UNITED STATES DEPARTMENT OF ENERGY

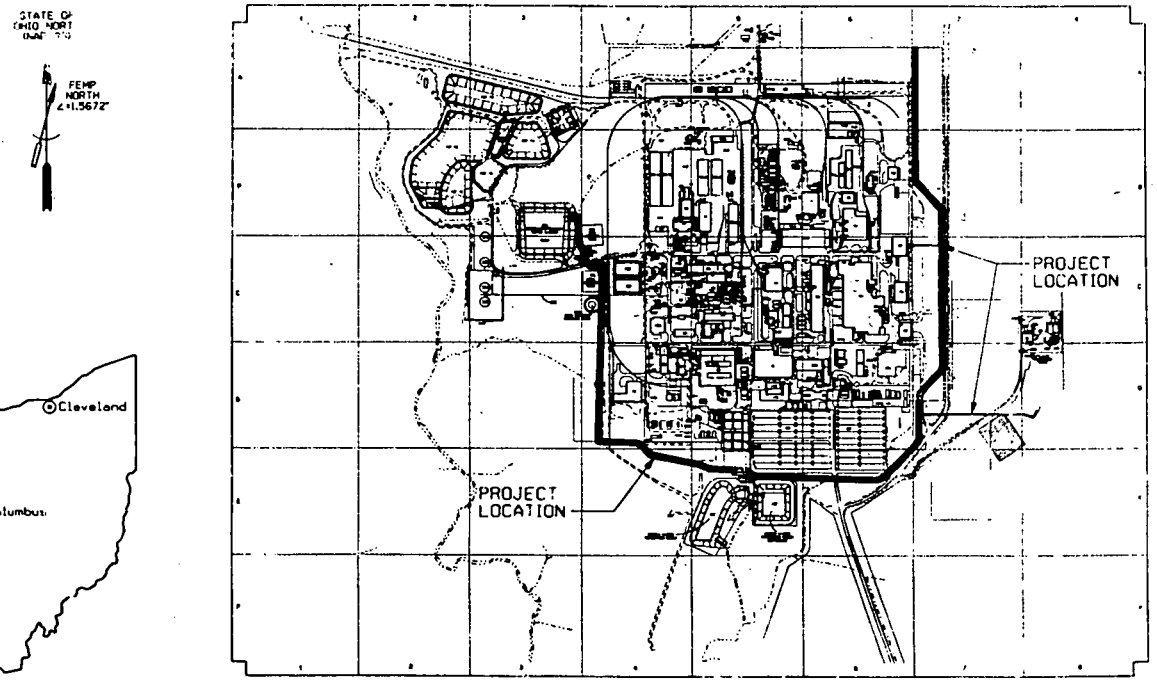
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

ON-SITE DISPOSAL FACILITY
LEACHATE CONVEYANCE SYSTEM

SUBCONTRACT NUMBER 20211

HAMILTON COUNTY AND BUTLER COUNTY, OHIO

CONSTRUCTION PACKAGE



NOTES

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS

FOR INFORMATION ONLY

REV NO.	REASON FOR REVISION	DRAWN	CHECKED	APPROVED
0	CERTIFIED FOR CONSTRUCTION		N/A	

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MADA, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
PROJECT TITLE SHEET

DRAWN BY	DATE	CHECKED BY	DATE	ENGINEER BY	DATE
R.L. RABBITT	10/16/92			E. KELLAWAY	10/92
PLANT/BLDG. NO.		PLANT		SCALE: NONE	PLANT
CONTRACTOR DRAWING		PARSONS DWG. ORIGINAL: N/A		PARSONS PROJECT NO. 20211	
PROJECT NO.		DRAWING NO.		SHEET NO.	REV NO.
	WBS 1.1.1.7.3.6 00-90701	92X-5900-X-00263		X0001	0

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
P.O. BOX 398704
CINCINNATI, OHIO 45239

PARSONS
1100 LAKE HEARN DRIVE, N.E. SUITE 200
ATLANTA, GEORGIA 30342-1523

PARSONS
25 MERCHANT STREET
CINCINNATI, OH 45246

CONSTRUCTION PACKAGE

PROJECT DWG TYPE: SRP/P0164

741

INDEX OF DRAWINGS

INDEX CODE NO.	FERMCO DWG. NO.	SHEET NO.	REVISION NO.	DRAWING TITLE	PREPARED BY	REMARKS
	92X-5900-X-00263	X0001	0	PROJECT TITLE SHEET	PARSONS	
	92X-5900-X-00264	X0002	1	DRAWING INDEX	PARSONS	
	92X-5900-X-00265	X0003	0	LEGEND AND SYMBOLS	PARSONS	
					PARSONS	
	92X-5900-G-00251	G0001	1	CIVIL - MASTER PLAN	PARSONS	
	92X-5900-G-00254	G0002	1	CIVIL - PLAN AND PROFILE - SHEET 1 OF 4	PARSONS	
	92X-5900-G-00255	G0003	1	CIVIL - PLAN AND PROFILE - SHEET 2 OF 4	PARSONS	
	92X-5900-G-00256	G0004	1	CIVIL - PLAN AND PROFILE - SHEET 3 OF 4	PARSONS	
	92X-5900-G-00262	G0005	1	CIVIL - PLAN AND PROFILE - SHEET 4 OF 4	PARSONS	
	92X-5900-G-00255	G0006	0	CIVIL - DETAILS - SHEET 1 OF 3	PARSONS	
	92X-5900-G-00257	G0007	0	CIVIL - DETAILS - SHEET 2 OF 3	PARSONS	
	92X-5900-G-00258	G0008	0	CIVIL - DETAILS - SHEET 3 OF 3	PARSONS	
	92X-5900-G-00259	G0009	0	CIVIL - SECTIONS AND DETAILS	PARSONS	DRAWING ADDED AFTER CFC
	92X-5900-G-00410	G0010	0	CIVIL - MANHOLE AND MISCELLANEOUS DETAILS	PARSONS	DRAWING ADDED AFTER CFC
	92X-5900-E-00323	E0001	0	ELECTRICAL - PLANS - PERMANENT LIFT STATION AND DISCHARGE MANIFOLD	PARSONS	
	92X-5900-E-00324	E0002	0	ELECTRICAL - SINGLE LINE AND SCHEMATICS - PERMANENT LIFT STATION	PARSONS	
	92X-5900-E-00325	E0003	0	ELECTRICAL - ELEVATION AND DETAILS	PARSONS	
	92X-5500-E-00500		0	LEACHATE CONVEYANCE SYSTEM - ELECTRICAL SITE PLAN AND SINGLE LINE	FERMCO	
	92X-5500-E-00501		0	LEACHATE CONVEYANCE SYSTEM - ELECTRICAL DETAILS	FERMCO	
	92X-5500-E-00502		0	LEACHATE CONVEYANCE SYSTEM - ELECTRICAL DETAILS	FERMCO	
	92X-5500-E-00503		0	OSDF UTILITY REROUTING - MAIN SITE TELEPHONE FEEDER LINES INSIGHTS	FERMCO	
	92X-5900-M-00330	M0001	0	MECHANICAL PROCESS - PIPING AND INSTRUMENTATION DIAGRAM - SYMBOLS AND LEGEND SHEET	PARSONS	
	92X-5900-M-00322	M0002	0	MECHANICAL PROCESS - PIPING AND INSTRUMENTATION DIAGRAM - LEACHATE CONVEYANCE SYSTEM	PARSONS	
	92X-5900-M-00345	M0003	0	INSTRUMENTATION - ANALOG I/O DIAGRAM	PARSONS	
	92X-5900-M-00347	M0004	0	INSTRUMENTATION - INSTRUMENT INSTALLATION METER MANHOLE DETAIL	PARSONS	
	92X-6000-X-00056	X-2	0	LEGEND AND SYMBOLS	GEOSYNTEC	
	92X-6000-G-00057	G-0A	0	LEACHATE TRANSMISSION SYSTEM - PLAN AND PROFILE DATA I	GEOSYNTEC	
	92X-6000-G-00058	G-0B	0	LEACHATE TRANSMISSION SYSTEM - PLAN AND PROFILE DATA II	GEOSYNTEC	
	92X-6000-G-00059	G-0C	0	LEACHATE TRANSMISSION SYSTEM - PLAN AND PROFILE DATA III	GEOSYNTEC	
	92X-6000-E-00060	E-4A	0	LEACHATE TRANSMISSION SYSTEM - ELECTRICAL DETAILS I	GEOSYNTEC	
	92X-6000-E-00061	E-7A	0	LEACHATE TRANSMISSION SYSTEM - ELECTRICAL DETAILS IV	GEOSYNTEC	
	92X-6000-M-00053	M-2A	0	LEACHATE TRANSMISSION SYSTEM - PIPING AND INSTRUMENTATION DIAGRAM EARLY STAGE	GEOSYNTEC	
	92X-6000-M-00052	M-4A	0	LEACHATE TRANSMISSION SYSTEM - GRAVITY LINE AND MANHOLE MECHANICAL DETAILS I	GEOSYNTEC	
	92X-6000-M-00054	M-5A	0	LEACHATE TRANSMISSION SYSTEM - GRAVITY LINE AND MANHOLE MECHANICAL DETAILS II	GEOSYNTEC	
	92X-6000-M-00055	M-6A	0	LEACHATE TRANSMISSION SYSTEM - GRAVITY LINE AND MANHOLE MECHANICAL DETAILS III	GEOSYNTEC	
	92X-6000-M-00056	M-6B	0	LEACHATE TRANSMISSION SYSTEM - GRAVITY LINE AND MANHOLE MECHANICAL DETAILS IV	GEOSYNTEC	
	92X-6000-M-00057	M-9A	0	LEACHATE TRANSMISSION SYSTEM - LIFT STATION MECHANICAL DETAILS III	GEOSYNTEC	
	92X-6000-S-00068	S-1A	0	LEACHATE TRANSMISSION SYSTEM - STRUCTURAL DETAILS I	GEOSYNTEC	
	92X-6000-S-00069	S-3A	0	LEACHATE TRANSMISSION SYSTEM - STRUCTUTAL DETAILS III	GEOSYNTEC	
	92X-6000-S-00072	S-5B	0	FENCE DETAILS	GEOSYNTEC	
	18A-1920-P-60381			BIODENITRIFICATION SYSTEM FORCE MAIN - LAGOON TO REACTOR	FERMCO	REFERENCE DRAWING
	SKG-04391		A	EXISTING UTILITIES - REFERENCE DRAWING - OVERALL PLAN	FERMCO	REFERENCE DRAWING
	SKG-04392		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 1 OF 6	FERMCO	REFERENCE DRAWING
	SKG-04393		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 2 OF 6	FERMCO	REFERENCE DRAWING
	SKG-04394		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 3 OF 6	FERMCO	REFERENCE DRAWING
	SKG-04395		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 4 OF 6	FERMCO	REFERENCE DRAWING
	SKG-04396		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 5 OF 6	FERMCO	REFERENCE DRAWING
	SKG-04397		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 6 OF 6	FERMCO	REFERENCE DRAWING

NOTES

REF DWG NO.	DRAWING TITLE
92X-5900-X-00263	PROJECT TITLE SHEET
92X-5900-X-00265	LEGEND AND SYMBOLS

REV NO	ISSUE OF REVISION PURPOSE - DESCRIPTION	DRAWN	CHECKED	DATE
1	ADD/ADJUST UTILITIES DCN 1695841, DCN 1788887, 818, DCN 1718883, DCN 4831688	JCY	N/A	8/8/97
0	CERTIFIED FOR CONSTRUCTION	VSM 11/5/96	N/A	

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. · PARSONS MAIN, INC. · ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
DRAWING INDEX

DRAWN BY	DATE	LEAD DESIGNER	DATE	CHECKED BY	DATE
K.L. ABBITT	02/16/96	ED KLEBEN	10/31/96	E. HELMKE	4/11/96

FLOOR/BLDG NO	FLOOR	ROOM	CLASS
		NONE	

DESIGNED FOR APPROVAL	FENCED FOR APPROVAL	FENCED PROJECT NO
V.S. MOORE 11/5/96	N/A	20210

PROJECT GROUP NUMBER	PROJECT DRAWING NUMBER	WBS	DRAWING PROJECT CODE NO	SHEET NO	REV NO
SRP/P0164		WBS 1.1.1.2.3.6 00-90701	92X-5900-X-00264	X0002	1

CONSTRUCTION PACKAGE

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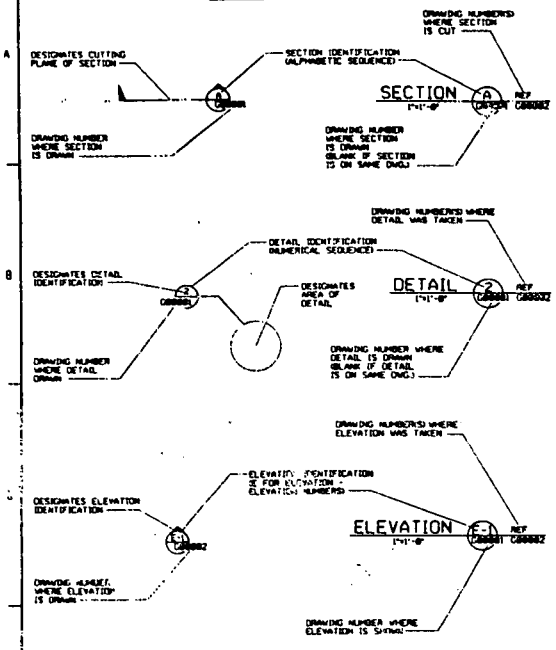
GENERAL LEGEND



NOTE:

ABBREVIATED DRAWING NUMBERS WILL BE USED FOR ALL SECTIONS, DETAILS, ELEVATIONS, AND WITHIN NOTES AND CALL OUTS IN THE BODY OF THE DRAWING.

FOR EXAMPLE: 92X-5900-G-00002 = DRAWING NUMBER
G00002 = ABBREVIATED DRAWING NUMBER

DIMENSIONING:

DIMENSIONS AND/OR ELEVATIONS MARKED THUS (+/-) SHALL BE VERIFIED IN THE FIELD BY SUB-CONTRACTOR BEFORE START OF CONSTRUCTION.

USE DIMENSIONS AS SHOWN. DO NOT SCALE.

NTS (NOT TO SCALE) IS SHOWN ONLY WHERE DIMENSION IS OBVIOUSLY OUT OF SCALE.

CONSTRUCTION BY OTHERS

- CONTOUR - MAJOR & MINOR
- UTILITIES
- BUILDING/TRAILER/PAD
- ROADWAY/SIDEWALK

UTILITY SYMBOLS

EXISTING		PROPOSED
ST	STORM SEWER	ST
SN	SANITARY SEWER	SN
FG	FUEL GAS	FG
DW	DRINKING WATER	DW
FQ	FIRE PROTECTION	FQ
LS	LIVE STEAM	LS
WS	WATER SUPPLY	WS
WR	COOLING WATER RETURN	WR
TW	PROCESS WATER	TW
CE	CONTAMINATE WATER	CE
FT	FILTRATE OR EFFLUENT	FT
DF	DEIONIZED FEED	DF
PW	DEIONIZED WATER	PW
BR	BRINE	BR
RW	RAW WATER	RW
A	ALARM	A
CN	STEAM CONDENSATE	CN
VE	VENT LINES	VE
SD	SUB-SURFACE DRAINAGE	SD
SL	SUMP LIQUID	SL
E	ELECTRICAL	E
OE	OVERHEAD ELECTRICAL	OE
T	TELEPHONE	T
G	ELECTRIC GROUND	G
PA	PLANT AIR	PA
SA	INSTRUMENT AIR SUPPLY	SA
	ABANDONED	

BALLOON LEGEND

- PIV — POST INDICATOR VALVE
- SMH — SANITARY MANHOLE
- EMH — ELECTRICAL MANHOLE
- TMH — TELEPHONE MANHOLE
- CB — STORM SEWER CATCH BASIN
- HFH — HIGH PRESSURE FIRE HYDRANT
- LFH — LOW PRESSURE FIRE HYDRANT
- DESIGNATES PIPELINE — FT 3 — COORDINATE POINT

GRADING SYMBOLS

SEE DRAWING 92X-5900-X-00056 FOR GRADING SYMBOLS LEGEND

SYMBOLS LEGEND

EXISTING		PROPOSED
	POST INDICATOR VALVE (PIV)	
	FIRE HYDRANT (FH)	
	MANHOLE (MH)	S OR D
	CATCH BASIN (CB)	G
	LIGHT POLE	
	PIPE SUPPORT	
	ELECTRICAL MANHOLE	
	TELEPHONE MANHOLE	
	STREET WASHERS	
	VALVE BOX	
	MONITORING WELL	
	SURFACE DRAINAGE FLOW	
	POWER POLE	
	GRAVEL ROADWAY/DRIVEWAY	
	ASPHALT ROADWAY/DRIVEWAY	
	CONCRETE	
	BUILDING/TRAILER	
	RAILROAD TRACK	
	OU BOUNDARY	
	FENCE	
	TREE LINE	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	CENTERLINE DRAINAGE DITCH	
	RIVER/CREEK	
	TO BE REMOVED	
	SILT FENCE	
	ELECTRICAL TRANSFORMER	
	TRANSMISSION TOWER	
	HEADWALL	OR
	BENCH MARK	
	CONSTRUCTION/WIND BARRIER FENCE	
	SIGN	
	BOLLARD/GUARD POST	
	ELECTRICAL PULL BOX	
	SURVEY CONTROL POINT	
	ROAD CENTERLINE OR BASELINE	
	BEND	OR
	TEE	
	THRUST BLOCK	
	REDUCER	
W OR U	UNKNOWN	
	STRAW BALE SILT BARRIER	
	FENCE GATE	
	CHECK DAM	

CONSTRUCTION PACKAGE

NOTES

ABBREVIATIONS

AWWT	ADVANCE WASTE WATER TREATMENT
BSL	BIODENITRIFICATION SURGE LAGOON
COMH	CLEANOUT MANHOLE
DI	DUCTILE IRON
FT	EFFLUENT LINE
FML	FLEXIBLE MEMBRANE LINER
HDPE	HIGH DENSITY POLYETHYLENE
LSP	LIME SLUDGE POND
OD	OUTSIDE DIAMETER
ODOT	OHIO DEPARTMENT OF TRANSPORTATION
OSDF	ONSITE DISPOSAL FACILITY
OU	OPERABLE UNIT
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PS	POINT OF SWITCH
SCH	SCHEDULE
SWRB	STORMWATER RETENTION BASIN
STL	CARBON STEEL
TYP	TYPICAL
WWF	WELDED WIRE FABRIC
HWC	HEAVY WALL CONDUIT

GENERAL NOTE:

THE LEGEND AND SYMBOLS PRESENTED ON THIS DRAWING APPLIES TO PARSONS 92X-5900-X-XXXX SERIES DRAWINGS ONLY.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00263	PROJECT TITLE SHEET
92X-5900-X-00264	DRAWING INDEX

FOR INFORMATION ONLY

REV NO.	REVISION NUMBER - DESCRIPTION	CHK	REVIEW	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

UNITED STATES
DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

PARSONS
THE RALPH M. PARSONS CO. - PARSONS MADI, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME: LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE: LEGEND AND SYMBOLS

DRAWN BY K.L. RABBITT	DATE 02/16/96	CHECKED BY G. HOLLAND	DATE 4/9/96
TOP/FOLDER NO.	PROJECT	TOOLS	SCALE NONE
ENGINEERING PER APPROVAL	PROJECT PER APPROVAL N/A	PROJECT NO. 28211	
WBS NO. SRP/P0164	WBS NO. 00-90701	92X-5900-X-00265	SHEET NO. X0003

REV NO. 0

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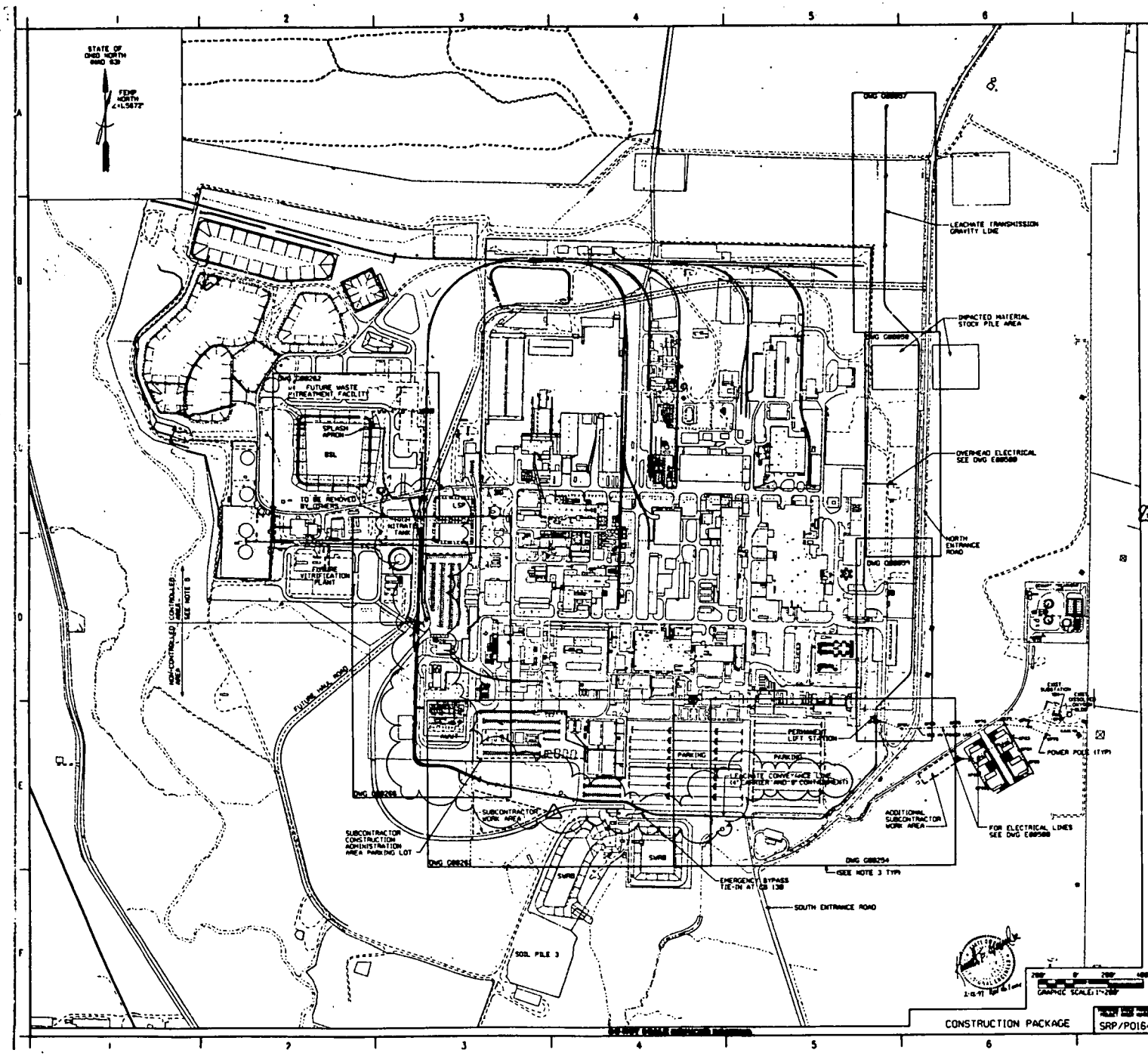

NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE FOLLOWING DOCUMENTS:

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   FEMP CADD ORTHO/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   PARSONS TOPOGRAPHY (1992)
   B.L. PAYNE AND ASSOCIATES, TOPOGRAPHIC SURVEY 1996
   WOOLPERT SURVEY, MARCH 1996

2. THE LOCATION AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO START OF CONSTRUCTION. (POS) (POS) (POS)

3. RECTANGULAR SHAPE INDICATES SHEET LIMITS WITH DRAWING NUMBER TO REFERENCE FOR ENLARGED PLAN AND PROFILE.

4. ALL COORDINATES ± E IN NAD 1983. ALL ELEVATIONS IN NGVD 1927.

5. THE SUBCONTRACTOR SHALL VERIFY LOCATION OF CONTROLLED AREA WITH (POS) PRIOR TO CONSTRUCTION.

REF DWG NO.	DRAWING TITLE
92X-5900-K-00264	DRAWING INDEX
92X-5900-K-00265	LEGEND AND SYMBOLS
92X-5900-G-00254	PLAN AND PROFILE SHEET 1 OF 4
92X-5900-G-00261	PLAN AND PROFILE SHEET 2 OF 4
92X-5900-G-00262	PLAN AND PROFILE SHEET 3 OF 4
92X-5900-G-00263	PLAN AND PROFILE SHEET 4 OF 4
92X-5900-G-00294	SECTIONS AND DETAILS
92X-6000-G-00057	LEACHATE TRANSMISSION SYSTEM PLAN AND PROFILE DATA I
92X-6000-G-00058	LEACHATE TRANSMISSION SYSTEM PLAN AND PROFILE DATA II
92X-6000-G-00059	LEACHATE TRANSMISSION SYSTEM PLAN AND PROFILE DATA III
92X-5900-E-00580	LEACHATE CONVEYANCE SYSTEM - ELECTRICAL SITE PLAN AND SINGLE LINE

REV NO.	DESC OF REVISION PURPOSE - DESCRIPTION	DRAWN BY	CHECKED BY	DATE
1	ADD/ADJUST UTILITIES; DCN 16[illegible], DCN 17[illegible], DCN 17[illegible], DCN 18[illegible]	CLA	N/A	[illegible]
0	CERTIFIED FOR CONSTRUCTION	VCH	N/A	

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. · PARSONS MADI, INC. · ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL
MASTER PLAN

DRAWN BY	DATE	CHECKED BY	DATE
C.A. TOMONGIN	3-22-96	T. MCLAIN	4/9/96

SCALE: 1" = 200'

SUBMITTED FOR APPROVAL	PROJECT DWG APPROVAL	PROJECT NO.
M.S. MOORE 11/5/96	N/A	20210

WBS	PROJECT NO.	DRAWING NO.	SHEET NO.	REV NO.
WBS 1.1.1.2.3.6	00-90701	92X-5900-G-00251	G0001	1

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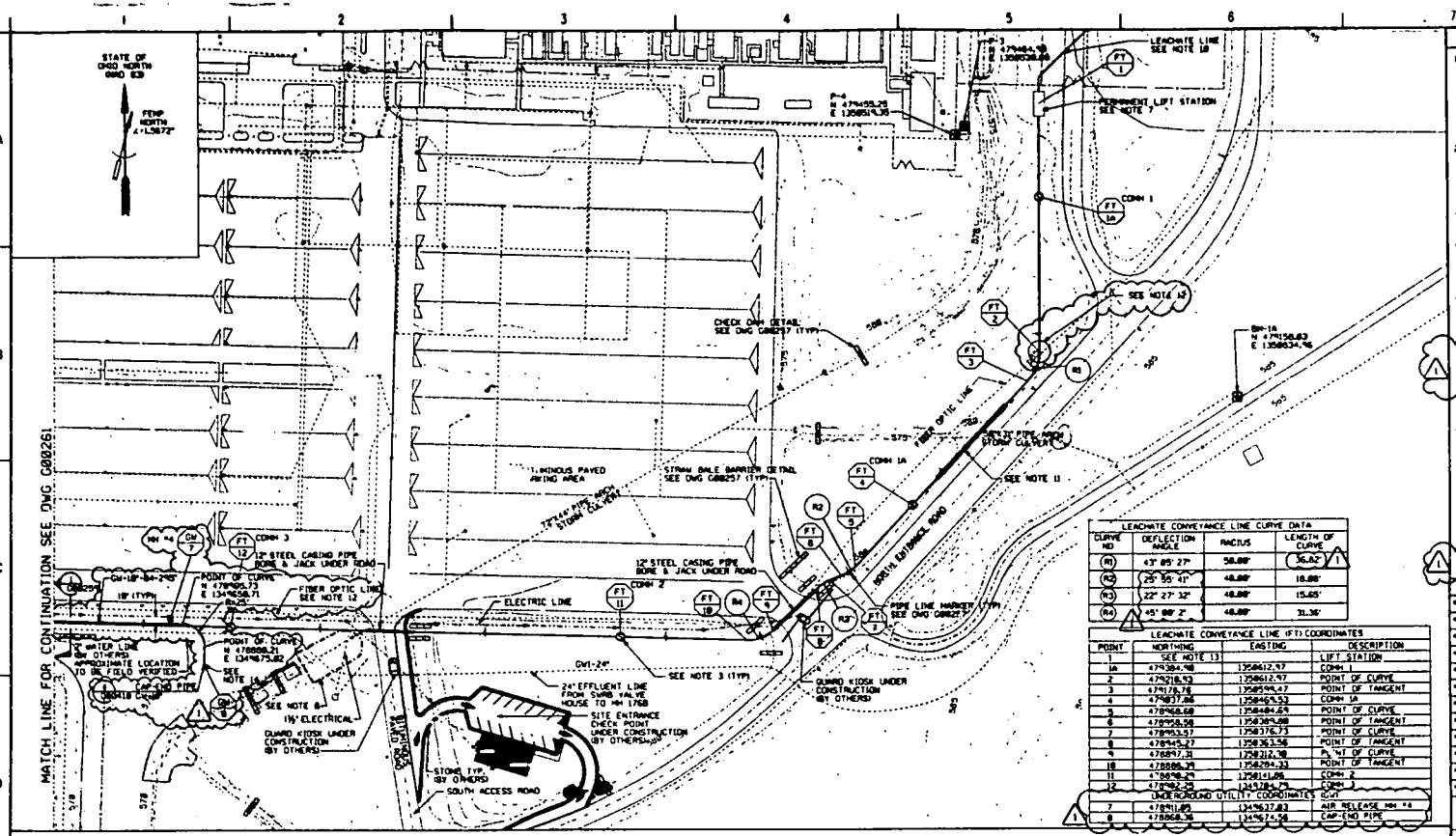


LEACHATE CONVEYANCE LINE CURVE DATA			
CURVE NO	DEFLECTION ANGLE	RADIUS	LENGTH OF CURVE
R1	43° 05' 27"	58.00'	56.02'
R2	25° 55' 41"	48.00'	18.08'
R3	22° 27' 32"	48.00'	15.65'
R4	45° 00' 2"	48.00'	31.36'

LEACHATE CONVEYANCE LINE (FT) COORDINATES			
POINT	NORTHING	EASTING	DESCRIPTION
1	SEE NOTE 13		LIFT STATION
1A	479384.98	1358612.97	CONN 1
2	479218.93	1358612.97	POINT OF CURVE
3	479178.78	1358599.47	POINT OF TANGENT
4	479037.86	1358469.53	CONN 1A
5	478958.68	1358484.69	POINT OF CURVE
6	478958.58	1358389.88	POINT OF TANGENT
7	478953.57	1358376.73	POINT OF CURVE
8	478945.27	1358363.56	POINT OF TANGENT
9	478897.31	1358312.98	POINT OF CURVE
10	478886.39	1358284.33	POINT OF TANGENT
11	478898.29	1358141.86	CONN 2
12	478982.29	1358184.74	CONN 3
UNDERGROUND UTILITY COORDINATES (CY)			
7	478911.85	1345637.83	AIR RELEASE MH #4
8	478868.36	1345674.58	CAP END PIPE

NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW.

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   PARSONS TOPOGRAPHY 1992
   B.L. PAYNE AND ASSOCIATES, TOPOGRAPHIC SURVEY 1996
   WOOLPERT SURVEY, MARCH 1996

2. ALL HDPE PIPE VERTICAL ALIGNMENT TO BE INSTALLED USING A MINIMUM 48 DIAMETER BEND. MAINTAIN A MINIMUM 36" COVER OVER TOP OF CONTAINMENT PIPE.

3. SEE TABLE I ON DRAWING 92X-5900-G-00258 FOR SCHEDULE OF TOP OF LID AND INVERT ELEVATION AND DETAILS OF CLEANOUT-MANHOLES (CONN).

4. THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION.

5. MAINTAIN PIPE ELEVATIONS AS SHOWN BETWEEN MANHOLES TO PERMIT DRAINAGE TO MANHOLES. NO SACS ARE TO BE CREATED BETWEEN MANHOLES. THE LOCATION OF HIGH POINT IS APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE SUBCONTRACTOR.

6. FIELD VERIFY EXISTING TOPOGRAPHY OF AREA BEFORE START OF CONSTRUCTION.

7. SEE DRAWING 92X-5900-G-00259, 92X-5900-H-00067 AND 92X-5900-S-00069 FOR DETAILS AND LOCATION OF PERMANENT LIFT STATION.

8. FOR UNDERGROUND LEACHATE CONVEYANCE PIPING USE HDPE SDR 17 FOR 4" CARRIER PIPE AND SDR 26 FOR 8" CONTAINMENT PIPE. INSTALL 6" WIDE PLASTIC TAPE WITH MAGNETIC TRACE WIRE 6" ABOVE ALL HDPE PIPE. INSTALL PIPE LINE SIGNS AS SHOWN ON THE DETAIL ON DRAWING 92X-5900-G-00257.

9. ALL FITTINGS ON HDPE ARE TO BE MOLDED UNLESS OTHERWISE NOTED.

10. FOR LOCATION OF PLAN IN REFERENCE TO THE LEACHATE CONVEYANCE LINE SEE THE MASTER PLAN DRAWING 92X-5900-G-00251.

11. LIMIT OF ADDITIONAL COVER GRADING. SIDE SLOPES TO BE MAXIMUM 3:1. REGRADE DRAINAGE SWALES AS REQUIRED TO MAINTAIN DRAINAGE. PIPE ARCH CULVERT TO BE MAINTAINED.

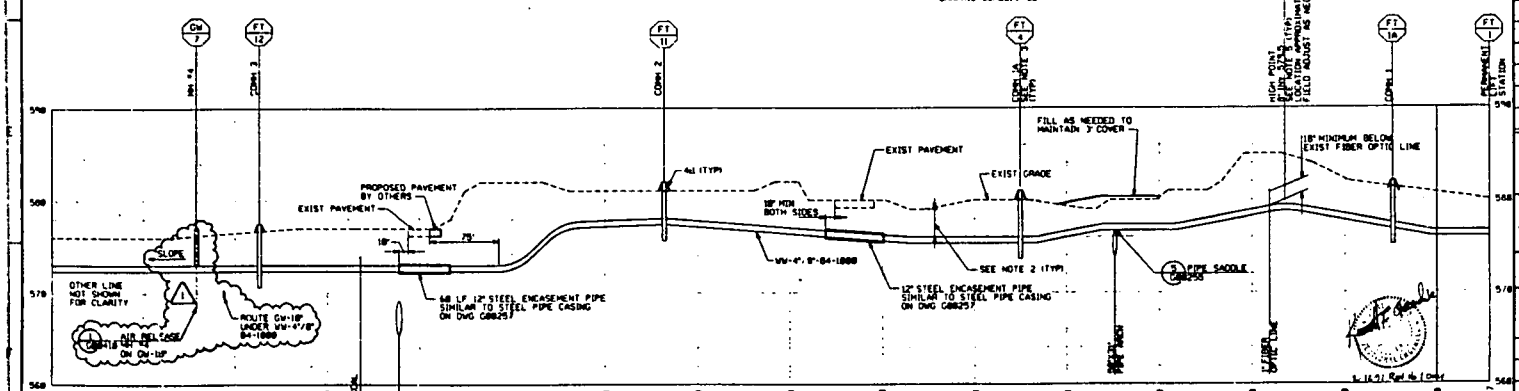
12. SUBCONTRACTOR SHALL EXCAVATE AND CONFIRM LOCATION AND DEPTH OF FIBER OPTIC LINE PRIOR TO ANY CONSTRUCTION OF THE LEACHATE CONVEYANCE LINE.

13. LOCATION OF TIE-IN POINT IS DEPENDENT ON FABRICATION DETAILS OF LIFT STATION. LOCATION TO BE FIELD DETERMINED.

14. TIE-IN LOCATION FOR THE GROUNDWATER LINE SHALL BE COORDINATED WITH FOF. PLACE SIGN TO MARK CAP LOCATION.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-V-00265	LEGEND AND SYMBOLS
92X-5900-G-00251	MASTER PLAN
92X-5900-G-00261	PLAN AND PROFILE - SHEET 2 OF 4
92X-5900-G-00255	DETAILS SHEET 1 OF 3
92X-5900-G-00257	DETAILS SHEET 2 OF 3
92X-5900-G-00258	DETAILS SHEET 3 OF 3
92X-5900-G-00259	SECTIONS AND DETAILS
92X-5900-G-00410	MANHOLE AND MISCELLANEOUS DETAILS
92X-6000-H-00067	LEACHATE TRANSMISSION SYSTEM - LIFT STATION MECHANICAL DETAILS II
92X-6000-G-00059	LEACHATE TRANSMISSION SYSTEM PLAN AND PROFILE DATA III
92X-6000-S-00069	LEACHATE TRANSMISSION SYSTEM STRUCTURAL DETAILS

PLAN
SCALE: 1" = 50'



PROFILE
SCALE: HOR 1" = 50' VERT 1" = 5'

DO NOT SCALE PRINTED PRINTS

CONSTRUCTION PACKAGE

REV	DESCRIPTION			
1	ADD/ADJUST UTILITIES & DCN 16[illegible] DCN 17[illegible] & 018 DCN 17[illegible]	CCS	N/A	1/[illegible]
0	CERTIFIED FOR CONSTRUCTION	WSM 11/5/96	N/A	

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. · PARSONS MADA, INC. · ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME: LEACHATE CONVEYANCE SYSTEM

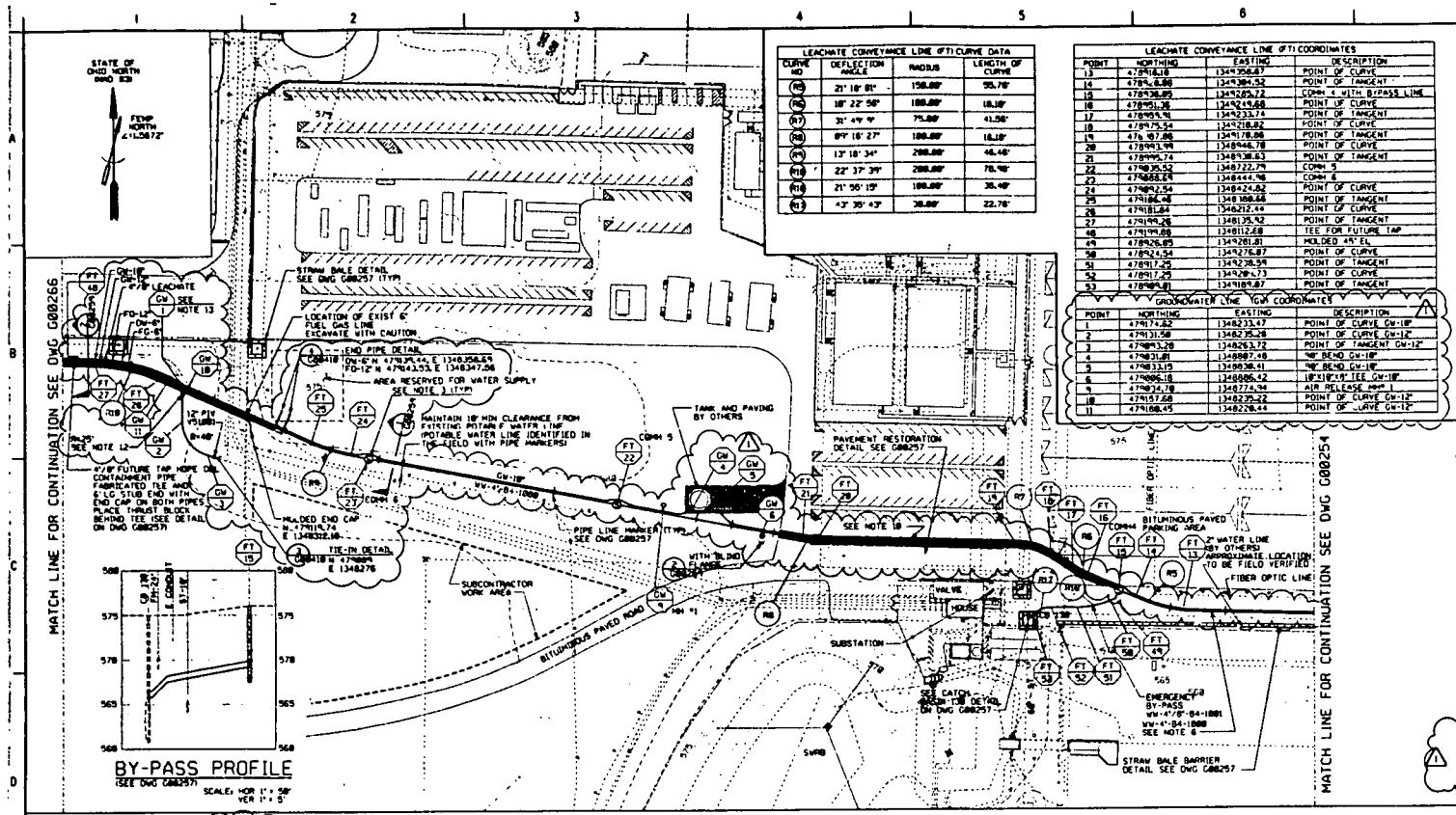
DRAWING TITLE: CIVIL
PLAN AND PROFILE
SHEET 1 OF 4

DRAWN BY	DATE	CHECKED BY	DATE
E.A. TOKINGIN	7-22-96	E. HELYAR	11/5/96
CHECKED BY	DATE	SCALE	
W.S. MOORE 11/5/96		AS SHOWN	
PROJECT NO.			
20210			

SRP/P0164 | WBS 1.1.1.2.3.6 00-90701 | 92X-5900-G-00254 | G0002 | 1

5

741



LEACHATE CONVEYANCE LINE (FT) CURVE DATA			
CURVE NO	DEFLECTION ANGLE	RADIUS	LENGTH OF CURVE
R5	21° 18' 01"	150.00'	55.78'
R6	18° 22' 58"	100.00'	18.18'
R7	31° 49' 9"	75.00'	41.56'
R8	09° 18' 27"	100.00'	16.18'
R9	13° 18' 34"	200.00'	46.46'
R10	22° 37' 39"	200.00'	78.98'
R11	21° 56' 19"	100.00'	38.40'
R12	43° 35' 43"	30.00'	22.78'

LEACHATE CONVEYANCE LINE (FT) COORDINATES			
POINT	NORTHING	EASTING	DESCRIPTION
13	479816.18	1349356.87	POINT OF CURVE
14	479816.88	1349384.52	POINT OF TANGENT
15	479938.85	1349385.72	COMM 4 WITH BYPASS LINE
16	479951.36	1349349.68	POINT OF CURVE
17	479959.91	1349333.74	POINT OF TANGENT
18	479975.54	1349318.92	POINT OF CURVE
19	479 987.06	1349318.06	POINT OF TANGENT
20	479991.99	1349346.78	POINT OF CURVE
21	479995.74	1349378.63	POINT OF TANGENT
22	479935.52	1349322.79	COMM 5
23	479888.69	1349444.98	COMM 6
24	479892.54	1349424.82	POINT OF CURVE
25	479886.48	1349388.66	POINT OF TANGENT
26	479881.84	1349312.44	POINT OF CURVE
27	479879.26	1349135.92	POINT OF TANGENT
48	479199.68	1349112.68	TEE FOR FUTURE TAP
49	479026.85	1349281.81	MOLDED 45° EL
50	479924.54	1349276.87	POINT OF CURVE
51	479917.25	1349238.59	POINT OF TANGENT
52	479917.25	1349209.73	POINT OF CURVE
53	479909.81	1349189.07	POINT OF TANGENT

GROUNDWATER LINE (GW) COORDINATES			
POINT	NORTHING	EASTING	DESCRIPTION
1	479174.82	1348233.47	POINT OF CURVE GW-18"
2	479131.58	1348235.28	POINT OF CURVE GW-12"
3	479093.28	1348263.72	POINT OF TANGENT GW-12"
4	479031.81	1348987.48	90° BEND GW-18"
5	479033.15	1349038.41	90° BEND GW-18"
6	479086.18	1348886.42	18"X18"X8" TEE GW-18"
9	479034.78	1348774.94	AIR RELEASE MH 1
10	479157.68	1348235.22	POINT OF CURVE GW-12"
11	479168.45	1348228.44	POINT OF CURVE GW-12"

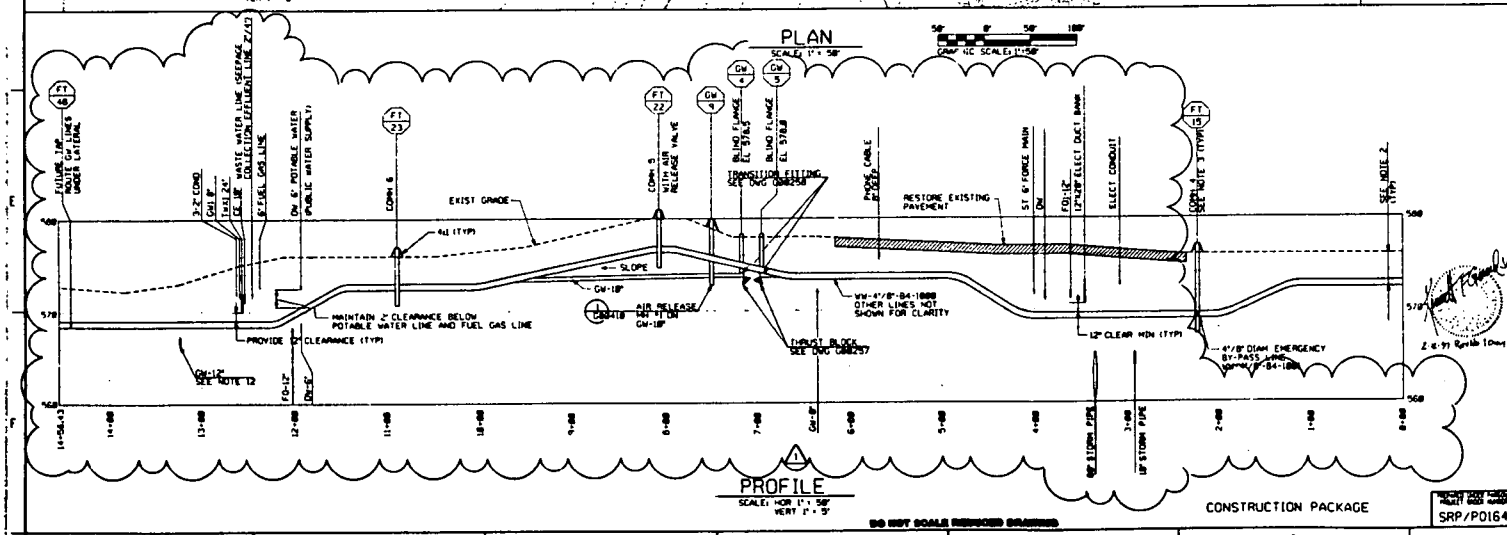
NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW.

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   PARSONS TOPOGRAPHY, 1992
   B.L. PAYNE AND ASSOCIATES, TOPOGRAPHIC SURVEY 1996
   WOR, PERT SURVEY, MARCH 1996
2. ALL HDPE LINE VERTICAL ALIGNMENT TO BE INSTALLED USING A MINIMUM 48' DIAMETER BEND. MAINTAIN A MINIMUM 36" COVER OVER TOP OF PIPE.
3. SEE TABLE 1, DRAWING NO 92x-5900-G-00256 FOR SCHEDULE OF TOP OF LID AND INVERT ELEVATION AND DETAILS OF CLEANOUT-MANHOLE.
4. THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION.
5. MAINTAIN PIPE ELEVATIONS AS SHOWN BETWEEN MANHOLES TO PERMIT DRAINAGE. LOCATION OF HIGH POINT IS APPROXIMATE TO BE FIELD VERIFIED.
6. FOR UNDERGROUND LEACHATE CONVEYANCE PIPING, USE HDPE SDR 17 FOR 4" CARRIER PIPE WITH PIPE CENTRALIZERS AND SDR 26 FOR 8" CONTAINMENT PIPE. INSTALL 6" WIDE PLASTIC TAPE WITH MAGNETIC TRACE WIRE 6" ABOVE ALL HDPE PIPES. INSTALL PIPE LINE SIGNS AS SHOWN (SEE DETAIL ON DRAWING 92x-5900-G-00257).
7. ALL FITTINGS ON HDPE ARE TO BE MOLDED UNLESS OTHERWISE NOTED.
8. FOR LOCATION OF PLAN IN REFERENCE TO THE LEACHATE CONVEYANCE LINE SEE THE MASTER PLAN DRAWING 92x-5900-G-00251.
9. FIELD LOCATE FIBER OPTIC LINE BEFORE INITIATING CONSTRUCTION.
10. PROVIDE TRAFFIC CONTROL IN PARKING LOT AND ROAD AREA AS PER ODOT 614 AND ODOT "TRAFFIC CONTROL FOR MAINTENCE AND CONSTRUCTION OPERATIONS". SUBCONTRACTOR IS TO SUBMIT TRAFFIC CONTROL PLAN TO FERNCO AND OBTAIN APPROVAL PRIOR TO COMMENCEMENT OF WORK.
11. HORIZONTAL AND VERTICAL ALIGNMENT OF ALL NEW PIPES TO FOLLOW THE WW-4'/8'-84-1000 UNLESS OTHERWISE SHOWN. SEE DRAWING 92x-5900-G-00259 FOR SECTIONS. ADJUST IN FIELD TO PROVIDE 1' MINIMUM CLEARANCE FROM STRUCTURES AND OTHER UTILITIES.
12. ROUTE GW-12" UNDER OTHER LINES.

REF DWG NO.	DRAWING TITLE
92x-5900-G-00264	DRAWING INDEX
92x-5900-G-00265	LEGEND AND SYMBOLS
92x-5900-G-00251	MASTER PLAN
92x-5900-G-00254	PLAN AND PROFILE SHEET 1 OF 4
92x-5900-G-00256	PLAN AND PROFILE SHEET 3 OF 4
92x-5900-G-00257	DETAILS - SHEET 2 OF 3
92x-5900-G-00258	DETAILS - SHEET 3 OF 3
92x-5900-G-00259	SECTIONS AND DETAILS
92x-5900-G-00410	MANHOLE AND MISCELLANEOUS DETAILS
95x-5900-G-00393	SOUTH PLUME OPTIMIZATION AND INJECTION DEMONSTRATION PROJECT PLAN AND PROFILE SHEET 1 OF 8

REV NO	REASON FOR REVISION DESCRIPTION	DRAWN	CHECKED	APPROVED & DATE
1	ADD/ADJUST UTILITIES; DCN 16950411 DCN 17000007 & 010; DCN 17100003	CCG	N/A	JAY/YT
0	CERTIFIED FOR CONSTRUCTION	VGM 8/5/98	N/A	



UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL
PLAN AND PROFILE
SHEET 2 OF 4

DRAWN BY	DATE	CHECKED BY	DATE
C.A. TORGESEN	7-22-96	E. HELWIG	04/29/98

SCALE: AS SHOWN

REVIEWED FOR ISSUANCE	PERMITS ON ISSUANCE	PERMIT PROJECT NO
W.S. MOORE 11/5/96	N/A	20210

PROJECT DATA FILE	PROJECT NO	DRAWING NO	SHEET NO	REV NO
SRP/P0164	1.1.1.2.3.6 00-90701	92x-5900-G-00261	G0003	1

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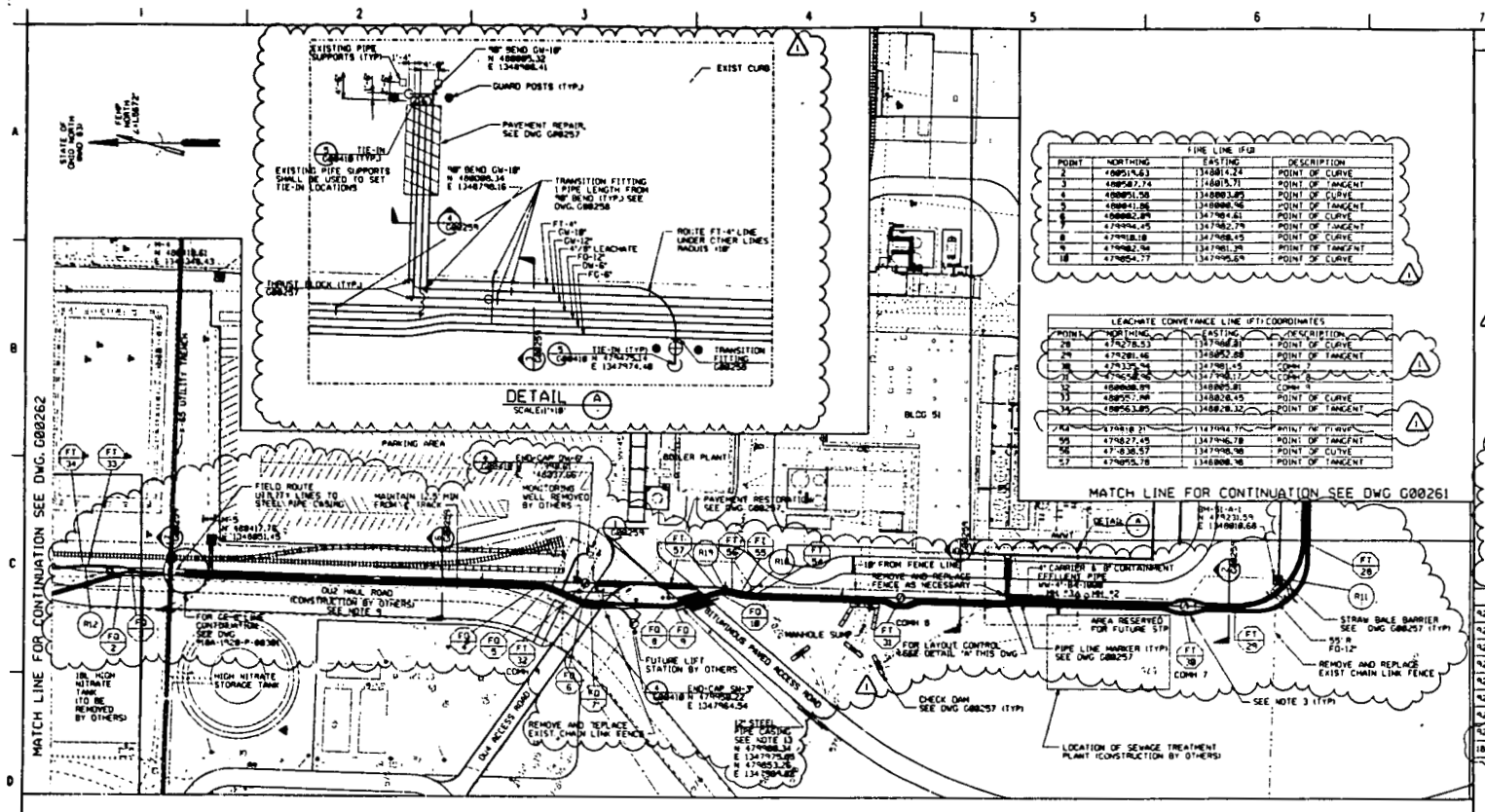


FINE LINE (FT)			
POINT	NORTHING	EASTING	DESCRIPTION
2	480515.63	1348014.24	POINT OF CURVE
3	480587.74	1348015.71	POINT OF TANGENT
4	480851.58	1348003.85	POINT OF CURVE
5	480841.86	1348000.96	POINT OF TANGENT
6	480882.29	1347984.61	POINT OF CURVE
7	479994.45	1347982.79	POINT OF TANGENT
8	479918.10	1347988.45	POINT OF CURVE
9	479882.94	1347981.39	POINT OF TANGENT
10	479854.77	1347995.69	POINT OF CURVE

LEACHATE CONVEYANCE LINE (FT) COORDINATES			
POINT	NORTHING	EASTING	DESCRIPTION
28	479278.53	1347988.81	POINT OF CURVE
29	479281.46	1348052.88	POINT OF TANGENT
30	479335.94	1347981.45	COMM 5
31	479654.42	1347981.17	COMM 6
32	480008.89	1348005.81	COMM 9
33	480557.44	1348028.45	POINT OF CURVE
34	480563.85	1348028.32	POINT OF TANGENT
[illegible]	479818.21	1347994.77	POINT OF CURVE
55	479827.45	1347996.78	POINT OF TANGENT
56	479838.57	1347998.96	POINT OF CURVE
57	479855.78	1348000.36	POINT OF TANGENT

MATCH LINE FOR CONTINUATION SEE DWG G00261

NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW.

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   FEMP EMOD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   PARSONS TOPOGRAPHY, 1992
   B.L. PAYNE AND ASSOCIATES, TOPOGRAPHIC SURVEY 1996
   WOOLPERT SURVEY MARCH 1996

2. ALL HDPE LINE VERTICAL ALIGNMENT TO BE INSTALLED USING A MINIMUM 48' DIAMETER BEND. MAINTAIN A MINIMUM 36" COVER OVER TOP OF CONTAINMENT PIPE.

3. SEE TABLE 1, DRAWING NO 92X-5900-G-00256 FOR SCHEDULE OF TOP OF LID AND INVERT ELEVATION AND DETAILS OF CLEANOUT-MANHOLES.

4. THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION.

5. MAINTAIN PIPE ELEVATIONS AS SHOWN BETWEEN MANHOLES TO PERMIT DRAINAGE. THE LOCATION OF HIGH POINT IS APPROXIMATE, TO BE FIELD VERIFIED.

6. FOR UNDERGROUND LEACHATE CONVEYANCE PIPING, USE HDPE PIPE FOR 4" CARRIER PIPE WITH PIPE CENTRALIZERS AND SOFT SOIL FOR 8" CONTAINMENT PIPE. INSTALL 6" WIDE PLASTIC TAPE WITH MAGNETIC TRACE WIRE 6" ABOVE ALL HDPE PIPE. INSTALL PIPE LINE SIGNS AS SHOWN (SEE DETAIL ON DRAWING 92X-5900-G-00257).

7. ALL FITTINGS ON HDPE ARE TO BE MOLDED UNLESS OTHERWISE NOTED.

8. FOR LOCATION OF PLAN IN REFERENCE TO THE LEACHATE CONVEYANCE LINE SEE THE MASTER PLAN DRAWING 92X-5900-G-00251.

9. USE SAME BEDDING, BACKFILL AND COMPACTION SHOWN ON TYPICAL PAVEMENT RESTORATION DETAIL, DRAWING 92X-5900-G-00257.

10. HORIZONTAL AND VERTICAL ALIGNMENT OF ALL NEW PIPES TO FOLLOW THE WW-4"/8"-B4-1000 UNLESS OTHERWISE SHOWN (SEE DRAWING 92X-5900-G-00259) FOR SECTIONS. ADJUST IN FIELD TO PROVIDE 1' MINIMUM CLEARANCE FROM STRUCTURES AND OTHER UTILITIES.

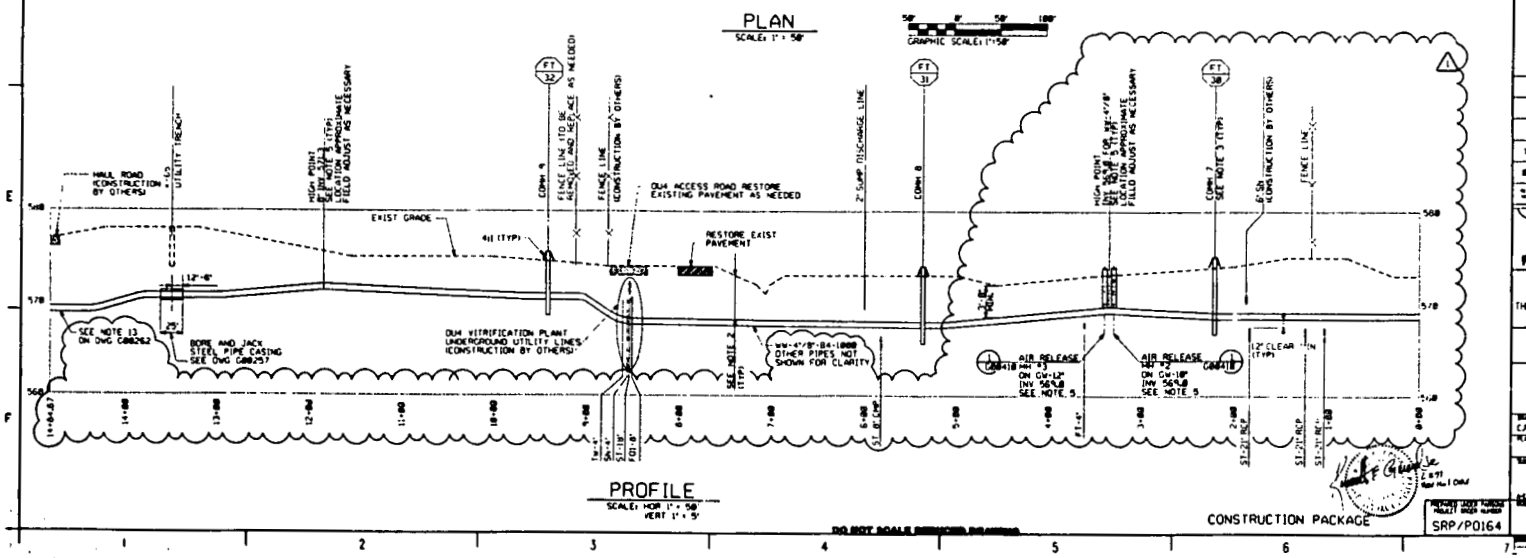
11. TYPICAL HORIZONTAL HDPE PIPE RADIUS SHALL BE 48 PIPE DIAMETERS UNLESS OTHERWISE SHOWN OR IF FIELD CONDITIONS REQUIRE OTHERWISE. FOLLOW MANUFACTURERS RECOMMENDATION FOR MINIMUM.

