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X 20A OR X 100AF 80AT 3P — LOW VOLTAGE CIRCUIT BREAKER (CB). RATINGS AND NO. OF POLES AS SHOWN. WHEN SPECIFIC TYPE IS REQUIRED, X INDICATES TYPE.

TYPES:
MCCB – MOLDED CASE
ICCB – INSULATED CASE
LVP – LOW VOLTAGE POWER
MCP – MOTOR CIRCUIT PROTECTOR
(RATING PER CONNECTED LOAD)

CB — SEPARATELY MOUNTED CIRCUIT BREAKER, SEE ELECTRICAL ONE LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

GFP — GROUND FAULT PROTECTION

52 — MEDIUM VOLTAGE CIRCUIT BREAKER

FUSE, SIZE AND NUMBER OF FUSES AS NOTED

FUSED CUTOUT, CURRENT RATING, FUSE SIZE AND NUMBER OF POLES AS NOTED

FUSIBLE SWITCH, CURRENT RATING, FUSE SIZE AND QUANTITY AS NOTED

NON–FUSED SWITCH, CURRENT RATING AND NUMBER OF POLES AS NOTED

DISCONNECT OR DRAWOUT CONNECTION

A C B & A C B — MAGNETIC MOTOR STARTER AND SEPARATELY MOUNTED COMBINATION MAGNETIC MOTOR STARTER.

D C & D C — MOTOR CONTROLLER AND SEPERATELY MOUNTED MOTOR CONTROLLER WITH SHORT CIRCUIT PROTECTION AND DISCONNECT.

MOTOR STARTER AND CONTROLLER SUBSCRIPTS:

A – MAGNETIC STARTER NEMA SIZE

B – STARTER TYPE
NONE – FULL VOLTAGE NON–REVERSING (FVNR)
FVR – FULL VOLTAGE REVERSING
2S – TWO SPEED
RVAT – REDUCED VOLTAGE AUTO TRANSFORMER

C – CONTROL DIAGRAM OR CONTROLS SCHEDULE NUMBER (IF REQUIRED)

D – CONTROLLER TYPE
VFD – VARIABLE FREQUENCY DRIVE
SS – SOLID STATE

SEPERATLY MOUNTED COMBINATION MOTOR STARTER OR CONTROLLER, SEE ELECTRICAL ONE LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

THERMAL OVERLOAD ELEMENT

THERMAL OVERLOAD RELAY CONTACT

DISCONNECT OR SAFETY SWITCH, 30A, 3P, NON–FUSED UNLESS OTHERWISE NOTED

7 1/2 OR HP — MOTOR WITH DESIGN HORSEPOWER (WHEN INDICATED)

G — GENERATOR

TRANSFER SWITCH, CURRENT RATING AND NUMBER OF POLES AS NOTED.

ATS – AUTOMATIC
MTS – MANUAL

TRANSFORMER

Δ 3 PHASE, 3 WIRE DELTA CONNECTION

Y 3 PHASE, 4 WIRE GROUNDED WYE CONNECTION

SWITCHBOARD OR PANELBOARD. NAME, VOLTAGE, PHASE, NUMBER OF WIRES WHEN INDICATED.

100 KVA — NON–MOTOR LOAD WITH DESIGN KVA, KW OR AMPS

CPT — CONTROL POWER TRANSFORMER (CPT)

VOLTAGE TRANSFORMER (VT OR PT)

CURRENT TRANSFORMER (CT)

WH — UTILITY WATT–HOUR METER PER UTILITY REQUIREMENTS

DMP — DIGITAL METERING PACKAGE

RTM — RUN TIME METER

GROUND

LIGHTNING ARRESTER

SPD — LOW VOLTAGE SURGE PROTECTIVE DEVICE

ELECTRICAL CONNECTION

OR OR — NO ELECTRICAL CONNECTION

SV OR — SOLENOID VALVE

X Y — CONTROL/RELAY COIL, X INDICATES TYPE, Y INDICATES LOOP NO. WHEN USED

TYPES:
CR – CONTROL RELAY
DP – DEFINITE PURPOSE RELAY
LC – LIGHTING CONTACTOR
M – MOTOR STARTER
PC – PHOTO CELL
TC – TIME CLOCK
TR – TIMING RELAY

NORMALLY OPEN CONTACT (N.O.)

NORMALLY CLOSED CONTACT (N.C.)

NORMALLY OPEN TIME DELAY RELAY CONTACT, WITH TIME DELAY ON CLOSING AFTER COIL IS ENERGIZED

NORMALLY CLOSED TIME DELAY RELAY CONTACT, WITH TIME DELAY ON OPENING AFTER COIL IS ENERGIZED

NORMALLY OPEN TIME DELAY RELAY CONTACT, WITH TIME DELAY ON OPENING AFTER COIL IS DE–ENERGIZED

NORMALLY CLOSED TIME DELAY RELAY CONTACT, WITH TIME DELAY ON CLOSING AFTER COIL IS DE–ENERGIZED

NORMALLY OPEN TEMPERATURE SWITCH, CLOSE ON RISING TEMPERATURE

NORMALLY CLOSED TEMPERATURE SWITCH, OPEN ON RISING TEMPERATURE

NORMALLY OPEN FLOW SWITCH, CLOSE ON INCREASING FLOW

NORMALLY CLOSED FLOW SWITCH, OPEN ON INCREASING FLOW

NORMALLY OPEN LEVEL SWITCH, CLOSE ON RISING LEVEL

NORMALLY CLOSED LEVEL SWITCH, OPEN ON RISING LEVEL

NORMALLY OPEN PRESSURE SWITCH, CLOSE ON INCREASING PRESSURE

NORMALLY CLOSED PRESSURE SWITCH, OPEN ON INCREASING PRESSURE

NORMALLY OPEN LIMIT SWITCH, CLOSE ON REACHING LIMIT

NORMALLY CLOSED LIMIT SWITCH, OPEN ON REACHING LIMIT

FIELD WIRING EXTERNAL TO CONTROL PANEL

X — INTERLOCK, X INDICATES TYPE

TYPES:
E – ELECTRICAL
M – MECHANICAL
K – KEY

OFF HAND AUTO XOO OOX — 3 POSITION SELECTOR SWITCH, MAINTAINED CONTACTS, UNLESS OTHERWISE NOTED, 2 POSITION SIMILAR

NORMALLY OPEN PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

NORMALLY CLOSED PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

X — INDICATING LIGHT, X INDICATES LENS COLOR

X — PUSH TO TEST INDICATING LIGHT, X INDICATES LENS COLOR

LENS COLORS:
R – RED
G – GREEN
B – BLUE
Y – YELLOW
W – WHITE
A – AMBER

T — TRANSFORMER

LC — LOADCENTER, TRANSFORMER WITH PANLEBOARD

FS — FLOAT SWITCH

SS — SELECTOR SWITCH

PB — PUSHBUTTON

IC — INSTRUMENTATION/CONTROL DEVICE

CONTROL PANEL INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

CONTROL PANEL WITH DISCONNECT SWITCH INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

JUNCTION OR PULL BOX

PANELBOARD (250V TO 600V)

PANELBOARD (LESS THAN 250V)

ELECTRICAL EQUIPMENT ENCLOSURE: SWITCHBOARD, MOTOR CONTROL CENTER, CONTROL PANEL OR OTHER EQUIPMENT AS INDICATED

PC — PHOTOCELL

X Y — CEILING/PENDANT MOUNTED LUMINAIRE – HID, COMPACT FLUORESCENT OR INCANDESCENT

X Y — WALL MOUNTED LUMINAIRE – HID, COMPACT FLUORESCENT OR INCANDESCENT

z X Y — CEILING/PENDANT MOUNTED FLUORESCENT FIXTURE

z X Y — WALL MOUNTED FLUORESCENT FIXTURE

z X Y — CEILING/PENDANT MOUNTED FLUORESCENT FIXTURE NORMAL/EMERGENCY

z X Y — WALL MOUNTED FLUORESCENT FIXTURE NORMAL/EMERGENCY

X Y — EMERGENCY LIGHT FIXTURE, 2 ATTACHED HEADS AS SHOWN

X Y — EMERGENCY LIGHT, REMOTE MOUNTED HEAD

X Y X Y — DOUBLE FACED CEILING OR WALL MOUNTED EXIT LIGHT, DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

X Y X Y — SINGLE FACED CEILING OR WALL MOUNTED EXIT LIGHT, DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

X Y — AREA OR ROADWAY LIGHT – POLE MOUNTED

LIGHTING FIXTURE SUBCRIPTS:

X – INDICATES FIXTURE TYPE PER LIGHTING FIXTURE SCHEDULE
Y – INDICATES CIRCUIT NUMBER FROM PANELBOARD
z – INDICATES CONTROLLING SWITCH (IF REQUIRED)

TOGGLE SWITCH

SUBCRIPTS:
X – INDICATES TYPE
NONE NONE – SINGLE POLE
3 – THREE–WAY
4 – FOUR–WAY
HP – TOGGLE SWITCH, HORSEPOWER RATED
K – KEY SWITCH
TE – MANUAL MOTOR STARTER WITH THERMAL ELEMENT
P – PILOT LIGHT
L – LIGHTED HANDLE
Y – INDICATES CONTROLLING SWITCH (IF REQUIRED)

SPECIAL PURPOSE RECEPTACLE AS DEFINED ON PLANS

PLUG–IN RECEPTACLE STRIP, QUANTITY AND SPACING OF RECEPTACLES AS NOTED OR SPECIFIED

TELECOMMUNICATIONS OUTLET JUNCTION BOX

X Y — QUAD–DUPLEX RECEPTACLE, TWO NEMA 5–20R UNDER COMMON COVER PLATE.

X Y — DUPLEX RECEPTACLE, NEMA 5–20R

X Y — SIMPLEX RECEPTACLE, NEMA 5–20R

SUBCRIPTS:
X – INDICATES TYPE
GFCI – GROUND FAULT CIRCUIT INTERRUPTER
Y – INDICATES CIRCUIT NUMBER FROM PANELBOARD
WP – WEATHERPROOF

CONDUIT TURNING UP

CONDUIT TURNING DOWN

HOME RUN TO PANEL, 2 #12, 1 #12G IN 3/4"C UNLESS OTHERWISE NOTED

CIRCUIT RUN BETWEEN DEVICES EXPOSED IN NON–ARCHITECTURALLY FINISHED AREAS, CONCEALED IN ARCHITECTURALLY FINISHED AREAS. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT

CONDUIT RUN BETWEEN DEVICES CONCEALED IN NON–ARCHITECTURALLY FINISHED AREAS OR UNDER FLOOR SLAB. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.

CIRCUIT HASH MARKS (WHEN INDICATED), LONG, SHORT, SINGLE DOT AND DOUBLE DOT REPRESENT PHASE, NEUTRAL, EQUIPMENT GROUND AND ISOLATED EQUIPMENT GROUND RESPECTIVELY. #12 IN 3/4" CONDUIT UNLESS OTHERWISE INDICATED. IF NOT SHOWN, REFER TO PANEL SCHEDULE.

CIRCUIT CONTINUATION

CONDUIT STUBBED OUT AND CAPPED

XX — CONDUIT TAG OR CIRCUIT NUMBER – WIRE AND CONDUIT SIZE AS SPECIFIED IN CIRCUIT SCHEDULE ON THE DRAWINGS

FAA — FIRE ALARM ANNUNCIATOR

FACP — FIRE ALARM CONTROL PANEL

F — FIRE ALARM MANUAL PULL STATION

CR — FIRE ALARM CONTROL RELAY

FS — FIRE ALARM CONTACT, FLOW SWITCH

TS — FIRE ALARM CONTACT, TAMPER SWITCH

PS — FIRE ALARM CONTACT, PRESSURE SWITCH

X AND X — SMOKE AND DUCT DETECTOR

SUBCRIPT:
I – IONAZATION TYPE
P – PHOTOELECTRIC TYPE

X — HEAT DETECTOR

SUBCRIPT:
R/C – RATE COMPENSATION
R/F – COMBINATION RATE OF RISE AND FIXED TEMP
R – RATE OF RISE
F – FIXED

X — ALARM BELL

X — ALARM HORN

X — ALARM FLASHING LIGHT

X — ALARM BELL AND FLASHING LIGHT COMBINATION UNIT

X — ALARM HORN AND FLASHING LIGHT COMBINATION UNIT

SUBCRIPT:
NONE – GENERAL ALARM DEVICE
F – FIRE ALARM DEVICE

GROUND CABLE

GROUND ROD

EXTERIOR PADMOUNTED TRANSFORMER

POLE MOUNTED TRANSFORMER

Y — ELECTRICAL HANDHOLE OR MANHOLE
Y – MHX OR HHX WHERE X INDICATES SEQUENCE NUMBER

HH — HAND HOLE, SIZED PER NEC 314, TRAFFIC RATED FOR H–20 LOADING

GENERAL NOTES:

1. THIS IS A STANDARD ELECTRICAL SYMBOLS SHEET. ALL SYMBOLS MAY NOT BE USED ON THIS PROJECT.
2. IN GENERAL CONDUIT ROUTING IS NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS INCLUDING THOSE SHOWN ON ONE–LINES AND HOME RUNS. SEE SPECIFICATIONS FOR CONDUIT INSTALLATION REQUIREMENTS. CONDUIT ROUTINGS AND STUB–UP LOCATIONS THAT ARE SHOWN ARE APPROXIMATE, EXACT ROUTINGS SHALL BE AS REQUIRED FOR EQUIPMENT FURNISHED.
3. WHEN BRANCH CIRCUITS ARE NOT SHOWN ON THE PLANS THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUITS AND CONDUCTORS REQUIRED. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE BRANCH CIRCUIT.
4. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE–EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH DRAWING FOR USAGE.
5. SEE PROJECT EQUIPMENT AND PIPING SYSTEMS DRAWING FOR SYMBOLS AND ABBREVIATIONS SPECIFIC TO THE PROJECT.

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REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 15, 1988 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

Design SM
Drawn ACB
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

GENERAL ELECTRICAL LEGEND

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PRIMARY ELEMENT SYMBOLOGY

- ORIFICE PLATE
- PITOT TUBE OR ANNUBAR
- FI — ROTAMETER
- SONIC OR ULTRASONIC FLOWMETER
- M — MAGNETIC FLOWMETER
- MASS DISPERSION FLOWMETER
- FLUME
- WEIR
- PROPELLER OR TURBINE METER
- VENTURI TUBE
- FLOAT SWITCH
- TE — TEMPERATURE ELEMENT WITH THERMOWELL
- FG — SIGHT FLOW GLASS

LINE TYPES

- MAIN PROCESS LINE
- SECONDARY PROCESS LINE
- AUXILIARY PROCESS LINE
- DIRECTION OF FLOW
- PNEUMATIC SIGNAL
- ELECTRICAL SIGNAL
- HYDRAULIC SIGNAL
- SOFTWARE OR DATA LINK
- SIGNAL CONNECTION
- CROSSOVER – NO CONNECTION
- CAPILLARY

CROSS REFERENCE SYMBOLOGY

- 1-3 — CONTINUATION ON DRAWING 1-3
- 1-3 — CONTINUATION ON DRAWING 1-3

INSTRUMENT SYMBOLOGY

- LOCALLY MOUNTED FIELD INSTRUMENTATION
- MOUNTED ON PANEL FRONT
- MOUNTED INSIDE PANEL
- XXX — FRONT PANEL MOUNTED ON AUXILIARY PANEL (SUBSCRIPT INDICATES PANEL)
- MOUNTED INSIDE AUXILIARY PANEL
- PILOT LIGHT
- INSTRUMENT FUNCTIONS SHARING COMMON HOUSING
- COMPLEX INTERLOCK AS DEFINED IN CONTROL DIAGRAM OR IN SPECIFICATIONS
- SHARED DISPLAY, SHARED CONTROL, FIELD MOUNTED
- SHARED DISPLAY, SHARED CONTROL, PRIMARY LOCATION – NORMALLY ACCESSIBLE TO OPERATOR
- PROGRAMMABLE LOGIC CONTROL, PRIMARY LOCATION – NORMALLY ACCESSIBLE TO OPERATOR
- PROGRAMMABLE LOGIC CONTROL, FIELD MOUNTED

ACTUATOR SYMBOLOGY

- OPERATOR ABBREVIATIONS:
  M = MOTOR
  P = PNEUMATIC
  S = SOLENOID
- FLOAT OPERATOR
- SPRING OPPOSED SINGLE ACTING PNEUMATIC CYLINDER
- DOUBLE ACTING PNEUMATIC CYLINDER
- PNEUMATIC DIAPHRAGM
- PNEUMATIC DIAPHRAGM WITH POSITIONER

TYPES OF POWER SUPPLY

A	PLANT COMPRESSED AIR
IA	INSTRUMENTATION AIR
ES	ELECTRIC SUPPLY

INSTRUMENT IDENTIFICATION LETTERS

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USERS CHOICE	USERS CHOICE	USERS CHOICE
C	USERS CHOICE			CONTROL	CLOSED
D	USERS CHOICE	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECH. ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

MISCELLANEOUS INSTRUMENTATION ABBREVIATIONS

AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DO	DISSOLVED OXYGEN (ANALYZER MODIFIER)
I/O	INPUT/OUTPUT
OI	OPERATOR INTERFACE
O2	OXYGEN (ANALYZER MODIFIER)
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
WAN	WIDE AREA NETWORK

CONTROL SWITCH NOTATION ABBREVIATIONS

XXX / XXXX

ACK	ACKNOWLEDGE
ESTOP	EMERGENCY STOP
FAIL	FAILURE
FOR	FORWARD–OFF–REVERSE
FR	FORWARD–REVERSE
FS	FAST–SLOW
HA	HAND–AUTO
HOA	HAND–OFF–AUTO
HOR	HAND–OFF–REMOTE
LL	LEAD–LAG
LLS	LEAD–LAG–STANDBY
LOR	LOCAL–OFF–REMOTE
LR	LOCAL–REMOTE
LS	LEAD–STANDBY
MA	MANUAL–AUTO
OAC	OPEN–AUTO–CLOSE
OC	OPEN–CLOSE
OSC	OPEN–STOP–CLOSE
RJ	RUN–JOG
RJR	RUN–JOG–REVERSE
SIL	SILENCE
SS	START–STOP

MISCELLANEOUS P & ID SYMBOLOGY

GENERAL NOTES:

1. THIS IS A STANDARD INSTRUMENTATION SYMBOLS AND ABBREVIATION SHEET. LISTING OF SYMBOLS AND ABBREVIATIONS DOES NOT IMPLY ALL SYMBOLS AND ABBREVIATIONS HAVE BEEN USED ON THIS PROJECT.
2. SEE GENERAL SYMBOL DRAWING FOR VALVING AND PIPING SYMBOLS.
3. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK, REFER TO CONTEXT OF EACH DRAWING FOR USAGE.
4. SEE PROJECT EQUIPMENT AND PIPING SYSTEMS DRAWING FOR SYMBOLS AND ABBREVIATIONS SPECIFIC TO THE PROJECT.

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REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1980 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

Design ACB
Drawn ACB
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

GENERAL INSTRUMENTATION SYMBOLS

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CONTINUED ON 1/E-1
INTAKE VAULT
INTAKE SITE PLAN
SCALE: 1"=100'
0 100 200 300 FT
FIR STREET
TO NEW PUMP IN EXISTING WELL #4
TO RESIDENCE ALARM 6/E27
EXISTING WELL HOUSE #4
GRAVEL ROAD
FLOWMETERS ARE LISTED ON THE INSTRUMENTATION SCHEDULE E16
HEAT TRACE (3) PIPES PER 16125
CONTINUED TO TWO WELL HEADS 2/E2 VIA ONE HANDHOLE, NOT SHOWN
TRANSFORMER T1 ON PAD 2/E29
TRANSFORMER GROUNDING
UTILITY POLE
TELEPHONE UTILITY SERVICE AND JUNCTION BOX AS SPECIFIED BY THE NEZ PERCE TELECOMMUNICATIONS DEPARTMENT. PROVIDE GROUND CONNECTION
CONTINUED TO INTAKE STRUCTURE 1/E2 WITH HANDHOLE EVERY 300 FEET
TO RESIDENCE ALARM
RESIDENCE
SEPTIC DRAIN FIELD
CHILLER, PROVIDE POWER FACTOR CORRECTION CAPACITORS
GROUND FIELD
CONNECTIONS TO GENERATOR, ANNUNCIATOR PER SHOP DRAWINGS
FUEL TANKS
ALARM TO PLC
CHEMICAL SAFETY SHED
UTILITY BUILDING
TRANSFORMER SEE NOTE 1
MDP
UTILITY METER AND CT CABINET
LOADCENTER T3-LP3
LOADCENTER T2-LP2
LOAD CENTER T7-LP7
TRANSFORMER T8
TO PLC LOW LEVEL ALARMS
LOAD CENTER T6-LP6
TAG TRAILER RECEPTACLE
FREEZER CONDENSER. PROVIDE POWER FACTOR CORRECTION CAPACITORS
POWER OUTLET PANEL (9) LOCATIONS
LEVEL ALARM FLOAT SWITCH (TYP. 3 LOCATIONS)
STUB OUT SPARES 10'-0" SEE 3/E6
GROUND RODS (TYP.)
DATA CABLE TO SPAWNING FACILITY
SPAWNING FACILITY LOADCENTER T4-LP4
CLARIFIER
REARING RACEWAYS
HEAT TRACE PER 16125. (2) MANHOLES WITH FLOWMETERS
OXYGEN TANK STORAGE SLAB
DIFFERENTIAL PRESSURE SWITCH FOR LOX LOW LEVEL ALARM, TO BE PROVIDED BY OTHERS
2 #14 TO PLC LOW LEVEL ALARM
TO PLC
FUTURE PIT TAG SHACK
FUSED DISCONNECT AT WATER CONTROL BOX FOR RENTAL PUMP
QUARANTINE RACEWAY, 8'x80'
ADULT HOLDING PONDS
TYP (6) LOCATIONS
EASEMENT LINE
FISHWAY
LOSTINE RIVER
ELECTRICAL SITE PLAN
0 15 30 60 90 FT
SCALE: 1"=30'

NOTES:
1. UTILITY TRANSFORMER MUST BE 8 FEET FROM OVERHANG.
2. (XX) CONDUIT NUMBERS, SEE E3.

