Environmental Resources Management

CityCentre Four
840 W. Sam Houston Pkwy N.
Suite 600
Houston, Texas 77024
(281) 600-1000
(281) 600-1001 (Fax)

October 17, 2016

Mr. Michael Malone
CPS Energy
145 Navarro Street, Mail Drop 100406
San Antonio, Texas 78296

Project No. 0352436

Subject: Compilation of Construction History
Calaveras Power Station
San Antonio, Texas

Dear Mr. Malone:

Environmental Resources Management Southwest, Inc. (ERM) is pleased to provide this Compilation of Construction History for the Calaveras Power Station, to assist CPS Energy in complying with Title 40, Code of Federal Regulations, Part 257 (40 CFR §257), Subpart D Coal Combustion Residual (CCR) Rules. Currently, CPS Energy operates six CCR units at the Calaveras Power Station which are subject to the CCR Rule.

40 CFR §257.73(c)(1) requires that the owner or operator of the CCR unit must compile a history of construction, which shall contain, to the extent feasible, the information specified below:

(i) The name and address of the person(s) owning or operating the CCR unit; the name associated with the CCR unit; and the identification number of the CCR unit if one has been assigned by the state.

(ii) The location of the CCR unit identified on the most recent U.S. Geological Survey (USGS) 7.5 minute or 15 minute topographic quadrangle map, or a topographic map of equivalent scale if a USGS map is not available.

(iii) A statement of the purpose for which the CCR unit is being used.

(iv) The name and size in acres of the watershed within which the CCR unit is located.

(v) A description of the physical and engineering properties of the foundation and abutment materials on which the CCR unit is constructed.

(vi) A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR unit; the method of site preparation and construction of each zone of the CCR unit; and the approximate dates of construction of each successive stage of construction of the CCR unit.

(vii) At a scale that details engineering structures and appurtenances relevant to the design, construction, operation, and maintenance of the CCR unit, detailed dimensional drawings of the CCR unit, including a plan view and cross sections of the length and width of the CCR unit, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection, in addition to the normal operating pool surface elevation and the maximum pool surface elevation following peak discharge from the inflow design flood, the expected maximum depth of CCR within the CCR surface impoundment, and any identifiable natural or manmade features that could adversely affect operation of the CCR unit due to malfunction or mis-operation.

(viii) A description of the type, purpose, and location of existing instrumentation.

(ix) Area-capacity curves for the CCR unit.

(x) A description of each spillway and diversion design features and capacities and calculations used in their determination.

(xi) The construction specifications and provisions for surveillance, maintenance, and repair of the CCR unit.

(xii) Any record or knowledge of structural instability of the CCR unit.

The CCR units listed in Table 1 are shared by the J.T. Deely and J.K. Spruce Power Plants, which are co-located at 12940 U.S. Highway 181 South in San Antonio, Texas. Figure 1 depicts the location of the Calaveras Power Station and the applicable CCR units on the most recent U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle map. Locally, the Calaveras Power Station is located within the drainage of Calaveras Lake. Regionally, it is located within the San Antonio River watershed which drains over 4,194 square miles (approximately 2,684,000 acres)[1]

As required by the CCR Rule, all CCR units are inspected annually by a Texas Licensed Professional Engineer and each unit is observed for potential stability or operational issues. There is no reported historical evidence or current structural instabilities of any CCR unit described below.

To the extent feasible, the construction history of these CCR units is provided in the following sections. Pertinent drawings reviewed during the preparation of this compilation are provided in Attachment 1. Dam safety assessment reports for the J.T. Deely and J.K. Spruce Power Plants are provided in Attachments 2 and 3, respectively.

[1] San Antonio River Authority (www.sara-tx.org).

TABLE 1: Calaveras Power Station CCR Unit Descriptions

Unit Name	Unit ID	Purpose of Unit
Sludge Recycle Holding (SRH) Ponds (North and South)	026	Receives flue gas desulphurization scrubber sludge.
North Bottom Ash Pond (North BAP)	005	Receives sluiced bottom ash.
South Bottom Ash Pond (South BAP)	006	Receives sluiced bottom ash.
Evaporation Pond	021	Receives boiler chemical cleaning waste and other authorized liquid wastes.
Fly Ash Landfill	010	Receives fly ash, bottom ash, economizer ash, scrubber sludge from flue gas desulphurization ponds, and flue gas desulphurization gypsum (temporary storage).

SLUDGE RECYCLE HOLDING PONDS

The SRH Ponds contain CCR sludge from the air pollution control equipment from both plants. The SRH Ponds were constructed as a single impoundment with a divider wall that separates the impoundment into the North and South SRH Ponds. A gate present in the divider wall is closed during normal operating procedures, but can be opened. Each pond is approximately 1.5 acres in area and is located east of the plants, adjacent to the BAPs.

The SRH Ponds began receiving CCR before October 14, 2015 and are still in service. Hence, in accordance with 40 CFR §257.53, the SRH Ponds are classified as an active existing CCR surface impoundment.

The interior slopes of the SRH Ponds are reportedly constructed with a 10-oz. Geotextile and a 30-mil High Density Polyethylene (HDPE) geomembrane over prepared subgrade. The North SRH Pond bottom liner consists of a six-inch layer of 4,000 psi concrete over one-foot of compacted sand overlying a 30-mil HDPE geomembrane. The South SRH Pond bottom liner also has a six-inch layer of 4,000 psi concrete. Under the concrete is one-foot of compacted fill overlaying a 10-oz. Geotextile, a 30-mil HDPE geomembrane and another 10-oz. Geotextile. The SRH Ponds are separated by a concrete divider wall with a sluice gate that allows the North SRH Pond and South SRH Pond to be isolated from each other. Water is pumped from the SRH Ponds to clarifiers via two 18-inch steel pipes. Both SRH Ponds have eight-foot-wide concrete overflow chutes that discharge to the South BAP. These overflow chutes are at an approximate elevation of 499.5 feet MSL.

The estimated maximum inventory of CCR to be on-site in the SRH ponds at a given time is approximately 7 acre-feet. This estimate is based on a worst-case assumption of both SRH Ponds being completely full of CCR up to the limits of the freeboard as allowed by the Inflow Flood Control Plan.

There is no instrumentation present in the SRH Ponds.

BOTTOM ASH PONDS

The North and South BAPs contain sluiced CCR from the wet feed process at the J.T. Deely Plant. The BAPs were constructed by CPS Energy in 1977 as part of the original plant construction. The North BAP is approximately 6.1 acres in area, while the South BAP is approximately 6.8 acres. They are located east of the plants, adjacent to the SRH Ponds.

The BAPs began receiving CCR before October 14, 2015 and currently receive CCR. Hence, in accordance with 40 CFR §257.53, the BAPs are classified as active existing CCR surface impoundments.

The BAPs share a common embankment that separates the ponds. The ponds are reportedly lined with clay, but the thickness and hydraulic conductivity of the clay are unknown. One 24-inch steel pipe in each pond allows water to be returned to the plant for reuse. Additionally, both ponds have two discharge points. The discharge points consist of an outlet structure with a horizontal 12-inch steel discharge pipe at an approximate elevation of 489 feet MSL (bottom drain used to empty the pond), and a vertical 12-inch steel overflow pipe at an approximate of elevation 499 feet MSL (normal operation level pool drain).

The outfall structure is in one corner of each pond (northeast for North BAP and southeast for South BAP) and is partially surrounded by steel sheet piling. The sheet piling and pond berms create an opening for water to reach the discharge pipes. This opening is typically protected by floating sorbent booms. Water from these outlets discharge to Calaveras Lake through a TPDES permitted outfall.

It is estimated that approximately 118 acre-feet is the maximum inventory of CCR to be on-site over the active life of the North and South BAPs. This estimate is based on a worst-case assumption of the BAPs being completely full of CCR up to the limits of the freeboard as allowed by the Inflow Flood Control Plan.

There is no instrumentation present in the BAPs.

EVAPORATION POND

The EP is located generally northeast of the plants. The EP side and bottom liner consist of a one-foot layer of cohesive soil overlying a 30-mil Polyvinylchloride geomembrane and an additional one-foot of cohesive soil when constructed as a landfill in 1990. The subgrade consists of two-feet of soil, with all large rock removed, and compacted to 50% density. The EP was converted to a fly ash impoundment in 1996.

The EP is a surface impoundment that was constructed and received CCR before October 14, 2015. In addition, the EP currently receives CCR. Hence, in accordance with 40 CFR §257.53, the EP is classified as an active existing CCR surface impoundment.

The EP receives ash washdown water from washing of the air pollution control system and other miscellaneous CCR washdown sources. That waste contains CCR as defined in 40 CFR §257.52.

There are no inlet or outlet structures to the EP. Liquid from ash washdown, boiler chemical cleanouts, and other authorized liquid wastes is trucked to the pond, where it is allowed to evaporate.

It is estimated that approximately 83 acre-feet is the maximum inventory of CCR to be on-site over the active life of the EP. This estimate is based on a worst-case assumption of the EP being completely full of CCR up to the limits of the freeboard as allowed by the Inflow Flood Control Plan.

There is no instrumentation present in the EP.

FLY ASH LANDFILL

The Fly Ash Landfill (FAL) is a Class 2 landfill constructed by CPS Energy in 1992 to increase the on-site disposal storage capacity of CCR wastes, prior to construction of the J.K. Spruce Plant. The FAL is located generally northeast of the plants.

The FAL was constructed and received CCR before October 14, 2015. In addition, the FAL currently receives CCR wastes consisting of bottom ash, fly ash, scrubber solids, coal dust, gypsum, fly ash dust bags, and ion exchange resin waste generated by plant operations. Those wastes contain CCR as defined in 40 CFR §257.52. Hence, in accordance with 40 CFR §257.53, the FAL is classified as an active existing CCR landfill.

The FAL has an approximate total area of 23 acres. According to as-built drawings provided by CPS Energy, the bottom of the landfill is lined with a 30-mil High Density Polyethylene (HDPE) with a geotextile cushion and sand drainage layer. In 2010, repairs were made to portions of the liner on the north and west side embankments to prevent deterioration of the slopes. A geocomposite drainage net covered by two feet of coarse CCR provides the drainage layer over the liner on the interior embankments of the landfill.

It is estimated that approximately 550 acre-feet is the maximum inventory of CCR to be on-site over the active life of the FAL. This estimate is based on a worst-case assumption of the FAL being completely full of CCR up to the limits of the freeboard as allowed by the Run-on/Run-off Control Plan.

There is no instrumentation present in the FAL.

Based on our evaluation of the available information for the CCR units at the Calaveras Power Station, to the extent feasible, this Compilation of Construction History meets the requirements of 40 CFR §257.73(c)(1).

Sincerely,

Environmental Resources Management

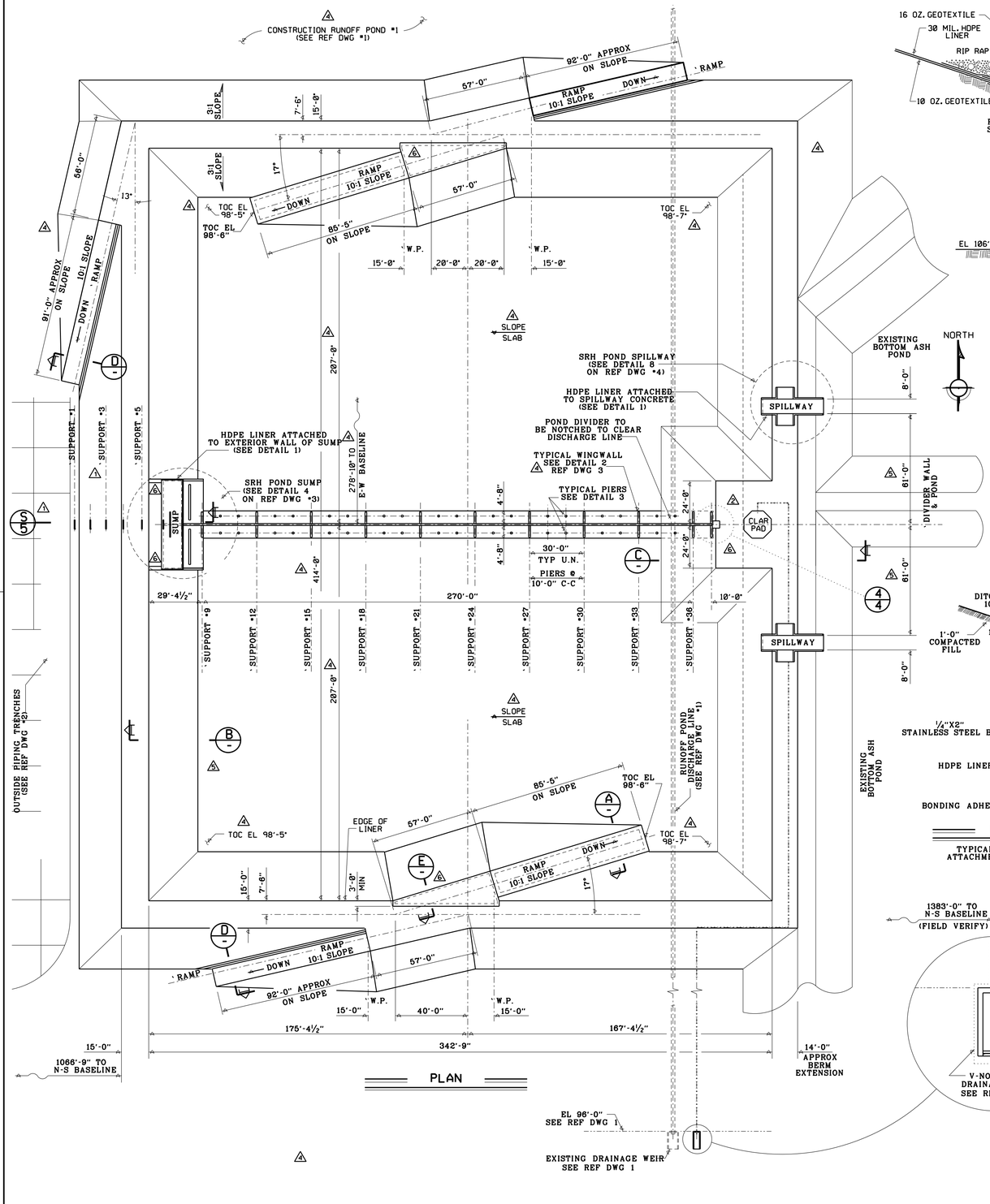
Walter Zverina
Project Manager

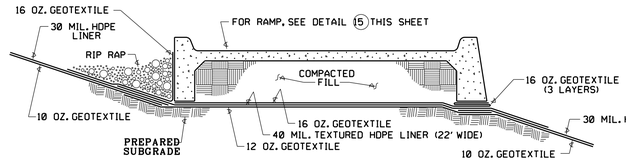
Drawings Reviewed During Preparation

Attachment 1

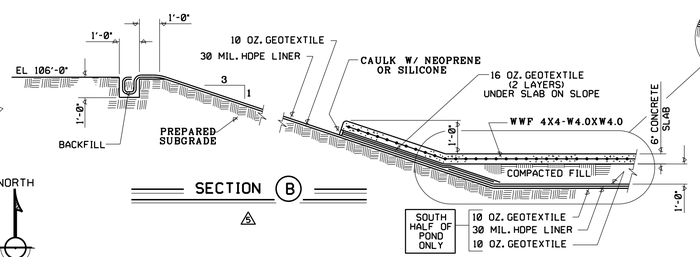
October 2016
CPS Energy

Environmental Resources Management
CityCentre Four
840 W. Sam Houston Pkwy. N. – Suite 600
Houston, Texas 77024
(281) 600-1000

