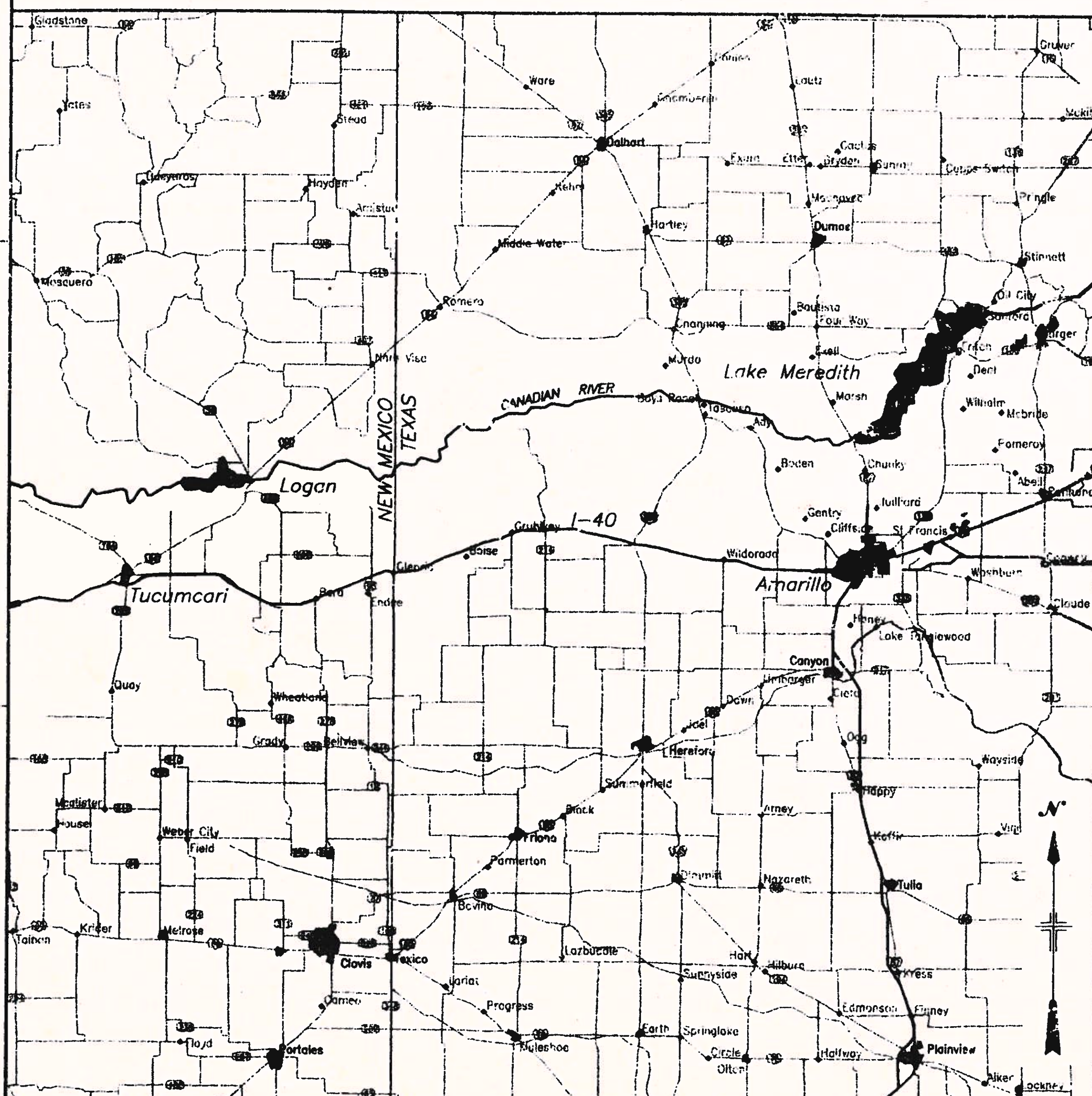
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

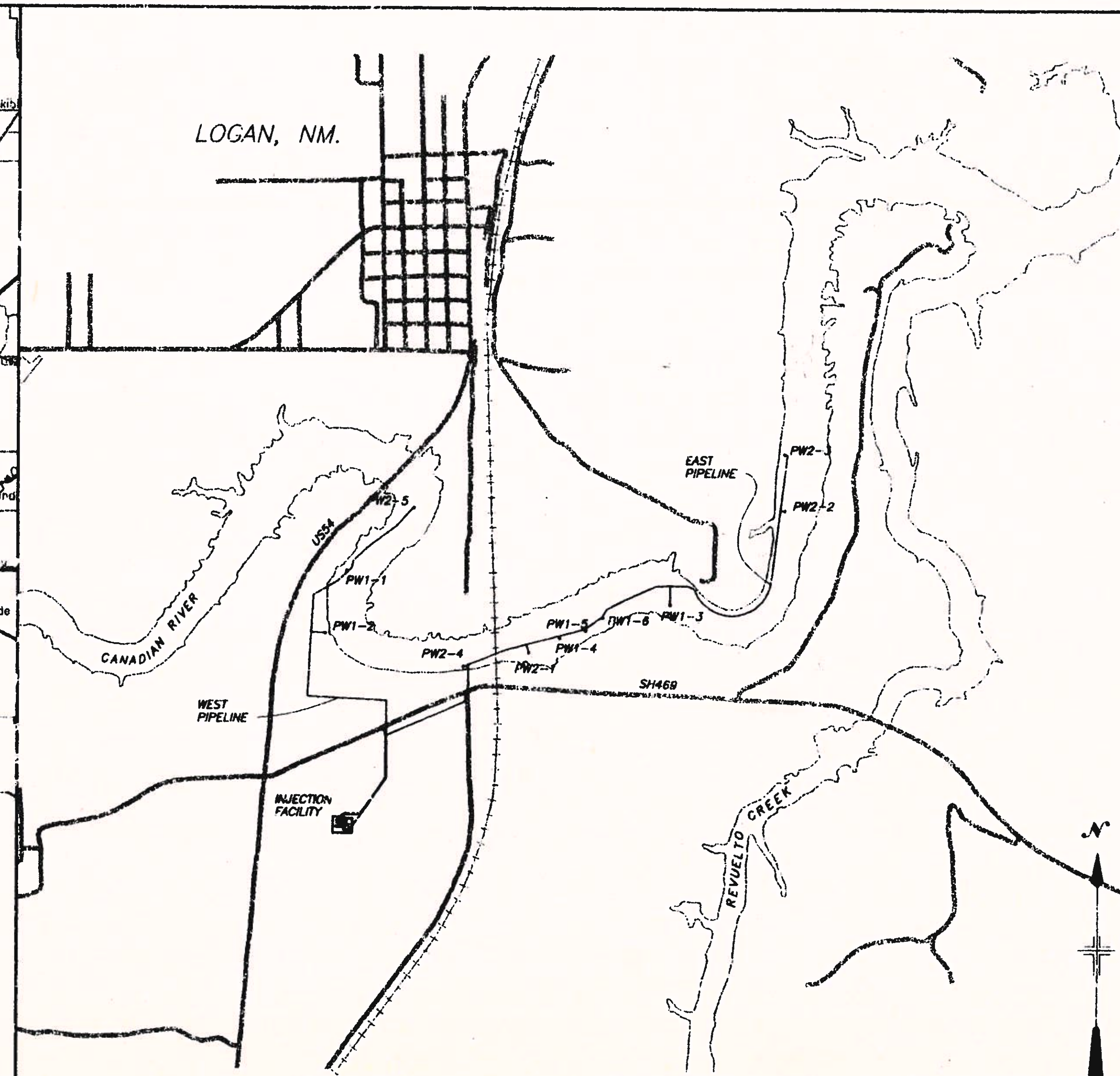
CANADIAN RIVER
MUNICIPAL
WATER AUTHORITY

LAKE MEREDITH SALINITY CONTROL PROJECT ~ BID PACKAGE 2
LOGAN, NEW MEXICO

VICINITY MAP



LOCATION MAP



PROJECT TEAM

OWNER
CANADIAN RIVER MUNICIPAL WATER AUTHORITY
P.O. BOX 99
SANFORD, TX 79078
PHONE : 806-865-3325
FAX : 806-865-3314

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LITTLETON, CO 80226
PHONE : 303-797-1200
FAX : 303-797-1187

ARCHITECT
J.F. SATO & ASSOCIATES, INC.
5898 SOUTH RAPP STREET
LITTLETON, CO 80226
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MECH./ELEC. ENGINEER
RMH GROUP, INC.
12600 WEST COLFAX AVENUE, SUITE A400
LAKEWOOD, CO 80215
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FAX : 303-202-9210

INJECTION WELL ENGINEER
TEXAS WORLD OPERATIONS, INC.
P.O. BOX 56343
HOUSTON, TX 77256-6343
PHONE : 713-850-0003
FAX : 713-850-7532

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
COVER SHEET

DESIGNED C. Pangburn	TECH. APPROVAL
DRAWN C. Pangburn	SUBMITTED
CHECKED J. Godwin	APPROVED

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME BP-2\9752-COV.DWG	DATE AND TIME PLOTTED 12/3/1997 16:36:46
BILLINGS, MONTANA	April 17, 1998	1253-600-42
	BP-2	G1.1 Sheet 1 of 2

Drawing acquired under Contract No.1425-5-CA-60-08530
Task Order Number 1425-7-PD-60-08530-003

INDEX OF DRAWINGS

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

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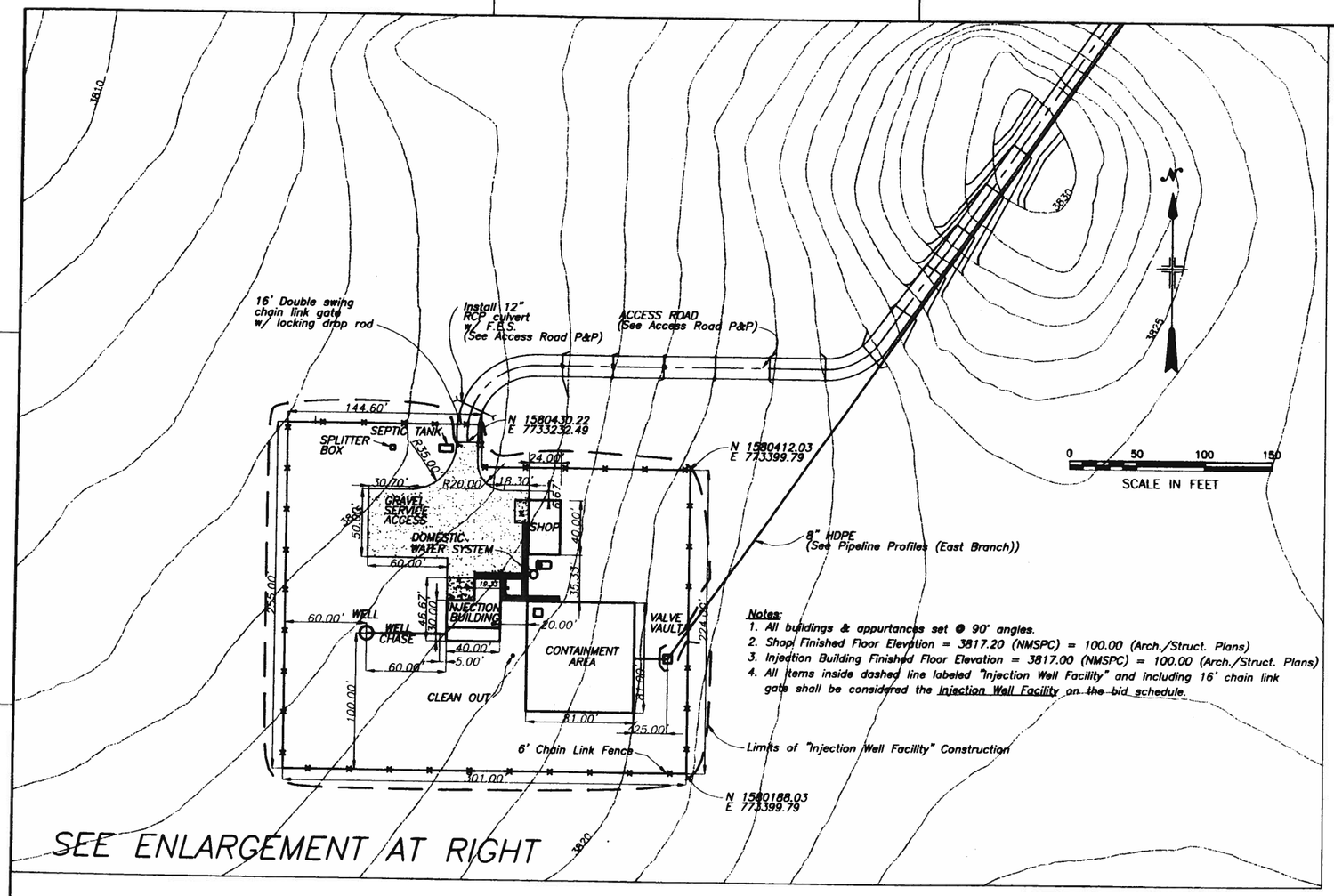
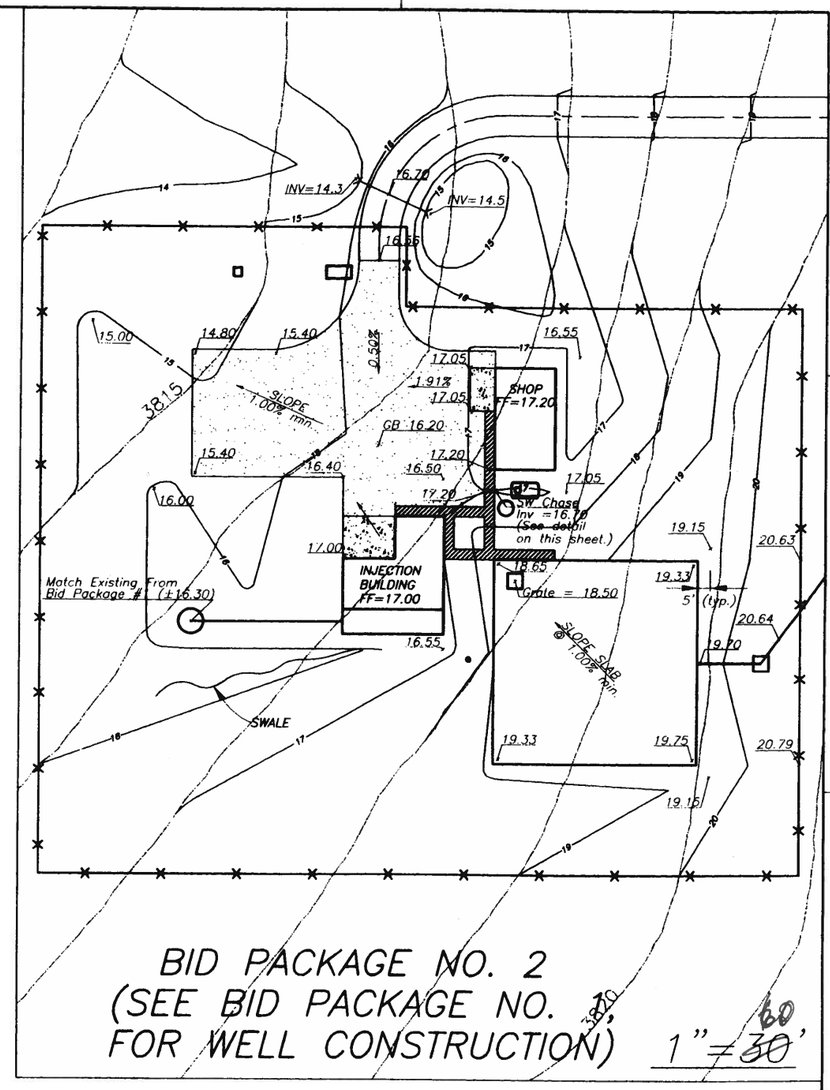
BUREAU OF RECLAMATION

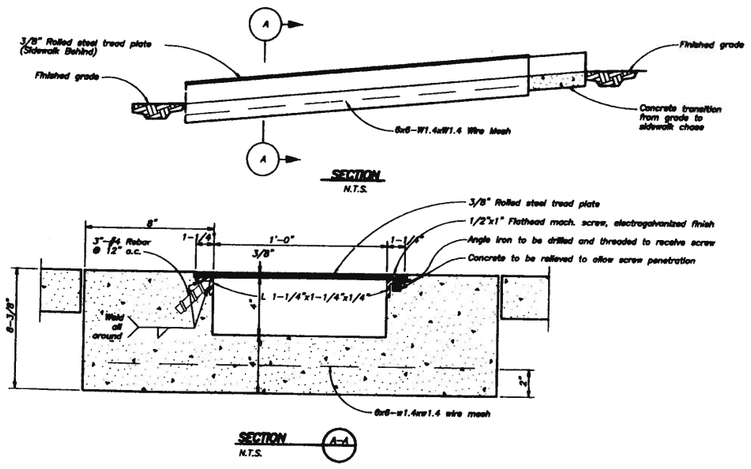
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

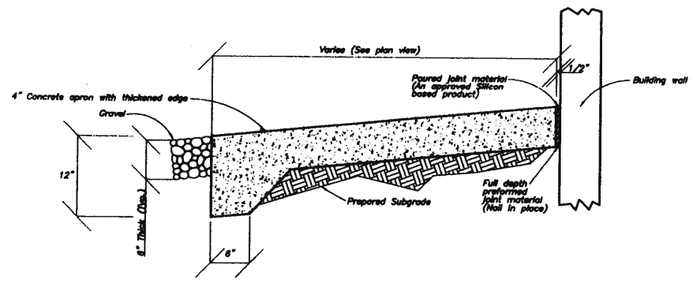
SALINITY CONTROL FACILITIES
INDEX OF DRAWINGS

DESIGNED C. Pangburn	TECH. APPROVAL		
DRAWN C. Pangburn	SUBMITTED		
CHECKED J. Gedrein	APPROVED		
CADD SYSTEM AutoCAD 13_c4 BILLINGS, MONTANA	CADD FILENAME BP-2\9752-IDX.DWG April 17,1998	DATE AND TIME PLOTTED 04/10/1998 16:02:50	1253-600-43
		G1.2	Sheet 2 of 2









6" APRON WITH THICKENED EDGE AND EXPANSION JOINT
N.T.S.

LEGEND

- EXISTING CONTOURS
- 17 PROPOSED CONTOURS
- FENCE
- 4" CONCRETE SIDEWALK
- GRAVEL ACCESS
- FLOW ARROW
- 4" CONCRETE BUILDING APRON

BENCHMARK:
A USGS benchmark stamped 12CFL1961, Located South of Logan, NM. on the south end of Union Pacific Railroad Bridge over Canadian River in the northwest corner of the south bridge abutment.
Elevation = 3791.78
Benchmark references New Mexico State Plane Coordinate System (East Zone)
N 1582699.475
E 775630.626

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-80-06530-003

J.F. SATO AND ASSOCIATES
Consulting Engineers
Project Managers, Planners & Surveyors
5990 So. Tripp St. • Littleton, CO 80120 • (303) 797-1200

JAMES F. SATO NEW MEXICO 5174 REGISTERED PROFESSIONAL ENGINEER
AFFIX STAMP/SEAL

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DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

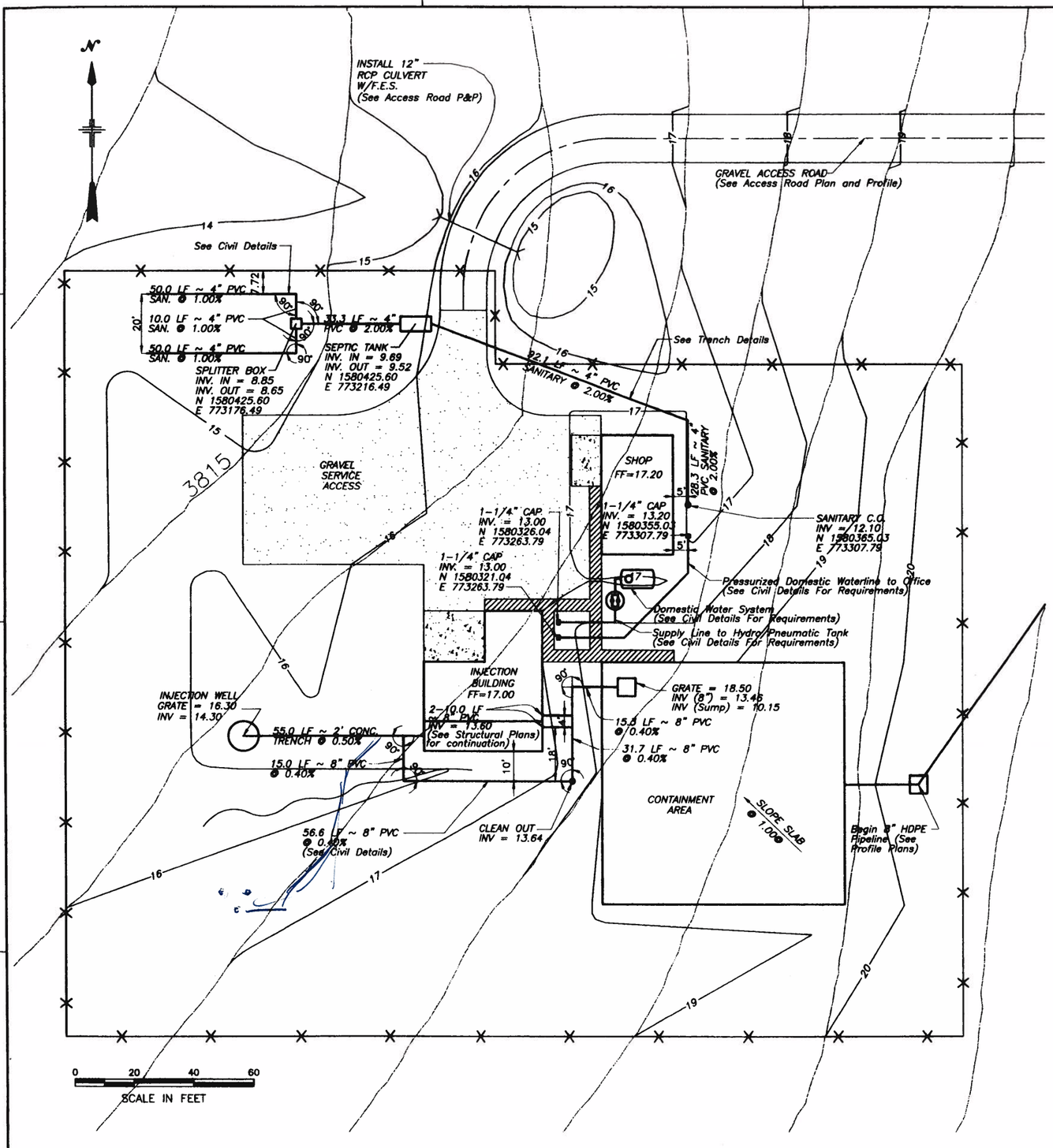
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

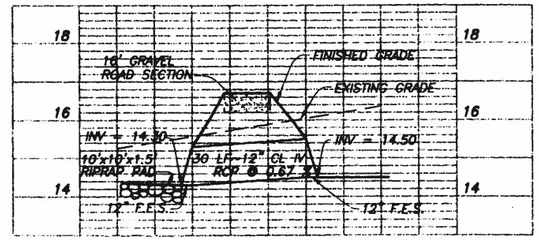
SALINITY CONTROL FACILITIES
SITE AND GRADING PLAN

DESIGNED	J. GODWIN	TECH. APPROVAL	
DRAWN	M. TROTMAN	SUBMITTED	
CHECKED	C. PANGBURN	APPROVED	

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME BP-2\9752-BP2.DWG	DATE AND TIME PLOTTED 10/1/1997 10:42:15
BILLINGS, MONTANA	April 17, 1998	1253-600-44

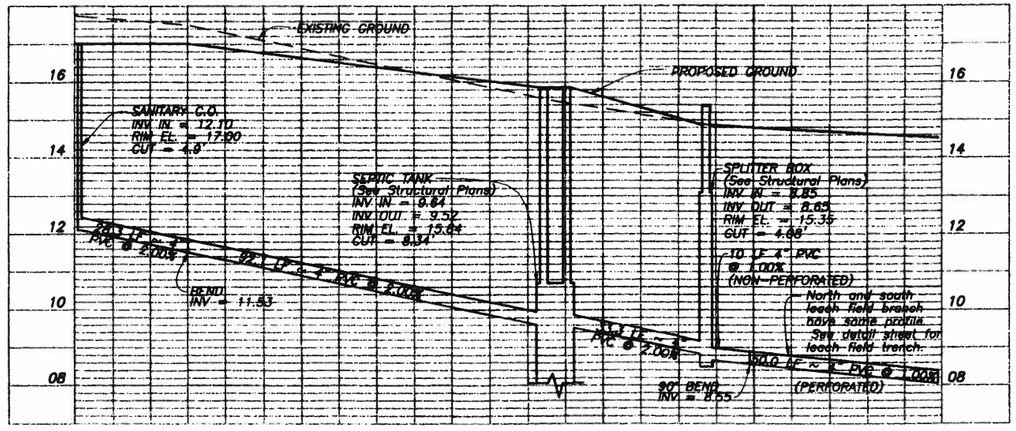
BP-2 | C1.1 | Sheet 1 of 11





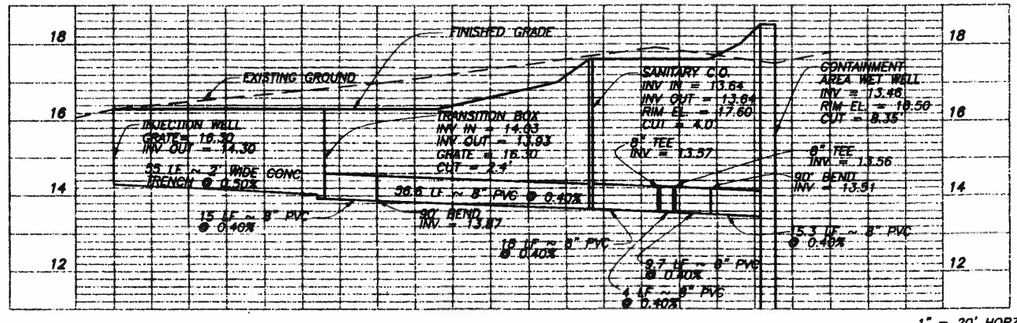
12" CULVERT

1" = 20' HORZ
1" = 2' VERT



SANITARY & LEACH FIELD

1" = 20' HORZ
1" = 2' VERT



CONCRETE TRENCH & 8" PVC TO SUMP

1" = 20' HORZ
1" = 2' VERT

LEGEND

- EXISTING CONTOURS
- 17 PROPOSED CONTOURS
- FENCE
- 4" CONCRETE SIDEWALK
- GRAVEL ACCESS
- 4" CONCRETE BUILDING APRON

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N 1582699.475
E 775630.626

Drawing acquired under Contract No.1425-5-CA-60-08530
Task Order Number 1425-7-PD-60-08530-003

J.F. SATO AND ASSOCIATES
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Project Managers, Planners & Surveyors
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JAMES F. SATO 9274 REGISTERED PROFESSIONAL ENGINEER
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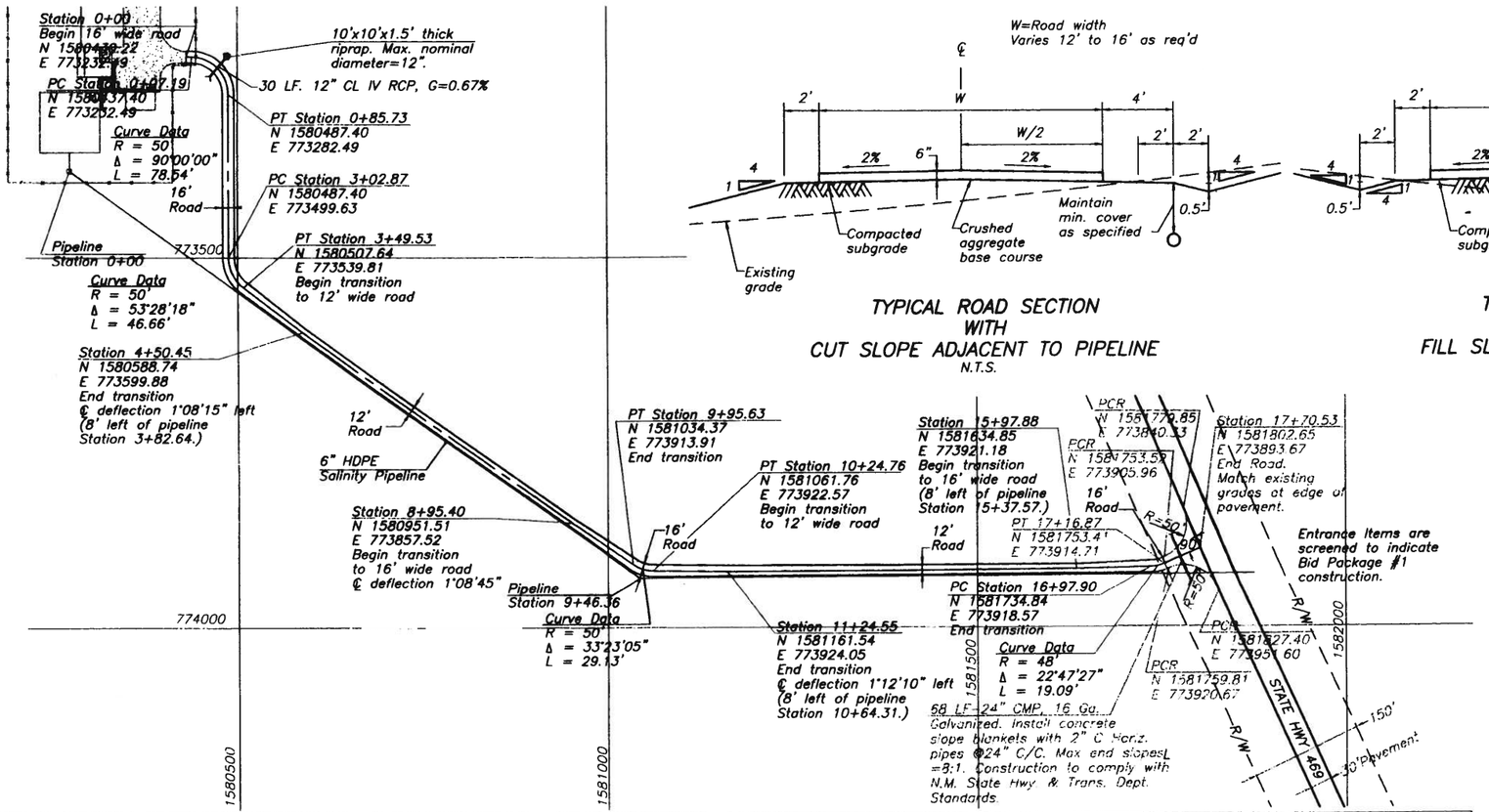
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

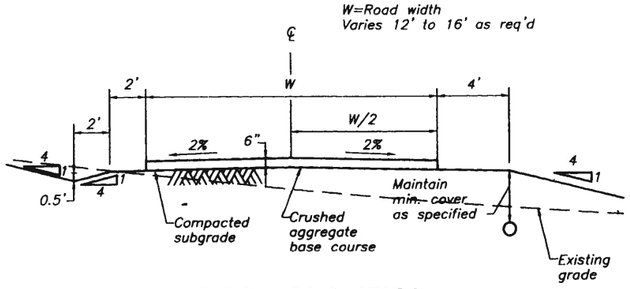
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
. SITE UTILITY PLAN

DESIGNED J. Godwin	TECH. APPROVAL		
DRAWN J. Yancey	SUBMITTED		
CHECKED C. Pangburn	APPROVED		
CADD SYSTEM AutoCAD 13_c4	CADD FILENAME BP-2\9752-OUP.DWG	DATE AND TIME PLOTTED 11/14/1997 10:41:09	
BILLINGS, MONTANA	April 17, 1998	1253-600-45	
BP-2	C1.2	Sheet 2 of 11	

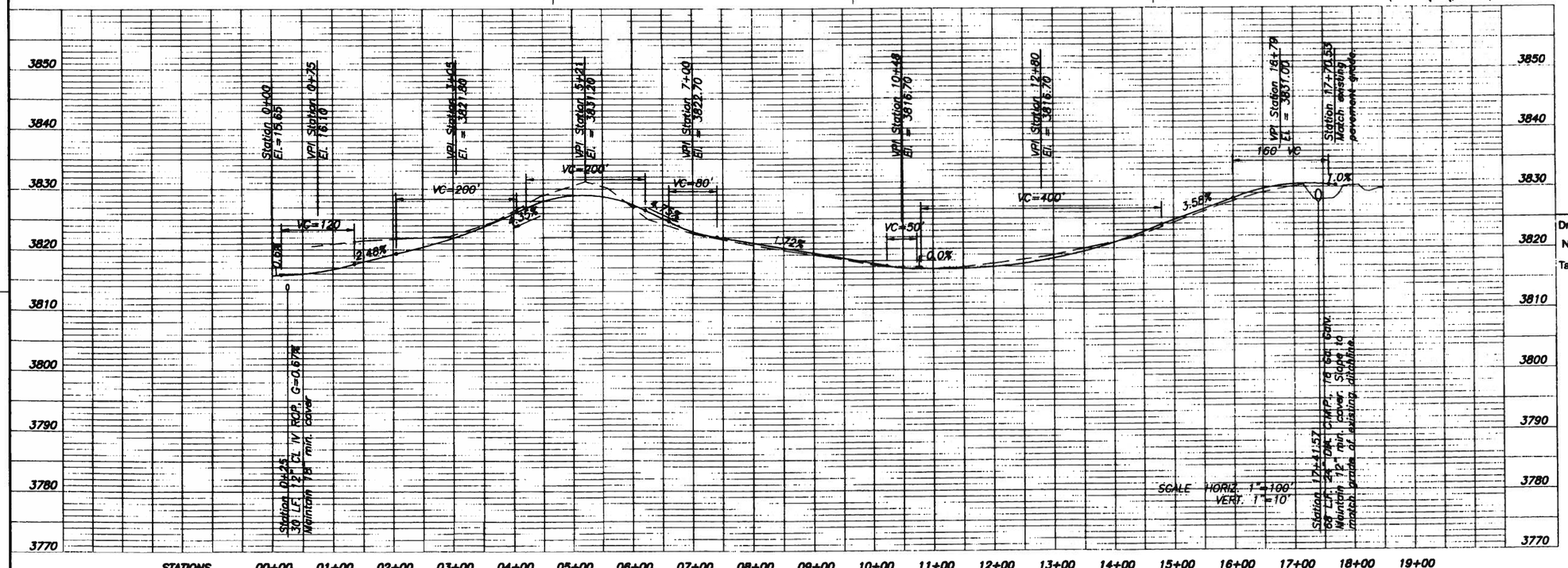


TYPICAL ROAD SECTION
WITH
CUT SLOPE ADJACENT TO PIPELINE
N.T.S.



TYPICAL ROAD SECTION
WITH
FILL SLOPE ADJACENT TO PIPELINE
N.T.S.

SCALE IN FEET
Scale 1" = 100'



Notes:
1. See typical road section details this sheet.
2. Provide traffic control for work adjacent and within State Highway R/W.
3. Contractor to comply with all requirements of the Highway Department Permit and other regulatory agencies exercising jurisdiction over the project.
4. Refer to project specifications for fill and subgrade compaction requirements.
5. The Contractor shall provide erosion protection measures for all areas disturbed by construction. Such measures shall include, but are not limited to the following.
   a) silt fence on down gradient edge of all disturbed areas.
   b) straw bale or silt fence inlet protection on the up gradient end of culverts.
   c) Straw bale or silt fence protection in graded ditchlines/swales at intervals not greater than 100 ft.
   d) Other measures as appropriate to maintain adequate protection.
6. The Contractor shall routinely check and maintain erosion protection measures to insure their proper functioning at all times.
7. The Contractor shall limit construction disturbance of adjacent lands to the minimum amount necessary to satisfactorily perform the work.
8. All items shown and not indicated as from Bid Package 1 are considered "Roadway Construction."

Drawing acquired under Contract
No. 1425-5-CA-60-06530
Task Order No. 1425-7-PD-60-06530-003

J.F. SATO AND ASSOCIATES
Consulting Engineers
Project Managers, Planners & Surveyors
5898 So. Rapp St. • Littleton, CO 80120 • (303) 797-1200

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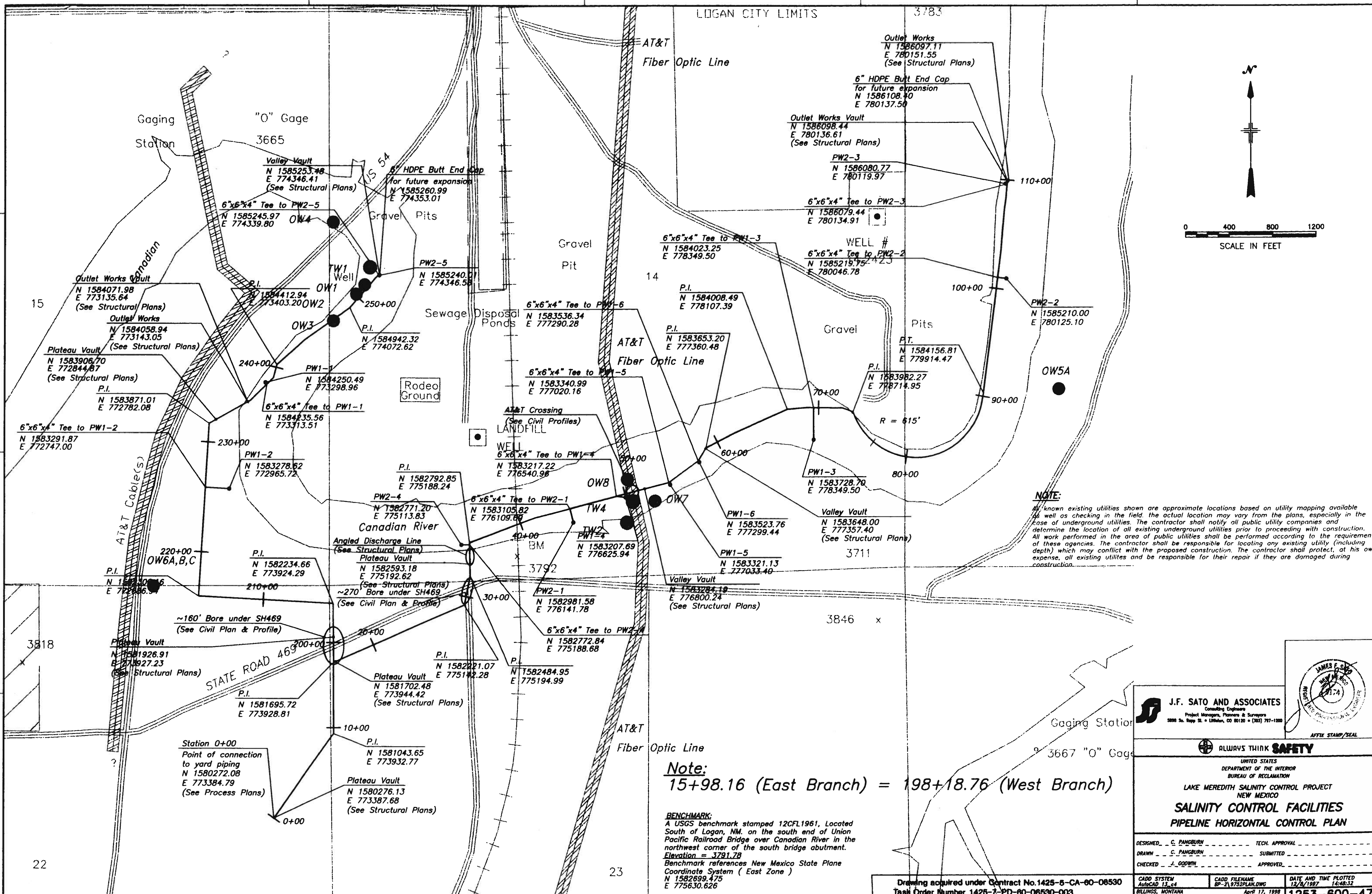
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
ACCESS ROAD PLAN AND PROFILE

DESIGNED	G. Cioff	TECH. APPROVAL	
DRAWN	R. Wheeler	SUBMITTED	
CHECKED	J. Godwin	APPROVED	

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME BP-2\9752PFRD.DWG	DATE AND TIME PLOTTED 09/30/1997 17:03:46
BILLINGS, MONTANA	April 17, 1998	1253-600-46
BP-2	C1.3	Sheet 3 of 11



LOGAN CITY LIMITS
AT&T Fiber Optic Line
Gaging Station
"O" Gage
3665
US 54
Gravel Pits
Gravel Pit
Sewage Disposal Ponds
Rodeo Ground
LANDFILL WELL
Canadian River
STATE ROAD 469
AT&T Cable(s)
Canadian
WELL # 2423
Gravel Pits
OW5A
OW4
OW3
OW2
OW1
TW1 Well
OW6A,B,C
OW8
OW7
TW4
TW2
BM
3792
3846
3711
3818
3783
15
14
22
23
R = 615'
Outlet Works
N 1586097.11
E 780151.55
(See Structural Plans)
6" HDPE Butt End Cap for future expansion
N 1586108.40
E 780137.50
Outlet Works Vault
N 1586098.44
E 780136.61
(See Structural Plans)
PW2-3
N 1586080.77
E 780119.97
6"x6"x4" Tee to PW2-3
N 1586079.44
E 780134.91
6"x6"x4" Tee to PW2-2
N 1585219.75
E 780046.78
PW2-2
N 1585210.00
E 780125.10
P.T.
N 1584156.81
E 779914.47
P.I.
N 1583982.27
E 778714.95
6"x6"x4" Tee to PW1-3
N 1584023.25
E 778349.50
P.I.
N 1584008.49
E 778107.39
P.I.
N 1583653.20
E 777360.48
PW1-3
N 1583728.70
E 778349.50
Valley Vault
N 1583648.00
E 777357.40
(See Structural Plans)
PW1-6
N 1583523.76
E 777299.44
PW1-5
N 1583321.13
E 777033.40
Valley Vault
N 1583284.19
E 776800.24
(See Structural Plans)
6"x6"x4" Tee to PW1-6
N 1583536.34
E 777290.28
6"x6"x4" Tee to PW1-5
N 1583340.99
E 777020.16
AT&T Crossing
(See Civil Profiles)
6"x6"x4" Tee to PW1-4
N 1583217.22
E 776540.96
PW1-4
N 1583207.69
E 776625.94
6"x6"x4" Tee to PW2-1
N 1583105.82
E 776109.69
PW2-1
N 1582981.58
E 776141.78
6"x6"x4" Tee to PW2-4
N 1582772.84
E 775188.68
P.I.
N 1582792.85
E 775188.24
PW2-4
N 1582771.20
E 775113.83
Angled Discharge Line
(See Structural Plans)
Plateau Vault
N 1582593.18
E 775192.62
(See Structural Plans)
~270' Bore under SH469
(See Civil Plan & Profile)
P.I.
N 1582221.07
E 775142.28
P.I.
N 1582484.95
E 775194.99
Valley Vault
N 1585253.48
E 774346.41
(See Structural Plans)
6" HDPE Butt End Cap for future expansion
N 1585260.99
E 774353.01
6"x6"x4" Tee to PW2-5
N 1585245.97
E 774339.80
PW2-5
N 1585240.21
E 774346.58
P.I.
N 1584412.94
E 773403.20
P.I.
N 1584942.32
E 774072.62
Outlet Works Vault
N 1584071.98
E 773135.64
(See Structural Plans)
Outlet Works
N 1584058.94
E 773143.05
(See Structural Plans)
Plateau Vault
N 1583906.70
E 772844.87
(See Structural Plans)
P.I.
N 1583871.01
E 772782.08
6"x6"x4" Tee to PW1-2
N 1583291.87
E 772747.00
PW1-1
N 1584250.49
E 773298.96
6"x6"x4" Tee to PW1-1
N 1584235.56
E 773313.51
PW1-2
N 1583278.62
E 772965.72
P.I.
N 1582234.66
E 773924.29
P.I.
N 1582300.16
E 772686.97
~160' Bore under SH469
(See Civil Plan & Profile)
Plateau Vault
N 1581926.91
E 773927.23
(See Structural Plans)
Plateau Vault
N 1581702.48
E 773944.42
(See Structural Plans)
P.I.
N 1581695.72
E 773928.81
P.I.
N 1581043.65
E 773932.77
Station 0+00
Point of connection to yard piping
N 1580272.08
E 773384.79
(See Process Plans)
Plateau Vault
N 1580276.13
E 773387.68
(See Structural Plans)
0+00
10+00
20+00
30+00
40+00
50+00
60+00
70+00
80+00
90+00
100+00
110+00
200+00
210+00
220+00
230+00
240+00
250+00
N
0 400 800 1200
SCALE IN FEET
NOTE:
All known existing utilities shown are approximate locations based on utility mapping available as well as checking in the field. the actual location may vary from the plans, especially in the case of underground utilities. The contractor shall notify all public utility companies and determine the location of all existing underground utilities prior to proceeding with construction. All work performed in the area of public utilities shall be performed according to the requirements of these agencies. The contractor shall be responsible for locating any existing utility (including depth) which may conflict with the proposed construction. The contractor shall protect, at his own expense, all existing utilites and be responsible for their repair if they are damaged during construction.
Note:
15+98.16 (East Branch) = 198+18.76 (West Branch)
BENCHMARK:
A USGS benchmark stamped 12CFL1961, Located South of Logan, NM. on the south end of Union Pacific Railroad Bridge over Canadian River in the northwest corner of the south bridge abutment.
Elevation = 3791.78
Benchmark references New Mexico State Plane Coordinate System (East Zone)
N 1582699.475
E 775630.626
Gaging Station
3667 "O" Gage
Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003
J.F. SATO AND ASSOCIATES
Consulting Engineers
Project Managers, Planners & Surveyors
AFFIX STAMP/SEAL
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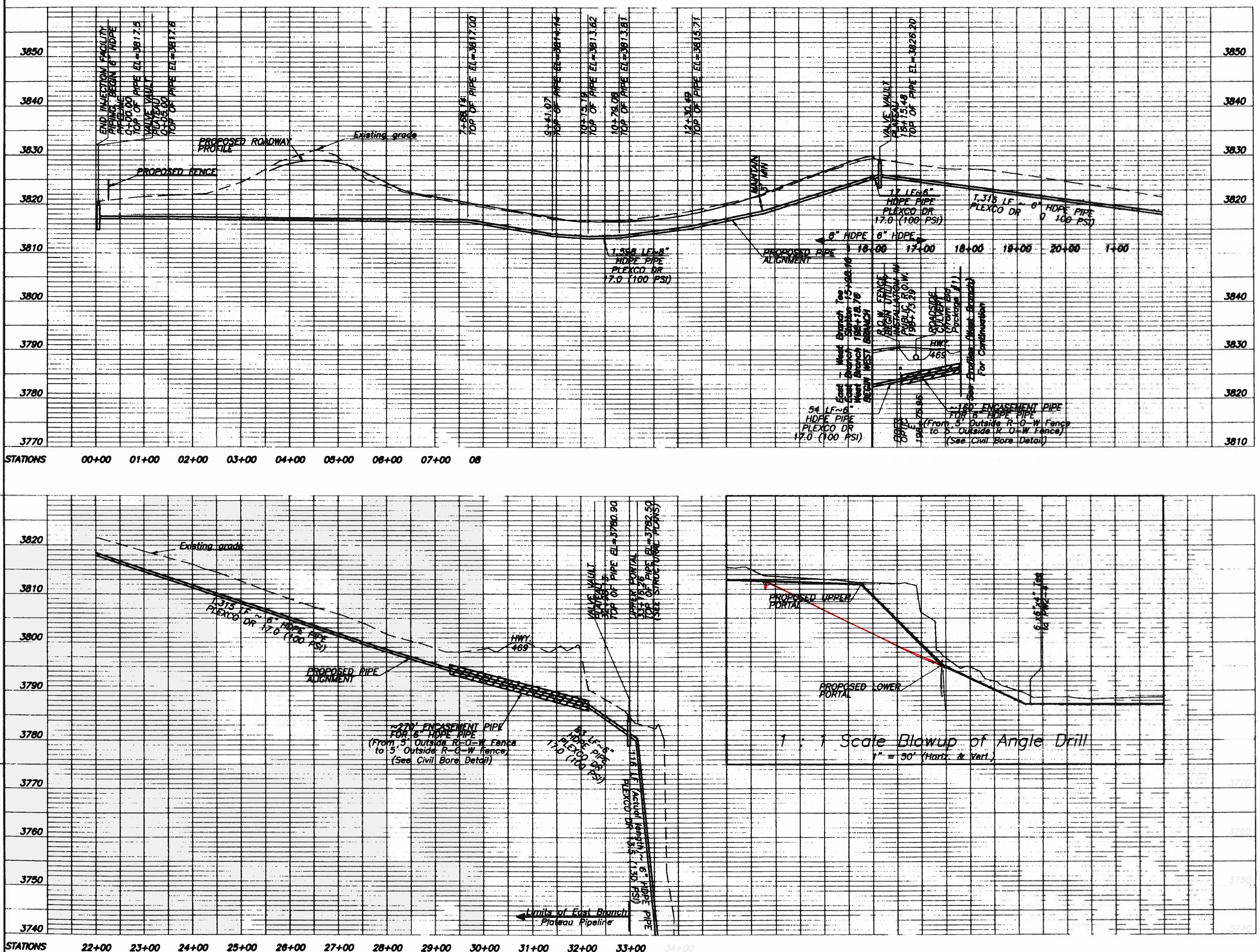
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO
SALINITY CONTROL FACILITIES
PIPELINE HORIZONTAL CONTROL PLAN
DESIGNED C. PANGBURN
DRAWN C. PANGBURN
CHECKED J. GODWIN
TECH. APPROVAL
SUBMITTED
APPROVED
CADD SYSTEM AutoCAD 13_c4
CADD FILENAME BP-2\9752PLAN.DWG
DATE AND TIME PLOTTED 12/8/1997 14:48:32
BILLINGS, MONTANA
April 17, 1998
1253-600-47
BP-2
C1.4
Sheet 4 of 11

7 - 7 - 97 D - A.B.C.	AS BUILT BY (INSERT PROPER STATION NUMBER) SHOW FINAL ARRANGMENT



Drawing acquired under Contract No.1425-5-CA-60-06530

Task Order Number 1425-7-PD-60-06530-003

J.F. SATO AND ASSOCIATES
Consulting Engineers
Project Managers, Planners & Surveyors
5898 So. Rapp St. • Littleton, CO 80120 • (303) 797-1200

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BUREAU OF RECLAMATION

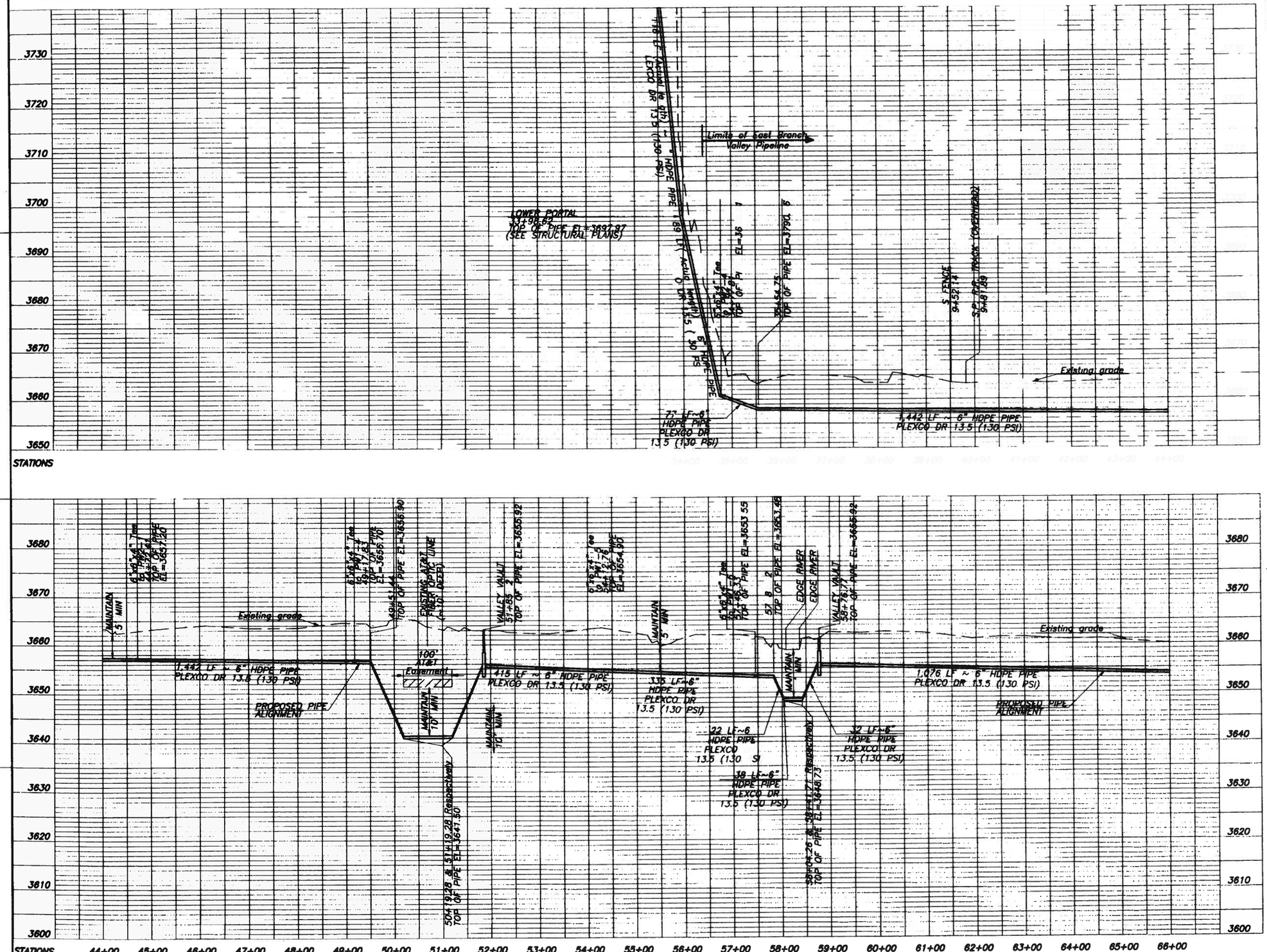
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

