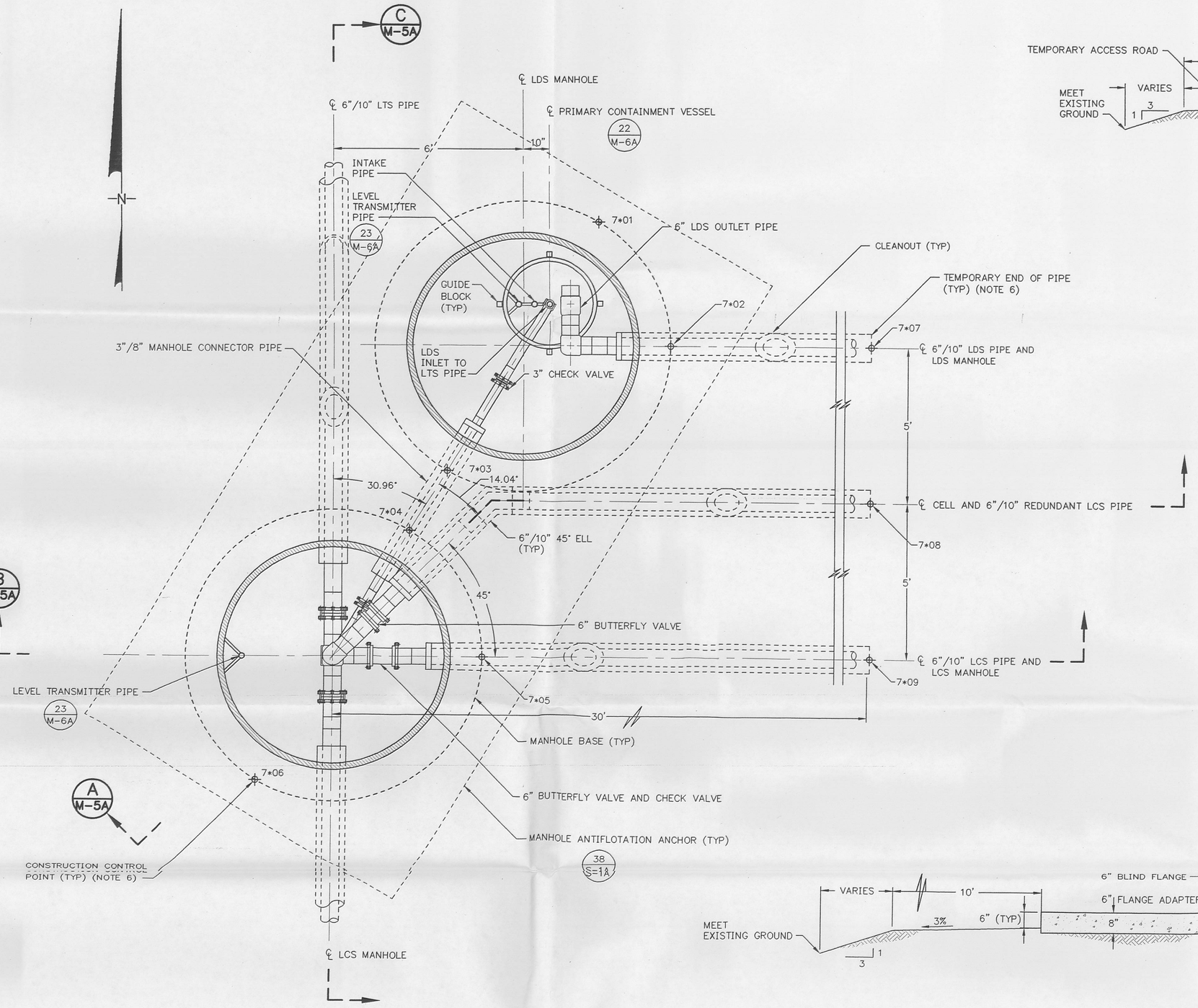
GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-M-00063
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2007
SHEET NO.:	M-4A
REVISION NO.:	0

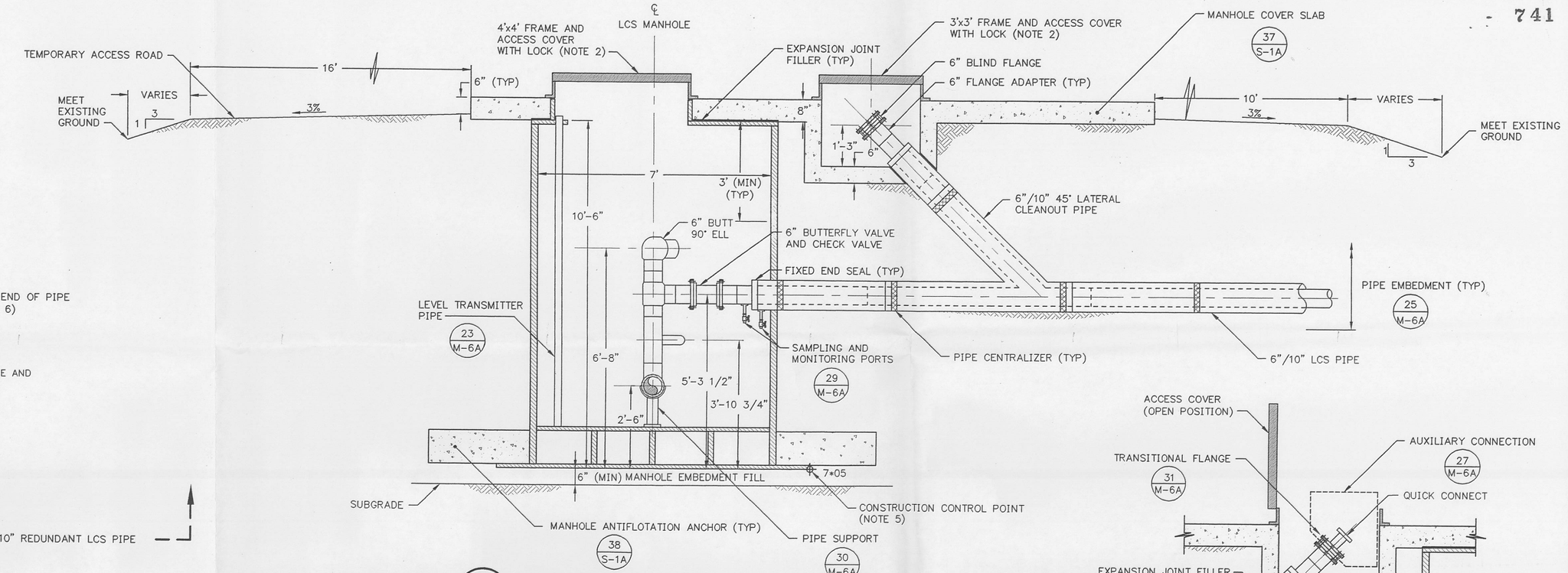
FOR INFORMATION ONLY

CERTIFIED FOR CONSTRUCTION

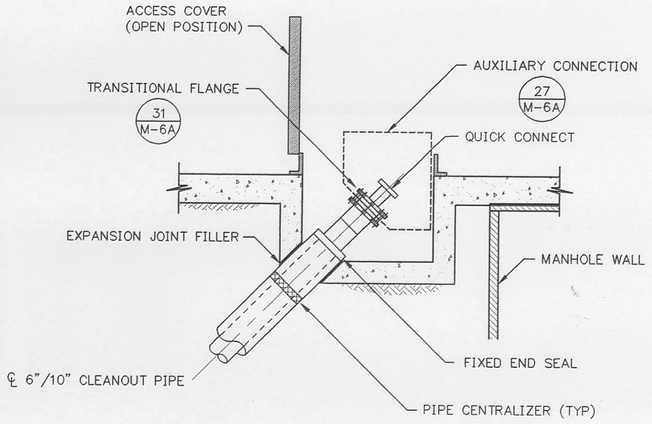
L:\F96-2007 Mon Oct 07 11:57:10 1996 J.MILLER



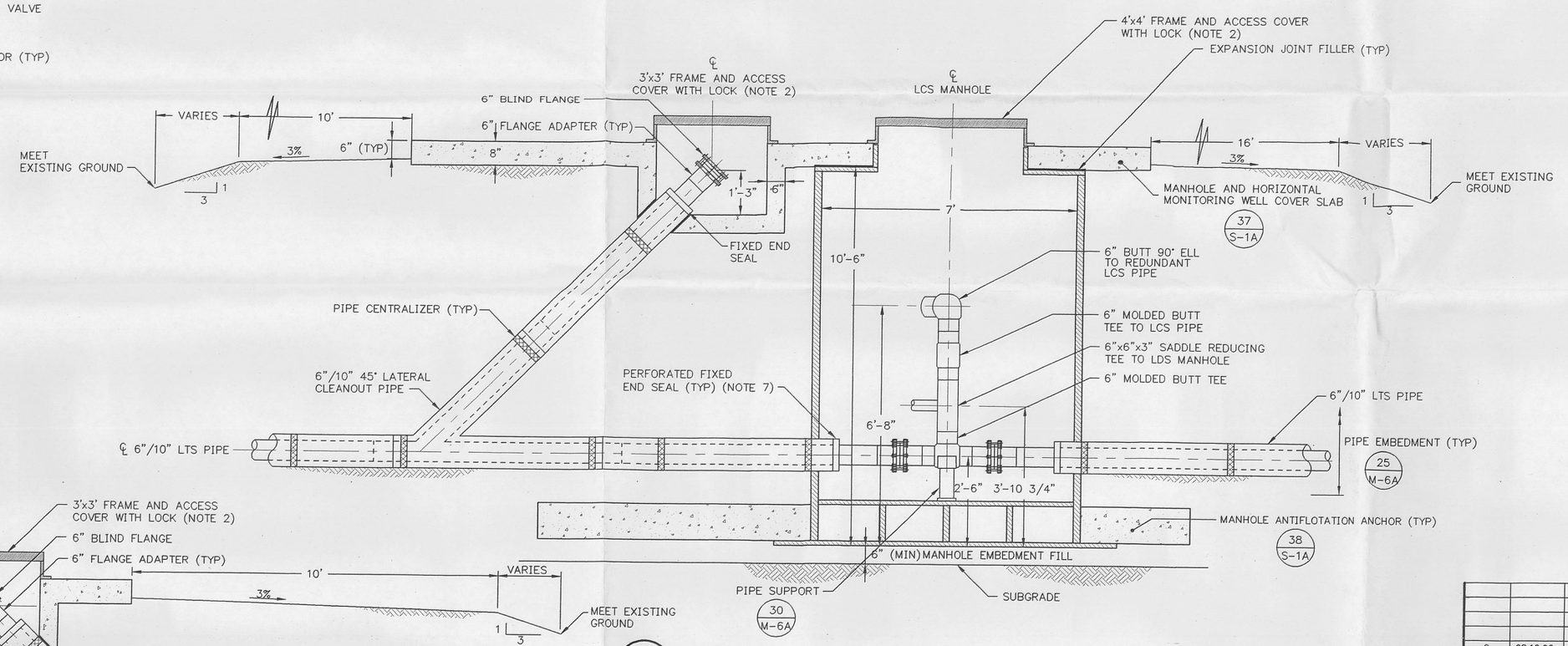
20 G-8A **SECTIONAL PLAN**
LDS AND LCS MANHOLES AT CELLS 2 AND 3
(NOTES 1 AND 4)
SCALE: 1" = 2'
IREF: F96K2067



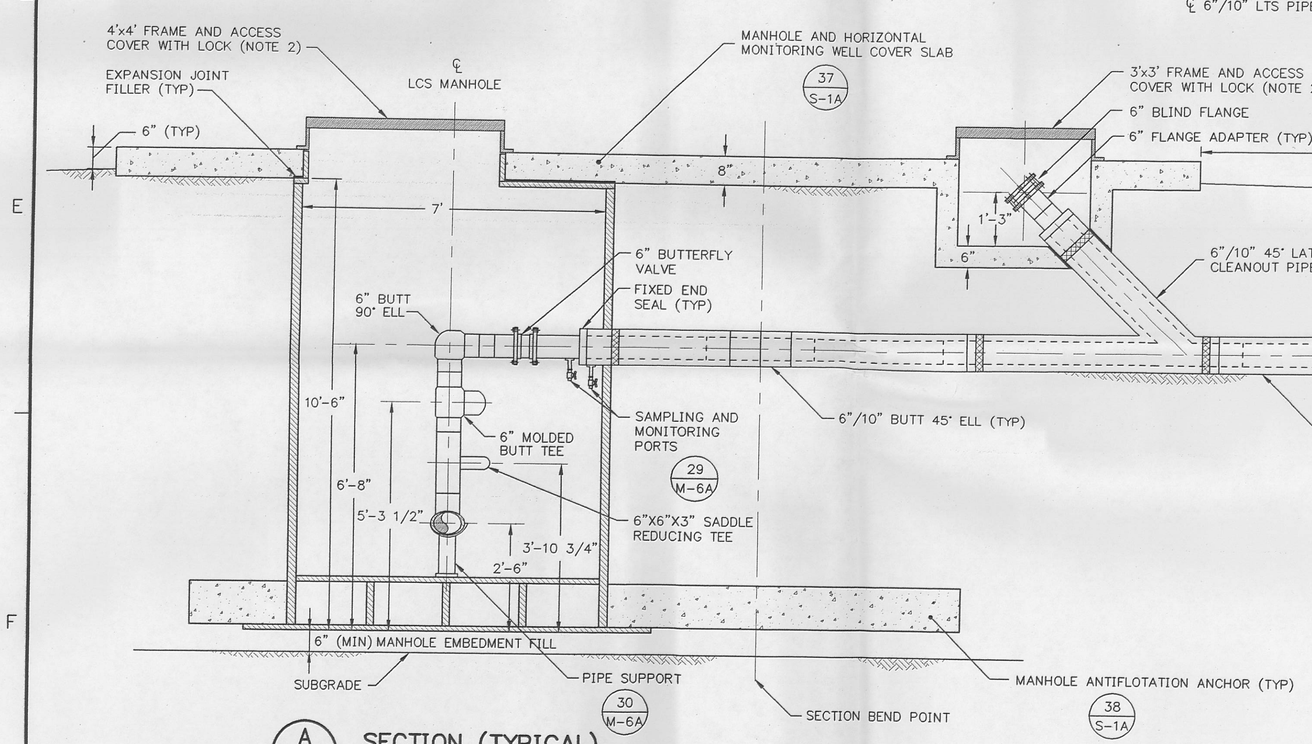
B M-5 **SECTION (TYPICAL)**
LCS MANHOLE AT CELLS 1 THROUGH 3
(NOTE 3)
SCALE: 1" = 2'
IREF: F96K2066



21 - **DETAIL**
CLEANOUT AND AUXILIARY CONNECTION
(NOTE 2)
SCALE: 1" = 2'
IREF: F96K2068



C M-5A **SECTION**
LCS MANHOLE AT CELLS 2 AND 3
(NOTE 3)
SCALE: 1" = 2'
IREF: F96K2064



A M-5A **SECTION (TYPICAL)**
LCS MANHOLE AT CELLS 1 THROUGH 3
(NOTE 3)
SCALE: 1" = 2'
IREF: F96K2065

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
7107	482978.97	1350710.33	599.19
7108	482973.97	1350710.26	600.58
7109	482968.97	1350710.20	599.19

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
7207	482579.00	1350705.44	596.19
7208	482574.00	1350705.38	597.58
7209	482569.00	1350705.31	596.19

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
7307	482179.03	1350700.55	593.19
7308	482174.03	1350700.49	594.58
7309	482169.03	1350700.43	593.19

FOR INFORMATION ONLY

NOTES:

1. MANHOLES, PIPES, AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
2. FRAME AND ACCESS COVERS, VALVES, AND AUXILIARY CONNECTION TO CLEANOUT SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS. AUXILIARY CONNECTION TO CLEANOUT PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THE SYSTEMS PLAN OR AT THE DIRECTION OF THE CONSTRUCTION MANAGER.
3. EARTHWORK, TRENCHING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTIONS 02200 AND 02215 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS. 31
4. PIPE CENTRALIZERS ARE NOT SHOWN IN THIS PLAN.
5. CONSTRUCTION CONTROL POINTS ARE PROVIDED ON THIS DRAWINGS. THE "+" SYMBOL REPRESENTS THE APPROPRIATE MANHOLE NUMBER FOR EACH CELL.
6. SUBCONTRACTOR SHALL SURVEY AND RECORD LOCATION OF TEMPORARY END OF PIPE AND PROVIDE ABOVE GROUND MARKER FOR FUTURE REFERENCE IN ACCORDANCE WITH SECTION 02100 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS. SUBCONTRACTOR SHALL PROTECT TEMPORARY END OF PIPE TO PREVENT LIQUID, SOIL OR DEBRIS FROM ENTERING PIPE AT ALL TIMES DURING INSTALLATION AND SUBSEQUENT EXCAVATION FOR FUTURE EXTENSION OF PIPE.
7. FIXED END SEAL ON LTS PIPE SHALL BE PERFORATED WITH 6-5/8-INCH DIAMETER HOLES EVENLY SPACED AT 60° APART.

