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# UTAH DIVISION OF WILDLIFE RESOURCES SPRINGVILLE FISH HATCHERY TREATMENT PLANT 2009



PREPARED BY:

**SUNRISE ENGINEERING, INC.**

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PROJECT NAME:

UTAH DIVISION OF  
WILDLIFE  
RESOURCES  
SPRINGVILLE  
FISH HATCHERY  
TREATMENT PLANT  
2009

ENGINEER'S STAMP



MARK	DATE	DESCRIPTION
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ISSUE TYPE: 100%

ISSUE DATE: November 1, 2009

DFCM PROJECT NO: 07146520

SEI PROJECT NO: 03388

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DRAWING TITLE

TITLE SHEET

DRAWING NUMBER

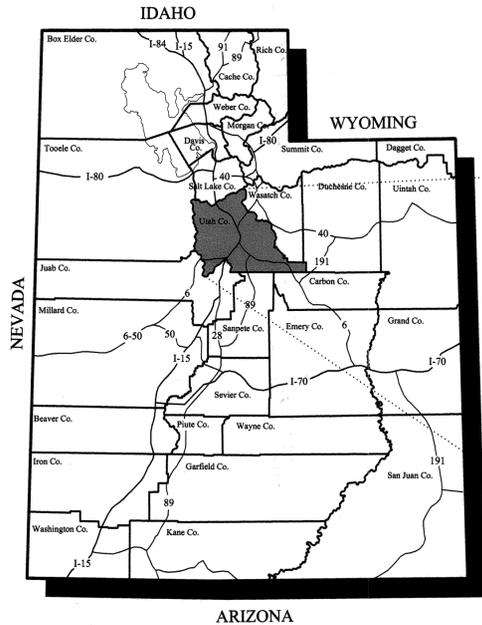
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SHEET 1 OF 46

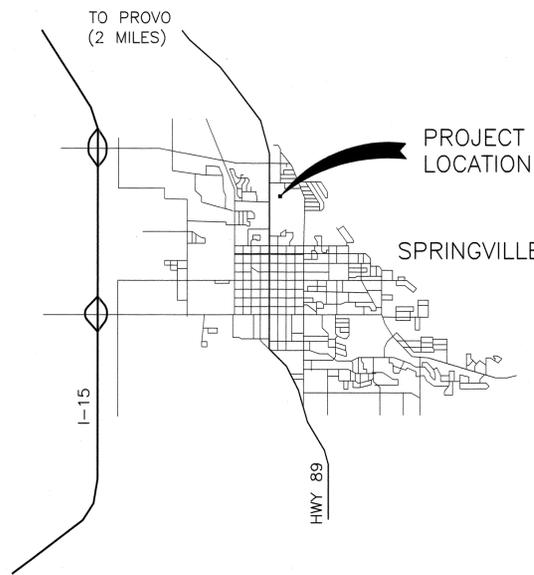
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D  
C  
B  
A

**AREA MAP**



**LOCATION MAP**



**SHEET INDEX**

GENERAL	DWG. NO.	SHT. NO.
TITLE SHEET	G1	1
AREA MAP, LOCATION MAP, ABBREVIATIONS, & SHEET INDEX	G2	2
CODE ANALYSIS, DESIGN CRITERIA, CONSTRUCTION NOTES, AND SPECIAL INSPECTION	G3	3
HYDRAULIC PROFILE	G4	4
<b>SITE</b>		
SITE PLAN	C1	5
EXIST. REARING POND SYSTEM	C2	6
RESTORED REARING POND SYSTEM	C3	7
REARING POND DETAILS	C4-C6	8-10
RECIRC PUMP STATION, JUNCTION BOX, AND METERING MANHOLE	C7	11
DIVERSION STRUCTURE	C8	12
SITE DETAILS	C9	13
THRUST RESTRAINT DETAILS	C10	14
<b>BUILDING</b>		
FOOTING & FOUNDATION PLAN	S1	15
FLOOR DRAINAGE PLAN	S2	16
EXTERIOR ELEVATIONS	S3	17
MAIN FLOOR PLAN	M1	18
SECTIONS & EQUIPMENT SCHEDULES	M2-M6	19-23
BUILDING DETAILS	D1-D4	24-27
<b>ELECTRICAL</b>		
ELECTRICAL INDEX	E1	28
ONE LINE DIAGRAM & PANEL SCHEDULES	E2.1-E2.2	29-30
ELECTRICAL SITE PLAN	E3	31
ELECTRICAL PLAN	E4	32
LIGHTING PLAN	E5	33
LIGHTING DETAILS	E6.1-E6.2	34-35
<b>MECHANICAL</b>		
MECHANICAL LEGEND	M1	36
MECHANICAL PLAN	M2	37
MECHANICAL DETAILS	M3-M4	38-39
MECHANICAL EQUIPMENT SCHEDULES	M5	40
<b>INSTRUMENTATION</b>		
INSTRUMENTATION INDEX	I1.1-I1.2	41-42
COMMUNICATIONS BLOCK DIAGRAM	I2	43
P&ID	I3.1-I3.3	44-46

**ABBREVIATIONS**

AB	ANCHOR BOLT	DIP	DUCTILE IRON PIPE	OD	OUTSIDE DIAMETER
ALT.	ALTERNATE	EA.	EACH	OSB	ORIENTED STRAND BOARD
ALUM.	ALUMINUM	E.F.	EACH FACE	PL.	PLATE
ACI	AMERICAN CONCRETE INSTITUTE	E.W.	EACH WAY	PV	PLUG VALVE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	E	EAST	PE	POLYETHYLENE
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS	ELL.	ELBOW	PVC	POLYVINYL-CHLORIDE PIPE
L	ANGLE	ELEV. OR EL.	ELEVATION	LB. OR #	POUND
APPROX.	APPROXIMATELY	EXIST.	EXISTING	PSI	POUNDS per SQUARE INCH
ASSY.	ASSEMBLY	FT OR '	FEET	PG	PRESSURE GAUGE
@	AT (MEASUREMENTS)	F.G.	FINISH GRADE	PRV	PRESSURE REDUCING VALVE
BD.	BOARD	FTG.	FITTING	P	PROPERTY LINE
BV	BALL VALVE	FLG.	FLANGE	R	RADIUS
B.M.	BENCH MARK	FRP	FIBERGLASS REINFORCED PANEL	RED.	REDUCER
BSC	BITUMINOUS SURFACE COURSE	FLEX.	FLEXIBLE	RDWD.	REDWOOD
B.F.	BLIND FLANGE	F	FLOW LINE	REINF.	REINFORCING
B.W.	BOTH WAYS	GALV.	GALVANIZED	REBARS.	REINFORCING BARS
BOT.	BOTTOM	GPM	GALLONS per MINUTE	REQ'D.	REQUIRED
BTU	BRITISH THERMAL UNITS	GSP	GALVANIZED STEEL PIPE	REV.	REVISION
BLDG.	BUILDING	GV	GATE VALVE	R/W	RIGHT-OF-WAY
BLM	BUREAU OF LAND MANAGEMENT	GA.	GAUGE	SCH	SCHEDULE
BTV	BUTTERFLY VALVE	H.W.L.	HIGH WATER LEVEL	SHT.	SHEET
CI	CAST IRON	HORIZ.	HORIZONTAL	SL	SLOPE
CIP	CAST IRON PIPE	IN. OR "	INCH	S	SOUTH
CL	CENTER LINE	ID	INSIDE DIAMETER	SPEC.	SPECIFICATION
C	CHANNEL (STRUCTURAL)	INSUL.	INSULATION	SQ.	SQUARE
CV	CHECK VALVE	INV.	INVERT	SQ. FT.	SQUARE FEET
CO	CLEAN OUT	JT.	JOINT	SQ. IN.	SQUARE INCHES
CONC.	CONCRETE	J.B.	JUNCTION BOX	ST. STL.	STAINLESS STEEL
CONT.	CONTINUOUS	L	LENGTH	STD.	STANDARD
CMP	CORRUGATED METAL PIPE	LN.	LINEAL	STA	STATION
CPLG.	COUPLING	LN. FT. OR LF	LINEAL FEET	STL	STEEL
CFM	CUBIC FEET per MINUTE	MH	MANHOLE	SYM.	SYMMETRICAL
CFS	CUBIC FEET per SECOND	MFR.	MANUFACTURER	TYP.	TYPICAL
CU.	CUBIC	MFG.	MANUFACTURING	UBC	UNTREATED BASE COURSE
CU. YD.	CUBIC YARD	MATL.	MATERIAL	UDOT	UTAH DEPARTMENT OF TRANSPORTATION
DEG. OR °	DEGREE	MAX.	MAXIMUM	VERT.	VERTICAL
DET.	DETAIL	MECH.	MECHANICAL	VOL.	VOLUME
D.O.E.	DEPARTMENT OF ENERGY	MJ	MECHANICAL JOINT	VTR	VENT THRU ROOF
DIAG.	DIAGONAL	MJ	MILLIOULE	WS	WATER SURFACE
DIA. OR Ø	DIAMETER	MGD	MILLIONS OF GALLONS PER DAY	WT.	WEIGHT
DIM	DIMENSION	MIN.	MINIMUM	W	WEST
DIST.	DISTRIBUTION	N	NORTH	W/REQ'D.	WHERE REQUIRED
DWC.	DRAWING	NO. OR #	NUMBER	W/	WITH
		O.C.	ON CENTER	W/O	WITHOUT

DESIGNED BY:

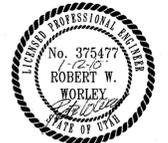


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MAPS, ABBREVIATIONS,  
& SHEET INDEX

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**G2**

1  
**CODE ANALYSIS**

THIS BUILDING IS NOT INTENDED FOR PUBLIC USE OR OCCUPANCY

APPLICABLE CODES			
	Year		Year
International Building Code	2006	National Electrical Code	2008
International Mechanical Code	2006	Uniform Code for Building Conservation	2006
International Fuel Gas Code	2006	ADA Accessibility Guidelines	N/A
International Plumbing Code	2006		
International Fire Code	2006		
International Energy Conservation Code	2006		

D

- A. Occupancy and Group: WATER TREATMENT PLANT OCCUPANCY F-1
- Change in Use: Yes  No  Mixed Occupancy: Yes  No   
Special Use and Occupancy (e.g. High Rise, Covered Mall):  NO
- B. Seismic Design Category: D-1 Design Wind Speed: 90-120 mph
- C. Type of Construction (circle one):  

I	I	II	III	IV	V	V
A	B	A	B	HT	A	B
- D. Fire Resistance Rating Requirements for the Exterior Walls based on the fire separation distance (in hours):  
North: NONE South: NONE East: NONE West: NONE
- E. Mixed Occupancies: F-1 Nonseparated Uses: N/A
- F. Sprinklers:  
Required: NONE Provided: NONE

C

- G. Type of Sprinkler System (IBC 903.3.1) NONE
- H. Number of Stories: 1 Building Height: 22 FT.
- I. Actual Area per Floor (square feet): 3,240
- J. Tabular Area: (table 503): II-B 27,125 SQ. FT.
- K. Area Modifications:  

$$a) A_a = \left\{ A_t + \left[ A_t \times I_f \right] + \left[ A_t \times I_s \right] \right\} I_r = \left[ F/P - 0.25 \right] W / 30$$
- b) Sum of the Ratio Calculations for Mixed Occupancies:  

$$\frac{\text{Actual Area}}{\text{Allowable Area}} \leq 1$$
- c) Total Allowable Area for:  
 1) One Story: 27,125 SQ. FT.  
 2) Two Story: A<sub>a</sub>(2) NONE  
 3) Three Story: A<sub>a</sub>(3) NONE
- d) Unlimited Area Building: Yes  No  Code Section: \_\_\_\_\_

B

K. Fire Resistance Rating Requirements for Building Elements (hours) II-B

Element	Hours	Assembly Listing	Element	Hours	Assembly Listing
Exterior Bearing Walls	NONE	NONE	Floors - Ceiling Floors	NONE	NONE
Interior Bearing Walls	NONE	NONE	Roofs - Ceiling Roofs	NONE	NONE
Exterior Non-Bearing Walls	NONE	NONE	Exterior Doors and Windows	NONE	NONE
Structural Frame	NONE	NONE	Shaft Enclosures	NONE	NONE
Partitions - Permanent	NONE	NONE	Fire Walls	NONE	NONE
Fire Barriers	NONE	NONE	Fire Partitions	NONE	NONE
			Smoke Partitions	NONE	NONE

- L. Design Occupant Load: 7 BASED ON WAREHOUSE, ACTUAL IS THOUGHT NOT TO BE MORE THAN 3
- Exit Width Required: \_\_\_\_\_ Exit Width Provided: \_\_\_\_\_
- M. Minimum Number of Required Plumbing Facilities: NONE IBC 2902.4.1
- a) Water Closets - Required (m) \_\_\_\_\_ (f) \_\_\_\_\_ Provided (m) \_\_\_\_\_ (f) \_\_\_\_\_
- b) Urinals - Required (m) \_\_\_\_\_ (f) \_\_\_\_\_ Provided (m) \_\_\_\_\_ (f) \_\_\_\_\_
- c) Lavatories - Required (m) \_\_\_\_\_ (f) \_\_\_\_\_ Provided (m) \_\_\_\_\_ (f) \_\_\_\_\_
- d) Bath Tubs or Showers: \_\_\_\_\_
- e) Drinking Fountains: \_\_\_\_\_ Service Sinks: \_\_\_\_\_

A

- FOOTNOTES:
- 1) In case of conflict with the U.S. Department of Justice Federal Registers Parts 1 through 5 - ADA Guidelines and specific reference to the International Building Code Accessibility Chapters, the more restrictive requirement shall govern.
- 2) Additional Code Information shall be provided at the discretion of the Building Official for Complex Buildings. Including, but not limited to:  
 a) High Rise Requirements.  
 b) Atriums.  
 c) Performance Based Criteria.  
 d) Means or Egress Analysis.  
 e) Fire Assembly Locator Sheet.  
 f) Exterior and Interior Accessibility Route.  
 g) Fire Stopping, Including Tested Design Number.

2  
**DESIGN CRITERIA**

**GENERAL BACKGROUND**

THE PURPOSE OF THIS PROJECT IS TO INSTALL A TREATMENT PLANT TO REMOVE/INACTIVATE WHIRLING DISEASE FROM THE TWO SOURCES THAT FEED THE SPRINGVILLE FISH HATCHERY.

THE WHIRLING DISEASE PARASITE GOES THROUGH A COMPLEX LIFE CYCLE AND PART OF THAT LIFE CYCLE IS TO ENTER A FISH AND ATTACK THE CARTILAGE TISSUE OF THE FISH'S HEAD AND SPINE. THE PARASITE STARTS OFF AS A MICROSCOPIC MYXOSPORE (APPROXIMATELY 8 TO 10 MICRONS IN SIZE) IN THE HEAD OF A FISH. WHEN THE FISH DIES, THE MYXOSPORES ARE RELEASED AND MUST BE EVENTUALLY EATEN BY THE AQUATIC WORM TUBIFEX TO COMPLETE THE TWO-HOST LIFE CYCLE. INSIDE THE TUBIFEX WORM, THE SPORE CHANGES FORM AND BECOMES A TRIACTINOMYXON (TAM). AFTER SEVERAL MONTHS OF DEVELOPMENT, THE TAM'S ARE RELEASED FROM THE TUBIFEX WORM AND INTO THE WATER. TROUT BECOME INFECTED WHEN A TAM CLINGS TO A FISH'S BODY AND WORKS ITS WAY INTO THE FISH'S NERVOUS SYSTEM. ONCE INSIDE THE FISH, THE PARASITE CHANGES FORM AGAIN AND MOVES INTO THE FISH'S CARTILAGE TISSUES WHERE IT DEVELOPS INTO A MATURE SPORE IN 3 TO 5 MONTHS. AFTER SEVERAL WEEKS, INFECTED FISH MAY EXHIBIT A "WHIRLING" BEHAVIOR, SPINAL OR HEAD DEFORMITIES AND BLACK TAILS. WHEN AN INFECTED FISH DIES AND DECOMPOSES, THE SPORES ARE RELEASED INTO THE ENVIRONMENT AND CAN SURVIVE TRANSPORT THROUGH A PREDATOR'S DIGESTIVE TRACT OR CAN BE TRANSPORTED ON MUDDY BOOTS OR OTHER EQUIPMENT.

**DESIGN FLOW**

THIS TREATMENT PLANT IS DESIGNED TO TREAT A MAXIMUM OF 6 CFS (2700 GPM) OF INFLOW TO THE HATCHERY. THE PLANT CONSISTS OF AN INLET BOX, REDUNDANT INFLUENT FEED PUMPS, THREE DRUM FILTERS AND A THREE BANK OPEN CHANNEL UV SYSTEM. THE FISH HATCHERY CANNOT GO WITHOUT WATER FOR ANY PERIOD OF TIME. THEREFORE, THIS TREATMENT PLANT MUST BE BUILT WITH REDUNDANT EQUIPMENT. THIS WILL ALLOW THE OPERATOR TO TAKE ONE COMPONENT OF THE EQUIPMENT OFF LINE AS MAINTENANCE REQUIRES AND STILL MAINTAIN 6 CFS FLOW TO THE FISH. ADDITIONALLY, A RECIRCULATION PUMP WILL BE USED TO RECIRCULATE WATER FROM THE BOTTOM END OF THE FISH CHANNELS, BACK THROUGH THE LOW HEAD UNITS TO REOXYGENATE THE WATER, IN THE EVENT THAT THE TREATMENT SYSTEM MUST BE TAKEN OFFLINE FOR A SHORT PERIOD OF TIME.

**DRUM FILTER**

THE THREE DRUM FILTERS WILL EACH HAVE THE CAPACITY TO REMOVE ALL PARTICLES LARGER THAN 21 MICRONS AT 3 CFS (6 CFS TOTAL @ n+1). THE PURPOSE OF THE DRUM FILTER IS NOT NECESSARILY TO REMOVE THE TAM'S. THE PURPOSE OF THE DRUM FILTER RATHER IS TO REMOVE PARTICLES IN THE WATER THAT WOULD HINDER THE EFFECTIVENESS OF THE UV DISINFECTION.

**UV DISINFECTION**

THE UV DISINFECTION SYSTEM WILL HAVE THE CAPACITY TO TREAT 6 CFS AT A RATE OF 50 mJ/cm (W/ n+1 UNITS). THE UV DISINFECTION IS DESIGNED WITH A SAFETY DEVICE THAT WILL ENSURE THAT ALL WATER THROUGH THE UV IS PROPERLY DISINFECTED. THIS WILL BE DONE WITH THE USE OF THE ELECTRIC ACTUATED DOWNWARD OPENING WEIR GATE IMMEDIATELY DOWNSTREAM FROM THE UV SYSTEM. IF AT ANY TIME, THE UV DOSAGE CONCENTRATION FALLS BELOW 50 MJ/CM OR POWER TO A UNIT IS LOST, THE CONTROL PANEL WILL AUTOMATICALLY RAISE THE ACTUATED GATE DOWNSTREAM OF THE UV SYSTEM, AND SEND A SIGNAL TO THE CONTROL PANEL TO TURN ON THE RECIRCULATION PUMP.

IN THE EVENT OF A POWER FAILURE, THE UV SYSTEM IS EQUIPPED WITH A UNINTERRUPTIBLE POWER SUPPLY (UPS) TO PROVIDE POWER TO THE UV UNTIL THE BACKUP GENERATOR CAN BE STARTED. THE BACKUP GENERATOR IS ALSO EQUIPPED WITH AN AUTOMATIC TRANSFER SWITCH TO AUTOMATICALLY START THE GENERATOR IN THE EVENT OF A POWER FAILURE. THE GENERATOR AND AUTOMATIC TRANSFER SWITCH SHOULD BE TESTED REGULARLY PER THE MANUFACTURER'S RECOMMENDATIONS TO ENSURE THAT IT WILL FUNCTION PROPERLY IN THE EVENT OF A POWER FAILURE.

**PUMPS**

THE RECIRCULATION PUMP IS DESIGNED TO PUMP THE FULL 6 CFS. THIS WAY FULL REDUNDANCY IS MAINTAINED.

3  
**CONSTRUCTION NOTES**

**GENERAL**

1. SPRINGVILLE FISH HATCHERY HAS HATCHERY FEED & DRAIN LINES, POWER, AND TELEPHONE LINES, ETC. THE LOCATION OF THE EXISTING UTILITIES HAVE BEEN SHOWN TO THE BEST OF THE ENGINEER'S ABILITY; HOWEVER, THE CONTRACTOR HAS THE ULTIMATE RESPONSIBILITY TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION. ANY DISTURBED UTILITIES DURING CONSTRUCTION SHALL BE REPLACED OR REPAIRED AT THE CONTRACTOR'S EXPENSE.

2. ALL PIPELINES SHALL BE INSTALLED AT LOCATIONS AND DEPTH REQUIRED ON THE PLANS OR AS OTHERWISE DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL NOT MOVE THE PLANNED ALIGNMENT OF ANY WATER PIPELINE WITHOUT THE WRITTEN CONSENT OF BOTH THE ENGINEER AND THE OWNER.

3. ALL GATE AND/OR BUTTERFLY VALVES SHALL BE THE SAME SIZE AS THE PIPELINE TO WHICH THEY CONNECT.

4. THE INSTALLATION OF VARIABLE SIZED OPENINGS IN TEES, ELBOWS, CROSSES, ETC. WHERE APPLICABLE IS AN ACCEPTABLE ALTERNATIVE TO THE USE OF REDUCERS. THE INSTALLATION OF TWO TEES IS AN ACCEPTABLE ALTERNATIVE TO THE USE OF A CROSS.

5. EXISTING WATER SERVICE SHALL BE LEFT IN OPERATION DURING CONSTRUCTION, EXCEPT AS APPROVED BY THE ENGINEER.

6. ANY DEBRIS RESULTING FROM THE PROJECT SHALL BE DISPOSED OF BY THE CONTRACTOR. CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENTS FOR DISPOSAL SITES AT WHICH SAID MATERIAL MAY BE LAWFULLY WASTED. FINAL GRADE OF DISTURBED AREAS IS SUBJECT TO THE ENGINEER'S AND OWNER'S APPROVAL AND IS TO BE DONE IN A NEAT AND WORKMANLIKE MANNER.

7. AN EFFORT HAS BEEN MADE TO SHOW THE EXISTING SYSTEM AND THE PROPOSED IMPROVEMENTS AS ACCURATELY AS POSSIBLE. ALL PIPELINE LOCATIONS, SIZES AND TYPES ARE SHOWN ACCORDING TO THE INFORMATION AVAILABLE TO THE ENGINEER. HOWEVER, THE ACTUAL FIELD CONDITIONS MAY VARY. ADDITIONAL WORK MAY BE REQUIRED AND LIKEWISE PROPOSED WORK MAY BE ELIMINATED BASED ON ACTUAL FIELD CONDITIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM THE LOCATION, SIZE AND TYPE OF PIPELINES WHERE WORK IS TO BE PERFORMED.

8. SITE DISTURBANCE SHALL BE KEPT AT A MINIMUM. WHERE POSSIBLE THE VEGETATION SHALL BE PROTECTED AND PRESERVED.

9. ALL FINISHED COLORS ARE TO BE DETERMINED BY SUBMITTAL AND APPROVED IN WRITING BY THE HATCHERY OPERATOR.

10. THE CONTRACTOR SHALL INSURE THAT ALL EQUIPMENT IS INSTALLED IN A TIMELY MANNER, WITH REASONABLE COORDINATION TO INSURE INTEGRATION OF EQUIPMENT AND A FULLY FUNCTIONAL FACILITY.