Profiles (East Branch 1/3)

DESIGNED	C. Koran/ M. Trolman	TECH. APPROVAL	
DRAWN	C. Koran/ M. Trolman	SUBMITTED	
CHECKED	C. Pangburn	APPROVED	

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 9752-pf-e.DWG	DATE AND TIME PLOTTED
BILLINGS, MONTANA	April 17,1998	1253-600-48
BP-2	C1.5	Sheet 5 of 11



BENCHMARK:
A USGS benchmark stamped 12CFL1961, Located South of Logan, NM. on the south end of Union Pacific Railroad Bridge over Canadian River in the northwest corner of the south bridge abutment.
Elevation = 3791.78
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N 1582699.475
E 775630.626

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Drawing acquired under Contract No. 1425-8-CA-60-08530
Task Order Number 1425-7-PD-60-08530-003

SCALE: HORIZ. 1"=100'
VERT. 1"=10'

J.F. SATO AND ASSOCIATES
Consulting Engineers
Project Managers, Planners & Surveyors
5898 So. Rapp St. • Littleton, CO 80120 • (303) 797-1309

JAMES F. SATO
NEW MEXICO
9174
REGISTERED PROFESSIONAL ENGINEER
AFFIX STAMP/SEAL

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

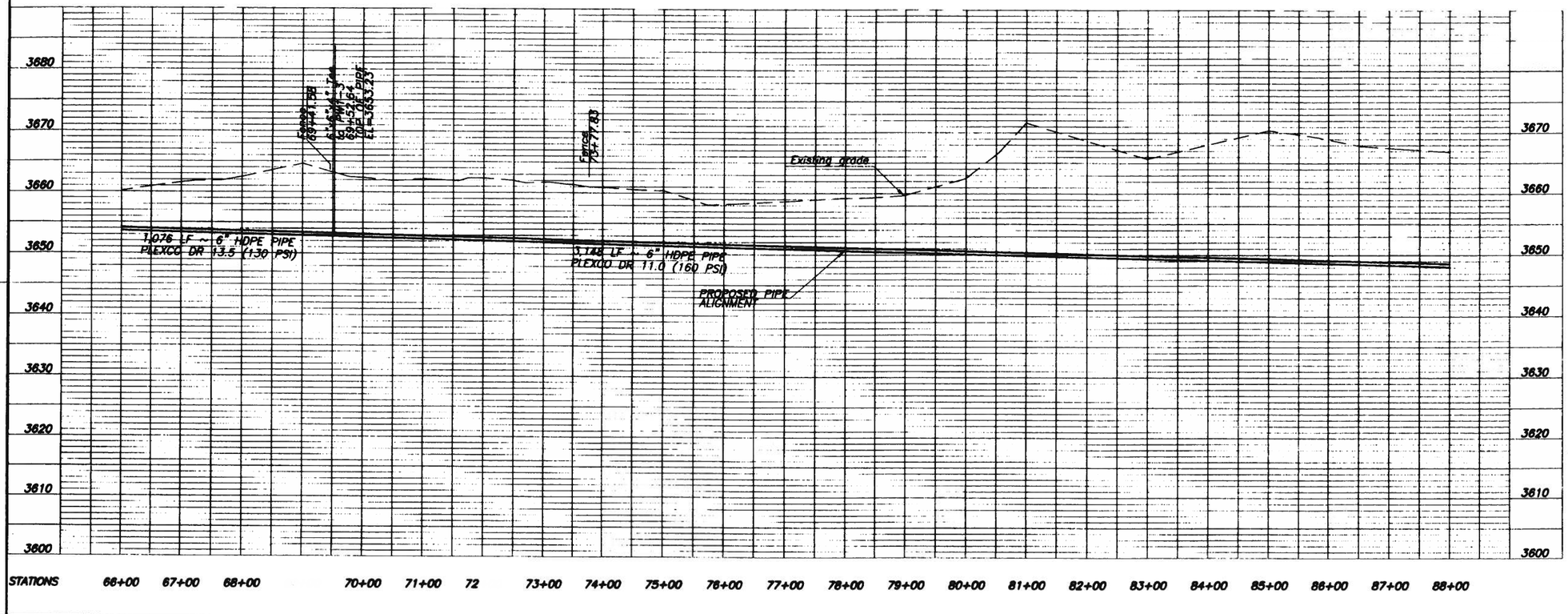
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

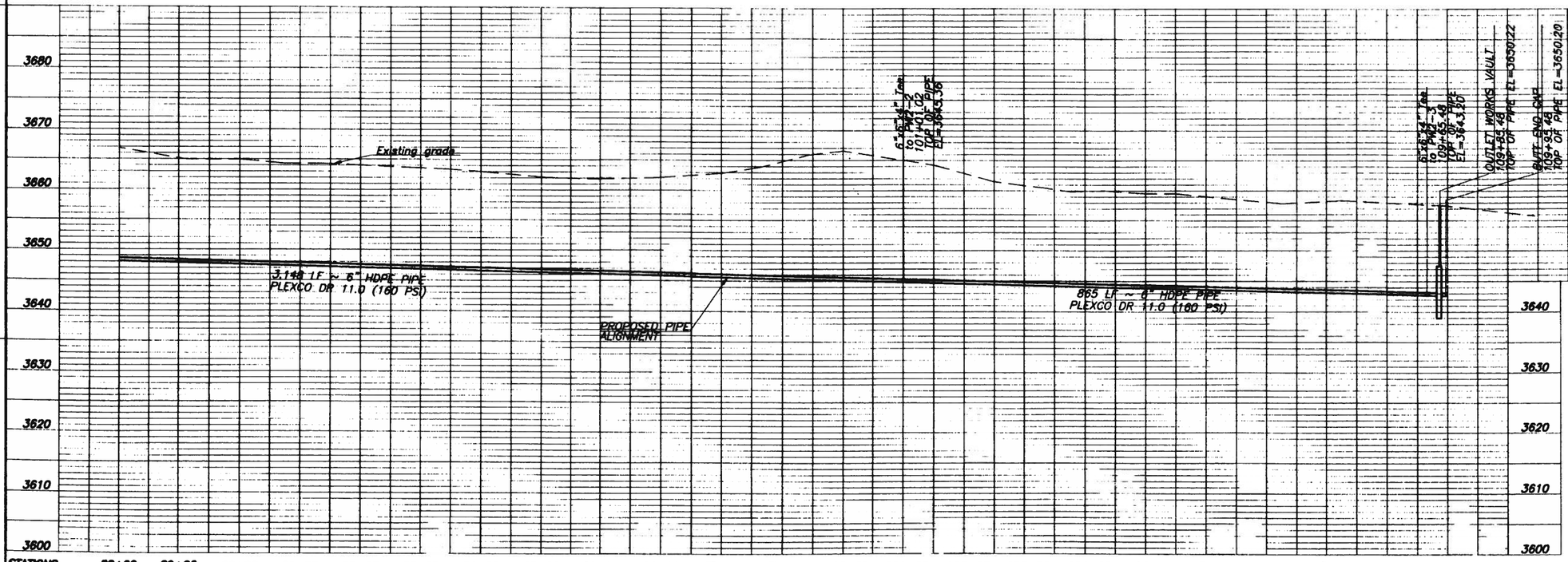
SALINITY CONTROL FACILITIES

Profiles (East Branch 2/3)

DESIGNED C. Koran/ M. Trotman	TECH. APPROVAL		
DRAWN C. Koran/ M. Trotman	SUBMITTED		
CHECKED C. Pangburn	APPROVED		
CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 9752-pf-e.DWG	DATE AND TIME PLOTTED	
BILLINGS, MONTANA	April 17, 1998	1253-600-49	
BP-2	C1.6	Sheet 6 of 11	

7 - 7 - 97	AS BUILT BY (INSERT PROPER STATION NUMBER)
D - A.B.C.	SHOW FINAL ARRANGMENT





BENCHMARK:
A USGS benchmark stamped 12CFL1961, Located South of Logan, NM. on the south end of Union Pacific Railroad Bridge over Canadian River in the northwest corner of the south bridge abutment.
Elevation = 3791.78
Benchmark references New Mexico State Plane Coordinate System (East Zone)
N 1582699.475
E 775630.626

NOTE:
All known existing utilities shown are approximate locations based on utility mapping available as well as checking in the field. the actual location may vary from the plans, especially in the case of underground utilities. The contractor shall notify all public utility companies and determine the location of all existing underground utilities prior to proceeding with construction. All work performed in the area of public utilities shall be performed according to the requirements of these agencies. The contractor shall be responsible for locating any existing utility (including depth) which may conflict with the proposed construction. The contractor shall protect, at his own expense, all existing utilities and be responsible for their repair if they are damaged during construction

Drawing acquired under Contract No.1425-6-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

Profiles (East Branch 3/3)

DESIGNED	M. Trotman	TECH. APPROVAL	
DRAWN	M. Trotman	SUBMITTED	
CHECKED	C. Pangburn	APPROVED	

CADD SYSTEM	CADD FILENAME	DATE AND TIME PLOTTED
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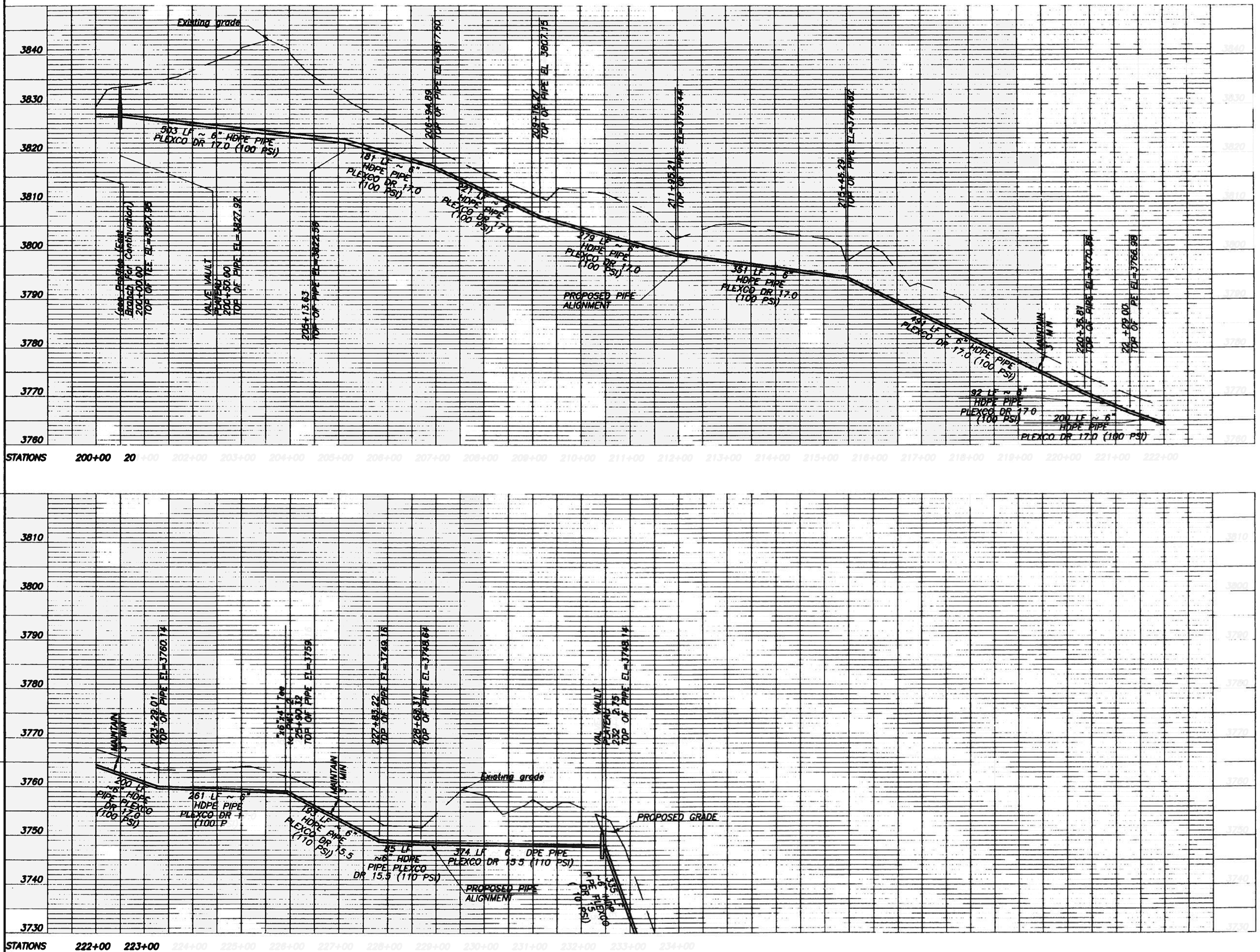
BILLINGS, MONTANA	April 17, 1998	1253-600-50

BP-2	C1.7	Sheet 7 of 11



BENCHMARK:
A USGS benchmark stamped 12CFL1961, Located South of Logan, NM. on the south end of Union Pacific Railroad Bridge over Canadian River in the northwest corner of the south bridge abutment.
Elevation = 3791.78
Benchmark references New Mexico State Plane Coordinate System (East Zone)
N 1582699.475
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NOTE:
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SCALE: HORIZ. 1"=100'
VERT. 1"=10'

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NEW MEXICO

SALINITY CONTROL FACILITIES

Profiles (West Branch 1/2)

DESIGNED	M. Trolman	TECH. APPROVAL	
DRAWN	M. Trolman	SUBMITTED	
CHECKED	C. Pangburn	APPROVED	

CADD SYSTEM	CADD FILENAME	DATE AND TIME PLOTTED
AutoCAD 13_c4	9752-pf-w.DWG	09/30/1997 17:16:57
BILLINGS, MONTANA	April 17, 1998	1253-600-51

BP-2 | C1.8 | Sheet 8 of 11

BENCHMARK:
A USGS benchmark stamped 12CFL1961, Located South of Logan, NM. on the south end of Union Pacific Railroad Bridge over Canadian River in the northwest corner of the south bridge abutment.
Elevation = 3791.78
Benchmark references New Mexico State Plane Coordinate System (East Zone)
N 1582699.475
E 775630.626

NOTE:
All known existing utilities shown are approximate locations based on utility mapping available as well as checking in the field. the actual location may vary from the plans, especially in the case of underground utilities. The contractor shall notify all public utility companies and determine the location of all existing underground utilities prior to proceeding with construction. All work performed in the area of public utilities shall be performed according to the requirements of these agencies. The contractor shall be responsible for locating any existing utility (including depth) which may conflict with the proposed construction. The contractor shall protect, at his own expense, all existing utilites and be responsible for their repair if they are damaged during construction.

Drawing acquired under Contract No.1425-5-CA-60-06630
Task Order Number 1425-7-PD-60-06630-003

SCALE: HORIZ. 1"=100'
VERT. 1"=10'

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

Profiles (West Branch 2/2)

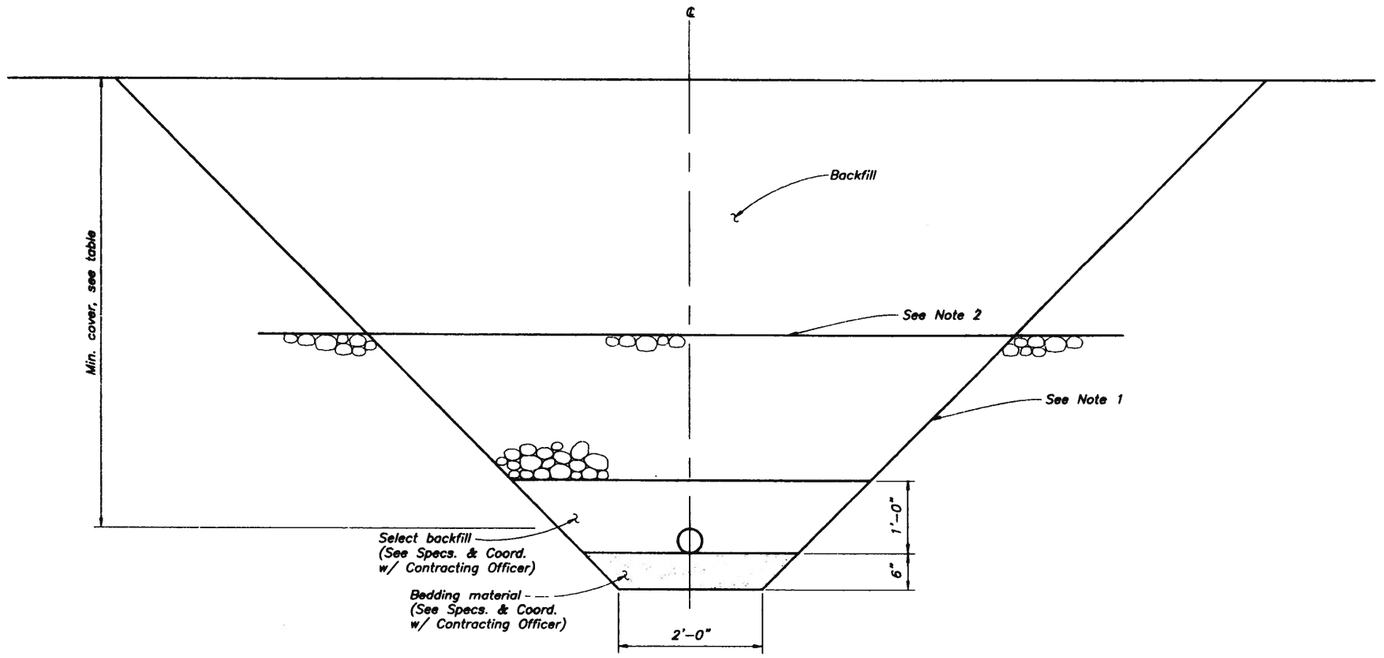
DESIGNED M. Trolman	TECH. APPROVAL
DRAWN M. Trolman	SUBMITTED
CHECKED C. Pangburn	APPROVED

CADD SYSTEM	CADD FILENAME	DATE AND TIME PLOTTED
AutoCAD 13_c4	9752-pf-w.DWG	08/04/97

BILLINGS, MONTANA April 17, 1998

1253-600-52

BP-2 | C1.9 | Sheet 9 of 11

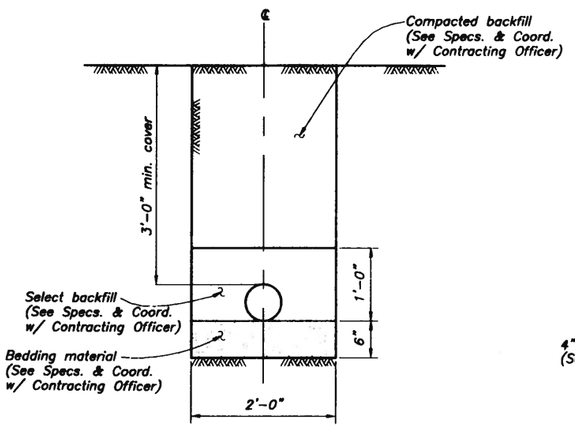


TYPICAL TRENCH VALLEY FLOOR

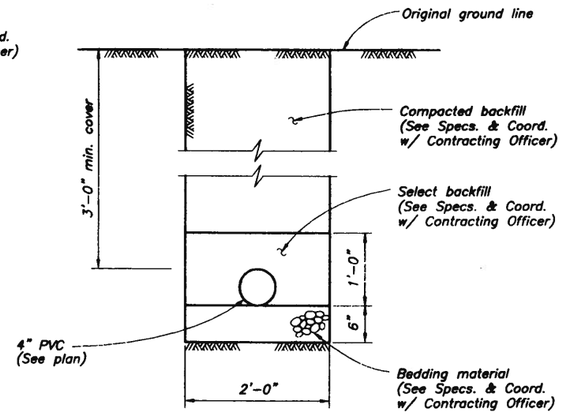
Notes:

1. Trench stability and dewatering are solely contractor's responsibilities.
2. Should contractor uncover river armor during excavation he shall note its elevation, stockpile 6" plus rock and boulders and replace them to their original elevation as directed by the contracting officer.
3. Contractor shall coordinate his construction with the Canadian River Municipal Water Authority and shall consult prior to submitting bid.
4. Limits shown are approximate only and may be field determined by contracting officer.

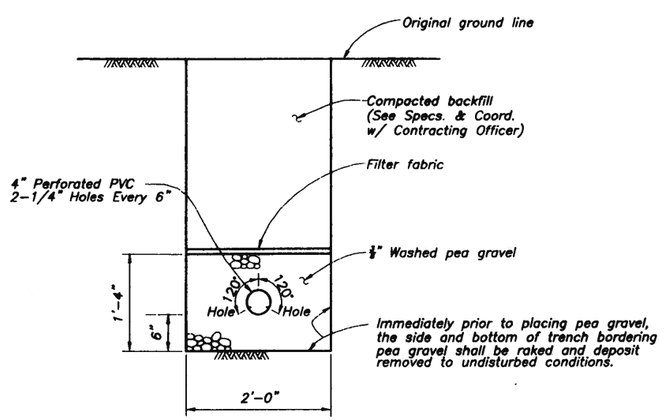
E. Branch Station	Min. Cover, ft.	W. Branch Station
00+00.00 TO 33+16.26	3.0	198+18.76 TO 235+77.21
33+16.26 TO 33+98.62	(SEE DIRECTIONAL DETAIL)	
33+98.62 TO 34+77.81	3.0	
34+77.81 TO 49+51.44	5.0	235+77.21 TO 253+04.90
49+51.44 TO 51+85.62	(SEE PLAN AND PROFILE)	
51+85.62 TO 57+82.92	5.0	
57+82.92 TO 58+76.77	(SEE PLAN AND PROFILE)	
58+76.77 TO 109+95.48	5.0	



TRENCH DETAIL PLATEAU



TYPICAL TRENCH 4" SEWAGE LINE



TYPICAL TRENCH LEACH FIELD

Drawing acquired under Contract No.1425-6-CA-60-05530
Task Order Number 1425-7-PD-60-05530-008

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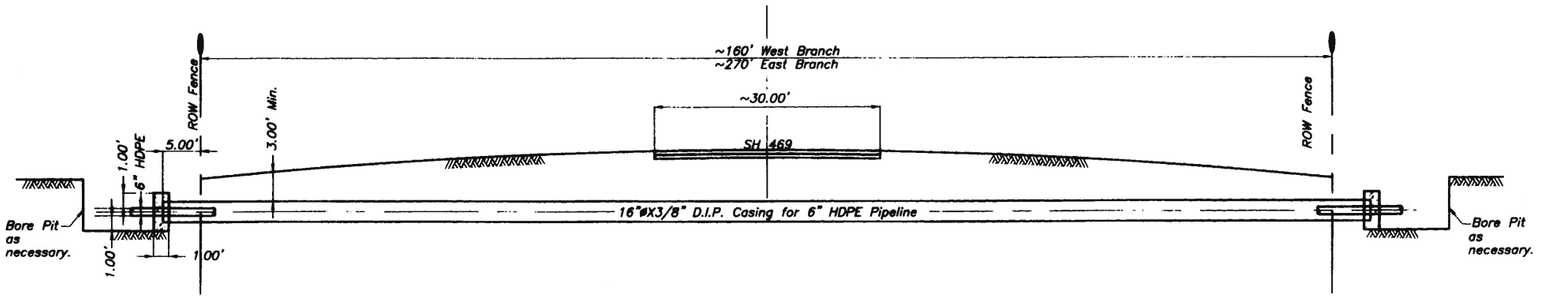
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
CIVIL DETAILS

DESIGNED J. Sato — TECH. APPROVAL
DRAWN C. Koran — SUBMITTED
CHECKED C. Pangburn — APPROVED

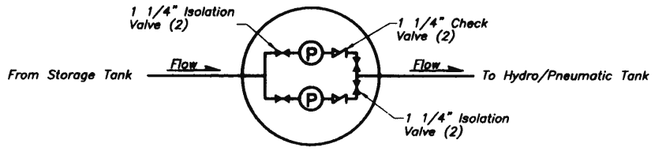
CADD SYSTEM	CADD FILENAME	DATE AND TIME PLOTTED
AutoCAD 13.c4	9732e11.dwg	4-SEPT-1997 8:09 AM
BILLINGS, MONTANA	April 17, 1998	1253-600-53

BP-2 | C2.0 | Sheet 10 of 11

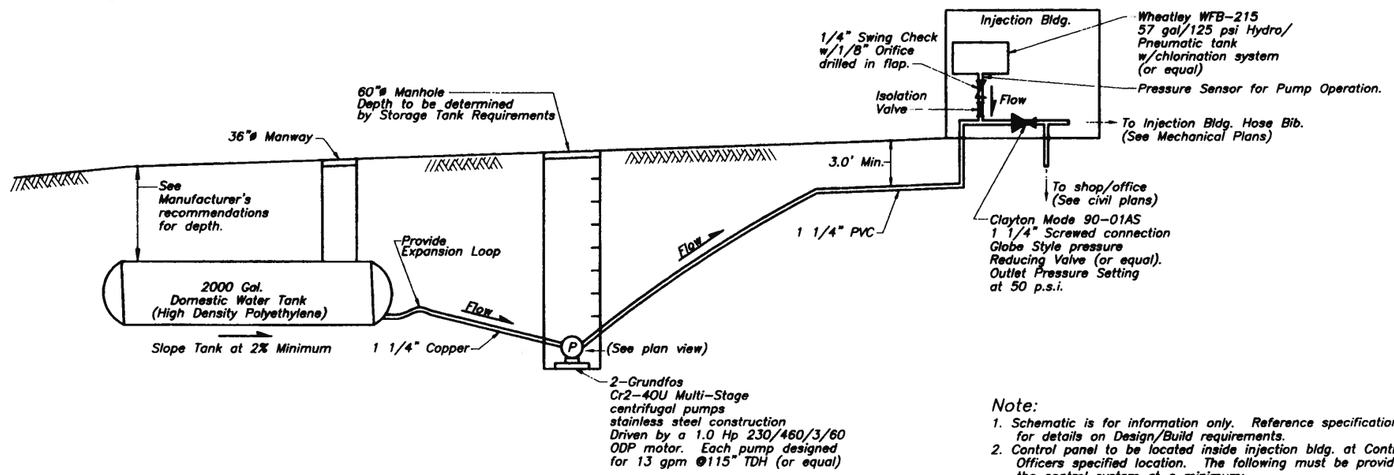


SH469 ROADWAY CROSSING
TYPICAL BORE CONSTRUCTION

Note:
1. The casing shall be blown full of sand.
2. The casing shall be sealed with concrete collars 2'-6" x 2'-6".
3. See East and West Branch profile plans for location and elevation of pipeline.



MANHOLE PLAN VIEW



DOMESTIC WATER SYSTEM PROFILE

Note:
1. Schematic is for information only. Reference specifications for details on Design/Build requirements.
2. Control panel to be located inside injection bldg. at Contracting Officers specified location. The following must be provided in the control system at a minimum:
   a) Low water audible alarm (with silence switch) when 25% of Total Volume remains in the tank.
   b) Automatic pump(s) shutoff at 4" above Storage Tank Outlet.
   c) Pump on @ 45 p.s.i., pump off @ 73 p.s.i.
   d) Duplex pump system controls to alternate pump usage for all operations.
   e) Chlorination System controls and Alarm System to be approved by Contracting Officer.

Drawing acquired under Contract No.1426-5-CA-60-05530
Task Order Number 1426-7-PD-60-05530-000

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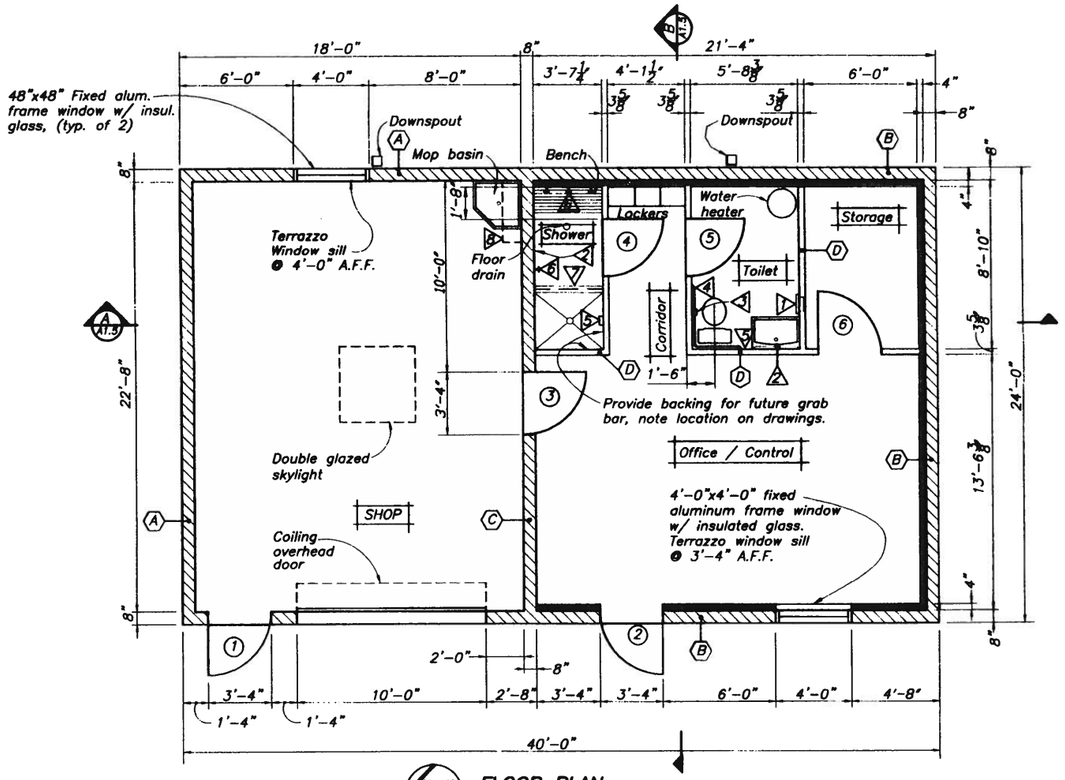
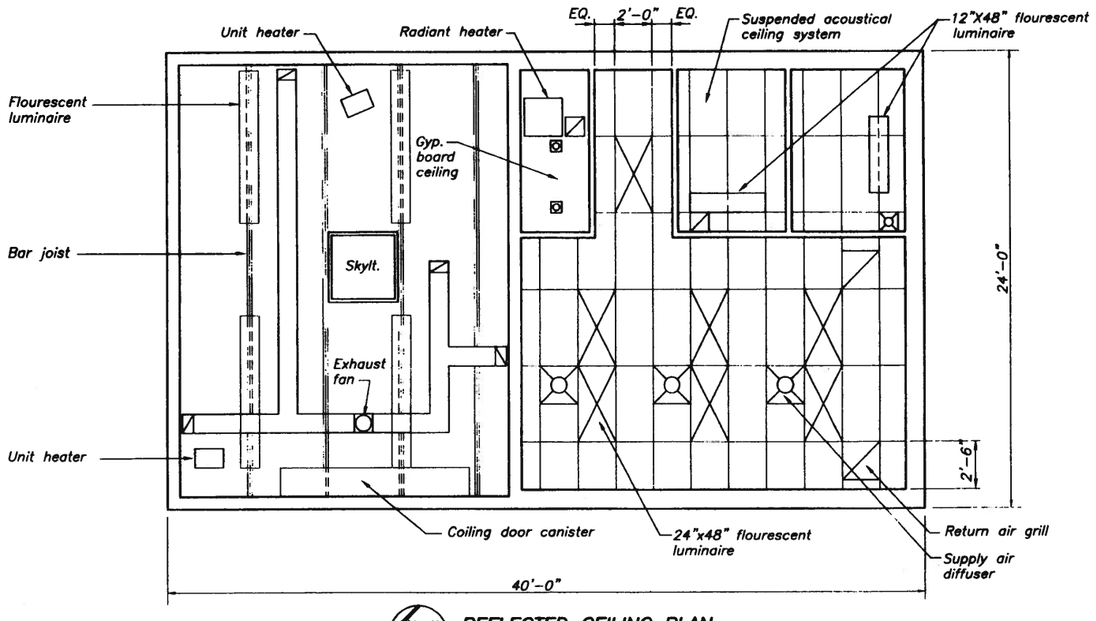
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
CIVIL DETAILS

DESIGNED C. Pangburn	TECH. APPROVAL		
DRAWN C. Pangburn	SUBMITTED		
CHECKED G. Cioff	APPROVED		
CADD SYSTEM AutoCAD 13_c4	CADD FILENAME BP-2\9752del2.dwg	DATE AND TIME PLOTTED 4-SEPT-1997 8:09 AM	
BILLINGS, MONTANA	April 17, 1998	1253-600-54	
BP-2	C2.1	Sheet 11 of 11	

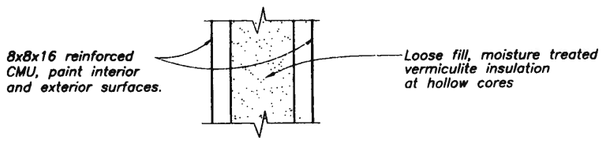


FLOOR PLAN
1/4"=1'-0"
Note: Finished floor elevation 100'-0" = 17.20

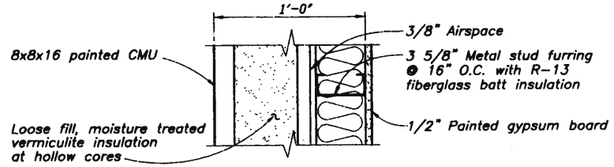


REFLECTED CEILING PLAN
1/4"=1'-0"

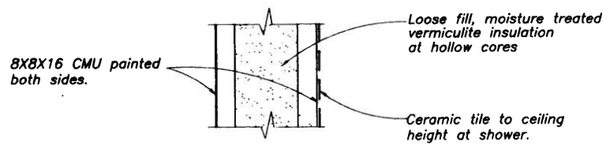
WALL TYPES



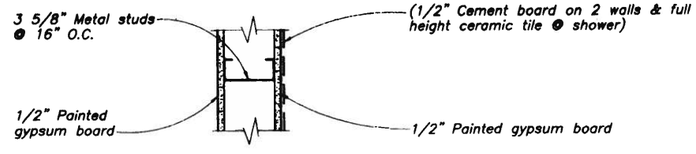
(A) EXTERIOR CMU WALL



(B) EXT. CMU WALL W/FURRING



(C) INTERIOR CMU WALL



(D) INTERIOR PARTITION

TOILET and SHOWER ACCESSORIES

1. Paper towel dispenser/waste recpetacle
2. Mirror
3. Toilet tissue dispenser
4. Grab bar
5. Liquid soap dispenser
6. Clothes hooks
7. Shower curtain and rod
8. Stainless steel shelf

ABBREVIATIONS

VCT	=	vinyl composition tile
GYP. BD.	=	gypsum board
HT.	=	height
A.F.F.	=	above finished floor
FRP	=	fiberglass reinforced plastic panel to 48" A.F.F.

Notes:

1. Plumbing fixtures and toilet accessories shall be installed to meet ADA standards.
   a. The centerline of the water closet shall be 18 inches from the north wall of the toilet.
   b. The lavatory rim shall be 34 inches above the floor. insulate the drain line with a P-trap safety cover.
   c. Toilet accessories shall be installed at the following distances above finished floor (A.F.F.)
      grab bar – 36" inches A.F.F.
      mirror – 40 inches A.F.F.
      toilet dispenser – per manufacturer recommendations
      toilet tissue dispenser – 24 inches A.F.F.
2. In the shower provide backing for future installation of a grab bar at 36 inched A.F.F.
3. provide backing in stud wall at south end of wood bench in the shower.

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

J.F. SATO AND ASSOCIATES
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Project Managers, Planners & Surveyors
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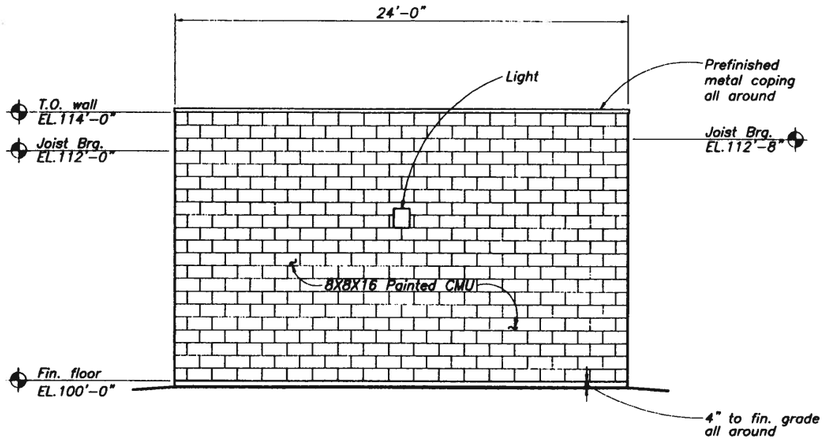
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

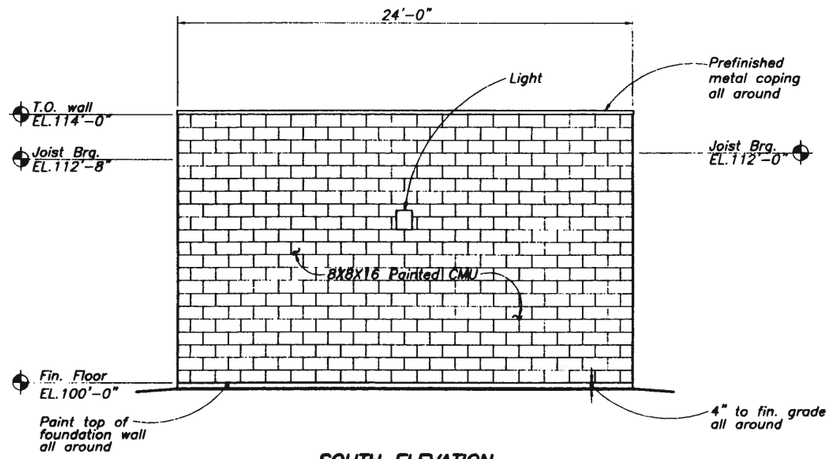
SALINITY CONTROL FACILITIES
SHOP AND OFFICE BUILDING

DESIGNED	S. Hogg	TECH. APPROVAL	
DRAWN	J. Glenger	SUBMITTED	
CHECKED	J. Cernejo	APPROVED	

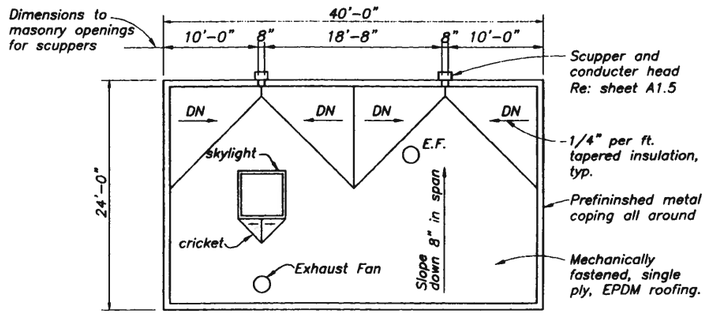
CADD SYSTEM: AutoCAD 13_c4	CADD FILENAME: 9752\ARCH\A1-1.DWG	DATE AND TIME PLOTTED: 12/3/1997 12:00:00
BILLINGS, MONTANA	April 17, 1998	1253-600-55
BP-2	A1.1	Sheet 1 of 7



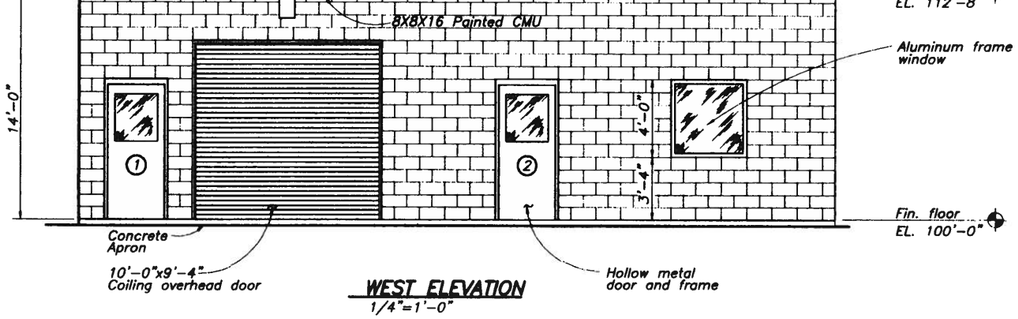
NORTH ELEVATION
1/4"=1'-0"



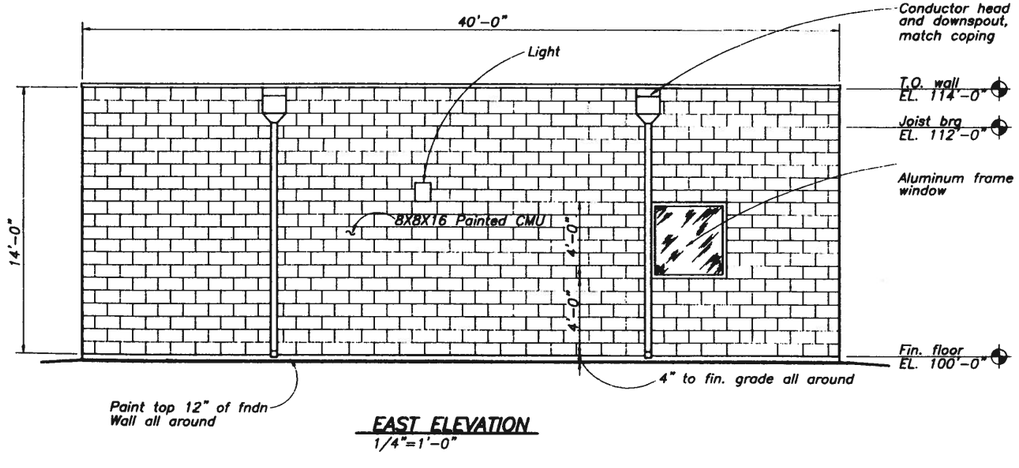
SOUTH ELEVATION
1/4"=1'-0"



North **ROOF PLAN**
1/8"=1'-0"



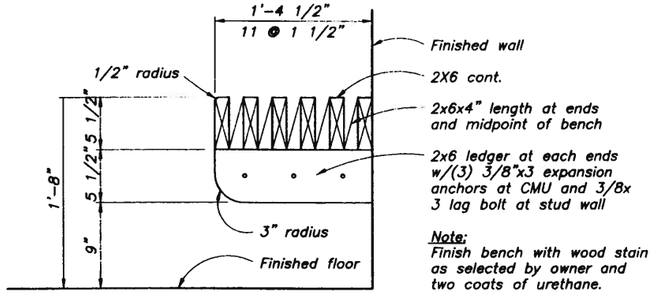
WEST ELEVATION
1/4"=1'-0"



EAST ELEVATION
1/4"=1'-0"

ROOM FINISH SCHEDULE

			WALLS				
	FLOOR	CEILING	NORTH	EAST	SOUTH	WEST	BASE
SHOP	Conc. with sealer	Exposed structure, painted	Painted CMU	Painted CMU	Painted CMU	Painted CMU	None
CORRIDOR	VCT	Suspended acoustical	Painted GYP. BD.	Painted GYP. BD.	Painted GYP. BD.		Vinyl
TOILET	VCT	Suspended acoustical	FRP Panel and Painted GYP. BD.	FRP Panel and Painted GYP. BD.	FRP Panel and Painted GYP. BD.	FRP Panel and Painted GYP. BD.	Vinyl
SHOWER	Ceramic tile	Suspended gypsum board, painted	Ceramic tile Full HT.	Ceramic tile Full HT.	Ceramic tile Full HT.	Ceramic tile Full HT.	Ceramic
OFF/CONTROL	VCT	Suspended acoustical	Painted CMU	Painted GYP. BD.	Painted GYP. BD.	Painted GYP. BD.	Vinyl
STORAGE	VCT	Suspended acoustical	Painted GYP. BD.	Painted GYP. BD.	Painted GYP. BD.	Painted GYP. BD.	Vinyl



DETAIL 1-SHOWER BENCH
1 1/2"=1'-0"

Note:
Finish bench with wood stain as selected by owner and two coats of urethane.

Drawing acquired under Contract No. 1425-6-CA-60-05530
Task Order Number 1425-7-PD-60-05530-003

JAMES F. SATO NEW MEXICO 9274 REGISTERED PROFESSIONAL ENGINEER
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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
SHOP AND OFFICE BUILDING

DESIGNED	S. HOGG	TECH. APPROVAL	
DRAWN	M. WASINGER	SUBMITTED	
CHECKED	J. CORNEJO	APPROVED	

CADD SYSTEM	CADD FILENAME	DATE AND TIME PLOTTED
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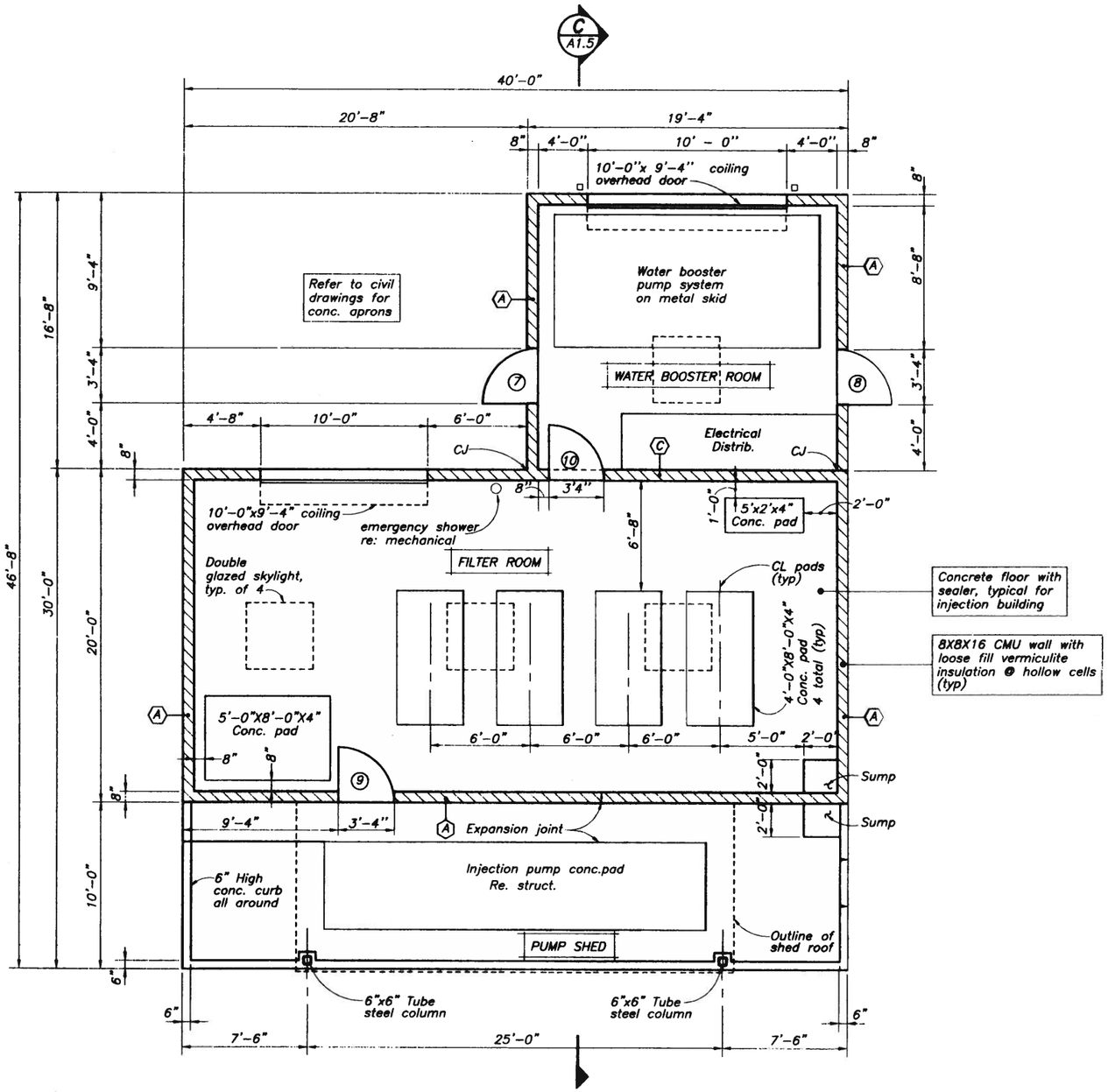
BILLINGS, MONTANA	April 17, 1998	1253-600-56

BP-2 | A1.2 | Sheet 2 of 7

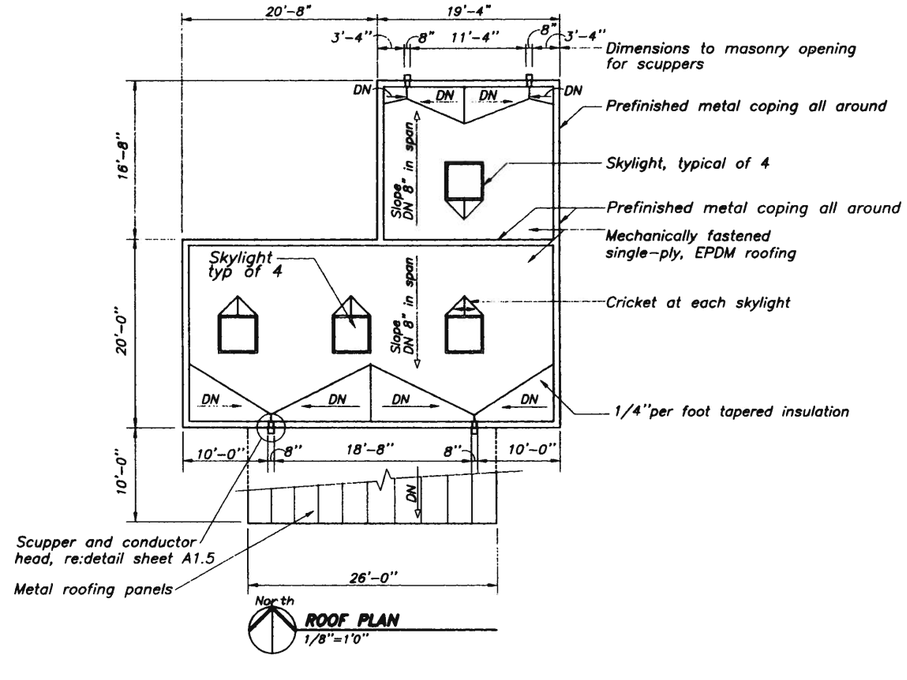


North

FLOOR PLAN

1/4" = 1'-0"

Note: Inject building elevation 100'-0" = 17.00



North

ROOF PLAN

1/8"=1'0"

NOTES

1. – Refer to shop and office building A1.1 for wall type schedule and details
2. – Refer to civil drawings for conc. walk and grading
3. – refer to A1.4 for louvers in the east and west walls.