CERTIFIED FOR CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	BJ	JRM	LA/DS	RWC	RB

SCALE AS SHOWN

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

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
LEACHATE CONVEYANCE SYSTEM

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

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-M-00064
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2008
SHEET NO.:	M-5A
REVISION NO.:	0

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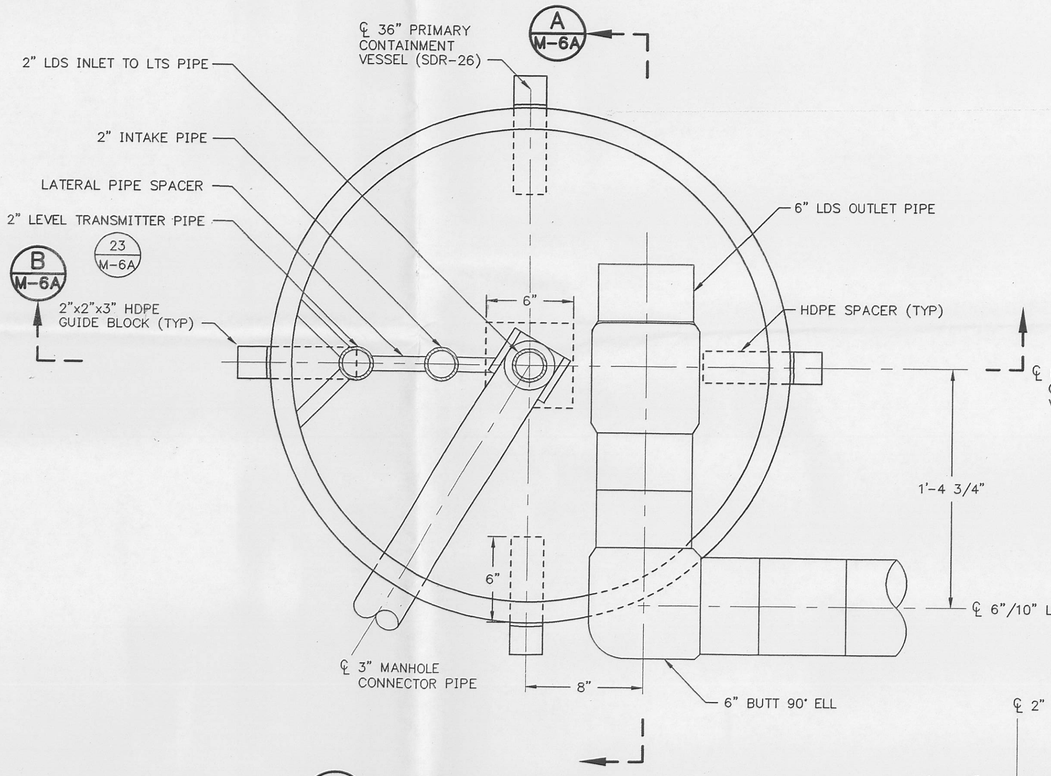
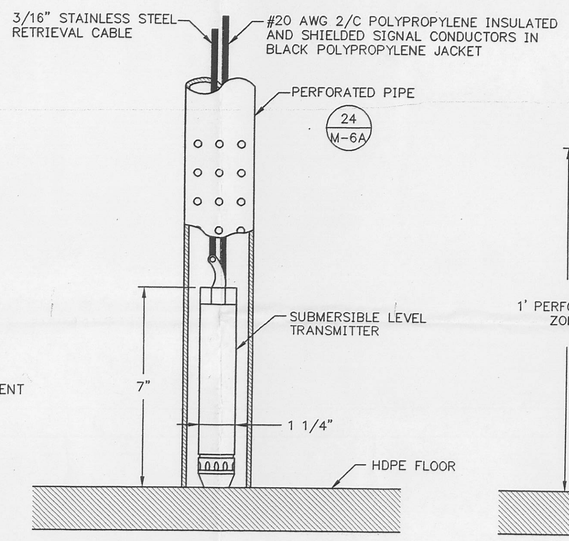
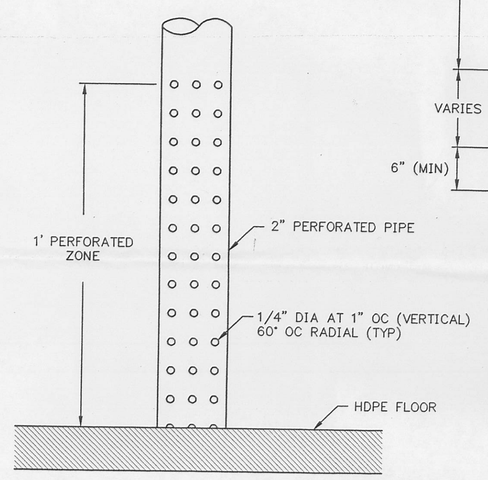


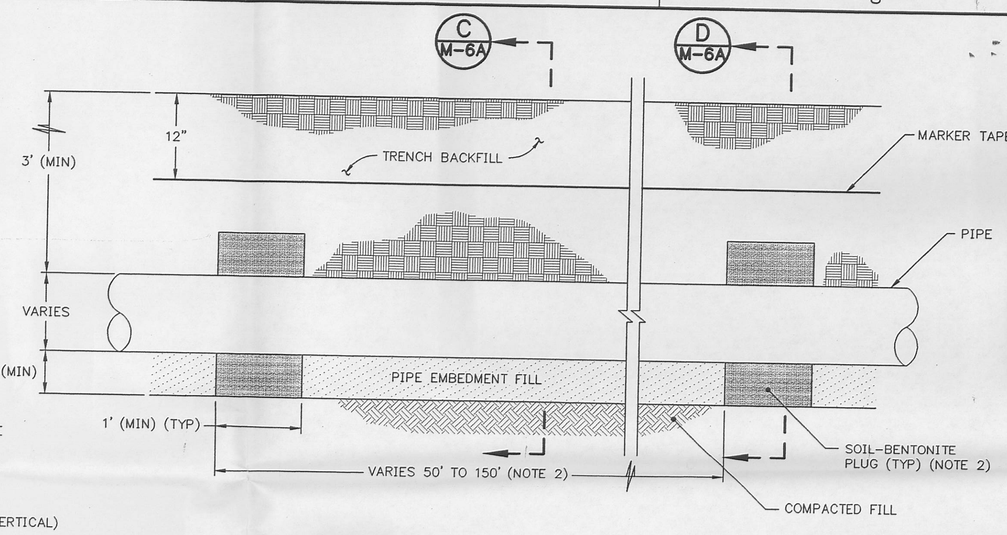
22 M-4A SECTIONAL PLAN
PRIMARY CONTAINMENT VESSEL
(NOTE 1)
SCALE: 1" = 6"
XREF: F96X2055



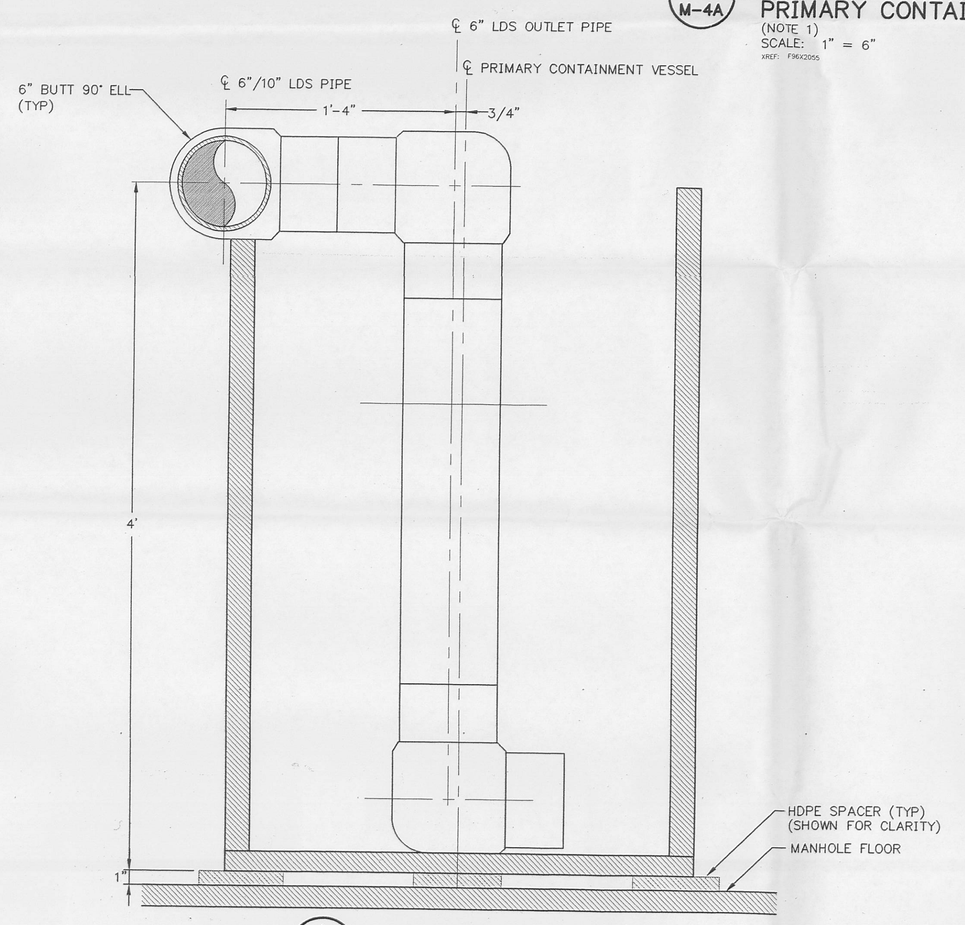
23 M-4A DETAIL
LEVEL TRANSMITTER PIPE
SCALE: NTS
XREF: F96X2056



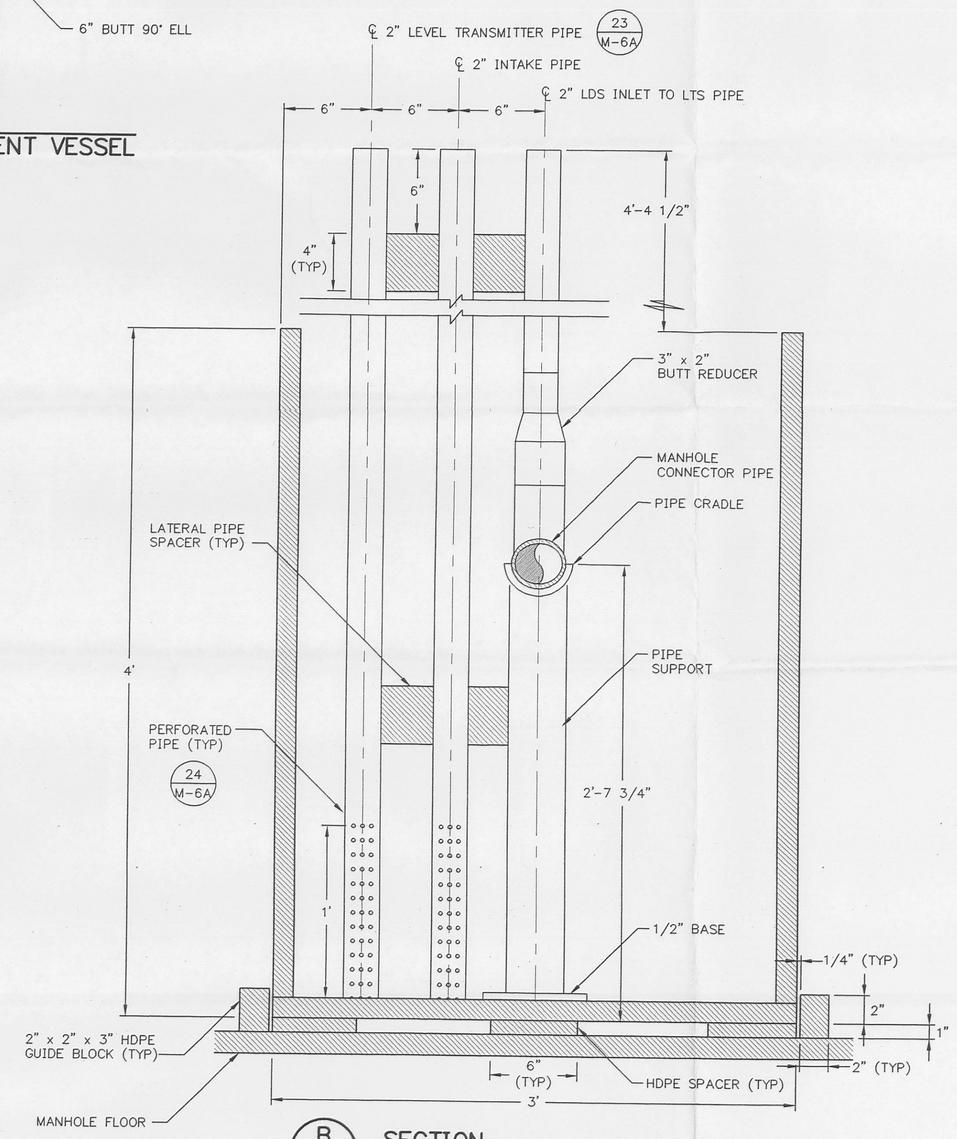
24 M-6A DETAIL
PERFORATED PIPE
SCALE: 1" = 3"
XREF: F96X2056



