Salt Lake County/Utah County, Utah

UTAH LAKE OUTLET

Utah Lake Jordan River Flood Management Program

APPROVALS

SALT LAKE COUNTY

R. TERRY HOLZWORTH
Director of Flood Control

DONALD G. SPENCER, P.E.
Director of Public Works

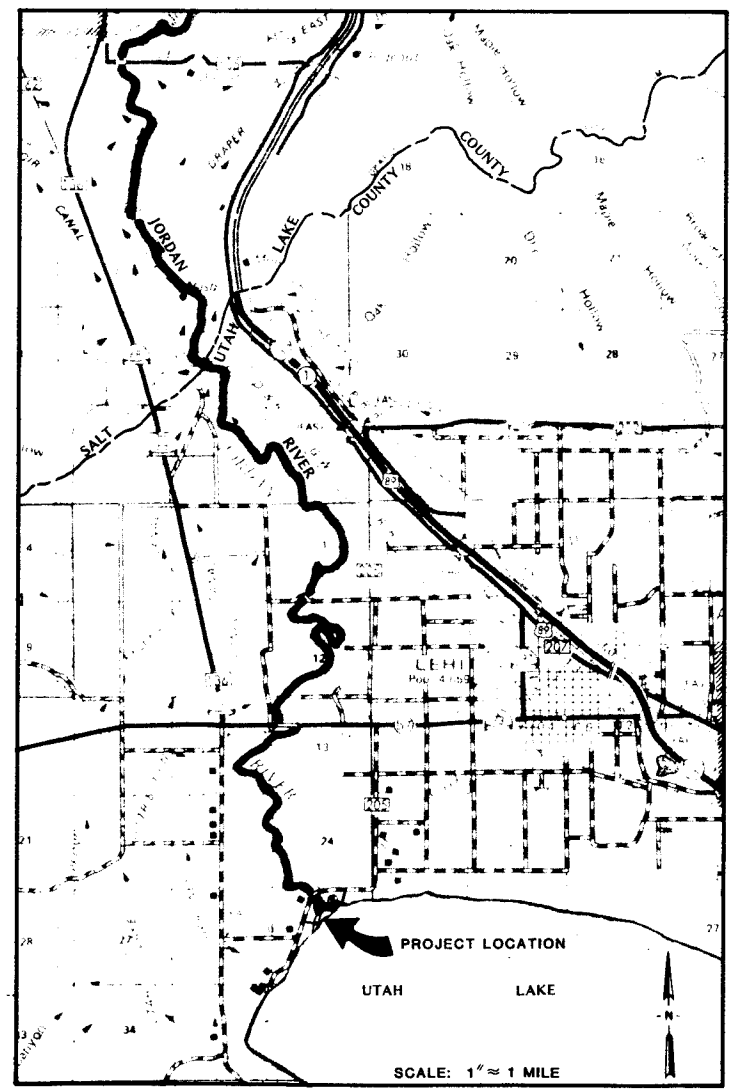
D. MICHAEL STEWART
Chairman County Commissioner

APPROVALS

UTAH COUNTY

CLYDE R. NAYLOR, P.E.
Engineer

KEITH J. RICHAN
Chairman County Commissioners



VICINITY MAP

LEGEND

4490	CONTOUR LINE & ELEVATION
—x—x—	CHAIN LINK FENCE
× 95.0	EXISTING GRADE
⊗ 95.0	FINISH GRADE
	BORING LOCATION
	DREDGING TRAVERSE LINE CONTROL POINT
	LOCAL BASE LINE CONTROL POINT
	EXISTING POWER POLE
PWR	OVERHEAD POWER LINE
	RIPRAP
	CONSTRUCTION LIMITS
5:1	NEW EMBANKMENT - SLOPE AS INDICATED
W	EXISTING WATER LINE
I I I	ROADWAY BARRIER
	HANDRAIL

NOTE:
IN GENERAL, EXISTING STRUCTURES AND FACILITIES ARE NOTED AS "EXISTING" AND ARE SHOWN IN LIGHT LINE WEIGHTS, OR AS SCREENED BACKGROUNDS. NEW STRUCTURES ARE SHOWN IN HEAVY LINE WEIGHTS.

SECTION (LETTER) OR DETAIL (NUMERAL) DESIGNATION — A

SHEET NUMBER (REPLACED WITH A LINE IF TAKEN AND SHOWN ON SAME SHEET) — 5

ON DRAWING WHERE SECTION OR DETAIL IS TAKEN: SHEET NUMBER WHERE SHOWN

ON DRAWING WHERE SECTION OR DETAIL IS SHOWN: SHEET NUMBER(S) WHERE TAKEN

DETAIL AND SECTION DESIGNATION

DESIGN DETAIL DESIGNATION (NUMERAL) — 32

SHOWN ON DESIGN DETAIL DRAWING(S)

DESIGN DETAIL DESIGNATION

INDEX TO DRAWINGS

SHEET	TITLE
1	VICINITY MAP, LEGEND, AND INDEX TO DRAWINGS
2	SITE PLAN
3	EARTHWORK DETAILS, GEOTHERMAL PIPELINE PLAN AND DETAILS
4	STRUCTURAL AND PILING PLANS
5	STRUCTURAL SECTIONS
6	DESIGN DETAILS
7	DESIGN DETAILS
8	DESIGN DETAILS
9	ELECTRICAL
10	ELECTRICAL

ABBREVIATIONS

AB	ANCHOR BOLT	EXST	EXISTING	PNL	PANEL
AC	ASPHALTIC CONCRETE	FAB	FABRICATE	PRESS.	PRESSURE
ADDL	ADDITIONAL	FLG	FLANGE	PVC	POLYVINYL CHLORIDE
AL	ALUMINUM	FLEX.	FLEXIBLE	RAD	RADIUS
APPROX	APPROXIMATE	FLL	FLOWLINE	REINF	REINFORCING
BLDG	BUILDING	FNSH	FINISH	REM	REMOVE
BM	BENCH MARK	FT	FOOT	REQD	REQUIRED
BOT	BOTTOM	FTG	FOOTING	RM	ROOM
CJ	CONSTRUCTION JOINT	FUT	FUTURE	SCHED	SCHEDULE
CLR	CLEAR	GALV	GALVANIZED	SH	SHEET
CMU	CONCRETE MASONRY UNITS	GND	GROUND	SIM	SIMILAR
CONC	CONCRETE	H.A.S.	HEADED ANCHOR STUD	SLP	SLOPE
CONN	CONNECTOR	HORIZ	HORIZONTAL	SP	SPACES
CONN	CONNECTION	INFL	INFLUENT	SPEC	SPECIFICATIONS
CONSTR	CONSTRUCTION	INVT	INVERT	SQ	SQUARE
CONT	CONTINUATION	JT	JOINT	SST	STAINLESS STEEL
COR	CORNER	LBS	POUNDS	SFTB	SQUARE FEET THRUST BLOCK
CPLG	COUPLING	LF	LINEAR FEET	STD	STANDARD
CTR	CENTER	MAX	MAXIMUM	STL	STEEL
CU	CUBIC	MECH	MECHANICAL	T&B	TOP AND BOTTOM
D	DRAIN	MFR	MANUFACTURER	THRU	THROUGH
DET	DETAIL	MH	MANHOLE	T.O.	TOP OF
DIA	DIAMETER	MIN	MINIMUM	TYP	TYPICAL
DIM.	DIMENSION	MJ	MECHANICAL JOINT	VERT	VERTICAL
DWGS	DRAWINGS	NIC	NOT IN CONTRACT	W/	WITH
EA	EACH	NO.	NUMBER	WS	WATERSTOP
EF	EACH FACE	NTS	NOT TO SCALE	WS	WATER SURFACE
ELB	ELBOW	OBS	OBSERVATION	WS	WELDED STEEL
ELEC	ELECTRICAL	OC	ON CENTER	WWF	WELDED WIRE FABRIC
EL	ELEVATION	OPNG	OPENING	WWM	WELDED WIRE MESH
EQL	EQUAL	PEN.	PENETRATION	YD	YARD
EQPT	EQUIPMENT	PE	PLAIN END		
EW	EACH WAY	PJF	PREMOLDED JOINT FILLER		
EXP	EXPAND	PL	PLATE		