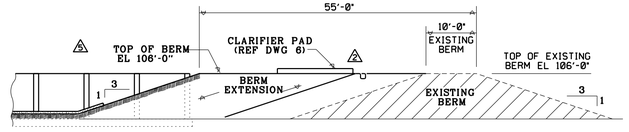




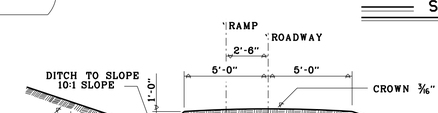
SECTION (A)



SECTION (B)



SECTION (C)

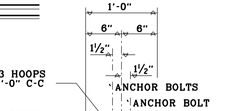


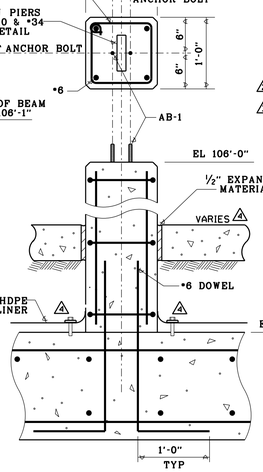
SECTION (D)

DETAIL (1)

TYPICAL HDPE LINER TO CONCRETE ATTACHMENT (HORIZONTAL & VERTICAL)

KEYWAY DETAIL

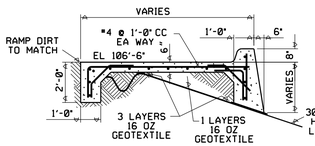




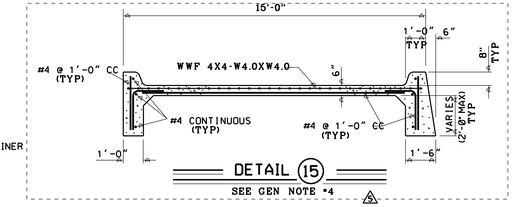
DETAIL (3)

TYP PIER

AB-1

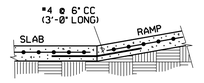


SECTION (E)



DETAIL (15)

SEE GEN NOTE *4



DETAIL (16)

RAMP TIE TO SLAB

GENERAL NOTES

1. 6" BOTTOM MAT & CONCRETE RAMPS TO HAVE CONSTRUCTION JOINTS ON 30' CENTERS TO BE LOCATED BY CONTRACTOR.
2. CONCRETE TO BE 4000 PSI (CLASS 1S)
3. REINFORCING BAR TO BE GRADE 60.
4. RAMPS TO BE CONSTRUCTED WITH CONCRETE ON INSIDE OF POND ONLY. RAMPS ON EXTERIOR OF POND SHALL BE 10'-0" WIDE COMPACTED FILL.

REFERENCE DRAWINGS

1. CONSTRUCTION RUNOFF PONDS D-CL05-155-S001
2. OUTSIDE PIPING TRENCHES D-CL05-111-S011 SH 1
3. SRH POND SUMP - SECT & DET D-CL05-464-S002
4. SRH POND SPILLWAY - SECT & DET D-CL05-464-S003
5. SRH POND - PIPE SUPPORTS & WALKWAY D-CL05-464-S004
6. SRH POND CLARIFIER FOUNDATION D-CL05-464-S006
7. V-NOTCHED DRAINAGE WEIR D-CL05-111-S023

AS CONSTRUCTED

NO	REVISIONS	DATE	BY	CHK	DSNR	APPR
6	EXTENDED RAMPS @ PLAN & ADD'D SECT "E" AS PER FM 92-736. ADD'D WING WALLS @ SRH POND SUMP & REV'D EAST END OF PIPE RACK AS PER FM 92-724.	1020/92				
5	REV'D SECTIONS A, B, & C AND DETAIL 1 ADDED DETAILS 15 & 16 (FM 92-438)	0715/92	RMJ	RDR	JAK	DM
	REV'D SPILLWAY DIMENSIONS (FM 92-368)					
4	REV'D PLAN, SECT B & DET 3 AS NOTED, MOVED DET 2, SECTS E & F TO HDP DWG 3.	0116/92	DD	RDR	JAK	DM
3	ADDED V-NOTCHED DRAINAGE WEIR ADDED REF DWG 7 & MOVED SECT E	1107/91	RMJ	RDR	JAK	DM
2	REM'D HOLD ON CLARIFIER PAD @ PLAN, ADD'D REF DWG 6 & REV'D SECT C AS NOTED	09-24-91	DD	RDR	JAK	DM
1	CUT SECTION S ON WEST BERM	06-11-91	TDC	DLR	JAK	DM
0	ISSUED FOR CONSTRUCTION	06-11-91	TDC	DLR	JAK	DM

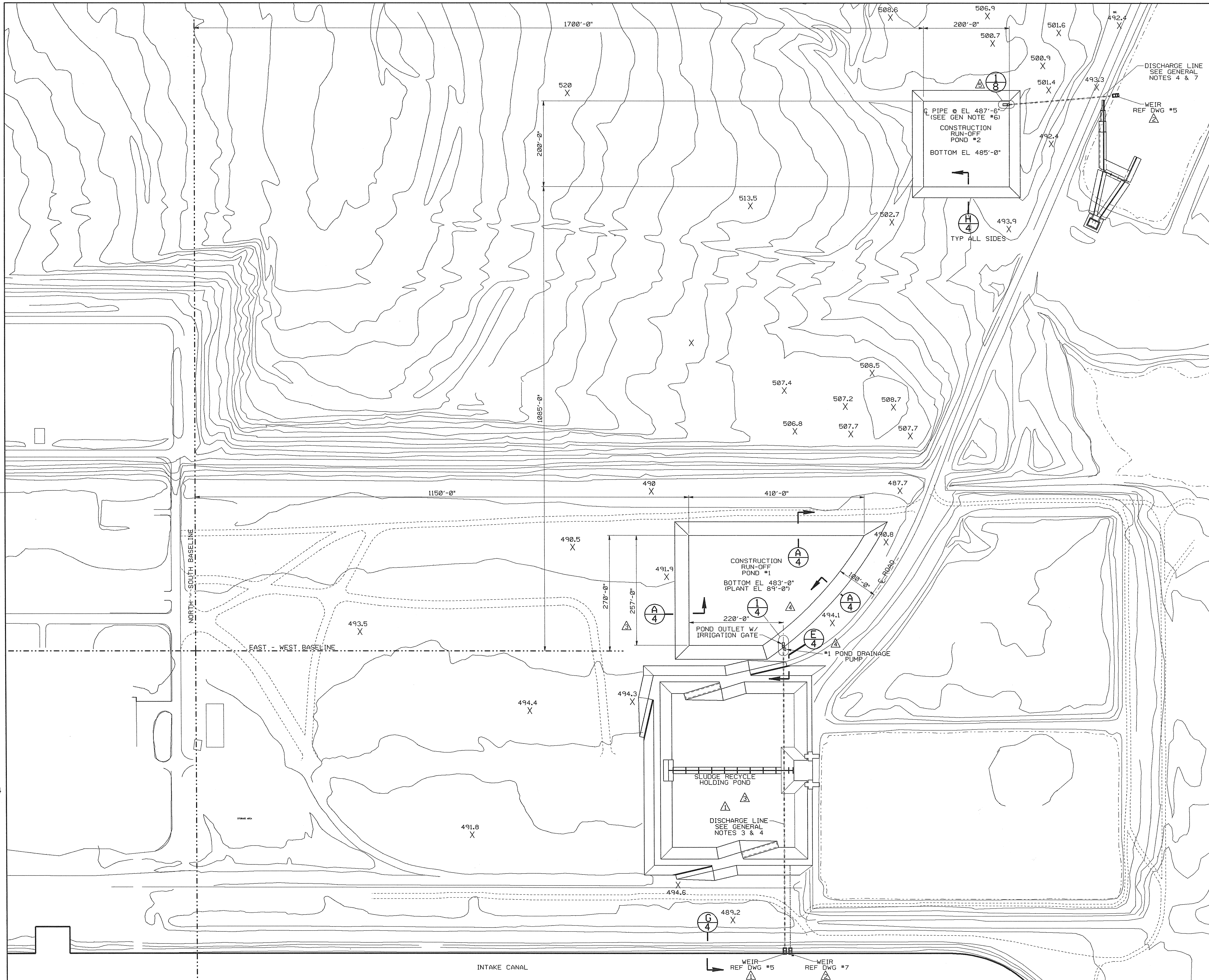
CITY PUBLIC SERVICE
J. K. SPRUCE UNIT 1

UTILITY ENGINEERING CORPORATION
COMBUSTION ENGINEERING, INC. — H.B.ZACHRY COMPANY

SLUDGE HANDLING SYSTEM
SLUDGE RECYCLE HOLDING POND

DWN	CHKD	CHKD	CONTROLS	ELECTRICAL	MECHANICAL	STRUCTURAL
T. CAIN	J. KEAHEY	R. RICHERSON				
DSNR						
D. MITCHELL						
APPR						

CADD DRAWING NO.	SHEET	REV
D-CL05-464-S001	6	



GENERAL NOTES

1. AREAS TO THE NORTH AND EAST SIDES OF THE CONSTRUCTION RUN-OFF POND #1 SHALL BE SLOPED TO DRAIN FREELY INTO THE POND. RIDGES OR RISES WHICH IMPEDE SURFACE WATER FLOW SHALL BE BLADED SMOOTH.
2. FOR DITCHES DRAINING INTO THE CONSTRUCTION RUN-OFF POND, SEE UEC DWG D-CL05-006-S007.
3. DISCHARGE LINE TO BE SCHEDULE 40 BELL & SPIGOT PVC PIPE, 24" DIAMETER.
4. DISCHARGE PIPE SHALL BE SET ON A CONSTANT SLOPE BETWEEN INTAKE AT THE POND AND DISCHARGE AT THE CANAL.
5. FOR MORE COMPLETE & ACCURATE DETAIL OF CONTOURS & CONTOUR ELEVATION POINTS SEE UEC DWG D-CL05-006-S001.
6. IRRIGATION GATE SHALL BE IDENTICAL TO POND #1 IRRIGATION GATE. (2)
7. DISCHARGE LINE TO BE 24" GALVANIZED 16 GUAGE CORRUGATED METAL PIPE. COUPLERS TO BE SUPPLIED BY CORRUGATED PIPE SUPPLIER. (2)

REFERENCE DRAWINGS

1. SITE PREPARATION - CONTOURS D-CL05-006-S001
2. SITE PREPARATION - EXISTING GRADES D-CL05-006-S004
3. SITE PREPARATION - CONSTRUCTION GRADES D-CL05-006-S007
4. CONSTRUCTION RUN-OFF PONDS - SECT & DET D-CL05-155-S002
5. V NOTCH WEIR - PLAN D-CL05-155-S003 (1)
6. SLUDGE RECYCLE HOLDING POND D-CL05-464-S001 (1)
7. PLANT DRAINAGE - V NOTCH WEIR D-CL05-111-S023 (2)
8. CONSTRUCTION RUN-OFF PONDS - SECT & DET D-CL05-155-S006 (5)

AS CONSTRUCTED

RECEIVED APR 0 4 1994 POWER ENGINEERING

NO	REVISIONS	DATE	BY	CHK	DSNR	APPR
5	ADDED HEADWALL @ POND #2 PER FM #91-1346	030293	RWD	DLR	JAK	BLR
4	ADDED POND #1 IRRIGATION GATE AND DRAINAGE PUMP	013192	RMJ	DLR	JAK	DM
3	REVISED RUN-OFF POND #1 REVISED SLUDGE RECYCLE HOLDING POND	012192	RMJ	RDR	JAK	DM
2	ADDED WEIR @ RUNOFF POND #2, ADDED DISCHARGE STRUCTURE & REF DWG #7 ADDED GENERAL NOTE #6 & #7	112391	RWD	DLR	JAK	DM
1	ADDED WEIR AT INTAKE CANAL RUN-OFF POND #1, ADDED SLUDGE RECYCLE HOLDING POND, ADDED REF DWG #5 & #6	092591	RWD	RDR	JAK	DM ETB
	ISSUED FOR CONSTRUCTION	040789	CLJ	DLF	BLR	DM