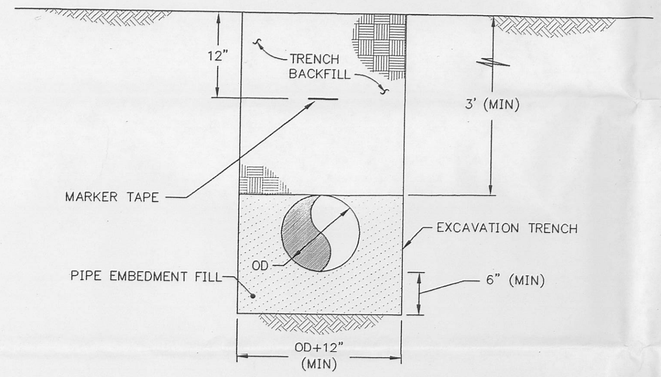
25 M-4A DETAIL
PIPE EMBEDMENT
(NOTE 3)
SCALE: 1" = 1'
XREF: F96X2057



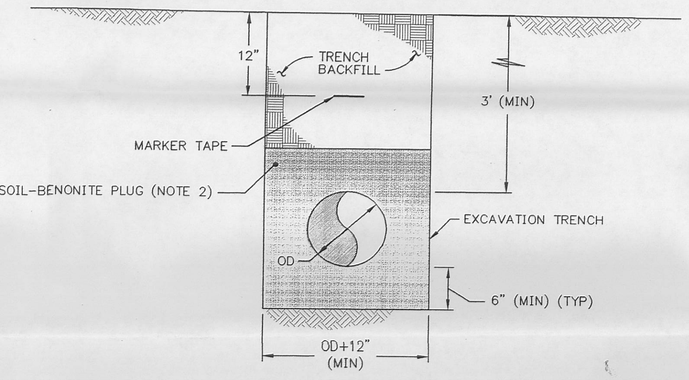
A M-6A SECTION
LDS OUTLET PIPE
SCALE: 1" = 6"
XREF: F96X2055



B M-6A SECTION
PRIMARY CONTAINMENT VESSEL
(NOTE 4)
SCALE: 1" = 6"
XREF: F96X2055

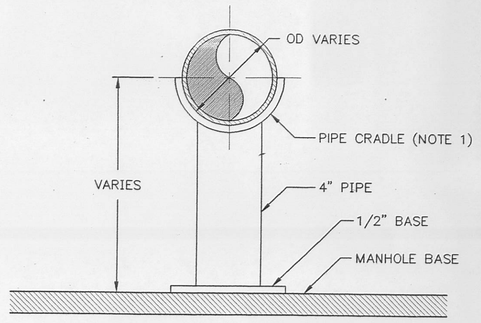


C M-6A SECTION (TYP)
PIPE EMBEDMENT AT EMBEDMENT FILL
(NOTE 3)
SCALE: 1" = 1'
XREF: F96X2058



D M-6A SECTION (TYP)
PIPE EMBEDMENT AT SOIL-BENTONITE PLUG
(NOTE 3)
SCALE: 1" = 1'
XREF: F96X2058

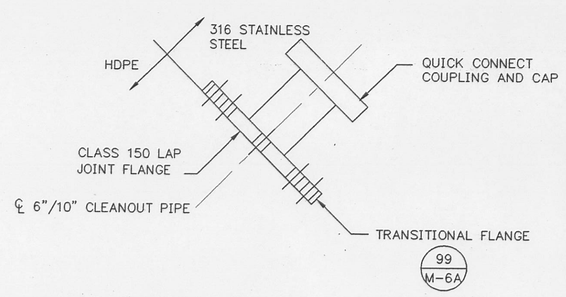
FOR INFORMATION ONLY



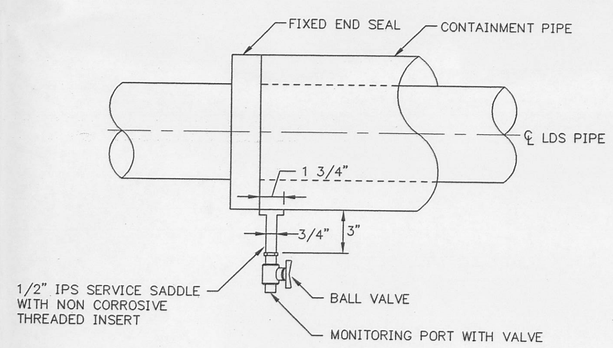
30 M-4A DETAIL
PIPE SUPPORT
SCALE: 1" = 6"
XREF: F96X2059

NOTES:

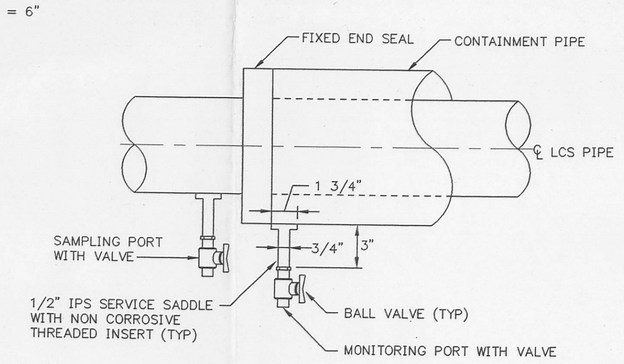
1. PIPES, PIPE SUPPORTS, AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS. PIPE CRADLE SHALL NOT BE WELDED TO PIPE WHICH IT SUPPORTS. PIPE SUPPORT SHALL BE WELDED TO MANHOLE BASE.
2. SOIL-BENTONITE PLUGS SHALL BE CONSTRUCTED IN ALL PIPE-CARRYING TRENCHES CONNECTED TO THE MANHOLE EMBEDMENT FILL, AT MAXIMUM DISTANCE OF 50 FEET FROM LCS OR LDS MANHOLE IN ADDITION, SOIL-BENTONITE PLUGS SHALL BE INSTALLED AT 150-FOOT INTERVALS ALONG PERMANENT AND TEMPORARY LTS GRAVITY LINES.
3. EARTHWORK, TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTIONS 02200 AND 02215 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
4. LEACHATE DETECTION SYSTEM OUTLET PIPE IS NOT SHOWN IN THIS SECTION.



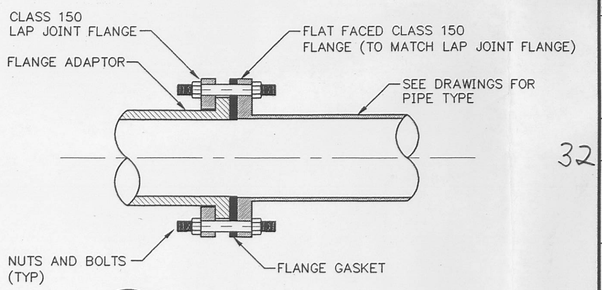
27 M-5A DETAIL
AUXILIARY CONNECTION
SCALE: 1" = 6"
XREF: F96X2062



28 M-4A DETAIL
MONITORING PORT
SCALE: 1" = 6"
XREF: F96X2061



29 M-5A DETAIL
SAMPLING AND MONITORING PORTS
SCALE: 1" = 6"
XREF: F96X2064



31 M-4A DETAIL
TRANSITIONAL FLANGE
SCALE: 1" = 6"
XREF: F96X2060

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REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	BJ	JRM	LA/DS	KWC	RB

SCALE AS SHOWN

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

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
LEACHATE CONVEYANCE SYSTEM

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

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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.:	90-X-6000-M-00065
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2016
SHEET NO.:	M-6A
REVISION NO.:	0

32

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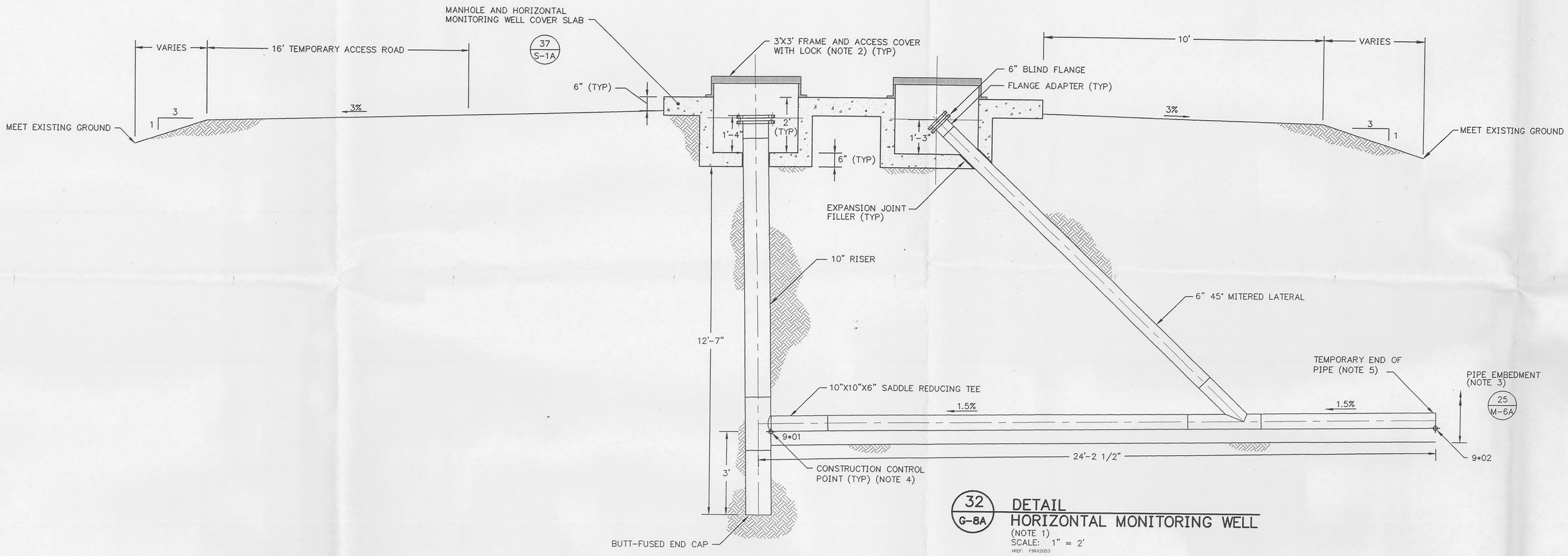
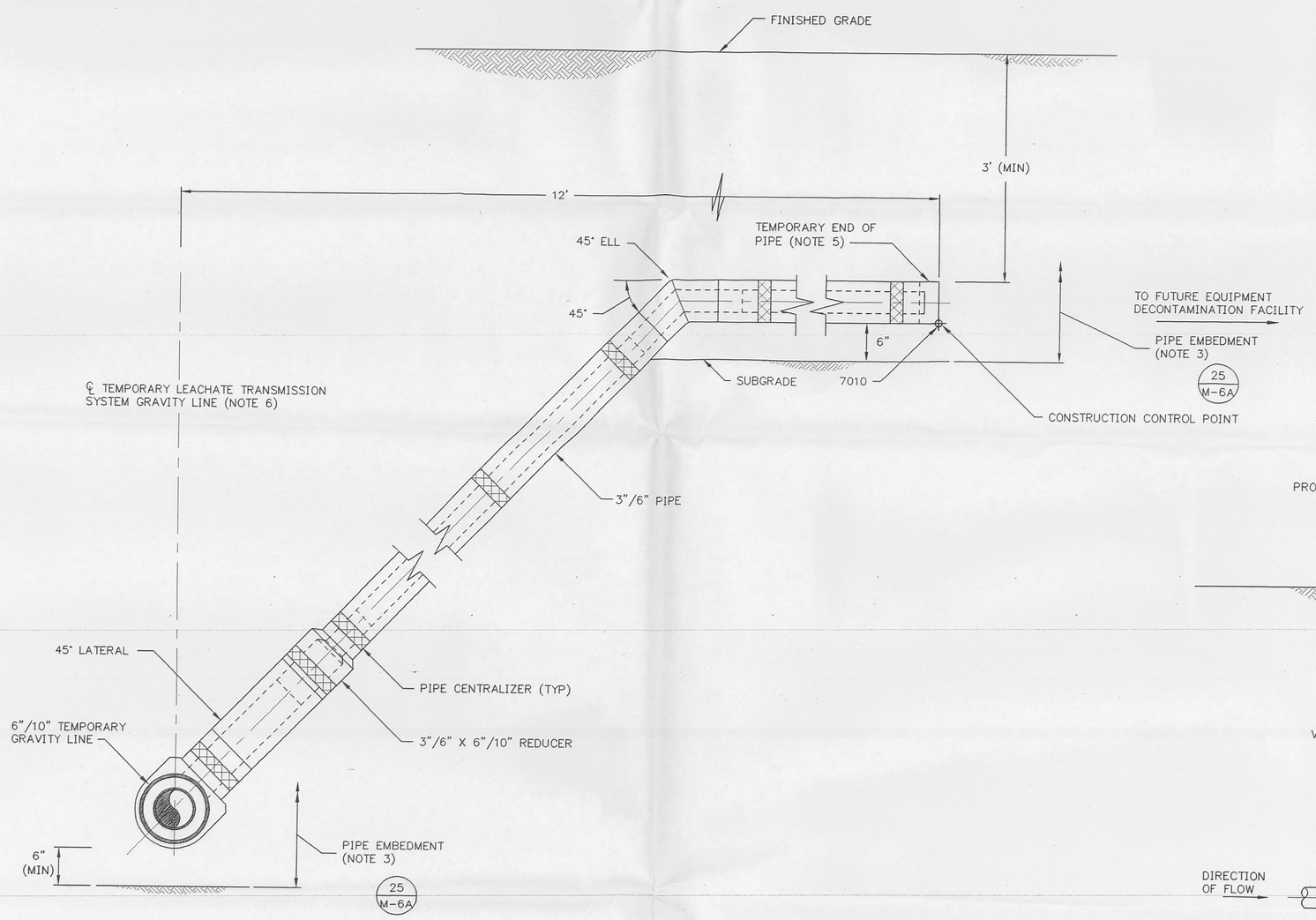
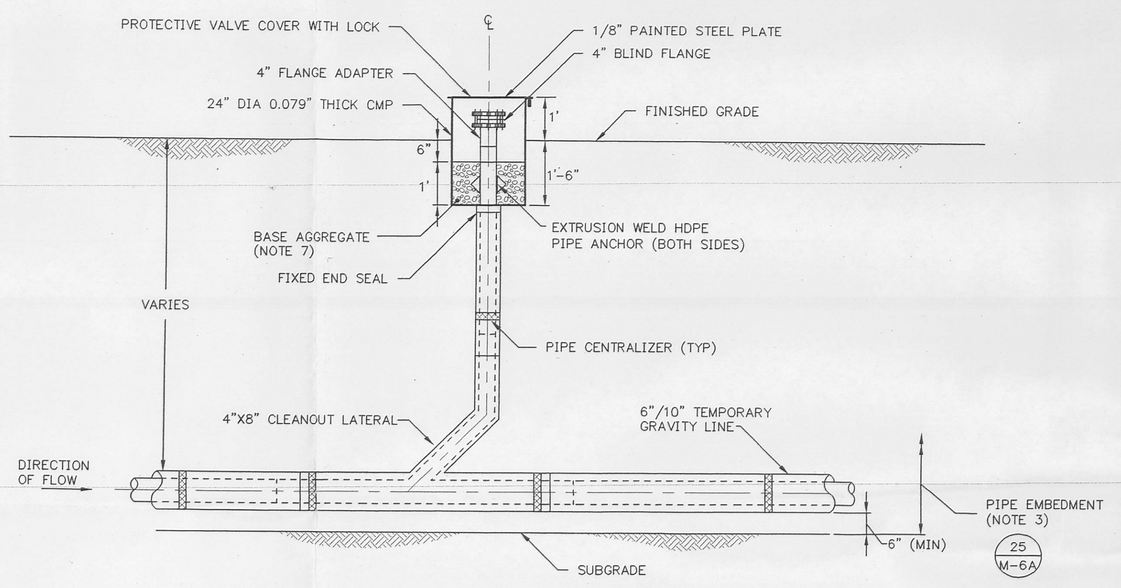