12. SEE DRAWING 92X-5900-G-00257 FOR SIGN TO MARK TIE-IN POINT. CHANGE LEACHATE TO MATCH LINE MARKED.

13. CONFIRM LOCATION OF UTILITY POLE. ADJUST LINE ROUTES IF NEEDED TO PROVIDE CLEARANCE. PROVIDE SUPPORT AS NECESSARY.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-G-00251	MASTER PLAN
92X-5900-G-00261	PLAN AND PROFILE SHEET 2 OF 4
92X-5900-G-00262	PLAN AND PROFILE SHEET 4 OF 4
92X-5900-G-00257	DETAILS - SHEET 2 OF 3
92X-5900-G-00258	DETAILS - SHEET 3 OF 3
92X-5900-G-00259	SECTIONS AND DETAILS
10A-1420-P-00301	BIODENITRIFICATION SYSTEM FORCE MAIN - LAGOON TO REACTORS

LEACHATE CONVEYANCE LINE CURVE DATA			
CURVE NO	DEFLECTION ANGLE	RADIUS	LENGTH OF CURVE
R11	89° 54' 59"	75.00'	117.78'
R12	86° 03' 28"	20.00'	30.04'
R18	89° 59' 28"	100.00'	17.37'
R19	89° 59' 58"	100.00'	17.34'



REV	DESCRIPTION			
1	ADD/ADJUST UTILITIES: DCN 1695041; DCN 1700007,010; DCN 1710003; DCN 4031A002	CCS	N/A	
0	CERTIFIED FOR CONSTRUCTION	WSM 6/5/96	N/A	

DO NOT SCALE DRAWING

CONSTRUCTION PACKAGE

SRP/P0164

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL
PLAN AND PROFILE
SHEET 3 OF 4

DRAWN BY	DATE	CHK DIMENS.	DATE	CHECKED BY	DATE
C.A. TONCHIGIN	2-23-96	E. HELMER	10/5/96	E. HELMER	10/5/96

PLOT SCALE NO	FILMS	SCALE	CLASS
		AS SHOWN	

SUBMITTED FOR APPROVAL	FORCE ON DRAWING	FORCE PROJECT NO
W.S. MOORE 11/5/96		20210

DOE FACILITY NO	TOP PROJECT NO	DRAWING FILE CODE NO	SHEET NO	REV NO
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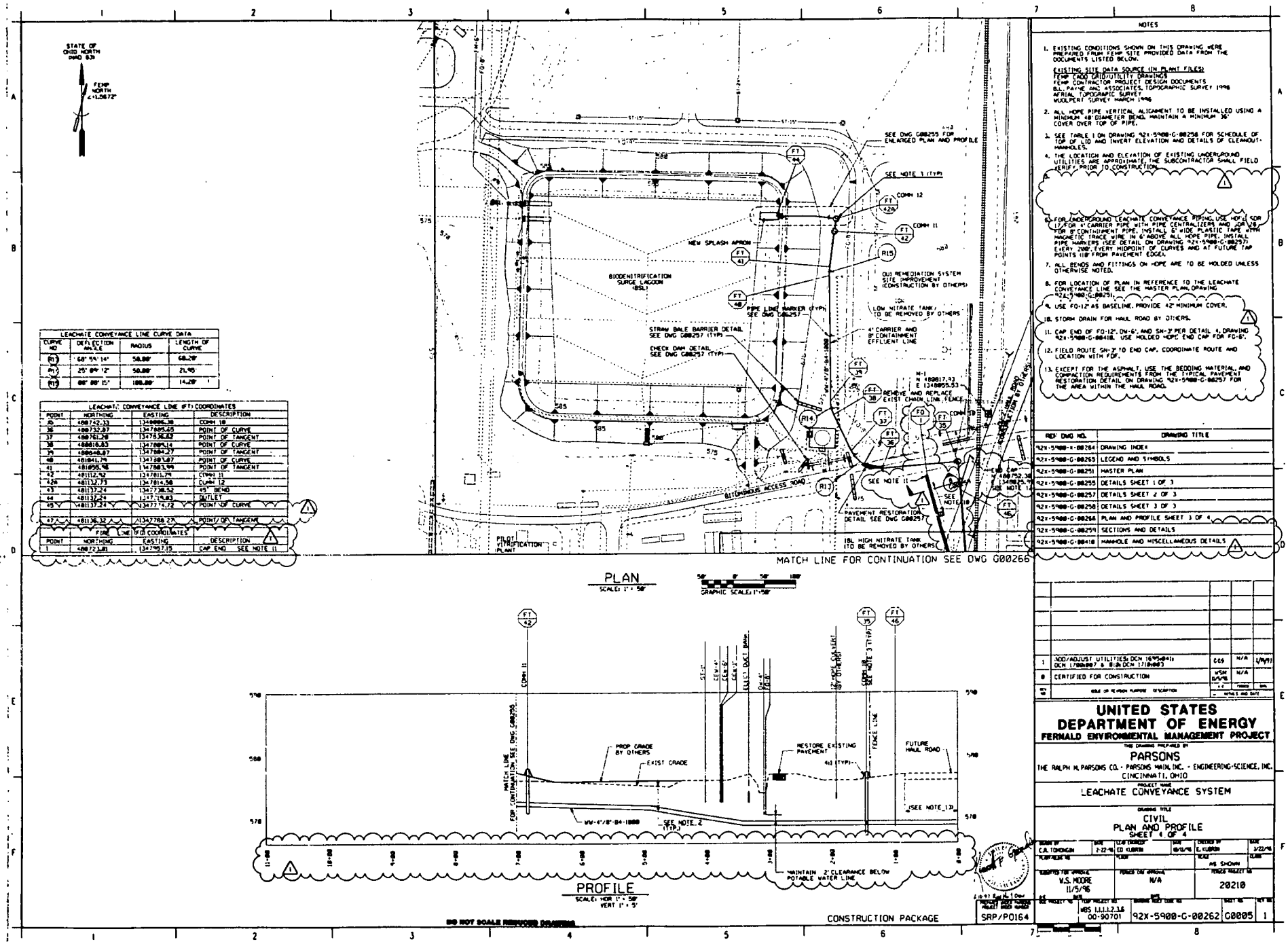

LEACHATE CONVEYANCE LINE CURVE DATA			
CURVE NO	DEFLECTION ANGLE	RADIUS	LENGTH OF CURVE
R13	68° 59' 14"	50.00'	60.20'
R14	25° 09' 12"	50.00'	21.95'
R15	08° 00' 15"	100.00'	14.00'

LEACHATE CONVEYANCE LINE (FT) COORDINATES			
POINT	NORTHING	EASTING	DESCRIPTION
35	480742.33	1347806.38	CURVE 10
36	480732.87	1347805.65	POINT OF CURVE
37	480761.28	1347836.83	POINT OF TANGENT
38	480818.83	1347809.14	POINT OF CURVE
39	480848.87	1347884.27	POINT OF TANGENT
40	481041.79	1347881.87	POINT OF CURVE
41	481095.98	1347883.99	POINT OF TANGENT
42	481112.92	1347811.79	CURVE 11
42A	481112.73	1347814.58	CURVE 12
43	481137.24	1347738.52	45° BEND
44	481137.24	1347714.83	OUTLET
45	481137.24	1347714.72	POINT OF CURVE
47A	481136.32	1347788.27	POINT OF TANGENT

FIRE LINE (FD) COORDINATES			
POINT	NORTHING	EASTING	DESCRIPTION
1	480723.81	1347957.15	CAP END SEE NOTE 11

NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW.

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   B.L. PAYNE AND ASSOCIATES, TOPOGRAPHIC SURVEY 1996
   AERIAL TOPOGRAPHIC SURVEY
   WOOLPERT SURVEY MARCH 1996

2. ALL HOPE PIPE VERTICAL ALIGNMENT TO BE INSTALLED USING A MINIMUM 48' DIAMETER BEND. MAINTAIN A MINIMUM 36" COVER OVER TOP OF PIPE.

3. SEE TABLE 1 ON DRAWING 92X-5900-G-00256 FOR SCHEDULE OF TOP OF LID AND INVERT ELEVATION AND DETAILS OF CLEANOUT-MANHOLES.

4. THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION.

5. FOR UNDERGROUND LEACHATE CONVEYANCE PIPING, USE HDPE SDR 17 FOR 4" CARRIER PIPE WITH PIPE CENTRALIZERS AND SDR 26 FOR 8" CONTAINMENT PIPE. INSTALL 6" WIDE PLASTIC TAPE WITH MAGNETIC TRACE WIRE IN 6" ABOVE ALL HDPE PIPE. INSTALL PIPE MARKERS (SEE DETAIL ON DRAWING 92X-5900-G-00257) EVERY 200', EVERY MIDPOINT OF CURVES AND AT FUTURE TAP POINTS (10' FROM PAVEMENT EDGE).

7. ALL BENDS AND FITTINGS ON HDPE ARE TO BE MOLDED UNLESS OTHERWISE NOTED.

8. FOR LOCATION OF PLAN IN REFERENCE TO THE LEACHATE CONVEYANCE LINE SEE THE MASTER PLAN DRAWING 92X-5900-G-00251.

9. USE FD-12" AS BASELINE. PROVIDE 42" MINIMUM COVER.

10. STORM DRAIN FOR HAUL ROAD BY OTHERS.

11. CAP END OF FD-12", DN-6", AND SN-3" PER DETAIL 4, DRAWING 92X-5900-G-00418. USE MOLDED HDPE END CAP FOR FD-6".

12. FIELD ROUTE SN-3" TO END CAP. COORDINATE ROUTE AND LOCATION WITH FDF.

13. EXCEPT FOR THE ASPHALT, USE THE BEDDING MATERIAL AND COMPACTION REQUIREMENTS FROM THE TYPICAL PAVEMENT RESTORATION DETAIL ON DRAWING 92X-5900-G-00257 FOR THE AREA WITHIN THE HAUL ROAD.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-G-00265	LEGEND AND SYMBOLS
92X-5900-G-00251	MASTER PLAN
92X-5900-G-00255	DETAILS SHEET 1 OF 3
92X-5900-G-00257	DETAILS SHEET 2 OF 3
92X-5900-G-00258	DETAILS SHEET 3 OF 3
92X-5900-G-00266	PLAN AND PROFILE SHEET 3 OF 4
92X-5900-G-00259	SECTIONS AND DETAILS
92X-5900-G-00418	MANHOLE AND MISCELLANEOUS DETAILS

REV	REASON FOR REVISION	BY	CHKD	DATE
1	ADD/ADJUST UTILITIES; DCN 1695-0416 DCN 1700-0007 & 0126 DCN 1710-0003	GGG	N/A	1/19/97
0	CERTIFIED FOR CONSTRUCTION	WSM	N/A	11/5/96

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. · PARSONS MAIN, INC. · ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL
PLAN AND PROFILE
SHEET 4 OF 4

DRAWN BY	DATE	LEAD DESIGNER	DATE	DESIGNED BY	DATE
C.A. TOMOGIN	2-22-96	ED KUBRIN	08/01/96	E. KUBRIN	3/22/96

SCALE	CLASS
AS SHOWN	

REQUESTED FOR APPROVAL	FORCE DAY APPROVAL	FORCE PROJECT NO
W.S. MOORE 11/5/96	N/A	20210

PROJECT NO	TOP PROJECT NO	DRAWING PROJECT CODE NO	SHEET NO	REV NO
	WBS 1.1.1.1.2.1.6 00-90701	92X-5900-G-00262	G0005	1

SRP/P0164

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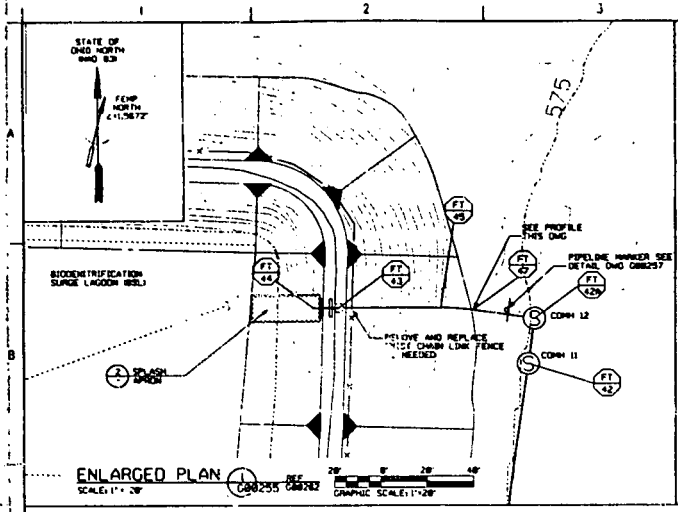
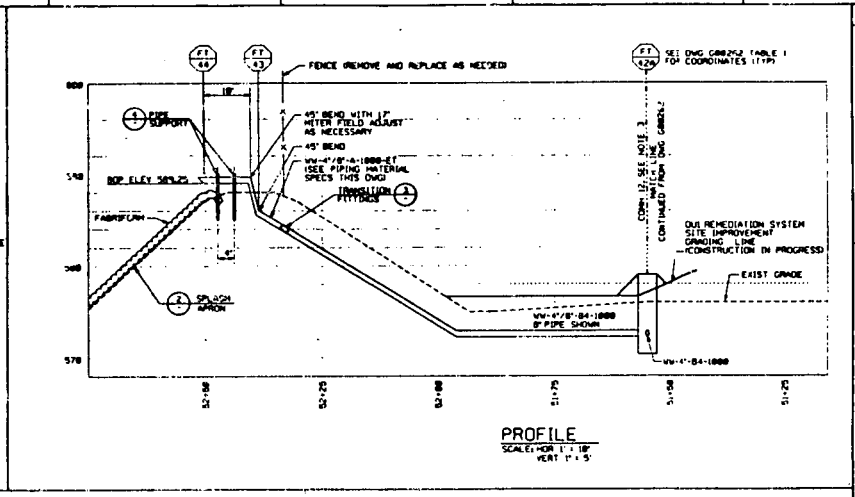


ENLARGED PLAN (1) REF G80255 G80262
SCALE: 1" = 20'
GRAPHIC SCALE: 1"=20'



PROFILE
SCALE: HOR 1" = 10' VERT 1" = 5'

NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW:

   EXISTING SITE DATA SOURCE (IN PLANT FILES):
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   U.L. PARKE AND ASSOCIATES, TOPOGRAPHIC SURVEY 1996
   92 AERIAL TOPOGRAPHY
   WOOLPERT SURVEY MARCH 1996

2. MAINTAIN A MINIMUM 36" COVER OVER TOP OF PIPE.
3. SEE TABLE 1, DRAWING NO. 92X-5900-G-00258 FOR SCHEDULE OF TOP AND BOTTOM AND DETAILS OF CLEANOUT-MANHOLES.
4. THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION.
5. ALL FITTINGS ON HDPE ARE TO BE MOLDED UNLESS OTHERWISE NOTED.
6. ATTACH RUB SHEET TO EDGES OF FABRIFORM FABRIC (BY ADHESIVE, SEWING, OR TIES) PRIOR TO PLACEMENT. RUB SHEET WILL EXTEND INTO BSL AT SAME TIME AS FABRIFORM PLACEMENT.

NOTES:

1. CARBON STEEL PIPE SHALL BE INSULATED AND ELECTRIC TRACED TO A MINIMUM DEPTH OF 3'-0" BELOW GRADE.
2. UNDERGROUND STL CONTAINMENT PIPE SHALL BE BITUMINOUS COATED AND WRAPPED.

ABOVE GRADE PIPING MATERIAL SPECIFICATIONS

PIPE:
DOUBLE CONTAINMENT PIPING:
CONTAINMENT - 8" DIA, SCH 40; CARRIER - 4" DIA, SCH 40
ASTM A-53 GRADE B, CARBON STEEL, STD. WT, BEVELED ENDS ELECTRIC TRACED AND INSULATED

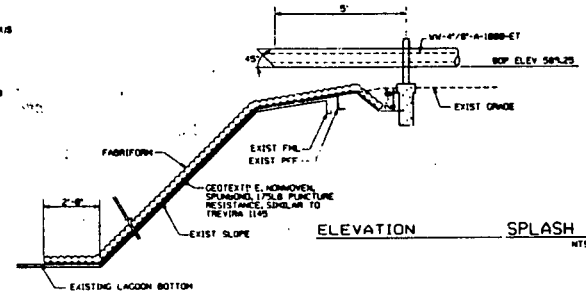
FITTINGS:
SEAMLESS CARBON STEEL, STD. WT., BEVELED ENDS, ASTM A234 GR. WPB

FLANGES:
CLASS 150, CARBON STEEL, FF, ASTM A105, WELDNECK STD. WT. BORE

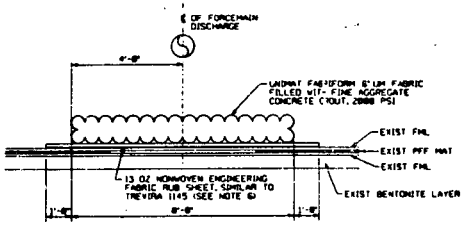
GASKETS:
TEFLON, 1/8" THICK

BOLTING:
STUD BOLTS WITH HEAVY HEX NUTS, ASTM A193 GR B7 ASTM A194 GR 2H

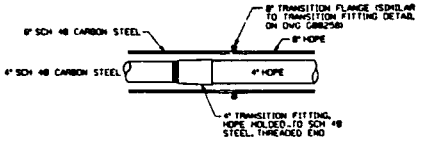
INSULATION:
CELLULAR GLASS, 2" THICK WITH ALUMINUM JACKET



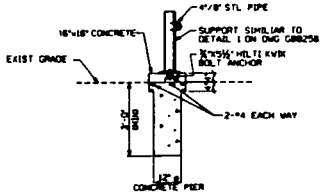
ELEVATION SPLASH APRON (2)
NTS



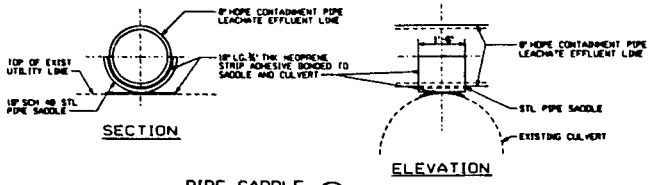
SECTION



TRANSITION DETAIL (3)
FROM HDPE TO CARBON STEEL
NTS



PIPE SUPPORT (4)
NTS



SECTION
ELEVATION

PIPE SADDLE (5) REF G80255 G80254
NTS

CONSTRUCTION PACKAGE

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-G-00251	MASTER PLAN
92X-5900-G-00262	PLAN AND PROFILE SHEET 4 OF 4
92X-5900-G-00257	DETAIL SHEET 2 OF 3
92X-5900-G-00258	DETAIL SHEET 3 OF 3
92X-5900-G-00254	PLAN AND PROFILE SHEET 1 OF 4

FOR INFORMATION ONLY

REV NO.	REVISION OR REVISION PURPOSE - DESCRIPTION	DRAWN	CHECKED	DATE
0	CERTIFIED FOR CONSTRUCTION			

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THE DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MADI INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL DETAILS
SHEET 1 OF 3

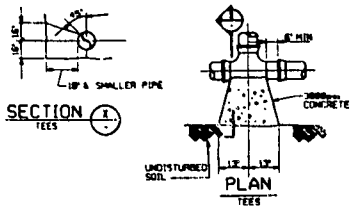
DRAWN BY	DATE	CHECKED BY	DATE
C.A. TOMCHEK	2-22-96	E. HOLMES	

SCALE: AS NOTED
PARSONS PROJECT NO.: 20211
SRP/P0164
WBS 1.1.1.2.1.4 00-90701
92X-5900-G-00255 SHEET NO. G0006 REV NO. 0

DO NOT SCALE REDUCED DRAWING

9

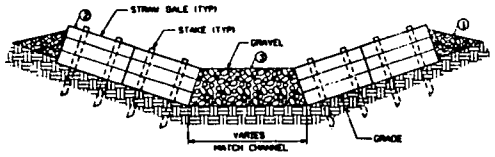
741



NOTE: BASED ON 100 PSI STATIC PRESSURE PLUS A.W.W.A. WATER HAMMER ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND, TYPE II 2983psf

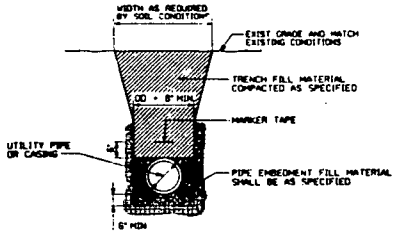
PLAN & ELEVATION

CONCRETE THRUST BLOCK DETAIL
NTS

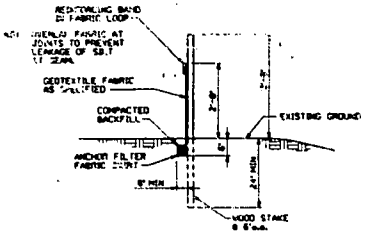


① ODOT ITEM 304 STABILIZED CRUSHED AGGREGATE (2-6" COMPOSITE) ON FILTER FABRIC, ODOT ITEM 712.09, TYPE D.
② INSTALL STRAW BALE AS SHOWN ON DETAIL.
③ GRAVEL TO BE ODOT ITEM 601.07, TYPE D DUMPED ROCK. TOP WIDTH TO BE SAME AS STRAW BALES.

TYPICAL CHECK DAM DETAIL
NTS

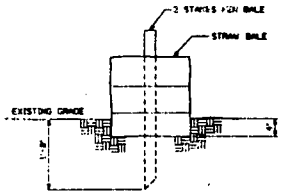


TYPICAL PIPE BEDDING DETAIL
NTS



TYPICAL SEDIMENT FENCE DETAIL
NTS

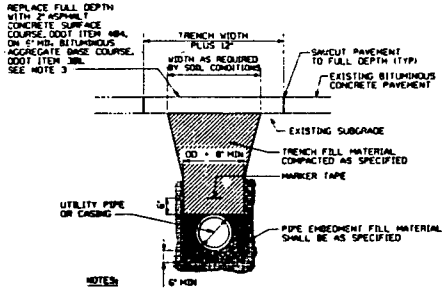
SEE NOTE 1



NOTE:
1. STRAW BALES TO BE USED WHEN NATURAL GROUND IS LEVEL OR SLOPING AWAY FROM PROJECT.
2. PLACE STRAW BALES APPROXIMATELY PARALLEL TO BOTTOM OF FILL SLOPE AND AROUND THE CATCH BASINS INLETS.
3. STRAW BALES SHALL BE AS SPECIFIED.
4. FOR EROSION CONTROL MAINTENANCE SEE SPECIFICATIONS.

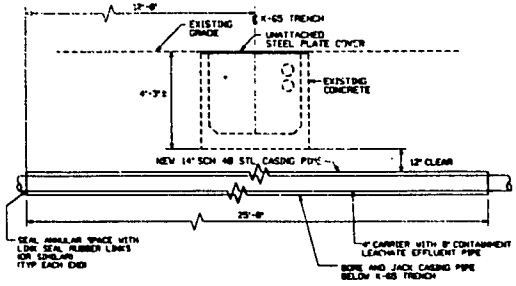
TYPICAL STRAW BALE BARRIER DETAIL
NTS

SEE NOTE 1

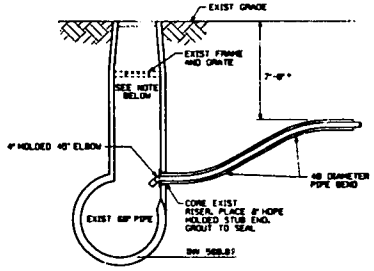


NOTES:
1. MATERIAL AND CONSTRUCTION OF THE ASPHALTIC CONCRETE PAVING SHALL COMPLY WITH THE REQUIREMENTS OF SECTIONS 301, 401 AND 404 OF ODOT STANDARD SPECIFICATION.
2. COMPACT PAVEMENT BY STEEL WHEEL ROLLER TO ACHIEVE EVEN AND SMOOTH FINISH, WITHOUT ROLLER MARKS. HAND-COMPACT IN AREAS INACCESSIBLE TO ROLLING EQUIPMENT.
3. PLACE PAVEMENT IN LAYERS NOT TO EXCEED 3 INCHES COMPACTED DEPTH. THE THICKNESS OF THE REPLACEMENT BITUMINOUS CONCRETE SHALL BE AT LEAST AS THICK AS THE EXISTING. USE ODOT ITEM 301 MATERIAL AS NECESSARY.
4. ADD TACK COAT (ITEM 407, ODOT STANDARD SPECIFICATIONS BETWEEN LAYERS IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.

TYPICAL PAVEMENT RESTORATION DETAIL
NTS

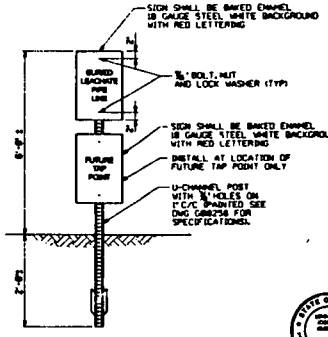


STEEL PIPE CASING
NTS



NOTE:
CATCH BASIN CONFIGURATION IS ASSUMED - NO PLANS WERE AVAILABLE. CONDITIONS NEED TO BE FIELD VERIFIED.

EXIST CATCH BASIN 130 DETAIL
NTS



TYPICAL PIPE LINE MARKER DETAIL
NTS

INSTALL AS SHOWN ON PLANS, GENERALLY AT EVERY 200' AND AT PC, PT, AND MID-POINT OF CURVES.

DRAFT CONSTRUCTION PACKAGE

NOTES

1. SUBCONTRACTOR MAY IN GENERAL USE EITHER SEDIMENT FENCE OR STRAW BALES INTERCHANGEABLY FOR SEDIMENT CONTROL WHERE INDICATED ON THE DRAWING. WHERE CHECK DAMS ARE INDICATED, THE CHECK DAM DETAIL ON THIS SHEET SHALL BE UTILIZED. STRAWBALES ARE PREFERRED AND SHALL BE COMPOSTED AT THE END OF PROJECT, CONSISTENT WITH THE FERNCO WASTE MINIMIZATION PROGRAM.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-G-00256	DETAILS - SHEET 3 OF 3

FOR INFORMATION ONLY

REV NO.	REASON FOR REVISION PURPOSE - DESCRIPTION	DRAWN	REVIEW	DATE
0	CERTIFIED FOR CONSTRUCTION	LGN	N/A	9/9/96

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MADI, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL DETAILS SHEET 2 OF 3

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
C.A. TOMONGIN	7-12-96	[illegible]	[illegible]	K. MCLAIN	9/9/96

SUBMITTED FOR APPROVAL	REVISED FOR APPROVAL	REVISED PROJECT NO.
LGN	N/A	20211

PROJECT NO.	WBS	DRAWING NO.	SHEET NO.	REV NO.
SRP/P0164	1.1.1.7.3.6 00-90701	92X-5900-G-00257	G0007	0

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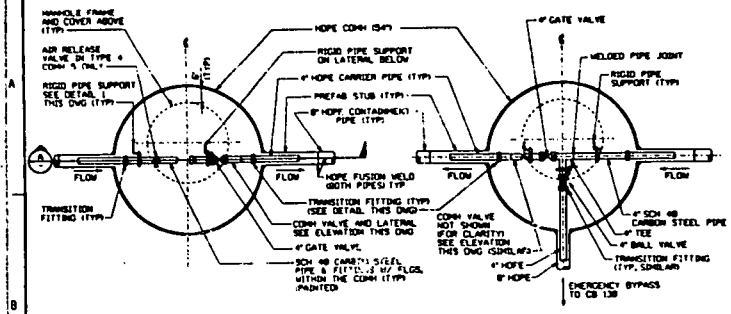
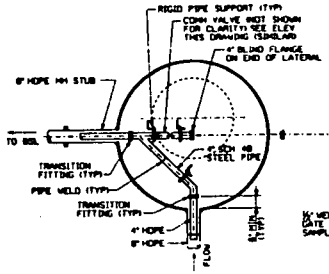


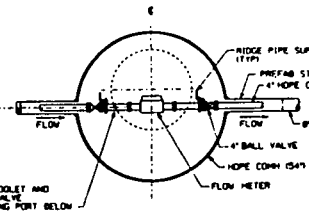
TYPE 1 & 4

(TYPE 1 & 4 SAME EXCEPT TYPE 4 HAS AIR RELEASE VALVE)

TYPE 2



TYPE 3



TYPE 5

SEE DRAWING 92X-5900-G-00347 FOR DETAILS OF METER

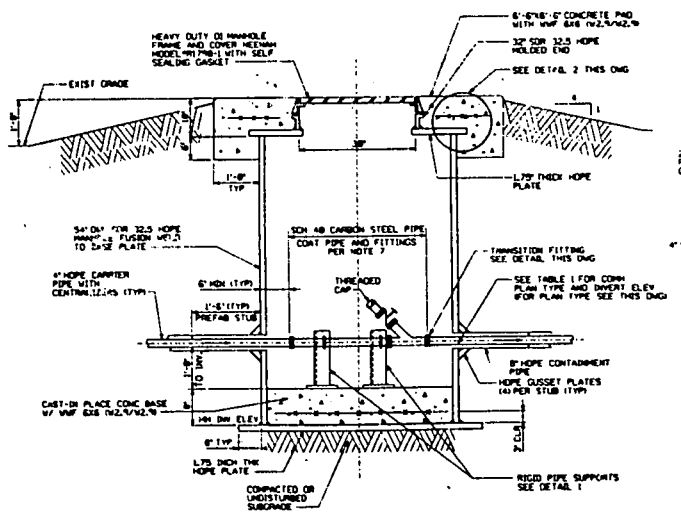
VALVE IDENTIFICATION

1. EACH VALVE SHALL BE IDENTIFIED WITH ITS UNIQUE VALVE NUMBER.
2. LABEL SIZE SHALL BE BASED ON USING 1/2" LETTERS.
3. LABELS SHALL BE CONSTRUCTED OF NONREFLECTIVE MATERIALS. BLACK CHARACTERS ON A WHITE BACKGROUND OR WHITE CHARACTERS ON A BLACK BACKGROUND 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.
4. LABELS, INCLUDING ADHESIVES AND OTHER MEANS OF ATTACHMENT, SHALL BE MADE FROM CORROSION-RESISTANT MATERIALS THAT ARE COMPATIBLE WITH THE COMPONENT AND ENVIRONMENT WHERE THEY ARE USED.

TYPICAL CLEANOUT MANHOLE PLANS

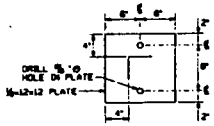
NTS

NOTE: SEE TABLE 1 FOR TYPE OF SPECIFIC COMH



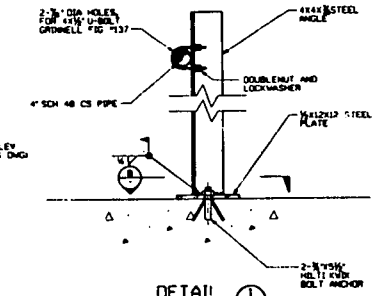
TYPICAL CLEANOUT - MANHOLE (COMH) SECTION (A)

1"=1'-0"



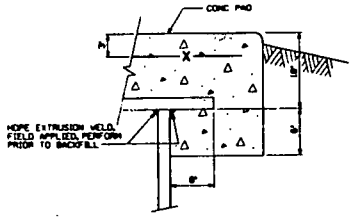
SECTION (B)

NTS



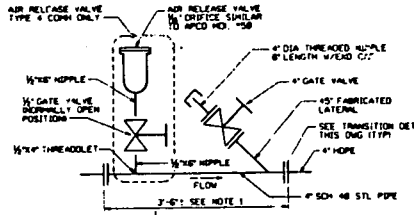
DETAIL (1)

NTS



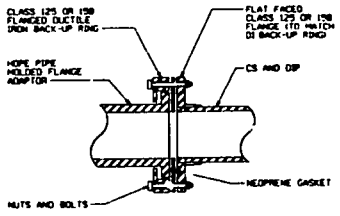
DETAIL (2)

NTS



TYPICAL COMH VALVE ELEVATION

NTS



TYPICAL TRANSITION FITTING DETAIL

NTS

TABLE 1

CLEANOUT - MANHOLE (COMH)			
COMH	TOP OF LID ELEV	INVERT ELEV	PLAN TYPE
	582.80	575.16	TYPE 5
A	581.80	573.87	TYPE 1
2	582.34	575.27	TYPE 1
3	577.56	570.87	TYPE 1
4	577.80	567.33	TYPE 2
5	581.80	574.87	TYPE 4
6	577.80	570.87	TYPE 1
7	577.80	566.87	TYPE 1
8	574.80	565.87	TYPE 1
9	579.50	568.87	TYPE 1
10	577.25	567.14	TYPE 3
11	577.63	570.63	TYPE 3
12	575.00	570.38	TYPE 3

NOTES

1. FINAL DIMENSION OF LENGTH OF STEEL FITTINGS AND VALVES IN THE MANHOLES WILL VARY DUE TO EXPANSION AND CONTRACTION OF HDPE PIPE AFTER COMPLETE BURIAL OF PIPE AND MANHOLE. ALLOW 5 DAYS BEFORE SETTING FITTINGS AND ANCHOR SUPPORTS. EACH MANHOLE WILL NEED A SEPARATE MEASUREMENT.

METAL PIPING SPECIFICATION NOTES

2. MATERIALS
   A) METAL CARRIER PIPE SHALL BE SEAMLESS CARBON STEEL ASTM A-53, GRADE B SCHEDULE 40, BEVELED ENDS. 1/2" THREADED PIPE SHALL BE THE SAME EXCEPT SCHEDULE 80. BOLTS, NUTS, AND WASHERS SHALL CONFORM TO ASTM A307.

   FITTINGS SHALL BE SEAMLESS CARBON STEEL BUTT WELD, ASTM A234, GRADE WPB. ELBOWS SHALL BE SHORT RADIUS.

   FLANGES SHALL BE CLASS 150, CARBON STEEL, FF OR RF, ASTM A105, WELDNECK STD. WT. BORE. USE FF WHEN MATING WITH CLASS 125 FLANGED VALVES OR TRANSITION FITTINGS.
3. FABRICATION
   ALL WELDING ELECTRODES SHALL BE IN ACCORDANCE WITH AWS A5.1.
4. TESTING
   CARRIER PIPE SHALL BE HYDROSTATICALLY TESTED TO AWWA C600.130 PSIG. THE TEST PRESSURE SHALL BE MAINTAINED FOR A MINIMUM OF TEN MINUTES PRIOR TO VISUAL INSPECTION.

GENERAL STEEL NOTES

5. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH AISC MANUAL OF STEEL CONSTRUCTION, NINTH EDITION.
6. MATERIAL SHALL MEET THE REQUIREMENTS OF THE FOLLOWING SPECIFICATIONS
   STRUCTURAL STEEL - ASTM A36
   WELDING - AWS D1.1 CLASS E70XX (ELECTRODES)
   ANCHOR STUD, WEDGE, NUT AND WASHER SHALL BE AISI 316 STAINLESS STEEL CONFORMING TO ASTM A276 (STUD) ASTM F594 (NUT) AND ASTM A240 (WASHER)
7. SHOP AND FIELD PAINTING SPECIFICATION FOR STEEL PLATE AND SHAPES, PIPE AND FITTINGS
   A) PREPARE SURFACES IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL (SSPC) SP-6.
   B) PRIME ALL BARE METAL NOT IN CONTACT WITH CONCRETE/GROUT WITH ONE COAT THEMEC SERIES 6 EPOXY LINE PRIMER. APPLY TWO COATS OF THEMEC SERIES 66 HI-BUILD EPOXOLINE FOR THE FINISH COAT. FOLLOW SSPC PAINT 13 AND PAINT 26.
8. THE VALVE SPECIFICATIONS INCLUDE THE FOLLOWING
   CHECK - SWING CHECK, IRON BODY, BRONZE TRIM, 45 DEGREE SWING DISC AND SEAT, CLASS 125 FLANGE ENDS, CONFORMING TO AWWA C508.

   4" GATE - IRON BODY, BRONZE TRIM, RISING STEM, SINGLE WEDGE, RESILIENT SEAT, CLASS 125 FLANGE ENDS, CONFORMING TO AWWA C509.

   4" BALL VALVE - CLASS 150, CARBON STEEL, RF FLANGE, ASTM A216, GRADE WCB, REINFORCED TFE SEATS, CHROME-PLATED BALL, WRENCH OPERATOR

   1/2" GATE - CLASS 150, BRONZE, THREADED ENDS, ASTM B62, RISING STEM.

   AIR RELEASE - CAST IRON BODY AND TOP, STAINLESS STEEL TRIM AND BALL FLOAT, BUNA-N SEAT, AND NPT THREADED INLET.

   PROTECTIVE COATINGS FOR VALVES
   INTERIOR - FACTORY APPLIED HEAT-CURED EPOXY COATING CONFORMING TO AWWA C550

   EXTERIOR - TWO COATS OF FACTORY APPLIED ZINC CHROMATE PRIMER AND TWO COATS FINISH COATING IN ACCORDANCE WITH METAL PAINTING SPECIFICATIONS.

ERECTION/INSTALLATION NOTES

9. ALL PIPING, FITTINGS, COMPONENTS, WELDING, BONDING, FABRICATION, ERECTION, AND ASSEMBLY SHALL BE IN ACCORDANCE WITH ASME B31.3.
10. ALL FLANGED JOINTS SHALL BE ASSEMBLED IN ACCORDANCE WITH ASME B31.3.
11. FABRICATE, INSTALL AND TEST HDPE PIPE MATERIALS IN ACCORDANCE WITH DETAILED SPECIFICATIONS.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00254	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-H-00347	INSTRUMENTATION - INSTRUMENT INSTALLATION MANHOLE DETAIL

FOR INFORMATION ONLY

REV	REVISION			
0	CERTIFIED FOR CONSTRUCTION	LGN	N/A	

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

PARSONS
THE RALPH M. PARSONS CO. - PARSONS MADI, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

LEACHATE CONVEYANCE SYSTEM

CIVIL DETAILS SHEET 3 OF 3

D.A. FOX | 04/18/96 | E. HELMIG | 04/19/96

N/A | 20211

SRP/P0164

WBS 1.1.1.7.3.6 00-90701 | 92X-5900-G-00258 | G0008 | 0

CONSTRUCTION PACKAGE

DO NOT SCALE REDUCED DRAWINGS

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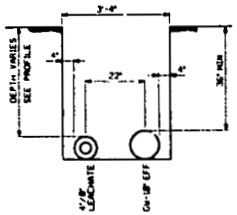
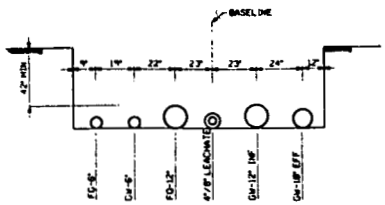
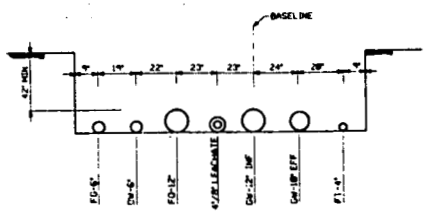


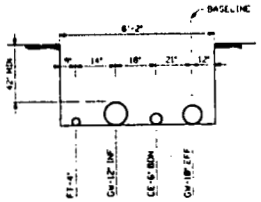
SECTION 1 NTS REF G08254 G08261 G08262



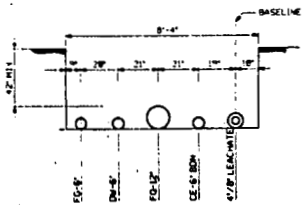
SECTION 2 NTS REF G08261 G08262



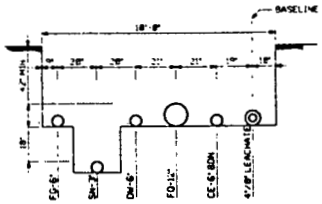
SECTION 3 NTS REF G08262



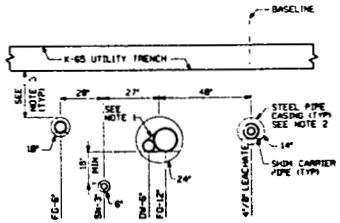
SECTION 4 NTS REF G08262



SECTION 5 NTS REF G08262

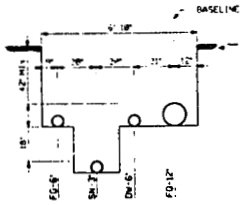


SECTION 6 NTS REF G08262

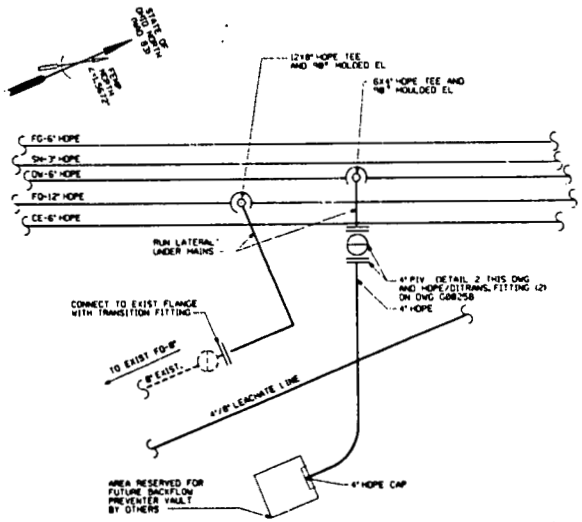


SECTION 7 NTS REF G08262

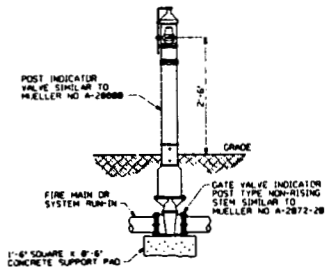
NOTES:
1. BAND DN AND FG PIPE WITH STEEL BANDS AT 5' SPACING OR AS RECOMMENDED BY PIPE MANUFACTURER
2. SEE STEEL PIPE CASING DETAIL ON DWG G08257
3. USE THE DEPTH/COVER SHOWN ON THE LEACHATE LINE PROFILE SHOWN ON DWG G08266 EXCEPT FOR SH-3"



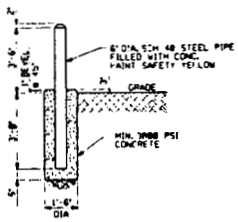
SECTION 8 NTS REF G08262



DETAIL 1 NTS REF G08262



DETAIL 2 NTS REF G08262
POST INDICATOR VALVE



TYPICAL EXTERIOR GUARD POST DETAIL
NTS

NOTES

1. IN GENERAL, THE PIPES ARE TO FOLLOW THE LEACHATE CONVEYANCE LINE (WW-4"/8") ALIGNMENT. THERE MUST BE A MINIMUM OF 3'-6" COVER OVER THE FD-12 FIRE WATER LINE. MAINTAIN A MINIMUM OF 1' CLEARANCE FROM ALL EXISTING UTILITIES. SANITARY LINES (CN) ARE TO BE 18" MINIMUM BELOW WATER LINES. (DN, FD).
2. THERE SHALL BE NO CHANGE IN THE WW-4"/8" PROFILE WITHOUT WRITTEN AUTHORIZATION BY FDF.
3. EXCEPT FOR THE WW-4"/8" AND THE FG-6", ALL HDPE PIPE TO BE SDR 11, WW-4"/8" IS SPECIFIED ON THE PLAN AND PROFILE SHEETS. FG LINES SHALL BE HDPE SDR 11 MEETING THE REQUIREMENTS FOR PE 2406 MANUFACTURED UNDER ASTM SPECIFICATION D 2513.
4. HAND DIG WHEN WITHIN 3' OF EXISTING GAS/FGU LINES. CONNECTION INTO THE EXISTING FG LINE SHALL BE DONE ACCORDING TO FEMP STANDARDS. COORDINATE TIE IN ACTIVITIES WITH FDF.
5. SEE DRAWING 92X-5900-C-00257 FOR TYPICAL PIPE BEDDING DETAIL.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-C-00254	PLAN AND PROFILE - SHEET 1 OF 4
92X-5900-C-00261	PLAN AND PROFILE - SHEET 2 OF 4
92X-5900-C-00266	PLAN AND PROFILE - SHEET 3 OF 4
92X-5900-C-00262	PLAN AND PROFILE - SHEET 4 OF 4
92X-5900-C-00257	DETAILS - SHEET 2 OF 3
92X-5900-C-00258	DETAILS - SHEET 3 OF 3

REV NO	REVISION PURPOSE / DESCRIPTION	DRAWN	CHECKED	DATE
0	ADD/ADJUST UTILITIES: DCN 1595841; DCN 1780007.818; DCN 1710003; DCN 4831H002	GES	N/A	1/4/93

UNITED STATES
DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. · PARSONS MAIN, INC. · ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL
SECTIONS AND DETAILS

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
M. LEU	8/27/92	R. Gerald	5/4/93	T. AFSHAR	2/4/93

SCALE: AS SHOWN

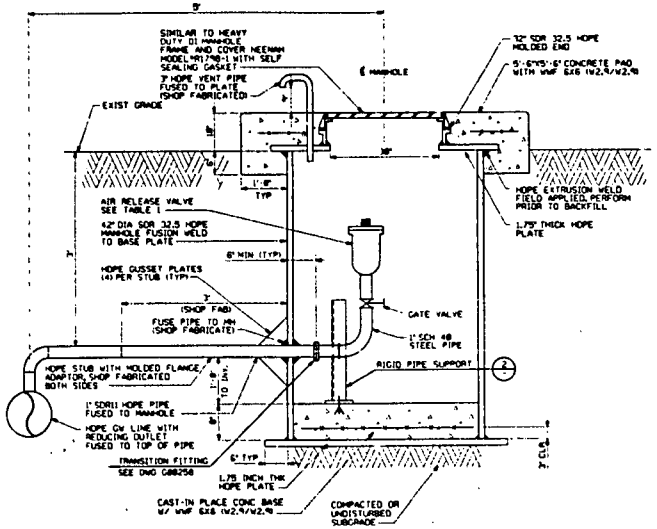
DESIGNED PER DWG NO	PROJECT CAD DRAWING	PROJECT NO
C. Schroeder 1/4/93	N/A	28018

PROJECT DATA NUMBER / PROJECT DATA NUMBER	PROJECT NO	DRAWING NO	SHEET NO	REV NO
SRP/P0164	WBS U1.1.2.1.6 00-90701	92X-5900-C-00259	C0009	0

CONSTRUCTION PACKAGE

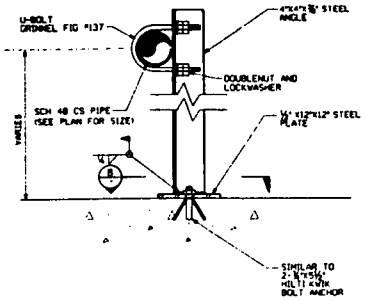
DO NOT SCALE REDUCED DRAWING

12

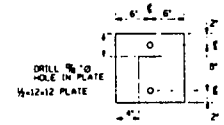


PLAN TYPE 4

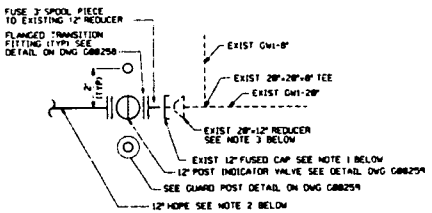
AIR RELEASE MANHOLE DETAIL (1) REF G00410 G00254 G00261 G00266



PIPE SUPPORT DETAIL (2) NTS



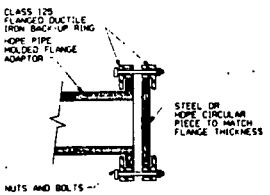
SECTION (B) NTS



NOTES:

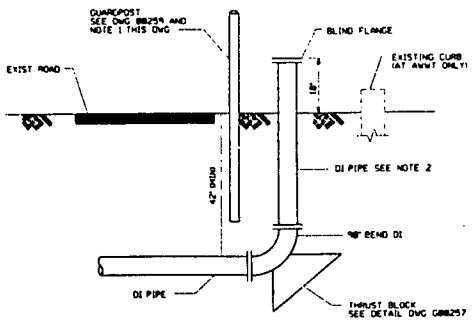
1. EXISTING LINE TO BE ISOLATED AND DRAINED BY FDF PRIOR TO CONSTRUCTION. SUBCONTRACTOR TO VERIFY PRIOR TO REMOVING END CAP.
2. PROVIDE 18 LF OF STRAIGHT PIPE PRIOR TO STARTING BEND.
3. REDUCER IS A SERIES OF HDPE REDUCERS (28"x18", 18"x16", 16"x14", 14"x12")

DETAIL TIE-IN (3) REF G00410 G00261 NTS



SEE NOTES 5, 6 AND 7

DETAIL END PIPE (4) REF G00410 G00254 G00266 G00262 NTS



DETAIL TIE-IN (5) REF G00410 G00262 NTS

NOTES

1. GUARD POST SHALL BE 2' FROM PIPE BUT NOT OVER THE PIPE. LOCATION SHALL BE FIELD DETERMINED.
2. DUCTILE IRON PIPE TO BE INSULATED, HEAT TRACED AND JACKETED TO 30" BELOW GRADE, BY OTHERS.
3. FLANGE ADAPTERS SHALL BE USED AT ALL HDPE PIPE TO DUCTILE IRON PIPE (DI) PIPE TRANSITIONS.
4. UNLESS OTHERWISE NOTED, ALL CONCRETE SHALL BE 3000 PSI PER ODOT ITEM 499, CLASS F.
5. PLACE SIGN TO MARK END OF PIPE FOR FUTURE TIE-IN WORK.
6. MARK END OF PIPES WITH SIGN SIMILAR TO DETAIL ON DRAWING 92X-5900-G-00257. CHANGE LEACHATE TO MATCH PIPE TYPE.
7. A MOLDED END CAP MAY BE USED IN LIEU OF CIRCULAR PIECE FOR HDPE PIPE LESS THAN 6" DIAMETER.

TABLE 1

VALVES **

MH#	PLAN TYPE	AIR RELEASE
1	4	½"-13 (CFM)
2	4	½"-13 (CFM)
3	4	½"-13 (CFM)
4	4	½"-13 (CFM)

** MODELS SIMILAR TO APCO OR CRISPIN

REF DWG NO.	DRAWING TITLE
92X-5900-X-00254	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-G-00254	PLAN AND PROFILE - SHEET 1 OF 4
92X-5900-G-00261	PLAN AND PROFILE - SHEET 2 OF 4
92X-5900-G-00266	PLAN AND PROFILE - SHEET 3 OF 4
92X-5900-G-00262	PLAN AND PROFILE - SHEET 4 OF 4
92X-5900-G-00257	DETAILS - SHEET 2 OF 3
92X-5900-G-00258	DETAILS - SHEET 3 OF 3
92X-5900-G-00259	SECTIONS AND DETAILS

REV NO	REVISION DESCRIPTION	DES	DRWN	DATE
0	DCN FOR ADDITIONAL UTILITIES ADDED DU-4 DCN 48310-002	EES	N/A	7/14/97

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. · PARSONS MAIN, INC. · ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME: LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE: CIVIL
MANHOLE AND MISCELLANEOUS DETAILS

DRAWN BY R. LINDGREN DATE 8/8/97 | LEAD ENGINEER K. Gaudel DATE 2-9-97 | CHECKED BY T. M. Smith DATE 2/12/97
SCALE NONE

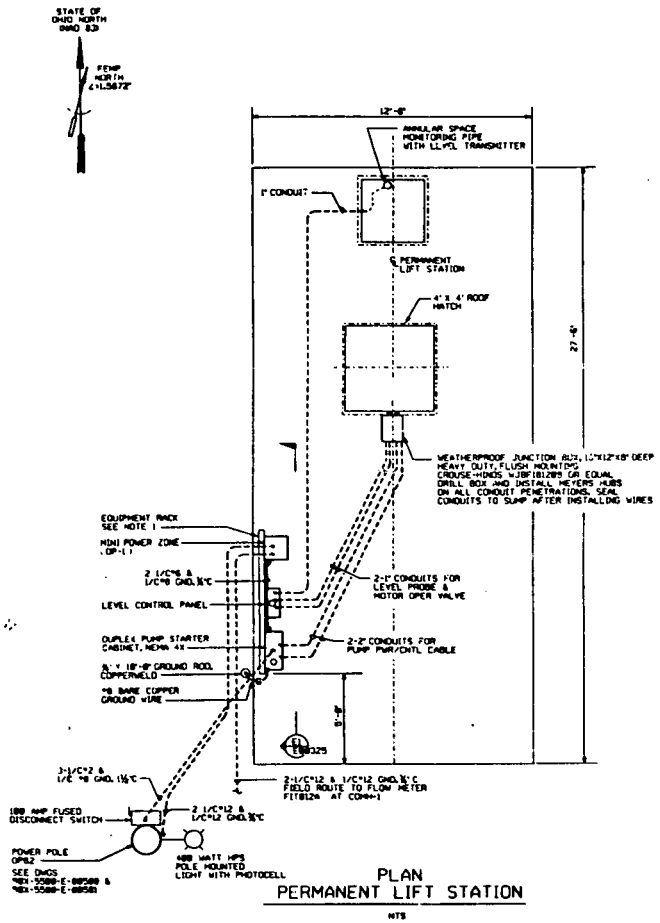
SUBMITTED FOR APPROVAL C. Schneider DATE 2/19/97 | FENCED ON APPROVAL N/A | FERNALD PROJECT NO 20210

REFERENCE DATA PACKAGE PROJECT DATA NUMBER SRP/P0164

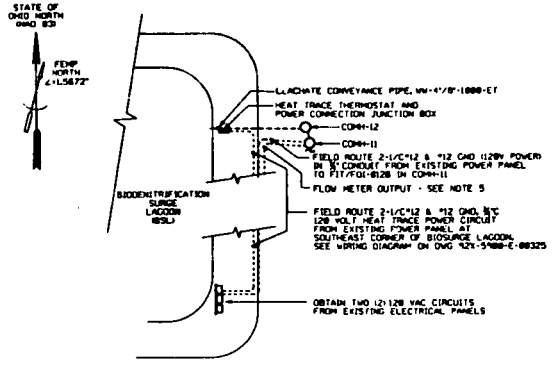
PROJECT NO	TOP PROJECT NO	DRAWING INDEX CODE NO	SHEET NO	REV NO
	WBS 1.1.1.2.3.6 00-90701	92X-5900-G-00410	G0010	0

CONSTRUCTION PACKAGE

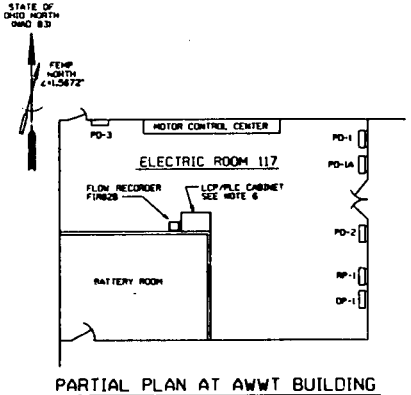
741



PLAN
PERMANENT LIFT STATION
NTS



PLAN
AT BIODENITRIFICATION SURGE LAGOON
NTS



PARTIAL PLAN AT AWWT BUILDING
NTS

NOTES

1. EQUIPMENT RACK AT PERMANENT LIFT STATION TO BE FIELD FABRICATED AND LOCATED AS SHOWN.
2. CONDUITS TO BE FIELD ROUTED. EMBEDDED CONDUITS SHALL BE A MINIMUM OF 18" BELOW GRADE.
3. EXPOSED PIPE AT BIOSURGE LAGOON SHALL BE HEAT TRACED. EXTEND HEAT TRACE CABLE 3'-0" BELOW GRADE.
4. SEE CIVIL DRAWING 92X-5980-G-00262 FOR LEACHATE CONVEYANCE PIPE LOCATION AND DETAILS AT THE BIO SURGE LAGOON.
5. FIELD ROUTE FLOW METER OUTPUT SIGNAL WIRES TO NEAREST TELEPHONE LINE INTERFACE POINT AS DETERMINED BY FERMCO.
6. LOCATE THE LCP/PLC CABINET AND FLOW RECORDER FIR828 AT TENTATIVE LOCATION AT THE AWWT AS SHOWN. COORDINATE FINAL LOCATION AND CONNECTION TO 120 VOLT POWER WITH THE AWWT FACILITY MANAGER AT TIME OF CONSTRUCTION FOR APPROVAL OF EQUIPMENT LOCATIONS AND WORK TO BE PERFORMED IN THIS AREA.

REF SHEET NO.	DRAWING TITLE
92X-5980-E-00264	DRAWING INDEX
92X-5980-E-00325	ELEVATION AND DETAILS
92X-5980-G-00262	CIVIL - PLAN & PROFILE
92X-5980-E-00500	ELECTRICAL SITE PLAN AND SINGLE LINE
92X-5980-E-00501	ELECTRICAL DETAILS

REV NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	DRAWN	CHECKED	APPROVED
0	CERTIFIED FOR CONSTRUCTION		N/A	

UNITED STATES
DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS RADIX INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
ELECTRICAL
PLANS
PERMANENT LIFT STATION AND BIOSURGE LAGOON

DRAWN BY	DATE	TECH REVIEW BY	DATE	ENGINEER BY	DATE
R PROBST	4/24/98			J.L. COOPER	4/24/98
PROJECT NO.		SCALE		SCALE	
				NONE	
DRAWING PREP APPROVAL		PROJECT CAD APPROVAL		PROJECT PROJECT NUMBER	
		N/A		26211	

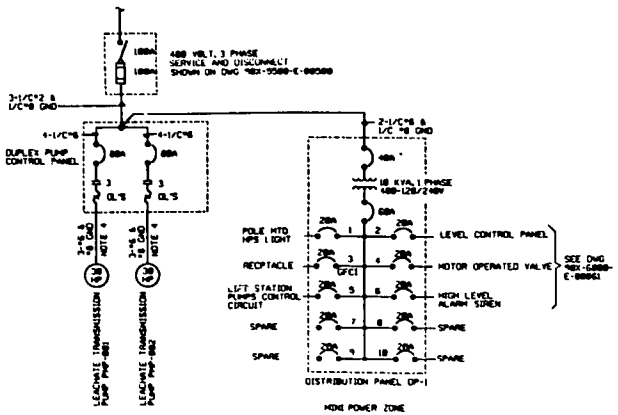
PROJECT CODE PROJECT	PROJECT CODE SUBPROJECT	DRAWING CODE	SHEET NO.	REV NO.
SRP/P0164	WBS 1.1.1.2.3.6 00-90701	92X-5980-E-00323	E0001	0

CONSTRUCTION PACKAGE

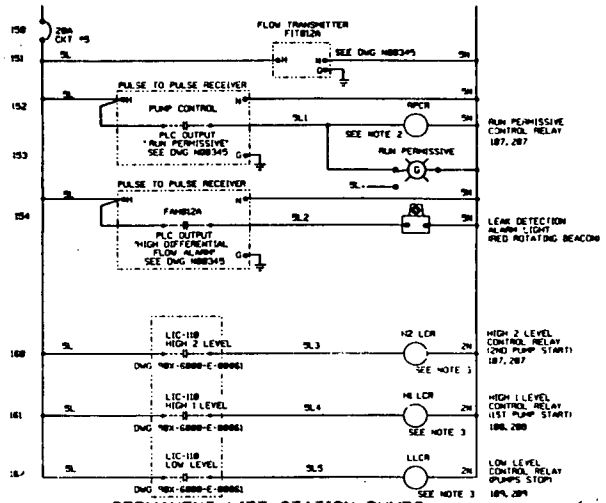
DO NOT SCALE REDUCED DRAWING

14

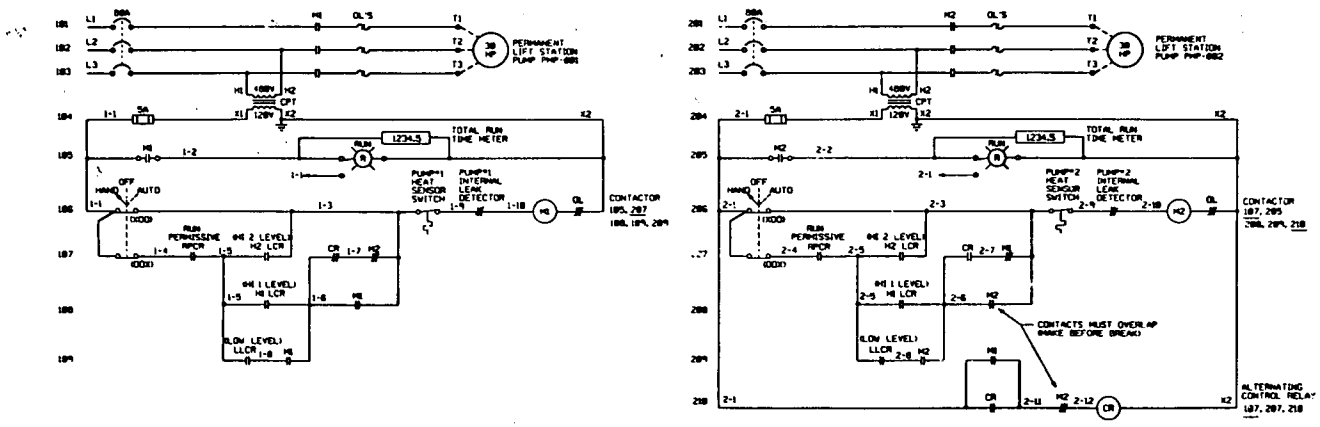
741



SINGLE LINE DIAGRAM



PERMANENT LIFT STATION PUMPS
CONTROL CIRCUIT



PERMANENT LIFT STATION PUMPS
SCHEMATIC DIAGRAMS

OPERATION

THE DUPLEX PUMP CONTROL PANEL WILL AUTOMATICALLY ALTERNATE MOTOR OPERATION. THE CONTROLLER OPERATES ONE MOTOR AND THEN THE OTHER ON EACH SUCCESSIVE CLOSING OF HIGH LEVEL SIGNAL.

IF ONE MOTOR IS RUNNING AND ITS DISCONNECT SWITCH IS OPENED, AN OVERLOAD RELAY TRIPS, OR THE STARTER IS DE-ENERGIZED FOR ANY REASON, THE OTHER MOTOR WILL AUTOMATICALLY BE STARTED.

FAILURE OF A PUMP MAY BE DETECTED BY PERIODIC TESTING AND MONITORING OF TOTAL RUN TIME METERS.

FLOW FROM THE PERMANENT LIFT STATION AND OUTPUT FLOW AT THE BIOSURGE LAGOON ARE COMPARED BY A COMPUTER LOCATED AT THE WWTF FACILITY.
FOLLOWING A TIME DELAY TO ALLOW FOR PUMP STARTUP, A DISCREPENCY OF 50 (APPROX 10 GPM) WILL ACTIVATE AN ALARM LIGHT INDICATING A LEAK.
A DISCREPENCY OF 100 (APPROX 20 GPM) WILL RESULT IN LOSS OF "RUN PERMISSIVE" CONTROL INTERLOCK, DE-ENERGIZING RELAY "RPCR", AND SHUTDOWN THE LIFT STATION PUMPS.

DURING HIGH FLOW PERIODS, IF ONE PUMP IS UNABLE TO HANDLE THE INFLOW, AND LEVEL IN THE LIFT STATION CONTINUES TO RISE AND THE HIGH 2 LEVEL IS REACHED, THE SECOND PUMP WILL START. BOTH PUMPS WILL CONTINUE TO RUN UNTIL THE WATER LEVEL REACHES THE LOW LEVEL STOPPING BOTH PUMPS.

NOTES:

1. THE PUMP CONTROL PANEL SHALL BE FURNISHED WITH THE FOLLOWING OPTIONS: MOTOR CIRCUIT PROTECTORS, 480/120V CONTROL POWER TRANSFORMERS AND FUSES, HAND-OFF-AUTO SELECTOR SWITCHES, RUN INDICATING LIGHTS AND TOTAL RUN TIME METERS, MOUNTED ON A NEMA 4 STAINLESS STEEL ENCLOSURE.
2. HIGH LEVEL RELAYS "HI LCR", "HI2 LCR", AND LOW LEVEL RELAY "LLCR" ARE CONTROLLED BY THE LEACHATE COLLECTION MANHOLE LEVEL CONTROLLER LIC-110 SHOWN ON DRAWING 92X-6000-E-00061.
3. INFLOW TO THE PERMANENT LIFT STATION IS STOPPED BY A HIGH-HIGH LEVEL RELAY (LSH1) WHICH CLOSES A MOTOR OPERATED VALVE AND CONTROLS VISUAL AND AUDIBLE ALARMS. SEE DRAWING 92X-6000-E-00061.