CITY PUBLIC SERVICE
J. K. SPRUCE UNIT 1

UTILITY ENGINEERING CORPORATION
COMBUSTION ENGINEERING, INC. — H.B. ZACHRY COMPANY

CONSTRUCTION RUN-OFF PONDS PLAN VIEW

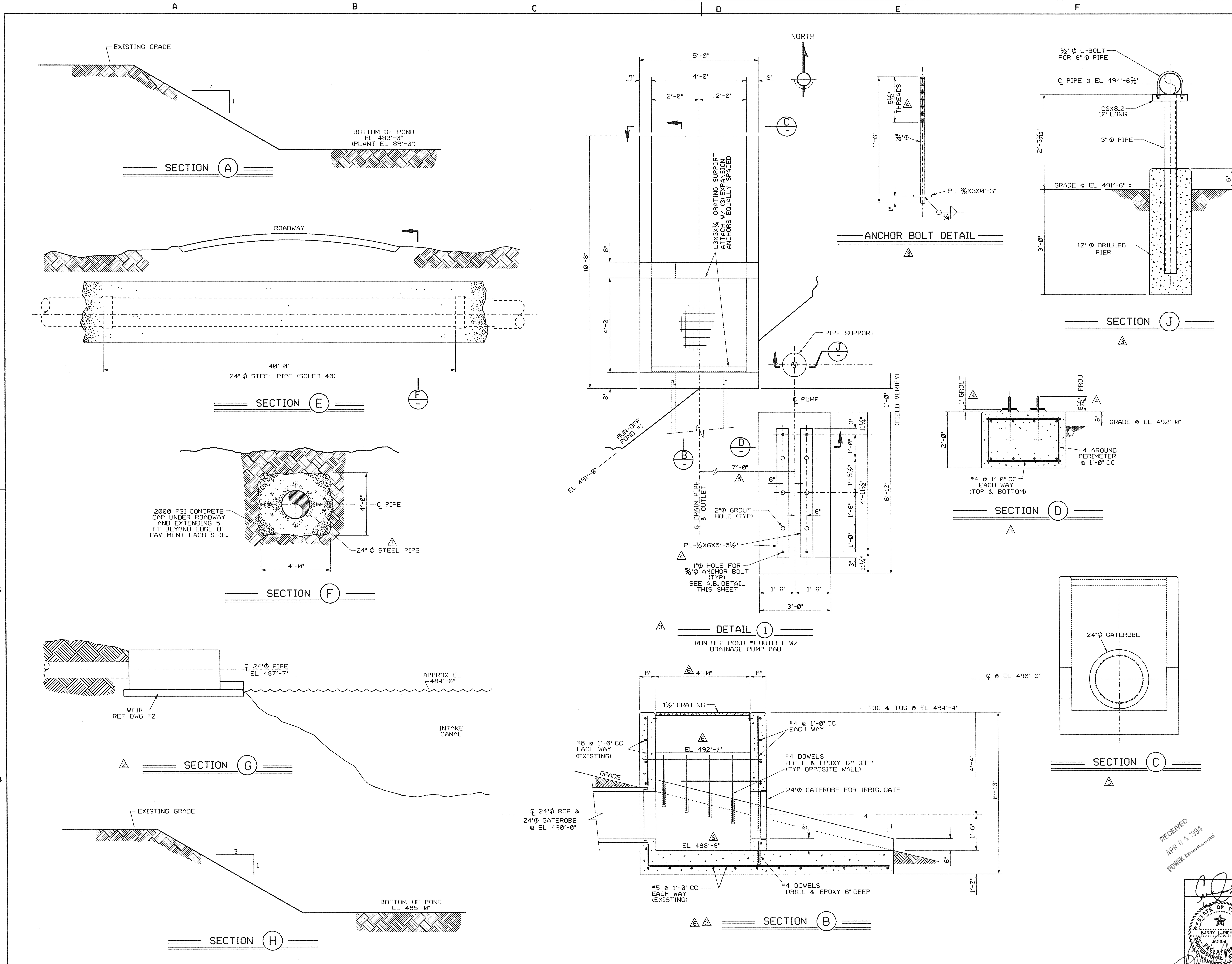
STATE OF TEXAS — JOHN ANDREW KEAHEY 65018 REGISTERED PROFESSIONAL ENGINEER — 3/3/93

DRAWN	DESIGNED	CHECKED	CONTROLS	ELECTRICAL	MECHANICAL	STRUCTURAL
2-18-88 R SCOTT	2-16-88 B RICHEY	D RODEN	—	NR	—	

APPR D MITCHELL 3-22-88
APPR

CADD DRAWING NO. D-CL05-155-S001 — SHEET — REV 5

MAR - 4 1993



GENERAL NOTES

1. ALL CONCRETE TO BE 4000 PSI
2. ALL REINFORCING BAR TO BE GRADE 60
3. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" CHAMFER

REFERENCE DRAWINGS

1. PLAN VIEW - CONSTRUCTION RUN-OFF PONDS D-CL05-155-S001
2. WEIR - PLAN D-CL05-155-S003

AS CONSTRUCTED

RECEIVED APR 0 4 1994 POWER ENGINEERING

NO	REVISIONS	DATE	BY	CHK	DSNR	APPR
6	REV SECTION "B" PER FM #91-1346	030293	RWD	DLR	JAK	BLR
5	MOVED PUMP PAD PER FM #92-754	120192	RWD	RDR	BLR	DM
4	REV DETAIL 1, SECTION D & ANCHOR BOLT DETAIL AS PER FM 92-129	052292	RWD	RDR	JAK	DM
3	REMOVED OLD SECTIONS B, C, D & ADDED NEW ONES; ADDED DETAIL 2 AND ANCHOR BOLT DTL ADDED GENERAL NOTES 1 THRU 3 (FM 91-1346 AND FM 92-050)	012392	RMJ	DLR	JAK	DM
2	REVISED SECTION "G", ADDED REF DWG #2	092591	RWD	RDR	JAK	DM
1	REV SEC F & ADD SAMP PORT SEC G	062388	GIL	DLR	BLR	DM
Ø	ISSUED FOR CONSTRUCTION	050988	JKB	DLR	BLR	DM

CITY PUBLIC SERVICE
JK SPRUCE UNIT 1

UTILITY ENGINEERING CORPORATION
COMBUSTION ENGINEERING, INC. H.B. ZACHRY COMPANY

CONSTRUCTION RUN-OFF PONDS
SECTIONS & DETAILS

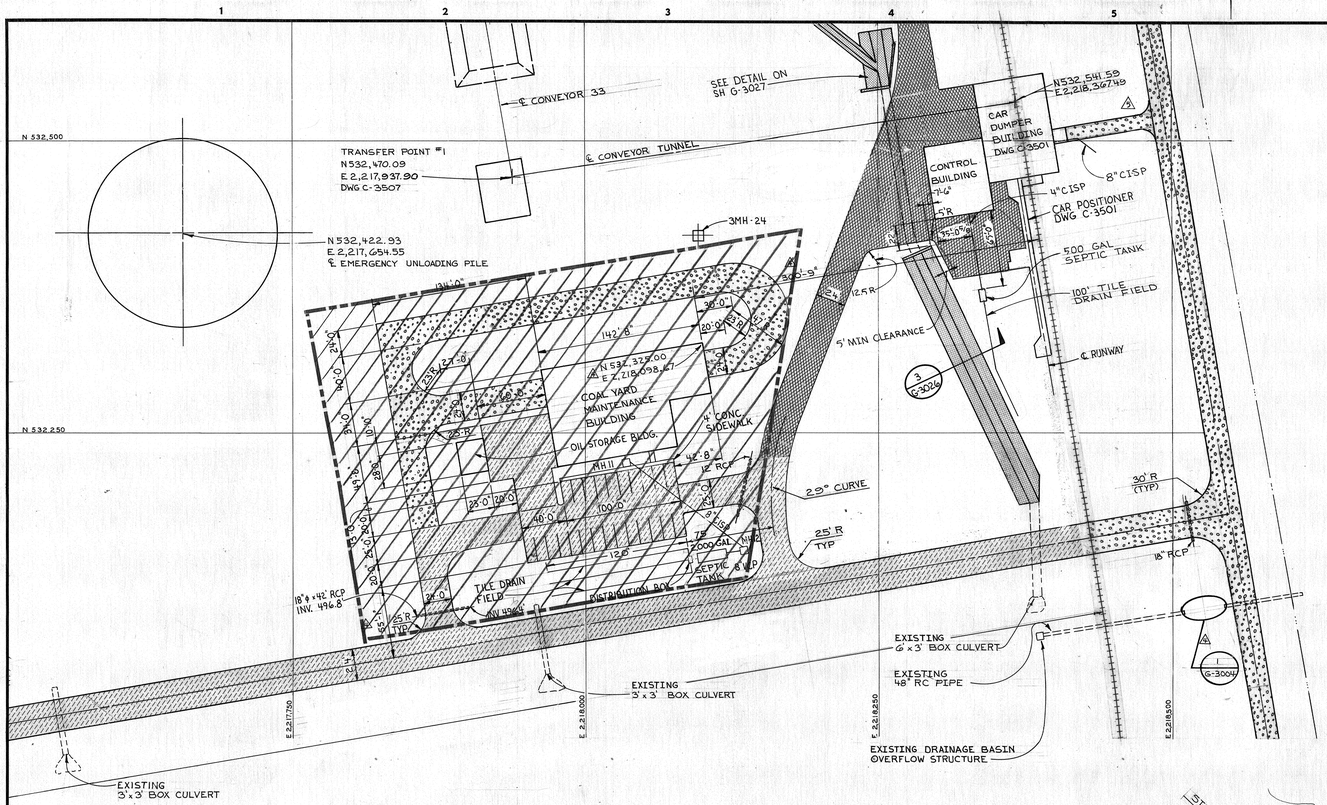
STATE OF TEXAS BARRY L. RICHEY 60808 REGISTERED PROFESSIONAL ENGINEER 3/3/93

DRAWN 2-19-88	DESIGNED 2-16-88	CHECKED	CONTROLS	ELECTRICAL	MECHANICAL	STRUCTURAL
R SCOTT	B RICHEY	D RODEN	—	NR	—	

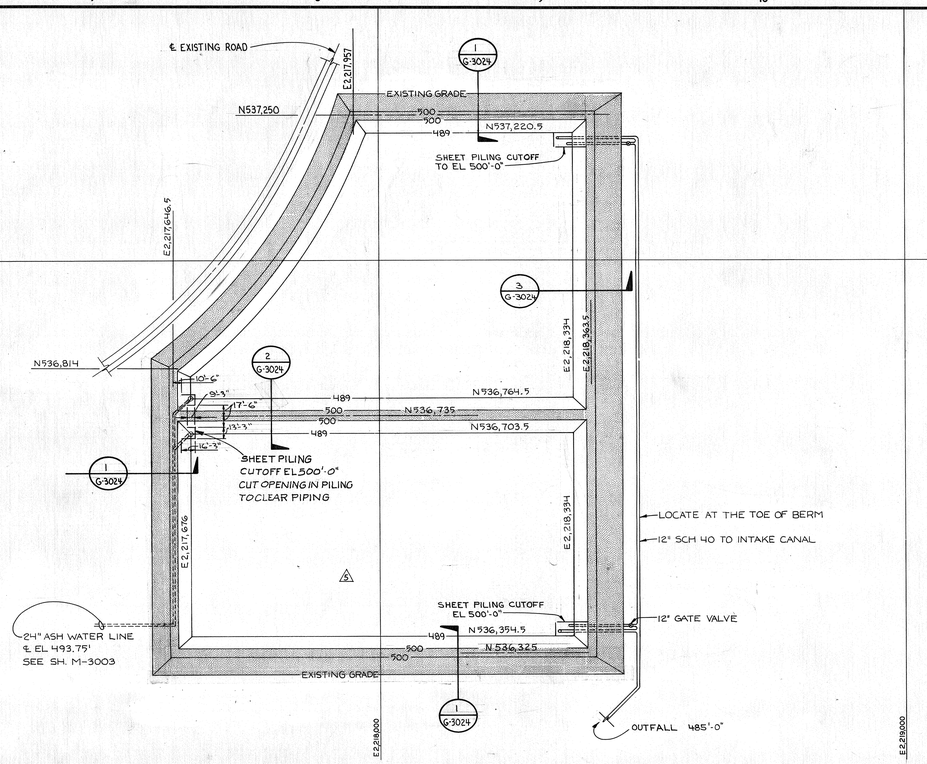
APPR 03-22-88	CADD DRAWING NO.	SHEET	REV
MITCHELL	D-CL05-155-S002		6
APPR			

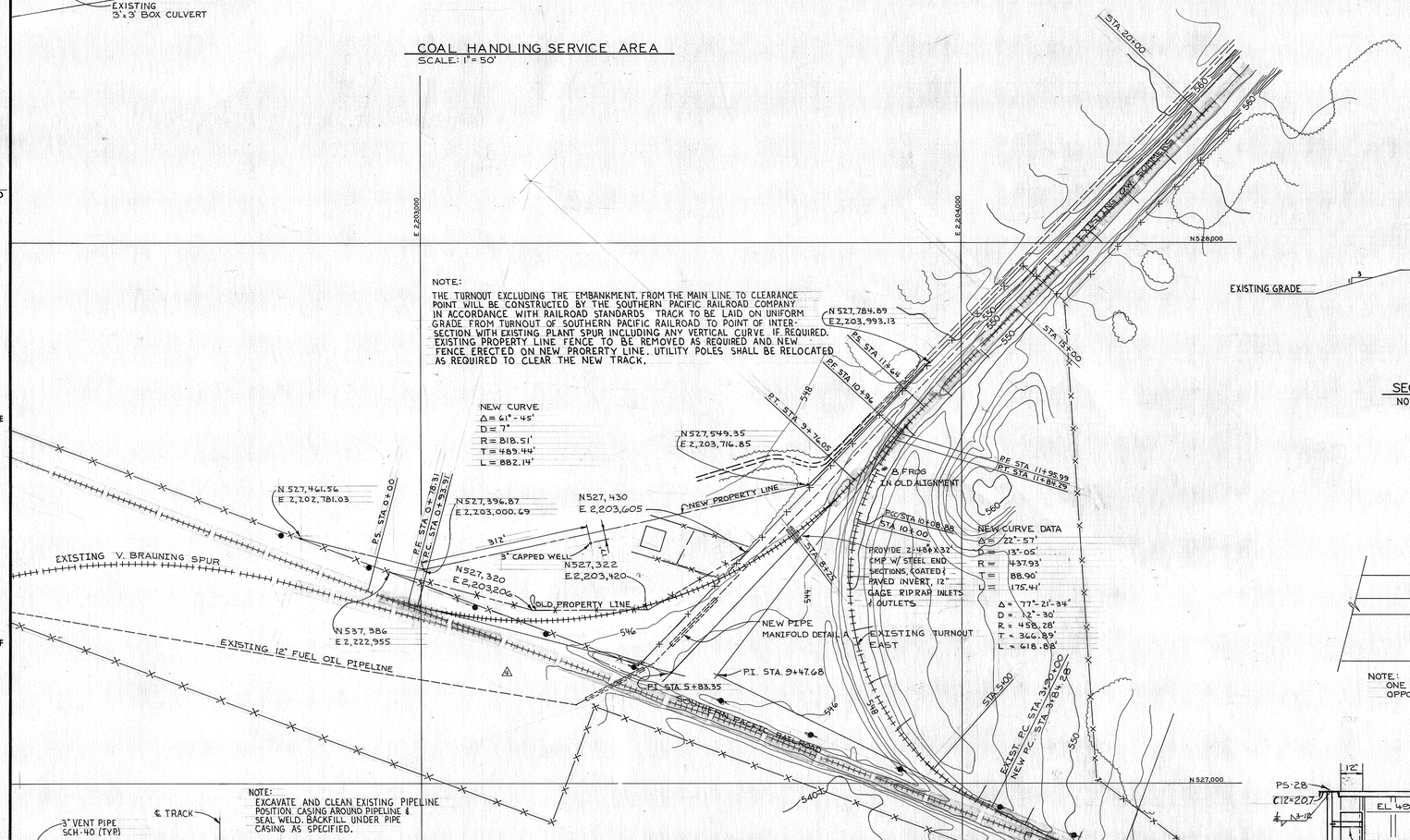
MAR - 4 1993

COAL HANDLING SERVICE AREA
SCALE: 1" = 50'