11. THE CONTRACTOR SHALL MEET THE REQUIREMENTS OF THE COMCHECK. SEE APPENDIX C TO THE SPECIFICATIONS.

12. THIS BUILDING IS NOT INTENDED FOR PUBLIC USE OR OCCUPANCY

**STEEL BUILDING DESIGN CRITERIA**

1. SEE SPECIAL PROVISION 13150SP FOR DESIGN REQUIREMENTS.

2. THE NATIVE SOIL HAS AN ALLOWABLE PRESSURE OF 1500 PSI. SEE APPENDIX A TO THE SPECIFICATIONS SOILS REPORT.

**TREATMENT SYSTEM EQUIPMENT**

1. THE CONTRACTOR IS REQUIRED TO FURNISH AND INSTALL ALL OF THE EQUIPMENT AND MATERIALS REQUIRED TO MAKE A COMPLETE AND FUNCTIONING TREATMENT FACILITY.

2. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL COORDINATION OF EQUIPMENT AND SUPPLY DELIVERIES. DELIVERIES OF MAJOR EQUIPMENT SHALL ALSO BE COORDINATED WITH THE ENGINEER AND IN ACCORDANCE WITH THE CONTRACTOR'S CONSTRUCTION SCHEDULE (AS SUBMITTED AT THE START OF THE PROJECT). IF ANY EQUIPMENT REQUIRES STORAGE, THE CONTRACTOR IS ALSO RESPONSIBLE TO PROVIDE STORAGE ACCORDING TO MANUFACTURER RECOMMENDATIONS.

3. THE CONTRACTOR SHALL BECOME FAMILIAR WITH ALL PARTS OF THE PLANS AND SPECIFICATIONS AND INSURE THAT ALL SUBCONTRACTORS ARE FAMILIAR WITH THE SECTIONS PERTAINING TO THEIR AREA OF WORK. NO DEVIATIONS FROM THE DRAWINGS WILL BE ALLOWED UNLESS AGREED UPON BY ALL PARTIES IN WRITING PRIOR TO CONSTRUCTION AND/OR FABRICATION.

4. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE MAJOR EQUIPMENT SUPPLIERS THE CLEANING, FLUSHING, TESTING AND START-UP OF ALL TREATMENT PLANT EQUIPMENT AFTER IT HAS BEEN INSTALLED ACCORDING TO THE DRAWINGS AND SPECIFICATIONS.

4

5

5. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE ALL WORK BETWEEN THE VARIOUS TRADES REQUIRED OF THE TREATMENT PLANT FACILITIES AND APPURTENANT SITE WORK IMPROVEMENTS.

6. ANY OMISSIONS OR CONFLICTS BETWEEN THE PLANS AND THE ACTUAL CONDITIONS ENCOUNTERED IN THE VARIOUS ELEMENTS OF THE PROJECT SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND RESOLVED BY THE SAME BEFORE PROCEEDING WITH ANY WORK INVOLVED.

7. ALL CONSTRUCTION, WORKMANSHIP, AND MATERIALS SHALL CONFORM TO THE LATEST EDITIONS OF THE INTERNATIONAL BUILDING CODE, PLUMBING CODE, ELECTRICAL CODE, AND PROJECT SPECIFICATIONS.

8. THE CONTRACTOR IS RESPONSIBLE TO VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE SITE WITH THE CONSTRUCTION DRAWINGS.

**SAFETY NOTES**

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL STATE OF UTAH SAFETY STANDARDS AND OSHA REQUIREMENTS AS THEY APPLY TO THE PROJECT.

2. THE ENGINEER OR OWNER DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE CONTRACTOR'S FAILURE TO COMPLY WITH THESE REQUIREMENTS.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE DESIGN AND CONSTRUCTION OF ALL FORMS AND SHORING REQUIRED.

**SPECIAL INSPECTION AND TESTING UNDER THE PROVISIONS OF IBC 1704 AND FOR MISCELLANEOUS AREAS**

Indicate required Special inspections for project by checking the appropriate boxes and provide specific instructions as to the inspection requirements and the expectations of the architect, engineer and owner:

FABRICATORS (IBC 1704.2)

<input checked="" type="checkbox"/> Approved Fabricator	Fabricator Name: Fabricator must be listed by DFCM as a approved fabricator
In-plant inspections	
<input type="checkbox"/> Steel Construction	<input type="checkbox"/> Welding
<input type="checkbox"/> Details	

**STEEL (IBC 1704.3)**

Item	Continuous	Periodic	Detailed Instructions and Frequencies
High Strength Bolting(1704.3.3)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by steel building manufacturer
Complete & partial penetration groove welds	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by steel building manufacturer
Multipass fillet welds	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by steel building manufacturer
Single-pass fillet welds > 5/16"	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by steel building manufacturer
Single-pass fillet welds ≤ 5/16"	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by steel building manufacturer
REINFORCEMENT STEEL	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by steel building manufacturer
Verification of weldability	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by steel building manufacturer
Shear wall and shear reinforcement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by steel building manufacturer
Other reinforcement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by steel building manufacturer
Steel frame joint details	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by steel building manufacturer

**CONCRETE CONSTRUCTION (IBC 1704.4)**

Item	Continuous	Periodic	Detailed Instructions and Frequencies
Materials (1704.4.1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic spot checks as needed
Steel placement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic spot checks as needed
Bolts prior & during placement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic spot checks as needed
Use of required design mix	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Whenever mix is modified
Concrete sampling for strength test, slump, air content, and temperature of concrete	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic spot checks as needed to insure compliance
Concrete & shotcrete placement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic spot checks as needed
Curing temperature and techniques	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic spot checks as needed
Form work	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic spot checks as needed

**SOILS CONSTRUCTION (IBC 1704.7)**

Item	Continuous	Periodic	Detailed Instructions and Frequencies
Site preparation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic spot checks as needed
Structural fill material	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Period spot checks as needed or whenever source changes
Structural fill lift thickness	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic spot checks as needed
Structural fill soil densities	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic spot checks as needed at least daily
Backfill soils materials	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Period spot checks as needed or whenever source changes
Backfill soil densities	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic spot checks as needed at least daily

**Special inspection for seismic resistance (IBC 1707)**

Item	Continuous	Periodic	Detailed Instructions and Frequencies
Structural Steel (1707.2)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by building manufacturer
Cold-formed steel framing (1707.4)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	As required by building manufacturer
Mechanical & electrical items (1707.8)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Checked at least once per item installed

- Special Inspectors Shall:
- Be approved by the Building Official prior to performing any duties;
  - Provide proof of licensure as a special inspector by the State of Utah for each type of inspection;
  - Inspection reports are to meet the requirements of IBC 1704.1.2 and DFCM standards;
  - Inspection reports are to be submitted to the code consultant, architect, DFCM project manager, and the State of Utah Building Official within 48 hrs. of inspections;
  - A final inspection report shall be submitted following completion of the project documenting the types of special inspections performed and a statement indicating that the structure is in compliance with the drawings, specifications and applicable codes. IBC 1704.1.2

Updated October 8, 2009

Division of Facilities  
Construction & Management  
4110 State Office Building  
Salt Lake City, Utah 84114  
Phone: (801) 538 - 3018  
Fax: (801) 538 - 3267

http://dfcm.utah.gov

DESIGNED BY:

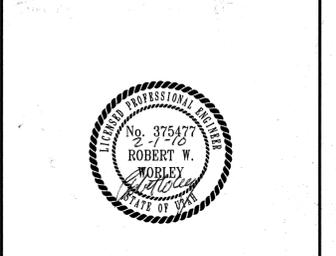


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SUNRISE ENGINEERING, INC.  
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PROJECT NAME:

UTAH DIVISION OF  
WILDLIFE  
RESOURCES  
SPRINGVILLE  
FISH HATCHERY  
TREATMENT PLANT  
2009

ENGINEER'S STAMP



MARK	DATE	DESCRIPTION

ISSUE TYPE: 100%

ISSUE DATE: November 1, 2009

DFCM PROJECT NO: 07146520  
SEI PROJECT NO: 03388  
CAD DWG FILE: sprngvl-G01-03  
DRAWN BY: CJC  
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DRAWING TITLE

CODE ANALYSIS,  
DESIGN CRITERIA,  
CONSTRUCTIONS NOTES,  
& SPECIAL INSPECTION

DRAWING NUMBER

G3

1

2

3

4

5

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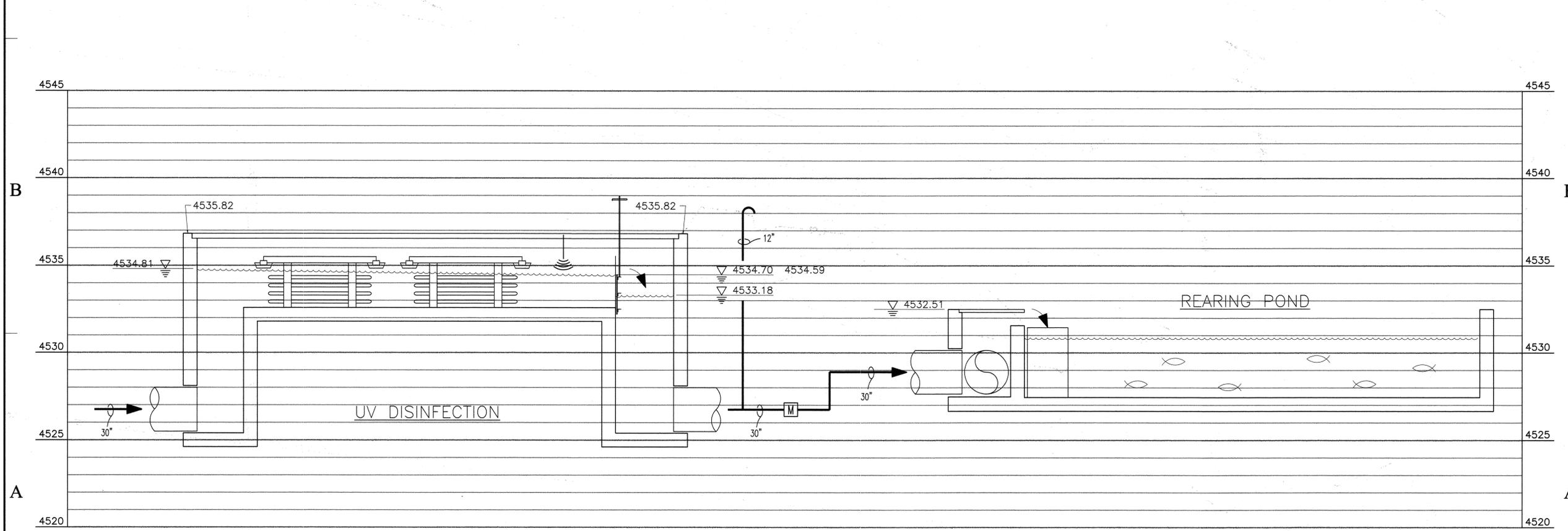
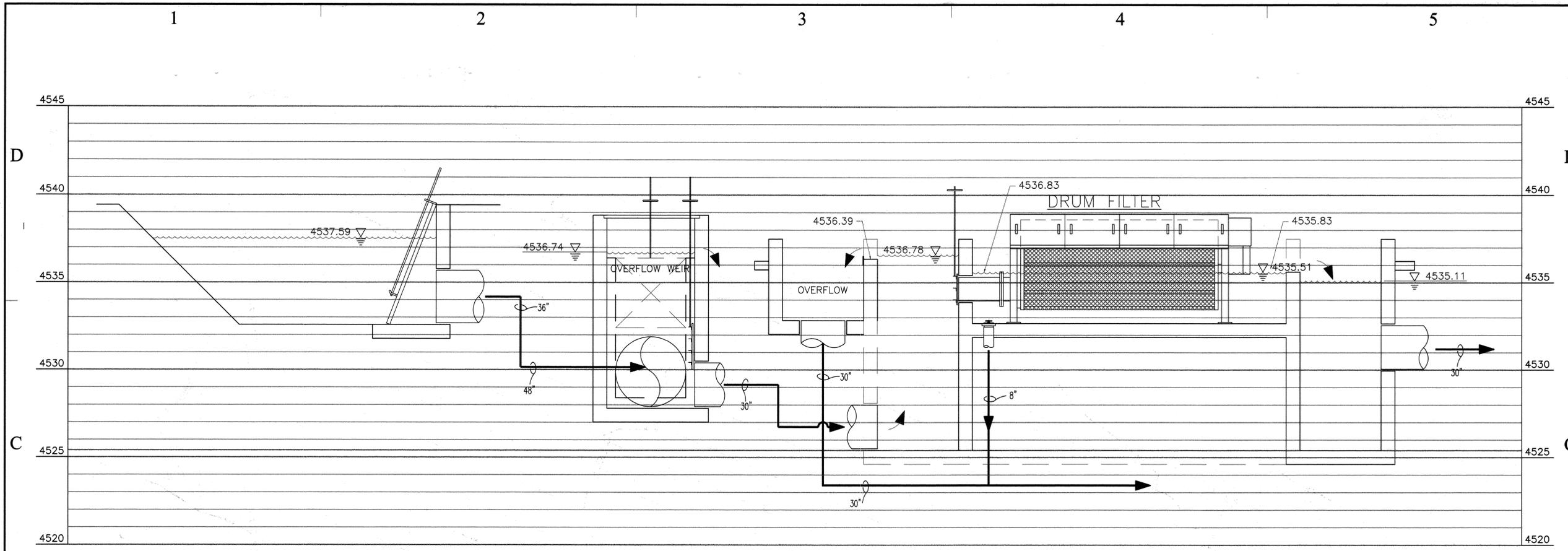
DRAWING TITLE

HYDRAULIC PROFILE

DRAWING NUMBER

**G4**

SHEET 4 OF 46



1

2

3

4

5

D

D

C

C

B

B

A

A

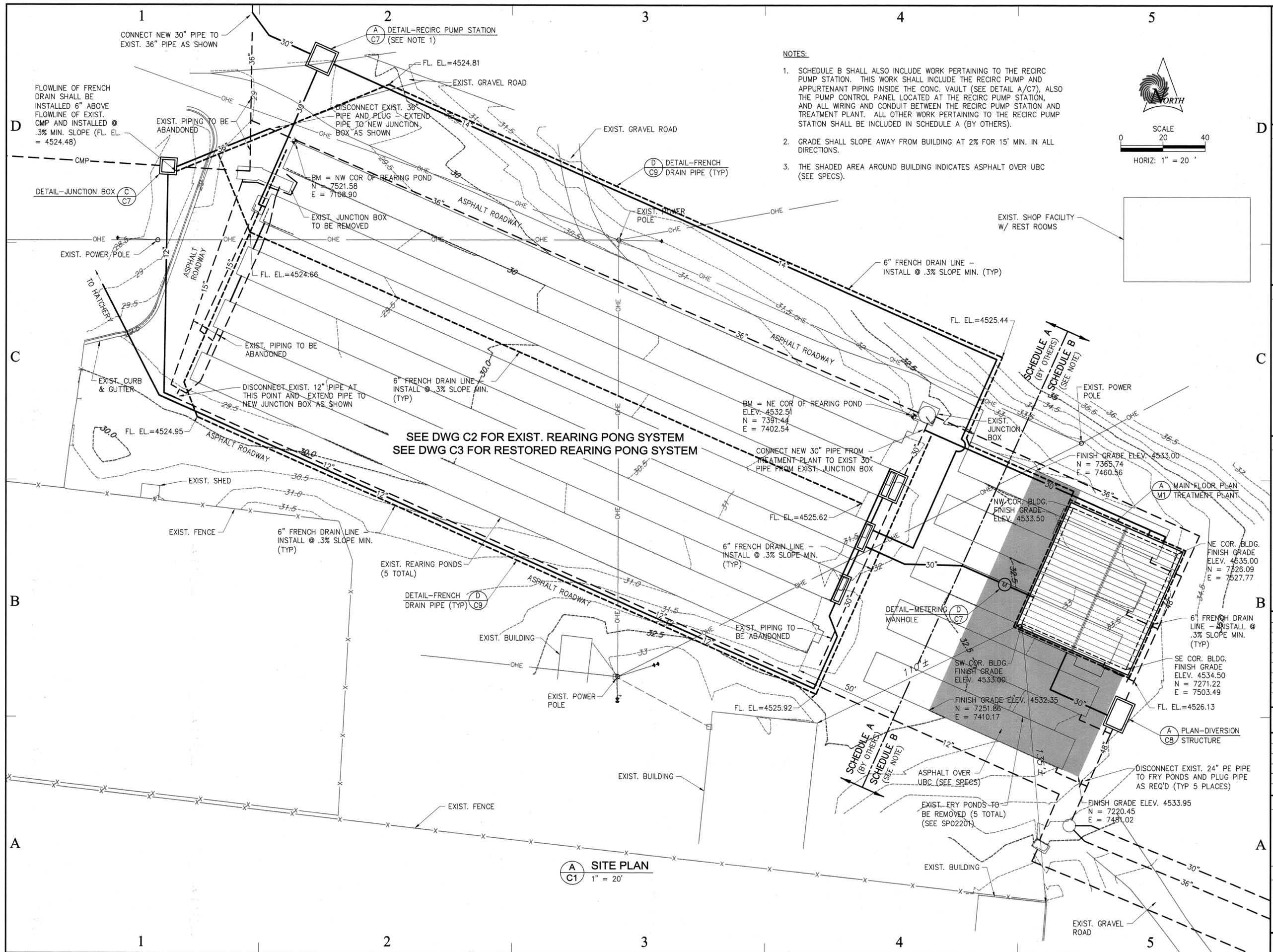
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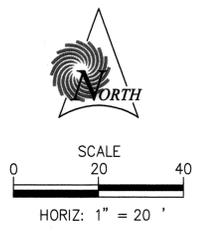
3

4

5



- NOTES:**
- SCHEDULE B SHALL ALSO INCLUDE WORK PERTAINING TO THE RECIRC PUMP STATION. THIS WORK SHALL INCLUDE THE RECIRC PUMP AND APPURTENANT PIPING INSIDE THE CONC. VAULT (SEE DETAIL A/C7), ALSO THE PUMP CONTROL PANEL LOCATED AT THE RECIRC PUMP STATION, AND ALL WIRING AND CONDUIT BETWEEN THE RECIRC PUMP STATION AND TREATMENT PLANT. ALL OTHER WORK PERTAINING TO THE RECIRC PUMP STATION SHALL BE INCLUDED IN SCHEDULE A (BY OTHERS).
  - GRADE SHALL SLOPE AWAY FROM BUILDING AT 2% FOR 15' MIN. IN ALL DIRECTIONS.
  - THE SHADED AREA AROUND BUILDING INDICATES ASPHALT OVER UBC (SEE SPECS).





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ISSUE DATE: November 1, 2009

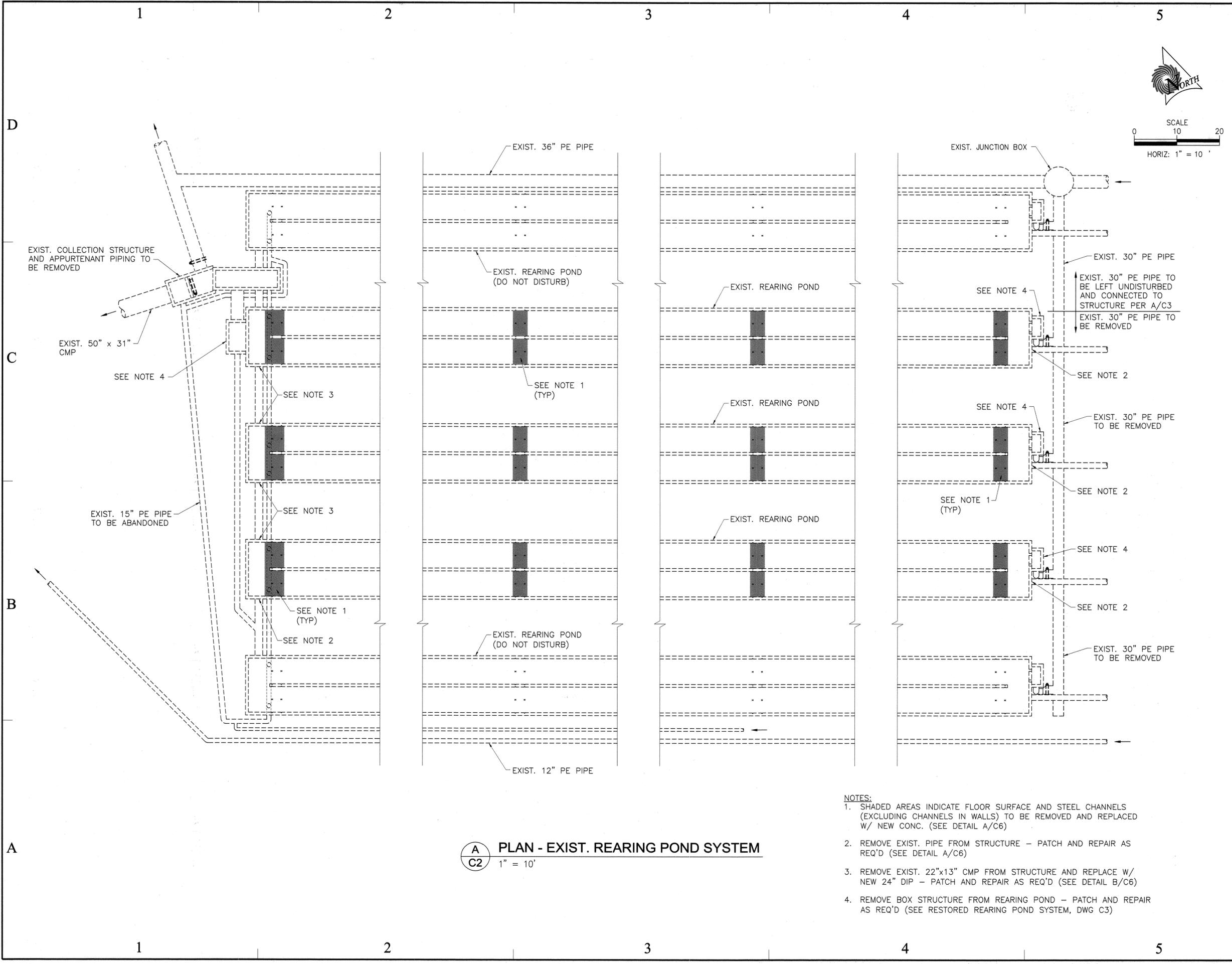
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SEI PROJECT NO: 03388
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DRAWING TITLE

EXIST. REARING POND SYSTEM

DRAWING NUMBER

C2



**A**  
**C2** PLAN - EXIST. REARING POND SYSTEM  
1" = 10'

- NOTES:
1. SHADED AREAS INDICATE FLOOR SURFACE AND STEEL CHANNELS (EXCLUDING CHANNELS IN WALLS) TO BE REMOVED AND REPLACED W/ NEW CONC. (SEE DETAIL A/C6)
  2. REMOVE EXIST. PIPE FROM STRUCTURE - PATCH AND REPAIR AS REQ'D (SEE DETAIL A/C6)
  3. REMOVE EXIST. 22"x13" CMP FROM STRUCTURE AND REPLACE W/ NEW 24" DIP - PATCH AND REPAIR AS REQ'D (SEE DETAIL B/C6)
  4. REMOVE BOX STRUCTURE FROM REARING POND - PATCH AND REPAIR AS REQ'D (SEE RESTORED REARING POND SYSTEM, DWG C3)



DESIGNED BY:

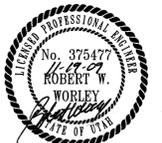


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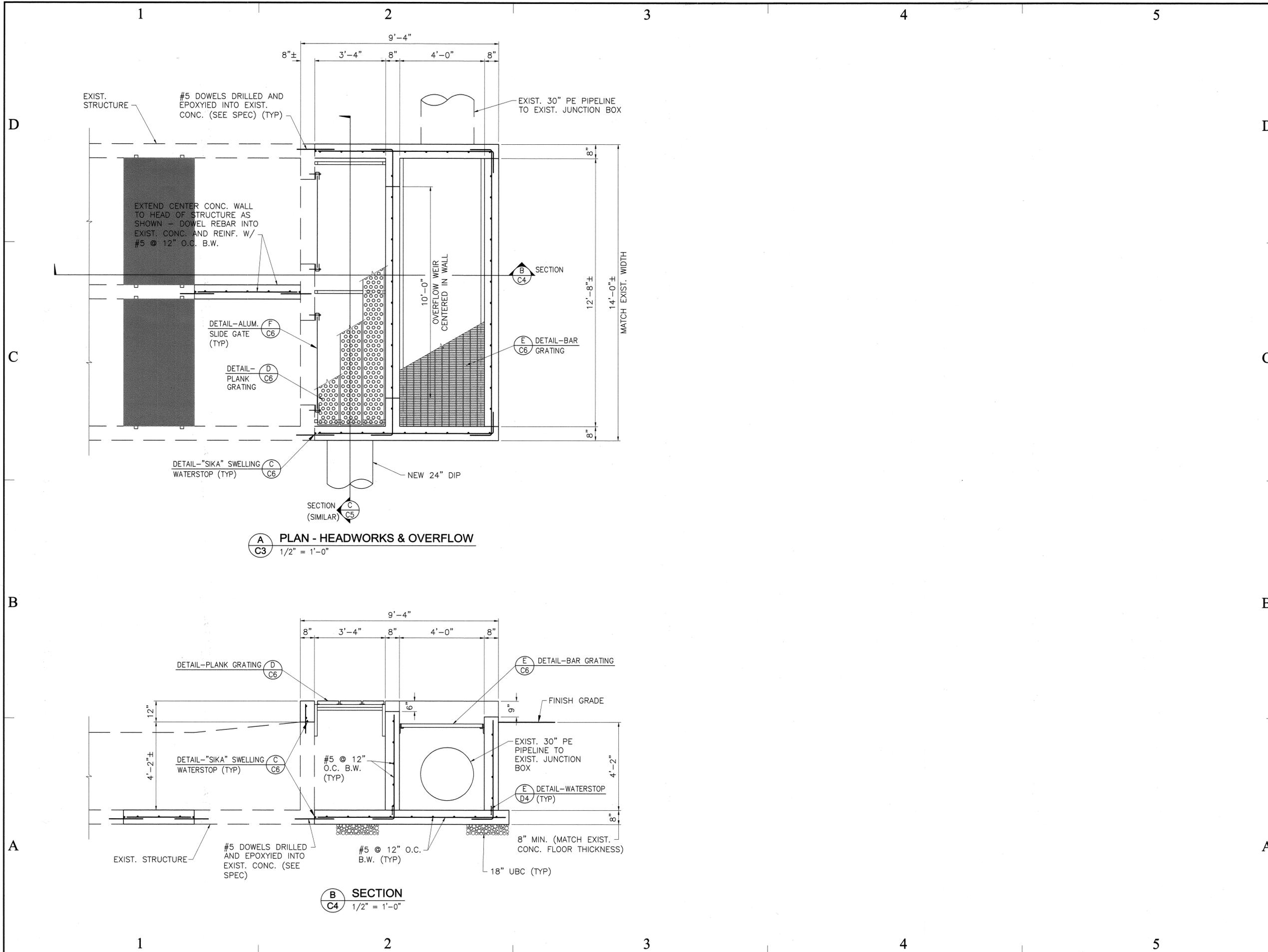
DRAWING TITLE

REARING POND DETAILS

DRAWING NUMBER

C4

SHEET 8 OF 46



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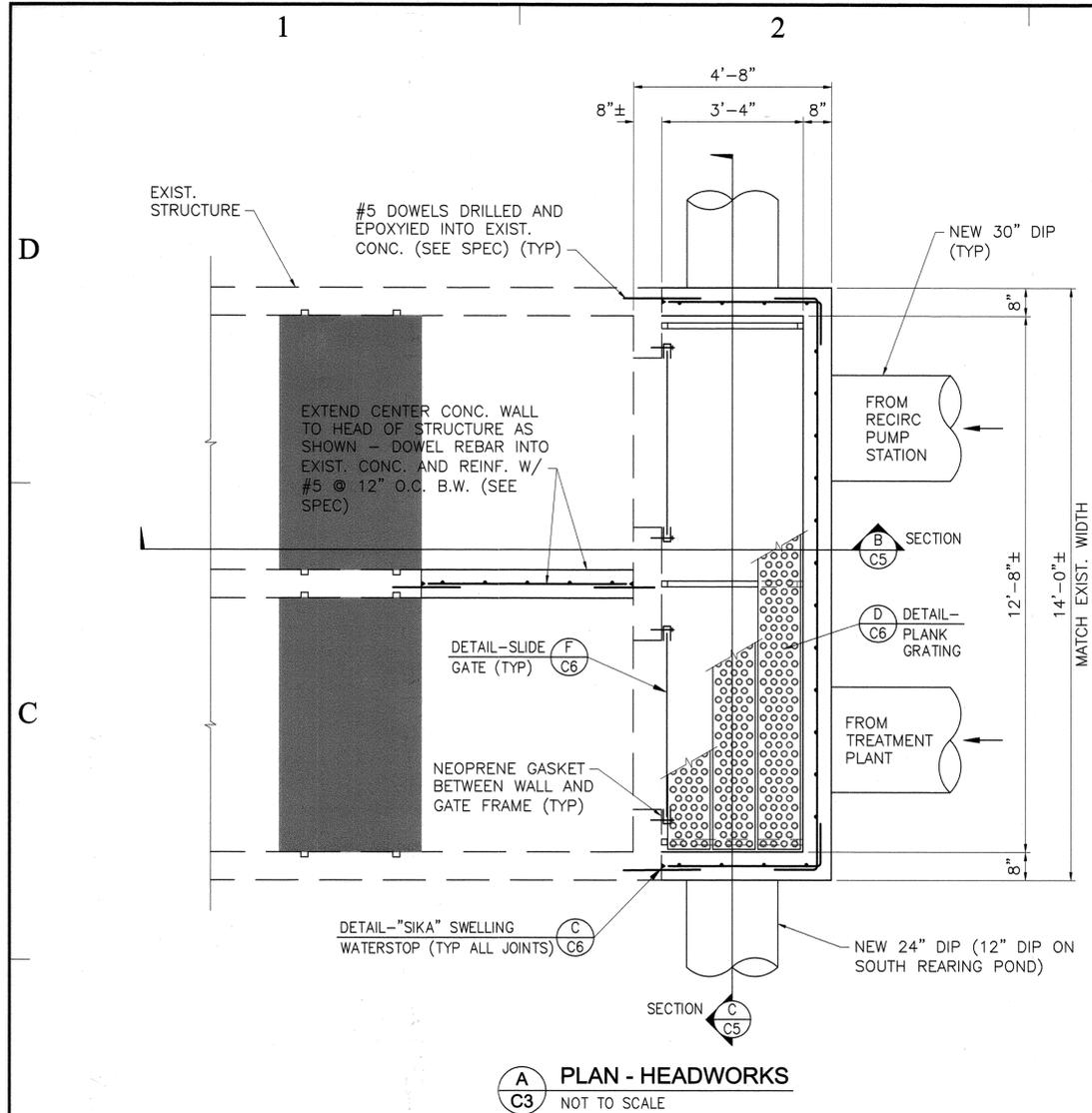
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REARING POND DETAILS

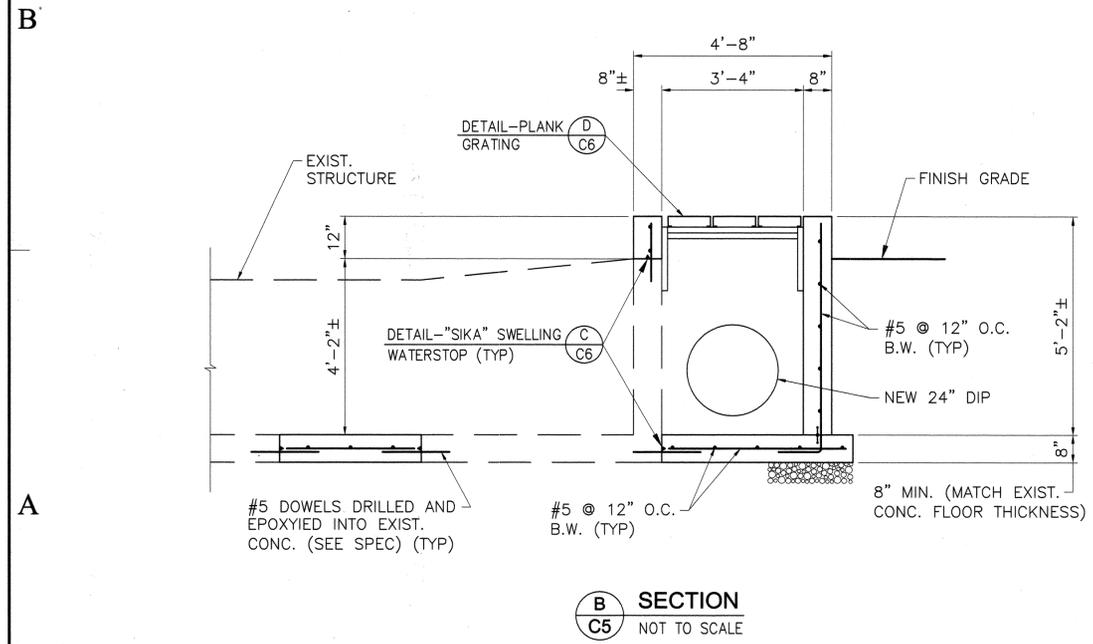
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C5

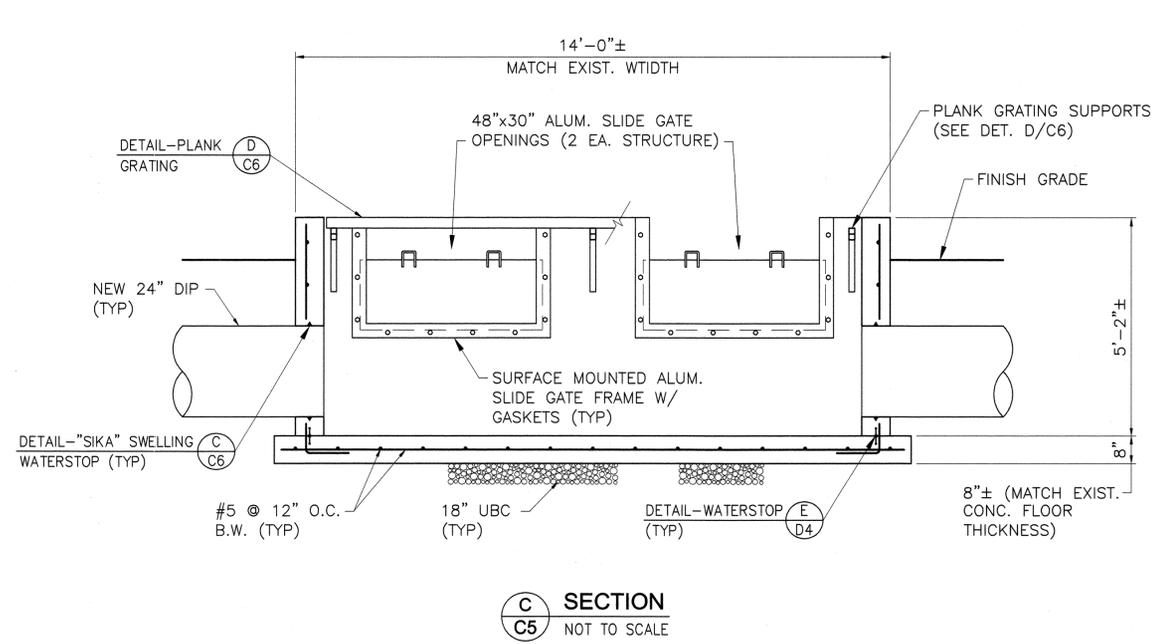
SHEET 9 OF 46



**A** PLAN - HEADWORKS  
C3 NOT TO SCALE



**B** SECTION  
C5 NOT TO SCALE



**C** SECTION  
C5 NOT TO SCALE

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ISSUE TYPE: 100%		

ISSUE DATE: November 1, 2009

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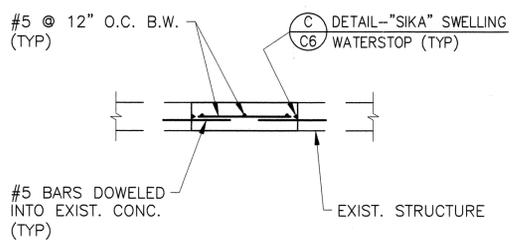
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REARING POND DETAILS

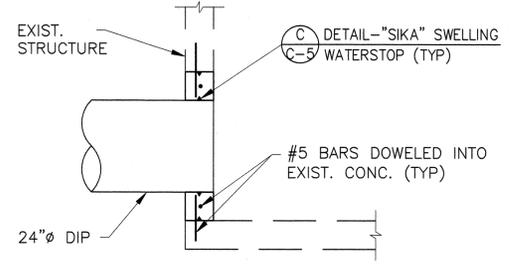
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**C6**

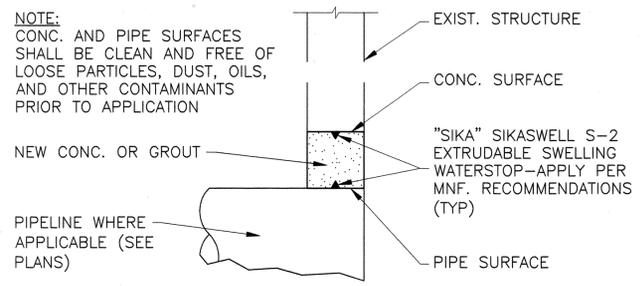
SHEET 10 OF 46



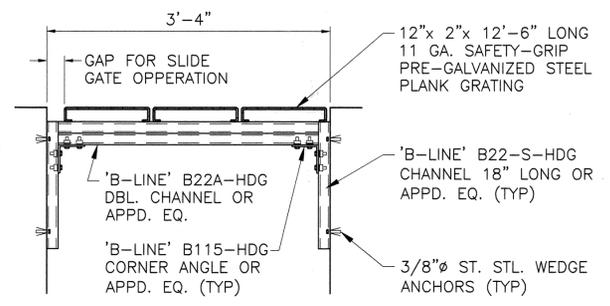
**A** DETAIL - CONC. FLOOR / WALL  
REPLACEMENT OR REPAIR  
NOT TO SCALE



**B** DETAIL - PIPE REPLACEMENT  
IN EXIST. CONC. WALL  
NOT TO SCALE

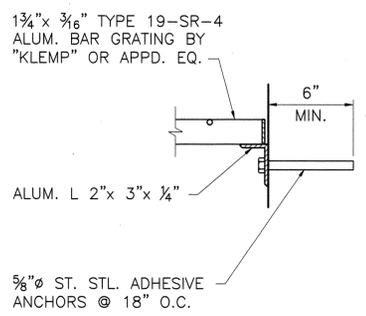


**C** DETAIL - "SIKA" SWELLING WATERSTOP  
NOT TO SCALE



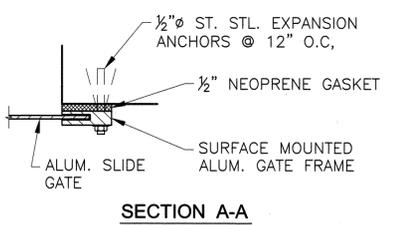
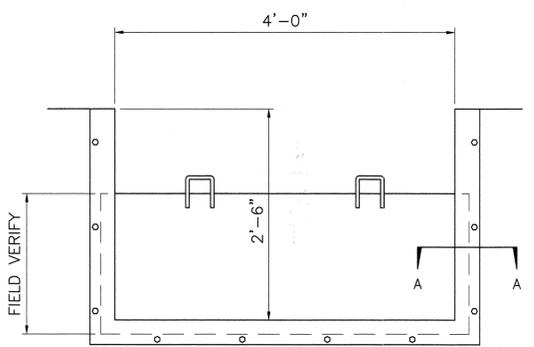
NOTE:  
SUPPORTS LOCATED AT 3 PLACES (SEE DWG C5)

**D** DETAIL - PLANK GRATING  
NOT TO SCALE



- NOTES:
1. ALL ENDS AND OPENINGS SHALL BE BANDED
  2. ALL GRATINGS SHALL BE SECURED IN PLACE WITH REMOVABLE FASTENERS
  3. WEIGHT OF EA. GRATING SECTION SHALL NOT EXCEED 65 LBS.
  4. WIDTH OF EA. GRATING SECTION SHALL NOT EXCEED 30"
  5. ALL ALUM. SURFACES IN CONTACT WITH STL. OR CONC. SHALL BE COATED PER SPECS.

**E** DETAIL - BAR GRATING  
NOT TO SCALE



- NOTES:
1. ALL ALUM. SURFACES IN CONTACT WITH STL. OR CONC. SHALL BE COATED PER SPECS.
  2. SLIDE GATE HEIGHT SHALL BE FIELD DETERMINED FOR PROPER OPERATION OF REARING PONDS

**F** DETAIL - ALUM. SLIDE GATE  
NOT TO SCALE



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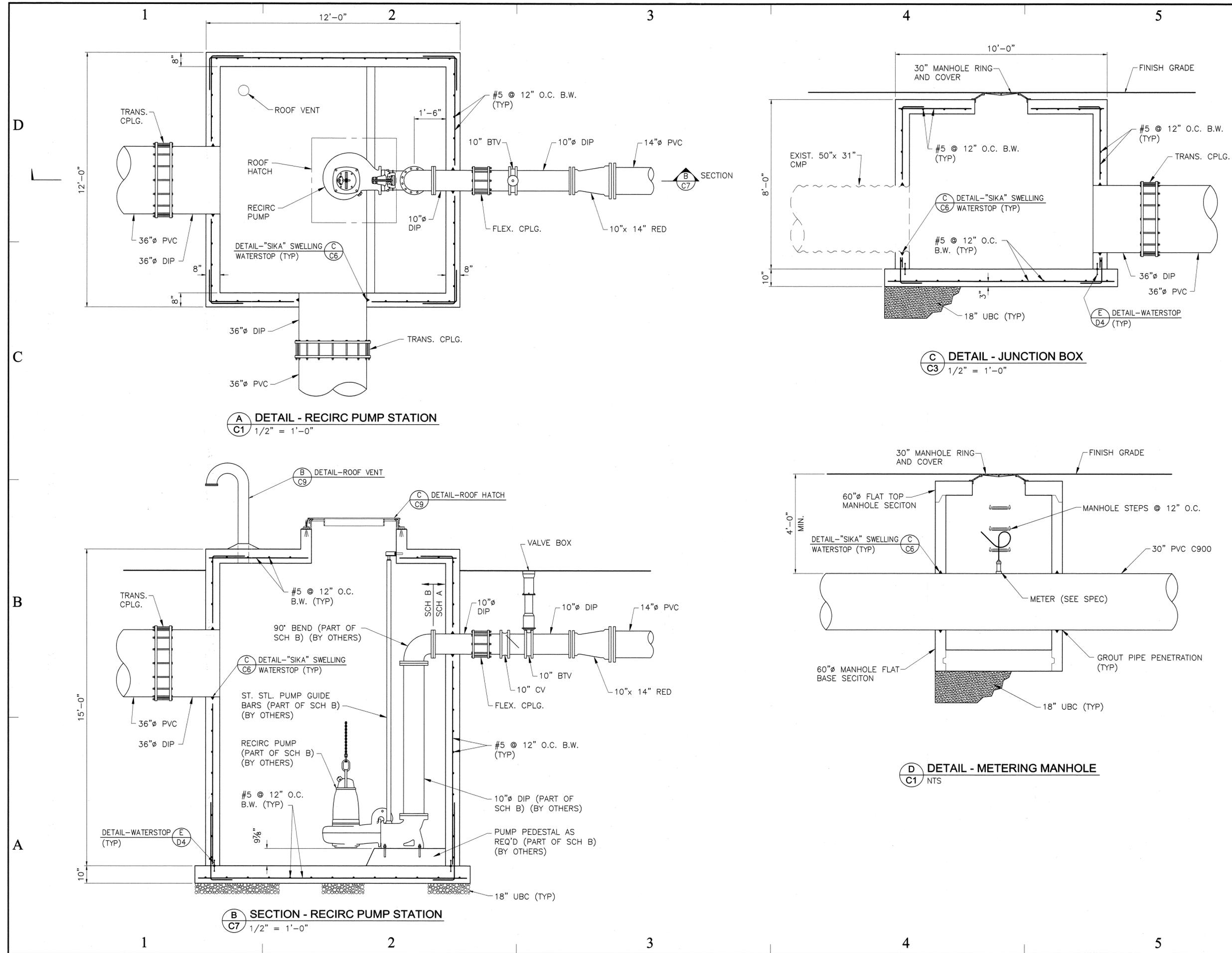
DFCM PROJECT NO: 07146520  
SEI PROJECT NO: 03388  
CAD DWG FILE: sprgvl-C07-09  
DRAWN BY: CJC  
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DRAWING TITLE  
**RECIRC PUMP STATION,  
JUNCTION BOX, &  
METERING MANHOLE**