32 G-8A DETAIL
HORIZONTAL MONITORING WELL
(NOTE 1)
SCALE: 1" = 2'
XREF: F96K2053

CONSTRUCTION CONTROL POINTS			
HORIZONTAL MONITORING WELLS			
POINT NO.	NORTHING	EASTING	ELEVATION
9101	482960.27	1350685.30	592.97
9102	482959.85	1350720.09	593.49
9201	482560.30	1350680.42	589.97
9202	482559.88	1350715.20	590.49
9301	482160.33	1350675.53	586.97
9302	482159.90	1350710.32	587.49
STUB-OUT FOR EQUIPMENT DECONTAMINATION FACITITY			
POINT NO.	NORTHING	EASTING	ELEVATION
7010	481701.53	1350804.04	593.75



33 G-8A DETAIL
STUB-OUT FOR EQUIPMENT DECONTAMINATION FACILITY
(NOTE 1)
SCALE: 1" = 1'
XREF: F96K2048



34 G-8A DETAIL
TEMPORARY GRAVITY LINE CLEANOUT
(NOTE 1)
SCALE: 1" = 2'
XREF: F96K2047

FOR INFORMATION ONLY

NOTES:

1. PIPES AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
2. FRAME AND ACCESS COVER AT HORIZONTAL MONITORING WELL SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
3. EARTHWORK, TRENCHING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTIONS 02200 AND 02215 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
4. CONSTRUCTION CONTROL POINTS ARE PROVIDED ON THIS DRAWING. THE "*" SYMBOL REPRESENTS THE APPROPRIATE MANHOLE NUMBER FOR EACH CELL. CONSTRUCTION CONTROL POINTS REFER TO BOTTOM OF PIPE.
5. SUBCONTRACTOR SHALL SURVEY AND RECORD LOCATION OF TEMPORARY END OF PIPE AND PROVIDE ABOVE GROUND MARKER FOR FUTURE REFERENCE IN ACCORDANCE WITH SECTION 02100 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS. SUBCONTRACTOR SHALL PROTECT TEMPORARY END OF PIPE TO PREVENT LIQUID, SOIL OR DEBRIS FROM ENTERING PIPE AT ALL TIMES DURING INSTALLATION AND SUBSEQUENT EXCAVATION FOR FUTURE EXTENSION OF PIPE.
6. SEE DRAWING G-8A FOR TEMPORARY LEACHATE TRANSMISSION SYSTEM GRAVITY LINE CONSTRUCTION CONTROL POINTS.
7. BASE AGGREGATE SHALL MEET THE REQUIREMENTS OF ITEM 304.02 AND 703.04 OF THE OHIO DOT SPECIFICATIONS.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	BJ	JRM	LA/DS	KWC	RB

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:
LEACHATE CONVEYANCE SYSTEM

33

TITLE:
LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLE DETAILS IV

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-00066
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2013
SHEET NO.:	M-6B
REVISION NO.:	0

CERTIFIED FOR CONSTRUCTION

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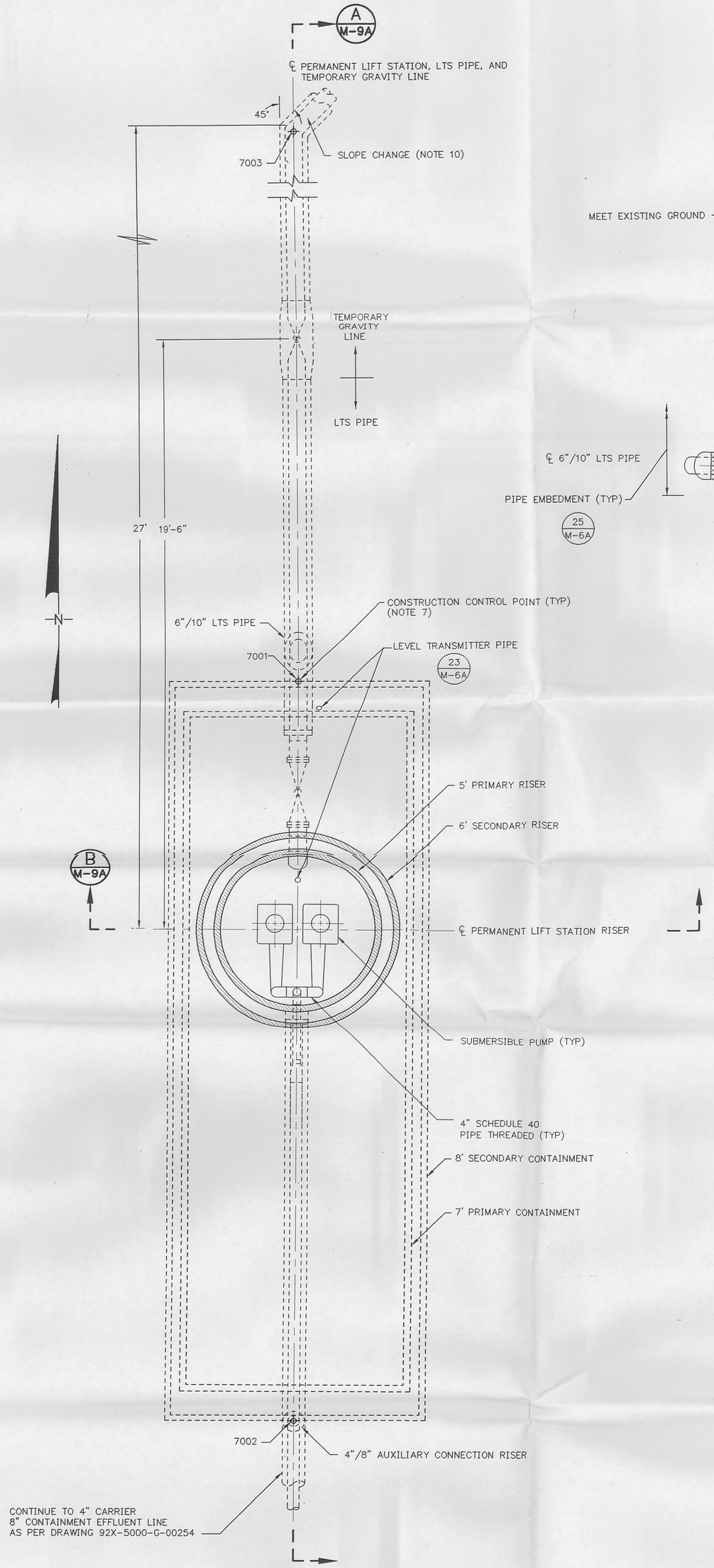
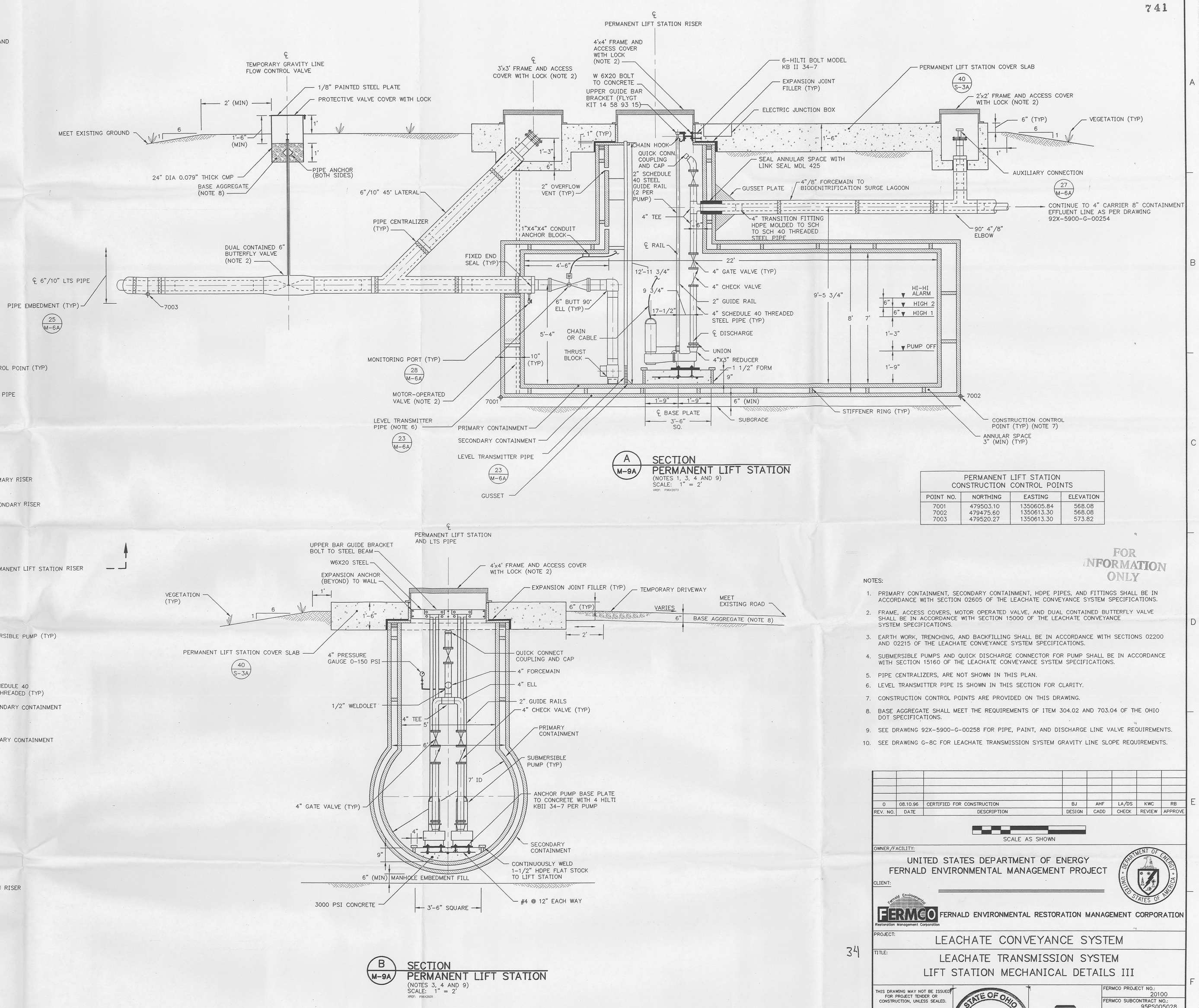


35 / - SECTIONAL PLAN
PERMANENT LIFT STATION
(NOTES 1 AND 5)
SCALE: 1" = 2'
XREF: F96X2046



A / M-9A SECTION
PERMANENT LIFT STATION
(NOTES 1, 3, 4 AND 9)
SCALE: 1" = 2'
XREF: F96X2073

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
7003	479520.27	1350613.30	573.82

B / M-9A SECTION
PERMANENT LIFT STATION
(NOTES 3, 4 AND 9)
SCALE: 1" = 2'
XREF: F96X2031

FOR INFORMATION ONLY

NOTES:

1. PRIMARY CONTAINMENT, SECONDARY CONTAINMENT, HDPE PIPES, AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
2. FRAME, ACCESS COVERS, MOTOR OPERATED VALVE, AND DUAL CONTAINED BUTTERFLY VALVE SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
3. EARTH WORK, TRENCHING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTIONS 02200 AND 02215 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
4. SUBMERSIBLE PUMPS AND QUICK DISCHARGE CONNECTOR FOR PUMP SHALL BE IN ACCORDANCE WITH SECTION 15160 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
5. PIPE CENTRALIZERS, ARE NOT SHOWN IN THIS PLAN.
6. LEVEL TRANSMITTER PIPE IS SHOWN IN THIS SECTION FOR CLARITY.
7. CONSTRUCTION CONTROL POINTS ARE PROVIDED ON THIS DRAWING.
8. BASE AGGREGATE SHALL MEET THE REQUIREMENTS OF ITEM 304.02 AND 703.04 OF THE OHIO DOT SPECIFICATIONS.
9. SEE DRAWING 92X-5900-G-00258 FOR PIPE, PAINT, AND DISCHARGE LINE VALVE REQUIREMENTS.
10. SEE DRAWING G-8C FOR LEACHATE TRANSMISSION SYSTEM GRAVITY LINE SLOPE REQUIREMENTS.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	BJ	AHF	LA/DS	KWC	RB

SCALE AS SHOWN

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

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

PROJECT:
LEACHATE CONVEYANCE SYSTEM

TITLE:
LEACHATE TRANSMISSION SYSTEM
LIFT STATION MECHANICAL DETAILS III

34

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

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

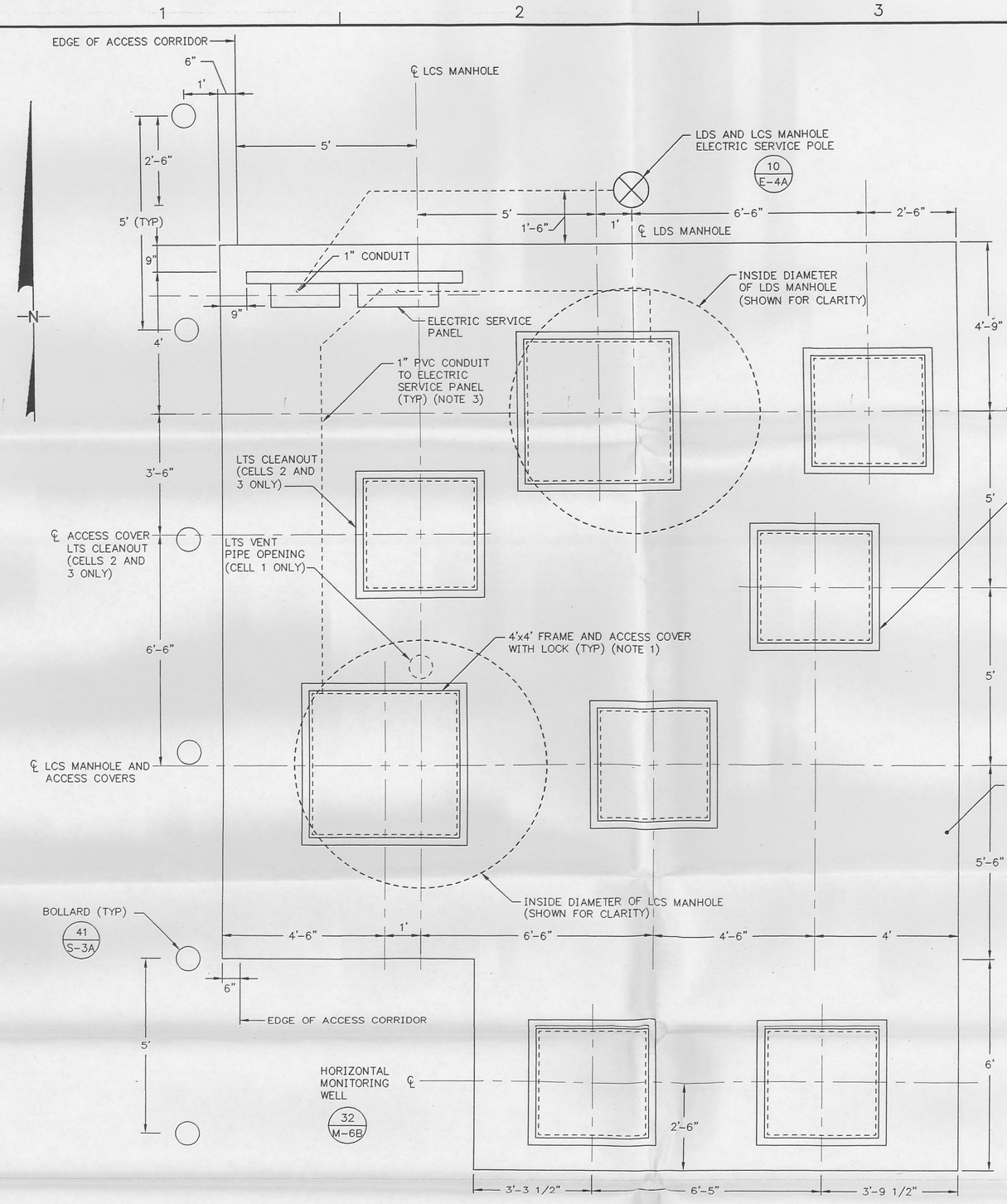
STATE OF OHIO — RUDOLPH BONAPARTE — E-56679 — REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

