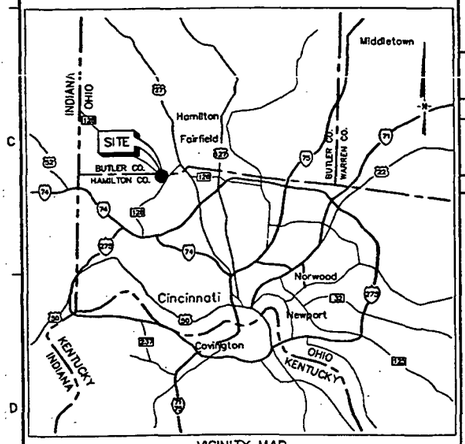
UNITED STATES DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
ON-SITE DISPOSAL FACILITY-PHASE V

4665

FLUOR FERNALD, INC. PROJECT NUMBER 20105
HAMILTON COUNTY AND BUTLER COUNTY, OHIO
CONSTRUCTION CONTRACT NO. FSC-659



VICINITY MAP

8 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-00360	TITLE SHEET I
X-2	0	90X-6000-X-00361	TITLE SHEET II
X-3	0	90X-6000-X-00362	LEGEND AND SYMBOLS
CIVIL			
G-1	0	90X-6000-G-00363	SITE DEVELOPMENT PLAN I – CELL 6
G-2	0	90X-6000-G-00364	SITE DEVELOPMENT PLAN II – CELL 7
G-3	0	90X-6000-G-00365	SUBGRADE GRADING PLAN I – CELLS 3, 4, AND 5 LINER AND FINAL COVER SYSTEMS
G-4	0	90X-6000-G-00366	SUBGRADE GRADING PLAN II – CELL 6 LINER SYSTEM AND OSDF SEDIMENTATION BASIN NO. 2
G-5	0	90X-6000-G-00367	SUBGRADE GRADING PLAN III – CELL 6 LINER SYSTEM AND OSDF SEDIMENTATION BASIN NO. 2
G-6	0	90X-6000-G-00368	SUBGRADE GRADING PLAN IV – CELL 7 LINER SYSTEM
G-7	0	90X-6000-G-00369	COMPACTED CLAY LINER GRADING PLAN – CELLS 6 AND 7 LINER SYSTEM
G-8	0	90X-6000-G-00370	CELL OUTLET GRADING PLANS I – CELLS 6 AND 7 LINER SYSTEM
G-9	0	90X-6000-G-00371	CELL OUTLET GRADING PLANS II – CELLS 6 AND 7 LINER SYSTEM
G-10	0	90X-6000-G-00372	FINAL COVER SYSTEM CONTOURING LAYER GRADING PLAN I – CELLS 3, 4, AND 5
G-11	0	90X-6000-G-00373	FINAL COVER SYSTEM CONTOURING LAYER GRADING PLAN II – CELLS 6 AND 7
G-12	0	90X-6000-G-00374	FINAL COVER SYSTEM COMPACTED CLAY CAP GRADING PLAN I – CELLS 3, 4, AND 5
G-13	0	90X-6000-G-00375	FINAL COVER SYSTEM COMPACTED CLAY CAP GRADING PLAN II – CELLS 6 AND 7
G-14	0	90X-6000-G-00376	FINAL COVER SYSTEM GRADING PLAN I – CELLS 3, 4, AND 5
G-15	0	90X-6000-G-00377	FINAL COVER SYSTEM GRADING PLAN II – CELLS 6 AND 7
G-16	0	90X-6000-G-00378	FINAL COVER SYSTEM STAGED CLOSURE GRADING PLANS – CELLS 6 AND 7
G-17	0	90X-6000-G-00379	IMPACTED MATERIAL HAUL ROAD GRADING PLAN AND DETAILS I
G-18	0	90X-6000-G-00380	IMPACTED MATERIAL HAUL ROAD GRADING PLAN AND DETAILS II
G-19	0	90X-6000-G-00381	OSDF NORTH-SOUTH SECTIONS I
G-20	0	90X-6000-G-00382	OSDF NORTH-SOUTH SECTIONS II
G-21	0	90X-6000-G-00383	OSDF WEST-EAST SECTIONS I
CIVIL (CONTINUED)			
G-22	0	90X-6000-G-00384	OSDF WEST-EAST SECTIONS II
G-23	0	90X-6000-G-00385	OSDF WEST-EAST SECTIONS III
G-24	0	90X-6000-G-00386	CELL PERIMETER DETAILS I
G-25	0	90X-6000-G-00387	CELL PERIMETER DETAILS II
G-26	0	90X-6000-G-00388	CELL PERIMETER DETAILS III
G-27	0	90X-6000-G-00389	CELL PERIMETER DETAILS IV
G-28	0	90X-6000-G-00390	CELL PERIMETER DETAILS V
G-29	0	90X-6000-G-00391	LINER SYSTEM DETAILS I
G-30	0	90X-6000-G-00392	LINER SYSTEM DETAILS II
G-31	0	90X-6000-G-00393	LINER SYSTEM DETAILS III
G-32	0	90X-6000-G-00394	LINER SYSTEM DETAILS IV
G-33	0	90X-6000-G-00395	LINER SYSTEM DETAILS V
G-34	0	90X-6000-G-00396	FINAL COVER SYSTEM DETAILS I
G-35	0	90X-6000-G-00397	FINAL COVER SYSTEM DETAILS II
G-36	0	90X-6000-G-00398	SURFACE-WATER MANAGEMENT SYSTEM DETAILS I
G-37	0	90X-6000-G-00399	SURFACE-WATER MANAGEMENT SYSTEM DETAILS II
G-38	0	90X-6000-G-00400	SURFACE-WATER MANAGEMENT SYSTEM DETAILS III
G-39	0	90X-6000-G-00401	SURFACE-WATER MANAGEMENT SYSTEM DETAILS IV
G-40	0	90X-6000-G-00402	SURFACE-WATER MANAGEMENT SYSTEM DETAILS V
G-41	0	90X-6000-G-00403	SURFACE-WATER MANAGEMENT SYSTEM DETAILS VI
G-42	0	90X-6000-G-00404	SURFACE-WATER MANAGEMENT SYSTEM DETAILS VII
G-43	0	90X-6000-G-00405	SURFACE-WATER MANAGEMENT SYSTEM DETAILS VIII
G-44	0	90X-6000-G-00406	HORIZONTAL MONITORING WELL AND MISCELLANEOUS DETAILS
G-45	0	90X-6000-G-00407	IMPACTED MATERIAL PLACEMENT DETAILS I
G-46	0	90X-6000-G-00408	IMPACTED MATERIAL PLACEMENT DETAILS II
G-47	0	90X-6000-G-00409	CHAIN-LINK FENCE AND GATE DETAILS

LOCATION MAP
U.S.G.S. SHANDON QUADRANGLE, OHIO

2000 1000 0 2000 4000
SCALE IN FEET

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	SPVR. BY	APP. BY
D	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TCI	VDR	LMC	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TCI	JWD	LMC	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	TCI	TWM	LMC	DCP	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 V

TITLE:
TITLE SHEET I

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

SIGNATURE
29 Jan 2002
DATE

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

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

PROJECT NO.:	20105
CONTRACT NO.:	95PS0050029
FEMP DRAWING NO.:	90X-6000-X-00360
GEOSYNTEC PROJECT NO.:	001342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0501
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

—4665

REFERENCE DRAWING INDEX

SHEET NO.	REVISION NO.	FEMP DRAWING NO.	TITLE
REFERENCE			
FINAL DESIGN PACKAGE			
X-1	0	90X-6000-X-00001	TITLE SHEET
X-2	0	90X-6000-X-00002	LEGENDS AND SYMBOLS
X-7	0	90X-6000-X-00006	GEOTECHNICAL DATA POINT LOCATION PLAN
X-8	0	90X-6000-X-00007	GREAT MIAMI AQUIFER GROUND-WATER CONTOUR MAP
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
ON-SITE DISPOSAL FACILITY - PHASE I			
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-41A	0	90X-6000-G-00089	SEDIMENTATION BASIN DETAILS
ON-SITE DISPOSAL FACILITY - PHASE II			
X-1B	0	90X-6000-X-00200	TITLE SHEET
X-2C	0	90X-6000-X-00201	LEGENDS AND SYMBOLS
G-2B	0	90X-6000-G-00202	SITE DEVELOPMENT PLAN I - BASE BID
G-5D	0	90X-6000-G-00204	SUBGRADE GRADING PLAN
G-20B	2	90X-6000-G-00212	CELL PERIMETER DETAILS I
G-30B	2	90X-6000-G-00220	STORM-WATER MANAGEMENT SYSTEM DETAILS
ENCHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM			
X-1	0	90X-6000-X-00239	TITLE SHEET
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-00292	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 II
ON-SITE DISPOSAL FACILITY - PHASE III			
X-1	1	90X-6000-X-00293	TITLE SHEET I
X-3	1	90X-6000-X-00295	LEGEND AND SYMBOLS
G-1	1	90X-6000-X-00296	SITE DEVELOPMENT PLAN
G-2	1	90X-6000-X-00297	SUBGRADE GRADING PLAN I
G-3	1	90X-6000-X-00298	SUBGRADE GRADING PLAN II
G-7	1	90X-6000-G-00302	FINAL COVER GRADING PLAN
G-11	1	90X-6000-G-00306	IMPACTED MATERIAL HAUL ROAD GRADING PLANS AND DETAILS
G-24	1	90X-6000-G-00319	SURFACE-WATER MANAGEMENT SYSTEM DETAILS II
G-25	1	90X-6000-G-00320	SURFACE-WATER MANAGEMENT SYSTEM DETAILS III
ON-SITE DISPOSAL FACILITY - PHASE IV			
X-1	0	90X-6000-X-00326	TITLE SHEET I
X-3	0	90X-6000-X-00328	LEGEND AND SYMBOLS
G-1	0	90X-6000-X-00329	SITE DEVELOPMENT PLAN I
G-2	0	90X-6000-G-00330	SITE DEVELOPMENT PLAN II
G-3	0	90X-6000-G-00331	SUBGRADE GRADING PLAN - CELL 4 LINER
G-4	0	90X-6000-G-00332	SUBGRADE GRADING PLAN - CELL 5 LINER
G-7	0	90X-6000-G-00335	CELL OUTLET GRADING PLANS II
G-11	0	90X-6000-G-00339	CELL PERIMETER SECTIONS I
G-12	0	90X-6000-G-00340	CELL PERIMETER SECTIONS II
G-17	0	90X-6000-G-00345	SURFACE-WATER MANAGEMENT SYSTEM DETAILS I
G-18	0	90X-6000-G-00346	SURFACE-WATER MANAGEMENT SYSTEM DETAILS II
G-19	0	90X-6000-G-00347	SURFACE-WATER MANAGEMENT SYSTEM DETAILS III
G-20	0	90X-6000-G-00348	SURFACE-WATER MANAGEMENT SYSTEM DETAILS IV

SHEET NO.	REVISION NO.	FEMP DRAWING NO.	TITLE
REFERENCE			
ON-SITE DISPOSAL FACILITY - PHASE IV (CONTINUED)			
G-21	0	90X-6000-G-00349	HORIZONTAL MONITORING WELL DETAILS - CELL 6
G-25	0	90X-6000-G-00353	SUBGRADE GRADING PLAN - CELL 2 CAP
G-26	0	90X-6000-G-00354	CONTOURING LAYER GRADING PLAN - CELL 2
G-27	0	90X-6000-G-00355	COMPACTED CLAY CAP GRADING PLAN - CELL 2
G-28	0	90X-6000-G-00356	FINAL COVER SYSTEM GRADING PLAN - CELL 2
G-30	0	90X-6000-G-00358	FINAL COVER SYSTEM DETAILS
-	0	90X-5500-G-00580	BORROW AREA - SUBAREA 3 EXCAVATION AND (INTERIM) RESTORATION PLAN
INTERIM LEACHATE COLLECTION SYSTEM			
-	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
LEACHATE CONVEYANCE SYSTEM			
-	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
EXISTING UTILITIES			
-	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
-	14	22X-5500-P-00659	MASTER GRID OF UNDERGROUND UTILITY PLANS
-	21	22C-5500-P-00661	GRID 2 - UNDERGROUND UTILITIES
-	26	22C-5500-P-00662	GRID 3 - UNDERGROUND UTILITIES
-	21	22C-5500-P-00663	GRID 4 - UNDERGROUND UTILITIES
-	22	22A-5500-P-00664	GRID 5 - UNDERGROUND UTILITIES
-	17	22F-5500-P-00665	GRID 6 - UNDERGROUND UTILITIES
-	20	22H-5500-P-00666	GRID 7 - UNDERGROUND UTILITIES
-	15	22H-5500-P-00667	GRID 8 - UNDERGROUND UTILITIES
-	11	22A-5500-P-00707	GRID 32 - UNDERGROUND UTILITIES
-	3	90X-5500-E-00522	ELECTRICAL POWER FOR OSDF
-	0	90X-5500-E-00542	ELECTRIC FOR OSDF AIR MONITORS
G0015	3	93X-5900-G-00288	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 13
G0021	8	93X-5900-G-00294	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 21
G0029	9	93X-5900-G-00302	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 29
G0030	10	93X-5900-G-00303	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 30
G0037	9	93X-5900-G-00310	CIVIL EXISTING SITE AND UTILITY PLAN - GRID 37
G0038	7	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
CONSTRUCTION LAYDOWN AREA			
-	1	90X-5500-G-00543	ON-SITE DISPOSAL FACILITY CONSTRUCTION LAYDOWN AREA ACCESS ROAD PLAN AND PROFILE SHEET 1 OF 2
-	1	90X-5500-G-00544	ON-SITE DISPOSAL FACILITY CONSTRUCTION LAYDOWN AREA ACCESS ROAD PLAN AND PROFILE SHEET 2 OF 2
-	0	90X-5500-G-00545	ON-SITE DISPOSAL FACILITY CONSTRUCTION LAYDOWN AREA ACCESS ROAD CROSS SECTIONS SHEET 1 OF 2
-	0	90X-5500-G-00546	ON-SITE DISPOSAL FACILITY CONSTRUCTION LAYDOWN AREA ACCESS ROAD CROSS SECTIONS SHEET 2 OF 2
-	0	90X-5500-G-00547	ON-SITE DISPOSAL FACILITY CONSTRUCTION LAYDOWN AREA PLAN AND PROFILE
MISCELLANEOUS			
-	7	75A-5500-G-00441	AREA 1 PHASE 1 SITE PLAN 3 OF 3
-	2	75X-5500-X-00450	AREA 1 PHASE 1 (EAST) DETAIL SHEET 1
-	3	00X-5500-G-01843	FEMP ON-SITE EASEMENTS AND RIGHT-OF-WAYS
-	0	90X-5000-G-00359	TOPOGRAPHY BASED ON 12 JANUARY 2000 FLYOVER

000002

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	VDR	LMC	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	JMO	LMC	DCP	JFB
A	01.10.23	PRELIMINARY SUBMITTAL TO FF/DOE	TEZ	TMM	LMC	DCP	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 V

TITLE: TITLE SHEET II

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

29 Jan 2002

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

GEO SYNTEC CONSULTANTS
1900 LAKE PLACE DRIVE
ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-6000-X-00361
GEOSYNTEC PROJECT NO.:	GD1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0502
SHEET NO.:	X-2
REVISION NO.:	0

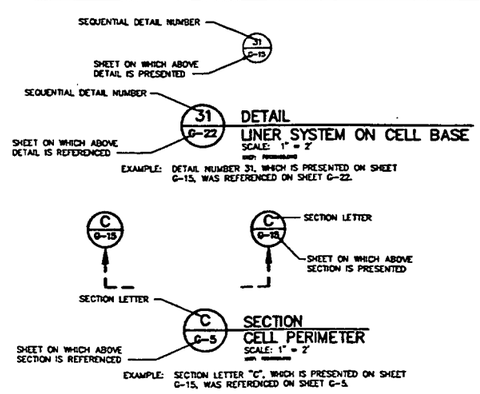
SYMBOLS LEGEND

EXISTING		NEW
	IMPACTED MATERIAL DISPOSAL LIMIT	
	BATTERY LIMIT	
	BORROW AREA LIMIT	
	FEMP PROPERTY LINE	
	BUTLER COUNTY/HAMILTON COUNTY LINE	
	ADJACENT LANDOWNER PROPERTY LINE	
x x x	FENCE	x x x
	RAD FENCE	XXXX XXXX
W	NON-POTABLE CONSTRUCTION WATER LINE	
	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	
LTS	LTS PIPE	
ILTS	ILTS PIPE	
	EPLTS PIPE	
E E	UTILITY EASEMENT	
GW	24" STORMWATER FORCEMAIN	
UE	UNDERGROUND ELECTRIC	
	WATER TABLE OR PIEZOMETRIC SURFACE	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	TREE LINE	
	PARKING LOT STRIPING	
1	CELL DESIGNATION	6
	TRAILER OR BUILDING	
	DRAINAGE FLOW DIRECTION	
	HEADWALL	
	SIGN	
	POST	
	SLOPE INDICATOR	CREST TOE
	TRANSMISSION TOWER	
	CATCH BASIN	
	MANHOLE	
	POWER POLE	
1250	TYPE 1 MONITORING WELL	
2421	TYPE 2 MONITORING WELL	
3421	TYPE 3 MONITORING WELL	
4064	TYPE 4 MONITORING WELL	
1750	GEOTECHNICAL BORING	
11439	CONE PENETROMETER TEST SOUNDING	
BM-10	BENCHMARK	
11545	LYSIMETER	
	MONITORING WELL	
11705	PIEZOMETER	
	VALVE HOUSE	
	LEACHATE TRANSMISSION SYSTEM PERMANENT LIFT STATION	
	CONSTRUCTION CONTROL POINT	
	DRAINAGE CHANNEL GRAVITY INLET STRUCTURE	
	CULVERT	
	PERMANENT VEGETATION	
	INTERIM VEGETATION	
	HORIZONTAL MONITORING WELL WITH COVER SLAB	

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
	FINAL COVER SYSTEM
	IMPACTED MATERIAL PLACEMENT AREA
	LINER SYSTEM
	ACCESS CORRIDOR, ACCESS ROAD, ACCESS RAMP, MAINTENANCE ACCESS, OR HAUL ROAD
	GRADING TRANSITION
	BERM CREST

DETAIL AND SECTION IDENTIFICATION LEGEND



ABBREVIATIONS

ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BAMP	BORROW AREA MANAGEMENT AND RESTORATION PLAN
BCY	BULK CUBIC YARDS
℄	BASELINE
BM	BENCH MARK
CFC	CERTIFIED-FOR-CONSTRUCTION
℄	CENTERLINE
CLR	CLEARANCE
CMP	CORRUGATED METAL PIPE
CO.	COUNTY
CPT	CONE PENETROMETER TEST
CQA	CONSTRUCTION QUALITY ASSURANCE
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
FF	FLUOR FERNALD
GIS	GRAVITY INLET STRUCTURE
HDPE	HIGH DENSITY POLYETHYLENE
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
STP	SEWAGE TREATMENT PLANT
SWMEC	SURFACE WATER MANAGEMENT AND EROSION CONTROL
(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
590	EXISTING GROUND ELEVATION (FEET)	
590	SUBGRADE ELEVATION (FEET)	590
590	COMPACTED CLAY LINER ELEVATION (FEET)	590
590	LEACHATE COLLECTION SYSTEM ELEVATION (FEET)	590
585	PROTECTIVE LAYER ELEVATION (FEET)	585
590	CONTOURING LAYER ELEVATION (FEET)	590
590	COMPACTED CLAY CAP LAYER ELEVATION (FEET)	590
590	FINISHED GRADE ELEVATION (FEET)	590
	IMPACTED MATERIAL (FEET)	600

4665

GENERAL NOTES

NOTES:

1. TOPOGRAPHY SHOWN ON CONSTRUCTION DRAWINGS IS 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	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	JWO	LMG	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	JWO	LMG	DGP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	TEZ	TMB	LMG	DGP	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 V

TITLE:

LEGEND AND SYMBOLS

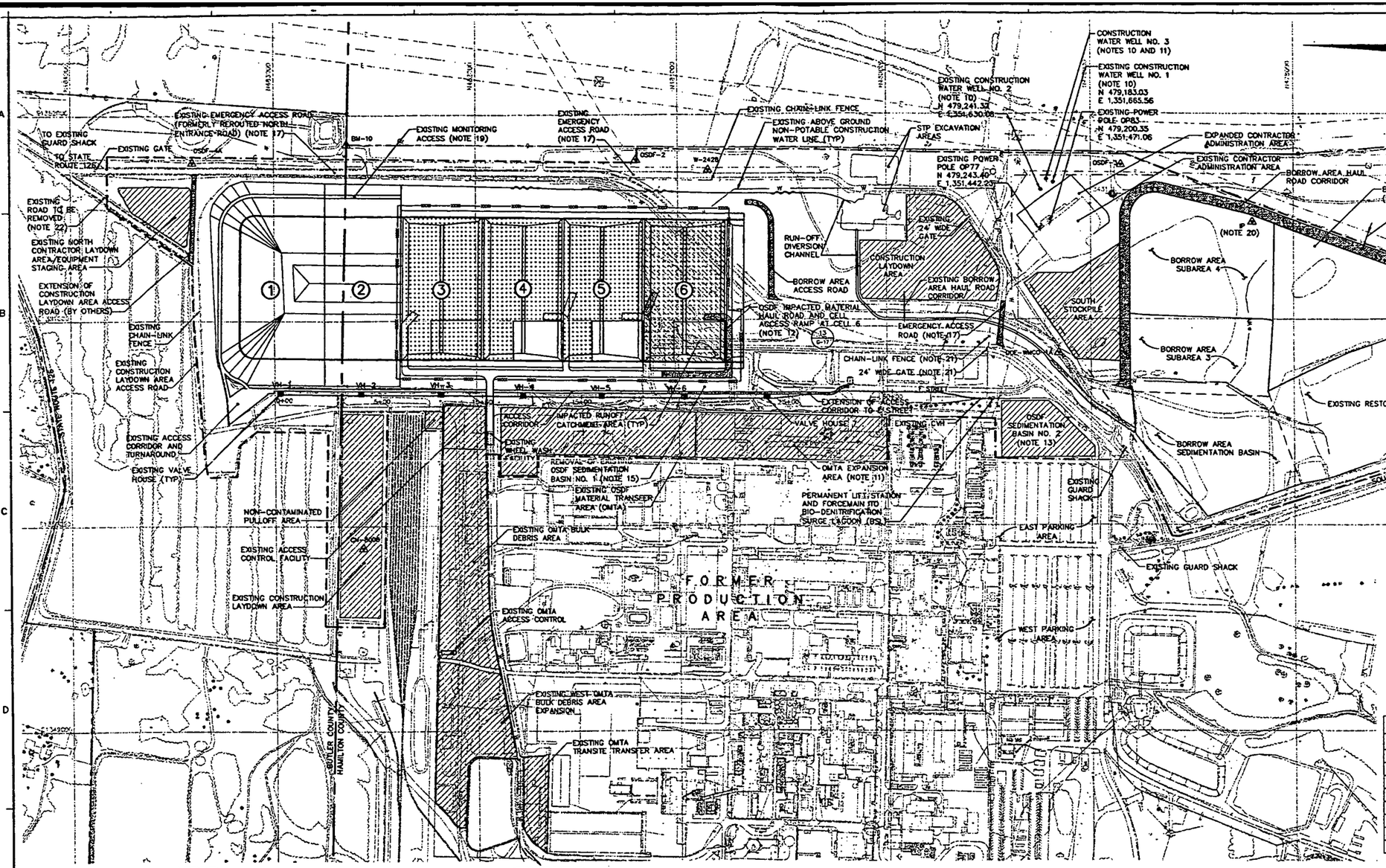
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION UNLESS SEALED.

SIGNATURE
29 Jan 2002
DATE

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

GEOSYNTEC CONSULTANTS
1255 LAKE HARBOR DRIVE
ATLANTA, GEORGIA 30312 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-6000-X-00362
GEOSYNTEC PROJECT NO.:	GQ1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0503
SHEET NO.:	X-3
REVISION NO.:	0



MONITORING WELL DATA POINTS			
TYPE 2 MONITORING WELLS			
POINT NO.	NORTHING	EASTING	ELEVATION
2068	478712.38	1349922.00	578.10
2070	476781.37	1350560.02	592.10
2399	477343.94	1350079.81	581.00
2431	478886.20	1351606.01	–
2432	478031.61	1351613.27	603.45
2733	477100.05	1351692.04	604.90
TYPE 3 MONITORING WELLS			
POINT NO.	NORTHING	EASTING	ELEVATION
3068	478701.59	1349923.56	577.90
3070	476791.60	1350557.08	591.40
3431	478895.98	1351606.72	–

BENCHMARKS				
NUMBER	NORTHING	EASTING	ELEVATION	STATUS
IRON PIN (IP)	478205.58	1351472.81	603.32	EXISTING
DOE-WMCD-1A	479157.59	1350835.05	585.57	EXISTING
W-2428	480850.13	1351732.75	600.79	EXISTING
BM-10	482638.02	1351857.89	615.87	EXISTING
CM-8008	482566.06	1349891.82	593.98	EXISTING
OSDF-2	482199.94	1351779.16	615.82	EXISTING
OSDF-3	478850.42	1351749.33	585.61	EXISTING
OSDF-4A	483394.96	1351770.39	609.93	EXISTING

LEGEND

- BUTLER COUNTY/HAMILTON COUNTY LINE
- FEMP PROPERTY LINE
- BATTERY LIMIT
- IMPACTED MATERIAL DISPOSAL LIMIT
- BORROW AREA LIMIT
- FENCE
- RADIOLOGICAL CONTROL LIMIT/FENCE (NOTE 7)
- ILTS — EXISTING ILTS PIPE
- LTS — EXISTING LTS PIPE
- 154-00 — EXISTING EPLTS PIPE
- DRAINAGE FLOW DIRECTION
- OSDF-4A — BENCHMARK
- 2068 — EXISTING MONITORING WELLS
- ② — ON-SITE DISPOSAL FACILITY CELL DESIGNATION
- ACCESS CORRIDOR, ACCESS ROAD, ACCESS RAMP, OR HAUL ROAD
- IMPACTED MATERIAL PLACEMENT AREA CELLS 3, 4, 5, AND 6 (NOTE 6)
- CELL 6 LINER SYSTEM (NOTE 6)

NOTES:

1. PURPOSE OF THIS DRAWING IS TO CONCEPTUALLY ILLUSTRATE SITE DEVELOPMENT FOR OSDF-PHASE V WITH SUPPORT FACILITIES INCLUDING BUT NOT LIMITED TO HAUL ROADS, GUARD SHACKS, EQUIPMENT WASH FACILITY, CONTRACTOR ADMINISTRATION AREA, PARKING AREAS, CONSTRUCTION LAYDOWN AREA, ACCESS CONTROL FACILITY, RADIOLOGICAL CONTROL LIMIT/FENCE, STOCKPILE AREAS, 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 SECTIONS 02270 AND 13010.
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. EXISTING CONDITIONS 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 DOWNGRADIENT CELL IS CONSTRUCTED AND OPERATIONAL.
6. STATEMENT OF WORK FOR OSDF-PHASE V CONSTRUCTION IS SPECIFIED IN PART 6 OF THE CONTRACT DOCUMENT.
7. RADIOLOGICAL CONTROL LIMIT/FENCE INDICATES LIMIT OF RADIOLOGICAL CONTROL FOR IMPACTED MATERIAL HAULING AND PLACEMENT. RAD FENCE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
8. BORROW AREA MANAGEMENT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13000.
9. CONTRACTOR SHALL LOCATE MID-VALLEY PIPELINE EASEMENT IN ACCORDANCE WITH SPECIFICATION SECTION 02100. CONTRACTOR SHALL NOT ENTER PIPELINE EASEMENT.
10. 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 1,350,478.4 AND CONSTRUCTION WATER WELLS SHOWN ON THIS DRAWING.
11. LOCATION AND DESIGN OF OMTA EXPANSION AREA AND CONSTRUCTION WATER WELL NO. 3 TO BE PROVIDED BY CONSTRUCTION MANAGER.
12. OSDF IMPACTED MATERIAL HAUL ROAD AND CELL ACCESS RAMP AT CELL 6 GRADING PLANS ARE SHOWN ON DRAWING G-17.
13. OSDF SEDIMENTATION BASIN NO. 2 GRADING PLAN IS SHOWN ON DRAWING G-5.
14. REMOVAL LIMITS FOR NORTH ENTRANCE ROAD AND VALVE HOUSE ACCESS ROAD ARE SHOWN ON DRAWING G-4.
15. REMOVAL OF EXISTING OSDF SEDIMENTATION BASIN NO. 1 IS SHOWN ON DRAWING G-4.
16. GEOTECHNICAL DATA POINTS ARE SHOWN ON DRAWINGS G-4 AND G-6.
17. EMERGENCY ACCESS ROAD TO BE USED FOR EMERGENCY RESPONSE VEHICLES AND PICKUP TRUCK VEHICLES. THIS ROAD SHALL BE USED FOR DELIVERY OF CONSTRUCTION MATERIALS AND EQUIPMENT AS APPROVED BY CONSTRUCTION MANAGER.
18. SOUTH ENTRANCE ROAD SHALL NOT BE USED FOR DELIVERY OF CONSTRUCTION MATERIALS.
19. MONITORING ACCESS TO BE USED FOR MAINTENANCE, SEEDING, IRRIGATION, MONITORING, INSPECTION, FEMP OPERATIONS, AND EMERGENCY VEHICLES ONLY.
20. CONTRACTOR SHALL REMOVE EXISTING SURVEY BENCHMARK IP AND ESTABLISH NEW SURVEY BENCHMARK IP-2 AS DIRECTED BY CONSTRUCTION MANAGER.
21. DETAILS FOR FENCE AND GATE INSTALLATION ARE SHOWN ON DRAWING G-47.
22. ROAD PAVEMENT COURSES AND ASSOCIATED IMPACTED MATERIAL FOR EXISTING ROAD SHALL BE REMOVED WITHIN LIMITS SHOWN. REMOVAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200. CONTRACTOR SHALL PLACE REMOVED MATERIAL IN SOUTH STOCKPILE AREA OR ACTIVE CELL AS APPROVED BY CONSTRUCTION MANAGER.

000004

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVWL BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	AAA	LMC	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	TMM	LMC	DGP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	TEZ	VDR	LMC	DGP	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 V

TITLE: SITE DEVELOPMENT PLAN I - CELL 6

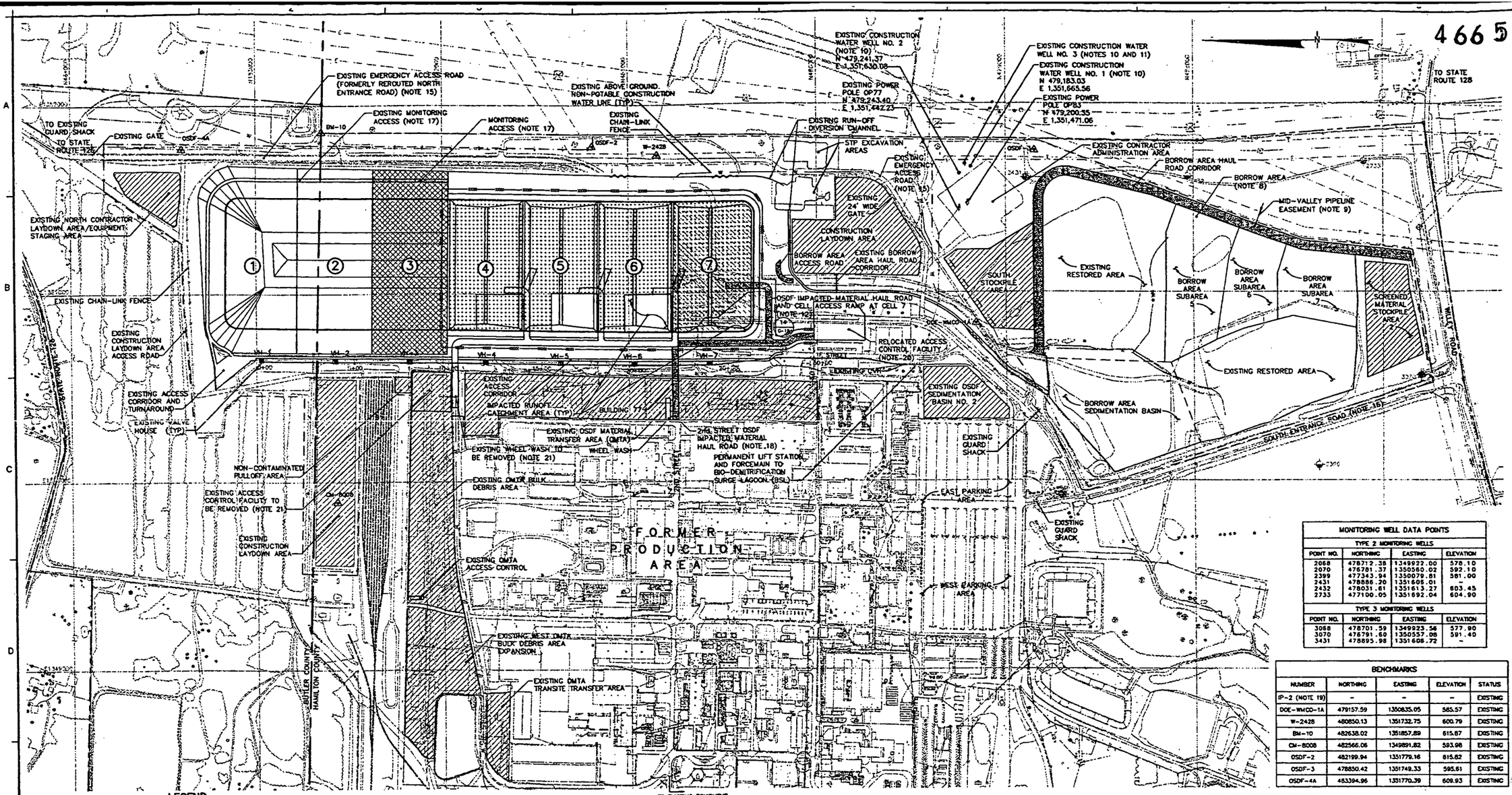
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE — DATE: 29 Jan 2002

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

GEOSYNTEC CONSULTANTS, 1900 LAKE HEARN DRIVE, ATLANTA, GEORGIA 30329 USA

PROJECT NO.:	20105
CONTRACT NO.:	95P5005028
FEMP DRAWING NO.:	9DX-6000-C-00363
GEOSYNTEC PROJECT NO.:	GO1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0001
SHEET NO.:	G-1
REVISION NO.:	0



MONITORING WELL DATA POINTS			
TYPE 2 MONITORING WELLS			
POINT NO.	NORTHING	EASTING	ELEVATION
2068	478712.38	1349922.00	578.10
2070	476781.57	1350580.02	592.10
2399	477343.94	1350079.81	581.00
2431	478886.20	1351605.01	-
2432	478031.61	1351613.27	603.45
2733	477100.05	1351692.04	604.90
TYPE 3 MONITORING WELLS			
POINT NO.	NORTHING	EASTING	ELEVATION
3068	478701.59	1349923.56	577.90
3070	476791.60	1350557.06	591.40
3431	478895.98	1351608.72	-

BENCHMARKS				
NUMBER	NORTHING	EASTING	ELEVATION	STATUS
IP-2 (NOTE 19)	-	-	-	EXISTING
DOE-WMCO-1A	479157.59	1350835.05	565.57	EXISTING
W-2428	480850.13	1351732.75	600.79	EXISTING
BM-10	482638.02	1351857.89	615.87	EXISTING
CM-8008	482566.06	1349891.82	593.98	EXISTING
OSDF-2	482199.94	1351779.16	615.82	EXISTING
OSDF-3	478850.42	1351749.33	595.61	EXISTING
OSDF-4A	483394.96	1351770.39	609.93	EXISTING

LEGEND

- BUTLER COUNTY/HAMILTON COUNTY LINE
- FEMP PROPERTY LINE
- BATTERY LIMIT
- IMPACTED MATERIAL DISPOSAL LIMIT
- BORROW AREA LIMIT
- FENCE
- RADIOLOGICAL CONTROL LIMIT/FENCE (NOTE 7)
- ILTS — EXISTING ILTS PIPE
- LTS — EXISTING LTS PIPE
- 15HCO — EXISTING EPLTS PIPE
- DRAINAGE FLOW DIRECTION
- OSDF-4A — BENCHMARK
- 2068 / 3068 — EXISTING MONITORING WELLS
- 2 — ON-SITE DISPOSAL FACILITY CELL DESIGNATION
- ACCESS CORRIDOR, ACCESS ROAD, ACCESS RAMP, OR HAUL ROAD
- CELL 3 FINAL COVER SYSTEM (NOTE 6)
- IMPACTED MATERIAL PLACEMENT AREA CELLS 4, 5, 6, AND 7 (NOTE 6)
- CELL 7 LINER SYSTEM (NOTE 6)

NOTES:

1. PURPOSE OF THIS DRAWING IS TO CONCEPTUALLY ILLUSTRATE SITE DEVELOPMENT FOR OSDF-PHASE V WITH SUPPORT FACILITIES INCLUDING BUT NOT LIMITED TO HAUL ROADS, GUARD SHACKS, EQUIPMENT WASH FACILITY, CONTRACTOR ADMINISTRATION AREA, PARKING AREAS, CONSTRUCTION LAYDOWN AREA, ACCESS CONTROL FACILITY, RADIOLOGICAL CONTROL LIMIT/FENCE, STOCKPILE AREAS, 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 SECTIONS 02270 AND 13010.
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. EXISTING CONDITIONS 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 DOWNGRADIENT CELL IS CONSTRUCTED AND OPERATIONAL. CLOSURE OF CELL 7 IMPACTED RUNOFF CATCHMENT AREA IS SHOWN ON DRAWING G-16.
6. STATEMENT OF WORK FOR OSDF-PHASE V CONSTRUCTION IS SPECIFIED IN PART 6 OF THE CONTRACT DOCUMENT.
7. RADIOLOGICAL CONTROL LIMIT/FENCE INDICATES LIMIT OF RADIOLOGICAL CONTROL FOR IMPACTED MATERIAL HAULING AND PLACEMENT. RAD FENCE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
8. BORROW AREA MANAGEMENT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13000.
9. CONTRACTOR SHALL LOCATE MID-VALLEY PIPELINE EASEMENT IN ACCORDANCE WITH SPECIFICATION SECTION 02100. CONTRACTOR SHALL NOT ENTER PIPELINE EASEMENT.
10. 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 CONSTRUCTION WATER WELLS SHOWN ON THIS DRAWING.
11. LOCATION OF CONSTRUCTION WATER WELL NO. 3 TO BE PROVIDED BY CONSTRUCTION MANAGER.
12. OSDF IMPACTED MATERIAL HAUL ROAD AND CELL ACCESS RAMP AT CELL 7 GRADING PLANS ARE SHOWN ON DRAWING G-18.
13. REMOVAL LIMITS FOR NORTH ENTRANCE ROAD AND REROUTED NORTH ENTRANCE ROAD ARE SHOWN ON DRAWING G-6.
14. GEOTECHNICAL DATA POINTS ARE SHOWN ON DRAWINGS G-4 AND G-5.
15. EMERGENCY ACCESS ROAD TO BE USED FOR EMERGENCY RESPONSE VEHICLES AND PICKUP TRUCK VEHICLES. THIS ROAD SHALL BE USED FOR DELIVERY OF CONSTRUCTION MATERIALS AND EQUIPMENT AS APPROVED BY CONSTRUCTION MANAGER.
16. SOUTH ENTRANCE ROAD SHALL NOT BE USED FOR DELIVERY OF CONSTRUCTION MATERIALS.
17. MONITORING ACCESS TO BE USED FOR MAINTENANCE, SEEDING, IRRIGATION, MONITORING, INSPECTION, FEMP OPERATIONS, AND EMERGENCY VEHICLES ONLY.
18. SECOND STREET IMPACTED MATERIAL HAUL ROAD MAY BE ROUTED AROUND BUILDING 77 DEPENDING ON DEMOLITION SCHEDULE. CONSTRUCT SECOND STREET IMPACTED MATERIAL HAUL ROAD TO BE OPERATIONAL AT START OF CONSTRUCTION FOR CELL 4 FINAL COVER SYSTEM.
19. LOCATION OF SURVEY BENCHMARK IP-2 TO BE PROVIDED BY CONSTRUCTION MANAGER.
20. CONSTRUCT RELOCATED ACCESS CONTROL FACILITY TO BE OPERATIONAL AT START OF CONSTRUCTION FOR CELL 4 FINAL COVER SYSTEM. LOCATION AND DESIGN OF RELOCATED ACCESS CONTROL FACILITY TO BE PROVIDED BY CONSTRUCTION MANAGER.
21. REMOVE EXISTING ACCESS CONTROL FACILITY AND EXISTING WHEEL WASH AFTER RELOCATED ACCESS CONTROL FACILITY IS OPERATIONAL.

000005

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	AJA	LMC	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	TMM	LMC	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	TEZ	VOR	LMC	DCP	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 V

TITLE:
SITE DEVELOPMENT PLAN II – CELL 7

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

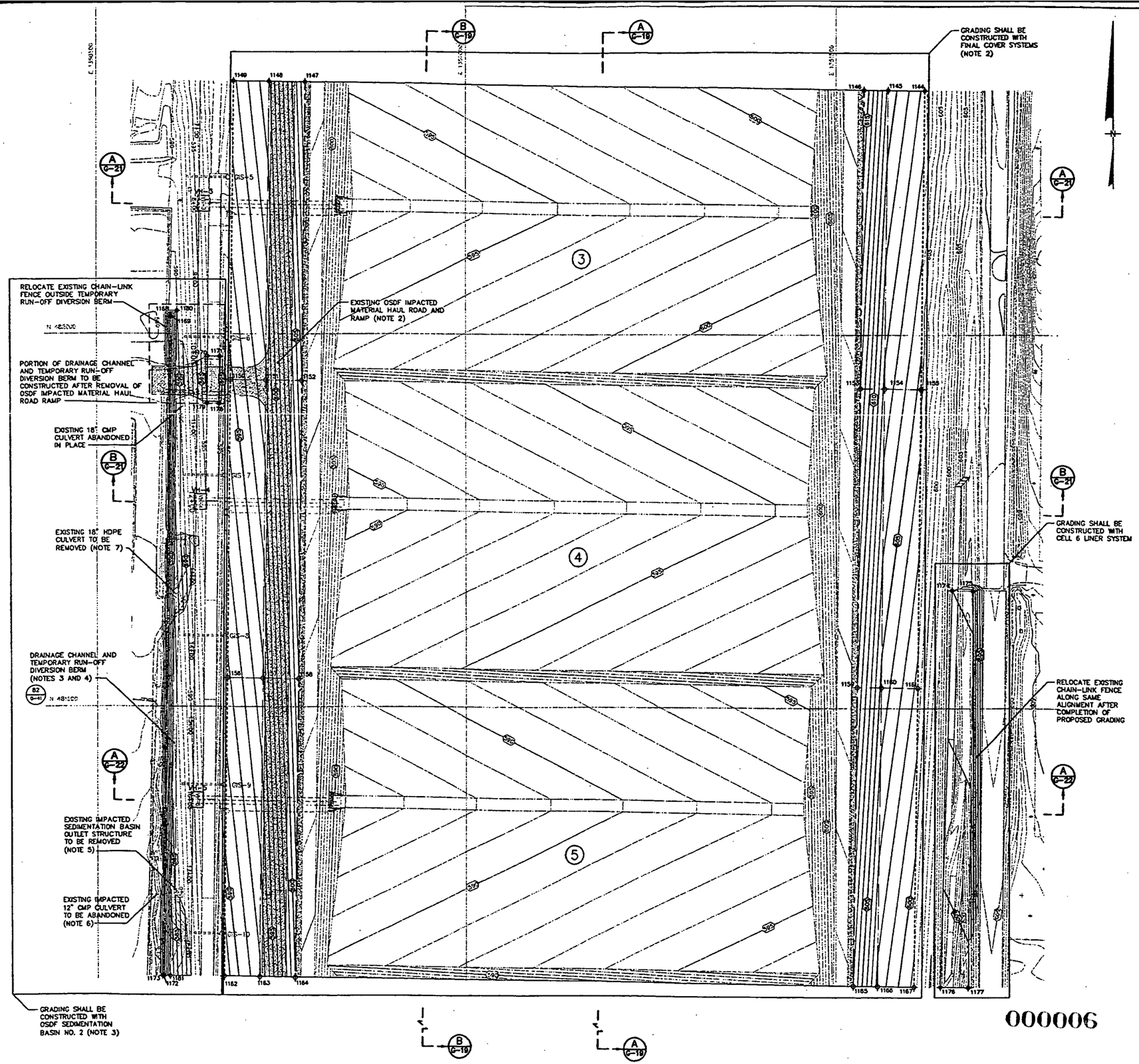
SIGNATURE
29 Jan 2002
DATE

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

GEOSYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20105
CONTRACT NO.:	93P5005028
TEMP DRAWING NO.:	9QX-6000-G-00384
GEOSYNTEC PROJECT NO.:	G01342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0002
SHEET NO.:	G-2
REVISION NO.:	0

4665



LEGEND

- EXISTING GROUND ELEVATION (FEET)
- EXISTING SUBGRADE ELEVATION (FEET) (NOTE 1)
- SUBGRADE ELEVATION (FEET) (NOTES 1 AND 2)
- PERIMETER BERM BASELINE
- APPROXIMATE LIMIT OF FINAL COVER SYSTEM CONSTRUCTION
- EXISTING ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM PIPE
- EXISTING INTERIM LEACHATE TRANSMISSION SYSTEM PIPE
- CONSTRUCTION CONTROL POINT
- EXISTING CELL DESIGNATION
- BERM CREST

SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
1144	482327.33	1351619.11	607.69
1145	482327.94	1351569.03	610.70
1146	482328.33	1351537.40	615.97
1147	482337.57	1350780.79	608.94
1148	482338.17	1350731.85	600.78
1149	482338.78	1350681.76	597.78
1150	481938.68	1350676.87	594.78
1151	481938.12	1350728.86	597.79
1152	481937.56	1350775.80	605.94
1153	481928.37	1351532.52	612.97
1154	481927.99	1351564.14	607.71
1155	481927.37	1351614.23	604.69
1156	481538.84	1350671.98	591.78
1157	481538.23	1350722.07	594.79
1158	481537.64	1350771.01	602.94
1159	481528.38	1351527.63	609.97
1160	481527.99	1351559.25	604.70
1161	481527.36	1351609.34	601.69
1162	481138.36	1350667.09	588.78
1163	481137.73	1350717.17	591.78
1164	481137.11	1350766.11	599.94
1165	481128.32	1351522.74	606.96
1166	481127.93	1351554.36	601.69
1167	481127.31	1351604.45	598.69
1168	482023.13	1350594.14	593.85
1169	482023.11	1350598.14	593.85
1170	481970.11	1350645.49	596.46
1171	481969.91	1350661.99	596.46
1172	481138.40	1350565.32	587.21
1173	481138.40	1350583.32	587.21
1174	481658.14	1351656.04	602.00
1175	481657.83	1351683.43	602.27
1176	481126.86	1351641.57	599.34
1177	481126.40	1351678.14	599.71
1178	481906.88	1350661.22	595.98
1179	481906.89	1350644.72	595.98
1180	482030.89	1350604.23	589.91
1181	481138.40	1350593.32	583.22

NOTES:

1. SUBGRADE ELEVATIONS CORRESPOND TO TOP OF PREPARED SUBGRADE INCLUDING ANY COMPACTED FILL. SUBGRADE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
2. CONTRACTOR SHALL RE-ESTABLISH SUBGRADE ELEVATIONS TO FINAL COVER SYSTEM CONSTRUCTION LIMITS SHOWN HEREON AND RELOCATE EXISTING CHAIN-LINK FENCE AFTER REMOVAL OF IMPACTED MATERIAL HAUL ROAD AND RAMP AND PRIOR TO FINAL COVER SYSTEM CONSTRUCTION.
3. CONTRACTOR SHALL CONSTRUCT DRAINAGE CHANNEL AND TEMPORARY RUN-OFF DIVERSION BERM WITH OSDF SEDIMENTATION BASIN NO. 2 CONSTRUCTION.
4. CONTRACTOR SHALL REMOVE EXISTING INTERIM LEACHATE TRANSMISSION SYSTEM PIPE AND TEMPORARY RUN-OFF DIVERSION BERM AFTER ADJACENT CELL CAPS ARE FULLY VEGETATED. CONTRACTOR SHALL PLACE COMPACTED FILL, AS NECESSARY, TO PROVIDE POSITIVE DRAINAGE TO FORMER PRODUCTION AREA AND AWAY FROM OSDF FACILITY.
5. CONTRACTOR SHALL REMOVE EXISTING IMPACTED SEDIMENTATION BASIN OUTLET STRUCTURE AND RE-ESTABLISH DRAINAGE CHANNEL SLOPE AFTER CELL 5 FINAL COVER SYSTEM CONSTRUCTION. MATERIAL SHALL BE STOCKPILED AT LOCATION APPROVED BY CONSTRUCTION MANAGER.
6. CONTRACTOR SHALL ABANDON EXISTING IMPACTED CORRUGATED METAL PIPE CULVERT IN PLACE BY FILLING END OF CULVERT WITH GROUT FOR A MINIMUM LENGTH OF 4 FEET.
7. CONTRACTOR SHALL REMOVE EXISTING CULVERT AND STOCKPILE MATERIAL AT LOCATIONS APPROVED BY CONSTRUCTION MANAGER.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	LMC	JJA	TEZ	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	LMC	JJA	TEZ	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	KRD	TMM	KRD	DCP	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 V

TITLE:
SUBGRADE GRADING PLAN I – CELLS 3, 4, AND 5
LINER AND FINAL COVER SYSTEMS

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

SIGNATURE
29 Jan 2002
DATE

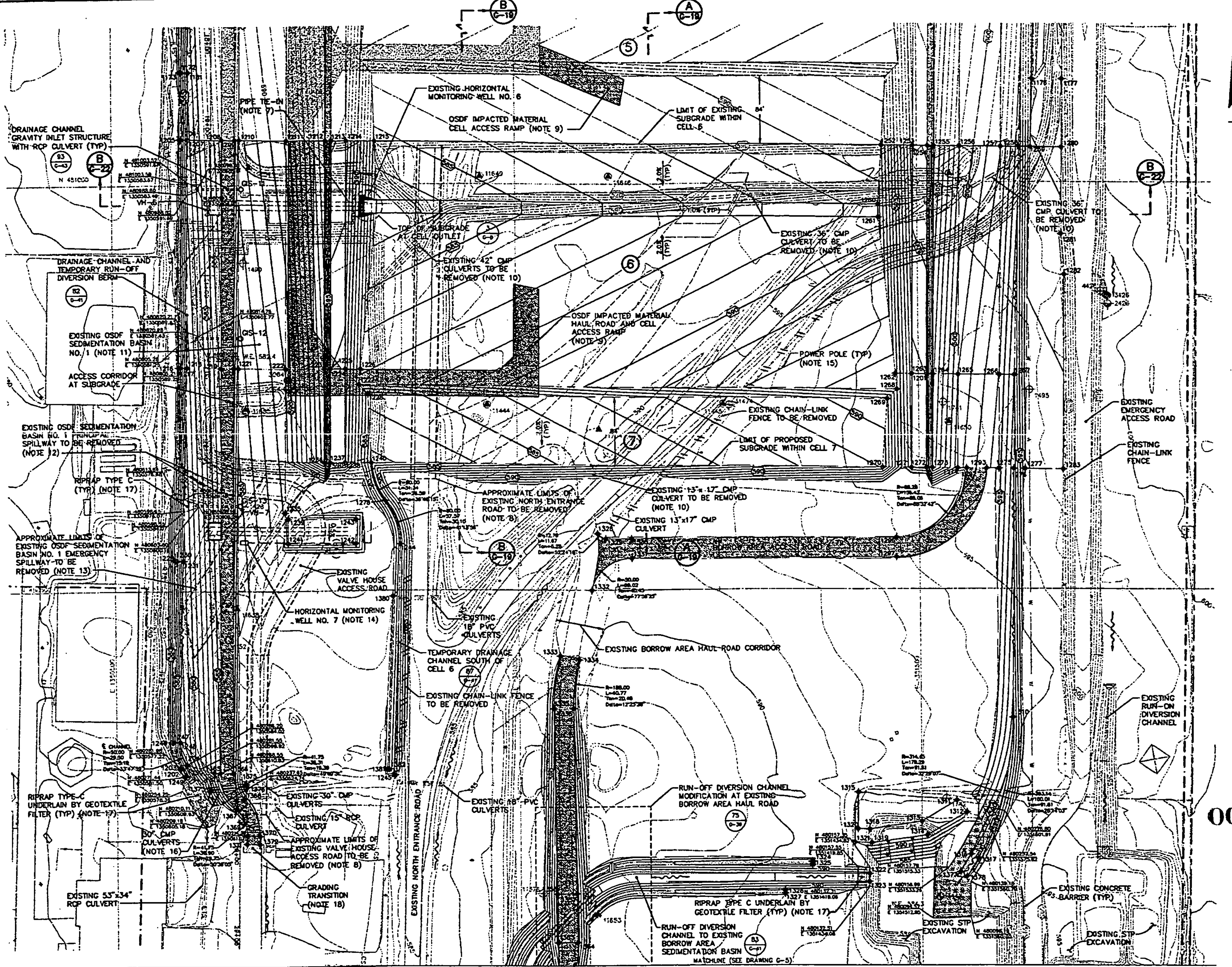
STATE OF OHIO — JOHN F. BEECH E-58248 — REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1888 LAKE MIRAMAR DRIVE
TAMPA, FLORIDA 33612 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	90X-6000-C-00363
GEOSYNTEC PROJECT NO.:	001342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0003
SHEET NO.:	C-3
REVISION NO.:	0

000006

CERTIFIED-FOR-CONSTRUCTION



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SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
1172	481138.40	1350585.32	587.21	1268	480745.38	1351472.84	593.90
1173	481138.40	1350583.32	587.21	1269	480733.51	1351480.43	590.77
1176	481126.86	1351641.57	599.34	1270	480649.58	1351494.13	589.04
1177	481126.40	1351678.14	589.71	1271	480649.14	1351490.37	598.09
1181	481138.40	1350593.32	583.22	1272	480648.91	1351509.08	598.47
1201	480784.07	1351510.49	599.04	1273	480648.81	1351518.88	603.66
1202	480280.92	1350575.32	580.34	1274	480648.43	1351548.50	598.39
1203	480281.98	1350577.22	580.54	1275	480647.82	1351598.89	595.38
1204	480288.20	1350584.02	576.54	1276	480647.60	1351618.59	592.38
1205	481058.33	1350582.32	586.80	1277	480647.43	1351630.25	591.94
1206	481056.31	1350584.32	586.80	1278	480810.21	1350838.31	582.53
1207	481058.21	1350592.32	582.80	1280	481042.84	1351677.23	599.30
1208	481055.88	1350634.32	583.80	1281	480936.19	1351676.07	598.78
1209	481055.47	1350650.81	589.80	1282	480888.03	1351678.74	598.58
1210	481055.40	1350656.81	587.80	1283	480846.86	1351676.79	597.41
1211	481054.88	1350710.10	591.16	1292	480648.29	1351559.63	597.76
1212	481054.05	1350765.10	599.32	1293	480648.00	1351583.71	596.29
1213	481053.95	1350772.89	594.12	1296	480583.10	1351470.56	594.21
1214	481053.71	1350791.61	593.75	1297	480539.10	1351470.56	594.21
1215	481053.26	1350828.01	584.65	1310	480341.79	1351612.85	590.71
1216	480775.41	1350578.89	584.49	1311	480239.91	1351543.88	593.00
1217	480775.38	1350580.08	584.49	1312	480225.49	1351558.47	592.00
1218	480775.29	1350588.89	580.49	1313	480214.12	1351499.89	593.00
1219	480774.77	1350630.88	587.49	1314	480187.09	1351508.72	592.00
1220	480774.57	1350647.38	587.49	1315	480249.98	1351420.79	593.00
1221	480774.50	1350653.38	585.49	1316	480173.31	1351361.61	588.92
1222	480773.77	1350712.73	589.05	1317	480188.52	1351570.28	588.92
1223	480773.17	1350761.67	587.21	1318	480204.82	1351434.87	593.00
1224	480772.85	1350788.16	591.84	1319	480187.88	1351437.32	592.00
1225	480773.08	1350789.46	592.01	1320	480205.27	1351420.33	593.00
1226	480772.82	1350807.31	586.86	1321	480188.68	1351418.33	592.00
1227	480753.54	1350805.24	587.22	1322	480149.83	1351434.60	588.53
1228	480741.38	1350816.42	584.33	1323	480139.83	1351434.30	588.53
1229	480537.35	1350572.40	582.70	1324	480184.64	1351363.96	591.78
1230	480537.32	1350574.40	582.71	1325	480180.64	1351363.96	591.78
1231	480537.23	1350582.40	578.71	1326	480129.22	1351330.41	591.63
1235	480596.32	1350710.50	588.17	1327	480125.22	1351330.41	591.63
1236	480658.06	1350780.26	588.63	1328	480569.27	1351098.51	590.00
1237	480657.87	1350788.05	591.44	1329	480563.10	1351107.94	590.58
1238	480657.74	1350786.77	591.06	1330	480563.10	1351139.37	590.90
1239	480568.49	1350734.55	589.70	1331	480538.10	1351139.88	590.90
1240	480657.33	1350820.24	582.70	1332	480499.55	1351090.77	590.88
1241	480558.49	1350734.18	589.55	1333	480418.88	1351051.40	590.02
1242	480557.70	1350799.27	589.55	1334	480414.00	1351074.90	590.02
1243	480587.70	1350799.64	588.70	1335	480353.71	1351042.85	590.75
1244	480556.87	1350858.43	582.33	1336	480353.83	1351068.85	590.75
1245	480272.12	1350847.18	581.42	1356	480125.70	1351045.31	583.50
1246	480314.50	1350588.33	581.03	1357	480125.96	1351068.31	583.50
1247	480314.45	1350588.33	581.03	1363	480085.53	1351045.87	583.50
1248	480314.23	1350576.33	577.03	1364	480085.79	1351069.86	583.50
1249	480271.44	1350581.50	580.36	1365	480276.45	1350824.78	585.00
1250	480272.30	1350583.20	580.36	1366	480276.25	1350841.29	585.00
1252	481045.41	1351455.81	590.92	1367	480231.72	1350844.89	583.23
1253	481044.91	1351495.20	600.77	1368	480244.14	1350855.75	583.23
1254	481044.68	1351513.92	601.15	1369	480189.01	1350839.33	581.41
1255	481044.68	1351521.71	606.34	1370	480198.60	1350875.83	581.41
1256	481044.19	1351553.34	601.07	1371	480188.88	1350858.06	580.99
1257	481043.56	1351803.42	598.07	1372	480188.72	1350875.55	580.99
1258	481043.28	1351825.63	594.36	1373	480257.48	1350810.16	578.84
1259	481043.11	1351839.29	598.92	1374	480253.83	1350811.49	578.84
1260	480972.78	1351451.13	589.43	1375	480262.47	1350858.63	579.33
1261	480956.78	1351451.44	589.43	1376	480258.83	1350859.83	579.33
1262	480764.50	1351471.09	593.40	1377	480151.86	1351348.02	588.66
1263	480764.25	1351491.77	598.07	1378	480148.23	1351356.28	588.66
1264	480763.93	1351518.28	604.24	1379	480276.57	1350816.96	583.70
1265	480763.54	1351549.91	598.97	1380	480482.68	1350846.72	584.00
1266	480762.93	1351599.89	595.96	1381	480279.85	1350837.77	584.00
1267	480762.71	1351617.99	592.96	1382	480279.85	1350839.77	584.00