DRAWING NUMBER

**C7**

SHEET 11 OF 46



MARK	DATE	DESCRIPTION
ISSUE TYPE: 100%		

ISSUE DATE: November 1, 2009

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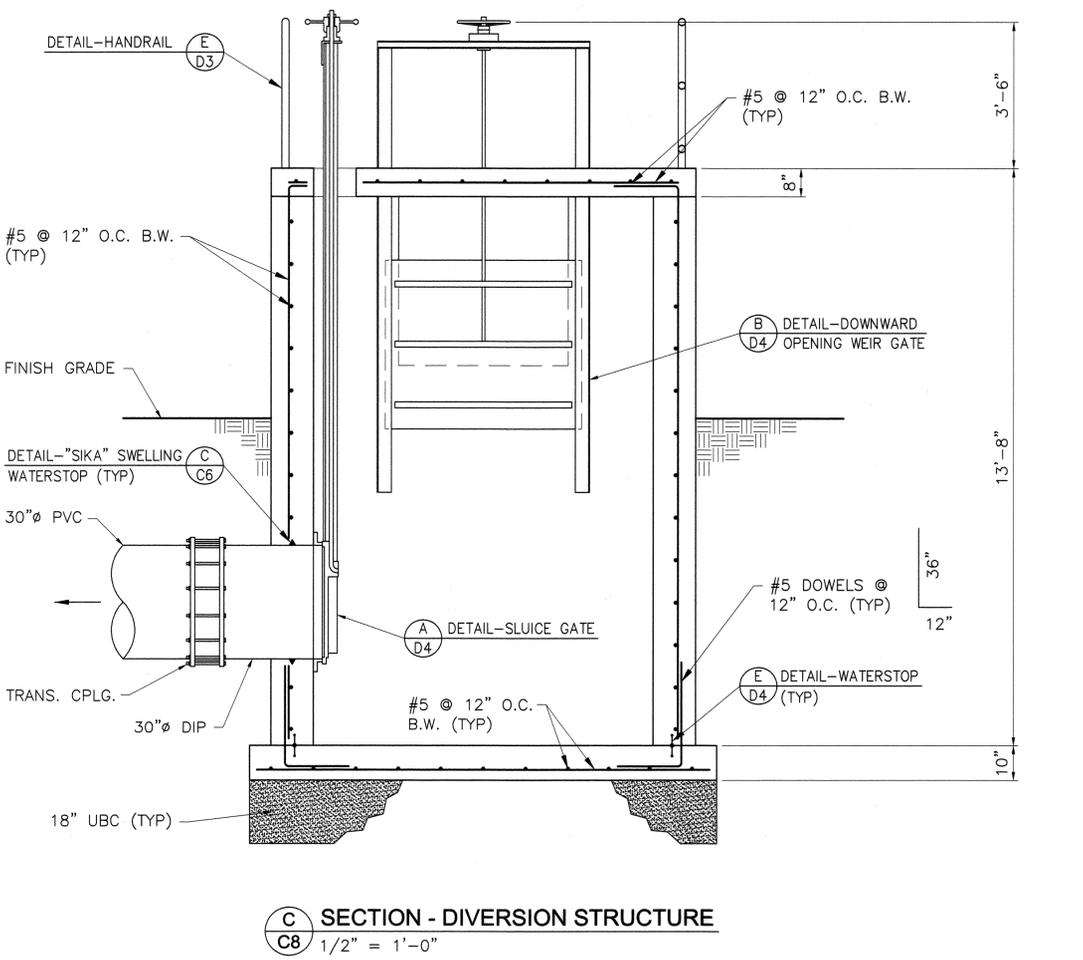
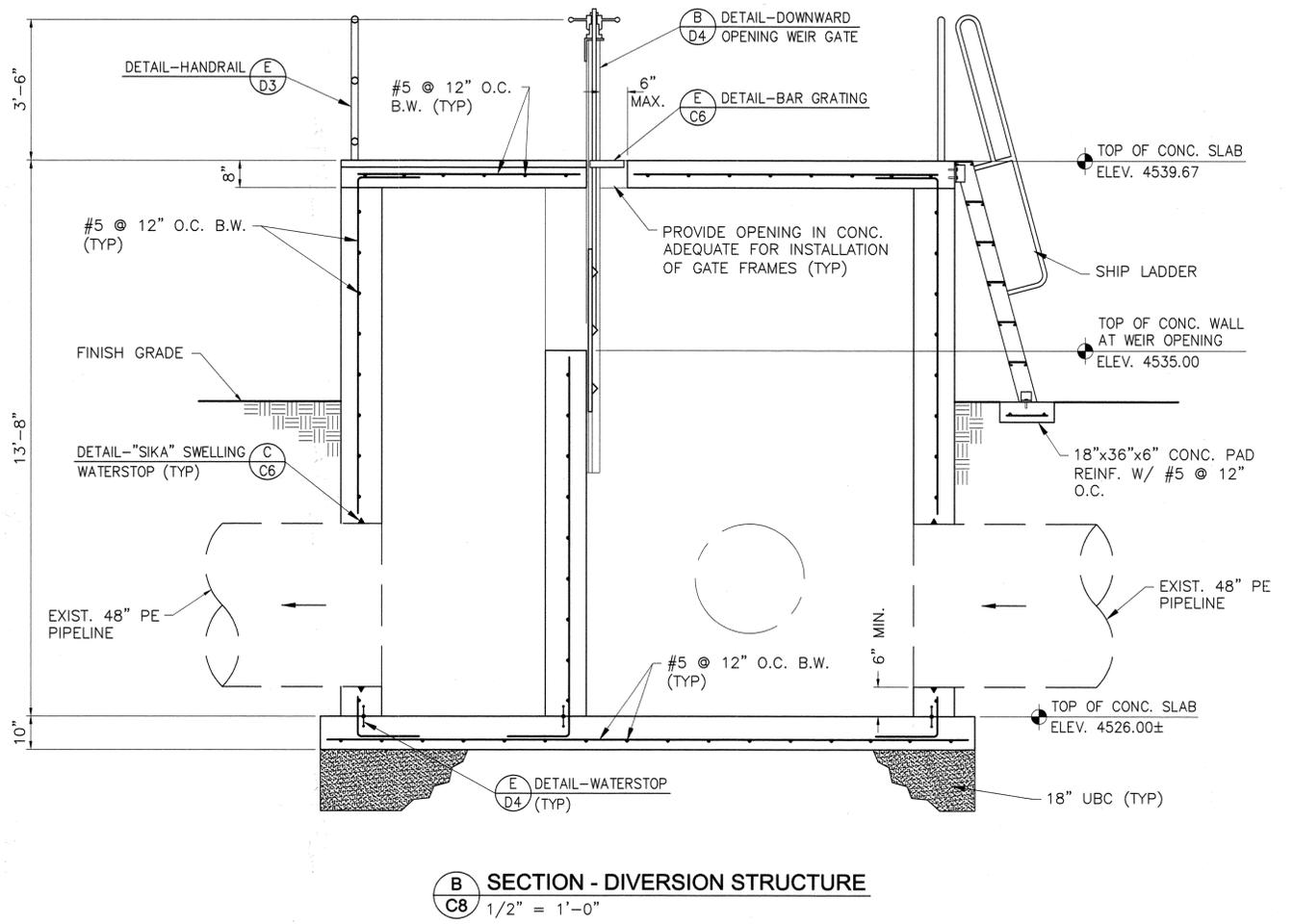
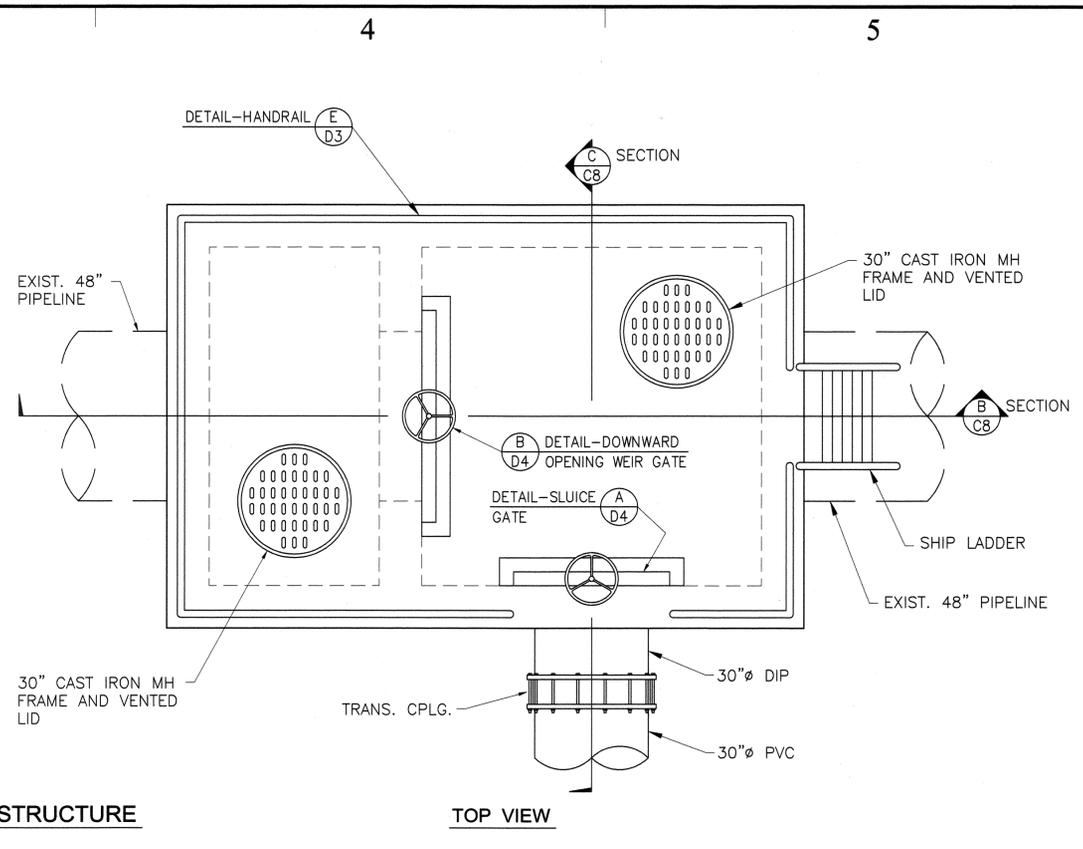
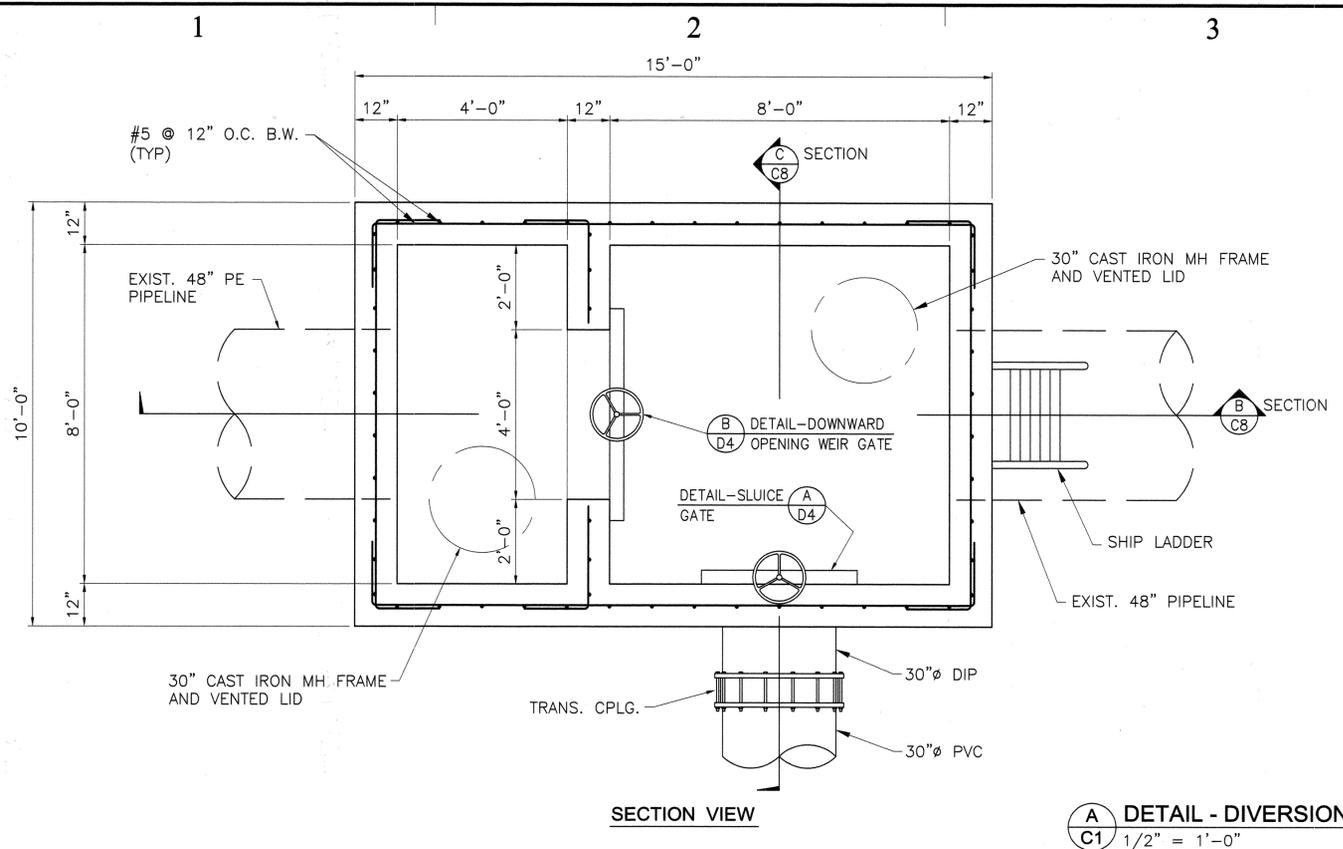
DRAWING TITLE

DIVERSION STRUCTURE

DRAWING NUMBER

**C8**

SHEET 12 OF 46





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MARK DATE DESCRIPTION

ISSUE TYPE: 100%

ISSUE DATE: November 1, 2009

DFCM PROJECT NO: 07146520

SEL PROJECT NO: 03388

CAD DWG FILE: sprgvl-C10-11

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DRAWING TITLE

THRUST RESTRAINT  
DETAILS

DRAWING NUMBER

C10

SHEET 14 OF 46

# MEGALUG THRUST RESTRAINING SYSTEM DETAILS

\* CALCULATIONS DERIVED FROM EBAA IRON SALES

NOTE:  
CONTRACTOR SHALL USE MEGALUG FOR THE ENTIRE PROJECT.

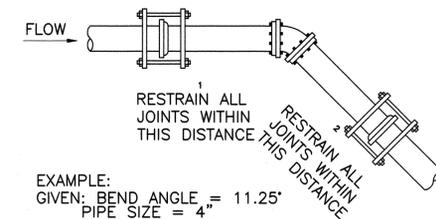
BASED ON:  
TEST PRESSURE 200 PSI  
SOIL TYPE: GM - SILTY GRAVEL,  
GRAVEL-SAND-SILT MIXTURE  
BURIAL DEPTH: 4 FT.  
TRENCH TYPE: 5 - PIPE BEDDED IN COMPACTED GRANULAR MATERIAL TO THE CENTER LINE OF PIPE, 4" MIN. UNDER PIPE. COMPACTED GRANULAR OR SELECT MATERIAL TO TOP OF PIPE. (APPROX. 90% STANDARD PROCTOR, AASHTO T-99) SAFETY FACTOR: 1.5

BEND ANGLE	PIPE SIZE									
	4	6	8	10	12	14	16	18	20	24
11.25	4/1	5/2	7/2	9/3	10/3	12/4	13/4	15/5	16/5	19/6
22.5	8/3	11/4	15/5	17/6	21/7	24/8	27/9	30/9	33/10	38/12
45	16/5	23/8	30/10	36/12	43/14	49/16	56/18	62/20	68/21	79/25

CALCULATIONS BASED ON THE ELEVATION OF THE PIPE REMAINING CONSTANT WITH THE CONTOUR OF THE GROUND.  
FOR TWO WAY FLOW, SUCH AS FOUND IN DISTRIBUTION SYSTEMS, USE 'L' ON BOTH SIDES OF FITTING.

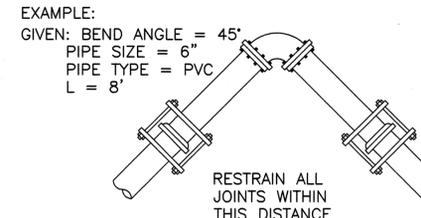
BEND ANGLE	PIPE SIZE									
	4	6	8	10	12	14	16	18	20	24
11.25	2/1	4/2	5/2	6/2	7/3	8/3	8/4	9/4	10/4	12/5
22.5	5/2	7/3	9/4	11/5	13/6	15/6	17/7	19/8	21/9	24/10
45	11/5	15/6	20/8	23/10	28/12	32/13	36/15	40/17	43/18	51/21

CALCULATIONS BASED ON THE ELEVATION OF THE PIPE REMAINING CONSTANT WITH THE CONTOUR OF THE GROUND.



EXAMPLE:  
GIVEN: BEND ANGLE = 11.25°  
PIPE SIZE = 4"  
PIPE TYPE = PVC  
L<sub>1</sub> = 4'  
L<sub>2</sub> = 1'

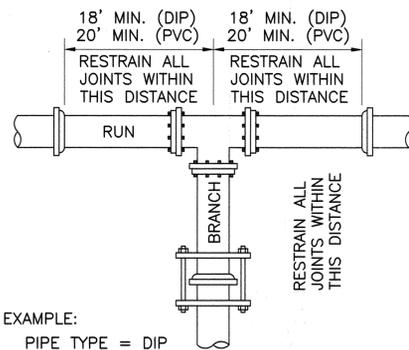
ELEVATION



EXAMPLE:  
GIVEN: BEND ANGLE = 45°  
PIPE SIZE = 6"  
PIPE TYPE = PVC  
L = 8'

PLAN

C



PLAN

EXAMPLE:  
PIPE TYPE = DIP  
PIPE SIZE = 16"  
L = 12'

BEND ANGLE	PIPE SIZE									
	4	6	8	10	12	14	16	18	20	24
11.25	1	2	2	3	3	4	4	5	5	6
22.5	3	4	5	6	7	8	9	10	10	12
45	5	8	10	12	14	16	18	20	21	25
90	13	18	24	29	34	38	43	47	52	60

1. ALL JOINTS WITHIN THE "L" DISTANCE SHALL BE RESTRAINED

BEND ANGLE	PIPE SIZE									
	4	6	8	10	12	14	16	18	20	24
11.25	1	2	2	2	3	3	4	4	4	5
22.5	2	3	4	5	6	6	7	8	9	10
45	5	6	8	10	12	13	15	17	18	21
90	11	15	20	24	28	32	36	40	44	51

1. ALL JOINTS WITHIN THE "L" DISTANCE SHALL BE RESTRAINED

BRANCH SIZE DIA.	RUN SIZE DIAMETER									
	4	6	8	10	12	14	16	18	20	24
4	*	*	*	*	*	*	*	*	*	*
6	-	*	*	*	*	*	*	*	*	*
8	-	-	*	*	*	*	*	*	*	*
10	-	-	-	*	*	*	*	*	*	*
12	-	-	-	-	*	*	*	*	*	*
14	-	-	-	-	-	*	*	*	*	*
16	-	-	-	-	-	-	7	*	*	*
18	-	-	-	-	-	-	-	20	4	*
20	-	-	-	-	-	-	-	-	34	3
24	-	-	-	-	-	-	-	-	-	60

\* = FOR THIS CONDITION NEED ONLY RESTRAIN THE OUTLETS OF TEE

NOTES:

1. RESTRAIN THE THREE MECHANICAL JOINTS ON THE TEE.
2. ALL JOINTS WITHIN THE "L" DISTANCE ON THE BRANCH SIDE OF TEE SHALL BE RESTRAINED AND ALL JOINTS WITHIN 18' ON THE RUN SIDE OF THE TEE SHALL BE RESTRAINED.

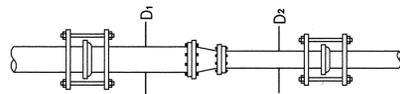
BRANCH SIZE DIA.	RUN SIZE DIAMETER									
	4	6	8	10	12	14	16	18	20	24
4	*	*	*	*	*	*	*	*	*	*
6	-	*	*	*	*	*	*	*	*	*
8	-	-	*	*	*	*	*	*	*	*
10	-	-	-	*	*	*	*	*	*	*
12	-	-	-	-	*	*	*	*	*	*
14	-	-	-	-	-	*	*	*	*	*
16	-	-	-	-	-	-	12	2	*	*
18	-	-	-	-	-	-	-	21	12	*
20	-	-	-	-	-	-	-	-	30	12
24	-	-	-	-	-	-	-	-	-	47

\* = FOR THIS CONDITION NEED ONLY RESTRAIN THE OUTLETS OF TEE

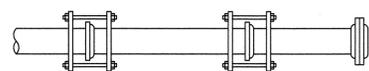
NOTES:

1. RESTRAIN THE THREE MECHANICAL JOINTS ON THE TEE.
2. ALL JOINTS WITHIN THE "L" DISTANCE ON THE BRANCH SIDE OF TEE SHALL BE RESTRAINED AND ALL JOINTS WITHIN 18' ON THE RUN SIDE OF THE TEE SHALL BE RESTRAINED.

B



EXAMPLE:  
PIPE TYPE = PVC  
D<sub>1</sub> = 8"  
D<sub>2</sub> = 6"  
L<sub>1</sub> = 31'  
L<sub>2</sub> = 40'



EXAMPLE:  
PIPE TYPE = DIP  
PIPE SIZE = 10"  
L = 57'

D2	D1	PIPE SIZE									
		6	8	10	12	14	16	18	20	24	
4	42/29	100/52	171/71	258/90	-	-	-	-	-	-	
6	-	40/31	88/54	147/75	217/95	297/113	-	-	-	-	
8	-	-	37/29	82/55	135/77	197/98	266/117	-	-	-	
10	-	-	-	36/30	79/56	128/80	183/100	244/120	-	-	
12	-	-	-	-	36/30	77/57	123/80	174/102	293/142	-	
14	-	-	-	-	-	35/30	74/57	118/81	219/124	-	
16	-	-	-	-	-	-	34/30	73/57	161/104	-	
18	-	-	-	-	-	-	-	34/30	111/82	-	
20	-	-	-	-	-	-	-	-	70/57	-	

1. ALL JOINTS WITHIN THE "L" DISTANCE SHALL BE RESTRAINED

D2	D1	PIPE SIZE									
		6	8	10	12	14	16	18	20	24	
4	27/18	65/34	110/46	166/58	-	-	-	-	-	-	
6	-	26/20	57/35	95/48	140/61	192/73	-	-	-	-	
8	-	-	24/19	53/35	87/50	127/63	171/75	-	-	-	
10	-	-	-	23/20	51/36	82/51	118/64	158/77	-	-	
12	-	-	-	-	23/20	49/37	79/52	112/66	188/91	-	
14	-	-	-	-	-	22/20	48/37	76/52	141/80	-	
16	-	-	-	-	-	-	22/19	47/37	103/67	-	
18	-	-	-	-	-	-	-	22/19	72/53	-	
20	-	-	-	-	-	-	-	-	45/37	-	

1. ALL JOINTS WITHIN THE "L" DISTANCE SHALL BE RESTRAINED

PIPE SIZE	PIPE SIZE									
	4	6	8	10	12	14	16	18	20	24
39	55	73	88	104	119	134	149	163	192	

1. ALL JOINTS WITHIN THE "L" DISTANCE SHALL BE RESTRAINED

PIPE SIZE	PIPE SIZE									
	4	6	8	10	12	14	16	18	20	24
25	36	47	57	67	76	86	95	105	123	

1. ALL JOINTS WITHIN THE "L" DISTANCE SHALL BE RESTRAINED

A

A

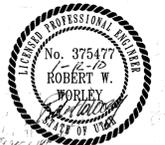


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SUNRISE ENGINEERING, INC.  
25 EAST 500 NORTH  
FILLMORE, UTAH 84631  
TEL. (435) 743-6151  
FAX (435) 743-7900

