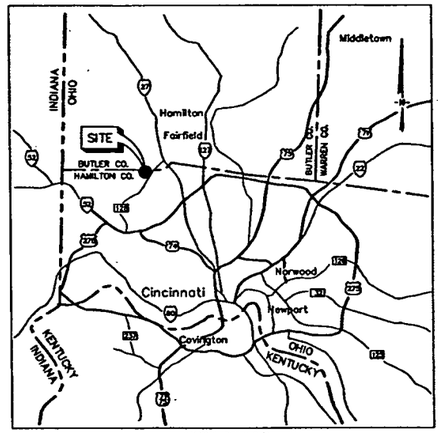
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
ON-SITE DISPOSAL FACILITY-PHASE III

3099

FLUOR FERNALD, INC. PROJECT NUMBER 20103
HAMILTON COUNTY AND BUTLER COUNTY, OHIO
CONSTRUCTION CONTRACT NO. FSC-642

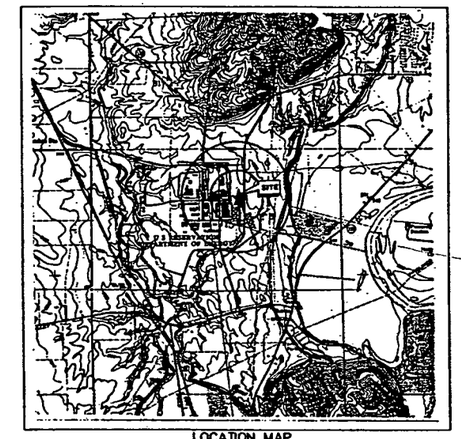


VICINITY MAP

6 3 0 6 12
SCALE IN MILES

CONSTRUCTION DRAWING INDEX

SHEET NO.	REVISION NO.	FEMP DRAWING NO.	TITLE
GENERAL			
X-1	0	90X-6000-X-00293	TITLE SHEET I
X-2	0	90X-6000-X-00294	TITLE SHEET II
X-3	0	90X-6000-X-00295	LEGEND AND SYMBOLS
CIVIL			
G-1	0	90X-6000-G-00296	SITE DEVELOPMENT PLAN
G-2	0	90X-6000-G-00297	SUBGRADE GRADING PLAN I
G-3	0	90X-6000-G-00298	SUBGRADE GRADING PLAN II
G-4	0	90X-6000-G-00299	COMPACTED CLAY LINER GRADING PLAN
G-5	0	90X-6000-G-00300	CELL OUTLET GRADING PLANS AND DETAILS
G-6	0	90X-6000-G-00301	CONTOURING LAYER GRADING PLAN
G-7	0	90X-6000-G-00302	FINAL COVER GRADING PLAN
G-8	0	90X-6000-G-00303	BORROW AREA SUBAREA 1 EXCAVATION GRADING PLAN
G-9	0	90X-6000-G-00304	BORROW AREA SUBAREA 1 RESTORATION PLAN AND SUBAREA 2A EXCAVATION GRADING PLAN
G-10	0	90X-6000-G-00305	BORROW AREA DETAILS
G-11	0	90X-6000-G-00306	IMPACTED MATERIAL HAUL ROAD GRADING PLANS AND DETAILS
G-12	0	90X-6000-G-00307	OSDF NORTH-SOUTH SECTIONS
G-13	0	90X-6000-G-00308	OSDF WEST-EAST SECTIONS I
G-14	0	90X-6000-G-00309	OSDF WEST-EAST SECTIONS II
G-15	0	90X-6000-G-00310	CELL PERIMETER DETAILS I
G-16	0	90X-6000-G-00311	CELL PERIMETER DETAILS II
G-17	0	90X-6000-G-00312	CELL PERIMETER DETAILS III
G-18	0	90X-6000-G-00313	LINER SYSTEM DETAILS I
G-19	0	90X-6000-G-00314	LINER SYSTEM DETAILS II
G-20	0	90X-6000-G-00315	LINER SYSTEM DETAILS III
G-21	0	90X-6000-G-00316	LINER SYSTEM DETAILS IV
G-22	0	90X-6000-G-00317	FINAL COVER SYSTEM DETAILS
G-23	0	90X-6000-G-00318	SURFACE-WATER MANAGEMENT SYSTEM DETAILS I
G-24	0	90X-6000-G-00319	SURFACE-WATER MANAGEMENT SYSTEM DETAILS II
G-25	0	90X-6000-G-00320	SURFACE-WATER MANAGEMENT SYSTEM DETAILS III
G-26	0	90X-6000-G-00321	SURFACE-WATER MANAGEMENT SYSTEM DETAILS IV
G-27	0	90X-6000-G-00322	IMPACTED MATERIAL PLACEMENT DETAILS
G-28	0	90X-6000-G-00323	CHAIN LINK FENCE DETAILS



LOCATION MAP
U.S.G.S. SHANDON QUADRANGLE, OHIO
2000 1000 0 2000 4000
SCALE IN FEET

000001

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	RAM	MJB	LMO	DLW.	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	RAM	JMB	WHM	DLW.	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	RAM	RDD	WHM	DLW.	JFB

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE III

TITLE: TITLE SHEET I

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

SIGNATURE: J.F. Beck
DATE: 9 May 00

STATE OF OHIO — JOHN F. BECK — 5-38248 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20103
CONTRACT NO.:	95P5005026
FEMP DRAWING NO.:	90X-6000-X-00293
GEOSYNTEC PROJECT NO.:	CO1001-06
GEOSYNTEC DOCUMENT NO.:	F00-0100
SHEET NO.:	X-1
REVISION NO.:	0

FLUOR FERNALD, INC.

FLUOR FERNALD, INC.
P.O. BOX 398704
CINCINNATI, OHIO 45239

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

CERTIFIED-FOR-CONSTRUCTION

3099

REFERENCE DRAWING INDEX

SHEET NO.	REVISION NO.	FEMP DRAWING NO.	TITLE
REFERENCE			
X-3	0	90X-6000-X-00003	FACILITY PLOT PLAN
X-4	0	90X-6000-X-00004	SITE PLAN
X-9	0	90X-6000-X-00008	PERCHED ZONE POTENTIOMETRIC SURFACE MAP
X-10	0	90X-6000-X-00009	BROWN TILL/GRAY TILL INTERFACE CONTOUR MAP
X-11	0	90X-6000-X-00010	GRAY TILL ISOPACH MAP
X-12	0	90X-6000-X-00011	SURFACE GEOLOGY MAP
X-13	0	90X-6000-X-00012	GEOLOGIC SECTION A-A
X-14	0	90X-6000-X-00013	GEOLOGIC SECTION B-B
X-15	0	90X-6000-X-00014	GEOLOGIC SECTION C-C AND D-D
X-1A	2	90X-6000-X-00070	TITLE SHEET
X-2B	0	90X-6000-X-00071	LEGEND AND SYMBOLS
G-2A	0	90X-6000-G-00072	SITE DEVELOPMENT PLAN
G-5A	1	90X-6000-G-00073	SUBGRADE GRADING PLAN I
G-5B	2	90X-6000-G-00074	SUBGRADE GRADING PLAN II
G-5C	0	90X-6000-G-00075	SUBGRADE GRADING PLAN III
G-5D	0	90X-6000-G-00204	SUBGRADE GRADING PLAN
G-14	0	90X-6000-G-00199	IMPACTED MATERIAL HAUL ROAD GRADING PLAN
G-15A	2	90X-6000-G-00077	OSDF SECTIONS
G-41A	0	90X-6000-G-00089	SEDIMENTATION BASIN DETAILS
-	2	90X-5500-E-00522	ELECTRICAL POWER FOR OSDF
-	0	90X-5500-E-00542	ELECTRIC FOR OSDF AIR MONITORS
-	2	92X-5900-G-00254	PLAN AND PROFILE, SHEET 1 OF 4
-	3	92X-5900-G-00261	PLAN AND PROFILE, SHEET 2 OF 4
-	3	92X-5900-G-00266	PLAN AND PROFILE, SHEET 3 OF 4
-	2	92X-5900-G-00262	PLAN AND PROFILE, SHEET 4 OF 4
-	1	91X-5900-G-00232	CIVIL MASTER PLAN
-	-	SKG-04391	EXISTING UTILITIES - REFERENCE DRAWINGS - OVERALL PLAN
-	-	SKG-04392	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 1 OF 6
-	-	SKG-04393	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 2 OF 6
-	-	SKG-04394	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 3 OF 6
-	-	SKG-04395	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 4 OF 6
-	-	SKG-04396	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 5 OF 6
-	-	SKG-04397	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 6 OF 6
-	3	00X-5500-G-01843	FEMP ON-SITE EASEMENTS AND RIGHT-OF-WAYS
-	13	22X-5500-P-00659	MASTER GRID OF UNDERGROUND UTILITY PLANS
-	16	22C-5500-P-00661	GRID 2 - UNDERGROUND UTILITIES
-	19	22C-5500-P-00662	GRID 3 - UNDERGROUND UTILITIES
-	18	22F-5500-P-00663	GRID 4 - UNDERGROUND UTILITIES
-	19	22A-5500-P-00664	GRID 5 - UNDERGROUND UTILITIES
-	15	22H-5500-P-00666	GRID 7 - UNDERGROUND UTILITIES
-	13	22H-5500-P-00667	GRID 8 - UNDERGROUND UTILITIES
-	10	22A-5500-P-00707	GRID 32 - UNDERGROUND UTILITIES
-	7	75A-5500-G-00441	AREA 1 PHASE 1 SITE PLAN 3 OF 3
-	2	75A-5500-X-00450	AREA 1 PHASE 1 (EAST) DETAIL SHEET 1
G0013	3	93X-5900-G-00286	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 13
G0021	6	93X-5900-G-00294	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 21
G0029	5	93X-5900-G-00302	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 29
G0030	5	93X-5900-G-00303	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 30
G0037	8	93X-5900-G-00310	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 37
G0038	5	93X-5900-G-00311	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 38
G0045	8	93X-5900-G-00318	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 45
E0018	3	96X-5900-E-00356	13.2 kV ELECTRICAL MASTER PLOT
-	1	90X-5500-G-00536	INTERIM LCS COVER SHEET
-	1	90X-5500-G-00537	INTERIM LCS PLAN AND PROFILE, SHEET 1 OF 3
-	1	90X-5500-G-00538	INTERIM LCS PLAN AND PROFILE, SHEET 2 OF 3
-	1	90X-5500-G-00539	INTERIM LCS PLAN AND PROFILE, SHEET 3 OF 3

SHEET NO.	REVISION NO.	FEMP DRAWING NO.	TITLE
REFERENCE			
X-2	0	90X-6000-X-00240	LEGEND AND SYMBOLS
G-3	0	90X-6000-G-00281	LTS PIPE PLAN AND PROFILE STATIONS 0+00 TO 5+00
G-4	0	90X-6000-G-00282	LTS PIPE PLAN AND PROFILE STATIONS 5+00 TO 11+00
G-5	0	90X-6000-G-00283	LTS PIPE PLAN AND PROFILE STATIONS 11+00 TO 17+00
G-6	0	90X-6000-G-00284	LTS PIPE PLAN AND PROFILE STATIONS 17+00 TO 23+00
G-7	0	90X-6000-G-00285	LTS PIPE PLAN AND PROFILE STATIONS 23+00 TO 29+00
G-8	0	90X-6000-G-00286	LTS PIPE PLAN AND PROFILE STATIONS 29+00 TO 34+24.34
G-14	0	90X-6000-G-00251	VALVE HOUSE AND CONTROL VALVE HOUSE GENERAL LAYOUTS
G-20	0	90X-6000-G-00291	SURFACE-WATER MANAGEMENT SYSTEM DETAILS
E-1	0	90X-6000-E-00258	OVERHEAD POWER TRANSMISSION SYSTEM PLAN
M-3	0	90X-6000-M-00265	VALVE HOUSE MECHANICAL DETAILS

000002

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC/DOE/EPA	RAM	MLG	WHB	DLW.	JFB
B	00.04.18	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC/DOE	RAM	JAB	WHB	DLW.	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	RAM	RDO	WHB	DLW.	JFB

SCALE AS SHOWN

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

CLIENT: **FLUOR FERNALD, INC.**

PROJECT: ON-SITE DISPOSAL FACILITY - PHASE III

TITLE: TITLE SHEET II

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

T.F. Beach
9 May 00

JOHN F. BEACH E-38246 REGISTERED PROFESSIONAL ENGINEER STATE OF OHIO

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20103
CONTRACT NO.:	93P5005028
FEMP DRAWING NO.:	90X-6000-X-00234
GEOSYNTEC PROJECT NO.:	001001-04
GEOSYNTEC DOCUMENT NO.:	FDO-0101
SHEET NO.:	X-2
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

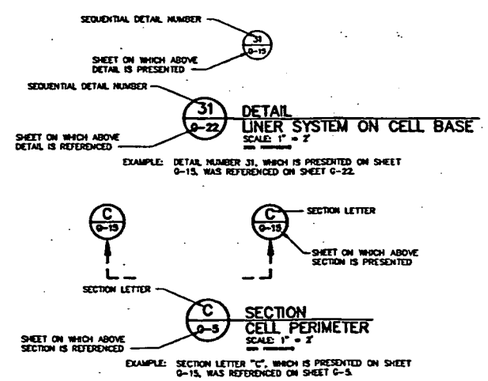
SYMBOLS LEGEND

EXISTING		NEW
	IMPACTED MATERIAL DISPOSAL LIMIT	
	BATTERY LIMIT	
	BORROW AREA LIMIT	
	FEMP PROPERTY LINE	
	BUTLER COUNTY/HAMILTON COUNTY LINE	
	ADJACENT LANDOWNER PROPERTY LINE	
	FENCE	
	RAD FENCE	
	FENCE GATE	
	RAILROAD TRACK	
	PAVED ROAD, SIDEWALK OR PARKING LOT	
	UNPAVED ROAD, SIDEWALK OR PARKING LOT	
	CENTERLINE OR BASELINE	
	PERIMETER BERM BASELINE	
	SLOPE CREST OR TOE	
ILTS	ILTS PIPE	
LTS	LTS PIPE	
	UTILITY EASEMENT	
	WATER TABLE OR PIEZOMETRIC SURFACE	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	TREE LINE	
	PARKING LOT STRIPING	
	CELL DESIGNATION	1
	TRAILER OR BUILDING	
	DRAINAGE FLOW DIRECTION	
	HEADWALL	
	SIGN	
	POST	
	SLOPE INDICATOR	CREST TOE
PILE	PILE	
	TRANSMISSION TOWER	
	CATCH BASIN	
	MANHOLE	
	POWER POLE	
2421	TYPE 2 MONITORING WELL	
2421	TYPE 3 MONITORING WELL	
1740	GEOTECHNICAL BORING	
11428	CONE PENETROMETER TEST (CPT) SOUNDING	
BM-10	BENCHMARK	
11546	LYSIMETER	
	MONITORING WELL	
	VALVE HOUSE	
	LEACHATE TRANSMISSION SYSTEM PERMANENT LIFT STATION	
	CONSTRUCTION CONTROL POINT	
	DRAINAGE CHANNEL GRAVITY INLET STRUCTURE	
	CULVERT	
	VEGETATION	
	HORIZONTAL MONITORING WELL WITH COVER SLAB (BY OTHERS)	

SYMBOLS LEGEND (CONTINUED)

SYMBOL	COMPONENT
	PRIMARY GEOMEMBRANE LINER
	SECONDARY GEOMEMBRANE LINER
	PRIMARY GEOSYNTHETIC CLAY LINER
	SECONDARY GEOSYNTHETIC CLAY LINER
	GEOTEXTILE FILTER
	GEOTEXTILE CUSHION
	SUPPLEMENTAL GEOTEXTILE CUSHION
	SUBGRADE
	COMPACTED CLAY LINER/PROTECTIVE CLAY LAYER
	LDS DRAINAGE LAYER
	LDS DRAINAGE CORRIDOR
	LCS DRAINAGE LAYER
	LCS DRAINAGE CORRIDOR
	PROTECTIVE LAYER (IMPACTED)
	PROTECTIVE LAYER (NON-IMPACTED GRANULAR)
	PROTECTIVE LAYER (NON-IMPACTED NON-GRANULAR)
	SELECT IMPACTED MATERIAL
	TRENCH BACKFILL
	PIPE EMBEDMENT FILL
	GEOMEMBRANE CAP
	GEOSYNTHETIC CLAY CAP
	COMPACTED CLAY CAP
	COVER DRAINAGE LAYER
	BIOINTRUSION BARRIER
	GRANULAR FILTER
	TOPSOIL
	CONTOURING LAYER
	RIPRAP LIMIT
	RIPRAP
	EROSION MAT

DETAIL AND SECTION IDENTIFICATION LEGEND



ABBREVIATIONS

ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BAMR	BORROW AREA MANAGEMENT AND RESTORATION PLAN
BCY	BULK CUBIC YARDS
℄	BASELINE
BM	BENCH MARK
CFC	CERTIFIED-FOR-CONSTRUCTION
℄	CENTERLINE
CLR	CLEARANCE
CO.	COMPANY
CMP	CORRUGATED METAL PIPE
CPT	CONE PENETROMETER TEST
CQC	CONSTRUCTION QUALITY CONTROL
CSA	CONSTRUCTION SITE ACCESS
CVH	CONTROL VALVE HOUSE
D	DEPTH
DECON	DECONTAMINATION
DIA	DIAMETER
DOE	DEPARTMENT OF ENERGY
DOT	DEPARTMENT OF TRANSPORTATION
E	EASTING
EL	ELEVATION
EPA	ENVIRONMENTAL PROTECTION AGENCY
EPLTS	ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM
FEMP	FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
HDPE	HIGH DENSITY POLYETHYLENE
DIS	DRAINAGE CHANNEL GRAVITY INLET STRUCTURE
H:V	HORIZONTAL TO VERTICAL LENGTH RATIO FOR A SLOPE
ID	INSIDE DIAMETER
ILTS	INTERIM LEACHATE TRANSMISSION SYSTEM
IMP	IMPACTED MATERIAL PLACEMENT
INC.	INCORPORATED
IP	IRON PIN
LCS	LEACHATE COLLECTION SYSTEM
LDS	LEAK DETECTION SYSTEM
LTS	LEACHATE TRANSMISSION SYSTEM
(MAX)	MAXIMUM
(MIN)	MINIMUM
N	NORTHING
NAD	NORTH AMERICAN DATUM
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NO.	NUMBER
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
ODOT	OHIO DEPARTMENT OF TRANSPORTATION
OMTA	OSDF MATERIAL TRANSFER AREA
OSDF	ON-SITE DISPOSAL FACILITY
PLS	PERMANENT LIFT STATION
RAD	RADIOLOGICAL
RCP	REINFORCED CONCRETE PIPE
REV.	REVISION
RLCS	REDUNDANT LEACHATE COLLECTION SYSTEM
(TYP)	TYPICAL
WAC	WASTE ACCEPTANCE CRITERIA
W.E.	WATER ELEVATION
VH--	VALVE HOUSE
6"/10"	6"/10" NOMINAL PIPE SIZE (CARRIER/CONTAINMENT)

CERTIFIED-FOR-CONSTRUCTION

CONTOUR LEGEND

EXISTING		NEW
595	EXISTING GROUND ELEVATION (FEET)	
590	SUBGRADE ELEVATION (FEET)	590
590	COMPACTED CLAY LINER ELEVATION (FEET)	590
600	LEACHATE COLLECTION SYSTEM ELEVATION (FEET)	600
585	PROTECTIVE LAYER ELEVATION (FEET)	585
	CONTOURING LAYER ELEVATION (FEET)	590
590	FINISHED GRADE ELEVATION (FEET)	590

3099

GENERAL NOTES

NOTES:

1. TOPOGRAPHY BASED ON 12 JANUARY 2000 FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO 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 GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY.
5. SURVEY COORDINATES AND DIMENSIONS SHALL BE USED FOR CONSTRUCTION. DRAWINGS SHALL NOT BE SCALED TO OBTAIN LOCATIONS AND DIMENSIONS.
6. BATTERY LIMIT DEFINES LIMIT OF THIS WORK PACKAGE FOR OSDF AND SUPPORT FACILITIES AND LOCATION OF INTERFACES WITH OTHER WORK PACKAGES. CONTRACTOR SHALL PERFORM DUST CONTROL WITHIN BATTERY LIMIT AS SPECIFIED IN PART 6 OF CONTRACT DOCUMENT.
7. THE TERM "IMPACTED MATERIAL" REFERS TO THAT MATERIAL MEETING OSDF WASTE ACCEPTANCE CRITERIA (WAC) DESTINED FOR OSDF DISPOSAL. "SELECT IMPACTED MATERIAL" LOCATIONS SHOWN ON THESE DRAWINGS SHALL CONSIST OF IMPACTED MATERIAL. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.

000003

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	RAM	JMB	LMO	DLW	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	RAM	JMB	LMO	DLW	JFB
A	00.03.07	PRELIMINARY SUBMITTAL TO FF/DOE	RAM	LMB	LMO	DLW	JFB

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE III

TITLE:
LEGEND AND SYMBOLS

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

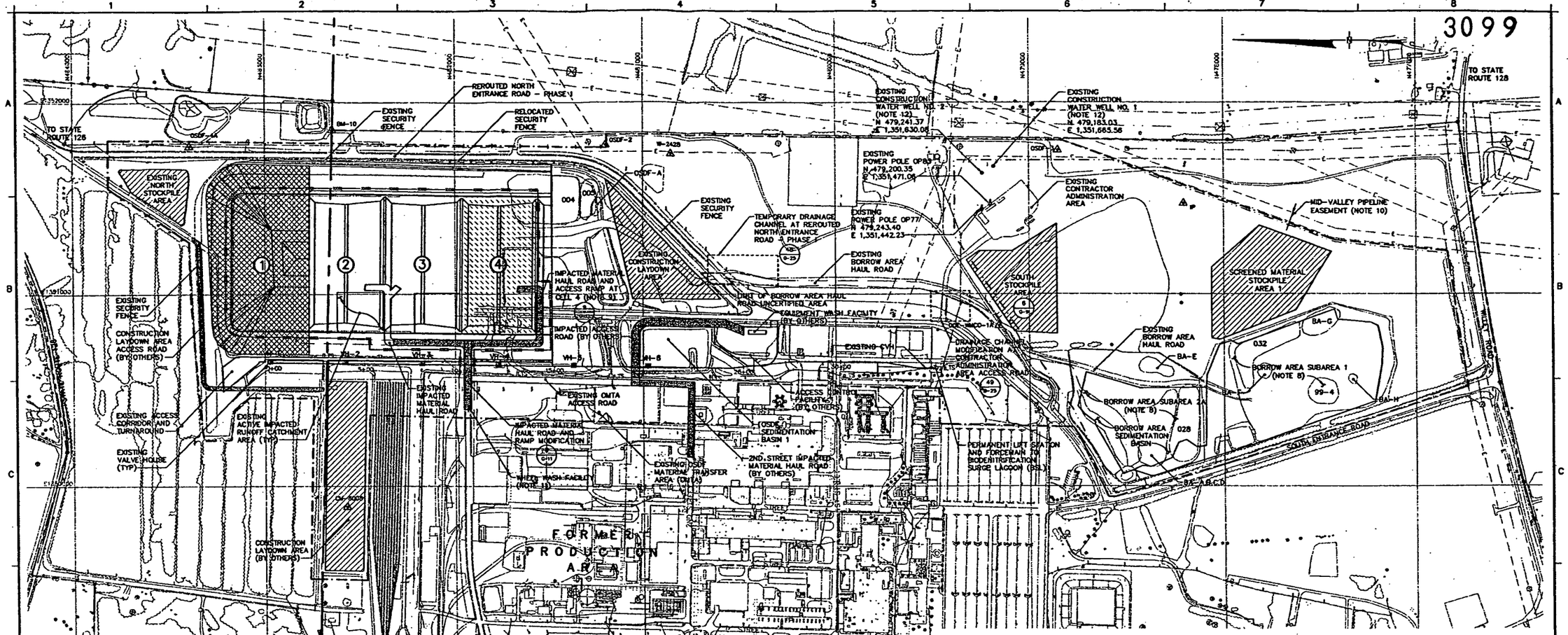
9 May 00

STATE OF OHIO JOHN E. BEECH E-38248 REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20103
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	9XX-5000-X-00292
GEOSYNTEC PROJECT NO.:	CO1001-04
GEOSYNTEC DOCUMENT NO.:	F00-0102
SHEET NO.:	X-3
REVISION NO.:	0

3099



EXISTING STOCKPILE DATA				
NAME	DRAWING LABEL	STOCKPILE MATERIAL	QUANTITY (BCY)	REMARK
MTL-OSD-003	003	CLAYEY ROCKFILL	2,500	2, 3
MTL-OSD-004	004	TOPSOIL	13,600	6
MTL-OSD-005	005	GRUBBED MATERIAL	5,300	2
MTL-OSD-010	010	WOOD CHIPS	900	3, 4
MTL-OSD-028	028	TOPSOIL	21,200	1
MTL-OSD-032	032	TOPSOIL	8,300	2
BA-99-4	99-4	CLAY LINER AND CAP MATERIAL	8,000	5
BA-A,B,C,D	BA-A,B,C,D	FILL MATERIAL (NON-CONFORMING CLAY MATERIAL)	3,300	1
BA-E	BA-E	FILL MATERIAL (NON-CONFORMING CLAY MATERIAL)	1,100	1
BA-F,G,H	BA-F,G,H	SCREENED REJECT MATERIAL	5,800	4
OSDF-A,B,C,D,E	OSDF-A,B,C,D,E	FILL MATERIAL (NON-CONFORMING CLAY MATERIAL)	4,700	2, 3

BENCHMARKS				
NUMBER	NORTHING	EASTING	ELEVATION	STATUS
IRON PIN (IP)	478205.58	1351472.81	603.32	EXISTING
DOE-WACO-1A	479157.59	1350835.03	585.57	EXISTING
W-2428	480350.13	1351732.75	600.79	EXISTING
BM-10	482638.02	1351657.89	615.87	EXISTING
CM-8008	482568.06	1348891.82	593.98	EXISTING
OSDF-2	482199.94	1351779.16	615.82	EXISTING
OSDF-3	478850.42	1351746.33	595.61	EXISTING
OSDF-4A	483394.96	1351770.39	609.93	EXISTING

000004

LEGEND

- BUTLER COUNTY/HAMILTON COUNTY LINE
- FEMP PROPERTY LINE
- BATTERY LIMIT
- IMPACTED MATERIAL DISPOSAL LIMIT
- BORROW AREA LIMIT
- RADIOLOGICAL (RAD) CONTROL LIMIT/FENCE (NOTE 7)
- ILTS — EXISTING ILTS PIPE
- EXISTING LTS PIPE
- 6+00 OSDF-4 — BENCHMARK
- 2 — ON-SITE DISPOSAL FACILITY (OSDF) CELL DESIGNATION
- CELL 4 LINER SYSTEM (NOTE 6)
- CELL 1 FINAL COVER SYSTEM (NOTE 6)
- ACCESS CORRIDOR, ACCESS ROAD OR HAUL ROAD

NOTES:

1. PURPOSE OF THIS DRAWING IS TO CONCEPTUALLY ILLUSTRATE SITE DEVELOPMENT FOR OSDF–PHASE III WITH SUPPORT FACILITIES INCLUDING BUT NOT LIMITED TO HAUL ROADS, EQUIPMENT WASH FACILITY, CONTRACTOR ADMINISTRATION AREA, CONSTRUCTION LAYDOWN AREA, ACCESS CONTROL FACILITY, RADIOLOGICAL CONTROL LIMIT/FENCE, EXISTING STOCKPILES AND SEDIMENTATION BASINS. SIZE AND LOCATION OF SUPPORT FACILITIES MAY VARY FROM THOSE SHOWN.
2. CONTRACTOR SHALL CONTAIN AND CONTROL WATER GENERATED DURING CONSTRUCTION AND FILLING OF OSDF IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
3. CONTRACTOR SHALL SUBMIT EARTHWORK WORK PLAN IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
4. EXISTING CONTOURS ARE NOT SHOWN FOR CLARITY. EXISTING CONTOURS ARE SHOWN ON GRADING PLANS. ADDITIONAL EXISTING CONDITIONS ARE SHOWN ON REFERENCE DRAWINGS AND SHALL BE VERIFIED IN ACCORDANCE WITH SPECIFICATION SECTION 02100.
5. IMPACTED RUNOFF CATCHMENT AREA IN ACTIVE CELL SHALL REMAIN OPEN UNTIL COMPACTION OF SECOND LIFT OF COMPACTED CLAY CAP IS COMPLETED IN ADJACENT UPGRADIENT CELL AND IMPACTED RUNOFF CATCHMENT AREA IN FUTURE CELL IS CONSTRUCTED AND OPERATIONAL.
6. STATEMENT OF WORK FOR OSDF–PHASE III CONSTRUCTION IS SPECIFIED IN PART 5 OF CONTRACT DOCUMENT.
7. RADIOLOGICAL (RAD) CONTROL LIMIT/FENCE INDICATES LIMIT OF RADIOLOGICAL CONTROL FOR IMPACTED MATERIAL HAULING AND PLACEMENT. RAD FENCE LOCATED IN CELL 1 AREA SHALL BE REMOVED AFTER COMPACTION OF SECOND LIFT OF COMPACTED CLAY CAP IS COMPLETED. RAD FENCE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
8. BORROW AREA SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13000.
9. IMPACTED MATERIAL HAUL ROAD GRADING PLAN IS SHOWN ON DRAWING C-11.
10. CONTRACTOR SHALL LOCATE MID-VALLEY PIPELINE EASEMENT IN ACCORDANCE WITH SPECIFICATION SECTION 02100. CONTRACTOR SHALL NOT ENTER EASEMENT.
11. EXISTING WHEEL WASH FACILITY TO BE REMOVED BY OTHERS. CONTRACTOR SHALL LOCATE NEW WHEEL WASH FACILITY IN ACCORDANCE WITH SPECIFICATION SECTION 13010 AND AS APPROVED BY CONSTRUCTION MANAGER.
12. CONSTRUCTION WATER SHALL BE OBTAINED FROM EXISTING WELL HOUSES LOCATED WEST OF FORMER PRODUCTION AREA AT LOCATIONS N 480,784.4 AND E 1,348,403.7 AND N 481,454.8 AND E 1,350,487.4 AND EXISTING CONSTRUCTION WATER WELLS SHOWN.

REMARKS:

1. USE IN OSDF CONSTRUCTION AND RELOCATE REMAINING STOCKPILE TO SOUTH STOCKPILE AREA.
2. STOCKPILE TO BE RELOCATED TO NORTH STOCKPILE AREA BY OTHERS.
3. STOCKPILES WITHIN CELL 4 NOT SHOWN ON DRAWING FOR CLARITY.
4. STOCKPILE TO BE RELOCATED TO SOUTH STOCKPILE AREA BY OTHERS.
5. STOCKPILE TO BE RELOCATED TO SCREENED MATERIAL STOCKPILE AREA 1 BY OTHERS. CONTRACTOR SHALL USE RELOCATED STOCKPILE IN OSDF CONSTRUCTION.
6. STOCKPILE TO BE RELOCATED TO NORTH STOCKPILE AREA BY OTHERS. CONTRACTOR SHALL USE RELOCATED STOCKPILE IN OSDF CONSTRUCTION.

CERTIFIED–FOR–CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
C	00.03.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	RAM	JMB	DLVL	DLVL	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	RAM	JMB	DLVL	DLVL	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	RAM	LCB	DLVL	DLVL	JFB

200 100 0 200 400
SCALE IN FEET

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE III

TITLE: SITE DEVELOPMENT PLAN

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDING OR CONSTRUCTION, UNLESS SEALED.

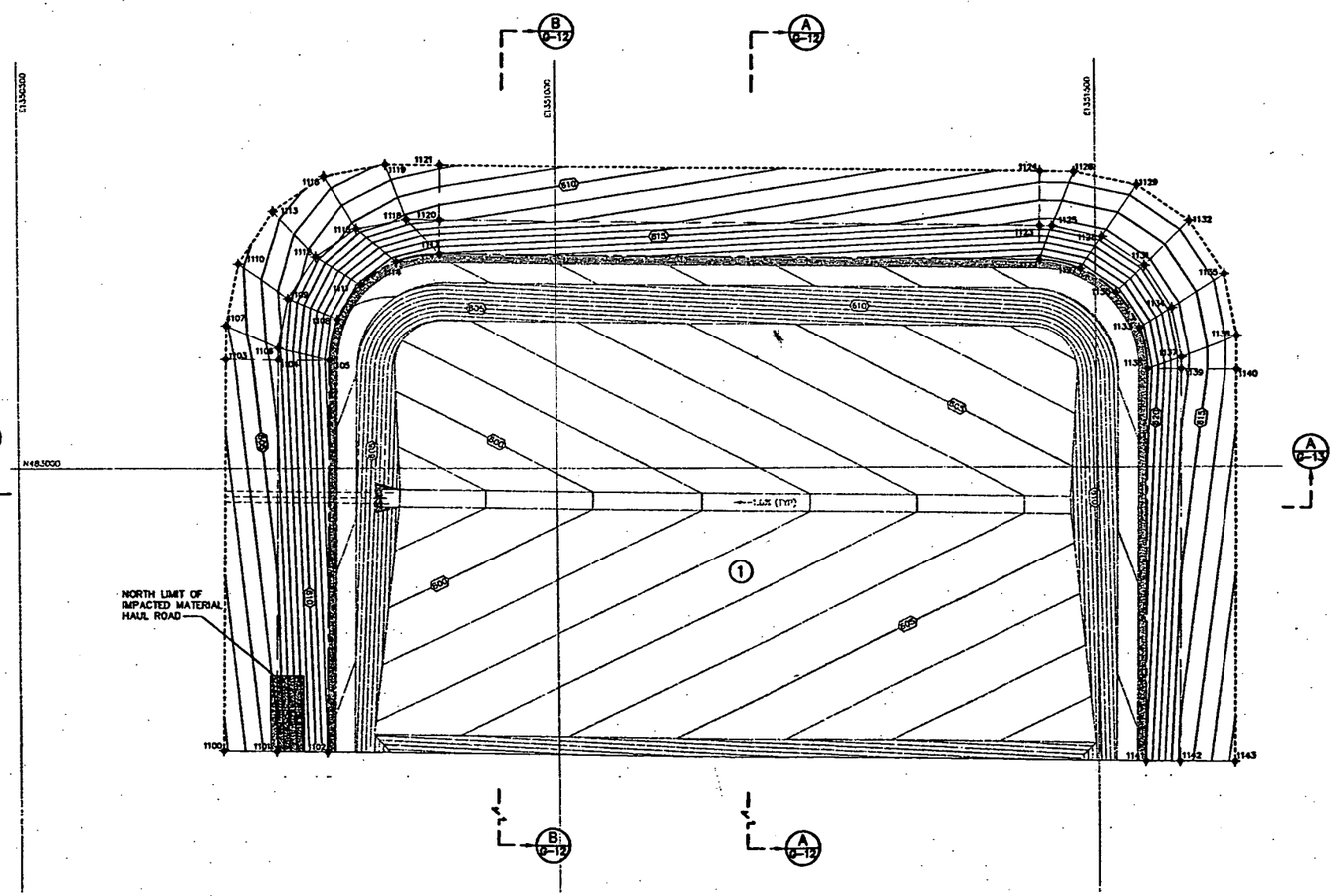
9 May 00

STATE OF OHIO — JOHN E. BEECH E-58248 — REGISTERED PROFESSIONAL ENGINEER — SEAL

GeoSyntec Consultants
3400 Lake Herrin Drive, Atlanta, Georgia 30342 USA

PROJECT NO.:	20103
CONTRACT NO.:	95P5005028
FEMP DRAWING NO.:	9OX-6000-C-00296
GEOSYNTEC PROJECT NO.:	G01001-04
GEOSYNTEC DOCUMENT NO.:	F00-0103
SHEET NO.:	C-1
REVISION NO.:	0

3099



LEGEND

- 610 — EXISTING SUBGRADE ELEVATION (FEET) (NOTE 1)
- 580 — SUBGRADE ELEVATION (FEET) (NOTES 1 AND 2)
- PERIMETER BERM BASELINE
- APPROXIMATE LIMIT OF FINAL COVER SYSTEM CONSTRUCTION
- 1105 — CONSTRUCTION CONTROL POINT
- 1 — EXISTING CELL DESIGNATION
- EXISTING IMPACTED MATERIAL HAUL ROAD (NOTE 2)

SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1100	482738.75	1350886.65	600.78
1101	482738.14	1350736.73	603.79
1102	482737.54	1350785.67	611.84
1103	483101.22	1350891.08	603.44
1104	483100.61	1350741.16	608.51
1105	483100.01	1350790.10	614.66
1106	483111.62	1350741.30	606.69
1107	483132.32	1350691.48	603.87
1108	483138.17	1350788.20	613.02
1109	483157.43	1350751.00	607.58
1110	483169.58	1350703.58	604.69
1111	483170.34	1350820.27	615.37
1112	483186.04	1350777.49	608.48
1113	483237.84	1350738.69	605.50
1114	483191.82	1350852.97	613.73
1115	483231.57	1350816.73	609.38
1116	483269.76	1350785.74	608.32
1117	483198.78	1350891.32	610.09
1118	483230.15	1350863.78	610.27
1119	483280.48	1350843.28	607.14
1120	483229.79	1350891.70	610.82
1121	483279.88	1350892.31	607.82
1122	483191.97	1351447.95	621.65
1123	483222.99	1351448.33	618.38
1124	483273.08	1351448.94	613.38
1125	483222.85	1351459.95	616.39
1126	483272.69	1351460.66	613.39
1127	483163.89	1351488.12	621.66
1128	483213.15	1351503.76	616.40
1129	483260.56	1351537.91	613.39
1130	483181.82	1351518.30	621.67
1131	483186.67	1351544.37	616.40
1132	483227.45	1351588.16	613.40
1133	483129.12	1351539.58	621.68
1134	483147.42	1351569.01	616.41
1135	483178.40	1351618.08	613.40
1136	483090.76	1351546.72	621.69
1137	483101.39	1351578.48	616.42
1138	483120.87	1351628.81	613.41
1139	483090.37	1351578.34	616.42
1140	483089.78	1351628.43	613.41
1141	482728.32	1351542.29	616.97
1142	482727.93	1351573.91	613.70
1143	482727.32	1351624.00	610.69

000005

NOTES:

1. SUBGRADE ELEVATIONS CORRESPOND TO TOP OF SUBGRADE, INCLUDING ANY COMPACTED FILL. SUBGRADE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
2. CONTRACTOR SHALL RE-ESTABLISH SUBGRADE ELEVATIONS TO LIMITS SHOWN HEREON AFTER REMOVAL OF IMPACTED MATERIAL HAUL ROAD AND PRIOR TO FINAL COVER SYSTEM CONSTRUCTION.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	00.00.00	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	RAM	MLG	DLVL	DLVL	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	RAM	AM/RDD	DLVL	DLVL	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	DLVL	AM/RDD	RAM	DLVL	JFB

50 25 0 50 100
SCALE IN FEET

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE III

TITLE:
SUBGRADE GRADING PLAN I

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

J.F. Beal
9 May 00

STATE OF OHIO — JOHN F. BEECH E-38240 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20103
CONTRACT NO.:	95P5003028
FDMP DRAWING NO.:	90X-6000-G-00297
GEOSYNTEC PROJECT NO.:	001001-04
GEOSYNTEC DOCUMENT NO.:	FDD-0108
SHEET NO.:	G-2
REVISION NO.:	0

CERTIFIED–FOR–CONSTRUCTION

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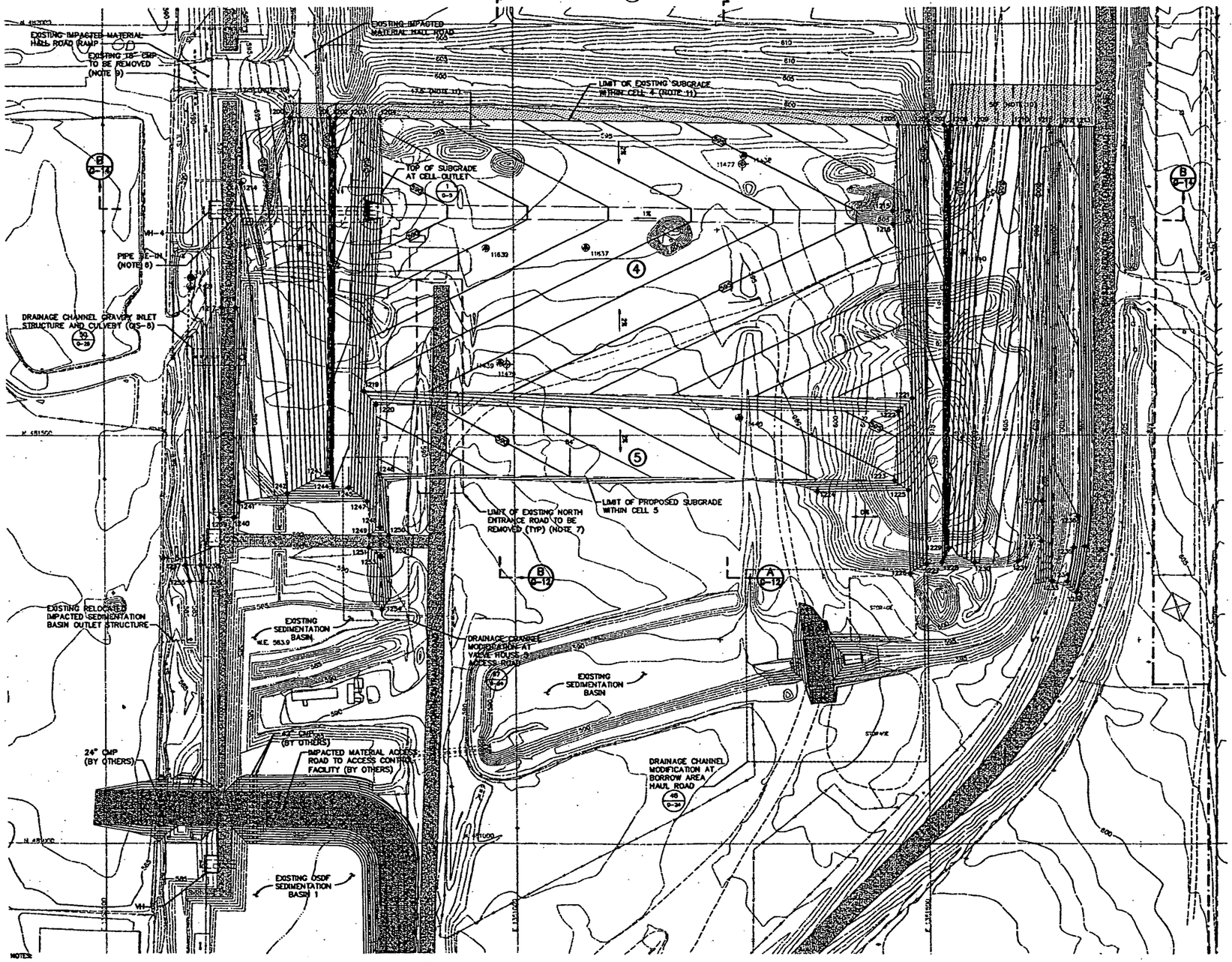


GEOTECHNICAL DATA POINTS (NOTE 4)

CONE PENETRATION TESTS			
POINT NO.	NORTHING	EASTING	ELEVATION
11438	481540.50	1351282.82	598.83
11439	481588.29	1350982.38	594.15
11440	481531.72	1351375.13	596.61
11632	481737.42	1350737.61	583.06
11637	481725.06	1351080.83	586.61
11639	481737.25	1350969.53	597.97
11640	481721.88	1351545.34	602.43
GEOTECHNICAL BORINGS			
POINT NO.	NORTHING	EASTING	ELEVATION
1740	481829.43	1351530.88	-
11478	481588.49	1350980.71	593.63
11477	481636.19	1351181.28	597.66
LYSIMETERS			
POINT NO.	NORTHING	EASTING	ELEVATION
11548	481663.49	1351288.00	598.98
11537	481642.73	1351275.70	598.00
11484	481546.28	1351289.70	598.80
11498	481532.18	1350981.00	594.60
11499	481593.33	1350991.00	594.70
11500	481640.13	1351284.30	598.00
11501	481683.43	1351285.20	599.00
TYPE 2 MONITORING WELLS			
POINT NO.	NORTHING	EASTING	ELEVATION
3421	481681.26	1350909.32	-
TYPE 3 MONITORING WELLS			
POINT NO.	NORTHING	EASTING	ELEVATION
3421	481692.05	1350805.70	-

SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1200	481888.56	1350738.33	597.40
1201	481883.98	1350775.27	600.38
1202	481883.87	1350783.06	600.38
1203	481885.84	1350801.78	599.99
1204	481877.42	1350838.06	601.37
1205	481877.50	1351487.95	597.38
1206	481877.04	1351505.39	597.37
1207	481876.81	1351524.09	597.36
1208	481876.78	1351537.88	597.38
1209	481876.32	1351563.31	597.31
1210	481873.39	1351583.29	594.31
1211	481872.78	1351848.28	598.53
1212	481872.73	1351863.13	603.30
1213	481874.96	1351884.10	603.30
1214	481866.77	1351888.00	603.33
1215	481772.70	1351480.91	598.43
1216	481636.21	1351480.21	598.10
1217	481635.71	1350841.88	594.10
1218	481635.49	1350834.93	594.10
1219	481533.46	1350878.83	595.10
1220	481538.63	1350829.80	589.20
1221	481532.82	1350831.82	593.94
1222	481529.15	1351486.08	593.84
1223	481443.31	1351485.48	593.84
1224	481431.34	1351368.88	598.00
1225	481432.28	1351479.22	598.00
1226	481331.42	1351479.03	598.00
1227	481331.42	1351478.03	603.00
1228	481344.87	1351817.38	603.40
1229	481348.40	1351828.40	598.72
1230	481344.34	1351837.00	603.32
1231	481343.93	1351837.13	600.32
1232	481370.40	1351834.36	598.00
1233	481321.44	1351837.97	600.31
1234	481321.03	1351863.03	600.46
1235	481321.03	1351873.17	600.77
1236	481400.63	1351879.35	601.00
1237	481441.48	1350597.37	589.00
1238	481341.26	1350618.37	588.00
1239	481339.32	1350638.32	592.18
1240	481399.32	1350635.02	592.18
1241	481429.22	1350682.28	593.33
1242	481429.22	1350720.74	593.97
1243	481453.68	1350759.98	592.31
1244	481438.32	1350796.28	596.51
1245	481438.34	1350796.28	596.51
1246	481432.89	1350821.17	597.60
1247	481419.32	1350818.03	591.00
1248	481432.38	1350834.22	590.00
1249	481377.90	1350820.28	590.00
1250	481377.20	1350824.28	590.00
1251	481362.51	1350818.84	590.00
1252	481362.18	1350843.70	590.00
1253	481330.64	1350836.23	586.11
1254	481298.40	1350839.87	586.14
1255	481321.42	1350802.45	583.00
1256	481321.24	1350818.88	588.00
1257	481307.81	1351875.93	605.00
1258	481383.43	1351877.17	605.00
1259	481419.44	1351833.87	598.33

LEGEND

- 600 — EXISTING GROUND ELEVATION (FEET)
- 592 — SUBGRADE ELEVATION (FEET) (NOTE 1)
- FEMP PROPERTY LINE
- BATTERY LIMIT
- PERIMETER BERM BASELINE
- EXISTING LTS PIPE
- ILTS — EXISTING ILTS PIPE
- SLOPE CREST OR TOE
- HORIZONTAL MONITORING WELL WITH COVER SLAB (BY OTHERS)
- 11438, 3421, 1740, 11548, 2421 — EXISTING GEOTECHNICAL DATA POINTS (NOTE 4)
- 4 — CELL DESIGNATION
- ACCESS CORRIDOR, ACCESS ROAD OR HAUL ROAD
- BERM CREST
- GRADING TRANSITION AREA

000006

NOTES:

1. SUBGRADE ELEVATIONS CORRESPOND TO TOP OF SUBGRADE, INCLUDING ANY COMPACTED FILL. SUBGRADE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200. CLEARING, GRUBBING AND STRIPPING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02110.
2. ACTIVE VERTICAL MONITORING WELLS AND PIEZOMETERS WITHIN CONSTRUCTION AREA WILL BE ABANDONED BY OWNER PRIOR TO CONSTRUCTION IN THAT AREA.
3. CONTRACTOR SHALL LOCATE AND REMOVE EXISTING SUBDRAIN TILE SYSTEM WITHIN CONSTRUCTION AREA IN ACCORDANCE WITH SPECIFICATION SECTION 02200. REFER TO REFERENCE DRAWINGS SKG-04381 THROUGH SKG-04397 FOR LOCATION OF SUBDRAIN TILE SYSTEM.
4. CONTRACTOR SHALL REMOVE GROUT USED TO BACKFILL GEOTECHNICAL DATA POINTS AND MONITORING WELLS LOCATED WITHIN PERIMETER BERM BASELINE TO A MINIMUM DEPTH OF 3 FEET BELOW SUBGRADE ELEVATIONS.
5. CONTRACTOR SHALL DEWATER EXCAVATIONS AND MANAGE COLLECTED WATER IN ACCORDANCE WITH SPECIFICATION SECTION 02200. GROUNDWATER LEVELS IN BROWN AND GRAY TILL LAYERS VARY DURING YEAR AND MAY BE HIGHER THAN THOSE SHOWN ON REFERENCE DRAWINGS. LEVELS MAY APPROACH GROUND SURFACE DURING PERIODS OF HEAVY PRECIPITATION.
6. LDS, LCS AND RLCS PIPES SHALL TIE INTO EXISTING PIPES. CONSTRUCTION CONTROL POINTS FOR PIPE TIE-INS ARE PROVIDED ON DRAWING G-5
7. ROAD PAVEMENT COURSES AND ASSOCIATED IMPACTED MATERIAL FOR EXISTING NORTH ENTRANCE ROAD SHALL BE REMOVED WITHIN LIMIT SHOWN. REMOVAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200. CONTRACTOR SHALL PLACE REMOVED MATERIAL IN A STOCKPILE OR ACTIVE CELL AS APPROVED BY CONSTRUCTION MANAGER.
8. CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND UTILITIES WITHIN CONSTRUCTION AREA SHOWN ON REFERENCE DRAWINGS SKG-04381 THROUGH SKG-04397. CONTRACTOR SHALL REMOVE UNDERGROUND UTILITIES IN CONSTRUCTION AREA IN ACCORDANCE WITH SPECIFICATION SECTION 02200 AND AS APPROVED BY CONSTRUCTION MANAGER.
9. CONTRACTOR SHALL REMOVE EXISTING CULVERT AND STOCKPILE MATERIAL AT LOCATION APPROVED BY CONSTRUCTION MANAGER.
10. CONTRACTOR SHALL TRANSITION PROPOSED SUBGRADE ELEVATIONS TO EXISTING GROUND ELEVATIONS WITHIN AREA SHOWN.
11. CONTRACTOR SHALL TIE PROPOSED SUBGRADE ELEVATIONS TO EXISTING SUBGRADE ELEVATIONS APPROXIMATELY 17.5 FEET NORTH OF LIMIT LINE SHOWN.

CERTIFIED–FOR–CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVWL BY	APP. BY
D	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	PW	JJA	RAB	DLVL	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	PW	JJA	RAB	DLVL	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	DLVL	JJA	RAB	DLVL	JFB

50 25 0 50 100
SCALE IN FEET

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

CLIENT: **FLUOR FERNALD, INC.**

PROJECT: ON–SITE DISPOSAL FACILITY – PHASE III

TITLE: SUBGRADE GRADING PLAN II

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

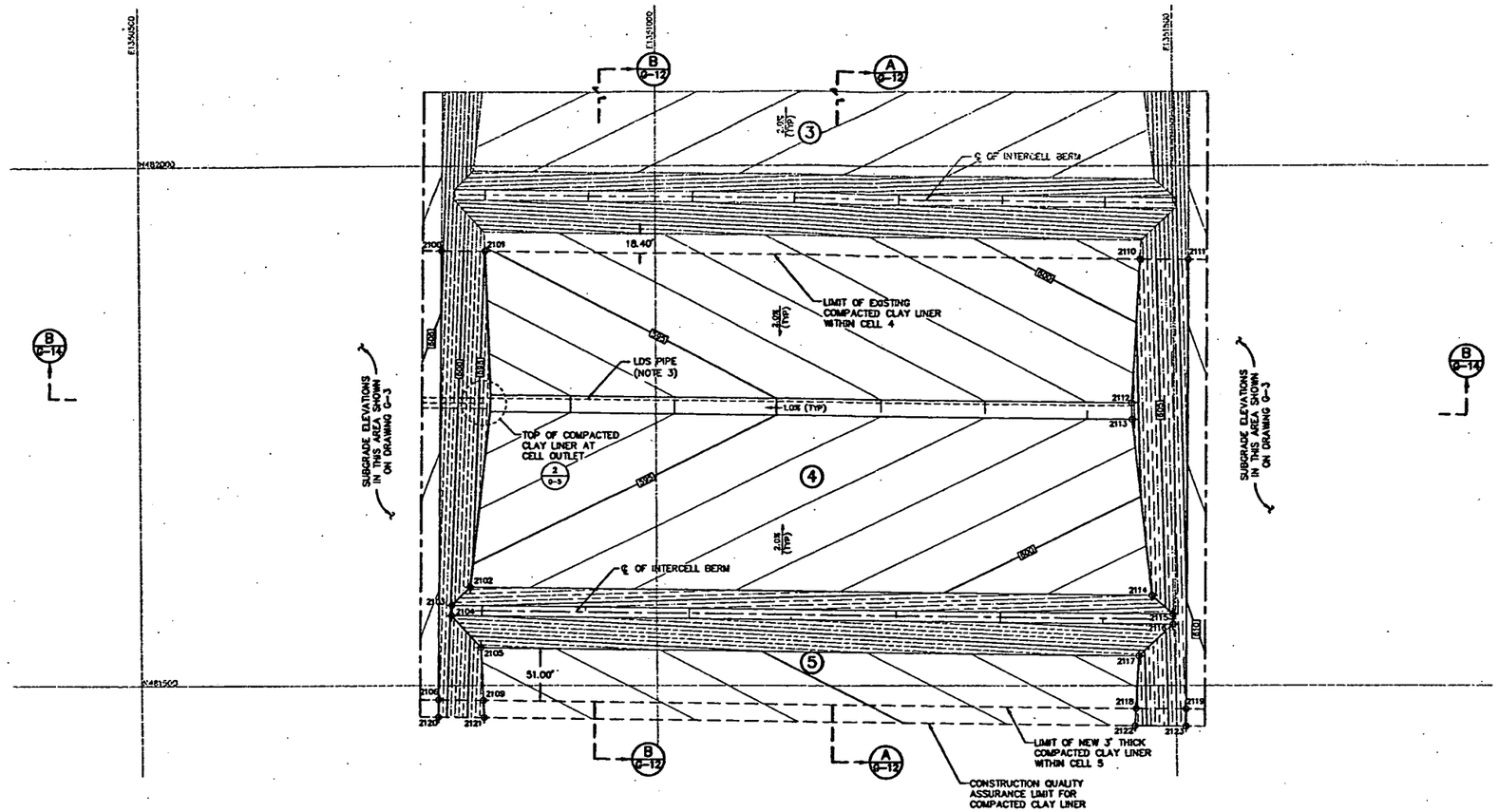
SIGNATURE: J.F. Beal
DATE: 9 May 00

STATE OF OHIO — JOHN F. BEECH — E-33249 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20103
CONTRACT NO.:	90P5003028
FEMP DRAWING NO.:	90X-5000-C-00298
GEOSYNTEC PROJECT NO.:	GC1001-04
GEOSYNTEC DOCUMENT NO.:	FD0-0109
SHEET NO.:	G-3
REVISION NO.:	0

3099



LEGEND

- EXISTING COMPACTED CLAY LINER (FEET) (NOTE 2)
- COMPACTED CLAY LINER (FEET) (NOTE 2)
- PERIMETER BERM BASELINE
- 2100 CONSTRUCTION CONTROL POINT
- 3 CELL DESIGNATION

COMPACTED CLAY LINER CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
2100	481918.60	1350793.71	605.44
2101	481918.08	1350835.81	594.92
2102	481595.35	1350820.13	595.43
2103	481577.74	1350802.26	599.71
2104	481567.74	1350801.85	599.70
2105	481536.52	1350830.28	592.27
2108	481486.03	1350788.42	602.20
2109	481485.50	1350832.09	592.30
2110	481910.34	1351469.38	601.25
2111	481909.79	1351514.24	612.47
2112	481772.68	1351460.52	598.42
2113	481758.73	1351460.83	598.43
2114	481587.30	1351478.14	602.01
2115	481569.25	1351497.05	606.66
2116	481559.24	1351497.24	606.66
2117	481528.76	1351465.68	598.63
2118	481477.79	1351462.40	597.58
2119	481477.22	1351508.96	609.22
2120	481469.37	1351508.75	602.07
2121	481468.82	1350832.89	590.95
2122	481461.14	1351461.32	597.24
2123	481460.56	1351508.75	609.10

NOTES:

1. PURPOSE OF THIS DRAWING IS TO PRESENT CONSTRUCTION CONTROL POINTS FOR COMPACTED CLAY LINER FOR CELL 4 AND TEMPORARY TERMINATION IN CELL 5.
2. COMPACTED CLAY LINER ELEVATIONS CORRESPOND TO TOP OF COMPACTED CLAY LINER.
3. LDS PIPE CONSTRUCTION CONTROL POINTS ARE PROVIDED ON DRAWING G-5.

000007

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	RAM	MLG	DLW	DLW	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	RAM	JAS	DLW	DLW	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	RAM	RDO	WHB	DLW	JFB

50 25 0 50 100
SCALE IN FEET

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE III

TITLE:
COMPACTED CLAY LINER GRADING PLAN

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

J.F. Beal
SIGNATURE
9 May 00
DATE

STATE OF OHIO
JOHN F. BEECH
E-58248
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20103
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-6000-G-00299
GEOSYNTEC PROJECT NO.:	001001-04
GEOSYNTEC DOCUMENT NO.:	F00-0113
SHEET NO.:	G-4
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

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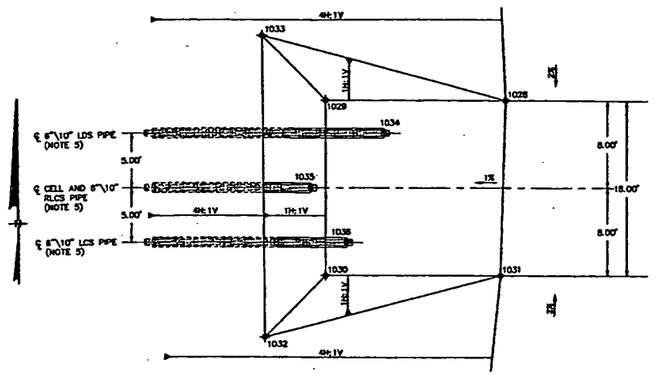
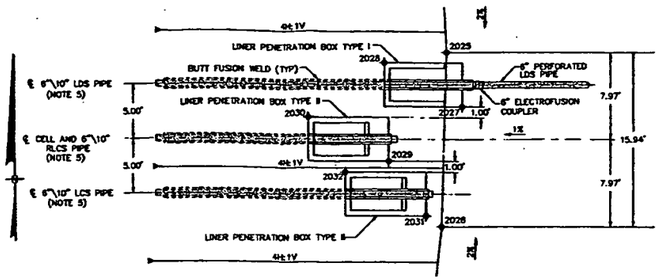
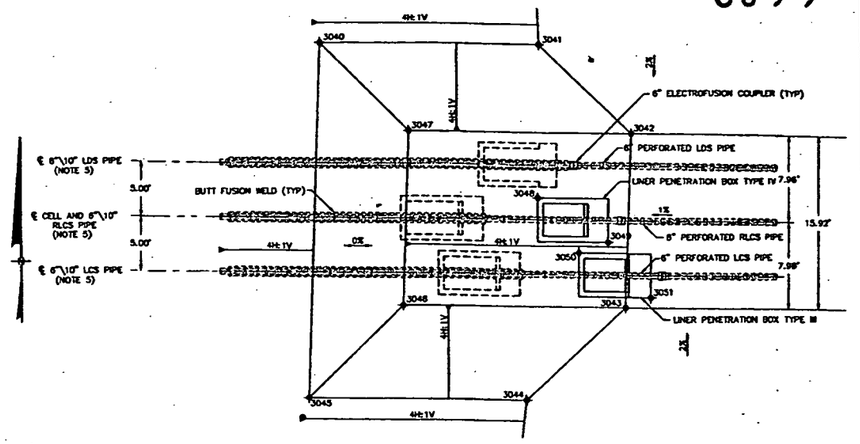


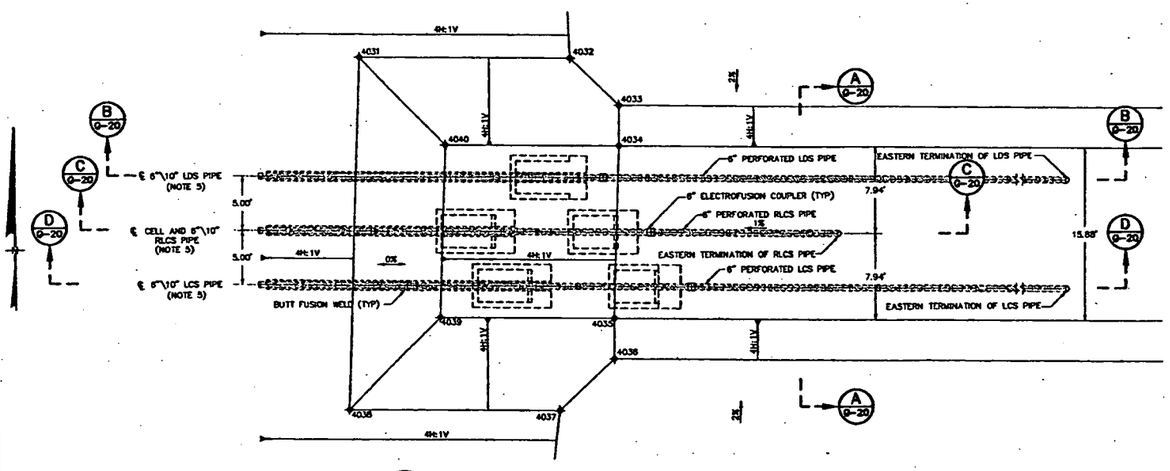
1 / 0-3 PLAN
TOP OF SUBGRADE AT CELL OUTLET
SCALE: 1" = 5'



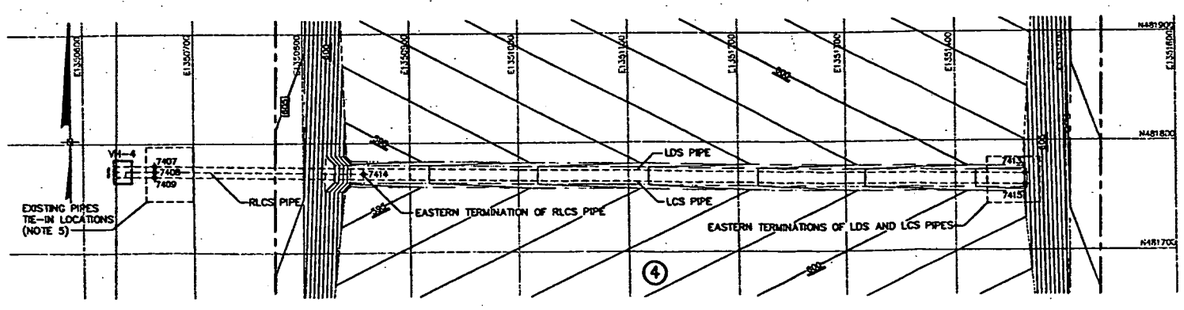
2 / 0-4 PLAN
TOP OF COMPACTED CLAY LINER AT CELL OUTLET
SCALE: 1" = 5'



3 / - PLAN
TOP OF LDS DRAINAGE LAYER AT CELL OUTLET
SCALE: 1" = 5'



4 / - PLAN
TOP OF LCS DRAINAGE LAYER AT CELL OUTLET
SCALE: 1" = 5'



5 / - PLAN
CONSTRUCTION CONTROL POINT LOCATIONS FOR CELL 4 LDS, LCS AND RLCS PIPES
SCALE: 1" = 50'

CONSTRUCTION CONTROL POINTS

TOP OF SUBGRADE AT CELL OUTLET

CELL 4

POINT NO.	NORTHING	EASTING	ELEVATION
1028	481780.29	1350840.40	589.22
1029	481780.48	1350823.67	589.08
1030	481784.49	1350823.67	589.08
1031	481784.29	1350838.74	589.23
1032	481756.92	1350917.82	594.64
1033	481758.46	1350917.08	594.62
1034	481777.43	1350829.08	592.11
1035	481772.51	1350822.16	584.04
1036	481767.47	1350823.45	583.07

TOP OF COMPACTED CLAY LINER AT CELL OUTLET

CELL 4

POINT NO.	NORTHING	EASTING	ELEVATION
2025	481780.25	1350840.73	592.23
2028	481784.32	1350840.12	592.22
2027	481773.37	1350842.06	583.29
2026	481779.35	1350835.11	583.43
2029	481770.33	1350835.39	583.48
2030	481771.44	1350828.18	582.31
2031	481780.31	1350838.89	582.58
2032	481769.40	1350831.48	584.43

TOP OF LDS DRAINAGE LAYER AT CELL OUTLET

CELL 4

POINT NO.	NORTHING	EASTING	ELEVATION
3040	481788.46	1350821.04	588.27
3041	481788.23	1350840.38	583.38
3042	481780.14	1350849.80	583.33
3043	481784.23	1350848.14	583.30
3044	481753.84	1350839.21	583.38
3045	481758.08	1350819.79	588.28
3046	481764.47	1350828.30	588.28
3047	481780.39	1350828.98	588.57
3048	481774.29	1350840.38	583.36
3049	481770.21	1350848.62	583.75
3050	481768.34	1350844.00	584.38
3051	481765.18	1350850.48	583.33

TOP OF LCS DRAINAGE LAYER AT CELL OUTLET

CELL 4

POINT NO.	NORTHING	EASTING	ELEVATION
4031	481788.47	1350821.18	588.27
4032	481788.23	1350840.19	588.38
4033	481783.67	1350845.17	588.38
4034	481784.30	1350843.57	588.27
4035	481784.36	1350844.42	583.32
4036	481782.59	1350844.37	583.34
4037	481753.88	1350838.33	588.38
4038	481758.10	1350818.43	588.28
4039	481764.49	1350828.43	588.28
4040	481780.37	1350828.08	588.27

EXISTING LDS, LCS AND RLCS PIPES TIE-IN LOCATIONS (NOTE 5)

CELL 4

POINT NO.	NORTHING	EASTING	ELEVATION
7407	481778.44	1350884.18	588.72
7408	481776.44	1350884.10	588.72
7409	481768.44	1350884.04	588.72

LDS, LCS AND RLCS PIPES EASTERN TERMINATIONS

CELL 4

POINT NO.	NORTHING	EASTING	ELEVATION
7413	481788.08	1351482.49	588.44
7414	481772.08	1350857.17	588.39
7415	481728.68	1351482.41	588.44

LEGEND

- 605 — COMPACTED CLAY LINER ELEVATION (FEET)
- 602 — LEACHATE COLLECTION SYSTEM ELEVATION (FEET)
- PERIMETER BERM BASELINE
- 2009 — CONSTRUCTION CONTROL POINT
- EXISTING LTS PIPE
- 4 — CELL DESIGNATION

NOTES:

1. LDS, LCS AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02805.
2. SEE DRAWING G-21 FOR LINER PENETRATION BOX DETAILS.
3. TRENCH FOR LDS, LCS AND RLCS PIPES IS NOT SHOWN ON THIS DRAWING FOR CLARITY. TRENCHING AND BACKFILLING FOR LDS, LCS AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215 AND 02225.
4. HORIZONTAL MONITORING WELL IS NOT SHOWN ON THIS DRAWING FOR CLARITY.
5. LDS, LCS AND RLCS PIPES SHALL TIE INTO EXISTING PIPES. TIE-IN LOCATIONS ARE SHOWN IN CONSTRUCTION CONTROL POINT TABLE PRESENTED ON THIS DRAWING. TIE-IN CONSTRUCTION CONTROL POINTS REPRESENT OUTSIDE BOTTOM OF 10-INCH PIPE. CONTRACTOR SHALL REMOVE PLUGS OR OTHER TEMPORARY PROTECTION INSTALLED IN EXISTING PIPES PRIOR TO TIE-INS. AS-BUILT TIE-IN LOCATIONS MAY VARY SLIGHTLY FROM CONSTRUCTION CONTROL POINTS GIVEN ON THIS DRAWING.

000008

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LMD	JJS	RAM	DLW.	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LMD	JJS	RAM	DLW.	JFB
A	00.02.07	NOT SUBMITTED AS PART OF PRELIMINARY SUBMITTAL					

SCALE AS SHOWN

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

CLIENT: **FLUOR FERNALD, INC.**

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE III

TITLE: CELL OUTLET GRADING PLANS AND DETAILS

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

J.F. Beard
9/May 00

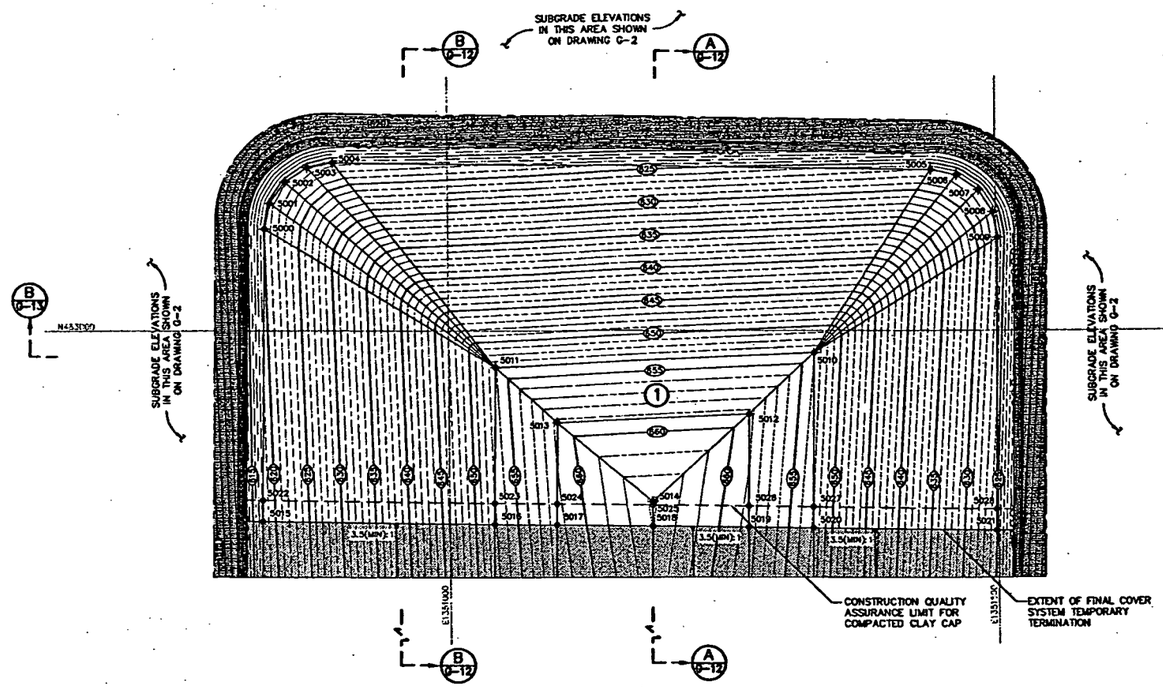
STATE OF OHIO — JOHN F. BEECH — E-38248 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20103
CONTRACT NO.:	95P5005028
FDHP DRAWING NO.:	9OX-6000-D-00300
GEOSYNTEC PROJECT NO.:	001001-04
GEOSYNTEC DOCUMENT NO.:	F00-0118
SHEET NO.:	G-5
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

3099



LEGEND

- (565) PROTECTIVE CLAY LAYER ELEVATION (FEET) (NOTE 2)
- (630) CONTOURING LAYER ELEVATION (FEET) (NOTE 2)
- PERIMETER BERM BASELINE
- 5010 CONSTRUCTION CONTROL POINT
- (1) CELL DESIGNATION
- DRAINAGE FLOW DIRECTION (NOTE 4)
- FUTURE CONTOURING LAYER GRADES (NOTE 3)
- EXISTING PROTECTIVE CLAY LAYER GRADES

CONTOURING LAYER CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
5000	483093.28	1350835.11	620.10
5001	483116.63	1350840.02	620.47
5002	483138.32	1350853.50	620.85
5003	483149.35	1350873.49	621.22
5004	483153.73	1350898.98	621.60
5005	483147.14	1351441.21	627.02
5006	483142.18	1351484.58	627.04
5007	483128.63	1351484.28	627.07
5008	483108.62	1351497.24	627.10
5009	483085.12	1351501.58	627.13
5010	482979.65	1351333.90	654.05
5011	482988.48	1351042.10	653.92
5012	482923.15	1351275.37	659.40
5013	482915.20	1351099.31	659.33
5014	482842.54	1351188.40	683.19
5015	482824.21	1350831.83	618.09
5016	482821.86	1351040.33	652.84
5017	482820.95	1351098.18	658.62
5018	482819.88	1351188.13	683.02
5019	482818.80	1351274.09	658.92
5020	482818.10	1351331.93	652.84
5021	482816.06	1351498.27	625.11
5022	482843.71	1350832.06	618.15
5023	482841.18	1351040.57	652.99
5024	482840.45	1351098.40	658.63
5025	482839.38	1351188.37	683.13
5026	482838.30	1351274.33	658.64
5027	482837.80	1351332.18	652.99
5028	482835.56	1351498.51	625.14

NOTES:

1. PURPOSE OF THIS DRAWING IS TO PRESENT CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER FOR CELL 1 AND CONSTRUCTION QUALITY ASSURANCE LIMIT FOR COMPACTED CLAY CAP FOR CELL 1.
2. PROTECTIVE CLAY LAYER AND CONTOURING LAYER ELEVATIONS CORRESPOND TO TOP OF PROTECTIVE CLAY LAYER AND CONTOURING LAYERS, RESPECTIVELY.
3. CONTOURS IN SHADED AREA REPRESENT FUTURE CONTOURING LAYER GRADES, WHICH WILL BE CONSTRUCTED UNDER A FUTURE CONTRACT.
4. RUNOFF FROM NON-IMPACTED CONTOURING LAYER SHALL BE DIVERTED TO IMPACTED RUNOFF CATCHMENT AREA UNTIL COMPACTION OF SECOND LIFT OF COMPACTED CLAY CAP IS COMPLETED. DRAINAGE FLOW DIRECTION INDICATES LOCATION OF TEMPORARY DRAINAGE CHANNEL THAT SHALL BE USED TO DIVERT RUNOFF FROM CONTOURING LAYER TO IMPACTED RUNOFF CATCHMENT AREA. CONTRACTOR SHALL CONTAIN AND CONTROL WATER GENERATED DURING CONSTRUCTION AND FILLING OF OSDF IN ACCORDANCE WITH SPECIFICATION 02270.