LEGEND

- 600 — EXISTING GROUND ELEVATION (FEET)
- 585 — SUBGRADE ELEVATION (FEET) (NOTE 1)
- 590 — FINISHED GRADE ELEVATION (FEET)
- FEMP PROPERTY LINE
- BATTERY LIMIT
- PERIMETER BERM BASELINE
- 22+50 — EXISTING ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM PIPE
- EXISTING INTERIM LEACHATE TRANSMISSION SYSTEM PIPE
- SLOPE TOE OR CREST
- EXISTING HORIZONTAL MONITORING WELL WITH COVER SLAB
- 3426, 11444, 1441, 1463, 4064, 11704, 2064, 1152 — EXISTING GEOTECHNICAL DATA POINTS (NOTE 4)
- 6 — CELL DESIGNATION
- 1250 — CONSTRUCTION CONTROL POINT
- ACCESS CORRIDOR, ACCESS ROAD, ACCESS RAMP, MAINTENANCE ACCESS, OR HAUL ROAD
- BERM CREST
- RIPRAP LIMIT
- GRADING TRANSITION (NOTE 18)
- DRAINAGE FLOW DIRECTION

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GEOTECHNICAL DATA POINTS (NOTE 4)

CONE PENETRATION TESTS

POINT NO.	NORTHING	EASTING	ELEVATION
11444	480728.08	1350983.87	
11445	480728.10	1351258.03	
11634	481021.71	1350868.98	
11635	480724.26	1350882.01	
11638	480479.06	1350848.77	
11644	481010.80	1351540.88	
11646	481008.50	1351115.21	
11649	481009.87	1350957.20	
11650	480705.49	1351537.67	
11653	480100.29	1351094.32	

GEOTECHNICAL BORINGS

POINT NO.	NORTHING	EASTING	ELEVATION
1493	480244.41	1351570.98	
1495	480744.42	1351835.97	
1498	480604.41	1350855.98	
1499	480904.41	1350680.97	
1741	480729.42	1351530.97	
1742	480242.41	1351530.98	
11378	480128.49	1351027.07	
11474	480728.81	1351263.88	
11685	480721.77	1350663.00	

PIEZOMETERS

POINT NO.	NORTHING	EASTING	ELEVATION
11704	480697.86	1351101.05	

MONITORING WELLS

POINT NO.	NORTHING	EASTING	ELEVATION
1152	480440.42	1350636.60	

TYPE 1 MONITORING WELLS

POINT NO.	NORTHING	EASTING	ELEVATION
1064	480748.20	1350724.01	
1441	480121.40	1351522.40	

TYPE 2 MONITORING WELLS

POINT NO.	NORTHING	EASTING	ELEVATION
2064	480748.31	1350714.84	
2120	480216.32	1350834.03	
3426	480850.24	1351733.70	

TYPE 3 MONITORING WELLS

POINT NO.	NORTHING	EASTING	ELEVATION
3064	480759.84	1350715.19	
3426	480860.32	1351733.15	

TYPE 4 MONITORING WELLS

POINT NO.	NORTHING	EASTING	ELEVATION
4064	480759.64	1350724.59	
4426	480865.86	1351724.77	

NOTES:

1. CLEARING, GRUBBING, AND STRIPPING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02110. SUBGRADE ELEVATIONS CORRESPOND TO TOP OF PREPARED SUBGRADE, INCLUDING ANY COMPACTED FILL. SUBGRADE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
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-04391 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. CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND UTILITIES WITHIN CONSTRUCTION AREA AS SHOWN ON REFERENCE DRAWINGS SKG-04391 THROUGH SKG-04397. CONTRACTOR SHALL REMOVE UNDERGROUND UTILITIES IN CONSTRUCTION AREA IN ACCORDANCE WITH SPECIFICATION SECTION 02200 AND AS APPROVED BY CONSTRUCTION MANAGER.
7. LDS, LCS, AND RLCS PIPES SHALL TIE INTO EXISTING PIPES. CONSTRUCTION CONTROL POINTS FOR PIPE TIE-INS ARE SHOWN ON DRAWING G-9.
8. ROAD PAVEMENT COURSES AND ASSOCIATED IMPACTED MATERIAL FOR EXISTING NORTH ENTRANCE ROAD AND EXISTING VALVE HOUSE ACCESS ROAD SHALL BE REMOVED WITHIN LIMITS SHOWN. REMOVAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200. CONTRACTOR SHALL PLACE REMOVED MATERIAL IN SOUTH STOCKPILE AREA OR ACTIVE CELL AS APPROVED BY CONSTRUCTION MANAGER.
9. OSDF IMPACTED MATERIAL HAUL ROAD AND CELL ACCESS RAMP GRADING PLAN IS SHOWN ON DRAWING G-17.
10. CONTRACTOR SHALL REMOVE EXISTING CULVERTS AND STOCKPILE MATERIAL AT LOCATIONS APPROVED BY CONSTRUCTION MANAGER.
11. CONTRACTOR SHALL REMOVE SEDIMENT FROM EXISTING OSDF SEDIMENTATION BASIN NO. 1 AND EXCAVATE TO COMPETENT SUBGRADE (MINIMUM ELEVATION OF 579 OR LOWER) PRIOR TO BACKFILLING BASIN TO CREST OF EXISTING EMBANKMENT. CONTRACTOR SHALL STOCKPILE EXCAVATED SEDIMENT AT LOCATION APPROVED BY CONSTRUCTION MANAGER. CONTRACTOR SHALL SLOPE COMPACTED FILL FINISHED GRADE WITHIN BASIN TO DRAIN TO WEST AT A MINIMUM SLOPE OF 1 PERCENT.
12. CONTRACTOR SHALL REMOVE EXISTING OSDF SEDIMENTATION BASIN NO. 1 PRIMARY SPILLWAY AND STOCKPILE MATERIAL AT LOCATION APPROVED BY CONSTRUCTION MANGER.
13. CONTRACTOR SHALL REMOVE EXISTING OSDF SEDIMENTATION BASIN NO. 1 EMERGENCY SPILLWAY RIPRAP AND UNDERLYING GEOTEXTILE AND STOCKPILE MATERIAL AT LOCATION APPROVED BY CONSTRUCTION MANAGER.
14. HORIZONTAL MONITORING WELL FOR CELL 7 SHALL BE CONSTRUCTED MINIMUM ONE YEAR PRIOR TO CONSTRUCTION OF CELL 7. HORIZONTAL MONITORING WELL AND MISCELLANEOUS DETAILS ARE SHOWN ON DRAWING G-44.
15. CONTRACTOR SHALL REMOVE POWER POLES LOCATED WITHIN PROPOSED SUBGRADE AND BACKFILL HOLES IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
16. CONTRACTOR SHALL EXTEND EXISTING 30-INCH CMP CULVERTS TO OUTLET INVERTS AS SHOWN. ALUMINIZED CMP CULVERTS AND JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
17. CONTRACTOR SHALL PLACE RIPRAP WITHIN AREA SHOWN. RIPRAP THICKNESS SHALL BE 1.5 FEET. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION 02271. GEOTEXTILE FILTER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02714.
18. CONTRACTOR SHALL TRANSITION PROPOSED ACCESS CORRIDOR ELEVATIONS TO TIE-IN WITH EXISTING GROUND ELEVATIONS WITHIN AREA SHOWN.

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	LMG	JJA	TEZ	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	LMG	JJA	TEZ	DGP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	LMG	JJA	TEZ	DGP	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 V

TITLE: SUBGRADE GRADING PLAN II – CELL 6 LINER SYSTEM AND OSDF SEDIMENTATION BASIN NO. 2

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

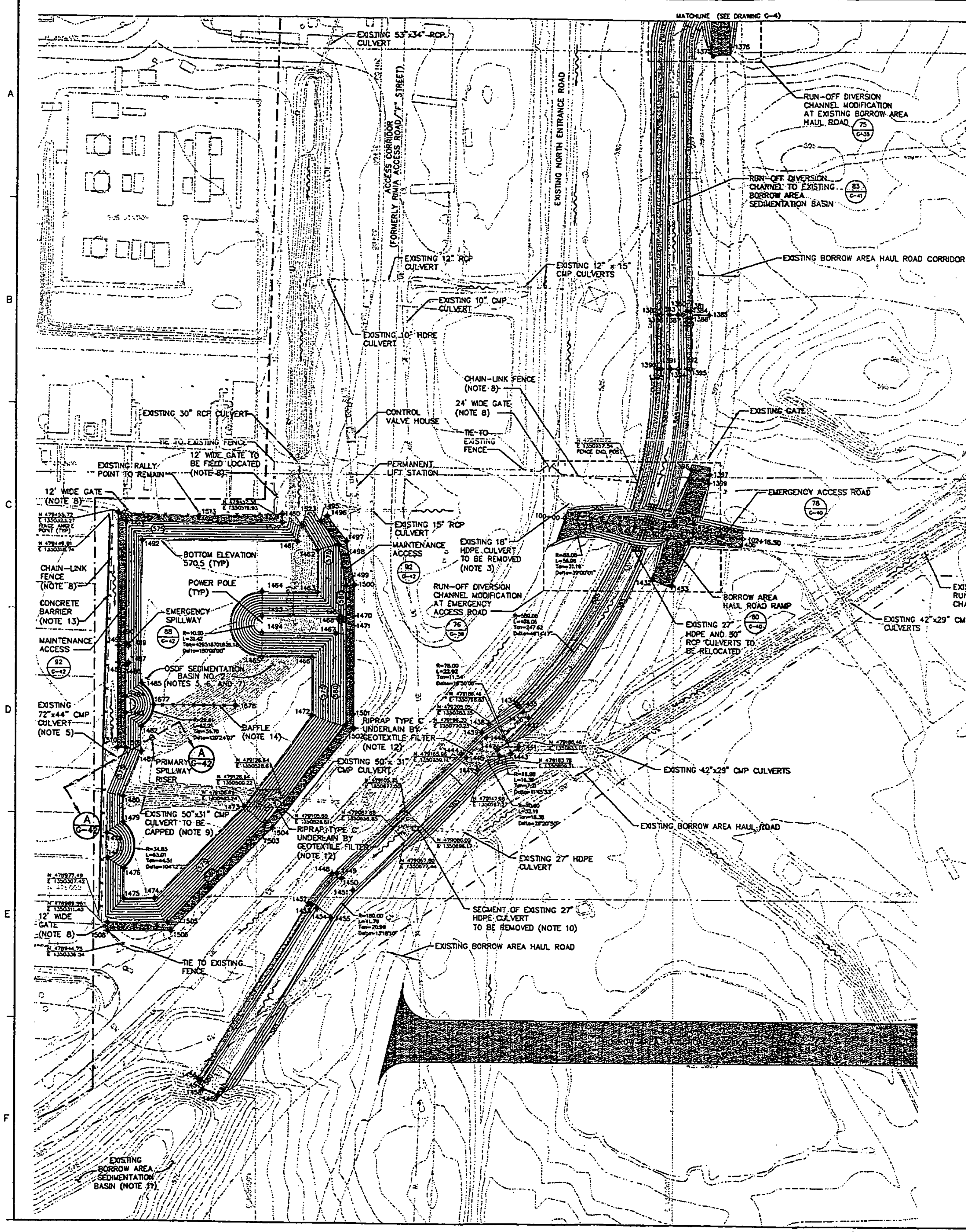
SIGNATURE: [signature]
DATE: 29 Jan 2002

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

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-6000-C-00366
GEOSYNTEC PROJECT NO.:	GQ1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0004
SHEET NO.:	G-4
REVISION NO.:	0

4665



SUBGRADE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
1375	480006.28	1351048.61	590.51	1463	479360.50	1350572.50	570.50
1376	480005.54	1351070.61	590.51	1464	479360.50	1350506.00	570.50
1380	479691.27	1351012.18	586.87	1465	479283.50	1350506.00	570.50
1381	479685.50	1351016.76	588.53	1466	479283.50	1350568.50	570.50
1382	479691.27	1350980.83	588.51	1467	479312.00	1350595.00	580.00
1383	479681.27	1350995.81	584.85	1468	479329.00	1350598.00	581.00
1384	479695.11	1351020.77	588.53	1469	479332.00	1350601.00	580.00
1385	479691.27	1351044.32	588.00	1470	479329.00	1350604.00	581.00
1386	479691.27	1350984.83	588.51	1471	479326.00	1350601.00	582.00
1387	479691.27	1351005.81	584.85	1472	479215.08	1350568.50	570.50
1388	479687.53	1351020.82	588.49	1473	479108.65	1350485.24	570.50
1389	479687.15	1351016.82	588.49	1474	478997.70	1350376.29	570.50
1390	479627.12	1350981.29	586.22	1475	478997.70	1350338.61	570.50
1391	479627.23	1350998.27	584.56	1476	479033.11	1350338.61	570.50
1392	479627.38	1351017.25	588.22	1477	479045.51	1350318.52	577.20
1393	479627.15	1350985.29	588.22	1478	479074.63	1350317.45	577.20
1394	479627.30	1351006.27	584.56	1479	479087.77	1350337.46	570.50
1395	479627.41	1351021.25	588.22	1480	479118.10	1350337.46	570.50
1396	479508.93	1351021.76	586.94	1481	479171.29	1350359.30	570.50
1397	479502.78	1351045.07	587.73	1482	479200.31	1350359.50	570.50
1398	479499.06	1351020.17	587.25	1483	479216.36	1350338.64	577.12
1399	479492.90	1351043.49	587.49	1484	479235.63	1350339.64	577.12
1406	479427.56	1351085.91	587.32	1485	479251.69	1350351.50	570.50
1407	479433.96	1351024.32	589.32	1486	479272.63	1350340.00	577.00
1408	479437.78	1350987.56	589.32	1487	479275.63	1350343.00	576.00
1409	479438.11	1350974.77	590.07	1488	479275.63	1350331.25	576.00
1414	479441.24	1350954.37	590.07	1489	479295.63	1350343.00	576.00
1416	479449.95	1350870.57	585.16	1490	479298.63	1350340.00	577.00
1432	479379.80	1350975.70	586.81	1491	479295.63	1350330.99	574.00
1433	479371.40	1350998.18	587.09	1492	479470.17	1350359.30	570.50
1434	479229.74	1350813.24	585.01	1493	479332.00	1350506.00	580.00
1435	479228.62	1350815.77	585.01	1494	479312.00	1350506.00	580.00
1436	479220.77	1350820.51	582.32	1495	479444.27	1350576.50	-
1437	479213.59	1350827.40	582.32	1496	479450.60	1350584.61	-
1438	479206.43	1350778.20	584.83	1497	479421.42	1350607.39	-
1439	479198.33	1350770.25	584.77	1498	479417.19	1350598.00	-
1440	479190.47	1350774.98	582.28	1499	479388.64	1350607.00	-
1441	479179.99	1350814.95	582.39	1500	479389.55	1350617.00	-
1442	479176.12	1350788.91	582.28	1501	479203.75	1350607.00	-
1443	479171.94	1350805.58	582.35	1502	479230.15	1350617.00	-
1444	479170.60	1350743.77	584.61	1503	479088.27	1350511.41	-
1445	479168.49	1350750.30	582.12	1504	479081.53	1350518.61	-
1446	479168.51	1350791.39	582.28	1505	478988.20	1350392.34	-
1447	479152.15	1350764.23	582.12	1506	478959.20	1350398.48	-
1448	479028.19	1350591.51	583.88	1507	478989.20	1350318.50	-
1449	479028.33	1350597.33	583.69	1508	478959.20	1350318.50	-
1450	479022.95	1350602.56	581.19	1509	479175.17	1350340.00	-
1451	479008.61	1350616.50	581.19	1510	479175.17	1350330.00	-
1452	478993.22	1350583.59	583.49	1511	479452.72	1350330.00	-
1453	478991.07	1350588.97	583.49	1512	479442.72	1350340.00	-
1454	478987.03	1350573.27	581.00	1513	479449.43	1350429.00	-
1455	478976.28	1350590.15	580.89	1521	479452.72	1350530.01	-
1456	478784.18	1350430.30	582.38	1522	479442.72	1350530.01	-
1457	478782.03	1350433.88	582.38	1523	479438.93	1350555.38	570.50
1458	478771.59	1350435.91	579.85	1524	479446.96	1351000.74	588.96
1459	478764.67	1350455.22	579.87	1525	479444.40	1351025.40	588.87
1460	479438.93	1350553.38	570.50	1526	479426.64	1350993.16	588.98
1461	479420.17	1350548.55	570.50	1527	479424.08	1351017.82	588.69
1462	479410.17	1350572.50	570.50	1677	479226.01	1350374.39	570.50
				1678	479226.01	1350474.39	570.50

EMERGENCY ACCESS ROAD HORIZONTAL ALIGNMENT STATION AND CURVE REPORT

Project: 1342-174
Horizontal Alignment Station and Curve Report
Alignment: em-4 Desc:

Desc.	Station	Spiral/Curve Data	Northing	Easting
PI	100+00		479449.95	1350870.57
Length:	216.50	Course: S 84-03-47 E		
PI	102+16.50		479427.56	1351085.91

Tangent Data

Station			Northing	Easting
100+00			479449.95	1350870.57
102+16.50			479427.56	1351085.91
Length:	216.50	Course: S 84-03-47 E		

LEGEND

- EXISTING GROUND ELEVATION (FEET)
- SUBGRADE ELEVATION (FEET) (NOTE 1)
- FINISHED GRADE ELEVATION (FEET)
- BATTERY LIMIT
- BORROW AREA LIMIT
- EXISTING ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM PIPE
- EXISTING INTERIM LEACHATE TRANSMISSION SYSTEM PIPE
- EXISTING LEACHATE TRANSMISSION SYSTEM PIPE
- EXISTING UNDERGROUND ELECTRIC
- EXISTING 24" STORMWATER FORCEMAIN
- SLOPE TOE OR CREST
- DRAINAGE FLOW DIRECTION
- CONSTRUCTION CONTROL POINT
- BERM CREST
- ACCESS CORRIDOR, ACCESS ROAD, ACCESS RAMP, MAINTENANCE ACCESS, OR HAUL ROAD
- RIPRAP LIMIT

000008

NOTES:

1. CLEARING, GRUBBING, AND STRIPPING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02110. SUBGRADE ELEVATIONS CORRESPOND TO TOP OF PREPARED SUBGRADE, INCLUDING ANY COMPACTED FILL. SUBGRADE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
2. 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.
3. CONTRACTOR SHALL REMOVE EXISTING CULVERTS AND STOCKPILE MATERIAL AT LOCATIONS APPROVED BY CONSTRUCTION MANAGER.
4. CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND UTILITIES WITHIN CONSTRUCTION AREA AS SHOWN ON REFERENCE DRAWINGS SKG-04391 THROUGH SKG-04397. CONTRACTOR SHALL REMOVE UNDERGROUND UTILITIES IN CONSTRUCTION AREA IN ACCORDANCE WITH SPECIFICATION SECTION 02200 AND AS APPROVED BY CONSTRUCTION MANAGER.
5. OSDF SEDIMENTATION BASIN NO. 2 DETAILS ARE SHOWN ON DRAWING G-42. EXISTING 72-INCH X 44-INCH CMP PIPE SHALL BE UTILIZED WITH OSDF SEDIMENTATION BASIN NO. 2.
6. CONTRACTOR SHALL PLACE RING BUOYS AROUND OSDF SEDIMENTATION BASIN NO. 2 AS REQUIRED BY OSHA 1926.106.
7. CONTRACTOR SHALL PLACE CAUTION SIGNS WITHIN CONSTRUCTION SAFETY FENCE SURROUNDING OSDF SEDIMENTATION BASIN NO. 2. SIGNS SHALL READ, "CAUTION! DROWNING HAZARD, LIFE VEST REQUIRED WITHIN 5 FEET OF WATER." SIGNS SHALL BE PLACED AT TOP OF EMBANKMENT AND MAY BE SHARED WITH RING BUOY POSTS.
8. CHAIN-LINK FENCE AND GATE DETAILS ARE SHOWN ON DRAWING G-47.
9. CONTRACTOR SHALL CAP EXISTING 50-INCH X 31-INCH CMP CULVERT USING A PRE-FABRICATED STEEL PLATE BULKHEAD PIPE FILET-WELDED TO A 2-FOOT SECTION OF 50-INCH X 31-INCH ALUMINIZED CMP PIPE. BULKHEAD SECTION SHALL BE CONNECTED TO EXISTING PIPE USING A FLAT BAND AND GASKET WITH BAR-BOLTS AND STRAP FASTENERS.
10. CONTRACTOR SHALL CUT AND REMOVE EXISTING 27-INCH HDPE CULVERT TO LIMIT N 479082.35 AND E 1350693.31 (SHOWN WITHIN BOX). MATERIAL SHALL BE STOCKPILED AT LOCATION APPROVED BY CONSTRUCTION MANAGER.
11. BORROW AREA DEVELOPMENT AND RESTORATION IS ILLUSTRATED ON DRAWING G-1.
12. CONTRACTOR SHALL PLACE RIPRAP WITHIN AREA SHOWN. RIPRAP THICKNESS SHALL BE 1.5 FEET. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271. GEOTEXTILE FILTER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02714.
13. CONCRETE BARRIERS TO BE SUPPLIED BY FLUOR FERNALD, INC.
14. BAFFLE SHALL CONSIST OF HDPE CONSTRUCTION SAFETY FENCE, 4 FEET IN HEIGHT WITH MINIMUM TENSILE STRENGTH OF 2000 POUNDS PER FOOT OF WIDTH. POSTS SHALL BE 6 FEET LONG AND MADE OF STEEL. INSTALL POSTS AT MINIMUM SPACING OF 5 FEET AND WITH A MINIMUM EMBEDMENT OF 2 FEET. WRAP FENCING ALONG BOTH SIDES OF POSTS FOR FULL LENGTH OF BAFFLE.

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
1	02.10.30	RESPONSE TO OEPA COMMENTS	DCP	JJA	CDC	DKP	JFB
0	02.01.29	CFC SUBMITTAL TO FT/DOE/EPA	LMC	JJA	TEZ	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FT/DOE	LMC	JJA	TEZ	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FT/DOE	TEZ	JJA	LMC	DCP	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 V

TITLE:
SUBGRADE GRADING PLAN III - CELL 6 LINER SYSTEM AND OSDF SEDIMENTATION BASIN NO. 2

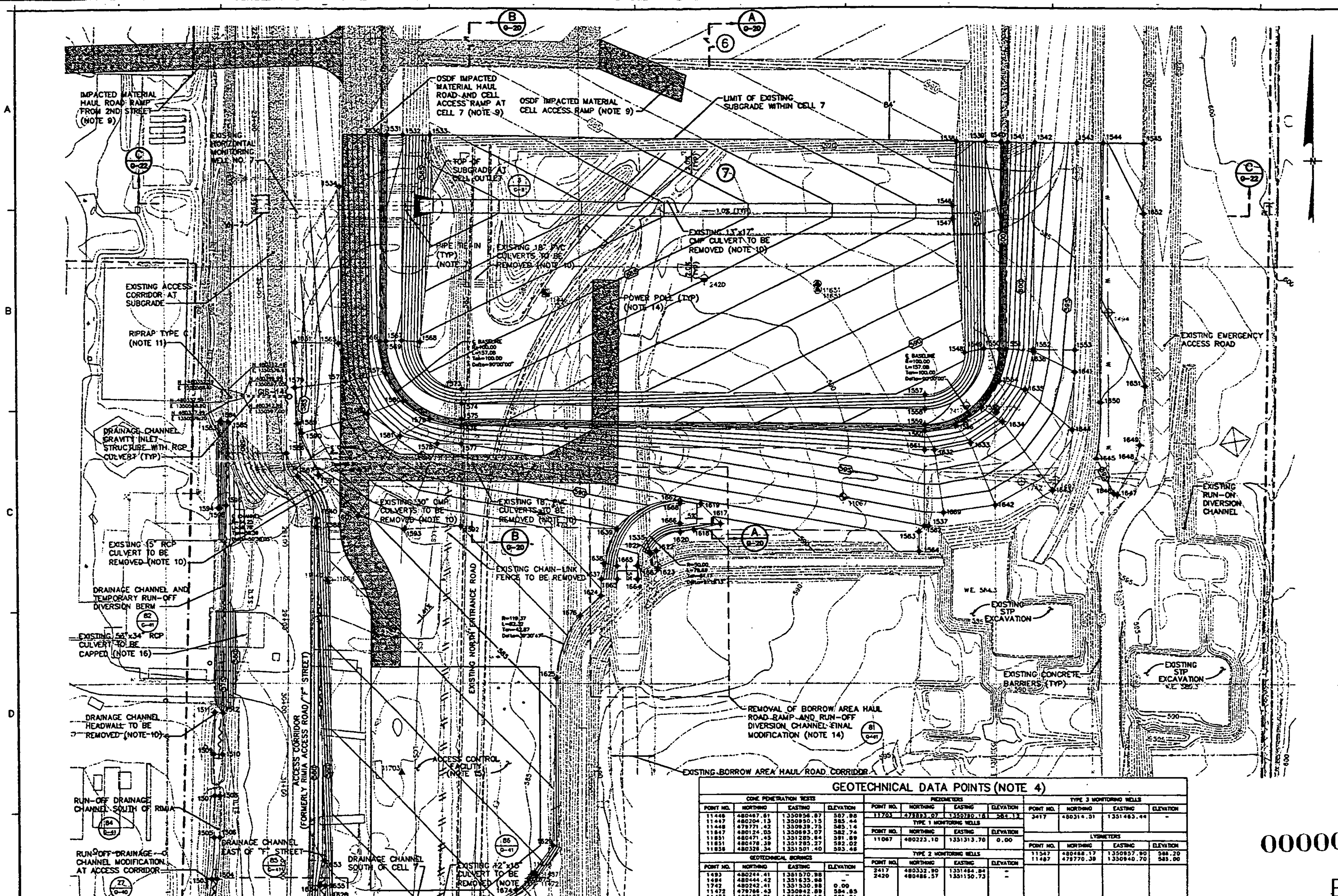
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION UNLESS SEALED.

J.F. Beech
SIGNATURE
30 Oct 2002
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.: 20105
CONTRACT NO.: 95PS005028
FEMP DRAWING NO.: 90X-6000-G-00367
GEOSYNTEC PROJECT NO.: GO1342-17.4
GEOSYNTEC DOCUMENT NO.: F02-1005
SHEET NO.: G-5
REVISION NO.: 1



SUBGRADE CONSTRUCTION CONTROL POINTS

4665

POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
1377	479446.80	1350555.35	570.52	1584	480314.45	1350568.33	581.03
1494	479525.73	1350549.73	571.12	1585	480314.23	1350578.33	577.03
1495	479565.33	1350550.99	571.41	1586	480276.17	1350647.29	583.00
1496	479565.31	1350550.02	571.41	1587	480248.70	1350638.64	581.86
1497	479615.46	1350547.88	571.79	1588	480188.10	1350681.55	578.80
1498	479615.41	1350550.21	571.79	1589	480311.94	1350660.62	583.74
1499	479665.32	1350551.31	572.16	1590	480300.22	1350665.31	585.19
1500	479665.31	1350554.18	572.16	1591	480249.81	1350684.47	584.89
1501	479715.48	1350549.26	572.54	1592	480188.52	1350854.39	586.00
1502	479715.50	1350554.06	572.54	1593	480185.00	1350785.57	585.27
1503	479765.33	1350553.18	572.91	1594	480210.70	1350563.51	580.29
1504	479765.17	1350559.52	572.91	1595	480210.65	1350565.51	580.29
1505	479815.24	1350556.12	573.29	1596	480214.06	1350573.60	578.28
1506	479815.06	1350563.12	573.29	1601	480200.65	1350729.95	584.86
1507	479865.35	1350557.26	573.66	1617	480191.81	1351168.37	589.57
1508	479865.11	1350563.32	573.66	1618	480185.08	1351138.03	588.82
1509	479915.27	1350558.29	574.04	1619	480216.10	1351144.67	590.77
1510	479914.99	1350566.81	574.04	1620	480182.29	1351110.96	588.63
1511	479965.59	1350557.75	574.41	1621	480156.22	1351084.37	588.01
1512	479964.54	1350568.04	574.41	1622	480159.82	1351091.51	588.12
1530	480658.06	1350760.26	596.63	1623	480138.58	1351093.54	587.83
1531	480657.97	1350768.05	591.44	1624	480103.90	1351025.84	588.97
1532	480657.74	1350786.77	591.06	1625	480006.35	1350968.64	585.38
1533	480657.33	1350820.24	592.70	1626	479727.24	1350688.42	577.11
1534	480596.32	1350710.38	588.17	1627	479732.20	1350696.65	579.90
1535	480157.67	1351084.28	588.02	1628	479721.47	1350829.81	578.83
1537	480188.88	1351418.33	592.00	1629	479805.99	1350962.09	583.32
1538	480849.36	1351454.15	589.04	1631	480409.34	1350658.18	584.22
1539	480849.14	1351490.37	598.09	1632	480279.96	1351423.99	597.44
1540	480848.81	1351509.08	598.47	1633	480288.53	1351470.02	597.37
1541	480848.61	1351516.88	603.66	1634	480314.07	1351509.28	597.30
1542	480848.43	1351548.50	598.39	1635	480352.68	1351535.75	597.23
1543	480847.82	1351598.59	595.38	1636	480398.48	1351545.44	597.18
1544	480847.43	1351630.25	596.94	1637	480125.30	1351026.17	587.12
1545	480848.86	1351677.59	597.41	1638	480144.64	1351029.33	587.34
1546	480572.77	1351448.41	587.45	1639	480186.19	1351045.03	587.91
1547	480558.76	1351448.55	587.45	1640	480198.43	1350681.82	578.85
1548	480398.75	1351483.24	590.82	1641	480373.72	1351595.24	594.13
1549	480401.51	1351487.34	596.85	1642	480214.12	1351499.89	593.00
1550	480401.38	1351508.06	597.23	1643	480231.97	1351967.81	592.00
1551	480401.18	1351513.85	602.42	1644	480304.47	1351591.81	593.38
1552	480400.80	1351545.47	597.15	1645	480269.30	1351820.00	595.00
1553	480400.18	1351585.56	594.15	1646	480227.60	1351840.94	595.00
1554	480363.01	1351505.77	602.12	1647	480226.17	1351844.91	595.03
1555	480330.63	1351483.70	601.81	1648	480268.53	1351867.28	595.34
1556	480309.56	1351451.00	601.50	1649	480285.65	1351871.53	595.48
1557	480348.01	1351413.17	591.35	1650	480336.69	1351625.81	595.70
1558	480328.92	1351412.86	595.62	1651	480356.14	1351677.87	596.00
1559	480310.20	1351412.73	598.00	1652	480362.82	1351677.12	597.00
1560	480302.41	1351412.64	601.19	1653	479787.23	1350887.67	577.41
1561	480280.10	1351412.38	597.47	1654	479757.16	1350862.02	577.26
1562	480188.83	1351411.48	592.00	1655	479757.24	1350868.05	577.26
1563	480181.80	1351404.70	591.51	1656	479727.88	1350681.74	577.11
1564	480158.59	1351405.00	591.28	1657	479724.00	1350681.99	577.00
1565	480408.71	1350708.26	587.23	1658	479723.74	1350688.28	577.11
1566	480410.43	1350737.23	585.40	1659	479722.72	1350713.26	577.96
1567	480411.30	1350783.76	589.83	1660	479726.22	1350713.40	577.96
1568	480409.63	1350806.46	584.15	1661	479725.20	1350738.38	578.00
1569	480410.70	1350765.03	580.20	1662	480270.18	1351118.99	580.75
1570	480354.93	1350657.51	583.95	1663	480123.70	1351045.31	583.50
1571	480362.68	1350716.83	588.28	1664	480125.96	1351068.31	583.50
1572	480372.07	1350784.38	585.45	1665	480141.80	1351045.14	592.71
1573	480332.82	1350836.54	585.78	1666	480182.40	1351119.75	582.00
1574	480335.72	1350856.33	590.06	1667	480141.86	1351069.14	582.71
1575	480317.01	1350858.10	590.43	1668	480216.40	1351120.04	582.00
1576	480309.21	1350856.00	593.63	1669	480204.82	1351434.87	593.00
1577	480288.90	1350855.73	591.91	1670	479724.37	1350833.07	581.20
1578	480287.28	1350826.79	591.26	1671	479727.92	1350834.73	581.25
1579	480317.29	1350817.83	585.57	1672	479727.85	1350863.22	581.54
1580	480339.37	1350785.86	595.51	1673	479734.83	1350889.82	581.88
1581	480298.94	1350780.98	580.26	1674	479751.86	1350918.79	582.34
1582	480323.43	1350742.36	589.27	1675	479763.82	1350934.08	582.63
1583	480314.50	1350569.33	581.03	1676	480081.23	1350990.58	582.40

LEGEND

- 590 — EXISTING GROUND ELEVATION (FEET)
- 585 — SUBGRADE ELEVATION (FEET) (NOTE 1)
- 585 — FINISHED GRADE ELEVATION (FEET)
- FEMP PROPERTY LINE
- BATTERY LIMIT
- PERIMETER BERM BASELINE
- 22+00 — EXISTING ENHANCED PERMANENT LEACHATE TRANSMISSION SYSTEM PIPE
- ILTS — EXISTING INTERIM LEACHATE TRANSMISSION SYSTEM PIPE
- UE — EXISTING UNDERGROUND ELECTRIC (NOTE 12)
- SLOPE TOE OR CREST
- EXISTING HORIZONTAL MONITORING WELL WITH COVER SLAB
- 3417, 11651, 11067, 1494, 11703, 11547, 2417 — EXISTING GEOTECHNICAL DATA POINTS (NOTE 4)
- 7 — CELL DESIGNATION
- 1565 — CONSTRUCTION CONTROL POINT
- ACCESS CORRIDOR, ACCESS ROAD, ACCESS RAMP, MAINTENANCE ACCESS, OR HAUL ROAD
- BERM CREST
- GRADING TRANSITION (NOTE 13)
- RIPRAP LIMIT
- DRAINAGE FLOW DIRECTION

GEOTECHNICAL DATA POINTS (NOTE 4)

CONE PENETRATION TESTS

POINT NO.	NORTHING	EASTING	ELEVATION
11446	480467.61	1350856.87	587.98
11447	480204.13	1350950.15	585.44
11448	479771.42	1350939.75	585.14
11847	480124.05	1350693.07	582.74
11851	480471.45	1351285.64	591.89
11851	480478.39	1351285.27	592.02
11858	480328.34	1351501.40	593.46

GEOTECHNICAL BORINGS

POINT NO.	NORTHING	EASTING	ELEVATION
1493	480244.41	1351570.98	-
1494	480444.42	1351635.98	-
1742	480242.41	1351530.98	0.00
11472	479766.43	1350942.89	584.85
11473	480197.81	1350935.16	585.61
11886	480124.05	1350695.40	582.44

PIEZOMETERS

POINT NO.	NORTHING	EASTING	ELEVATION
11703	479893.07	1350780.16	584.12

TYPE 1 MONITORING WELLS

POINT NO.	NORTHING	EASTING	ELEVATION
11067	480223.10	1351313.70	0.00

TYPE 2 MONITORING WELLS

POINT NO.	NORTHING	EASTING	ELEVATION
2417	480332.90	1351464.84	-
2420	480486.57	1351150.73	-

TYPE 3 MONITORING WELLS

POINT NO.	NORTHING	EASTING	ELEVATION
3417	480314.51	1351463.44	-

LYSIMETERS

POINT NO.	NORTHING	EASTING	ELEVATION
11547	480468.17	1350957.90	588.20
11487	479770.39	1350940.70	585.00

000009

NOTES:

1. CLEARING, GRUBBING, AND STRIPPING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02110. SUBGRADE ELEVATIONS CORRESPOND TO TOP OF PREPARED SUBGRADE, INCLUDING ANY COMPACTED FILL. SUBGRADE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
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-04391 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. CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND UTILITIES WITHIN CONSTRUCTION AREA AS SHOWN ON REFERENCE DRAWINGS SKG-04391 THROUGH SKG-04397. CONTRACTOR SHALL REMOVE UNDERGROUND UTILITIES IN CONSTRUCTION AREA IN ACCORDANCE WITH SPECIFICATION SECTION 02200 AND AS APPROVED BY CONSTRUCTION MANAGER.
7. LDS, LCS, AND RLCS PIPES SHALL TIE INTO EXISTING PIPES. CONSTRUCTION CONTROL POINTS FOR PIPE TIE-INS ARE SHOWN ON DRAWING G-9.
8. ROAD PAVEMENT COURSES AND ASSOCIATED IMPACTED MATERIAL FOR EXISTING NORTH ENTRANCE ROAD AND REROUTED NORTH ENTRANCE ROAD SHALL BE REMOVED WITHIN LIMITS SHOWN. REMOVAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200. CONTRACTOR SHALL PLACE REMOVED MATERIAL IN SOUTH STOCKPILE AREA OR ACTIVE CELL AS APPROVED BY CONSTRUCTION MANAGER.
9. OSDF IMPACTED MATERIAL HAUL ROAD RAMP AND CELL ACCESS RAMP GRADING PLAN IS SHOWN ON DRAWING G-18.
10. CONTRACTOR SHALL REMOVE EXISTING CULVERTS AND STOCKPILE MATERIAL AT LOCATIONS APPROVED BY CONSTRUCTION MANAGER.
11. CONTRACTOR SHALL PLACE RIPRAP WITHIN AREA SHOWN. RIPRAP THICKNESS SHALL BE 1.5 FEET AND IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
12. UNDERGROUND ELECTRIC AT CULVERT CROSSING SHALL BE REMOVED AND RELOCATED PRIOR TO INSTALLATION OF NEW CULVERT.
13. CONTRACTOR SHALL TRANSITION PROPOSED 1.41% GRADES TO TIE-IN WITH GROUND ELEVATIONS EXISTING AFTER REMOVAL OF NORTH ENTRANCE ROAD.
14. CONTRACTOR SHALL REMOVE POWER POLES LOCATED WITHIN PROPOSED SUBGRADE AND BACKFILL HOLES IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
15. RELOCATED ACCESS CONTROL FACILITY TO BE OPERATIONAL AT START OF CONSTRUCTION FOR CELL 4 FINAL COVER SYSTEM. LOCATION AND DESIGN OF RELOCATED ACCESS CONTROL FACILITY TO BE PROVIDED BY FLUOR FERNALD.
16. CONTRACTOR SHALL CAP EXISTING 53-INCH x 34-INCH CMP CULVERT USING A PRE-FABRICATED STEEL PLATE BULKHEAD PIPE FILET-WELDED TO A 2-FOOT SECTION OF 53-INCH x 34-INCH ALUMINIZED CMP PIPE. BULKHEAD SECTION SHALL BE CONNECTED TO EXISTING PIPE USING A FLAT BAND AND GASKET WITH BAR-BOLTS AND STRAP FASTENERS.

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	LMG	AJA	TEZ	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	LMG	AJA	TEZ	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	TEZ	AJA	LMG	DCP	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 V

TITLE: SUBGRADE GRADING PLAN IV – CELL 7 LINER SYSTEM

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

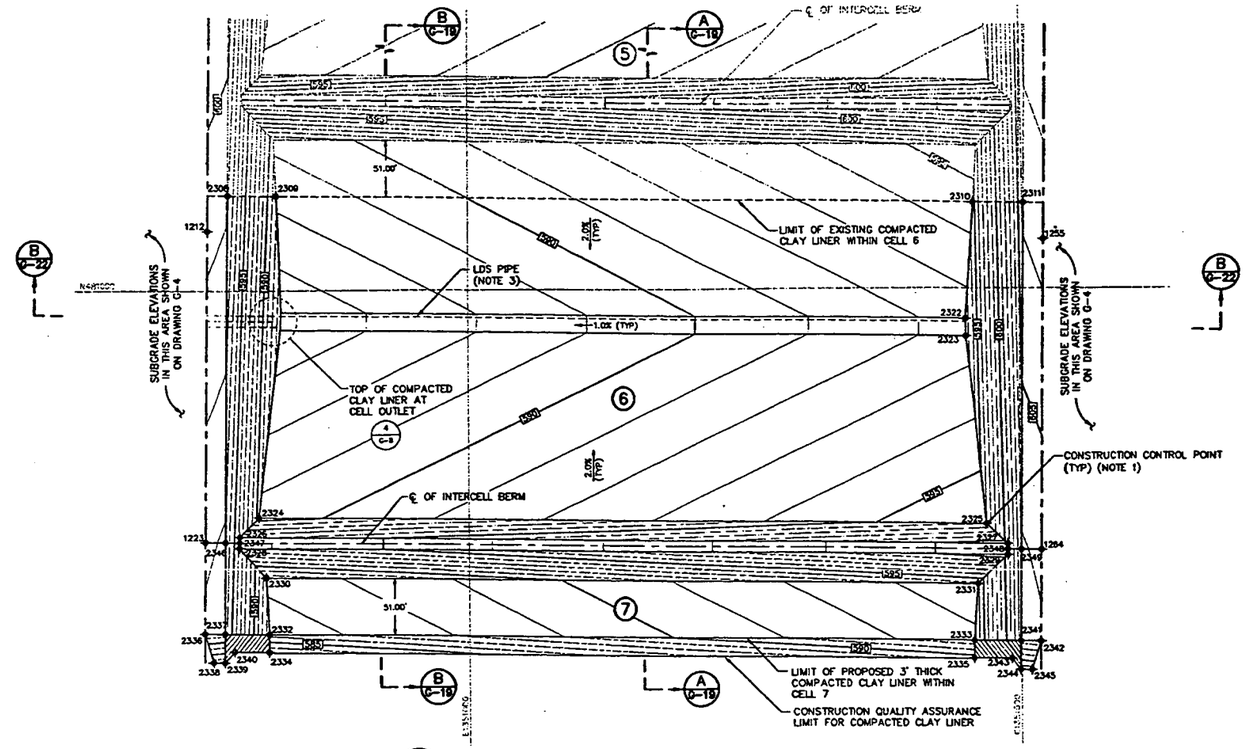
SIGNATURE
29 Jan 2002
DATE

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

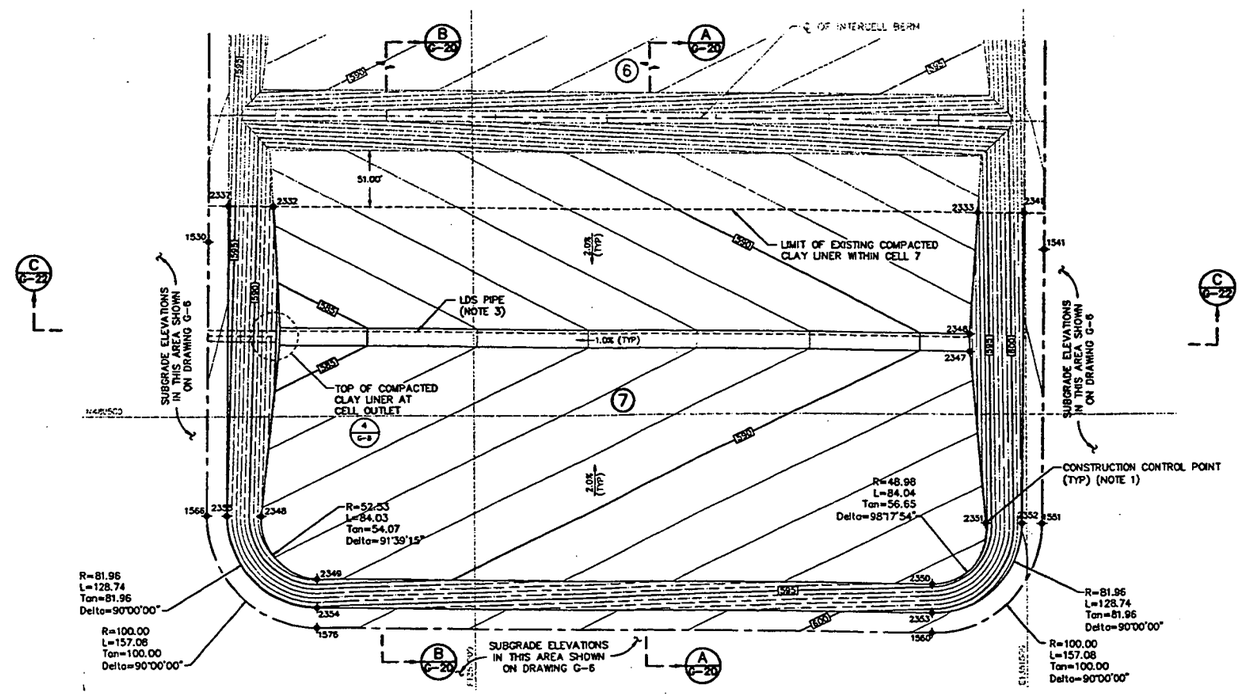
GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE ATLANTA, GEORGIA 30342 USA

PROJECT NO.: 20105
CONTRACT NO.: 95PS005028
FEMP DRAWING NO.: 90X-5000-G-00368
GEOSYNTEC PROJECT NO.: GQ1342-17.4
GEOSYNTEC DOCUMENT NO.: F01-0006
SHEET NO.: G-6
REVISION NO.: 0

4665



1 PLAN
COMPACTED CLAY LINER – CELL 6
SCALE: 1" = 50'



2 PLAN
COMPACTED CLAY LINER – CELL 7
SCALE: 1" = 50'

CERTIFIED-FOR-CONSTRUCTION

LEGEND

- 592 — EXISTING COMPACTED CLAY LINER ELEVATION (FEET) (NOTE 2)
- 590 — COMPACTED CLAY LINER ELEVATION (FEET) (NOTE 2)
- PERIMETER BERM BASELINE/LIMIT OF COMPACTED CLAY LINER
- 2308 — CONSTRUCTION CONTROL POINT
- 6 — CELL DESIGNATION

COMPACTED CLAY LINER CONSTRUCTION CONTROL POINTS

CELL 6				CELL 7			
POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
2308	481088.06	1350783.53	599.20	2332	480889.94	1350819.11	586.33
2309	481085.53	1350827.20	588.28	2333	480882.16	1351456.21	592.71
2310	481077.82	1351457.51	594.58	2337	480690.44	1350778.70	596.44
2311	481077.25	1351504.07	606.22	2341	480681.83	1351499.23	603.46
2322	480972.74	1351450.75	592.42	2346	480572.74	1351448.02	590.45
2323	480958.79	1351451.05	592.43	2347	480558.80	1351448.16	590.45
2324	[illegible]	[illegible]	[illegible]	2348	[illegible]	[illegible]	[illegible]
2325	480787.36	1351468.37	596.01	2349	480353.22	1350856.54	588.77
2326	480777.80	1350792.49	593.71	2350	480348.41	1351413.17	594.34
2327	480769.31	1351487.27	600.66	2351	480401.81	1351462.39	583.71
2328	480767.80	1350792.12	593.70	2352	480401.40	1351495.81	602.06
2329	480759.30	1351487.41	600.66	2353	480320.45	1351412.86	600.83
2330	480740.98	1350816.79	587.32	2354	480327.26	1350856.22	595.27
2331	480733.11	1351460.02	593.76	2355	480410.21	1350775.27	595.04
2332	480889.94	1350819.11	586.33				
2333	480882.16	1351456.21	592.71				
2334	480674.09	1350818.91	583.16				
2335	480666.30	1351456.01	589.53				
2336	480690.66	1350760.66	596.80				
2337	480690.44	1350778.70	596.44				
2338	480664.72	1350768.13	591.47				
2339	480664.59	1350778.38	591.27				
2340	480674.48	1350786.97	591.15				
2341	480681.83	1351499.23	603.46				
2342	480681.41	1351517.28	603.82				
2343	480665.88	1351490.57	598.17				
2344	480655.79	1351498.92	598.29				
2345	480655.66	1351509.17	598.50				
2346	480772.95	1350779.71	596.85				
2347	480772.80	1350792.30	593.70				
2348	480764.30	1351487.34	600.66				
2349	480764.15	1351500.24	603.88				

SUBGRADE CONSTRUCTION CONTROL POINTS

CELL 6				CELL 7			
POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
1212	481054.05	1350765.10	599.32	1530	480636.06	1350760.26	596.63
1223	480773.17	1350761.87	597.21	1541	480648.81	1351516.88	603.66
1255	481044.58	1351521.71	606.34	1551	480401.18	1351513.85	602.42
1264	480763.93	1351518.28	604.24	1560	480302.41	1351412.64	601.19
				1566	480410.43	1350757.23	595.40
				1576	480309.21	1350856.00	595.63

NOTES:

1. THIS DRAWING SHOWS GRADING AND CONSTRUCTION CONTROL POINTS FOR COMPACTED CLAY LINER FOR CELLS 6 AND 7 AND LINER SYSTEM TEMPORARY TERMINATION WITHIN CELL 7.
2. COMPACTED CLAY LINER ELEVATIONS CORRESPOND TO TOP OF COMPACTED CLAY LINER.
3. LDS PIPE CONSTRUCTION CONTROL POINTS ARE SHOWN ON DRAWINGS G-8 AND G-9.

000010

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	JRO	LMC	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	JRO	LMC	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	TEZ	JRO	LMC	DCP	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 V

TITLE: COMPACTED CLAY LINER GRADING PLAN – CELLS 6 AND 7 LINER SYSTEM

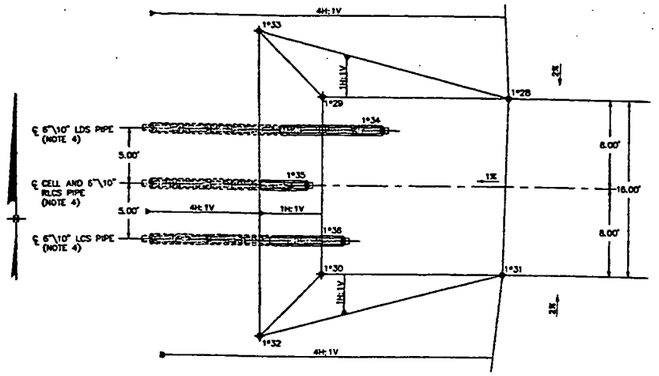
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE: H.B. Beck
DATE: 29 Jan 2002

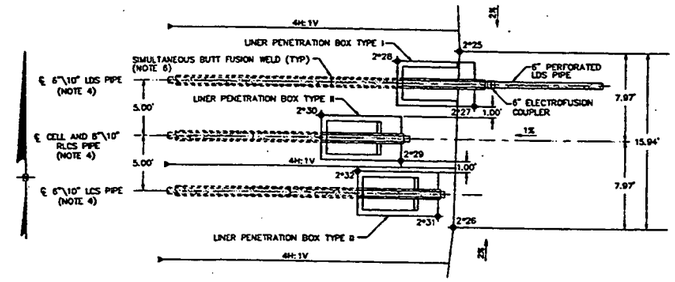
STATE OF OHIO — JOHN H. BECK — E-58248 — REGISTERED PROFESSIONAL ENGINEER — SEAL

GEOSYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30043 USA

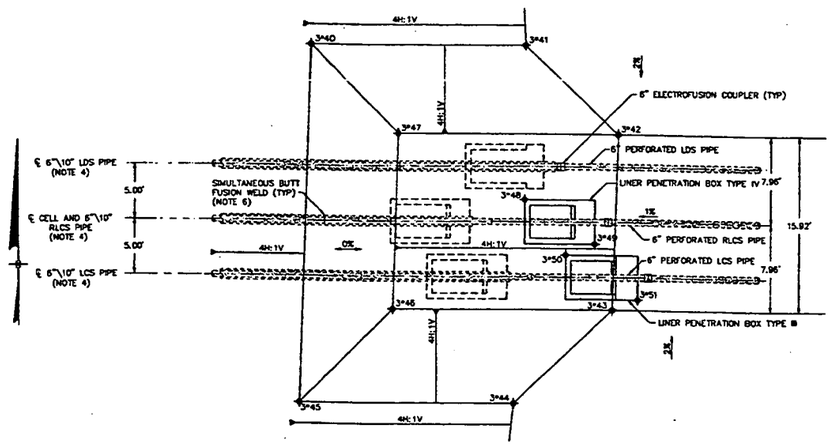
PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	901-5000-G-00369
GEOSYNTEC PROJECT NO.:	CO1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0008
SHEET NO.:	G-7
REVISION NO.:	0



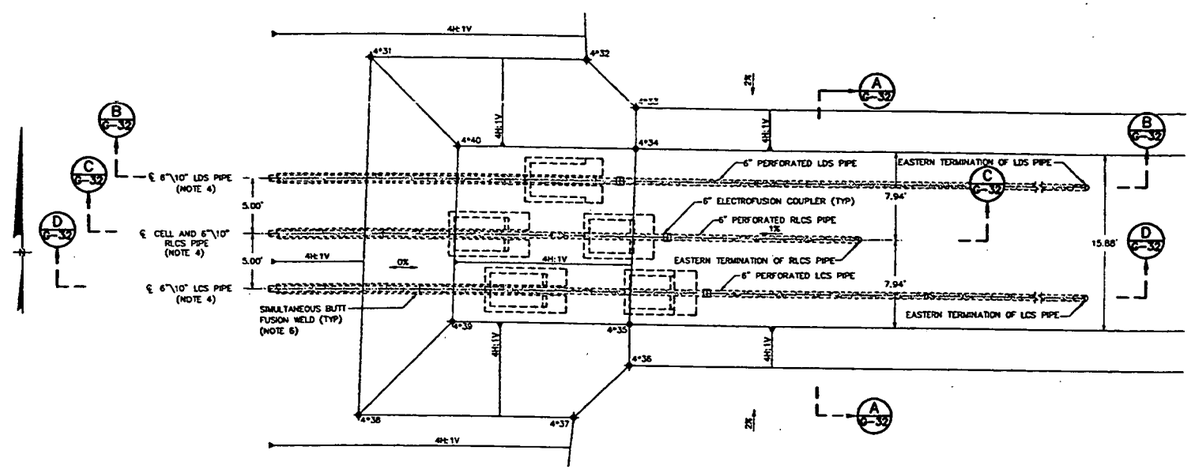
3 / G-4 PLAN
TOP OF SUBGRADE AT CELL OUTLET
SCALE: 1" = 5'



4 / G-7 PLAN
TOP OF COMPACTED CLAY LINER AT CELL OUTLET
SCALE: 1" = 5'



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



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

CELL 6 CONSTRUCTION CONTROL POINTS			
TOP OF SUBGRADE AT CELL OUTLET			
POINT NO.	NORTHING	EASTING	ELEVATION
1628	480980.35	1350830.62	583.22
1629	480980.55	1350813.89	583.06
1630	480964.55	1350813.89	583.06
1631	480964.35	1350829.96	583.22
1632	480956.90	1350808.04	588.64
1633	480986.54	1350806.10	588.92
1634	480977.48	1350819.33	586.11
1635	480972.57	1350812.17	588.04
1636	480967.53	1350815.60	587.08
TOP OF COMPACTED CLAY LINER AT CELL OUTLET			
POINT NO.	NORTHING	EASTING	ELEVATION
2625	480980.31	1350830.97	586.23
2626	480964.38	1350830.32	586.22
2627	480975.32	1350832.30	586.20
2628	480979.41	1350825.35	587.54
2629	480970.41	1350825.41	587.65
2630	480974.50	1350818.20	589.47
2631	480965.38	1350828.83	586.89
2632	480969.45	1350821.62	588.51
TOP OF LDS DRAINAGE LAYER AT CELL OUTLET			
POINT NO.	NORTHING	EASTING	ELEVATION
3640	480988.55	1350811.28	592.27
3641	480988.31	1350830.82	587.38
3642	480980.20	1350839.04	587.31
3643	480964.29	1350838.39	587.30
3644	480955.90	1350829.46	587.38
3645	480956.14	1350809.95	592.28
3646	480964.53	1350818.55	592.26
3647	480980.45	1350819.20	592.27
3648	480974.35	1350830.39	589.53
3649	480970.27	1350838.63	587.98
3650	480969.30	1350834.13	588.47
3651	480965.22	1350840.58	587.29
TOP OF LCS DRAINAGE LAYER AT CELL OUTLET			
POINT NO.	NORTHING	EASTING	ELEVATION
4631	480988.53	1350811.39	593.27
4632	480988.29	1350830.92	588.39
4633	480963.93	1350835.34	588.34
4634	480980.23	1350835.29	589.27
4635	480964.36	1350834.84	589.27
4636	480960.65	1350834.59	588.34
4637	480955.92	1350829.55	588.39
4638	480956.15	1350810.06	593.26
4639	480964.55	1350818.65	593.28
4640	480980.43	1350819.30	593.27

CELL 7 CONSTRUCTION CONTROL POINTS			
TOP OF SUBGRADE AT CELL OUTLET			
POINT NO.	NORTHING	EASTING	ELEVATION
1728	480580.40	1350823.73	581.20
1729	480580.60	1350807.06	581.04
1730	480564.61	1350806.88	581.04
1731	480564.41	1350823.23	581.20
1732	480558.99	1350801.19	586.87
1733	480586.55	1350801.34	586.85
1734	480577.54	1350812.52	584.11
1735	480572.83	1350805.36	586.04
1736	480567.58	1350808.85	585.08
TOP OF COMPACTED CLAY LINER AT CELL OUTLET			
POINT NO.	NORTHING	EASTING	ELEVATION
2725	480580.37	1350824.09	584.23
2726	480564.43	1350823.59	584.22
2727	480575.38	1350825.49	584.20
2728	480579.46	1350818.54	585.54
2729	480570.46	1350818.60	585.65
2730	480574.55	1350811.39	587.47
2731	480565.42	1350822.02	584.89
2732	480569.51	1350814.81	586.51
TOP OF LDS DRAINAGE LAYER AT CELL OUTLET			
POINT NO.	NORTHING	EASTING	ELEVATION
3740	480588.60	1350804.52	590.27
3741	480588.36	1350824.06	585.38
3742	480580.25	1350832.28	585.31
3743	480564.34	1350831.83	585.30
3744	480555.95	1350822.70	585.38
3745	480558.19	1350803.19	590.26
3746	480564.58	1350811.79	590.28
3747	480580.50	1350812.44	590.27
3748	480574.40	1350823.58	587.53
3749	480570.32	1350829.82	585.98
3750	480569.35	1350827.32	586.47
3751	480565.27	1350833.77	585.29
TOP OF LCS DRAINAGE LAYER AT CELL OUTLET			
POINT NO.	NORTHING	EASTING	ELEVATION
4731	480588.51	1350804.43	591.25
4732	480588.27	1350823.96	586.36
4733	480583.99	1350828.30	586.32
4734	480580.29	1350828.25	587.25
4735	480564.41	1350828.06	587.25
4736	480560.70	1350828.02	586.32
4737	480555.89	1350822.90	586.37
4738	480558.13	1350803.39	591.25
4739	480564.60	1350812.07	591.25
4740	480580.48	1350812.26	591.25

LEGEND

1*28 ✦ CONSTRUCTION CONTROL POINT (SEE NOTE 5)

NOTES:

1. LDS, LCS, AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
2. FOR LINER PENETRATION BOX DETAILS, SEE DRAWING G-33.
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 SECTIONS 02215 AND 02225.
4. LDS, LCS, AND RLCS PIPES SHALL TIE INTO EXISTING PIPES. TIE-IN LOCATIONS ARE SHOWN IN CONSTRUCTION CONTROL POINT TABLE PRESENTED ON DRAWING G-9.
5. THE "✦" SYMBOL REPRESENTS THE CELL IN WHICH THE APPROPRIATE CELL OUTLET CONTROL POINTS ARE LOCATED.
6. SIMULTANEOUS BUTT FUSION WELDS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13005.