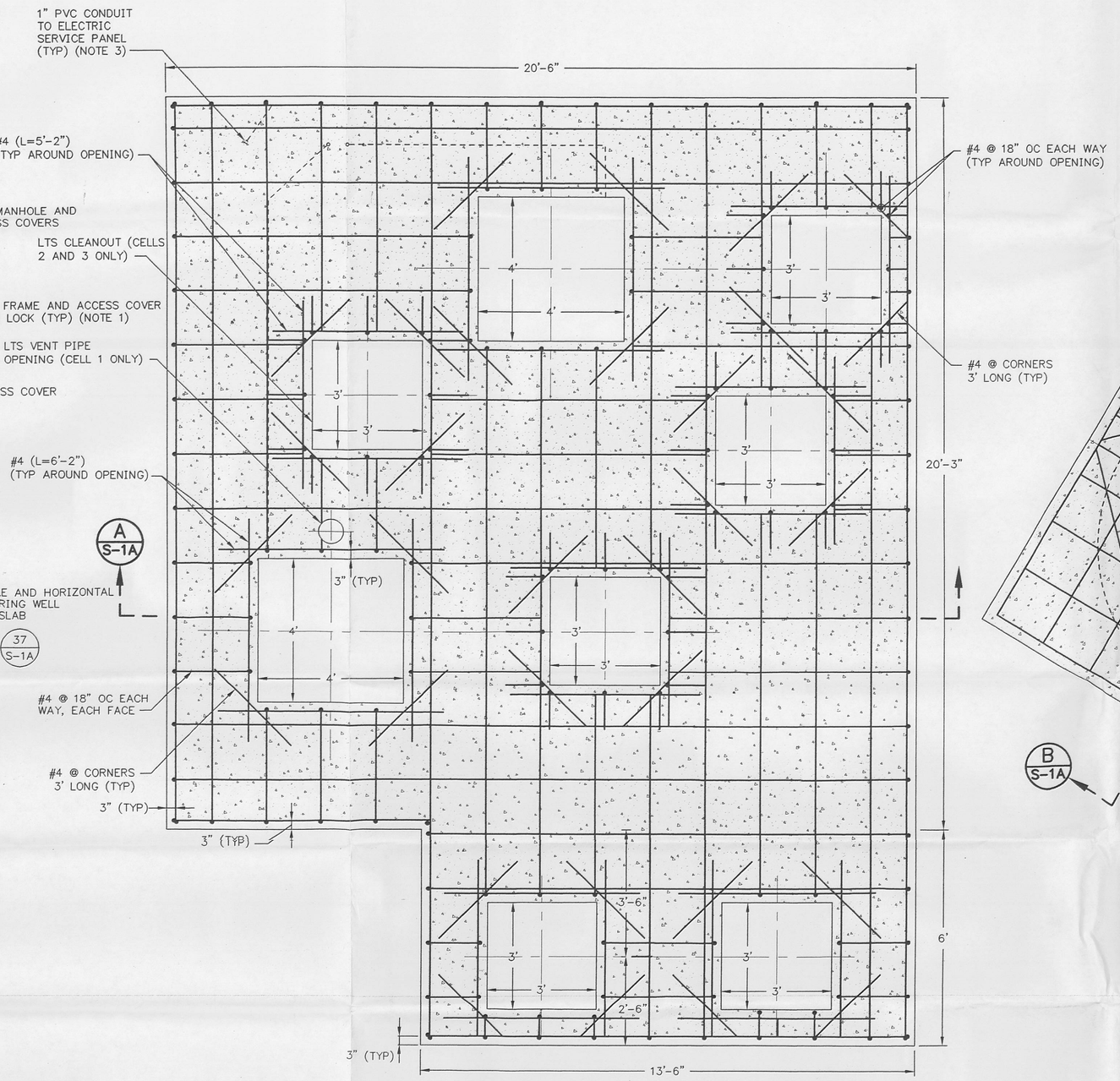
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-M-00067
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2012
SHEET NO.:	M-9A
REVISION NO.:	0

CERTIFIED FOR CONSTRUCTION

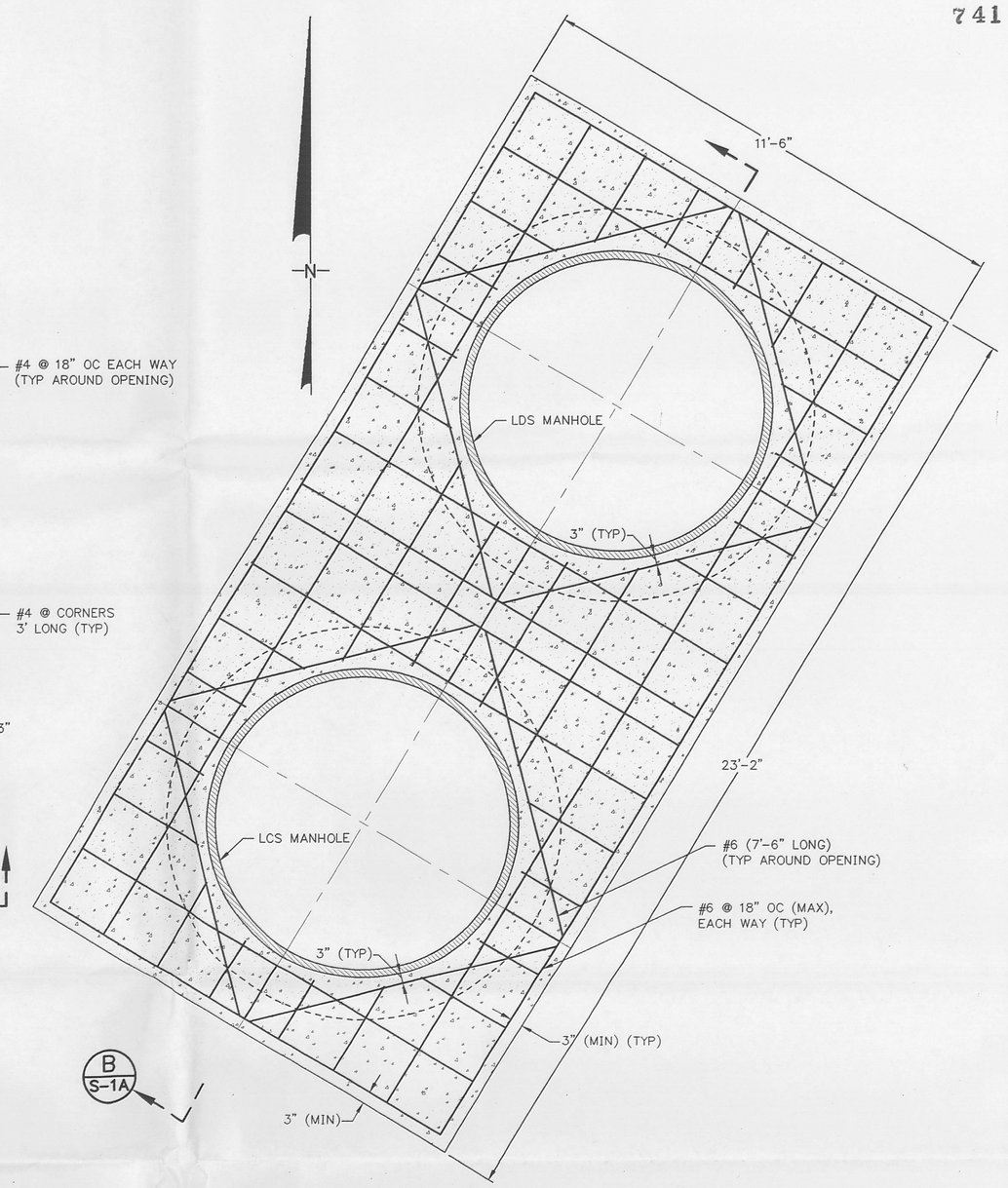
\F96-2012 Mon Oct 07 15:20:22 1996 J MILLER



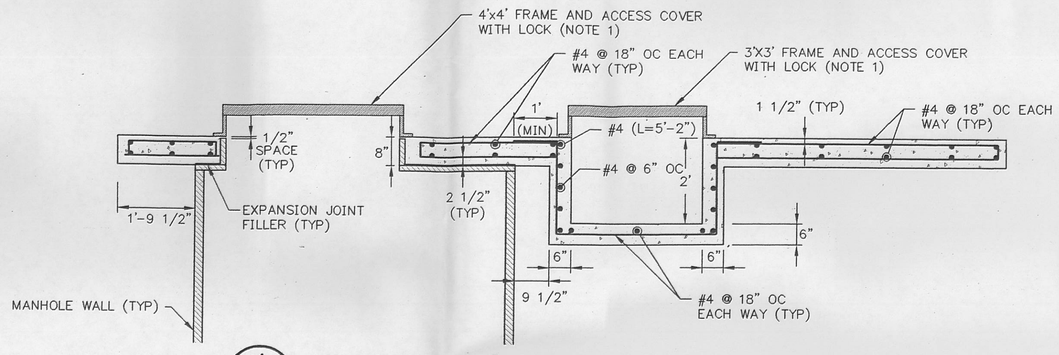
36 G-8A **PLAN**
MANHOLE AND HORIZONTAL MONITORING WELL COVER SLAB
SCALE: 1" = 2'
XREF: F96X2036



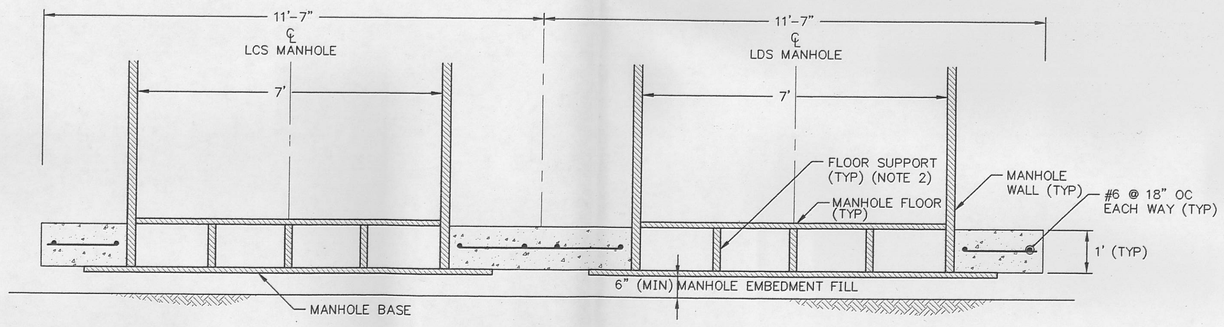
37 M-4A **SECTIONAL PLAN**
MANHOLE AND HORIZONTAL MONITORING WELL COVER SLAB
(NOTES 4, 5 AND 6)
SCALE: 1" = 2'
XREF: F96X2039



38 M-4A **SECTIONAL PLAN**
MANHOLE ANTIFLOTATION ANCHOR
(NOTES 5, 6 AND 7)
SCALE: 1" = 2'
XREF: F96X2040



A S-1A **SECTION**
MANHOLE COVER SLAB
(NOTES 2 AND 4)
SCALE: N.T.S.
XREF: F96X2041



B S-1A **SECTION**
MANHOLE BASE AND ANTIFLOTATION ANCHOR
SCALE: 1" = 2'
XREF: F96X2042

NOTES:

1. FRAME AND ACCESS COVER SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
2. MANHOLE COVER SUPPORTS AND MANHOLE FLOOR SUPPORTS SHALL BE IN ACCORDANCE WITH SECTION 02605 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
3. ELECTRICAL CONDUIT PENETRATIONS INTO MANHOLES SHALL BE IN ACCORDANCE WITH SECTIONS 02605 AND 16050 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
4. MANHOLE HDPE COVER SHALL BE TEMPORARILY SHORED DURING CONSTRUCTION OF MANHOLE COVER SLAB IN ACCORDANCE WITH SECTION 03100 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
5. CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE WITH SECTION 03100 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
6. CONCRETE SHALL BE PLACED IN ACCORDANCE WITH SECTION 03100 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
7. SUBCONTRACTOR MAY PLACE CONCRETE AGAINST NATURAL GROUND WITH APPROVAL OF THE CONSTRUCTION MANAGER.