CONSTRUCTION PACKAGE

DO NOT SCALE REDUCED DRAWING

NOTES

1. SEE DRAWING 92X-5900-E-00323 FOR ELECTRICAL PLAN AT PERMANENT LIFT STATION.
2. INSTALL A SQUARE D TYPE KPL2P14V20 OR EQUAL (120 VOLT DPDT PLUG IN RELAY) IN STARTER CABINET. ALSO INSTALL A 120VOLT, GREEN PILOT LIGHT, SQUARE D TYPE (30) OR EQUAL ON THE STARTER DOOR.
3. INSTALL THREE (3) SQUARE D TYPE KPL2P14V20 OR EQUAL RELAYS IN THE LEVEL CONTROL CABINET. SEE DWG 92X-6000-E-00061.
4. PUMP IS FURNISHED WITH 40 FOOT LONG SUBMERSIBLE POWER CABLE CONTAINING 3 #6 (PVRL) 2 #10 (CTLL) #8 (GND) & 1 #10 (GC) CONDUCTORS. NOMINAL DIA OF CABLE IS 1.22 INCHES.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-6000-E-00061	ELECTRICAL DETAILS IV
92X-5900-E-00323	PLANS PERMANENT LIFT STATION AND BIOSURGE LAGOON
92X-5903-N-00345	ANALOG I/O DIAGRAM
92X-5500-E-00500	ELECTRICAL SITE PLAN AND SINGLE LINE

REV NO.	REMARKS	BY	CHKD	DATE
0	CERTIFIED FOR CONSTRUCTION	VGN	N/A	3/30/98

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS HADA, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

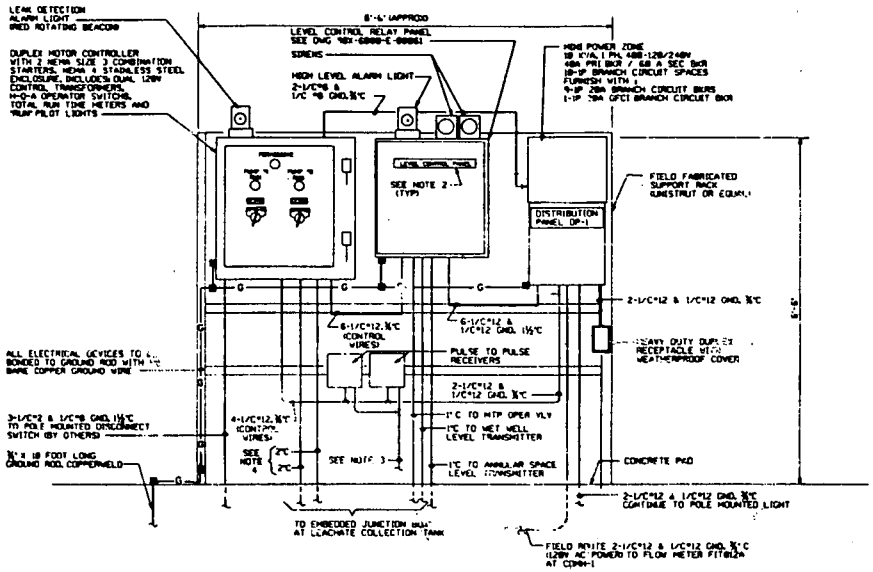
DRAWING TITLE
ELECTRICAL
SINGLE LINE AND SCHEMATICS
PERMANENT LIFT STATION

DRAWN BY	DATE	CHECKED BY	DATE	CHECKED BY	DATE
R. PROSKI	3/30/98	J. Powell	4/1/98	J.L. COOPER	3/30/98

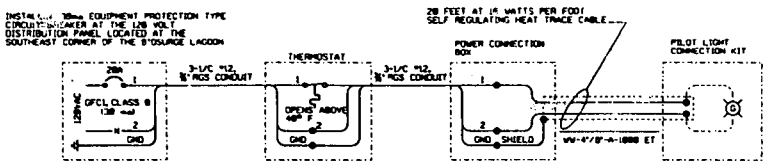
SCALE	SIZE
NONE	28211

PROJECT NO.	WBS	CONTRACT NO.	DRAWING NO.	REV.
SRP/P0164	1.1.1.2.3.8 00-90701	92X-5900-E-00324	E0002	0

15



PERMANENT LIFT STATION
EQUIPMENT RACK
ELEVATION (E1) REF E00325 E00323
NTS



HEAT TRACING CIRCUIT
WIRING DIAGRAM

NOTES

1. SEE 92X-5900-E-00323 FOR PLANS AT THE PERMANENT LIFT STATION AND AT THE BIO SURGE LAGOON.
2. SUBCONTRACTOR SHALL PROVIDE AND INSTALL NAMEPLATES FOR ALL PANELS AND CONTROLS. NAMEPLATES SHALL BE WHITE CAMACOID WITH 3/8 MINIMUM HIGH BLACK LETTERING.
3. FIELD ROUTE A TWO PAIR TELEPHONE CABLE TO NEAREST TELEPHONE LINE INTERFACE POINT AS DIRECTED BY FERMCO.
4. 2" CONDUITS CONTAIN PUMP VENDOR SUPPLIED CABLE. PUMPS ARE FURNISHED WITH 48 FOOT LONG SUBMERSIBLE POWER CABLE CONTAINING 3-#8 (PWR), 2-#18 (CNTL), 1-#8 (GND), & 1-#18 (GC) CONDUCTORS. NOMINAL DIA OF CABLE IS 1.22 INCHES.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-E-00323	POWER PLANS
92X-6000-E-00061	ELECTRICAL DETAILS IV

FOR INFORMATION ONLY

REV NO.	REVISION PURPOSE - DESCRIPTION			
0	CERTIFIED FOR CONSTRUCTION		N/A	

UNITED STATES
DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

PARSONS
THE RALPH M. PARSONS CO. · PARSONS MADI, INC. · ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

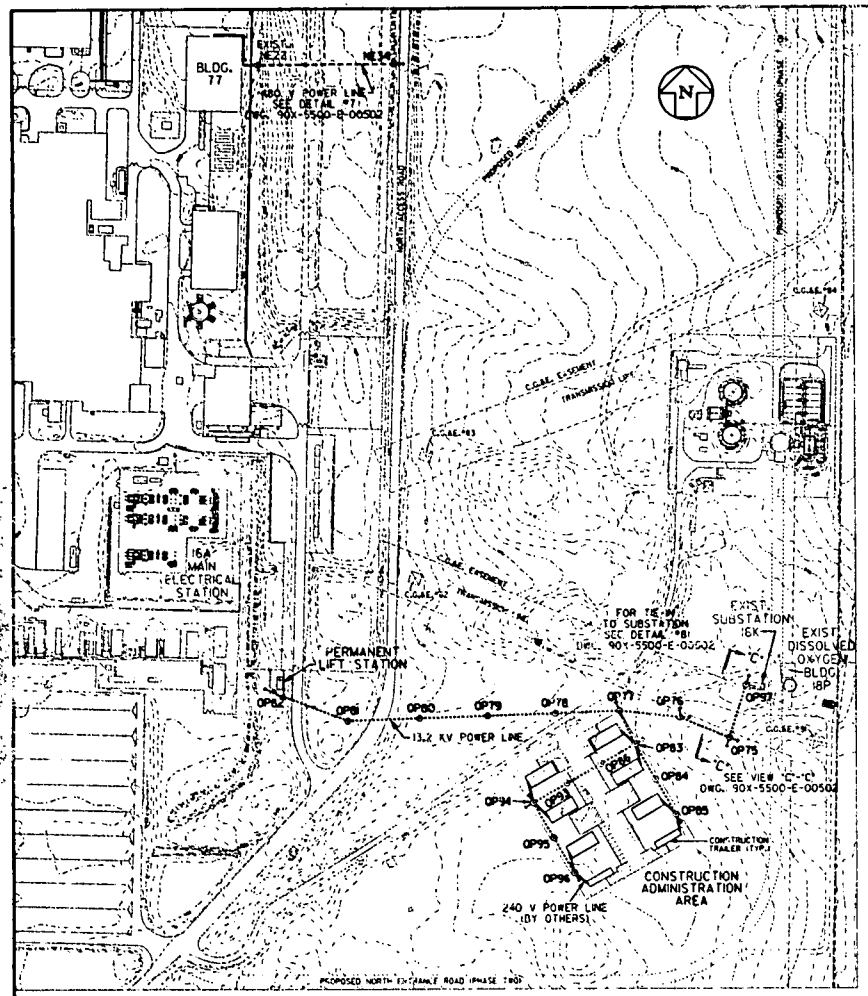
LEACHATE CONVEYANCE SYSTEM

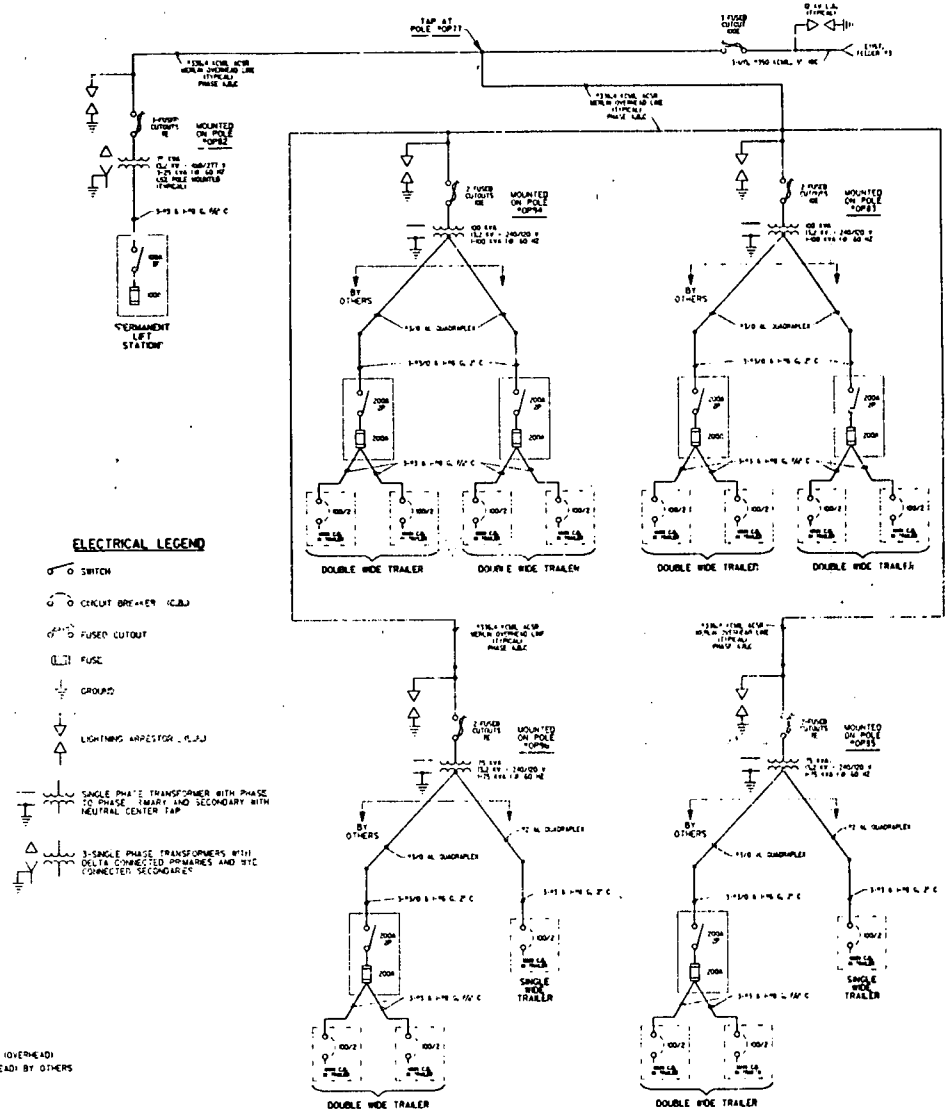
ELECTRICAL
ELEVATION AND DETAILS

DESIGNED BY R. PRIDDY	DATE 4/22/96	LEAD ENGINEER D. Pennell	DATE 4/26/96	DRAWN BY J.L. COOPER	DATE 4/24/96
PLANT/BLDG. NO.		PLANT		SCALE	SCALE
DESIGNED PER DRAWING		PROJECT DEF DRAWING N/A		HOME PROJECT NUMBER 2821	

PROJECT DATA BASE PROJECT NUMBER SRP/P0164	WBS LLLLL.L.L.L 00-90701	DRAWING NO. 92X-5900-E-00325	SHEET NO. E0003	REV NO. 0

CONSTRUCTION PACKAGE





ELECTRICAL LEGEND

- SWITCH
- CIRCUIT BREAKER (CB)
- FUSED CUTOUT
- FUSE
- GROUND
- LIGHTNING ARRESTOR (LA)
- SINGLE PHASE TRANSFORMER WITH PHASE TO PHASE PRIMARY AND SECONDARY WITH NEUTRAL CENTER TAP
- 3-SINGLE PHASE TRANSFORMERS WITH DELTA CONNECTED PRIMARIES AND WYE CONNECTED SECONDARIES

NEW POLE COORDINATES

	EASTING	NORTHING	
NE34	1350863.22	480830.30	POLE WITH GUY
OP75	1350586.37	479336.52	POLE WITH GUY
OP76	1350480.00	479405.44	POLE WITH GUY
OP77	1350350.00	479420.00	POLE WITH GUY
OP78	1350210.00	479415.00	
OP79	1350062.50	479410.00	
OP80	1350095.00	479405.00	
OP81	1350160.00	479400.00	
OP82	1350194.36	479463.75	POLE WITH GUY
OP83	1350382.45	479318.20	POLE WITH GUY
OP84	1350426.45	479275.98	
OP85	1350470.45	479195.77	POLE WITH GUY
OP86	1350509.24	479305.90	
OP93	1350235.82	479263.54	
OP94	1350162.9	479220.8	POLE WITH GUY
OP95	1350206.51	479145.00	
OP96	1350250.51	479068.79	POLE WITH GUY
OP97	1350622.8	479475.84	POLE WITH GUY

EXISTING POLE COORDINATES

	EASTING	NORTHING
NE22	1350957.82	480829.84

SCALE

LEGEND

- ELECTRIC POLE
- ELECTRIC POLE WITH GUY
- 13.2 KV 3Ø 60 HZ PRIMARY LINE (FEEDER 3B) (OVERHEAD)
- 240 V 1Ø 60 HZ DISTRIBUTION LINE (OVERHEAD) BY OTHERS
- 480 V 3Ø 60 HZ (OVERHEAD)
- OP75 OUTSIDE PRODUCTION AREA POLE (#75)
- NE34 NORTHEAST POLE (#34)
- FIRE LANE - NO PARKING

NO.	REVISIONS	DATE	DWN.	CHK.	APPD.
1	CORRECTED FERMCO PROJECT NO.	8/96	SJS		
0	CFC	8/96	SJS	JAP	

NO.	REVISIONS	DATE	DWN.	CHK.	APPD.	REF. DWG. NO.
						90X-5500-E-00503
						90X-5500-E-00502
						90X-5500-E-00501

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

CONFIGURATION MANAGEMENT DRAWING

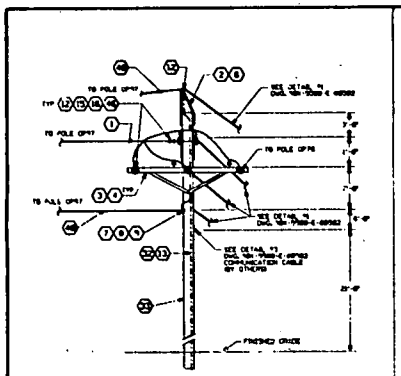
PERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald
Environmental Management Project
U.S. DEPARTMENT OF ENERGY

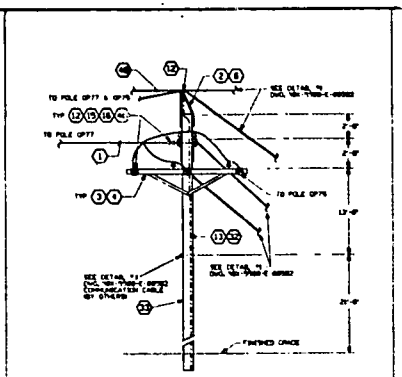
SOUTHEAST CORNER OF SITE
LEACHATE CONVEYANCE SYSTEM
ELECTRICAL SITE PLAN AND SINGLE LINE
SCALE: 1" = 100'-0"

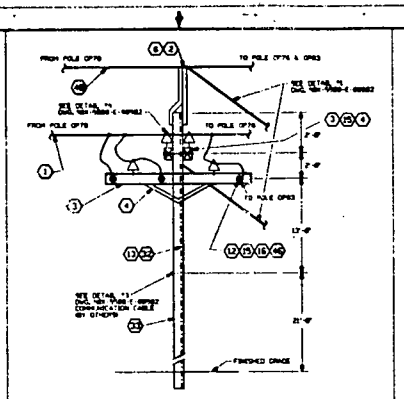
90X-5500-E-00500 | 1

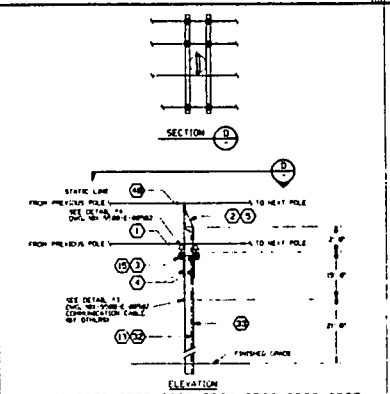
FERMCO PROJECT NO. 2080

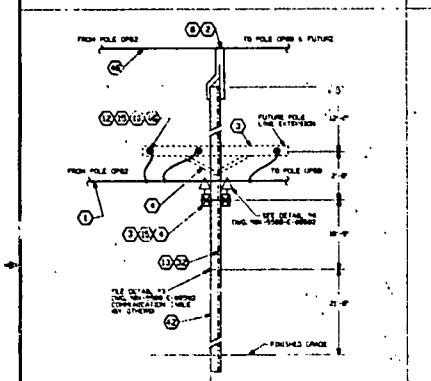
FILE NAME: 90X5500E00500.DGN

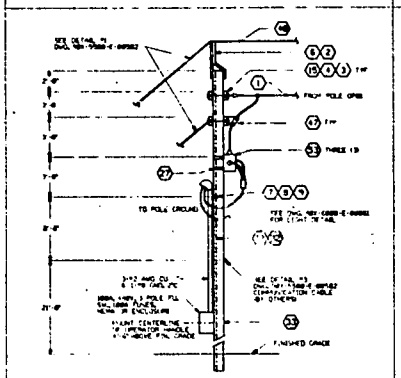


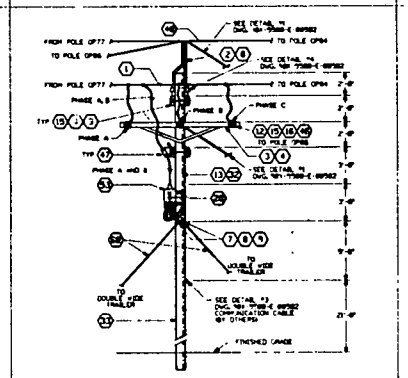


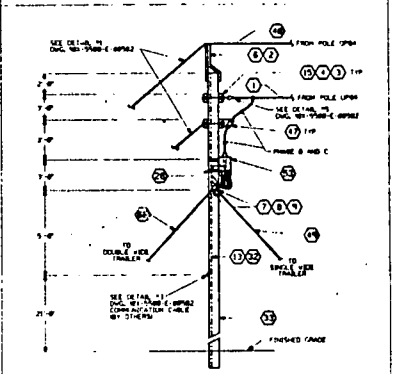


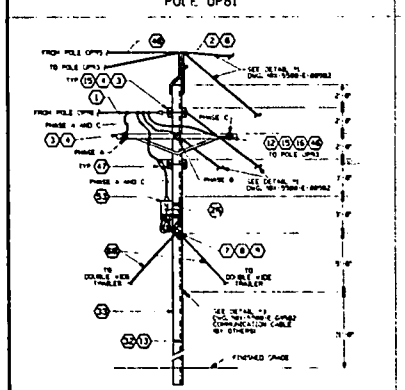


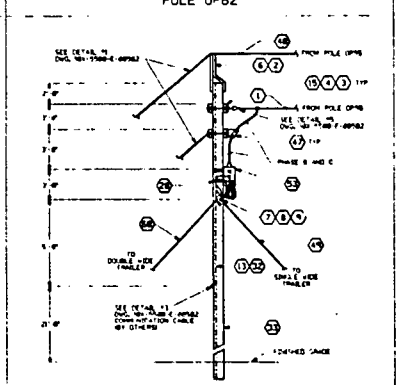


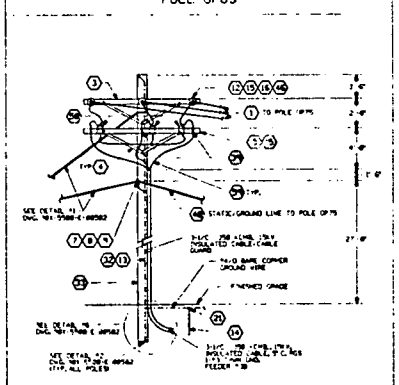












LEGEND

1. AERIAL POWER CONDUCTOR
2. GROUND WIRE CLAMP, USED TO ATTACH STATIC WIRE TO BRACKET & POLE GROUND.
3. CROSSARM, 3½" x 4½" x 12' - 0", PRESSURE TREATED SOUTHERN PINE.
4. CROSSARM BRACE, HOT DIP GALVANIZED ¼" x 1½" STEEL, 48" GRAB x 18" DROP.
5. STATIC WIRE SUPPORT, STRAIGHT BRACKET TYPE.
6. STATIC WIRE SUPPORT, CORNER BRACKET TYPE.
7. THIMBLE, FOR STATIC WIRE OR MESSENGER WIRE DEAD END.
8. EYE BOLT, SPIRAL BITE TYPE, FOR DEAD END ATTACHMENT, WITH ONE WASHER AND ADDITIONAL NUTS, WASHERS, AND LENGTH AS REQUIRED.
9. GUY GRIP, FOR STATIC WIRE, PREFORMED WIRE TYPE.
10. WEATHERHEAD, CONDUIT, OUTDOOR, WEATHERTIGHT.
11. CLAMP, SUSPENSION - 2" & ½" MESSENGER.
12. EYENUT, ⅝" BOLT DIAMETER.
13. STAPLE, COPPER LAG, 1½" LONG.
14. GROUND ROD, ⅝" DIAMETER x 10' LONG, COPPERWELD.
15. BOLTS, DOUBLE ARMING, SQUARE NUTS, ⅝" DIA x LENGTH AS REQUIRED.
16. DISTRIBUTION TYPE DEAD END GRIP, FOR USE ON MULTI-WIRE ACSR CONDUCTOR.
17. ARMOR ROD FOR USE ON ITEM #9 THIS LIST.
18. 10" DIAMETER HELICAL SCREW TYPE GUY ANCHOR WITH HIGH PULLOUT CAPACITY OF 70,000 LBS.
19. COMPRESSION GROUND FITTING.
20. SPLIT-BOLT CONNECTOR, FOR OUTDOOR OVERHEAD CONDUCTOR INSTALLATIONS.
21. COMPRESSION GROUND FITTING TO SECURE BARE COPPER CONDUCTOR TO ⅝" GROUND ROD.
22. NOT USED
23. NOT USED
24. GUY WIRE MARKER, HALF ROUND, 2" WIDE, 18" LONG, UV RESISTANT WITH BRACKETS.
25. NOT USED
26. TRIPLE EYE, GALVANIZED ANCHOR, ⅝" x 8" DEAD LENGTH AS REQUIRED.
27. EQUIPMENT MOUNT FOR 3 TRANSFORMERS, DOUBLE BANDED, ALUMINUM CLUSTER MOUNT W/ANG LUG.
28. EQUIPMENT MOUNT FOR SINGLE TRANSFORMER, DOUBLE BANDED, ALUMINUM CLUSTER MOUNT W/ANG LUG.
29. GUY STRAIN INSULATOR, WITH CLAVIS PIN, FOR ⅝" GUY WIRE.
30. LASHING WIRE CLIP, SIZE AS REQUIRED.
31. CROSSARM CORNER, TYPE PCN, MALLEABLE IRON, GALVANIZED, W/THREAD MOUNTING HARDWARE.
32. #4 AWG BARE SOLID COPPER GROUND CONDUCTOR.
33. POLE, 45 FT, CLASS 2, PRESSURE TREATED SOUTHERN YELLOW PINE.
34. TIE WIRE FOR ACSR CONDUCTOR TO PIN TYPE INSULATOR, SIZE TIE WIRE TO FIT OVER ARMOR ROD.
35. ⅝" DIAMETER, 7 STRAND, HIGH STRENGTH, GALVANIZED STEEL STRAND.
36. NOT USED
37. ⅝" DIAMETER, 7 STRAND, HIGH STRENGTH, GALVANIZED STEEL STRAND.
38. CABLE SUPPORT, 90° BRACKET TYPE, OUTDOOR WATERTIGHT, SEAL WITH FILLING COMPOUND.
39. TERMINATION, 15 kV, 350 KCMIL, CROSS LINKED POLYETHYLENE (XLPE) INSULATED CABLE, SILICONE RUBBER, SIZED TO FIT INSULATOR DIAMETER.
40. ⅝" DIAMETER, 7 x 19 STRANDED CONSTRUCTION, GALVANIZED STEEL STRAND.
41. NOT USED
42. POLE, 60 FT, CLASS 2, PRESSURE TREATED SOUTHERN YELLOW PINE
43. HIGH VOLTAGE STRUCT STEEL PIN FOR PIN TYPE INSULATORS (FIELD INSTALLED) WITH WASHERS AND NUTS AS REQUIRED.
44. SURGE ARRESTER, DIRECT CONNECTED LIGHTNING ARRESTER POLE TYPE, METAL OXIDE VARISTOR, WITH CROSSARM MOUNTING HARDWARE.
45. INSULATOR, PIN TYPE, 15 kV, 57, GLAZED PORCELAIN, 3" THREADS SHED CLASS 56, 5" HEIGHT.
46. INSULATOR, DEAD END TYPE, SINGLE LUG, 5½" DIA AND CLASS 52-3, CLEVIS TYPE WITH STEEL HARDWARE.
47. FUSED OUTDOOR TRANSFORMER COMBINATION UNIT, OUTPUT RATED 100 kVA, 7200 - 120/240 VOLTS, WITH CROSSARM MOUNTING HARDWARE, FOR TRANSFORMER, SEE ITEM #41 THIS MATERIAL LIST.
48. LIGHT CHANNEL, 3" x 3" x 1/4" x 6', HOT DIPPED GALVANIZED STEEL, 8 FT, 1½" x ⅜" SHAPE, DIAMETER, WITH STRAPS AND HARDWARE AS REQUIRED.
49. #2 AL JUMPER.
50. FUSED OUTDOOR TRANSFORMER COMBINATION UNIT, OUTPUT RATED 100 kVA, 7200 - 120/240 VOLTS, WITH CROSSARM MOUNTING HARDWARE, FOR TRANSFORMER, SEE ITEM #41 THIS MATERIAL LIST.
51. NOT USED
52. NOT USED
53. SINGLE PHASE OIL FILLED POLE MOUNTED TRANSFORMER, SEE 90X-5500-E-00500 FOR SIZE AND QUANTITY.
54. NOT USED
55. NOT USED
56. NOT USED
57. NOT USED
58. CLEVIS BUTT PLATE
59. 750 MCM, 15 kV, EPR INSULATED, 133% CABLE INSULATED FOR 100% LEVEL, 133% RATED FOR 1 HOUR.
60. #1/0 AL JUMPER.

NOTES

1. CONSTRUCT OVERHEAD LINES TO CLEAR 7 FEET BY 18 FEET AND RAILROADS BY 24 FEET A MINIMUM.

FERMCO PROJECT NO. 2080

NO.	REVISIONS	DATE	DRN.	CHK.	APPD.
1	CORRECTED FERMCO PROJECT NO.	6/96	SJS	JWW	90X-5500-E-00501
0	IFC	8/95	SJS	JWW	90X-5500-E-00500

NO.	REVISIONS	DATE	DRN.	CHK.	APPD.
					REF. DWG. NO.

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

CONFIGURATION MANAGEMENT DESIGNS

APPROVALS

CIVIL & STR.		SAFETY ENG.	
ELECTRICAL		MAINTENANCE	
MECHANICAL			
INSTRUMENT			
MECHANICAL			
CHECKED			
APPROVED			

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

FERMCO

Fernald Environmental Management Project

U.S. DEPARTMENT OF ENERGY

SOUTHEAST CORNER OF SITE

LEACHATE CONVEYANCE SYSTEM

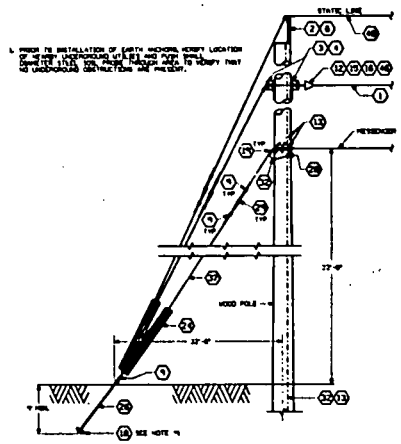
ELECTRICAL DETAILS

NO SCALE

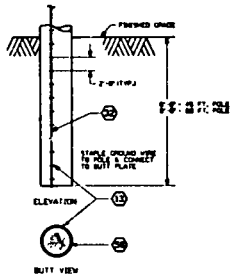
90X-5500-E-00501 | 1

FILE NAME: 90X5500E00501

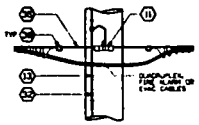
R90xs00501.ad(3314.ad15) acad&ve15, Thu Nov 7 11:17:39 EST 1996



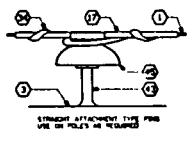
DETAIL #1
TYPICAL GUY



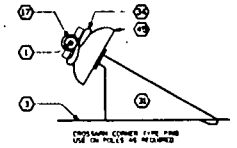
DETAIL #2
POLE GROUNDING



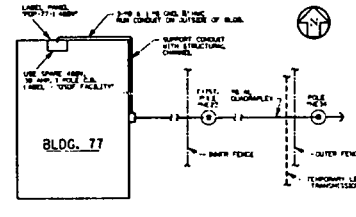
DETAIL #3
TELEPHONE WIRING
(BY OTHERS - TYP.)



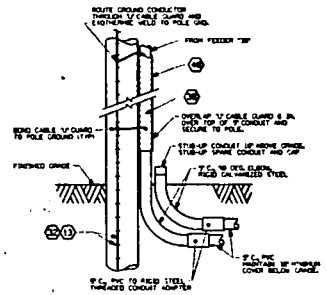
DETAIL #4
INSULATOR (STRAIGHT)



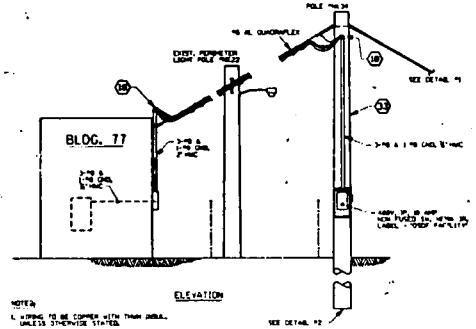
DETAIL #5
INSULATOR (CORNER)



PLAN VIEW

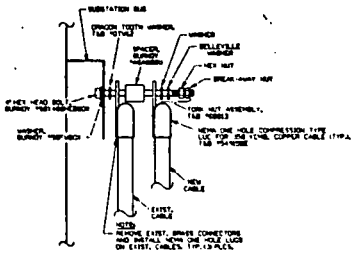


DETAIL #6
POLE OP89

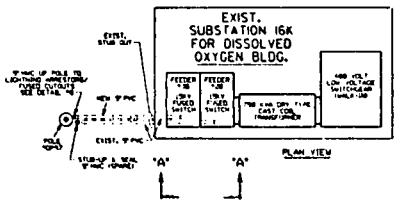


ELEVATION

DETAIL #7

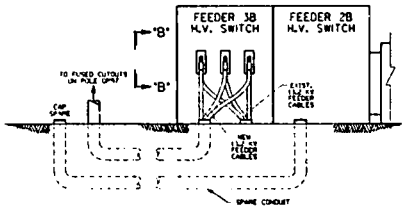


VIEW "B"-"B"

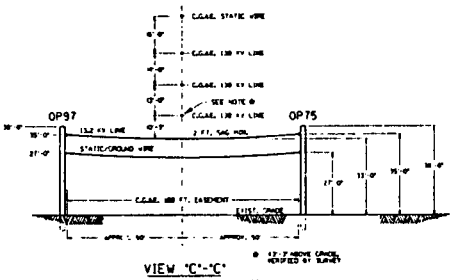


PLAN VIEW

DETAIL #8
TIE-IN TO SUBSTATION



VIEW "A"-"A"
ELEVATION



VIEW "C"-"C"
CLEARANCE UNDER C.G.&E. LINES
(SEE DWG. 901-5500-E-00508)
SCALE: 1" = 20'-0"

LEGEND

1. AERIAL POWER CONDUCTOR, 336.4 KCMIL ACSR, 26/7 STRAND.
2. GROUND WIRE CLAMP, USED TO ATTACH STATIC WIRE TO BRACKET & POLE GROUND.
3. CROSSARM, 3½" x 4½" x 12' - 0", PRESSURE TREATED SOUTHERN PINE.
4. CROSSARM BRACE, HOT DIP GALVANIZED ⅝" x 1½" STEEL, 60" SPAN x 18" DROP.
5. STATIC WIRE SUPPORT, STRAIGHT BRACKET TYPE.
6. STATIC WIRE SUPPORT, CORNER BRACKET TYPE.
7. THIMBLE, FOR STATIC WIRE OR MESSENGER WIRE DEAD END.
8. EYE BOLT, OVAL EYE TYPE, FOR DEAD-END ⅝" DIA. WITH ONE SQUARE NUT, ADDITIONAL NUTS, WASHERS, AND LENGTH AS REQUIRED.
9. GUY GRIP, FOR STATIC WIRE, PREFORMED WIRE TYPE.
10. WEATHERHEAD, CONDUIT, OUTDOOR, WEATHERTIGHT.
11. CLAMP, SUSPENSION, FOR ⅝" MESSENGER.
12. EYENUT, ⅝" BOLT DIAMETER.
13. STAPLE, COPPERWELD, 1½" LONG.
14. GROUND ROD, ⅝" DIAMETER x 10' LONG, COPPERWELD.
15. BOLTS, DOUBLE ARMING, SQUARE NUTS, ⅝" DIA x LENGTH AS REQUIRED.
16. DISTRIBUTION TYPE DEAD END TAP, FOR USE ON 336.4 KCMIL ACSR CONDUCTOR.
17. ARMOR ROD FOR USE ON ITEM 14 THIS LIST.
18. EXPANDED HELICAL SCREW TYPE GUY ANCHOR WITH 4000 PULLOUT CAPACITY OF 1/2" GUARD LINE.
19. COMPRESSION GROUND FITTING.
20. SPLIT BOLT CONNECTOR, FOR OUTDOOR OVERHEAD CONDUCTOR INSTALLATIONS.
21. COMPRESSION GROUND FITTING TO SECURE BARE COPPER CONDUCTOR TO ⅝" GROUND ROD.
22. NOT USED
23. NOT USED
24. GUY WIRE MARKER, HALF ROUND, 2" WIDE, 18" LONG, UV RESISTANT W/HARDWARE.
25. NOT USED
26. TRIPLE EYE, GALVANIZED ANCHOR ROD, 1" DIA., LENGTH AS REQUIRED.
27. EQUIPMENT MOUNT FOR 3 TRANSFORMERS, DOUBLE BANKED. ALUMINUM CLUSTER MOUNT W/CABLE LUGS.
28. EQUIPMENT MOUNT FOR SINGLE TRANSFORMER, DOUBLE BANKED. ALUMINUM CLUSTER MOUNT W/CABLE LUGS.
29. GUY STRAIN INSULATOR, ANSI CLASS 54-1, FOR ⅝" GUY WIRE.
30. LASHING WIRE CLIP, SIZE #6 REQUIRED.
31. CROSSARM CORNER, TYPE PTM, MALLEABLE IRON, GALVANIZED, 2" THREAD MOUNTING HARDWARE.
32. 4/0 AWG, BARE SOLID COPPER GROUND CONDUCTOR.
33. POLE, 40 FT., CLASS 4, PRESSURE TREATED SOUTHERN YELLOW PINE.
34. TIE WIRE FOR ACSR CONDUCTOR TO PIN TYPE INSULATOR, SIZE TIE WIRE TO FIT OVER ARMOR ROD.
35. ⅝" DIAMETER, 7 STRAND, HIGH STRENGTH, GALVANIZED STEEL STRAND.
36. NOT USED
37. ⅜" DIAMETER, 7 STRAND, HIGH STRENGTH, GALVANIZED STEEL STRAND.
38. CABLE SUPPORT, 2" CONDUIT TOP, OUTDOOR WATERTIGHT, SEAL WITH FILLING COMPOUND.
39. TERMINATOR, 15 kV, 350 KCMIL, COLD SHRINK, SILICONE RUBBER, SIZED TO FIT INSULATION DIAMETER.
40. ⅝" DIAMETER, 7 x 6, STRANDED CONSTRUCTION, GALVANIZED STEEL STRAND.
41. NOT USED
42. POLE, 60 FT., CLASS 4, PRESSURE TREATED SOUTHERN YELLOW PINE.
43. HIGH VOLTAGE FORGED LINE PIN, FOR PIN TYPE INSULATORS (LEAD THREADED, LONG SHANK, WITH WASHERS AND NUTS AS REQUIRED.
44. SURGE ARRESTER, DIRECT CONNECTED 12 kV, FITTED POLE TYPE METAL OXIDE VALVE, WITH CROSSARM MOUNTING HARDWARE.
45. INSULATOR, PIN TYPE, 15.5 kV, GLAZED PORCELAIN, 2" THREADS AND CLASS 55-5, 5" HEIGHT.
46. INSULATOR, DEAD-END TYPE, 6¾" LONG, 1⅝" DIA. AND CLASS 52-1, CLEVIS TYPE WITH STEEL HARDWARE.
47. FUSED CUTOUT, ARRESTER COMBINATION, UNIT CUTOUT RATED 15kV, 100 AMPS, FUSE HOLDER, WITH CROSSARM MOUNTING HARDWARE, FOR ARRESTER, SEE ITEM 44, THIS MATERIAL LIST.
48. CABLE GUARD, 1½" DIAMETER GALVANIZED, HOT DIPPED GALVANIZED STEEL, 8 FT. LONG, 5" SHAPE DIAMETER, WITH STRAPS AND HARDWARE AS REQUIRED.
49. #2 AL QUADRAPLEX
50. FUSED CUTOUT, ARRESTER COMBINATION UNIT CUTOUT RATED 15kV, 100 AMPS, FUSE HOLDER, WITH CROSSARM MOUNTING HARDWARE, FOR ARRESTER, SEE ITEM 44, THIS MATERIAL LIST.
51. NOT USED
52. NOT USED
53. SINGLE PHASE OIL FILLED POLE MOUNTED TRANSFORMER, SEE 901-5500-E-00508 FOR SIZE AND QUANTITY.
54. NOT USED
55. NOT USED
56. NOT USED
57. NOT USED
58. COPPER BUTT PLATE
59. 750 KCMIL, 15 kV, EPR SHIELDED, WATER CABLE INSULATED FOR 15kV, 133 PERCENT SHIELD TO LEVEL.
60. #1/0 AL QUADRAPLEX

NOTES

1. CONDUCTOR OVERHEAD LINES TO CLEAR ROADS BY 18' AND RAILROADS BY 29' AS A MINIMUM.

FERMCO PROJECT NO. 2080

NO.	REVISIONS	DATE	DWN.	B/	APPD.	NO.	REVISIONS	DATE	DWN.	B/	APPD.	REF. DWG. NO.
												901-5500-E-00503
						1	CORRECTED FERMCO PROJECT NO.	8/9/	SJS			901-5500-E-00503
						0	CFC	8/19/	SJS		CFC	901-5500-E-00500

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

CONFIGURATION MANAGEMENT DRAWING

APPROVAL

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

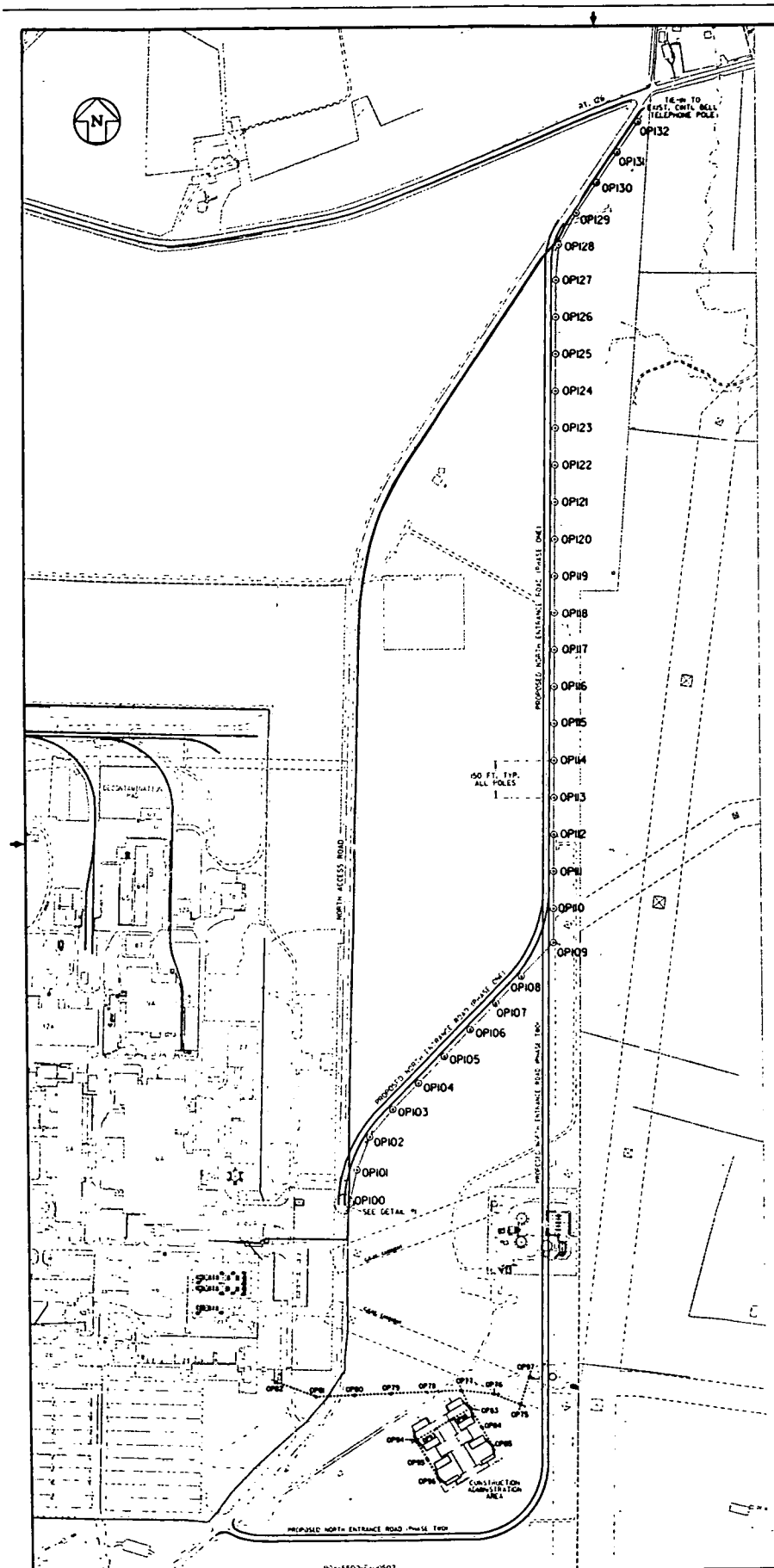
SOUTHEAST CORNER OF SITE

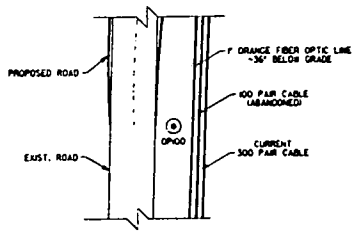
LEACHATE CONVEYANCE SYSTEM ELECTRICAL DETAILS

SCALE: AS NOTED

90X-5500-E-00502 | 1

FILE NAME: 90X5500E00502.DGN





DETAIL #1

NEW POLE COORDINATES

	EASTING	NORTHING
OP100	350387.98	480370.67
OP101	350392.93	480365.04
OP102	350396.65	480450.70
OP103	350373.25	480562.90
OP104	350378.41	480668.07
OP105	350383.60	480773.24
OP106	350388.74	480878.40
OP107	350493.90	480983.57
OP108	350597.30	481090.35
OP109	350727.00	481223.51
OP110	350727.64	481357.35
OP111	350729.17	481505.70
OP112	350730.80	481654.40
OP113	350732.50	481803.10
OP114	350734.15	481951.82
OP115	350735.83	482100.53
OP116	350737.50	482249.25
OP117	350739.20	482397.96
OP118	350740.86	482546.68
OP119	350742.54	482695.40
OP120	350744.21	482844.11
OP121	350745.90	482992.82
OP122	350747.60	483141.54
OP123	350749.25	483290.25
OP124	350750.92	483438.97
OP125	350752.60	483587.70
OP126	350754.28	483736.40
OP127	350755.96	483885.11
OP128	350768.62	484032.70
OP129	350840.50	484166.55
OP130	350924.20	484284.50
OP131	350007.93	484407.40
OP132	350096.77	484530.20

LEGEND

- OSDF TELEPHONE FEEDER POLE (33)
- OSDF POWER DISTRIBUTION POLE

NOTES:

1. POLES OP100 THRU OP132 TO BE 45 FT., CLASS 3, 100% TREATED SOUTHERN PINE SET 6'-6".
2. GUYS SHOWN ON POLES OP100, OP102, OP105, OP108 AND OP132 SHALL HAVE ANCHOR AND ROD ONLY INSTALLED FOR TELEPHONE COMPANY. SEE DWG. #90X-5500-E-00502 FOR ANCHOR AND ROD DETAILS.
3. BEFORE DIGGING NEAR UNDERGROUND TELEPHONE LINES CALL UTILITY HOT LINE (3) BUSINESS DAYS PRIOR TO DIGGING. 1-800 686-7826. POLES OP100, OP108, OP120, OP130, OP131 AND OP132 WILL REQUIRE THE TELEPHONE LINES BE IDENTIFIED.

FERMCO PROJECT NO. 2010

					90X-5500-E-00500
					90X-5500-E-00501
					90X-5500-E-00502
					90X-5500-P-00671
					90X-5500-P-00673
					90X-5500-P-00667
					90X-5500-P-00664
					90X-5500-P-00663
1	ADDED FERMCO PROJECT NO.	SJS	SJS	GEP	
0	CFC	SJS	SJS	GEP	
NO.	REVISIONS	DATE	DRN. B	APPD.	REF. DWG. NO.

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

CONFIGURATION CONTROL DRAWING

APPROVALS: DESIGN & STA. / ELECTRICAL / ENGINEER / INSTRUMENT / MECHANICAL / CHECKED / APPROVED

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

NORTH ACCESS ROAD
OSDF UTILITY REROUTING - MAIN SITE TELEPHONE FEEDER LINES
LAYOUT
SCALE: 1" = 160'-0"

90X-5500-E-00503 | 1

DO NOT SCALE REDUCED DRAWING

FILE NAME:

R90xe0503.m/3318.wa15 steve6/wa15, Thu Nov 7 14:50:41 EST 1996

PIPING SYMBOLS

- GATE VALVE
- GLOBE VALVE
- BALL VALVE
- PLUG VALVE
- BUTTERFLY VALVE/DAMPER
- STOP CHECK
- NEEDLE VALVE
- CHECK VALVE
- SLIDING GATE VALVE
- BALL CHECK VALVE
- BACKFLOW PREVENTER
- DIAPHRAGM VALVE
- PINCH VALVE
- 3 WAY VALVE
- 3 WAY BALL VALVE
- 3 WAY PLUG VALVE
- ANGLE GATE VALVE
- ANGLE GLOBE VALVE
- FOOT VALVE
- HUB DRAIN OR FUNNEL
- DIAPHRAGM OPERATOR
- DIAPHRAGM w/ POSITIONER
- PISTON OPERATOR
- SAFETY RELIEF VALVE
- SOLENOID OPERATOR
- SELF-CONTAINED BACK PRESSURE REGULATING VALVE
- 2-WAY SOLENOID VALVE
- 3-WAY SOLENOID VALVE (INDICATES DEENERGIZED FLOW PATH)
- 4-WAY SOLENOID VALVE
- VALVE WITH OPERATOR (VALVE TYPE UNDEFINED)
- STEAM TRAP
- HOSE QUICK COUPLING
- UNION
- DRAIN LEG
- EXPANSION JOINT
- HANDWHEEL
- EJECTOR
- STRAINER (Y TYPE)
- STRAINER (SINGLE BASKET)
- STRAINER (DOUBLE BASKET)
- STRAINER (CONE TYPE)
- STRAINER (SUCTION TYPE)
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- ORIFICE
- VENTURI TUBE
- SIPHON TUBE
- THERMOWELL
- FLOW DIRECTION
- WELDED CONNECTION
- FLANGED CONNECTION
- FLEXIBLE HOSE
- PIPE CAP
- TIE/IN MARK
- PRIMARY
- SECONDARY
- EXISTING PIPING OR EQUIPMENT
- PACKAGED SYSTEM
- MATERIAL CODE BREAK
- INSULATION CODE BREAK
- PULSATION DAMPENER
- AIR FILTER
- FILTER LUBRICATOR REGULATOR
- AIR OPERATED DIAPHRAGM PUMP
- HORIZONTAL CENTRIFUGAL PUMP
- VERTICAL CENTRIFUGAL PUMP
- SUMP PUMP
- CHEMICAL METERING PUMP
- AGITATOR (MIXER)
- AIR RELEASE VALVE

INSTRUMENT SYMBOLS

- DATA HIGHWAY
- ELECTRICAL BINARY SIGNAL
- PNEUMATIC BINARY SIGNAL
- ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)
- ELECTROMAGNETIC OR SONIC SIGNAL (NON-GUIDED)
- (IA) INSTRUMENT/PLANT AIR SUPPLY
- ELECTRICAL SIGNAL
- CAPILLARY
- HYDRAULIC SIGNAL LINE
- PNEUMATIC OR VACUUM SIGNAL LINE
- INTERLOCK
- DIAPHRAGM SEAL
- FI ROTAMETER
- FI SIGHT GLASS
- LOCAL MOUNTED INSTRUMENT
- FRONT OF PANEL MOUNTED INSTRUMENT
- FRONT OF PANEL MOUNTED INSTRUMENT AUXILIARY LOCATION
- REAR OF PANEL MOUNTED INSTRUMENT
- REAR OF PANEL MOUNTED INSTRUMENT AUXILIARY LOCATION
- DIGITAL LOGIC OPERATOR INTERFACE AUXILIARY LOCATION
- DIGITAL LOGIC OPERATOR INTERFACE
- SHARED CONTROL AUXILIARY LOCATION
- SHARED DISPLAY COMPUTER CONTROL AND OPERATOR INTERFACE
- F AIR VENT FILTER
- M MAGNETIC FLOW METER
- POSITIVE DISPLACEMENT FLOW METER
- EQUIPMENT NUMBER

ABBREVIATIONS

BTU	BRITISH THERMAL UNIT
CU FT	CUBIC FEET
GPM	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
KW	KILOWATT
LB/HR	POUNDS PER HOUR
SCFM	STD. CUBIC FT/MINUTE
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
FO	FAIL OPEN
FC	FAIL CLOSED
AO	AIR TO OPEN
AC	AIR TO CLOSE
IA	INSTRUMENT AIR
ET	ELECTRIC TRACED AND INSULATED
ST	STEAM TRACED AND INSULATED
EF	EXHAUST FAN
GV	GRAVITY VENTILATOR
UH	UNIT HEATER
RED	REDUCER
ECC	ECCENTRIC
TBD	TO BE DETERMINED
TF	TOP FLAT
TYP	TYPICAL
MATL	MATERIAL
MED	MEDIUM
CO	CARBON MONOXIDE
RH	RELATIVE HUMIDITY
CFM	CUBIC FEET/MINUTE
SF	SOUTH FIELD
IFA	INACTIVE FLYASH PILE
COMH	CLEAN OUT MANHOLE
HDPE	HIGH DENSITY POLYETHYLENE
CS	CARBON STEEL
LCP	LOCAL CONTROL PANEL

INSTRUMENTATION SPECIAL DESIGNATIONS

DESIGNATION	FUNCTION/ABBREVIATION
Σ/N OR AVG	AVERAGING
± OR BI	BIAS
(L)(L)(L)Z(L)(TYP)	BOOST/GAIN OR ATTENUATE (INPUT/OUTPUT)
Δ OR DIF	DIFFERENTIAL
÷ OR DIV	DIVIDE
√ OR SQRT.	EXTRACT SQUARE ROOT
X OR MUL	MULTIPLY
N	RAISE TO POWER
REV	REVERSING
Σ OR SUM	SUMMING
L	LOW
LL	LOW LOW
H	HIGH
HH	HIGH HIGH
HL	HIGH LOW
∫	INTEGRATE (TIME INTEGRAL)
%	PROPORTIONAL
Y	UNDETERMINED COMPUTING RELAY
HOA	HAND-OFF-AUTO
*	EXISTING INSTRUMENT TO BE RELOCATED
I/P	CURRENT TO PNEUMATIC TRANSDUCER
RUN	RUNNING
OA	OFF-AUTO
OCA	OPEN-CLOSE-AUTO
I/O	INPUT / OUTPUT
*	EXISTING INSTRUMENT
UD	UP/DOWN
EW	EAST/WEST
I/I	CURRENT TO CURRENT

PIPING SPECIFICATIONS

FLOWING MEDIUM	MED CODE	MATL CODE
BACK WASH	BW	T
CHILLED WATER	CHS, CHR	A
CHLORINE	CL	B1
CONDENSATE	LC	A, T
CONDENSER WATER	CWS, CWR	A
COOLING WATER	WS, WR	A
DRAIN	DR	A, T
THICKENER OVERFLOW	TO	A
FILTRATE EFFLUENT	FT	A
FLOCCULANT	FL	A
FLUSH WATER	FW	T
FORCE MAIN	FM	ML B4
INSTRUMENT AIR	IA	T
OFF-GAS	OG	T
NITRIC ACID	AN	T1
PERCHED GND WATER	PGW	B
PHOSPHORIC ACID	PAPH	T1
PLANT AIR	PA	W
POLISHED WATER	PW	A
POTABLE WATER	DW	W, B, B3
PROCESS WATER	TW	A
PROCESS WASTEWATER	CE	A
RAW WATER	RW	A
RECYCLE WATER	RC	T, B2
SCRUBBER RECYCLE	RSL	T
SLURRY	SL	T
SODIUM CARBONATE	SC	A
SODIUM HYDROXIDE	NA	T
SODIUM SILICATE	SS	A
STORM WATER	ST	A
SULFURIC ACID	SA	T1
SUMP DISCHARGE	SU	T
VACUUM	V	A
VENTILATION AIR	VE	T
WASTE WATER	WW	W, B, A **

EXAMPLE:

CE-4"/B"-A-100-ET

- CE — MEDIUM CODE
- 4" — NOMINAL CARRIER PIPE SIZE
- B" — NOMINAL CONTAINMENT PIPE SIZE
- A — MATERIAL CODE
- 100 — LINE NUMBER
- E — HEAT TRACING AND INSULATION
- T — INSULATION

A - A53 SEAMLESS STEEL PIPE
B - PVC
B1 - PVDF
B2 - PVDF, 100 PSI
B3 - CPVC
B4 - HDPE
L - FIBERGLASS REINFORCED PLASTIC
M - DUCTILE IRON
T - 304L STAINLESS STEEL PIPE
T1 - 316L STAINLESS STEEL PIPE
W - A53GR. A, GALVANIZED STEEL PIPE

** SEE NOTE 1

SINGLE LINE AIR DUCT SYMBOLS

- FAN WITH INLET VANES AND BACKDRAFT DAMPER
- BACKDRAFT DAMPER
- MOTORIZED DAMPER
- MANUAL VOLUME DAMPER

LETTERS OF INSTRUMENT IDENTIFICATION

LETTER	FIRST LETTER	2ND LETTER	3RD OR 4TH LETTER
	MEASURED OR INITIATING VARIABLE	MODIFIER	READ OUT OR PASSIVE FUNCTION
A	ANALYSIS		ALARM
B	BURNER FLAME	----	----
C	CAMERA	CONTROLLER	CONTROLLER
D	DENSITY	DIFFERENTIAL	----
E	VOLTAGE	ELEMENT	ELEMENT
F	FLOW RATE	RATIO (FRACTION)	----
G	GAGING (DIM)	VIEWING DEVICE	GLASS
H	HAND (MANUAL)	----	HIGH
I	CURRENT (ELECT)	INDICATE	INDICATE
J	POWER	SCAN	----
K	TIME	----	----
L	LEVEL	LIGHT	LOW
M	MOIST OR HUMIDITY	----	----
N	----	----	----
O	OBSERVATION	----	ORIFICE
P	PRESSURE OR VACUUM	----	POINT (TEST)
Q	QUANTITY OR EVENT	TOTALIZER	----
R	RADIOACTIVITY	RECORDER	----
S	SPEED OR FREQUENCY	SAFETY/SWITCH	SWITCH
T	TEMPERATURE	TRANSMITTER	TRANSMITTER
U	USER'S GUIDE	----	MULTIFUNCTION
V	VISCOSITY	----	VENT, VALVE
W	WEIGHT OR FORCE	WELL	----
X	UNCLASSIFIED	----	UNCLASSIFIED
Y	RELAY	RELAY	----
Z	POSITION	----	----

CONSTRUCTION PACKAGE

- 2"-CA — LETTERS OF IDENTIFICATION
- 1824 — SPECIAL DESIGNATION
- INSTRUMENT TAG NUMBER

TYPICAL CALL OUT

NOTES

1. CONTAINMENT PIPE SHALL BE PROVIDED FOR LEACHATE CONVEYANCE SYSTEM, EXCEPT WITHIN PERMANENT LIFT STATION AND CLEANOUT MANHOLES.
2. THIS LEGEND APPLIES TO DRAWING 92X-5900-N-00322.

REF DWG NO.	DRAWING TITLE
92X-5900-N-00322	PIPING AND INSTRUMENTATION DIAGRAM LEACHATE CONVEYANCE SYSTEM
92X-5900-X-00264	DRAWING INDEX

FOR INFORMATION ONLY

B	CERTIFIED FOR CONSTRUCTION	N/A	

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

LEACHATE CONVEYANCE SYSTEM

MECHANICAL PROCESS
PIPING AND INSTRUMENTATION DIAGRAM
SYMBOLS AND LEGEND SHEET

DRAWN BY P. A. WILSON	DATE 03/02/96	DESIGNED BY K. HORRIS	DATE 03/02/96
N/A	HOME		

SRP/P0164

MBS LL.1.2.16 00-90701 | 92X-5900-N-00330 | N0001 | 0

741

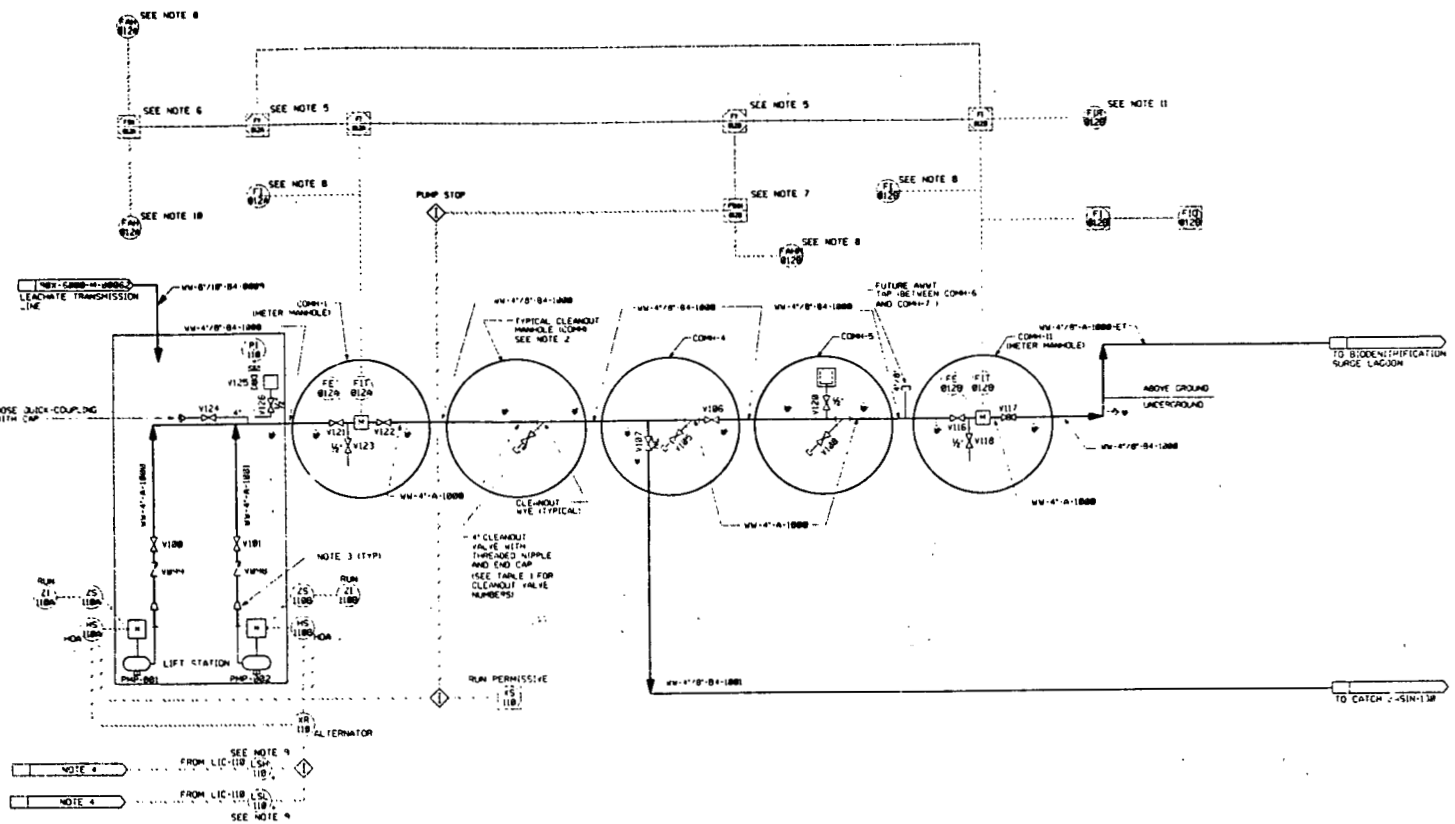


TABLE I	
CLEANOUT MANHOLE NO.	CLEANOUT VALVE NO.
COMH-1A	V102
COMH-2	V103
COMH-3	V104
COMH-4	V105
COMH-5	V108
COMH-6	V109
COMH-7	V110
COMH-8	V111
COMH-9	V112
COMH-10	V113
COMH-12	V119

NOTES

1. FOR PUMP CONTROLS AND INDICATORS, SEE DRAWING 92X-5900-E-00124.
2. SEE CIVIL DRAWING 92X-5900-G-00250 FOR DETAILS AND LOCATIONS OF CLEANOUT MANHOLES. ONLY MANHOLES CONTAINING SPECIAL FEATURES ARE SHOWN ON THIS P&ID.
3. PROVIDE REDUCER IF NECESSARY TO SUIT ACTUAL PUMP INSTALLED.
4. SEE DRAWING 98X-6000-M-00062 FOR LOCATION AND CONNECTION TO LIC-110.
5. FY-012A AND FY-012B IS A SOFTWARE FUNCTION MONITORING THE DIFFERENTIAL FLOWRATE OF FLOW ELEMENTS FE/FIT-012A AND FE/FIT-012B.
6. FSH-012A IS A SOFTWARE FUNCTION ALARMING WHEN THE FLOWRATE DIFFERENTIAL BETWEEN FI-012A AND FI-012B IS GREATER THAN 5%.
7. FSHH-012A IS A SOFTWARE FUNCTION STOPPING PMP-001 AND PMP-002, VIA HS-110, WHEN THE FLOWRATE DIFFERENTIAL BETWEEN FI-012A AND FI-012B IS GREATER THAN 10%.
8. LOCATED ON THE LCP AT THE AWWT FACILITY.
9. PERMANENT LIFT STATION CONTROLS LSH-110 AND LSL-110 ARE SHOWN ON DRAWING 98X-6000-E-00061.
10. ALARM LOCATED AT THE PUMP STATION AREA.
11. INSTRUMENT LOCATED AT THE AWWT FACILITY.