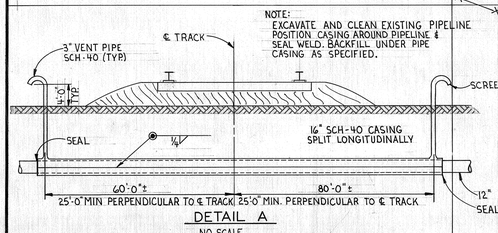


ASH DISPOSAL BASINS
SCALE: 1" = 100'

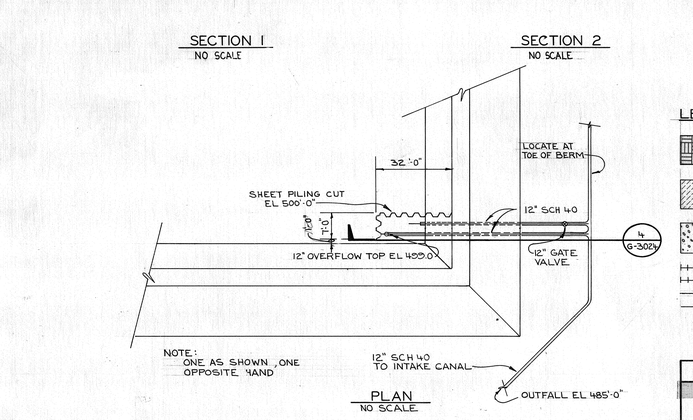




NEW RAILROAD TURNOUT WEST
SCALE: 1" = 100'



DETAIL A
NO SCALE

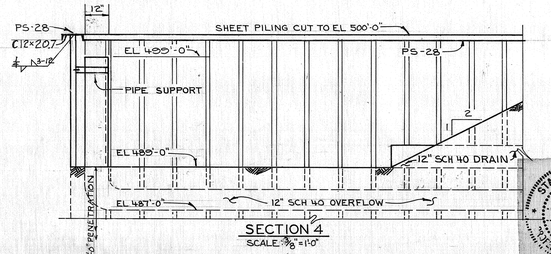


SECTION 1
NO SCALE

SECTION 2
NO SCALE

PLAN
NO SCALE

SECTION 3
NO SCALE



SECTION 4
SCALE: 3/8" = 1'-0"

LEGEND
- EARTH
- ASPHALT PAVING
- CRUSHED ROCK SURFACING
- EXISTING RAILROAD
- NEW RAILROAD
- FENCE
- PROPERTY LINE
- NEW CONCRETE
- BITUMINOUS SURFACE TREATMENT
- SEEDING (A)

GENERAL NOTES
ALL DETAILS ON THIS DRAWING APPLY TO CONTRACT D-4.

REFERENCE DRAWINGS

DWG. NO.	
G-3002	GENERAL PLOT PLAN
G-3004	GENERAL SITE ARRANGEMENTS AREA II
G-3011	UNDERGROUND UTILITIES, ROADS, GRADING, & LANDSCAPING AREA E
G-3303	STRUCTURAL CONCRETE YARD INLETS, MANHOLES AND MISCELLANEOUS DETAILS

NO.	DATE	REVISIONS AND RECORD OF ISSUE	BY	CK	APP
3	12-2-74	REVISED COAL HANDLING SERVICE AREA	HLK	JRS	
2	9-30-74	APPROVED FOR CONST, CONTRACT D-4A	HLK	JRS	
1	8/9/74	ISSUED FOR GEN CONST ADDENDUM 2 - CONTRACT D-4A	HLK		
0	6-28-74	ISSUED FOR GEN. CONST. BIDS - CONTRACT D-4A	BVR		
G	12-1-78	CONFORMED TO CONSTRUCTION RECORDS	TAB	TAB	
S	1-30-76	REVISED PER DCN 22, 58, AND 65	VBD	HES	RJS
H	4-11-75	UPDATED DWG TO REFLECT DCN13, DCN17 & REVISED AS CIRCLED	VBD	HES	RJS

SCALE: 100' 50' 0 100' 200' (1"=100'); 50' 25' 0 50' 100' (1"=50')

DEPT HEAD C.L.M
DES ENGR J.R.S
CHECKED H.L.K
DRAWN C.R

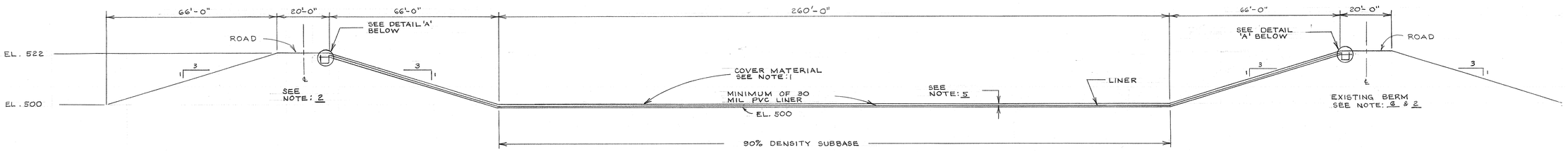
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF TEXAS
SIGNED John R. Stack
DATE 9/30/74 REG. NO. 28734

STATE OF TEXAS · JOHN R. STACK · 28734 · REGISTERED PROFESSIONAL ENGINEER

BLACK & VEATCH CONSULTING ENGINEERS
PROJECT 6314

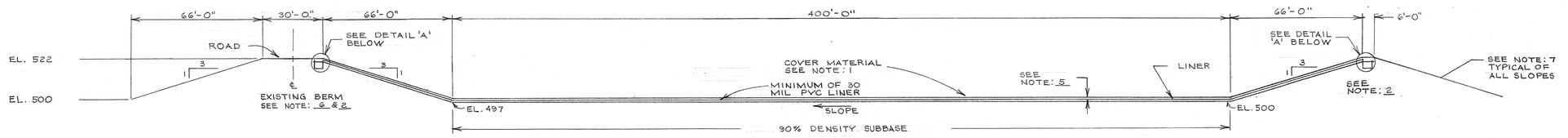
CITY PUBLIC SERVICE BOARD
J. T. DEELY PLANT — UNIT 1
GENERAL
RAILROAD TURNOUT COAL HANDLING SERVICE AREA AND ASH DISPOSAL AREA

B&V DWG NO. G-3024



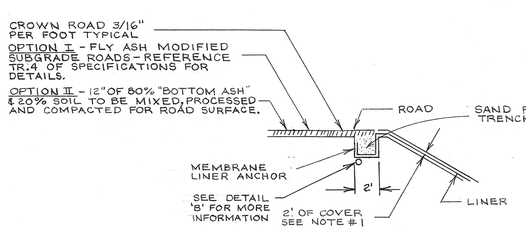
SECTION 'B-B'
— LOOKING NORTH —
SCALE: 1"=20'-0"

REFERENCE DRAWINGS
1. D-CL05-289-5002
2. D/S-1547

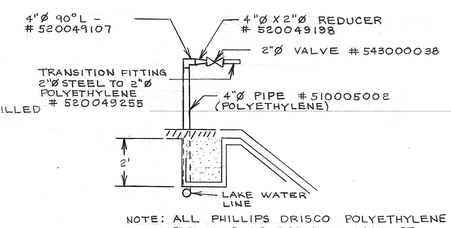


SECTION 'A-A'
— LOOKING EAST —
SCALE: 1"=30'-0"

NOTE:
1) COVER MATERIAL SHALL BE COHESIVE SOILS FREE OF ALL ROCKS, ROOTS AND OTHER FOREIGN MATERIALS. THE COVER MATERIALS SHALL BE PLACED OVER THE LINER AS RECOMMENDED BY THE MANUFACTURER AND APPROVED BY CPS FIELD REPRESENTIVE.
2) SUBGRADE COMPACTED TO 90% DENSITY
3) ROCKS THAT ARE LESS THAN 6"X12" ARE ACCEPTABLE IN ALL BUT THE TOP TWO FEET OF THE BERM.
4) CONTRACTOR WILL BE REQUIRED TO WATER ALL EXTERNAL SLOPES FOR A PERIOD OF TWO MONTHS (DAILY) TO AID IN THE ESTABLISHMENT OF GRASS
5) REQUIREMENTS FOR SOIL COVER MATERIAL
   a) PVC - 1FT. OF THE TYPE OF SOIL STATED IN NOTE #1
   b) HDPE - 4 IN. OF THE TYPE OF SOIL STATED IN NOTE #1
6) MOST OF THIS BERM IS EXISTING. THE CONTRACTOR WILL BE REQUIRED TO COMPLETE THE INSIDE SLOPES AND TO BRING THE EXISTING ROAD UP TO ELEVATION 522.
7) MIRAMAT "2400" OR TENSAR "NS3000" EROSION CONTROL AND REVEGETATION MAT SHALL BE INSTALLED ON EXTERNAL SLOPES, PER MANUFACTURE RECOMMENDATION. EROSION CONTROL MAT IS TO BE SUPPLIED AND INSTALLED BY CONTRACTOR. MAT IS TO BE COVER WITH A MINIMUM OF 1" OF TOP SOIL. ALL EXTERNAL SLOPES SHALL THEN BE SEEDED, FERTILIZED AND MULCHED BY CONTRACTOR PER SPECIFICATIONS.



DETAIL 'A'
(TYP.)



NOTE: ALL PHILLIPS DRISCO POLYETHYLENE PIPE AND ACCESSORIES WILL BE FURNISHED FROM CPS STOCK AND INSTALLED THE CONTRACTOR.

DETAIL 'B'
(TYP.)

No.	DATE	REVISION	BY	CK'D	APP
1	7-25-90	BID ISSUE	F.T.	DTS	DTS

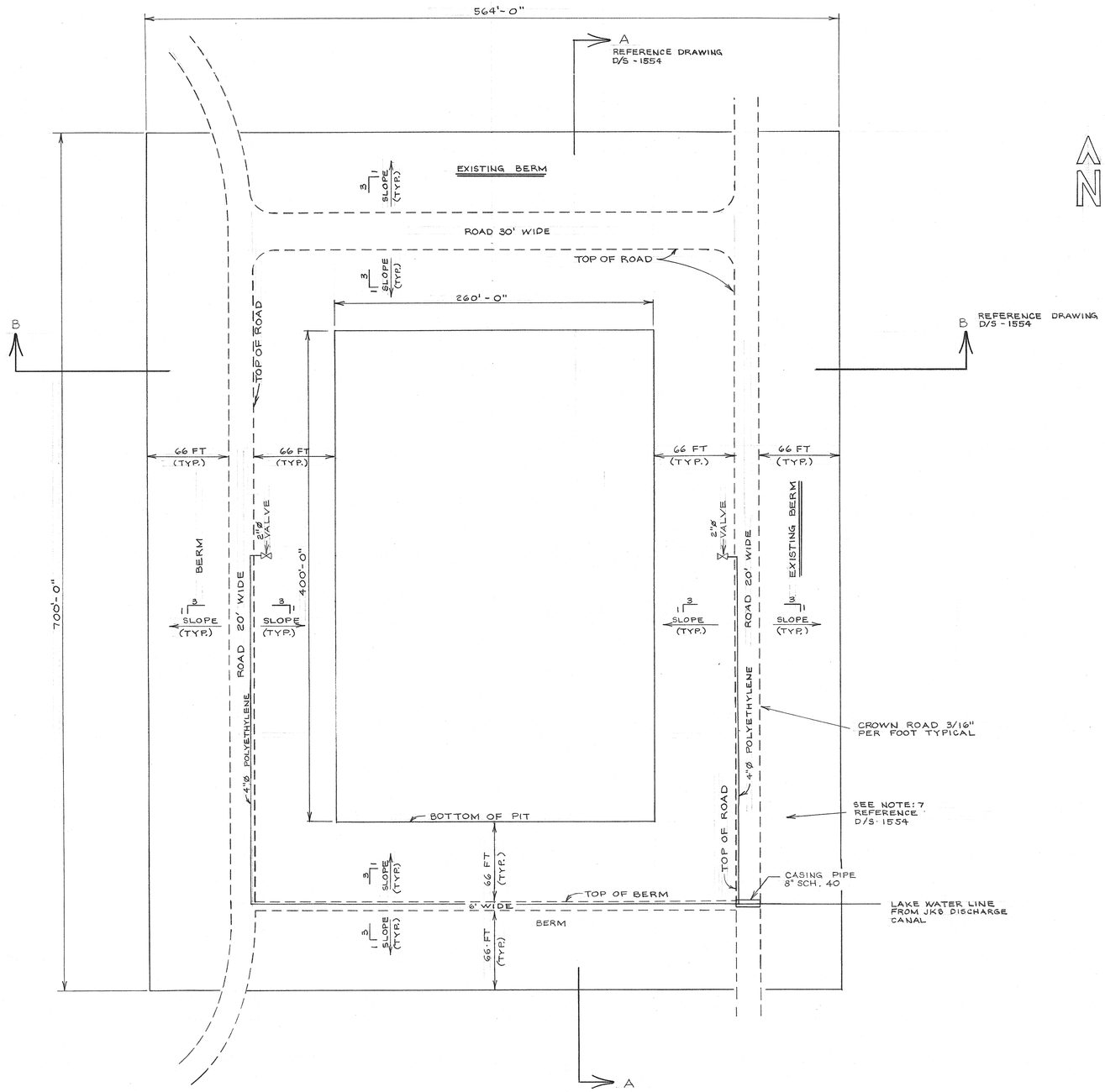
J.T. DEELY/J.K. SPRUCE
ASH DISPOSAL PIT # 4
ELEVATION VIEWS