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REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	BJ	JRM	LA	KWC	RB

SCALE AS SHOWN

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

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
LEACHATE CONVEYANCE SYSTEM

TITLE:
LEACHATE TRANSMISSION SYSTEM
STRUCTURAL DETAILS I

35

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-S-00068
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2011
SHEET NO.:	S-1A
REVISION NO.:	0

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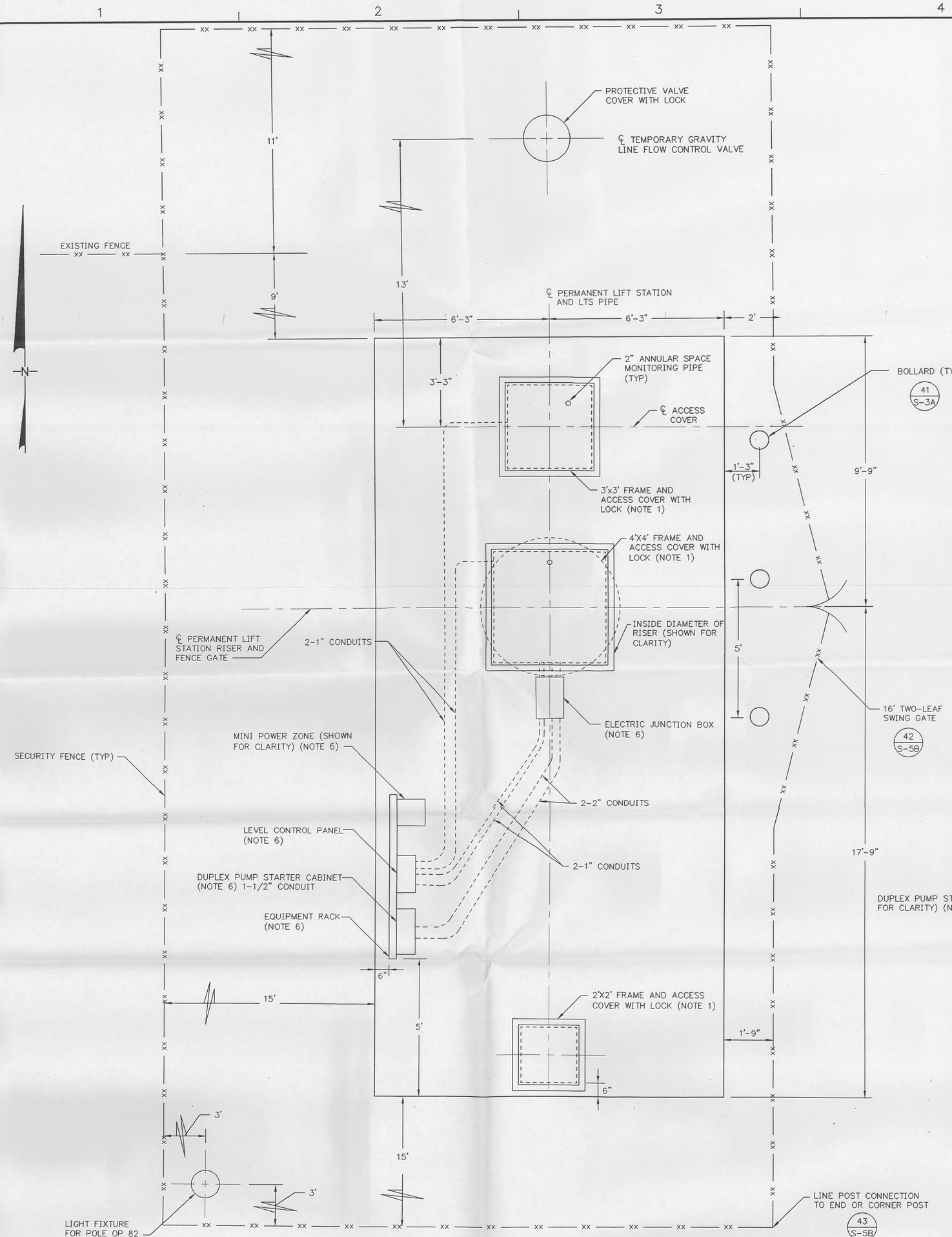
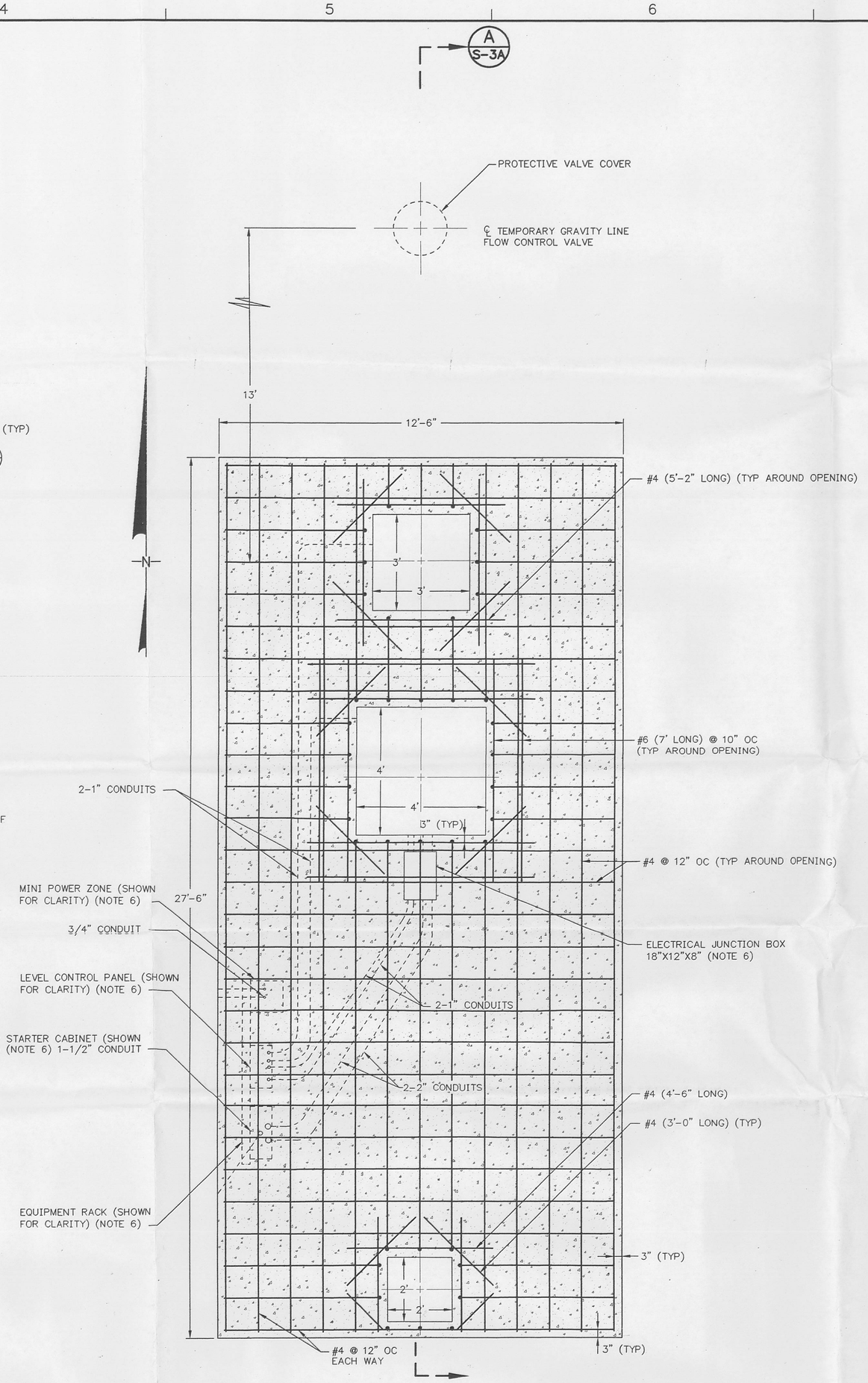
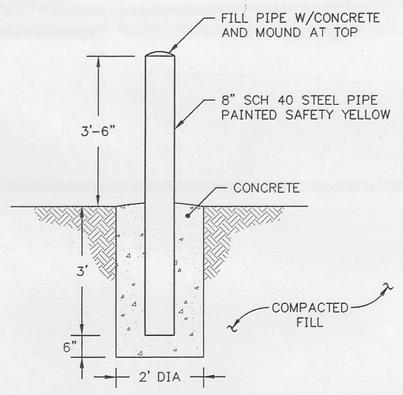


39 G-8C **PLAN**
PERMANENT LIFT STATION COVER
SCALE: 1" = 2'
XREF: F96X2034



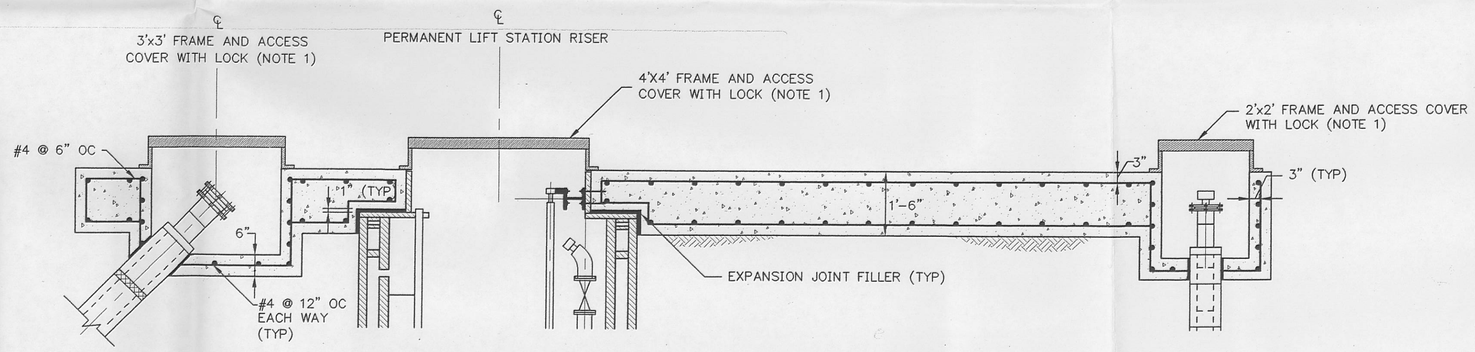
40 M-9 **SECTIONAL PLAN**
PERMANENT LIFT STATION COVER SLAB
(NOTE 3)
SCALE: 1" = 2'
XREF: F96X2035



41 S-1A **DETAIL**
BOLLARD
(NOTE 5)
SCALE: 1" = 2'
XREF: F96X2037

NOTES:

1. FRAME AND ACCESS COVER SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
2. ELECTRICAL CONDUIT PENETRATIONS INTO MANHOLES SHALL BE IN ACCORDANCE WITH SECTIONS 02605 AND 16050 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
3. MANHOLE HDPE COVER SHALL BE TEMPORARILY SHORED DURING CONSTRUCTION OF MANHOLE COVER SLAB IN ACCORDANCE WITH SECTION 03100 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
4. VERTICAL CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE WITH SECTION 03100 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
5. EXPOSED CONCRETE INCLUDING TOPS AND BASE OF BOLLARD SHALL HAVE A 1-INCH CROWN TO PROMOTE DRAINAGE.
6. SEE DRAWING 92X-5900-E-00323 FOR ELECTRICAL PLANS FOR PERMANENT LIFT STATION.



A S-3A **SECTION**
PERMANENT LIFT STATION
(NOTES 2, 3, AND 4)
SCALE: N.T.S
XREF: F96X2036

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	BJ	JRM	LA	KWC	RB

SCALE AS SHOWN

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

CLIENT:
FERMCO Restoration Management Corporation
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
LEACHATE CONVEYANCE SYSTEM

TITLE:
LEACHATE TRANSMISSION SYSTEM
STRUCTURAL DETAILS III

36

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-S-00069
GEOSYNTEC PROJECT NO.:	GE3900-22.1
GEOSYNTEC DOCUMENT NO.:	F96-2010
SHEET NO.:	S-3A
REVISION NO.:	0

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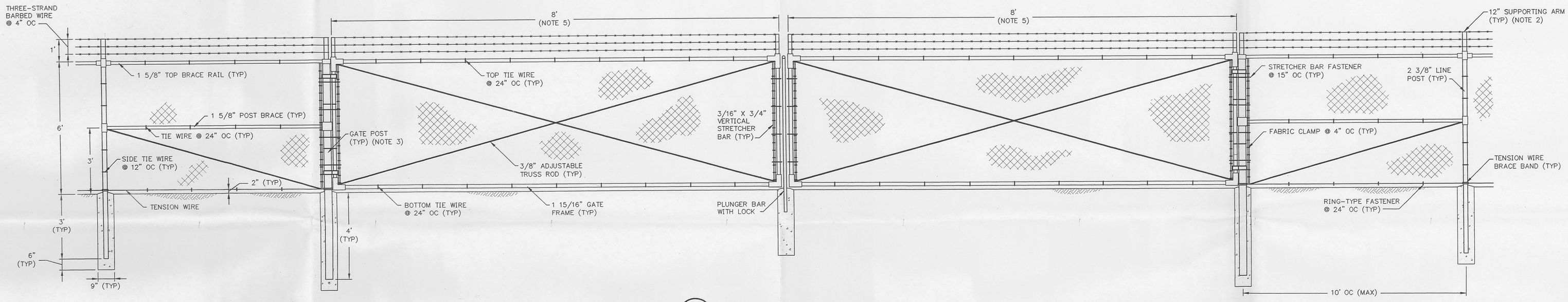
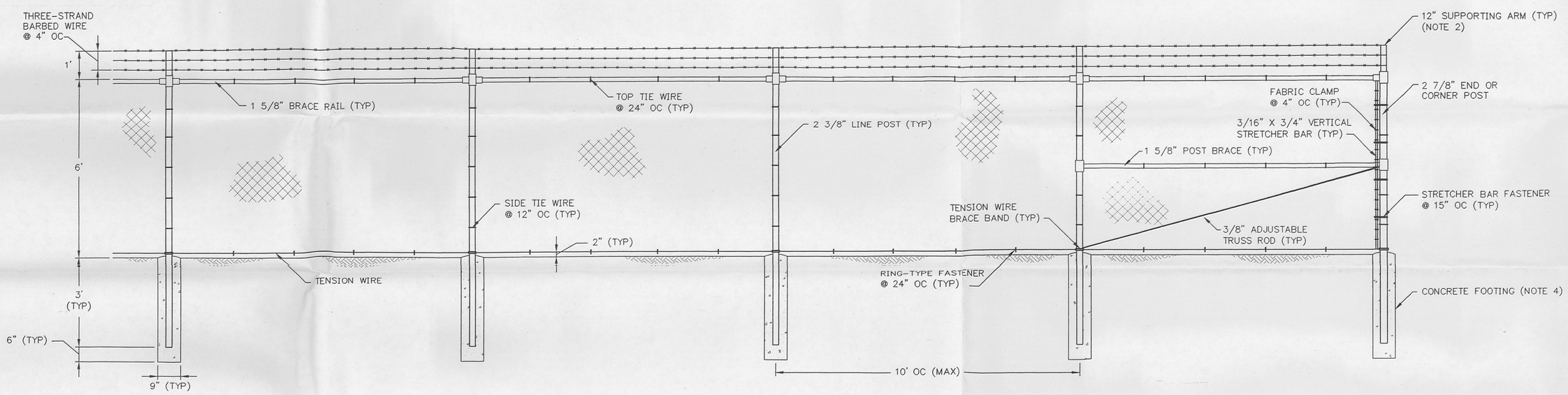
CERTIFIED FOR CONSTRUCTION

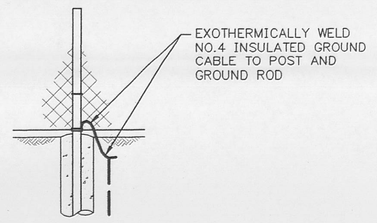
L:\F96-2010 Mon Oct 07 12:15:28 1996 J MILLER



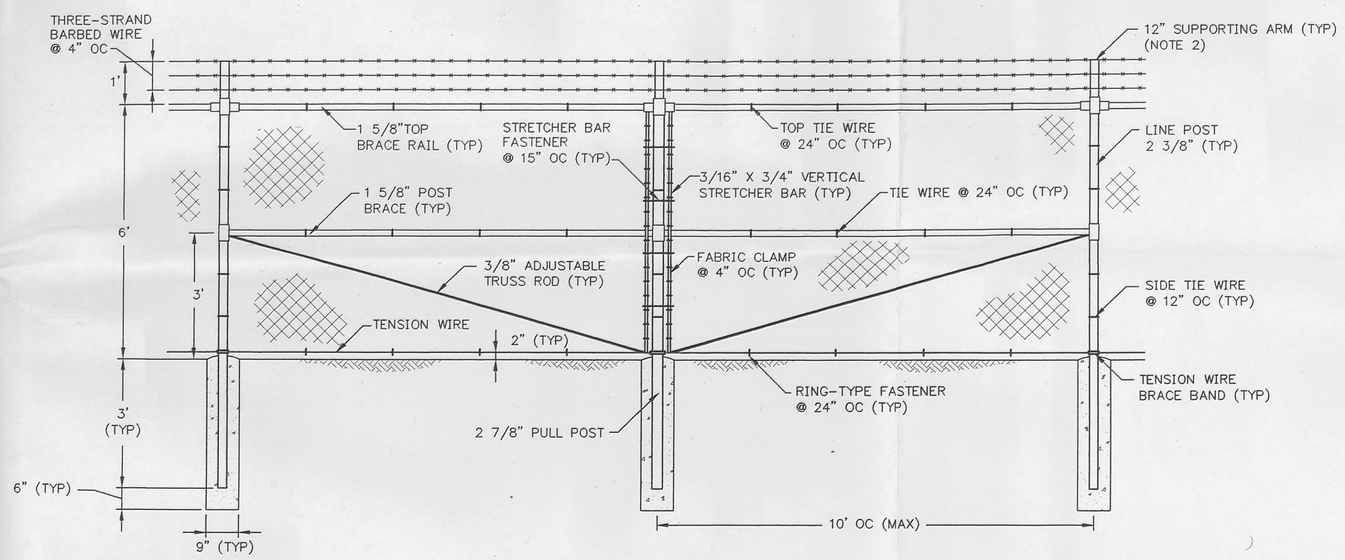
42 / G-8C **DETAIL**
TWO-LEAF SWING GATE
SCALE: 1" = 2'
XREF: F96X1075



43 / G-8C **DETAIL**
LINE POST CONNECTION TO END OR CORNER POST
SCALE: 1"= 2'
XREF: F96X1078



44 / - **DETAIL**
RIGHT-OF-WAY FENCE GROUND
SCALE: NTS
XREF: F96X1077



45 / - **DETAIL**
PULL POST
SCALE: 1"= 2'
XREF: F96X1076

NOTES:

1. CHAIN LINK FENCE AND GATES SHALL COMPLY WITH SECTION 02831 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
2. SUPPORTING ARMS SHALL SLOPE TO THE OUTSIDE OF THE FENCE AT 45 DEGREES FROM THE VERTICAL.
3. 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 DRAWINGS G-8C AND S-3A FOR LOCATION OF CHAIN LINK FENCE AND GATE.
6. CHAIN LINK FENCE SHALL BE GROUNDED ON BOTH SIDES OF GATE.