000011

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	PRC	LMC	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	TMM	LMC	DGP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE AS SHOWN

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

CLIENT: FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: CELL OUTLET GRADING PLANS I – CELLS 6 AND 7 LINER SYSTEM

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

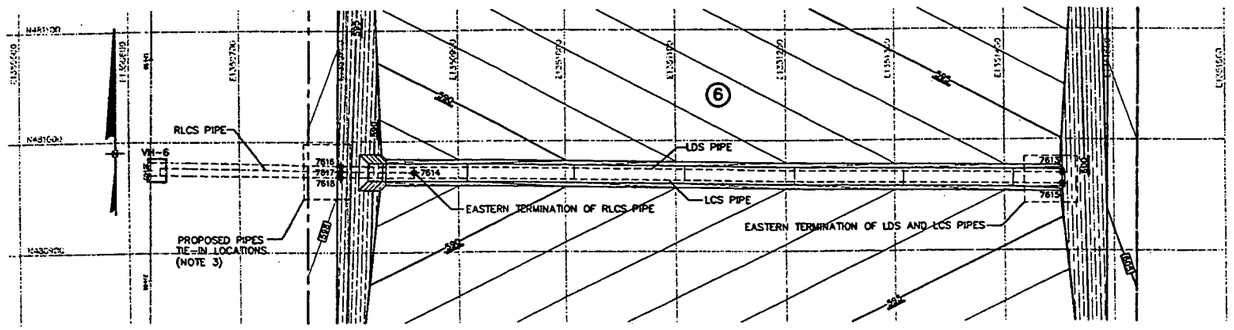
SIGNATURE: H. Boyd
DATE: 29 Jan 2002

STATE OF OHIO — JOHN H. BEECH — E-36248 — REGISTERED PROFESSIONAL ENGINEER — SEAL

GEOSYNTEC CONSULTANTS
3400 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

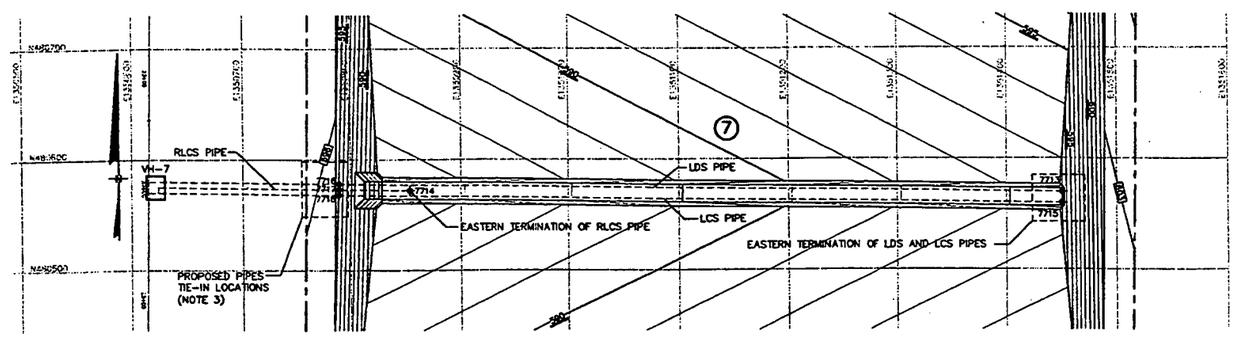
PROJECT NO.:	20105
CONTRACT NO.:	95P5005028
FDMP DRAWING NO.:	90X-5000-G-00370
GEOSYNTEC PROJECT NO.:	GG1342-17.4
GEOSYNTEC DOCUMENT NO.:	FD1-0009
SHEET NO.:	G-8
REVISION NO.:	0

CERTIFIED-FOR-CONSTRUCTION



7 PLAN
CONSTRUCTION CONTROL POINT LOCATIONS FOR CELL 6 LDS, LCS, AND RLCS PIPES
SCALE: 1" = 50'

EXISTING LDS, LCS, AND RLCS PIPES TIE-IN LOCATIONS (NOTE 3)			
CELL 6			
POINT NO.	NORTHING	EASTING	ELEVATION
7616	480978.00	1350794.41	583.83
7617	480972.97	1350794.29	587.64
7618	480967.81	1350794.15	586.75
CELL 7			
POINT NO.	NORTHING	EASTING	ELEVATION
7716	480577.82	1350788.52	583.83
7717	480572.82	1350789.38	583.84
7718	480567.82	1350788.26	584.75
LDS, LCS, AND RLCS PIPES EASTERN TERMINATIONS			
CELL 6			
POINT NO.	NORTHING	EASTING	ELEVATION
7613	480969.74	1351452.71	582.44
7614	480971.98	1350660.05	588.47
7615	480969.74	1351452.64	583.45
CELL 7			
POINT NO.	NORTHING	EASTING	ELEVATION
7713	480569.75	1351450.02	580.44
7714	480572.04	1350653.23	586.47
7715	480569.75	1351449.85	581.45



8 PLAN
CONSTRUCTION CONTROL POINT LOCATION FOR CELL 7 LCS, LDS, AND RLCS PIPES
SCALE: 1" = 50'

NOTES:

1. LDS, LCS, AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
2. 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 SECTIONS 02215 AND 02225.
3. LDS, LCS, AND RLCS PIPES FOR CELLS 6 AND 7 SHALL TIE INTO EXISTING PIPES. TIE-IN LOCATIONS FOR CELLS 6 AND 7 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 END CAPS OR OTHER TEMPORARY PROTECTION INSTALLED ON EXISTING PIPES PRIOR TO TIE-INS. AS-BUILT TIE-IN LOCATIONS MAY VARY SLIGHTLY FROM CONSTRUCTION CONTROL POINTS GIVEN ON THIS DRAWING.

000012

LEGEND

- 605 — COMPACTED CLAY LINER ELEVATION (FEET)
- 600 — LEACHATE COLLECTION SYSTEM ELEVATION (FEET)
- PERIMETER BERM BASELINE
- EXISTING EPLTS PIPE
- 7616 — CONSTRUCTION CONTROL POINT
- 6 — CELL DESIGNATION

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	02.01.28	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	JWD	LMC	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	TMM	LMC	DCP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE AS SHOWN

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

CLIENT: FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: CELL OUTLET GRADING PLANS II – CELLS 6 AND 7 LINER SYSTEM

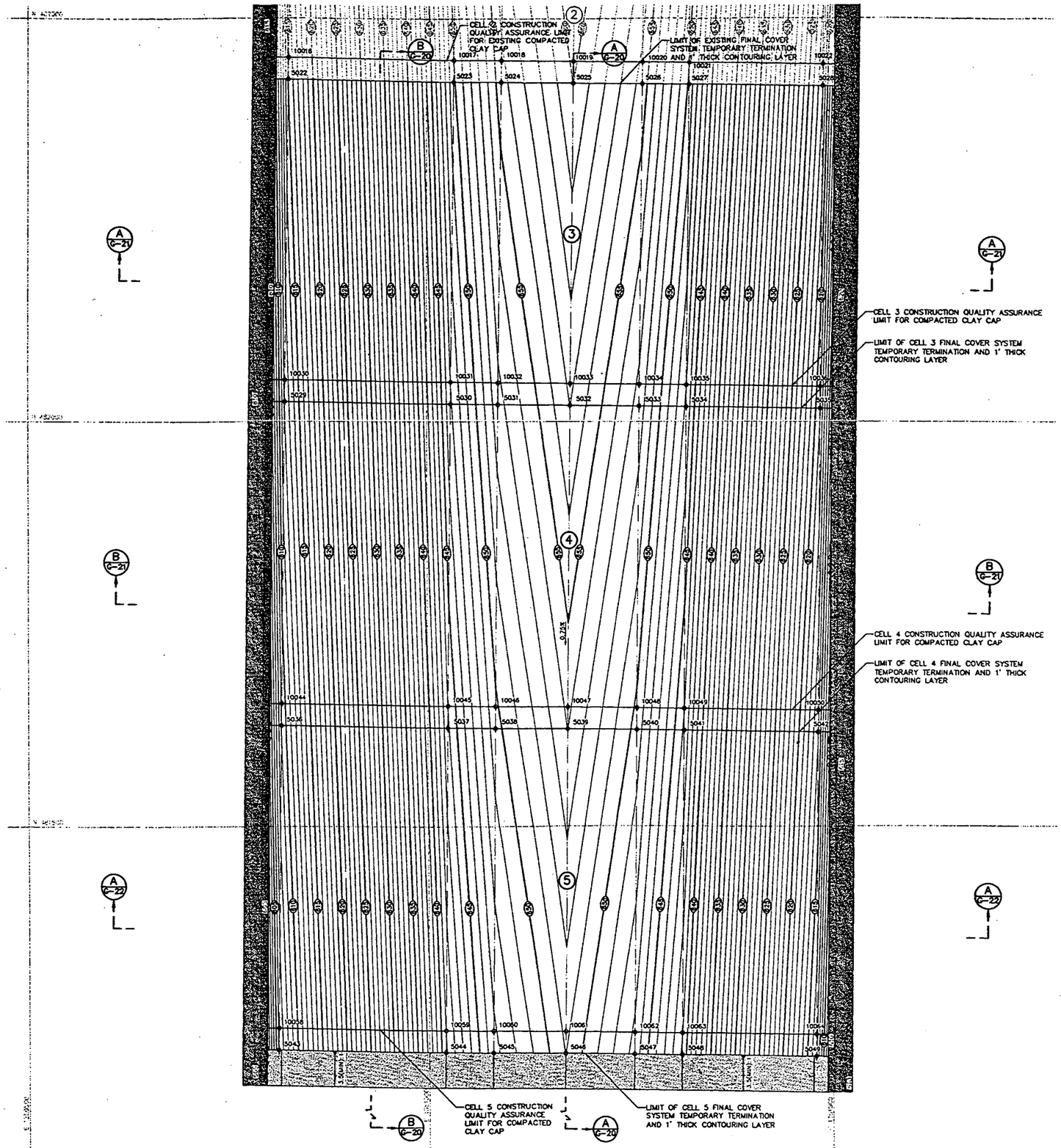
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE
29 Jan 2002
DATE

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

GEOSYNTEC CONSULTANTS
1255 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30043 USA

PROJECT NO.:	20105
CONTRACT NO.:	85P5005028
FEMP DRAWING NO.:	90X-6000-C-00371
GEOSYNTEC PROJECT NO.:	C01342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0010
SHEET NO.:	C-9
REVISION NO.:	0



LEGEND

- 630 — EXISTING CONTOURING LAYER ELEVATION (FEET)
- 629.0 — EXISTING PROTECTIVE CLAY LAYER ELEVATION (FEET)
- 630 — CONTOURING LAYER ELEVATION (FEET) (NOTE 2)
- PERIMETER BERM BASELINE
- 5023 — CONSTRUCTION CONTROL POINT
- 2 — CELL DESIGNATION
- DRAINAGE FLOW DIRECTION (NOTE 4)
- CONTOURING LAYER AND IMPACTED MATERIAL INTERIM GRADE (NOTE 3)
- EXISTING PROTECTIVE CLAY LAYER GRADES

CONTOURING LAYER CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
5022	482424.24	1350826.92	615.09
5023	482421.69	1351035.45	649.84
5024	482420.98	1351093.28	655.62
5025	482419.91	1351181.24	660.02
5026	482418.83	1351269.20	655.82
5027	482418.13	1351327.03	649.84
5028	482416.09	1351493.38	622.11
5029	482024.27	1350822.03	612.08
5030	482021.72	1351030.56	646.84
5031	482021.01	1351088.39	652.82
5032	482019.94	1351176.35	657.02
5033	482018.86	1351264.31	652.62
5034	482016.16	1351322.14	646.84
5035	482016.12	1351488.51	619.11
5036	481624.30	1350817.15	609.08
5037	481621.75	1351025.67	643.84
5038	481621.04	1351083.50	649.62
5039	481619.97	1351171.46	654.02
5040	481618.89	1351259.43	649.62
5041	481618.19	1351317.25	643.84
5042	481616.15	1351483.62	616.11
5043	481224.33	1350812.26	606.08
5044	481221.78	1351020.79	640.84
5045	481221.07	1351078.61	646.62
5046	481220.00	1351166.57	651.02
5047	481218.92	1351254.54	646.62
5048	481218.22	1351312.36	640.84
5049	481216.18	1351478.73	613.11

CQA LIMIT FOR COMPACTED CLAY CAP CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
10016	482451.24	1350827.27	615.29
10017	482448.69	1351035.77	650.04
10018	482447.98	1351093.60	655.82
10019	482446.91	1351181.57	660.22
10020	482445.83	1351269.54	655.83
10021	482445.13	1351327.37	650.04
10022	482443.09	1351493.71	622.32
10030	482051.27	1350822.36	612.28
10031	482048.72	1351030.89	647.04
10032	482048.01	1351088.72	652.82
10033	482046.94	1351176.68	657.22
10034	482045.86	1351264.64	652.82
10035	482045.16	1351322.47	647.04
10036	482043.12	1351488.84	619.34
10044	481651.30	1350817.48	609.28
10045	481648.75	1351026.00	644.04
10046	481648.04	1351083.83	649.82
10047	481646.97	1351171.79	654.22
10048	481645.89	1351259.76	649.82
10049	481645.19	1351317.58	644.04
10050	481643.15	1351483.95	616.31
10058	481251.33	1350812.59	606.28
10059	481248.78	1351021.12	641.04
10060	481248.07	1351078.94	646.82
10061	481247.00	1351166.90	651.22
10062	481245.92	1351254.87	646.82
10063	481245.22	1351312.69	641.04
10064	481243.18	1351479.06	613.31

NOTES:

1. THIS DRAWING PRESENTS CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER, LIMIT OF FINAL COVER SYSTEM TEMPORARY TERMINATION, AND CQA LIMIT FOR COMPACTED CLAY CAP FOR CELLS 3, 4, AND 5.
2. CONTOURING LAYER AND PROTECTIVE CLAY LAYER ELEVATIONS CORRESPOND TO TOP OF CONTOURING LAYER AND TOP OF PROTECTIVE CLAY LAYER, RESPECTIVELY.
3. CONSTRUCT INTERIM GRADES TO MEET EXISTING IMPACTED MATERIAL GRADES.
4. RUNOFF FROM NON-IMPACTED CONTOURING LAYER SHALL BE DIVERTED TO DOWNGRADIENT 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 THE CONSTRUCTION DRAWINGS AND SPECIFICATION SECTION 02270.

000013

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
C	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KSN	JWD	KSN	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KSN	JWD	KSN	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	KSN	JWD	KSN	DCP	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 V

TITLE: FINAL COVER SYSTEM CONTOURING LAYER GRADING PLAN I - CELLS 3, 4, AND 5

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

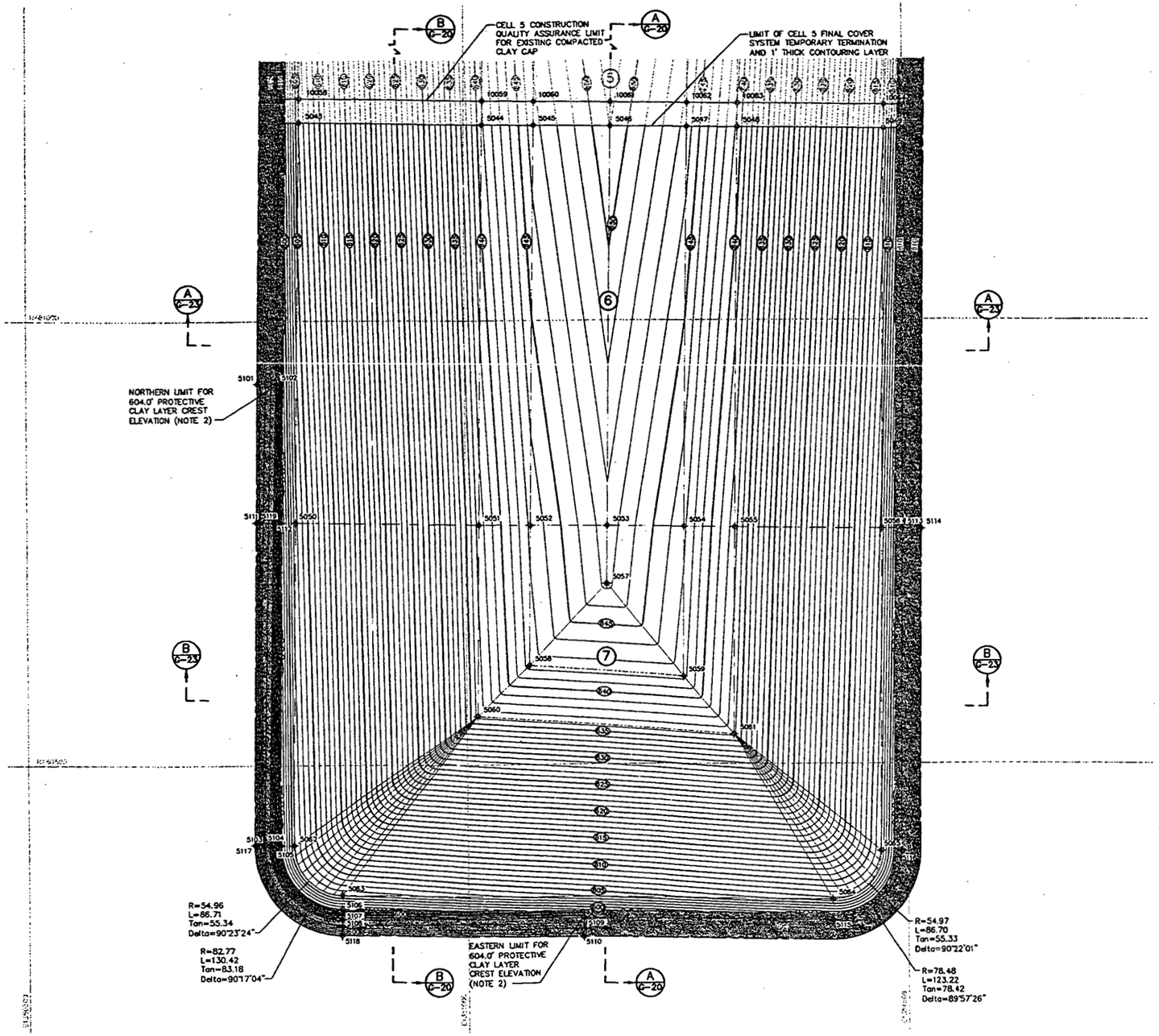
SIGNATURE: 18 April 2002
DATE

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

GEOSYNTEC CONSULTANTS
1900 LAKE HOLMES DRIVE
ATLANTA, GEORGIA 30342 USA

PROJECT NO.: 20105
CONTRACT NO.: 95P5005028
FDMP DRAWING NO.: 90X-6000-G-00372
GEOSYNTEC PROJECT NO.: CO1342-17.4
GEOSYNTEC DOCUMENT NO.: F01-0011
SHEET NO.: G-10
REVISION NO.: 0

CERTIFIED-FOR-CONSTRUCTION



LEGEND

- EXISTING CONTOURING LAYER ELEVATION (FEET)
- EXISTING PROTECTIVE CLAY LAYER ELEVATION (FEET)
- PROTECTIVE CLAY LAYER ELEVATION (FEET) (NOTES 1 AND 2)
- CONTOURING LAYER ELEVATION (FEET) (NOTE 2)
- PERIMETER BERM BASELINE
- CONSTRUCTION CONTROL POINT 4665
- CELL DESIGNATION
- DRAINAGE FLOW DIRECTION (NOTE 3)
- EXISTING PROTECTIVE CLAY LAYER GRADES

CQA LIMIT FOR COMPACTED CLAY CAP CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
10058	481251.33	1350812.59	606.28
10059	481248.78	1351021.12	641.04
10060	481248.07	1351078.94	646.82
10061	481247.00	1351166.90	651.22
10062	481245.92	1351254.87	646.82
10063	481245.22	1351312.69	641.04
10064	481243.18	1351479.06	613.31

PROTECTIVE CLAY LAYER CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
5101	480929.30	1350763.57	600.41
5102	480929.03	1350785.12	604.00
5103	480410.42	1350768.42	603.02
5104	480410.33	1350774.30	604.00
5105	480410.20	1350786.76	595.70
5106	480338.74	1350856.68	595.53
5107	480328.64	1350856.53	604.00
5108	480319.52	1350856.44	602.81
5109	480327.39	1351131.74	604.00
5110	480305.85	1351131.48	600.41
5111	480773.17	1350761.67	599.24
5112	480772.93	1350781.46	604.00
5113	480764.19	1351496.74	609.86
5114	480763.93	1351518.28	606.26
5115	480323.96	1351412.90	606.81
5116	480401.45	1351492.30	608.04
5117	480410.56	1350757.23	597.42
5118	480309.21	1350856.32	597.65
5119	480773.12	1350786.06	601.43

CONTOURING LAYER CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
5043	481224.33	1350812.26	606.08
5044	481221.78	1351020.79	640.84
5045	481221.07	1351078.81	646.62
5046	481220.00	1351166.57	651.02
5047	481218.92	1351254.54	646.62
5048	481218.22	1351312.36	640.84
5049	481216.18	1351478.73	613.11
5050	480772.62	1350806.74	602.69
5051	480770.07	1351015.26	637.45
5052	480769.37	1351073.09	643.23
5053	480768.29	1351161.05	647.63
5054	480767.22	1351249.02	643.23
5055	480766.51	1351306.84	637.45
5056	480764.48	1351473.21	609.72
5057	480702.91	1351160.25	647.30
5058	480611.46	1351071.16	642.44
5059	480598.43	1351246.95	642.39
5060	480554.76	1351012.63	636.37
5061	480533.16	1351303.99	636.28
5062	480410.01	1350802.31	600.88
5063	480354.28	1350856.87	601.11
5064	480347.49	1351412.87	606.68
5065	480401.86	1351468.78	607.91
5082	480773.13	1350765.18	601.00

NOTES:

1. THIS DRAWING PRESENTS CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER, LIMIT OF FINAL COVER SYSTEM TEMPORARY TERMINATION, AND CQA LIMIT FOR COMPACTED CLAY CAP FOR CELLS 6 AND 7. THIS DRAWING ALSO PRESENTS CONSTRUCTION CONTROL POINTS FOR PROTECTIVE CLAY LAYER WITH CREST ELEVATION OF 604'.
2. PROTECTIVE CLAY LAYER AND CONTOURING LAYER ELEVATIONS CORRESPOND TO TOP OF PROTECTIVE CLAY LAYER AND CONTOURING LAYER, RESPECTIVELY. PROTECTIVE CLAY LAYER WILL BE CONSTRUCTED AS PART OF CELLS 6 AND 7 LINER SYSTEM CONSTRUCTION.
3. RUNOFF FROM NON-IMPACTED CONTOURING LAYER SHALL BE DIVERTED TO DOWNGRADIENT 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 THE CONSTRUCTION DRAWINGS AND SPECIFICATION SECTION 02270. CELL 7 IMPACTED RUNOFF CATCHMENT AREA SHOWN ON DRAWING G-16.
4. FINAL COVER SYSTEM FOR CELLS 6 AND 7 MAY BE CONSTRUCTED CONCURRENTLY WITHOUT CONSTRUCTION OF THE FINAL COVER SYSTEM TEMPORARY TERMINATION. CELLS 6 AND 7 FINAL COVER SYSTEM STAGED CLOSURE. SEQUENCE IS SHOWN ON DRAWING G-16.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
G	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JMO	KRD	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JMO	KRD	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	KRD	JMO	KRD	DCP	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 V

TITLE:
FINAL COVER SYSTEM CONTOURING LAYER GRADING PLAN II – CELLS 6 AND 7

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

SIGNATURE
13 April 2002
DATE

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

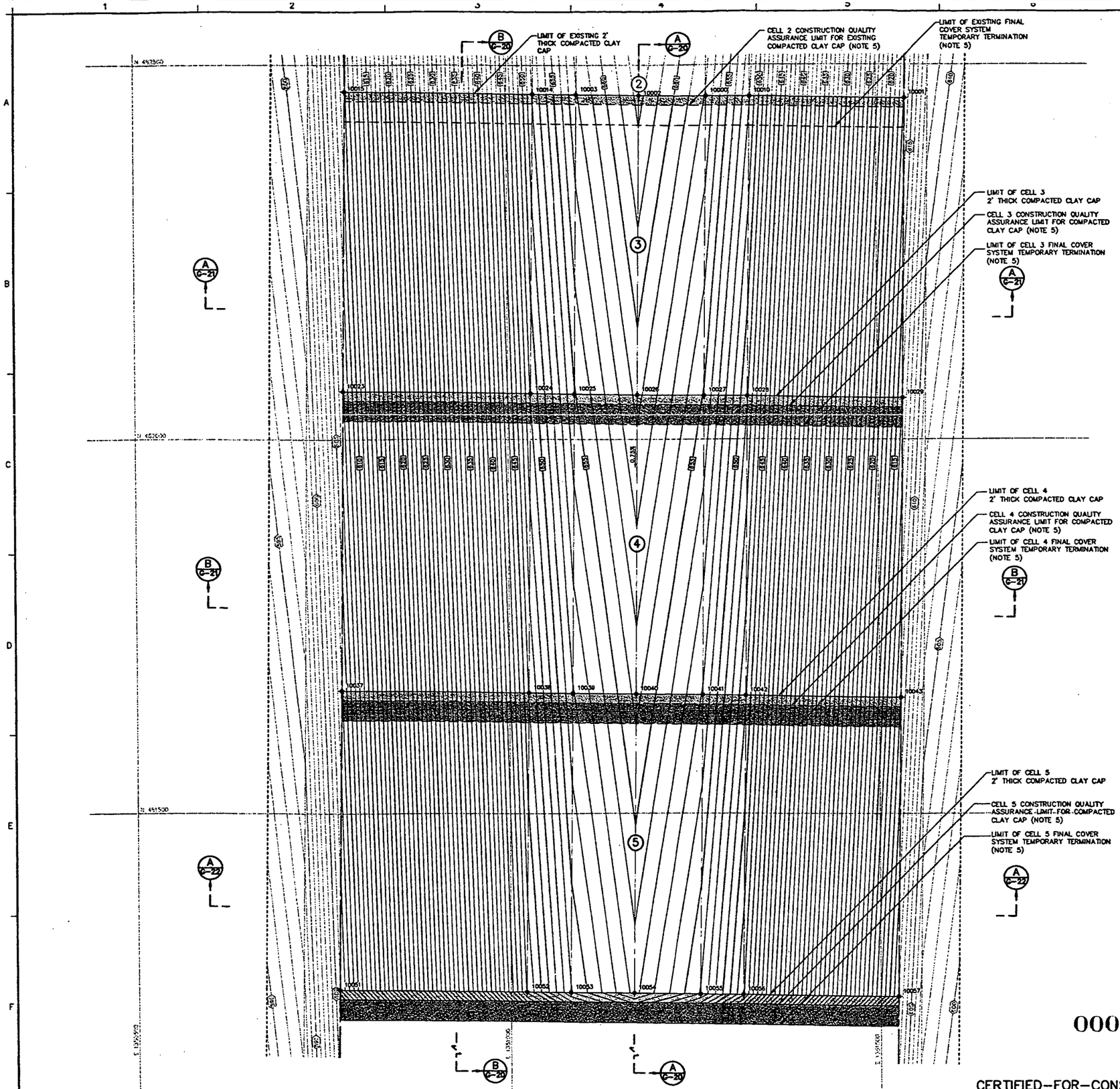
GEOSYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30343 USA

PROJECT NO.:	20105
CONTRACT NO.:	95P5005028
FDMP DRAWING NO.:	90X-6000-G-00373
GEOSYNTEC PROJECT NO.:	001542-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0012
SHEET NO.:	G-11
REVISION NO.:	0

000014

CERTIFIED-FOR-CONSTRUCTION

4665



LEGEND

- EXISTING SUBGRADE LAYER ELEVATION (FEET)
- EXISTING COMPACTED CLAY CAP ELEVATION (FEET)
- COMPACTED CLAY CAP ELEVATION (FEET) (NOTE 2)
- PERIMETER BERM BASELINE
- APPROXIMATE LIMIT OF FINAL COVER SYSTEM CONSTRUCTION
- CONSTRUCTION CONTROL POINT
- CELL DESIGNATION
- PORTION OF FINAL COVER SYSTEM TEMPORARY TERMINATION AREA (NOTE 3)
- COMPACTED CLAY CAP TRANSITION AREA (NOTE 4)

COMPACTED CLAY CAP CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
10000	482458.38	1351269.84	657.91
10001	482455.09	1351538.95	616.92
10002	482459.46	1351181.72	662.32
10003	482460.53	1351093.61	657.91
10010	482457.67	1351327.78	652.12
10014	482461.24	1351035.65	652.12
10015	482464.34	1350782.33	609.89
10023	482084.37	1350777.45	605.89
10024	482081.27	1351030.76	649.12
10025	482080.56	1351088.72	654.91
10026	482059.49	1351176.83	659.32
10027	482058.41	1351264.95	654.91
10028	482057.70	1351322.90	649.12
10029	482055.12	1351534.07	613.92
10037	481664.40	1350772.56	603.89
10038	481661.30	1351025.87	646.12
10039	481660.59	1351083.83	651.91
10040	481659.52	1351171.95	656.32
10041	481658.44	1351260.06	651.91
10042	481657.73	1351318.01	646.12
10043	481655.15	1351529.18	610.92
10051	481264.43	1350767.67	600.89
10052	481261.35	1351020.99	643.12
10053	481260.62	1351078.94	648.91
10054	481259.55	1351167.06	653.32
10055	481258.47	1351255.17	648.91
10056	481257.76	1351313.13	643.12
10057	481255.18	1351524.29	607.92

NOTES:

1. THIS DRAWING PRESENTS CONSTRUCTION CONTROL POINTS FOR COMPACTED CLAY CAP FOR CELLS 3, 4, AND 5.
2. COMPACTED CLAY CAP AND SUBGRADE LAYER ELEVATIONS CORRESPOND TO TOP OF COMPACTED CLAY CAP AND SUBGRADE LAYER, RESPECTIVELY.
3. SHADED AREA REPRESENTS A PORTION OF TEMPORARY TERMINATION OF FINAL COVER SYSTEM. TEMPORARY TERMINATION SHALL BE CONSTRUCTED ACCORDING TO DETAIL SHOWN ON DRAWING C-34.
4. CONSTRUCT TRANSITION FROM EXISTING FULL DEPTH SECTION OF COMPACTED CLAY CAP TO AN ADJACENT SECTION OF COMPACTED CLAY CAP IN ACCORDANCE WITH SPECIFICATION SECTION 02225.
5. CONSTRUCTION CONTROL POINTS FOR LIMIT OF FINAL COVER SYSTEM TEMPORARY TERMINATION AND CONSTRUCTION QUALITY ASSURANCE LIMIT FOR COMPACTED CLAY CAP FOR CELLS 2, 3, 4, AND 5 ARE PROVIDED ON DRAWING C-10.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APR. BY
C	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JWD	KRD	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JWD	KRD	DGP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	KRD	TMM	KRD	DGP	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 V

TITLE:
FINAL COVER SYSTEM COMPACTED CLAY CAP
GRADING PLAN I – CELLS 3, 4, AND 5

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

DRAWN BY
29 Jan 2002
DATE

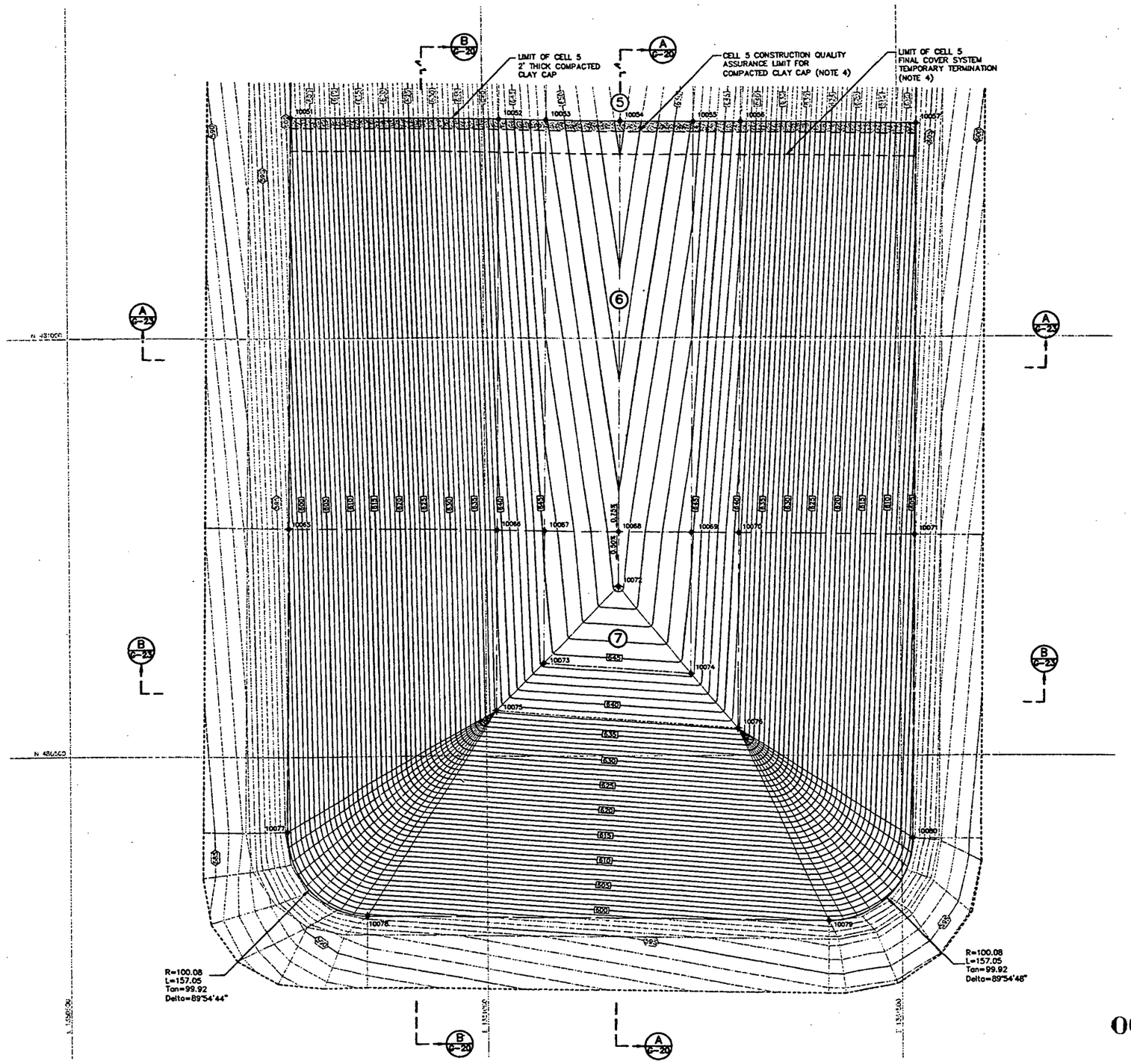
STATE OF OHIO
JOHN F. BECCH
E-58248
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1900 LAKE HARBIN DRIVE
ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-6000-C-00374
GEOSYNTEC PROJECT NO.:	001342-17.4
GEOSYNTEC DOCUMENT NO.:	FD1-0014
SHEET NO.:	C-12
REVISION NO.:	0

000015

CERTIFIED–FOR–CONSTRUCTION



LEGEND

640C	EXISTING SUBGRADE LAYER ELEVATION (FEET)
620	EXISTING COMPACTED CLAY CAP ELEVATION (FEET)
620	COMPACTED CLAY CAP ELEVATION (FEET) (NOTE 2)
	PERIMETER BERM BASELINE
	APPROXIMATE LIMIT OF FINAL COVER SYSTEM CONSTRUCTION
10051	CONSTRUCTION CONTROL POINT
6	CELL DESIGNATION
	COMPACTED CLAY CAP TRANSITION AREA (NOTE 3)

COMPACTED CLAY CAP CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
10051	481264.43	1350767.67	600.89
10052	481261.33	1351020.99	643.12
10053	481260.62	1351078.94	648.91
10054	481259.55	1351167.06	653.32
10055	481258.47	1351255.17	648.91
10056	481257.76	1351313.13	643.12
10057	481255.18	1351524.29	607.92
10065	480773.17	1350761.67	597.21
10066	480770.08	1351014.98	639.43
10067	480769.37	1351072.94	645.23
10068	480768.29	1351161.05	649.63
10069	480767.22	1351249.17	645.23
10070	480766.51	1351307.12	639.43
10071	480763.93	1351518.28	604.24
10072	480702.91	1351160.25	649.31
10073	480611.32	1351071.01	644.44
10074	480598.26	1351247.10	644.35
10075	480554.49	1351012.35	638.35
10076	480532.85	1351304.27	638.28
10077	480410.43	1350757.23	595.40
10078	480309.21	1350856.00	595.63
10079	480302.41	1351412.64	601.19
10080	480401.18	1351513.85	602.42

NOTES:

1. THIS DRAWING PRESENTS CONSTRUCTION CONTROL POINTS FOR COMPACTED CLAY CAP FOR CELLS 6 AND 7.
2. COMPACTED CLAY CAP AND SUBGRADE LAYER ELEVATIONS CORRESPOND TO TOP OF COMPACTED CLAY CAP AND SUBGRADE LAYER, RESPECTIVELY.
3. CONSTRUCT TRANSITION FROM EXISTING FULL DEPTH SECTION OF COMPACTED CLAY CAP TO ADJACENT SECTION OF COMPACTED CLAY CAP IN ACCORDANCE WITH SPECIFICATION SECTION 02225.
4. CONSTRUCTION CONTROL POINTS FOR LIMIT OF FINAL COVER SYSTEM TEMPORARY TERMINATION AND CONSTRUCTION QUALITY ASSURANCE LIMIT FOR COMPACTED CLAY CAP FOR CELL 5 ARE PROVIDED ON DRAWING G-11.
5. FINAL COVER SYSTEM FOR CELLS 6 AND 7 MAY BE CONSTRUCTED CONCURRENTLY WITHOUT CONSTRUCTION OF THE FINAL COVER SYSTEM TEMPORARY TERMINATION. CELLS 6 AND 7 FINAL COVER SYSTEM STAGED CLOSURE SEQUENCE IS SHOWN ON DRAWING G-16.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FT/DOE/EPA	KRD	JWD	KRD	DOP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FT/DOE	KRD	JWD	KRD	DOP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FT/DOE	KRD	JWD	KRD	DOP	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 V

TITLE:
FINAL COVER SYSTEM COMPACTED CLAY CAP
GRADING PLAN II – CELLS 6 AND 7

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

SIGNATURE
29 Jan 2002
DATE

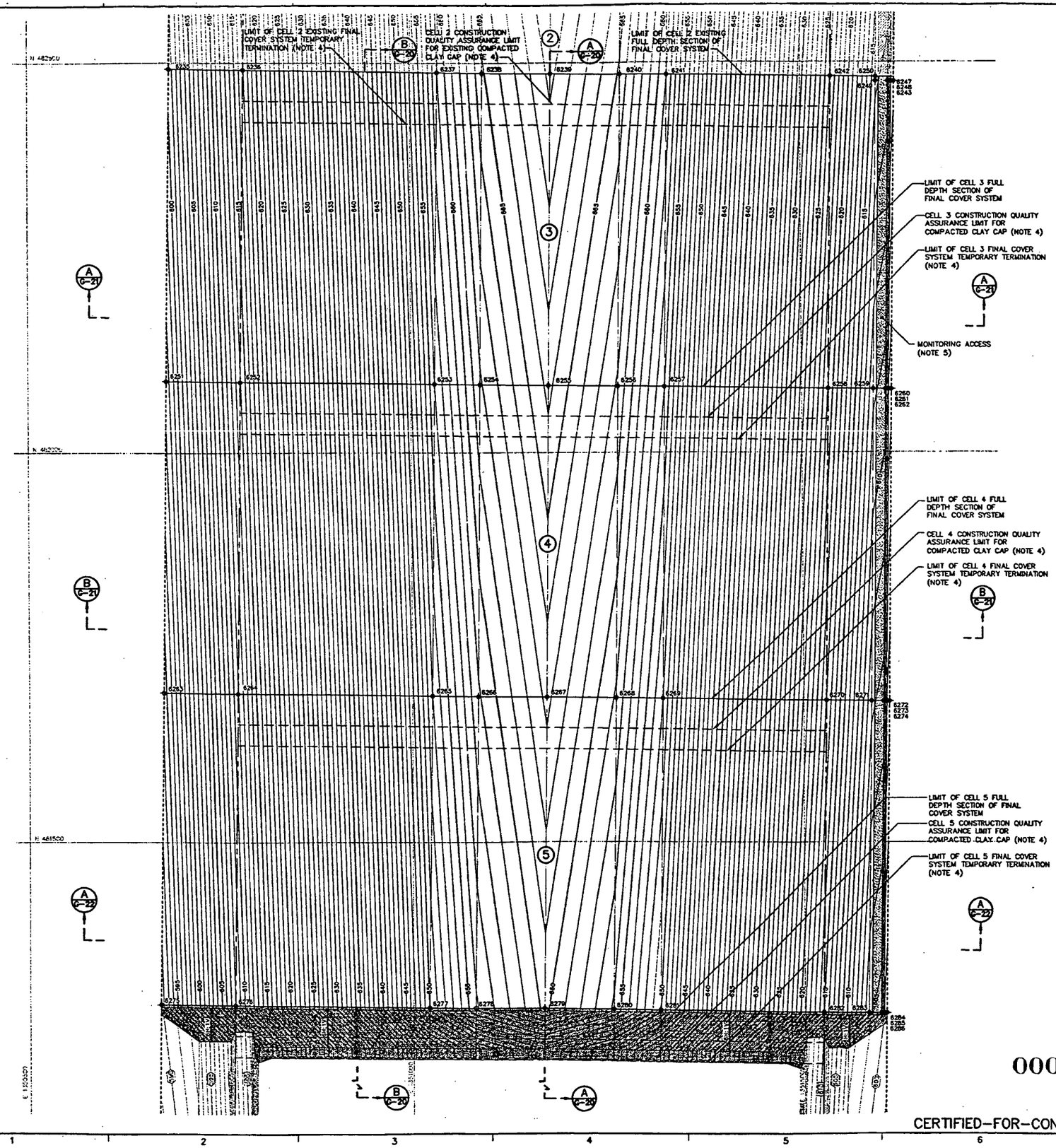
STATE OF OHIO
JOHN BEICH
E-36246
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEO SYNTEC CONSULTANTS
3165 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30343 USA

PROJECT NO.:	29105
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	00X-6000-G-00373
GEOSYNTEC PROJECT NO.:	G01342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0015
SHEET NO.:	G-13
REVISION NO.:	0

000016

CERTIFIED-FOR-CONSTRUCTION



LEGEND

- 600 — EXISTING FINISHED GRADE ELEVATION (FEET)
- 600 — EXISTING SUBGRADE LAYER ELEVATION (FEET)
- 600 — EXISTING PROTECTIVE CLAY LAYER ELEVATION (FEET)
- 645 — FINISHED GRADE ELEVATION (FEET) (NOTE 2)
- PERIMETER BERM BASELINE
- APPROXIMATE LIMIT OF FINAL COVER SYSTEM CONSTRUCTION
- 6260 — CONSTRUCTION CONTROL POINT
- 3 — CELL DESIGNATION
- FINAL COVER SYSTEM TEMPORARY TERMINATION AREA (NOTE 3)
- MONITORING ACCESS (NOTE 5)

FINAL COVER SYSTEM CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
6235	482492.22	1350683.64	600.43
6236	482491.01	1350782.68	615.94
6237	482487.92	1351035.10	659.01
6238	482487.21	1351093.43	654.85
6239	482485.12	1351182.05	659.28
6240	482485.04	1351270.67	654.85
6241	482484.33	1351329.00	659.01
6242	482481.76	1351539.28	625.96
6243	482475.28	1351820.92	610.30
6247	482475.37	1351613.68	613.54
6248	482475.32	1351617.68	610.87
6249	482475.56	1351597.89	614.18
6250	482481.04	1351597.76	614.22
6251	482092.25	1350678.75	597.43
6252	482091.03	1350777.77	613.94
6253	482087.95	1351030.21	658.01
6254	482087.24	1351088.54	681.85
6255	482086.15	1351177.16	666.28
6256	482085.07	1351265.78	651.85
6257	482084.36	1351324.11	656.01
6258	482081.79	1351534.39	620.96
6259	482081.07	1351592.88	611.22
6260	482080.88	1351608.86	610.58
6261	482080.83	1351612.86	607.91
6262	482080.79	1351616.10	607.34
6263	481692.28	1350673.86	594.43
6264	481691.07	1350772.88	610.94
6265	481687.98	1351025.32	653.01
6266	481687.27	1351083.65	658.85
6267	481686.18	1351172.27	663.28
6268	481685.10	1351260.89	658.85
6269	481684.39	1351319.22	653.01
6270	481681.82	1351529.50	617.96
6271	481681.10	1351587.99	608.22
6272	481680.91	1351603.97	607.55
6273	481680.86	1351607.97	604.91
6274	481680.82	1351611.21	604.34
6275	481292.31	1350668.97	591.43
6276	481291.09	1350768.00	607.94
6277	481288.01	1351020.43	650.01
6278	481287.30	1351078.76	655.85
6279	481286.21	1351167.38	660.28
6280	481285.13	1351256.00	655.85
6281	481284.42	1351314.34	650.01
6282	481281.85	1351524.62	614.96
6283	481281.13	1351583.10	605.22
6284	481280.94	1351599.08	604.58
6285	481280.89	1351603.08	601.91
6286	481280.85	1351606.33	601.34

NOTES:

1. THIS DRAWING PRESENTS CONSTRUCTION CONTROL POINTS FOR FINAL COVER SYSTEM FOR CELLS 3, 4, AND 5.
2. FINISHED GRADE ELEVATIONS EXCLUDING MONITORING ACCESS CORRESPOND TO TOP OF FINAL COVER SYSTEM TOPSOIL LAYER.
3. SHADED AREA REPRESENTS EXTENT OF TEMPORARY TERMINATION OF FINAL COVER SYSTEM. TEMPORARY TERMINATION SHALL BE CONSTRUCTED ACCORDING TO DETAIL SHOWN ON DRAWING G-34.
4. CONSTRUCTION CONTROL POINTS FOR LIMIT OF FINAL COVER SYSTEM TEMPORARY TERMINATION AND CONSTRUCTION QUALITY ASSURANCE LIMIT FOR COMPACTED CLAY CAP ARE PROVIDED ON DRAWING G-10.
5. MONITORING ACCESS DETAILS ARE SHOWN ON DRAWING G-37.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	SVR. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JRD	KRD	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JRD	KRD	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	KRD	JRD	KRD	DCP	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 V

TITLE: FINAL COVER SYSTEM GRADING PLAN I – CELLS 3, 4, AND 5

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

29 Aug 2002
DATE

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

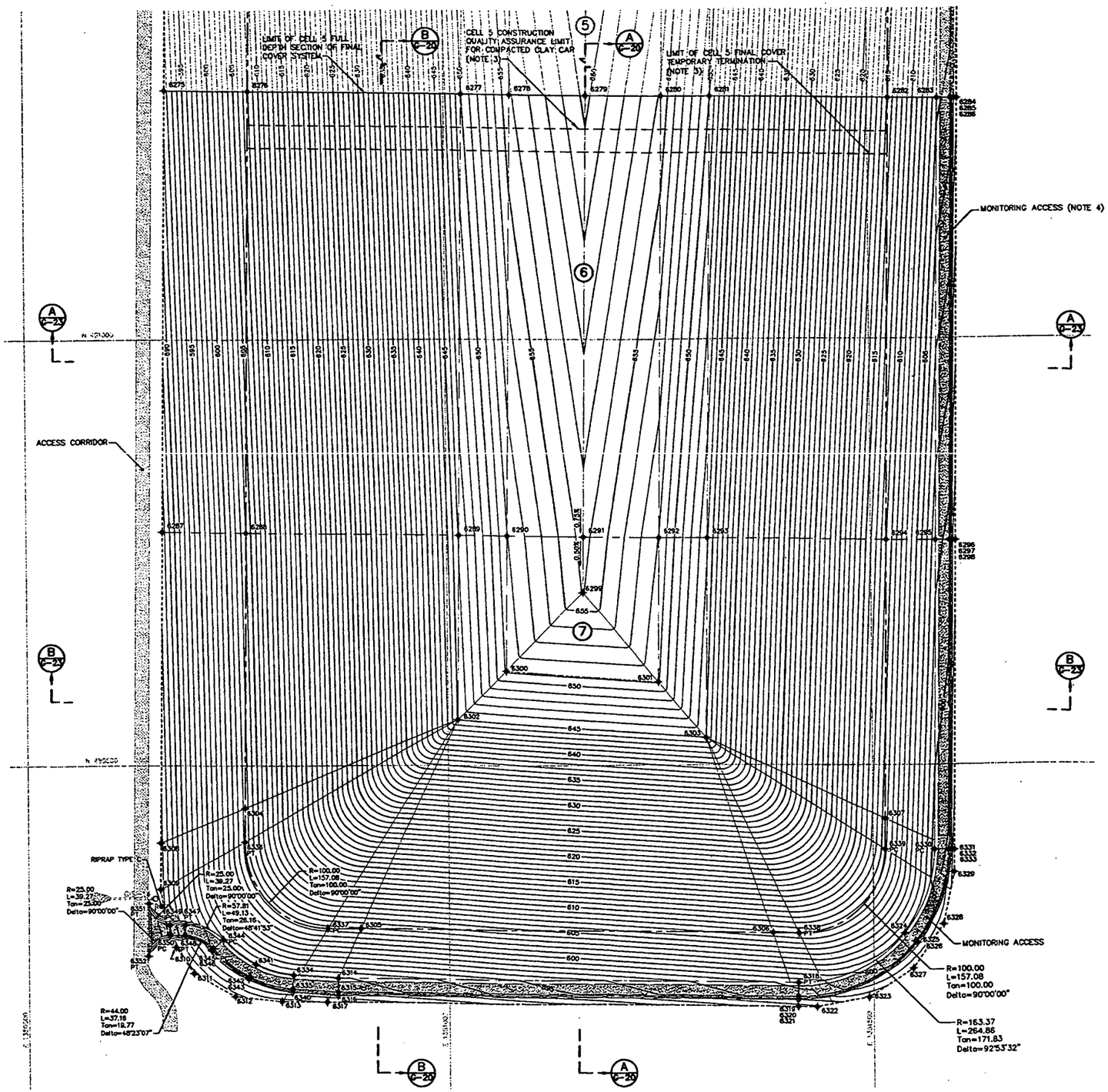
GEOSYNTEC CONSULTANTS
1900 LAKE HORN DRIVE, ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20105
CONTRACT NO.:	95P5005028
FEMP DRAWING NO.:	90X-6000-G-00375
GEOSYNTEC PROJECT NO.:	CO1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0017
SHEET NO.:	G-14
REVISION NO.:	0

000017

CERTIFIED-FOR-CONSTRUCTION

4665



LEGEND

645	EXISTING FINISHED GRADE ELEVATION (FEET)
645	FINISHED GRADE ELEVATION (FEET) (NOTE 2)
	PERIMETER BERM BASELINE
	APPROXIMATE LIMIT OF FINAL COVER SYSTEM CONSTRUCTION
6299	CONSTRUCTION CONTROL POINT
6	CELL DESIGNATION
	MONITORING ACCESS (NOTE 4)
	RIPRAP LIMIT

FINAL COVER SYSTEM CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
6275	481292.31	1350668.97	591.43
6276	481291.09	1350768.00	607.94
6277	481288.01	1351020.43	650.01
6278	481287.30	1351078.76	655.85
6279	481288.21	1351167.38	660.28
6280	481285.13	1351258.00	655.85
6281	481284.42	1351314.34	650.01
6282	481281.85	1351524.62	614.96
6283	481281.13	1351583.10	605.22
6284	481280.94	1351589.08	604.58
6285	481280.89	1351603.08	601.91
6286	481280.85	1351606.33	601.34
6287	480774.38	1350662.94	587.55
6288	480773.17	1350761.67	604.05
6289	480770.09	1351014.10	646.13
6290	480769.38	1351072.43	651.96
6291	480768.29	1351161.05	656.39
6292	480767.21	1351249.67	651.96
6293	480766.50	1351308.01	646.13
6294	480763.93	1351518.29	611.08
6295	480763.21	1351576.77	601.33
6296	480763.02	1351592.75	600.89
6297	480762.97	1351596.75	598.03
6298	480762.93	1351600.00	597.46
6299	480702.91	1351160.25	656.07
6300	480610.84	1351070.50	651.17
6301	480597.71	1351247.60	651.11
6302	480553.85	1351011.46	645.05
6303	480531.88	1351305.14	644.98
6304	480450.00	1350757.72	602.44
6305	480308.73	1350895.61	602.87
6306	480302.78	1351382.32	607.73
6307	480437.04	1351514.29	609.45
6308	480409.34	1350658.18	585.72
6309	480354.93	1350657.51	585.46
6310	480286.78	1350675.47	585.74
6311	480255.95	1350697.05	585.64
6312	480228.02	1350744.99	586.45
6313	480223.41	1350801.05	587.53