CITY PUBLIC SERVICE
SAN ANTONIO, TEXAS

DRAWN: FRANK TOBAR	DATE: 7/16/90
CHECKED: DTS	SCALE: SHOWN
APPROVED: DTS	SHEET 1 OF 1

SYSTEM	I.D.	DRAWING NUMBER	CODE
		D/S - 1554	

3D1000



REFERENCE DRAWINGS
1. D-CL05-283-5002
2 D/S 1554

No.	DATE	REVISION	BY	CK'D	APP
1	7-25-90	BID ISSUE	F.T.	DES	DTS

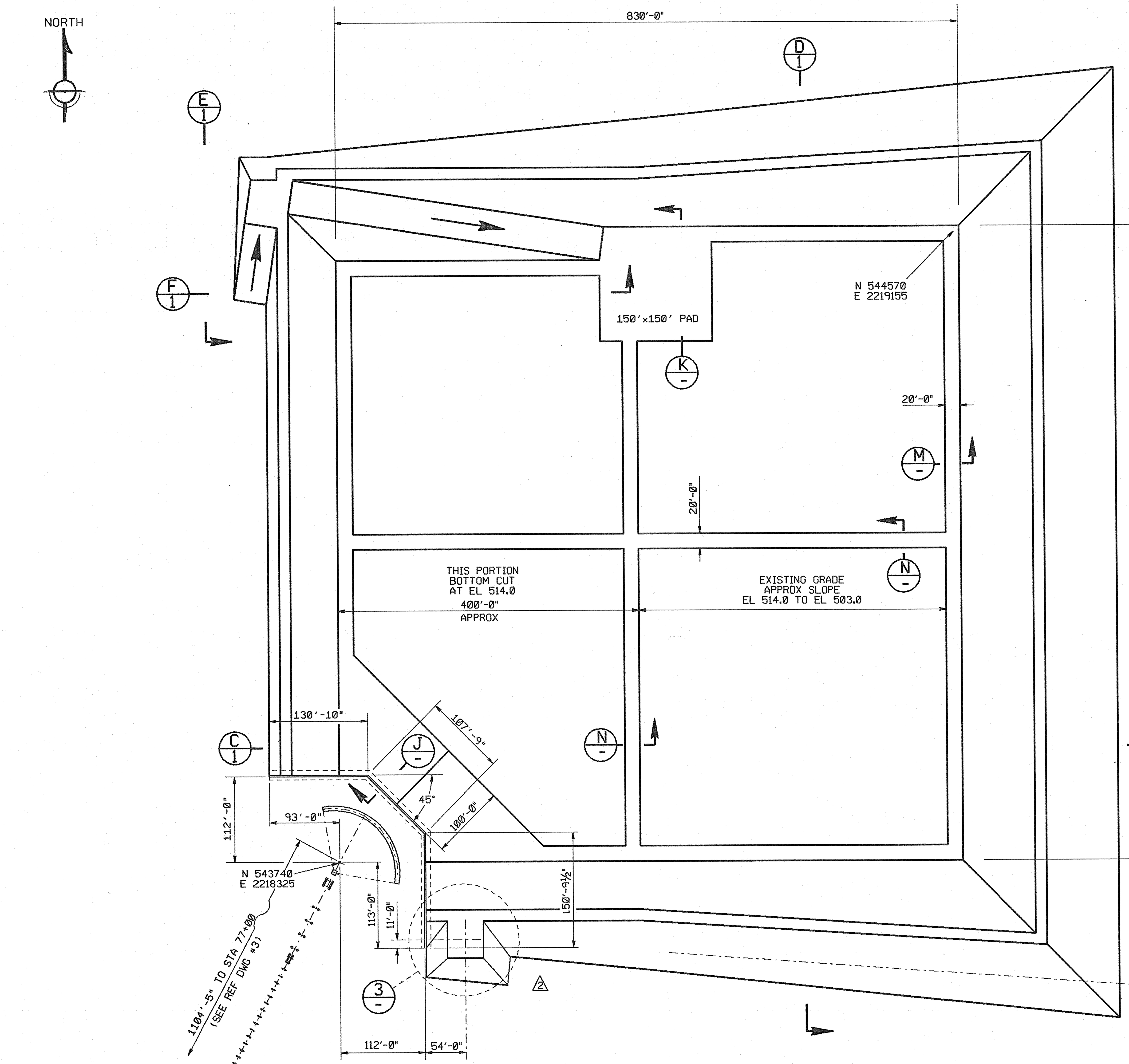
J.T. DEELY/J.K. SPRUCE
ASH DISPOSAL PIT # 4
PLAN VIEW

CITY PUBLIC SERVICE
SAN ANTONIO, TEXAS

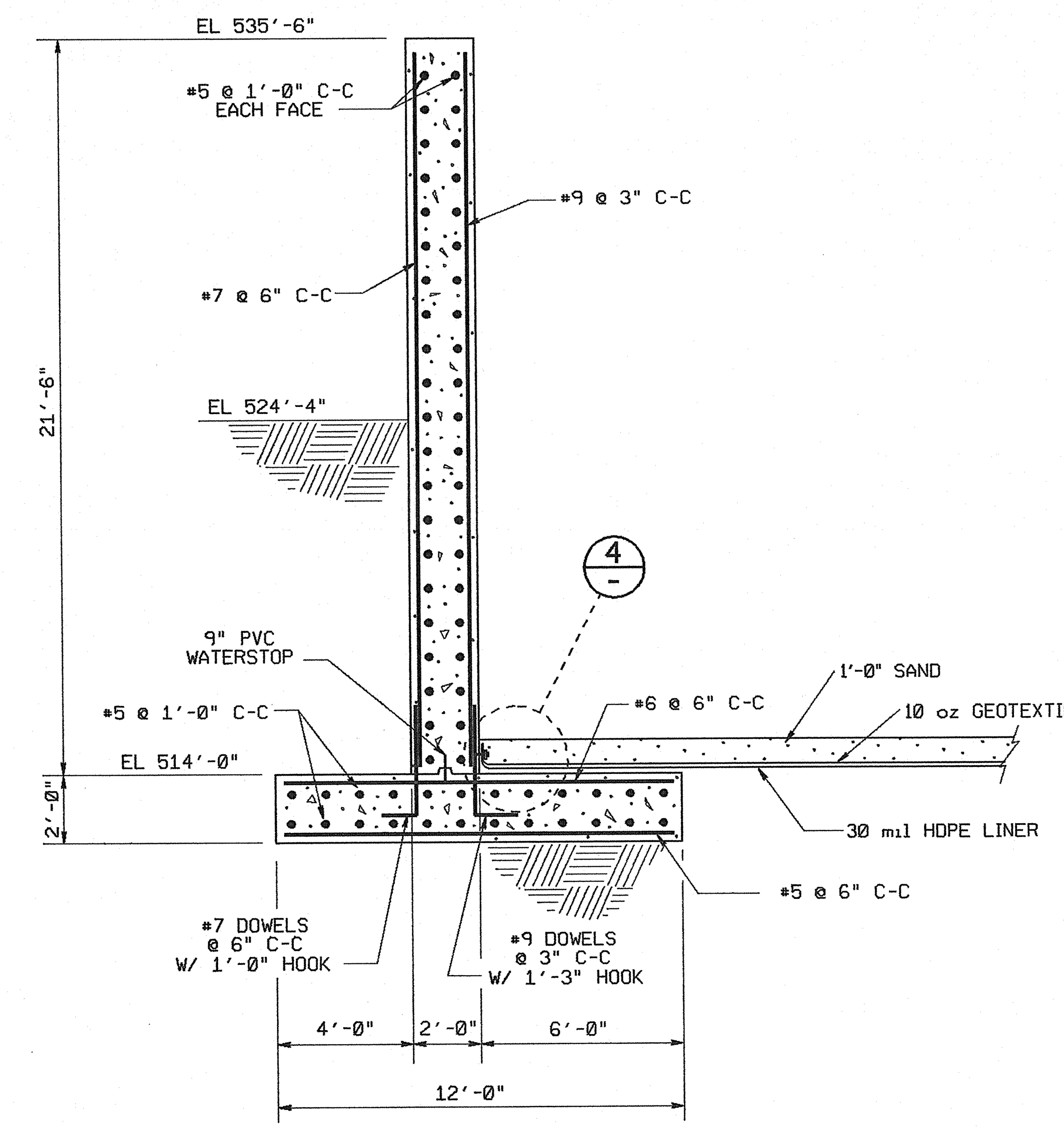
DRAWN: FRANK TOBAR	DATE: 7/16/90
CHECKED: DTS	SCALE: 1" = 50'-0"
APPROVED: DTS	SHEET 1 OF 1

SYSTEM	I.D.	DRAWING NUMBER	CODE
		D/S - 1547	

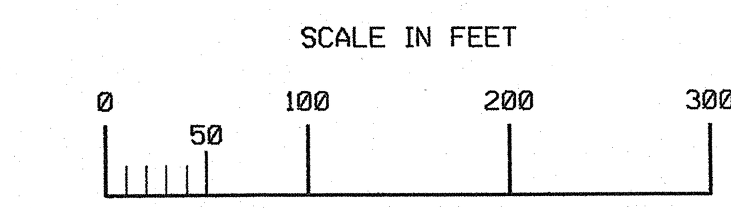
391000



PLAN



SECTION (J)

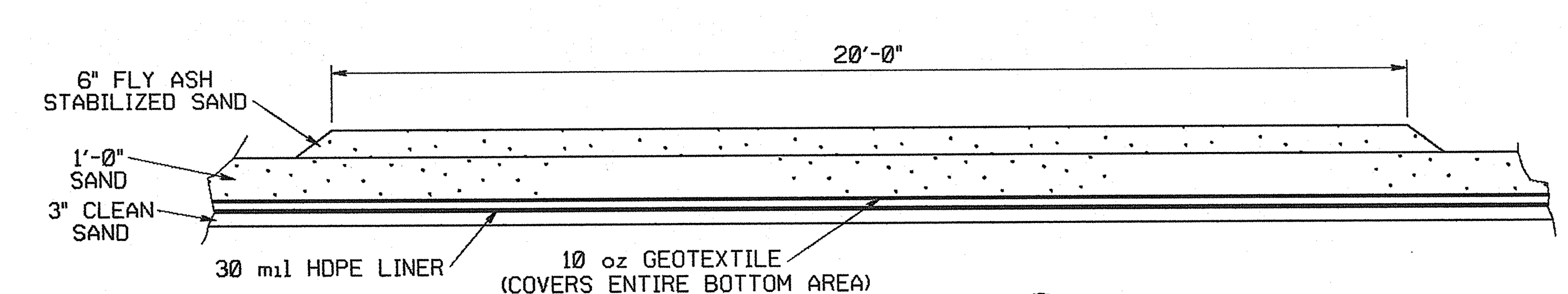


GENERAL NOTES

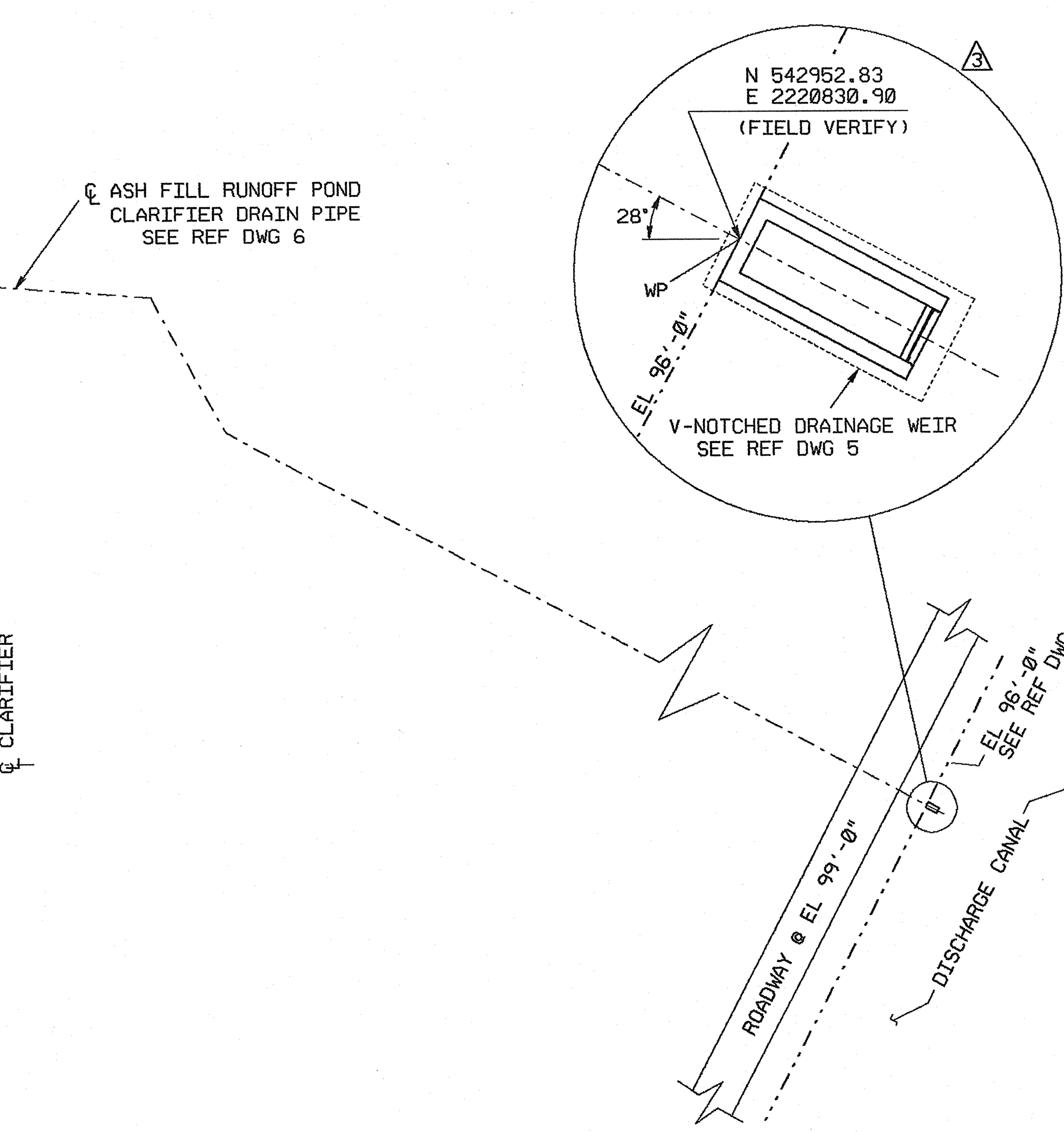
1. ALL FILL SHALL BE CONTROLLED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
2. CUT DISPOSAL FROM WITHIN THE DISPOSAL AREA MAY BE USED AS EMBANKMENT.
3. CUT DISPOSAL FROM THE POWER PLANT SITE MAY BE USED AS EMBANKMENT FILL.
4. ALL REBAR SHALL HAVE 3" MIN CLEAR COVER.

REFERENCE DRAWINGS

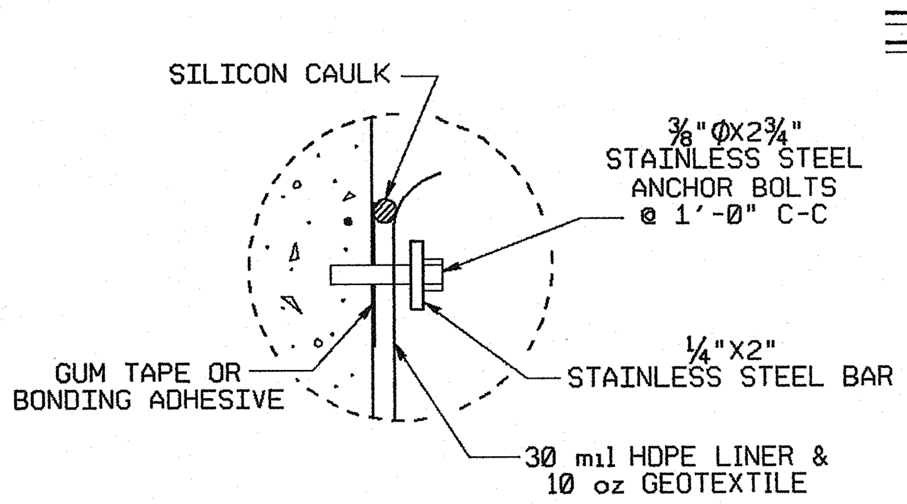
1. 5 YR DISPOSAL AREA SECTIONS & DETAILS D-CL05-289-S002
2. SITE PREP SLUDGE CONVEYOR LINE D-CL05-288-S004
3. (△1) MOVABLE TWR T-4 & RADIAL STACKER FNDS D-CL05-288-S019
4. (△2) MISCELLANEOUS FND - PLANS, SET'S & DET'S D-CL05-289-S005
5. (△3) V-NOTCHED DRAINAGE WEIR D-CL05-111-S023
6. (△3) LANDFILL RUNOFF POND AREA LAYOUT D-CL05-289-M100
7. (△3) SLUDGE CONVEYOR LINE D-CL05-288-S002



SECTION (N)

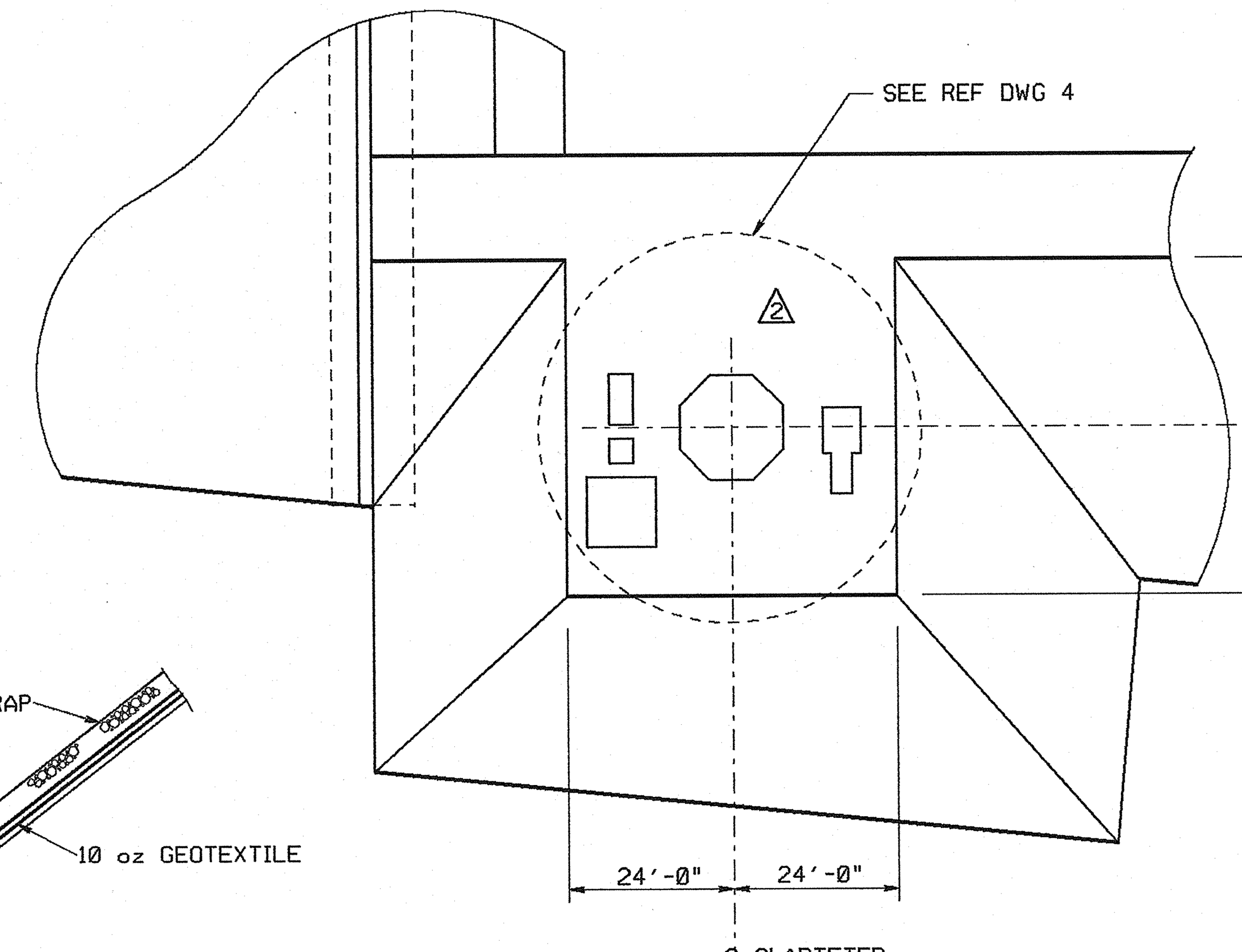


AS CONSTRUCTED

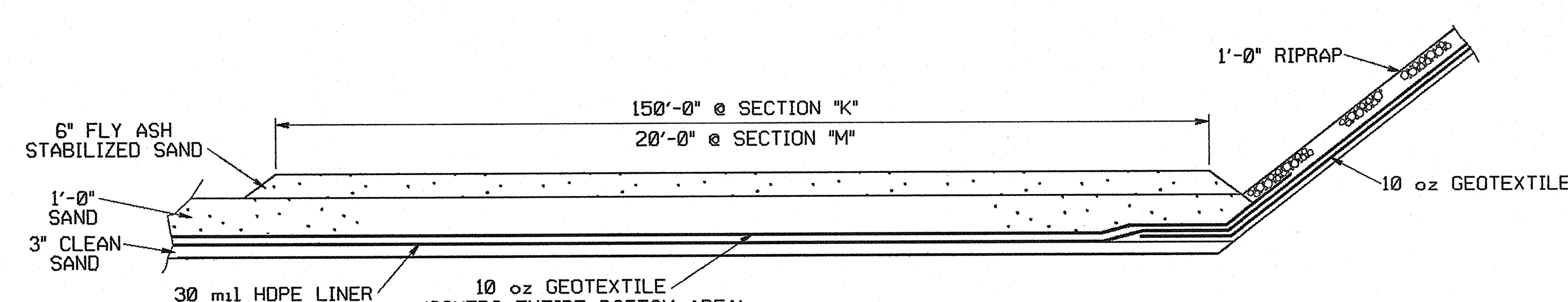


DETAIL (4)

TYPICAL LINER TO CONCRETE ATTACHMENT



DETAIL (3)



SECTION (K)

SECTION (M)

NO	REVISIONS	DATE	BY	CHK	DSNR	APPR
4	ADDED ROADS & REVISED LINER PER FM #92-442 REV 1 & FM #92-711	122992	RWP	[illegible]	BLK	DM
3	ADDED V-NOTCHED DRAINAGE WEIR	110691	RMJ	RDR	JAK	DM
2	SHOWN CLARIFIER PAD @ PLAN & REV'D DETAIL 3. ADDED REF DWG 4.	102291	DO	RDR	JAK	DM
1	ADDED RETAINING WALL & RELOCATED CLARIFIER TO TOP OF BERM ADDED REF DWG #3	061991	JKB	DLR	JAK	DM
0	ISSUED FOR CONSTRUCTION					

CITY PUBLIC SERVICE
J. K. SPRUCE UNIT 1

UTILITY ENGINEERING CORPORATION
COMBUSTION ENGINEERING, INC. — H.B.ZACHRY COMPANY

SITE PREPARATION
5 YR SCRUBBER SLUDGE DISPOSAL AREA

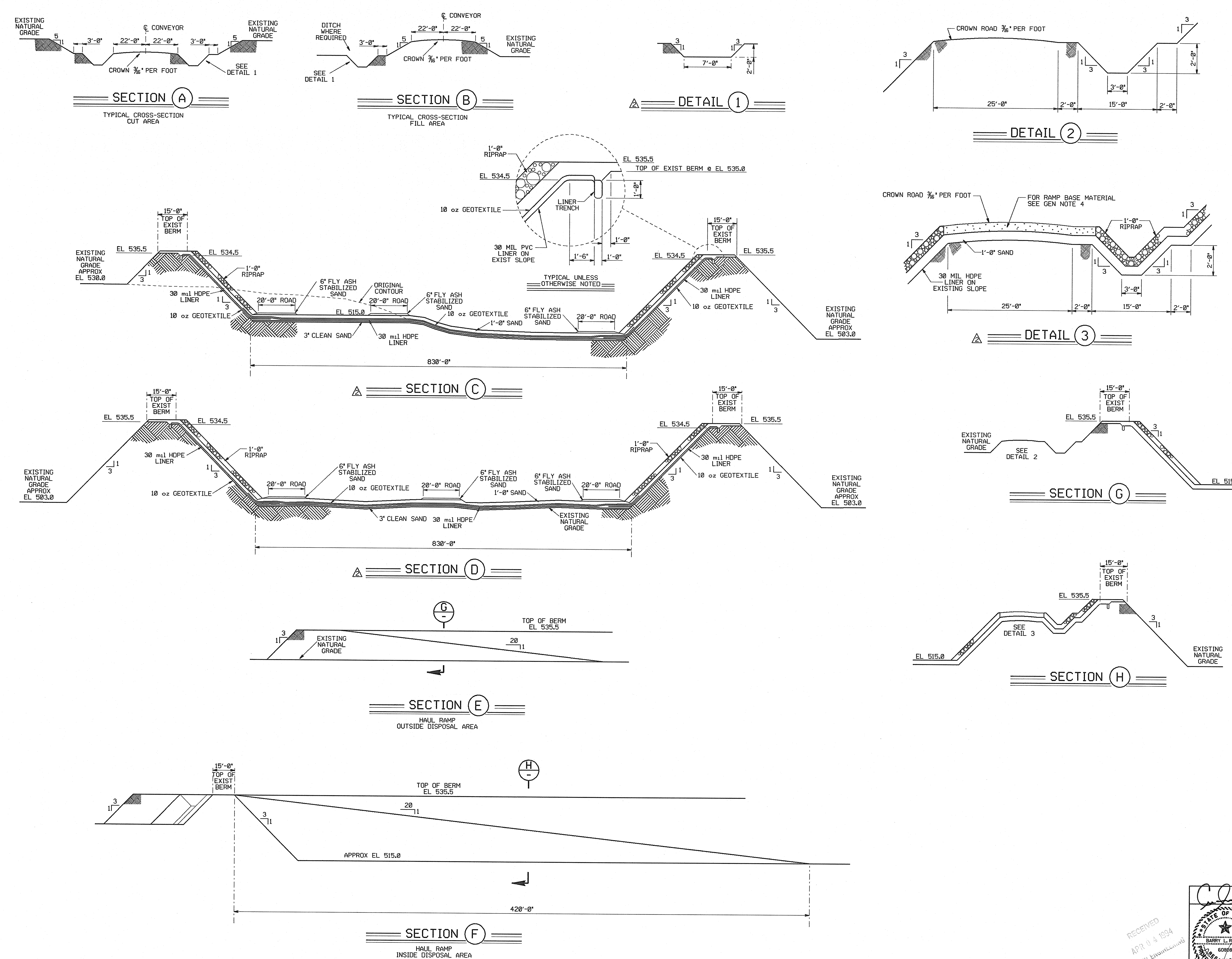
DWN 032588	DSGND 040888	CHKD	CONTROLS	ELECTRICAL	MECHANICAL	STRUCTURAL
G DELEON	B RICHEY	D RODEN				

APPR D MITCHELL 4-12-88
APPR
CADD DRAWING NO. D-CL05-289-S001 — SHEET — REV 4

STATE OF TEXAS — BARRY L. RICHEY — 60808 — REGISTERED PROFESSIONAL ENGINEER

JAN 0 6 1993

dawson
29-DEC-1992 15:01
/usr/zg0/289s001.dgn



GENERAL NOTES

1. ALL FILL SHALL BE CONTROLLED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
2. CUT DISPOSAL FROM WITHIN THE DISPOSAL AREA MAY BE USED AS EMBANKMENT FILL.
3. CUT DISPOSAL FROM THE POWER PLANT SITE MAY BE USED AS EMBANKMENT FILL.
4. ROAD BASE ON INSIDE RAMP TO BE GRADE 1, TYPE A MATERIAL PLACED IN (2) 6" LIFTS. BINDER TO BE CLASS C FLYASH (APPROX 12% TOTAL QUANTITY.)

REFERENCE DRAWINGS

1. SITE PREP SLUDGE CONVEYOR LINE D-CL05-288-S001
2. SITE PREP SLUDGE CONVEYOR LINE D-CL05-288-S002
3. 5 YEAR SLUDGE DISPOSAL AREA D-CL05-289-S001

AS CONSTRUCTED

NO	REVISIONS	DATE	BY	CHK	DSNR	APPR
2	REVISED SECTIONS & DETAILS PER FM #92-442 REV 1 & FM #92-711	122992	RWD	RDR	BLR	DM
1	ADDED PVC POND LINER & RIPRAP	061991	TLC	DLR	JAK	DM
0	ISSUED FOR CONSTRUCTION	121289	LK	DLR	BLR	DM

CITY PUBLIC SERVICE
J. K. SPRUCE UNIT 1

UTILITY ENGINEERING CORPORATION
COMBUSTION ENGINEERING, INC. — H.B.ZACHRY COMPANY

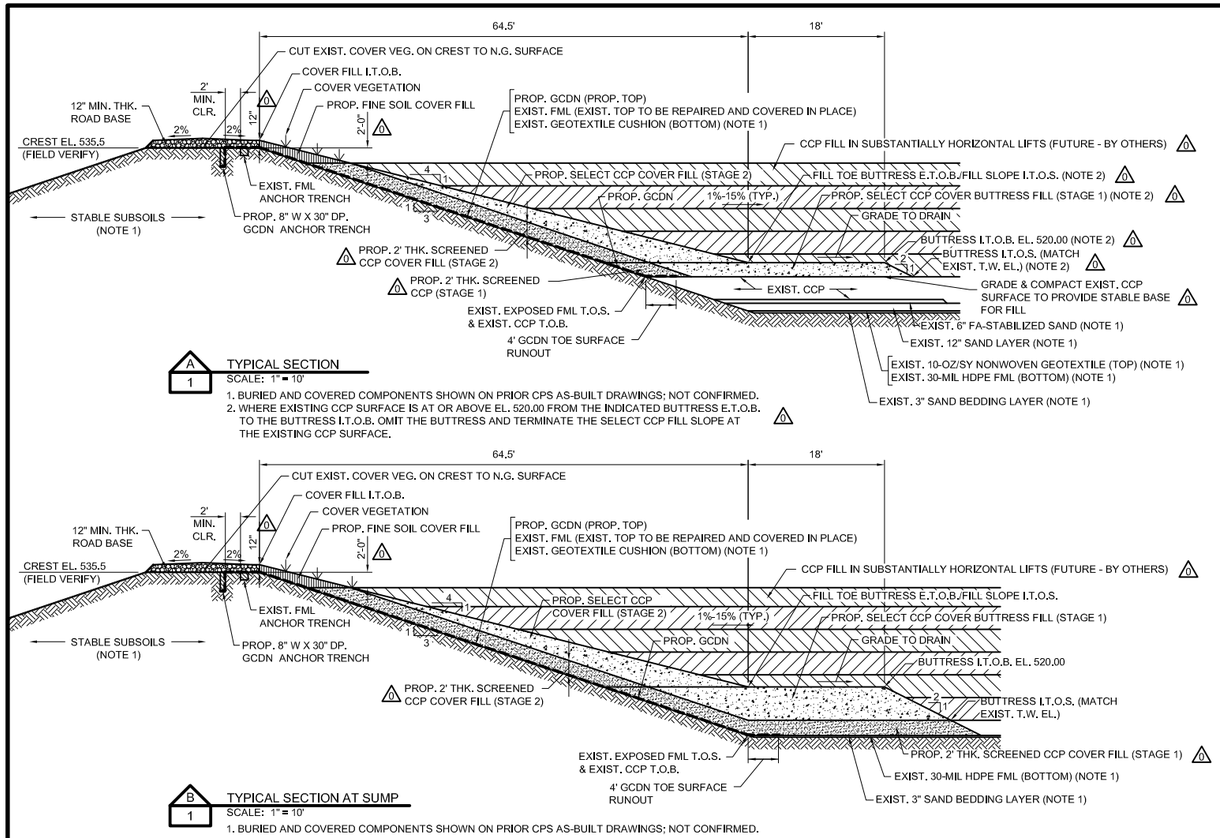
5 YR SCRUBBER SLUDGE DISPOSAL AREA
SECTIONS AND DETAILS

DWN DELEON 03-25-88 | DSGND RICHIE 4-8-88 | CHKD RODEN | CONTROLS | ELECTRICAL | MECHANICAL | STRUCTURAL
APPR D MITCHELL 4-12-88 | APPR
CADD DRAWING NO. D-CL05-289-S002 | SHEET | REV 2

STATE OF TEXAS — BARRY L. RICHEY — 60808 — REGISTERED PROFESSIONAL ENGINEER

JAN 0 6 1993

dawson
29-DEC-1992 15:45
/usr/zg0/289s002.dgn

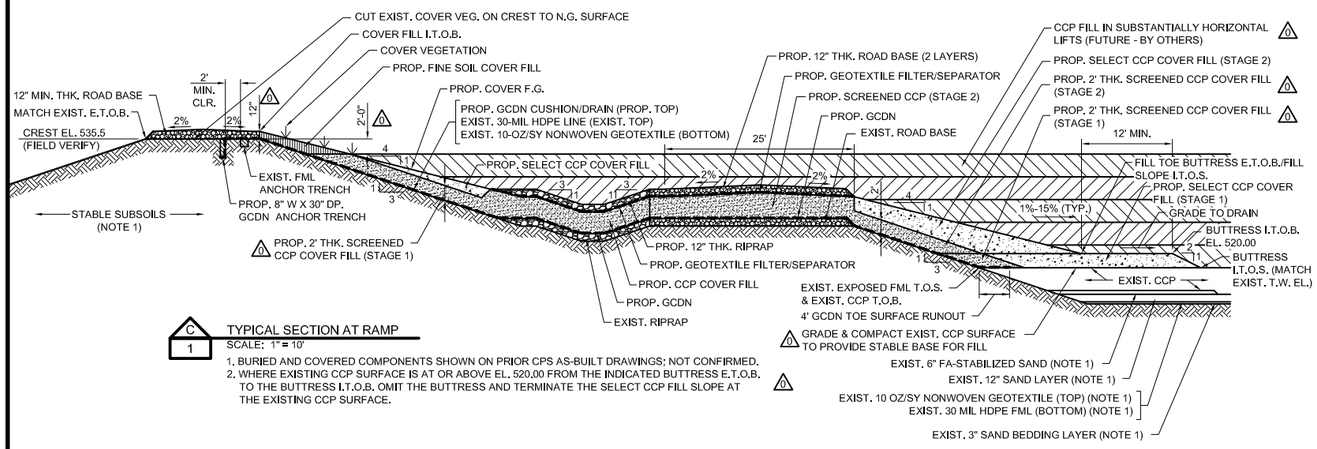


A 1 TYPICAL SECTION
SCALE: 1" = 10'

1. BURIED AND COVERED COMPONENTS SHOWN ON PRIOR CPS AS-BUILT DRAWINGS; NOT CONFIRMED.
2. WHERE EXISTING CCP SURFACE IS AT OR ABOVE EL. 520.00 FROM THE INDICATED BUTTRESS E.T.O.B. TO THE BUTTRESS I.T.O.B. OMIT THE BUTTRESS AND TERMINATE THE SELECT CCP FILL SLOPE AT THE EXISTING CCP SURFACE.

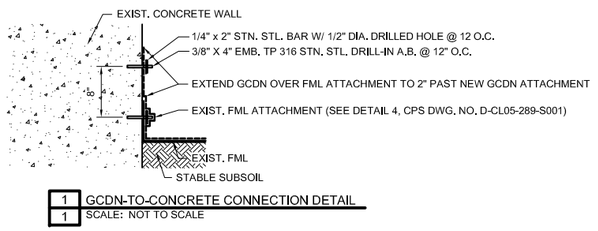
B 1 TYPICAL SECTION AT SUMP
SCALE: 1" = 10'

1. BURIED AND COVERED COMPONENTS SHOWN ON PRIOR CPS AS-BUILT DRAWINGS; NOT CONFIRMED.



C 1 TYPICAL SECTION AT RAMP
SCALE: 1" = 10'

1. BURIED AND COVERED COMPONENTS SHOWN ON PRIOR CPS AS-BUILT DRAWINGS; NOT CONFIRMED.
2. WHERE EXISTING CCP SURFACE IS AT OR ABOVE EL. 520.00 FROM THE INDICATED BUTTRESS E.T.O.B. TO THE BUTTRESS I.T.O.B. OMIT THE BUTTRESS AND TERMINATE THE SELECT CCP FILL SLOPE AT THE EXISTING CCP SURFACE.



1 1 GCDN-TO-CONCRETE CONNECTION DETAIL
SCALE: NOT TO SCALE

STATE OF TEXAS
EDWARD DOYON MAIN
65502
REGISTERED PROFESSIONAL ENGINEER
8/17/2010

GENERAL CONSTRUCTION NOTES

1. SCOPE: THE WORK IS FOR REPAIR OF THE EXPOSED LINER IN 5-YEAR LANDFILL. THE WORK INCLUDES LINER WORK AND EARTHWORK AS DESCRIBED ON THIS SHEET.

2. WORK BY CPS ENERGY : CPS ENERGY WILL PROVIDE CCP PRODUCTS PRODUCED BY THE SOMMERS/DEELY/SPRUCE POWER PLANTS AT STOCKPILES CHOSEN BY CPS ENERGY IN THE 5-YEAR LANDFILL. THE CCP WILL BE PROVIDED AS-PRODUCED. CPS WILL NOT SCREEN THE CCP.

3. WORK BY OTHER CPS ENERGY CONTRACTORS : CPS ENERGY WILL MANAGE THE LINER WORK AND THE EARTHWORK NEEDED TO IMPLEMENT THE 5-YEAR LINER IMPROVEMENTS.

4. REFERENCE DRAWINGS : "SITE PREPARATION, 5-YEAR SCRUBBER SLUDGE DISPOSAL AREA", CPS ENERGY DWG. NO. D-CL05-289-S001, REV. 4., 12/29/1992; AND "5-YEAR SCRUBBER SLUDGE DISPOSAL AREA, SECTIONS AND DETAILS", CPS ENERGY DWG. NO. D-CL05-289-S002, REV. 2, 12/29/1992. FIELD VERIFY LINES AND GRADES SHOWN PRIOR TO CONSTRUCTION.

5. SUBMITTALS: SUBMIT A WORK PLAN WITH PRODUCT TECHNICAL DATA AND A DETAILED PROGRESS SCHEDULE FOR REVIEW AND APPROVAL BY THE CPS ENERGY PROJECT MANAGER. UPDATE AND REVIEW THE SCHEDULE WEEKLY WITH THE CPS ENERGY PROJECT MANAGER.

6. AS-BUILT DRAWINGS : UPDATE A COPY OF THE DRAWINGS SHOWING THE LINES AND GRADES OF WORK CONSTRUCTED. SUBMIT A LEGIBLE COPY OF ANNOTATED DRAWINGS SHOWING MATERIALS USED AND PLACEMENT LINES AND GRADES.

7. ACCESS: COMPLY WITH CPS ENERGY REQUIREMENTS FOR PERSONNEL, EQUIPMENT, AND MATERIALS ACCESS. ACCESS THE JOB SITE ONLY VIA ACCESS ROUTES APPROVED IN ADVANCE BY THE CPS ENERGY PROJECT MANAGER.

8. PROTECT EXISTING FACILITIES : LOCATE AND PROTECT EXISTING FACILITIES NOT DESIGNATED TO BE MODIFIED OR REMOVED. REPAIR OR REPLACE FACILITIES DAMAGED WITH NEW LIKE QUALITY FACILITIES AS REQUIRED BY CPS ENERGY AT NO ADDITIONAL CONTRACT COST.

9. EXISTING LINES AND GRADES : FIELD VERIFY LINES AND GRADES OF THE EXISTING CCP, EARTHWORK, LINER AND STRUCTURES PRESENT AT THE 5-YEAR LANDFILL PRIOR TO CONSTRUCTION. NOTIFY THE CPS ENERGY PROJECT MANAGER OF VARIANCES AND OBTAIN APPROVAL OF ANY CHANGES NECESSARY PRIOR TO CONSTRUCTION.

10. PROPOSED LINES AND GRADES : CONSTRUCT THE WORK TO THE LINES AND SLOPES SHOWN ON THE DRAWINGS.

11. ACCEPTANCE OF THE WORK : ACHIEVE ALL CQA ACCEPTANCE CRITERIA AS DETERMINED BY THE CPS PROJECT MANAGER.

LINER CONSTRUCTION NOTES

1. GENERAL REQUIREMENTS : SEE GENERAL CONSTRUCTION NOTES, THIS SHEET.

2. LINER WORK SCOPE : REPAIR OF THE EXISTING FLEXIBLE MEMBRANE LINER (FML) AND CONSTRUCTION OF GEOCOMPOSITE DRAINAGE NET (GCDN).