FOR INFORMATION ONLY

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	08.10.96	CERTIFIED FOR CONSTRUCTION	DLVL	JRM	LA	KWC	RB

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

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

PROJECT:
LEACHATE CONVEYANCE SYSTEM

TITLE:
FENCE DETAILS

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

Rudolph Bonaparte
SIGNATURE
8 Oct 1996
DATE

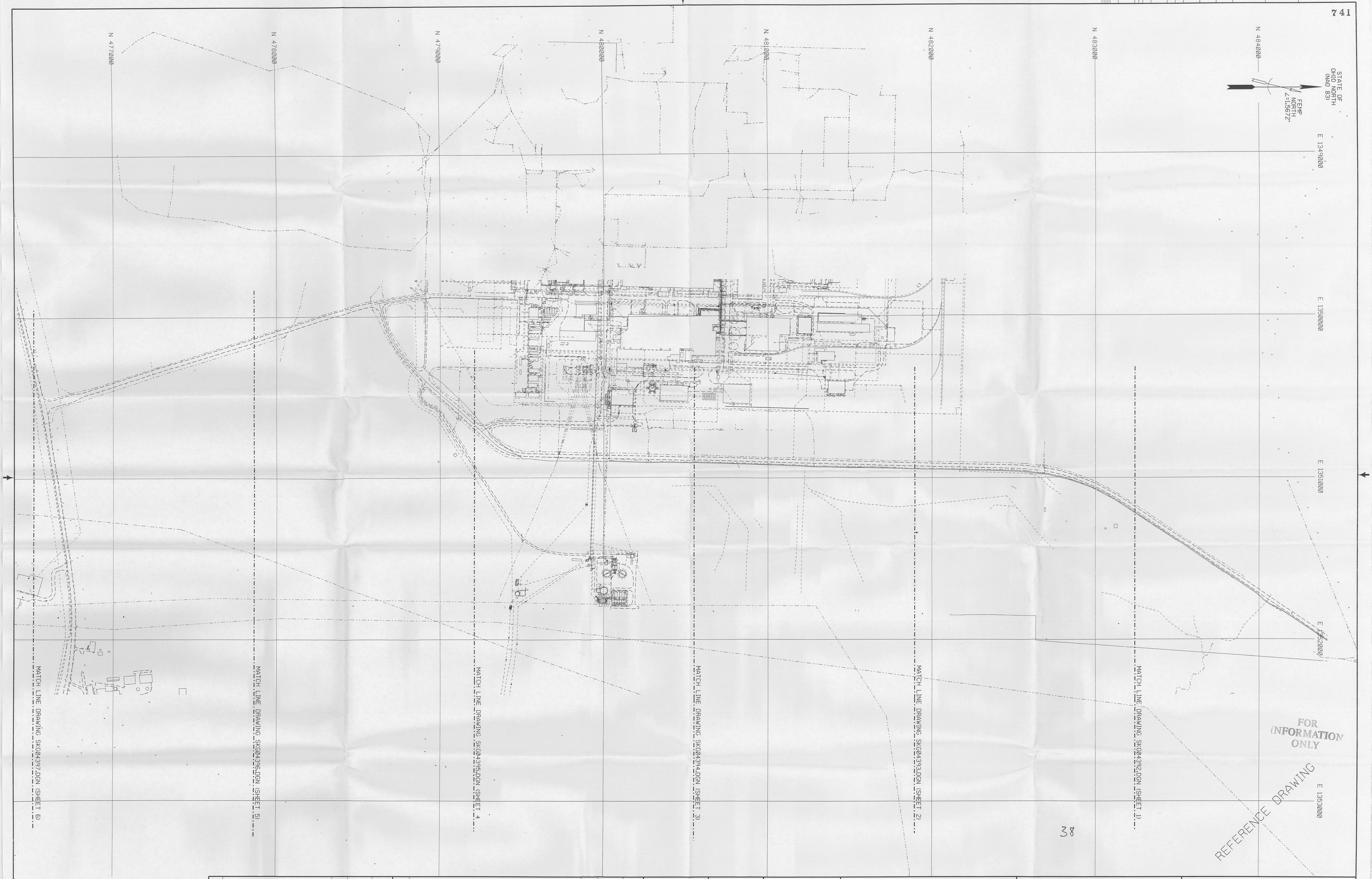
STATE OF OHIO
RUDOLPH BONAPARTE
E-56679
REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.: 20100
FERMCO SUBCONTRACT NO.: 95PS005028
FERMCO DRAWING NO.: 90X-6000-S-00092
GEOSYNTEC PROJECT NO.: GE3900-22.1
GEOSYNTEC DOCUMENT NO.: F96-2018
SHEET NO.: S-5B
REVISION NO.: 0

CERTIFIED FOR CONSTRUCTION

M:\GAGADDD\GE3900.22\F96-2018 Mon Oct 07 12:39:59 1996 John C.



NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
B	ISSUED FOR DOE REVIEW									
A	ISSUED FOR FERMCO REVIEW									

NOTE: FERMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

CONFIGURATION MANAGEMENT DRAWING YES / NO

SYSTEMS, STRUCTURES OR COMPONENTS DEPICTED ON THIS DRAWING ARE UNDER CONFIGURATION MANAGEMENT CONTROL. SEE NOTES.

COGNIZANT ENGINEER DATE

APPROVALS					
			SAFETY ENG.		
CIVIL & STR.			MAINTENANCE		
ELECTRICAL			Q.A.		
ENGINEER			FIRE PROTECT.		
INSTRUMENT			WASTE MANAGE		
MECHANICAL			SECURITY		
			CRU		
CHECKED					
APPROVED					

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

FERMCO

Fernald Environmental Management Project

U.S. DEPARTMENT OF ENERGY

EXISTING UTILITIES REFERENCE DRAWING OVERALL PLAN

SCALE 1"=200'

DATE 8/8/96

DRAWN D. REED

SKG04391.DGN

A

FORMAT REVISED 4/15/96 FORM5A.DGN

FILE NAME: /usr/ref2/ou2/po164/skg04391.dgn

741

NOTES:

1. SEE SITE STANDARDS ON PARSONS' LEGEND AND SYMBOLS.
2. SITE FILE UTILITIES ARE UTILITIES THAT HAVE BEEN IDENTIFIED BY "AS BUILT DRAWING" OR SITE HISTORICAL INFORMATION. LOCATION IS APPROXIMATE IN THE AREA. CONSTRUCTION IN AREA SHOULD PHYSICALLY VERIFY UTILITY PRIOR TO COMMENCEMENT.
3. LOCATION OF DRAIN TILES SHOWN ARE APPROXIMATE. DRAIN TILES ARE APPROXIMATELY 18" BELOW THE EXISTING GRADE.

MATCH LINE SEE DRAWING SKG04393.DGN (SHEET 2)

NO.	REVISIONS	DATE	DWN. BY	APPD.
B	ISSUED FOR DOE REVIEW			
A	ISSUED FOR FERMCO REVIEW			

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.

NOTE: FERMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

CONFIGURATION MANAGEMENT DRAWING YES NO

SYSTEMS, STRUCTURES OR COMPONENTS DEPICTED ON THIS DRAWING ARE UNDER CONFIGURATION MANAGEMENT CONTROL. SEE NOTES.

COGNIZANT ENGINEER DATE

APPROVALS

CIVIL & STR.			SAFETY ENG.		
ELECTRICAL			MAINTENANCE		
ENGINEER			Q.A.		
INSTRUMENT			FIRE PROTECT.		
MECHANICAL			WASTE MANAGE		
			SECURITY		
			CRU		
CHECKED					
APPROVED					

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

FERMCO

Fernald Environmental Management Project

U.S. DEPARTMENT OF ENERGY

EXISTING UTILITIES REFERENCE DRAWING SHEET 1 OF 6

SCALE 1"=50'
DATE 8/8/96
DRAWN D. REED

SKG04392.DGN A

FORMAT REVISED 4/15/96 FORM5A.DGN

FILE NAME: /usr/ref2/ou2/po164/skg04392.dgn

NOTES:

1. SEE SITE STANDARDS ON PARSONS' LEGEND AND SYMBOLS.
2. SITE FILE UTILITIES ARE UTILITIES THAT HAVE BEEN IDENTIFIED BY "AS BUILT DRAWING" OR SITE HISTORICAL INFORMATION. LOCATION IS APPROXIMATE IN THE AREA. CONSTRUCTION IN AREA SHOULD PHYSICALLY VERIFY UTILITY PRIOR TO COMMENCEMENT.
3. LOCATION OF DRAIN TILES SHOWN ARE APPROXIMATE. DRAIN TILES ARE APPROXIMATELY 18" BELOW THE EXISTING GRADE.

NO.	REVISIONS	DATE	DWN. BY	APPD.
B	ISSUED FOR DOE REVIEW			
A	ISSUED FOR FERMCO REVIEW			

NO.	REVISIONS	DATE	DWN. BY	APPD.

REF. DWG. NO.

NOTE: FERMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

CONFIGURATION MANAGEMENT DRAWING YES NO

SYSTEMS, STRUCTURES OR COMPONENTS DEPICTED ON THIS DRAWING ARE UNDER CONFIGURATION MANAGEMENT CONTROL. SEE NOTES.

COGNIZANT ENGINEER DATE

APPROVALS

CIVIL & STR.		SAFETY ENG.	
ELECTRICAL		MAINTENANCE	
ENGINEER		Q.A.	
INSTRUMENT		FIRE PROTECT.	
MECHANICAL		WASTE MANAGE	
		SECURITY	
		CRU	
CHECKED			
APPROVED			

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald Environmental Management Project
U.S. DEPARTMENT OF ENERGY

EXISTING UTILITIES REFERENCE DRAWING SHEET 2 OF 6

SCALE 1"=50'
DATE 8/8/95
DRAWN D. REED

SKG04393.DGN A

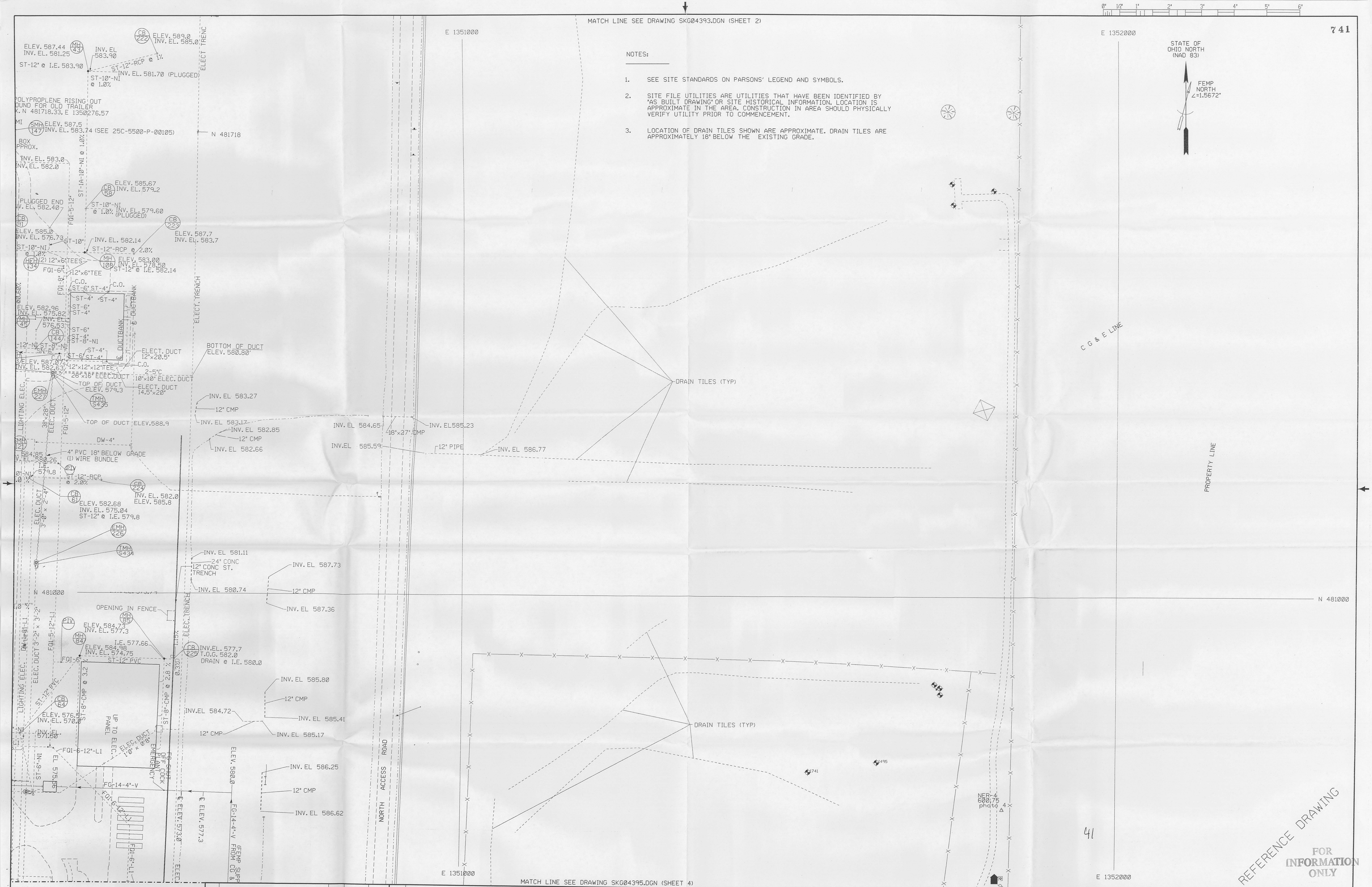
FORMAT REVISED 4/15/96 FORM5A.DGN

FILE NAME: /usr/ref2/cu2/pa164/skg04393.dgn

MATCH LINE SEE DRAWING SKG04393.DGN (SHEET 2)

NOTES:

1. SEE SITE STANDARDS ON PARSONS' LEGEND AND SYMBOLS.
2. SITE FILE UTILITIES ARE UTILITIES THAT HAVE BEEN IDENTIFIED BY "AS BUILT DRAWING" OR SITE HISTORICAL INFORMATION. LOCATION IS APPROXIMATE IN THE AREA. CONSTRUCTION IN AREA SHOULD PHYSICALLY VERIFY UTILITY PRIOR TO COMMENCEMENT.
3. LOCATION OF DRAIN TILES SHOWN ARE APPROXIMATE. DRAIN TILES ARE APPROXIMATELY 18" BELOW THE EXISTING GRADE.