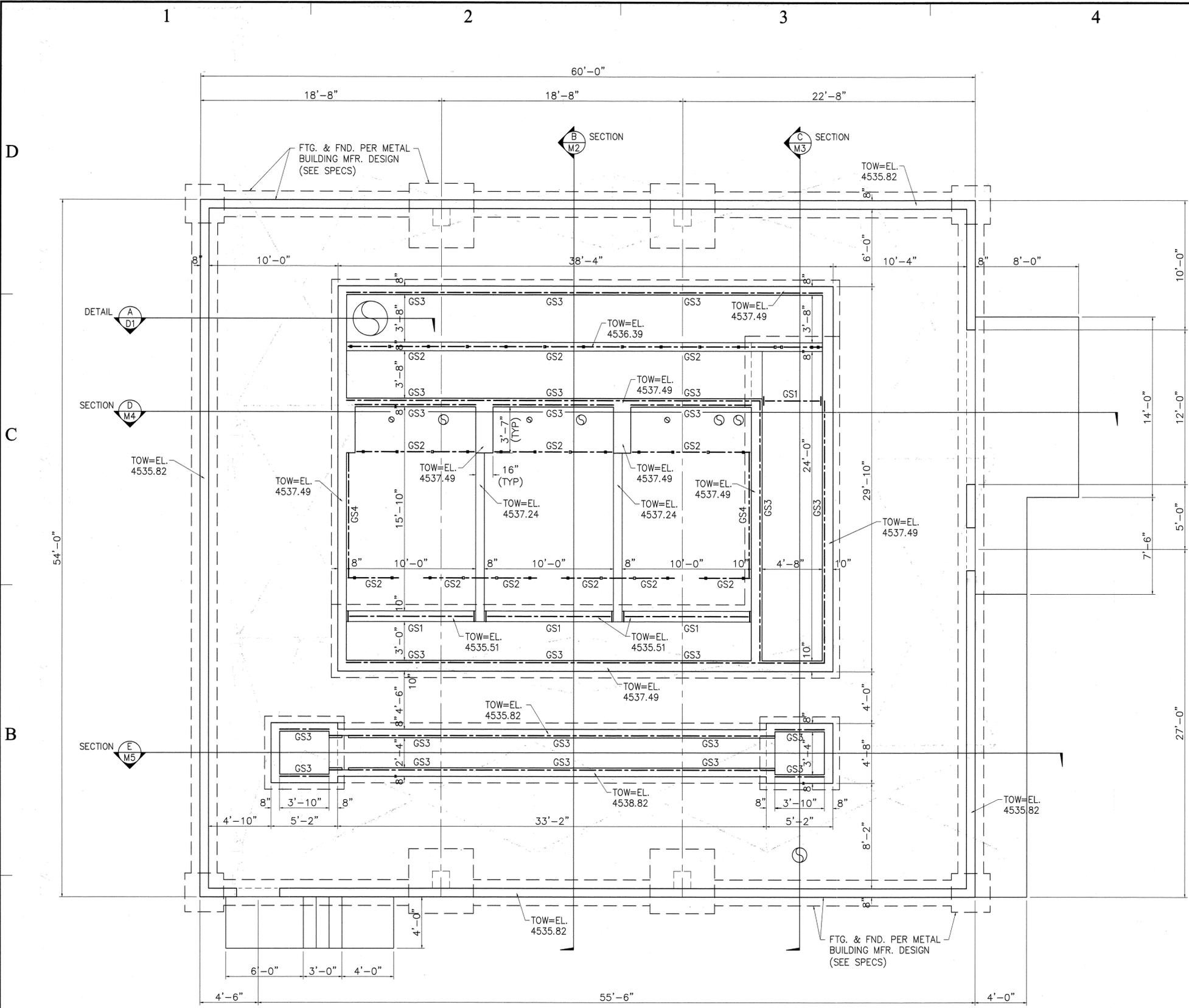
PROJECT NAME:

UTAH DIVISION OF  
WILDLIFE  
RESOURCES  
SPRINGVILLE  
FISH HATCHERY  
TREATMENT PLANT  
2009

ENGINEER'S STAMP



MARK	DATE	DESCRIPTION
ISSUE TYPE: 100%		
ISSUE DATE: November 1, 2009		
DFCM PROJECT NO: 07146520		
SEL PROJECT NO: 03388		
CAD DWG FILE: sprgvl-S01-03-M01-06		
DRAWN BY: CJC		
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DRAWING TITLE		
FOOTING & FOUNDATION PLAN		
DRAWING NUMBER		
S1		
SHEET 15 OF 46		



GRATING SUPPORT SCHEDULE	
MK. NO.	DESCRIPTION
GS1	ALUM. 1 8" x 5" x 0.25"
GS2	DBL. ALUM. L 2" x 2" x 1/4" W/ 3"Ø ALUM. SCH 40 PIPE SUPPORTS @ 48" MAX. O.C.
GS3	ALUM. L 2" x 2" x 1/4" IMBEDDED IN CONC. WALL
GS4	ALUM. L 2" x 3" x 1/4" MOUNTED TO CONC. WALL

- NOTE:
- ALL GRATING SUPPORTS SHALL BE ALUM. FABRICATED AND INSTALLED AS SHOWN ON DETAIL D/D3
  - ALL ALUM. IN CONTACT W/ CONCRETE SHALL BE COATED PER SPEC

**A**  
**S1** FOOTING AND FOUNDATION PLAN  
1/4" = 1'-0"

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25 EAST 500 NORTH  
FILLMORE, UTAH 84631  
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FAX (435) 743-7900

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ISSUE DATE: November 1, 2009

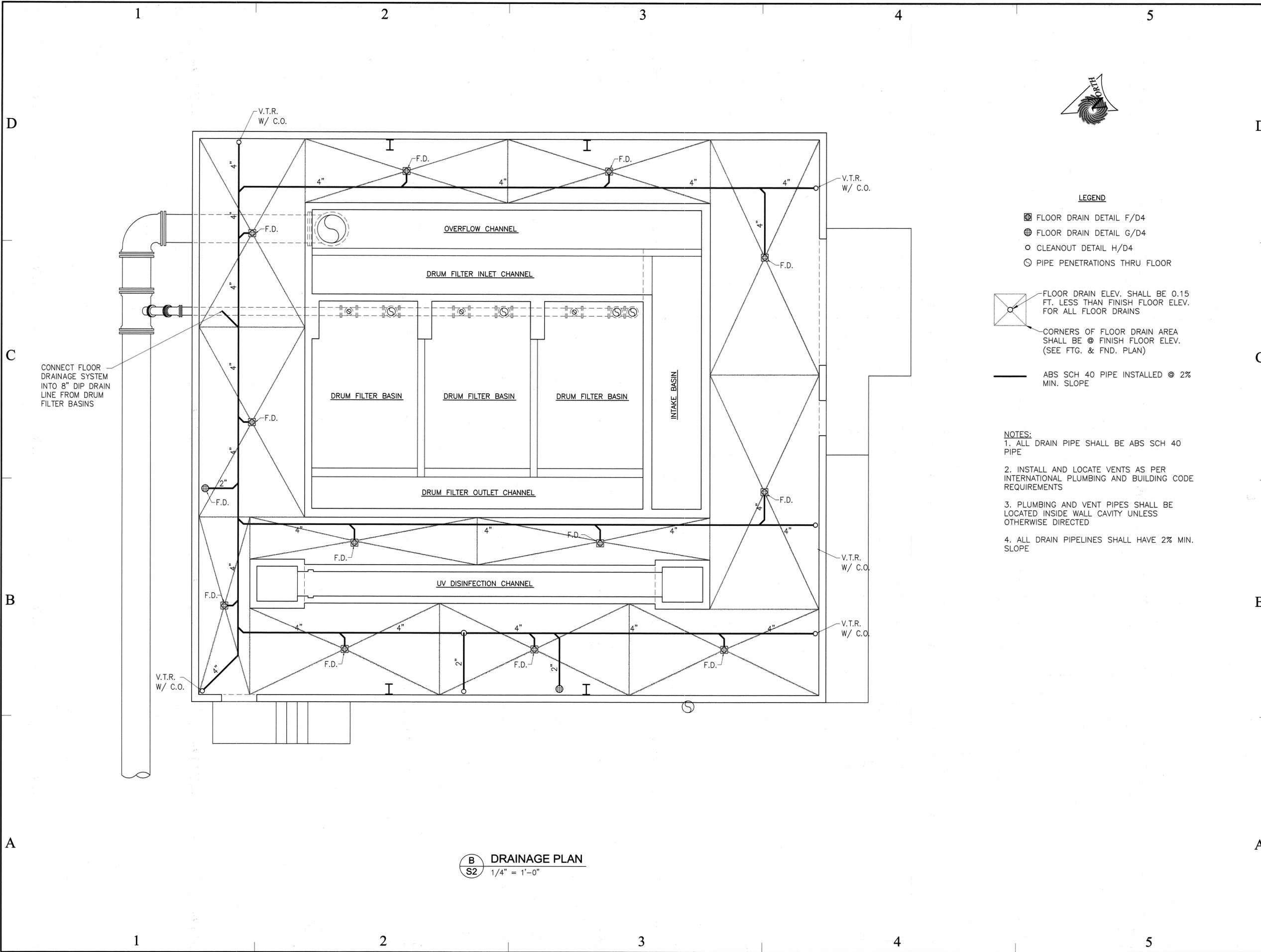
DFCM PROJECT NO: 07146520  
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CAD DWG FILE: sprgvl-S01-03-M01-06  
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DRAWING TITLE

FLOOR DRAINAGE PLAN

DRAWING NUMBER

S2



LEGEND

- ⊕ FLOOR DRAIN DETAIL F/D4
- ⊕ FLOOR DRAIN DETAIL G/D4
- CLEANOUT DETAIL H/D4
- ⊙ PIPE PENETRATIONS THRU FLOOR

- ⊕ FLOOR DRAIN ELEV. SHALL BE 0.15 FT. LESS THAN FINISH FLOOR ELEV. FOR ALL FLOOR DRAINS
- ⊕ CORNERS OF FLOOR DRAIN AREA SHALL BE ⊕ FINISH FLOOR ELEV. (SEE FTG. & FND. PLAN)

— ABS SCH 40 PIPE INSTALLED @ 2% MIN. SLOPE

NOTES:

1. ALL DRAIN PIPE SHALL BE ABS SCH 40 PIPE
2. INSTALL AND LOCATE VENTS AS PER INTERNATIONAL PLUMBING AND BUILDING CODE REQUIREMENTS
3. PLUMBING AND VENT PIPES SHALL BE LOCATED INSIDE WALL CAVITY UNLESS OTHERWISE DIRECTED
4. ALL DRAIN PIPELINES SHALL HAVE 2% MIN. SLOPE

**B**  
S2 DRAINAGE PLAN  
1/4" = 1'-0"

CONNECT FLOOR DRAINAGE SYSTEM INTO 8" DIP DRAIN LINE FROM DRUM FILTER BASINS

DESIGNED BY:

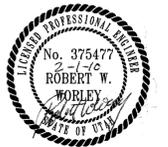


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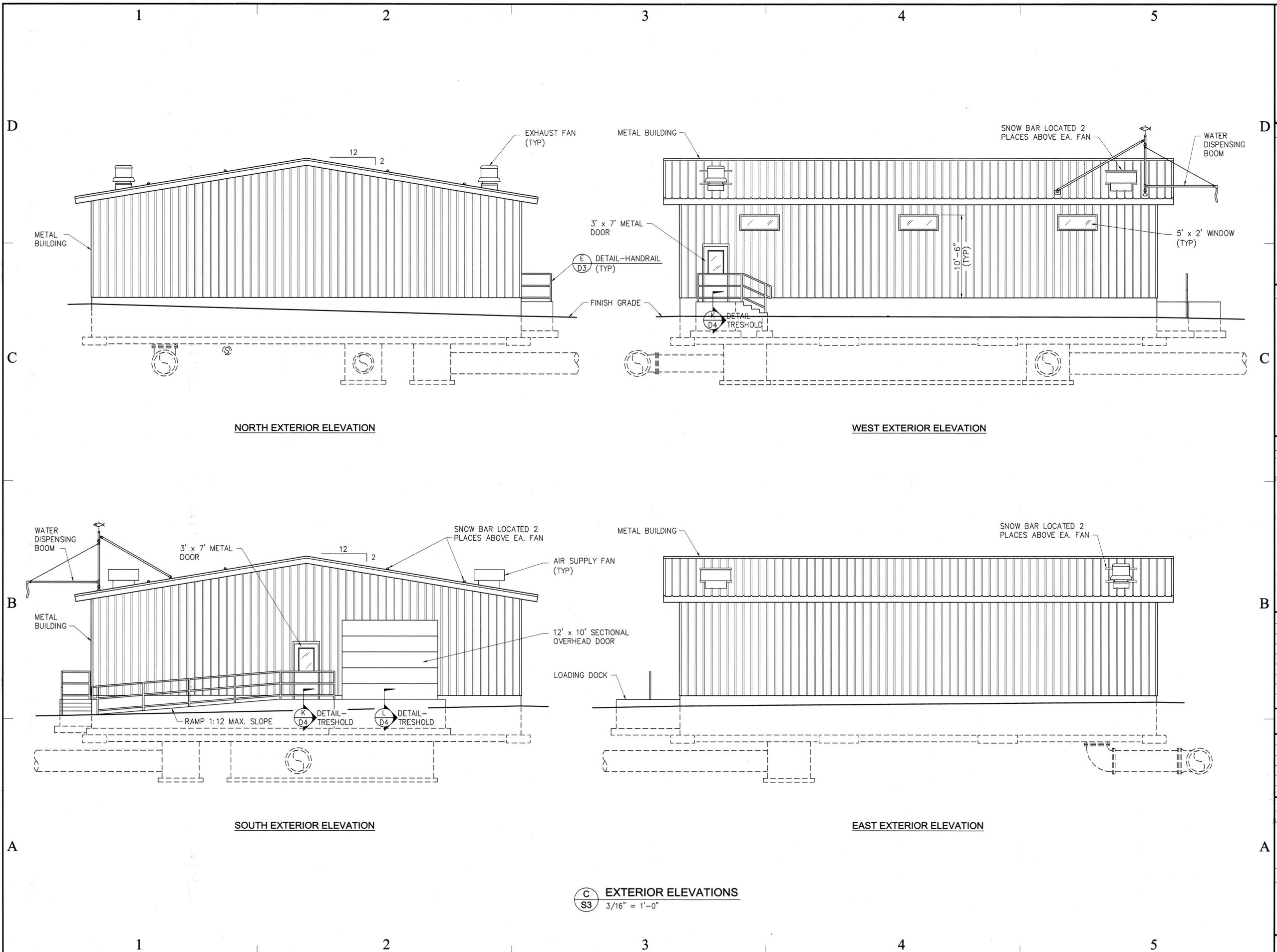
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DRAWING TITLE		
SECTION & EQUIPMENT SCHEDULE		
DRAWING NUMBER		
M2		
SHEET 19 OF 46		

ISSUE TYPE: 100%

ISSUE DATE: November 1, 2009

DFCM PROJECT NO: 07146520

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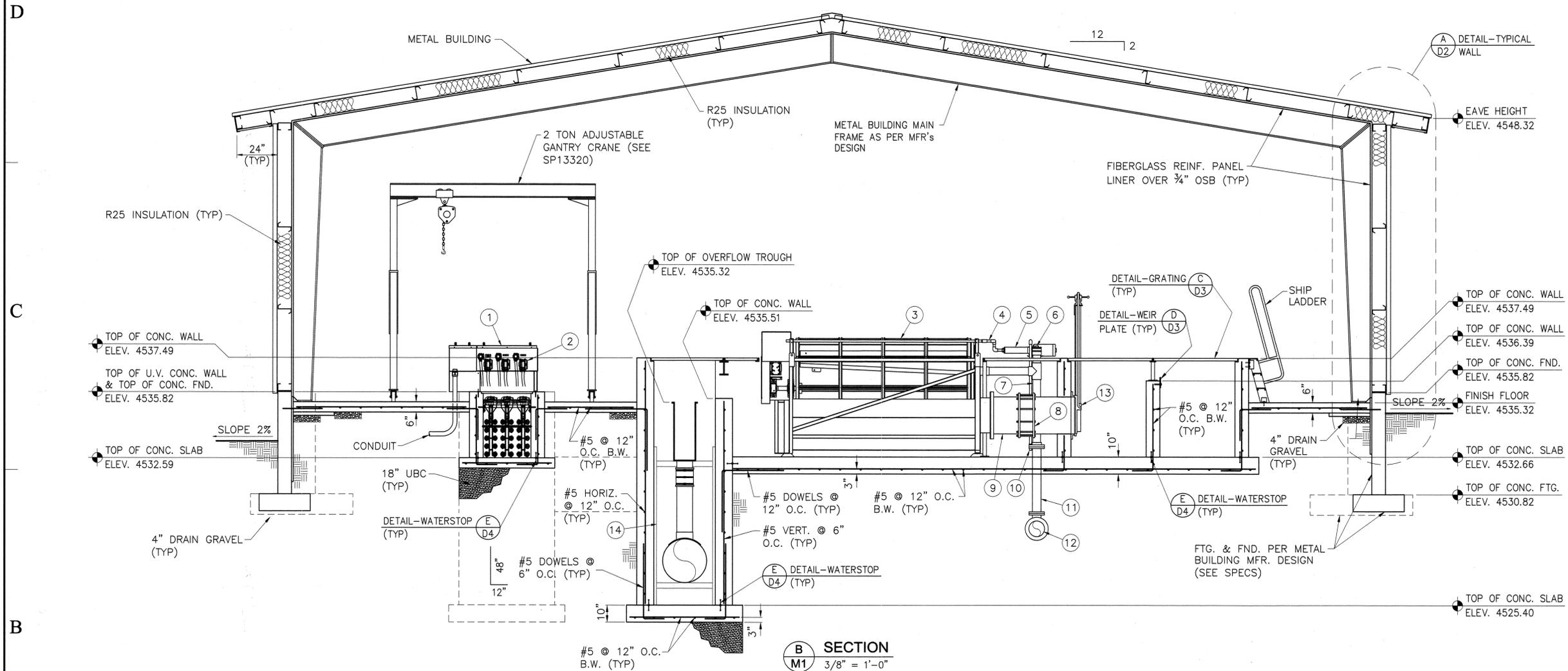
DRAWING TITLE

SECTION & EQUIPMENT SCHEDULE

DRAWING NUMBER

M2

SHEET 19 OF 46



**B SECTION**  
M1 3/8" = 1'-0"

**EQUIPMENT SCHEDULE**

NO.	DESCRIPTION	SIZE	REMARKS
1	UV JUNCTION BOX		SEE SP11250
2	UV DISINFECTION MODULE		
3	DRUM FILTER		SEE SP11260
4	SCH 80 PVC PIPE AND FITTINGS	1"	
5	BACKWASH PUMP		
6	CLEAN OUT	4"	
7	SCH 80 PVC PIPE AND FITTINGS	4"	
8	FLEX. CPLG.	20"	
9	DIP AND FITTINGS	20"	
10	FOOT VALVE	1"	
11	DIP AND FITTINGS	4"	
12	DIP AND FITTINGS	8"	
13	SLUICE GATE	20"	SEE DETAIL A/D4
14	PIPE AND TROUGH SUPPORT		SEE DETAIL C/D4
15			

DESIGNED BY:



PREPARED BY:  
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ISSUE DATE: November 1, 2009

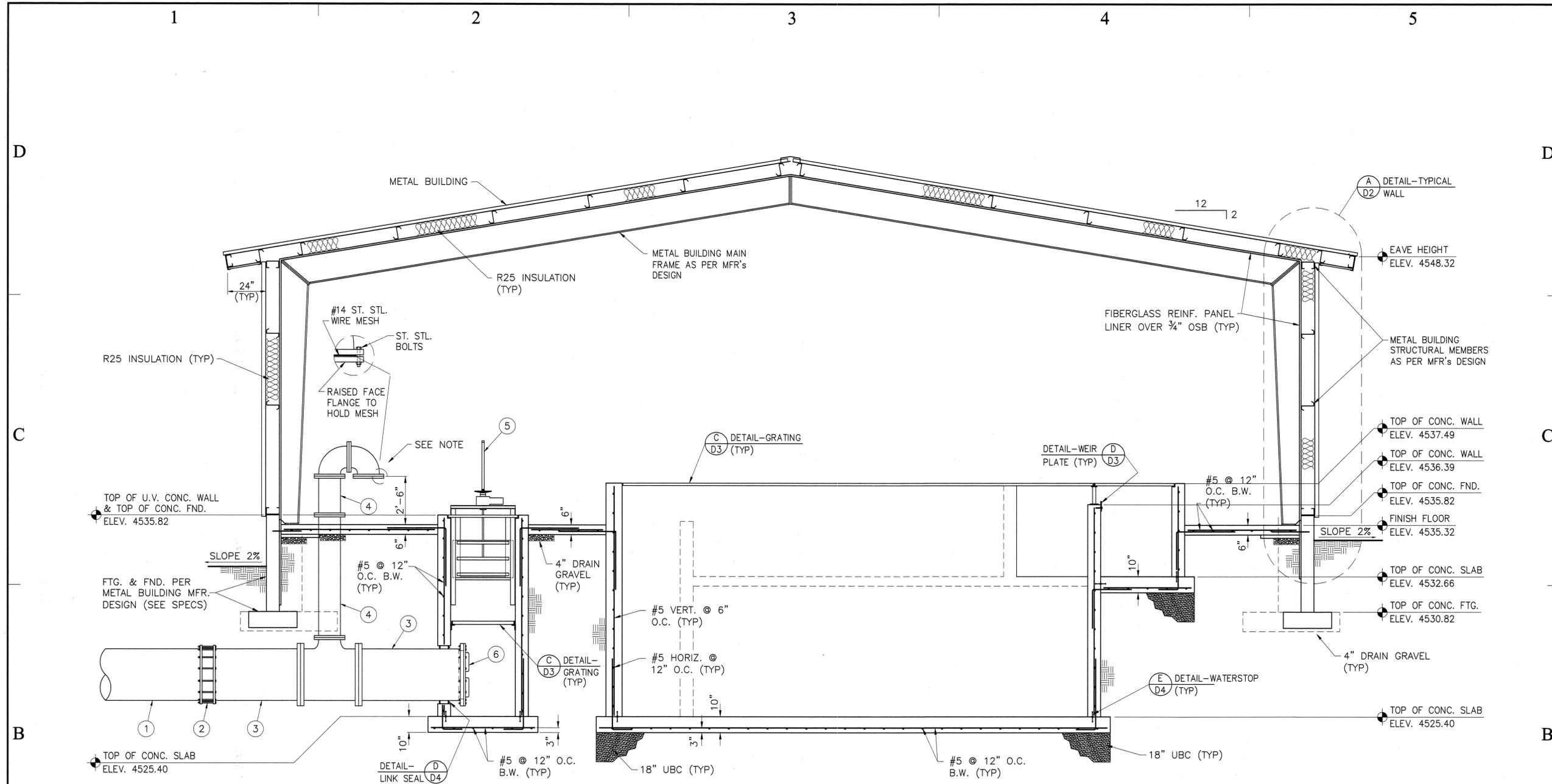
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**SECTION & EQUIPMENT  
SCHEDULE**

DRAWING NUMBER

**M3**



**C SECTION**  
M1 3/8" = 1'-0"

NOTE:  
GOOSE NECK ROTATED 90° FOR  
CLARITY - SEE DWG M1 FOR  
PROPER ORIENTATION

**EQUIPMENT SCHEDULE**

NO.	DESCRIPTION	SIZE	REMARKS
1	PVC PIPE	30"	
2	FLEX. CPLG.	30"	
3	DIP AND FITTINGS	30"	
4	DIP AND FITTINGS	12"	
5	DOWNWARD OPENING WEIR GATE	28"	SEE SP11250
6	CHECK VALVE	30"	"TIDEFLEX" WF-3 WATERFLEX
7			
8			
9			
10			
11			
12			
13			
14			
15			





DESIGNED BY:



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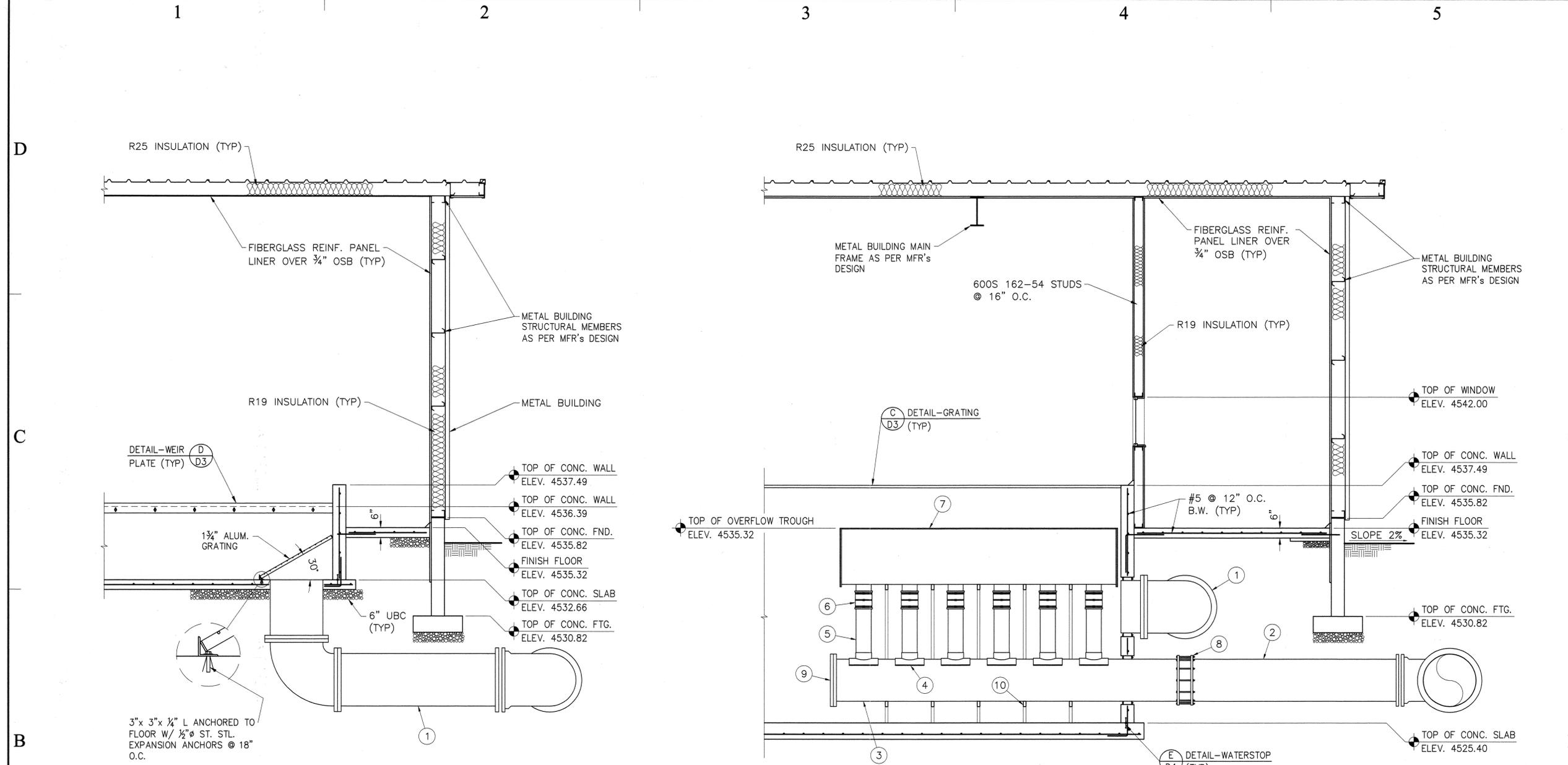
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SECTIONS & EQUIPMENT  
SCHEDULE

DRAWING NUMBER

M6



EQUIPMENT SCHEDULE			
NO.	DESCRIPTION	SIZE	REMARKS
1	DIP AND FITTINGS	30"	
2	DIP AND FITTINGS	24"	
3	SCH 80 PVC PIPE AND FITTINGS	24"	
4	SCH 80 PVC PIPE SADDLE CONNECTION	8" x 24"	
5	SCH 80 PVC PIPE AND FITTINGS	8"	
6	DRESSER CPLG.	8"	
7	OVERFLOW TROUGH	12" x 34"	
8	TRANS. CPLG.	24"	
9	BLIND FLNG.	24"	
10	PIPE & TROUGH SUPPORT		SEE DETAIL D/D4
11			
12			
13			
14			
15			

DESIGNED BY:



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ISSUE DATE: November 1, 2009		
DFCM PROJECT NO: 07146520		
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CAD DWG FILE: sprgy-D01-04		
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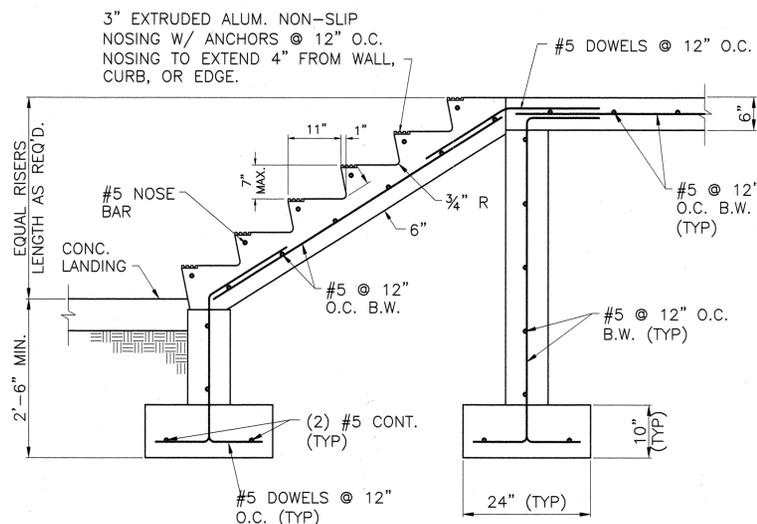
DRAWING TITLE

BUILDING DETAILS

DRAWING NUMBER

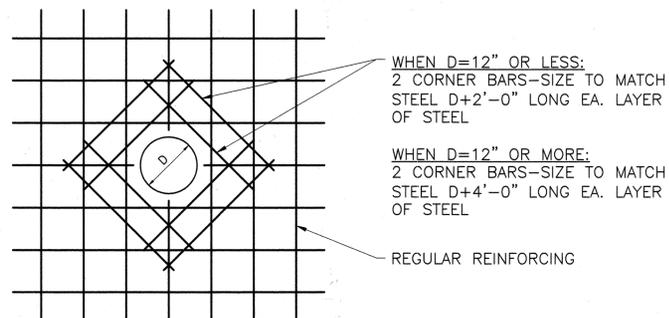
D1

SHEET 24 OF 46

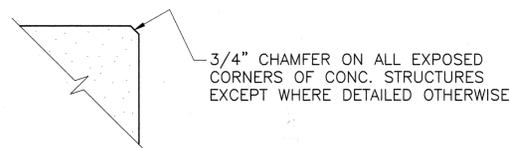


NOTE:  
TREAD SHALL RECEIVE A STEEL TROWEL FINISH. IMMEDIATELY THEREAFTER, THE SURFACE SHALL BE SLIGHTLY ROUGHENED BY DRAWING A HAIRBRUSH LIGHTLY OVER THE SURFACE AT A RIGHT ANGLE TO THE DIRECTION OF TRAFFIC TO PRODUCE A NON-SKID SURFACE.

**A** DETAIL - CONC. STAIRS  
M1 3/4" = 1'-0"

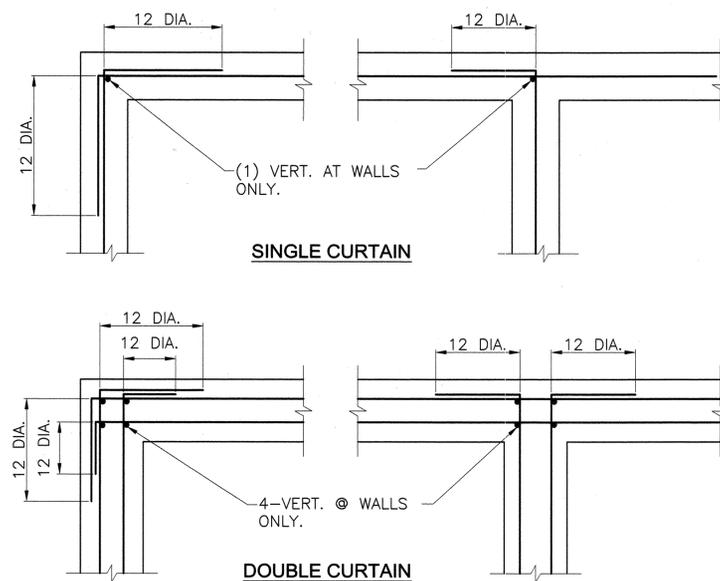


**D** DETAIL - EXTRA REINFORCING AT PIPE WALL AND FLOOR PENETRATIONS  
TYP NTS

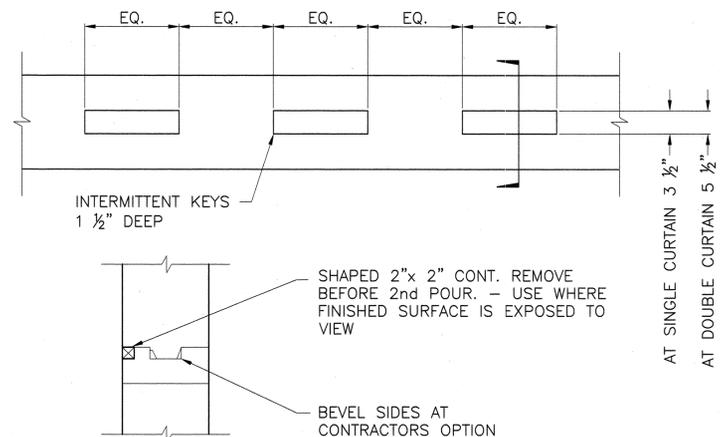


**G** DETAIL - CHAMFER  
TYP NOT TO SCALE

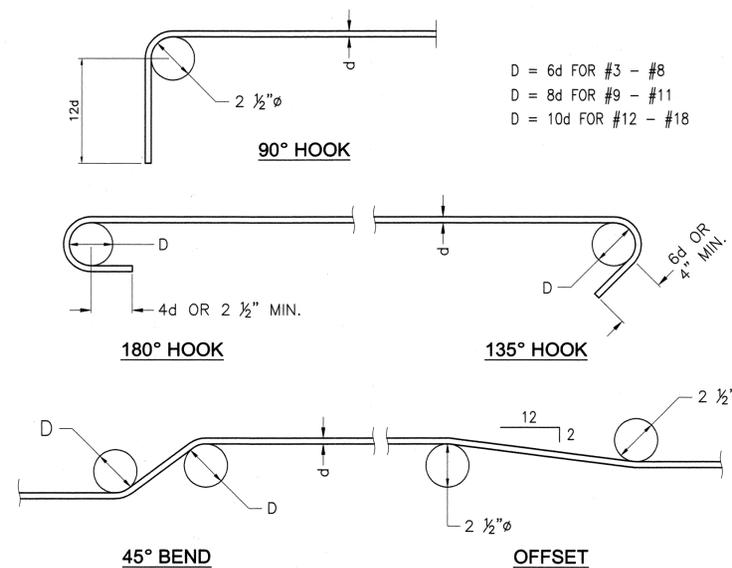
CONCRETE COVER FOR REINFORCEMENT	
CONDITION	MIN. COVER
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
CONCRETE EXPOSED TO EARTH OR WEATHER (#6 THRU #18 BARS)	2"
CONCRETE EXPOSED TO EARTH OR WEATHER (#5 BARS AND SMALLER)	1-1/2"
CONCRETE NOT EXPOSED TO EARTH OR WEATHER	1-1/2"



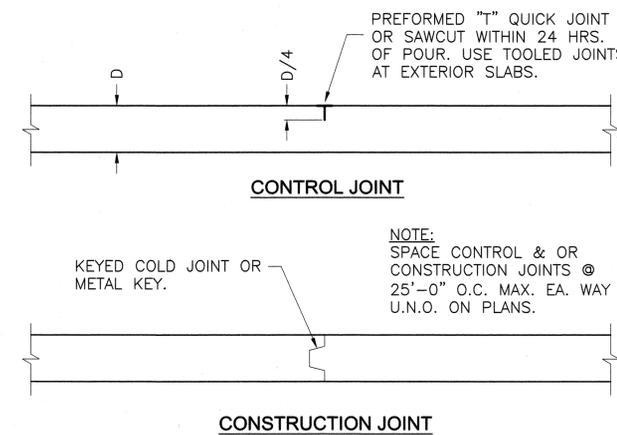
**B** DETAIL - REINF. @ INTERSECTIONS  
TYP NTS



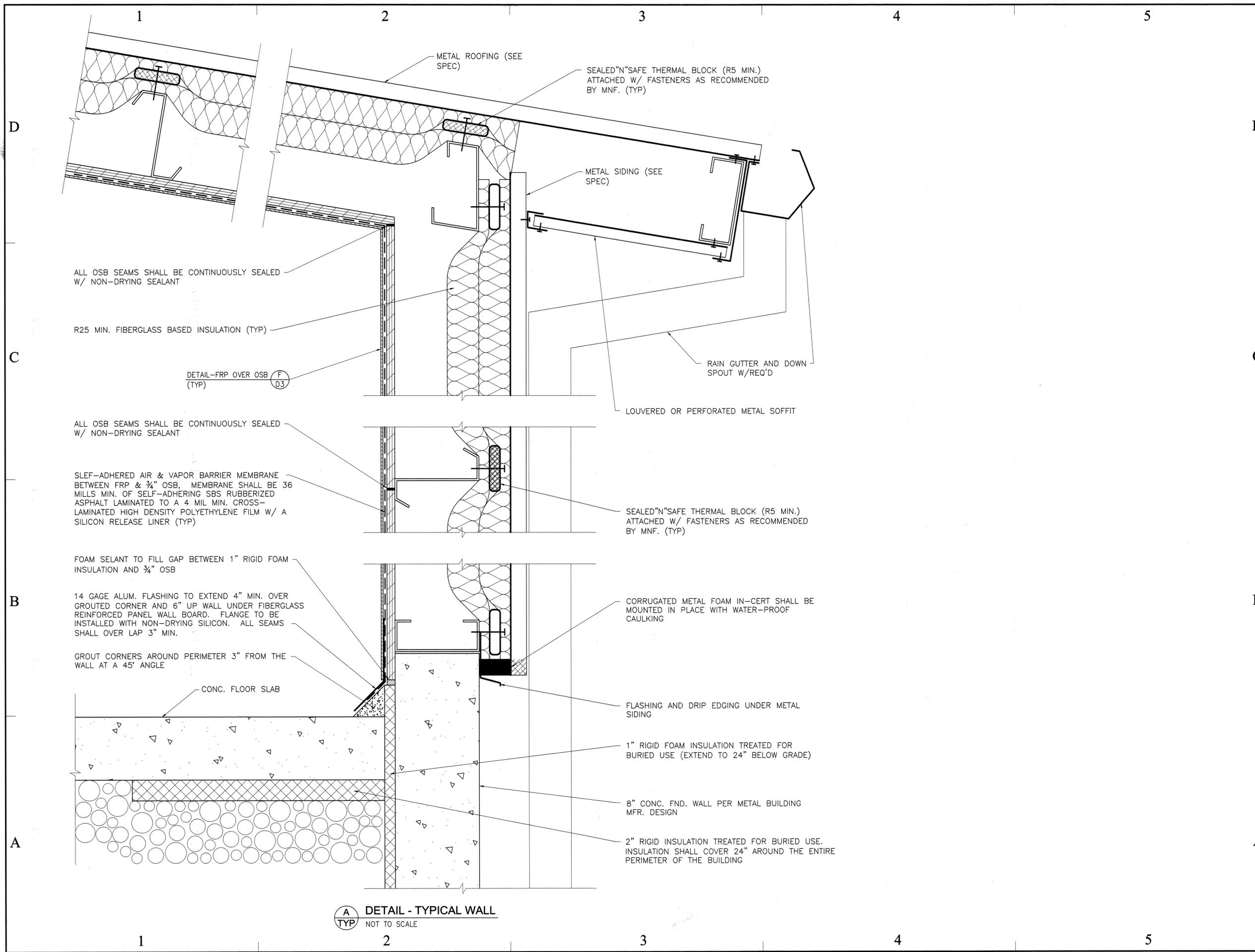
**E** DETAIL - CONST. JOINT IN WALL OR FOOTING  
TYP NTS (APPLIES TO BOTH VERT. AND HORIZ. JOINTS)



**C** DETAIL - REINF, BENDS, HOOKS, AND OFFSET  
TYP NTS



**F** DETAIL - SLAB ON GRADE JOINT  
TYP NOT TO SCALE



**A** TYP **DETAIL - TYPICAL WALL**  
NOT TO SCALE

**D** DESIGNED BY:



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25 EAST 500 NORTH  
FILLMORE, UTAH 84631  
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PROJECT NAME:

**UTAH DIVISION OF  
WILDLIFE  
RESOURCES  
SPRINGVILLE  
FISH HATCHERY  
TREATMENT PLANT  
2009**

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**B**

MARK	DATE	DESCRIPTION
ISSUE TYPE: 100%		
ISSUE DATE: November 1, 2009		
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**A** BUILDING DETAILS

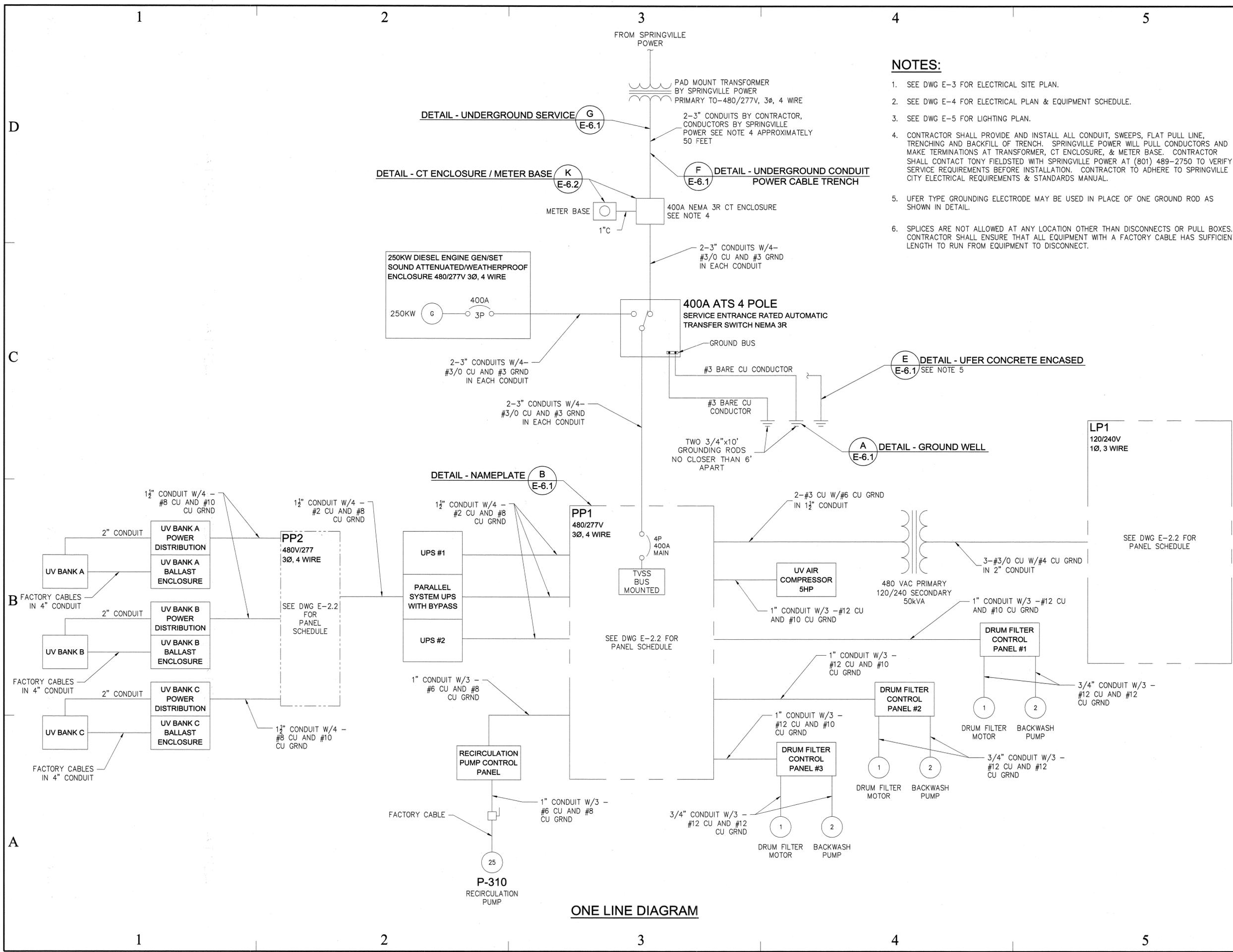
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**D2**









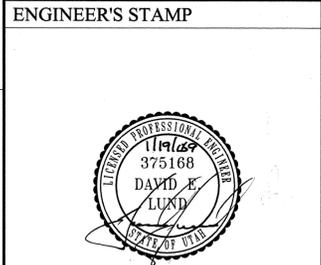
- NOTES:**
- SEE DWG E-3 FOR ELECTRICAL SITE PLAN.
  - SEE DWG E-4 FOR ELECTRICAL PLAN & EQUIPMENT SCHEDULE.
  - SEE DWG E-5 FOR LIGHTING PLAN.
  - CONTRACTOR SHALL PROVIDE AND INSTALL ALL CONDUIT, SWEEPS, FLAT PULL LINE, TRENCHING AND BACKFILL OF TRENCH. SPRINGVILLE POWER WILL PULL CONDUCTORS AND MAKE TERMINATIONS AT TRANSFORMER, CT ENCLOSURE, & METER BASE. CONTRACTOR SHALL CONTACT TONY FIELDSTED WITH SPRINGVILLE POWER AT (801) 489-2750 TO VERIFY SERVICE REQUIREMENTS BEFORE INSTALLATION. CONTRACTOR TO ADHERE TO SPRINGVILLE CITY ELECTRICAL REQUIREMENTS & STANDARDS MANUAL.
  - UFER TYPE GROUNDING ELECTRODE MAY BE USED IN PLACE OF ONE GROUND ROD AS SHOWN IN DETAIL.
  - SPLICES ARE NOT ALLOWED AT ANY LOCATION OTHER THAN DISCONNECTS OR PULL BOXES. CONTRACTOR SHALL ENSURE THAT ALL EQUIPMENT WITH A FACTORY CABLE HAS SUFFICIENT LENGTH TO RUN FROM EQUIPMENT TO DISCONNECT.

http://dfcm.utah.gov



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PROJECT NAME:  
**UTAH DIVISION OF WILDLIFE RESOURCES SPRINGVILLE FISH HATCHERY TREATMENT PLANT 2009**



MARK	DATE	DESCRIPTION

ISSUE DATE: .

DFCM PROJECT NO: .

SEI PROJECT NO: 03388

CAD DWG FILE: .

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**ONE LINE DIAGRAM**

DRAWING NUMBER  
**E-2.1**

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PROJECT NAME:

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RESOURCES  
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PANEL SCHEDULES

DRAWING NUMBER

E-2.2

SHEET 30 OF 46

PP1

SPRINGVILLE FISH HATCHERY											
35 KA SC (RMS) Rating											
PP1 480/277 3Ø, 4 WIRE PANEL SCHEDULE CIRCUIT 400A MAIN CB											
CKT. NO.	AMP	POLE	DESCRIPTION	AMPS			VOLT AMPS	DESCRIPTION	POLE	AMP	CKT. NO.
				A	B	C					
01				37	-	-		UPS #1/UV BANK A SYSTEM			02
03	100	3		15224	-	37	15224	UPS #2/UV BANK B SYSTEM	3	100	04
05					-	-	37				06
07				52	-	-		RECIRCULATION PUMP PANEL			08
09	100	3		15224	-	52	28234	RECIRCULATION PUMP PANEL	3	70	10
11					-	-	52				12
13				0	-	-		SPACE			14
15				-	0	-		SPACE			16
17					-	0					18
19				12	-	-					20
21	20	3		4983	-	12	4983	DRUM FILTER PUMP CONTROL PANEL #2	3	20	22
23					-	-	12				24
25				12	-	-					26
27	20	3		4983	-	12	4983	UV AIR COMPRESSOR	3	20	28
29					-	-	12				30
31	20	1		1840	13	-	1840	BAY AREA FIXTURES	20	1	32
33	20	1		1050	-	6.4	736	ELECTRICAL ROOM FIXTURES	20	1	34
35	20	1		0	-	0	0	SPACE	20	1	36
37				104	-	-	0				38
39	100	2		50000	-	104		SPACE	2	40	40
41	20	1		0	-	0	0	SPACE	20	1	42
				230	224	113					
				Subtotal Watts	93304		56000	Subtotal Watts			
				Total Watts	149304		180	Average Amps			

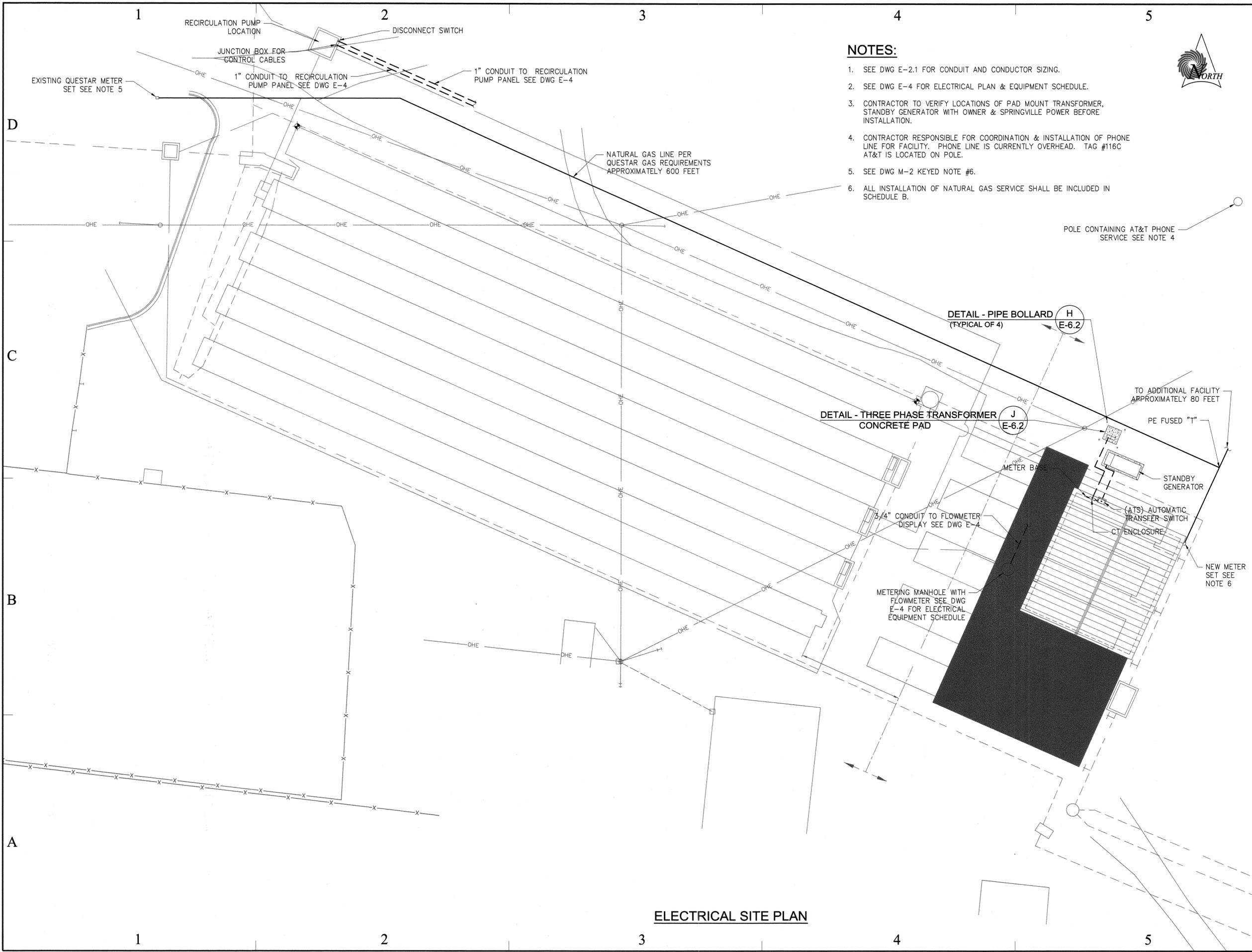
PP2

SPRINGVILLE FISH HATCHERY											
35 KA SC (RMS) Rating											
PP2 480/277 3Ø, 4 WIRE PANEL SCHEDULE CIRCUIT 100A MAINS											
CKT. NO.	AMP	POLE	DESCRIPTION	AMPS			VOLT AMPS	DESCRIPTION	POLE	AMP	CKT. NO.
				A	B	C					
01				30	-	-		UV BANK A			02
03	50	3		12456	-	30	12456	UV BANK B	3	50	04
05					-	-	30				06
07					-	-					08
09	50	3		12456	-	15		UV BANK C			10
11					-	-	15				12
				30	45	45					
				Subtotal Watts	24912		12456	Subtotal Watts			
				Total Watts	37368		45	Average Amps			

LP1

SPRINGVILLE FISH HATCHERY											
22 KA SC Rating (RMS)											
LP1 120/240 1Ø PANEL SCHEDULE CIRCUIT 225A MAIN CB											
CKT. NO.	AMP	POLE	DESCRIPTION	LOAD		VOLT AMPS	DESCRIPTION	POLE	AMP	CKT. NO.	
				A	B						
01	20	1		1800	30	1800	RECEPTACLES GFCI BREAKER	1	20	02	
03	20	1		0	-	24	2880	MTU	1	30	04
05	20	1		0	3	-	360	OUTDOOR RECEPTACLES GFCI	1	20	06
07	20	1		1200	-	15	600	DRYER UV DISINFECTION SYSTEM	1	30	08
09	20	1		1200	20	-	1200	GENERATOR BATTERY CHARGER	1	20	10
11				-	23	-	2500	GENERATOR JACKET WATER HEATER	2	20	12
13	20	2		3000	0	-		GENERATOR JACKET WATER HEATER	2	20	14
15	20	1		120	-	3	240	EXHAUST FAN #1	1	20	16
17	20	1		120	3	-	240	EXHAUST FAN #2	1	20	18
19				-	17	-	240	INTAKE FAN #1	1	20	20
21	20	2		3600	17	-	240	INTAKE FAN #2	1	20	22
23				-	0	-		SPACE			24
25				12	-	-		SPACE			26
27	30	2		2880	-	12		SPACE	-	-	28
29	-	-		0	-	-		SPACE	-	-	30
				1st Leg Amps	=	85	94	=	2nd Leg Amps		
				1st Leg WATTS	13920		10300	2nd Leg WATTS			
				Total Watts	24220		101	Average Amps			

PANEL SCHEDULES



- NOTES:**
- SEE DWG E-2.1 FOR CONDUIT AND CONDUCTOR SIZING.
  - SEE DWG E-4 FOR ELECTRICAL PLAN & EQUIPMENT SCHEDULE.
  - CONTRACTOR TO VERIFY LOCATIONS OF PAD MOUNT TRANSFORMER, STANDBY GENERATOR WITH OWNER & SPRINGVILLE POWER BEFORE INSTALLATION.
  - CONTRACTOR RESPONSIBLE FOR COORDINATION & INSTALLATION OF PHONE LINE FOR FACILITY. PHONE LINE IS CURRENTLY OVERHEAD. TAG #116C AT&T IS LOCATED ON POLE.
  - SEE DWG M-2 KEYED NOTE #6.
  - ALL INSTALLATION OF NATURAL GAS SERVICE SHALL BE INCLUDED IN SCHEDULE B.



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PROJECT NAME:

UTAH DIVISION OF  
WILDLIFE  
RESOURCES  
SPRINGVILLE  
FISH HATCHERY  
TREATMENT PLANT  
2009

ENGINEER'S STAMP



MARK	DATE	DESCRIPTION

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SEI PROJECT NO: 03388  
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DRAWING TITLE

ELECTRICAL SITE PLAN

DRAWING NUMBER

**E-3**

**ELECTRICAL SITE PLAN**

DESIGNED BY:

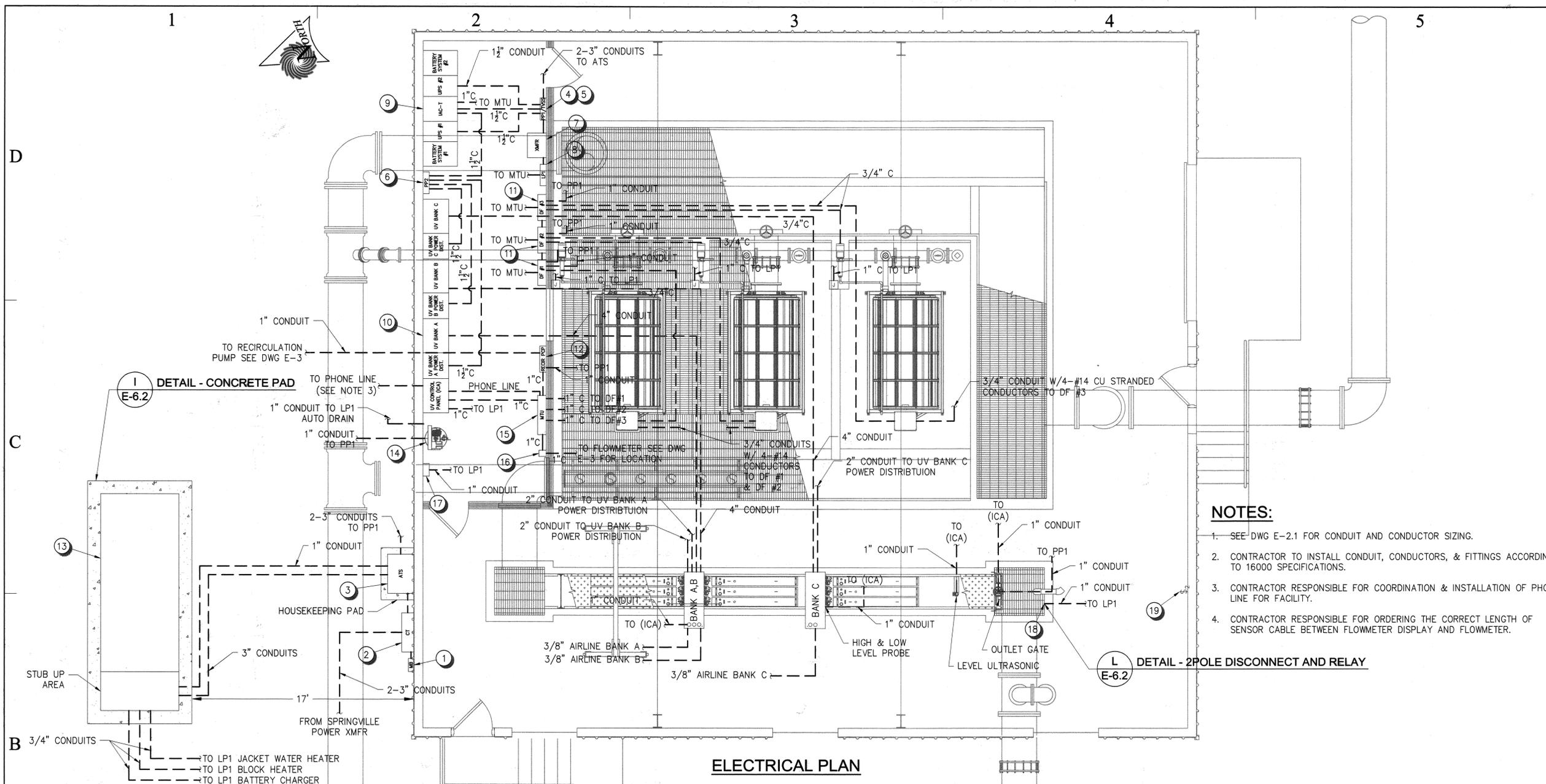


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FISH HATCHERY  
TREATMENT PLANT  
2009

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- NOTES:**
- SEE DWG E-2.1 FOR CONDUIT AND CONDUCTOR SIZING.
  - CONTRACTOR TO INSTALL CONDUIT, CONDUCTORS, & FITTINGS ACCORDING TO 16000 SPECIFICATIONS.
  - CONTRACTOR RESPONSIBLE FOR COORDINATION & INSTALLATION OF PHONE LINE FOR FACILITY.
  - CONTRACTOR RESPONSIBLE FOR ORDERING THE CORRECT LENGTH OF SENSOR CABLE BETWEEN FLOWMETER DISPLAY AND FLOWMETER.

**ELECTRICAL PLAN**

**ELECTRICAL EQUIPMENT SCHEDULE**

ITEM #	DESCRIPTION	QUANTITY	MODEL #	MANUFACTURER	COMMENTS
1	METER BASE	1			PER SPRINGVILLE POWER REQUIREMENTS
2	CT ENCLOSURE NEMA 3R	1			PER SPRINGVILLE POWER REQUIREMENTS.
3	(ATS) AUTOMATIC TRANSFER SWITCH 4 POLE 480/277V 400A NEMA 3R SERVICE ENTRANCE RATED FREE STANDING	1	TS884A0400B1AM2ENKAA	THOMSON TECHNOLOGY	OR APPROVED EQUAL
4	(PP1) POWER PANEL #1 400A MAIN CB BUS 35 KAIC	1	PRL3a	CUTLER HAMMER	OR APPROVED EQUAL
5	(TVSS) 250KA BUSS MOUNTED IN PP1	1	CPS 250 480Y S	CUTLER HAMMER	OR APPROVED EQUAL
6	(PP2) POWER PANEL #2 100A MAIN CU BUS 35 KAIC	1	PRL2a	CUTLER HAMMER	OR APPROVED EQUAL
7	(XMFR) 50 KVA DT TRANSFORMER NEMA 3R CU WINDINGS	1	TT48M11S50CU	CUTLER HAMMER	OR APPROVED EQUAL
8	(LP1) LIGHTING PANEL #1 225A MAIN CB NEMA 3R CU BUS 22 KAIC	1	PRL1a	CUTLER HAMMER	OR APPROVED EQUAL
9	(UPS) 50KVA/45KW PARALLEL REDUNDANT UPS SYSTEM W/BATTERY BACKUP & BYPASS 480V 3ø	1	9390-50kVA/45KW	POWERWARE	BY CONTRACTOR SEE SPEC 16900SP
10	(UV) UV DISINFECTION SYSTEM 480/277V 3ø, 4 WIRE	1			BY CONTRACTOR SEE SPEC 11250SP
11	(DF) DRUM FILTER CONTROL PANELS	3			BY CONTRACTOR SEE SPEC 11260SP
12	RECIRCULATION PUMP CONTROL PANEL	1			BY CONTRACTOR SEE SPEC 11388SP SEE DWG E-3 FOR PUMP LOCATION
13	250KW DIESEL STANDBY GENERATOR 480/277V 3ø, 4 WIRE WEATHERPROOF/SOUND ATTENUATED W/SUBBASE TANK	1	250JC6DT3	MTU	OR APPROVED EQUAL SEE SPEC 16815SP
14	UV SYSTEM COMPRESSOR 480V 3ø	1	2340L5	INGERSOLL RAND	BY CONTRACTOR SEE SPEC 11250SP
15	MTU	1			SEE DWG I-3.1-3.3
16	MULTI-MAG FLOWMETER "INSERTION TYPE" W/DISPLAY MOUNTED IN ELECTRICAL ROOM SEE NOTE 4	1	285L	McCROMETER	BY CONTRACTOR SEE SPEC 17210 SEE DWG E-3 FOR LOCATION
17	UV SYSTEM DRYER - MODULAR DESICCANT AIR DRYER	1	D25IM	INGERSOLL RAND	BY CONTRACTOR SEE SPEC 11250SP
18	SUMP PUMP 2 HP	1	KS2610MT.	FLYGT	BY CONTRACTOR
19	OPERATOR BYPASS MOTOR RATED SWITCH	1	FW2	SQUARE D	OR APPROVED EQUAL

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**ELECTRICAL PLAN**

DRAWING NUMBER

**E-4**













1 2 3 4 5

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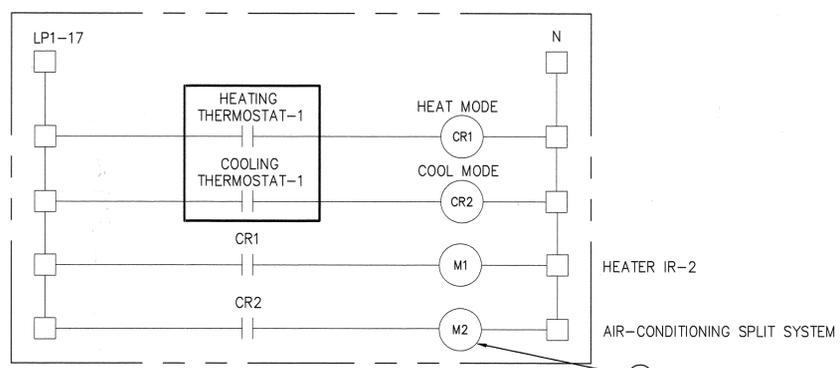
MECHANICAL DETAILS

DRAWING NUMBER

**M-4**

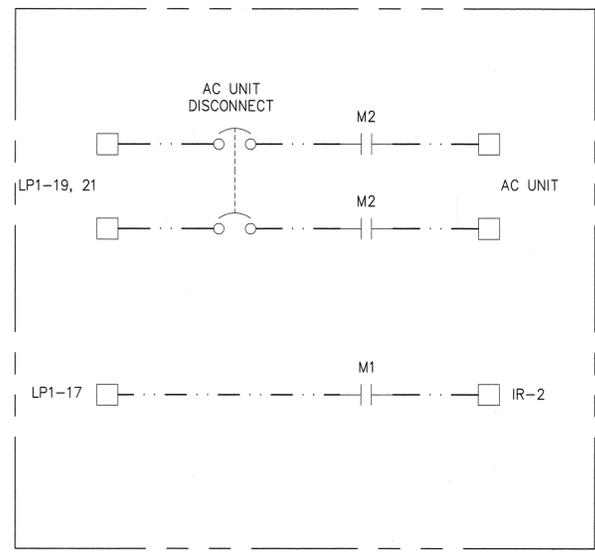
SHEET 39 OF 46

D



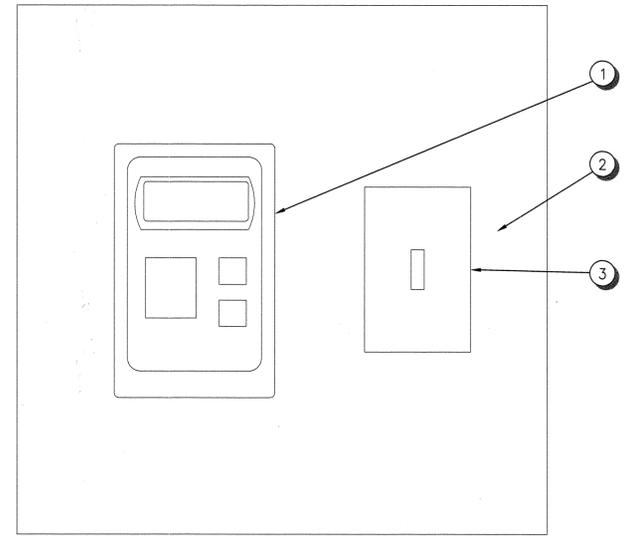
**(A)** CONTROL DIAGRAM—ELECTRICAL ROOM THERMOSTAT  
 N.T.S.

C



**(C)** CONTROL DIAGRAM—HEATING & AIR CONDITIONING  
 N.T.S. CONTROL DIAGRAM (MOUNTED IN HVAC BOX)

B



**(B)** DETAIL— THERMOSTAT CONTROL BOX MOUNT  
 N.T.S.

A

ELECTRICAL EQUIPMENT SCHEDULE					
Item #	Description	Quantity	Model or Series #	Manufacturer	Comments
1	PROGRAMMABLE DIGITAL THERMOSTAT WITH NEEDED SENSOR	1	ULE-SD11-011	SAGINO MIYA	OR APPROVED EQUAL
2	HOFFMAN 8"x8" ENCLOSURE NEMA 12	1	A101008CH	HOFFMAN	OR APPROVED EQUAL
3	2 POLE CONTACTOR FOR AIR CONDITIONER CONTROL	1	3RT10 33-1AK60	SIEMENS	OR APPROVED EQUAL
4	MOTOR RATED SWITCH	1	600-TOX4	ALLEN-BRADLEY	OR APPROVED EQUAL
5	~	~	~	~	~

**ELECTRICAL ROOM**

1 2 3 4 5

### EXHAUST FAN SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	TYPE	AIRFLOW RATE (CFM)	STATIC PRESSURE DROP (IN H2O)	FAN SPEED (RPM)	DRIVE TYPE (BELT /DIRECT)	WHEEL DIAMETER (IN)	FAN SIZE (HP)	VOLT/PH/HZ	LENGTH/ WIDTH/ HEIGHT (IN)	NOTES
EF-1	LOREN COOK, 150C5B	DOWN BLAST	2,500	0.125	1320	BELT	15	1/2 HP	120/1/60	33/33/29	PROVIDE WITH MANUFACTURES ROOF CURB RCG-22 AND MOTORIZED DAMPER BDM-18

### HOODED INTAKE FAN SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	TYPE	AIRFLOW RATE (CFM)	STATIC PRESSURE DROP (IN H2O)	FAN SPEED (RPM)	DRIVE TYPE (BELT /DIRECT)	WHEEL DIAMETER (IN)	FAN SIZE (HP)	VOLT/PH/HZ	LENGTH/ WIDTH/ HEIGHT (IN)	NOTES
IH-1	LOREN COOK, 150ASP	FILTERED INTAKE	2,500	0.375	478	DIRECT	15	1/2 HP	120/1/60	45/45/36	PROVIDE WITH MANUFACTURES ROOF CURB RCG-30 AND MOTORIZED DAMPER BDMI-26

### INFRARED HEAT SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	INPUT CAPACITY (BTUH)	OUTPUT CAPACITY (BTUH)	LENGTH (FT)	FUEL TYPE	VACUUM PUMP ELECTRICAL				NOTES
								MOTOR SPEED (RPM)	HP	AMPS	VOLT/PH	
IR-1	SUPERIOR RADIANT PRODUCTS,UA10N4A	FILTRATION BUILDING	TUBE & REFLECTOR	100,000	89,000	40	NATURAL GAS	NA	FRAC	20	120/1	SUPPLY WITH MANUFACTURERS SILKOTE FINISH, HIGH EMISSIVITY CORROSIAN RESITANT COATING.
IR-2	SUPERIOR RADIANT PRODUCTS,UA04N2A	ELECTRICAL ROOM	TUBE & REFLECTOR	40,000	27,000	20	NATURAL GAS	NA	FRAC	20	120/1	SUPPLY WITH MANUFACTURERS SILKOTE FINISH, HIGH EMISSIVITY CORROSIAN RESITANT COATING.

### AIR CONDITIONING SPLIT SYTEM SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	AIR		COOLING					ELECTRICAL		PHYSICAL	NOTES	
				SUPPLY AIRFLOW RATE (CFM)	EXTERNAL STATIC PRESSURE DROP (IN H2O)	COOLING TYPE	COOLING CAPACITY (BTUH)	TEMPERATUR E DROP (° F)	RATED EFFICENCY (SEER)	REFRIGERAN T TYPE	COOLING CAPACITY (TONS)	VOLT/PH/HZ	MAXIMUM AMPERAGE (AMP)		LENGTH/ WIDTH/ HIEGHT (IN)
SS-1	mitsubishi electric, MSY-A15NA	ELECTRICAL ROOM	DX	1,000	0.75	ELECTRIC	15,000	25°	16	R-410A	1.25	240/1/60	15	31/12/9	SUPPLY WITH MANUFACTURERS MOUNTING HARDWARE

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PROJECT NAME:

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RESOURCES  
SPRINGVILLE  
FISH HATCHERY  
TREATMENT PLANT  
2009

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MECHANICAL EQUIPMENT  
SCHEDULES

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M-5

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State of Utah  
Department of Administrative Services

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INSTRUMENTATION  
INDEX

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I-1.1

SHEET 41 OF 46

INSTRUMENT / FUNCTION SYMBOLS	FIELD MOUNTED	PRIMARY LOCATION		AUXILIARY LOCATION	
		NORMALLY ACCESSIBLE TO OPERATOR	NORMALLY INACCESSIBLE TO OPERATOR	NORMALLY ACCESSIBLE TO OPERATOR	NORMALLY INACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS					
SHARED DISPLAY, SHARED CONTROL					
COMPUTER FUNCTION					
PROGRAMMABLE LOGIC CONTROL					

SYMBOL	DESCRIPTION
	INSTRUMENT SUPPLY OR CONNECTION TO PROCESS
	UNDEFINED SIGNAL
	PNEUMATIC SIGNAL
	ELECTRIC SIGNAL
	HYDRAULIC SIGNAL
	CAPILLARY TUBE
	ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED)
	ELECTROMAGNETIC OR SONIC SIGNAL (NOT GUIDED)
	INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)
	MECHANICAL LINK

COMMON INSTRUMENTATION IDENTIFIERS USED IN THESE DRAWINGS					
IDENTIFIER	DESCRIPTION	PLC I/O	IDENTIFIER	DESCRIPTION	PLC I/O
AE	ANALYTICAL ELEMENT		SI	SPEED INDICATOR (FEEDBACK)	AI
AI	ANALYTICAL INSTRUMENT INDICATOR	AI	SX	SPEED REFERENCE	AO
AT	ANALYTICAL INSTRUMENT TRANSMITTER	AI	TAH	TEMPERATURE ALARM HIGH	DI
FE	FLOW ELEMENT		TI	TEMPERATURE INDICATOR	AI
FI	FLOW INDICATOR	AI	WAH	WEIGHT/FORCE/TORQUE HIGH ALARM	DI
FQI	FLOW QUANTITY INDICATOR	DI	WAL	WEIGHT ALARM LOW	DI
FIT	FLOW INDICATING TRANSMITTER	AI	WE	WEIGHT / FORCE / TORQUE ELEMENT	
FQT	FLOW QUANTITY PULSE TRANSMITTER	DI	WI	WEIGHT/FORCE/TORQUE INDICATOR	AI
FT	FLOW TRANSMITTER	AI	WIT	WEIGHT INDICATING TRANSMITTER	DI
HS	HAND SWITCH	DI	YA	EVENT ALARM	DI
LAH	LEVEL ALARM HIGH	DI	YI	EVENT INDICATOR	DI
LAL	LEVEL ALARM LOW	DI	YS	EVENT SWITCH	DI
LE	LEVEL ELEMENT		YX	EVENT EXECUTE (RUN COMMAND)	DO
LI	LEVEL INDICATOR	AI	ZI	POSITION INDICATOR (POSITION FEEDBACK)	AI
LIT	LEVEL INDICATING TRANSMITTER	AI	ZSC	POSITION LIMIT SWITCH CLOSED	DI
LT	LEVEL TRANSMITTER	AI	ZSO	POSITION LIMIT SWITCH OPEN	DI
PE	PRESSURE ELEMENT		ZX	POSITION REFERENCE	AO
PI	PRESSURE INDICATOR	AI	ZXC	POSITION EXECUTE CLOSE (CLOSE COMMAND)	DO
PIT	PRESSURE INDICATING TRANSMITTER	AI	ZXO	POSITION EXECUTE OPEN (OPEN COMMAND)	DO
PT	PRESURE TRANSMITTER	AI			

1

2

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SHEET 42 OF 46

VALVE & INSTRUMENTATION IDENTIFIER LETTERS

FIRST-LETTERS	INDICATING MEASURED OR CONTROLLED VARIABLE	CONTROLLERS			VALVES	READOUT DEVICE		SWITCHES AND ALARM DEVICES			TRANSMITTERS			SOLENOIDS RELAYS COMPUTING DEVICES	PRIMARY ELEMENT	TEST POINT	WELL OR PROBE	VIEWING DEVICE GLASS	SAFETY DEVICE	FINAL ELEMENT
		RECORDING	INDICATING	BLIND		RECORDING	INDICATING	HIGH*	LOW	COMB	RECORDING	INDICATING	BLIND							
A	ANALYSIS	ARC	AIC	AC		AR	AI	ASH	ASL	ASHL	ART	AIT	AT	AY	AE	AP	AW		AV	
B	BURNER/COMBUSTION	BRC	BIC	BC		BR	BI	BSH	BSL	BSHL	BRT	BIT	BT	BY	BE		BW	BG	BZ	
C	CONDUCTIVITY		CIC	CC											CE					
D	USER'S CHOICE																			
E	VOLTAGE	ERC	EIC	EC		ER	EI	ESH	ESL	ESHL	ERT	EIT	ET	EY	EE				EZ	
F	FLOW RATE	FRC	FIC	FC	FCV FICV	FR	FI	FSH	FSL	FSHL	FRT	FIT	FT	FY	FE	FP		FG	FV	
FQ	FLOW QUANTITY	FQRC	FQIC			FQR	FQI	FQSH	FQSL		FQIT	FQT		FQY	FQE				FQV	
FF	FLOW RATIO	FFRC	FFIC	FFC		FFR	FFI	FFSH	FFSL						FE				FFV	
G	USER'S CHOICE																			
H	HAND		HIC	HC	HV					HS									HV	
I	CURRENT	IRC	IIC			IR	II	ISH	ISL	ISHL	IRT	IIT	IT	IY	IE				IZ	
J	POWER	JRC	JIC	ARC		JR	JI	JSH	JSL	JSHL	JRT	JIT	JT	JY	JE				JV	
K	TIME	KRC	KIC	KC	KCV	KR	KI	KSH	KSL	KSHL	KRT	KIT	KT	KY	KE				KV	
L	LEVEL	LRC	LIC	LC	LCV	LR	LI	LSH	LSL	LSHL	LRT	LIT	LT	LY	LE		LW	LG	LV	
M	MOISTURE/HUMIDITY						MI						MT							
N	USER'S CHOICE																			
O	USER'S CHOICE																			
P	PRESSURE VACUUM	PRC	PIC	PC	PCV	PR	PI	PSH	PSL	PSHL	PRT	PIT	PT	PY	PE	PP		PSV PSE	PV	
PD	PRESSURE DIFFERENTIAL	PDRC	PDIC	PDC	PDCV	PDR	PDI	PDSH	PDSL		PDRT	PDIT	PDT	PDY	PE	PP			PDV	
Q	QUALITY	QRC	QIC			QR	QI	QSH	QSL	QSHL	QRT	QIT	QT	QY	QE				QZ	
R	RADIATION	RRC	RIC	RC		RR	RI	RSH	RSL	RSHL	RRT	RIT	RT	RY	RE		RW		RZ	
S	SPEED	SRC	SIC	SC	SCV	SR	SI	SSH	SSL	SSHL	SRT	SIT	ST	SY	SE				SV	
T	TEMPERATURE	TRC	TIC	TC	TCV	TR	TI	TSH	TSL	TSHL	TRT	TIT	TT	TY	TE	TP	TW		TV	
TD	TEMPERATURE DIFFERENTIAL	TDRC	TDIC	TDC	TDCV	TDR	TDI	TDSH	TDSL		TDRT	TDIT	TDT	TDY	TDE	TDP TP	TDW TW		TSE TDV	
U	MULTIVARIABLE					UR	UI							UY					UV	
V	MACHINERY VIBRATION ANALYSIS					VR	VI	VSH	VSL	VSHL	VRT	VIT	VT	VY	VE				VZ	
W	WEIGHT FORCE	WRC	WIC	WC	WCV	WR	WI	WSH	WSL	WSHL	WRT	WIT	WT	WY	WE				WZ	
WD	WEIGHT FORCE DIFFERENTIAL	WDRC	WDIC	WDC	WDCV	WDR	WDI	WDSH	WDSL		WDRT	WDIT	WDT	WDY	WDE WE				WDZ	
X	USER'S CHOICE																			
Y	EVENT STATE PRESENCE		YIC	YC		YR	YI	YSH	YSL			YT	YY	YE					YZ	
Z	POSITION DIMENSION	ZRC	ZIC	ZC	ZCV	ZR	ZI	ZSH	ZSL	ZSHL	ZRT	ZIT	ZT	ZY	ZE				ZV	
ZD	GAUGING	ZDRC	ZDIC	ZDC	ZDCV	ZDR	ZDI	ZDSH	ZDSL		ZDRT	ZDIT	ZDT	ZDY	ZDE				ZDV	

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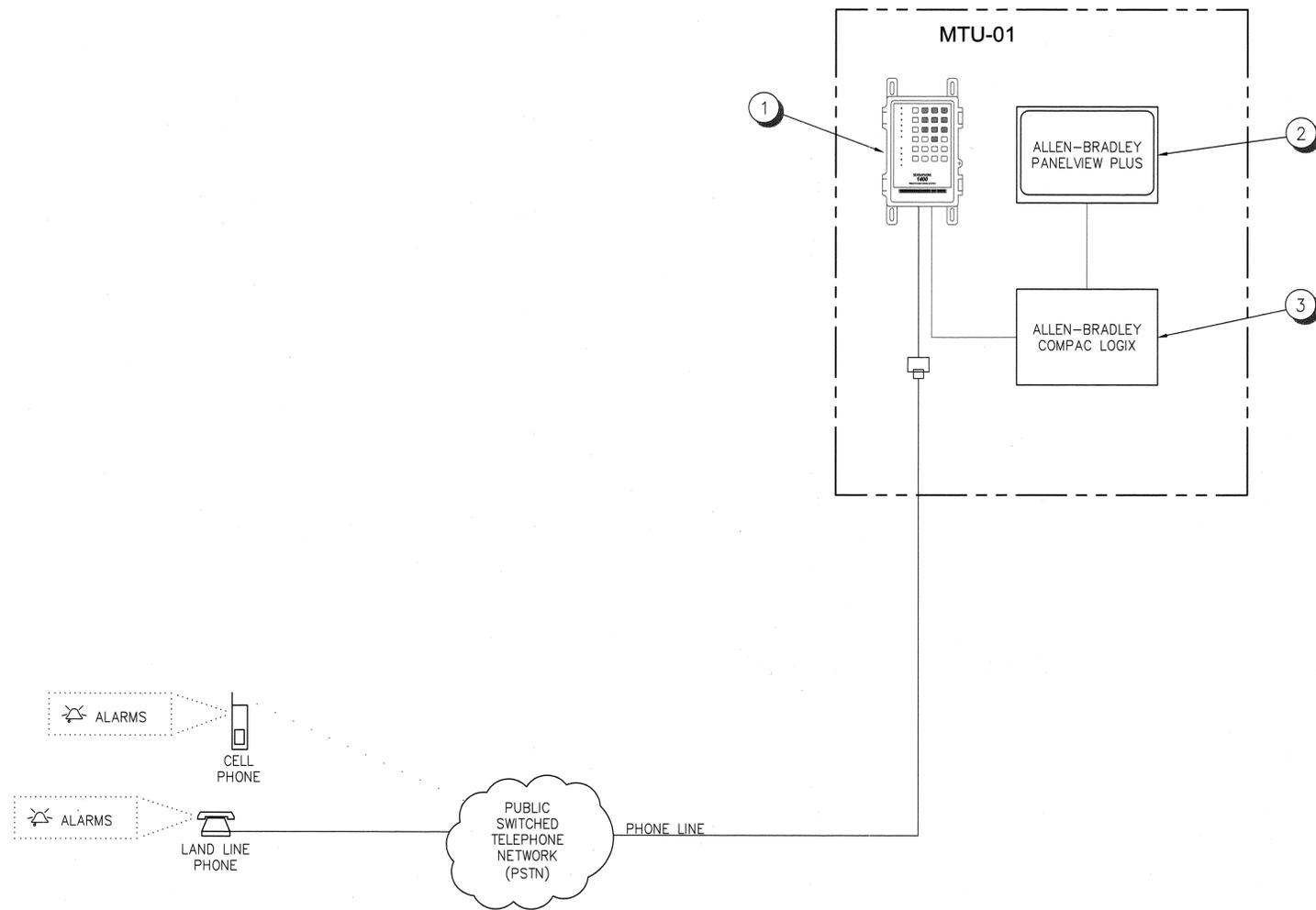
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ELECTRICAL EQUIPMENT SCHEDULE					
Item #	Description	Quantity	Model or Series #	Manufacturer	Comments
1	AUTODIALER SENSAPHONE	1	FGD-0800	SENSAPHONE	OR APPROVED EQUAL
2	ALLEN-BRADLEY PANELVIEW PLUS	1	2711P-B10C4A6	ALLEN-BRADLEY	OR APPROVED EQUAL
3	ALLEN-BRADLEY COMPACTLOGIX PLC	1	1769-L23E	ALLEN-BRADLEY	OR APPROVED EQUAL

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**State of Utah**  
Department of Administrative Services

**Division of Facilities**  
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PROJECT NAME:  
**UTAH DIVISION OF WILDLIFE RESOURCES SPRINGVILLE FISH HATCHERY TREATMENT PLANT 2009**

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MTU-01

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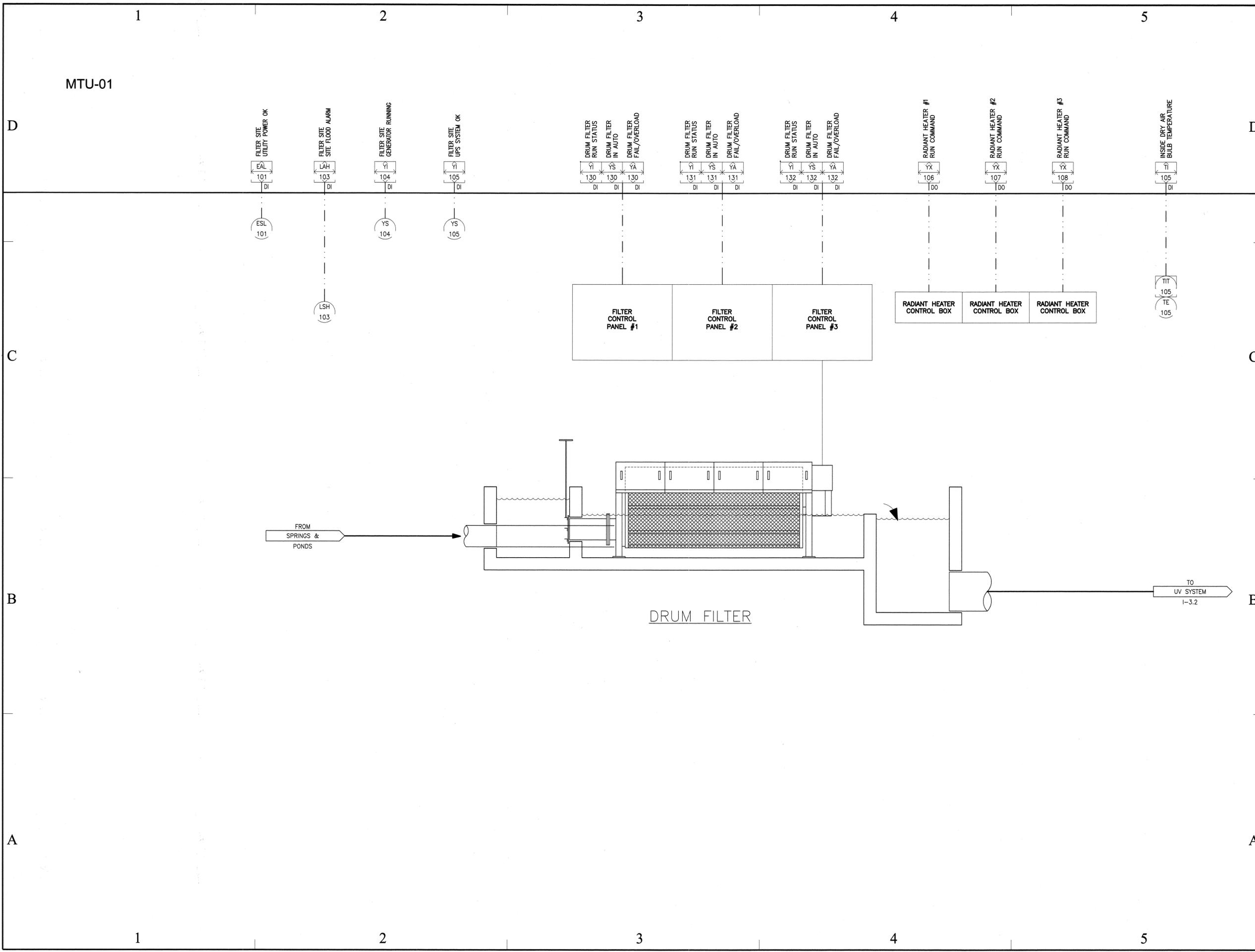
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PROCESS AND  
INSTRUMENTATION  
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SHEET 44 OF 46





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PROJECT NAME:  
**UTAH DIVISION OF  
WILDLIFE  
RESOURCES  
SPRINGVILLE  
FISH HATCHERY  
TREATMENT PLANT  
2009**

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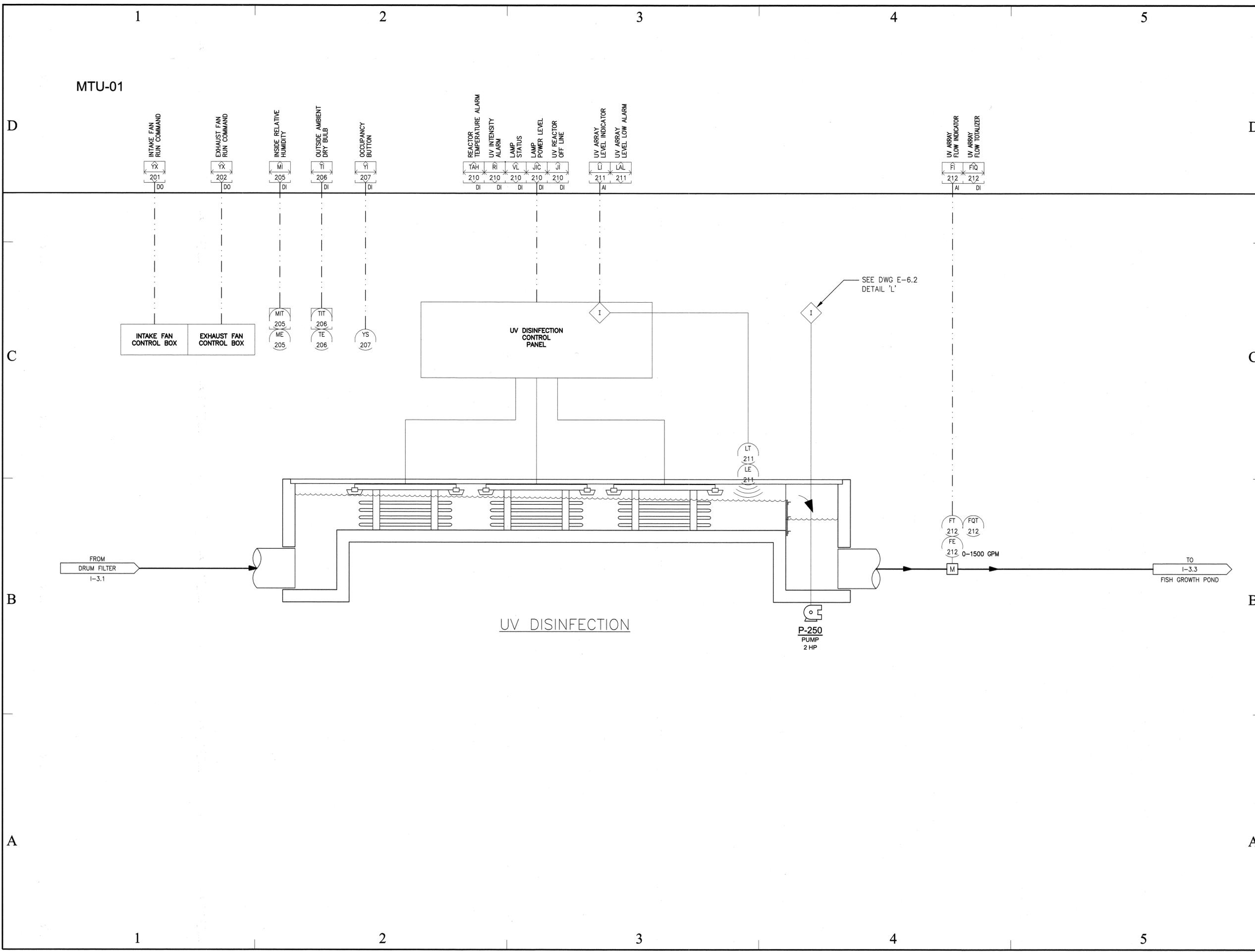
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SHEET 45 OF 46



MTU-01

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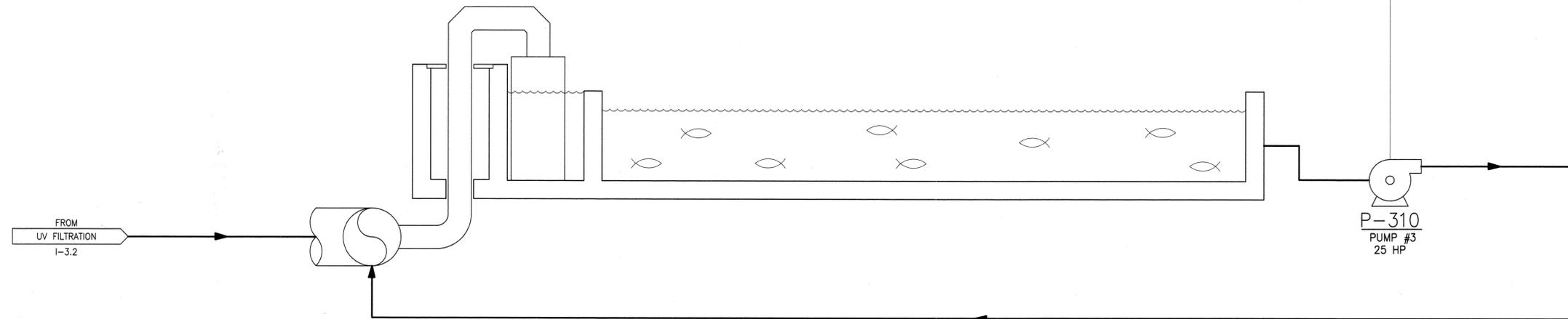
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MTU-01

REGRULATION PUMP					
TEMPERATURE ALARM					
MOISTURE ALARM					
IN AUTO					
FAIL/OVERLOAD	FAIL/OVERLOAD	FAIL/OVERLOAD	FAIL/OVERLOAD	FAIL/OVERLOAD	FAIL/OVERLOAD
RUN COMMAND					



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DESIGNED BY:



PREPARED BY:  
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