FINAL COVER SYSTEM CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
6314	480250.57	1350868.10	592.85
6315	480234.59	1350867.91	592.21
6316	480230.07	1350867.85	589.20
6317	480222.75	1350854.95	588.08
6318	480243.93	1351411.92	598.29
6319	480227.95	1351411.73	597.65
6320	480223.95	1351411.88	594.98
6321	480215.95	1351411.58	593.82
6322	480215.68	1351433.29	593.85
6323	480227.11	1351494.67	595.19
6324	480302.43	1351536.66	600.81
6325	480293.03	1351349.59	600.17
6326	480291.30	1351551.96	596.22
6327	480261.15	1351547.00	595.93
6328	480312.64	1351582.32	596.02
6329	480373.72	1351595.24	595.52
6330	480400.47	1351572.34	599.52
6331	480400.27	1351588.32	598.88
6332	480400.22	1351592.32	596.21
6333	480400.18	1351595.56	595.65
6334	480254.20	1350815.22	592.85
6335	480238.28	1350814.06	592.21
6336	480410.43	1350757.23	602.25
6337	480309.21	1350856.00	602.48
6338	480302.41	1351412.64	608.04
6339	480401.18	1351513.85	609.27
6340	480234.15	1350813.76	589.47
6341	480266.66	1350769.37	592.85
6342	480252.35	1350762.27	592.21
6343	480249.48	1350760.84	590.07
6344	480295.94	1350731.43	592.85
6345	480285.44	1350719.38	592.21
6346	480283.13	1350717.51	590.25
6347	480312.74	1350686.71	591.37
6348	480300.74	1350686.56	590.89
6349	480312.97	1350668.24	589.16
6350	480300.97	1350668.09	588.67
6351	480338.27	1350643.55	586.31
6352	480276.28	1350642.79	586.00

NOTES:

1. THIS DRAWING PRESENTS CONSTRUCTION CONTROL POINTS FOR FINAL COVER SYSTEM FOR CELLS 6 AND 7.
2. FINISHED GRADE ELEVATIONS EXCLUDING MONITORING ACCESS CORRESPOND TO TOP OF TOPSOIL OF FINAL COVER SYSTEM.
3. CONSTRUCTION CONTROL POINTS FOR LIMIT OF FINAL COVER SYSTEM TEMPORARY TERMINATION AND CONSTRUCTION QUALITY ASSURANCE LIMIT FOR COMPACTED CLAY CAP ARE PROVIDED ON DRAWING G-11.
4. MONITORING ACCESS DETAILS ARE SHOWN ON DRAWING G-37.
5. FINAL COVER SYSTEM FOR CELLS 6 AND 7 MAY BE CONSTRUCTED CONCURRENTLY WITHOUT CONSTRUCTION OF THE FINAL COVER SYSTEM TEMPORARY TERMINATION. CELLS 6 AND 7 FINAL COVER SYSTEM STAGED CLOSURE SEQUENCE IS SHOWN ON DRAWING G-16.
6. CONTRACTOR SHALL TRANSITION PROPOSED MONITORING ACCESS ELEVATIONS TO TIE-IN WITH EXISTING ACCESS CORRIDOR AT TIE-IN LOCATION SHOWN.
7. CONTRACTOR SHALL PLACE COMPACTED FILL TO PROVIDE POSITIVE DRAINAGE TO GIS 14.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
C	02.01.23	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JRO	KRD	DOP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JRO	KRD	DOP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	KRD	JRO	KRD	DOP	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 V

TITLE: FINAL COVER SYSTEM GRADING PLAN II – CELLS 6 AND 7

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

SIGNATURE
29 Jan 2002
DATE

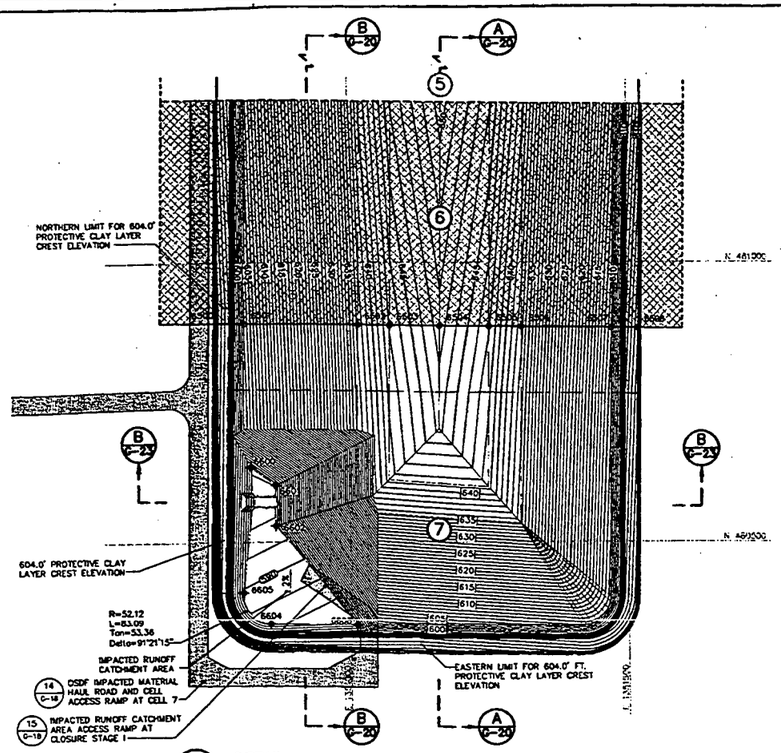
STATE OF OHIO
JOHN E. BEECH
E-58246
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
3900 LAKE ROAD, SUITE
ATLANTA, GEORGIA 30342 USA

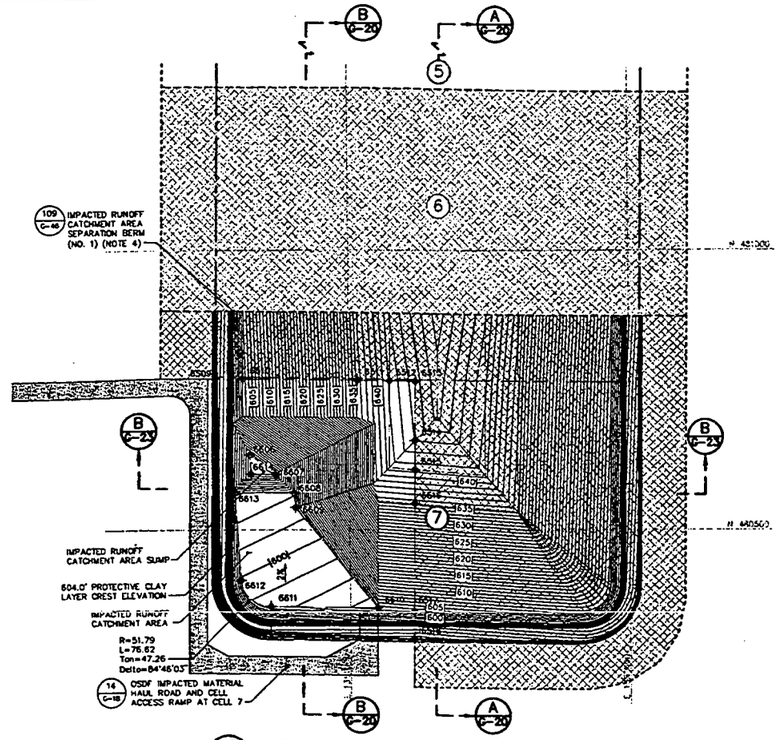
PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-6000-G-00377
GEOSYNTEC PROJECT NO.:	001342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0019
SHEET NO.:	G-15
REVISION NO.:	0

000018

CERTIFIED-FOR-CONSTRUCTION



9 DETAIL
STAGE I – CELL 6 CLOSURE IN PROGRESS, CELL 7 OPEN
SCALE: 1" = 100'



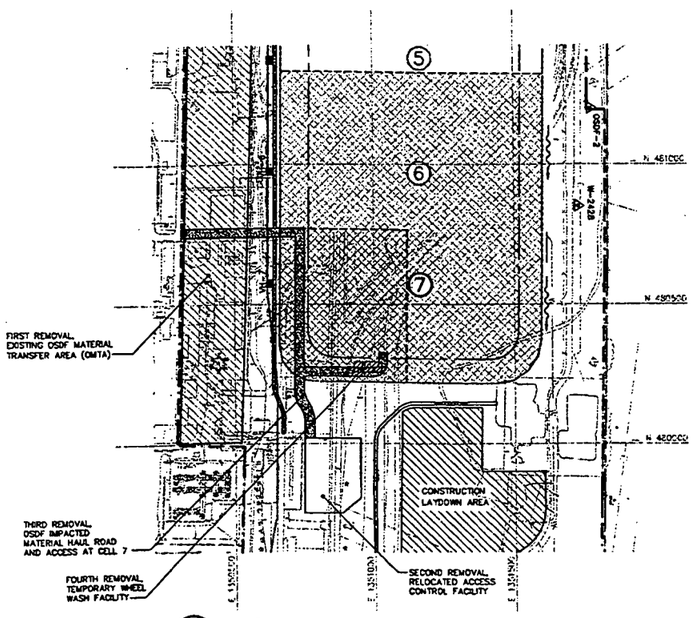
10 DETAIL
STAGE II – CELL 7 PARTIAL CLOSURE IN PROGRESS
SCALE: 1" = 100'

LEGEND

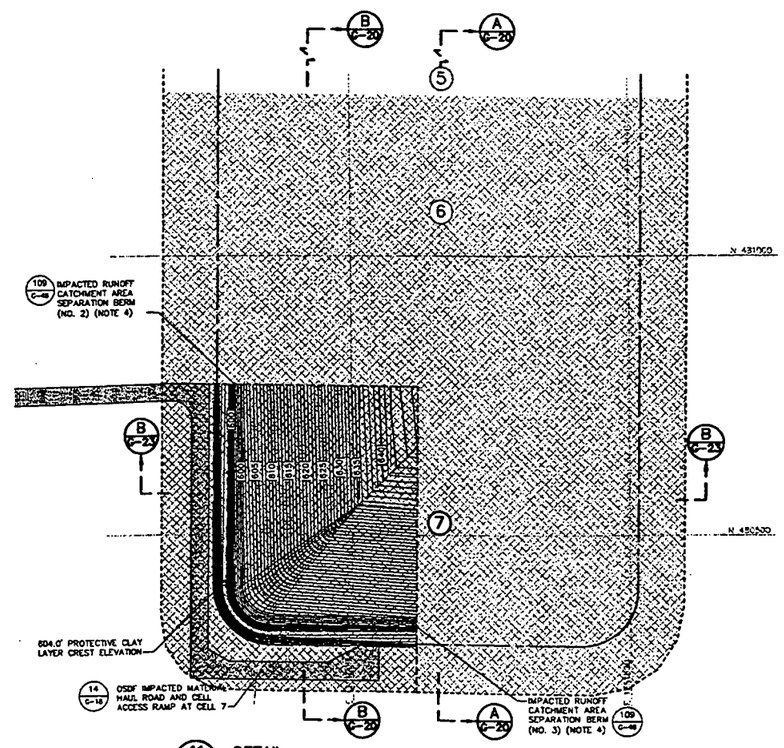
- PROTECTIVE CLAY ELEVATION (FEET) (NOTE 2)
- PROTECTIVE LAYER ELEVATION (FEET)
- IMPACTED MATERIAL ELEVATION (FEET) (NOTE 2)
- PERIMETER BERM BASELINE
- APPROXIMATE LIMIT OF FINAL COVER SYSTEM CONSTRUCTION
- BATTERY LIMIT
- FEMP PROPERTY LINE
- CONSTRUCTION CONTROL POINT
- DRAINAGE FLOW DIRECTION CELL DESIGNATION
- CELL DESIGNATION
- NON-IMPACTED RUNOFF AREA (NOTE 5)
- IMPACTED RUNOFF AREA (NOTES 6)
- ACCESS CORRIDOR

FINAL COVER SYSTEM STAGED CLOSURE CONSTRUCTION CONTROL POINTS

POINT NO.	NORTHING	EASTING	ELEVATION
6500	480891.13	1350763.11	–
6501	480890.53	1350811.81	–
6502	480888.02	1351016.97	–
6503	480887.32	1351074.68	–
6504	480886.24	1351162.50	–
6505	480885.17	1351250.31	–
6506	480884.47	1351308.02	–
6507	480882.47	1351471.22	–
6508	480881.88	1351519.73	–
6509	480770.29	1350761.63	–
6510	480769.70	1350810.13	–
6511	480767.12	1350812.45	–
6512	480766.48	1351073.20	–
6513	480765.91	1351120.20	–
6514	480660.34	1351118.81	–
6515	480608.03	1351118.27	–
6516	480547.17	1351117.53	–
6517	480354.56	1351115.17	–
6518	480306.05	1351114.58	–
6600	480633.94	1350822.05	588.24
6601	480600.81	1350863.79	589.03
6602	480528.71	1350865.97	589.33
6603	480351.78	1351011.02	593.30
6604	480353.69	1350855.15	591.74
6605	480409.99	1350807.22	590.14
6606	480633.94	1350822.05	588.24
6607	480599.08	1350865.65	588.00
6608	480565.11	1350899.99	597.93
6609	480539.70	1350901.52	598.45
6610	480360.76	1351048.24	603.48
6611	480363.10	1350858.66	601.57
6612	480409.85	1350804.78	600.12
6613	480566.39	1350794.60	596.87
6614	480599.59	1350823.61	587.57



12 DETAIL
FINAL IMPACTED MATERIAL REMOVAL SEQUENCE (BETWEEN STAGE II AND III)
SCALE: 1" = 200'



11 DETAIL
STAGE III – CELL 7 FINAL CLOSURE IN PROGRESS
SCALE: 1" = 100'

NOTES:

1. THIS DRAWING SHOWS STAGED SEQUENCE FOR FILLING OF CELL 7 IMPACTED RUNOFF CATCHMENT AREA AND CLOSURE OF CELLS 6 AND 7.
2. IMPACTED MATERIAL ELEVATIONS, EXCLUDING IMPACTED RUNOFF CATCHMENT AREA, REPRESENT TOP OF SELECT IMPACTED MATERIAL.
3. RUNOFF 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 CLOSURE OF CELLS 6 AND 7 AND FILLING OF CELL 7 IMPACTED RUNOFF CATCHMENT AREA IN ACCORDANCE WITH SPECIFICATION SECTIONS 13010 AND 02270.
4. IMPACTED RUNOFF CATCHMENT AREA SEPARATION BERM SHALL BE CONSTRUCTED PRIOR TO DIVERSION OF RUNOFF FROM UPSTREAM AREAS TO OSDF SURFACE-WATER MANAGEMENT SYSTEM.
5. REPRESENTS AREA WHERE A MINIMUM OF 2 LIFTS OF COMPACTED CLAY CAP IS PLACED AND RUNOFF IS DIVERTED TO OSDF SURFACE-WATER MANAGEMENT SYSTEM.
6. REPRESENTS AREA DISCHARGING IMPACTED RUNOFF TO CELL 7 IMPACTED RUNOFF CATCHMENT AREA.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
C	03.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JMD	KRD	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JMD	KRD	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	KRD	JMD	KRD	DCP	JFB

SCALE IN FEET: 100 50 0 100 200

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE V

TITLE:
FINAL COVER SYSTEM STAGED CLOSURE
GRADING PLANS – CELLS 6 AND 7

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

SIGNATURE
29 Jan 2002
DATE

STATE OF OHIO
JOHN T. BECKER
E-38248
REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

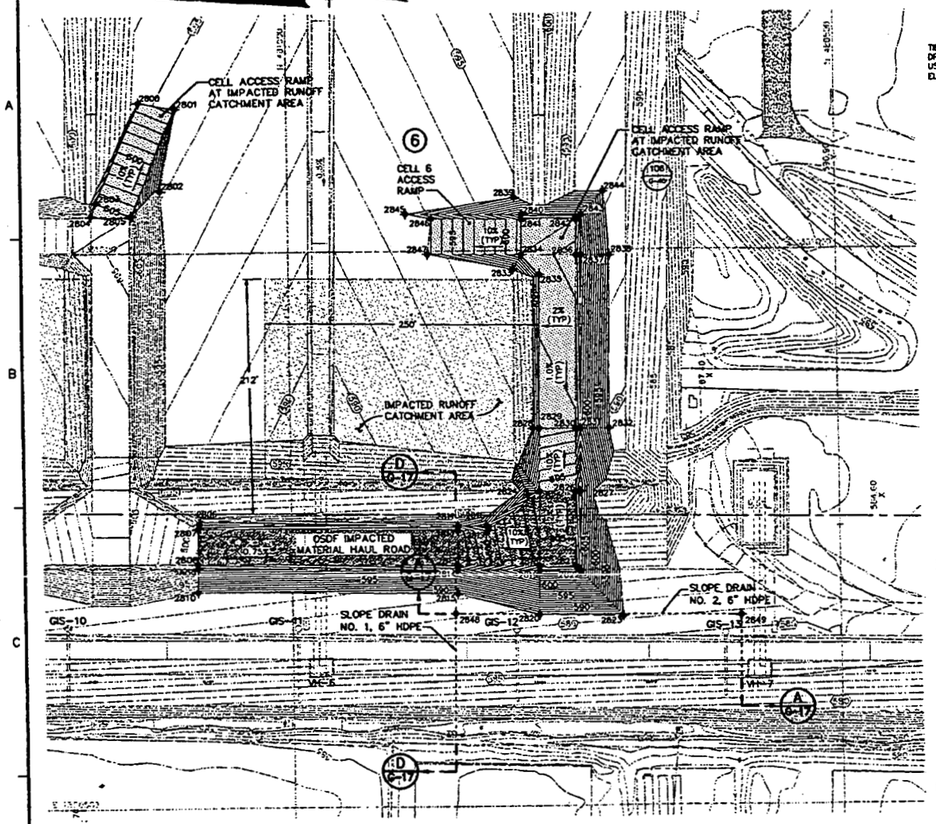
PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	SOX-5000-C-00378
GEOSYNTEC PROJECT NO.:	GO1342-17.6
GEOSYNTEC DOCUMENT NO.:	FD1-0018
SHEET NO.:	C-16
REVISION NO.:	0

000019

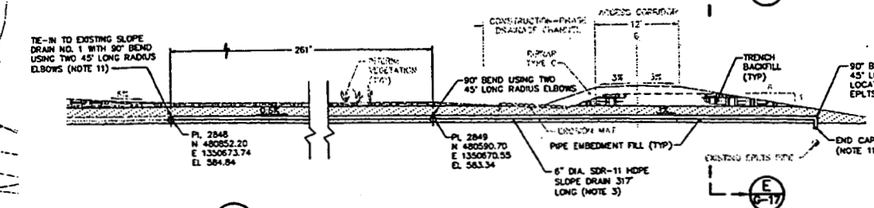
CERTIFIED-FOR-CONSTRUCTION

LEGEND

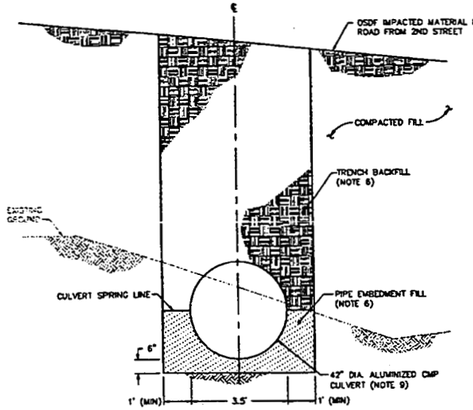
- EXISTING GROUND ELEVATION (FEET)
- FINISHED GRADE ELEVATION (FEET)
- EXISTING SUBGRADE ELEVATION (FEET)
- EXISTING COMPACTED CLAY LINER/PROTECTIVE CLAY LAYER ELEVATION (FEET)
- EXISTING PROTECTIVE LAYER ELEVATION (FEET) (NOTE 2)
- PERIMETER BERM BASELINE
- EXISTING EPLTS PIPE
- EXISTING ILTS PIPE
- CONSTRUCTION CONTROL POINT
- OSDF IMPACTED MATERIAL HAUL ROAD (NOTE 1)
- CELL ACCESS RAMP
- EXISTING CELL DESIGNATION



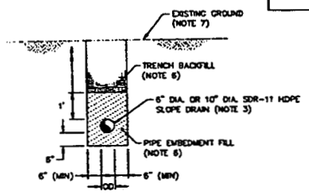
13 / G-1 PLAN
OSDF IMPACTED MATERIAL HAUL ROAD AND CELL ACCESS RAMP AT CELL 6
SCALE: 1" = 50'



A / G-17 SECTION
CELL 6 OSDF IMPACTED MATERIAL HAUL ROAD SLOPE DRAIN NO. 2
SCALE: 1" = 8'



B / G-18 SECTION
CELL 7 OSDF IMPACTED MATERIAL HAUL ROAD 42-IN DIA. CMP CULVERT EMBEDMENT
SCALE: 1" = 2'



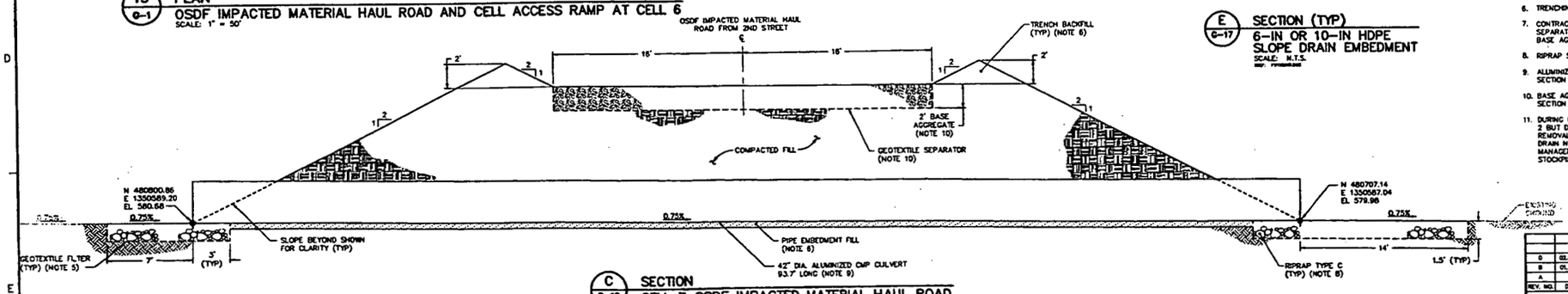
E / G-17 SECTION (TYP)
6-IN OR 10-IN HDPE SLOPE DRAIN EMBEDMENT
SCALE: N.T.S.

OSDF IMPACTED MATERIAL HAUL ROAD AND CELL ACCESS RAMP CONSTRUCTION CONTROL POINTS

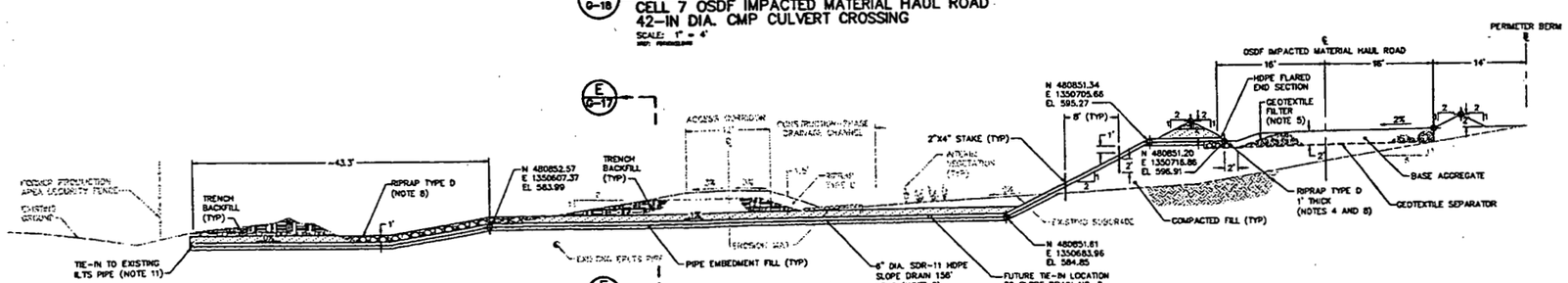
POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
2800	481128.90	1351135.62	595.31	2826	480740.28	1350783.01	605.86
2801	481096.64	1351129.98	594.81	2827	480736.28	1350782.96	607.86
2802	481109.85	1351056.35	594.10	2828	480777.59	1350840.19	597.18
2803	481165.59	1351045.90	605.00	2829	480771.58	1350840.12	600.18
2804	481170.37	1351034.21	605.00	2830	480739.59	1350839.73	600.82
2805	481135.97	1351033.78	605.00	2831	480735.59	1350839.68	602.82
2806	481080.34	1350755.67	601.35	2832	480709.79	1350839.36	589.93
2807	481081.70	1350751.68	599.25	2833	480794.78	1350983.42	594.13
2808	481082.09	1350719.69	598.61	2834	480785.89	1350996.32	601.40
2809	481082.14	1350715.69	600.61	2835	480769.89	1350978.38	601.57
2810	481082.40	1350694.41	589.97	2836	480737.88	1350995.72	602.38
2811	480649.21	1350752.84	599.50	2837	480733.68	1350995.67	604.38
2812	480649.26	1350748.84	597.50	2838	480707.88	1350995.35	591.49
2813	480649.65	1350716.85	596.86	2839	480792.96	1351047.90	594.78
2814	480849.70	1350712.85	598.86	2840	480786.49	1351032.32	603.40
2815	480849.96	1350691.73	588.31	2841	480786.50	1351028.32	601.40
2816	480822.57	1350752.52	602.16	2842	480737.29	1351027.71	601.40
2817	480821.31	1350748.50	600.29	2843	480733.24	1351031.67	603.28
2818	480773.10	1350715.91	604.51	2844	480713.22	1351052.74	592.16
2819	480773.15	1350711.91	606.51	2845	480894.29	1351033.63	592.82
2820	480773.84	1350672.13	586.51	2846	480870.50	1351029.34	593.00
2821	480741.10	1350715.52	604.51	2847	480874.23	1350997.38	592.67
2822	480737.15	1350711.47	606.43				
2823	480898.80	1350670.36	586.19				
2824	480783.46	1350780.35	606.85				
2825	480772.28	1350783.40	605.86				

NOTES:

1. CONTOURS WITHIN SHADED REGION ON OSDF IMPACTED MATERIAL HAUL ROAD AND CELL ACCESS RAMP REPRESENT TOP OF BASE AGGREGATE. BASE AGGREGATE FOR CELL ACCESS RAMP SHALL BE 6 INCHES THICK AND UNDERLAIN BY GEOTEXTILE SEPARATOR. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
2. FOR PROTECTIVE LAYER, SEE NOTE 3 ON SHEET G-19.
3. HDPE SLOPE DRAIN SHALL BE SDR-11 AND IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
4. RIPRAP APRON SHALL BE CONSTRUCTED AT INLET OF 6-INCH HDPE SLOPE DRAIN. RIPRAP APRON SHALL BE 4 FEET WIDE AND CENTERED ON 6-INCH HDPE SLOPE DRAIN.
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.
8. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
9. ALUMINIZED CMP CULVERTS AND JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721.
10. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
11. DURING CONSTRUCTION OF OSDF IMPACTED HAUL ROAD AT CELL 6, INSTALL SLOPE DRAIN NO. 2 BUT DO NOT CONNECT TO SLOPE DRAIN NO. 1 OR EPLTS PIPE. PRIOR TO CUTTING OR REMOVAL OF EXISTING ILTS PIPE SOUTH OF CELL 6, TIE-IN SLOPE DRAIN NO. 2 TO SLOPE DRAIN NO. 1 AND TO EXISTING EPLTS PIPE USING DETAILS TO BE PROVIDED BY CONSTRUCTION MANAGER. REMOVE SLOPE DRAIN NO. 1 SEGMENT LOCATED WEST OF TIE-IN LOCATION AND STOCKPILE MATERIAL AT LOCATIONS APPROVED BY CONSTRUCTION MANAGER.



C / G-18 SECTION
CELL 7 OSDF IMPACTED MATERIAL HAUL ROAD 42-IN DIA. CMP CULVERT CROSSING
SCALE: 1" = 4'



D / G-17 SECTION
CELL 6 OSDF IMPACTED MATERIAL HAUL ROAD SLOPE DRAIN NO. 1
SCALE: 1" = 8'

000020

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DCL BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.04.29	CFC SUBMITTAL TO FF/DOE/EPA	DCP	JAS	KRD	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	DCP	JAS	DCP	DCP	JFB
A	-	NOT ISSUED	-	-	-	-	-

SCALE AS SHOWN

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

CLIENT: FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: IMPACTED MATERIAL HAUL ROAD GRADING PLAN AND DETAILS I

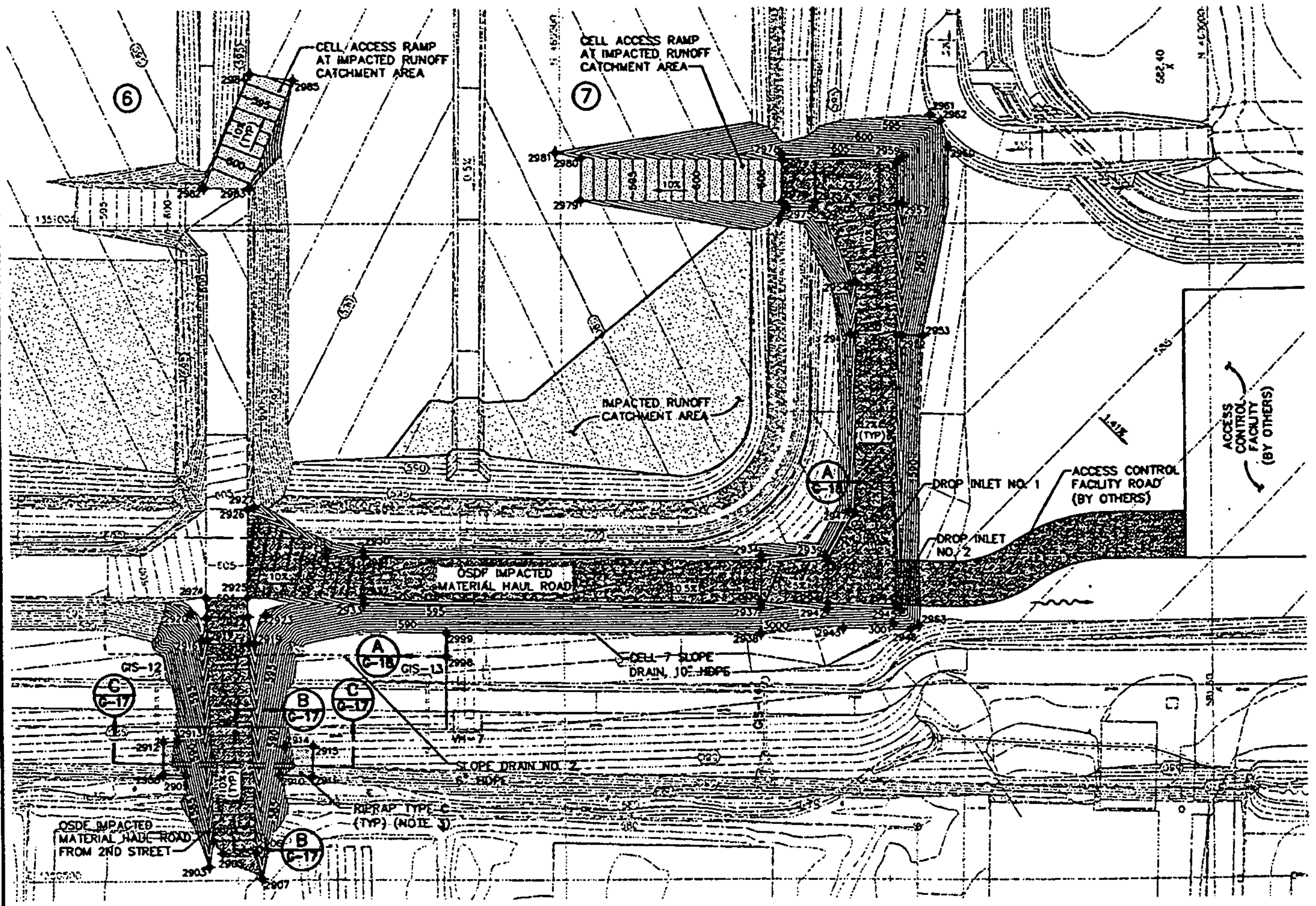
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT BIDDER OR CONSTRUCTION, UNLESS SEALED.

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

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	9021-8000-G-00379
GEOSYNTEC PROJECT NO.:	GC1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0053
SHEET NO.:	G-17
REVISION NO.:	0

4665

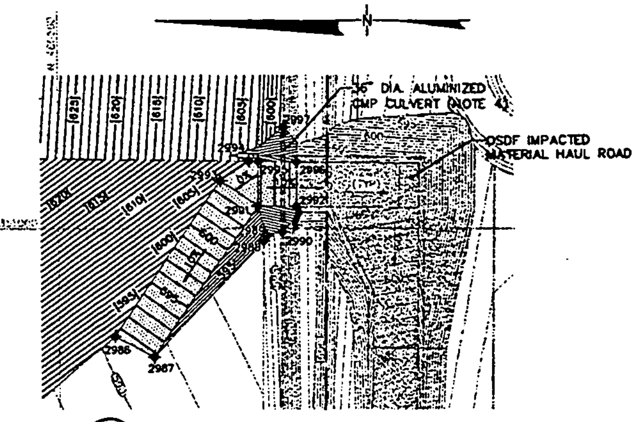


14 PLAN (G-2)
OSDF IMPACTED MATERIAL HAUL ROAD AND CELL ACCESS RAMP AT CELL 7
SCALE: 1" = 50'

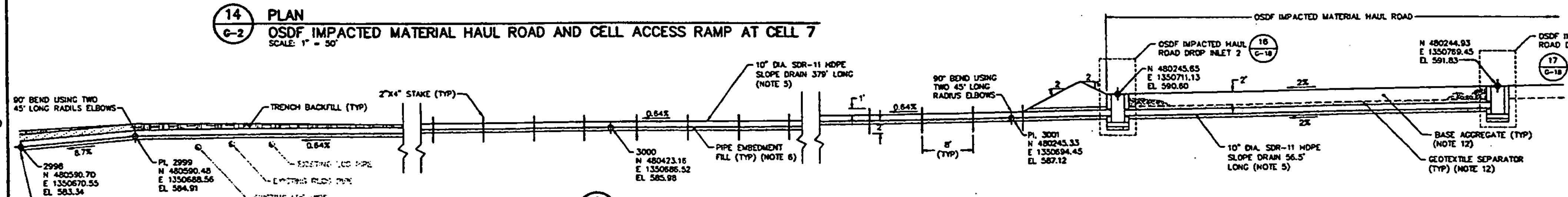
OSDF IMPACTED MATERIAL HAUL ROAD AND ACCESS RAMP CONSTRUCTION CONTROL POINTS							
POINT NO.	NORTHING	EASTING	ELEVATION	POINT NO.	NORTHING	EASTING	ELEVATION
2903	480772.56	1350510.25	586.00	2949	480277.49	1350915.11	597.35
2904	480769.00	1350530.34	586.00	2950	480273.49	1350915.06	595.35
2905	480761.50	1350520.50	585.00	2951	480241.49	1350914.67	594.71
2906	480736.79	1350521.05	585.00	2952	480237.49	1350914.62	596.71
2907	480732.35	1350501.14	585.00	2953	480220.73	1350914.42	588.37
2908	480808.05	1350581.33	-	2954	480277.01	1350954.21	601.38
2909	480790.23	1350580.44	-	2955	480273.00	1350955.16	599.36
2910	480718.36	1350580.16	-	2956	480240.27	1351014.77	604.72
2911	480693.33	1350578.91	-	2957	480236.27	1351014.72	606.72
2912	480807.46	1350606.20	-	2958	480239.88	1351046.77	604.72
2913	480796.06	1350606.58	-	2959	480235.83	1351050.72	606.72
2914	480714.53	1350601.76	-	2960	480199.89	1351058.40	588.80
2915	480692.78	1350602.15	-	2961	480213.83	1351082.93	589.97
2916	480776.38	1350682.98	603.28	2962	480208.05	1351078.46	592.00
2917	480772.39	1350683.24	601.30	2963	480225.62	1350693.31	585.00
2918	480740.32	1350680.52	600.95	2973	480304.27	1351015.55	606.00
2919	480736.32	1350680.43	602.93	2974	480306.72	1351011.58	608.00
2920	480785.34	1350703.70	605.59	2975	480324.81	1351011.80	608.41
2921	480772.77	1350700.30	603.00	2976	480329.28	1351015.86	606.50
2922	480740.77	1350701.00	603.00	2977	480328.87	1351047.85	606.50
2923	480727.74	1350702.10	605.33	2978	480328.82	1351051.85	608.50
2924	480773.10	1350715.91	604.00	2979	480484.25	1351017.75	590.70
2925	480741.10	1350715.52	604.00	2980	480483.86	1351049.75	591.02
2926	480740.28	1350783.01	605.86	2981	480503.81	1351053.99	590.66
2927	480735.70	1350784.88	607.58	2982	480771.73	1351028.14	601.40
2928	480680.59	1350750.79	601.38	2983	480737.29	1351027.71	601.40
2929	480681.73	1350746.80	599.25	2984	480736.15	1351115.04	593.27
2930	480652.65	1350750.44	598.34	2985	480703.89	1351109.40	592.58
2931	480652.70	1350746.44	596.33	2986	480459.13	1350923.00	590.29
2932	480652.82	1350714.44	595.69	2987	480430.32	1350908.42	590.72
2933	480652.84	1350710.44	597.69	2988	480352.02	1350990.98	593.10
2934	480348.32	1350746.70	596.80	2989	480349.95	1350994.48	593.64
2935	480346.37	1350742.70	594.80	2990	480338.97	1350997.69	596.41
2936	480346.77	1350710.70	594.16	2991	480356.19	1351016.18	603.80
2937	480348.81	1350706.70	596.16	2992	480329.26	1351015.85	606.50
2938	480347.08	1350686.54	586.09	2993	480382.55	1351034.32	603.80
2939	480298.70	1350746.12	594.30	2994	480362.63	1351048.26	603.80
2940	480296.38	1350742.09	592.30	2995	480355.80	1351048.18	603.80
2941	480298.77	1350710.09	591.66	2996	480328.87	1351047.85	606.50
2942	480296.82	1350706.09	593.66	2997	480338.05	1351072.75	597.16
2943	480284.83	1350691.11	586.00				
2944	480244.00	1350709.44	590.60				
2945	480240.05	1350705.40	592.60				
2946	480232.17	1350690.57	585.00				
2947	480279.13	1350780.90	594.64				
2948	480275.14	1350779.83	592.64				

LEGEND

600	EXISTING GROUND ELEVATION (FEET)
600	FINISHED GRADE ELEVATION (FEET)
595	EXISTING SUBGRADE ELEVATION (FEET)
	EXISTING COMPACTED CLAY LINER/PROTECTIVE CLAY LAYER ELEVATION (FEET)
	EXISTING PROTECTIVE LAYER ELEVATION (FEET) (NOTE 2)
585	IMPACTED MATERIAL ELEVATION (FEET)
	PERIMETER BERM BASELINE
	EXISTING EPLTS PIPE
ILTS	EXISTING ILTS PIPE
2900	CONSTRUCTION CONTROL POINT
	OSDF IMPACTED MATERIAL HAUL ROAD (NOTE 1)
	CELL ACCESS RAMP
7	EXISTING CELL DESIGNATION



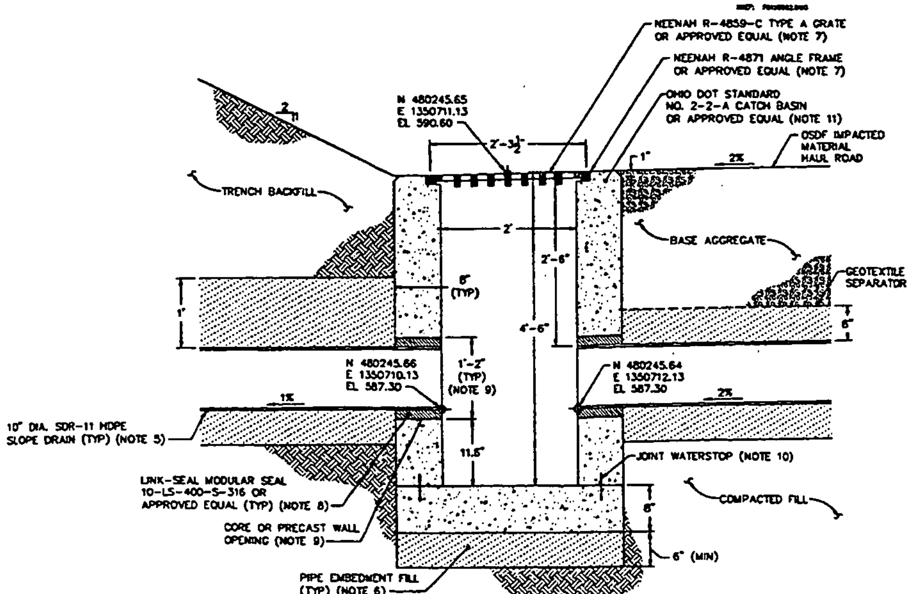
15 DETAIL (G-18)
IMPACTED RUNOFF CATCHMENT AREA ACCESS RAMP AT CLOSURE STAGE I
SCALE: 1" = 50'



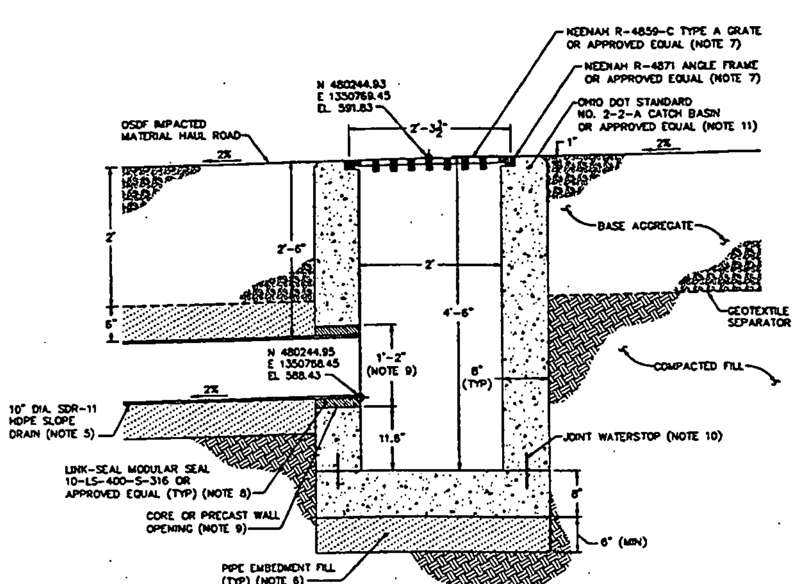
A SECTION (G-18)
CELL 7 OSDF IMPACTED MATERIAL HAUL ROAD SLOPE DRAIN
SCALE: 1" = 8'

NOTES:

1. CONTOURS WITHIN SHADED REGION ON OSDF IMPACTED MATERIAL HAUL ROAD AND ACCESS RAMPS REPRESENT TOP OF BASE AGGREGATE. BASE AGGREGATE FOR ACCESS RAMPS SHALL BE 6 INCHES THICK AND UNDERLAIN BY GEOTEXTILE SEPARATOR. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
2. FOR PROTECTIVE LAYER, SEE NOTE 3 ON SHEET G-19.
3. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
4. ALUMINIZED CMP CULVERT AND JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721. CONTROL POINTS SHOWN AT ENDS OF CULVERT CORRESPOND TO INVERT LOCATIONS.
5. HDPE SLOPE DRAIN SHALL BE SDR-11 AND IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
6. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215
7. NEENAH R-4859-C TYPE A GRATE AND NEENAH R-4871 ANGLE FRAME MANUFACTURED BY NEENAH FOUNDARY COMPANY OF NEENAH, WISCONSIN.
8. LINK-SEAL MODULAR SEAL 10-LS-400-S-316 MANUFACTURED BY PIPELINE SEAL AND INSULATOR, INC. OF HOUSTON, TEXAS.
9. CORED OR PRECAST WALL OPENING TO MEET LINK-SEAL MODULAR SEAL OR APPROVED EQUALS MANUFACTURERS RECOMMENDED TOLERANCES FOR INSTALLATION.
10. JOINT WATERSTOP SHALL BE CONTINUOUS AND SHALL HAVE A MINIMUM CONCRETE COVER OF 2 INCHES. FOR PRECAST DROP INLET, NO JOINT WATERSTOP IS REQUIRED IF BOTTOM IS CAST AS ONE PIECE WITH RISER SECTION FOR A MINIMUM RISER SECTION HEIGHT OF 2 FEET.
11. INSTALL STORM DRAIN PROTECTION FOR DROP INLETS IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
12. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.



16 DETAIL (G-18)
OSDF IMPACTED MATERIAL HAUL ROAD DROP INLET NO. 2
SCALE: 1" = 1'



17 DETAIL (G-18)
OSDF IMPACTED MATERIAL HAUL ROAD DROP INLET NO. 1
SCALE: 1" = 1'

000021

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	DCP	JAS	KRD	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	DCP	JAB	KRD	DCP	JFB
A	-	NOT ISSUED	-	-	-	-	-

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: IMPACTED MATERIAL HAUL ROAD GRADING PLAN AND DETAILS II

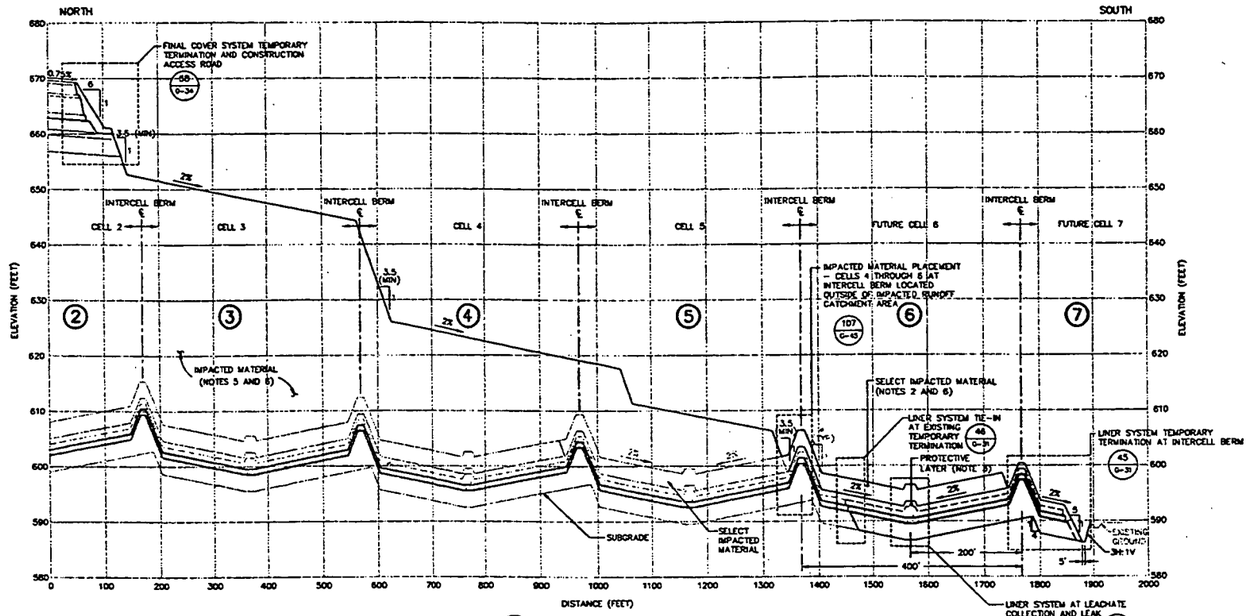
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION UNLESS SEALED.

SIGNATURE
29 Jan 2002
DATE

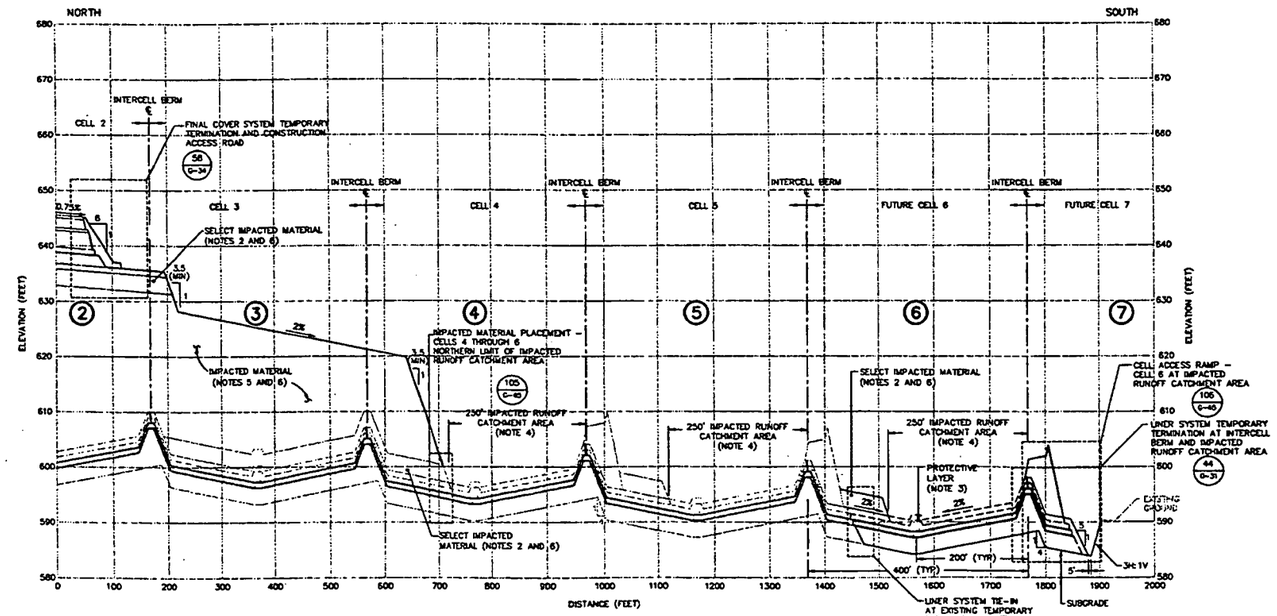
STATE OF OHIO — JOHN F. BEECH E-58246 — REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-6000-C-00380
GEOSYNTEC PROJECT NO.:	GQ1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0054
SHEET NO.:	G-18
REVISION NO.:	0



A G-3 **SECTION**
NORTH-SOUTH CELL 6
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'



B G-3 **SECTION**
NORTH-SOUTH CELL 6 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 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 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. EXISTING IMPACTED MATERIAL GRADES SHOWN ARE APPROXIMATE.
6. IMPACTED MATERIAL PLACEMENT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
C	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JMD	KRD	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JMD	KRD	DCP	JFB
A	-	NOT ISSUED	-	-	-	-	-

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY - PHASE V

TITLE: OSDF NORTH-SOUTH SECTIONS I

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

29 Jan 2002

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

GEOSYNTEC CONSULTANTS

PROJECT NO.:	29105
CONTRACT NO.:	95PS005026
FDMP DRAWING NO.:	90X-5000-G-00381
GEOSYNTEC PROJECT NO.:	G01342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0021
SHEET NO.:	G-19
REVISION NO.:	0

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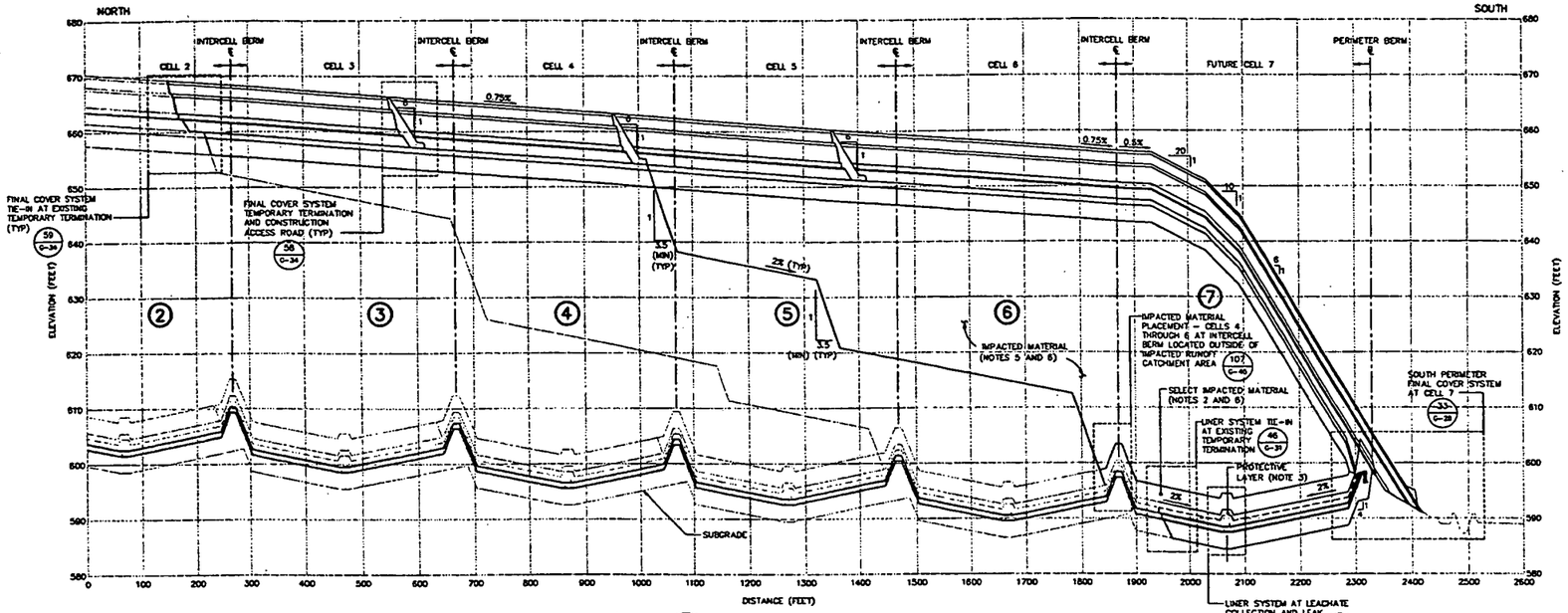
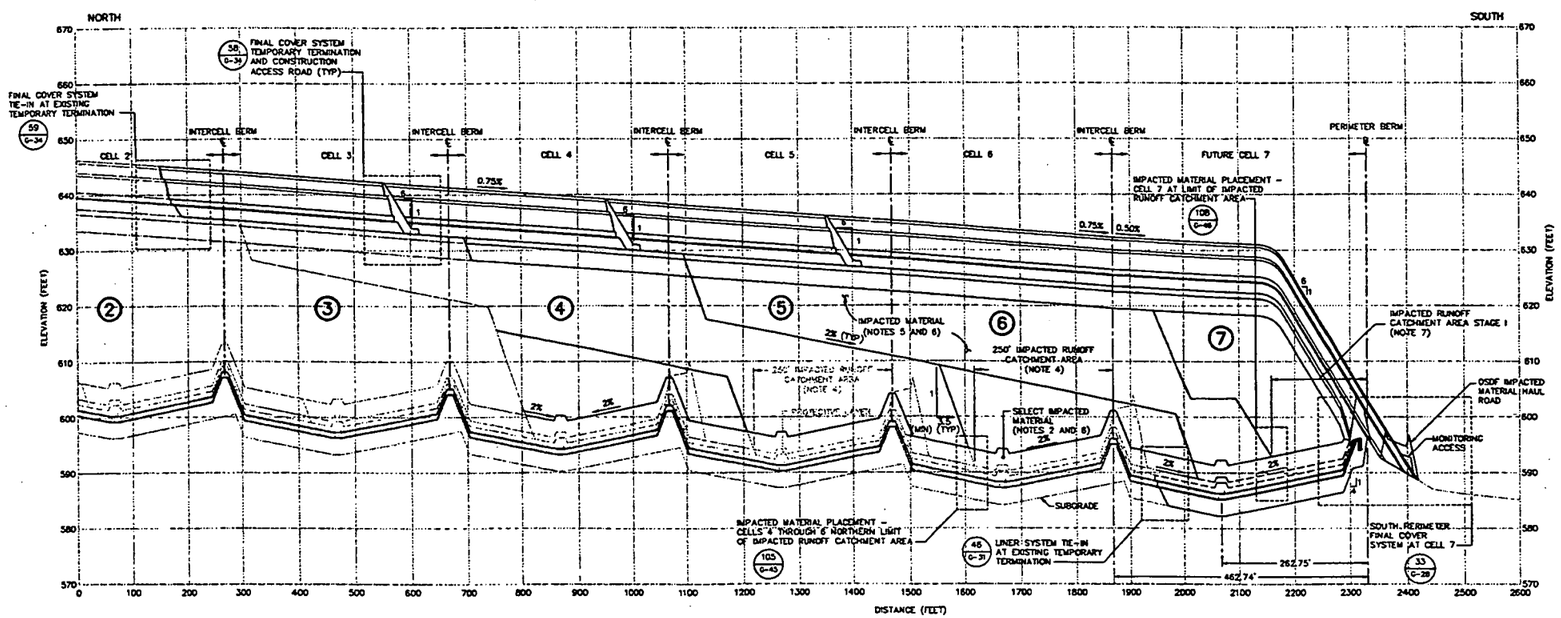