NO.	REVISIONS	DATE	DWN. BY	APPD.
B	ISSUED FOR DOE REVIEW			
A	ISSUED FOR FERMCO REVIEW			

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.

NOTE: FERMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

CONFIGURATION MANAGEMENT DRAWING — YES / NO

SYSTEMS, STRUCTURES OR COMPONENTS DEPICTED ON THIS DRAWING ARE UNDER CONFIGURATION MANAGEMENT CONTROL. SEE NOTES.

COGNIZANT ENGINEER DATE

APPROVALS

CIVIL & STR.			SAFETY ENG.		
ELECTRICAL			MAINTENANCE		
ENGINEER			Q.A.		
INSTRUMENT			FIRE PROTECT.		
MECHANICAL			WASTE MANAGE		
			SECURITY		
			CRU		
CHECKED					
APPROVED					

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald Environmental Management Project
U.S. DEPARTMENT OF ENERGY

EXISTING UTILITIES REFERENCE DRAWING SHEET 3 OF 6

SCALE 1"=50'
DATE 8/8/96
DRAWN D. REED
SKG04394.DGN A

FORMAT REVISED 4/15/96 FORM5A.DGN

NOTES:

1. SEE SITE STANDARDS ON PARSONS' LEGEND AND SYMBOLS.
2. SITE FILE UTILITIES ARE UTILITIES THAT HAVE BEEN IDENTIFIED BY "AS BUILT DRAWING" OR SITE HISTORICAL INFORMATION. LOCATION IS APPROXIMATE IN THE AREA. CONSTRUCTION IN AREA SHOULD PHYSICALLY VERIFY UTILITY PRIOR TO COMMENCEMENT.
3. LOCATION OF DRAIN TILES SHOWN ARE APPROXIMATE. DRAIN TILES ARE APPROXIMATELY 18" BELOW THE EXISTING GRADE.

NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
B	ISSUED FOR DOE REVIEW									
A	ISSUED FOR FERMCO REVIEW									

NOTE: FERMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

CONFIGURATION MANAGEMENT DRAWING — YES / NO

SYSTEMS, STRUCTURES OR COMPONENTS DEPICTED ON THIS DRAWING ARE UNDER CONFIGURATION MANAGEMENT CONTROL. SEE NOTES.

COGNIZANT ENGINEER — DATE

APPROVALS					
			SAFETY ENG.		
CIVIL & STR.			MAINTENANCE		
ELECTRICAL			Q.A.		
ENGINEER			FIRE PROTECT.		
INSTRUMENT			WASTE MANAGE		
MECHANICAL			SECURITY		
			CRU		
CHECKED					
APPROVED					

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

FERMCO

Fernald Environmental Management Project

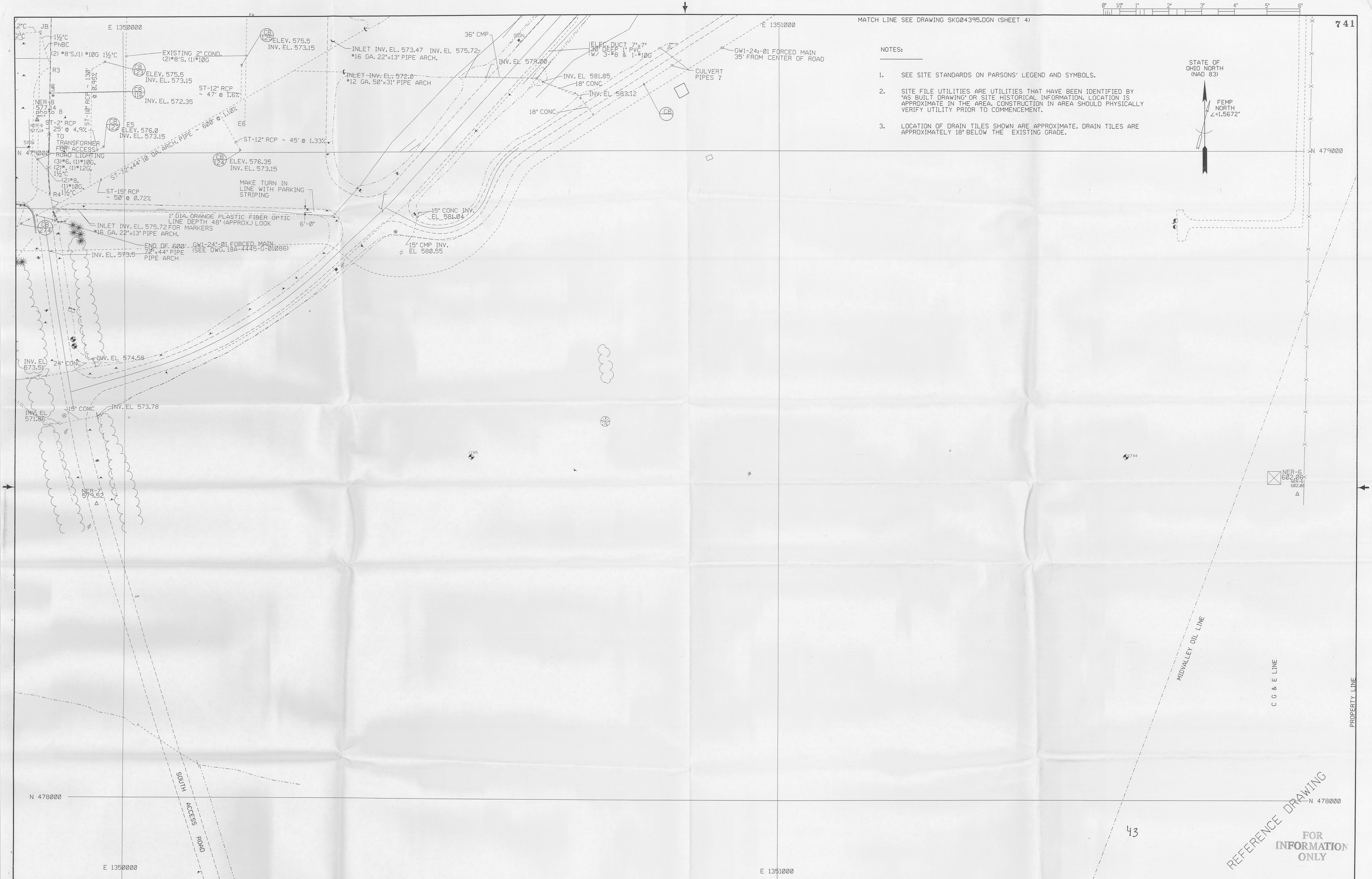
U.S. DEPARTMENT OF ENERGY

EXISTING UTILITIES REFERENCE DRAWING SHEET 4 OF 6

SCALE 1"=50'
DATE 8/8/96
DRAWN D. REED

SKG04395.DGN | A

FORMAT REVISED 4/15/96 FORM5A.DGN



NOTES:

1. SEE SITE STANDARDS ON PARSONS' LEGEND AND SYMBOLS.
2. SITE FILE UTILITIES ARE UTILITIES THAT HAVE BEEN IDENTIFIED BY "AS BUILT DRAWING" OR SITE HISTORICAL INFORMATION. LOCATION IS APPROXIMATE IN THE AREA. CONSTRUCTION IN AREA SHOULD PHYSICALLY VERIFY UTILITY PRIOR TO COMMENCEMENT.
3. LOCATION OF DRAIN TILES SHOWN ARE APPROXIMATE. DRAIN TILES ARE APPROXIMATELY 18" BELOW THE EXISTING GRADE.

43

REFERENCE DRAWING

FOR INFORMATION ONLY

NO.	REVISIONS	DATE	DWN. BY	APPD.
B	ISSUED FOR DOE REVIEW			
A	ISSUED FOR FERMCO REVIEW			

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.

NOTE: FERMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

CONFIGURATION MANAGEMENT DRAWING YES NO

SYSTEMS, STRUCTURES OR COMPONENTS DEPICTED ON THIS DRAWING ARE UNDER CONFIGURATION MANAGEMENT CONTROL. SEE NOTES.

COGNIZANT ENGINEER DATE

APPROVALS

		SAFETY ENG.	
CIVIL & STR.		MAINTENANCE	
ELECTRICAL		Q.A.	
ENGINEER		FIRE PROTECT.	
INSTRUMENT		WASTE MANAGE	
MECHANICAL		SECURITY	
		CRU	
CHECKED			
APPROVED			

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

FERMCO

Fernald Environmental Management Project

U.S. DEPARTMENT OF ENERGY

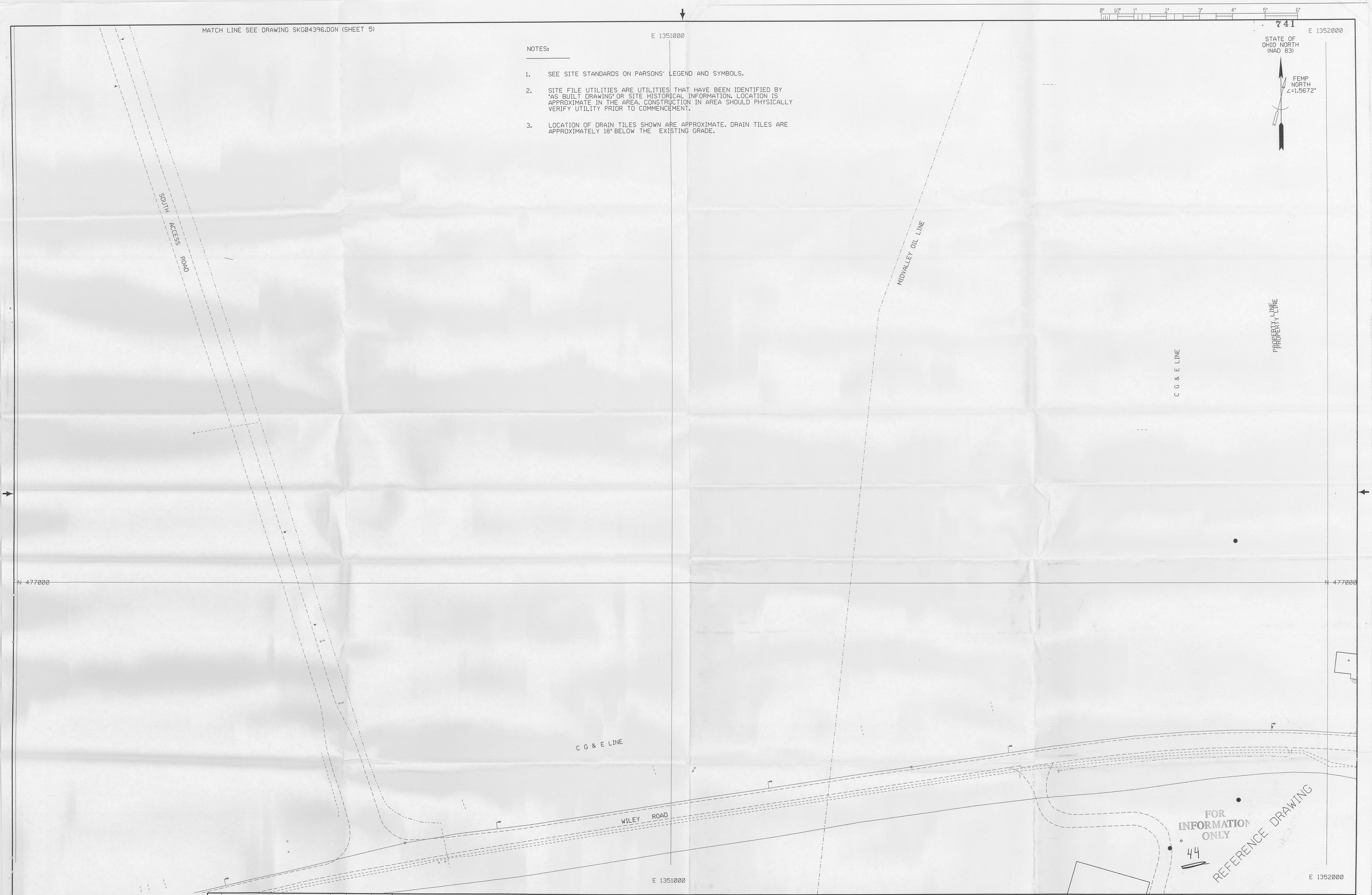
EXISTING UTILITIES REFERENCE DRAWING SHEET 5 OF 6

SCALE 1"=50'
DATE 8/8/96
DRAWN D. REED

SKG04396.DGN | A

FORMAT REVISED 4/15/96 FORM5A.DGN

FILE NAME: /usr/ref2/ou2/po164/skg04396.dgn



NOTES:

1. SEE SITE STANDARDS ON PARSONS' LEGEND AND SYMBOLS.
2. SITE FILE UTILITIES ARE UTILITIES THAT HAVE BEEN IDENTIFIED BY "AS BUILT DRAWING" OR SITE HISTORICAL INFORMATION. LOCATION IS APPROXIMATE IN THE AREA. CONSTRUCTION IN AREA SHOULD PHYSICALLY VERIFY UTILITY PRIOR TO COMMENCEMENT.
3. LOCATION OF DRAIN TILES SHOWN ARE APPROXIMATE. DRAIN TILES ARE APPROXIMATELY 18" BELOW THE EXISTING GRADE.

NO.	REVISIONS	DATE	DWN. BY	APPD.
B	ISSUED FOR DOE REVIEW			
A	ISSUED FOR FERMCO REVIEW			

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.

NOTE: FERMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY

CONFIGURATION MANAGEMENT DRAWING YES NO

SYSTEMS, STRUCTURES OR COMPONENTS DEPICTED ON THIS DRAWING ARE UNDER CONFIGURATION MANAGEMENT CONTROL. SEE NOTES.

COGNIZANT ENGINEER DATE

APPROVALS

CIVIL & STR.			SAFETY ENG.		
ELECTRICAL			MAINTENANCE		
ENGINEER			Q.A.		
INSTRUMENT			FIRE PROTECT.		
MECHANICAL			WASTE MANAGE		
			SECURITY		
			CRU		
CHECKED					
APPROVED					

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EXISTING UTILITIES REFERENCE DRAWING SHEET 6 OF 6

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