Drawing acquired under Contract No.1425-6-CA-60-06830
Task Order Number 1425-7-PD-60-06530-003

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

INJECTION BUILDING

DESIGNED	S. HOGG	TECH. APPROVAL	
DRAWN	M. WASHINGER	SUBMITTED	
CHECKED	J. CORNEJO	APPROVED	

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 9752\ARCH\A1-3.DWG	DATE AND TIME PLOTTED 12/3/1997 12:00:00
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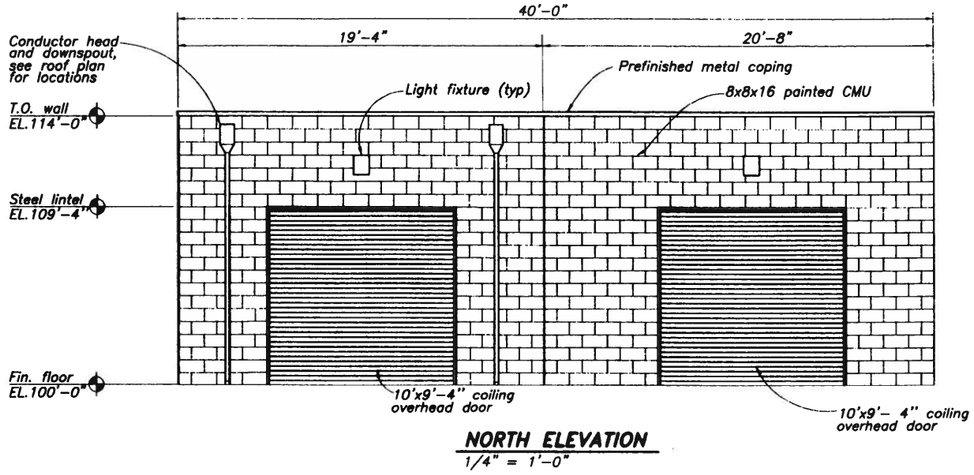
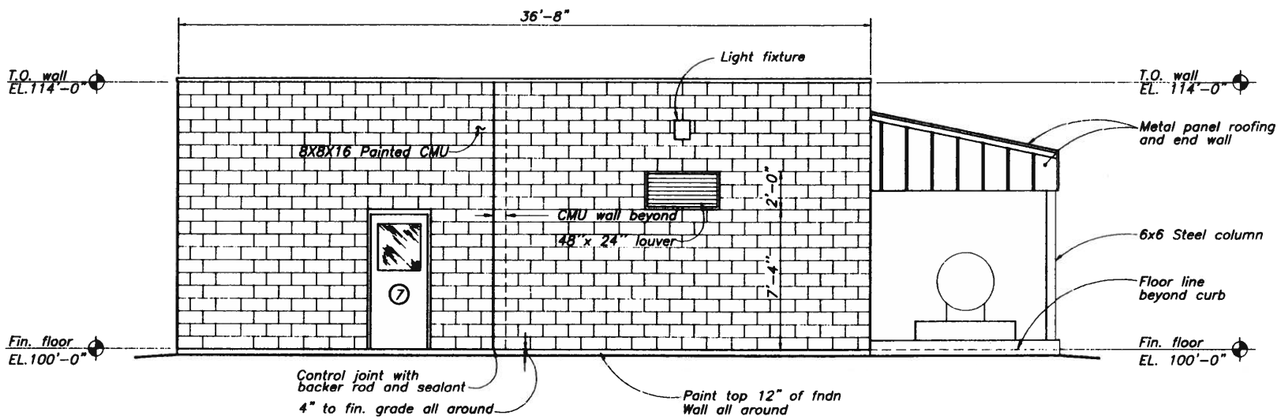
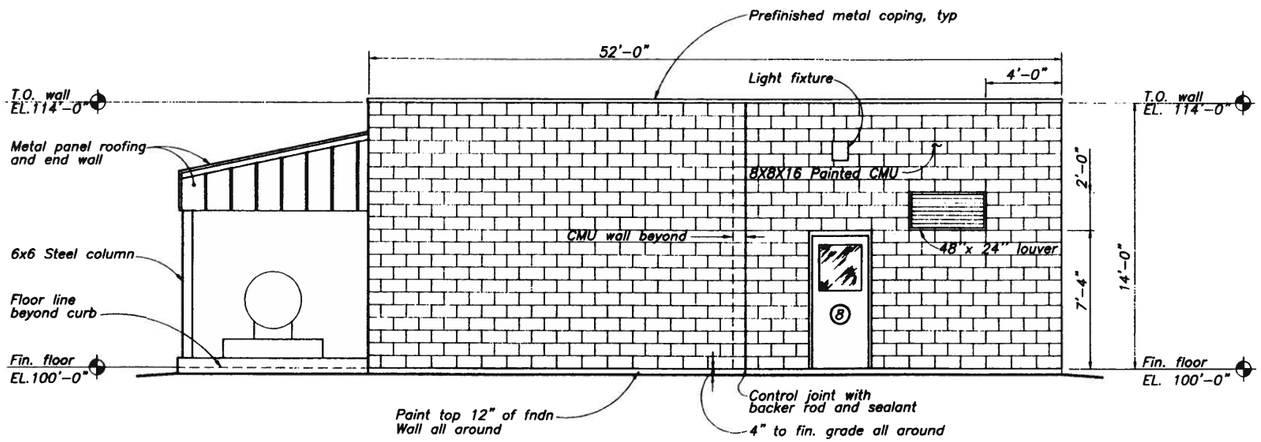


NORTH ELEVATION
1/4" = 1'-0"



WEST ELEVATION
1/4" = 1'-0"



EAST ELEVATION
1/4" = 1'-0"

Drawing acquired under Contract No.1425-6-CA-80-08530
Task Order Number 1425-7-PD-80-08530-003

J.F. SATO AND ASSOCIATES
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DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

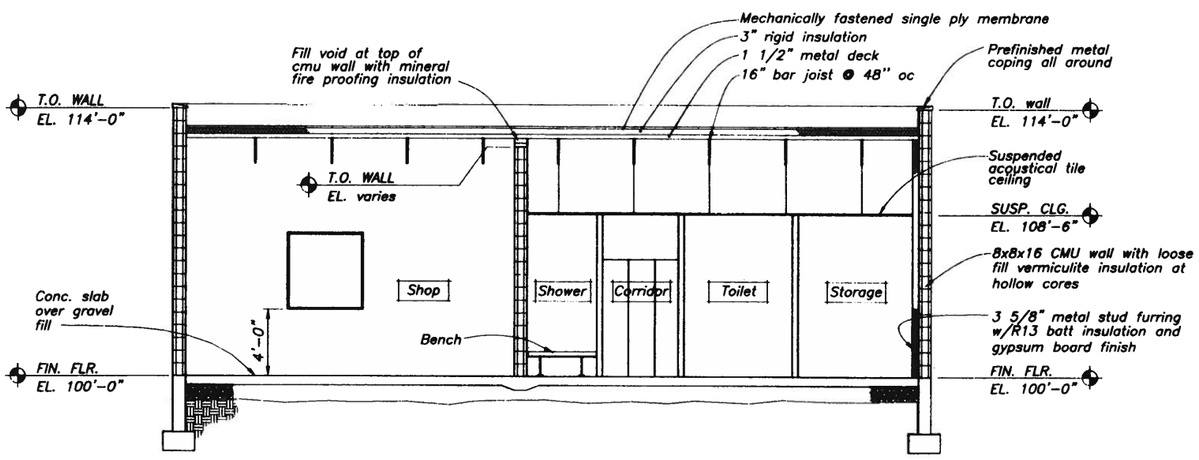
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
INJECTION BUILDING

DESIGNED	S. Hogg	TECH. APPROVAL	
DRAWN	M. Wasinger	SUBMITTED	
CHECKED	J. Cornejo	APPROVED	

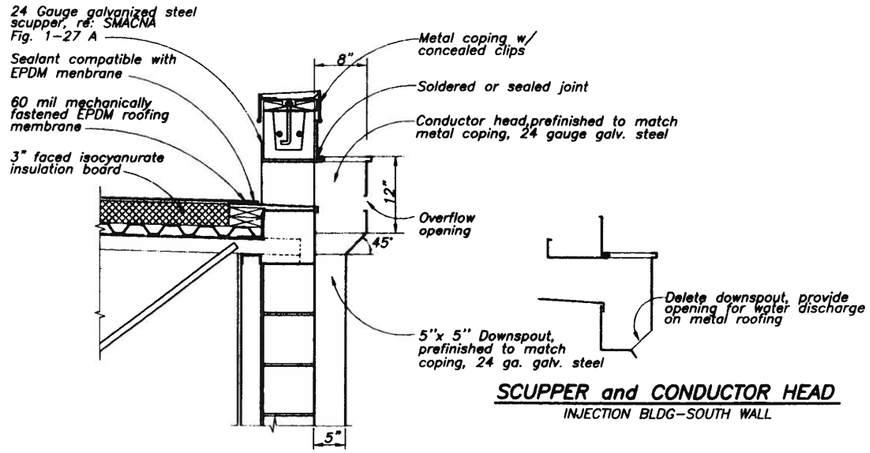
CADD SYSTEM	CADD FILENAME	DATE AND TIME PLOTTED
AutoCAD 13.c4	9752\ARCH\A1-4.DWG	12/3/1997 12:00:00
BILLINGS, MONTANA	April 17, 1998	1253-600-58

BP-2 | A1.4 | Sheet 4 of 7



SHOP AND OFFICE BLDG – SECTION A/A1.1

1/4"=1'-0"

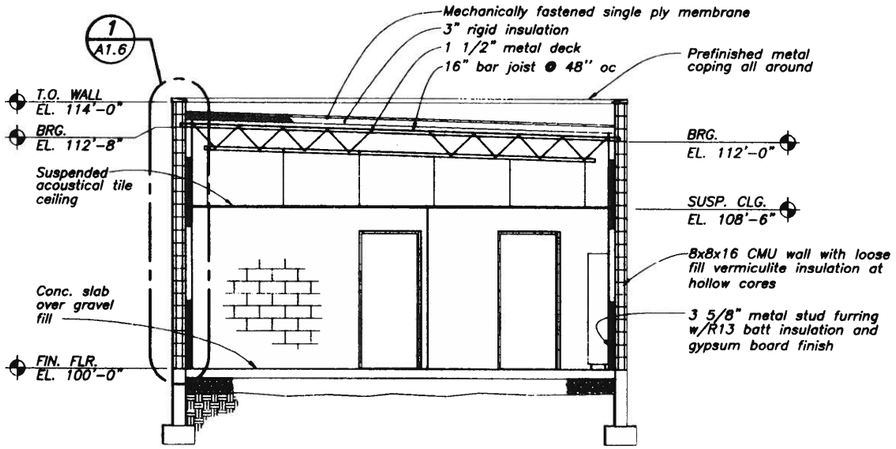


SCUPPER and CONDUCTOR HEAD

INJECTION BLDG–SOUTH WALL

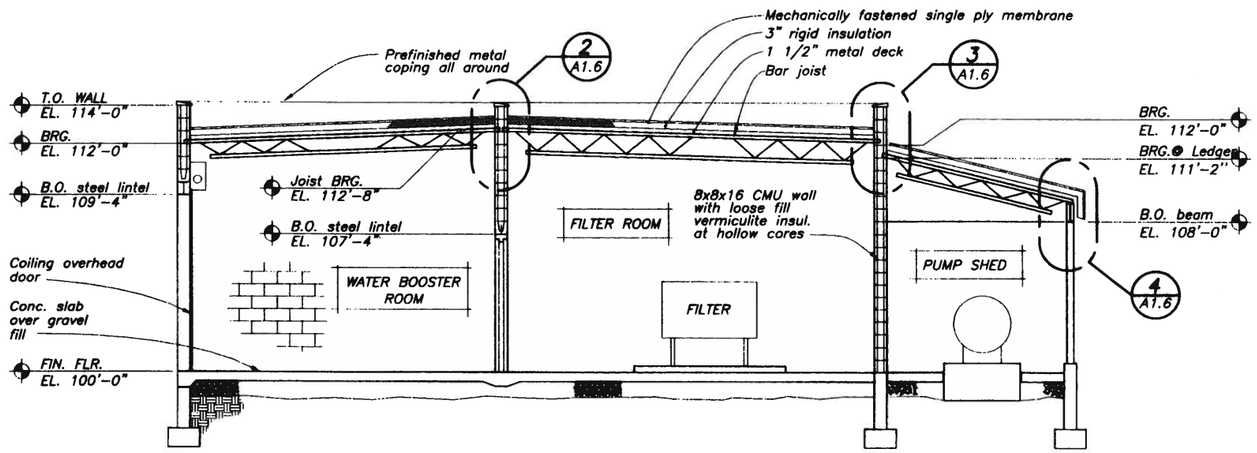
TYP. SCUPPER and CONDUCTOR HEAD DETAIL

1 1/2"= 1'-0"



SHOP AND OFFICE BLDG – SECTION B/A1.1

1/4"=1'-0"



INJECTION BUILDING – SECTION C/A1.3

1/4"=1'-0"

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

BUILDING SECTIONS

DESIGNED	S. HOGG	TECH. APPROVAL	
DRAWN	M. WASHINGER	SUBMITTED	
CHECKED	J. CORNEJO	APPROVED	

Drawing acquired under Contract No. 1426-6-CA-60-08530
Task Order Number 1426-7-PD-60-08550-008

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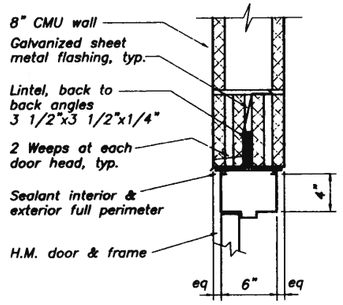
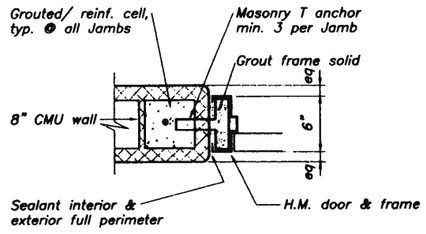
BILLINGS, MONTANA	April 17, 1998	

1253-600-59

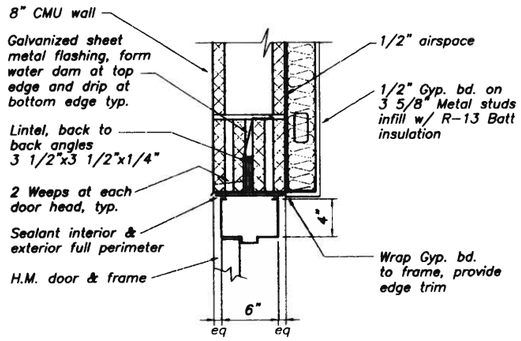
BP-2 | A1.5 | Sheet 5 of 7



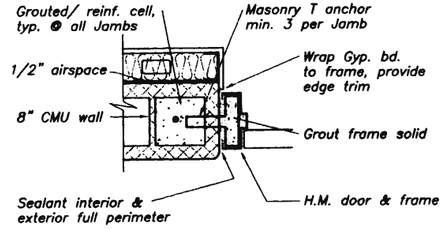
1 H.M. AT CMU WALL- HEAD 1 (H1)
1 1/2"=1'-0"



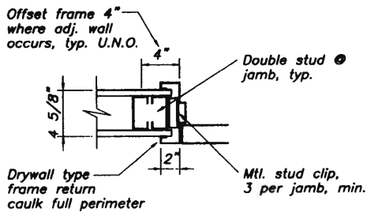
2 H.M. AT CMU WALL- JAMB 1 (J1)
1 1/2"=1'-0"

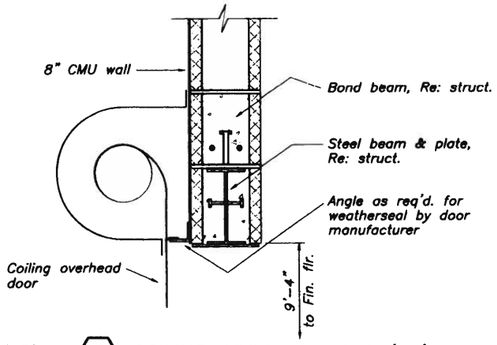


3 H.M. AT CMU WALL- HEAD 2 (H2)
1 1/2"=1'-0"



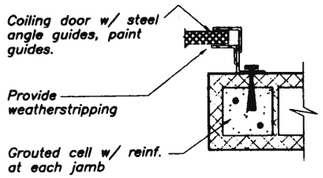
4 H.M. AT CMU WALL- JAMB 2 (j2)
1 1/2"=1'-0"



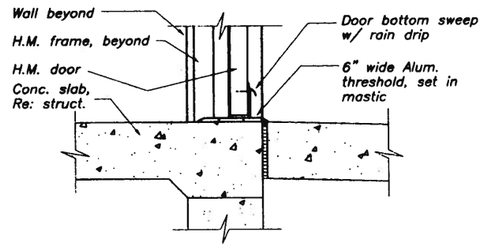


5 H.M. AT GYP. BD. WALL- JAMB 3 (J3)
1 1/2"=1'-0"
HEAD 3 SIMILAR (H3)

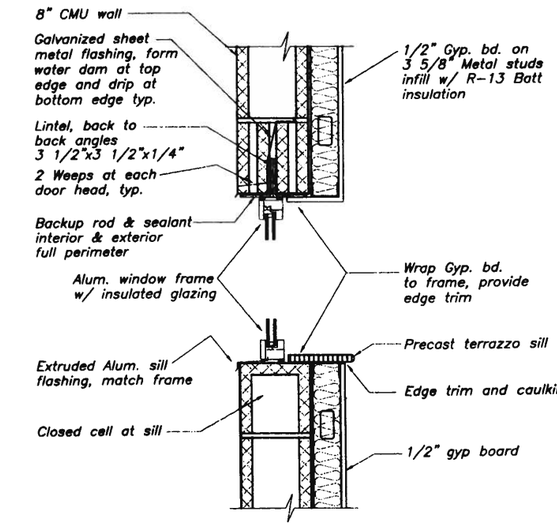
6 COILING DOOR- HEAD 4 (H4)
1 1/2"=1'-0"



7 COILING DOOR- JAMB 4 (J4)
1 1/2"=1'-0"



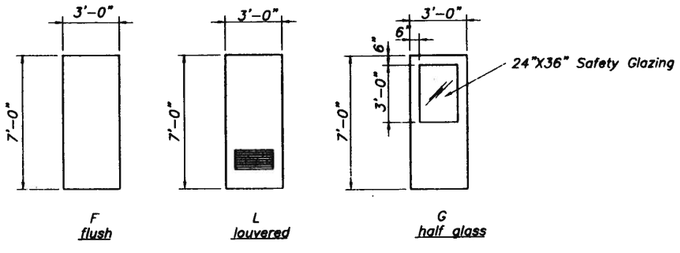
8 SILL AT EXTERIOR DOOR (S1)
1 1/2"=1'-0"



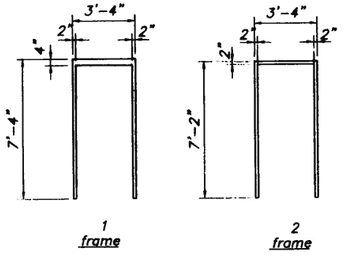
JAMB SIMILAR
9 ALUM. WINDOW HEAD AND SILL
1 1/2"=1'-0"

HOLLOW METAL DOOR SCHEDULE

DOOR NO.	DOOR SIZE	DOOR NO.	FRAME TYPE	HARDWARE GROUP	DETAILS			REMARKS
					HEAD	JAMB	SILL	
1	3-0x7-0x1 3/4	G	1	1	H1	J1	S1	
2	3-0x7-0x1 3/4	G	1	1	H2	J2	S1	
3	3-0x7-0x1 3/4	F	1	3	H1	J1	–	3/4 HR. UL RATING
4	3-0x7-0x1 3/4	L	2	4	H3	J3	–	
5	3-0x7-0x1 3/4	L	2	4	H3	J3	–	
6	3-0x7-0x1 3/4	F	2	5	H3	J3	–	
7	3-0x7-0x1 3/4	G	1	1	H1	J1	S1	
8	3-0x7-0x1 3/4	G	1	1	H1	J1	S1	
9	3-0x7-0x1 3/4	G	1	2	H1	J1	S1	
10	3-0x7-0x1 3/4	G	1	6	H1	J1	–	



10 HOLLOW METAL DOOR TYPES
1/4"=1'-0"



11 HOLLOW METAL FRAME ELEVATIONS TYPES
1/4"=1'-0"

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
DOOR AND WINDOW DETAILS

DESIGNED S. HOGG — TECH. APPROVAL
DRAWN S. HOGG — SUBMITTED
CHECKED J. CORMEJO — APPROVED

Drawing acquired under Contract No.1425-8-CA-80-08530
Task Order Number 1426-7-PD-80-08530-003

CADD SYSTEM AutoCAD 13 c4 BILLINGS, MONTANA
CADD FILENAME 9752\ARCH\A1-7.dwg April 17, 1998
DATE AND TIME PLOTTED 12/3/1997 12:00:00

BP-2 | A1.7 | 1253-600-61 | Sheet 7 of 7

Structural General Notes

I. General Requirements:

1. Structural design is in accordance with the Uniform Building code, 1994 AISC Manual, 9th Edition and the ACI 301–89 and ACI 350R.
2. In case of disagreement between the drawing and specifications or within either document itself, the better quality or greater quantity shall be used unless a written clarification is issued.
3. The Contractor shall make note of disagreement of building dimensions and elevations and shall obtain corrections prior to proceeding with construction.
4. The drawings represent the completed structure in its final condition with all members in place, connections complete, and all at their specified strength. Prior to this, the Contractor shall be responsible for all temporary bracing and shoring during construction and erection for any and all loads to which the construction is subjected. Job site safety and construction procedures are the responsibility of the Contractor.
5. Contractor shall coordinate with architectural, process, mechanical, plumbing electrical, and any specialty drawings as well as equipment furnished for size and location of openings, sleeves, concrete pads, curbs, inserts, slopes, depressions, or other items that interface with the structure.
6. Reproduction of structural contract documents for resubmittal as shop drawings is prohibited. Shop drawings produced in such a manner will be rejected and returned.

II. Design Loads:

1. Snow Load . . . . . 30 psf
2. Wind Load
   - A. Basic Wind Speed . . . . . 85 mph
   - B. Exposure Category C
   - C. Importance Factor 1.15
3. Earth Pressure (Drained Condition) . . . . . 50 pcf
4. Seismic Zone . . . . . Zone 1

III. Foundations:

1. Foundations have been designed in accordance with the recommendations set forth in the UBC, 1994 Code.
2. Design Criteria for Spread Footings: Allow bearing pressure (on undisturbed natural soils) 1500 psf
3. Do not place backfill against foundation walls without adequate bracing.

IV. Concrete and Reinforcing:

1. All concrete shall be prepared and placed according to ACI 301–89, specifications for "Structural Concrete for Buildings" and ACI 318–89, "Building Code Requirements for Reinforced Concrete".
2. All concrete shall be normal weight (145 pcf, stone aggregate) with the following requirements:
   - A. Use Type II modified Portland Cement
   - B. Concrete (28 day strength) . . . . f'c = 4000 psi
   - C. Reinforcing Steel:
     - #4 and smaller (ASTM A615 Grade 40), fy = 40000 psi
     - #5 and larger (ASTM A615 Grade 60), fy = 60000 psi
     - Welded wire fabrics . . . . . ASTM A185

   - Chamfer all exposed corners 3/4 inch.
   - Provide cover for reinforcing as specified on standard detail sheet.
   - Provide minimum splice lengths as shown on standard detail sheet.
   - Bars shall be spliced between supports for top bars and over supports for bottom bars.
   - Make horizontal bars continuous around corners or provide corner bars as shown on standard detail sheet.
   - All detailing, fabrication and erection of reinforcing bars shall comply with the ACI manual SP–66(88) of standard practice.
   - Waterstops are required at construction joints for all tanks and basins that store and isolate liquids. Waterstops shall be continuous along the construction joints in slabs and walls.
3. Provide control joints in slabs on grade as described in ACI 302 (C.J. @ 15'–0 O.C. each way, max.), unless otherwise noted on the drawings.
4. All wall openings less than 12" shall be reinforced with minimum #5 bars extending 2'–0 beyond the edge of the opening. The number of additional bars shall be two (2) per side of opening, unless noted otherwise. Ref. To standard detail for wall openings larger than 12".
5. Welded wire fabric (WWF), lap one full mesh at splices and wire tie together.
6. No welding of reinforcing shall be permitted unless specifically approved by the Structural Engineer.

V. Masonry:

1. Concrete masonry units shall be medium weight, ASTM C90 Type I Grade N, shall develop 2000 psi 28 day ultimate compressive strength. No special inspection required.
2. Mortar shall be type S.
3. Grout ASTM C476 shall be made with Portland Cement and develop 3000 psi 28 day ultimate compressive strength.
4. Assembly strength (F'M) shall be 2000 psi.
5. Reinforcing shall be ASTM A615, Grade 40 for #4 and smaller, Grade 60 for all others.
6. Splices in reinforcement shall be made by 48 bar diameter contact laps.
7. Grout and reinforce all corners and door openings with 2 – #6 vertical reinforcement full height.
8. Vertical reinforcement shall be centered in wall unless otherwise noted on drawings.
9. Horizontal wire reinforcement shall be ASTM A82. Standard weight, galvanized and spaced at 16" O.C. in walls and 8" O.C. in parapets. Use only ladder type in exterior walls.
10. Horizontal reinforcement shall be continuous between control joints.
11. Bond beams shall be filled with 3000 psi concrete and reinforced with continuous bars top and bottom. Bar size as noted on the drawings.

VI. Structural Steel and Aluminum:

1. All steel shall be fabricated and erected in accordance with AISC Manual of Steel Construction, 9th Edition.
2. Design Stresses:
   - A. All steel shapes, plates, bars (ASTM A36) Fy = 36000 psi
   - B. All aluminum shapes, plates, bars (6061–T6) Ftu = 38000 psi Fty = 35000 psi
3. Anchor Bolts A307
4. Welding Electrodes:
   - A. Electrodes for steel E70XX
   - B. Filler alloy for aluminum ER4043
5. Welded joints and connections shall be made with full penetration welds or maximum size fillet welds. All welds shall be made in accordance with current standards of the American Welding Society and performed by welders qualified by AWS Standards.
6. Minimum welds according to AISC specifications and not less than 3/16" fillet continuous, unless detailed otherwise.
7. All openings through the roof decks shall be framed with 4"x4"x1/4" angles, unless otherwise noted.
8. Verify all openings sizes and locations shown on the structural drawings with responsible trade.
9. All bolts, nuts, washers, etc. in contact with aluminum to be stainless steel or 2024–T4 aluminum.
10. Steel Joists:
    - A. All steel joists and bridging shall be designed and erected according to the Steel Joist Standard Specifications.
    - B. Joists shall bear 2" minimum on steel and 4" minimum on masonry.
    - C. Weld all joists to cast–in bearing plates with a minimum 2"x1/4" fillet weld.
11. Steel Deck:
    - A. Install in accordance with deck manufacturer's recommendations.
    - B. Steel roof deck shall be 20 gauge 1 ¢" deep, galvanized, Vulcraft Type F or approved equal.
    - C. Attach deck to support members per drawings detail.
    - D. Contractor shall provide all additional framing required to support deck at openings through deck.
12. Shop Drawings:
    - A. Provide shop drawings for all steel members, frames, joists, etc., showing connections, headed anchor studs (HAS), bracing and bridging where required. Provide calculations and review by Structural Engineer when requested.

JAMES F. SATO NEW MEXICO 6174 REGISTERED PROFESSIONAL ENGINEER

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

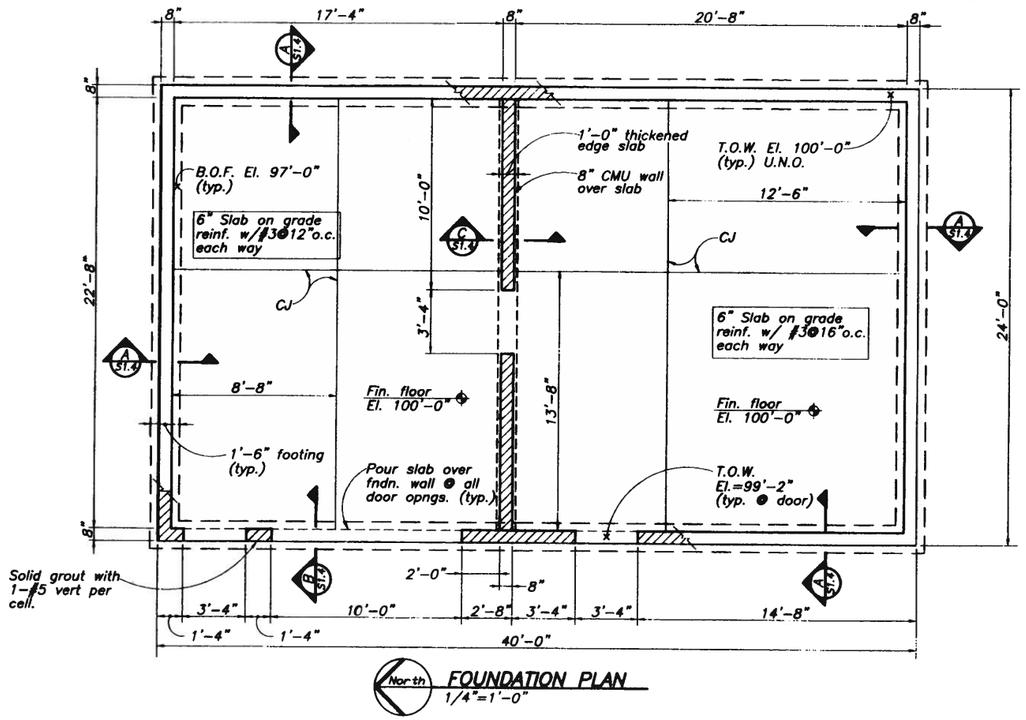
SALINITY CONTROL FACILITIES

STRUCTURAL GENERAL NOTES

DESIGNED J. Cornelio	TECH. APPROVAL
DRAWN M. Trahman	SUBMITTED
CHECKED J. Cornelio	APPROVED

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 9752\STRUCT\S1-1.DWG	DATE AND TIME PLOTTED 12/3/1997 12:05:00
BILLINGS, MONTANA	April 17, 1998	1253–600–62
BP-2	S1.1	Sheet 1 of 17

Drawing acquired under Contract No.1425-5-CA-80-08530
Task Order Number 1425-7-PD-80-08530-003



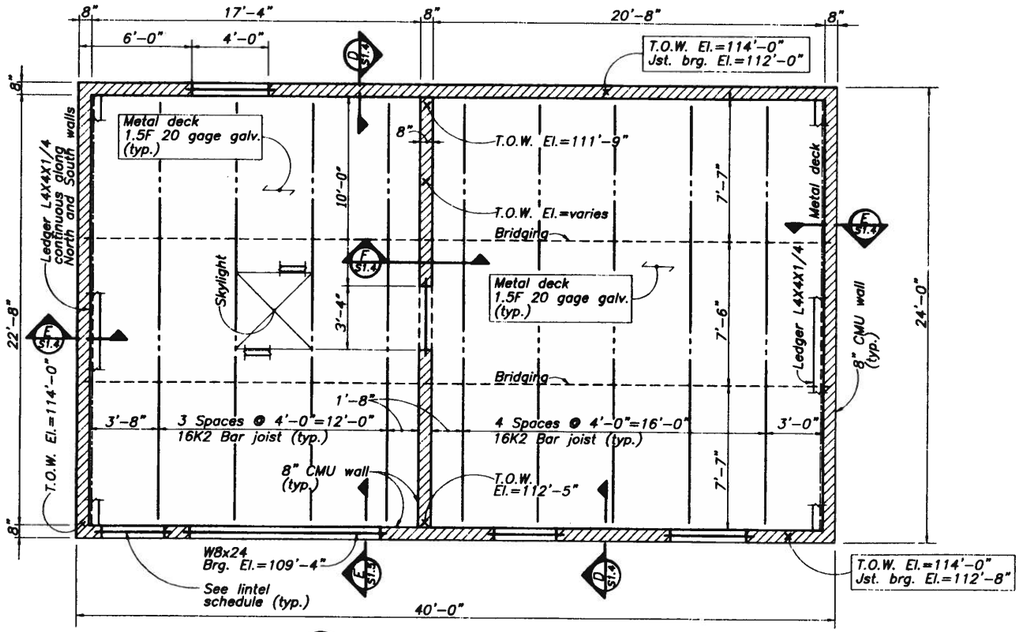
North **FOUNDATION PLAN**
1/4"=1'-0"

Notes:

1. *Refer to architectural drawings for pad size and location.*
2. *Refer to civil drawings for outside concrete apron and sidewalk.*
3. *Coordinate with electrical, mechanical and process drawings for wall, floor roof penetrations.*
4. *Place control joint as shown.*

Loose Lintel Schedule	
Opening Size	Lintel
Less Than 4'-1"	(2)- L5"x3 1/2"x5/16" LLH
4'-1" TO 8'-1"	(2)- L5"x3 1/2"x1/2" LLH

Notes:
1. Provide minimum of 6" bearing at each end of lintel.
2. Provide lintel for all openings larger than 1'-0".
3. Grout and reinforce cell under lintel bearing from floor to base of lintel, grout and reinforce adjacent cell full height.
4. All lintels to be hot dip galvanized epoxy paint.



North **ROOF FRAMING PLAN**
1/4"=1'-0"

Drawing acquired under Contract No.1425-8-CA-80-08530
Task Order Number 1425-7-PD-80-08530-503

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NEW MEXICO

SALINITY CONTROL FACILITIES
SHOP AND OFFICE BUILDING

DESIGNED J. Sato — TECH. APPROVAL
DRAWN M. Wasinger — SUBMITTED
CHECKED J. Cornejo — APPROVED

CADD SYSTEM	CADD FILENAME	DATE AND TIME PLOTTED
AutoCAD 13_c4	9752\STRUCT\S1-2.dwg	12/3/1997 12:00:00
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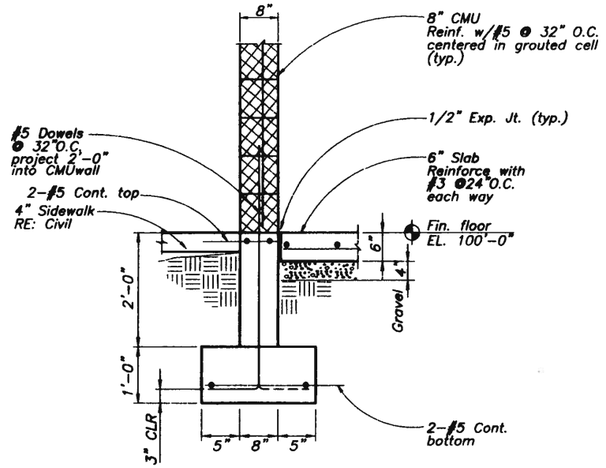
BP-2 | S1.2 | Sheet 2 of 17



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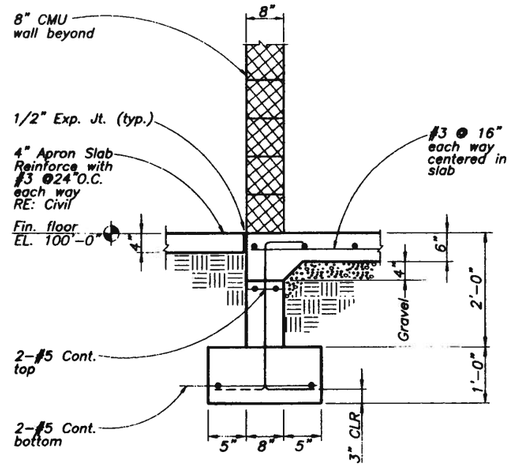

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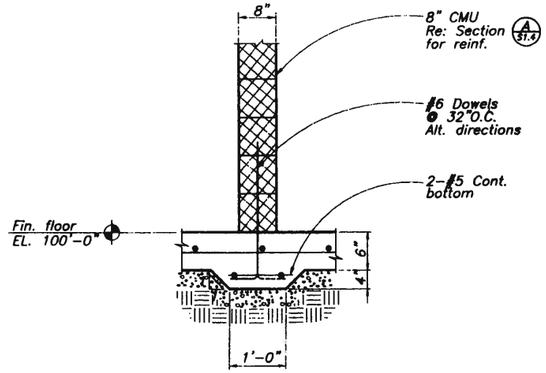

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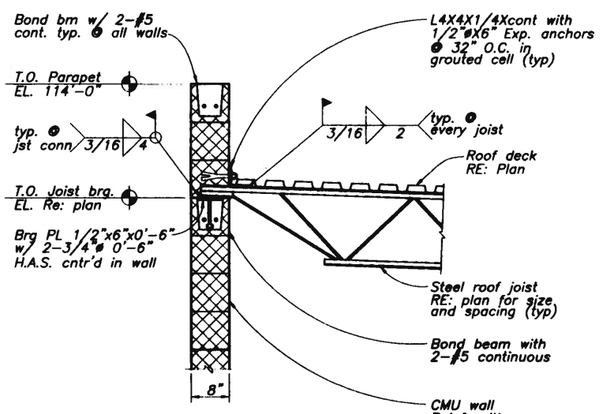

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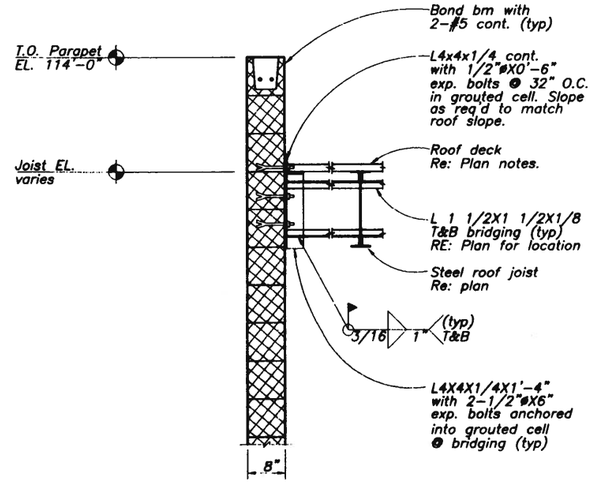

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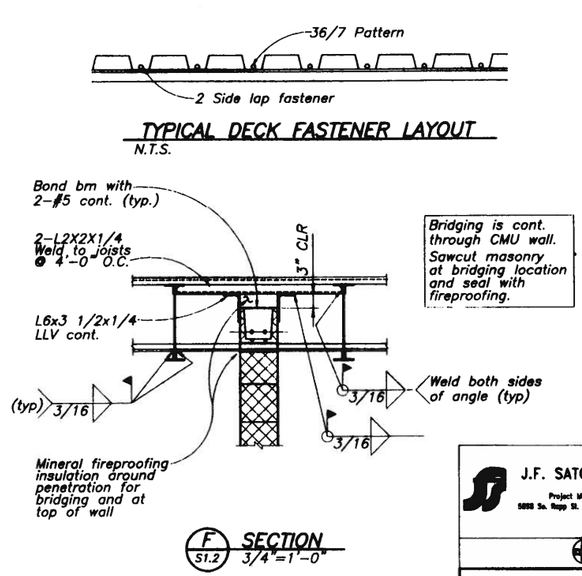

F S1.2 SECTION 3/4"=1'-0"

Drawing acquired under Contract No. 1425-6-CA-60-06830
Task Order Number 1425-7-PD-60-06830-008

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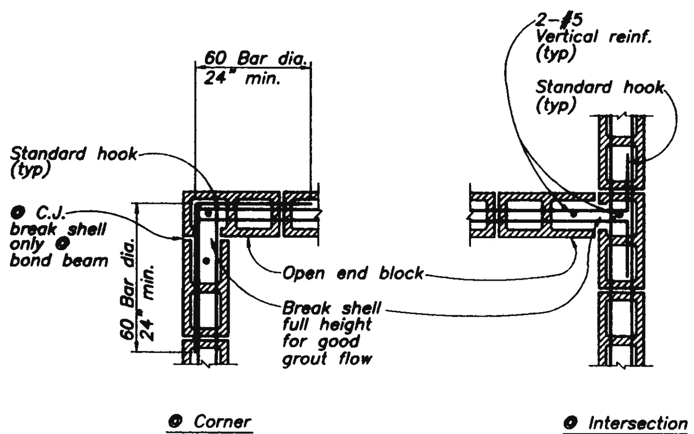
NEW MEXICO

SALINITY CONTROL FACILITIES
SECTIONS & DETAILS

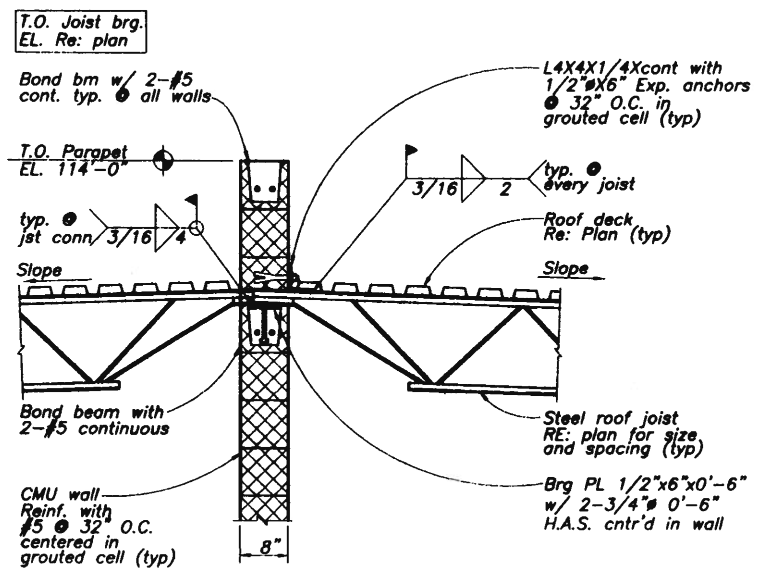
DESIGNED	J. Cornejo	TECH. APPROVAL	
DRAWN	M. Wasinger	SUBMITTED	
CHECKED	J. Cornejo	APPROVED	

CADD SYSTEM: AutoCAD 13_c4	CADD FILENAME: 9752\STRUCT\S1-4.dwg	DATE AND TIME PLOTTED: 12/3/1997 12:00:00
BILLINGS, MONTANA	April 17, 1998	1253-600-65
BP-2	S1.4	Sheet 4 of 17

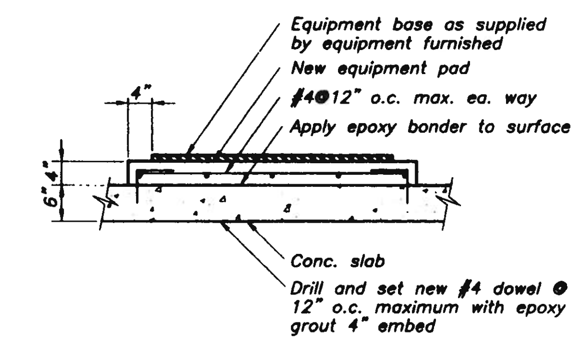


TYPICAL CMU BOND BEAM REINFORCEMENT DETAILS

No scale



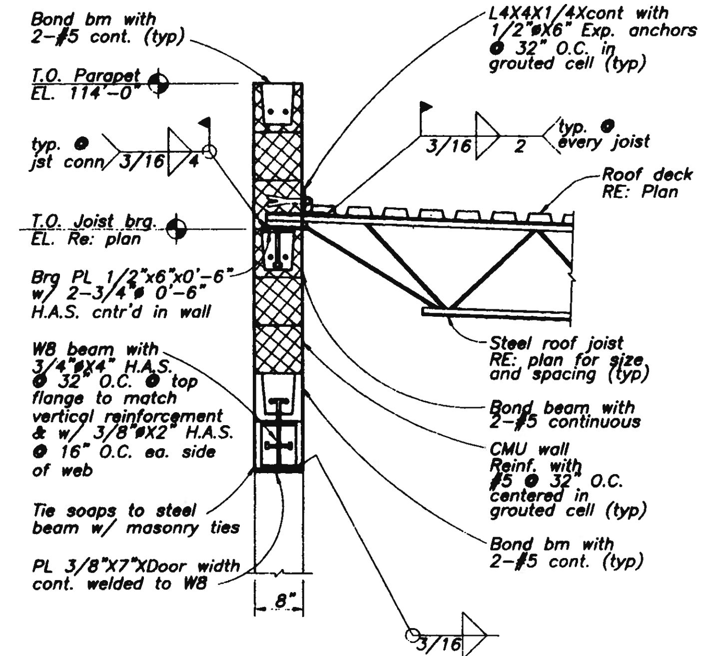
G SECTION S1.3 3/4"=1'-0"



NOTE: Provide 4" thick conc. pad @ all equipment, coordinate size with process dwg's. and equip. furnished.

EQUIPMENT PAD DETAIL

1"=1'-0"



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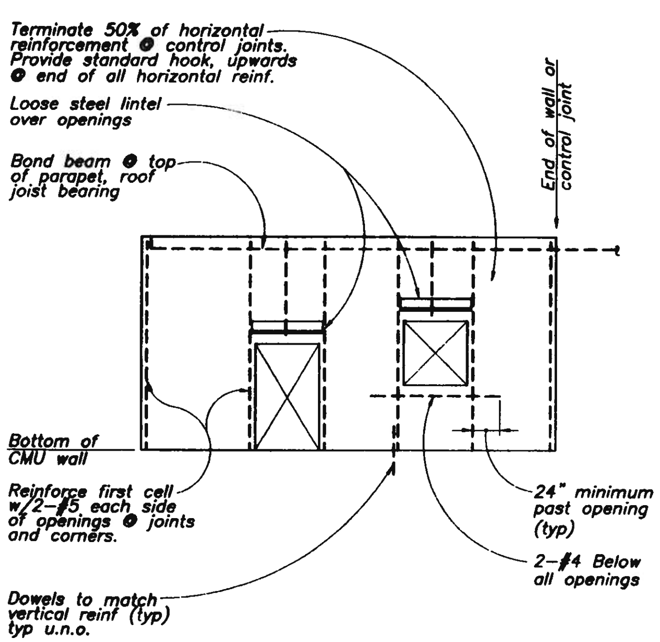
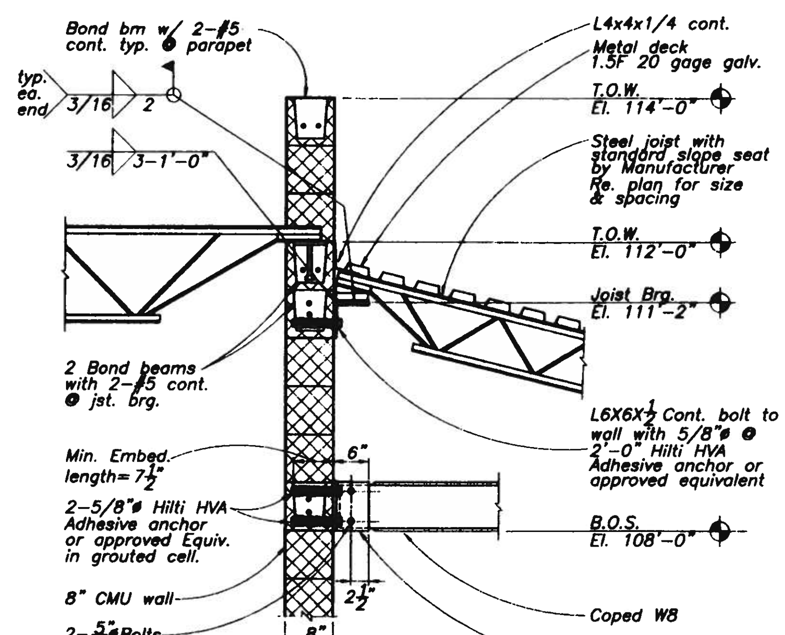
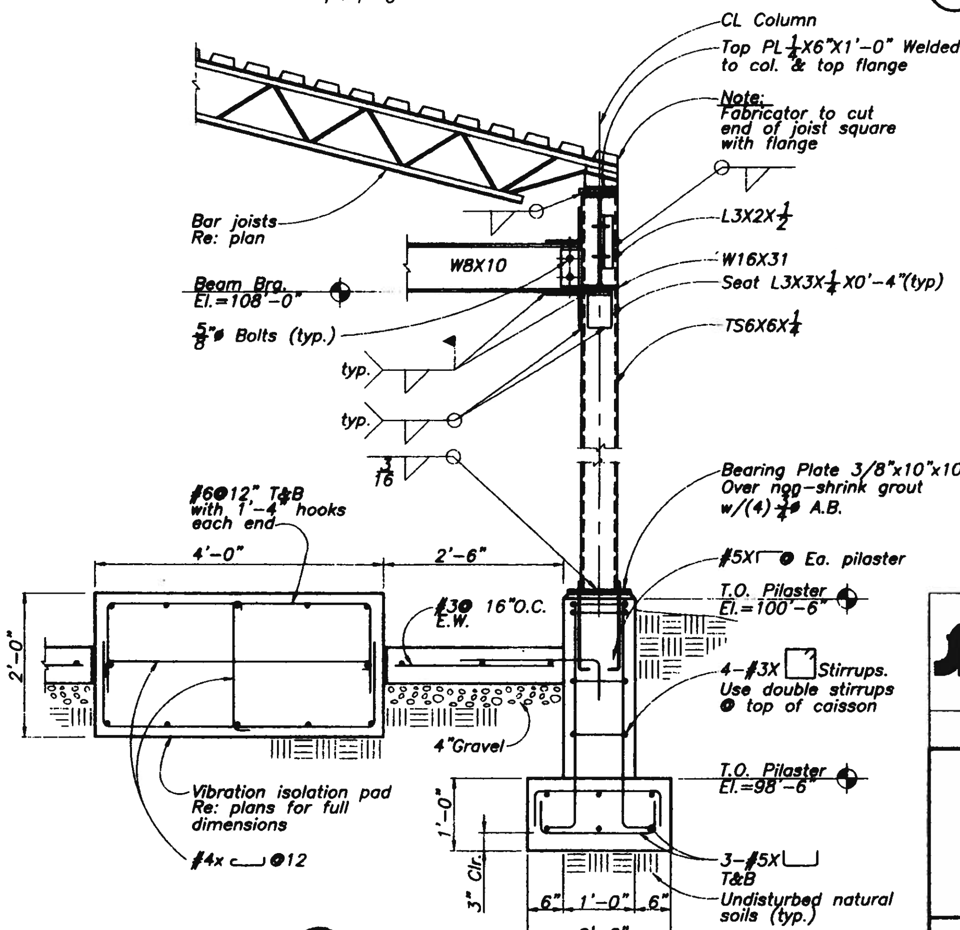


TYPICAL CMU WALL ELEVATION REINFORCEMENT

No scale



H SECTION S1.3 3/4"=1'-0"



J SECTION S1.3 3/4"=1'-0"

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Consulting Engineers
Project Managers, Planners & Surveyors
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DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

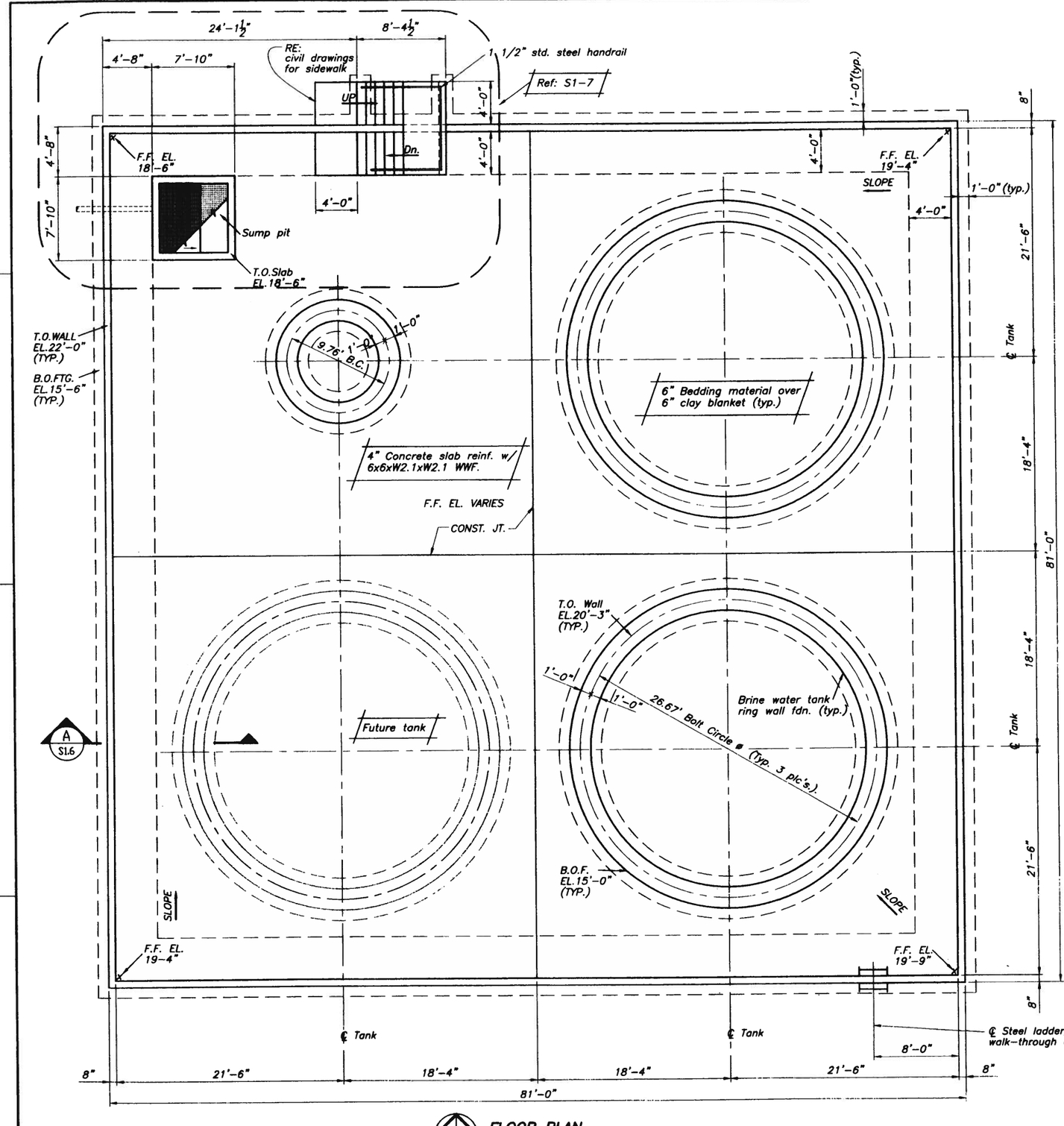
SECTIONS AND DETAILS

DESIGNED	J. Cornejo	TECH. APPROVAL	
DRAWN	M. Wasinger	SUBMITTED	
CHECKED	J. Cornejo	APPROVED	

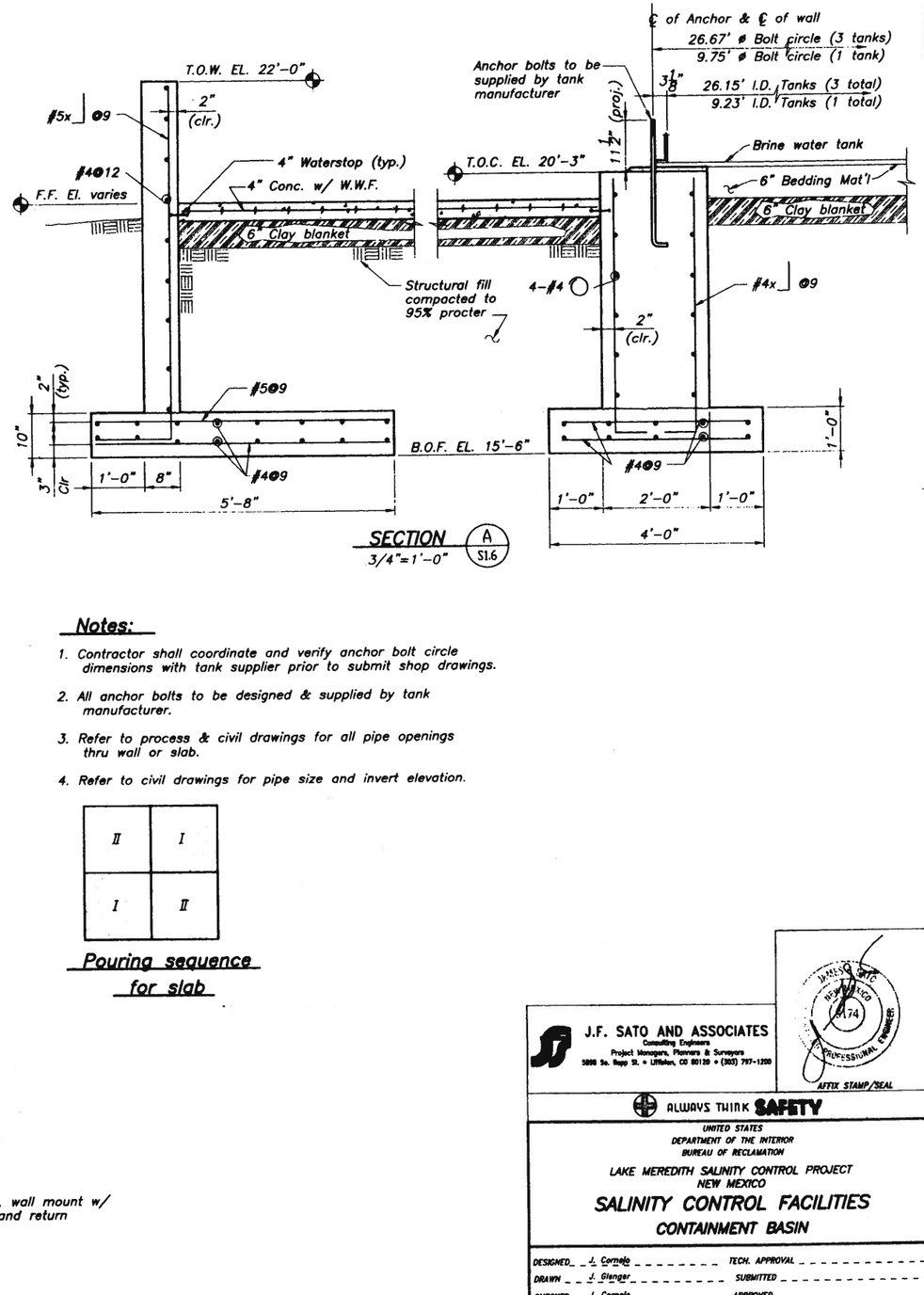
CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 9752\STRUCT\S1-5.dwg	DATE AND TIME PLOTTED 12/3/1997 12:00:00
BILLINGS, MONTANA	April 17, 1998	1253-600-66

Drawing acquired under Contract No.1425-5-CA-60-08880
Task Order Number 1425-7-PD-60-08880-009

BP-2 S1.5 Sheet 5 of 17



FLOOR PLAN
3/16"=1'-0"



SECTION A S1.6
3/4"=1'-0"

Notes:

1. Contractor shall coordinate and verify anchor bolt circle dimensions with tank supplier prior to submit shop drawings.
2. All anchor bolts to be designed & supplied by tank manufacturer.
3. Refer to process & civil drawings for all pipe openings thru wall or slab.
4. Refer to civil drawings for pipe size and invert elevation.