LAST VALVE NUMBER V126

REF DWG NO.	DRAWING TITLE
92X-5900-E-00124	ELECTRICAL SINGLE LINE & SCHEMATICS
92X-5900-G-00250	CIVIL DETAILS, SHEET 3 OF 3
92X-5900-N-00330	SYMBOLS AND LEGEND SHEET
92X-5900-X-00264	DRAWING INDEX
98X-6000-E-00047	LEACHATE TRANSMISSION SYSTEM ELECTRICAL DETAILS
98X-6000-M-00040	LEACHATE TRANSMISSION SYSTEM PIPING AND INSTRUMENTATION DIAGRAM

FOR INFORMATION ON

REV NO	TITLE OF REVISION PURPOSE DESCRIPTION			
0	CERTIFIED FOR CONSTRUCTION		N/A	

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
MECHANICAL PROCESS
PIPING AND INSTRUMENTATION DIAGRAM
LEACHATE CONVEYANCE SYSTEM

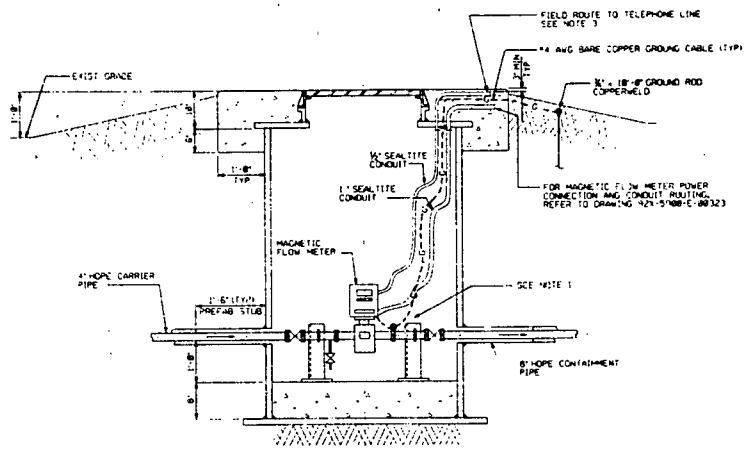
DRAWN BY P.A. WILSON | DATE 03/31/96 | CHECKED BY K. MORRIS | DATE 05/08/96
SCALE NONE
SUBMITTED FOR APPROVAL | PERMIT ON APPROVAL N/A | PERMIT PROJECT NUMBER 28211

PROJECT NO. SRP/P0164 | SYS. PROJECT NO. 00-90701 | DRAWING NO. 92X-5900-N-00322 | SHEET NO. N0002 | REV NO. 0

CONSTRUCTION PACKAGE

DO NOT SCALE REDUCED DRAWING

22



METER MANHOLE DETAIL

1" = 1'-0"

FOR MANHOLE DETAILS SEE TYPE 5 PLAN ON DRAWING C00250.

NOTES

1. PROVIDE AND INSTALL GROUNDING CONNECTION FOR MAGNETIC FLOW METER PER MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE AND INSTALL INSTRUMENT MOUNTING STAND AS REQUIRED.
3. FIELD ROUTE A 2 PAIR TELEPHONE CABLE TO NEAREST TELEPHONE LINE INTERFACE POINT AS DIRECTED BY FERMCO.

REF SHEET NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-C-00250	CIVIL DETAILS - SHEET 1 OF 3
92X-5900-E-00323	ELECTRICAL - PLANS

FOR INFORMATION ONLY

REV NO	TITLE OR REVISION PURPOSE DESCRIPTION			
0	CERTIFIED FOR CONSTRUCTION		NA	

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. · PARSONS MAIN, INC. · ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
INSTRUMENTATION
INSTRUMENT INSTALLATION
METER MANHOLE DETAIL

DRAWN BY: J.A. DYER
CHECKED BY: JIM L. COOPER
SCALE: 1" = 1'-0"
CONSTRUCTED FOR APPROVAL: NA
PARSONS PROJECT NUMBER: 28211

PROJECT FILE NUMBER: SRP/P0164
MBS 1.1.1.1.2.1.6 00-90701
92X-5900-N-00347
SHEET NO. N0004
REV NO. 0

CONSTRUCTION PACKAGE

DO NOT SCALE REDUCED DRAWING

SYMBOLS LEGEND

EXISTING		PROPOSED
	FENCE	
	SECURITY FENCE	
	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	
	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 LLS) AND HORIZONTAL MONITORING WELL (OVER SLAB)	

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-##	LEACHATE COLLECTION SYSTEM MANHOLE DESIGNATION
LDS	LEAK DETECTION SYSTEM
LDS-##	LEAK DETECTION SYSTEM MANHOLE DESIGNATION
LIC	LEVEL INDICATOR CONTROLLER
LI	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	RADIUS

CONTOUR LEGEND

EXISTING		PROPOSED
	EXISTING GROUND ELEVATION (FEET)	
	FINISHED GRADE ELEVATION (FEET)	980

UTILITY LEGEND

EXISTING		PROPOSED
	ELECTRICAL DUCT	
	TELEPHONE	
	FUEL GAS	
	FILTRATE OR EFFLUENT	
	OVERHEAD ELECTRIC	
	UNDERGROUND UTILITY	
	UNDERGROUND CONCRETE DUCT BANK OR DIRECT BURIAL CABLE	
	DRINKING WATER	
	SANITARY	

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-6A

DETAIL
SAMPLING AND MONITORING PORTS
SCALE 1" = 2'

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

C — M-6A
C — M-6A — SECTION LETTER
SHEET ON WHICH ABOVE SECTION IS PRESENTED

SECTION LETTER — C
SHEET ON WHICH ABOVE SECTION IS REFERENCED — M-6A

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

EXAMPLE: SECTION LETTER "C", WHICH IS PRESENTED ON SHEET M-6A, WAS REFERENCED ON SHEET M-5A

CERTIFIED FOR CONSTRUCTION

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 FERNCO TO CONSTRUCT THE LEACHATE CONVEYANCE SYSTEM FOR THE OSDF
8. THIS LEGEND AND SYMBOLS DRAWING APPLIES TO THE FOLLOWING DRAWINGS: G-6A, G-6B, G-6C, E-5A, L-7A, M-2A, M-4A, M-5A, M-6A, M-6B, M-8A, S-1A, S-3A AND S-1B

REV. NO.	DATE	DESCRIPTION	DR. DRAWN	CHECK	REVIEW	APPROVAL
0	03-16-00	CERTIFIED FOR CONSTRUCTION	LA	JRB	DJ	MWC

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

FERNCO — FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

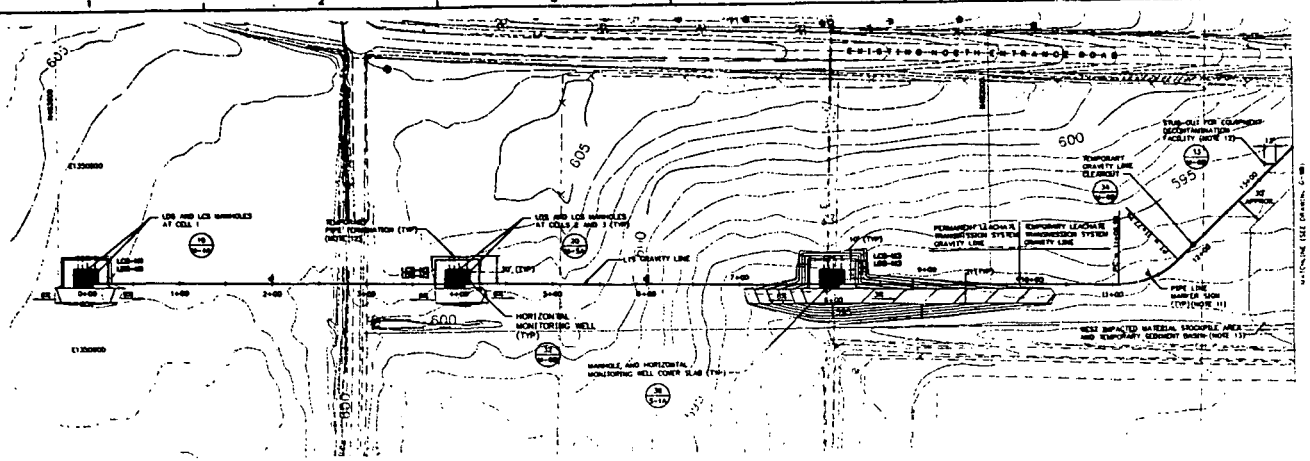
PROJECT: LEACHATE CONVEYANCE SYSTEM

TITLE: LEGEND AND SYMBOLS

STATE OF OHIO

GeoSyntec Consultants

PROJECT NO.	30100
	1YP0600015
	06-2000-0011
	FER-0470-L-00076
	06-2000-0011
	1YP-0217
SHEET NO.	K-2A
REVISION NO.	0



1 PLAN
LEACHATE TRANSMISSION SYSTEM
SCALE 1" = 50'

LEGEND

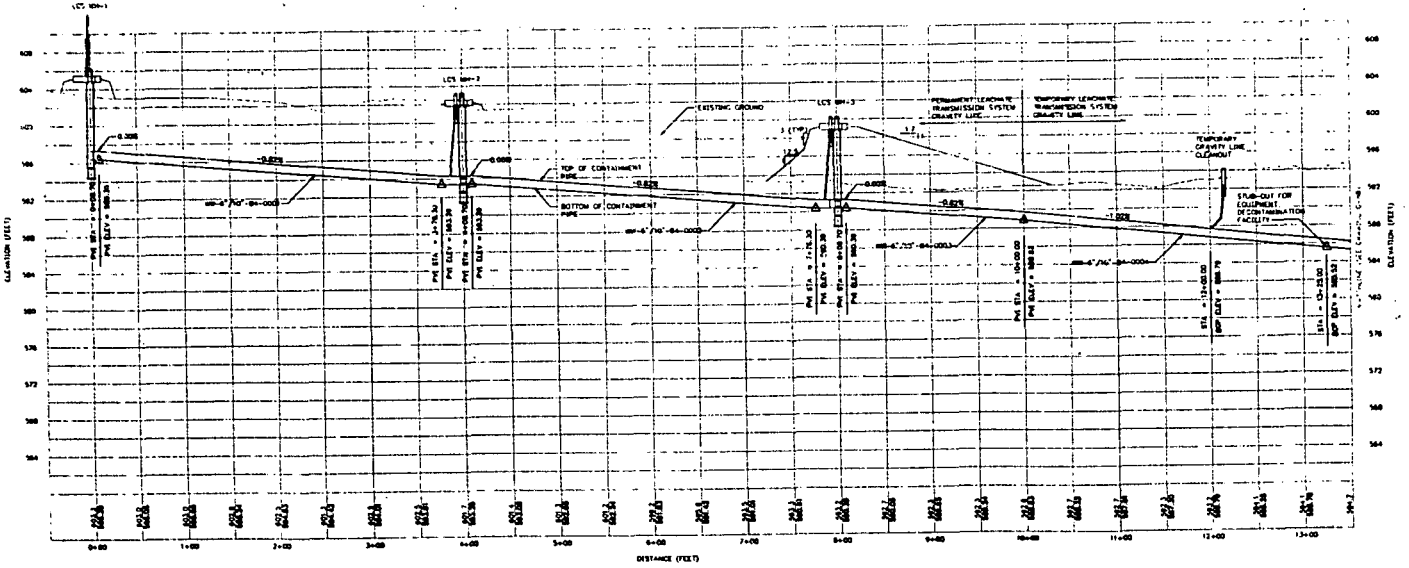
- EXISTING GROUND ELEVATION (FEET)
- FINISHED GROUND ELEVATION (FEET)
- POWER POLE
- PIPE LINE MARKER SIGN
- TEMPORARY GRAVITY LINE CLEANOUT
- LEACHATE TRANSMISSION SYSTEM MANHOLES (TLPS AND LCS) AND HORIZONTAL MONITORING WELL COVER SLAB

CURVE TABLE - LCS GRAVITY LINE

NOTES:

1. TOPOGRAPHIC MAP BASED ON 1992 SITE FLYOVER
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM (NOTE "SEA LEVEL DATUM" RETURNS 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 924-9600-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 924-9600-G-00041
14. REMOVE ABANDONED UTILITIES WITHIN LIMIT OF EXCAVATION



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

DO NOT SCALE REDUCED DRAWING

CERTIFIED FOR CONSTRUCTION

SCALE IN FEET

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

LEACHATE CONVEYANCE SYSTEM

LEACHATE TRANSMISSION SYSTEM
PLAN AND PROFILE DATA I

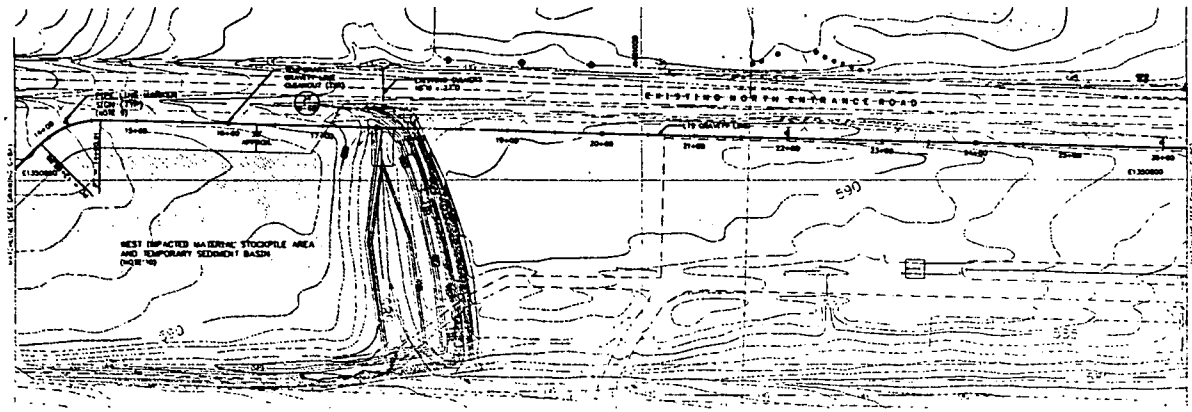
STATE OF OHIO

Fluor Daniel

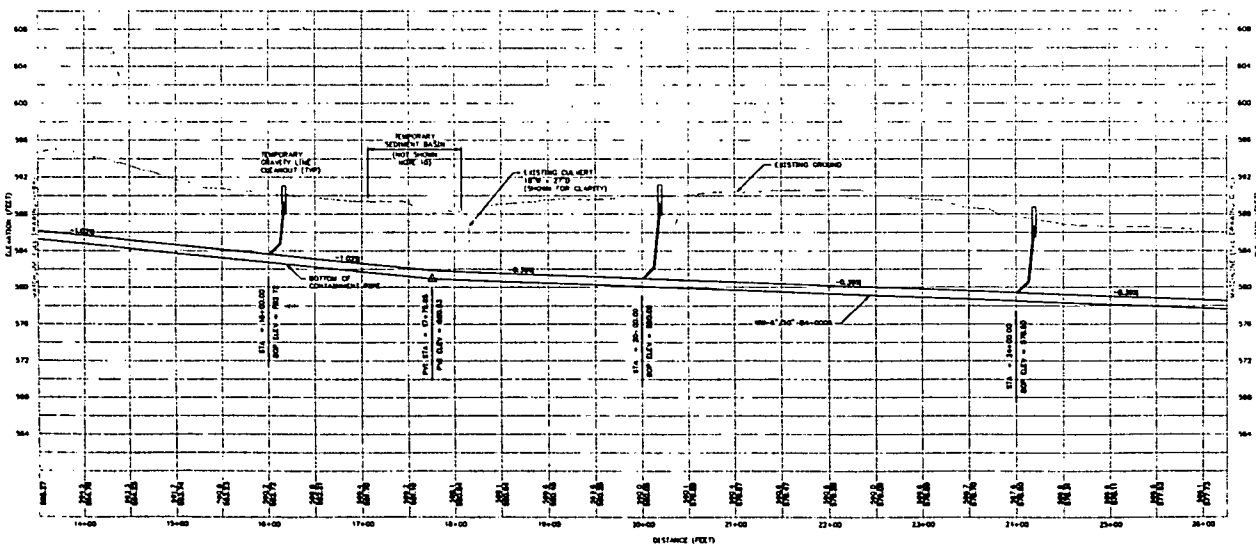
Environmental Services

FEMP PROJECT NO. 70-00
FEMP SUBCONTRACT NO. 24C300028
FEMP DRAWING NO. 924-9600-G-00001
REFERENCE PROJECT NO. A1900-22.1
REFERENCE DRAWING NO. 1951-2028
SHEET NO. G-5A
REVISION NO. 0

741



3 PLAN
LEACHATE TRANSMISSION SYSTEM
SCALE 1" = 50'



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

LEGEND

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

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 ALL UTILITIES IDENTIFIED BY THE CONSTRUCTION MANAGER AS ABANDONED AND 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 18 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 774-5600-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 774-5600-G-00041

FOR INFORMATION ONLY

SCALE IN FEET

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

LEACHATE CONVEYANCE SYSTEM

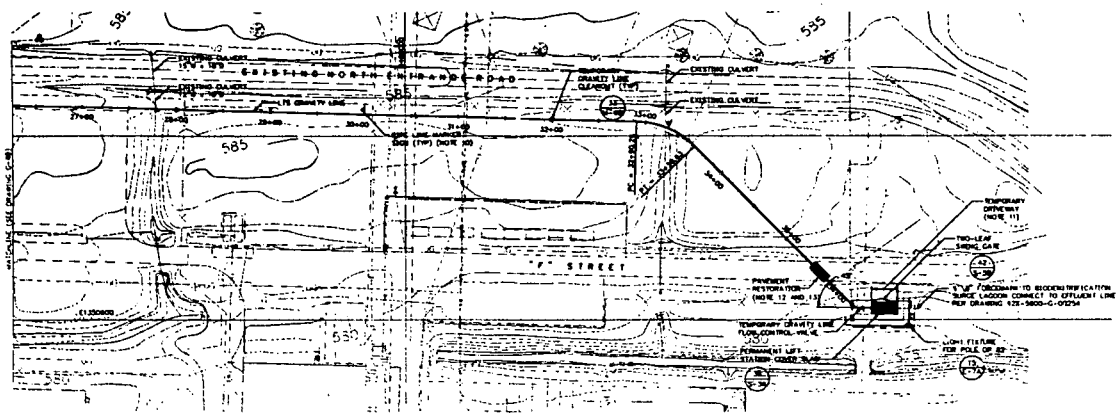
LEACHATE TRANSMISSION SYSTEM
PLAN AND PROFILE DATA II

DO-NOT SCALE REDUCED DRAWING

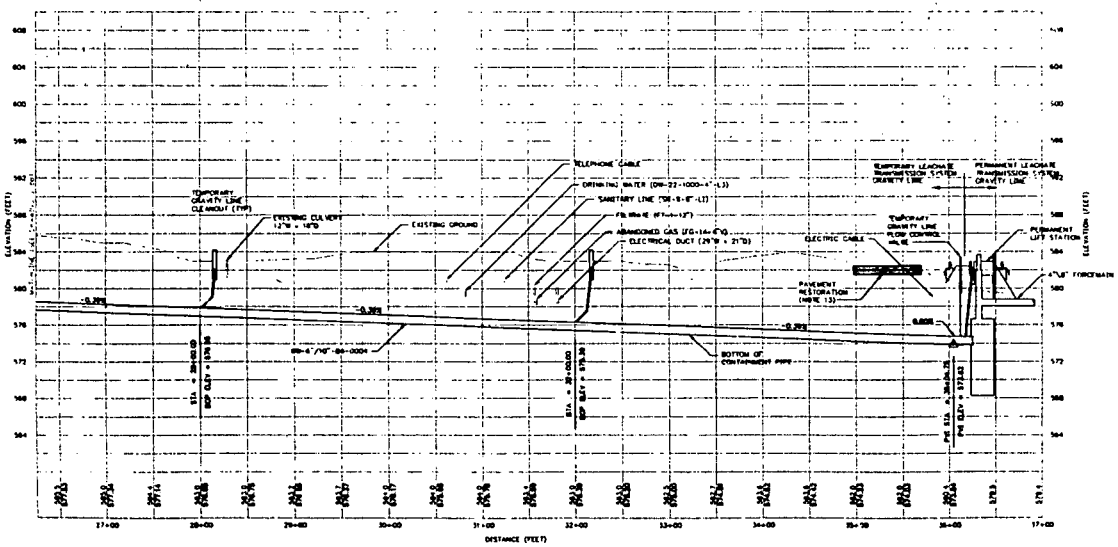
CERTIFIED FOR CONSTRUCTION

26

741



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



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

DO NOT SCALE REDUCED DRAWING

CERTIFIED FOR CONSTRUCTION

LEGEND

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

GRAVITY LINE

Station	Vertical Curve Data	Elevation
22+26.79		+79.79
Length 200.54	Curve	S 49-05-48 W
24+00.00		+80.102.13
32+00.26		+79.763.13
Length 929.18	Curve	S 81-31-34 W
12+00.26	Curvature Data	+79.763.13
32+00.26		+79.763.13
Length 71.51	Curve	S 00-12-41 W
13+00.00		+79.725.27
34+00.00		+79.725.27
Length 240.12	Curve	S 40-42-19 W
34+00.00		+79.725.27
36+26.79		+79.613.39
Length 71.51	Curve	S 00-12-41 W
36+26.79		+79.613.39
37+00.00		+79.613.39
Length 71.51	Curve	S 00-12-41 W

NOTES:

1. TOPOGRAPHIC MAP BASED ON 1982 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-1A
8. CLEARING ZONE SHALL NOT EXTEND 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 929-5400-G-00257
11. TEMPORARY DRIVEWAY SHALL EXTEND FROM PERMANENT LIFT STATION COVER SLAB TO EDGE OF "F" STREET. SEE DRAWING M-5A 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 LIFT, TEMPORARY GRAVITY LINE IN ACCORDANCE WITH DETAIL SHOWN ON DRAWING 929-5400-G-00257

FOR INFORMATION ONLY

REV NO	DATE	DESCRIPTION	BY	CHKD	CHKD	REVIEW	APPROVE
0	98 10 30	CERTIFIED FOR CONSTRUCTION	LA	JDD	SJ	VMC	HB

SCALE IN FEET

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

LEACHATE CONVEYANCE SYSTEM

LEACHATE TRANSMISSION SYSTEM
PLAN AND PROFILE DATA III

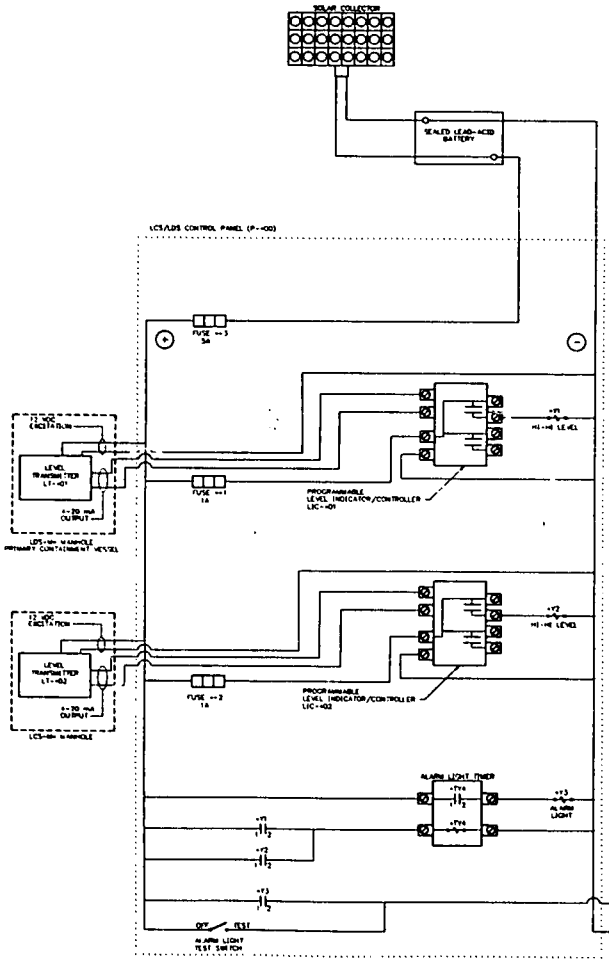
STATE OF OHIO

GeoSyntec Consultants

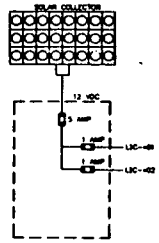
FERMCO PROJECT NO. 30100
FERMCO SUBCONTRACT NO. FMC00028
FERMCO DRAWING NO. 929-5400-G-00254
GEOSYNTEC PROJECT NO. GE1509-22.1
GEOSYNTEC DRAWING NO. 1B-1003
SCALE NO. G-8C
REVISION NO. 0

DO NOT SCALE REDUCED DRAWING

27



7 DETAIL
LDS AND LCS MANHOLES CONTROL SCHEMATIC
SCALE: NTS



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

RELAY NUMBER = +Y2 : LDS-1H HI-HI LEVEL

COIL 12 VDC / CONTACTS #	NORMALLY OPEN NO	NORMALLY CLOSED NC	CONTACT FUNCTION
1 - 2	X		ENERGIZE (+TY4) ALARM LIGHT TIMER

NOTES
1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE

RELAY NUMBER = +Y2 : LCS-1H HI-HI LEVEL

COIL 12 VDC / CONTACTS #	NORMALLY OPEN NO	NORMALLY CLOSED NC	CONTACT FUNCTION
1 - 2	X		ENERGIZE (+TY4) ALARM LIGHT TIMER

NOTES
1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE

RELAY NUMBER = +Y3 : LDS-1H, LCS-1H ALARM LIGHT ENERGIZED

COIL 12 VDC / CONTACTS #	NORMALLY OPEN NO	NORMALLY CLOSED NC	CONTACT FUNCTION
1 - 2	X		ALARM LIGHT (LA-401) ON

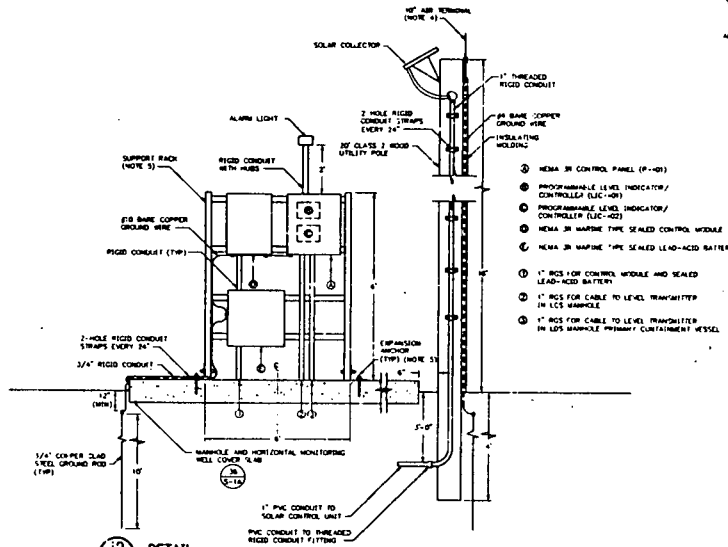
NOTES
1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE

RELAY NUMBER = +TY4 : LDS-1H, LCS-1H ALARM LIGHT TIMER

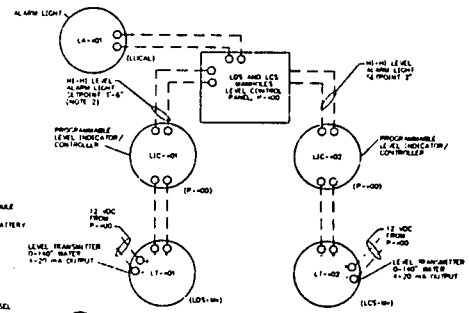
COIL 12 VDC / CONTACTS #	NORMALLY OPEN NO	NORMALLY CLOSED NC	CONTACT FUNCTION
1 - 2	X		ACTIVATE ALARM LIGHT TIMER ENERGIZE (+Y3) ALARM LIGHT

NOTES
1. RELAY SHOWN IN DE-ENERGIZED SHELF STATE

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



10 DETAIL
9-1A LDS AND LCS MANHOLES ELECTRIC SERVICE PANEL AND POLE
(NOTE 3)
SCALE: NTS



11 DETAIL
LDS AND LCS MANHOLES LEVEL INSTRUMENTATION LOOP DIAGRAM
SCALE: NTS

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	DRAWN	CHECK	REVIEW	APPROVAL
0	00 10 05	CERTIFIED FOR CONSTRUCTION	LF			

SCALE AS SHOWN

CONTRACTOR

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT: LEACHATE CONVEYANCE SYSTEM

TITLE: LEACHATE TRANSMISSION SYSTEM ELECTRICAL DETAILS I

DO NOT SCALE REDUCED DRAWINGS

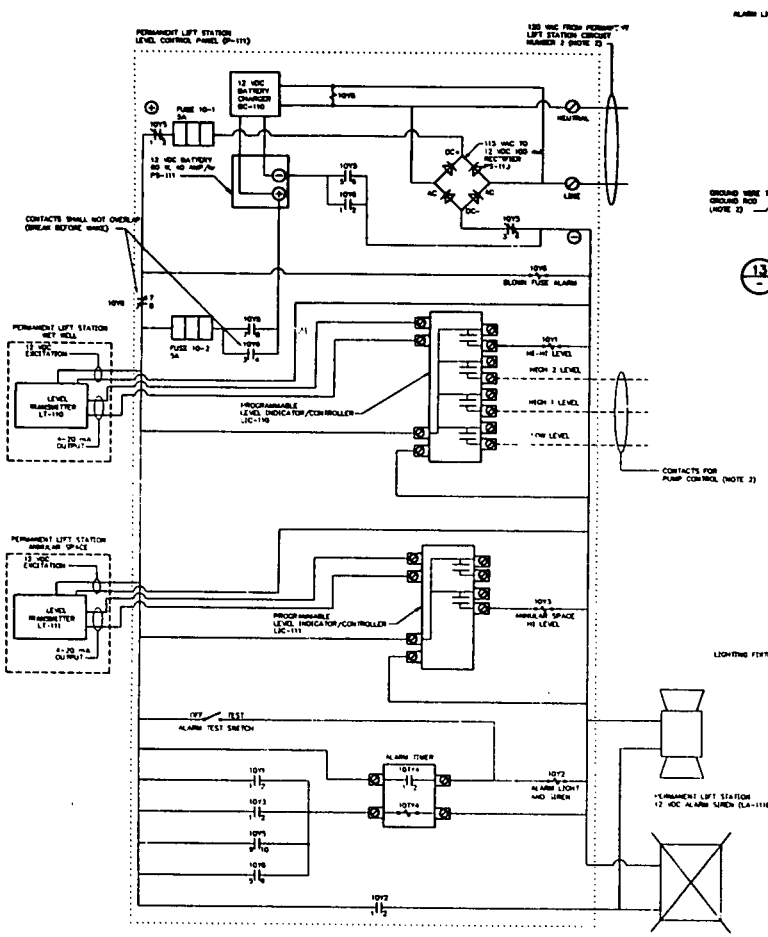
CERTIFIED FOR CONSTRUCTION

STATE OF OHIO

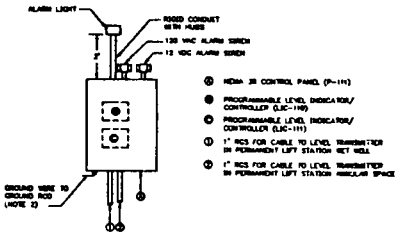
GEO SYSTEMS CONSULTANTS

SHEET NO. E-4A

REVISION NO. 0



12 DETAIL
PERMANENT LIFT STATION CONTROL SCHEMATIC
SCALE: NTS



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

RELAY NUMBER - 10Y1 - PERMANENT LIFT STATION HI-HI LEVEL			
COIL 12 VDC	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 12 VDC	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 12 VDC	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 12 VDC	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

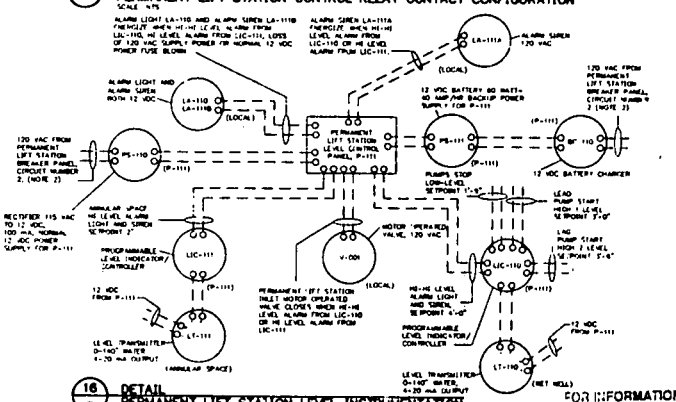
RELAY NUMBER - 10Y5 PERMANENT LIFT STATION LOSS OF 120 VAC POWER			
COIL 120 VAC	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 - 2	X		NORMAL 12 VDC HOT LEG
3 - 4	X		NORMAL 12 VDC COMMON
5 - 6		X	BATTERY 12 VDC COMMON
7 - 8		X	BATTERY 12 VDC HOT LEG
9 - 10		X	ENERGIZE (10TY4) ALARM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

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

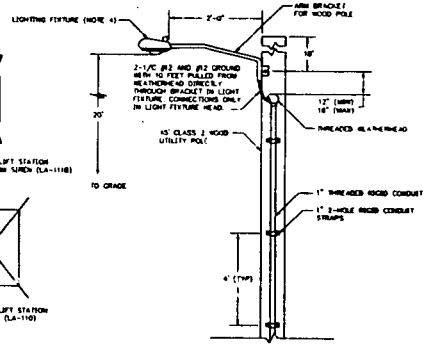
RELAY NUMBER - 10Y6 PERMANENT LIFT STATION NORMAL 12 VDC POWER FUSE BLOWN			
COIL 12 VDC	NORMALLY OPEN	NORMALLY CLOSED	CONTACT FUNCTION
CONTACTS #	NO	NC	
1 - 2		X	BATTERY 12 VDC COMMON
3 - 4		X	BATTERY 12 VDC HOT LEG
5 - 6		X	ENERGIZE (10TY4) ALARM TIMER
7 - 8	X		BLOWN FUSE LATCH

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

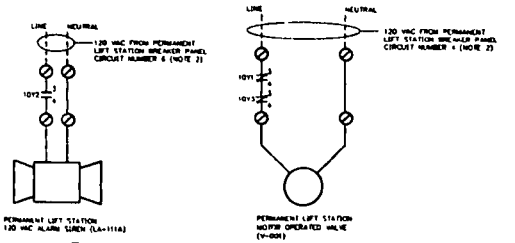
14 DETAIL
PERMANENT LIFT STATION CONTROL RELAY CONTACT CONFIGURATION
SCALE: NTS



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



15 DETAIL
LIGHT FIXTURE FOR POLE OP 82
(NOTE 3)
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-00509 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.

DO NOT SCALE REDUCED DRAWINGS

CERTIFIED FOR CONSTRUCTION

FOR INFORMATION ONLY

REV. NO	DATE	DESCRIPTION	BY	CHKD	CHKD	REVIEW	APPROVE
0	08/16/95	CERTIFIED FOR CONSTRUCTION	LF	AMF	RJ	JWM	RG

SCALE AS SHOWN

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

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

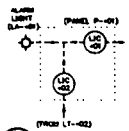
PROJECT:
LEACHATE CONVEYANCE SYSTEM

TITLE:
LEACHATE TRANSMISSION SYSTEM
ELECTRICAL DETAILS IV

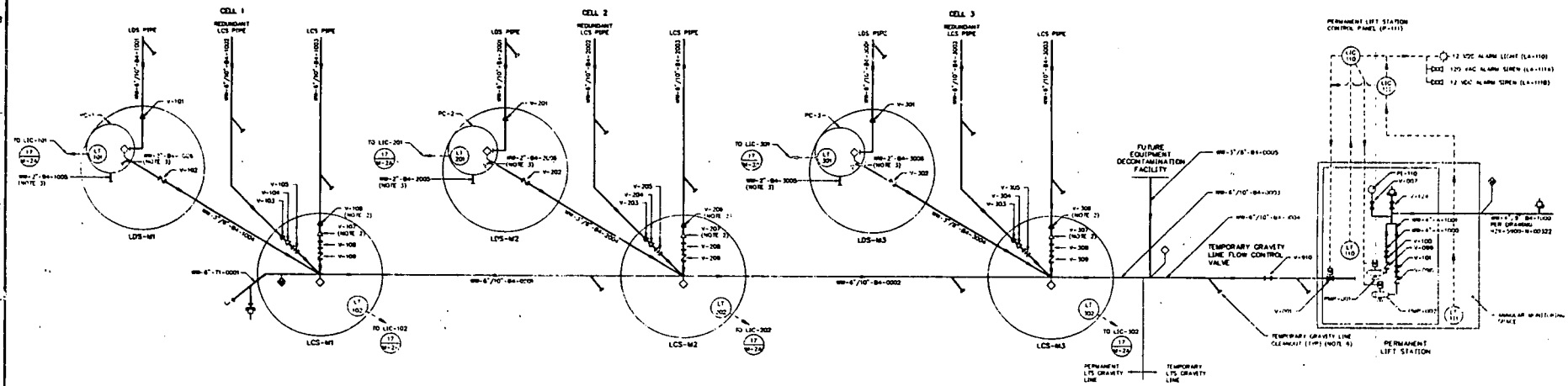
STATE OF OHIO
PROFESSIONAL ENGINEER

GeoSyntec Consultants

SERVICE PROJECT NO. 7900
SERVICE SUBCONTRACT NO. 5025
SERVICE DRAWING NO. 00-0009-E-00081
SERVICE PROJECT NO. LLP002-E21
SERVICE DRAWING NO. 199-2005
SHEET NO. E-7A
REVISION NO. 0



17 (M-3A) 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 OF

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	ASS. 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 02400S 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"-B4-0005 SUCTION
   LINE NUMBERS WW-2"-B4-0006 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. TEMPORARY GRAVITY LINE CLEANOUTS SHALL BE INSTALLED ALONG TEMPORARY GRAVITY LINE AS SHOWN ON DRAWINGS G-8A, C-8B, AND G-8C.

0	08/16/96	CERTIFIED FOR CONSTRUCTION	BH	BH	LA	MWC	NB
REV. NO.	DATE	DESCRIPTION	DRAWN	CHECK	CHECK	REVIEW	APPROVE

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 PIPING AND INSTRUMENTATION DIAGRAM

THIS DRAWING HAS NOT BEEN SEALED FOR PRIMARY REVIEW BY REGISTERED PROFESSIONAL ENGINEER.

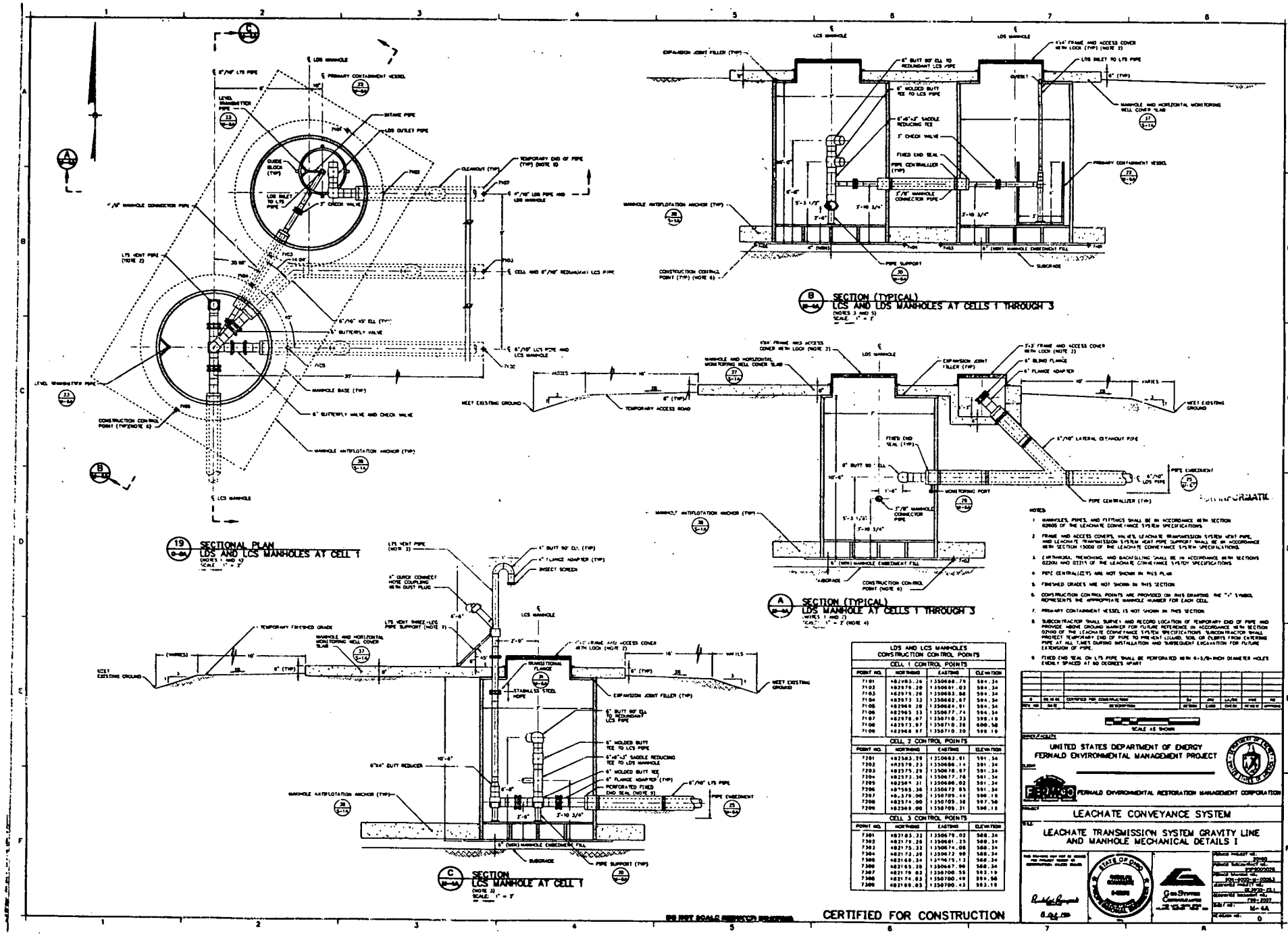
STATE OF OHIO — REGISTERED PROFESSIONAL ENGINEER

CH2M HILL

PROJECT NO.	20100
SUBCONTRACT NO.	P-8700026
SHEET NO.	106-0000-M-00B2
FIELD PROJECT NO.	01/R01-C11
DRAWING NO.	(19)-2003
SHEET NO.	M-2A
REVISION NO.	0

DO NOT SCALE REDUCED DRAWING

CERTIFIED FOR CONSTRUCTION



LDS AND LCS MANHOLES
CONSTRUCTION CONTROL POINTS

CELL 1 CONTROL POINTS

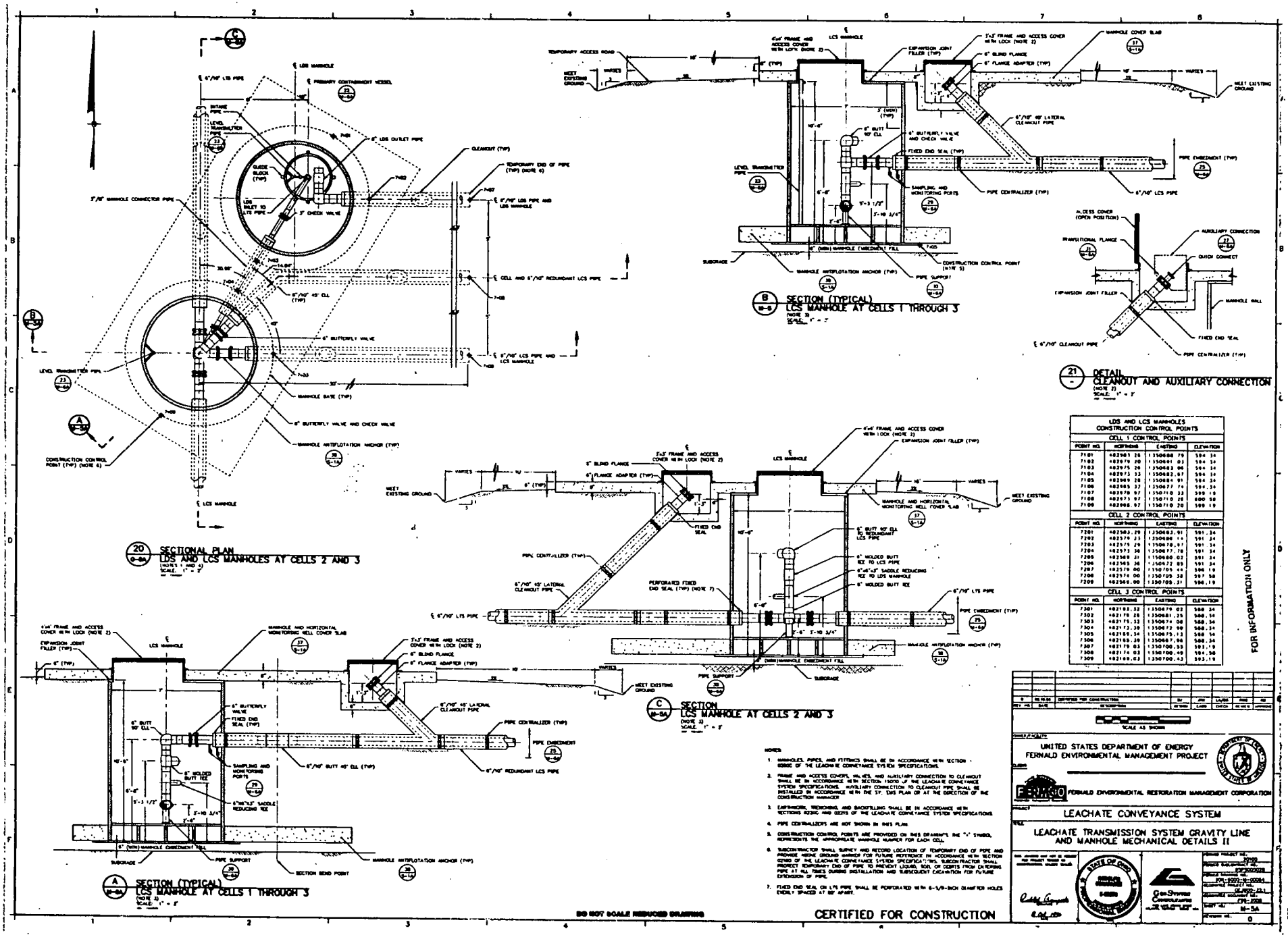
POINT NO.	NORTHING	EASTING	ELEVATION
7101	482983.26	1350688.76	584.34
7102	482979.28	1350681.03	584.34
7103	482975.26	1350683.86	584.34
7104	482973.53	1350682.67	584.34
7105	482969.28	1350684.91	584.34
7106	482965.53	1350677.74	584.34
7107	482978.97	1350710.33	588.18
7108	482973.97	1350710.28	600.58
7109	482968.97	1350710.20	588.18

CELL 2 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7201	482583.28	1350683.91	581.34
7202	482579.23	1350686.14	581.34
7203	482575.29	1350678.87	581.34
7204	482573.36	1350677.78	581.34
7205	482569.31	1350680.02	581.34
7206	482565.36	1350672.85	581.34
7207	482579.00	1350705.44	586.18
7208	482574.00	1350705.38	597.58
7209	482569.00	1350705.31	586.18

CELL 3 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7301	482183.32	1350679.02	588.34
7302	482179.28	1350681.25	588.34
7303	482175.32	1350674.08	588.34
7304	482173.39	1350672.99	588.34
7305	482169.34	1350675.13	588.34
7309	482165.39	1350667.96	588.34
7307	482179.03	1350700.55	593.18
7308	482174.03	1350700.49	604.58
7309	482169.03	1350700.43	593.18



LDS AND LCS MANHOLES CONSTRUCTION CONTROL POINTS

CELL 1 CONTROL POINTS

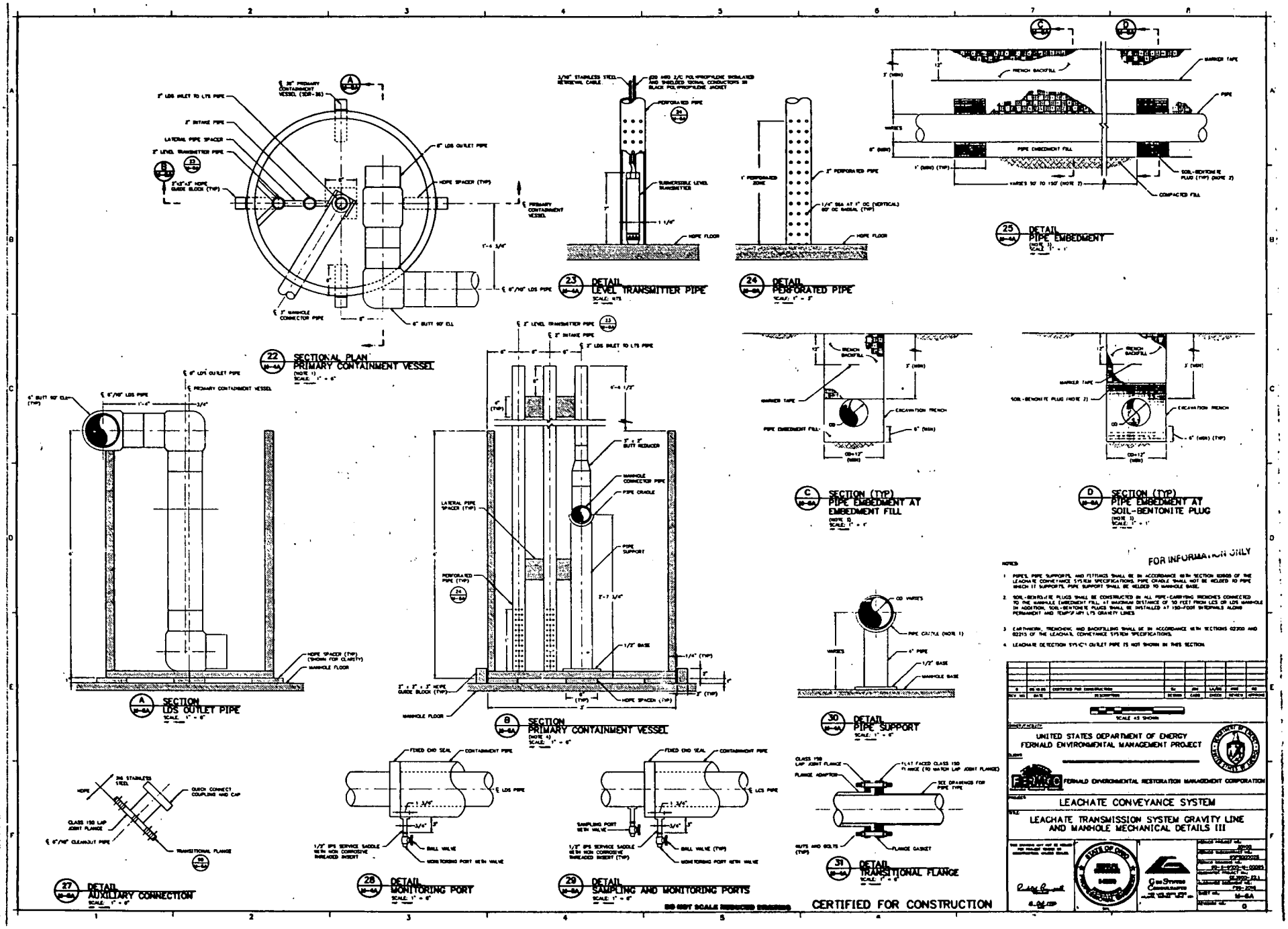
POINT NO.	NORTHING	EASTING	ELEVATION
7101	402561.26	1150668.79	594.34
7102	402570.20	1150681.03	594.34
7103	402575.26	1150683.06	594.34
7104	402573.13	1150682.67	594.34
7105	402569.28	1150684.91	594.34
7106	402565.37	1150677.74	594.34
7107	402570.97	1150710.33	599.19
7108	402573.97	1150710.28	600.58
7109	402568.97	1150710.28	599.19

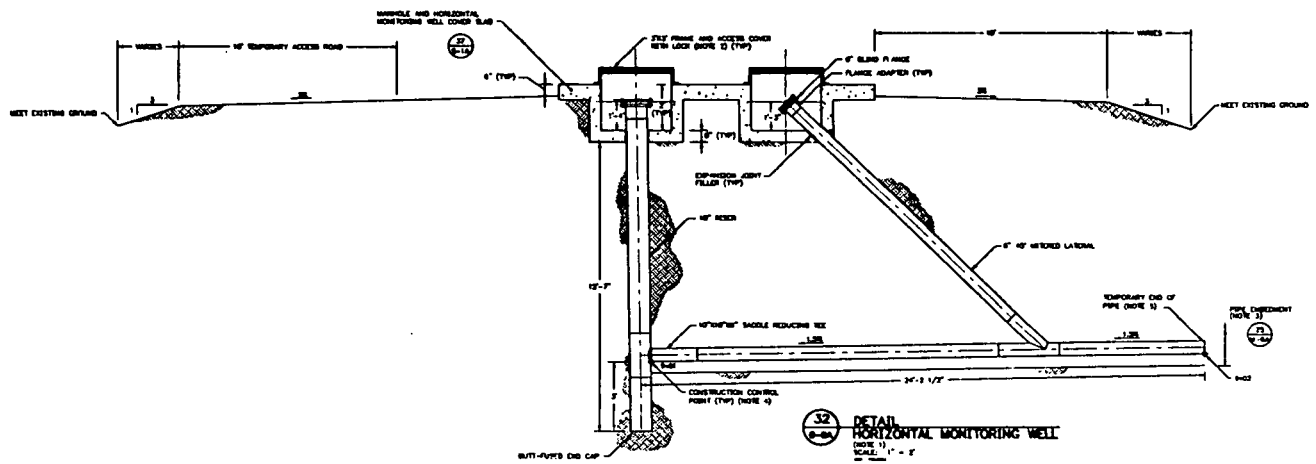
CELL 2 CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
7201	402582.29	1150683.81	591.34
7202	402579.23	1150686.14	591.34
7203	402575.29	1150678.87	591.34
7204	402573.36	1150677.78	591.34
7205	402569.31	1150680.02	591.34
7206	402565.36	1150672.85	591.34
7207	402579.00	1150705.44	596.19
7208	402579.00	1150705.38	597.58
7209	402569.00	1150705.31	596.19

CELL 3 CONTROL POINTS

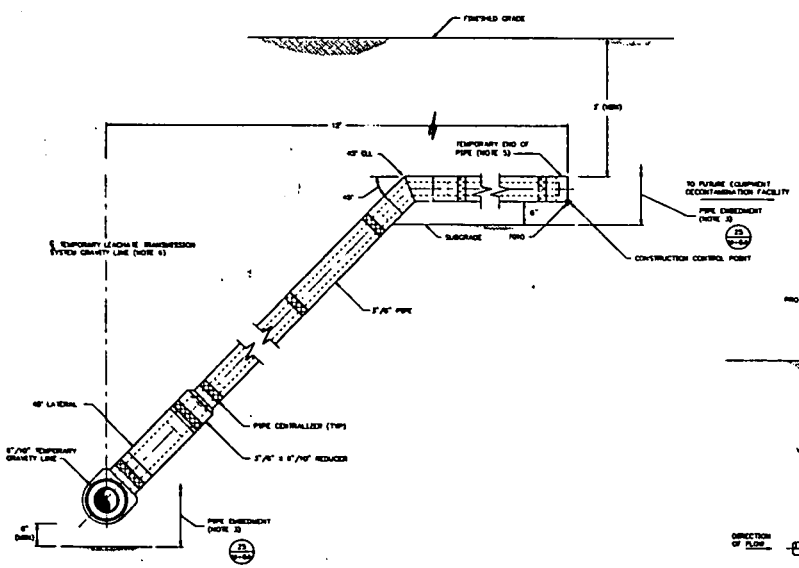
POINT NO.	NORTHING	EASTING	ELEVATION
7301	402183.32	1150679.02	588.34
7302	402178.25	1150681.35	588.34
7303	402175.33	1150674.08	588.34
7304	402172.39	1150673.99	588.34
7305	402169.34	1150675.13	588.34
7306	402169.39	1150667.96	588.34
7307	402178.03	1150700.53	593.19
7308	402174.03	1150700.49	594.58
7309	402169.03	1150700.43	593.19


22 SECTIONAL PLAN PRIMARY CONTAINMENT VESSEL
23 DETAIL LEVEL TRANSMITTER PIPE
24 DETAIL PERFORATED PIPE
25 DETAIL PIPE EMBEDMENT
A SECTION LDS OUTLET PIPE
B SECTION PRIMARY CONTAINMENT VESSEL
C SECTION (TYP) PIPE EMBEDMENT AT EMBEDMENT FILL
D SECTION (TYP) PIPE EMBEDMENT AT SOIL-BENTONITE PLUG
27 DETAIL AUXILIARY CONNECTION
28 DETAIL MONITORING PORT
29 DETAIL SAMPLING AND MONITORING PORTS
30 DETAIL PIPE SUPPORT
31 DETAIL TRANSITIONAL FLANGE
FOR INFORMATION ONLY
CERTIFIED FOR CONSTRUCTION
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
LEACHATE CONVEYANCE SYSTEM
LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLE MECHANICAL DETAILS III
M-6A

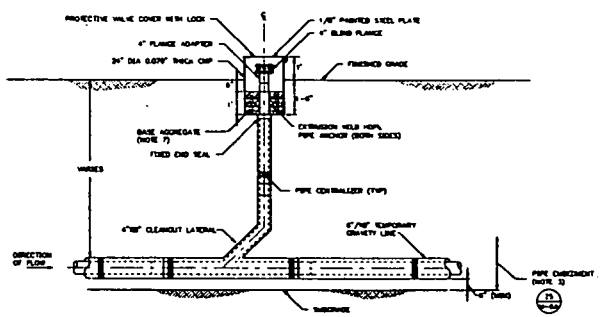


32 D-6A DETAIL
HORIZONTAL MONITORING WELL
(NOTE 1)
SCALE: 1" = 2'

CONSTRUCTION CONTROL POINTS			
HORIZONTAL MONITORING WELLS			
POINT NO.	NORTHING	EASTING	ELEVATION
3101	463960.77	1150485.30	583.87
3102	463954.85	1150785.56	583.46
3103	463941.40	1150890.63	584.3
3104	463941.40	1150910.63	584.3
3105	463941.40	1150930.63	584.3
3106	463941.40	1150950.63	584.3
3107	463941.40	1150970.63	584.3
STUB-OUT FOR EQUIPMENT DECONTAMINATION FACILITY			
POINT NO.	NORTHING	EASTING	ELEVATION
3108	463790.33	1150897.04	583.78



33 D-6A DETAIL
STUB-OUT FOR EQUIPMENT DECONTAMINATION FACILITY
(NOTE 1)
SCALE: 1" = 1'



34 D-6A DETAIL
TEMPORARY GRAVITY LINE CLEANOUT
(NOTE 1)
SCALE: 1" = 2'

FOR INFORMATION ONLY

NOTES

1. PIPES AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02805 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. EMBANKMENT, TRENCHING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH SECTIONS 02300 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 LOSSES, SOIL OR DEBRIS FROM ENTERING PIPE AT ALL TIMES DURING INSTALLATION AND SUBSEQUENT EXCAVATION FOR FUTURE EXTENSION OF PIPE.
6. SEE DRAWING D-6A 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 SPECIFICATION.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVED
0	05.16.03	CERTIFIED FOR CONSTRUCTION					

SCALE AS SHOWN

CONSULTING ENGINEER
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

OWNER
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT
LEACHATE CONVEYANCE SYSTEM

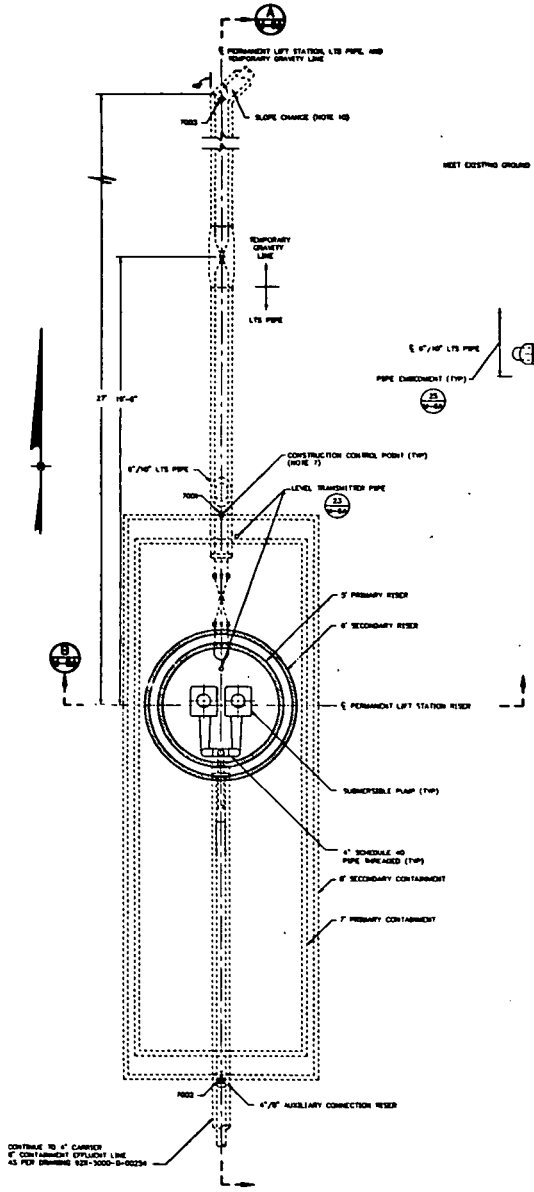
TITLE
LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLE DETAILS IV