000003

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVWL BY	APP. BY
0	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	RJM	MLG	DLVL	DLVL	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	RJM	JAS	DLVL	DLVL	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	RJM	JAH/KMS	MHM	DLVL	JFB

SCALE IN FEET: 50 25 0 50 100

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE III

TITLE: CONTOURING LAYER GRADING PLAN

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDING OR CONSTRUCTION UNLESS SEALED.

J.F. Beck
9 May 00

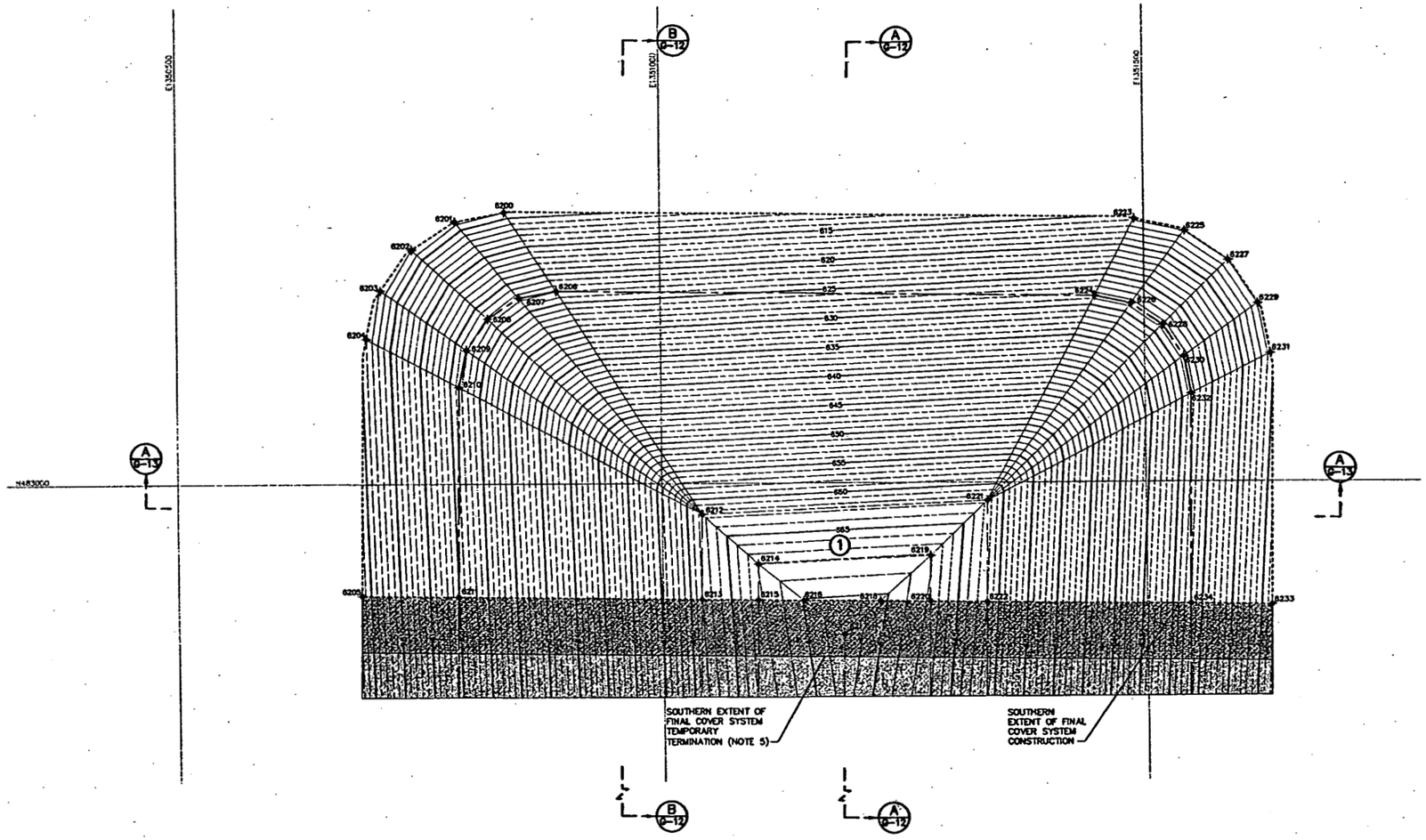
STATE OF OHIO — JOHN F. BECK — E-38248 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20103
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	90X-8000-G-00302
GEOSYNTEC PROJECT NO.:	CO1001-04
GEOSYNTEC DOCUMENT NO.:	FDO-0118
SHEET NO.:	G-6
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

3099



FINAL COVER SYSTEM CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
8200	483279.66	1350838.88	609.02
8201	483270.01	1350787.08	608.54
8202	483241.83	1350742.02	607.98
8203	483199.86	1350710.50	607.14
8204	483149.98	1350695.19	605.95
8205	482863.97	1350888.42	603.37
8206	483198.78	1350891.32	622.93
8207	483191.81	1350852.97	622.57
8208	483170.33	1350820.28	622.22
8209	483138.17	1350798.20	621.86
8210	483100.01	1350790.10	621.51
8211	482882.78	1350787.45	619.88
8212	482987.97	1351040.98	662.81
8213	482879.87	1351039.88	661.95
8214	482918.25	1351098.87	668.07
8215	482878.96	1351098.22	667.79
8216	482878.40	1351144.04	670.08
8217	482943.05	1351186.41	671.96
8218	482877.42	1351224.34	670.34
8219	482924.26	1351278.03	668.14
8220	482878.79	1351275.48	667.79
8221	482981.25	1351335.07	662.74
8222	482878.08	1351333.79	661.95
8223	483270.69	1351490.12	615.71
8224	483191.97	1351447.93	628.50
8225	483258.12	1351541.46	615.98
8226	483183.87	1351488.11	628.51
8227	483227.98	1351585.41	613.97
8228	483161.80	1351518.28	628.51
8229	483183.49	1351614.77	615.94
8230	483129.11	1351539.56	628.52
8231	483132.14	1351628.71	615.80
8232	483090.78	1351546.72	628.53
8233	482872.51	1351625.78	613.28
8234	482873.51	1351544.07	628.90

LEGEND

- 845 — FINISHED GRADE ELEVATION (FEET) (NOTE 2)
- PERIMETER BERM BASELINE
- APPROXIMATE LIMIT OF FINAL COVER SYSTEM CONSTRUCTION
- 8203 — CONSTRUCTION CONTROL POINT
- 1 — CELL DESIGNATION
- FINAL COVER SYSTEM TEMPORARY TERMINATION AREA (NOTES 3 AND 6)
- FUTURE FINAL COVER SYSTEM AREA (NOTE 4)

NOTES:

1. PURPOSE OF THIS DRAWING IS TO PRESENT CONSTRUCTION CONTROL POINTS FOR FINAL COVER SYSTEM FOR CELL 1.
2. FINISHED GRADE ELEVATIONS CORRESPOND TO TOP OF TOPSOIL AND RIPRAP COMPONENTS OF FINAL COVER SYSTEM.
3. SHADED AREA REPRESENTS EXTENT OF TEMPORARY TERMINATION OF FINAL COVER SYSTEM. TEMPORARY TERMINATION SHALL BE CONSTRUCTED ACCORDING TO DETAIL SHOWN ON DRAWING G-22.
4. CONTOURS IN SHADED AREA REPRESENT FUTURE FINAL COVER SYSTEM GRADES, WHICH WILL BE CONSTRUCTED UNDER A FUTURE CONTRACT.
5. CONSTRUCTION CONTROL POINTS FOR SOUTHERN EXTENT OF FINAL COVER SYSTEM TEMPORARY TERMINATION FOR CELL 1 ARE PROVIDED ON DRAWING G-8.
6. CONSTRUCTION CONTROL POINTS FOR CONSTRUCTION QUALITY ASSURANCE LIMIT FOR COMPACTED CLAY CAP FOR CELL 1 ARE PROVIDED ON DRAWING G-8.

000010

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	00.05.09	CPC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	RAM	MLG	DLW.	DLW.	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	RAM	JAS	DLW.	DLW.	JFB
A	00.02.07	NOT SUBMITTED AS PART OF PRELIMINARY SUBMITTAL					

50 25 0 50 100
SCALE IN FEET

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE III

TITLE:
FINAL COVER GRADING PLAN

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

SIGNATURE: J.F. Beck
DATE: 9 May 00

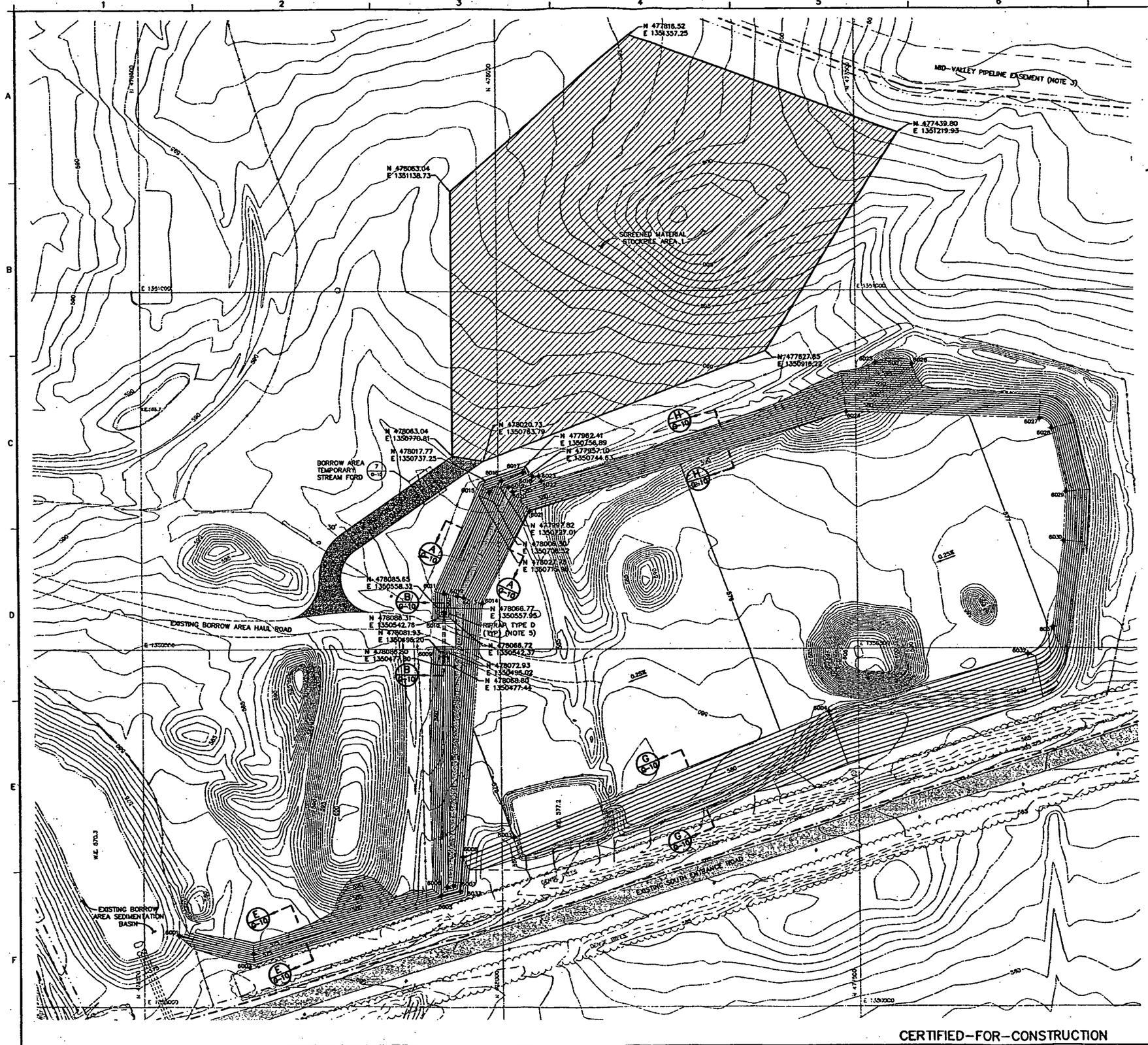
STATE OF OHIO — JOHN F. BECK — E-083340 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30329-1505

PROJECT NO.:	201103
CONTRACT NO.:	89P5005076
FDMP DRAWING NO.:	90X-6000-C-00302
GEOSYNTEC PROJECT NO.:	GO1001-06
GEOSYNTEC DOCUMENT NO.:	FDO-0124
SHEET NO.:	G-7
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

3099



LEGEND

- 580 — EXISTING GROUND ELEVATION (FEET)
- 580 — FINISHED GRADE ELEVATION (FEET)
- BATTERY LIMIT
- BORROW AREA LIMIT
- EASEMENT BOUNDARY
- SLOPE CREST OR TOE
- 6001 — CONSTRUCTION CONTROL POINT
- NEW BORROW AREA HAUL ROAD
- BERM CREST (NOTE 7)
- RIPRAP LIMIT

FINISHED GRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
6001	478452.19	1350099.86	572.69
6002	478349.60	1350074.67	573.21
6003	477983.55	1350237.01	575.00
6004	477542.40	1350411.89	578.19
6005	478084.19	1350154.56	574.82
6006	478075.03	1350166.69	577.88
6007	478066.92	1350159.11	577.92
6008	478053.87	1350209.13	574.81
6009	478077.56	1350489.61	577.34
6010	478076.32	1350532.14	577.81
6011	478075.82	1350577.78	578.00
6012	478057.81	1350574.20	584.00
6013	478049.81	1350572.25	584.00
6014	478023.88	1350564.25	575.18
6015	478012.98	1350720.40	579.17
6016	477998.11	1350738.42	582.33
6017	477968.18	1350748.22	582.70
6018	477953.16	1350743.07	586.00
6019	477986.16	1350727.39	586.53
6020	477980.33	1350721.01	586.49
6021	477957.01	1350693.48	575.43
6022	477940.48	1350735.62	587.30
6023	477944.12	1350742.80	587.22
6024	477513.79	1350831.26	578.01
6025	477472.08	1350899.61	600.00
6026	477422.79	1350897.37	600.00
6027	477247.61	1350821.04	577.23
6028	477231.17	1350807.28	577.25
6029	477211.21	1350718.92	577.23
6030	477215.08	1350650.14	577.16
6031	477232.15	1350529.31	577.03
6032	477267.30	1350491.85	577.00
6033	478057.91	1350181.78	574.74

NOTES:

1. CONTRACTOR SHALL DEVELOP BORROW AREA IN ACCORDANCE WITH SPECIFICATION SECTION 13000.
2. SUBAREA BOUNDARIES ARE APPROXIMATE AND MAY BE ADJUSTED BY CONSTRUCTION MANAGER TO ENABLE EXCAVATION OF MATERIALS THAT CONFORM WITH SPECIFICATIONS.
3. CONTRACTOR SHALL LOCATE MID-VALLEY PIPELINE EASEMENT IN ACCORDANCE WITH SPECIFICATION SECTION 02100. CONTRACTOR SHALL NOT ENTER EASEMENT.
4. DATA FOR EXISTING STOCKPILES LOCATED WITHIN BORROW AREA LIMIT ARE PROVIDED ON DRAWING G-1.
5. CONTRACTOR SHALL PLACE RIPRAP TYPE D WITHIN AREAS SHOWN. RIPRAP THICKNESS SHALL BE 1 FOOT. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271. CONTRACTOR SHALL UNDERLAY RIPRAP WITH GEOTEXTILE FILTER. GEOTEXTILE FILTER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02714.
6. CONTRACTOR SHALL DEWATER EXCAVATIONS AND MANAGE COLLECTED WATER IN ACCORDANCE WITH SPECIFICATION SECTION 02200. GROUNDWATER LEVELS IN BROWN AND GRAY TILL LAYERS VARY DURING YEAR AND MAY BE HIGHER THAN THOSE SHOWN ON REFERENCE DRAWINGS. LEVELS MAY APPROACH GROUND SURFACE DURING PERIODS OF HEAVY PRECIPITATION.
7. BORROW AREA DRAINAGE CHANNEL AND DIVERSION BERM SHALL BE CONSTRUCTED PRIOR TO INITIATING EXCAVATION IN SUBAREA 1.

000011

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	00.05.08	CPC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	WHS	JKS	PRV	DLW.	JTB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	WHS	JKS	RWH	DLW.	JTB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	CDE	JKS	WHS	DLW.	JTB

50 25 0 50 100
SCALE IN FEET

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

CUSTY:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE III

TITLE:
BORROW AREA SUBAREA 1
EXCAVATION GRADING PLAN

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

J.T. Beal
SIGNATURE
9 May 00
DATE

STATE OF OHIO
JOHN T. BEAL
BECOM
E-62.26
REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1055 LAKE HOWELL DRIVE
ATLANTA, GEORGIA 30318 USA

PROJECT NO.:	20103
CONTRACT NO.:	95P5005028
FDHP DRAWING NO.:	9KX-5000-G-00303
GEOSYNTEC PROJECT NO.:	001001-06
GEOSYNTEC DOCUMENT NO.:	FDO-0224
SHEET NO.:	G-8
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

3099

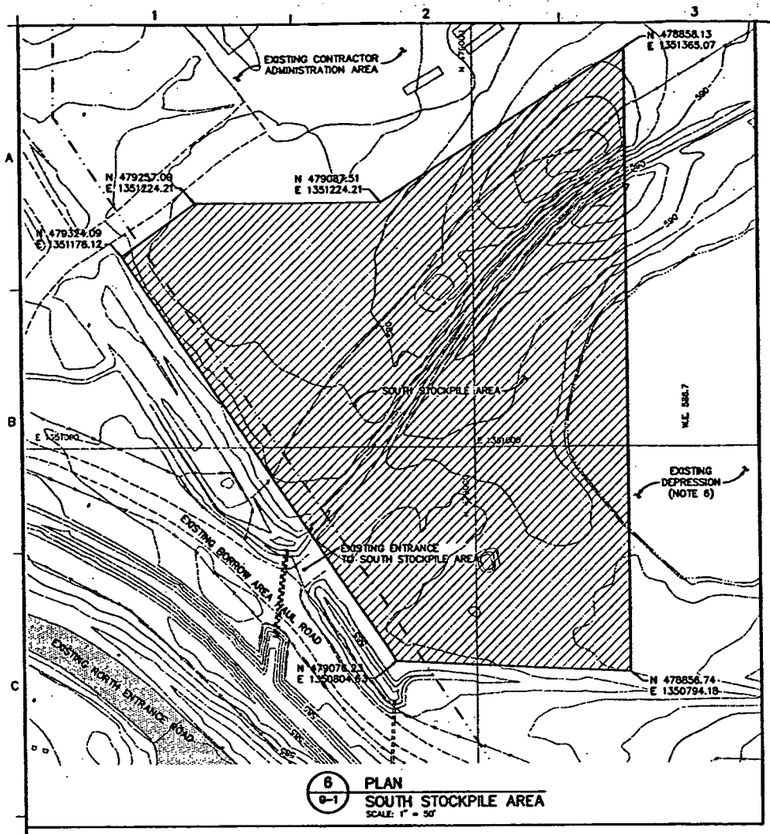
FINISHED GRADE CONSTRUCTION CONTROL POINTS			
POINT NO.	NORTHING	EASTING	ELEVATION
6100	478708.17	1350375.18	568.43
6101	478737.41	1350415.49	568.39
6102	478731.40	1350440.04	568.43
6103	478683.27	1350521.79	568.81
6104	478445.49	1350463.12	569.10
6105	478073.00	1350467.82	570.00
6106	478045.63	1350483.18	575.08
6107	478030.74	1350483.14	575.10
6108	477958.82	1350245.92	575.08
6109	477998.87	1350263.14	570.00
6110	478068.70	1350238.25	569.82
6111	478072.03	1350172.99	569.75
6112	478330.16	1350087.88	569.02
6113	478480.38	1350118.20	568.74

NOTES:

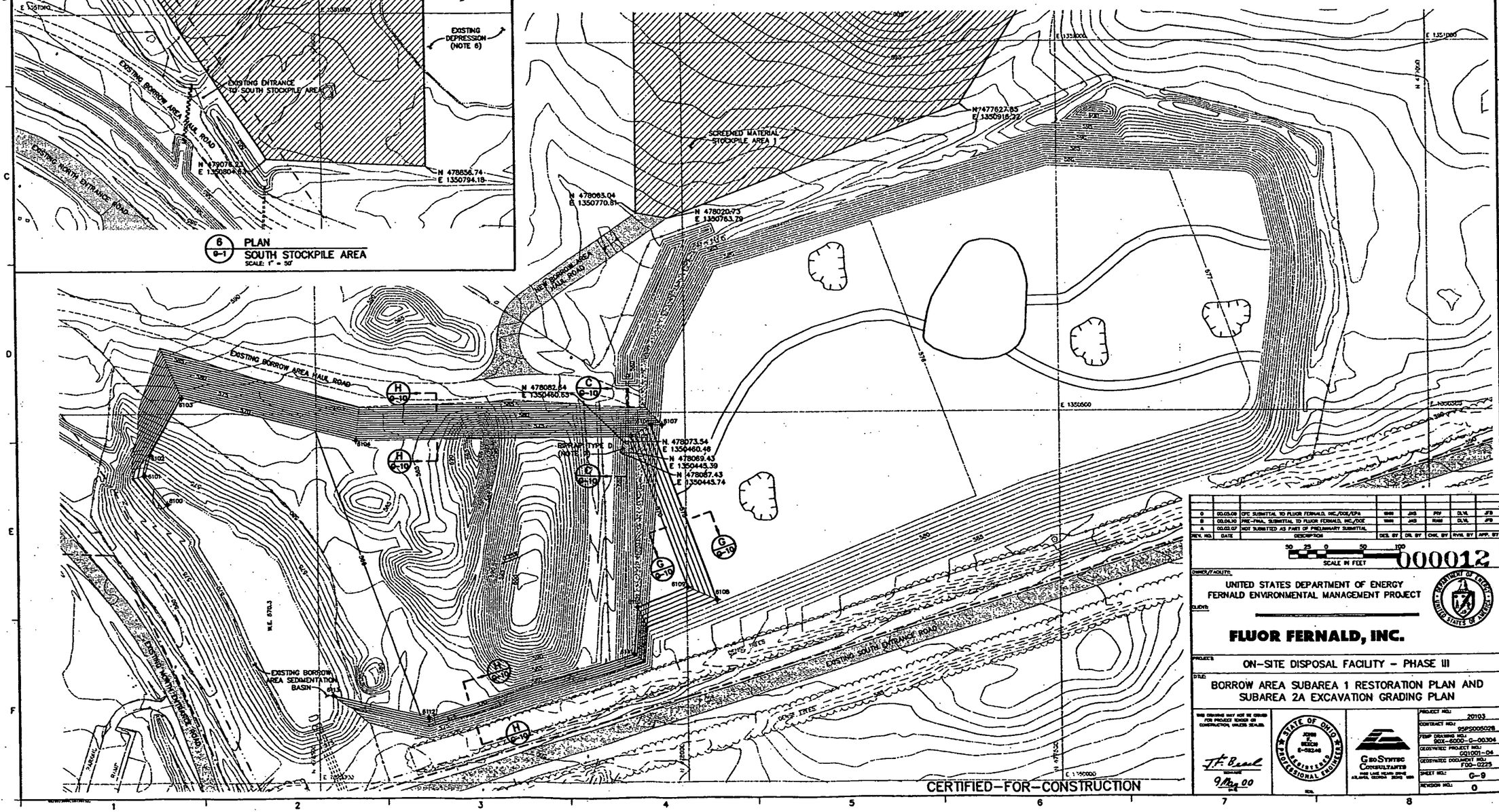
1. CONTRACTOR SHALL DEVELOP AND RESTORE BORROW AREA IN ACCORDANCE WITH SPECIFICATION SECTION 13000.
2. SUBAREA BOUNDARIES ARE APPROXIMATE AND MAY BE ADJUSTED BY CONSTRUCTION MANAGER TO ENABLE EXCAVATION OF MATERIALS THAT CONFORM WITH SPECIFICATIONS.
3. CONTRACTOR SHALL LOCATE MID-VALLEY PIPELINE EASEMENT IN ACCORDANCE WITH SPECIFICATION SECTION 02100. CONTRACTOR SHALL NOT ENTER EASEMENT.
4. QUANTITY, SIZE AND LOCATION OF INTERIM RESTORATION FEATURES ARE APPROXIMATE. CONTRACTOR SHALL LOCATE AND SIZE INTERIM RESTORATION FEATURES AS APPROVED BY CONSTRUCTION MANAGER.
5. DATA FOR EXISTING STOCKPILES LOCATED WITHIN BORROW AREA LIMIT ARE PROVIDED ON DRAWING G-1.
6. EXISTING DEPRESSION TO BE GRADED TO DRAIN BY OTHERS.
7. CONTRACTOR SHALL PLACE RIPRAP TYPE D WITHIN AREA SHOWN. RIPRAP THICKNESS SHALL BE 1 FOOT. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271. CONTRACTOR SHALL UNDERLAY RIPRAP WITH GEOTEXTILE FILTER. GEOTEXTILE FILTER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02714.
8. CONTRACTOR SHALL DEWATER EXCAVATIONS AND MANAGE COLLECTED WATER IN ACCORDANCE WITH SPECIFICATION SECTION 02200. GROUNDWATER LEVELS IN BROWN AND GRAY TILL LAYERS VARY DURING YEAR AND MAY BE HIGHER THAN THOSE SHOWN ON REFERENCE DRAWINGS. LEVELS MAY APPROACH GROUND SURFACE DURING PERIODS OF HEAVY PRECIPITATION.

LEGEND

- 580 — EXISTING GROUND ELEVATION (FEET)
- 580 — FINISHED GRADE ELEVATION (FEET)
- BATTERY LIMIT
- BORROW AREA LIMIT
- EASEMENT BOUNDARY
- SLOPE CREST OR TOE
- RIPRAP LIMIT
- 6100 — CONSTRUCTION CONTROL POINT
- SWALE
- DEPRESSION
- SMALL POND



6 G-1 PLAN
SOUTH STOCKPILE AREA
SCALE: 1" = 50'



CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	WMS	JAS	PRV	DLW	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	WMS	JAS	RMB	DLW	JFB
A	00.03.07	NOT SUBMITTED AS PART OF PRELIMINARY SUBMITTAL					

SCALE IN FEET: 50 25 0 50 100

000012

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY - PHASE III

TITLE:
BORROW AREA SUBAREA 1 RESTORATION PLAN AND SUBAREA 2A EXCAVATION GRADING PLAN

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDING OR CONSTRUCTION UNLESS SEALED.

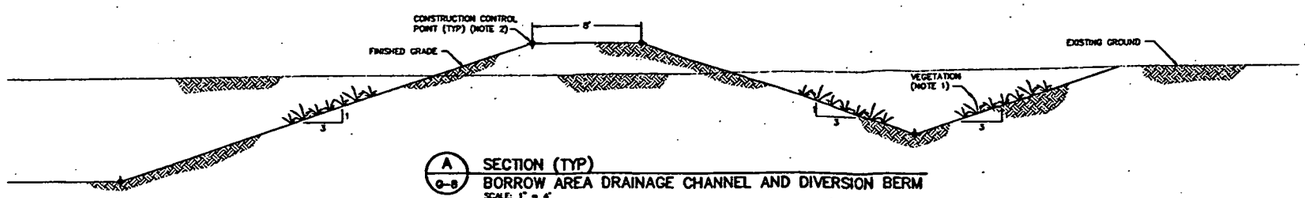
SIGNATURE
9 May 00
DATE

STATE OF OHIO
JOHN A. BEECHER
E-58246
REGISTERED PROFESSIONAL ENGINEER
SEAL

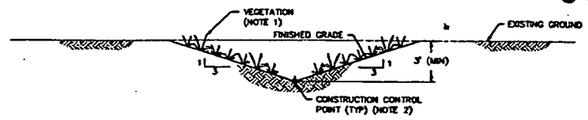
GEO SYNTEC CONSULTANTS
3565 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20103
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-6000-G-00304
GEOSYNTEC PROJECT NO.:	001001-04
GEOSYNTEC DOCUMENT NO.:	F00-0225
SHEET NO.:	G-9
REVISION NO.:	0

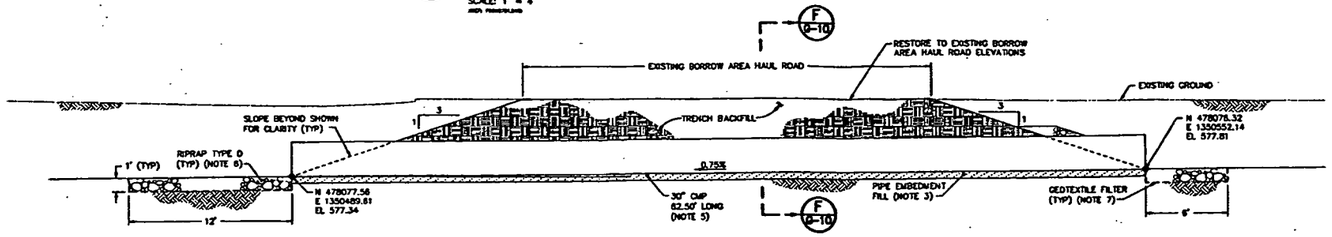
3099



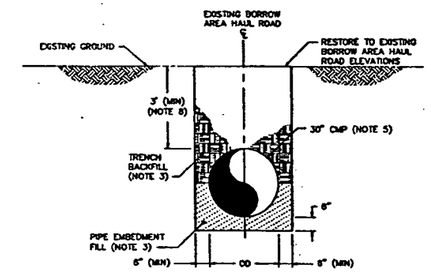
A / G-8 SECTION (TYP)
BORROW AREA DRAINAGE CHANNEL AND DIVERSION BERM
SCALE: 1" = 4'



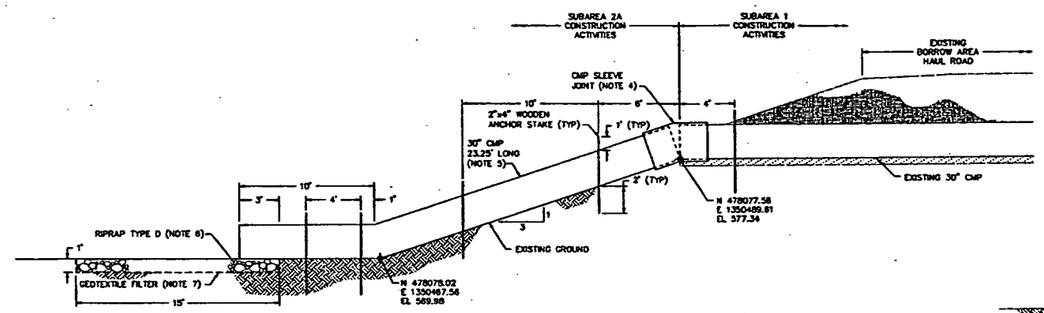
E / G-8 SECTION (TYP)
TEMPORARY BORROW AREA DRAINAGE CHANNEL TO EXISTING BORROW AREA SEDIMENTATION BASIN
SCALE: 1" = 4'



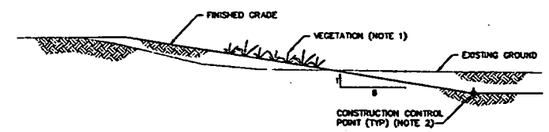
B / G-8 SECTION
EXISTING BORROW AREA HAUL ROAD 30-IN CMP CULVERT
SCALE: 1" = 4'



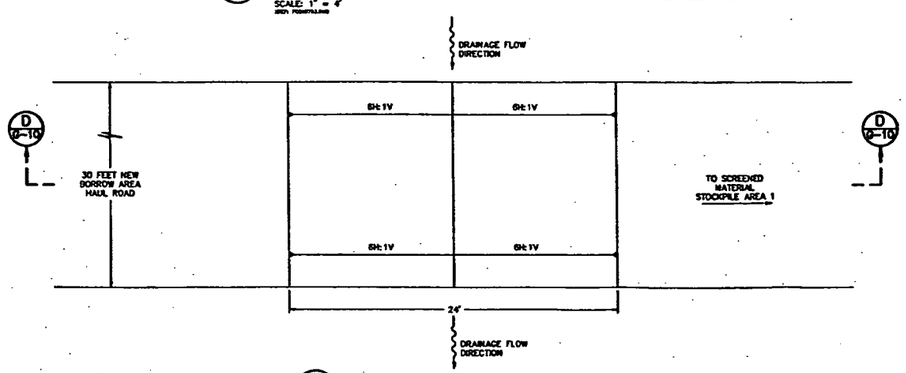
F / G-10 SECTION
BORROW AREA HAUL ROAD 30-IN CMP CULVERT EMBEDMENT
SCALE: 1" = 2'



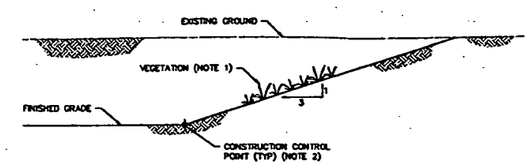
C / G-9 SECTION
BORROW AREA SUBAREA 2A 30-IN CMP CULVERT EXTENSION
SCALE: 1" = 4'



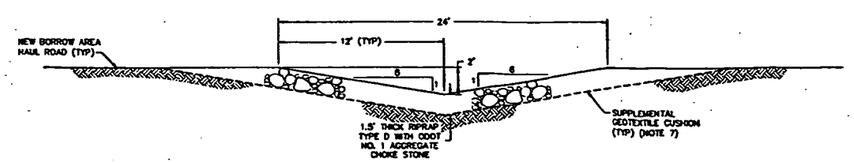
G / G-8 SECTION (TYP)
RESTORED BORROW AREA EXTERIOR SIDESLOPE
SCALE: 1" = 10'



7 / G-8 PLAN
BORROW AREA TEMPORARY STREAM FORD
SCALE: 1" = 4'



H / G-8 SECTION (TYP)
TEMPORARY BORROW AREA SIDESLOPE
SCALE: 1" = 10'



D / G-10 SECTION
BORROW AREA TEMPORARY STREAM FORD
SCALE: 1" = 4'

NOTES:

1. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
2. CONSTRUCTION CONTROL POINTS ARE PROVIDED ON DRAWINGS C-8 AND G-9.
3. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
4. OUTLET END OF TEMPORARY CMP CULVERT AT EXISTING BORROW AREA HAUL ROAD SHALL BE CONNECTED TO TEMPORARY CMP CULVERT EXTENSION INTO BORROW AREA SUBAREA 2A.
5. CORRUGATED METAL PIPE CULVERTS AND JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721.
6. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
7. SUPPLEMENTAL GEOTEXTILE CUSHION AND GEOTEXTILE FILTER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02714.
8. CONTRACTOR SHALL RESTORE COVER ABOVE CROWN OF PIPE TO EXISTING BORROW AREA HAUL ROAD ELEVATION. COVER ABOVE CROWN OF PIPE SHALL NOT BE LESS THAN 3 FEET.

000013

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	WHB	JAS	PRV	DLW.	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	CDK	JAS	WHB	DLW.	JFB
A	00.02.07	NOT SUBMITTED AS PART OF PRELIMINARY SUBMITTAL					

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE III

TITLE: BORROW AREA DETAILS

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

J.F. Beck
9 May 00

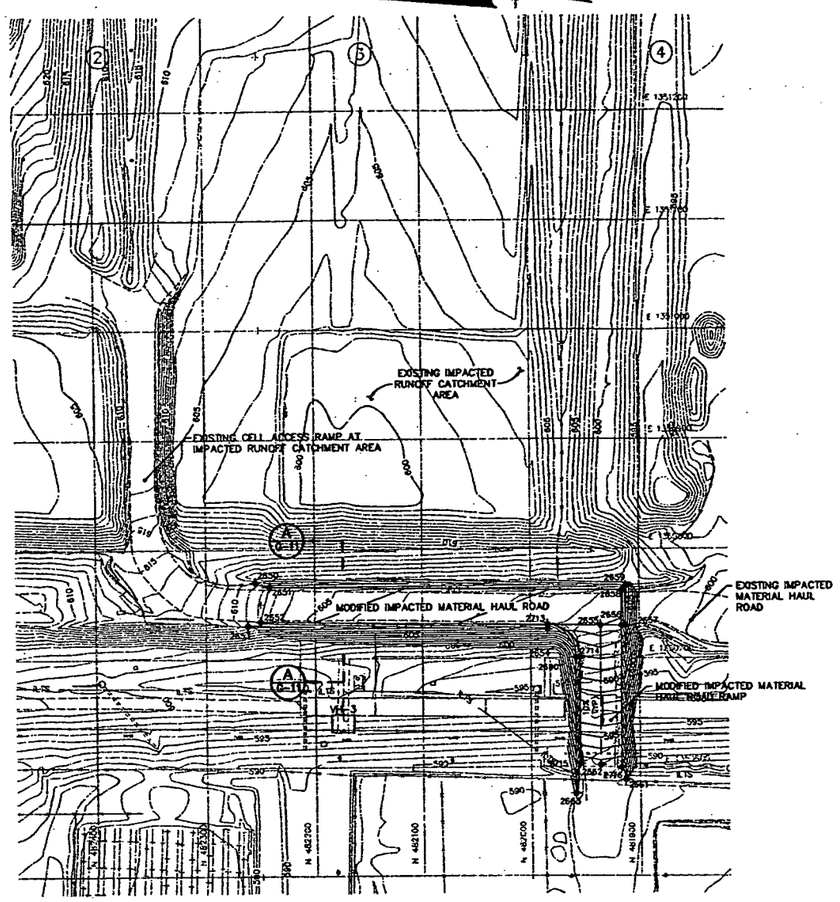
STATE OF OHIO — JOHN F. BECK E-38246 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

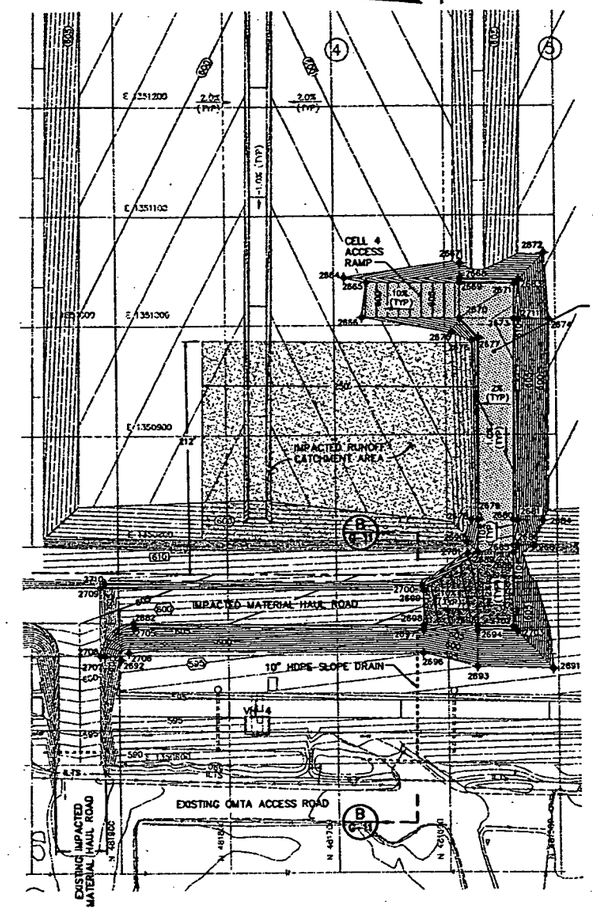
PROJECT NO.:	20103
CONTRACT NO.:	93P5005028
FDMP DRAWING NO.:	9DX-6000-C-00305
GEOSYNTEC PROJECT NO.:	G01001-04
GEOSYNTEC DOCUMENT NO.:	FDD-0207
SHEET NO.:	C-10
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

3099



8 G-1 PLAN
IMPACTED MATERIAL HAUL ROAD AND RAMP MODIFICATION
SCALE: 1" = 50'



9 G-1 PLAN
IMPACTED MATERIAL HAUL ROAD AND ACCESS RAMP AT CELL 4
SCALE: 1" = 50'

IMPACTED MATERIAL HAUL ROAD CONSTRUCTION CONTROL POINTS			
POINT NO.	NORTHING	EASTING	ELEVATION
2650	482254.89	1350770.02	609.67
2651	482242.12	1350785.98	608.00
2652	482250.15	1350733.98	607.37
2653	482281.91	1350730.11	609.48
2654	481984.79	1350726.72	607.38
2655	481935.94	1350730.00	605.00
2656	481916.94	1350729.89	604.87
2657	481912.94	1350729.87	606.87
2658	481916.76	1350761.89	605.51
2659	481912.74	1350765.84	607.48
2660	481959.11	1350700.57	603.84
2661	481913.75	1350588.54	593.00
2662	481936.58	1350601.99	592.59
2663	481959.83	1350575.71	591.73
2664	481690.39	1351043.38	599.00
2665	481869.78	1351039.11	599.07
2666	481874.17	1351007.18	598.67
2667	481588.22	1351038.01	602.44
2668	481588.40	1351042.09	609.40
2669	481588.44	1351038.09	607.40
2670	481588.53	1351006.10	607.40
2671	481537.23	1351037.49	607.40
2672	481510.17	1351065.83	597.17
2673	481537.82	1351005.49	608.38
2674	481505.77	1351005.10	596.48
2675	481594.72	1350993.19	600.13
2676	481575.98	1350985.77	604.54
2677	481569.83	1350988.13	607.57
2678	481577.88	1350822.70	602.91
2679	481571.88	1350822.63	605.91
2680	481539.86	1350822.23	608.55
2681	481535.88	1350822.18	608.55
2682	481888.64	1350729.52	604.84
2683	481533.18	1351041.44	609.40
2684	481513.15	1350921.91	597.20
2685	481540.14	1350799.18	608.86
2686	481538.14	1350799.14	610.86
2687	481522.48	1350799.25	604.00
2688	481540.22	1350792.79	608.86
2689	481572.22	1350793.18	608.86
2690	481582.41	1350802.53	602.78
2691	481504.90	1350886.71	592.44
2692	481898.29	1350895.86	596.00
2693	481573.49	1350888.72	593.02
2694	481573.09	1350721.89	609.51
2695	481573.04	1350729.89	607.51
2696	481621.95	1350701.17	594.10
2697	481621.89	1350722.28	604.85
2698	481621.94	1350726.28	602.85
2699	481621.25	1350758.28	603.29
2700	481622.51	1350762.30	605.31
2701	481581.38	1350791.56	610.08
2702	481541.05	1350725.30	607.51
2703	481537.09	1350721.25	609.51
2704	481886.53	1350725.52	606.64
2706	481890.97	1350702.54	596.00
2707	481913.14	1350699.40	603.67
2708	481917.12	1350699.79	601.67
2709	481918.76	1350761.89	605.51
2710	481912.74	1350765.84	607.48
2711	481533.62	1351005.45	610.38
2713	481984.75	1350730.72	605.38
2714	481955.11	1350700.55	601.84
2715	481955.67	1350602.98	592.37
2716	481917.69	1350599.67	592.08

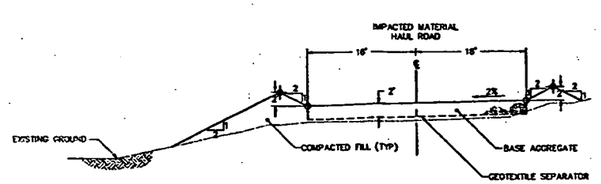
NOTES:

1. CONTOURS WITHIN SHADED REGION ON IMPACTED MATERIAL HAUL ROAD REPRESENT TOP OF BASE AGGREGATE. BASE AGGREGATE SHALL BE 6 INCHES THICK AND UNDERLAIN BY GEOTEXTILE SEPARATOR. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
2. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED GRANULAR MATERIAL IN IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED MATERIAL IN REMAINING ACTIVE CELL AREAS EXCLUDING ACTIVE CELL AREA AT INTERCELL BERM TEMPORARY LINER SYSTEM TERMINATION. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED NON-GRANULAR MATERIAL IN ACTIVE AND FUTURE CELL AREAS OF TEMPORARY LINER SYSTEM TERMINATION. NON-IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02240. IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
3. HDPE SLOPE DRAIN SHALL BE SDR-26 AND IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
4. RIPRAP APRON SHALL BE CONSTRUCTED AT INLET AND OUTLET OF 10-INCH HDPE SLOPE DRAIN. RIPRAP APRON SHALL BE 4 FEET WIDE AND CENTERED ON 10-INCH HDPE SLOPE DRAIN. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
5. GEOTEXTILE FILTER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02714.
6. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
7. CONTRACTOR SHALL RE-ESTABLISH EXISTING GRADES, RIPRAP, VEGETATION, GEOTEXTILE SEPARATOR AND BASE AGGREGATE WITHIN AREA OF SLOPE DRAIN TRENCH EXCAVATION. BASE AGGREGATE THICKNESS SHALL BE 1 FOOT.

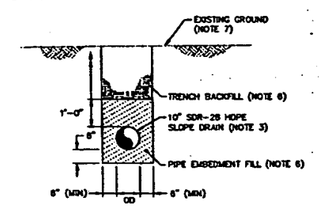
000014

LEGEND

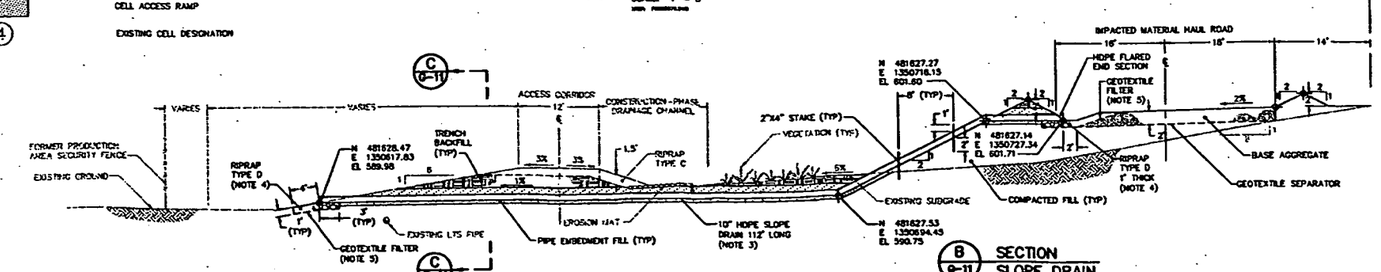
- 600 — EXISTING GROUND ELEVATION (FEET)
- 600 — FINISHED GRADE ELEVATION (FEET)
- 595 — EXISTING SUBGRADE ELEVATION (FEET)
- 590 — EXISTING COMPACTED CLAY LINER/PROTECTIVE CLAY LAYER ELEVATION (FEET)
- 585 — EXISTING PROTECTIVE LAYER ELEVATION (FEET) (NOTE 2)
- PERIMETER BERM BASELINE
- EXISTING LTS PIPE
- ILTS — EXISTING ILTS PIPE
- 2650 — CONSTRUCTION CONTROL POINT
- IMPACTED MATERIAL HAUL ROAD (NOTE 1)
- CELL ACCESS RAMP
- 4 — EXISTING CELL DESIGNATION



A G-11 SECTION
IMPACTED MATERIAL HAUL ROAD MODIFICATION AT CELL 3
SCALE: 1" = 5'



C G-11 SECTION (TYP)
10-IN HDPE SLOPE DRAIN EMBEDMENT
SCALE: 1" = 2'



B G-11 SECTION
SLOPE DRAIN
SCALE: 1" = 6'

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LMD	JJR	RMB	DLW.	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LMD	JJR	RMB	DLW.	JFB
A	00.02.07	NOT SUBMITTED AS PART OF PRELIMINARY SUBMITTAL					

SCALE AS SHOWN

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

CLIENT: FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY - PHASE III

TITLE: IMPACTED MATERIAL HAUL ROAD GRADING PLANS AND DETAILS

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDING OR CONSTRUCTION, UNLESS SEALED

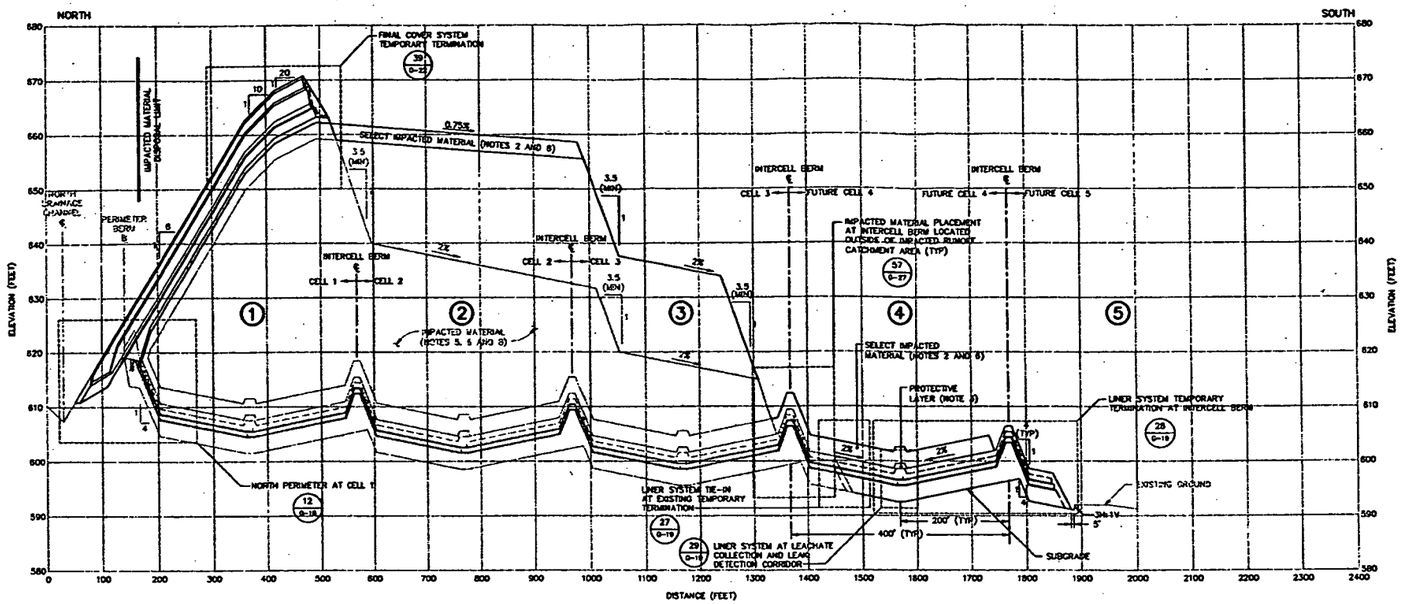
SIGNATURE: J.T. Bond
DATE: 9 May 00

STATE OF OHIO — JOHN T. BOND — E-68348 — REGISTERED PROFESSIONAL ENGINEER

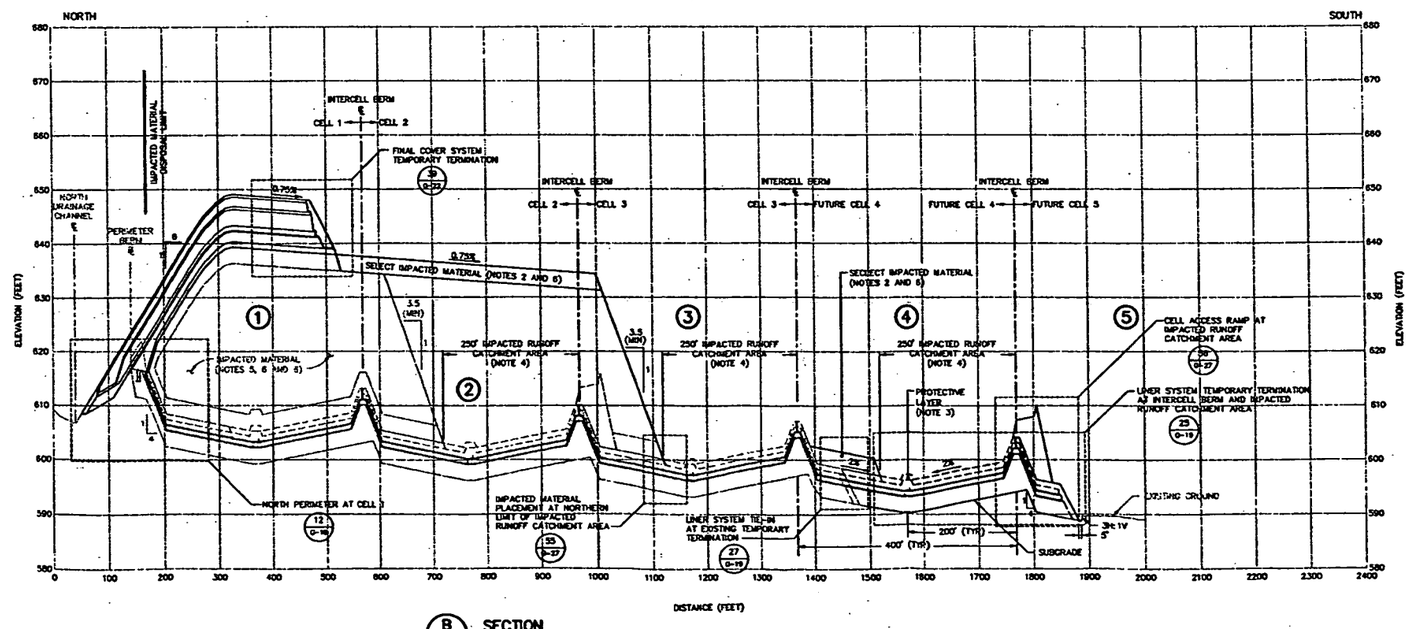
GEO SYNTEC CONSULTANTS
1255 LAKE HOWELL DRIVE
ATLANTA, GEORGIA 30318

PROJECT NO.: 70103
CONTRACT NO.: 95PS000028
FDMP DRAWING NO.: 9-02-6000-0-00308
GEOSYNTEC PROJECT NO.: 001001-04
GEOSYNTEC DOCUMENT NO.: FDD-0608
SHEET NO.: G-11
REVISION NO.: 0

3099



A D-2 SECTION
NORTH-SOUTH
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'



B D-2 SECTION
NORTH-SOUTH AT IMPACTED RUNOFF CATCHMENT AREA
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

NOTES:

1. SECTIONS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE PROTECTIVE LAYER AND BELOW CONTOURING LAYER. THICKNESS OF SELECT IMPACTED MATERIAL OVERLYING PROTECTIVE LAYER MAY BE REDUCED TO 2 FEET IF FIRST LIFT OF IMPACTED MATERIAL TO BE PLACED OVER SELECT IMPACTED MATERIAL IS CATEGORY I IMPACTED MATERIAL.
3. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED GRANULAR MATERIAL IN IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED MATERIAL IN REMAINING ACTIVE CELL AREAS EXCLUDING ACTIVE CELL AREA AT INTERCELL BERM TEMPORARY LINER SYSTEM TERMINATION. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED NON-GRANULAR MATERIAL IN ACTIVE AND FUTURE CELL AREAS OF TEMPORARY LINER SYSTEM TERMINATION. NON-IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02240. IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
4. IMPACTED RUNOFF CATCHMENT AREA IN ACTIVE CELL SHALL REMAIN OPEN UNTIL COMPACTION OF SECOND LIFT OF COMPACTED CLAY CAP IS COMPLETED IN ADJACENT UPGRADIENT CELL AND IMPACTED RUNOFF CATCHMENT AREA IN FUTURE CELL IS CONSTRUCTED AND OPERATIONAL.
5. IMPACTED MATERIAL INTERIM SLOPES SHALL BE NO STEEPER THAN 3.5H:1V. INTERIM SLOPE CONFIGURATION SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY AND MAY VARY BASED ON SEQUENCE AND SCHEDULE FOR REMOVAL OF IMPACTED MATERIAL FROM OPERABLE UNITS.
6. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
7. LDS, LCS AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605 AND TERMINATE AT UPGRADIENT END WITH A 6-INCH MOLDED END CAP.
8. EXISTING IMPACTED MATERIAL GRADES SHOWN ARE APPROXIMATE.

000015

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVWD. BY	APP. BY
0	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	RMM	MLB	DLW.	DLW.	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	RMM	JHB	DLW.	DLW.	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	MRA	UMW/BLB	DLW.	DLW.	JFB

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

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE III

TITLE: OSDF NORTH-SOUTH SECTIONS

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE: J.H. Beck
DATE: 9 May 00

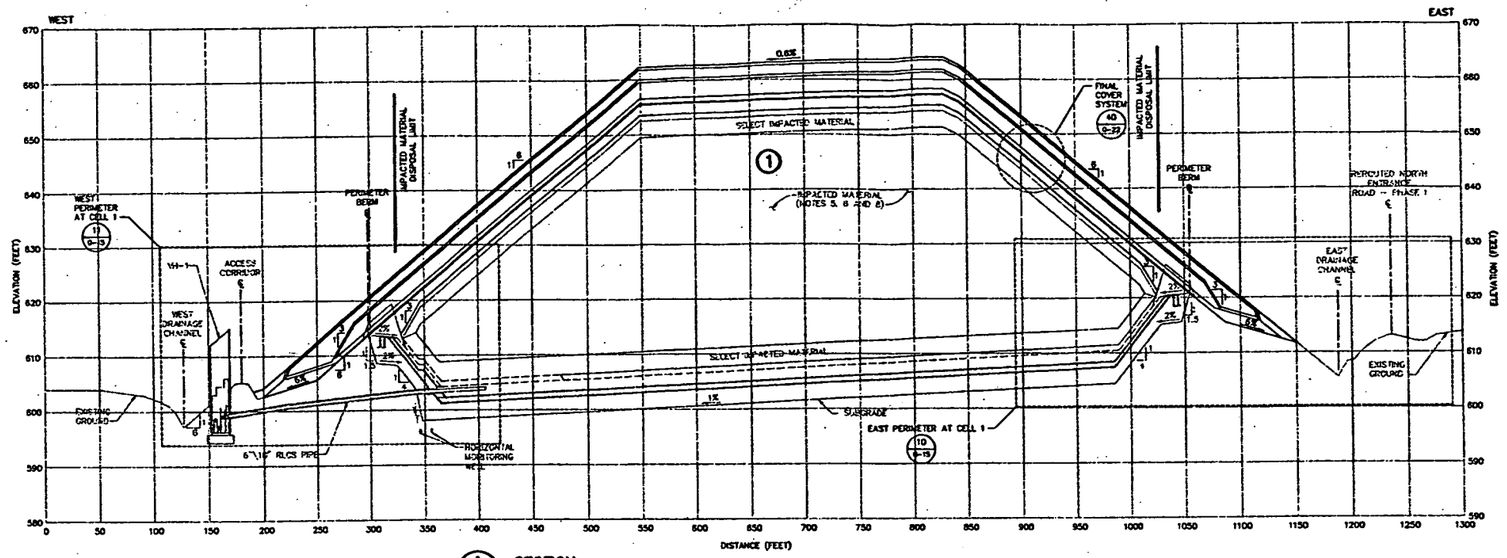
STATE OF OHIO — JOHN H. BECK — 6-58269 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1900 LAKE HARBIN DRIVE
ATLANTA, GEORGIA 30318 USA

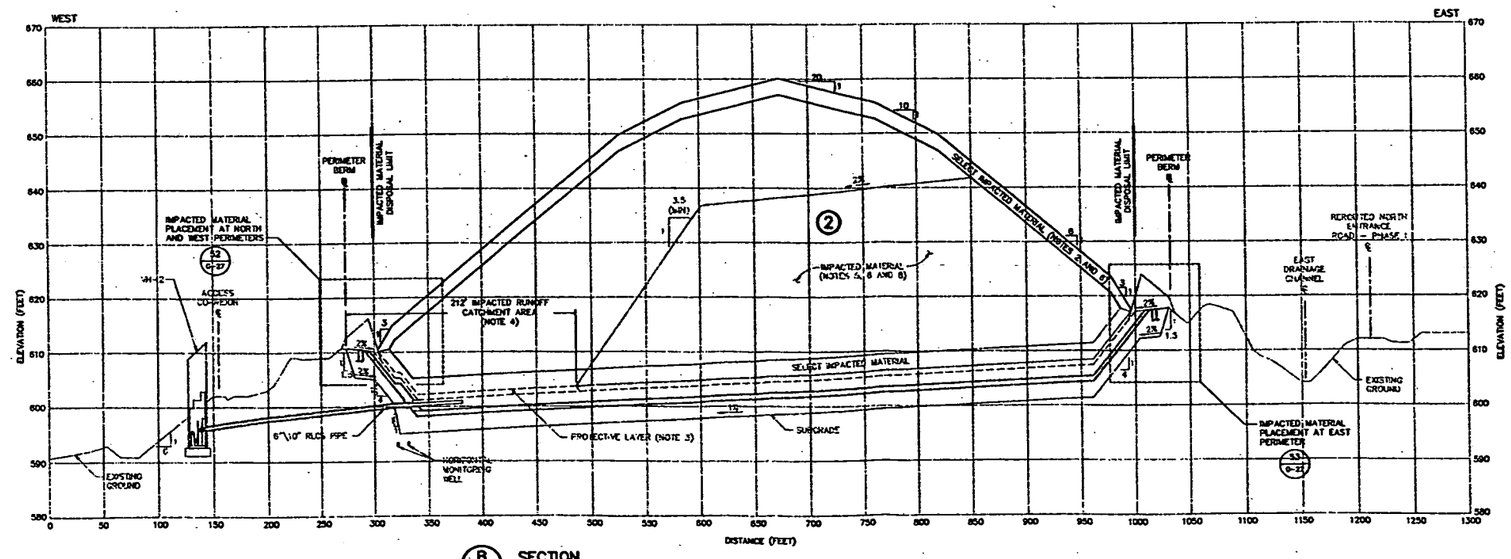
PROJECT NO.:	29103
CONTRACT NO.:	95P5005028
FEMP DRAWING NO.:	90X-6000-C-00307
GEOSYNTEC PROJECT NO.:	CO1001-04
GEOSYNTEC DOCUMENT NO.:	FX0-0213
SHEET NO.:	C-12
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

3099



A SECTION
WEST-EAST CELL 1 AT IMPACTED RUNOFF CATCHMENT AREA
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'



B SECTION
WEST-EAST CELL 2 AT IMPACTED RUNOFF CATCHMENT AREA
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'

NOTES:

1. SECTIONS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE PROTECTIVE LAYER AND BELOW CONTOURING LAYER. THICKNESS OF SELECT IMPACTED MATERIAL OVERLYING PROTECTIVE LAYER MAY BE REDUCED TO 2 FEET IF FIRST LIFT OF IMPACTED MATERIAL TO BE PLACED OVER SELECT IMPACTED MATERIAL IS CATEGORY 1 IMPACTED MATERIAL.
3. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED GRANULAR MATERIAL IN IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED MATERIAL IN REMAINING ACTIVE CELL AREAS EXCLUDING ACTIVE CELL AREA AT INTERCELL BERM TEMPORARY LINER SYSTEM TERMINATION. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED NON-GRANULAR MATERIAL IN ACTIVE AND FUTURE CELL AREAS OF TEMPORARY LINER SYSTEM TERMINATION. NON-IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02240. IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
4. IMPACTED RUNOFF CATCHMENT AREA IN ACTIVE CELL SHALL REMAIN OPEN UNTIL COMPACTION OF SECOND LIFT OF COMPACTED CLAY CAP IS COMPLETED IN ADJACENT UPGRADIENT CELL AND IMPACTED RUNOFF CATCHMENT AREA IN FUTURE CELL IS CONSTRUCTED AND OPERATIONAL.
5. IMPACTED MATERIAL INTERIM SLOPES SHALL BE NO STEEPER THAN 3.5H:1V. INTERIM SLOPE CONFIGURATION SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY AND MAY VARY BASED ON SEQUENCE AND SCHEDULE FOR REMOVAL OF IMPACTED MATERIAL FROM OPERABLE UNITS.
6. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
7. LDS, LCS AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605 AND TERMINATE AT THE UPGRADIENT END WITH A 6-INCH MOLDED END CAP.
8. EXISTING IMPACTED MATERIAL GRADES SHOWN ARE APPROXIMATE.

000016

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
C	03.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	SMM	JMB	DLW.	DLW.	JFB
B	03.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	SMM	JMB	DLW.	DLW.	JFB
A	03.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	URA	UMR/SLB	DLW.	DLW.	JFB

HORIZONTAL SCALE IN FEET: 50 20 0 50 100
VERTICAL SCALE IN FEET: 10 5 0 10 20

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY - PHASE III

TITLE:
OSDF WEST-EAST SECTIONS I

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

J.F. Beck
SIGNATURE
9 May 00
DATE

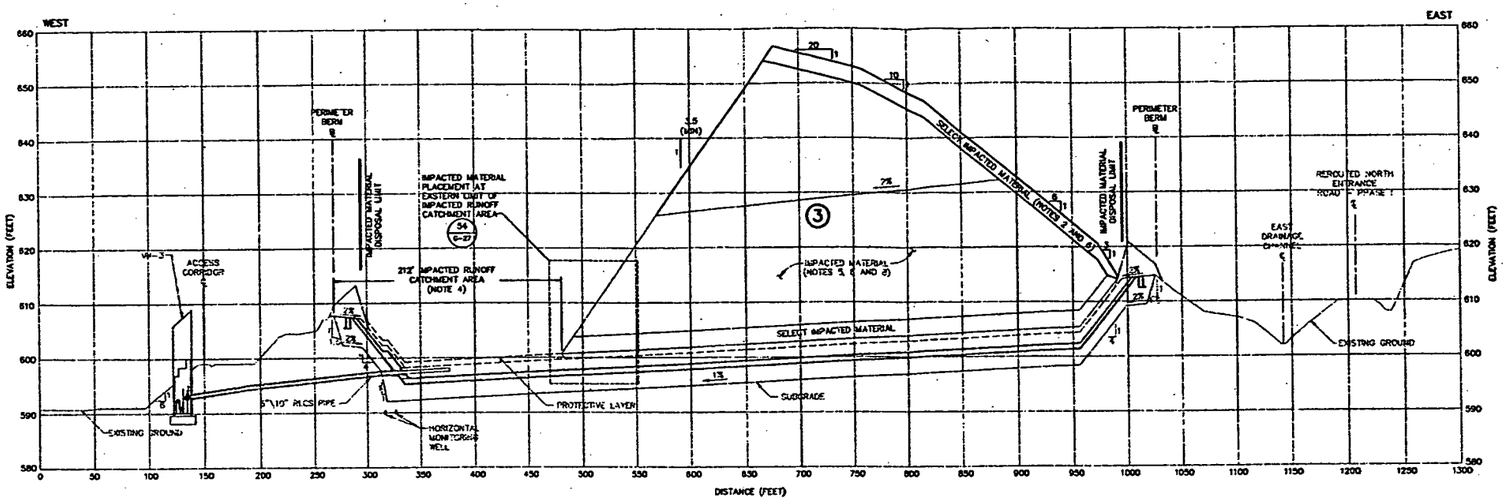
STATE OF OHIO
JOHN F. BECK
E-58248
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
3100 LAKE HOLLY DRIVE
ATLANTIC GEORGIA 30342 USA

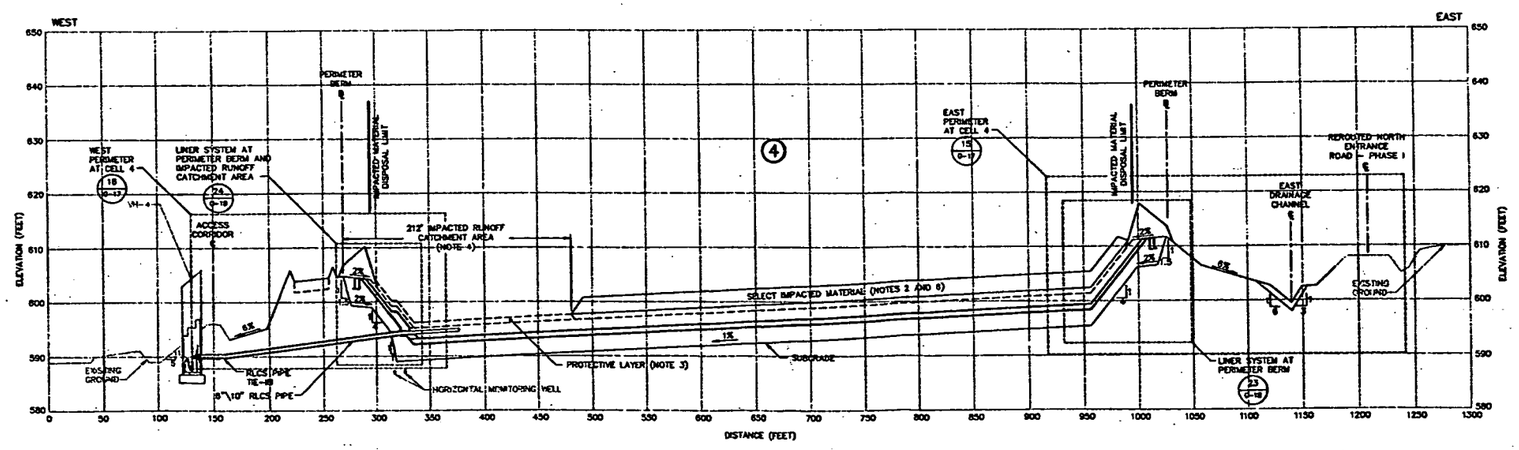
PROJECT NO.:	20103
CONTRACT NO.:	9SPS005078
FDMP DRAWING NO.:	9X2X-5000-G-00308
GEOSYNTEC PROJECT NO.:	001001-04
GEOSYNTEC DOCUMENT NO.:	F00-0217
SHEET NO.:	G-13
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

3099



A SECTION
WEST-EAST CELL 3 AT IMPACTED RUNOFF CATCHMENT AREA
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'



B SECTION
G-3
WEST-EAST CELL 4 AT IMPACTED RUNOFF CATCHMENT AREA
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'

NOTES:

1. SECTIONS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE PROTECTIVE LAYER AND BELOW CONTOURING LAYER. THICKNESS OF SELECT IMPACTED MATERIAL OVERLYING PROTECTIVE LAYER MAY BE REDUCED TO 2 FEET IF FIRST LIFT OF IMPACTED MATERIAL TO BE PLACED OVER SELECT IMPACTED MATERIAL IS CATEGORY I IMPACTED MATERIAL.
3. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED GRANULAR MATERIAL IN IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED MATERIAL IN REMAINING ACTIVE CELL AREAS EXCLUDING ACTIVE CELL AREA AT INTERCELL BERM TEMPORARY LINER SYSTEM TERMINATION. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED NON-GRANULAR MATERIAL IN ACTIVE AND FUTURE CELL AREAS OF TEMPORARY LINER SYSTEM TERMINATION. NON-IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02240. IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
4. IMPACTED RUNOFF CATCHMENT AREA IN ACTIVE CELL SHALL REMAIN OPEN UNTIL COMPACTION OF SECOND LIFT OF COMPACTED CLAY CAP IS COMPLETED IN ADJACENT UPGRADIENT CELL AND IMPACTED RUNOFF CATCHMENT AREA IN FUTURE CELL IS CONSTRUCTED AND OPERATIONAL.
5. IMPACTED MATERIAL INTERIM SLOPES SHALL BE NO STEEPER THAN 3.5H:1V. INTERIM SLOPE CONFIGURATION SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY AND MAY VARY BASED ON SEQUENCE AND SCHEDULE FOR REMOVAL OF IMPACTED MATERIAL FROM OPERABLE UNITS.
6. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
7. LDS, LCS AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02505 AND TERMINATE AT THE UPGRADIENT END WITH A 6-INCH MOLDED END CAP.
8. EXISTING IMPACTED MATERIAL GRADES SHOWN ARE APPROXIMATE.

000017

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	00.03.09	CPC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	KMM	JMB	DLVL	DLVL	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	KMM	JMB	DLVL	DLVL	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	MRA	MMM/SLB	DLVL	DLVL	JFB

HORIZONTAL SCALE IN FEET: 50 25 0 50 100
VERTICAL SCALE IN FEET: 10 5 0 10 20

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY - PHASE III

TITLE: OSDF WEST-EAST SECTIONS II

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDING OR CONSTRUCTION, UNLESS SIGNED.
SIGNATURE: J.F. Beck
DATE: 9 May 00

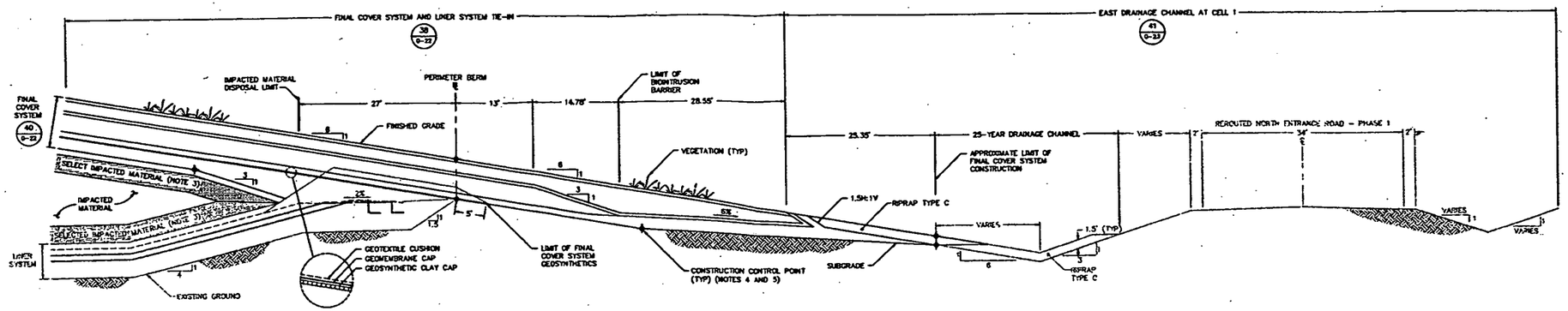
STATE OF OHIO — JOHN F. BECK — E-58246 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

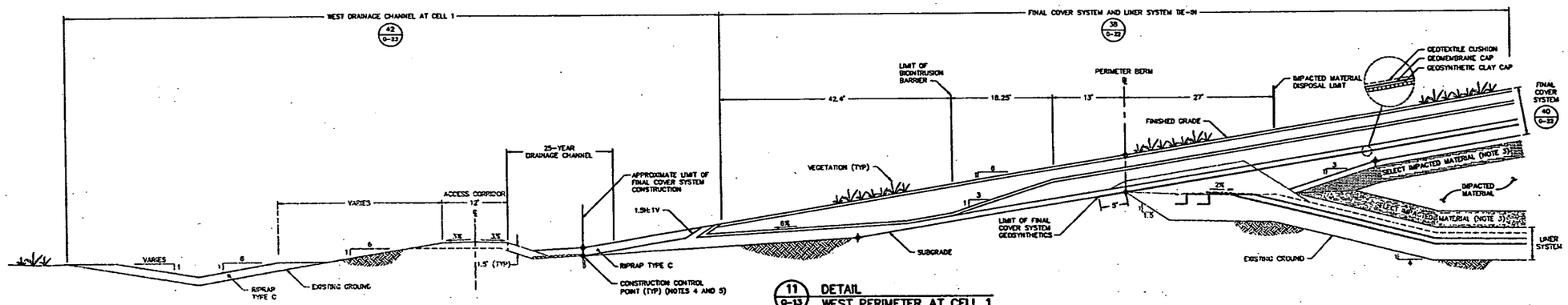
PROJECT NO.:	20103
CONTRACT NO.:	95P5005028
PDMP DRAWING NO.:	9001-6000-C-00309
GEOSYNTEC PROJECT NO.:	001001-04
GEOSYNTEC DOCUMENT NO.:	F00-0215
SHEET NO.:	G-14
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

3099



10 G-13 **DETAIL**
EAST PERIMETER AT CELL 1
SCALE: 1" = 8'



11 G-13 **DETAIL**
WEST PERIMETER AT CELL 1
SCALE: 1" = 8'

000018

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
3. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE PROTECTIVE LAYER AND BELOW CONTOURING LAYER. THICKNESS OF SELECT IMPACTED MATERIAL OVERLYING PROTECTIVE LAYER MAY BE REDUCED TO 2 FEET IF FIRST LIFT OF IMPACTED MATERIAL TO BE PLACED OVER SELECT IMPACTED MATERIAL IS CATEGORY 1 IMPACTED MATERIAL. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
4. CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER AND FINAL COVER SYSTEM ARE PROVIDED ON DRAWINGS G-6 AND G-7.
5. CONTRACTOR SHALL RE-ESTABLISH SUBGRADE ELEVATIONS OUTSIDE PERIMETER BERM BASELINE PRIOR TO FINAL COVER SYSTEM CONSTRUCTION. CONSTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWING G-2.