A C-6 SECTION
NORTH–SOUTH CELL 7
HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'



B D-6 SECTION
NORTH–SOUTH CELL 7 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 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 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. EXISTING IMPACTED MATERIAL GRADES SHOWN ARE APPROXIMATE.
6. IMPACTED MATERIAL PLACEMENT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
7. DEVELOP AND MAINTAIN CELL 7 IMPACTED RUNOFF CATCHMENT AREA AS SHOWN ON DRAWINGS C-16 AND C-46 AND IN ACCORDANCE WITH SPECIFICATION SECTIONS 13010 AND 02270.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JWD	KRD	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JWD	KRD	DCP	JFB
A	–	NOT ISSUED	–		–	–	

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

CLIENT: **FLUOR FERNALD, INC.**

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: OSDF NORTH–SOUTH SECTIONS II

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29 Jan 2002

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

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-5000-C-00382
GEOSYNTEC PROJECT NO.:	CQ1342-17,4
GEOSYNTEC DOCUMENT NO.:	FDT-0022
SHEET NO.:	G-20
REVISION NO.:	0

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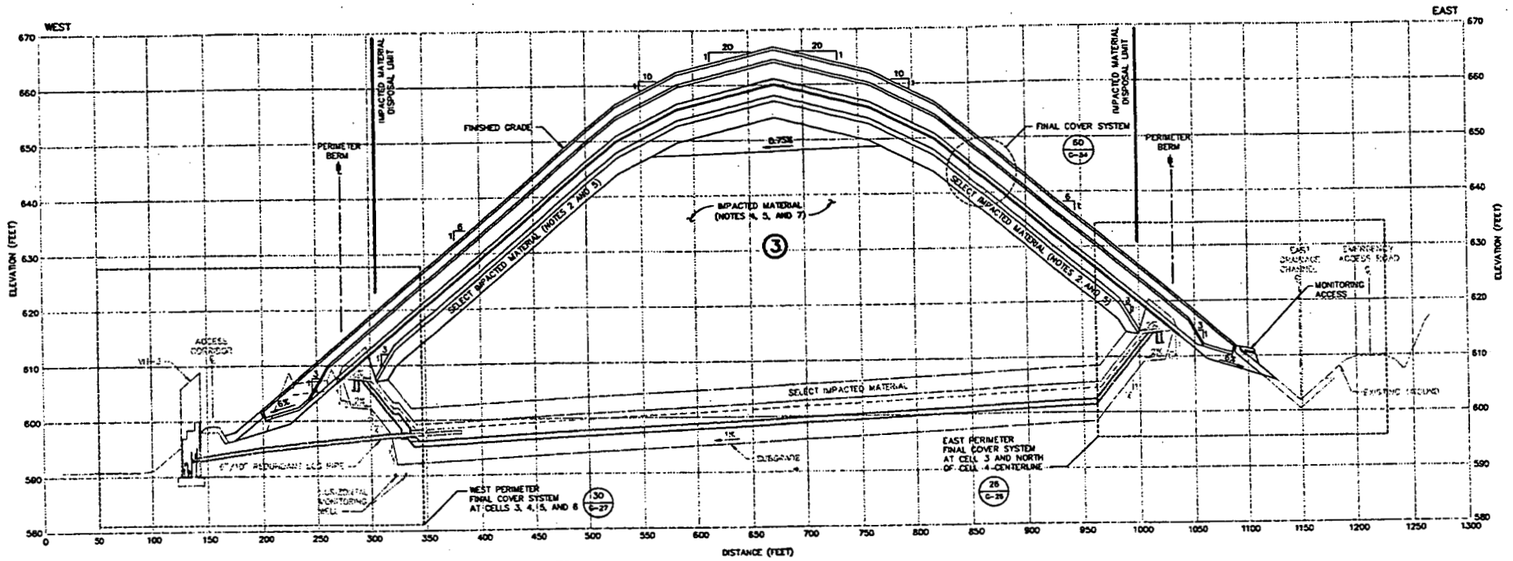
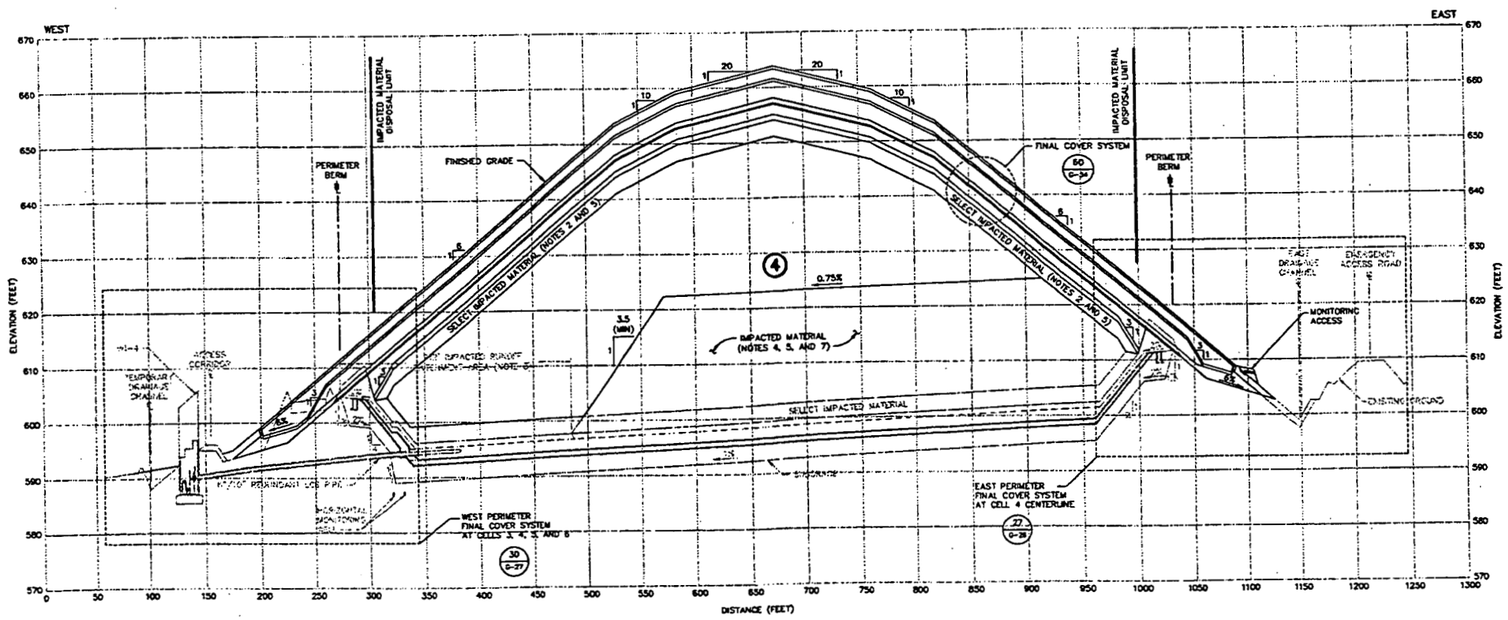


A G-3 SECTION
WEST-EAST CELL 3 AT IMPACTED RUNOFF CATCHMENT AREA
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'



B G-3 SECTION
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 1 IMPACTED MATERIAL.
3. 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 DOWNGRADIENT CELL IS CONSTRUCTED AND OPERATIONAL.
4. 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.
5. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
6. 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.
7. EXISTING IMPACTED MATERIAL GRADES SHOWN ARE APPROXIMATE.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JMO	KRD	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JMO	KRD	DGP	JFB
A	-	NOT ISSUED	-	-	-	-	-

50 25 0 50 100 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 V

TITLE: OSDF WEST-EAST SECTIONS I

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

SIGNATURE
29 Jan 2002
DATE

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

GEOSYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30329 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-5000-C-00383
GEOSYNTEC PROJECT NO.:	GD1342-17.4
GEOSYNTEC DOCUMENT NO.:	FD1-0023
SHEET NO.:	C-21
REVISION NO.:	0

000024

CERTIFIED-FOR-CONSTRUCTION

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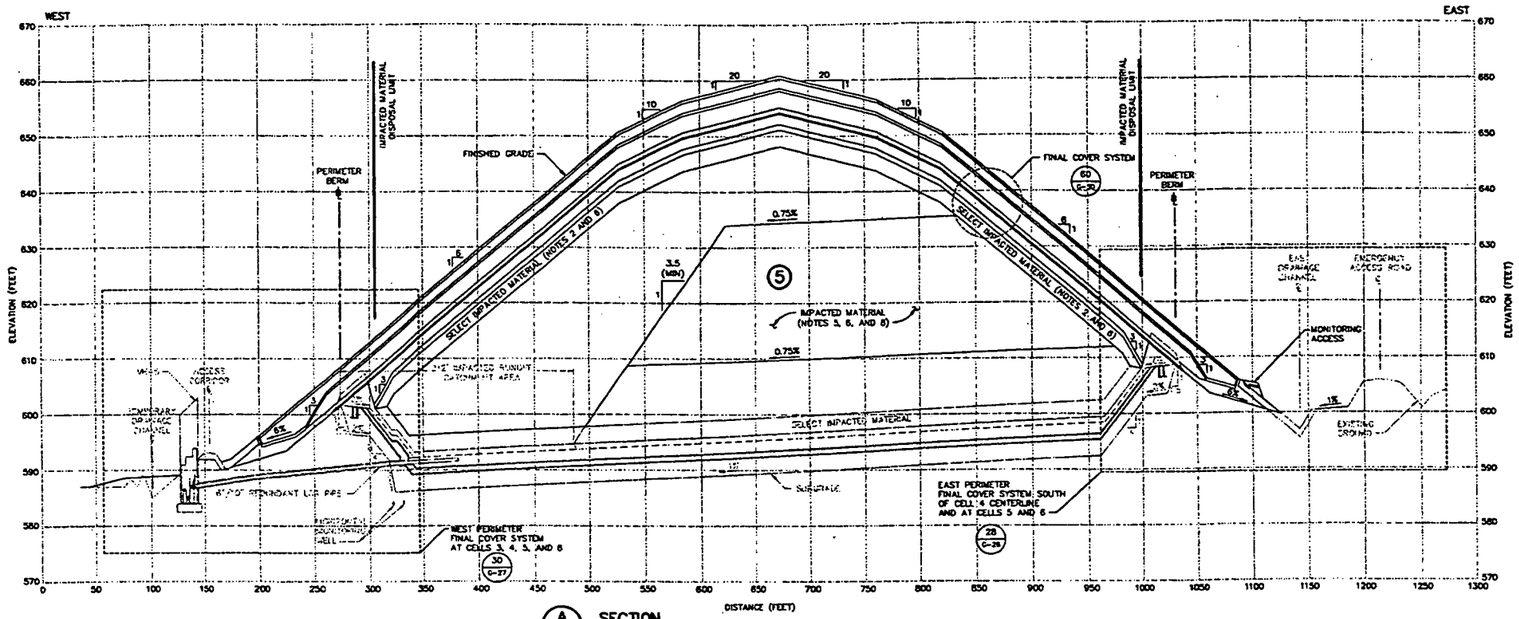
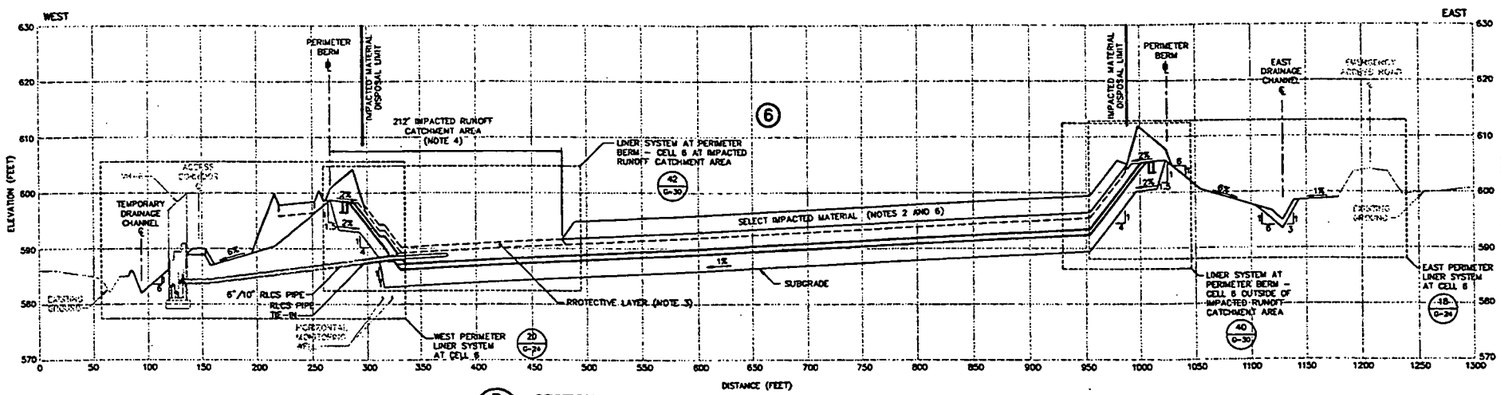
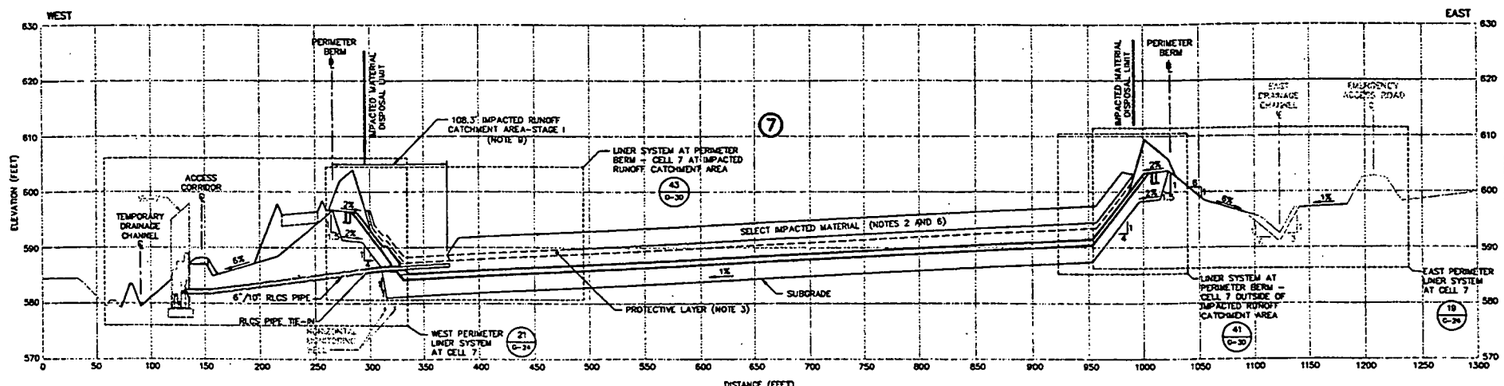


A/G-3 SECTION
WEST-EAST CELL 5 AT IMPACTED RUNOFF CATCHMENT AREA
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'



B/C-4 SECTION
WEST-EAST CELL 6 AT IMPACTED RUNOFF CATCHMENT AREA
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'



C/C-8 SECTION
WEST-EAST CELL 7 AT IMPACTED RUNOFF CATCHMENT AREA
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'

000025

CERTIFIED-FOR-CONSTRUCTION

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 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 DOWNGRADIENT CELL IS CONSTRUCTED AND OPERATIONAL.
5. IMPACTED MATERIAL INTERIM SLOPES SHALL BE NO STEEPER THAN 3.3H: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.
9. DEVELOP AND MAINTAIN CELL 7 IMPACTED RUNOFF CATCHMENT AREA AS SHOWN ON DRAWINGS G-16 AND G-46 AND IN ACCORDANCE WITH SPECIFICATION SECTIONS 13010 AND 02270.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CTC SUBMITTAL TO FF/DOE/EPA	KRD	JWD	KRD	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JWD	KRD	DCP	JFB
A	-	NOT ISSUED	-	-	-	-	-

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

AUDIT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY - PHASE V

TITLE:
OSDF WEST-EAST SECTIONS II

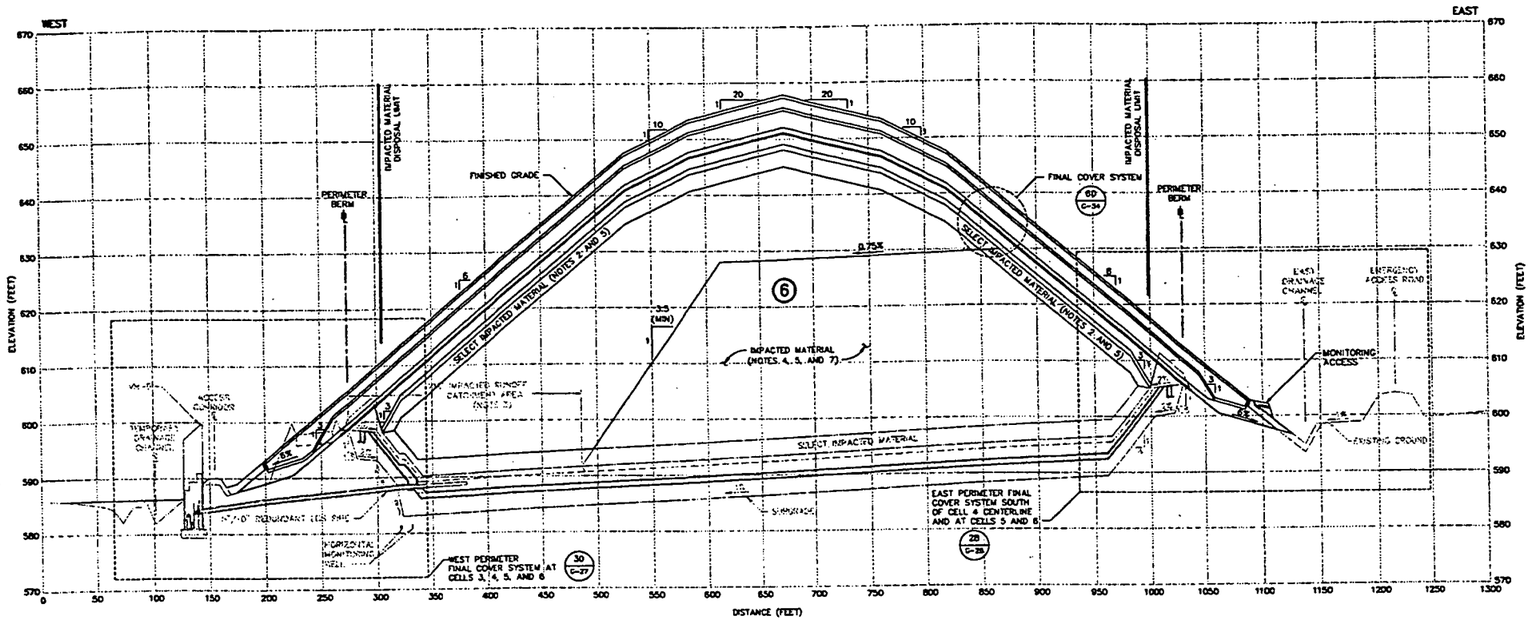
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

29 Jan 2012

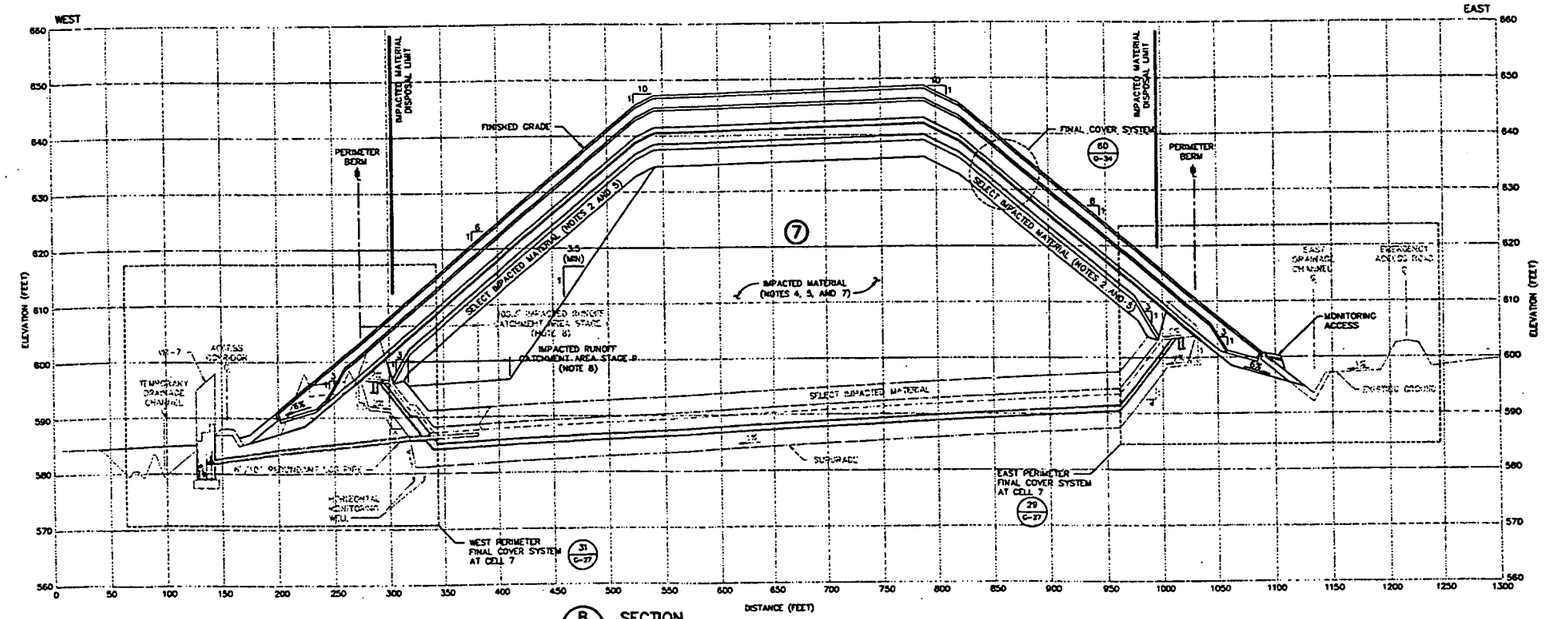
STATE OF OHIO — JOHN T. BEECH E-39246 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30043 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	90X-6000-C-00384
GEOSYNTEC PROJECT NO.:	GO1342-17.4
GEOSYNTEC DOCUMENT NO.:	FD1-0024
SHEET NO.:	C-22
REVISION NO.:	0



A 9-11 SECTION
WEST–EAST CELL 6 AT IMPACTED RUNOFF CATCHMENT AREA
HORIZONTAL SCALE: 1" = 50'
VERTICAL SCALE: 1" = 10'



B C-11 SECTION
WEST–EAST CELL 7 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. 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.
4. 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.
5. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
6. LDS, LCS, AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605 AND TERMINATE AT THE UPGRADIENT END WITH A 6-INCH DIA MOLDED END CAP.
7. EXISTING IMPACTED MATERIAL GRADES SHOWN ARE APPROXIMATE.
8. DEVELOP AND MAINTAIN CELL 7 IMPACTED RUNOFF CATCHMENT AREA AS SHOWN ON DRAWINGS C-15 AND C-46 AND IN ACCORDANCE WITH SPECIFICATION SECTIONS 13010 AND 02270.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FT/DOE/EPA	KRD	JWO	KRD	DGP	JPB
B	01.12.17	PRE-FINAL SUBMITTAL TO FT/DOE	KRD	JWO	KRD	DGP	JPB
A	–	NOT ISSUED	–	–	–	–	–

50 25 0 50 100 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 V

TITLE: OSDF WEST–EAST SECTIONS III

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

J.H. Beck
SIGNATURE
29 Jan 2002
DATE

STATE OF OHIO
JOHN H. BECK
E-58246
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30329 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-5000-C-00385
GEOSYNTEC PROJECT NO.:	501342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0025
SHEET NO.:	C-23
REVISION NO.:	0

000026

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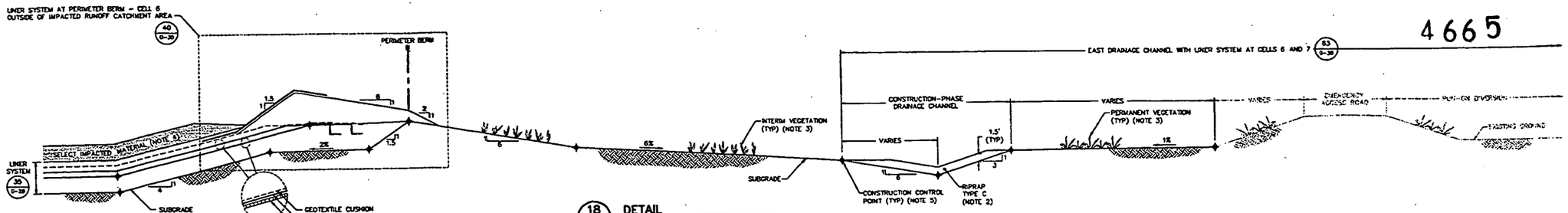
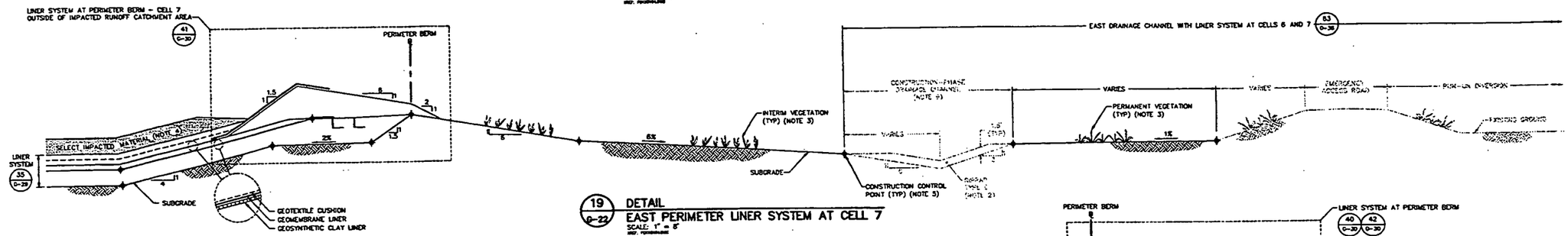
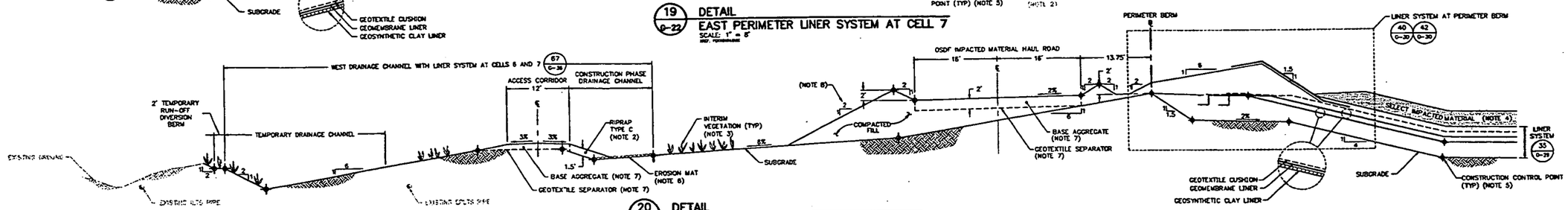
4665



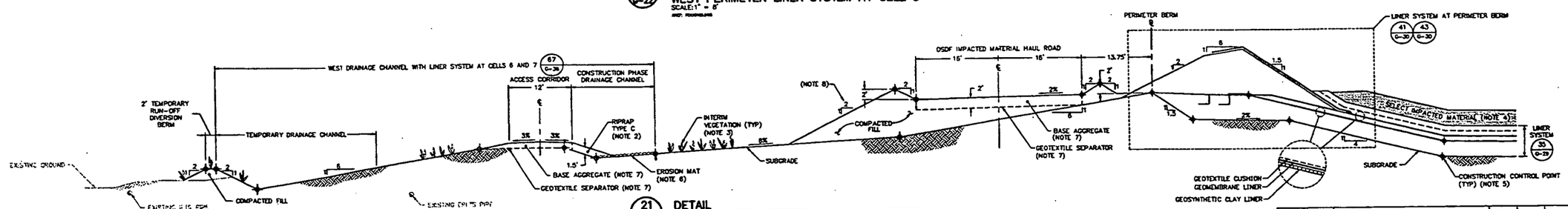
18 G-22 DETAIL
EAST PERIMETER LINER SYSTEM AT CELL 6
SCALE: 1" = 8'



19 G-22 DETAIL
EAST PERIMETER LINER SYSTEM AT CELL 7
SCALE: 1" = 8'



20 G-22 DETAIL
WEST PERIMETER LINER SYSTEM AT CELL 6
SCALE: 1" = 8'



21 G-22 DETAIL
WEST PERIMETER LINER SYSTEM AT CELL 7
SCALE: 1" = 8'

000027

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. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
4. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THICKNESS OF SELECT IMPACTED MATERIAL MAY BE REDUCED TO 2 FEET IF THE FIRST LIFT OF IMPACTED MATERIAL TO BE PLACED OVER SELECT IMPACTED MATERIAL IS CATEGORY 1 IMPACTED MATERIAL. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 13010.
5. CONSTRUCTION CONTROL POINTS FOR SUBGRADE, COMPACTED CLAY LINER, AND OSDF IMPACTED MATERIAL HAUL ROAD ARE PROVIDED ON DRAWINGS G-4, G-6, G-7, G-17, AND G-18.
6. EROSION MAT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
7. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
8. CRUSTING AGENT SHALL BE APPLIED TO OSDF IMPACTED HAUL ROAD EMBANKMENT SIDE SLOPE AS REQUIRED TO MINIMIZE EROSION AND BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
9. CONSTRUCTION-PHASE DRAINAGE CHANNEL ALONG EAST PERIMETER OF CELL 7 WILL BE CONSTRUCTED PRIOR TO CONSTRUCTION OF CELL 7 LINER SYSTEM.

CERTIFIED–FOR–CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	JAS	LMC	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	PBG	LMC	DCP	JFB
A	–	NOT ISSUED	–	–	–	–	–

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: CELL PERIMETER DETAILS I

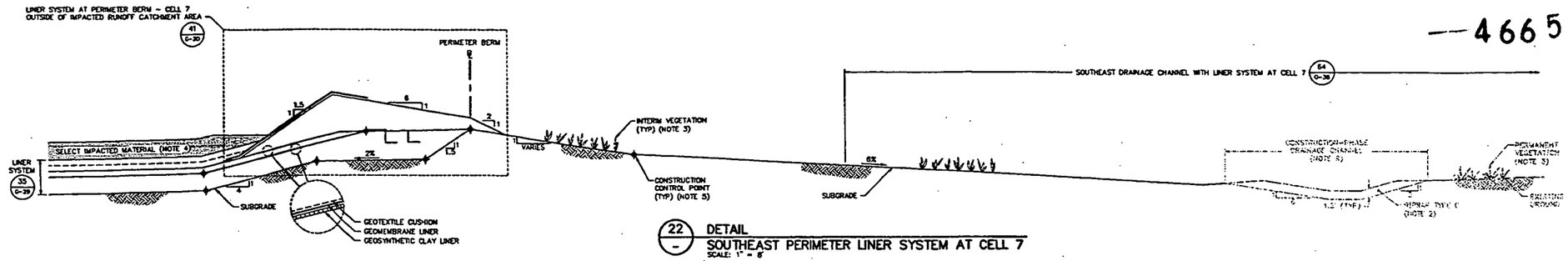
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE
29 Sep 2002
DATE

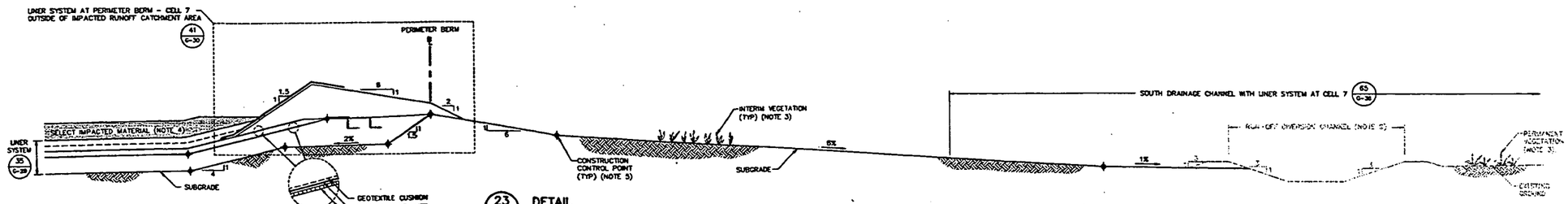
STATE OF OHIO
JOHN BEECH
E-38246
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

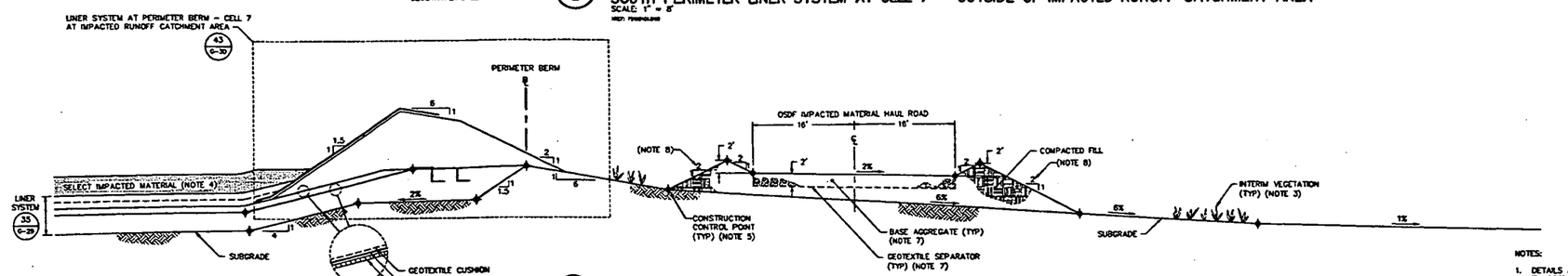
PROJECT NO.:	20105
CONTRACT NO.:	95PS005076
FDMP DRAWING NO.:	904-6000-C-00388
GEOSYNTEC PROJECT NO.:	001542-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0026
SHEET NO.:	G-24
REVISION NO.:	0



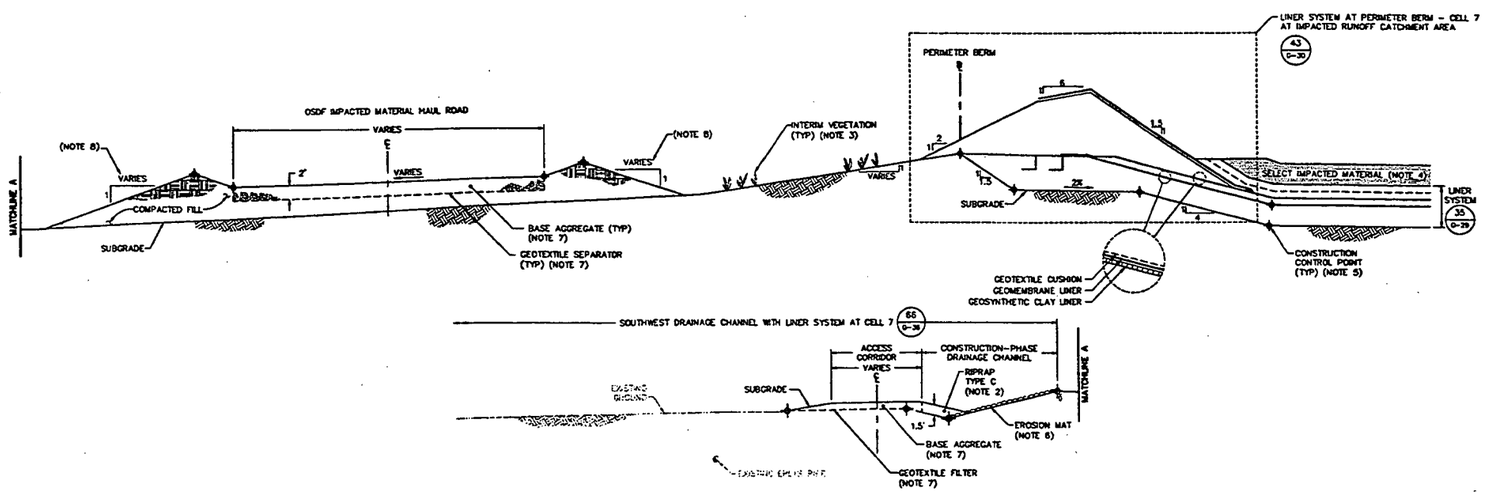
22 DETAIL
SOUTHEAST PERIMETER LINER SYSTEM AT CELL 7
SCALE: 1" = 8'



23 DETAIL
SOUTH PERIMETER LINER SYSTEM AT CELL 7 – OUTSIDE OF IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 8'



24 DETAIL
SOUTH PERIMETER LINER SYSTEM AT CELL 7 – INSIDE OF IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 8'



25 DETAIL
SOUTHWEST PERIMETER LINER SYSTEM AT CELL 7
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. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
4. A MINIMUM THICKNESS OF 3 FEET OF SELECT IMPACTED MATERIAL SHALL BE PLACED ABOVE THE PROTECTIVE LAYER AND BELOW THE CONTOURING LAYER. THICKNESS OF SELECT IMPACTED MATERIAL MAY BE REDUCED TO 2 FEET IF THE FIRST LIFT OF IMPACTED MATERIAL TO BE PLACED OVER SELECT IMPACTED MATERIAL IS CATEGORY 1 IMPACTED MATERIAL. IMPACTED MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 13010.
5. CONSTRUCTION CONTROL POINTS FOR SUBGRADE, COMPACTED CLAY LINER, AND OSDF IMPACTED MATERIAL HAUL ROAD ARE PROVIDED ON DRAWINGS G-6, G-7, AND G-18.
6. EROSION MAT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
7. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
8. CRUSTING AGENT SHALL BE APPLIED TO OSDF IMPACTED HAUL ROAD EMBANKMENT SIDESLOPES AS REQUIRED TO MINIMIZE EROSION AND BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
9. CONSTRUCTION-PHASE DRAINAGE CHANNEL ALONG SOUTHEAST CORNER OF CELL 7 AND RUN-OFF DIVERSION CHANNEL WILL BE CONSTRUCTED PRIOR TO CONSTRUCTION OF CELL 7 LINER SYSTEM.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	JAS	LMC	DOP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	PBC	LMC	DOP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE V

TITLE:
CELL PERIMETER DETAILS II

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

SIGNATURE
29 Jan 2012
DATE

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

GEO SYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005026
FDMP DRAWING NO.:	90X-5000-C-00387
GEOSYNTEC PROJECT NO.:	GO1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0027
SHEET NO.:	G-25
REVISION NO.:	0

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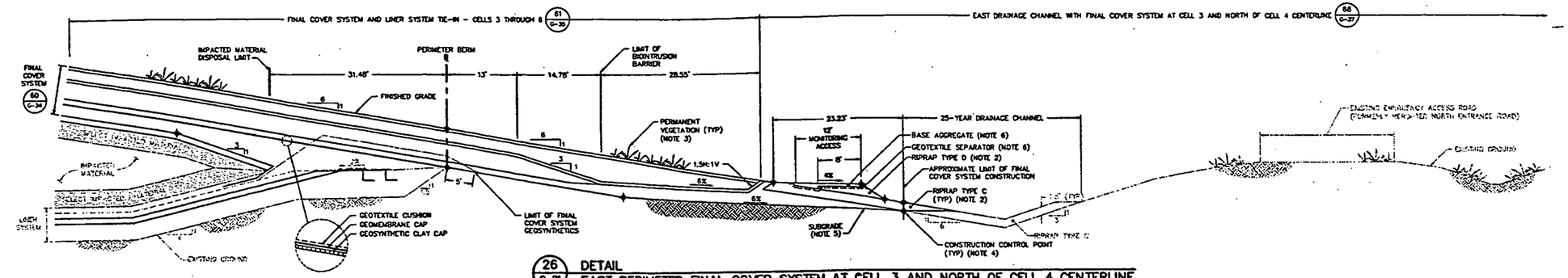
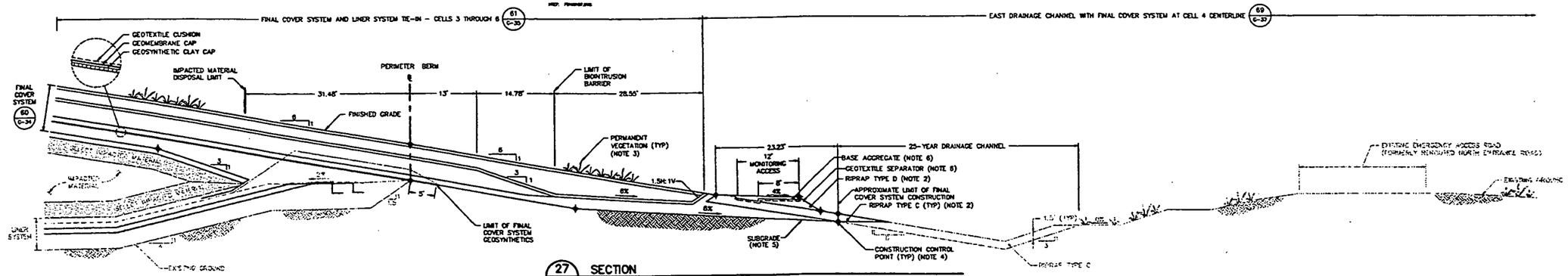
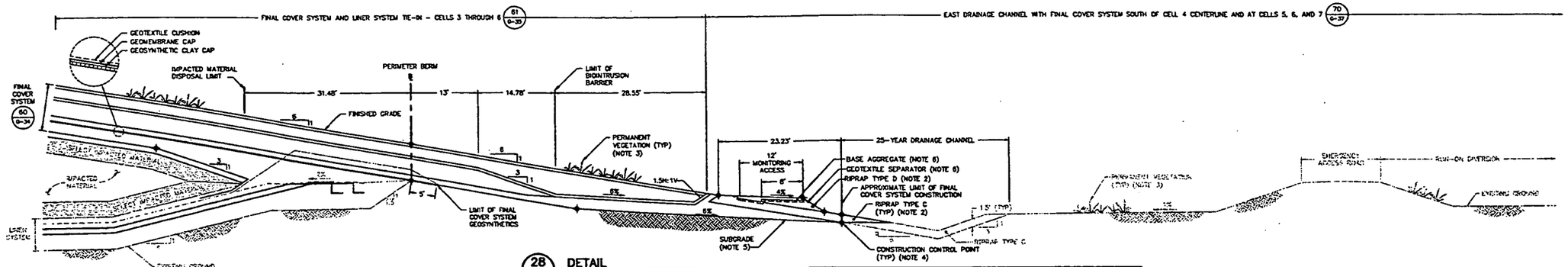


26 G-21 **DETAIL**
EAST PERIMETER FINAL COVER SYSTEM AT CELL 3 AND NORTH OF CELL 4 CENTERLINE
SCALE: 1" = 8'



27 G-21 **SECTION**
EAST PERIMETER FINAL COVER SYSTEM AT CELL 4 CENTERLINE
SCALE: 1" = 8'



28 G-22 **DETAIL**
EAST PERIMETER FINAL COVER SYSTEM SOUTH OF CELL 4 CENTERLINE AND AT CELLS 5 AND 6
SCALE: 1" = 8'

000029

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. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
4. CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER, COMPACTED CLAY CAP, AND FINAL COVER SYSTEM ARE PROVIDED ON DRAWINGS G-10 THROUGH G-15.
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 DRAWINGS G-3 AND G-4.
6. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CTC SUBMITTAL TO FF/DOE/EPA	TCZ	JWO	LMG	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TCZ	PBG	LMG	DGP	JFB
A	-	NOT ISSUED	-	-	-	-	-

SCALE AS SHOWN

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

AUDIT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY - PHASE V

TITLE:
CELL PERIMETER DETAILS III

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

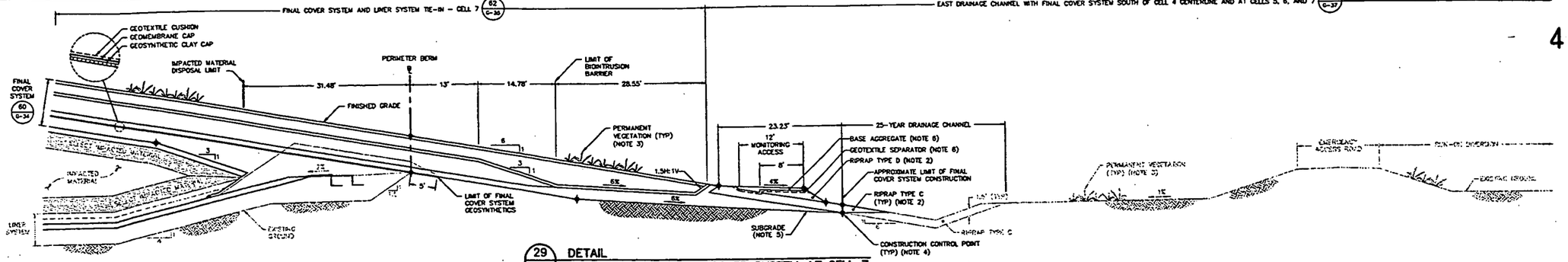
SIGNATURE
29 Jan 2002
DATE

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

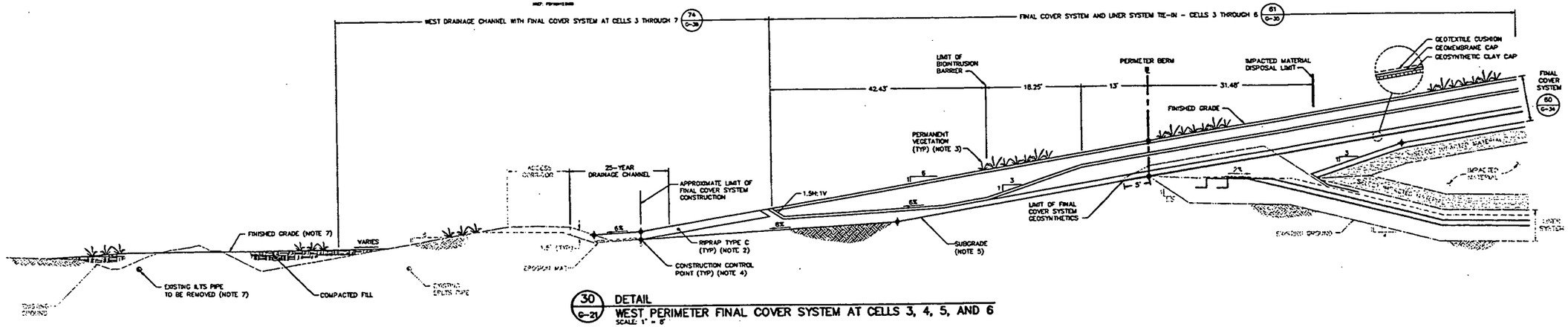
GEOSYNTEC CONSULTANTS
1000 LAKE ANNIE DRIVE
ATLANTA, GEORGIA 30307 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS000028
FEMP DRAWING NO.:	90X-6000-C-00388
GEOSYNTEC PROJECT NO.:	GO1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0026
SHEET NO.:	G-26
REVISION NO.:	0

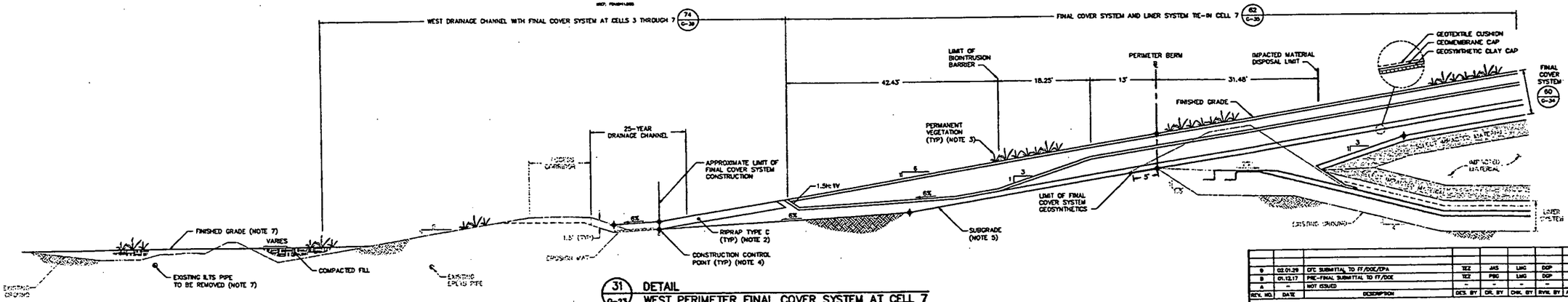
4665



29 (G-23) DETAIL
EAST PERIMETER FINAL COVER SYSTEM AT CELL 7
SCALE: 1" = 8'



30 (G-21) DETAIL
WEST PERIMETER FINAL COVER SYSTEM AT CELLS 3, 4, 5, AND 6
SCALE: 1" = 8'



31 (G-23) DETAIL
WEST PERIMETER FINAL COVER SYSTEM AT CELL 7
SCALE: 1" = 8'

000030

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. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
4. CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER, COMPACTED CLAY CAP, AND FINAL COVER SYSTEM ARE PROVIDED ON DRAWINGS G-10 THROUGH G-15.
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 DRAWINGS G-3, G-4, AND G-8.
6. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
7. CONTRACTOR SHALL REMOVE EXISTING INTERIM LEACHATE TRANSMISSION SYSTEM PIPE AND TEMPORARY RUN-OFF DIVERSION BERM AFTER ADJACENT CELL CAPS ARE FULLY VEGETATED. CONTRACTOR SHALL PLACE COMPACTED FILL AS NECESSARY, TO PROVIDE POSITIVE DRAINAGE TO FORMER PRODUCTION AREA AND AWAY FROM OSDF FACILITY.

CERTIFIED–FOR–CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
9	02.01.29	DTC SUBMITTAL TO FF/DOE/EPA	TEZ	JAS	LMG	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	PBG	LMG	DGP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: CELL PERIMETER DETAILS IV

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

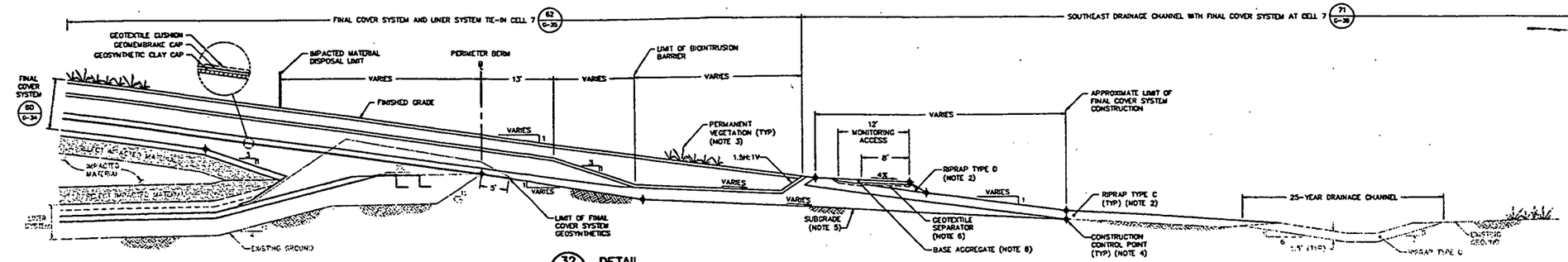
SIGN-DATE: 29 Jan 2002
DATE

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

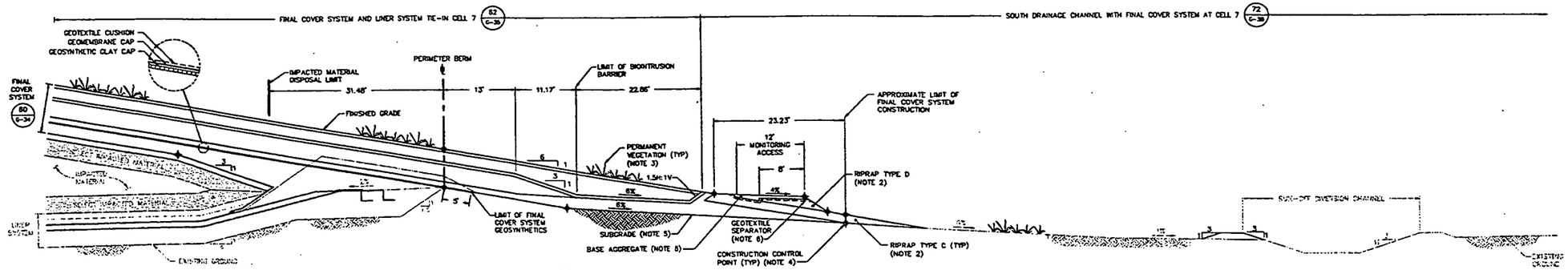
GEOSYNTEC CONSULTANTS
1980 USE HEARD DRIVE
ATLANTA, GEORGIA 30340 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-6000-C-00389
GEOSYNTEC PROJECT NO.:	GO1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0029
SHEET NO.:	G-27
REVISION NO.:	0

4665



32 / - DETAIL
SOUTHEAST PERIMETER FINAL COVER SYSTEM AT CELL 7
SCALE: 1" = 8'



33 / C-20 DETAIL
SOUTH PERIMETER FINAL COVER SYSTEM AT CELL 7
SCALE: 1" = 8'

34 / - DETAIL
SOUTHWEST PERIMETER FINAL COVER SYSTEM AT CELL 7
SCALE: 1" = 8'

000031

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. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
4. CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER, COMPACTED CLAY CAP, AND FINAL COVER SYSTEM ARE PROVIDED ON DRAWINGS C-11, C-13, AND C-15.
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 C-6.
6. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TCZ	JAS	LMD	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TCZ	PBG	LMD	DCP	JFB
A	-	NOT ISSUED	-	-	-	-	-

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY - PHASE V

TITLE: CELL PERIMETER DETAILS V

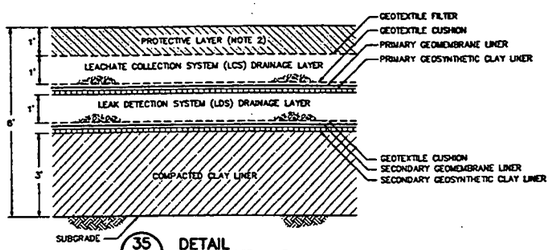
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT BIDDING OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE
29 Jan 2012
DATE

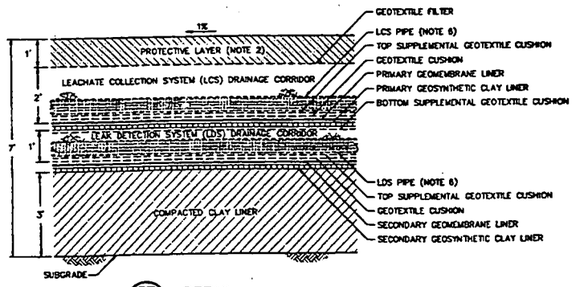
STATE OF OHIO
JOHN E. BECKER
E-58248
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
3400 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30329 USA

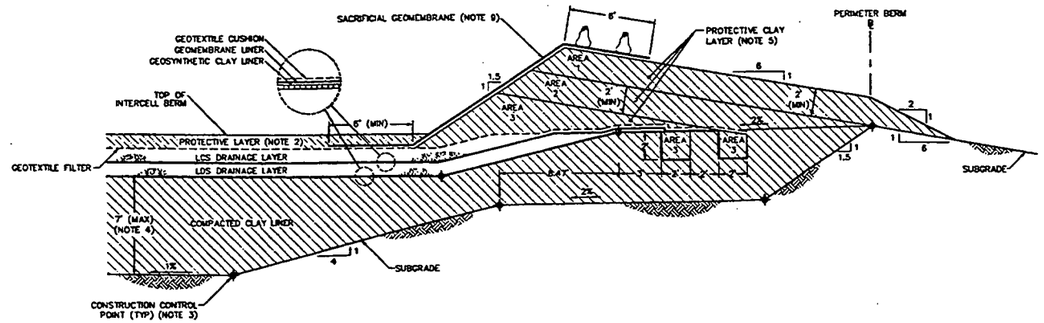
PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	90X-5000-C-00390
GEOSYNTEC PROJECT NO.:	GO1342-17.4
GEOSYNTEC DOCUMENT NO.:	FO1-0030
SHEET NO.:	C-26
REVISION NO.:	0



35 / G-24 DETAIL
LINER SYSTEM
SCALE: 1" = 2'



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



36 / – DETAIL
LINER SYSTEM AT INTERCELL BERM AND PERIMETER BERM INTERSECTION – EAST PERIMETER
SCALE: 1" = 4'

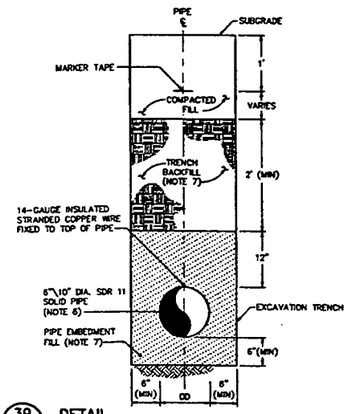
LINER SYSTEM COMPONENT SUMMARY

GEOSYNTHETICS (NOTE 8)

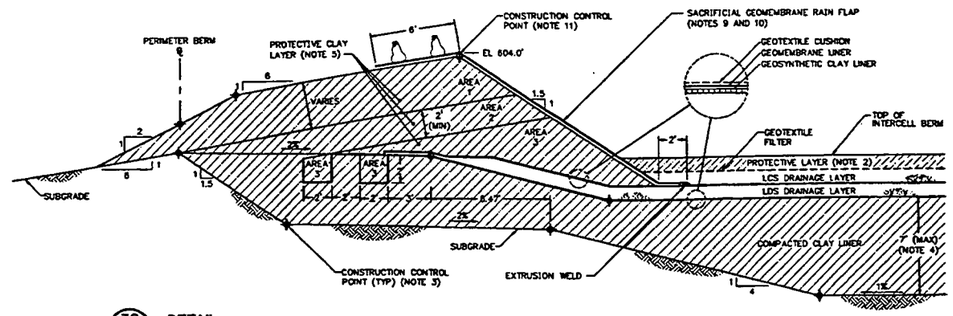
SYMBOL	COMPONENT	SPECIFICATION SECTION
	PRIMARY GEOMEMBRANE LINER	02770
	SECONDARY GEOMEMBRANE LINER	02770
	PRIMARY GEOSYNTHETIC CLAY LINER	02772
	SECONDARY GEOSYNTHETIC CLAY LINER	02772
	GEOTEXTILE FILTER	02714
	GEOTEXTILE CUSHION	02714
	SUPPLEMENTAL GEOTEXTILE CUSHION	02714

SOILS

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



39 / G-32 DETAIL
LDS, LCS, OR RLCS PIPE EMBEDMENT
SCALE: 1" = 1'



38 / – DETAIL
LINER SYSTEM AT INTERCELL BERM AND PERIMETER BERM INTERSECTION – WEST PERIMETER
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. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED GRANULAR MATERIAL IN IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED MATERIAL IN REMAINING ACTIVE CELL AREAS EXCLUDING 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. CONSTRUCTION CONTROL POINTS FOR SUBGRADE AND COMPACTED CLAY LINER ARE PROVIDED ON DRAWINGS G-4, G-5, AND G-7.
4. THICKNESS OF COMPACTED CLAY LINER ALONG CENTERLINE OF INTERCELL BERM VARIES FROM A MINIMUM OF 3 FEET TO A MAXIMUM OF 7 FEET.
5. PROTECTIVE CLAY LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02225. EQUIPMENT USED ABOVE GEOMEMBRANE LINER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02770.
6. LDS, LCS, AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
7. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
8. GEOSYNTHETICS FOR THE LINER SYSTEM WILL BE SUPPLIED BY FLUOR FERNALD, INC., AS SPECIFIED IN PART 6 OF THE CONTRACT DOCUMENTS.
9. SACRIFICIAL GEOMEMBRANE AND SACRIFICIAL GEOMEMBRANE RAIN FLAP SHALL CONSIST OF HIGH DENSITY POLYETHYLENE APPROVED BY CONSTRUCTION MANAGER AND PROVIDED BY FLUOR FERNALD, INC. CONTRACTOR SHALL SECURE IN PLACE SACRIFICIAL GEOMEMBRANE AND SACRIFICIAL GEOMEMBRANE RAIN FLAP WITH SANDBAGS TO PREVENT DAMAGE BY WIND.
10. SACRIFICIAL GEOMEMBRANE RAIN FLAP SHALL BE EXTRUSION WELDED TO THE INTERCELL BERM GEOMEMBRANE RAIN FLAP.
11. CONSTRUCTION CONTROL POINTS FOR LIMITS OF EL. 604.0' PROTECTIVE CLAY LAYER CREST ON DRAWING G-11.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. B
0	02.01.29	CTC SUBMITTAL TO FF/DOE/EPA	KBD	JWO	LJC	DOP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TCZ	JWO	LJC	DOP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE V

TITLE:
LINER SYSTEM DETAILS I

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

29 Jan 2002

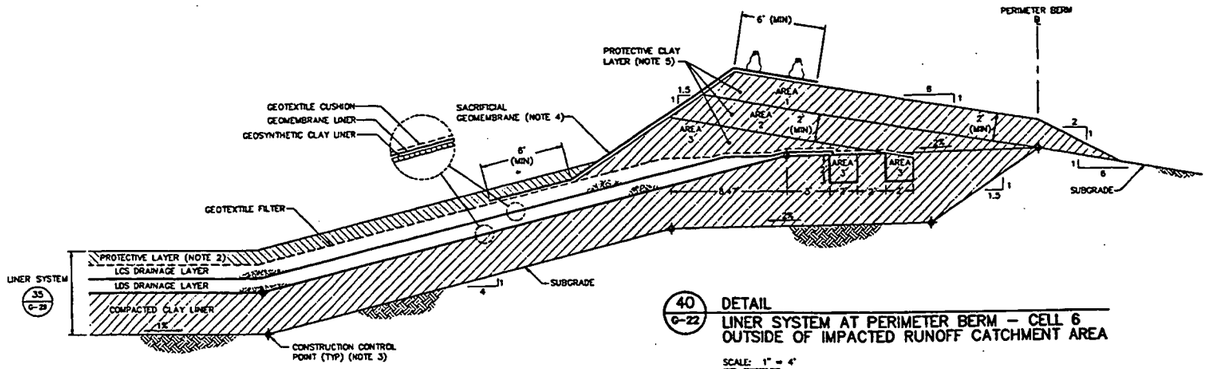
STATE OF OHIO — JOHN T. BEECH E-58246 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE ATLANTA, GEORGIA 30342 USA

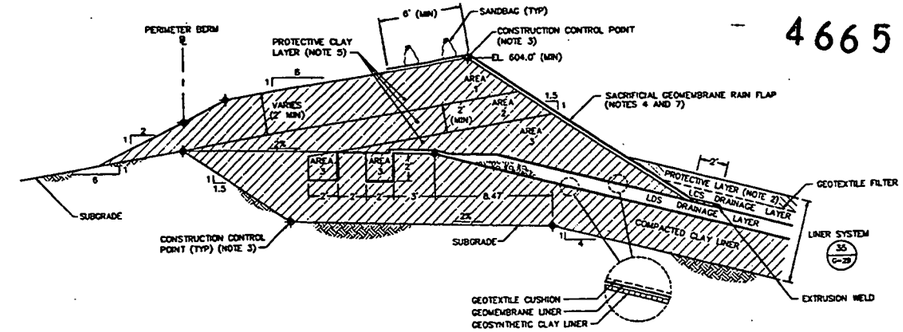
PROJECT NO.:	20105
CONTRACT NO.:	95PS005076
FDRP DRAWING NO.:	90X-5000-C-0031
GEOSYNTEC PROJECT NO.:	GD1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0031
SHEET NO.:	G-29
REVISION NO.:	0

000032

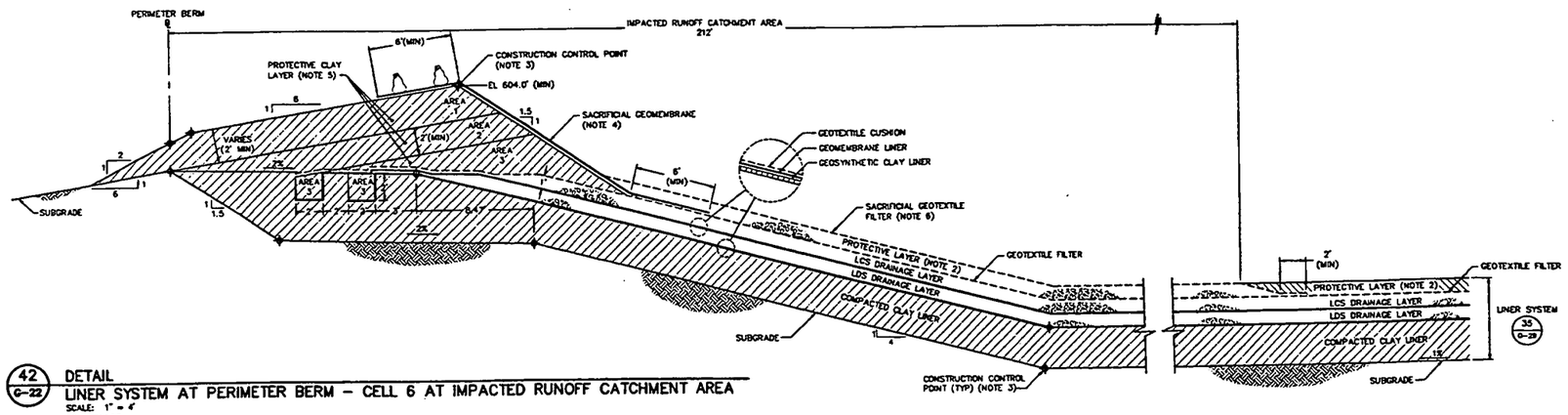
CERTIFIED-FOR-CONSTRUCTION



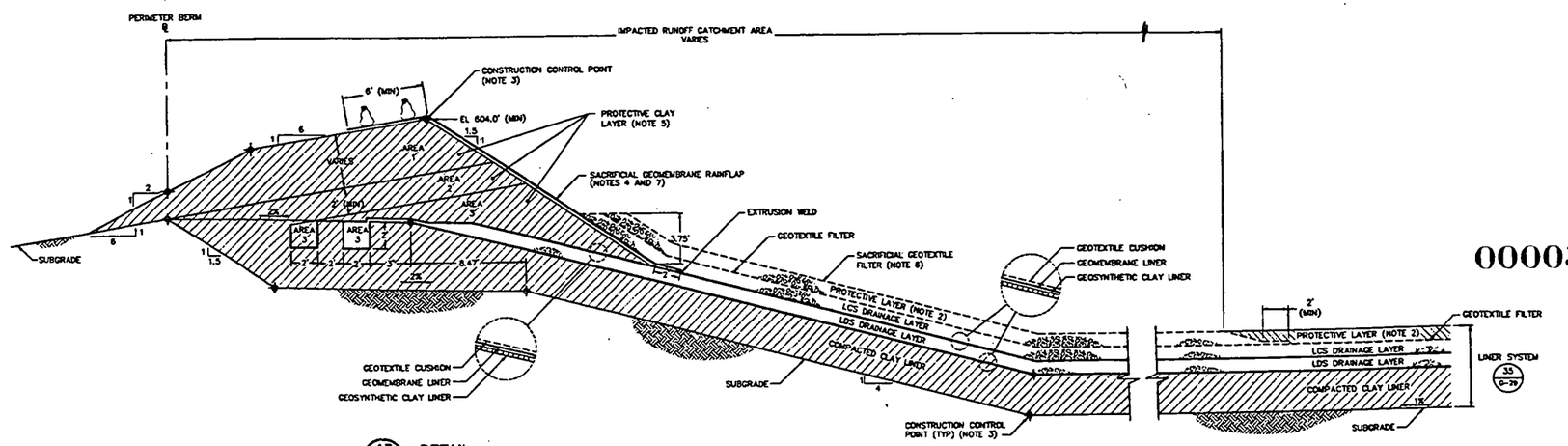
40 G-22 DETAIL
LINER SYSTEM AT PERIMETER BERM – CELL 6 OUTSIDE OF IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



41 G-22 DETAIL
LINER SYSTEM AT PERIMETER BERM – CELL 7 OUTSIDE OF IMPACTED RUNOFF CATCHMENT AREA
(NOTE 7)
SCALE: 1" = 4'



42 G-22 DETAIL
LINER SYSTEM AT PERIMETER BERM – CELL 6 AT IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



43 G-22 DETAIL
LINER SYSTEM AT PERIMETER BERM – CELL 7 AT IMPACTED RUNOFF CATCHMENT AREA
(NOTE 7)
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. PROTECTIVE LAYER SHALL CONSIST OF NON-IMPACTED GRANULAR MATERIAL IN IMPACTED RUNOFF CATCHMENT AREA AND IMPACTED MATERIAL IN REMAINING ACTIVE CELL AREAS EXCLUDING 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. CONSTRUCTION CONTROL POINTS FOR SUBGRADE AND COMPACTED CLAY LINER ARE PROVIDED ON DRAWINGS G-4, G-6, AND G-7. CONSTRUCTION CONTROL POINTS FOR 604.0' CREST ELEVATION FOR PROTECTIVE CLAY LAYER SHOWN ON DRAWING G-11.
4. SACRIFICIAL GEOMEMBRANE AND SACRIFICIAL GEOMEMBRANE RAIN FLAP SHALL CONSIST OF HIGH DENSITY POLYETHYLENE, AS APPROVED BY CONSTRUCTION MANAGER AND PROVIDED BY FLUOR FERNALD, INC. CONTRACTOR SHALL SECURE IN-PLACE SACRIFICIAL GEOMEMBRANE WITH SANDBAGS TO PREVENT DAMAGE FROM WIND.
5. PROTECTIVE CLAY LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02225. EQUIPMENT USED ABOVE GEOMEMBRANE LINER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02770.
6. SACRIFICIAL GEOTEXTILE FILTER SHALL BE INSTALLED OVER GRANULAR PROTECTIVE LAYER WITHIN IMPACTED RUNOFF CATCHMENT AREA.
7. SACRIFICIAL GEOMEMBRANE RAIN FLAP SHALL BE CONTINUOUSLY EXTRUSION WELDED TO PRIMARY GEOMEMBRANE LINER ALONG WEST PERIMETER BERM UP TO AND INCLUDING THE CENTERLINE OF INTERCELL BERM, SOUTH PERIMETER BERM, AND ALONG EAST PERIMETER BERM SOUTH OF CELL 7 LINER TIE-IN LOCATION WITH CELL 8.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVWL BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JWO	KRD	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JWO	KRD	DGP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	TEZ	JWO	LMG	DGP	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 V

TITLE: LINER SYSTEM DETAILS II

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

SIGNATURE: J.H. Beech
DATE: 29 Jan 2002

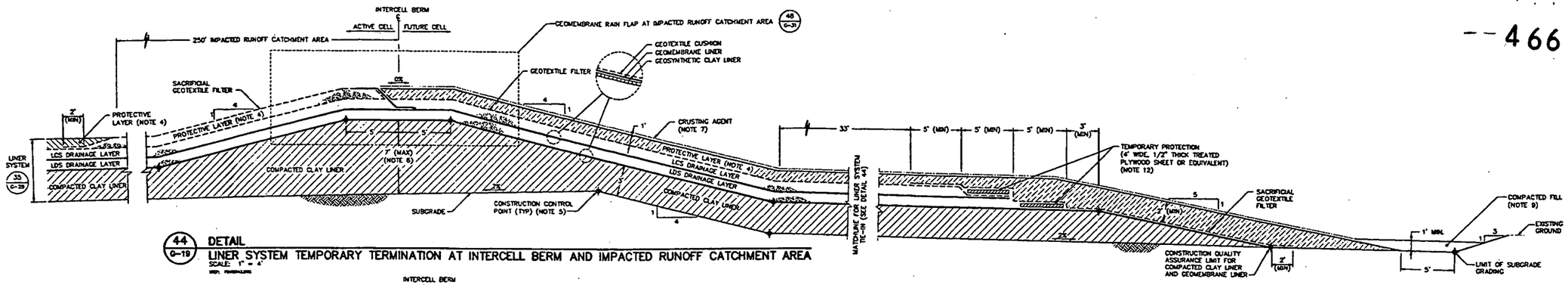
STATE OF OHIO — JOHN H. BEECH E-58248 — REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
3400 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

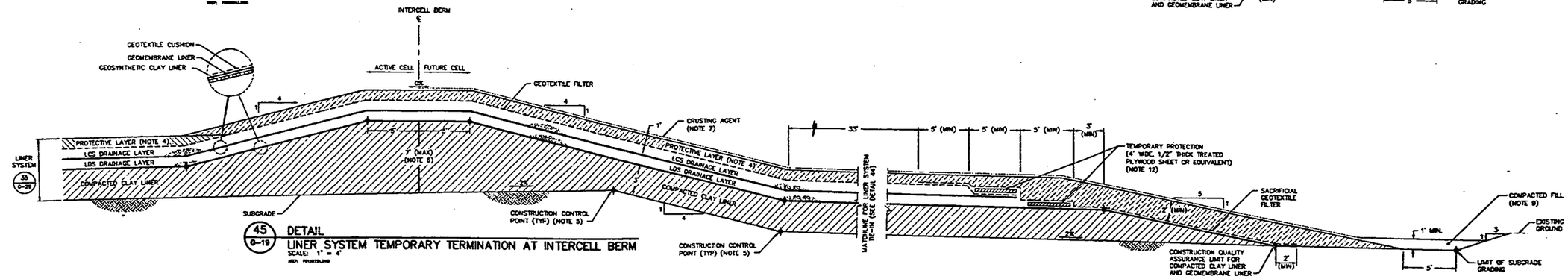
PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FFMP DRAWING NO.:	90X-6000-C-00392
GEOSYNTEC PROJECT NO.:	021342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0036
SHEET NO.:	G-30
REVISION NO.:	0

000033

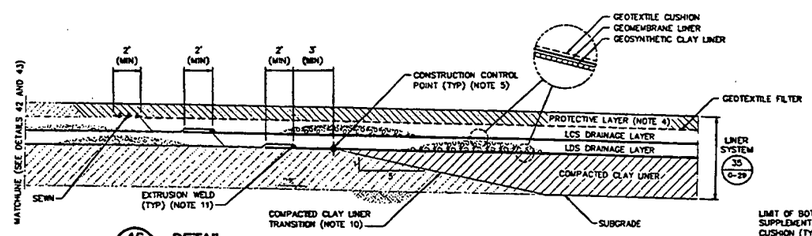
CERTIFIED-FOR-CONSTRUCTION



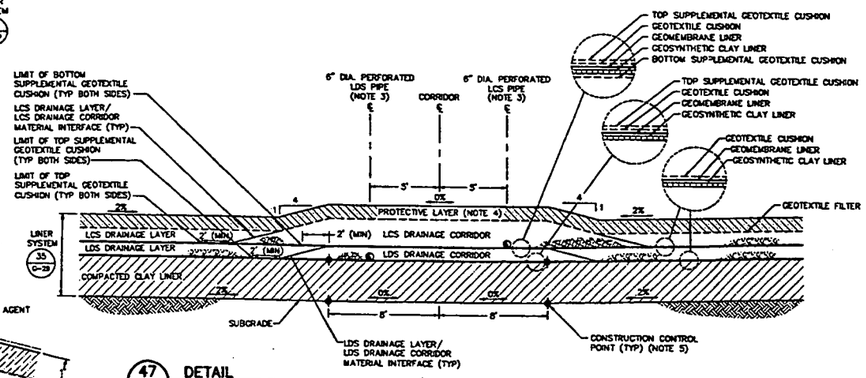
44 G-19 DETAIL
LINER SYSTEM TEMPORARY TERMINATION AT INTERCELL BERM AND IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



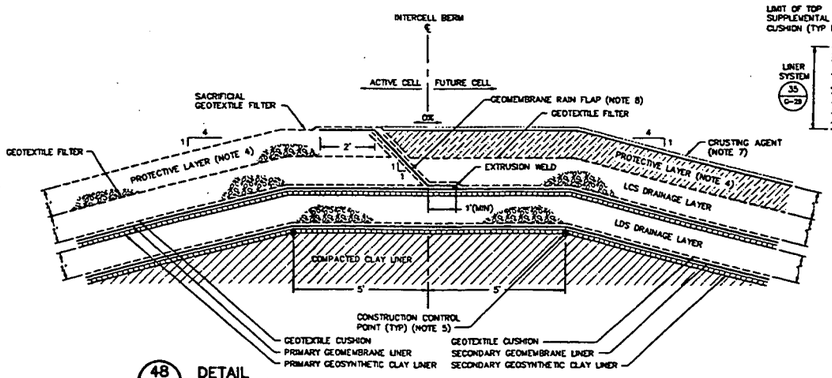
45 G-19 DETAIL
LINER SYSTEM TEMPORARY TERMINATION AT INTERCELL BERM
SCALE: 1" = 4'



46 G-19 DETAIL
LINER SYSTEM TIE-IN AT EXISTING TEMPORARY TERMINATION
SCALE: 1" = 4'



47 G-19 DETAIL
LINER SYSTEM AT LEACHATE COLLECTION AND LEAK DETECTION CORRIDOR
SCALE: 1" = 4'



48 G-31 DETAIL
GEOMEMBRANE RAIN FLAP AT IMPACTED RUNOFF CATCHMENT AREA
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. 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-4, G-6, AND G-7.
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. CRUSTING AGENT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
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.
10. TRANSITION FROM EXISTING FULL-DEPTH SECTION OF COMPACTED CLAY LINER TO ADJACENT SECTION OF COMPACTED CLAY LINER SECTION SHALL BE CONSTRUCTED IN ACCORDANCE WITH SPECIFICATION SECTION 02225.
11. CONTRACTOR SHALL REMOVE DAMAGED PORTION OF EXISTING GEOMEMBRANE LINER BY CUTTING PRIOR TO INSTALLATION OF NEW GEOMEMBRANE LINER.
12. EXTEND SECONDARY GEOMEMBRANE LINER ONLY BEYOND TEMPORARY PROTECTION.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVR. BY	APP. BY
D	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	VGR	LMC	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	JMO	LMC	DGP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	TEZ	JMO	LMC	DGP	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 V

TITLE: LINER SYSTEM DETAILS III

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

SIGNATURE: H. Beard
DATE: 29 Jan 2002

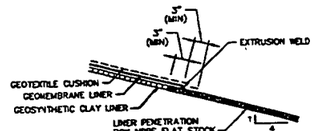
STATE OF OHIO — JOHN D. BEECH — E-54246 — REGISTERED PROFESSIONAL ENGINEER — SEAL

GEOSYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE, ATLANTA, GEORGIA 30329 USA

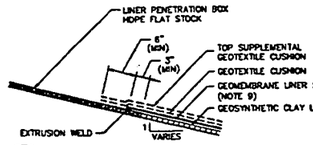
PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
TEMP DRAWING NO.:	90X-6000-C-00393
GEOSYNTEC PROJECT NO.:	001342-17.4
GEOSYNTEC DOCUMENT NO.:	FD1-0032
SHEET NO.:	G-31
REVISION NO.:	0

000034

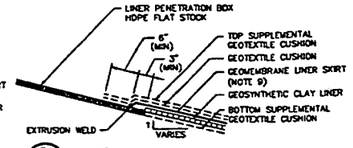
CERTIFIED-FOR-CONSTRUCTION



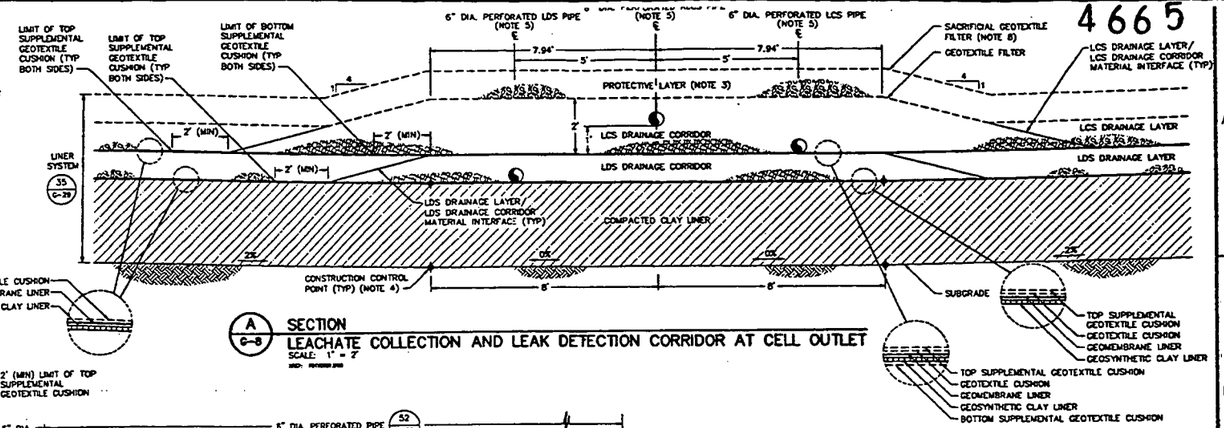
49 G-32 DETAIL
LINER SYSTEM GEOSYNTHETICS TERMINATION TYPE I AT LINER PENETRATION
SCALE: 1" = 1'



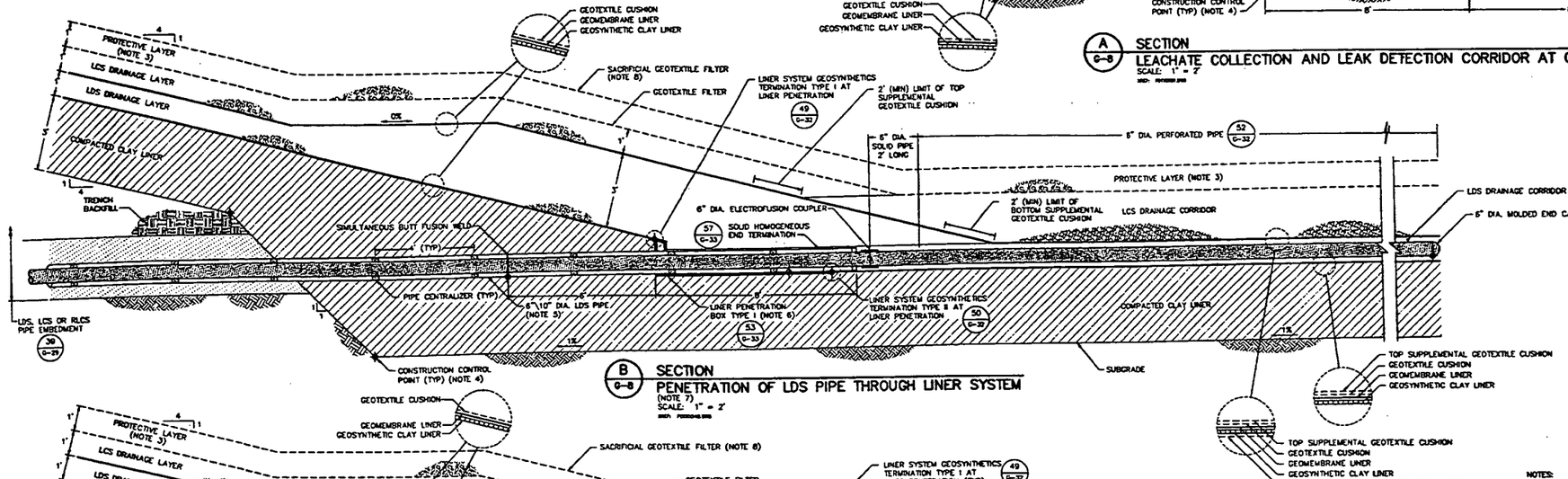
50 G-32 DETAIL
LINER SYSTEM GEOSYNTHETICS TERMINATION TYPE II AT LINER PENETRATION
SCALE: 1" = 1'



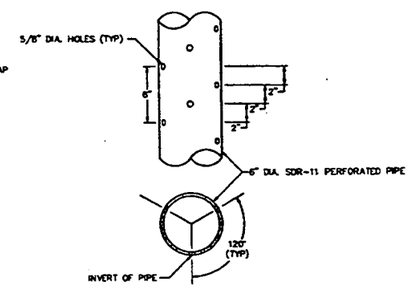
51 G-32 DETAIL
LINER SYSTEM GEOSYNTHETICS TERMINATION TYPE III AT LINER PENETRATION
SCALE: 1" = 1'



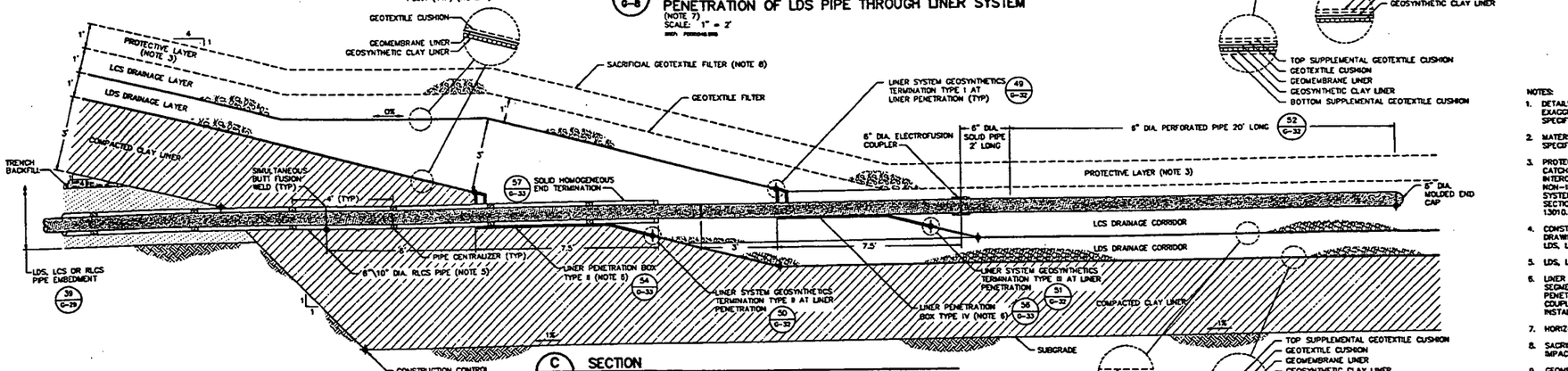
A G-8 SECTION
LEACHATE COLLECTION AND LEAK DETECTION CORRIDOR AT CELL OUTLET
SCALE: 1" = 2'



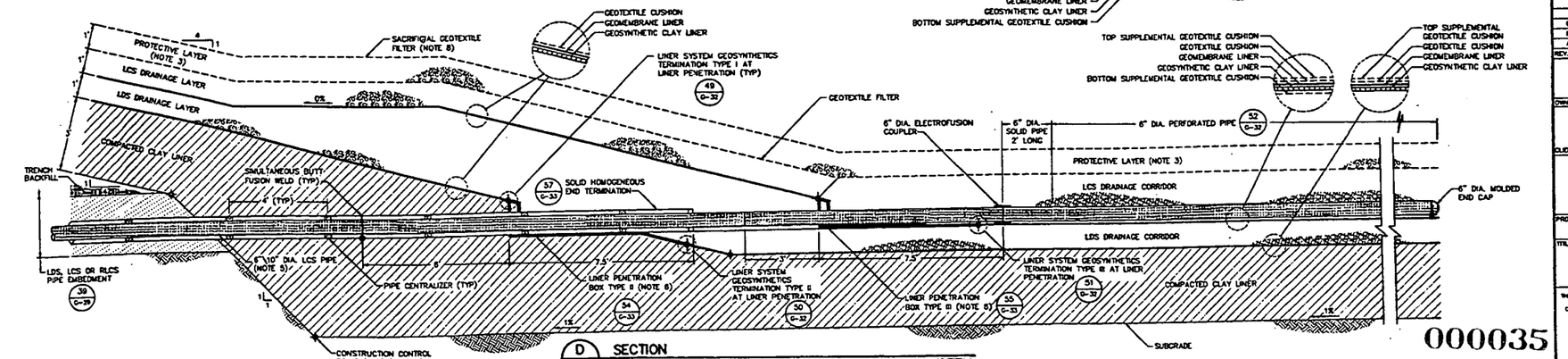
B G-8 SECTION
PENETRATION OF LDS PIPE THROUGH LINER SYSTEM
(NOTE 7)
SCALE: 1" = 2'



52 G-32 DETAIL
6-INCH PERFORATED PIPE
SCALE: 1" = 6"



C G-8 SECTION
PENETRATION OF RLCS PIPE THROUGH LINER SYSTEM
(NOTE 7)
SCALE: 1" = 2'



D G-8 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 CELL AREAS EXCLUDING 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-4, C-6, AND C-7. CONSTRUCTION CONTROL POINTS FOR LINER PENETRATION BOXES AND LDS, LCS, AND RLCS PIPES ARE PROVIDED ON DRAWINGS C-8 AND C-9.
5. LDS, LCS, AND RLCS PIPES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
6. LINER PENETRATION BOXES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13005. 8-INCH PIPE SEGMENTS AND SOLID HOMOGENEOUS END TERMINATIONS SHALL BE FACTORY WELDED TO LINER PENETRATION BOXES AND EXTEND BETWEEN SIMULTANEOUS BUTT FUSION WELDS AND ELECTROFUSION COUPLERS AS SHOWN. SOLID HOMOGENEOUS END TERMINATIONS AND PIPE CENTRALIZERS SHALL BE INSTALLED AS SHOWN AND IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
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
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	JWD	LMC	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	JWD	LMC	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	TEZ	JWD	LMC	DCP	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 V

TITLE:
LINER SYSTEM DETAILS IV

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

29 Jan 2002

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

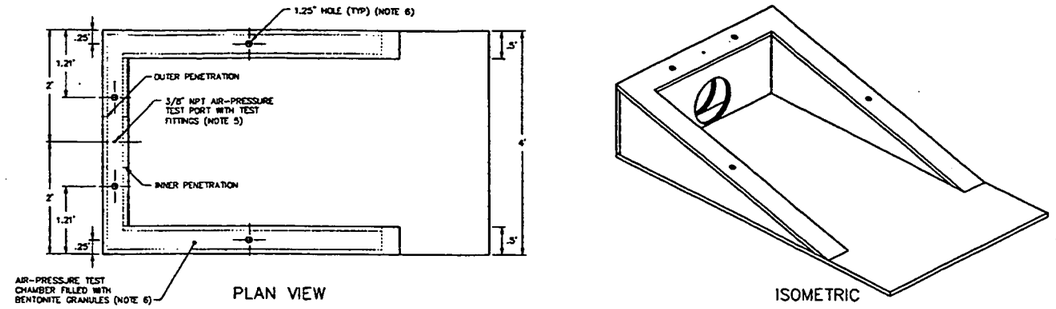
GEOSYNTEC CONSULTANTS

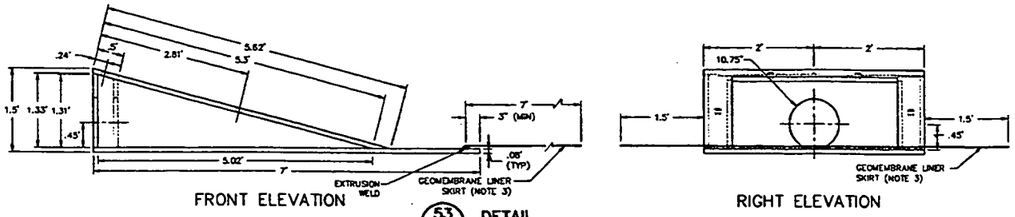
PROJECT NO.:	20105
CONTRACT NO.:	95PS005026
FEMP DRAWING NO.:	90X-8000-C-00394
GEOSYNTEC PROJECT NO.:	GO1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0033
SHEET NO.:	G-32
REVISION NO.:	0

000035

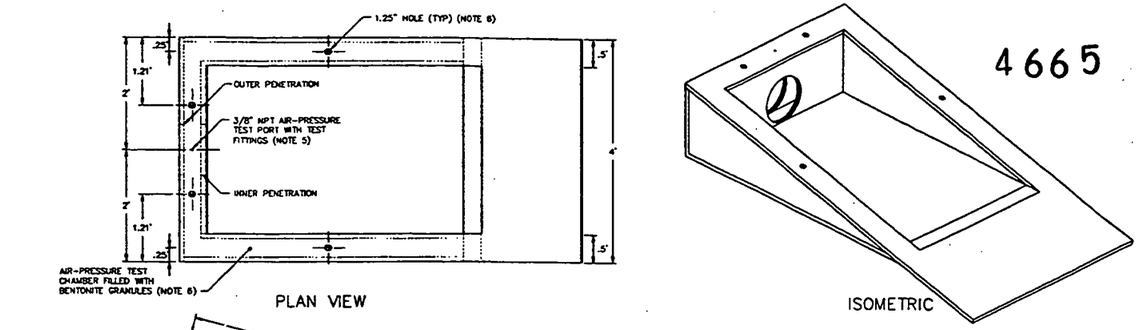
CERTIFIED-FOR-CONSTRUCTION

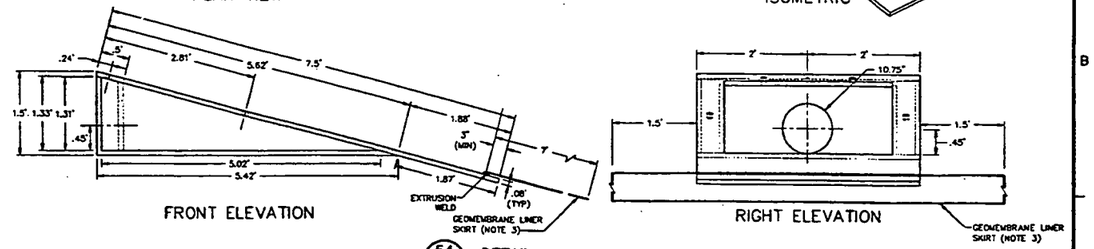
4665



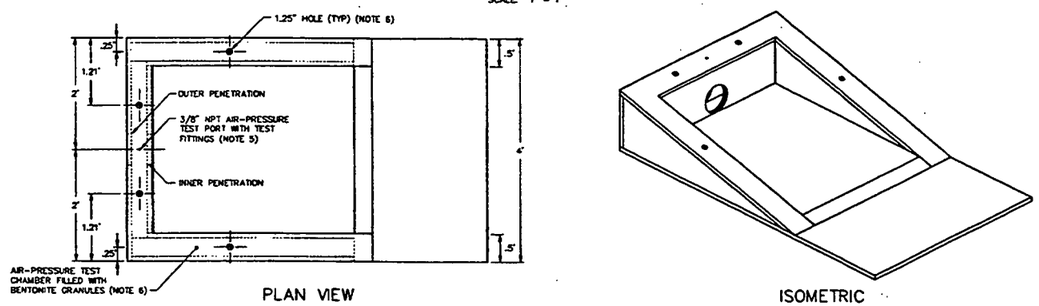


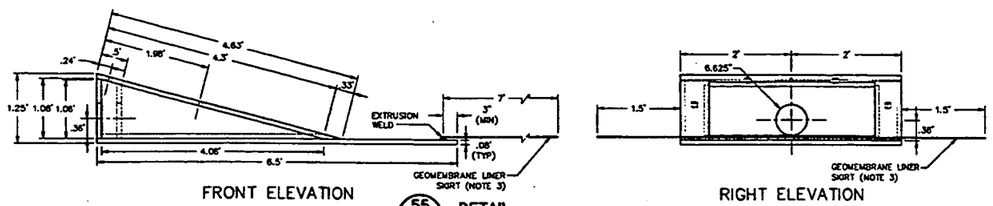
53 / G-32 DETAIL
LINER PENETRATION BOX TYPE I
(NOTE 7)
SCALE: 1" = 1'



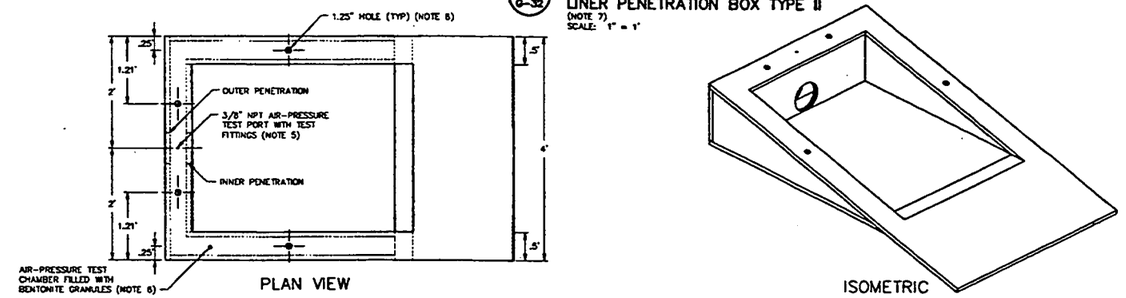


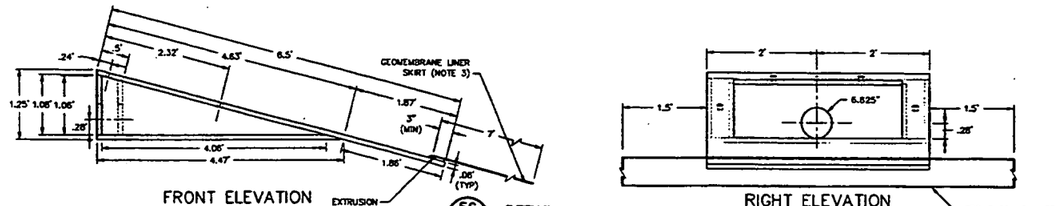
54 / G-32 DETAIL
LINER PENETRATION BOX TYPE II
(NOTE 7)
SCALE: 1" = 1'





55 / G-32 DETAIL
LINER PENETRATION BOX TYPE III
(NOTE 7)
SCALE: 1" = 1'

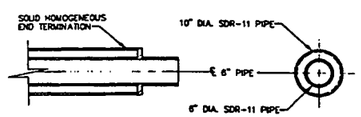




56 / G-32 DETAIL
LINER PENETRATION BOX TYPE IV
(NOTE 7)
SCALE: 1" = 1'

NOTES:

1. LINER PENETRATION BOXES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 13005.
2. 6-INCH PIPE SEGMENTS AND SOLID HOMOGENEOUS END TERMINATIONS SHALL BE FACTORY WELDED TO LINER PENETRATION BOXES WITH LENGTHS SHOWN ON DRAWING G-32. PIPES ARE NOT SHOWN ON THIS DRAWING FOR CLARITY. SOLID HOMOGENEOUS END TERMINATIONS AND PIPE CENTRALIZERS SHALL BE INSTALLED AS SHOWN ON DRAWING G-32 AND IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
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. THE EXTRUSION WELDS SHALL BE TESTED PRIOR TO DELIVERY.
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.
7. GEOMEMBRANE LINER SKIRT IS NOT SHOWN ON PLAN AND ISOMETRIC VIEWS FOR CLARITY.



57 / G-32 DETAIL
SOLID HOMOGENEOUS END TERMINATION
SCALE: 1" = 1'

000036

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	REVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	JWO	LMC	DGP	JFB
- B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	JWO	LMC	DGP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	TEZ	JWO	LMC	DGP	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 V

TITLE: LINER SYSTEM DETAILS V

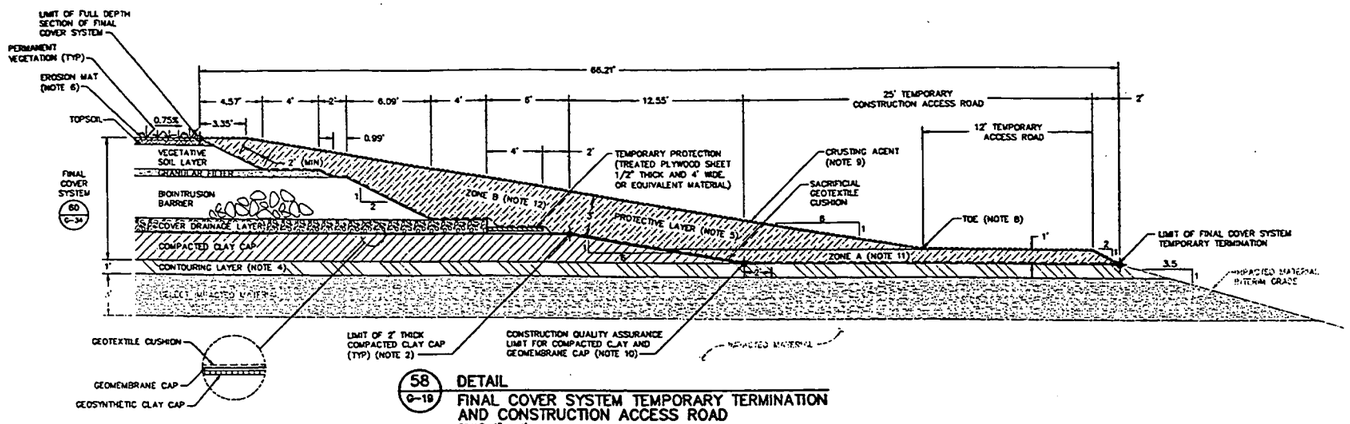
THIS DRAWING MAY NOT BE USED FOR PROJECT WORK OR CONSTRUCTION, UNLESS SEALED.

29 Jan 2002

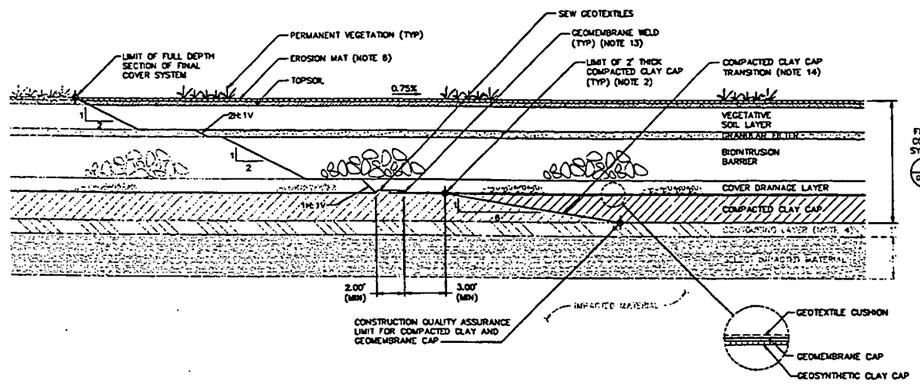
STATE OF OHIO — JOHN W. BEECH — E-38246 — REGISTERED PROFESSIONAL ENGINEER

GEO SYNTEC CONSULTANTS — 3400 LAKE HEARN DRIVE, ATLANTA, GEORGIA 30342 USA

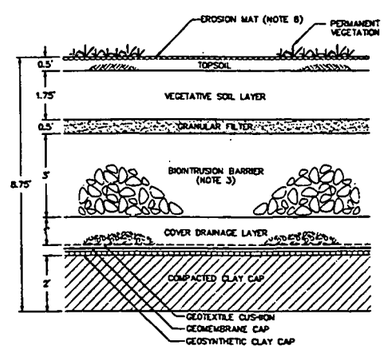
PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	90X-6000-G-00395
GEOSYNTEC PROJECT NO.:	C01342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0034
SHEET NO.:	G-33
REVISION NO.:	0



58 G-19 **DETAIL**
FINAL COVER SYSTEM TEMPORARY TERMINATION AND CONSTRUCTION ACCESS ROAD
SCALE: 1" = 4'



59 G-19 **DETAIL**
FINAL COVER SYSTEM TIE-IN AT EXISTING TEMPORARY TERMINATION
SCALE: 1" = 4'



60 G-21 **DETAIL**
FINAL COVER SYSTEM
SCALE: 1" = 2'

FINAL COVER SYSTEM COMPONENT SUMMARY

SYMBOL	COMPONENT	SPECIFICATION SECTION
GEOSYNTHETICS (NOTE 7)		
	GEOMEMBRANE CAP	02770
	GEOSYNTHETIC CLAY CAP	02772
	GEOTEXTILE CUSHION	02714
SOILS		
	COMPACTED CLAY CAP	02225
	COVER DRAINAGE LAYER	02710
	BIOINTRUSION BARRIER	02280
	GRANULAR FILTER	02712
	VEGETATIVE SOIL LAYER	02250
	TOPSOIL	02920
	PROTECTIVE LAYER (NON-IMPACTED NON-GRANULAR)	02240
	CONTOURING LAYER (NON-IMPACTED)	02240
VEGETATION		
	PERMANENT VEGETATION	02930

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. CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER, COMPACTED CLAY CAP, AND FINAL COVER SYSTEM ARE PROVIDED ON DRAWINGS G-10 THROUGH G-15.
3. CHOKE STONE LAYER SHALL BE PLACED INTO TOP OF BIOINTRUSION BARRIER IN ACCORDANCE WITH SPECIFICATION SECTION 02280.
4. 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.
5. 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.
6. EROSION MAT SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 02270. EROSION MAT WITH A 100% COIR YARN CONTENT SHALL BE USED AT TWO LOCATIONS, TO LIMITS INDICATED ON DETAIL AND AT THE 10H:1V TO 6H:1V FINAL COVER SYSTEM SLOPE TRANSITION. TWO 6-FOOT WIDTHS OF COIR EROSION MAT SHALL BE USED AT EACH LOCATION WITH A 1.5' FOOT OVERLAP ON EACH SIDE OF THE 10H:1V TO 6H:1V TRANSITION.
7. GEOSYNTHETICS FOR THE COVER SYSTEM WILL BE SUPPLIED BY FLUOR FERNALD, INC. AS SPECIFIED IN PART 6 OF THE CONTRACT DOCUMENTS
8. INSTALL SILT FENCE 10 FEET (MEASURED HORIZONTALLY) UPSLOPE FROM TOE OF 6H:1V SLOPE AT FINAL COVER SYSTEM TEMPORARY TERMINATION. SILT FENCE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
9. CRUSTING AGENT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
10. EXTEND GEOMEMBRANE CAP ONLY BEYOND TEMPORARY PROTECTION.
11. ZONE A PROTECTIVE LAYER SOIL SHALL BE PLACED AFTER INSTALLATION OF COMPACTED CLAY CAP.
12. ZONE B PROTECTIVE LAYER SOIL SHALL BE PLACED AFTER COMPLETION OF UNDERLYING COMPONENTS OF FINAL COVER SYSTEM.
13. CONTRACTOR SHALL REMOVE DAMAGED PORTION OF EXISTING GEOMEMBRANE CAP BY CUTTING PRIOR TO INSTALLATION OF NEW GEOMEMBRANE CAP.
14. TRANSITION FROM EXISTING 2' THICK COMPACTED CLAY CAP TO ADJACENT SECTION OF COMPACTED CLAY CAP SHALL BE CONSTRUCTED IN ACCORDANCE WITH SPECIFICATION SECTION 02225.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JMD	KRD	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JMD	KRD	DGP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	KRD	JMD	KRD	DGP	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 V

TITLE:
FINAL COVER SYSTEM DETAILS I

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

29 Jan 2012
DATE

STATE OF OHIO
JOHN H. BECCH
E-38248
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	90X-5000-G-00396
GEOSYNTEC PROJECT NO.:	GG1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0035
SHEET NO.:	G-34
REVISION NO.:	0

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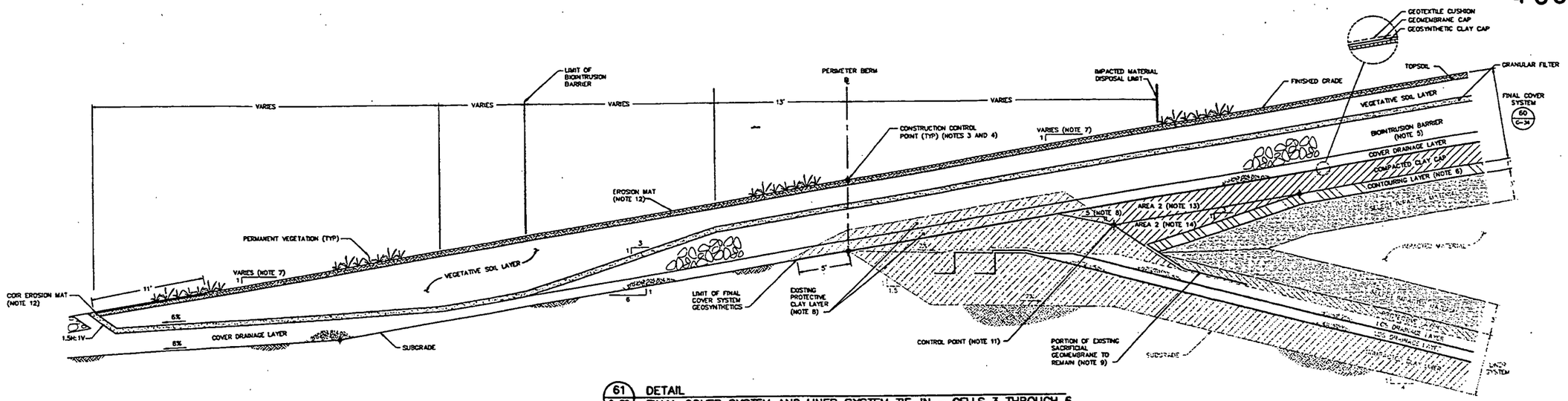
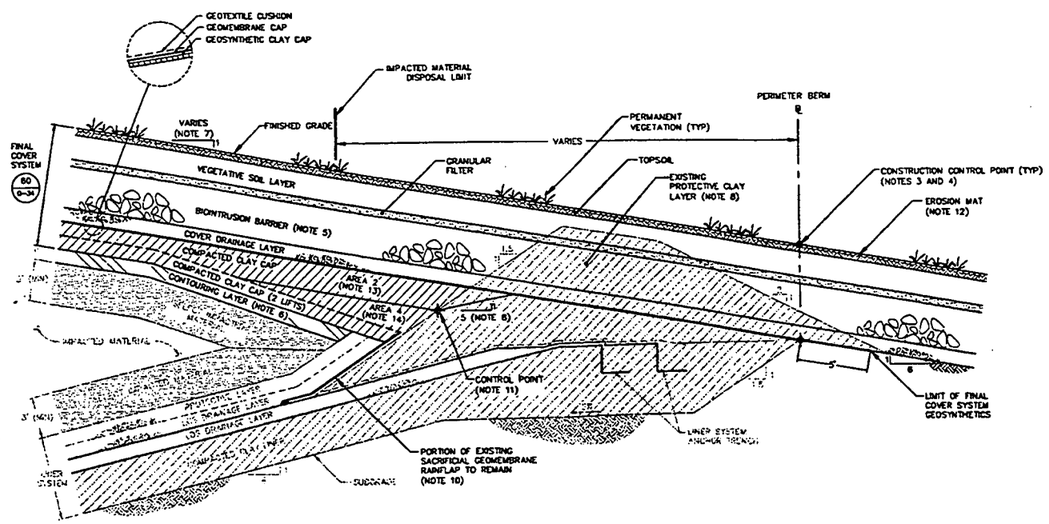
CERTIFIED-FOR-CONSTRUCTION



61 / 0-26 DETAIL
FINAL COVER SYSTEM AND LINER SYSTEM TIE-IN – CELLS 3 THROUGH 6
SCALE: 1" = 4'



62 / G-27 DETAIL
FINAL COVER SYSTEM AND LINER SYSTEM TIE-IN CELL 7
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. CONSTRUCTION CONTROL POINTS FOR CONTOURING LAYER, COMPACTED CLAY CAP, AND FINAL COVER SYSTEM ARE PROVIDED ON DRAWINGS G-10 THROUGH G-15.
4. CONTRACTOR SHALL REESTABLISH SUBGRADE ELEVATIONS OUTSIDE PERIMETER BERM BASELINE PRIOR TO COMPLETION OF COMPACTED CLAY CAP. CONSTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWINGS G-3, G-4, AND G-6.
5. CHOKE STONE LAYER SHALL BE PLACED INTO TOP OF BIOINTRUSION BARRIER IN ACCORDANCE WITH SPECIFICATION SECTION 02280.
6. 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.
7. SLOPE OF LOWER PORTION OF FINAL COVER SYSTEM IS 6H:1V FOR EAST, WEST, AND SOUTH PERIMETERS OF OSDF.
8. EXISTING PROTECTIVE CLAY LAYER PLACED ABOVE FINAL COVER SYSTEM GRADES SHALL BE CUT BACK JUST PRIOR TO COMPLETION OF COMPACTED CLAY CAP. 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.
9. CONTRACTOR SHALL REMOVE EXPOSED PORTION OF EXISTING SACRIFICIAL GEOMEMBRANE BY CUTTING PRIOR TO CONSTRUCTION OF COMPACTED CLAY CAP IN TEMPORARY DRAINAGE CHANNEL.
10. SACRIFICIAL GEOMEMBRANE RAIN FLAP SHALL BE USED TO CONTROL AND CONTAIN IMPACTED RUNOFF IN CELL 7 DURING FILLING. EXPOSED SACRIFICIAL GEOMEMBRANE RAIN FLAP SHALL BE REMOVED BY CUTTING ONLY AFTER CONSTRUCTION OF SECOND LIFT COMPACTED CLAY CAP AND DIVERSION OF UPSTREAM NON-IMPACTED RUNOFF TO THE OSDF SURFACE-WATER MANAGEMENT SYSTEM.
11. CONTROL POINT WILL BE PROVIDED BY CONTRACTOR IN ACCORDANCE TO SPECIFICATION SECTION 02100.
12. EROSION MAT SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 02270. EROSION MAT WITH A 100% COIR YARN CONTENT SHALL BE USED AT TWO LOCATIONS, TO LIMITS INDICATED ON DETAIL AND AT THE 10H:1V TO 6H:1V FINAL COVER SYSTEM SLOPE TRANSITION. TWO 8-FOOT WIDTHS OF COIR EROSION MAT SHALL BE USED AT EACH LOCATION WITH A 1.5' OVERLAP ON EACH SIDE OF THE 10H:1V TO 6H:1V TRANSITION.
13. AREA 2 OF COMPACTED CLAY CAP SHALL BE CONSTRUCTED IN ACCORDANCE WITH SPECIFICATION SECTION 02225.
14. AREA 4 MAY BE CONSTRUCTED OF COMPACTED CLAY CAP OR NON-IMPACTED CONTOURING LAYER MATERIALS AS APPROVED BY THE CONSTRUCTION MANAGER. COMPACTED CLAY CAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02225. NON-IMPACTED CONTOURING LAYER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02240.

000038

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.39	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JMD	KRD	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JMD	KRD	DGP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE AS SHOWN

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

AUDIT:

FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: FINAL COVER SYSTEM DETAILS II

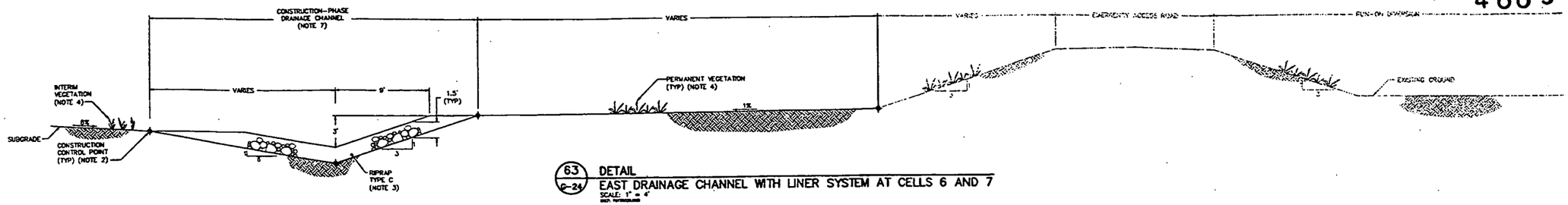
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT BIDDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE
29 Feb 2012
DATE

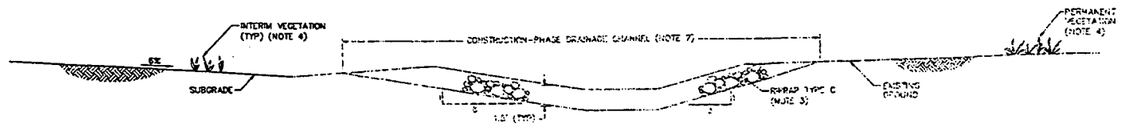
STATE OF OHIO
JOHN F. BEECH
E-58246
REGISTERED PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
1000 LAKE ACADIA DRIVE
ATLANTA, GEORGIA 30342 USA

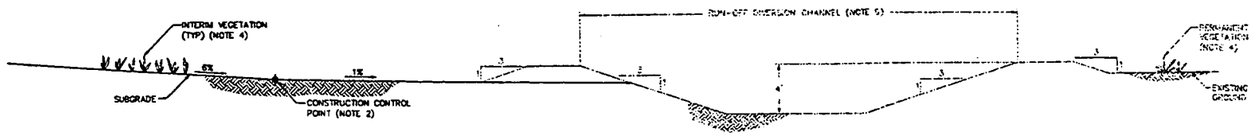
PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FLMP DRAWING NO.:	90X-6000-G-00387
GEOSYNTEC PROJECT NO.:	001342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0051
SHEET NO.:	G-35
REVISION NO.:	0



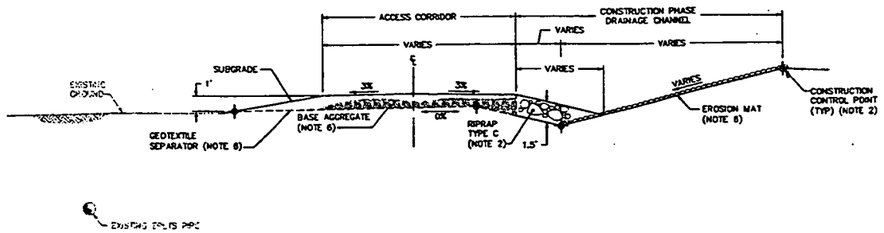
63 / C-24 DETAIL
EAST DRAINAGE CHANNEL WITH LINER SYSTEM AT CELLS 6 AND 7
SCALE: 1" = 4'



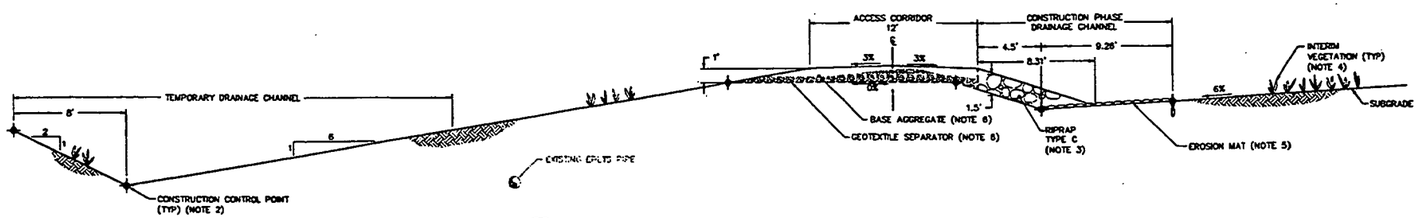
64 / C-25 DETAIL
SOUTHEAST DRAINAGE CHANNEL WITH LINER SYSTEM AT CELL 7
SCALE: 1" = 4'



65 / C-25 DETAIL
SOUTH DRAINAGE CHANNEL WITH LINER SYSTEM AT CELL 7
SCALE: 1" = 4'



66 / C-25 DETAIL
SOUTHWEST DRAINAGE CHANNEL WITH LINER SYSTEM AT CELL 7
SCALE: 1" = 4'



67 / C-24 DETAIL
WEST DRAINAGE CHANNEL WITH LINER SYSTEM AT CELLS 6 AND 7
SCALE: 1" = 4'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN THE SPECIFICATIONS.
2. CONSTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWINGS C-4 AND C-8.
3. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
4. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
5. EROSION MAT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
6. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
7. CONSTRUCTION-PHASE DRAINAGE CHANNEL ALONG EAST PERIMETER AND SOUTHEAST CORNER OF CELL 7 AND RUN-OFF DIVERSION CHANNEL WILL BE CONSTRUCTED PRIOR TO CONSTRUCTION OF CELL 7 LINER SYSTEM.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	SYNE. BY	APP. BY
D	02.01.29	CTC SUBMITTAL TO FF/DOE/EPA	TCZ	JAG	LMC	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TCZ	JAG	LMC	DCP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE AS SHOWN

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

CLIENT: **FLUOR FERNALD, INC.**

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: SURFACE-WATER MANAGEMENT SYSTEM DETAILS I

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

29 Jan 2002

STATE OF OHIO — JOHN T. BECCH E-38246 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20105
CONTRACT NO.:	95P5005078
FDHP DRAWING NO.:	90X-5000-C-00398
GEOSYNTEC PROJECT NO.:	G01342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0037
SHEET NO.:	C-36
REVISION NO.:	0

000039

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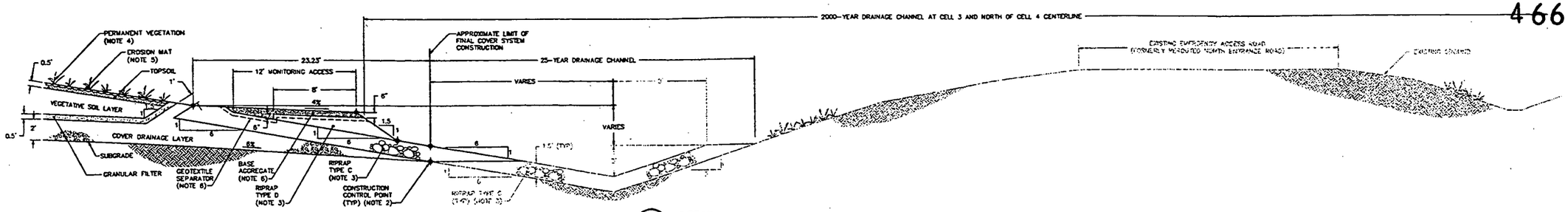
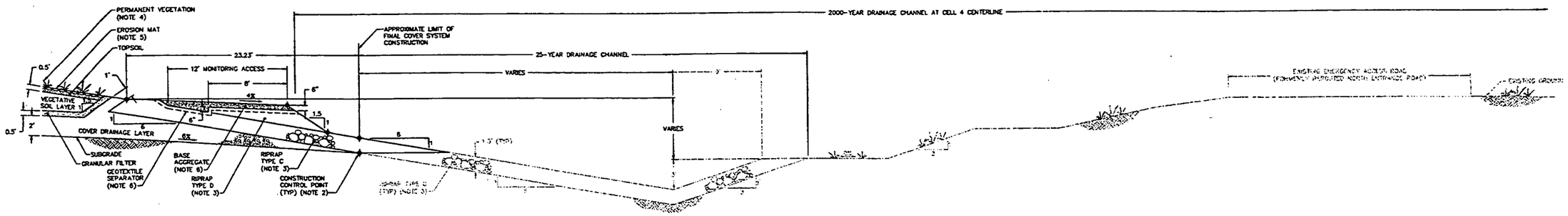
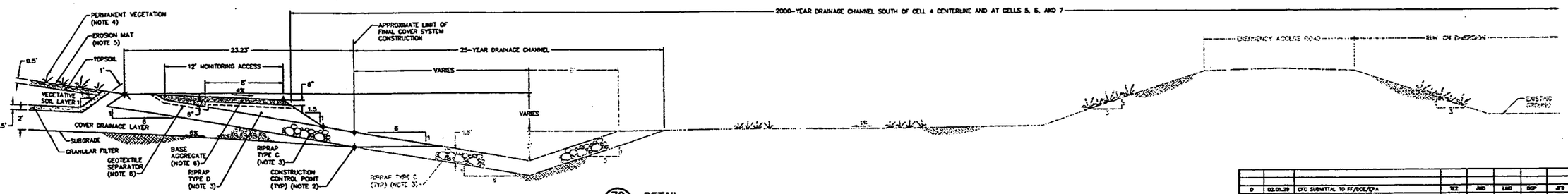


68 / G-28 DETAIL
EAST DRAINAGE CHANNEL WITH FINAL COVER SYSTEM AT CELL 3 AND NORTH OF CELL 4 CENTERLINE
SCALE: 1" = 4'



69 / G-28 DETAIL
EAST DRAINAGE CHANNEL WITH FINAL COVER SYSTEM AT CELL 4 CENTERLINE
SCALE: 1" = 4'



70 / G-28 DETAIL
EAST DRAINAGE CHANNEL WITH FINAL COVER SYSTEM SOUTH OF CELL 4 CENTERLINE AND AT CELLS 5, 6, AND 7
SCALE: 1" = 4'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN THE SPECIFICATIONS.
2. CONSTRUCTION CONTROL POINTS FOR SUBGRADE AND FINAL COVER SYSTEM ARE PROVIDED ON DRAWINGS G-3, G-4, G-6, G-14, AND G-15.
3. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
4. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
5. EROSION MAT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
6. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.

000040

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	JWD	LMG	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	JWD	LMG	DCP	JFB
A	-	NOT ISSUED	-	-	-	-	-

SCALE AS SHOWN

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

CLIENT: **FLUOR FERNALD, INC.**

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: SURFACE-WATER MANAGEMENT SYSTEM DETAILS II

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

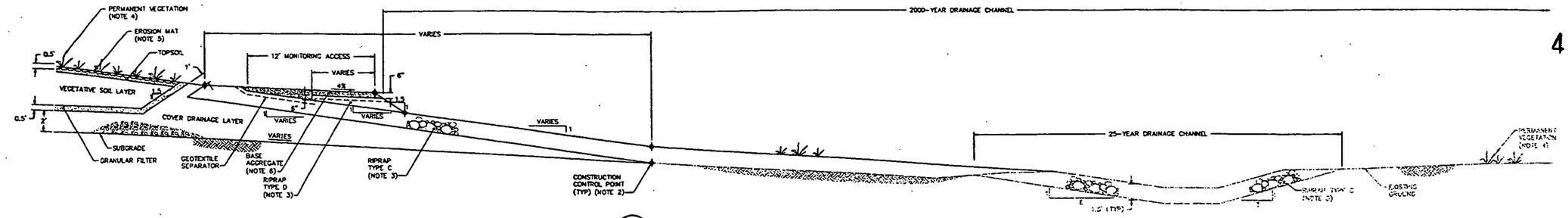
DRAWING — DATE: 29 Jan 2002

STATE OF OHIO — JOHN T. BECCH — E-58246 — REGISTERED PROFESSIONAL ENGINEER — SEAL

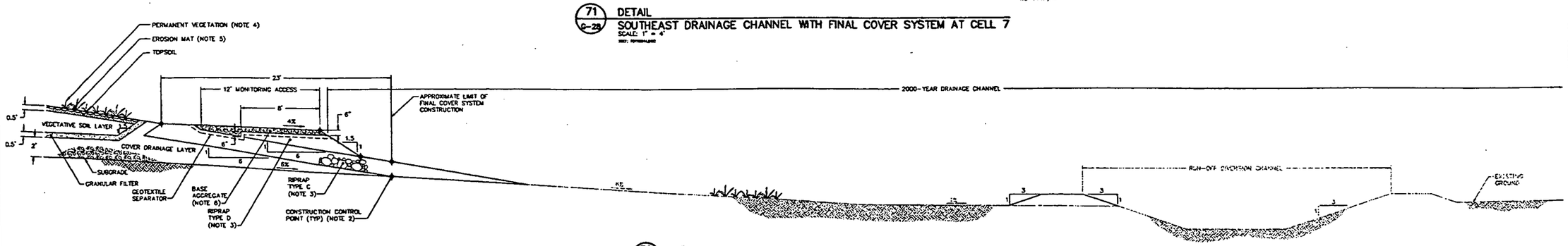
GEOSYNTEC CONSULTANTS — 1100 LAKE HEARN DRIVE, ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FEMP DRAWING NO.:	90X-5000-G-00399
GEOSYNTEC PROJECT NO.:	GG1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0038
SHEET NO.:	G-37
REVISION NO.:	0

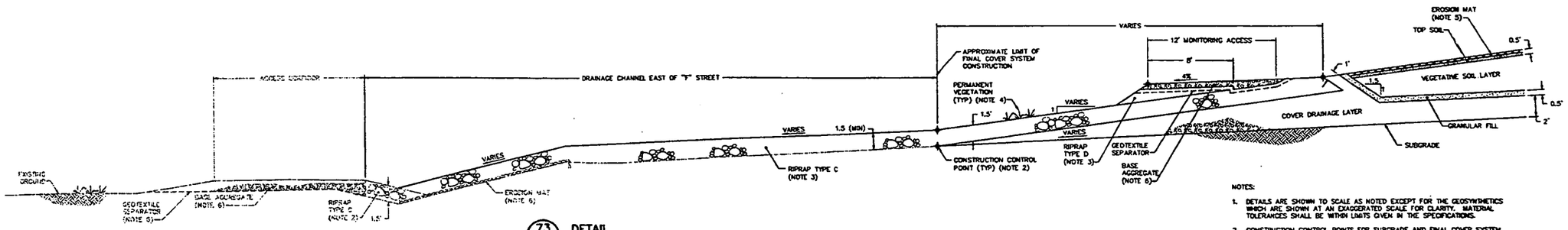
4665



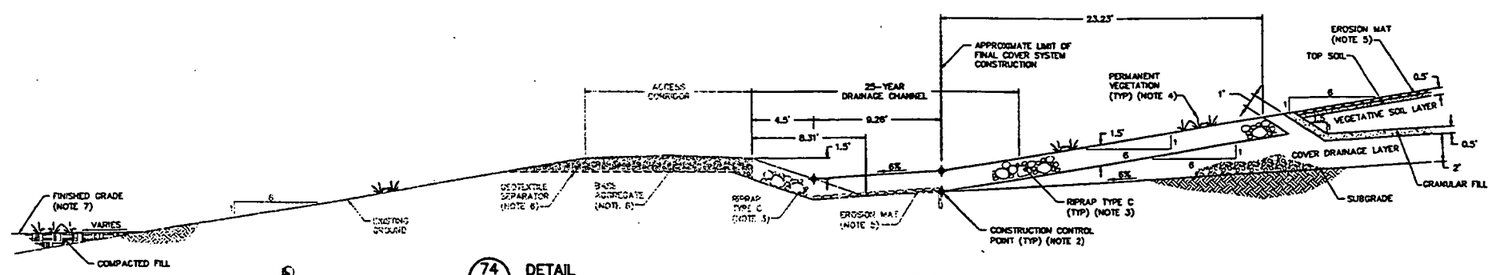
71 / G-28 DETAIL
SOUTHEAST DRAINAGE CHANNEL WITH FINAL COVER SYSTEM AT CELL 7
SCALE: 1" = 4'



72 / G-28 DETAIL
SOUTH DRAINAGE CHANNEL WITH FINAL COVER SYSTEM AT CELL 7
SCALE: 1" = 4'



73 / G-28 DETAIL
SOUTHWEST DRAINAGE CHANNEL WITH FINAL COVER SYSTEM AT CELL 7
SCALE: 1" = 4'



74 / G-27 DETAIL
WEST DRAINAGE CHANNEL WITH FINAL COVER SYSTEM AT CELLS 3 THROUGH 7
SCALE: 1" = 4'

NOTES:

1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR THE GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN THE SPECIFICATIONS.
2. CONSTRUCTION CONTROL POINTS FOR SUBGRADE AND FINAL COVER SYSTEM ARE PROVIDED ON DRAWINGS C-3, C-4, C-6, C-14, AND C-15.
3. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
4. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
5. EROSION MAT SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
6. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
7. CONTRACTOR SHALL PLACE COMPACTED FILL, AS NECESSARY, TO PROVIDE POSITIVE DRAINAGE TO FORMER PRODUCTION AREA AND AWAY FROM OSDF FACILITY.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.04.29	CTC SUBMITTAL TO FF/DOE/EPA	KZ	JMD	LMC	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KZ	JMD	LMC	DCP	JFB
A	-	NOT ISSUED	-	-	-	-	-

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY - PHASE V

TITLE:
SURFACE-WATER MANAGEMENT SYSTEM DETAILS III

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

29 Feb 2012

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

GEOSYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30043 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	9CX-6000-C-00400
GEOSYNTEC PROJECT NO.:	001347-17.4
GEOSYNTEC DOCUMENT NO.:	FD1-0039
SHEET NO.:	C-38
REVISION NO.:	0

000041

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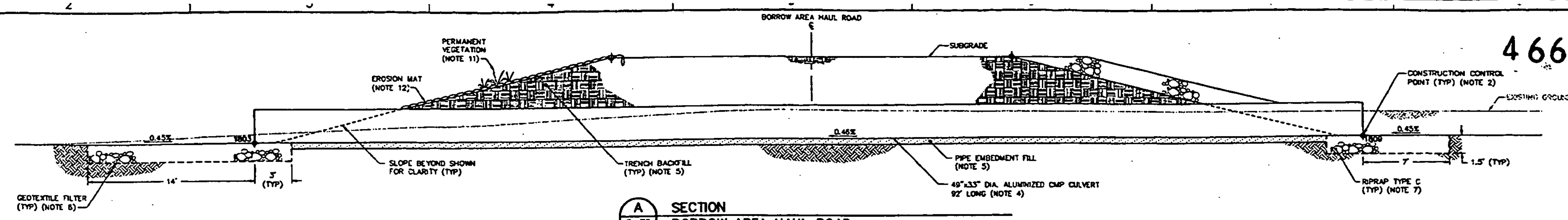
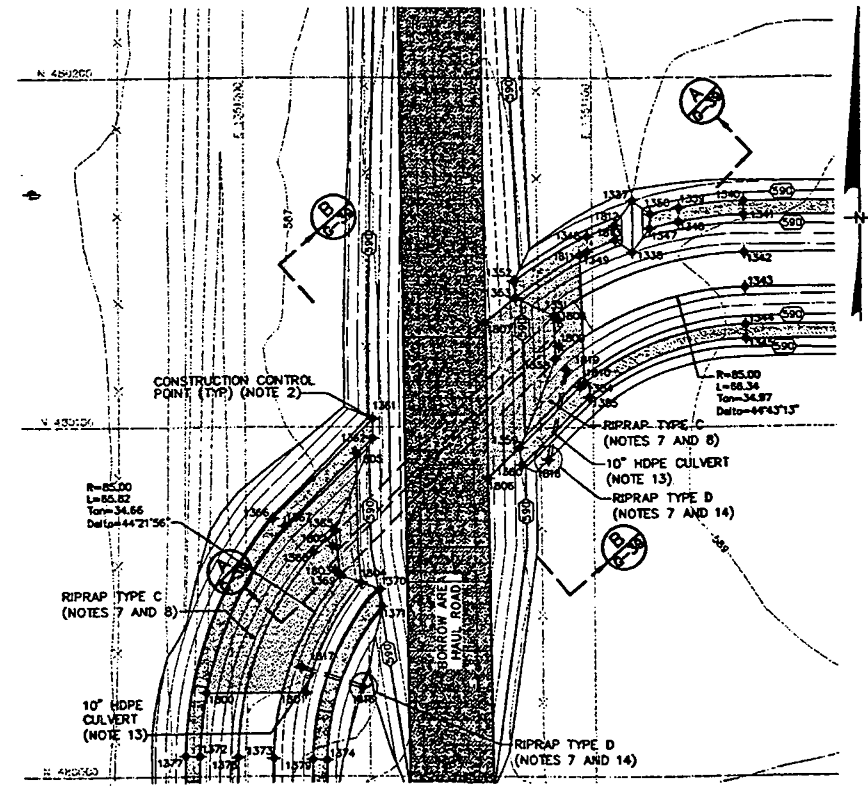
4665

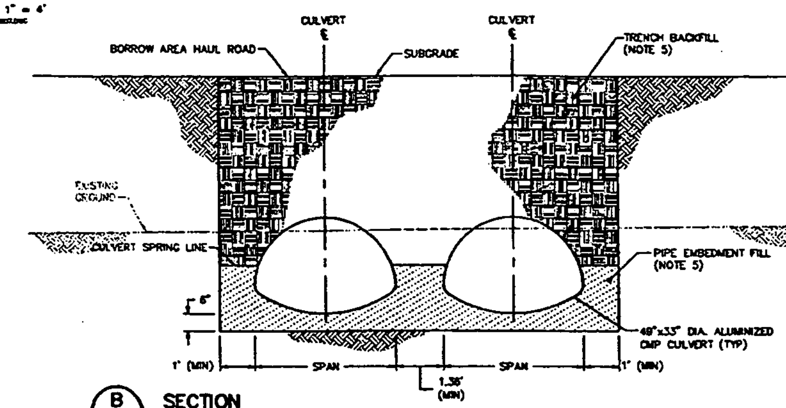


A / G-39 SECTION
BORROW AREA HAUL ROAD
49"x33" DIA. ALUMINIZED CMP CULVERT CROSSING
SCALE: 1" = 4'

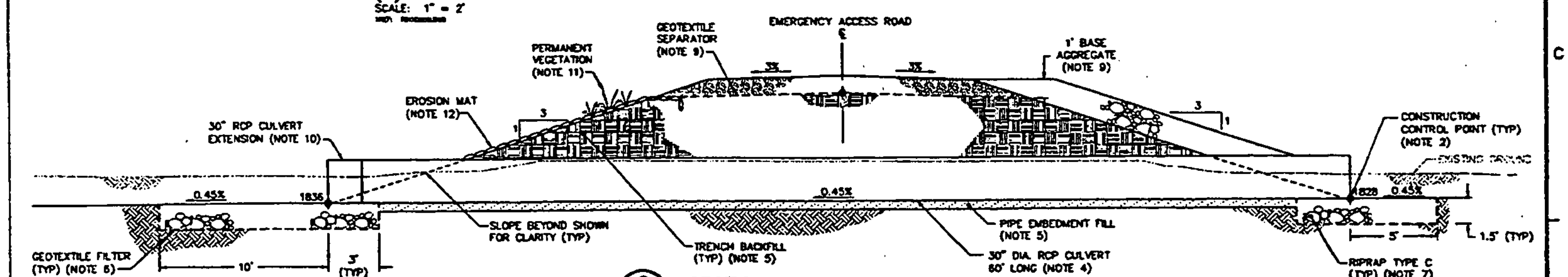


75 / G-4 PLAN
RUN-OFF DIVERSION CHANNEL MODIFICATION
AT EXISTING BORROW AREA HAUL ROAD
SCALE: 1" = 20'

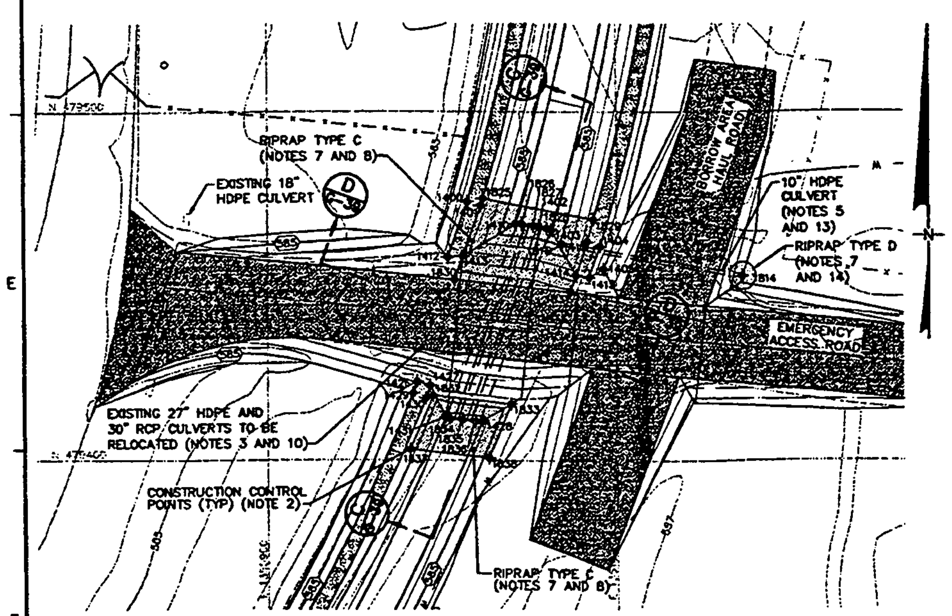
CONSTRUCTION CONTROL POINTS			
POINT NO.	NORTHING	EASTING	ELEVATION
1337	480164.93	1351111.56	589.00
1338	480150.26	1351111.56	589.00
1339	480162.89	1351124.72	590.72
1340	480164.64	1351143.86	590.79
1341	480160.64	1351143.92	590.79
1342	480149.93	1351144.06	587.22
1343	480139.93	1351144.20	587.22
1344	480129.22	1351144.35	590.79
1345	480125.22	1351144.40	590.79
1346	480158.79	1351124.62	590.72
1347	480156.95	1351116.54	590.66
1348	480154.72	1351098.60	590.62
1349	480150.39	1351098.71	590.61
1350	480161.12	1351116.68	590.69
1351	480132.01	1351088.63	586.97
1352	480141.96	1351077.37	590.53
1353	480137.19	1351077.77	590.52
1354	480111.70	1351096.26	590.50
1355	480108.74	1351098.96	590.51
1358	480119.64	1351089.06	586.93
1359	480094.27	1351078.66	590.50
1360	480089.29	1351079.32	590.38
1361	480102.40	1351036.20	590.38
1362	480096.82	1351036.16	590.36
1365	480070.40	1351025.12	586.58
1366	480073.87	1351007.39	590.20
1367	480071.59	1351010.69	590.20
1368	480064.15	1351018.82	586.54
1369	480057.52	1351026.33	586.53
1370	480053.66	1351038.04	590.21
1371	480048.65	1351038.66	590.19
1372	480005.83	1350986.33	589.92
1373	480005.20	1351007.30	586.26
1374	480004.75	1351022.28	589.92
1377	480005.95	1350982.33	589.92
1378	480005.50	1350997.31	586.26
1379	480004.87	1351018.28	589.92
1800	480023.97	1350988.26	-
1801	480023.97	1351016.31	-
1802	480065.97	1351024.24	586.55
1803	480058.98	1351024.90	586.53
1804	480055.50	1351032.55	-
1805	480092.48	1351031.19	-
1806	480085.45	1351069.75	-
1807	480130.11	1351069.27	-
1808	480130.75	1351090.06	586.97
1809	480123.35	1351090.31	586.95
1810	480112.88	1351097.68	-
1811	480149.23	1351098.43	-
1812	480157.96	1351106.51	590.65
1813	480153.74	1351106.65	590.64
1816	480025.56	1351032.95	587.78
1817	480031.33	1351015.09	587.40
1818	480090.80	1351086.83	589.00
1819	480116.41	1351092.45	588.48



B / G-39 SECTION
BORROW AREA HAUL ROAD
(2) 49"x33" DIA. ALUMINIZED CMP CULVERT EMBEDMENT
SCALE: 1" = 2'

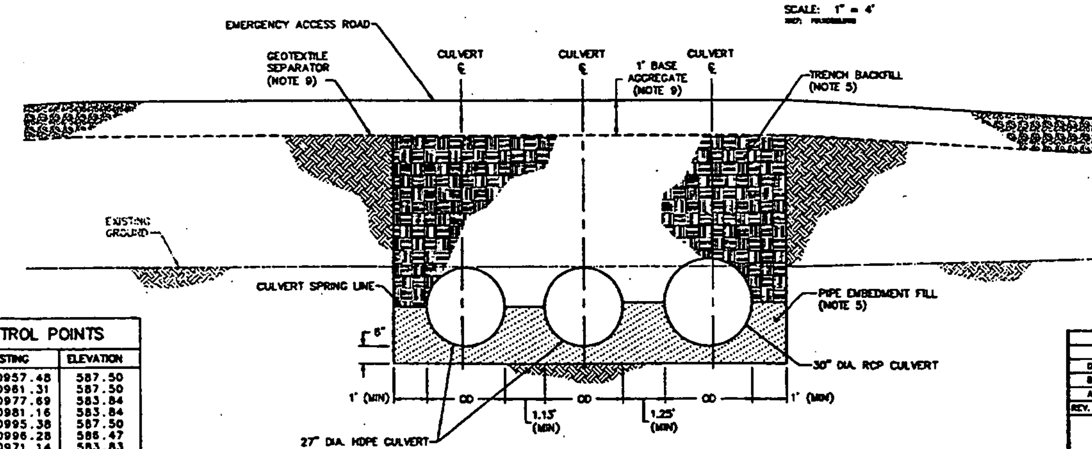


C / G-39 SECTION
EMERGENCY ACCESS ROAD
30" DIA. RCP CULVERT CROSSING
SCALE: 1" = 4'



76 / G-5 PLAN
RUN-OFF DIVERSION CHANNEL MODIFICATION
AT EMERGENCY ACCESS ROAD
SCALE: 1" = 20'

CONSTRUCTION CONTROL POINTS			
POINT NO.	NORTHING	EASTING	ELEVATION
1400	479474.21	1350957.48	587.50
1401	479473.06	1350981.31	587.50
1402	479467.20	1350977.69	583.84
1403	479466.21	1350981.16	583.84
1404	479461.50	1350995.38	587.50
1405	479455.06	1350996.28	586.47
1410	479467.89	1350971.14	583.83
1411	479462.76	1350991.58	587.50
1412	479458.33	1350951.81	587.43
1413	479458.59	1350956.15	587.44
1414	479453.12	1350988.14	587.45
1415	479452.58	1350992.20	587.46
1426	479422.56	1350942.77	586.10
1427	479421.46	1350946.62	586.10
1428	479411.28	1350961.56	583.56
1429	479419.22	1350941.57	586.08
1430	479417.78	1350945.31	586.08
1431	479412.35	1350951.17	583.57
1814	479452.89	1351036.29	586.14
1815	479462.21	1350983.95	585.08
1825	479475.13	1350961.92	-
1826	479467.98	1350972.90	583.84
1827	479467.44	1350976.27	583.84
1828	479466.67	1350979.87	583.84
1829	479469.20	1350993.49	-
1830	479451.86	1350953.75	-
1831	479448.45	1350986.48	-
1832	479418.57	1350947.57	-
1833	479416.26	1350969.76	-
1834	479411.95	1350952.37	583.57
1835	479411.59	1350955.83	583.57
1836	479411.18	1350959.54	583.57
1837	479403.14	1350940.71	-
1838	479400.71	1350963.40	-



D / G-39 SECTION
EMERGENCY ACCESS ROAD
(2) 27" DIA. HDPE & 30" DIA. RCP CULVERT EMBEDMENT
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. CONSTRUCTION CONTROL POINTS FOR SUBGRADE, CULVERT INVERTS, AND RIPRAP LIMITS ARE PROVIDED IN THE TABLES PROVIDED ON THIS DRAWING AND ON DRAWINGS G-4 AND G-5.
3. CONTRACTOR SHALL REMOVE EXISTING CULVERTS AND STOCKPILE MATERIAL AT LOCATIONS APPROVED BY CONSTRUCTION MANAGER.
4. ALUMINIZED CMP CULVERTS AND JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02721.
5. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
6. GEOTEXTILE FILTER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02714.
7. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
8. CONTRACTOR SHALL PLACE RIPRAP TYPE C WITHIN AREA SHOWN.
9. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
10. EXISTING CULVERTS SHALL BE EXTENDED AS NECESSARY TO MEET REQUIRED LENGTHS.
11. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
12. EROSION MAT SHALL BE INSTALLED ON SLOPE LENGTHS OF 6' OR GREATER AND IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
13. HDPE CULVERTS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
14. CONTRACTOR SHALL PLACE RIPRAP TO A DISTANCE OF 4 FEET FROM INLET OF 10-INCH HDPE CULVERT. RIPRAP THICKNESS SHALL BE 1 FOOT AND UNDERLAIN BY A GEOTEXTILE FILTER.

000042

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	TEZ	JJA	LMG	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	TEZ	JJA	LMG	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	TEZ	JJA	LMG	DCP	JFB

20 10 0 20 40
SCALE IN FEET

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY - PHASE V

TITLE:
SURFACE-WATER MANAGEMENT SYSTEM DETAILS IV

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

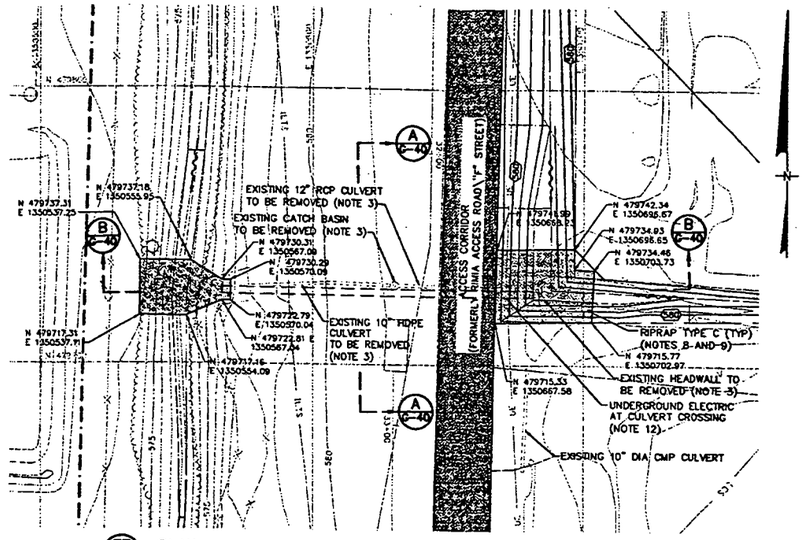
SIGNATURE
29 Jan 2002
DATE

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

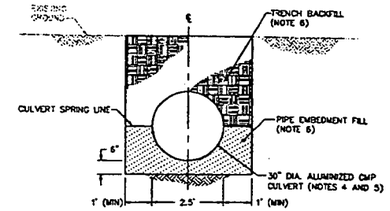
GeoSyntec Consultants
1100 LAKE HEARN DRIVE ATLANTA, GEORGIA 30342 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
TEMP DRAWING NO.:	90X-5000-G-00401
GEOSYNTEC PROJECT NO.:	GQ1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0711
SHEET NO.:	G-39
REVISION NO.:	0

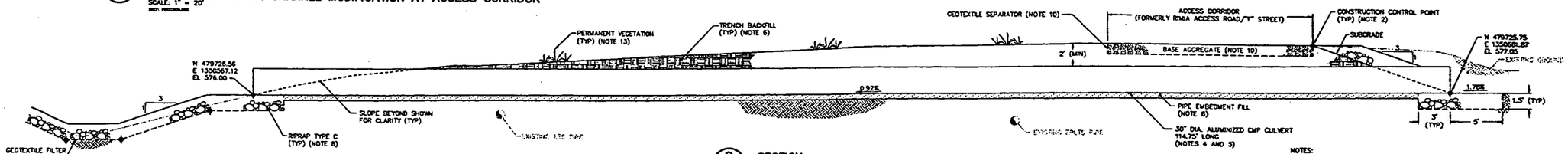
4665



77 G-6 PLAN
RUN-OFF DRAINAGE CHANNEL MODIFICATION AT ACCESS CORRIDOR
SCALE: 1" = 20'



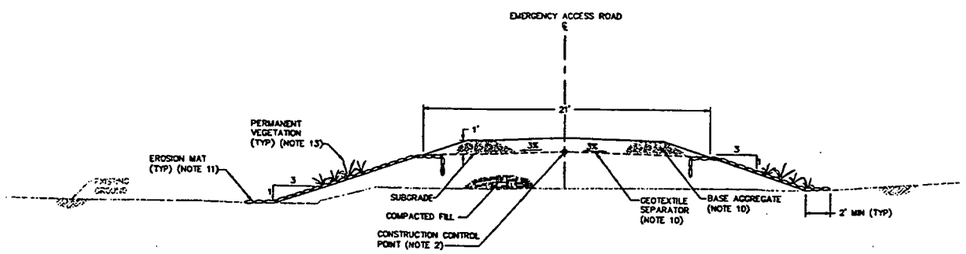
A G-40 SECTION
RUN-OFF DRAINAGE CHANNEL MODIFICATION
30-IN DIA. ALUMINIZED CMP CULVERT EMBEDMENT
SCALE: 1" = 2'



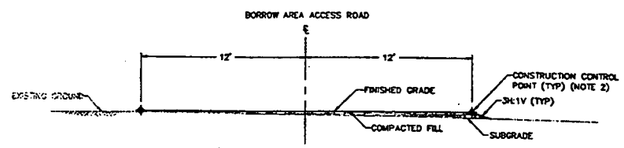
B G-40 SECTION
RUN-OFF DRAINAGE CHANNEL MODIFICATION
30-IN DIA. ALUMINIZED CMP CULVERT CROSSING
SCALE: 1" = 4'

NOTES:

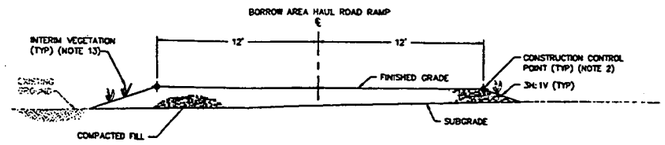
1. DETAILS ARE SHOWN TO SCALE AS NOTED EXCEPT FOR GEOSYNTHETICS WHICH ARE SHOWN AT AN EXAGGERATED SCALE FOR CLARITY. MATERIAL TOLERANCES SHALL BE WITHIN LIMITS GIVEN IN SPECIFICATIONS.
2. CONSTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWINGS G-4, G-5, AND G-6.
3. CONTRACTOR SHALL REMOVE EXISTING CULVERTS, CATCH BASIN, AND HEADWALL AND STOCKPILE MATERIAL AT LOCATIONS APPROVED BY CONSTRUCTION MANAGER.
4. ALUMINIZED CMP CULVERTS AND JOINTS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS SECTION 02721.
5. CONTRACTOR SHALL FILL A MINIMUM OF 2 FEET ABOVE CROWN OF 30-INCH CMP CULVERT. PLACEMENT AND COMPACTION OF FILL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
6. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
7. GEOTEXTILE FILTER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02714.
8. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
9. CONTRACTOR SHALL PLACE RIPRAP TYPE C WITHIN AREA SHOWN.
10. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
11. EROSION MAT SHALL BE INSTALLED ON SLOPE LENGTHS OF 8 FEET OR GREATER AND IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
12. UNDERGROUND ELECTRIC AT CULVERT CROSSING SHALL BE REMOVED AND RELOCATED PRIOR TO INSTALLATION OF NEW CULVERT.
13. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.



78 G-5 DETAIL (TYP)
EMERGENCY ACCESS ROAD
SCALE: 1" = 4'



79 G-4 DETAIL (TYP)
BORROW AREA ACCESS ROAD
SCALE: 1" = 4'



80 G-5 DETAIL (TYP)
BORROW AREA HAUL ROAD RAMP
SCALE: 1" = 4'

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	LMC	JJA	TEZ	DDP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	LMC	JJA	TEZ	DDP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE V

TITLE:
SURFACE-WATER MANAGEMENT SYSTEM DETAILS V

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

SIGNATURE
29 Jan 2002
DATE

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

GEOSYNTEC CONSULTANTS
1900 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30329 USA

PROJECT NO.:	20105
CONTRACT NO.:	95PS005028
FDMP DRAWING NO.:	90X-5000-G-00402
GEOSYNTEC PROJECT NO.:	GD1342-17.4
GEOSYNTEC DOCUMENT NO.:	FD1-0712
SHEET NO.:	G-40
REVISION NO.:	0

000043

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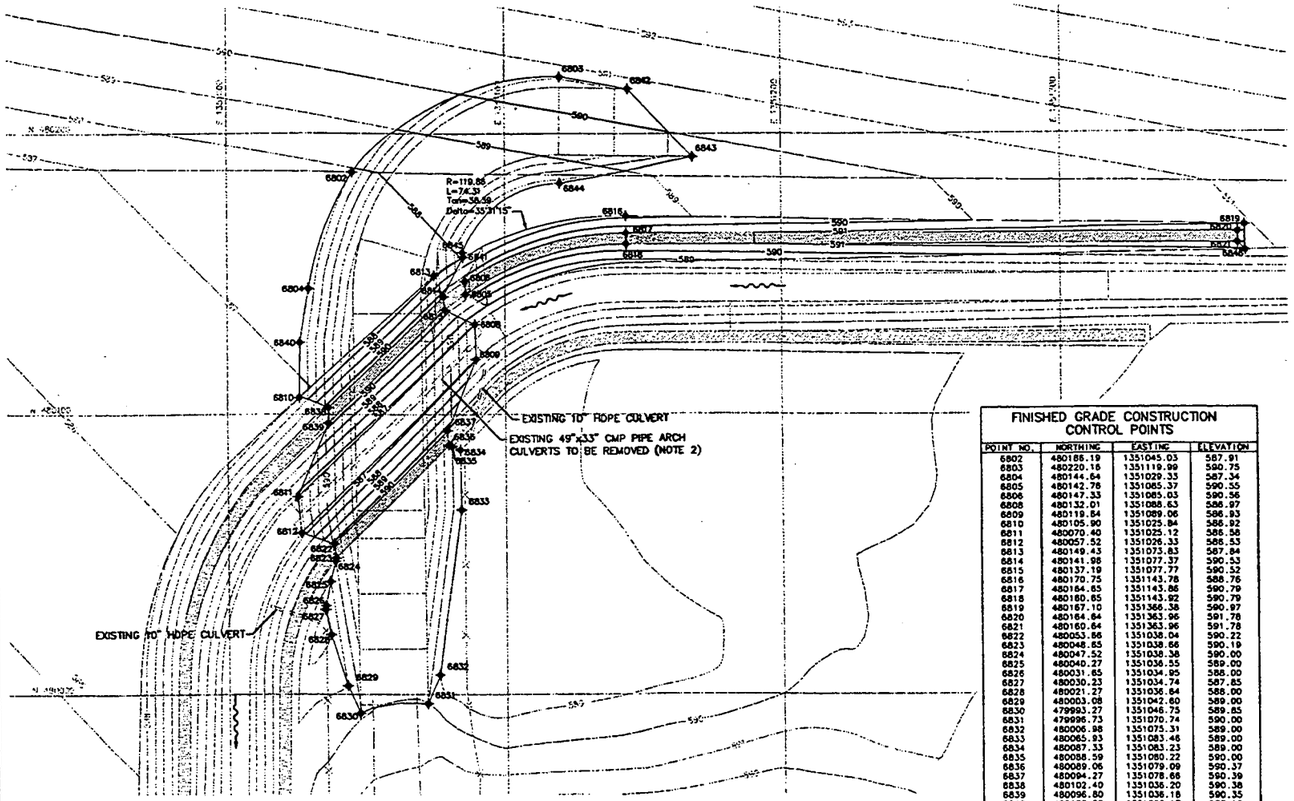
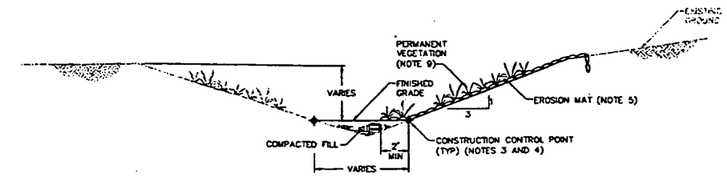
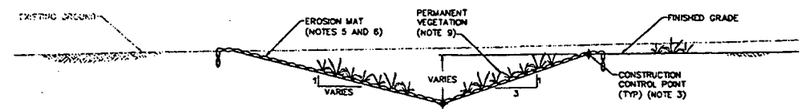


81 G-6 PLAN
REMOVAL OF BORROW HAUL ROAD RAMP AND RUN-OFF DIVERSION CHANNEL FINAL MODIFICATION
SCALE: 1" = 20'

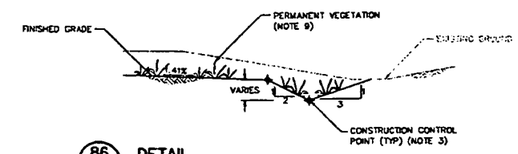
FINISHED GRADE CONSTRUCTION CONTROL POINTS			
POINT NO.	NORTHING	EASTING	ELEVATION
6802	480186.19	1351045.03	587.91
6803	480220.18	1351119.99	590.75
6804	480144.64	1351029.33	587.34
6805	480142.76	1351065.37	590.55
6806	480147.33	1351085.03	590.56
6808	480132.01	1351088.63	586.97
6809	480119.84	1351089.06	586.93
6810	480105.90	1351025.84	586.92
6811	480070.40	1351025.12	586.58
6812	480057.52	1351026.33	588.53
6813	480149.43	1351073.83	587.84
6814	480141.98	1351077.37	590.53
6815	480137.19	1351077.77	590.52
6816	480170.75	1351143.78	588.76
6817	480164.85	1351143.86	590.79
6818	480160.65	1351143.92	590.79
6819	480167.10	1351366.38	590.97
6820	480164.64	1351363.96	591.78
6821	480160.64	1351363.96	591.78
6822	480053.86	1351038.04	590.22
6823	480048.85	1351038.66	590.19
6824	480047.52	1351038.38	590.00
6825	480040.27	1351036.55	589.00
6826	480031.85	1351034.95	588.00
6827	480030.23	1351034.74	587.85
6828	480021.27	1351036.84	588.00
6829	480003.08	1351042.60	589.00
6830	479993.27	1351046.75	589.85
6831	479996.73	1351070.74	590.00
6832	480006.88	1351075.31	589.00
6833	480065.93	1351083.46	589.00
6834	480087.33	1351083.23	589.00
6835	480088.59	1351080.22	590.00
6836	480089.06	1351079.09	590.37
6837	480094.27	1351078.66	590.39
6838	480102.40	1351036.20	590.38
6839	480096.80	1351038.18	590.35
6840	480125.50	1351026.17	587.12
6841	480135.87	1351084.38	588.01
6842	480216.10	1351144.67	590.77
6843	480191.81	1351168.37	589.57
6844	480182.29	1351119.96	588.63
6845	480157.87	1351084.26	588.02
6846	480157.92	1351366.64	590.89



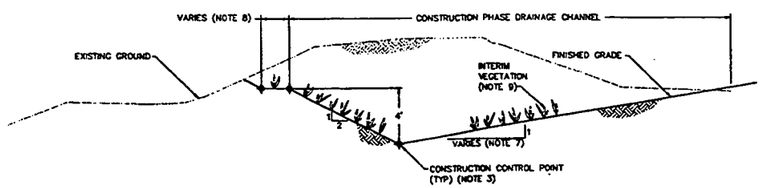
84 G-6 DETAIL
RUN-OFF DRAINAGE CHANNEL SOUTH OF RIMIA
SCALE: 1" = 4'



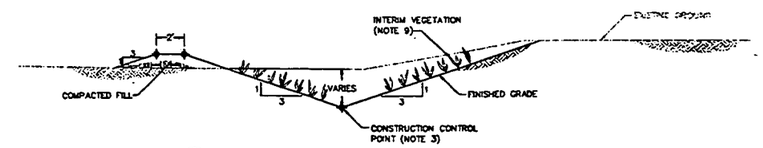
85 G-6 DETAIL
DRAINAGE CHANNEL EAST OF "F" STREET
SCALE: 1" = 4'



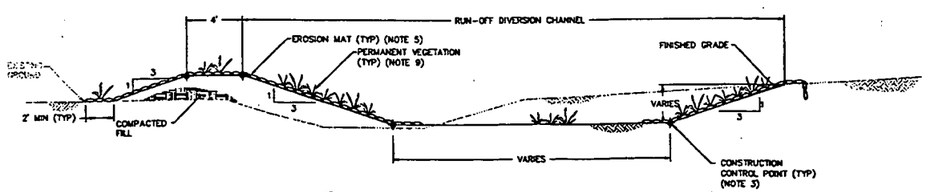
86 G-6 DETAIL
DRAINAGE CHANNEL SOUTH OF CELL 7
SCALE: 1" = 4'



82 G-3 DETAIL
DRAINAGE CHANNEL AND TEMPORARY RUN-OFF DIVERSION BERM
SCALE: 1" = 4'



87 G-4 DETAIL
TEMPORARY DRAINAGE CHANNEL SOUTH OF CELL 6
SCALE: 1" = 4'



83 G-4 DETAIL
RUN-OFF DIVERSION CHANNEL TO EXISTING BORROW AREA SEDIMENTATION BASIN
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. CONTRACTOR SHALL REMOVE EXISTING CULVERTS AND STOCKPILE MATERIAL AT LOCATIONS APPROVED BY CONSTRUCTION MANAGER.
3. CONSTRUCTION CONTROL POINTS FOR SUBGRADE ARE PROVIDED ON DRAWINGS G-3, G-4, G-5, AND G-6.
4. CONTRACTOR SHALL PLACE COMPACTED FILL TO PROVIDE POSITIVE DRAINAGE IN EXISTING CHANNEL BOTTOM. CONSTRUCTION CONTROL POINTS FOR CHANNEL BOTTOM ARE PROVIDED ON DRAWING G-6. DRAINAGE CHANNEL SIDESLOPES SHALL BE GRADED AT A SLOPE OF 3H:1V, WHERE NECESSARY, TO MEET EXISTING CHANNEL SIDESLOPES.
5. EROSION MAT SHALL BE INSTALLED ON SLOPE LENGTHS OF 6 FEET OR GREATER AND IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
6. EROSION MAT SHALL BE INSTALLED ON SLOPES STEEPER THAN 4H:1V AND IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
7. SLOPE OF CHANNEL SIDESLOPE IS 6H:1V FOR WEST PERIMETER OF OSDF AND TRANSITIONS FROM 6H:1V TO 3H:1V SOUTH OF CELL 7.
8. BERM WIDTH VARIES FROM 0 TO 2 FEET WHERE CHANNEL DEPTH REQUIRES BERM.
9. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.