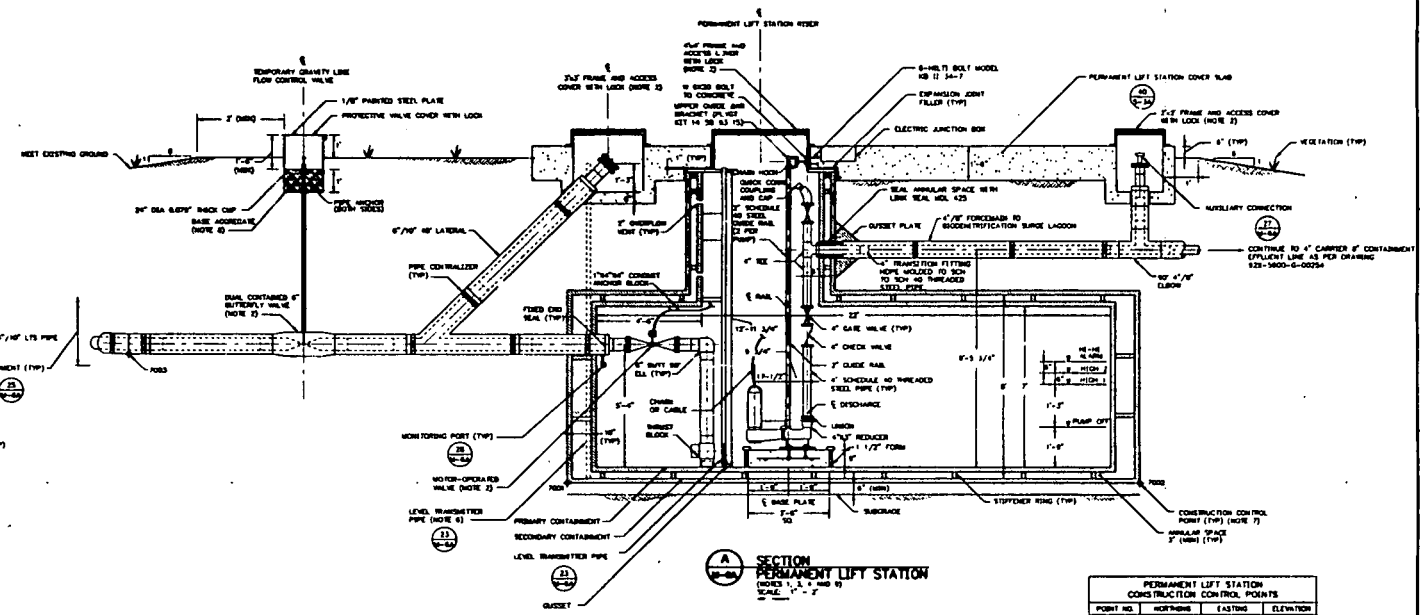
STATE OF OHIO

CH2M HILL

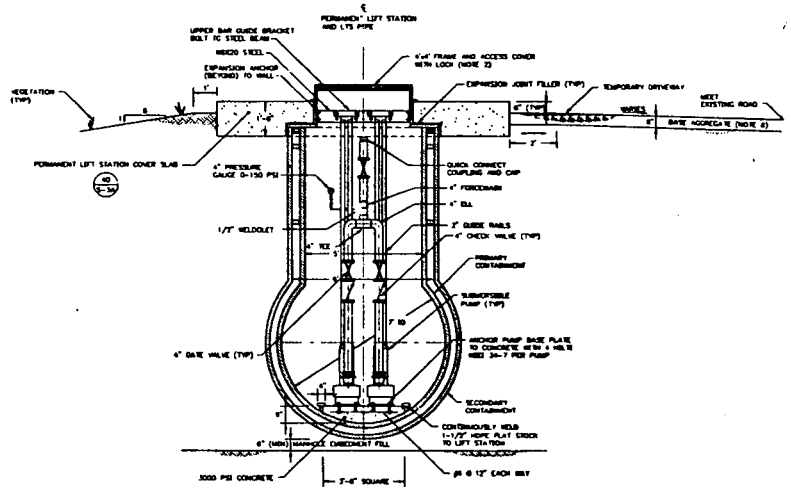
CERTIFIED FOR CONSTRUCTION

DO NOT SCALE REDUCED DRAWINGS





PERMANENT LIFT STATION CONSTRUCTION CONTROL POINTS			
POINT NO.	NORTHING	EASTING	ELEVATION
7001	1790053.10	1350805.84	568.08
7002	1790175.89	1350813.30	568.08
7003	1790235.27	1350813.30	571.82



FOR INFORMATION ONLY

NOTES:

1. PRIMARY CONTAINMENT, SECONDARY CONTAINMENT, HDPE PIPES, AND FITTINGS SHALL BE IN ACCORDANCE WITH SECTION 02808 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 02315 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
4. SUBMERSIBLE PUMPS AND QUICK DISCHARGE CONNECTOR FOR PUMP SHALL BE IN ACCORDANCE WITH SECTION 15460 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
5. PIPE CENTRALIZERS ARE NOT SHOWN ON 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 928-3000-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	DESIGNED	DRAWN	CHECKED	REVIEWED	APPROVED
0	05/14/96	CERTIFIED FOR CONSTRUCTION	GJ	KMF	LA/GM	MMB	RG

SCALE AS SHOWN

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

CLIENT: FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT: LEACHATE CONVEYANCE SYSTEM

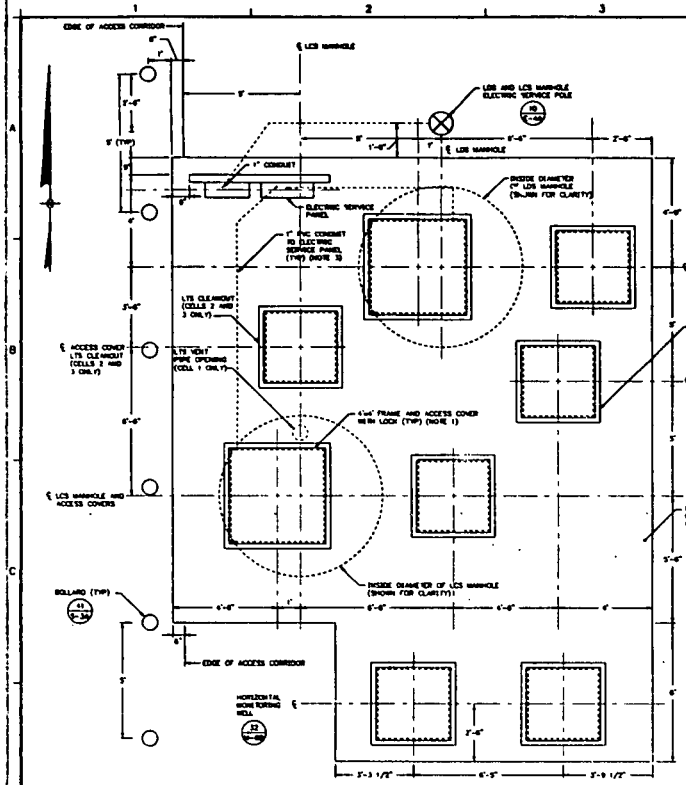
TITLE: LEACHATE TRANSMISSION SYSTEM
LIFT STATION MECHANICAL DETAILS III

STATE OF OHIO

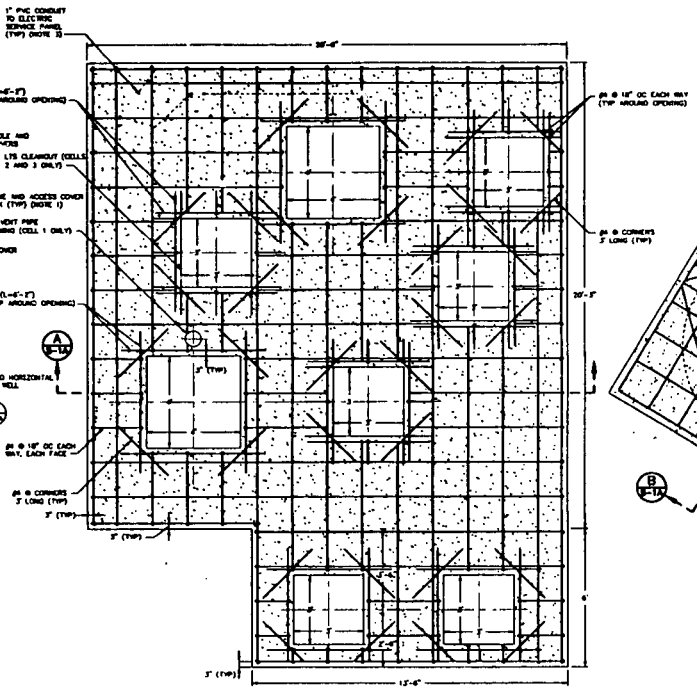
Geo-Systems Consultants

FERNALD PROJECT NO.	27700
FERNALD DOCUMENT NO.	FDC-00252B
Geo-Systems Consultants NO.	1-5000-G-00267
Contractor NO.	06-9900-13.1
Contractor DWG. NO.	FPR-021
SHEET NO.	M-8A
REVISION NO.	0

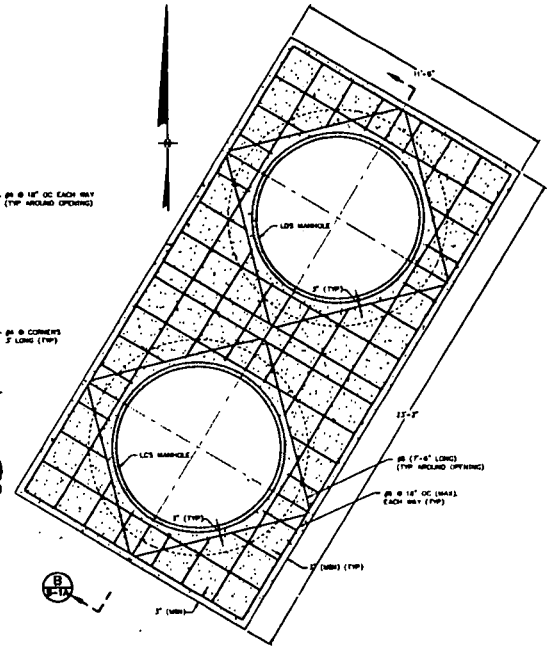
CERTIFIED FOR CONSTRUCTION



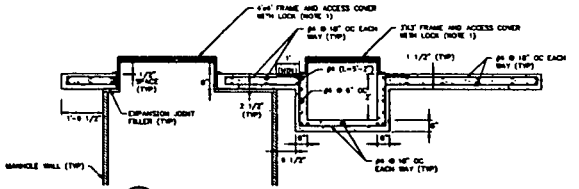
36 PLAN
MANHOLE AND HORIZONTAL MONITORING WELL COVER SLAB
SCALE: 1" = 2'



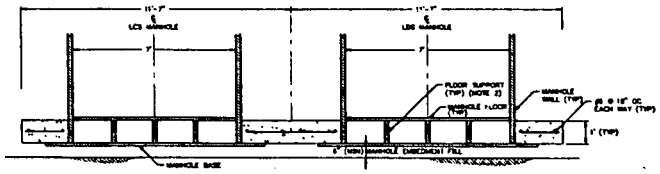
37 SECTIONAL PLAN
MANHOLE AND HORIZONTAL MONITORING WELL COVER SLAB
(NOTES 4, 5 AND 6)
SCALE: 1" = 2'



38 SECTIONAL PLAN
MANHOLE ANTIFLOTATION ANCHOR
(NOTES 5, 6 AND 7)
SCALE: 1" = 2'



A SECTION
MANHOLE COVER SLAB
(NOTES 3 AND 4)
SCALE: 1" = 1'



B SECTION
MANHOLE BASE AND ANTIFLOTATION ANCHOR
SCALE: 1" = 2'

FOR INFORMATION ONLY

NOTES:

1. FRAME AND ACCESS COVER SHALL BE IN ACCORDANCE WITH SECTION 13000 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
2. MANHOLE COVER SUPPORTS AND MANHOLE FLOOR SUPPORTS SHALL BE IN ACCORDANCE WITH SECTION 03800 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
3. ELECTRICAL CONDUIT PENETRATIONS INTO MANHOLES SHALL BE IN ACCORDANCE WITH SECTIONS 03800 AND 16000 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
4. MANHOLE HOPE 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 03300 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.

0	05.10.99	CERTIFIED FOR CONSTRUCTION	RJ	JRP	LJ	PMB	KD
REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD	CHKD	REVIEW	APPROVED

SCALE AS SHOWN

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

LEACHATE CONVEYANCE SYSTEM

LEACHATE TRANSMISSION SYSTEM
STRUCTURAL DETAILS I

STATE OF OHIO

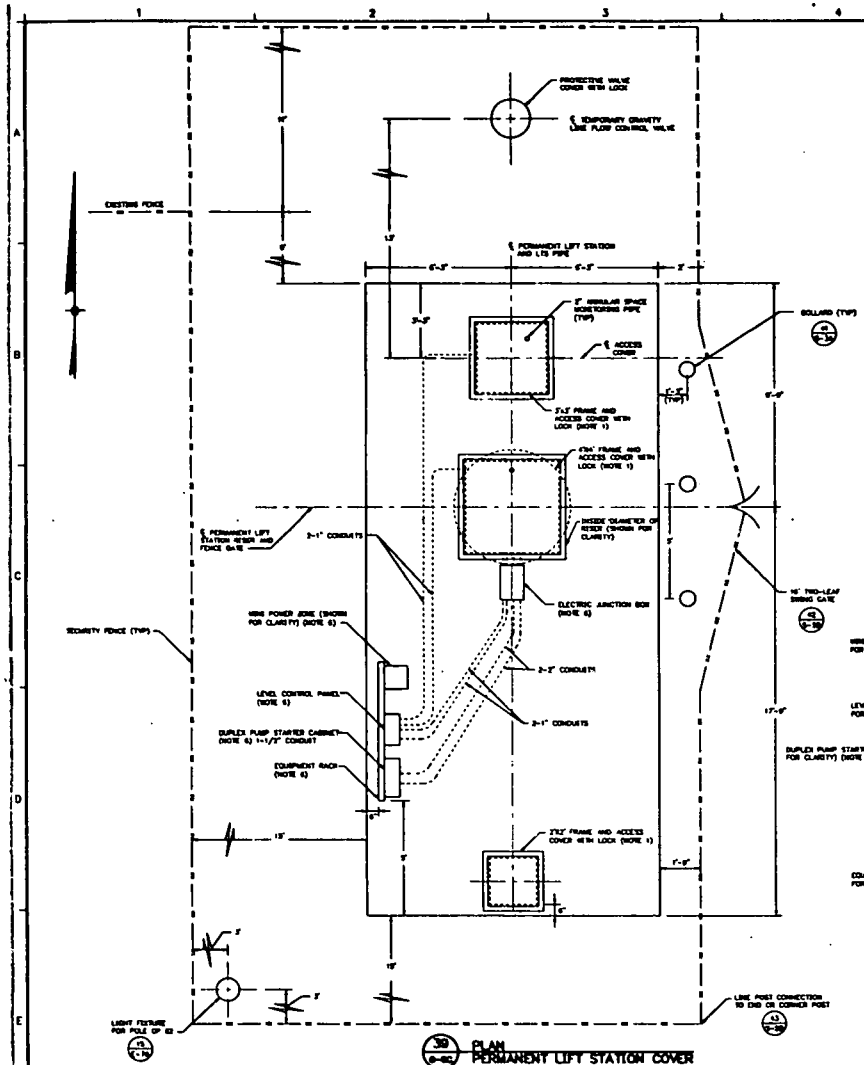
Geo Synthetics Consultants

Approved Project No. 3P09
Approved Subproject No. 03
Approved Drawing No. 03-0000-1-00208
Approved Sheet No. 1
Approved Revision No. 0
Drawing No. 03-0000-1211
Approved Revision No. 0
Sheet No. 7R-3211
Sheet No. 9-1A
Revision No. 0

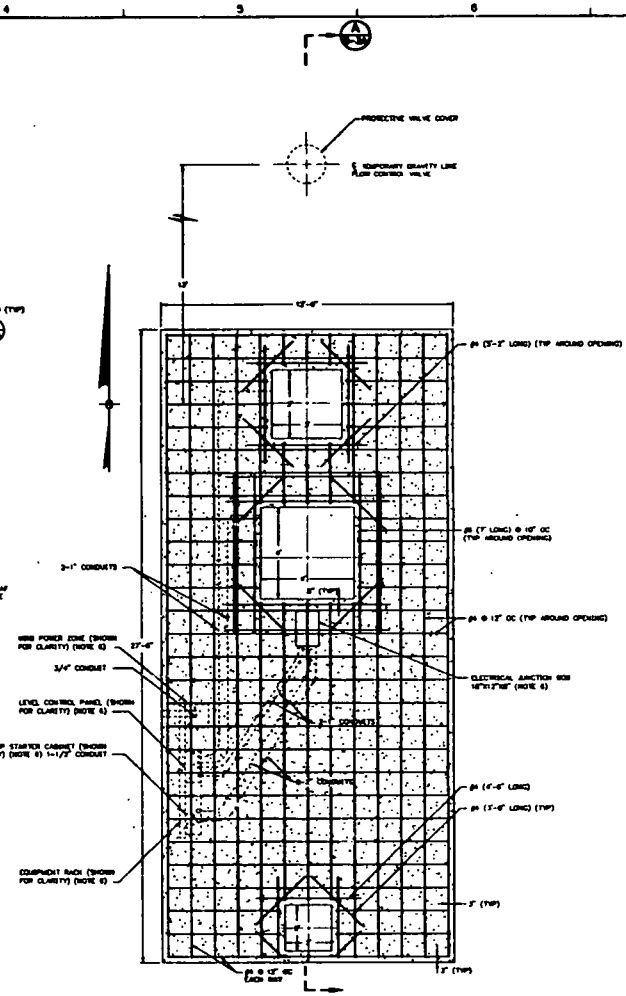
NOT FOR CONSTRUCTION UNLESS SIGNED AND SEALED BY REGISTERED ENGINEER

ISO-ANSI SCALE REDUCED DRAWING

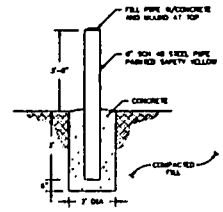
CERTIFIED FOR CONSTRUCTION



39 PLAN PERMANENT LIFT STATION COVER
SCALE: 1" = 2'



40 SECTIONAL PLAN PERMANENT LIFT STATION COVER SLAB
(NOTE 3)
SCALE: 1" = 2'

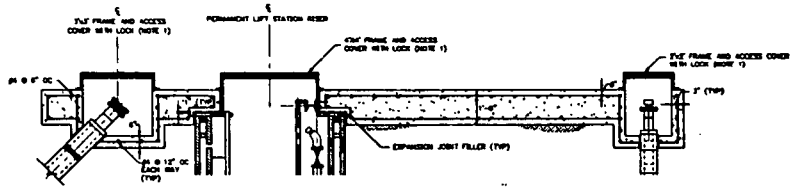


41 DETAIL BOLLARD
(NOTE 5)
SCALE: 1" = 2'

NOTES

1. FRAME AND ACCESS COVER SHALL BE IN ACCORDANCE WITH SECTION 15000 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
2. ELECTRICAL CONDUIT PENETRATIONS IN MANHOLES SHALL BE IN ACCORDANCE WITH SECTIONS 02800 AND 16000 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
3. MANHOLE HOPE COVER SHALL BE TEMPORARILY SHORED DURING CONSTRUCTION OF MANHOLE COVER SLAB IN ACCORDANCE WITH SECTION 02600 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
4. VERTICAL CONSTRUCTION JOINTS SHALL BE IN ACCORDANCE WITH SECTION 03300 OF THE LEACHATE CONVEYANCE SYSTEM SPECIFICATIONS.
5. EXPOSED CONCRETE INCLUDING TOPS AND BASE OF BOLLARD SHALL HAVE A 1-INCH CROWN TO PROVIDE DRAINAGE.
6. SEE DRAWING 629-3600-E-00323 FOR ELECTRICAL PLANS FOR PERMANENT LIFT STATION.

FOR INFORMATION ONLY



A SECTION PERMANENT LIFT STATION
(NOTES 2, 3, AND 4)
SCALE: NTS

FOR FINAL SCALE REFER TO DRAWING

CERTIFIED FOR CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DRAWN	CHKD	CHKD	REVIEW	APPROVED
0	03 10 00	REPLACED FOR CONSTRUCTION	BH	JRW	LH	MHB	RB

SCALE AS SHOWN

CONTRACT/SCALE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

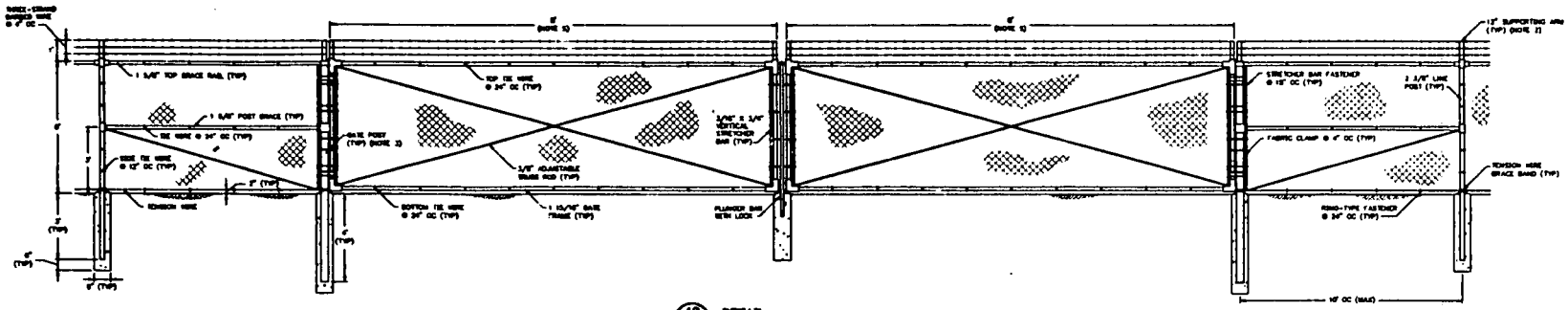
PROJECT: LEACHATE CONVEYANCE SYSTEM

TITLE: LEACHATE TRANSMISSION SYSTEM STRUCTURAL DETAILS III

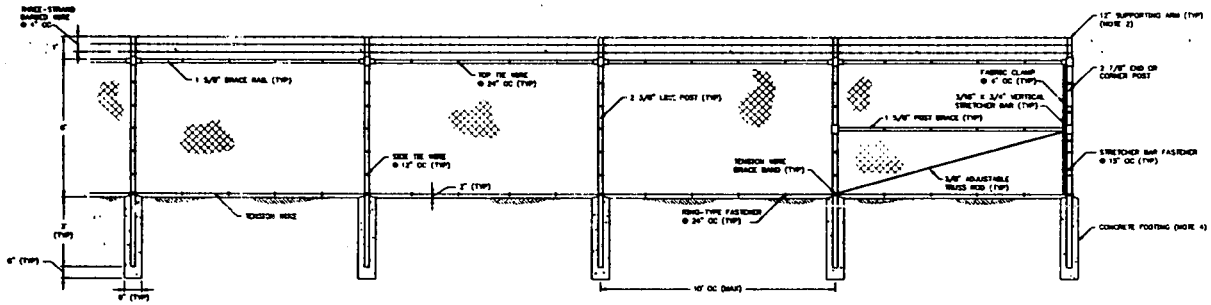
FEMP-2208

B-3A

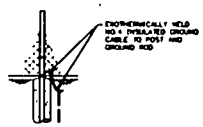
0



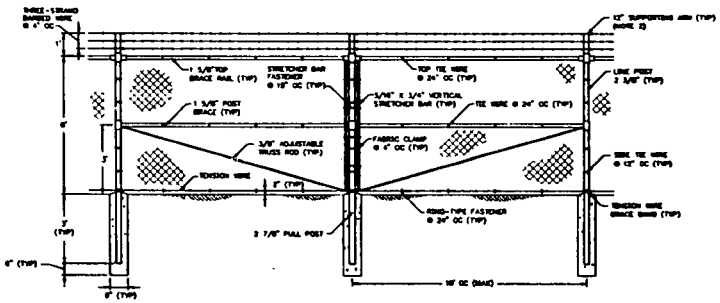
42 DETAIL
TWO-LEAF SWING GATE
SCALE: 1" = 2'



43 DETAIL
LINE POST CONNECTION TO END OR CORNER POST
SCALE: 1" = 2'



44 DETAIL
RIGHT-OF-WAY FENCE GROUND
SCALE: NTS



45 DETAIL
PULL POST
SCALE: 1" = 2'

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	DRAWN	CHECK	REVIEW	APPROVE
0	03 10 93	REPORTED FOR CONSTRUCTION	S.L.	JRG	LA	MRE	RE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

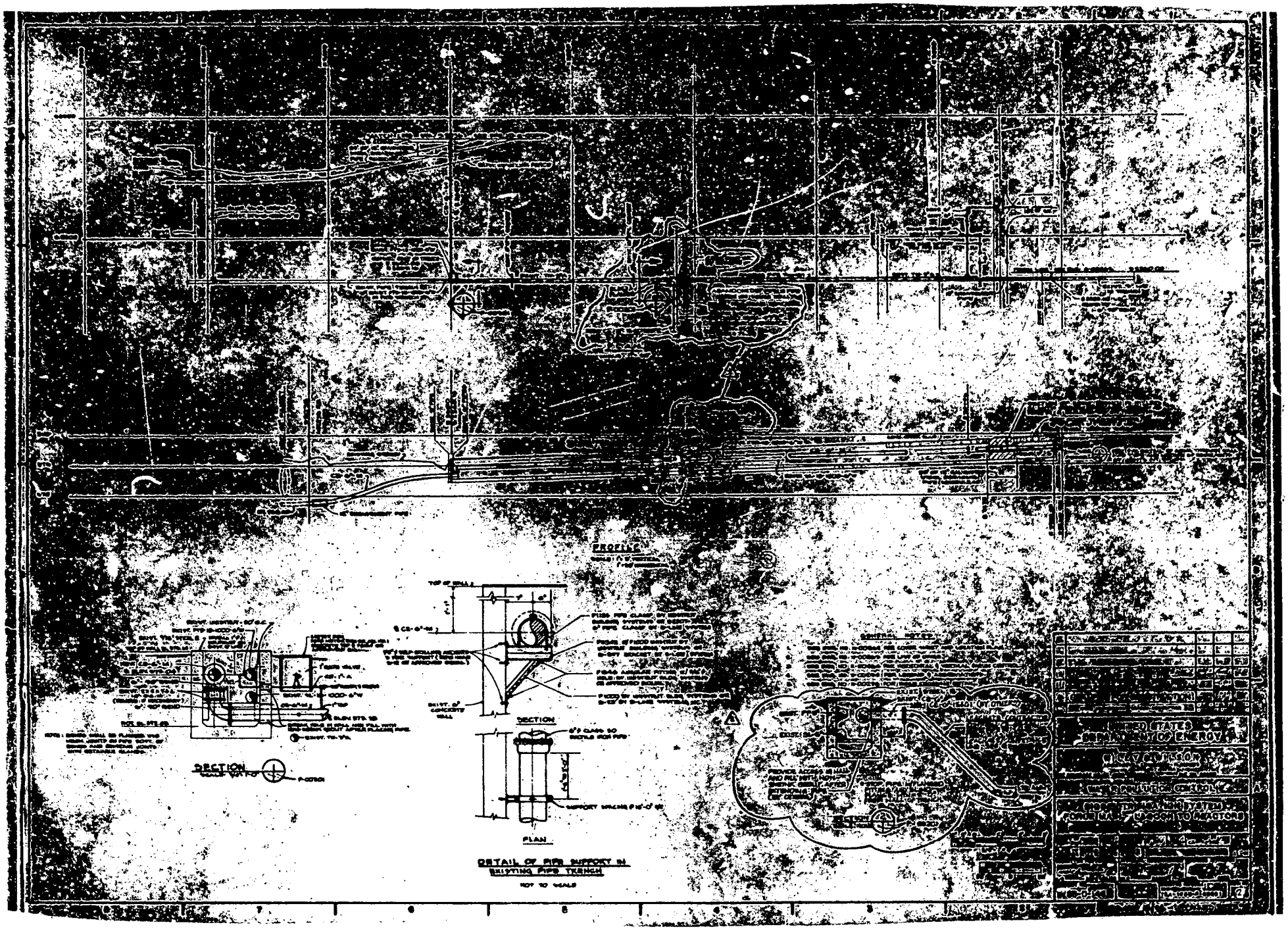
LEACHATE CONVEYANCE SYSTEM

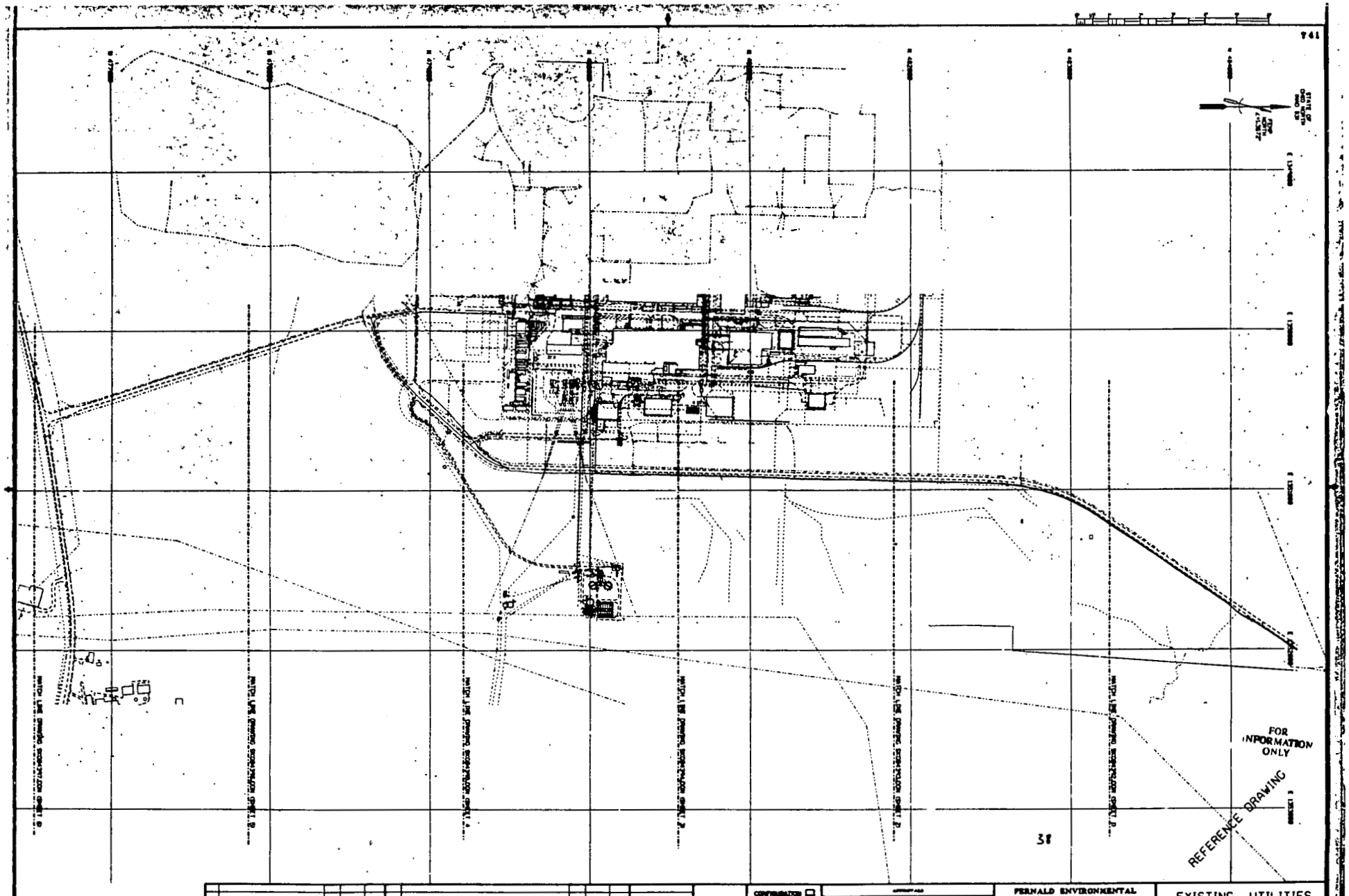
FENCE DETAILS

FER-5200-S-00021
DATE: 3-93
SHEET NO. 0

NO-SCAN SCALE REDUCED DRAWING

CERTIFIED FOR CONSTRUCTION


PROFILE
SECTION
SECTION
PLAN
DETAIL OF PIPE SUPPORT IN
SHIFTING PIPE TRENCH
NOT TO SCALE



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

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

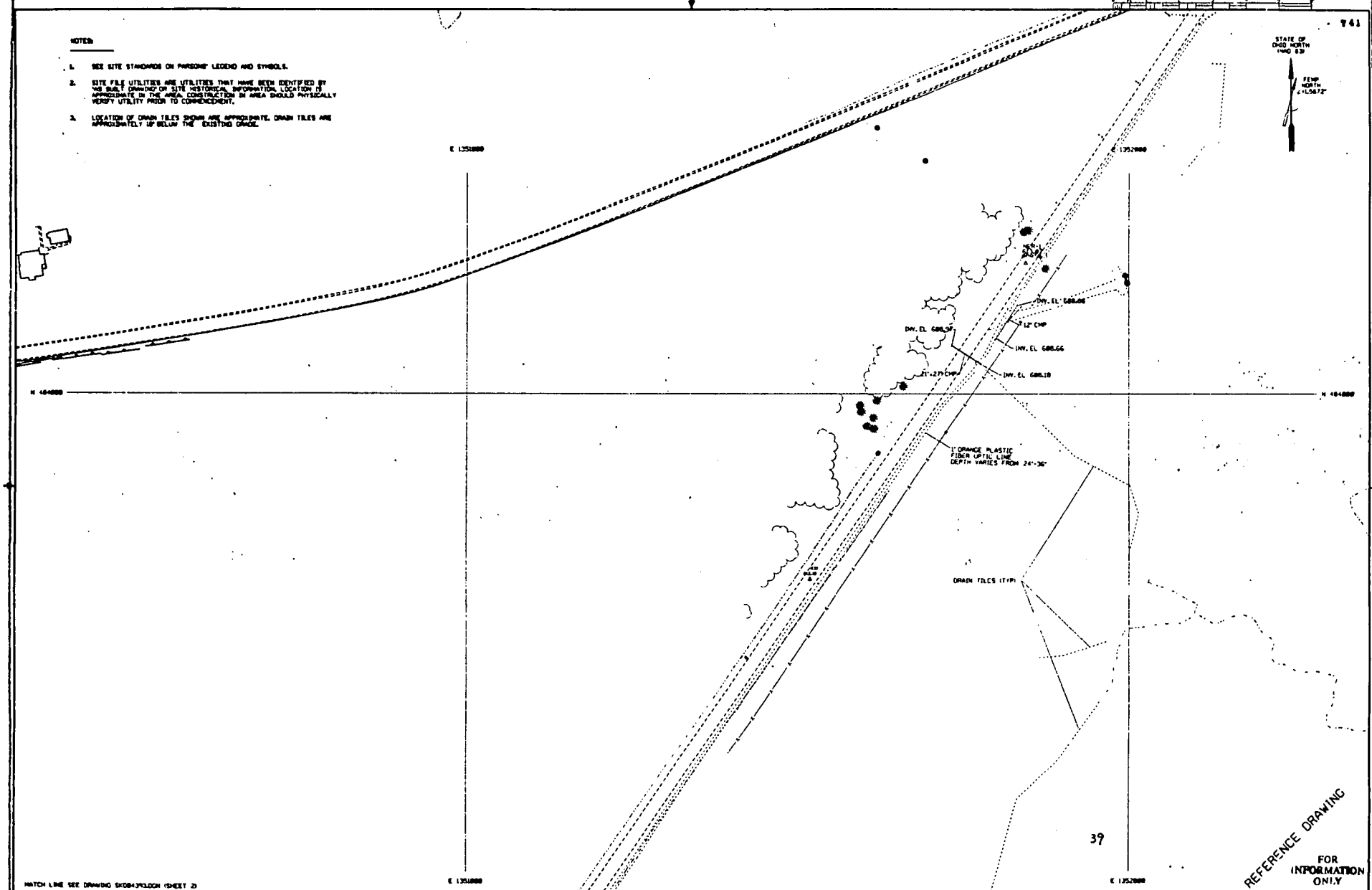
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
Fernald
Environmental Management Project
U.S. DEPARTMENT OF ENERGY

EXISTING UTILITIES REFERENCE DRAWING OVERALL PLAN

SKG04391.DGN A

NOTES:

1. SEE SITE STANDARDS ON PARSONS' LEGEND AND SYMBOLS.
2. SITE FILE UTILITIES ARE UTILITIES THAT HAVE BEEN IDENTIFIED BY "AS BUILT" DRAWINGS 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	NO.	REVISIONS	DATE	DWN	BY	APPD	REF. DWG. NO.
B	ISSUED FOR DOE REVIEW											
A	ISSUED FOR FERNCO REVIEW											

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

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

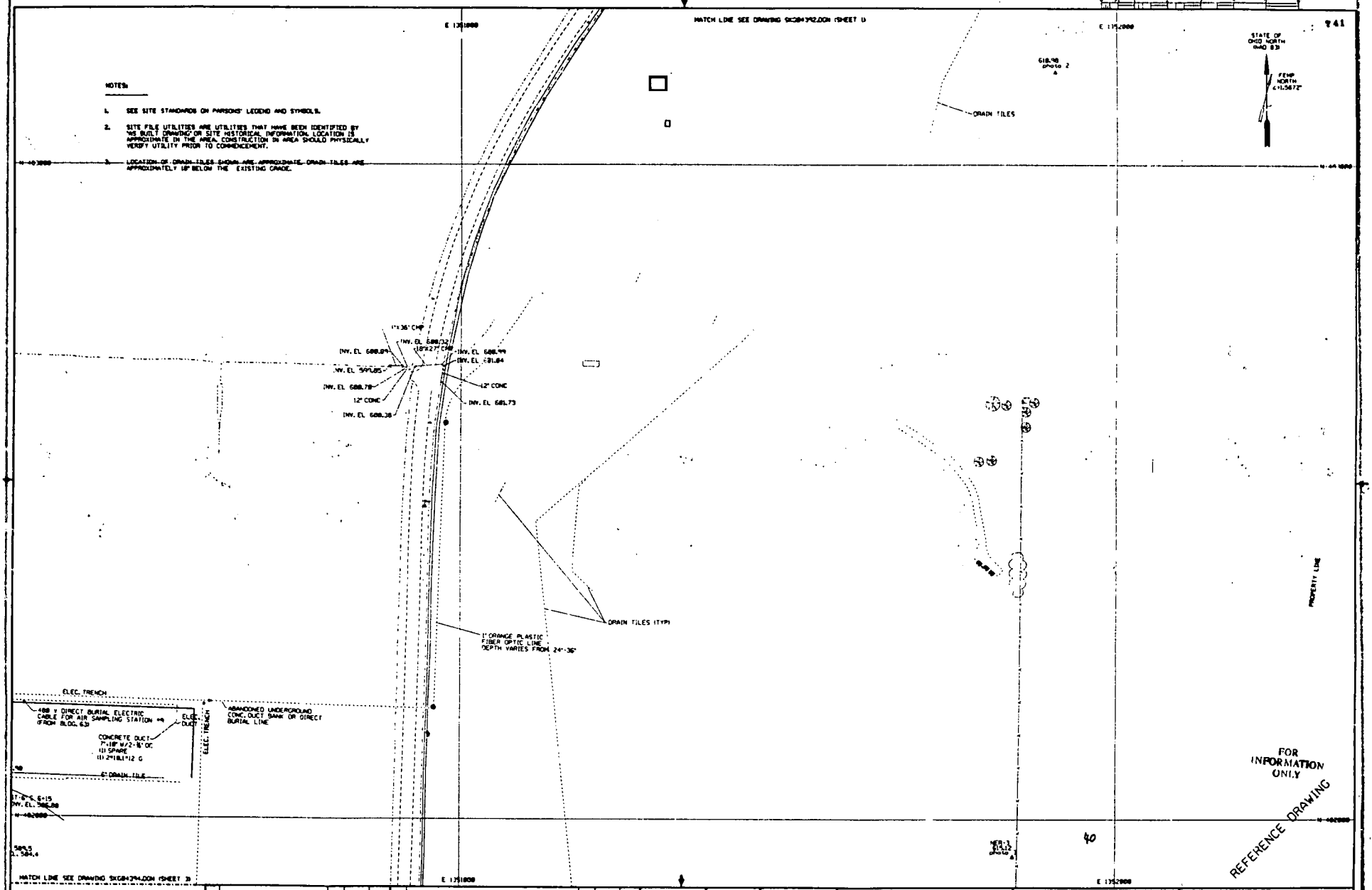
EXISTING UTILITIES REFERENCE DRAWING SHEET 1 OF 6

SKG04392.DGN A

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.



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

NO.	REVISIONS	DATE	DWN	BY	APPD

REF. DWG. NO.

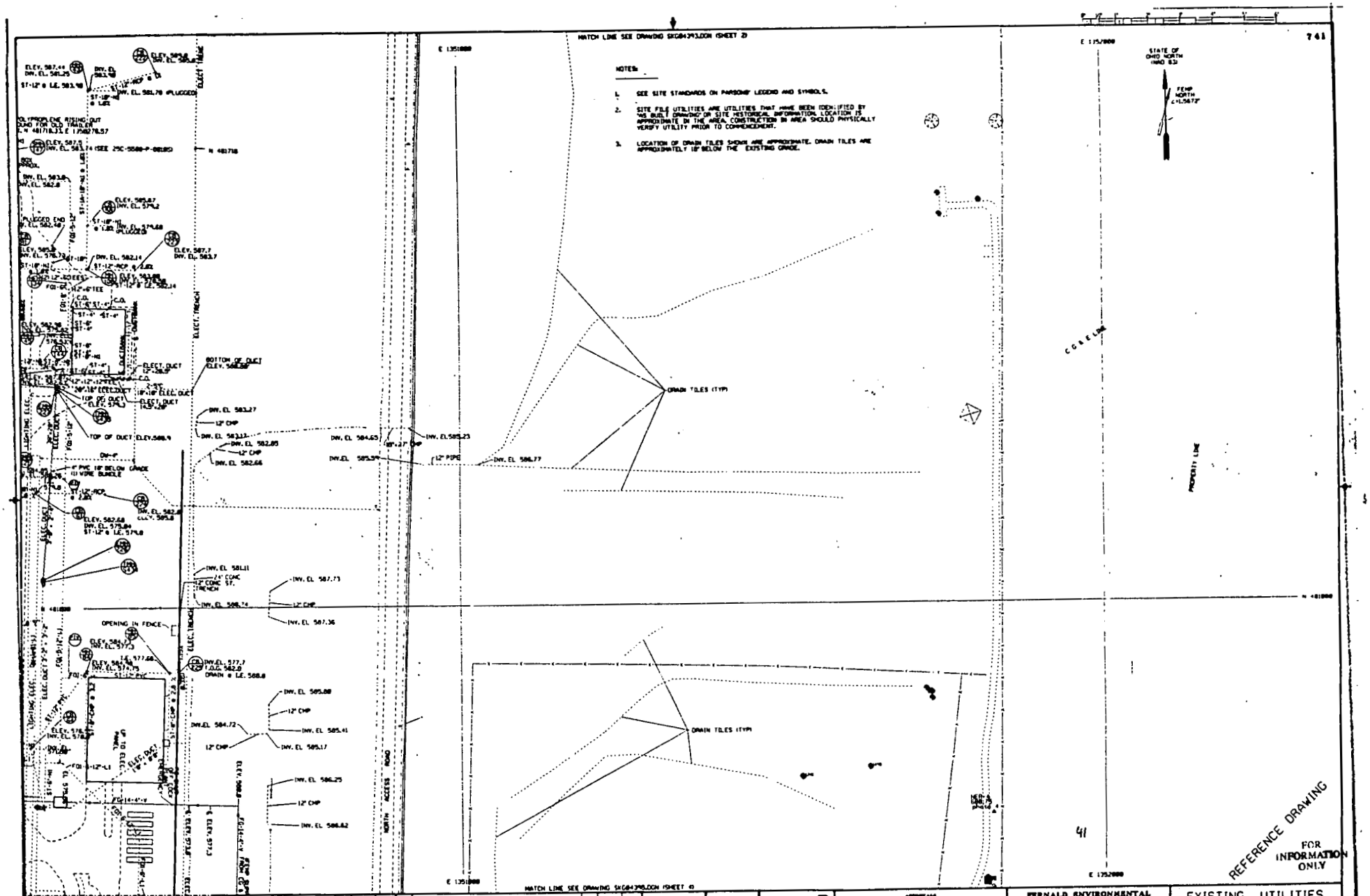
NOTE: FERNCO C.A.T. DRAWING NOT TO BE REVISED MANUALLY

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

EXISTING UTILITIES REFERENCE DRAWING SHEET 2 OF 6

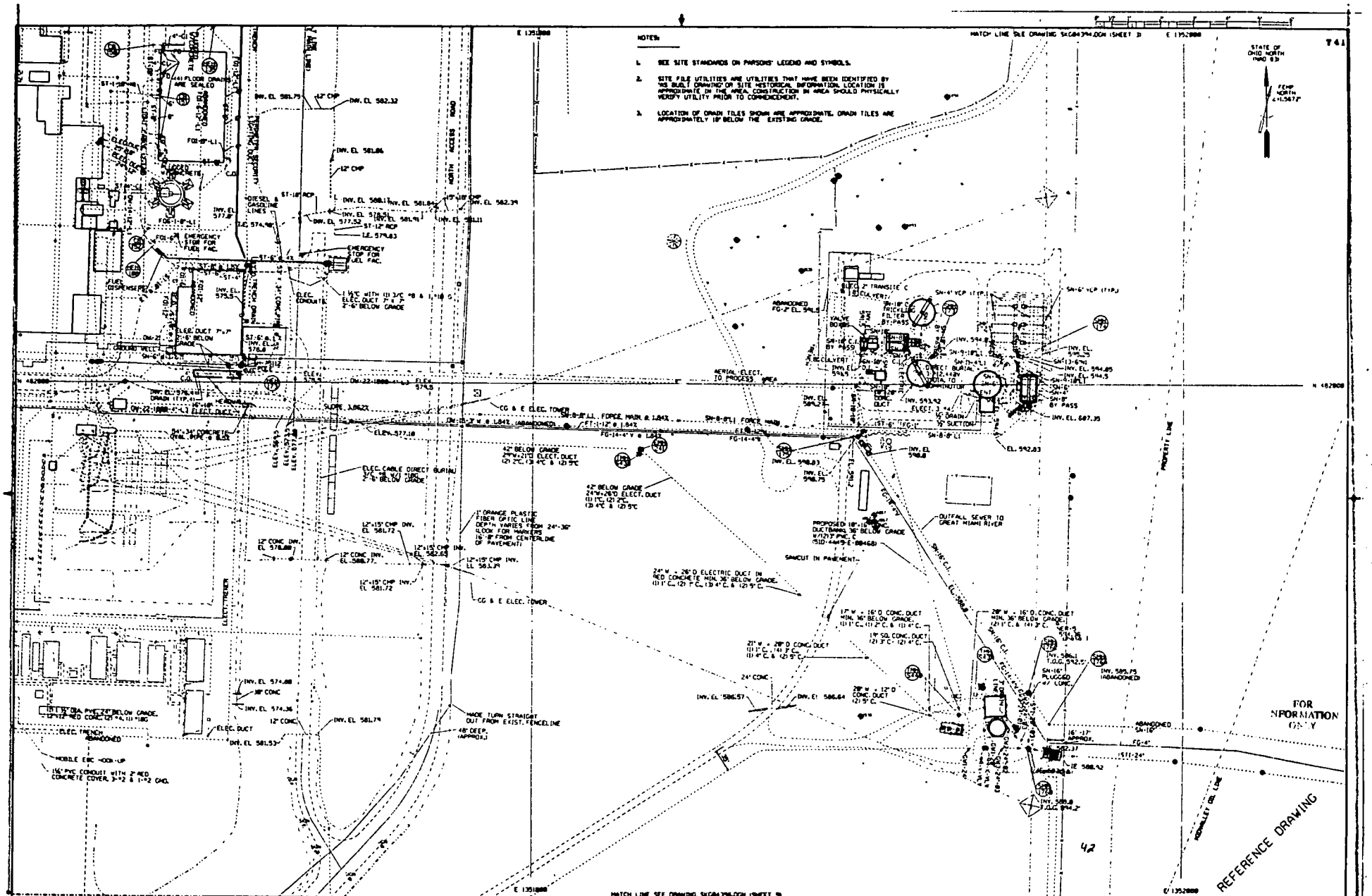
SKG04393.DGN A

42


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.
STATE OF OHIO NORTH (NAD 83)
FEMP NORTH
DRAIN TILES (TYP)
CORE LINE
PROPERTY LINE
NORTH ACCESS ROAD
ELECT. TRENCH
OPENING IN FENCE
MATCH LINE SEE DRAWING SKG04395.DGN (SHEET 4)
REFERENCE DRAWING
FOR INFORMATION ONLY
B ISSUED FOR DOE REVIEW
A ISSUED FOR FERMCO REVIEW
NOTE: FERMCO C.A.D. DRAWING NOT TO BE REVISED MANUALLY
PERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
U.S. DEPARTMENT OF ENERGY
EXISTING UTILITIES REFERENCE DRAWING SHEET 3 OF 6
SKG04394.DGN A

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.



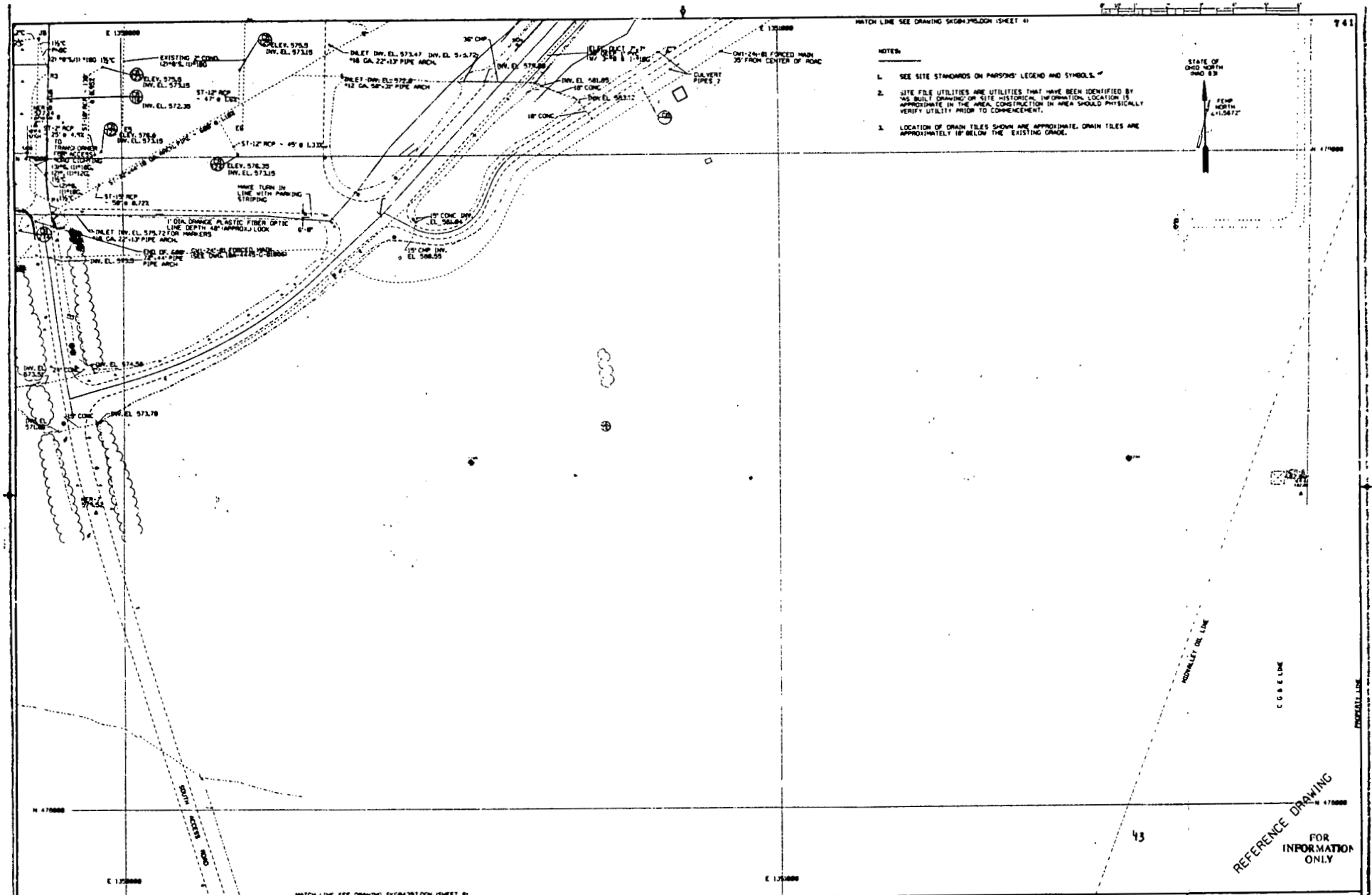
NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
B	ISSUED FOR DOE REVIEW									
A	ISSUED FOR FERMCO REVIEW									

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

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

EXISTING UTILITIES REFERENCE DRAWING SHEET 4 OF 6

SK04395.DGN A



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

NOTE: FERNCO CAD DRAWING NOT TO BE REVISED MANUALLY

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

EXISTING UTILITIES REFERENCE DRAWING SHEET 5 OF 6

SKG04396.DGN A

741

MATCH LINE SEE DRAWING SKG04396.DGN (SHEET 5)

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.

E 1351000

E 1352000

STATE OF OHIO NORTH (NAD 83)

FERNP NORTH ∠41.5872°

SOUTH ACCESS ROAD

MIDVALLEY OIL LINE

C G & E LINE

PROPERTY LINE

VALLEY ROAD

FOR INFORMATION ONLY

REFERENCE DRAWING

44

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

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

CONFORMED DRAWING

CHECKED
APPROVED

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

Fernald

Environmental Management Project

U.S. DEPARTMENT OF ENERGY

EXISTING UTILITIES REFERENCE DRAWING SHEET 6 OF 6

SCALE 1"=100'

DATE 8/27/96

SKG04397.DGN A

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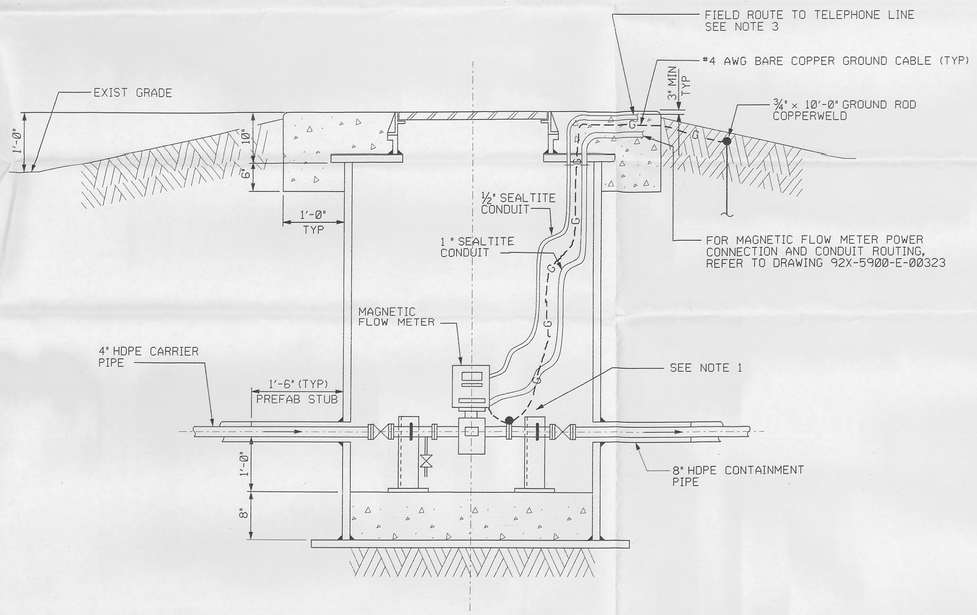
741



METER MANHOLE DETAIL

1" = 1'-0"

FOR MANHOLE DETAILS SEE TYPE 5 PLAN ON DRAWING G00258.

NOTES

1. PROVIDE AND INSTALL GROUNDING CONNECTION FOR MAGNETIC FLOW METER PER MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE AND INSTALL INSTRUMENT MOUNTING STAND AS REQUIRED.
3. FIELD ROUTE A 2 PAIR TELEPHONE CABLE TO NEAREST TELEPHONE LINE INTERFACE POINT AS DIRECTED BY FERMCO.

REF SHEET NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-G-00258	CIVIL-DETAILS - SHEET 3 OF 3
92X-5900-E-00323	ELECTRICAL- PLANS

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		NA	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
INSTRUMENTATION
INSTRUMENT INSTALLATION
METER MANHOLE DETAIL

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
J.H. DYER	05-08-96		10/10/96	JIM L. COOPER	6/25/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		1" = 1'-0"	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NUMBER
A-E DATE	DATE	20211

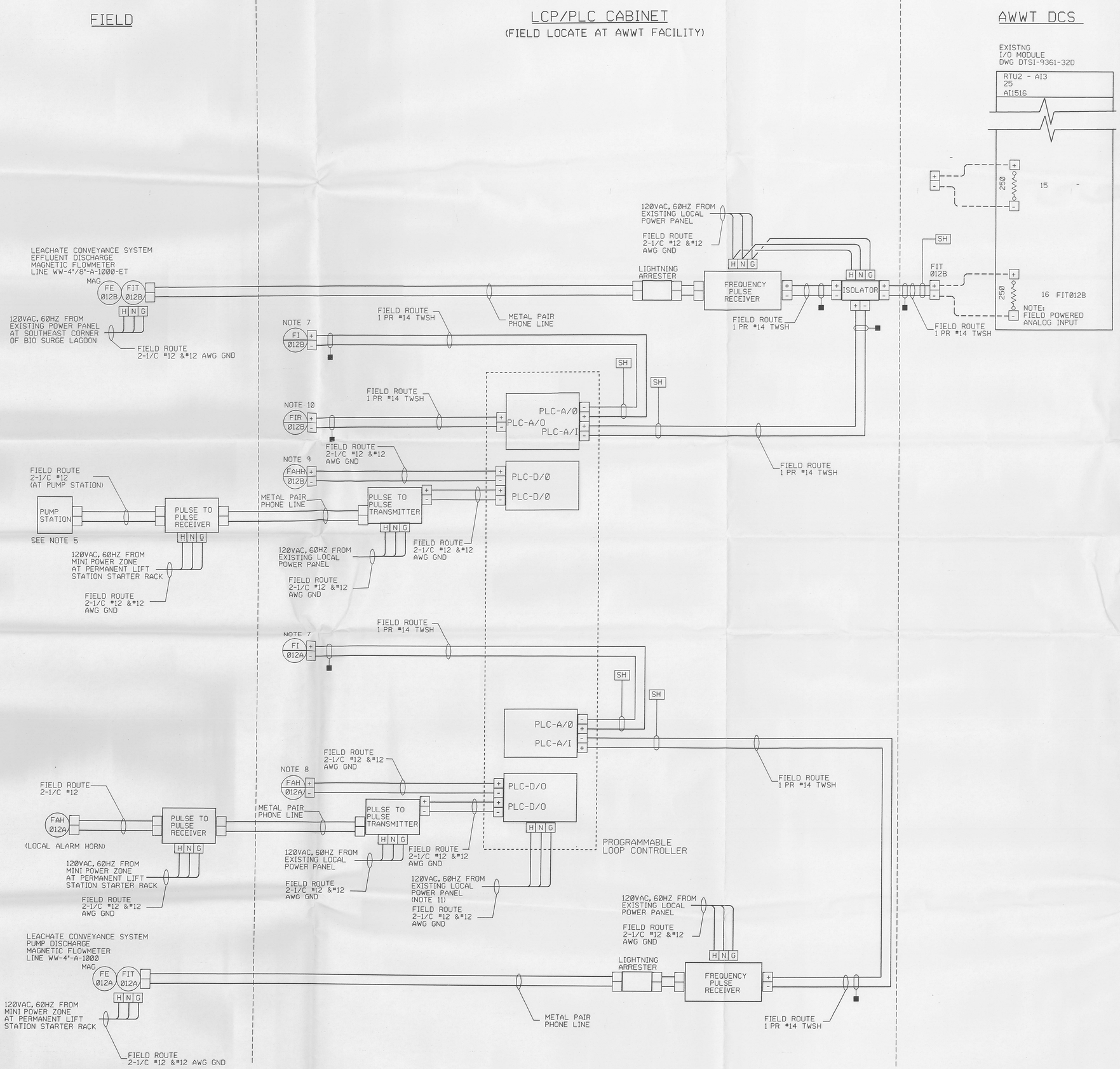
DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
	WBS 1.1.1.1.2.3.6 00-90701	92X-5900-N-00347	N0004	0

PREPARED UNDER PARSONS PROJECT ORDER NUMBER
SRP/P0164

STATE OF OHIO JAMES L. COOPER E-66806 REGISTERED PROFESSIONAL ENGINEER

22

CONSTRUCTION PACKAGE



NOTES

1. FOR RTU2 PANEL WIRING DIAGRAM, SEE DRAWING DTSI-9361-32D.
2. RTU INPUT RESISTOR VALUES ARE IN OHMS.
3. TRANSMITTER OUTPUT SHALL BE PULSE-DURATION SIGNAL
4. EACH SIGNAL SHALL HAVE DEDICATED METAL PAIR PHONE LINE.
5. "RUN PERMISSIVE" CONTROLER RELAY (RPCR) SEE DRAWING 92X-5900-E-00324
6. PROVIDE GROUND CABLE FOR LIGHTNING ARRESTER.
7. INSTALL FLOW METER INDICATORS ON THE LCP AT THE AWWT FACILITY (REFER TO SPECIFICATION 13401 SECTION 2.5 A).
8. INSTALL PILOT LIGHT ON THE LCP AT THE AWWT FACILITY (REFER TO SPECIFICATION 13401 SECTION 2.5 A).
9. INSTALL BUZZER ALARM ON THE LCP AT THE AWWT FACILITY (REFER TO SPECIFICATION 13401 SECTION 2.5 A).
10. INSTALL RECEIVER INSTRUMENT ADJACENT TO THE LCP AT THE AWWT FACILITY (REFER TO SPECIFICATION 13400 SECTION 2.1 H).
11. PROVIDE ONE SOURCE OF 120 VAC, 60HZ POWER TO ALL COMPONENTS WHICH MAKE UP THE PROGRAMMABLE LOOP CONTROLLER. INDIVIDUAL COMPONENT POWER SUPPLIES WILL BE WIRED IN PARALLEL.