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVWL BY	APP. BY
0	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LHO	MLG	RAM	DLVL	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LHO	LMW	RAM	DLVL	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	DLVL	MLG	MRA	DLVL	JFB

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY - PHASE III

TITLE: CELL PERIMETER DETAILS I

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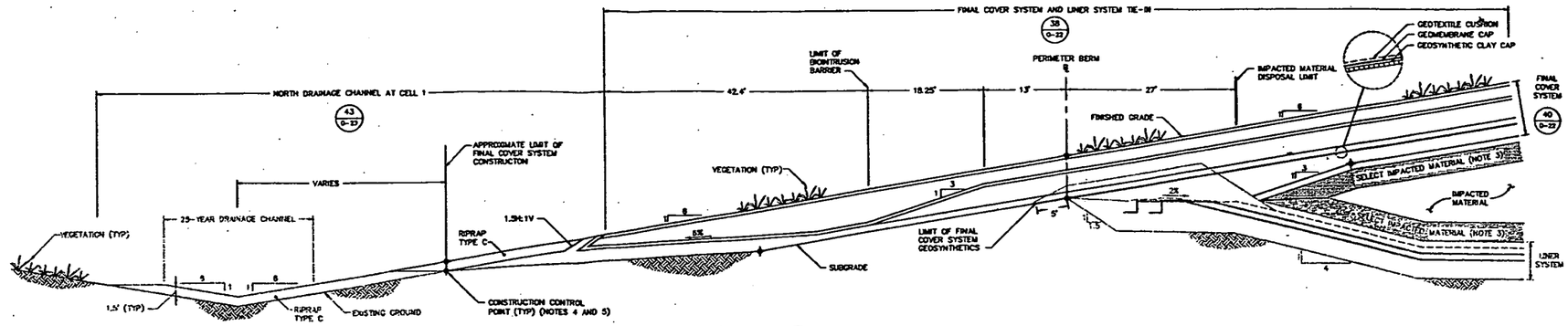
9 May 00

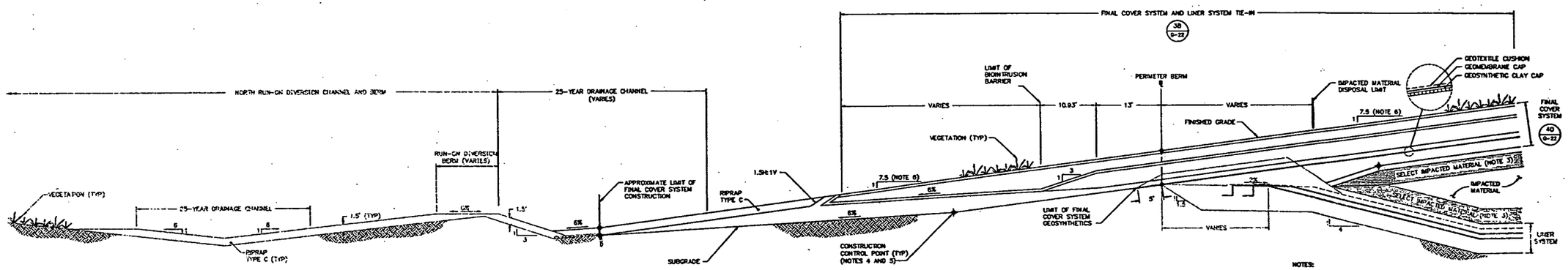
STATE OF OHIO JOHN F. BECCH E-58248 REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20103
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	90X-5000-G-00310
GEOSYNTEC PROJECT NO.:	CO1001-06
GEOSYNTEC DOCUMENT NO.:	F00-0218
SHEET NO.:	G-15
REVISION NO.:	0



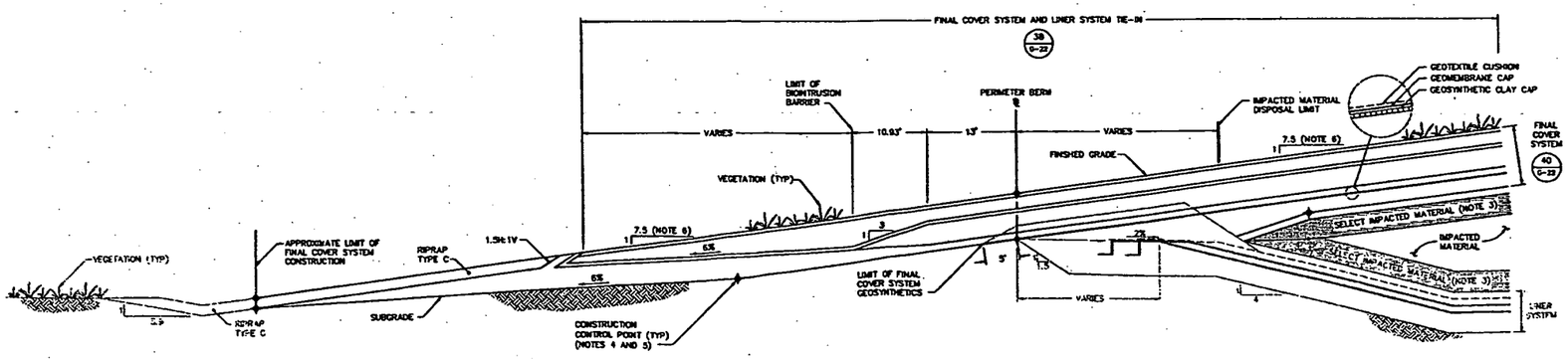
12 / 0-12 DETAIL
NORTH PERIMETER AT CELL 1
SCALE: 1" = 8'



13 / - DETAIL
NORTHWEST PERIMETER AT CELL 1
SCALE: 1" = 8'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
3. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE PROTECTIVE LAYER AND BELOW CONTOURING LAYER. THICKNESS OF SELECT IMPACTED MATERIAL OVERLYING PROTECTIVE LAYER MAY BE REDUCED TO 2 FEET IF FIRST LIFT OF IMPACTED MATERIAL TO BE PLACED OVER SELECT IMPACTED MATERIAL IS CATEGORY 1 IMPACTED MATERIAL. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
4. CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER AND FINAL COVER SYSTEM ARE PROVIDED ON DRAWINGS G-6 AND G-7.
5. CONTRACTOR SHALL RE-ESTABLISH SUBGRADE ELEVATIONS OUTSIDE PERIMETER BERM BASELINE PRIOR TO FINAL COVER SYSTEM CONSTRUCTION. CONSTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWING G-2.
6. SLOPE OF LOWER PORTION OF FINAL COVER IS 6H:1V FOR NORTH, EAST AND WEST PERIMETERS OF OSDF AND TRANSITIONS FROM 6H:1V TO 7.5H:1V AND BACK TO 6H:1V IN CORNERS OF OSDF.



14 / - DETAIL
NORTHEAST PERIMETER AT CELL 1
SCALE: 1" = 8'

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	PRN. BY	APP. BY
0	08.05.09	CPC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LMB	MLD	RAM	DLW.	JFB
B	03.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LMG	LMW	RAM	DLW.	JFB
A	03.03.07	PRELIMINARY SUBMITTAL TO FF/DOE	DLW.	MLD	MRA	DLW.	JFB

SCALE AS SHOWN

000019

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE III

TITLE:
CELL PERIMETER DETAILS II

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDING OR CONSTRUCTION UNLESS SEALED.

SIGNATURE
9 May 00

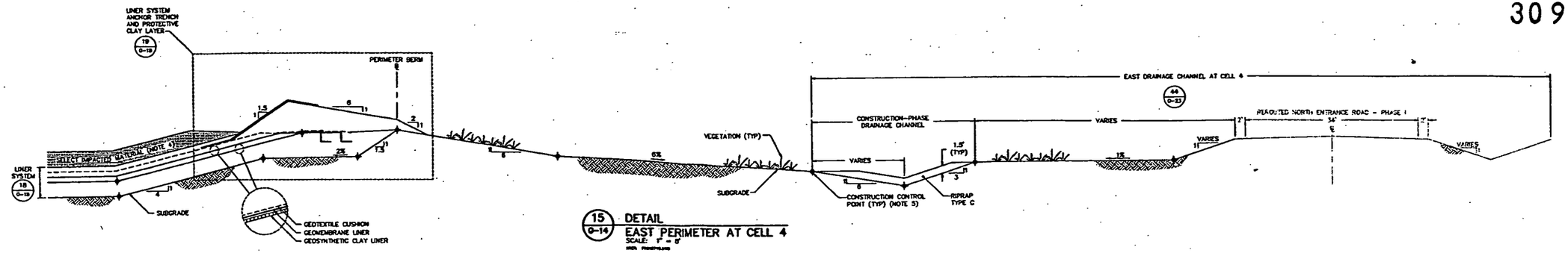
STATE OF OHIO
JOHN A. BEECH
E-58246
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
3000 LAKE CROSS DRIVE
ATLANTA, GEORGIA 30312 USA

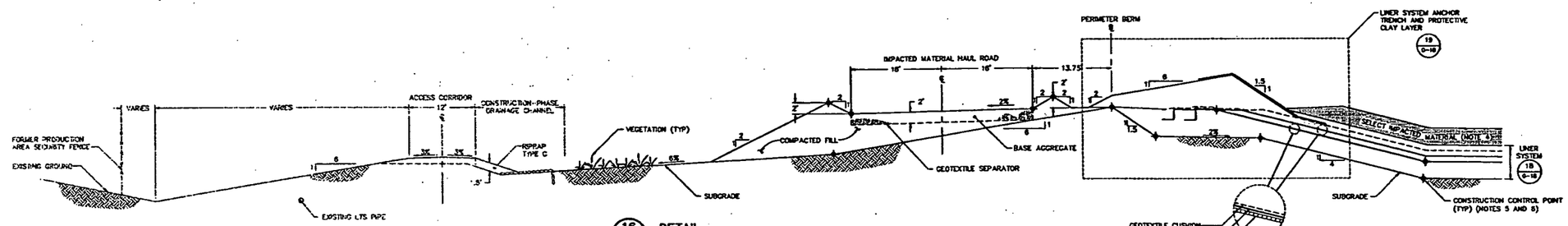
PROJECT NO.:	20103
CONTRACT NO.:	DE-SP5005028
PDMP DRAWING NO.:	90X-6000-G-00311
GEOSYNTEC PROJECT NO.:	GC10001-04
GEOSYNTEC DOCUMENT NO.:	F00-0190
SHEET NO.:	G-15
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

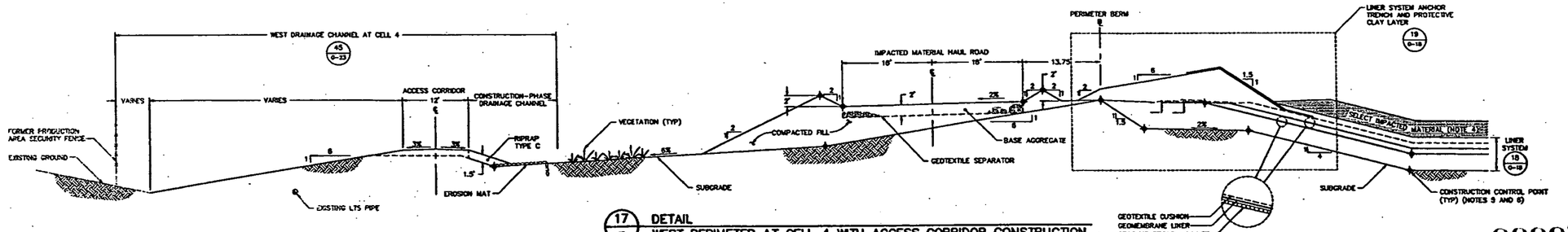
3099



15 G-14 DETAIL
EAST PERIMETER AT CELL 4
SCALE: 1" = 8'



16 G-14 DETAIL
WEST PERIMETER AT CELL 4 WITH EXISTING ACCESS CORRIDOR
SCALE: 1" = 8'



17 - DETAIL
WEST PERIMETER AT CELL 4 WITH ACCESS CORRIDOR CONSTRUCTION
SCALE: 1" = 8'

000020

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
3. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION 02230.
4. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE PROTECTIVE LAYER AND BELOW CONTOURING LAYER. THICKNESS OF SELECT IMPACTED MATERIAL OVERLYING PROTECTIVE LAYER MAY BE REDUCED TO 2 FEET IF FIRST LIFT OF IMPACTED MATERIAL TO BE PLACED OVER SELECT IMPACTED MATERIAL IS CATEGORY I IMPACTED MATERIAL. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
5. CONSTRUCTION CONTROL POINTS FOR SUBGRADE AND COMPACTED CLAY LINER ARE PROVIDED ON DRAWINGS G-3 AND G-4.
6. CONSTRUCTION CONTROL POINTS FOR IMPACTED MATERIAL HAUL ROAD ARE PROVIDED ON DRAWING G-11.

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVWL BY	APP. BY
B	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LMB	MLB	RAB	DLW.	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LMB	LMB	RAB	DLW.	JFB
A	00.03.07	PRELIMINARY SUBMITTAL TO FF/DOE	DLW.	MLB	LMB	DLW.	JFB

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY - PHASE III

TITLE:
CELL PERIMETER DETAILS III

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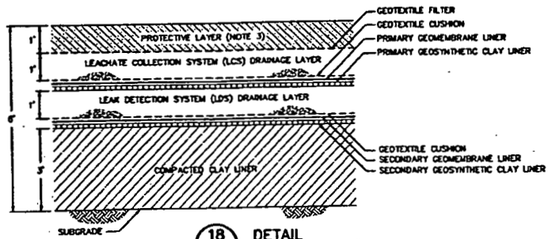
SIGNATURE
9 May 00
DATE

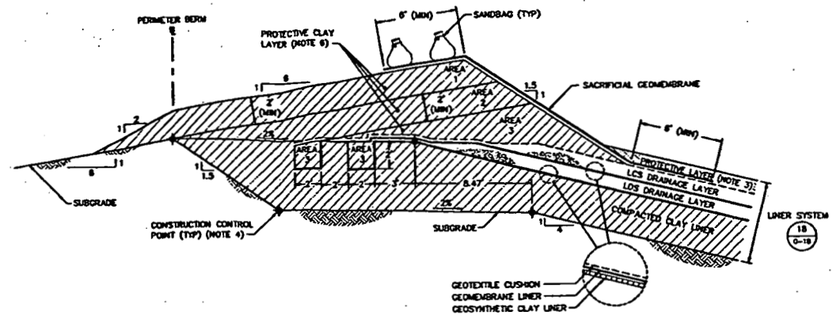
STATE OF OHIO
JOHN F. BEECH
E-080248
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30345 USA

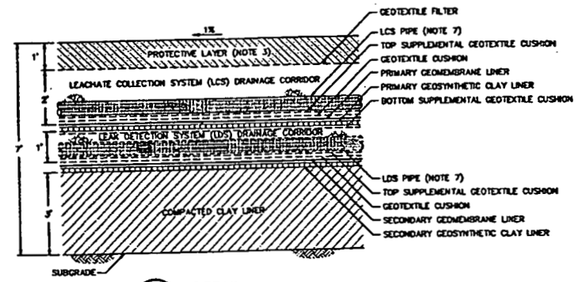
PROJECT NO.:	20103
CONTRACT NO.:	95P5009028
FDHP DRAWING NO.:	90X-5000-G-00372
GEOSYNTEC PROJECT NO.:	001001-04
GEOSYNTEC DOCUMENT NO.:	F00-0187
SHEET NO.:	G-17
REVISION NO.:	0



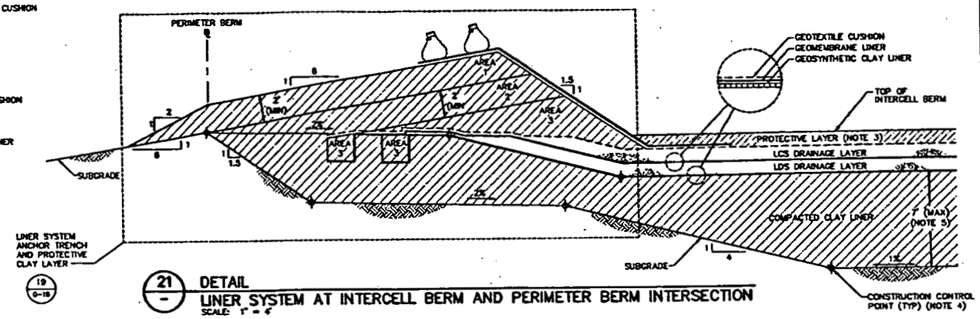
18 / 0-17 DETAIL
LINER SYSTEM
SCALE: 1" = 2'



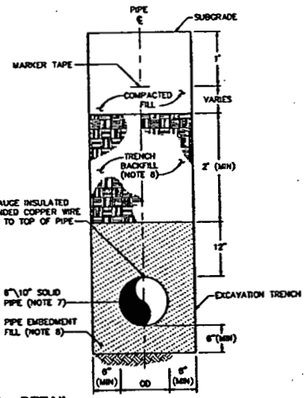
19 / 0-17 DETAIL
LINER SYSTEM ANCHOR TRENCH AND PROTECTIVE CLAY LAYER
SCALE: 1" = 4'



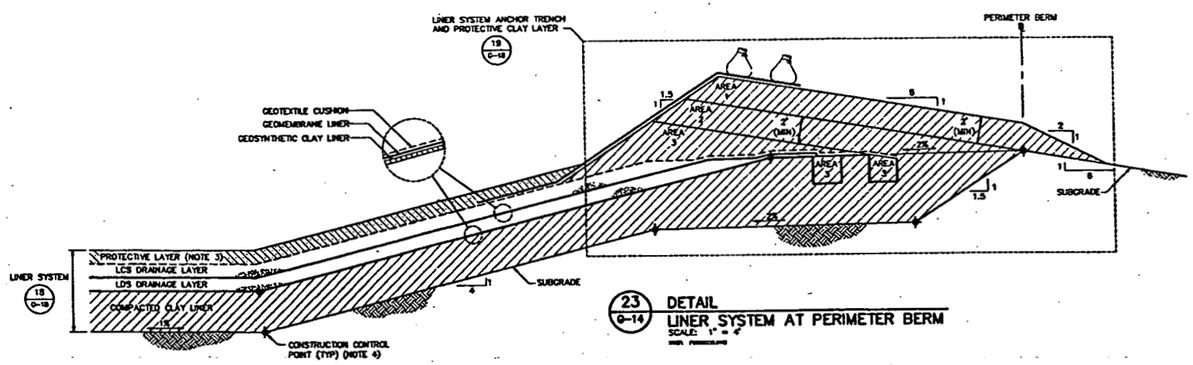
20 / - DETAIL
LINER SYSTEM WITH LCS AND LDS PIPES
SCALE: 1" = 2'



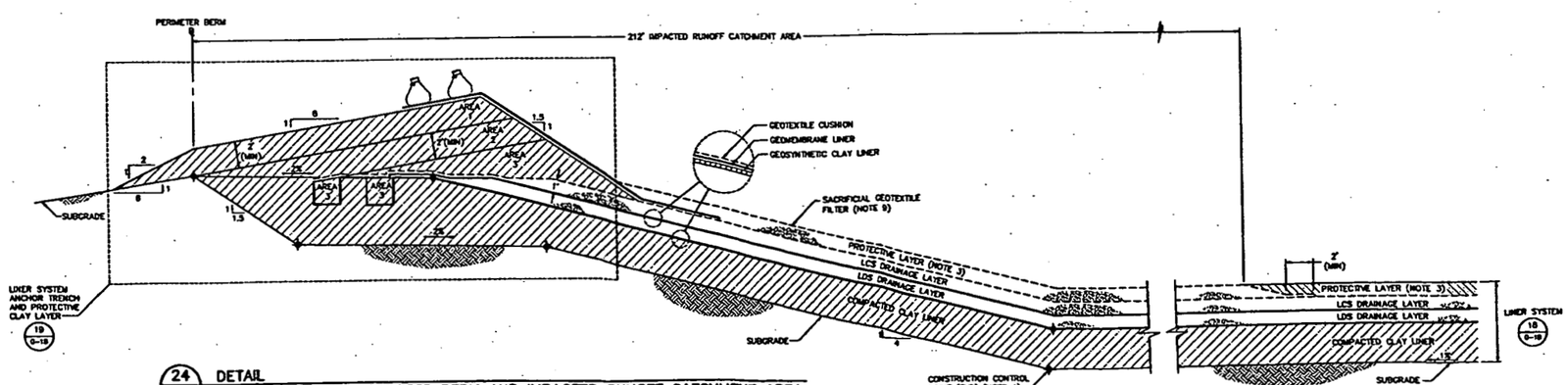
21 / - DETAIL
LINER SYSTEM AT INTERCELL BERM AND PERIMETER BERM INTERSECTION
SCALE: 1" = 4'



22 / 0-20 DETAIL
LDS, LCS OR RLCS PIPE EMBEDMENT
SCALE: 1" = 1'



23 / 0-14 DETAIL
LINER SYSTEM AT PERIMETER BERM
SCALE: 1" = 4'



24 / 0-14 DETAIL
LINER SYSTEM AT PERIMETER BERM AND IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'

LINER SYSTEM COMPONENT SUMMARY (NOTE 2)

GEOSYNTHETICS (NOTE 10)

SYMBOL	COMPONENT	MATERIAL	SPECIFICATION SECTION
	PRIMARY GEOMEMBRANE LINER	TEXTURED 80-mil HDPE	02770
	SECONDARY GEOMEMBRANE LINER	TEXTURED 80-mil HDPE	02770
	PRIMARY GEOSYNTHETIC CLAY LINER	INTERNALLY-REINFORCED SODIUM MONTMORILLONITE CORE WITH WOVEN GEOTEXTILE SIDE AGAINST OVERLYING GEOMEMBRANE AND NONWOVEN SIDE AGAINST UNDERLYING SOIL	02772
	SECONDARY GEOSYNTHETIC CLAY LINER	INTERNALLY-REINFORCED SODIUM MONTMORILLONITE CORE WITH WOVEN GEOTEXTILE SIDE AGAINST OVERLYING GEOMEMBRANE AND NONWOVEN SIDE AGAINST UNDERLYING SOIL	02772
	GEOTEXTILE FILTER	POLYPROPYLENE OR POLYESTER NEEDLE-PUNCHED NONWOVEN GEOTEXTILE	02714
	GEOTEXTILE CUSHION	POLYPROPYLENE OR POLYESTER NEEDLE-PUNCHED NONWOVEN GEOTEXTILE	02714
	SUPPLEMENTAL GEOTEXTILE CUSHION	POLYPROPYLENE OR POLYESTER NEEDLE-PUNCHED NONWOVEN GEOTEXTILE	02714

SOILS

SYMBOL	COMPONENT	MATERIAL	SPECIFICATION SECTION
	SUBGRADE	ON-SITE MATERIAL	02200
	COMPACTED CLAY LINER/ PROTECTIVE CLAY LAYER	ON-SITE MATERIAL	02225
	LDS DRAINAGE LAYER	OFF-SITE MATERIAL	02710
	LDS DRAINAGE CORRIDOR	OFF-SITE MATERIAL	02710
	LCS DRAINAGE LAYER	OFF-SITE MATERIAL	02710
	LCS DRAINAGE CORRIDOR	OFF-SITE MATERIAL	02710
	PROTECTIVE LAYER (IMPACTED)	ON-SITE STOCKPILE	13010
LDS-RS	PROTECTIVE LAYER (NON-IMPACTED GRANULAR)	OFF-SITE MATERIAL	02240
	PROTECTIVE LAYER (NON-IMPACTED NON-GRANULAR)	ON-SITE STOCKPILE	02240

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. LINER SYSTEM COMPONENT SUMMARY IS PROVIDED FOR INFORMATION PURPOSES ONLY. SPECIFICATION SECTIONS SHALL BE REFERENCED FOR DETAILED MINIMUM REQUIREMENTS FOR EACH MATERIAL.
3. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED GRANULAR MATERIAL IN IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED MATERIAL IN REMAINING ACTIVE CELL AREAS EXCLUDING ACTIVE CELL AREA AT INTERCELL BERM TEMPORARY LINER SYSTEM TERMINATION. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED NON-GRANULAR MATERIAL IN ACTIVE AND FUTURE CELL AREAS OF TEMPORARY LINER SYSTEM TERMINATION. NON-IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02240. IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
4. CONSTRUCTION CONTROL POINTS FOR SUBGRADE AND COMPACTED CLAY LINER ARE PROVIDED ON DRAWINGS G-3 AND G-4.
5. THICKNESS OF COMPACTED CLAY LINER ALONG CENTERLINE OF INTERCELL BERM VARIES FROM A MINIMUM OF 3 FEET TO A MAXIMUM OF 7 FEET.
6. PROTECTIVE CLAY LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02225. EQUIPMENT USED ABOVE GEOMEMBRANE LINER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02770.
7. LDS, LCS AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
8. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
9. SACRIFICIAL GEOTEXTILE FILTER SHALL BE INSTALLED OVER GRANULAR PROTECTIVE LAYER WITHIN IMPACTED RUNOFF CATCHMENT AREA.
10. GEOSYNTHETICS WILL BE SUPPLIED BY FLUOR FERNALD, INC.

000021

REV. NO.	DATE	DESCRIPTION	DES. BY	CKL BY	CHK. BY	RVW. BY	APP. BY
0	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LMB	MLG	RAM	DLW.	JB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LMB	LMB	RMB	DLW.	JB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	MBA	JHB	DLW.	DLW.	JB

SCALE AS SHOWN

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

AUDIT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE III

TITLE:
LINER SYSTEM DETAILS I

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDER OR CONSTRUCTION, UNLESS SEALED.

J.F. Beck
9 May 00

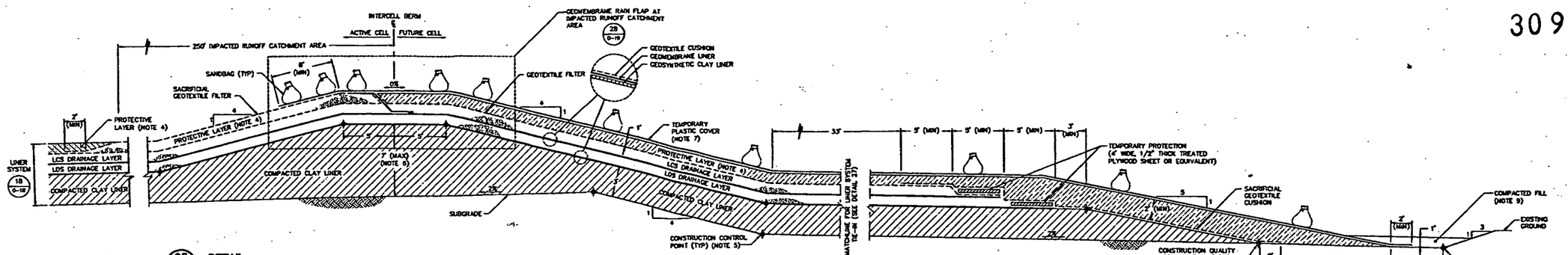
STATE OF OHIO
JOHN F. BECK
REGISTERED
PROFESSIONAL ENGINEER
9-58246

GEOSYNTEC CONSULTANTS

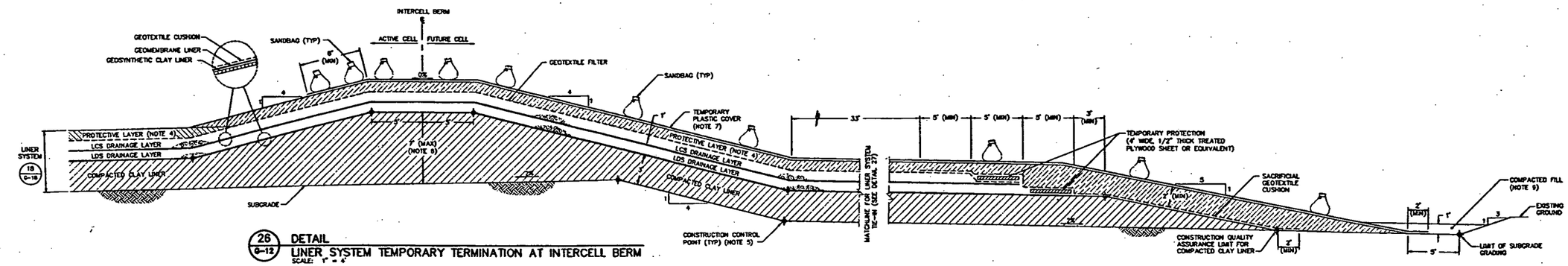
PROJECT NO.:	20103
CONTRACT NO.:	89P5005026
FEMP DRAWING NO.:	9031-6000-G-00313
GEOSYNTEC PROJECT NO.:	CO1001-04
GEOSYNTEC DOCUMENT NO.:	FDO-0180
SHEET NO.:	G-18
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

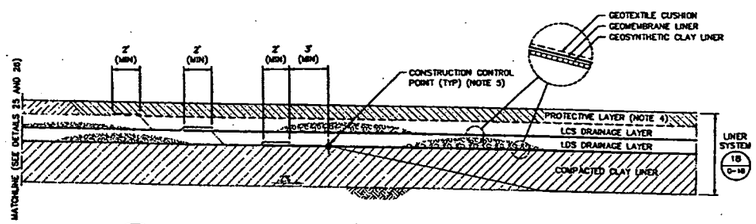
3099



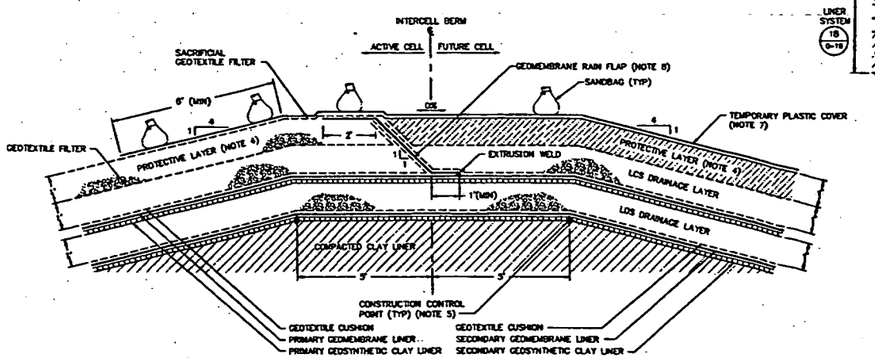
25 G-12 DETAIL
LINER SYSTEM TEMPORARY TERMINATION AT INTERCELL BERM AND IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



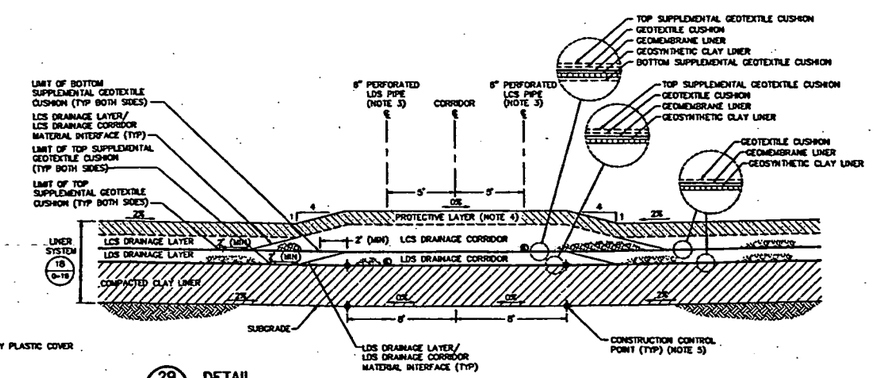
26 G-12 DETAIL
LINER SYSTEM TEMPORARY TERMINATION AT INTERCELL BERM
SCALE: 1" = 4'



27 G-12 DETAIL
LINER SYSTEM TIE-IN AT EXISTING TEMPORARY TERMINATION
SCALE: 1" = 4'



28 G-19 DETAIL
GEOMEMBRANE RAIN FLAP AT IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 2'



29 G-12 DETAIL
LINER SYSTEM AT LEACHATE COLLECTION AND LEAK DETECTION CORRIDOR
SCALE: 1" = 4'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. MATERIAL IN DRAINAGE LAYERS AND DRAINAGE CORRIDORS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02710.
3. LDS AND LCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
4. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED GRANULAR MATERIAL IN IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED MATERIAL IN REMAINING ACTIVE CELL AREAS EXCLUDING ACTIVE CELL AREA AT INTERCELL BERM TEMPORARY LINER SYSTEM TERMINATION. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED NON-GRANULAR MATERIAL IN ACTIVE AND FUTURE CELL AREAS OF TEMPORARY LINER SYSTEM TERMINATION. NON-IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02240. IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
5. CONSTRUCTION CONTROL POINTS FOR SUBGRADE AND COMPACTED CLAY LINER ARE PROVIDED ON DRAWINGS G-3 AND G-4.
6. THICKNESS OF COMPACTED CLAY LINER ALONG CENTERLINE OF INTERCELL BERM VARIES FROM A MINIMUM OF 3 FEET TO A MAXIMUM OF 7 FEET.
7. TEMPORARY PLASTIC COVER SHALL CONSIST OF 20-mil THICK (MIN) POLYETHYLENE, POLYVINYL CHLORIDE OR OTHER SHEETING APPROVED BY CONSTRUCTION MANAGER. CONTRACTOR SHALL WEIGHT TEMPORARY PLASTIC COVER WITH SANDBAGS OR 8 INCHES OF NON-IMPACTED SOIL PLACED ABOVE PLASTIC COVER TO PREVENT DAMAGE FROM WIND UPLIFT.
8. RAIN FLAP SHALL BE CONTINUOUSLY EXTRUSION WELDED TO PRIMARY GEOMEMBRANE LINER ALONG INTERCELL BERM. FLAP SHALL TIE-IN TO GEOMEMBRANE AT CREST OF PERIMETER BERM AND EXTEND 212 FEET EAST FROM WEST PERIMETER BERM BASELINE.
9. CONTRACTOR SHALL PLACE COMPACTED FILL TO PROVIDE POSITIVE DRAINAGE TO TEMPORARY DRAINAGE CHANNEL.

REV. NO.	DATE	DESCRIPTION	DESIGN BY	DRAWN BY	CHECKED BY	REVIEWED BY	APPR. BY
0	00.03.08	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LHO	JHB	RHM	DLW.	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LHO	JHB	RHM	DLW.	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	DLW.	WLB	WHB	DLW.	JFB

SCALE AS SHOWN

000022

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE III

TITLE:
LINER SYSTEM DETAILS II

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

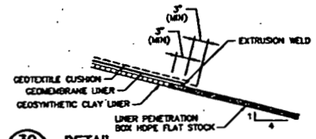
STATE OF OHIO — JOHN T. BEECH E-58248 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

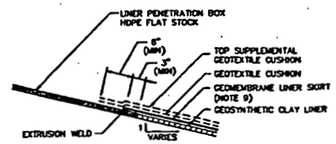
PROJECT NO.:	20103
CONTRACT NO.:	95P3000028
PCMP DRAWING NO.:	9024-6000-C-00314
GEOSYNTEC PROJECT NO.:	CO10011-04
GEOSYNTEC DOCUMENT NO.:	F00-0181
SHEET NO.:	G-19
REVISION NO.:	0

9 May 00

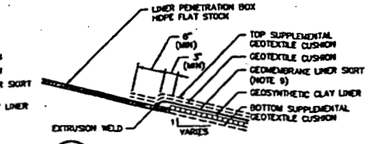
CERTIFIED-FOR-CONSTRUCTION



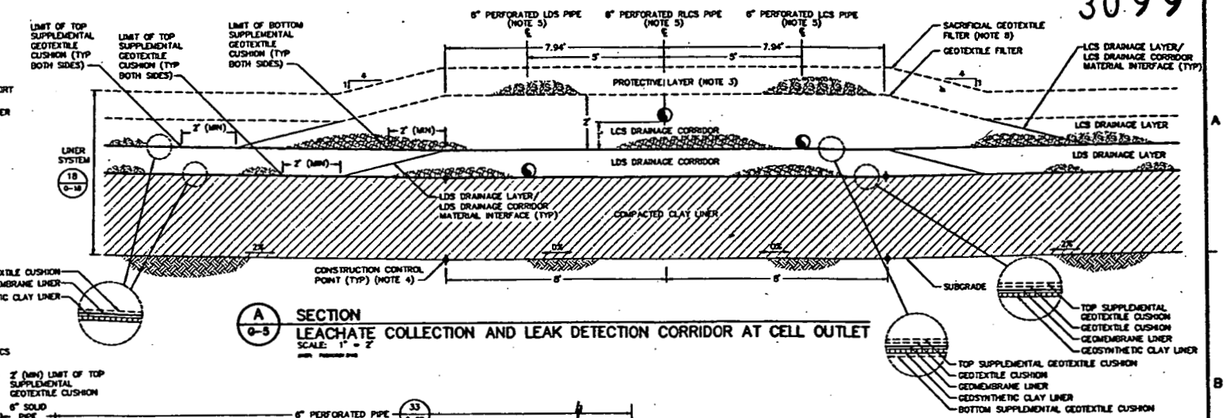
30 0-20 DETAIL
LINER SYSTEM GEOSYNTHETICS TERMINATION TYPE I AT LINER PENETRATION
SCALE: 1" = 1'



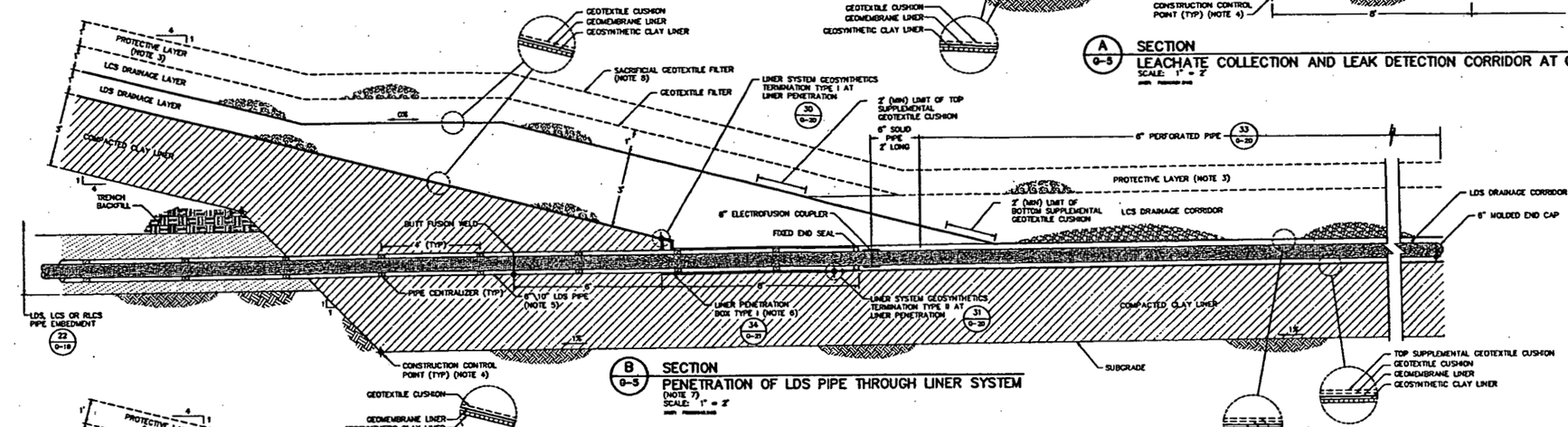
31 0-20 DETAIL
LINER SYSTEM GEOSYNTHETICS TERMINATION TYPE II AT LINER PENETRATION
SCALE: 1" = 1'



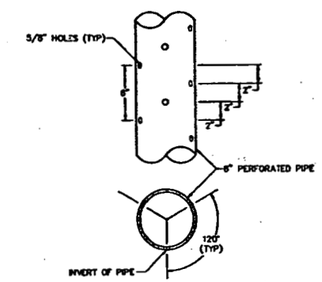
32 0-20 DETAIL
LINER SYSTEM GEOSYNTHETICS TERMINATION TYPE III AT LINER PENETRATION
SCALE: 1" = 1'



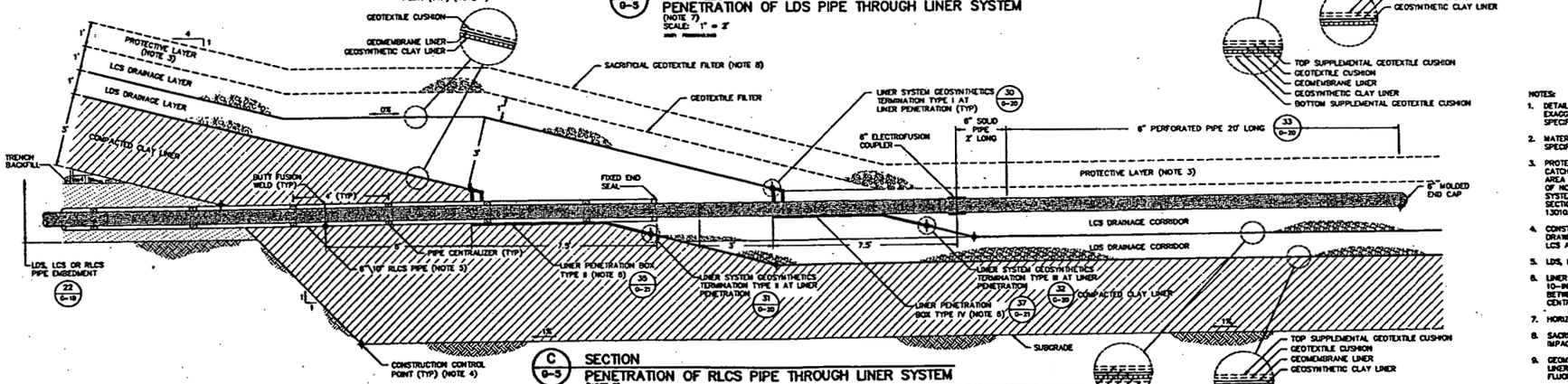
A 0-5 SECTION
LEACHATE COLLECTION AND LEAK DETECTION CORRIDOR AT CELL OUTLET
SCALE: 1" = 2'



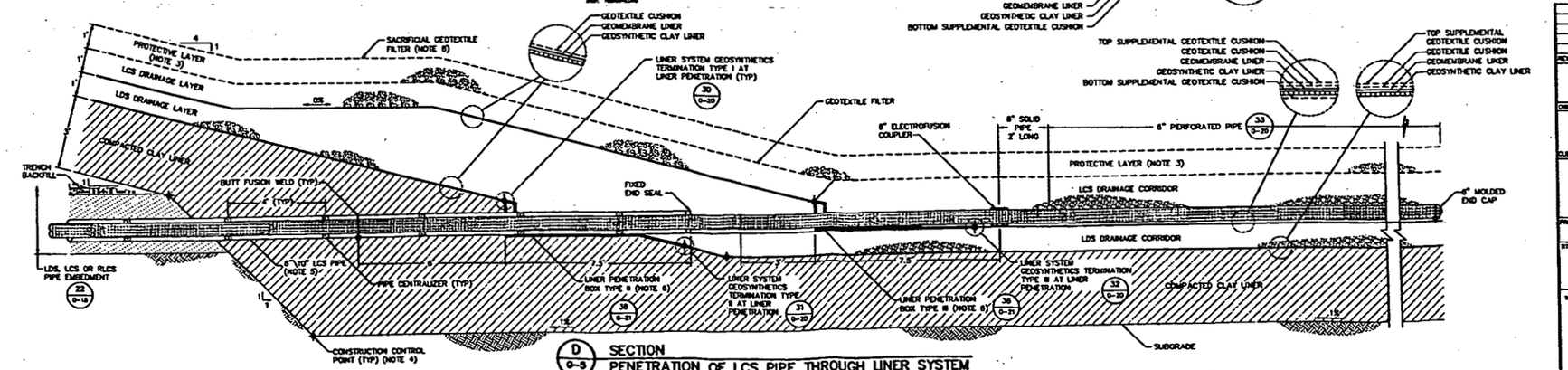
B 0-5 SECTION
PENETRATION OF LDS PIPE THROUGH LINER SYSTEM
(NOTE 7)
SCALE: 1" = 2'



33 0-20 DETAIL
6-INCH PERFORATED PIPE
SCALE: 1" = 6"



C 0-5 SECTION
PENETRATION OF RLCS PIPE THROUGH LINER SYSTEM
(NOTE 7)
SCALE: 1" = 2'



D 0-5 SECTION
PENETRATION OF LCS PIPE THROUGH LINER SYSTEM
(NOTE 7)
SCALE: 1" = 2'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. MATERIAL IN DRAINAGE LAYERS AND DRAINAGE CORRIDORS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02710.
3. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED GRANULAR MATERIAL IN IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED MATERIAL IN REMAINING ACTIVE CELL AREAS EXCLUDING ACTIVE CELL AREA AT INTERCELL BERM TEMPORARY LINER SYSTEM TERMINATION. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED NON-GRANULAR MATERIAL IN ACTIVE AND FUTURE CELL AREAS OF TEMPORARY LINER SYSTEM TERMINATION. NON-IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02240. IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
4. CONSTRUCTION CONTROL POINTS FOR SUBGRADE AND COMPACTED CLAY LINER ARE PROVIDED ON DRAWINGS C-3 AND C-4. CONSTRUCTION CONTROL POINTS FOR LINER PENETRATION BOXES AND LDS, LCS AND RLCS PIPES ARE PROVIDED ON DRAWING C-5.
5. LDS, LCS AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02805.
6. LINER PENETRATION BOXES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13005. 8-INCH AND 10-INCH PIPE SEGMENTS SHALL BE FACTORY WELDED TO LINER PENETRATION BOXES AND EXTEND BETWEEN BUTT FUSION WELDS AND ELECTROFUSION COUPLERS AS SHOWN. FIXED END SEALS AND PIPE CENTRALIZERS SHALL BE INSTALLED AS SHOWN.
7. HORIZONTAL MONITORING WELL IS NOT SHOWN IN THIS SECTION FOR CLARITY.
8. SACRIFICIAL GEOTEXTILE FILTER SHALL BE INSTALLED OVER GRANULAR PROTECTIVE LAYER WITHIN IMPACTED RUNOFF CATCHMENT AREA.
9. GEOMEMBRANE LINER SKIRT SHALL BE FACTORY WELDED TO LINER PENETRATION BOX. GEOMEMBRANE LINER SKIRT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02770 AND WILL BE PROVIDED BY FLUOR FERNALD, INC. GEOMEMBRANE LINER SKIRT SHALL BE A MINIMUM 7 FEET WIDE BY 7 FEET LONG.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	03.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LMG	MLB	RMM	DLM	JFB
B	09.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LMG	JAB	RMM	DLM	JFB
A	09.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	LMG	JAB	MRA	DLM	JFB

SCALE AS SHOWN

000023

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE III

TITLE:
LINER SYSTEM DETAILS III

THIS DRAWING MAY NOT BE USED FOR PROJECT WORK OR CONSTRUCTION, UNLESS SEALED.

9 May 00

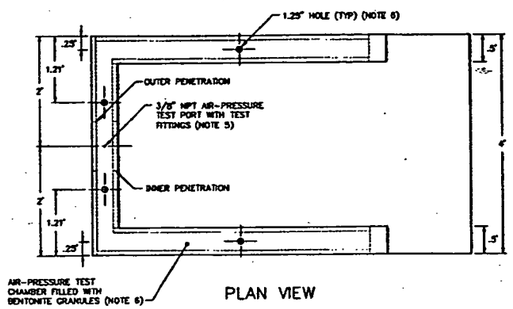
STATE OF OHIO — JOHN F. BEECH E-38246 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1100 LAKE HOLLOW DRIVE
ATLANTA, GEORGIA 30342 USA

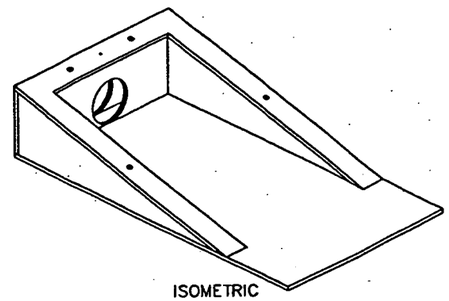
PROJECT NO.:	20103
CONTRACT NO.:	95P5009028
FDMP DRAWING NO.:	903-5000-C-00315
GEOSYNTEC PROJECT NO.:	C01001-04
GEOSYNTEC DOCUMENT NO.:	F00-0162
SHEET NO.:	G-20
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

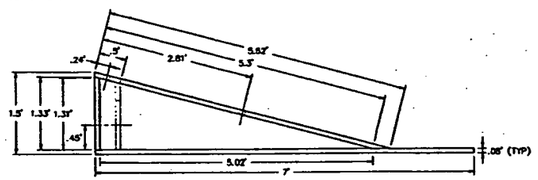
3099



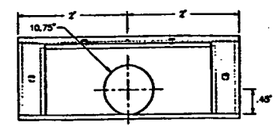
PLAN VIEW



ISOMETRIC

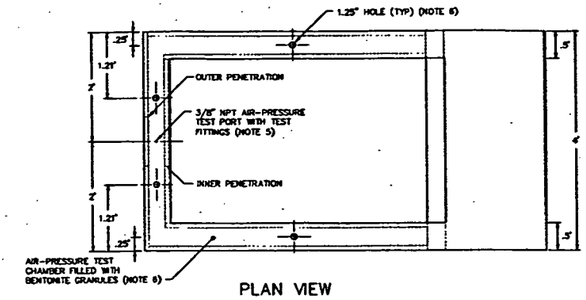


FRONT ELEVATION

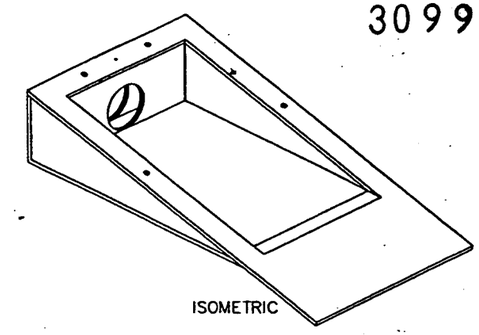


RIGHT ELEVATION

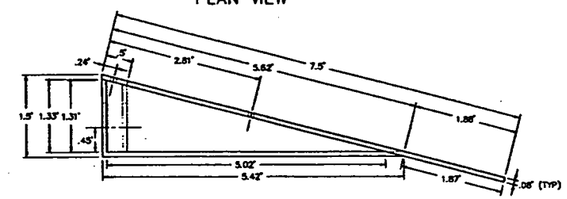
34 / 0-20 DETAIL
LINER PENETRATION BOX TYPE I
SCALE: 1" = 1'



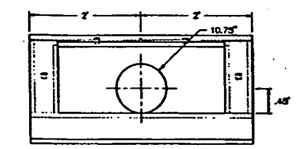
PLAN VIEW



ISOMETRIC

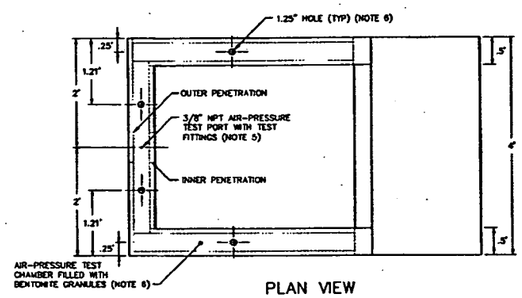


FRONT ELEVATION

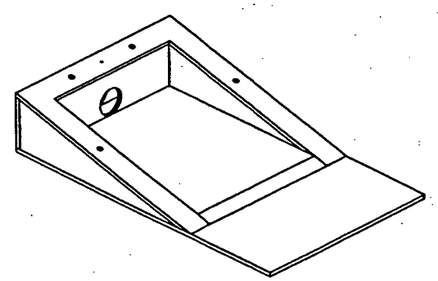


RIGHT ELEVATION

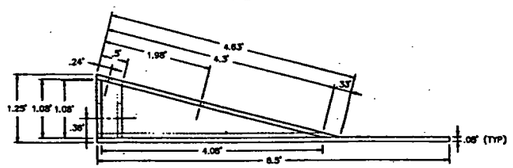
35 / 0-20 DETAIL
LINER PENETRATION BOX TYPE II
SCALE: 1" = 1'



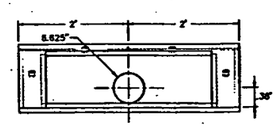
PLAN VIEW



ISOMETRIC

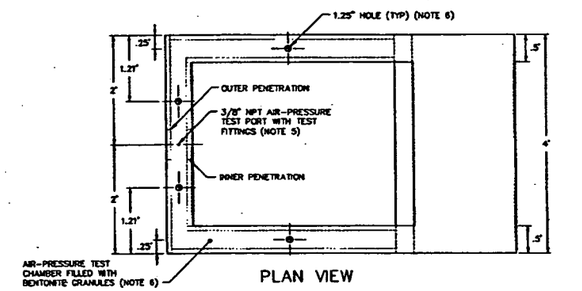


FRONT ELEVATION

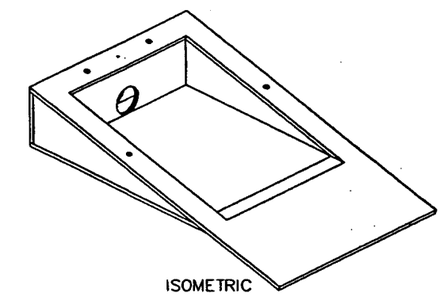


RIGHT ELEVATION

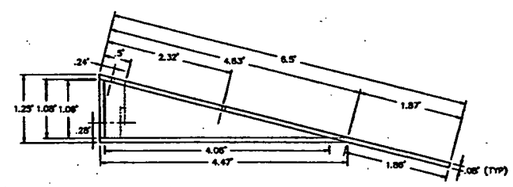
36 / 0-20 DETAIL
LINER PENETRATION BOX TYPE III
SCALE: 1" = 1'



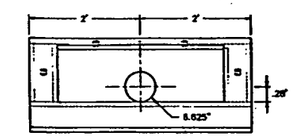
PLAN VIEW



ISOMETRIC



FRONT ELEVATION



RIGHT ELEVATION

37 / 0-20 DETAIL
LINER PENETRATION BOX TYPE IV
SCALE: 1" = 1'

000024

NOTES:

1. LINER PENETRATION BOXES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13005.
2. 6-INCH AND 10-INCH PIPE SEGMENTS SHALL BE FACTORY WELDED TO LINER PENETRATION BOXES WITH LENGTHS SHOWN ON DRAWING G-20. PIPES ARE NOT SHOWN ON THIS DRAWING FOR CLARITY. FIXED END SEALS AND PIPE CENTRALIZERS SHALL BE INSTALLED AS SHOWN ON DRAWING G-20.
3. GEOMEMBRANE LINER SKIRT SHALL BE FACTORY WELDED TO LINER PENETRATION BOX. GEOMEMBRANE LINER SKIRT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02770 AND WILL BE PROVIDED BY FLUOR FERNALD, INC. GEOMEMBRANE LINER SKIRT SHALL BE A MINIMUM 7 FEET WIDE BY 7 FEET LONG.
4. LINER PENETRATION BOXES SHALL BE CONSTRUCTED USING 1-INCH THICK HDPE FLAT STOCK.
5. LINER PENETRATION BOXES AND ATTACHED CONTAINMENT PIPING SHALL BE AIR-PRESSURE TESTED IN FIELD AFTER INSTALLATION.
6. AIR-PRESSURE TEST CHAMBER SHALL BE BACKFILLED WITH BENTONITE GRANULES USING 1.25-INCH HOLES AFTER AIR-PRESSURE TESTING IS COMPLETED. EACH HOLE SHALL BE SEALED WITH HDPE EXTRUDATE AFTER BENTONITE FILLING IS COMPLETED.

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVWL BY	APP. BY
0	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LHO	SMF	RAM	DLVL	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LHO	SMF	RAM	DLVL	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	LHO	SMF	MRA	DLVL	JFB

SCALE IN FEET

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY - PHASE III

TITLE:
LINER SYSTEM DETAILS IV

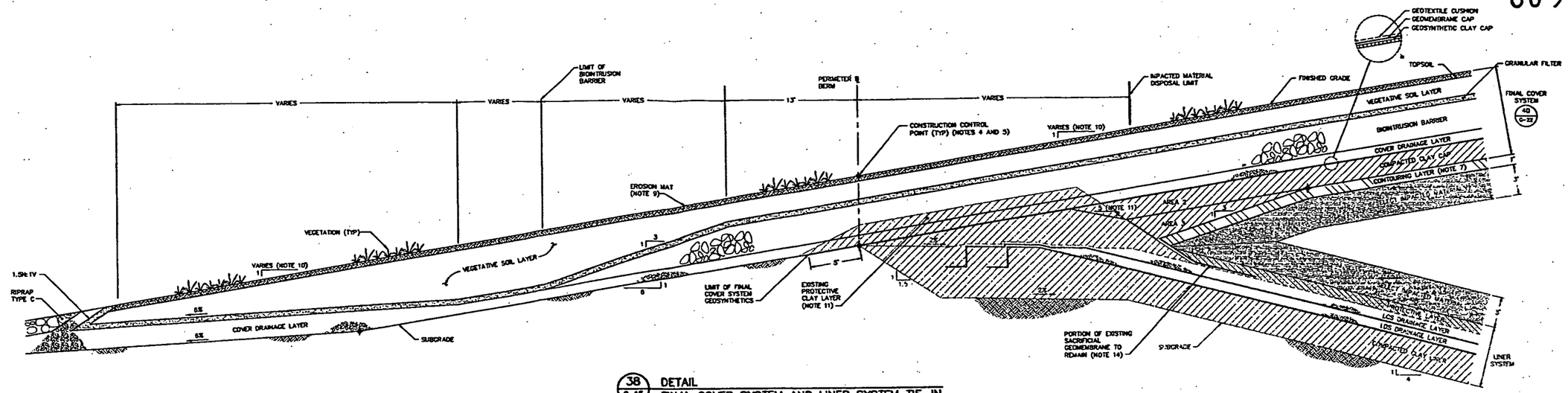
THIS DRAWING MAY NOT BE USED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

J.F. Beck
SIGNATURE
9 May 00
DATE

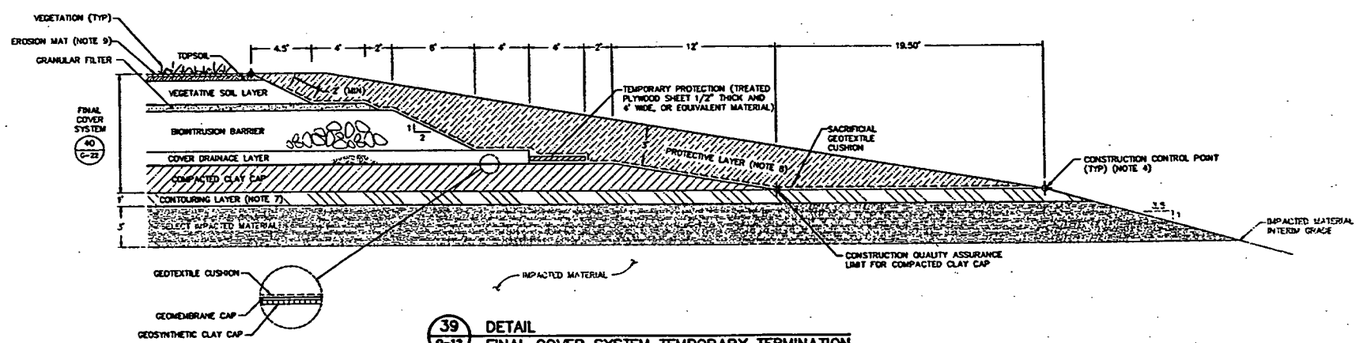
STATE OF OHIO
JOHN F. BECK
E-58248
REGISTERED PROFESSIONAL ENGINEER

GeoSyntec Consultants
300 Lake Hearn Drive
Atlanta, Georgia 30342 USA

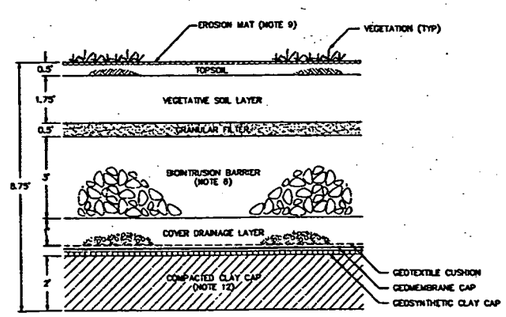
PROJECT NO.:	20103
CONTRACT NO.:	95PS005028
PDMP DRAWING NO.:	90X-6000-C-00318
GEOSYNTEC PROJECT NO.:	001001-04
GEOSYNTEC DOCUMENT NO.:	F00-0183
SHEET NO.:	G-21
REVISION NO.:	0



38 / G-15 DETAIL
FINAL COVER SYSTEM AND LINER SYSTEM TIE-IN
SCALE: 1" = 4'



39 / G-12 DETAIL
FINAL COVER SYSTEM TEMPORARY TERMINATION
SCALE: 1" = 4'



40 / G-13 DETAIL
FINAL COVER SYSTEM
SCALE: 1" = 2'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
3. FINAL COVER SYSTEM COMPONENT SUMMARY IS PROVIDED FOR INFORMATION PURPOSES ONLY. SPECIFICATION SECTIONS SHALL BE REFERENCED FOR DETAILED MINIMUM REQUIREMENTS FOR EACH MATERIAL.
4. CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER AND FINAL COVER SYSTEM ARE PROVIDED ON DRAWINGS G-6 AND G-7.
5. CONTRACTOR SHALL RE-ESTABLISH SUBGRADE ELEVATIONS OUTSIDE PERIMETER BERM BASELINE PRIOR TO FINAL COVER SYSTEM CONSTRUCTION. CONTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWING G-2.
6. CHOKE STONE LAYER SHALL BE PLACED INTO TOP OF BIOINTRUSION BARRIER IN ACCORDANCE WITH SPECIFICATION SECTION 02260.
7. CONTOURING LAYER SHALL CONSIST OF NON-IMPACTED MATERIAL IN ACCORDANCE WITH SPECIFICATION SECTION 02240. RUNOFF FROM NON-IMPACTED CONTOURING LAYER SHALL BE DIVERTED TO IMPACTED RUNOFF CATCHMENT AREA UNTIL COMPACTION OF SECOND LIFT OF COMPACTED CLAY CAP IS COMPLETED. CONTRACTOR SHALL CONTAIN AND CONTROL WATER GENERATED DURING CONSTRUCTION AND FILLING OF OSDF IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
8. PROTECTIVE LAYER IN FINAL COVER SYSTEM TEMPORARY TERMINATION SHALL BE NON-IMPACTED NON-GRANULAR MATERIAL. NON-IMPACTED PROTECTIVE LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02240.
9. EROSION MAT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
10. SLOPE OF LOWER PORTION OF FINAL COVER SYSTEM IS 6H:1V FOR NORTH, EAST AND WEST PERIMETERS OF OSDF AND TRANSITIONS FROM 6H:1V TO 7.3H:1V AND BACK TO 6H:1V IN CORNERS OF OSDF.
11. EXISTING PROTECTIVE CLAY LAYER PLACED ABOVE FINAL COVER SYSTEM GRADES SHALL BE CUT BACK JUST PRIOR TO FINAL COVER CONSTRUCTION. TRANSITION FROM PROTECTIVE CLAY LAYER TO COMPACTED CLAY CAP SHALL BE CUT BACK AT A 5H:1V SLOPE OR FLATTER IN ACCORDANCE WITH SPECIFICATION SECTION 02225.
12. COMPACTED CLAY CAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02225.
13. GEOSYNTHETICS WILL BE SUPPLIED BY FLUOR FERNALD, INC.
14. CONTRACTOR SHALL REMOVE EXPOSED PORTION OF EXISTING SACRIFICIAL GEOMEMBRANE BY CUTTING PRIOR TO CONSTRUCTION OF COMPACTED CLAY CAP IN TEMPORARY DRAINAGE CHANNEL.

FINAL COVER SYSTEM COMPONENT SUMMARY (NOTE 3)

GEOSYNTHETICS (NOTE 13)

SYMBOL	COMPONENT	MATERIAL	SPECIFICATION SECTION
	GEOMEMBRANE CAP	TEXTURED 60-mil HDPE	02770
	GEOSYNTHETIC CLAY CAP	INTERNALLY-REINFORCED SODIUM MONTMORILLONITE CORE WITH WOVEN GEOTEXTILE SIDE AGAINST OVERLYING GEOMEMBRANE AND NONWOVEN SIDE AGAINST UNDERLYING SOIL	02772
	GEOTEXTILE CUSHION	POLYPROPYLENE OR POLYESTER NEEDLE-PUNCHED NONWOVEN GEOTEXTILE	02714
	EROSION MAT	EXCELSIOR MATTING COVERED WITH PLASTIC NETTING ON BOTH SIDES	02270

SOILS

SYMBOL	COMPONENT	MATERIAL	SPECIFICATION SECTION
	COMPACTED CLAY CAP	ON-SITE BORROW	02225
	COVER DRAINAGE LAYER	OFF-SITE BORROW	02710
	BIOINTRUSION BARRIER	OFF-SITE BORROW	02280
	GRANULAR FILTER	OFF-SITE BORROW	02712
	VEGETATIVE SOIL LAYER	ON-SITE BORROW	02250
	TOPSOIL	ON-SITE	02920
	PROTECTIVE LAYER (NON-IMPACTED NON-GRANULAR)	ON-SITE BORROW	02240
	CONTOURING LAYER (NON-IMPACTED)	ON-SITE BORROW	02240

VEGETATION

SYMBOL	COMPONENT	MATERIAL	SPECIFICATION SECTION
	VEGETATION	SEED MIX	02930

CERTIFIED-FOR-CONSTRUCTION

000025

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LMD	MLD	RAM	DLW.	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LMD	LMW	RAM	DLW.	JFB
A	00.03.07	PRELIMINARY SUBMITTAL TO FF/DOE	MRA	JRG	DLW.	DLW.	JFB

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY - PHASE III

TITLE:
FINAL COVER SYSTEM DETAILS

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

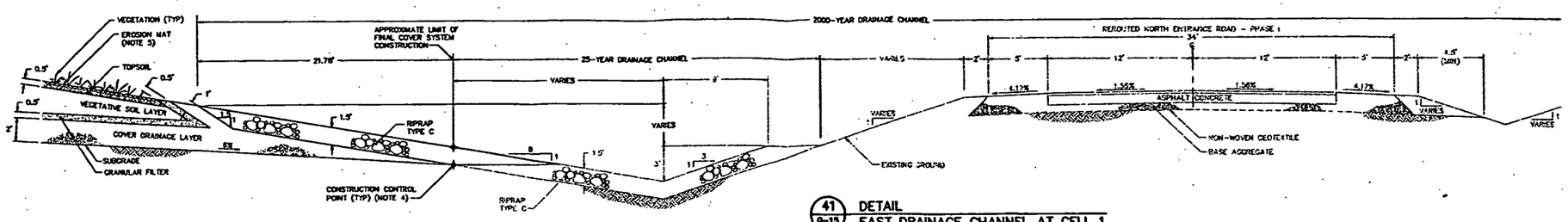
SIGNATURE
9 May 00
DATE

STATE OF OHIO
JOHN T. BEZZIS
E-052348
REGISTERED PROFESSIONAL ENGINEER
SEAL

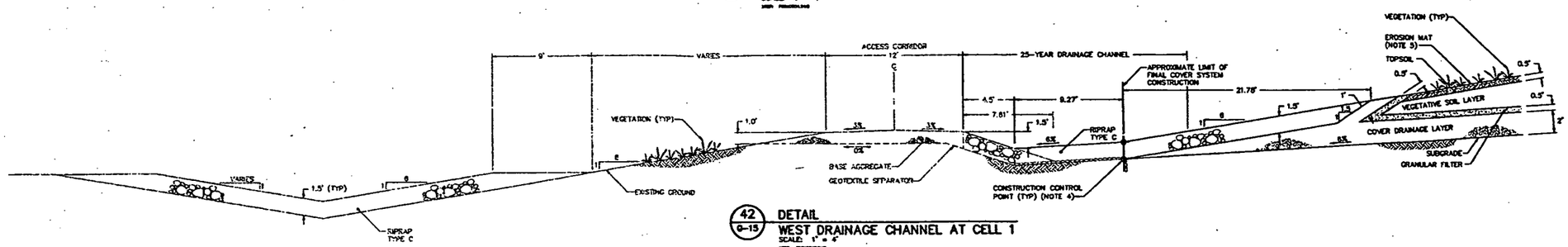
GEOSYNTEC CONSULTANTS
3980 LAKE NORTH DRIVE
ATLANTA, GEORGIA 30318 USA

PROJECT NO.:	20103
CONTRACT NO.:	95P3000028
FDMP DRAWING NO.:	90X-6000-C-00317
GEOSYNTEC PROJECT NO.:	001001-06
GEOSYNTEC DOCUMENT NO.:	F00-0166
SHEET NO.:	G-22
REVISION NO.:	0

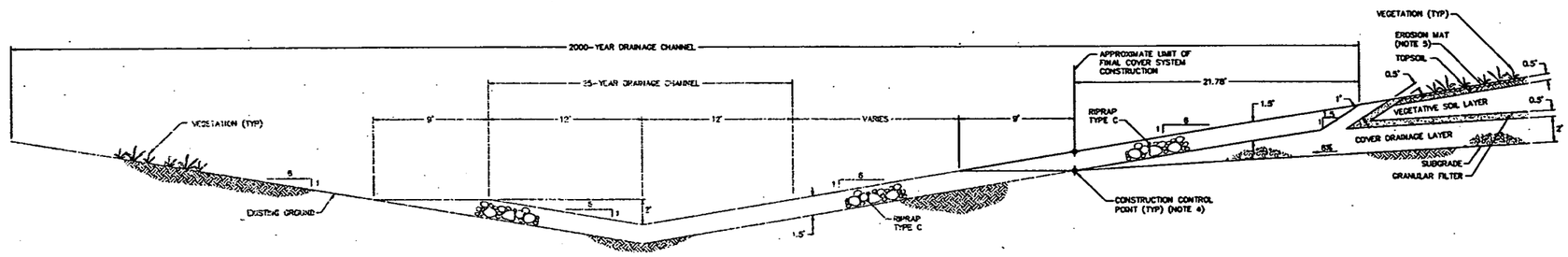
3099



41 / G-15 DETAIL
EAST DRAINAGE CHANNEL AT CELL 1
SCALE: 1" = 4'



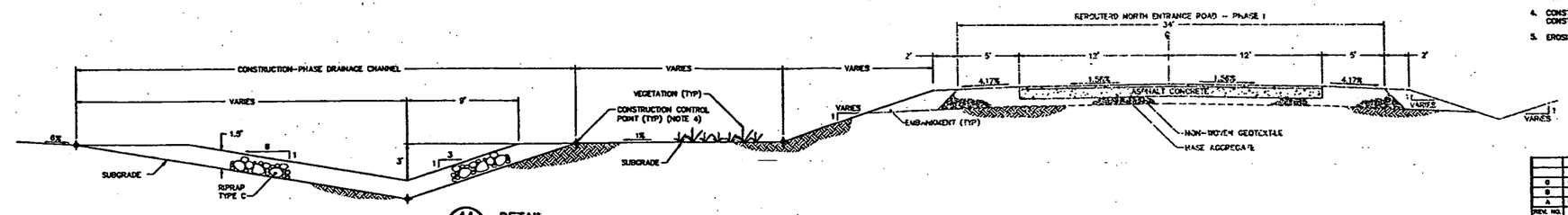
42 / G-15 DETAIL
WEST DRAINAGE CHANNEL AT CELL 1
SCALE: 1" = 4'



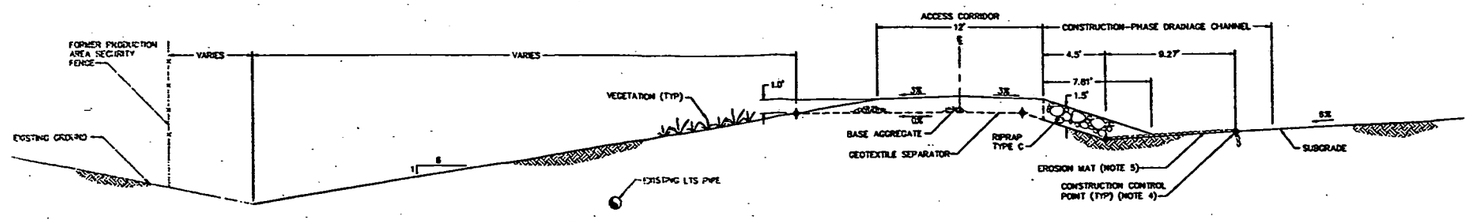
43 / G-16 DETAIL
NORTH DRAINAGE CHANNEL AT CELL 1
SCALE: 1" = 4'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
3. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
4. CONSTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWINGS G-2 AND G-3. CONSTRUCTION CONTROL POINTS FOR FINAL COVER SYSTEM ARE PROVIDED ON DRAWING G-7.
5. EROSION MAT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.