000044

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REV. NO.	DATE	DESCRIPTION	DCL BY	DRL BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FT/DOE/EPA	LMC	JJA	TEZ	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FT/DOE	LMC	JJA	TEZ	DCP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE IN FEET

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

CLIENT: FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: SURFACE-WATER MANAGEMENT SYSTEM DETAILS VI

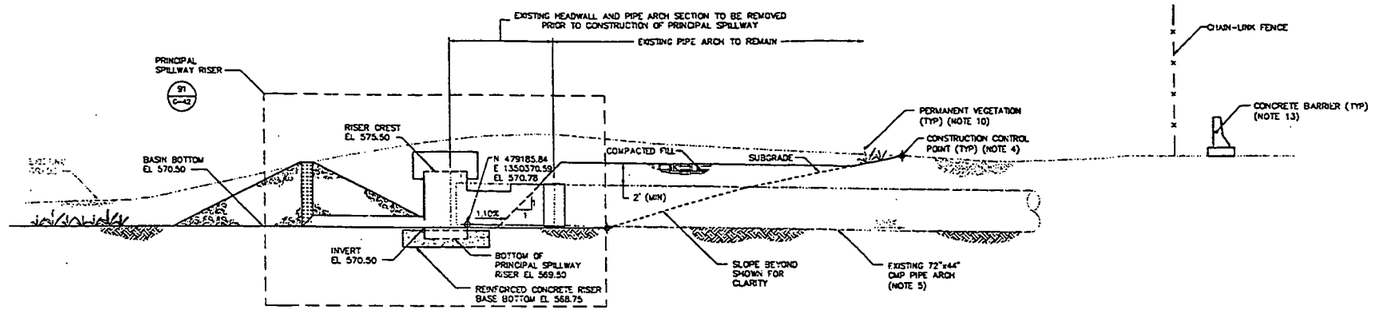
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

29 Jan 2002

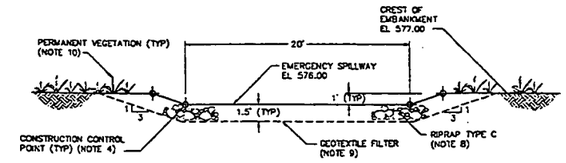
STATE OF OHIO — JOHN F. BEECH E-58248 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

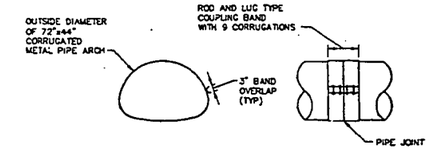
PROJECT NO.:	20105
CONTRACT NO.:	95PS000028
FEMP DRAWING NO.:	90X-5000-G-00403
GEOSYNTEC PROJECT NO.:	021342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0713
SHEET NO.:	G-41
REVISION NO.:	0



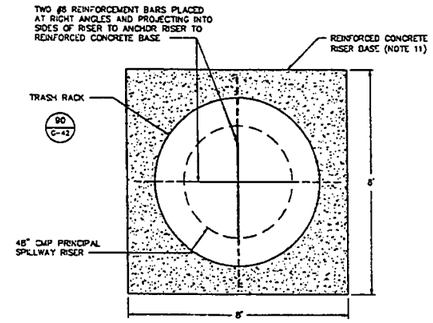
A C-5 SECTION
PRINCIPAL SPILLWAY
SCALE: 1" = 5'



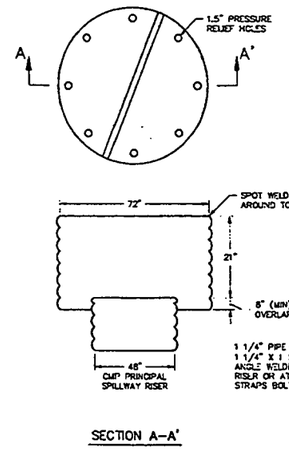
88 C-5 DETAIL
EMERGENCY SPILLWAY
SCALE: 1" = 5'



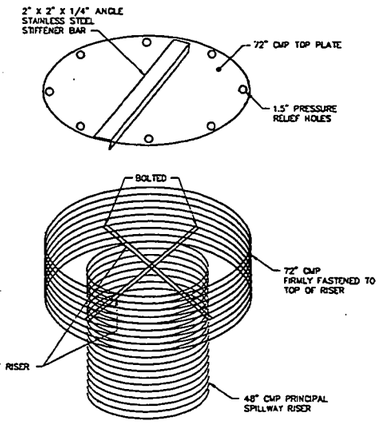
89 C-42 DETAIL
CMP COUPLING BAND
SCALE: NTS



PLAN

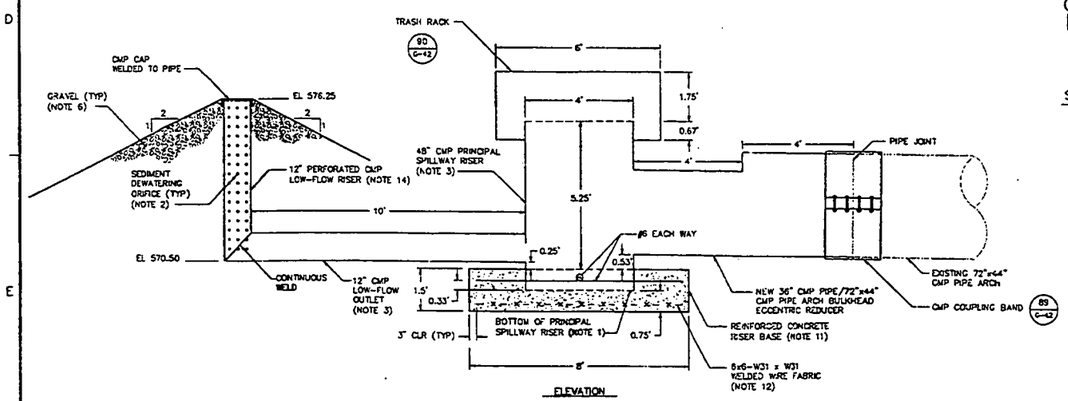


SECTION A-A'



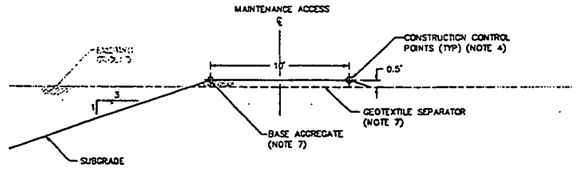
ISOMETRIC VIEW

90 C-42 DETAIL
CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE
SCALE: NTS



ELEVATION

91 C-42 DETAIL
PRINCIPAL SPILLWAY RISER
SCALE: 1" = 2'



92 C-5 DETAIL
MAINTENANCE ACCESS
SCALE: 1" = 4'

NOTES:

1. PRINCIPAL SPILLWAY RISER SHALL BE EMBEDDED 0.75 FEET IN REINFORCED CONCRETE RISER BASE.
2. SEDIMENT DEWATERING ORIFICES SHALL BE 1 INCH DIAMETER AND VERTICALLY SPACED AT 4 INCHES ON CENTER WITH 8 ORIFICES AT EACH LEVEL.
3. CULVERTS AND RISERS SHALL BE ALUMINIZED AND IN ACCORDANCE WITH SPECIFICATION SECTION 02721.
4. CONSTRUCTION CONTROL POINTS FOR SUBGRADE AND MAINTENANCE ACCESS ALIGNMENT ARE PROVIDED ON DRAWING G-5.
5. CONTRACTOR SHALL FILL A MINIMUM OF 2 FEET ABOVE CROWN OF EXISTING CMP PIPE ARCH CULVERT. PLACEMENT AND COMPACTION OF FILL SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02200.
6. AASHTO NO. 57 STONE SHALL BE USED AROUND 12-INCH PERFORATED CMP LOW-FLOW RISER.
7. BASE AGGREGATE AND GEOTEXTILE SEPARATOR SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02230.
8. RIPRAP SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02271.
9. GEOTEXTILE FILTER SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02714.
10. VEGETATION SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02930.
11. CONTRACTOR SHALL FURNISH CONCRETE MIX WITH SUFFICIENT AIR ENTRAINING ADMIXTURE TO PROVIDE 5% ± 1% AIR AT POINT OF DELIVERY IN ACCORDANCE WITH ASTM C231 AND A COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM C39.
12. CONTRACTOR SHALL FURNISH REINFORCING WELDED STEEL WIRE FABRIC IN ACCORDANCE WITH ASTM A185.
13. CONCRETE BARRIERS SHALL BE SUPPLIED BY FLUOR FERNALD, INC.
14. CONTRACTOR SHALL WRAP LOW-LEVEL RISER WITH GALVANIZED WIRE MESH OVERLAIN BY TWO WRAPS OF GEOTEXTILE FILTER. GALVANIZED WIRE MESH SHALL HAVE 1/2 INCH SQUARE OPENINGS AND A 0.063 INCH WIRE DIAMETER.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APR. BY
1	02.10.30	RESPONSE TO OEPA COMMENTS	DGP	JJA	CDC	DGP	JFB
0	02.01.29	CFC SUBMITTAL TO FF/UOL/DPA	LMC	JJA	TCZ	DGP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	LMC	TMM	TCZ	DGP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	LMC	TMM	TCZ	DGP	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 V

TITLE:
SURFACE-WATER MANAGEMENT SYSTEM DETAILS VII

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

SIGNATURE
30 OCT 2002

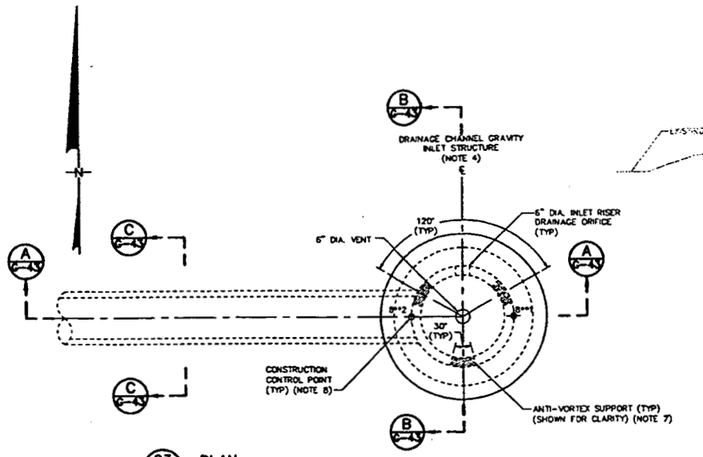
STATE OF OHIO
JOHN T. BECH
E-58248
REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS
3400 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

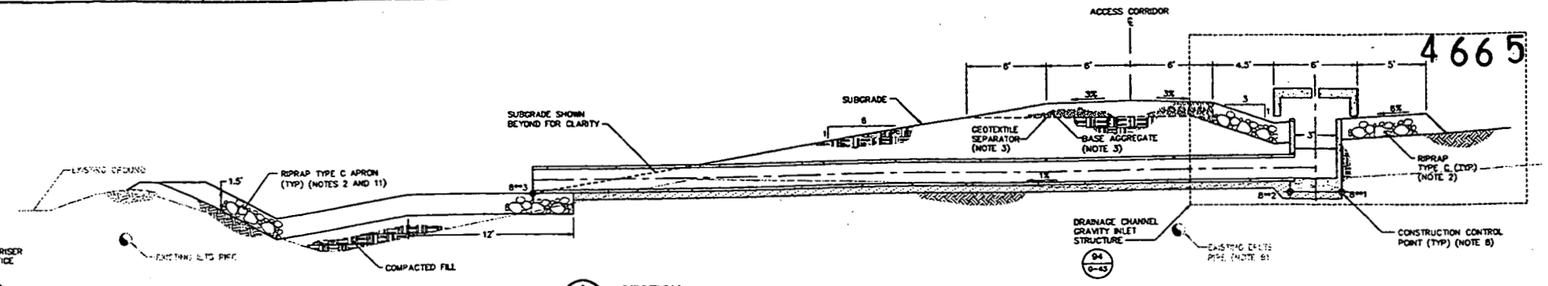
PROJECT NO.:	20105
CONTRACT NO.:	95P5005028
FEMP DRAWING NO.:	90X-6000-C-00404
GEOSYNTEC PROJECT NO.:	GO1342-17.4
GEOSYNTEC DOCUMENT NO.:	F02-1040
SHEET NO.:	C-42
REVISION NO.:	

000045

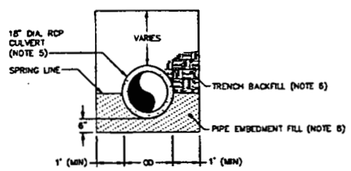
CERTIFIED-FOR-CONSTRUCTION



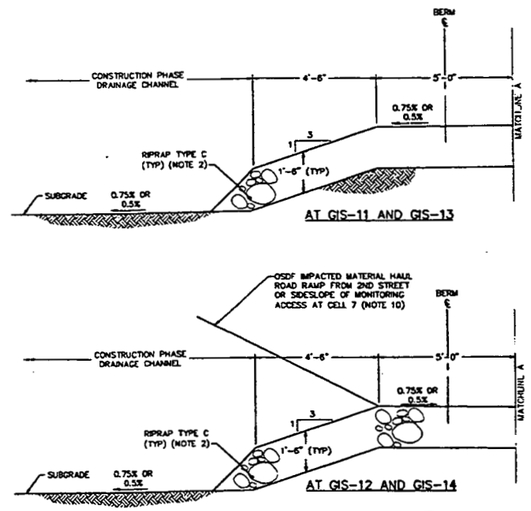
93/G-4 PLAN
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE WITH RCP CULVERT
SCALE: 1" = 2'



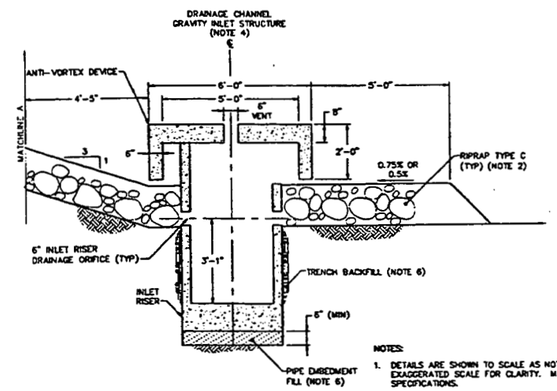
A/G-43 SECTION
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE WITH RCP CULVERT
SCALE: 1" = 4'

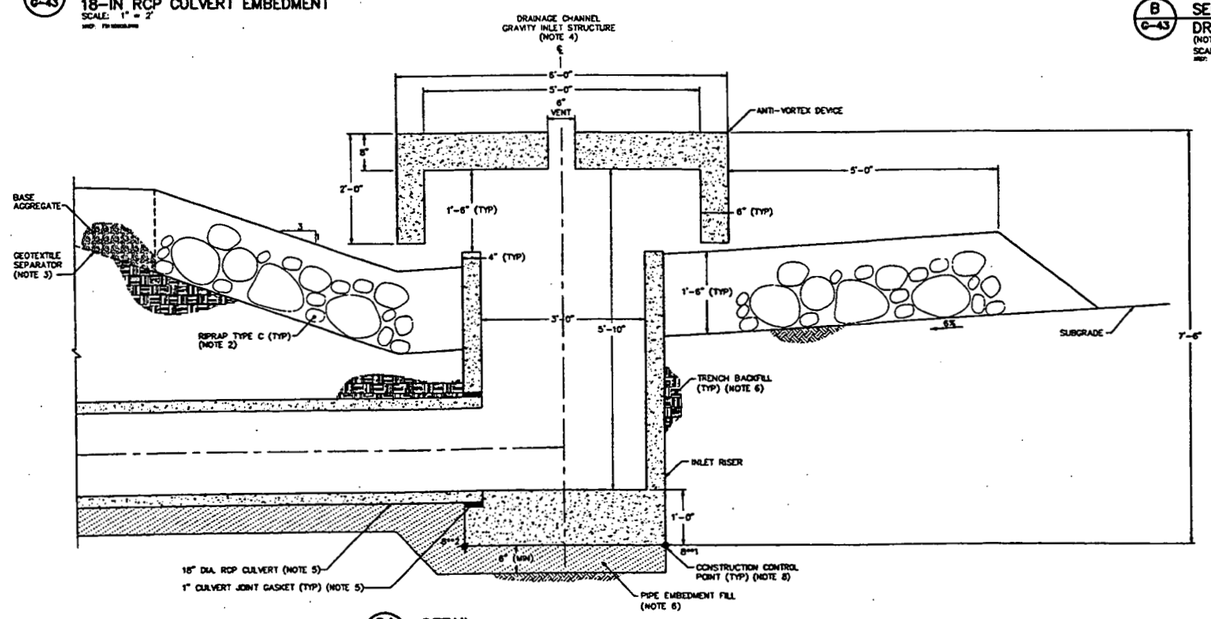


C/G-43 SECTION (TYP)
18-IN RCP CULVERT EMBEDMENT
SCALE: 1" = 2'



B/G-43 SECTION
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE
(NOTE 12)
SCALE: 1" = 2'





94/G-43 DETAIL
DRAINAGE CHANNEL GRAVITY INLET STRUCTURE
SCALE: 1" = 1'

DRAINAGE CHANNEL GRAVITY INLET STRUCTURE AND REINFORCED CONCRETE PIPE CONSTRUCTION CONTROL POINTS			
GIS-11, GIS-12, GIS-13, AND GIS-14 (NOTE 8)			
POINT NO.	NORTHING	EASTING	ELEVATION
8111	480995.16	1350860.80	583.84
8112	480995.29	1350857.23	583.84
8113	480995.88	1350601.98	583.88
8121	480811.84	1350658.86	582.27
8122	480811.89	1350654.99	582.27
8123	480812.56	1350599.74	582.51
8131	480605.18	1350658.13	581.14
8132	480605.23	1350653.47	581.14
8133	480605.90	1350597.21	581.38
8141	480344.07	1350652.94	579.83
8142	480344.11	1350649.28	579.83
8143	480344.79	1350594.02	580.07

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. THE "*" SYMBOL REPRESENTS THE GRAVITY INLET STRUCTURE FOR WHICH THE APPROPRIATE CONTROL POINTS ARE PROVIDED.
9. EXISTING CONDITIONS SHOWN IN THIS SECTION CORRESPOND TO LOCATION OF GIS-14.
10. PRIOR TO CONSTRUCTION OF OSDF IMPACTED MATERIAL HAUL ROAD RAMP AND MONITORING ACCESS, CONTRACTOR SHALL PLACE GEOTEXTILE SEPARATOR BETWEEN RIPRAP AND COMPACTED FILL.
11. LIMITS OF RIPRAP TYPE C APRON ARE PROVIDED ON DRAWINGS G-4 AND G-5.
12. DRAINAGE CHANNEL SLOPE AT GIS-11 AND GIS-12 IS 0.75%. DRAINAGE CHANNEL SLOPE AT GIS-13 AND GIS-14 IS 0.5%.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	LMC	VDR	TEZ	DOP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	LMC	JMB	TEZ	DOP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE AS SHOWN

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

CLIENT: FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: SURFACE-WATER MANAGEMENT SYSTEM DETAILS VIII

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

DRAWING 29 Jan 2002 DATE

STATE OF OHIO — JOHN E. BEECH E-04246 — REGISTERED PROFESSIONAL ENGINEER — SEAL

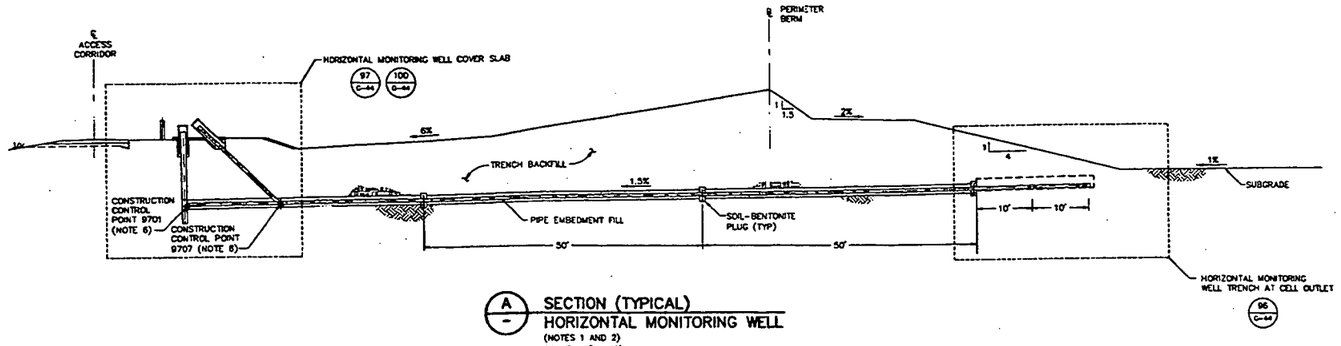
GEOSYNTEC CONSULTANTS

PROJECT NO.: 20105
CONTRACT NO.: 89PS000078
FEMP DRAWING NO.: 90X-8000-G-00405
GEOSYNTEC PROJECT NO.: CO1342-17.4
GEOSYNTEC DOCUMENT NO.: FDT-0045
SHEET NO.: G-43
REVISION NO.: 0

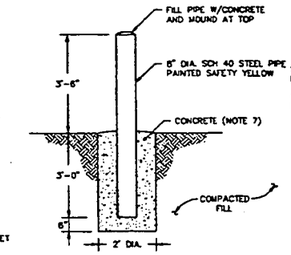
000046

CERTIFIED-FOR-CONSTRUCTION

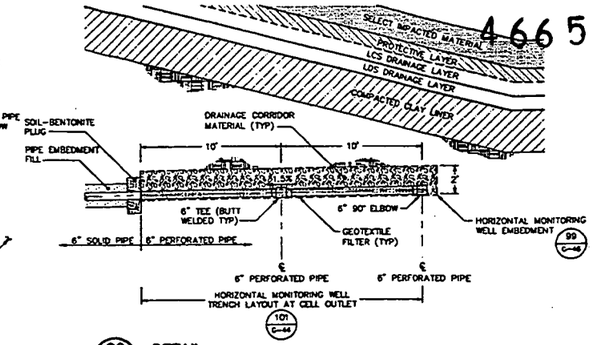
4665



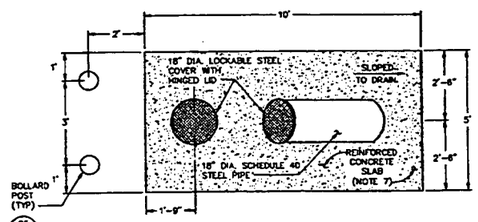
A — SECTION (TYPICAL)
HORIZONTAL MONITORING WELL
(NOTES 1 AND 2)
SCALE: 1" = 10'



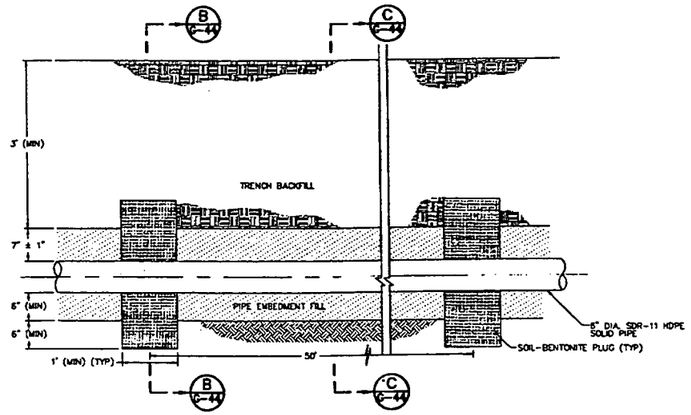
95 / C-44 DETAIL
BOLLARD POST
SCALE: 1" = 2'



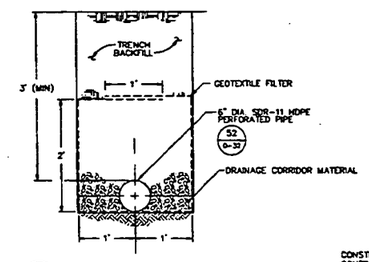
96 / C-44 DETAIL
HORIZONTAL MONITORING WELL TRENCH AT CELL OUTLET
SCALE: 1" = 4'



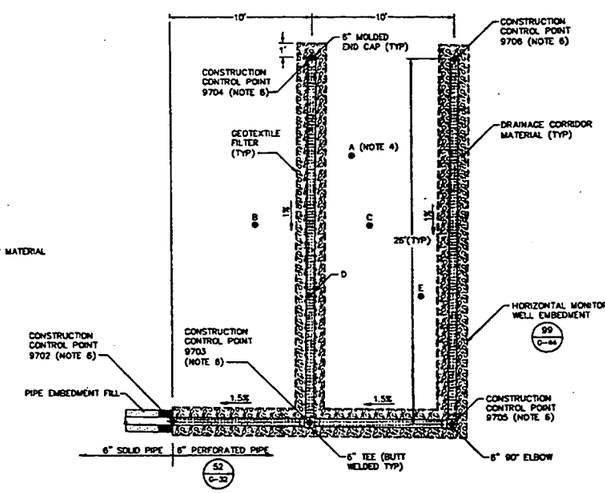
97 / C-44 DETAIL
HORIZONTAL MONITORING WELL COVER SLAB
SCALE: 1" = 2'



98 / C-44 DETAIL
PIPE EMBEDMENT
(NOTES 1, 2, AND 3)



99 / C-44 DETAIL
HORIZONTAL MONITORING WELL EMBEDMENT
(NOTES 1 AND 3)
SCALE: 1" = 1'

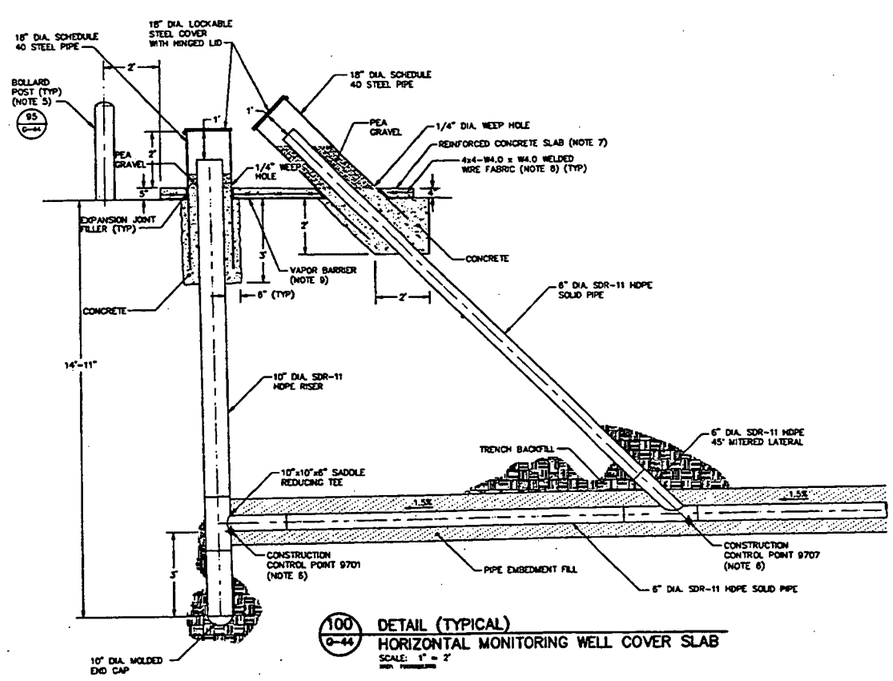


LOCATION OF OVERLYING FEATURE RELATIVE TO TRENCH

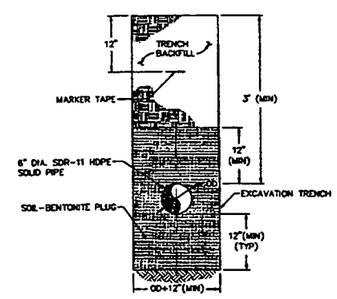
LEGEND:

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

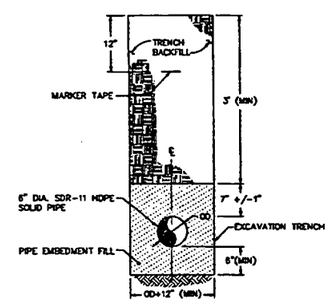
101 / C-44 PLAN
HORIZONTAL MONITORING WELL TRENCH LAYOUT AT CELL OUTLET
SCALE: 1" = 4'



100 / C-44 DETAIL (TYPICAL)
HORIZONTAL MONITORING WELL COVER SLAB
SCALE: 1" = 2'



B / C-44 SECTION
PIPE EMBEDMENT WITH SOIL-BENTONITE PLUG
(NOTES 1, 2, AND 3)
SCALE: 1" = 1'



C / C-44 SECTION
PIPE EMBEDMENT
(NOTES 1 AND 3)
SCALE: 1" = 1'

NOTES:

1. TRENCHING AND BACKFILLING SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
2. SOIL BENTONITE PLUGS SHALL BE LOCATED 50 FEET ON CENTER AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH SPECIFICATION SECTION 02215.
3. PIPES AND FITTINGS SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02605.
4. POINTS "A" THROUGH "E" ILLUSTRATE THE HORIZONTAL LOCATIONS OF LINER PENETRATIONS SITUATED ABOVE THE HORIZONTAL MONITORING WELL TRENCH AT THE CELL OUTLET.
5. BOLLARD POST CONCRETE EMBEDMENT NOT SHOWN FOR CLARITY.
6. CONSTRUCTION CONTROL POINTS ASSOCIATED WITH HORIZONTAL MONITORING WELLS ARE PROVIDED IN TABLE SHOWN ON THIS DRAWING.
7. CONTRACTOR SHALL FURNISH CONCRETE MIX WITH SUFFICIENT AIR ENTRAINING ADMIXTURE TO PROVIDE 5% ± 1% AIR AT POINT OF DELIVERY IN ACCORDANCE WITH ASTM C213 AND A COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM C39.
8. FURNISH REINFORCING WELDED STEEL WIRE FABRIC MEETING REQUIREMENTS OF ASTM A185.
9. FURNISH POLYETHYLENE SHEET FOR VAPOR BARRIERS WITH A 8 MIL MINIMUM THICKNESS.

HORIZONTAL MONITORING WELL CONSTRUCTION CONTROL POINTS

CELL NO.	POINT NO.	NORTHING	EASTING	BOTTOM OF PIPE ELEVATION
CELL 7	9701	480550.45	1350655.87	575.47
	9702	480558.70	1350798.74	577.61
	9703	480558.58	1350808.74	577.76
	9704	480584.58	1350809.06	578.02
	9705	480558.46	1350818.74	577.91
	9706	480584.46	1350819.05	578.17
	9707	480560.25	1350672.53	575.72

000047

CERTIFIED-FOR-CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
D	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JMD	KRD	DDP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JMD	KRD	DDP	JFB
A	-	NOT ISSUED	-	-	-	-	-

SCALE AS SHOWN

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

CLIENT: FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: HORIZONTAL MONITORING WELL AND MISCELLANEOUS DETAILS

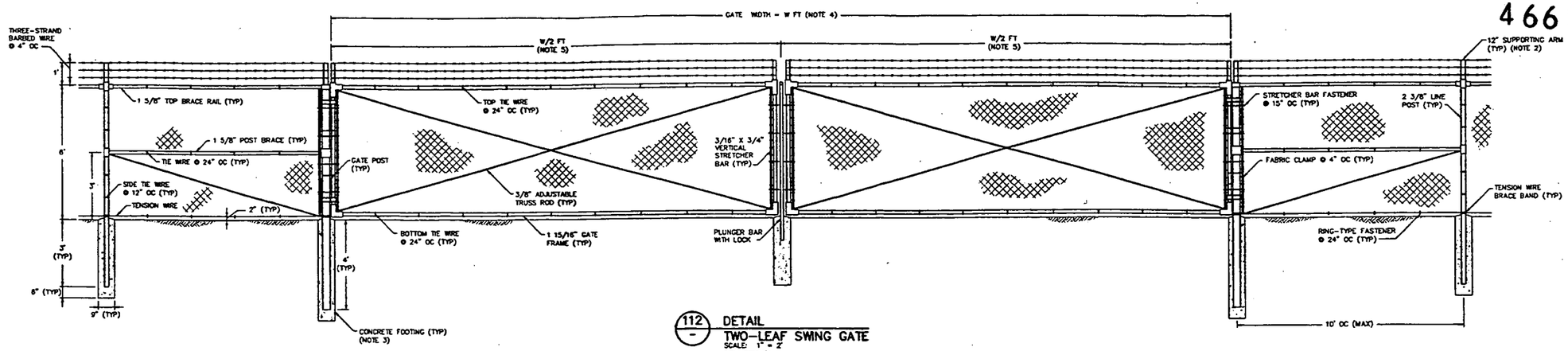
THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED.

SIGNATURE — DATE: 29 Feb 2002

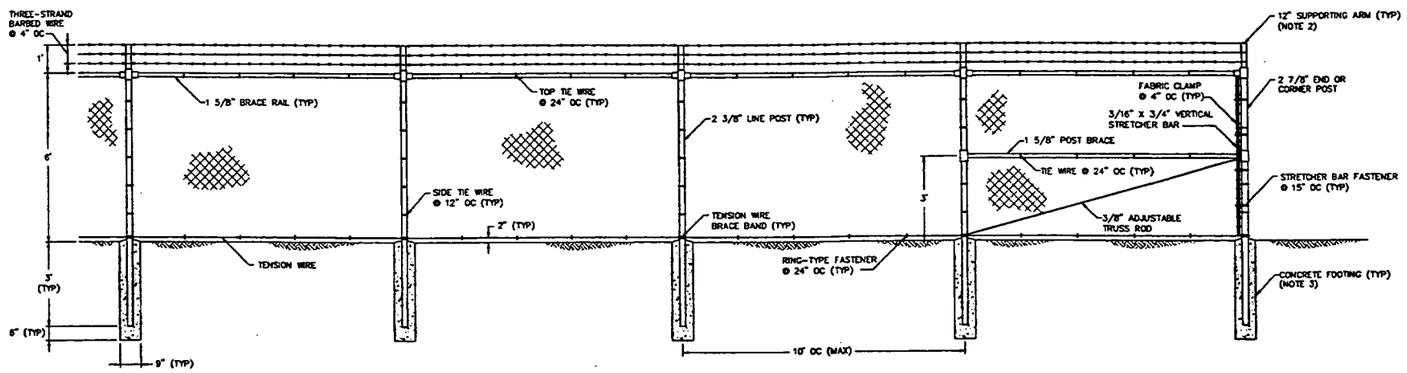
STATE OF OHIO — JOHN F. BEECH E-38246 — REGISTERED PROFESSIONAL ENGINEER — SEAL

GEO SYNTEC CONSULTANTS
1255 LAKE HEARN DRIVE, ATLANTA, GEORGIA 30343 USA

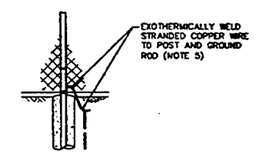
PROJECT NO.:	20105
CONTRACT NO.:	9SPS005028
FEMP DRAWING NO.:	90X-5000-C-00406
GEOSYNTEC PROJECT NO.:	001342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0048
SHEET NO.:	C-44
REVISION NO.:	0



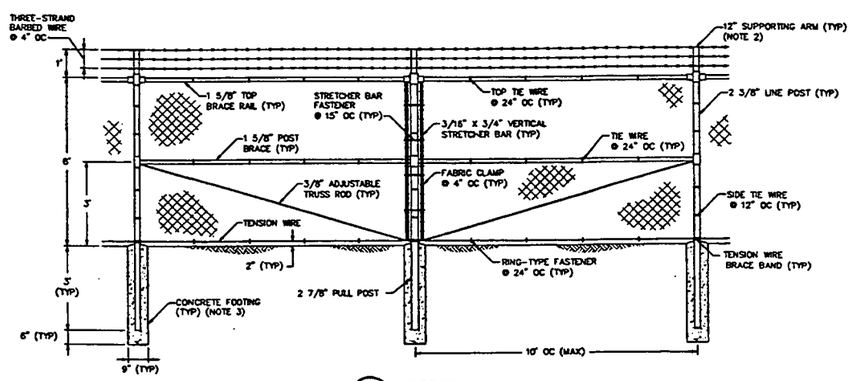
112 DETAIL
TWO-LEAF SWING GATE
SCALE: 1" = 2'



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



114 DETAIL
CHAIN-LINK FENCE GROUND
SCALE: NTS



115 DETAIL
PULL POST
SCALE: 1" = 2'

NOTES:

1. CHAIN-LINK FENCE AND GATES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02831.
2. SUPPORTING ARMS SHALL SLOPE TO OUTSIDE OF FENCED AREA AT 45 DEGREES FROM VERTICAL.
3. CONCRETE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02831. EXPOSED TOPS OF CONCRETE FOOTINGS SHALL HAVE A 1-INCH CROWN TO PROMOTE DRAINAGE.
4. SEE DRAWINGS G-1, G-3, AND G-5 FOR LOCATION OF CHAIN-LINK FENCE, GATES, AND GATE WIDTHS.
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.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.28	CFC SUBMITTAL TO FF/DOE/EPA	LMG	JWD	TEZ	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	LMG	JWD	TEZ	DCP	JFB
A	--	NOT ISSUED	--	--	--	--	--

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY - PHASE V

TITLE:
CHAIN-LINK FENCE AND GATE DETAILS

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

SIGNATURE
29 Jan 2002
DATE

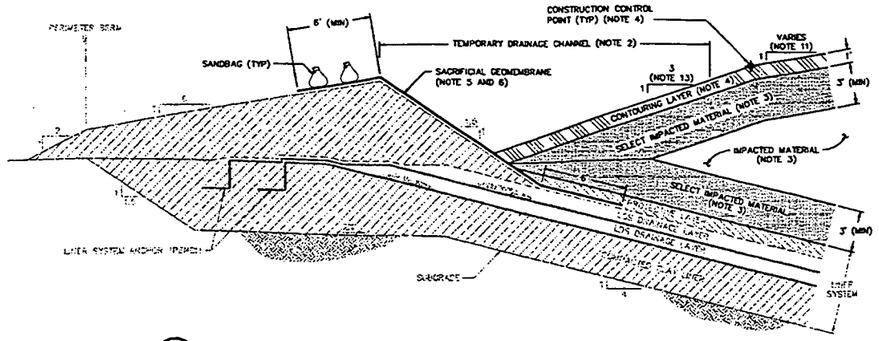
STATE OF OHIO
JOHN F. BEECH
E-38248
REGISTERED
PROFESSIONAL ENGINEER
SEAL

GEOSYNTEC CONSULTANTS
3100 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30342 USA

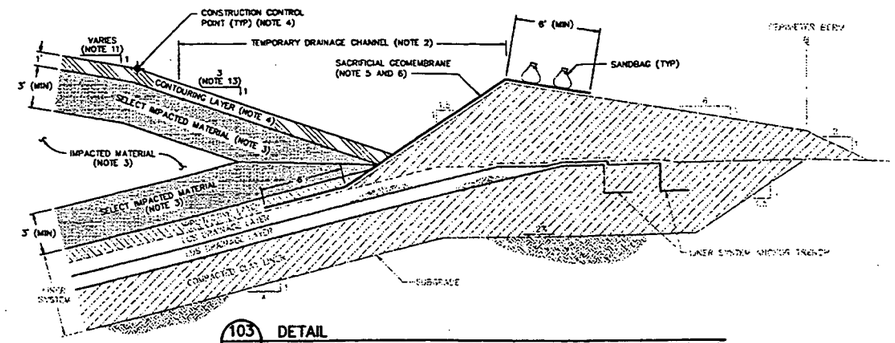
PROJECT NO.:	20105
CONTRACT NO.:	95PS005078
FEMP DRAWING NO.:	90X-6000-G-00409
GEOSYNTEC PROJECT NO.:	CO1342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0048
SHEET NO.:	G-47
REVISION NO.:	0

000050

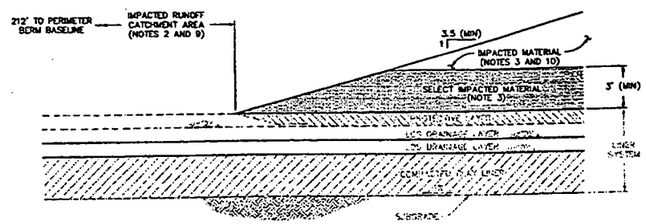
CERTIFIED-FOR-CONSTRUCTION



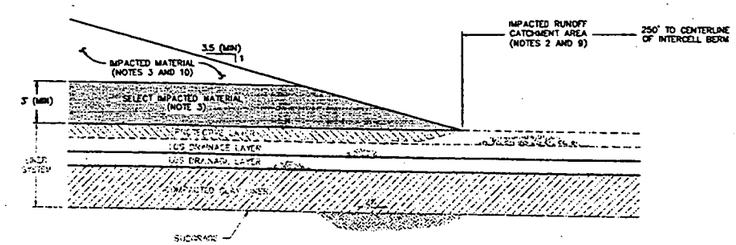
102 / – DETAIL
IMPACTED MATERIAL PLACEMENT – CELLS 4 THROUGH 6
WEST PERIMETER OUTSIDE OF IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



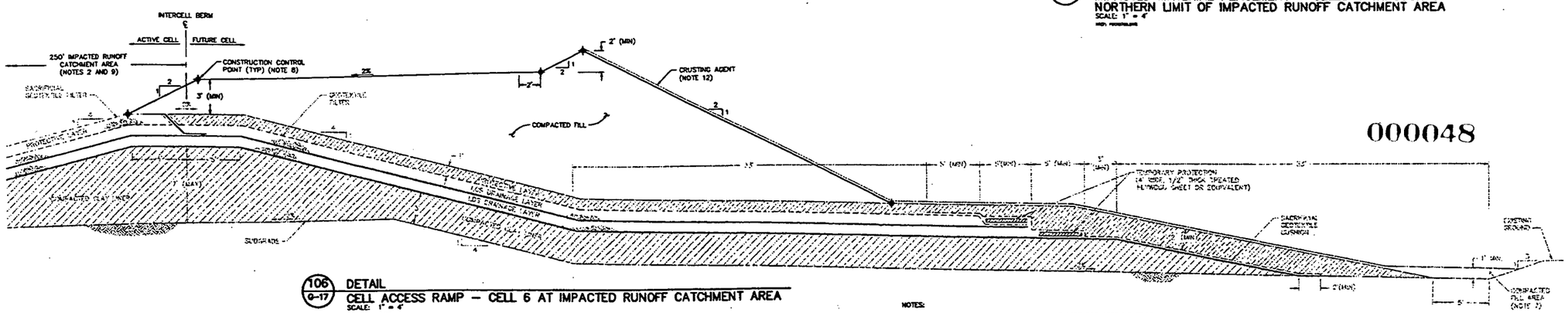
103 / – DETAIL
IMPACTED MATERIAL PLACEMENT – CELLS 4 THROUGH 6
EAST PERIMETER
SCALE: 1" = 4'



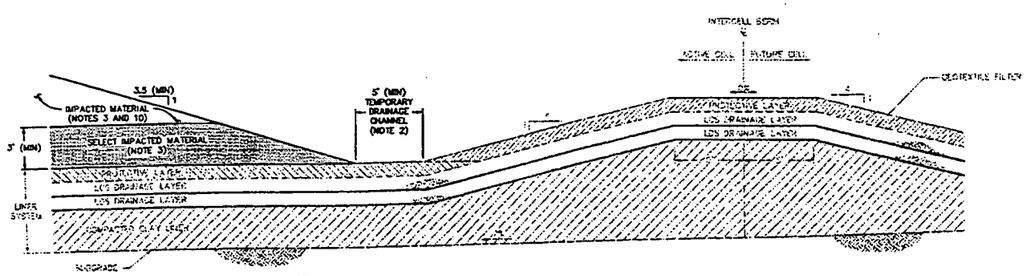
104 / – DETAIL
IMPACTED MATERIAL PLACEMENT – CELLS 4 THROUGH 6
EASTERN LIMIT OF IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



105 / G-19 DETAIL
IMPACTED MATERIAL PLACEMENT – CELLS 4 THROUGH 6
NORTHERN LIMIT OF IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



106 / G-17 DETAIL
CELL ACCESS RAMP – CELL 6 AT IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



107 / G-19 DETAIL
IMPACTED MATERIAL PLACEMENT – CELLS 4 THROUGH 6 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 AS SPECIFIED IN TECHNICAL 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. EROSION CONTROL MEASURES SHALL BE INSTALLED (E.G. STRAW BALES) CONSISTENT WITH THE IMPACTED MATERIAL PLACEMENT PLAN.
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.
5. SACRIFICIAL GEOMEMBRANE SHALL BE USED TO CONTROL IMPACTED RUNOFF IN CELLS 4 THROUGH 6 DURING FILLING. EXPOSED SACRIFICIAL GEOMEMBRANE SHALL BE REMOVED BY CUTTING PRIOR TO CONSTRUCTION OF COMPACTED CLAY CAP IN TEMPORARY DRAINAGE CHANNEL.
6. SACRIFICIAL GEOMEMBRANE SHALL CONSIST OF HIGH DENSITY POLYETHYLENE, AS APPROVED BY CONSTRUCTION MANAGER AND PROVIDED BY FLUOR FERNALD, INC. CONTRACTOR SHALL SECURE IN-PLACE SACRIFICIAL GEOMEMBRANE WITH SANDBAGS 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 DRAWINGS G-17 AND G-18.
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 EAST AND WEST PERIMETERS OF OSDF.
12. CRUSTING AGENT SHALL BE APPLIED AT LINER SYSTEM TEMPORARY TERMINATION INCLUDING CELL ACCESS RAMP SIDE SLOPE AND BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
13. INSTALL SILT FENCE 10 FEET (MEASURED HORIZONTALLY) UPSLOPE OF 3H:1V SLOPE LIMIT. INSTALL ADDITIONAL SILT FENCES AT APPROXIMATELY 50 FEET INTERVALS FOR A TOTAL OF THREE SILT FENCES. SILT FENCES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.

CERTIFIED–FOR–CONSTRUCTION

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVR. BY	APP. B
D	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JWD	KRD	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JWD	KRD	DCP	JFB
A	01.10.22	PRELIMINARY SUBMITTAL TO FF/DOE	KRD	JWD	KRD	DCP	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 V

TITLE: IMPACTED MATERIAL PLACEMENT DETAILS I

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

29 Jan 2002

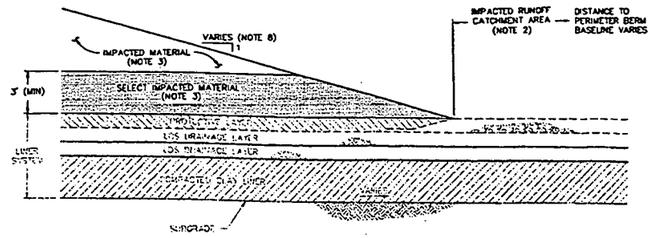
STATE OF OHIO — JOHN W. BEECH E-38248 — REGISTERED PROFESSIONAL ENGINEER

GEOSYNTEC CONSULTANTS

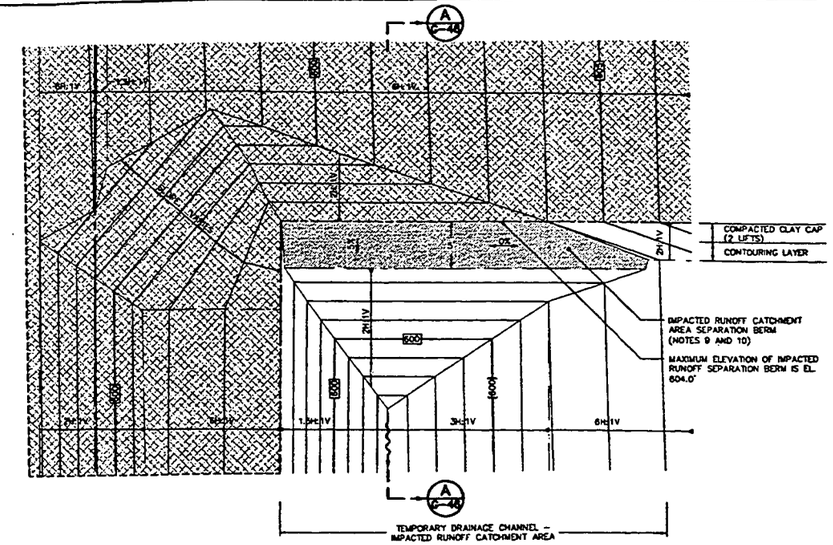
PROJECT NO.:	20105
CONTRACT NO.:	95PS0050026
FEMP DRAWING NO.:	90X-5000-G-0041
GEOSYNTEC PROJECT NO.:	001342-17.4
GEOSYNTEC DOCUMENT NO.:	F01-0047
SHEET NO.:	G-45
REVISION NO.:	0

000048

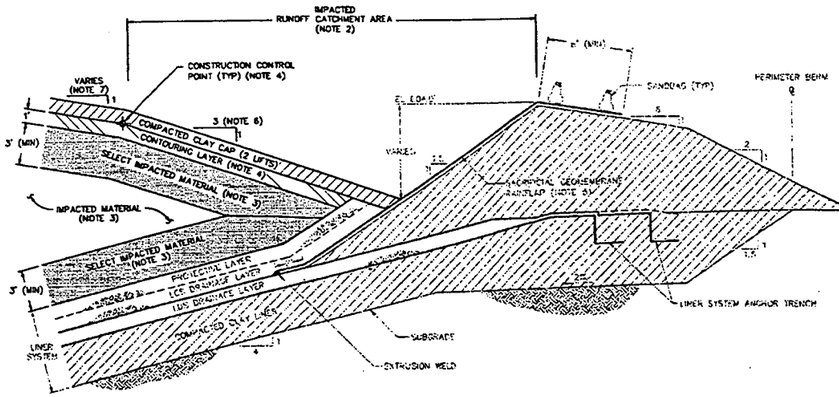
4665



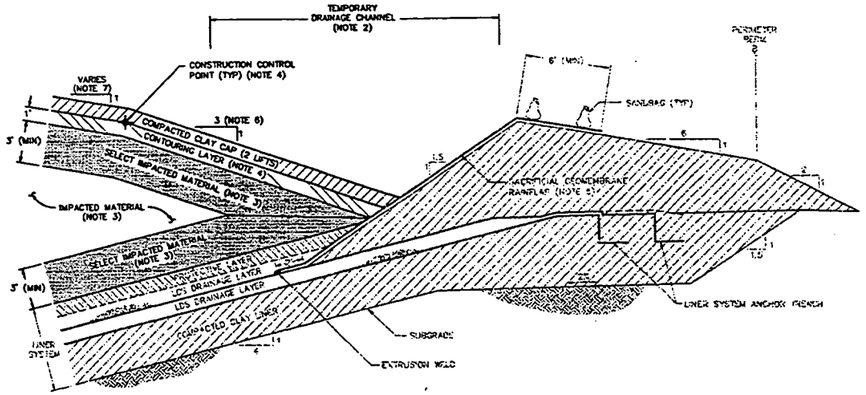
108 / C-20 DETAIL
IMPACTED MATERIAL PLACEMENT – CELL 7 AT LIMIT OF IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



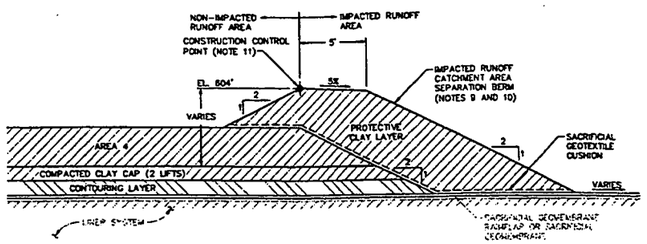
109 / C-16 PLAN
IMPACTED RUNOFF CATCHMENT AREA SEPARATION BERM
(NOTE 12)
SCALE: 1" = 6'



110 / – DETAIL
IMPACTED MATERIAL PLACEMENT – CELL 7, STAGE III AT IMPACTED RUNOFF CATCHMENT AREA
SCALE: 1" = 4'



111 / – DETAIL
IMPACTED MATERIAL PLACEMENT – CELL 7 OUTSIDE OF IMPACTED MATERIAL CATCHMENT AREA
SCALE: 1" = 4'



A / C-46 SECTION (TYPICAL)
IMPACTED RUNOFF CATCHMENT AREA SEPARATION BERM
SCALE: 1" = 4'

4665

LEGEND

- 600 — PROTECTIVE CLAY LAYER OR COMPACTED CLAY CAP ELEVATION (FEET)
- 600 — SELECT IMPACTED MATERIAL ELEVATION (FEET)
- PERIMETER BERM BASELINE
- NON-IMPACTED RUNOFF AREA (NOTE 13)
- BERM CREST
- DRAINAGE FLOW DIRECTION

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 AS SPECIFIED IN TECHNICAL SPECIFICATIONS.
2. THIS DRAWING ILLUSTRATES 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. EROSION CONTROL MEASURES SHALL BE INSTALLED (E.G. STRAW BALES) CONSISTENT WITH THE IMPACTED MATERIAL PLACEMENT PLAN.
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.
5. SACRIFICIAL GEOMEMBRANE RAINFLAP SHALL BE USED TO CONTROL AND CONTAIN IMPACTED RUNOFF IN CELL 7 DURING FILLING. EXPOSED SACRIFICIAL GEOMEMBRANE RAINFLAP SHALL BE REMOVED BY CUTTING ONLY AFTER CONSTRUCTION OF SECOND LIFT OF COMPACTED CLAY CAP. SACRIFICIAL GEOMEMBRANE RAINFLAP SHALL CONSIST OF HIGH DENSITY POLYETHYLENE, AS APPROVED BY CONSTRUCTION MANAGER AND PROVIDED BY FLUOR FERNALD, INC. CONTRACTOR SHALL SECURE IN-PLACE SACRIFICIAL GEOMEMBRANE WITH SANDBAGS TO PREVENT DAMAGE FROM WIND.
6. INSTALL SILT FENCE 10 FEET (MEASURED HORIZONTALLY) UPSLOPE OF 3H:1V SLOPE LIMIT. INSTALL ADDITIONAL SILT FENCES AT APPROXIMATELY 50 FEET INTERVALS FOR A TOTAL OF THREE SILT FENCES. SILT FENCES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02270.
7. SLOPE OF LOWER PORTION OF FINAL COVER SYSTEM IS 6H:1V FOR EAST AND WEST PERIMETERS OF OSDF.
8. IMPACTED MATERIAL INTERIM SLOPES SHALL BE NO STEEPER THAN 3.5H:1V IN ACCORDANCE WITH SPECIFICATION SECTION 13010.
9. CONSTRUCT IMPACTED RUNOFF CATCHMENT AREA SEPARATION BERM OF PROTECTIVE CLAY LAYER MATERIAL AND IN ACCORDANCE WITH SPECIFICATION SECTION 02225.
10. IMPACTED RUNOFF CATCHMENT AREA SEPARATION BERMS SHALL BE IN-PLACE PRIOR TO DIVERSION OF NON-IMPACTED RUNOFF FROM UPSTREAM AREAS TO OSDF SURFACE WATER MANAGEMENT SYSTEM.
11. CONSTRUCTION CONTROL POINT INFORMATION IS SHOWN ON DRAWING C-16.
12. EXISTING CONDITIONS SHOWN IN THIS PLAN CORRESPOND TO IMPACTED RUNOFF CATCHMENT AREA SEPARATION BERM NUMBER 2 LOCATED AS SHOWN ON DRAWING C-16.
13. IMPACTED MATERIAL ELEVATIONS, EXCLUDING IMPACTED RUNOFF CATCHMENT AREA, REPRESENT TOP OF SELECT IMPACTED MATERIAL.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP. BY
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	KRD	JBD	KRD	DCP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	KRD	JBD	KRD	DCP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT: ON-SITE DISPOSAL FACILITY – PHASE V

TITLE: IMPACTED MATERIAL PLACEMENT DETAILS II

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

29 Jan 2002

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

GEOSYNTEC CONSULTANTS

PROJECT NO.:	20105
CONTRACT NO.:	95P5005020
FERNP DRAWING NO.:	9OX-6000-C-00406
GEOSYNTEC PROJECT NO.:	GO1342-17.6
GEOSYNTEC DOCUMENT NO.:	F01-0050
SHEET NO.:	C-46
REVISION NO.:	0

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CERTIFIED-FOR-CONSTRUCTION

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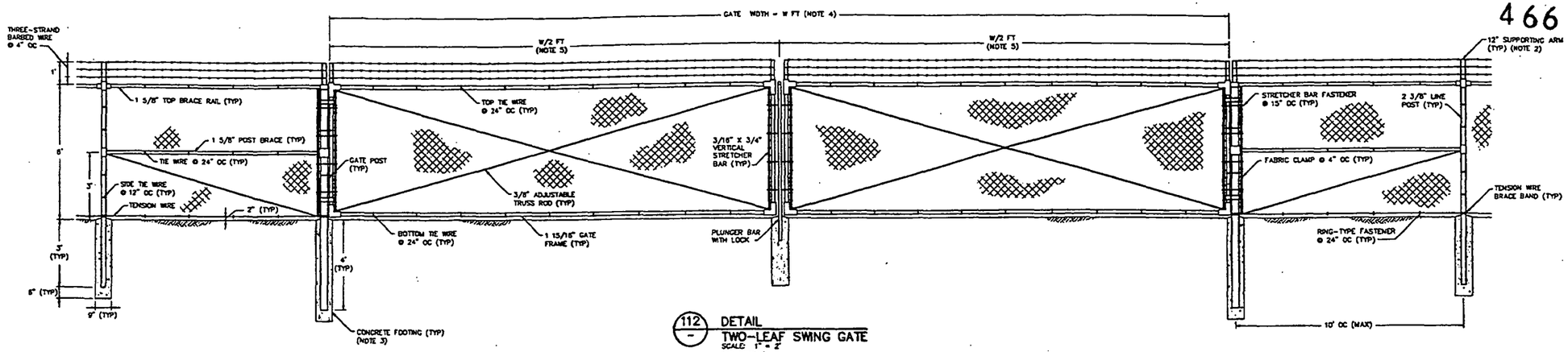
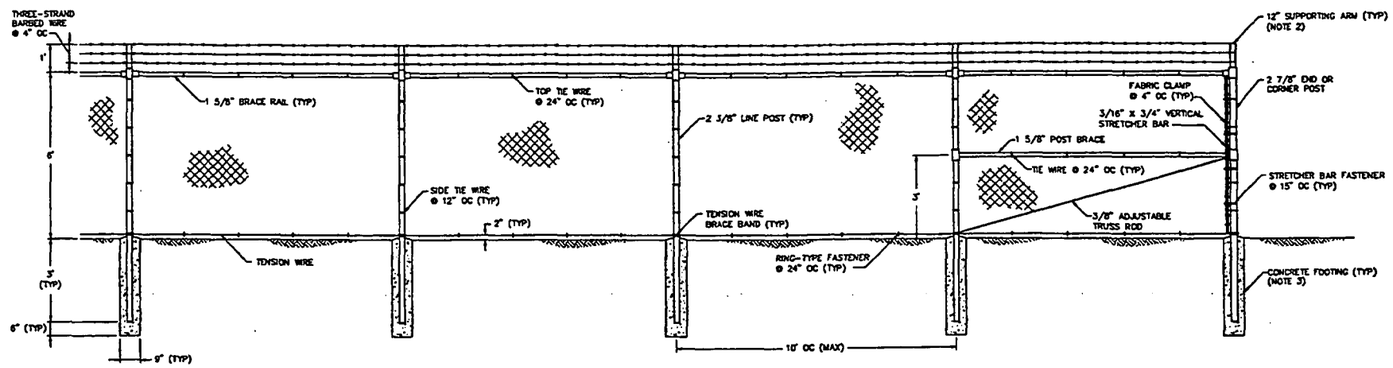
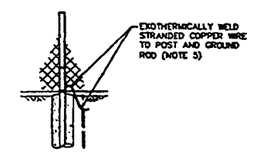


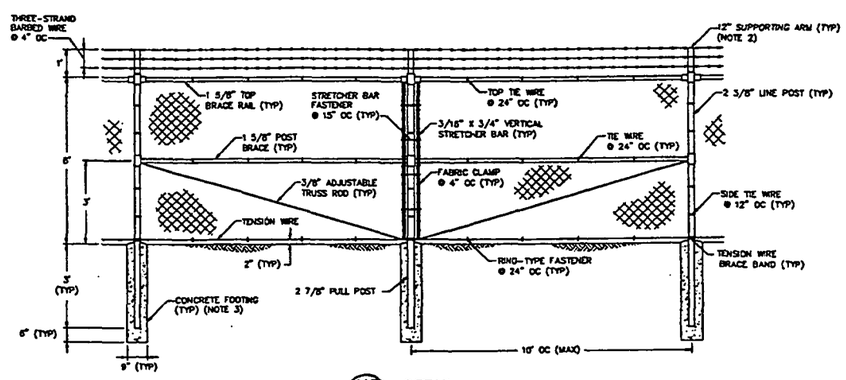
112 DETAIL
TWO-LEAF SWING GATE
SCALE: 1" = 2'



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



114 DETAIL
CHAIN-LINK FENCE GROUND
SCALE: NTS



115 DETAIL
PULL POST
SCALE: 1" = 2'

NOTES:

1. CHAIN-LINK FENCE AND GATES SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02831.
2. SUPPORTING ARMS SHALL SLOPE TO OUTSIDE OF FENCED AREA AT 45 DEGREES FROM VERTICAL.
3. CONCRETE SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 02831. EXPOSED TOPS OF CONCRETE FOOTINGS SHALL HAVE A 1-INCH CROWN TO PROMOTE DRAINAGE.
4. SEE DRAWINGS G-1, G-3, AND G-5 FOR LOCATION OF CHAIN-LINK FENCE, GATES, AND GATE WIDTHS.
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.

REV. NO.	DATE	DESCRIPTION	DES. BY	DR. BY	CHK. BY	RVW. BY	APP.
0	02.01.29	CFC SUBMITTAL TO FF/DOE/EPA	LMG	JMD	TEZ	DOP	JFB
B	01.12.17	PRE-FINAL SUBMITTAL TO FF/DOE	LMG	JMD	TEZ	DOP	JFB
A	–	NOT ISSUED	–	–	–	–	–

SCALE AS SHOWN

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

CLIENT:
FLUOR FERNALD, INC.

PROJECT:
ON-SITE DISPOSAL FACILITY – PHASE V

TITLE:
CHAIN-LINK FENCE AND GATE DETAILS

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

SIGNATURE
29 Jan 2002
DATE

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

GEOSYNTEC CONSULTANTS
3165 LAKE HEARN DRIVE
ATLANTA, GEORGIA 30345 USA

PROJECT NO.:	20105
CONTRACT NO.:	95P5005028
FFMP DRAWING NO.:	90X-5000-C-004
GEOSYNTEC PROJECT NO.:	CD1342-17
GEOSYNTEC DOCUMENT NO.:	F01-0045
SHEET NO.:	G-47
REVISION NO.:	0

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