II	I
I	II

Pouring sequence for slab

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

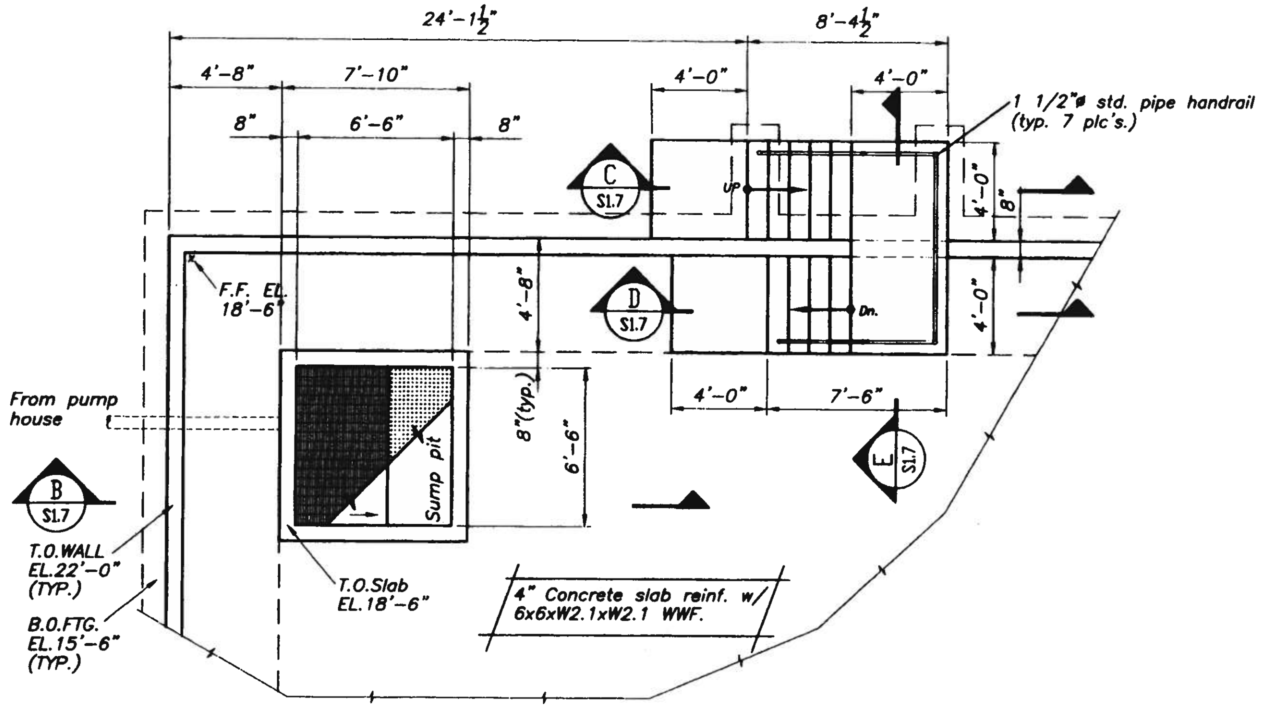
SALINITY CONTROL FACILITIES
CONTAINMENT BASIN

DESIGNED J. Cornejo	TECH. APPROVAL
DRAWN J. Glenger	SUBMITTED
CHECKED J. Cornejo	APPROVED

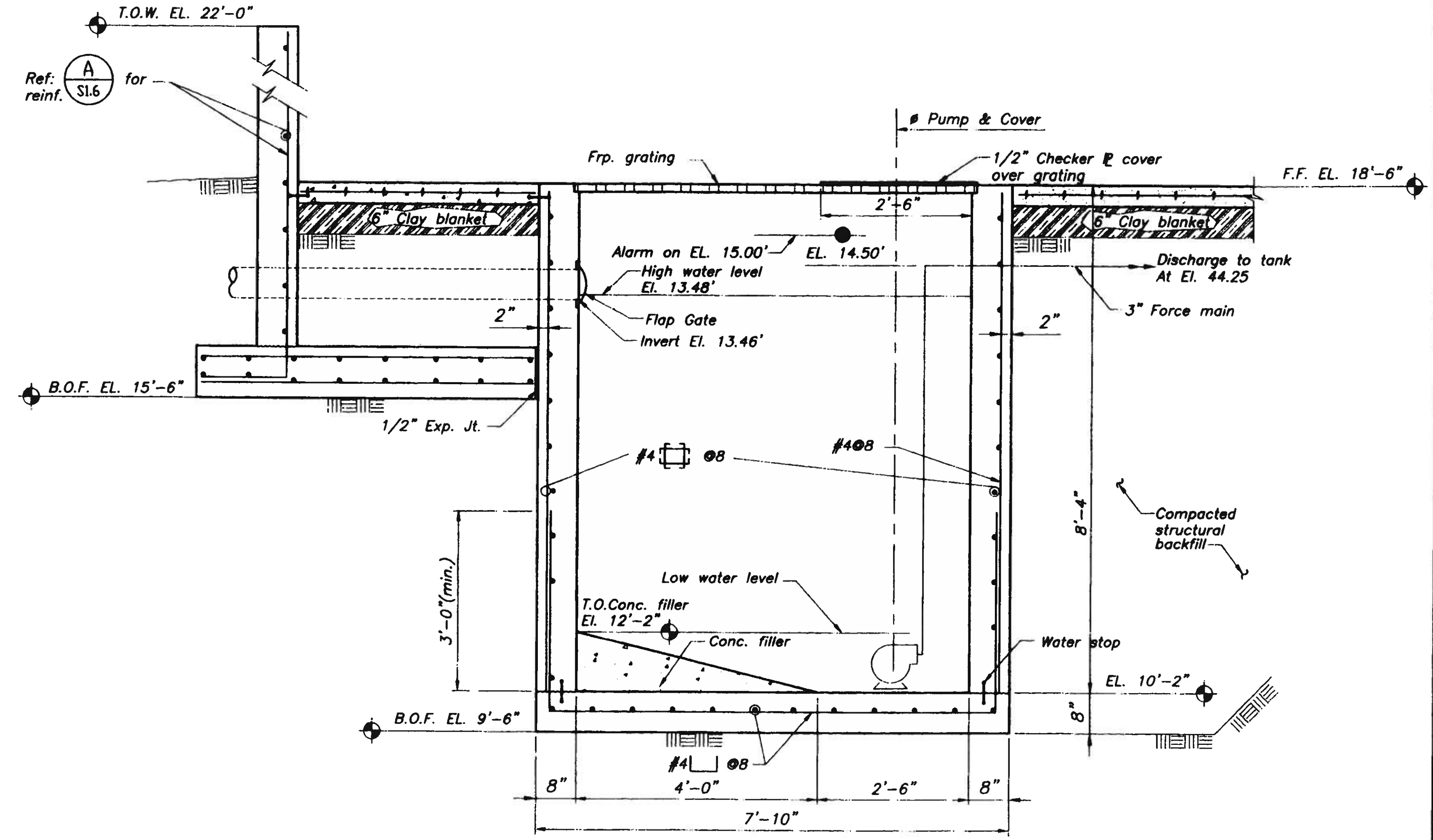
CADD SYSTEM AutoCAD 13_c4 BILLINGS, MONTANA	CADD FILENAME 9752\STRUCT\S1-6.dwg April 17, 1998	DATE AND TIME PLOTTED 12/3/1997 12:00:00

Drawing acquired under Contract No.1425-5-CA-60-06830
Task Order Number 1425-7-PD-60-06530-003

BP-2 | S1.6 | Sheet 6 of 17

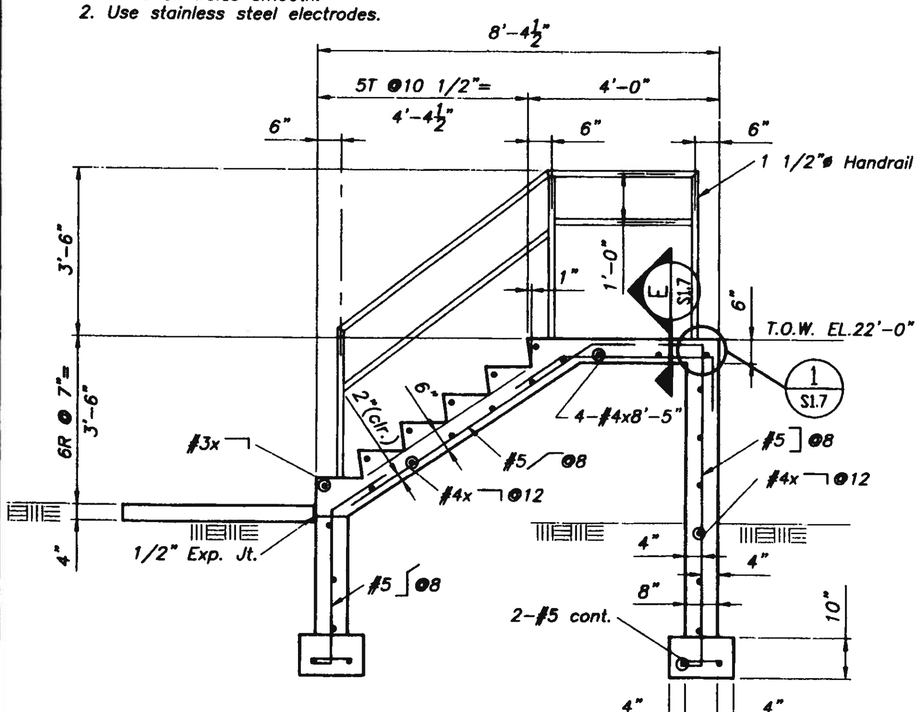


FLOOR PLAN
1/4"=1'-0"

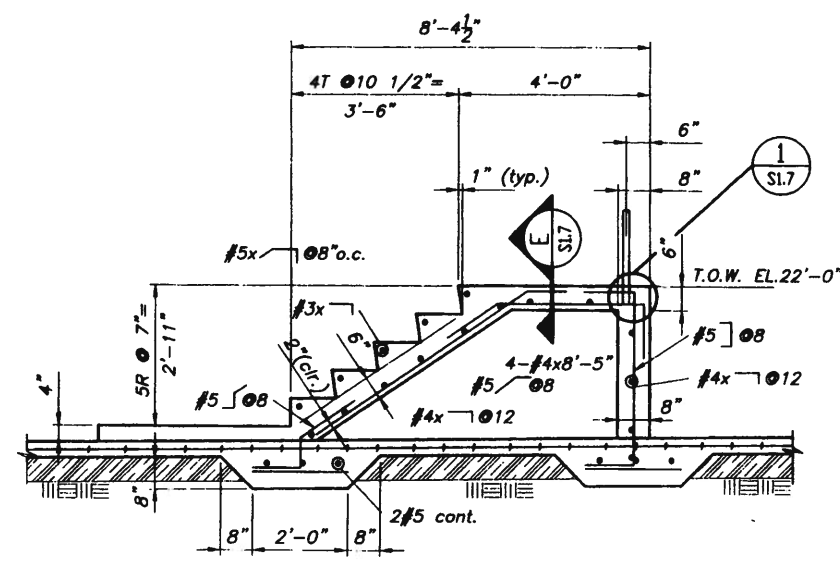


SECTION B S1.7
3/4"=1'-0"

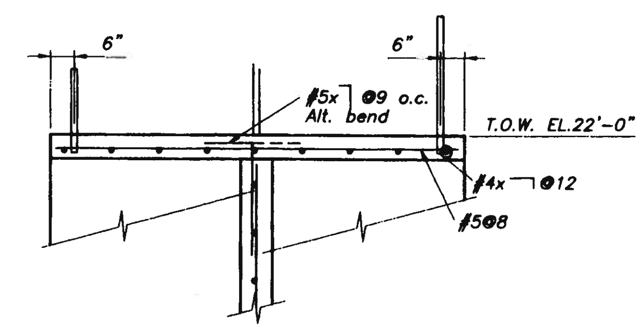
NOTES:
1. Grind all welds smooth.
2. Use stainless steel electrodes.



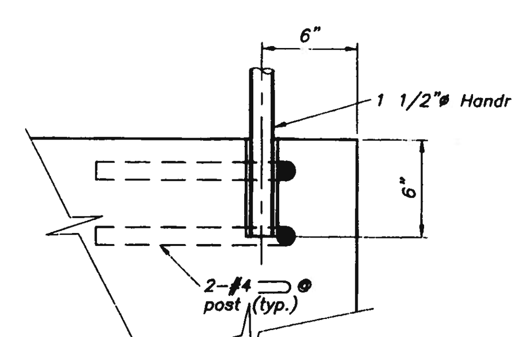
SECTION C S1.7
1/2"=1'-0"



SECTION D S1.7
1/2"=1'-0"



SECTION E S1.7
1/2"=1'-0"



DETAIL 1 S1.7
1"=1'-0"

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

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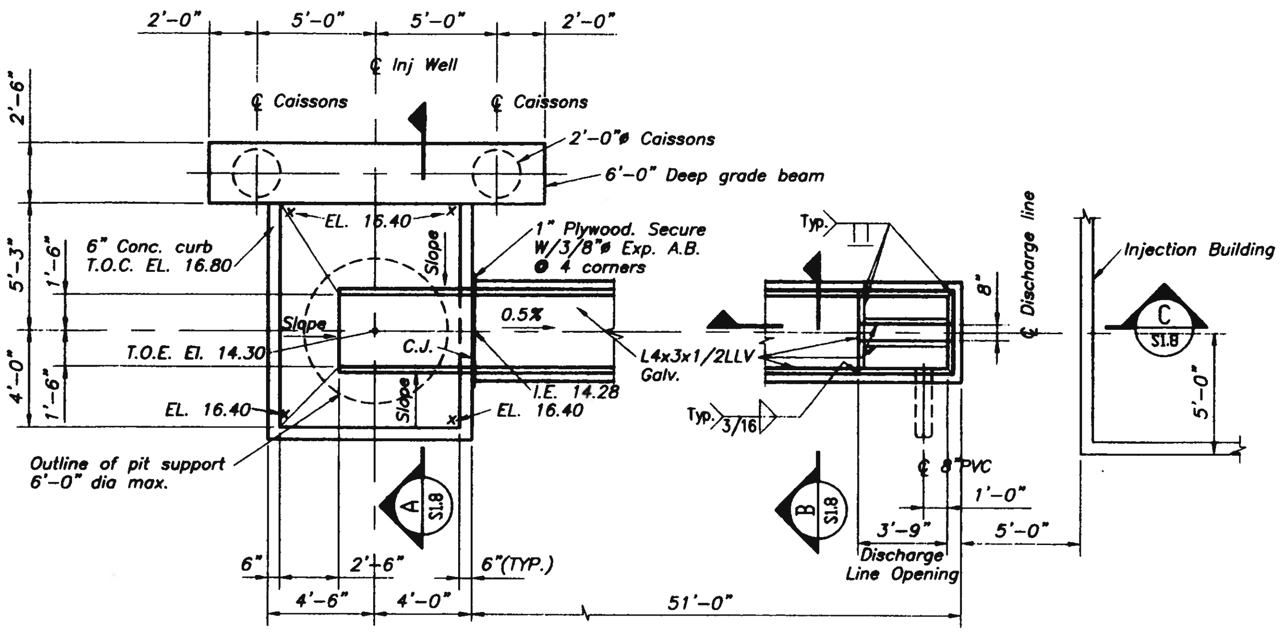
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

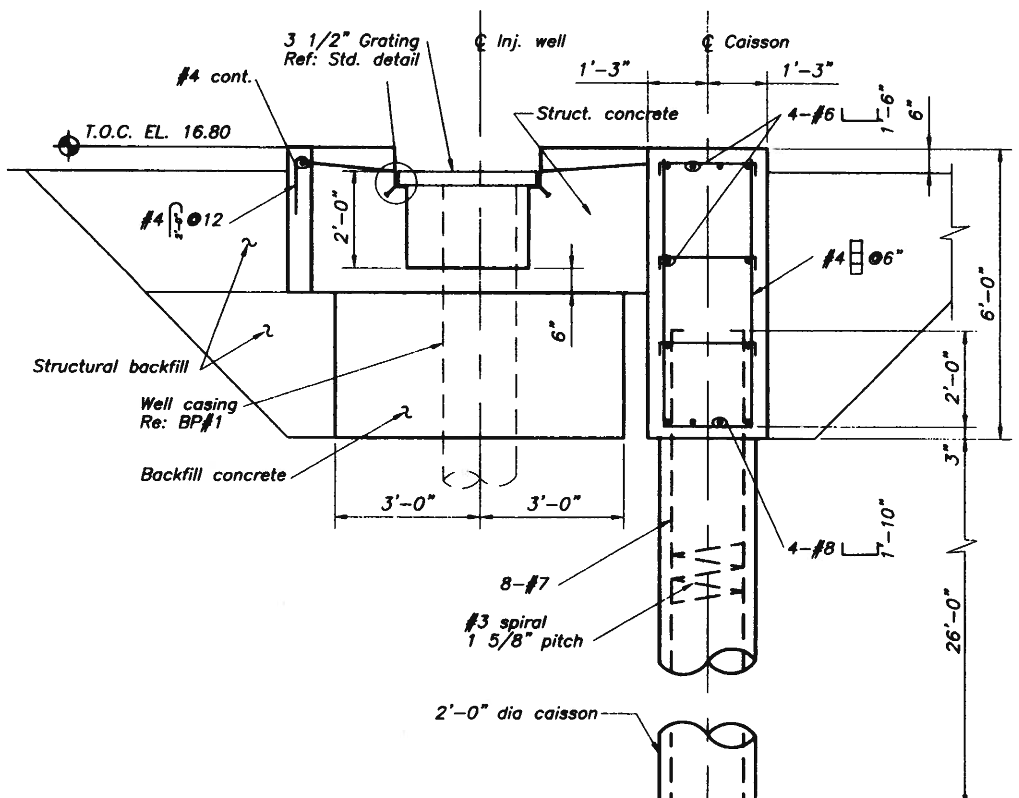
CONTAINMENT BASIN

DESIGNED J. Sato	TECH. APPROVAL
DRAWN J. Glenger	SUBMITTED
CHECKED J. Carnala	APPROVED

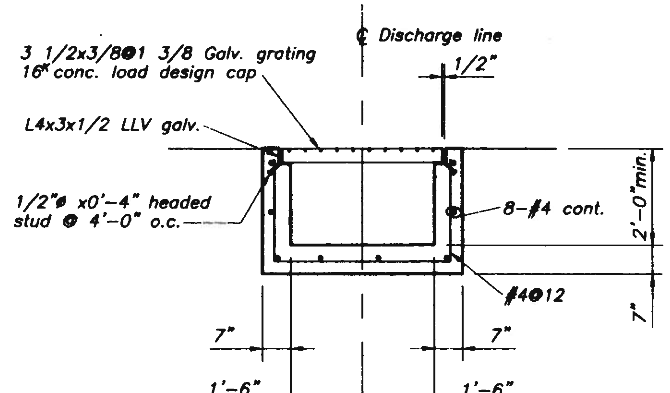
CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 9752\STRUCT\S1-7.dwg	DATE AND TIME PLOTTED 04/9/1998 10:31:26
BILLINGS, MONTANA	April 17, 1998	1253-600-68
BP-2	S1.7	Sheet 7 of 17



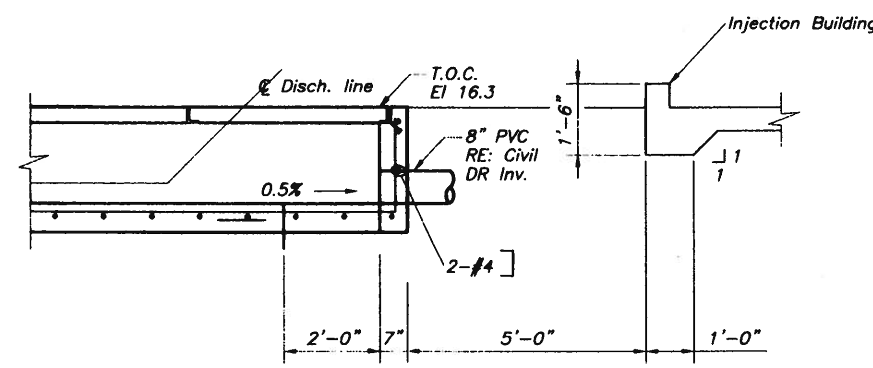
PLAN
1/4"=1'-0"



SECTION A
S1.8
1/2"=1'-0"



SECTION B
S1.8
1/2"=1'-0"



SECTION C
S1.8
1/2"=1'-0"

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

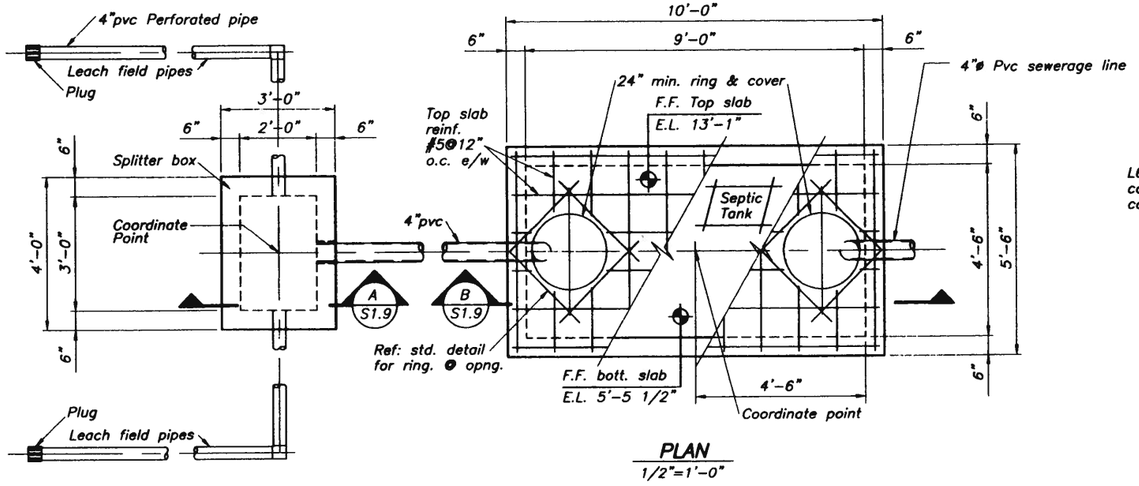
SALINITY CONTROL FACILITIES
INJECTION WELL PLAN & DETAILS

DESIGNED J. Cornejo	TECH. APPROVAL
DRAWN P. Koelzer	SUBMITTED
CHECKED J. Cornejo	APPROVED

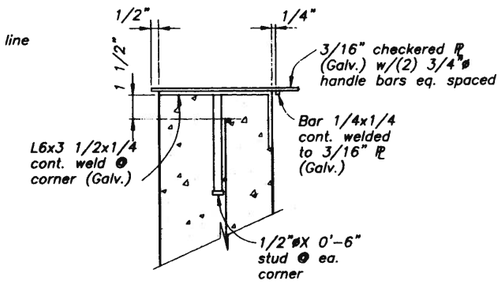
CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 9752\STRUCT\S1-8.dwg	DATE AND TIME PLOTTED 12/3/1997 12:00:00
BILLINGS, MONTANA	April 17, 1998	1253-600-69

Drawing acquired under Contract No. 1425-6-CA-60-06630
Task Order Number 1426-7-PD-60-06630-008

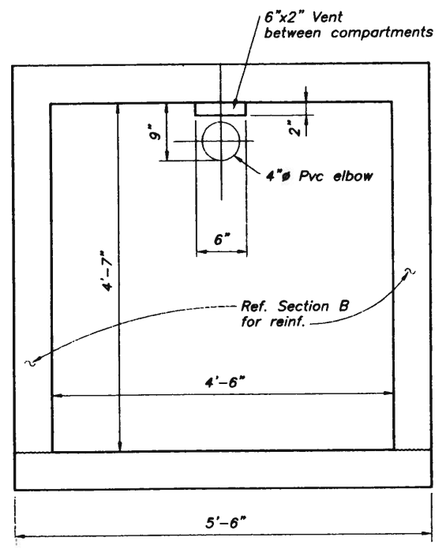
BP-2 S1.8 Sheet 8 of 17



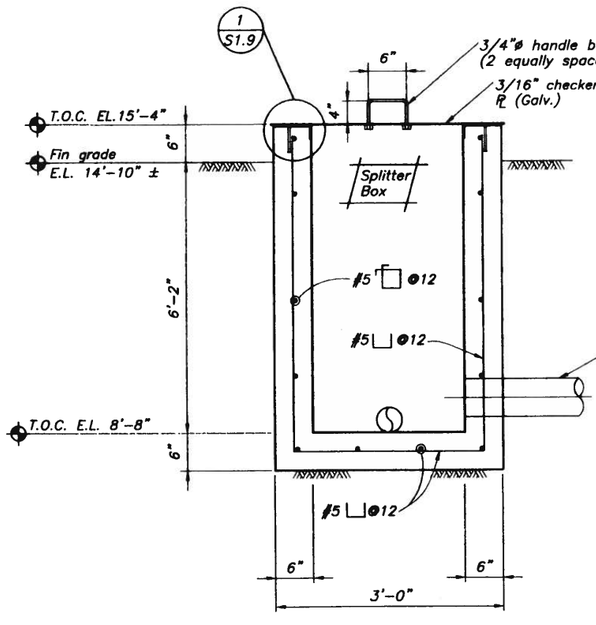
PLAN
1/2"=1'-0"



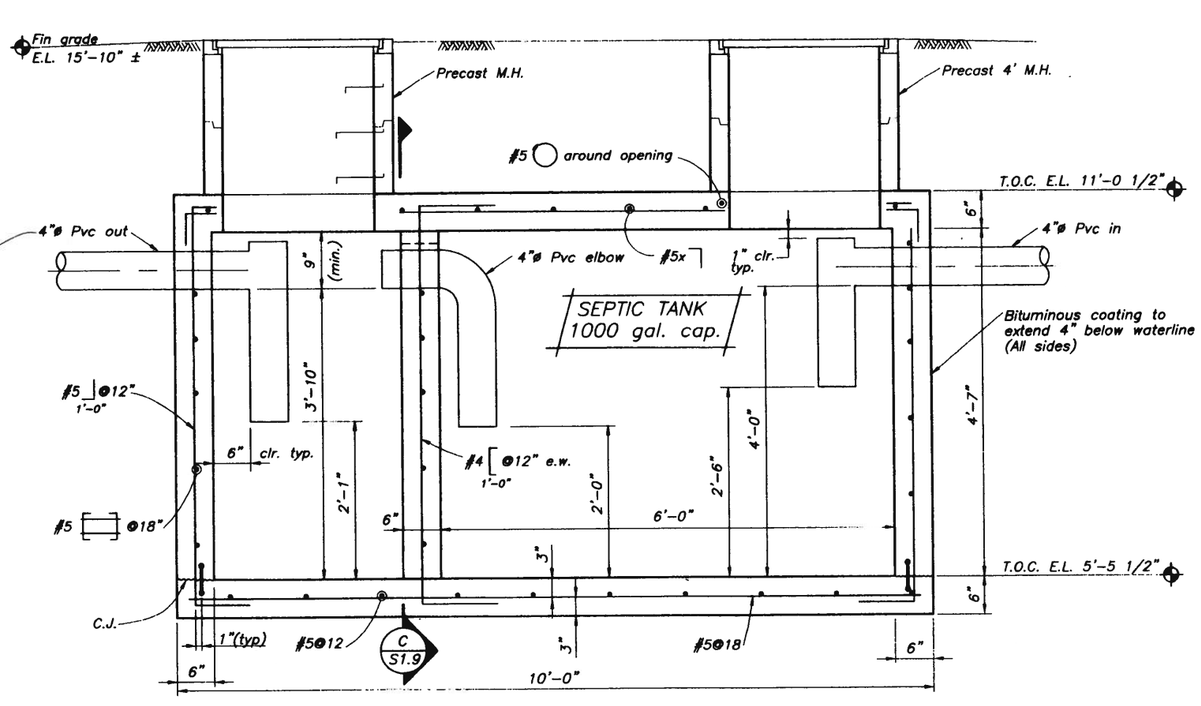
1 S1.9 DETAIL
3"=1'-0"



C S1.9 SECTION
1"=1'-0"



A S1.9 SECTION
1"=1'-0"



B S1.9 SECTION
1"=1'-0"

Note:
1. Ref: civil drawings for pipe length & Inv. EL.
2. Ref: civil drawings for typical pipe trench and manhole details, U.N.O.

Drawing acquired under Contract No.1425-8-CA-80-06530
Task Order Number 1425-7-PD-80-06530-003

J.F. SATO AND ASSOCIATES
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Project Managers, Planners & Surveyors
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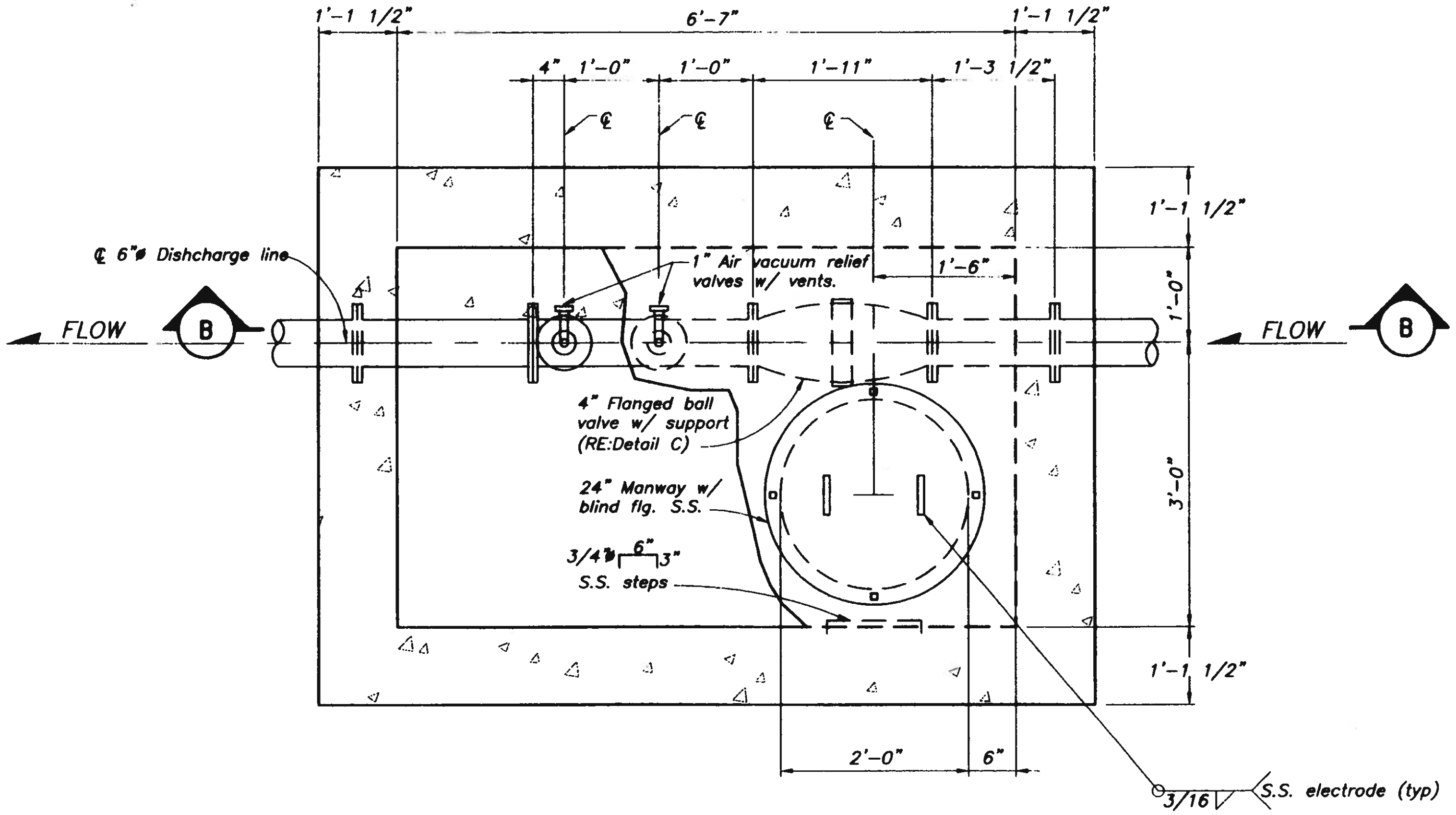
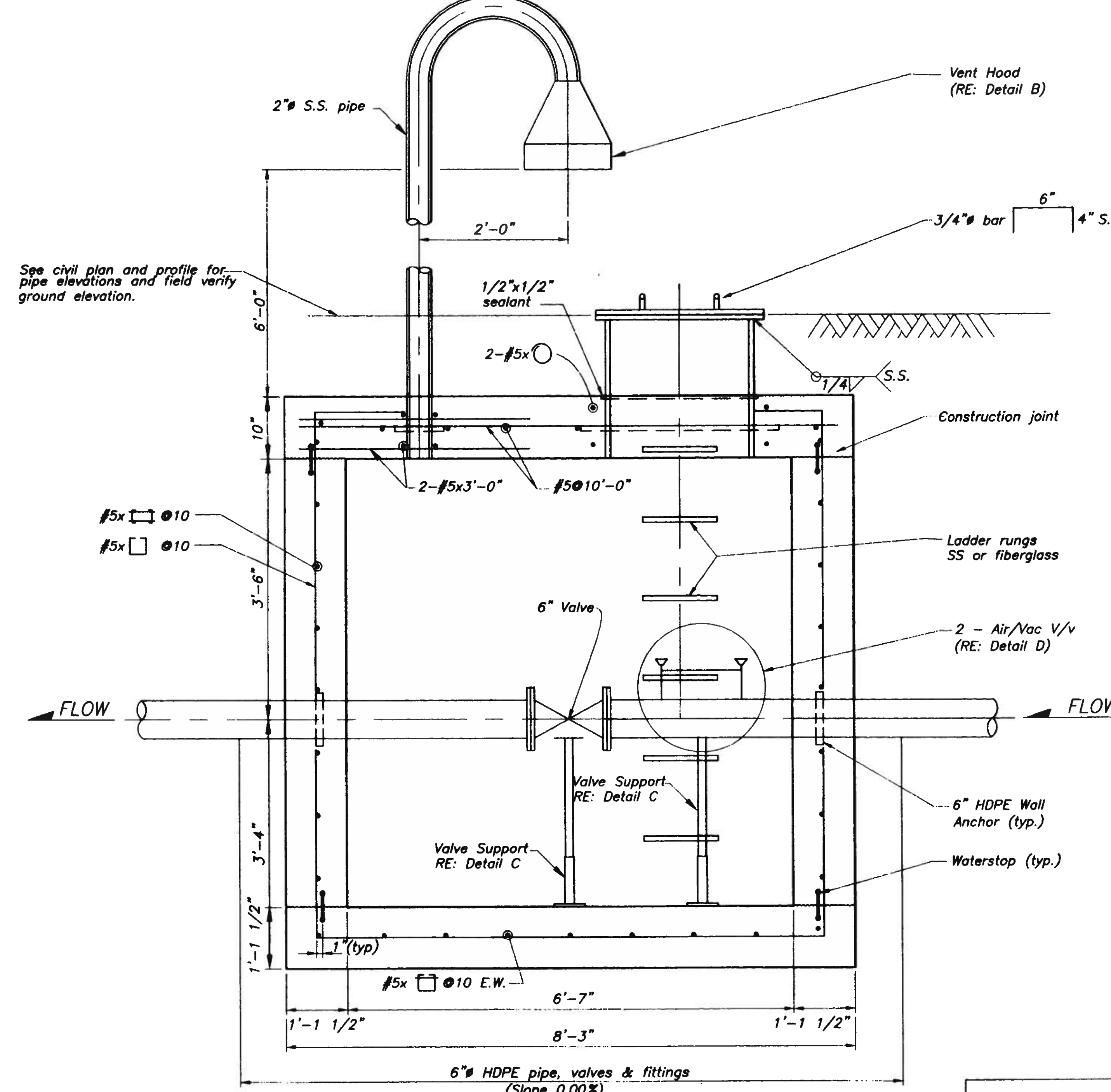
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
SANITARY SEWERAGE SYSTEM

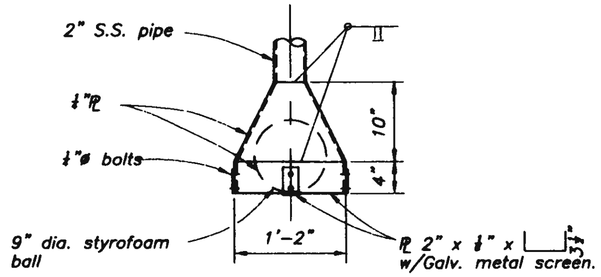
DESIGNED J. Sato	TECH. APPROVAL		
DRAWN J. Glenger	SUBMITTED		
CHECKED J. Carmijo	APPROVED		
CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 9752\STRUCT\S1-9.dwg	DATE AND TIME PLOTTED 12/3/1997 12:00:00	
BILLINGS, MONTANA	April 17, 1998	1253-600-70	
BP-2	S1.9	Sheet 9 of 17	



PLAN–VALVE VAULT VALLEY

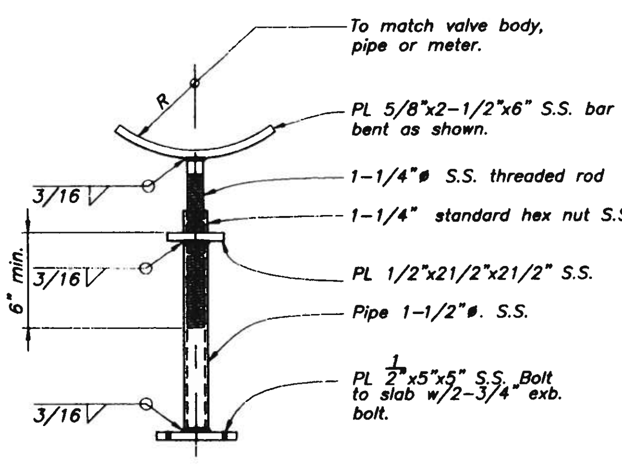


SECTION B–B

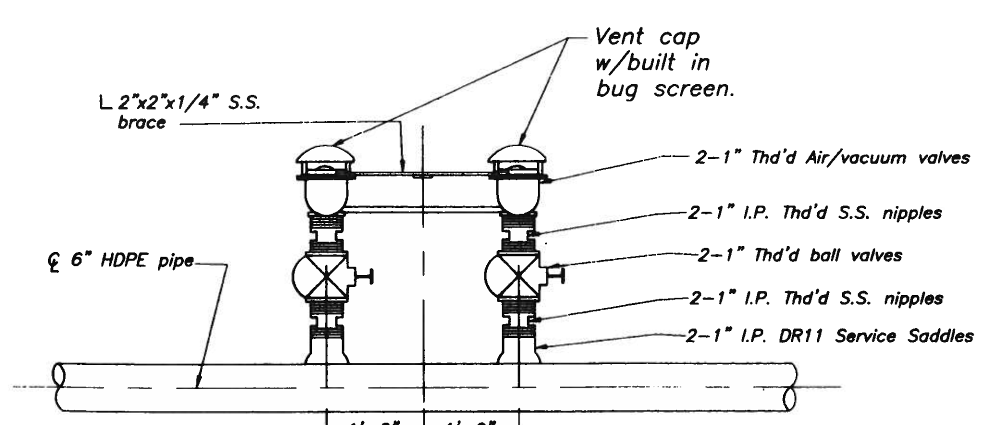


Scale 1½"=1'-0"

DETAIL B
VENT HOOD



DETAIL C
ADJUSTABLE VALVE SUPPORT



DETAIL D

Notes:
1. Air/vacuum valve vault shall be installed at the high point of the pipe line.
2. Ref. to civil drawings for Fin. Fl. El. and location.
3. All pipe inside vault and 5' outside to be HDPE DR 11.0.
4. Limits of Valve Vault Valley are all items shown and 5' of HDPE DR 11.0 each side of vault.

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

J.F. SATO AND ASSOCIATES
Consulting Engineers
Project Managers, Planners & Surveyors
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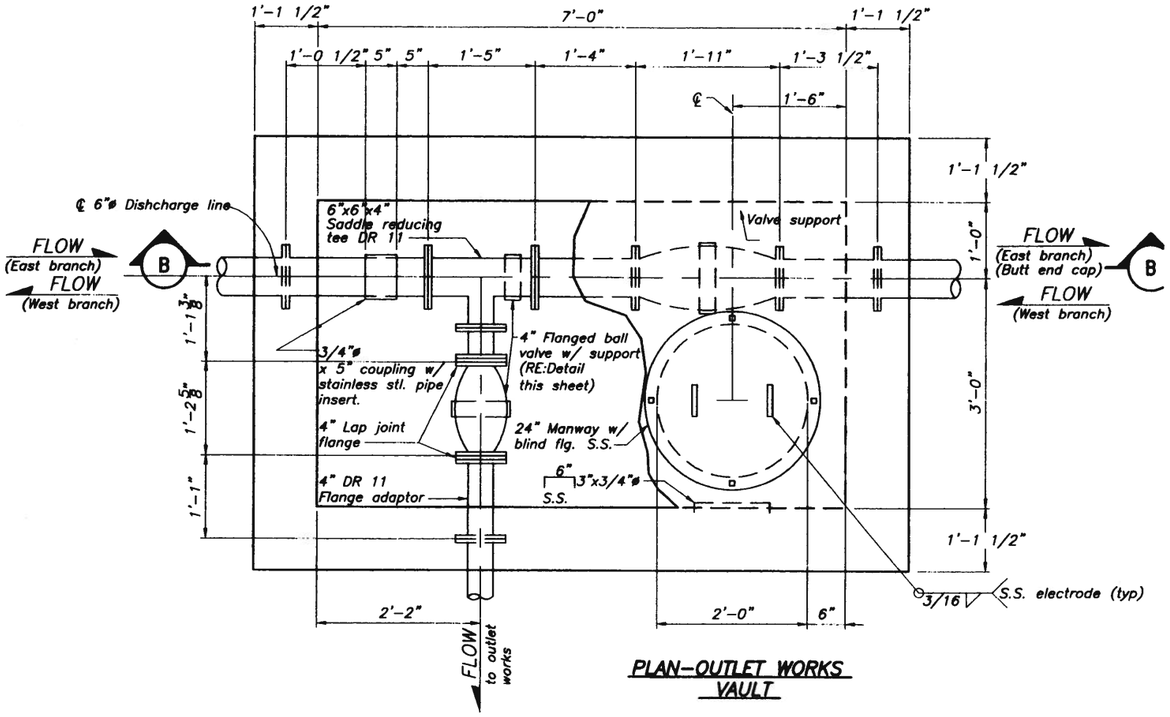
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
VALVE VAULT VALLEY

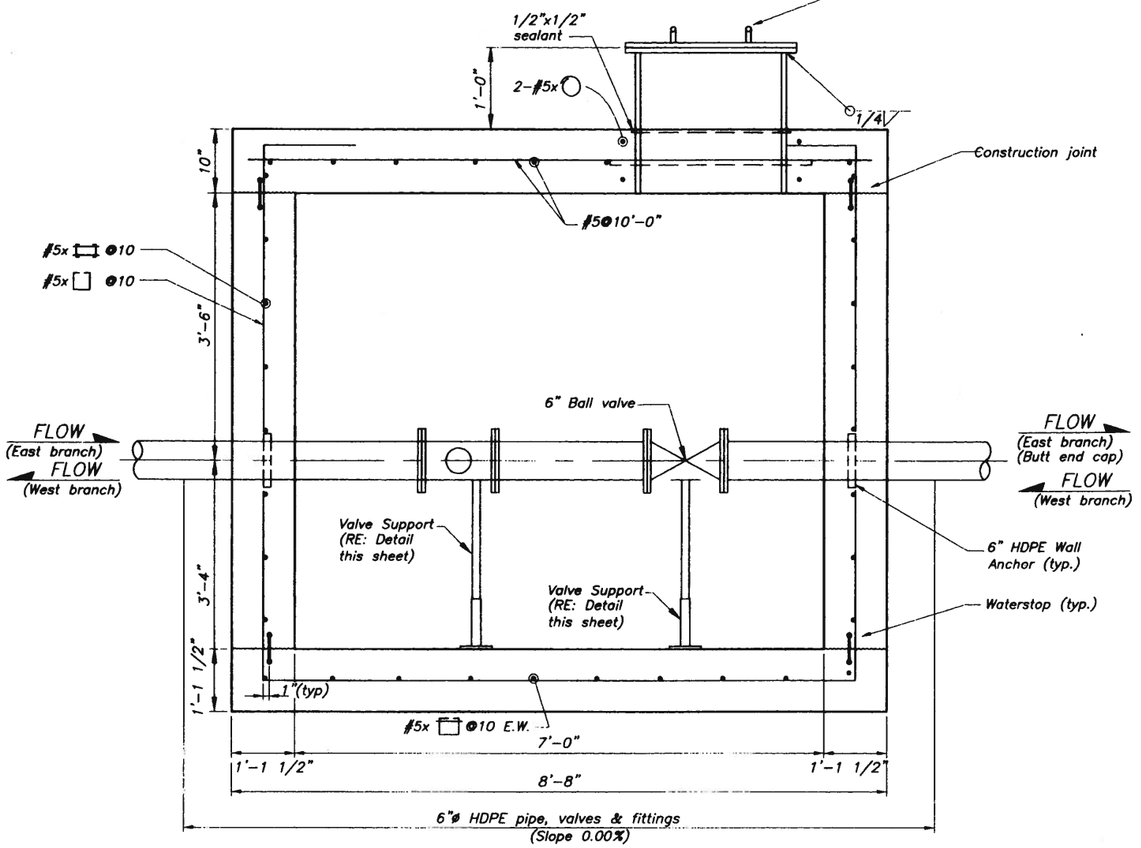
DESIGNED	J. Sato	TECH. APPROVAL	
DRAWN	C. Koren	SUBMITTED	
CHECKED	J. Carnejo	APPROVED	

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 9752\STRUCT\S2-0.dwg	DATE AND TIME PLOTTED 12/3/1997 12:00:00
BILLINGS, MONTANA	April 17, 1998	1253-600-71

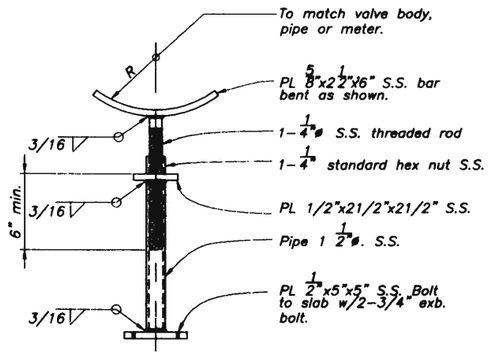
BP-2 | S2.0 | Sheet 10 of 17



PLAN-OUTLET WORKS VAULT



SECTION B-B



ADJUSTABLE VALVE SUPPORT

NOTES:

1. All pipe inside vault and 5' outside to be HDPE DR 11.0.
2. Limits of Outlet Works Vault are all items shown and 5' of HDPE DR 11.0 three (3) sides of vault.

Drawing acquired under Contract No.1425-8-CA-60-08530
Task Order Number 1425-7-PD-60-08630-003

JAMES F. SATO NEW MEXICO 9104 REGISTERED PROFESSIONAL ENGINEER

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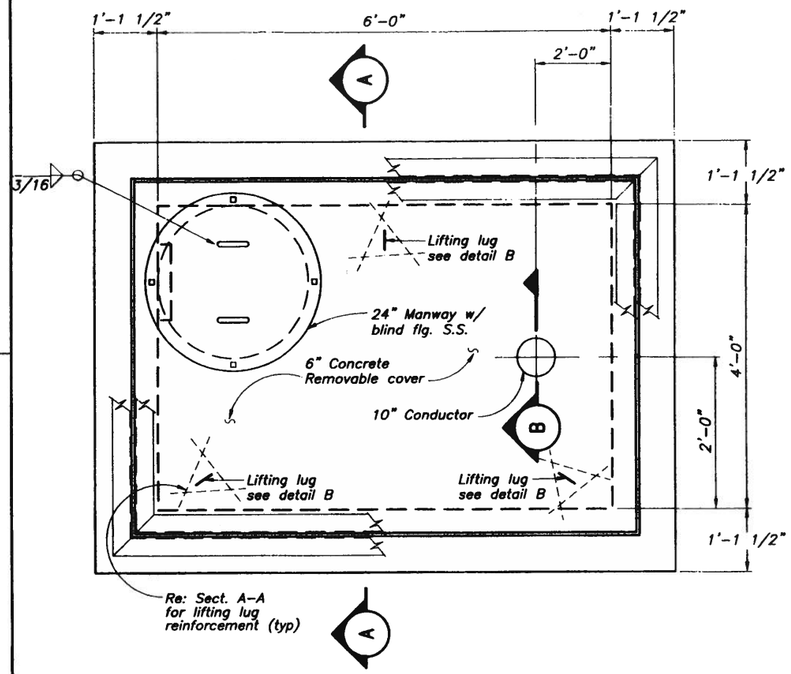
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

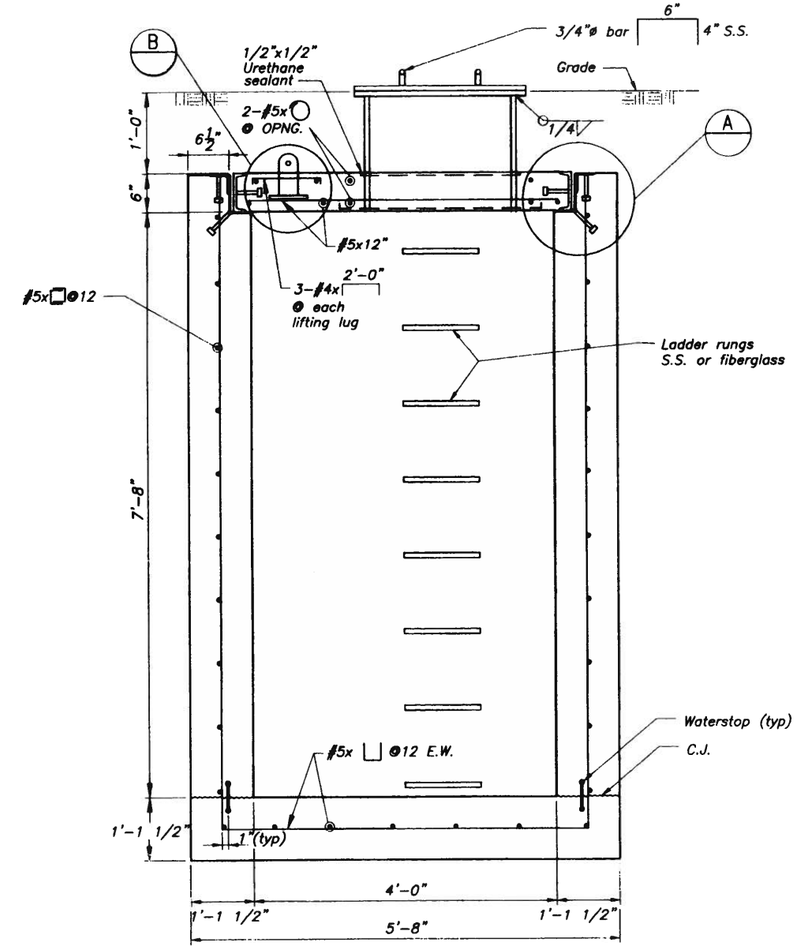
SALINITY CONTROL FACILITIES
OUTLET WORKS VAULT

DESIGNED J. Sato	TECH. APPROVAL
DRAWN J. Glenger	SUBMITTED
CHECKED J. Cornejo	APPROVED

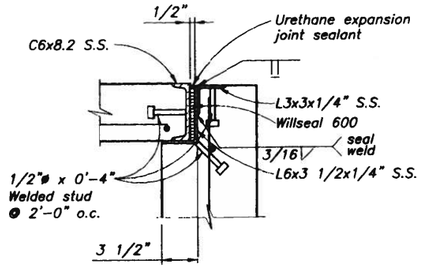
CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 9752\STRUCT\S2-1.dwg	DATE AND TIME PLOTTED 04/8/1998 13:37:12
BILLINGS, MONTANA	April 17, 1998	1253-600-72
BP-2	S2.1	Sheet 11 of 17



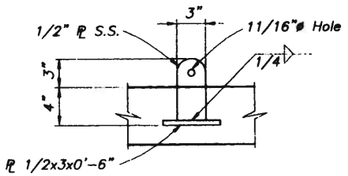
PLAN-PRODUCTION WELL VAULT
1"=1'-0"



SECTION A-A
1"=1'-0"

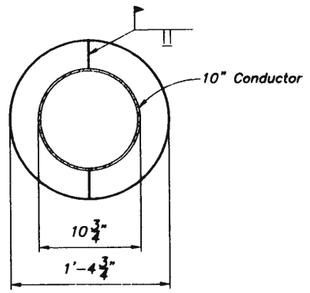


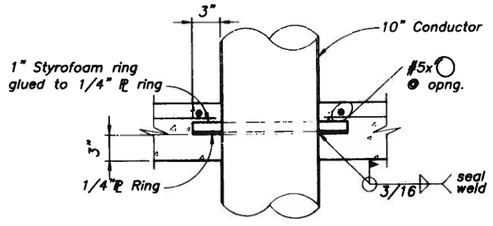
DETAIL A
1 1/2"=1'-0"



DETAIL B
1 1/2"=1'-0"

S.S.=Stainless steel





SECTION B
1 1/2"=1'-0"

NOTES:

1. All items shown and all related items shown in Elec.\Mech.\Process drawings plus 5' of HDPE DR11.0 outside of vault are considered the Production Well Vault.

Drawing acquired under Contract No. 1425-6-CA-60-08530
Task Order Number 1425-7-PD-60-08530-008

J.F. SATO AND ASSOCIATES
Consulting Engineers
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JAMES F. SATO NEW MEXICO 9248 REGISTERED PROFESSIONAL ENGINEER
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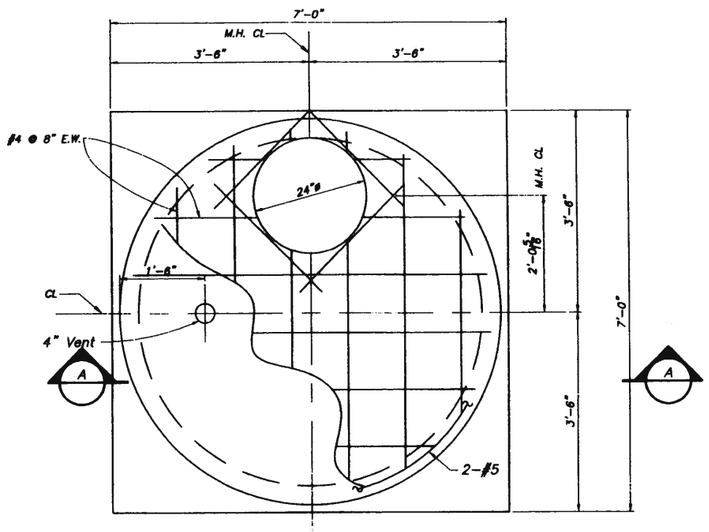
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

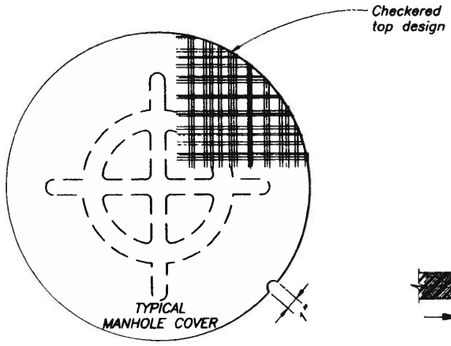
SALINITY CONTROL FACILITIES
PRODUCTION WELL VAULT

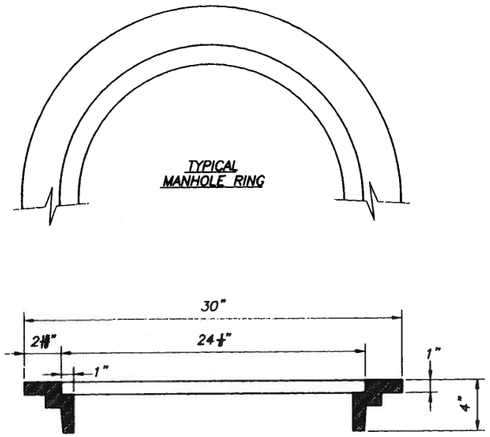
DESIGNED J. Sato	TECH. APPROVAL		
DRAWN J. Glenger	SUBMITTED		
CHECKED T. Frank	APPROVED		
CADD SYSTEM AutoCAD 13_c4 BILLINGS, MONTANA	CADD FILENAME 9752\STRUCT\S2-2.dwg April 17, 1998	DATE AND TIME PLOTTED 04/6/1998 13:58:56	1253-600-73
		BP-2	S2.2 Sheet 12 of 17



PLAN–VALVE VAULT PLATEAU

Scale 3/4"= 1–0"





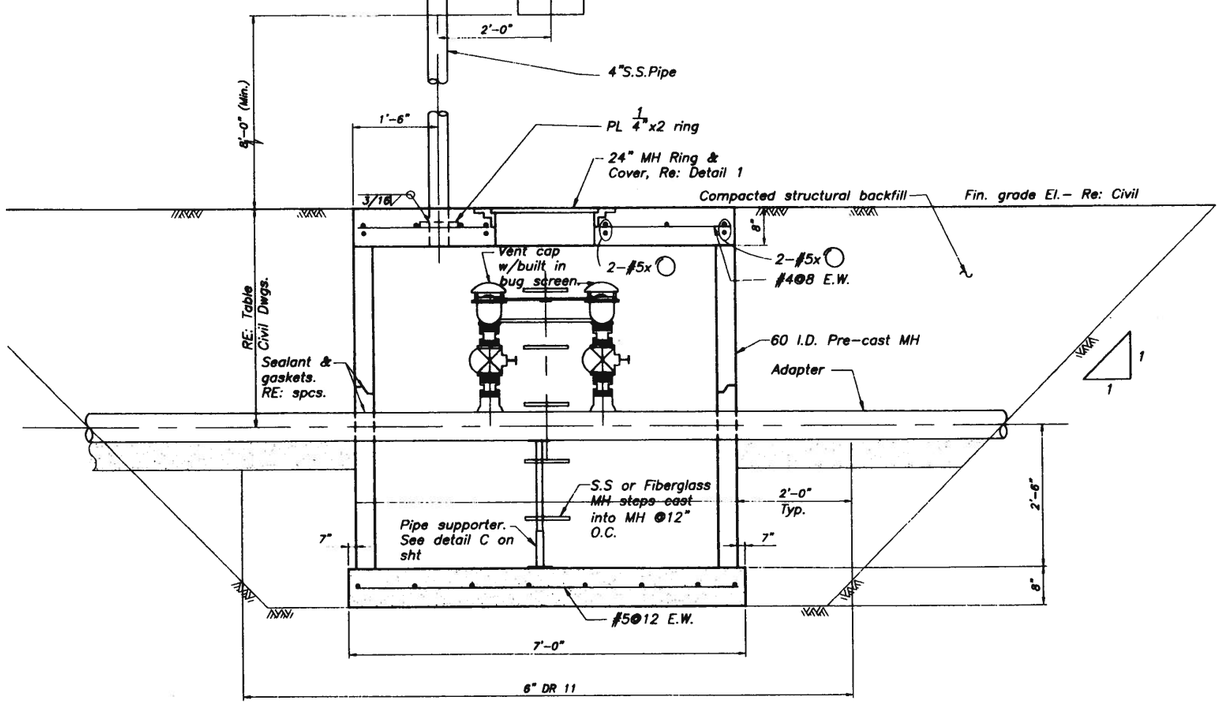
WEIGHTS:

Cover	=	125 LBS.
Ring	=	135 LBS.
Total	=	260 LBS. (Minimum)

NOTES

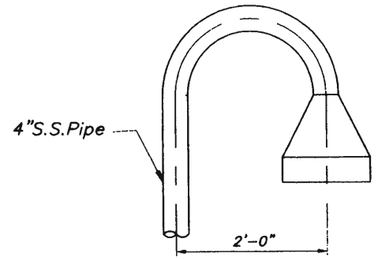
1. Inlet steps shall be in accordance with AASHTO M 199.
2. Dimensions and weights of typical manhole ring and cover are nominal. Manhole ring and cover shall be Neenah R–1538 rated for heavy duty service or approved equal.
3. Material for manhole rings and covers shall be gray or ductile iron conforming to ASTM 712.06.

DETAIL 1 / S2.2 — N.T.S.



SECTION A–A

Scale 3/4"= 1–0"



VENT PIPE INSTALLATION

DETAIL 2 / S2.2 — N.T.S.

NOTES:

1. All pipe inside vault and 5' outside is to be HDPE DR 11.0.
2. Limits of Valve Vault Plateau are all items shown and 5' of HDPE DR 11.0 each side of vault.

Drawing acquired under Contract No.1425-5-CA-80-05530
Task Order Number 1425-7-PD-80-05530-003

J.F. SATO AND ASSOCIATES
Consulting Engineers
Project Managers, Planners & Surveyors
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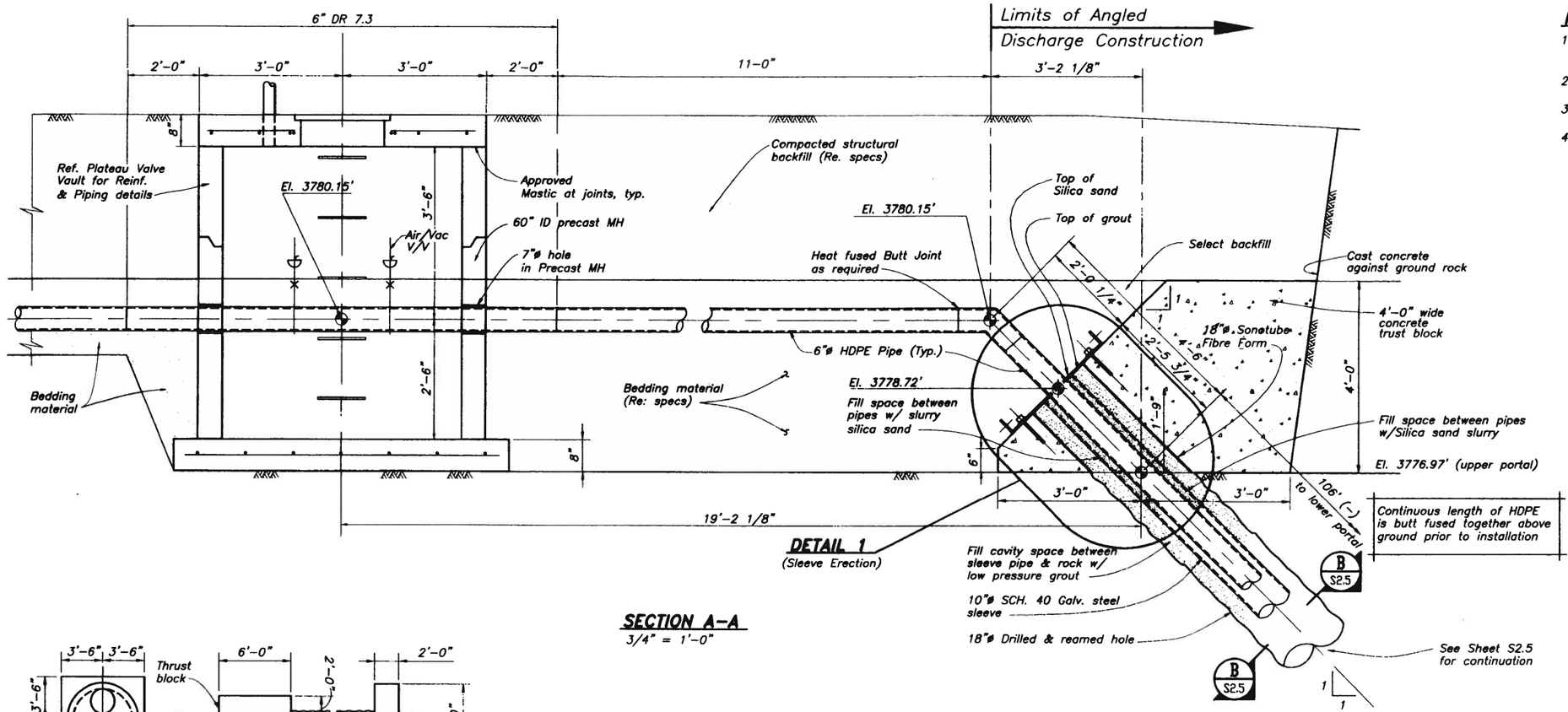
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
VALVE VAULT PLATEAU

DESIGNED J. Sato	TECH. APPROVAL		
DRAWN C. Koron	SUBMITTED		
CHECKED J. Carrejo	APPROVED		
CADD SYSTEM AutoCAD 13_c4 BILLINGS, MONTANA	CADD FILENAME 9732\STRUCT\S2-3.dwg April 17, 1998	DATE AND TIME PLOTTED 12/3/1997 12:00:00	1253–600–74
		BP-2	S2.3 Sheet 13 of 17

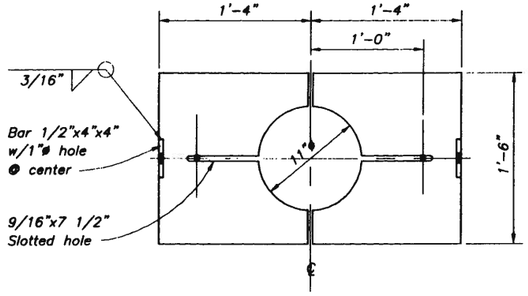


DETAIL 1
(Sleeve Erection)

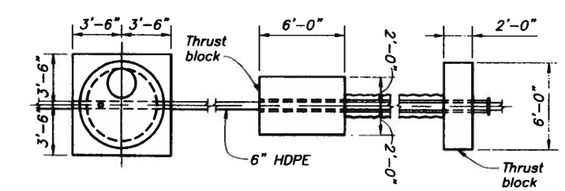
SECTION A-A
3/4" = 1'-0"

NOTES:

1. Contractor may propose alternative design of drilled discharge line prepared and sealed by an registered professional engineer. Submit alternative for review and approval to Contracting Officer.
2. Temporary support of sleeve and discharge line is Contractor's responsibility.
3. Grouting annular space shall not cause failure of rock mass surrounding pipe.
4. HDPE, High Density Polyethylene Pipe System shall be Plexco EHMW PE 3408, per ASTM D 3350 (or approved Equal) as manufactured by the Chevron Chemical Company.



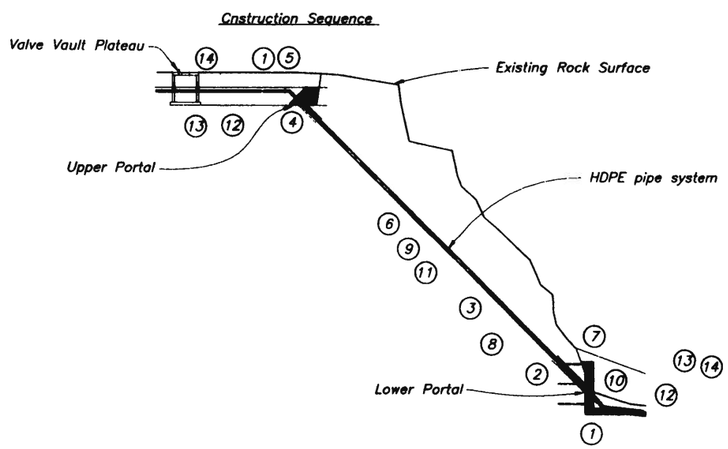
SECTION C-C
1 1/2" = 1'-0"



VALVE VAULT PLATEAU **UPPER PORTAL** **LOWER PORTAL**

PLAN

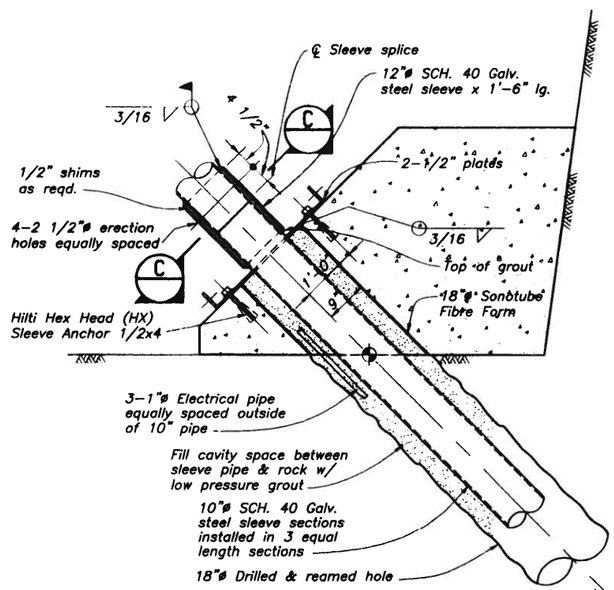
Cnstruction Sequence



PROFILE
N.T.S.

Pipe System Construction Sequence

1. Excavate upper & lower portals.
2. Stabilize Veritical rock face with pressure grouted rebar.
3. Drill & ream 18" ø hole.
4. Place upper portal thrust block.
5. Install 2-30"o.d. half plates on upper portal thrust blocks. (Re: Detail 1)
6. Install three equall length 10" ø sleeve sections.
   Note: Half plates to be moved outward after each new upper sleeve section is field welded to 12" sleeve & re-positioned to temporarily secure the next sleeve section lowered into place. First section of 10"ø sleeve to be capped during sinking sequence. (Re: Detail 1)
7. Raise bottom section of 10" ø sleeve to proper elevation & place lower portal thrust block.
8. Place low pressure grout from lower portal to top of upper portal thrust block.
9. Install HDPE pipe system within 10"ø sleeve.
10. Install lower portal sleeve flange & filter.
11. Install silica sand slurry.
12. Place bedding material.
13. Complete HDPE system installation.
14. Complete backfill & test. (Re: specs).



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

Drawing acquired under Contract No.1425-6-CA-80-06530
Task Order Number 1425-7-PD-80-06530-003

JAMES F. SATO 9478 NEW MEXICO REGISTERED PROFESSIONAL ENGINEER
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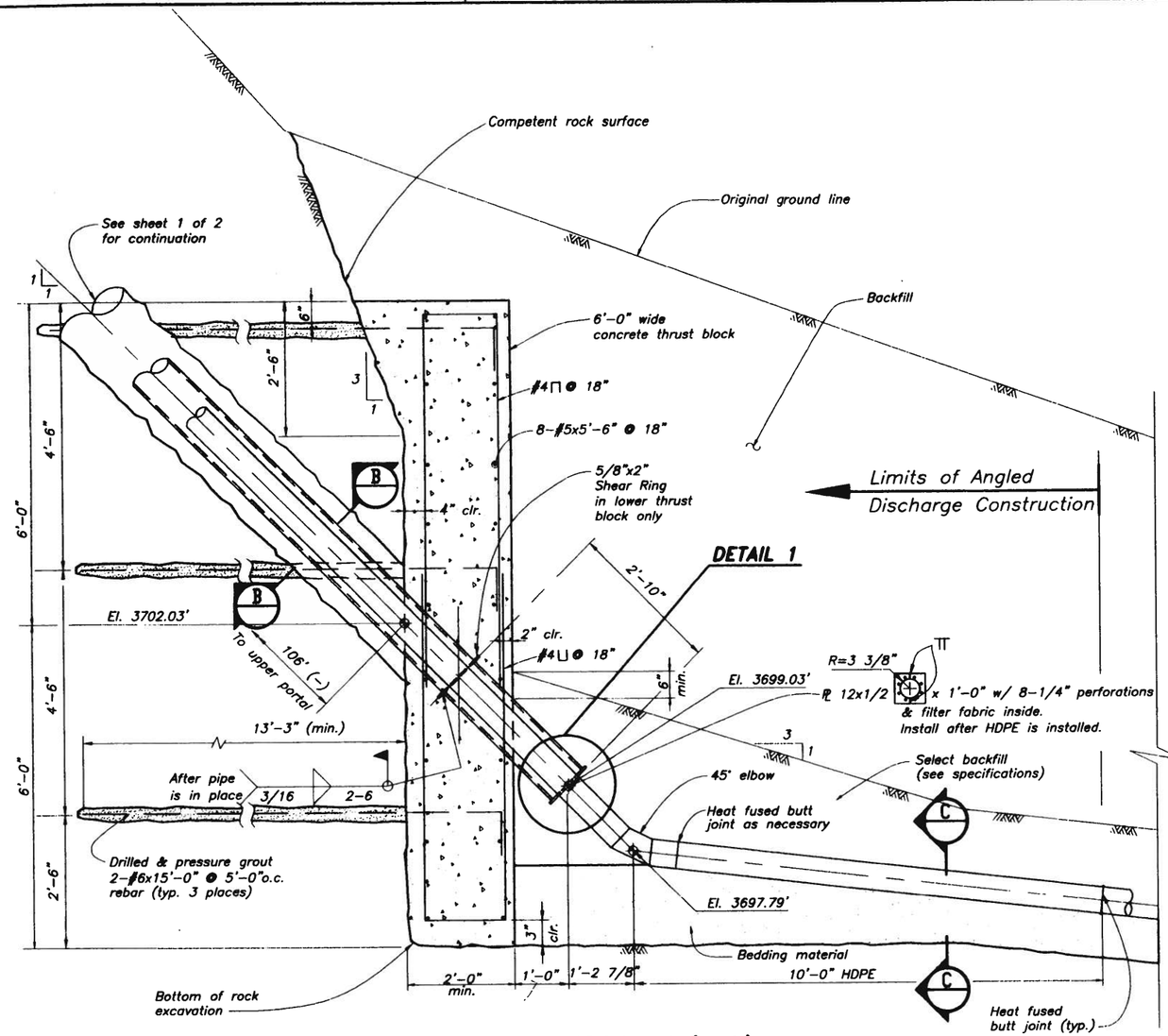
BUREAU OF RECLAMATION

LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

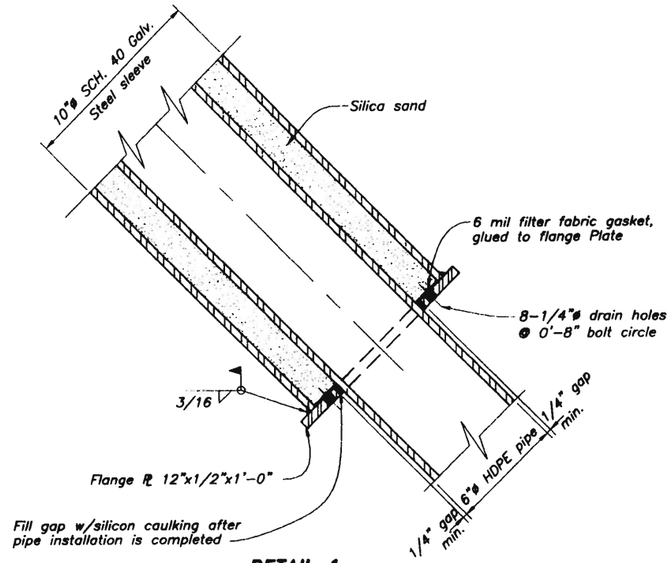
SALINITY CONTROL FACILITIES
ANGLED DISCHARGE LINE - PLAN & SECTIONS

DESIGNED	J. Sato	TECH. APPROVAL	
DRAWN	C. Koran	SUBMITTED	
CHECKED	J. Cornejo	APPROVED	

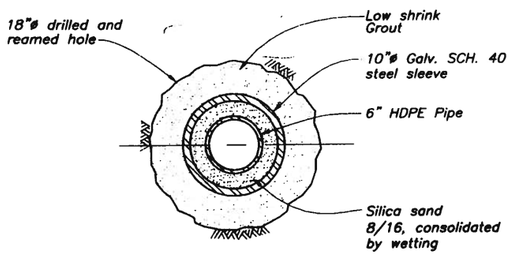
CADD SYSTEM: AutoCAD 13 c4	CADD FILENAME: 9752\STRUCT\S2-4.dwg	DATE AND TIME PLOTTED: 04/9/1998 14:47:12	
BILLINGS, MONTANA	April 17, 1998	1253-600-75	
BP-2	S2.4	Sheet 14 of 17	



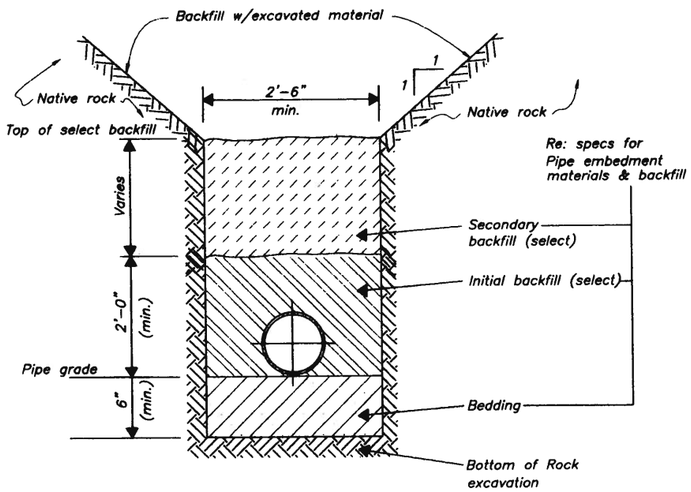
SECTION A-A (cont.)
3/4" = 1'-0"



DETAIL 1
1" = 1'-0"



SECTION B-B
1 1/2" = 1'-0"



SECTION C-C
N.T.S.

Drawing acquired under Contract No. 1425-5-CA-80-05530
Task Order Number 1425-7-PD-80-05530-003

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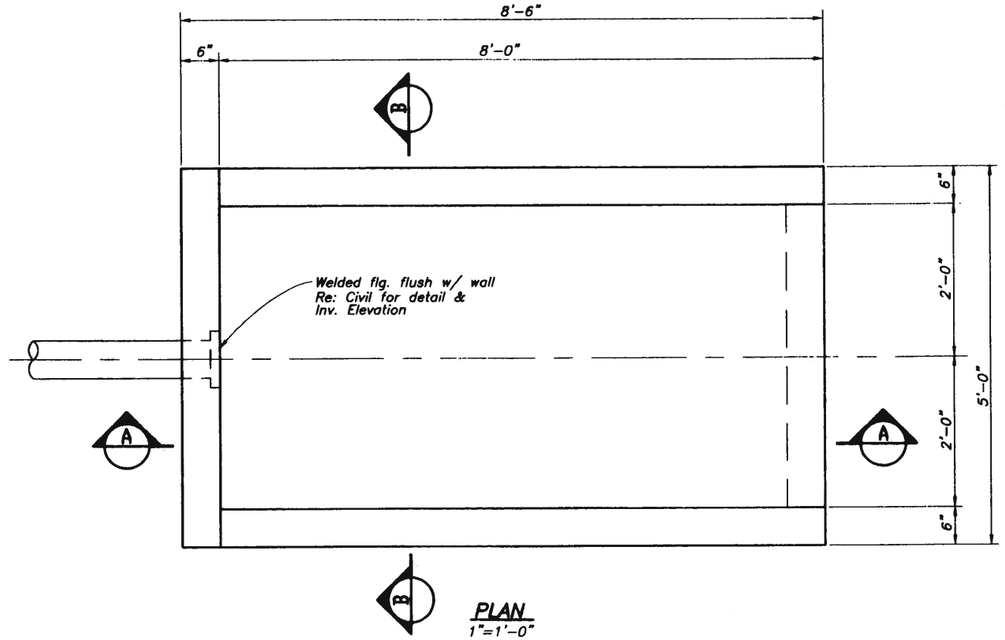
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

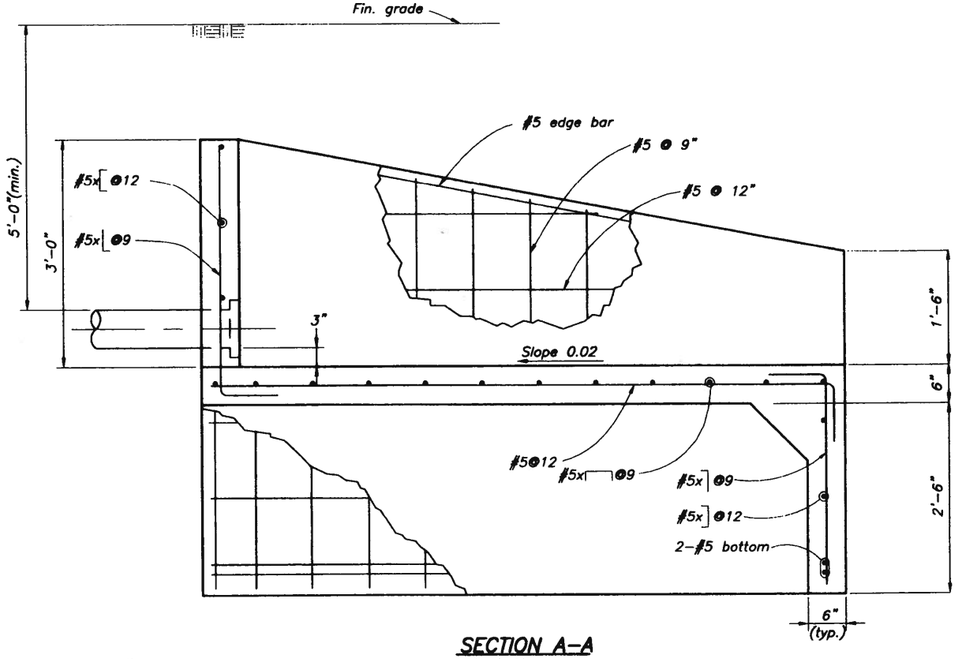
SALINITY CONTROL FACILITIES
ANGLED DISCHARGE LINE - PLAN & SECTIONS

DESIGNED	J. Sato	TECH. APPROVAL	
DRAWN	C. Koron	SUBMITTED	
CHECKED	J. Frank	APPROVED	

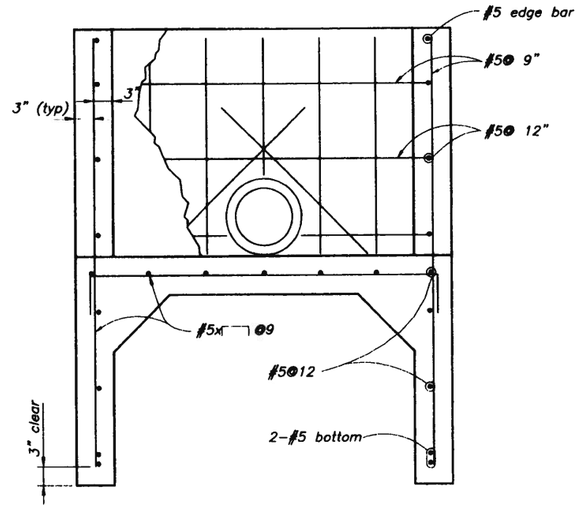
CADD SYSTEM: AutoCAD 13_c4	CADD FILENAME: 9752\STRUCT\52-5.dwg	DATE AND TIME PLOTTED: 12/3/1997 12:00:00
BILLINGS, MONTANA	April 17, 1998	1253-600-76
BP-2	S2.5	Sheet 15 of 17



PLAN
1"=1'-0"



SECTION A-A
1"=1'-0"



SECTION B-B
1"=1'-0"

Drawing acquired under Contract No. 1425-6-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

OUTLET WORKS
DETAILS

DESIGNED	J. Sato	TECH. APPROVAL	
DRAWN	C. Koran	SUBMITTED	
CHECKED	J. Carnaje	APPROVED	

CADD SYSTEM: AutoCAD 13_c4	CADD FILENAME: 9752\STRUCT\S2-6.dwg	DATE AND TIME PLOTTED: 12/3/1997 12:00:00
BILLINGS, MONTANA	April 17, 1998	1253-600-77
BP-2	S2.6	Sheet 16 of 17

STANDARD REINFORCEMENT ABBREVIATIONS

ld	DEVELOPMENT LENGTH	FF	FAR FACE
ldh	ST. HOOK DEV. LENGTH		
d_b	BAR DIAMETER		
BF	BOTTOM FACE	NF	NEAR FACE
		OC	ON CENTERS
EF	EACH FACE		
EL	EACH LAYER	T & B	TOP & BOTTOM
EW	EACH WAY		

REINFORCEMENT CONCRETE COVER

TABLE 1

EXCEPT AS OTHERWISE NOTED OR SHOWN ON THE DRAWINGS REINFORCEMENT SHALL HAVE A MINIMUM CONCRETE COVER AS FOLLOWS:

BOTTOM OF FOUNDATIONS AND FOOTINGS OR OTHER CONC. CAST AGAINST EARTH:	3"
BACKFILLED SURFACES AND SURFACES SUBJECT TO SUBMERGENCE OR WEATHER:	2"
ALL OTHER WALLS, BEAMS, SLABS AND COLUMNS:	1 1/2"

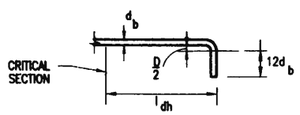
FOR WALL SLABS WITH A SINGLE CURTAIN OF STEEL, REINFORCING SHALL BE PLACED AT THE CENTER OF THE WALL.

TYPICAL DEVELOPMENT AND SPLICE LENGTHS

TABLE 2

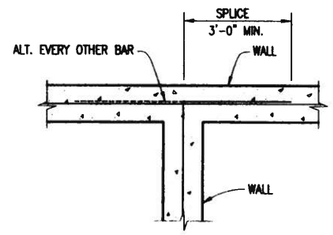
BAR SIZE	f'c=4,000 psi INCHES: TENSION 90° HOOK ldh	90° HOOK D	TENSION STRAIGHT TOP SPLICE	STRAIGHT OTHER SPLICE	fy=60,000 psi COMPRESSION ALL
4	7	3	25	19	10
5	9	3 3/4	32	24	12
6	10	4 1/2	37	28	14
7	12	5 1/4	43	33	17
8	14	6	51	39	19
9	16	9 1/2	65	50	22
10	17	10 3/4	82	63	24
11	19	12	100	77	27

* SEE NOTES FOR TABLE 2

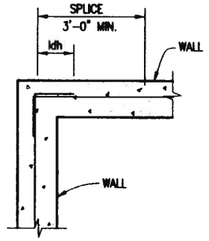


NOTES FOR TABLE 2

1. TOP BARS ARE HORIZ. BARS PLACED SUCH THAT MORE THAN 12" OF CONC. IS CAST BELOW THE BAR.
2. FOR EPOXY COATED REINFORCING BARS, INCREASE STRAIGHT SPLICE LENGTH BY 50%.
3. BARS THAT ARE DEVELOPED BY A STANDARD HOOK AT DISCONTINUOUS ENDS, WITH LESS THAN 2-1/2 IN. OF COVER SHALL MEET THE PROVISIONS OF ACI 318-89 SECTION 12.5.4.



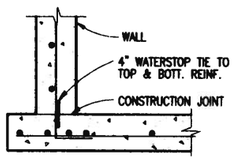
CASE 2



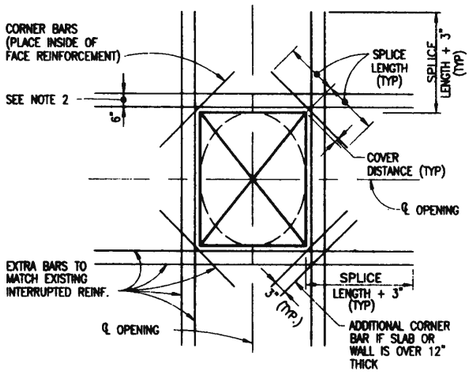
CASE 1

SINGLE CURTAIN BAR ANCHORAGE

NOTE: FOR SPLICE & ldh SEE TABLE 2



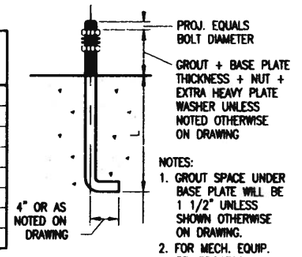
WATERSTOP INSTALLATION



NOTES:
1. THIS STANDARD IS LIMITED TO OPENINGS OF GREATER THAN 12" BUT NOT LARGER THAN 6'-0" EACH WAY. OTHERWISE SEE DRAWINGS.
2. PLACE EXTRA BARS CLOSE TO OPENING EQUAL TO HALF OF THE INTERRUPTED BARS. (WITH A MINIMUM OF 2- #5'S AT EA. SIDE) USE 6" SPACING OR SPACING OF INTERRUPTED BARS, WHICH EVER IS LESS.
3. IN ADDITION, AT CIRCULAR OPENINGS PROVIDE 2-#5x ◯

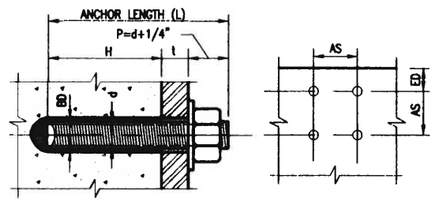
REINFORCEMENT ARRANGEMENT AROUND OPENINGS

BOLT (DIA.)	L
1/2"	0'-9"
5/8"	1'-0"
3/4"	1'-2"
7/8"	1'-4"
1"	1'-8"
1 1/8"	1'-9"
1 1/4"	2'-0"
1 1/2"	2'-3"



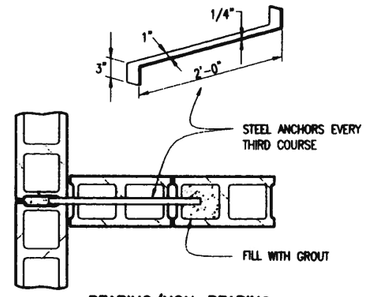
NOTES:
1. GROUT SPACE UNDER BASE PLATE WILL BE 1 1/2" UNLESS SHOWN OTHERWISE ON DRAWING.
2. FOR MECH. EQUIP. RE: PROCESS.

ANCHOR BOLTS



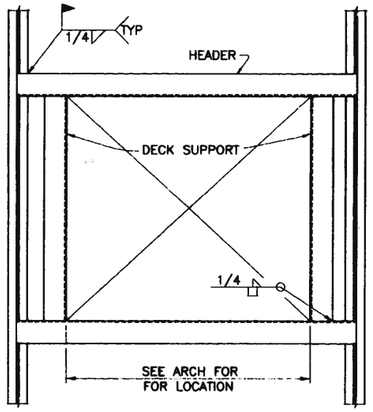
HAS ADHESIVE ANCHOR ROD

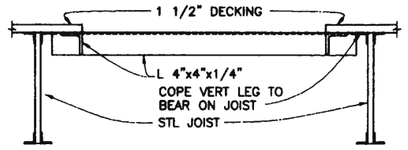
HILTI HIT HY150 INJECTION ADHESIVE ANCHOR OR EQUIVALENT ANCHOR SPACING AND EMBEDMENT REQUIREMENTS U.N.O.				
BOLT DIA d	HOLE DIA BD	H (MIN)	AS (MIN)	ED (MIN)
3/8"	15/32"	3 1/2"	3 1/2"	5 1/4"
1/2"	9/16"	4 1/4"	4 1/4"	6 3/8"
5/8"	11/16"	5"	5"	7 1/2"
3/4"	7/8"	6 5/8"	6 5/8"	10"
7/8"	1"	6 5/8"	6 5/8"	10"
1"	1 1/8"	8 1/4"	8 1/4"	12 3/8"



BEARING/NON-BEARING WALL JOINT DETAIL

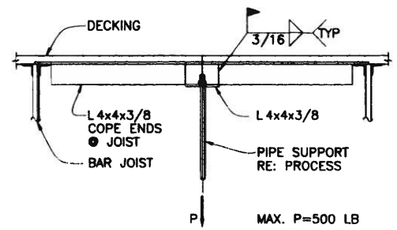
1"=1'-0"





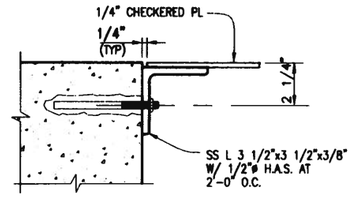
TYPICAL JOIST OPENING

TYPICAL FOR ANY OPENING 12"ø OR LARGER

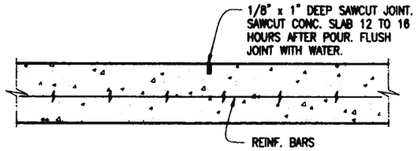


PIPE SUPPORT SECTION

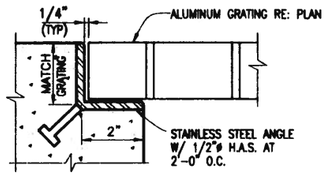
AT END



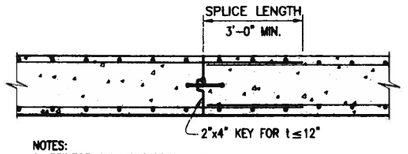
TYPICAL STEEL PLATE ANCHOR DETAIL U.N.O



TYPICAL SLAB ON GRADE SAWCUT CONTROL JOINT

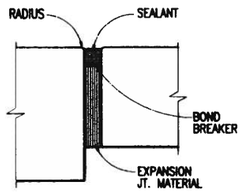


TYPICAL ALUMINUM GRATING AND EMBEDDED SEAT U.N.O.

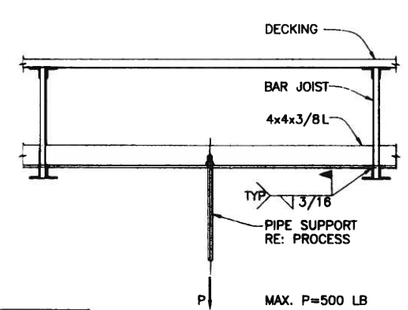


NOTES:
1. REINFORCING CONTINUOUS THRU CONSTRUCTION JOINTS.
2. PROVIDE CONSTRUCTION JOINTS @ 30'-0" MAX. IN LIQUID CONTAINMENT STRUCTURES AND @ 40'-0" IN OTHER STRUCTURES.

TYPICAL CONSTRUCTION JOINT DETAIL IN WALL



TYPICAL ISOLATION/EXPANSION JT.



PIPE SUPPORT SECTION

AT MID-SPAN

J.F. SATO AND ASSOCIATES
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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
STANDARD DETAILS

DESIGNED J. Sato — TECH. APPROVAL
DRAWN J. Glenger — SUBMITTED
CHECKED J. Carnglo — APPROVED

CADD SYSTEM	CADD FILENAME	DATE AND TIME PLOTTED
AutoCAD 13_c4 BILLINGS, MONTANA	9752\STRUCT\S2-7.dwg April 17, 1998	04/9/1998 15:03:18

Drawing acquired under Contract No. 1426-6-CA-60-06530
Task Order Number 1426-7-PD-60-06560-003

BP-2	S2.7	Sheet 17 of 17

HVAC LEGEND (Not all symbols shown are used)

ABBR.	SYMBOL	DESCRIPTION
	UC 3/4"	Undercut 3/4"
RL	—RL—	Refrigerant liquid
RS	—RS—	Refrigerant suction
	T	Thermostat
	Up / Down	Outside air intake duct
		Positive pressure duct
		Negative pressure duct
Ø		Round duct
MVD		Manual volume damper in duct
FLEX. CONN.		Flexible connection in duct
MD	MD	Motorized damper in duct with access panel
	TS	Temperature sensor in duct
		Flexible duct with spin-in fitting and volume damper
		Fire damper with access panel
		Fire/smoke damper with access panel
		Security barrier in duct
		Elbow with turning vanes
		Access panel (size)
		Parallel blade damper
		Opposed blade damper
	NECK SIZE / CFM / TYPE	Grille, Register or Diffuser
	TYPE / FLOW G.P.M. / ZONE NO. / LENGTH IN FT.	Baseboard or fintube radiation heating
		Supply air diffuser in lay-in ceiling (with flexible duct)
		Return air grille in lay-in ceiling

ABBR.	DESCRIPTION
AFF	Above finish floor
AD	Access door
AP	Access panel
BDD	Back draft damper
CUH	Cabinet unit heater
DIFF	Diffuser
DG	Door grille
DTR	Duct through roof
DMPR	Damper
ELEV	Elevation
EAT	Entering air temperature
EWT	Entering water temperature
EXH	Exhaust
(E)	Existing
ESP	External static pressure
GR	Grille
IJS	In joist space
LAT	Leaving air temperature
LWT	Leaving water temperature
MA	Mixed air
ML	Motorized louver
(N)	New
NO	Normally open
NC	Normally closed
N.I.C.	Not in contract
OTCS	Open to ceiling space
OA	Outside air
RA	Return air
RIJS	Rise in joist space
SA	Supply air
TSP	Total static pressure
UH	Unit heater
ZCV	Zone control valve

PLUMBING LEGEND (Not all symbols shown are used)

ABBR.	SYMBOL	DESCRIPTION
CW		Cold water (from underground tank)
HW		Hot water
W		Waste (buried)
V		Plumbing vent
		Elbow up
		Elbow down
		Tee up
		Tee down
		Piping cap or plug
		Indication of flow direction
		Indicates pitch down
BC		Balancing cock
		Butterfly valve
		Check valve
GV		Gate valve
		Ball valve
		Hose end valve
PRV		Pressure reducing valve
		Temperature and pressure relief valve
SA		Shock absorber
SV		Solenoid valve
		Strainer
		Strainer with blowdown valve
		Thermometer and thermowell
		Union
		Vacuum breaker
WH		Wall hydrant

ABBR.	DESCRIPTION
AP	Access panel
CI	Cast iron
CP	Chrome plated
FCO	Floor clean out
FD	Floor drain
IE	Invert elevation
LAV	Lavatory
MB	Mop basin
OD	Overflow drain
RD	Roof drain
SS	Service sink
SH	Shower
UR	Urinal
VTR	Vent through roof
VCP	Vitrified clay pipe
WC	Water closet
WCO	Wall clean out
WF	Wash fountain
ZVB	Zone valve box

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

HVAC AND PLUMBING LEGENDS

DESIGNED RMH GROUP — TECH. APPROVAL
DRAWN RMG GROUP — SUBMITTED
CHECKED RMH GROUP — APPROVED

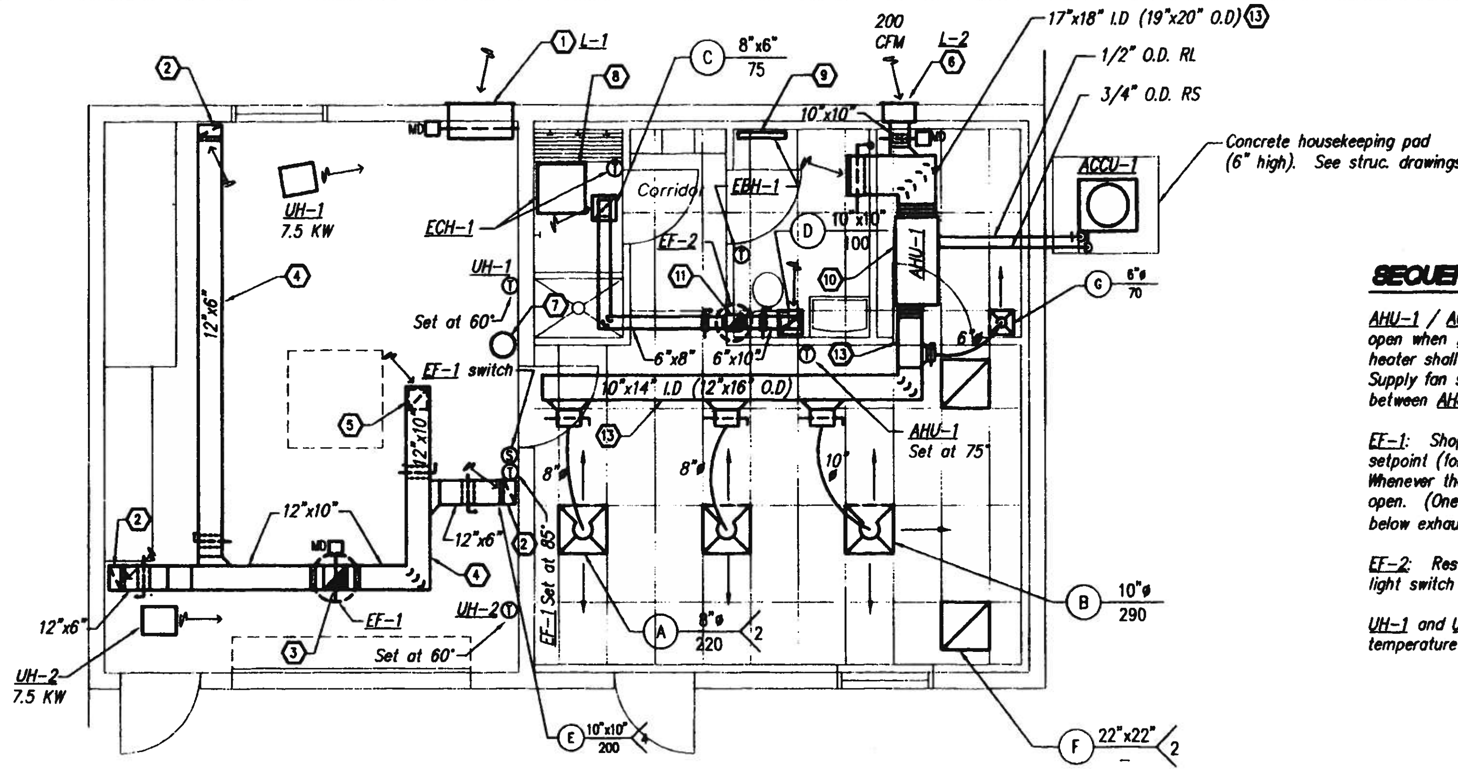
Drawing acquired under Contract No. 1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

CADD SYSTEM AutoCAD 13_c4 | CADD FILENAME 4568M11.DWG | DATE AND TIME PLOTTED 12/02/97 6:56

BILLINGS, MONTANA — December 8, 1997

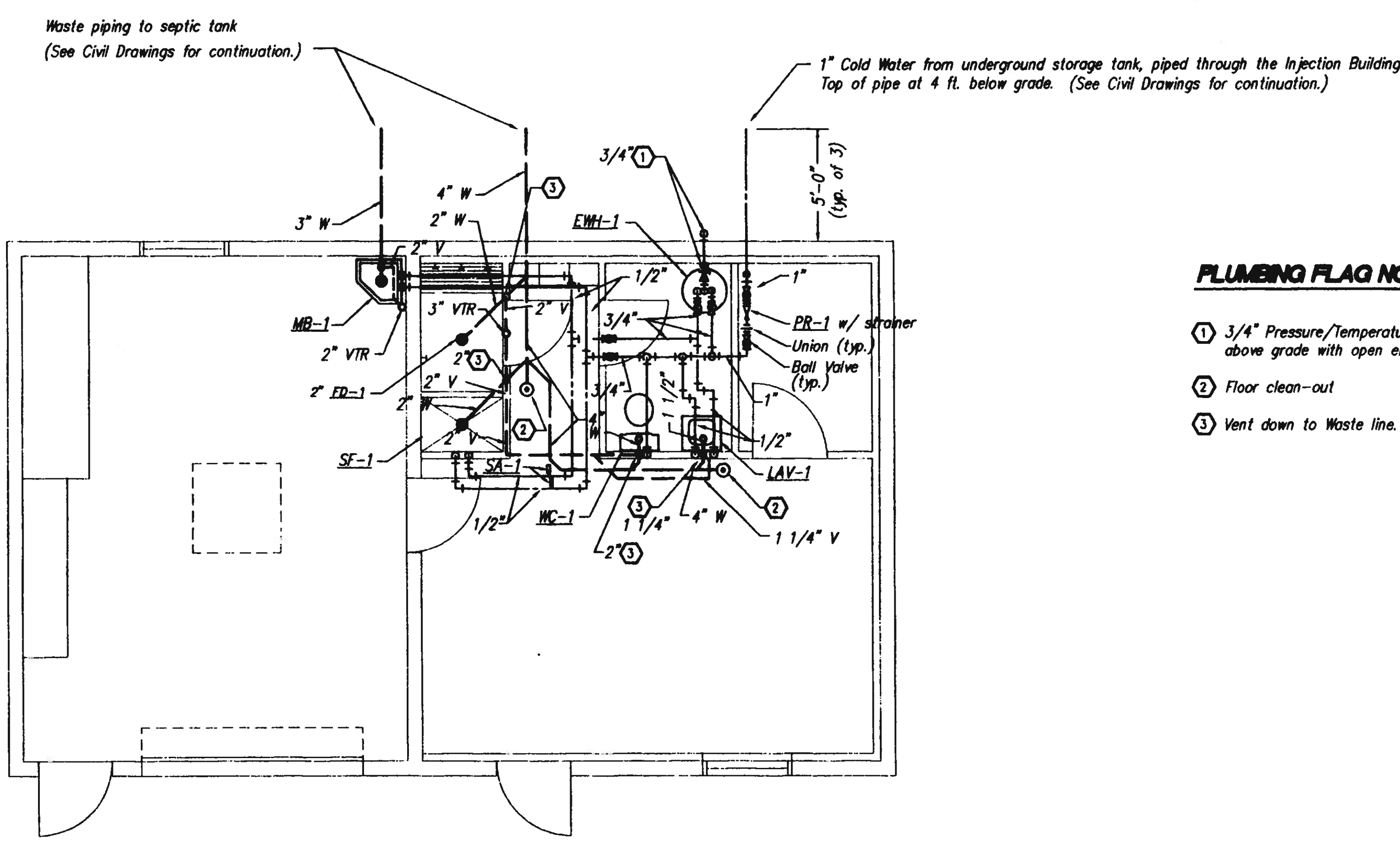
1253-600-79

BP-2 — M1.1 — Sheet 1 of 4



SHOP AND OFFICE HVAC PLAN

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



SHOP AND OFFICE PLUMBING PLAN

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

SEQUENCE OF OPERATION

AHU-1 / ACCU-1: Motorized damper for outside air (at L-2 louver) shall open when AHU-1 supply (evaporator) fan starts. Compressor and electric heater shall cycle in sequence to maintain space temperature setpoint. Supply fan shall run continuously. Provide all required interlock wiring between AHU-1 air handling unit and ACCU-1 air-cooled condensing unit.

EF-1: Shop exhaust fan shall be energized either by space temperature setpoint (for cooling with outside air) or by manual on/off switch. Whenever the fan is energized, the two associated motorized dampers shall open. (One damper is at L-1 louver, and one damper is in duct riser below exhaust fan.)

EF-2: Restroom / Shower Room exhaust fan shall be energized by the light switch in either room.

UH-1 and UH-2: Electric unit heater shall cycle to maintain space temperature setpoint.

PLUMBING FLAG NOTES

1. 3/4" Pressure/Temperature relief drain line down. Terminate 1'-6" above grade with open end.
2. Floor clean-out
3. Vent down to Waste line.

HVAC FLAG NOTES

1. L-1 32"x24" outside air louver with bottom of louver at 7'-4" above finished floor. (Minimum louver free area required is 2.3 square feet.) Install 32"x24" sheet metal sleeve through wall with motorized damper as shown.
2. 12"x6" exhaust duct down. Cap off duct at floor. Install 10"x10" exhaust grille in side of duct with bottom of grille at 0'-3" above finished floor. Vertical duct drops shall be 16 gauge or heavier.
3. Turn two 12"x10" exhaust ducts up with vaned 90 degree elbows and connect into bottom of 12"x20" riser. Transition to 12"x12" below roof and up through roof with 12"x12" to EF-1 exhaust fan.
4. Bottom of exhaust ductwork at approx. 10'-0" above finished floor. (Install high as possible.) Coordinate with light fixtures, unit heaters, etc.
5. Exhaust grille at approx. 10'-0" above finished floor.
6. L-2 16"x16" outside air louver. (Minimum louver free area required is 0.70 sq. ft.)
7. Portable fire extinguisher, suitable for Class A, B, and C fires. Extinguisher shall be the dry chemical type rated (as a minimum): 4-A / 20-B:C.
8. ECH-1 electric ceiling heater (radiant type) installed at gypboard ceiling.
9. EBH-1 electric baseboard heater mounted with bottom of heater at 0'-8" above finished floor.
10. AHU-1 above lay-in ceiling with bottom of unit approximately 1 ft. above 8-6" ceiling. Locate unit so it is directly above a 2'x4' ceiling grid opening. (Coordinate with ceiling contractor before installing unit.)
11. Connect 6"x8" and 6"x10" exhaust ducts to 8"x8" riser up through roof.
12. Install the centerline of exhaust fan EF-2 approx. 13 ft. from the south building edge (to avoid roof low point farther to the north).
13. Line this duct with 1" thick acoustical lining. (See specs.)

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

SHOP AND OFFICE HVAC AND PLUMBING PLANS

DESIGNED	RMH GROUP	TECH. APPROVAL	
DRAWN	RMH GROUP	SUBMITTED	
CHECKED	RMH GROUP	APPROVED	

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 4585M12.DWG	DATE AND TIME PLOTTED 12/02/97 7:02
BILLINGS, MONTANA	December 8, 1997	1253-600-80
BP-2	M1.2	Sheet 2 of 4

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

PLUMBING FLAG NOTES:

1. See Civil Drawings for continuation of 2" underground water piping to underground storage tank. (Field verify exact pipe connection size required with Contracting Officer.)
2. See Civil Drawings for continuation of 1" underground water piping to Shop/Office building.
3. Connect 2" piping to packaged water system equipment. (Field verify exact piping size required with Contracting Officer.)
4. 2" water piping, downstream of pressure regulator at packaged water system equipment. (Set pressure at 50 PSI.)
5. Connect to emergency eyewash/shower with two 1 1/4" connections as required.

SEQUENCE OF OPERATION

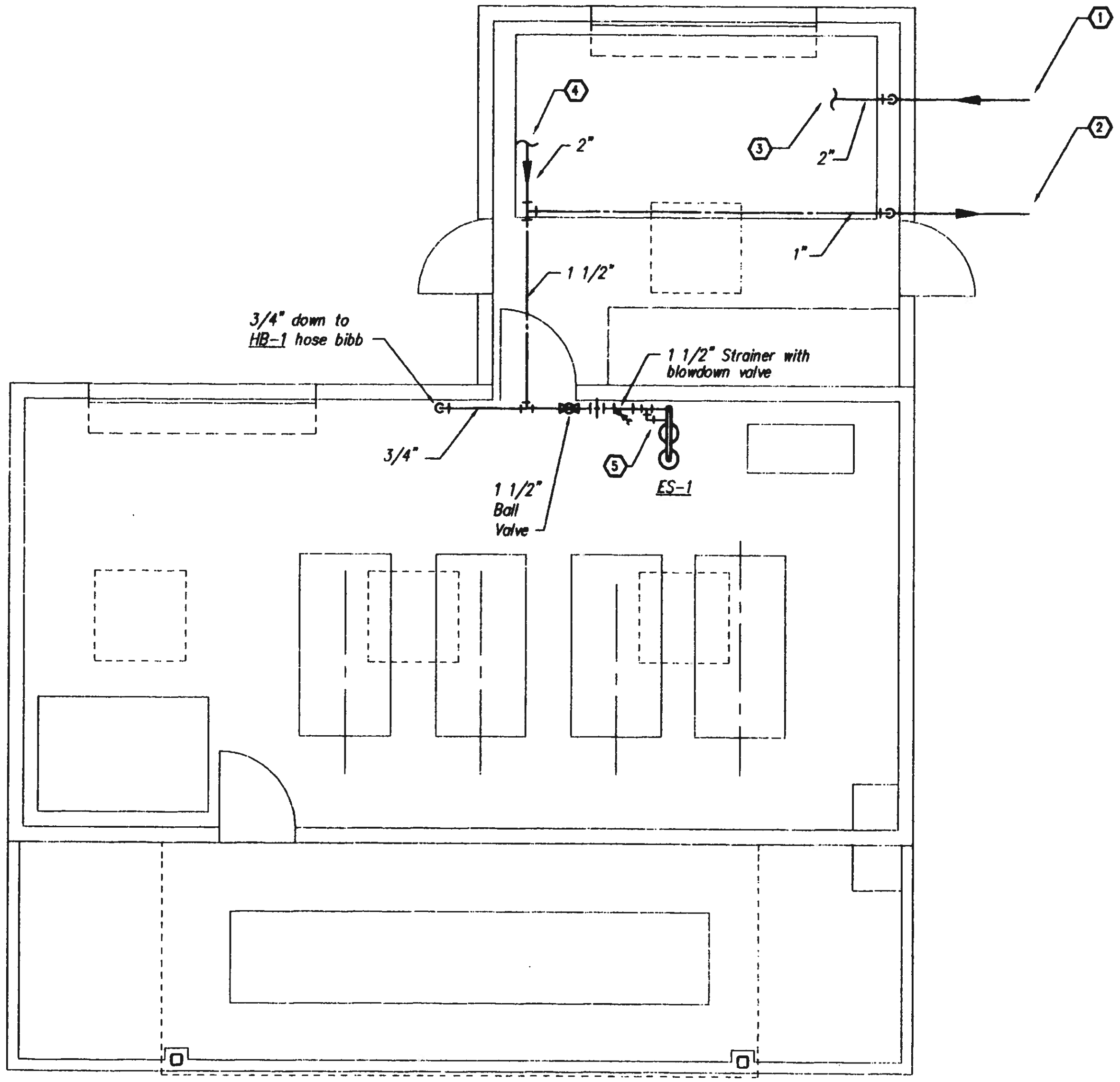
EF-3: Exhaust fan shall be energized by space temperature setpoint (for cooling with outside air). Whenever the fan is energized, the two associated motorized dampers shall open. (One damper is at L-3 louver, and one damper is in duct riser below exhaust fan.)

EF-4: Exhaust fan shall be energized by space temperature setpoint (for cooling with outside air). Whenever the fan is energized, the two associated motorized dampers shall open. (One damper is at L-4 louver, and one damper is in duct riser below exhaust fan.)

UH-3, UH-4, UH-5, UH-6: Electric unit heater shall cycle to maintain space temperature setpoint.

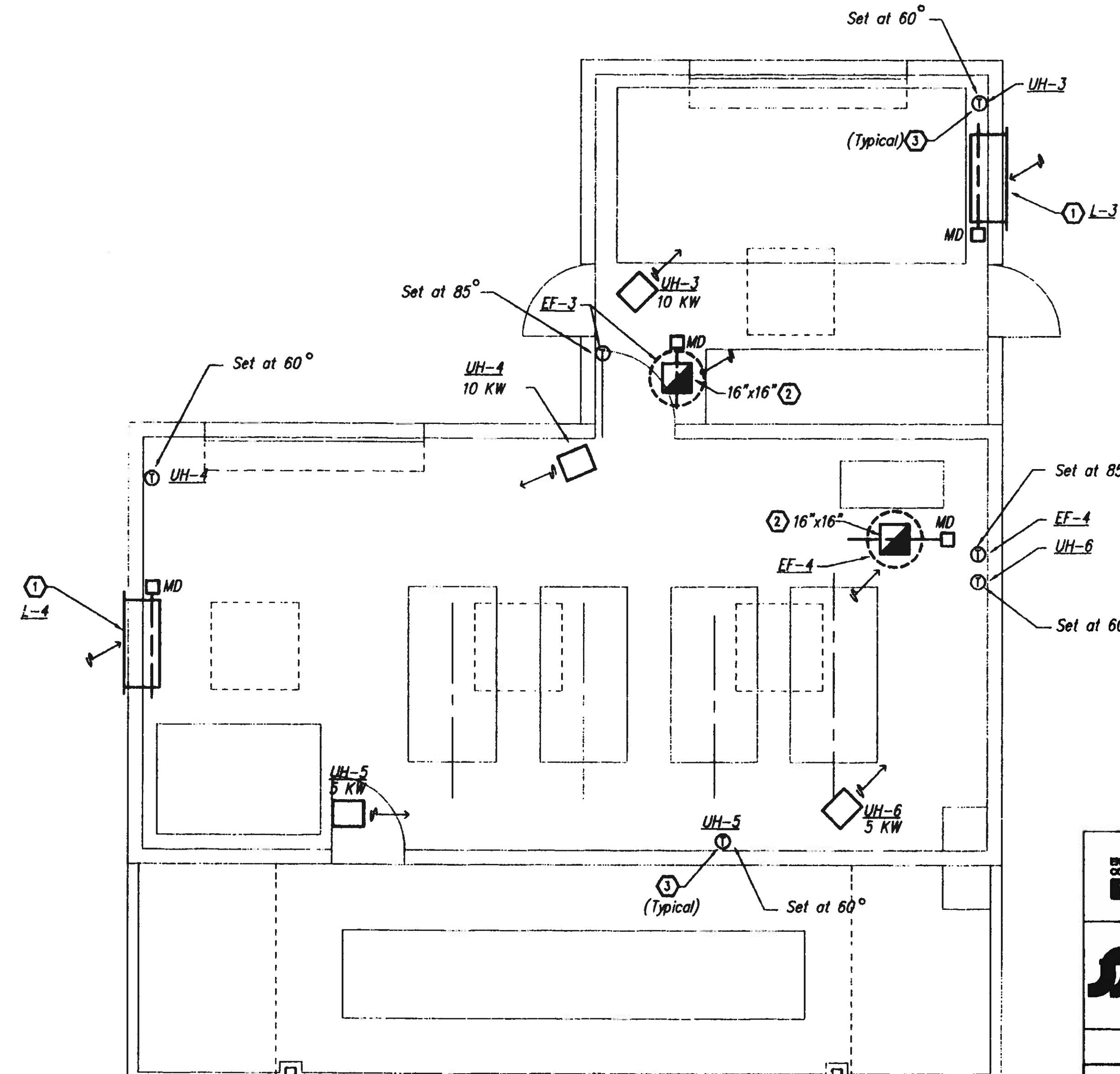
HVAC FLAG NOTES:

1. 48"x 24" louver with bottom of louver at 7'-4" above finished floor. (Minimum louver free area required is 4.0 square feet.) Install 48"x 24" sheet metal sleeve through wall with motorized damper as shown.
2. 16"x16" exhaust duct up through roof to exhaust fan. Terminate 16"x16" 2 ft. below roof with 1/2"x 1/2" birdscreen. Install motorized damper in 16"x16" below roof.
3. Install thermostat on insulated pad.



INJECTION BUILDING PLUMBING PLAN

Scale: 1/4" = 1'-0"



INJECTION BUILDING HEATING/VENTILATING PLAN

Scale: 1/4" = 1'-0"

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

INJECT. BLDG. HEAT./VENTILAT. AND PLUMB. PLANS

DESIGNED RMH GROUP	TECH. APPROVAL
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CHECKED RMH GROUP	APPROVED

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 4568M13.DWG	DATE AND TIME PLOTTED 12/02/97 7:00
BILLINGS, MONTANA	December 8, 1997	1253-600-81
BP-2	M1.3	Sheet 3 of 4

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

DIFFUSER AND GRILLE SCHEDULE

TAG	PURPOSE	TYPE	PATTERN	NECK SIZE	MANUFACTURER OR APPROVED EQUAL	NOTES
A	SUPPLY	CEILING DIFFUSER	S2 (2-WAY)	8"ø W/ 12"x12"	TITUS TDC	① ②
B	SUPPLY	CEILING DIFFUSER	A3 (3-WAY)	10"ø W/ 12"x12"	TITUS TDC	① ②
C	EXHAUST	CEILING GRILLE	—	8"x6"	TITUS 350RL	① ③
D	EXHAUST	CEILING GRILLE	—	10"x10"	TITUS PAR	① ④
E	EXHAUST	GRILLE	—	10"x10"	TITUS 355 ZRL-HD	① ⑤
F	RETURN	CEILING GRILLE	—	22"x22"	TITUS PAR	① ②
G	SUPPLY	CEILING DIFFUSER	S1 (1-WAY)	6"ø W/ 6"x6"	TITUS TDC	① ④

NOTES:

① OFF-WHITE FINISH
② 24"x24" T-BAR CEILING MODULE
③ 35° FIXED BLADES
④ 12"x12" T-BAR CEILING MODULE
⑤ HEAVY-DUTY GRILLE W/ 0° FIXED BLADES

FAN SCHEDULE

TAG	PURPOSE	TYPE	CFM	S.L.S.P	HP	RPM	CURB	BDD	MANUFACTURER / MODEL OR APPROVED EQUAL	NOTES
EF-1	SHOP EXHAUST	ROOF-MOUNTED CENTRIF. UPBLAST	800	0.375"	1/4	1225	YES	NO	GREENHECK CUBE-100	①③④⑤⑥⑦
EF-2	RESTROOM / SHOWER EXHAUST	ROOF-MOUNTED CENTRIFUGAL	175	0.25"	1/30	1550	YES	YES	GREENHECK G-65-D	②⑤⑦
EF-3	INJECTION BLDG. EXHAUST	ROOF-MOUNTED CENTRIFUGAL	2000	0.30"	1/2	1210	YES	NO	GREENHECK GB-140	①⑤⑥⑦
EF-4	INJECTION BLDG. EXHAUST	ROOF-MOUNTED CENTRIFUGAL	2000	0.30"	1/2	1210	YES	NO	GREENHECK GB-140	①⑤⑥⑦

NOTES:

① BELT DRIVE
② DIRECT DRIVE
③ AMCA TYPE "B" SPARK-RESISTANT FAN CONSTRUCTION
④ EXPLOSION-PROOF MOTOR
⑤ ROOF CURB SHALL BE FACTORY-PROVIDED, GREENHECK MODEL GPI, 14" HIGH, GALVANIZED STEEL CONSTRUCTION.
⑥ PROVIDE CHROMALOX #WCRT-100 THERMOSTAT, 120 VOLT, IN NEMA 4X ENCLOSURE. THERMOSTAT SHALL BE U.L. LISTED.
⑦ 120 VOLTS/1 PHASE/60 CYCLES

MECHANICAL EQUIPMENT SCHEDULE

SYMBOL	EQUIPMENT DESCRIPTION (OR APPROVED EQUAL)
AHU-1	AIR HANDLING UNIT – TRANE MODEL TWE024P FAN UNIT WITH DX COIL AND ELECTRIC HEATER; 800 CFM AT 0.4" E.S.P (HIGH SPEED); 1/4 HP DIRECT-DRIVE 3-SPEED FAN MOTOR; 3.21 SQ. FT. COIL FACE AREA, 26 MBH TOTAL COOLING, 24 MBH SENSIBLE COOLING AT 3900 FT. ELEVATION, 85 DEG. DB/63 DEG. WB EAT; 51.1 DEG. DB/50.4 DEG. WB LAT; 9.6 KW ELECTRIC HEATER; SINGLE POWER POINT CONNECTION: 208/1/60; 46 MINIMUM CIRCUIT AMPACITY. UNIT SHALL BE SUPPLIED WITH A THERMAL EXPANSION VALVE. PROVIDE TRANE 24 VOLT HEATING AND COOLING THERMOSTAT AND REQUIRED 1" FILTER WITH THREE EXTRA FILTERS. UNIT, ELECTRIC HEATER, AND THERMOSTAT SHALL BE U.L. LISTED.
ACCU-1	AIR-COOLED CONDENSING UNIT – TRANE MODEL TTP030C1 WITH ONE SINGLE-SPEED COMPRESSOR AND 1/5 HP OUTDOOR FAN MOTOR. SINGLE POWER POINT CONNECTION: 208/1/60; 13.5 AMPS. COOLING CAPACITY AT 95 DEG. OUTDOOR TEMPERATURE TO MATCH AHU-1 REQUIREMENTS; LOW-AMBIENT COOLING TO 40 DEG. UNIT SHALL BE U.L. LISTED.
UH-1 & UH-2	ELECTRIC UNIT HEATER – CHROMALOX MODEL HDH-750 HOSE-DOWN BLOWER HEATER; 7.5 KW ELECTRIC HEAT, 9.0 AMPS AT 480/3/60; FAN MOTOR AT 480/1/60; 590 CFM; NEMA 4X FIBERGLASS JUNCTION BOX WITH BUILT-IN CONTROLS AND FUSED TRANSFORMER FOR 120V CONTROL CIRCUIT; PILOT LIGHT; REMOTE CHROMALOX #WCRT-100 120V THERMOSTAT (IN NEMA 4X ENCLOSURE). UNIT HEATER AND THERMOSTAT SHALL BE U.L. LISTED.
UH-3 & UH-4	ELECTRIC UNIT HEATER – CHROMALOX MODEL HDH-1000 HOSE-DOWN BLOWER HEATER; 10.0 KW ELECTRIC HEAT, 12.0 AMPS AT 480/3/60; FAN MOTOR AT 480/1/60; 1180 CFM; NEMA 4X FIBERGLASS JUNCTION BOX WITH BUILT-IN CONTROLS AND FUSED TRANSFORMER FOR 120V CONTROL CIRCUIT; PILOT LIGHT; REMOTE CHROMALOX #WCRT-100 120V THERMOSTAT (IN NEMA 4X ENCLOSURE). UNIT HEATER AND THERMOSTAT SHALL BE U.L. LISTED.
UH-5 & UH-6	ELECTRIC UNIT HEATER – CHROMALOX MODEL HDH-500 HOSE-DOWN BLOWER HEATER; 5.0 KW ELECTRIC HEAT, 6.0 AMPS AT 480/3/60; FAN MOTOR AT 480/1/60; 405 CFM; NEMA 4X FIBERGLASS JUNCTION BOX WITH BUILT-IN CONTROLS AND FUSED TRANSFORMER FOR 120V CONTROL CIRCUIT; PILOT LIGHT; REMOTE CHROMALOX #WCRT-100 120V THERMOSTAT (IN NEMA 4X ENCLOSURE). UNIT HEATER AND THERMOSTAT SHALL BE U.L. LISTED.
ECH-1	ELECTRIC CEILING HEATER – QMARK AZTEC 24"x24" RADIANT CEILING PANEL, MODEL CP-374; 120/1/60; 375 WATTS; THERMAL CUTOUT; SURFACE-MOUNTING FRAME; FACTORY-SEALED WITH SILICONE (FOR SHOWER ROOM); AND QMARK #T200 (TYPE DPST) LINE-VOLTAGE REMOTE THERMOSTAT. HEATER AND THERMOSTAT SHALL BE U.L. LISTED.
EBH-1	ELECTRIC BASEBOARD HEATER – QMARK MODEL QMKC-1812W; 120/1/60, 376 WATTS, 3.1 AMPS; AND QMARK #T200 (TYPE DPST) LINE-VOLTAGE REMOTE THERMOSTAT. HEATER AND THERMOSTAT SHALL BE U.L. LISTED.
L-1 THROUGH L-4	LOUVER – RUSKIN ELF6375DX, EXTRUDED ALUMINUM, DIMENSIONS AND FREE AREAS AS NOTED ON PLANS. LOUVERS SHALL BE AMCA LICENSED AND SHALL BE OF THE DRAINABLE BLADE STYLE WITH 37.5 DEGREE BLADE ANGLE AND 6" FRAME DEPTH. LOUVER SHALL BE STORM-RESISTANT WITH WATER PENETRATION TESTED AT 0.01 OZ./SQ.FT. AT 1006 FPM. PRESSURE DROP SHALL BE APPROXIMATELY 0.025" AT 400 FPM THROUGH FREE AREA, AND 0.04" AT 500 FPM. LOUVER FINISH SHALL BE KYNAR COATING, COLOR AS SELECTED BY CONTRACTING OFFICER. (SUBMIT COLOR CHART FOR SELECTION.)
MD	MOTORIZED DAMPER – RUSKIN MODEL CD-60, ULTRA-LOW LEAKAGE, WITH 16 GAGE GALVANIZED STEEL CHANNEL AND 14 GAGE BLADES. BLADE EDGE SEALS SHALL BE RUSKIPRENE TYPE. BLADES SHALL BE THE OPPOSED BLADE TYPE. ELECTRIC ACTUATOR SHALL BE TWO-POSITION SPRING-RETURN, 120 VOLTS, IN A NEMA 4X ENCLOSURE. (MD-2 REQUIRES ONLY A STANDARD ENCLOSURE.) DAMPER ACTUATOR SHALL DEVELOP SUFFICIENT TORQUE AS REQUIRED FOR DAMPER SIZE.

PLUMBING FIXTURE SCHEDULE

SYMBOL	DESCRIPTION OR APPROVED EQUAL
PR-1	PRESSURE REDUCING VALVE – WATTS SERIES U5-GG, 1" SIZE, WITH INTEGRAL STRAINER, GAUGE AND THERMAL EXPANSION BY-PASS. SET FOR 50 PSI NO FLOW PRESSURE.
ES-1	EMERGENCY EYE-FACE WASH/SHOWER COMBINATION UNIT – HAWS MODEL 8200 WITH 10" ABS PLASTIC SHOWER HEAD AND ABS PLASTIC EYEWASH. SHOWER IS ACTIVATED BY STAINLESS STEEL PULL ROD AND EYE-FACE WASH IS ACTIVATED BY PUSH FLAG OR FOOT TREADLE.
FD-1	FLOOR DRAIN – JOSAM #30000-A COATED CAST IRON, TWO PIECE BODY WITH DOUBLE DRAINAGE FLANGE, BOTTOM OUTLET, ADJUSTABLE TOP, WITH NIKALOY STRAINER
HB-1	HOSE BIBB – WOODFORD MODEL 24 WALL HYDRANT WITH VACUUM BREAKER
LAV-1	LAVATORY (HANDICAPPED) – AMERICAN STANDARD LUCERNE #0355.012 WALL HUNG WHITE VITREOUS CHINA, DELTA MODEL 511-WF-HDF 4" CENTER SET SINGLE LEVER FAUCET, WITH AMERICAN STANDARD #32411.015 OPEN GRID STRAINER, SUPPLIES WITH STOPS AND C.P. "P" PATTERN 17 GA. TRAP WITH C.O., CONCEALED ARM SUPPORTS, AND DRAIN. INSULATE SUPPLIES AND DRAIN WITH TRUEBRO INC. INSULATION KIT. INSTALL TO MEET ADA REQUIREMENTS.
SF-1	SHOWER FLOOR – PRECAST TERRAZZO W INTERGRAL SINGLE, DOUBLE OR NEO-CORNER TYPE THRESHOLD WITH 1" HIGH (MIN.) SHOULDER AND 1 1/4" (MIN.) WIDE. DRAIN BODY SHALL BE STAINLESS STEEL CAST INTEGRALLY AND SHALL PROVIDE FOR A CONNECTION TO A 2" PIPE. DRAIN SHALL BE PROVIDED WITH REMOVABLE STAINLESS STEEL STRAINER PLATE. (FOR SHOWER WALLS, SEE ARCH. DWGS.) ALSO PROVIDE SHOWER WITH DELTA MODEL 1424-VCHLHP, SINGLE HANDLE, PRESSURE BALANCE ANTI-SCALD VALVE, SHOWER HEAD WITH VOLUME CONTROL, CHROME FINISH.
WC-1	WATER CLOSET (HANDICAPPED) – AMERICAN STANDARD CADET II 17" H EL 1.6/PA, #2168.100, 17" HIGH RIM, FLOOR MOUNTED, TANK TYPE, BOTTOM OUTLET, ELONGATED SIPHON JET BOWL, WHITE VITREOUS CHINA, #5311.012 "LAUREL" FRONT SEAT WITH COVER, SUPPLY WITH STOP, 1.6 GALLON FLUSH. INSTALL TO MEET ADA REQUIREMENTS.
EWH-1	ELECTRIC WATER HEATER – A.O. SMITH DURA-POWER MODEL DEN-30; 9 KW TOTAL (4.5 KW EACH OF TWO ELEMENTS), 480/3/60, 16.2 AMPS; HIGH-TEMPERATURE CUTOFF SWITCH; DRAIN VALVE. OUTER JACKET SHALL ENCLOSE FOAM INSULATION. HEATER TANK SHALL HAVE 3 YEAR LIMITED WARRANTY. U.L. LISTED.
MB-1	MOP BASIN – FIAT MODEL TSBC-1610, SIZE 24"x24"x12" WITH 6" DROP FRONT AND NEO-CORNER, PRECAST TERRAZZO. DRAIN BODY SHALL BE STAINLESS STEEL CAST INTEGRAL WITH UNIT, COMPLETE WITH REMOVABLE STAINLESS STEEL STRAINER PLATE. PROVIDE FIAT #830-AA SERVICE FAUCET WITH VACUUM BREAKER, INTEGRAL STOPS, ADJUSTABLE WALL BRACE, PAIL HOOK AND 3/4" HOSE THREAD ON SPOUT.
SA-1	SHOCK ABSORBER – JOSAM "ABSORBOTRON II" MODEL 75001, P.D.I. SIZE A, STAINLESS STEEL SHELL, HYDRO-PNEUMATIC CUSHION OF ARGON GAS AND PURE GLYCERINE, ELASTOMER BELLOWS, STAINLESS STEEL ADAPTER AND MALE THREADED PLUG.

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

MECHANICAL SCHEDULES & GENERAL NOTES

DESIGNED RMH GROUP — TECH. APPROVAL
DRAWN RMG GROUP — SUBMITTED
CHECKED RMH GROUP — APPROVED

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 4568M14.DWG	DATE AND TIME PLOTTED 12/02/97 7:13
BILLINGS, MONTANA	December 8, 1997	1253-600-82
	BP-2	M1.4 — Sheet 4 of 4

ELECTRICAL LEGEND (Not all symbols shown are used)

	Duplex grounded receptacle
	Fourplex grounded receptacle
	Motor
	Pushbutton control station
	Fused disconnect switch
	Non-fused disconnect switch
	Telephone outlet wall mounted
	Recessed 2x4 Fluorescent fixture
	Shading indicates fixture with emergency
	Shading indicates fixture emergency battery
	Wall mounted H.I.D. light fixture
	Recessed light fixture
	Bare lamp fluorescent strip light
	Exit light
	Pole light
S	Single pole switch
S_2	Double pole-single throw switch
S_3	Three-way switch
S_{TO}	Switch with thermal overload
	Panelboard
	Telephone service demarcation point
T	Transformer
	Branch circuit homerun to panel
FACP SCP	Combination fire alarm and security control panel
	Combination horn/strobe light
	Fire alarm horn
	Fire alarm strobe
MD	Motion detector
D	Smoke detector
F	Fire alarm pullbox
	Magnetic door contacts
H	Heat detector
K	Security key pad

GND, GRD		Equipment ground
NO		Normally open contact
NC		Normally closed contact
SW		Switch
		Connection point, node
XFMR		Transformer (volt, phase & size as indicated)
PT		Potential transformer (volt, phase, & size as indicated)
CT		Current transformer (volt, phase & size as indicated)
F		Fuse
F		Fuse
		Fused switch
		Current arrestor
CB		Circuit breaker
CB		Circuit breaker
ST	ST	Shunt trip
VM	V	Voltmeter
AM	A	Ammeter
VS	VS	Voltmeter switch
AS	AS	Ammeter switch
	TVSS	Transient voltage surge suppressor
	M	Electric utility meter
PA	PA	Pitless adapter
PLC	PLC	PLC Panel
	T	120V Thermostat
		Connection to equipment
	XX-X	Mechanical equipment reference
	X	Flag note reference
		Feeder number

AFG	Above finished grade
AFF	Above finished floor
AC	Above counter
GFI	Ground fault interrupter
WP	Weatherproof
FVNR	Full voltage non-reversing
DM	Damper motor
EFM	Electrostatic flow monitor
FDS	Fused disconnect switch
NFDS	Non-fused disconnect switch
SOL	Solenoid valve
VS	Vacuum switch
MS	Moisture sensor
SSC	Soft starter control
VFD	Variable frequency drive
RVNR	Reduced voltage non-reversing
I_{SC}	Short circuit current
I_{LT}	Short circuit let-thru current

INSTRUMENTATION AND CONTROLS LEGEND

	Centrifugal pump
	Positive displacement metering pump
	Gate valve
	Ball valve
	Butterfly valve
Check	Swing check valve
M	Magnetic flow meter
	Pressure regulating valve
	Backpressure valve
SV	Solenoid valve
	Field mounted device
	Front panel mounted device
	MCC or local starter-front mounted device
	PLC system input/output
SV	Solenoid operated actuator (on-off)
SV H	Hydraulic with solenoid valve
ZY E	Electric with positioner
E	Electric

AI	Analog input
AIT	Analog indicating transmitter
AO	Analog output
DI	Discrete input
DO	Discrete output
DV	Three-way diverter valve
ET	Electronic timer
FE	Flow element
FIT	Flow indicating transmitter
FQI	Flow totalizer
FS	Flow sensor
FT	Flow transmitter
HOA	Hand-off-on
HS	Hand switch
HSC	Hand speed control
LIT	Level indicating transmitter
KQI	Run time totalizer
KY	Cycle timer
LOA	Local-off-automatic
TIT	Temperature indicator trans.
PSL	Pressure switch low

LSH	High level switch
LSHH	Level switch high-high
LSL	Low level switch
M	Motor
MS	Magnetic motor starter
MT	Mechanical timer
PIT	Pressure indicating transmitter
PDI	Pressure differential indicator
PDIT	Pressure differential indicator transmitter
PLA	Pressure level alarm
PRV	Pressure reducing valve
PSH	Pressure switch-high
SI	Frequency (speed) indicator
SV	Solenoid valve
VFD	Variable frequency drive
WE	Torque element
WHS	High torque switch
YA	Status alarm
YE	Event element (water sensor)
YL	Status light
LI	Level indicator

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NEW MEXICO

SALINITY CONTROL FACILITIES

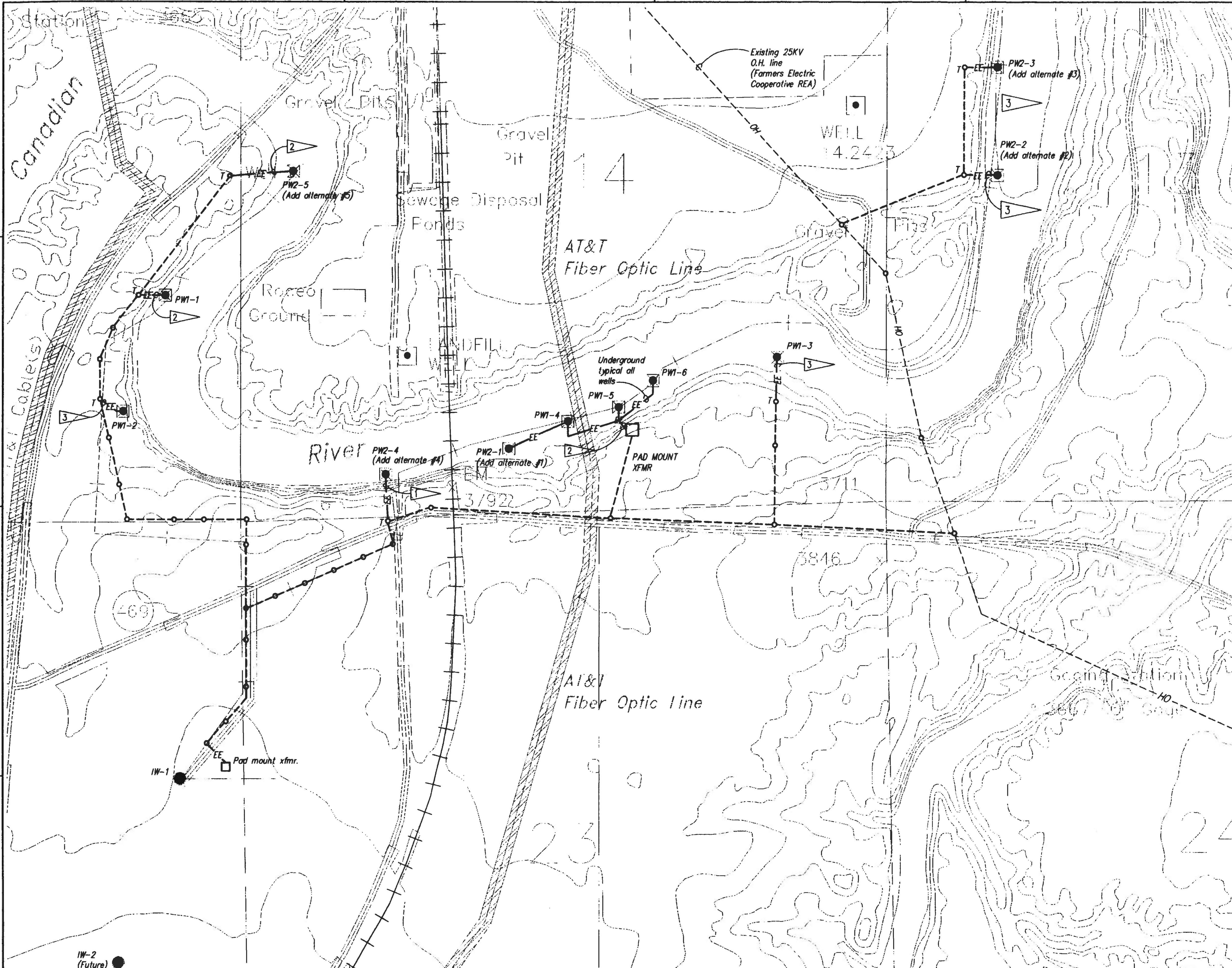
ELECTRICAL LEGENDS

DESIGNED RMH GROUP — TECH. APPROVAL
DRAWN RMH GROUP — SUBMITTED
CHECKED RMH GROUP — APPROVED

CADD SYSTEM AutoCAD 13_c4 | CADD FILENAME 4568E11.DWG | DATE AND TIME PLOTTED 12/01/97 10:00
BILLINGS, MONTANA December 8, 1997 | 1253-600-83

Drawing acquired under Contract No.1425-5-CA-60-08530
Task Order Number 1425-7-PD-60-08530-003

BP-2 | E1.1 | Sheet 1 of 9



Drawing acquired under Contract No.1425-5-CA-60-08530
Task Order Number 1425-7-PD-60-08530-003

0 400 800 1200
SCALE IN FEET
CONTOUR INTERVAL = 20'

LEGEND (Overall site plan only)

— — —	Utility 25KV, O.H. line
—EE—	Underground cable
PW1-1	Production well #1
IW-1	Injection well #1
T○	Pole mounted transformer
□	Pad mounted transformer

NOTE:

1. All medium voltage electrical work and service transformers will be provided by Farmers Electric Cooperative.

FLAG NOTES:

1. Power and controls conduit shall be PVC coated GRC and routed with the pipeline down the bore hole.
2. Power conduit shall be Schedule 80 PVC, controls conduit shall be PVC coated GRC and routed with the pipeline.
3. Power conduit shall be Schedule 80 PVC, controls conduit shall be PVC coated GRC and installed as shown on "Conduit trenching detail" on drawing E1.9.

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SALINITY CONTROL FACILITIES

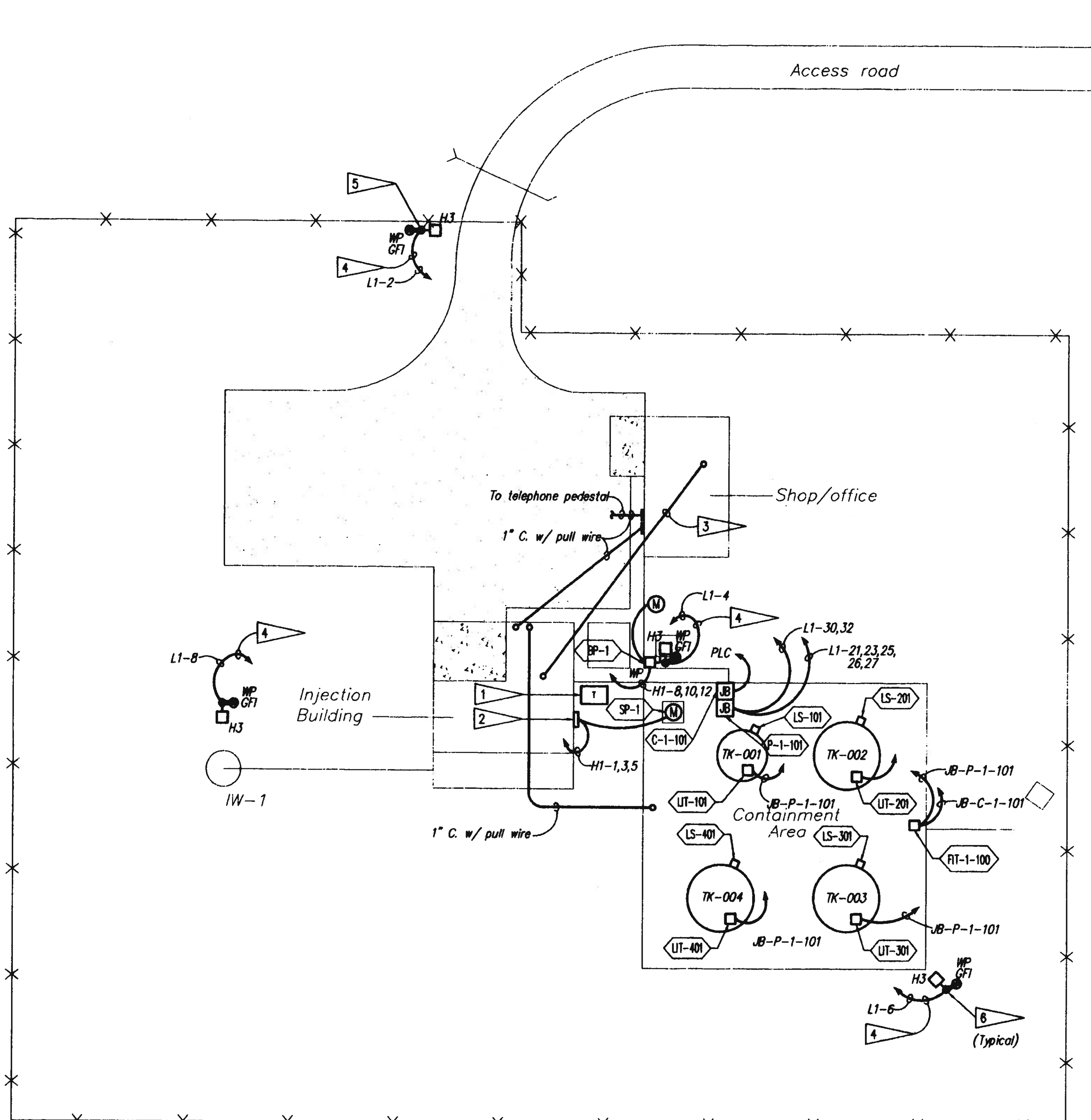
ELECTRICAL SITE PLAN–OVERALL

DESIGNED RMH GROUP — TECH. APPROVAL
DRAWN RMH GROUP — SUBMITTED
CHECKED RMH GROUP — APPROVED

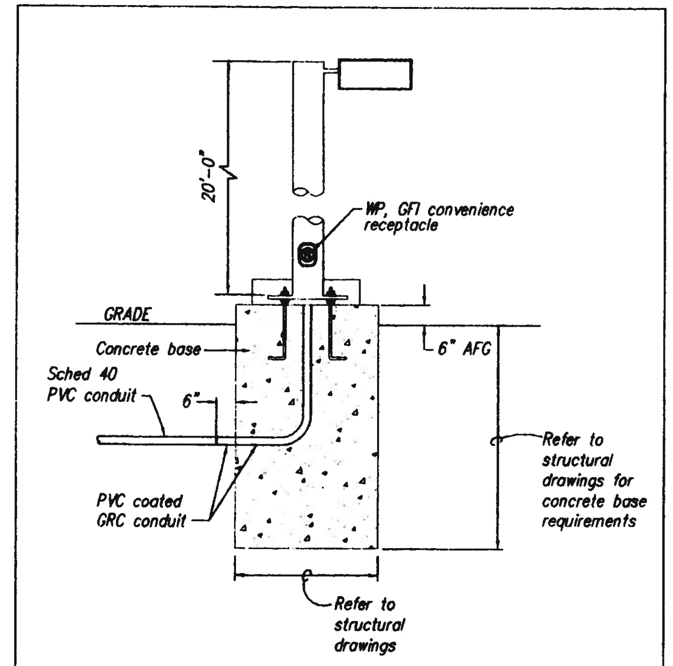
CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 4508E12.DWG	DATE AND TIME PLOTTED 12/01/97 16:02
BILLINGS, MONTANA	December 8, 1997	1253-600-84
BP-2	E1.2	Sheet 2 of 9

FLAG NOTES

1. Electric service transformer.
2. Simplex sump pump control panel, furnished by pump supplier, installed and wired by Division 16 contractor.
3. Feeder from MCC-1 to Panel "H" in the shop. Refer to one-line diagram for feeder size.
4. Provide (2#10, 1#10 Gnd.)3/4" C. to pole light as shown.
5. Provide broad spectrum telemetry radio receiver on top of light pole.
6. Refer to structural drawings for concrete pole base requirements.



ELECTRICAL SITE PLAN
Scale: 1"=20'-0"



LIGHT POLE BASE DETAIL
No Scale

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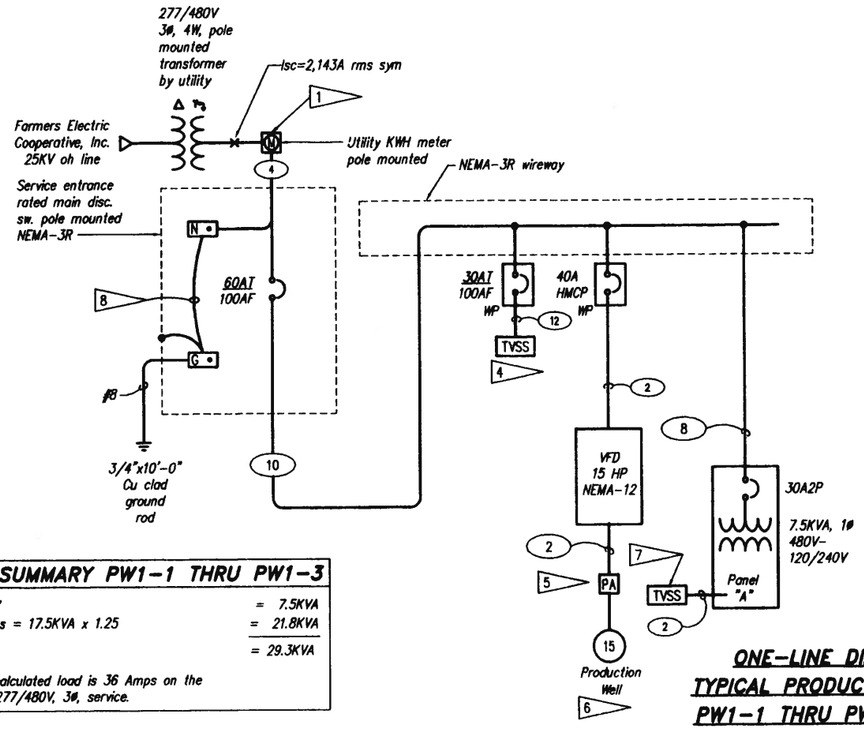
SALINITY CONTROL FACILITIES

ELECTRICAL SITE PLAN–OFFICE AREA

DESIGNED	RMH GROUP	TECH. APPROVAL	
DRAWN	RMH GROUP	SUBMITTED	
CHECKED	RMH GROUP	APPROVED	

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 4568E13.DWG	DATE AND TIME PLOTTED 04/17/98 16:00
BILLINGS, MONTANA	April 17, 1998	1253-600-85
	BP-2	E1.3 — Sheet 3 of 9

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

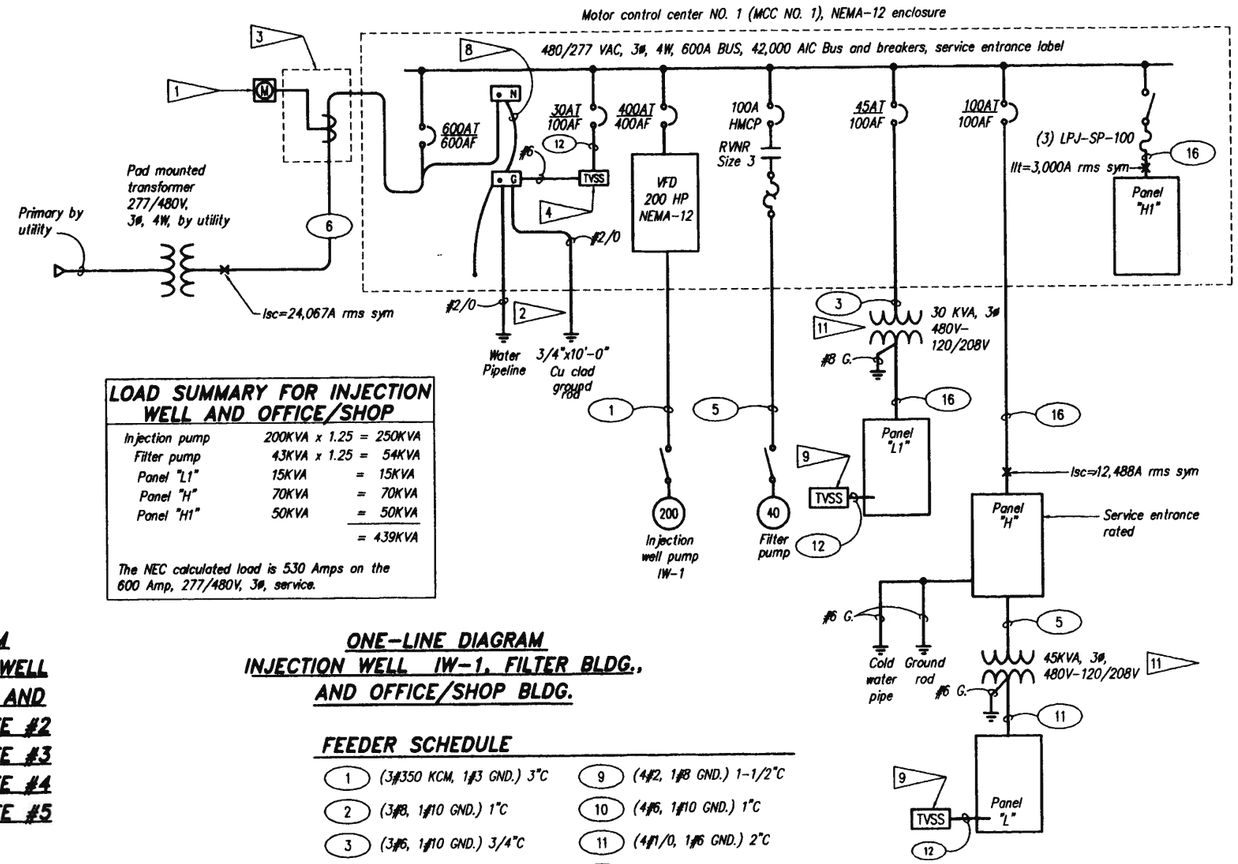


LOAD SUMMARY PW1-1 THRU PW1-3

Panel "A"	= 7.5KVA
Well pumps = 17.5KVA x 1.25	= 21.8KVA
	= 29.3KVA

The NEC calculated load is 36 Amps on the 60 Amp, 277/480V, 3ø, service.

ONE-LINE DIAGRAM TYPICAL PRODUCTION WELL PW1-1 THRU PW1-3 AND PW2-2 ADD ALTERNATE #2 PW2-3 ADD ALTERNATE #3 PW2-4 ADD ALTERNATE #4 PW2-5 ADD ALTERNATE #5



LOAD SUMMARY FOR INJECTION WELL AND OFFICE/SHOP

Injection pump	200KVA x 1.25	= 250KVA
Filter pump	43KVA x 1.25	= 54KVA
Panel "L1"	15KVA	= 15KVA
Panel "H"	70KVA	= 70KVA
Panel "H1"	50KVA	= 50KVA
		= 439KVA

The NEC calculated load is 530 Amps on the 600 Amp, 277/480V, 3ø, service.

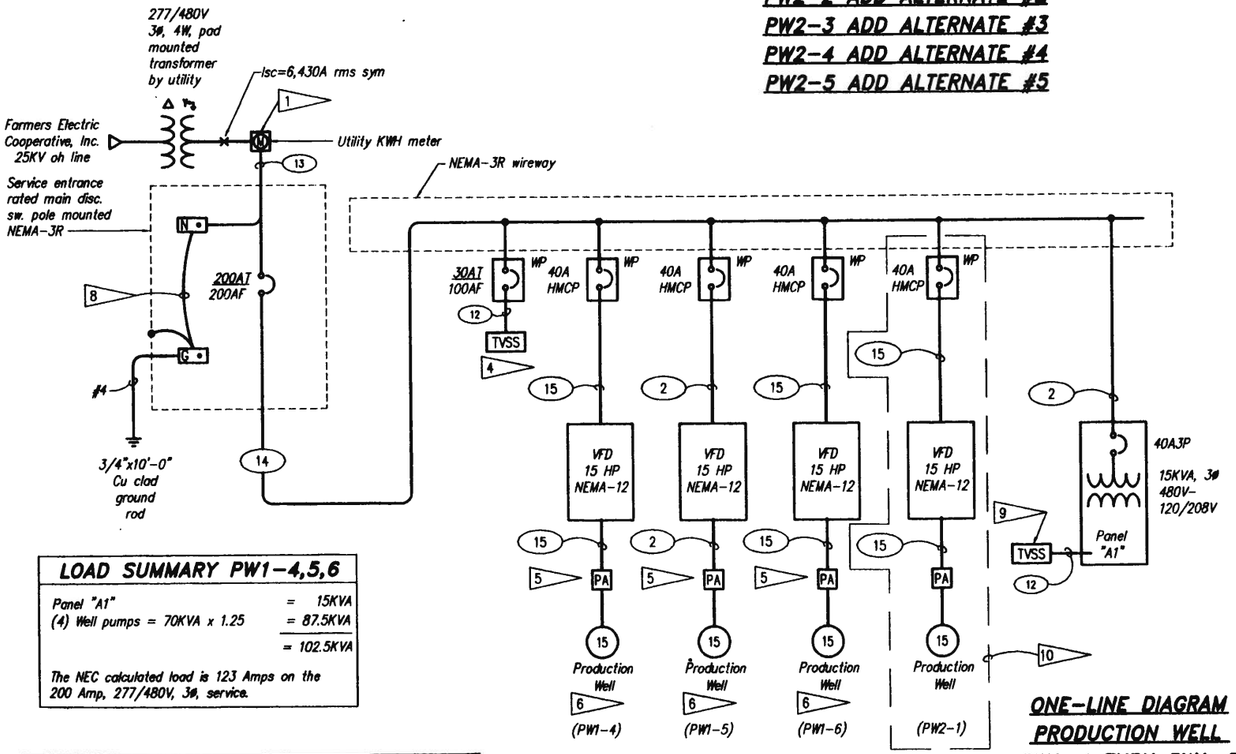
ONE-LINE DIAGRAM INJECTION WELL IW-1, FILTER BLDG., AND OFFICE/SHOP BLDG.

FEEDER SCHEDULE

1	(3#350 KCM, 1#3 GND.) 3"C	9	(4#2, 1#8 GND.) 1-1/2"C
2	(3#8, 1#10 GND.) 1"C	10	(4#6, 1#10 GND.) 1"C
3	(3#6, 1#10 GND.) 3/4"C	11	(4#1/0, 1#6 GND.) 2"C
4	(4#6) 1"C	12	(4#6, 1#8 GND.) 1"C
5	(3#4, 1#8 GND.) 1"C	13	(4#3/0) 2"C
6	2[(4#350 KCM) 3"C]	14	(4#3/0, 1#6 GND.) 2"C
7	(4#3, 1#8 GND.) 1-1/4"C	15	(3#4, 1#6 GND.) 1-1/4"C
8	(2#10, 1#10 GND.) 1/2"C	16	(4#1, 1#8 GND.) 1- 1/2"C

FLAG NOTES

1. Meter base, supplied by utility, installed by contractor.
2. Provide ground electrodes per NEC 250-81 and 83.
3. Provide NEMA-3R meter cabinet in accordance with Farmers Electric Coop. requirements.
4. TVSS shall be Current Technology DPA 277/480-3GY-DF in NEMA 12 enclosure.
5. Ground the well pump per NEC 250-43K.
6. Provide the complete installation for the well, to include pump, motor, terminals, the well level transmitter and sensing element, and all necessary conduit and wire.
7. 120/240V TVSS shall be Control Concepts Islatrol Model IC+105 or equal, in NEMA 12 enclosure.
8. Bond per 250-79.
9. 120/208V, 3ø TVSS shall be Control Concepts, Islatrol Model IC+105 or equal. in NEMA 12 enclosure.
10. Work indicated is Add alternate #1.
11. Non-ventilated dry type transformer.



LOAD SUMMARY PW1-4,5,6

Panel "A1"	= 15KVA
(4) Well pumps = 70KVA x 1.25	= 87.5KVA
	= 102.5KVA

The NEC calculated load is 123 Amps on the 200 Amp, 277/480V, 3ø, service.

ONE-LINE DIAGRAM PRODUCTION WELL PW1-4 THRU PW1-6

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

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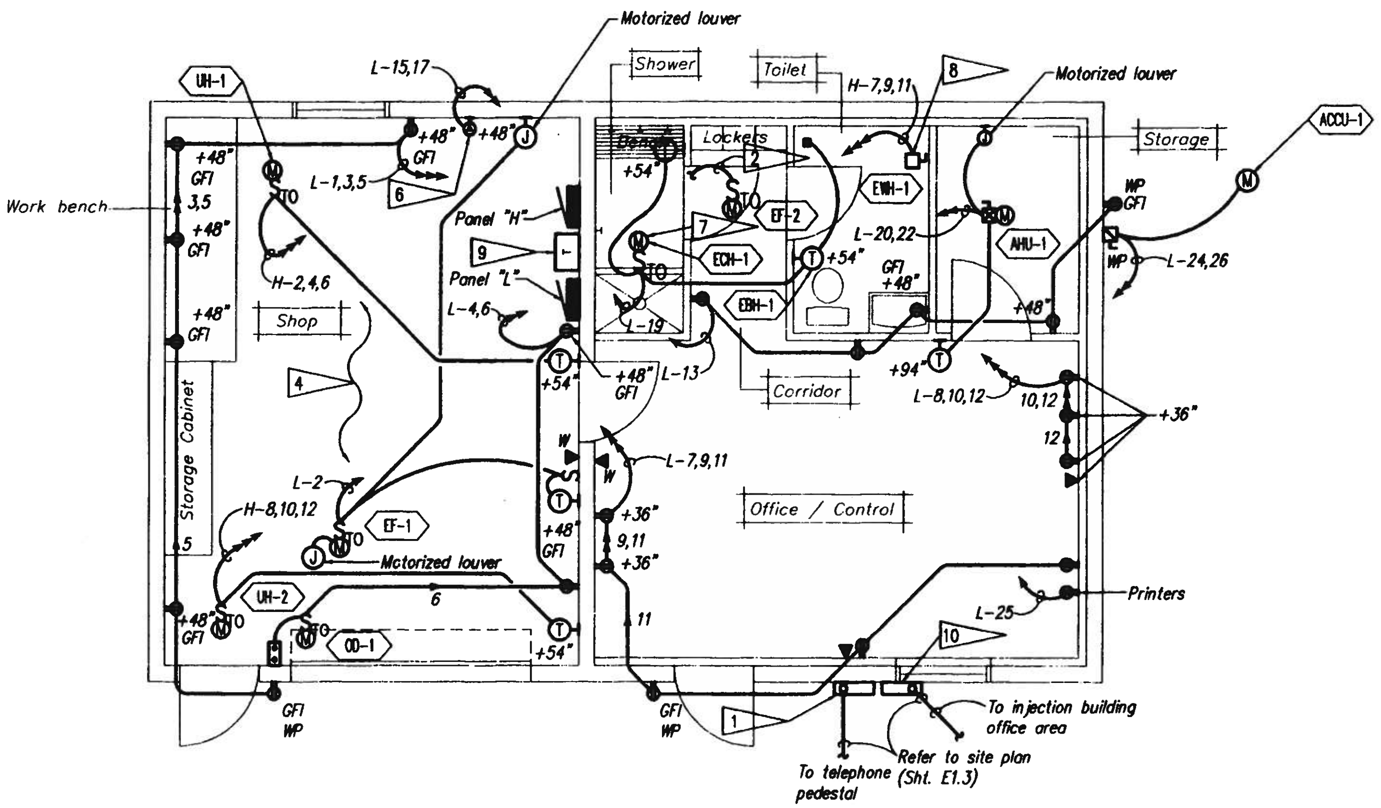
ELECTRICAL POWER ONE-LINE DIAGRAMS

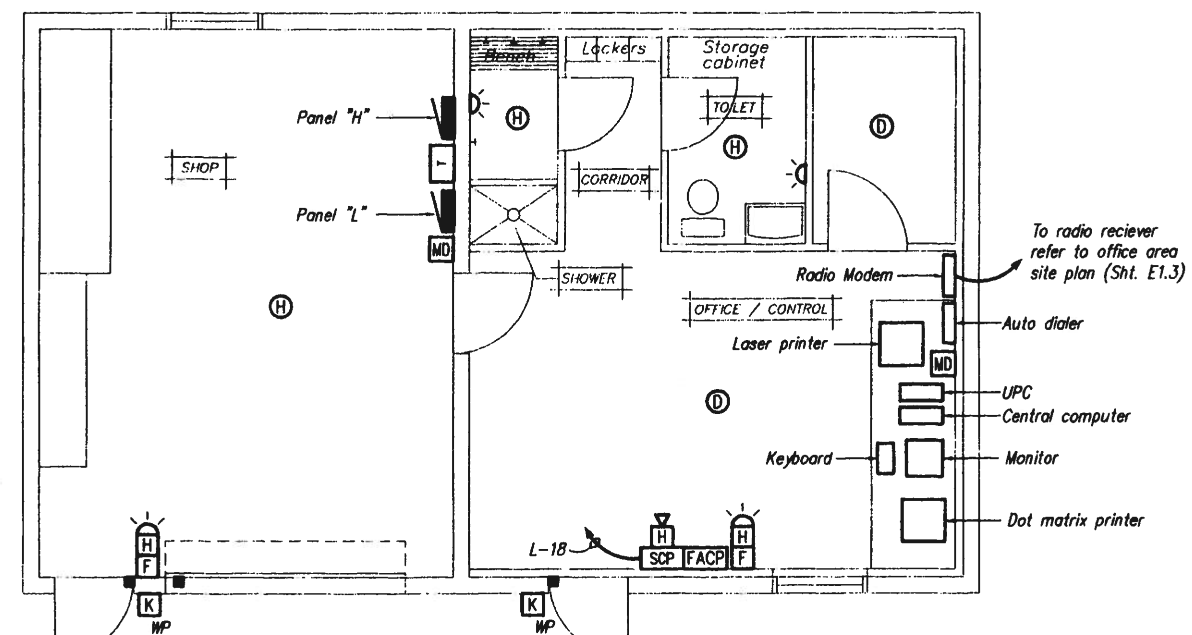
DESIGNED	RMH GROUP	TECH. APPROVAL	
DRAWN	RMH GROUP	SUBMITTED	
CHECKED	RMH GROUP	APPROVED	

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 4588E14.DWG	DATE AND TIME PLOTTED 04/17/98 13:52
BILLINGS, MONTANA	April 17, 1998	1253-600-86
BP-2	E1.4	Sheet 4 of 9



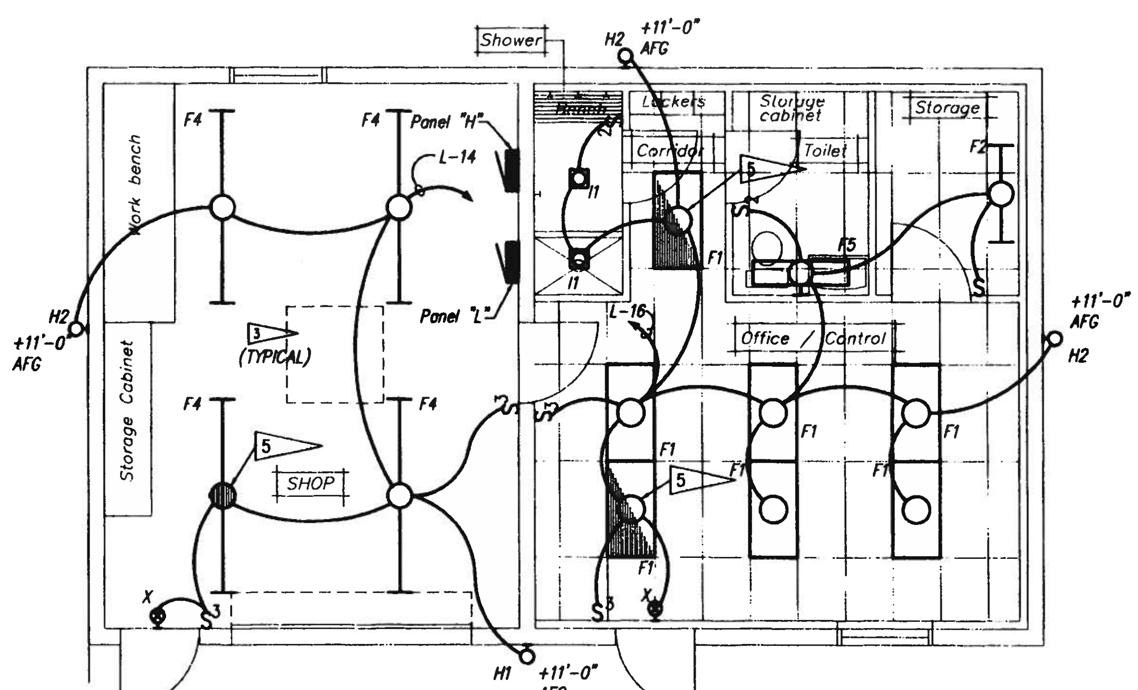
SHOP/OFFICE POWER AND SYSTEMS PLAN

Scale: 1/4"=1'-0"



SHOP/OFFICE FIRE ALARM/SECURITY PLAN

Scale: 1/4"=1'-0"



SHOP/OFFICE LIGHTING PLAN

Scale: 1/4"=1'-0"

FLAG NOTES:

1. Telephone service demarcation point. Contractor shall provide all telephone cable and outlets from demarcation point to the office/shop building and injection building.
2. Light switch in shower or toilet controls lights and exhaust fan EF-2.
3. Pendant light fixture to 9'-10" AFF.
4. The shop room is classified as hazardous location Class 1, Division 2 from the floor to +18" AFF. The electrical installation in this area shall comply with NEC Article 501, Class 1 locations, including GRC conduit and seal-offs.
5. Provide Sure-lites emergency battery #FBP-2-40H, or approved equal. Connect battery charger and sense lead to unswitched conductor.
6. Provide NEMA 6-30R, 208V, 1-Phase, 30Amp receptacle for electric arc welder.
7. Remove red jumper per manufacturers drawings to provide 500 watts output.
8. Connect water heater for 480V, 3ø, and 9.0 KW output per manufacturer's drawings.
9. Mount transformer on wall 8" below structure.
10. Terminate box (24" W x 24" H x 6" D). Provide terminal strips, end caps, etc. for termination of I/O signals.

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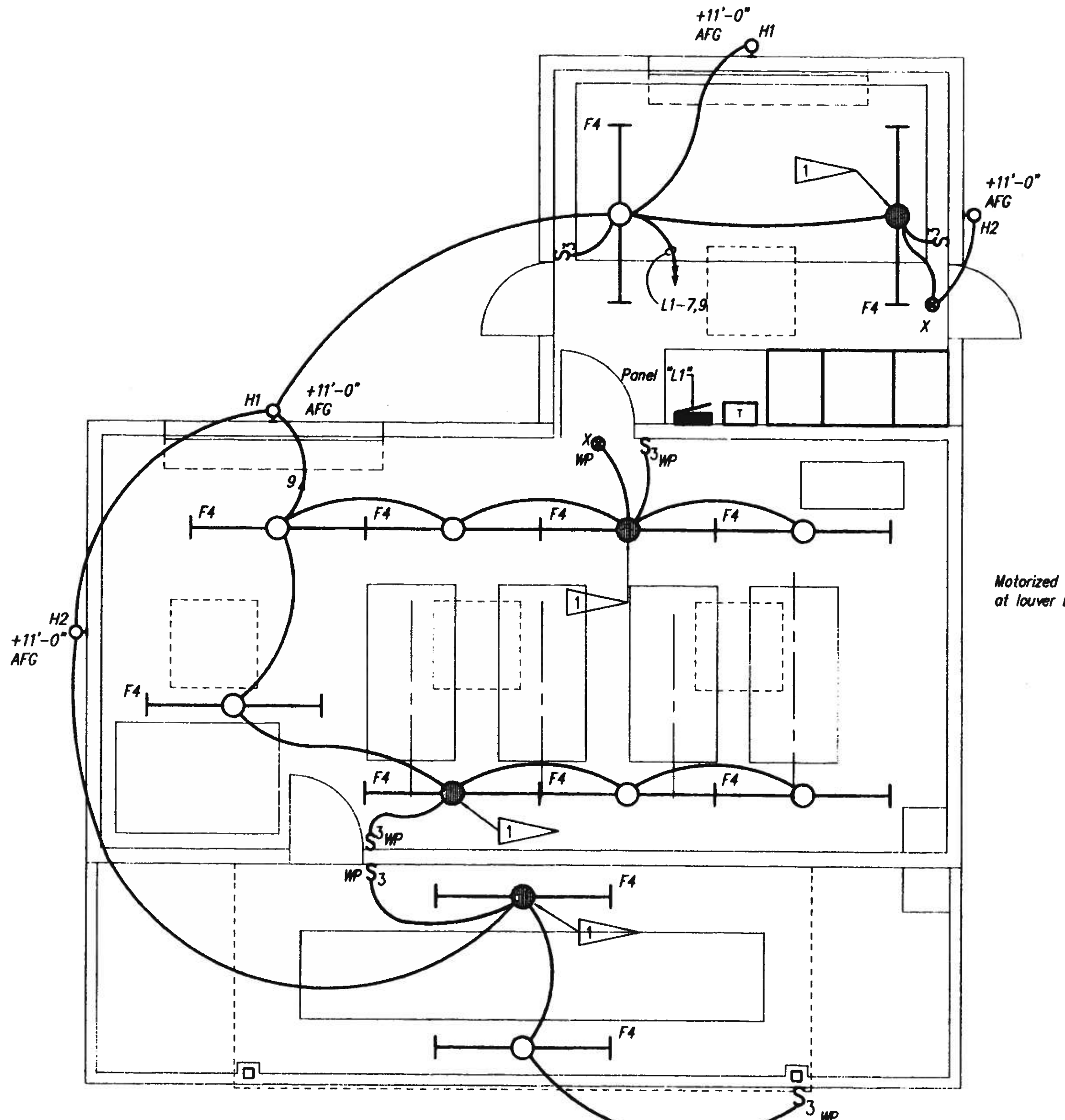
SALINITY CONTROL FACILITIES

INJECTION BUILDING PLANS

DESIGNED RMH GROUP — TECH. APPROVAL
DRAWN RMH GROUP — SUBMITTED
CHECKED RMH GROUP — APPROVED

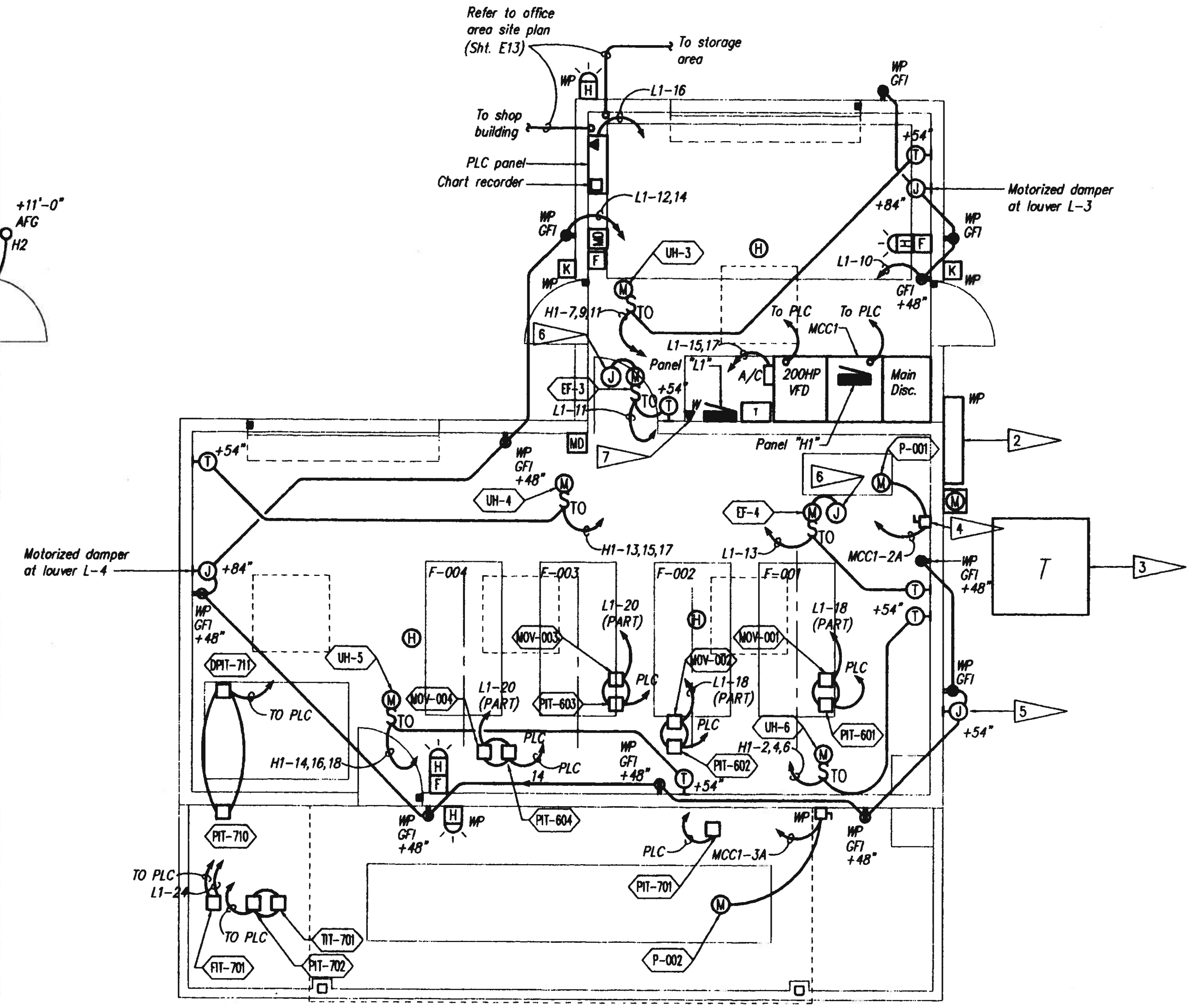
CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 4568E15.DWG	DATE AND TIME PLOTTED 04/17/98 15:54
BILLINGS, MONTANA	April 17, 1998	1253-600-87
BP-2	E1.5	Sheet 5 of 9

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003



INJECTION BUILDING LIGHTING PLAN

Scale: 1/4" = 1'-0"



INJECTION BUILDING-POWER AND SYSTEMS PLAN

Scale: 1/4" = 1'-0"

FLAG NOTES

1. Provide Sure-lites emergency battery #FBP-2-40H, or approved equal. Connect battery charger and sense lead to unswitched conductor.
2. Electric service metering cabinet.
3. Farmers Electric Coop. service transformer.
4. Provide NEMA-12 non-fused disconnect switch.
5. 120V power connection to controls cabinet for SP-1.
6. 120V motorized damper connection.
7. Provide telephone cable in schedule 40 PVC conduit back to office building demarcation box.

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

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INJECTION BUILDING PLANS

DESIGNED RMH GROUP	TECH. APPROVAL
DRAWN RMG GROUP	SUBMITTED
CHECKED RMH GROUP	APPROVED

CADD SYSTEM AutoCAD 13_c4	CADD FILENAME 4568E16.DWG	DATE AND TIME PLOTTED 04/17/98 15:32
BILLINGS, MONTANA	April 17, 1998	1253-600-88
	BP-2	E1.6 — Sheet 6 of 9

For production wells (PW1-5, PW1-6)

Name: A1 — Volt: 208/120 — Ph: 3 — Wire: 4
Mnt Method: SURFACE NEMA-3R — Bus Rating: 50A — Main Breaker: 50A — AIC Rating: 10,000A

	Code	Description	Load VA	Bkr	P	Ph A	Ph B	Ph C	P	Bkr	Load VA	Description	Code	
1		FLOW METERS		20	1	■			3	30		TVSS	6	2
3		CONDUCTIVITY		20	1		■			/				4
5		PRESSURE		20	1			■		/				6
7		LEVEL		20	1	■			1	20	180	RECEPT	2	8
9		PLC PANEL		20	1		■		1	20	1000	TWO VFD HEATERS	4	10
11				-				■	1	20	1000	TWO VFD HEATERS	4	12
13				-		■				-				14
15				-			■			-				16
17				-				■		-				18
19				-		■				-				20
21				-			■			-				22
23				-				■		-				24
25				-		■				-				26
27				-			■			-				28
29				-				■		-				30
31				-		■				-				32
33				-			■			-				34
35				-				■		-				36
37				-		■				-				38
39				-			■			-				40
41		NOT AVAIL		-				■		-				42

Code	Description	Load VA	Dem
1	Lighting	0	125%
2	Rec up to 10,000	180	100%
	Rec over 10,000	0	50%
3	Motor	0	100%
	Largest Motor	0	125%
4	Heater	2000	100%
5	Kitchen	0	100%
6	Miscellaneous	0	100%
7	Sub Panel	0	100%

Load Summary
Per Phase: Ph A 180 VA; Ph B 1000 VA; Ph C 1000 VA
Connected 2180 VA
Code Demand 2180 VA
Code Demand 6.06 Amps

Located in injection building

Name: L1 — Volt: 208/120 — Ph: 3 — Wire: 4
Mnt Method: SURFACE NEMA-12 — Bus Rating: 100A — Main Breaker: 100A — AIC Rating: 10,000A

	Code	Description	Load VA	Bkr	P	Ph A	Ph B	Ph C	P	Bkr	Load VA	Description	Code	
1	6	TVSS	0	30	3	■			1	20	550	POLE LIGHT	1	2
3	0		0	/	0		■		1	20	550	POLE LIGHT	1	4
5	0		0	/	0			■	1	20	550	POLE LIGHT	1	6
7	1	LIGHTS	1410	20	1	■			1	20	550	POLE LIGHT	1	8
9	1	LIGHTS	1880	20	1		■		1	20	540	RECEPT	2	10
11	3	EF-3	700	15	1			■	1	20	540	RECEPT	2	12
13	3	EF-4	700	15	1	■			1	20	720	RECEPT	2	14
15	3	AIR COND UNIT	2000	20	2		■		1	20	300	PLC PANEL	6	16
17				/				■	1	20	1000	FILTER MOV 001, 2	6	18
19	6	SUMP CONTROL	100	20	1	■			1	20	1000	FILTER MOV 003, 4	6	20
21	6	TANK MOV	200	20	1		■			-		SPACE		22
23	6	TANK MOV	200	20	1			■	1	20	100	FLOW FIT, 701	6	24
25	6	TANK MOV	200	20	1	■			1	20	100	FLOW FIT 1-001	6	26
27	6	TANK MOV	200	20	1		■			-		SPACE		28
29		SPACE		-				■		-		SPACE		30
31		SPACE		-		■				-		SPACE		32
33		SPACE		-			■			-		SPACE		34
35		SPACE		-				■		-		SPACE		36
37		SPACE		-		■				-		SPACE		38
39		SPACE		-			■			-		SPACE		40
41		SPACE		-				■		-		SPACE		42

Code	Description	Load VA	Dem
1	Lighting	5490	125%
2	Rec up to 10,000	1800	100%
	Rec over 10,000	0	50%
3	Motor	1400	100%
	Largest Motor	2000	125%
4	Heater	0	100%
5	Kitchen	0	100%
6	Miscellaneous	3400	100%
7	Sub Panel	0	100%

Load Summary
Per Phase: Ph A 5330 VA; Ph B 4670 VA; Ph C 4090 VA
Connected 14090 VA
Code Demand 15963 VA
Code Demand 44.36 Amps

Located in injection building

Name: H1 — Volt: 480/277 — Ph: 3 — Wire: 4
Mnt Method: IN MCC 1, NEMA 12 — Bus Rating: 100A — Main Breaker: NONE — AIC Rating: 14,000A

	Code	Description	Load VA	Bkr	P	Ph A	Ph B	Ph C	P	Bkr	Load VA	Description	Code	
1	3	SP-1	4500	20	3	■			3	20	5000	UH-6	4	2
3				/			■			/				4
5				/				■		/				6
7	4	UH-3	10000	20	3	■			3	20	2800	BP-1	3	8
9				/			■			/				10
11				/				■		/				12
13	4	UH-4	10000	20	3	■			3	20	5000	UH-5	4	14
15				/			■			/				16
17				/				■		/				18
19		SPACE		-		■			3	20	4000	STAC-1	3	20
21		SPACE		-			■			/				22
23		SPACE		-				■		/				24
25		SPACE		-		■				-		SPACE		26
27		SPACE		-			■			-		SPACE		28
29		SPACE		-				■		-		SPACE		30
31		SPACE		-		■				-		SPACE		32
33		SPACE		-			■			-		SPACE		34
35		SPACE		-				■		-		SPACE		36
37		SPACE		-		■				-		SPACE		38
39		SPACE		-			■			-		SPACE		40
41		SPACE		-				■		-		SPACE		42

Code	Description	Load VA	Dem
1	Lighting	0	125%
2	Rec up to 10,000	0	100%
	Rec over 10,000	0	50%
3	Motor	6800	100%
	Largest Motor	4500	125%
4	Heater	30000	100%
5	Kitchen	0	100%
6	Miscellaneous	0	100%
7	Sub Panel	0	100%

Load Summary
Per Phase: Ph A 13767 VA; Ph B 13767 VA; Ph C 13767 VA
Connected 41300 VA
Code Demand 42425 VA
Code Demand 51.09 Amps

Located at production wells (Typical of 3)

Name: A — Volt: 240/120 — Ph: 1 — Wire: 3
Mnt Method: SURFACE NEMA-3R — Bus Rating: 30A — Main Breaker: 30A — AIC Rating: 10,000A

	Code	Description	Load VA	Bkr	P	Ph A	Ph B	P	Bkr	Load VA	Description	Code	
1		PLC PANEL		20	1	■		2	30		TVSS	6	2
3		FLOW		20	1		■		/				4
5		PRESSURE		20	1	■		1	20	180	RECEPT	2	6
7		LEVEL		20	1		■	1	20	500	VFD HEATER	4	8
9		CONDUCTIVITY		20	1	■			-				10
11				-			■		-				12
13				-		■			-				14
15				-			■		-				16
17				-		■			-				18
19				-			■		-				20
21				-		■			-				22
23				-			■		-				24
25				-		■			-				26
27				-			■		-				28
29				-		■			-				30
31				-			■		-				32
33				-		■			-				34
35				-			■		-				36
37				-		■			-				38
39				-			■		-				40
41				-		■			-				42

Code	Description	Load VA	Dem
1	Lighting	0	125%
2	Rec up to 10,000	180	100%
	Rec over 10,000	0	50%
3	Motor	0	100%
	Largest Motor	0	125%
4	Heater	500	100%
5	Kitchen	0	100%
6	Miscellaneous	0	100%
7	Sub Panel	0	100%

Load Summary
Per Phase: Ph A 180 VA; Ph B 500 VA
Connected 680 VA
Code Demand 680 VA
Code Demand 2.83 Amps

Located in shop/office building

Name: L — Volt: 208/120 — Ph: 3 — Wire: 4
Mnt Method: SURFACE NEMA-12 — Bus Rating: 150A — Main Breaker: 150A — AIC Rating: 10,000A

■ NOTE: ACCU-1 WILL NOT RUN CONCURRENTLY WITH AHU-1 ELEC HEATER

	Code	Description	Load VA	Bkr	P	Ph A	Ph B	Ph C	P	Bkr	Load VA	Description	Code	
* 1	2	SHOP RECEPT.	360	20	1	■			1	15	500	EF-1	3	2
3	2	SHOP RECEPT.	360	20	1		■		1	20	360	SHOP RECEPT.	2	4
5	2	SHOP RECEPT.	360	20	1			■	1	20	1000	DD-1	3	6
7	5	MICROWAVE	1500	20	1	■			1	20	600	COMPUTER	6	8
9	5	COFFEE	1200	20	1		■		1	20	600	COMPUTER	6	10
11	2	RECEPT.	540	20	1			■	1	20	600	COMPUTER	6	12
13	2	RECEPT.	900	20	1	■			1	20	1350	LIGHTS	1	14
15	6	WELDER	2400	30	2		■		1	20	1420	LIGHTS	1	16
17			0	/				■	1	20	500	FIRE/SECURITY PNL	6	18
19	4	ECH-1, EBH-1	876	20	1	■			2	50	9400	AHU-1	4	20
21		RADIO MOPDEM		20	1		■			/				22
23		AUTO DIALER		20	1			■	2	25	2912	ACCU-1	■	24
25		PRINTERS		20	1	■				/				26
27		SPARE		20	1		■		1	20		SPARE		28
29		SPARE		20	1			■	1	20		SPARE		30
31		SPACE		-		■			1	20		SPARE		32
33		SPACE		-			■		1	20		SPARE		34
35		SPACE		-				■	1	20		SPARE		36
37		SPACE		-		■			3	30		TVSS		38
39		SPACE		-			■			/				40
41		SPACE		-				■		/				42

Code	Description	Load VA	Dem
1	Lighting	2770	125%
2	Rec up to 10,000	2880	100%
	Rec over 10,000	0	50%
3	Motor	500	100%
	Largest Motor	1000	125%
4	Heater	10276	100%
5	Kitchen	2700	100%
6	Miscellaneous	4700	100%
7	Sub Panel	0	100%

Load Summary
Per Phase: Ph A 12242 VA; Ph B 9840 VA; Ph C 5656 VA
Connected 24826 VA
Code Demand 25769 VA
Code Demand 71.61 Amps

* Provide locking clip on circuit breaker

Located in shop/office building

Name: H — Volt: 480/277 — Ph: 3 — Wire: 4
Mnt Method: SURFACE NEMA-12 — Bus Rating: 100A — Main Breaker: 100A — AIC Rating: 14,000A

	Code	Description	Load VA	Bkr	P	Ph A	Ph B	Ph C	P	Bkr	Load VA	Description	Code	
1	7	PANEL "L"	45000	70	3	■			3	20	7500	UH-1	4	2
3				/			■			/				4
5				/				■		/				6
7	4	EWH-1	9000	20	3	■			3	20	7500	UH-2	4	8
9				/			■			/				10
11				/				■		/				12
13		SPACE		-		■				-		SPACE		14
15		SPACE		-			■			-		SPACE		16
17		SPACE		-				■		-		SPACE		18
19		SPACE		-		■				-		SPACE		20
21		SPACE		-			■			-		SPACE		22
23		SPACE		-				■		-		SPACE		24
25		SPACE		-		■				-		SPACE		26
27		SPACE		-			■			-		SPACE		28
29		SPACE		-				■		-		SPACE		30
31		SPACE		-		■				-		SPACE		32
33		SPACE		-			■			-		SPACE		34
35		SPACE		-				■		-		SPACE		36
37		SPACE		-		■				-		SPACE		38
39		SPACE		-			■			-		SPACE		40
41		SPACE		-				■		-		SPACE		42

Code	Description	Load VA	Dem
1	Lighting	0	125%
2	Rec up to 10,000	0	100%
	Rec over 10,000	0	50%
3	Motor	0	100%
	Largest Motor	0	125%
4	Heater	24000	100%
5	Kitchen	0	100%
6	Miscellaneous	0	100%
7	Sub Panel	45000	100%

Load Summary
Per Phase: Ph A 23000 VA; Ph B 23000 VA; Ph C 23000 VA
Connected 69000 VA
Code Demand 69000 VA
Code Demand 83.09 Amps

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

ELECTRICAL PANEL SCHEDULES

DESIGNED RMH GROUP — TECH. APPROVAL
DRAWN RMG GROUP — SUBMITTED
CHECKED RMH GROUP — APPROVED

CADD SYSTEM AutoCAD 13_c4 — CADD FILENAME 4568E17.DWG — DATE AND TIME PLOTTED 04/17/98 15:51
BILLINGS, MONTANA — April 17, 1998 — 1253-600-89

Drawing acquired under Contract No. 1425-5-CA-60-08530
Task Order Number 1425-7-PD-60-08530-003

BP-2 — E1.7 — Sheet 7 of 9

MECHANICAL EQUIPMENT SCHEDULE

KEY	DESCRIPTION	ELECTRICAL LOAD	ELECTRICAL UNIT	ELECTRICAL VOLT	ELECTRICAL PH	FEEDER & CONDUIT	PROTECTION TYPE	PROTECTION SIZE	CNTRL & FA NOTES
ACCU-1	AIR CONDITIONING UNIT	14	MCA	208	1	(2#10, #10 G.)1/2"C.	FDS	25A3P	PACKAGED CONTROLS
AHU-1	AIR HANDLING UNIT	46	MCA	208	1	(2#8, #10 G.)3/4"C.	FDS	50A3P	PACKAGED CONTROLS
BP-1	BOOSTER PUMP-DOMESTIC WATER	2	HP	480	3	(3#12, #12 G.)1/2"C.	CB	20A3P	PACKAGED CONTROLS
EBH-1	ELECTRIC BASEBOARD HEAT	376	W	120	1	(2#12, #12 G.)1/2"C.	CB	20A1P	120V T-STAT
ECH-1	ELECTRIC CEILING HEATER	0.50	KW	120	1	(2#12, #12 G.)1/2"C.	CB	20A1P	120V T-STAT
EF-1,	EXHAUST FAN	1/4	HP	120	1	(2#12, #12 G.)1/2"C.	CB	20A1P	120V T-STAT OR SWITCH
EF-2	EXHAUST FAN	1/30	HP	120	1	(2#12, #12 G.)1/2"C.	CB	20A1P	LIGHT SWITCH EITHER RESTRM.
EF-3,4	EXHAUST FAN	1/2	HP	120	1	(2#12, #12 G.)1/2"C.	CB	20A1P	120V T-STAT
EWH-1	ELECTRIC WATER HEATER	9.0	KW	480	3	(3#12, #12 G.)1/2"C.	CB	20A3P	INTEGRAL
P-001	XFER PUMP	40	HP	480	3	(3#4, #8 G.)1"C.	CB	80A3P	RVNR/ WYE DELTA STARTER
P-002	INJECTION PUMP	200	HP	480	3	(3#350 KCM, #3 G.)3"C.	CB	400A3P	VFD
IW-1	INJECTION WELL	200	HP	480	3	SEE ONE-LINE DIAGRAM	CB	400A3P	RTU
OD-1	OVERHEAD DOOR	3/4	HP	120	1	(2#12, #12 G.)1/2"C.	CB	20A1P	PUSHBUTTON STATION
PVX-X	PRODUCTION WELL	15	HP	480	3	SEE ONE-LINE DIAGRAM	CB	40A3P	VFD
SP-1	SUMP PUMP-CONTAINMENT	3.6	HP	480	3	(3#12, #12 G.)1/2"C.	CB	20A3P	PACKAGED CONTROLS
UH-1,2	UNIT HEATER-ELECTRIC	7.5	KW	480	3	(3#12, #12 G.)1/2"C.	CB	20A3P	120V T-STAT
UH-3,4	UNIT HEATER-ELECTRIC	10	KW	480	3	(3#12, #12 G.)1/2"C.	CB	20A3P	120V T-STAT
UH-5,6	UNIT HEATER-ELECTRIC	5	KW	480	3	(3#12, #12 G.)1/2"C.	CB	20A3P	120V T-STAT
MOV-001	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A30	HAND SWITCH ON VALVE PARALLEL INDICATION AND CONTROLLED BY PCC
MOV-002	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A3P	SAME AS ABOVE
MOV-003	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A3P	SAME AS ABOVE
MOV-004	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A3P	SAME AS ABOVE
MOV T1-001	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A3P	SAME AS ABOVE
MOV T1-002	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A3P	SAME AS ABOVE
MOV T2-001	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A3P	SAME AS ABOVE
MOV T2-002	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A3P	SAME AS ABOVE
MOV T3-001	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A3P	SAME AS ABOVE
MOV T3-002	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A3P	SAME AS ABOVE
MOV T4-001	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A3P	SAME AS ABOVE
MOV T4-002	MOTOR OPERATED VALVE	500	VA	120	1	(2#14, 1#14G.,) 1/2"C.	CB	20A3P	SAME AS ABOVE

INJECTION WELL AND CONTAINMENT AREA INSTRUMENTATION EQUIPMENT SCHEDULE

KEY	DESCRIPTION	ELECTRICAL MAX LOAD	ELECTRICAL UNIT	ELECTRICAL MAX VOLT	ELECTRICAL PH	FEEDER & CONDUIT	PROTECTION TYPE	PROTECTION SIZE	CNTRL & FA NOTES
FIT 701	INJECTION WELL DISCHARGE FLOW	3	A	48VDC	1	(2 #14 + 1 #14 GND, 1 TSP) 1/2"C	CB	20A1P	TO PLC
PIT 702	INJECTION WELL DISCHARGE PRESSURE	3	A	48VDC	1	(2 #14 + 1 #14 GND, 2 TSP) 1/2"C	CB	20A1P	TO PLC
TIT 701	INJECTION WELL DISCHARGE TEMPERATURE	3	A	48VDC	1	(2 #14 + 1 #14 GND, 1 TSP) 1/2"C			TO PLC
PIT 601	FILTER 1 PRESSURE XMTR (INCLUDES PLC CONTROL FOR MOV-001)	3	A	48VDC	1	(5#14 +1#14G., 1 TSP) 3/4"C.	CB	20A1P	TO PLC
PIT 602	FILTER 2 PRESSURE XMTR (INCLUDES PLC CONTROL FOR MOV-002)	3	A	48VDC	1	(5#14 +1#14G., 1 TSP) 3/4"C.			TO PLC
PIT 603	FILTER 3 PRESSURE XMTR (INCLUDES PLC CONTROL FOR MOV-003)	3	A	48VDC	1	(5#14 +1#14G., 1 TSP) 3/4"C.	CB	20A1P	TO PLC
PIT 604	FILTER 4 PRESSURE XMTR (INCLUDES PLC CONTROL FOR MOV-004)	3	A	48VDC	1	(5#14 +1#14G., 1 TSP) 3/4"C.			TO PLC
FIT 1-100	CONTAINMENT INFLUENT FLOW	3	A	48VDC	1	(2 #14 + 1 #14 GND) 1/2"C (TSP) 1/2"C	CB	20A1P	TO J-BOX P 1-100 TO J-BOX C 1-100
LS 101	LEVEL SWITCH TANK 1 LEVEL SWITCH LOW LSL LEVEL SWITCH HIGH LSH LEVEL SWITCH HIGH LIMIT LSHH	3	A	48VDC	1	(4 #14 + 1 #14 GND, 1 TSP) 1/2"C	CB	20A1P	TO J-BOX C 1-100
LIT 101	LEVEL INDICATING XMTR TANK 1	3	A	48VDC	1	(2 #14 + 1 #14 GND) 1/2"C	CB	20A1P	TO J-BOX P 1-100
LS 201	LEVEL SWITCH TANK 2 LEVEL SWITCH LOW LSL LEVEL SWITCH HIGH LSH LEVEL SWITCH HIGH LIMIT LSHH	3	A	48VDC	1	(4 #14 + 1 #14 GND, 1 TSP) 1/2"C			TO J-BOX C 1-100
LIT 201	LEVEL INDICATING XMTR TANK 2	3	A	48VDC	1	(2 #14 + 1 #14 GND) 1/2"C	CB	20A1P	TO J-BOX P 1-100
LS 301	LEVEL SWITCH TANK 3 LEVEL SWITCH LOW LSL LEVEL SWITCH HIGH LSH LEVEL SWITCH HIGH LIMIT LSHH	3	A	48VDC	1	(4 #14 + 1 #14 GND, 1 TSP) 1/2"C			TO J-BOX C 1-101
LIT 301	LEVEL INDICATING XMTR TANK 3	3	A	48VDC	1	(2 #14 + 1 #14 GND) 1/2"C	CB	20A1P	TO J-BOX P 1-101
LS 401	LEVEL SWITCH TANK 4 LEVEL SWITCH LOW LSL LEVEL SWITCH HIGH LSH LEVEL SWITCH HIGH LIMIT LSHH	3	A	48VDC	1	(4 #14 + 1 #14 GND, 1 TSP) 1/2"C			TO J-BOX C 1-101
LIT 401	LEVEL INDICATING XMTR TANK 4	3	A	48VDC	1	(2 #14 + 1 #14 GND) 1/2"C	CB	20A1P	TO J-BOX P 1-101
PIT 701	INJECTION PUMP SUCTION PRESSURE	3	A	48VDC					INCLUDED IN PIT 710
PIT 710	NITROGEN SUPPLY PRESSURE	3	A	48VDC		(4#14 + 1#14GND, 2 TSP) 1/2"C.			TO PLC
DPIT 711	SEAL POT DIFFERENTIAL PRESSURE	3	A	48VDC					INCLUDED IN PIT 710

LUMINAIRE SCHEDULE

KEY	LAMP(S) QTY	LAMP(S) SPEC	DESCRIPTION	FINISH	MOUNT	SPECIFICATION MANUFACTURER	SPECIFICATION CATALOG NUMBER	SPECIFICATION VOLT
F1	3	F32T8/SP35	2x4 FLUORESCENT	WHITE	RECESSED	METALUX	2GS-332A125-120-EB81	120
F2	2	F32T8/SP35	FLUORESCENT STRIP 4-FOOT	WHITE	SURFACE	METALUX	SS-232-120-EB81	120
F3			NOT USED					
F4	2	F96T12/SP35/ HO/WM	HIGH OUTPUT FLUORESCENT/WET LOCATION (-20° F RATED)	WHITE	SURFACE	METALUX	VT2-296-HO-120-LE3-DL	120
F5	2	F32T8/SP35	WALL MOUNTED FLUORESCENT FIXTURE	WHITE	WALL-MOUNTED	METALUX	BE-232-120-EB81	120
H1	1	LU150	WALL PACK PHOTOCELL HIGH PRESSURE SODIUM	BRONZE	SURFACE	LUMARK	HPWP-150H-120-PE	120
H2	1	LU70	WALL PACK PHOTOCELL HIGH PRESSURE SODIUM	BRONZE	SURFACE	LUMARK	HPWP-70H-120-PE	120
H3	1	LU250	HIGH PRESSURE SODIUM POLE LIGHT- 4' STRAIGHT SQUARE STEEL POLE	BRONZE	20' POLE	MCGRAW-EDISON	CS72524-P/20' POLE	120
I1	1	60WA19	SHOWER LIGHT	WHITE	RECESSED	HALO	H7T-71PS	120
X	-	LED	EXIT LIGHT W/ BATTERY PACK AND SELF DIAGNOSTICS	WHITE	SURFACE	SURE-LITES	CCX-71-RWH-SD	120

Note: Provide emergency battery packs (1100 Lumen output) as noted on drawings.

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

ENGINEERS CONSULTANTS
RMH GROUP

J.F. SATO AND ASSOCIATES

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

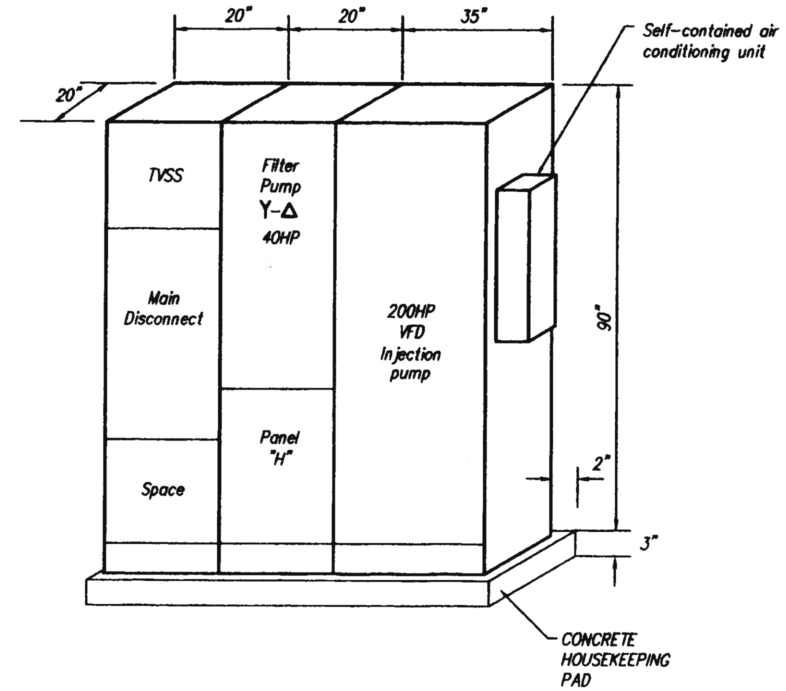
ELECTRICAL SCHEDULES

DESIGNED RMH GROUP — TECH. APPROVAL
DRAWN RMH GROUP — SUBMITTED
CHECKED RMH GROUP — APPROVED

CADD SYSTEM AutoCAD 13_c4 | CADD FILENAME 4368E18.DWG | DATE AND TIME PLOTTED 04/14/98 15:50
BILLINGS, MONTANA — April 14, 1998

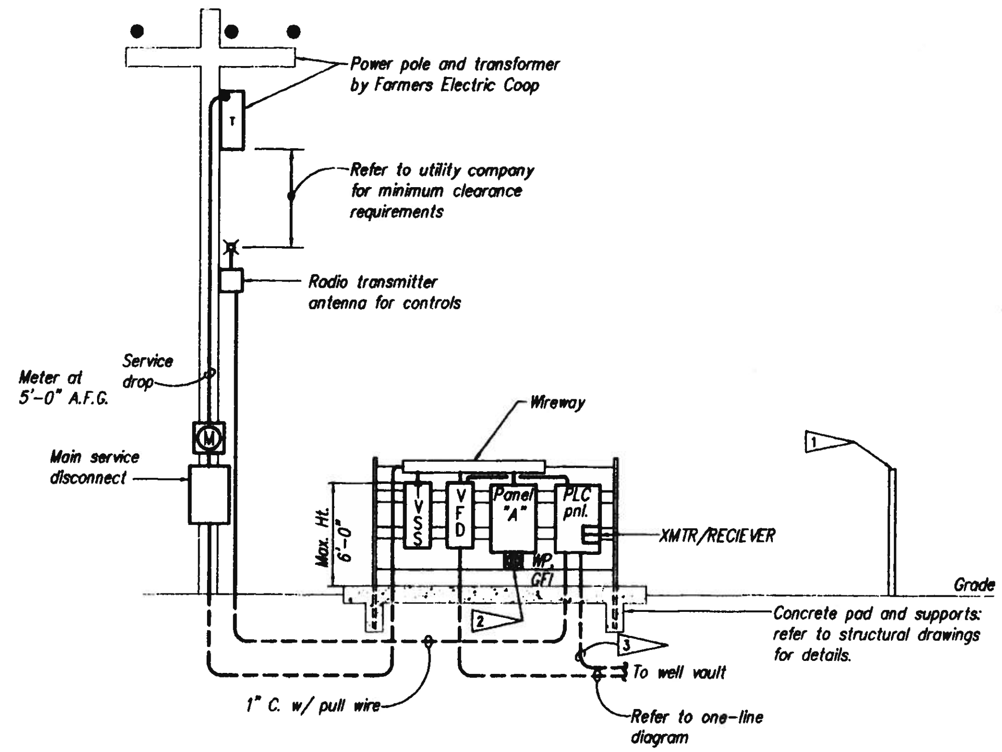
1253-600-90

BP-2 | E1.8 | Sheet 8 of 9



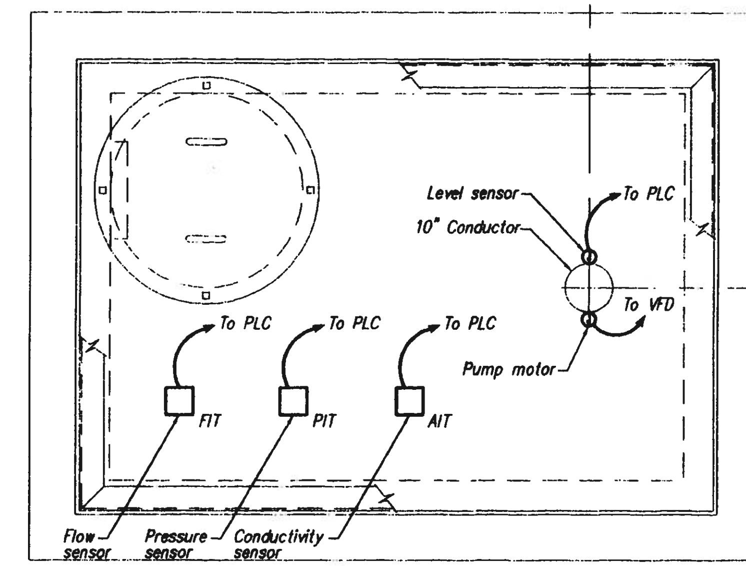
MCC 1 ELEVATION-(NEMA 12 ENCLOSURE)

Scale: None



PRODUCTION WELL ELECTRICAL EQUIPMENT ELEVATIONS (Typical of four for base bid)

Scale: None



Notes:

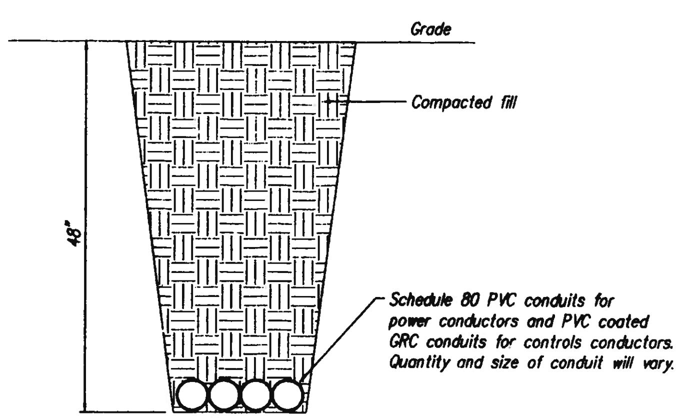
1. Typical of six vaults for base bid.
2. Typical of five vaults for add alternates.
3. All sensors, and junction boxes shall be UL listed for submersible use.

POWER PLAN PRODUCTION WELL VAULT

Scale: None

FLAG NOTES

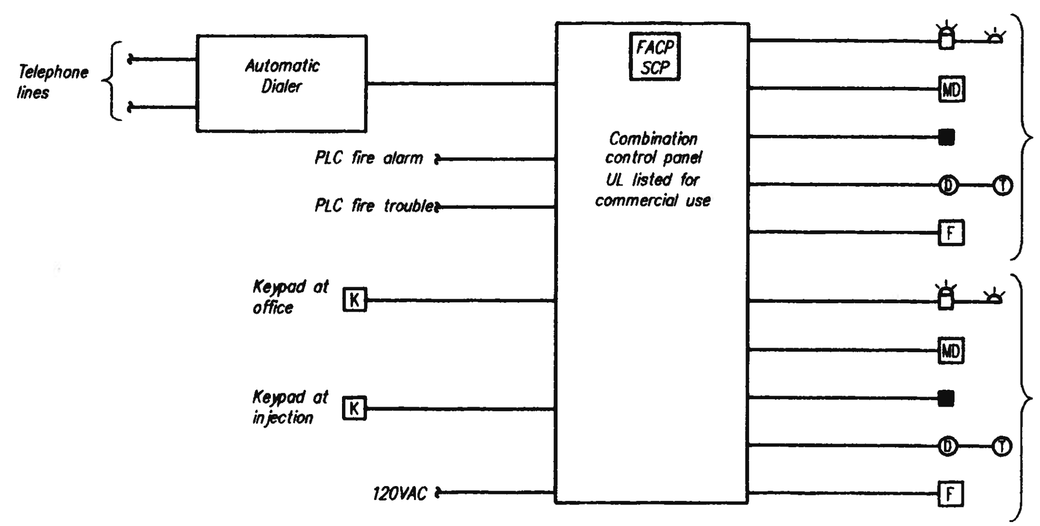
1. Barbed wire fence around equipment. Maintain all clearances. Provide barbed wire fence 44" high, 4-strand barbed wire. Post shall be 2" x 2" treated wood and buried a minimum of 28". Post should be no more than 20" center to center. Install a minimum of 8' away from all electrical equipment and power poles. be no more than 20" center-to-center. Coordinate exact location with contracting officer.
2. Refer to panel schedule "A" for circuit number.
3. Minimum control conduit to each vault shall be 1" with pull wire. Coordinate conduit size with controls contractor.



CONDUIT TRENCHING DETAIL TO PRODUCTION WELLS

Scale: None

Note:
This conduit trenching detail is specifically for the conduit from the electrical equipment on the bluff down the river embankment to the production wells when the conduit cannot be run in the pipeline trench.



FIRE ALARM/SECURITY SYSTEM ONE-LINE

Scale: None

Note:
Refer to plans for device quantities.

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

ELECTRICAL DETAILS

DESIGNED RMH GROUP — TECH. APPROVAL
DRAWN RMG GROUP — SUBMITTED
CHECKED RMH GROUP — APPROVED

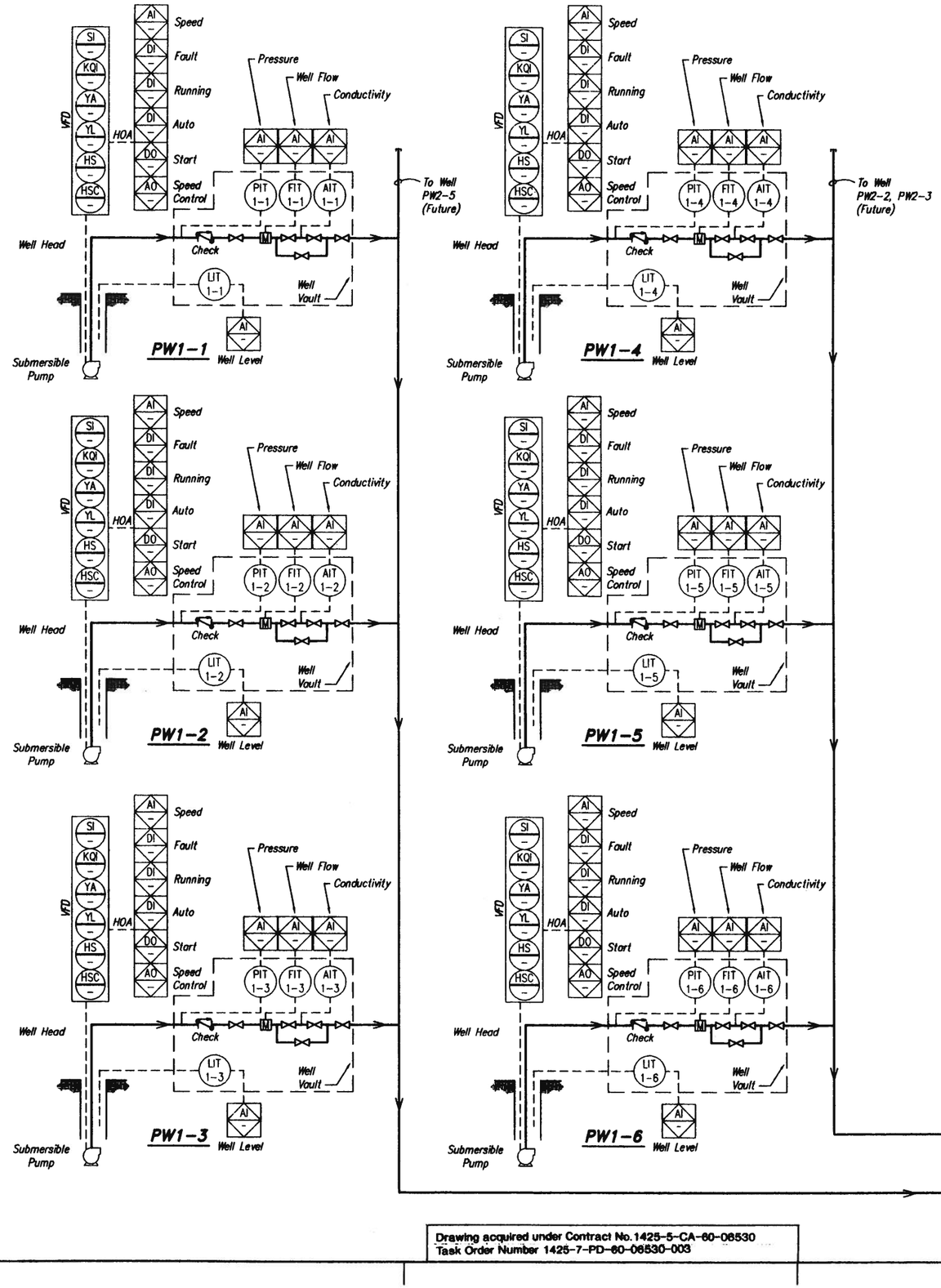
CADD SYSTEM AutoCAD 13_c4 | CADD FILENAME 4568E19.DWG | DATE AND TIME PLOTTED 04/17/98 15:49

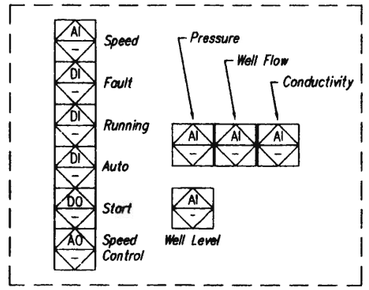
BILLINGS, MONTANA April 17, 1998

1253-600-91

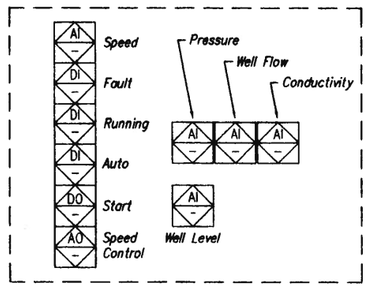
Drawing acquired under Contract No. 1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

BP-2 | E1.9 | Sheet 9 of 9





PW2-1
(ADD ALTERNATE #1)



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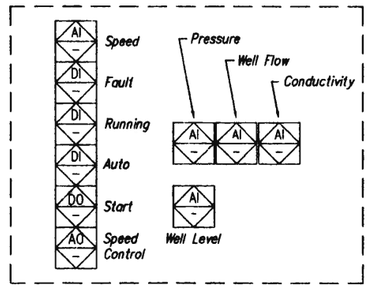

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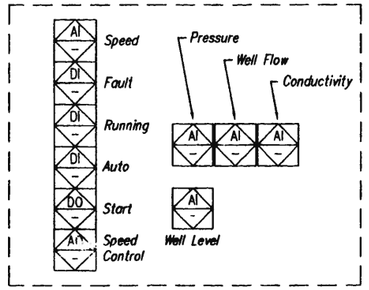
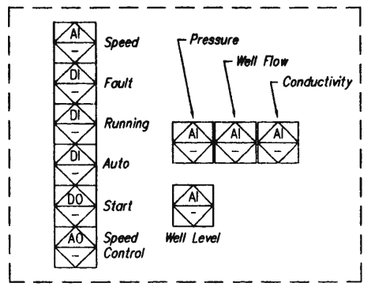
(ADD ALTERNATE #3)



PW2-4
(ADD ALTERNATE #4)



PW2-5
(ADD ALTERNATE #5)

GENERAL NOTES

1. Contractor shall coordinate all instrument, taps on pipes, tanks, valves, etc., for size and thread with each instrument sensor fitting.
2. Each PLC shall be capable of handling respective I/O of each base bid and add alternate well as necessary in anticipation of final buildout.

FILTER PLANT

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

ENGINEERS CONSULTANTS RMH GROUP
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REGISTERED PROFESSIONAL ENGINEER 9088 5/13/98
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DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

ID-PRODUCTION WELLS

DESIGNED	TDM	TECH. APPROVAL	
DRAWN	TMH	SUBMITTED	
CHECKED	RMH GROUP	APPROVED	

CADD SYSTEM	CADD FILENAME	DATE AND TIME PLOTTED
AutoCAD 13.04	456811.DWG	04/17/98 18:32
BILLINGS, MONTANA	April 17, 1998	1253-600-92

BP-2 | 11.1 | Sheet 1 of 4

GENERAL NOTES

1. Contractor shall coordinate all instrument, taps on pipes, tanks, valves, etc., for size and thread with each instrument sensor fitting.

BOOSTER PUMP (Future)

DI Auto
DI Running
DI Low pressure shutdown
DI Fault

SIMPLEX PUMP

Control Panel
YA 501, MS 501, YL 501, HS 501, LSH 501, LSL 501
DI Running
DI Fault
DI Auto
DI High level alarm
DI Low level cutoff

Sump Pump Package

FILTER PLAN

To injection well IW-2 (Future)
DI Speed
DI Fault
DI Running
DI Auto
DO Start
AO Speed control
DO Low pressure shutdown
DO Fault
DO Open
DI Auto
DI Closed
Injection Temperature AI
Injection Flow AI
Injection pressure AI

VFD
SI 701, KQI 701, YA 701, YL 701, HS 701, HSC 701
HOA
DI Speed
DI Fault
DI Running
DI Auto
DO Start
AO Speed control
DO Low pressure shutdown
DO Fault
DO Open
DI Auto
DI Closed

Injection Temperature AI — TIT 701
Flow AI — FIT 701
Injection flow
Injection pressure
PIT 702
Chart recorder
HS 702
Motor
Injection pump P-002
Flow meter
Check
Injection pressure AI
PIT 701
Pressure AI
Check

INJECTION WELL IW-1

TK-004 (Future)
HS 401, MOV 401, LSL 401, LI 401, LSHH 401, LSH 401, LIT 401, HS 402, MOV 402
DO Open, DI Auto, DI Closed
Shutdown DI, High level alarm DI, Level AI

TK-003
HS 301, MOV 301, LSL 101, LI 301, LSHH 301, LSH 301, LIT 301, HS 302, MOV 302
DO Open, DI Auto, DI Closed
Shutdown DI, High level alarm DI, Level AI

TK-001
HS 101, MOV 101, LSL 101, LI 101, LSHH 101, LSH 101, LIT 101, HS 102, MOV 102
DO Open, DI Auto, DI Closed
Shutdown DI, High level alarm DI, Level AI

TK-002
HS 201, MOV 201, LSL 101, LI 201, LSHH 201, LSH 201, LIT 201, HS 202, MOV 202
DO Open, DI Auto, DI Closed
Shutdown DI, High level alarm DI, Level AI

Soft Start Controller
KQI 510, YL 510, HS 510, MS 510
HOA
DI Low press. Shutdown
DI Running
DI Auto
DI Fault
DO Low level Shutdown
DO Start

HS 601, MOV 001, PI 601, PIT 601, Pressure AI
HS 602, MOV 002, PI 602, PIT 602, Pressure AI
F-001 20 Microns
F-002 5 Microns
DO Open/Close, DI Auto, DI Closed

PSL 501
P-001
Pre-injection filters
MOV 003, MOV 004
F-003 20 Microns
F-004 5 Microns
HS 603, PIT 603, PI 603, Pressure AI
HS 604, PIT 604, PI 604, Pressure AI
DO Open/Close, DI Auto, DI Closed

Production Pipeline Flow AI — FIT 1-100
Vent
To production wells Ref. dwg. 456811.1
To production wells Ref. dwg. 456811.1

STORAGE TANKS

ANNULUS SYSTEM

Nitrogen tanks Low Pressure DI
Pressure AI
PLA 710, PIT 710
Ratio PID control
Pressure
Low Pressure shutdown DI

Nitrogen Regulator
Fill SV, Vent SV
Vent
Level
DPIT 711, PLA 711, AI Level
Liquid
Annulus seal pot
Nitrogen bottles
HS 710, HS 711
DI Auto, AO PID Pulse, DO Open, DI Closed, DI Fault

Drawing acquired under Contract No.1425-5-CA-60-08530
Task Order Number 1425-7-PD-60-08530-003

ENGINEERS CONSULTANTS RMH GROUP
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BUREAU OF RECLAMATION

LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

ID-INJECTION WELL

DESIGNED TDH — TECH. APPROVAL
DRAWN EMH — SUBMITTED
CHECKED RMH GROUP — APPROVED

CADD SYSTEM AutoCAD 13_c4 — BILLINGS, MONTANA
CADD FILENAME 456BP2.DWG — April 17,1998
DATE AND TIME PLOTTED 04/17/98 11:27

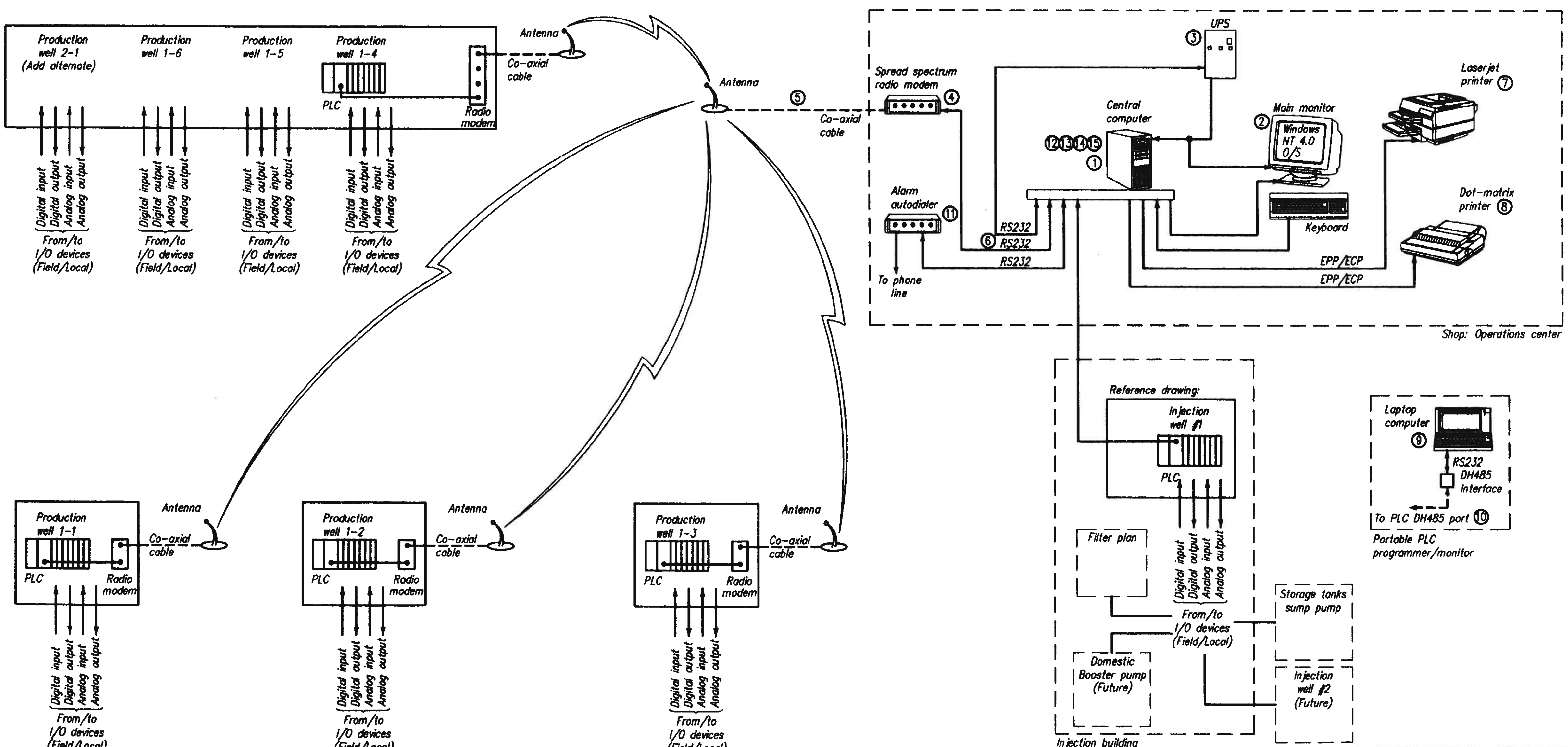
1253-600-93

BP-2 | 11.2 | Sheet 2 of 4

Architecture for Shop Building.							
Item	Description	Type	Quantity	P/N	Manufacturer	Suggested Vendor	Remarks:
1	Computer, PC, complete	Pentium 233 or higher	1	-	Midwest Micro	Midwest Micro	ref to spec
2	Monitor	.28 DP, 17'	1	-	Midwest Micro	Midwest Micro	ref to spec
3	UPS	2000VA	1	PRA2000	Deltec	Computer Pwr & Air	Ni-Cad Batteries
4	Radio Modem	Freq. Hop.	1	SRM6000	Data-Linc	Ryall Electric	Spread Sprectrum
5	Conn/Cabling/Ant for modem	Omni	1	A-DB-100	Data-Linc	Ryall Electric	Tuned Antenna
6	Modem to CPU cable	RS 232	1	C232/SLC-5/03	Data-Linc	Ryall Electric	ref to spec
7	Laser Printer	600 DPI/4 PPM	1	HP Laserjet 4P	Hewlett Packard	MicroWarehouse	ref to spec
8	Line Printer	Wide carriage/128 CPS	1	PR1172	Okidata	MicroWarehouse	ref to spec
9	Laptop	Pentium 133MHz	1	Armada 1120	Compaq	MicroWarehouse	Client supplied
10	Laptop to PLC cable	Interface	1	1747-PIC	Allen Bradley	Ryall Electric	For roving programming
11	Alarm Auto-dialer	Alarm sequencing	1	Verbatim 8	Raco	Ryall Electric	Operator paging
12	Intellution	SCADA developer	1	--	Intellution	Intellution, Inc.	For Win NT4.0
13	RSLogix 500 (SLC & uLogic)	PLC programming s/w	1	9324-RL0300END	Allen Bradley	Ryall Electric	For Win NT4.0
14	RSTrend	Historical Data	1	9304-WTD300D	Allen Bradley	Ryall Electric	For Win NT4.0
15	WinComm/Fax	Communications Suite	1	-	Symantec	MicroWarehouse	For Win NT4.0

GENERAL NOTES

1. *Furnish all materials, equipment, tools, and labor and install electrical work as indicated on the drawings and specified herein. Connect all new work and existing modifications for a completed, coordinated and integrated electrical system. It is the intent and purpose of these electrical drawings that upon completion of the project, the electrical installation including all systems shall be complete and operable in all respects. Furnish and install any minor items omitted from design but obviously necessary to accomplish the above intent. The electrical work shall include but not limited to the following items.*
2. *Contractor shall arrange for required inspections and pay all license, permit and inspection fees. Furnish a certificate of final inspections and approval from local authority having jurisdiction.*
3. *Contractor shall install new equipment in compliance with NFPA #70, the National Electrical Code and all other applicable federal, state and local laws and regulations.*
4. *Contractor shall use copper conductors only.*
5. *Install all conductors in galvanized rigid steel raceway systems.*
6. *Contractor shall provide labels on all panelboards, separately mounted disconnects, and circuit breakers. Labels shall show the minimum code clearance for working space required. The labels shall read "Minimum 36-inches of clear working space required" (1/4-inch minimum height letters in raised plastic).*
7. *Contractor shall provide a support system for mounting new equipment.*
8. *Contractor shall ground all electrical equipment in accordance with the latest National Electrical Code NFPA #70 article 250, grounding.*



Drawing acquired under Contract No. 1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

ENGINEERS CONSULTANTS RMH GROUP
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BUREAU OF RECLAMATION

LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES

ID-INJECTION WELLS

DESIGNED TON — TECH. APPROVAL
DRAWN EMM — SUBMITTED
CHECKED RMH GROUP — APPROVED

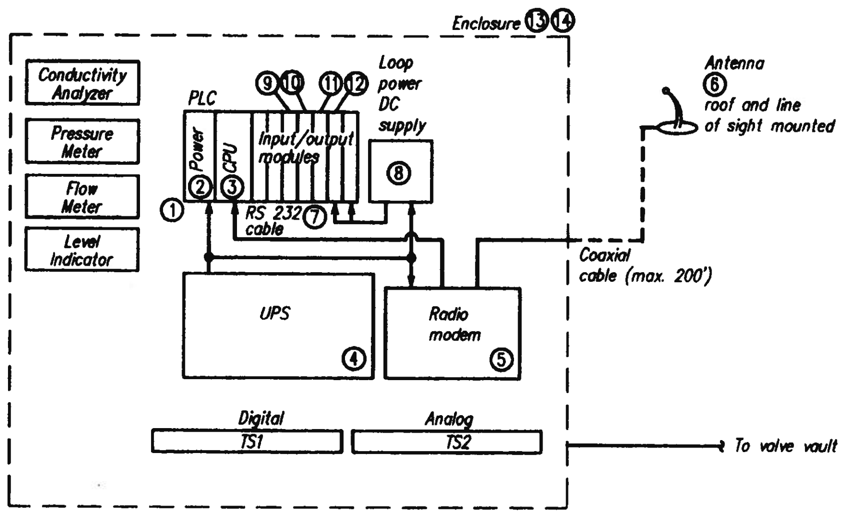
CADD SYSTEM AutoCAD 13_c4 | CADD FILENAME 456813.DWG | DATE AND TIME PLOTTED 04/17/98 11:52

BILLINGS, MONTANA April 17, 1998

1253-600-94

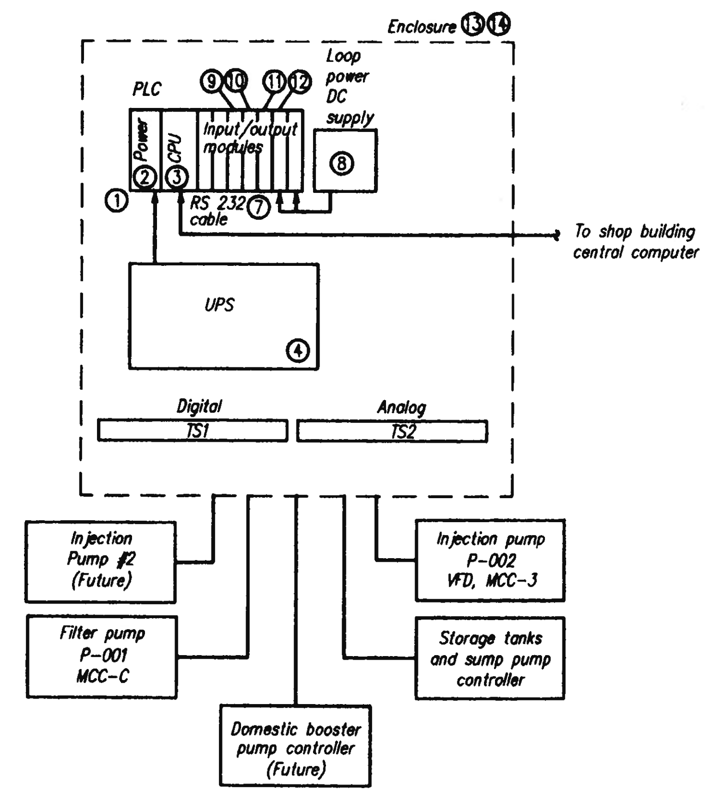
BP-2 | 11.3 | Sheet 3 of 4

Architecture for PLC Panels							
Item	Description	Type	Quantity	P/N	Manufacturer	Suggested Vendor	Remarks:
1	7 slot PLC chassis	Base	1	1746-A7	Allen Bradley	Ryall Electric	
2	PLC Power supply	110VAC	1	1746-P2	Allen Bradley	Ryall Electric	180VA max trx load
3	PLC SLC 5/03 - 8K	CPU	1	1747-L531	Allen Bradley	Ryall Electric	
4	UPS	750VA	1	EX-7 / 89007	Topaz	Consolidated Parts	Ni-Cad Batteries
5	Radio Modem	Freq. Hop.	1	SRM6000	Data-Linc	Ryall Electric	Spread Sprectrum
6	Conn/Cabling/Ant for modem	Omni	1	A-OB-100	Data-Linc	Ryall Electric	Tuned Antenna
7	Modem to CPU cable	RS 232	1	C232/SLC-5/03	Data-Linc	Ryall Electric	
8	Loop Power Supply	24VDC	1	B24G210	Acopian	Acopian	24VDC Regulated
9	16 point DI, AC	Digital Input	0	1746-IA16	Allen Bradley	Ryall Electric	
9	16 point DI, DC	Digital Input	0	1746-IB16	Allen Bradley	Ryall Electric	
10	4 Ch. AI, 4-20	Analog Input	0	1746-NI4	Allen Bradley	Ryall Electric	
11	16 point DO, AC	Digital Output	0	1746-OV16	Allen Bradley	Ryall Electric	
11	16 point DO, DC	Digital Output	0	1746-OV16	Allen Bradley	Ryall Electric	
12	4 Ch. AO, 4-20	Analog Output	1	1746-NO4I	Allen Bradley	Ryall Electric	
13	Enclosure	NEMA 3R	1	A363612LP	Hoffman	Consolidated Parts	
14	Panel	NEMA 3R	1	A36P36	Hoffman	Consolidated Parts	
15	I/O Devices	NEMA 3R	From I/O list	-	-	-	Existing and New



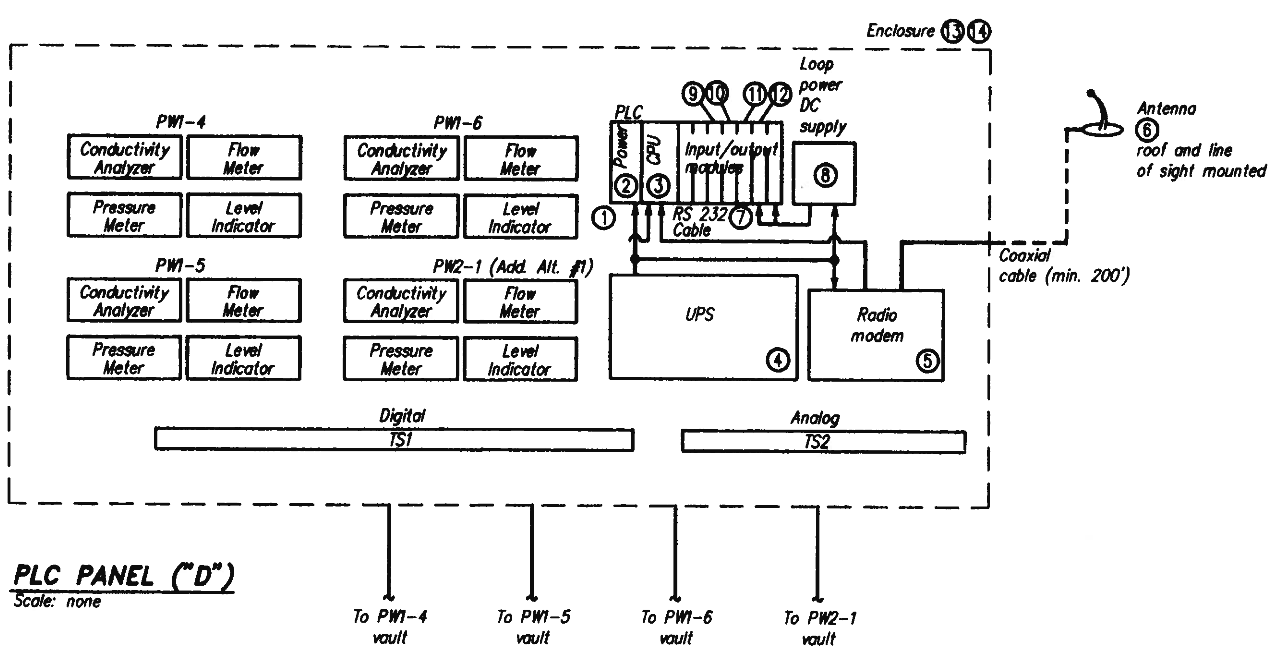
PLC PANEL (A,B,C)
(PW1-1, PW1-2, PW1-3)

Scale: None
Note: Typ. of 3 for base bid



PLC PANEL ("E")

Scale: None



PLC PANEL ("D")

Scale: none

Drawing acquired under Contract No.1425-5-CA-60-06530
Task Order Number 1425-7-PD-60-06530-003

ENGINEERS CONSULTANTS RMH GROUP
THE RMH GROUP, INC.

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Consulting Engineers

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
ID-INJECTION WELL

DESIGNED TPH — TECH. APPROVAL
DRAWN EMH — SUBMITTED
CHECKED RMH GROUP — APPROVED

CADD SYSTEM AutoCAD 13_c4 | CADD FILENAME | DATE AND TIME PLOTTED 12/03/97
BILLINGS, MONTANA — December 8, 1997

1253-600-95

BP-2 | 11.4 | Sheet 4 of 4

F-001
CARTRIDGE FILTER
24 IN. DIA. x 43 IN. LG.
VOLUME = 95 GAL
CARTRIDGES = 7

F-002
CARTRIDGE FILTER
24 IN. DIA. x 43 IN. LG.
VOLUME = 95 GAL
CARTRIDGES = 7

F-003
CARTRIDGE FILTER
24 IN. DIA. x 43 IN. LG.
VOLUME = 95 GAL
CARTRIDGES = 7

F-004
CARTRIDGE FILTER
24 IN. DIA. x 43 IN. LG.
VOLUME = 95 GAL
CARTRIDGES = 7

TK-001
BRINE WATER TANK
9.23 FT. DIA. x 24.18 FT. HIGH
CAPACITY = 12,105 GAL.

TK-004 (FUTURE)
BRINE WATER TANK
26.15 FT. DIA. x 24.18 FT. HIGH
CAPACITY = 96,400 GAL.

TK-002
BRINE WATER TANK
26.15 FT. DIA. x 24.18 FT. HIGH
CAPACITY = 96,400 GAL.

TK-003
BRINE WATER TANK
26.15 FT. DIA. x 24.18 FT. HIGH
CAPACITY = 96,400 GAL.

WELLHEAD 2500# FIBERGLASS
PMT6
4" CKV
4"x1 1/2" TEE
INJECTION WELL

ET & INSUL TO HERE
BLDG. WALL
1/2" BA
PMT6
MM6UC
*D
F-004
MOV 004
6" BF
6"CPVC-009
6"CPVC-011
6" BF
CONTAINMENT WALL

F-003
MOV 003
PS
6"CPVC-010
F-002
MOV 002
6"CPVC-008
F-001
MOV 001
6"CPVC-007
4"FC-012
6"CPVC-011
4" FLOWMETER
6" CK
6"x3"
3"-150#FF
3"x1/2"
4"x4"-150#FF
1/2" BA

P-002
INJECTION PUMP
3450 RPM @ 200HP
CAPACITY = 300 GPM
SP.GR. = 1.05

P-001
TRANSFER PUMP
3550 RPM @ 40HP
CAPACITY = 450 GPM
SP.GR. = 1.05

20" MUSHROOM VENT WITH BUG SCREEN
24" SQ. ROOF MANWAY
4" FLANGED
INTERNAL LADDER
OVERFLOW WEIR
LI 101
TK-001
24" MANWAY
SIPHON
4" OVERFLOW WITH FLAPPER
MOV 101
MOV 102
6" CK. 6" GA.
6" INLET
4" DRAIN
6" OUTLET
6"CPVC-001
6"CPVC-008
6"CPVC-005
6" STR.
2" BV
1/2" BV
TO SUMP

LI 201
TK-002
MOV 201
MOV 202
6"CPVC-003
6"CPVC-005

6"CPVC-001

2"CPVC-00
CPVC
2" BA
8" INLET PIPELINE
FIT 1-100
CONTAINMENT WAL

20" MUSHROOM VENT WITH BUG SCREEN
24" SQ. ROOF MANWAY
4" FLANGED
INTERNAL LADDER
OVERFLOW WEIR
LI 301
TK-003
24" MANWAY
SIPHON
4" OVERFLOW WITH FLAPPER
MOV 301
MOV 302
6" CK. 6" GA.
6" INLET
4" DRAIN
6" OUTLET
6" BF
6"CPVC-007
6"CPVC-002

LI 401
TK-004 (FUTURE)
MOV 401
MOV 402
6"CPVC-006
6"CPVC-002

LEGEND
* =DENOTES VENDOR SUPPLIED

JAMES F. SATO NEW MEXICO 9174 REGISTERED PROFESSIONAL ENGINEER

REFERENCE DRAWINGS

DWG. NO	DESCRIPTION

7 - 24 - 96 .600	ON P-002 INJECTION PUMP CHANGED CAPACITY FROM 450 TO 600 GPM AS PER MEMO FROM J. F. SATO & ASSOC. SIGNED BY CHRISTOPHER L. PANGBORN

Drawing acquired under Contract No. 1425-6-CA-60-06580
Task Order Number 1425-7-PD-60-06580-003

UNITED STATES
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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES FLOW DIAGRAM

DESIGNED	B. Whiteside	TECH. APPROVAL	
DRAWN	T.W.O.	SUBMITTED	
CHECKED	B. Armstrong	APPROVED	

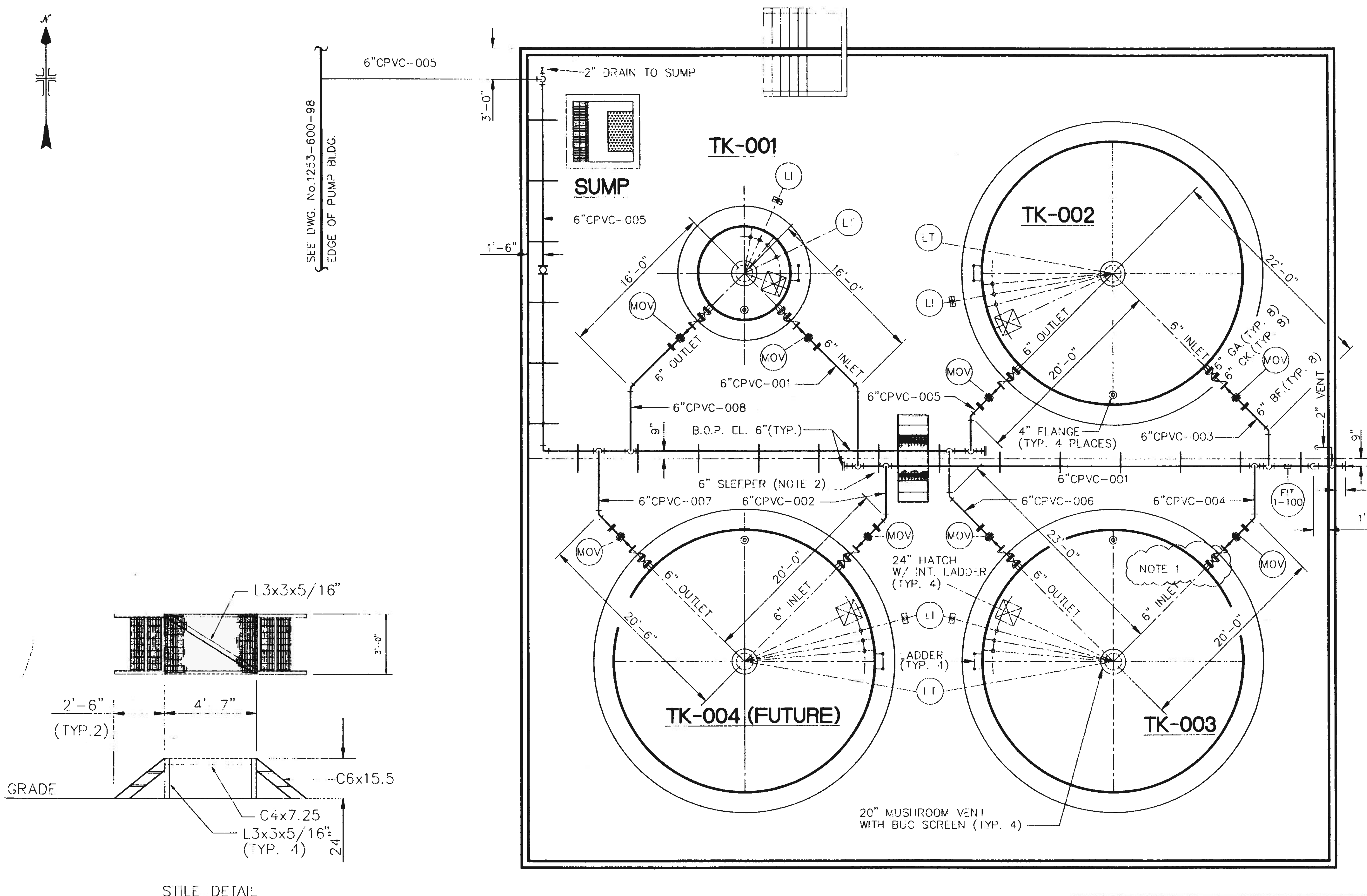
CADD SYSTEM: AutoCAD 13_c4 BILLINGS, MONTANA
CADD FILE NAME: TWO\LOOPER\FLOW.DWG
DATE AND TIME PLOTTED: April 17, 1998

125.3-600-96

BP-2 | P1.1 | Sheet 1 of 4

NOTES:

1. HOLD FOR INLET AND OUTLET ELEVATIONS (8 PLACES).
2. SLEEPERS (6"x6"x34") ON 6'-0" CENTERS.



REFERENCE DRAWINGS

DWG. NO.	DESCRIPTION

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

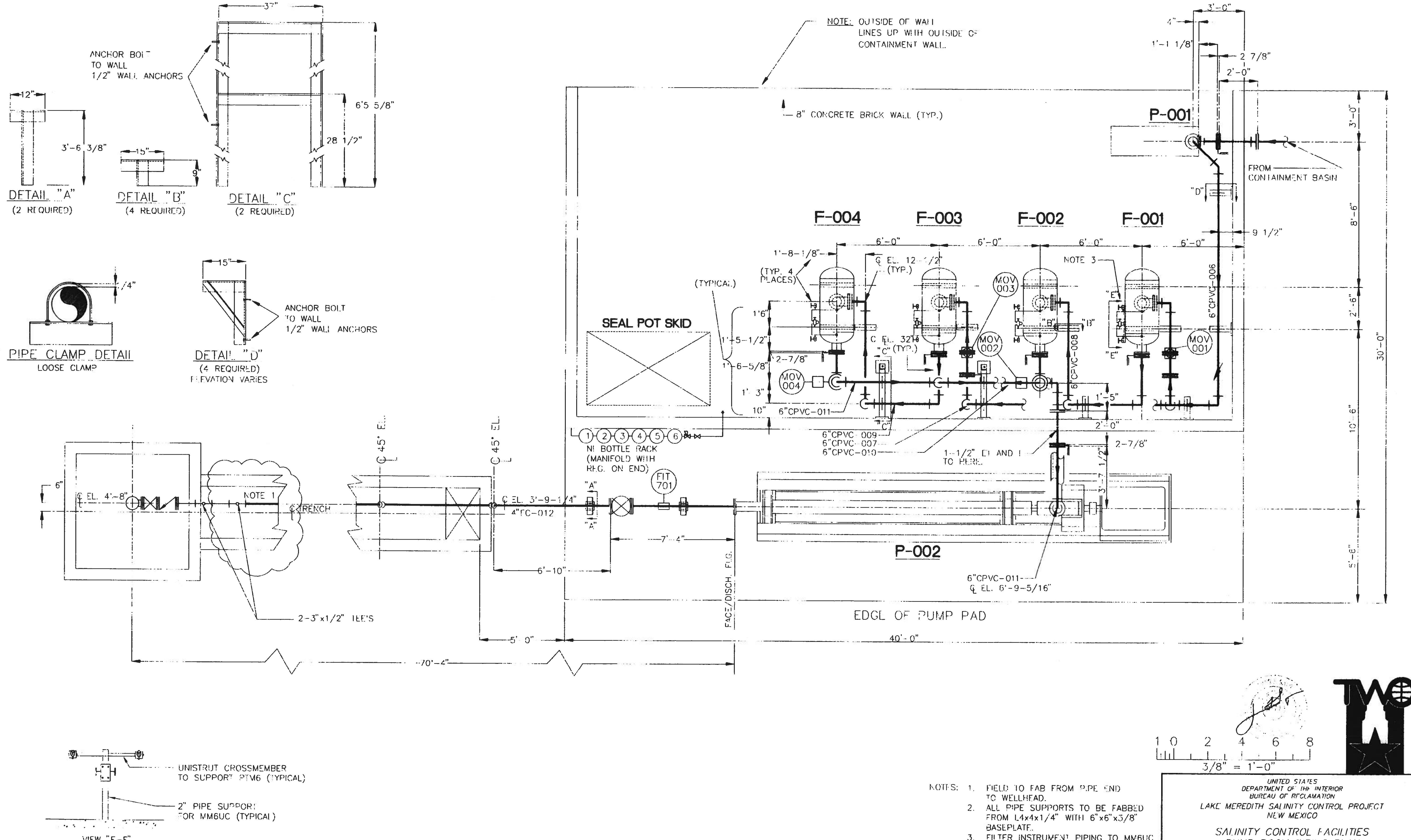
SALINITY CONTROL FACILITIES
BASIN PIPING PLAN

DESIGNED B. Whiteside — TECH. APPROVAL
DRAWN T.W.O. — SUBMITTED
CHECKED B. Armstrong — APPROVED

1253-600-97

BP-2 — P1.2 — Sheet 2 of 4

Drawing acquired under Contract No.1425-5-CA-60-08530
Task Order Number 1425-7-PD-60-08530-003



NOTES:
1. FIELD TO FAB FROM PIPE END TO WELLHEAD.
2. ALL PIPE SUPPORTS TO BE FABBED FROM L4x4x1/4" WITH 6"x6"x3/8" BASEPLATE.
3. FILTER INSTRUMENT PIPING TO MM6UC AND PTM6 TO BE 1/2" SWAGELOK FITTINGS AND TUBING.

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LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
PUMP ROOM PIPING PLAN

DESIGNED	R. Whiteside	TECH. APPROVAL	
DRAWN	T.W.O.	SUBMITTED	
CHECKED	B. Armstrong	APPROVED	

Drawing acquired under Contract No. 1425-5-CA-60-08530
Task Order Number 1425-7-PD-60-08530-003

1253-600-98

BP-2 P1.3 Sheet 3 of 4

1253-600-139

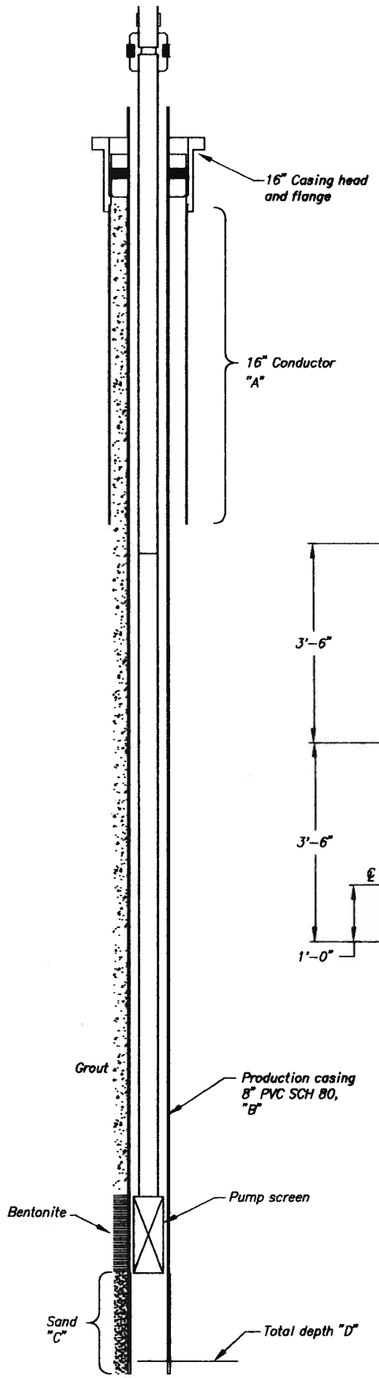
PRODUCTION DEPTH TABLE

	A	B	C			D
	16"	8" SCH 80 PVC	6-5/8"	SCREEN	6-5/8"	
	CONDUCTOR	PRODUCTION	SCREEN	INTERVAL	BLANK	TOTAL DEPTH
WELL NO.	FEET	FEET	FEET	FEET	FEET	FEET
1-1	45	97	50	97-147	10	157
1-2	15	174	50	174-224	10	234
1-3	45	67	50	67-117	10	127
1-4	55	59	50	59-109	10	119
1-5	55	58	50	58-108	10	118
1-6	55	61	50	65-111	10	121
2-1	35	69	50	69-119	10	129
2-2	25	66	30	66-96	10	106
2-3	25	59	30	59-89	10	99
2-4	25	64	50	64-114	10	124
2-5	35	154	80	154-234	10	244

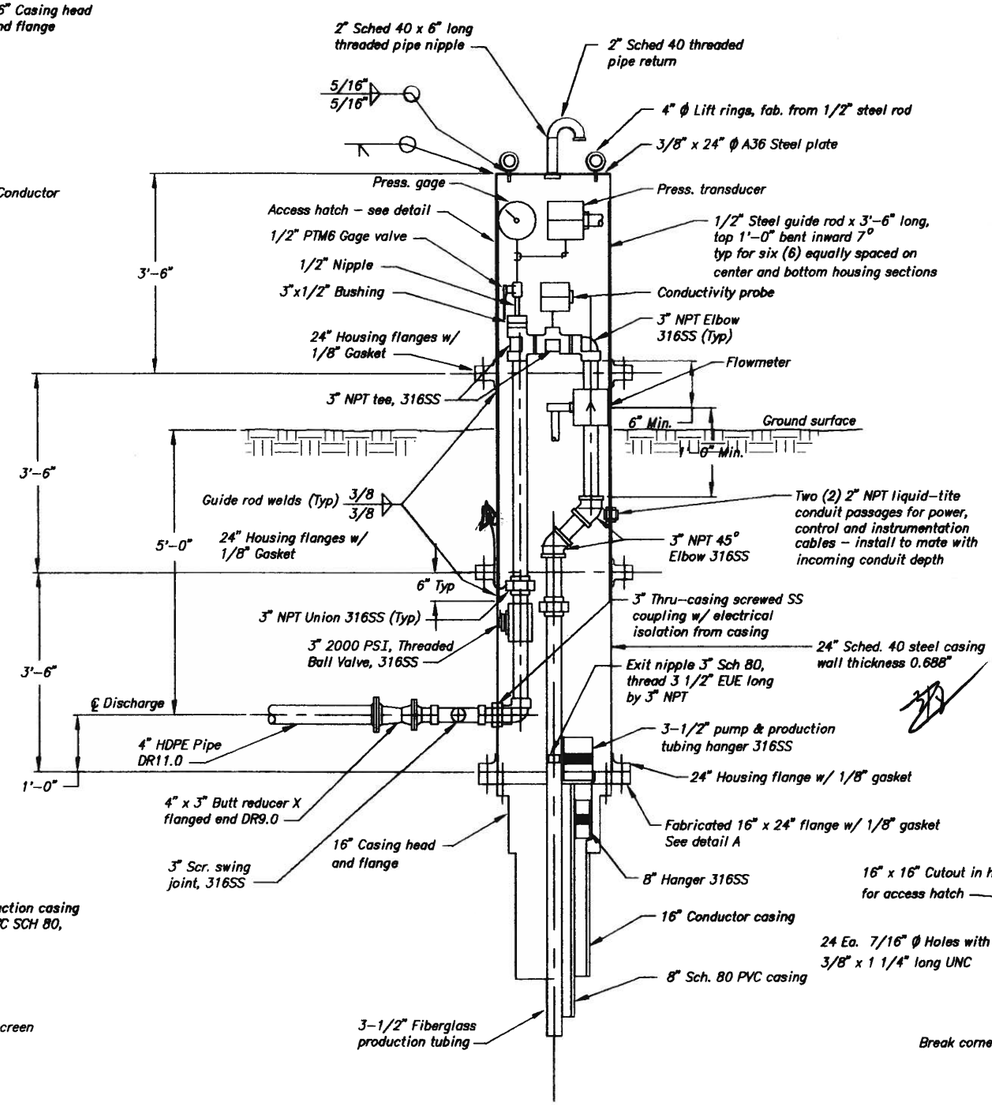
ALL MEASURMENTS ARE FROM GROUND SURFACE

NOTES:

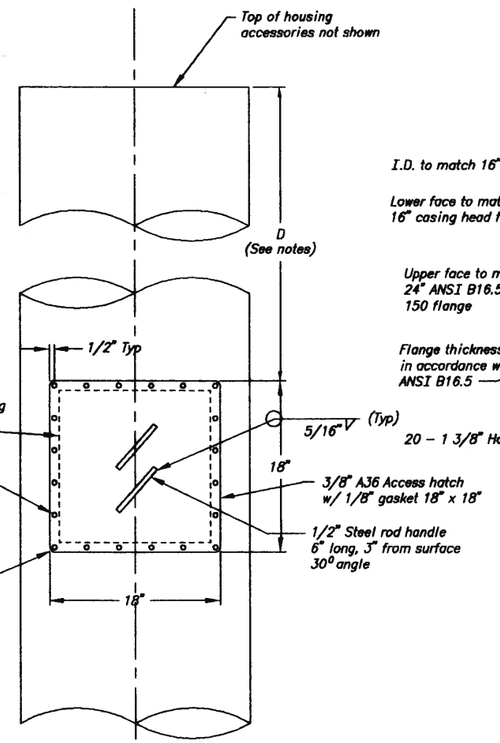
1. Pipe and fittings to be 316 stainless steel unless otherwise specified
2. 24" Housing flanges shall be slip-on type with dimensions in accordance with ANSI B16.5 and installed in accordance with AWWA C207
3. Access hatch dimension "D" to be determined by contractor for maximum accessibility to adjustable equipment.
4. Welding shall be in accordance with AWS and AWWA C207
5. Match-mark upper housing flange set to facilitate correct orientation of access hatch for instrumentation reading and adjustment



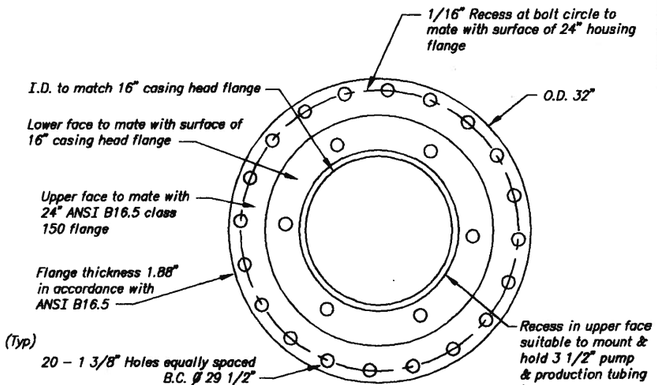
PRODUCTION WELL
(Typical)
Not to scale



PRODUCTION WELLHEAD
(Typical)
SCALE OF FEET 3/4" = 1'-0"



ACCESS HATCH DETAIL
SCALE OF FEET 1 1/2"=1'-0"



DETAIL A
FABRICATED HANGER FLANGE
FABRICATED - ASTM A 36 FLANGE
SCALE OF FEET 1 1/2"=1'-0"

THIS DRAWING SUPERSEDES DRAWING 1253-600-99

REV NO		
1	3-30-2000 BOO - TW	ADDED CONTRACTOR REFERENCE NUMBERS BELOW SIGNATURE BLOCK

ALWAYS THINK SAFETY

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
LAKE MEREDITH SALINITY CONTROL PROJECT
NEW MEXICO

SALINITY CONTROL FACILITIES
PRODUCTION WELL DETAIL

DESIGNED M. HAMLET — TECH. APPROVAL Thomas R. Weichel
DRAWN ENGINEERING SUPPORT — SUBMITTED
CHECKED M. Hamlet — APPROVED J. D. Acree

CADD SYSTEM	CADD FILENAME	DATE AND TIME PLOTTED
AutoCAD	0000600WL.dwg	3/30/2000 10:00
BILLINGS, MONTANA	FEB. 2000	1253-600-139
SHEET 1 OF 1		BP-2 P1.4 Sheet 4 of 4