44 / G-17 DETAIL
EAST DRAINAGE CHANNEL AT CELL 4
SCALE: 1" = 4'



45 / G-17 DETAIL
WEST DRAINAGE CHANNEL AT CELL 4
SCALE: 1" = 4'

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000026

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
C	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LMB	MLB	RAM	DLW	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LMB	JMB	RAM	DLW	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	DLW	MLB	MRA	DLW	JFB

SCALE AS SHOWN

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

BUILDER:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY - PHASE III

TITLE:
SURFACE-WATER MANAGEMENT SYSTEM DETAILS I

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

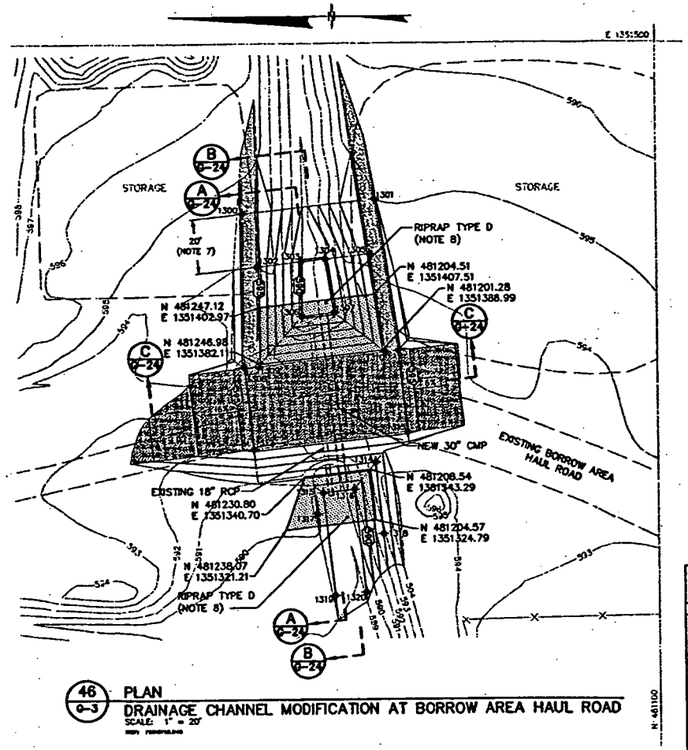
J.F. Breil
9 May 00

STATE OF OHIO
JOHN F. BREIL
E-52240
REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1900 LAKE HORN DRIVE
ATLANTA, GEORGIA 30318 USA

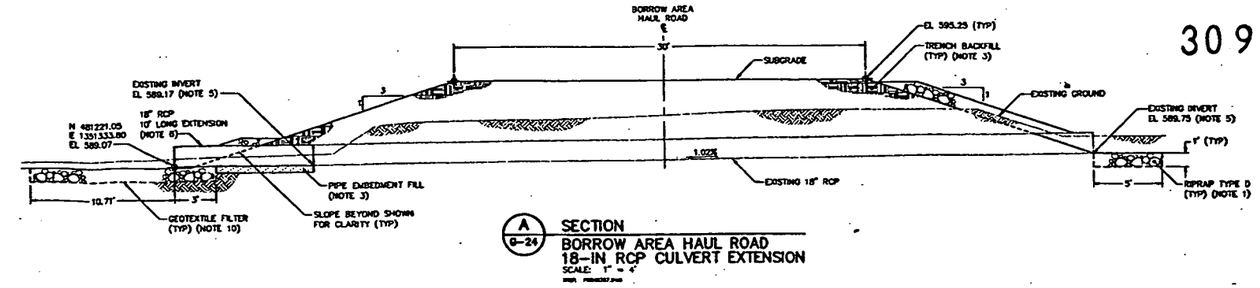
PROJECT NO.:	20103
CONTRACT NO.:	93P5005028
FDMP DRAWING NO.:	900-6000-C-00318
GEOSYNTEC PROJECT NO.:	GO1001-04
GEOSYNTEC DOCUMENT NO.:	F00-0178
SHEET NO.:	G-23
REVISION NO.:	0

3099

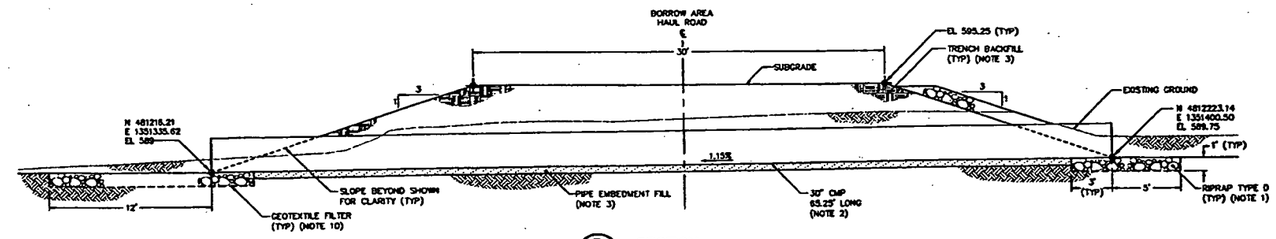


46 / 0-3 PLAN
DRAINAGE CHANNEL MODIFICATION AT BORROW AREA HAUL ROAD
SCALE: 1" = 20'

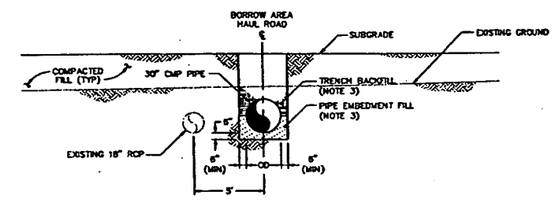
FINISHED GRADE CONSTRUCTION CONTROL POINTS			
POINT NO.	NORTHING	EASTING	ELEVATION
1300	481253.10	1351437.53	595.25
1301	481204.24	1351442.74	595.25
1302	481247.97	1351417.96	595.25
1303	481231.48	1351419.72	589.75
1304	481222.53	1351420.68	589.75
1305	481208.10	1351422.43	595.25
1306	481231.35	1351389.82	589.75
1307	481219.41	1351400.90	589.75
1308	481252.72	1351380.74	595.25
1309	481247.72	1351381.28	595.25
1310	481200.41	1351386.33	595.25
1311	481195.44	1351386.88	595.25
1312	481249.53	1351350.91	595.25
1313	481192.25	1351357.03	595.25
1314	481204.41	1351345.93	592.00
1315	481223.92	1351334.79	589.00
1316	481212.41	1351336.02	589.00
1317	481226.12	1351327.10	590.00
1318	481201.63	1351319.84	592.00
1319	481219.90	1351297.11	589.00
1320	481208.38	1351298.34	589.00



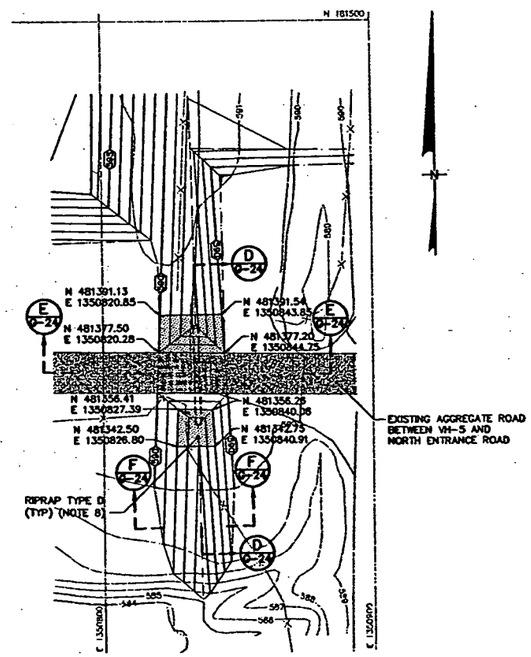
A / 0-24 SECTION
BORROW AREA HAUL ROAD
18-IN RCP CULVERT EXTENSION
SCALE: 1" = 4'



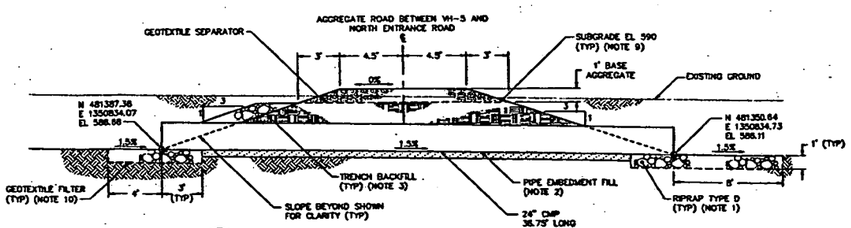
B / 0-24 SECTION
BORROW AREA HAUL ROAD
30-IN CMP CULVERT
SCALE: 1" = 4'



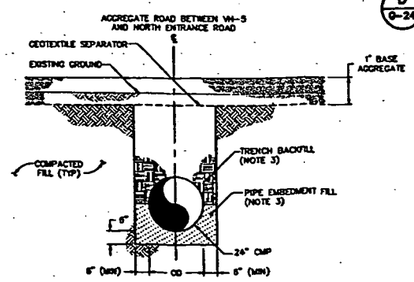
C / 0-24 SECTION
BORROW AREA HAUL ROAD
30-IN CMP CULVERT EMBEDMENT
SCALE: 1" = 4'



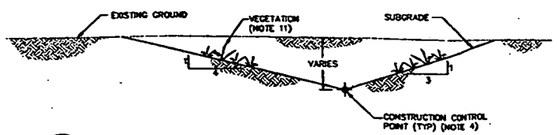
47 / 0-3 PLAN
DRAINAGE CHANNEL MODIFICATION AT VALVE HOUSE 5 ACCESS ROAD
SCALE: 1" = 20'



D / 0-24 SECTION
AGGREGATE ROAD BETWEEN VH-5 AND NORTH ENTRANCE ROAD 24-IN CMP CULVERT
SCALE: 1" = 4'



E / 0-24 SECTION
AGGREGATE ROAD BETWEEN VH-5 AND NORTH ENTRANCE ROAD 24-IN CMP CULVERT EMBEDMENT
SCALE: 1" = 2'



F / 0-24 SECTION
TEMPORARY DRAINAGE CHANNEL AT AGGREGATE ROAD BETWEEN VH-5 AND NORTH ENTRANCE ROAD
SCALE: 1" = 4'

CERTIFIED-FOR-CONSTRUCTION

NOTES:

1. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
2. CORRUGATED METAL PIPE CULVERTS AND JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721.
3. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
4. CONSTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWING 0-3.
5. EXISTING CULVERT INVERT ELEVATIONS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ELEVATIONS IN FIELD PRIOR TO CONSTRUCTION.
6. REINFORCED CONCRETE PIPE CULVERTS AND JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721.
7. CONTRACTOR SHALL TRANSITION SUBGRADE ELEVATIONS TO EXISTING GROUND ELEVATIONS WITHIN AREA SHOWN.
8. CONTRACTOR SHALL PLACE RIPRAP TYPE D WITHIN AREA SHOWN.
9. CONTRACTOR SHALL RE-ESTABLISH SUBGRADE FOR EXISTING AGGREGATE ROAD BETWEEN VH-5 AND NORTH ENTRANCE ROAD TO ELEVATION 590.
10. GEOTEXTILE FILTER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02714.
11. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVWL BY	APP. BY
D	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	PRV	JMB	RMM	DLWL	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	PRV	JMB	RMM	DLWL	JFB
A	00.02.07	NOT SUBMITTED AS PART OF PRELIMINARY SUBMITTAL					

SCALE AS SHOWN

000027

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

CLIENT: FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE III

TITLE: SURFACE-WATER MANAGEMENT SYSTEM DETAILS II

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDED OR CONSTRUCTION UNLESS SEALED.

J. F. Beard
9 May 00

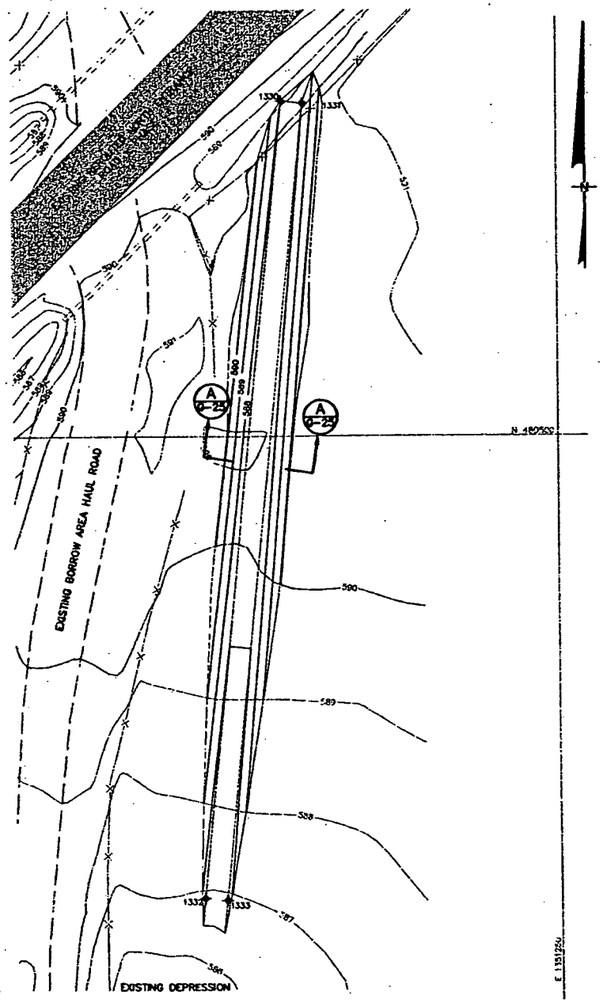
STATE OF OHIO — JOHN F. BEARD — E-58240 — REGISTERED PROFESSIONAL ENGINEER

GEO SYNTEC CONSULTANTS

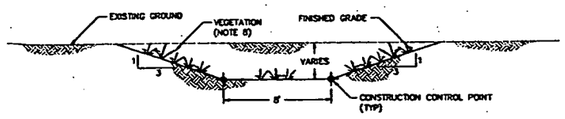
PROJECT NO.:	20103
CONTRACT NO.:	93FS000028
PCMP DRAWING NO.:	9DX-5000-C-00319
GEOSYNTEC PROJECT NO.:	C01001-04
GEOSYNTEC DOCUMENT NO.:	F00-0215
SHEET NO.:	C-24
REVISION NO.:	0

3099

FINISHED GRADE CONSTRUCTION CONTROL POINTS			
POINT NO.	NORTHING	EASTING	ELEVATION
1330	480622.41	1351148.33	588.00
1331	480621.58	1351156.28	588.00
1332	480330.75	1351118.10	588.53
1333	480329.92	1351126.05	588.53

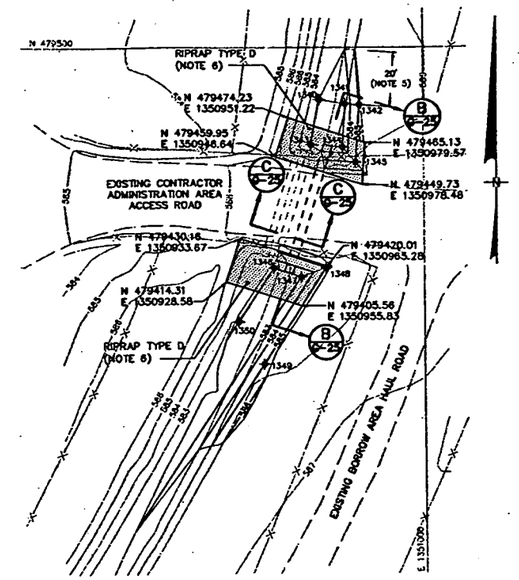


48 / 0-1 PLAN
TEMPORARY DRAINAGE CHANNEL AT REROUTED NORTH ENTRANCE ROAD – PHASE I
SCALE: 1" = 20'

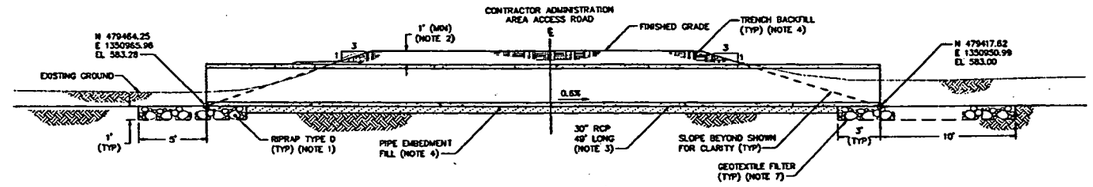


A / 0-25 SECTION
TEMPORARY DRAINAGE CHANNEL AT REROUTED NORTH ROAD ENTRANCE – PHASE I
SCALE: 1" = 4'

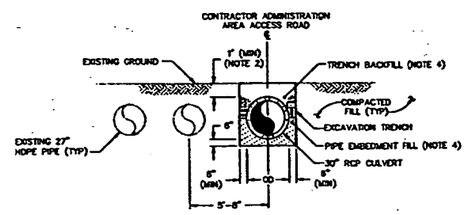
FINISHED GRADE CONSTRUCTION CONTROL POINTS			
POINT NO.	NORTHING	EASTING	ELEVATION
1340	479480.83	1350982.76	583.28
1341	479479.31	1350972.40	583.28
1342	479478.94	1350977.35	585.00
1343	479464.34	1350959.52	583.28
1344	479479.51	1350971.28	583.28
1345	479457.99	1350978.08	585.00
1346	479419.31	1350945.71	583.00
1347	479416.14	1350955.58	583.00
1348	479419.45	1350984.91	585.00
1349	479384.38	1350942.00	583.00
1350	479399.80	1350932.95	583.00



49 / 0-1 PLAN
DRAINAGE CHANNEL MODIFICATION AT CONTRACTOR ADMINISTRATION AREA ACCESS ROAD
SCALE: 1" = 20'



B / 0-25 SECTION
CONTRACTOR ADMINISTRATION AREA ACCESS ROAD 30-IN RCP CULVERT
SCALE: 1" = 4'



C / 0-25 SECTION
CONTRACTOR ADMINISTRATION AREA ACCESS ROAD 30-IN RCP CULVERT EMBEDMENT
SCALE: 1" = 4'

NOTES:

1. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
2. CONTRACTOR SHALL PROVIDE A MINIMUM COVER OF 1 FOOT ABOVE CROWN OF PIPE.
3. REINFORCED CONCRETE PIPE CULVERTS AND JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721.
4. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
5. CONTRACTOR SHALL TRANSITION SUBGRADE ELEVATIONS TO EXISTING GROUND ELEVATIONS WITHIN AREA SHOWN.
6. CONTRACTOR SHALL PLACE RIPRAP TYPE D WITHIN AREA SHOWN.
7. GEOTEXTILE FILTER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02714.
8. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
C	00.08.09	CPC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	PW	JHB	RMW	DLW.	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	PW	JHB	RMW	DLW.	JFB
A	00.02.07	NOT SUBMITTED AS PART OF PRELIMINARY SUBMITTAL					

SCALE AS SHOWN

000028

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

CLIENT: FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE III

TITLE: SURFACE-WATER MANAGEMENT SYSTEM DETAILS III

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDING OR CONSTRUCTION, UNLESS SEALED.

9 Aug 00

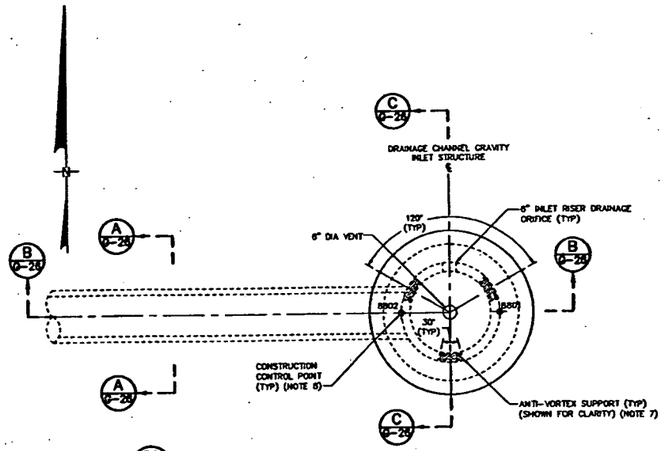
STATE OF OHIO — JOHN K. BEECH — 0-06246 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

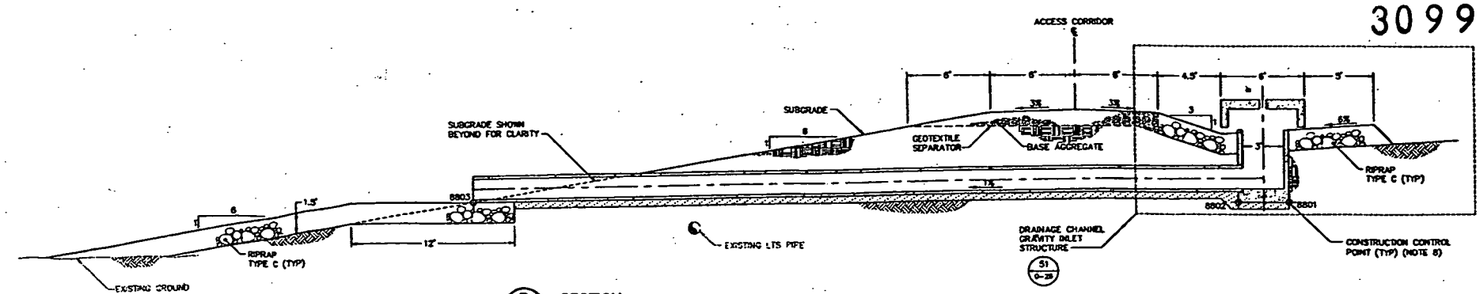
PROJECT NO.:	20103
CONTRACT NO.:	95PS005028
PDMP DRAWING NO.:	90X-6000-0-00320
GEOSYNTEC PROJECT NO.:	001001-04
GEOSYNTEC DOCUMENT NO.:	F00-0219
SHEET NO.:	0-25
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

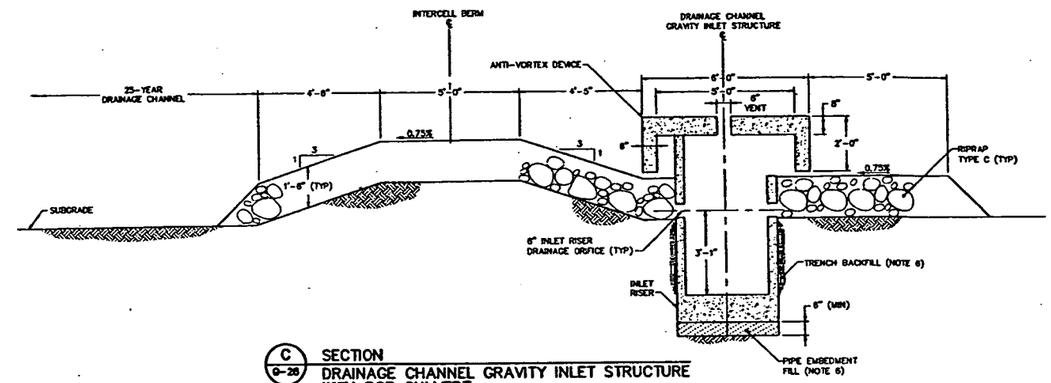
3099



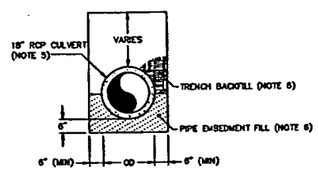
50 / 0-3 PLAN
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE WITH RCP CULVERT
SCALE: 1" = 2'



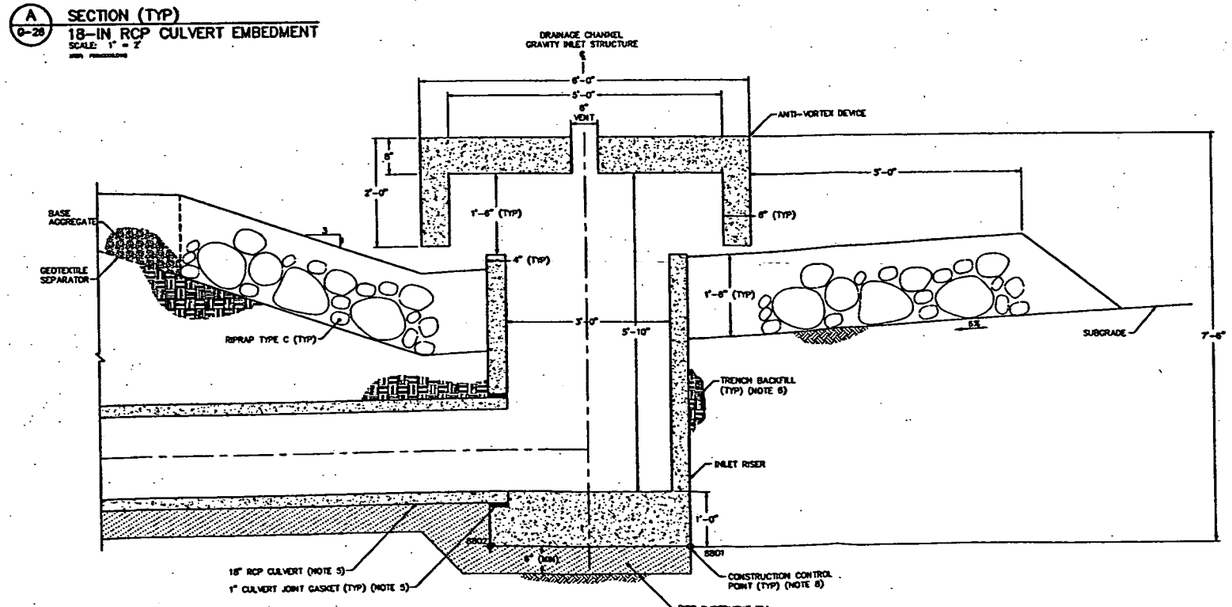
B / 0-28 SECTION
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE WITH RCP STRUCTURE
SCALE: 1" = 4'



C / 0-28 SECTION
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE WITH RCP CULVERT
SCALE: 1" = 2'



A / 0-28 SECTION (TYP)
18-IN RCP CULVERT EMBEDMENT
SCALE: 1" = 2'



51 / 0-28 DETAIL
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE
SCALE: 1" = 1'

DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND REINFORCED CONCRETE PIPE CONSTRUCTION CONTROL POINTS

GIS-8			
POINT NO.	NORTHING	EASTING	ELEVATION
8801	481595.11	1350668.23	588.15
8802	481595.18	1350664.59	588.15
8803	481595.83	1350668.32	588.38

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
3. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
4. DRAINAGE CHANNEL GRAVITY INLET STRUCTURE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721.
5. REINFORCED CONCRETE PIPE CULVERT AND JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721.
6. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
7. ANTI-VORTEX SUPPORTS DO NOT APPEAR IN ALL SECTIONS. SEE PLAN ON THIS SHEET FOR LOCATIONS.
8. CONSTRUCTION CONTROL POINTS ASSOCIATED WITH DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND REINFORCED CONCRETE PIPE ARE PROVIDED IN TABLE SHOWN ON THIS DRAWING.

000029

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	00.03.08	CPC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LMB	MLB	PRF	DLVL	JFB
B	00.04.18	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LMB	LMW	RHB	DLVL	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	LMB	LMW	MRA	DLVL	JFB

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE III

TITLE:
SURFACE-WATER MANAGEMENT SYSTEM DETAILS IV

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, WHICHEVER SOONER.

J.F. Beal
9 May 00

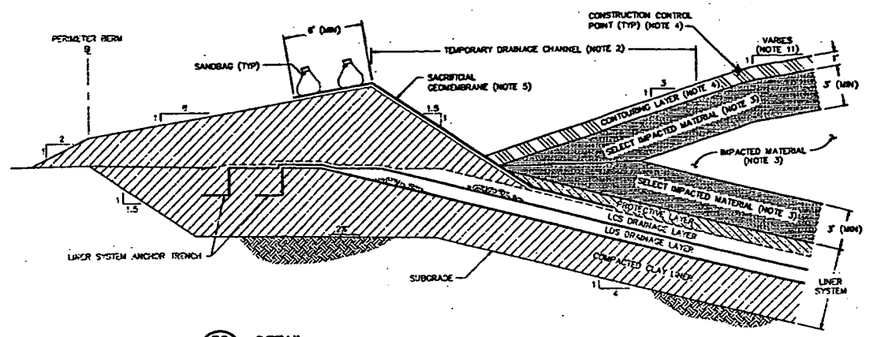
STATE OF OHIO
JOHN F. BEECH
E-58240
REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1765 LAKE NOVA DRIVE
ATLANTA, GEORGIA 30342 USA

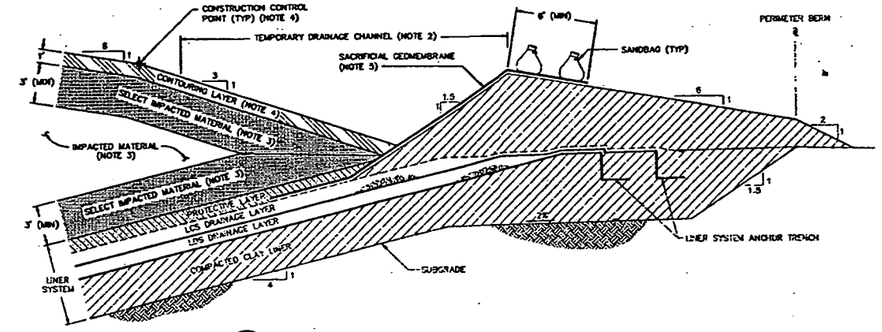
PROJECT NO.:	29103
CONTRACT NO.:	99P5005029
FFMP DRAWING NO.:	90X-5000-G-00321
GEOSYNTEC PROJECT NO.:	GC1001-04
GEOSYNTEC DOCUMENT NO.:	FDO-0168
SHEET NO.:	G-26
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

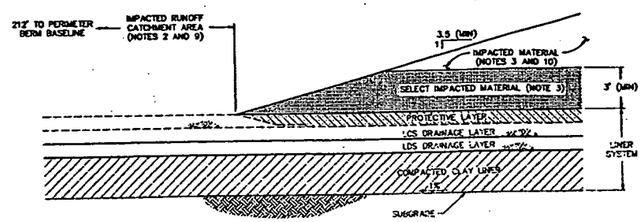
3099



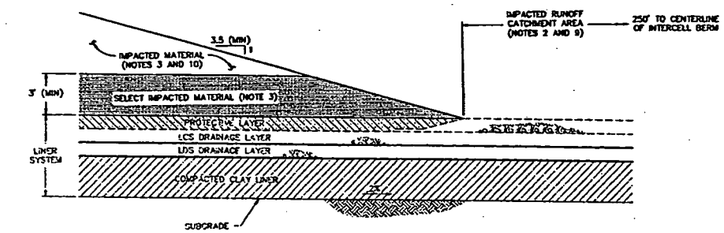
52 / G-13 DETAIL
IMPACTED MATERIAL PLACEMENT AT NORTH AND WEST PERIMETERS
SCALE: 1" = 4'



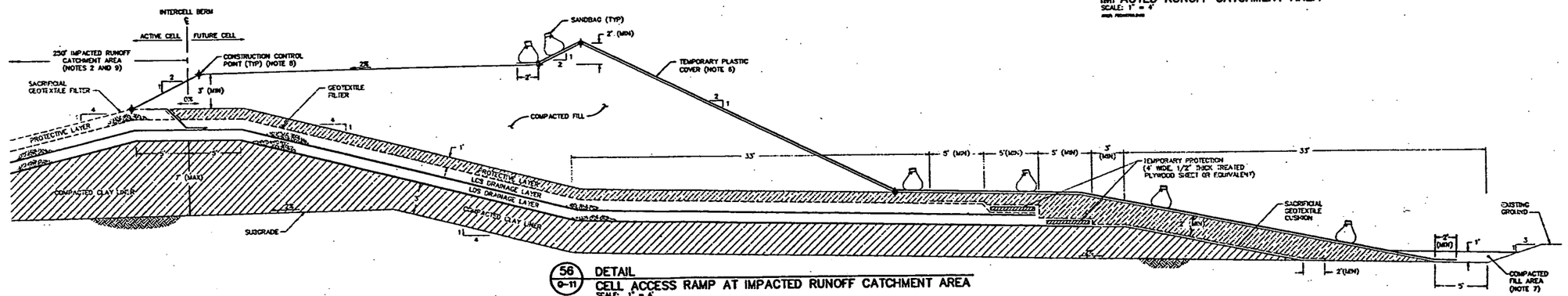
53 / G-13 DETAIL
IMPACTED MATERIAL PLACEMENT AT EAST PERIMETER
SCALE: 1" = 4'



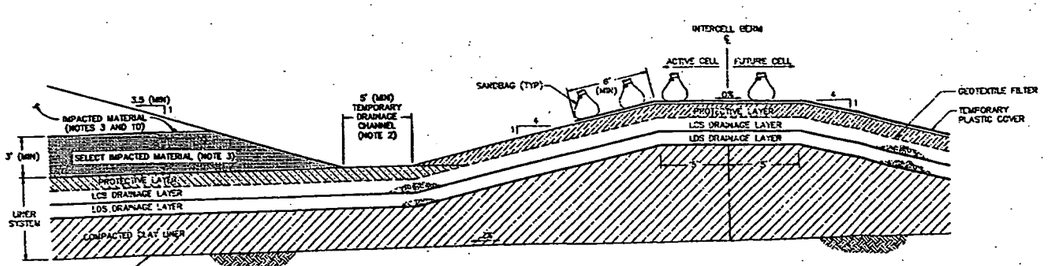
54 / G-14 DETAIL
IMPACTED MATERIAL PLACEMENT AT EASTERN LIMIT OF IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



55 / G-12 DETAIL
IMPACTED MATERIAL PLACEMENT AT NORTHERN LIMIT OF IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



56 / G-11 DETAIL
CELL ACCESS RAMP AT IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



57 / G-12 DETAIL
IMPACTED MATERIAL PLACEMENT AT INTERCELL BERM LOCATED OUTSIDE OF IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. PURPOSE OF THIS DRAWING IS TO ILLUSTRATE PLACEMENT OF SELECT IMPACTED MATERIAL, IMPACTED MATERIAL AND CONTOURING LAYER, INGRESS TO AND EGRESS FROM CELLS AND CONCURRENT CONTROL OF IMPACTED RUNOFF IN CELLS DURING FILLING. CONTRACTOR SHALL CONTAIN AND CONTROL WATER GENERATED DURING CONSTRUCTION AND FILLING OF OSDF IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
3. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE PROTECTIVE LAYER AND BELOW CONTOURING LAYER. THICKNESS OF SELECT IMPACTED MATERIAL OVERLYING PROTECTIVE LAYER MAY BE REDUCED TO 2 FEET IF FIRST LIFT OF IMPACTED MATERIAL TO BE PLACED OVER SELECT IMPACTED MATERIAL IS CATEGORY 1 IMPACTED MATERIAL. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
4. CONTOURING LAYER SHALL CONSIST OF NON-IMPACTED MATERIAL IN ACCORDANCE WITH SPECIFICATION SECTION 02240. CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER ARE PROVIDED ON DRAWING G-8.
5. SACRIFICIAL GEOMEMBRANE SHALL BE USED TO CONTROL IMPACTED RUNOFF IN CELLS DURING FILLING. EXPOSED SACRIFICIAL GEOMEMBRANE SHALL BE REMOVED BY CUTTING PRIOR TO CONSTRUCTION OF COMPACTED CLAY CAP IN TEMPORARY DRAINAGE CHANNEL.
6. TEMPORARY PLASTIC COVER SHALL CONSIST OF 20-mil THICK (MIN) POLYETHYLENE, POLYVINYL CHLORIDE OR OTHER SHEETING APPROVED BY CONSTRUCTION MANAGER. CONTRACTOR SHALL WEIGHT TEMPORARY PLASTIC COVER WITH SANDBAGS OR SIX INCHES OF NON-IMPACTED SOIL PLACED ABOVE PLASTIC COVER TO PREVENT DAMAGE FROM WIND.
7. CONTRACTOR SHALL PLACE COMPACTED FILL TO PROVIDE POSITIVE DRAINAGE TO TEMPORARY DRAINAGE CHANNEL.
8. CONSTRUCTION CONTROL POINTS FOR CELL ACCESS RAMP ARE PROVIDED ON DRAWING G-11.
9. IMPACTED RUNOFF CATCHMENT AREA IN ACTIVE CELL SHALL REMAIN OPEN UNTIL COMPACTION OF SECOND LIFT OF COMPACTED CLAY CAP IS COMPLETED IN ADJACENT UPGRADIENT CELL AND IMPACTED RUNOFF CATCHMENT AREA IN FUTURE CELL IS CONSTRUCTED AND OPERATIONAL.
10. IMPACTED MATERIAL INTERIM SLOPES SHALL BE NO STEEPER THAN 3.5H:1V IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
11. SLOPE OF LOWER PORTION OF FINAL COVER SYSTEM IS 6H:1V FOR NORTH, EAST AND WEST PERIMETERS OF OSDF AND TRANSITIONS FROM 6H:1V TO 7.5H:1V AND BACK TO 6H:1V AT CORNERS OF OSDF.

CERTIFIED-FOR-CONSTRUCTION

000030

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVWL BY	APP. BY
0	00.05.09	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LMD	MLB	RMB	DLVL	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	LMD	LMM	RMB	DLVL	JFB
A	00.02.07	PRELIMINARY SUBMITTAL TO FF/DOE	DLVL	SKY/MDG	RMB	DLVL	JFB

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE III

TITLE:
IMPACTED MATERIAL PLACEMENT DETAILS

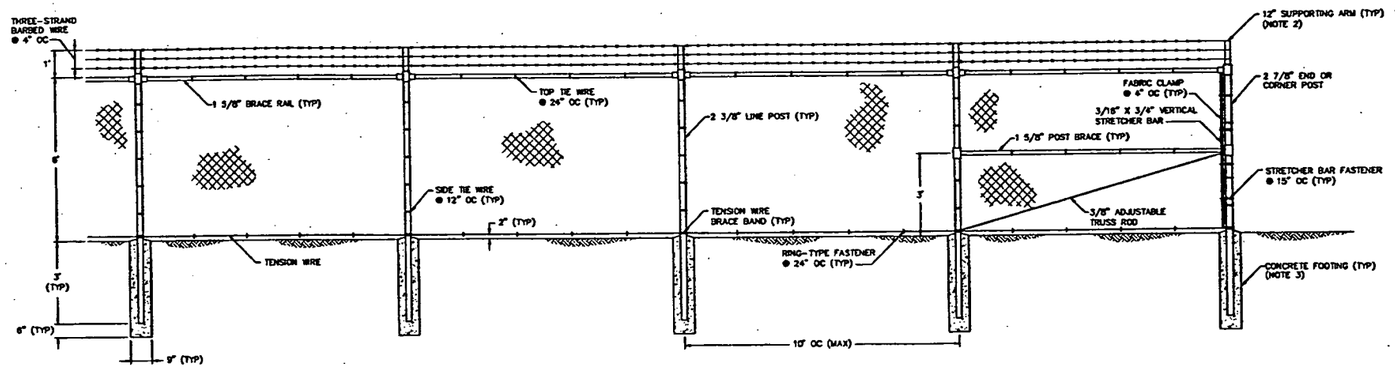
THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDING OR CONSTRUCTION UNLESS SEALED.

SIGNATURE
9 May 00
DATE

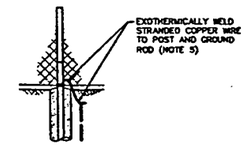
STATE OF OHIO
JOHN F. BEECH
E-38240
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

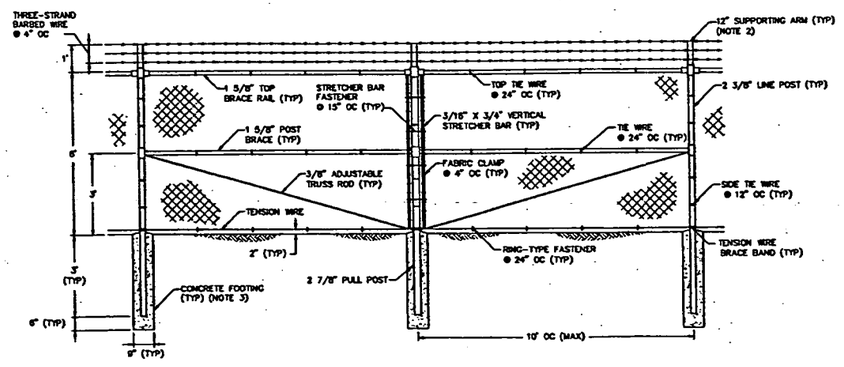
PROJECT NO.:	20103
CONTRACT NO.:	95P5000026
FDRP DRAWING NO.:	901-6000-C-00332
GEOSYNTEC PROJECT NO.:	001001-06
GEOSYNTEC DOCUMENT NO.:	F00-0172
SHEET NO.:	G-27
REVISION NO.:	0



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



60 DETAIL
CHAIN LINK FENCE GROUND
SCALE: NTS



59 DETAIL
PULL POST
SCALE: 1" = 2'

NOTES:

1. CHAIN LINK FENCE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02831.
2. SUPPORTING ARMS SHALL SLOPE TO OUTSIDE OF FENCE AT 45 DEGREES FROM VERTICAL.
3. EXPOSED TOPS OF CONCRETE FOOTINGS SHALL HAVE A 1-INCH CROWN TO PROMOTE DRAINAGE.
4. SEE DRAWING G-1 FOR LOCATION OF FENCE.
5. GROUNDING INTERVAL SHALL BE EVERY 400 FEET ALONG FENCE, ON BOTH SIDES OF GATES AND ON BOTH SIDES OF ABOVE GROUND OR BELOW GROUND UTILITIES.

000031

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	00.05.08	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	RAM	MLG	LMG	DLVL	JFB
B	00.04.10	PRE-FINAL SUBMITTAL TO FLUOR FERNALD, INC./DOE	RAM	LMW	LMG	DLVL	JFB
A	00.03.07	PRELIMINARY SUBMITTAL TO FF/DOE	LMG	LMW/AWS	RAM	DLVL	JFB

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE III

TITLE: CHAIN LINK FENCE DETAILS

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

J.F. Beech
9 May 00

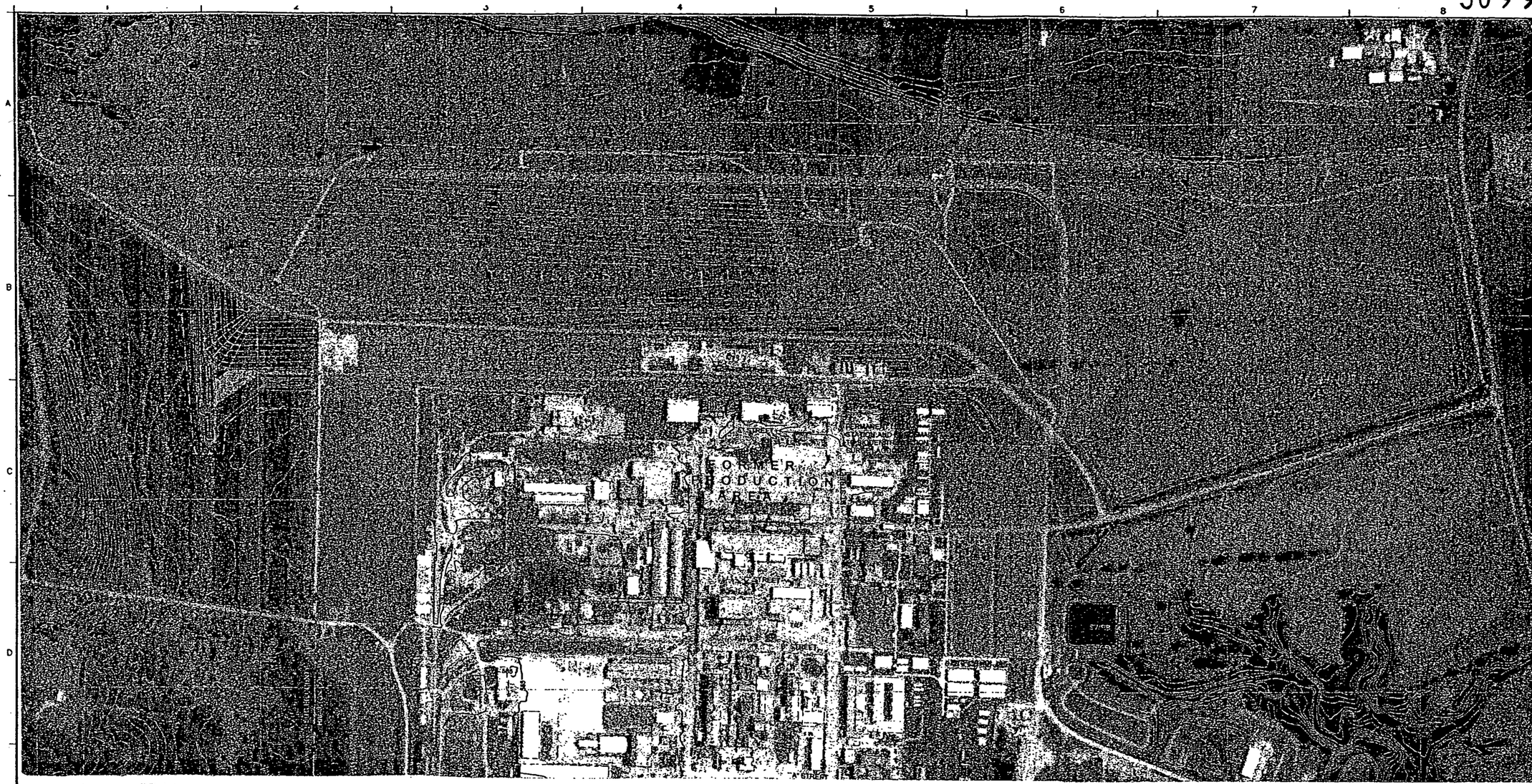
STATE OF OHIO
JOHN F. BEECH
E-58246
REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20103
CONTRACT NO.:	95PS005028
PDMP DRAWING NO.:	90X-6000-G-00323
GEOSYNTEC PROJECT NO.:	G01001-04
GEOSYNTEC DOCUMENT NO.:	F00-0173
SHEET NO.:	G-28
REVISION NO.:	0

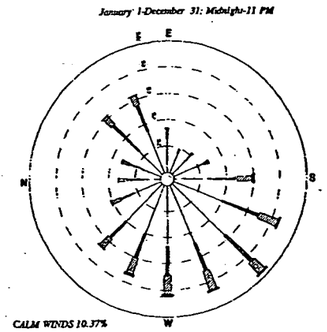
CERTIFIED-FOR-CONSTRUCTION

3099



FEMP 94-95 (10 m level)

January 1-December 31; Midnight-11 PM



CALM WINDS 10.37%

WIND SPEED (KNOTS)

SOURCE: FEMP EMERGENCY OPERATIONS CENTER

LEGEND

- 100 — EXISTING GROUND ELEVATION (FEET)
- 595 — FINISHED GRADE ELEVATION (FEET)
- BUTLER COUNTY/HAMILTON COUNTY LINE
- FEMP PROPERTY LINE
- BATTERY LIMIT

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD])
3. GRID COORDINATE SYSTEM CORRESPONDS TO STATE PLANAR NORTH AMERICAN DATUM (NAD) 1983 OHIO SOUTH.
4. THE PURPOSE OF THIS DRAWING IS TO SHOW A SCALED SITE PHOTOGRAPH WITH 5-FOOT CONTOUR INTERVALS, PROPOSED CONFIGURATION OF THE OSDF, BATTERY LIMIT, BORROW AREA, AND THE FORMER PRODUCTION AREA. THIS DRAWING SHALL NOT BE USED TO OBTAIN CONTRUCTION CONTROL INFORMATION AND IS FOR ILLUSTRATION PURPOSES ONLY.
5. FINISHED GRADE ELEVATIONS CORRESPOND TO THE TOP OF THE TOPSOIL COMPONENT OF THE FINAL COVER SYSTEM.
6. WIND ROSE DATA FROM FEMP EMERGENCY OPERATIONS CENTER.

000032

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	97.05.13	RESPONSE TO FINAL DESIGN COMMENTS	ELYA	AJM	GB	KWC	RB
C	96.10.11	FINAL SUBMITTAL TO EPA	ELYA	AJM	LA	KWC	RB
F	96.06.25	PRELIMINARY SUBMITTAL TO EPA					

200 100 0 200 400
SCALE IN FEET

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

CLIENT:
FLUOR DANIEL FERNALD

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
FACILITY PLOT PLAN

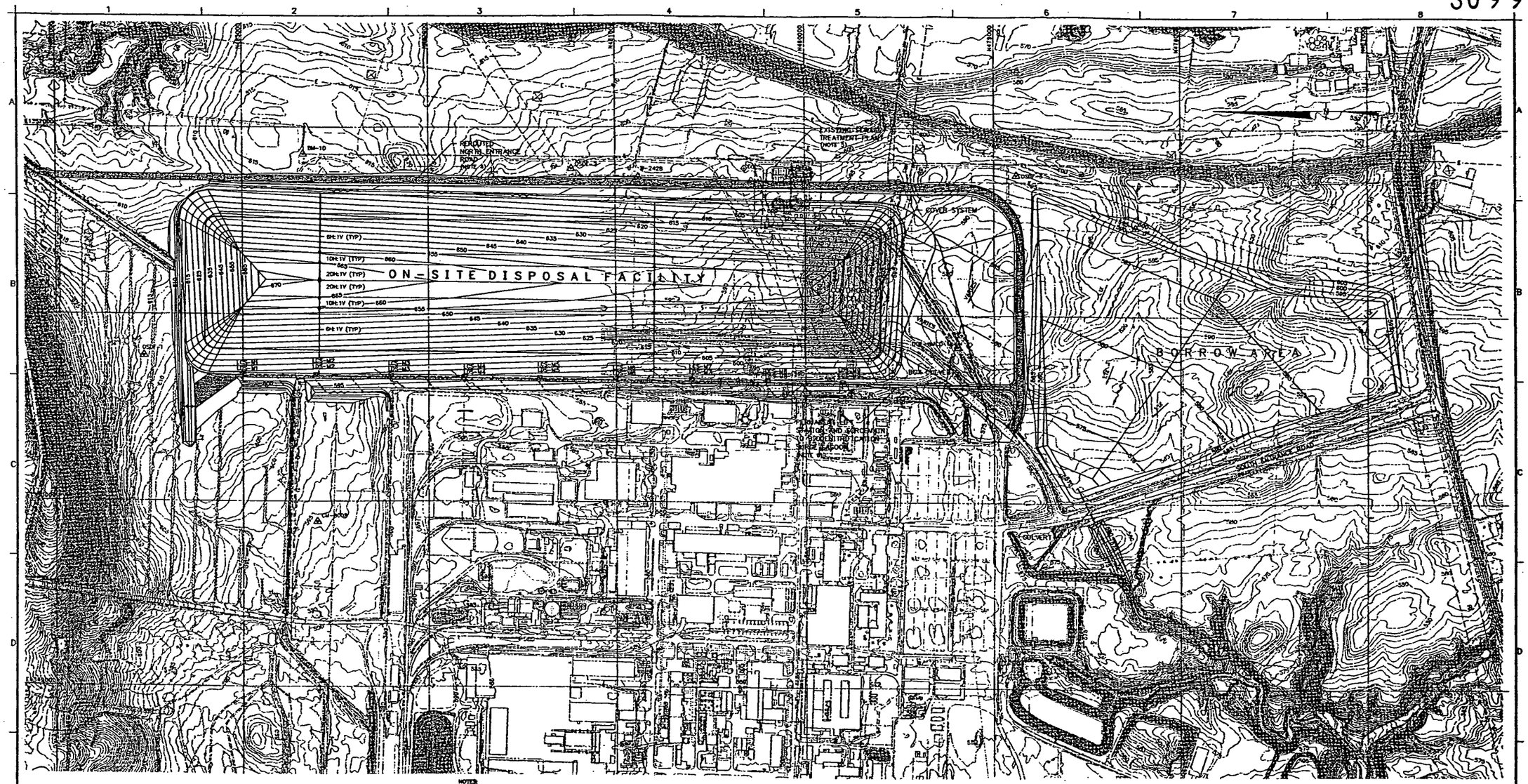
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION UNLESS SEALED.

STATE OF OHIO
RUDOLPH BUNAFACIO
E-56878
REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1900 LAKE ELLEN DRIVE, NO. 300
OAKLAND, FLORIDA 32750-1320

FDF PROJECT NO:	20100
FDF SUBCONTRACT NO:	94P5005028
FDF DRAWING NO:	FOX-6000-X-00003
GEOSYNTEC PROJECT NO:	GE3900-14.1
GEOSYNTEC DOCUMENT NO:	F97-0083
SHEET NO:	X-3
REVISION NO:	0

FINAL DESIGN PACKAGE



FEMP NORTH ∠ = 1.5872°

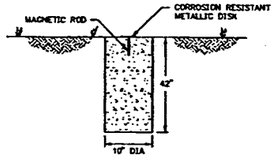
STATE OF OHIO NORTH (NAD 83)

LEGEND

- 800 — EXISTING GROUND ELEVATION (FEET)
- 800 — FINISHED GRADE ELEVATION (FEET)
- BUTLER COUNTY/HAMILTON COUNTY LINE
- FEMP PROPERTY LINE
- BATTERY LIMIT
- IMPACTED MATERIAL DISPOSAL LIMIT
- BORROW AREA LIMIT
- LEACHATE TRANSMISSION SYSTEM GRAVITY LINE
- LEACHATE TRANSMISSION SYSTEM MANHOLES (LDS AND LCS) AND HORIZONTAL MONITORING WELL COVER SLAB
- LEACHATE TRANSMISSION SYSTEM PERMANENT LIFT STATION
- ACCESS CORRIDOR OR REROUTED NORTH ENTRANCE ROAD
- DRAINAGE FLOW DIRECTION
- △ OSDF-1 — BENCHMARK
- DRAINAGE CHANNEL GRAVITY INLET STRUCTURE
- CULVERT

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 OF REROUTED NORTH ENTRANCE ROAD PHASE II OBTAINED FROM DRAWING C0001, "CIVIL SITE PLAN", OF THE "REROUTED NORTH ENTRANCE ROAD CONSTRUCTION DRAWINGS, OPERABLE UNIT 2 PROJECT ORDER 15A, REVISION 0", PARSONS, APRIL 1998. EXISTING NORTH ENTRANCE ROAD WILL BE REROUTED PRIOR TO OSDF CONSTRUCTION. SUBCONTRACTOR SHALL DECOMMISSION ABANDONED NORTH ENTRANCE ROAD AS NECESSARY WITHIN BATTERY LIMIT TO CONSTRUCT OSDF.
5. EXISTING SEWAGE TREATMENT PLANT WILL BE DECOMMISSIONED PRIOR TO CONSTRUCTION OF THE OSDF IN THAT AREA.
6. CONTINGENCY CELL WILL ONLY BE CONSTRUCTED IF NEEDED FOR DISPOSAL OF IMPACTED MATERIAL FROM THE OPERABLE UNITS. CONTINGENCY VOLUME IS PROVIDED TO ACCOUNT FOR OVEREXCAVATION OF IMPACTED MATERIAL AND/OR IDENTIFICATION OF ADDITIONAL VOLUME OF IMPACTED MATERIAL AS A RESULT OF CONFIRMATORY SAMPLING ACTIVITIES. ONLY ON-SITE MATERIAL SATISFYING THE OSDF WASTE ACCEPTANCE CRITERIA WILL BE DISPOSED IN THE OSDF. IF THE CONTINGENCY CELL IS NOT DEVELOPED, THE SOUTHERN LIMIT OF THE ODSF WILL MOVE 400 FEET TO THE NORTH.
7. MONITORING WELLS AND PIEZOMETERS WITHIN THE CONSTRUCTION AREA WILL BE ABANDONED BY THE OWNER PRIOR TO CONSTRUCTION IN A GIVEN AREA. ABANDONMENT WILL BE IN ACCORDANCE WITH APPLICABLE STATE AND FEDERAL REGULATIONS.
8. SEE SEPARATE DESIGN PACKAGE FOR THE DESIGN OF THE FORCEMAIN (LEACHATE TRANSMISSION SYSTEM CONNECTOR) FROM THE PERMANENT LIFT STATION TO THE BIODENITRIFICATION SURGE LAGOON (INCLUDES LIFT STATION PUMP REQUIREMENTS AND DOUBLE-WALL HDPE FORCEMAIN).
10. SUBCONTRACTOR SHALL CONSTRUCT A PERMANENT SECURITY FENCE WITH GATES TO CONTROL ACCESS TO THE OSDF AFTER CLOSURE. THE FENCE SHALL BE LOCATED OUTSIDE THE TOE OF SLOPE OF THE OSDF AND LOCATED SO AS NOT TO INHIBIT FLOW AT LOCATIONS WHERE SURFACE-WATER DRAINAGE FEATURES ARE CROSSED. SEE FENCE DETAILS ON DRAWING S-5.
11. SURVEY BENCH MARKS SHALL BE IN ACCORDANCE WITH SECTION 02100 OF THE OSDF SPECIFICATIONS



SURVEY BENCHMARK
(NOTE 10)
SCALE: NTS

BENCHMARKS

NUMBER	NORTHING	EASTING	ELEVATION	STATUS
IRON PIN (IP)	478205.578945	1351472.814296	603.32	EXISTING
DOE-WMCO-1A	479157.594871	1350835.053430	585.57	EXISTING
W-2428	480850.128523	1351732.754450	600.79	EXISTING
BM-10	482838.021627	1351857.894919	615.87	EXISTING
CM-8008	482566.059750	1349891.816758	583.98	EXISTING
OSDF-1	483500.000000	1350780.000000	-	PROPOSED
OSDF-2	481200.000000	1351780.000000	-	PROPOSED
OSDF-3	478850.000000	1351750.000000	-	PROPOSED

FINAL DESIGN PACKAGE

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
0	97.05.13	RESPONSE TO FINAL DESIGN COMMENTS	DLVL	JRM	GD	KRC	RB
C	96.10.11	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KRC	RB
F	96.06.25	PRELIMINARY SUBMITTAL TO EPA					

200 100 0 200 400
SCALE IN FEET

000033

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

CLIENT:
FLUOR DANIEL FERNALD

PROJECT:
ON-SITE DISPOSAL FACILITY

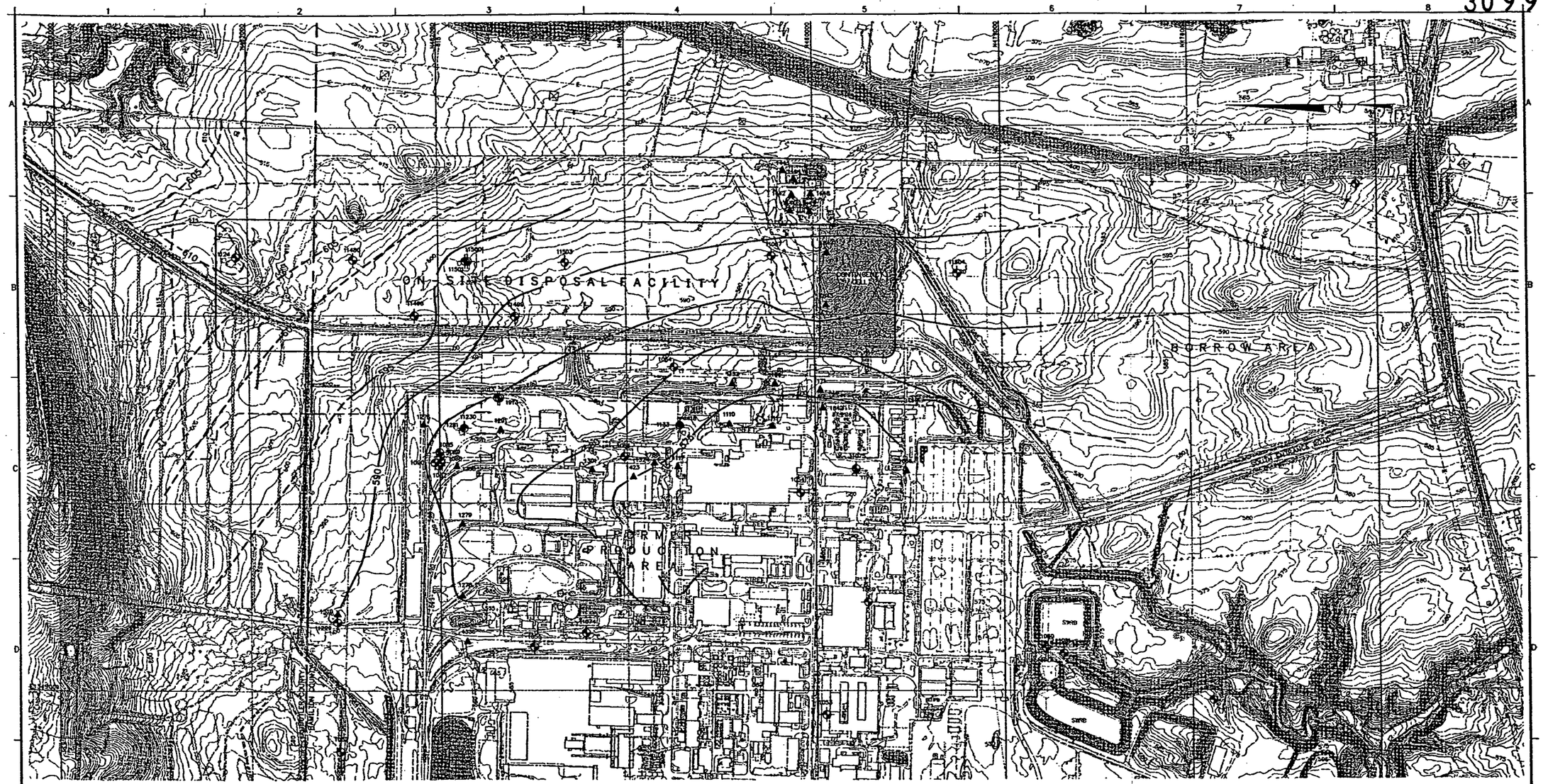
TITLE:
SITE PLAN

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

STATE OF OHIO
RUDOLPH BONAPARTE
E-58279
REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
3400 LAKE HEARN DRIVE, N.E.
SUITE 200
ATLANTA, GEORGIA 30342-1523

FDF CONTRACT NO.: 20100
FDF SUBCONTRACT NO.: 95P5005028
FDF DRAWING NO.: 9100-5000-X-00004
GEOSYNTEC PROJECT NO.: GC3900-141
GEOSYNTEC DOCUMENT NO.: F97-0024
SHEET NO.: X-4
REVISION NO.: 0



LEGEND

- 600 — EXISTING POTENTIOMETRIC SURFACE (FEET)
- 595 — PERCHED ZONE POTENTIOMETRIC SURFACE ELEVATION (FEET) (DASHED WHERE INFERRED)
- BUTLER COUNTY/HAMILTON COUNTY LINE
- FEMP PROPERTY LINE
- BATTERY LIMIT
- IMPACTED MATERIAL DISPOSAL LIMIT
- BORROW AREA LIMIT
- 1338 — PIEZOMETER
- 1229 — TYPE 1 MONITORING WELL

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. PERCHED ZONE POTENTIOMETRIC SURFACE OBTAINED FROM FIGURE 2-20, "PERCHED GROUNDWATER CONTOURS FOR WELLS SCREENED ACROSS THE BROWN/GRAY INTERFACE", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995.
5. MONITORING WELL AND PIEZOMETER INFORMATION OBTAINED FROM FDF COMPUTER FILE "DATA.WK3".
6. PERCHED ZONE POTENTIOMETRIC SURFACE IS BASED ON ELEVATIONS MEASURED BETWEEN OCTOBER 1994 AND FEBRUARY 1995 IN MONITORING WELLS SCREENED ACROSS THE BROWN TILL/GRAY TILL INTERFACE.
7. LOCATIONS OF MONITORING WELLS AND PIEZOMETERS WILL BE UPDATED FOR THE INDIVIDUAL CERTIFIED FOR CONSTRUCTION PACKAGES IN ACCORDANCE WITH SECTION 1.4 OF THE FINAL DESIGN CALCULATION PACKAGE.

TYPE 1 MONITORING WELLS

NO.	COORDINATES (1983 NAD) NORTHING	EASTING	ELEVATION GROUND SURFACE	WELL SCREEN TOP	BOTTOM
1013	481,682.43	1,350,558.68	585.80	–	–
1052	482,335.99	1,348,878.58	585.40	568.90	558.90
1053	479,950.36	1,348,873.06	578.70	571.70	563.70
1054	480,078.68	1,350,053.13	579.80	572.70	579.80
1055	481,505.56	1,349,234.29	586.30	576.00	567.50
1064	480,748.20	1,350,724.01	580.00	570.00	560.00
1065	477,590.38	1,348,941.05	571.40	565.30	557.20
1085	481,988.79	1,350,278.53	590.50	583.50	573.50
1086	481,013.65	1,350,247.41	590.40	583.40	573.40
1087	481,992.43	1,350,217.35	590.10	583.10	573.10
1088	482,008.65	1,350,198.84	590.10	583.10	573.10
1089	481,993.46	1,350,247.44	590.30	583.30	573.30
1090	482,024.87	1,350,215.43	590.10	583.10	573.10
1124	483,082.56	1,351,314.14	590.32	–	–
1133	480,719.05	1,350,414.54	590.32	575.32	570.32
1733	477,109.87	1,351,667.50	604.70	578.70	573.70
1869	479,723.31	1,348,472.78	576.67	568.37	563.37
1913	481,679.49	1,350,538.93	588.60	–	–
11067	480,223.10	1,351,313.70	590.71	573.71	571.71
11074	481,228.50	1,349,305.34	582.90	568.10	563.10
11075	478,784.75	1,350,182.54	578.49	569.49	564.49
11080	478,780.00	1,348,228.77	583.60	559.40	557.40
11081	478,686.13	1,349,197.03	568.00	558.80	556.80
11229	482,546.35	1,349,363.47	580.34	573.24	573.24
11230	481,866.55	1,350,399.31	593.24	583.74	583.74
11480	482,448.04	1,351,297.95	606.28	–	–
11496	482,126.19	1,350,995.23	602.65	583.70	583.70
11499	481,581.24	1,350,991.08	594.60	578.70	572.70
11500	481,940.14	1,351,294.36	598.93	579.90	573.40
11501	481,853.44	1,351,285.22	598.87	566.00	562.00
11503	481,327.01	1,351,275.97	593.47	569.50	565.50
11504	479,235.18	1,351,218.87	580.02	576.00	572.00

PIEZOMETERS

NO.	COORDINATES (1983 NAD) NORTHING	EASTING	ELEVATION GROUND SURFACE	WELL SCREEN TOP	BOTTOM
1110	480,455.69	1,350,420.77	580.30	572.10	567.10
1111	480,225.57	1,350,408.05	579.70	573.50	563.50
1117	480,732.58	1,350,193.45	578.80	568.70	563.70
1152	480,445.42	1,350,836.80	577.69	572.69	578.69
1169	479,771.08	1,350,635.49	582.12	576.12	572.62
1171	479,571.11	1,350,601.56	585.60	577.60	572.60
1174	479,788.28	1,350,167.88	579.39	574.89	570.09
1278	482,081.53	1,350,415.97	590.51	573.51	570.51
1279	481,884.27	1,349,304.33	588.82	583.32	578.32
1279	481,884.27	1,349,289.40	588.87	580.67	573.67
1280	481,807.43	1,350,193.98	587.08	574.08	569.08
1281	481,873.41	1,350,395.30	584.19	577.19	572.19
1291	481,684.92	1,350,360.85	588.47	585.97	580.97
1301	481,190.80	1,350,180.36	585.58	578.78	573.98
1324	480,857.91	1,350,212.80	580.80	573.50	567.00
1336	481,858.67	1,349,359.84	583.13	581.43	568.43
1418	480,717.42	1,350,414.50	–	–	–
1423	480,982.30	1,350,148.23	583.09	576.49	570.49
1441	480,121.40	1,351,052.40	594.10	586.60	576.60
1442	480,114.55	1,351,841.67	596.71	592.71	587.71
1443	480,132.53	1,351,763.46	596.60	590.90	580.60
1444	480,096.57	1,351,723.33	600.33	590.33	583.33
1447	480,020.94	1,351,550.18	596.60	593.10	588.10
1448	480,015.79	1,351,442.94	596.60	592.10	583.10
1510	482,549.03	1,349,408.88	591.00	587.50	582.50
1798	480,657.83	1,350,212.70	580.05	578.05	568.05
1842	479,938.65	1,350,503.90	578.78	568.78	563.78
1843	479,830.00	1,351,053.37	581.37	574.87	572.87
1844	479,830.33	1,351,331.92	583.12	578.12	576.12
1856	479,517.38	1,350,173.44	576.80	573.30	571.30

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
D	97.05.13	RESPONSE TO FINAL DESIGN COMMENTS	DLVL	JRM	GD	KWC	RB
E	96.10.11	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KWC	RB
F	96.06.25	PRELIMINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KWC	RB

200 100 0 200 400
SCALE IN FEET

000034

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

CLIENT:
FLUOR DANIEL FERNALD — FLUOR DANIEL FERNALD

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
PERCHED ZONE POTENTIOMETRIC SURFACE MAP

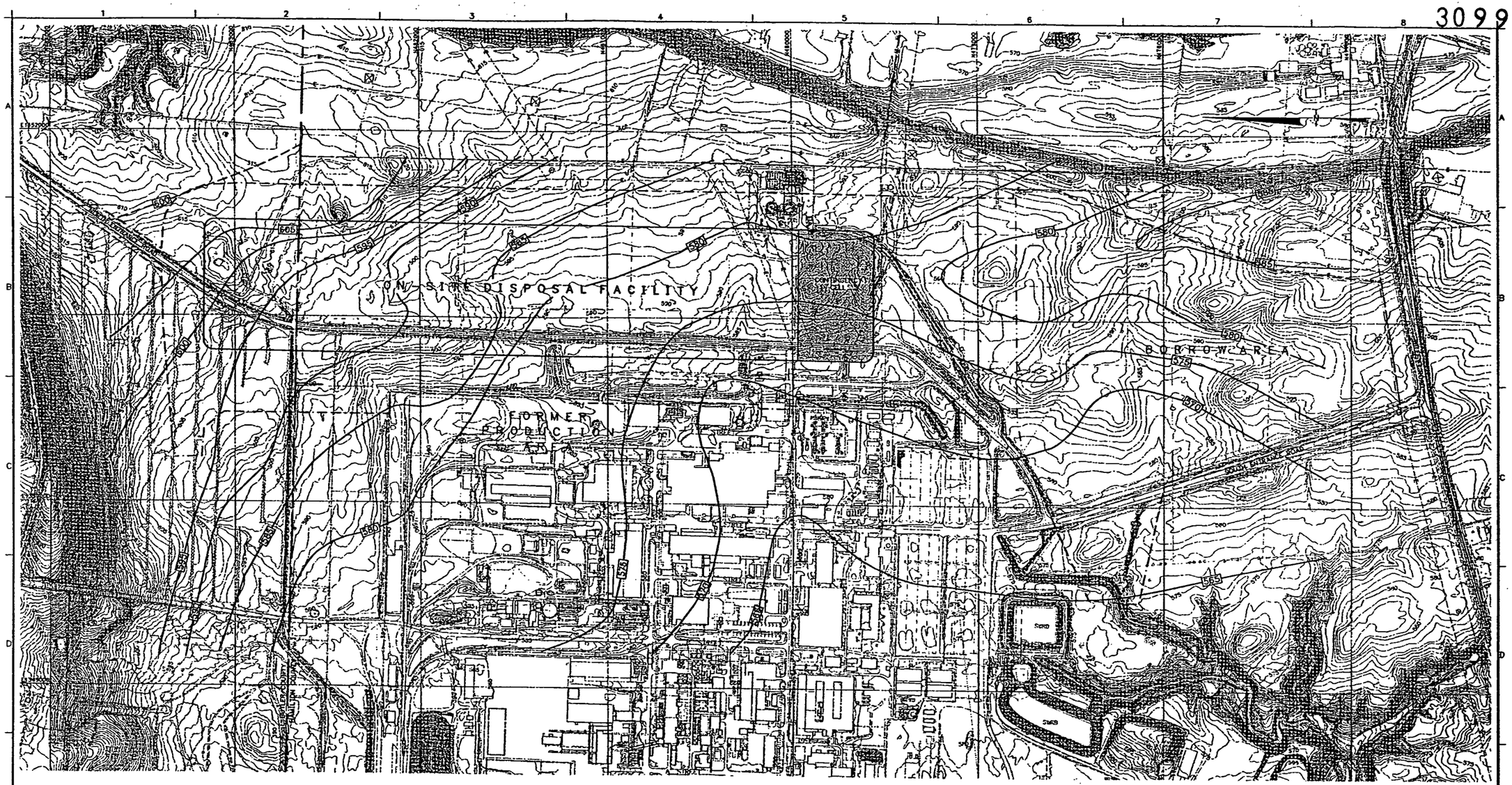
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT WORK OR CONSTRUCTION, UNLESS SEALED.