I/O LEGEND

- - - - - -	INTERNAL RTU WIRING PROVIDED BY THE RTU ASSEMBLER.
———	EXTERNAL WIRING TO THE RTU CABINET FROM FIELD DEVICES PROVIDED BY THE SUBCONTRACTOR.
L	INTERNAL RTU LINE SIDE FUSE PROVIDED BY THE RTU ASSEMBLER.
+	NON-FUSED POSITIVE TERMINAL
-	NON-FUSED NEGATIVE TERMINAL
SH	NON-FUSED GROUNDED SHIELD BUS
	FLOAT AND TAPE SHIELD (DO NOT GROUND AT THIS POINT)

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
DTSI-9361-32D	SOUTH CONTAIN. ANALOG INPUT WIRING DIAGRAM 1
92X-5900-E-00324	SINGLE LINE AND SCHEMATICS

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		NA	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
INSTRUMENTATION
ANALOG I/O DIAGRAM

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
J.H. DYER	05-07-96	G.M. Sagstrom	10/10/96	JIM L. COOPER	6/25/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		NONE	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NUMBER
A-E DATE	NA DATE	20211

PREPARED UNDER PARSONS PROJECT ORDER NUMBER	DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
SRP/PO164		WBS 1.1.1.1.2.3.6 00-90701	92X-5900-N-00345	N0003	0

STATE OF OHIO JAMES COOPER E-9097 REGISTERED PROFESSIONAL ENGINEER

CONSTRUCTION PACKAGE

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741

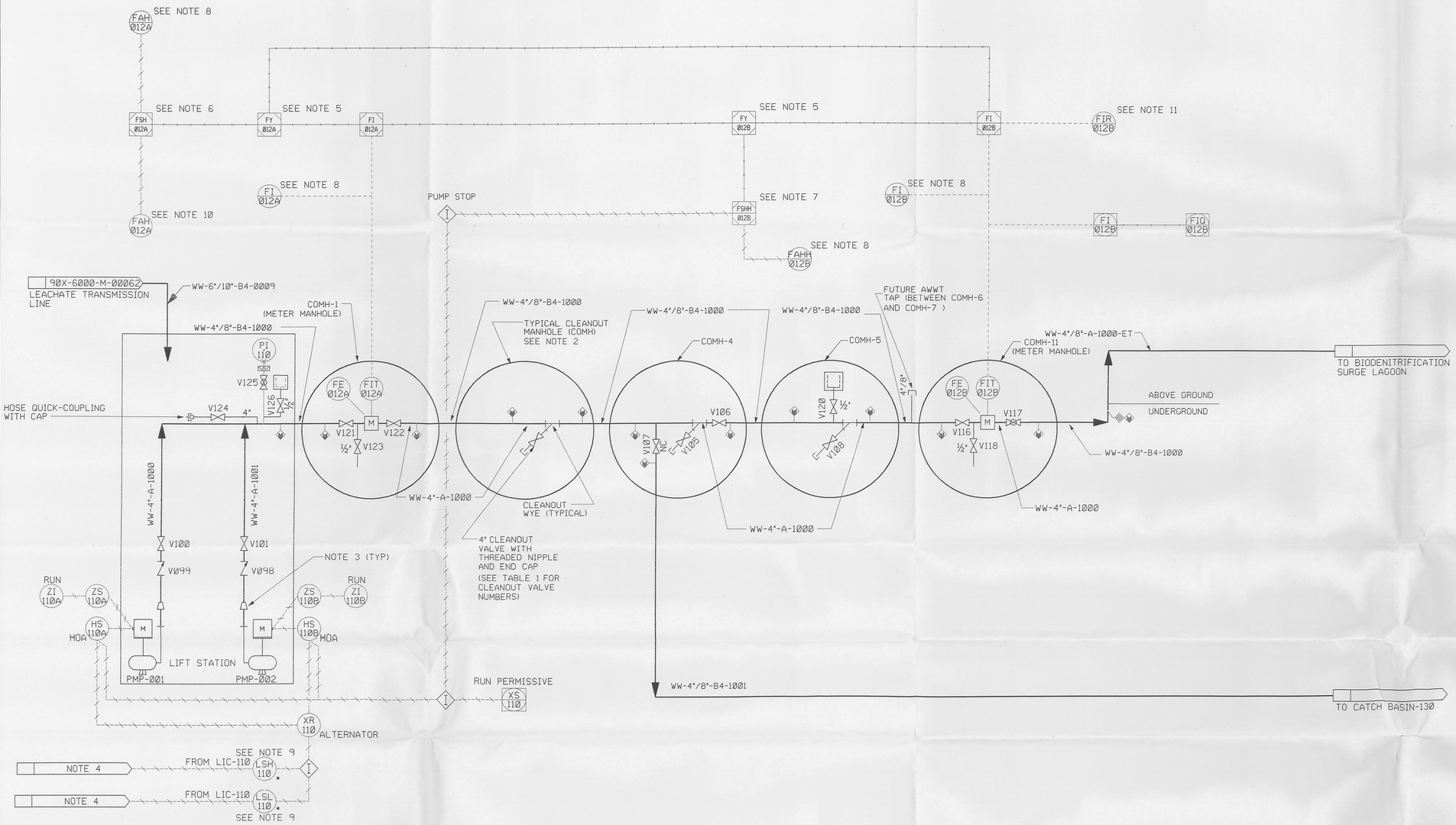


TABLE 1	
CLEANOUT MANHOLE NO.	CLEANOUT VALVE NO.
COMH-1A	V102
COMH-2	V103
COMH-3	V104
COMH-4	V105
COMH-5	V108
COMH-6	V109
COMH-7	V110
COMH-8	V111
COMH-9	V112
COMH-10	V113
COMH-12	V119

NOTES

741

1. FOR PUMP CONTROLS AND INDICATORS, SEE DRAWING 92X-5900-E-00324.
2. SEE CIVIL DRAWING 92X-5900-G-00258 FOR DETAILS AND LOCATIONS OF CLEANOUT MANHOLES. ONLY MANHOLES CONTAINING SPECIAL FEATURES ARE SHOWN ON THIS P&ID.
3. PROVIDE REDUCER IF NECESSARY TO SUIT ACTUAL PUMP INSTALLED.
4. SEE DRAWING 90X-6000-M-00062 FOR LOCATION AND CONNECTION TO LIC-110.
5. FY-012A AND FY-012B IS A SOFTWARE FUNCTION MONITORING THE DIFFERENTIAL FLOWRATE OF FLOW ELEMENTS FE/FIT-012A AND FE/FIT-012B.
6. FSH-012A IS A SOFTWARE FUNCTION ALARMING WHEN THE FLOWRATE DIFFERENTIAL BETWEEN FI-012A AND FI-012B IS GREATER THAN 5%.
7. FSHH-012B IS A SOFTWARE FUNCTION STOPPING PMP-001 AND PMP-002, VIA XS-110, WHEN THE FLOWRATE DIFFERENTIAL BETWEEN FI-012A AND FI-012B IS GREATER THAN 10%.
8. LOCATED ON THE LCP AT THE AWWT FACILITY.
9. PERMANENT LIFT STATION CONTROLS, LSH-110 AND LSL-110 ARE SHOWN ON DRAWING 90X-6000-E-00061.
10. ALARM LOCATED AT THE PUMP STATION AREA.
11. INSTRUMENT LOCATED AT THE AWWT FACILITY.

LAST VALVE NUMBER	V126

REF DWG NO.	DRAWING TITLE
92X-5900-E-00324	ELECTRICAL SINGLE LINE & SCHEMATICS
92X-5900-G-00258	CIVIL DETAILS, SHEET 3 OF 3
92X-5900-N-00330	SYMBOLS AND LEGEND SHEET
92X-5900-X-00264	DRAWING INDEX
90X-6000-E-00047	LEACHATE TRANSMISSION SYSTEM ELECTRICAL DETAILS IV
90X-6000-M-00048	LEACHATE TRANSMISSION SYSTEM PIPING AND INSTRUMENTATION DIAGRAM

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
MECHANICAL PROCESS
PIPING AND INSTRUMENTATION DIAGRAM
LEACHATE CONVEYANCE SYSTEM

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
P. A. WILSON	03/11/96	Oscar W. Carlson Jr.	4/15/96	K. MORRIS	05/08/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		NONE	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NUMBER
A-E DATE	DATE	20211

STATE OF OHIO OSCAR W. CARLSON, JR. 60196 REGISTERED PROFESSIONAL ENGINEER

20

CONSTRUCTION PACKAGE

PREPARED UNDER PARSONS PROJECT ORDER NUMBER	DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
SRP/P0164		WBS 1.1.1.1.2.3.6 00-90701	92X-5900-N-00322	N0002	0

PIPING SYMBOLS

- GATE VALVE
- GLOBE VALVE
- BALL VALVE
- PLUG VALVE
- BUTTERFLY VALVE/DAMPER
- STOP CHECK
- NEEDLE VALVE
- CHECK VALVE
- SLIDING GATE VALVE
- BALL CHECK VALVE
- BACKFLOW PREVENTER
- DIAPHRAGM VALVE
- PINCH VALVE
- 3 WAY VALVE
- 3 WAY BALL VALVE
- 3 WAY PLUG VALVE
- ANGLE GATE VALVE
- ANGLE GLOBE VALVE
- FOOT VALVE
- HUB DRAIN OR FUNNEL
- DIAPHRAGM OPERATOR
- DIAPHRAGM W/ POSITIONER
- PISTON OPERATOR
- SAFETY RELIEF VALVE
- SOLENOID OPERATOR
- SELF-CONTAINED BACK PRESSURE REGULATING VALVE
- 2-WAY SOLENOID VALVE
- 3-WAY SOLENOID VALVE INDICATES DEENERGIZED FLOW PATH
- 4-WAY SOLENOID VALVE
- VALVE WITH OPERATOR (VALVE TYPE UNDEFINED)
- STEAM TRAP
- HOSE QUICK COUPLING
- UNION
- DRAIN LEG
- EXPANSION JOINT
- HANDWHEEL
- EJECTOR
- STRAINER (Y TYPE)
- STRAINER (SINGLE BASKET)
- STRAINER (DOUBLE BASKET)
- STRAINER (CONE TYPE)
- STRAINER (SUCTION TYPE)
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- ORIFICE
- VENTURI TUBE
- SIPHON TUBE
- THERMOWELL
- FLOW DIRECTION
- WELDED CONNECTION
- FLANGED CONNECTION
- FLEXIBLE HOSE
- PIPE CAP
- TIE/IN MARK
- PRIMARY
- SECONDARY
- EXISTING PIPING OR EQUIPMENT
- PACKAGED SYSTEM
- MATERIAL CODE BREAK
- INSULATION CODE BREAK
- PULSATION DAMPENER
- AIR FILTER
- FILTER LUBRICATOR REGULATOR
- AIR OPERATED DIAPHRAGM PUMP
- HORIZONTAL CENTRIFUGAL PUMP
- VERTICAL CENTRIFUGAL PUMP
- SUMP PUMP
- CHEMICAL METERING PUMP
- AGITATOR (MIXER)
- AIR RELEASE VALVE

INSTRUMENT SYMBOLS

- DATA HIGHWAY
- ELECTRICAL BINARY SIGNAL
- PNEUMATIC BINARY SIGNAL
- ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)
- ELECTROMAGNETIC OR SONIC SIGNAL (NON-GUIDED)
- IA — INSTRUMENT/PLANT AIR SUPPLY
- ELECTRICAL SIGNAL
- CAPILLARY
- HYDRAULIC SIGNAL LINE
- PNEUMATIC OR VACUUM SIGNAL LINE
- I — INTERLOCK
- DIAPHRAGM SEAL
- FI — ROTAMETER
- FI — SIGHT GLASS
- LOCAL MOUNTED INSTRUMENT
- FRONT OF PANEL MOUNTED INSTRUMENT
- FRONT OF PANEL MOUNTED INSTRUMENT AUXILLIARY LOCATION
- REAR OF PANEL MOUNTED INSTRUMENT
- REAR OF PANEL MOUNTED INSTRUMENT AUXILLIARY LOCATION
- DIGITAL LOGIC OPERATOR INTERFACE AUXILIARY LOCATION
- DIGITAL LOGIC OPERATOR INTERFACE
- SHARED CONTROL AUXILIARY LOCATION
- SHARED DISPLAY COMPUTER CONTROL AND OPERATOR INTERFACE
- F — AIR VENT FILTER
- M — MAGNETIC FLOW METER
- POSITIVE DISPLACEMENT FLOW METER
- A### — EQUIPMENT NUMBER

FY 102 A
- LETTERS OF IDENTIFICATION
- SPECIAL DESIGNATION
- INSTRUMENT TAG NUMBER

TYPICAL CALL OUT

ABBREVIATIONS

BTU	BRITISH THERMAL UNIT
CU FT	CUBIC FEET
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
KW	KILOWATT
LB/HR	POUNDS PER HOUR
SCFM	STD. CUBIC FT/MINUTE
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
FO	FAIL OPEN
FC	FAIL CLOSED
AO	AIR TO OPEN
AC	AIR TO CLOSE
IA	INSTRUMENT AIR
ET	ELECTRIC TRACED AND INSULATED
ST	STEAM TRACED AND INSULATED
EF	EXHAUST FAN
GV	GRAVITY VENTILATOR
UH	UNIT HEATER
RED	REDUCER
ECC	ECCENTRIC
TBD	TO BE DETERMINED
TF	TOP FLAT
TYP	TYPICAL
MATL	MATERIAL
MED	MEDIUM
CO	CARBON MONOXIDE
RH	RELATIVE HUMIDITY
CFM	CUBIC FEET/MINUTE
SF	SOUTH FIELD
IFA	INACTIVE FLYASH PILE
COMH	CLEAN OUT MANHOLE
HDPE	HIGH DENSITY POLYETHYLENE
CS	CARBON STEEL
LCP	LOCAL CONTROL PANEL

INSTRUMENTATION SPECIAL DESIGNATIONS

DESIGNATION	FUNCTION/ABBREVATION
Σ/N OR AVG	AVERAGING
± OR BI	BIAS
1:1,1:3,2:1 (TYP)	BOOST,GAIN OR ATTENUATE (INPUT:OUTPUT)
△ OR DIF	DIFFERENTIAL
÷ OR DIV	DIVIDE
√‾ OR SQ.RT.	EXTRACT SQUARE ROOT
X OR MUL	MULTIPLY
N	RAISE TO POWER
REV	REVERSING
Σ OR SUM	SUMMING
L	LOW
LL	LOW LOW
H	HIGH
HH	HIGH HIGH
HL	HIGH LOW
∫	INTEGRATE (TIME INTEGRAL)
%	PROPORTIONAL
Y	UNDETERMINED COMPUTING RELAY
HOA	HAND-OFF-AUTO
∓	EXISTING INSTRUMENT TO BE RELOCATED
I/P	CURRENT TO PNEUMATIC TRANSDUCER
RUN	RUNNING
OA	OFF-AUTO
OCA	OPEN-CLOSE-AUTO
I/O	INPUT / OUTPUT
*	EXISTING INSTRUMENT
UD	UP/DOWN
EW	EAST/WEST
I/I	CURRENT TO CURRENT

SINGLE LINE AIR DUCT SYMBOLS

- M — FAN WITH INLET VANES AND BACKDRAFT DAMPER
- BACKDRAFT DAMPER
- M — MOTORIZED DAMPER
- MANUAL VOLUME DAMPER

PIPING SPECIFICATIONS

FLOWING MEDIUM	MED CODE	MATL CODE
BACK WASH	BW	T
CHILLED WATER	CHS, CHR	A
CHLORINE	CL	B1
CONDENSATE	LC	W, T
CONDENSER WATER	CWS, CWR	A
COOLING WATER	WS, WR	A
DRAIN	DR	A , T
THICKENER OVERFLOW	TO	T
FILTRATE EFFLUENT	FT	A
FLOCCULANT	FL	A
FLUSH WATER	FW	T
FORCE MAIN	FM	M, B4
INSTRUMENT AIR	IA	T
OFF-GAS	OG	T
NITRIC ACID	AN	T1
PERCHED GND WATER	PGW	B
PHOSPHORIC ACID	PAPH	T1
PLANT AIR	PA	W
POLISHED WATER	PW	A
POTABLE WATER	DW	W, B, B3
PROCESS WATER	TW	A
PROCESS WASTEWATER	CE	A
RAW WATER	RW	A
RECYCLE WATER	RC	T, B2
SCRUBBER RECYCLE	RSL	T
SLURRY	SL	T
SODIUM CARBONATE	SC	A
SODIUM HYDROXIDE	NA	T
SODIUM SILICATE	SS	A
STORM WATER	ST	A
SULFURIC ACID	SB	T1
SUMP DISCHARGE	SU	T
VACUUM	V	A
VENTILATION AIR	VE	T
WASTE WATER	WW	W, B4, A **

EXAMPLE: CE-4"/8"-A-100-ET

- MEDIUM CODE
- NOMINAL CARRIER PIPE SIZE
- NOMINAL CONTAINMENT PIPE SIZE
- MATERIAL CODE
- LINE NUMBER
- HEAT TRACING AND INSULATION

A - A53 SEAMLESS STEEL PIPE
B - PVC
B1 - PVDF
B2 - PVDF, 100 PSI
B3 - CPVC
B4 - HDPE
L - FIBERGLASS REINFORCED PLASTIC
M - DUCTILE IRON
T - 304L, STAINLESS STEEL PIPE
T1 - 316L, STAINLESS STEEL PIPE
W - A53,GR. A, GALVANIZED STEEL PIPE

** SEE NOTE 1

LETTERS OF INSTRUMENT IDENTIFICATION

LETTER	FIRST LETTER: MEASURED OR INITIATING VARIABLE	2ND LETTER: MODIFIER	3RD OR 4TH LETTER: READ OUT OR PASSIVE FUNCTION
A	ANALYSIS	ALARM	ALARM
B	BURNER FLAME	----	----
C	CAMERA	CONTROLLER	CONTROLLER
D	DENSITY	DIFFERENTIAL	----
E	VOLTAGE	ELEMENT	ELEMENT
F	FLOW RATE	RATIO (FRACTION)	----
G	GAGING (DIM)	VIEWING DEVICE	GLASS
H	HAND (MANUAL)	----	HIGH
I	CURRENT (ELECT)	INDICATE	INDICATE
J	POWER	SCAN	----
K	TIME	----	----
L	LEVEL	LIGHT	LOW
M	MOIST OR HUMIDITY	----	----
N	----	----	----
O	OBSERVATION	----	ORIFICE
P	PRESSURE OR VACUUM	----	POINT (TEST)
Q	QUANTITY OR EVENT	TOTALIZER	----
R	RADIOACTIVITY	RECORDER	----
S	SPEED OR FREQUENCY	SAFETY/SWITCH	SWITCH
T	TEMPERATURE	TRANSMITTER	TRANSMITTER
U	USER'S GUIDE	----	MULTIFUNCTION
V	VISCOSITY	----	VENT, VALVE
W	WEIGHT OR FORCE	WELL	----
X	UNCLASSIFIED	----	UNCLASSIFIED
Y	RELAY	RELAY	----
Z	POSITION	----	----

CONSTRUCTION PACKAGE

19

STATE OF OHIO — OSCAR W. CARLSON, JR. — 67193 — REGISTERED PROFESSIONAL ENGINEER

NOTES

1. CONTAINMENT PIPE SHALL BE PROVIDED FOR LEACHATE CONVEYANCE SYSTEM, EXCEPT WITHIN PERMANANT LIFT STATION AND CLEANOUT MANHOLES.
2. THIS LEGEND APPLIES TO DRAWING 92X-5900-N-00322.

REF DWG NO.	DRAWING TITLE
92X-5900-N-00322	PIPING AND INSTRUMENTATION DIAGRAM LEACHATE CONVEYANCE SYSTEM
92X-5900-X-00264	DRAWING INDEX

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME: LEACHATE CONVEYANCE SYSTEM

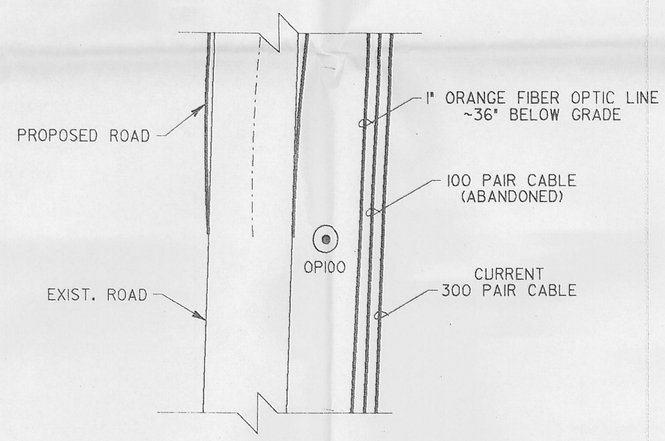
DRAWING TITLE: MECHANICAL PROCESS PIPING AND INSTRUMENTATION DIAGRAM SYMBOLS AND LEGEND SHEET

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
P. A. WILSON	03/12/96			K. MORRIS	05/08/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		NONE	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NUMBER
A-E DATE	N/A DATE	20211

PREPARED UNDER PARSONS PROJECT ORDER NUMBER	DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
SRP/P0164		WBS 1.1.1.1.2.3.6 00-90701	92X-5900-N-00330	N0001	0



DETAIL #1

NEW POLE COORDINATES

	EASTING	NORTHING
OP100	1350887.98	480170.67
OP101	1350921.93	480315.04
OP102	1350976.15	480450.70
OP103	1351073.25	480562.90
OP104	1351178.41	480668.07
OP105	1351283.60	480773.24
OP106	1351388.74	480878.40
OP107	1351493.90	480983.57
OP108	1351597.30	481090.35
OP109	1351727.00	481223.51
OP110	1351727.61	481357.35
OP111	1351729.17	481505.70
OP112	1351730.80	481654.40
OP113	1351732.50	481803.10
OP114	1351734.15	481951.82
OP115	1351735.83	482100.53
OP116	1351737.50	482249.25
OP117	1351739.20	482397.96
OP118	1351740.86	482546.68
OP119	1351742.54	482695.40
OP120	1351744.21	482844.11
OP121	1351745.90	482992.82
OP122	1351747.60	483141.54
OP123	1351749.25	483290.25
OP124	1351750.92	483438.97
OP125	1351752.60	483587.70
OP126	1351754.28	483736.40
OP127	1351755.96	483885.11
OP128	1351768.62	484032.70
OP129	1351840.50	484161.55
OP130	1351924.20	484284.50
OP131	1352007.93	484407.40
OP132	1352091.77	484530.20

LEGEND

- OSDF TELEPHONE FEEDER POLE (33)
- OSDF POWER DISTRIBUTION POLE

NOTES:

1. POLES OP100 THRU OP132 TO BE 45 FT., CLASS II, 100% TREATED SOUTHERN PINE SET 6'-6".
2. GUYS SHOWN ON POLES OP100, OP102, OP109, OP128 AND OP132 SHALL HAVE ANCHOR AND ROD ONLY INSTALLED FOR TELEPHONE COMPANY. SEE DWG. #90X-5500-E-00502 FOR ANCHOR AND ROD DETAILS.
3. BEFORE DIGGING NEAR UNDERGROUND TELEPHONE LINES CALL UTILITY HOT LINE (2) BUSINESS DAYS PRIOR TO DIGGING. (1-800-686-7826) POLES OP100, OP101, OP128, OP129, OP130, OP131 AND OP132 WILL REQUIRE THE TELEPHONE LINES BE IDENTIFIED.

FOR INFORMATION ONLY

NOT IN CONTRACT

741

NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
					22H-5500-P-00674
					22H-5500-P-00673
					22H-5500-P-00667
					22A-5500-P-00664
0	CFC	10/7/96	SJS		22F-5500-P-00663

FORMAT REVISED 4/15/96 FORM5VA.DGN

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 10-9-96

APPROVALS

CIVIL & STR.			SAFETY ENG.		
ELECTRICAL	J.E. Karl	10/8/96	MAINTENANCE		
ENGINEER		10/8/96	O.A.		
INSTRUMENT			FIRE PROTECT.		
MECHANICAL			WASTE MANAGE		
			SECURITY		
			CRU		
CHECKED			OSDF		10/9/96
APPROVED		10/9/96			

FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

FERMCO

Fernald Environmental Management Project

U.S. DEPARTMENT OF ENERGY

NORTH ACCESS ROAD

OSDF UTILITY REROUTING - MAIN SITE TELEPHONE FEEDER LINES LAYOUT

SCALE: 1" = 160'-0"

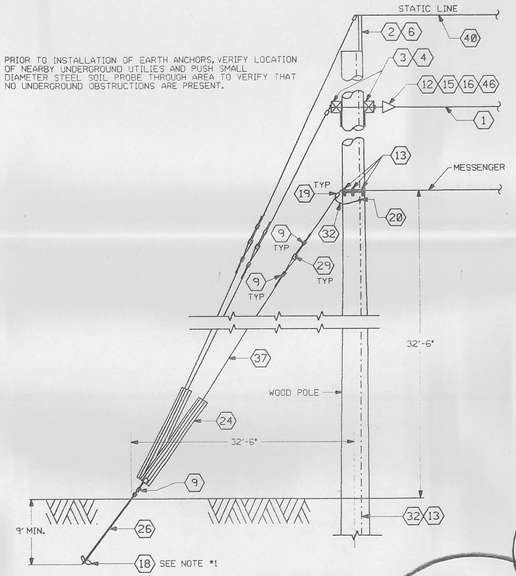
RES #3037

DATE 7/22/96

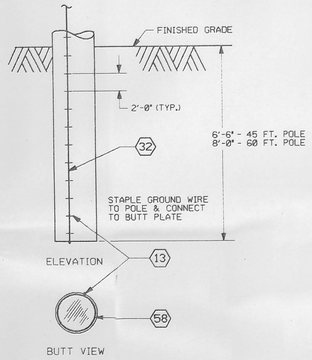
DRAWN S.J.SMOCK

90X-5500-E-00503 | 0

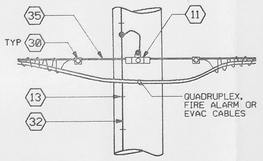
1. PRIOR TO INSTALLATION OF EARTH ANCHORS, VERIFY LOCATION OF NEARBY UNDERGROUND UTILIES AND PUSH SMALL DIAMETER STEEL SOIL PROBE THROUGH AREA TO VERIFY THAT NO UNDERGROUND OBSTRUCTIONS ARE PRESENT.



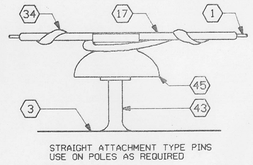
DETAIL #1
TYPICAL GUY



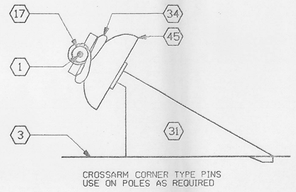
DETAIL #2
POLE GROUNDING



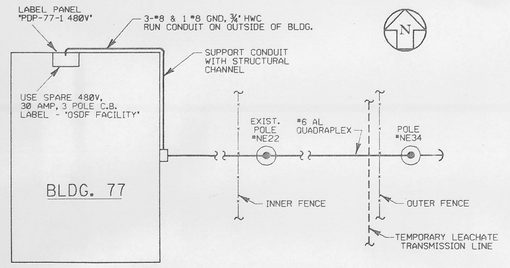
DETAIL #3
TELEPHONE WIRING
(BY OTHERS - TYP.)



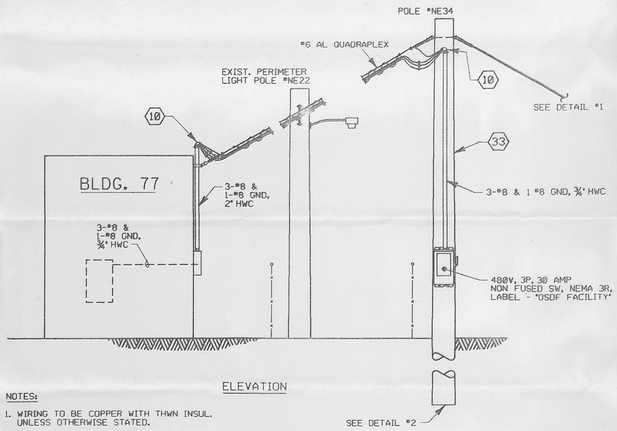
DETAIL #4
INSULATOR (STRAIGHT)



DETAIL #5
INSULATOR (CORNER)



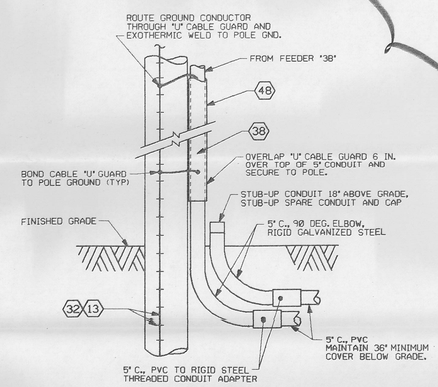
PLAN VIEW



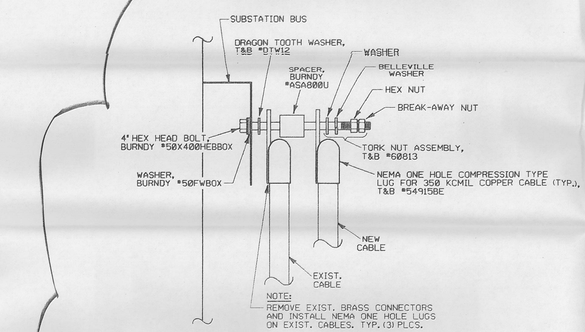
ELEVATION

NOTES:
1. WIRING TO BE COPPER WITH THWN INSUL. UNLESS OTHERWISE STATED.
2. GROUND WIRES TO BE COPPER.

DETAIL #7

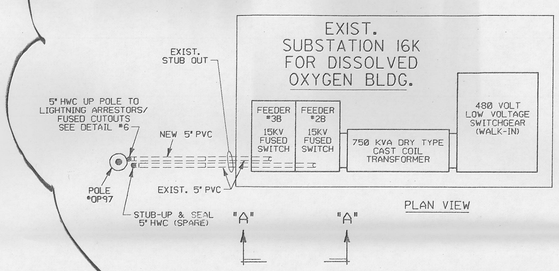


DETAIL #6
POLE OP89



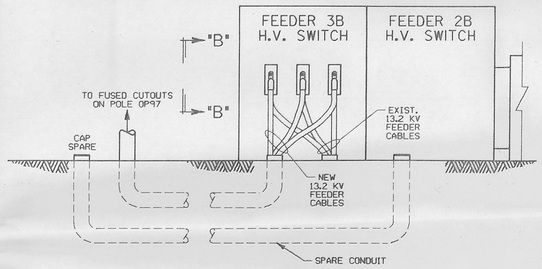
VIEW "B"-"B"

NOT IN CONTRACT

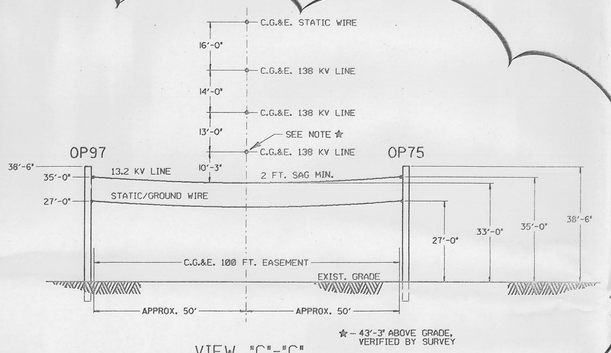


PLAN VIEW

DETAIL #8
TIE-IN TO SUBSTATION



VIEW "A"-"A"
ELEVATION



VIEW "C"-"C"
CLEARANCE UNDER C.G.&E. LINES
(SEE DWG. 90X-5500-E-00500)
SCALE: 1" = 20'-0"

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LEGEND

1. AERIAL POWER CONDUCTOR, 366.4 KCMIL ACSR, "MERLIN".
2. GROUND WIRE CLAMP, USED TO ATTACH STATIC WIRE TO BAYONET & POLE GROUND.
3. CROSSARM, 3½" X 4½" X 12' - 0", PRESSURE TREATED SOUTHERN PINE.
4. CROSSARM BRACE, HOT DIP GALVANIZED ¼" X 1¼" STEEL, 60" SPAN X 18" DROP.
5. STATIC WIRE SUPPORT, STRAIGHT BAYONET TYPE.
6. STATIC WIRE SUPPORT, CORNER BAYONET TYPE.
7. THIMBLE, FOR STATIC WIRE OR MESSENGER WIRE DEAD-END.
8. EYE BOLT, OVAL EYE TYPE, FOR DEAD-END, ⅝" DIA., WITH ONE SQUARE NUT, ADDITIONAL NUTS, WASHERS, AND LENGTH AS REQUIRED.
9. GUY GRIP, FOR STATIC WIRE, PREFORMED WIRE TYPE.
10. WEATHERHEAD, CONDUIT, OUTDOOR, WEATHERTIGHT.
11. CLAMP, SUSPENSION, FOR ⅞" MESSENGER.
12. EYENUT, ⅝" BOLT DIAMETER.
13. STAPLE, COPPERCLAD, 1½" LONG.
14. GROUND ROD, ¾" DIAMETER X 10' LONG, COPPERWELD.
15. BOLTS, DOUBLE ARMING, SQUARE NUTS, ⅝" DIA X LENGTH AS REQUIRED.
16. DISTRIBUTION TYPE DEAD END GRIP, FOR USE ON 366.4 KCMIL ACSR CONDUCTOR.
17. ARMOR ROD FOR USE ON ITEM #1 THIS LIST.
18. 14" DIAMETER HELICAL SCREW TYPE GUY ANCHOR WITH MIN. PULLOUT CAPACITY OF 28,000 LBS.
19. COMPRESSION GROUND FITTING.
20. SPLIT-BOLT CONNECTOR, FOR OUTDOOR OVERHEAD CONDUCTOR INSTALLATIONS.
21. COMPRESSION GROUND FITTING, TO SECURE BARE COPPER CONDUCTOR TO ¾" GROUND ROD.
22. NOT USED
23. NOT USED
24. GUY WIRE MARKER, HALF ROUND, 2" WIDE, 96" LONG, UV RESISTANT W/HARDWARE.
25. NOT USED
26. TRIPLEYE, GALVANIZED ANCHOR ROD, 1" DIA., LENGTH AS REQUIRED.
27. EQUIPMENT MOUNT FOR 3 TRANSFORMERS, DOUBLE BANDED, ALUMINUM CLUSTER MOUNT W/GND. LUG.
28. EQUIPMENT MOUNT FOR SINGLE TRANSFORMER, DOUBLE BANDED, ALUMINUM CLUSTER MOUNT W/GND. LUG.
29. GUY STRAIN INSULATOR, ANSI CLASS 54-4, FOR ⅝" GUY WIRE.
30. LASHING WIRE CLIP, SIZE AS REQUIRED.
31. CROSSARM CORNER, TYPE PIN, MALLABLE IRON, GALVANIZED, 1" THREAD MOUNTING HARDWARE.
32. #4 AWG, BARE SOLID COPPER GROUND CONDUCTOR.
33. POLE, 45 FT, CLASS 2, PRESSURE TREATED, SOUTHERN YELLOW PINE.
34. TIE ROD FOR ACSR CONDUCTOR TO PIN TYPE INSULATOR. SIZE TIE ROD TO FIT OVER ARMOR ROD.
35. ⅜" DIAMETER, 7 STRAND, HIGH STRENGTH, GALVANIZED STEEL STRAND.
36. NOT USED
37. ⅝" DIAMETER, 7 STRAND, HIGH STRENGTH, GALVANIZED STEEL STRAND.
38. CABLE SUPPORT, 5" CONDUIT TOP, OUTDOOR WATERTIGHT, SEAL WITH FILLING COMPOUND.
39. TERMINATOR, 15KV, 350 KCMIL, COLD SHRINK, SILICONE RUBBER, SIZED TO FIT INSULATION DIAMETER.
40. ⅜" DIAMETER, 7 X 8, STRANDED CONSTRUCTION, GALVANIZED STEEL STRAND.
41. NOT USED
42. POLE, 60 FT, CLASS 2, PRESSURE TREATED, SOUTHERN YELLOW PINE.
43. HIGH VOLTAGE FORGED STEEL PIN, FOR PIN TYPE INSULATORS 1" LEAD THREAD, LONG SHANK, WITH WASHERS AND NUTS AS REQUIRED.
44. SURGE ARRESTER, DIRECT CONNECTED, 12KV, RISER POLE TYPE, METAL OXIDE VALVE, WITH CROSSARM MOUNTING HARDWARE.
45. INSULATORS, PIN TYPE, 14.4 KV, GLAZED PORCELAIN, 1" THREADS ANSI CLASS 55-5, "F" NECK.
46. INSULATOR, DEAD-END TYPE, 6¼" LONG, 4¾" DIA, ANSI CLASS 52-9, CLEVIS TYPE WITH STEEL HARDWARE.
47. FUSED CUTOUT ARRESTER COMBINATION UNIT, CUTOUT RATED 15KV, 100 AMPS, 16,000 AMPS IC, WITH CROSSARM MOUNTING HARDWARE. FOR ARRESTER, SEE ITEM 44, THIS MATERIAL LIST.
48. CABLE GUARD, "U" SHAPE, 14-GAUGE, HOT DIPPED GALVANIZED STEEL, 8 FT. LONG, 5 ½" INSIDE DIAMETER, WITH STRAPS AND HARDWARE AS REQUIRED.
49. #2 AL QUADRAPLEX
50. FUSED CUTOUT ARRESTER COMBINATION UNIT, CUTOUT RATED 15KV, 200 AMPS, 14,000 AMPS IC, WITH CROSSARM MOUNTING HARDWARE. FOR ARRESTER, SEE ITEM 44, THIS MATERIAL LIST.
51. NOT USED
52. NOT USED
53. SINGLE PHASE, OIL FILLED, POLE MOUNTED TRANSFORMER, SEE 90X-5500-E-00500 FOR SIZE AND QUANTITY.
54. NOT USED
55. NOT USED
56. NOT USED
57. NOT USED
58. COPPER BUTT PLATE
59. 350 KCMIL 1/C EPR SHIELDED MV90 CABLE INSULATED FOR 15KV, 133 PERCENT INSULATED LEVEL.
60. #3/0 AL QUADRAPLEX

NOTES

1. CONSTRUCT OVERHEAD LINES TO CLEAR ROADS BY 18' AND RAILROADS BY 24' AS A MINIMUM.

FOR INFORMATION ONLY

FERMCO PROJECT NO. 2011

NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
										90X-5500-E-00501
					0	CFC	10/0/96	SJS		90X-5500-E-00500

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

CONFIGURATION MANAGEMENT DRAWING
SYSTEMS, STRUCTURES OR COMPONENTS AFFECTED BY THIS DRAWING FOLLOW CONFIGURATION MANAGEMENT CONTROL. SEE NOTES.
COGNIZANT ENGINEER — DATE

APPROVALS

CIVIL & STR.			SAFETY ENG.		
ELECTRICAL	D. E. Karl	10/8/96	MAINTENANCE		
ENGINEER			O.A.		
INSTRUMENT			FIRE PROTECT.		
MECHANICAL			WASTE MANAGE		
			SECURITY		
			CRU		
CHECKED			OSDF		
APPROVED					

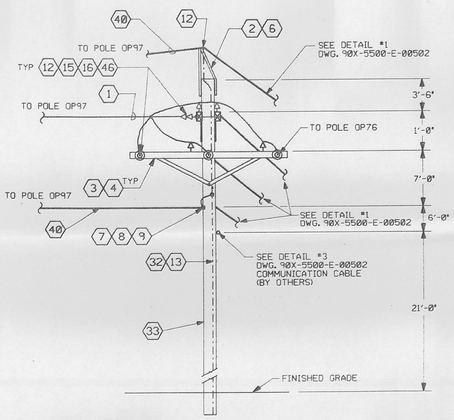
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION
FERMCO
Fernald
Environmental Management Project
U.S. DEPARTMENT OF ENERGY

SOUTHEAST CORNER OF SITE
LEACHATE CONVEYANCE SYSTEM
ELECTRICAL DETAILS
SCALE: AS NOTED

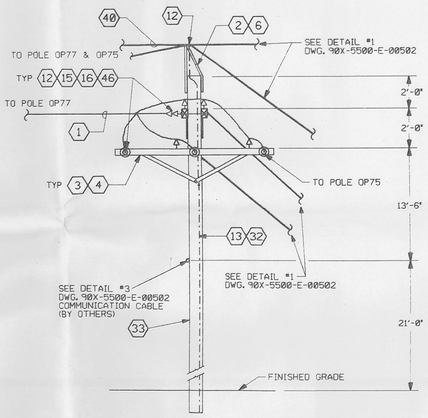
RES #2971 | DATE 6/4/96 | DRAWN S.J.SMOCK | 90X-5500-E-00502 | 0

FORMAT REVISED 4/15/96 FORMSA.DGN

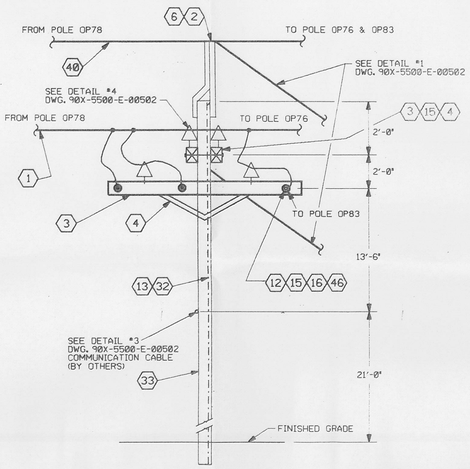
FILE NAME: /RES2971/90XE0502.DGN



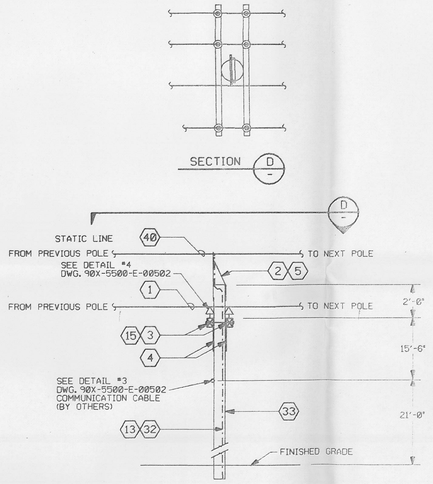
ELEVATION
POLE OP75



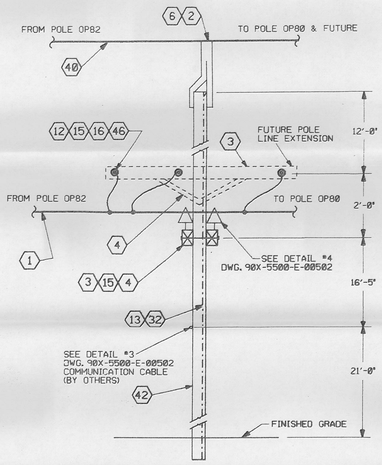
ELEVATION
POLE OP76



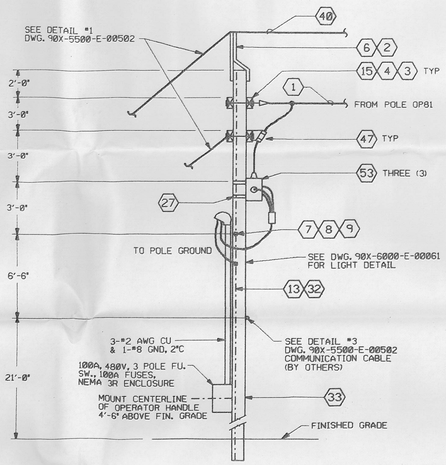
ELEVATION
POLE OP77



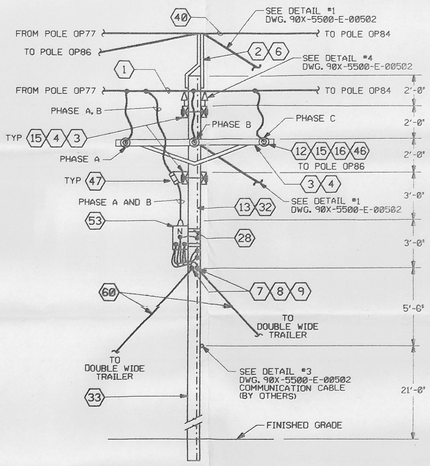
ELEVATION
POLES OP78, OP79, OP80, OP84, OP86, OP93, OP95



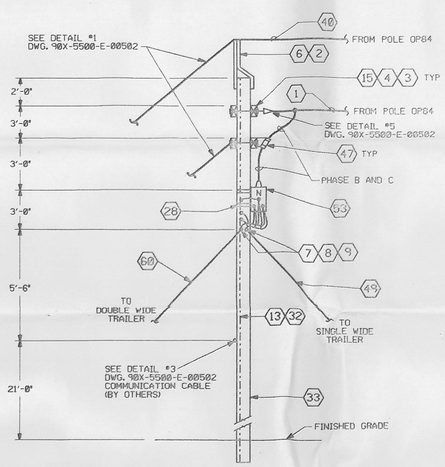
ELEVATION
POLE OP81



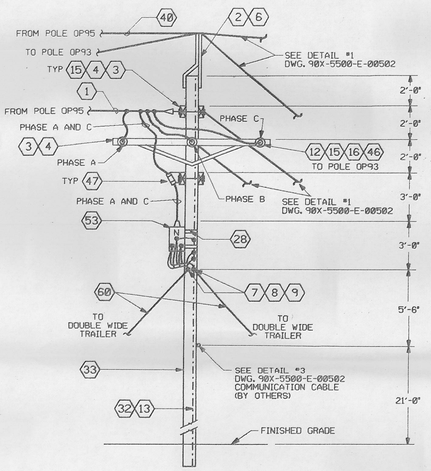
ELEVATION
POLE OP82



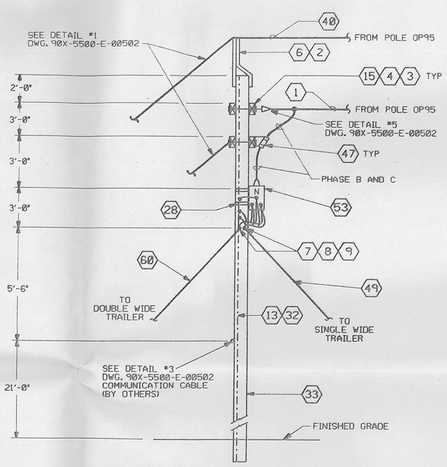
ELEVATION
POLE OP83



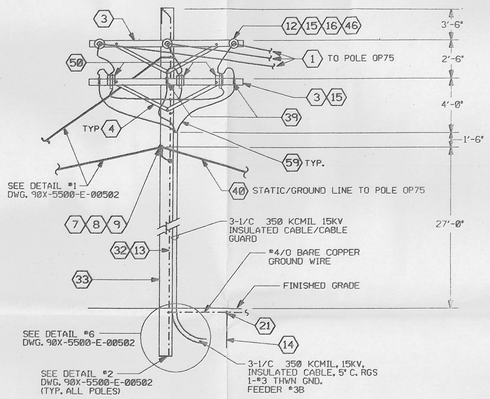
ELEVATION
POLE OP85



ELEVATION
POLE OP94



ELEVATION
POLE OP96



ELEVATION
POLE OP97

THIS DRAWING IS NOT INCONTRACT

16

LEGEND

1. AERIAL POWER CONDUCTOR, 366.4 KCMIL ACSR, "MERLIN".
2. GROUND WIRE CLAMP, USED TO ATTACH STATIC WIRE TO BAYONET & POLE GROUND.
3. CROSSARM, 3½" X 4½" X 12' - 0", PRESSURE TREATED SOUTHERN PINE.
4. CROSSARM BRACE, HOT DIP GALVANIZED ¼" X 1¼" STEEL, 60" SPAN X 18" DROP.
5. STATIC WIRE SUPPORT, STRAIGHT BAYONET TYPE.
6. STATIC WIRE SUPPORT, CORNER BAYONET TYPE.
7. THIMBLE, FOR STATIC WIRE OR MESSENGER WIRE DEAD-END.
8. EYE BOLT, OVAL EYE TYPE, FOR DEAD-END, ⅝" DIA., WITH ONE SQUARE NUT, ADDITIONAL NUTS, WASHERS, AND LENGTH AS REQUIRED.
9. GUY GRIP, FOR STATIC WIRE, PREFORMED WIRE TYPE.
10. WEATHERHEAD, CONDUIT, OUTDOOR, WEATHERTIGHT.
11. CLAMP, SUSPENSION, FOR ¾" MESSENGER.
12. EYENUT, ⅝" BOLT DIAMETER.
13. STAPLE, COPPERCLAD, 1½" LONG.
14. GROUND ROD, ¾" DIAMETER X 10' LONG, COPPERWELD.
15. BOLTS, DOUBLE ARMING, SQUARE NUTS, ⅝" DIA X LENGTH AS REQUIRED.
16. DISTRIBUTION TYPE DEAD END GRIP, FOR USE ON 366.4 KCMIL ACSR CONDUCTOR.
17. ARMOR ROD FOR USE ON ITEM #1 THIS LIST.
18. 14" DIAMETER HELICAL SCREW TYPE GUY ANCHOR WITH MIN. PULLOUT CAPACITY OF 26,000 LBS.
19. COMPRESSION GROUND FITTING.
20. SPLIT-BOLT CONNECTOR, FOR OUTDOOR OVERHEAD CONDUCTOR INSTALLATIONS.
21. COMPRESSION GROUND FITTING, TO SECURE BARE COPPER CONDUCTOR TO ¾" GROUND ROD.
22. NOT USED
23. NOT USED
24. GUY WIRE MARKER, HALF ROUND, 2" WIDE, 96" LONG, UV RESISTANT W/HARDWARE.
25. NOT USED
26. TRIPLEYE, GALVANIZED ANCHOR ROD, 1" DIA., LENGTH AS REQUIRED.
27. EQUIPMENT MOUNT FOR 3 TRANSFORMERS, DOUBLE BANDED, ALUMINUM CLUSTER MOUNT W/GND. LUG.
28. EQUIPMENT MOUNT FOR SINGLE TRANSFORMER, DOUBLE BANDED, ALUMINUM CLUSTER MOUNT W/GND. LUG.
29. GUY STRAIN INSULATOR, ANSI CLASS 54-4, FOR ⅝" GUY WIRE.
30. LASHING WIRE CLIP, SIZE AS REQUIRED.
31. CROSSARM CORNER, TYPE PIN, MALLABLE IRON, GALVANIZED, 1" THREAD MOUNTING HARDWARE.
32. #4 AWG, BARE SOLID COPPER GROUND CONDUCTOR.
33. POLE, 45 FT, CLASS 2, PRESSURE TREATED, SOUTHERN YELLOW PINE.
34. TIE ROD FOR ACSR CONDUCTOR TO PIN TYPE INSULATOR. SIZE TIE ROD TO FIT OVER ARMOR ROD.
35. ⅜" DIAMETER, 7 STRAND, HIGH STRENGTH, GALVANIZED STEEL STRAND.
36. NOT USED
37. ⅝" DIAMETER, 7 STRAND, HIGH STRENGTH, GALVANIZED STEEL STRAND.
38. CABLE SUPPORT, 5" CONDUIT TOP, OUTDOOR WATERTIGHT, SEAL WITH FILLING COMPOUND.
39. TERMINATOR, 15KV, 350 KCMIL, COLD SHRINK, SILICONE RUBBER, SIZED TO FIT INSULATION DIAMETER.
40. ⅜" DIAMETER, 7 X 8, STRANDED CONSTRUCTION, GALVANIZED STEEL STRAND.
41. NOT USED
42. POLE, 60 FT, CLASS 2, PRESSURE TREATED, SOUTHERN YELLOW PINE.
43. HIGH VOLTAGE FORGED STEEL PIN, FOR PIN TYPE INSULATORS 1" LEAD THREAD, LONG SHANK, WITH WASHERS AND NUTS AS REQUIRED.
44. SURGE ARRESTER, DIRECT CONNECTED, 12KV, RISER POLE TYPE, METAL OXIDE VALVE, WITH CROSSARM MOUNTING HARDWARE.
45. INSULATORS, PIN TYPE, 14.4 KV, GLAZED PORCELAIN, 1" THREADS ANSI CLASS 55-5, "F" NECK.
46. INSULATOR, DEAD END TYPE, 6½" LONG, 4⅜" DIA. ANSI CLASS 55-5, CLEVIS TYPE WITH STEEL HARDWARE.
47. FUSED CUTOUT ARRESTER COMBINATION UNIT, CUTOUT RATED 15KV, 100 AMPS, 10,000 AMPS IC, WITH CROSSARM MOUNTING HARDWARE. FOR ARRESTER, SEE ITEM 44, THIS MATERIAL LIST.
48. CABLE GUARD, "U" SHAPE, 14-GAUGE, HOT DIPPED GALVANIZED STEEL, 8" LONG, 5 ½" INSIDE DIAMETER, WITH STRAPS AND HARDWARE AS REQUIRED.
49. #2 AL QUADRAPLEX
50. FUSED CUTOUT ARRESTER COMBINATION UNIT, CUTOUT RATED 15KV, 200 AMPS, 10,000 AMPS IC, WITH CROSSARM MOUNTING HARDWARE. FOR ARRESTER, SEE ITEM 44, THIS MATERIAL LIST.
51. NOT USED
52. NOT USED
53. SINGLE PHASE, OIL FILLED, POLE MOUNTED TRANSFORMER, SEE 90X-5500-E-00500 FOR SIZE AND QUANTITY.
54. NOT USED
55. NOT USED
56. NOT USED
57. NOT USED
58. COPPER BUTT PLATE
59. 350 KCMIL 1/C EPR SHIELDED MV90 CABLE INSULATED FOR 15KV, 133 PERCENT INSULATED LEVEL.
60. #3/0 AL QUADRAPLEX

FOR INFORMATION ONLY

NOTES

1. CONSTRUCT OVERHEAD LINES TO CLEAR ROADS BY 18' AND RAILROADS BY 24' AS A MINIMUM.

FERMCO PROJECT NO. 2011

NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
					0	CFC	10/3/96	SJS		90X-5500-E-00502
										90X-5500-E-00500

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

CONFIGURATION MANAGEMENT DRAWING — SYSTEMS, STRUCTURES OR COMPONENTS SHOWN ON THIS DRAWING ARE UNDER CORPORATION MANAGEMENT CONTROL. SEE NOTES.
COGNIZANT ENGINEER — DATE 10-9-96

APPROVALS					
CIVIL & STR.			SAFETY ENG.		
ELECTRICAL			MAINTENANCE		
ENGINEER		10/3/96	Q.A.		
INSTRUMENT		10-3-96	FIRE PROTECT.		
MECHANICAL			WASTE MANAGE		
			SECURITY		
			CRU		
CHECKED			OSDF		
APPROVED		10/3/96			10/3/96

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

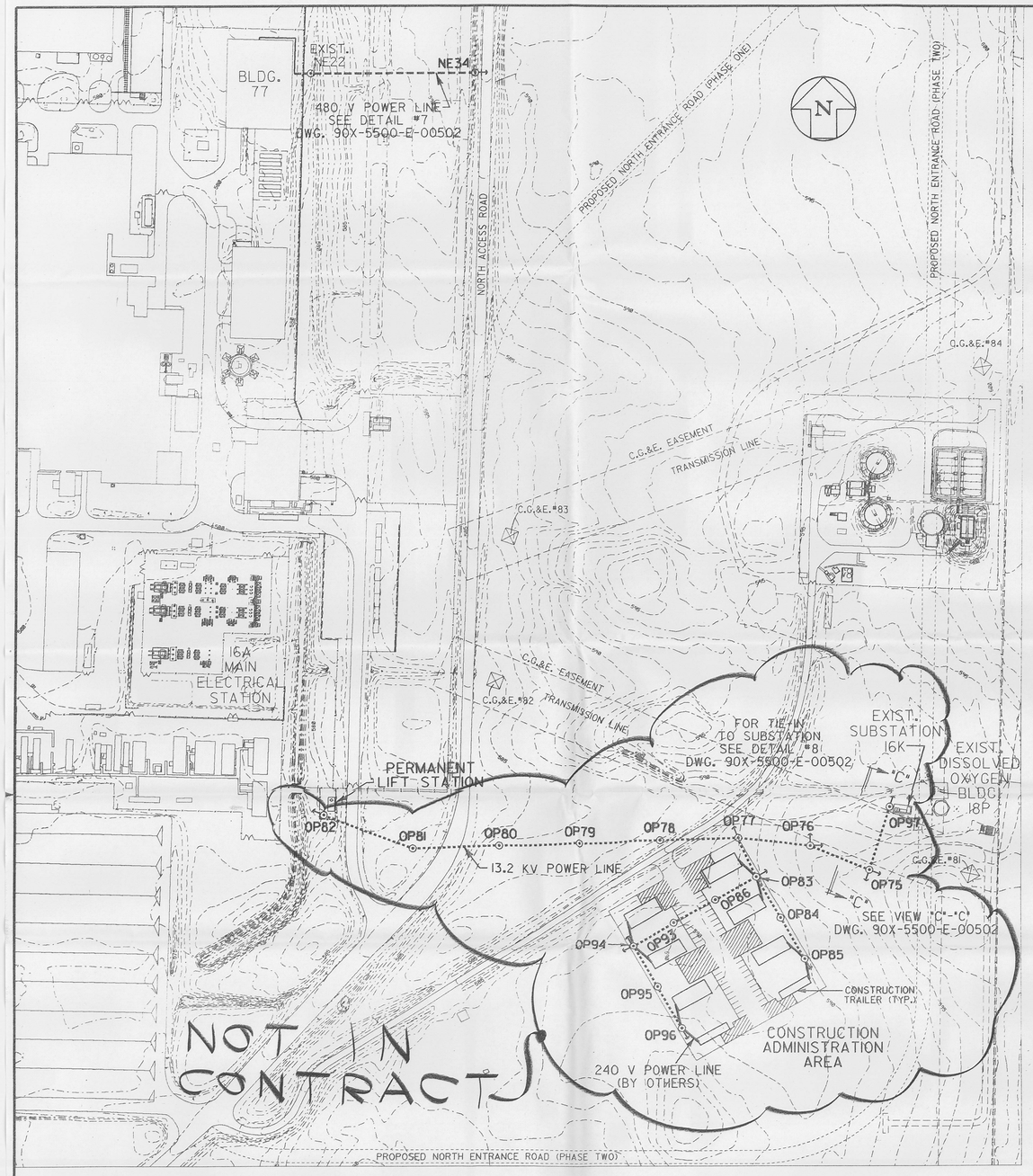
SOUTHEAST CORNER OF SITE
LEACHATE CONVEYANCE SYSTEM
ELECTRICAL DETAILS
NO SCALE

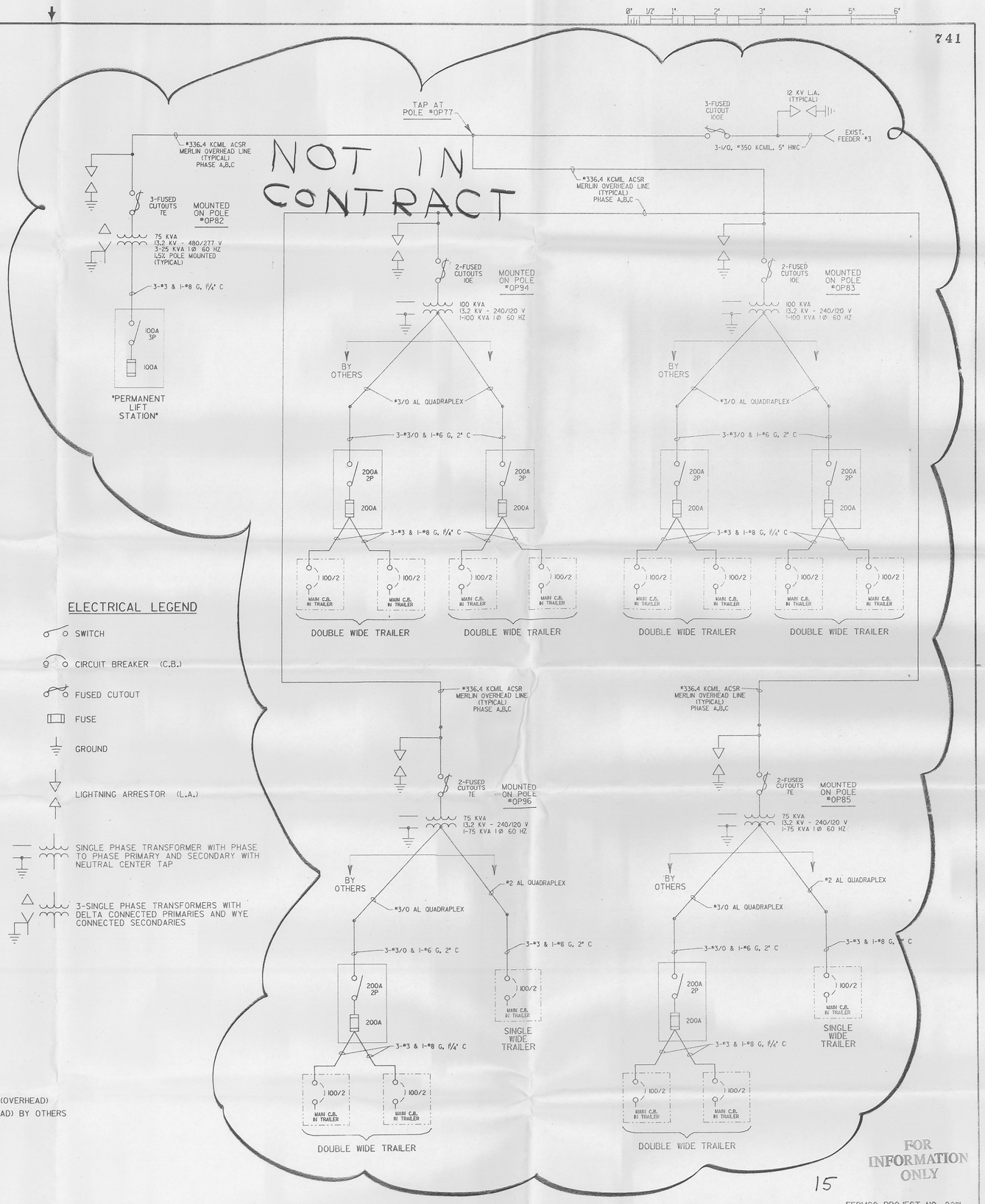
RES #2971
DATE 6/4/96
DRAWN S.J.SMOCK

90X-5500-E-00501 | 0

FORMAT REVISED 4/15/96 FORM5A.DGN

FILE NAME: /RES2971/90XE0501.DGN





ELECTRICAL LEGEND

- SWITCH
- CIRCUIT BREAKER (C.B.)
- FUSED CUTOUT
- FUSE
- GROUND
- LIGHTNING ARRESTOR (L.A.)
- SINGLE PHASE TRANSFORMER WITH PHASE TO PHASE PRIMARY AND SECONDARY WITH NEUTRAL CENTER TAP
- 3-SINGLE PHASE TRANSFORMERS WITH DELTA CONNECTED PRIMARIES AND WYE CONNECTED SECONDARIES

NEW POLE COORDINATES

	EASTING	NORTHING	
NE34	1350863.22	480830.30	POLE WITH GUY
OP75	1351586.37	479361.52	POLE WITH GUY
OP76	1351480.00	479405.44	POLE WITH GUY
OP77	1351350.00	479420.00	POLE WITH GUY
OP78	1351210.00	479415.00	
OP79	1351062.50	479410.00	
OP80	1350915.00	479405.00	
OP81	1350760.00	479400.00	
OP82	1350594.36	479463.75	POLE WITH GUY
OP83	1351382.45	479348.20	POLE WITH GUY
OP84	1351426.45	479271.98	
OP85	1351470.45	479195.77	POLE WITH GUY
OP86	1351309.14	479305.90	
OP93	1351235.82	479263.54	
OP94	1351162.51	479221.21	POLE WITH GUY
OP95	1351206.51	479145.00	
OP96	1351250.51	479068.79	POLE WITH GUY
OP97	1351622.81	479475.84	POLE WITH GUY

EXISTING POLE COORDINATES

	EASTING	NORTHING
NE22	1350571.82	480829.84

100' 0' 100' 200' 300'
SCALE

LEGEND

- ELECTRIC POLE
- ELECTRIC POLE WITH GUY
- 13.2 KV 3Ø 60 HZ PRIMARY LINE (FEEDER 3B) (OVERHEAD)
- 240 V 1Ø 60 HZ DISTRIBUTION LINE (OVERHEAD) BY OTHERS
- 480 V 3Ø 60 HZ (OVERHEAD)
- OP75 OUTSIDE PRODUCTION AREA POLE (#75)
- NE34 NORTHEAST POLE (#34)
- FIRE LANE - NO PARKING

FOR INFORMATION ONLY

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FERMCO PROJECT NO. 2011

NO.	REVISIONS	DATE	DWN. BY	APPD.	NO.	REVISIONS	DATE	DWN. BY	APPD.	REF. DWG. NO.
										90X-5500-E-00502
					0	CFC	10/3/96	SJS		90X-5500-E-00501

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

CONFIGURATION MANAGEMENT DRAWING — YES
SYSTEMS, STRUCTURES OR COMPONENTS REPRESENTED ON THIS DRAWING ARE UNDER CONFIGURATION MANAGEMENT CONTROL. SEE NOTES.
COGNIZANT ENGINEER 10-9-96 DATE

APPROVALS

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

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

SOUTHEAST CORNER OF SITE
LEACHATE CONVEYANCE SYSTEM
ELECTRICAL SITE PLAN AND SINGLE LINE
SCALE: 1" = 100'-0"

