

2-6-09

Retained in
Atlas Room

Date: 2/5/09

Record Drawing Submittal *pg*

Job Number: SA 92-3 cont 1

Project Name: L.B.C.W.W.T.P.

Engineer: Greeley + Hansen / C+K

Contractor: _____

Location: L.B.C.W.W.T.P.

Atlas Page: 735

Date Released From Inspection: _____

Project Cost: _____

<u>Lift Station</u>	<u>Project Information</u>		
Name: _____	Pipe Size	Pipe Type	Pipe Length
Use Fee \$: _____	_____	_____	_____
Relief Fee\$: _____	_____	_____	_____
Acres Served: _____	_____	_____	_____
<u>Forced Main</u>			
Type Pipe: _____	_____	_____	_____
Size Pipe: _____	_____	_____	_____
Length: _____	_____	_____	_____
Abandoned Pipe: _____	Pipe Size	Pipe Type	Pipe Length
	_____	_____	_____
	_____	_____	_____

Comments: found plans for project had them scanned

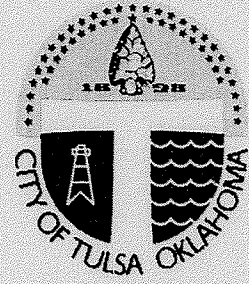
Date sent to Reproduction: 2/5/09

Date sent to Graphics: _____

Date Posted to Atlas: _____

Requested By: Casper MC

**CITY OF TULSA, OKLAHOMA
TULSA METROPOLITAN UTILITY AUTHORITY**



**LOWER BIRD CREEK
WASTEWATER TREATMENT FACILITIES**

**RECORD DRAWINGS
CONTRACTS I AND II**

GREELEY AND HANSEN-CRAIG & KEITHLINE, INC.
Joint Venture

TULSA METROPOLITAN UTILITY AUTHORITY

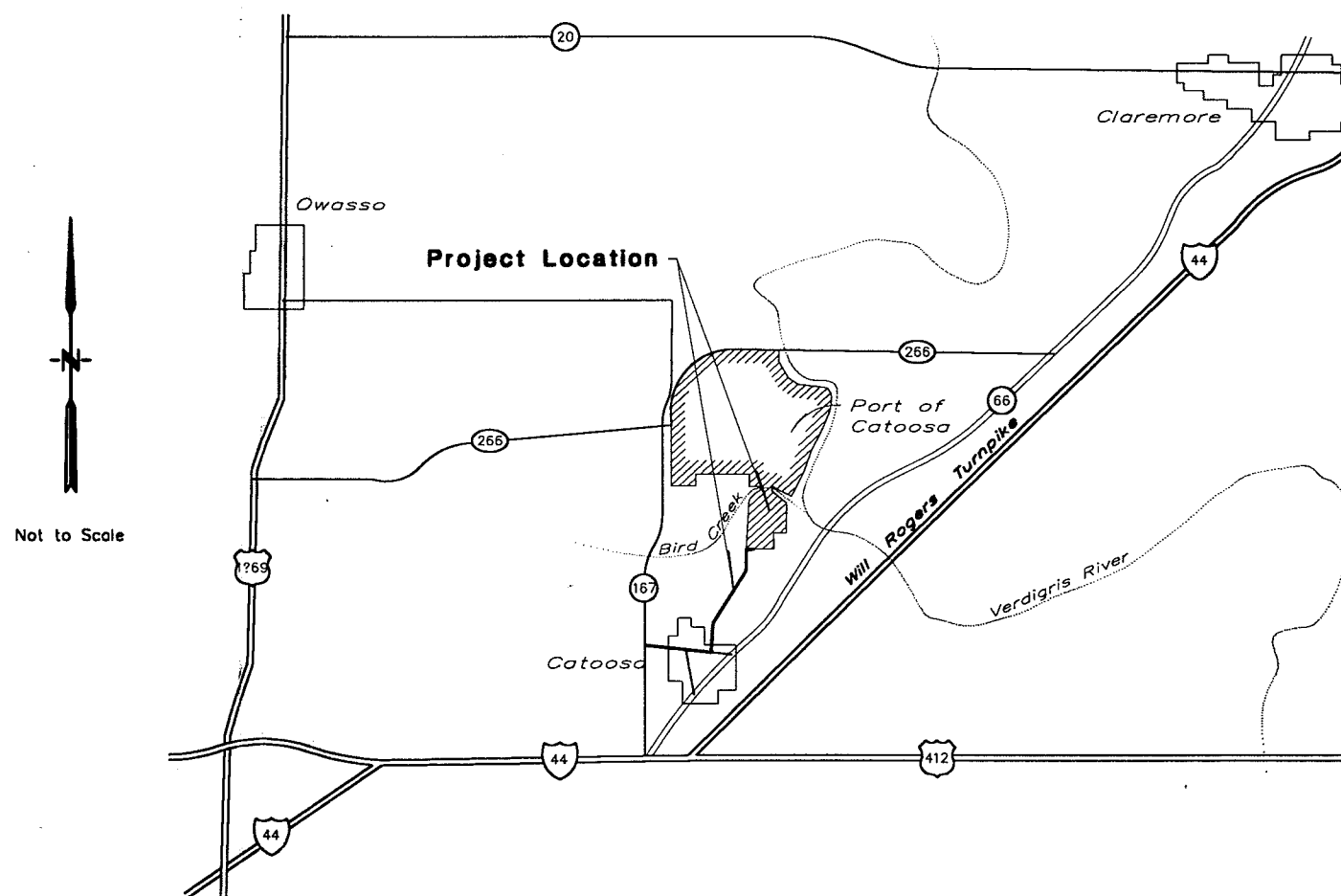
CITY OF TULSA, OKLAHOMA

LOWER BIRD CREEK WASTEWATER FACILITIES

PROJECT No. SA 92-3

CONTRACT No. I

WASTEWATER TREATMENT PLANT



GREELEY AND HANSEN - CRAIG & KEITHLINE, INC.
Joint Venture

RECORD DRAWING

THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

APPROVED
CITY OF TULSA, OKLAHOMA
Public Works Department

By _____ Date _____
Charles L. Hardt - Director

SUBMITTED
GREELEY AND HANSEN
Engineers
Chicago, Illinois
Certificate of Authorization No. CA1975
September 17, 1993

By _____ Date _____
Paul E. Langdon, Jr.
Oklahoma Reg. No. 15258

CRAIG AND KEITHLINE, INC.
Engineers
Tulsa, Oklahoma
Certificate of Authorization No. CA1216
February 15, 1985

By _____ Date _____
Ray Douglas Alexander
Oklahoma Reg. No. 11008

DRAWING INDEX

SHEET NO.	DRAWING NO.	TITLE
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GENERAL		
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6	AG6	PIPE PROFILES
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SHEET NO.	DRAWING NO.	TITLE
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FLUME AND STEPPED AERATOR		
STRUCTURAL		
49	GS1	PLANS, ELEVATION AND SECTIONS

GENERAL NOTES:

- SECTION CUTTING PLANES ARE IDENTIFIED WITH A SECTION NUMBER AND THE DRAWING NUMBER ON WHICH THE SECTION IS SHOWN, I.E. 1/BM3.
- SECTION TITLES INCLUDE A FRACTION, WHERE THE NUMERATOR SHOWS THE SECTION IDENTIFYING NUMBER, AND THE DENOMINATOR INDICATES THE DRAWING ON WHICH THE SECTION IS CUT, I.E. SECTION 1/BM3. DETAIL TITLES INCLUDE A FRACTION, WHERE THE NUMERATOR SHOWS THE DETAIL NUMBER AND THE DENOMINATOR INDICATES THE DRAWING ON WHICH THE DETAIL IS CROSS-REFERENCED, I.E. DETAIL 3/S1.
- DETAILS ARE IDENTIFIED WITH A NUMBER FOLLOWED BY THE DRAWING ON WHICH THE DETAIL IS SHOWN, I.E. 1/BM3.
- ADDITIONAL CONTRACTS HAVE BEEN OR ARE INTENDED TO BE LET ADJACENT TO THIS WORK. COORDINATE THOSE PORTIONS OF THIS WORK AFFECTED BY OTHERS. COOPERATE WITH OTHER CONTRACTORS IN EVERY REASONABLE WAY SO THERE IS A MINIMUM PRACTICABLE INTERFERENCE WITH THEIR OPERATIONS.
- MAKE AN ON-SITE INSPECTION OF THE FACILITY AND RELATED CONDITIONS PRIOR TO BIDDING THIS CONTRACT.
- A DISTINCTION BETWEEN NEW AND EXISTING MATERIALS, EQUIPMENT AND STRUCTURES HAS BEEN MADE ON THE DRAWINGS BY LINE WEIGHT. HEAVY REPRESENTS NEW, LIGHT REPRESENTS EXISTING.
- AN ASTERISK (*) AT NEW CONSTRUCTION DENOTES LOCATIONS, ELEVATIONS, DIMENSIONS AND OTHER INFORMATION DEPENDENT ON THE CONTRACTOR'S SUBMITTALS. DEVELOP AND SHOW THE INFORMATION MARKED WITH AN ASTERISK (*) ON SUBMITTALS AND DEVELOP AND PROVIDE SUCH INFORMATION FOR ALL ASTERISKS (*) WITHIN OR INTERFACING WITH ANY SUBMITTALS AND BETWEEN SUBMITTALS. THIS REQUIREMENT ALSO EXTENDS TO CONDITIONS OR SITUATIONS WHERE A LOCATION, DIMENSION, ELEVATION OR OTHER ITEM IS INDICATED TO BE DETERMINED AFTER FINAL SELECTION OF EQUIPMENT AND/OR APPURTENANCES. ALL INFORMATION FOR ASTERISK (*) AND EQUIPMENT/APPURTENANCES SITUATIONS DESCRIBED HEREIN ARE THE RESPONSIBILITY OF THE CONTRACTOR TO DEVELOP AND ASSURE COMPATIBLE INTERFACING FOR A COMPLETE, COORDINATED AND TROUBLE-FREE OPERATING INSTALLATION.

GENERAL MECHANICAL NOTES:

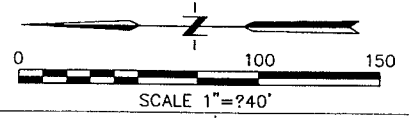
- PIPE FITTINGS, FLANGES, HARNESSED SLEEVE TYPE COUPLINGS, AND LOCATIONS AND ELEVATIONS OF PIPING ARE SHOWN TO GENERALLY DESCRIBE THE WORK AND DO NOT PURPORT TO BE COMPLETE FINAL CONSTRUCTION DETAILS. PREPARE SHOP DRAWINGS AND SUBMIT FOR ACCEPTANCE AS SPECIFIED.
- PROVIDE HARNESSED SLEEVE TYPE COUPLINGS AND FLANGES ON PIPING SYSTEMS WHERE SHOWN AND AT OTHER LOCATIONS AS REQUIRED AND APPROVED TO FACILITATE THE FUTURE DISMANTLING OR REMOVAL OF PIPING SEGMENTS WITHOUT DISTURBING ADJACENT AND RELATED PIPING.
- PROVIDE PIPE SUPPORTS ON EACH SIDE OF ALL HARNESSED COUPLINGS SYMMETRICALLY LOCATED WITHIN TWO FEET OF THE END OF THE COUPLING.
- MAKE ALL ANCHOR BOLTS, NUTS, WASHERS, AND EXPANSION ANCHORS EXPOSED TO THE WEATHER, AND PARTIALLY OR TOTALLY SUBMERGED OF TYPE 304 STAINLESS STEEL.
- SIZE WALL AND FLOOR SLEEVES LARGE ENOUGH TO ACCOMMODATE FLANGES IF NECESSARY OR REQUIRED.
- PROVIDE 3/4-INCH VENTS WITH GATE VALVES AT ALL HIGH POINTS ON NEW INTERIOR PIPING.
- INCORPORATE ALL REQUIREMENTS AND RESPONSIBILITIES OF THESE MECHANICAL NOTES WITH ALL SHOP AND WORKING DRAWING SUBMITTALS.
- IN COMPLYING WITH ALL RESPONSIBILITIES AND REQUIREMENTS UNDER THESE MECHANICAL NOTES, PROVIDE ALL DESIGNS, LABOR, EQUIPMENT AND SERVICES NEEDED FOR SUCH COMPLIANCE.
- INCLUDE ALL COSTS ASSOCIATED WITH COMPLIANCE WITH THESE GENERAL MECHANICAL NOTES IN THE VARIOUS CONTRACT ITEMS. NO SEPARATE PAYMENT WILL BE MADE THEREFOR.

RECORD DRAWING

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GENERAL	
INDEX AND GENERAL NOTES	
LOWER BIRD CREEK WASTEWATER FACILITIES PROJECT NO. TMUA SA 92-3 CONTRACT NO. 1 WASTEWATER TREATMENT PLANT	
CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES DIVISION	
PLANS AND ESTIMATES PREPARED BY: GREELEY AND HANSEN ENGINEERS 100 SOUTH WACKER DRIVE CHICAGO, ILLINOIS 60606	

REVISION	BY	DATE	PLAN SCALE	DRAWN	LCC	APPROVED
			NONE	DESIGNED	DCH	
				SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AG1		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 1 OF 49 SHEETS

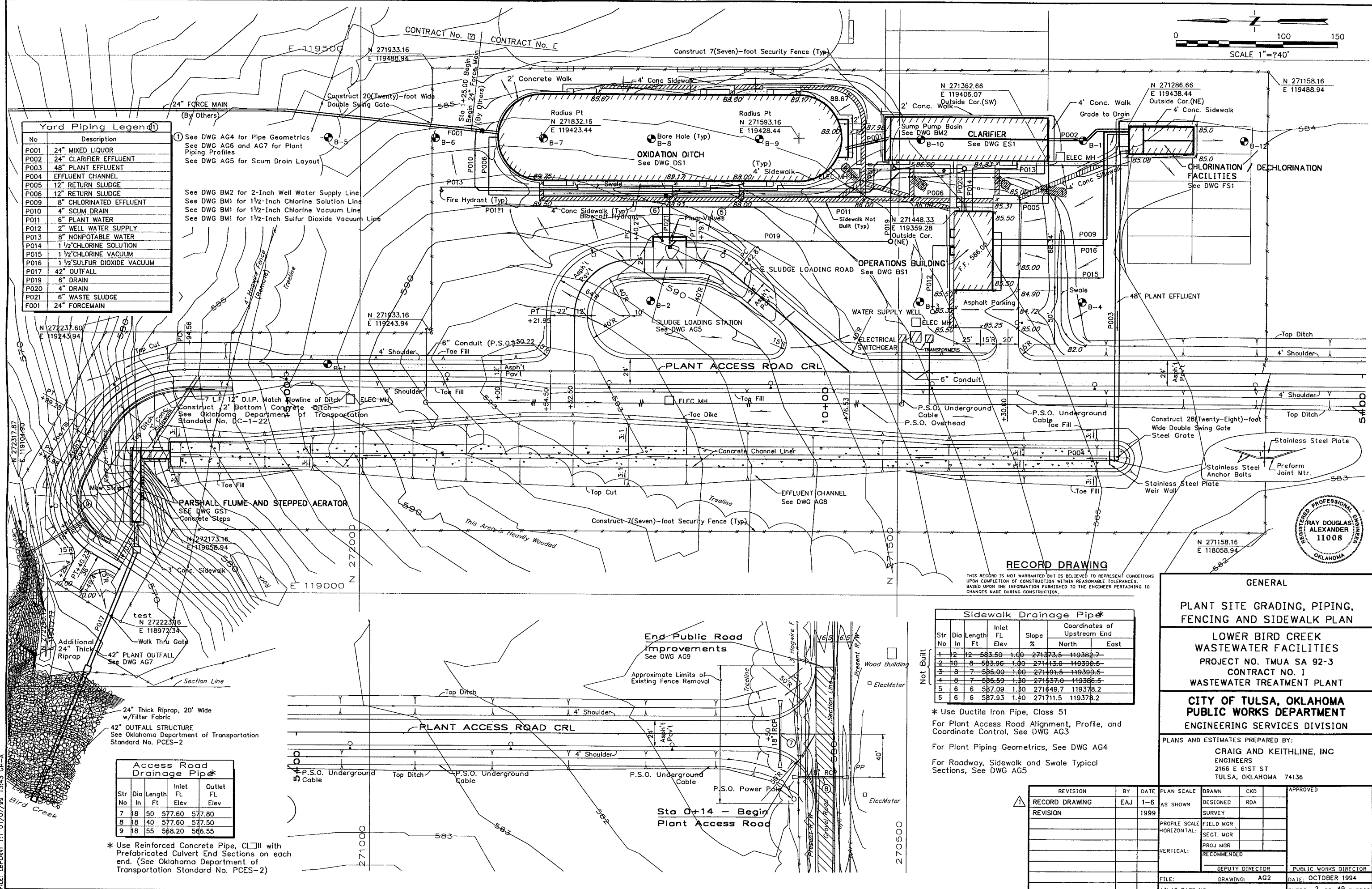


Yard Piping Legend

No	Description
P001	24" MIXED LIQUOR
P002	24" CLARIFIER EFFLUENT
P003	48" PLANT EFFLUENT
P004	EFFLUENT CHANNEL
P005	12" RETURN SLUDGE
P006	12" RETURN SLUDGE
P009	8" CHLORINATED EFFLUENT
P010	4" SCUM DRAIN
P011	6" PLANT WATER
P012	2" WELL WATER SUPPLY
P013	8" NONPOTABLE WATER
P014	1 1/2" CHLORINE SOLUTION
P015	1 1/2" CHLORINE VACUUM
P016	1 1/2" SULFUR DIOXIDE VACUUM
P017	42" OUTFALL
P019	6" DRAIN
P020	4" DRAIN
P021	6" WASTE SLUDGE
F001	24" FORCEMAIN

1 See DWG AG4 for Pipe Geometrics
 See DWG AG6 and AG7 for Plant Piping Profiles
 See DWG AG5 for Scum Drain Layout

See DWG BM2 for 2-Inch Well Water Supply Line
 See DWG BM1 for 1/2-Inch Chlorine Solution Line
 See DWG BM1 for 1/2-Inch Chlorine Vacuum Line
 See DWG BM1 for 1/2-Inch Sulfur Dioxide Vacuum Line



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Sidewalk Drainage Pipe

Str No	Dia In	Length Ft	Inlet FL Elev	Slope %	Coordinates of Upstream End	
					North	East
1	12	12	583.50	1.00	271373.5	119382.7
2	10	8	583.96	1.00	271413.0	119399.5
3	8	7	585.00	1.00	271491.5	119399.5
4	8	7	585.59	1.00	271537.0	119399.5
5	6	6	587.09	1.00	271649.7	119378.2
6	6	6	587.93	1.00	271711.5	119378.2

* Use Ductile Iron Pipe, Class 51
 For Plant Access Road Alignment, Profile, and Coordinate Control, See DWG AG3
 For Plant Piping Geometrics, See DWG AG4
 For Roadway, Sidewalk and Swale Typical Sections, See DWG AG5

Access Road Drainage Pipe

Str No	Dia In	Length Ft	Inlet FL Elev	Outlet FL Elev
7	18	50	577.60	577.80
8	18	40	577.60	577.50
9	18	55	568.20	566.55

* Use Reinforced Concrete Pipe, C¹ with Prefabricated Culvert End Sections on each end. (See Oklahoma Department of Transportation Standard No. PCES-2)

GENERAL

PLANT SITE GRADING, PIPING, FENCING AND SIDEWALK PLAN

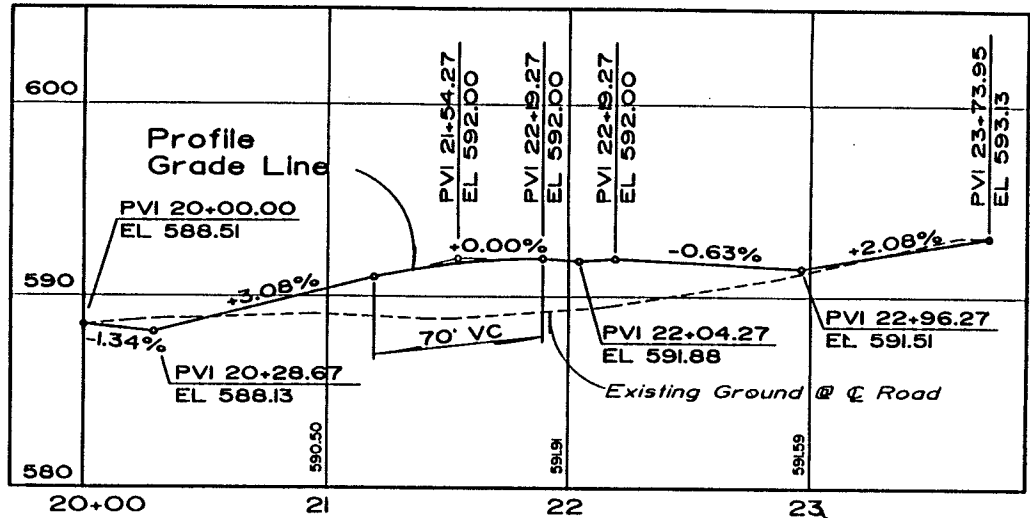
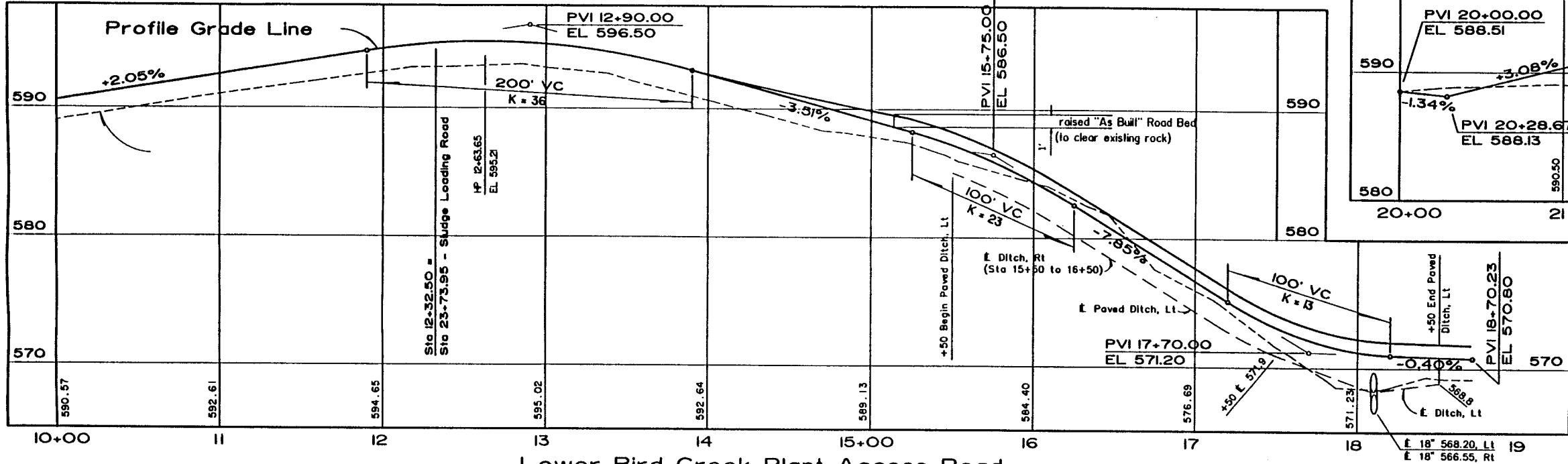
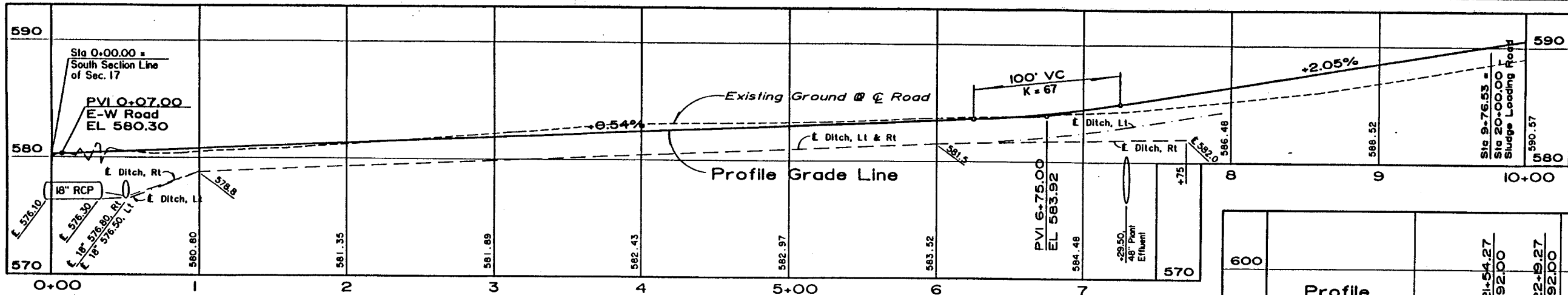
LOWER BIRD CREEK WASTEWATER FACILITIES
 PROJECT NO. TMUA SA 92-3
 CONTRACT NO. 1
 WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA
 PUBLIC WORKS DEPARTMENT
 ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
 CRAIG AND KEITHLINE, INC
 ENGINEERS
 2166 E 61ST ST
 TULSA, OKLAHOMA 74136

REVISION	BY	DATE	PLAN SCALE	DRAWN	CKD	APPROVED
RECORD DRAWING	EJAJ	1-6	AS SHOWN	DESIGNED	RD	
REVISION		1999		SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
FILE:			DRAWING:	AG2		DATE: OCTOBER 1994
ATLAS PAGE NO.:						SHEET 2 OF 49 SHEETS

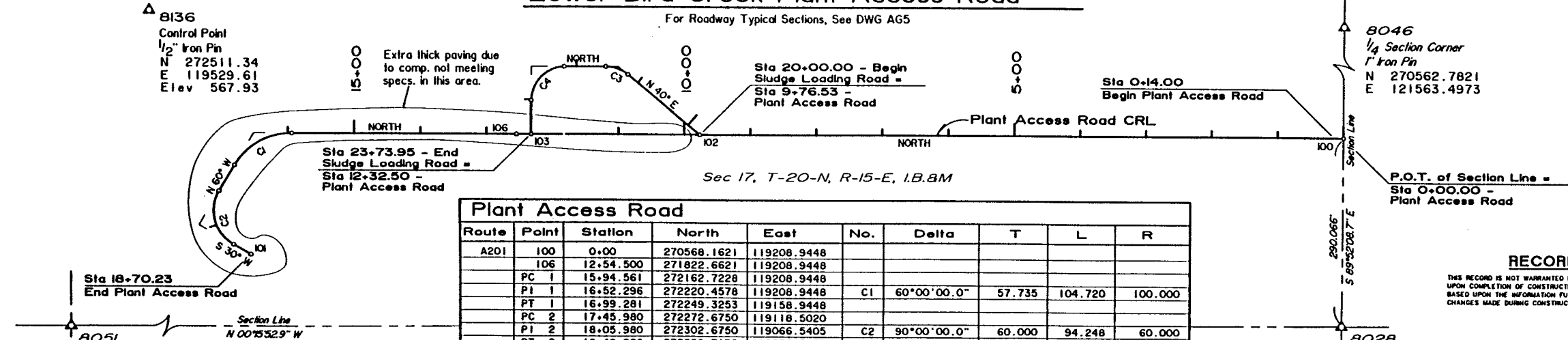
FILE: LPLANT 1:1 01/07/99 13:43 CH-A



Sludge Loading Road
For Roadway Typical Sections, See DWG AG5

Lower Bird Creek Plant Access Road

For Roadway Typical Sections, See DWG AG5



Plant Access Road									
Route	Point	Station	North	East	No.	Delta	T	L	R
A201	100	0+00	270568.1621	119208.9448					
	106	12+54.500	271822.6621	119208.9448					
	PC 1	15+94.561	272162.7228	119208.9448					
	PI 1	16+52.296	272220.4578	119208.9448	C1	60°00'00.0"	57.735	104.720	100.000
	PT 1	16+99.291	272249.3253	119158.9448					
	PC 2	17+45.980	272272.6750	119118.5020					
	PI 2	18+05.980	272302.6750	119066.5405	C2	90°00'00.0"	60.000	94.248	60.000
	PT 2	18+40.228	272250.7135	119036.5405					
	101	18+70.228	272224.7327	119021.5405					

Sludge Loading Road									
Route	Point	Station	North	East	No.	Delta	T	L	R
A202	102	20+00.000	271544.6905	119208.9448					
	PC 3	21+42.869	271654.1344	119300.7791					
	PI 3	21+61.795	271668.6329	119312.9448	C3	40°00'00.0"	18.927	36.303	52.000
	PT 3	21+79.172	271687.5593	119312.9448					
	PC 4	22+40.273	271748.6603	119312.9448					
	PI 4	22+92.273	271800.6603	119312.9448	C4	90°00'00.0"	52.000	81.681	52.000
	PT 4	23+21.954	271800.6603	119260.9448					
	103	23+73.954	271800.6603	119208.9448					

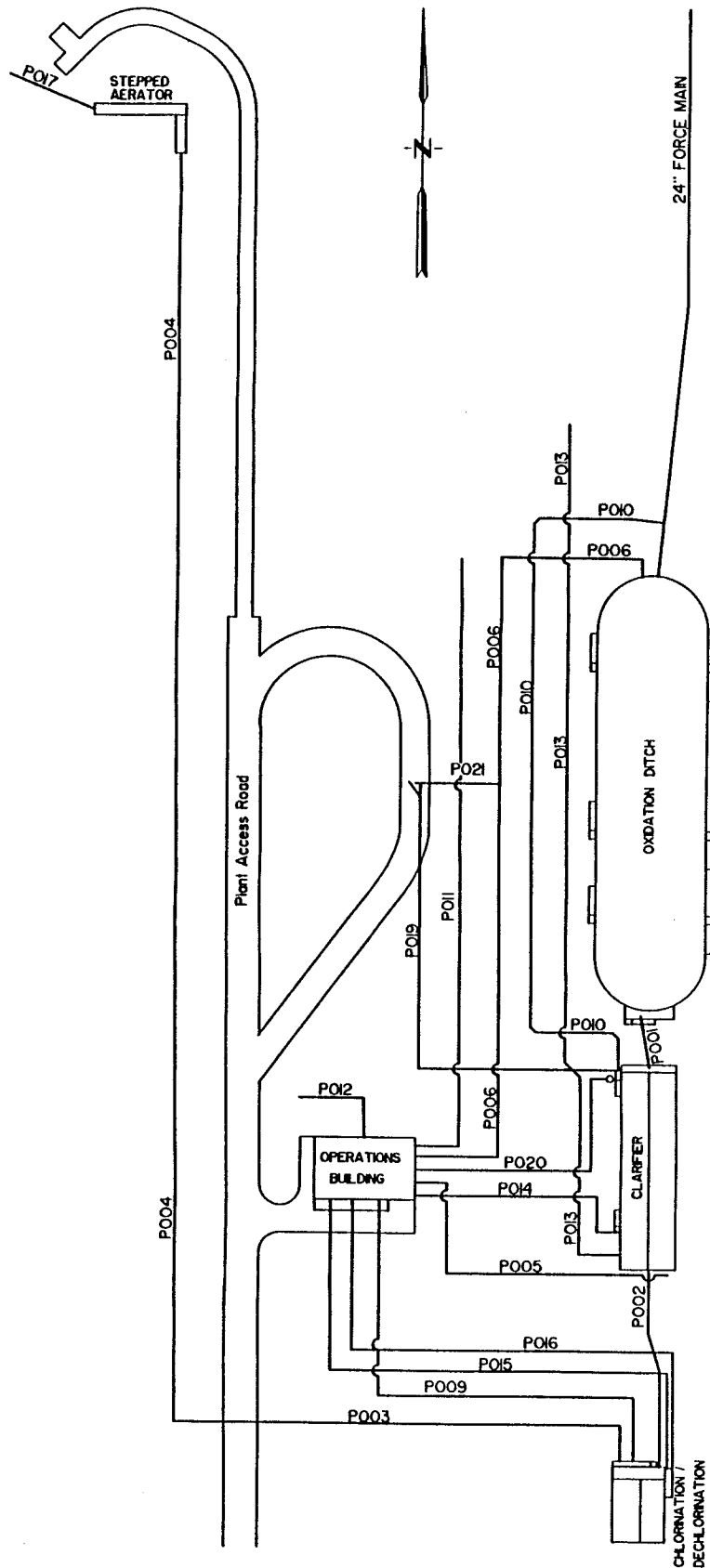


GENERAL 4/4/97
PLANT ACCESS ROAD PROFILE AND GEOMETRICS
 LOWER BIRD CREEK WASTEWATER FACILITIES
 PROJECT NO. TMUA SA 92-3
 CONTRACT NO. 1
 WASTEWATER TREATMENT PLANT
 CITY OF TULSA, OKLAHOMA
 PUBLIC WORKS DEPARTMENT
 ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
CRAIG AND KEITHLINE, INC
 ENGINEERS
 2166 E 61ST ST
 TULSA, OKLAHOMA 74136

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REVISION	BY	DATE	PLAN SCALE	DRAWN	CKD	APPROVED
			AS SHOWN	DESIGNED	RDA	
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AG3		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 3 OF 49 SHEETS



PIPE DIAGRAM
NOT TO SCALE

FOO1 24" FORCE MAIN				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271871.71	119429.94	1+00.00
BEND	199.05 N 56°05' E			
		272069.75	119449.94	2+99.05
BEND	450.00 NORTH			
		272540.70	119449.94	7+70.00

POO1 24" MIXED LIQUOR				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271549.99	119417.94	10+00.00
	39.89 S 134°59' E			
END		271510.91	119425.95	10+39.89

POO2 24" CLARIFIER EFFLUENT				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271362.66	119425.94	20+00.00
	36.33 SOUTH			
45		271326.33	119425.94	20+36.33
45	11.31 S 430°00" E			
		271318.33	119433.94	20+47.64
END	30.67 SOUTH			
		271287.66	119433.94	20+78.31

POO3 48" PLANT EFFLUENT				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271287.66	119417.44	30+00.00
	10.00 NORTH			
90		271297.66	119417.44	30+10.00
END	288.50 WEST			
		271297.66	119128.94	32+98.50

POO4 PLANT EFFLUENT DITCH				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271297.66	119128.94	40+00.00
	878.61 NORTH			
END		272176.27	119128.94	48+78.61

POO5 12" RETURN SLUDGE				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271361.66	119443.94	50+00.00
	76.66 WEST			
90		271361.66	119367.28	50+76.66
90	75.84 NORTH			
		271437.50	119367.28	51+52.50
END	8.00 WEST			
		271437.50	119359.28	51+60.50

POO6 12" RETURN SLUDGE				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271441.50	119359.28	60+00.00
	13.24 EAST			
90		271441.50	119372.52	60+13.24
90	439.16 NORTH			
		271880.66	119372.52	64+52.40
90	53.42 EAST			
		271880.66	119425.94	65+05.82
END	8.75 SOUTH			
		271871.91	119425.94	65+14.57

POO9 8" CHLORINATED EFFLUENT				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271287.66	119430.78	90+00.00
	20.00 NORTH			
90		271307.66	119430.78	90+20.00
90	97.17 WEST			
		271307.66	119333.61	91+17.17
END	105.00 NORTH			
		271412.66	119333.61	92+22.17

POIO 4" SCUM DRAIN				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271509.41	119404.57	100+00.00
	10.00 NORTH			
45		271519.41	119404.57	00+10.00
45	5.66 N 430°00" W			
		271523.41	119400.57	00+15.66
45	20.05 WEST			
		271523.41	119380.52	00+35.71
45	5.66 N 430°00" W			
		271527.41	119376.52	00+41.36
45	361.83 NORTH			
		271889.24	119376.52	04+03.19
45	5.66 N 430°00" E			
		271893.24	119380.52	04+08.85
BEND	41.54 EAST			
		271893.24	119422.06	104+50.39
END	10.00 S 84°3'55" E			
		271892.23	119432.01	104+60.39

POI0 6" PLANT WATER				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271444.00	119359.28	110+00.00
	3.00 EAST			
90		271444.00	119362.28	10+03.00
END	450.00 NORTH			
		271894.00	119362.28	114+53.00

POI2 1 1/2" WELL WATER				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271448.33	119323.28	120+00.00
	20.00 NORTH			
90		271468.33	119323.28	20+20.00
END	57.50 WEST			
		271468.33	119265.78	120+77.50

POI3 8" NON-POTABLE WATER				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271365.41	119406.07	130+00.00
	11.79 WEST			
90		271365.41	119394.28	30+11.79
45	135.00 NORTH			
		271500.41	119394.28	31+46.79
45	20.87 N 430°00" W			
		271515.17	119379.52	31+67.66
END	410.25 NORTH			
		271925.42	119379.52	135+77.91

POI4 1 1/2" CHLORINE SOLUTION				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271431.66	119359.28	140+00.00
	40.79 EAST			
90		271431.66	119400.07	40+40.79
90	41.00 SOUTH			
		271390.66	119400.07	40+81.79
END	6.00 EAST			
		271390.66	119406.07	140+87.79

POI5 1 1/2" CHLORINE VACUUM				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271412.66	119297.78	150+00.00
	102.00 SOUTH			
90		271310.66	119297.78	51+02.00
90	135.50 EAST			
		271310.66	119433.28	52+37.50
END	23.00 SOUTH			
		271287.66	119433.28	152+60.50

POI6 1 1/2" SULFUR DIOXIDE VACUUM				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271412.66	119327.78	160+00.00
	101.50 SOUTH			
90		271311.16	119327.78	61+01.50
90	105.00 EAST			
		271311.16	119432.78	62+06.50
END	23.50 SOUTH			
		271287.66	119432.78	162+30.00

POI7 42" PLANT OUTFALL				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		272208.02	119065.69	170+00.00
	26.25 WEST			
BEND		272208.02	119039.44	170+26.25
END	251.82 N 6°30'00" W			
		272304.39	118806.79	172+78.07

POI9 6" DRAIN				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271507.66	119402.07	0+00.00
	71.13 WEST			
90		271507.66	119330.94	0+71.13
45	199.00 NORTH			
		271706.66	119330.94	2+70.13
END	8.49 S 45° W			
		271712.66	119324.94	2+78.61

POI20 4" DRAIN				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271504.66	119402.07	0+00.00
	3.50 WEST			
90		271504.66	119398.57	0+03.50
90	66.72 SOUTH			
		271437.94	119398.57	0+70.22
END	39.29 WEST			
		271437.94	119359.28	1+09.51

POI21 6" WASTE SLUDGE				
PI	DIRECTION	NORTHING	EASTING	STATION
BEGIN		271712.66	119328.44	0+00.00
	2.50 EAST			
TEE		271712.66	119330.94	0+02.50
END	41.58 EAST			
		271712.66	119372.52	0+44.08



Ray Douglas Alexander
GENERAL 3/27/91

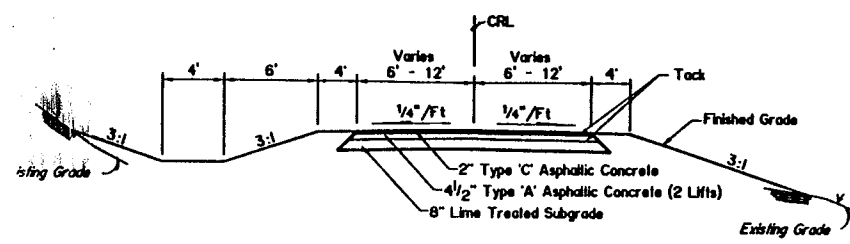
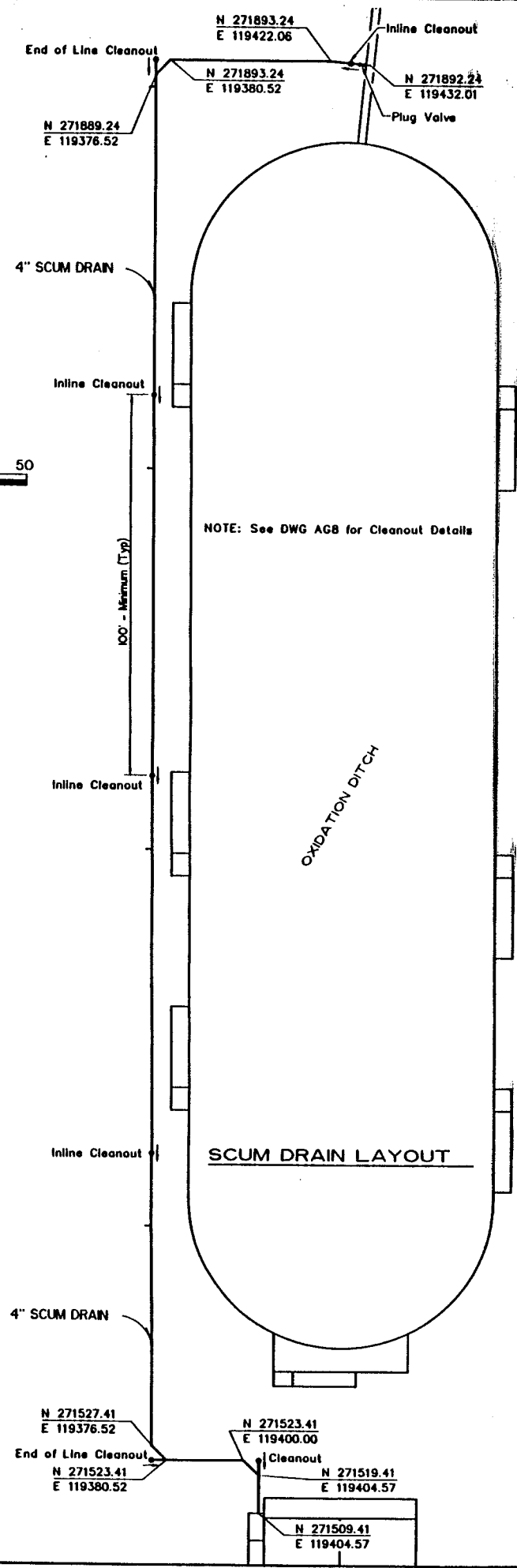
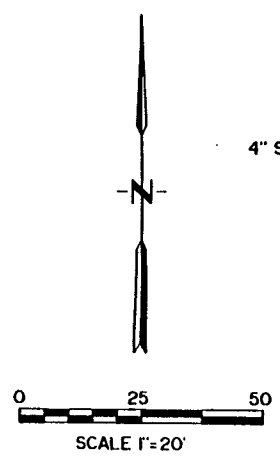
PIPE GEOMETRICS
LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT
CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
CRAIG AND KEITHLINE, INC
ENGINEERS
2166 E 61ST ST
TULSA, OKLAHOMA

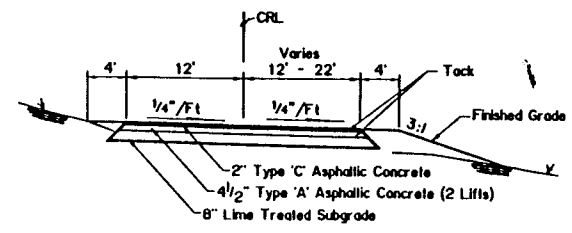
RECORD DRAWING

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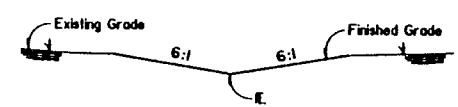
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				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
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			ATLAS PAGE NO.:			SHEET 4 OF 49 SHEETS



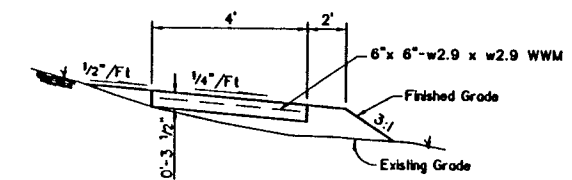
PLANT ACCESS ROAD
NOT TO SCALE



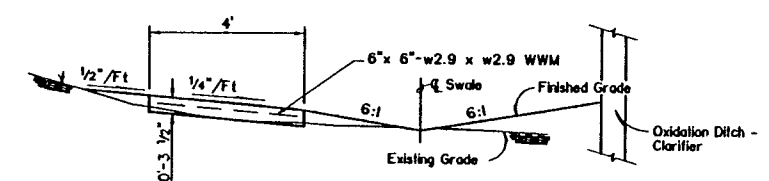
SLUDGE LOADING ROAD
NOT TO SCALE



SWALE
NOT TO SCALE

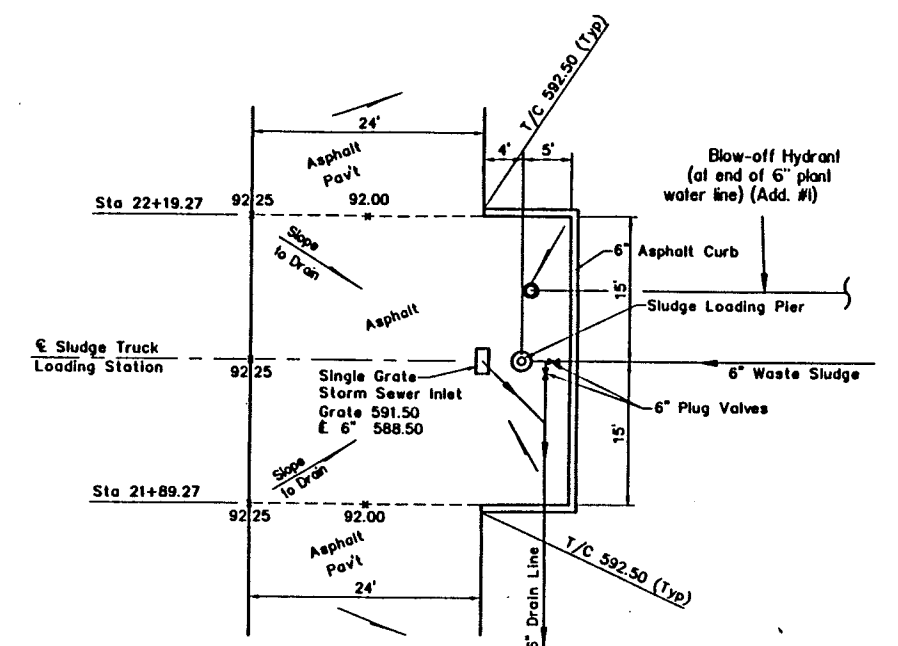


SIDEWALK
NOT TO SCALE



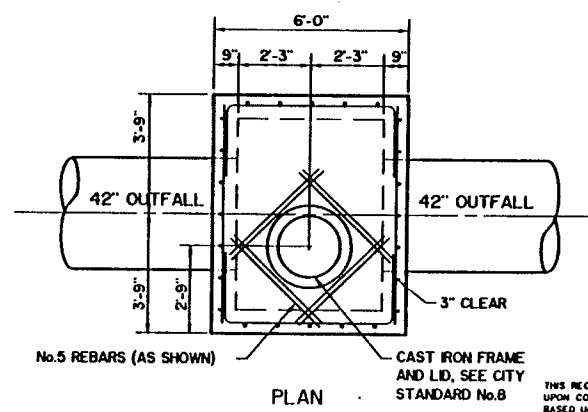
SIDEWALK w/SWALE
NOT TO SCALE

- NOTES:**
1. Slope sidewalks which are parallel to swales to drain to the swale.
 2. Slope sidewalks that cross a swale to drain in the same direction as the swale it crosses.
 3. Spot elevations shown for sidewalks represent the elevation of the high side of the sidewalk.

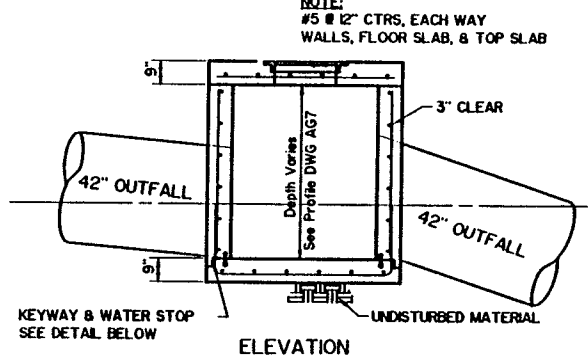


Follow Oklahoma Department of Transportation Standard No. SSI-6A-12 for 'Standard Storm Sewer Inlet'

SLUDGE TRUCK LOADING STATION
NOT TO SCALE

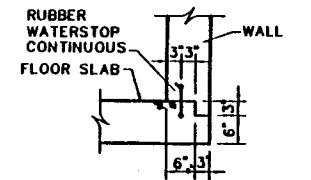


PLAN



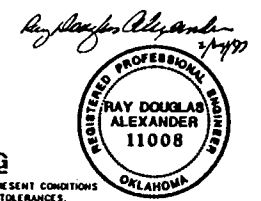
ELEVATION

42" OUTFALL MANHOLE



TYPICAL KEYWAY AND WATERSTOP CONSTRUCTION

RECORD DRAWING
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GENERAL

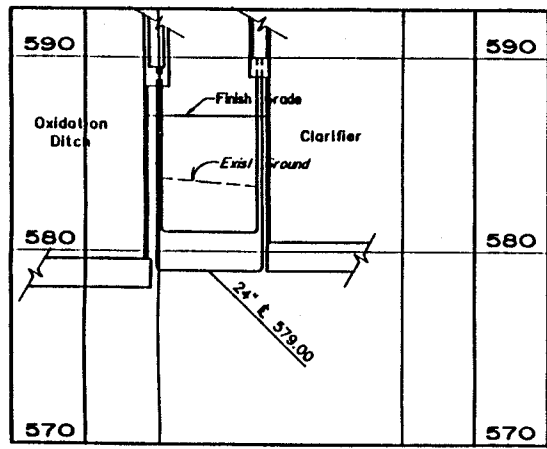
TYPICAL SECTIONS AND SCUM DRAIN LAYOUT

LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

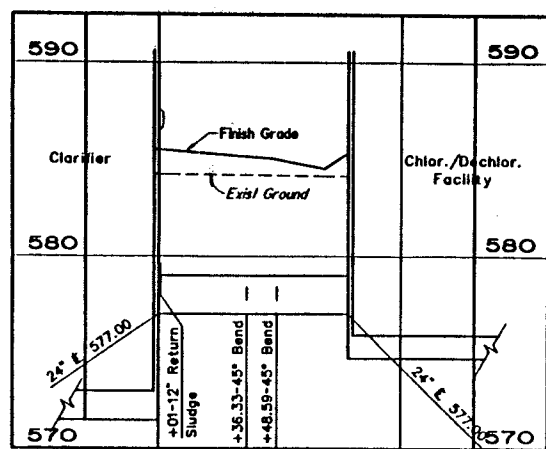
CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
CRAIG AND KEITHLINE, INC
ENGINEERS
2166 E 61ST ST
TULSA, OKLAHOMA 74136

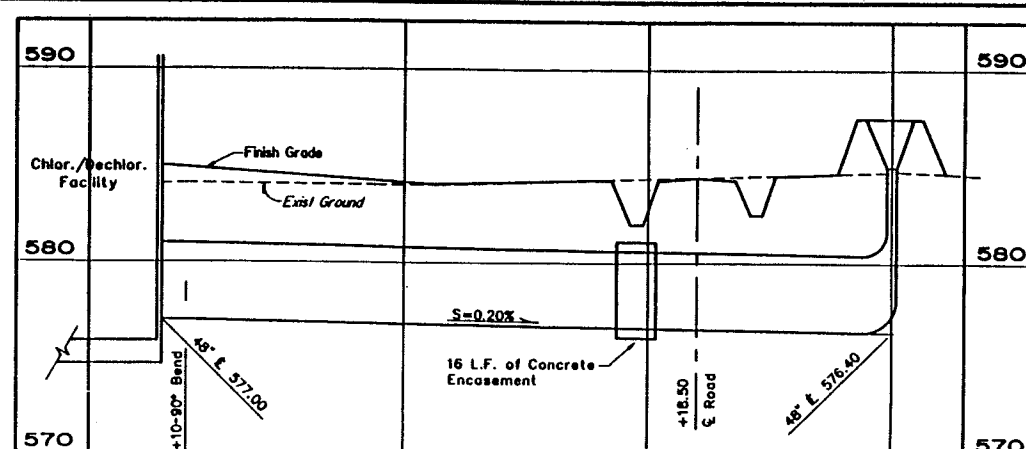
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AS SHOWN			AS SHOWN	DESIGNED	ROA	
			PROFILE SCALE	FIELD MGR		
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			VERTICAL:	PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AG5		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 5 OF 49 SHEETS



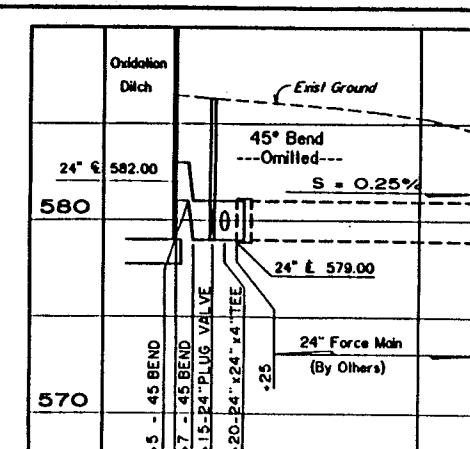
POO1-24" MIXED LIQUOR



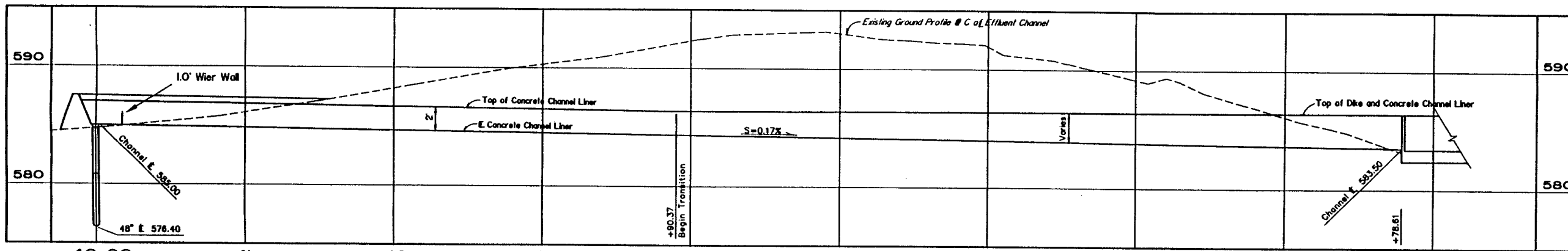
POO2-24" CLARIFIER EFFLUENT



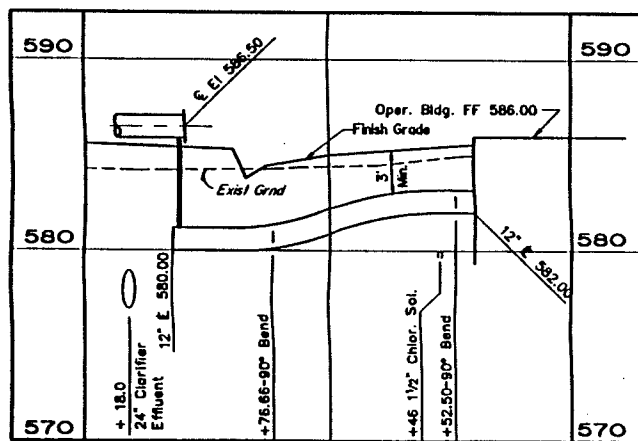
POO3 - 48" PLANT EFFLUENT



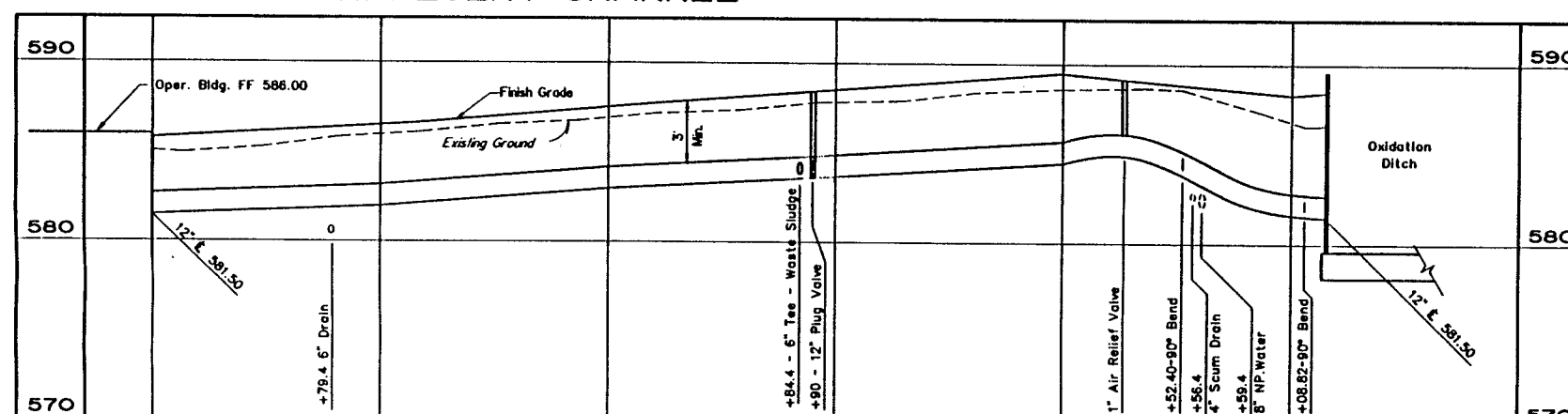
FOO1 - 24" FORCE MAIN



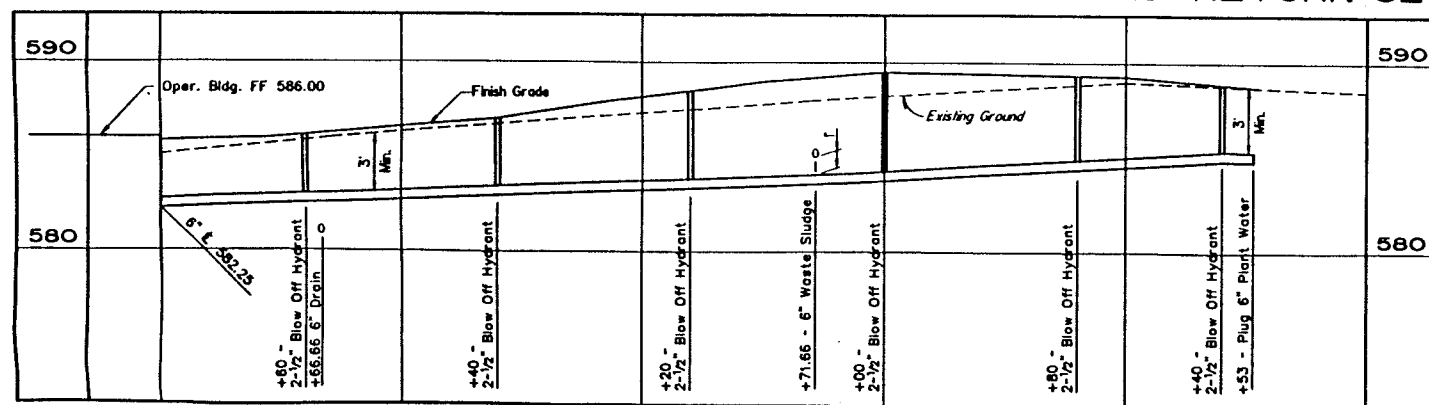
POO4 - EFFLUENT CHANNEL



POO5-12" RETURN SLUDGE



POO6 - 12" RETURN SLUDGE



POI1 - 6" PLANT WATER



Ray Douglas Alexander
GENERAL 2/24/97

PIPE PROFILES
LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

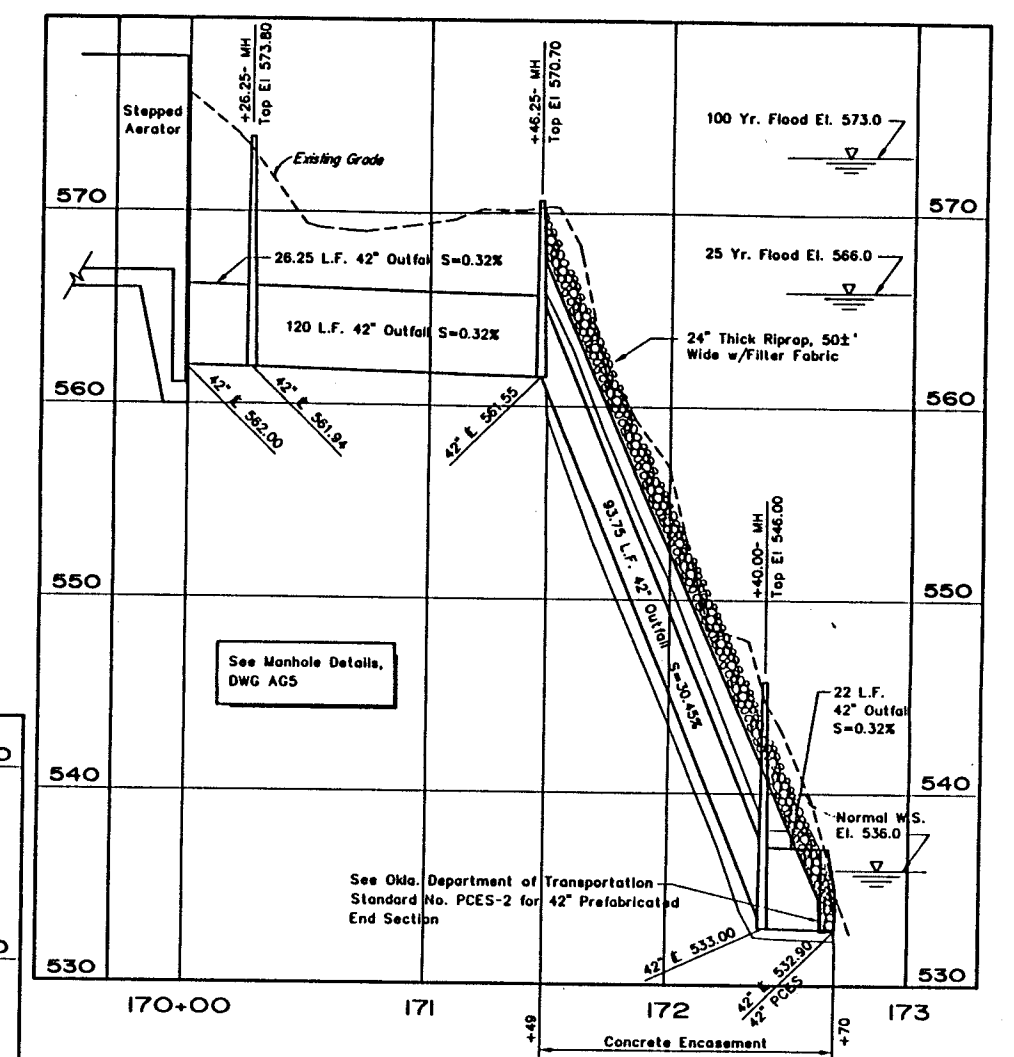
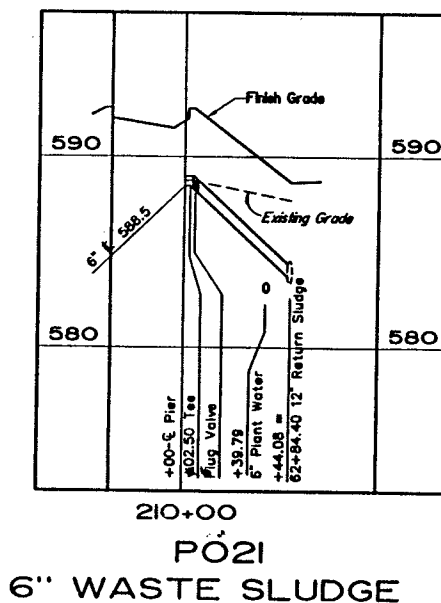
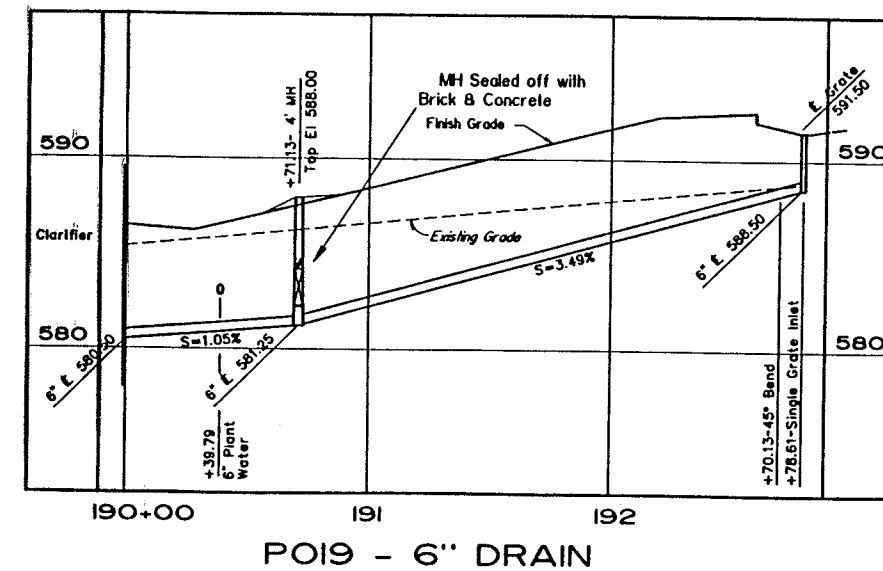
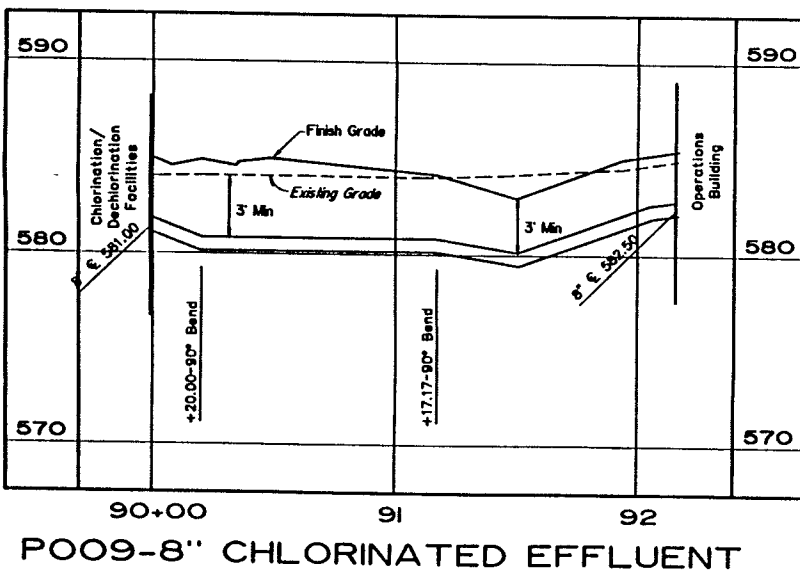
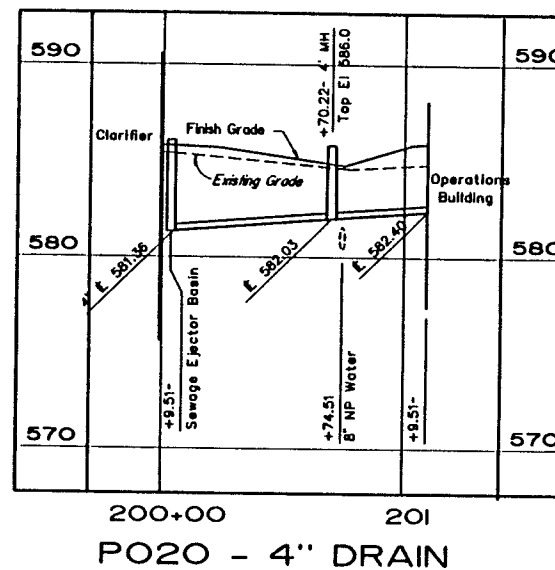
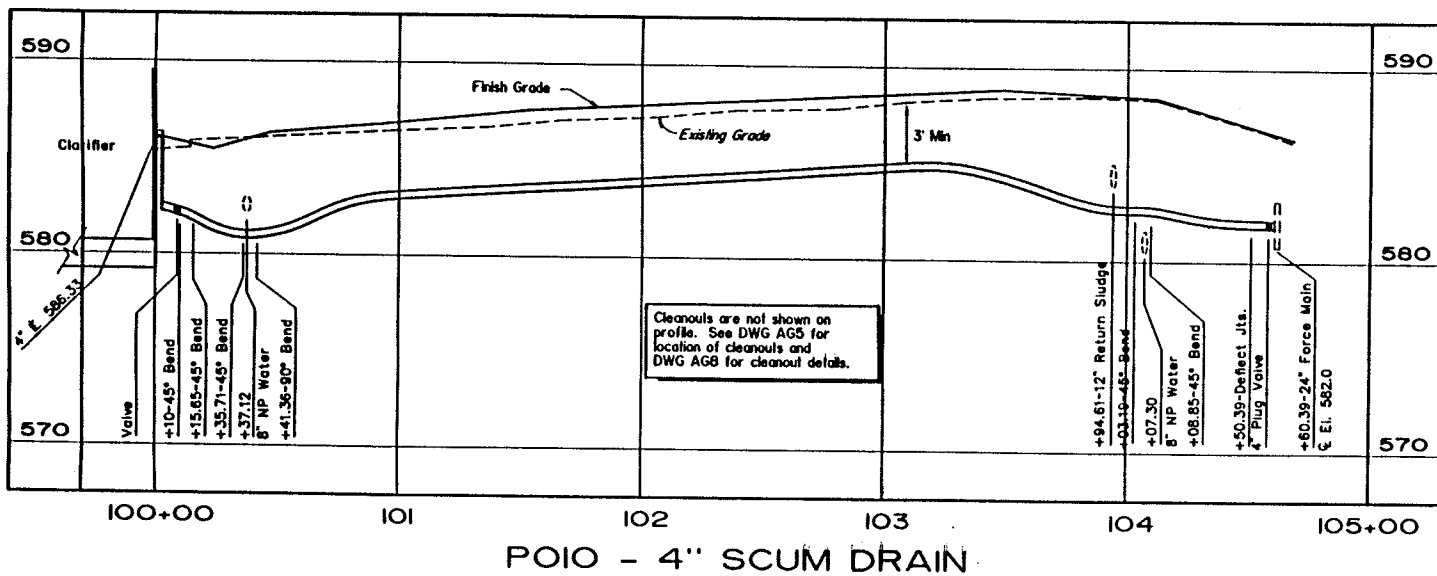
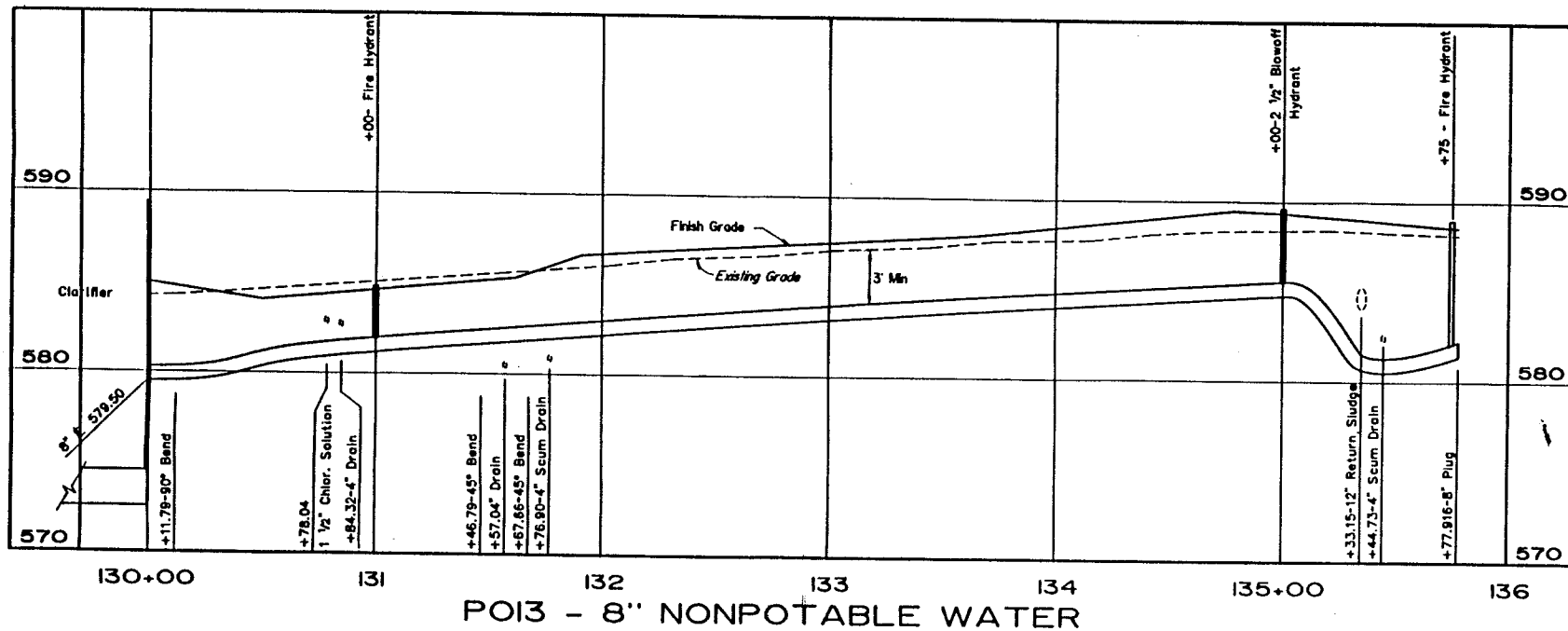
CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
CRAIG AND KEITHLINE, INC
ENGINEERS
2166 E 61ST ST
TULSA, OKLAHOMA 74136