STATE OF OHIO — RUDOLPH BONAPARTE — E-68878 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

FDF CONTRACT NO.: 20100
FDF SUBCONTRACT NO.: PSP-S005028
FDF DRAWING NO.: 9CX-8000-X-00008
GEOSYNTEC PROJECT NO.: GE3920-14.1
GEOSYNTEC DOCUMENT NO.: F97-0006
SHEET NO.: X-9
REVISION NO.: 0

FINAL DESIGN PACKAGE



LEGEND

600	EXISTING GROUND ELEVATION (FEET)
580	BROWN TILL/GRAY TILL INTERFACE ELEVATION (FEET) (DASHED WHERE INFERRED)
	BUTLER COUNTY/HAMILTON COUNTY LINE
	FEMP PROPERTY LINE
	BATTERY LIMIT
	IMPACTED MATERIAL DISPOSAL LIMIT
	BORROW AREA LIMIT

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. BROWN TILL/GRAY TILL INTERFACE CONTOURS OBTAINED FROM FIGURE 3-3, "BROWN TILL/GRAY TILL INTERFACE SURFACE", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
0	97.05.13	RESPONSE TO FINAL DESIGN COMMENTS	DLVL	JRM	GB	KWC	RB
G	96.10.11	FINAL SUBMITTAL TO EPA	DLVL	JRM	LA	KWC	RB
F	96.08.25	PREFINAL SUBMITTAL TO EPA					

200 100 0 200 400
SCALE IN FEET

000035

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

CLIENT:
FLUOR DANIEL FERNALD

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
BROWN TILL/GRAY TILL INTERFACE CONTOUR MAP

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

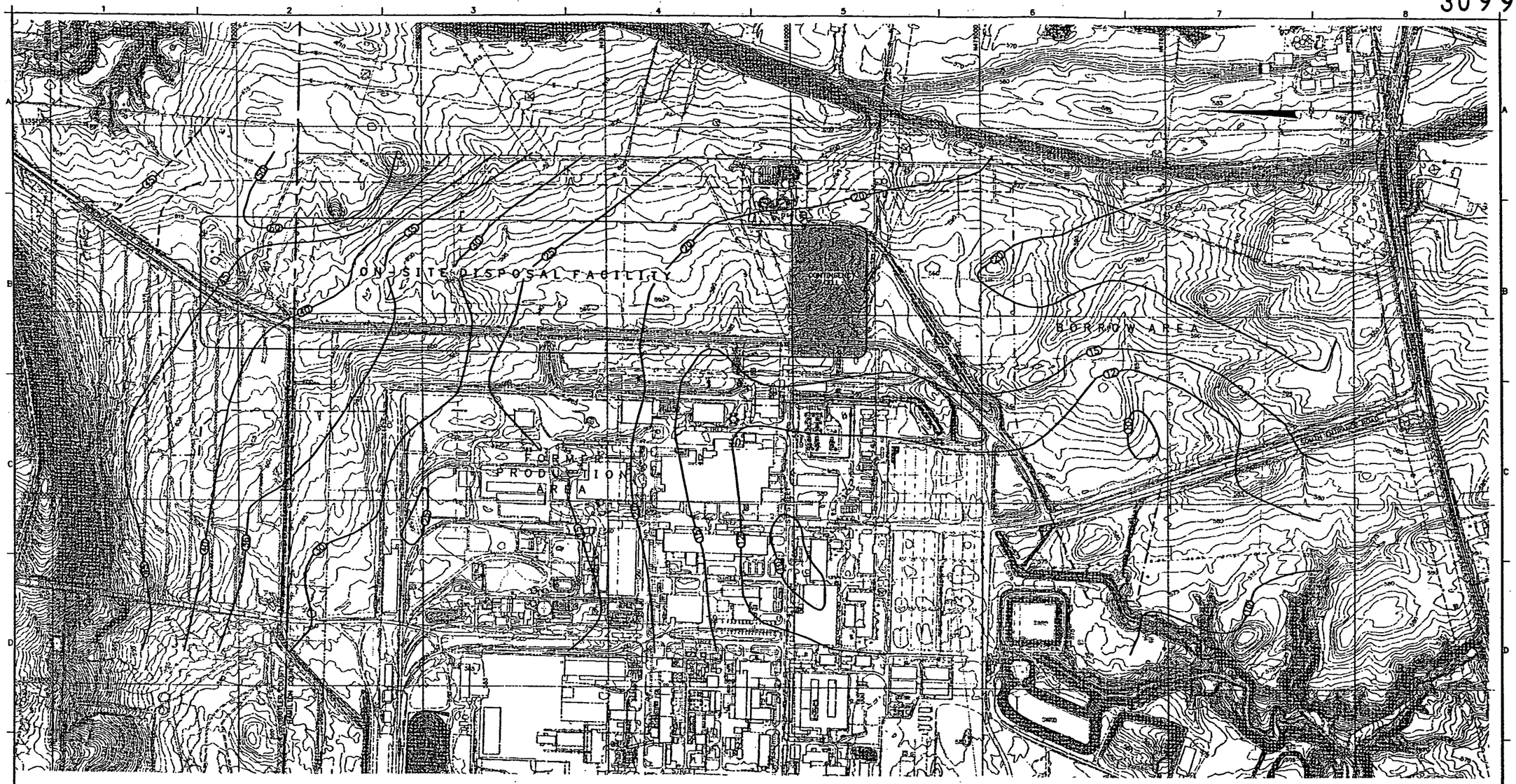
Andrew Bonaparte
Engineer
13 May 97
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
E-66670
REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1900 LAKE SEARS DRIVE, N.E.
SUITE 200
ATLANTA, GEORGIA 30043-1023

FDF CONTRACT NO.: 20100
FDF SUBCONTRACT NO.: 95PS005028
FDF DRAWING NO.: 90X-6000-X-00009
GEOSYNTEC PROJECT NO.: GE3900-14.1
GEOSYNTEC DOCUMENT NO.: F97-0007
SHEET NO.: X-10
REVISION NO.: 0

FINAL DESIGN PACKAGE



LEGEND

- EDC — EXISTING GROUND ELEVATION (FEET)
- 20 — GRAY TILL ISOPACH (FEET) (DASHED WHERE INFERRED)
- BUTLER COUNTY/HAMILTON COUNTY LINE
- FEMP PROPERTY LINE
- BATTERY LIMIT
- IMPACTED MATERIAL DISPOSAL LIMIT
- BORROW AREA LIMIT

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. GRAY TILL ISOPACHS OBTAINED FROM FIGURE 3-4, "THICKNESS OF THE GRAY TILL", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995. ISOPACH DEFINES LINE OF CONSTANT TILL THICKNESS.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
9	97.05.13	RESPONSE TO FINAL DESIGN COMMENTS	DLW	JRM	CD	KWC	RB
8	96.10.17	FINAL SUBMITTAL TO EPA	DLW	JRM	LA	KWC	RB
7	96.08.23	PRELIM. SUBMITTAL TO EPA					

200 100 0 200 400
SCALE IN FEET

000036

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

CLIENT: FLUOR DANIEL FERNALD

PROJECT: ON-SITE DISPOSAL FACILITY

TITLE: GRAY TILL ISOPACH MAP

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

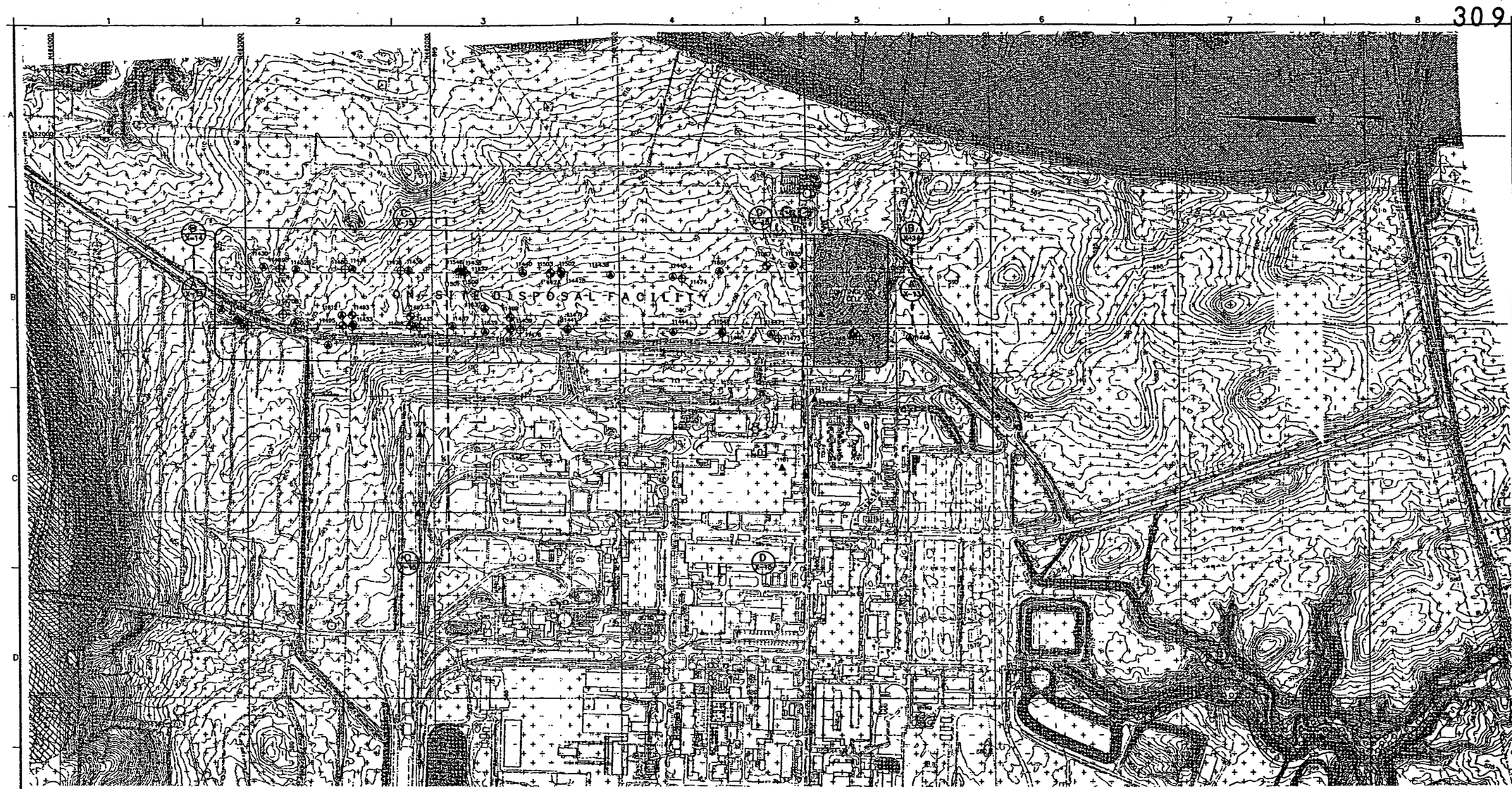
DRAWING: Robert Bonpasto
DATE: 15 May 97

STATE OF OHIO — RUDOLPH BONAPARTE — E-55579 — REGISTERED PROFESSIONAL ENGINEER

GEOSTATIC CONSULTANTS

FDF CONTRACT NO.:	20100
FDF SUBCONTRACT NO.:	P2P5005078
FDF DRAWING NO.:	901-6000-X-00010
GEOSTATIC PROJECT NO.:	DE3900-14.1
GEOSTATIC DOCUMENT NO.:	F97-0008
SHEET NO.:	X-11
REVISION NO.:	0

FINAL DESIGN PACKAGE



LEGEND

- 500 — EXISTING GROUND ELEVATION (FEET)
- BUTLER COUNTY/HAMILTON COUNTY LINE
- FEMP PROPERTY LINE
- BATTERY LIMIT
- IMPACTED MATERIAL DISPOSAL LIMIT
- BORROW AREA LIMIT
- APPROXIMATED CONTACT OF MAP UNITS
- CONTACT OF MAP UNITS
- 1278 PIEZOMETER
- 11403 TYPE 1 MONITORING WELL
- 11434 CONE PENETROMETER TEST (CPT) SOUNDING
- 11480 GEOTECHNICAL BORING

SURFACE GEOLOGY

ALLUVIUM, FLUVIAL DEPOSITS OF RECENT (HOLOCENE) ORIGIN. INCLUDES A VARIETY OF TEXTURAL CLASSES FROM CLAYS TO BOULDERS. THIS ALLUVIUM LIES DIRECTLY UPON SAND AND GRAVEL OUTWASH DEPOSITS OF THE GREAT MIAMI AQUIFER.

TILL, WISCONSIN AGE. SHELBYVILLE TILL EXPOSED ON ERODED SLOPES AND FLOOR OF PADDYS RUN VALLEY. LOCALLY, MAY BE COVERED WITH A THIN VENEER OF RECENT ALLUVIUM.

FINE TO COARSE SAND. CONTAINS LESSER AMOUNTS OF DISSEMINATED GRAVEL AND THIN GRAVEL OR SILT LENSES. THE MAPPED UNIT IS ALLUVIUM THAT LIES UNCONFORMABLY UPON SHELBYVILLE TILL, AN ALLUVIAL TERRACE OF THE GREAT MIAMI RIVER.

TILL, LEAN CLAY TO A SANDY LEAN CLAY WITH INTERSTITIAL SANDS AND GRAVELS. WITHIN THE AREA OF THE OSDF, TILL CONTAINS LESS THAN 5 PERCENT INTERSTITIAL BODIES OF SAND AND GRAVELLY SAND. TILL RANGES FROM APPROXIMATELY 25 FEET TO 60 FEET IN THICKNESS.

BEDROCK WITH A TILL/LOESS CAP OF VARIABLE THICKNESS. ORDOVICIAN AGE BEDROCK CONSISTING OF ALTERNATING LAYERS OF LIMESTONE AND SHALE. BEDROCK IS CAPPED BY WISCONSIN TILL, LOESS, AND COLLUVIUM OF VARIABLE THICKNESS, GENERALLY LESS THAN 10 FEET THICK.

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. SURFACE GEOLOGY INFORMATION OBTAINED FROM FIGURE 3-18, "PRE-CONSTRUCTION SURFACE GEOLOGY OF THE FEMP", OF THE "REMEDIAL INVESTIGATION REPORT FOR OPERABLE UNIT 5, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT, REMEDIAL INVESTIGATION AND FEASIBILITY STUDY", U.S. DEPARTMENT OF ENERGY, MARCH 1995.
5. SECTION LOCATIONS OBTAINED FROM FIGURE 2-8, "CROSS-SECTION LOCATION MAP", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995.
6. MONITORING WELL AND PIEZOMETER LOCATIONS OBTAINED FROM TABLE A-6, "PREDESIGN INVESTIGATION WELL REFERENCE INFORMATION", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995. SEE DRAWINGS X-13 THROUGH X-15 FOR NORTHING, EASTING, AND GROUND SURFACE ELEVATION INFORMATION.
7. GEOTECHNICAL BORING AND CONE PENETROMETER TEST (CPT) SOUNDING LOCATIONS OBTAINED FROM APPENDIX B, "BORING AND CPT COORDINATES", OF THE "GEOTECHNICAL INVESTIGATION REPORT, ON-SITE DISPOSAL FACILITY, OPERABLE UNIT 2, PROJECT ORDER 140, REVISION A", PARSONS, SEPTEMBER 1995. SEE DRAWINGS X-13 THROUGH X-15 FOR NORTHING, EASTING, AND GROUND SURFACE ELEVATION INFORMATION.
8. LOCATIONS OF GEOTECHNICAL BORINGS, CONE PENETROMETER TEST SOUNDINGS, MONITORING WELLS, AND PIEZOMETERS WILL BE UPDATED FOR THE INDIVIDUAL CERTIFIED FOR CONSTRUCTION PACKAGES IN ACCORDANCE WITH SECTION 1.4 OF THE FINAL DESIGN CALCULATION PACKAGE.

REV. NO.	DATE	DESCRIPTION	DES BY	DR BY	CHK BY	RVW BY	APP BY
D	97.05.13	RESPONSE TO FINAL DESIGN COMMENTS	DLVL	UWF	RB	KMC	RB
E	98.10.21	FINAL SUBMITTAL TO EPA	DLVL	JSM	LA	KMC	RB
F	98.08.25	PRETRIAL SUBMITTAL TO EPA					

200 100 0 200 400
SCALE IN FEET

000037

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

CLIENT:
FLUOR DANIEL FERNALD

PROJECT:
ON-SITE DISPOSAL FACILITY

TITLE:
SURFACE GEOLOGY MAP

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDER OR CONSTRUCTION UNLESS SEALED.

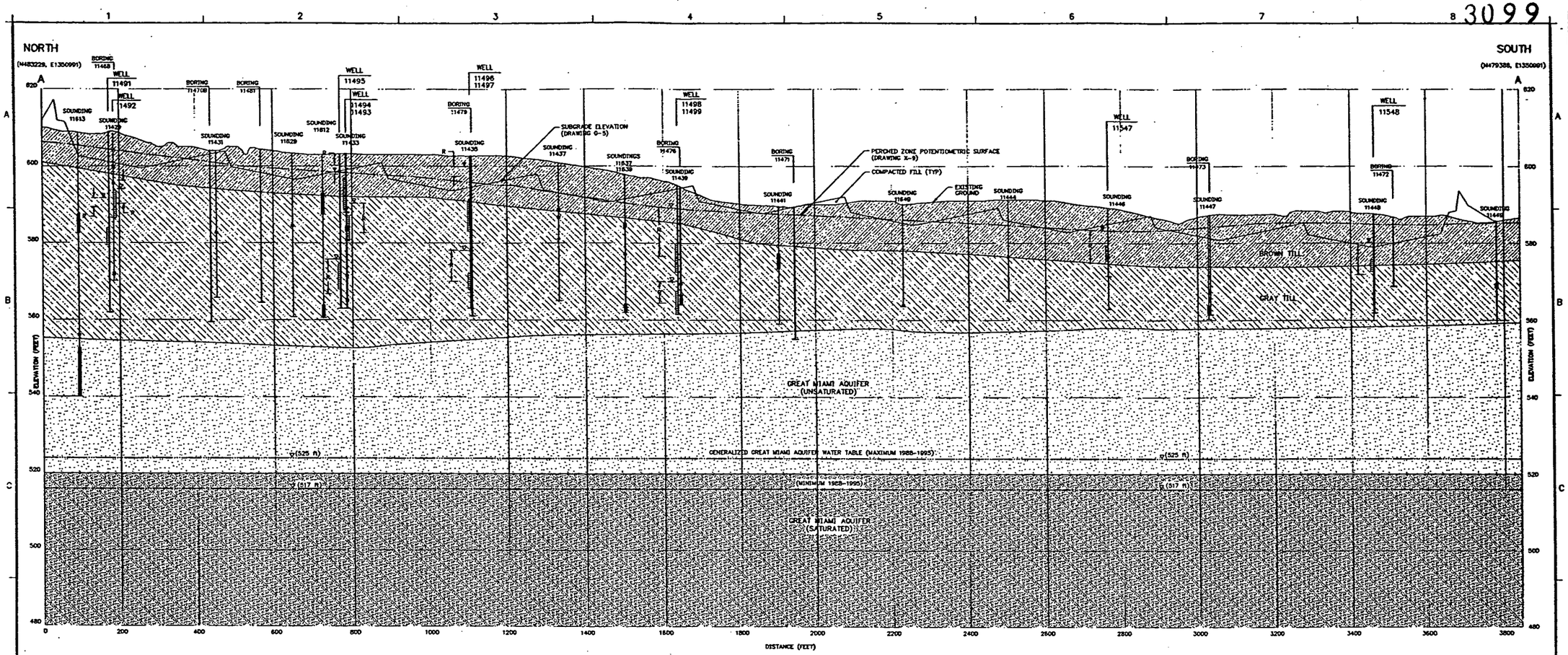
STATE OF OHIO
RUDOLPH BORRAVITE
E-58079
REGISTERED PROFESSIONAL ENGINEER

13 May 97

GEOSYSTEC CONSULTANTS
3400 LAKE HEARN DRIVE, N.E.
SUITE 200
ATLANTA, GEORGIA 30342-1522

FOR CONTRACT NO.: 20100
FOR SUBCONTRACT NO.: 8OP2000078
FOR DRAWING NO.: 9OX-6000-X-0071
GEOSYSTEC PROJECT NO.: GE3900-14.1
GEOSYSTEC DOCUMENT NO.: 197-0509
SHEET NO.: X-12
REVISION NO.: 0

FINAL DESIGN PACKAGE



LEGEND

- WATER TABLE OR PIEZOMETRIC SURFACE
- WELL 11492 — MONITORING WELL OR PIEZOMETER
- BORING 11468 — GEOTECHNICAL BORING
- SOUNDING 11468 — CONE PENETROMETER TEST (CPT) SOUNDING
- INTERPRETED LOCATION OF COARSE-GRAINED MATERIAL OBTAINED FROM CONE PENETROMETER TEST (CPT) SOUNDING
- BROWN TILL – PREDOMINANTLY SANDY LEAN CLAY (CL) WITH LOCALIZED POCKETS OF HIGH PLASTICITY CLAY (CH), CLAYEY SILT (ML), AND CLAYEY AND SILTY SAND AND SCATTERED GRAVEL. TYPICALLY MOIST AND STIFF TO VERY STIFF. SOME LOCAL SAND LENSES. OPEN 1/8" FRACTURES.
- GRAY TILL – PREDOMINANTLY SANDY LEAN CLAY (CL) WITH POCKETS OF SAND (SW), CLAYEY SAND (SC), AND SCATTERED GRAVELS TYPICALLY MOIST AND VERY STIFF TO LOCALLY HARD. SCATTERED SAND LENSES.
- GREAT MIAMI AQUIFER – SAND/GRAVEL MIXTURES, VERY DENSE TO HARD (UNSATURATED)
- GREAT MIAMI AQUIFER – SAND/GRAVEL MIXTURES, VERY DENSE TO HARD (SATURATED)
- WATER LEVEL MEASURED BETWEEN 20 AND 29 MARCH 1995 IN MONITORING WELL SCREENED ACROSS OR NEAR THE BROWN TILL/GRAY TILL INTERFACE
- WATER LEVEL MEASURED IN MONITORING WELL SCREENED IN GRAY TILL OR GREAT MIAMI AQUIFER
- MONITORING WELL SCREEN INTERVAL
- RANGE OF POTENTIOMETRIC SURFACE FLUCTUATION IN THE PERCHED ZONE BETWEEN OCTOBER 1994 AND MARCH 1995

A / X-12 **SECTION A-A**
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD])
3. GRID COORDINATE SYSTEM CORRESPONDS TO STATE PLANAR NORTH AMERICAN DATUM (NAD) 1983 OHIO SOUTH.
4. GEOLOGIC SECTION DATA OBTAINED FROM FIGURE 2-4, "COARSE GRAINED MATERIAL INTERPRETED FROM CONE PENETROMETER RESULTS", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995.
5. MONITORING WELL AND PERCHED ZONE INFORMATION OBTAINED FROM TABLE A-4, "BORING DEPTH AND SCREENED INTERVALS FOR PHASE II WELLS", AND TABLE A-19, "SUMMARY OF WATER LEVEL DATA, BROWN/GRAY TILL INTERFACE WELLS, MARCH 29, 1995", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995.
6. GEOTECHNICAL BORING AND CONE PENETROMETER TEST (CPT) SOUNDING LOCATIONS OBTAINED FROM APPENDIX B, "BORING AND CPT COORDINATES", OF THE "GEOTECHNICAL INVESTIGATION REPORT, ON-SITE DISPOSAL FACILITY, OPERABLE UNIT 2, PROJECT ORDER 140, REVISION A", PARSONS, SEPTEMBER 1995.
7. PERCHED ZONE POTENTIOMETRIC SURFACE OBTAINED FROM FIGURE 2-20, "PERCHED GROUNDWATER CONTOURS FOR WELLS SCREENED ACROSS THE BROWN/GRAY INTERFACE", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995.
8. GREAT MIAMI AQUIFER WATER TABLE INFORMATION OBTAINED FROM FIGURE 3-51, "MAXIMUM GROUNDWATER ELEVATIONS, TYPE 2 WELLS, JUNE 1990", AND FIGURE 3-52, "MINIMUM GROUNDWATER ELEVATIONS, TYPE 2 WELLS, NOVEMBER 1988", OF THE "REMEDIAL INVESTIGATION REPORT FOR OPERABLE UNIT 5, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT, REMEDIAL INVESTIGATION AND FEASIBILITY STUDY", U.S. DEPARTMENT OF ENERGY, MARCH 1995.
9. LOCATIONS OF GEOTECHNICAL BORINGS, CONE PENETROMETER TEST SOUNDINGS, MONITORING WELLS, AND PIEZOMETERS WILL BE UPDATED FOR THE INDIVIDUAL CERTIFIED FOR CONSTRUCTION PACKAGES IN ACCORDANCE WITH SECTION 1.4 OF THE FINAL DESIGN CALCULATION PACKAGE.

BORINGS, SOUNDINGS, AND WELLS

NO.	TYPE	COORDINATES (1983 NAD) NORTHING	EASTING	GROUND SURFACE ELEVATION
11429	CPT	483,044.98	1,351,020.91	610.13
11431	CPT	482,773.78	1,351,013.81	605.79
11433	CPT	482,442.87	1,351,005.18	603.00
11435	CPT	482,127.54	1,350,997.60	602.10
11437	CPT	481,897.84	1,350,992.31	600.03
11439	CPT	481,585.81	1,350,988.23	593.99
11441	CPT	481,325.77	1,350,980.85	589.00
11444	CPT	480,723.60	1,350,969.73	580.01
11446	CPT	480,464.83	1,350,964.03	587.83
11447	CPT	480,201.27	1,350,957.41	585.30
11448	CPT	479,768.79	1,350,948.73	584.88
11449	CPT	479,448.01	1,350,941.69	584.23
11612	CPT	482,503.41	1,351,052.28	603.24
11613	CPT	483,136.86	1,351,078.38	613.29
11629	CPT	482,579.66	1,350,894.14	603.38
11637	CPT	481,728.58	1,351,089.21	596.64
11639	CPT	481,727.31	1,350,963.93	597.96
11649	CPT	480,999.60	1,350,948.96	590.24
11468	BORING	483,039.84	1,351,018.05	610.04
11470B	BORING	482,790.71	1,351,042.41	606.96
11471	BORING	481,282.81	1,350,976.29	589.14
11472	BORING	479,765.78	1,350,939.74	584.63
11473	BORING	480,196.20	1,350,949.87	585.61
11476	BORING	481,585.16	1,350,980.71	594.12
11479	BORING	482,120.19	1,350,995.94	602.96
11481	BORING	482,860.50	1,350,405.12	599.89
11491	WELL	483,056.88	1,351,025.48	611.13
11492	WELL	483,045.25	1,351,021.13	610.53
11493	WELL	482,448.22	1,351,024.06	603.38
11494	WELL	482,448.31	1,350,993.91	603.51
11495	WELL	482,457.48	1,350,999.69	603.68
11496	WELL	482,126.19	1,350,995.23	602.65
11497	WELL	482,126.13	1,351,008.26	602.34
11498	WELL	481,583.20	1,350,985.05	594.60
11499	WELL	481,583.24	1,350,991.08	594.58
11547	WELL	480,468.19	1,350,957.98	588.22
11548	WELL	478,757.97	1,350,958.37	585.72

000038

REV. NO	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	ENR. BY	APP. BY
0	97.00.13	RESPONSE TO FINAL DESIGN COMMENTS	DLVL	PRO	GB	KMC	RB
0	96.10.31	FINAL SUBMITTAL TO EPA	DLVL	PRO	LA	KMC	RB
F	96.06.25	PRELIMINAL SUBMITTAL TO EPA					

SCALE IN FEET (100 50 0 100 200) — SCALE IN FEET (10 5 0 10 20)

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

CLIENT: FLUOR DANIEL FERNALD

PROJECT: ON-SITE DISPOSAL FACILITY

TITLE: GEOLOGIC SECTION A-A

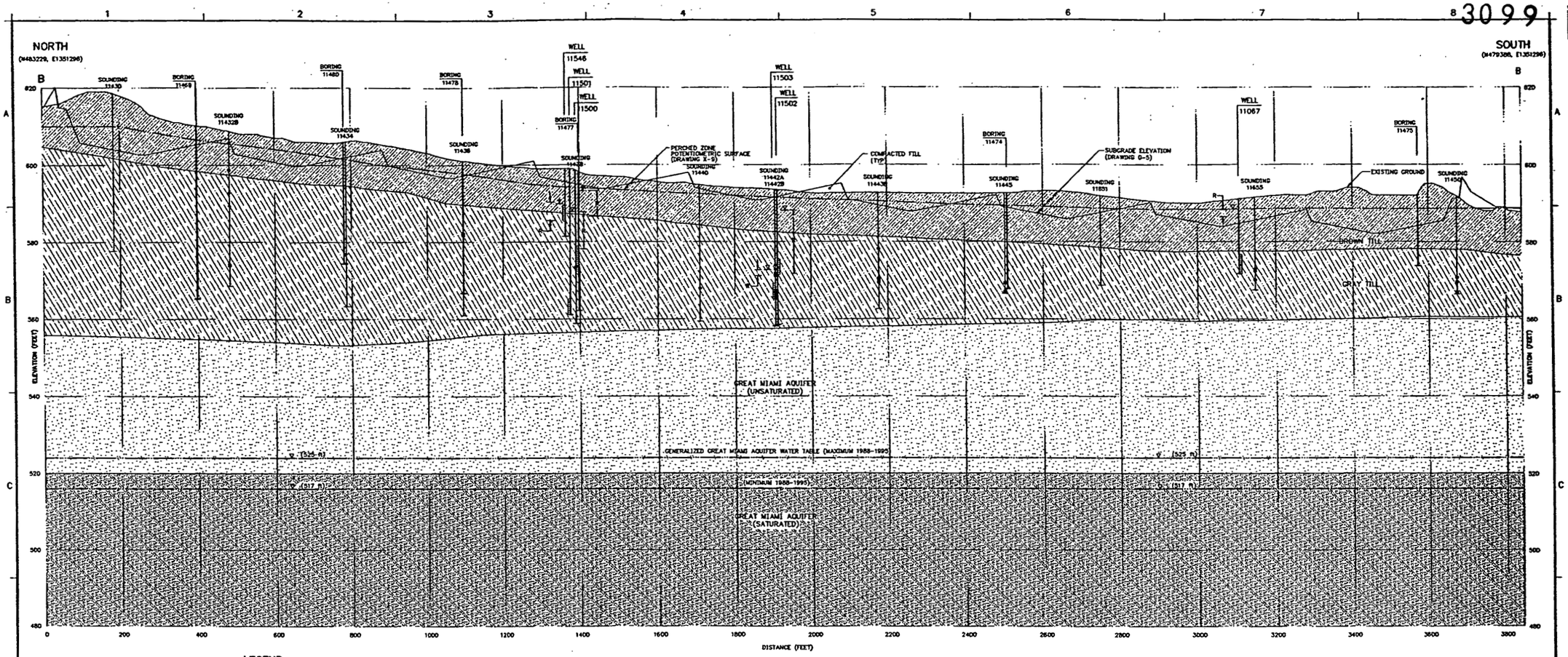
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT BIDDER OR CONSTRUCTION UNLESS SEALED.

STATE OF OHIO — REGISTERED PROFESSIONAL ENGINEER — E-66579

GEOSYNTEC CONSULTANTS

FDF PROJECT NO: 20100
FDF SUBCONTRACT NO: 9GF5005028
FDF DRAWING NO: 9G5-6000-X-00012
GEOSYNTEC PROJECT NO: GF3600-14.1
GEOSYNTEC DOCUMENT NO: F97-0044
SHEET NO: X-13
REVISION NO: 0

FINAL DESIGN PACKAGE



LEGEND

- WATER TABLE OR PIEZOMETRIC SURFACE
- WELL 11492 — MONITORING WELL OR PIEZOMETER
- BORING 11468 — GEOTECHNICAL BORING
- SOUNDING 11468 — CONE PENETROMETER TEST (CPT) SOUNDING
- INTERPRETED LOCATION OF COARSE-GRAINED MATERIAL OBTAINED FROM CONE PENETROMETER TEST (CPT) SOUNDING
- BROWN TILL – PREDOMINANTLY SANDY LEAN CLAY (CL) WITH LOCALIZED POCKETS OF HIGH PLASTICITY CLAY (CH), CLAYEY SILT (ML), AND CLAYEY AND SILTY SAND AND SCATTERED GRAVEL. TYPICALLY MOIST AND STIFF TO VERY STIFF. SOME LOCAL SAND LENSES. OPEN 1/8" FRACTURES.
- GRAY TILL – PREDOMINANTLY SANDY LEAN CLAY (CL) WITH POCKETS OF SAND (SW), CLAYEY SAND (SC), AND SCATTERED GRAVELS TYPICALLY MOIST AND VERY STIFF TO LOCALLY HARD. SCATTERED SAND LENSES.
- GREAT MIAMI AQUIFER – SAND/GRAVEL MIXTURES, VERY DENSE TO HARD (UNSATURATED)
- GREAT MIAMI AQUIFER – SAND/GRAVEL MIXTURES, VERY DENSE TO HARD (SATURATED)
- WATER LEVEL MEASURED BETWEEN 20 AND 29 MARCH 1995 IN MONITORING WELL SCREENED ACROSS OR NEAR THE BROWN TILL/GRAY TILL INTERFACE
- WATER LEVEL MEASURED IN MONITORING WELL SCREENED IN GRAY TILL OR GREAT MIAMI AQUIFER
- MONITORING WELL SCREEN INTERVAL
- RANGE OF POTENTIOMETRIC SURFACE FLUCTUATION IN THE PERCHED ZONE BETWEEN OCTOBER 1994 AND MARCH 1995

B / X-12 SECTION B-B

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

NOTES:

1. EXISTING GROUND ELEVATONS 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. GEOLOGIC SECTION DATA OBTAINED FROM FIGURE 2-4, "COARSE GRAINED MATERIAL INTERPRETED FROM CONE PENETROMETER RESULTS", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995.
5. MONITORING WELL AND PERCHED ZONE INFORMATION OBTAINED FROM TABLE A-4, "BORING DEPTH AND SCREENED INTERVALS FOR PHASE II WELLS", AND TABLE A-19, "SUMMARY OF WATER LEVEL DATA, BROWN/GRAY TILL INTERFACE WELLS, MARCH 29, 1995", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995.
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7. PERCHED ZONE POTENTIOMETRIC SURFACE OBTAINED FROM FIGURE 2-20, "PERCHED GROUNDWATER CONTOURS FOR WELLS SCREENED ACROSS THE BROWN/GRAY INTERFACE", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT," U.S. DEPARTMENT OF ENERGY, JULY 1995.
8. GREAT MIAMI AQUIFER WATER TABLE INFORMATION OBTAINED FROM FIGURE 3-51, "MAXIMUM GROUNDWATER ELEVATIONS, TYPE 2 WELLS, JUNE 1990", AND FIGURE 3-52, "MINIMUM GROUNDWATER ELEVATIONS, TYPE 2 WELLS, NOVEMBER 1988", OF THE "REMEDIAL INVESTIGATION REPORT FOR OPERABLE UNIT 5, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT, REMEDIAL INVESTIGATION AND FEASIBILITY STUDY", U.S. DEPARTMENT OF ENERGY, MARCH 1995.
9. LOCATIONS OF GEOTECHNICAL BORINGS, CONE PENETROMETER TEST SOUNDING, MONITORING WELLS, AND PIEZOMETERS WILL BE UPDATED FOR THE INDIVIDUAL CERTIFIED FOR CONSTRUCTION PACKAGES IN ACCORDANCE WITH SECTION 1.4 OF THE FINAL DESIGN CALCULATION PACKAGE.

BORINGS, SOUNDINGS, AND WELLS				
		COORDINATES (1983 NAD)		GROUND SURFACE
NO.	TYPE	NORTHING	EASTING	ELEVATION
11430	CPT	483,045.58	1,351,311.90	617.71
11432B	CPT	482,743.79	1,351,295.43	608.60
11434	CPT	482,442.84	1,351,298.74	606.04
11436	CPT	482,133.99	1,351,291.80	600.95
11438	CPT	481,838.95	1,351,283.28	598.67
11440	CPT	481,518.93	1,351,278.57	594.38
11442A	CPT	481,315.22	1,351,275.01	593.18
11442B	CPT	481,315.22	1,351,275.01	593.18
11444B	CPT	481,049.44	1,351,269.27	592.55
11445	CPT	480,727.38	1,351,281.50	591.53
11450	CPT	479,555.62	1,351,238.01	591.39
11831	CPT	480,479.22	1,351,284.74	592.19
11853	CPT	480,082.47	1,351,314.24	592.08
11468	BORING	482,830.31	1,351,296.75	610.19
11474	BORING	480,720.45	1,351,250.61	591.94
11475	BORING	479,658.67	1,351,231.56	594.38
11477	BORING	481,831.18	1,351,279.70	596.27
11478	BORING	482,133.00	1,351,291.73	601.35
11480	BORING	482,448.04	1,351,297.85	606.28
11067	WELL	480,223.12	1,351,313.77	590.71
11500	WELL	481,640.14	1,351,294.36	596.93
11501	WELL	481,853.44	1,351,285.22	596.97
11502	WELL	481,317.57	1,351,282.97	593.79
11503	WELL	481,327.01	1,351,275.87	593.47
11546	WELL	481,865.50	1,351,286.04	598.90

FINAL DESIGN PACKAGE

000039

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	97.05.13	RESPONSE TO FINAL DESIGN COMMENTS	DLVL	PBG	DG	KMC	RG
E	96.10.11	FINAL SUBMITTAL TO EPA	DLVL	PBG	LA	KMC	RG
F	96.06.25	PRELIMINAL SUBMITTAL TO EPA					

100 50 0 100 200 SCALE IN FEET

10 5 0 10 20 SCALE IN FEET

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

CLIENT:
FLUOR DANIEL FERNALD

PROJECT:
ON-SITE DISPOSAL FACILITY

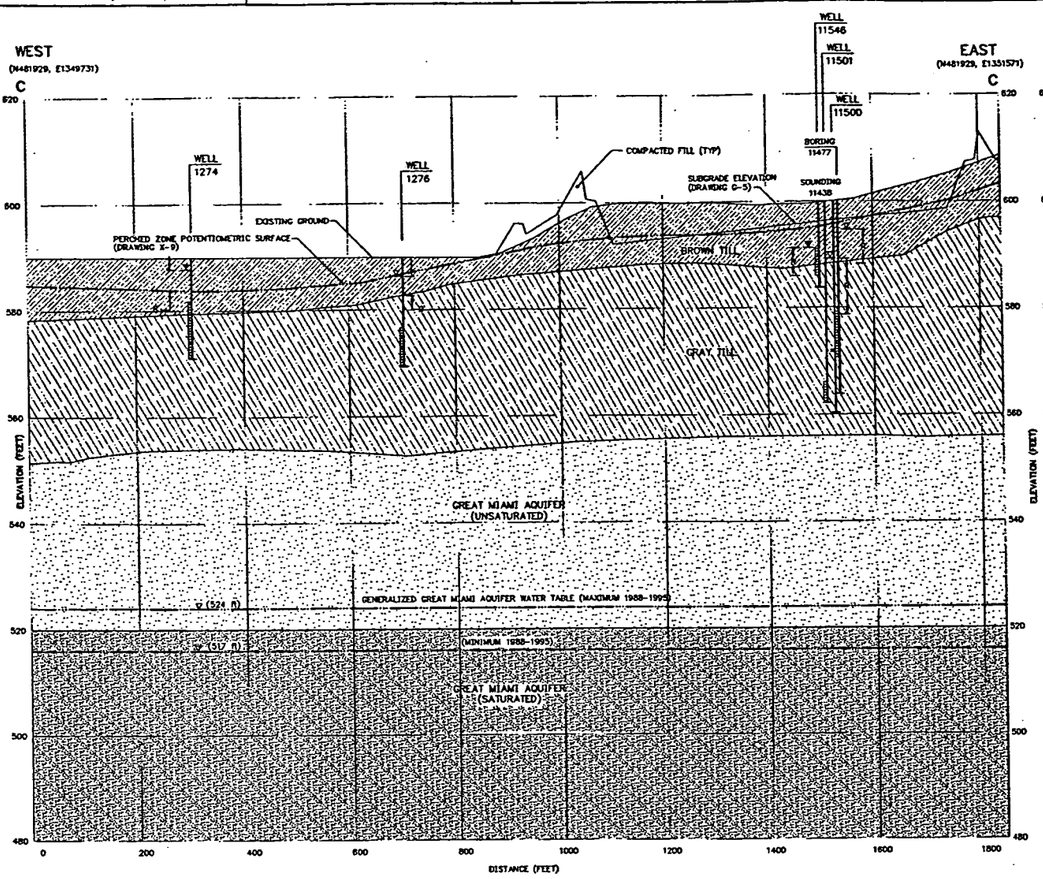
TITLE:
GEOLOGIC SECTION B-B

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

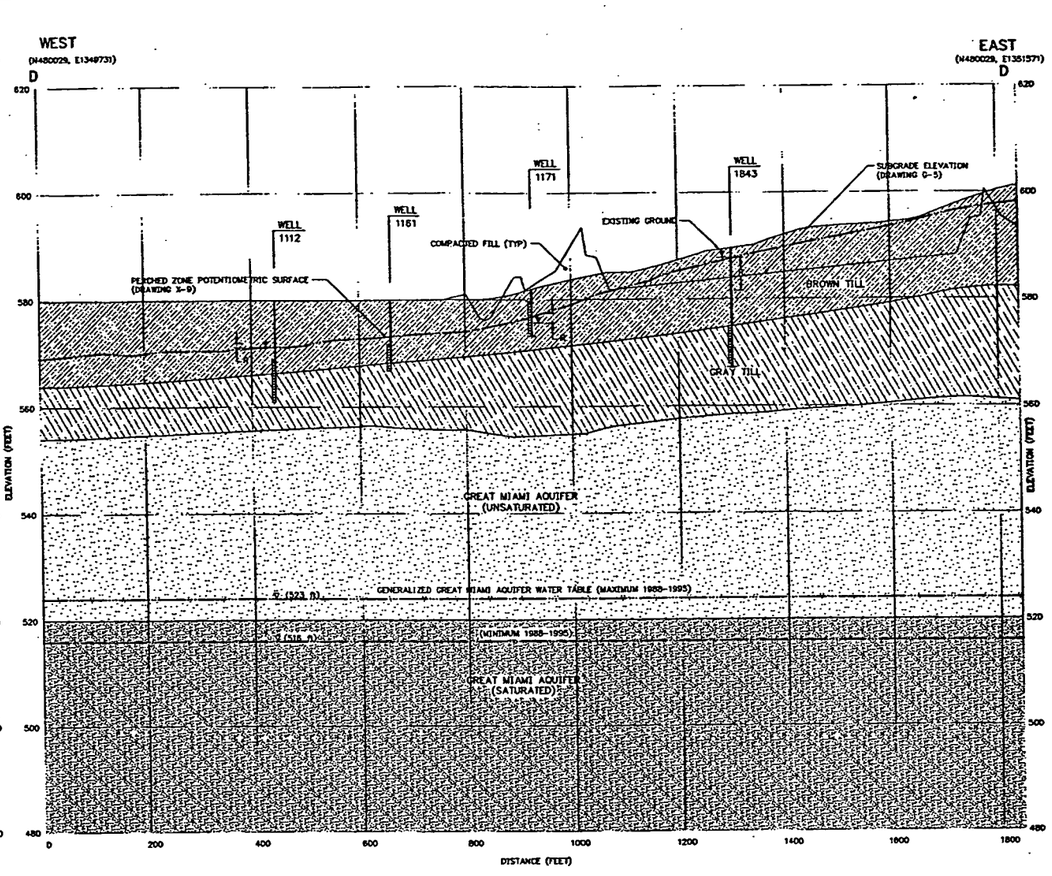
STATE OF OHIO — RUDOLPH BONAPARTE — E-60879 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

F&F PROJECT NO.: 20100
F&F SUBCONTRACT NO.: 00P3000028
F&F DRAWING NO.: 900X-6000-X-00013
GEOSYNTEC PROJECT NO.: 08.3900-14.1
GEOSYNTEC DOCUMENT NO.: F97-0045
SHEET NO.: X-14
REVISION NO.: 0



C X-12 SECTION C-C
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'



D X-12 SECTION D-D
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

LEGEND

- WATER TABLE OR PIEZOMETRIC SURFACE
- WELL 11492 — MONITORING WELL OR PIEZOMETER
- BORING 11468 — GEOTECHNICAL BORING
- SOUNDING 11468 — CONE PENETROMETER TEST (CPT) SOUNDING
- INTERPRETED LOCATION OF COARSE-GRAINED MATERIAL OBTAINED FROM CONE PENETROMETER TEST (CPT) SOUNDING
- BROWN TILL - PREDOMINANTLY SANDY LEAN CLAY (CL) WITH LOCALIZED POCKETS OF HIGH PLASTICITY CLAY (CH), CLAYEY SILT (ML), AND CLAYEY AND SILTY SAND AND SCATTERED GRAVEL. TYPICALLY MOIST AND STIFF TO VERY STIFF. SOME LOCAL SAND LENSES. OPEN 1/8" FRACTURES.
- GRAY TILL - PREDOMINANTLY SANDY LEAN CLAY (CL) WITH POCKETS OF SAND (SW), CLAYEY SAND (SC), AND SCATTERED GRAVELS TYPICALLY MOIST AND VERY STIFF TO LOCALLY HARD. SCATTERED SAND LENSES.
- GREAT MIAMI AQUIFER - SAND/GRAVEL MIXTURES, VERY DENSE TO HARD (UNSATURATED)
- GREAT MIAMI AQUIFER - SAND/GRAVEL MIXTURES, VERY DENSE TO HARD (SATURATED)
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- WATER LEVEL MEASURED IN MONITORING WELL SCREENED IN GRAY TILL OR GREAT MIAMI AQUIFER
- MONITORING WELL SCREEN INTERVAL
- R — RANGE OF POTENTIOMETRIC SURFACE FLUCTUATION IN THE PERCHED ZONE BETWEEN OCTOBER 1994 AND MARCH 1995

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD]).
3. GRID COORDINATE SYSTEM CORRESPONDS TO STATE PLANAR NORTH AMERICAN DATUM (NAD) 1983 OHIO SOUTH.
4. GEOLOGIC SECTION DATA OBTAINED FROM FIGURE 3-8, "MODELED LOCATIONS OF COARSE GRAINED MATERIALS SECTION D-D'", AND FIGURE 3-10, "MODELED LOCATIONS OF COARSE GRAINED MATERIALS SECTION E-E'", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995.
5. MONITORING WELL AND PERCHED ZONE INFORMATION OBTAINED FROM TABLE A-4, "BORING DEPTH AND SCREENED INTERVALS FOR PHASE II WELLS", AND TABLE A-18, "SUMMARY OF WATER LEVEL DATA, BROWN/GRAY TILL INTERFACE WELLS, MARCH 29, 1995", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995.
6. GEOTECHNICAL BORING AND CONE PENETROMETER TEST (CPT) SOUNDING LOCATIONS OBTAINED FROM APPENDIX B, "BORING AND CPT COORDINATES", OF THE "GEOTECHNICAL INVESTIGATION REPORT, ON-SITE DISPOSAL FACILITY, OPERABLE UNIT 2, PROJECT ORDER 140, REVISION A", PARSONS, SEPTEMBER 1995.
7. PERCHED ZONE POTENTIOMETRIC SURFACE OBTAINED FROM FIGURE 2-20, "PERCHED GROUNDWATER CONTOURS FOR WELLS SCREENED ACROSS THE BROWN/GRAY INTERFACE", OF THE "PREDESIGN INVESTIGATION AND SITE SELECTION REPORT FOR THE ON-SITE DISPOSAL FACILITY, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT", U.S. DEPARTMENT OF ENERGY, JULY 1995.
8. GREAT MIAMI AQUIFER WATER TABLE INFORMATION OBTAINED FROM FIGURE 3-51, "MAXIMUM GROUNDWATER ELEVATIONS, TYPE 2 WELLS, JUNE 1990", AND FIGURE 3-52, "MINIMUM GROUNDWATER ELEVATIONS, TYPE 2 WELLS, NOVEMBER 1988", OF THE "REMEDIAL INVESTIGATION REPORT FOR OPERABLE UNIT 5, FERNALD ENVIRONMENTAL MANAGEMENT PROJECT, REMEDIAL INVESTIGATION AND FEASIBILITY STUDY", U.S. DEPARTMENT OF ENERGY, MARCH 1995.
9. LOCATIONS OF GEOTECHNICAL BORINGS, CONE PENETROMETER TEST SOUNDINGS, MONITORING WELLS, AND PIEZOMETERS WILL BE UPDATED FOR THE INDIVIDUAL CERTIFIED FOR CONSTRUCTION PACKAGES IN ACCORDANCE WITH SECTION 1.4 OF THE FINAL DESIGN CALCULATION PACKAGE.

BORINGS, SOUNDINGS, AND WELLS				
		COORDINATES (1983 NAD)		GROUND SURFACE
NO.	TYPE	NORTHING	EASTING	ELEVATION
11438	CPT	481,838.95	1,351,285.28	598.47
11477	BORING	481,831.18	1,351,279.70	598.27
1112	WELL	480,020.92	1,349,834.25	578.23
1161	WELL	480,148.26	1,350,235.85	580.20
1171	WELL	479,971.11	1,350,601.56	580.60
1274	WELL	482,093.21	1,348,993.26	591.11
1276	WELL	482,081.74	1,350,415.97	590.51
1843	WELL	479,935.00	1,351,053.37	591.37
11500	WELL	481,840.14	1,351,284.36	598.63
11501	WELL	481,853.44	1,351,292.22	598.97
11546	WELL	481,865.50	1,351,298.04	598.90

FINAL DESIGN PACKAGE

REV. NO.	DATE	DESCRIPTION	DCL BY	DR. BY	CHK. BY	RVW. BY	APP. BY
G	97.05.13	RESPONSE TO FINAL DESIGN COMMENTS	DLVL	PBG	CD	KMC	RB
D	96.10.11	FINAL SUBMITTAL TO EPA	DLVL	PBG	LA	KMC	RB
F	96.08.23	PRELIMINAL SUBMITTAL TO EPA					

SCALE IN FEET (100 50 0 100 200) — SCALE IN FEET (10 5 0 10 20)

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

CLIENT: FLUOR DANIEL FERNALD

PROJECT: ON-SITE DISPOSAL FACILITY

TITLE: GEOLOGIC SECTIONS C-C AND D-D

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

STATE OF OHIO — RUDOLPH DONAPRATE — E-56578 — REGISTERED PROFESSIONAL ENGINEER

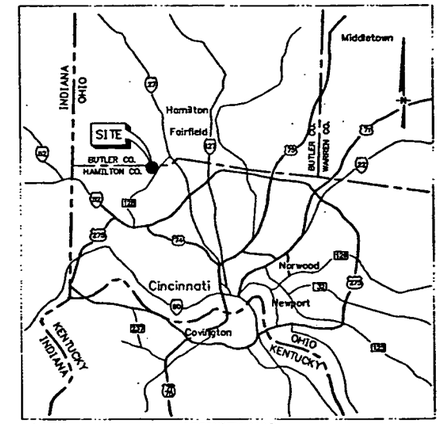
GEOSYNTEC CONSULTANTS

FDF PROJECT NO.:	20100
FDF SUBCONTRACT NO.:	92F0050028
FDF DRAWING NO.:	9001-6000-B-00016
GEOSYNTEC PROJECT NO.:	GE3600-14.1
GEOSYNTEC DOCUMENT NO.:	F97-0092
SHEET NO.:	X-15
REVISION NO.:	0

R:\GACADD\MERGE...14\UNVFD.DGN Fri Nov 08 11:17:02 1997 PLOT: NONE

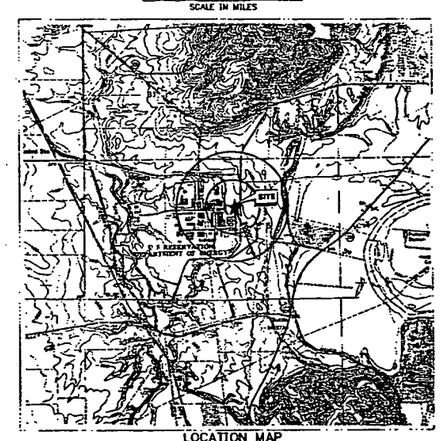
3099

UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
ON-SITE DISPOSAL FACILITY
FERMCO PROJECT NUMBER 20100
HAMILTON COUNTY AND BUTLER COUNTY, OHIO
SUBCONTRACT NO. FSC 597
PHASE I CONSTRUCTION PACKAGE



VICINITY MAP

6 3 0 6 12
SCALE IN MILES



LOCATION MAP
7.5 Minute. U.S.G.S. QUADRANGLE

2000 1000 0 2000 4000
SCALE IN FEET

INDEX OF DRAWINGS

SHEET NO.	REVISION NO.	FERMCO DRAWING NO.	TITLE
GENERAL			
X-1A	2	90X-6000-X-00070	TITLE SHEET
X-2B	0	90X-6000-X-00071	LEGEND AND SYMBOLS
CIVIL			
G-2A	0	90X-6000-G-00072	SITE DEVELOPMENT PLAN
G-5A	1	90X-6000-G-00073	SUBGRADE GRADING PLAN I
G-5B	2	90X-6000-G-00074	SUBGRADE GRADING PLAN II
G-5C	0	90X-6000-G-00075	SUBGRADE GRADING PLAN III
G-9A	0	90X-6000-G-00076	CELL OUTLET GRADING PLANS
G-15A	2	90X-6000-G-00077	OSDF SECTIONS
G-20A	0	90X-6000-G-00078	CELL PERIMETER DETAILS I
G-21A	0	90X-6000-G-00079	CELL PERIMETER DETAILS II
G-22A	1	90X-6000-G-00080	LINER SYSTEM DETAILS I
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G-24A	0	90X-6000-G-00082	LINER SYSTEM DETAILS III
G-25A	0	90X-6000-G-00083	LINER SYSTEM DETAILS IV
G-30A	0	90X-6000-G-00084	STORMWATER MANAGEMENT SYSTEM DETAILS I
G-31A	0	90X-6000-G-00085	STORMWATER MANAGEMENT SYSTEM DETAILS II
G-37A	0	90X-6000-G-00086	EQUIPMENT DECONTAMINATION FACILITY DETAILS I
G-37B	0	90X-6000-G-00090	EQUIPMENT DECONTAMINATION FACILITY DETAILS II
G-40A	0	90X-6000-G-00087	HORIZONTAL MONITORING WELL AND MISCELLANEOUS DETAILS
G-41A	0	90X-6000-G-00089	SEDIMENTATION BASIN DETAILS
STRUCTURAL			
S-5A	0	90X-6000-S-00088	CHAIN LINK FENCE DETAILS
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X-3	C	90X-6000-X-00003	FACILITY PLOT PLAN
X-4	C	90X-6000-X-00004	SITE PLAN
X-10	C	90X-6000-X-00009	BROWN TILL/GRAY TILL INTERFACE CONTOUR MAP
X-11	C	90X-6000-X-00010	GRAY TILL ISOPACH MAP
X-12	C	90X-6000-X-00011	SURFACE GEOLOGY MAP
X-13	C	90X-6000-X-00012	GEOLOGIC SECTION A-A
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X-15	C	90X-6000-X-00014	GEOLOGIC SECTION C-C AND D-D

SHEET NO.	REVISION NO.	FERMCO DRAWING NO.	TITLE
REFERENCE			
-	-	92X-5900-G-00215	CIVIL SITE PLAN
-	-	92X-5900-G-00220	CIVIL PLAN AND PROFILE, SHEET 1 OF 7
-	-	92X-5900-G-00221	CIVIL PLAN AND PROFILE, SHEET 2 OF 7
-	-	92X-5900-G-00222	CIVIL PLAN AND PROFILE, SHEET 3 OF 7
-	-	92X-5900-G-00223	CIVIL PLAN AND PROFILE, SHEET 4 OF 7
-	-	92X-5900-G-00224	CIVIL PLAN AND PROFILE, SHEET 5 OF 7
-	-	92X-5900-G-00225	CIVIL PLAN AND PROFILE, SHEET 6 OF 7
-	-	92X-5900-G-00226	CIVIL PLAN AND PROFILE, SHEET 7 OF 7
-	-	92X-5900-G-00227	CIVIL CROSS-SECTIONS, 1 OF 4
-	-	92X-5900-G-00228	CIVIL CROSS-SECTIONS, 2 OF 4
-	-	92X-5900-G-00229	CIVIL CROSS-SECTIONS, 3 OF 4
-	-	92X-5900-G-00230	CIVIL CROSS-SECTIONS, 4 OF 4
-	-	92X-5900-G-00189	CIVIL PLAN AND PROFILE, SHEET 5 OF 5
-	-	92X-5900-G-00195	CIVIL CROSS-SECTIONS, SHEET 5 OF 6
-	-	92X-5900-G-00196	CIVIL CROSS-SECTIONS, SHEET 6 OF 6
-	-	75X-5500-G-00438	SITE LAYOUT PLAN
-	-	75A-5500-G-00439	SITE PLAN, 1 OF 3
-	-	75A-5500-G-00440	SITE PLAN, 2 OF 3
-	-	75A-5500-G-00441	SITE PLAN, 3 OF 3
-	-	75X-5900-G-00455	SITE PLAN
-	-	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-6000-M-00063	LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLE MECHANICAL DETAILS I
-	-	90X-6000-M-00064	LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLE MECHANICAL DETAILS II
-	-	90X-6000-M-00065	LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLE MECHANICAL DETAILS III
-	-	90X-6000-M-00066	LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLE MECHANICAL DETAILS IV
-	-	90X-5500-E-00500	ELECTRICAL SITE PLAN AND SINGLE LINE
-	-	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
-	-	91X-5900-G-00232	CIVIL MASTER PLAN
-	-	91X-5900-G-00235	GRADING AND DRAINAGE SHEET 3 OF 3
-	-	SKG-04391	EXISTING UTILITIES - REFERENCE DRAWINGS - OVERALL PLAN
-	-	SKG-04392	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 1 OF 6
-	-	SKG-04393	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 2 OF 6
-	-	SKG-04394	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 3 OF 6
-	-	SKG-04395	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 4 OF 6
-	-	SKG-04396	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 5 OF 6
-	-	SKG-04397	EXISTING UTILITIES - REFERENCE DRAWINGS - SHEET 6 OF 6

000041

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
2	23.11.96	REVISED AND ISSUED WITH AMENDMENT NO.2	DLW	JPC	KLD	KWC	RB
1	07.11.96	REVISED AND ISSUED WITH AMENDMENT NO.1	DLW	AMF	KLD	KWC	RB
0	18.10.96	CERTIFIED FOR CONSTRUCTION	DLW	RD	KLD	KWC	RB

SCALE AS SHOWN

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

CLIENT:
FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY PHASE I CONSTRUCTION

TITLE:
TITLE SHEET

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

Rudolph Bonaparte
SIGNATURE
21 Nov 1996
DATE

STATE OF OHIO
RUDOLPH BONAPARTE
E-68879
REGISTERED
PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	FSC597
FERMCO DRAWING NO.:	90X-6000-X-00070
GEOSYNTEC PROJECT NO.:	GC3900-Z1.1
GEOSYNTEC DOCUMENT NO.:	F99-5501
SHEET NO.:	X-1A
REVISION NO.:	2

FERNALD ENVIRONMENTAL
RESTORATION MANAGEMENT CORPORATION
P.O. BOX 538704
CINCINNATI, OHIO 45253

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

CERTIFIED FOR CONSTRUCTION

3099

SYMBOLS LEGEND

EXISTING		PROPOSED
	IMPACTED MATERIAL DISPOSAL LIMIT	
	BATTERY LIMIT	
	BORROW AREA LIMIT	
	FEMP PROPERTY LINE	
	ADJACENT LANDOWNER PROPERTY LINE	
	CHAIN LINK FENCE	
	FENCE	
	FENCE GATE	
	RAILROAD TRACK	
	PAVED ROAD, SIDEWALK, OR PARKING LOT	
	UNPAVED ROAD, SIDEWALK, OR PARKING LOT	
	CENTERLINE OR BASELINE	
	PROPOSED TEMPORARY STORM-WATER DRAINAGE CHANNEL	
	CREEK OR DRAINAGE COURSE	
	LEACHATE TRANSMISSION SYSTEM GRAVITY LINE	
	LEACHATE TRANSMISSION SYSTEM TEMPORARY GRAVITY LINE	
	UTILITY EASEMENT	
	WATER TABLE OR PIEZOMETRIC SURFACE	
	TEMPORARY VEGETATION	
	PERMANENT VEGETATION	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	TREE LINE	
	PARKING LOT STRIPING	
	CELL DESIGNATION	1
	TRAILER OR BUILDING	
	DRAINAGE FLOW DIRECTION	
	HEADWALL	
	SIGN	
	POST	
	SLOPE INDICATOR	CREST / TOE
	PILE	
	TRANSMISSION TOWER	
	UTILITY, LIGHT, POWER, OR COMMUNICATION POLE	
	CATCH BASIN	
	MANHOLE	
	AIR MONITORING STATION	
1002	ABANDONED TYPE 1 MONITORING WELL	
71404	ABANDONED GEOTECHNICAL BORING	
1276	ABANDONED LYSIMETER	
BM-10	BENCHMARK	
	LEACHATE TRANSMISSION SYSTEM AND HORIZONTAL MONITORING WELL MANHOLES WITH COVER SLAB	
	LEACHATE TRANSMISSION SYSTEM PERMANENT LIFT STATION	
	CONSTRUCTION WATER STANDPIPE	
	CONSTRUCTION CONTROL POINT	
	DRAINAGE CHANNEL GRAVITY INLET STRUCTURE (GIS)	
	CULVERT	

DETAIL AND SECTION IDENTIFICATION LEGEND

SEQUENTIAL DETAIL NUMBER — 31
SHEET ON WHICH ABOVE DETAIL IS PRESENTED — G-5A

SEQUENTIAL DETAIL NUMBER — 31
SHEET ON WHICH ABOVE DETAIL IS REFERENCED — G-2A

DETAIL
LINER SYSTEM ON CELL BASE
SCALE: 1" = 2'

EXAMPLE: DETAIL NUMBER 31, WHICH IS PRESENTED ON SHEET G-5A, WAS REFERENCED ON SHEET G-2A.

C / G-5A

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

SECTION LETTER — C
SHEET ON WHICH ABOVE SECTION IS REFERENCED — G-2A

SECTION
CELL PERIMETER
SCALE: 1" = 2'

EXAMPLE: SECTION LETTER "C", WHICH IS PRESENTED ON SHEET G-5A, WAS REFERENCED ON SHEET G-2A.

ABBREVIATIONS

ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
℄	BASELINE
BM	BENCHMARK
℄	CENTERLINE
CG&E	CINCINNATI GAS AND ELECTRIC
CMP	CORRUGATED METAL PIPE
CO.	COMPANY
CPT	CONE PENETROMETER TEST
DECON	DECONTAMINATION
DIA	DIAMETER
DOE	DEPARTMENT OF ENERGY
EL	ELEVATION
FEMP	FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
GIS	GRAVITY INLET STRUCTURE
H:V	HORIZONTAL TO VERTICAL LENGTH RATIO FOR A SLOPE
ID	INSIDE DIAMETER
IMP	IMPACTED MATERIAL PLACEMENT PLAN (IMP)
INC.	INCORPORATED
IP	IRON PIN
IPS	IRON PIPE SIZE
LCS	LEACHATE COLLECTION SYSTEM
LDS	LEAK DETECTION SYSTEM
LTS	LEACHATE TRANSMISSION SYSTEM
(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
RCP	REINFORCED CONCRETE PIPE
SWMECP	SURFACE WATER MANAGEMENT AND EROSION CONTROL PLAN
SWRB	STORM-WATER RETENTION BASIN
TBD	TO BE DETERMINED
(TYP)	TYPICAL
WAC	WASTE ACCEPTANCE CRITERIA
WWF	WELDED WIRE FABRIC

UTILITY LEGEND

EXISTING		PROPOSED
	UNDERGROUND ELECTRIC	
	PRIMARY ELECTRIC SERVICE	
	LIGHTING SERVICE	
	WASTE WATER LINE	
	TEMPORARY WET WELL	
	PERMANENT WET WELL	
	OVERHEAD ELECTRIC	
	ELECTRIC GROUND	
	STORM SEWER	
	SUB-SURFACE DRAINAGE	
	SANITARY SEWER	
	FIRE-PROTECTION	
	DRINKING WATER	
	STEAM CONDENSATE	
	WATER SUPPLY	
	COOLING WATER RETURN	
	CONTAMINATED WATER	
	TELEPHONE	
	FUEL GAS	
	FILTRATE OR EFFLUENT	
	FUEL OIL	
	LIVE STEAM	
	PROCESS WATER	
	DEIONIZED FEED	
	DEIONIZED WATER	
	BRINE	
	RAW WATER	
	ALARM	
	VENT LINE	
	PLANT AIR	
	INSTRUMENT AIR SUPPLY	
	ABANDONED	

CONTOUR LEGEND

EXISTING		PROPOSED
320	EXISTING GROUND ELEVATION (FEET)	
	SUBGRADE ELEVATION (FEET)	680

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 "SUBCONTRACTOR" REFERS TO THE PARTY SUBCONTRACTED BY FERMCO TO CONSTRUCT AND PARTIALLY FILL PHASE I OF THE OSDF.

000042

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	12.10.98	CERTIFIED FOR CONSTRUCTION	DLW	RD	KLD	KMC	RD

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

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY PHASE I CONSTRUCTION

TITLE:
LEGEND AND SYMBOLS

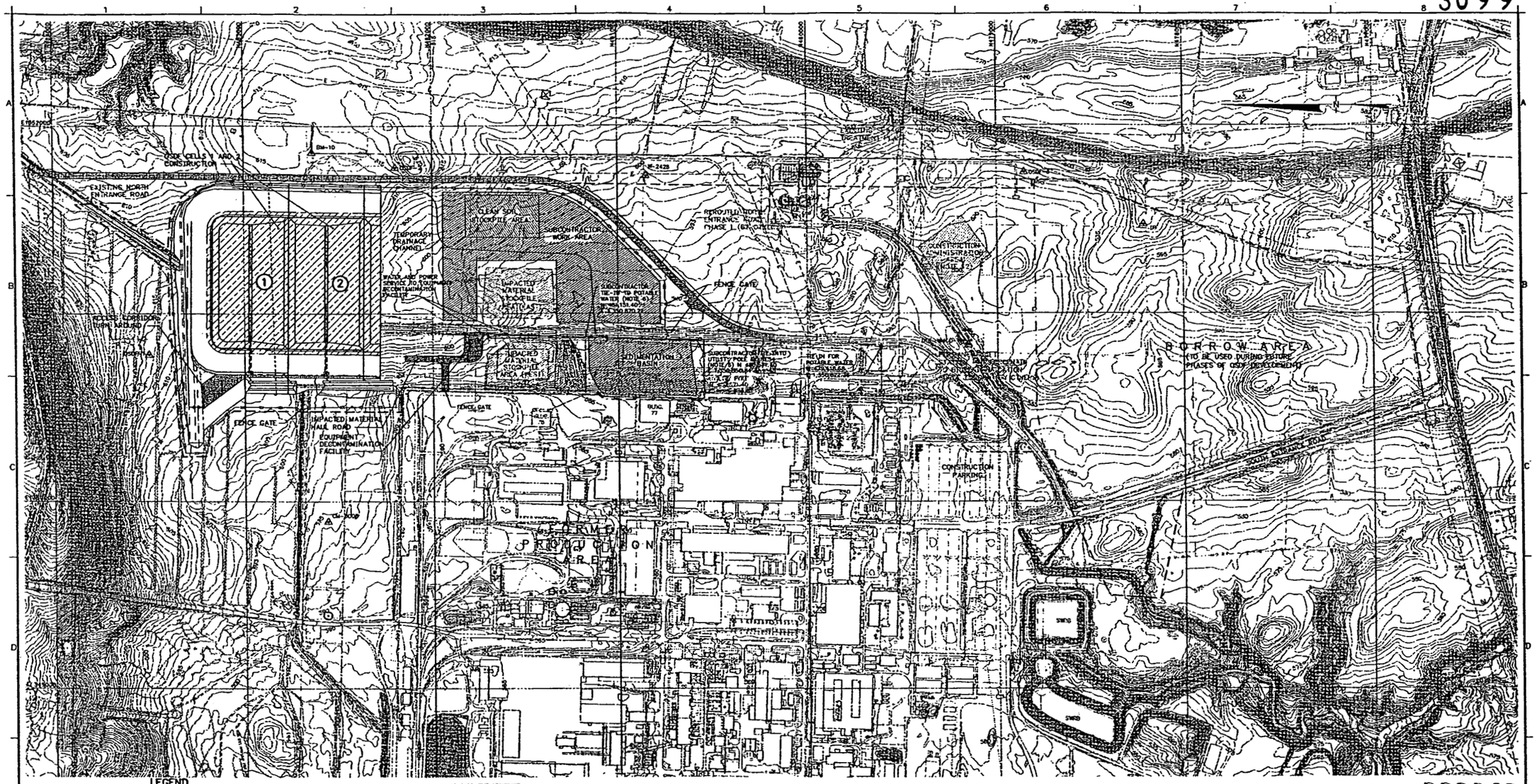
THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDING OR CONSTRUCTION UNLESS SEALED.

STATE OF OHIO — RUDOLPH BORNHAUSER — E-58879 — REGISTERED PROFESSIONAL ENGINEER

GeoSyntec Consultants — THE LAKE HOWELL DRIVE, ATLANTA, GEORGIA 30342

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95P20020029
FERMCO DRAWING NO.:	9021-8000-X-00071
GEOSYNTEC PROJECT NO.:	GE3900-21.1
GEOSYNTEC DOCUMENT NO.:	D98-3002
SHEET NO.:	X-2B
REVISION NO.:	0

A 1700-3002 Thu Oct 17 18:22:09 1996 J MILLER



LEGEND

- 600 — EXISTING GROUND ELEVATION (FEET) (NOTE 2)
- FEMP PROPERTY LINE
- BATTERY LIMIT
- IMPACTED MATERIAL DISPOSAL LIMIT
- BORROW AREA LIMIT
- EXISTING LEACHATE TRANSMISSION SYSTEM GRAVITY LINE
- TGL — EXISTING LEACHATE TRANSMISSION SYSTEM TEMPORARY GRAVITY LINE (NOTE 11)
- PROPOSED TEMPORARY DRAINAGE CHANNEL (NOTE 7)
- XX — CHAIN LINK FENCE
- CONSTRUCTION CONTROL POINT
- EXISTING LEACHATE TRANSMISSION SYSTEM AND HORIZONTAL MONITORING WELL MANHOLES WITH COVER SLAB
- EXISTING LEACHATE TRANSMISSION SYSTEM PERMANENT LIFT STATION
- UTILITY POLE WITH LIGHT
- DRAINAGE CHANNEL GRAVITY INLET STRUCTURE
- ACCESS CORRIDOR, HAUL ROAD, IMPACTED MATERIAL HAUL ROAD OR RELOCATED NORTH ENTRANCE ROAD PHASE I
- DRAINAGE FLOW DIRECTION
- EXISTING ROAD TO BE REMOVED
- OSDF-1 — BENCHMARK

DEVELOPMENT SEQUENCE:

1. PRIOR TO ANY OSDF CELL WORK, THE SUBCONTRACTOR SHALL CONSTRUCT THE FOLLOWING IN THE GENERAL ORDER LISTED:
   A. EROSION AND SEDIMENT CONTROL FEATURES;
   B. SUBCONTRACTOR WORK AREA;
   C. CHAIN LINK FENCE
2. UPON COMPLETION OF THE LINER AND LEACHATE COLLECTION SYSTEMS IN EACH CELL SUBCONTRACTOR SHALL OBTAIN SELECT IMPACTED MATERIAL FROM THE EXISTING EAST AND WEST IMPACTED MATERIAL STOCKPILES AND PLACE THE SELECT IMPACTED MATERIAL IN THE CELL IN ACCORDANCE WITH THE IMP PLAN.

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. THE LOCATION OF THE REROUTED NORTH ENTRANCE ROAD—PHASE I WAS OBTAINED FROM A SEPARATE DESIGN PACKAGE TITLED "REROUTED NORTH ENTRANCE ROAD CONSTRUCTION DRAWINGS". EXISTING NORTH ENTRANCE ROAD WILL BE REROUTED BY OTHERS PRIOR TO CONSTRUCTION OF CELLS 1 AND 2. REFER TO REFERENCE DRAWING 92X-5900-G-00215.
5. THE DESIGN OF THE LEACHATE TRANSMISSION SYSTEM WEST OF CELLS 1 AND 2, THE TEMPORARY GRAVITY LINE FROM CELL 2 TO THE PERMANENT LIFT STATION, AND FROM THE PERMANENT LIFT STATION TO THE BIODENITRIFICATION SURGE LAGOON ARE CONTAINED IN SEPARATE DESIGN PACKAGES TITLED "LEACHATE CONVEYANCE SYSTEM". REFERENCE DRAWINGS 92X-6000-G000057 THROUGH 92X-6000-G-00059; AND 92X-5900-G-00254, 92X-5900-G-00261, 92X-5900-G-00262 AND 92X-5900-G-00286.
6. FOR POWER AND WATER SERVICE AT THE EQUIPMENT DECONTAMINATION FACILITY, THE SUBCONTRACTOR SHALL TIE-IN TO POWER AND POTABLE WATER AT THE LOCATIONS SHOWN. SUBCONTRACTOR SHALL FIELD ROUTE 120/240 VAC ELECTRIC SERVICE TO THE EQUIPMENT DECONTAMINATION FACILITY.

BENCHMARKS

NUMBER	NORTHING	EASTING	ELEVATION	STATUS
IRON PIN (3P)	478205.578945	1351472.814296	603.32	EXISTING
DOE-WMCO-1A	479157.594871	1350835.053430	585.57	EXISTING
W-2428	480850.128823	1351732.754450	600.79	EXISTING
BM-10	482538.021627	1351857.894919	615.87	EXISTING
CM-8008	482566.059750	1349891.816756	593.98	EXISTING
OSDF-1	483500.000000	1350780.000000	-	PROPOSED
OSDF-2	482200.000000	1351780.000000	-	PROPOSED
OSDF-3	478850.000000	1351750.000000	-	PROPOSED

000043

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	10.10.96	CERTIFIED FOR CONSTRUCTION	DLW	JRM	RLD	RWC	RB

200 100 0 200 400
SCALE IN FEET

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

CLIENT:
FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT:
ON-SITE DISPOSAL FACILITY PHASE I CONSTRUCTION

TITLE:
SITE DEVELOPMENT PLAN

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDING OR CONSTRUCTION, UNLESS SEALED.