RES #2971
DATE 6/7/96
DRAWN S.J.SMOCK

90X-5500-E-00500 | 0

FORMAT REVISED 4/15/96 FORMSA.DGN

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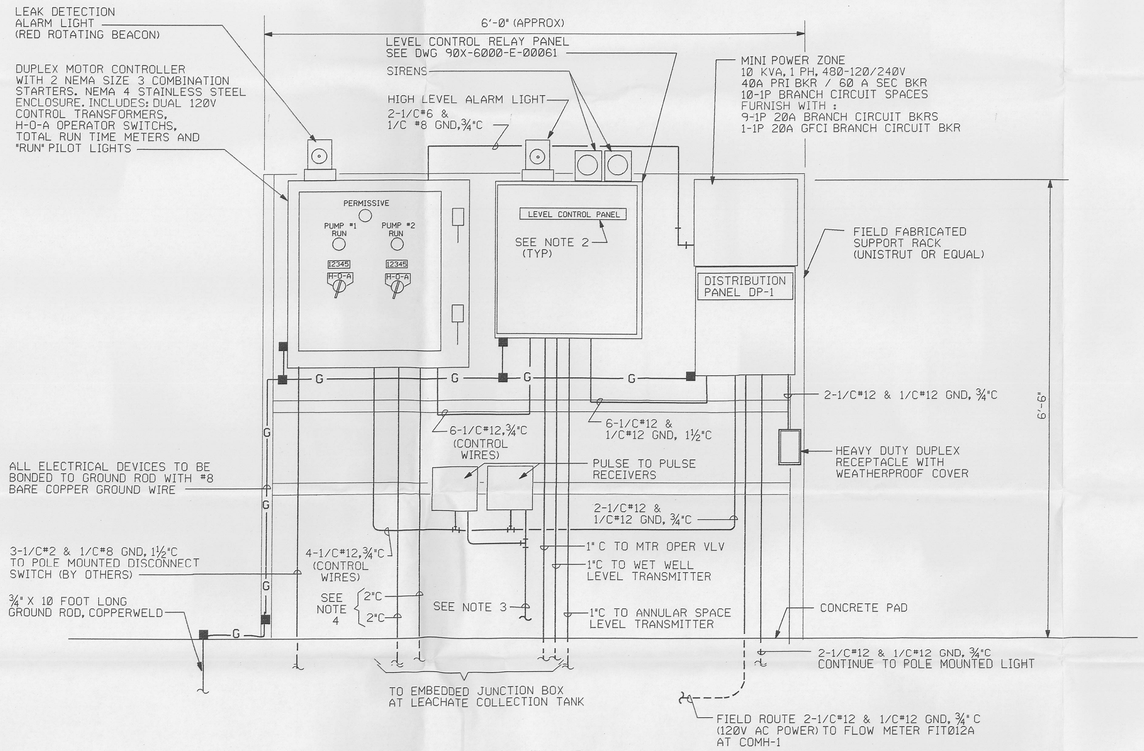
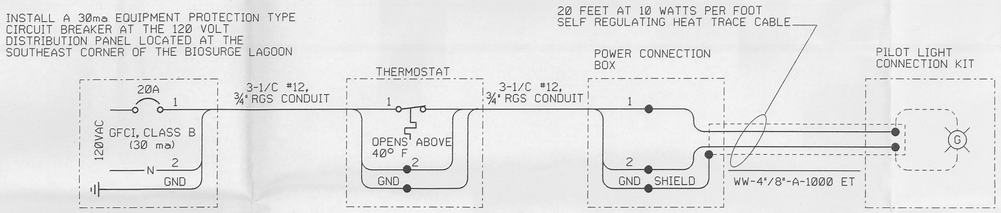


PERMANENT LIFT STATION
EQUIPMENT RACK
ELEVATION (E1) REF E00325 E00323
NTS



HEAT TRACING CIRCUIT
WIRING DIAGRAM

NOTES

741

1. SEE 92X-5900-E-00323 FOR PLANS AT THE PERMANENT LIFT STATION AND AT THE BIO SURGE LAGOON.
2. SUBCONTRACTOR SHALL PROVIDE AND INSTALL NAMEPLATES FOR ALL PANELS AND CONTROLS. NAMEPLATES SHALL BE WHITE LAMACOID WITH 3/16 (MIN) HIGH BLACK LETTERING.
3. FIELD ROUTE A TWO PAIR TELEPHONE CABLE TO NEAREST TELEPHONE LINE INTERFACE POINT AS DIRECTED BY FERMCO.
4. 2" CONDUITS CONTAIN PUMP VENDOR SUPPLIED CABLE. PUMPS ARE FURNISHED WITH 40 FOOT LONG SUBMERSIBLE POWER CABLE CONTAINING 3-#6 (PWR), 2-#10 (CNTL), 1-#8 (GND), & 1-#10 (GC) CONDUCTORS. NOMINAL DIA OF CABLE IS 1.22 INCHES.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-E-00323	POWER PLANS
90X-6000-E-00061	ELECTRICAL DETAILS 1V

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
ELECTRICAL
ELEVATION AND DETAILS

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
R. PROSKI	4/22/96	D. Fewell	10/11/96	J.L.COOPER	4/24/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		NONE	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NUMBER
A-E DATE	DATE	20211

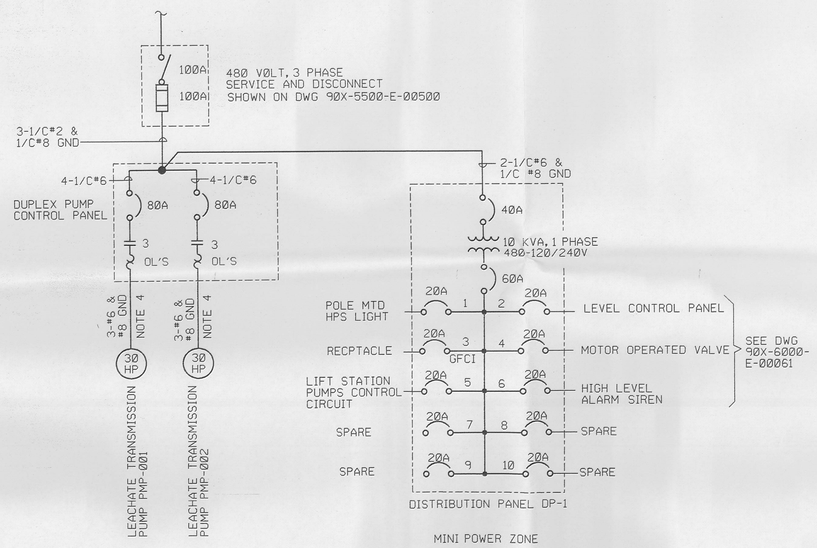
DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
	WBS 1.1.1.1.2.3.6 00-90701	92X-5900-E-00325	E0003	0

PREPARED UNDER PARSONS PROJECT ORDER NUMBER
SRP/P0164

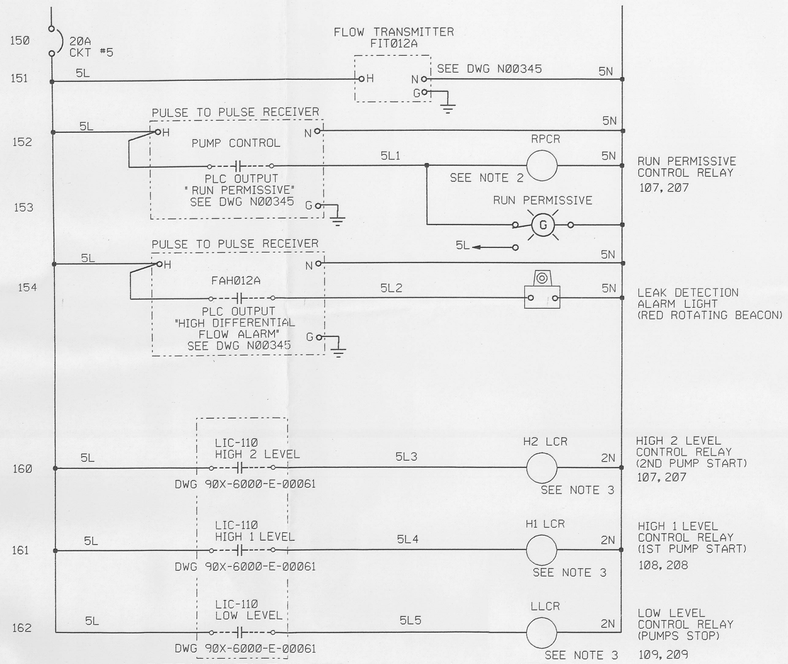
14

STATE OF OHIO JAMES L. COOPER E-36604 REGISTERED PROFESSIONAL ENGINEER

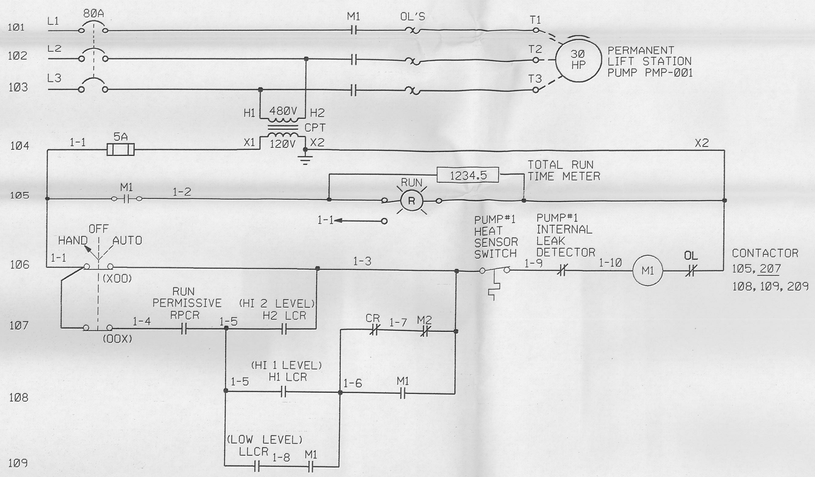
CONSTRUCTION PACKAGE

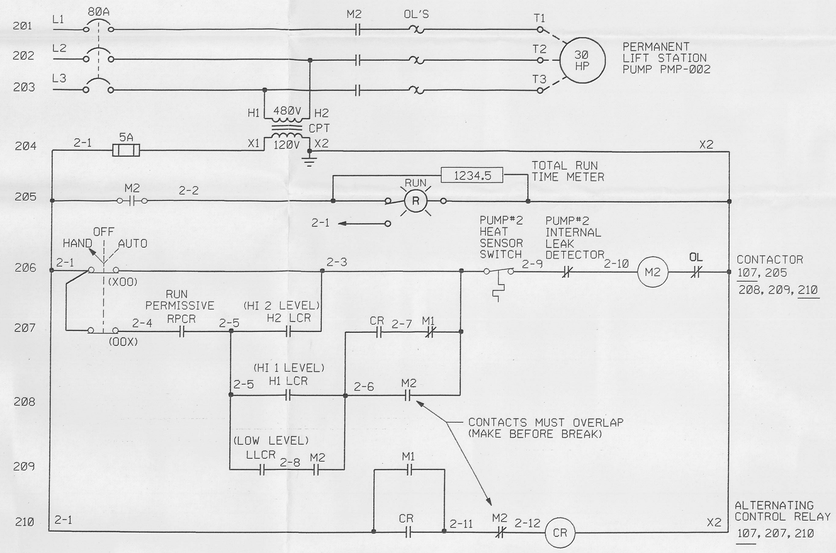


SINGLE LINE DIAGRAM



PERMANENT LIFT STATION PUMPS CONTROL CIRCUIT





PERMANENT LIFT STATION PUMPS SCHEMATIC DIAGRAMS

OPERATION:

THE DUPLEX PUMP CONTROL PANEL WILL AUTOMATICALLY ALTERNATE MOTOR OPERATION. THE CONTROLLER OPERATES ONE MOTOR AND THEN THE OTHER ON EACH SUCCESSIVE CLOSING OF HIGH LEVEL SIGNAL.

IF ONE MOTOR IS RUNNING AND ITS DISCONNECT SWITCH IS OPENED, AN OVERLOAD RELAY TRIPS, OR THE STARTER IS DE-ENERGIZED FOR ANY REASON, THE OTHER MOTOR WILL AUTOMATICALLY BE STARTED.

FAILURE OF A PUMP MAY BE DETECTED BY PERIODIC TESTING AND MONITORING OF TOTAL RUN TIME METERS.

FLOW FROM THE PERMANENT LIFT STATION AND OUTPUT FLOW AT THE BIOSURGE LAGOON ARE COMPARED BY A COMPUTER LOCATED AT THE AWWT FACILITY.
FOLLOWING A TIME DELAY TO ALLOW FOR PUMP STARTUP, A DISCREPENCY OF 5% (APPROX 10 GPM) WILL ACTIVATE AN ALARM LIGHT INDICATING A LEAK.
A DISCREPENCY OF 10% (APPROX 20 GPM) WILL RESULT IN LOSS OF "RUN PERMISSIVE" CONTROL INTERLOCK, DE-ENERGIZING RELAY "RPCR", AND SHUTDOWN THE LIFT STATION PUMPS.

DURING HIGH FLOW PERIODS, IF ONE PUMP IS UNABLE TO HANDLE THE INFLOW, AND LEVEL IN THE LIFT STATION CONTINUES TO RISE AND THE HIGH 2 LEVEL IS REACHED, THE SECOND PUMP WILL START. BOTH PUMPS WILL CONTINUE TO RUN UNTIL THE WATER LEVEL REACHES THE LOW LEVEL, STOPPING BOTH PUMPS.

NOTES:

1. THE PUMP CONTROL PANEL SHALL BE FURNISHED WITH THE FOLLOWING OPTIONS:
   MOTOR CIRCUIT PROTECTORS, 480/120V CONTROL POWER TRANSFORMERS AND FUSES, HAND-OFF-AUTO SELECTOR SWITCHES, RUN INDICATING LIGHTS AND TOTAL RUN TIME METERS, MOUNTED IN A NEMA 4 STAINLESS STEEL ENCLOSURE.
2. HIGH LEVEL RELAYS "H1 LCR", "H2 LCR", AND LOW LEVEL RELAY "LLCR" ARE CONTROLLED BY THE LEACHATE COLLECTION MANHOLE LEVEL CONTROLLER LIC-110 SHOWN ON DRAWING 90X-6000-E-00061.
3. INFLOW TO THE PERMANENT LIFT STATION IS STOPPED BY A HIGH-HIGH LEVEL RELAY (10Y1) WHICH CLOSES A MOTOR OPERATED VALVE AND CONTROLS VISUAL AND AUDIBLE ALARMS. SEE DRAWING 90X-6000-E-00061.

CONSTRUCTION PACKAGE

NOTES

1. SEE DRAWING 92X-5900-E-00323 FOR ELECTRICAL PLAN AT PERMANENT LIFT STATION.
2. INSTALL A SQUARE D TYPE KP12P14V20 OR EQUAL (120 VOLT DPDT PLUG IN RELAY) IN STARTER CABINET. ALSO INSTALL A 120VOLT, GREEN PILOT LIGHT, SQUARE D #KP1G31 OR EQUAL IN THE STARTER DOOR.
3. INSTALL THREE SQUARE D TYPE KP12P14V20 OR EQUAL RELAYS IN THE LEVEL CONTROL CABINET. SEE DWG 90X-6000-E-00061.
4. PUMP IS FURNISHED WITH 40 FOOT LONG SUBMERSIBLE POWER CABLE CONTAINING 3-#6 (PWR), 2-#10 (CNTL), 1 #8 (GND), & 1 #10 (GC) CONDUCTORS.
   NOMINAL DIA OF CABLE IS 1.22 INCHES.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
90X-6000-E-00061	ELECTRICAL DETAILS IV
92X-5900-E-00323	PLANS PERMANENT LIFT STATION AND BIOSURGE LAGOON
92X-5900-N-00345	ANALOG I/O DIAGRAM
90X-5500-E-00500	ELECTRICAL SITE PLAN AND SINGLE LINE

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
ELECTRICAL
SINGLE LINE AND SCHEMATICS
PERMANENT LIFT STATION

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
R PROSKI	3/11/96	D. Fewell	10/11/96	J.L. COOPER	3/25/96

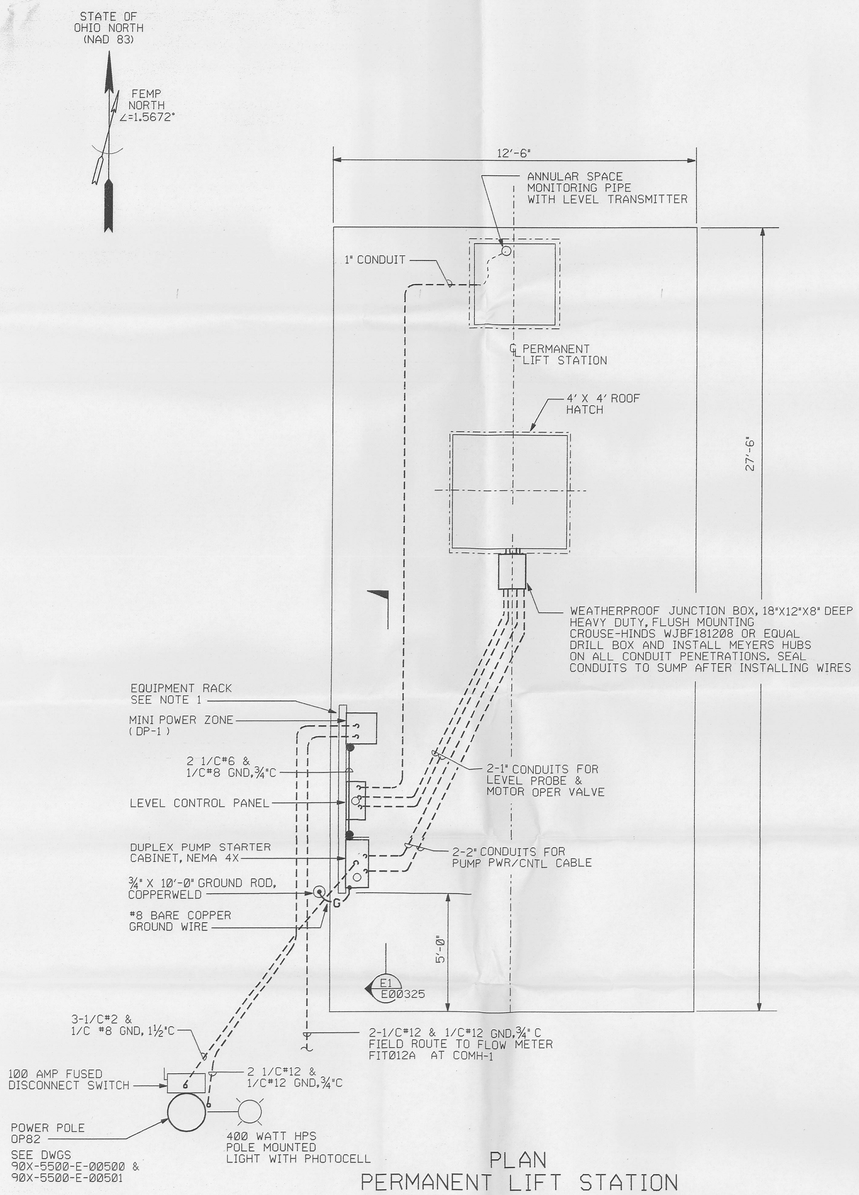
PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		NONE	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NUMBER
A-E DATE	DATE	20211

PREPARED UNDER PARSONS PROJECT ORDER NUMBER	DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
SRP/P0164		WBS 1.1.1.1.2.3.6 00-90701	92X-5900-E-00324	E0002	0

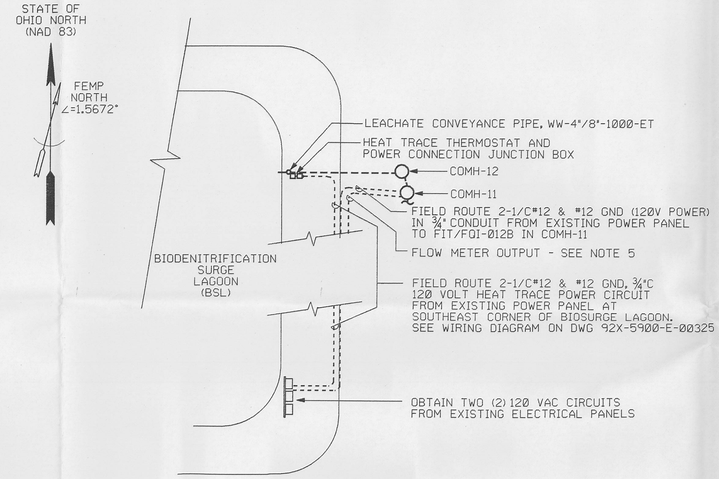
STATE OF OHIO JAMES L. COOPER E-59087 REGISTERED PROFESSIONAL ENGINEER

13



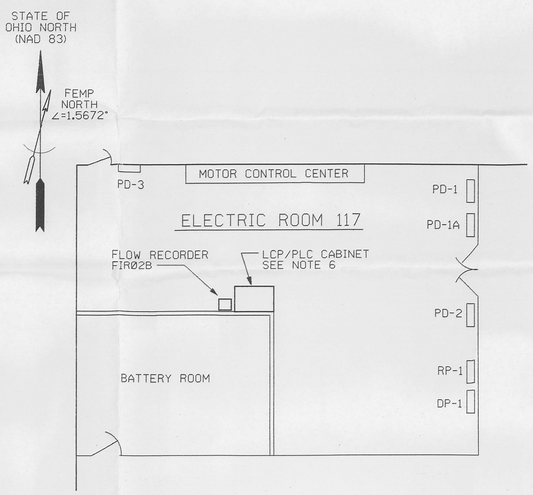
PLAN
PERMANENT LIFT STATION

NTS



PLAN
AT BIODENITRIFICATION SURGE LAGOON

NTS



PARTIAL PLAN AT AWWT BUILDING

NTS

NOTES

741

1. EQUIPMENT RACK AT PERMANENT LIFT STATION TO BE FIELD FABRICATED AND LOCATED AS SHOWN.
2. CONDUITS TO BE FIELD ROUTED. EMBEDDED CONDUITS SHALL BE A MINIMUM OF 18" BELOW GRADE.
3. EXPOSED PIPE AT BIOSURGE LAGOON SHALL BE HEAT TRACED. EXTEND HEAT TRACE CABLE 3'-0" BELOW GRADE.
4. SEE CIVIL DRAWING 94X-5900-G-00262 FOR LEACHATE CONVEYANCE PIPE LOCATION AND DETAILS AT THE BIO SURGE LAGOON.
5. FIELD ROUTE FLOW METER OUTPUT SIGNAL WIRES TO NEAREST TELEPHONE LINE INTERFACE POINT AS DETERMINED BY FERMCO.
6. LOCATE THE LCP/PLC CABINET AND FLOW RECORDER FIR012B AT TENTATIVE LOCATION AT THE AWWT AS SHOWN. COORDINATE FINAL LOCATION AND CONNECTION TO 120 VOLT POWER WITH THE AWWT FACILITY MANAGER AT TIME OF CONSTRUCTION FOR APPROVAL OF EQUIPMENT LOCATIONS AND WORK TO BE PERFORMED IN THIS AREA.

REF SHEET NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-E-00325	ELEVATION AND DETAILS
92X-5900-G-00262	CIVIL - PLAN & PROFILE
90X-5500-E-00500	ELECTRICAL SITE PLAN AND SINGLE LINE
90X-5500-E-00501	ELECTRICAL DETAILS

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N\A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

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THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
ELECTRICAL PLANS
PERMANENT LIFT STATION AND BIOSURGE LAGOON

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
R PROSKI	4/23/96	D. Tuell	10/11/96	J.L. COOPER	4/24/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		NONE	

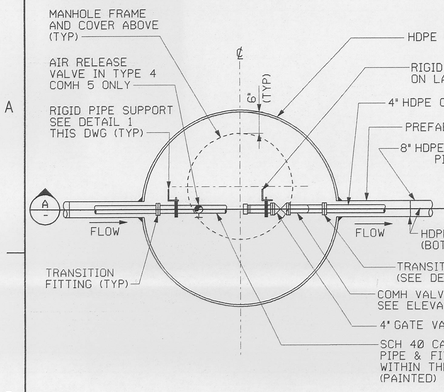
SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NUMBER
A-E DATE	DATE	20211

12

STATE OF OHIO JAMES L. COOPER E-32821 REGISTERED PROFESSIONAL ENGINEER

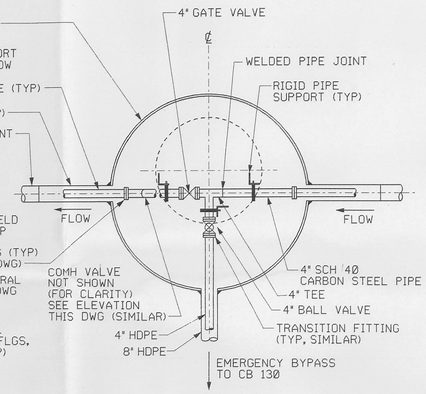
PREPARED UNDER PARSONS PROJECT ORDER NUMBER	DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
SRP/P0164		WBS 1.1.1.1.2.3.6 00-90701	92X-5900-E-00323	E0001	0

CONSTRUCTION PACKAGE

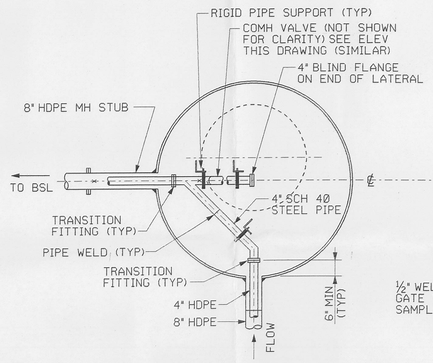


TYPE 1 & 4

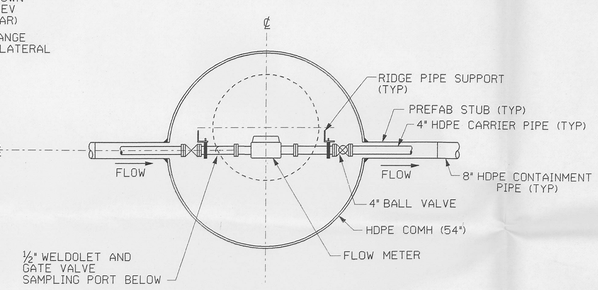
(TYPE 1 & 4 SAME EXCEPT TYPE 4 HAS AIR RELEASE VALVE)



TYPE 2



TYPE 3



TYPE 5

SEE DRAWING 92N00347 FOR DETAILS OF METER

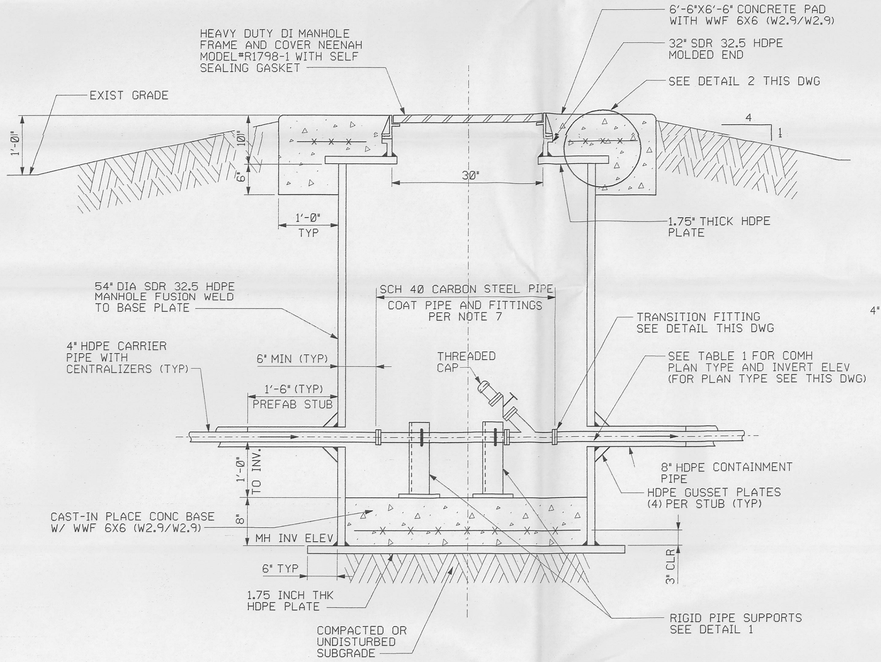
VALVE IDENTIFICATION

1. EACH VALVE SHALL BE IDENTIFIED WITH ITS UNIQUE VALVE NUMBER.
2. LABEL SIZE SHALL BE BASED ON USING ½" LETTERS.
3. LABELS SHALL BE CONSTRUCTED OF NONREFLECTIVE MATERIALS. BLACK CHARACTERS ON A WHITE BACKGROUND OR WHITE CHARACTERS ON A BLACK BACKGROUND 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.
4. LABELS, INCLUDING ADHESIVES AND OTHER MEANS OF ATTACHMENT, SHALL BE MADE FROM CORROSION-RESISTANT MATERIALS THAT ARE COMPATIBLE WITH THE COMPONENT AND ENVIRONMENT WHERE THEY ARE USED.

TYPICAL CLEANOUT MANHOLE PLANS

NTS

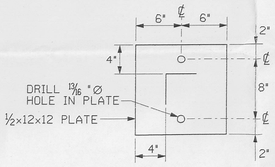
NOTE: SEE TABLE 1 FOR TYPE OF SPECIFIC COMH



TYPICAL CLEANOUT - MANHOLE (COMH) SECTION (A)

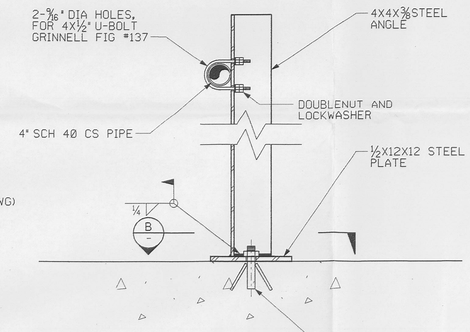
1"=1'-0"

TABLE 1			
CLEANOUT - MANHOLE (COMH)			
COMH#	TOP OF LID ELEV	INVERT ELEV	PLAN TYPE
1	582.00	575.16	TYPE 5
1A	581.00	573.67	TYPE 1
2	582.00	575.67	TYPE 1
3	577.50	570.67	TYPE 1
4	577.00	567.33	TYPE 2
5	581.00	574.67	TYPE 4
6	577.00	570.67	TYPE 1
7	575.50	566.67	TYPE 1
8	574.00	565.67	TYPE 1
9	575.50	568.67	TYPE 1
10	577.25	567.16	TYPE 3
11	577.83	570.83	TYPE 5
12	579.00	570.58	TYPE 3



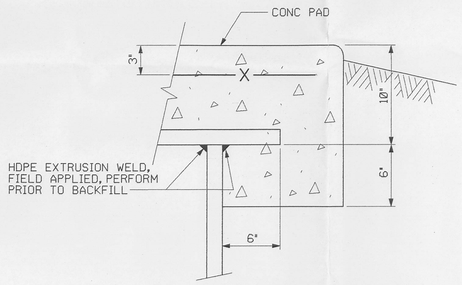
SECTION (B)

NTS



DETAIL (1)

NTS



DETAIL (2)

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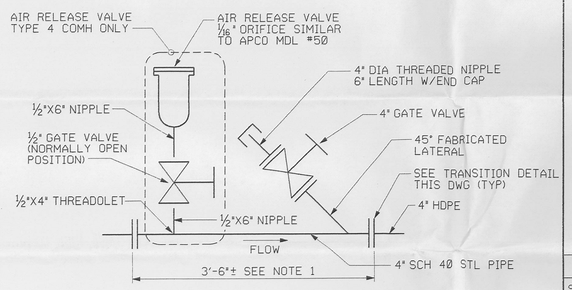
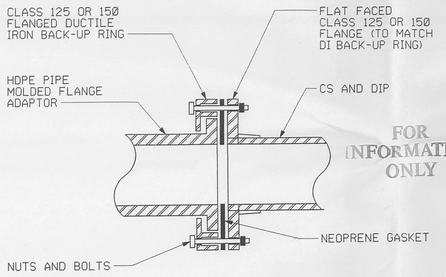


TYPICAL COMH VALVE ELEVATION

NTS



TYPICAL TRANSITION FITTING DETAIL

NTS

FOR INFORMATION ONLY

CONSTRUCTION PACKAGE

NOTES

1. FINAL DIMENSION OF LENGTH OF STEEL FITTINGS AND VALVES IN THE MANHOLES WILL VARY DUE TO EXPANSION AND CONTRACTION OF HDPE PIPE. AFTER COMPLETE BURIAL OF PIPE AND MANHOLE, ALLOW 5 DAYS BEFORE SETTING FITTINGS AND ANCHOR SUPPORTS. EACH MANHOLE WILL NEED A SEPARATE MEASUREMENT.

METAL PIPING SPECIFICATION NOTES

2. MATERIALS:
   4" METAL CARRIER PIPE SHALL BE SEAMLESS, CARBON STEEL ASTM A-53, GRADE B SCHEDULE 40, BEVELED ENDS. ½" THREADED PIPE SHALL BE THE SAME EXCEPT SCHEDULE 80. BOLTS, NUTS, AND WASHERS SHALL CONFORM TO ASTM A307.

   FITTINGS SHALL BE SEAMLESS CARBON STEEL BUTT WELD, ASTM A234, GRADE WPB. ELBOWS SHALL BE SHORT RADIUS.

   FLANGES SHALL BE CLASS 150, CARBON STEEL, FF OR RF, ASTM A105, WELDNECK STD. WT. BORE. USE FF WHEN MATING WITH CLASS 125 FLANGED VALVES OR TRANSITION FITTINGS.
3. FABRICATION:
   ALL WELDING ELECTRODES SHALL BE IN ACCORDANCE WITH AWS A5.1.
4. TESTING:
   CARRIER PIPE SHALL BE HYDROSTATICALLY TESTED TO AWWA C600, 130 PSIG. THE TEST PRESSURE SHALL BE MAINTAINED FOR A MINIMUM OF TEN MINUTES PRIOR TO VISUAL INSPECTION.

GENERAL STEEL NOTES

5. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH AISC MANUAL OF STEEL CONSTRUCTION, NINTH EDITION.
6. MATERIAL SHALL MEET THE REQUIREMENTS OF THE FOLLOWING SPECIFICATIONS:
   STRUCTURAL STEEL - ASTM A36
   WELDING - AWS D1.1 CLASS E70XX (ELECTRODES)
   ANCHOR STUD, WEDGE, NUT AND WASHER SHALL BE AISI 316 STAINLESS STEEL CONFORMING TO ASTM A276 (STUD); ASTM F594 (NUT); AND ASTM A240 (WASHER)
7. SHOP AND FIELD PAINTING SPECIFICATION: FOR STEEL PLATE AND SHAPES, PIPE AND FITTINGS
   A) PREPARE SURFACES IN ACCORDANCE WITH STEEL STRUCTURES PAINTING COUNCIL (SSPC) SP-6.
   B) PRIME ALL BARE METAL NOT IN CONTACT WITH CONCRETE/GROUT WITH ONE COAT TNEMEC SERIES 6 EPOXO LINE PRIMER. APPLY TWO-COATS OF TNEMEC SERIES 66 HI-BUILD EPOXOLINE FOR THE FINISH COAT. FOLLOW SSPC PAINT 13 AND PAINT 20.
8. THE VALVE SPECIFICATIONS INCLUDE THE FOLLOWING:
   CHECK - SWING CHECK, IRON BODY, BRONZE TRIM, 45 DEGREE SWING DISC AND SEAT, CLASS 125 FLANGE ENDS; CONFORMING TO AWWA C508.

   4" GATE - IRON BODY, BRONZE TRIM, RISING STEM, SINGLE WEDGE, RESILIENT SEAT, CLASS 125 FLANGE ENDS; CONFORMING TO AWWA C509.

   4" BALL VALVE - CLASS 150, CARBON STEEL, RF FLANGE, ASTM A216, GRADE WCB, REINFORCED TFE SEATS, CHROME-PLATED BALL, WRENCH OPERATOR

   ½" GATE - CLASS 150, BRONZE, THREADED ENDS, ASTM B62, RISING STEM.

   AIR RELEASE - CAST IRON BODY AND TOP, STAINLESS STEEL TRIM AND BALL FLOAT, BUNA-N SEAT, AND NPT THREADED INLET.

   PROTECTIVE COATINGS FOR VALVES:
   INTERIOR - FACTORY APPLIED HEAT-CURED EPOXY COATING CONFORMING TO AWWA C550

   EXTERIOR - TWO COATS OF FACTORY APPLIED ZINC CHROMATE PRIMER AND TWO COATS FINISH COATING IN ACCORDANCE WITH METAL PAINTING SPECIFICATIONS.

ERECTION/INSTALLATION NOTES

9. ALL PIPING, FITTINGS, COMPONENTS, WELDING, BONDING, FABRICATION, ERECTION, AND ASSEMBLY SHALL BE IN ACCORDANCE WITH ASME B31.3.
10. ALL FLANGED JOINTS SHALL BE ASSEMBLED IN ACCORDANCE WITH ASME B31.3.
11. FABRICATE, INSTALL AND TEST HDPE PIPE MATERIALS IN ACCORDANCE WITH DETAILED SPECIFICATIONS.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-N-00347	INSTRUMENTATION - INSTRUMENT INSTALLATION MANHOLE DETAIL

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME: LEACHATE CONVEYANCE SYSTEM

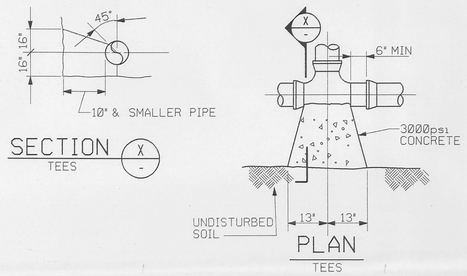
DRAWING TITLE: CIVIL DETAILS SHEET 3 OF 3

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
D.R. FOX	04/18/96		4/19/96	E. MELNYK	04/19/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NO.
A-E DATE	DATE	20211

DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
PREPARED UNDER PARSONS PROJECT ORDER NUMBER SRP/P0164	WBS 1.1.1.1.2.3.6 00-90701	92X-5900-G-00258	G0008	0

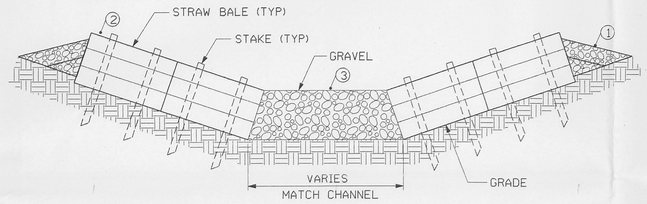


NOTE: BASED ON 100 PSI STATIC PRESSURE PLUS A.W.W.A. WATER HAMMER ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND, TYPE II 2000psf

PLAN & ELEVATION

CONCRETE THRUST BLOCK DETAIL

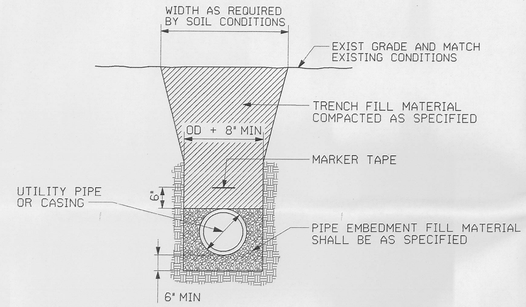
NTS



① ODOT ITEM 304 STABILIZED CRUSHED AGGREGATE (2-6" COURSES) ON FILTER FABRIC, ODOT ITEM 712.09, TYPE D.
② INSTALL STRAW BALE AS SHOWN ON DETAIL.
③ GRAVEL TO BE ODOT ITEM 601.07, TYPE D DUMPED ROCK. TOP WIDTH TO BE SAME AS STRAW BALES.

TYPICAL CHECK DAM DETAIL

NTS

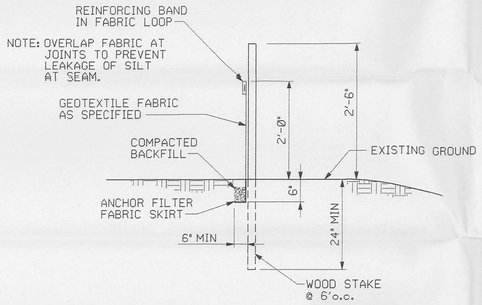


TYPICAL PIPE BEDDING DETAIL

NTS

NOTES

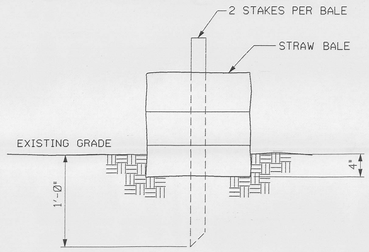
1. SUBCONTRACTOR MAY IN GENERAL USE EITHER SEDIMENT FENCE OR STRAW BALES INTERCHANGEBLY FOR SEDIMENT CONTROL WHERE INDICATED ON THE DRAWING. WHERE CHECK DAMS ARE INDICATED, THE CHECK DAM DETAIL ON THIS SHEET SHALL BE UTILIZED. STRAWBALES ARE PREFERRED AND SHALL BE COMPOSTED AT THE END OF PROJECT, CONSISTENT WITH THE FERMCO WASTE MINIMIZATION PROGRAM.



TYPICAL SEDIMENT FENCE DETAIL

NTS

SEE NOTE 1



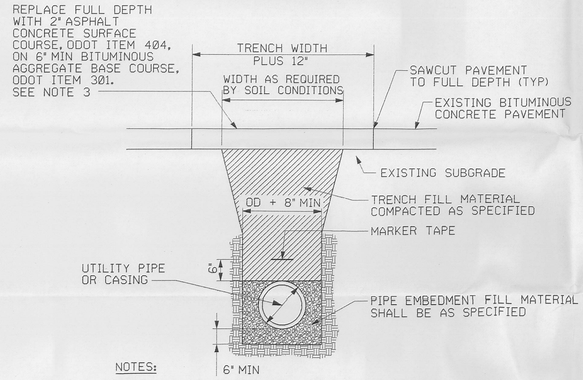
NOTE:

1. STRAW BALES TO BE USED WHEN NATURAL GROUND IS LEVEL OR SLOPING AWAY FROM PROJECT.
2. PLACE STRAW BALES APPROXIMATELY PARALLEL TO BOTTOM OF FILL SLOPE AND AROUND THE CATCH BASINS INLETS.
3. STRAW BALES SHALL BE AS SPECIFIED.
4. FOR EROSION CONTROL MAINTENANCE SEE SPECIFICATIONS.

TYPICAL STRAW BALE BARRIER DETAIL

NTS

SEE NOTE 1

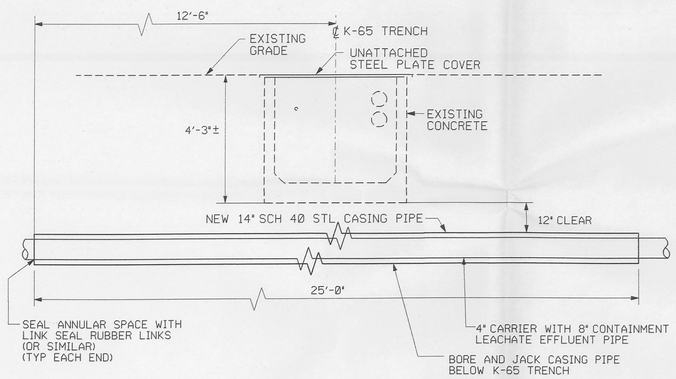


NOTES:

1. MATERIAL AND CONSTRUCTION OF THE ASPHALTIC CONCRETE PAVING SHALL COMPLY WITH THE REQUIREMENTS OF SECTIONS 301, 401 AND 404 OF ODOT STANDARD SPECIFICATION.
2. COMPACT PAVEMENT BY STEEL WHEEL ROLLER TO ACHIEVE EVEN AND SMOOTH FINISH, WITHOUT ROLLER MARKS. HAND-COMPACT IN AREAS INACCESSIBLE TO ROLLING EQUIPMENT.
3. PLACE PAVEMENT IN LAYERS NOT TO EXCEED 3 INCHES COMPACTED DEPTH. THE THICKNESS OF THE REPLACEMENT BITUMINOUS CONCRETE SHALL BE AT LEAST AS THICK AS THE EXISTING. USE ODOT ITEM 301 MATERIAL AS NECESSARY.
4. ADD TACK COAT ITEM 407, ODOT STANDARD SPECIFICATIONS BETWEEN LAYERS IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.

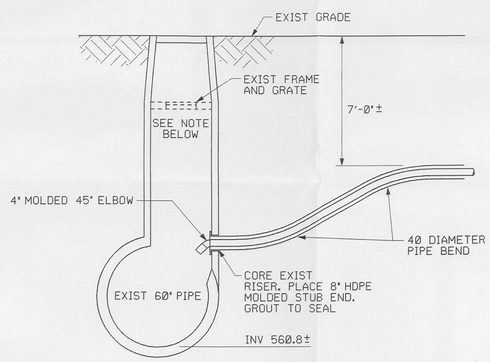
TYPICAL PAVEMENT RESTORATION DETAIL

NTS



STEEL PIPE CASING

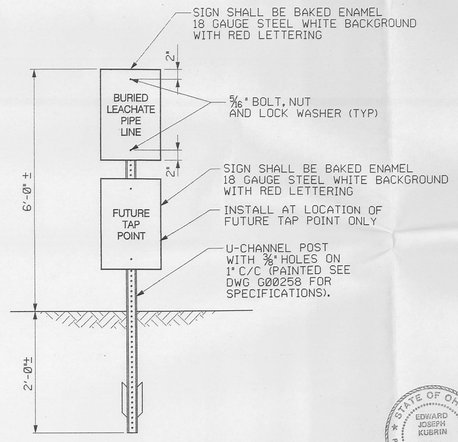
NTS



NOTE:
CATCH BASIN CONFIGURATION IS ASSUMED - NO PLANS WERE AVAILABLE. CONDITIONS NEED TO BE FIELD VERIFIED.

EXIST CATCH BASIN 130 DETAIL

NTS



TYPICAL PIPE LINE MARKER DETAIL

NTS

INSTALL AS SHOWN ON PLANS. GENERALLY AT EVERY 200' AND AT PC, PT, AND MIDPOINT OF CURVES.

10

STATE OF OHIO EDWARD JOSEPH KUBRIN 47703 REGISTERED PROFESSIONAL ENGINEER

DRAFT CONSTRUCTION PACKAGE

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-G-00258	DETAILS - SHEET 3 OF 3

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

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PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

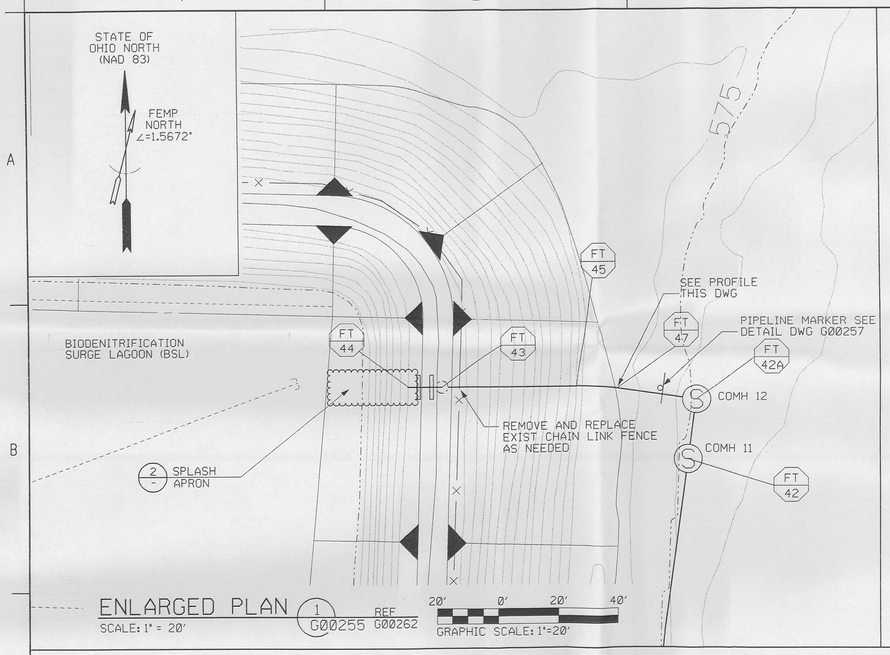
DRAWING TITLE
CIVIL DETAILS
SHEET 2 OF 3

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
C.R. TOMONGIN	2-22-96	Ed Kubrin	04/01/96	E. MELNYK	04/19/96

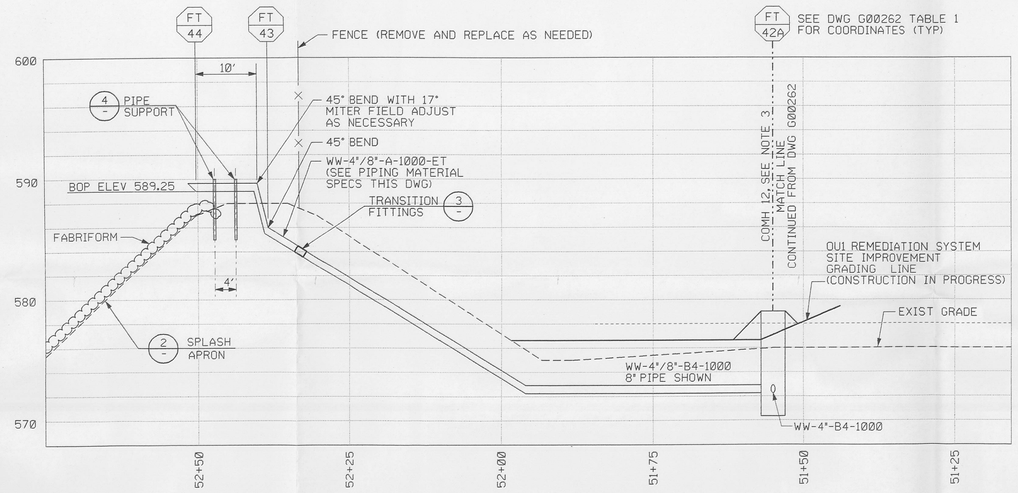
PLANT/BLDG. NO.	FLOOR	SCALE	CLASS

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NO.
A-E DATE	DATE	20211

PREPARED UNDER PARSONS PROJECT ORDER NUMBER	DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
SRP/P0164		WBS 1.1.1.1.2.3.6 00-90701	92X-5900-G-00257	G0007	0



ENLARGED PLAN (1 / G00255) REF G00262
SCALE: 1" = 20'
GRAPHIC SCALE: 1"=20'



PROFILE
SCALE: HOR 1" = 10'
VERT 1" = 5'

NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW.

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   B.L. PAYNE AND ASSOCIATES, TOPOGRAPHIC SURVEY 1996
   92 AERIAL TOPOGRAPHY
   WOOLPERT SURVEY MARCH 1996

2. MAINTAIN A MINIMUM 36" COVER OVER TOP OF PIPE.
3. SEE TABLE 1, DRAWING NO 92X-5900-G-00258 FOR SCHEDULE OF TOP AND BOTTOM AND DETAILS OF CLEANOUT-MANHOLES.
4. THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION.
5. ALL FITTINGS ON HDPE ARE TO BE MOLDED UNLESS OTHERWISE NOTED.
6. ATTACH RUB SHEET TO EDGES OF FABRIFORM FABRIC (BY ADHESIVE, SEWING, OR TIES.) PRIOR TO PLACEMENT. RUB SHEET WILL EXTEND INTO BSL AT SAME TIME AS FABRIFORM PLACEMENT.

NOTES:

1. CARBON STEEL PIPE SHALL BE INSULATED AND ELECTRIC TRACED TO A MININUM DEPTH OF 3'-0" BELOW GRADE.
2. UNDERGROUND STL CONTAINMENT PIPE SHALL BE BITUMINOUS COATED AND WRAPPED.

ABOVE GRADE PIPING MATERIAL SPECIFICATIONS

PIPE:
DOUBLE CONTAINMENT PIPING:
CONTAINMENT - 8" DIA., SCH 40; CARRIER - 4" DIA., SCH 40
ASTM A-53 GRADE B, CARBON STEEL, STD. WT. BEVELED ENDS ELECTRIC TRACED AND INSULATED

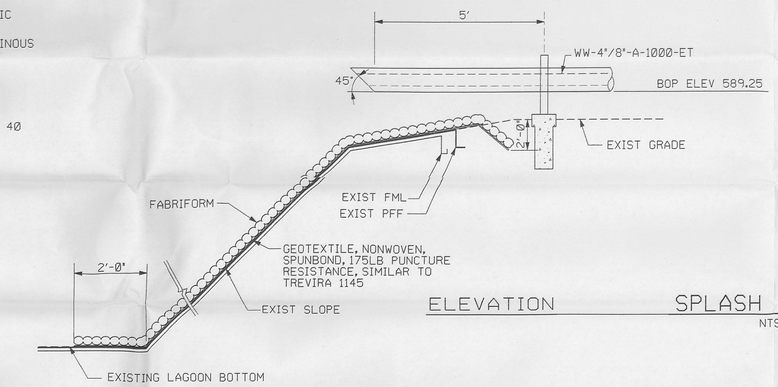
FITTINGS:
SEAMLESS CARBON STEEL, STD. WT., BEVELED ENDS, ASTM A234 GR. WPB

FLANGES:
CLASS 150, CARBON STEEL, FF, ASTM A105, WELDNECK STD. WT. BORE

GASKETS:
TEFLON, 1/16" THICK

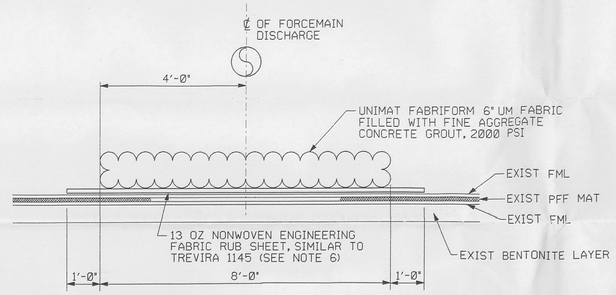
BOLTING:
STUD BOLTS WITH HEAVY HEX NUTS, ASTM A193 GR B7
ASTM A194 GR 2H

INSULATION:
CELLULAR GLASS, 2" THICK WITH ALUMINUM JACKET

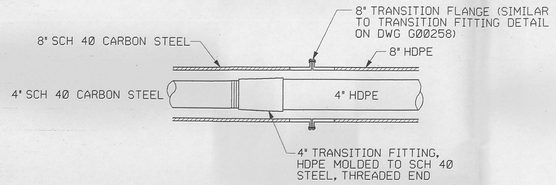


ELEVATION

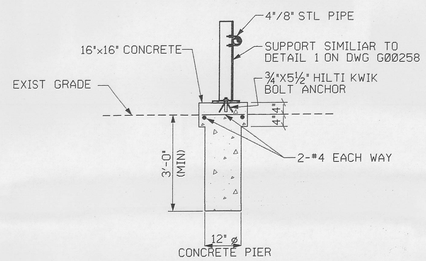
SPLASH APRON (2 / -)
NTS



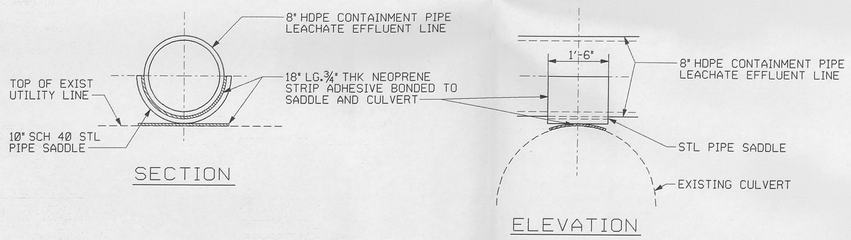
SECTION



TRANSITION DETAIL (3 / -)
FROM HDPE TO CARBON STEEL
NTS



PIPE SUPPORT (4 / -)
NTS



SECTION

ELEVATION

PIPE SADDLE (5 / G00255) REF G00254
NTS

9

STATE OF OHIO
EDWARD JOSEPH KUSRIN
47703
REGISTERED
PROFESSIONAL ENGINEER

CONSTRUCTION PACKAGE

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-G-00251	MASTER PLAN
92X-5900-G-00262	PLAN AND PROFILE SHEET 4 OF 4
92X-5900-G-00257	DETAIL SHEET 2 OF 3
92X-5900-G-00258	DETAIL SHEET 3 OF 3
92X-5900-G-00254	PLAN AND PROFILE SHEET 1 OF 4

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION			

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL DETAILS
SHEET 1 OF 3

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
C.R. TOMONGIN	2-22-96	Ed Kusrin	10/1/96	E. MELNYK	4/19/96

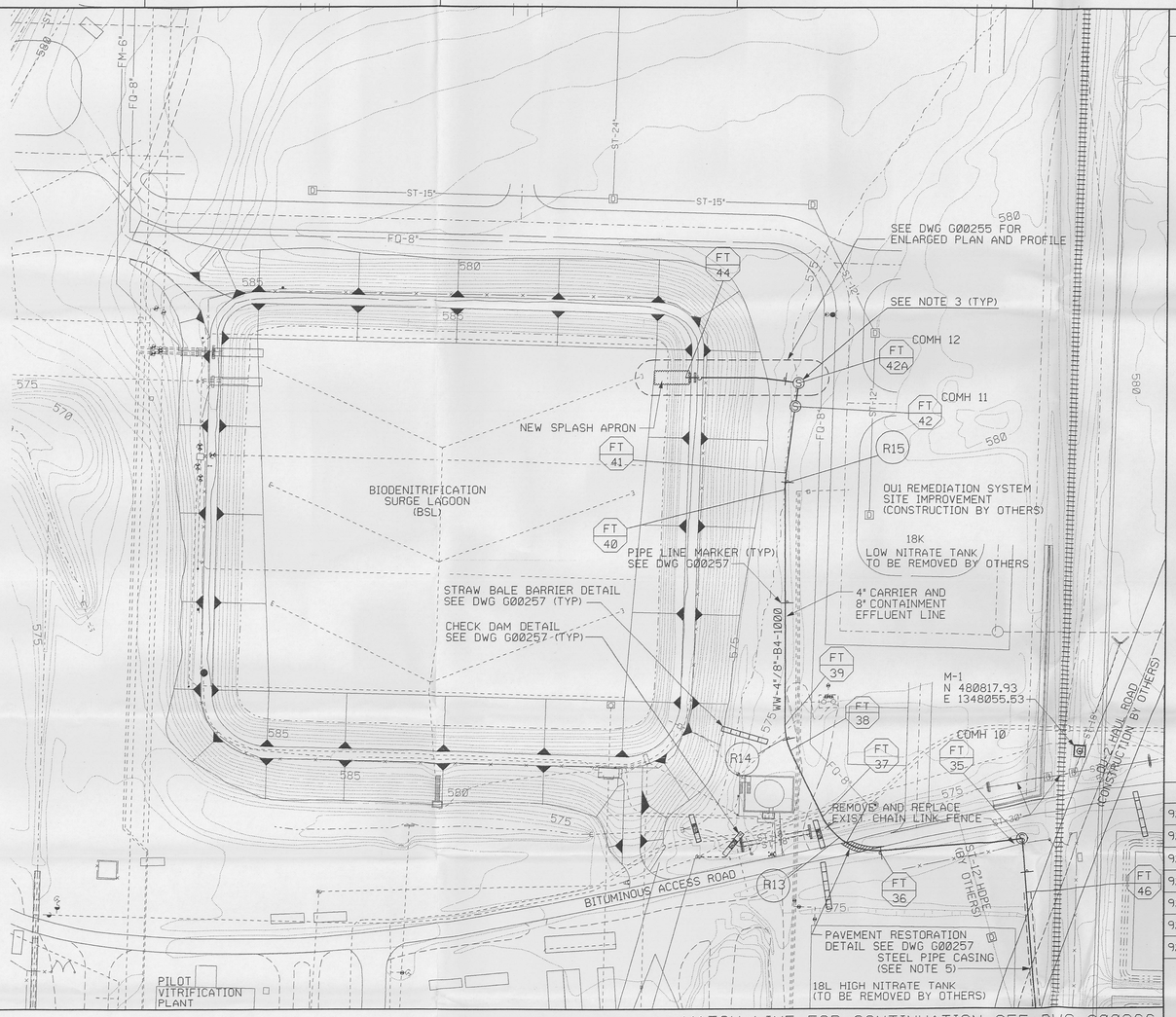
PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		AS NOTED	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NO.
A-E DATE	N/A DATE	20211

PREPARED UNDER PARSONS PROJECT ORDER NUMBER	DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
SRP/P0164		WBS 1.1.1.1.2.3.6 00-90701	92X-5900-G-00255	G0006	0

STATE OF OHIO NORTH (NAD 83)

FEMP NORTH ∠=1.5672°



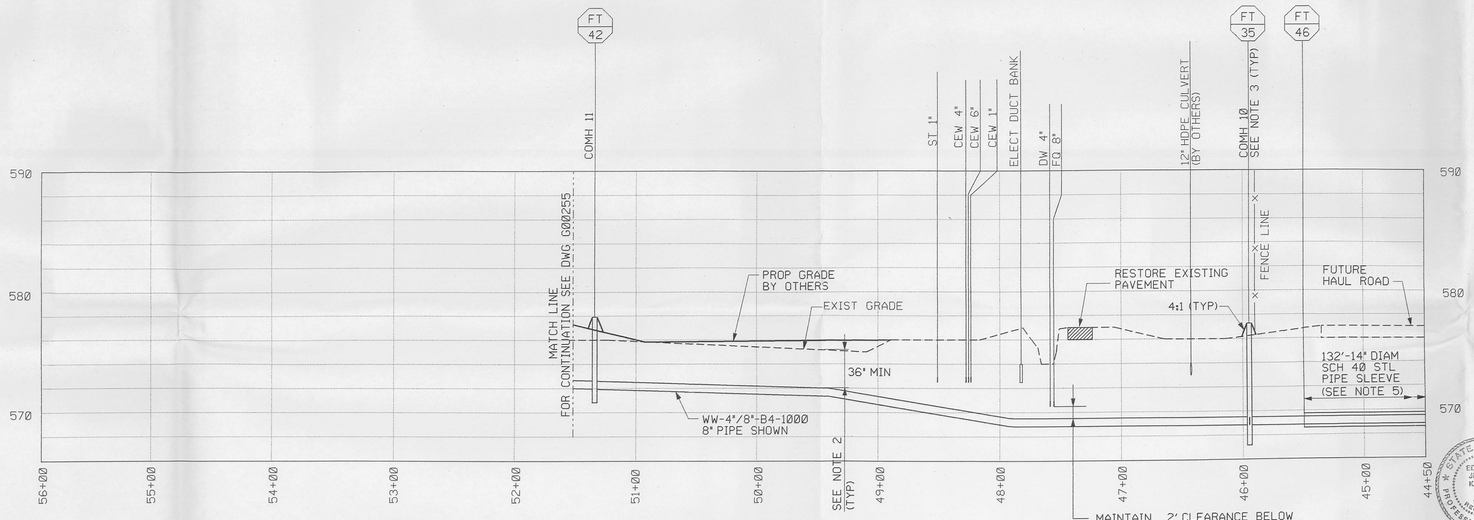
PLAN

SCALE: 1" = 50'

GRAPHIC SCALE: 1"=50'

LEACHATE CONVEYANCE LINE CURVE DATA			
CURVE NO	DEFLECTION ANGLE	RADIUS	LENGTH OF CURVE
R13	68° 59' 14"	50.00'	60.20'
R14	25° 09' 12"	50.00'	21.95'
R15	08° 08' 15"	100.00'	14.20'

LEACHATE CONVEYANCE LINE (FT) COORDINATES			
POINT	NORTHING	EASTING	DESCRIPTION
35	480742.33	1348006.38	COMH 10
36	480732.87	1347885.65	POINT OF CURVE
37	480761.20	1347836.62	POINT OF TANGENT
38	480818.83	1347809.14	POINT OF CURVE
39	480840.07	1347804.27	POINT OF TANGENT
40	481041.79	1347803.07	POINT OF CURVE
41	481055.96	1347803.99	POINT OF TANGENT
42	481112.92	1347811.79	COMH 11
42A	481132.73	1347814.50	COMH 12
43	481137.24	1347730.52	45° BEND
44	481137.24	1347719.03	OUTLET
45	481137.24	1347774.72	POINT OF CURVE
46	480697.45	1348009.87	END OF STEEL CASING
47	481136.32	1347788.27	POINT OF TANGENT



PROFILE

SCALE: HOR 1" = 50'
VERT 1" = 5'

CONSTRUCTION PACKAGE

NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW.