RECORD DRAWING

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REVISION	BY	DATE	PLAN SCALE	DRAWN	CKD	APPROVED
			AS SHOWN	DESIGNED	CKD	
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			ATLAS PAGE NO.:			SHEET 6 OF 49 SHEETS



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RAY DOUGLAS ALEXANDER 11008 OKLAHOMA

GENERAL 2/1/97

PIPE PROFILES

LOWER BIRD CREEK WASTEWATER FACILITIES

PROJECT NO. TMUA SA 92-3

CONTRACT NO. 1

WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA

PUBLIC WORKS DEPARTMENT

ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:

CRAIG AND KEITHLINE, INC

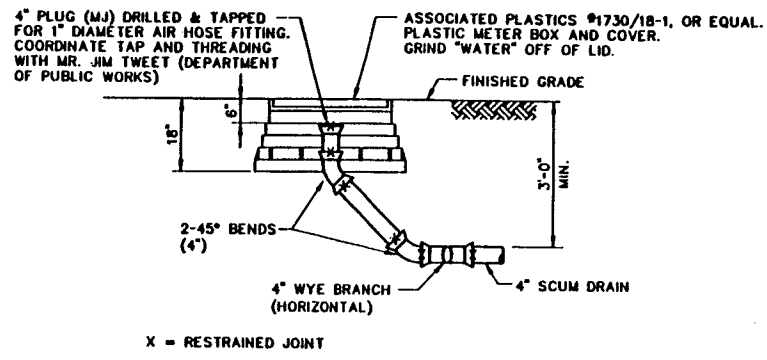
ENGINEERS

2166 E 61ST ST

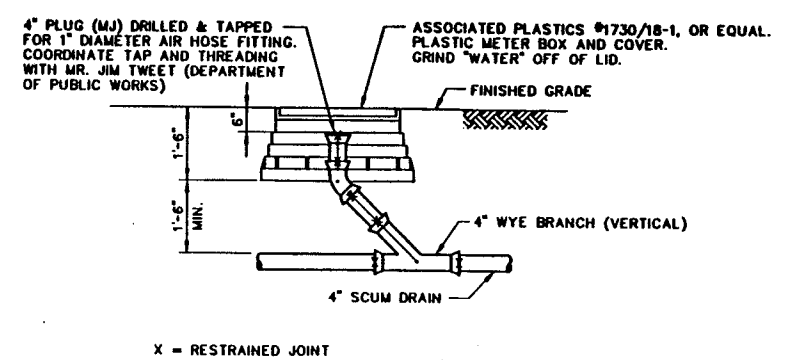
TULSA, OKLAHOMA 74136

REVISION	BY	DATE	PLAN SCALE	DRAWN	CKD	APPROVED
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			ATLAS PAGE NO:			SHEET 7 OF 49 SHEETS

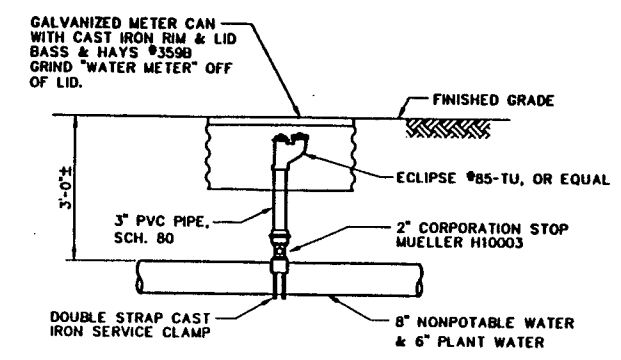
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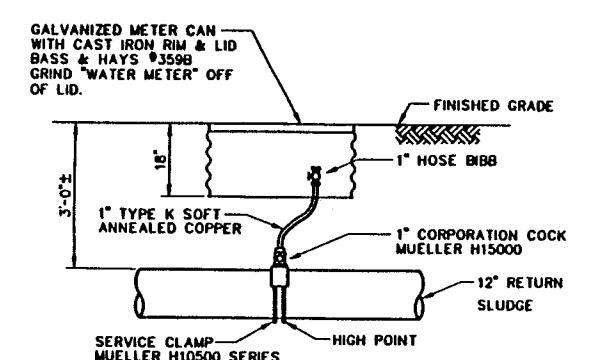
END-OF-LINE CLEANOUTS
SCALE: 1/2"=1'-0"
3 EACH REQUIRED



IN-LINE CLEANOUTS
SCALE: 1/2"=1'-0"
5 EACH REQUIRED
MAX. SPACING = 100 FT.

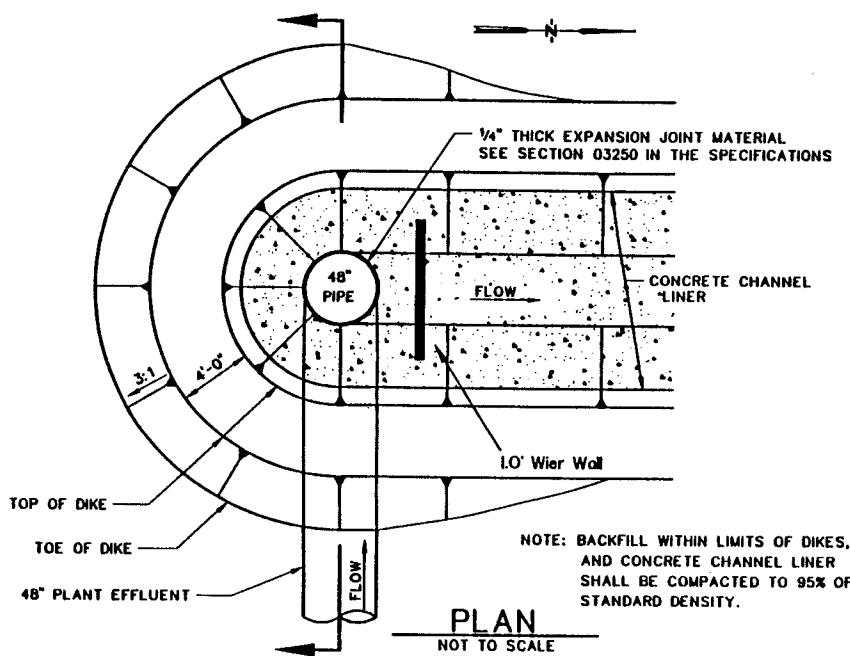


BLOW OFF HYDRANT DETAILS
SCALE: 1/2"=1'-0"
7 EACH REQUIRED
SEE PROFILES DWG AG6, AG7

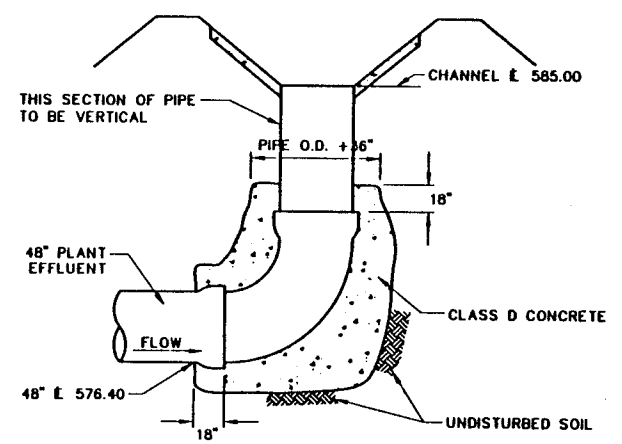


1" AIR RELIEF VALVE DETAILS
SCALE: 1/2"=1'-0"
2 EACH REQUIRED

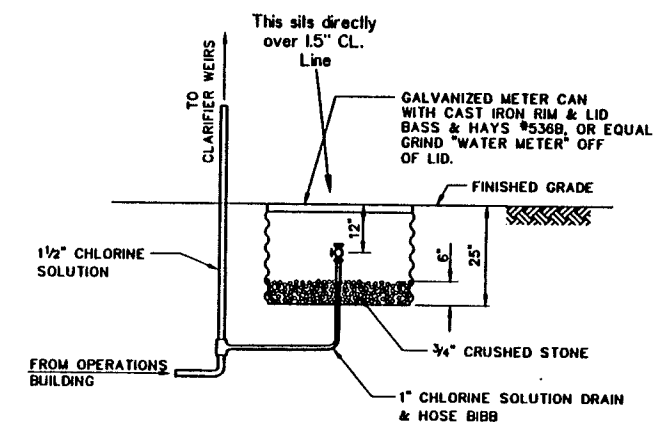
SCUM DRAIN CLEANOUT DETAILS



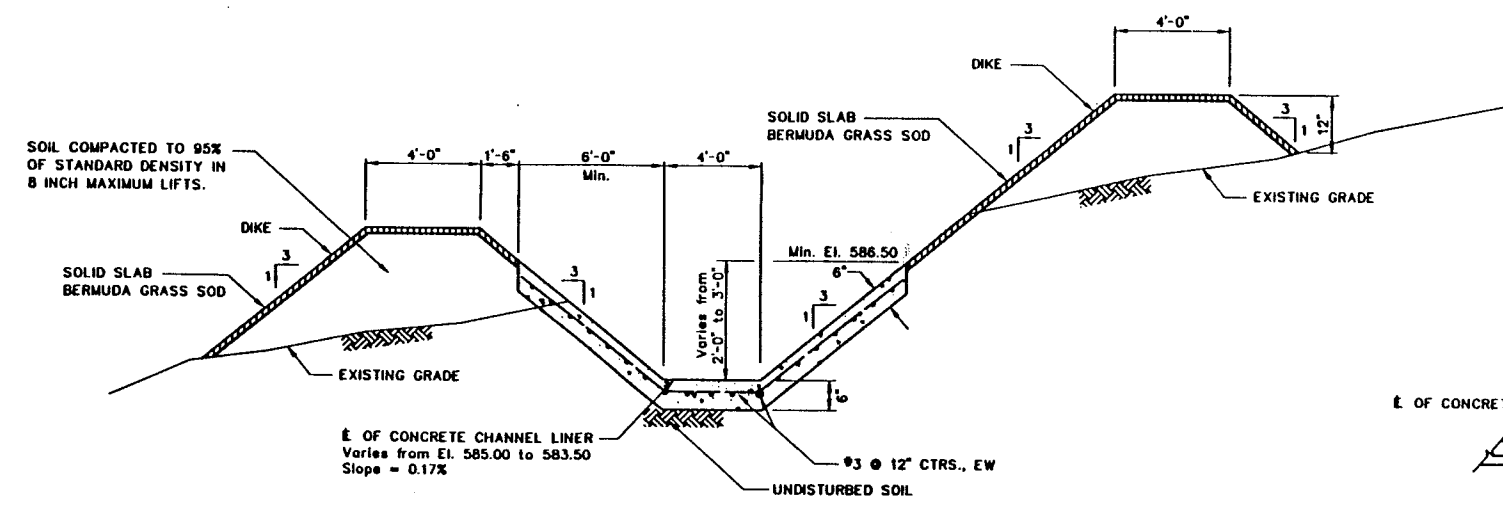
PLAN
NOT TO SCALE
48" PLANT EFFLUENT/EFFLUENT CHANNEL DETAILS



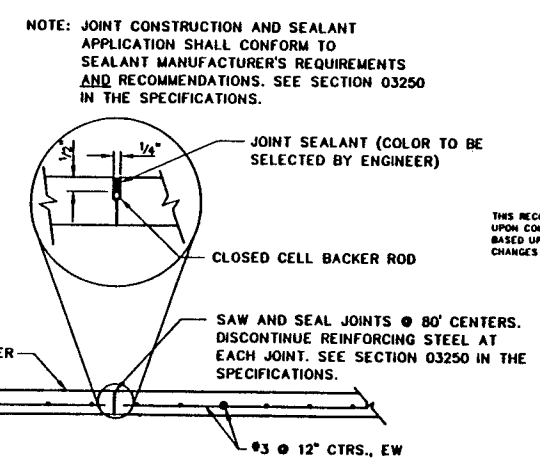
SECTION
NOT TO SCALE



FREEZE DRAIN DETAILS FOR 1 1/2" CHLORINE SOLUTION LINE
SCALE: 1/2"=1'-0"
1 EACH REQUIRED



EFFLUENT CHANNEL - TYPICAL SECTION
NOT TO SCALE
APPROXIMATELY 880 L.F. REQUIRED



CONSTRUCTION JOINT DETAIL
NOT TO SCALE



GENERAL 2/24/97

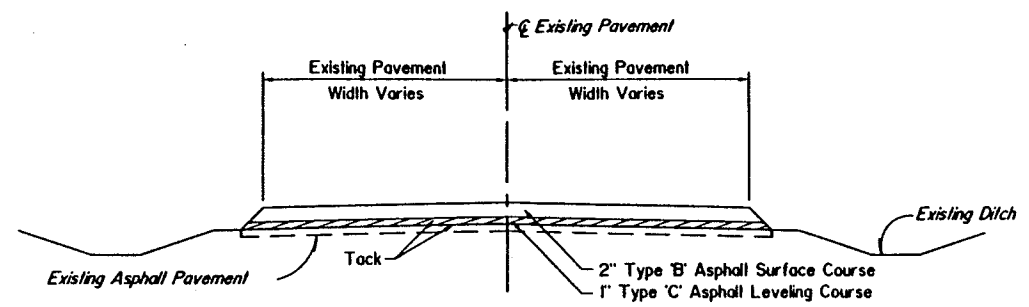
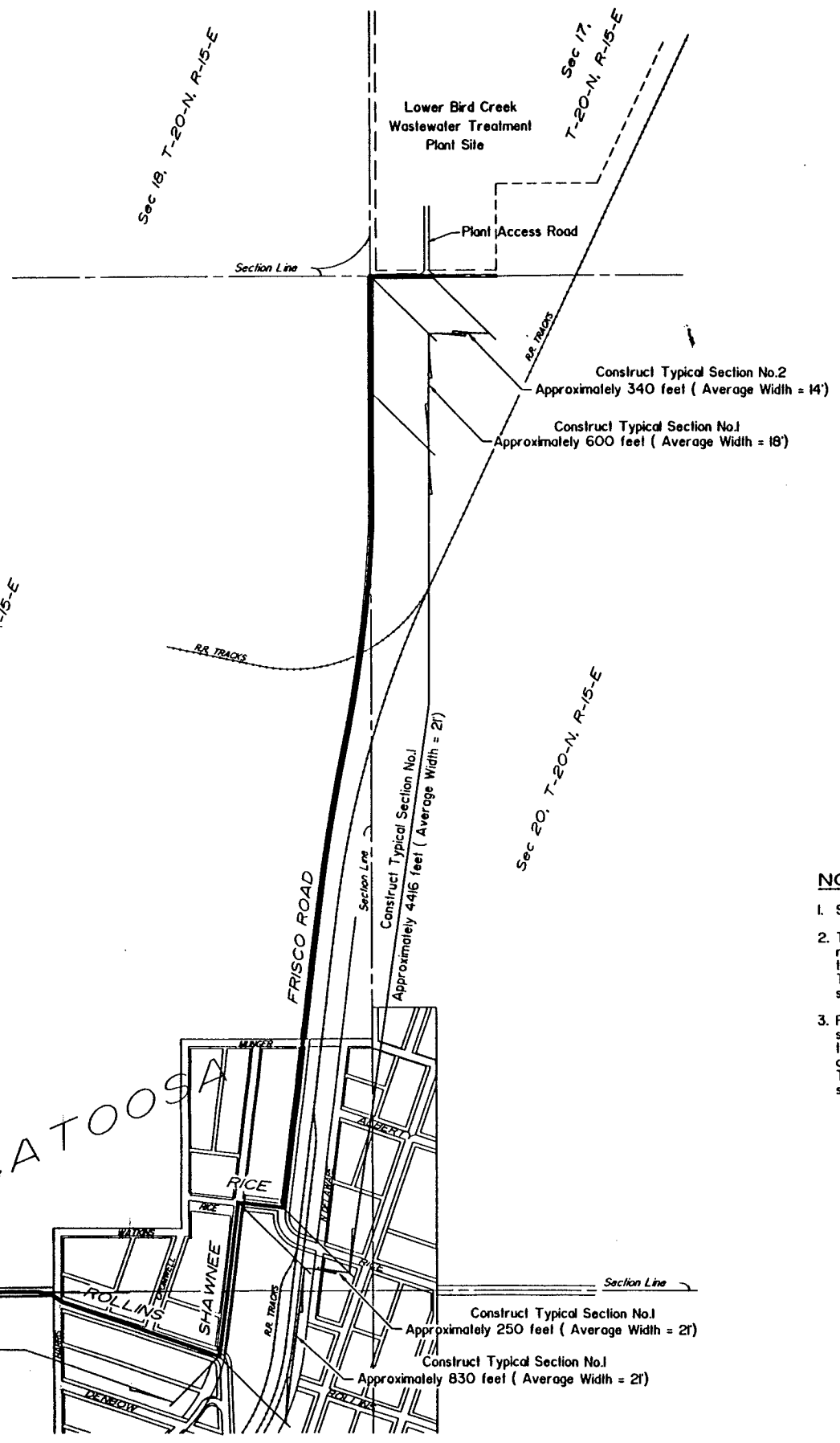
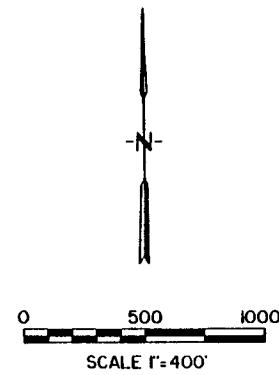
MISCELLANEOUS DETAILS
LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT
CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
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TULSA, OKLAHOMA 74136

RECORD DRAWING

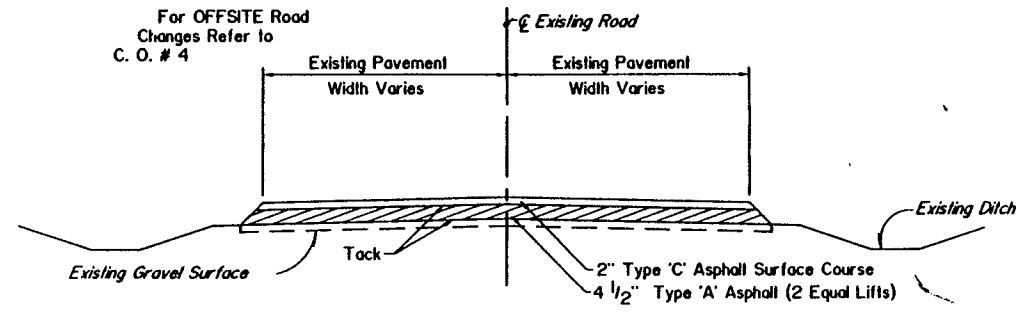
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REVISION	BY	DATE	PLAN SCALE	DRAWN	CKD	APPROVED
			AS SHOWN	DESIGNED	CKD	
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			PROFILE SCALE	FIELD MGR		
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			FILE:	DRAWING: AGB		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 8 OF 49 SHEETS

File Name: LBOEEL.dwg 10/26/94 11.50



TYPICAL SECTION No.1
See Specification Section 02840 for additional Requirements



TYPICAL SECTION No.2
See Specification Section 02840 for additional Requirements

NOTES

1. See Specification Section 02840 for additional requirements.
2. The Contractor shall be responsible for maintaining the public roads used for access to the plant site in passable condition to the satisfaction of the Engineer. The cost for this work shall be included in other items. No separate payment shall be made for this work.
3. Prior to the construction of Typical Section No.2, the Contractor shall reshape the existing roadbed and recompact the top 6-inches to 95% Standard Density in accordance with Oklahoma Department of Transportation Specification Section 310, Method B. The cost for this work shall be included in other items. No separate payment shall be made for this work.

RECORD DRAWING

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Ray Douglas Alexander
GENERAL 4/1/97

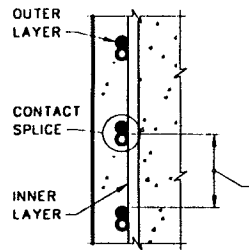
PUBLIC ROAD IMPROVEMENTS
LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA
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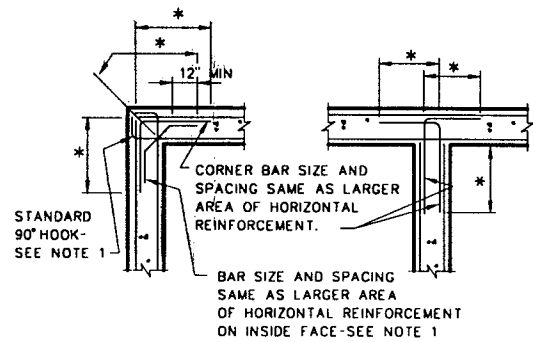
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				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AG9		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 9 OF 49 SHEETS

REINFORCING-LAP SPLICE TABLE		GRADE 60 REINF 4000 PSI CONC									
BAR SIZE		3	4	5	6	7	8	9	10	11	
OUTER LAYER	TOP BARS	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-3"	7'-6"	9'-6"	11'-8"	
	OTHER BARS	1'-2"	1'-7"	1'-11"	2'-4"	2'-9"	3'-3"	5'-9"	7'-4"	9'-0"	
INNER LAYER	TOP BARS	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-3"	5'-4"	6'-9"	8'-4"	
	OTHER BARS	1'-2"	1'-7"	1'-11"	2'-4"	2'-9"	3'-3"	4'-2"	5'-3"	6'-5"	



- TOP BARS ARE ALL HORIZONTAL BARS SO PLACED THAT MORE THAN 12" OF CONCRETE IS PLACED IN THE MEMBER BELOW THE BAR. THIS INCLUDES HORIZONTAL WALL REINFORCEMENT.
- WHERE BARS OF DIFFERENT SIZES ARE LAP SPICED USE LAP LENGTH FOR SMALLER BAR.
- FOR EPOXY COATED BARS INCREASE LAP LENGTHS 20% FOR #3, #4 & #5 BARS & 50% FOR #6 THRU #11 BARS.
- THIS TABLE IS FOR CLEAR DISTANCE EQUAL TO OR GREATER THAN 3 BAR DIAMETERS.
- FOR CLEAR DISTANCE LESS THAN 3 BAR DIAMETERS SPLICE LENGTHS SHOWN MUST BE DOUBLED.

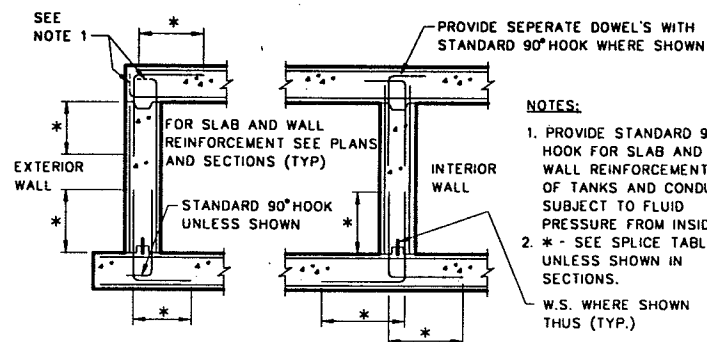
1



- NOTES:
- REQUIRED ONLY WHERE WALLS ARE SUBJECT TO FLUID PRESSURE FROM INSIDE.
 - * - SEE SPLICE TABLE.

HORIZONTAL CORNER BAR DETAIL

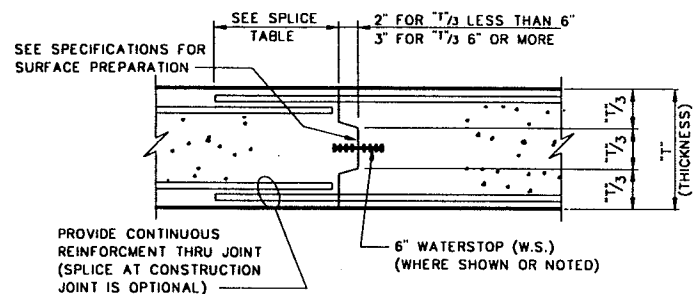
2



- NOTES:
- PROVIDE STANDARD 90° HOOK FOR SLAB AND WALL REINFORCEMENT OF TANKS AND CONDUITS SUBJECT TO FLUID PRESSURE FROM INSIDE.
 - * - SEE SPLICE TABLE, UNLESS SHOWN IN SECTIONS.
- W.S. WHERE SHOWN THUS (TYP.)

WALL REINFORCEMENT PLACING DIAGRAM

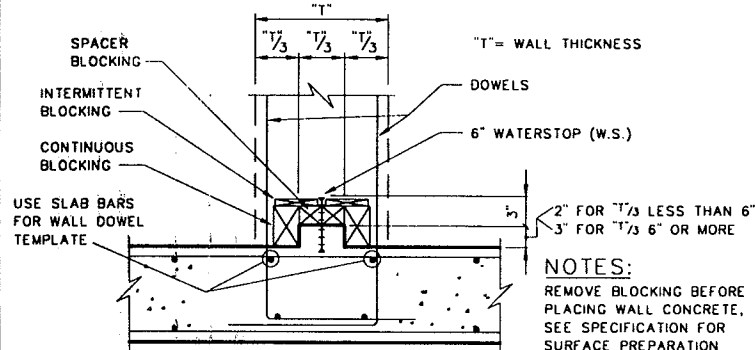
3



NOTE: WHERE "T" EXCEEDS 2'-0" SEE SECTIONS.

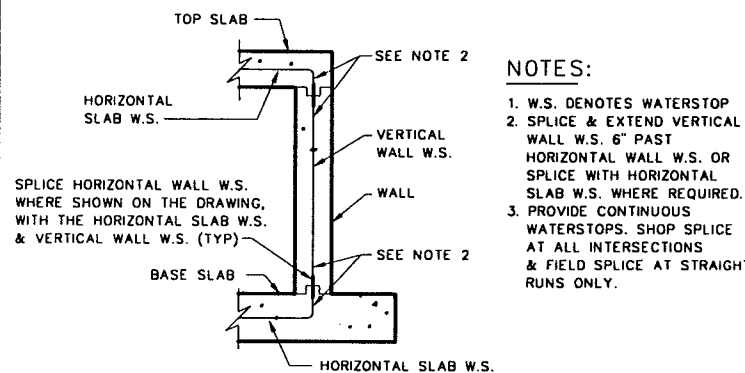
CONSTRUCTION JOINT DETAIL FOR WALLS AND SLABS

4



CONSTRUCTION JOINT WITH WATERSTOP IN WALL AT SLAB

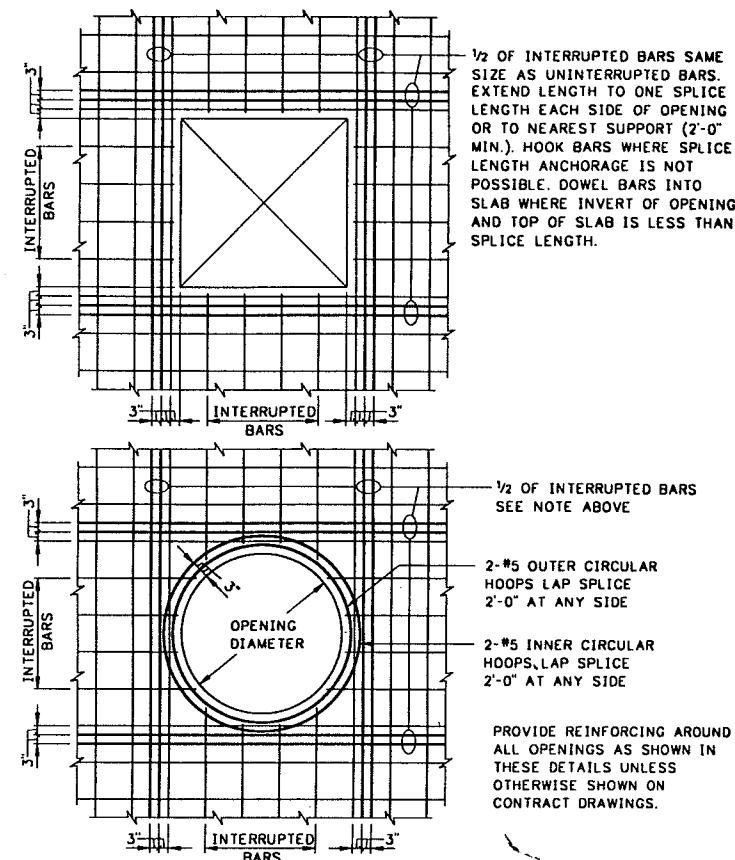
5



- NOTES:
- W.S. DENOTES WATERSTOP
 - SPLICE & EXTEND VERTICAL WALL W.S. 6" PAST HORIZONTAL WALL W.S. OR SPLICE WITH HORIZONTAL SLAB W.S. WHERE REQUIRED.
 - PROVIDE CONTINUOUS WATERSTOPS. SHOP SPLICE AT ALL INTERSECTIONS & FIELD SPLICE AT STRAIGHT RUNS ONLY.

WATERSTOP PLACING DETAIL

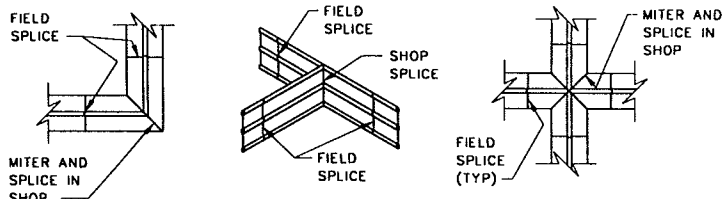
6



ADDITIONAL REINFORCING AT OPENINGS* IN WALLS AND SLABS

* 48" OR SMALLER

7

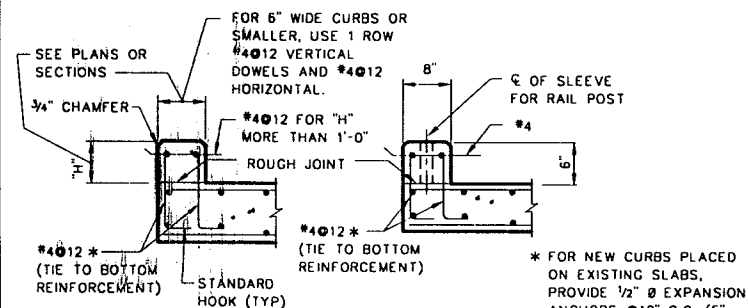


FLAT ELL VERTICAL TEE FLAT CROSS

MAKE FIELD SPLICES IN STRICT ACCORDANCE W/MANUFACTURERS RECOMMENDATIONS.

WATERSTOP SPLICE DETAILS AT INTERSECTIONS

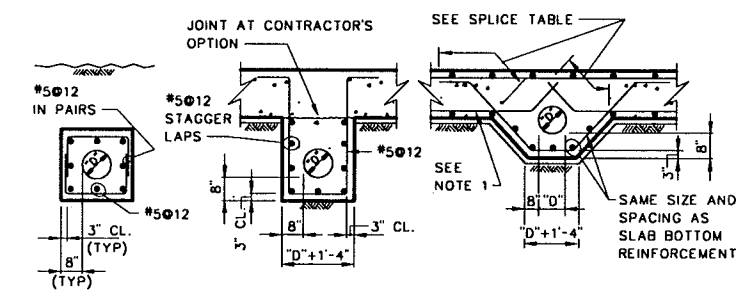
8



CURB WITHOUT HANDRAILS CURB WITH HANDRAILS

CURB DETAILS

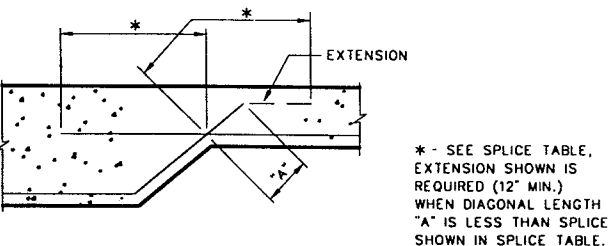
9



- NOTES:
- PROVIDE CONTINUOUS BOTTOM REINFORCEMENT WHERE POSSIBLE.
 - FOR PIPE SIZE "D" AND ELEVATION SEE MECHANICAL & PLUMBING DRAWINGS.
 - ENCASE ALL PIPES LOCATED BENEATH BASE SLABS IN CONCRETE, U.N.O.

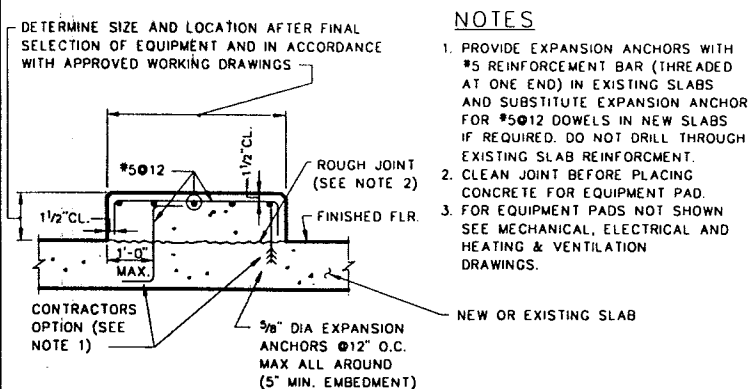
PIPE ENCASEMENT DETAILS

10



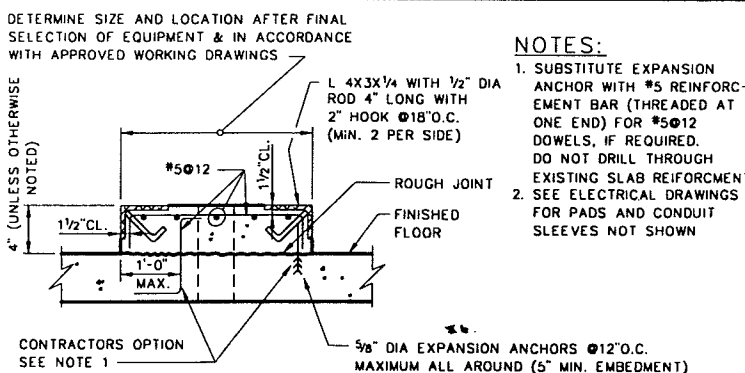
SPLICE LENGTH OF REINFORCEMENT INTERSECTING DIAGONALLY

11



EQUIPMENT PAD DETAIL

12



ELECTRICAL EQUIPMENT PAD DETAIL

13

RECORD DRAWING

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GENERAL STRUCTURAL

TYPICAL DETAILS

LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMAA SA 92-3
CONTRACT NO. I
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:

KLEIN AND HOFFMAN, INC.
CONSULTING ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
PROJECT NO. 4543

REVISION	BY	DATE	PLAN SCALE	DRAWN	JVT	APPROVED
			AS SHOWN	DESIGNED	JEB	
			PROFILE SCALE	SURVEY		
			HORIZONTAL:	FIELD MGR		
			VERTICAL:	SECT. MGR		
				PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AS1		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 10 OF 49 SHEETS

GENERAL STRUCTURAL NOTES

THE FOLLOWING GENERAL NOTES ARE SHOWN FOR CONVENIENCE AND ARE SUPPLEMENTAL TO THE SPECIFICATIONS:

- ALL SECTIONS, DETAILS AND NOTES ARE TYPICAL UNLESS OTHERWISE INDICATED. PREPARE WORKING DRAWINGS TO SHOW THE APPLICATION OF TYPICAL SECTIONS AND DETAILS FOR SIMILAR SITUATIONS.
- PROVIDE A 3/4" CHAMFER AT EXPOSED CORNERS AND PROVIDE A 3/4" FLAT FILLET AT RE-ENTRANT CORNERS UNLESS OTHERWISE NOTED.
- OBTAIN ENGINEERS APPROVAL FOR USE OF CONSTRUCTION JOINTS AT LOCATIONS NOT SHOWN ON THE DRAWINGS.
- VERIFY LOCATIONS OF ALL OPENINGS, EMBEDDED ITEMS AND CONCRETE CONFIGURATIONS WITH DRAWINGS AND SPECIFICATIONS FROM ALL OTHER DISCIPLINES. LOCATE AND SHOW ALL THESE ITEMS ON APPROVED WORKING (SHOP) DRAWINGS.
- DO NOT PLACE BACKFILL AGAINST SUBSTRUCTURE WALLS UNTIL FLOOR SLABS SUPPORTING TOP AND BOTTOM OF THE WALLS HAVE ATTAINED A COMPRESSIVE STRENGTH OF 3,000 PSI AS INDICATED BY CYLINDER TESTING. PLACE BACKFILL EVENLY AGAINST EACH SIDE OF SUBSTRUCTURES TO PRODUCE EQUAL AND OPPOSITE LATERAL PRESSURES. THE DIFFERENCE IN ELEVATION NOT TO EXCEED 1-FOOT.
- COMPRESSIVE STRENGTH OF CONCRETE: PROVIDE CAST-IN-PLACE CONCRETE (EXCEPT CONCRETE WORKMATS) OF $F'_c = 4,000$ PSI AT 28 DAYS AND CONCRETE WORKMATS OF $F'_c = 2,000$ PSI AT 28 DAYS.
- PROVIDE ASTM A615, GRADE 60 REINFORCING STEEL AND DETAIL ACCORDING TO THE ACI DETAILING MANUAL 1988 PUBLICATION SP-66.
- PROVIDE THE FOLLOWING CONCRETE PROTECTION FOR REINFORCEMENT, UNLESS OTHERWISE INDICATED ON THE PLANS OR ORDERED BY THE ENGINEER.

- SLABS**
- FOR DRY CONDITIONS:
 - SLABS 8" THICK OR LESS 1"
 - SLABS OVER 8" THICK 2"
 - EXPOSED TO EARTH, WATER OR WEATHER AND FOR BOTTOMS BEARING ON WORKMATS 2"

- BEAMS AND COLUMNS**
- FOR DRY CONDITIONS:
 - STIRRUPS AND TIES 1/2"
 - PRINCIPAL REINFORCEMENT 2"
 - EXPOSED TO EARTH, WATER OR WEATHER:
 - STIRRUPS AND TIES 2"
 - PRINCIPAL REINFORCEMENT 2 1/2"

- WALLS**
- FOR DRY CONDITIONS:
 - WALLS 8" THICK OR LESS 1"
 - WALLS OVER 8" THICK 2"
 - EXPOSED TO EARTH, WATER OR WEATHER:
 - CIRCULAR TANKS WITH RING TENSION 2 1/2"
 - ALL OTHERS 2"

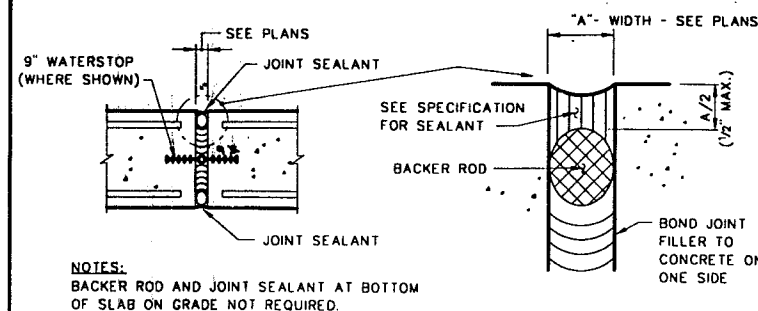
- FOOTINGS AND BASE SLABS**
- TOP OF FOOTING OR BASE SLAB 2"
 - ALL FORMED SIDES AND ENDS, AND BOTTOMS BEARING ON CONCRETE WORKMAT 2"
 - AT UNFORMED SIDES AND ENDS, AND BOTTOMS IN CONTACT WITH EARTH 3"
 - OVER TOP OF PILES 2"

- STRUCTURAL STEEL:**
 - DETAIL, FABRICATE AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ALLOWABLE STRESS DESIGN, JUNE 1, 1989.
 - PROVIDE ASTM A501 STRUCTURAL STEEL WITH $F_y = 36$ KSI FOR TUBES, AND PROVIDE ASTM A36 STRUCTURAL STEEL FOR ALL OTHER SHAPES, UNLESS NOTED OTHERWISE.
 - PROVIDE 3/4" DIAMETER, HIGH STRENGTH BOLTS CONFORMING TO ASTM A325 FOR TYPE N CONNECTION, UNLESS NOTED OTHERWISE.
 - PROVIDE TYPICAL BEAM CONNECTIONS FOR A CAPACITY OF NOT LESS THAN 1/2 OF THE TOTAL UNIFORM LOAD CAPACITY TABULATED IN THE AISC TABLES FOR ALLOWABLE LOADS ON BEAMS UNLESS OTHERWISE NOTED.
 - APPLY ONE SHOP COAT OF PRIMER TO ALL STRUCTURAL STEEL SURFACES.

- LOAD-BEARING CONCRETE MASONRY:**
 - CONFORM ALL CONCRETE MASONRY TO THE SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF LOAD BEARING CONCRETE MASONRY PUBLISHED BY THE NATIONAL CONCRETE MASONRY ASSOCIATION.
 - USE HOLLOW CONCRETE MASONRY UNITS HAVING 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI BASED ON THE NET AREA.
 - USE TYPE S MORTAR CONFORMING TO ASTM 270.
 - USE GROUT CONFORMING TO ASTM C476 AND HAVING A 28 DAY COMPRESSIVE STRENGTH OF 3,000 PSI.
 - REINFORCE ALL WALLS AS SHOWN AND FILL CELLS HAVING REINFORCEMENT WITH GROUT.
 - LAP SPlice UNCOATED REINFORCEMENT 48 BAR DIAMETERS, LAP SPlice EPOXY COATED REINFORCEMENT 58 BAR DIAMETERS.

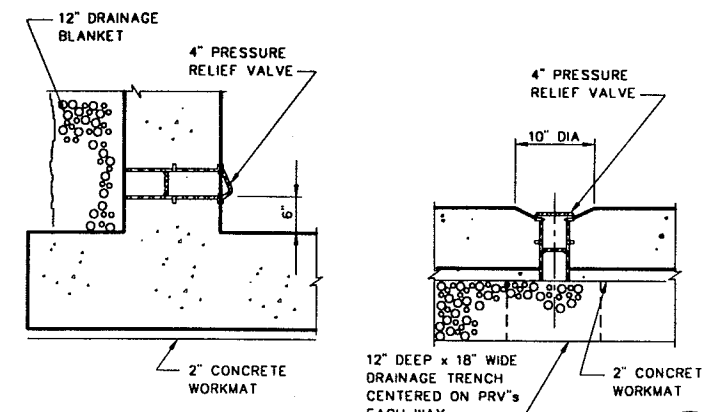
11. ALL ABBREVIATIONS SHOWN ON DRAWINGS CONFORM TO ANSI / ASME - Y1.1-1989. THE FOLLOWING LEGEND SHOWS ABBREVIATIONS AND SYMBOLS COMMONLY USED IN THE STRUCTURAL DETAILING AND CONSTRUCTION INDUSTRY:

LEGEND:		LEGEND:	
∅	CONSTRUCTION JOINT	L	ANGLE
W.S.	WATERSTOP	∅	PLATE
EXP. JT.	EXPANSION JOINT	A.B.	ANCHOR BOLT
C.G.	CONTROL GROOVE	S.S.	STAINLESS STEEL
H.P.	HIGH POINT	F.R.P.	FIBERGLASS REINFORCED PLASTIC
L.P.	LOW POINT	M.C.	MECHANICAL CONNECTIONS
W.P.	WORK POINT	N.T.S.	NOT TO SCALE
E.P.	EQUIPMENT PAD	U.N.O.	UNLESS NOTED OTHERWISE
E.E.P.	ELECTRICAL EQUIPMENT PAD	*	DIMENSIONS OR ELEVATION TO BE DETERMINED OR VERIFIED AFTER FINAL SELECTION OF EQUIPMENT
P.S.	PIPE SUPPORT		
∅	CENTER LINE		
C/C	CENTER TO CENTER		
O.C.	ON CENTER		
∅S(E)	DENOTES EPOXY COATED		
∅S	REINFORCING BAR		



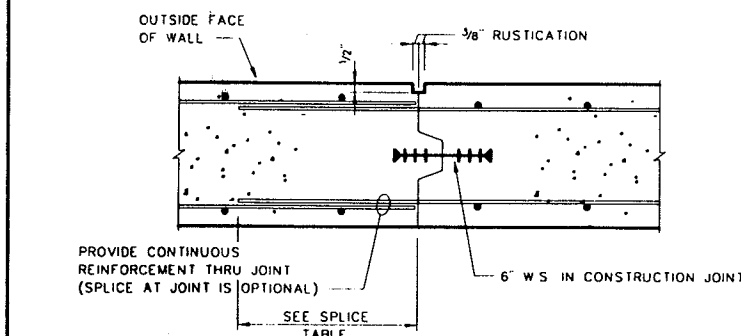
EXPANSION JOINT DETAIL AT WALLS AND SLABS

14



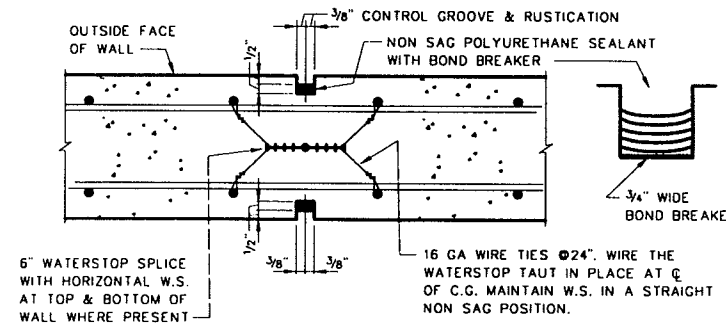
PRESSURE RELIEF VALVE DETAIL

15



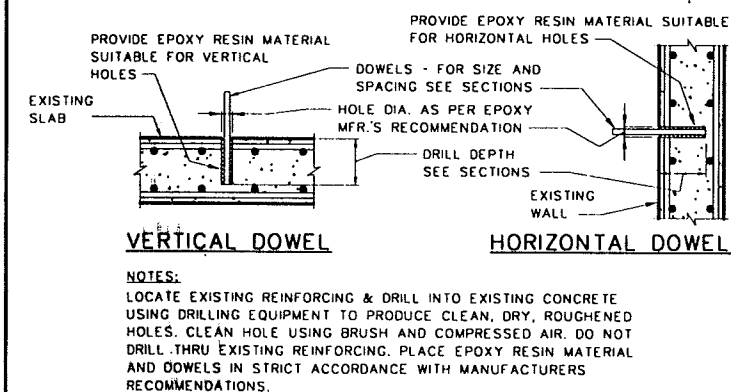
VERTICAL CONSTRUCTION JOINT DETAIL AT RUSTICATION

16



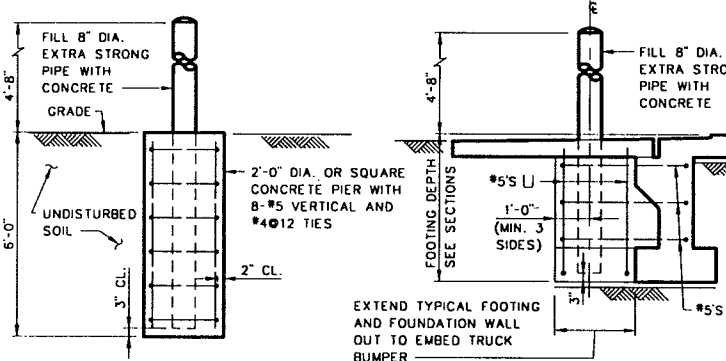
VERTICAL CONTROL GROOVE DETAIL AT RUSTICATION

17



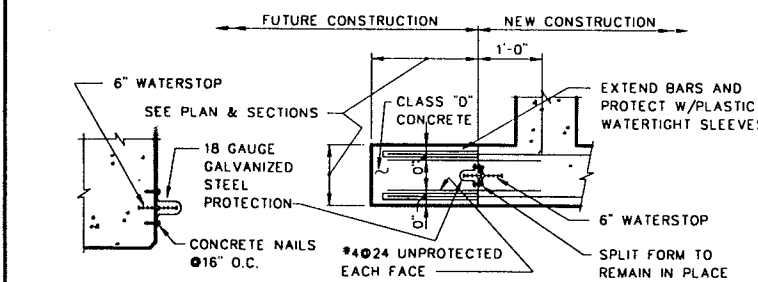
DOWEL GROUTING DETAIL

19



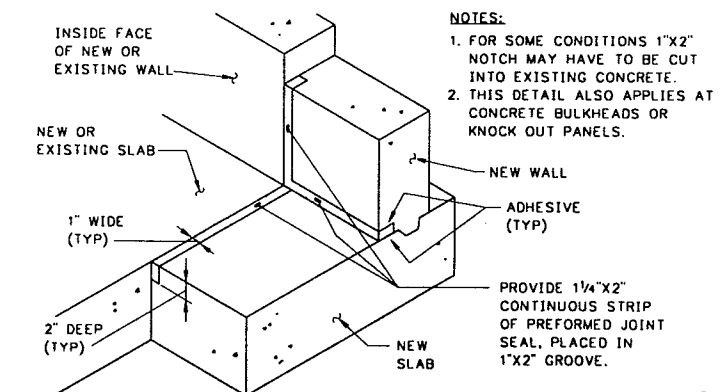
TRUCK BUMPER DETAILS

20



WATERSTOP PROTECTION FOR FUTURE CONSTRUCTION

21



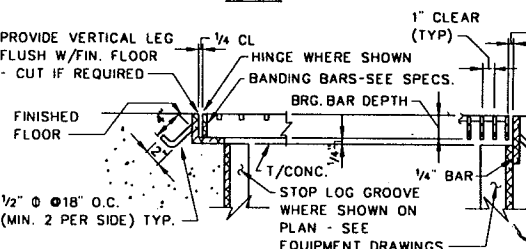
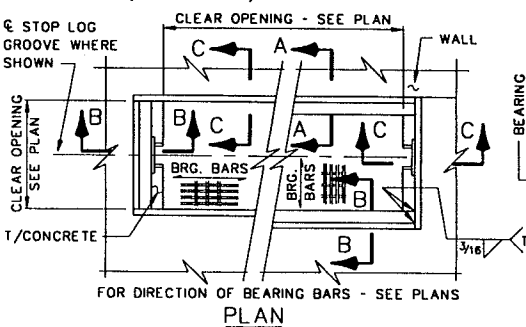
PREFORMED JOINT SEALANT DETAIL

22

GRATING SCHEDULE

SPAN	ALUMINUM (SERRATED)		STAINLESS STEEL OR GALVANIZED (SERRATED)	
	BRG. BARS 1" CLEAR	FRAME	BRG. BARS 1" CLEAR	FRAME
4'-0" OR LESS	1 3/4 x 3/8	L 2X2X1/4	1 1/2 x 3/8	L 2X2X1/4
4'-1" TO 5'-0"	2 1/4 x 3/8	L 2 1/2 X 2 1/4	1 3/4 x 3/8	L 2X2X1/4
5'-1" TO 6'-0"	2 1/2 x 3/8	L 3X2X1/4	2 x 3/8	L 2 1/2 X 2 1/4
6'-1" TO 7'-0"	3 x 3/8	L 3 1/2 X 2 1/2 X 1/4	2 1/4 x 3/8	L 2 1/2 X 2 1/4
7'-1" TO 8'-0"	3 1/4 x 1/4	L 3 1/2 X 2 1/2 X 1/4	2 1/2 x 1/4	L 3X2 1/2 X 1/4

• HEAVY DUTY (NOT STANDARD)



GRATING DETAILS

18

RECORD DRAWING

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GENERAL STRUCTURAL TYPICAL DETAILS AND GENERAL NOTES

LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:

KLEIN AND HOFFMAN, INC.
CONSULTING ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
PROJECT NO. 4543

REVISION	BY	DATE	PLAN SCALE	DRAWN	APPROVED
			AS SHOWN	DESIGNED	JEB
			PROFILE SCALE	SURVEY	
			HORIZONTAL:	FIELD MGR	
			VERTICAL:	SECT. MGR	
				PROJ. MGR	
				RECOMMENDED	
				DEPUTY DIRECTOR	PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AS2	DATE: OCTOBER 1994
			ATLAS PAGE NO.:		SHEET 11 OF 49 SHEETS

VALVE SYMBOLS			
DESCRIPTION	SCHEMATIC	THREE LINE	SINGLE LINE
GATE			
BUTTERFLY			
PLUG			
CHECK (SWING)			
CONE			
BALL			
DIAPHRAGM			
GLOBE			
ANGLE			
THREE WAY			
FOUR WAY			
FLAP			
PRESSURE RELIEF			
AUTO AIR AND VACUUM RELEASE			
AUTO AIR RELEASE			
AUTO VACUUM RELEASE			
PRESSURE REDUCING			
HOSE			
STOP AND DRAIN			

PIPE FITTINGS			
DESCRIPTION	SCHEMATIC	THREE LINE	SINGLE LINE
CROSS	NA		
CROSS	NA		
TEE	NA		
TEE	NA		
TEE	NA		
SIDE OUTLET TEE	NA		
SIDE OUTLET TEE	NA		
LATERAL	NA		
90° ELBOW	NA		
90° ELBOW	NA		
90° ELBOW	NA		
90° ELBOW (LONG RADIUS)	NA		
45° ELBOW	NA		
45° ELBOW	NA		
45° ELBOW	NA		
45° ELBOW (LONG RADIUS)	NA		
SIDE OUTLET ELBOW	NA		
SIDE OUTLET ELBOW	NA		
BASE ELBOW	NA		

PIPE FITTINGS			
DESCRIPTION	SCHEMATIC	THREE LINE	SINGLE LINE
UNION (SCREWED)			
REDUCER			
REDUCER - ECCENTRIC (OFFSET VIEW)	NA		
BLIND FLANGE			
SLEEVE TYPE COUPLING			
SLEEVE TYPE COUPLING (HARNESSED)			
GROOVED TYPE COUPLING			
EXPANSION JOINT RUBBER BELLOWS TYPE			
EXPANSION JOINT METAL BELLOWS TYPE			
VENTURI METER			
METER			
STRAINER			
DUPLIX STRAINER			
LUBE OIL FILTER		NA	
MOISTURE SEPARATOR		NA	
SCALE TRAP		NA	
FLAME TRAP			
VENT			
THERMOSTAT (TEMPERATURE REGULATOR)			
PRESSURE GAUGE			
THERMOMETER			
WATER LEVEL ALARM			
DIFFERENTIAL PRESSURE GAUGE			

PIPE JOINTS			
DESCRIPTION	SCHEMATIC	THREE LINE	SINGLE LINE
FLANGE	NA		
MECHANICAL JOINT	NA		
MECHANICAL JOINT (RESTRAINED)	NA		
PUSH ON OR BELL AND SPIGOT	NA		
PUSH ON OR BELL AND SPIGOT (RESTRAINED)	NA		
WELDED	NA		NA
SCREWED	NA		
JOINT IN CONCRETE PIPE	NA		NA

WALL FITTINGS			
DESCRIPTION	SCHEMATIC	THREE LINE	SINGLE LINE
WALL SLEEVE (CAULKED)	NA		
WALL SLEEVE (ANNULAR TYPE SEAL)	NA		
WALL SLEEVE (MECHANICAL JOINT)	NA		
FLANGE AND FLANGE WALL PIPE WITH INTERMEDIATE COLLAR (F x F x F)	NA		
BELL AND BELL WALL PIPE WITH INTERMEDIATE COLLAR (B x F x B)	NA		
MECHANICAL JOINT AND MECHANICAL JOINT WALL PIPE WITH INTERMEDIATE COLLAR (MJ x F x MJ)	NA		
BELL AND FLANGE WALL PIPE WITH INTERMEDIATE COLLAR (B x F x F)	NA		
MECHANICAL JOINT AND FLANGE WALL PIPE WITH INTERMEDIATE COLLAR (MJ x F x F)	NA		
STEEL WALL RING FOR MECHANICAL JOINT AND CONCRETE PIPE (RUBBER AND STEEL)	NA		NA

NOTES:

1. THIS IS A GENERAL LEGEND PROVIDED TO FACILITATE USE OF THE DRAWINGS. REFER TO THE DRAWINGS AND SPECIFICATIONS FOR ITEMS REQUIRED.
2. VALVES AND PIPE FITTINGS ARE SHOWN WITH FLANGED JOINTS. ITEMS ARE AVAILABLE WITH VARIOUS JOINTS AND ARE SHOWN AS REQUIRED.
3. NA MEANS NOT APPLICABLE.

VALVE OPERATORS

- NONE
- D DIAPHRAGM
- F FLOAT
- G GEAR
- H HYDRAULIC CYLINDER
- M MOTOR (ELECTRIC)
- P PNEUMATIC CYLINDER
- S SOLENOID
- A AIR MOTOR

**GENERAL
EQUIPMENT AND PLUMBING**

PIPING SYMBOLS

**LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT**

**CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION**

PLANS AND ESTIMATES PREPARED BY:
**GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606**

REVISION	BY	DATE	PLAN SCALE	DRAWN	RPN	APPROVED
RECORD DRAWING		9-1	NO SCALE	DESIGNED	LCC	
REVISIONS	EAJ	1996		SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AM1		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 12 OF 49 SHEETS

RECORD DRAWING

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FIXTURE SYMBOLS	
DESCRIPTION	SYMBOL
FLOOR DRAIN	□ FD
EQUIPMENT DRAIN	□ ED
AREA DRAIN	□ AD
ROOF DRAIN	○ RD
	SINGLE DOUBLE
COMPRESSED AIR OUTLET	○-A ◊ A
GAS OUTLET	○-NG ◊ NG
VACUUM OUTLET	○-VAC ◊ VAC
HOSE BIBB	⊥HB
WALL HYDRANT	⊥WH
DRINKING FOUNTAIN	□ DF
HOSE RACK	○ HR
ELECTRIC WATER HEATER	○ EWH
GAS WATER HEATER	○ GWH
LAVATORIES	□ L □ L
SERVICE SINK	□ SS
MOP RECEPTOR	□ MR
SHOWER STALL	⊠ SH
URINAL	⊞ U
WATER CLOSET	⊞ WC
ELECTRIC WATER COOLER	□ EWC
WALL SIAMESE (EXPOSED)	⊥
WALL SIAMESE (RECESSED)	⊞
FIRE HOSE CABINET	□ FHC
FIRE EXTINGUISHER CABINET	○ FEC
FIRE HOSE RACK	▨ FHR

PIPING SYMBOLS	
SINGLE LINE AND SCHEMATICS	
SANITARY DRAIN	— SAN —
STORM DRAIN	— ST —
ACID WASTE	— AW —
COLD WATER	— CW —
HOT WATER	— HW —
HOT WATER RETURN	— HWR —
FIRE PROTECTION MAIN	— F —
VENT	— V —
ACID VENT	— AV —
NATURAL GAS	— NG —
LAB AIR	— A —
VACUUM	— VAC —
DEIONIZED WATER	— DI —
DISTILLED WATER	— DIS —
FLOOR CLEANOUT	— ○ CO
EXPOSED CLEANOUT	— CO
DETECTOR CHECK VALVE	— > —
UPRIGHT SPRINKLER HEAD	— ○ —
PENDANT SPRINKLER HEAD	— ● —
WATER FLOW SWITCH	— □ —
P TRAP	— ○ ○ — P
RUNNING TRAP	— ● ● — U
S TRAP	— ○ ○ — S

ABBREVIATIONS	
DESCRIPTION	DESIGNATION
AUTOMATIC SPRINKLER	A.S.
ACID VENT	AV
ACID WASTE	AW
BACK WATER VALVE	BWV
CENTERLINE ELEVATION	CL EL
CLEANOUT	CO
CUP SINK	CS
COLD WATER	CW
DOWN	DN
DOWNSPOUT	DS
EMERGENCY EYEWASH	EE
EMERGENCY SHOWER	ES
EMERGENCY SHOWER/EYEWASH	ESE
ELECTRIC WATER HEATER	EWH
FIRE EXTINGUISHER	FE
FLOOR	FL
FIRE PROTECTION	FP
GUTTER DRAIN	GD
GAS WATER HEATER	GWH
HOSE BIBB	HB
HIGH POINT	HP
HOT WATER	HW
HOT WATER RETURN	HWR
INCREASER	INCR
INVERT ELEVATION	INV EL
LOW POINT	LP
LABORATORY SINK	LS
MOP BASIN	MB
ROOF	RF
ROD OUT BASIN	RO
SHOCK ABSORBER	SA
SANITARY	SAN
SAMPLE SINK	SK
SUMP PUMP	SMP
SERVICE SINK	SS
STORM	ST
VENT	V
VACUUM BREAKER	VB
VACUUM RELIEF VALVE	VRV
VENT THRU ROOF	VTR
WASH FOUNTAIN	WF
WALL HYDRANT	WH

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**GENERAL
EQUIPMENT AND PLUMBING**

PLUMBING SYMBOLS

**LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT**

**CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION**

PLANS AND ESTIMATES PREPARED BY:
**GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606**

REVISION	BY	DATE	PLAN SCALE	DRAWN	LCC	APPROVED
			NONE	DESIGNED	KGB	
				SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AM2		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 13 OF 49 SHEETS

NOTES:

- THIS IS A GENERAL LEGEND PROVIDED TO FACILITATE USE OF THE DRAWINGS. REFER TO THE DRAWINGS AND SPECIFICATIONS FOR REQUIRED ITEMS.
- FOR OTHER VALVE, EQUIPMENT AND PIPING SYMBOLS SEE GENERAL PIPING SYMBOLS.

DUCTWORK SYMBOLS	
DESCRIPTION	SYMBOL
DUCT WIDTH X DEPTH (FIRST DIMENSION IS DIMENSION SEEN)	
INCLINED RISE (WITH RESPECT TO FLOW)	
INCLINED DROP (WITH RESPECT TO FLOW)	
VOLUME DAMPER (SHAFT PARALLEL TO PAPER)	
REGISTER OR GRILLE (FACE PERPENDICULAR TO PAPER)	
REGISTER OR GRILLE (FACE PARALLEL TO PAPER)	
(*) EQUIPMENT DESIGNATIONS	<p>DIFFUSER: D</p> <p>REGISTER: R</p> <p>CEILING DIFFUSER: CD</p> <p>SUPPLY DIFFUSER: SD</p> <p>CEILING REGISTER: CR</p> <p>GRILLE: G</p> <p>WALL GRILLE: WG</p> <p>CEILING GRILLE: CG</p> <p>TRANSFER GRILLE: TG</p> <p>DRUM LOUVER: DL</p> <p>WALL DIFFUSER: WD</p> <p>WALL REGISTER: WR</p>
RECTANGULAR DIFFUSER (SIZE GIVEN REFERS TO NECK SIZE)	
ROUND DIFFUSER (SIZE GIVEN REFERS TO NECK SIZE)	
LINEAR DIFFUSER	
DUCT SECTION (*) S=SUPPLY AIR (*) OA=OUTSIDE AIR	
DUCT SECTION (*) E=EXHAUST AIR (*) RA=RETURN AIR	
ROUND DUCT WITH TRANSITION TO RECTANGULAR DUCT	
SPLITTER DAMPER (WITH ROD & LOCK)	

DESCRIPTION	SYMBOL
TURNING VANES	
DEFLECTING (SPLITTER) DAMPER WITH ROD & LOCK	
AIR EXTRACTOR WITH ROD & LOCK	
SUPPLY DUCT DOWN	
EXHAUST OR RETURN DUCT UP	
FLEXIBLE DUCT CONNECTION	
FLEXIBLE DUCT	
ACCESS DOORS IN DUCT	
OUTLET AIR DIRECTION	
INLET AIR DIRECTION	
DIRECTION OF AIR FLOW IN DUCT	
DUCT SOUND ATTENUATOR	
FIRE DAMPER (RATING NOTED IF OTHER THAN 1/2 HOUR)	

PIPING SYMBOLS	
DESCRIPTION	SYMBOL
HEATING WATER SUPPLY	HWS
HEATING WATER RETURN	HWR
COOLING WATER SUPPLY	CWS
COOLING WATER RETURN	CWR
CHILLED WATER SUPPLY	CHWS
CHILLED WATER RETURN	CHWR
LOW PRESSURE STEAM	LPS
LOW PRESSURE CONDENSATE	LPC
MEDIUM PRESSURE STEAM	MPS
MEDIUM PRESSURE CONDENSATE	MPC
HIGH PRESSURE STEAM	HPS
HIGH PRESSURE CONDENSATE	HPC
FUEL OIL SUPPLY	FOS
FUEL OIL RETURN	FOR
FUEL OIL FILL	FOF
FUEL OIL VENT	FOV
BOILER FEED	BF
NATURAL GAS	NG
LIQUIFIED PETROLEUM GAS	LPG
REFRIGERANT LIQUID	RL
REFRIGERANT SUCTION	RS
REFRIGERANT DISCHARGE	RD
CONDENSATE PUMP DISCHARGE	CPD
COMPRESSED AIR	A
GLYCOL SUPPLY	GLS
GLYCOL RETURN	GLR
PRESSURE & TEMPERATURE TEST PLUG	P&T
BALANCING VALVE	
MANUAL BALANCING & FLOW MEASURING VALVE	
AUTOMATIC BALANCING & FLOW MEASURING VALVE	
TRIPLE DUTY VALVE	

DESCRIPTION	SYMBOL
INLINE PUMP	
BASE MOUNTED PUMP	
PIPE GUIDE	
PIPE ANCHOR	
FLOAT & THERMOSTATIC TRAP	
EXPANSION JOINT	
PIPE FLOW DIRECTION	
PIPE PITCH DOWN (WITH RESPECT TO FLOW)	DN
PIPE PITCH UP (WITH RESPECT TO FLOW)	UP
PIPE CAPPED	
MANUAL AIR VENT	
AUTOMATIC AIR VENT	

TEMPERATURE CONTROL SYMBOLS	
DESCRIPTION	SYMBOL
PRESSURE SENSOR	
DIFFERENTIAL PRESSURE SENSOR	
HUMIDITY SENSOR	
DEW POINT TEMPERATURE SENSOR	
CFM AIR MEASURING STATION	
HIGH TEMPERATURE THERMOSTAT	
LOW TEMPERATURE THERMOSTAT	
SPACE SMOKE DETECTOR	
DUCT SMOKE DETECTOR	
PADDLE FLOW SWITCH	
DIFFERENTIAL PRESSURE FLOW SWITCH	
HAZARDOUS GAS DETECTOR (* INDICATES GAS)	
TEMPERATURE CONTROL PANEL	TCP

TEMPERATURE CONTROL SYMBOLS	
DESCRIPTION	SYMBOL
MOTOR ACTUATOR	
SOLENOID ACTUATOR	
PNEUMATIC ACTUATOR	
2-WAY CONTROL VALVE (WITH SOLENOID ACTUATOR)	
3-WAY CONTROL VALVE (WITH PNEUMATIC ACTUATOR)	
BUTTERFLY CONTROL VALVE (WITH MOTOR ACTUATOR)	
OPPOSED BLADE CONTROL DAMPER (WITH MOTOR ACTUATOR)	
PARALLEL BLADE CONTROL DAMPER (WITH MOTOR ACTUATOR)	
SPACE TEMPERATURE SENSOR/THERMOSTAT	
SPACE HUMIDITY SENSOR/HUMIDISTAT	
TEMPERATURE SENSOR WITH RIGID ELEMENT	
TEMPERATURE SENSOR WITH AVERAGING ELEMENT	

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RECORD DRAWING

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GENERAL HEATING AND VENTILATING SYMBOLS

LOWER BIRD CREEK WASTEWATER FACILITIES
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			FILE:	DRAWING: AH1		DATE: OCTOBER 1994
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PACKAGED AIR CONDITIONING UNITS

UNIT I.D.	LOCATION	AREA(S) SERVED	TYPE	TONS @ 105 DEG. O.A.T.	SUPPLY FAN				SUP. FAN MOTOR		EVAPORATOR COIL			CONDENSER			COMPRESSORS		HEATING		ELECTRICAL		FILTERS		MANUFACTURER MODEL NO.	REMARKS/NOTES		
					TYPE DISCH	BHP CLASS	CFM RPM	EXT SP H2O	O.V. FPM	HP	RPM	TYPE DRIVE	EAT: DB/WB	MBH TONS	VEL FPM	NO. FANS	CFM RPM (EA)	HP (EA)	NO.	BHP HP (EA)	CONTROL	REFR	MBH KW	CONTROL			V/PH/Hz	TOT KW
PUC-1	OFFICE OPERATIONS BLDG	OFFICE OPERATIONS BLDG	WINDOW ROOM AIR CONDITIONER	1.5	-	-	460/330	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CARRIER XCA183D	COMPLETE WITH SLEEVE AND SLIDE OUT CHASIS 3-SPEED COOLING, EER 9.5
PUC-2	CONTROL RM OPERATIONS BLDG	CONTROL RM OPERATIONS BLDG	WINDOW ROOM AIR CONDITIONER	2.0	-	-	600/440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CARRIER YCA243P	COMPLETE WITH SLEEVE AND SLIDE OUT CHASIS 3-SPEED COOLING, EER 8.8
PUC-3	CONTROL RM OPERATIONS BLDG	CONTROL RM OPERATIONS BLDG	WINDOW ROOM AIR CONDITIONER	2.0	-	-	600/440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CARRIER YCA243P	COMPLETE WITH SLEEVE AND SLIDE OUT CHASIS 3-SPEED COOLING, EER 8.8

PACKAGED AIR HANDLING UNITS (GAS/OIL)

UNIT I.D.	AREA(S) SERVED	LOCATION	TYPE	MBH IN OUT	NO. PASSES	HTG. SURF. SQ. FT.	FAN				AIR		MOTOR		BURNER			IND. FAN HP	FILTER		MANUFACTURER MODEL NO.	REMARKS/NOTES		
							TYPE DISCH	DIA NO FANS	CFM RPM	EXT SP H2O	EAT DB	LAT DB	HP	RPM	TYPE DRIVE	FUEL TYPE	GPH CFH		FAN HP	CONTROL			PUMP HP	ARRGT
HVU-1	OPERATIONS BLDG	PUMP ROOM	INDIRECT FIRED HTR	500 400	4	41	CENT VERT	9 2	4150	1.5	39 85	5	460/3/60	TEFC BELT	NO.2 OIL	3.5	1/3	MODULATING	1/4	1/3	ANGLE	-	INDUSTRIAL AIRSYST. MODEL 40	FILTER MIXING BOX

EXHAUST AIR FANS

UNIT I.D.	LOCATION	AREA(S) SERVED	TYPE	FAN				MOTOR				MANUFACTURER MODEL NO.	REMARKS/NOTES			
				TYPE DISCH	DIA CLASS	CFM (HIGH) (LOW)	RPM (HIGH) (LOW)	EXT SP H2O	O.V. FPM	BHP	HP			RPM	ELEC. V/PH/Hz	TYPE DRIVE
EAF-1	CHLORINE ROOM (ROOF)	CHLORINE RM OPERATIONS BLDG	CENTRIFUGAL ROOF EXHAUST	CENT VERT	14	840	1176	0.50	-	0.14	1/4	1750	115/1/60	TEFC BELT	SWARTWOUT 14WA 2B	GRAVITY DAMPER, BIRD SCREEN FIBERGLASS CONSTRUCTION
EAF-2	CHLORINE ROOM (ROOF)	CHLORINE RM OPERATIONS BLDG	CENTRIFUGAL ROOF EXHAUST	CENT VERT	30	4100	557	0.50	-	0.70	3/4	1750	460/3/60	TEFC BELT	SWARTWOUT 30WA 3B	GRAVITY DAMPER, BIRD SCREEN FIBERGLASS CONSTRUCTION
EAF-3	SULFUR DIOXIDE RM (ROOF)	SULFUR DIOXIDE ROOM OPERAT. BLDG	CENTRIFUGAL ROOF EXHAUST	CENT VERT	14	840	1176	0.50	-	0.14	1/4	1750	115/1/60	TEFC BELT	SWARTWOUT 14WA 2B	GRAVITY DAMPER, BIRD SCREEN FIBERGLASS CONSTRUCTION
EAF-4	SULFUR DIOXIDE RM (ROOF)	SULFUR DIOXIDE ROOM OPERAT. BLDG	CENTRIFUGAL ROOF EXHAUST	CENT VERT	30	4100	557	0.50	-	0.70	3/4	1750	460/3/60	TEFC BELT	SWARTWOUT 30WA 3B	GRAVITY DAMPER, BIRD SCREEN FIBERGLASS CONSTRUCTION
EAF-5	TOILET & LOCKER RM (ROOF)	TOILET AND LOCKER ROOM OPERAT. BLDG	CENTRIFUGAL ROOF EXHAUST	CENT VERT	10	200	860	0.25	-	-	1/20	860	115/1/60	TEFC DIRECT	PENN VENTILATOR CO AW 10	GRAVITY DAMPER, BIRD SCREEN
REF-1	PUMP ROOM	OPERATIONS BUILDING	INLINE CENTRIFUGAL	CENT CW HOR	13	2270	1870	0.50	1038	0.76	1	1750	460/3/60	TEFC BELT	GREENHECK BSQ 130-7 RS	

ELECTRIC WATER HEATERS

UNIT I.D.	LOCATION	AREA(S) SERVED	TYPE	TANK GAL.	RECOVERY DEG./GPH	SIZE (")		TOT KW	NO. ELEM.	ELEC. V/PH/Hz	MANUFACTURER MODEL NO.	REMARKS/NOTES
				DIA	HGT							
EWH-1	PUMP ROOM OPERAT. BLDG	VARIOUS	TANK	65	90/41	24	50	9	3	480/3/60	A. O. SMITH DSE-65	

SEWAGE EJECTORS

UNIT I.D.	LOCATION	AREA SERVED	SERVICE	TYPE	SINGLE OR DUPLEX	GPM. (EA)	HEAD H2O	MOTOR				MANUFACTURER MODEL NO.	REMARKS/NOTES	
								BHP	HP	RPM	CONTRCL			
SMP-1	OUTDOOR CLARIFIER	OPERATIONS BUILDING	TOILET RM, FLOOR AND EQUIP. DRAINS	SUBMER-SIBLE	DUPLEX	50	20	-	1/2	1150	MERCURY FLOATS	460/3/60	WEIL PUMP CO SERIES 2700 - 3"	NON-CLOG, STAINLESS STEEL CONSTRUCTION
SMP-2	OUTDOOR CLARIFIER	OPERATIONS BUILDING	TOILET RM, FLOOR AND EQUIP. DRAINS	SUBMER-SIBLE	DUPLEX	50	20	-	1/2	1150	MERCURY FLOATS	460/3/60	WEIL PUMP CO SERIES 2700 - 3"	NON-CLOG, STAINLESS STEEL CONSTRUCTION

PUMPS

UNIT I.D.	LOCATION	SERVICE	TYPE	FLUID			MOTOR			MANUFACTURER MODEL NO.	REMARKS/NOTES	
				GPM	HEAD H2O	% GLYC.	BHP	HP	RPM			
FOP-1	OUTDOOR AT FUEL OIL TANK	FUEL OIL TRANSFER	ROTARY	0.6	30	-	0.1	0.25	800	115/1/60		
FOP-2	OUTDOOR AT FUEL OIL TANK	FUEL OIL TRANSFER	ROTARY	0.6	30	-	0.1	0.25	800	115/1/60		STANDBY

DOMESTIC CIRCULATING PUMPS

UNIT I.D.	LOCATION	SERVICE	TYPE	WATER		MOTOR		MANUFACTURER MODEL NO.	REMARKS/NOTES	
				GPM	HEAD H2O	HP	RPM			
DCP-1	PUMP ROOM OPER. BLDG	HOT WATER SYSTEM	CENTRIFUGAL IN - LINE	5	8	1/12	1750	115/1/60	BELL & GOSSETT SERIES 100	BRONZE CONSTRUCTION

BASEBOARD HEATERS (ELECTRIC)

UNIT I.D.	LOCATION	TYPE	MTG. HTG. IN	APPR. LNGT. FT.	HEATER			MANUFACTURER MODEL NO.	REMARKS/NOTES	
					MBH KW	EAT LAT	NO. STGS.			
EBH-1	OFFICE OPERAT. BLDG	CONVECTOR TYPE PEDESTAL HEATER	-	5	6.4	68	2	208/1/60	QMARK DPH07A-5375	BUILT-IN THERMOSTAT

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GENERAL HEATING AND VENTILATING

SCHEDULES

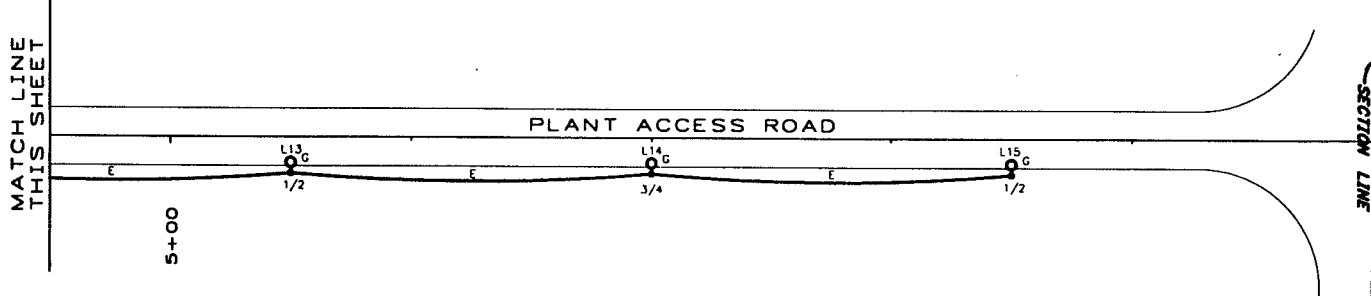
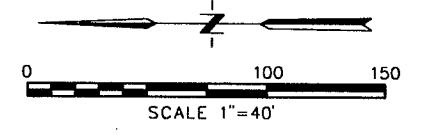
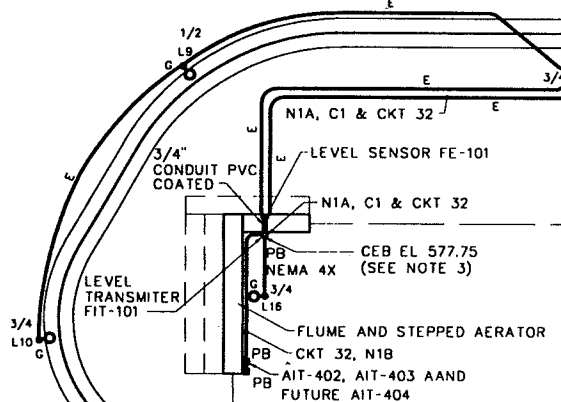
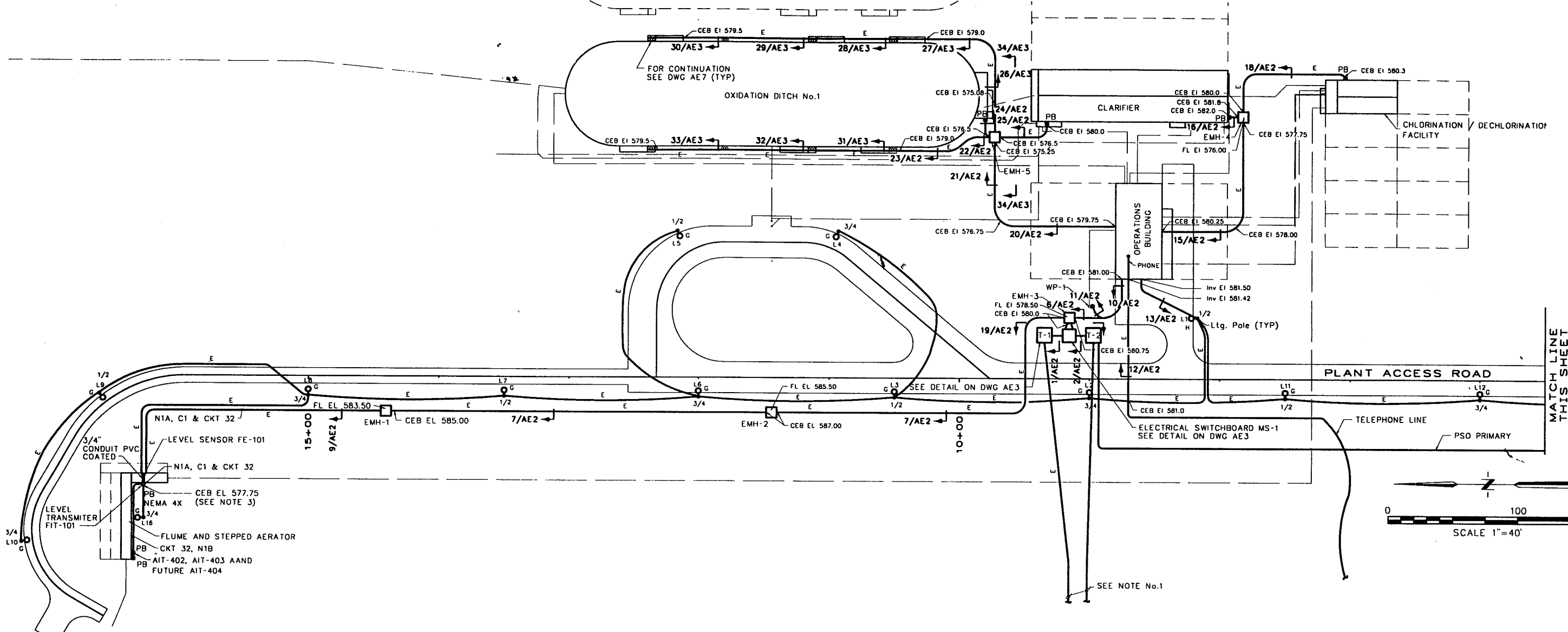
LOWER BIRD CREEK
WASTEWATER FACILITIES
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			FILE:	DRAWING: AH2		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 15 OF 49 SHEETS



NOTES

1. PROVIDE CONCRETE ENCASED CONDUITS FROM TRANSFORMERS (PRIMARY) TO UTILITY POLES AS REQUIRED BY PSO. COORDINATE WITH PSO AND DETERMINE EXACT ROUTING OF CONDUITS IN FIELD. STUB CONDUITS 6" ABOVE GRADE AT POLES.
2. CONDUIT ENCASEMENT BOTTOM (CEB) ELEVATIONS SHOWN INDICATE THE BOTTOM OF THE CONCRETE ENCASEMENT AT THE ENTRANCE TO STRUCTURE UNLESS NOTED OTHERWISE.
3. MAKE WEEP HOLE AT THE LOW POINT OF UNDERGROUND ELECTRICAL CONDUITS.

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GENERAL
ELECTRICAL

SITE PLAN

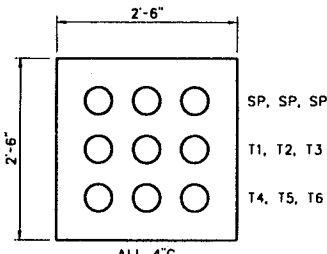
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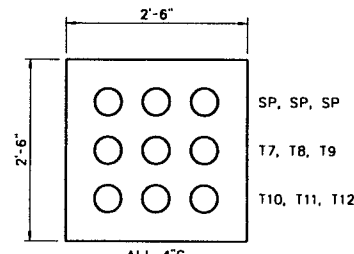
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REVISION	BY	DATE	PLAN SCALE	DRAWN	CKD	APPROVED
RECORD DRAWING	EAJ	9-1 1996	1" = 40'	DESIGNED	GJ	
REVISIONS				SURVEY		
				FIELD MGR		
				SECT MGR		
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				RECOMMENDED		
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				FILE:	DRAWING: AE1	DATE: OCTOBER 1994
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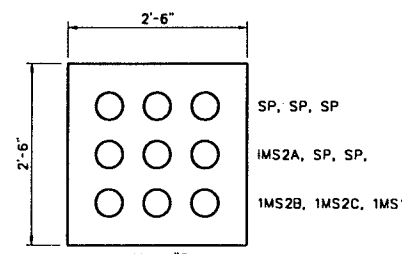
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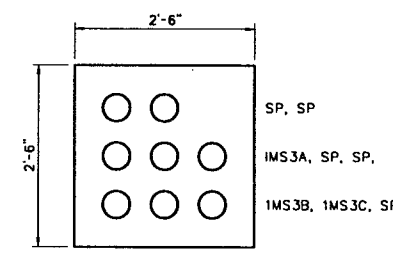
SECTION 1/AE1,AE3



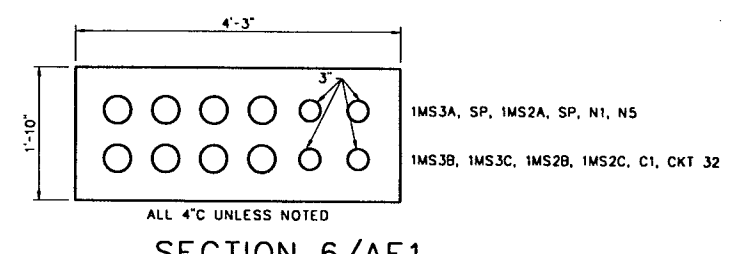
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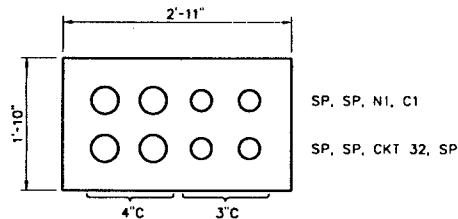
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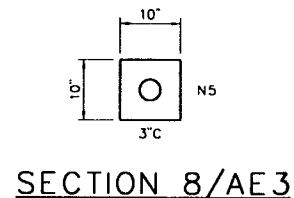
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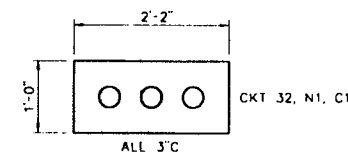
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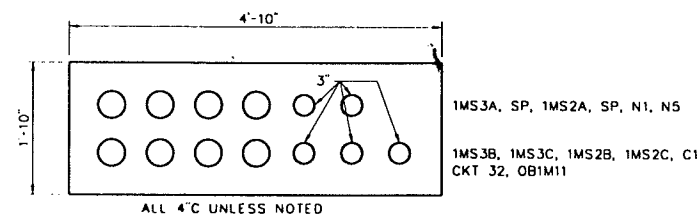
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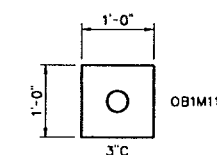
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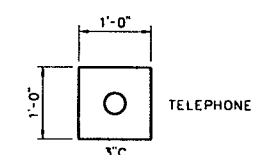
SECTION 9/AE1



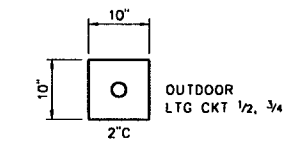
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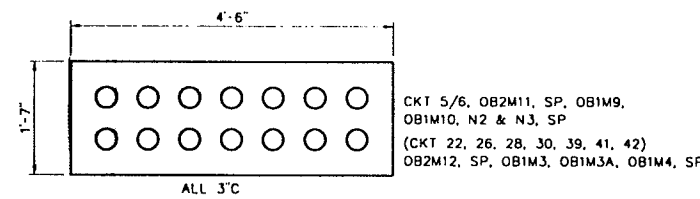
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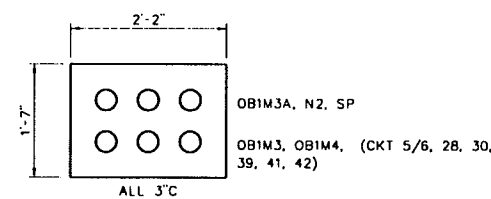
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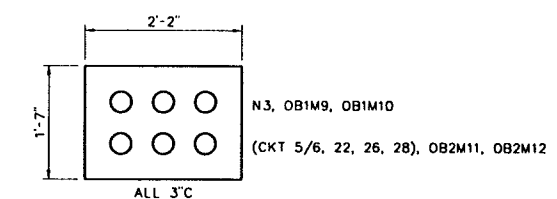
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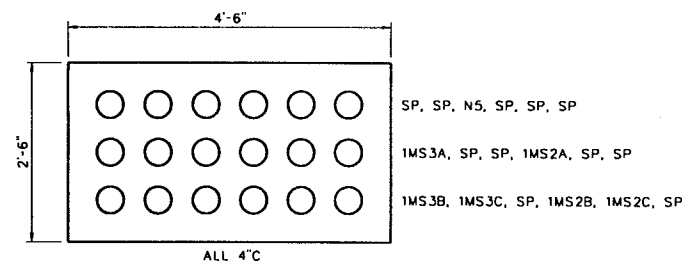
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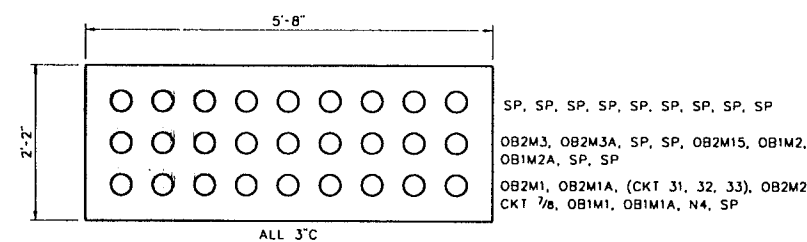
SECTION 16/AE1,AE7



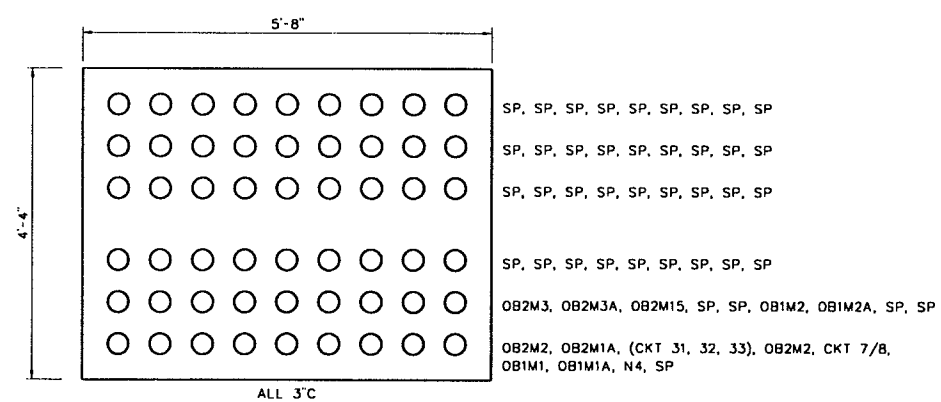
SECTION 18/AE1,AE7



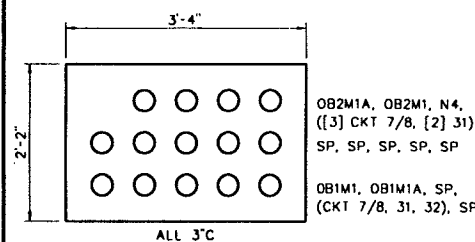
SECTION 19/AE1,AE3



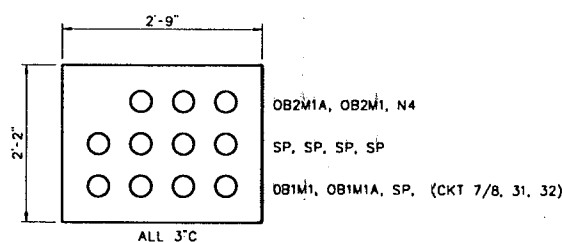
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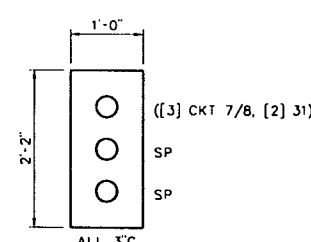
SECTION 21/AE1



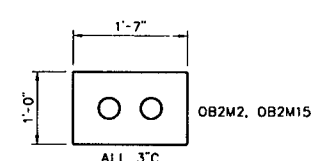
SECTION 22/AE2



SECTION 23/AE2



SECTION 24/AE1, AE7



SECTION 25/AE2,AE8

NOTE:

SECTION NO. 3 - NOT USED
SECTION NO. 14 - NOT USED
SECTION NO. 17 - NOT USED

REVISION	BY	DATE	PLAN SCALE	DRAWN	LCC	APPROVED
RECORD DRAWING	EAJ	1996	NONE	DESIGNED	GJ	
REVISIONS				SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT MGR		
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				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AE2		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 17 OF 49 SHEETS

RECORD DRAWING

THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

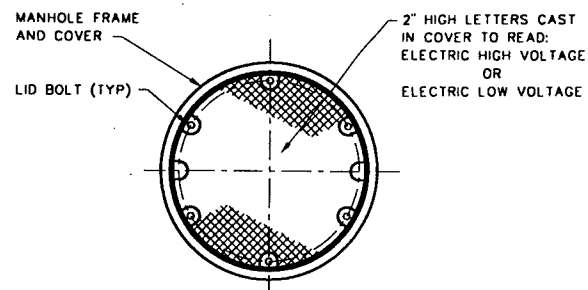
GENERAL ELECTRICAL

SECTIONS

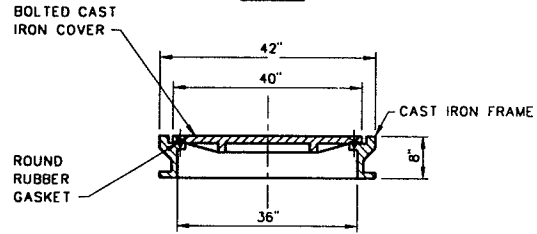
LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

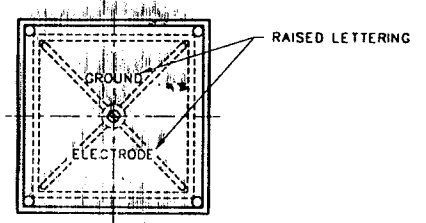


PLAN

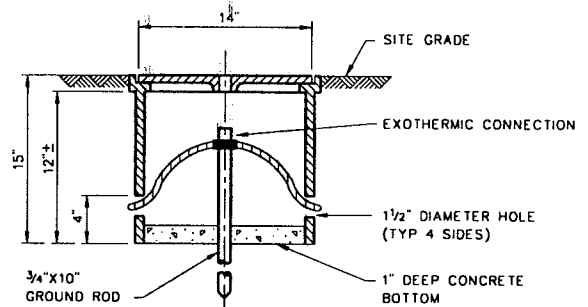


ELEVATION

ELECTRICAL MANHOLE FRAME AND DETAIL

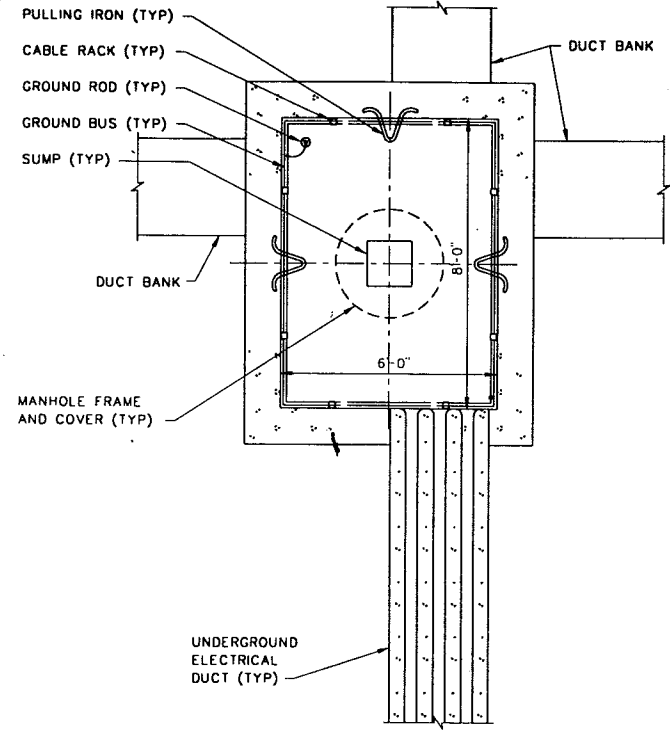


PLAN

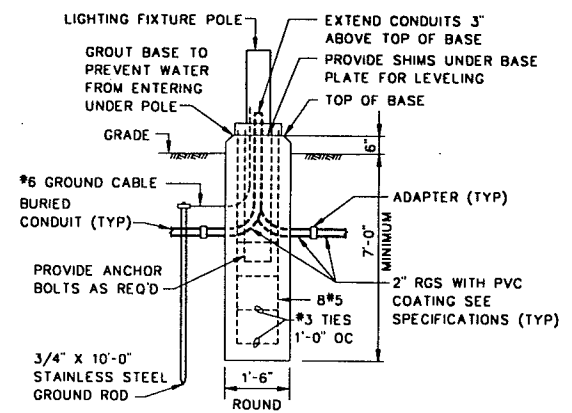


ELEVATION

GROUND ROD AND ACCESS BOX DETAIL



ELECTRICAL MANHOLE TYPICAL PLAN

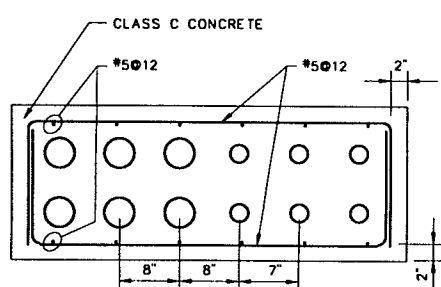


LIGHTING FIXTURE POLE BASE

NOT TO SCALE
(SEE SHOP DRAWING/
APPROVED SUBMITTAL)

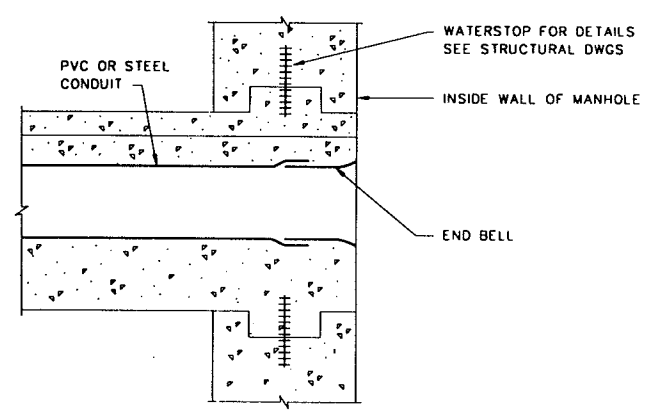
NOTES:

1. SEE DWG AE1 FOR MANHOLE LOCATIONS.
2. FOR CONSTRUCTION OF MANHOLES SEE SPECIFICATION REQUIREMENTS.
3. PROVIDE A 1/4"x1/2" COPPER GROUND BUS IN EACH MANHOLE SPACED 1/2" FROM MANHOLE WALL AND LOCATE APPROXIMATELY 1'-0" ABOVE MANHOLE FLOOR.
4. PROVIDE A 3/4"x10'-0" COPPER CLAD STEEL SOLID GROUND ROD WITH TOP OF ROD 6" ABOVE MANHOLE FLOOR. CONNECT GROUND BUS TO GROUND RODS WITH #4/0 BARE COPPER CABLE USING EXOTHERMIC CONNECTIONS.
5. FIT ALL ELECTRICAL DUCTS TERMINATING IN MANHOLES WITH BELL ENDS INSTALLED FLUSH WITH THE INSIDE WALL OF THE MANHOLE, SEE DETAIL THIS DWG.
6. CONNECT ALL GROUND WIRES IN DUCTS TERMINATING IN MANHOLES TO GROUND BUS USING EXOTHERMIC CONNECTIONS. PROVIDE 500 MCM CU GROUNDING JUMPER TO MEDIUM VOLTAGE PRIMARY SIDE GROUND PAD.
7. FIT RIGID STEEL ELECTRICAL DUCTS WITH GROUNDING BUSHINGS EXTENDING 1" BEYOND THE INSIDE WALL OF THE MANHOLE. CONNECT GROUNDING BUSHINGS VIA GROUNDING WIRE TO THE MANHOLE GROUND BUS.
8. GROUND ALL INTERNAL HARDWARE TO THE MANHOLE GROUND BUS USING #6 AWG BARE COPPER GROUND CABLE.



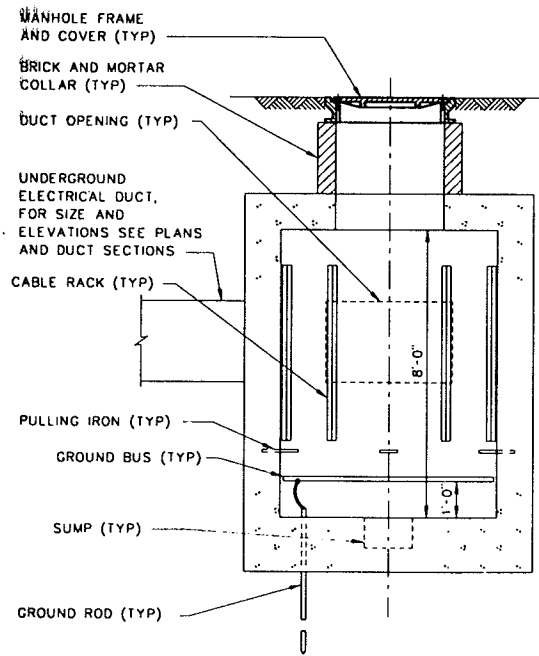
TYPICAL REINFORCING FOR CONCRETE, ENCASED DUCT

SEE PLANS FOR ACTUAL DUCT SIZES

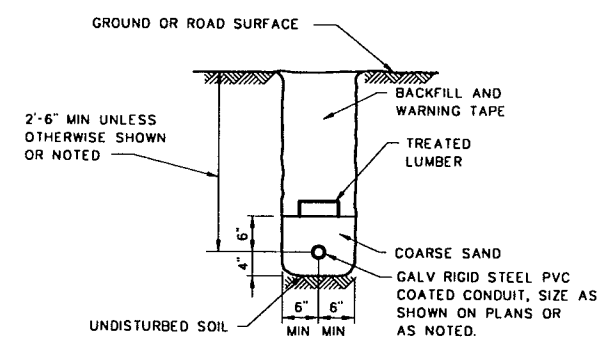


CONDUIT ENTRANCE AT MANHOLE DETAIL

(SEE SHOP DRAWING/APPROVED SUBMITTAL)



ELECTRICAL CONCRETE MANHOLE TYPICAL SECTION



DIRECT BURIED CONDUIT

NOT TO SCALE

RECORD DRAWING

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GENERAL ELECTRICAL MANHOLES SECTIONS AND DETAILS

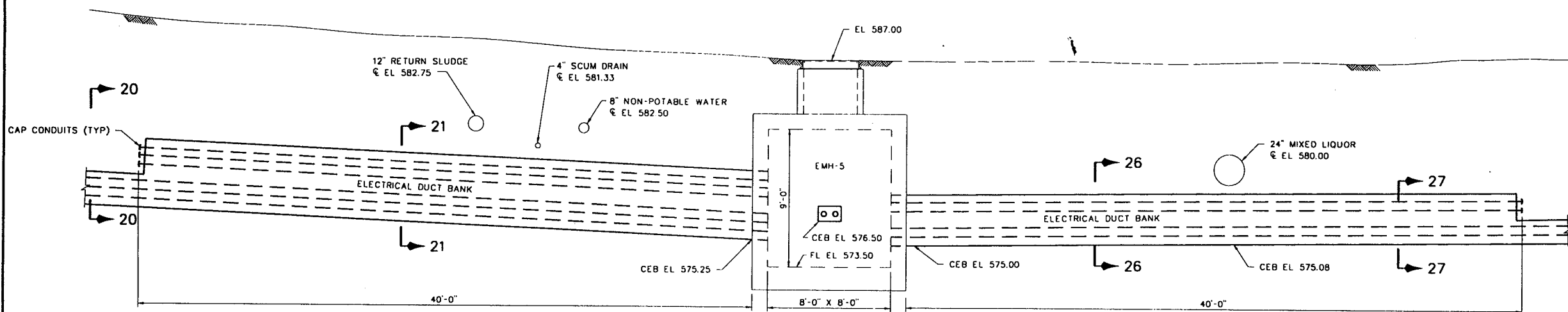
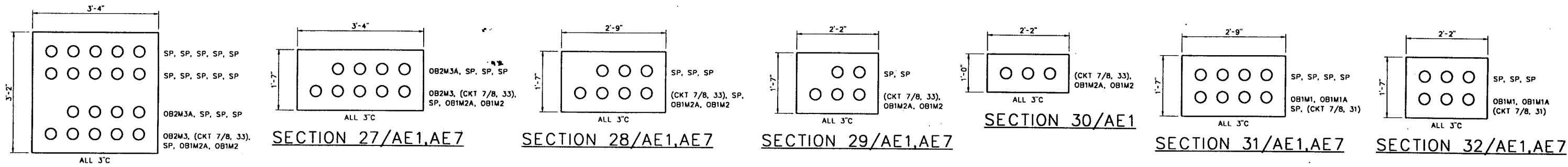
LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

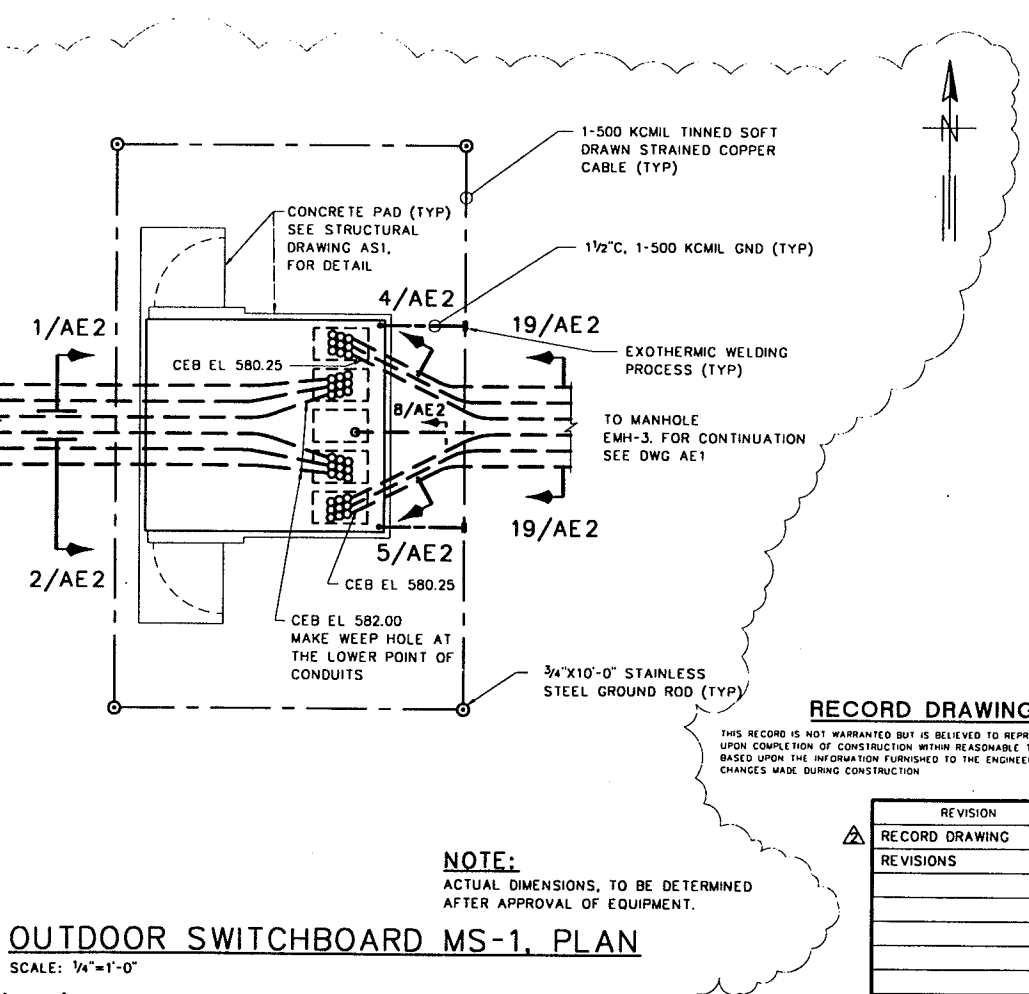
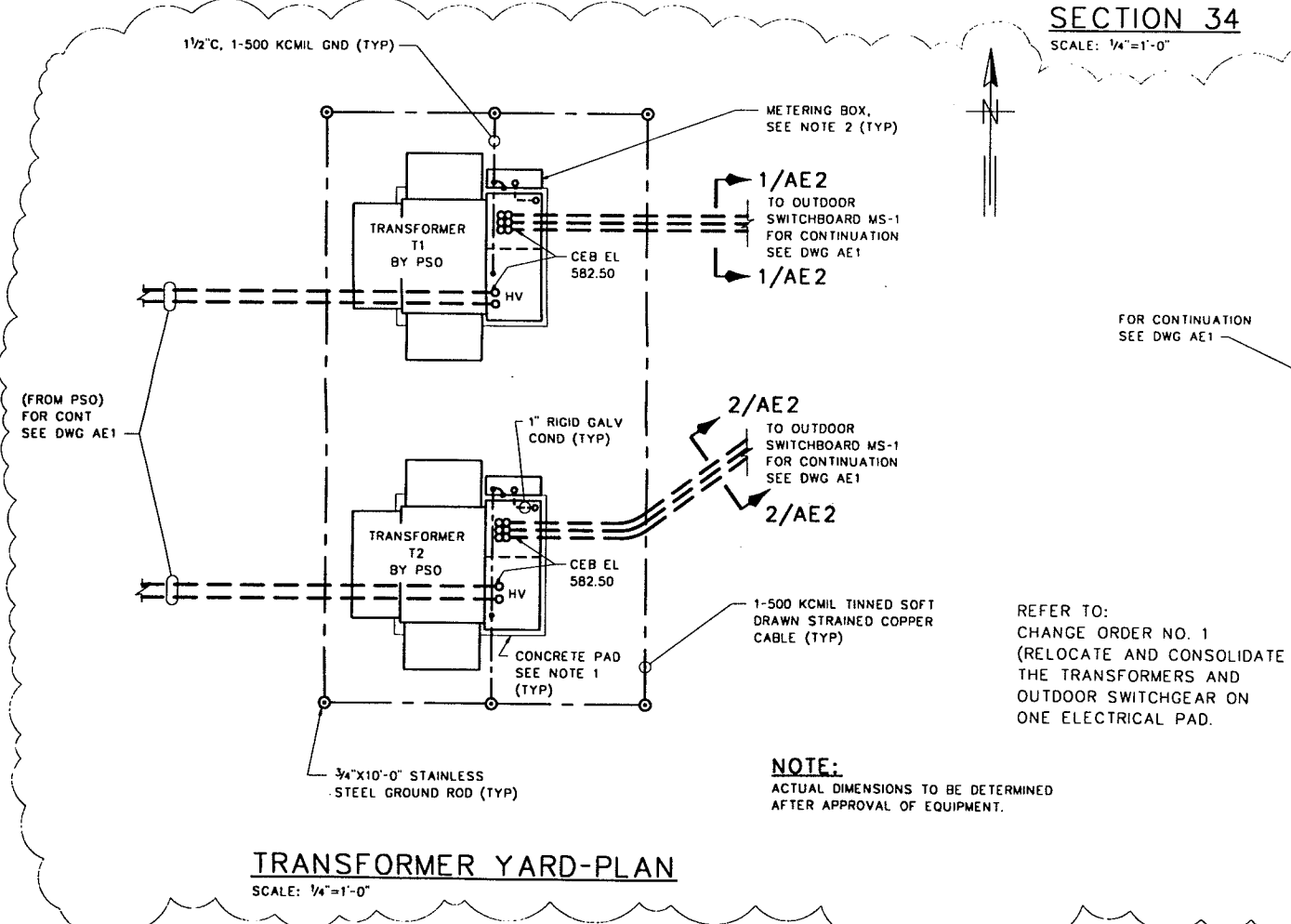
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REVISIONS	EAJ	1996		SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
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				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AE4		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 19 OF 49 SHEETS

FILE: 10/15/94 11:17/20/94 15.45 00-1



NOTES:

1. FOR TRANSFORMER PAD, FOLLOW REQUIREMENTS ON PSO DWG 36160-1, PAGE U-501.4 ISSUED 1/18/72.
2. METERING BOX, PER PSO SERVICE METERING REQUIREMENTS ON PSO DWG. 36161-1, PAGE U-645.0 ISSUED 2/9/73.



SECTION 34
SCALE: 1/4"=1'-0"

TRANSFORMER YARD-PLAN
SCALE: 1/4"=1'-0"

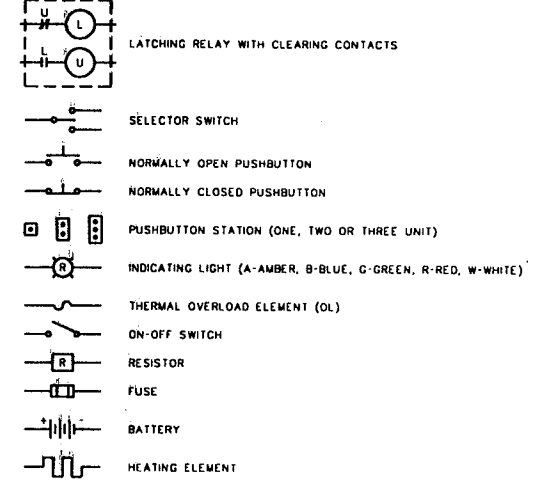
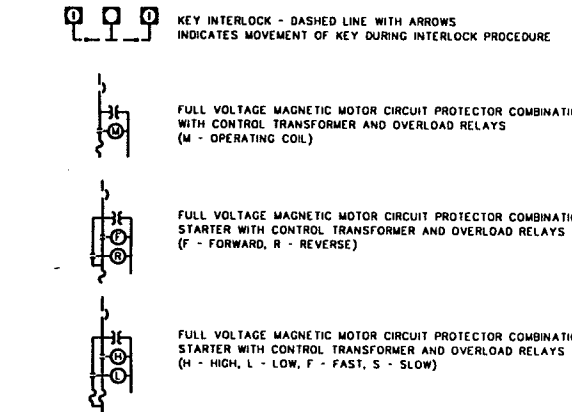
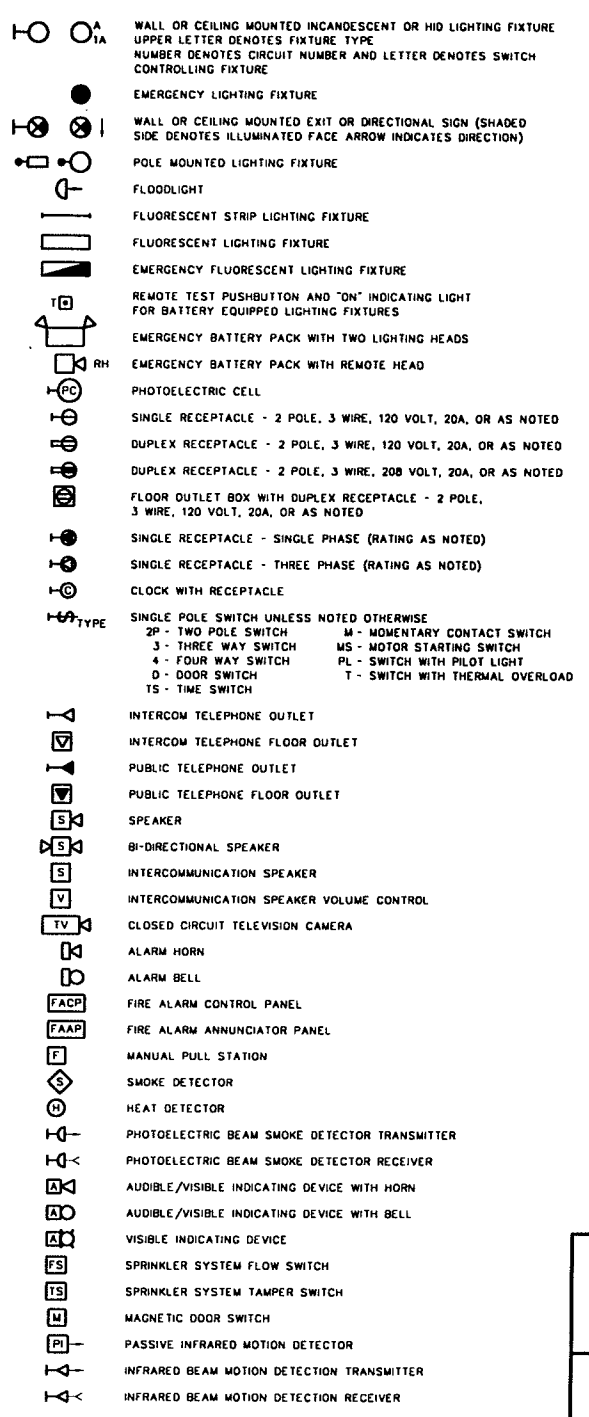
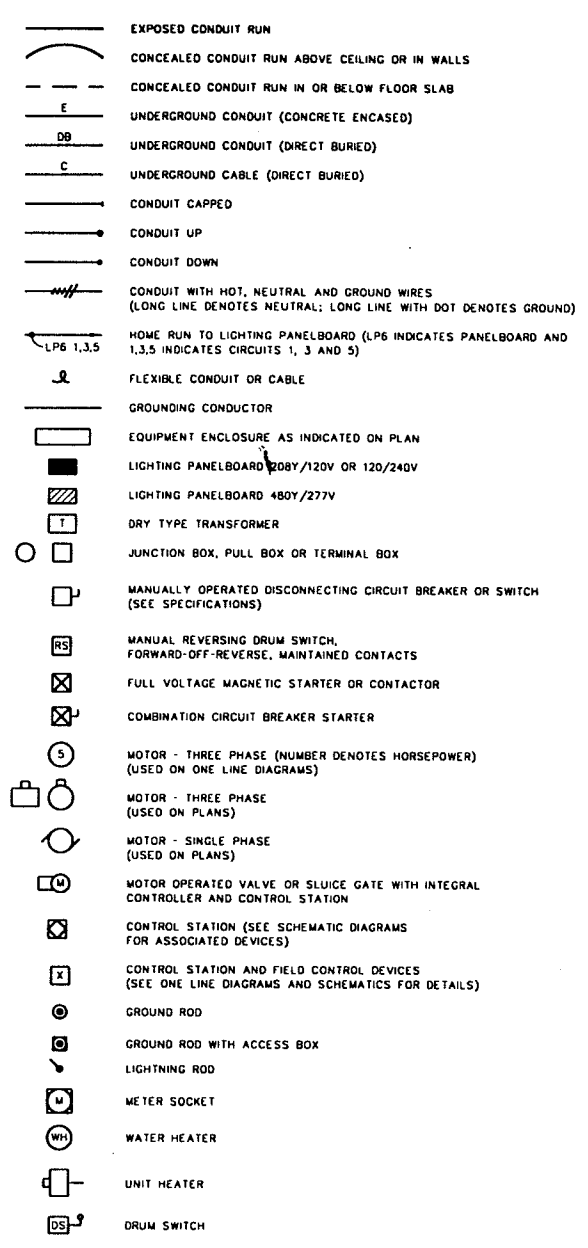
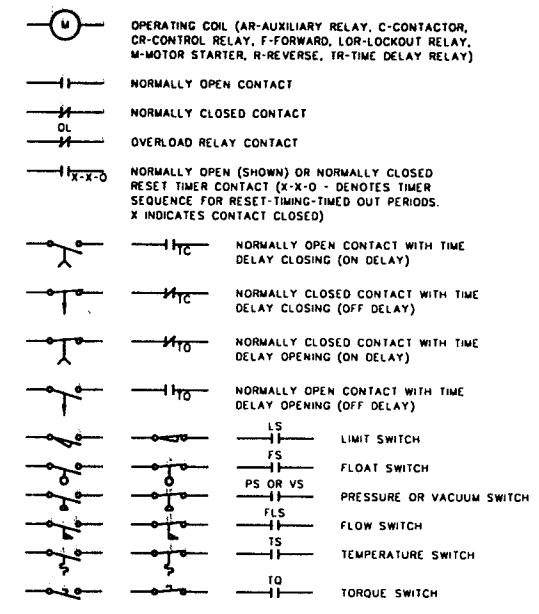
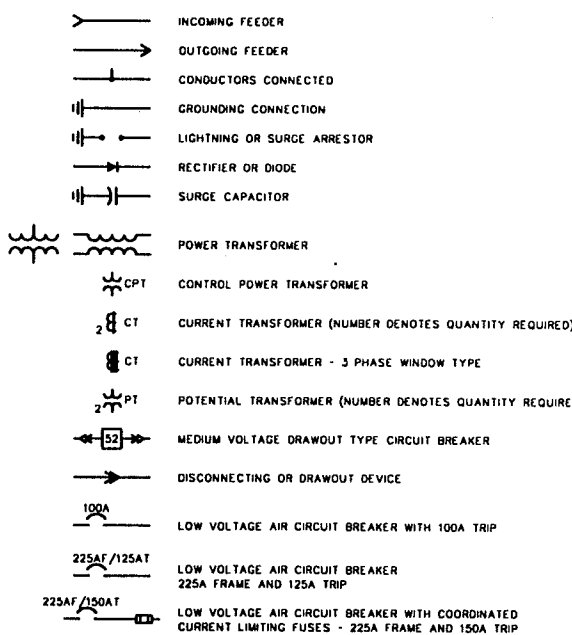
OUTDOOR SWITCHBOARD MS-1, PLAN
SCALE: 1/4"=1'-0"

GENERAL ELECTRICAL					
SECTIONS AND DETAILS					
LOWER BIRD CREEK WASTEWATER FACILITIES PROJECT NO. TMUA SA 92-3 CONTRACT NO. 1 WASTEWATER TREATMENT PLANT					
CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES DIVISION					
PLANS AND ESTIMATES PREPARED BY:					
Greeley and Hansen ENGINEERS 100 SOUTH WACKER DRIVE CHICAGO, ILLINOIS 60606					

RECORD DRAWING

THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

REVISION	BY	DATE	PLAN SCALE	DRAWN	LCC	APPROVED
RECORD DRAWING		9-1	NONE	DESIGNED	GJ	
REVISIONS	EAJ	1996		SURVEY		
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				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AE3		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 18 OF 49 SHEETS



- PROTECTIVE RELAYS:**
25 - SYNCHRONIZING CHECK
27 - UNDERVOLTAGE
32 - REVERSE POWER
43 - SELECTOR SWITCH
49 - THERMAL
50 - INSTANTANEOUS OVERCURRENT
51 - AC TIME OVERCURRENT
52 - AC CIRCUIT BREAKER
60 - VOLTAGE OR CURRENT BALANCE
62 - TIME DELAY
64 - GROUND
67 - DIRECTIONAL OVERCURRENT
86 - LOCKOUT
87 - DIFFERENTIAL CURRENT
DBX - DEAD BUS AUXILIARY
C - DEVICE IN GROUND CIRCUIT
CSR - GROUND SENSING
IR - INTERPOSING
LOR - LOCKOUT
N - DEVICE IN NEUTRAL CIRCUIT
PSR - PHASE SENSING
X - AUXILIARY
- METER, INSTRUMENT OR INSTRUMENT SWITCHES:**
A - AMMETER
AS - AMMETER SWITCH
AT - CURRENT TRANSDUCER
CS - BREAKER CONTROL SWITCH
DT - DUTY TRANSFER SWITCH
PF - POWER FACTOR METER
POT - POTENTIOMETER
SI - SPEED INDICATOR
SS - SELECTOR SWITCH
TM - ELAPSED TIME METER
TMR - TIMER
V - VOLTMETER
VAR - VAR METER
VART - VARS TRANSDUCER
VS - VOLTMETER SWITCH
VT - VOLTAGE TRANSDUCER
W - WATTMETER
WHD - WATTHOUR DEMAND METER
WH - WATTHOUR METER
WT - WATTS TRANSDUCER
ZT - POSITION TRANSMITTER
- CONTROL DEVICES:**
DPS - DIFFERENTIAL PRESSURE SWITCH
FS - FLOAT SWITCH
FLS - FLOW SWITCH
LLS - LEVEL SWITCH
LS - LIMIT SWITCH
PS - PRESSURE SWITCH
RDS - REVERSING DRUM SWITCH
ST - SHUNT TRIP
SV - SOLENOID VALVE
T - THERMOSTAT
TQ - TORQUE SWITCH
TS - TEMPERATURE SWITCH
VIB - VIBRATION SWITCH
VS - VACUUM SWITCH

ABBREVIATIONS

- AFF - ABOVE FINISHED FLOOR
ATS - AUTOMATIC TRANSFER SWITCH
DP - DISTRIBUTION PANELBOARD
DTC - DATA TERMINAL CABINET
LCP - LIGHTING CONTROL PANEL
LP - LIGHTING PANELBOARD
MH - MOUNTING HEIGHT
RTU - REMOTE TERMINAL UNIT
TCP - TEMPERATURE CONTROL PANEL
TTC - TELEPHONE TERMINAL CABINET
WP - WEATHERPROOF
XP - EXPLOSION-PROOF
PC - PHOTOCELL
CEB - CONDUIT ENCASEMENT BOTTOM
GND - GROUND

NOTE:
THIS IS A GENERAL LEGEND PROVIDED TO FACILITATE USE OF THE ELECTRICAL DRAWINGS. ALL SYMBOLS MAY NOT BE USED IN THIS SET OF ELECTRICAL DRAWINGS. REFER TO THE DRAWINGS AND SPECIFICATIONS FOR ITEMS REQUIRED.

RECORD DRAWING

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GENERAL ELECTRICAL

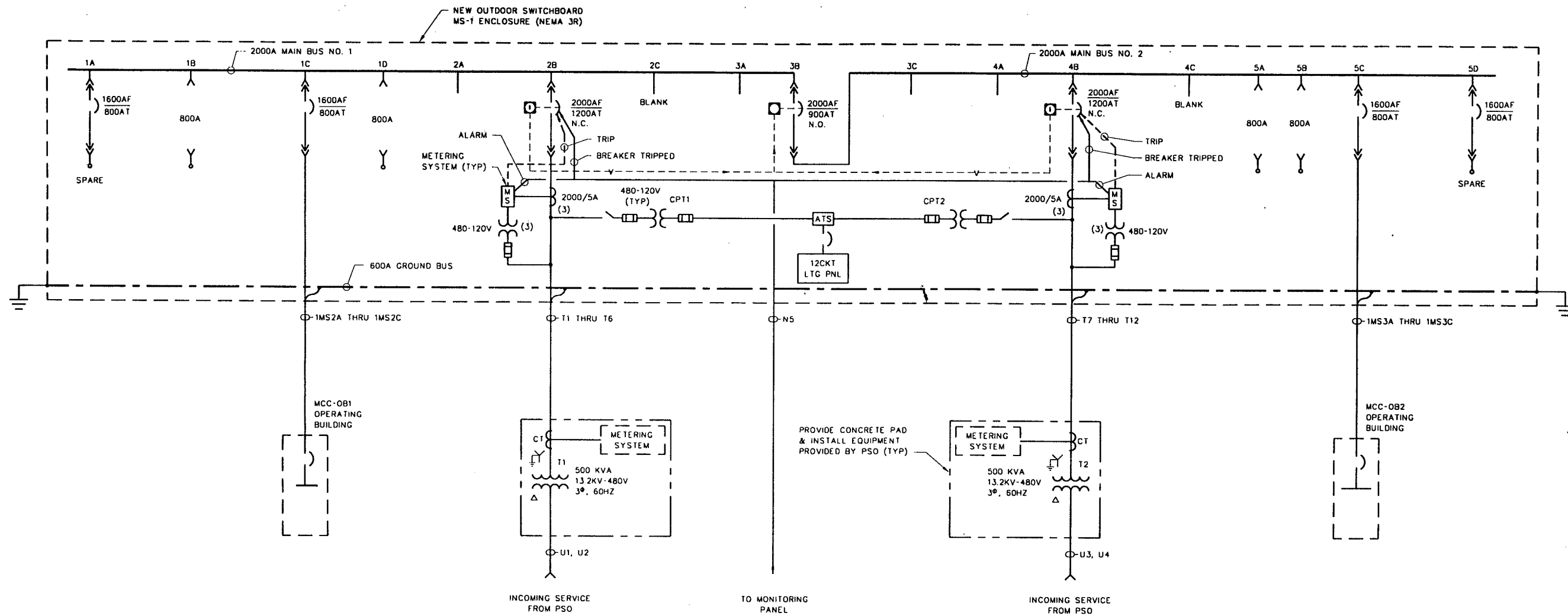
SYMBOL LEGEND

LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

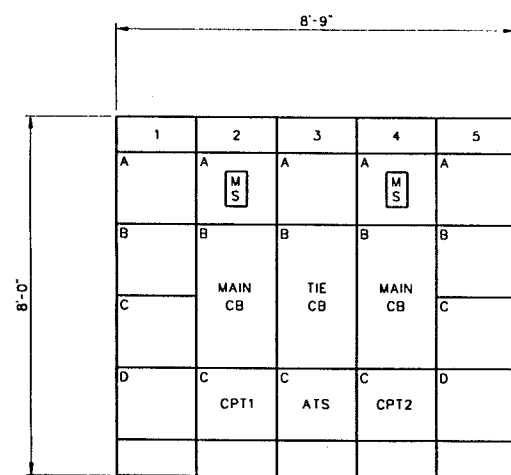
CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

REVISION	BY	DATE	PLAN SCALE	DRAWN	LCC	APPROVED
			NONE	DESIGNED		
				SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
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				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AES		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 20 OF 49 SHEETS



MAIN SWITCHBOARD MS-1 ONE LINE DIAGRAM
480V, 3 ϕ , 3W, 60HZ



MAIN SWITCHBOARD MS-1 FRONT ELEVATION (INSIDE)
NOT TO SCALE

RECORD DRAWING

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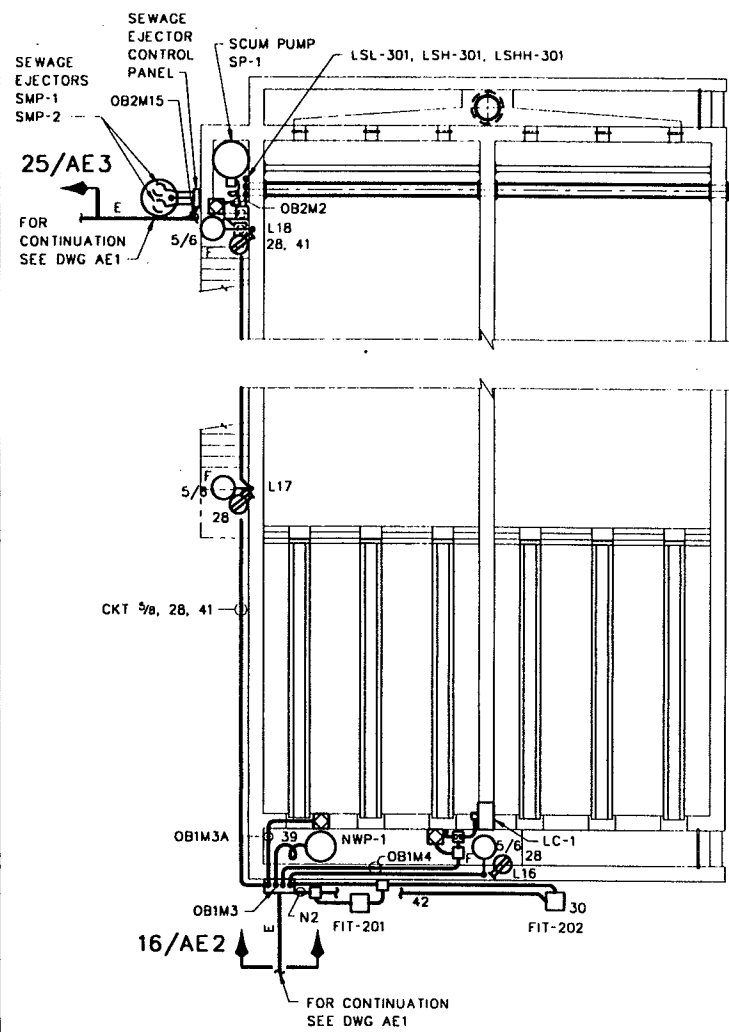
GENERAL ELECTRICAL SWITCHBOARD MS-1 ONE LINE DIAGRAM

LOWER BIRD CREEK WASTEWATER FACILITIES PROJECT NO. TMUA SA 92-3 CONTRACT NO. 1 WASTEWATER TREATMENT PLANT

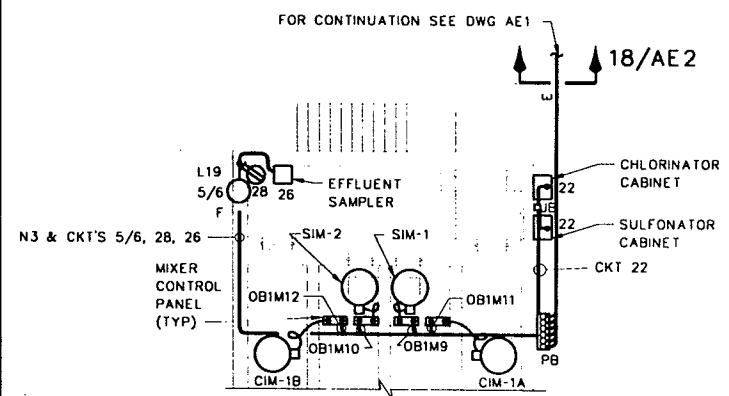
CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES DIVISION

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CHICAGO, ILLINOIS 60606

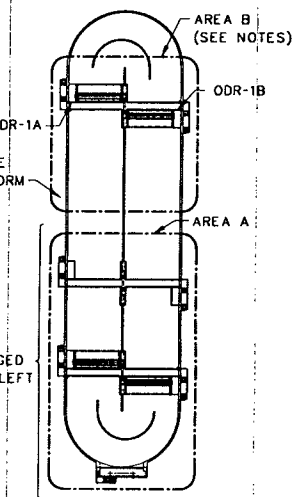
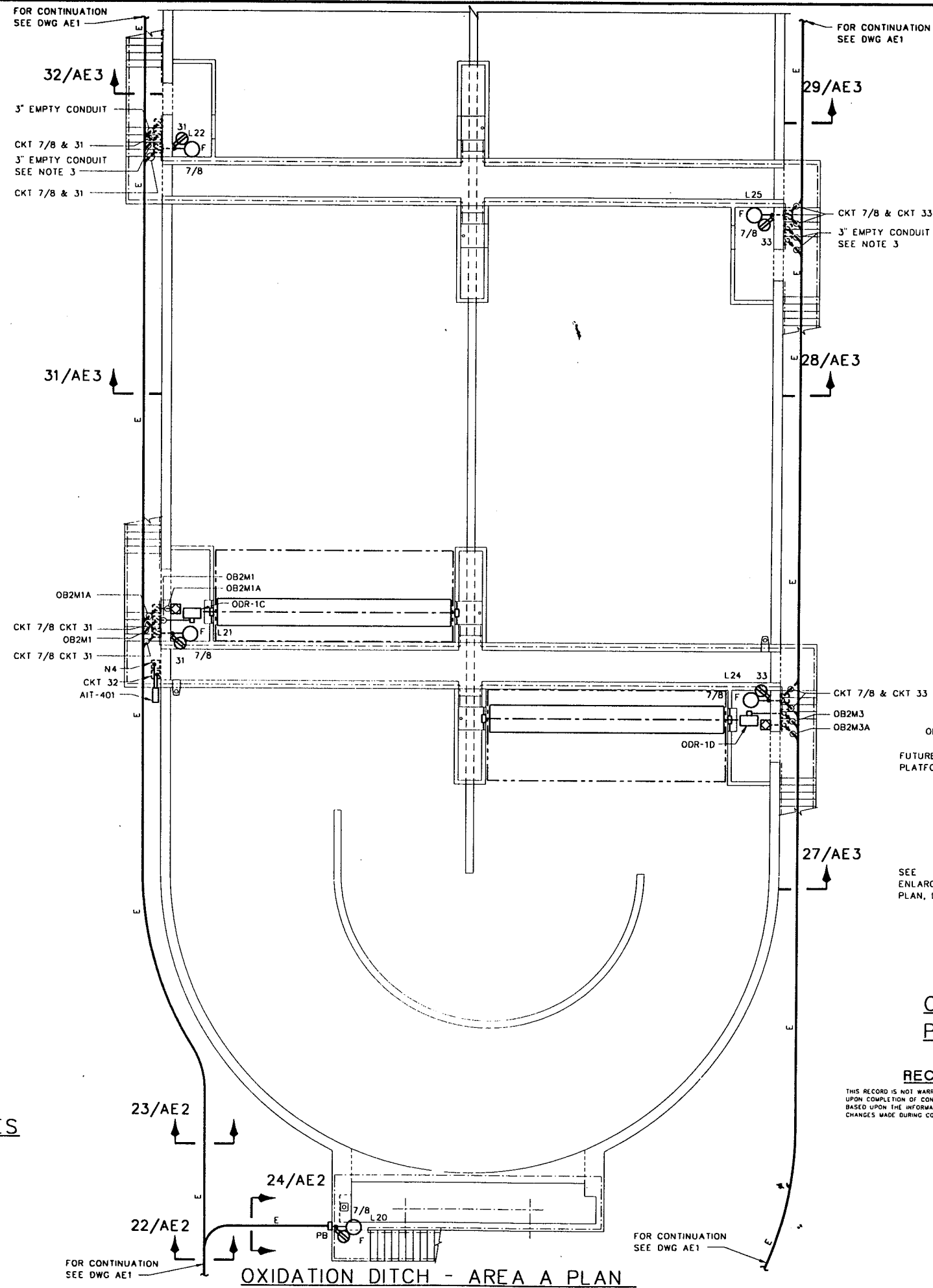
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				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AEB		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 21 OF 49 SHEETS



CLARIFIER - PARTIAL PLAN



CHLORINATION/DECHLORINATION FACILITIES PARTIAL PLAN



OXIDATION DITCH PLAN KEY

RECORD DRAWING
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- NOTES:**
- LIGHTING, POWER AND CONTROL FOR AREA "B" IS SIMILAR TO AREA "A" REFER TO OXIDATION DITCH AREA A PLAN AND SITE PLAN ON AE1.
 - AREA "B" LIGHTING (L23 & L26) IS CONNECTED ON CKT 7/8 AND RECEPTACLES ON CKT'S 31 & 33.
 - POWER AND CONTROL FOR AREA "B" IS SIMILAR TO AREA "A" EXCEPT AS FOLLOWS:
 - OXIDATION DITCH ROTOR DRIVES ODR-1A AND ODR-1B SHALL BE CONNECTED WITH CONDUITS NO: OB1M1, OB1M1A, OB1M2 & OB1M2A.
 - FOR THE FUTURE PLATFORMS LOCATED IN AREA "B" SOUTH OF ODR-1A, ODR-1B, ALL UNDERGROUND CONDUITS FOR POWER, CONTROL AND LIGHTING SHALL BE TERMINATED WITH PULL BOXES LOCATED ON THE OXIDATION DITCH TANK WALLS.
 - THE UNDERGROUND CONDUITS FOR FUTURE ROTORS SHALL BE TERMINATED WITH PULL BOXES LOCATED UNDER STAIRS ON THE OXIDATION DITCH TANK WALLS.

GENERAL ELECTRICAL MISCELLANEOUS POWER AND LIGHTING PLANS
LOWER BIRD CREEK WASTEWATER FACILITIES PROJECT NO. TMUA SA 92-3 CONTRACT NO. 1 WASTEWATER TREATMENT PLANT
CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

REVISION	BY	DATE	PLAN SCALE	DRAWN	AF	APPROVED
RECORD DRAWING		9-1	1/8"=1'-0"	DESIGNED	GJ	
REVISIONS	EAJ	1996		SURVEY		
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			FILE:	DRAWING: AE7		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 22 OF 49 SHEETS

FILE: B04E11.1 11/18/95 14:37 DWG-A

CONDUIT AND CABLE SCHEDULE

CONDUIT		CONDUCTOR QUANTITY & SIZE	FROM	TO	REMARKS
NUMBER	SIZE				
480 VOLT FEEDERS FROM TRANSFORMERS					
T1	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T1	SWITCHBOARD MS-1	BUS NO. 1
T2	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T1	SWITCHBOARD MS-1	BUS NO. 1
T3	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T1	SWITCHBOARD MS-1	BUS NO. 1
T4	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T1	SWITCHBOARD MS-1	BUS NO. 1
T5	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T1	SWITCHBOARD MS-1	BUS NO. 1
T6	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T1	SWITCHBOARD MS-1	BUS NO. 1
T7	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T2	SWITCHBOARD MS-1	BUS NO. 2
T8	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T2	SWITCHBOARD MS-1	BUS NO. 2
T9	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T2	SWITCHBOARD MS-1	BUS NO. 2
T10	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T2	SWITCHBOARD MS-1	BUS NO. 2
T11	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T2	SWITCHBOARD MS-1	BUS NO. 2
T12	4	3-500 kcmil & 1#2/0 GND	TRANSFORMER T2	SWITCHBOARD MS-1	BUS NO. 2
480 VOLT FEEDERS FROM SWITCHBOARD MS-1					
IMS2A	4	3-500 kcmil & 1#2/0 GND	MS-1	MCC-OB1	
IMS2B	4	3-500 kcmil & 1#2/0 GND	MS-1	MCC-OB1	
IMS2C	4	3-500 kcmil & 1#2/0 GND	MS-1	MCC-OB1	
IMS3A	4	3-500 kcmil & 1#2/0 GND	MS-1	MCC-OB2	
IMS3B	4	3-500 kcmil & 1#2/0 GND	MS-1	MCC-OB2	
IMS3C	4	3-500 kcmil & 1#2/0 GND	MS-1	MCC-OB2	
CONTROL CONDUITS					
C1	3/4	2#12 & 1#12 GND	FIT-101	MONITORING PANEL	
INSTRUMENTATION CONDUITS					
N1	1-1/4	6-2/C#16 SHLD	MONITORING PANEL	JB NEAR FIT-101	2 SPARE
N1A	3/4	1/2/C#16 SHLD	JB NEAR FIT-101	FIT-101	
N1B	1	4-2/C#16 SHLD	JB NEAR FIT-101	JB NEAR AIT-402	1 SPARE
N1C	3/4	1-2/C#16 SHLD	JB NEAR AIT-402	AIT-402	
N1D	3/4	1-2/C#16 SHLD	JB NEAR AIT-402	AIT-403	

LIGHTING FIXTURE SCHEDULE

MARK	MANUFACTURER OR EQUAL	CATALOG NUMBER	VOLTS	LAMPS			MOUNTING		DESCRIPTION
				NO.	WATTS	TYPE			
A	METALUX	2G440A125-120-LE3	120	4	34	FLUOR. F40T12	RECESS	METAL PAN CLG SUSP	2' X 4' FLUORESCENT STATIC TROFFER WITH BAKED WHITE ENAMEL FINISH, LATCHED DOOR, 0.125" THICK ACRYLIC LENS.
B	METALUX	G240A125-120-LE3	120	2	34	FLUOR. F40T12	RECESS	METAL PAN CLG SUSP	SAME AS MARK A EXCEPT 1' X 4'
C	METALUX	VT2-240DR-120-LE3	120	2	34	FLUOR. F40T12	SUSP 12 FT	CLG	4' LONG ENCLOSED FLUORESCENT FIXTURE, REINFORCED FIBERGLASS HOUSING, ACRYLIC LENS, LISTED AS SUITABLE FOR CORROSIVE AREAS.
D	HALO	H75/T-406P	120	1	60	INC. A19	RECESS	METAL PAN SUSP	INCANDESCENT DOWNLIGHT WITH LENS AND DIFFUSER, WET LOCATION LISTED FOR SHOWER LIGHT APPLICATIONS, WHITE FINISH.
E	DEVINE LIGHTING	E551-W65-50HPS	120	1	150	HPS	RECESS	CLG	HPS RECESSED FIXTURE LISTED FOR EXTERIOR INSTALLATIONS WITH PRISMATIC GLASS LENS.
F	MCGRAW EDISON	CS7222480 WITH CA40 BRACKET SSA4110WC POLE	480	1	250	HPS	10 FT	POLE	HPS AREA FIXTURE, 480V BALLAST, DIRECT ARM BRACKET, HOUSING AND HINGED ALUMINUM DOOR FRAME, BRONZE FINISH, TEMPERED GLASS LENS, TYPE III OPTICAL ASSEMBLY.
G	MCGRAW EDISON	CS7262480 WITH CA40 BRACKET SSA6M30WC POLE	480	1	400	HPS	30 FT	POLE	HPS ROADWAY FIXTURE, 480V BALLAST, DIRECT ARM BRACKET, HOUSING AND HINGED ALUMINUM DOOR FRAME, BRONZE FINISH, TEMPERED GLASS LENS, TYPE III OPTICAL ASSEMBLY.
H	MCGRAW EDISON	CS7264480 WITH CA40 BRACKET SSA6M30WC POLE	480	1	400	HPS	30 FT	POLE	SAME AS MARK G, EXCEPT FORWARD THROW.
XA	ALKCO	EAX-12-FL-12	120	2	8	FLUOR. FBT5	SURF	WALL	SINGLE FACE WITH DOWNLIGHT, EMERGENCY BATTERY PACKAGE, GLASS PANEL, 6" RED LETTERS ON WHITE BACKGROUND BRONZE FINISH.

RECORD DRAWING

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**GENERAL
ELECTRICAL
LIGHTING FIXTURES, CONDUIT
AND CABLE SCHEDULE**

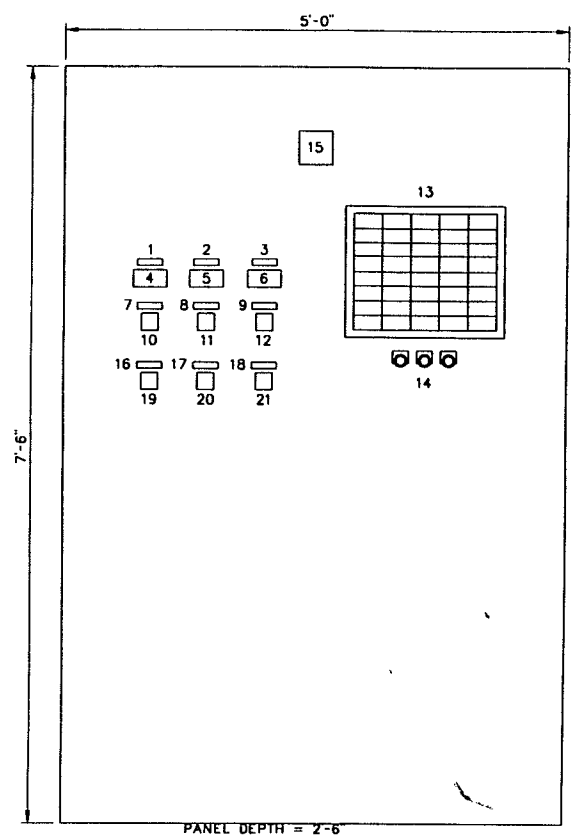
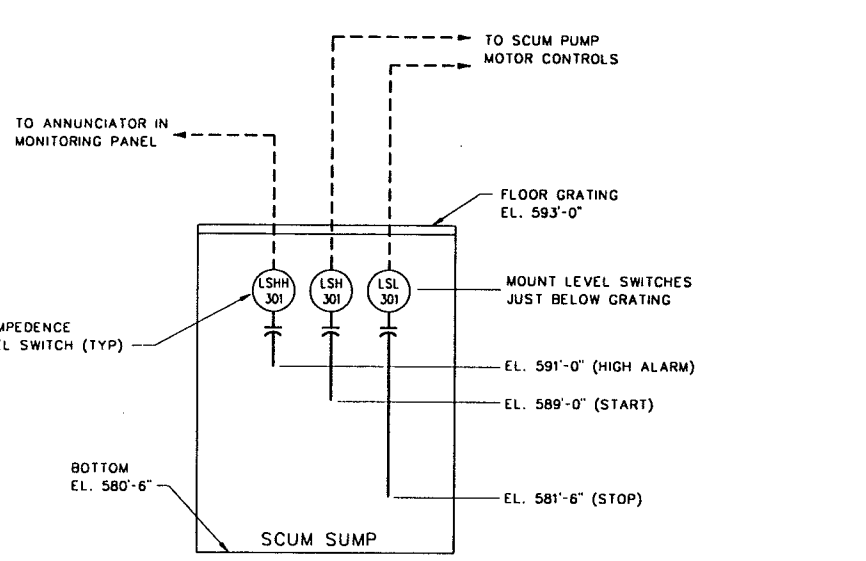
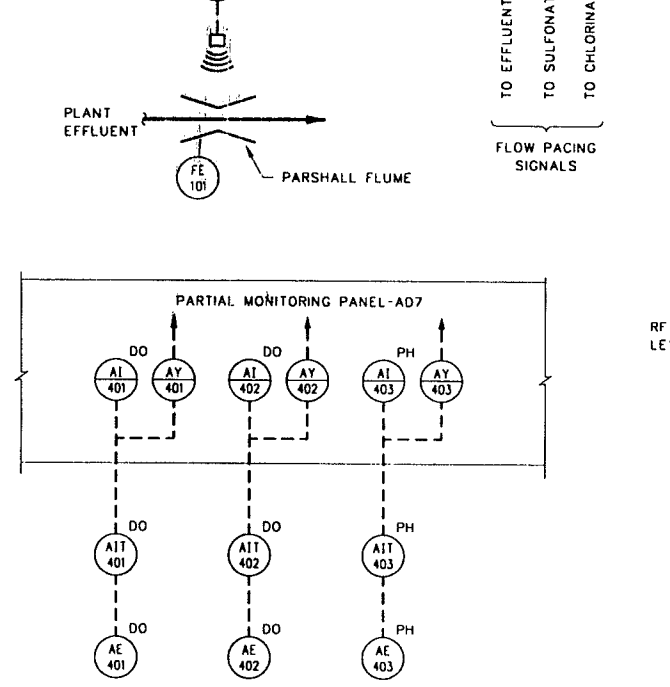
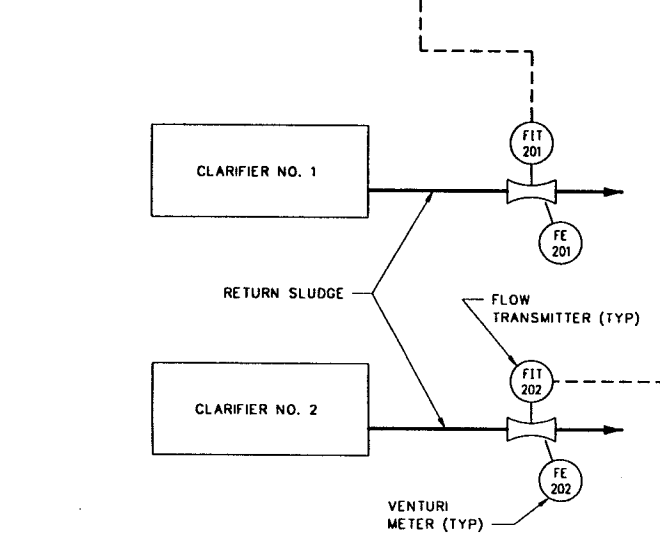
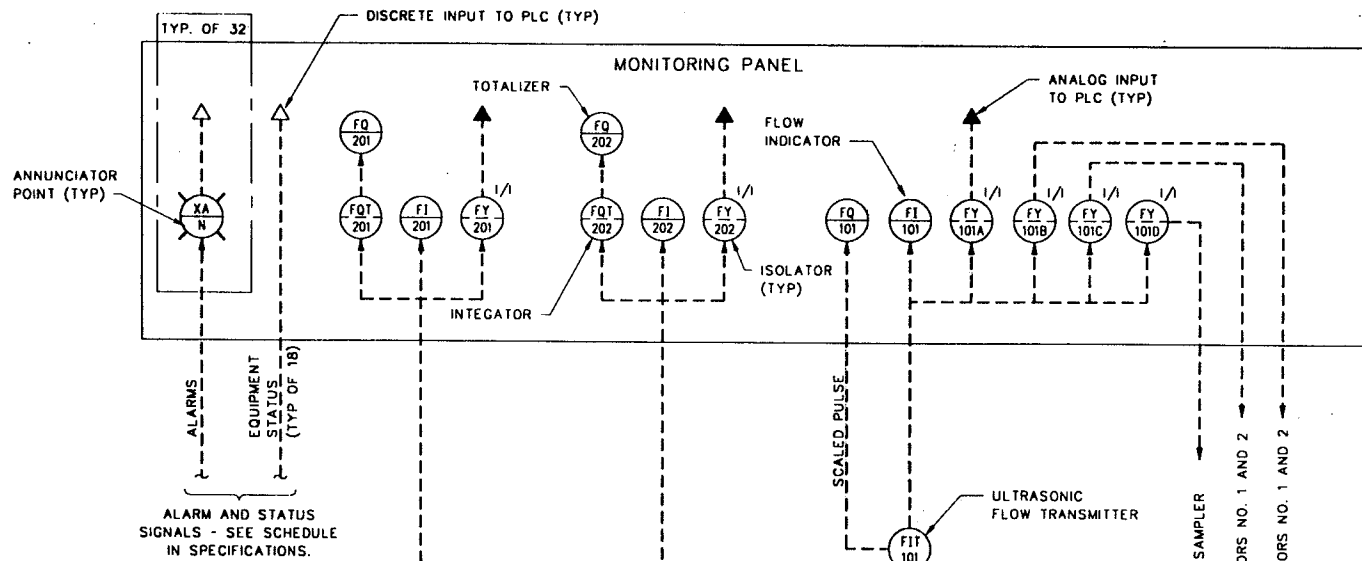
**LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT**

**CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION**

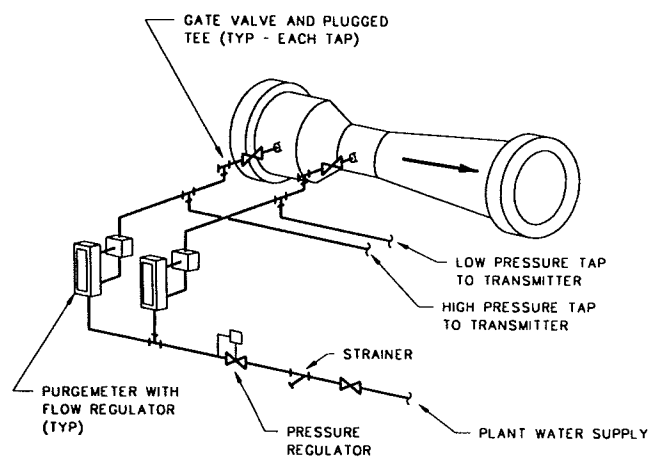
PLANS AND ESTIMATES PREPARED BY:

**GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606**

REVISION	BY	DATE	PLAN SCALE	DRAWN	RPN	APPROVED
RECORD DRAWING		9-1	NONE	DESIGNED	GJ	
REVISIONS	EAJ	1996		SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: AEB		DATE: OCTOBER 1994
			ATLAS PAGE NO:			SHEET 23 OF 49 SHEETS

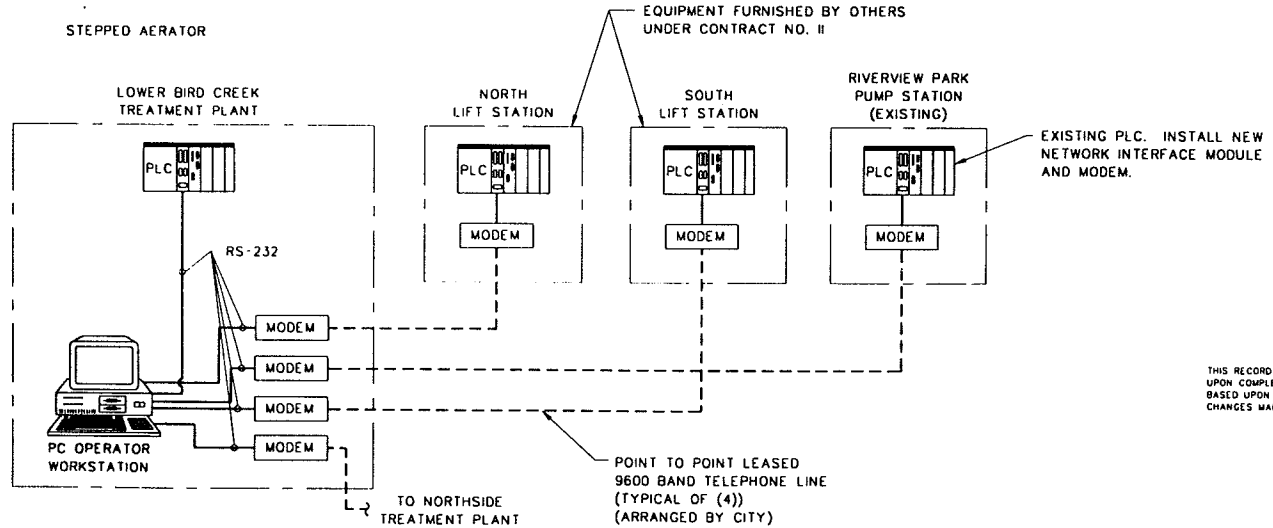


MONITORING PANEL
SCALE: 1"=1'-0"



VENTURI METER WATER PURGE

NOTE: SLOPE IMPULSE LINES DOWNWARD
1/4 INCH PER FOOT TOWARD TRANSMITTER



PLC SCADA SYSTEM

RECORD DRAWING
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GENERAL ELECTRICAL

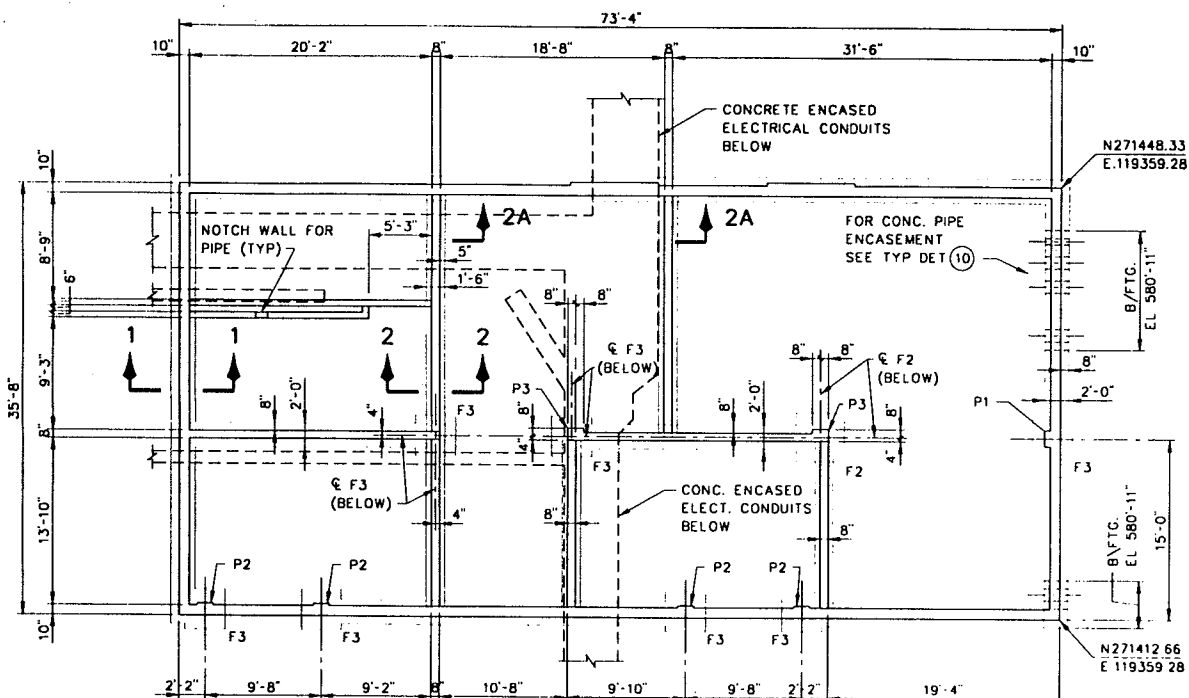
INSTRUMENTATION

LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

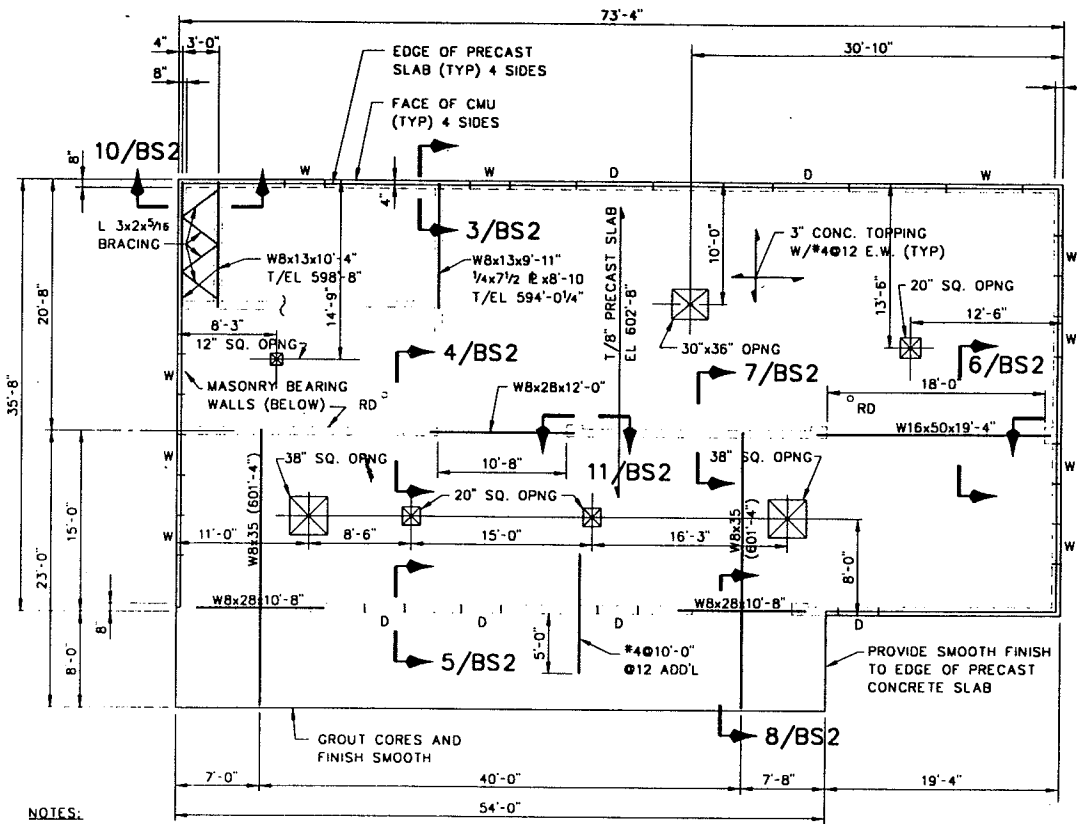
CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

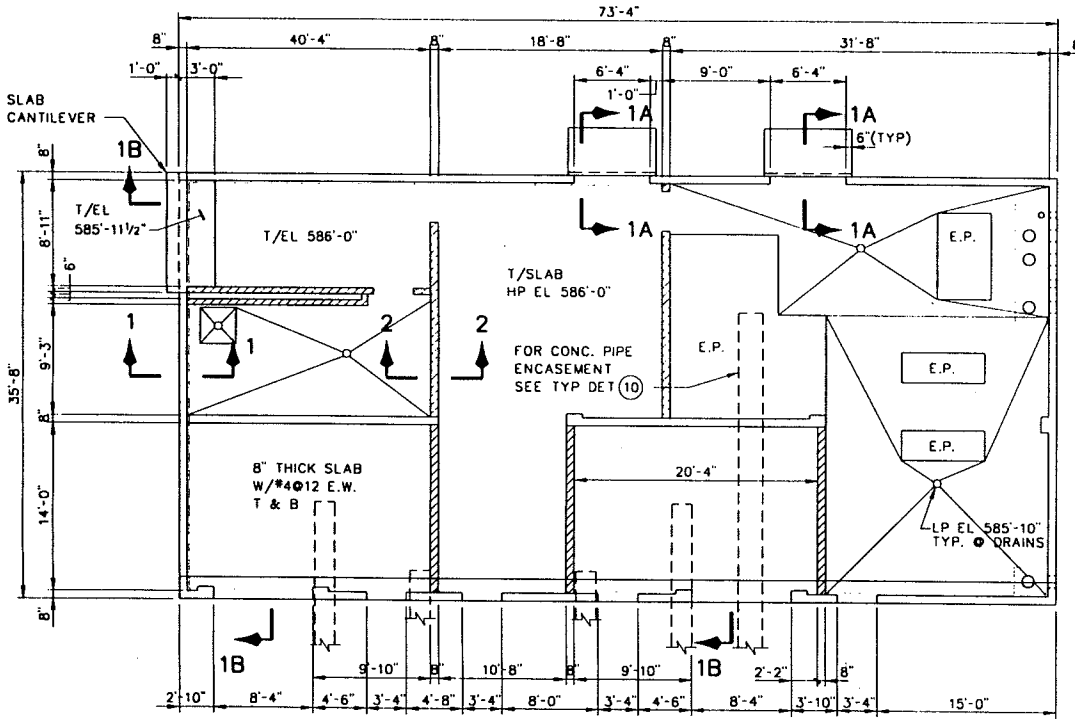
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			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ MGR		
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				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
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			ATLAS PAGE NO.:			SHEET 24 OF 49 SHEETS



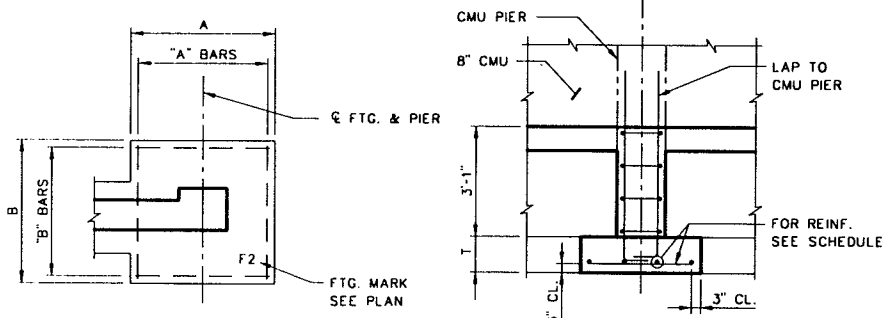
FOUNDATION PLAN
SCALE: 1/8" = 1'-0"



ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"



FLOOR PLAN EL 586'-0"
SCALE: 1/8" = 1'-0"



TYP. PIER FOOTING DETAILS

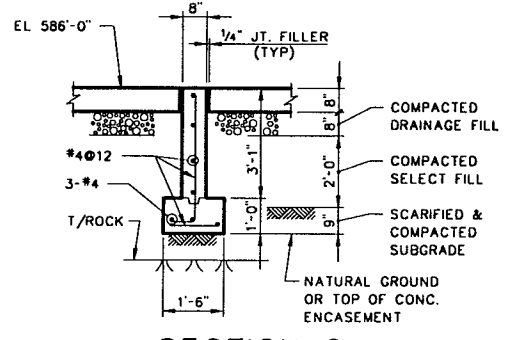
MARK	SIZE			REINFORCING		REMARKS
	A	B	T	"A" BARS	"B" BARS	
F2	4'-0"	4'-0"	1'-0"	#5@12	#5@12	
F3	3'-4"	3'-4"	1'-0"	#5@12	#5@12	

ALLOWABLE NET SOIL PRESSURE: 3,000 PSF ON NATURAL SOIL

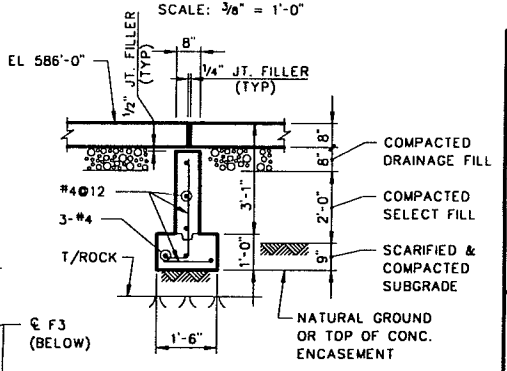
RECORD DRAWING

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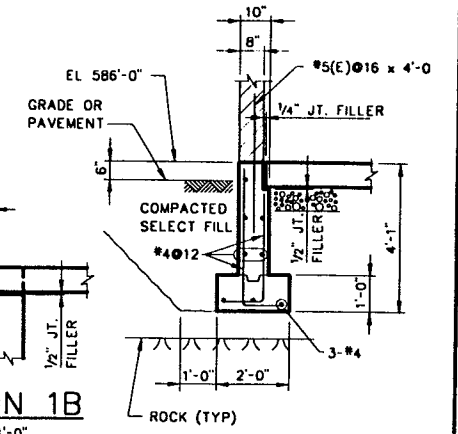
NOTES:
1. FOR TYPICAL DETAILS DESIGNATED THUS (3) AND GENERAL NOTES SEE DWG. AS1 AND AS2.



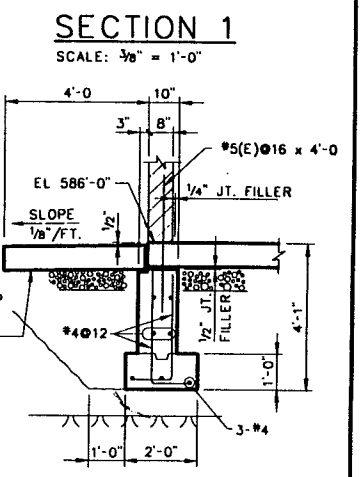
SECTION 2
SCALE: 3/8" = 1'-0"



SECTION 2A
SCALE: 3/8" = 1'-0"
(UNDER DOORS B101, B102 & B104)



SECTION 1B
SCALE: 3/8" = 1'-0"
AT SOUTH WALL
• WEST SIDE-NORTH END
• WALL AS NOTED



SECTION 1A
SCALE: 3/8" = 1'-0"
(UNDER DOORS B103 & B105)

OPERATIONS BUILDING STRUCTURAL

PLANS, SECTIONS AND DETAILS

LOWER BIRD CREEK WASTEWATER FACILITIES

PROJECT NO. TMAA SA 92-3

CONTRACT NO. 1

WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT

ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:

KLEIN AND HOFFMAN, INC.

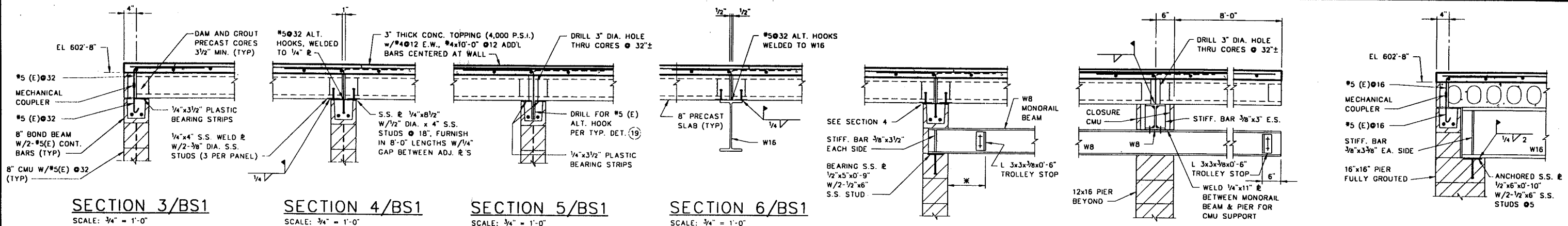
CONSULTING ENGINEERS

100 SOUTH WACKER DRIVE

CHICAGO, ILLINOIS 60606

PROJECT NO. 4543

REVISION	BY	DATE	PLAN SCALE	DRAWN	JVT	APPROVED
RECORD DRAWING	EAJ	9-1	AS SHOWN	DESIGNED	JBA	
REVISIONS				SURVEY		
				FIELD MGR		
				SECT. MGR		
				PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
				FILE: DRAWING: BS1		DATE: OCTOBER 1994
				ATLAS PAGE NO.:		SHEET 25 OF 49 SHEETS



SECTION 3/BS1
SCALE: 3/4" = 1'-0"

SECTION 4/BS1
SCALE: 3/4" = 1'-0"

SECTION 5/BS1
SCALE: 3/4" = 1'-0"

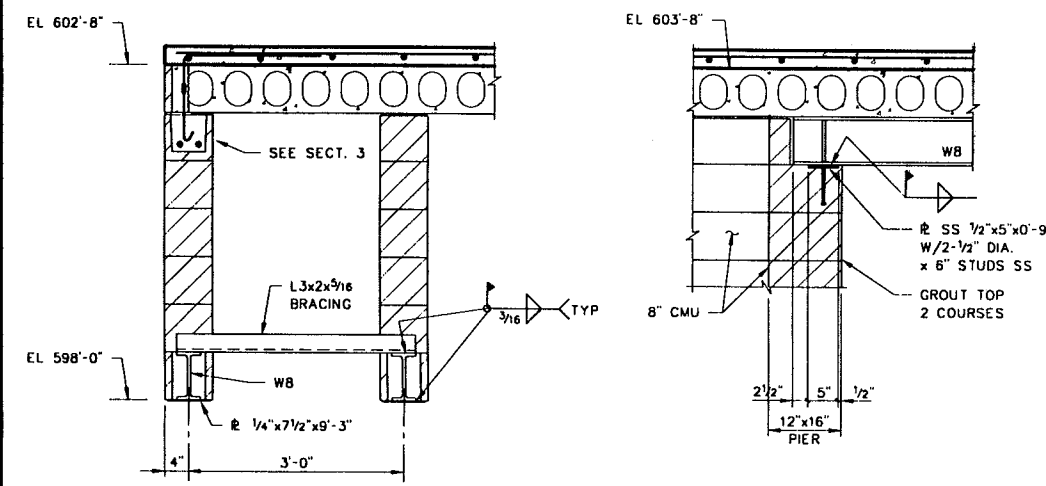
SECTION 6/BS1
SCALE: 3/4" = 1'-0"

SECTION 7/BS1
SCALE: 3/4" = 1'-0"

SECTION 8/BS1
SCALE: 3/4" = 1'-0"

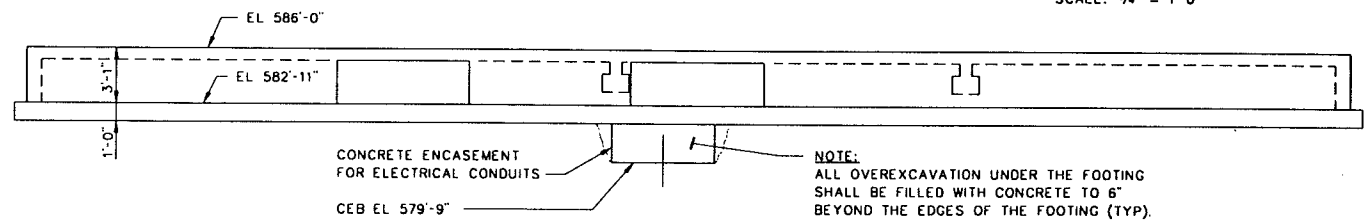
SECTION 9/BS1
SCALE: 3/4" = 1'-0"

NOTE:
1. PROVIDE SHORING FOR CANTILEVER END OF SLAB UNTIL CONCRETE TOPPING ATTAINS ITS DESIGN STRENGTH.
2. CANTILEVER PORTION OF SLAB MAY BE REMOVED FOR FUTURE EXPANSION. DESIGN OF PRECAST SLABS SHALL TAKE THIS INTO ACCOUNT.

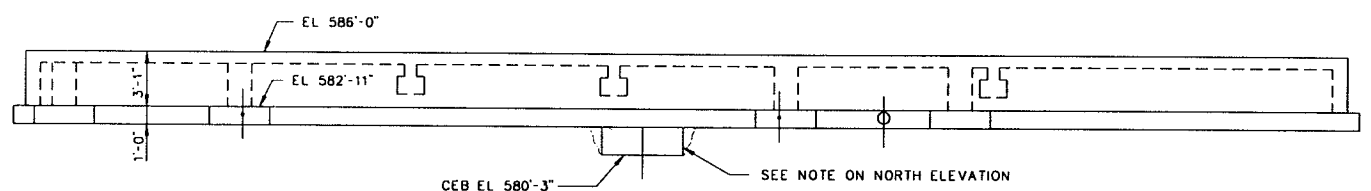


SECTION 10/BS1
SCALE: 3/4" = 1'-0"

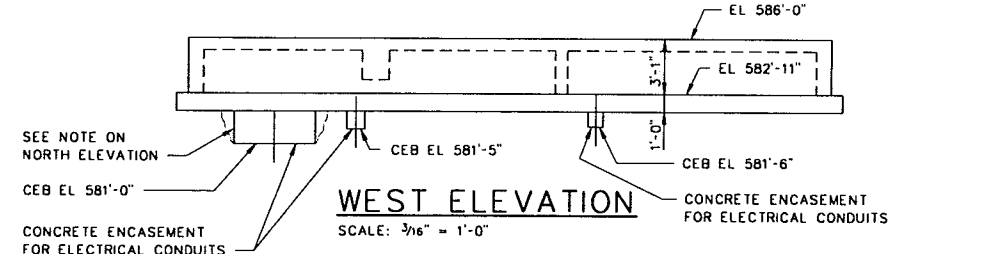
SECTION 11/BS1
SCALE: 3/4" = 1'-0"



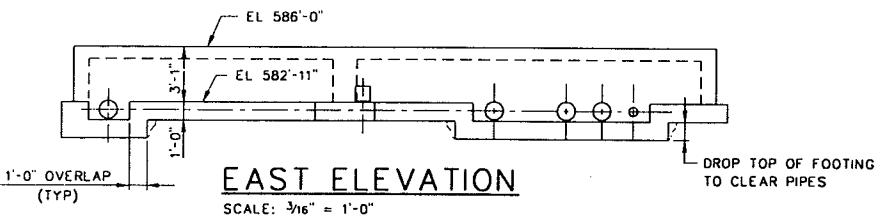
NORTH ELEVATION
SCALE: 3/16" = 1'-0"



SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

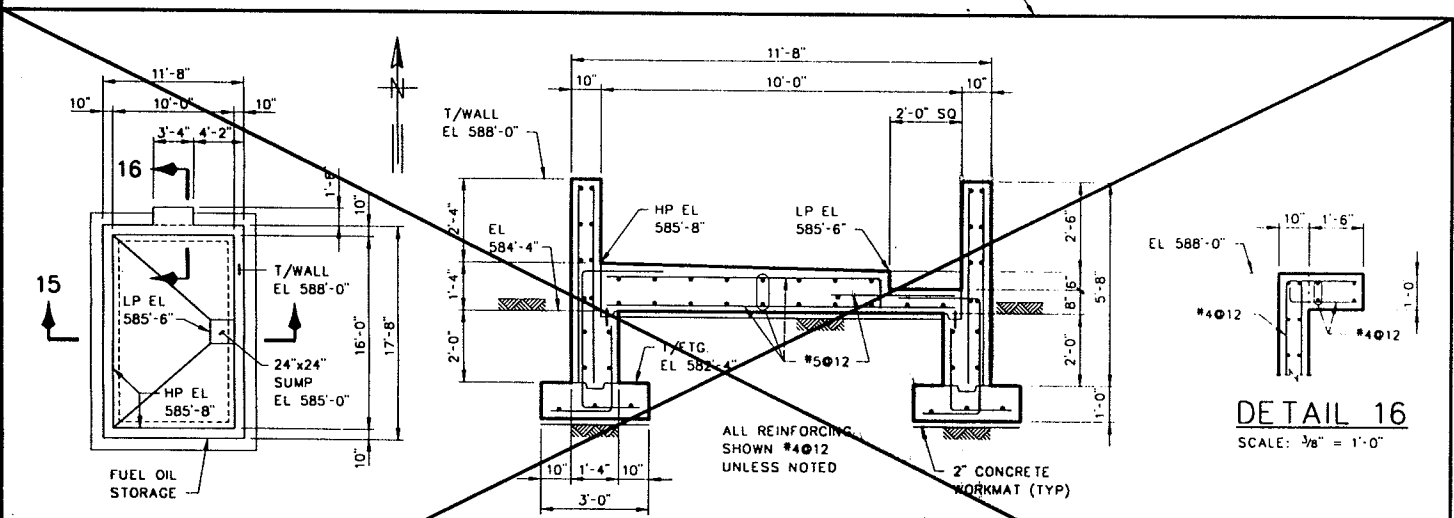


WEST ELEVATION
SCALE: 3/16" = 1'-0"



EAST ELEVATION
SCALE: 3/16" = 1'-0"

DELETED



PLAN
SCALE: 1/8" = 1'-0"

SECTION 15
SCALE: 3/8" = 1'-0"

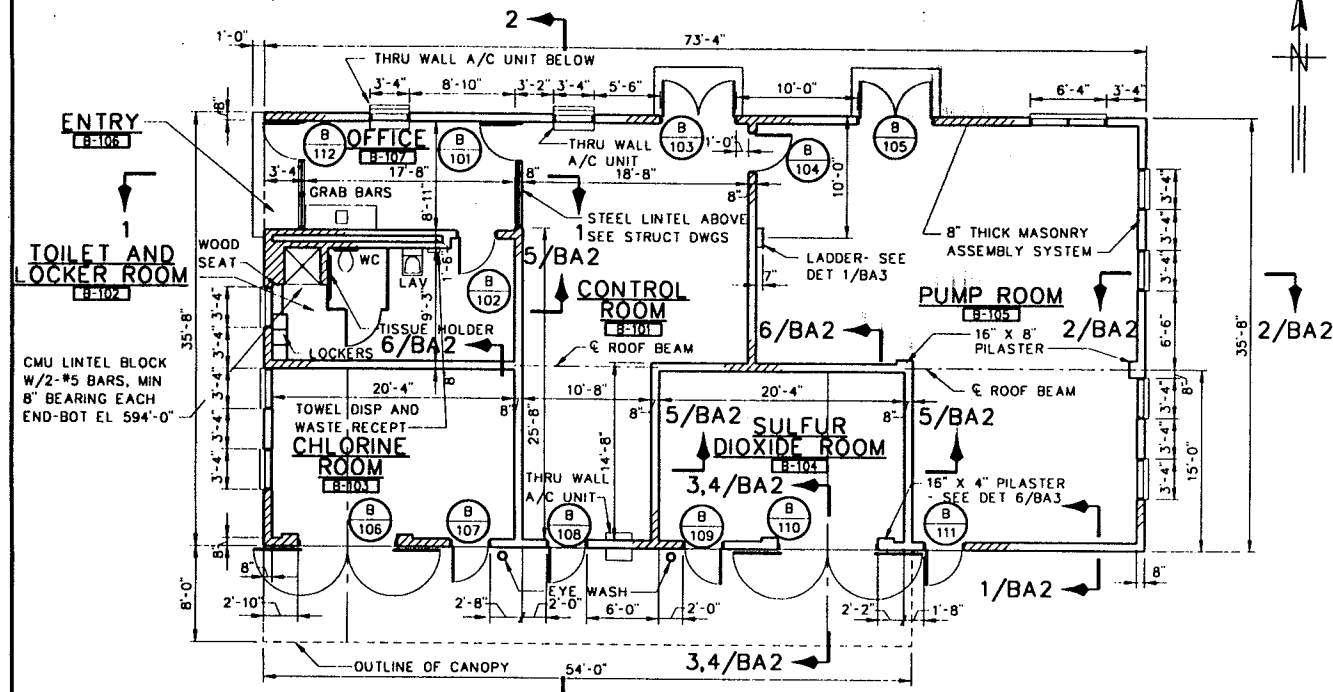
DETAIL 16
SCALE: 3/8" = 1'-0"

CONTAINMENT STRUCTURE FOR FUEL OIL STORAGE TANK

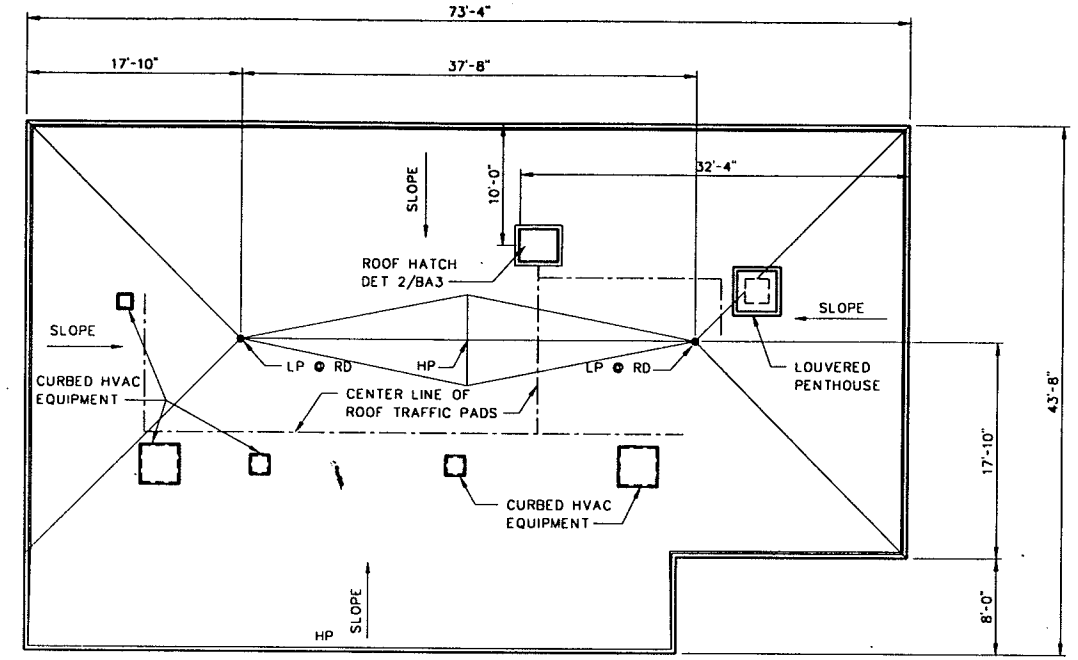
RECORD DRAWING
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NOTES:
1. FOR TYPICAL DETAILS DESIGNATED THUS (3) AND GENERAL NOTES SEE DWG. AS1 AND AS2.

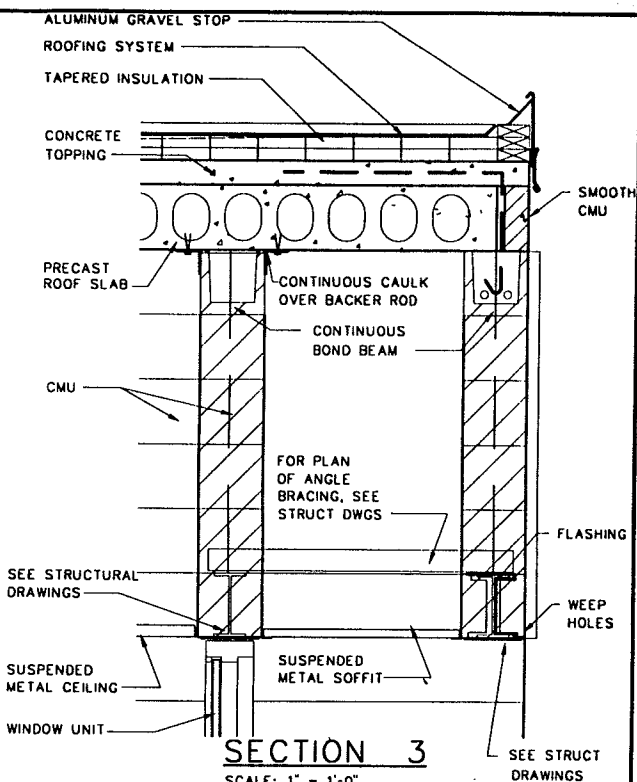
OPERATIONS BUILDING STRUCTURAL			
PLANS AND SECTIONS			
LOWER BIRD CREEK WASTEWATER FACILITIES PROJECT NO. TMUA SA 92-3 CONTRACT NO. 1 WASTEWATER TREATMENT PLANT			
CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT ENGINEERING SERVICES DIVISION			
PLANS AND ESTIMATES PREPARED BY: KLEIN AND HOFFMAN, INC. CONSULTING ENGINEERS 100 SOUTH WACKER DRIVE CHICAGO, ILLINOIS 60606 PROJECT NO. 4543			
REVISION	BY	DATE	PLAN SCALE
RECORD DRAWING	EAJ	1996	AS SHOWN
REVISIONS			
			DRAWN
			DESIGNED
			SURVEY
			FIELD MGR
			SECT MGR
			PROJ MGR
			RECOMMENDED
			DEPUTY DIRECTOR
			PUBLIC WORKS DIRECTOR
			DRAWING: BS2
			DATE: OCTOBER 1994
			FILE:
			ATLAS PAGE NO:
			SHEET 26 OF 49 SHEETS



PLAN EL 586'-0"
SCALE: 1/8" = 1'-0"



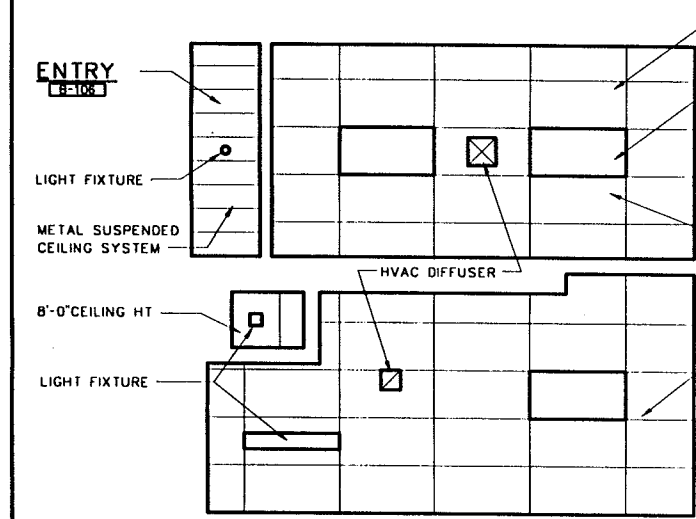
ROOF PLAN
SCALE: 1/8" = 1'-0"



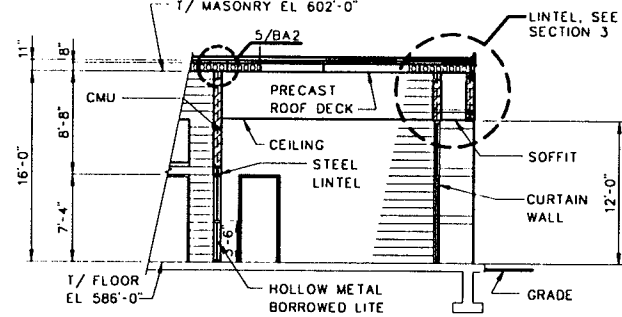
SECTION 3
SCALE: 1" = 1'-0"

MASONRY REINFORCING NOTES

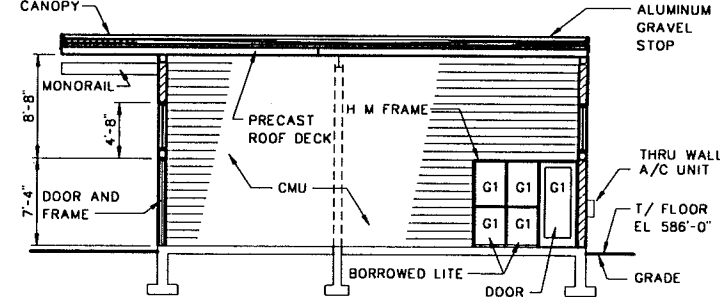
1. EXTERIOR WALLS: SEE SECTIONS ON DRAWING BA2.
2. INTERIOR WALLS: PROVIDE 2-#6 BARS AT TOP AND BOTTOM OF WALLS AND AT TOP AND BOTTOM OF OPENINGS: PROVIDE 1-#5E EACH SIDE OF OPENINGS (FULL HEIGHT).
3. PILASTERS: PROVIDE 4-#6 VERTICAL BARS, PLACE NEAR THE CORNERS LAPPED WITH FOUNDATION PIER DOWELS.
4. MINIMUM SPLICE LENGTHS:
#4E 27"
#5E 32"
#6E 39"
5. E DENOTES EPOXY COATED REINFORCING.



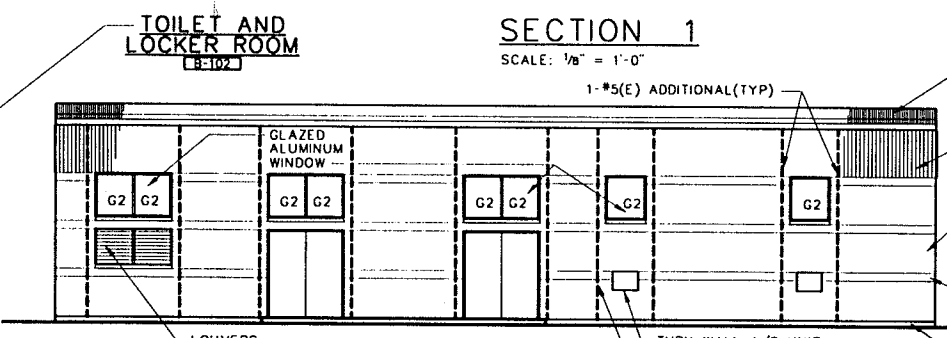
REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"



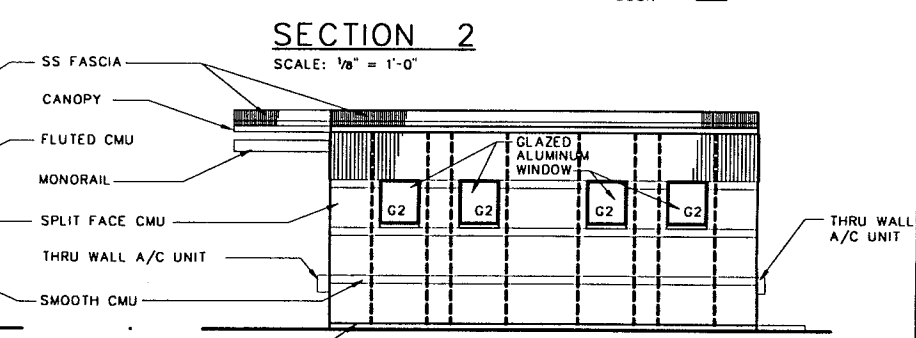
SECTION 1
SCALE: 1/8" = 1'-0"



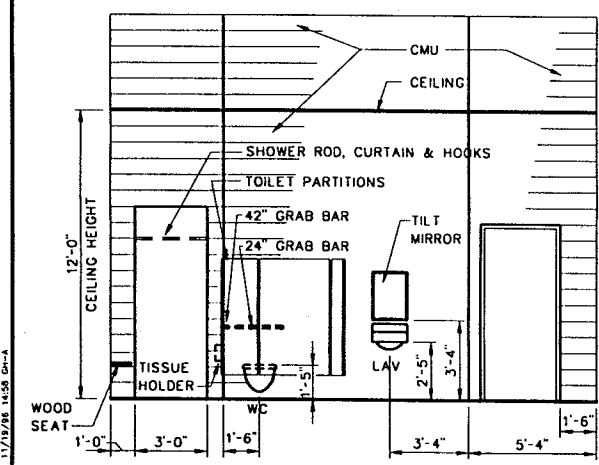
SECTION 2
SCALE: 1/8" = 1'-0"



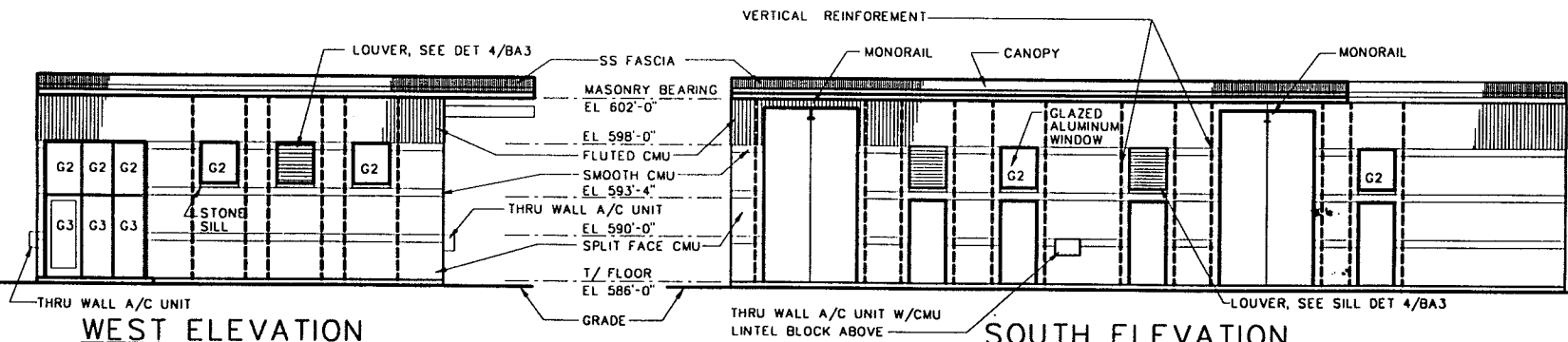
NORTH ELEVATION
SCALE: 1/8" = 1'-0"



EAST ELEVATION
SCALE: 1/8" = 1'-0"



TOILET ROOM ELEVATION
SCALE: 1/4" = 1'-0"



WEST ELEVATION
SCALE: 1/8" = 1'-0"

SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

RECORD DRAWING

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NOTE:
REINFORCING SHOWN ON ELEVATION DRAWING IS ADDITIONAL TO TYPICAL REINFORCING SHOWN ON DET 7/BA2.

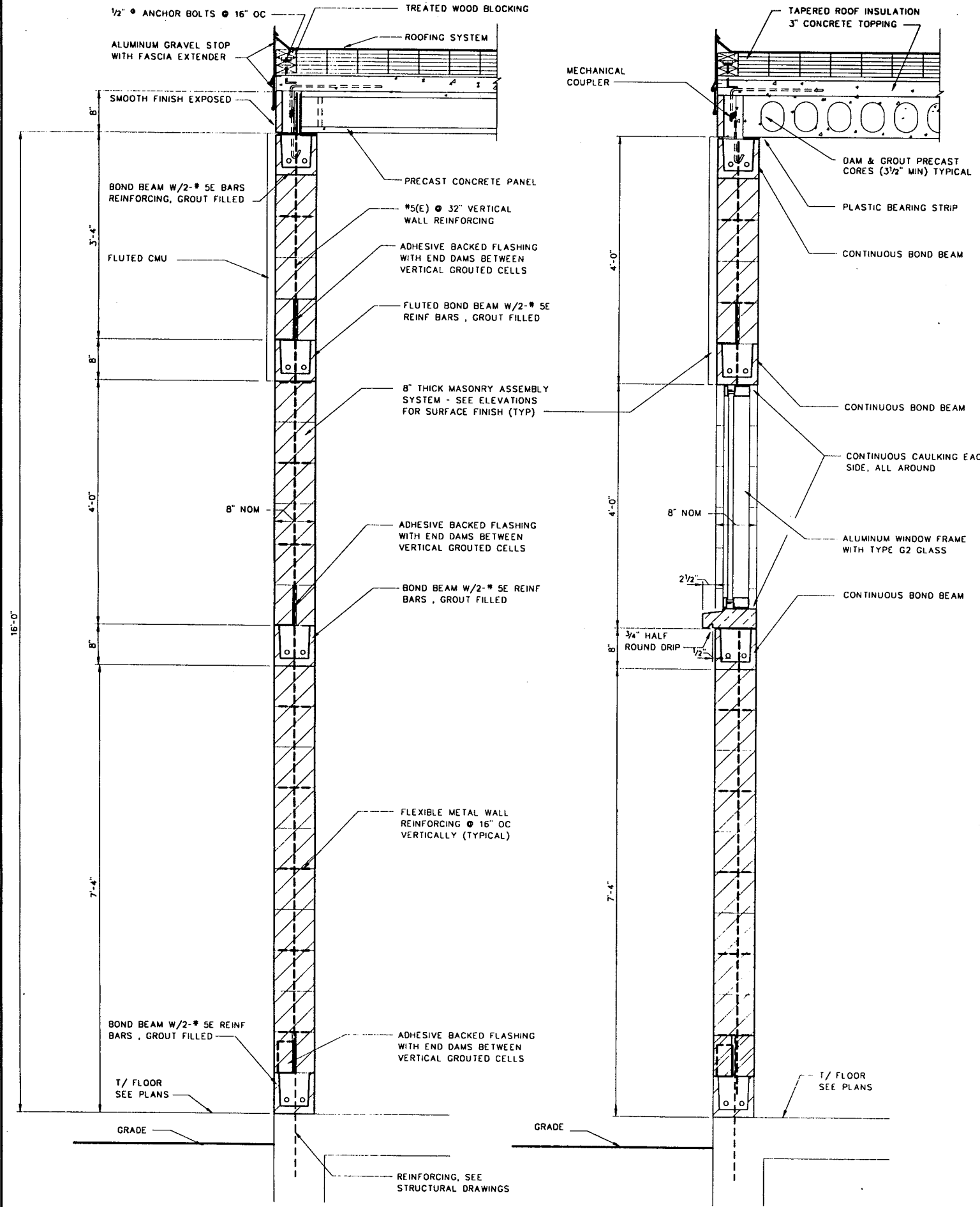
**OPERATIONS BUILDING
ARCHITECTURAL
PLANS, ELEVATIONS
AND SECTIONS**

**LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT**

**CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION**

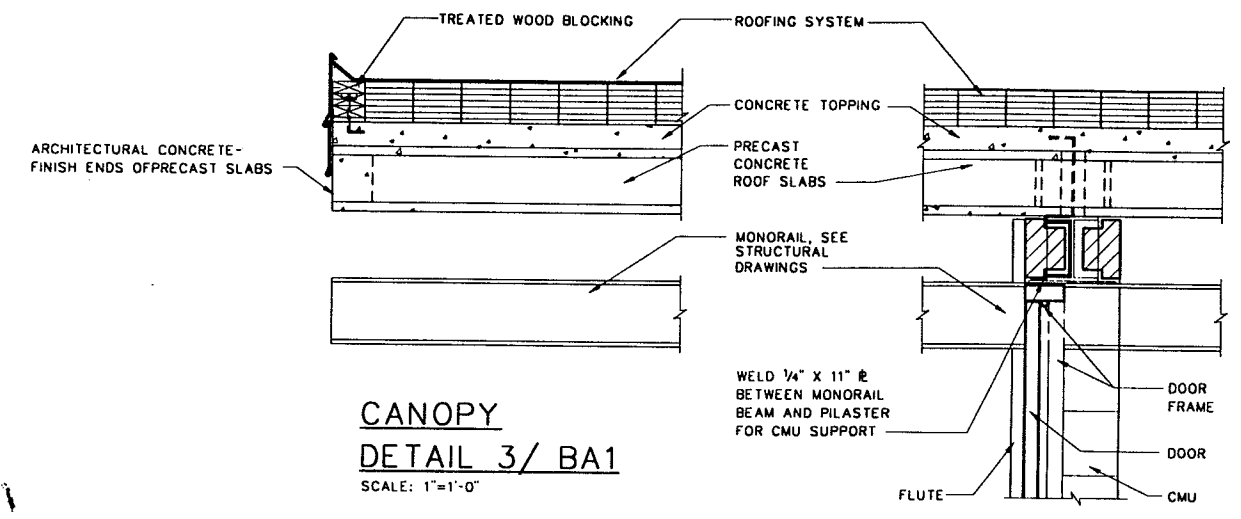
PLANS AND ESTIMATES PREPARED BY:
**GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606**

REVISION	BY	DATE	PLAN SCALE	DRAWN	PMC/CWC	APPROVED
RECORD DRAWING		9-1	AS SHOWN	DESIGNED	PMC	
REVISIONS	EAJ	1996		SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
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			ATLAS PAGE NO.:			SHEET 27 OF 49 SHEETS



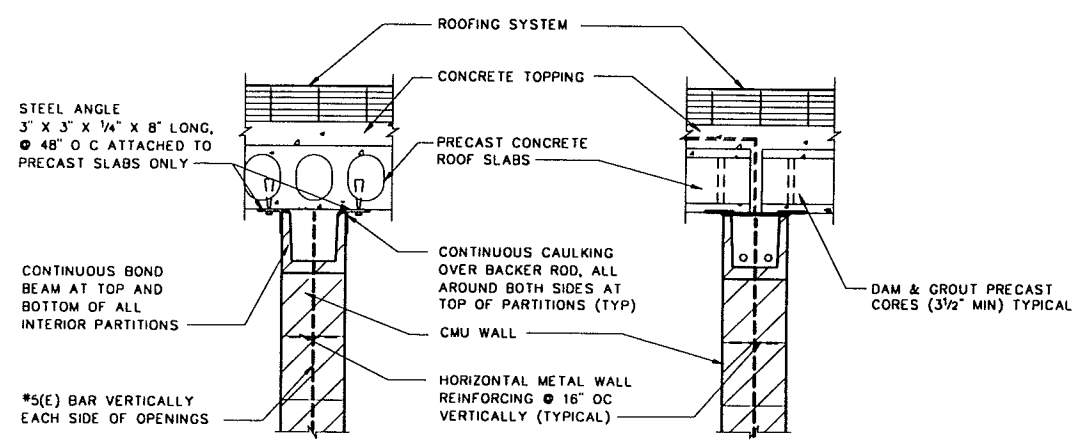
SECTION 1/BA1
SCALE: 1"=1'-0"

SECTION 2/BA1
SCALE: 1"=1'-0"



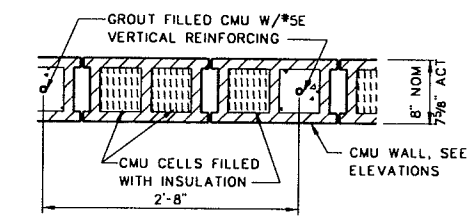
**CANOPY
DETAIL 3/BA1**
SCALE: 1"=1'-0"

DETAIL 4/BA1
SCALE: 1"=1'-0"



**NON - BEARING INTERIOR
PARTITION DETAIL 5/BA1**
SCALE: 1"=1'-0"

**BEARING INTERIOR
PARTITION DETAIL 6/BA1**
SCALE: 1"=1'-0"



TYPICAL EXTERIOR WALL DETAIL 7/BA2
SCALE: 1"=1'-0"

OPERATIONS BUILDING
ARCHITECTURAL
WALL SECTIONS
AND DETAILS

LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

RECORD DRAWING

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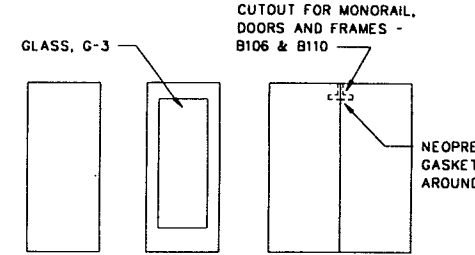
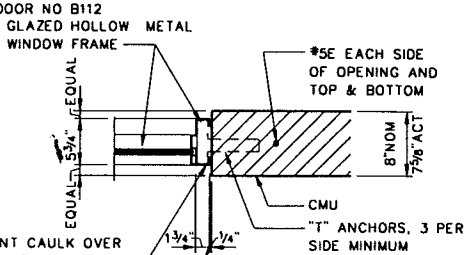
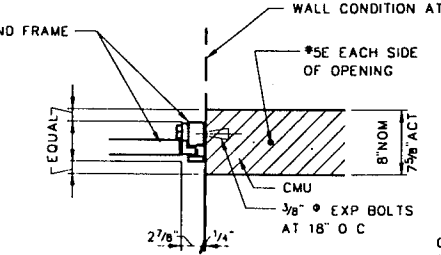
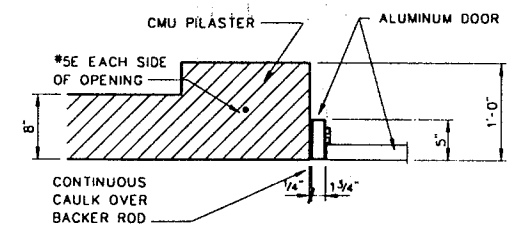
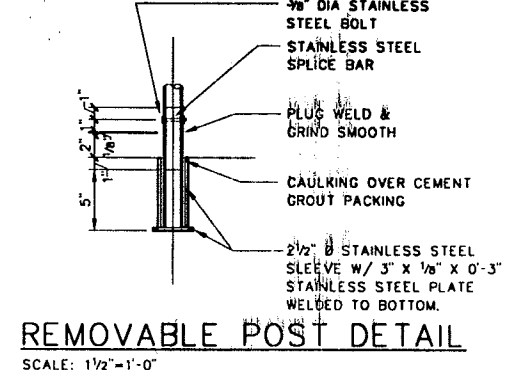
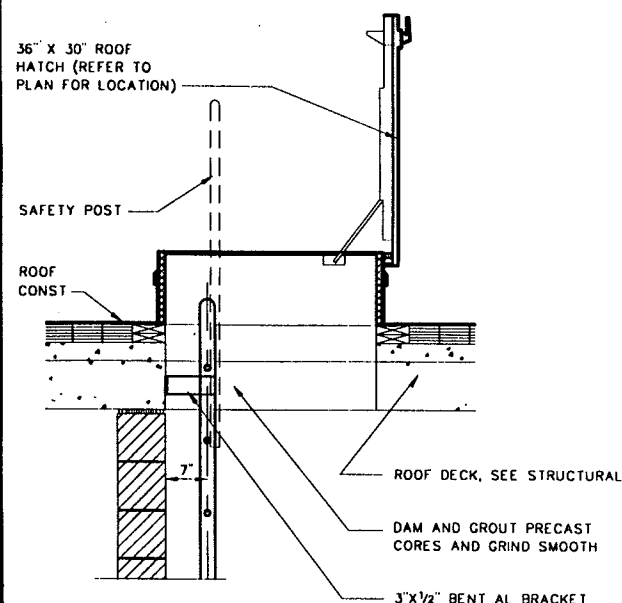
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REVISIONS	EAJ	1996		SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
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				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: BA2		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 28 OF 49 SHEETS

FILE: 180403.11.11/17/94/85 1500 04-4

ROOM FINISH SCHEDULE

DOOR SCHEDULE

ROOM NO.	ROOM NAME	BASE	FLOOR	WALLS	CEILING	REMARKS	DOOR NUMBER	DOOR SIZE	ELEVATION	THRESHOLD	DETAILS		MATERIAL	HARDWARE ITEM	REMARKS
											HEAD	JAMB			
B-101	CONTROL ROOM	---	CONC	CMU	---	---	B-101	3'-0" x 7'-2" x 1-3/4"	A	2	3	10,11	HM	1	IN BORROWED LITE FRAME
B-102	TOILET AND LOCKER ROOM	---	MT	CT	MAC	12'-0" CEILING	B-102	3'-0" x 7'-2" x 1-3/4"	A	2	3	10	HM	4	---
B-103	CHLORINE ROOM	---	CONC	CMU	---	---	B-103	2 @ 3'-0" x 7'-2" x 1-3/4"	C	2	13	7	AL	2	---
B-104	SULFUR DIOXIDE ROOM	---	CONC	CMU	---	---	B-104	3'-0" x 7'-2" x 1-3/4"	A	1	3	10	HM	1	---
B-105	PUMP ROOM	---	CONC	CMU	---	---	B-105	2 @ 3'-0" x 7'-2" x 1-3/4"	C	1	13	7	AL	2	---
B-106	ENTRY	---	CONC	CMU, GL	MAC	12'-0" CEILING	B-106	2 @ 4'-0" x 15'-2" x 1-3/4"	C	1	4/BA2	6 SIM	AL	3	180° DOOR SWING
B-107	OFFICE	VINYL	VCT	GL, CMU	MAC	12'-0" CEILING	B-107	3'-0" x 7'-2" x 1-3/4"	A	1	9	7	AL	5	---
							B-108	3'-0" x 7'-2" x 1-3/4"	A	2	9	7	AL	1	---
							B-109	3'-0" x 7'-2" x 1-3/4"	A	1	9	7	AL	5	---
							B-110	2 @ 4'-0" x 15'-2" x 1-3/4"	C	1	4/BA2	6 SIM	AL	3	180° DOOR SWING
							B-111	3'-0" x 7'-2" x 1-3/4"	A	1	9	7	AL	1	---
							B-112	3'-0" x 7'-1" x 1-3/4"	B	2	12	7, SIM 12	AL	1	IN CURTAIN WALL



ABBREVIATIONS

AL	ALUMINUM
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS
CT	CERAMIC TILE
DIA(Ø)	DIAMETER
EXP	EXPANSION
FH	FLAT HEAD
HM	HOLLOW METAL (HOL MET)
MAC	METAL ACOUSTICAL CEILING
MS	MACHINE SCREW
MT	MOSIAC CERAMIC TILE
O C	ON CENTER
ST STL	STAINLESS STEEL (SST)
T/	TOP OF
TYP	TYPICAL
VCT	VINYL COMPOSITION TILE
W/	WITH

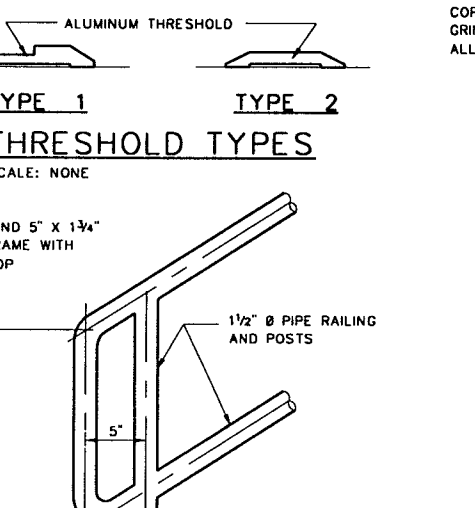
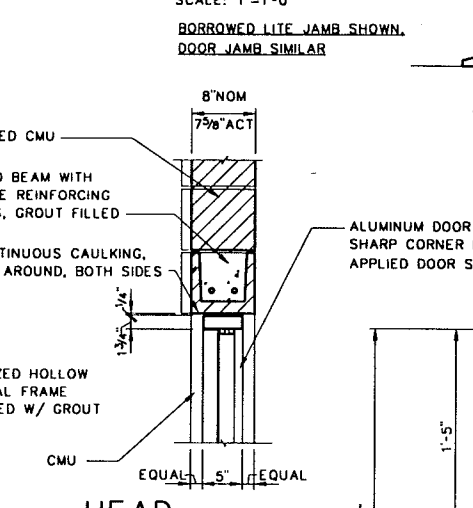
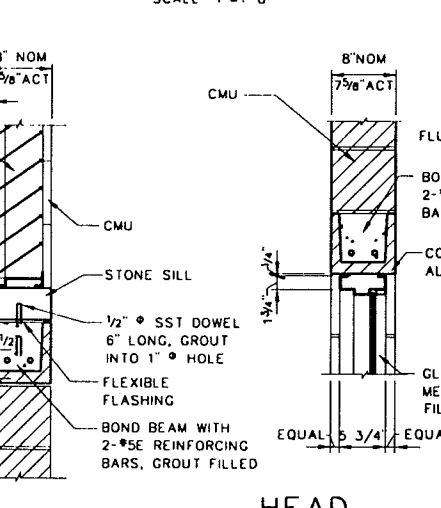
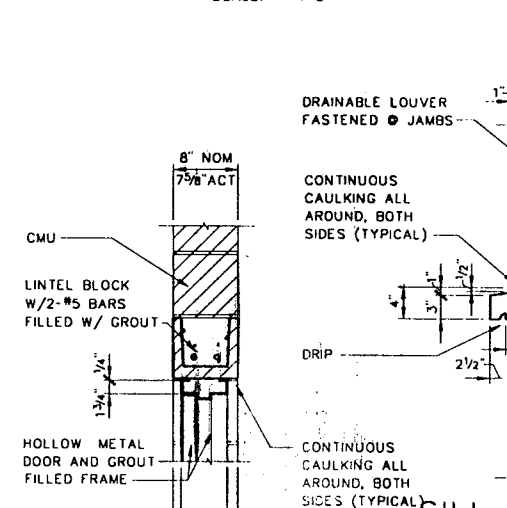
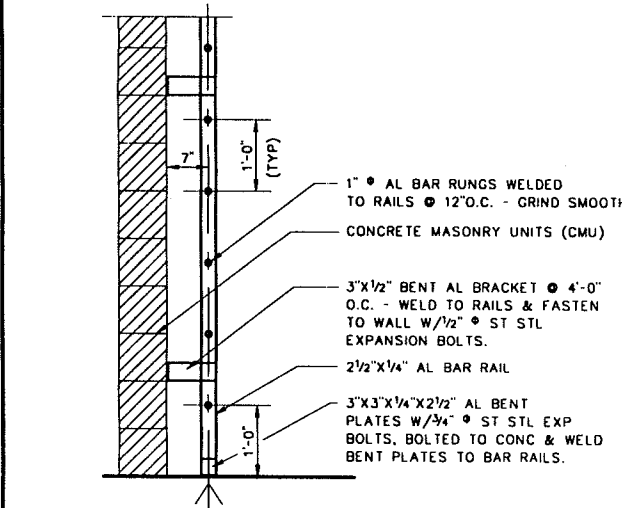
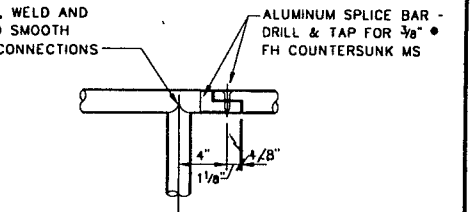
ROOF HATCH DETAIL 2/BA1
SCALE: 3/4"=1'-0"

JAMB DETAIL 6
SCALE: 1"=1'-0"

JAMB DETAIL 7
SCALE: 1"=1'-0"

JAMB DETAIL 8
SCALE: 1"=1'-0"

DOOR ELEVATIONS
SCALE: 1/4"=1'-0"



REMOVABLE RAIL DETAIL
SCALE: 1"=1'-0"

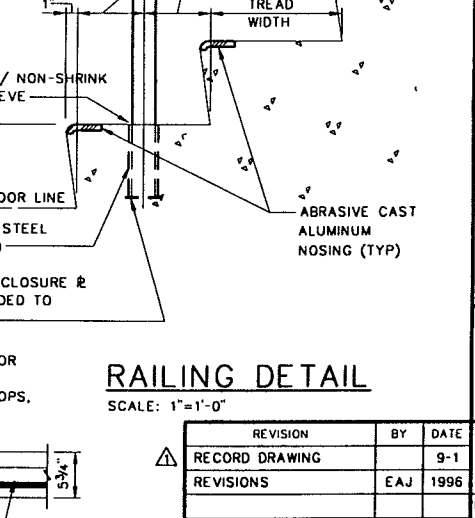
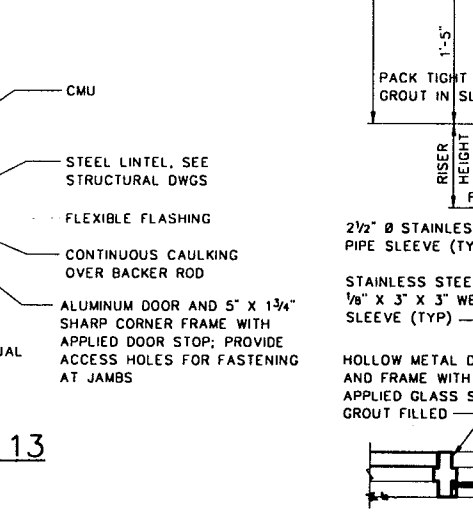
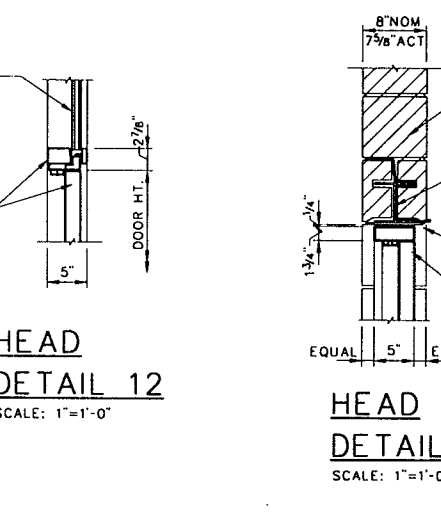
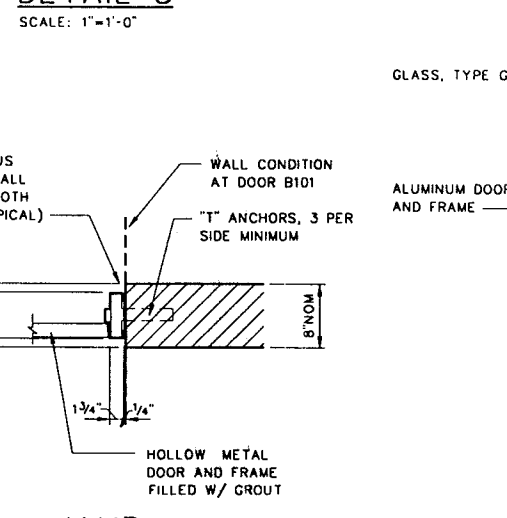
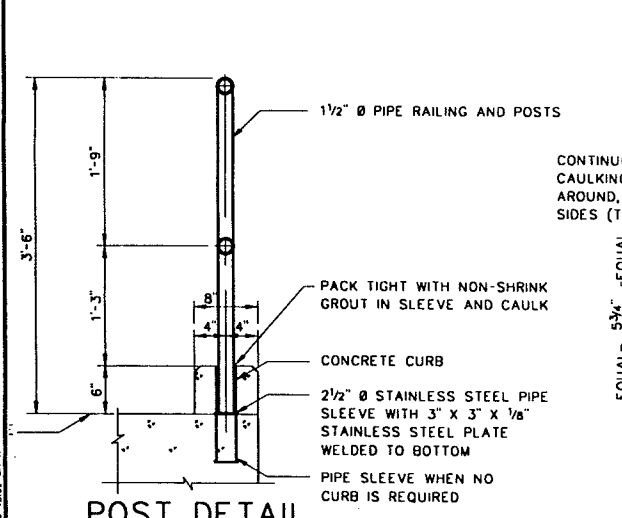
LADDER DETAIL 1/BA1
SCALE: 3/4"=1'-0"

HEAD DETAIL 3
SCALE: 1"=1'-0"

HEAD DETAIL 5
SCALE: 1"=1'-0"

HEAD DETAIL 9
SCALE: 1"=1'-0"

THRESHOLD TYPES
SCALE: NONE



OPERATIONS BUILDING ARCHITECTURAL

SCHEDULES AND DETAILS

LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

POST DETAIL
SCALE: 1"=1'-0"

JAMB DETAIL 10
SCALE: 1"=1'-0"

HEAD DETAIL 12
SCALE: 1"=1'-0"

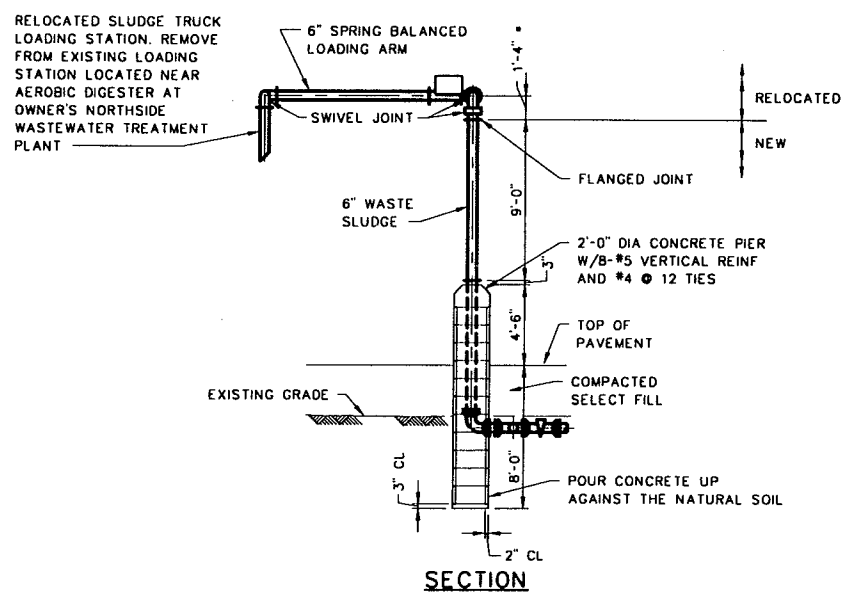
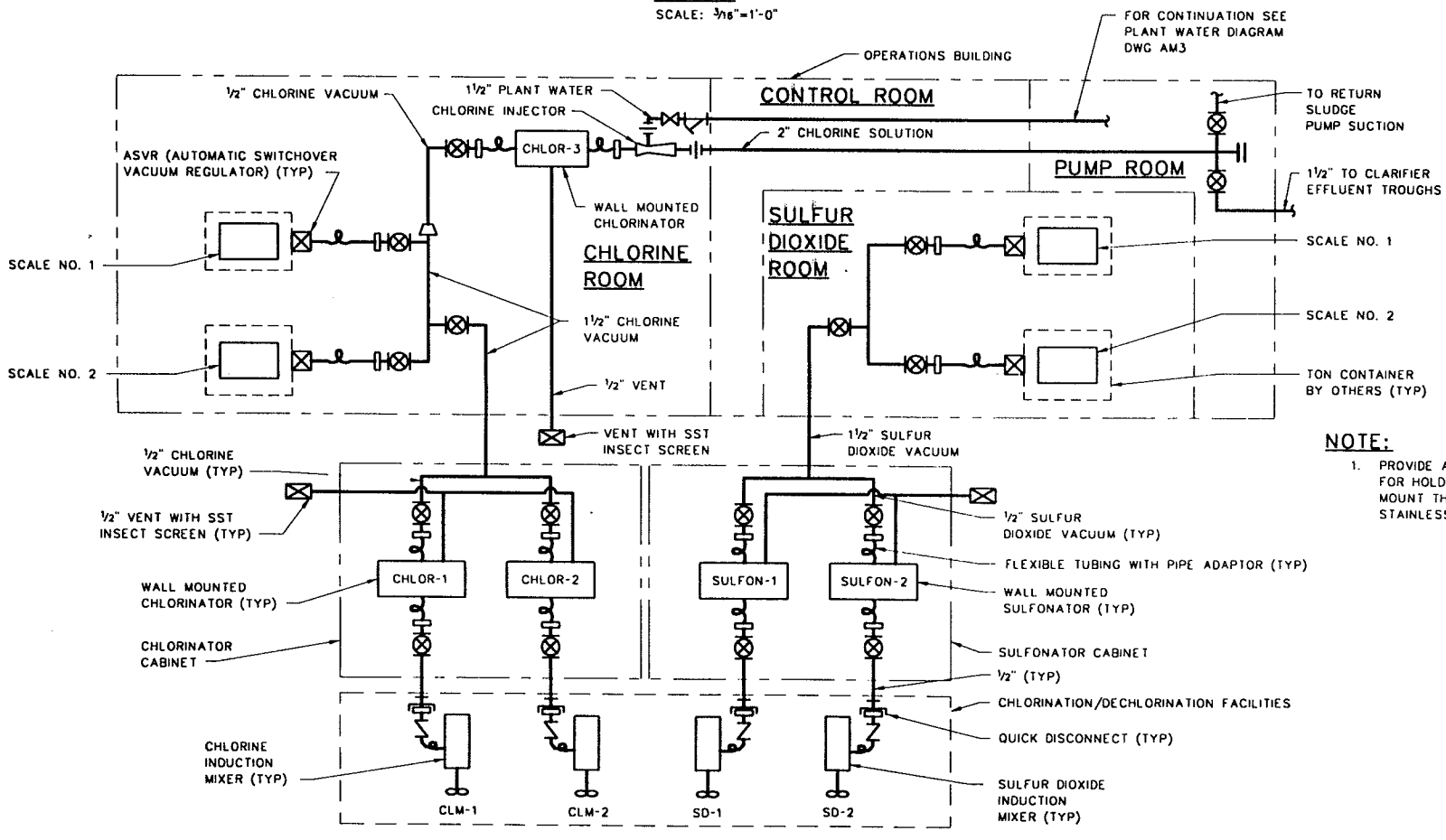
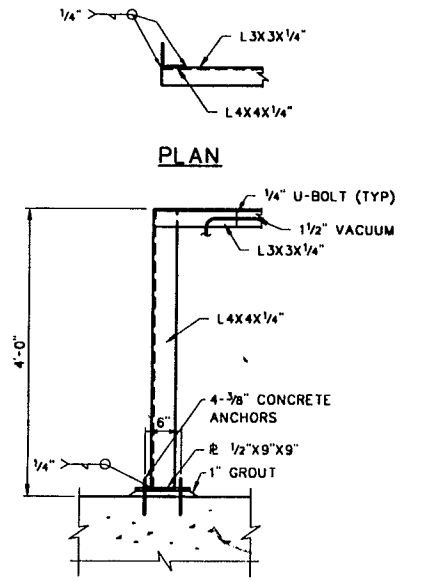
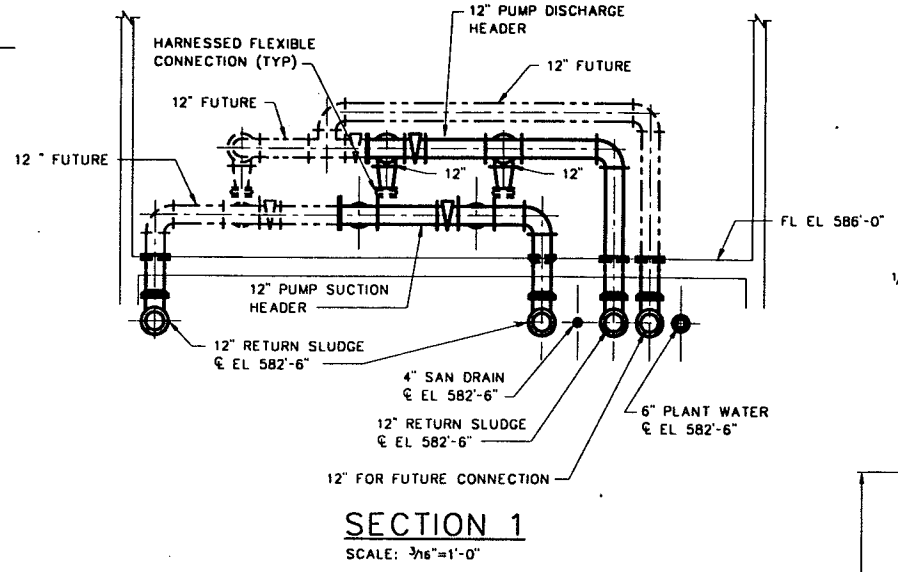
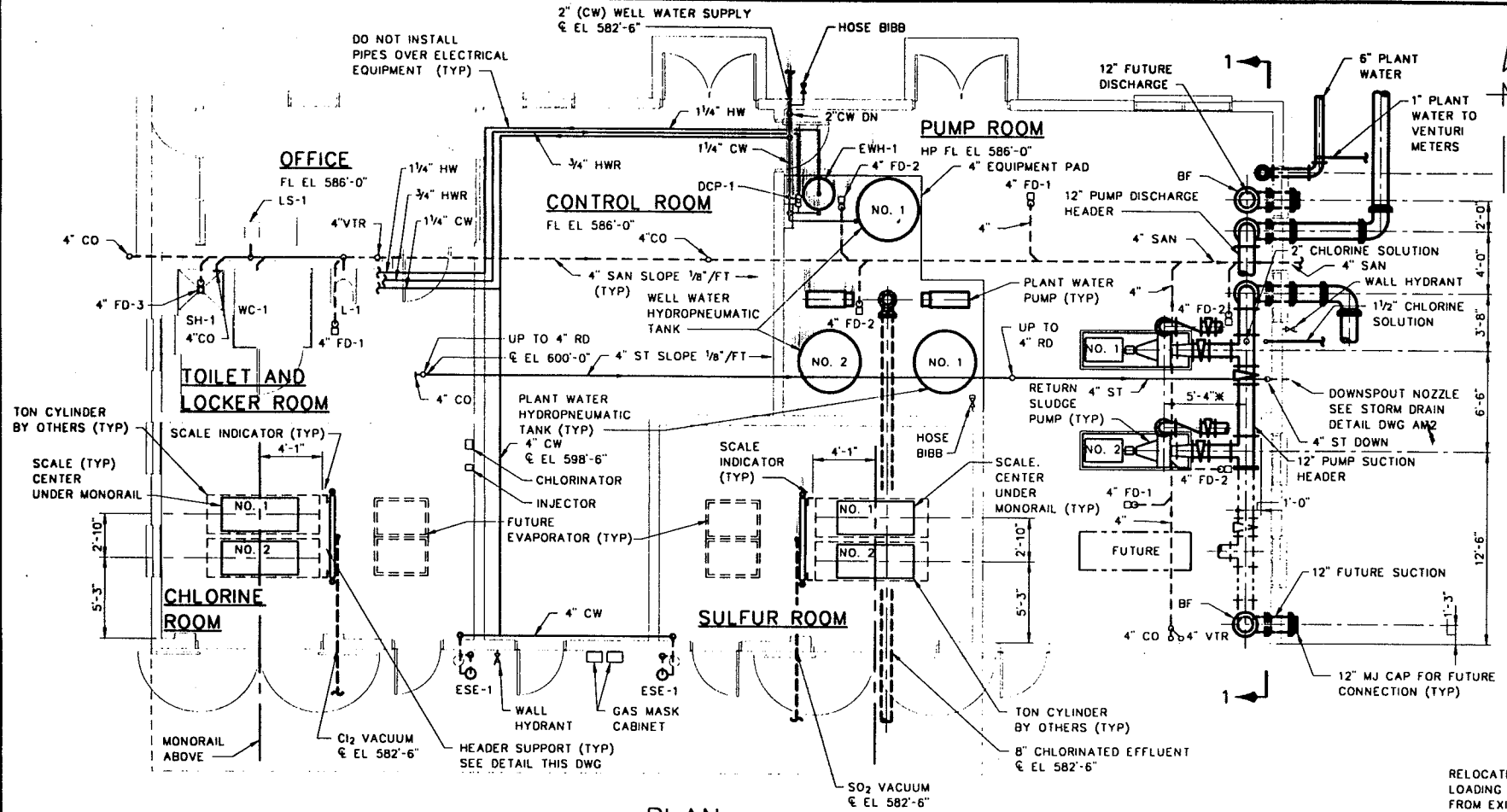
HEAD DETAIL 13
SCALE: 1"=1'-0"

JAMB DETAIL 11
SCALE: 1"=1'-0"

REVISION	BY	DATE	PLAN SCALE	DRAWN	CHK	APPROVED
RECORD DRAWING	EAJ	9-1 1996	AS SHOWN	DESIGNED	PWC	
REVISIONS				SURVEY		
				FIELD MGR		
				SECT. MGR		
				PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
				DRAWING: BA3		DATE: OCTOBER 1994
				ATLAS PAGE NO.:		SHEET 29 OF 49 SHEETS

RECORD DRAWING

THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES. BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.



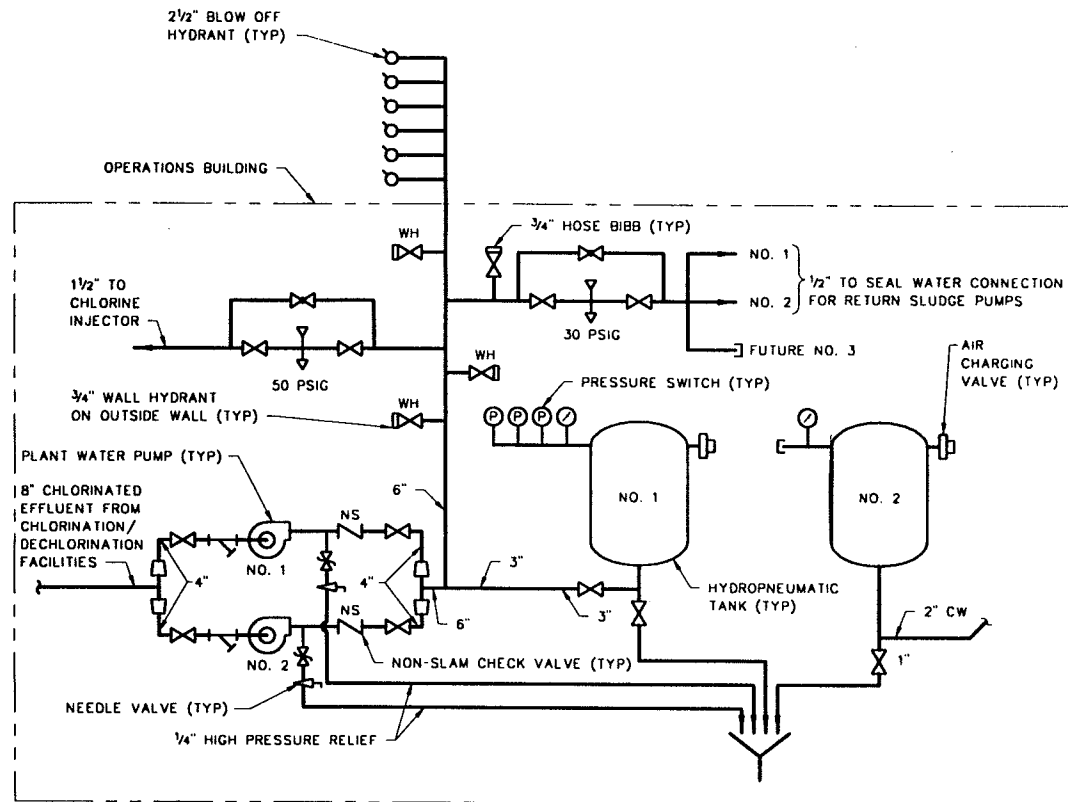
NOTE:
1. PROVIDE A CORROSION-RESISTANT HANGER SUITABLE FOR HOLDING 50 FEET OF 3/4-INCH HOSE ABOVE GROUND. MOUNT THE HANGER TO THE CONCRETE PIER WITH STAINLESS STEEL BAND CLAMPS AND HARDWARE.

**OPERATIONS BUILDING
EQUIPMENT AND PLUMBING**
PLAN, SECTIONS AND DIAGRAM
**LOWER BIRD CREEK
WASTEWATER FACILITIES**
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT
**CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT**
ENGINEERING SERVICES DIVISION

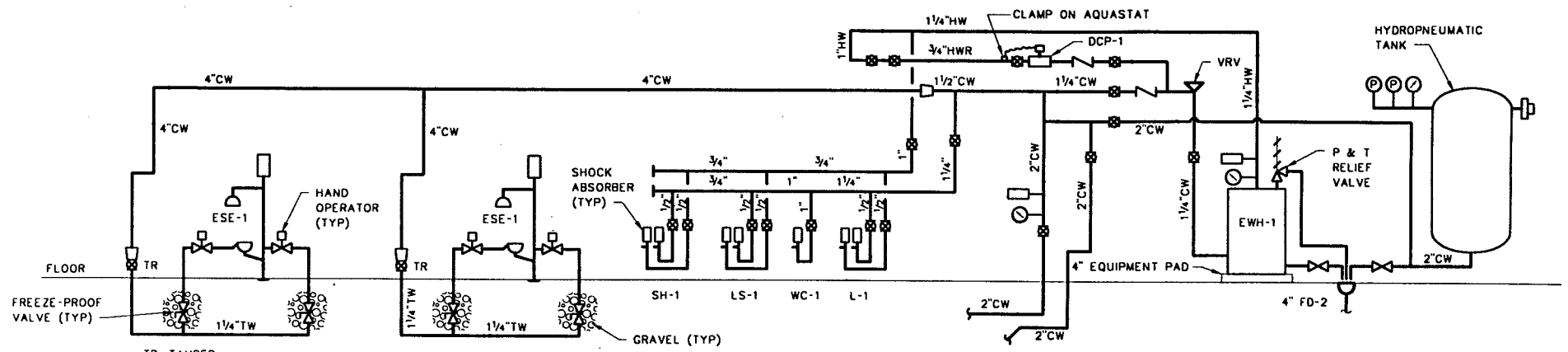
PLANS AND ESTIMATES PREPARED BY:
**GREELEY AND HANSEN
ENGINEERS**
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

REVISION	BY	DATE	PLAN SCALE	DRAWN	RPN	APPROVED
RECORD DRAWING		9-1	AS SHOWN	DESIGNED	DVM RPN	
REVISIONS	EAJ	1996		SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: BM1		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 30 OF 49 SHEETS

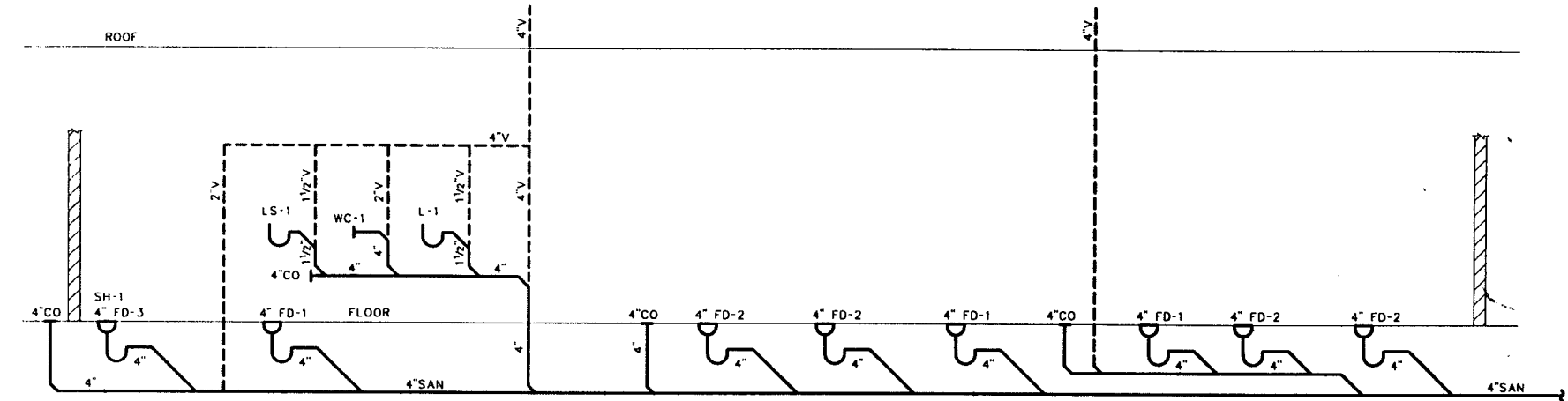
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THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES. BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.



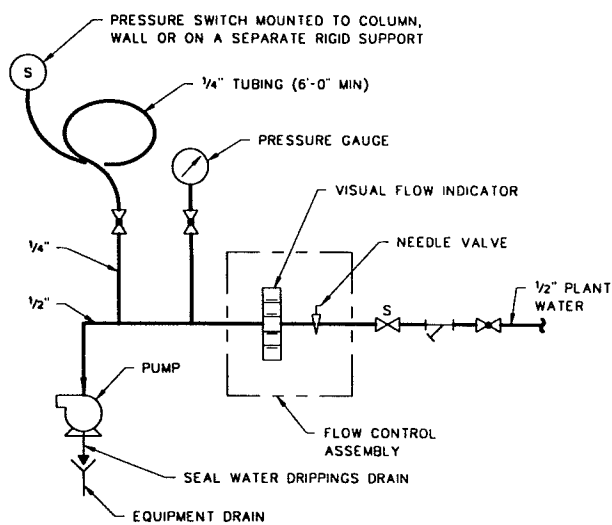
PLANT WATER DIAGRAM
NO SCALE



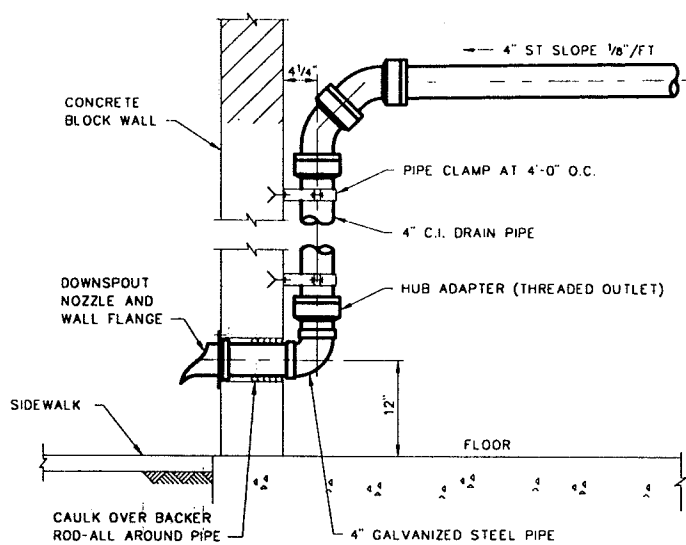
OPERATIONS BUILDING POTABLE WATER PIPING DIAGRAM
NO SCALE



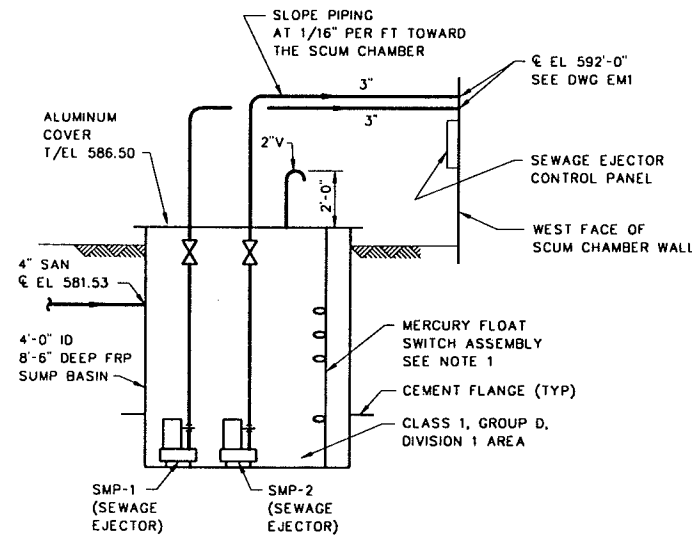
OPERATIONS BUILDING WASTE, VENT AND SANITARY PIPING DIAGRAM
NO SCALE



SEAL WATER CONNECTION
NO SCALE



STORM DRAIN DETAIL
SCALE: 1"=1'-0"



SEWAGE EJECTOR PIPING DIAGRAM
NOT TO SCALE

NOTE:

- POSITION MERCURY FLOAT SWITCHES FOR LIQUID LEVEL CONTROLS AS FOLLOWS:
 - INSTALL LOW WATER LEVEL SWITCH 6 INCHES ABOVE BOTTOM OF SUMP.
 - FIRST PUMP START: SET 3 FEET 0 INCHES ABOVE BOTTOM OF SUMP.
 - SECOND PUMP START: SET 3 FEET 2 INCHES ABOVE BOTTOM OF SUMP.
 - HIGH WATER LEVEL ALARM: SET 3 FEET 4 INCHES ABOVE BOTTOM OF SUMP.

RECORD DRAWING
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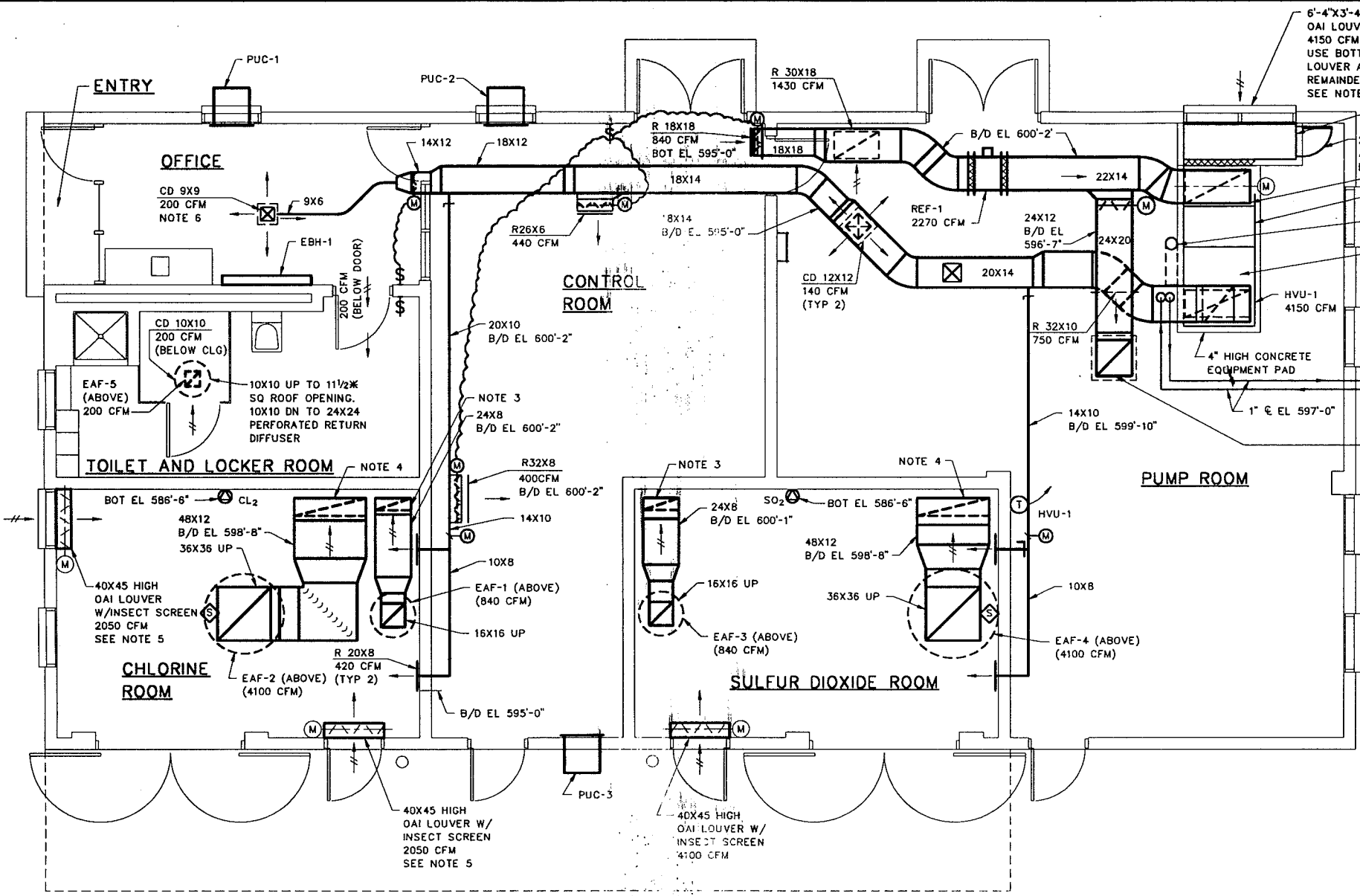
**OPERATIONS BUILDING
EQUIPMENT AND PLUMBING
MISCELLANEOUS DIAGRAMS
AND DETAILS**

**LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT**

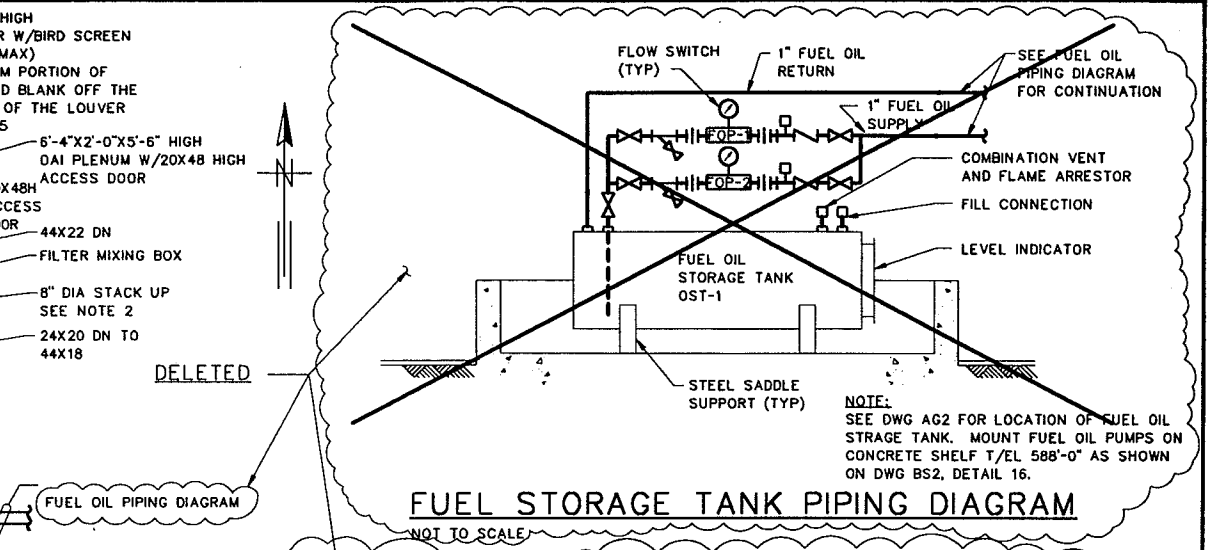
**CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION**

PLANS AND ESTIMATES PREPARED BY:
**GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606**

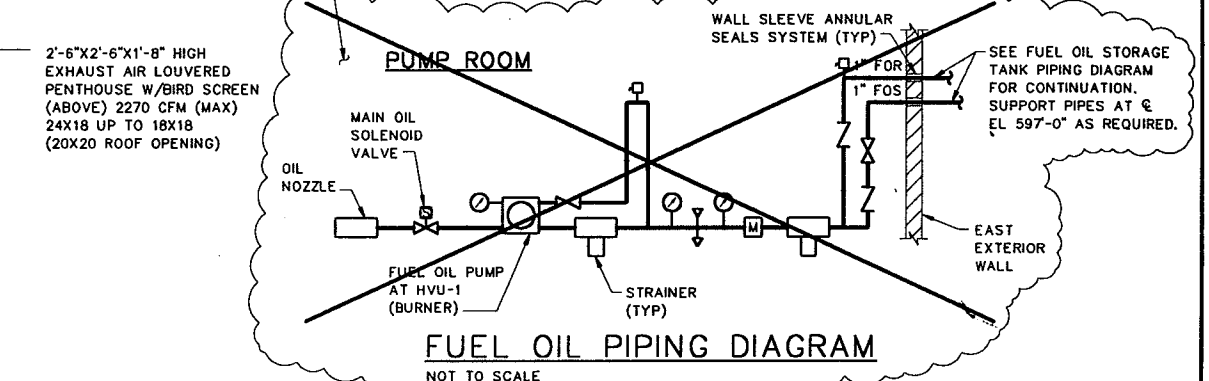
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			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
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				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: BM2		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 31 OF 49 SHEETS



PLAN EL 586'-0"
SCALE: 1/4"=1'-0"



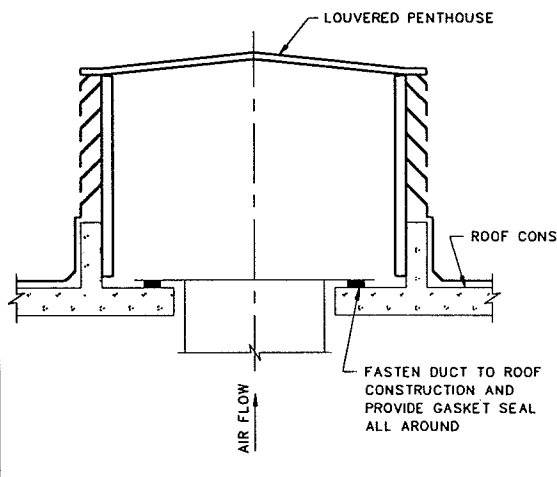
FUEL STORAGE TANK PIPING DIAGRAM
NOT TO SCALE



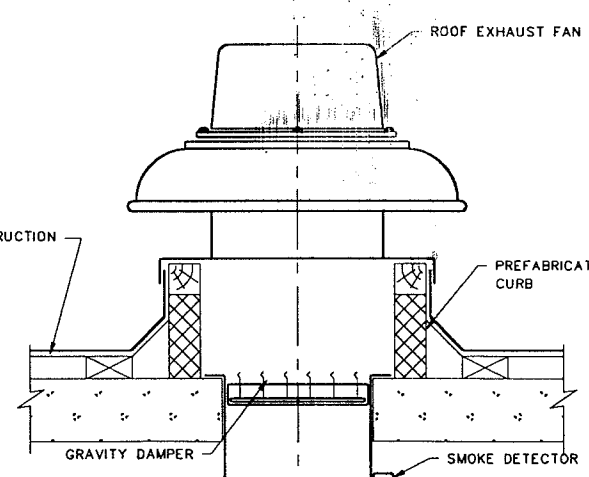
FUEL OIL PIPING DIAGRAM
NOT TO SCALE

NOTES:

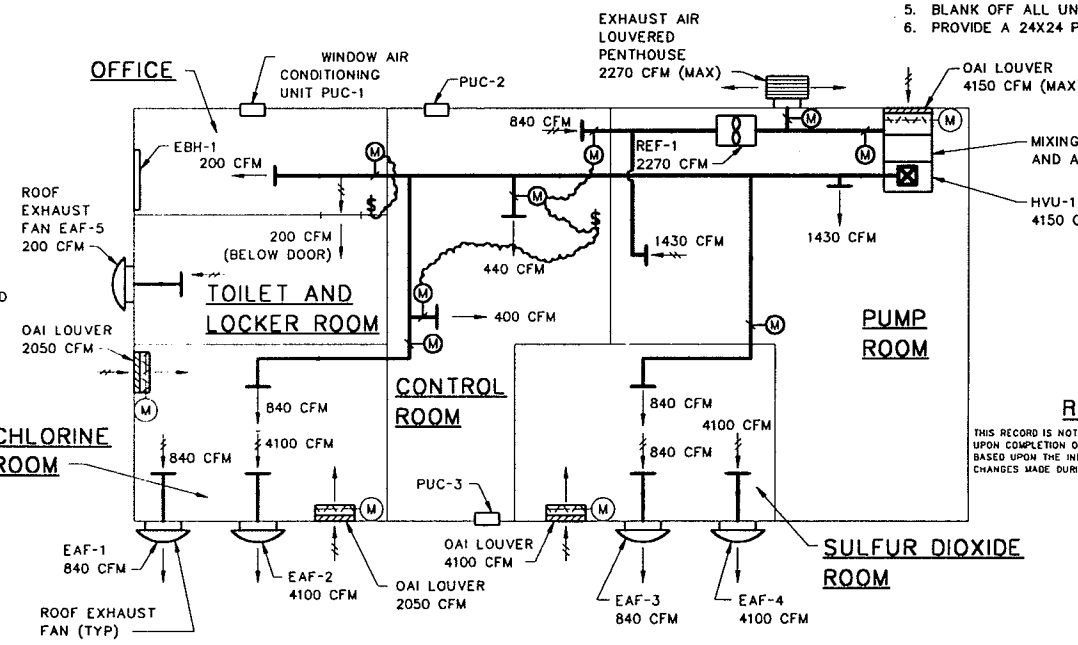
- * DETERMINE DIMENSIONS AFTER FINAL SELECTION OF EQUIPMENT.
- 8" DIA PAINTED GALV STEEL STACK UP THRU ROOF. TERMINATE 3'-0" ABOVE ROOF.
- 24X8 PVC COATED DUCT DN. TERMINATE DUCT 8" ABOVE FLOOR WITH OPENING CUT AT 45° TO HORIZONTAL AND COVER WITH PVC COATED BIRD SCREEN. PROVIDE 316 SST DUCT SUPPORT & FASTENERS AND A 304 SST FACE OPERATED OPPOSED BLADE VOLUME DAMPER AT EL 591'-0".
- 48X12 PVC COATED DUCT DN. TERMINATE DUCT 8" ABOVE FLOOR WITH OPENING CUT AT 45° TO HORIZONTAL AND COVER WITH PVC COATED BIRD SCREEN. PROVIDE 316 SST DUCT SUPPORT & FASTENERS AND A 304 SST FACE OPERATED OPPOSED BLADE VOLUME DAMPER AT EL 591'-0".
- BLANK OFF ALL UNUSED PORTION OF THE LOUVER.
- PROVIDE A 24X24 PERFORATED SUPPLY AIR DIFFUSER.



TYPICAL PENTHOUSE DUCT CONNECTION DETAIL
NOT TO SCALE



ROOF EXHAUST FAN DETAIL
NOT TO SCALE



AIR FLOW DIAGRAM
NOT TO SCALE

OPERATIONS BUILDING
HEATING AND VENTILATING
PLAN, DETAILS
AND DIAGRAMS

LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

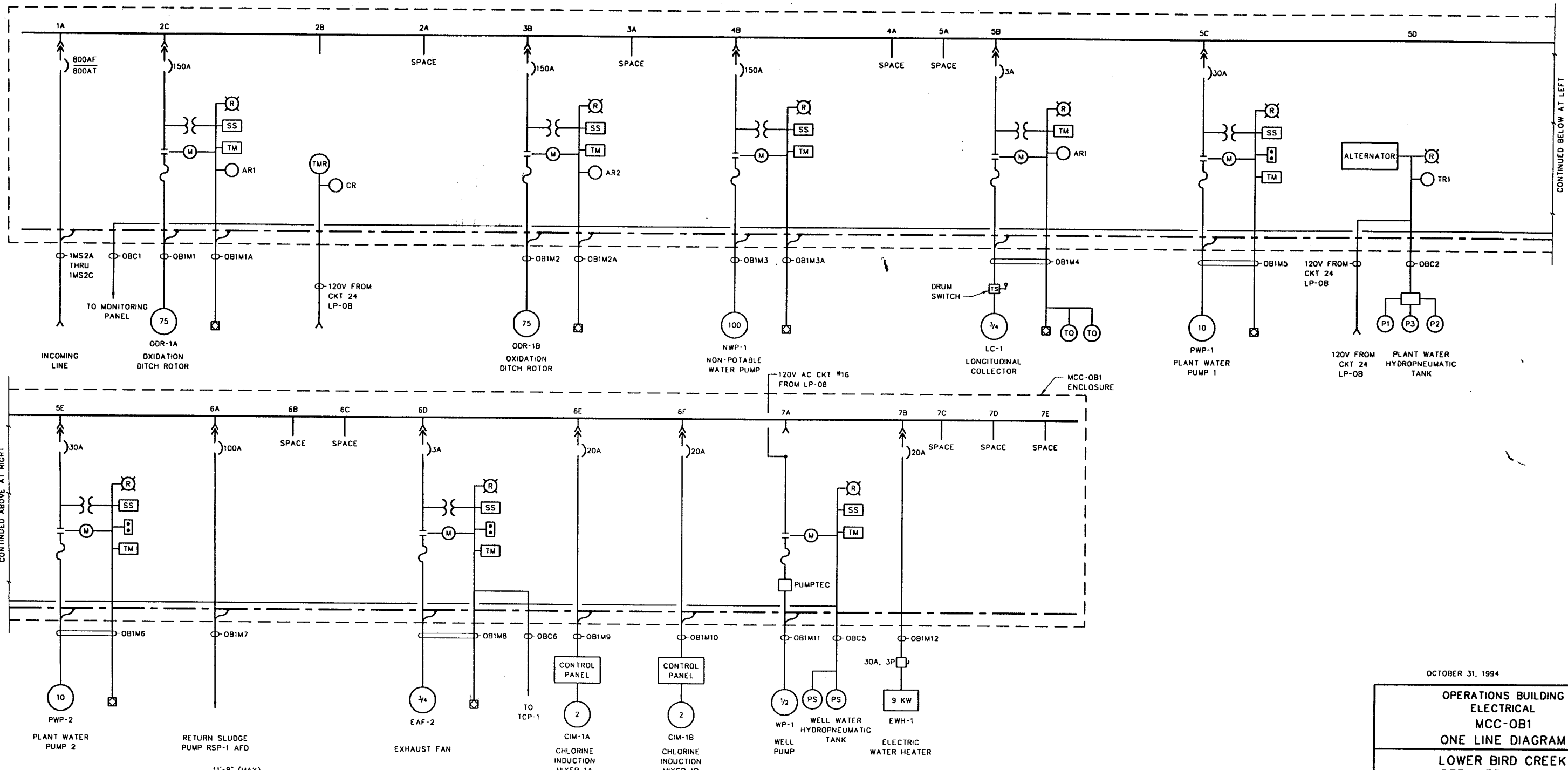
PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

RECORD DRAWING

THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

REVISION	BY	DATE	PLAN SCALE	DRAWN	AF	APPROVED
RECORD DRAWING		9-1	AS SHOWN	DESIGNED	KGB	
REVISIONS	EAJ	1996		SURVEY		
				PROFILE SCALE	FIELD MGR	
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					RECOMMENDED	
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
FILE:				DRAWING: BH1	DATE: OCTOBER 1994	
ATLAS PAGE NO.:						SHEET 32 OF 49 SHEETS

FILE: LBCAN03 1-1 01/06/99 13:07 GH-A



CONTINUED BELOW AT LEFT

CONTINUED ABOVE AT RIGHT

MOTOR CONTROL CENTER MCC-OB1

11'-8" (MAX)

	1	2	3	4	5	6	7
A	A	A	A	A	A	A	A
		B		B	B	B	B
	C	B	B	C	D	D	D
				D	E	E	E
				E	F	F	F

**MOTOR CONTROL CENTER MCC-OB1
FRONT ELEVATION**
NOT TO SCALE

OCTOBER 31, 1994

**OPERATIONS BUILDING
ELECTRICAL
MCC-OB1
ONE LINE DIAGRAM**

**LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT**

**CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION**

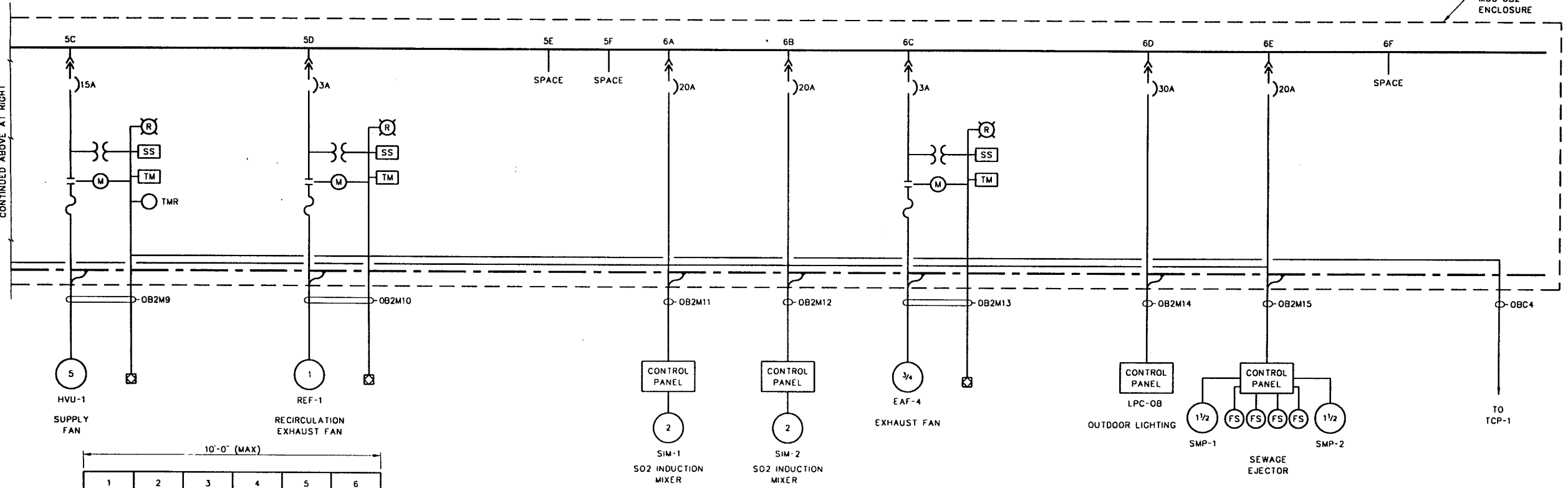
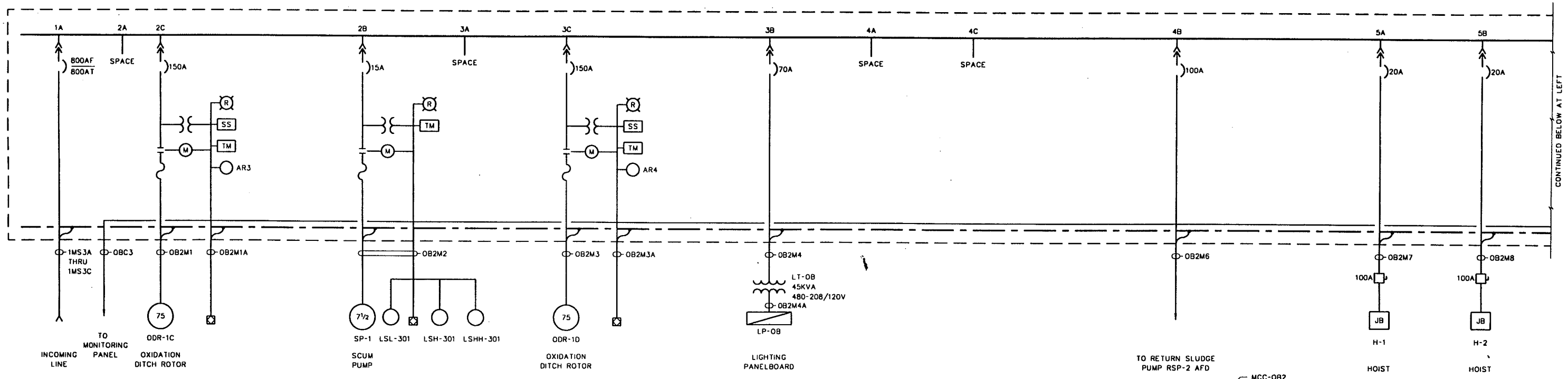
PLANS AND ESTIMATES PREPARED BY:
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ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606**

RECORD DRAWING

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REVISION	BY	DATE	PLAN SCALE	DRAWN	LCC	APPROVED
RECORD DRAWING		9-1	NONE	DESIGNED	MMN	
REVISIONS	EAJ	1996		SURVEY		
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				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: BE1		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 33 of 49 SHEETS

FILE: LB202 1.1 11/19/98 15:05 CH-4



10'-0" (MAX)

1	2	3	4	5	6
A	A	A	A	A	A
	B	B	B	C	C
	C	C	C	D	D
				E	E
				F	F

MOTOR CONTROL CENTER MCC-OB2

RECORD DRAWING

THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

OPERATIONS BUILDING
ELECTRICAL
MCC-OB2
ONE LINE DIAGRAM

LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

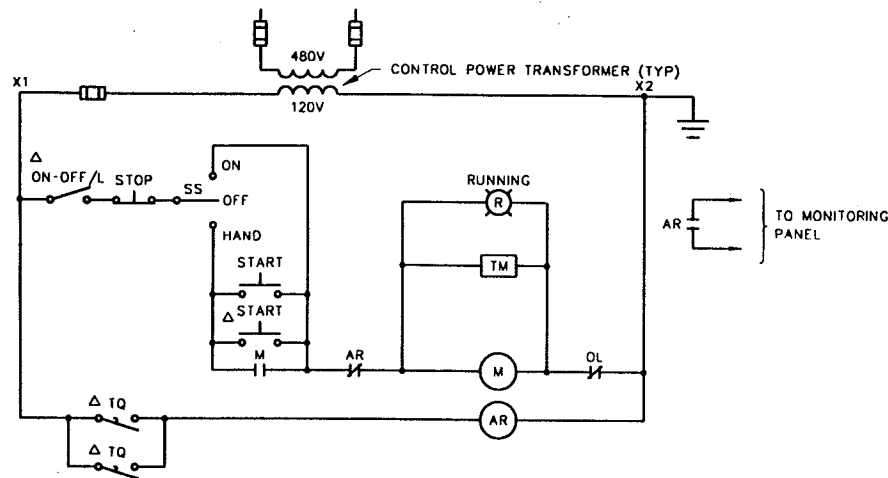
CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN
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100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

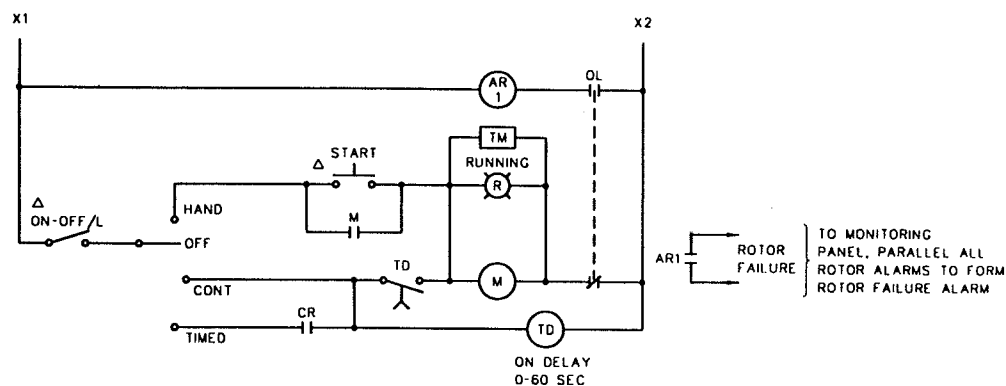
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				SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: BE2		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 34 OF 49 SHEETS

MOTOR CONTROL CENTER MCC-OB2
FRONT ELEVATION
NOT TO SCALE

FILE: 100004-11-11/17/94 15:08 CH-1

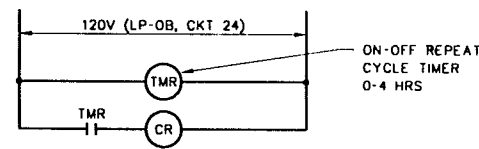


LONGITUDINAL COLLECTOR LC-1



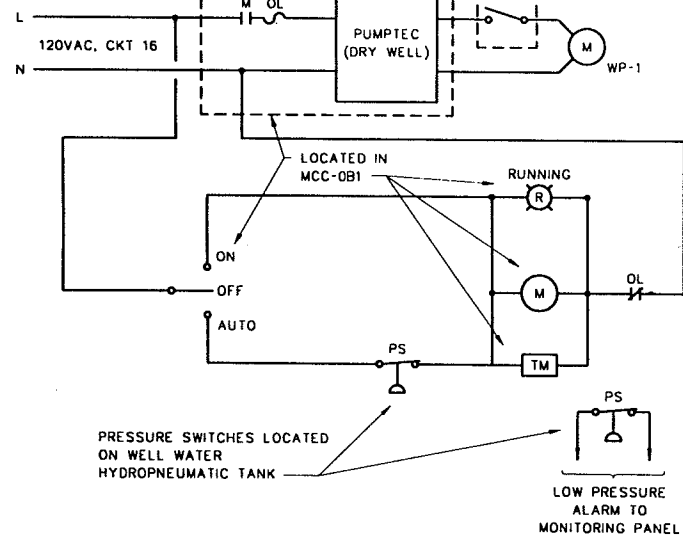
ROTOR ODR-1A

SIMILAR FOR ROTORS ODR-1B, ODR-1C, ODR-1D

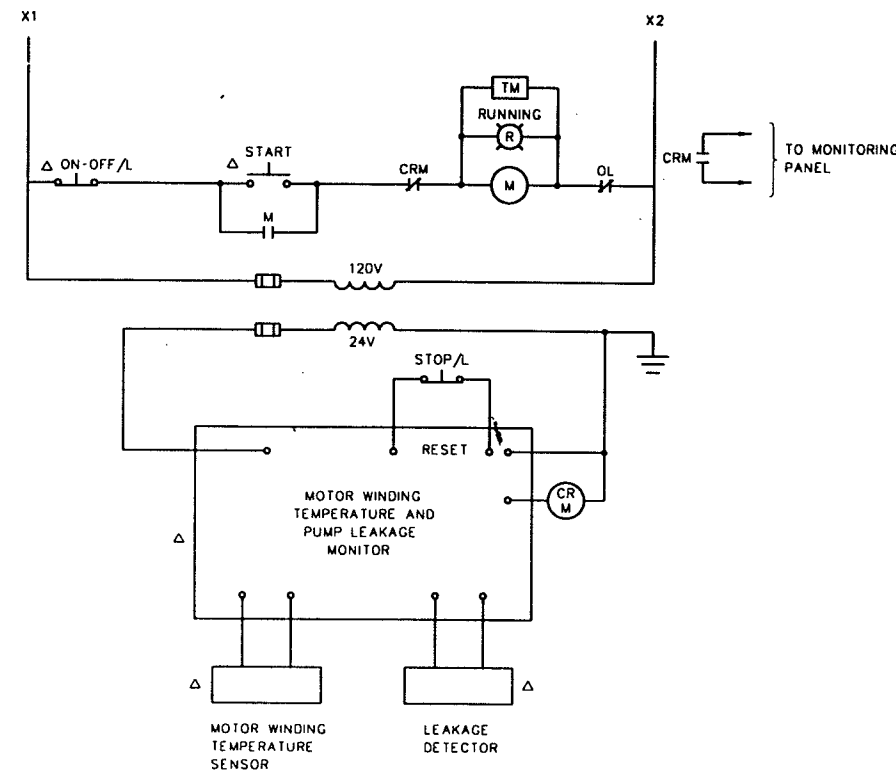


ROTOR MASTER TIMER

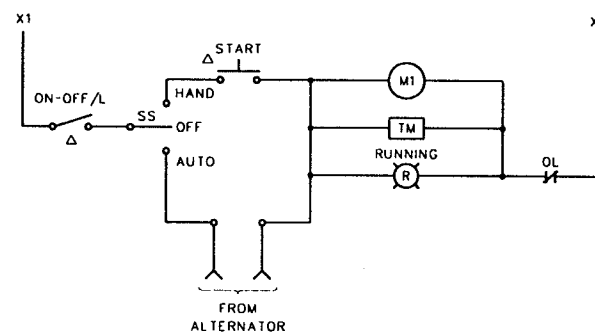
MOTOR STARTING SWITCH IN NEMA 4 ENCLOSURE LOCATED AT WELL



WELL PUMP WP-1 CONTROLS

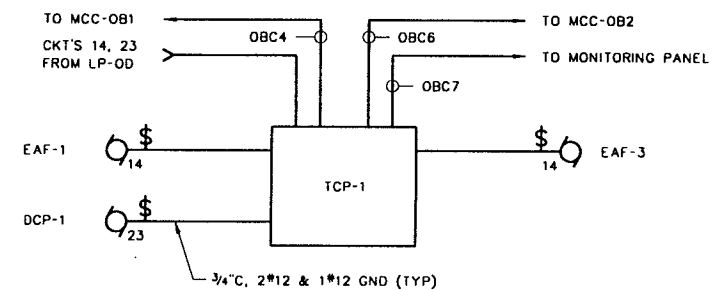


NONPOTABLE WATER PUMP NWP-1



PLANT WATER PUMP PWP-1

SIMILAR FOR PWP-2



TEMPERATURE CONTROL PANEL TCP-1

NOTE:

Δ DEVICE LOCATED NEAR PUMP

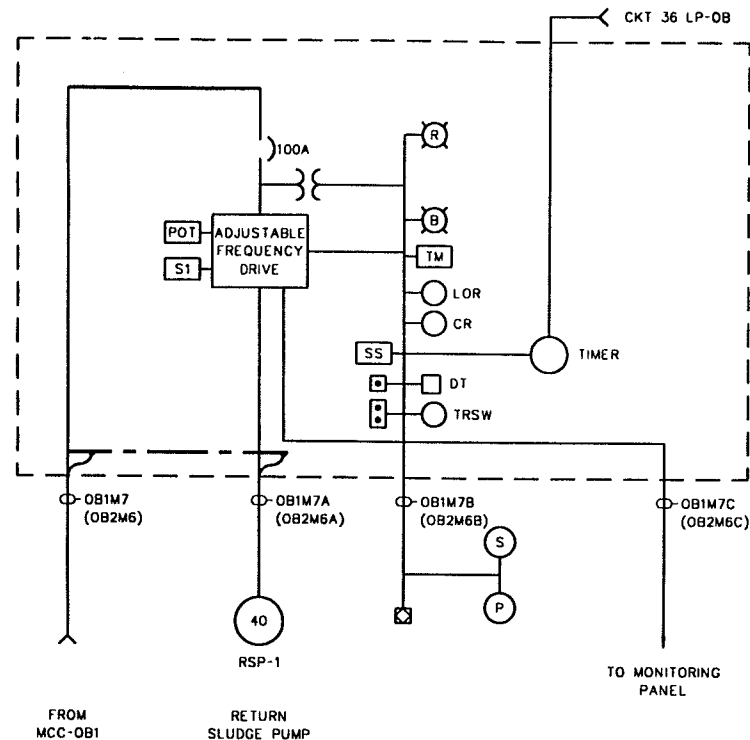
RECORD DRAWING

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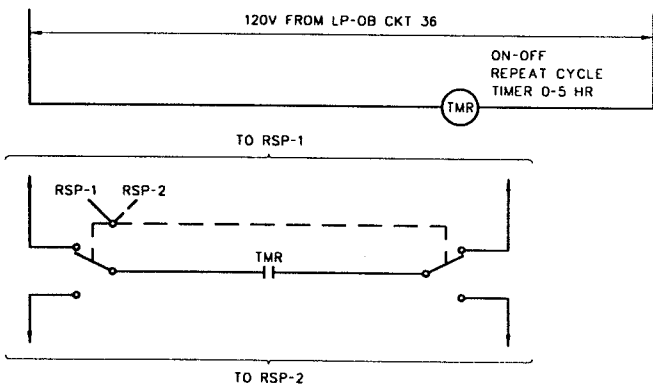
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			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ MGR		
			RECOMMENDED			
			DEPUTY DIRECTOR			PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: BE3		DATE: OCTOBER 1994
			ATLAS PAGE NO:			SHEET 35 OF 49 SHEETS

SUPPLY FAN HVU-1

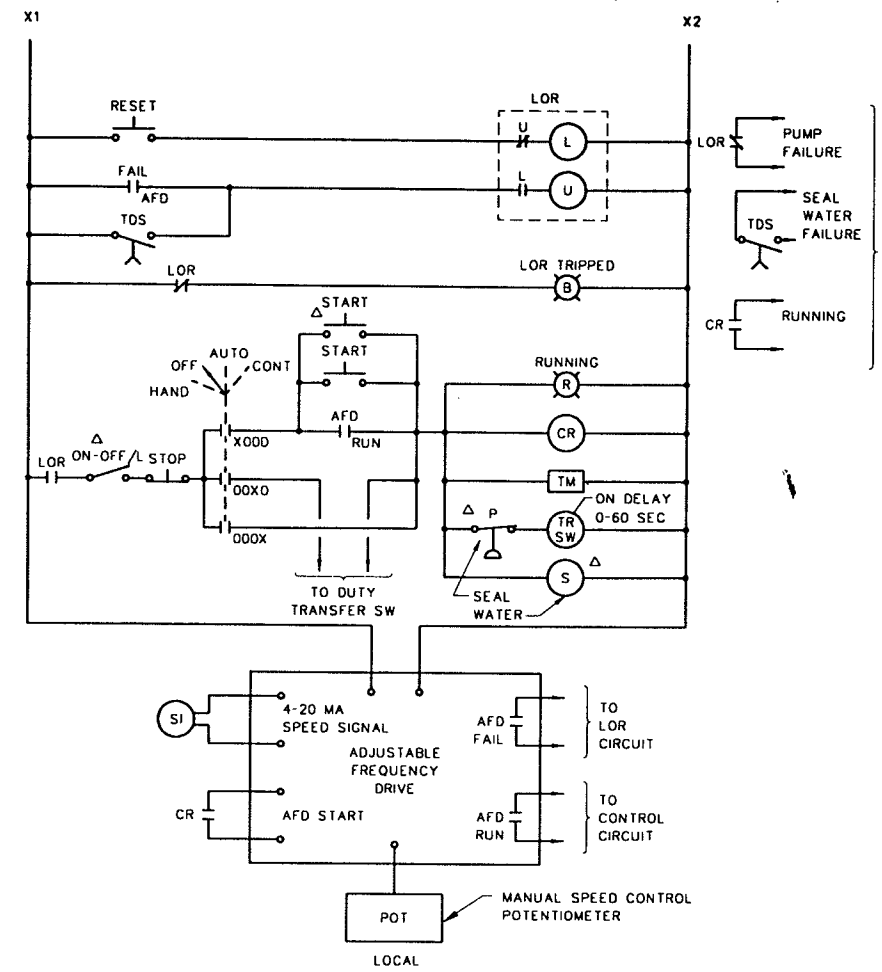
SIMILAR FOR REF-1, EAF-2, EAF-4



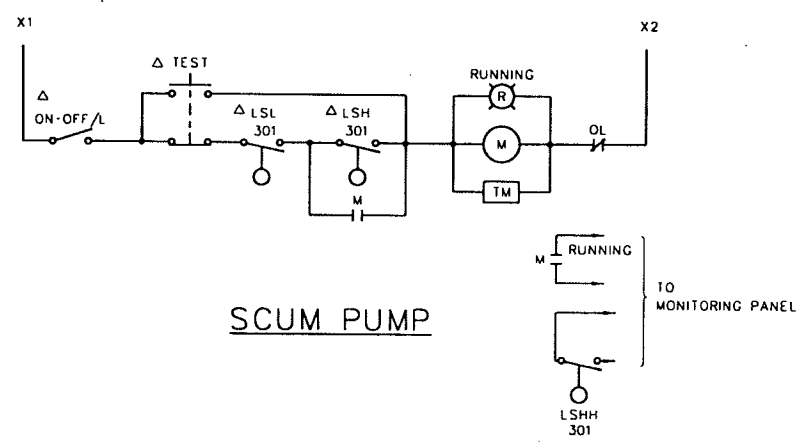
RETURN SLUDGE PUMP AFD RSP-1
RSP-2 AFD SIMILAR



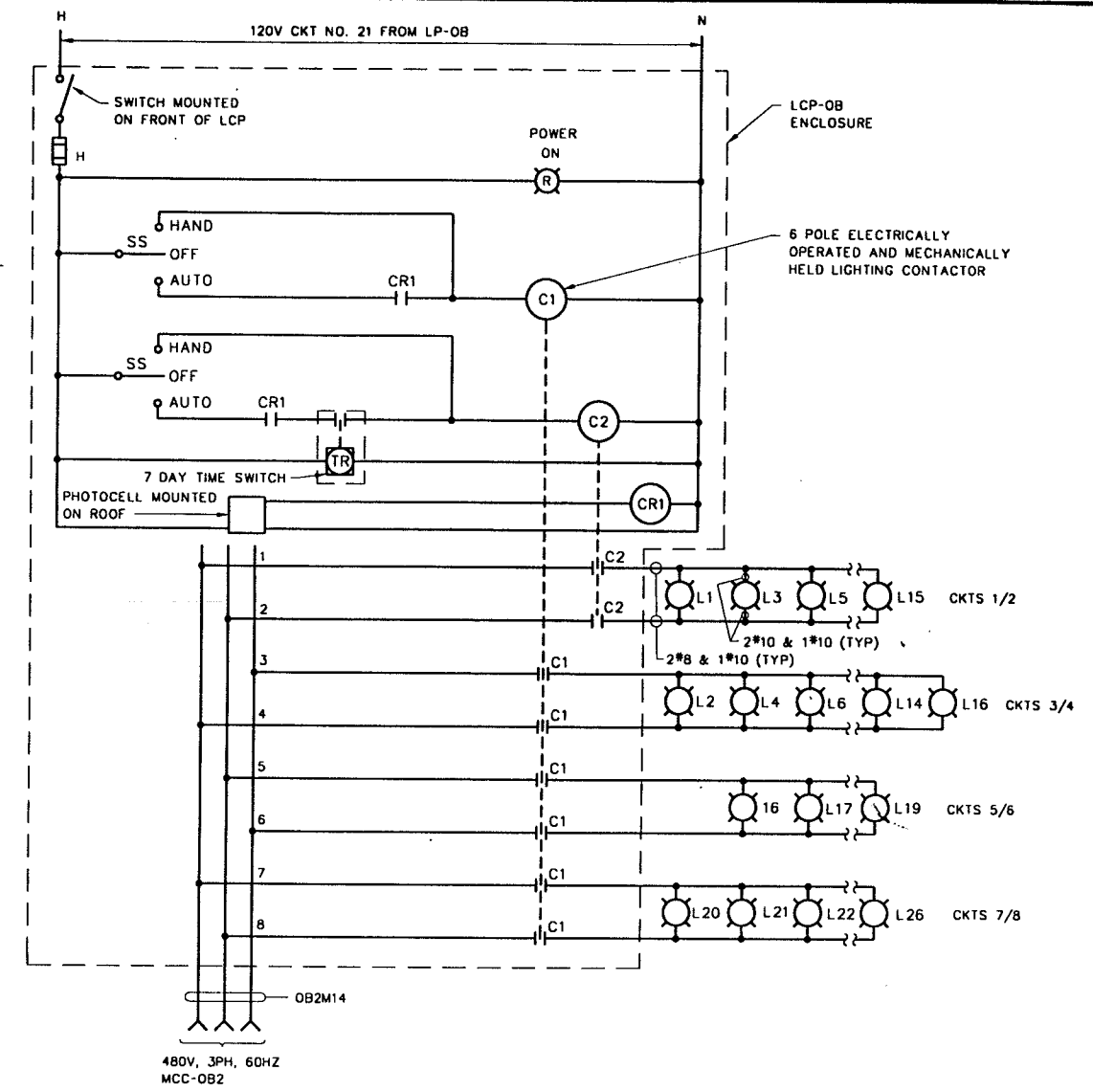
RETURN SLUDGE PUMP DUTY TRANSFER SWITCH



RETURN SLUDGE PUMP RSP-1
SIMILAR FOR RSP-2



SCUM PUMP



PANEL LCP-OB - OUTDOOR LIGHTING
ALL EQUIPMENT MOUNTED IN LCP EXCEPT AS NOTED

Δ DENOTES DEVICE LOCATED NEAR MOTOR

RECORD DRAWING

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OPERATIONS BUILDING ELECTRICAL

SCHEMATIC DIAGRAMS

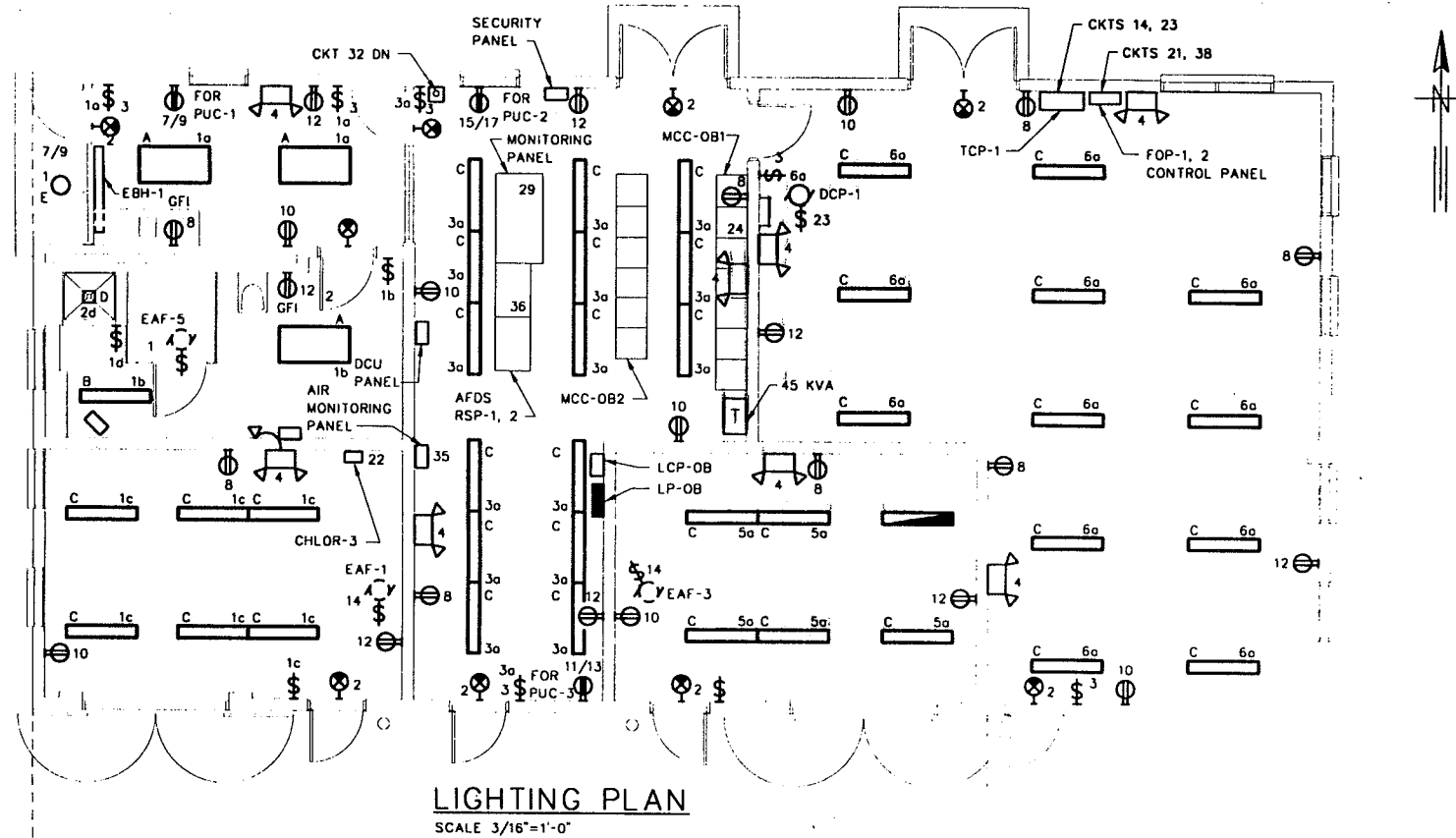
LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

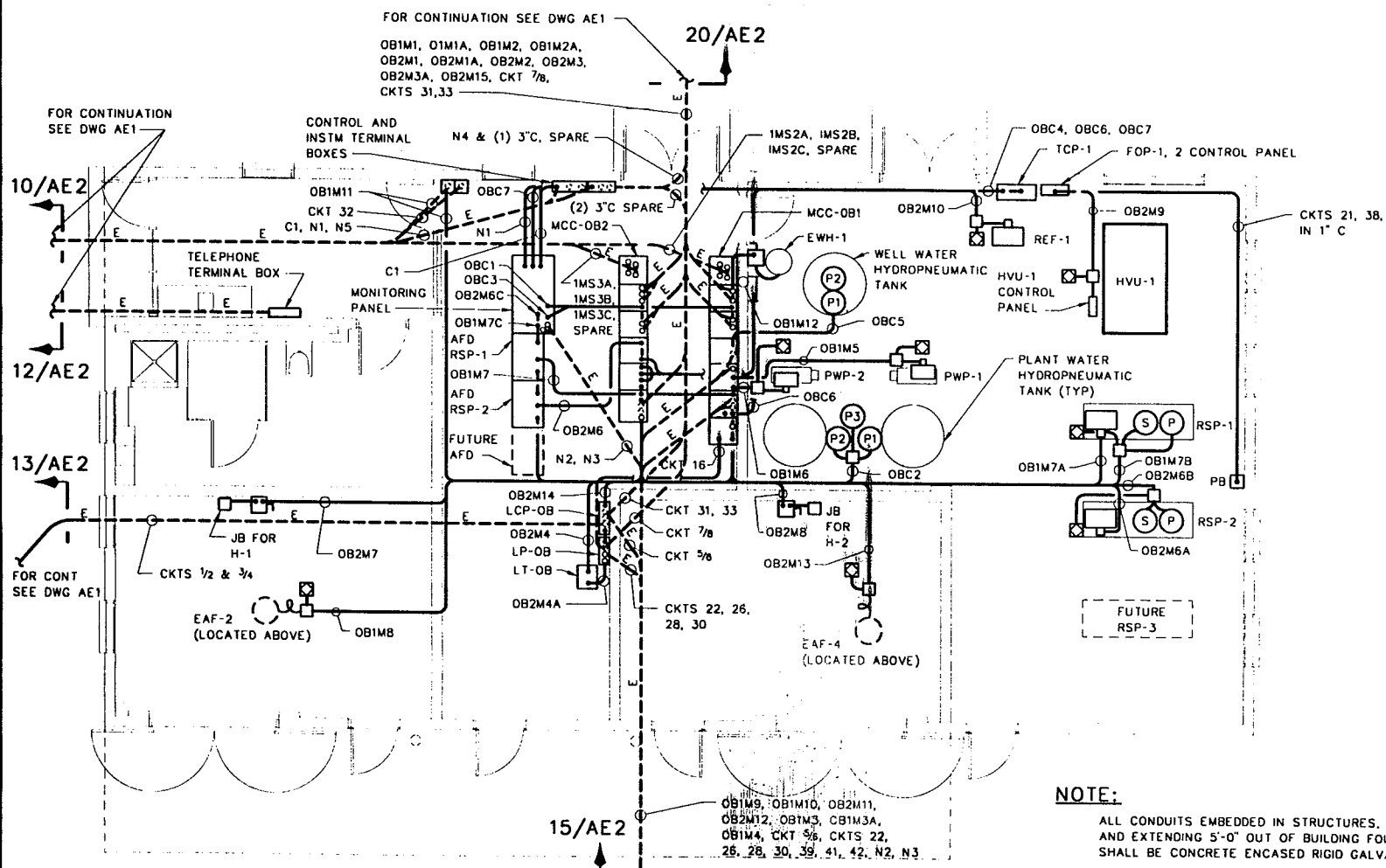
PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

REVISION	BY	DATE	PLAN SCALE	DRAWN	AF	APPROVED
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REVISIONS	EAJ	1996		SURVEY		
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			ATLAS PAGE NO.:			SHEET 36 OF 49 SHEETS

FILE: LP2408 1.1 11/15/96 15:07 0-4



LIGHTING PLAN
SCALE 3/16"=1'-0"



POWER PLAN
SCALE: 3/16"=1'-0"

NOTE:
ALL CONDUITS EMBEDDED IN STRUCTURES, UNDER STRUCTURES AND EXTENDING 5'-0" OUT OF BUILDING FOUNDATIONS SHALL BE CONCRETE ENCASED RIGID GALVANIZED STEEL.

**OPERATIONS BUILDING
ELECTRICAL**

POWER AND LIGHTING PLANS

**LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT**

**CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION**

PLANS AND ESTIMATES PREPARED BY:
**GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606**

RECORD DRAWING

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REVISIONS	EAJ	1996		SURVEY		
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			HORIZONTAL:	SECT. MGR		
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				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: BE5		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 37 OF 49 SHEETS

CONDUIT		CONDUCTOR QUANTITY & SIZE	FROM	TO	REMARKS
NUMBER	SIZE				
MOTOR CONTROL CENTER MCC-OB1					
OB1M1	2-1/2	3#2/0 & 1#6 GND	MCC-OB1	ODR-1A	
OB1M1A	3/4	4#12 & 1#12 GND	MCC-OB1	ODR-1A	
OB1M2	2-1/2	3#2/0 & 1#6 GND	MCC-OB1	ODR-1B	
OB1M2A	3/4	4#12 & 1#12 GND	MCC-OB1	ODR-1B	
OB1M3	2-1/2	3#2/0 & 1#6 GND	MCC-OB1	NWP-1	
OB1M3A	1	9#12 & 1#12 GND	MCC-OB1	NWP-1	
OB1M4	1-1/4	3#12, 6#14 & 1#12 GND	MCC-OB1	LC-1	
OB1M5	1-1/4	3#10, 4#14 & 1#10 GND	MCC-OB1	PWP-1	
OB1M6	1-1/4	3#10, 4#14 & 1#10 GND	MCC-OB1	PWP-2	
OB1M7	1-1/4	3#6 & 1#8 GND	MCC-OB1	AFD RSP-1	
OB1M8	1	3#12, 4#14 & 1#12 GND	MCC-OB1	EAF-2	
OB1M9	3/4	3#12, 1#14 & 1#12 GND	MCC-OB1	CIM-1A	
OB1M10	3/4	3#12, 1#14 & 1#12 GND	MCC-OB1	CIM-1B	
OB1M11	3/4	2#12, 1#14 & 1#12 GND	MCC-OB1	WP-1	
OB1M12	3/4	3#12, 1#14 & 1#12 GND	MCC-OB1	EW-1	
MOTOR CONTROL CENTER MCC-OB2					
OB2M1	2-1/2	3#2/0 & 1#6 GND	MCC-OB2	ODR-1C	
OB2M1A	3/4	4#12 & 1#12 GND	MCC-OB2	ODR-1C	
OB2M2	1-1/4	5#12, 9#14 & 1#12 GND	MCC-OB2	SP-1 CONTROL PANEL	
OB2M3	2-1/2	3#2/0 & 1#6 GND	MCC-OB2	ODR-1D	
OB2M3A	3/4	4#12 & 1#12 GND	MCC-OB2	ODR-1D	
OB2M4	1-1/4	3#6 & 1#8 GND	MCC-OB2	LT-OB	
OB2M4A	2	4#2 & 1#8 GND	MCC-OB2	LT-OB	
OB2M5	-	-	MCC-OB2	-	
OB2M6	1-1/4	3#6 & 1#8 GND	MCC-OB2	AFD RSP-2	
OB2M7	3/4	3#12 & 1#12 GND	MCC-OB2	H-1	
OB2M8	3/4	3#12 & 1#12 GND	MCC-OB2	H-2	
OB2M9	1	3#12, 4#14 & 1#12 GND	MCC-OB2	HVU-1	
OB2M10	1	3#12, 4#14 & 1#12 GND	MCC-OB2	REF-1	
OB2M11	3/4	3#12, 4#14 & 1#12 GND	MCC-OB2	SIM-1	
OB2M12	3/4	3#12, 4#14 & 1#12 GND	MCC-OB2	SIM-2	
OB2M13	1	3#12, 4#14 & 1#12 GND	MCC-OB2	EAF-4	
OB2M14	3/4	3#10 & 1#10 GND	MCC-OB2	LCP-OB	
OB2M15	1	3#12, 2#14 & 1#12 GND	MCC-OB2	SEWAGE EJECTOR CONTROL PANEL	
ADJUSTABLE FREQUENCY DRIVES AFD RSP-1 & AFD RSP-2					
OB2M7A	1-1/2	3#6, 6#14 & 1#8 GND	AFD RSP-1	RSP-1 POWER	
OB2M7B	1	8#14 & 1#12 GND	AFD RSP-1	RSP-1 CONTROL	
OB2M7C	1	8#14	AFD RSP-1	MONITORING PANEL	
OB2M6A	1-1/2	3#6, 6#14 & 1#8 GND	AFD RSP-2	RSP-2 POWER	
OB2M6B	1	8#14 & 1#12 GND	AFD RSP-2	RSP-2 CONTROL	
OB2M6C	1	8#14	AFD RSP-2	MONITORING PANEL	
OPERATIONS BUILDING - CONTROL CONDUITS					
OBC1	2-1/2	50#14 & 1#12 GND	MCC-OB1	MONITORING PANEL	
OBC2	1	6#14 & 1#12 GND	MCC-OB1	PLANT WATER HYDRO-PNEUMATIC TANK MONITORING PANEL	CONTROL
OBC3	2	40#14 & 1#12 GND	MCC-OB2	MONITORING PANEL	
OBC4	1-1/2	20#14 & 1#12 GND	MCC-OB2	TCP-1	
OBC5	3/4	4#14 & 1#12 GND	MCC-OB1	WELL WATER HYDRO-PNEUMATIC TANK	CONTROL
OBC6	1	8#14 & 1#12 GND	MCC-OB1	TCP-1	
OBC7	1	4#14 & 1#12 GND	MCC-OB1	MONITORING PANEL	
OPERATIONS BUILDING INSTRUMENTATIONS CONDUITS					
N2	3/4	2-2/C #16 SH	MONITORING PANEL	FIT-201, FIT-202	
N3	3/4	1-2/C #16 SH	MONITORING PANEL	EFFLUENT SAMPLER	CHLORINATOR/SULFONATOR
N4	3/4	1-2/C #16 SH	MONITORING PANEL	AIT-401	
N5	3/4	1-2/C #16 SH	MONITORING PANEL	SWITCHBOARD MS-1	

CIRCUIT SCHEDULE - LIGHTING PANEL LP-OB (208Y/120V, 3PH, 4W)											
PHASE A				PHASE B				PHASE C			
CKT NO.	WATTS	BRKR SIZE	SERVES	CKT NO.	WATTS	BRKR SIZE	SERVES	CKT NO.	WATTS	BRKR SIZE	SERVES
1	1,130	20A	LIGHTING, EAF-5	3	1,080	20A	LIGHTING	5	380	20A	LIGHTING
2	500	20A	EXIT SIGNS	4	1,200	20A	EMERG. LIGHTING	6	860	20A	LIGHTING
7	1,840	20A 2P	PUC-1, EBH-1	9	1,840	--	PUC-1, EBH-1	11	1,300	20A 2P	PUC-3
8	1,600	20A	RECEPT	10	1,400	20A	RECEPT	12	1,600	20A	RECPT.
13	1,300	--	PUC-3	15	1,300	20A 2P	PUC-2	17	1,300	--	PUC-2
14	1,340	20A	EAF-1, EAF-3	16	1,200	20A	WATER WELL WP-1	18	500	20A L	SCUM PUMP PROBES
19		20A	DO METER, OXIDATION DITCH	21	1,340	20A L	LIGHTING CONTACTORS	23	850	20A L	DCP-1, TCP-1 & POWER PANEL
20	AFD TIMER	20A	SECURITY PANEL	22	400	20A L	CHLOR 1, 2, 3 & SULFON 1, 2	24	500	20A L	MCC-OB1
25		20A	SPARE	27		20A	SPARE	29	500	20A L	MONITORING PANEL
26	500	20A L	EFFLUENT SAMPLER	28	600	20A GFI	RCPT - CHLORIF/CLORIN.	30	400	20A L	FIT-1, FIT-2
31	1,000	20A GFI	RCPT-OXIDATION DITCH	33	1,000	20A GFI	RCPT - OXIDATION DITCH	35	500	20A L	AIR MONITORING & DCU
											CHLORINE PANEL
32	600	20A L	EFFLUENT STRUCTURE INSTRUMENTATION	34		20A	SPARE	36	100	20A L	AFD RSP
37		20A	SPARE	39	600	20A L	HEAT TRACE	41	600	20A L	HEAT TRACE
38	500	20A L	HEAT TRACE	40		20A	SPARE	42	600	20A L	HEAT TRACE
10,310				11,960				9,990			
A		10,310		B		11,960		C		9,990	
TOTAL		32,260		WATTS							

NOTES:
L - DENOTES CIRCUIT BREAKER WITH PROVISION FOR LOCKING.
GFI - DENOTES CIRCUIT BREAKER WITH GROUND FAULT INTERRUPTER.
THE CONTRACTOR SHALL SIZE THE CONDUIT AND WIRES FOR 120/280V CIRCUITS TO LIMIT THE VOLTAGE DROP TO 3 PERCENT.

OPERATIONS BUILDING
ELECTRICAL
LIGHTING PANEL
CONDUIT AND CABLE SCHEDULES

LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

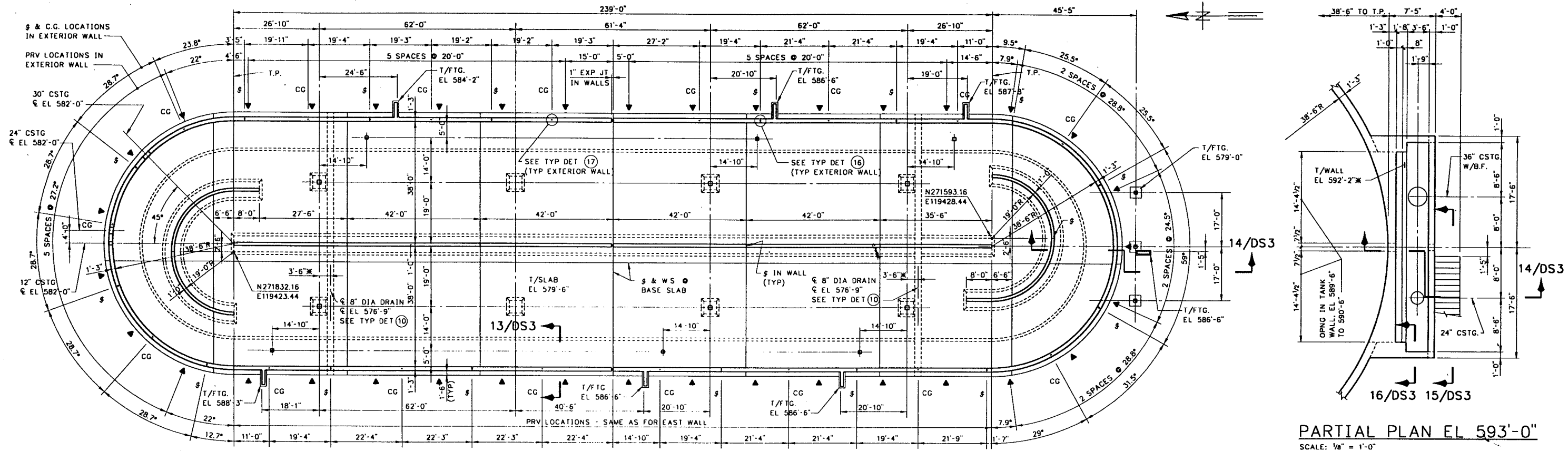
CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

RECORD DRAWING
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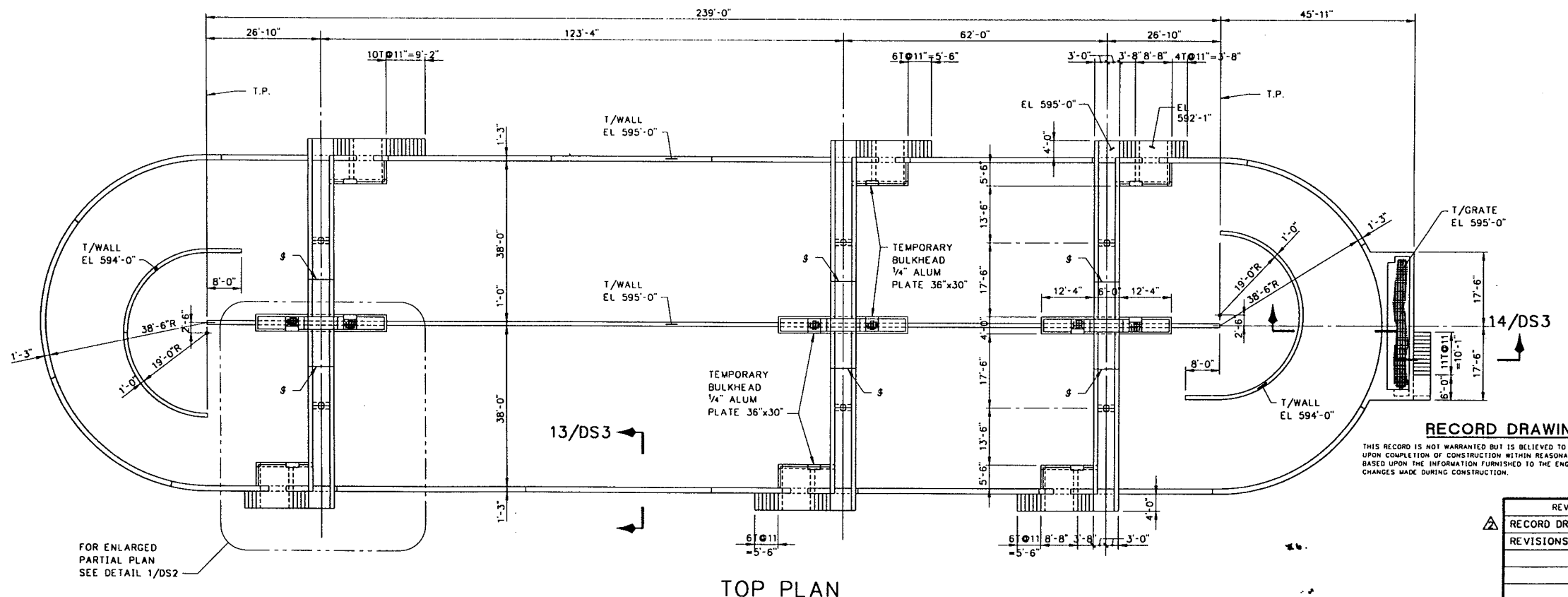
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			FILE:	DRAWING: RE6		DATE: OCTOBER 1994
			ATLAS PAGE NO:			SHEET 38 OF 49 SHEETS

FILE: LDC418 11-11/79/98 1526 01-4



▲ INDICATES PRESSURE RELIEF VALVE IN WALL

SECTIONAL PLAN
SCALE: 1/16" = 1'-0"



FOR ENLARGED PARTIAL PLAN SEE DETAIL 1/DS2

TOP PLAN
SCALE: 1/16" = 1'-0"

NOTES:
1. FOR TYPICAL DETAILS DESIGNATED THUS (3) AND GENERAL NOTES SEE DWG. AS1 AND AS2.
2. FOR STAIR NOSINGS, SEE DWG. BA3.

OXIDATION DITCH STRUCTURAL

PLANS

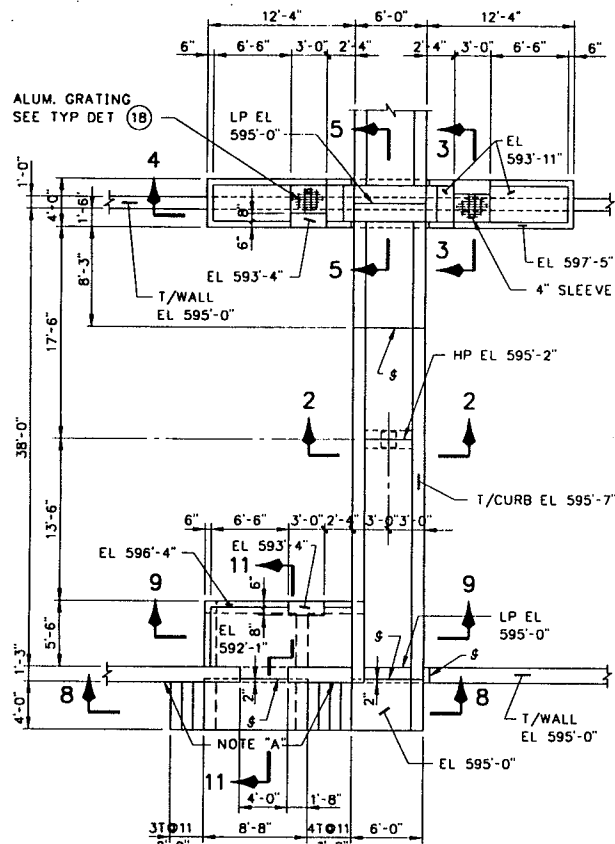
LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. I
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

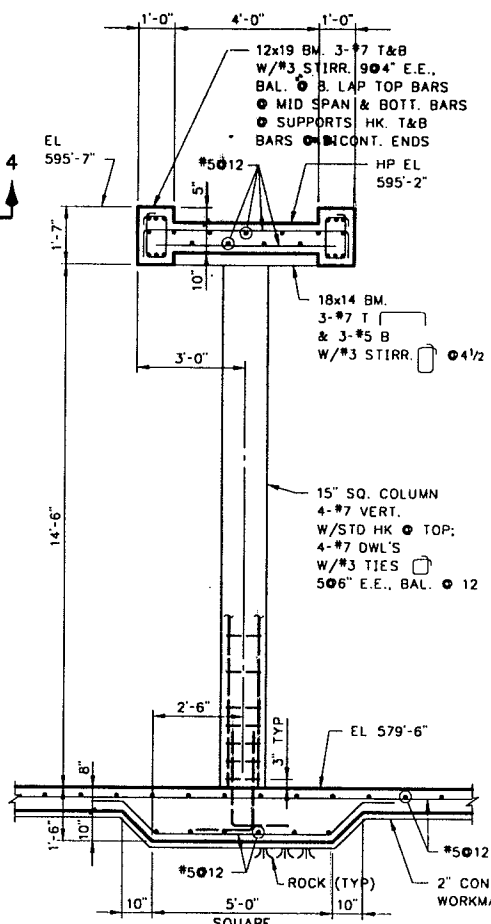
PLANS AND ESTIMATES PREPARED BY:
KLEIN AND HOFFMAN, INC.
CONSULTING ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
PROJECT NO. 4543

REVISION	BY	DATE	PLAN SCALE	DRAWN	JEB	APPROVED
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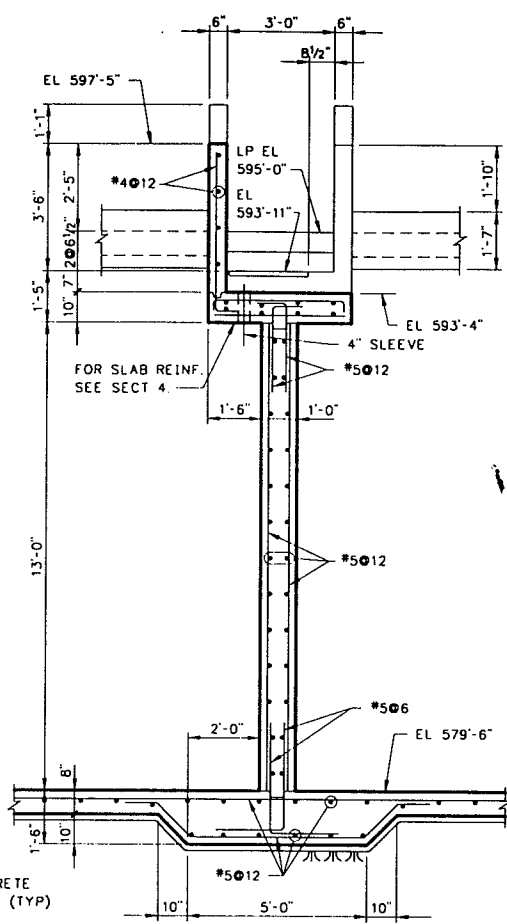
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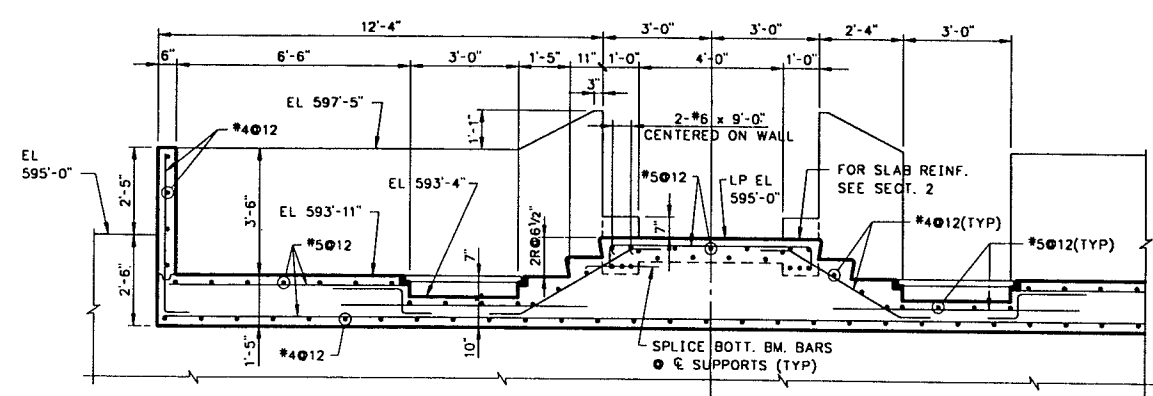
PARTIAL PLAN
DETAIL 1/DS1
SCALE: 1/8" = 1'-0"



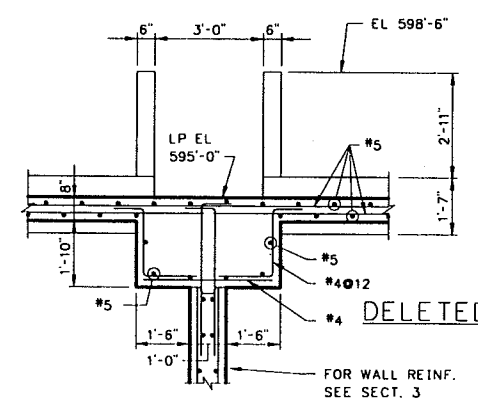
SECTION 2
SCALE: 3/8" = 1'-0"



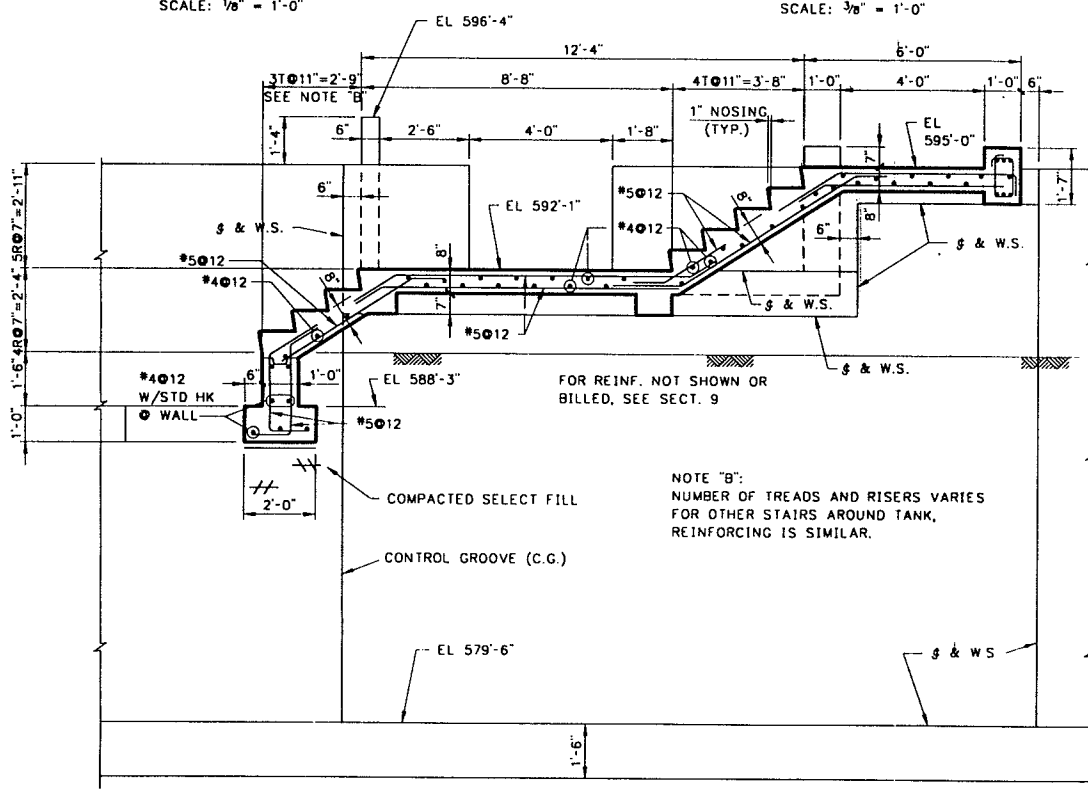
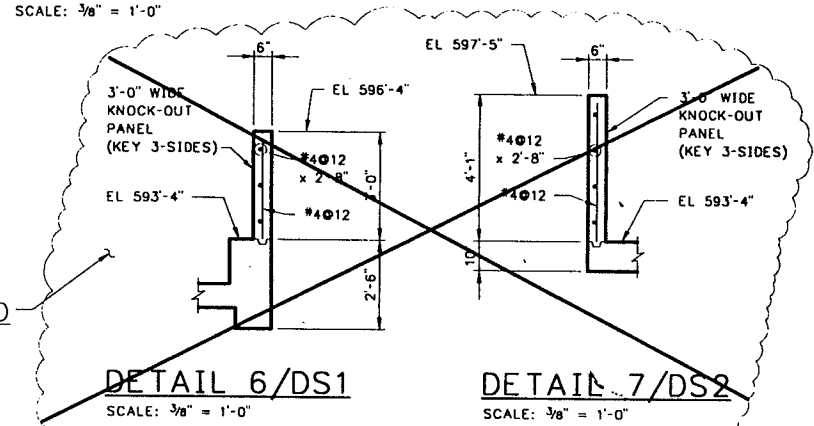
SECTION 3
SCALE: 3/8" = 1'-0"



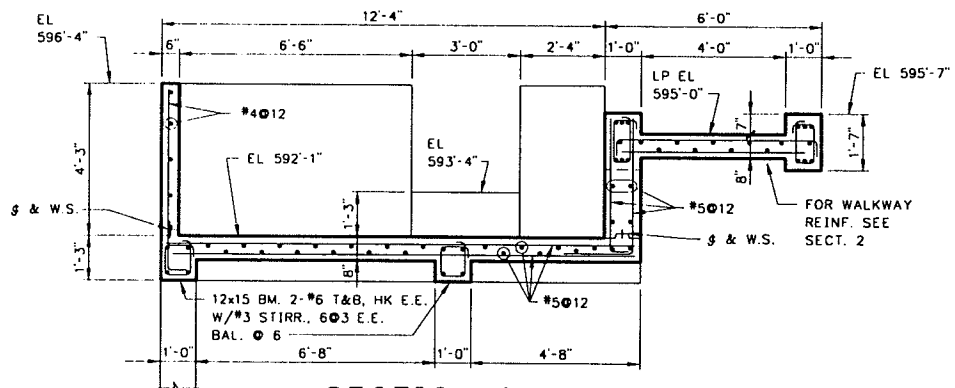
SECTION 4
SCALE: 3/8" = 1'-0"



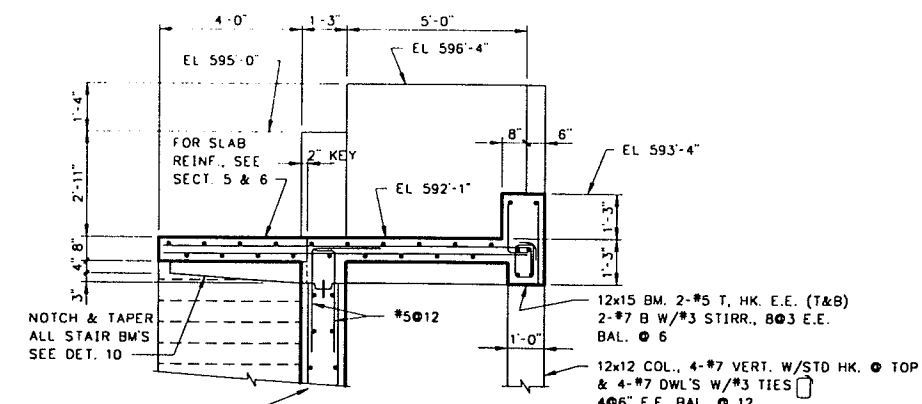
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SCALE: 3/8" = 1'-0"



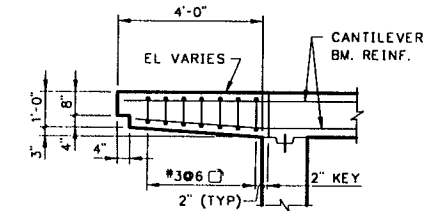
SECTION 8
SCALE: 3/8" = 1'-0"



SECTION 9
SCALE: 3/8" = 1'-0"



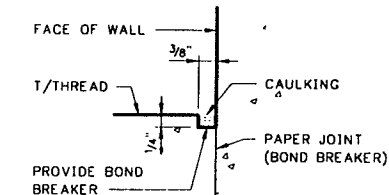
SECTION 11
SCALE: 3/8" = 1'-0"



THIS DETAIL APPLYS FOR ALL STAIR BMS UNLESS SHOWN

FOR WALL REINF. SEE SECT. 11

DETAIL 10
SCALE: 3/8" = 1'-0"



DETAIL 12
SCALE: 6" = 1'-0"

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			FILE:	DRAWING: DS2		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 40 OF 49 SHEETS

OXIDATION DITCH STRUCTURAL

SECTIONS

LOWER BIRD CREEK WASTEWATER FACILITIES

PROJECT NO. TMUA SA 92-3

CONTRACT NO. I

WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT

ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:

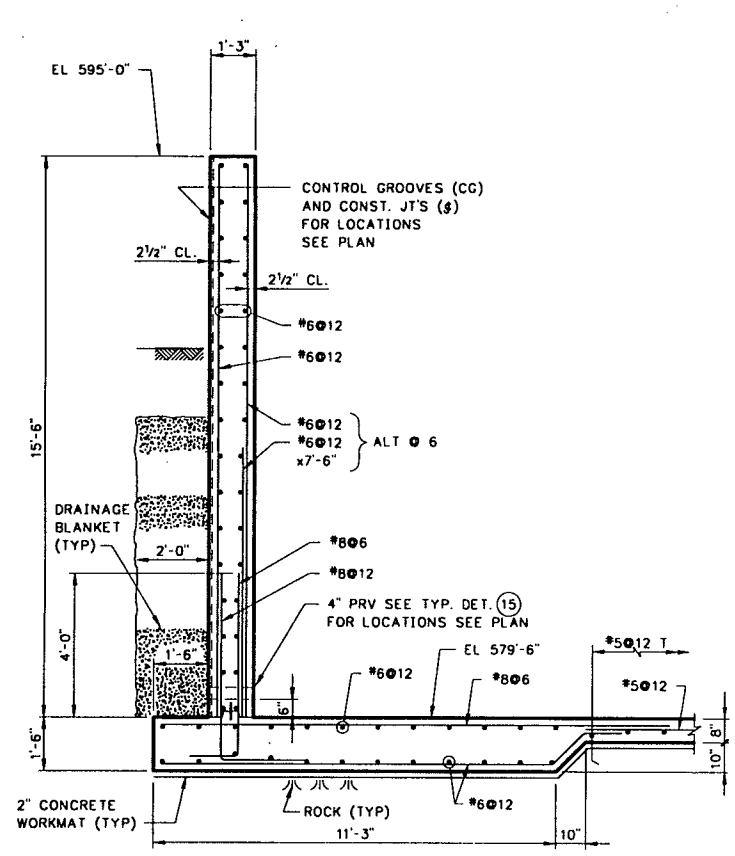
KLEIN AND HOFFMAN, INC.

CONSULTING ENGINEERS

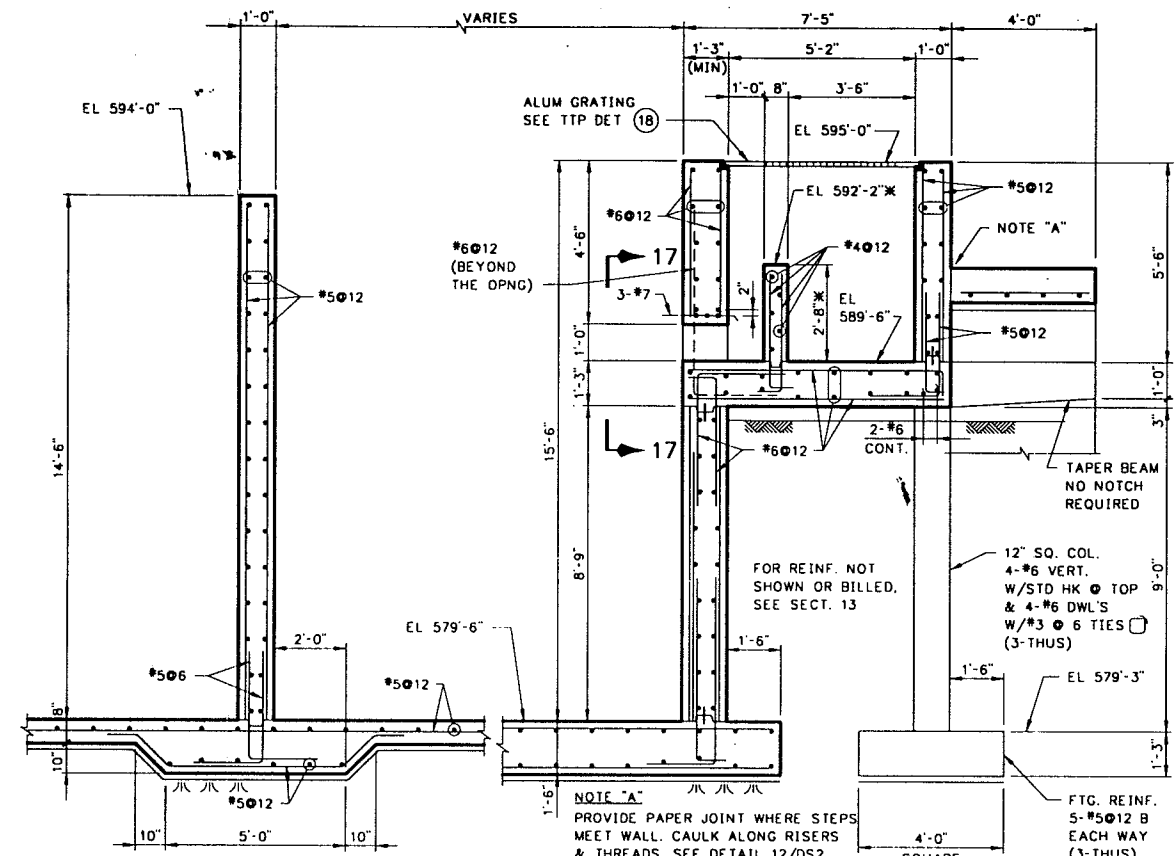
100 SOUTH WACKER DRIVE

CHICAGO, ILLINOIS 60606

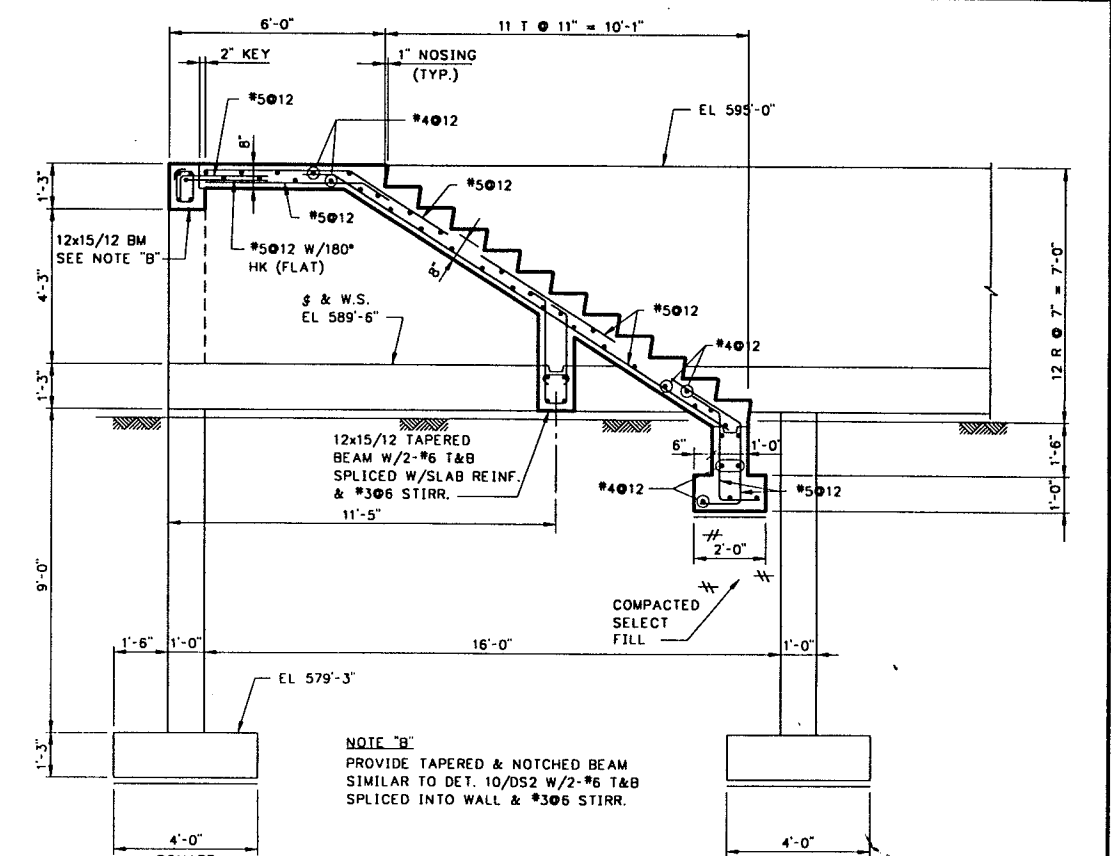
PROJECT NO. 4543



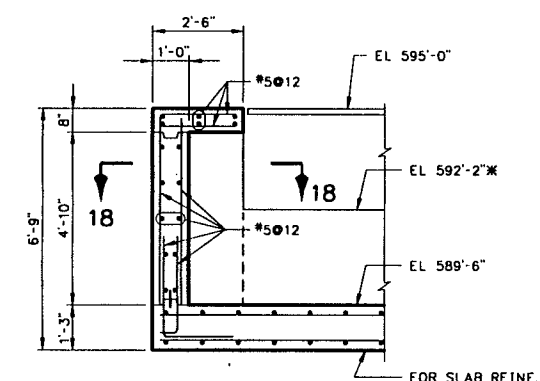
SECTION 13/DS1
SCALE: 3/8" = 1'-0"



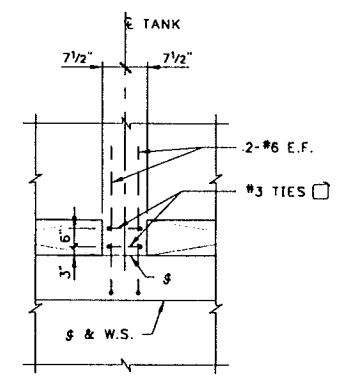
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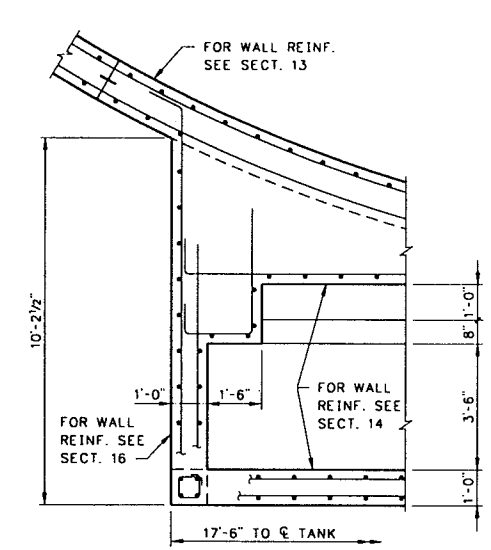
SECTION 15/DS1
SCALE: 3/8" = 1'-0"



SECTION 16/DS1
SCALE: 3/8" = 1'-0"



SECTION 17
SCALE: 3/8" = 1'-0"



SECTION 18
SCALE: 3/8" = 1'-0"

NOTE "B"
PROVIDE TAPERED & NOTCHED BEAM SIMILAR TO DET. 10/DS2 W/2-#6 T&B SPLICED INTO WALL & #306 STIRR.

NOTES:
1. FOR TYPICAL DETAILS DESIGNATED THUS (3) AND GENERAL NOTES SEE DWG. AS1 AND AS2.

OXIDATION DITCH STRUCTURAL

SECTIONS

LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. I
WASTEWATER TREATMENT PLANT

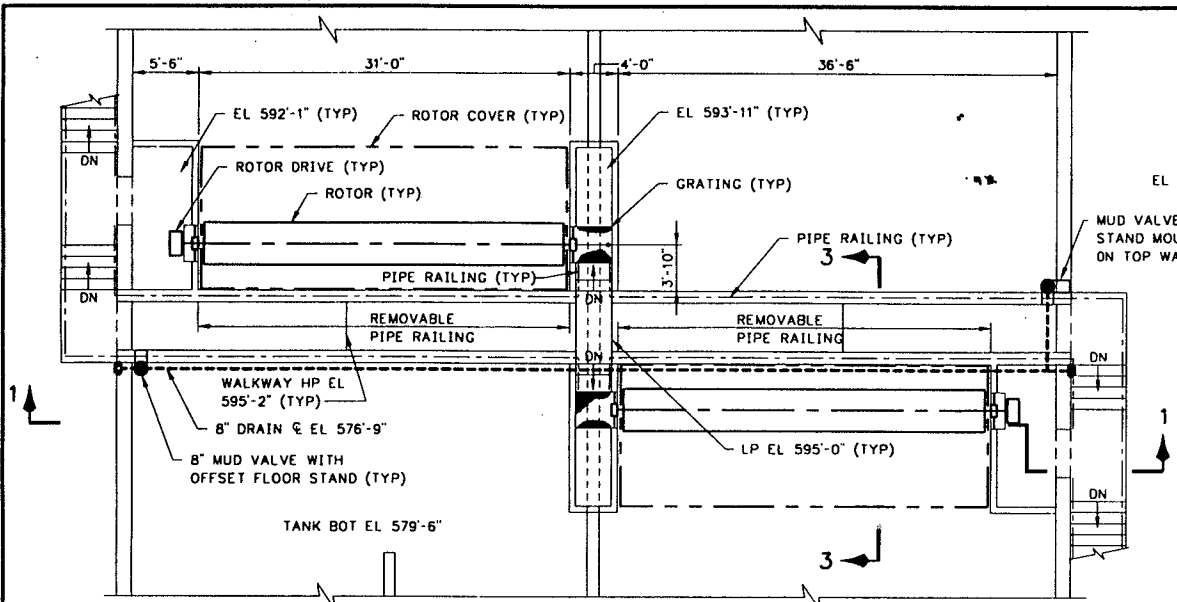
CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

RECORD DRAWING
THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES. BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

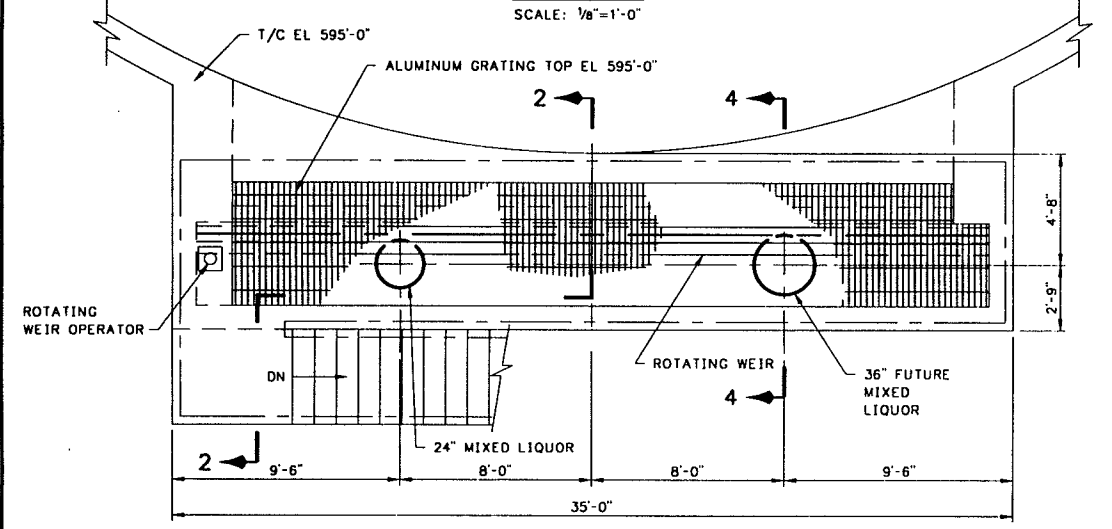
PLANS AND ESTIMATES PREPARED BY:
KLEIN AND HOFFMAN, INC.
CONSULTING ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60605
PROJECT NO. 4543

REVISION	BY	DATE	PLAN SCALE	DRAWN	JEB	APPROVED
RECORD DRAWING		9-1	AS SHOWN	DESIGNED	MB	
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			PROFILE SCALE	FIELD MGR		
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			ATLAS PAGE NO.:			SHEET 41 OF 49 SHEETS

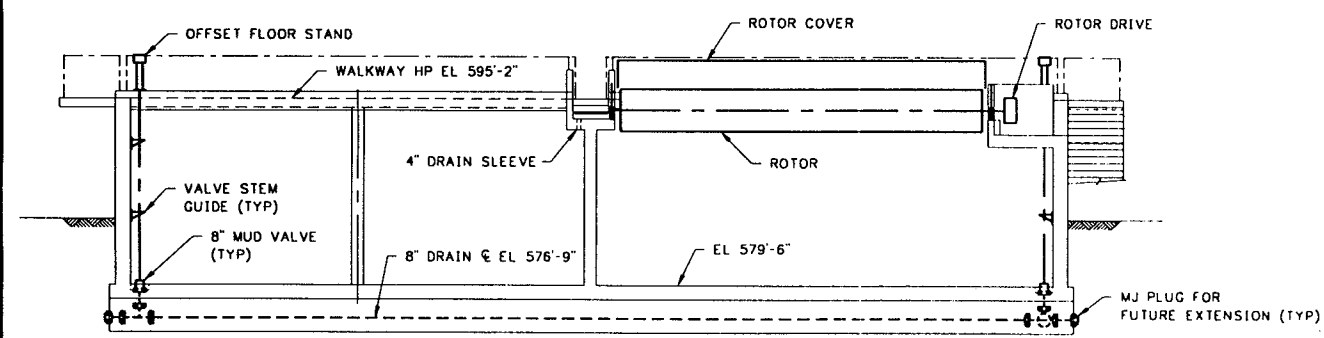
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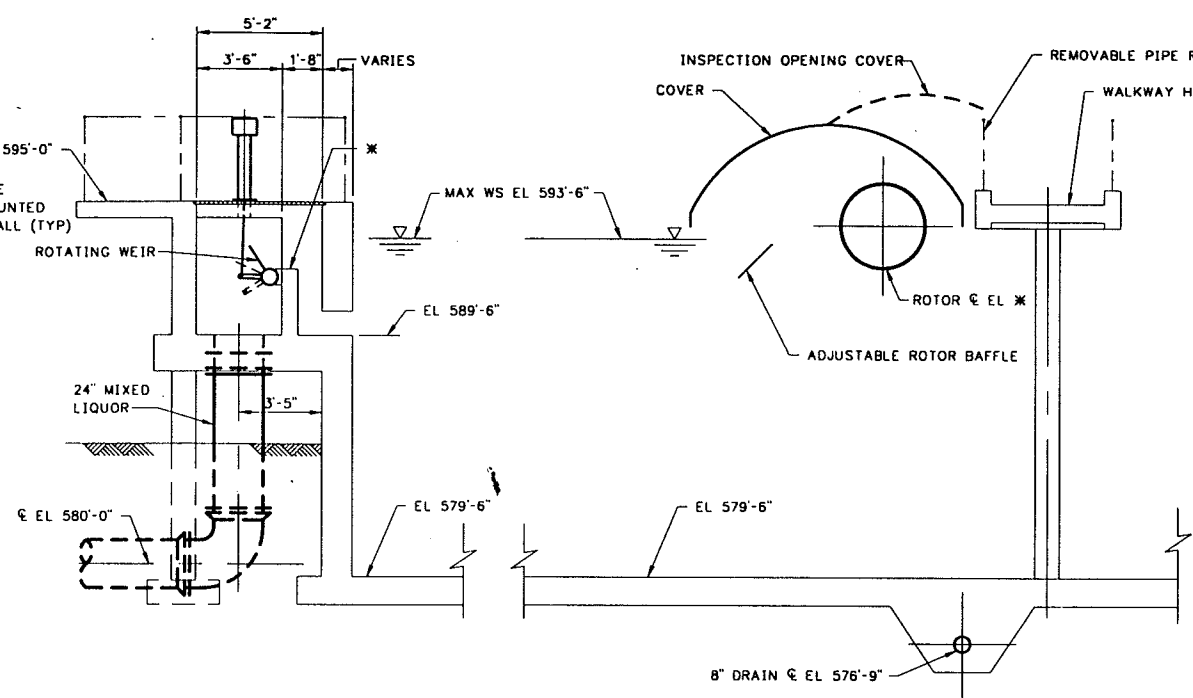
PLAN A
SCALE: 1/8"=1'-0"



PLAN B
SCALE: 1/4"=1'-0"

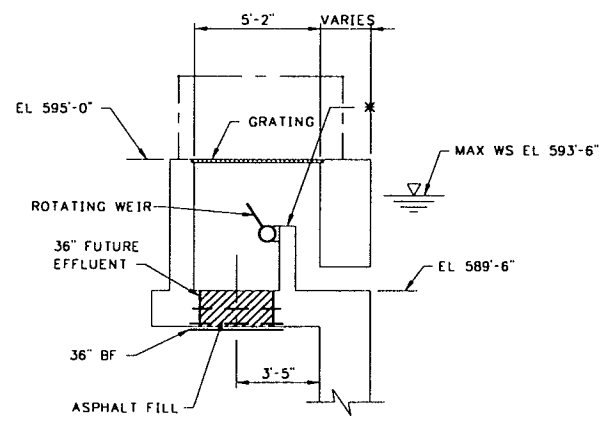


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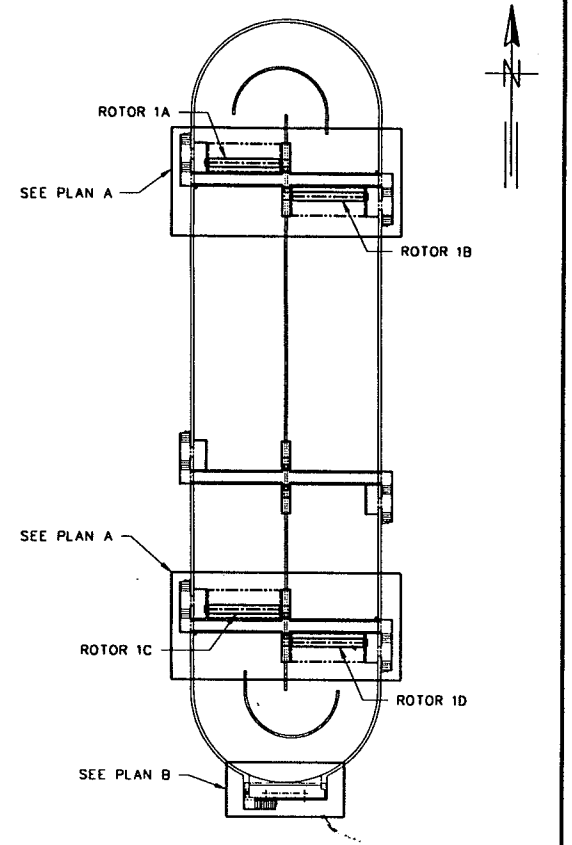


SECTION 2
SCALE: 1/4"=1'-0"

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



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



PLAN
SCALE: 1"=40'

NOTE:
1. FOR RAILING DETAILS SEE DWG BA3

RECORD DRAWING

THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES. BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

OXIDATION DITCH EQUIPMENT

PLANS AND SECTIONS

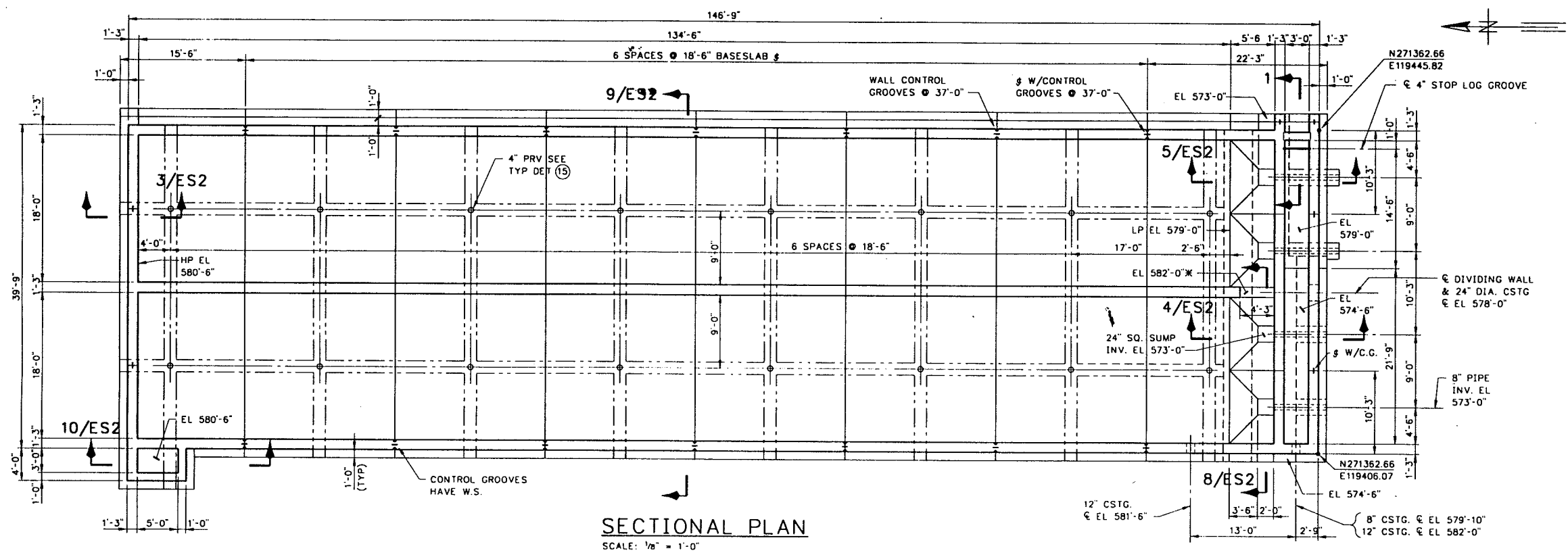
LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. I
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

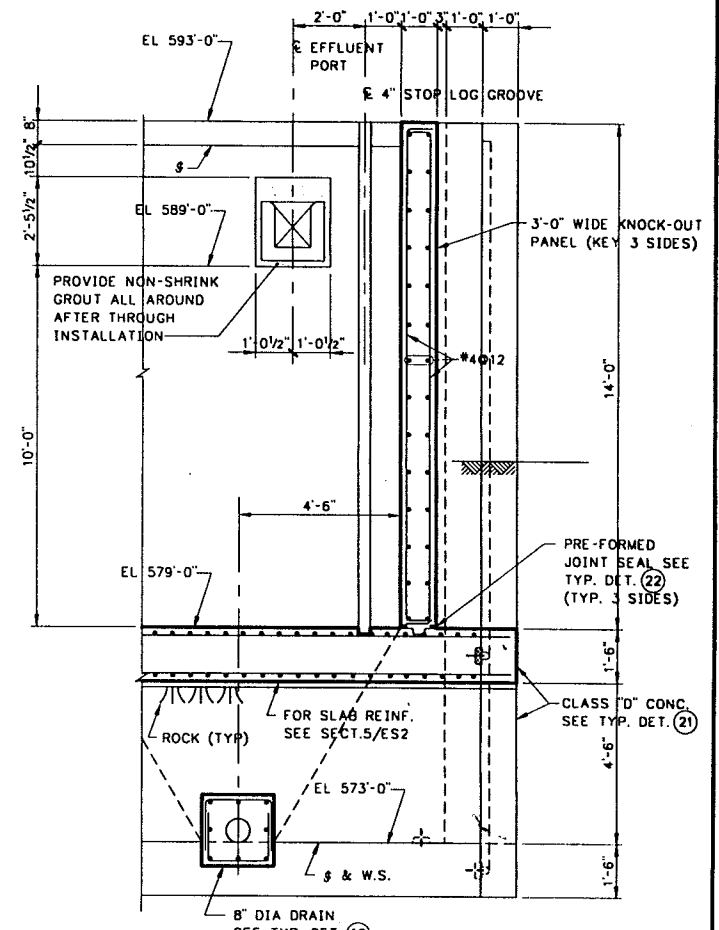
PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

REVISION	BY	DATE	PLAN SCALE	DRAWN	RPN	APPROVED
RECORD DRAWING	EAJ	9-1 1995	AS SHOWN	DESIGNED	DVH RPN	
REVISIONS				SURVEY		
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			HORIZONTAL:	SECT. MGR		
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				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: DM1		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 42 OF 49 SHEETS

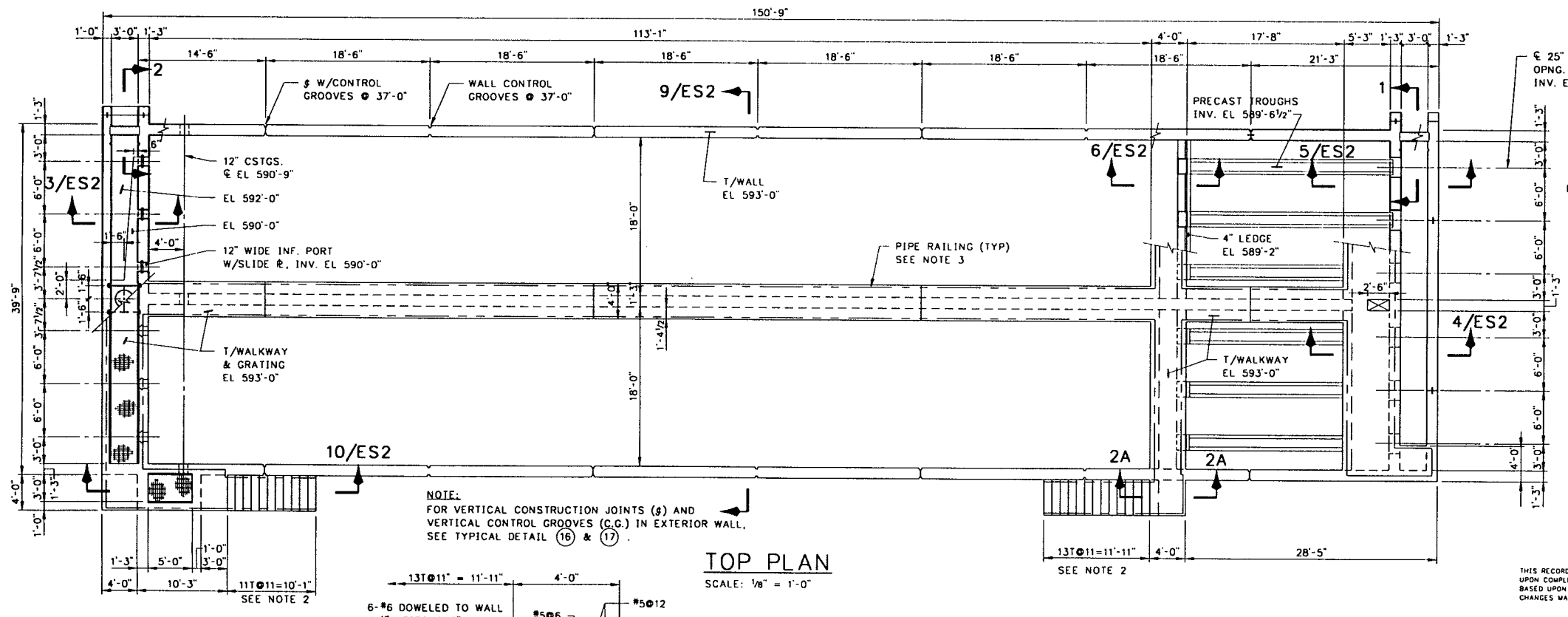
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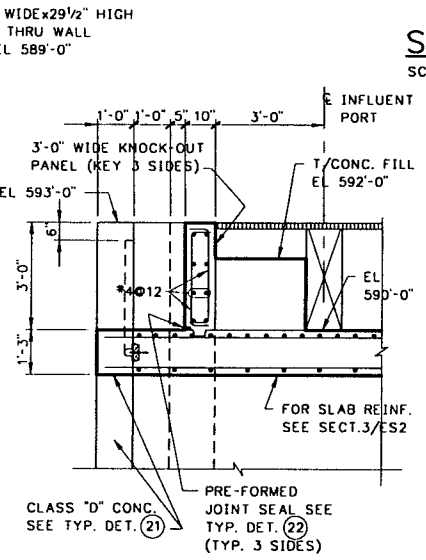
SECTIONAL PLAN
SCALE: 1/8" = 1'-0"



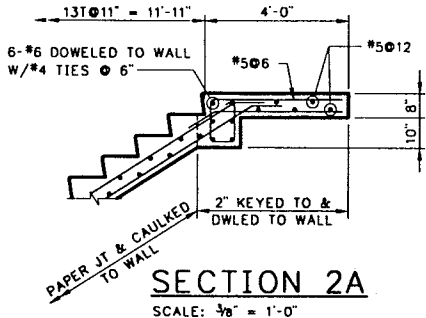
SECTION 1
SCALE: 3/8" = 1'-0"



TOP PLAN
SCALE: 1/8" = 1'-0"



SECTION 2
SCALE: 3/8" = 1'-0"



SECTION 2A
SCALE: 3/8" = 1'-0"

- NOTES:**
- FOR TYPICAL DETAILS DESIGNATED THUS (3) AND GENERAL NOTES SEE DWG AS1 AND AS2.
 - FOR STAIR NOSING SEE DWG BA3.
 - FOR PIPE RAILING DETAILS SEE DWG BA3.

RECORD DRAWING
THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

**CLARIFIERS
STRUCTURAL
PLANS**

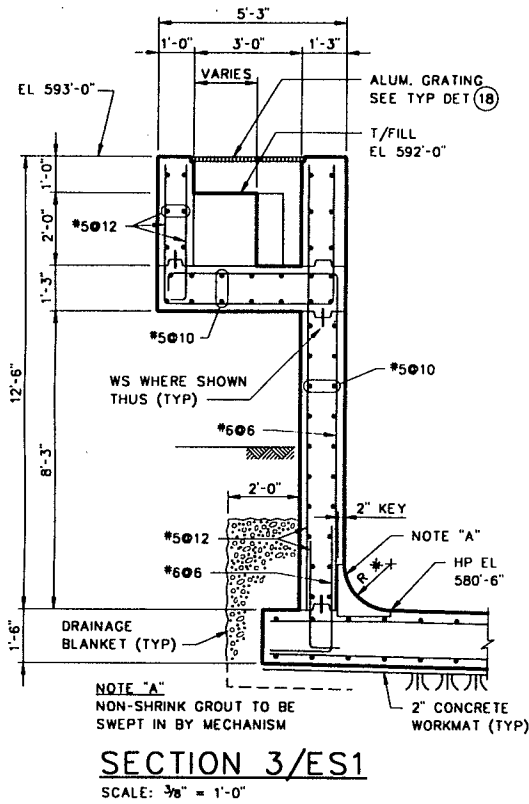
**LOWER BIRD CREEK
WASTEWATER FACILITIES**
PROJECT NO. TMUA SA 92-3
CONTRACT NO. I
WASTEWATER TREATMENT PLANT

**CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT**
ENGINEERING SERVICES DIVISION

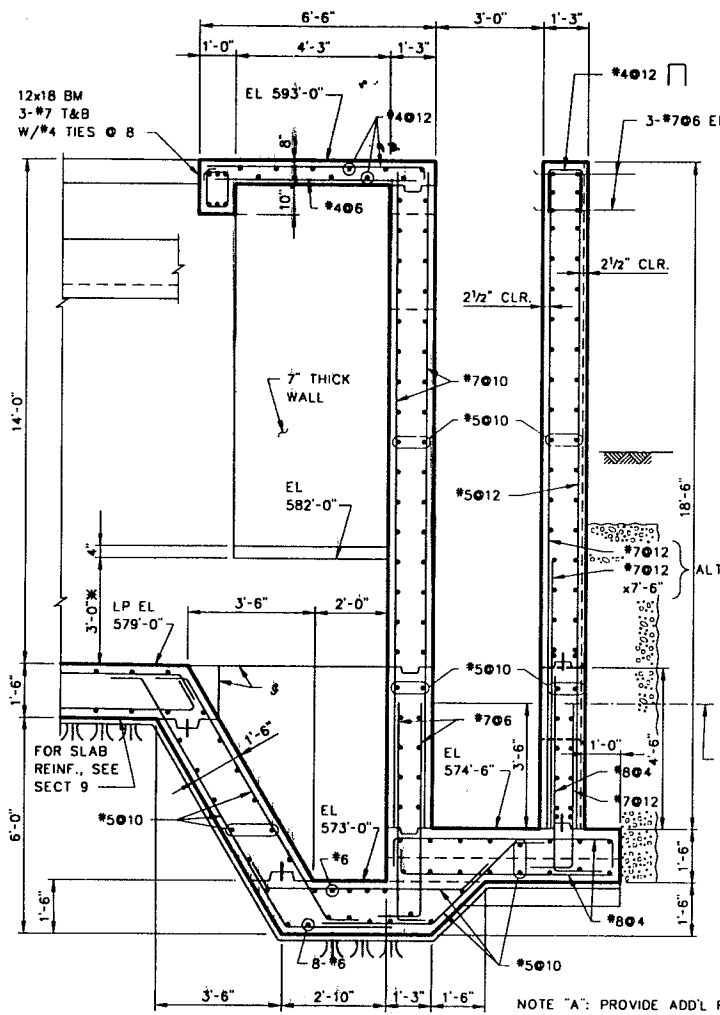
PLANS AND ESTIMATES PREPARED BY:
KLEIN AND HOFFMAN, INC.
CONSULTING ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
PROJECT NO. 4343

REVISION	BY	DATE	PLAN SCALE	DRAWN	JOB	APPROVED
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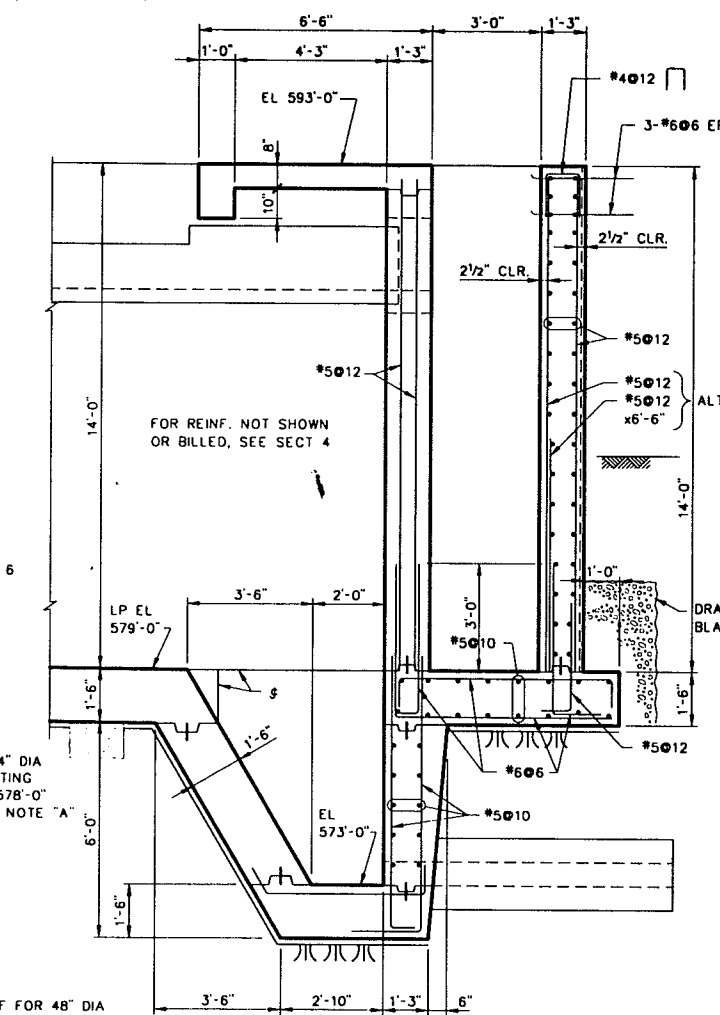
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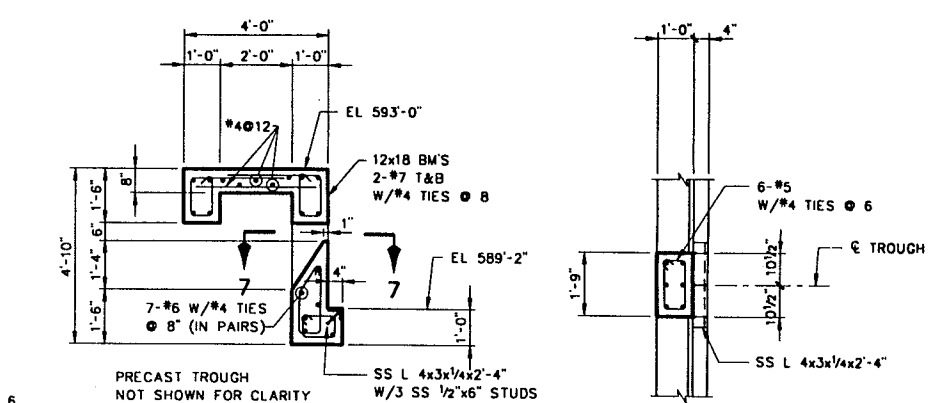
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SECTION 4/ES1
SCALE: 3/8" = 1'-0"

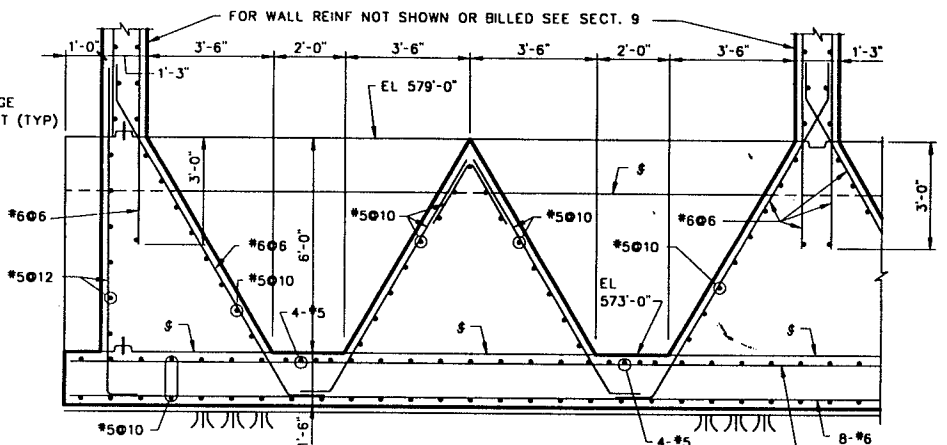


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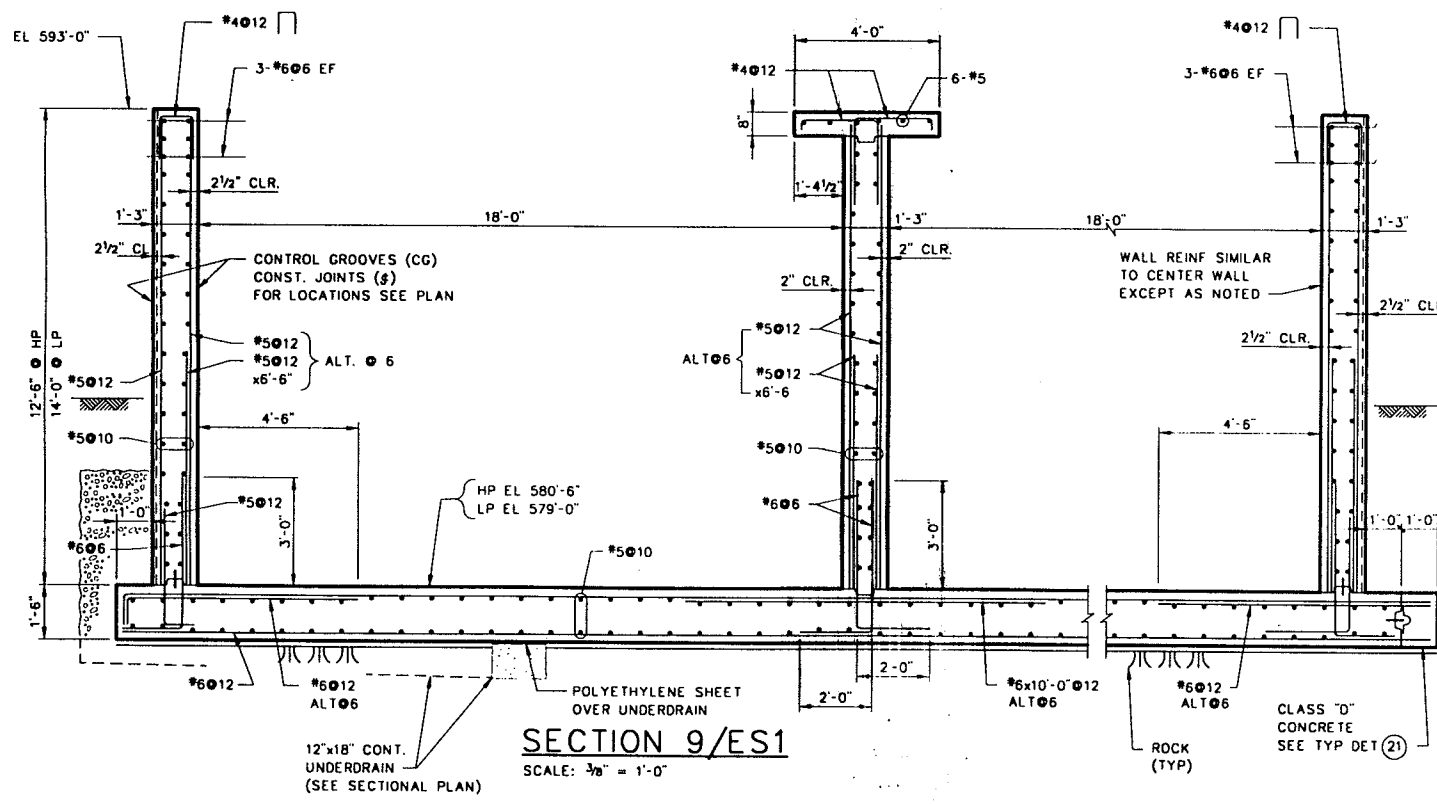


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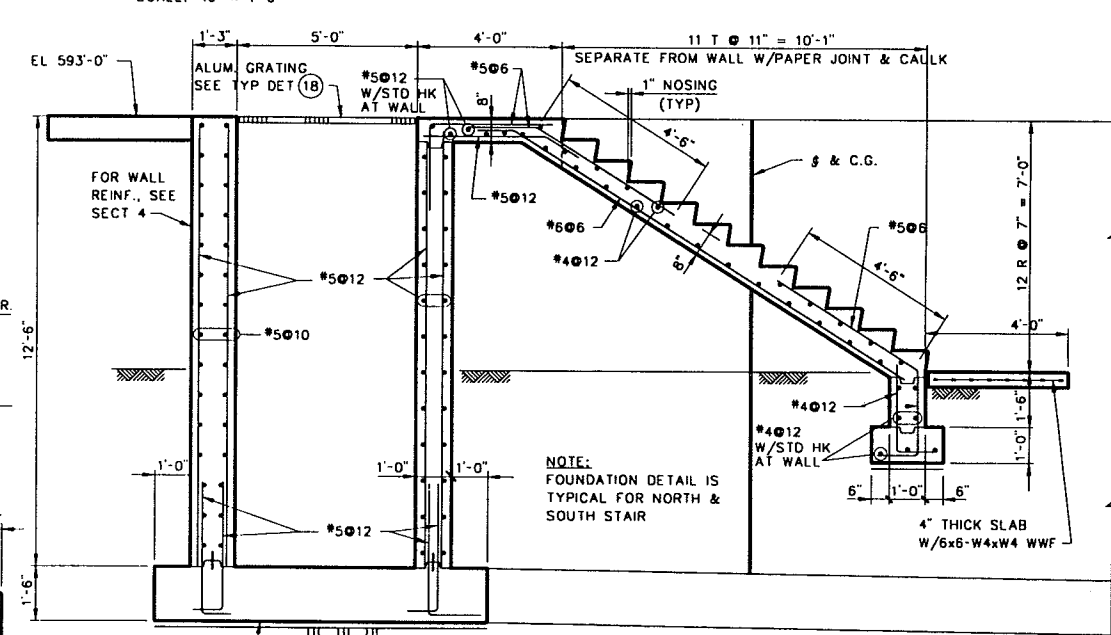
SECTION 7
SCALE: 3/8" = 1'-0"



SECTION 8/ES1
SCALE: 3/8" = 1'-0"



SECTION 9/ES1
SCALE: 3/8" = 1'-0"



SECTION 10/ES1
SCALE: 3/8" = 1'-0"

**CLARIFIERS
STRUCTURAL**

SECTIONS

**LOWER BIRD CREEK
WASTEWATER FACILITIES**
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

**CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT**
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:

KLEIN AND HOFFMAN, INC.
CONSULTING ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
PROJECT NO. 4543

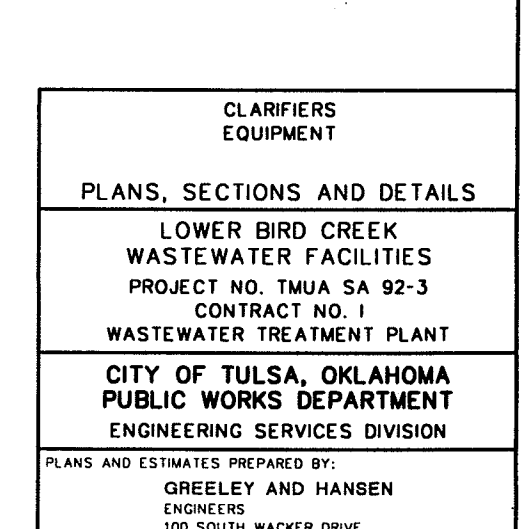
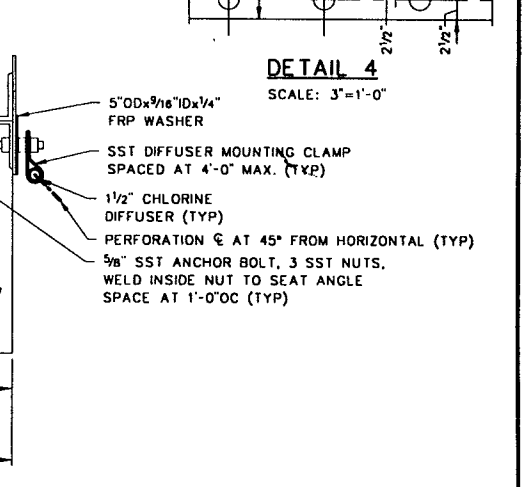
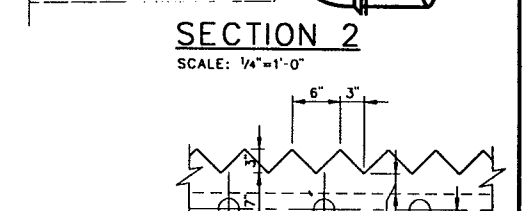
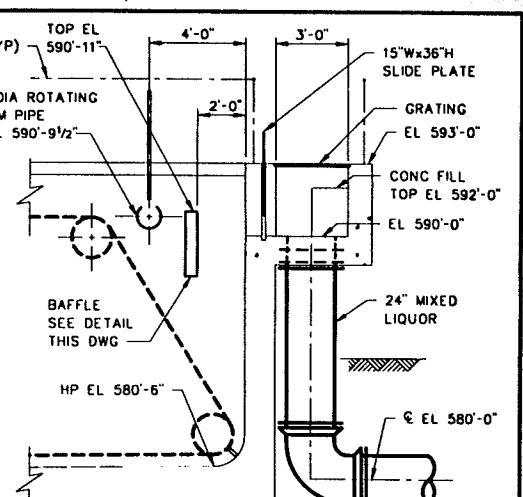
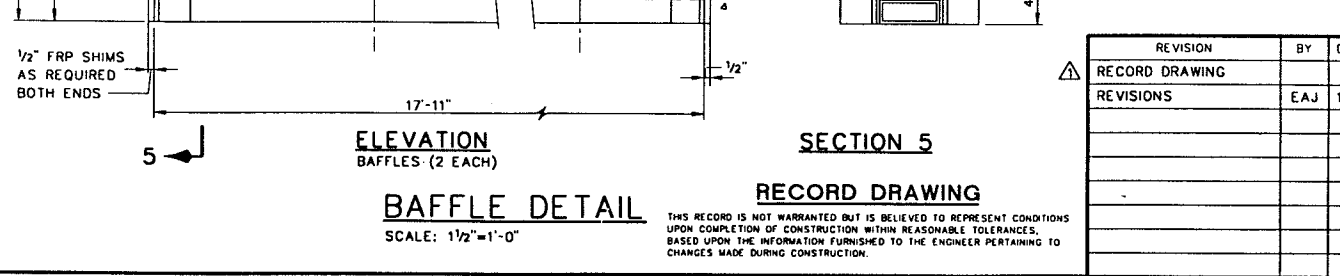
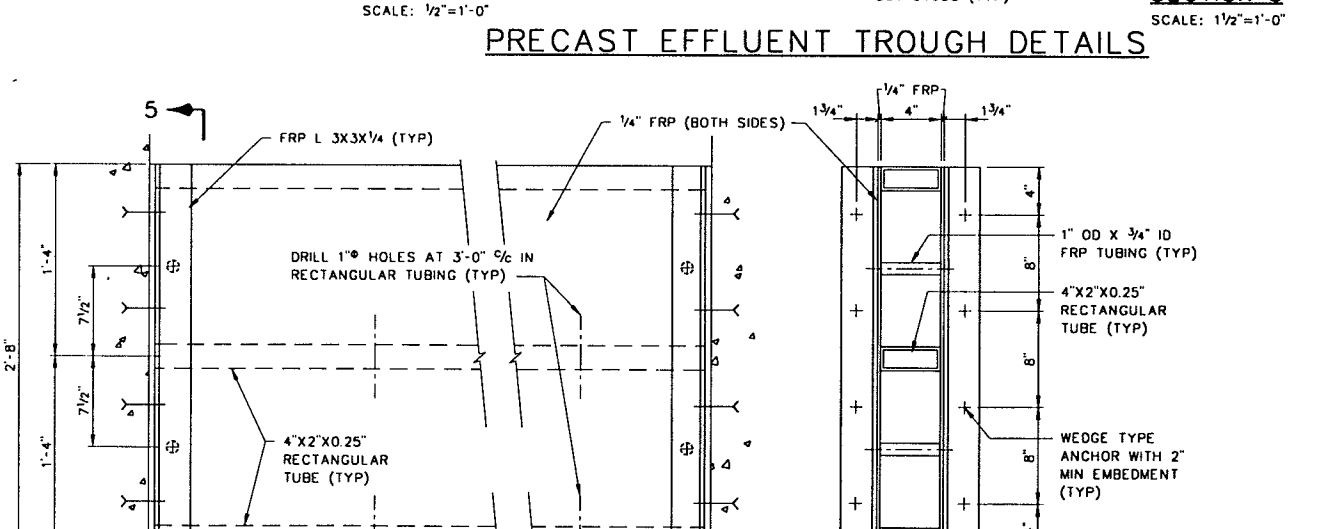
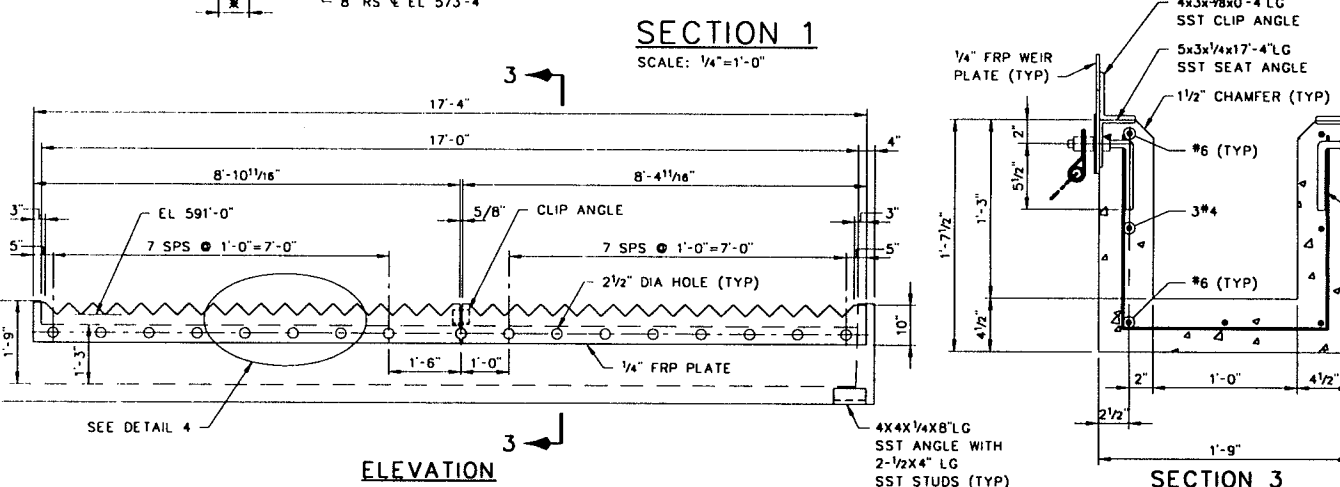
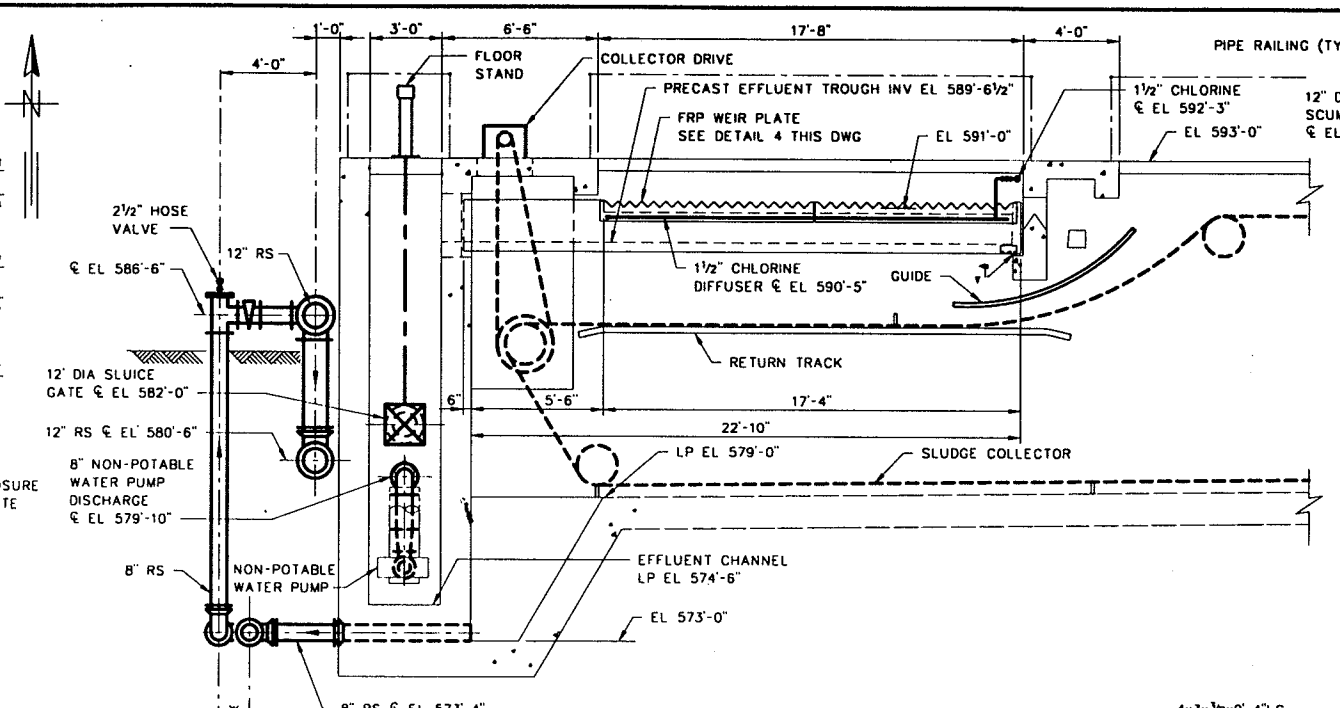
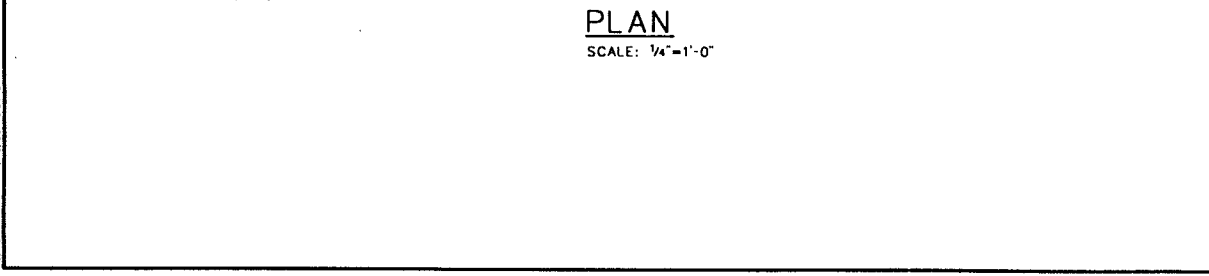
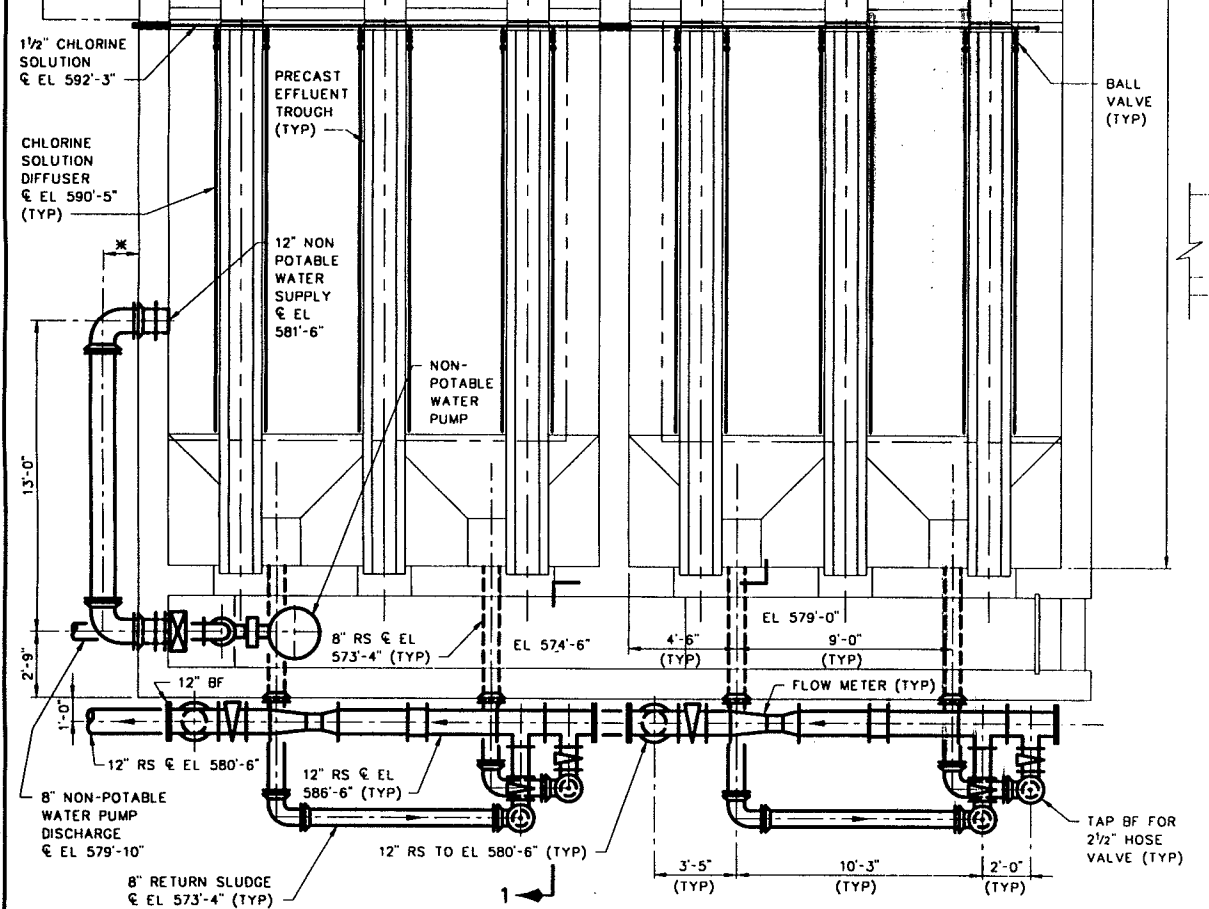
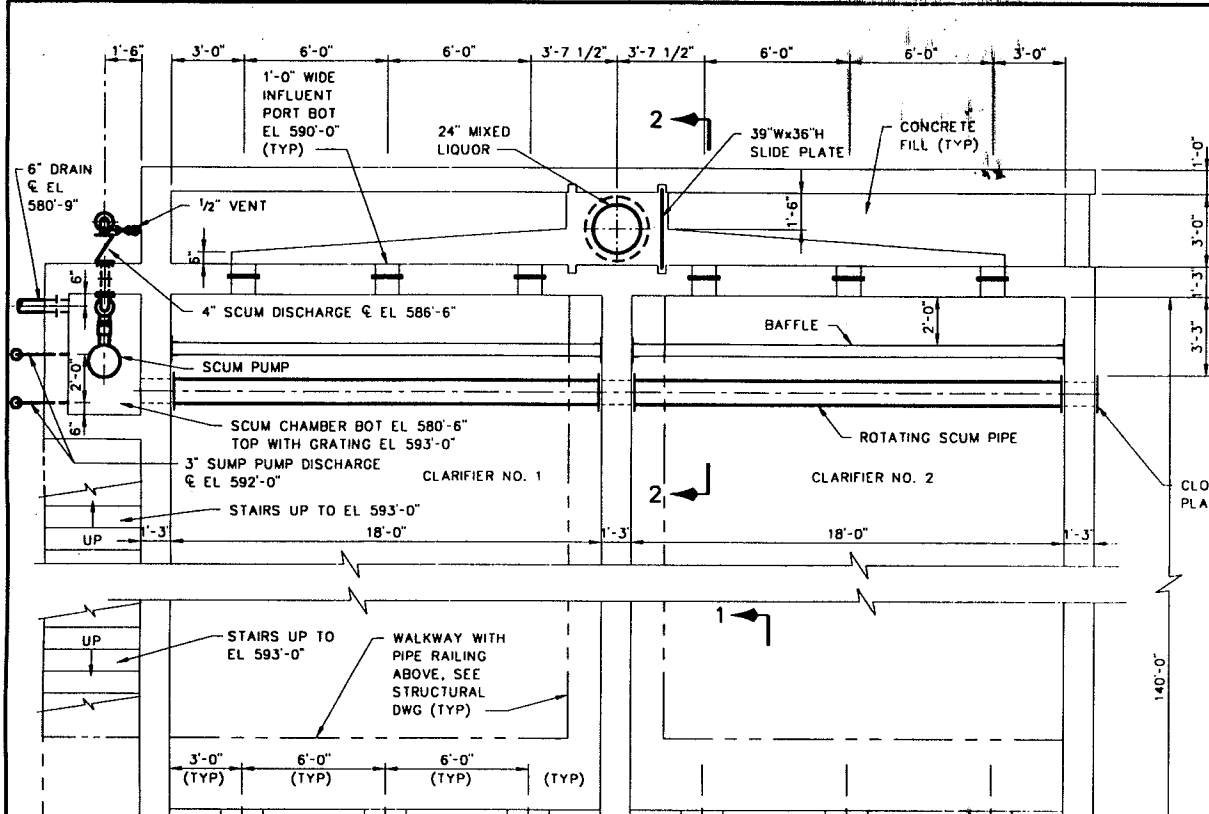
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				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
				DRAWING: ES2		DATE: OCTOBER 1994

FILE: ATLAS PAGE NO.: SHEET 44 OF 49 SHEETS

NOTES:
1. FOR TYPICAL DETAILS DESIGNATED THUS (3) AND GENERAL NOTES SEE DWG. AS1 AND AS2.

RECORD DRAWING
THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

FILE: 180452 11 11/25/96 18:17 CH-4



REVISION	BY	DATE	PLAN SCALE	DRAWN	RPN	APPROVED
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REVISIONS				SURVEY		
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				FILE:	DRAWING: EM1	DATE: OCTOBER 1994
				ATLAS PAGE NO.:		SHEET 45 OF 49 SHEETS

CLARIFIERS EQUIPMENT

PLANS, SECTIONS AND DETAILS

LOWER BIRD CREEK WASTEWATER FACILITIES

PROJECT NO. TMA SA 92-3

CONTRACT NO. 1

WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA

PUBLIC WORKS DEPARTMENT

ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:

GREELEY AND HANSEN

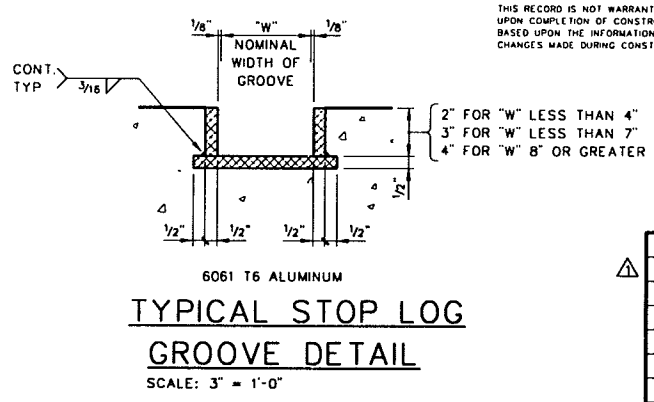
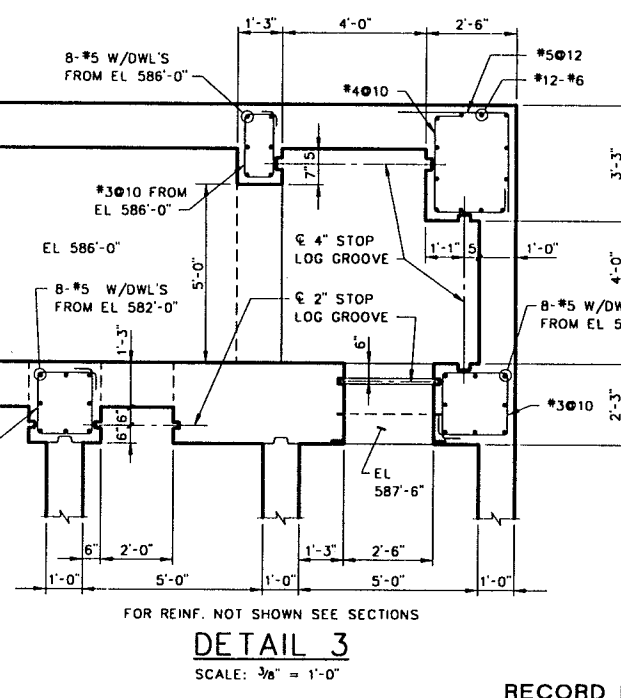
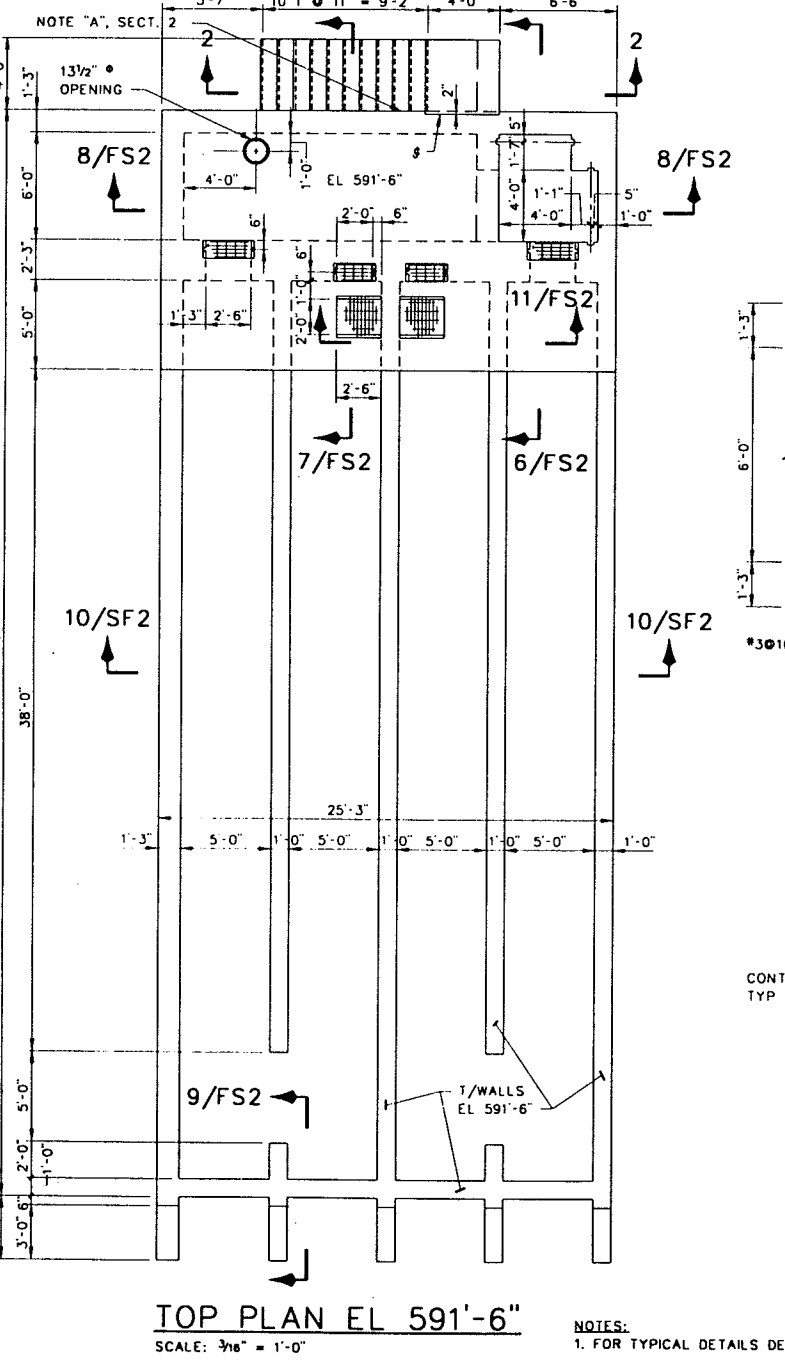
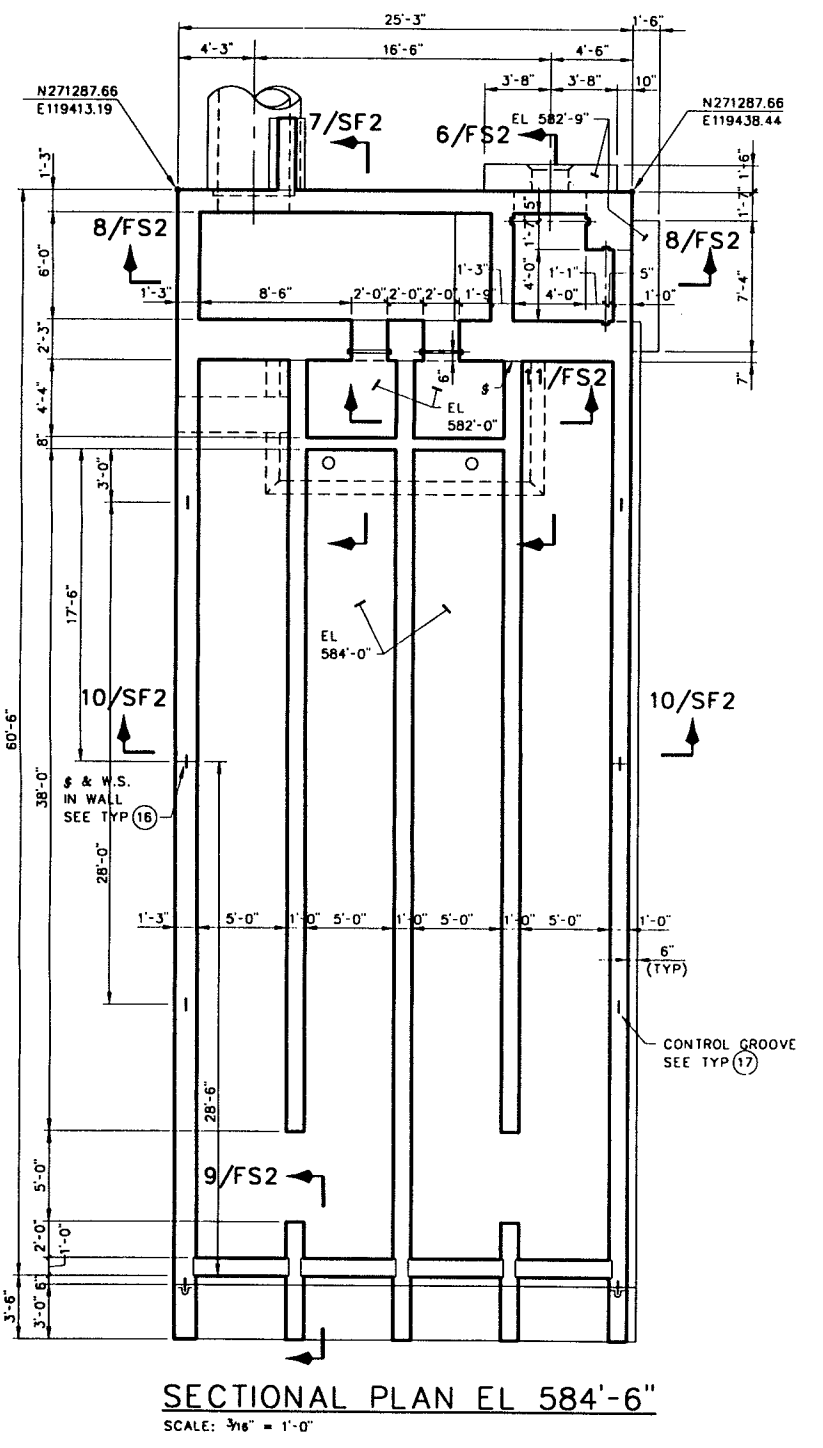
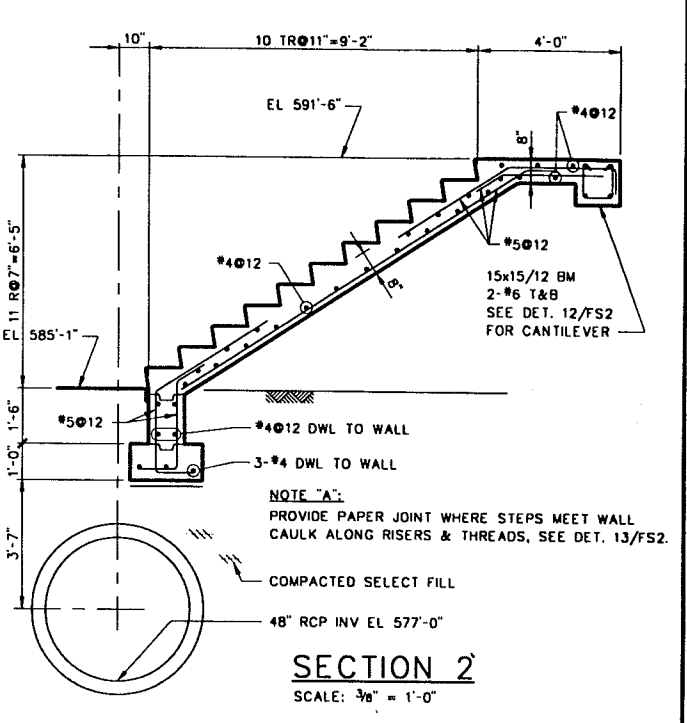
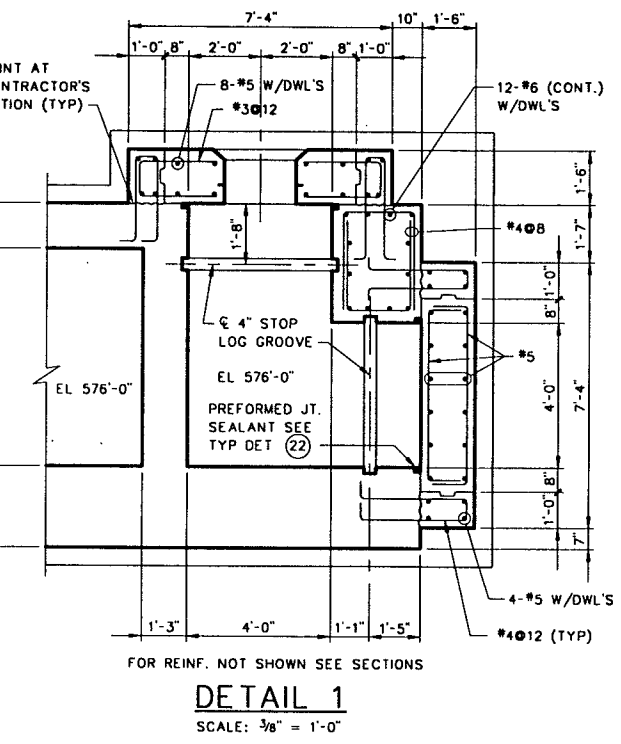
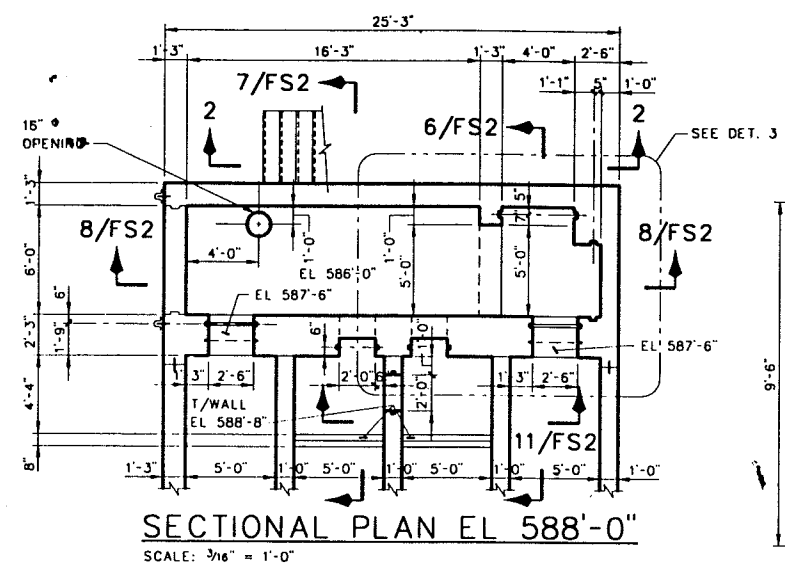
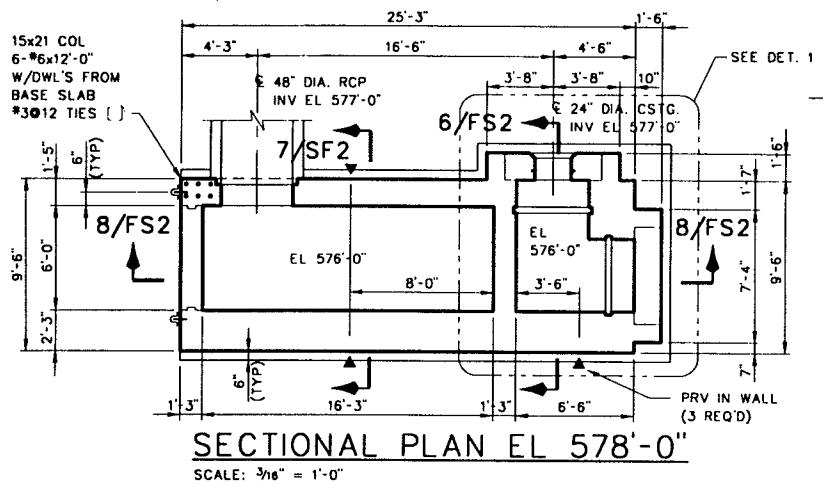
ENGINEERS

100 SOUTH WACKER DRIVE

CHICAGO, ILLINOIS 60606

RECORD DRAWING

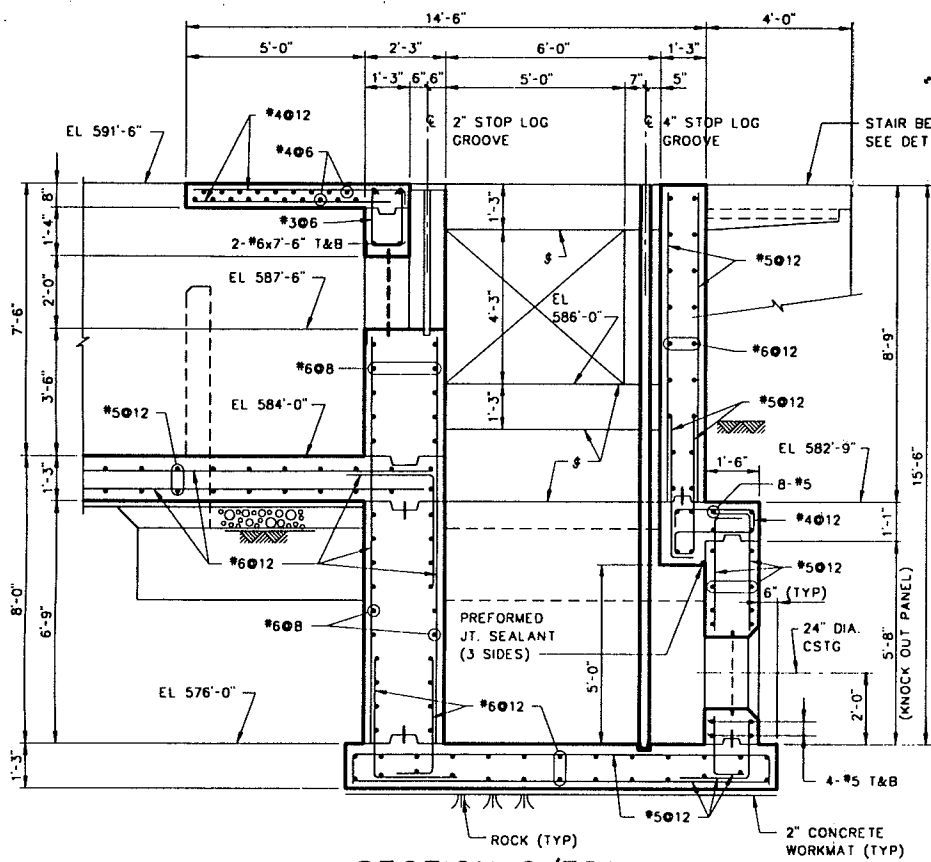
THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.



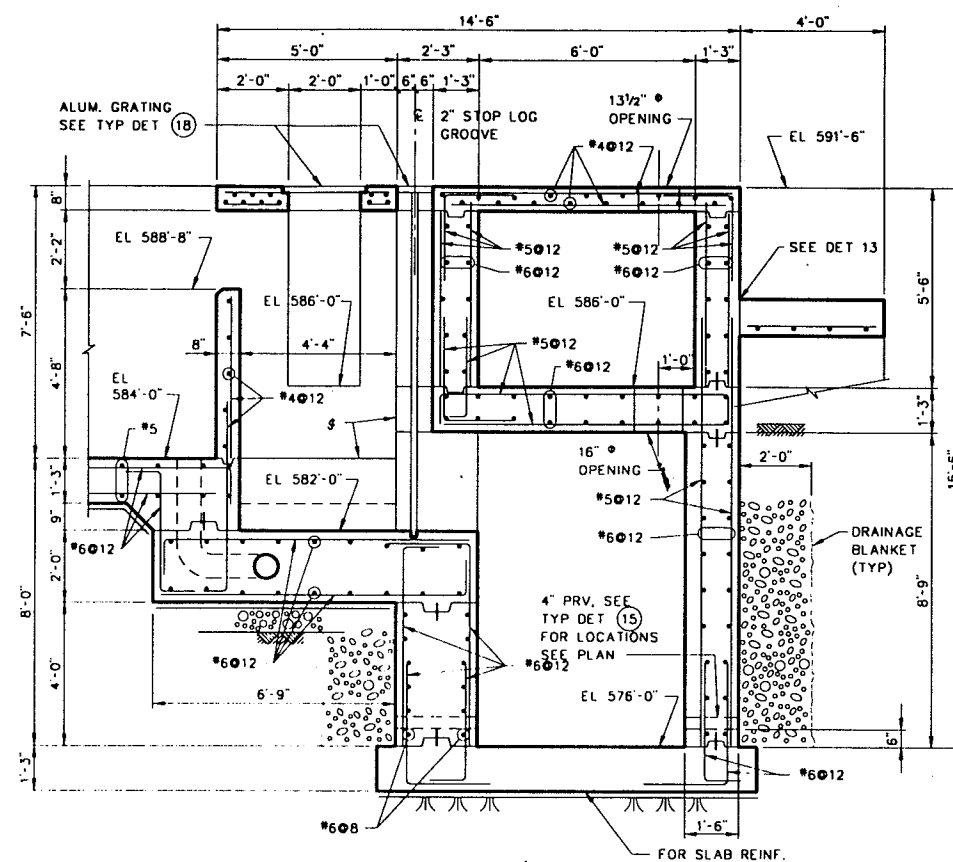
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CHLORINATION/DECHLORINATION FACILITIES STRUCTURAL									
PLANS AND SECTIONS									
LOWER BIRD CREEK WASTEWATER FACILITIES									
PROJECT NO. TMUA SA 92-3									
CONTRACT NO. 1									
WASTEWATER TREATMENT PLANT									
CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT									
ENGINEERING SERVICES DIVISION									
PLANS AND ESTIMATES PREPARED BY:									
KLEIN AND HOFFMAN, INC. CONSULTING ENGINEERS 100 SOUTH WACKER DRIVE CHICAGO, ILLINOIS 60606 PROJECT NO. 4543									
REVISION		BY	DATE	PLAN SCALE	DRAWN	JOB	APPROVED		
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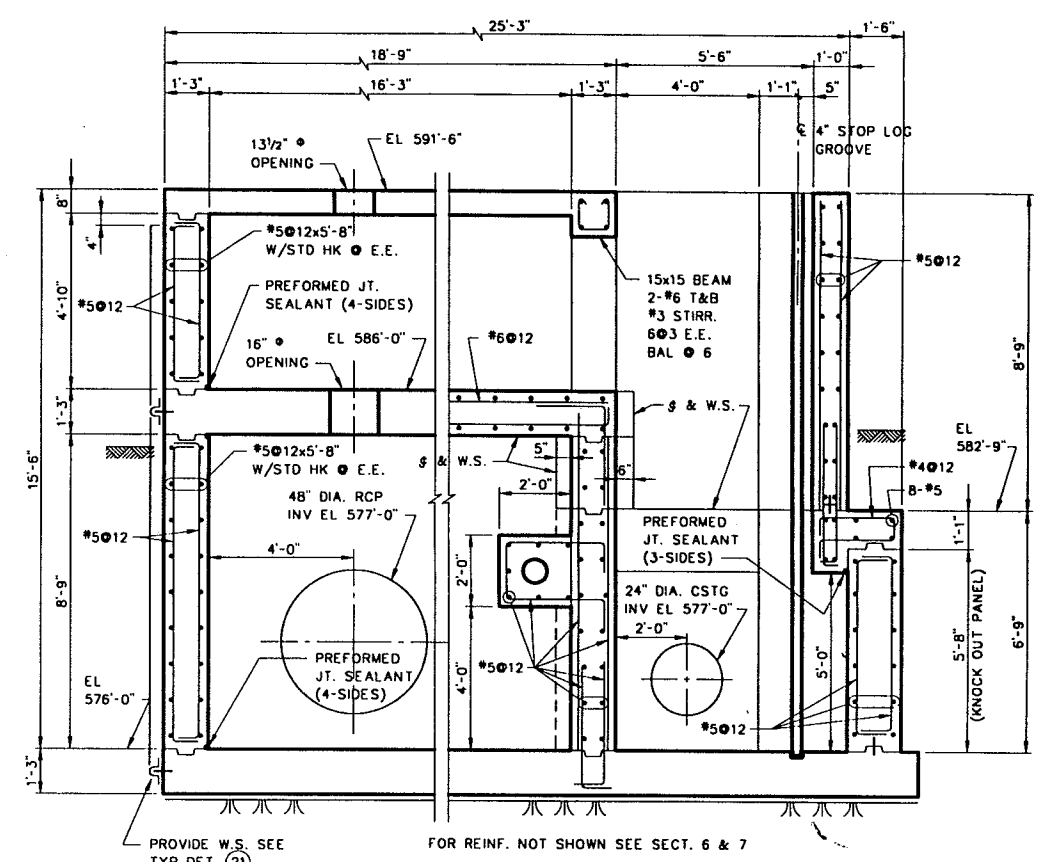
NOTES:
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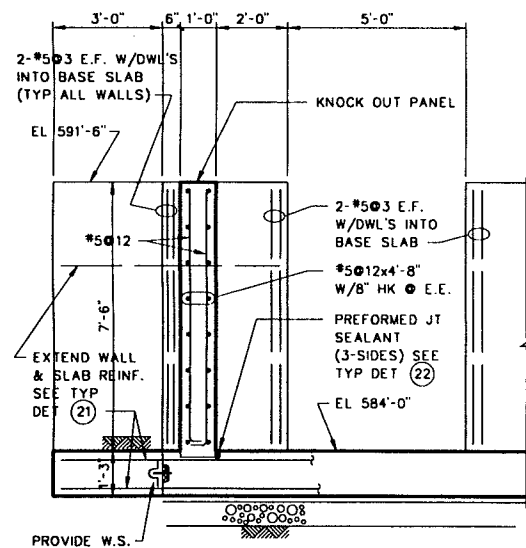
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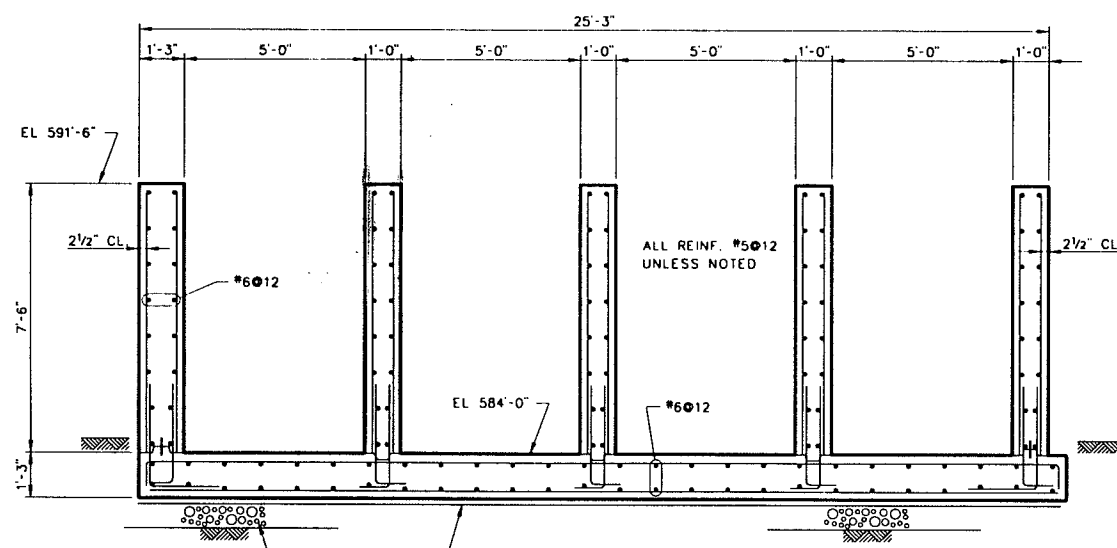
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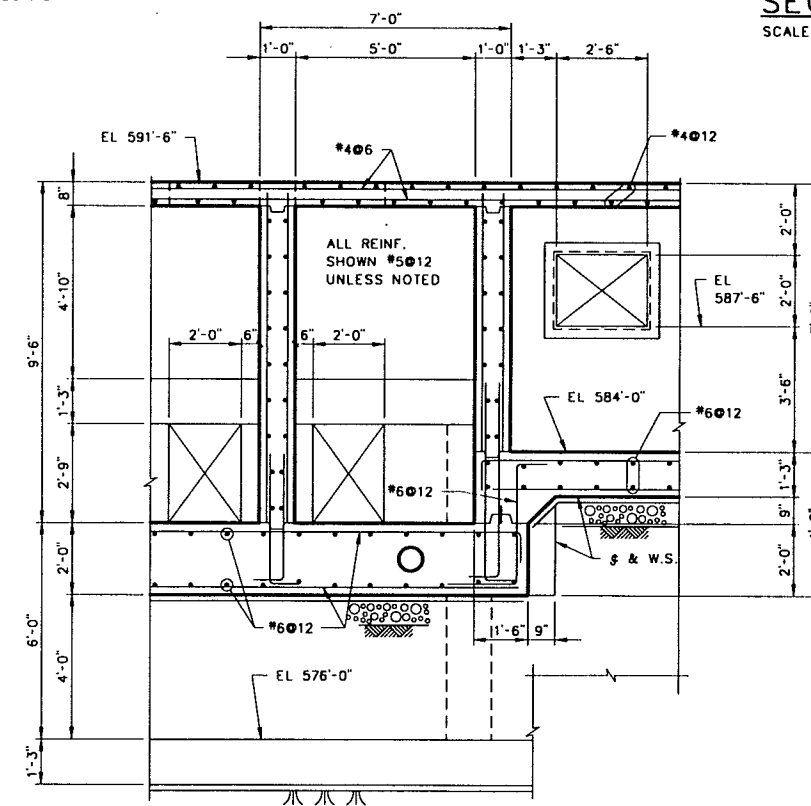
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SECTION 9/FS1
SCALE: 3/8" = 1'-0"



SECTION 10/FS1
SCALE: 3/8" = 1'-0"



SECTION 11/FS1
SCALE: 3/8" = 1'-0"

RECORD DRAWING

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NOTES:
1. FOR TYPICAL DETAILS DESIGNATED THUS (3) AND GENERAL NOTES SEE DWG. AS1 AND AS2.

REVISION	BY	DATE	PLAN SCALE	DRAWN	JEB	APPROVED
RECORD DRAWING	EAJ	9-1 1996	AS SHOWN	DESIGNED	MB	
REVISIONS			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
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				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: FS2		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 47 OF 49 SHEETS

CHLORINATION/DECHLORINATION FACILITIES STRUCTURAL

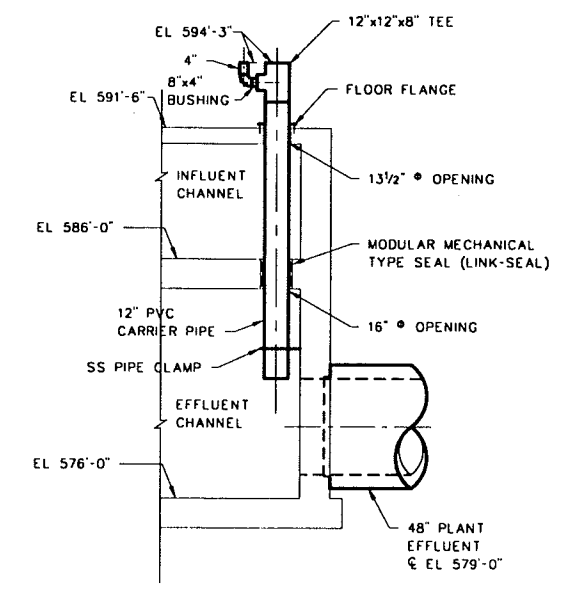
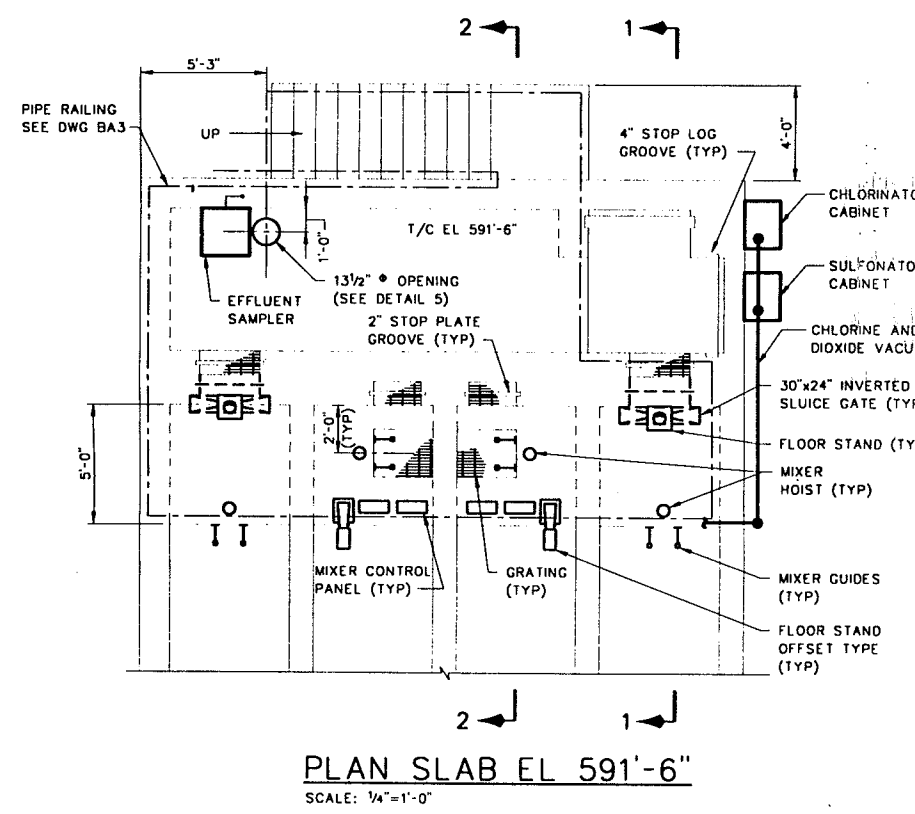
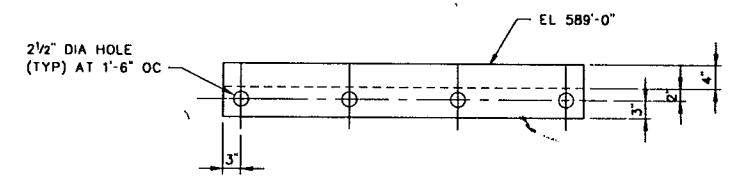
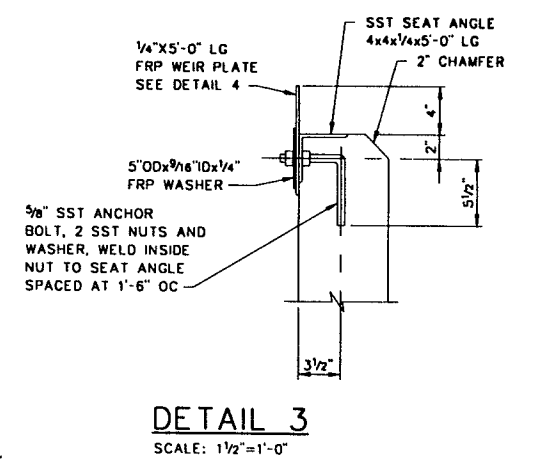
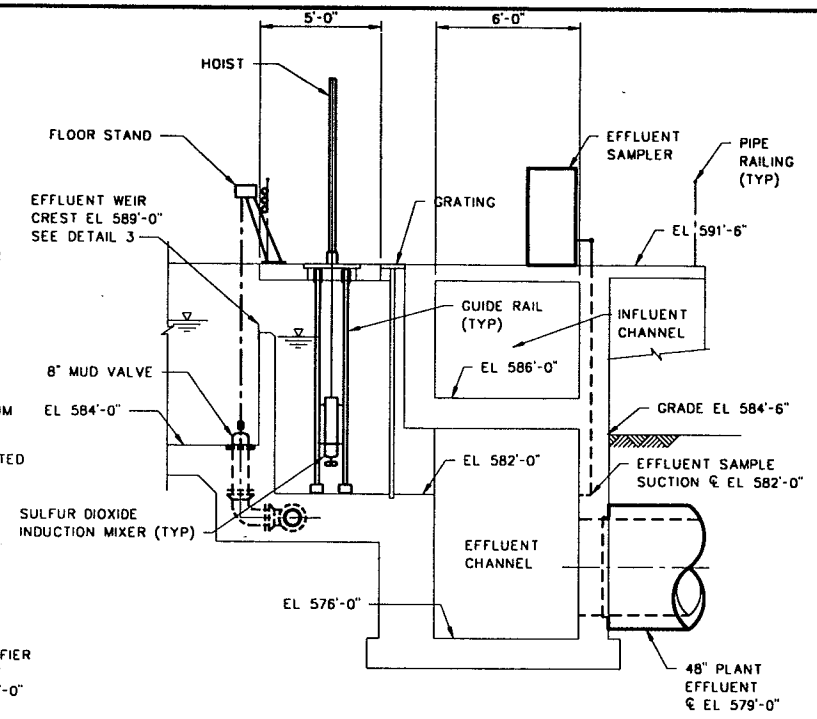
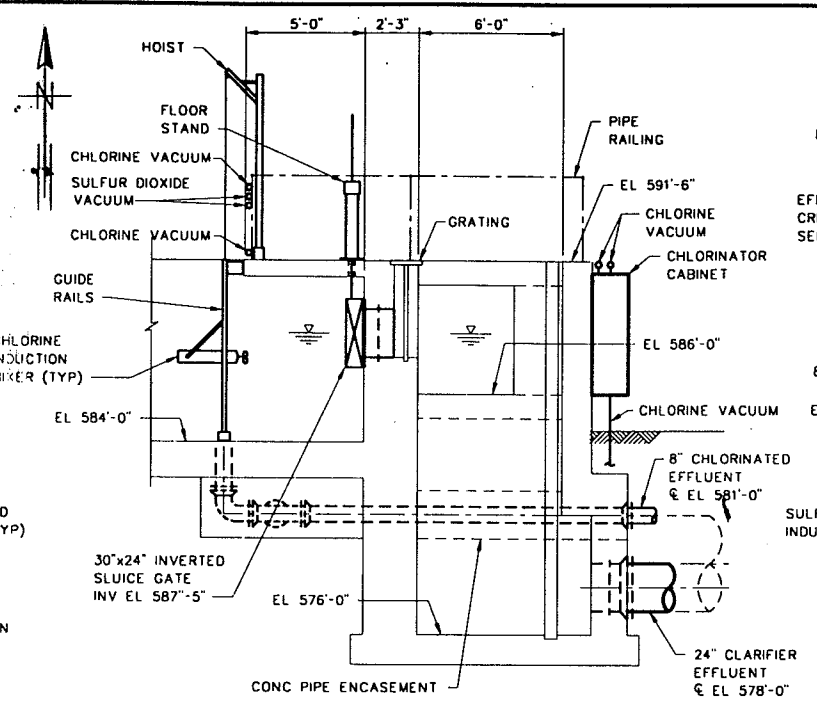
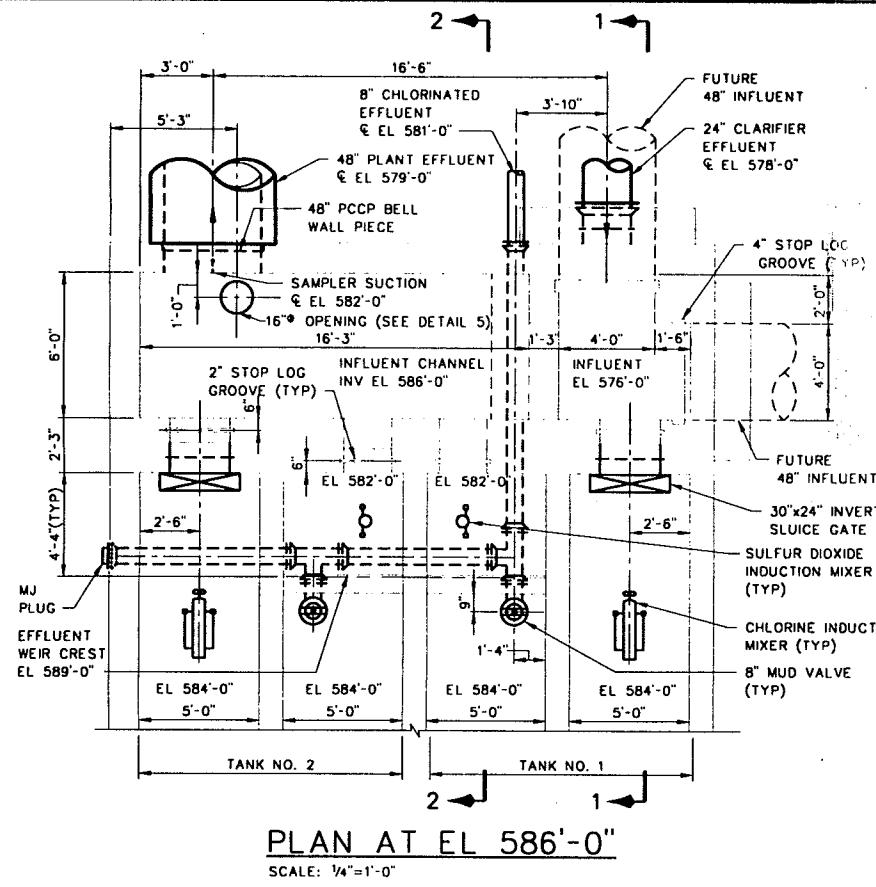
SECTIONS

LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

PLANS AND ESTIMATES PREPARED BY:
KLEIN AND HOFFMAN, INC.
CONSULTING ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
PROJECT NO. 4543

FILE: 180452 11-17/96 15:38 04-4



CHLORINATION/DECHLORINATION FACILITIES EQUIPMENT

PLANS, SECTIONS AND DETAILS

LOWER BIRD CREEK WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT

CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION

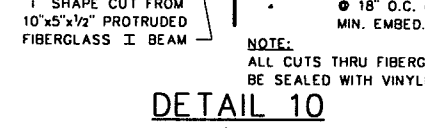
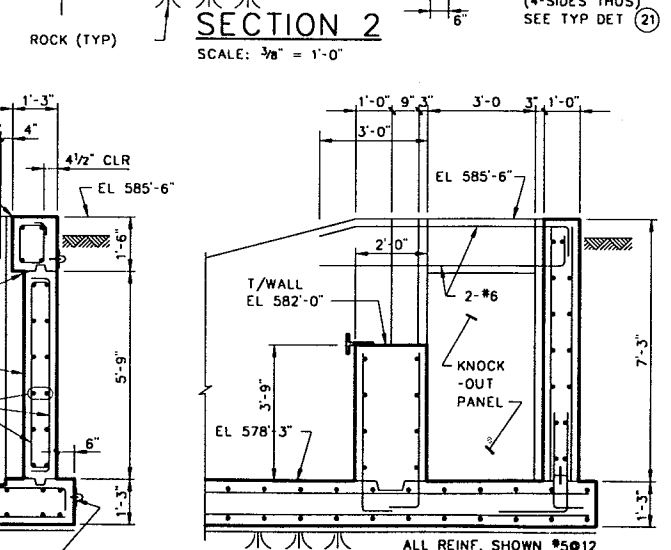
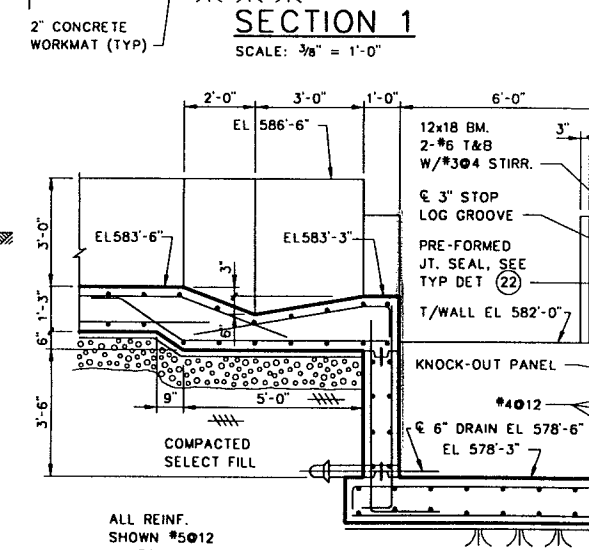
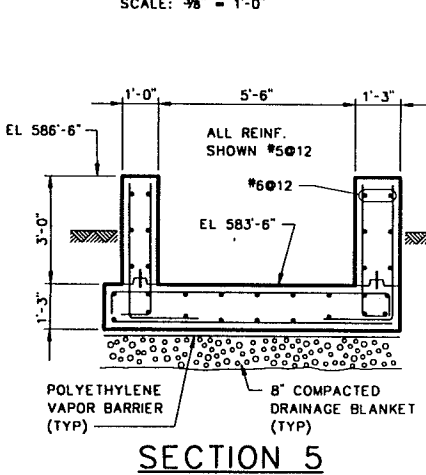
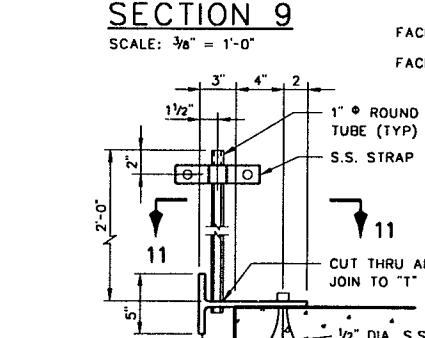
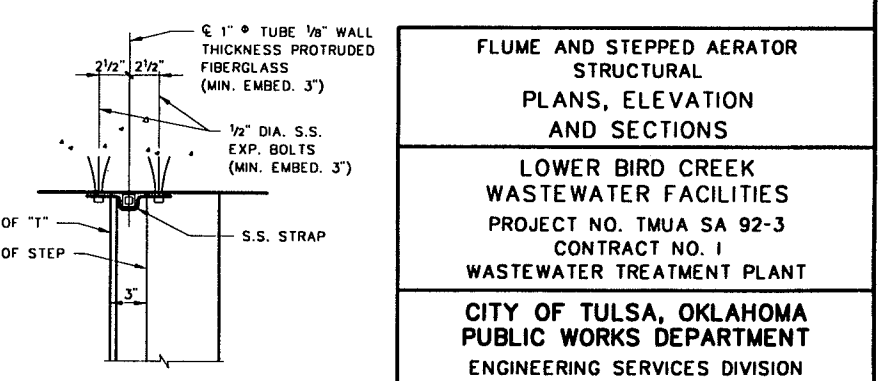
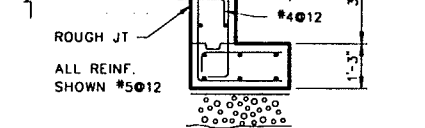
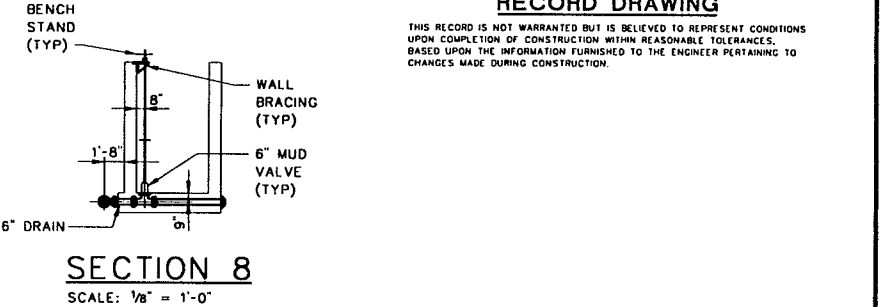
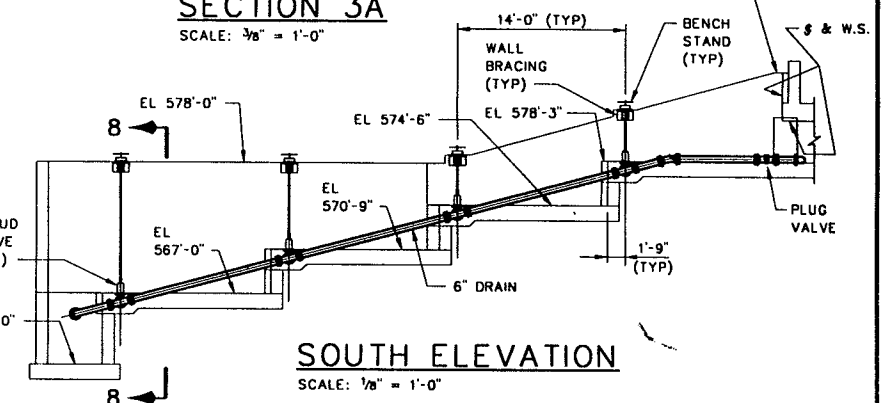
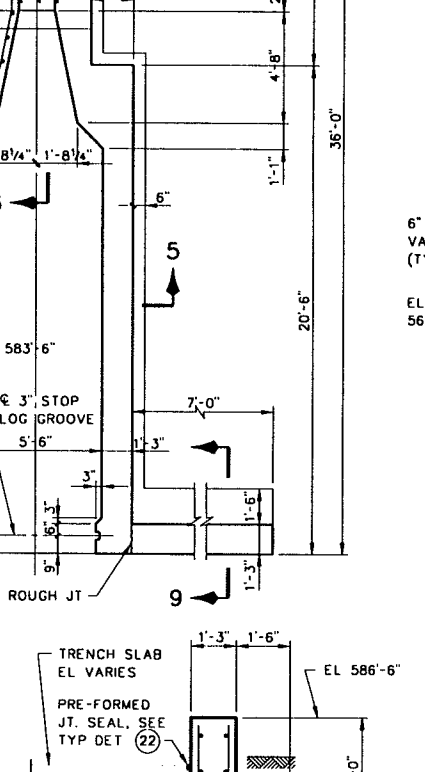
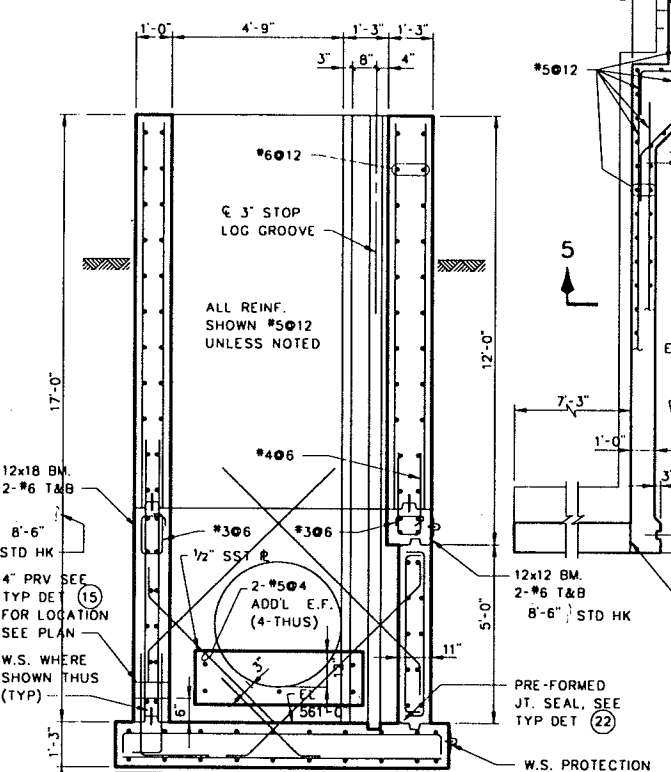
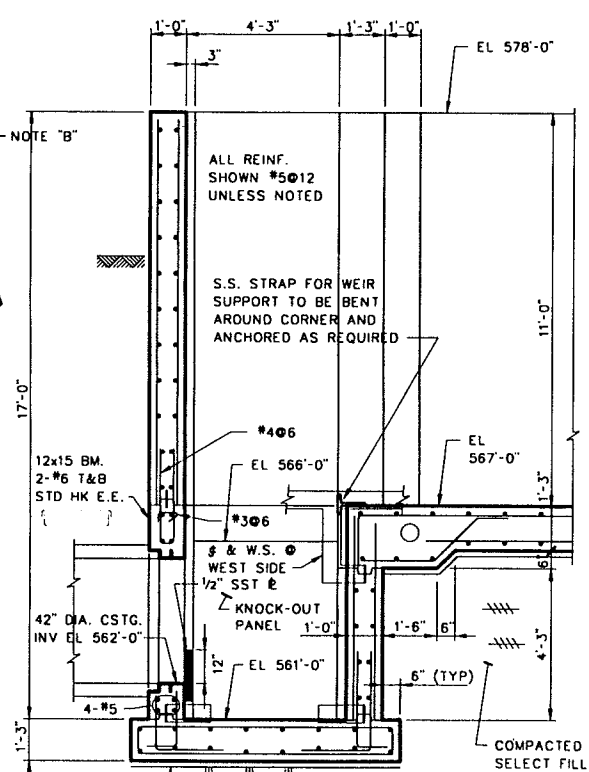
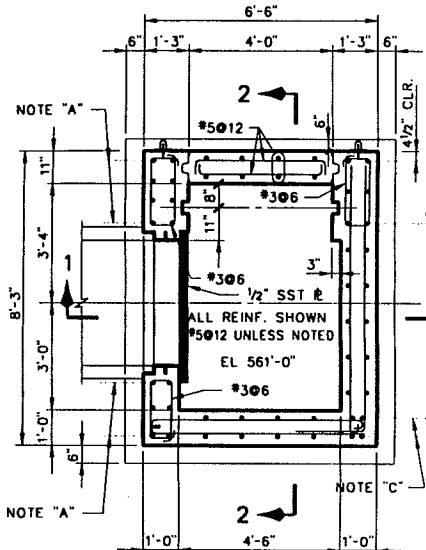
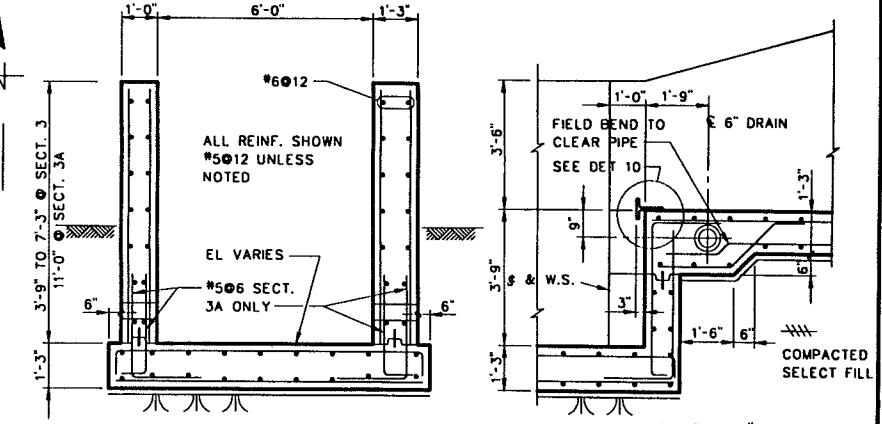
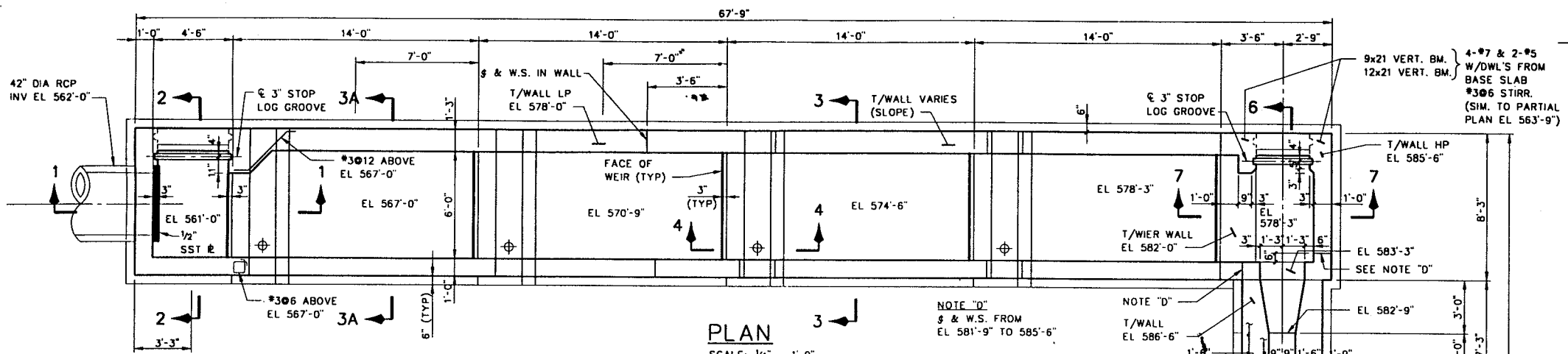
RECORD DRAWING

THIS RECORD IS NOT WARRANTED BUT IS BELIEVED TO REPRESENT CONDITIONS UPON COMPLETION OF CONSTRUCTION WITHIN REASONABLE TOLERANCES, BASED UPON THE INFORMATION FURNISHED TO THE ENGINEER PERTAINING TO CHANGES MADE DURING CONSTRUCTION.

PLANS AND ESTIMATES PREPARED BY:
GREELEY AND HANSEN
ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606

REVISION	BY	DATE	PLAN SCALE	DRAWN	RPN	APPROVED
RECORD DRAWING	EAJ	9-1	AS SHOWN	DESIGNED	DVH RPN	
REVISIONS				SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ. MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: FMT		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 48 OF 49 SHEETS

FILE: BPCAM05 11 11/25/94 1648 CH-4



RECORD DRAWING

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REVISION	BY	DATE	PLAN SCALE	DRAWN	JVT	APPROVED
RECORD DRAWING		9-1	AS SHOWN	DESIGNED	MB	
REVISIONS	EAJ	1996		SURVEY		
			PROFILE SCALE	FIELD MGR		
			HORIZONTAL:	SECT. MGR		
			VERTICAL:	PROJ MGR		
				RECOMMENDED		
				DEPUTY DIRECTOR		PUBLIC WORKS DIRECTOR
			FILE:	DRAWING: GS1		DATE: OCTOBER 1994
			ATLAS PAGE NO.:			SHEET 49 OF 49 SHEETS

**FLUME AND STEPPED AERATOR
STRUCTURAL
PLANS, ELEVATION
AND SECTIONS**

**LOWER BIRD CREEK
WASTEWATER FACILITIES
PROJECT NO. TMUA SA 92-3
CONTRACT NO. 1
WASTEWATER TREATMENT PLANT**

**CITY OF TULSA, OKLAHOMA
PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES DIVISION**

PLANS AND ESTIMATES PREPARED BY:
KLEIN AND HOFFMAN, INC.
CONSULTING ENGINEERS
100 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
PROJECT NO. 4543

NOTES:
1. FOR TYPICAL DETAILS DESIGNATED THUS (3) AND GENERAL NOTES SEE DWG. AS1 AND AS2.