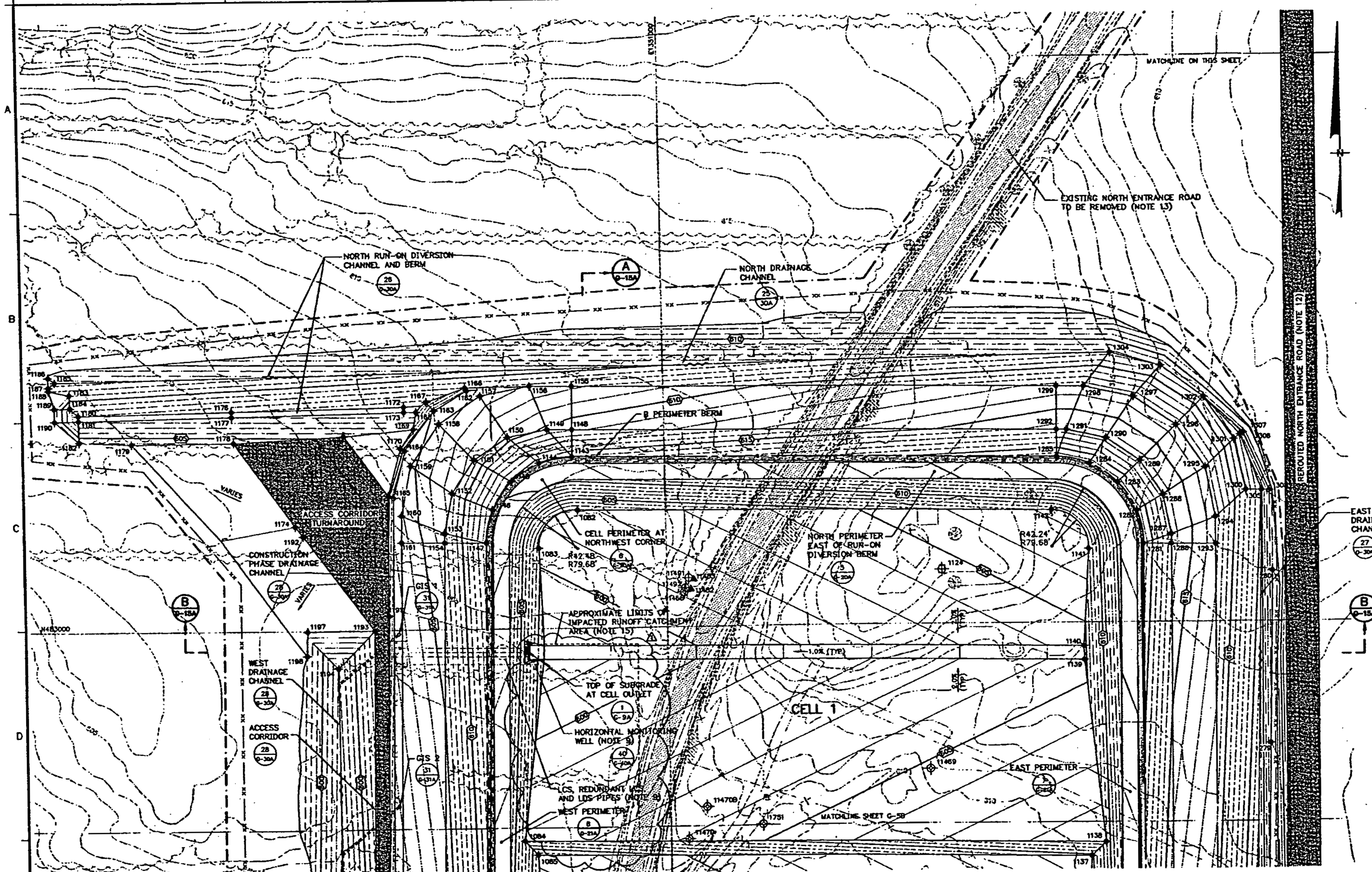
STATE OF OHIO
RUDOLPH BONAPACE
E-50879
REGISTERED PROFESSIONAL ENGINEER

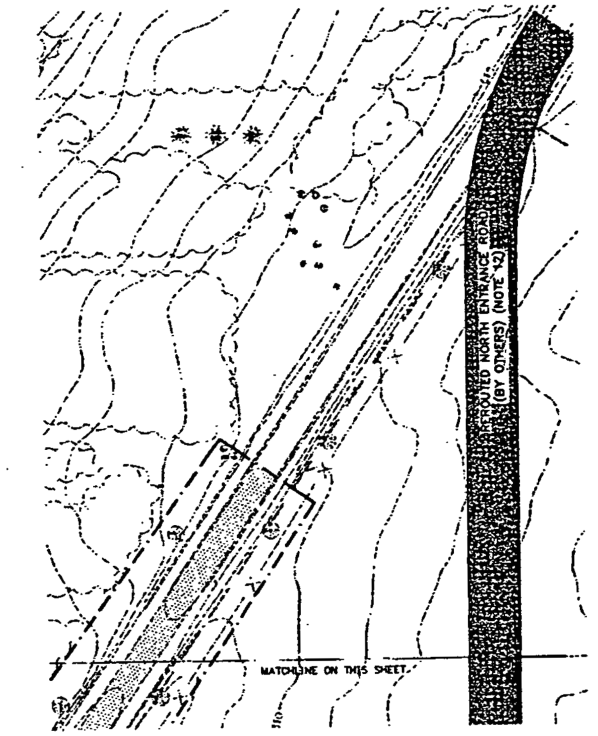
10 Oct 1996
DATE

GEOSTATIC CONSULTANTS
3500 LAKE VILLAGE DRIVE
ATLANTA, GEORGIA 30341 USA

FERNCO CONTRACT NO.:	20100
FERNCO SUBCONTRACT NO.:	95P2005078
FERNCO DRAWING NO.:	92X-6000-G-00072
GEOSTATIC PROJECT NO.:	GE3900-31.1
GEOSTATIC DOCUMENT NO.:	F96-3509
SHEET NO.:	G-2A
REVISION NO.:	0

CERTIFIED FOR CONSTRUCTION





LEGEND

——— 610 ———	EXISTING GROUND ELEVATION (FEET)
——(580)——	SUBGRADE ELEVATION (FEET) (NOTE 4)
	BUTLER COUNTY/HAMILTON COUNTY LINE
	FEMP PROPERTY LINE
	BATTERY LIMIT
	PERIMETER BERM BASELINE
	EXISTING LEACHATE CONVEYANCE SYSTEM GRAVITY LINE (NOTE 9)
	LIMIT OF AREA 1A TOPSOIL EXCAVATION (NOTES 10 AND 11)
	EXISTING LEACHATE TRANSMISSION SYSTEM AND HORIZONTAL MONITORING WELL MANHOLES WITH COVER SLAB (NOTE 9)
	DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND CULVERT (GIS)
	DRAINAGE FLOW DIRECTION
1198	CONSTRUCTION CONTROL POINT
	EXISTING TREES AND SHRUBS (NOTE 4)
	EXISTING TREELINE (NOTE 4)
— xx — xx — xx —	CHAIN LINK FENCE
	EXISTING ROAD TO BE REMOVED (NOTE 13)
11469 11492 11482	GEOTECHNICAL DATA POINTS (NOTE 8)

NOTES:

1. TOPOGRAPHIC MAP BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM (NGVD))
3. GRID COORDINATE SYSTEM CORRESPONDS TO STATE PLANAR NORTH AMERICAN DATUM (NAD) 1983 OHIO SOUTH.
4. SUBGRADE ELEVATIONS CORRESPOND TO THE TOP OF PREPARED SUBGRADE, INCLUDING ANY COMPACTED FILL. SUBGRADE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200. CLEARING, GRUBBING, AND STRIPPING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02110. THE LIMITS OF CLEARING, GRUBBING, AND STRIPPING SHALL BE NOT MORE THAN 10 FEET BEYOND THE LIMIT OF EARTHWORK CONSTRUCTION. ALL EXISTING TREES WITHIN THE CLEARING AND GRUBBING LIMIT SHALL BE REMOVED.
5. ACTIVE MONITORING WELLS AND PIEZOMETERS WITHIN THE CONSTRUCTION AREA WILL BE ABANDONED BY THE OWNER PRIOR TO CONSTRUCTION IN THAT AREA. ABANDONMENT WILL BE IN ACCORDANCE WITH ALL APPLICABLE STATE AND FEDERAL REGULATIONS.
6. AS A PART OF THE STRIPPING OPERATION, SUBCONTRACTOR SHALL LOCATE AND REMOVE EXISTING SUBDRAIN TILE SYSTEM WITHIN THE CONSTRUCTION AREA PRIOR TO INITIATING CONSTRUCTION IN THAT AREA. REFER TO REFERENCE DRAWINGS SKG-04391 THROUGH SKG-04397 FOR LOCATION OF SUBDRAIN TILE SYSTEM.
7. SUBCONTRACTOR SHALL NOT EXCAVATE TO A DEPTH OF MORE THAN 10 FEET WITHIN 50 FEET OF THE BATTERY LIMIT, UNLESS AN EXCAVATION-SPECIFIC STABILITY ANALYSIS IS PERFORMED AND SUBMITTED TO THE CONSTRUCTION MANAGER FOR APPROVAL.
8. SUBCONTRACTOR SHALL REMOVE GROUT USED TO BACKFILL GEOTECHNICAL DATA POINTS (I.E., BORINGS, WELLS, AND LYSIMETERS) LOCATED WITHIN THE PERIMETER BERM BASELINE TO A MINIMUM DEPTH OF 3 FEET BELOW SUBGRADE ELEVATIONS.
9. THE LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLES AND A PORTION OF THE HORIZONTAL MONITORING WELLS WILL BE CONSTRUCTED UNDER A SEPARATE CONTRACT AND WILL BE IN PLACE AT THE ONSET OF CELLS 1 AND 2 CONSTRUCTION. THE SUBCONTRACTOR SHALL TIE OSDF PHASE I CONSTRUCTION GRADES INTO THE LEACHATE TRANSMISSION SYSTEM FINAL GRADES USING DRAWINGS TITLED "LEACHATE CONVEYANCE SYSTEM" (REFER TO REFERENCE DRAWINGS 92X-5900-G-00254, 00261, 00262 AND 00266), AND AS BUILT SURVEY DATA. LDS, LCS, AND HORIZONTAL MONITORING WELL PIPING CONSTRUCTED UNDER THIS SUBCONTRACT SHALL TIE INTO THE EXISTING PIPING AT LOCATIONS SHOWN ON DRAWINGS G-9A AND G-40A.
10. LIMIT OF AREA 1A TOPSOIL EXCAVATION TAKEN FROM SEPARATE CONSTRUCTION CONTRACT PACKAGE TITLED "AREA 1 PHASE 1 (EAST) REMEDIAL ACTION PROJECT." REFER TO REFERENCE DRAWING 75X-5500-G-00438.
11. EXISTING GROUND CONTOURS WITHIN THE LIMIT OF AREA 1A TOPSOIL EXCAVATION REPRESENT ORIGINAL GROUND ELEVATIONS PRIOR TO TOPSOIL STRIPPING.
12. THE DESIGN OF THE REROUTED NORTH ENTRANCE ROAD IS CONTAINED IN A SEPARATED DESIGN PACKAGE TITLED "REROUTED NORTH ENTRANCE ROAD." REFER TO REFERENCE DRAWINGS 92X-5900-G-00220 THROUGH 92X-5900-G-00230 FOR ROAD GRADES.
13. ROAD PAVEMENT COURSES FOR EXISTING NORTH ENTRANCE ROAD SHALL BE REMOVED AND STOCKPILED SEPARATELY IN THE SUBCONTRACTOR WORK AREA IN ACCORDANCE WITH SPECIFICATION SECTION 02110.
14. LIMIT OF RAIL YARD TOPSOIL EXCAVATION TAKEN FROM SEPARATE CONSTRUCTION PACKAGE TITLED "SITE RAIL SYSTEM IMPROVEMENTS - GRADING AND DRAINAGE PACKAGE." REFER TO REFERENCE DRAWING 91X-5900-G-00235.
15. IMPACTED RUNOFF CATCHMENT AREA SHALL BE CONSTRUCTED IN CELLS 1 AND 2 AT THE LOCATIONS SHOWN ON THIS DRAWING. IMPACTED RUNOFF CATCHMENT AREA IN CELL 1 SHALL REMAIN OPEN FOR THE SUBCONTRACT DURATION.

SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
1082	483136.85	1350896.78	601.77	1166	483279.40	1350768.23	607.00	1280	483058.38	1351694.18	609.00
1083	483093.07	1350851.02	600.43	1167	483263.12	1350722.50	609.35	1281	483080.76	1351548.72	621.69
1084	482753.38	1350829.50	602.22	1168	483251.78	1350710.88	610.00	1282	483129.12	1351530.58	621.68
1085	482738.84	1350844.56	598.28	1169	483231.80	1350707.33	608.68	1283	483161.82	1351518.30	621.67
1137	482728.06	1351480.75	604.84	1170	483210.05	1350681.42	606.13	1284	483183.88	1351496.12	621.66
1138	482745.23	1351497.48	606.90	1171	483155.88	1350676.48	605.35	1285	483181.07	1351447.85	621.65
1139	482958.61	1351475.88	604.43	1172	483267.94	1350896.18	610.00	1286	483080.37	1351578.34	618.42
1140	482972.81	1351475.87	604.43	1173	483251.94	1350896.27	610.00	1287	483101.38	1351578.48	618.42
1141	483085.35	1351482.83	606.74	1174	483121.12	1350569.23	604.00	1288	483147.42	1351569.81	618.41
1142	483130.29	1351441.00	607.21	1175	483224.83	1350625.93	609.35	1289	483188.97	1351544.37	618.40
1143	483198.78	1350891.32	616.09	1176	483254.39	1350496.18	609.00	1290	483213.15	1351505.78	614.40
1144	483191.62	1350852.87	615.73	1177	483248.39	1350496.30	609.00	1291	483232.85	1351459.95	619.39
1145	483170.34	1350820.27	615.37	1178	483218.38	1350488.20	604.00	1292	483222.99	1351448.33	618.38
1146	483138.17	1350788.20	615.02	1179	483217.71	1350378.78	603.64	1293	483089.76	1351628.43	613.41
1147	483100.01	1350790.10	614.66	1180	483251.17	1350314.88	608.09	1294	483120.87	1351628.81	613.41
1148	483229.78	1350891.70	610.82	1181	483245.17	1350318.00	608.09	1295	483178.40	1351618.08	613.40
1149	483230.18	1350862.76	610.27	1182	483220.61	1350315.43	604.00	1296	483227.48	1351588.18	613.40
1150	483221.67	1350816.73	609.38	1183	483275.28	1350305.18	604.00	1297	483280.86	1351537.81	613.39
1151	483196.04	1350777.49	608.49	1184	483280.00	1350305.45	606.89	1298	483272.89	1351480.60	613.38
1152	483187.43	1350751.00	607.58	1185	483289.70	1350287.89	601.46	1299	483273.08	1351448.94	613.38
1153	483111.62	1350741.30	606.69	1186	483295.30	1350280.88	602.38	1300	483181.85	1351694.88	607.82
1154	483100.61	1350741.18	606.51	1187	483283.84	1350280.87	602.38	1301	483210.41	1351652.00	608.21
1155	483279.88	1350892.31	607.82	1188	483280.13	1350280.93	603.00	1302	483280.47	1351617.38	608.50
1156	483280.48	1350843.28	607.14	1189	483258.68	1350287.17	603.50	1303	483298.11	1351569.78	609.04
1157	483289.76	1350785.74	606.32	1190	483244.88	1350287.44	603.80	1304	483311.43	1351511.94	607.88
1158	483237.84	1350738.69	605.50	1191	483018.24	1350874.78	604.31	1305	483181.46	1351882.86	604.92
1159	483189.56	1350703.58	604.69	1192	483109.94	1350577.68	604.00	1306	483218.88	1351859.28	606.92
1160	483132.32	1350691.46	603.87	1193	482989.47	1350858.07	604.18	1307	483218.32	1351862.94	608.23
1161	483101.22	1350691.08	603.44	1194	482955.77	1350815.80	598.90	1308	483181.22	1351891.86	607.92
1162	483278.16	1350770.56	605.69	1197	482989.01	1350580.86	604.00				
1163	483253.23	1350731.30	605.02	1198	482970.82	1350680.09	602.92				
1164	483207.47	1350698.74	604.20	1199	482708.71	1350810.48	587.18				
1165	483153.05	1350682.45	603.31	1270	482858.48	1351888.72	608.00				

GEOTECHNICAL DATA POINTS (NOTE 8)

BORING NO.	NORTHING	EASTING
1751	482789.43	1351103.95
11468	483040.36	1351019.92
11469	482831.56	1351297.14
11470	482753.79	1351020.70
11470B	482790.71	1351042.41
LYSIMETER		
11482	483043.86	1351028.10
11483	483055.10	1351031.60
WELL NO.		
1124	483062.56	1351314.14
11491	483056.89	1351025.40
11492	483045.26	1351021.10

CERTIFIED FOR CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
1	07.11.96	REVISED AND ISSUED WITH AMENDMENT NO.1	DLW	AMF	KLD	KWC	RB
0	13.10.96	CERTIFIED FOR CONSTRUCTION	DLW	RD	KLD	KWC	RB

SCALE IN FEET: 50 25 0 50 100

000044

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

CLIENT: FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT: ON-SITE DISPOSAL FACILITY PHASE I CONSTRUCTION

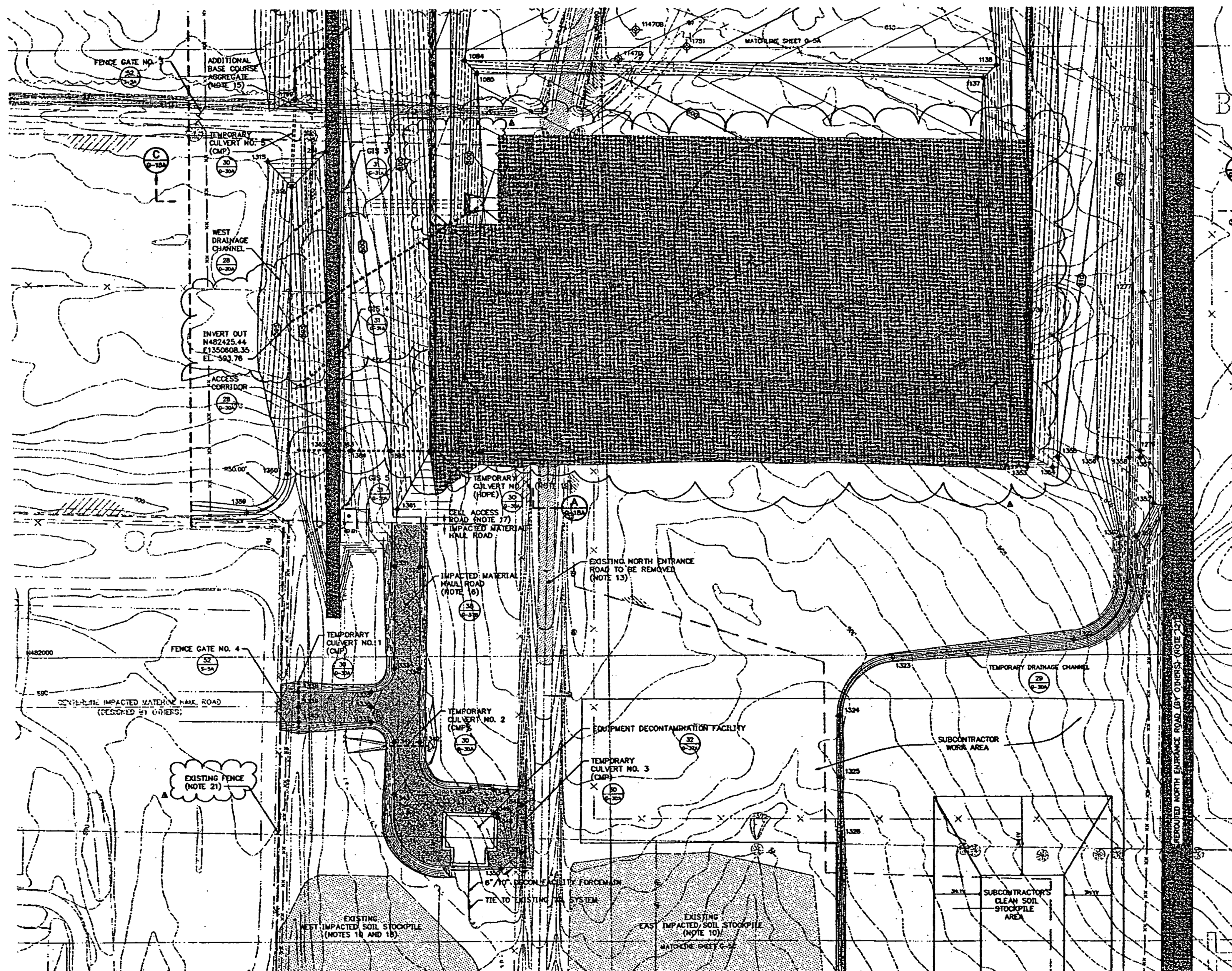
TITLE: SUBGRADE GRADING PLAN I

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

STATE OF OHIO — RUDOLPH BONAPARTE — E-55578 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS — ATLANTA, GEORGIA USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00073
GEOSYNTEC PROJECT NO.:	GE3900-21.1
GEOSYNTEC DOCUMENT NO.:	F96-4503
SHEET NO.:	G-5A
REVISION NO.:	1



SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1084	482753.39	1350829.80	602.22
1085	482736.84	1350844.86	598.29
1086	482353.42	1350824.61	599.22
1087	482338.87	1350839.87	593.28
1133	482329.09	1351475.88	601.94
1134	482345.28	1351492.80	605.90
1135	482556.64	1351470.89	601.43
1136	482572.84	1351470.88	601.43
1137	482729.06	1351480.75	604.84
1138	482745.23	1351487.48	608.90
1139	482747.61	1350819.83	599.40
1201	482839.25	1350853.87	601.47
1276	482258.75	1351672.39	605.00
1277	482450.66	1351677.63	606.00
1278	482658.57	1351683.27	607.00
1315	482828.49	1350580.95	599.39
1316	482584.30	1350610.60	594.02
1317	482252.40	1351470.97	600.07
1318	482280.01	1350842.43	593.78
1319	482280.75	1350779.85	608.37
1320	482251.60	1351536.47	615.39
1321	482081.94	1351684.18	599.61
1322	482018.32	1351586.38	599.07
1323	481997.34	1351358.94	597.91
1324	481922.68	1351289.09	597.39
1325	481845.30	1351289.09	596.97
1326	481789.14	1351288.09	594.69
1331	482114.56	1350733.89	598.00
1332	482114.18	1350785.89	598.84
1333	481984.74	1350732.30	596.07
1334	481984.34	1350784.30	598.71
1335	481955.10	1350702.13	594.56
1336	481938.11	1350701.71	594.89
1337	481917.11	1350701.28	594.81
1338	481985.53	1350810.47	591.88
1339	481936.63	1350810.37	591.96
1340	481917.83	1350810.78	591.88
1341	481891.19	1350730.83	596.00
1342	481890.79	1350763.16	596.84
1343	481824.96	1350730.35	597.00
1344	481831.83	1350825.05	598.00
1345	481831.25	1350840.83	598.40
1346	481810.97	1350869.71	598.00
1347	481800.36	1350884.27	598.00
1348	481795.42	1350859.13	598.00
1349	481800.42	1350830.27	598.10
1350	481730.29	1350862.93	597.00
1351	481750.37	1350888.38	597.00
1352	482152.15	1351688.01	604.34
1353	482238.50	1351529.88	611.00
1354	482238.10	1351562.08	611.00
1355	482251.23	1351568.09	610.12
1356	482250.82	1351618.18	607.12
1357	482249.87	1351672.18	604.96
1358	482250.13	1351698.49	600.40
1359	482183.82	1350548.47	598.50
1360	482232.42	1350600.64	607.12
1361	482187.98	1350738.06	601.00
1362	482262.35	1350649.06	604.08
1363	482262.15	1350665.56	604.00
1364	482281.86	1350680.82	597.21
1365	482281.36	1350730.81	600.21
1366	482150.03	1351840.98	605.00
1367	482150.28	1351845.58	605.00

GEOTECHNICAL DATA POINTS (NOTE 8)

BORING NO.	NORTHING	EASTING
1739	482429.43	1351530.98
1781	482789.43	1351105.85
11470	482753.78	1351020.70
11470B	482790.71	1351042.41
11480	482439.21	1351297.70
WELL NO.	**NORTHING**	**EASTING**
11493	482448.22	1351005.00
11494	482448.31	1350983.80
11495	482457.48	1350999.80

LEGEND

- EXISTING GROUND ELEVATION (FEET)
- SUBGRADE ELEVATION (FEET) (NOTE 4)
- FEMP PROPERTY LINE
- BATTERY LIMIT
- PERIMETER BERM BASELINE
- EXISTING LEACHATE CONVEYANCE SYSTEM GRAVITY LINE
- LIMIT OF AREA 1A TOPSOIL EXCAVATION (NOTES 10 AND 11)
- LIMIT OF RAIL YARD TOPSOIL EXCAVATION (NOTES 11 AND 14)
- EXISTING LEACHATE TRANSMISSION SYSTEM AND HORIZONTAL MONITORING WELL MANHOLES WITH COVER SLAB (NOTE 9)
- DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND CULVERT (GIS)
- DRAINAGE FLOW DIRECTION
- 1198 CONSTRUCTION CONTROL POINT
- EXISTING TREES AND SHRUBS (NOTE 4)
- CHAIN LINK FENCE
- EXISTING ROAD TO BE REMOVED (NOTE 13)
- 11468 11492 11482 GEOTECHNICAL DATA POINTS (NOTE 8)

NOTES:

1. TOPOGRAPHIC MAP BASED ON 1980 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD])
3. GRID COORDINATE SYSTEM CORRESPONDS TO STATE PLANAR NORTH AMERICAN DATUM (NAD) 1983 OHIO SOUTH.
4. SUBGRADE ELEVATIONS CORRESPOND TO THE TOP OF PREPARED SUBGRADE, INCLUDING ANY COMPACTED FILL. SUBGRADE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200. CLEARING, GRUBBING, AND STRIPPING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02110. THE LIMITS OF CLEARING, GRUBBING, AND STRIPPING SHALL BE NOT MORE THAN 10 FEET BEYOND THE LIMIT OF EARTHWORK CONSTRUCTION. ALL EXISTING TREES WITHIN THE CLEARING AND GRUBBING LIMIT SHALL BE REMOVED.
5. ACTIVE MONITORING WELLS AND PIEZOMETERS WITHIN THE CONSTRUCTION AREA WILL BE ABANDONED BY THE OWNER PRIOR TO CONSTRUCTION IN THAT AREA. ABANDONMENT WILL BE IN ACCORDANCE WITH ALL APPLICABLE STATE AND FEDERAL REGULATIONS.
6. AS PART OF THE STRIPPING OPERATION, SUBCONTRACTOR SHALL LOCATE AND REMOVE EXISTING SUBDRAIN TILE SYSTEM WITHIN THE CONSTRUCTION AREA PRIOR TO INITIATING CONSTRUCTION IN THAT AREA. REFER TO REFERENCE DRAWINGS SKO-04381 THROUGH SKO-04387 FOR LOCATION OF SUBDRAIN TILE SYSTEM.
7. SUBCONTRACTOR SHALL NOT EXCAVATE TO A DEPTH OF MORE THAN 10 FEET WITHIN 50 FEET OF THE BATTERY LIMIT, UNLESS AN EXCAVATION-SPECIFIC STABILITY ANALYSIS IS PERFORMED AND SUBMITTED TO THE CONSTRUCTION MANAGER FOR APPROVAL.
8. SUBCONTRACTOR SHALL REMOVE GROUT USED TO BACKFILL GEOTECHNICAL DATA POINTS (I.E. BORINGS, WELLS AND LYSIMETERS) LOCATED WITHIN THE PERIMETER BERM BASELINE TO A MINIMUM DEPTH OF 3 FEET BELOW SUBGRADE ELEVATIONS.
9. THE LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLE AND A PORTION OF THE HORIZONTAL MONITORING WELLS WILL BE CONSTRUCTED UNDER A SEPARATE CONTRACT AND WILL BE IN PLACE AT THE ONSET OF CELLS 1 AND 2 CONSTRUCTION. THE SUBCONTRACTOR SHALL TIE OSDF PHASE I CONSTRUCTION GRADES INTO THE LEACHATE TRANSMISSION SYSTEM FINAL GRADES USING DRAWINGS TITLED "LEACHATE CONVEYANCE SYSTEM" (REFER TO REFERENCE DRAWINGS 82X-5900-G-00254, 00281, 00282, AND 00286), AND AS BUILT SURVEY DATA. LDS, LCS AND HORIZONTAL MONITORING WELL PIPING CONSTRUCTED UNDER THIS SUBCONTRACT SHALL TIE INTO THE EXISTING PIPING AT LOCATIONS SHOWN ON DRAWINGS G-8A AND G-40A.
10. LIMIT OF AREA 1A TOPSOIL EXCAVATION, AND EAST AND WEST IMPACTED SOIL STOCKPILES TAKEN FROM SEPARATE CONSTRUCTION CONTRACT PACKAGE TITLED "AREA 1 PHASE 1 (EAST) REMEDIAL ACTION PROJECT." REFER TO DRAWING 73X-0500-G-00438. TOPSOIL STRIPPING WILL BE CONDUCTED BY OTHERS.
11. EXISTING GROUND CONTOURS WITHIN THE LIMITS OF TOPSOIL EXCAVATION REPRESENT ORIGINAL GROUND ELEVATIONS PRIOR TO TOPSOIL STRIPPING. CONTOURS FOR EXISTING IMPACTED SOIL STOCKPILE NOT SHOWN.
12. THE DESIGN OF THE REROUTED NORTH ENTRANCE ROAD IS CONTAINED IN A SEPARATE DESIGN PACKAGE TITLED "REROUTED NORTH ENTRANCE ROAD CONSTRUCTION DRAWINGS." REFER TO REFERENCE DRAWINGS 82X-5900-G-00220 THROUGH 82X-5900-G-00230 FOR ROAD GRADES.
13. ROAD PAVEMENT COURSES FOR EXISTING NORTH ENTRANCE ROAD SHALL BE REMOVED AND STOCKPILED SEPARATELY IN THE SUBCONTRACTOR WORK AREA IN ACCORDANCE WITH SPECIFICATION SECTION 02110.
14. LIMIT OF RAIL YARD TOPSOIL EXCAVATION TAKEN FROM SEPARATE DESIGN PACKAGE TITLED "SITE RAIL SYSTEM IMPROVEMENTS - GRADING AND DRAINAGE PACKAGE." REFER TO REFERENCE DRAWING 91X-5900-G-00235. TOPSOIL STRIPPING WILL BE CONDUCTED BY OTHERS.
15. SUBCONTRACTOR SHALL PLACE AND COMPACT ADDITIONAL BASE COURSE AGGREGATE AS NEEDED TO CREATE A SMOOTH TRANSITION FROM THE SURFACE OF THE EXISTING ROAD TO THE SURFACE OF THE ACCESS CORRIDOR.
16. CONTOURS WITHIN THE SHADED REGION ON THE IMPACTED MATERIAL HAUL ROAD REPRESENT FINISHED GRADE CONTOURS (I.E., TOP OF BASE AGGREGATE).
17. CONTRACTOR SHALL FIELD LOCATE AND CONSTRUCT CELL ACCESS ROAD IN ACCORDANCE WITH SPECIFICATION SECTION 02230 AND THE IMP PLAN. MINIMUM REQUIREMENTS FOR CELL ACCESS ROAD ARE GIVEN ON DRAWING D-21A.
18. SOIL FROM WEST IMPACTED SOIL STOCKPILE SHALL BE USED TO CONSTRUCT THE IMPACTED MATERIAL PORTION OF THE PROTECTIVE LAYER IN CELLS 1 AND 2. ANY REMAINING MATERIALS IN THE EAST AND WEST IMPACTED SOIL STOCKPILES SHALL BE USED AS SELECT IMPACTED MATERIAL DURING OSDF FILLING.
19. THE SHADED AREA IN CELL 2 REPRESENTS THE AREA OF OPTION 1 EXCAVATION. SCOPE OF WORK FOR OPTION 1 IS SPECIFIED IN PART 8 - STATEMENT OF WORK OF THE SUBCONTRACT DOCUMENTS. SUBCONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE FROM ALL LOCATIONS WITHIN CELL 2 TO THE CELL 2 OUTLET. TEMPORARY CULVERT NO. 4 SHALL BE INSTALLED ONLY IF OPTION 1 EXCAVATION IS CONDUCTED.
20. THE SCOPE OF WORK FOR OPTION 3 (INSTALLING THE HORIZONTAL MONITORING WELL AT CELL 2 AND REMOVING GROUT FROM GEOTECHNICAL DATA POINTS WITHIN CELL 2) IS SPECIFIED IN PART 8 - STATEMENT OF WORK OF THE SUBCONTRACT DOCUMENTS.
21. SUBCONTRACTOR MAY UTILIZE EXISTING FENCE INSTEAD OF INSTALLING NEW FENCE.

CERTIFIED FOR CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
2	21.11.96	REVISED AND ISSUED WITH AMENDMENT NO.2	DLW	RD	KLD	KMC	RB
1	07.11.96	REVISED AND ISSUED WITH AMENDMENT NO.1	DLW	RD	KLD	KMC	RB
0	19.10.96	CERTIFIED FOR CONSTRUCTION	DLW	RD	KLD	KMC	RB

SCALE IN FEET: 50 25 0 50 100

000045

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

CLIENT: FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT: ON-SITE DISPOSAL FACILITY PHASE I CONSTRUCTION

TITLE: SUBGRADE GRADING PLAN II

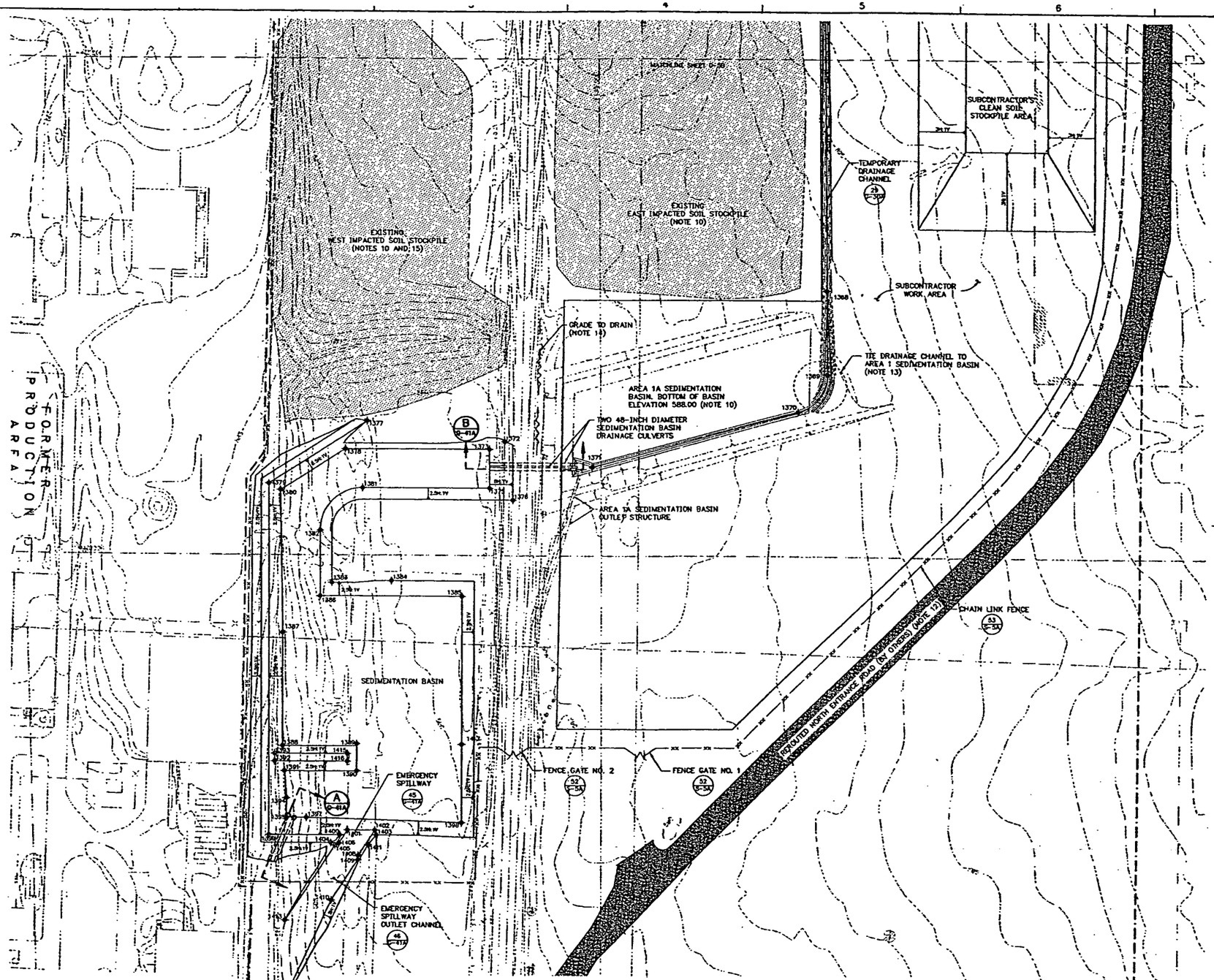
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION UNLESS SEALED.

STATE OF OHIO — RUDOLPH BONAPARTE — E-55579 — REGISTERED PROFESSIONAL ENGINEER

Rudolph Bonaparte — 21 Nov 1996

GEOSYNTEC CONSULTANTS — 1100 LAKE HEARN DRIVE, ATLANTA, GEORGIA 30342 USA

FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	95PS005028
FERMCO DRAWING NO.:	90X-6000-G-00074
GEOSYNTEC PROJECT NO.:	GE3900-21.1
GEOSYNTEC DOCUMENT NO.:	F96-5504
SHEET NO.:	G-5B
REVISION NO.:	2



3099

SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1368	481341.01	1351789.09	590.41
1369	481333.83	1351789.08	587.88
1370	481195.65	1351752.08	584.50
1371	481134.21	1350929.74	583.82
1372	481138.78	1350878.43	-
1373	481138.79	1350877.43	583.00
1374	REMOVED	REMOVED	REMOVED
1375	481049.78	1350838.43	583.00
1376	481051.78	1350848.79	-
1377	481172.88	1350848.79	589.00
1378	481132.78	1350870.87	583.00
1379	481093.10	1350872.79	589.00
1380	481082.88	1350887.79	582.00
1381	481086.78	1350892.74	583.00
1382	481031.78	1350927.74	583.00
1383	480946.25	1350932.74	-
1384	480948.78	1350938.20	-
1385	480946.78	1350820.98	582.00
1386	480948.75	1350937.70	582.00
1387	480948.25	1350990.20	582.00
1388	480733.75	1350990.20	582.00
1389	480755.25	1350885.20	-
1390	480720.25	1350885.20	581.00
1391	480710.25	1350992.70	581.00
1392	480732.75	1350988.20	582.00
1393	480742.75	1350980.20	580.00
1394	480748.25	1350985.20	580.00
1395	480860.25	1350983.20	580.00
1396	480867.88	1350980.20	580.00
1397	480880.25	1350820.20	580.00
1398	480859.91	1350829.98	581.00
1399	480852.75	1350873.73	582.00
1400	480837.75	1350883.13	589.00
1401	480834.00	1350873.18	-
1402	480849.00	1350798.88	589.00
1403	480837.75	1350710.00	589.00
1404	480837.75	1350691.71	589.90
1405	480834.42	1350693.43	589.30
1406	480837.24	1350692.25	588.30
1407	480837.73	1350572.79	-
1408	480819.84	1350687.38	582.50
1409	480825.21	1350689.78	584.30
1410	480832.78	1350832.52	582.00
1411	480829.25	1350700.38	580.00
1412	480823.75	1350581.17	579.00
1413	480828.83	1350583.63	-
1414	480820.84	1350581.63	-
1415	480823.75	1350473.38	589.00
1416	480732.75	1350872.70	589.00
1417	480755.25	1350820.98	581.00

LEGEND

- EXISTING GROUND ELEVATION (FEET)
- SUBGRADE ELEVATION (FEET) (NOTE 4)
- FEMP PROPERTY LINE
- BATTERY LIMIT
- PERIMETER BERM BASELINE
- EXISTING LEACHATE CONVEYANCE SYSTEM GRAVITY LINE
- LIMIT OF AREA 1A TOPSOIL EXCAVATION (NOTES 10 AND 11)
- DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND CULVERT (CIS)
- DRAINAGE FLOW DIRECTION
- CONSTRUCTION CONTROL POINT
- EXISTING TREES AND SHRUBS (NOTE 5)
- EXISTING TREELINE (NOTE 5)
- CHAIN LINK FENCE

NOTES:

1. TOPOGRAPHIC MAP BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD]).
3. GRID COORDINATE SYSTEM CORRESPONDS TO STATE PLANAR NORTH AMERICAN DATUM (NAD) 1983 OHIO SOUTH.
4. SUBGRADE ELEVATIONS CORRESPOND TO THE TOP OF PREPARED SUBGRADE, INCLUDING ANY COMPACTED FILL. SUBGRADE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200. CLEARING, GRUBBING, AND STRIPPING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02110. THE LIMITS OF CLEARING, GRUBBING, AND STRIPPING SHALL BE NOT MORE THAN 50 FEET BEYOND THE LIMIT OF EARTHWORK CONSTRUCTION. ALL EXISTING TREES WITHIN THE CLEARING AND GRUBBING LIMIT SHALL BE REMOVED.
5. ACTIVE MONITORING WELLS AND PIEZOMETERS WITHIN THE CONSTRUCTION AREA WILL BE ABANDONED BY THE OWNER PRIOR TO CONSTRUCTION IN THAT AREA. ABANDONMENT WILL BE IN ACCORDANCE WITH ALL APPLICABLE STATE AND FEDERAL REGULATIONS.
6. AS A PART OF THE STRIPPING OPERATION, SUBCONTRACTOR SHALL LOCATE AND REMOVE EXISTING SUBDRAIN TILE SYSTEM WITHIN THE CONSTRUCTION AREA PRIOR TO INITIATING CONSTRUCTION IN THAT AREA. REFER TO REFERENCE DRAWINGS SKG-04391 THROUGH SKG-04397.
7. SUBCONTRACTOR SHALL NOT EXCAVATE TO A DEPTH OF MORE THAN 10 FEET WITHIN 50 FEET OF THE BATTERY LIMIT, UNLESS AN EXCAVATION-SPECIFIC STABILITY ANALYSIS IS PERFORMED AND SUBMITTED TO THE CONSTRUCTION MANAGER FOR APPROVAL.
8. SUBCONTRACTOR SHALL REMOVE GROUT USED TO BACKFILL GEOTECHNICAL DATA POINTS (I.E., BORINGS, WELLS AND LYSIMETERS) LOCATED WITHIN THE PERIMETER BERM BASELINE TO A MINIMUM DEPTH OF 3 FEET BELOW SUBGRADE ELEVATIONS.
9. THE LEACHATE TRANSMISSION SYSTEM GRAVITY LINE AND MANHOLES AND A PORTION OF THE HORIZONTAL MONITORING WELLS WILL BE CONSTRUCTED UNDER A SEPARATE CONTRACT AND WILL BE IN PLACE AT THE ONSET OF CELLS 1 AND 2 CONSTRUCTION. THE SUBCONTRACTOR SHALL TIE OSDF PHASE I CONSTRUCTION GRADES INTO THE LEACHATE TRANSMISSION SYSTEM FINAL GRADES USING DRAWINGS TITLED "LEACHATE CONVEYANCE SYSTEM" (REFER TO REFERENCE DRAWINGS 92X-5900-G-00254, 00261, 00268, AND 00282), AND AS BUILT SURVEY DATA. LDS, LCS AND HORIZONTAL MONITORING WELL PIPING CONSTRUCTED UNDER THIS SUBCONTRACT SHALL TIE INTO THE EXISTING PIPING AT LOCATIONS SHOWN ON DRAWINGS G-9A AND G-40A.
10. LIMIT OF AREA 1A TOPSOIL EXCAVATION, EAST AND WEST IMPACTED MATERIAL STOCKPILES, AND AREA 1A SEDIMENTATION BASIN TAKEN FROM SEPARATE CONSTRUCTION CONTRACT PACKAGE TITLED "AREA 1 PHASE 1 (EAST) REMEDIAL ACTION PROJECT." REFER TO REFERENCE DRAWING 75X-5500-G-00438.
11. EXISTING GROUND CONTOURS WITHIN THE LIMITS OF TOPSOIL EXCAVATION REPRESENT ORIGINAL GROUND ELEVATIONS PRIOR TO TOPSOIL STRIPPING.
12. THE DESIGN OF THE REROUTED NORTH ENTRANCE ROAD IS CONTAINED IN A SEPARATE DESIGN PACKAGE TITLED "REROUTED NORTH ENTRANCE ROAD CONSTRUCTION DRAWINGS." REFER TO REFERENCE DRAWINGS 92X-5900-G-00220 THROUGH 92X-5900-G-00230 FOR ROAD GRADES.
13. SUBCONTRACTOR SHALL TIE DRAINAGE CHANNEL CONTOURS INTO FIELD GRADED EAST SLOPE OF AREA 1A SEDIMENTATION BASIN IN THIS AREA.
14. AFTER INSTALLATION OF SEDIMENTATION BASIN CULVERTS, SUBCONTRACTOR SHALL GRADE THIS AREA TO DRAIN TO THE LOW SPOT APPROXIMATELY 150 FT NORTH OF THE SEDIMENTATION BASIN CULVERTS.
15. SOIL FROM THE WEST IMPACTED SOIL STOCKPILE SHALL BE USED TO CONSTRUCT THE IMPACTED MATERIAL PORTION OF THE PROTECTIVE LAYER IN CELLS 1 AND 2. ANY REMAINING MATERIALS IN THE EAST AND WEST IMPACTED SOIL STOCKPILES SHALL BE USED AS SELECT IMPACTED MATERIAL DURING OSDF FILLING.

CERTIFIED FOR CONSTRUCTION

000046

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	10.10.96	CERTIFIED FOR CONSTRUCTION	D.N.W.	RD	RLD	RWC	RBD

SCALE IN FEET: 50 25 0 50 100

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

CLIENT: FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT: ON-SITE DISPOSAL FACILITY PHASE I CONSTRUCTION

TITLE: SUBGRADE GRADING PLAN III

THIS DRAWING MAY NOT BE SCALED FOR PRIVATE USE OR CONSTRUCTION UNLESS SEALED.

STATE OF OHIO — RUDOLPH BONAFACE — E-68879 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

FERNICO PROJECT NO:	20100
FERNICO SUBCONTRACT NO:	93P20000028
FERNICO DRAWING NO:	92X-5000-G-00075
GEOSYNTEC PROJECT NO:	GE3900-21.1
GEOSYNTEC DOCUMENT NO:	FA98-3526
SHEET NO:	G-5C
REVISION NO:	0

N:\ACADCV\GE3021.21\F20-3026 Thu Oct 17 08:05:24 1996 FERNICO\GAM

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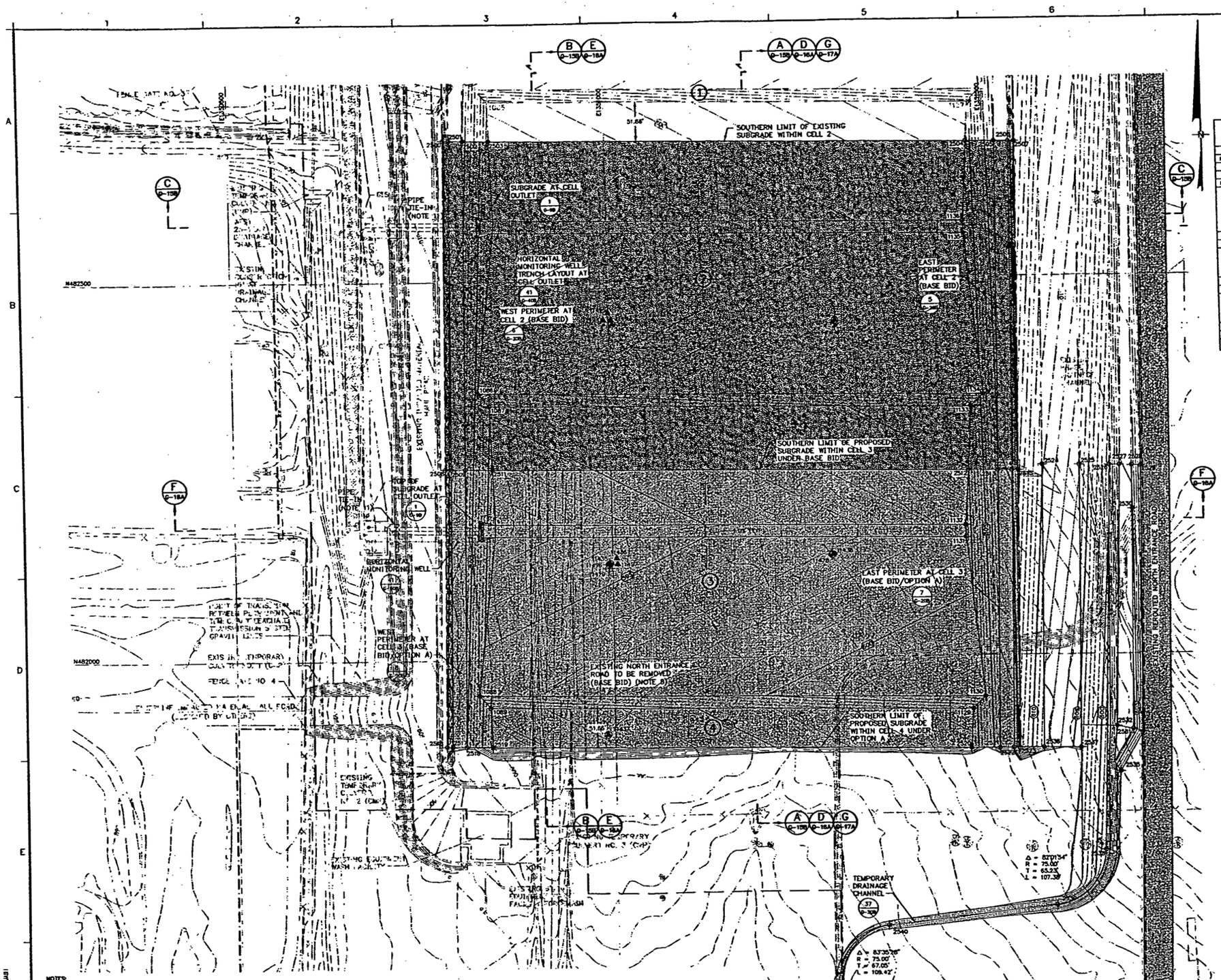

GEOTECHNICAL DATA POINTS (NOTE 7)

POINT NO.	NORTHING	EASTING	ELEVATION
BENCHMARK			
1	482479.31	1350948.73	803.82
CONE PENETRATION TESTS			
11433	482442.87	1351905.16	803.00
11434	482444.58	1351298.58	809.39
11435	482137.23	1350950.68	801.03
11436	481135.78	1351289.80	801.03
11437	481900.35	1350898.83	800.24
11852	482501.99	1351055.00	803.57
11829	482579.49	1350898.81	803.46
11871	482538.94	1351831.73	809.24
GEOTECHNICAL BOREHOLE			
1739	482438.43	1351530.95	-
11478	482137.23	1351289.49	801.24
11479	482139.53	1350994.67	802.35
11707	481972.57	1351133.22	800.24
11708	482613.73	1351425.69	808.69
LYSIMETERS			
11486	482134.22	1351005.00	802.30
11493	482448.32	1351004.00	803.40
11494	482448.31	1350993.00	803.30
11495	482457.48	1350998.80	803.70
11497	482128.13	1351008.19	801.30
TYPE I MONITORING WELLS (NOTE 8)			
11480	482438.21	1351287.70	808.21
11496	482128.19	1350995.20	802.70

SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1088	482353.02	1350924.97	808.22
1087	481953.45	1350939.57	805.28
1089	481953.45	1350816.78	805.28
1129	481929.13	1351470.97	808.64
1130	482345.22	1351487.71	809.00
1131	482196.87	1351468.10	808.43
1132	482172.47	1351483.80	808.43
1133	482329.09	1351475.88	805.69
1134	482348.29	1351492.60	808.43
1135	482536.84	1351478.88	808.43
1136	482536.84	1351470.88	808.43
2500	482885.80	1350795.04	811.56
2501	482885.81	1350782.84	808.26
2502	482885.38	1350811.93	808.59
2503	482848.13	1350848.57	807.27
2504	482977.44	1351477.43	803.38
2505	482976.98	1351516.18	813.05
2506	482976.78	1351533.87	813.38
2507	482976.86	1351541.98	810.38
2508	482753.84	1350778.75	812.31
2509	482753.34	1350787.38	803.72
2510	482753.31	1350808.34	803.72
2511	482752.87	1350842.88	802.84
2512	482752.79	1351470.88	802.84
2513	482744.78	1351508.87	808.77
2514	482744.78	1351528.38	808.17
2515	482744.38	1351538.38	815.38
2516	482743.98	1351547.38	808.38
2517	482483.87	1350775.08	808.38
2518	482483.64	1350801.08	808.38
2519	482480.21	1350836.86	801.27
2520	482477.00	1351470.88	807.38
2521	482476.09	1351505.38	807.97
2522	481976.81	1351824.88	807.28
2523	482352.72	1351343.88	812.38
2524	482351.23	1351360.08	812.12
2525	482350.82	1351368.08	812.12
2526	482350.13	1351808.48	800.48
2527	482348.87	1351808.48	800.48
2528	482348.35	1351808.72	806.12
2529	482347.80	1351799.08	806.12
2530	482182.03	1351808.48	805.00
2531	481800.36	1351807.87	803.43
2532	481804.36	1351862.74	802.33
2533	481804.36	1351864.74	808.00
2534	481804.48	1351885.91	807.91
2535	481804.38	1351863.31	807.32
2536	481878.38	1351813.80	804.31
2537	481740.93	1351378.02	807.89
2538	481588.44	1351378.02	807.31
2539	481543.47	1351385.72	804.88
2541	481588.84	1351288.02	802.28

LEGEND

- EXISTING GROUND ELEVATION (FEET) (NOTE 5)
- SUBGRADE ELEVATION (FEET) (NOTE 2)
- FDMP PROPERTY LINE
- BATTERY LIMIT
- PERIMETER BERM BASELINE
- EXISTING LIMIT OF AREA 1 - PHASE I TOPSOIL EXCAVATION (NOTE 5)
- EXISTING PERMANENT LEACHATE TRANSMISSION SYSTEM GRAVITY LINE
- EXISTING TEMPORARY LEACHATE TRANSMISSION SYSTEM GRAVITY LINE
- EXISTING LEACHATE TRANSMISSION SYSTEM AND HORIZONTAL MONITORING WELL MANHOLES WITH COVER SLAB
- EXISTING DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND CULVERT
- EXISTING TREES AND SHRUBS (NOTE 2)
- EXISTING SECURITY FENCE
- DRAINAGE FLOW DIRECTION
- CONSTRUCTION CONTROL POINT
- EXISTING GEOTECHNICAL DATA POINTS (NOTE 7)
- CELL DESIGNATION
- SUBGRADE ELEVATIONS WITHIN PERIMETER BERM BASELINE TO BE CONSTRUCTED UNDER BASE BID (NOTE 9)
- AREA TO BE EXCAVATED 1 FOOT ABOVE SUBGRADE ELEVATIONS SHOWN UNDER BASE BID

NOTES:

1. TOPOGRAPHIC MAP BASED ON 1992 SITE FLYOVER AND SUPPLEMENTAL AS-BUILT SURVEY EAST OF EXISTING RAILYARD AND WEST OF THE CENTERLINE FOR THE WEST 25-YEAR DRAINAGE CHANNEL.
2. SUBGRADE ELEVATIONS CORRESPOND TO THE TOP OF PREPARED SUBGRADE, INCLUDING ANY COMPACTED FILL. SUBGRADE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200. CLEARING, GRUBBING, AND STRIPPING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02110. LIMITS OF CLEARING, GRUBBING, AND STRIPPING SHALL NOT BE MORE THAN 10 FEET BEYOND LIMIT OF EARTHWORK CONSTRUCTION. ALL EXISTING TREES WITHIN THE CLEARING AND GRUBBING LIMIT SHALL BE REMOVED.
3. ACTIVE MONITORING WELLS AND PIEZOMETERS WITHIN THE CONSTRUCTION AREA WILL BE ABANDONED BY THE OWNER PRIOR TO CONSTRUCTION IN THAT AREA. ABANDONMENT WILL BE IN ACCORDANCE WITH ALL APPLICABLE STATE AND FEDERAL REGULATIONS.
4. CONTRACTOR SHALL NOT EXCAVATE TO A DEPTH OF MORE THAN 10 FEET WITHIN 50 FEET OF THE BATTERY LIMIT, UNLESS AN EXCAVATION-SPECIFIC STABILITY ANALYSIS IS PERFORMED AND SUBMITTED TO THE CONSTRUCTION MANAGER FOR APPROVAL.
5. EXISTING GROUND ELEVATIONS NORTH OF AREA 1 - PHASE 1 TOPSOIL EXCAVATION LIMIT ARE APPROXIMATELY 1 FOOT BELOW GROUND ELEVATIONS SHOWN AND REPRESENT ORIGINAL GROUND PRIOR
6. CONTRACTOR SHALL LOCATE AND REMOVE EXISTING SUBDRAIN TILE SYSTEM WITHIN THE CONSTRUCTION AREA AS PART OF STRIPPING OPERATIONS UNDER BASE BID PRIOR TO INITIATING CONSTRUCTION IN THAT AREA. REFER TO REFERENCE DRAWINGS SKG-04391 THROUGH SKG-04397 FOR LOCATION OF SUBDRAIN TILE SYSTEM.
7. CONTRACTOR SHALL REMOVE GROUT USED TO BACKFILL GEOTECHNICAL DATA POINTS AND MONITORING WELLS LOCATED WITHIN THE PERIMETER BERM BASELINE TO A MINIMUM DEPTH OF 3 FEET BELOW SUBGRADE ELEVATIONS UNDER BASE BID.
8. ROAD PAVEMENT COURSES AND ASSOCIATED IMPACTED MATERIAL FOR EXISTING NORTH ENTRANCE ROAD SHALL BE REMOVED AND STOCKPILED SEPARATELY IN THE CONTRACTOR WORK AREA OR PLACED IN AN ACTIVE CELL WITH THE APPROVAL OF THE CONSTRUCTION MANAGER AND IN ACCORDANCE WITH SPECIFICATION SECTION 02110.
9. SHADED AREA IN CELL 2 REPRESENTS AREA OF SUBGRADE CONSTRUCTION WITHIN PERIMETER BERM BASELINE UNDER BASE BID. EXISTING GROUND ELEVATIONS IN THIS AREA ARE APPROXIMATELY 1 FOOT ABOVE PROPOSED SUBGRADE ELEVATIONS SHOWN.
10. CONTRACTOR SHALL DEWATER EXCAVATIONS AND MANAGE COLLECTED WATER IN ACCORDANCE WITH SECTION 02200.
11. LDS PIPES, LCS PIPES, AND REDUNDANT LCS PIPES SHALL TIE INTO EXISTING PIPES INSTALLED AS PART OF PREVIOUS LEACHATE CONVEYANCE SYSTEM CONSTRUCTION. TIE-IN CONSTRUCTION CONTROL POINTS ARE PROVIDED ON DRAWING G-5B.
12. CONTRACTOR SHALL RELOCATE EXISTING CLEAN MATERIAL STOCKPILE WITHIN A CERTIFIED AREA AS DIRECTED BY CONSTRUCTION MANAGER.

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
B	97.11.10	CERTIFIED-FOR-CONSTRUCTION	DLW	JJA	CFW	KMC	RB
A	97.10.08	90 PERCENT SUBMITTAL TO DOE	DLW	JJA	CFW	KMC	RB

SCALE IN FEET: 50 25 0 50 100

000047

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

CLIENT: FLUOR DANIEL FERNALD

PROJECT: ON-SITE DISPOSAL FACILITY - PHASE II

TITLE: SUBGRADE GRADING PLAN

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

STATE OF OHIO — RUDOLPH SCHIAVONE — E-66879 — REGISTERED PROFESSIONAL ENGINEER

GEO SYNTEC CONSULTANTS
1900 EAST NEWPORT CENTER
ATLANTA, GEORGIA 30062 USA

FDF PROJECT NO.:	20100
FDF SUBCONTRACT NO.:	SSCF5005078
FDF DRAWING NO.:	90X-6000-C-00204
GEOSYNTEC PROJECT NO.:	GG0186-07
GEOSYNTEC DOCUMENT NO.:	F97-0604
SHEET NO.:	G-5D
REVISION NO.:	0

186--07\GG0375-0604 Thu Nov 13 12:46:43 1997 JJB1

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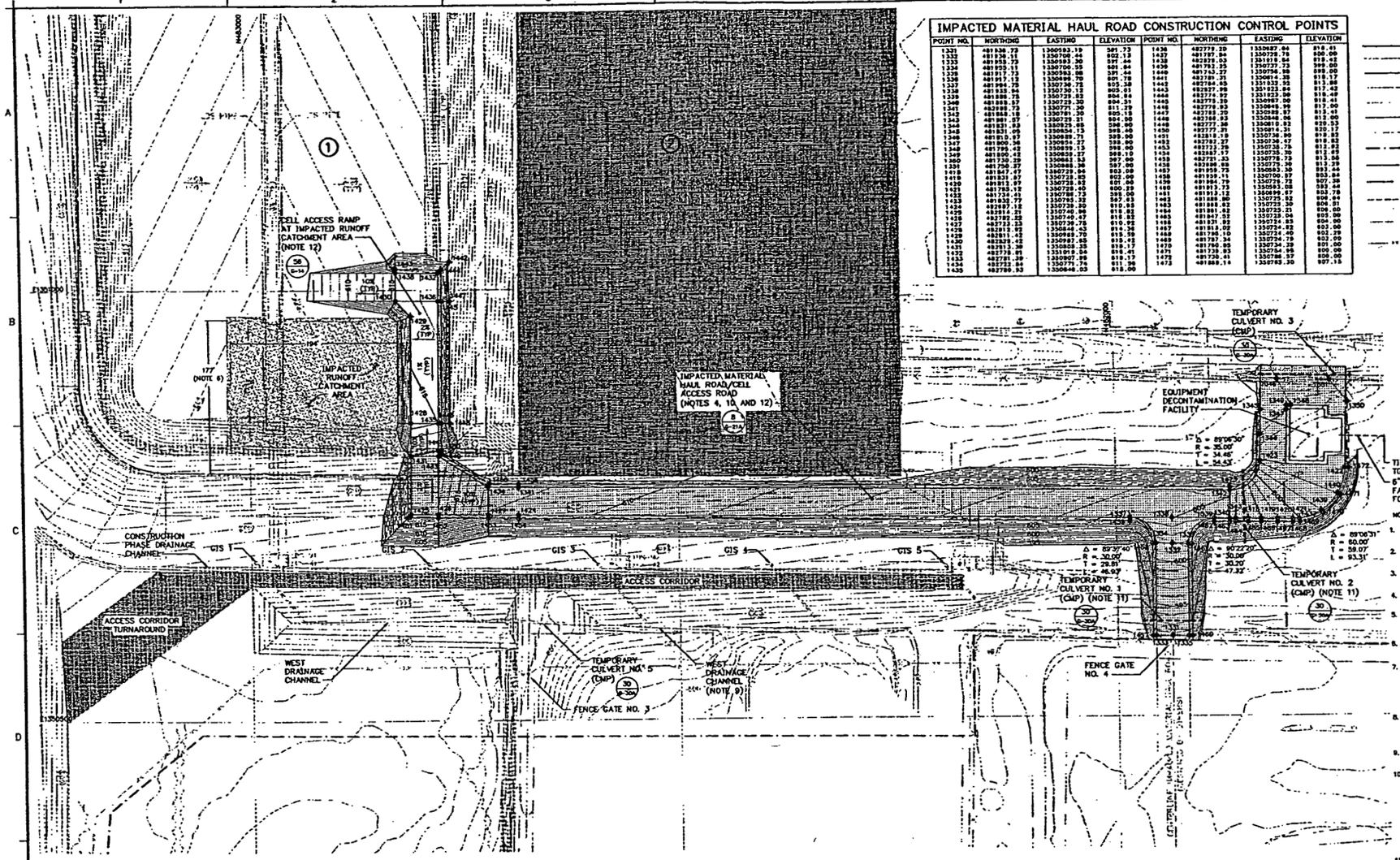


IMPACTED MATERIAL HAUL ROAD CONSTRUCTION CONTROL POINTS

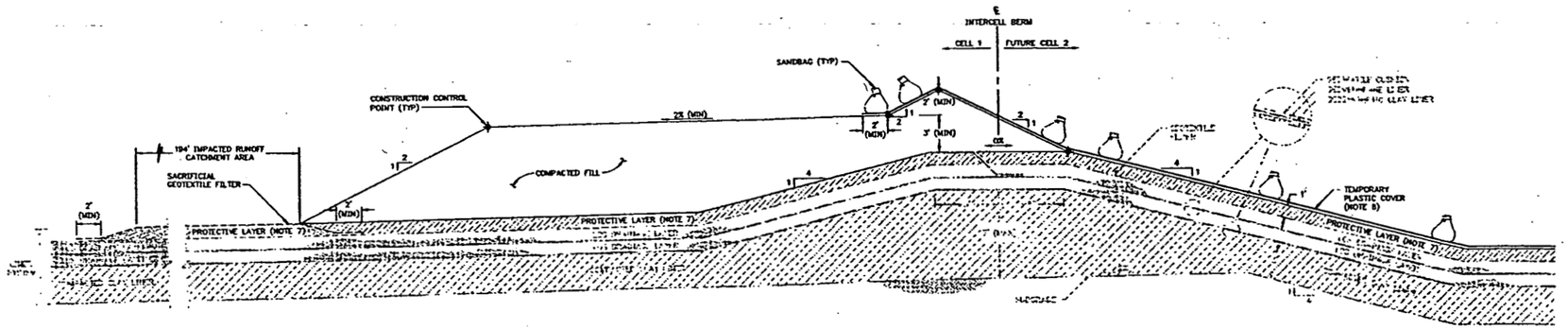
POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
1331	481538.72	1350983.19	901.73	1436	482779.20	1350687.84	918.81
1332	481538.11	1350709.44	892.12	1437	481939.84	1350719.76	890.09
1333	481533.11	1350700.45	891.44	1438	482829.03	1351018.54	919.42
1334	481533.11	1350700.55	891.84	1439	481793.35	1350727.04	889.00
1335	481533.11	1350983.88	901.44	1440	481743.27	1350734.08	888.00
1336	481917.12	1350986.70	901.78	1441	482789.31	1350825.17	913.17
1337	481933.55	1350729.72	903.24	1442	482774.45	1351832.92	913.88
1338	481933.94	1350730.12	903.01	1443	482827.98	1351823.84	918.42
1339	481933.52	1350729.52	904.00	1444	482774.92	1350987.00	918.40
1340	481888.57	1350729.30	904.31	1445	482778.39	1350988.57	912.40
1341	481888.57	1350729.71	905.44	1446	482778.39	1350988.87	912.41
1342	481888.18	1350781.30	905.18	1447	482788.39	1350988.87	912.41
1343	481831.93	1350829.06	896.00	1448	482788.93	1350988.06	920.53
1344	481831.93	1350829.46	896.40	1449	482777.38	1350816.82	920.12
1345	481831.93	1350829.73	896.43	1450	482777.38	1350814.32	918.82
1346	481831.93	1350889.71	893.90	1451	482819.19	1350736.90	918.82
1347	481888.57	1350889.27	893.90	1452	482782.27	1350736.36	913.82
1348	481795.42	1350839.13	898.90	1453	482722.39	1350738.78	913.82
1349	481795.42	1350839.27	898.10	1454	482687.17	1350738.39	913.45
1350	481730.29	1350841.33	897.90	1455	482721.33	1350778.73	913.56
1351	481730.27	1350729.04	897.90	1456	482698.68	1350773.30	913.23
1418	481647.97	1350729.04	902.08	1457	481958.75	1350663.30	893.44
1419	481939.97	1350729.52	902.08	1458	481939.11	1350700.57	893.44
1420	481911.97	1350728.92	901.08	1459	481895.79	1350721.72	907.38
1421	481793.17	1350729.40	900.23	1460	481913.73	1350563.08	893.42
1422	481734.41	1350788.73	893.00	1461	481913.12	1350699.67	893.78
1423	481734.41	1350793.32	897.40	1462	481881.82	1350723.52	896.81
1424	482697.12	1350738.30	910.93	1463	481888.82	1350723.30	896.81
1425	482697.21	1350740.94	910.82	1464	481881.82	1350723.21	896.00
1426	482792.22	1350740.47	918.82	1465	481847.52	1350738.04	895.00
1427	482792.22	1350738.78	918.82	1466	481839.92	1350724.83	894.45
1428	482811.42	1350844.53	914.36	1467	481818.09	1350724.82	893.00
1429	482811.42	1350844.70	914.59	1468	481798.10	1350724.40	893.29
1430	482829.42	1350987.85	915.93	1469	481797.34	1350734.79	893.00
1431	482829.39	1351019.38	915.17	1470	481765.34	1350734.39	891.00
1432	482778.91	1351019.84	916.41	1471	481738.93	1350764.95	890.00
1433	482778.88	1350988.38	916.41	1472	481738.41	1350788.57	890.00
1434	482782.84	1350771.74	911.38	1473	481869.19	1350783.30	897.18
1435	482788.93	1350846.03	918.00				

LEGEND

- EXISTING GROUND ELEVATION (FEET)
- FINISHED GRADE ELEVATION (FEET)
- EXISTING SUBGRADE ELEVATION (FEET) (NOTE 5)
- EXISTING LEACHATE COLLECTION SYSTEM ELEVATION (FEET)
- EXISTING COMPACTED CLAY LINER ELEVATION (FEET)
- EXISTING PROTECTIVE LAYER ELEVATION (FEET)
- BATTERY LIMIT
- PERIMETER BERM BASELINE
- LIMIT OF AREA 1 - PHASE I TOPSOIL EXCAVATION
- EXISTING PERMANENT LEACHATE TRANSMISSION SYSTEM GRAVITY LINE
- EXISTING LEACHATE TRANSMISSION SYSTEM TEMPORARY GRAVITY LINE
- SECURITY FENCE
- EXISTING LEACHATE TRANSMISSION SYSTEM AND HORIZONTAL MONITORING WELL MANHOLES WITH COVER SLAB
- EXISTING DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND CULVERT (GIS)
- CONSTRUCTION CONTROL POINT
- EXISTING TREES AND SHRUBS
- ACCESS CORRIDOR
- IMPACTED MATERIAL HAUL ROAD (NOTE 4)
- AREA EXCAVATED 1 FOOT ABOVE SUBGRADE ELEVATIONS UNDER OPTION 1
- CELL DESIGNATION

NOTES:

1. TOPOGRAPHIC MAP BASED ON 1992 SITE FLYOVER AND SUPPLEMENTAL AS-BUILT SURVEY EAST OF EXISTING RAILYARD AND WEST OF THE CENTERLINE FOR THE WEST 25-YEAR DRAINAGE CHANNEL.
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. CONTOURS WITHIN THE SHADED REGION ON THE IMPACTED MATERIAL HAUL ROAD REPRESENT TOP OF BASE AGGREGATE.
5. SUBGRADE ELEVATIONS CORRESPOND TO TOP OF PREPARED SUBGRADE, INCLUDING ANY COMPACTED FILL CONSTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWINGS G-5A, G-5B, AND G-5C.
6. DIMENSION SHOWN FOR IMPACTED RUNOFF CATCHMENT AREA IS MEASURED WEST TO EAST FROM PERIMETER BERM BASELINE TO CREST OF PROTECTIVE LAYER.
7. PROTECTIVE LAYER IN CELL 1 SHALL CONSIST OF IMPACTED OR NON-IMPACTED GRANULAR MATERIAL IN THE IMPACTED RUNOFF CATCHMENT AREA. PROTECTIVE LAYER OVER TEMPORARY LINER SYSTEM TERMINATION AND BENEATH CELL ACCESS RAMP (DETAILS 15 AND 16 ON DRAWING 23A AND DETAIL 56 ON DRAWING G-14) SHALL CONSIST OF NON-IMPACTED NON-GRANULAR MATERIAL. PROTECTIVE LAYER MATERIALS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02240.
8. TEMPORARY PLASTIC COVER SHALL CONSIST OF 12-MIL THICK (MIN) POLYETHYLENE, POLYVINYL CHLORIDE, OR OTHER SHEETING APPROVED BY THE CONSTRUCTION MANAGER. CONTRACTOR SHALL WEIGHT TEMPORARY PLASTIC COVER WITH SANDBAGS, OR EQUIVALENT, TO PREVENT DAMAGE FROM WIND.
9. CONTRACTOR SHALL GRADE WEST SIDE OF WEST DRAINAGE CHANNEL UPWARD AT A 3-HORIZONTAL TO 1-VERTICAL SLOPE FROM CHANNEL CENTERLINE UNTIL SLOPE DAYLIGHTS AT EXISTING GROUND.
10. MATERIAL FROM EXISTING STOCKPILES MTL-OSD-003 AND MTL-OSD-009 OR UNSUITABLE MATERIAL FROM COMPACTED CLAY LINER PROCESSING MAY BE SUBSTITUTED FOR COMPACTED FILL BELOW SUBBASE AGGREGATE ELEVATIONS IN THE IMPACTED MATERIAL HAUL ROAD/CELL ACCESS ROAD AND ACCESS CORRIDOR LOCATED OUTSIDE THE PERIMETER BERM BASELINE. IF THE UNSUITABLE MATERIAL FROM THE CLAY LINER PROCESSING, REFERRED TO AS SOIL/ROCK FILL, IS USED IT SHALL BE PLACED IN MAXIMUM 12-INCH THICK LOOSE LIFTS AND COMPACTED WITH MINIMUM EIGHT (8) PASSES OF A CATERPILLER 815B COMPACTOR. ROCK SIZE GREATER THAN 12-INCHES (BEFORE COMPACTION) SHALL BE REMOVED FROM THE FILL AND STOCKPILED FOR FUTURE USE IN NON-COMPACTED FILL AREAS AS DESIGNATED BY THE CONSTRUCTION MANAGER. ANY COMPACTED SOIL/ROCK FILL MATERIAL EXHIBITING EXCESSIVE PUMPING DUE TO WET MATERIAL OR INSUFFICIENT COMPACTION SHALL BE DRIED AND RECOMPACTED OR REMOVED FROM THE FILL.
11. TEMPORARY CULVERTS SHALL BE INSTALLED TO LIMIT OF IMPACTED MATERIAL HAUL ROAD EMBANKMENTS AND AT A MINIMUM SLOPE OF 1 PERCENT.
12. CONSTRUCTION OF IMPACTED MATERIAL HAUL ROAD/CELL ACCESS ROAD AND CELL ACCESS RAMP SHALL BE COMPLETE PRIOR TO PLACEMENT OF IMPACTED MATERIAL IN CELL 1.



56 / G-14 DETAIL
CELL ACCESS RAMP AT IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	07.10.98	CERTIFIED-FOR-CONSTRUCTION	DLW.	BJD	CFW	KMC	RB
A	02.10.98	DRAFT CERTIFIED-FOR-CONSTRUCTION	DLW.	BJD	CFW	KMC	RB

SCALE IN FEET: 50 25 0 50 100

000048

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

CLIENT: FLUOR DANIEL FERNALD

PROJECT: ON-SITE DISPOSAL FACILITY PHASE I CONSTRUCTION

TITLE: IMPACTED MATERIAL HAUL ROAD GRADING PLAN

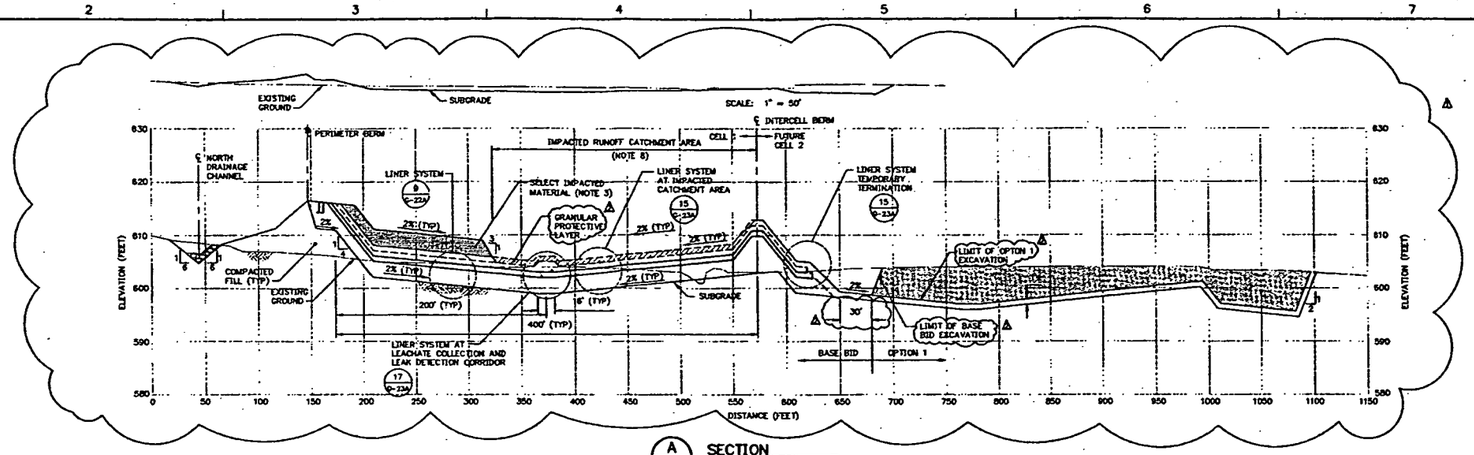
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT BIDDING OR CONSTRUCTION UNLESS SEALED.