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   B.L. PAYNE AND ASSOCIATES, TOPOGRAPHIC SURVEY 1996
   AERIAL TOPOGRAPIC SURVEY
   WOOLPERT SURVEY MARCH 1996

2. ALL HDPE PIPE VERTICAL ALIGNMENT TO BE INSTALLED USING A MINIMUM 40' DIAMETER BEND. MAINTAIN A MINIMUM 36" COVER OVER TOP OF PIPE.

3. SEE TABLE 1 ON DRAWING 92X-5900-G-00258 FOR SCHEDULE OF TOP OF LID AND INVERT ELEVATION AND DETAILS OF CLEANOUT-MANHOLES.

4. THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION.

5. THE STEEL CASING PIPE SHALL BE INSTALLED BY THE HAUL ROAD SUBCONTRACTOR. SUBCONTRACTOR SHALL VERIFY ELEVATIONS PRIOR TO WORK. TO INSTALL LEACHATE LINE, SLIP 8" HDPE THROUGH SLEEVE, TRIM ADD FUSION WELD BEADS ON EXTERIOR IF NECESSARY. REFERENCE MANUFACTURER INSTRUCTIONS FOR PROPOSED PULLING PROCEDURES AND PIPE BULKHEADS FOR PULLS.

6. FOR UNDERGROUND LEACHATE CONVEYANCE PIPING, USE HDPE SDR 11 FOR 4" CARRIER PIPE WITH PIPE CENTRALIZERS AND SDR 17 FOR 8" CONTAINMENT PIPE. INSTALL 6" WIDE PLASTIC TAPE WITH MAGNETIC TRACE WIRE IN 6" ABOVE ALL HDPE PIPE. INSTALL PIPE MARKERS (SEE DETAIL ON DRAWING 92X-5900-G-00257) EVERY 200', EVERY MIDPOINT OF CURVES AND AT FUTURE TAP POINTS (10' FROM PAVEMENT EDGE).

7. ALL BENDS AND FITTINGS ON HDPE ARE TO BE MOLDED UNLESS OTHERWISE NOTED.

8. FOR LOCATION OF PLAN IN REFERENCE TO THE LEACHATE CONVEYANCE LINE SEE THE MASTER PLAN, DRAWING 92X-5900-G-00251.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-G-00265	LEGEND AND SYMBOLS
92X-5900-G-00251	MASTER PLAN
92X-5900-G-00255	DETAILS SHEET 1 OF 3
92X-5900-G-00257	DETAILS SHEET 2 OF 3
92X-5900-G-00258	DETAILS SHEET 3 OF 3
92X-5900-G-00266	PLAN AND PROFILE SHEET 3 OF 4

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL
PLAN AND PROFILE
SHEET 4 OF 4

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
C.R. TOMONGIN	2-22-96	Ed Kubrin	10/1/96	E. KUBRIN	3/22/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		AS SHOWN	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NO.
A-E DATE	N/A DATE	20211

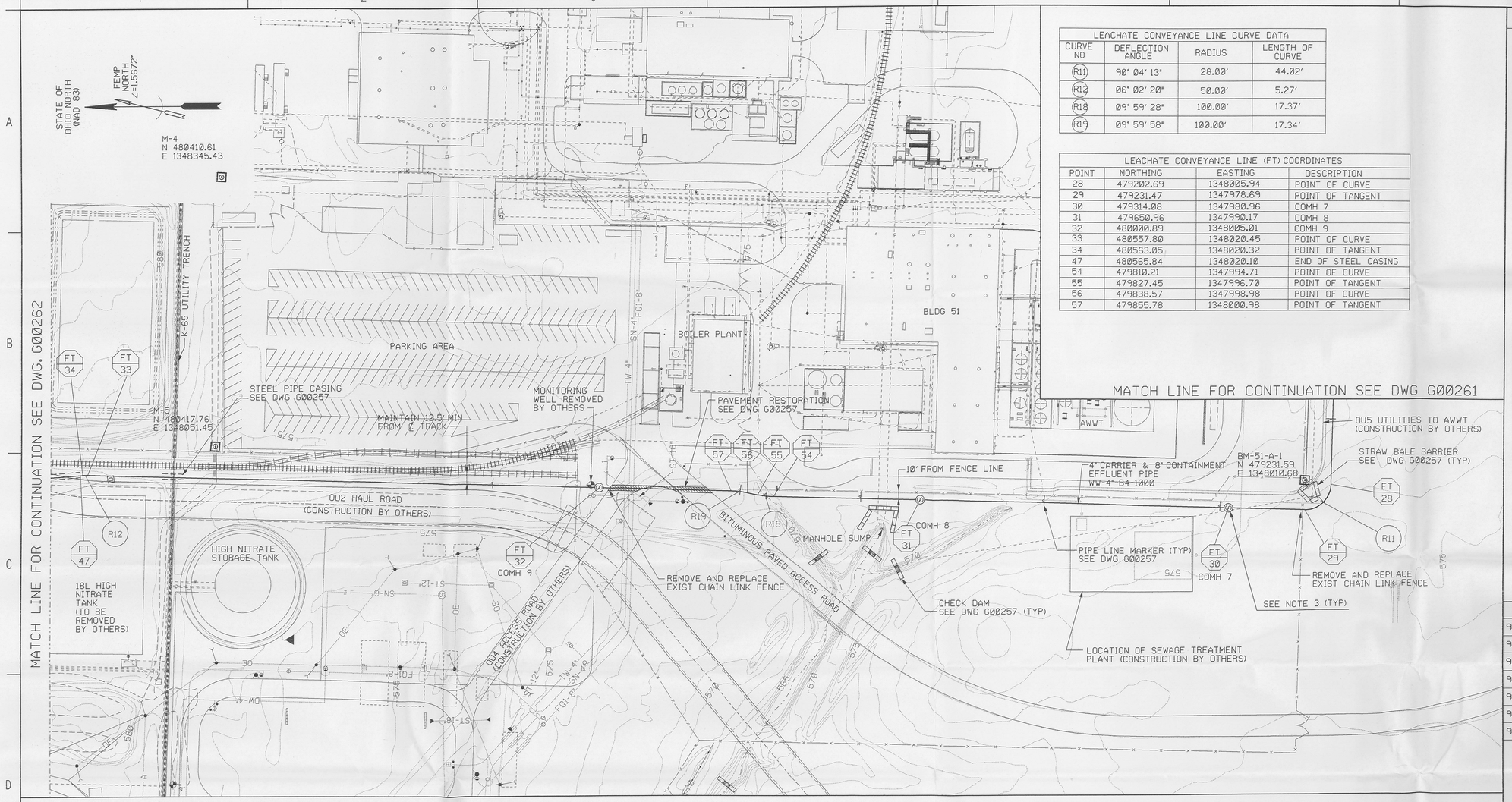
DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
	WBS 1.1.1.1.2.3.6 00-90701	92X-5900-G-00262	G0005	0

PREPARED UNDER PARSONS PROJECT ORDER NUMBER
SRP/PO164

STATE OF OHIO EDWARD JOSEPH KUBRIN 42703 REGISTERED PROFESSIONAL ENGINEER

Edward J. Kubrin

8



LEACHATE CONVEYANCE LINE CURVE DATA			
CURVE NO	DEFLECTION ANGLE	RADIUS	LENGTH OF CURVE
R11	90° 04' 13"	28.00'	44.02'
R12	06° 02' 20"	50.00'	5.27'
R18	09° 59' 28"	100.00'	17.37'
R19	09° 59' 58"	100.00'	17.34'

LEACHATE CONVEYANCE LINE (FT) COORDINATES			
POINT	NORTHING	EASTING	DESCRIPTION
28	479202.69	1348005.94	POINT OF CURVE
29	479231.47	1347978.69	POINT OF TANGENT
30	479314.08	1347980.96	COMH 7
31	479650.96	1347990.17	COMH 8
32	480000.89	1348005.01	COMH 9
33	480557.80	1348020.45	POINT OF CURVE
34	480563.05	1348020.32	POINT OF TANGENT
47	480565.84	1348020.10	END OF STEEL CASING
54	479810.21	1347994.71	POINT OF CURVE
55	479827.45	1347996.70	POINT OF TANGENT
56	479838.57	1347998.98	POINT OF CURVE
57	479855.78	1348000.98	POINT OF TANGENT

NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW.

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   PARSONS TOPOGRAPHY, 1992
   B.L. PAYNE AND ASSOCIATES, TOPOGRAPHIC SURVEY 1996
   WOOLPERT SURVEY MARCH 1996

2. ALL HDPE LINE VERTICAL ALIGNMENT TO BE INSTALLED USING A MINIMUM 40' DIAMETER BEND. MAINTAIN A MINIMUM 36" COVER OVER TOP OF CONTAINMENT PIPE.

3. SEE TABLE 1, DRAWING NO 92X-5900-G-00258 FOR SCHEDULE OF TOP OF LID AND INVERT ELEVATION AND DETAILS OF CLEANOUT-MANHOLES.

4. THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION.

5. MAINTAIN PIPE ELEVATIONS AS SHOWN BETWEEN MANHOLES TO PERMIT DRAINAGE. THE LOCATION OF HIGH POINT IS APPROXIMATE, TO BE FIELD VERIFIED .

6. FOR UNDERGROUND LEACHATE CONVEYANCE PIPING, USE HDPE SDR 11 FOR 4" CARRIER PIPE WITH PIPE CENTRALIZERS AND SDR 17 FOR 8" CONTAINMENT PIPE. INSTALL 6" WIDE PLASTIC TAPE WITH MAGNETIC TRACE WIRE 6" ABOVE ALL HDPE PIPE. INSTALL PIPE LINE SIGNS AS SHOWN (SEE DETAIL ON DRAWING 92X-5900-G-00257).

7. ALL FITTINGS ON HDPE ARE TO BE MOLDED UNLESS OTHERWISE NOTED.

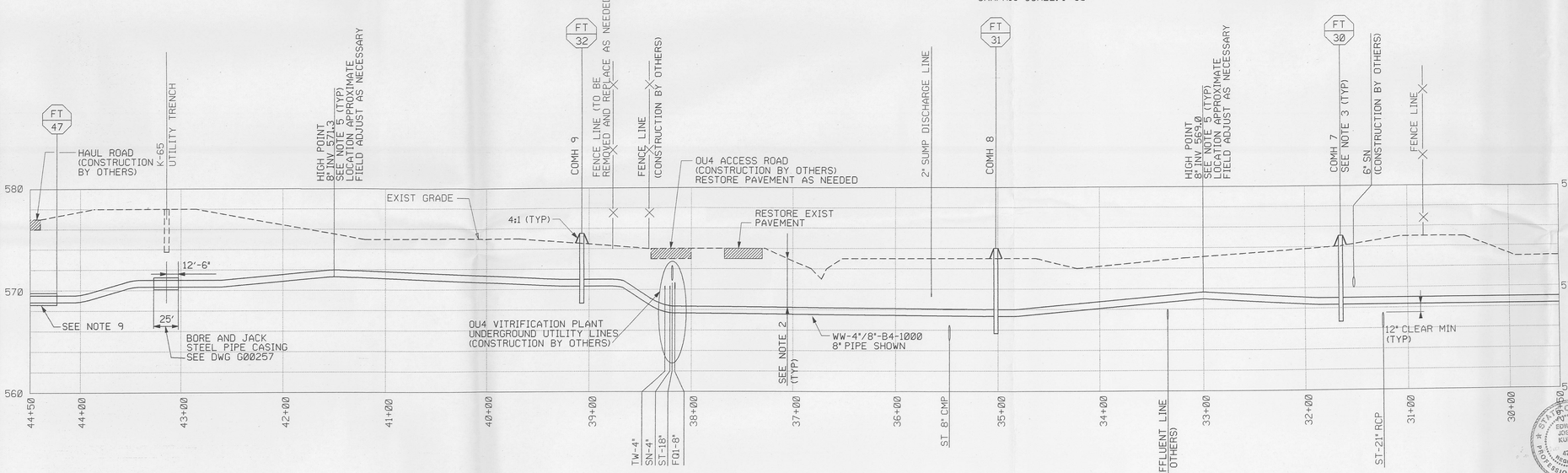
8. FOR LOCATION OF PLAN IN REFERENCE TO THE LEACHATE CONVEYANCE LINE SEE THE MASTER PLAN, DRAWING 92X-5900-G-00251.

9. THE STEEL CASING PIPE SHALL BE INSTALLED BY THE HAUL ROAD SUBCONTRACTOR, COORDINATED WORK THROUGH FERMCO.

PLAN

SCALE: 1" = 50'

GRAPHIC SCALE: 1"=50'



PROFILE

SCALE: HOR 1" = 50'
VERT 1" = 5'

CONSTRUCTION PACKAGE

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-G-00251	MASTER PLAN
92X-5900-G-00261	PLAN AND PROFILE SHEET 2 OF 4
92X-5900-G-00262	PLAN AND PROFILE SHEET 4 OF 4
92X-5900-G-00257	DETAILS - SHEET 2 OF 3
92X-5900-G-00258	DETAILS - SHEET 3 OF 3

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL
PLAN AND PROFILE
SHEET 3 OF 4

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
C.R. TOMONGIN	2-22-96		1/4/96	E. MELNYK	04/19/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		AS SHOWN	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NO.
		20211

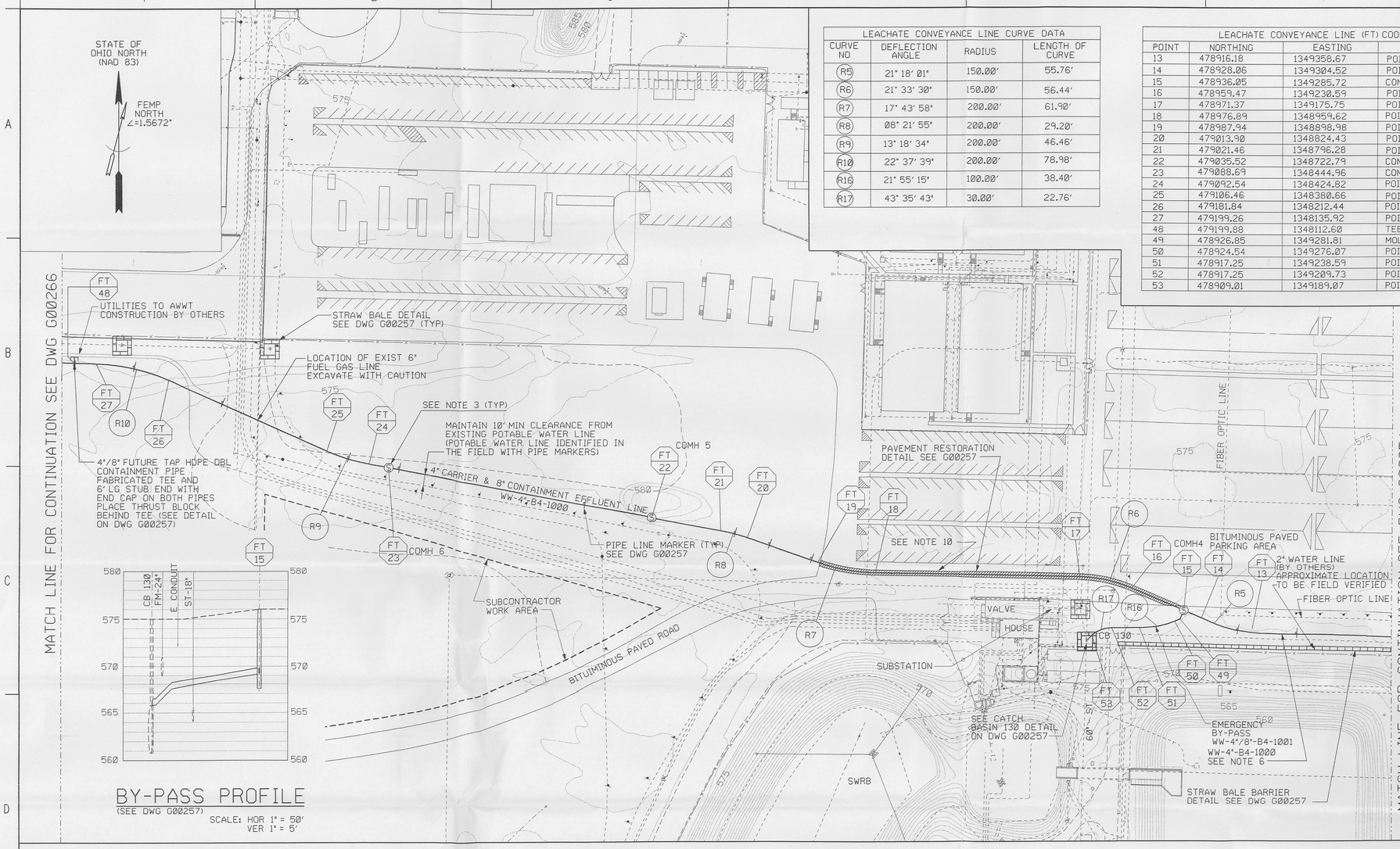
A-E DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
	WBS 1.1.1.1.2.3.6 00-90701	92X-5900-G-00266	G0004	0

PREPARED UNDER PARSONS PROJECT ORDER NUMBER
SRP/P0164

STATE OF OHIO EDWARD JOSEPH KUBRIN 67705 REGISTERED PROFESSIONAL ENGINEER

LEACHATE CONVEYANCE LINE CURVE DATA			
CURVE NO	DEFLECTION ANGLE	RADIUS	LENGTH OF CURVE
R5	21° 18′ 01"	150.00′	55.76′
R6	21° 33′ 30"	150.00′	56.44′
R7	17° 43′ 58"	200.00′	61.90′
R8	08° 21′ 55"	200.00′	29.20′
R9	13° 18′ 34"	200.00′	46.46′
R10	22° 37′ 39"	200.00′	78.98′
R16	21° 55′ 15"	100.00′	38.40′
R17	43° 35′ 43"	30.00′	22.76′

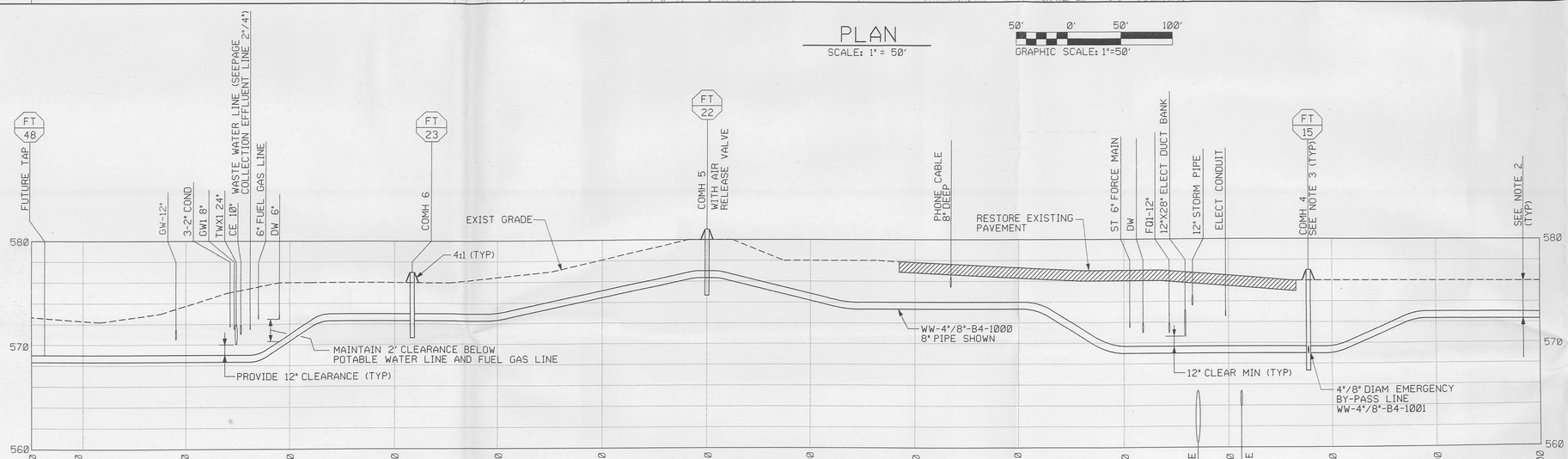
LEACHATE CONVEYANCE LINE (FT) COORDINATES			
POINT	NORTHING	EASTING	DESCRIPTION
13	478916.18	1349358.67	POINT OF CURVE
14	478928.06	1349304.52	POINT OF TANGENT
15	478936.05	1349285.72	COMH 4 WITH BYPASS LINE
16	478959.47	1349230.59	POINT OF CURVE
17	478971.37	1349175.75	POINT OF TANGENT
18	478976.89	1348959.62	POINT OF CURVE
19	478987.94	1348898.98	POINT OF TANGENT
20	479013.90	1348824.43	POINT OF CURVE
21	479021.46	1348796.28	POINT OF TANGENT
22	479035.52	1348722.79	COMH 5
23	479088.69	1348444.96	COMH 6
24	479092.54	1348424.82	POINT OF CURVE
25	479106.46	1348380.66	POINT OF TANGENT
26	479181.84	1348212.44	POINT OF CURVE
27	479199.26	1348135.92	POINT OF TANGENT
48	479199.88	1348112.60	TEE FOR FUTURE TAP
49	478926.85	1349281.81	MOLDED 45° EL
50	478924.54	1349276.07	POINT OF CURVE
51	478917.25	1349238.59	POINT OF TANGENT
52	478917.25	1349209.73	POINT OF CURVE
53	478909.01	1349189.07	POINT OF TANGENT



BY-PASS PROFILE
(SEE DWG G00257)
SCALE: HOR 1" = 50′
VER 1" = 5′

PLAN
SCALE: 1" = 50′

GRAPHIC SCALE: 1"=50′



PROFILE
SCALE: HOR 1" = 50′
VERT 1" = 5′

CONSTRUCTION PACKAGE

NOTES

741

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW.

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   PARSONS TOPOGRAPHY, 1992
   B.L. PAYNE AND ASSOCIATES, TOPOGRAPHIC SURVEY 1996
   WOOLPERT SURVEY, MARCH 1996

2. ALL HDPE LINE VERTICAL ALIGNMENT TO BE INSTALLED USING A MINIMUM 40′ DIAMETER BEND. MAINTAIN A MINIMUM 36" COVER OVER TOP OF PIPE.

3. SEE TABLE 1, DRAWING NO 92X-5900-G-00258 FOR SCHEDULE OF TOP OF LID AND INVERT ELEVATION AND DETAILS OF CLEANOUT-MANHOLES.

4. THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION.

5. MAINTAIN PIPE ELEVATIONS AS SHOWN BETWEEN MANHOLES TO PERMIT DRAINAGE. LOCATION OF HIGH POINT IS APPROXIMATE, TO BE FIELD VERIFIED.

6. FOR UNDERGROUND LEACHATE CONVEYANCE PIPING, USE HDPE SDR 11 FOR 4" CARRIER PIPE WITH PIPE CENTRALIZERS AND SDR 17 FOR 8" CONTAINMENT PIPE. INSTALL 6" WIDE PLASTIC TAPE WITH MAGNETIC TRACE WIRE 6" ABOVE ALL HDPE PIPE. INSTALL PIPE LINE SIGNS AS SHOWN (SEE DETAIL ON DRAWING 92X-5900-G-00257).

7. ALL FITTINGS ON HDPE ARE TO BE MOLDED UNLESS OTHERWISE NOTED.

8. FOR LOCATION OF PLAN IN REFERENCE TO THE LEACHATE CONVEYANCE LINE SEE THE MASTER PLAN, DRAWING 92X-5900-G-00251.

9. FIELD LOCATE FIBER OPTIC LINE BEFORE INITIATING CONSTRUCTION.

10. PROVIDE TRAFFIC CONTROL IN PARKING LOT AND ROAD AREA AS PER ODOT 614 AND ODOT "TRAFFIC CONTROL FOR MAINTENCE AND CONSTRUCTION OPERATIONS". SUBCONTRACTOR IS TO SUBMIT TRAFFIC CONTROL PLAN TO FERMCO AND OBTAIN APPROVAL PRIOR TO COMMENCEMENT OF WORK.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-G-00251	MASTER PLAN
92X-5900-G-00254	PLAN AND PROFILE SHEET 1 OF 4
92X-5900-G-00266	PLAN AND PROFILE SHEET 3 OF 4
92X-5900-G-00257	DETAILS - SHEET 2 OF 3
92X-5900-G-00258	DETAILS - SHEET 3 OF 3

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL
PLAN AND PROFILE
SHEET 2 OF 4

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
C.R. TOMONGIN	2-22-96	Edward Kubrin	10/16/96	E. MELNYK	04/19/96

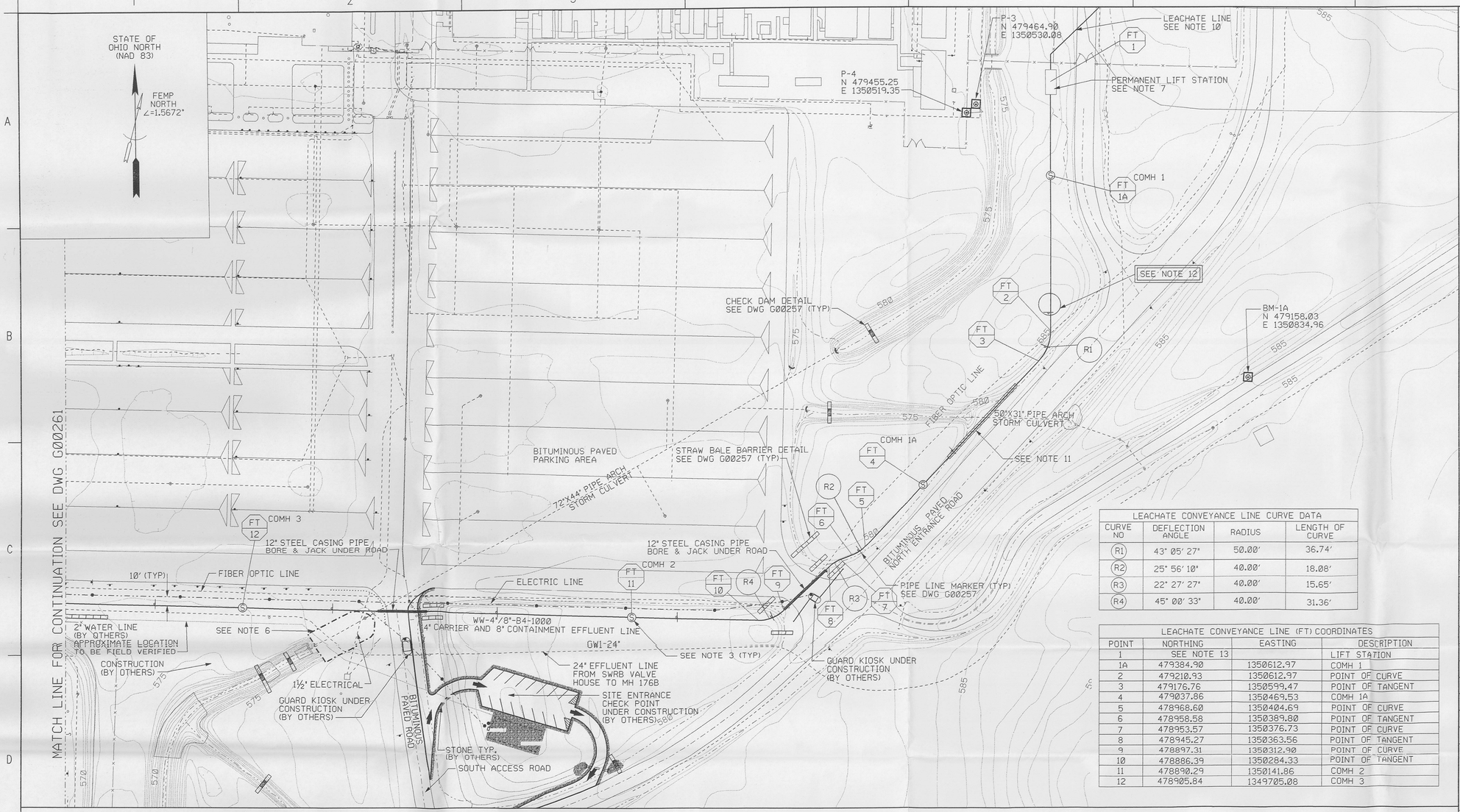
PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		AS SHOWN	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NO.
	N/A	20211

A-E DOE PROJECT NO.	DATE	FEMP PROJECT NO.	DATE	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
		WBS 1.1.1.1.2.3.6 00-90701		92X-5900-G-00261	G0003	0

PREPARED UNDER PARSONS PROJECT ORDER NUMBER
SRP/P0164

STATE OF OHIO — EDWARD JOSEPH KUBRIN — 47703 — REGISTERED PROFESSIONAL ENGINEER



PLAN

SCALE: 1" = 50'

GRAPHIC SCALE: 1"=50'

LEACHATE CONVEYANCE LINE CURVE DATA			
CURVE NO	DEFLECTION ANGLE	RADIUS	LENGTH OF CURVE
R1	43° 05' 27"	50.00'	36.74'
R2	25° 56' 10"	40.00'	18.08'
R3	22° 27' 27"	40.00'	15.65'
R4	45° 00' 33"	40.00'	31.36'

LEACHATE CONVEYANCE LINE (FT) COORDINATES			
POINT	NORTHING	EASTING	DESCRIPTION
1	SEE NOTE 13		LIFT STATION
1A	479384.90	1350612.97	COMH 1
2	479210.93	1350612.97	POINT OF CURVE
3	479176.76	1350599.47	POINT OF TANGENT
4	479037.86	1350469.53	COMH 1A
5	478968.60	1350404.69	POINT OF CURVE
6	478958.58	1350389.80	POINT OF TANGENT
7	478953.57	1350376.73	POINT OF CURVE
8	478945.27	1350363.56	POINT OF TANGENT
9	478897.31	1350312.90	POINT OF CURVE
10	478886.39	1350284.33	POINT OF TANGENT
11	478890.29	1350141.86	COMH 2
12	478905.84	1349705.08	COMH 3

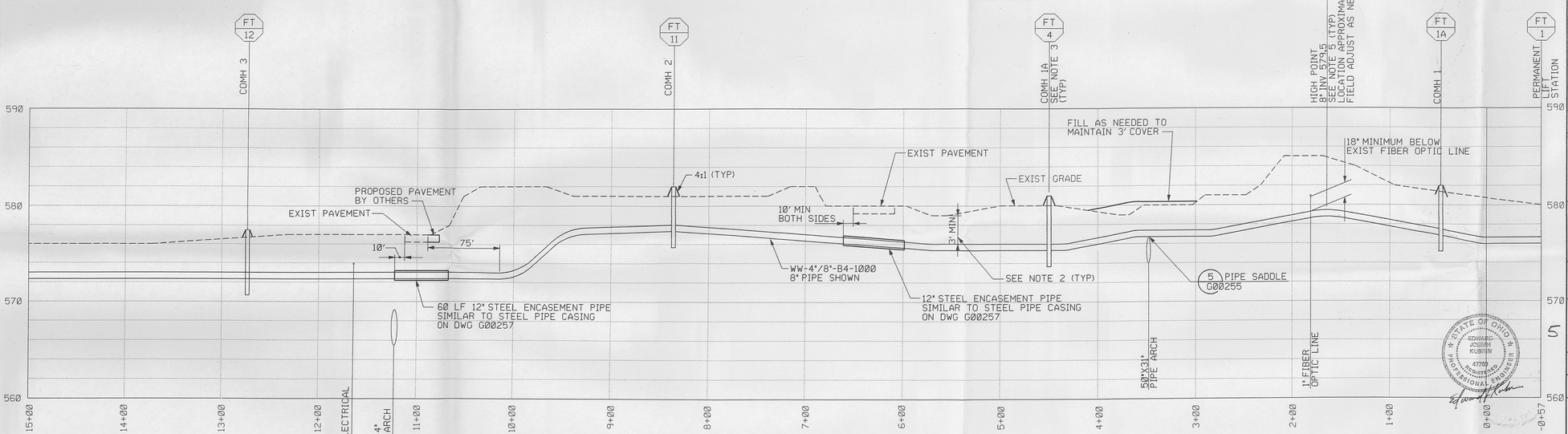
NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE DOCUMENTS LISTED BELOW.

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   PARSONS TOPOGRAPHY, 1992
   B.L. PAYNE AND ASSOCIATES, TOPOGRAPHIC SURVEY 1996
   WOOLPERT SURVEY, MARCH 1996
2. ALL HDPE PIPE VERTICAL ALIGNMENT TO BE INSTALLED USING A MINIMUM 40' DIAMETER BEND. MAINTAIN A MINIMUM 36" COVER OVER TOP OF CONTAINMENT PIPE.
3. SEE TABLE 1 ON DRAWING 92X-5900-G-00258 FOR SCHEDULE OF TOP OF LID AND INVERT ELEVATION AND DETAILS OF CLEANOUT-MANHOLES, (COMH).
4. THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO CONSTRUCTION.
5. MAINTAIN PIPE ELEVATIONS AS SHOWN BETWEEN MANHOLES TO PERMIT DRAINAGE TO MANHOLES. NO SAGS ARE TO BE CREATED BETWEEN MANHOLES. THE LOCATION OF HIGH POINT IS APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE SUBCONTRACTOR.
6. FIELD VERIFY EXISTING TOPOGRAPHY OF AREA BEFORE START OF CONSTRUCTION.
7. SEE DRAWING 90X-6000-G-00059, 90X-6000-M-00067 AND 90X-6000-S-00069 FOR DETAILS AND LOCATION OF PERMANENT LIFT STATION.
8. FOR UNDERGROUND LEACHATE CONVEYANCE PIPING, USE HDPE SDR 11 FOR 4" CARRIER PIPE AND SDR 17 FOR 8" CONTAINMENT PIPE. INSTALL 6" WIDE PLASTIC TAPE WITH MAGNETIC TRACE WIRE 6" ABOVE ALL HDPE PIPE. INSTALL PIPE LINE SIGNS AS SHOWN ON THE DETAIL ON DRAWING 92X-5900-G-00257).
9. ALL FITTINGS ON HDPE ARE TO BE MOLDED UNLESS OTHERWISE NOTED.
10. FOR LOCATION OF PLAN IN REFERENCE TO THE LEACHATE CONVEYANCE LINE SEE THE MASTER PLAN, DRAWING 92X-5900-G-00251.
11. LIMIT OF ADDITIONAL COVER GRADING, SIDE SLOPES TO BE MAXIMUM 3:1. REGRADE DRAINAGE SWALES AS REQUIRED TO MAINTAIN DRAINAGE. PIPE ARCH CULVERT TO BE MAINTAINED.
12. SUBCONTRACTOR SHALL EXCAVATE AND CONFIRM LOCATION AND DEPTH OF FIBER OPTIC LINE PRIOR TO ANY CONSTRUCTION OF THE LEACHATE CONVEYANCE LINE.
13. LOCATION OF TIE-IN POINT IS DEPENDENT ON FABRICATION DETAILS OF LIFT STATION. LOCATION TO BE FIELD DETERMINED.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-G-00251	MASTER PLAN
92X-5900-G-00261	PLAN AND PROFILE - SHEET 2 OF 4
92X-5900-G-00255	DETAILS SHEET 1 OF 3
92X-5900-G-00257	DETAILS SHEET 2 OF 3
92X-5900-G-00258	DETAILS SHEET 3 OF 3
90X-6000-M-00067	LEACHATE TRANSMISSION SYSTEM - LIFT STATION MECHANICAL DETAILS II
90X-6000-G-00059	LEACHATE TRANSMISSION SYSTEM PLAN AND PROFILE DATA III
90X-6000-S-00069	LEACHATE TRANSMISSION SYSTEM STRUCTURAL DETAILS

FOR INFORMATION ONLY



PROFILE

SCALE: HOR 1" = 50'
VERT 1" = 5'

CONSTRUCTION PACKAGE

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL
PLAN AND PROFILE
SHEET 1 OF 4

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
C.R. TOMONGIN	2-22-96	Edward Kubrin	10/11/96	E. MELYNK	4/19/96

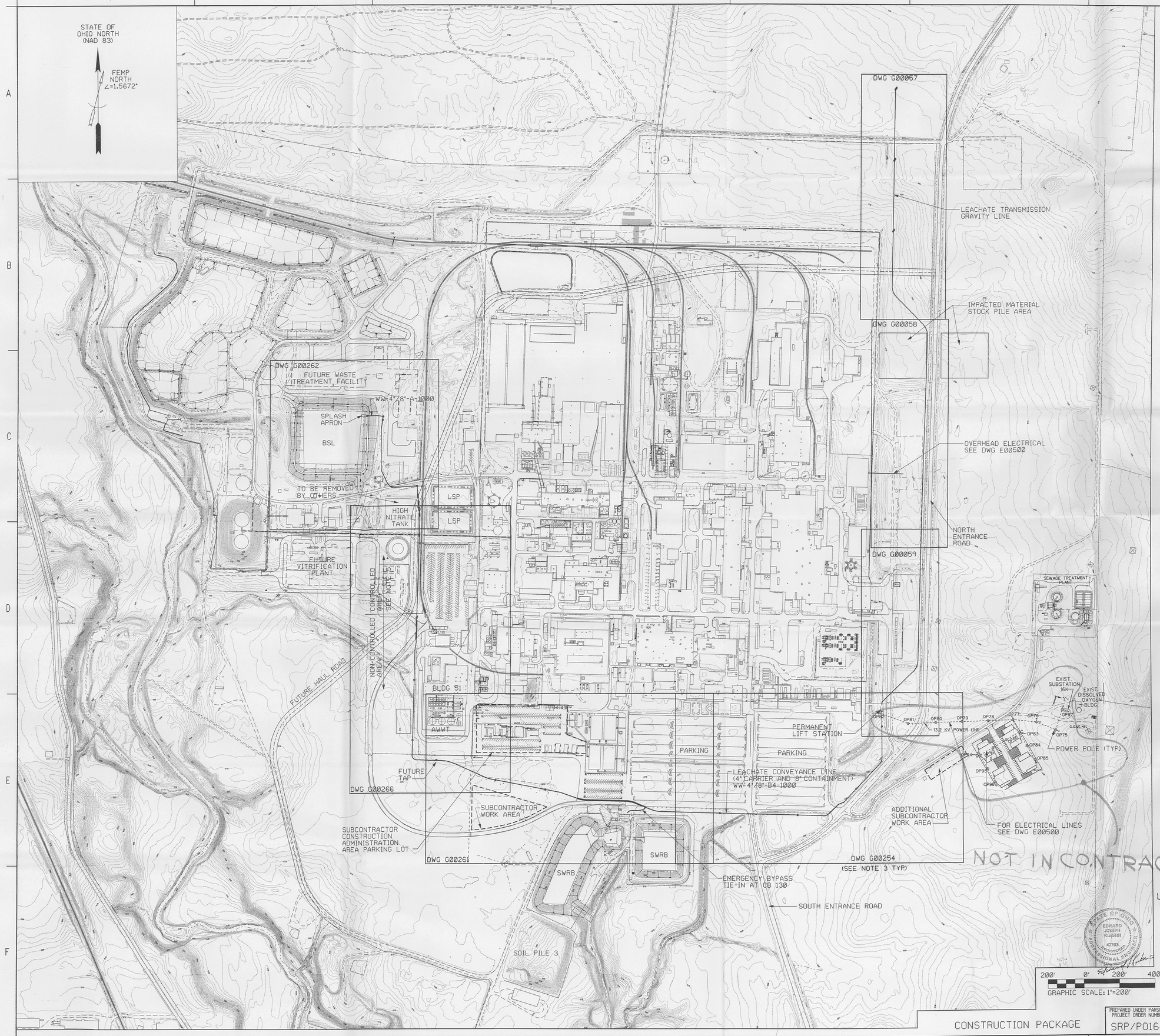
PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		AS SHOWN	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NO.
A-E DATE	DATE	20211

DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
	WBS 1.1.1.1.2.3.6 00-90701	92X-5900-G-00254	G0002	0

PREPARED UNDER PARSONS PROJECT ORDER NUMBER: SRP/P0164

STATE OF OHIO — EDWARD JOSEPH KUBRIN — 47703 — REGISTERED PROFESSIONAL ENGINEER



NOTES

1. EXISTING CONDITIONS SHOWN ON THIS DRAWING WERE PREPARED FROM FEMP SITE PROVIDED DATA FROM THE FOLLOWING DOCUMENTS:

   EXISTING SITE DATA SOURCE (IN PLANT FILES)
   FEMP CADD GRID/UTILITY DRAWINGS
   FEMP CONTRACTOR PROJECT DESIGN DOCUMENTS
   PARSONS TOPOGRAPHY, 1992
   B.L. PAYNE AND ASSOCIATES, TOPGORAPHIC SURVEY 1996
   WOOLPERT SURVEY, MARCH 1996

2. THE LOCATION AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE. THE SUBCONTRACTOR SHALL FIELD VERIFY PRIOR TO START OF CONSTRUCTION.

3. RECTANGULAR SHAPE INDICATES SHEET LIMITS WITH DRAWING NUMBER TO REFERENCE FOR ENLARGED PLAN AND PROFILE.

4. ALL COORDINATES ARE IN NAD 1983. ALL ELEVATIONS IN NGVD 1927.

5. THE SUBCONTRACTOR SHALL VERIFY LOCATION OF CONTROLLED AREA WITH FERMCO PRIOR TO CONSTRUCTION.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS
92X-5900-G-00254	PLAN AND PROFILE SHEET 1 OF 4
92X-5900-G-00261	PLAN AND PROFILE SHEET 2 OF 4
92X-5900-G-00266	PLAN AND PROFILE SHEET 3 OF 4
92X-5900-G-00262	PLAN AND PROFILE SHEET 4 OF 4
90X-6000-G-00057	LEACHATE TRANSMISSION SYSTEM PLAN AND PROFILE DATA I
90X-6000-G-00058	LEACHATE TRANSMISSION SYSTEM PLAN AND PROFILE DATA II
90X-6000-G-00059	LEACHATE TRANSMISSION SYSTEM PLAN AND PROFILE DATA III
90X-5500-E-00500	LEACHATE CONVEYANCE SYSTEM - ELECTRICAL SITE PLAN AND SINGLE LINE

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

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THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
CIVIL
MASTER PLAN

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
C.R. TOMONGIN	2-22-96	Edward Kubrin	1/9/1996	E. MELYNK	4/19/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		1" = 200'	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NO.
A-E DATE	N/A DATE	20211

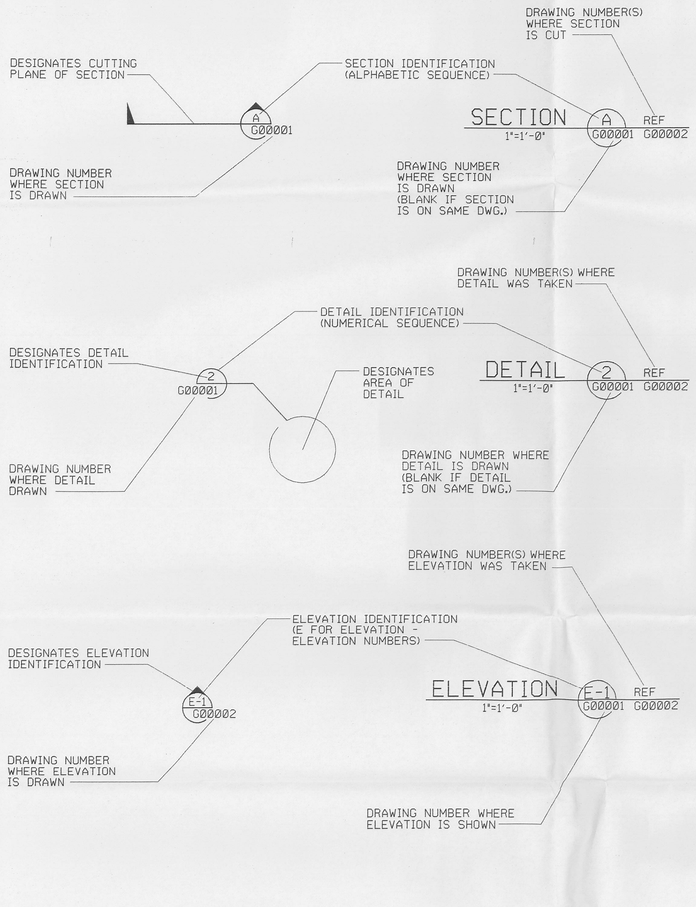
DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
	WBS 1.1.1.1.2.3.6 00-90701	92X-5900-G-00251	G0001	0

PREPARED UNDER PARSONS PROJECT ORDER NUMBER SRP/P0164

CONSTRUCTION PACKAGE

STATE OF OHIO EDWARD JOSEPH KUBRIN 47703 REGISTERED PROFESSIONAL ENGINEER

GENERAL LEGEND



NOTE:

ABBREVIATED DRAWING NUMBERS WILL BE USED FOR ALL SECTIONS, DETAILS, ELEVATIONS, AND WITHIN NOTES AND CALL OUTS IN THE BODY OF THE DRAWING.

FOR EXAMPLE; 95X-5900-G-00002 = DRAWING NUMBER
G00002 = ABBREVIATED DRAWING NUMBER

DIMENSIONING:

DIMENSIONS AND/OR ELEVATIONS MARKED THUS (+/-) SHALL BE VERIFIED IN THE FIELD BY SUB-CONTRACTOR, BEFORE START OF CONSTRUCTION.

USE DIMENSIONS AS SHOWN, DO NOT SCALE.

NTS (NOT TO SCALE) IS SHOWN ONLY WHERE DIMENSION IS OBVIOUSLY OUT OF SCALE.

CONSTRUCTION BY OTHERS

- CONTOUR - MAJOR & MINOR
- UTILITIES
- BUILDING/TRAILER/PAD
- ROADWAY/SIDEWALK

UTILITY SYMBOLS

EXISTING		PROPOSED
----- ST -----	STORM SEWER	ST
----- SN -----	SANITARY SEWER	SN
----- FG -----	FUEL GAS	FG
----- DW -----	DRINKING WATER	DW
----- FQ1 -----	FIRE PROTECTION	FQ1
----- LS -----	LIVE STEAM	LS
----- WS -----	WATER SUPPLY	WS
----- WR -----	COOLING WATER RETURN	WR
----- TW -----	PROCESS WATER	TW
----- CE -----	CONTAMINATE WATER	CE
----- FT -----	FILTRATE OR EFFLUENT	FT
----- DF -----	DEIONIZED FEED	DF
----- PW -----	DEIONIZED WATER	PW
----- BR -----	BRINE	BR
----- RW -----	RAW WATER	RW
----- A -----	ALARM	A
----- CN -----	STEAM CONDENSATE	CN
----- VE -----	VENT LINES	VE
----- SD -----	SUB-SURFACE DRAINAGE	SD
----- SL -----	SUMP LIQUOR	SL
----- E -----	ELECTRICAL	E
----- OE --◇--	OVERHEAD ELECTRICAL	OE —◆—
----- T -----	TELEPHONE	T
----- G -----	ELECTRIC GROUND	G
----- PA -----	PLANT AIR	PA
----- SA -----	INSTRUMENT AIR SUPPLY	SA
	ABANDONED	

BALLOON LEGEND

- PIV — POST INDICATOR VALVE
- SMH — SANITARY MANHOLE
- EMH — ELECTRICAL MANHOLE
- TMH — TELEPHONE MANHOLE
- CB — STORM SEWER CATCH BASIN
- HFH — HIGH PRESSURE FIRE HYDRANT
- LFH — LOW PRESSURE FIRE HYDRANT
- FT 3 — COORDINATE POINT (DESIGNATES PIPELINE)

GRADING SYMBOLS

SEE DRAWING 90X-6000-X-00056 FOR GRADING SYMBOLS LEGEND

SYMBOLS LEGEND

EXISTING		PROPOSED
	POST INDICATOR VALVE (PIV)	
	FIRE HYDRANT (FH)	
	MANHOLE (MH)	S OR D
	CATCH BASIN (CB)	D
	LIGHT POLE	
	PIPE SUPPORT	
	ELECTRICAL MANHOLE	E
	TELEPHONE MANHOLE	T
	STREET WASHERS	
	VALVE BOX	
1313	MONITORING WELL	
	SURFACE DRAINAGE FLOW	
	POWER POLE	
	GRAVEL ROADWAY/DRIVEWAY	
	ASPHALT ROADWAY/DRIVEWAY	
	CONCRETE	
	BUILDING/TRAILER	
	RAILROAD TRACK	
	OU BOUNDARY	
	FENCE	
	TREE LINE	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	CENTERLINE DRAINAGE DITCH	
	RIVER/CREEK	
	TO BE REMOVED	
	SILT FENCE	
	ELECTRICAL TRANSFORMER	T
	TRANSMISSION TOWER	
	HEADWALL	OR
BM	BENCH MARK	
—xx—xx—	CONSTRUCTION/WIND BARRIER FENCE	—xx—xx—
	SIGN	
	BOLLARD/GUARD POST	
PB	ELECTRICAL PULL BOX	
	SURVEY CONTROL POINT	
	ROAD CENTERLINE OR BASELINE	
	BEND	OR
	TEE	
	THRUST BLOCK	
	REDUCER	
W OR U	UNKNOWN	
	STRAW BALE SILT BARRIER	
	FENCE GATE	
	CHECK DAM	

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STATE OF OHIO — EDWARD JOSEPH KUBRIN — 47703 — REGISTERED PROFESSIONAL ENGINEER

CONSTRUCTION PACKAGE

NOTES

ABBREVIATIONS

AWWT	ADVANCE WASTE WATER TREAT,EMT
BSL	BIODENITRIFICATION SURGE LAGOON
COMH	CLEANOUT MANHOLE
DI	DUCTILE IRON
FT	EFFLUENT LINE
FML	FLEXIBLE MEMBRANE LINER
HDPE	HIGH DENSITY POLYETHYLENE
LSP	LIME SLUDGE POND
OD	OUTSIDE DIAMETER
ODOT	OHIO DEPARTMENT OF TRANSPORTATION
OSDF	ONSITE DISPOSAL FACILITY
OU	OPERABLE UNIT
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PS	POINT OF SWITCH
SCH	SCHEDULE
SWRB	STORMWATER RETENTION BASIN
STL	CARBON STEEL
TYP	TYPICAL
WWF	WELDED WIRE FABRIC
HWC	HEAVY WALL CONDUIT

GENERAL NOTE:

THE LEGEND AND SYMBOLS PRESENTED ON THIS DRAWING APPLIES TO PARSONS 92X-5900-X-XXXX SERIES DRAWINGS ONLY.

REF DWG NO.	DRAWING TITLE
92X-5900-X-00263	PROJECT TITLE SHEET
92X-5900-X-00264	DRAWING INDEX

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
Ø	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
LEGEND AND SYMBOLS

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
K.L. RABBITT	02/16/96			G. MELNYK	4/19/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		NONE	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NO.
A-E DATE	DATE	20211

PREPARED UNDER PARSONS PROJECT ORDER NUMBER	DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
SRP/P0164		WBS 1.1.1.1.2.3.6 00-90701	92X-5900-X-00265	X0003	Ø

INDEX OF DRAWINGS

INDEX CODE NO.	FERMCO DWG. NO.	SHEET NO.	REVISION NO.	DRAWING TITLE	PREPARED BY	REMARKS
	92X-5900-X-00263	X0001	0	PROJECT TITLE SHEET	PARSONS	
	92X-5900-X-00264	X0002	0	DRAWING INDEX	PARSONS	
	92X-5900-X-00265	X0003	0	LEGEND AND SYMBOLS	PARSONS	
					PARSONS	
	92X-5900-G-00251	G0001	0	CIVIL - MASTER PLAN	PARSONS	
	92X-5900-G-00254	G0002	0	CIVIL - PLAN AND PROFILE - SHEET 1 OF 4	PARSONS	
	92X-5900-G-00261	G0003	0	CIVIL - PLAN AND PROFILE - SHEET 2 OF 4	PARSONS	
	92X-5900-G-00266	G0004	0	CIVIL - PLAN AND PROFILE - SHEET 3 OF 4	PARSONS	
	92X-5900-G-00262	G0005	0	CIVIL - PLAN AND PROFILE - SHEET 4 OF 4	PARSONS	
	92X-5900-G-00255	G0006	0	CIVIL - DETAILS - SHEET 1 OF 3	PARSONS	
	92X-5900-G-00257	G0007	0	CIVIL - DETAILS - SHEET 2 OF 3	PARSONS	
	92X-5900-G-00258	G0008	0	CIVIL - DETAILS - SHEET 3 OF 3	PARSONS	
					PARSONS	
	92X-5900-E-00323	E0001	0	ELECTRICAL - PLANS - PERMANENT LIFT STATION AND BIOSURGE LAGOON	PARSONS	
	92X-5900-E-00324	E0002	0	ELECTRICAL - SINGLE LINE AND SCHEMATICS - PERMANENT LIFT STATION	PARSONS	
	92X-5900-E-00325	E0003	0	ELECTRICAL - ELEVATION AND DETAILS	PARSONS	
	90X-5500-E-00500		0	LEACHATE CONVEYANCE SYSTEM - ELECTRICAL SITE PLAN AND SINGLE LINE	FERMCO	
	90X-5500-E-00501		0	LEACHATE CONVEYANCE SYSTEM - ELECTRICAL DETAILS	FERMCO	
	90X-5500-E-00502		0	LEACHATE CONVEYANCE SYSTEM - ELECTRICAL DETAILS	FERMCO	
	90X-5500-E-00503		0	OSDF UTILITY REROUTING - MAIN SITE TELEPHONE FEEDER LINES LAYOUT	FERMCO	
	92X-5900-N-00330	N0001	0	MECHANICAL PROCESS - PIPING AND INSTRUMENTATION DIAGRAM - SYMBOLS AND LEGEND SHEET	PARSONS	
	92X-5900-N-00322	N0002	0	MECHANICAL PROCESS - PIPING AND INSTRUMENTATION DIAGRAM - LEACHATE CONVEYANCE SYSTEM	PARSONS	
	92X-5900-N-00345	N0003	0	INSTRUMENTATION - ANALOG I/O DIAGRAM	PARSONS	
	92X-5900-N-00347	N0004	0	INSTRUMENTATION - INSTRUMENT INSTALLATION - METER MANHOLE DETAIL	PARSONS	
	90X-6000-X-00056	X-2	0	LEGEND AND SYMBOLS	GEOSYNTEC	
	90X-6000-G-00057	G-8A	0	LEACHATE TRANSMISSION SYSTEM - PLAN AND PROFILE DATA I	GEOSYNTEC	
	90X-6000-G-00058	G-8B	0	LEACHATE TRANSMISSION SYSTEM - PLAN AND PROFILE DATA II	GEOSYNTEC	
	90X-6000-G-00059	G-8C	0	LEACHATE TRANSMISSION SYSTEM - PLAN AND PROFILE DATA III	GEOSYNTEC	
	90X-6000-E-00060	E-4A	0	LEACHATE TRANSMISSION SYSTEM - ELECTRICAL DETAILS I	GEOSYNTEC	
	90X-6000-E-00061	E-7A	0	LEACHATE TRANSMISSION SYSTEM - ELECTRICAL DETAILS IV	GEOSYNTEC	
	90X-6000-M-00062	M-2A	0	LEACHATE TRANSMISSION SYSTEM - PIPING AND INSTRUMENTATION DIAGRAM EARLY STAGE	GEOSYNTEC	
	90X-6000-M-00063	M-4A	0	LEACHATE TRANSMISSION SYSTEM - GRAVITY LINE AND MANHOLE MECHANICAL DETAILS I	GEOSYNTEC	
	90X-6000-M-00064	M-5A	0	LEACHATE TRANSMISSION SYSTEM - GRAVITY LINE AND MANHOLE MECHANICAL DETAILS II	GEOSYNTEC	
	90X-6000-M-00065	M-6A	0	LEACHATE TRANSMISSION SYSTEM - GRAVITY LINE AND MANHOLE MECHANICAL DETAILS III	GEOSYNTEC	
	90X-6000-M-00066	M-6B	0	LEACHATE TRANSMISSION SYSTEM - GRAVITY LINE AND MANHOLE MECHANICAL DETAILS IV	GEOSYNTEC	
	90X-6000-M-00067	M-9A	0	LEACHATE TRANSMISSION SYSTEM - LIFT STATION MECHANICAL DETAILS III	GEOSYNTEC	
	90X-6000-S-00068	S-1A	0	LEACHATE TRANSMISSION SYSTEM - STRUCTURAL DETAILS I	GEOSYNTEC	
	90X-6000-S-00069	S-3A	0	LEACHATE TRANSMISSION SYSTEM - STRUCTURAL DETAILS III	GEOSYNTEC	
	90X-6000-S-00092	S-5B	0	FENCE DETAILS	GEOSYNTEC	
	SKG-04391		A	EXISTING UTILITIES - REFERENCE DRAWING - OVERALL PLAN	FERMCO	REFERENCE DRAWING
	SKG-04392		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 1 OF 6	FERMCO	REFERENCE DRAWING
	SKG-04393		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 2 OF 6	FERMCO	REFERENCE DRAWING
	SKG-04394		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 3 OF 6	FERMCO	REFERENCE DRAWING
	SKG-04395		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 4 OF 6	FERMCO	REFERENCE DRAWING
	SKG-04396		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 5 OF 6	FERMCO	REFERENCE DRAWING
	SKG-04397		A	EXISTING UTILITIES - REFERENCE DRAWING - SHEET 6 OF 6	FERMCO	REFERENCE DRAWING

NOTES

741

REF DWG NO.	DRAWING TITLE
92X-5900-X-00263	PROJECT TITLE SHEET
92X-5900-X-00265	LEGEND AND SYMBOLS

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
DRAWING INDEX

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
K.L. RABBITT	02/16/96	Edward Kubsun	4/4/96	E. MELNYK	4/19/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		NONE	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NO.
A-E DATE	DATE	20211

DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
	WBS 1.1.1.1.2.3.6 00-90701	92X-5900-X-00264	X0002	0

PREPARED UNDER PARSONS PROJECT ORDER NUMBER
SRP/P0164

STATE OF OHIO EDWARD JOSEPH KUBSUN 47703 REGISTERED PROFESSIONAL ENGINEER

2

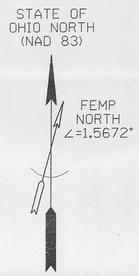
CONSTRUCTION PACKAGE

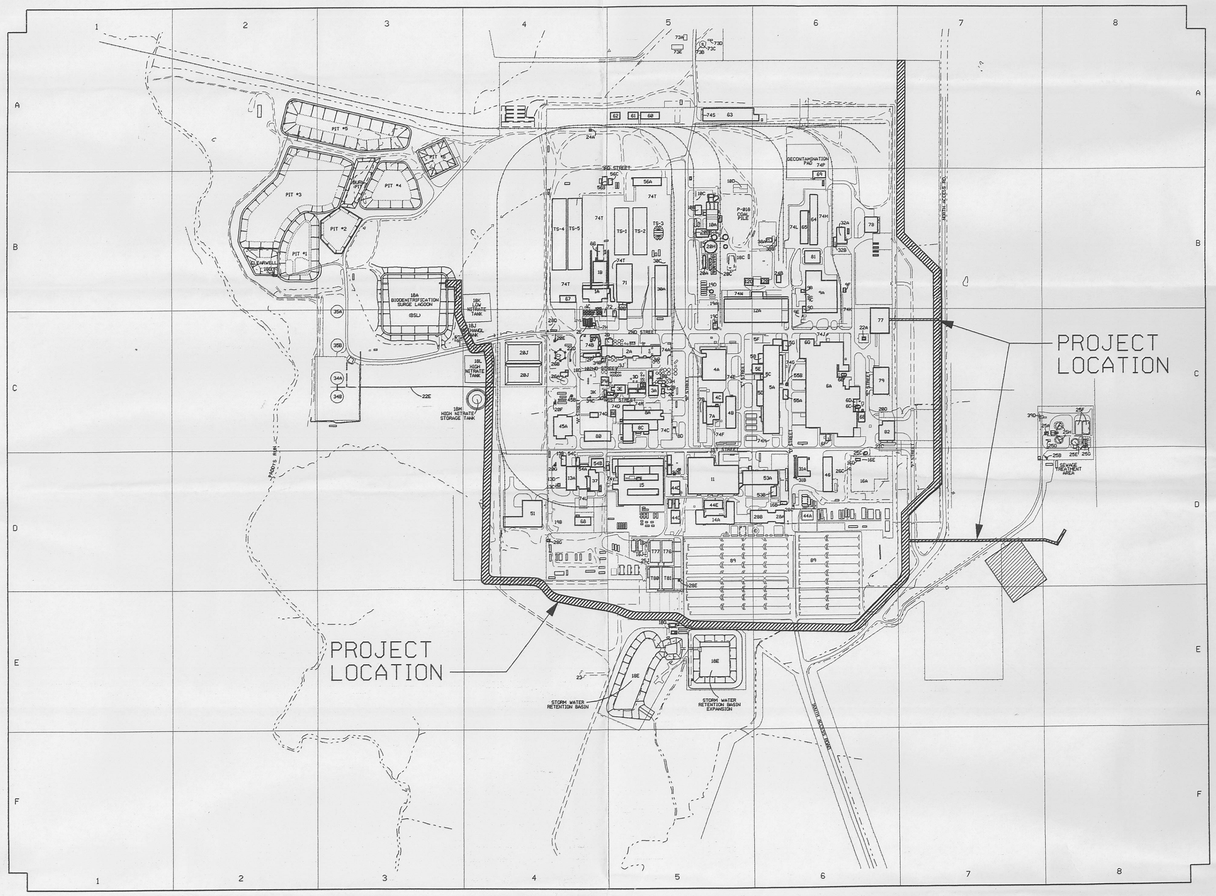
UNITED STATES DEPARTMENT OF ENERGY

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

ON-SITE DISPOSAL FACILITY
LEACHATE CONVEYANCE SYSTEM

SUBCONTRACT NUMBER 20211
HAMILTON COUNTY AND BUTLER COUNTY, OHIO
CONSTRUCTION PACKAGE





NOTES

741

REF DWG NO.	DRAWING TITLE
92X-5900-X-00264	DRAWING INDEX
92X-5900-X-00265	LEGEND AND SYMBOLS

FOR INFORMATION ONLY

REV. NO.	ISSUE OR REVISION PURPOSE - DESCRIPTION	A-E	FERMCO	DATE
0	CERTIFIED FOR CONSTRUCTION		N/A	

INITIALS AND DATE

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

THIS DRAWING PREPARED BY
PARSONS
THE RALPH M. PARSONS CO. - PARSONS MAIN, INC. - ENGINEERING-SCIENCE, INC.
CINCINNATI, OHIO

PROJECT NAME
LEACHATE CONVEYANCE SYSTEM

DRAWING TITLE
PROJECT TITLE SHEET

DRAWN BY	DATE	LEAD ENGINEER	DATE	CHECKED BY	DATE
K.L. RABBITT	02/16/96	Ed Kubsin	6/11/96	E. MELNYK	4/19/96

PLANT/BLDG. NO.	FLOOR	SCALE	CLASS
		NONE	

SUBMITTED FOR APPROVAL	FERMCO CRU APPROVAL	FERMCO PROJECT NO.
A-E DATE	N/A DATE	20211

PREPARED UNDER PARSONS PROJECT ORDER NUMBER	DOE PROJECT NO.	FEMP PROJECT NO.	DRAWING INDEX CODE NO.	SHEET NO.	REV. NO.
SRP/P0164		WBS 1.1.1.1.2.3.6 00-90701	92X-5900-X-00263	X0001	0

STATE OF OHIO EDWARD JOSEPH KUBSIN 47703 REGISTERED PROFESSIONAL ENGINEER

FERMCO
Fernald Environmental Restoration Management Corporation

FERNALD ENVIRONMENTAL
RESTORATION MANAGEMENT CORPORATION
P.O. BOX 398704
CINCINNATI, OHIO 45239

GEO SYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE, N.E. SUITE 200
ATLANTA, GEORGIA 30342-1523

PARSONS
25 MERCHANT STREET
CINCINNATI, OH 45246

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