REGISTERED PROFESSIONAL ENGINEER No. 6778 MICHAEL W. COLLINS 12/6/84 STATE OF UTAH

CH2M HILL

DSGN L.E. WILLIAMS
DR D.N. BARNES
CHK L.R. TAYLOR
APVD M.W. COLLINS

NO.	DATE	REVISION	BY	APVD

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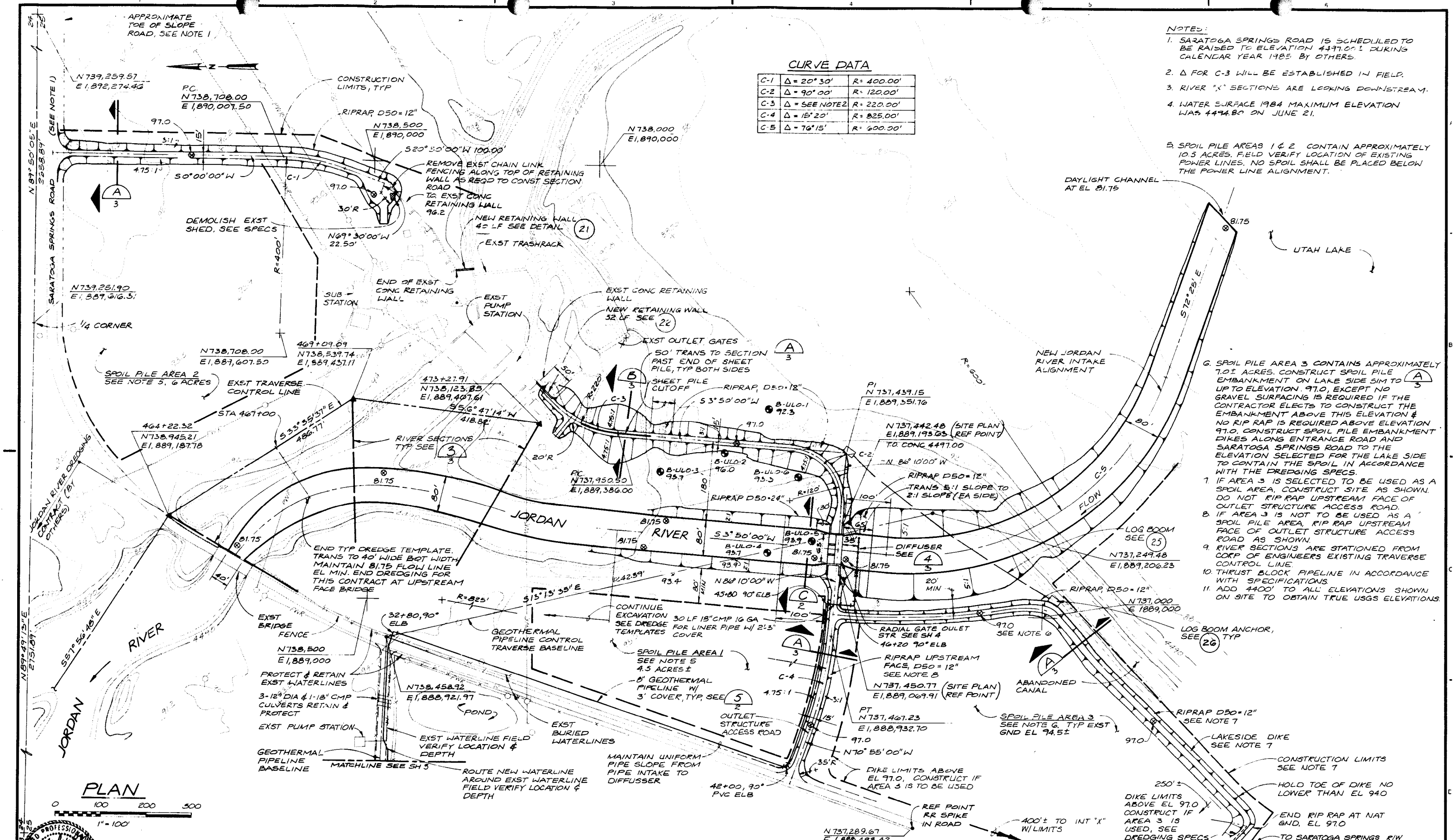
Utah Lake Jordan River Flood Management Program

UTAH LAKE OUTLET

VICINITY MAP, LEGEND, AND INDEX TO DRAWINGS

SHEET 1
DATE DEC. 1984
PROJ NO. B18331.F1



CURVE DATA

C-1	Δ = 20° 30'	R = 400.00'
C-2	Δ = 90° 00'	R = 120.00'
C-3	Δ = SEE NOTE 2	R = 220.00'
C-4	Δ = 15° 20'	R = 825.00'
C-5	Δ = 76° 15'	R = 600.00'

NOTES:

1. SARATOGA SPRINGS ROAD IS SCHEDULED TO BE RAISED TO ELEVATION 4497.00 ± DURING CALENDAR YEAR 1985 BY OTHERS.
2. Δ FOR C-3 WILL BE ESTABLISHED IN FIELD.
3. RIVER "X" SECTIONS ARE LOOKING DOWNSTREAM.
4. WATER SURFACE 1984 MAXIMUM ELEVATION WAS 4494.80 ON JUNE 21.
5. SPOIL PILE AREAS 1 & 2 CONTAIN APPROXIMATELY 10.5 ACRES. FIELD VERIFY LOCATION OF EXISTING POWER LINES. NO SPOIL SHALL BE PLACED BELOW THE POWER LINE ALIGNMENT.
6. SPOIL PILE AREA 3 CONTAINS APPROXIMATELY 7.0± ACRES. CONSTRUCT SPOIL PILE EMBANKMENT ON LAKE SIDE SIM TO (A/3) UP TO ELEVATION 97.0, EXCEPT NO GRAVEL SURFACING IS REQUIRED IF THE CONTRACTOR ELECTS TO CONSTRUCT THE EMBANKMENT ABOVE THIS ELEVATION & NO RIP RAP IS REQUIRED ABOVE ELEVATION 97.0. CONSTRUCT SPOIL PILE EMBANKMENT DIKES ALONG ENTRANCE ROAD AND SARATOGA SPRINGS ROAD TO THE ELEVATION SELECTED FOR THE LAKE SIDE TO CONTAIN THE SPOIL IN ACCORDANCE WITH THE DREDGING SPECS.
7. IF AREA 3 IS SELECTED TO BE USED AS A SPOIL AREA, CONSTRUCT SITE AS SHOWN. DO NOT RIP RAP UPSTREAM FACE OF OUTLET STRUCTURE ACCESS ROAD.
8. IF AREA 3 IS NOT TO BE USED AS A SPOIL PILE AREA, RIP RAP UPSTREAM FACE OF OUTLET STRUCTURE ACCESS ROAD AS SHOWN.
9. RIVER SECTIONS ARE STATIONED FROM CORP OF ENGINEERS EXISTING TRAVERSE CONTROL LINE.
10. THRUST BLOCK PIPELINE IN ACCORDANCE WITH SPECIFICATIONS.
11. ADD 4400' TO ALL ELEVATIONS SHOWN ON SITE TO OBTAIN TRUE USGS ELEVATIONS.

REGISTERED PROFESSIONAL ENGINEER No. 6778 MICHAEL W. COLLINS 12/6/84 STATE OF UTAH

CH2M HILL

DSGN M.P. LAVEY
DR L.E. WILLIAMS
CHK L.R. TAYLOR
APVD M.W. COLLINS

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Utah Lake Jordan River Flood Management Program

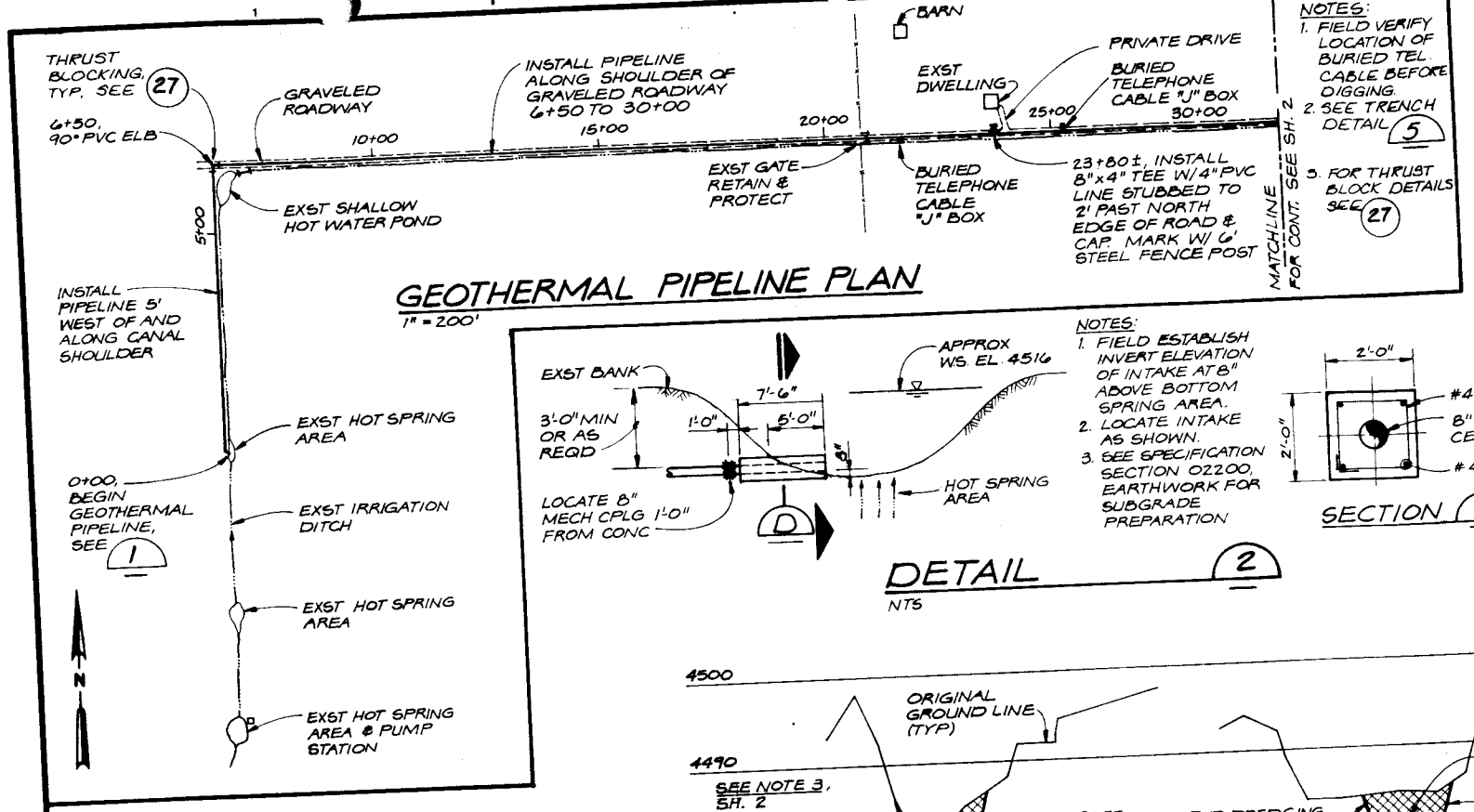
UTAH LAKE OUTLET

SITE PLAN

SHEET 2

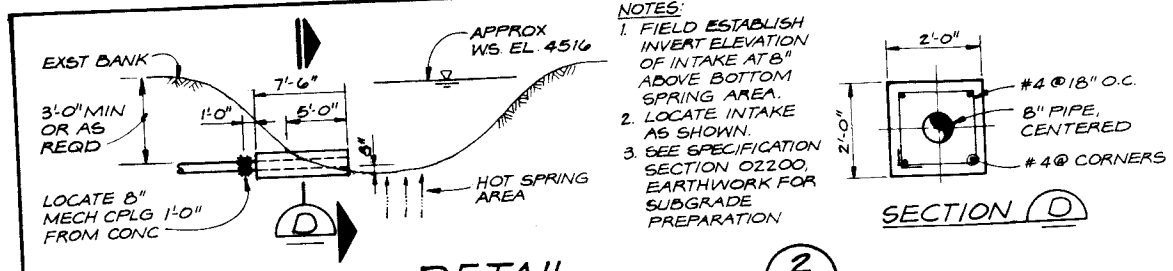
DATE DEC. 1984

PROJ NO. B18331.F1



NOTES:
1. FIELD VERIFY LOCATION OF BURIED TEL CABLE BEFORE DIGGING
2. SEE TRENCH DETAIL 5
3. FOR THRUST BLOCK DETAILS SEE 27

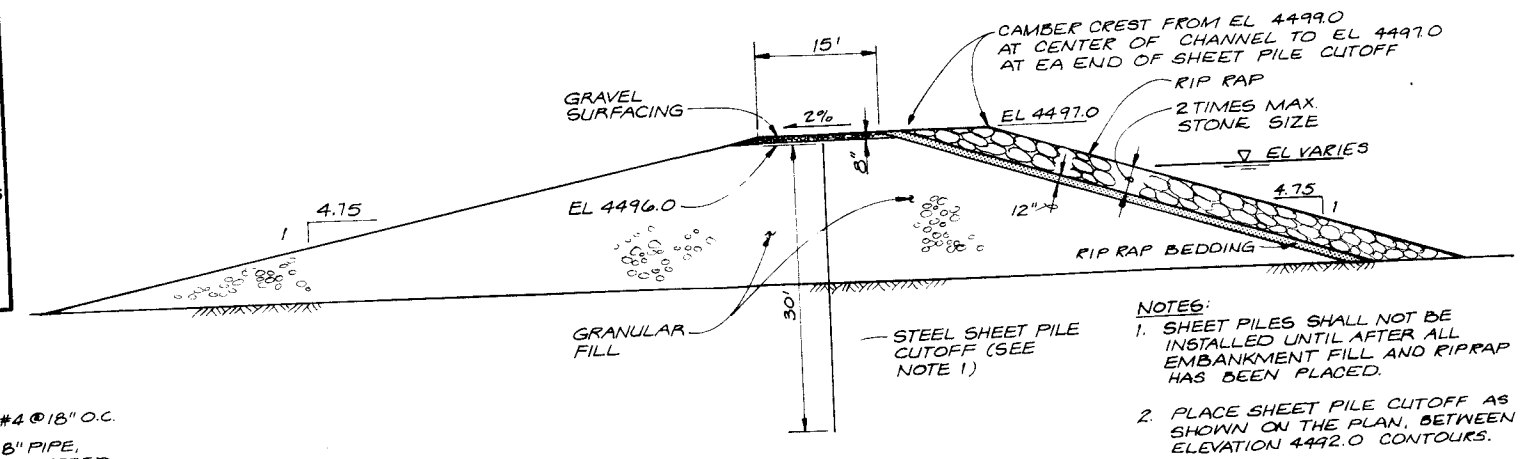
GEOTHERMAL PIPELINE PLAN
1" = 200'



NOTES:
1. FIELD ESTABLISH INVERT ELEVATION OF INTAKE AT 8" ABOVE BOTTOM SPRING AREA.
2. LOCATE INTAKE AS SHOWN.
3. SEE SPECIFICATION SECTION 02200, EARTHWORK FOR SUBGRADE PREPARATION

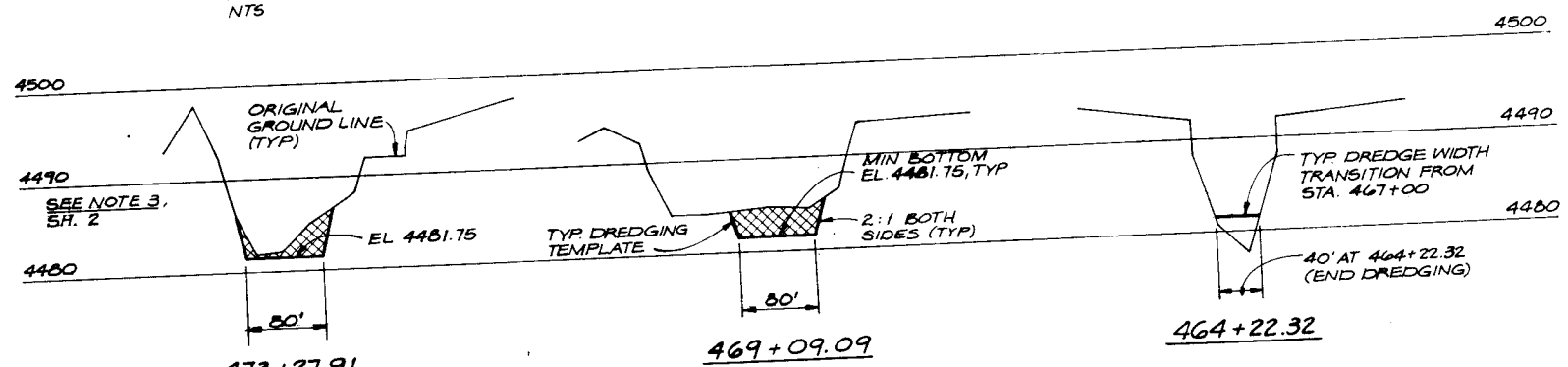
SECTION D

DETAIL 2
NTS

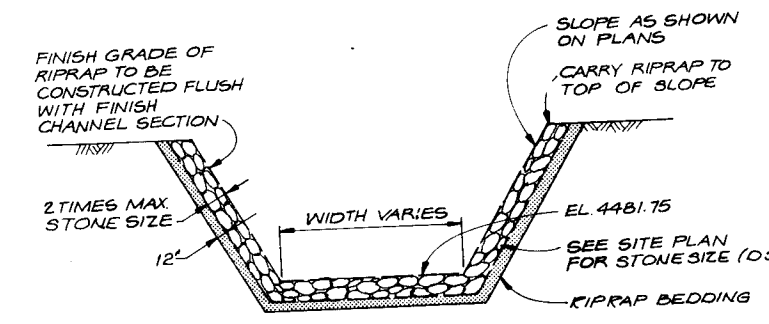


NOTES:
1. SHEET PILES SHALL NOT BE INSTALLED UNTIL AFTER ALL EMBANKMENT FILL AND RIPRAP HAS BEEN PLACED.
2. PLACE SHEET PILE CUTOFF AS SHOWN ON THE PLAN, BETWEEN ELEVATION 4492.0 CONTOURS.
3. TRANSITION TO DIKE SECT. A ON EACH SIDE OF LIMITS OF SHEET PILE CUTOFF.

TYPICAL RIVER CLOSURE SECTION B/2
NTS

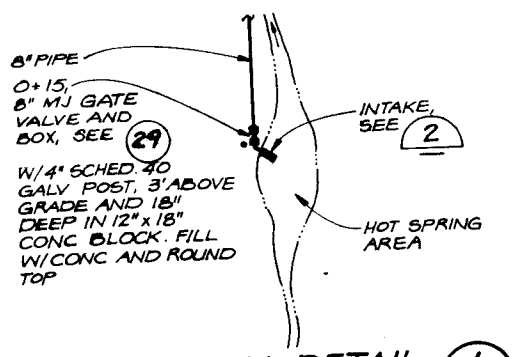


RIVER SECTIONS 3/2
1" = 100' HORIZONTAL
1" = 10' VERTICAL
SEE NOTE 3, SH. 2

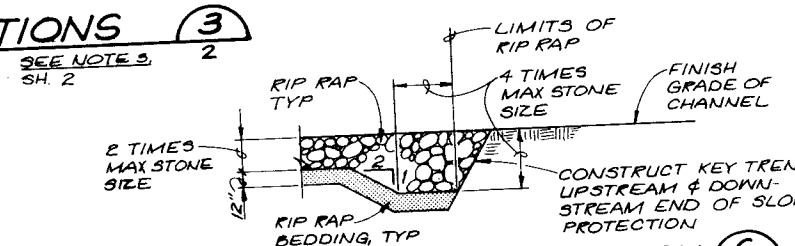


NOTES:
1. LIMITS OF RIPRAP ARE SHOWN ON SITE PLAN.
2. FOR KEY TRENCH AT UPSTREAM & DOWNSTREAM END OF RIPRAP LIMITS 6

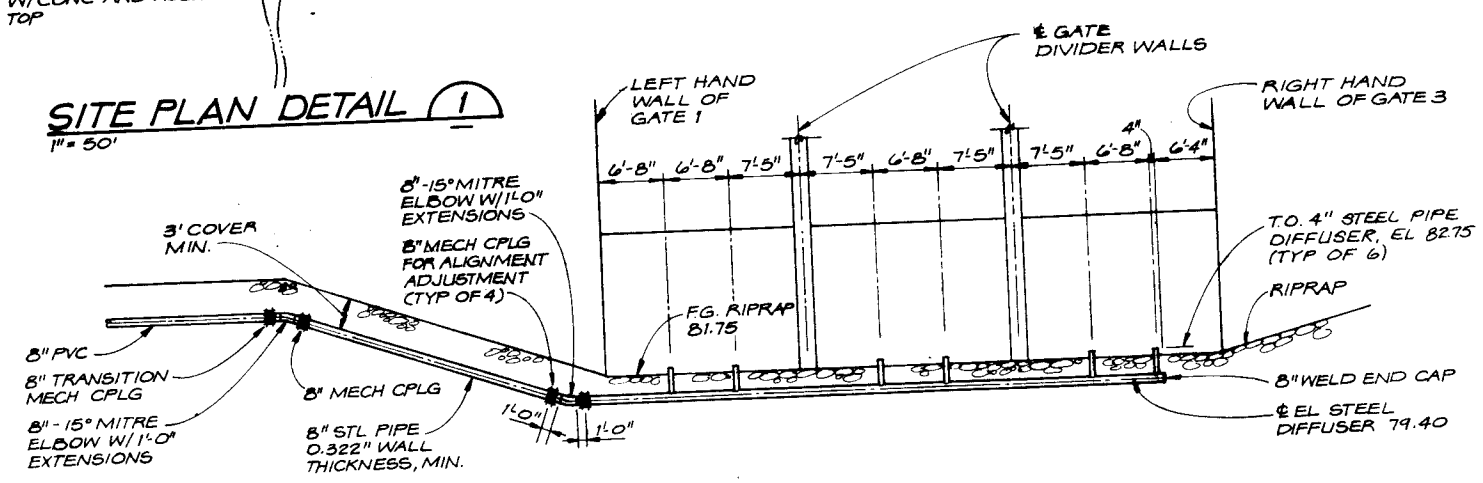
TYPICAL CHANNEL RIPRAP C/2
NTS



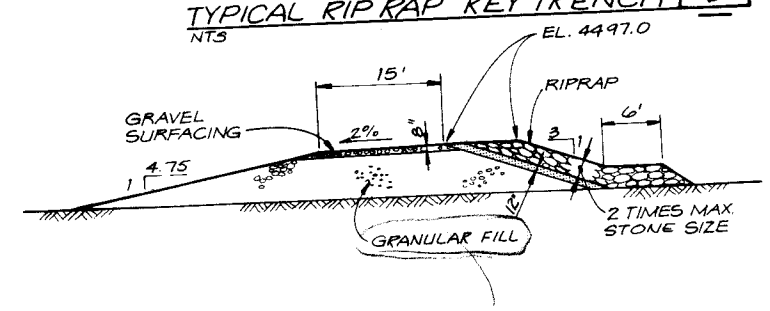
SITE PLAN DETAIL 1
1" = 50'



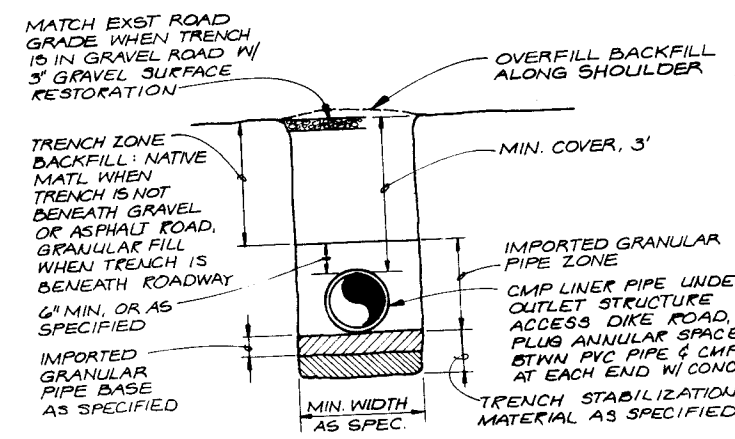
TYPICAL RIP RAP KEY TRENCH 6/2
NTS



DETAIL 4/2
1" = 10'



TYPICAL DIKE SECTION A/2
NTS



TYPICAL TRENCH DETAIL 5
NTS

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CH2M HILL					
DSGN M.P. LAVEY					
DR J.L. FAGAN					
CHK L.R. TAYLOR					
APVD M.W. COLLINS	NO.	DATE	REVISION	BY	APVD

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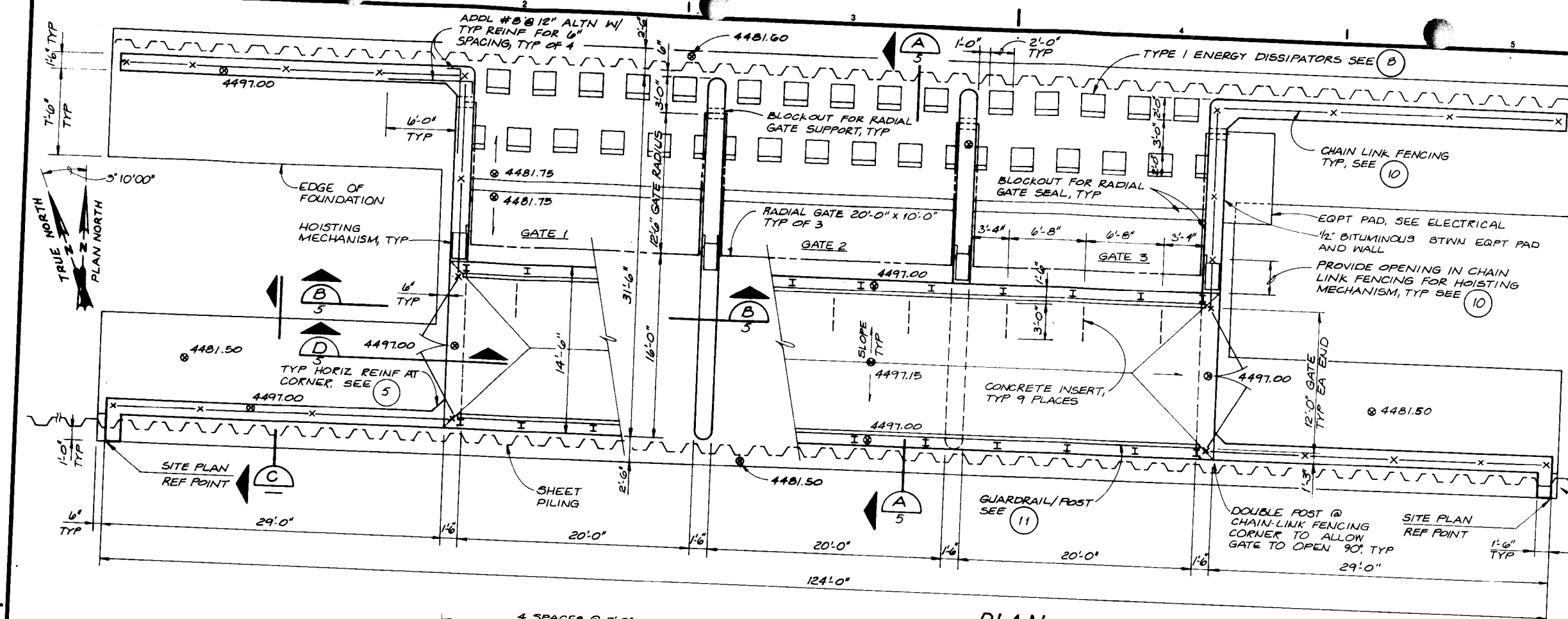
Utah Lake Jordan River Flood Management Program

UTAH LAKE OUTLET

EARTHWORK DETAILS, GEOTHERMAL PIPELINE PLAN AND DETAILS

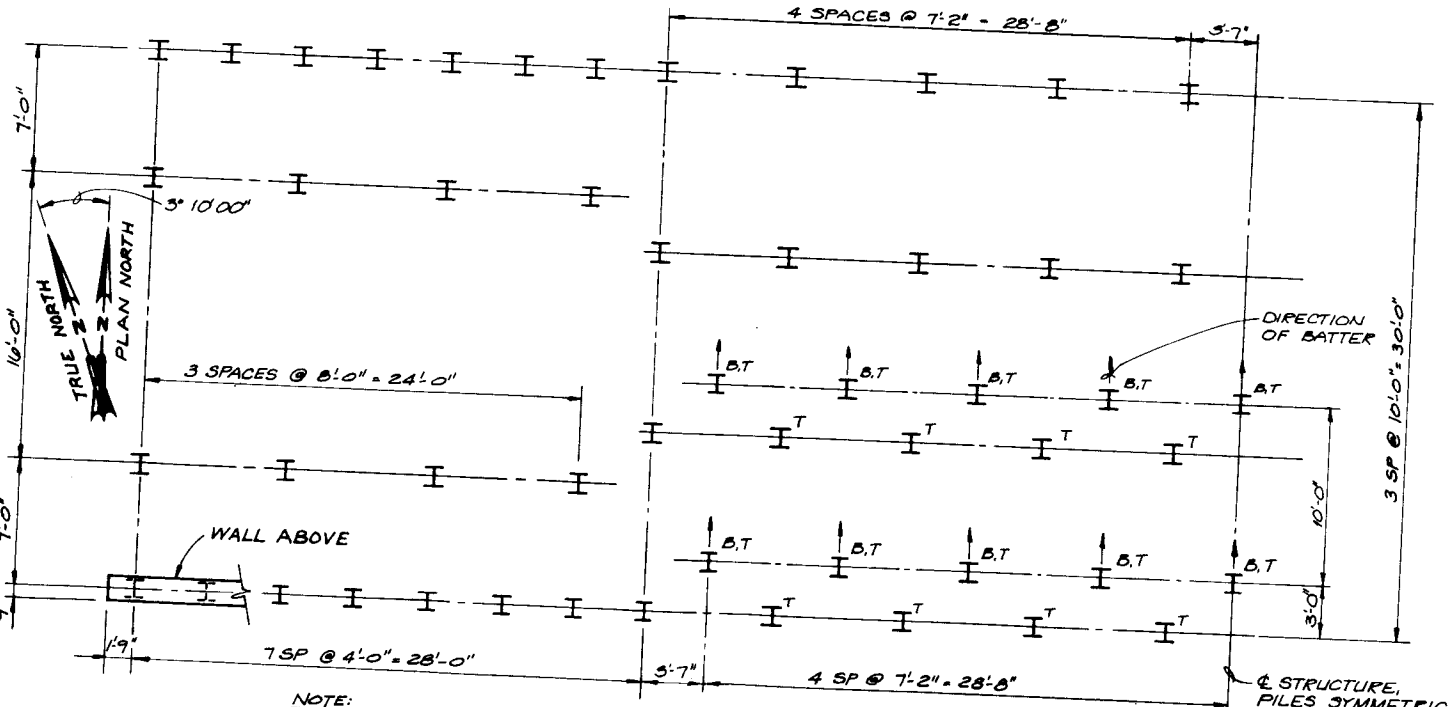
SHEET 3
DATE DEC. 1984
PROJ NO. B18331.F1



PLAN
3/16" = 1'-0"

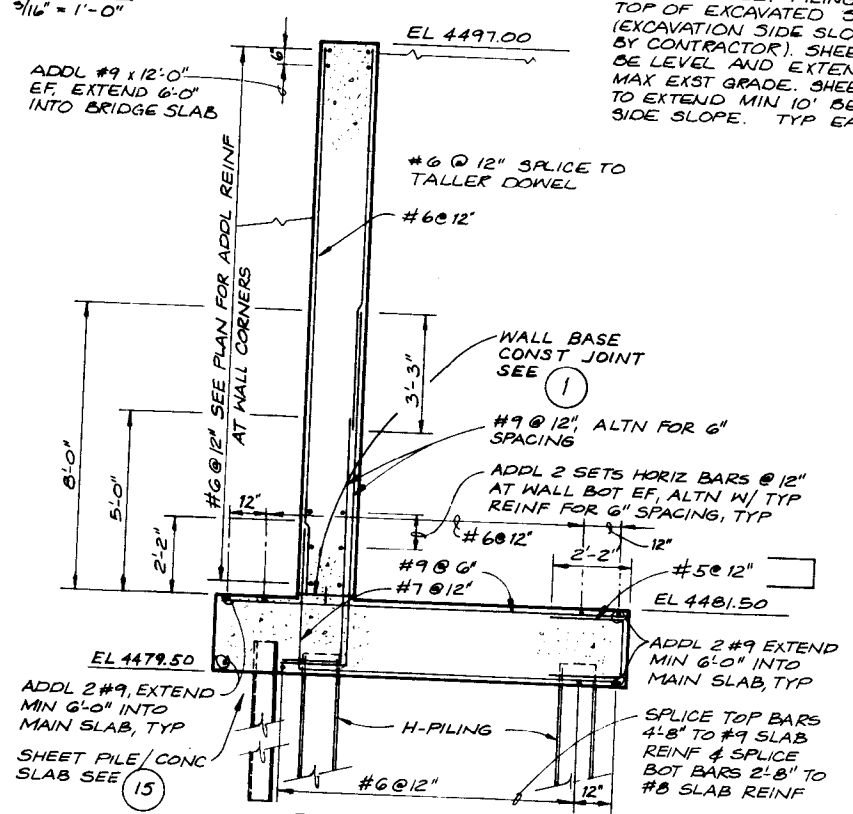
GENERAL NOTES:

1. LOADS STRUCTURE WEIGHT PLUS LIVE LOADS:
   ELEVATED SLAB: AASHTO HS-20 TRUCK
   SOIL (EQUIVALENT HYDROSTATIC PRESSURE)
   60 PCF, ABOVE GROUNDWATER
   90 PCF, BELOW GROUNDWATER
2. SEE GENERAL STRUCTURAL NOTES, SHEET 6.
3. DEPENDING ON CONSTRUCTION TECHNIQUE UTILIZED BY CONTRACTOR, SHEET PILING MAY MOVE INWARD PRIOR TO CONCRETE FOUNDATION PLACEMENT. CONTRACTOR TO ADJUST PLACEMENT OF SHEET PILING AS REQUIRED FOR ANY ANTICIPATED MOVEMENT.
4. SEE SPECIFICATION 02200 EARTHWORK, FOR SUBGRADE PREPARATION AND BACKFILL REQUIREMENTS.
5. TO CONTROL DIFFERENTIAL SOIL PRESSURE, BACKFILL SHALL BE PLACED SUCH THAT SOIL LEVEL DIFFERENTIAL DOES NOT EXCEED 4 FEET BETWEEN OPPOSITE ENDS OF STRUCTURE OR AT ONE END OF STRUCTURE.
6. PROVIDE CONTINUOUS WATERSTOP AT SLAB/WINGWALL CONSTRUCTION JOINT AND SLAB/ABUTMENT CONSTRUCTION JOINT.
7. CONTRACTOR SHALL COORDINATE ALL BLOCKOUTS, DIMENSIONS, AND EMBEDDED PARTS FOR RADIAL GATE W/ RADIAL GATE MANUFACTURER.



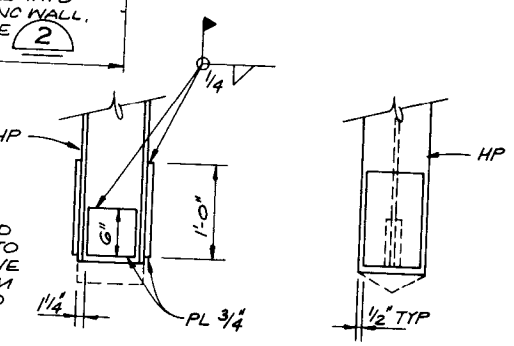
NOTE:
1. ALL PILES TO AS SPECIFIED.
2. DIMENSIONS SHOWN FOR BATTERED PILES ARE TO ℄ PILE, EL 4480.17
3. B: BATTERED T: TENSION SEE 1/5
4. USE H-PILE TIP REINFORCING SEE 1

H-PILE PLAN
3/16" = 1'-0"



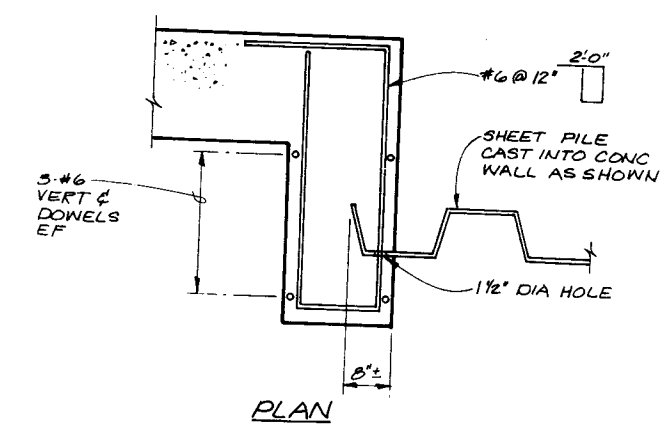
SECTION C
3/8" = 1'-0"

EXTEND SHEET PILING 10' BEYOND TOP OF EXCAVATED SIDE SLOPE (EXCAVATION SIDE SLOPE AS DESIGNED BY CONTRACTOR). SHEET PILING TOP TO BE LEVEL AND EXTEND MIN 6" ABOVE MAX EXST GRADE. SHEET PILE BOTTOM TO EXTEND MIN 10' BELOW EXCAVATED SIDE SLOPE. TYP EA END.



NOTE:
AN APPROVED COMMERCIAL TIP MAY BE USED IN LIEU OF REINFORCED TIP SHOWN. ALL COMMERCIAL TIPS SHALL BE ATTACHED TO THE PILING W/ 5/16" SINGLE GROOVE WELDS ALONG THE OUTSIDE OF THE PILE FLANGES.

DETAIL 1
1" = 1'-0"



PLAN

DETAIL 2
3/4" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER No. 4000 STATE OF UTAH

CH2M HILL

DSGN	R.W. TOEDDEN
DR	L.E. WILLIAMS
CHK	S.M. PITKIN
APVD	M.W. COLLINS

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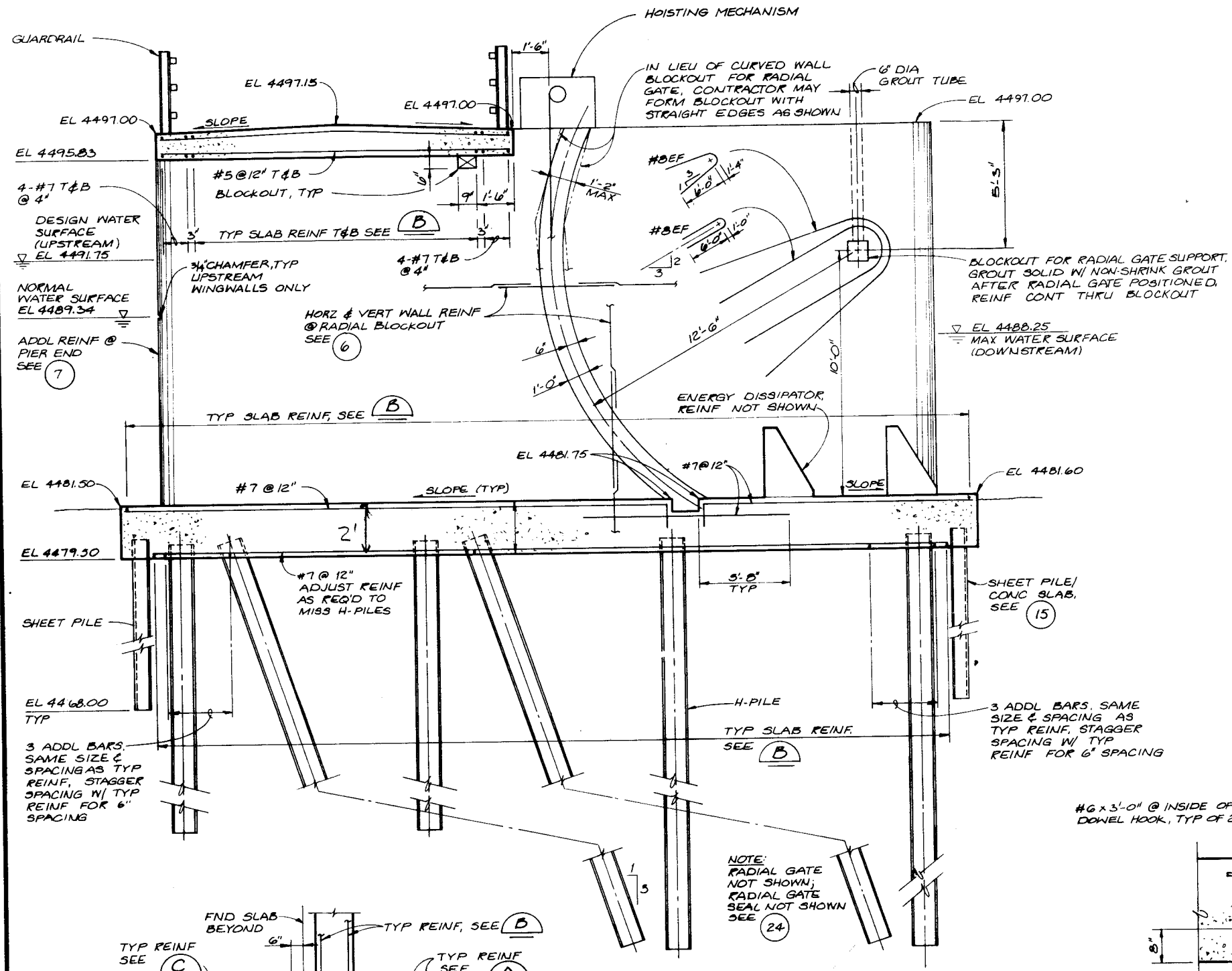
Utah Lake Jordan River Flood Management Program

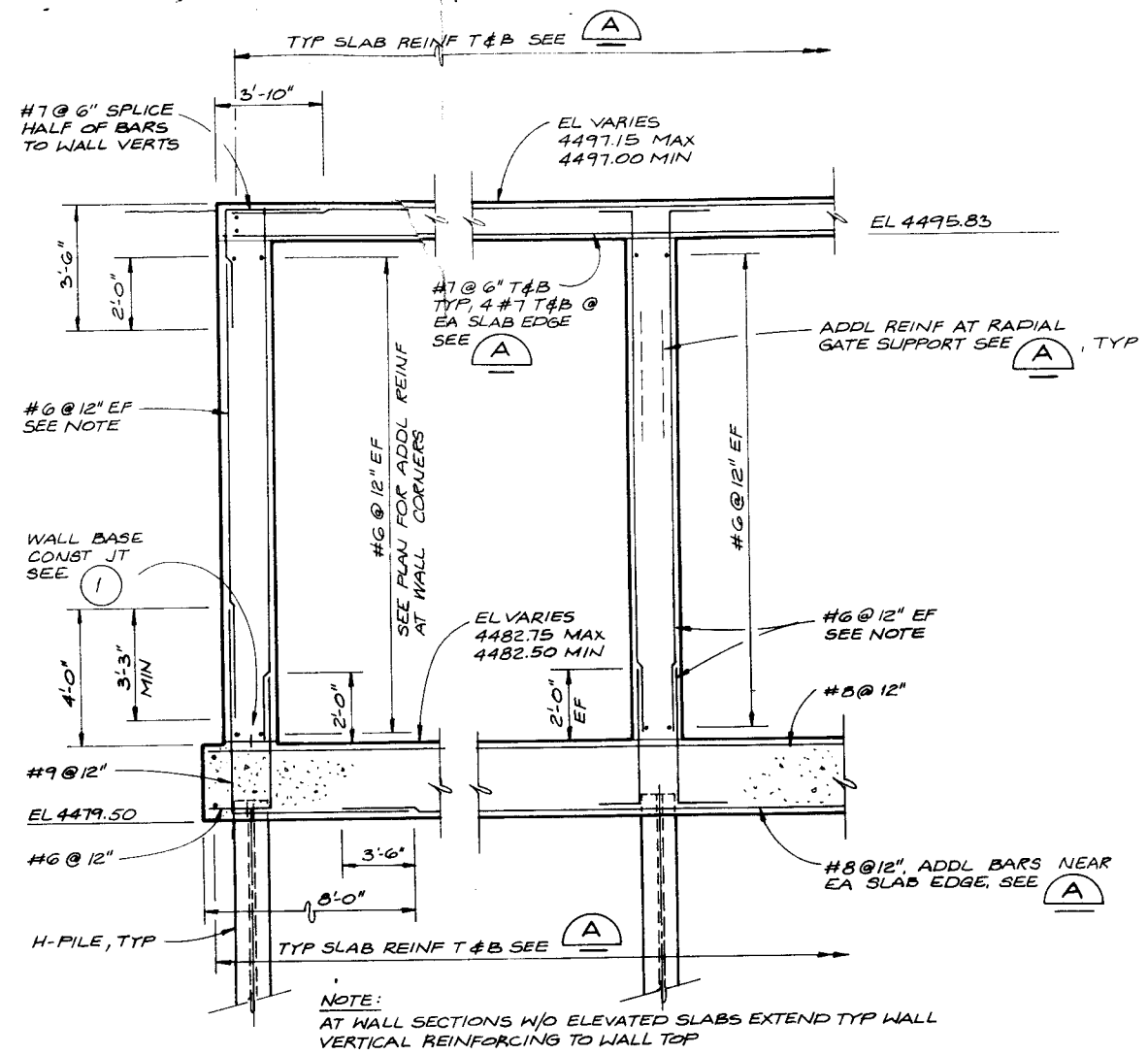
UTAH LAKE OUTLET

STRUCTURAL AND PILING PLANS

SHEET 4
DATE DEC. 1984
PROJ NO. B18331.F1

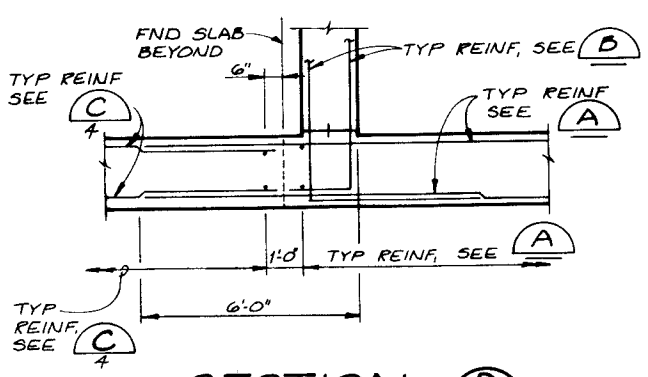


SECTION A 4
3/8" = 1'-0"

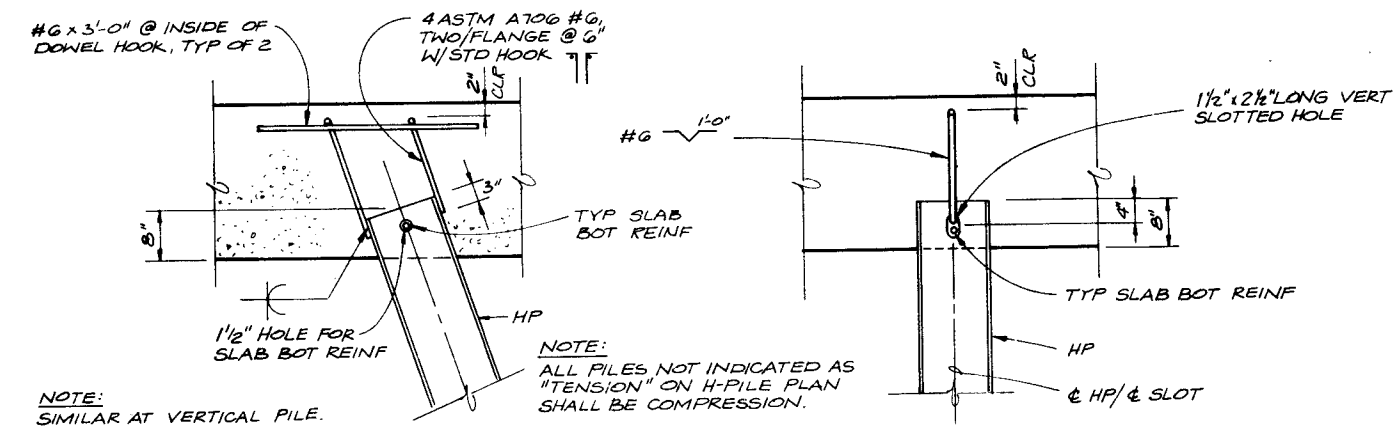


NOTE:
AT WALL SECTIONS W/O ELEVATED SLABS EXTEND TYP WALL VERTICAL REINFORCING TO WALL TOP

SECTION B 4
3/8" = 1'-0"



SECTION D 4
3/8" = 1'-0"



DETAIL 1 4
3/4" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER No. 6888 SHERMAN M. PITKIN STATE OF UTAH

CH2M HILL

DSGN	R.W. TOEBBEN
DR	L.E. WILLIAMS
CHK	S.M. PITKIN
APVD	M.W. COLLINS

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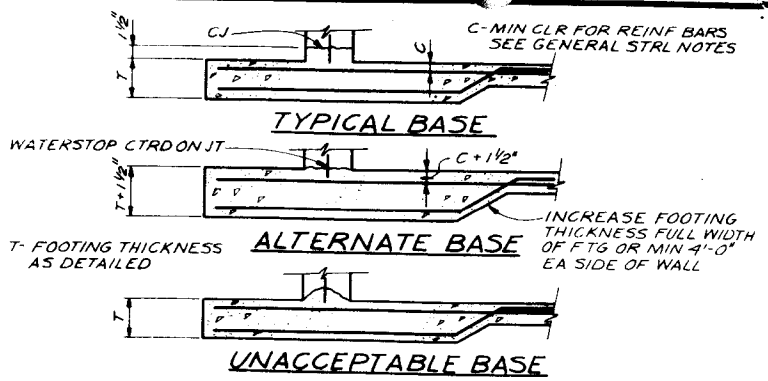
Utah Lake Jordan River Flood Management Program

UTAH LAKE OUTLET

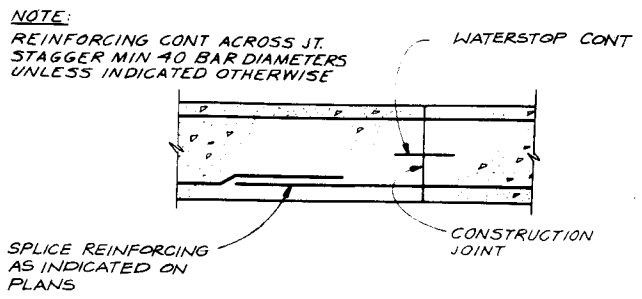
STRUCTURAL SECTIONS

SHEET 5
DATE DEC. 1984
PROJ NO. B18331.B1

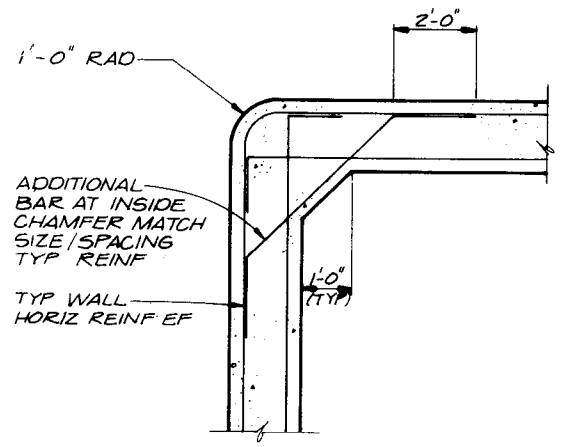
NOTE: NOT ALL DESIGN DETAILS ARE USED IN THIS CONTRACT



WALL BASE CONSTR JOINT (1)
NTS

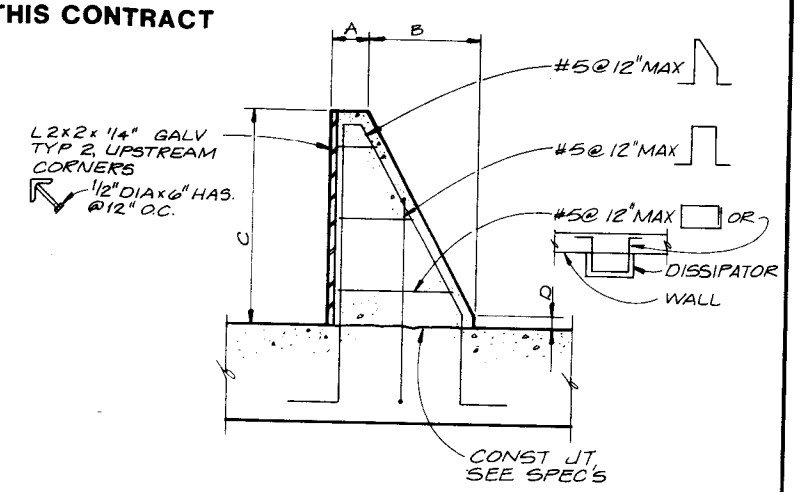


CONSTRUCTION JOINT (2)
NTS



NOTE:
VERTICAL REINFORCEMENT NOT SHOWN

CORNER REINFORCING (5)
NTS

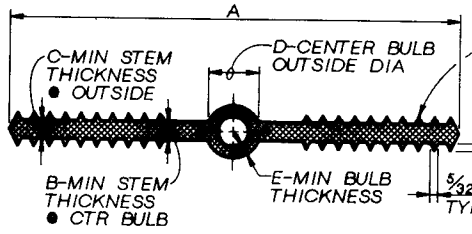


TYPE	A	B	C	D
1	6"	1'-6"	3'-0"	2"
2	1'-0"	3'-6"	4'-0"	6"
3	1'-0"	4'-0"	4'-6"	6"
4	1'-0"	3'-0"	4'-0"	6"

ENERGY DISSIPATOR (8)
NTS

GENERAL STRUCTURAL NOTES
REINFORCING DETAILS

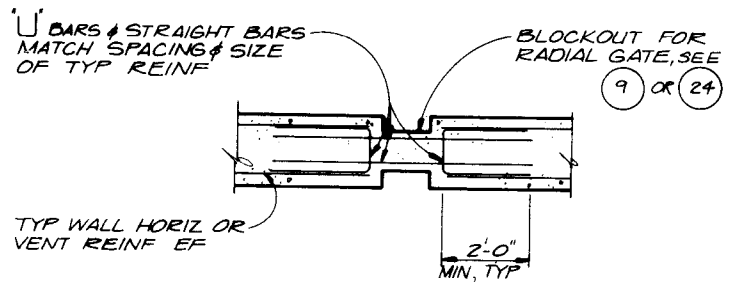
1. UNLESS OTHERWISE SHOWN, CONC WALLS AND SLABS SHALL BE REINF AS FOLLOWS: #4@12" EW CENTER OF 6" SECTIONS; #5@12" EW CENTER OF 8" SECTIONS; #4@12" EWEF OF 10" SECTIONS; #5@12" EWEF OF 12" SECTIONS. SINGLE MAT REINF SHALL BE AT CENTER OF SECTION, UNLESS SHOWN OTHERWISE.
2. MIN CLR FOR REINF BARS, UNLESS SHOWN OTHERWISE, SHALL BE 3" WHEN PLACED ON GROUND; FOR SURFACES EXPOSED TO WATER OR WEATHER - 1½" CLR FOR #5 BAR AND SMALLER AND 2" CLR FOR LARGER BARS; INTERIOR SLABS ¾" CLR, INTERIOR BEAMS 1½" CLR.
3. REFER TO WALL CORNER AND WALL INTERSECTION REINFORCING DETAIL.
4. ALL HOOKS UNLESS OTHERWISE SHOWN, SHALL BE A 90° DEGREE STANDARD HOOK AS DEFINED IN LATEST EDITION OF ACI 318.
5. UNLESS OTHERWISE NOTED, ALL WALL REINF BARS SHALL BE CONT AROUND CORNERS AND THROUGH COL OR PILASTERS. REINF SHALL BE EXTENDED INTO CONNECTING WALLS AND TERMINATED WITH STANDARD HOOK.
   ON THE OPPOSITE FACE OF THE CONNECTING WALLS, AS INDICATED ELSEWHERE ON THIS SHEET. VERT WALL BARS SHALL BE LAPPED WITH DOWELS FROM BASE SLABS AND EXTENDED INTO THE TOP FACE OF ELEVATED SLABS AND TERMINATED WITH STANDARD HOOK AT TOP OF SLAB. UNLESS INDICATED OTHERWISE, CONTRACTOR MAY SPLICE CONTINUOUS ELEVATED SLAB BARS AT LOCATIONS OF HIS CHOOSING, EXCEPT THAT TOP BAR SPLICES SHALL BE LOCATED AT MIDSPAN AND BOTTOM BAR SPLICES SHALL BE LOCATED AT SUPPORTS. UNLESS INDICATED OTHERWISE, CONTRACTOR MAY SPLICE CONTINUOUS SLAB-ON-GRADE BARS AT LOCATIONS OF HIS CHOOSING. EXCEPT THAT TOP BAR SPLICES SHALL BE LOCATED AT SUPPORTS (WALLS) AND BOTTOM BAR SPLICES SHALL BE LOCATED AT MIDSPAN. ALL REINF HOOKS AND SPLICES UNLESS OTHERWISE NOTED, SHALL SATISFY THE MINIMUM REQUIREMENT INDICATED IN SCHEDULE.
6. CONT WS SHALL BE INSTALLED IN ALL CJ IN WALLS INDICATED



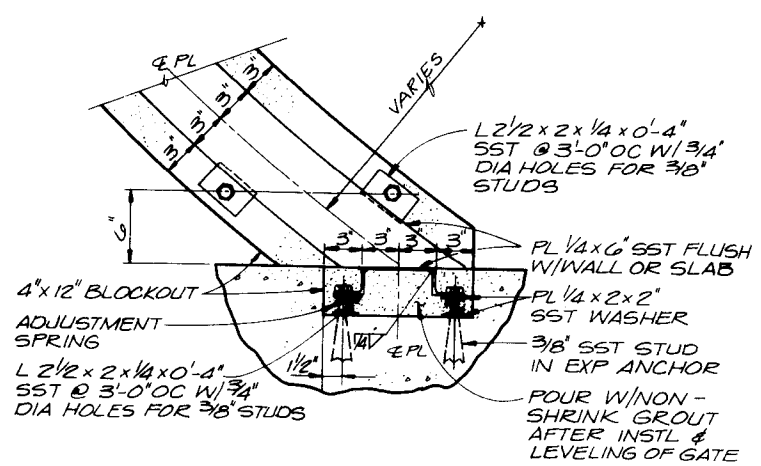
SIZE	A	B	C	D	E	F
4"x3/16"	4"	3/16"	3/16"	3/4"	1/4"	4
6"x3/8"	6"	3/8"	3/8"	7/8"	1/4"	6
9"x3/8"	9"	3/8"	3/8"	1"	1/4"	8

NOTES:
1. MATERIAL QUALITY PER SPECIFICATIONS.
2. DIM REQUIREMENTS INDICATED SHOULD BE GIVEN TO SUPPLIERS PRIOR TO PLACING ORDERS.
3. NON-ROUND CENTER BULBS SHALL HAVE A MIN OUTSIDE DIM OF 'D'.

PLASTIC WATERSTOP (3)
NTS



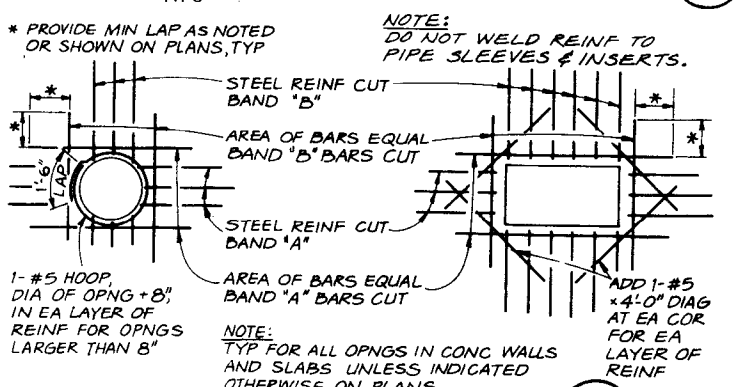
REINFORCING AT WALL RADIAL GATE BLOCKOUT (6)
NTS



RADIAL GATE SEAL (9)
NTS

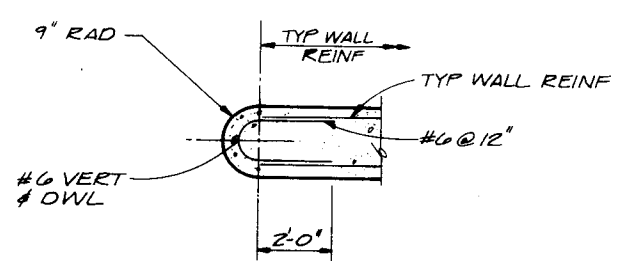
DETAIL OF REINFORCEMENT - LAP LENGTHS							
BAR SIZE		#6 OR SMALLER	#7	#8	#9	#10	#11
CONC DESIGN STRENGTH		4000 PSI					
GR 40	TOP BAR*	32 DIA, MIN 1'-6"	2'-6"	3'-3"	4'-0"	5'-0"	6'-4"
	OTHER BAR	22 DIA, MIN 1'-0"	1'-9"	2'-4"	3'-0"	3'-8"	4'-6"
GR 60	TOP BAR*	45 DIA, MIN 2'-0"	3'-8"	4'-9"	6'-0"	7'-8"	9'-6"
	OTHER BAR	32 DIA, MIN 1'-6"	2'-8"	3'-6"	4'-4"	5'-6"	6'-9"

*TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR, IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.



NOTE:
TYP FOR ALL OPNGS IN CONC WALLS AND SLABS UNLESS INDICATED OTHERWISE ON PLANS

OPENING REINFORCING (4)
NTS



REINFORCING AT ROUND WALL END (7)
NTS

REGISTERED PROFESSIONAL ENGINEER No. 6888 SHERRIE M. PITKIN STATE OF UTAH

CH2M HILL					
DSGN RW TOEBBEN					
DR B.K. URTON					
CHK S.M. PITKIN					
APVD M.W. COLLINS	NO.	DATE	REVISION	BY	APVD

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ORIGINAL SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

Utah Lake Jordan River Flood Management Program

UTAH LAKE OUTLET
DESIGN DETAILS

SHEET 6
DATE DEC. 1984
PROJ NO. B18331.F1