STATE OF OHIO — RUDOLPH KOMPARSKI — E-56579 — REGISTERED PROFESSIONAL ENGINEER

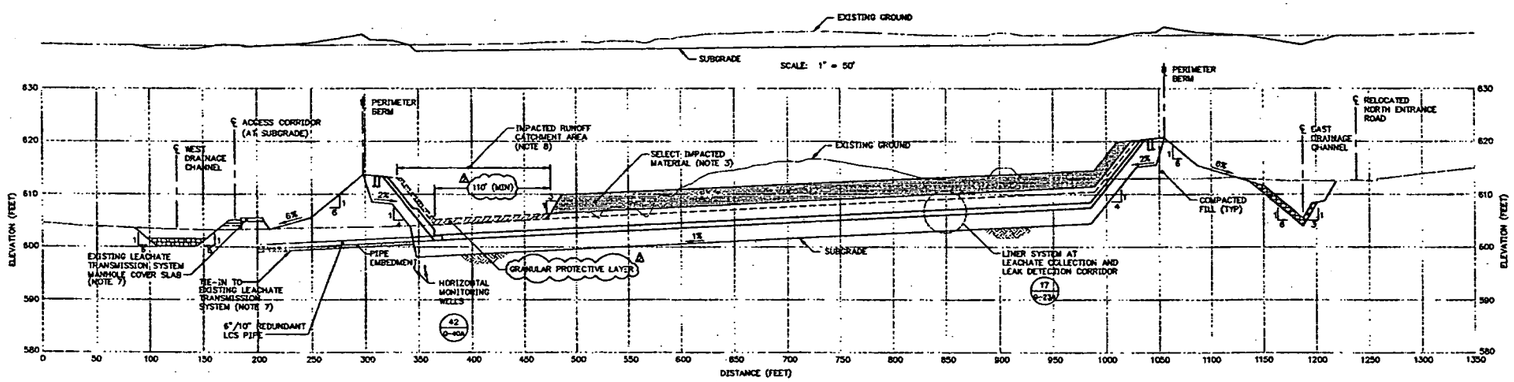
GEOSYNTEC CONSULTANTS

FOF PROJECT NO.:	20100
FOF SUBCONTRACT NO.:	90N5000028
FOF DRAWING NO.:	EOX-6000-Q-00199
GEOSYNTEC PROJECT NO.:	000169-03
GEOSYNTEC DOCUMENT NO.:	F97-0669
SHEET NO.:	G-14
REVISION NO.:	0

3099



A G-5A **SECTION NORTH-SOUTH**
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'

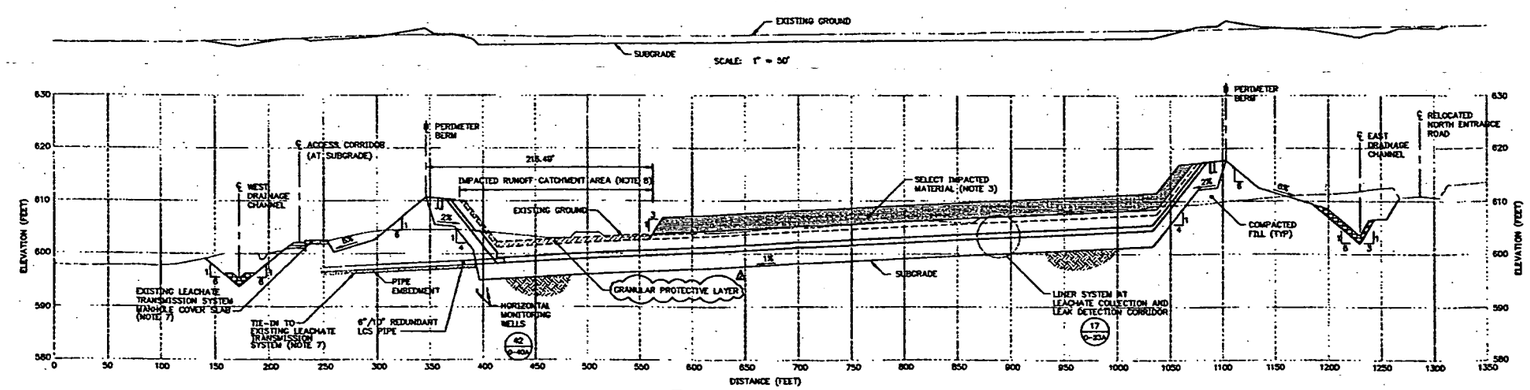


B G-5A **SECTION WEST-EAST AT CELL 1**
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'

NOTES:

1. EXISTING GROUND ELEVATIONS BASED ON 1992 SITE FLYOVER.
2. ELEVATIONS ARE IN FEET ABOVE SEA LEVEL DATUM. (NOTE: "SEA LEVEL DATUM" REFERS TO THE NATIONAL GEODETIC VERTICAL DATUM [NGVD])
3. SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER. SELECT IMPACTED MATERIAL SHALL BE OBTAINED FROM THE EAST IMPACTED MATERIAL STOCKPILE. SELECT IMPACTED MATERIAL SHALL ADDITIONALLY BE OBTAINED FROM THE WEST IMPACTED MATERIAL STOCKPILE AFTER THE REMOVAL OF MATERIAL FOR THE PROTECTIVE LAYER. IMPACTED MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SPECIFICATION SECTION 13010 AND THE INP PLAN.
4. LCS AND LDS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605 AND TERMINATE AT THE UPGRADIENT END OF THE PIPES WITH A 6-INCH MOLDED END CAP. (REDUNDANT LCS PIPE ONLY APPEARS IN THIS SECTION)
5. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN THE LIMITS GIVEN IN THE SPECIFICATIONS.
6. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
7. THE LEACHATE TRANSMISSION SYSTEM DESIGN IS CONTAINED IN A SEPARATE CONSTRUCTION PACKAGE TITLED "LEACHATE CONVEYANCE SYSTEM". (SEE DRAWINGS 90X-6000-G-00057 THROUGH 90X-6000-G-00068 FOR REFERENCE). LDS PIPE, LCS PIPE, AND REDUNDANT LCS PIPE SHALL TIE-IN TO EXISTING PIPES AT THE LOCATIONS SHOWN ON DRAWING G-9A OF THIS DESIGN PACKAGE.
8. IMPACTED RUNOFF CATCHMENT AREA IN CELL 1 SHALL REMAIN OPEN FOR THE SUBCONTRACT DURATION.
9. LINER SYSTEM AND LCS, REDUNDANT LCS AND LDS PIPES FOR CELL 2 WILL NOT BE CONSTRUCTED IN THIS SUBCONTRACT.

000049



C G-5B **SECTION WEST-EAST AT CELL 2 (NOTE 9)**
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'

CERTIFIED FOR CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
2	01.11.99	REVISED AND ISSUED WITH AMENDMENT M013	DLVL	AHF	KLO	KWC	RB
1	07.11.98	REVISED AND ISSUED WITH AMENDMENT M013	DLVL	AHF	KLO	KWC	RB
0	12.10.98	CERTIFIED FOR CONSTRUCTION	DLVL	UNF	KLO	KWC	RB

SCALE IN FEET (50 25 0 50 100) — SCALE IN FEET (10 5 0 10 20)

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

CLIENT: FERMCO FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT: ON-SITE DISPOSAL FACILITY PHASE I CONSTRUCTION

TITLE: OSDF SECTIONS

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

STATE OF OHIO — RUDOLPH BOMPARDE — E-68579 — REGISTERED PROFESSIONAL ENGINEER

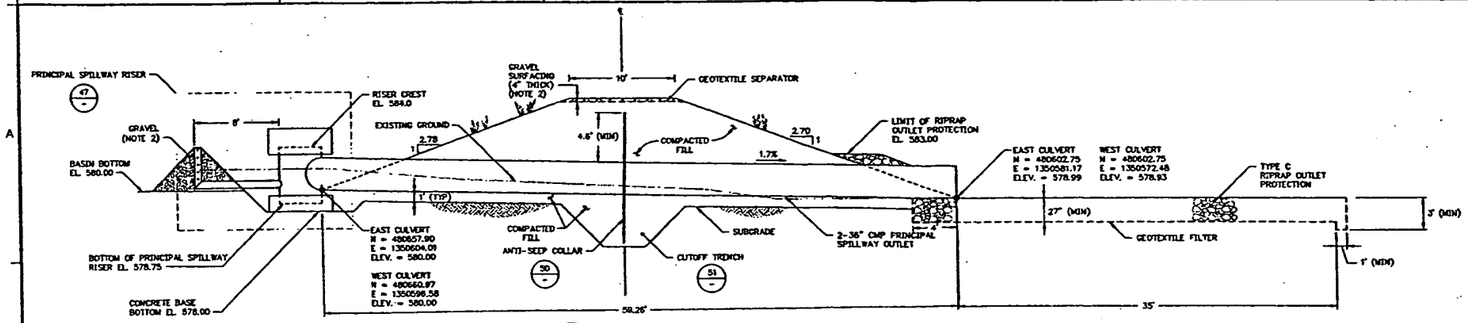
21 Nov 1998

GEOSYNTEC CONSULTANTS

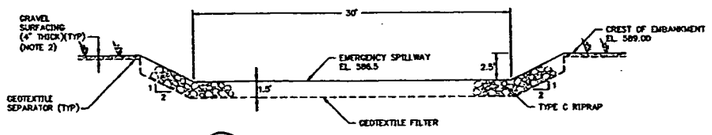
FERMCO PROJECT NO.:	20100
FERMCO SUBCONTRACT NO.:	90F-5005026
FERMCO DRAWING NO.:	90X-6000-G-00077
GEOSYNTEC PROJECT NO.:	GC3900-21.1
GEOSYNTEC DOCUMENT NO.:	F98-5227
SHEET NO.:	G-15A
REVISION NO.:	2

R:\AUTOCAD\CADDS5.21\F98-5227 Wed Nov 25 15:02:10 1998 AFENN

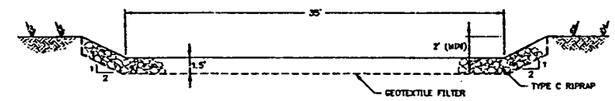
3099



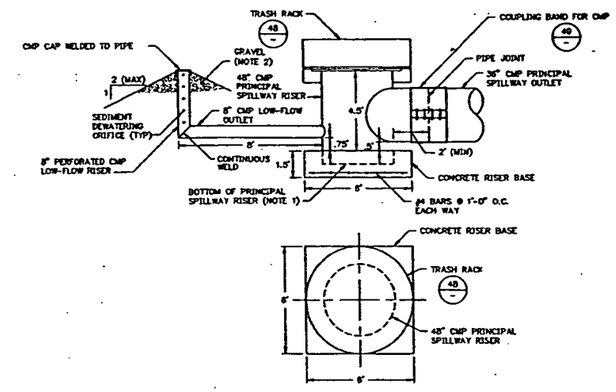
A SECTION
C-5C SEDIMENTATION BASIN PRINCIPAL SPILLWAY
SCALE: 1" = 5'



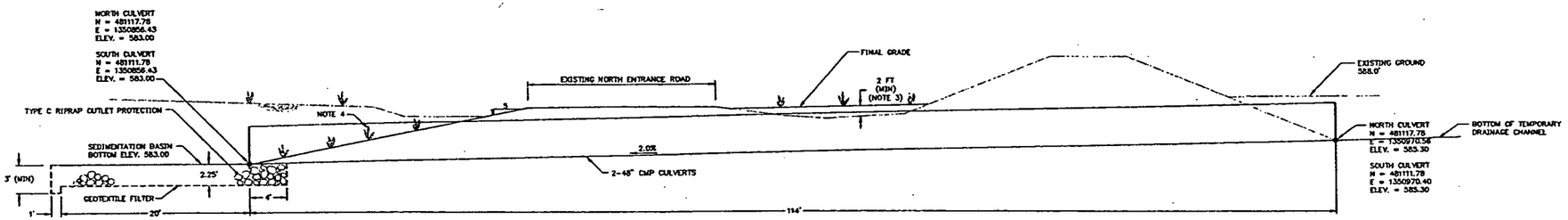
45 DETAIL
C-5C SEDIMENTATION BASIN EMERGENCY SPILLWAY
SCALE: 1" = 5'



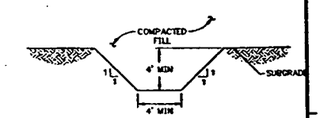
46 DETAIL
C-5C SEDIMENTATION BASIN EMERGENCY SPILLWAY OUTLET CHANNEL
SCALE: 1" = 5'



47 DETAIL
SEDIMENTATION BASIN PRINCIPAL SPILLWAY RISER
SCALE: 1" = 3'



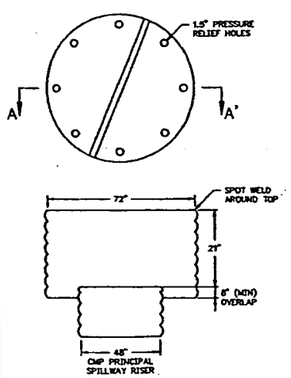
B SECTION
C-5C SEDIMENTATION BASIN DRAINAGE CULVERTS
SCALE: 1" = 5'



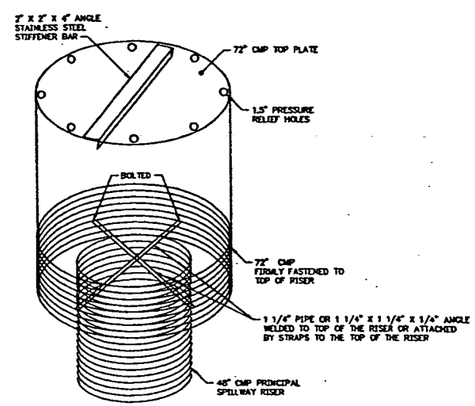
51 DETAIL
CUTOFF TRENCH
SCALE: 1" = 5'

NOTES:

1. PRINCIPAL SPILLWAY RISER SHALL BE EMBEDDED 0.75 FEET IN CONCRETE RISER BASE.
2. AASHTO NO.57 STONE SHALL BE USED AS GRAVEL SURFACING ALONG THE CREST OF THE SEDIMENTATION BASIN EMBANKMENT AND AROUND THE 8-INCH PERFORATED CMP LOW-FLOW RISER.
3. SUBCONTRACTOR SHALL FILL A MINIMUM OF 2 FT ABOVE THE CROWNS OF THE 48-INCH CMP CULVERTS. PLACEMENT AND COMPACTION OF FILL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200. ON THE EAST SIDE OF THE OLD NORTH ENTRANCE ROAD, SUBCONTRACTOR SHALL GRADE THE EXISTING SWALE NORTH OF THE 48-INCH CMP CULVERTS TO DRAIN TO THE NORTH.
4. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
5. CULVERTS AND RISERS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721.

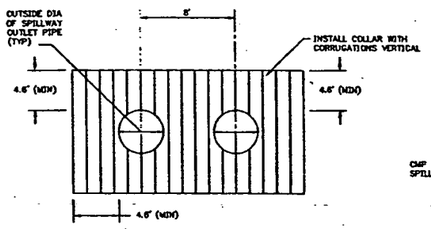


SECTION A-A'

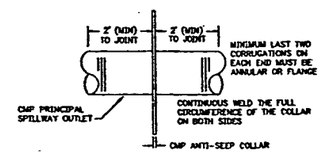


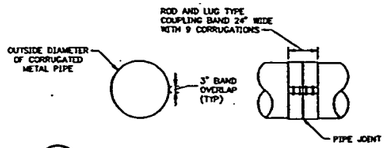
ISOMETRIC VIEW

48 DETAIL
CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE
SCALE: NTS



50 DETAIL
ANTI-SEEP COLLAR
SCALE: NTS





49 DETAIL
COUPLING BAND FOR CORRUGATED METAL PIPE
SCALE: NTS

LEGEND

TEMPORARY VEGETATION

PERMANENT VEGETATION

000050

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVE
0	10.10.96	CERTIFIED FOR CONSTRUCTION	DLVL	JMF	KLD	KMC	RB

SCALE IN FEET

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

CLIENT: FERNALD ENVIRONMENTAL RESTORATION MANAGEMENT CORPORATION

PROJECT: ON-SITE DISPOSAL FACILITY PHASE I CONSTRUCTION

TITLE: SEDIMENTATION BASIN DETAILS

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

STATE OF OHIO — RUDOLPH BONAFANTE — E-63879 — REGISTERED PROFESSIONAL ENGINEER

11 04 1996

GEO SYSTEMS CONSULTANTS

FERNCO PROJECT NO:	20100
FERNCO SUBCONTRACT NO:	PSP-5000028
FERNCO DRAWING NO:	SCX-C-6000-00089
GEOSYNTEC PROJECT NO:	GE3900-21.1
GEOSYNTEC DOCUMENT NO:	F98-3523
SHEET NO:	C-41A
REVISION NO:	0

CERTIFIED FOR CONSTRUCTION

SYMBOLS LEGEND

EXISTING / NEW

- BATTERY LIMIT
- FEMP PROPERTY LINE
- BUTLER COUNTY/HAMILTON COUNTY LINE
- FENCE
- SECURITY FENCE
- RADIOLOGICAL CONTROL FENCE
- FENCE GATE
- PAVED ROAD, SIDEWALK, OR PARKING LOT
- UNPAVED ROAD, SIDEWALK, OR PARKING LOT
- CENTERLINE
- SLOPE CREST OR TOE
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- CELL DESIGNATION
- SITE FEATURE
- DRAINAGE FLOW DIRECTION
- SLOPE INDICATOR (CREST / TOE)
- CONSTRUCTION CONTROL POINT
- POST
- BENCHMARK (BM-10)
- LEACHATE TRANSMISSION SYSTEM PERMANENT LIFT STATION
- DRAINAGE CHANNEL GRAVITY INLET STRUCTURE
- CULVERT
- GUY ANCHOR AND GUY WIRE(S) ASSEMBLY
- GEOTEXTILE SEPARATOR
- HEATER (UH)
- PUMP
- WATER SURFACE
- REINFORCED CONCRETE PIPE
- DEMOLITION LIMIT
- BERM CREST
- GROUT
- RIPRAP
- TRENCH BACKFILL
- PIPE EMBEDMENT FILL
- BASE AGGREGATE
- SEDIMENT
- SUBGRADE/COMPACTED FILL
- EXISTING GRADE
- CONCRETE
- ACCESS CORRIDOR
- RE-ESTABLISH EXISTING GRADES

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BM	BENCH MARK
BOP	BOTTOM OF PIPE
CFC	CERTIFIED-FOR-CONSTRUCTION
CG&E	CINCINNATI GAS AND ELECTRIC
℄	CENTERLINE
CLR	CLEARANCE
CMP	CORRUGATED METAL PIPE
CQC	CONSTRUCTION QUALITY CONTROL
CVH	CONTROL VALVE HOUSE
D	DEPTH
DIA	DIAMETER
DOE	DEPARTMENT OF ENERGY
DOT	DEPARTMENT OF TRANSPORTATION
DW	DRINKING WATER
E	EASTING
EL	ELEVATION
EPA	ENVIRONMENTAL PROTECTION AGENCY
EPDM	ETHYLENE PROPYLENE DIENE MONOMER
EPLTS	ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM
FEMP	FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FF	FLUOR FERNALD
FG	FUEL GAS
FT	FILTRATE
HDPE	HIGH DENSITY POLYETHYLENE
GIS	DRAINAGE CHANNEL GRAVITY INLET STRUCTURE
H:V	HORIZONTAL TO VERTICAL LENGTH RATIO FOR A SLOPE
ICAT	INTEGRATED CONSTRUCTION ACCEPTANCE TEST
ID	INSIDE DIAMETER
ILTS	INTERIM LEACHATE TRANSMISSION SYSTEM
INC.	INCORPORATED
IP	IRON PIN
LCS	LEACHATE COLLECTION SYSTEM
LCS-M*	EXISTING LEACHATE COLLECTION SYSTEM MANHOLE DESIGNATION
LDS	LEAK DETECTION SYSTEM
LDS-M*	EXISTING LEAK DETECTION SYSTEM MANHOLE DESIGNATION
LF	LINEAR FOOT
LTS	LEACHATE TRANSMISSION SYSTEM
(MAX)	MAXIMUM
(MIN)	MINIMUM
N	NORTHING
N/A	NOT APPLICABLE
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
OMTA	OSDF MATERIAL TRANSFER AREA
OSDF	ON-SITE DISPOSAL FACILITY
PI	POINT OF INTERSECTION
PLS	PERMANENT LIFT STATION
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
RCP	REINFORCED CONCRETE PIPE
REV.	REVISION
RGS	RIGID GALVANIZED STEEL CONDUIT
RLCS	REDUNDANT LEACHATE COLLECTION SYSTEM
SCH	SCHEDULE
SDR	STANDARD DIMENSION RATIO
SN	SANITARY
SOT	SYSTEM OPERABILITY TEST
SS	STAINLESS STEEL
SSR	STANDARD START-UP REVIEW
ST	STORM SEWER
STA	STATION
(TYP)	TYPICAL
W	WIDTH
WAC	WASTE ACCEPTANCE CRITERIA
W.E.	WATER ELEVATION
WWF	WELDED WIRE FABRIC
VH-*	VALVE HOUSE
&	AND

MECHANICAL LEGEND

SYMBOLS

- OPEN KNIFE GATE VALVE
- CLOSED KNIFE GATE VALVE
- OPEN BALL VALVE
- CLOSED BALL VALVE
- BLIND FLANGE
- CHECK VALVE
- ELECTRICAL CONTROL PANEL
- ELECTRICAL SIGNAL
- FLOW DIRECTION
- LOCAL MOUNTED INSTRUMENT
- PANEL MOUNTED INSTRUMENT
- MATERIAL CODE BREAK
- MOTOR OPERATOR
- OPEN PIPE END
- PIPE SIZE BREAK
- QUICK CONNECT
- MONITORING PORT (WITH VALVE)
- SAMPLING PORT (WITH VALVE)
- LOW POINT DRAIN AND SAMPLING PORT (WITH VALVE)
- SUBMERSIBLE PUMP
- TRANSFER PUMP
- VENT WITH SCREEN
- PRESSURE INDICATOR
- FLOW METER

PIPING CODES

MC – PS – MT – LN – MD

MC = FLOW MEDIUM CODE
PS = NOMINAL PIPE SIZE (CARRIER\CONTAINMENT) NON-CENTRALIZED
(PS) = NOMINAL PIPE SIZE (CARRIER\CONTAINMENT) CENTRALIZED
MT = PIPE MATERIAL STANDARD ABBREVIATION
LN = PIPELINE NUMBER
MD = MODIFIER (IF REQUIRED)

EXAMPLE: CE-6"\10"-B4-0006-IC
CE = CONTAMINATED SEWER
6"\10" = 6"\10" NOMINAL PIPE SIZE – NON-CENTRALIZED (CARRIER\CONTAINMENT)
B4 = HDPE
0006 = PIPELINE NUMBER 0006
IC = CONDENSATION INSULATION

STANDARD ABBREVIATIONS

A	A53, GRADE A SEAMLESS STEEL PIPE
B4	HIGH DENSITY POLYETHYLENE (HDPE)
CE	CONTAMINATED SEWER
FH	FLEXIBLE-METAL HOSE ASSEMBLY-TYPE 304 STAINLESS STEEL WIRE BRAID AND TYPE 316 STAINLESS STEEL FITTINGS
FPT	FEMALE PIPE THREAD
IC	CONDENSATION INSULATION
IPS	IRON PIPE SIZE
WW	WASTEWATER

EQUIPMENT ABBREVIATIONS

FE	FLOW ELEMENT
FM	FORCEMAIN
FQI	FLOW TOTALIZER/INDICATOR
FT	FLOW TRANSMITTER
LA	ALARM LIGHT
LI	LEVEL INDICATOR
LIC	PROGRAMMABLE LEVEL INDICATOR/CONTROLLER
LL	LEVEL LIGHT
LR	LEVEL RECORDER
LS	LEVEL SWITCH
LSHH	LEVEL SWITCH HIGH HIGH
LT	LEVEL TRANSMITTER
P	CONTROL PANEL
PC	PRIMARY CONTAINMENT VESSEL
PI	PRESSURE INDICATOR
PMP	PUMP
QC	QUICK CONNECT
T	TANK
V	VALVE

INSTRUMENT CODES

AAA – BCC
AAA = EQUIPMENT ABBREVIATION
B = CELL NUMBER
CC = INSTRUMENT NUMBER

EXAMPLE: V-304
V = VALVE
3 = CELL 3
04 = INSTRUMENT NUMBER 04

ELECTRICAL LEGEND

ABBREVIATIONS

A	AMPERE
ACSR	ALUMINUM CLAD STEEL REINFORCED
ALUM.	ALUMINUM
AMPS	AMPERES
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AWG	AMERICAN WIRE GAUGE
AWPA	AMERICAN WOOD PRODUCTS ASSOCIATION
BIL	BASIC IMPULSE LEVEL
C	CONDUIT
CAT.	CATALOG
CBL	CABLE
CKT.	CIRCUIT
CRL	CONTROL RELAY
DOA	DISSOLVED OXYGEN AUGMENTATION
DPDT	DOUBLE POLE DOUBLE THROW
DWG.	DRAWING
E	FUSE SIZE
FC	FUSED CUTOUT
FCL	FUSED CUTOUT WITH LIGHTNING ARRESTOR
FDR.	FEEDER
FQI	FLOW TOTALIZER/INDICATOR
FT	FLOW TRANSMITTER
FU	FUSE
G	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTOR
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
JIC	JOINT INDUSTRIAL COUNCIL
KA	THOUSAND AMPS
KCMIL	THOUSAND CIRCULAR MILS
KV	KILOVOLTS
KVA	KILOVOLT AMPS
LA	LIGHTNING ARRESTOR
LBS	POUNDS
LBS/FT	POUNDS PER LINEAR FOOT
LBS/FT^3	POUNDS PER CUBIC FOOT
LI	LEVEL INDICATOR
LL	LEVEL LIGHT
LP	LIGHTING PANEL
LR	LEVEL RECORDER
LS	LEVEL SWITCH
LT	LEVEL TRANSMITTER
MA	MILLIAMP
MCB	MAIN CIRCUIT BREAKER
MCP	MOTOR CONTROL PANEL
MSC	MANUFACTURER SUPPLIED CABLE
N.O.	NORMALLY OPEN
NO.	NUMBER
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
PH	PHASE
PLS	PERMANENT LIFT STATION
PMP	PUMP
REC.	RECEPTABLE
RGS	RIGID GALVANIZED STEEL CONDUIT
SD	SERVICE DISCONNECT
SHLD	SHIELD
S.N.	SOLID NEUTRAL
SPAR.	SPARROW
T	TRANSFORMER
T–	TRAILER NUMBER
UH	UNIT HEATER
UV	ULTRAVIOLET
V	VOLTS
V–	VALVE
VAC	VOLT ALTERNATING CURRENT
VDC	VOLT DIRECT CURRENT
W	WIRE
WPK	WALL PACK
XFMR	TRANSFORMER
Z	IMPEDANCE

SYMBOLS

Δ	DELTA
Y	WYE

DETAIL AND SECTION IDENTIFICATION LEGEND

SEQUENTIAL DETAIL NUMBER (31)
SHEET ON WHICH ABOVE DETAIL IS PRESENTED (G-15)

SEQUENTIAL DETAIL NUMBER (31)
SHEET ON WHICH ABOVE DETAIL IS REFERENCED (G-22)

DETAIL
LINER SYSTEM ON CELL BASE
SCALE: 1" = 2'

EXAMPLE: DETAIL NUMBER 31, WHICH IS PRESENTED ON SHEET G-15, WAS REFERENCED ON SHEET G-22.

SECTION LETTER (C)
SHEET ON WHICH ABOVE SECTION IS PRESENTED (G-15)

SECTION LETTER (C)
SHEET ON WHICH ABOVE SECTION IS REFERENCED (G-5)

SECTION
CELL PERIMETER
SCALE: 1" = 2'

EXAMPLE: SECTION LETTER "C", WHICH IS PRESENTED ON SHEET G-15, WAS REFERENCED ON SHEET G-5.

CONTOUR LEGEND

EXISTING		NEW
590	EXISTING GROUND ELEVATION (FEET)	
	SUBGRADE ELEVATION (FEET)	580

UTILITY LEGEND

EXISTING		NEW
OHE	OVERHEAD ELECTRIC	
UG	BURIED CONDUIT	UG
	13.2KV OVERHEAD PRIMARY LINE	P
ILTS	ILTS PIPE	
	LTS PIPE	6+00
	OVERHEAD POWER POLE	

GENERAL NOTES

NOTES:

1. TOPOGRAPHY BASED ON 12 JANUARY 2000 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 WHERE 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.

CERTIFIED-FOR-CONSTRUCTION

000051

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVED
0	00.03.20	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	RMB	JMB	LMG	DLW	JFB
A	00.01.17	PRE-FINAL SUBMITTAL TO FF/DOE/EPA	WHB	JMS	LMG	DLW	JFB

SCALE AS SHOWN

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

CLIENT: FLUOR FERNALD, INC.

PROJECT: ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM

TITLE: LEGEND AND SYMBOLS

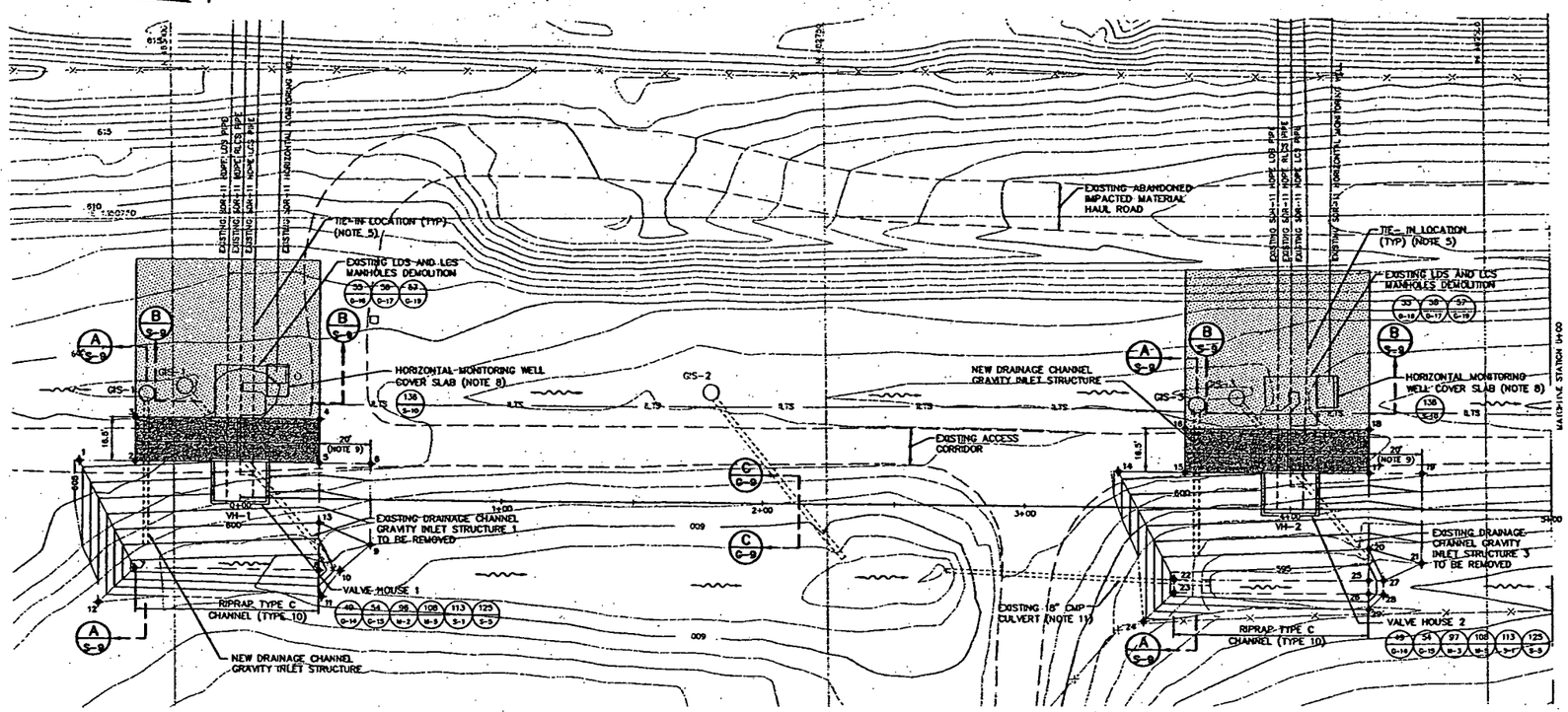
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION UNLESS SEALED.

STATE OF OHIO — JOHN F. BEECH — E-59240 — REGISTERED PROFESSIONAL ENGINEER

20MAR00

GeoSyntec Consultants

PROJECT NO.:	20111
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-6000-X-00240
GEOSYNTEC PROJECT NO.:	GO1030-07
GEOSYNTEC DOCUMENT NO.:	F00-0281
SHEET NO.:	X-2
REVISION NO.:	0



LEGEND

- 500 — EXISTING GROUND ELEVATION (FEET)
- 595 — SUBGRADE ELEVATION (FEET)
- 1+00 — LTS PIPE
- 8.7% — 8.7% PIPE
- SLOPE CREST OR TOE
- DRAINAGE FLOW DIRECTION
- RE-ESTABLISH EXISTING GRADES (NOTE 7)
- ACCESS CORRIDOR (NOTE 6)

Project: EM030-07 Wed Jan 19 13:53:30 2000
Horizontal Alignment: Station and Curve Report
Alignment: LTSPPE Desc: LTS PIPE

Desc.	Station	Spiral/Curve Data		Northing	Easting
PI	0+00			482974.77	1350844.27
	Length:	2431.00	Course:	S 00-42-01 W	
PI	24+31			480543.85	1350844.56
	Length:	340.23	Course:	S 00-53-34 E	
	Delta:	8-35-33			
		Tangent Data			
	0+00			482974.77	1350844.27
	24+31			480543.85	1350844.56
	Length:	2431.00	Course:	S 00-42-01 W	
PI	27+71.23			480205.38	1350848.53
	Length:	482.09	Course:	S 00-42-01 W	
	Delta:	8-35-33			
		Tangent Data			
	24+31			480543.85	1350844.56
	27+71.23			480205.38	1350848.53
	Length:	340.23	Course:	S 00-53-34 E	
PI	32+33.23			479743.54	1350843.88
	Length:	171.08	Course:	S 10-33-34 W	
	Delta:	9-00-23			
		Tangent Data			
	27+71.23			480205.38	1350848.53
	32+33.23			479743.54	1350843.88
	Length:	462.09	Course:	S 00-42-01 W	
PI	34+04.34			479573.34	1350812.58
	Length:	20.00	Course:	S 03-30-58 E	
	Delta:	14-23-23			
		Tangent Data			
	32+33.23			479743.54	1350843.88
	34+04.34			479573.34	1350812.58
	Length:	171.08	Course:	S 10-33-34 W	
PI	34+24.34			479555.38	1350813.93
		Tangent Data			
	34+04.34			479573.34	1350812.58
	34+24.34			479555.38	1350813.93
	Length:	20.00	Course:	S 03-30-58 E	

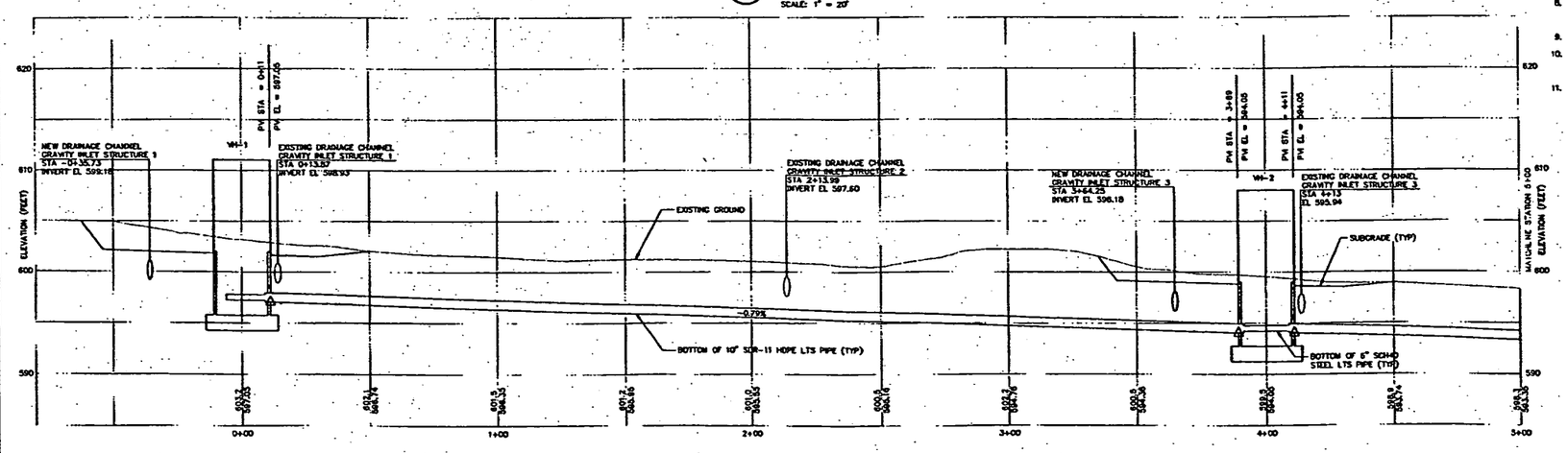
NOTES:

1. TOPOGRAPHY BASED ON 12 JANUARY 2000 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 ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SUPPORT AS REQUIRED TO MAINTAIN AND PROTECT EXISTING ACTIVE UTILITIES. CONTRACTOR SHALL VERIFY THAT UTILITIES IDENTIFIED BY CONSTRUCTION MANAGER AS ABANDONED ARE SUCH PRIOR TO EXCAVATION. ABANDONED UTILITIES SHALL BE REMOVED WITHIN LIMITS OF EXCAVATION.
5. TIE-IN LOCATION IS APPROXIMATE AND REPRESENTS LOCATION WHERE EXISTING LDS, RLCS OR LCS PIPES TRANSITION FROM SDR-26 TO SDR-11. CONTRACTOR SHALL REMOVE EXISTING LDS, RLCS AND LCS SDR-26 PIPES BETWEEN EXISTING MANHOLES AND TIE-IN LOCATIONS.
6. CONTRACTOR SHALL CONSTRUCT GEOTEXTILE SEPARATOR AND BASE AGGREGATE FOR ACCESS CORRIDOR. BASE AGGREGATE THICKNESS SHALL BE 12 INCHES.
7. CONTRACTOR SHALL RE-ESTABLISH EXISTING GRADES, RIPRAP TYPE C AND VEGETATION WITHIN APPROXIMATE AREA SHOWN AFTER COMPLETION OF STAGE 3 DEMOLITION ACTIVITIES AND VALVE HOUSE CONSTRUCTION.
8. LOCATION OF NEW HORIZONTAL MONITORING WELL COVER SLAB SHOWN IS APPROXIMATE. CONTRACTOR SHALL LOCATE NEW HORIZONTAL MONITORING WELL COVER SLAB ON EXISTING HORIZONTAL MONITORING WELL PIPES AS SHOWN ON DRAWING S-10.
9. CONTRACTOR SHALL TRANSITION SUBGRADES TO EXISTING GRADES WITHIN AREA SHOWN.
10. CONTRACTOR SHALL PLACE A 1.5-FEET THICK RIPRAP TYPE C LAYER ON DRAINAGE CHANNEL BOTTOM AND SIDESLOPES. RIPRAP ON SIDESLOPES SHALL EXTEND A MINIMUM OF 3 FEET ABOVE CHANNEL BOTTOM SUBGRADE ELEVATIONS OR TO INTERSECTION OF SIDESLOPES WITH EXISTING GROUND.
11. CONTRACTOR SHALL CUT AND REMOVE A PORTION OF EXISTING CORRUGATED METAL PIPE CULVERT WITHIN LIMITS OF EARTHWORK FOR VALVE HOUSE 2. CONTRACTOR SHALL PLACE RIPRAP TYPE C AS OUTLET PROTECTION BETWEEN END OF CULVERT AND EXISTING DRAINAGE CHANNEL.

SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
1	483030.38	1350858.81	604.49	15	482814.43	1350853.37	601.28	39	482345.27	1350800.90	598.00
2	483014.81	1350858.28	604.28	16	482814.43	1350869.87	601.28				
3	483014.40	1350874.78	604.28	17	482544.44	1350852.51	600.77				
4	482944.41	1350873.80	603.77	18	482544.44	1350869.91	600.77				
5	482944.80	1350857.40	603.77	19	482324.84	1350852.27	600.42				
6	482924.81	1350857.15	603.52	20	482324.98	1350823.91	598.00				
7	482915.10	1350817.65	597.32	21	482323.08	1350818.35	598.00				
8	482945.10	1350816.80	597.00	22	482315.88	1350812.81	594.55				
9	482938.09	1350938.51	600.09	23	482315.94	1350807.51	594.55				
10	482938.86	1350815.59	599.75	24	482330.43	1350598.85	598.34				
11	482944.14	1350855.28	600.20	25	482345.14	1350811.94	594.00				
12	483028.89	1350804.89	602.00	26	482345.20	1350806.81	594.00				
13	482938.98	1350854.88	600.00	27	482338.88	1350815.84	595.86				
14	482939.18	1350853.87	601.48	28	482329.81	1350806.62	595.88				

1 PLAN
LTS PIPE
SCALE: 1" = 20'



2 PROFILE
LTS PIPE
SCALE: 1" = 20' HORIZONTAL
SCALE: 1" = 5' VERTICAL

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVED
0	00.03.20	CFC SUBMITTAL TO FLUOR FERNALD, INC/DOE/EPA	PRV	JJB	RMB	DLW	JFD
A	00.01.17	PRE-FINAL SUBMITTAL TO FF/DOE/EPA	DLW	LDB/JJB	MRA	DLW	JFD

HORIZONTAL SCALE IN FEET: 20 10 0 20 40
VERTICAL SCALE IN FEET: 5 2.5 0 5 10

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

CLIENT: FLUOR FERNALD, INC.

000052

PROJECT: ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM

TITLE: LTS PIPE PLAN AND PROFILE
STATIONS 0+00 TO 5+00

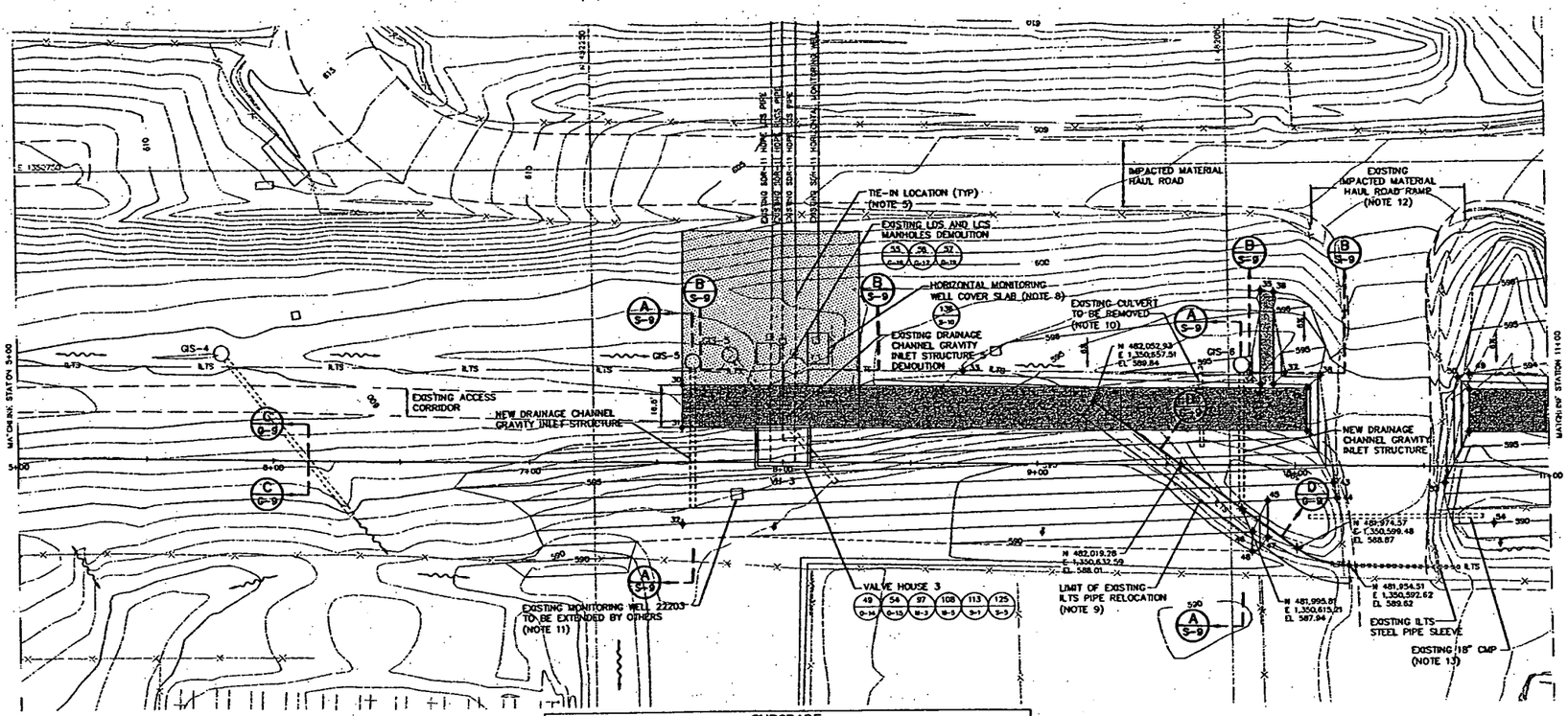
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT BIDDER OR CONTRACTOR, UNLESS SEALED.

28 AUG 00

STATE OF OHIO — JOHN J. BECCH E-58248 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

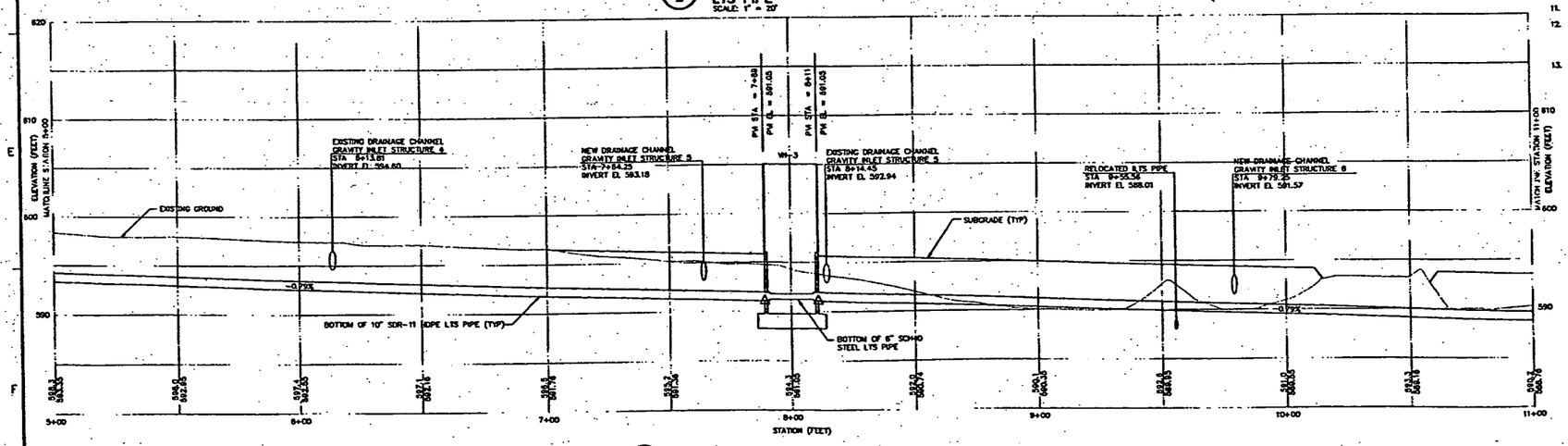
PROJECT NO.:	20111
CONTRACT NO.:	5DP5005028
PDMP DRAWING NO.:	9DX-6000-0-00281
GEOSYNTEC PROJECT NO.:	001030-07
GEOSYNTEC DOCUMENT NO.:	FDD-0319
SHEET NO.:	C-3
REVISION NO.:	0



SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
30	482214.46	1350844.98	596.29	44	481938.92	1350618.13	592.00
31	482214.86	1350848.46	596.29	45	481885.73	1350618.23	592.00
32	482215.04	1350810.73	592.00	46	481991.80	1350609.05	590.00
33	482213.80	1350819.63	595.48	47	481993.91	1350603.39	592.00
34	481993.19	1350868.29	594.82	48	481991.97	1350598.34	590.00
35	481987.87	1350700.71	596.09	49	481998.01	1350647.22	593.98
36	481982.38	1350999.36	596.03	50	481911.13	1350645.90	594.48
37	482179.13	1350998.09	594.52	51	481908.68	1350641.22	595.98
38	481964.71	1350848.95	594.73	52	481906.85	1350644.72	595.98
39	481987.81	1350843.71	596.09	53	481918.89	1350624.87	592.73
40	481982.82	1350842.85	596.03	54	481897.38	1350609.16	590.00
41	481989.87	1350841.99	596.48				
42	481870.11	1350845.40	596.46				
43	481959.88	1350835.09	593.05				

3 PLAN
LTS PIPE
SCALE: 1" = 20'



4 PROFILE
LTS PIPE
SCALE: 1" = 20' HORIZONTAL
SCALE: 1" = 5' VERTICAL

LEGEND

- 600 — EXISTING GROUND ELEVATION (FEET)
- 595 — SUBGRADE ELEVATION (FEET)
- 6+00 — LTS PIPE
- ILTS — ILTS PIPE
- SLOPE CREST OR TOE
- DRAINAGE FLOW DIRECTION
- RE-ESTABLISH EXISTING GRADES (NOTE 7)
- ACCCESS CORRIDOR (NOTE 6)
- BERM CREST

Project: C00030-07
Horizontal Alignment Station and Curve Report.
Alignment: LTSPIPE
Data: LTS PIPE
Sat Jan 15 15:53:50 2000

Data	Station	Spiral/Curve Data		Northing	Easting
PI	0+00			482974.77	1350844.27
	Length:	2431.00	Course:	S 00-42-01 W	
PI	24+31			480543.98	1350814.58
	Length:	340.23	Course:	S 00-33-54 E	
	Delta:	0-23-59			
	Tangent Data				
	0+00			482974.77	1350844.27
	24+31			480543.98	1350814.58
	Length:	2431.00	Course:	S 00-42-01 W	
PI	27+71.25			480205.50	1350848.53
	Length:	483.08	Course:	S 00-42-01 W	
	Delta:	8-25-59			
	Tangent Data				
	24+31			480543.98	1350814.58
	27+71.25			480205.50	1350848.53
	Length:	340.25	Course:	S 00-33-54 E	
PI	32+33.25			479943.54	1350843.88
	Length:	171.08	Course:	S 10-25-24 W	
	Delta:	9-50-23			
	Tangent Data				
	27+71.25			480205.50	1350848.53
	32+33.25			479943.54	1350843.88
	Length:	462.00	Course:	S 00-42-01 W	
PI	34+04.34			479875.34	1350872.58
	Length:	20.00	Course:	S 03-50-38 E	
	Delta:	14-23-23			
	Tangent Data				
	32+33.25			479943.54	1350843.88
	34+04.34			479875.34	1350872.58
	Length:	171.08	Course:	S 10-23-24 W	
PI	34+24.34			479855.38	1350873.83
	Tangent Data				
	34+04.34			479875.34	1350872.58
	34+24.34			479855.38	1350873.83
	Length:	20.00	Course:	S 03-50-38 E	

NOTES:

1. TOPOGRAPHY BASED ON 12 JANUARY 2000 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 ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SUPPORT AS REQUIRED TO MAINTAIN AND PROTECT EXISTING ACTIVE UTILITIES. CONTRACTOR SHALL VERIFY THAT UTILITIES IDENTIFIED BY CONSTRUCTION MANAGER AS ABANDONED ARE SUCH PRIOR TO EXCAVATION. ABANDONED UTILITIES SHALL BE REMOVED WITHIN LIMITS OF EXCAVATION.
5. TIE-IN LOCATION IS APPROXIMATE AND REPRESENTS LOCATION WHERE EXISTING LDS, RLCS OR LCS PIPES TRANSITION FROM SDR-26 TO SDR-11. CONTRACTOR SHALL REMOVE EXISTING LDS, RLCS AND LCS SDR-26 PIPES BETWEEN EXISTING MANHOLES AND TIE-IN LOCATIONS.
6. CONTRACTOR SHALL CONSTRUCT GEOTEXTILE SEPARATOR AND BASE AGGREGATE FOR ACCESS CORRIDOR. BASE AGGREGATE THICKNESS SHALL BE 12 INCHES.
7. CONTRACTOR SHALL RE-ESTABLISH EXISTING GRADES, RIPRAP AND VEGETATION WITHIN APPROXIMATE AREA SHOWN AFTER COMPLETION OF STAGE 3 DEMOLITION ACTIVITIES AND VALVE HOUSE CONSTRUCTION.
8. LOCATION OF NEW HORIZONTAL MONITORING WELL COVER SLAB SHOWN IS APPROXIMATE. CONTRACTOR SHALL LOCATE NEW HORIZONTAL MONITORING WELL COVER SLAB ON EXISTING HORIZONTAL MONITORING WELL PIPES AS SHOWN ON DRAWING S-10.
9. ELEVATIONS OF RELOCATED ILTS PIPE CORRESPOND TO INVERT OF PIPE.
10. CONTRACTOR SHALL REMOVE EXISTING CULVERT AND STOCKPILE AT LOCATION APPROVED BY CONSTRUCTION MANAGER.
11. CONTRACTOR SHALL NOT DISTURB OR DAMAGE MONITORING WELL 22203.
12. EXISTING IMPACTED MATERIAL HAUL ROAD RAMP MAY CONTAIN IMPACTED MATERIAL. CONTRACTOR SHALL COORDINATE CONSTRUCTION OF LTS PIPE THROUGH EXISTING IMPACTED MATERIAL HAUL ROAD RAMP WITH CONSTRUCTION MANAGER. CONTRACTOR SHALL STOCKPILE EXCAVATED MATERIAL FROM EXISTING IMPACTED MATERIAL HAUL ROAD RAMP AT LOCATION APPROVED BY CONSTRUCTION MANAGER.
13. CONTRACTOR SHALL ABANDON EXISTING CORRUGATED METAL PIPE CULVERT IN PLACE BY FILLING ENDS OF CULVERT WITH GROUT FOR A MINIMUM OF 4 FEET.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVED
0	00.03.30	O'C SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	PHY	JJR	RMB	DLW	JFB
A	00.01.17	PRE-FINAL SUBMITTAL TO FF/DOE/EPA	DLW	LOB/JJR	MRA	DLW	JFB

HORIZONTAL SCALE IN FEET: 20 10 0 20 40
VERTICAL SCALE IN FEET: 5 2.5 0 5 10

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

CLIENT:
FLUOR FERNALD, INC.

000053

PROJECT:
ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM

TITLE:
LTS PIPE PLAN AND PROFILE
STATIONS 5+00 TO 11+00

THIS DRAWING MAY NOT BE SIGNED FOR PROJECT SERVICE OR CONSTRUCTION, UNLESS SEALED.

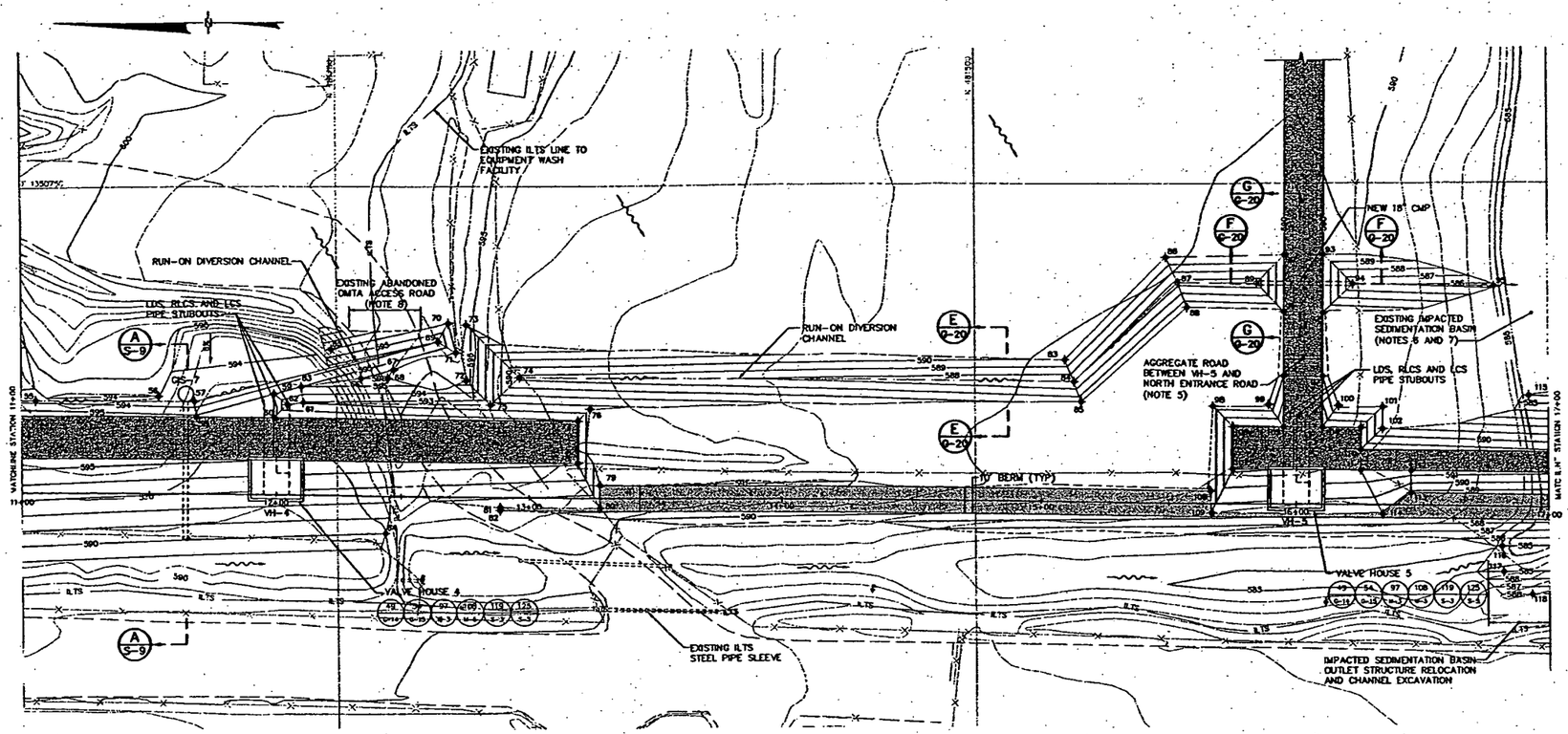
SIGNATURE: J.F. Bessel
DATE: 20 Jan 00

STATE OF OHIO — JOHN E. BESSEL E-58249 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1055 LAKE OLEMPIA DRIVE
JACKSONVILLE, FLORIDA 32259 USA

PROJECT NO.:	20111
CONTRACT NO.:	9SP3005028
STMP DRAWING NO.:	9X01-8000-C-00282
GEOSYNTEC PROJECT NO.:	001030-07
GEOSYNTEC DOCUMENT NO.:	F00-0320
SHEET NO.:	C-4
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION

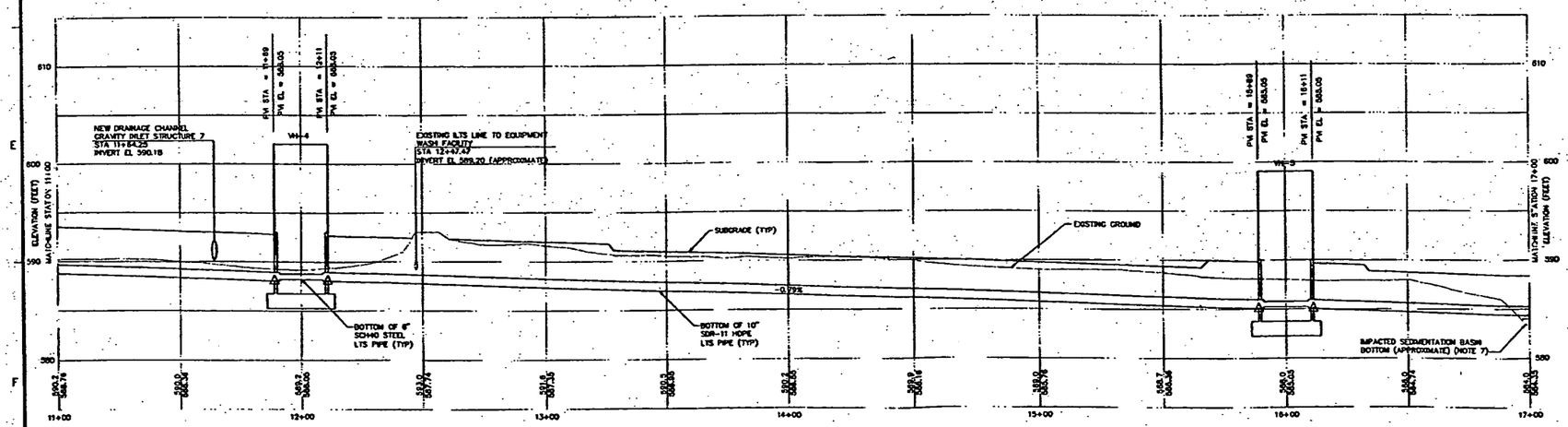


5 PLAN
LTS PIPE
SCALE: 1" = 20'

SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
55	481869.26	1350868.76	593.70	69	481710.21	1350869.27	593.98	83	481485.33	1350881.82	589.87	97	481364.28	1350874.49	590.00	111	481349.73	1350537.81	591.80
56	481832.99	1350868.19	594.00	70	481708.83	1350898.41	594.00	84	481461.81	1350872.58	587.05	98	481407.39	1350863.12	589.84	112	481329.73	1350537.88	591.83
57	481808.77	1350868.00	593.83	71	481702.83	1350864.95	595.00	85	481438.98	1350884.80	588.81	99	481385.31	1350863.53	589.18	113	481329.84	1350528.87	588.78
58	481808.15	1350868.19	593.53	72	481698.81	1350874.02	595.54	86	481423.18	1350731.19	590.00	100	481358.33	1350863.54	589.03	114	481341.18	1350528.81	588.88
59	481778.48	1350868.81	593.00	73	481698.82	1350865.78	595.60	87	481420.80	1350711.30	588.83	101	481341.01	1350852.53	589.00	115	481293.77	1350867.01	584.00
60	481763.26	1350869.42	592.50	74	481698.50	1350873.23	589.87	88	481417.25	1350701.80	589.82	102	481341.12	1350854.03	589.00	116	481293.42	1350809.20	585.00
61	481763.81	1350869.57	592.91	75	481698.48	1350864.36	592.35	89	481389.88	1350710.92	586.39	103	481349.03	1350854.41	591.80	117	481293.82	1350798.71	585.00
62	481764.47	1350869.72	593.31	76	481695.81	1350874.08	590.00	90	481378.71	1350700.00	590.00	104	481344.03	1350854.38	591.92	118	481281.75	1350599.35	588.00
63	481764.47	1350871.72	595.00	77	481695.50	1350868.15	594.10	91	481378.98	1350689.72	590.00	105	481379.53	1350854.77	592.03				
64	481764.24	1350873.33	590.00	78	481695.41	1350863.63	594.19	92	481383.98	1350699.20	590.00	106	481399.32	1350855.02	592.18				
65	481764.29	1350884.53	590.00	79	481845.28	1350833.04	591.13	93	481383.70	1350722.01	590.00	107	481389.73	1350838.52	592.18				
66	481740.31	1350878.97	590.00	80	481847.00	1350824.10	588.11	94	481332.17	1350710.97	588.11	108	481408.44	1350830.13	589.23				
67	481727.58	1350878.40	590.00	81	481885.99	1350823.86	589.43	95	481298.09	1350709.78	583.69	109	481408.23	1350821.82	589.23				
68	481729.72	1350875.08	590.00	82	481888.01	1350823.52	587.43	96	481378.29	1350874.07	590.00	110	481349.63	1350543.91	591.80				

6 PROFILE
LTS PIPE
SCALE: 1" = 20' HORIZONTAL
SCALE: 1" = 3' VERTICAL



CERTIFIED-FOR-CONSTRUCTION

LEGEND

- 590 — EXISTING GROUND ELEVATION (FEET)
- 590 — SUBGRADE ELEVATION (FEET)
- 154+00 — LTS PIPE
- ILTS — ILTS PIPE
- SLOPE CREST OR TOE
- DRAINAGE FLOW DIRECTION
- ACCESS CORRIDOR (NOTE 5)
- BERM CREST

Project: 001630-07
Horizontal Alignment: Station and Curve Report
Alignment: LSPPE
Descr: LTS PIPE
Sat Jan 15 15:53:30 2000

Desc.	Station	Spiral/Curve Data			Northing	Easting
PI	0+00				482974.77	1350844.27
	Length:	2438.00	Course:		S 00-42-01 W	
PI	24+38				480043.95	1350834.38
	Length:	340.23	Course:		S 05-33-54 E	
	Delta:	8-30-33				
		Tangent Data				
	0+00				482974.77	1350844.27
	24+38				480043.95	1350834.38
	Length:	2438.00	Course:		S 00-42-01 W	
PI	27+71.23				480205.50	1350848.53
	Length:	482.09	Course:		S 00-42-01 W	
	Delta:	8-30-38				
		Tangent Data				
	24+38				480043.95	1350834.38
	27+71.23				480205.50	1350848.53
	Length:	340.23	Course:		S 05-33-54 E	
PI	32+33.23				479743.34	1350843.88
	Length:	171.09	Course:		S 10-32-34 W	
	Delta:	9-30-23				
		Tangent Data				
	27+71.23				480205.50	1350848.53
	32+33.23				479743.34	1350843.88
	Length:	462.00	Course:		S 00-42-01 W	
PI	34+04.34				479573.34	1350812.38
	Length:	20.00	Course:		S 83-30-38 E	
	Delta:	14-23-23				
		Tangent Data				
	32+33.23				479743.34	1350843.88
	34+04.34				479573.34	1350812.38
	Length:	171.09	Course:		S 10-32-34 W	
PI	34+24.34				479555.38	1350813.83
		Tangent Data				
	34+04.34				479573.34	1350812.38
	34+24.34				479555.38	1350813.83
	Length:	20.00	Course:		S 03-30-38 E	

NOTES:

1. TOPOGRAPHY BASED ON 12 JANUARY 2000 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 ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SUPPORT AS REQUIRED TO MAINTAIN AND PROTECT EXISTING ACTIVE UTILITIES. CONTRACTOR SHALL VERIFY THAT UTILITIES IDENTIFIED BY CONSTRUCTION MANAGER AS ABANDONED ARE SUCH PRIOR TO EXCAVATION. ABANDONED UTILITIES SHALL BE REMOVED WITHIN LIMITS OF EXCAVATION.
5. CONTRACTOR SHALL CONSTRUCT GEOTEXTILE SEPARATOR AND BASE AGGREGATE FOR ACCESS CORRIDOR AND AGGREGATE ROAD BETWEEN VALVE HOUSE 5 AND NORTH ENTRANCE ROAD. BASE AGGREGATE THICKNESS SHALL BE 12 INCHES.
6. WATER ELEVATION IN IMPACTED SEDIMENTATION BASIN IS SUBJECT TO SUDDEN RISE TO ELEVATION 588.
7. CONTRACTOR SHALL EXCAVATE SEDIMENT IN CUT AND FILL AREAS AND RESTORE IMPACTED SEDIMENTATION BASIN BOTTOM ELEVATIONS AS SHOWN ON DRAWINGS G-5 AND G-6. CONTRACTOR SHALL STOCKPILE SEDIMENT AT LOCATION APPROVED BY CONSTRUCTION MANAGER.
8. EXISTING ABANDONED OMTA ACCESS ROAD MAY CONTAIN IMPACTED MATERIAL. CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES THROUGH EXISTING ABANDONED OMTA ACCESS ROAD WITH CONSTRUCTION MANAGER. CONTRACTOR SHALL STOCKPILE EXCAVATED MATERIAL FROM EXISTING ABANDONED OMTA ACCESS ROAD AT LOCATION APPROVED BY CONSTRUCTION MANAGER.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVED
0	00.03.20	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	PW	JJA	RMB	DLW	JFB
A	00.01.17	PRE-FINAL SUBMITTAL TO FF/DOE/EPA	DLW	LGE/JJA	MRA	DLW	JFB

HORIZONTAL SCALE IN FEET: 20 10 0 20 40
VERTICAL SCALE IN FEET: 5 2.5 0 5 10

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

CLIENT:
FLUOR FERNALD, INC. 000054

PROJECT:
ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM

TITLE:
LTS PIPE PLAN AND PROFILE
STATIONS 11+00 TO 17+00

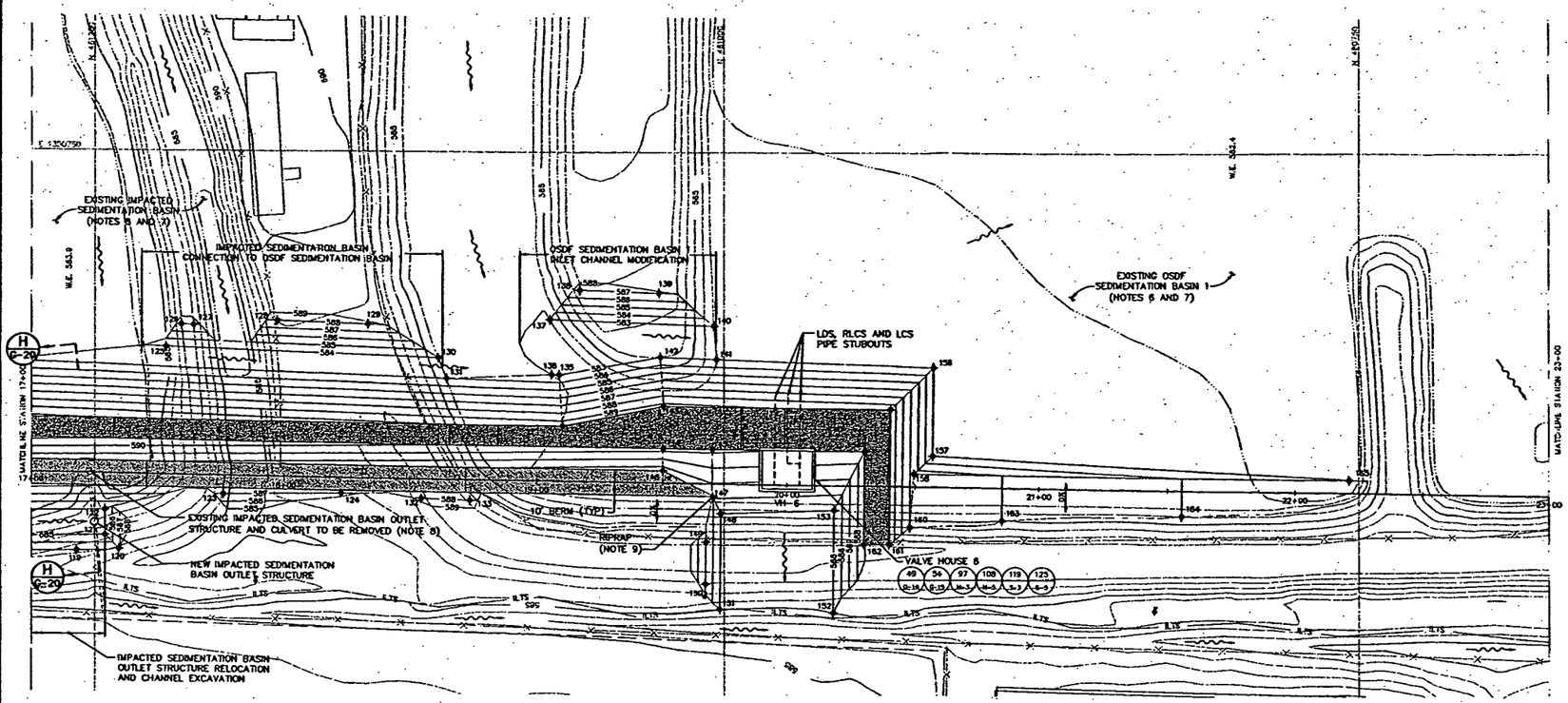
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT BIDDER OR CONSTRUCTION, UNLESS SEALED.