3. PRODUCTS: PROVIDE NEW PRODUCTS ACCEPTABLE TO CPS ENERGY IN ORIGINAL PACKAGING DELIVERED DIRECTLY FROM THE PRODUCT MANUFACTURER.

4. TRANSPORT: SHIP PRODUCTS DIRECT FROM THE PRODUCT MANUFACTURER TO THE JOB SITE VIA PRE-PAID FREIGHT, INCLUDING DEMURRAGE ADEQUATE TO UNLOAD THE PRODUCT AT THE SITE, AT NO ADDITIONAL CONTRACT COST.

5. PRODUCT HANDLING AND STORAGE : UNLOAD PRODUCTS SHIPPED TO THE JOB SITE ON RECEIPT USING EQUIPMENT AND TECHNIQUES IN ACCORDANCE WITH THE PRODUCT MANUFACTURER'S PRINTED INSTRUCTIONS APPROVED BY CPS ENERGY. STORE GCDN ABOVE FLOWING AND PONDED WATER. MAINTAIN WATERPROOF MEMBRANE COVER ON GCDN PRIOR TO DEPLOYMENT.

6. WORK BY OTHER CPS ENERGY CONTRACTORS : CPS ENERGY WILL MANAGE THE RELATED EARTHWORK CONTACT NEEDED TO IMPLEMENT THE 5-YEAR LINER IMPROVEMENTS; SEE EARTHWORK CONSTRUCTION NOTES, THIS SHEET.

7. COORDINATION OF THE LINER WORK : COORDINATE AND STAGE ACCESS, EQUIPMENT, MATERIALS, PERSONNEL, PLACEMENT OF TEMPORARY FACILITIES AND CONTROLS, AND COMPLETION OF LINER WORK IN ADVANCE WITH THE CPS ENERGY PROJECT MANAGER. ACCOMPLISH THE LINER WORK WITHOUT NEED FOR UNPLANNED DELAY OR STANDBY OF ANY OF THE RELATED EARTHWORK DUE TO THE PROGRESS OR STAGING OF THE LINER WORK.

8. EARTHWORK MATERIAL AND CONSTRUCTION : SEE EARTHWORK CONSTRUCTION NOTES, THIS SHEET.

9. REPAIR EXPOSED FML : LOCATE, REPAIR, AND TEST EACH CUTS, HOLES, AND OTHER DEFECTS THROUGH THE EXPOSED FML THAT COULD ALLOW LEAKAGE THROUGH THE FML.

10. GCDN PRODUCT AND CONSTRUCTION : PROVIDE AND CONSTRUCT GCDN ACCORDANCE WITH SECTION 31 05 19.17, GEOSYNTHETIC DRAINAGE NET.

11. DIKE CREST PREPARATION : CUT EXISTING COVER VEGETATION TO THE SURFACE ON THE CREST OF THE PERIMETER DIKE WITHIN 24 HOURS PRIOR TO DEPLOYING THE GCDN AT THAT LOCATION. PREVENT ABRASION, CUTTING, OR OTHER DAMAGE TO THE EXISTING FML WHEN CUTTING THE CREST COVER VEGETATION.

12. GCDN DEPLOYMENT : DEPLOY GCDN FROM THE EXTERIOR SIDE OF THE DIKE CREST SURFACE RUNOUT, OVER EXPOSED FML, AND ONTO THE CCP AT THE TOE OF THE EXPOSED FML COVERING THE SIDE SLOPE IN A SINGLE PANEL WITH NO END LAPS OR SEAMS.

13. GCDN TEMPORARY BALLAST : PROVIDE TEMPORARY BALLAST THAT WILL NOT DAMAGE THE GCDN OR THE UNDERLYING FML AS NEEDED TO PREVENT MOVEMENT OR DISPLACEMENT OF THE GCDN PRIOR TO AND DURING PLACEMENT OF CCP COVER FILL.

14. GCDN CONNECTION TO CONCRETE STRUCTURES : WHERE GCDN IS LOCATED ADJACENT TO EXISTING CONCRETE WALLS, SECURE THE GCDN TO THE WALL ALONG A LINE OUTSIDE THE EXISTING FML BATTEN STRIP IN ACCORDANCE WITH GCDN-CONCRETE CONNECTION DETAIL, THIS SHEET.

15. GCDN INTERIM COVER : WHERE THE WORK IS STAGED TO PRODUCE EXPOSURE OF THE GCDN FOR A PERIOD EXCEEDING 30 DAYS, COVER THE EXPOSED GCDN WITH REEF INDUSTRIES "GRIFFOLYN TX-1200" REINFORCED GEOCOMPOSITE MEMBRANE WITH SUITABLE TEMPORARY ANCHOR AND BALLAST TO PREVENT UV EXPOSURE OF THE GCGN. REPLACE GCDN IF DAMAGED AND, IF UNDAMAGED, AT 30-MONTH INTERVALS UNTIL THE GCGN IS COVERED WITH CCP COVER FILL AS SHOWN ON THE DRAWINGS.

16. REMOVAL OF INTERIM COVER : WHEN DAMAGE OR SUBSEQUENT STAGING REQUIRES REMOVAL OF GCDN, DO SO WITHOUT DAMAGING OR DISPLACING FML, GCDN, OR CCP COVER FILL. COVER THE EXPOSED GCGN WITH CCP COVER FILL WITHIN 7 DAYS THEREAFTER.

EARTHWORK CONSTRUCTION NOTES

1. GENERAL REQUIREMENTS : SEE GENERAL CONSTRUCTION NOTES, THIS SHEET.

2. SCREENED CCP MATERIAL : ECONOMIZER ASH, GYPSUM OR "MACS ASH" WITH 100% PASSING A 4-INCH BAR SCREEN AND GREATER THAN 80% PASSING A 3/4-INCH SIEVE. SCREEN CCP OUTSIDE THE LIMITS OF THE COVER FILL PRIOR TO PLACEMENT.

3. SELECT CCP MATERIAL : ECONOMIZER ASH, GYPSUM OR "MACS ASH", EXCLUDING MASSES LARGER THAN 12 INCHES IN ANY DIMENSION. CRUSH OR EXCLUDE OVERSIZE MATERIAL OUTSIDE LIMITS OF THE PROPOSED COVER FILL PRIOR TO PLACEMENT.

4. TOPSOIL MATERIAL : NATURAL SOIL, NRCS "LOAM", "CLAY LOAM", "SANDY LOAM", "SANDY CLAY LOAM", "SILTY CLAY LOAM", OR "SILTY LOAM" WITH 100% PASSING THE 3/4-INCH U.S. STANDARD SIEVE AND ORGANIC CONTENT OF 1% TO 2% DRY WEIGHT FROM A SOURCE APPROVED BY THE CPS PROJECT MANAGER.

5. GEOTEXTILE FILTER/SEPARATOR : CONTINUOUS 16-OZ/SY POLYESTER OR POLYPROPYLENE NONWOVEN GEOTEXTILE, WITH 24-INCH SIDE AND END LAPS.

6. RIP RAP MATERIAL : CRUSHED LIMESTONE OR DURABLE NATIVE QUARRY STONE WITH ANGULAR OR SUBANGULAR SHAPE PASSING AN 8-INCH BAR SCREEN AND RETAINED ON A 4-INCH BAR SCREEN.

7. ROAD BASE MATERIAL : FLEXIBLE ROAD BASE IN ACCORDANCE WITH TXDOT STD. SPEC. 247, TYPE A, GRADE 1, 3/4-INCH MAXIMUM PARTICLE SIZE, OR ALTERNATE MATERIAL APPROVED BY THE CPS ENERGY PROJECT MANAGER.

8. LINER MATERIAL PROTECTION : PROTECT LINER FML, GCDN, FILTER/SEPARATOR, AND OTHER LINER COMPONENTS THROUGHOUT CONSTRUCTION. OPERATE POWER EQUIPMENT AND RELATED BLADES, TRACK LUGS, AND TOOLS OVER SOIL OR CCP COVER OVER A THICKNESS OF STABLE LINER MATERIALS THAT IS AT LEAST 12 INCHES THICK, UNLESS OTHERWISE NOTED, AND IS NOT SUBSTANTIALLY DISPLACED BY THE EQUIPMENT. DO NOT DAMAGE OR DISPLACE THE UNDERLYING LINER DURING PLACEMENT OR COMPACTION OF EARTHWORK.

9. DUST CONTROL : APPLY WATER TO CCP AS NECESSARY TO CONTROL DUST.

10. CCP FILL SURFACE PREPARATION : IN AREAS OUTSIDE THE EXPOSED FML, GRADE THE SURFACE OF THE EXPOSED CCP ADEQUATE TO ALLOW PLACEMENT OF CCP COVER FILL WITHOUT DISPLACEMENT OF EXISTING CCP (I.E. CEMENTED MASSES, EXCESSIVELY STEEP PILES, ETC) AND WITHOUT PRODUCING SIGNIFICANT SOFT SPOTS OR VOIDS IN THE CCP PLACED.

11. GCDN ANCHOR TRENCH EXCAVATION: EXCAVATE GCDN ANCHOR TRENCH IN STAGES AS NEEDED FOR GCDN CONSTRUCTION. PLACE EXCAVATION SPOIL AT A LOCATION NOT COVERED BY THE GCDN AND SUITABLE FOR ACCESS TO THE WORK.

12. GCDN ANCHOR TRENCH BACKFILL : BACKFILL THE GCDN ANCHOR TRENCH IN STAGES AS NEEDED TO ANCHOR THE GCDN. USE ANCHOR TRENCH EXCAVATION SPOIL OR SUITABLE SELECT SOIL FILL, EXCLUDING PARTICLES LARGER THAN 3/4-INCH SCREEN SIZE TO BACKFILL THE GCDN ANCHOR TRENCH. PLACE AND COMPACT THE BACKFILL IN 6-INCH NOMINAL MAXIMUM THICKNESS COMPACTED LIFTS. COMPACT EACH LIFT WITH SUITABLE MANUAL COMPACTION TOOLS. PREVENT DAMAGE TO THE GCDN DURING PLACEMENT OF BACKFILL.

13. STAGED COVER PLACEMENT : PLACED SCREENED CCP, SELECT CCP, TOPSOIL, RIP RAP, AND ROAD BASE IN STAGES OVER THE DEPLOYED GCDN, GEOTEXTILE, AND SUBGRADE TO THE LINES AND GRADES SHOWN ON THE DRAWINGS. COMPLETE PLACEMENT OF STAGE 1 CCP COVER FILL PRIOR TO INITIATING PLACEMENT OF STAGE 2 CCP COVER FILL.

14. PLACEMENT OF SCREENED CCP : PLACE SCREENED CCP IN A SINGLE LIFT.

15. PLACEMENT OF SELECT CCP : PLACE SELECT CCP IN A SINGLE LIFT TO THE EXTENT PRACTICAL, BUT IN LIFTS NOT THICKER THAN 3 FEET.

16. PLACEMENT OF TOPSOIL : PLACE TOPSOIL IN A SINGLE LIFT.

17. COMPACTION OF CCP AND TOPSOIL : COMPACT EACH LIFT OF CCP BY TRAVELING OVER THE SURFACE OF THE CCP ONLY ENOUGH TO PRODUCE A STABLE SURFACE THAT IS NOT SUBSTANTIALLY DISPLACED OR DOES NOT SETTLE WHEN WALKED ON.

18. COVER FILL SLOPE TRANSITIONS : WHERE COVER FILL GRADES TRANSITION TO LOWER LEVELS OR AT ENDS OF FILL SECTION, GRADE THE CCP SURFACE AT A SURFACE SLOPE NOT EXCEEDING 4H:1V.

19. PLACEMENT AND COMPACTION OF ROAD BASE : PLACE AND COMPACT ROAD BASE IN A SINGLE 12-INCH NOMINAL THICKNESS LIFT. GRADE AND COMPACT ROAD BASE TO PRODUCE A DURABLE SURFACE THAT IS NOT DISPLACED OR YIELD UNDER LOAD IMPOSED BY HAUL VEHICLES OR SPREADING EQUIPMENT.

20. PLACEMENT OF RIP RAP : PLACE RIP RAP IN A SINGLE LAYER THAT DOES NOT DISPLACE OR DAMAGE THE UNDERLYING GEOTEXTILE FILTER SEPARATOR OR LINER.

21. COVER VEGETATION : SEED SURFACE OF TOPSOIL AND SOIL SURFACES DISTURBED BY EARTHWORK CONSTRUCTION WITH NATIVE OR ADAPTED PERENNIAL SHORTGRASS COVER VEGETATION AND ESTABLISH A CONTINUOUS AND VIGOROUS STAND OF EROSION-RESISTANT COVER VEGETATION.

REV	DESCRIPTION	DATE	APP'D.
0	ISSUED FOR CONSTRUCTION	8/17/2010	EDM

Environmental Resources Management

TYPICAL SECTIONS AND DETAILS
5-YEAR LANDFILL LINER REPAIR
Sommers/Deely Spruce Power Plants
CPS Energy
San Antonio, Texas

ERM

DESIGN: EDM	DRAWN: CAK	CHKD.: EDM	SHEET NO.
DATE: 8/17/2010	SCALE: AS SHOWN	REV.:	1 of 1
W.O.NO.: H:\DWG\H10\0113818_sectlon.dwg , 8/17/2010 5:09:29 PM			

Dam Safety Assessment Report – J.T. Deely Power Plant

Attachment 2

October 2016
CPS Energy

Environmental Resources Management
CityCentre Four
840 W. Sam Houston Pkwy. N. – Suite 600
Houston, Texas 77024
(281) 600-1000

Dam Safety Assessment Report – J.K. Spruce Power Plant

Attachment 3

October 2016
CPS Energy

Environmental Resources Management
CityCentre Four
840 W. Sam Houston Pkwy. N. – Suite 600
Houston, Texas 77024
(281) 600-1000