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 15, 1988 W. LOWELL SHELTON
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LOSTINE RIVER HATCHERY

ELECTRICAL SITE PLAN

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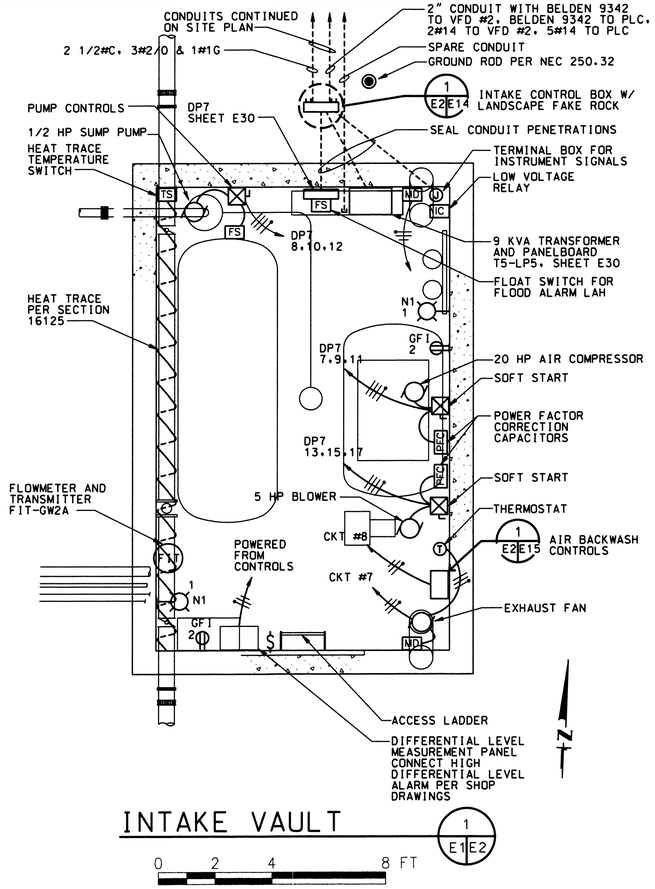
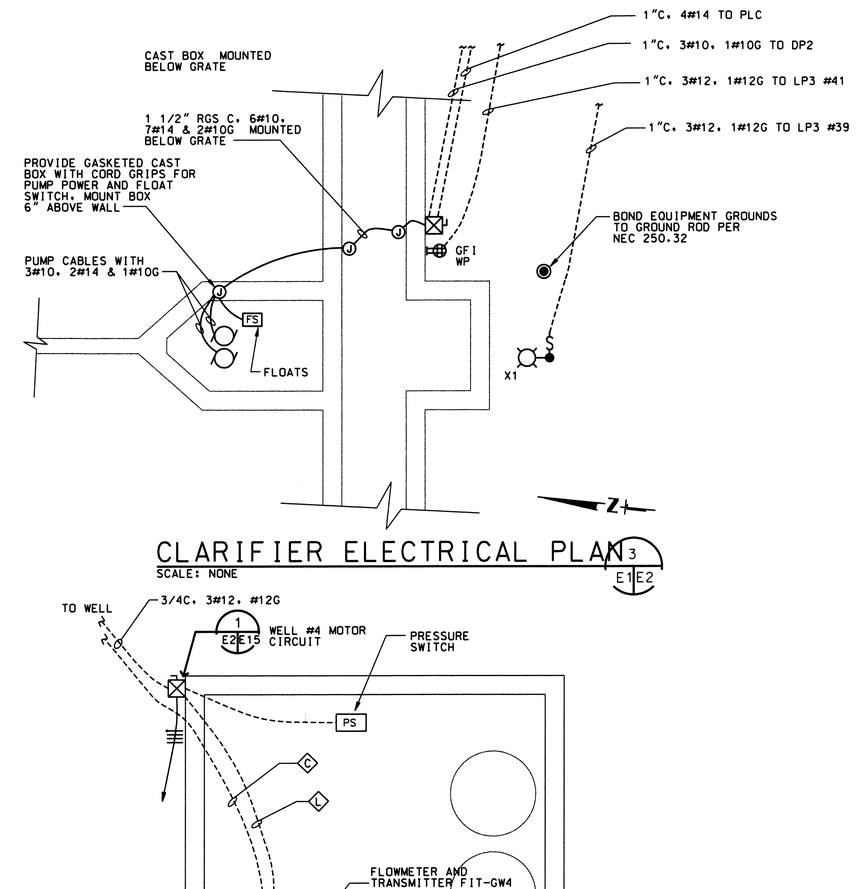


INTAKE VAULT

1 E1 E2

0 2 4 8 FT

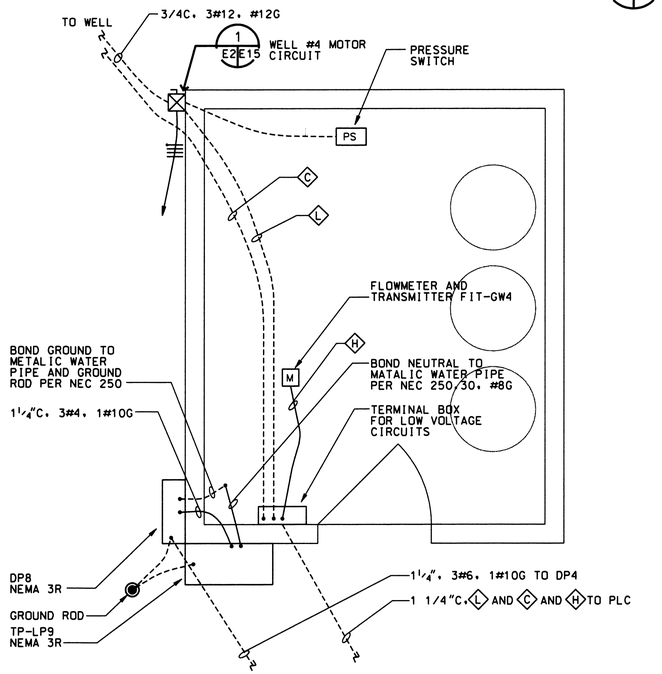
SCALE: 3/8"=1'-0"



CLARIFIER ELECTRICAL PLAN

3 E1 E2

SCALE: NONE

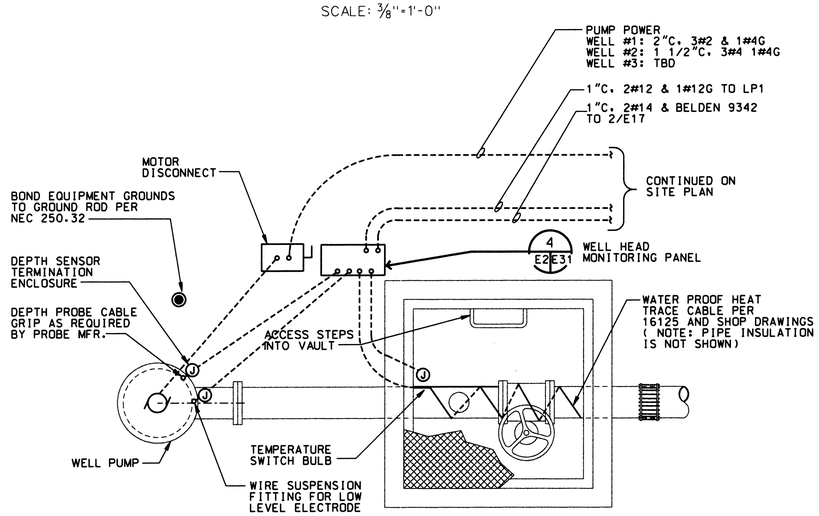


POTABLE WATER WELLHOUSE

4 E1 E2

0 1 2 4 6 FT

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



WELL HEAD PLAN (TYP.)

2 XX E2

0 1 2 4 FT

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

NOTES:
1. CONNECT EXISTING WELLHOUSE LIGHTS AND RECEPTACLE AND HEATER TO NEW CIRCUITS IN LP9.

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1995 W. LOWELL SHELTON
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LOSTINE RIVER HATCHERY

MISCELLANEOUS PLANS

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SITE CONDUIT SCHEDULE

CONDUIT NO.	FROM	POWER SOURCE	TO	SIZE	CONDUCTOR	PURPOSE
1	POWER POLE	UTILITY	UTILITY TRANSFORMER			UTILITY PRIMARY
2	UTILITY TRANSFORMER	SECONDARY	MDP	(5)4"	(5)4*400, *4/0G	SERVICE ENTRANCE
3	PHONE LINE	PHONE COMPANY	HATCHERY BUILDING		PER PHONE CO	PHONE LINES
4	TTB, HATCHERY ELECT RM	PHONE LINE	UTILITY BUILDING		2<A>	PLC MODEM
	DATA JACK AT PLC		TTB	3/4"		ALARM DIALER
5	ADULT DATA/PHONE JACKS	TTB	TTB	1"	4<A>	M&E TAG DATA, PHONE
6	PLC LOW VOLTAGE	PLC	HATCHERY BLDG	3"	5*14	INCUBATION MIX BOXES 1-4
		PLC			<L>	FREEZER WARM ALARM
		PLC			<H>	FLOWMETER FIT-GW1
		PLC			<J>	CACP HMI COMMUNICATIONS
7	UTILITY BUILDING	PLC, 120V	HATCHERY BLDG CACP	1"	2*12	HORNS
		PLC, 120V			2*14	BUZZER
		PLC POWER CIRCUIT			2*10, *10G	POWER TO DISPLAY PANEL
8		VFD*1		2"	<L>	CACP BYPASS
9	UTILITY BUILDING	DP1	HATCHERY DP3	(2)3"	(2)3*350, *1G	DP3 FEEDER
10	UTILITY BUILDING	DP2	HATCHERY DP5	2"	3*1, *6G	NONESSENTIAL DP5
11	UTILITY BUILDING	DP4 SECTION 2	INTAKE STRUCTURE	2.5"	3*2/0, *1G	480 VOLT POWER
12		FLOWMETER		2"	<H>	DEICE FLOW FIT-GW2A
		SPEED TRANSMITTER			<F>	VFD *2 SPEED
		VFD			<L>	VFD *2 START
		PLC			5*14	FLOOD ALARM
		PLC				BACKWASH ALARM
		PLC				DIFF HIGH ALARM
		PLC				LOW VOLTAGE ALARM
13		SPARE CONDUIT		1"		FUTURE VIDEO CAMERA
14	UTILITY BUILDING	DP4	ADULT BUILDING	2"	3*1, *6G	DP6 FEEDER
15	UTILITY BUILDING	PLC	(3) ADULT POND FLOAT SWITCHES, NORTH	1"	4*14	LAL-A1 TO LAL-A3
16	UTILITY BUILDING	PLC	(3) ADULT POND FLOAT SWITCHES, SOUTH	1"	4*14	LAL-A3 TO LAL-A6
17	UTILITY BUILDING, PLC AREA	SPARE CONDUIT	HATCHERY ELECT RM	2"	PULL STRING	SPARE CONDUIT
18	UTILITY BUILDING, ELECT RM	SPARE CONDUIT	HATCHERY ELECT RM	2"	PULL STRING	SPARE CONDUIT
19	ADULT BUILDING	LP4 *5	FLOODLIGHTS	1"	2*12, *12G	LIGHT
20	CHILLER ENABLED	TEMPERATURE SWITCH			2*14	ON/OFF CONTROL
21	FLUID COOLER ENABLED	TEMPERATURE SWITCH			2*14	ON/OFF CONTROL
22	DIVERTER VALVE, COOLER	TEMPERATURE SWITCH			<L>	MOTORIZED VALVE POWER
23	DIVERTER VALVE, CHILLER	TEMPERATURE SWITCH			<L>	MOTORIZED VALVE POWER
24	CHILLER ALARM	PLC	PLC		<L>	CHILLER ALARM
25	CHILLER COMMUNICATION LINK		PLC		<J>	
26	FLUID COOLER ALARM	PLC	PLC		<L>	
27	FUEL TANKS	GENERATOR ANNUNCIATOR			4*14, PARALLEL	LOW LEVEL ALARM
28	FUEL TANKS	GENERATOR ANNUNCIATOR			4*14, PARALLEL	CONTAINMENT LEAK
29	CHEMICAL SHED	LP3, 2 POLE	LP3	1"	3*10, *10G	208/120 1 PHASE TO SHED
30	CHEMICAL SHED	PLC, FACP	PLC & FACP		2<L>	ALARMS
31	NORTH FLOWMETER VAULT	PLC	UTILITY BUILDING	3/4"	<H>	FIT-W1TO PLC
				3/4"	<H>	FIT-W2 TO PLC
		FIT-SW		3/4"	<I>	FE-SW TO FIT-SW
32		LP3		3/4"	2*12, *12G	TO (3) HEAT TRACE T-STAT
33	WEST FLOWMETER VAULT	FIT-SWA	UTILITY BUILDING	3/4"	<I>	FE-SWA
34		LP3		3/4"	2*12, *12G	TO HEAT TRACE T-STAT
35	SOUTH FLOWMETER VAULT	FIT-SWR	UTILITY BUILDING	3/4"	<I>	FE-SWR
36		LP3		3/4"	2*12, *12G	TO HEAT TRACE T-STAT
37	CLARIFIER PUMP STARTER	PLC		1"	3*14	RUNNING, LEAK
38	CLARIFIER PUMP STARTER	DP4	DP4	1"	3*10, *10G	POWER TO DUPLEX STARTER
39	CLARIFIER FLOODLIGHT	LP3 *39	LP3	1"	2*12, *12G	LIGHT
40	CLARIFIER RECEPTACLE	LP3 *41	LP3	1"	2*10. *10G	
41	CONTROL BOX DISCONNECT	DP2	DP2	1.5"	3*3, *6G	FOR RENTAL PUMP
42	CHILLER			3"	3*250, *4G	CHILLER POWER
43	FLUID COOLER			1 1/4"	3*4, *8G	COOLER POWER
44	WELL *1	DP4	DP4	2"	3*2, *4G	PUMP POWER
45	WELL *1	LP1 *15	LP1	1"	2*12, *12G	HEAT TRACE POWER
46	WELL *1	PLC AND CONDUCTANCE RELAY	PLC AND VFD	1"	<C>, <L>	DEPTH PROBE LT-W1 AND ELECTRODE LAL-W1
47	WELL *2	DP4	DP4	1.5"	3*4, *4G	PUMP POWER
48	WELL *2	LP1 *17	LP1			HEAT TRACE POWER
49	WELL *2	PLC AND CONDUCTANCE RELAY	PLC AND VFD	1"	<C>, <L>	DEPTH PROBE LT-W2 AND ELECTRODE LAL-W2
50	WELL *4	DP4	DPB, WELLHOUSE4	1 1/4"	3*6, *10G	WELLHOUSE4 POWER
51	WELL *4	PLC AND CONDUCTANCE RELAY	WELLHOUSE 4	1"	<C>, <L>	DEPTH PROBE LT-W4 AND ELECTRODE LAL-W4
52	WELLHOUSE 4	PLC	UTILITY BUILDING	1 1/4"	<C>, <L>, <H>	LT-W4, FIT-W4, LAL-W4
53	HATCHERY DP3	DP3	T1 TRANSFORMER	2"	3*1, *6G	PRIMARY
54	T1 TRANSFORMER	T1	LP1	3"	4*250, *4G	SECONDARY
55	FREEZER DISCONNECT	DP3	FREEZER CONDENSER	1"	3*8, *10G	FREEZER POWER
56	FREEZER CONDENSER		FREEZER CONTROLS, EVAP, T-STAT	?	PER SHOP DRAWINGS	
57	HEAT PUMP DISCONNECT	DP3	HEAT PUMP CONDENSER	3/4"	3*10, *10G	HEAT PUMP POWER
58	HEAT PUMP		HEAT PUMP CONTROLS, AIR HANDLER, T-STAT	?	PER SHOP DRAWINGS	
59	HATCHERY DP5	DP5	RACEWAY T6	1 1/4"	2*2, *8G	TRANSFORMER PRIMARY
60	LP6	LP6	(9) POWER OUTLETS	(9)1.25"	3*4, *8G	(9) OUTLET RECEPTACLES
61	HATCHERY	LP1 SECTION 2	SOUTH LIGHT POLES	1"	2*8, *8G	LIGHT
62	HATCHERY	LP1 SECTION 2	CENTRAL LIGHT POLES	1"	2*8, *8G	LIGHT
63	HATCHERY	LP1 SECTION 2	NORTH LIGHT POLE	1"	2*12, *12G	LIGHT
64	RACEWAY NORTH	PLC	FLOAT SWITCH		<L>	LAL-RN
	RACEWAY SOUTH	PLC	FLOAT SWITCH	1" 1"	<L>	VIA JUNCTION BOX, NORTH
65	RACEWAY QUARANTINE	PLC	FLOAT SWITCH		<L>	LAL-RQ
66	LOX TANK RECEPTACLE	LP7 *21	HATCHERY SW RECPT	1"	2*8, *8G	RECEPT POWER
67	LOX TANK	PLC	DIFF PRESSURE SWITCH		<L>	LOW LEVEL ALARM
68	PIT TAG SHACK	EMPTY CONDUIT	HATCHERY ELECT RM	1.5"	PULL STRING	POWER & ISOLATED GROUND
69	PIT TAG SHACK	EMPTY CONDUIT	MULTI-PURPOSE ROOM	1"	PULL STRING	TAG READER DATA
70	RACEWAY NORTH	EMPTY CONDUIT	PIT TAG SHACK	1.5"	PULL STRING	PIT TAG ANTENNA CABLE
71	RACEWAY QUARANTINE	EMPTY CONDUIT	PIT TAG SHACK	1.5"	PULL STRING	PIT TAG ANTENNA CABLE
72	RACEWAY SOUTH	EMPTY CONDUIT	PIT TAG SHACK	1.5"	PULL STRING	PIT TAG ANTENNA CABLE
73	PLC	PLC, 120V	RESIDENCE *1	1/4"	2*14, *14G	BUZZERS
74	PLC	PLC, 120V	RESIDENCE *2	1/4"	2*14, *14G	BUZZERS

NOTES:

1. CONDUIT NUMBERS ARE SHOWN ON E-1.
2. INSTRUMENT CONDUCTORS, SEE INSTRUMENT WIRE AND CABLE LEGEND.

INSTRUMENT WIRE AND CABLE LEGEND

SYMBOL	SYSTEM	WIRE	PART NUMBER
	TELEPHONE & DATA	CAT 5E	
	PC TO PLC	PER MFR SPEC	
	LEVEL TRANSMITTER TO PLC	2*16 SHIELDED	BELDEN 9342
	TEMPERATURE TRANSMITTER TO PLC	2*16 SHIELDED	BELDEN 9342
	PANEL METER TO PLC	2*16 SHIELDED	BELDEN 9342
	VFD SPEED CONTROL. WET LOCATION	2*16 SHIELDED	BELDEN 9342
	VFD SPEED CONTROL. DRY LOCATION	2*16 SHIELDED	BELDEN 9316
	FLOWMETER TO PLC OR PANEL METER	2*16 SHIELDED	BELDEN 9342
	FLOWMETER TO FLOW SENSOR	PER MFR SPEC	
	RS485 COMMUNICATION TO PLC	LOW CAPACITANCE	BELDEN 9341
	DEPTH PROBE SUSPENSION WIRE	PER MFR SPEC	
	FIELD CONTACTS, WET LOCATIONS	2*14	THHN OR THWN
	FIELD CONTACTS, DRY LOCATIONS	2*16	TFFN
	ALARM DIALER	PER MFR SPEC	
	DIMMER SIGNAL TO DIMMING BALLASTS	PER MFR SPEC	
	LIGHT DIMMER TO LIGHT SWITCHS	PER MFR SPEC	
	GENERATOR ANNUNCIATOR	PER MFR SPEC	
	COMMUNICATION TO PIT TAG READER	PER MFR SPEC	

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 15, 1988 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

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C=CONTRACT CONSTR., FA=FORCE ACCOUNT CONSTR., R=RECORD FILE NAME: LRH_E3_NEOH.dgn

Design SM
Drawn KCP
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

INSTRUMENT WIRE, CABLE AND CONDUIT SCHEDULE

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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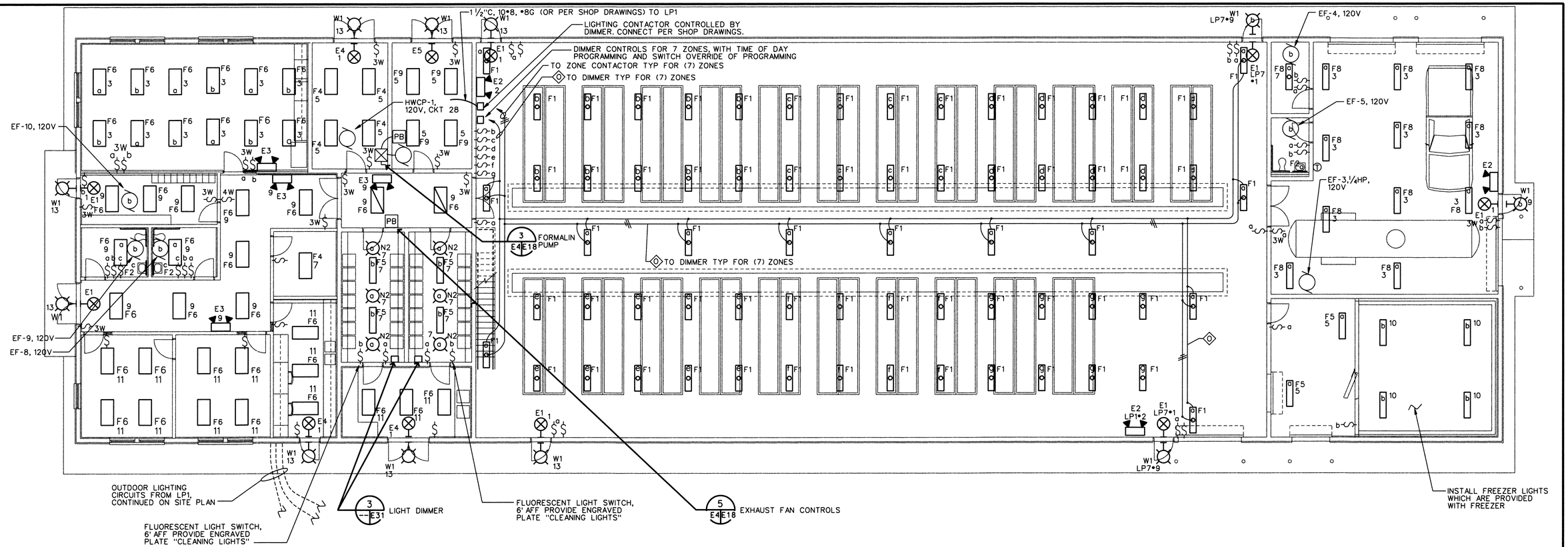

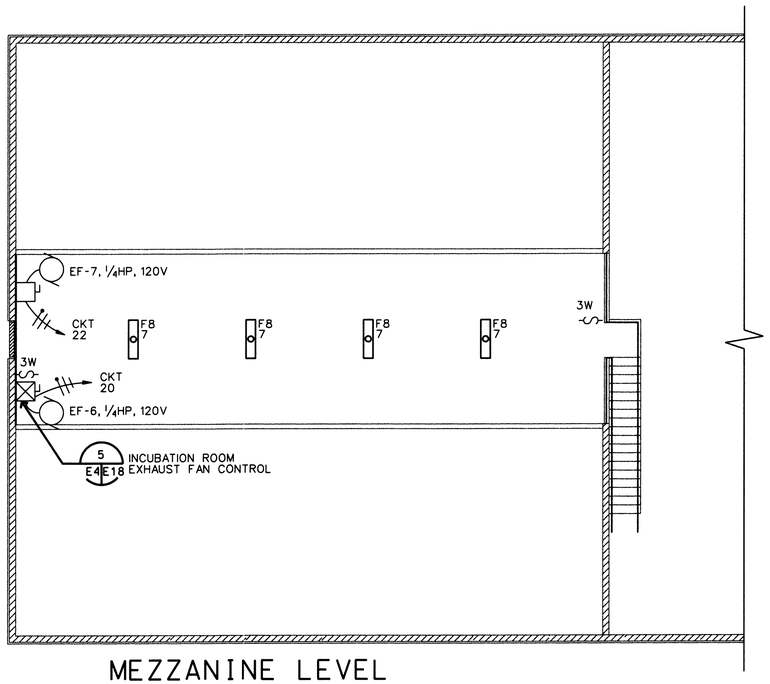

MEZZANINE LEVEL LIGTHING PLAN — 2 E7 E7

SCALE IN FEET 12"0 5' 10' 15'

LIGHTING PLAN — 1 E7 E7

SCALE IN FEET 12"0 5' 10' 15'

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REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1980 W. LOWELL SHELTON
EXPIRES 06/30/08
4/10/06
Engineer Seal

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HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

HATCHERY BUILDING LIGHTING PLAN

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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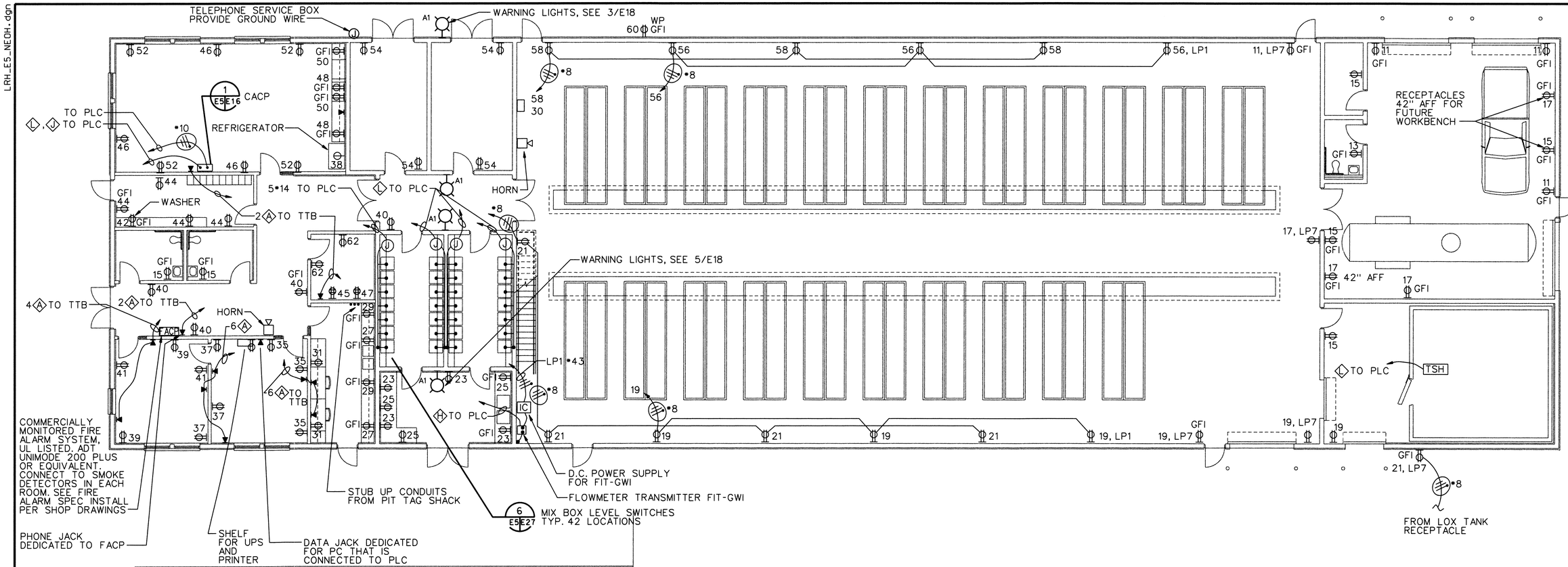
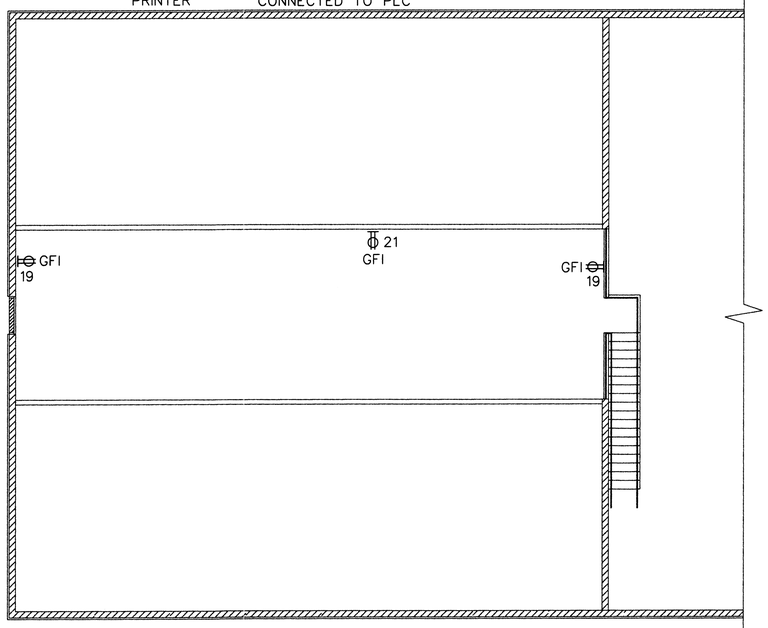


PLAN

1 E7 E7

0 4 8 12 16 20 24 FT

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



MEZZANINE LEVEL LIGTHING PLAN

2 E7 E7

0 4 8 12 16 20 24 FT

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

▼ PROVIDE CAT 5E DUPLEX RECEPTACLE (ONE WHITE, ONE BLUE) WITH CATEGORY 5E CABLES. ROUTE IN ENT TO ABOVE TELEPHONE TERMINAL BOARD IN ELECTRICAL ROOM.

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1989 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

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HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

HATCHERY BUILDING RECEPTACLE, PHONE AND ALARM

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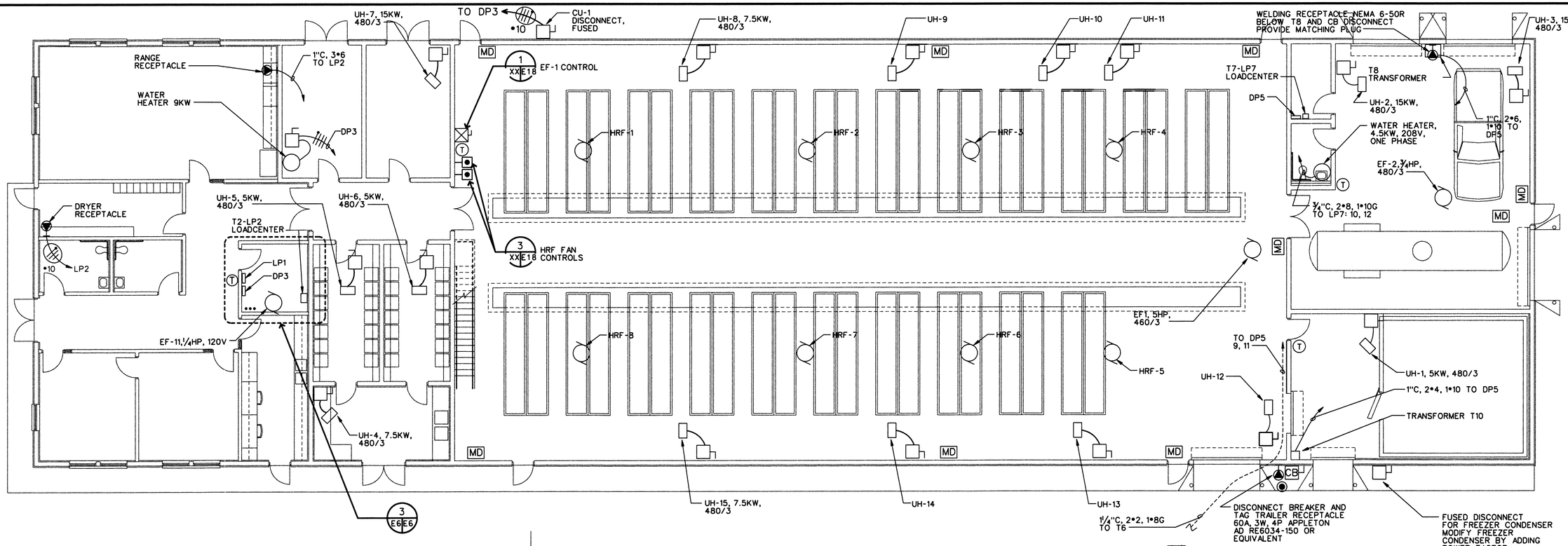
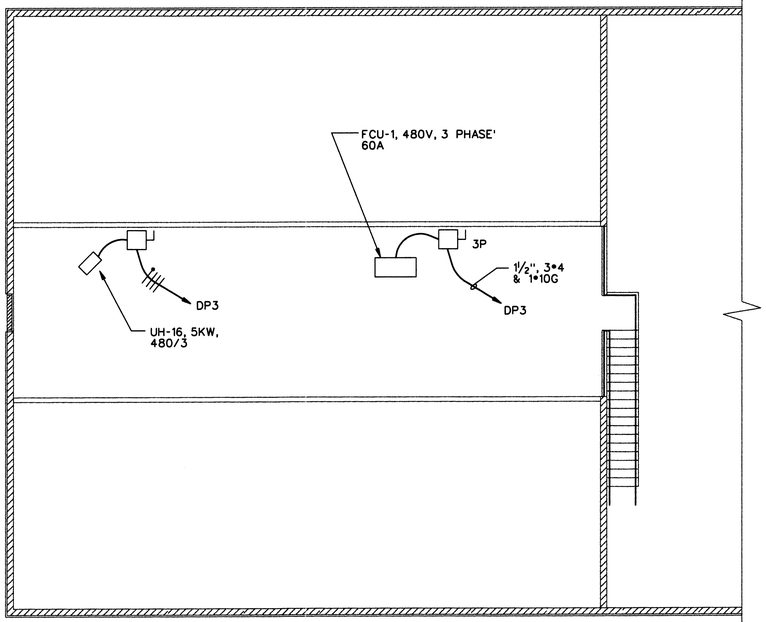


POWER PLAN

1 XX E9

0 4 8 12 16 20 24 FT

SCALE: ⅛"=1'-0"

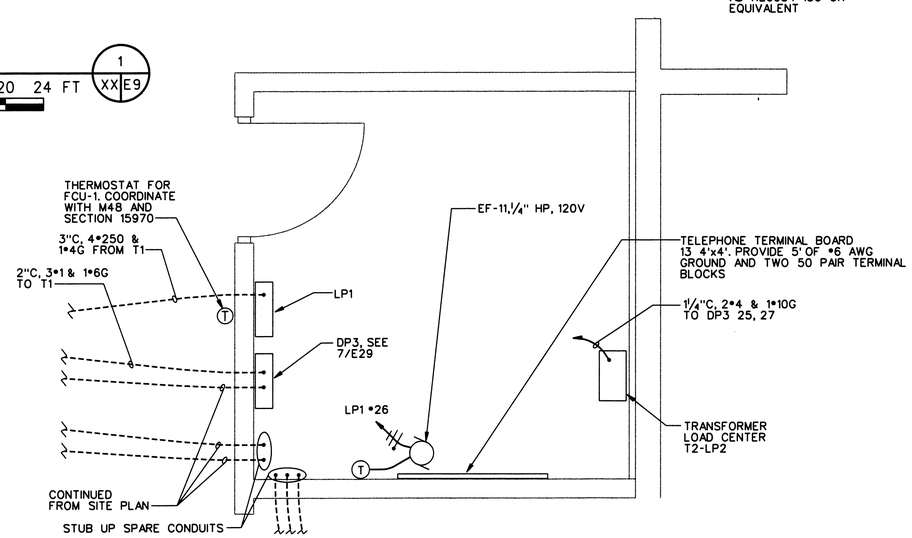


MEZZANINE LEVEL POWER PLAN

2 E9 E9

0 4 8 12 16 20 24 FT

SCALE: ⅛"=1'-0"



ELECTRICAL ROOM POWER PLAN

3 E9 E6

0 1 2 4 6 FT

SCALE: ½"=1'-0"

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REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1958 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

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NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

HATCHERY BUILDING POWER PLAN

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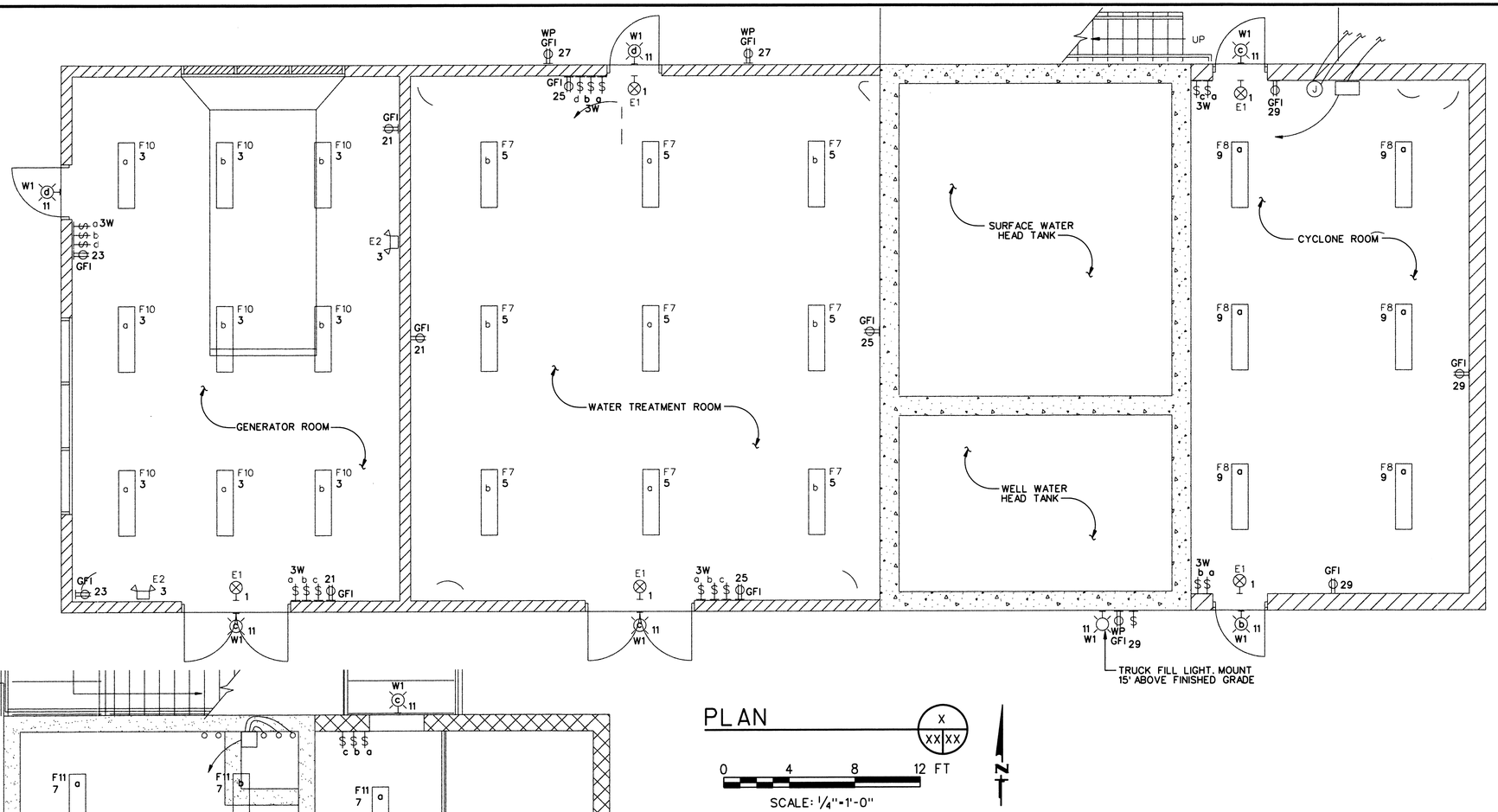
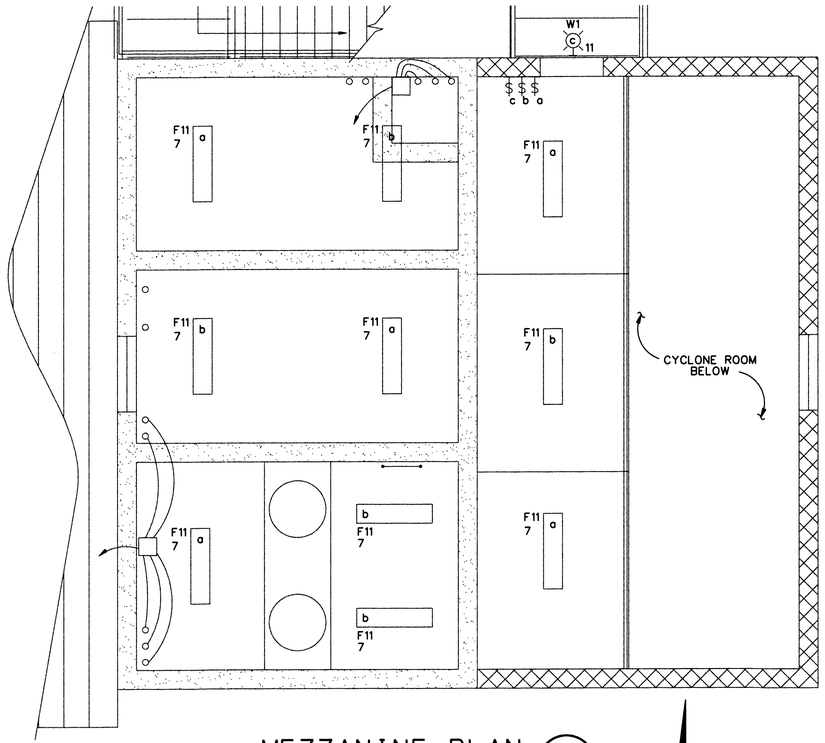


PLAN

0 4 8 12 FT

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



MEZZANINE PLAN

0 4 8 12 FT

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

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REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1989 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

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HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

UTILITY BUILDING LIGHTING AND RECEPTACLE PLAN

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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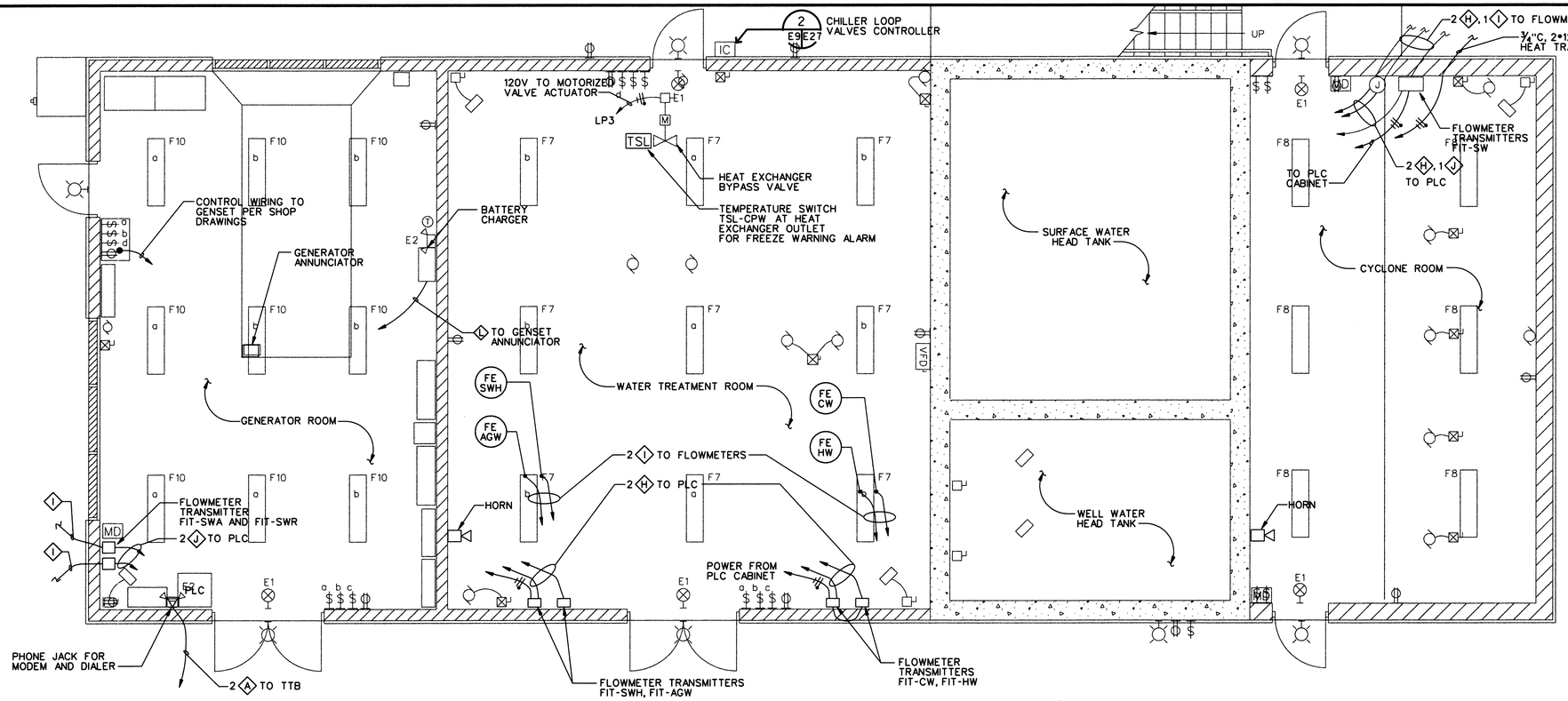

PLAN 1/E9

0 4 8 12 FT

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

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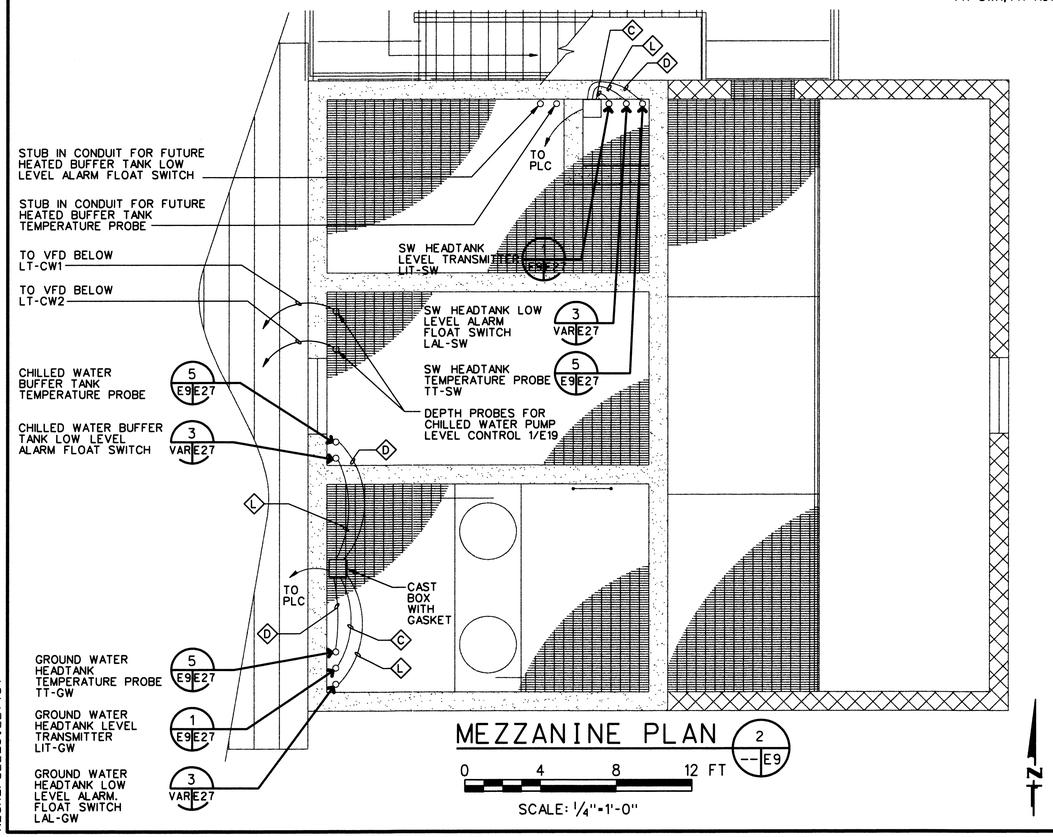

MEZZANINE PLAN 2/E9

0 4 8 12 FT

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

N

NOTES:
1. COORDINATE CHILLER LOOP VALVES, TEMPERATURE SENSORS AND A FLOW SWITCH WITH WITH SECTION 15970.

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 8, 1980 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

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Design SM
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HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY
UTILITY BUILDING INSTRUMENTATION PHONE AND ALARM

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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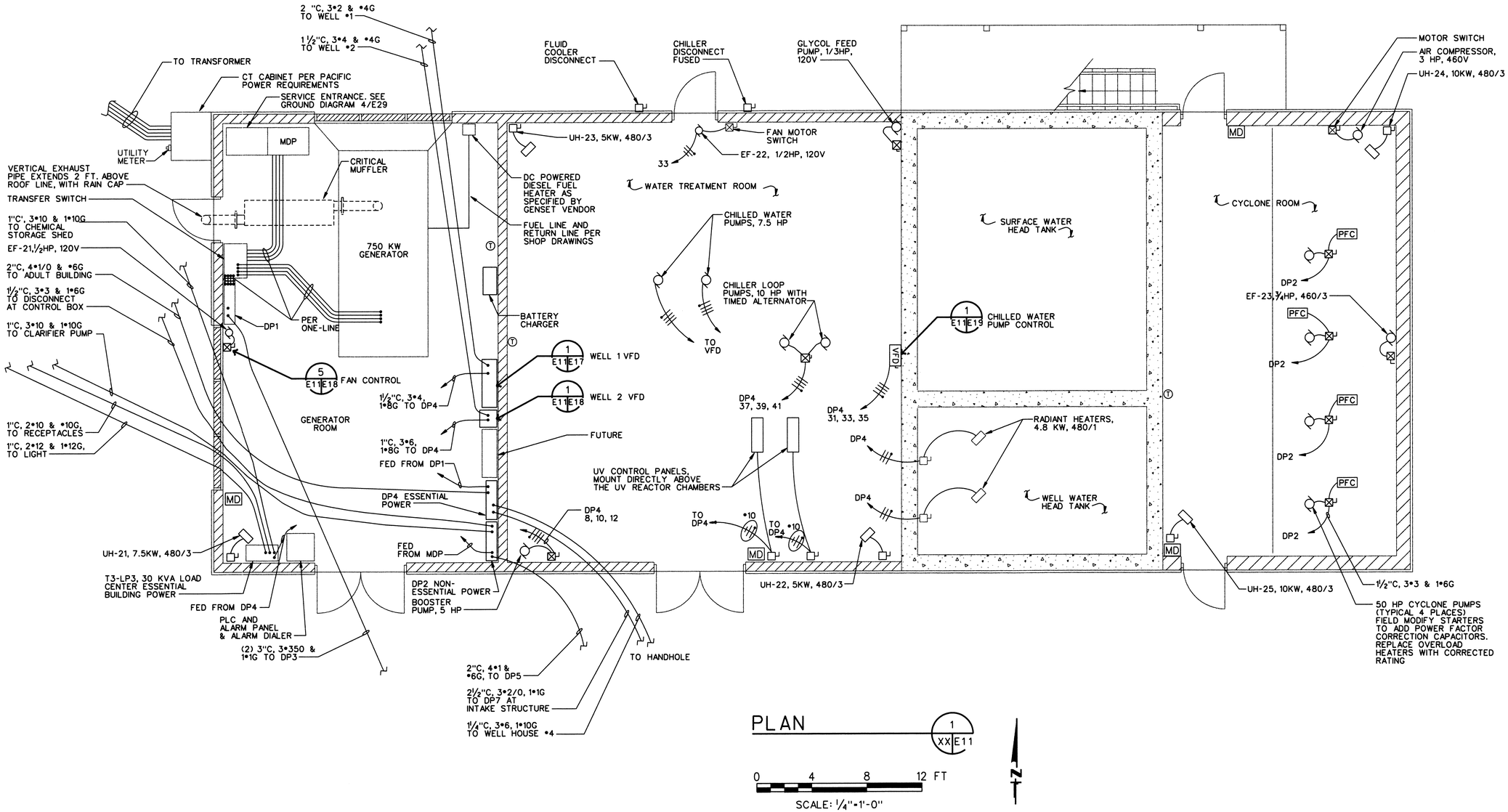

PLAN 1 / XX E11

0 4 8 12 FT

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

N

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REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1989 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

Design SM
Drawn SLS
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

UTILITY BUILDING ELECTRICAL PLAN

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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PANELBOARD SCHEDULE

NAME: DP6
ADULT

VOLTAGE: 480 VOLTS,
3 PHASE, 3 WIRE. DELTA

MAINS: 125 AMPS
X MCB
MLO

ENCLOSURE: NEMA 1

BRANCH BREAKERS

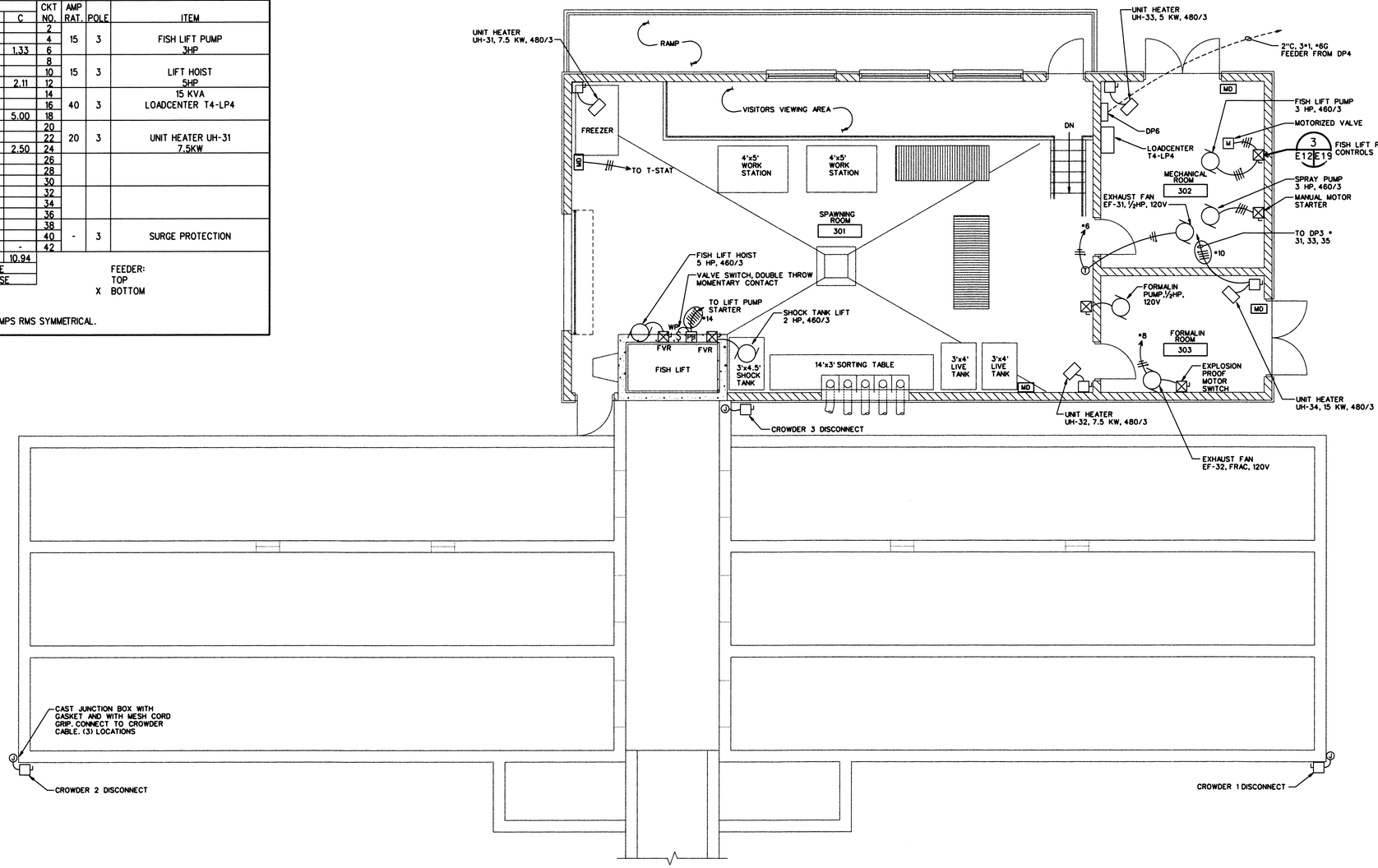
ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	LEFT PHASE C	RIGHT PHASE A	RIGHT PHASE B	RIGHT PHASE C	CKT NO.	AMP RAT.	POLE	ITEM
			1	0.31			1.33			2			
NORTH CROWDER .5 HP	3	15	3		0.31			1.33		4	15	3	FISH LIFT PUMP 3HP
			5			0.31			1.33	6			
			7	0.31			2.11			8			
SOUTH CROWDER .5 HP	3	15	9		0.31			2.11		10	15	3	LIFT HOIST 5HP
			11			0.31			2.11	12			
			13	0.31			5.00			14			15 KVA
FISHWAY CROWDER .5 HP	3	15	15		0.31			5.00		16	40	3	LOADCENTER T4-LP4
			17			0.31			5.00	18			
			19	2.50			2.50			20			
UNIT HEATER UH-32 7.5KW	3	20	21		2.50			2.50		22	20	3	UNIT HEATER UH-31 7.5KW
			23			2.50			2.50	24			
			25	1.66						26			
UNIT HEATER UH-33 5KW	3	20	27		1.66					28			
			29			1.66				30			
			31	5.00						32			
UNIT HEATER UH-34 15KW	3	25	33		5.00					34			
			35			5.00				36			
			37	1.33			-			38			
SPRAY PUMP 3HP	3	15	39		1.33			-		40	-	3	SURGE PROTECTION
			41			1.33			-	42			
				11.42	11.42	11.42	10.94	10.94	10.94				
				22.36	22.36	22.36	kVA PER PHASE						
				81	81	81	AMPS PER PHASE						

MOUNTING:
SURFACE X
FLUSH

FEEDER:
TOP
X BOTTOM

TOTAL CONNECTED LOAD: 67.08KVA

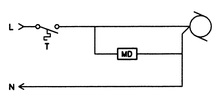
INTEGRAL EQUIPMENT INTERRUPTING RATING: 25,000 AMPS RMS SYMMETRICAL.



POWER PLAN

0 4 8 16 FT

SCALE: 3/16"-1'-0"



WIRING DIAGRAM
THERMOSTAT FAN W/ DAMPER (TYP.)

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1988 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

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Design SM
Drawn KCP
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY
ADULT HOLDING SPAWNING BUILDING POWER PLAN

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
---	--	E12	OF	

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NEOH_FULL_SIZE.tbl

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LOADCENTER SCHEDULE

NAME: IN ADULT BUILDING T4-LP4

TRANS 15 kVA, 3 PHASE, NEMA 1 ENCLOSURE.

PRIMARY 480 VOLTS DELTA — PRIMARY BREAKER: 40 AMP 3 POLE

SECONDARY 120 208 VOLTS 3 PHASE 4 WIRE, WYE. — SECONDARY BREAKER: 60 AMP 3 POLE

BRANCH BREAKERS

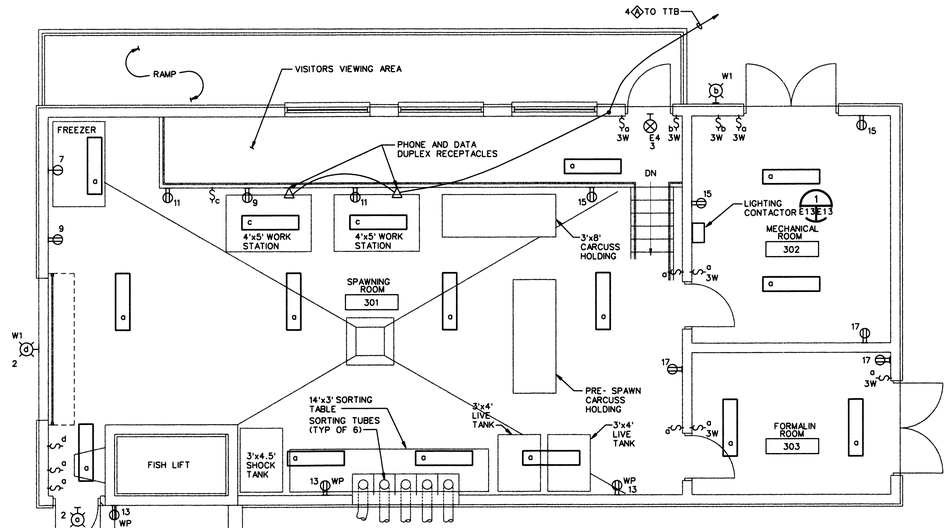
ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	LEFT PHASE C	RIGHT PHASE A	RIGHT PHASE B	RIGHT PHASE C	CKT NO.	AMP RAT.	POLE	ITEM
LIGHTS IN CHEM & MECH ROOMS	1	20	1	0.25			0.31			2	20	1	OUTDOOR WALL LIGHTS
SPAWNING LIGHT CONTACTOR	1	20	3		0.74			1.18		4	20	1	FORMALIN PUMP
FLOODLIGHTS	1	20	5			1.00			0.53	6	20	1	EF-31
FREEZER RECEPTACLE	1	15	7	1.44			0.32			8	20	1	EF-32
RECEPTACLES	1GFI	20	9		0.80					10	20	1	SPARE
RECEPTACLES	1GFI	20	11			0.80				12	20	1	SPARE
RECEPTACLES	1GFI	20	13	1.20						14	20	1	SPARE
RECEPTACLES	1GFI	20	15		1.20					16	20	1	SPARE
RECEPTACLES	1GFI	20	17			1.20				18	20	1	SPARE
SPARE	1	20	19				-			20			
SPARE	1	20	21					-		22	-	3	SURGE PROTECTOR
SPARE	1	20	23						-	24			
				2.89	2.74	3.00	0.63	1.18	0.53				
				3.52	3.92	3.53	kVA PER PHASE						
				29	33	29	AMPS PER PHASE						

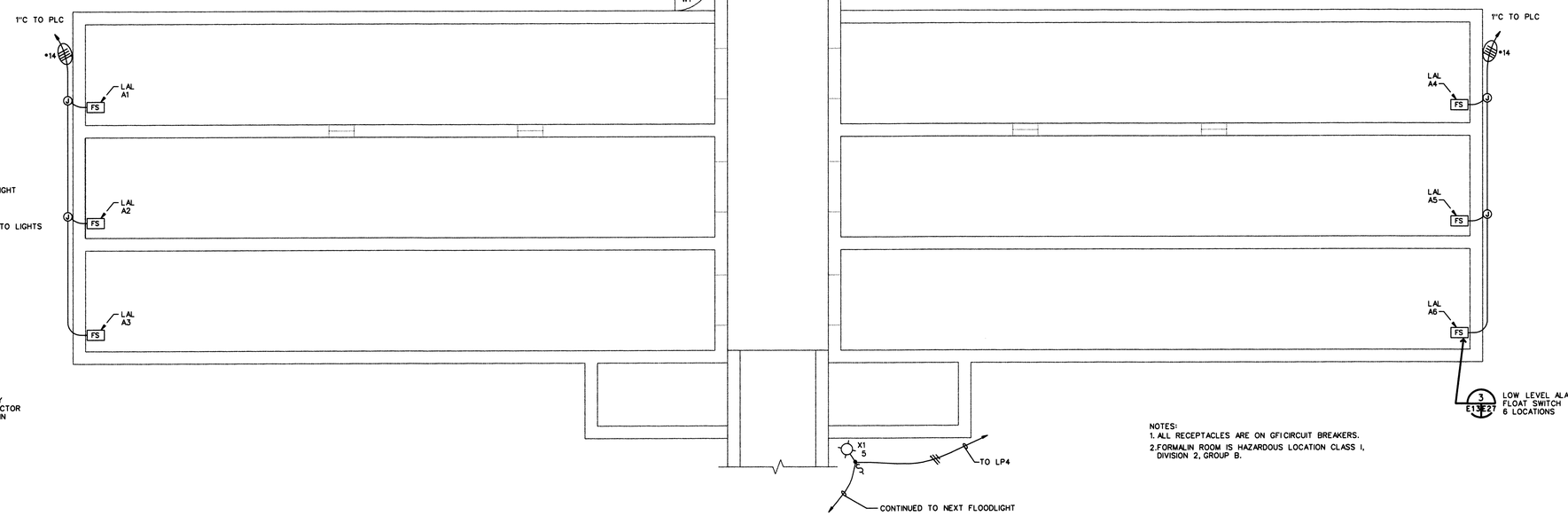
MOUNTING: SURFACE X, FLUSH

FEEDER: X TOP, BOTTOM

TOTAL CONNECTED VA: 10974

INTEGRAL EQUIPMENT INTERRUPTING RATING: 10,000 AMPS RMS SYMMETRICAL



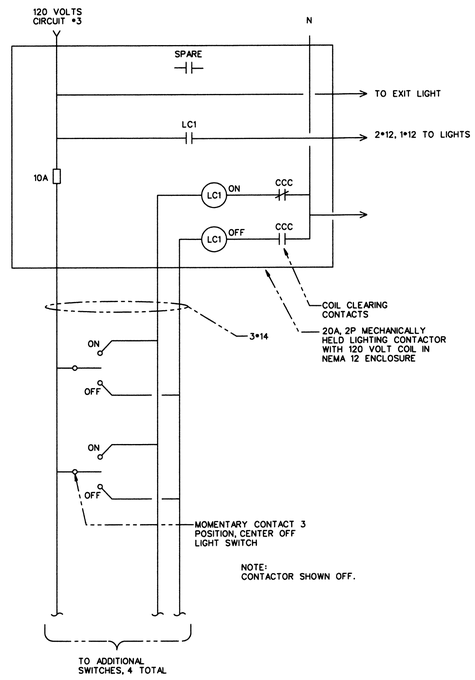


NOTES:
1. ALL RECEPTACLES ARE ON GFI CIRCUIT BREAKERS.
2. FORMALIN ROOM IS HAZARDOUS LOCATION CLASS I, DIVISION 2, GROUP B.

LIGHTING / RECEPTACLE

0 4 8 16 FT

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



LIGHT CONTROL

1 E13E13

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REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1989 W. LOWELL SHELTON

EXPIRES 06/30/06

4/10/06

Engineer Seal

HDR | FISHPRO

Design SM
Drawn KCP
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY
ADULT HOLDING
SPAWNING BUILDING
LIGHTING / RECEPTACLE PLAN

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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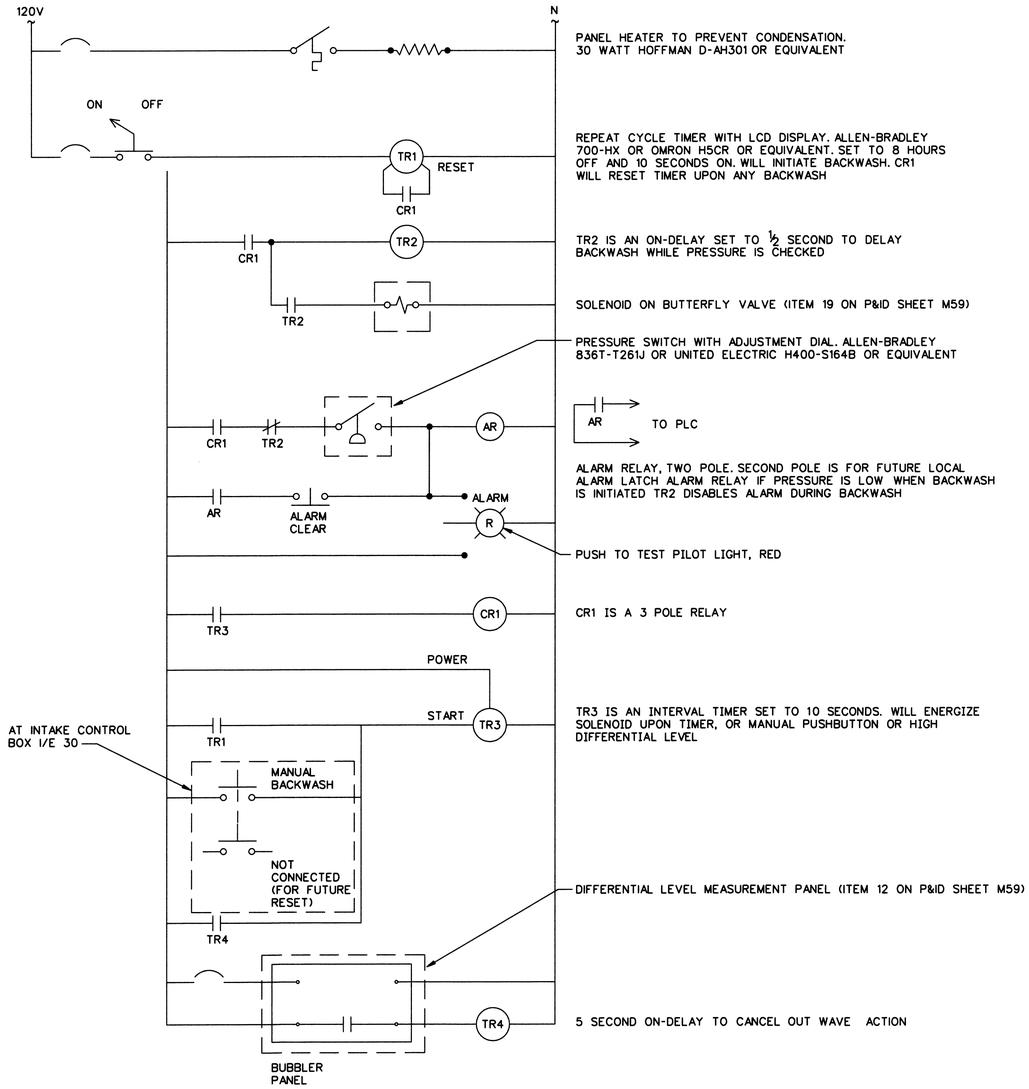
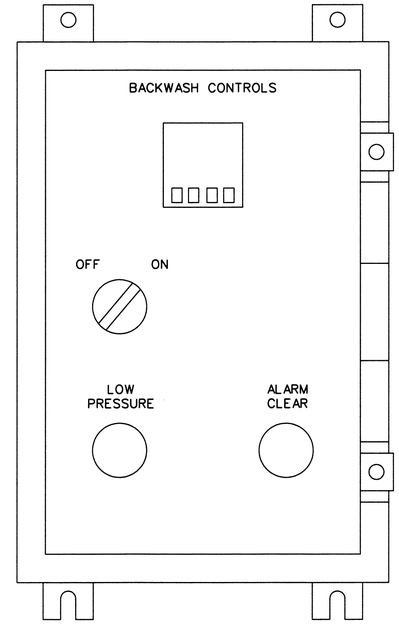


BACKWASH CONTROL SCHEMATIC

SCALE: NONE

1 / XX|XX



BACKWASH CONTROL PANEL

SCALE: NONE

1 / E2|E15

THIS IS ITEM 14 ON SHEET M59

NOTES:

1. PILOT DEVICES TO BE ALLEN-BRADLEY 800T. SQUARE D CLASS 9001. CUTLER-HAMMER 10250T OR GE CR104P OR APPROVED EQUIV.
2. PROVIDE RAIL MOUNTED TERMINALS AND FUSES. ALLEN-BRADLEY 1492. WEIDMULLER, WAGO, PHOENIX CONTACT, WIELAND OR APPROVED EQUIV.
3. PROVIDE NEMA 12 ENCLOSURE SIZED TO HOLD COMPONENTS. HOFFMAN, RITTAL, HAMMOND, CIRCLE AW OR APPROVED EQUIV.
4. RELAYS: ALLEN-BRADLEY 700-H, SQUARE D CLASS 8510 TYPE KU, IDEC TYPE RH, POTTER-BRUMFIELD TYPE KU P OR APPROVED EQUIV.
5. PROVIDE NAMEPLATE "BACKWASH CONTROLS".

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON W. LOWELL SHELTON JULY 18, 1988
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

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Design SM
Drawn KCP
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

AIR BACKWASH SYSTEM

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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INSTRUMENTATION SCHEDULE

I/O	TAG NO.	SYSTEM / LOCATION	FUNCTION	INSTRUMENT DEVICE	MANUFACTURER PART NUMBER	READOUT LOCATION[1]	ITEM DISPLAYED	LOGGING FREQUENCY[1]	ALARM SETPOINT[3]	COMMENT
AI	TT-CPW	CHILLED BUFFER TANK	BUFFER TANK TEMPERATURE	RTD AND TRANSMITTER	100 OHM OMEGA MODEL PR1B-2-100-1/4 WITH TX-92-1 TRANSMITTER	DISPLAY SCREEN ONLY	XX.X 33/36 oF	TWICE AN HOUR	NONE	
AO	ZC-CPW	CHILLED WATER	MODULATING VALVE KEEPS BUFFER TANK TEMPERATURE AT SETPOINT	HEAT EXCHANGER BYPASS VALVE			%OPEN			PID OUTPUT, MAINTAIN BUFFER TANK @ 38°F
DI	TAL-CPW	HEAT EXCHANGER	CW TEMPERATURE	TEMPERATURE SWITCH	UNITED ELECTRIC B105-HTFP	DISPLAY SCREEN ONLY	ALARM POP UP SCREEN	ALARM CONDITION	<33 33/36 oF	FREEZE WARNING
N/A	NONE	HEATED BUFFER TANK	BUFFER TANK TEMPERATURE	FUTURE (NOT IN CONTRACT)	NONE					TT-HPW
N/A	NONE	HEATED BUFFER TANK	BUFFER TANK LOW LEVEL	FUTURE (NOT IN CONTRACT)	NONE					LAL-HPW
AI	TT-GW	WELL WATER HEADTANK	GW TEMPERATURE	RTD AND TRANSMITTER	100 OHM OMEGA MODEL PR1B-2-100-1/4 WITH TX-92-1 TRANSMITTER	DISPLAY SCREEN ONLY	XX.X 33/36 oF	EVERY 6 HOURS	NONE	WEIGHTED AVERAGE OF WELL TEMPS
AI	TT-SW	SURFACE WATER HEADTANK	SW TEMPERATURE	RTD AND TRANSMITTER	SAME	DISPLAY SCREEN ONLY	XX.X 33/36 oF	EVERY 6 HOURS	NONE	
AI	FIT-GW2A	INTAKE	DEICE FLOW AT INTAKE (WELL #2)	PROPELLER FLOWMETER	McCROMETER ML-04 WITH TR-16 TRANSMITTER	METER, DISPLAY SCREEN AND PANELMETER	XXX GPM	EVERY HOUR	NONE	
AI	LT-W1	WELL #1	WELL LEVEL MONITORING	LEVEL TRANSMITTER	DRUCK PTX 1835 WITH STE-110 SENSOR TERMINATION	DISPLAY SCREEN ONLY	% FULL	TWICE A DAY	NONE	
AI	LT-W2	WELL #2	WELL LEVEL MONITORING	SAME	DRUCK PTX 1835 WITH STE-110 SENSOR TERMINATION					
N/A	NONE	FUTURE	FUTURE WELL LEVEL MONITORING	FUTURE (NOT IN CONTRACT)	NONE					
AI	LT-W4	WELL #4	WELL LEVEL MONITORING	SAME	DRUCK PTX 1835 WITH STE-110 SENSOR TERMINATION					
DI	LAL-W1	WELL #1	WELL LOW WATER LEVEL ALARM	CONDUCTANCE PROBE	WARRICK 26M	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION	LEVEL <2' ABOVE MIN SUBMERG.	FOR ACCURATE DETERMINATION OF LOW WATER
DI	LAL-W2	WELL #2	WELL LOW WATER LEVEL ALARM	CONDUCTANCE PROBE	WARRICK 26M					
N/A	NONE	FUTURE	FUTURE WELL #3 LOW LEVEL ALARM	FUTURE (NOT IN CONTRACT)	NONE					
DI	LAL-W4	WELL #4	WELL LOW WATER LEVEL ALARM	CONDUCTANCE PROBE	WARRICK 26M					
AI	FIT-GW1	VAULT N. OF UTILITY BLDG.	WELL #1 FLOW	PROPELLER FLOWMETER	McCROMETER ML-04 WITH TR-16 TRANSMITTER	LOCAL AND DISPLAY SCREEN		EVERY HOUR		WITH TOTALIZER
AI	FIT-GW2	SAME	WELL #2 FLOW	SAME	McCROMETER ML-04 WITH TR-16 TRANSMITTER					
N/A	NONE	FUTURE	FUTURE WELL #3 FLOW	FUTURE (NOT IN CONTRACT)	NONE					FIT-W3
AI	FIT-GW4	WELLHOUSE 4	WELL #4 FLOW	PROPELLER FLOWMETER	McCROMETER ML-04 WITH TR-16 TRANSMITTER					
AI	FIT-AGW	WATER TREATMENT	AGW FLOW TO HATCHERY	MAGNETIC FLOWMETER	McCROMETER ULTRAMAG UM-06	LOCAL AND DISPLAY SCREEN		EVERY HOUR		
AI	FIT-GWI	NW PROD ROOM	GW FLOW TO INCUBATION	PADDLE WHEEL	DATA INDUSTRIAL 1500-501 WITH P2205S SENSOR	LOCAL AND DISPLAY SCREEN		EVERY HOUR		
AI	FIT-HW	WATER TREATMENT	HW FLOW TO HATCHERY	MAGNETIC FLOWMETER	McCROMETER ULTRAMAG UM-06					
AI	FIT-CWH	WATER TREATMENT	CHILLED WATER FLOW TO HATCHERY	MAGNETIC FLOWMETER	McCROMETER ULTRAMAG UM-06	LOCAL AND DISPLAY SCREEN		EVERY HOUR		
AI	FIT-SWH	WATER TREATMENT	SW FLOW TO HATCHERY	MAGNETIC FLOWMETER	McCROMETER ULTRAMAG UM-06	LOCAL AND DISPLAY SCREEN		EVERY HOUR		
COMM	FIT-SW	VAULT N. OF UTILITY BLDG.	SW FLOW TO FACILITY	ULTRASONIC FLOWMETER	GE-PANAMETRICS AT868	LOCAL AND DISPLAY SCREEN		EVERY HOUR		RS485 TO PLC
COMM	FIT-SWR	VAULT SW OF UTILITY BLDG.	TOTAL SW FLOW TO RACEWAYS	ULTRASONIC FLOWMETER	GE-PANAMETRICS AT868	LOCAL AND DISPLAY SCREEN		EVERY HOUR		RS485 TO PLC
COMM	FIT-SWA	VAULT W. OF UTILITY BLDG.	FLOW TO ADULTS	ULTRASONIC FLOWMETER	GE-PANAMETRICS AT868	DISPLAY SCREEN ONLY	XXX GPM	EVERY HOUR	< 3 CFS	RS485 TO PLC
DI	LAL-I1	INCUBATION ROOM SOUTH	INCUBATION MIX BOX LOW LEVEL ALARMS IN EACH BAFFLE	14 FLOAT SWITCHES IN SERIES	BARKSDALE 0111-510	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		
DI	LAL-I2	INCUBATION ROOM SOUTH	SAME	14 FLOAT SWITCHES IN SERIES						
DI	LAL-I3	INCUBATION ROOM NORTH	SAME	7 FLOAT SWITCHES IN SERIES						
DI	LAL-I4	INCUBATION ROOM NORTH	SAME	7 FLOAT SWITCHES IN SERIES						
DI	LAL-SW	SW HEADTANK	SW HEADTANK LOW LEVEL ALARM	FLOAT SWITCH	WARRICK SERIES M TILT FLOAT	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		
DI	LAL-GW	GW HEADTANK	GW HEADTANK LOW LEVEL ALARM	FLOAT SWITCH	WARRICK SERIES M TILT FLOAT	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		
DI	LAL-CW	CHILLED BUFFER TANK	CHILLED BUFFER TANK LOW LEVEL ALARM	FLOAT SWITCH	WARRICK SERIES M TILT FLOAT	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		
DI	LAL-WW	WARM BUFFER TANK	WARM BUFFER TANK LOW LEVEL ALARM	FUTURE (NOT IN CONTRACT)	NONE	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		
DI	LAL-RN	RACEWAYS	UPPER RACEWAY HEAD BOX LOW LEVEL	FLOAT SWITCH	WARRICK SERIES M TILT FLOAT	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		
DI	LAL-RS	RACEWAYS	LOWER RACEWAY HEAD BOX LOW LEVEL	FLOAT SWITCH	WARRICK SERIES M TILT FLOAT	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		
DI	LAL-RQ	RACEWAYS	QUARANTINE RACEWAY HEAD BOX LOW LEVEL	FLOAT SWITCH	WARRICK SERIES M TILT FLOAT	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		
DI	LAL-A1 TO LAL-A6	ADULT POND	6 LOW LEVEL ALARM EACH ADULT POND	FLOAT SWITCH	WARRICK SERIES M TILT FLOAT	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		
DI	LDAH	INTAKE	INTAKE SCREEN HIGH DIFFERENTIAL	BUBBLER PANELMETER RELAY CONTACT	RIGHTON	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		
DI	LAH-VAULT	INTAKE	VAULT FLOOD ALARM	FLOAT SWITCH	GEMS LS-10	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		
DI		INTAKE	AIR BACKWASH ALARM	PRESSURE SWITCH	ALARM RELAY ON SHEET E-15	LOCAL AND DISPLAY SCREEN	ALARM POP UP SCREEN	ALARM CONDITION		
DI		INTAKE	POWER FAIL	VOLTAGE MONITOR RELAY (3 PHASE)	DIVERSIFIED SLD SERIES	LOCAL AND DISPLAY SCREEN	ALARM POP UP SCREEN	ALARM CONDITION		
DI		CHILLER[2]	CHILLER ALARM	CONTACT CLOSURE		LOCAL AND DISPLAY SCREEN	ALARM POP UP SCREEN	ALARM CONDITION		
AI	LIT-SW	SW HEADTANK	WATER LEVEL MEASUREMENT	LEVEL TRANSMITTER	DREXELBROOK 509-015-938 WITH WEIGHTED CABLE SENSOR	LOCAL AND DISPLAY SCREEN	% FULL	TWICE AN HOUR		
AI	LIT-GW	GW HEADTANK	WATER LEVEL MEASUREMENT	LEVEL TRANSMITTER	DREXELBROOK 509-015-938 WITH WEIGHTED CABLE SENSOR	LOCAL AND DISPLAY SCREEN	% FULL	TWICE AN HOUR	> 6" ABOVE OVERFLOW	DISPLAY IN YELLOW WHEN PUMP RUNS A MINIMUM SPEED.
DI		FREEZER	WARM ALARM	CONTACT IN FREEZER CONTROLLER	PROVIDED WITH FREEZER	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION		TEMPERATURE SWITCH ONLY, NOT A MONITORED VALUE
DI		GENERATOR[2]	GENERATOR ALARM	CONTACT CLOSURE			ALARM POP UP SCREEN	ALARM CONDITION		
DI		FUEL TANKS	LOW LEVEL ALARMS	FLOAT SWITCHES	PROVIDED WITH TANKS		ALARM POP UP SCREEN	ALARM CONDITION		TO PLC VIA GEN ANNUNCIATOR
DI		CHEMICAL SAFETY SHED	ALARM	CONTACT CLOSURE	PROVIDED WITH SHED	LOCAL AND DISPLAY SCREEN	ALARM POP UP SCREEN	ALARM CONDITION		IN ADDITION TO ALARM REQUIRED BY FIRE CODE 903.4
-	NONE	RACEWAYS	FLOW FROM EACH RACEWAY	WEIR ONLY	STAFF GAUGE		NONE	NONE	NONE	
DI		WATER TREATMENT	UV DISINFECTION ALARM	CONTACT CLOSURE	PROVIDED WITH UV UNITS	LOCAL AND DISPLAY SCREEN	ALARM POP UP SCREEN	ALARM CONDITION	< X.X MJ	
DI		WATER TREATMENT	UV DISINFECTION ALARM	CONTACT CLOSURE	PROVIDED WITH UV UNITS	LOCAL AND DISPLAY SCREEN	ALARM POP UP SCREEN	ALARM CONDITION	< X.X MJ	
DI	LAL-LOX	LOX TANK	LOX LOW LEVEL ALARM	DIFFERENTIAL PRESSURE SWITCH	PROVIDED WITH TANK	DISPLAY SCREEN ONLY DURING ALARM	ALARM POP UP SCREEN	ALARM CONDITION	< X INCHES	
DI		CLARIFIER	MOTOR SEAL FAILURE (PARALLEL FOR TWO MOTORS)	LEAK DETECTOR RELAYS	WARRICK 2810 OR EQUIVALENT		ALARM POP UP SCREEN	ALARM CONDITION		MOTOR WARRANTY VOID AFTER 7 DAYS
DI		CLARIFIER	MOTOR ON (PARALLEL FOR TWO MOTORS)	AUX CONTACTS	PROVIDED WITH STARTER		DISPLAY PUMP ICON			
N/A	LT-CW1	CHILLED BUFFER TANK	BUFFER TANK LEVEL	LEVEL TRANSMITTER	DRUCK PTX 1830, 2½ PSI	NONE	NONE	NONE	NONE	INPUT TO VFD, DETAIL 1/E19
N/A	LT-CW2	CHILLED BUFFER TANK	BUFFER TANK LEVEL	LEVEL TRANSMITTER	DRUCK PTX 1830, 2½ PSI	NONE	NONE	NONE	NONE	INPUT TO VFD, DETAIL 1/E19

NOTES:
1. REMOTE DISPLAY SCREENS WILL INCLUDE 1) A GRAPHICAL USER INTERFACE (GUI) ON CABINET DOOR OF PLC (LOCATED IN THE GENERATOR ROOM) AND 2) A DISPLAY SCREEN IN THE CREW ROOM, AND 3) FOR DATALOGGED VALUES AND ALARM HISTORY, A PC COMPUTER MONITOR IN AN OFFICE.
2. DATALOGGED INTERVALS OF ANY MONITORED VALUE CAN BE ADJUSTED BY THE OPERATOR. HISTORY OF ALL ALARMS WILL BE LOGGED (NOTE 3) BY DEFAULT BUT CAN BE DISABLED.
3. ALARM SET-POINTS FOR ANY MONITORED VALUE CAN BE ADJUSTED BY THE OPERATOR. VALUE INDICATED IN TABLE IS PRELIMINARY RECOMMENDATION
4. ALL ALARMS WILL BE DISPLAYED ON THE DISPLAY SCREENS, WITH TIME OF OCCURRENCE, TIME ACKNOWLEDGED, AND TIME CLEARED.
5. DIGITAL COMMUNICATION LINKS TO CHILLER AND GENERATOR ANNUNCIATOR AND TRANSFER SWITCH AND VFDS WILL COMMUNICATE MAJOR VALUES FOR DISPLAY.
6. THE PLC MUST HAVE THE CAPABILITY TO BE REPROGRAMMED OVER A PHONE MODEM

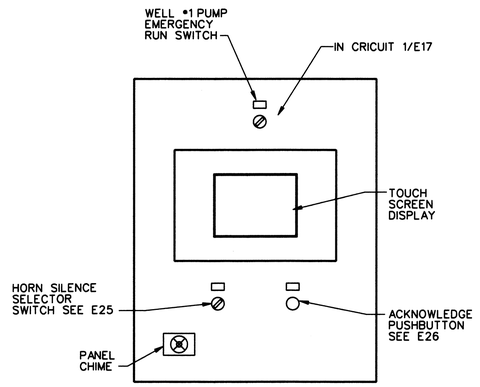
I/O LEGEND:
- AI ANALOG INPUT
- DI DISCRETE INPUT
- AO ANALOG OUTPUT
- DO DISCRETE OUTPUT
- I/O COMMUNICATION LINK

OTHER PLC INPUTS AND OUTPUTS

I/O	TAG NO.	SYSTEM/LOCATION	FUNCTION	INSTRUMENT DEVICE	DISPLAY
COMM	VFD #1	GENERATOR ROOM	COMMUNICATION LINK	VFD #1	DISPLAY GREEN IF STOPPED, BUT ALARM IF FAIL TO START. ACCUMULATE RUN TIME HOURS.
DI	VFD #1	GENERATOR ROOM	RUNNING	VFD #1	RED
DI	VFD #1	GENERATOR ROOM	NOT IN AUTO	VFD #1	YELLOW
DI	VFD #1	GENERATOR ROOM	AT MIN. SPEED	VFD #1	YELLOW
DI	VFD #1	GENERATOR ROOM	FAULT	VFD #1	ALARM
DO	VFD #1	GENERATOR ROOM	START/STOP	VFD #1	YELLOW UNTIL STARTED
COMM	VFD #1	GENERATOR ROOM	SPEED	VFD #1	
AO	VFD #1	GENERATOR ROOM	SPEED	VFD #1	PID OUTPUT
COMM	VFD #2	GENERATOR ROOM	COMMUNICATION LINK	VFD #2	
DI	VFD #2	GENERATOR ROOM	RUNNING	VFD #2	RED
DI	VFD #2	GENERATOR ROOM	FAULT	VFD #2	ALARM
COMM	VFD #2	GENERATOR ROOM	SPEED	VFD #2	
COMM	CHILLER	CHILLER	COMMUNICATION LINK	CHILLER	
(8) DO	DIALER	DIALER	DIALER	DIALER	OUTPUT TO CHANNELS 1-8
COMM	GENERATOR	GENERATOR ROOM	COMMUNICATION LINK	GEN ANNUNCIATOR	
DI	TRANSFER SWITCH	GENERATOR ROOM	NOT-IN-AUTO	TRANSFER SWITCH	YELLOW, RED IF POWER FAIL
COMM	TRANSFER SWITCH	GENERATOR ROOM	COMMUNICATION LINK	TRANSFER SWITCH	
DO	NONE	HORNS, CACP	AUDIBLE ANNUNICATION	HORN,BUZZER,CHIME	NONE
DI	NONE	CACP	ACKNOWLEDGE	PUSHBUTTON	ACKNOWLEDGE SEQUENCE
DI	NONE	CYCLONE PUMP #1	RUNNING	AUX CONTACT	RED
DI	NONE	CYCLONE PUMP #2	RUNNING	AUX CONTACT	RED
DI	NONE	CYCLONE PUMP #3	RUNNING	AUX CONTACT	RED
DI	NONE	CYCLONE PUMP #4	RUNNING	AUX CONTACT	RED

I/O LEGEND:

ANALOG INPUT	AI
ANALOG OUTPUT	AO
DISCRETE INPUT	DI
DISCRETE OUTPUT	DO
COMMUNCATION LINK	COMM



ALARMS SEQUENCE			
CONDITION	DISPLAY	BUZZERS AND HORNS	DIALER
NORMAL	OFF	OFF	DIALS OUT IF ALARM IS NOT ACKNOWLEDGED WITHIN 2 MINUTES, ADJUSTABLE
ALARM	FLASH	ON	
ACKNOWLEDGE	ON	OFF	
RETURN TO NORMAL AFTER ACKNOWLEDGE	OFF	OFF	

CENTRAL ALARM CONTROL PANEL

NO SCALE

1 E5 E16

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C-CONTRACT CONSTR., FA-FORCE ACCOUNT CONSTR., R-RECORD FILE NAME: LRH_E16_NEOH.dgn

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1986 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

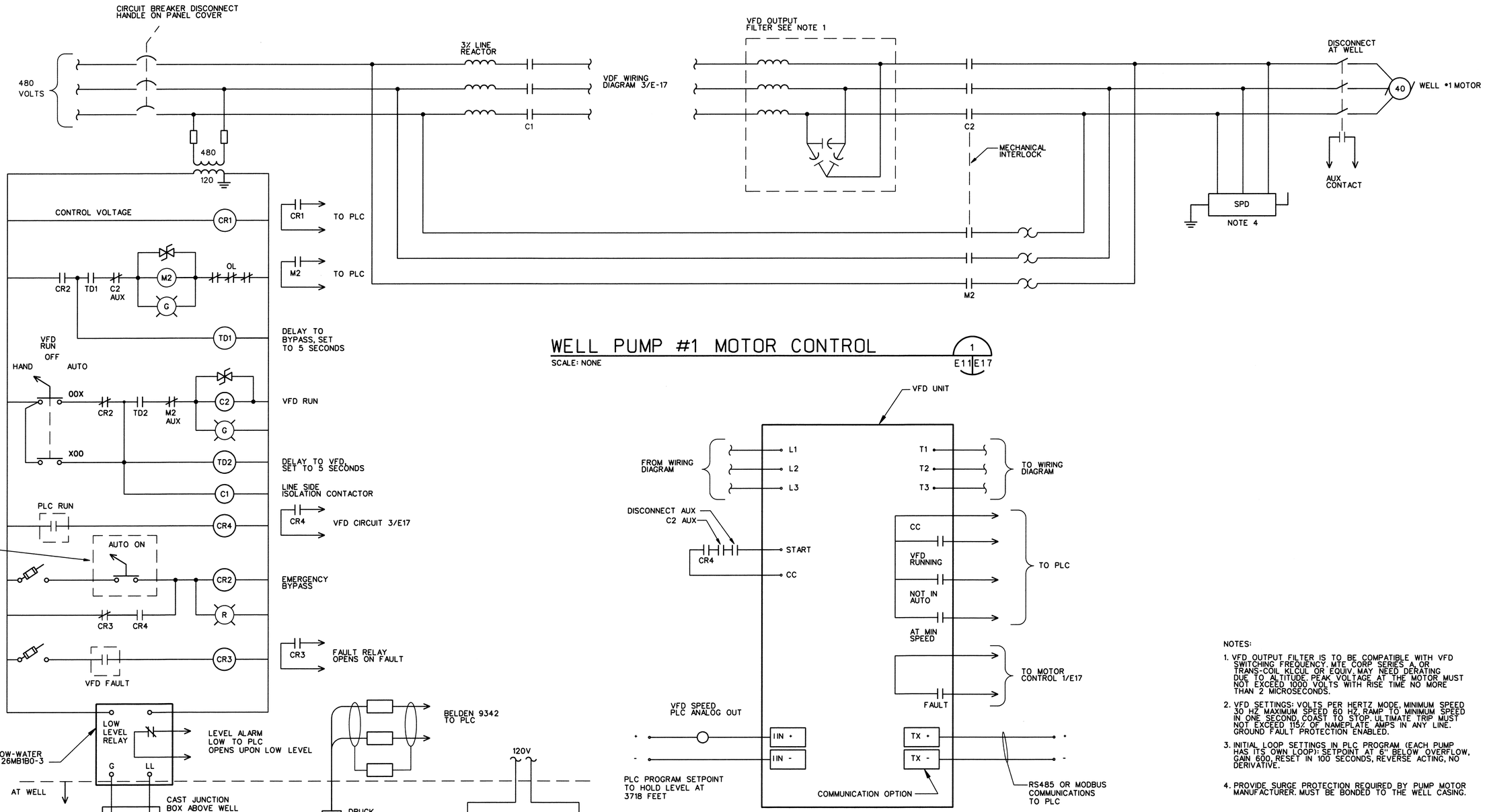
Design SM
Drawn KDP
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

ALARM PANEL AND SCHEDULES

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
---	--	E16	OF	



WELL MONITORING

SCALE: NONE

2 E2|E17

ELEVATIONS		
	LOW LEVEL	LEVEL PROBE
WELL #1		
WELL #2		
WELL #3		

WELL PUMP #1 MOTOR CONTROL

SCALE: NONE

1 E11|E17

WELL PUMP #1 VFD TERMINAL WIRING

SCALE: NONE

3 E17|E17

NOTES:

1. VFD OUTPUT FILTER IS TO BE COMPATIBLE WITH VFD SWITCHING FREQUENCY. MTE CORP SERIES A OR TRANS-COIL KLCUL OR EQUIV. MAY NEED DERATING DUE TO ALTITUDE. PEAK VOLTAGE AT THE MOTOR MUST NOT EXCEED 1000 VOLTS WITH RISE TIME NO MORE THAN 2 MICROSECONDS.
2. VFD SETTINGS: VOLTS PER HERTZ MODE, MINIMUM SPEED 30 HZ MAXIMUM SPEED 60 HZ, RAMP TO MINIMUM SPEED IN ONE SECOND, COAST TO STOP. ULTIMATE TRIP MUST NOT EXCEED 115% OF NAMEPLATE AMPS IN ANY LINE. GROUND FAULT PROTECTION ENABLED.
3. INITIAL LOOP SETTINGS IN PLC PROGRAM (EACH PUMP HAS ITS OWN LOOP): SETPOINT AT 6" BELOW OVERFLOW, GAIN 600, RESET IN 100 SECONDS, REVERSE ACTING, NO DERIVATIVE.
4. PROVIDE SURGE PROTECTION REQUIRED BY PUMP MOTOR MANUFACTURER. MUST BE BONDED TO THE WELL CASING.

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C-CONTRACT CONSTR., FA-FORCE ACCOUNT CONSTR., R-RECORD FILE NAME: LRH_E17_NEOH.dgn

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1989 W. LOWELL SHELTON
EXPIRES 06/30/08
4/10/06
Engineer Seal

HDR | FISHPRO

Design SM
Drawn KCP
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Date 04/10/06

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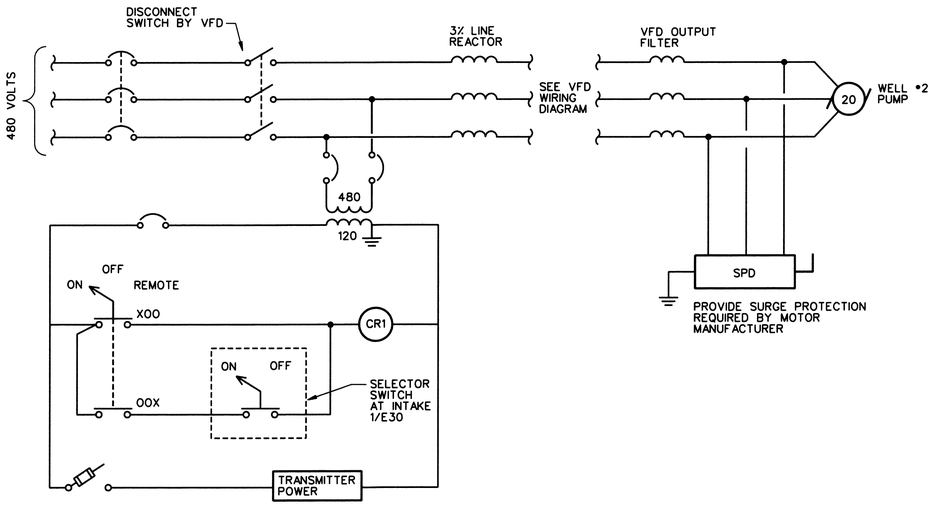
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

MOTOR CONTROL DIAGRAMS I

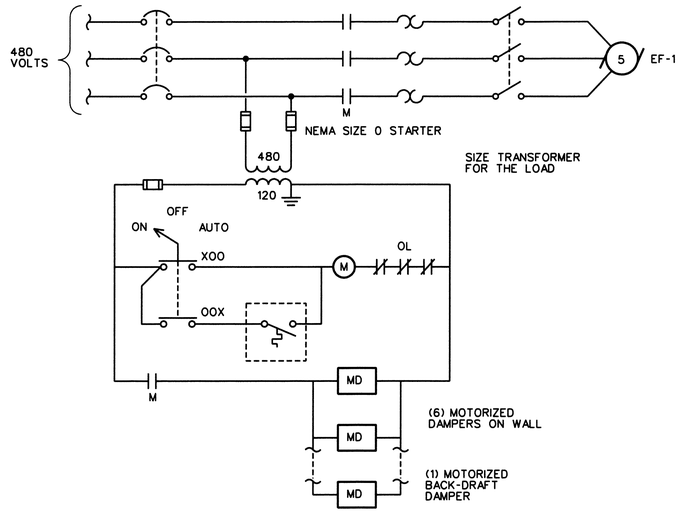
SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
---	--	E17	OF	

LRH_E18_NEOH.dgn



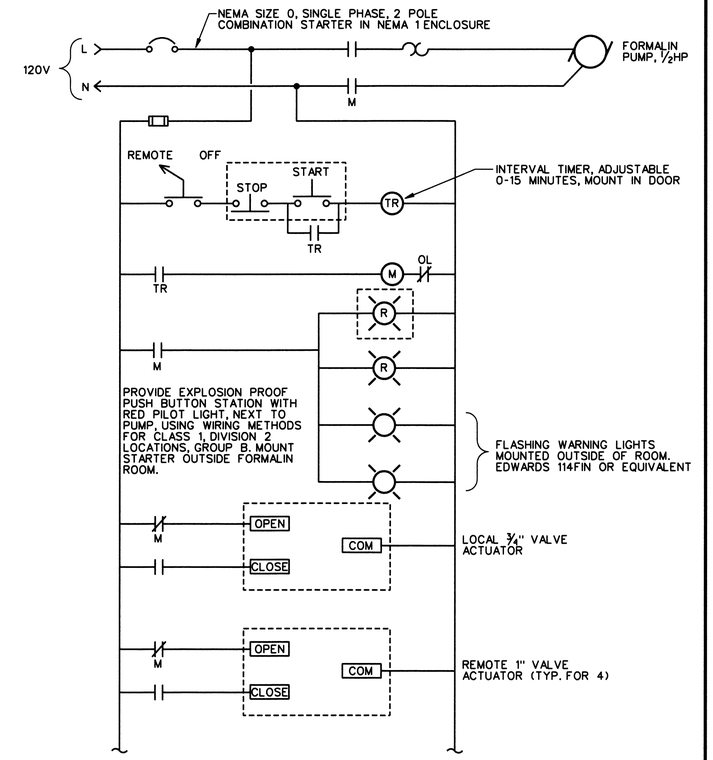
WELL #2 PUMP MOTOR

SCALE: NONE — 1 — E18|E18



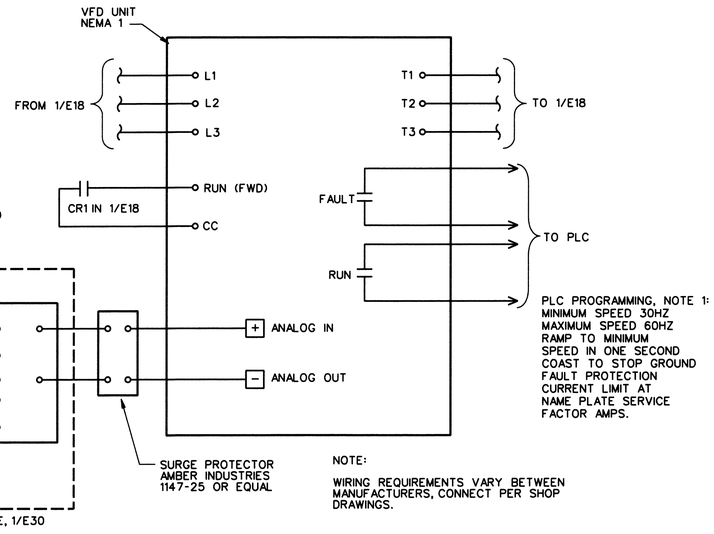
EF-1 MOTOR CONTROL

SCALE: NONE — 2 — E18|E18



FORMALIN PUMP

SCALE: NONE — 3 — E18|E18

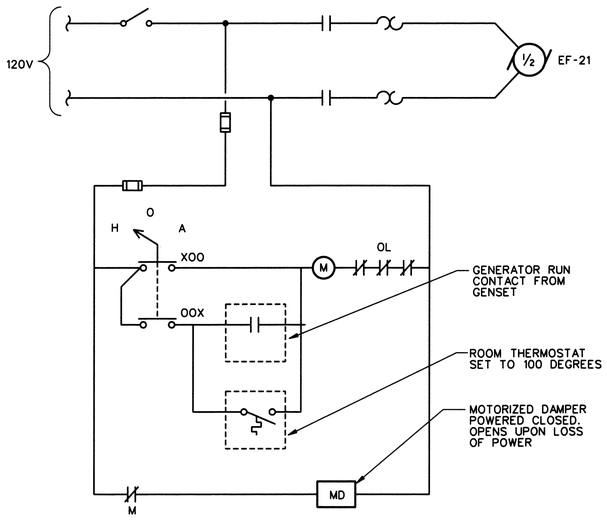


NOTE:

WIRING REQUIREMENTS VARY BETWEEN MANUFACTURERS, CONNECT PER SHOP DRAWINGS.

WELL #2 PUMP VFD WIRING

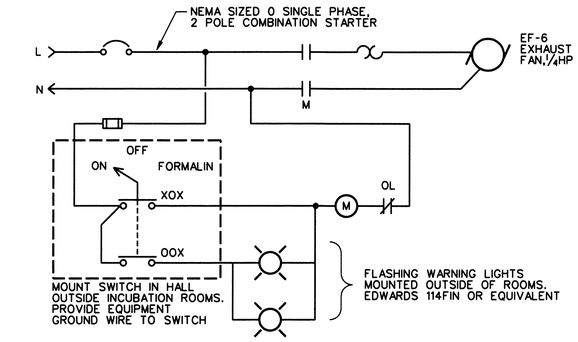
SCALE: NONE — 4 — E18|E18



GENERATOR ROOM EXHAUST FAN

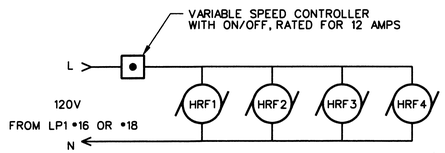
SCALE: NONE — 5 — E18|E18

1. COMPONENTS RATINGS PER UL 508A
   PROVIDE NEMA 1 HINGED ENCLOSURE SIZED
2. TO HOLD COMPONENTS.



INCUBATION ROOMS EXHAUST FAN CONTROL

SCALE: NONE (QTY. 2) — 6 — E18|E18



SIM FOR HRF5 THROUGH HRF-8

CEILING FAN CIRCUIT

SCALE: NONE (QTY: 2) — 7 — E18|E18

NOTES:
1. PROVIDE NEMA 1 HINGED ENCLOSURE SIZED TO HOLD COMPONENTS.
2. ALL COMPONENTS RATINGS ARE PER UL508A.
3. PROVIDE LEGEND PLATES "EXHAUST FAN" AND "ON / OFF FORMALIN".

REGISTERED PROFESSIONAL ENGINEER — 10634PE — OREGON — W. LOWELL SHELTON — JULY 15, 1998
EXPIRES 06/30/06
4/10/06
Engineer Seal

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C-CONTRACT CONSTR., FA-FORCE ACCOUNT CONSTR., R-RECORD FILE NAME: LRH_E18_NEOH.dgn

Design SM
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UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

MOTOR CONTROL DIAGRAMS 2

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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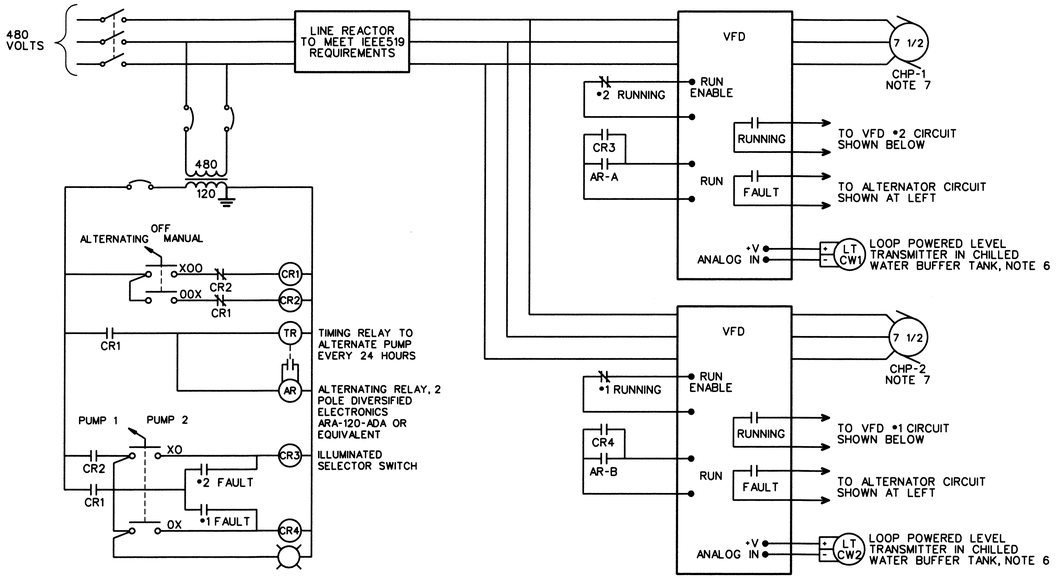
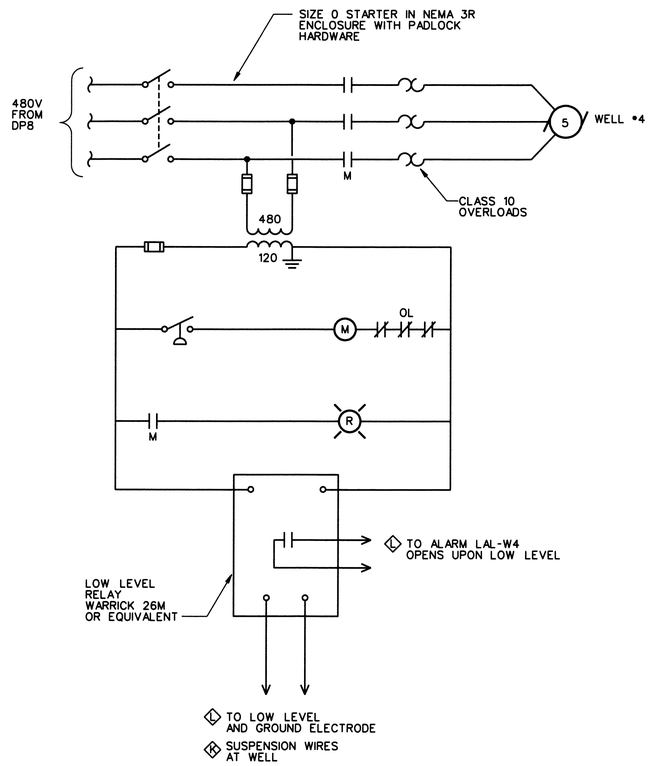


WIRING DIAGRAM – CHILLED WATER PUMPS

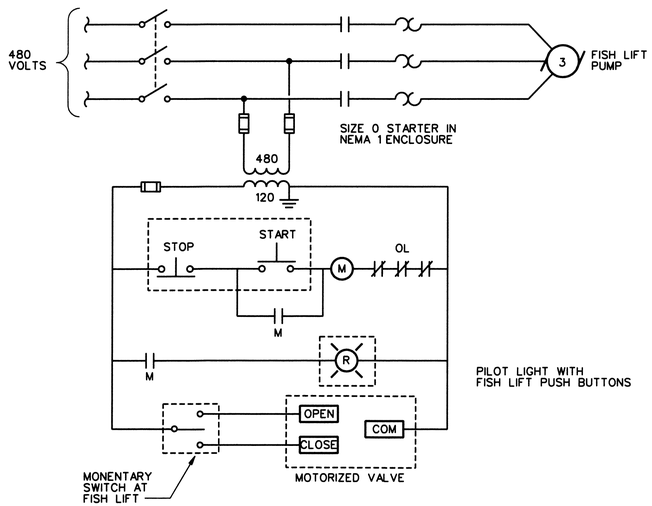
1 / XX|E19



WELL #4 MOTOR WIRING DIAGRAM

SCALE: NONE

3 / EXX|E19



FISH LIFT PUMP CONTROLS

SCALE: NONE

2 / EXX|E19

NOTES:

1. PUMPS ALTERNATE AND CANNOT BOTH RUN SIMULTANEOUSLY.
2. LEVEL CONTROL LOOPS ARE INDEPENDENT.
3. CIRCUIT SHOWN IS BASED ON VFD'S THAT HAVE P-I CONTROL LOOP CAPABILITY AND CAN PROVIDE LOOP POWER, SUCH AS CUTLER-HAMMER SV9000 AF OR EQUIVALENT. ACTUAL EQUIPMENT MAY VARY. CONNECT PER SHOP DRAWINGS.
4. VFD SETTINGS: VOLTS PER HERTZ MODE, MAX SPEED 60HZ, COAST TO STOP.
5. P-I INITIAL SETTINGS, TO BE FIELD ADJUSTED:
   - REVERSE ACTING
   - SETPOINT 3" BELOW OVERFLOW
   - GAIN 250%
   - INTEGRAL 0.5 REPEATS PER MINUTE
   - NO DERIVATIVE
6. NOT TO BE CONFUSED WITH THE "CHILLER WATER BUFFER TANK".
7. NOT TO BE CONFUSED WITH "CHILLER LOOP PUMPS".

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 15, 1998 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

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UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

MOTOR CONTROL DIAGRAM 3

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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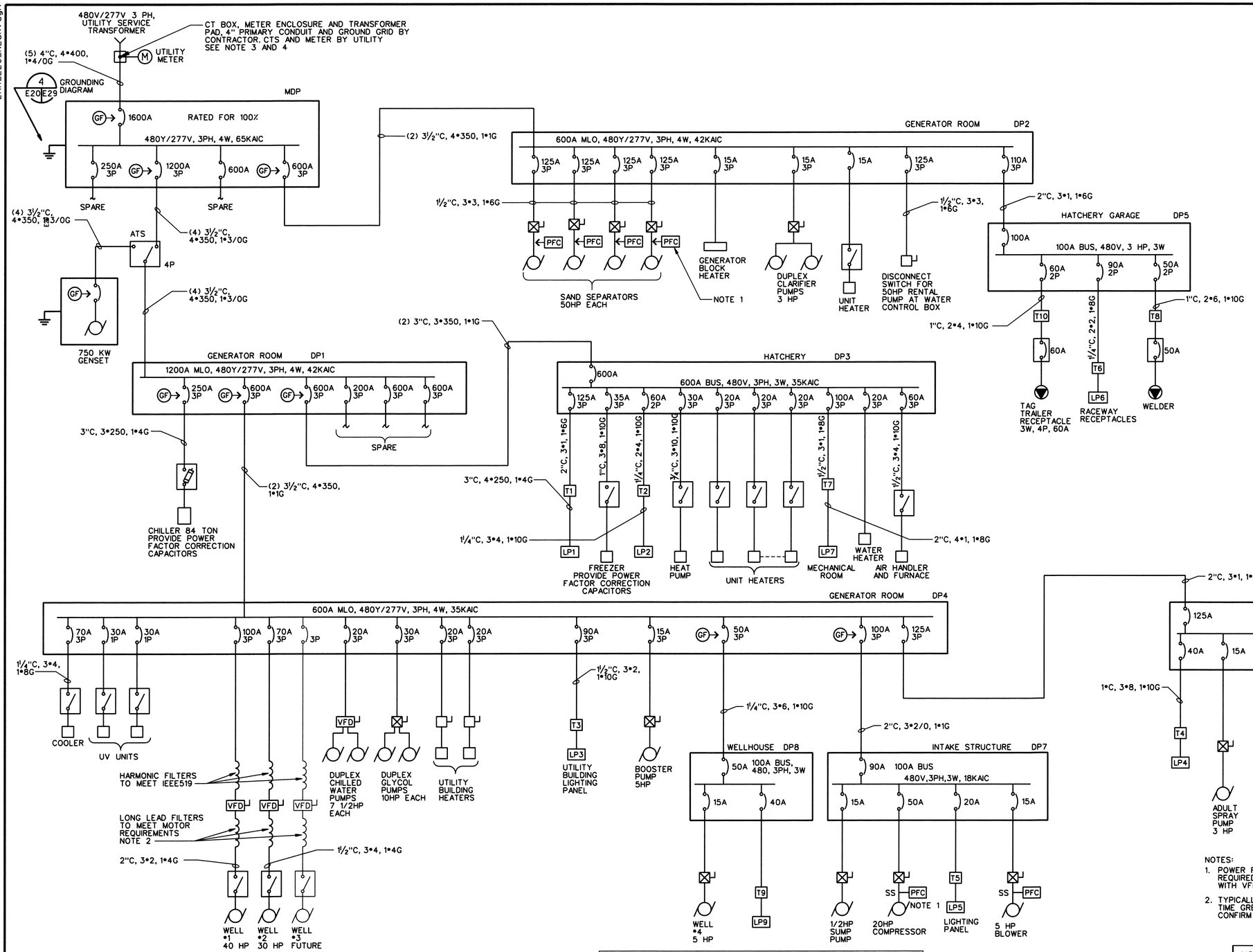

TRANSFORMER SCHEDULE

NO	KVA	CHARACTERISTICS	LOCATION
T1	75	480A-208Y/120V,3PH,3W	NORTH OF HATCHERY
T2	15	480-120/240V,1PH,3W	HATCHERY ELECTRICAL ROOM
T3	30	480-208Y/120V,3PH,4W	GENERATOR ROOM
T4	15	480-208Y/120V,3PH,3W	SPAWNING BUILDING
T5	9	480-208Y/120,3PH,3W	INTAKE STRUCTURE
T6	25	480-120/240V,1PH,3W	RACEWAY
T7	30	480-208Y/120,3PH,3W	SOUTH MECHANICAL ROOM
T8	10	480-120/240V,1PH,3W	GARAGE
T9	15	480-208Y/120,3PH,3W	WELL HOUSE •4
T10	15	480-120/240, 1PH,3W	FEED ROOM

NOTES:
1. POWER FACTOR CORRECTION CAPACITORS REQUIRED, COORDINATE IEEE-519 HARMONICS WITH VFD VENDOR.
2. TYPICALLY 1000 VOLTS PEAK WITH RISE TIME GREATER THAN 2 MICROSECONDS. CONFIRM WITH MOTOR VENDOR.
3. UTILITY COMPANY IS PACIFIC POWER. CONTACTS, ENGINEER: DOUG GUTTROMSOM, 509-522-7003. LOCAL OFFICE: TERRY LAMB 541-426-4270.
4. UTILITY TRANSFORMER VAULT, UTILITY VAULT 575-TRANS-PCORP STOCK ITEM 179-0023. METER REQUIREMENTS ARE IN THE ESR MANUAL AT www.pacificpower.net\esr

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 15, 1988 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

NO.	W/O	COMPUTER REVISION ONLY	BY	DATE	APPROVED

C-CONTRACT CONSTR., FA-FORCE ACCOUNT CONSTR., R-RECORD FILE NAME: LRH_E20_NEOH.dgn

Design SM
Drawn KCP
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Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

ONE LINE DIAGRAM

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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LIGHTING FIXTURE SCHEDULE

DRAWING FIXTURE MARK	FIXTURE DESCRIPTION	MANUFACTURER AND CATALOG NUMBER	LAMP			FIXTURE		MOUNTING		NOTES
			TYPE	QTY	WATTS	VOLTS	VA	TYPE	HEIGHT	
A1	FLASHING WARNING LIGHT, NEMA 4	EDWARDS 114FIN	INCANDESCENT	1	15	120	18			FORMALIN WARNING.
E1	EXIT SIGN, NICAD BATTERY, CAST ALUMINUM, RED LETTERING	MCPHILBEN SERIES 55, OR EQUIVALENT	LED		4	120	4	WALL	ABOVE DOOR	
E2	EMERGENCY LIGHT, DUAL LIGHTHEAD, 1.5 HOUR BURN, WITH CHARGER, WET LOCATION	HUBBELL N4 12-36-2, OR EQUIVALENT	HALOGEN	2	36	120	34	WALL	ABOVE DOOR HEIGHT	
E3	EMERGENCY LIGHT, DUAL LIGHTHEAD, 1.5 HOUR BURN, WITH CHARGER	PRESCOLITE EMAX, OR EQUIVALENT	INCANDESCENT	2	6	120	6	WALL	ABOVE DOOR	OFFICE AREA
E4	COMBINATION EMERGENCY LIGHT WITH EXIT SIGN	PRESCOLITE NOVUS NVT3GW3D	LED AND INCANDESCENT	3	6	120	6	WALL	ABOVE DOOR	DAMP LOCATION EXCEPT OFFICE AREA
E5	EXIT SIGN, SELF LUMINOUS	COST LESS LIGHTING SLXU1WR10	NONE		NONE	NONE		WALL	ABOVE DOOR	FORMALIN ROOM
F1	4' FLUORESCENT, DAMP LOCATION, DIMMING ELECTRONIC BALLAST RATED FOR FREEZING TEMPERATURE. <10%THD. DIMMING CONTROL BY 0-10VDC.	DAY-BRITE DWAE232-120-1/2, OR EQUIVALENT	FLUORESCENT	2	32		67	CHAIN HUNG	10' AFF	UNIVERSAL BALLAST ES5822B OR EQUAL
F2	4' ONE LAMP WALL MOUNTED FLUORESCENT, ELECTRONIC BALLAST <10%THD	COLUMBIA WAL4 -1UD32-EB8LH120	FLUORESCENT	1	32	120	34	SURFACE	WALL	ABOVE RESTROOM MIRRORS
F3	RESTROOM LIGHT, OVERHEAD FLUORESCENT, UL LISTED FOR DAMP LOCATION	LITHONIA 11750BN OR EQUIVALENT	FLUORESCENT	1	26	120	29	SURFACE	CEILING	
F4	4'x2' TWO LAMP SURFACE MOUNT FLUORESCENT, ACRYLIC DIFFUSER, ELECTRONIC BALLAST <10%THD	COLUMBIA PM24	FLUORESCENT	2	32	120	71	SURFACE	CEILING	
F5	4'x1' TWO LAMP SURFACE MOUNT FLUORESCENT, ACRYLIC DIFFUSER, ELECTRONIC BALLAST <10%THD, DAMP LOCATION, START TEMP BELOW 50 DEG	COLUMBIA PM14-232-FA-A12,EB8 LHZ-120-DL	FLUORESCENT	2	32	120	71	SURFACE	CEILING	INCUBATION ROOM & FEED STORAGE
F6	2'X4' LENSED FLUORESCENT TROFFER, 2 F32T8, <10%THD	COLUMBIA 4PS24-232G-FSA12-EB 8LH	F32T8	2	32	120	64	T-BAR	CEILING	
F7	INDUSTRIAL FLUORESCENT WITH WIRE GUARD, <10%THD	COLUMBIA KL4-232-EB8LH-120-K LWG4	F32T8	2	32	120	64	CHAIN HUNG	8' AFF	
F8	INDUSTRIAL FLUORESCENT WITH WIRE GUARD, DAMP LOCATION, BALLAST RATED TO FREEZING	COLUMBIA KL4-232-EB8Z-120-KL WG4	F32T8	2	32	120	64	CHAIN HUNG	8' AFF	
F9	HAZARDOUS LOCATION FLUORESCENT, 2 LAMP, ELECTRONIC BALLAST, <10%THD. CLASS 1, DIV2	COLUMBIA FSPH 4-234-EB8LH-120	F32T8	2	32	120	62	SURFACE	CEILING	
F10	DAMP LOCATION 2 LAMP CORROSION RESISTANT, INSTANT START, HIGH OUTPUT ELECTRONIC BALLAST, RATED TO -20 DEG F	COLUMBIA LUN4-248HO-EB12-12D OR EQUIVALENT	FLUORESCENT	2	60	120	138	PENDANT		GENERATOR ROOM
F11	WET LOCATION 2 LAMP CORROSION RESISTANT, INSTANT START, HIGH OUTPUT ELECTRONIC BALLAST, RATED TO -20 DEG F	COLUMBIA LUN4-248HO-EB12-12D OR EQUIVALENT	FLUORESCENT	2	60	120	138	PENDANT		HEADTANKS
N1	INCANDESCENT, WALL MOUNTED GLASS GLOBE WITH BACK BOX, 120V	HUBBELL VWX-151 OR EQUIVALENT	INCANDESCENT	1	60	120	60	WALL	HIGH AS POSSIBLE	INTAKE VAULT
N2	INCANDESCENT, CEILING MOUNTED GLASS GLOBE WITH BACK BOX, 120V	HUBBELL VWX-151 OR EQUIVALENT	INCANDESCENT	1	60	120	60		CEILING	INCUBATION
X1	POLE MOUNTED 500W QUARTZ HALOGEN FLOODLIGHT, 5x5 BEAM SPREAD, WET LOCATION	HUBBELL QL-505 OR EQUIVALENT ON 20' POLE	QUARTZ INCANDESCENT	1	500	120	500			
X2	SAME AS X1, BUT TWO FIXTURES ON BULLHORN BRACKET									
X3	HPS 250W YARD LIGHT WITH PHOTOCELL, ON 20' POLE WITH SWITCH AT BASE	EMCO INFINITY II PAF-0-3H-250HPS-12 0-BRP-PCT ON 20 FOOT POLE, OR	HPS	1	250	120	336	POLE		
W1	EXTERIOR WALL PACK, METAL HALIDE, 70 WATT HPF, GLASS LENS, WITH INTEGRAL PHOTOCELL	HOLOPHANE WL2K-70MH-12-BZ-WL2 KPR12	MH	1	70	120	108			

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REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1986 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

Design SM
Drawn SLS
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UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

FIXTURE SCHEDULE

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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PANELBOARD SCHEDULE

NAME: UTILITY DP2
FED FROM MDP
NON ESSENTIAL POWER

VOLTAGE: 277 480 VOLTS,
3 PHASE, 4 WIRE.

MAINS 600 AMPS
MCB
X MLO

ENCLOSURE: NEMA 1

BRANCH BREAKERS

ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	LEFT PHASE C	RIGHT PHASE A	RIGHT PHASE B	RIGHT PHASE C	CKT NO.	AMP RAT.	POLE	ITEM
			1	18.01			18.01			2			
CYCLONE PUMP 50HP	3	125	3		18.01			18.01		4	125	3	CYCLONE PUMP 50HP
			5			18.01			18.01	6			
			7	18.01			18.01			8			
CYCLONE PUMP 50HP	3	125	9		18.01			18.01		10	125	3	DISCONNECT SWITCH PUMP-BACK
			11			18.01			18.01	12			
			13	18.01			25.00			14			
CYCLONE PUMP 50HP	3	125	15		18.01			25.00		16	110	3	DP5
			17			18.01			25.00	18			
			19	1.33			1.00			20			
CLARIFIER PUMP 3HP	3	15	21		1.33			1.00		22	15	3	GENERATOR BLOCK HEATER
			23			1.33			1.00	24			
			25	2.50			1.33			26			
UH-21 7.5KW	3	15	27		2.50			1.33		28	15	3	CLARIFIER PUMP 3HP
			29			2.50			1.33	30			
			31							32			
SPARE	3	15	33							34	20	3	SPARE
			35							36			
			37							38			
SPARE	3	15	39							40	20	3	SPARE
			41							42			
				57.86	57.86	57.86	63.35	63.35	63.35				
				121.21	121.21	121.21	kVA PER PHASE						
				438	438	438	AMPS PER PHASE						

MOUNTING: SURFACE X, FLUSH
FEEDER: X TOP, BOTTOM

TOTAL CONNECTED LOAD: 363.63 KVA

INTEGRAL EQUIPMENT INTERRUPTING RATING: 42,000 AMPS RMS SYMMETRICAL.

PANELBOARD SCHEDULE

NAME: HATCHERY DP3
TWO SECTION

VOLTAGE: 480 VOLTS,
3 PHASE, 3 WIRE. DELTA

MAINS 600 AMPS
x MCB
MLO

ENCLOSURE: NEMA 1

BRANCH BREAKERS

ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	LEFT PHASE C	RIGHT PHASE A	RIGHT PHASE B	RIGHT PHASE C	CKT NO.	AMP RAT.	POLE	ITEM
30KVA T7 - LP7 SOUTH MECHANICAL ROOM	3	100	1	10.00			5.00			2			
			3		10.00			5.00		4	25	3	UH7 FORMALIN ROOM 15KW
			5			10.00			5.00	6			
			7	2.50			5.00			8			
UH4 WET ROOM 7.5KW	3	20	9		2.50			5.00		10	20	3	UH-2 GARAGE 15KW
			11			2.50			5.00	12			
			13	3.33			5.00			14			
UH5 & UH6 INCUBATION ROOMS 5KW EACH	3	20	15		3.33			5.00		16	20	3	UH-3 GARAGE 15KW
			17			3.33			5.00	18			
			19	1.67			5.00			20			
UH1 FEED STORAGE ROOM 5KW	3	20	21		1.67			5.00		22	20	3	UH-8 & UH-9 7.5KW EACH
			23			1.67			5.00	24			
TRANSFORMER 240 VOLT T2 - LP2 (RANGE, DRYER)	2	60	25	7.00			5.00			26			
			27		7.00			5.00		28	20	3	UH-10 & UH-11 7.5KW EACH
									5.00	30			
AIR HANDLER FURNACE AND FAN MOTOR 35KW AND 3HP	3	60	31	11.66			3.00			32			
			33		11.66			3.00		34	20	3	WATER HEATER 9KW
			35			11.66			3.00	36			
			37	5.00			4.90			38			
UH12 & UH13	3	20	39		5.00			4.90		40	30	3	HEAT PUMP OUTDOOR UNIT
			41			5.00			4.90	42			

SECTION TWO:

			43	5.00						44			
UH14 & UH15	3	20	45		5.00					46	20	3	SPARE
			47			5.00				48			
			49							50			
SPARE	3	20	51							52	20	3	SPARE
			53							54			
			55							56			
SPARE	3	20	57							58	20	3	SPARE
			59							60			
			61	1.67			2.11			62			
UH 16, 5KW	3	20	63		1.67			2.11		64	15	3	EF-1 5HP
			65			1.67			2.11	66			
			67				0.44			68			
SPARE	3	20	69					0.44		70	15	3	EF-2 .75 HP
			71						0.44	72			
			73	6.00			25.00			74			
FREEZER	3	35	75		6.00			25.00		76	125		TRANSFORMER T1 (FEDS LP1) 75KVA
			77			6.00			25.00	78			
				53.83	53.83	46.83	60.45	60.45	60.45				
				114.28	114.28	107.28	kVA PER PHASE						
				413	413	387	AMPS PER PHASE						

MOUNTING: SURFACE X, FLUSH
FEEDER: TOP, x BOTTOM

TOTAL CONNECTED LOAD: 335.84 KVA

INTEGRAL EQUIPMENT INTERRUPTING RATING: 35,000 AMPS RMS SYMMETRICAL.

PANELBOARD SCHEDULE

NAME: UTILITY BLDG DP4
TWO SECTION
WITH TVSS

VOLTAGE: 277 480 VOLTS,
3 PHASE, 4 WIRE.

MAINS 600 AMPS
MCB
X MLO

ENCLOSURE: NEMA 1

BRANCH BREAKERS

ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	LEFT PHASE C	RIGHT PHASE A	RIGHT PHASE B	RIGHT PHASE C	CKT NO.	AMP RAT.	POLE	ITEM
			1				10.00			2			30 KVA
SPARE	3	30	3					10.00		4	100	3	208Y/120 TRANSFORMER
			5						10.00	6			LOADCENTER T3 - LP3
			7	14.40			2.11			8			
WELL #1 VFD 40HP	3	70	9		14.40			2.11		10	15	3	WATER BOOSTER PUMP
			11			14.40			2.11	12			5HP
			13	11.08			1.33			14			
WELL #2 VFD 30HP	3	50	15		11.08			1.33		16	15	3	AIR COMPRESSOR
			17			11.08			1.33	18			3HP
			19	14.40			0.44			20			
WELL #3 VFD 40HP	3	100	21		14.40			0.44		22	15	3	EF-23
			23			14.40			0.44	24			.75HP
			25	3.33						26			
UH-24 10 KW	3	20	27		3.33					28	15	3	SPARE
			29			3.33				30			
			31	3.05			3.33			32			
CHILLED WATER PUMPS VFD 7.5HP	3	15	33		3.05			3.33		34	15	3	UH -22 & 23
			35			3.05			3.33	36			5KW EACH
			37	3.88			3.33			38			
CHILLER LOOP PUMPS 10HP DUPLEX	3	15	39		3.88			3.33		40	15	3	UH-25
			41			3.88			3.33	42			10 KW

SECTION TWO:

			43				2.40			44	20	2	RADIANT HEATER
SPARE	3	20	45					2.40		46			4.8KW, 480/1
			47						2.40	48	20	2	RADIANT HEATER
			49				2.40			50			4.8KW, 480/1
SPARE	3	20	51					5.42		52	30	1	UV #1 277v, 4.88KW
			53						5.42	54	30	1	UV #2 277v, 4.88 KW
			55							56			
SPARE	3	20	57							58	20	3	SPARE
			59							60			
			61	23.00			13.00			62			
ADULT BUILDING DP6	3	125	63		23.00			13.00		64	100	3	INTAKE STRUCTURE DP7
			65			23.00			13.00	66			
			67	9.97			7.11			68			
LIQUID COOLER	3	70	69		9.97			7.11		70	50	3	DP8, WELLHOUSE #4
			71			9.97			7.11	72			
				83.11	83.11	83.11	45.45	48.47	48.47				
				128.56	131.58	131.58	kVA PER PHASE						
				464	475	475	AMPS PER PHASE						

MOUNTING: SURFACE X, FLUSH
FEEDER: x TOP, BOTTOM

TOTAL CONNECTED LOAD: 391.72KVA

INTEGRAL EQUIPMENT INTERRUPTING RATING: 35,000 AMPS RMS SYMMETRICAL.

PANELBOARD SCHEDULE

NAME: HATCHERY DP5
FED FROM DP2 IN GENERATOR ROOM
NON ESSENTIAL POWER

VOLTAGE: 480 VOLTS,
3 PHASE, 3 WIRE. DELTA

MAINS 100 AMPS
x MCB
MLO

ENCLOSURE: NEMA 1

BRANCH BREAKERS

ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	LEFT PHASE C	RIGHT PHASE A	RIGHT PHASE B	RIGHT PHASE C	CKT NO.	AMP RAT.	POLE	ITEM
TAG TRAILER RECEPTACLE T10 (15KVA, 240 VOLT)	2	60	1	7.20			6.00			2	50*	2	T8 10KVA
			3		7.20			6.00		4			WELDER TRANSFORMER
			5							6			
			7							8			
T6 - LP6 10KVA RACEWAY RECEPTACLES	2	90	9		10.80					10			
			11			10.80				12			
			13							14			
			15							16			
			17							18			
				7.20	18.00	11.00	6.00	6.00	0.00				
				13.20	24.00	11.00	kVA PER PHASE						
				48	87	40	AMPS PER PHASE						

MOUNTING: SURFACE X, FLUSH
FEEDER: TOP, x BOTTOM

TOTAL CONNECTED LOAD: 48.20 KVA

INTEGRAL EQUIPMENT INTERRUPTING RATING: 25,000 AMPS RMS SYMMETRICAL.

*25A IF TWO WIRE SECONDARY WITHOUT OVERCURRENT PROTECTION

NO.	W/O	COMPUTER REVISION ONLY	BY	DATE	APPROVED
C-CONTRACT CONSTR., FA-FORCE ACCOUNT CONSTR., R-RECORD FILE NAME: LRH_E22_NEOH.dgn					

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1989 W. LOWELL SHELTON
EXPIRES 06/30/06
Engineer Seal

HDR | FISHPRO

Design SM
Drawn SLS
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

DISTRIBUTION PANEL SCHEDULES

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
---	--	E22	OF	

PANELBOARD SCHEDULE

NAME: LP1, HATCHERY ESSENTIAL 120/208 — VOLTAGE: 120 208 VOLTS, — MAINS 250 AMPS
INTEGRAL TVSS — 3 PHASE, 4 WIRE. — MCB X (SECONDARY PROTECTION)
FED FROM T1 OUTSIDE — MLO
TWO SECTION — ENCLOSURE: NEMA 1

BRANCH BREAKERS

ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	LEFT PHASE C	RIGHT PHASE A	RIGHT PHASE B	RIGHT PHASE C	CKT NO.	AMP RAT.	POLE	ITEM
EXIT LIGHTS	1	20	1	0.04			0.91			2	20	1	LIGHTING CONTACTOR (ZONE a)
LIGHTING CREW RM	1	20	3		0.78			0.67		4	20	1	LIGHTING CONTACTOR (ZONE b)
LIGHTING RM 109, 110	1	20	5			0.54			0.67	6	20	1	LIGHTING CONTACTOR (ZONE c)
LIGHTING RM 112, 114, 115, MEZZ	1	20	7	0.70			0.54			8	20	1	LIGHTING CONTACTOR (ZONE d)
LIGHTS MUD, HALLS, RR & EF8,9,10	1	20	9		1.83			0.67		10	20	1	LIGHTING CONTACTOR (ZONE e)
LIGHTING RM 106, 107, 113, 116	1	20	11			0.90			0.54	12	20	1	LIGHTING CONTACTOR (ZONE f)
WALL PACKS	1	20	13	0.87			0.54			14	20	1	LIGHTING CONTACTOR (ZONE g)
RECEPTACLE RR 103	1	20	15		1.00			1.36		16	20	1	HEAT RECOVERY FANS EAST
RECEPTACLE RR 104	1	20	17			1.00			1.36	18	20	1	HEAT RECOVERY FANS WEST
RECEPTACLES	1	20GFI	19	0.90			0.70			20	20	1	EXHAUST FAN EF-6 MEZZANINE
RECEPTACLES	1	20GFI	21		0.90			0.70		22	20	1	EXHAUST FAN EF-7 MEZZANINE
RECEPTACLES, WET RM	1	20	23			1.60			0.40	24	20	1	EXHAUST FAN EF-10 MUD ROOM
RECEPTACLES, WET RM	1	20	25	1.20			1.18			26	20	1	EXHAUST FAN EF-11 ELECT ROOM
RECEPTACLES, RM 113	1	20	27		0.80			0.34		28	20	1	HOT WATER PUMP
RECEPTACLES, RM 113	1	20	29			0.80			0.02	30	20	1	SECURITY SYSTEM
RECEPTACLES, RM 113	1	20	31	0.80			1.18			32	20	1	FORMALIN PUMP
CACP	1	20	33		0.50			1.20		34	20	1	DISHWASHER
RECEPTACLES RM 107	1	20	35			1.20			0.30	36	20	1	RANGE HOOD FAN & LIGHT
RECEPTACLES 106,107	1	20	37	1.20			0.60			38	15	1	REFRIGERATOR
RECEPTACLES RM 106	1	20	39		1.20			0.72		40	20	1	RECEPTACLES, HALLWAY
RECEPTACLES RM 106	1	20	41			1.20			0.60	42	20	1	WASHER
SECTION 2:													
FLOWMETER DC POWER SUPPLY	1	20	43	0.01			1.60			44	20	1	RECEPTACLES MUD ROOM
TTB RECPT WITH ISOLATED GND	1	20	45		1.00			0.54		46	20	1	RECEPTACLES, CREW ROOM
TTB RECPT WITH ISOLATED GND	1	20	47			1.00			1.44	48	20	1	RECEPTACLES, CREW COUNTER
SPARE	1	20	49				1.44			50	20	1	RECEPTACLES, CREW COUNTER
SPARE	1	20	51					0.72		52	20	1	RECEPTACLES, CREW ROOM
SPARE	1	20	53						0.72	54	20	1	RECEPTACLES RM 109, 110
PIT TAG SHACK	3	30	55	6.00			0.54			56	20GFI	1	RECEPTACLES
			57		6.00			0.54		58	20GFI	1	RECEPTACLES
			59			6.00			0.18	60	20	1	RECEPTACLE, HEAT PUMP
RACEWAY FLOODLIGHT NORTH	1	20	61	0.50			0.36			62	20	1	ELECT ROOM RECPT
RACEWAY FLOODLIGHTS CENTRAL	1	20	63		1.50					64	20	1	SPARE
RACEWAY LIGHTS SOUTH	1	20	65			1.18				66	20	1	SPARE
				12.22	15.51	15.42	9.59	7.46	6.23				
MOUNTING:				21.81	22.97	21.65	kVA PER PHASE						FEEDER:
SURFACE X				182	191	180	AMPS PER PHASE						TOP
FLUSH													X BOTTOM

TOTAL CONNECTED LOAD: 66.43KVA

INTEGRAL EQUIPMENT INTERRUPTING RATING: 10,000 AMPS RMS SYMMETRICAL.

LOADCENTER SCHEDULE

NAME: T3 - LP3 — TRANSFORMER 30 kVA, 3 PHASE, NEM 1 ENCLOSURE.
ESSENTIAL POWER FED FROM DP4
PRIMARY VOLTAGE: 480 VOLTS DELTA — PRIMARY BREAKER: 90 AMP 3 POLE
SECONDARY VOLTAGE: 120 208 VOLTS 3 PHASE 4 WIRE, WYE. — SECONDARY BREAKER: 100 AMP 3 POLE

BRANCH BREAKERS

ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	LEFT PHASE C	RIGHT PHASE A	RIGHT PHASE B	RIGHT PHASE C	CKT NO.	AMP RAT.	POLE	ITEM
EXIT LIGHTS	1	15	1	0.02			0.60			2	20	1	BATTERY CHARGER
LIGHTING, GEN ROOM	1	20	3		1.31			1.00		4	20	1	PLC & UPS
LIGHTING, TREATMENT RM	1	20	5			0.58			0.10	6	15	1	CHILLED WATER VALVE CONTROL
LIGHTING, MEZZ	1	20	7	1.52			0.86			8	15	1	GLYCOL FEED PUMP 1/3HP
LIGHTING, CYCLONE RM	1	20	9		0.39			0.03		10	15	1	CHILLER DIVERTER CONTROL
WALL PACKS	1	20	11			0.76			1.50	12	30	2	CHEMICAL STORAGE SHED
FUEL TANK "FILL & SPILL"	1	15	13	0.02			1.50			14			120/208 SINGLE PHASE
HEAT TRACE WELL #1	1GFI	20	15		1.00			1.00		16	20	1GFI	HEAT TRACE W. FLOWMETER VAULT
HEAT TRACE WELL #2	1GFI	20	17			1.00			1.00	18	20	1GFI	HEAT TRACE S. FLOWMETER VAULT
HEAT TRACE NE VAULT (3) PIPES	1GFI	20	19	1.40						20	20	1	SPARE
RECEPTACLES	1	20	21		1.00					22	20	1	SPARE
RECEPTACLES	1	20	23			0.80				24	20	1	SPARE
RECEPTACLES	1	20	25	1.00						26	20	1	SPARE
RECEPTACLES	1	20	27		0.80					28			
RECEPTACLES	1	20	29			1.60				30			
EXHAUST FAN EF-21	1	20	31	1.18						32			
EXHAUST FAN EF-22	1	20	33		1.18					34			
			35							36			
			37				-			38			
CLARIFIER FLOODLIGHT	1	20	39		0.50			-		40	-	3	SURGE ARRESTER
CLARIFIER RECEPTACLES	1	20	41			0.80		-		42			
				5.14	6.18	5.54	2.96	2.03	2.60				
MOUNTING:				8.10	8.21	8.14	kVA PER PHASE						FEEDER:
SURFACE				68	68	68	AMPS PER PHASE						TOP
FLUSH													BOTTOM

TOTAL CONNECTED VA: 24450

INTEGRAL EQUIPMENT INTERRUPTING RATING: 10,000 AMPS RMS SYMMETRICAL

LOADCENTER SCHEDULE

NAME: T7 - LP7
GARAGE MECHANICAL ROOM
TRANSFORMER: 30 kVA, 3 PHASE, NEM 1 ENCLOSURE.
PRIMARY VOLTAGE: 480 VOLTS DELTA — PRIMARY BREAKER: 90 AMP 3 POLE
SECONDARY VOLTAGE: 120 208 VOLTS 3 PHASE 4 WIRE, WYE. — SECONDARY BREAKER: 100 AMP 3 POLE

BRANCH BREAKERS

ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	LEFT PHASE C	RIGHT PHASE A	RIGHT PHASE B	RIGHT PHASE C	CKT NO.	AMP RAT.	POLE	ITEM
EXIT LIGHTS	1	15	1	0.02			?			2	20	1	FREEZER DRAIN HEATER
LIGHTING GARAGE	1	20	3		0.75			?		4	20	1	FREEZER DOOR HEATER
LIGHTING RM 121	1	20	5			0.15			?	6	20	1	FREEZER VENT HEATER
LIGHTING MECH RM, RR, EF4 EF5	1	20	7	1.52			0.57			8	15	1	FREEZER LIGHTING
WALL PACKS	1	20	9		0.33			4.16		10	40	2	WATER HEATER
RECEPTACLES AT DOORS	1	20GFI	11			1.00			4.16	12			8.32 KW
RECEPTACLE RR	1	20	13	1.00						14			
RECEPTACLES	1	20	15		1.20					16			
RECEPTACLES	1	20	17			1.60				18			
RECEPTACLES, WEST	1	20GFI	19	1.20						20			
RECEPTACLES OUTSIDE	1	20	21		0.60					22			
EXHAUST FAN EF-3	1	20	23			0.70				24			
				3.74	2.88	3.45	0.57	4.16	4.16				
MOUNTING:				4.31	7.04	7.61	kVA PER PHASE						FEEDER:
SURFACE				36	59	63	AMPS PER PHASE						TOP
FLUSH													BOTTOM

TOTAL CONNECTED VA: 18960

INTEGRAL EQUIPMENT INTERRUPTING RATING: 10,000 AMPS RMS SYMMETRICAL

LOADCENTER SCHEDULE

NAME: T6 - LP6
RACWAY POWER OUTLETS
NON-ESSENTIAL
TRANSFORMER: 25 kVA, NEM 3R ENCLOSURE.
PRIMARY VOLTAGE: 480 VOLTS. — PRIMARY BREAKER: 90 AMP 2 POLE.
SECONDARY VOLTAGE: 120 240 VOLTS. 1PHASE, 3 WIRE. — SECONDARY BREAKER: 125 AMP 2 POLE.

BRANCH BREAKERS

ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	RIGHT PHASE A	RIGHT PHASE B	CKT NO.	AMP RAT.	POLE	ITEM
NORTH RACEWAY NW	2	70	1	1.20		1.20		2	70	2	SOUTH RACEWAY NW
			3		1.20		1.20	4			
NORTH RACEWAY SW	2	70	5	1.20		1.20		6	70	2	SOUTH RACEWAY SW
			7		1.20		1.20	8			
NORTH RACEWAY NE	2	70	9	1.20		1.20		10	70	2	SOUTH RACEWAY NE
			11		1.20		1.20	12			
NORTH RACEWAY SE	2	70	13	1.20		1.20		14	70	2	SOUTH RACEWAY SE
			15		1.20		1.20	16			
QUARANTINE RACEWAY	2	70	17	1.20				18			
			19		1.20			20			
			21					22			
								24			
				6.00	6.00	4.80	4.80				
MOUNTING:				10.80	10.80	kVA PER PHASE					FEEDER:
SURFACE				90	90	AMPS PER PHASE					TOP
FLUSH											BOTTOM

TOTAL CONNECTED VA: 21780

INTEGRAL EQUIPMENT INTERRUPTING RATING: 10,000 AMPS RMS SYMMETRICAL.

LOADCENTER SCHEDULE

NAME: LP2
TRANSFORMER: 15 kVA, NEM 3R ENCLOSURE.
PRIMARY VOLTAGE: 480 VOLTS. — PRIMARY BREAKER: 60 AMP 2 POLE.
SECONDARY VOLTAGE: 120 240 VOLTS. 1PHASE, 3 WIRE. — SECONDARY BREAKER: 80 AMP 2 POLE.

BRANCH BREAKERS

ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	RIGHT PHASE A	RIGHT PHASE B	CKT NO.	AMP RAT.	POLE	ITEM
RANGE	2	50	1	4.80		2.30		5	30	2	DRYER
			3		4.80		2.30	7			
			5					6			
			7					8			
			9					10			
			11					12			
			13					14			
			15					16			
			17					18			
			19					20			
				4.80	4.80	2.30	2.30				
MOUNTING:				7.10	7.10	kVA PER PHASE					FEEDER:
SURFACE				59	59	AMPS PER PHASE					TOP
FLUSH											BOTTOM

TOTAL CONNECTED VA: 14200

INTEGRAL EQUIPMENT INTERRUPTING RATING: 10,000 AMPS RMS SYMMETRICAL

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1989 W. LOWELL SHELTON
EXPIRES 06/30/08
4/10/06 Engineer Seal

HDR | FISHPRO

NO.		W/O	COMPUTER REVISION ONLY	BY	DATE	APPROVED
C-CONTRACT CONSTR., FA-FORCE ACCOUNT CONSTR., R-RECORD FILE NAME: LRH_E23_NEOH.dgn						

Design SM
Drawn SLS
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

LOAD PANEL SCHEDULES

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
---	--	E23	OF	

LRH_E23_NEOH.dgn
4/9/06 09:39:30 0:1 ':" / IN. NEOH_FULL_SIZE.tbl

120 VOLTS
FROM LP3 •4

N

SURGE ARRESTER

CABINET FANS TO MEET UL508A REQUIREMENTS

CABINET HEATER

VR

VOLTAGE RELAY IS PLC INPUT FOR POWER FAILURE ALARM. OPENS ON POWER FAILURE

DOOR SWITCH AND CABINET LIGHT

UPS

UNITERRUTABLE POWER SUPPLY SIZED TO SERVE THE LOAD. SOLA SDU 850 OR EQUIVALENT

5A

SURGE ARRESTER

SURGE ARRESTER UL LISTED PER UL 1449

CR1

BUZZER RELAY

CR2

HORN RELAY

TO RESIDENCE 1
ALARM BUZZER 4/E27

TO RESIDENCE 2
ALARM BUZZER 4/E27

CR1

LOCAL BUZZER, SONALERT SC110 WITH SCVC VOLUME CONTROL OR EQUIVALENT

BUZZER CAPC

CR2

LOCAL HORNS

HATCHERY HORNS

PLC POWER

PLC COMMUNICATIONS

RS 485 COMMUNICATIONS TO (9) DEVICES LISTED ON SHEET E16

TOUCH SCREEN DISPLAY'S POWER

CACP DISPLAY POWER

ALARM DIALER - RADIO POWER

ALARM RADIO/DIALER: ZETRON 1550 OR EQUIVALENT

CONTINUED NEXT COLUMN

CONTINUED FROM PREVIOUS COLUMN

PLC PHONE MODEM

POWER TO FLOWMETER FIT-SW

POWER TO FLOWMETER FIT-SWA

POWER TO FLOWMETER FIT-SWR

POWER TO FLOWMETERS IN WATER TREATMENT ROOM

PLC OUTPUT — CR1 — SHOWN ABOVE

PLC OUTPUT — CR2 — SHOWN ABOVE

PLC OUTPUT — VFD 1 START

PLC OUTPUT — DIALER CHANNEL 1

PLC OUTPUT — DIALER CHANNEL 2

PLC OUTPUT — DIALER CHANNEL 3

PLC OUTPUT — DIALER CHANNEL 4

PLC OUTPUT — DIALER CHANNEL 5

PLC OUTPUT — DIALER CHANNEL 6

PLC OUTPUT — DIALER CHANNEL 7

PLC OUTPUT — DIALER CHANNEL 8

24 VOLTS DC POWER SUPPLY

+ −

DIALER COMMON

DC SURGE SUPPRESSOR

PLC INPUTS

TAL-CPW

LAL-W1

LAL-W2

LAL-W3

CONTINUED NEXT COLUMN

CONTINUED FROM PREVIOUS COLUMN

PLC INPUTS CONT'D

LAL-W4

LAL-I1

LAL-I2

LAL-I3

LAL-I4

LAL-SW

LAL-GW

LAL-CW

LAL-RN

LAL-RS

LAL-RQ

LAL-A1

LAL-A2

LAL-A3

LAL-A4

LAL-A5

LAL-A6

CONTINUED ON SHEET E26

NOTES:
1. CABINET TEMP RANGES FROM -35 TO 105 DEGREES F.
2. PROVIDE HINGED NEMA 1 CABINET SIZED TO HOLD COMPONENTS.

REGISTERED PROFESSIONAL ENGINEER
10634PE
OREGON
JULY 18, 1980
W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

NO.		W/O	COMPUTER REVISION ONLY	BY	DATE	APPROVED

C•CONTRACT CONSTR., FA•FORCE ACCOUNT CONSTR., R•RECORD FILE NAME: LRH_E25_NEOH.dgn

Design SM
Drawn KCP
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

PLC INPUTS AND OUTPUTS SHEET 1

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
___	__	E25	OF	

CONTINUED FROM SHEET E25

PLC INPUTS CONT'D

- INTAKE SCREEN
- VAULT FLOODED
- AIR BACKWASH ALARM
- INTAKE POWER FAILURE
- CHILLER ALARM
- FREEZER WARM ALARM
- GENERATOR ALARM
- FUEL LOW ALARM (TWO TANKS)
- CHEMICAL SHED ALARM
- UV-1 LOW INTENSITY
- UV-2 LOW INTENSITY
- CLAIRIFIER PUMP LEAK
- CLAIRIFIER PUMP ON
- VFD #1 ON
- VFD #1 NOT IN AUTO
- VFD #1 AT MIN SPEED
- VFD #1 FAULT
- VFD #2 RUNNING
- VFD #2 FAULT
- TRANSFER SWITCH NOT IN AUTO
- CYCLONE PUMP 1 RUNNING
- CYCLONE PUMP 2 RUNNING
- CYCLONE PUMP 3 RUNNING
- CYCLONE PUMP 4 RUNNING
- CACP ACKNOWLEDGE
- DIALER ALARM FOLLOWER

CONTINUED NEXT COLUMN

CONTINUED FROM PREVIOUS COLUMN

PLC INPUTS CONT'D

- VOLTAGE RELAY
- UPS BATTERY

ANALOG INPUTS

- TT CPW
- TT GW
- TT SW
- FIT GW2A / FI GW2A (REQUIRES POWER SUPPLY)
- LT W1
- LT W2
- LT W4
- FIT GW1
- FIT GW2
- FIT GW4
- FIT AGW
- FIT GWI
- FIT CW
- FIT SWH
- FIT HW
- LIT SW
- LIT GW

CONTINUED NEXT COLUMN

CONTINUED FROM PREVIOUS COLUMN

\+ −

ANALOG OUTPUTS

- ZC CPW
- SIC VFD1
- SIC VFD2

NOTES:
1. CABINET TEMP RANGES FROM −35 TO 105 DEGREES F.
2. PROVIDE HINGED NEMA 1 CABINET SIZED TO HOLD COMPONENTS.

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1986 LOWELL SHELTON
EXPIRES 06/30/08
4/10/06
Engineer Seal

HDR | FISHPRO

NO.	W/O	COMPUTER REVISION ONLY	BY	DATE	APPROVED

C=CONTRACT CONSTR., FA=FORCE ACCOUNT CONSTR., R=RECORD FILE NAME: LRH_E26_NEOH.dgn

Design SM
Drawn KCP
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

PLC INPUTS AND OUTPUTS SHEET 2

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
___	__	E26	OF	

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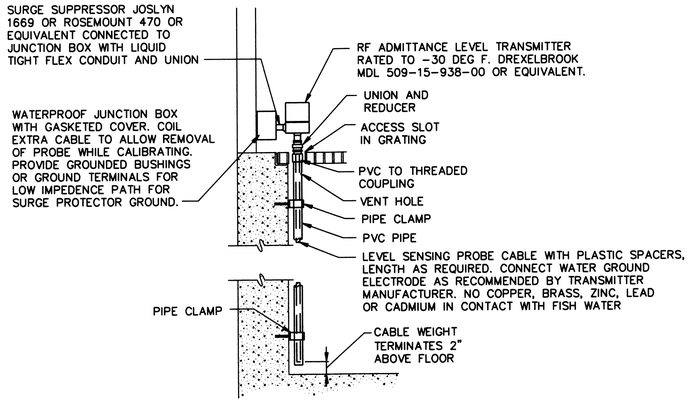
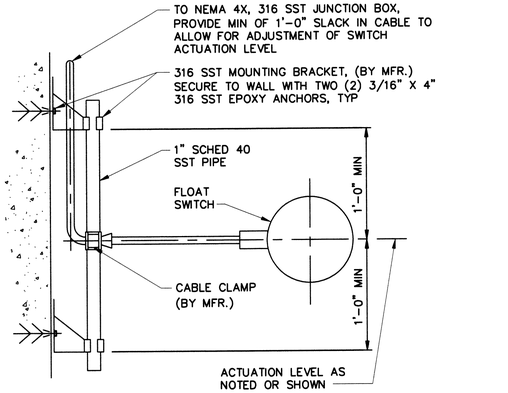


LEVEL TRANSMITTER AT HEADTANK

NO SCALE

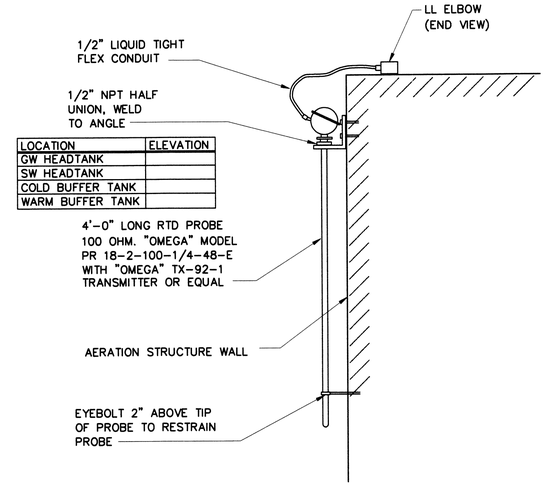
1 E9 E27



FLOAT SWITCH INSTALLATION

NO SCALE

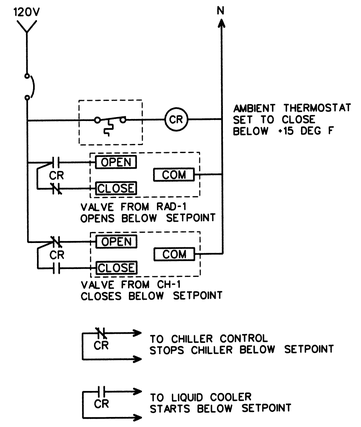
3 VAR E27



RTD TEMPERATURE PROBE

NO SCALE

5 E9 E27

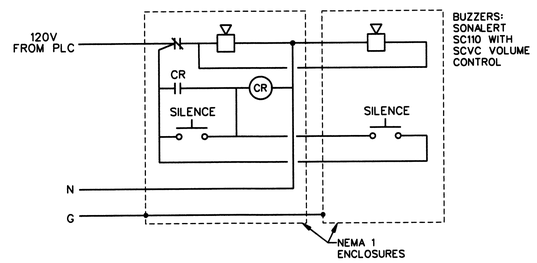


NOTES:

1. MOTORIZED VALVE WIRING MAY BE DIFFERENT THAN SHOWN. WIRE PER SHOP DRAWINGS.
2. THERMOSTAT DEADBAND MUST BE AT LEAST 4 DEG F TO PREVENT CYCLING, BUT NOT GREATER THAN 10 DEG F.
3. COMPONENTS TO MEET UL508A REQUIREMENTS.

CHILLER LOOP VALVES CONTROLLER

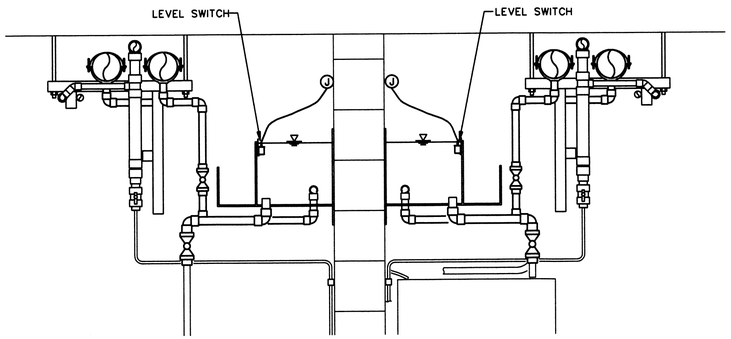
2 E9 E27



RESIDENCE ALARM BUZZERS

QTY: 2 (TWO BUZZERS PER RESIDENCE, FOR 4 BUZZERS TOTAL)

4 E1 E27



MIX BOX LEVEL SWITCH

6 E5 E27

NOTE:

1. FLOAT SWITCHES ARE WIRED IN SERIES FOR ALL MIX BOXES ALONG A WALL. (42) FLOAT SWITCHES TOTAL.
2. PROVIDE A METHOD TO DISABLE SWITCHES IN UNUSED MIX BOXES.

NO.	W/O	COMPUTER REVISION ONLY	BY	DATE	APPROVED

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REGISTERED PROFESSIONAL ENGINEER 10634PE W. LOWELL SHELTON OREGON JULY 15, 1988
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

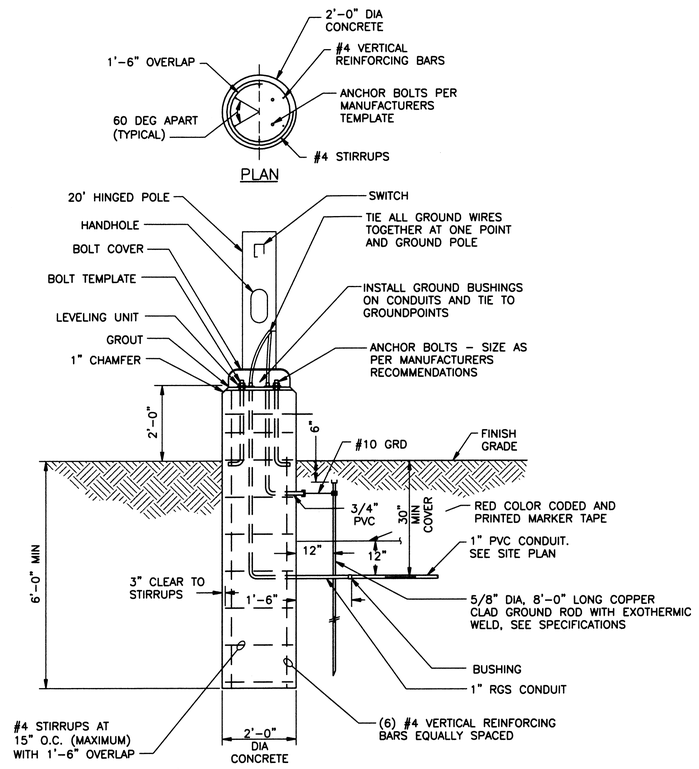
Design SM
Drawn SLS
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

INSTRUMENT DETAILS I

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
___	__	E27	OF	



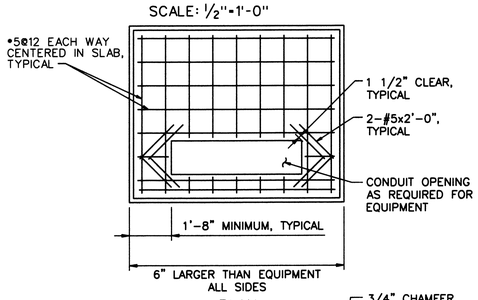
NOTE:
WHEN POURING CONCRETE DO NOT DROP CONCRETE THROUGH WATER IF WATER IS PRESENT IN HOLE.

LIGHT POLE BASE DETAIL

1 / E29

0 1 2 4 6 FT

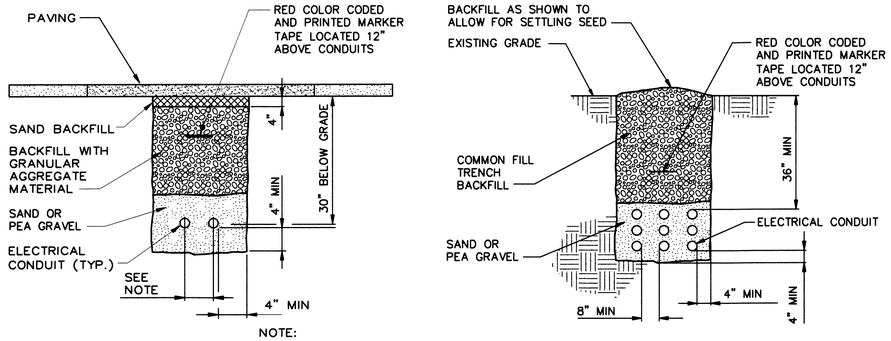
SCALE: 1/2"=1'-0"



REINFORCED CONCRETE PAD FOR OUTDOOR ELECTRICAL EQUIPMENT

2 / E1 E29

NO SCALE

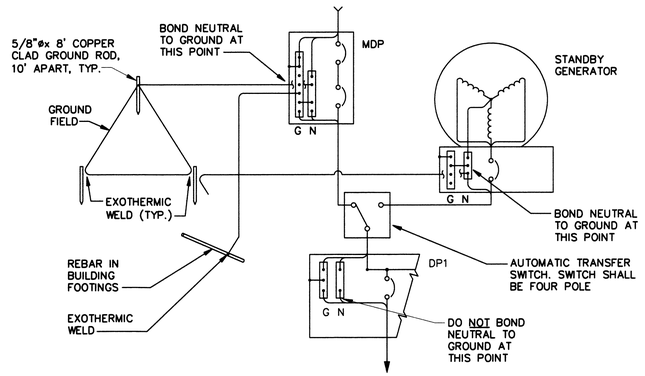


NOTE:
8" MIN BETWEEN LOW VOLTAGE CONTROL, DATA, OR COMMUNICATIONS CONDUIT AND POWER CONDUITS, 2" MIN OTHERWISE.

TYPICAL TRENCH DETAILS

3 / E7 E29

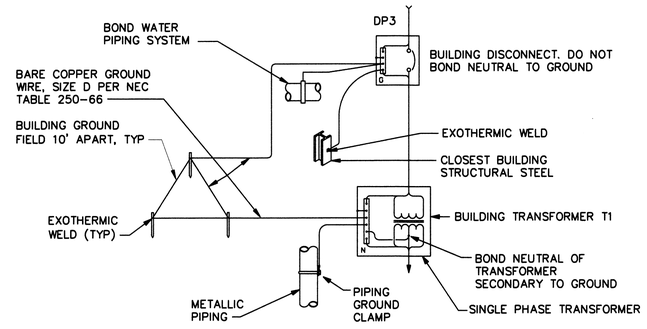
NO SCALE



UTILITY SERVICE GROUNDING DIAGRAM

4 / E6 E29

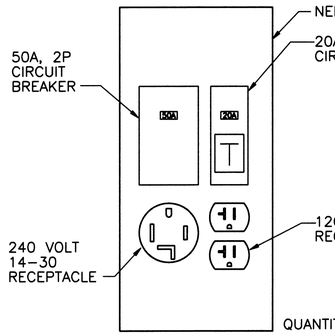
NO SCALE



BUILDING GROUNDING DIAGRAM WITH TRANSFORMER

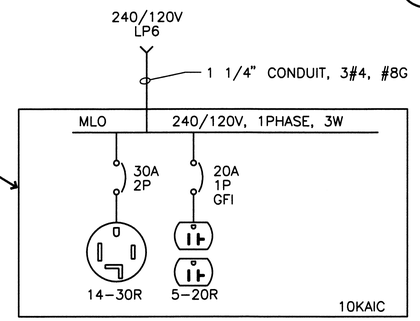
7 / E1 E29

NO SCALE



NEMA 3R ENCLOSURE SQUARE D, MIDWEST OR MILBANK

6 / E1 E29



POWER OUTLET PANEL

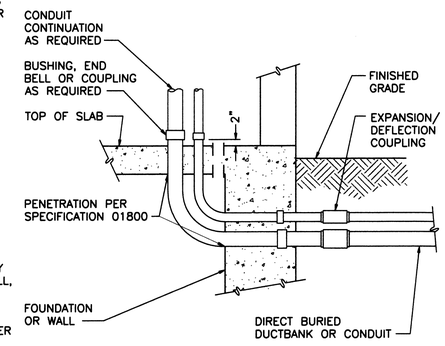
8 / E1 E29

NO SCALE

POWER OUTLET PANEL

6 / E29 E29

NO SCALE



CONDUIT TRANSITION TO ABOVE GRADE (EXTERIOR TO INTERIOR)

5 / E29

NO SCALE

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REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1986 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

Design	SM
Drawn	SLS
Chkd	WLS
Sub	
Rec	
Rec	
Appr	
Date	04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

ELECTRICAL DETAILS I

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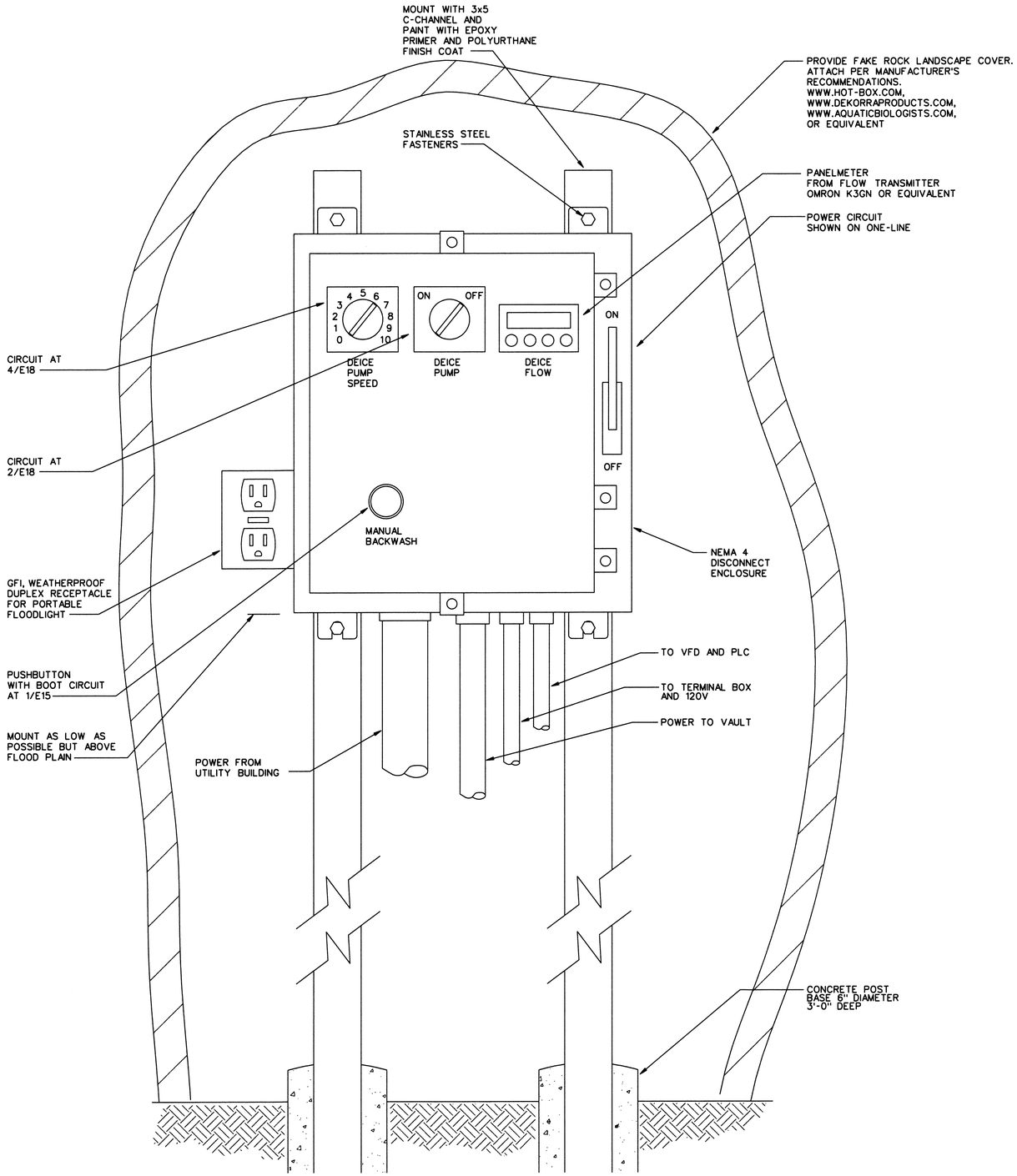
___	__	E29	OF	



INTAKE CONTROL BOX

SCALE: NONE

1 / XX|XX

LOADCENTER SCHEDULE

NAME: T5 - LP5
INTAKE STRUCTURE

TRANSFORMER: 9 kVA, 3 PHASE, NEM 1 ENCLOSURE.
PRIMARY VOLTAGE: 480 VOLTS DELTA — PRIMARY BREAKER: 20 AMP 3 POLE
SECONDARY VOLTAGE: 120 208 VOLTS 3 PHASE 4 WIRE, WYE. — SECONDARY BREAKER: 30 AMP 3 POLE

BRANCH BREAKERS

ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	LEFT PHASE C	RIGHT PHASE A	RIGHT PHASE B	RIGHT PHASE C	CKT NO.	AMP RAT.	POLE	ITEM
LIGHTS	1	20	1	0.20			0.80			2	20	1	RECEPTACLES
SUMP PUMP	1	20	3		1.18			0.01		4	20	1	PANELMETER DISPLAY
HEAT TRACE	1	20	5			1.00			1.00	6	20	1	FLOODLIGHT RECEPTACLE
EXHAUST FAN	1	20	7	0.86			0.13			8	20	1	AIR BACKWASH PANEL
SPEED CONTROL TRANSMITTER	1	15	9		0.01					10			
			11							12			
			13							14			
			15							16			
			17							18			
			19	-						20			
SURGE PROCTECTOR	3	-	21		-					22			
			23			-				24			
				1.06	1.19	1.00	0.93	0.01	1.00				
				1.99	1.20	2.00	kVA PER PHASE						
				17	10	17	AMPS PER PHASE						

MOUNTING: SURFACE; FLUSH X
FEEDER: TOP; BOTTOM
TOTAL CONNECTED VA: 5190
INTEGRAL EQUIPMENT INTERRUPTING RATING: 10,000 AMPS RMS SYMMETRICAL

PANELBOARD SCHEDULE

NAME: DP7
INTAKE STRUCTURE 480V

VOLTAGE: 480 VOLTS, 3 PHASE, 3 WIRE. DELTA
ENCLOSURE: NEMA 1
MAINS 90 AMPS
MCB X
MLO

BRANCH BREAKERS

ITEM	POLE	AMP RAT.	CKT NO.	LEFT PHASE A	LEFT PHASE B	LEFT PHASE C	RIGHT PHASE A	RIGHT PHASE B	RIGHT PHASE C	CKT NO.	AMP RAT.	POLE	ITEM
			1	3.00			-			2			
9KVA LOADCENTER	3	20	3		3.00			-		4	-	3	SURGE PROTECTOR
			5			3.00			-	6			
			7	7.47			0.30			8			
20HP COMPRESSOR	3	50	9		7.47			0.30		10	15	3	SUMP PUMP 0.5 HP
			11			7.47			0.30	12			
			13	2.10						14			
5HP BLOWER	3	15	15		2.10					16			
			17			2.10				18			
				12.57	12.57	12.57	0.30	0.30	0.30				
				12.87	12.87	12.87	kVA PER PHASE						
				46	46	46	AMPS PER PHASE						

MOUNTING: SURFACE X; FLUSH
FEEDER: X TOP; BOTTOM
TOTAL CONNECTED LOAD: 38.61KVA
INTEGRAL EQUIPMENT INTERRUPTING RATING: 18,000 AMPS RMS SYMMETRICAL.

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 18, 1986 W. LOWELL SHELTON
EXPIRES 06/30/06
Engineer Seal

HDR | FISHPRO

NO.	W/O	COMPUTER REVISION ONLY	BY	DATE	APPROVED

C-CONTRACT CONSTR., FA-FORCE ACCOUNT CONSTR., R-RECORD FILE NAME: LRH_E30_NEOH.dgn

Design SM
Drawn KCP
Chkd WLS
Sub
Rec
Rec
Appr
Date 04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

ELECTRICAL DETAILS 2

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
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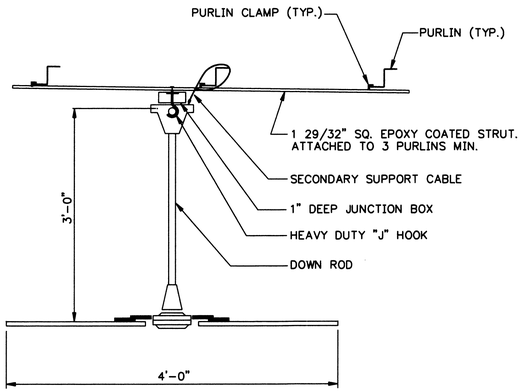
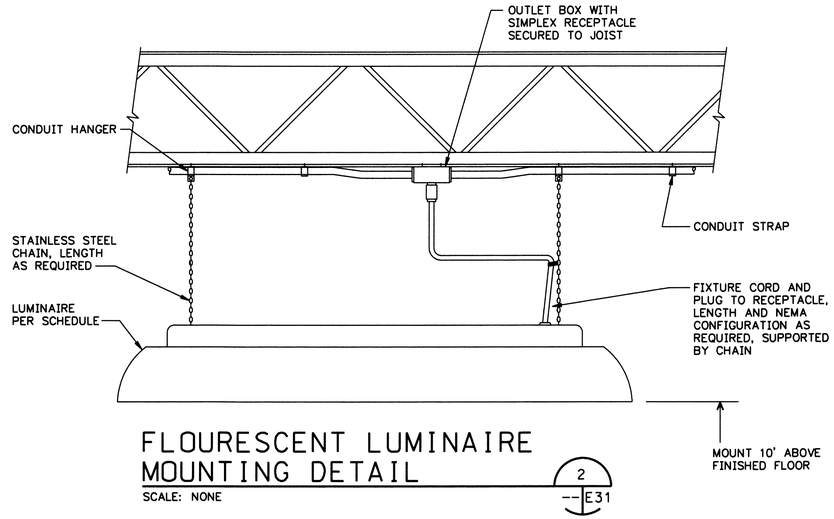


HEAT RECOVERY FAN DETAIL

SCALE: NONE

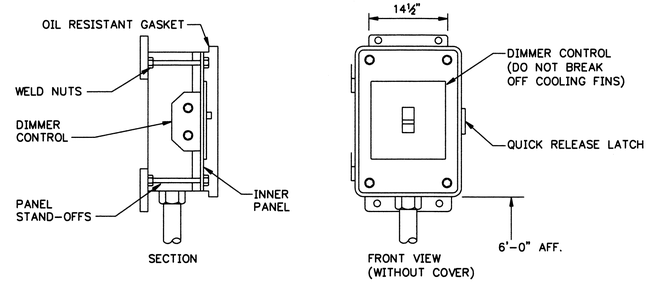
1 / E31



FLOURESCENT LUMINAIRE MOUNTING DETAIL

SCALE: NONE

2 / E31



AT INCUBATION ROOMS AND ADULT HOLDING STRUCTURE

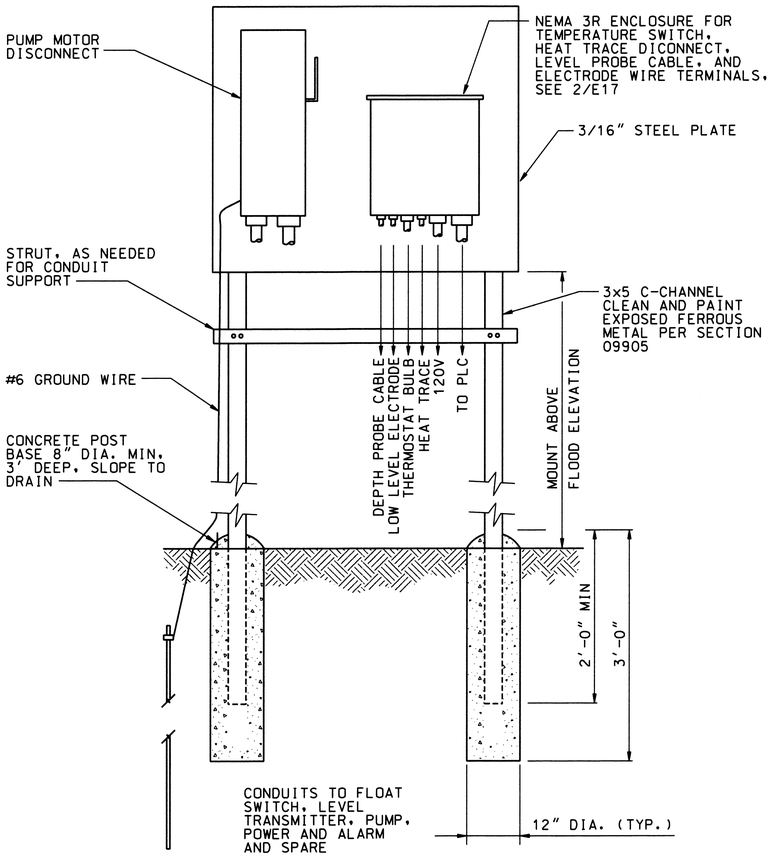
NOTES:

1. DIMMER ENCLOSURE SHALL BE 8"x6"x4", NEMA TYPE 12 DRAWN 16 GA. STEEL. LIFT OFF COVER WITH QUICK RELEASE LATCH, AND GRAY POLYESTER POWDER FINISH INSIDE AND OUT.
2. ALL WIRE SHALL BE CONCEALED WITH DIMMER DOOR OPEN.

DIMMER DETAIL

SCALE: NONE

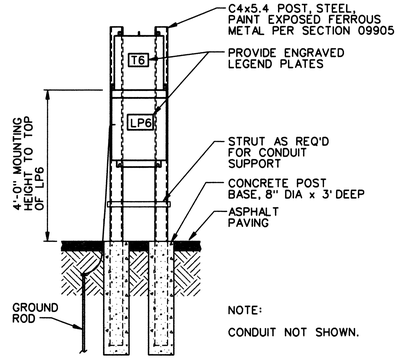
3 / E31



WELL HEAD PANEL

SCALE: NONE

4 / E31

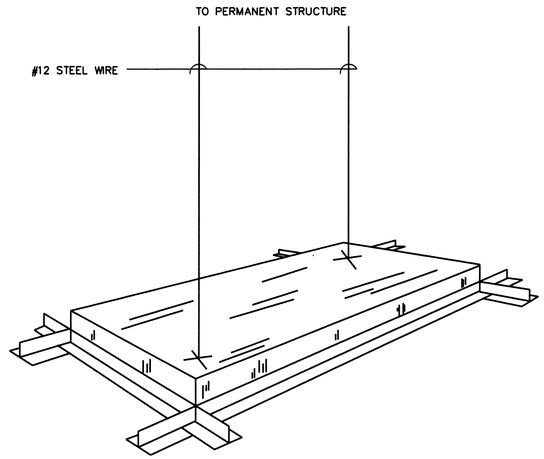


T6-LP6 LOADCENTER

0 1 2 4 6 FT

SCALE: ½"-1'-0"

5 / E31



FIXTURE SUPPORT DETAIL

SCALE: NONE

6 / E31

NOTE

1. TYPICAL FOR 2'x4', 1'x4' AND 2'x2' LIGHTING FIXTURE WITH WEIGHT 56 LBS OR LESS. SUPPORT LIGHTING FIXTURES THAT WEIGHT MORE THEN 56 LBS WITH FOUR STEEL WIRES.
2. X-#12 AWG STEEL WIRE CONNECTIONS

NO.	W/O	COMPUTER REVISION ONLY	BY	DATE	APPROVED
C-CONTRACT CONSTR., FA-FORCE ACCOUNT CONSTR., R-RECORD FILE NAME: LRH_E31_NEOH.dgn					

REGISTERED PROFESSIONAL ENGINEER 10634PE OREGON JULY 31, 1968 W. LOWELL SHELTON
EXPIRES 06/30/06
4/10/06
Engineer Seal

HDR | FISHPRO

Design	SM
Drawn	KCP
Chkd	WLS
Sub	
Rec	
Rec	
Appr	
Date	04/10/06

UNITED STATES DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
HEADQUARTERS, PORTLAND, OREGON

NORTHEAST OREGON HATCHERY PROGRAM
LOSTINE RIVER HATCHERY

ELECTRICAL DETAILS 3

SERIAL	SOURCE	SHEET NO.	SHEET	REVISION
---	--	E31	OF	