28 MAR 00

STATE OF OHIO — JOHN E. BECKER E-88348 — PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20111
CONTRACT NO.:	9SP5000029
FDMP DRAWING NO.:	903-6000-G-00283
GEOSYNTEC PROJECT NO.:	CO1030-07
GEOSYNTEC DOCUMENT NO.:	FD0-0321
SHEET NO.:	G-5
REVISION NO.:	0



LEGEND

- 590 — EXISTING GROUND ELEVATION (FEET)
- 585 — SUBGRADE ELEVATION (FEET)
- 21+00 — LTS PIPE
- ILTS — ILTS PIPE
- SLOPE CREST OR TOE
- DRAINAGE FLOW DIRECTION
- ACCESS CORRIDOR (NOTE 5)
- BERM CREST

Project: 001030-07
Horizontal Alignment Station and Curve Report
Alignment: LTSPPE Desc: LTS PIPE Sat Jan 15 15:33:30 2000

Elem.	Station	Solnd/Curve Data			Northing	Easting
PI	0+00				482976.77	1350844.27
	Length	2431.00	Course		S 00-42-09 W	
PI	24+31				480543.93	1350814.58
	Length	340.25	Course		S 00-33-54 E	
	Delta	8-35-38				
	Tangent Data					
	0+00				482976.77	1350844.27
	24+31				480543.93	1350814.58
	Length	2431.00	Course		S 00-42-09 W	
PI	27+71.25				480205.50	1350848.53
	Length	482.00	Course		S 00-42-09 W	
	Delta	8-35-23				
	Tangent Data					
	24+31				480543.93	1350814.58
	27+71.25				480205.50	1350848.53
	Length	340.25	Course		S 00-33-54 E	
PI	32+33.29				479743.54	1350843.88
	Length	171.08	Course		S 10-32-34 W	
	Delta	9-30-23				
	Tangent Data					
	27+71.25				480205.50	1350848.53
	32+33.29				479743.54	1350843.88
	Length	482.00	Course		S 00-42-09 W	
PI	34+04.34				479575.34	1350812.58
	Length	20.00	Course		S 03-30-38 E	
	Delta	14-23-23				
	Tangent Data					
	32+33.29				479743.54	1350843.88
	34+04.34				479575.34	1350812.58
	Length	171.08	Course		S 10-32-34 W	
PI	34+24.34				479555.38	1350813.83
	Tangent Data					
	34+04.34				479575.34	1350812.58
	34+24.34				479555.38	1350813.83
	Length	20.00	Course		S 03-30-38 E	

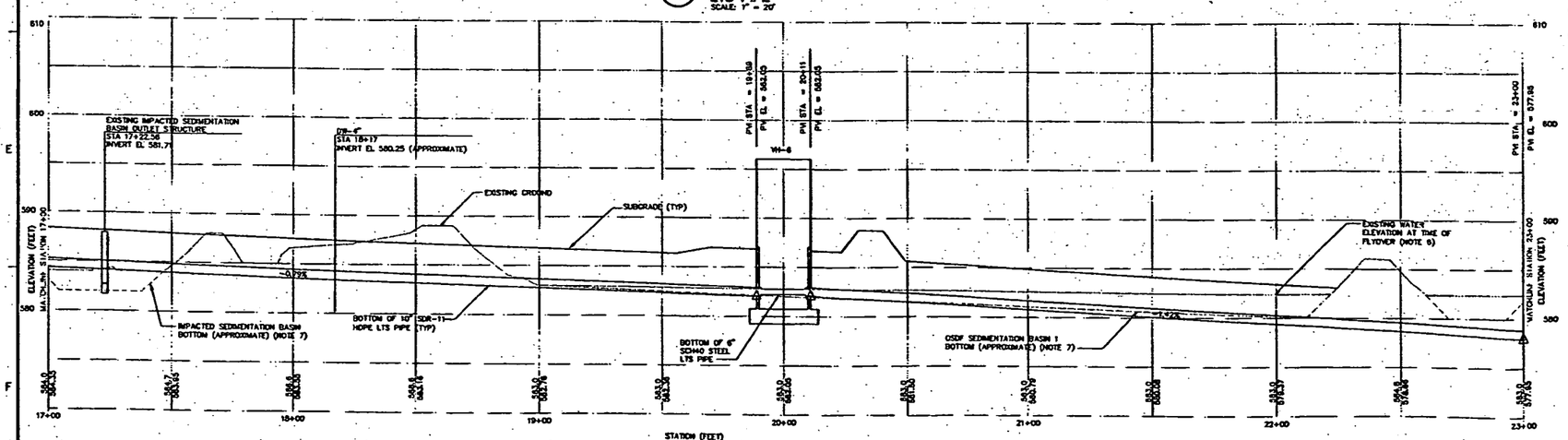
NOTES:

1. TOPOGRAPHY BASED ON 12 JANUARY 2000 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 ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SUPPORT AS REQUIRED TO MAINTAIN AND PROTECT EXISTING ACTIVE UTILITIES. CONTRACTOR SHALL VERIFY THAT UTILITIES IDENTIFIED BY CONSTRUCTION MANAGER AS ABANDONED ARE SUCH PRIOR TO EXCAVATION. ABANDONED UTILITIES SHALL BE REMOVED WITHIN LIMITS OF EXCAVATION.
5. CONTRACTOR SHALL CONSTRUCT GEOTEXTILE SEPARATOR AND BASE AGGREGATE FOR ACCESS CORRIDOR. BASE AGGREGATE THICKNESS SHALL BE 12 INCHES.
6. WATER ELEVATION IN THE IMPACTED SEDIMENTATION BASIN AND OSDF SEDIMENTATION BASIN 1 IS SUBJECT TO SUDDEN RISE TO ELEVATION 588.
7. CONTRACTOR SHALL EXCAVATE SEDIMENT IN CUT AND FILL AREAS AND RESTORE IMPACTED SEDIMENTATION BASIN AND OSDF SEDIMENTATION BASIN BOTTOM ELEVATIONS AS SHOWN ON DRAWINGS C-5, C-6 AND C-7. CONTRACTOR SHALL STOCKPILE SEDIMENT AT LOCATIONS APPROVED BY THE CONSTRUCTION MANAGER.
8. CONTRACTOR SHALL REMOVE EXISTING IMPACTED SEDIMENTATION BASIN OUTLET STRUCTURE AND DISCHARGE CULVERT TO LIMITS SHOWN ON DRAWING C-20.
9. CONTRACTOR SHALL PLACE RIPRAP TYPE D WITH A THICKNESS OF 1.5 FEET ALONG BERM CREST AMD VALLEY CREATED BY 5H:1V AND 3H:1V SLOPES.

SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
119	481237.19	1350582.82	587.00	133	481191.03	1350813.33	588.08	147	481004.99	1350819.19	586.53	163	480840.21	1350796.32	589.77
120	481240.43	1350593.37	588.81	134	481064.85	1350842.43	589.67	148	481001.38	1350805.01	585.00	183	480880.83	1350805.01	585.00
121	481243.89	1350398.79	585.00	135	481068.08	1350862.48	583.00	149	481007.52	1350797.29	587.00	184	480815.34	1350808.08	584.00
122	481246.08	1350608.75	585.00	136	481068.09	1350882.58	583.00	150	481007.72	1350780.72	587.00	185	480753.98	1350822.13	583.07
123	481199.96	1350613.28	587.00	137	481069.79	1350884.12	583.00	151	481001.84	1350770.60	585.00				
124	481152.23	1350615.82	587.00	138	481037.91	1350893.72	587.00	152	480954.84	1350669.54	585.00				
125	481121.81	1350672.88	584.00	139	481028.47	1350895.82	587.00	153	480954.34	1350669.38	583.00				
126	481213.47	1350681.88	587.00	140	481006.18	1350881.84	583.00	154	480944.78	1350632.98	589.77				
127	481210.37	1350681.31	587.00	141	481002.09	1350849.98	583.00	155	480945.34	1350649.34	588.89				
128	481177.70	1350683.37	588.00	142	481023.90	1350848.59	583.00	156	480917.28	1350663.82	583.00				
129	481141.34	1350682.11	588.07	143	481024.53	1350836.44	589.37	157	480917.79	1350630.33	583.00				
130	481113.58	1350689.14	584.00	144	481024.78	1350833.86	589.37	158	480929.31	1350624.22	583.31				
131	481110.38	1350691.02	584.00	145	481004.78	1350833.88	589.22	160	480927.08	1350624.28	588.00				
132	481120.20	1350814.02	588.00	146	481024.88	1350825.24	586.39	161	480835.21	1350596.43	588.89				

7 PLAN
LTS PIPE
SCALE: 1" = 20'



8 PROFILE
LTS PIPE
SCALE: 1" = 20' HORIZONTAL
SCALE: 1" = 5' VERTICAL

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVED
0	00.03.29	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	PRF	JJR	RAM	DLVL	JFB
A	00.01.17	PRE-FINAL SUBMITTAL TO FF/DOE/EPA	DLVL	LCB/JJR	MRA	DLVL	JFB

HORIZONTAL SCALE IN FEET: 20 10 0 20 40
VERTICAL SCALE IN FEET: 5 2.5 0 5 10

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

CLIENT:
FLUOR FERNALD, INC.

000055

PROJECT:
ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM

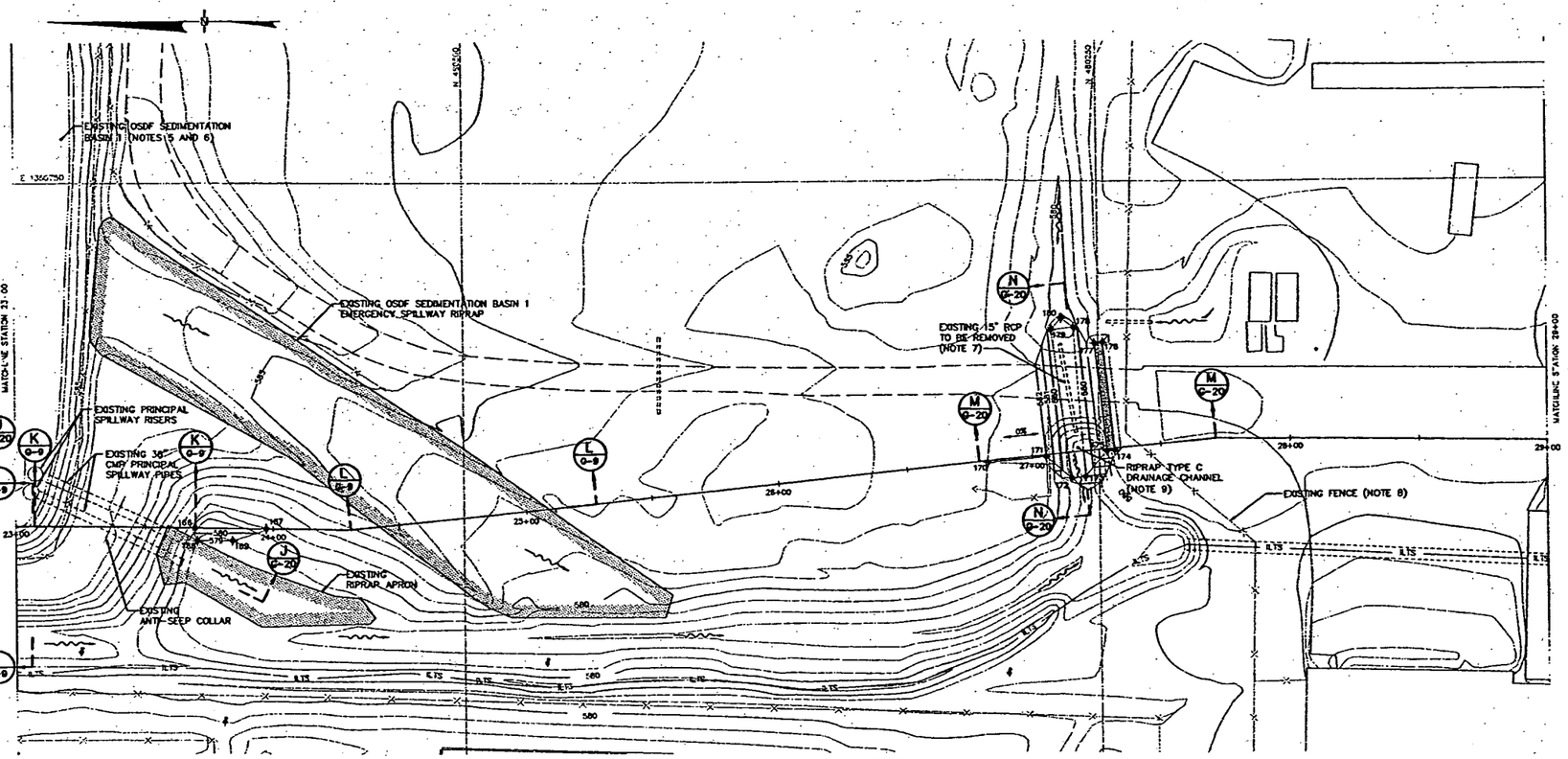
TITLE:
LTS PIPE PLAN AND PROFILE
STATIONS 17+00 TO 23+00

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

STATE OF OHIO
JOHN F. WEISS
E-68248
REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
3900 LAKE SHORE DRIVE
CHICAGO, ILLINOIS 60657

PROJECT NO.:	20111
CONTRACT NO.:	95F5000076
FEMP DRAWING NO.:	90X-6000-G-00284
GEOSYNTEC PROJECT NO.:	001030-07
GEOSYNTEC DOCUMENT NO.:	F00-0322
SHEET NO.:	C-6
REVISION NO.:	0



LEGEND

- 600 — EXISTING GROUND ELEVATION (FEET)
- 585 — SUBGRADE ELEVATION (FEET)
- 26+00 — LTS PIPE
- ILTS — ILTS PIPE
- SLOPE CREST OR TOE
- DRAINAGE FLOW DIRECTION
- BERM CREST

Project: CDYX30-07
Horizontal Alignment Station and Curve Report
Alignment: LTSPIPE
Desc: LTS PIPE

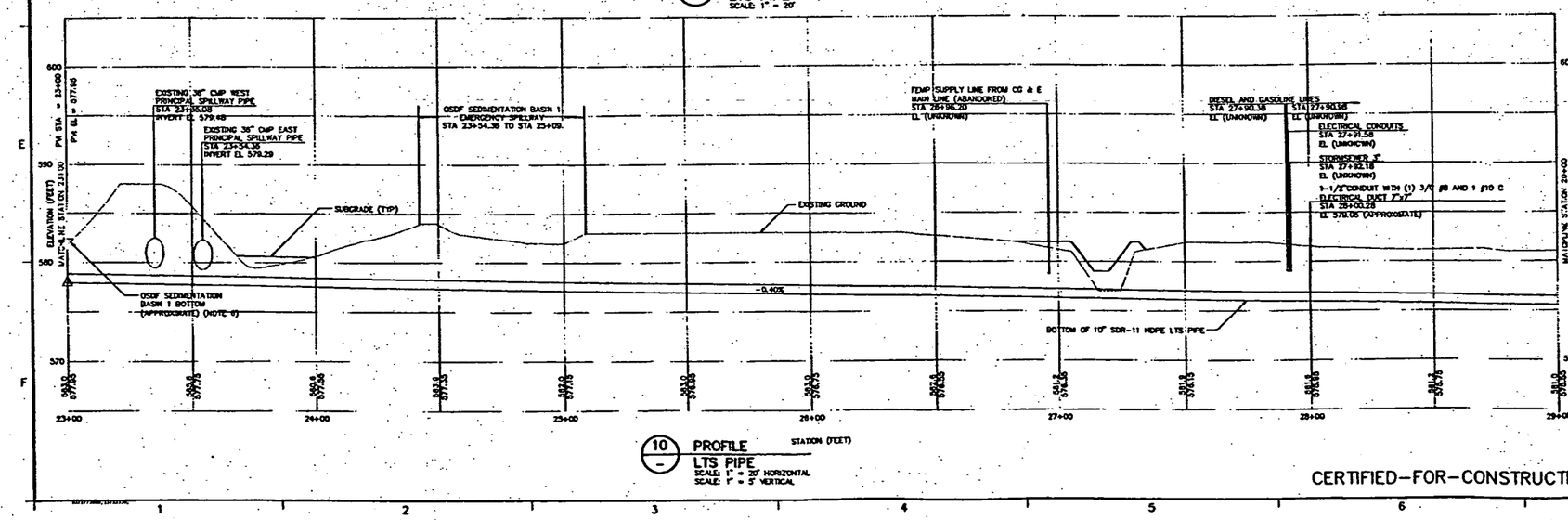
Sat Jan 15 15:53:50 2000

Desc.	Station	Spiral/Curve Data		Northing	Easting
PI	0+00			482274.77	1350844.27
	Length:	3431.00	Course:	S 00-42-01 W	
PI	34+31			480043.95	1350814.39
	Length: 340.23 Delta: 8-35-36		Course:	S 05-33-34 E	
	Tangent Data				
	0+00			482274.77	1350844.27
	34+31			480043.95	1350814.39
	Length:	3431.00	Course:	S 00-42-01 W	
PI	27+71.25			480205.50	1350848.53
	Length: 462.00 Delta: 8-30-35		Course:	S 00-42-01 W	
	Tangent Data				
	34+31			480043.95	1350814.39
	27+71.25			480205.50	1350848.53
	Length:	340.23	Course:	S 05-33-34 E	
PI	32+33.35			479743.54	1350843.88
	Length: 171.09 Delta: 8-30-33		Course:	S 10-32-24 W	
	Tangent Data				
	27+71.25			480205.50	1350848.53
	32+33.35			479743.54	1350843.88
	Length:	462.00	Course:	S 00-42-01 W	
PI	34+04.34			479575.34	1350812.58
	Length: 33.00 Delta: 16-23-33		Course:	S 03-30-38 E	
	Tangent Data				
	32+33.35			479743.54	1350843.88
	34+04.34			479575.34	1350812.58
	Length:	171.09	Course:	S 10-32-24 W	
PI	34+24.34			479555.38	1350813.93
	Tangent Data				
	34+04.34			479575.34	1350812.58
	34+24.34			479555.38	1350813.93
	Length:	33.00	Course:	S 03-30-38 E	

SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
166	480805.87	1350815.31	580.87
167	480377.87	1350814.87	580.58
168	480694.82	1350910.29	579.00
169	480599.58	1350910.29	579.00
170	480394.22	1350938.68	582.00
171	480278.94	1350843.08	582.00
172	480260.73	1350833.77	579.90
173	480253.38	1350834.32	579.90
174	480244.08	1350844.86	582.00
175	480247.08	1350844.53	582.08
176	480248.40	1350848.78	582.00
177	480251.38	1350848.47	582.00
178	480259.82	1350857.82	579.48
179	480268.47	1350851.68	579.48
180	480283.48	1350838.13	579.32

9 PLAN — LTS PIPE
SCALE: 1" = 20'



10 PROFILE — LTS PIPE
SCALE: 1" = 20' HORIZONTAL
SCALE: 1" = 5' VERTICAL

NOTES:

1. TOPOGRAPHY BASED ON 12 JANUARY 2000 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 ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SUPPORT AS REQUIRED TO MAINTAIN AND PROTECT EXISTING ACTIVE UTILITIES. CONTRACTOR SHALL VERIFY THAT UTILITIES IDENTIFIED BY CONSTRUCTION MANAGER AS ABANDONED ARE SUCH PRIOR TO EXCAVATION. ABANDONED UTILITIES SHALL BE REMOVED WITHIN LIMITS OF EXCAVATION.
5. WATER ELEVATION IN OSDF SEDIMENTATION BASIN 1 IS SUBJECT TO SUDDEN RISE TO ELEVATION 588.
6. CONTRACTOR SHALL EXCAVATE SEDIMENT IN CUT AND FILL AREAS AND RESTORE OSDF SEDIMENTATION BASIN 1 BOTTOM ELEVATIONS AS SHOWN ON DRAWINGS C-6 AND C-7. CONTRACTOR SHALL STOCKPILE SEDIMENT AT LOCATION APPROVED BY CONSTRUCTION MANAGER.
7. CONTRACTOR SHALL REMOVE EXISTING CULVERT AND STOCKPILE AT LOCATION APPROVED BY CONSTRUCTION MANAGER.
8. CONTRACTOR SHALL REPLACE EXISTING FENCE REMOVED AS PART OF LTS PIPE CONSTRUCTION.
9. CONTRACTOR SHALL PLACE RIPRAP TYPE C ON NEW SUBGRADE BELOW ELEVATION 582.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVED
0	00.03.20	CPC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	PRF	JJR	BAW	DLW	JFB
A	00.01.17	PRE-FINAL SUBMITTAL TO FF/DOE/EPA	DLW	LCB/JJR	MRA	DLW	JFB

HORIZONTAL SCALE IN FEET: 20 10 0 20 40
VERTICAL SCALE IN FEET: 5 2.5 0 5 10

CONTROLLING AGENCY:
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT

CLIENT:
FLUOR FERNALD, INC. 000056

PROJECT:
ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM

TITLE:
LTS PIPE PLAN AND PROFILE
STATIONS 23+00 TO 29+00

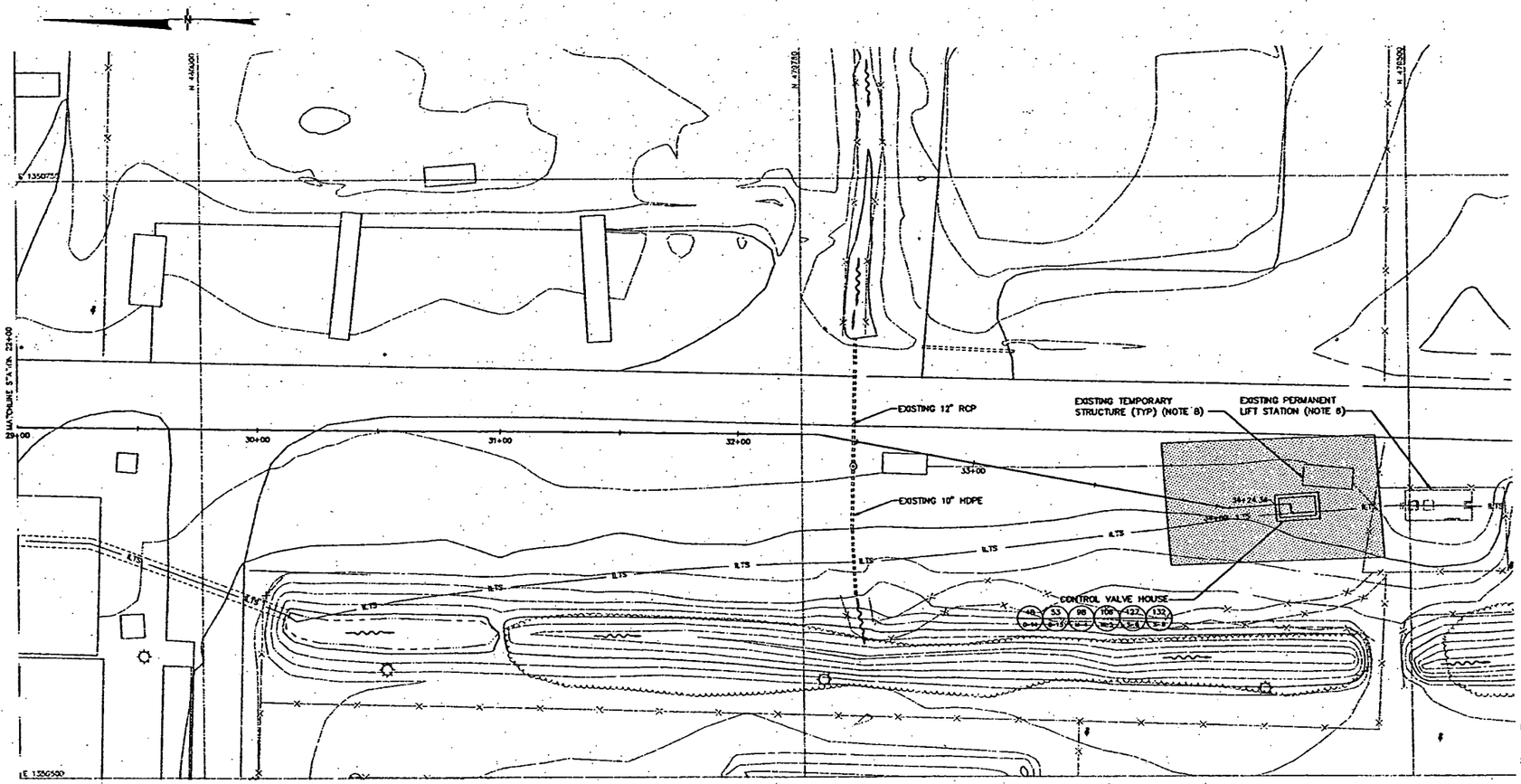
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT BIDDED OR CONSTRUCTION, UNLESS SEALED

STATE OF OHIO — JOHN E. BEECH — E-052248 — REGISTERED PROFESSIONAL ENGINEER

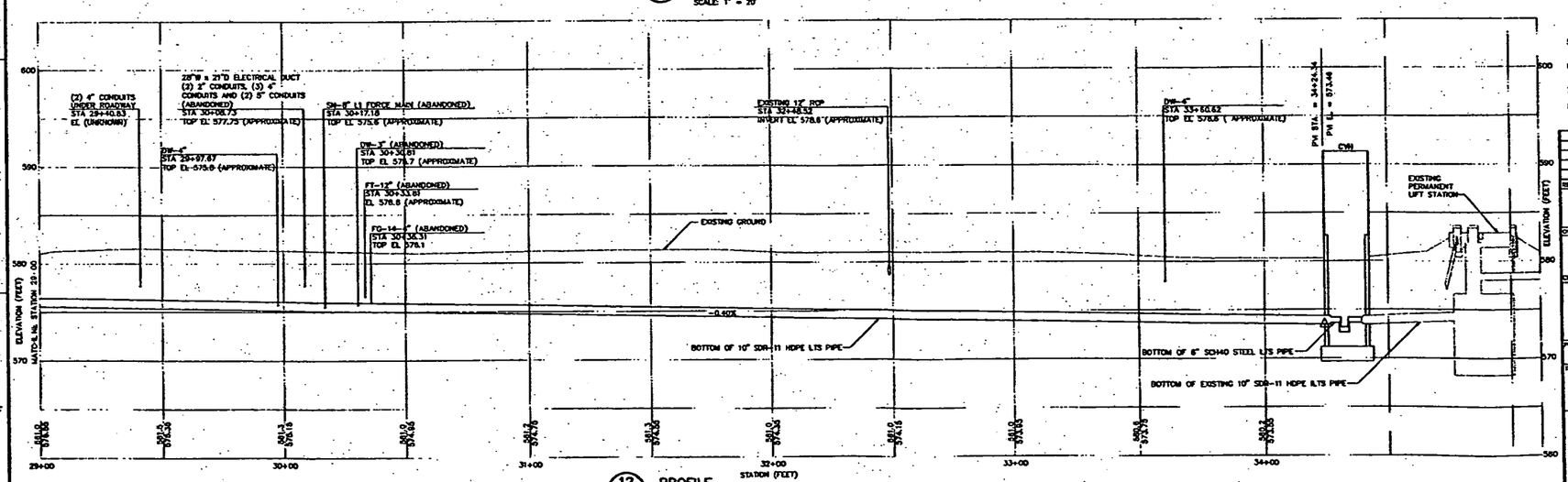
GEOSYNTEC CONSULTANTS

PROJECT NO.:	20111
CONTRACT NO.:	95F5000028
TEMP DRAWING NO.:	9001-5000-0-00285
GEOSYNTEC PROJECT NO.:	CDYX30-07
GEOSYNTEC DOCUMENT NO.:	F00-0323
SHEET NO.:	C-7
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION



11 PLAN
LTS PIPE
SCALE: 1" = 20'



12 PROFILE
LTS PIPE
SCALE: 1" = 20' HORIZONTAL
SCALE: 1" = 5' VERTICAL

LEGEND

- 600 — EXISTING GROUND ELEVATION (FEET)
- 595 — SUBGRADE ELEVATION (FEET)
- 31+00 — LTS PIPE
- ILTS — ILTS PIPE (NOTE 7)
- SLOPE CREST OR TOE
- DRAINAGE FLOW DIRECTION
- RE-ESTABLISH EXISTING GRADES (NOTE 5)

Project: 001030-07 Sat Jan 15 15:53:50 2000
Horizontal Alignment Station and Curve Report
Alignment: LTSPIPE
Done: LTS PIPE

Data, Station	Spiral/Curve Data		Northing	Easting
PI 0+00			482974.77	1350844.27
Length:	2631.00	Course:	S 00-42-01 W	
PI 26+38			480543.85	1350814.38
Length:	340.25	Course:	S 05-33-34 E	
Delta:	6-30-55			
Tangent Data				
0+00			482974.77	1350844.27
26+38			480543.85	1350814.38
Length:	2631.00	Course:	S 00-42-01 W	
PI 27+71.25			480205.50	1350848.53
Length:	463.00	Course:	S 00-42-01 W	
Delta:	8-30-50			
Tangent Data				
26+38			480543.85	1350814.38
27+71.25			480205.50	1350848.53
Length:	340.25	Course:	S 05-33-34 E	
PI 32+33.25			478743.54	1350843.88
Length:	171.09	Course:	S 10-32-34 W	
Delta:	9-50-23			
Tangent Data				
27+71.25			480205.50	1350848.53
32+33.25			478743.54	1350843.88
Length:	462.00	Course:	S 00-42-01 W	
PI 34+04.34			478573.34	1350812.58
Length:	20.00	Course:	S 03-30-38 E	
Delta:	14-23-23			
Tangent Data				
32+33.25			478743.54	1350843.88
34+04.34			478573.34	1350812.58
Length:	171.09	Course:	S 10-32-34 W	
PI 34+24.34			478555.39	1350813.63
Tangent Data				
34+04.34			478573.34	1350812.58
34+24.34			478555.39	1350813.63
Length:	20.00	Course:	S 03-30-38 E	

NOTES:

1. TOPOGRAPHY BASED ON 12 JANUARY 2000 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 ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SUPPORT AS REQUIRED TO MAINTAIN AND PROTECT EXISTING ACTIVE UTILITIES. CONTRACTOR SHALL VERIFY THAT UTILITIES IDENTIFIED BY CONSTRUCTION MANAGER AS ABANDONED ARE SUCH PRIOR TO EXCAVATION. ABANDONED UTILITIES SHALL BE REMOVED WITHIN LIMITS OF EXCAVATION.
5. CONTRACTOR SHALL RE-ESTABLISH EXISTING GRADES AND VEGETATION WITHIN APPROXIMATE AREA SHOWN.
6. CONTRACTOR SHALL AVOID DISRUPTING OPERATIONS AND DAMAGING EXISTING PERMANENT LIFT STATION.
7. CONTRACTOR SHALL AVOID DAMAGING EXISING ILTS PIPE.
8. EXISTING TEMPORARY STRUCTURE TO BE RELOCATED BY OTHERS PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES FOR CONTROL VALVE HOUSE.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVED
0	00.03.30	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	PW	JJR	BMM	DLW	JFB
A	00.01.17	PRE-FINAL SUBMITTAL TO FF/DOE/EPA	DLW	LDB/JJR	MRA	DLW	JFB

HORIZONTAL SCALE IN FEET: 20 10 0 20 40
VERTICAL SCALE IN FEET: 5 2.5 0 5 10

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

CLIENT:
FLUOR FERNALD, INC. 000057

PROJECT:
ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM

TITLE:
LTS PIPE PLAN AND PROFILE
STATIONS 29+00 TO 34+24.34

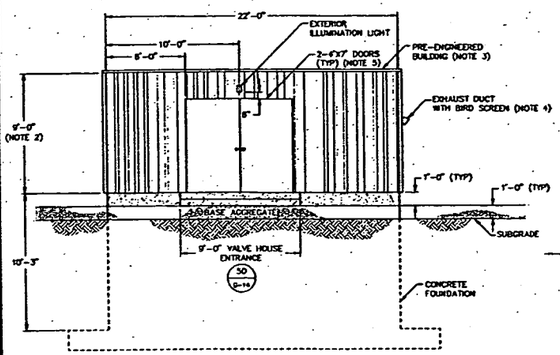
THIS DRAWING MAY NOT BE USED FOR PRODUCT SCHEDS OR CONSTRUCTION, UNLESS SEALED

STATE OF OHIO — JOHN A. BEECH E-58248 — PROFESSIONAL ENGINEER

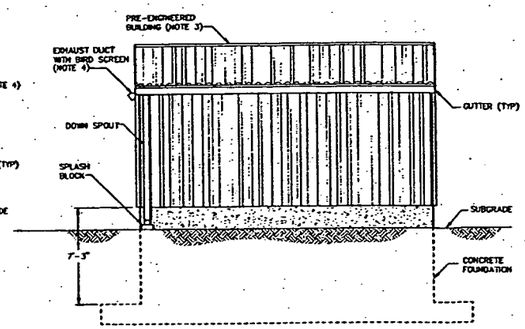
GEOSYNTEC CONSULTANTS

PROJECT NO.:	20111
CONTRACT NO.:	95P5000028
PDMP DRAWING NO.:	9DS-6000-D-00298
GEOSYNTEC PROJECT NO.:	001030-07
GEOSYNTEC DOCUMENT NO.:	F00-0324
SHEET NO.:	C-8
REVISION NO.:	0

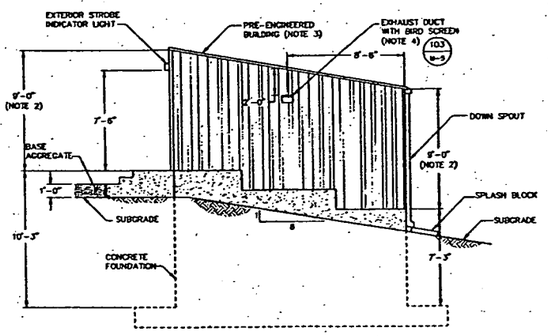
CERTIFIED—FOR—CONSTRUCTION



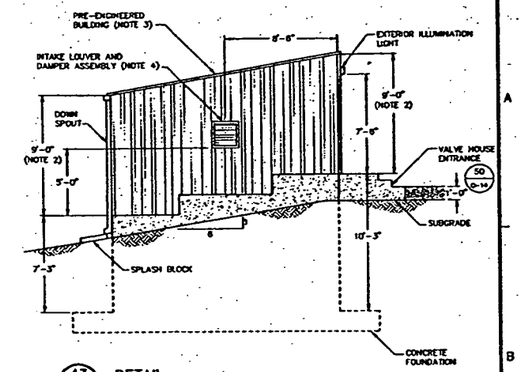
40 0-14 DETAIL
VALVE HOUSE EAST ELEVATION
SCALE: 1" = 4'



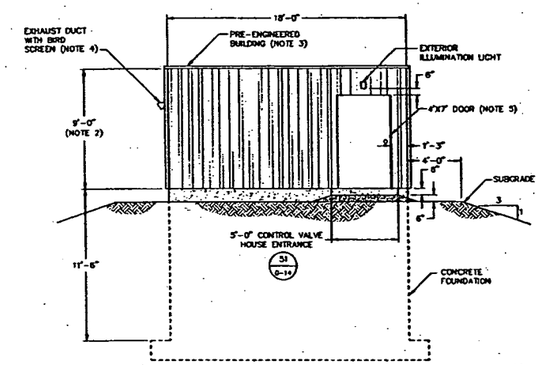
41 0-14 DETAIL
VALVE HOUSE WEST ELEVATION
SCALE: 1" = 4'



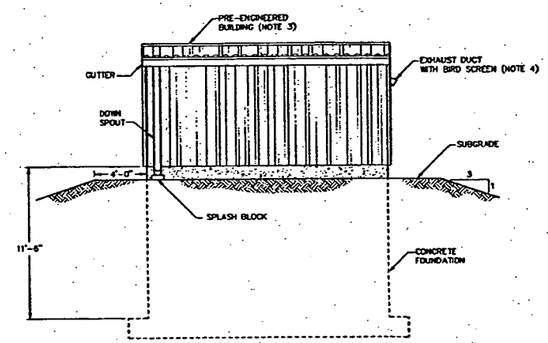
42 0-14 DETAIL
VALVE HOUSE NORTH ELEVATION
SCALE: 1" = 4'



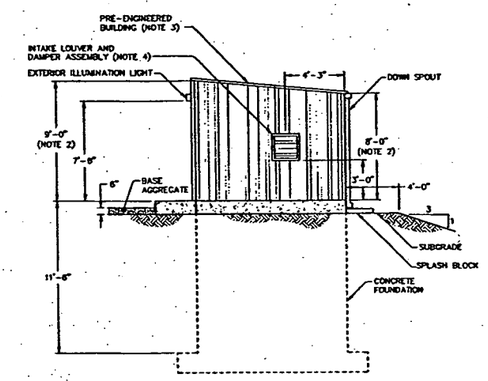
43 0-14 DETAIL
VALVE HOUSE SOUTH ELEVATION
SCALE: 1" = 4'



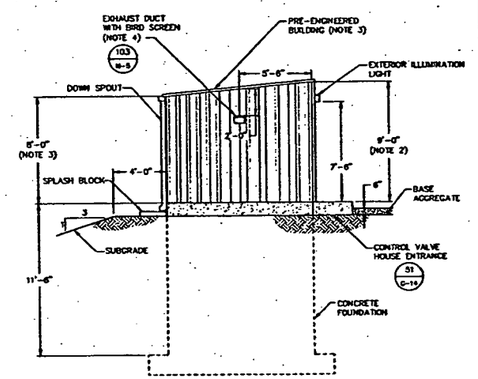
44 0-14 DETAIL
CONTROL VALVE HOUSE EAST ELEVATION
SCALE: 1" = 4'



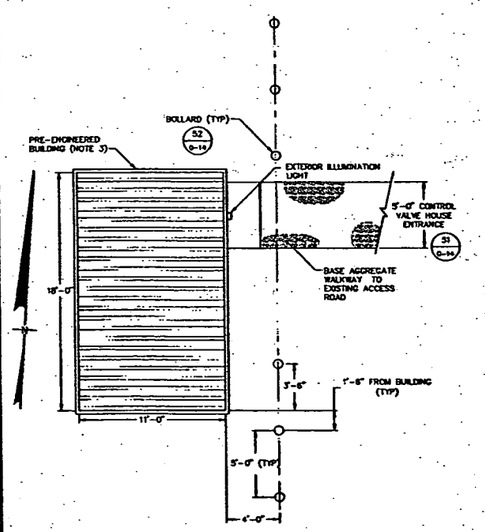
45 0-14 DETAIL
CONTROL VALVE HOUSE WEST ELEVATION
SCALE: 1" = 4'



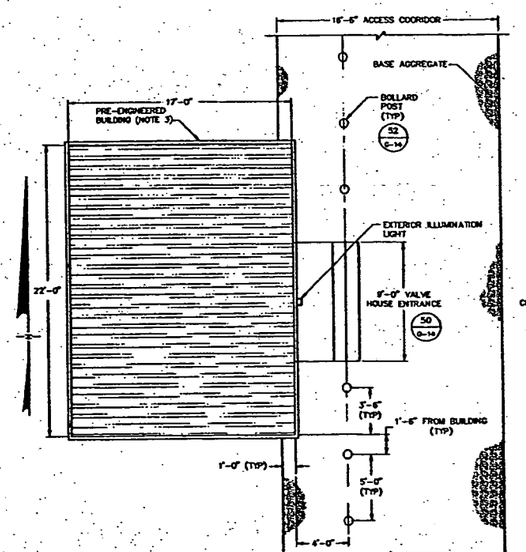
46 0-14 DETAIL
CONTROL VALVE HOUSE NORTH ELEVATION
SCALE: 1" = 4'



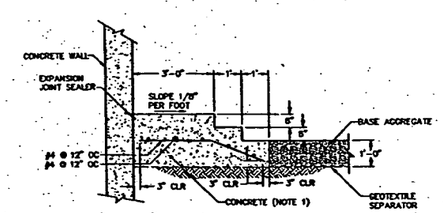
47 0-14 DETAIL
CONTROL VALVE HOUSE SOUTH ELEVATION
SCALE: 1" = 4'



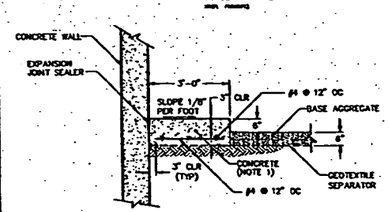
48 0-8 PLAN
CONTROL VALVE HOUSE AND APPURTENANCES
SCALE: 1" = 4'



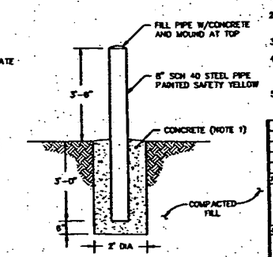
49 0-3 DETAIL
VALVE HOUSE AND APPURTENANCES
SCALE: 1" = 4'



50 0-14 DETAIL
VALVE HOUSE ENTRANCE
SCALE: 1" = 2'



51 0-14 DETAIL
CONTROL VALVE HOUSE ENTRANCE
SCALE: 1" = 2'



52 0-14 DETAIL
BOLLARD
SCALE: 1" = 2'

VALVE HOUSE AND CONTROL VALVE HOUSE SITE-WIDE BUILDING IDENTIFICATION NUMBERS	
STRUCTURE	IDENTIFICATION NUMBER
VH-1	9001
VH-2	9002
VH-3	9003
VH-4	9004
VH-5	9005
VH-6	9006
PLS AND CVH	900

CERTIFIED-FOR-CONSTRUCTION

NOTES:

1. CONCRETE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 03100.
2. DIMENSION SHOWN REPRESENTS BOTTOM OF ROOF JOIST SYSTEM. THICKNESS OF ROOF IS NOT SHOWN TO SCALE.
3. PRE-ENGINEERED BUILDING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13120.
4. EXHAUST DUCT AND INTAKE LOUVER AND DAMPER ASSEMBLY SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 10211. CONTRACTOR SHALL COORDINATE LOCATIONS OF EXHAUST DUCT AND INTAKE LOUVER AND DAMPER ASSEMBLY WITH PRE-ENGINEERED BUILDING REQUIREMENTS.
5. STANDARD STEEL DOORS AND FRAMES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 05110.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVED
B	00.03.30	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	[illegible]	JKS	[illegible]	DLW	JFB
A	00.06.17	PRE-FINAL SUBMITTAL TO FF/DOE/EPA	[illegible]	JKS	[illegible]	DLW	JFB

SCALE AS SHOWN

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

FLUOR FERNALD, INC. 000058

PROJECT: ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM

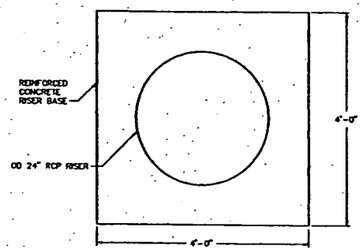
TITLE: VALVE HOUSE AND CONTROL VALVE HOUSE GENERAL LAYOUTS

THIS DRAWING MAY NOT BE USED FOR PROJECT BIDDER OR CONSTRUCTION, UNLESS SEALED.

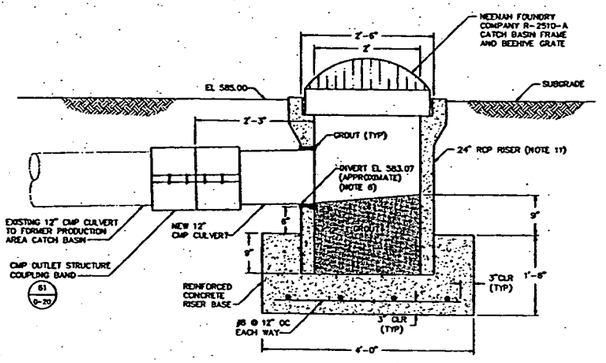
STATE OF OHIO — JOHN T. BEECH — REGISTERED PROFESSIONAL ENGINEER — 0-38248

G&O SYNTEC CONSULTANTS

PROJECT NO.: 20111
CONTRACT NO.: DE-SC05-00OR22678
FLUOR DRAWING NO.: 900E-4000-C-00251
GOSYNTEC PROJECT NO.: CO1035-07
GOSYNTEC DOCUMENT NO.: FDO-0329
SHEET NO.: G-14
REVISION NO.: 0

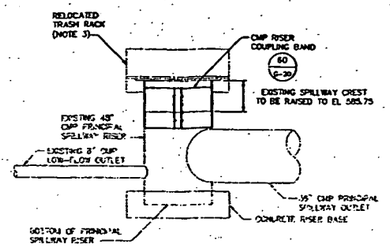


PLAN VIEW



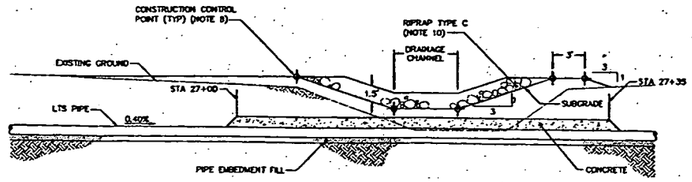
SIDE VIEW

58 G-20 DETAIL
IMPACTED SEDIMENTATION BASIN OUTLET STRUCTURE
SCALE: 1" = 1'

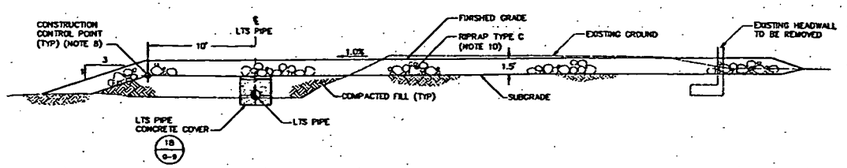


ELEVATION

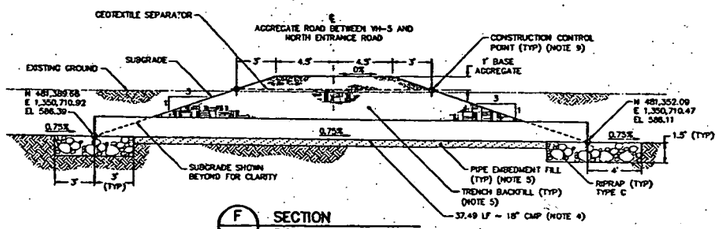
59 G-20 DETAIL
OSDF SEDIMENTATION BASIN 1 RISER MEDIFICATION
(NOTE 1)
SCALE: 1" = 3'



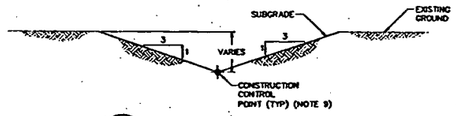
M G-7 SECTION
DRAINAGE MODIFICATION AT STATION 27+25
SCALE: 1" = 5'



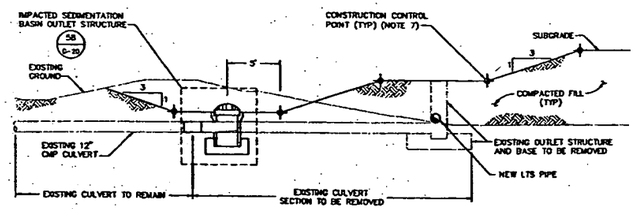
N G-7 SECTION
DRAINAGE MODIFICATION AT STATION 27+25
SCALE: 1" = 5'



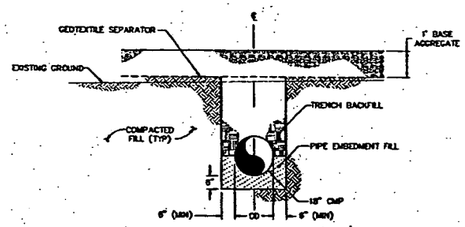
F G-5 SECTION
DRAINAGE CULVERT
SCALE: 1" = 4'



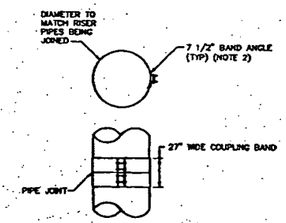
E G-5 SECTION (TYP)
RUN-ON DIVERSION CHANNEL
SCALE: 1" = 5'



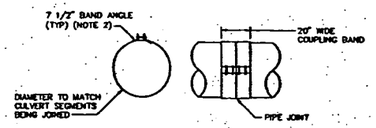
1 G-8 SECTION
IMPACTED SEDIMENTATION BASIN OUTLET STRUCTURE RELOCATION PLAN
SCALE: 1" = 5'



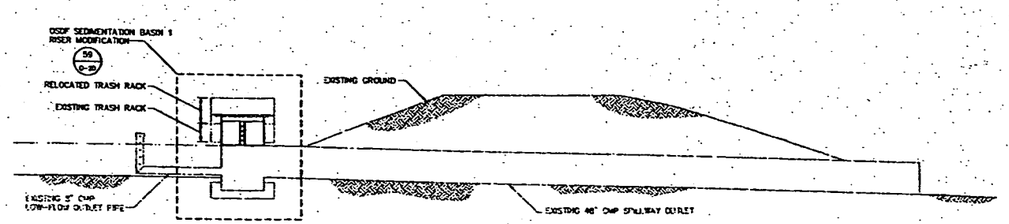
G G-5 SECTION
DRAINAGE CULVERT EMBEDMENT
SCALE: 1" = 2'



60 G-20 DETAIL
CMP RISER COUPLING BAND
SCALE: NTS



61 G-20 DETAIL
CMP OUTLET STRUCTURE COUPLING BAND
SCALE: NTS



J G-7 SECTION (TYP)
OSDF SEDIMENTATION BASIN 1 OUTLET MODIFICATION
(NOTE 1)
SCALE: 1" = 3'

NOTES:

1. MODIFICATION APPLIES TO BOTH PRINCIPAL SPILLWAY RISERS.
2. BAND SHALL BE ASSEMBLED PER MANUFACTURERS RECOMMENDATIONS.
3. EXISTING TRASH RACK SHALL BE DETACHED FROM CREST OF EXISTING 48" CMP PRINCIPAL SPILLWAY RISER AND REATTACHED TO 48" CMP PRINCIPAL SPILLWAY RISER EXTENSION.
4. CORRUGATED METAL PIPE CULVERTS AND JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721.
5. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02213.
6. EXISTING INVERT ELEVATIONS ARE APPROXIMATE.
7. SUBGRADE CONSTRUCTION CONTROL POINTS ARE PROVIDED ON DRAWING G-8.
8. CONSTRUCTION CONTROL POINTS ARE PROVIDED ON DRAWING G-7.
9. CONSTRUCTION CONTROL POINTS ARE PROVIDED ON DRAWING G-5.
10. CONTRACTOR SHALL PLACE RIPRAP TYPE C ON NEW SUBGRADE BELOW ELEVATION 582.
11. CONTRACTOR SHALL FIELD ADJUST VERTICAL HEIGHT OF 24-INCH REINFORCED CONCRETE PIPE RISER TO ACCOMODATE INVERT ELEVATION OF EXISTING 12-INCH CULVERT AND MAINTAIN SUBGRADE ELEVATION OF 585.

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVED
B	00.03.30	CFC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	PW	JKS	RMB	DLW	JFB
A	00.01.17	PRE-FINAL SUBMITTAL TO FF/DOE/EPA				DLW	JFB

SCALE AS SHOWN

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

CLIENT: FLUOR FERNALD, INC. 000059

PROJECT: ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM

TITLE: SURFACE-WATER MANAGEMENT SYSTEM DETAILS

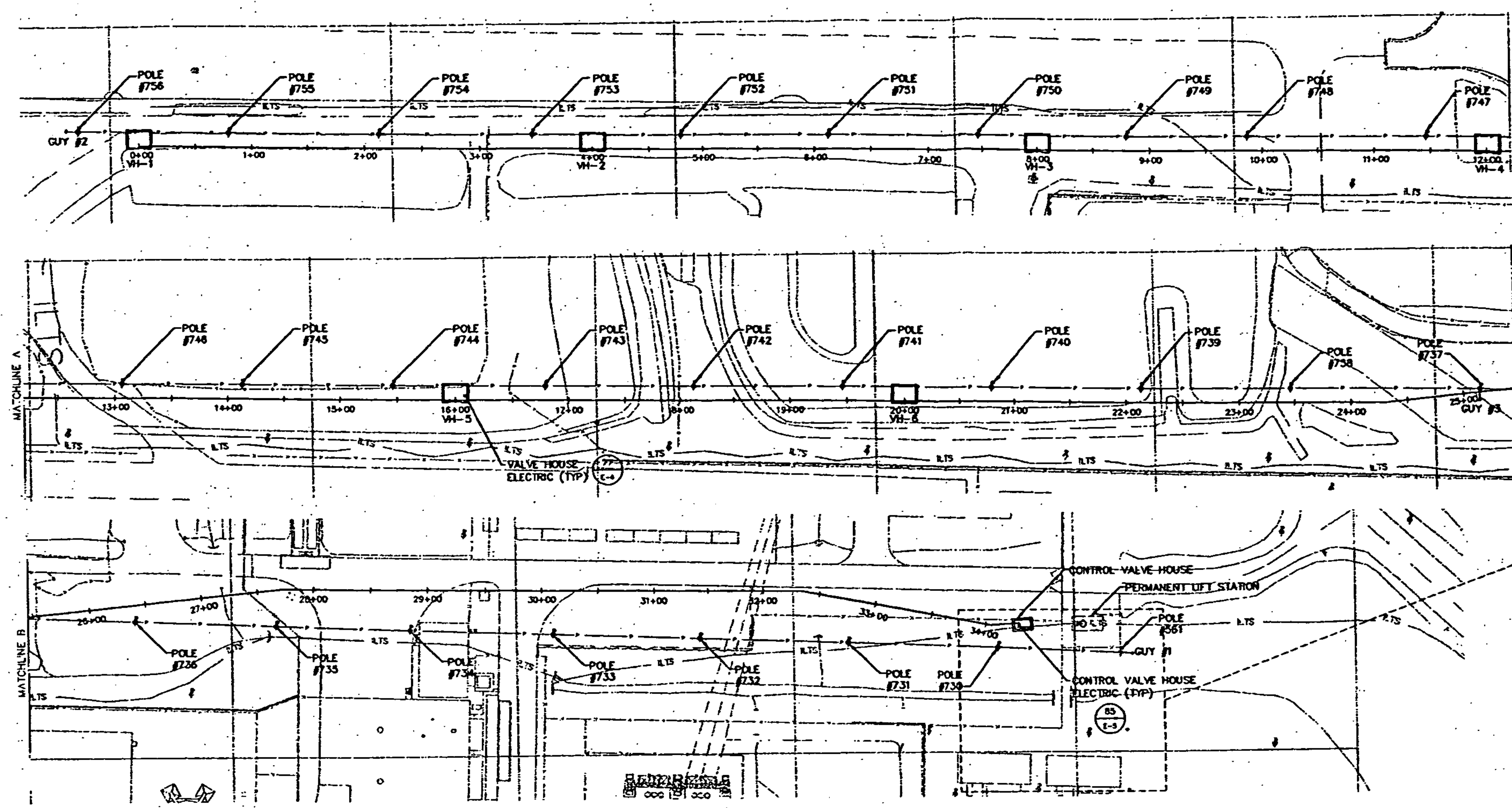
THIS DRAWING SHALL NOT BE ISSUED FOR PROJECT BIDDER OR CONSTRUCTION UNLESS SEALED.

STATE OF OHIO — JOHN R. BEECHER E-58246 — REGISTERED PROFESSIONAL ENGINEER

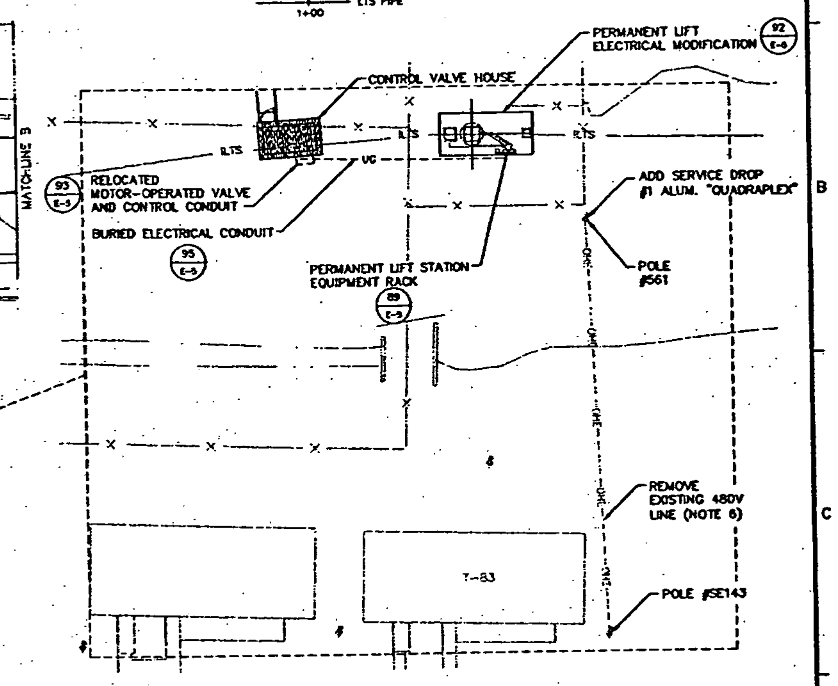
GEO-SYNTEC CONSULTANTS

PROJECT NO.	20111
CONTRACT NO.	95P5000028
FDMP DRAWING NO.	90X-8000-G-00297
GEOSYNTEC PROJECT NO.	CO1030-07
GEOSYNTEC DOCUMENT NO.	F00-03215
SHEET NO.	G-20
REVISION NO.	0

3099



62 PLAN
SITE ELECTRICAL PLAN
SCALE: 1" = 50'



63 PLAN
PERMANENT LIFT STATION AND CONTROL VALVE HOUSE ELECTRICAL PLAN
SCALE: 1"=20'

LEGEND

- EXISTING POWER POLE(S)
- NEW POWER POLE(S)
- GUY ANCHOR AND GUY WIRE(S) ASSEMBLY
- 13.2KV OVERHEAD PRIMARY LINE
- OH — OVERHEAD ELECTRIC
- UG — BURIED CONDUIT
- ILTS — ILTS PIPE
- 1+00 — LTS PIPE

POLE SCHEDULE (NAD83)

POLE NO.	POLE LENGTH	POLE STATUS	COORDINATES NORTHING	COORDINATES EASTING	POLE ELEVATION(S) DWG. NO.	POLE ELEVATION(S) DETAIL NO.	GUY ASSEMBLY NUMBERS	NEW SERVICE(S) ON POLE 13.2KV FDR.3C	13.2KV FDR.2C	13.2KV FDR.2/3C	NOTES
561	60'	EXISTING	479,460	1,350,589		64	1		✓		
730	55'	NEW	479,569	1,350,593		68			✓		
731	40'	NEW	479,703	1,350,598		75			✓		
732	40'	NEW	479,835	1,350,603		75			✓		
733	55'	NEW	479,987	1,350,608		65			✓		
734	55'	NEW	480,092	1,350,612		65			✓		
735	55'	NEW	480,211	1,350,617		65			✓		
736	60'	NEW	480,336	1,350,621		65			✓		
737	60'	NEW	480,461	1,350,628		67	3		✓		
738	55'	NEW	480,594	1,350,628		65			✓		
739	60'	NEW	480,727	1,350,629		65			✓		
740	60'	NEW	480,860	1,350,631		65			✓		
741	55'	NEW	480,994	1,350,633		66			✓		
742	55'	NEW	481,127	1,350,634		65			✓		
743	55'	NEW	481,260	1,350,636		65			✓		
744	60'	NEW	481,394	1,350,637		66			✓		
745	60'	NEW	481,527	1,350,639		65			✓		
746	55'	NEW	481,660	1,350,641		65			✓		
747	55'	NEW	481,794	1,350,642		66			✓		
748	55'	NEW	481,927	1,350,644		65			✓		
749	55'	NEW	482,060	1,350,646		65			✓		
750	55'	NEW	482,194	1,350,647		66			✓		
751	55'	NEW	482,327	1,350,649		65			✓		
752	55'	NEW	482,460	1,350,650		65			✓		
753	55'	NEW	482,594	1,350,652		68			✓		
754	55'	NEW	482,727	1,350,654		65			✓		
755	55'	NEW	482,860	1,350,655		65			✓		
756	55'	NEW	482,993	1,350,657		78	2		✓		

POLE INFORMATION / ELECTRICAL EQUIPMENT ON POLE

POLE NO.	POLE LENGTH	COORDINATES NORTHING	COORDINATES EASTING	13.2 KV SERVICE ON POLE FDR.3C	FDR.2C	FDR.2C/3C	LIGHTING ARRESTER(S)	FUSED CUTOUT(S)	FUSE SIZE(S)	LOAD BREAK(S)	TRANSFORMER(S)	#-KVA SIZE	NOTES
561	60'	479,460	1,350,589		✓			561B-2C-FCL	3-10E		561-2C-T	3-37.5	
730	55'	479,569	1,350,593		✓		730-2C-LA	730-2C-FCL	2-5E		730-2C-T	1-25	
731	55'	479,703	1,350,598		✓								
732	55'	479,835	1,350,603		✓								
733	55'	479,987	1,350,608		✓								
734	55'	480,092	1,350,612		✓								
735	55'	480,211	1,350,617		✓								
736	60'	480,336	1,350,621		✓								
737	60'	480,481	1,350,626		✓		737-2C-LA	737-2C-FCL	3-5E		737-2C-T	3-25	
738	55'	480,594	1,350,628		✓								
739	60'	480,727	1,350,629		✓								
740	60'	480,860	1,350,631		✓								
741	55'	480,994	1,350,633		✓		741-2C-LA	741-2C-FCL	2-5E		741-2C-T	1-25	
742	55'	481,127	1,350,634		✓								
743	55'	481,260	1,350,636		✓								
744	60'	481,394	1,350,637		✓		744-2C-LA	744-2C-FCL	2-5E		744-2C-T	1-25	
745	60'	481,527	1,350,639		✓								
746	55'	481,660	1,350,641		✓								
747	55'	481,794	1,350,642		✓		747-2C-LA	747-2C-FCL	2-5E		747-2C-T	1-25	
748	55'	481,927	1,350,644		✓								
749	55'	482,060	1,350,646		✓								
750	55'	482,194	1,350,647		✓		750-2C-LA	750-2C-FCL	2-5E		750-2C-T	1-25	
751	55'	482,327	1,350,649		✓								
752	55'	482,460	1,350,650		✓								
753	55'	482,594	1,350,652		✓		753-2C-LA	753-2C-FCL	2-5E		753-2C-T	1-25	
754	55'	482,727	1,350,654		✓								
755	55'	482,860	1,350,655		✓								
756	55'	482,993	1,350,657		✓		756-2C-LA	756-2C-FCL	2-5E		756-2C-T	1-25	

CABLE STRINGING TABLE

SPANS FROM POLE	TO POLE	LENGTH	30°F SAG SPAN IN.	30°F SAG STATIC IN.	50°F SAG SPAN IN.	50°F SAG STATIC IN.	70°F SAG SPAN IN.	70°F SAG STATIC IN.	90°F SAG SPAN IN.	90°F SAG STATIC IN.
561	730	133.33'	29	24	33	26	36	28	39	30
730	731	133.33'	29	24	33	26	38	28	39	30
731	732	133.33'	29	24	33	26	38	28	39	30
732	733	133.33'	29	24	33	26	38	28	39	30
733	734	126.00'	26	22	30	24	33	26	36	28
734	735	119.00'	24	20	27	22	30	24	33	25
735	736	125.00'	26	22	29	23	33	25	36	27
736	737	125.00'	26	22	29	23	33	25	36	27
737	738	168.00'	43	34	48	38	53	41	57	43
738	739	133.33'	29	24	33	26	38	28	39	30
739	740	133.33'	29	24	33	26	38	28	39	30
740	741	133.33'	29	24	33	26	38	28	39	30
741	742	133.33'	29	24	33	26	38	28	39	30
742	743	133.33'	29	24	33	26	38	28	39	30
743	744	133.33'	29	24	33	26	38	28	39	30
744	746	133.33'	29	24	33	26	38	28	39	30
745	746	108.66'	20	17	22	18	28	20	28	21
746	747	160.00'	39	31	44	34	48	37	52	40
747	748	160.00'	39	31	44	34	48	37	52	40
748	749	106.00'	20	17	22	18	25	20	28	21
749	750	133.33'	29	24	33	26	38	28	39	30
750	751	133.33'	29	24	33	26	38	28	39	30
751	752	133.33'	29	24	33	26	38	28	39	30
752	753	133.33'	29	24	33	26	38	28	39	30
753	754	133.33'	29	24	33	26	38	28	39	30
754	755	133.33'	29	24	33	26	38	28	30	30
755	756	133.33'	29	24	33	26	38	28	39	30

GUY ASSEMBLY SCHEDULE

GUY NO.	POLE NO.	ANCHOR FROM POLE	ANCHOR COORDINATES NORTHING	ANCHOR COORDINATES EASTING	GUY WIRE(S) ATTACHMENT AT POLE ELEVATION(S) (GUY POSITIONS +/- 6")		NOTES
1	561	30'	479430	1350589	55'-00"	41'-09"	NOTE 5
2	756	30'	483059	1350637	50'-00"	39'-09"	NOTE 5
3	737	20'	480481	1350606	39'-09"		NOTE 5

NOTES:

1. TOPOGRAPHY BASED ON 12 JANUARY 2000 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. MAINTAIN MINIMUM HORIZONTAL CLEARANCES ON 13.2KV BARE AERIAL CONDUCTORS: PHASE TO PHASE = 20", PHASE TO GROUND = 18", AND, MAINTAIN 6" TO GUY FEATURES (ANSI C2, TABLE 235-6). 480V CONDUCTORS OVER ROADS = 23'-0". ALL CONDUCTORS OVER BUILDINGS = 13'-6" OTHER CLEARANCES ON OVERHEAD SERVICE(S) IN ACCORDANCE WITH ANSI C2, NATIONAL ELECTRICAL SAFETY CODE.
5. GUY ANCHOR DISTANCES FROM POLE(S), GIVEN IN THE GUY ASSEMBLY SCHEDULE, ARE A MINIMUM.
6. DISCONNECT EXISTING 480V OVERHEAD FEEDER TO LIFT STATION AT POLE 561. REMOVE OVERHEAD BACK TO POLE SE143. AT THIS POLE, COIL WIRE FOR FUTURE USE AND ATTACH COIL HIGH AT ATTACHMENT POINT. AT POWER DISTRIBUTION CENTER NUMBER TWO, DISCONNECT WIRES AT WEATHERHEAD. LABEL ORIGINAL LIFT STATION FUSE SWITCH "SPARE." SECURE SWITCH IN OFF POSITION (REFERENCE DRAWINGS 90X-5500-E-00504 AND 90X-5500-E-00505). REPOWER PERMANENT LIFT STATION WITH SERVICE FROM INSTALLED TRANSFORMERS ON POLE 561.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVED
0	00.03.20	C/C SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	BDJ	LCB	RAM	DLW	JFB
A	00.02.17	PRE-FINAL SUBMITTAL TO FF/DOE/EPA	JBH	LCB	BDJ	DLW	JFB

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

000060

PROJECT:
ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM

TITLE:
OVERHEAD POWER TRANSMISSION SYSTEM PLAN

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

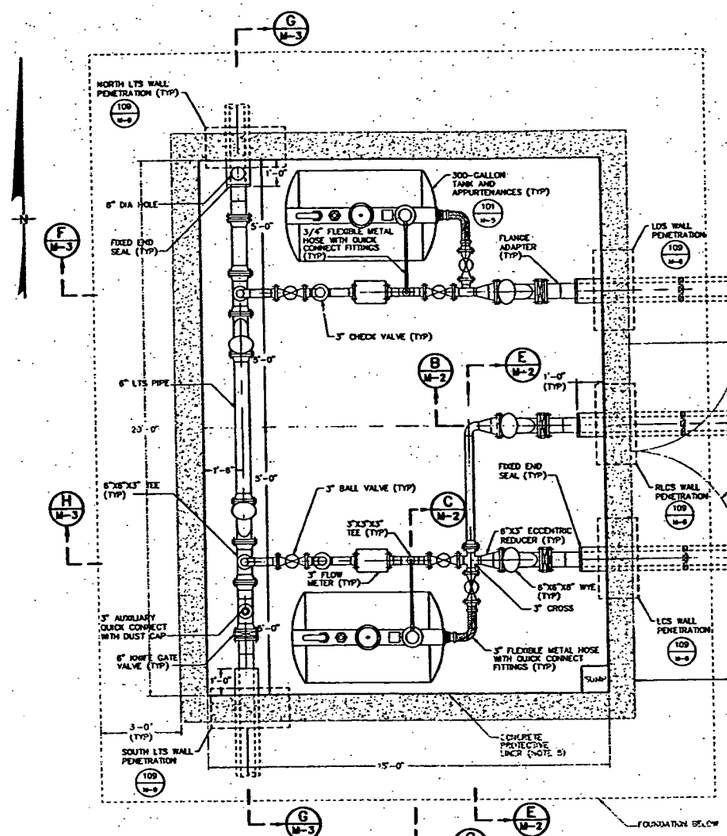
STATE OF OHIO — JOHN F. BEECH E-58246 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

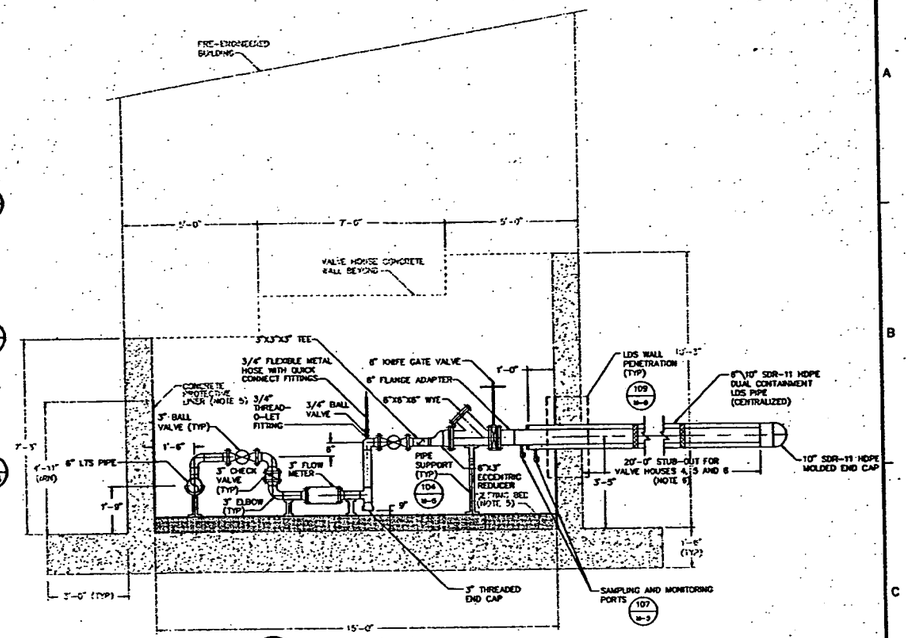
PROJECT NO.: 20111
CONTRACT NO.: 95PS005026
FEMP DRAWING NO.: 90X-6000-E-00258
GEOSYNTEC PROJECT NO.: GO1030-07
GEOSYNTEC DOCUMENT NO.: FOD-0292
SHEET NO.: E-1
REVISION NO.: 0

CERTIFIED-FOR-CONSTRUCTION

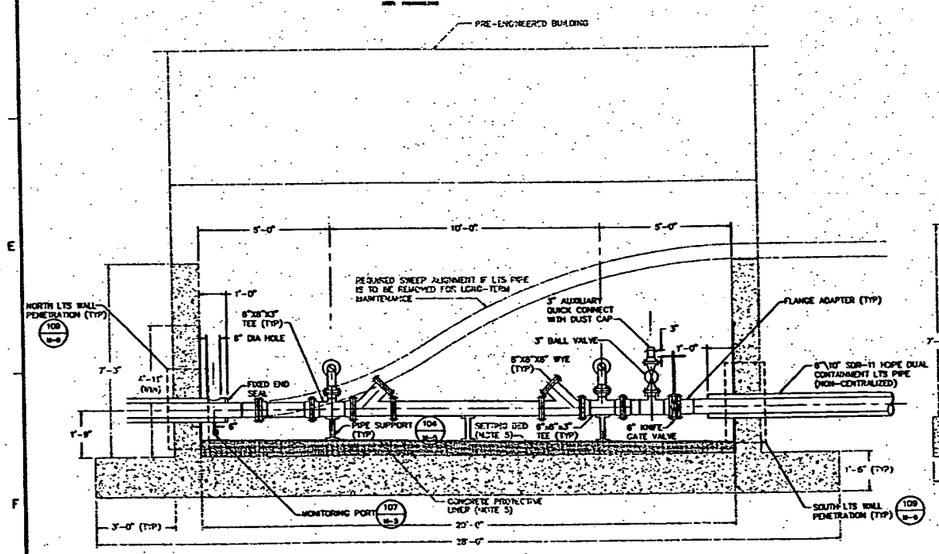
3099



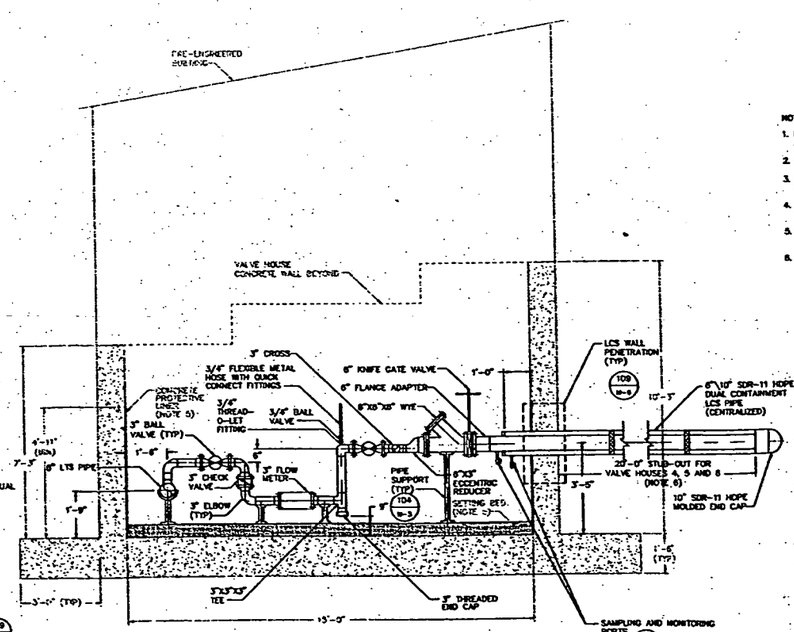
97 / G-3 PLAN
VALVE HOUSES 2 THROUGH 6
SCALE: 1" = 2'



F / M-2 SECTION (TYP)
VALVE HOUSES 1 THROUGH 6
SCALE: 1" = 2'



G / M-3 SECTION (TYP)
VALVE HOUSES 2 THROUGH 6
SCALE: 1" = 2'



H / M-2 SECTION (TYP)
VALVE HOUSES 1 THROUGH 6
SCALE: 1" = 2'

NOTES:

1. PROCESS PIPING AND RELATED APPURTENANCES SHALL BE ACCORDANCE WITH SPECIFICATION SECTIONS 15060, 15190, AND 15250.
2. VALVES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 15080.
3. FLOW METERS, CONTROLS AND RELATED INSTRUMENTATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 18900.
4. TANKS, FLEXIBLE METAL HOSE, AND TANK TRANSFER PUMPS SHALL BE IN ACCORDANCE WITH SECTION 15070.
5. SEE DRAWINGS S-2 AND S-4 FOR CONCRETE PROTECTIVE LINER AND SETTING BED INSTALLATION DETAILS.
6. HDPE STUB-OUT PIPES AND MOLDED END CAPS SHALL BE INSTALLED AT VALVE HOUSES 4, 5 AND 6. STUB-OUT PIPES SHALL BE CONSTRUCTED FROM A SINGLE LENGTH WITHOUT BUTT-FUSION WELDS EXCEPT FOR JOINT AT MOLDED END CAP. STUB-OUT PIPES ARE NOT REQUIRED TO BE HYDROSTATIC TESTED.

REV. NO.	DATE	DESCRIPTION	DESIGN	CADD	CHECK	REVIEW	APPROVAL
0	00.05.20	CPC SUBMITTAL TO FLUOR FERNALD, INC./DOE/EPA	LHB	JKB	RAW	DLW	JFB
A	00.01.17	PRE-FINAL SUBMITTAL TO FF/DOE/EPA	WKB	JKB	BDJ	DLW	JFB

SCALE AS SHOWN

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

FLUOR FERNALD, INC. 000061

PROJECT: ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM

TITLE: VALVE HOUSE MECHANICAL DETAILS II

THIS DRAWING MAY NOT BE USED FOR PROJECT WORK OR CONSTRUCTION UNLESS SEALED.

SIGNATURE
28 MAR 00
DATE

STATE OF OHIO — JOHN E. HOLCOMB — E-58348 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20171
CONTRACT NO.:	3CP5000028
FDNF DRAWING NO.:	90X-6000-M-00263
GEOSYNTEC PROJECT NO.:	00103030-07
GEOSYNTEC DOCUMENT NO.:	FDD-0271
SHEET NO.:	M-3
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION