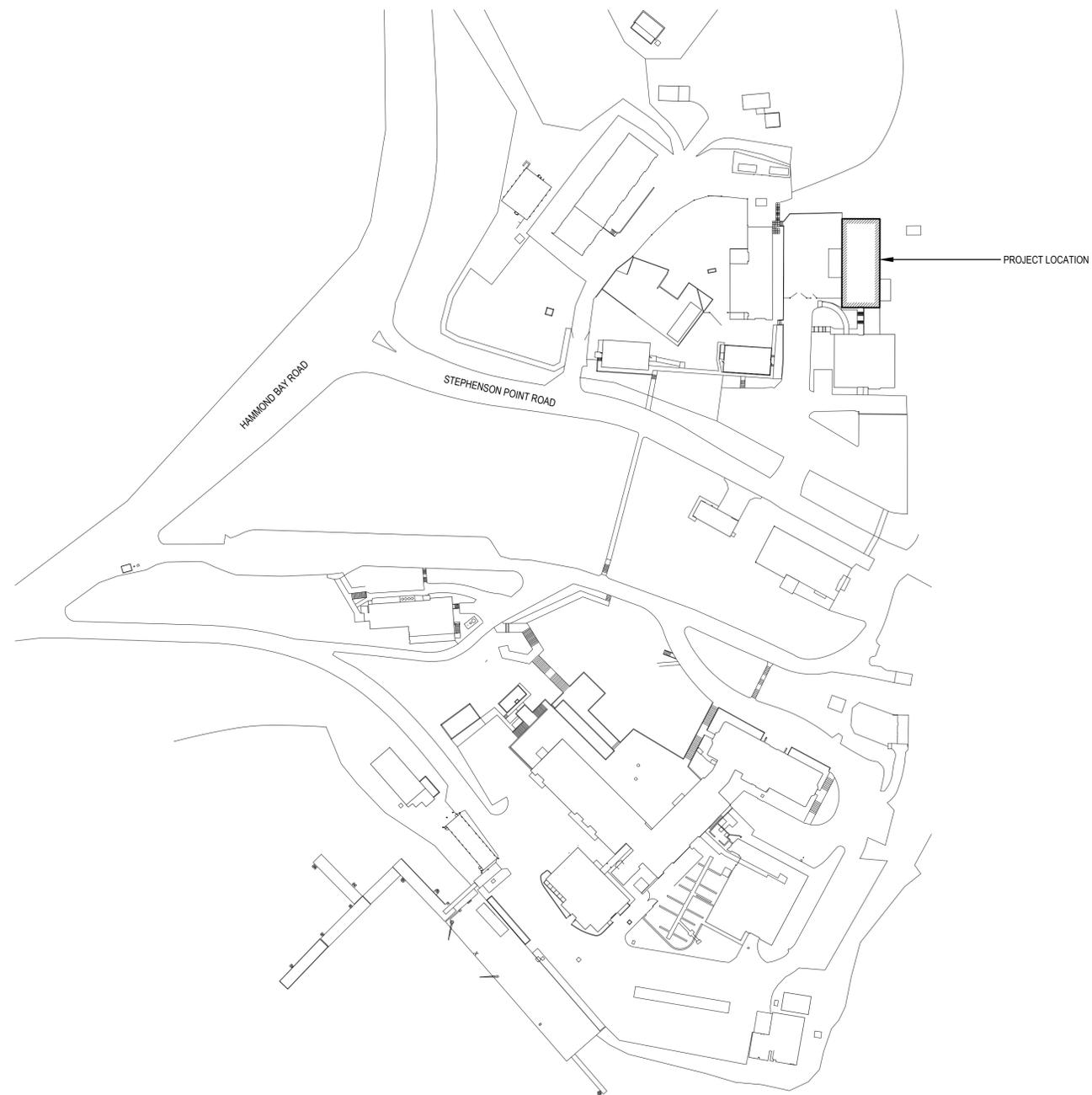


PACIFIC BIOLOGICAL STATION TECHNICAL SERVICES BUILDING

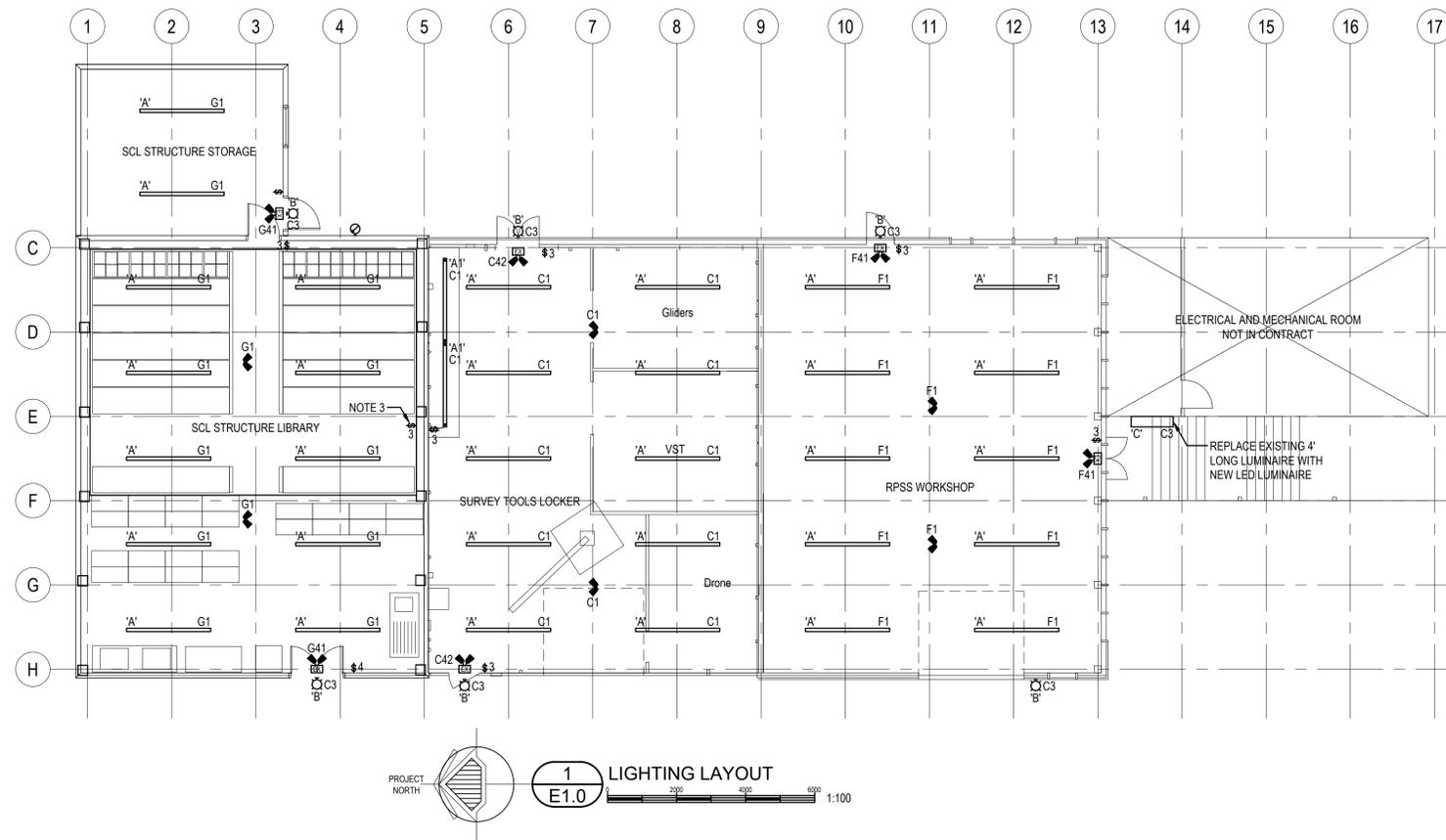
ELECTRICAL AND MECHANICAL UPGRADES

3225 STEPHENSON POINT ROAD, NANAIMO, BC

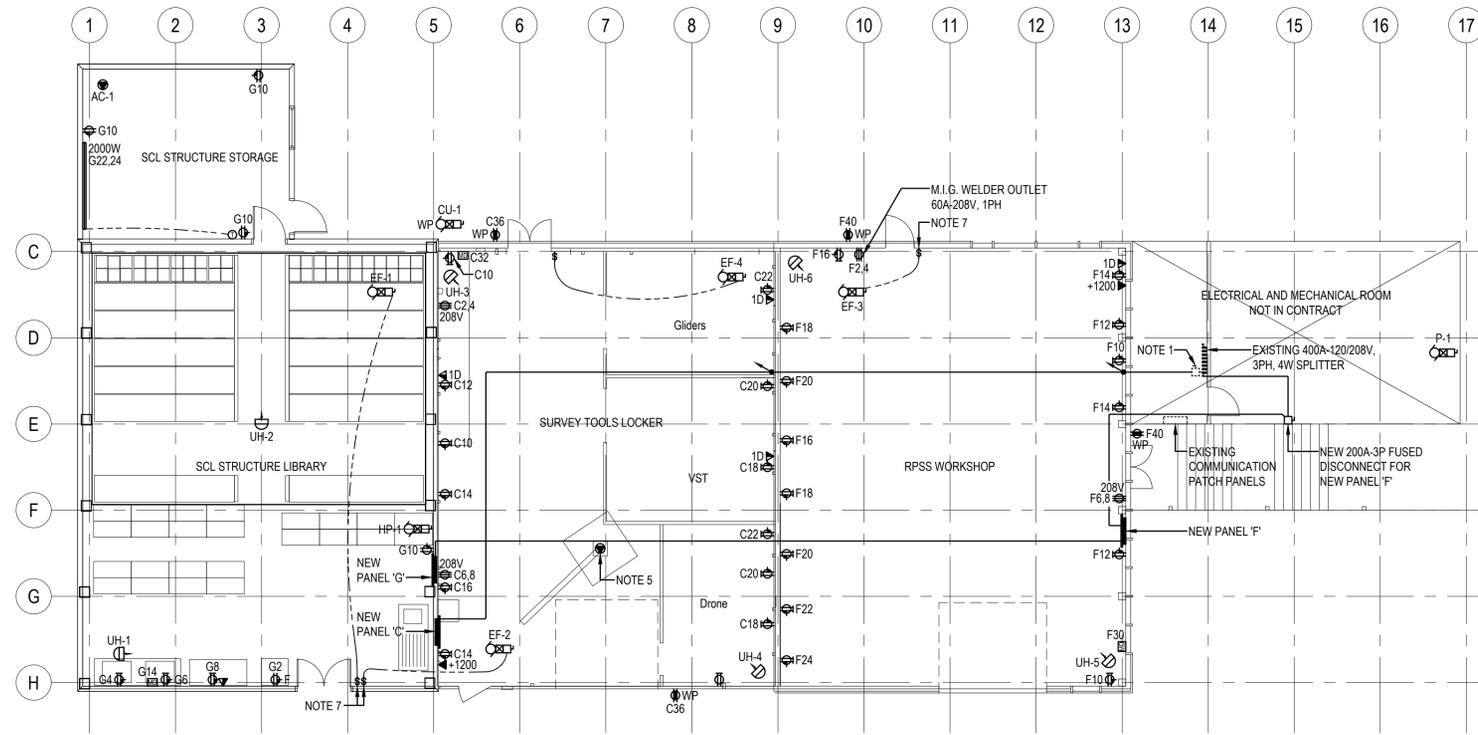
DFO PROJECT #: 5D007



LOCATION PLAN
1:1000



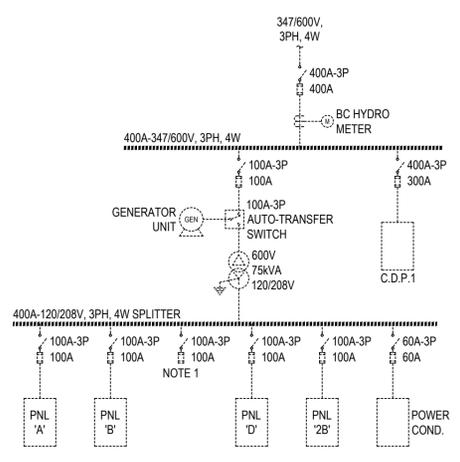
1 LIGHTING LAYOUT
E1.0
1:100



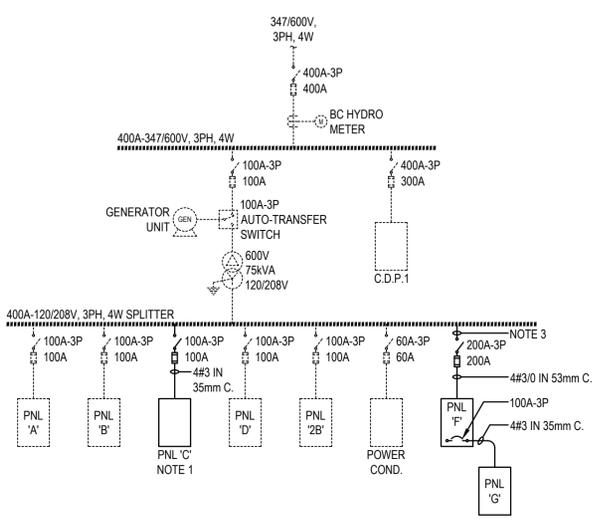
2 POWER DISTRIBUTION AND COMMUNICATION LAYOUT
E1.0
1:100

ELECTRICAL SYMBOL LEGEND	
ABBREVIATIONS	
NOTE	EQUIPMENT SHOWN DOTTED IS EXISTING AND TO REMAIN UNLESS INDICATED OTHERWISE
WP	DENOTES WEATHER PROOF DEVICE
LIGHTING	
[Symbol]	8' LONG SURFACE MOUNTED LUMINAIRE
[Symbol]	8' LONG CEILING SUSPENDED LINEAR LUMINAIRE
[Symbol]	RECESSED DOWN LIGHT
[Symbol]	WALL MOUNTED LUMINAIRE
[Symbol]	SINGLE POLE TOGGLE SWITCH, GANGED AS SHOWN
[Symbol]	THREE WAY TOGGLE SWITCH
[Symbol]	FOUR WAY TOGGLE SWITCH
[Symbol]	PHOTOCELL
[Symbol]	EXIT SIGN WITH INTEGRAL EMERGENCY LIGHTING
[Symbol]	DUAL HEAD EMERGENCY LIGHTING COMPLETE WITH SELF-CONTAINED BATTERY PACK, CEILING MOUNTED
[Symbol]	DUAL HEAD EMERGENCY LIGHTING COMPLETE WITH SELF-CONTAINED BATTERY PACK, WALL MOUNTED
POWER	
[Symbol]	DUPLEX RECEPTACLE
[Symbol]	ABOVE COUNTER DUPLEX RECEPTACLE
[Symbol]	SPECIAL RECEPTACLE
[Symbol]	5-20R DUPLEX RECEPTACLE (T-SLOT)
[Symbol]	ABOVE COUNTER 5-20R DUPLEX RECEPTACLE (T-SLOT)
[Symbol]	GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLE (GFCI)
[Symbol]	FRIDGE/FREEZER RECEPTACLE
[Symbol]	THERMOSTAT
[Symbol]	MECHANICAL EQUIPMENT CONNECTION
[Symbol]	UNIT HEATER
[Symbol]	MECHANICAL MOTOR CONNECTION
[Symbol]	DISCONNECT SWITCH
[Symbol]	MAGNETIC STARTER
[Symbol]	MOTORIZED DAMPER
[Symbol]	PANEL BOARD
[Symbol]	CONDUIT RUN UP
[Symbol]	BASEBOARD HEATER, WATTAGE AS NOTED ON PLANS
COMMUNICATIONS	
[Symbol]	TELEPHONE OUTLET
[Symbol]	DATA DROP, CATEGORY 6 CABLING AND RJ45 JACK
FIRE ALARM	
[Symbol]	FIRE ALARM SMOKE DETECTOR
[Symbol]	FIRE ALARM PULL STATION
[Symbol]	FIRE ALARM SPEAKER
[Symbol]	FIRE ALARM PANEL
ACCESS CONTROLS	
[Symbol]	DOOR STATUS CONTACT
[Symbol]	CARD READER
[Symbol]	KEY PAD
[Symbol]	REQUEST TO EXIT SENSOR
[Symbol]	MAGNETIC DOOR LOCK
[Symbol]	180° WALL MOUNTED INTRUSION MOTION DETECTOR
[Symbol]	INTRUSION ALARM HORN

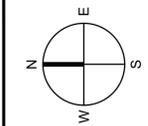
- LIGHTING NOTES:**
- PRIOR TO ROUGH-IN, CONFIRM LOCATION OF NEW INTERIOR PARTITIONS WITH DEPARTMENTAL REPRESENTATIVE. LOCATE LIGHT SWITCH AND LUMINAIRES INSIDE INDIVIDUAL ROOMS. LOCATE SWITCHES ON LATCH SIDE OF DOORS.
 - CONNECT ALL EXTERIOR LIGHTS TO BUILDING MOUNTED PHOTOCELL TEST AND COMMISSION PHOTOCELL AND EXTERIOR LIGHTING.
 - LOCATE LIGHT SWITCH ADJACENT DOOR ON SOUTH WALL.
- POWER AND COMMUNICATION NOTES:**
- RELOCATE EXISTING PANEL 'C' DISCONNECT TO TOP OF EXISTING SPLITTER. REWIRE AND RECONNECT TO SPLITTER AND RUN NEW FEEDER TO NEW PANEL 'C'.
 - MEGGER TEST ALL NEW PANEL FEEDERS. INSERT TEST RESULTS IN OPERATING AND MAINTENANCE MANUALS.
 - RUN 200A (#3/0 Cu) TAP CONDUCTOR IN 53mm C. NO LONGER THAN 7.5m TO 200A-3P DISCONNECT SWITCH.
 - PRIOR TO ROUGH-IN RECEPTACLE OUTLETS, CONFIRM EXACT PLACEMENT WITH DEPARTMENTAL REPRESENTATIVE.
 - NEW JIB CRANE, 120V, 1PH, 3W, 1HP.
 - RUN ALL DATA AND TELEPHONE CABLING IN MINIMUM 27mm EMT TO PATCH PANEL IN ELECTRICAL ROOM.
 - LOCATE EXHAUST FAN SWITCH ADJACENT DOOR.



3 EXISTING SINGLE LINE DIAGRAM
E1.0
NOT TO SCALE



4 REVISED SINGLE LINE DIAGRAM
E1.0
NOT TO SCALE



FISHERIES AND OCEANS CANADA
REAL PROPERTY, SAFETY AND SECURITY

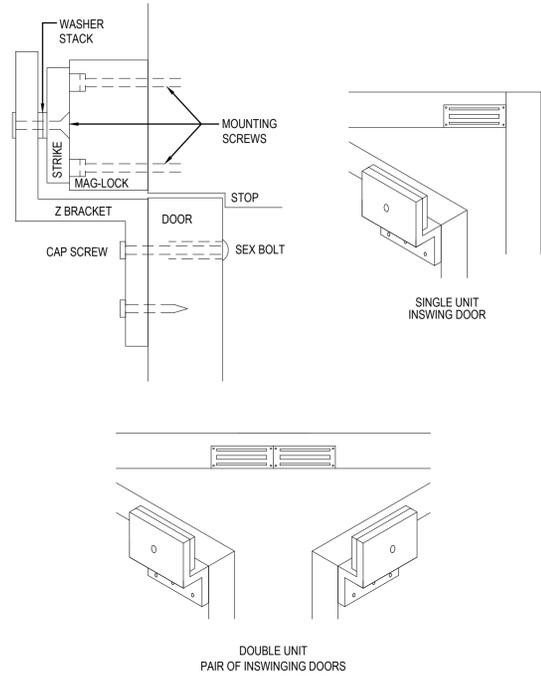
**PACIFIC BIOLOGICAL STATION
TECHNICAL SERVICES BUILDING
ELECTRICAL UPGRADES
LEGEND, DETAILS AND
ELECTRICAL LAYOUTS**

SCALE	AS NOTED
DATE	OCTOBER 2019
DRAWING NUMBER	E1.0
REVISION	2

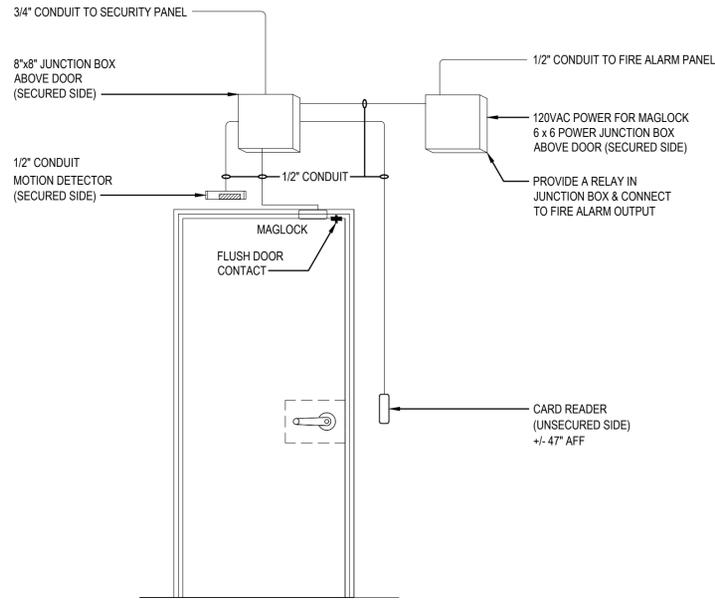
NO.	DATE	REVISIONS
4	2019-11-26	RE-ISSUED FOR TENDER
3	2019-11-20	ISSUED FOR TENDER
2	2019-11-12	ISSUED FOR 100% REVIEW
1	2019-10-17	ISSUED FOR REVIEW

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DWG. NO.	DRAWING REFERENCES	NOTES

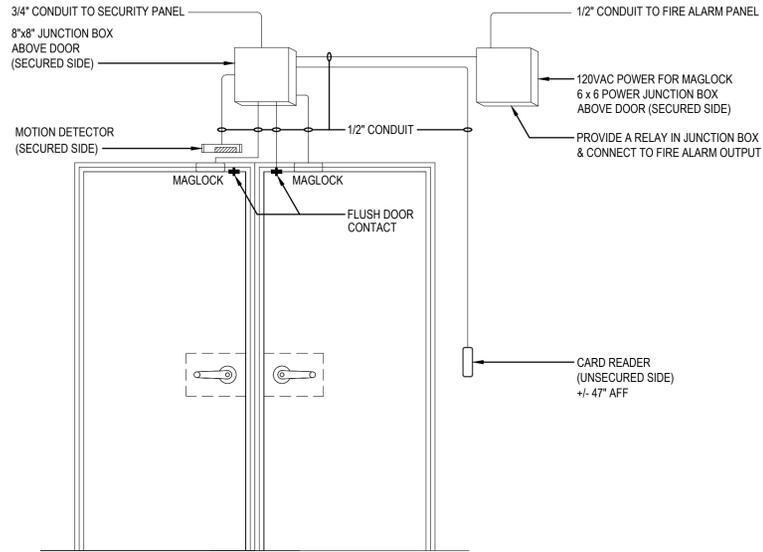


3 TYPICAL ELECTROMAGNETIC MOUNTING
E1.1 NOT TO SCALE



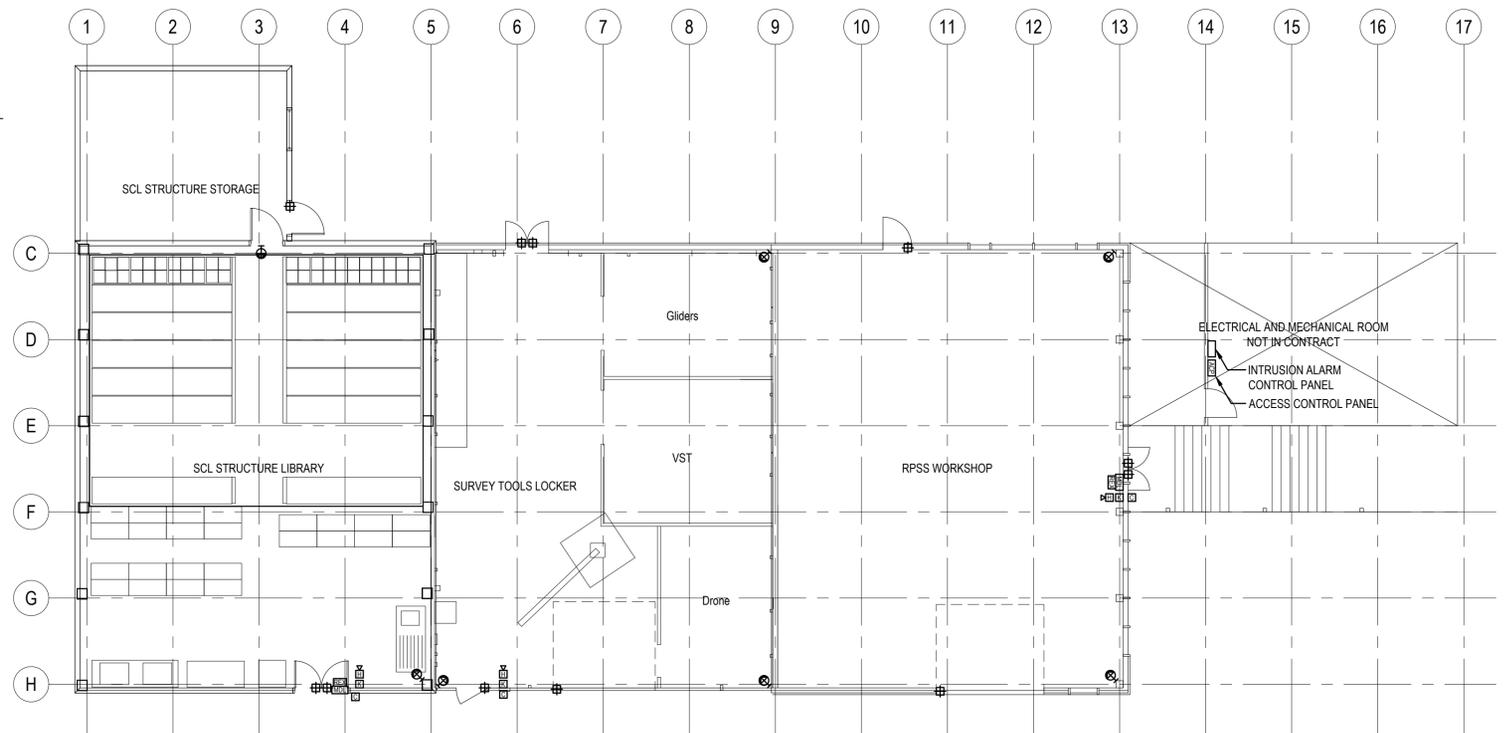
NOTES:
1. CONTRACTOR TO MIRROR INSTALLATION FOR DOORS WITH LATCHES ON OPPOSITE SIDE.

4 DOOR CONTROL - SINGLE DOOR
E1.1 NOT TO SCALE



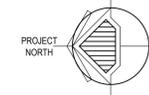
NOTES:
1. CONTRACTOR TO MIRROR INSTALLATION FOR DOORS WITH LATCHES ON OPPOSITE SIDE.

5 DOOR CONTROL - DOUBLE DOOR
E1.1 NOT TO SCALE

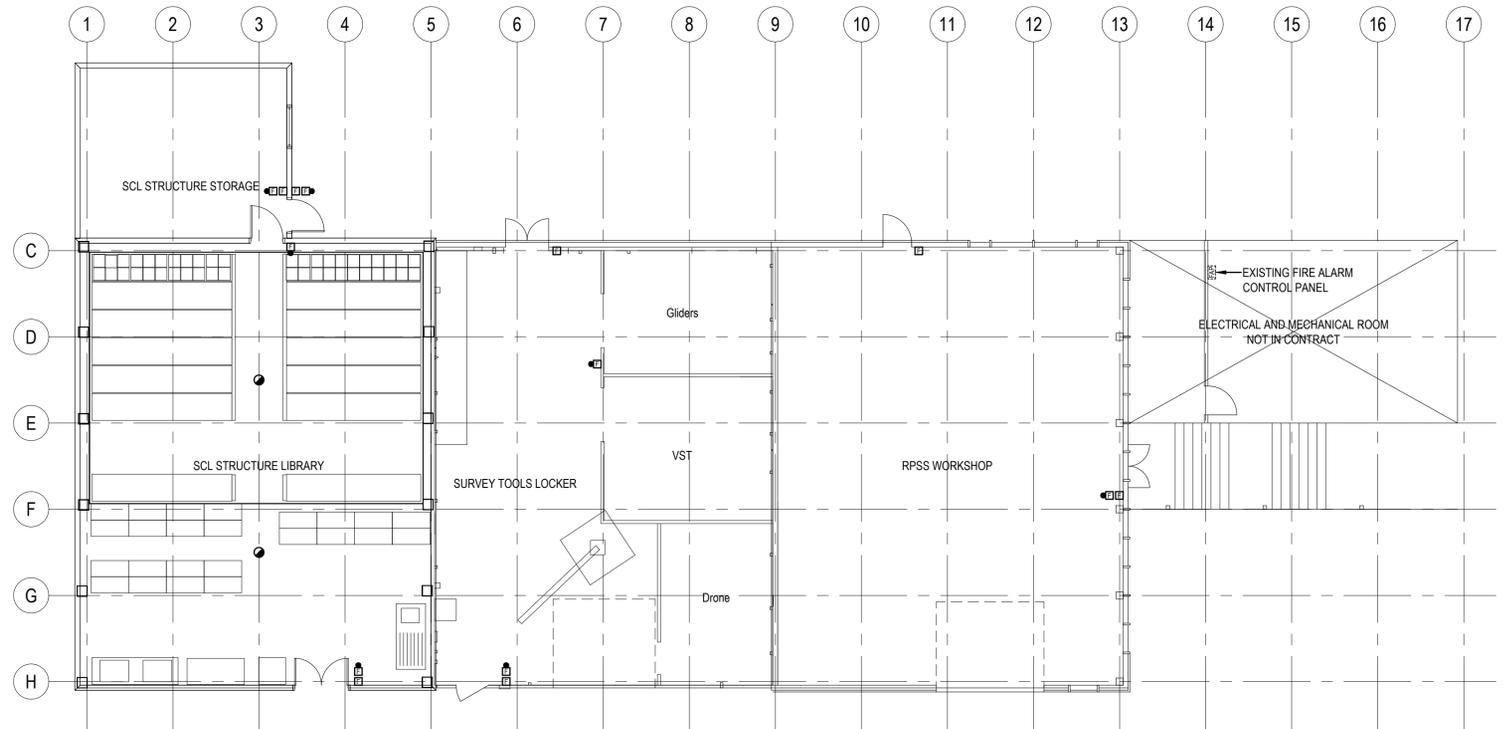


ACCESS CONTROL SYSTEM NOTES:

- ALL DOOR CONTACTS, REX SENSORS, CARD READERS AND MAGNETIC DOOR LOCKS SHALL BE INDIVIDUALLY WIRED TO THE DOOR CONTROLLER FOR CONTROLLED DOORS. FOR NON CONTROLLED DOORS, DAISY-CHAIN DOOR CONTACTS FOR ONE PARTITION TO DOOR CONTROLLED TO MONITOR "DOOR OPEN" STATUS.
- CONNECT 120V POWER FROM EXISTING DOOR CONTROL SYSTEM TO NEW CONTROLLER AND NEW INTRUSION ALARM PANEL.

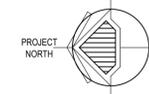


1 ACCESS CONTROL SYSTEM LAYOUT
E1.1 1:100



FIRE ALARM NOTES:

- SUPPLY, INSTALL, WIRE AND CONNECT NEW FIRE ALARM PULL STATIONS, SMOKE DETECTORS AND SPEAKERS TO EXISTING FIRE ALARM CONTROL PANEL.
- INSTALL FIRE ALARM DEVICES TO CAN/ULC-S524.
- TEST AND VERIFY FIRE ALARM SYSTEM DEVICES TO CAN/ULC-S537. PROVIDE VERIFICATION REPORT TO DEPARTMENTAL REPRESENTATIVE.



2 FIRE ALARM SYSTEM LAYOUT
E1.1 1:100

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**PACIFIC BIOLOGICAL STATION
TECHNICAL SERVICES BUILDING
ELECTRICAL UPGRADES**

**ACCESS CONTROLS AND
FIRE ALARM SYSTEM LAYOUTS**

SCALE	AS NOTED
DATE	OCTOBER 2019
DRAWING NUMBER	E1.1
REVISION	2

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DWG. NO.	
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DRAWING REFERENCES	
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NOTES	
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NO.	DATE	REVISIONS
4	2019-11-26	RE-ISSUED FOR TENDER
3	2019-11-20	ISSUED FOR TENDER
2	2019-11-12	ISSUED FOR 100% REVIEW
1	2019-10-17	ISSUED FOR REVIEW

DESIGNED	RTD
DRAWN	RS
CHECKED	RTD
RECOMMENDED	
APPROVED	
APPROVED	

PANELBOARD SCHEDULE

JOB NO./NAME : 1-19-283 / PBS SHOP BUILDING						
PANEL : G						
SYSTEM : 120/208V, 3PH, 4W						
TYPE : SCL STRUCTURE LIBRARY						
LOCATION : SURFACE						
MOUNTING : SURFACE						
NO. CIRCUITS : 42						
BUS SIZE : 100A						
SYM. FAULT RATING : 10KA MINIMUM						
DESCRIPTION	BRK	POLE	CCT	POLE	BRK	DESCRIPTION
LIGHTING	15	1	01	02	1	20 FREEZER
SPARE	15	1	03	04	1	20 SCALE PRESS 1
SPARE	15	1	05	06	1	20 SCALE PRESS 2
SPARE	15	1	07	08	1	20 DESK PLUG
SPARE	15	1	09	10	1	20 PLUGS
SPARE	15	1	11	12	1	15 UH-1,2
SPARE	15	1	13	14	1	15 MOTORIZED DAMPER
SPARE	15	1	15	16	1	15 EF-1
SPARE	20	1	17	18	2	20 HP-1/CU-1
SPARE	20	1	19	20		
SPARE	20	1	21	22	2	15 BASEBOARD HEAT
			23	24		
			25	26		
			27	28		
			29	30		
			31	32		
			33	34		
			35	36	2	60 AC-1
			37	38		
			39	40	1	15 SPARE
			41	42	1	15 MOTORIZED DAMPER
EXIT SIGNS	15	1	41	42	1	15 MOTORIZED DAMPER

* GFCI Breaker

PANELBOARD SCHEDULE

JOB NO./NAME : 1-19-283 / PBS SHOP BUILDING						
PANEL : F						
SYSTEM : 120/208V, 3PH, 4W						
TYPE : RPSS WORKSHOP						
LOCATION : SURFACE						
MOUNTING : SURFACE						
NO. CIRCUITS : 42						
BUS SIZE : 200A						
SYM. FAULT RATING : 10KA MINIMUM						
DESCRIPTION	BRK	POLE	CCT	POLE	BRK	DESCRIPTION
LIGHTING	15	1	01	02	2	60 MIG WELDER
LIGHTING	15	1	03	04		
LIGHTING	15	1	05	06	2	40 208V OUTLET
LIGHTING	15	1	07	08		
LIGHTING	15	1	09	10	1	20 RECEPTACLES
LIGHTING	15	1	11	12	1	20 RECEPTACLES
LIGHTING	15	1	13	14	1	20 RECEPTACLES
LIGHTING	15	1	15	16	1	20 RECEPTACLES
SPARE	20	1	17	18	1	20 RECEPTACLES
SPARE	20	1	19	20	1	20 RECEPTACLES
SPARE	20	1	21	22	1	20 RECEPTACLES
			23	24	1	20 RECEPTACLES
			25	26		
			27	28		
			29	30	1	15 MOTORIZED DAMPER
			31	32	1	15 EF-3
			33	34	1	15 UH-5.6
			35	36	1	15 EXT. RECEPTACLES *
			37	38	3	100 PANEL 'G'
			39	40		
EXIT SIGNS	15	1	41	42		

* GFCI Breaker

PANELBOARD SCHEDULE

JOB NO./NAME : 1-19-283 / PBS SHOP BUILDING						
PANEL : C						
SYSTEM : 120/208V, 3PH, 4W						
TYPE : SURVEY TOOLS LOCKER						
LOCATION : SURFACE						
MOUNTING : SURFACE						
NO. CIRCUITS : 42						
BUS SIZE : 100A						
SYM. FAULT RATING : 10KA MINIMUM						
DESCRIPTION	BRK	POLE	CCT	POLE	BRK	DESCRIPTION
LIGHTING	15	1	01	02	2	40 208V OUTLET
EXTERIOR LIGHTS (TC)	15	1	03	04		
SPARE	15	1	05	06	2	40 208V OUTLET
SPARE	15	1	07	08		
SPARE	15	1	09	10	1	20 RECEPTACLES
SPARE	15	1	11	12	1	20 RECEPTACLES
SPARE	15	1	13	14	1	20 RECEPTACLES
SPARE	20	1	15	16	1	20 RECEPTACLES
SPARE	20	1	17	18	1	20 RECEPTACLES
SPARE	20	1	19	20	1	20 RECEPTACLES
			21	22	1	20 RECEPTACLES
			23	24	1	20 SPARE
			25	26	1	20 SPARE
			27	28	1	20 SPARE
			29	30		
			31	32	1	15 MOTORIZED DAMPER
			33	34	1	15 EF-2
			35	36	1	15 EF-4
			37	38	1	15 UH-3.4
			39	40	1	15 EXT. RECEPTACLES *
			41	42	1	15 EXIT SIGNS

* GFCI Breaker
(TC) TIMECLOCK AND TIMER CONTROLLED WITH MANUAL OVERRIDE SWITCH FOR MANUAL TESTING

LUMINAIRE SCHEDULE

TYPE	BASIS OF DESIGN	CAT. No.	LAMPS	DRIVER	REMARKS
A	PHILIPS CFI DAY-BRITE	5FL-8-80L-835-PPS-UNV	80CRI, 3500K, LED	120V NON-DIMMED	LIGHTING FIXTURES WILL BE SUPPLIED BY DEPARTMENTAL REPRESENTATIVE. ELECTRICAL CONTRACTOR TO WIRE, INSTALL AND COMMISSION LIGHTING AND LIGHTING CONTROLS. LUMINAIRES TO BE SURFACE MOUNTED
A1	SAME AS TYPE 'A' BUT SUSPENDED WITH CABLE	-	-	-	-
B	PHILIPS KEEN	LPW16-20-WW-G3-3-120-BK	70CRI, 3000K, LED	120V NON-DIMMED	EXTERIOR WALL MOUNTED LUMINAIRE. LIGHT FIXTURES SUPPLIED BY DEPARTMENTAL REPRESENTATIVE. ELECTRICAL CONTRACTOR TO WIRE, INSTALL AND COMMISSION LIGHTING AND LIGHTING CONTROLS. 4' LONG VAPOUR TIGHT LED LUMINAIRE WALL MOUNTED SUPPLIED BY DEPARTMENTAL REPRESENTATIVE, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR
C	PHILIPS	-	MIN. 4000lm, 3000K LED	120V	PICTOGRAM STYLE EXIT SIGN SUPPLIED BY DEPARTMENTAL REPRESENTATIVE, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR
EXIT LIGHT	EMERGH-LITE	EP SERIES	LED	120V	EMERGENCY LIGHT, DUAL HEAD LED, SELF-CONTAINED WITH MINIMUM 30-MINUTE RUN-TIME. SUPPLIED BY DEPARTMENTAL REPRESENTATIVE, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR
EM. LIGHTS	EMERGH-LITE	JS-HP SERIES	LED	120V	COMBINATION PICTOGRAM EXIT WITH DUAL EMERGENCY LIGHTING HEADS WITH MINIMUM 30-MINUTE RUN-TIME. SUPPLIED BY DEPARTMENTAL REPRESENTATIVE, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR
COMBI EXIT & EM. LTG	EMERGE-LITE	EP SERIES	LED	120V	

MECHANICAL EQUIPMENT SCHEDULE

Q#	DESCRIPTION	EQUIPMENT LOCATION	LOAD		VOLTS	PHASE	UNIT			STARTER			DISC.			CONTROL			SUPPLY PANEL			WIRE & CONDUIT			NOTE					
			MCA	KW			HP	SUPPLY	CONNECT	DISC.	DISC.	DISC.	DISC.	DISC.	DISC.	DISC.	DISC.	DISC.	DISC.	DISC.	DISC.	DISC.	DISC.	DISC.						
UH-1	RPSS WORKSHOP UNIT HEATER	RPSS WORKSHOP	-	-	FR	120	1	M	M	E	M	M	INT	E	E	E	M	M	T	-	G	SCL LIBRARY	15	1	12	12	2	27	-	-
UH-2	RPSS WORKSHOP UNIT HEATER	RPSS WORKSHOP	-	-	FR	120	1	M	M	E	M	M	INT	E	E	E	M	M	T	-	G	SCL LIBRARY	15	1	12	12	2	27	-	-
UH-3	SURVEY TOOLS LOCKER UNIT HEATER	SURVEY TOOLS	-	-	FR	120	1	M	M	E	M	M	INT	E	E	E	M	M	T	-	C	SURVEY TOOLS	15	1	34	12	2	27	-	-
UH-4	SURVEY TOOLS LOCKER UNIT HEATER	SURVEY TOOLS	-	-	FR	120	1	M	M	E	M	M	INT	E	E	E	M	M	T	-	C	SURVEY TOOLS	15	1	34	12	2	27	-	-
UH-5	SCL LIBRARY UNIT HEATER	SCL LIBRARY	-	-	FR	120	1	M	M	E	M	M	INT	E	E	E	M	M	T	-	F	RPSS WORKSHOP	15	1	38	12	2	27	-	-
UH-6	SCL LIBRARY UNIT HEATER	SCL LIBRARY	-	-	FR	120	1	M	M	E	M	M	INT	E	E	E	M	M	T	-	F	RPSS WORKSHOP	15	1	38	12	2	27	-	-
AC-1	AIR COMPRESSOR	SCL STORAGE	-	-	5	208	1	M	M	E	E	E	INT	E	E	E	M	M	INT	-	G	SCL LIBRARY	60	2	36.38	8	2	27	30.6	-
P-1	BOILER CIRC PUMP	MECH. ROOM	-	-	FR	120	1	M	M	E	M	M	INT	E	E	E	M	M	BC	-	A	ELEC. ROOM	15	1	NOTE 2	12	2	27	-	2
EF-1	EXHAUST FAN	SCL LIBRARY	-	-	FR	120	1	M	M	E	M	M	INT	E	E	E	E	E	SW	-	G	SCL LIBRARY	15	1	16	12	2	27	-	-
EF-2	EXHAUST FAN	SURVEY LOCKER	-	-	FR	120	1	M	M	E	M	M	INT	E	E	E	E	E	SW	-	C	RPSS WORKSHOP	15	1	36	12	2	27	-	-
EF-3	EXHAUST FAN	RPSS WORKSHOP	-	-	1/4	120	1	M	M	E	M	M	INT	E	E	E	E	E	SW	-	F	SURVEY LOCKER	15	1	32	12	2	27	5.8	-
EF-4	EXHAUST FAN	SURVEY LOCKER GLIDERS	-	-	FR	120	1	M	M	E	M	M	INT	E	E	E	E	E	SW	-	C	RPSS WORKSHOP	15	1	38	12	2	27	-	-
HP-1/CU-1	HEAT PUMP	SCL LIBRARY	12.5	-	-	208	1	M	M	E	M	M	INT	E	E	E	M	M	T	-	G	SCL LIBRARY + EXT.	20	2	18.20	12	2	27	10	-

LEGEND
M = DENOTES BY MECHANICAL CONTRACTOR
E = DENOTES BY ELECTRICAL CONTRACTOR
T = THERMOSTAT
INT = INTEGRAL WITH UNIT
SW = H.P. RATED SWITCH
BC = BOILER CONTROL PANEL

NOTES
1. CONFIRM FINAL MECHANICAL EQUIPMENT REQUIREMENTS WITH MECHANICAL CONTRACTOR'S SHOP DRAWINGS AND ADJUST CIRCUIT WIRING AND BREAKER RATING IF REQUIRED AT NO ADDITIONAL COST.
2. PROVIDE AND INSTALL A 15A-1P BREAKER IN EXISTING PANEL AND WIRE TO NEW CIRCULATION PUMP.

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FISHERIES AND OCEANS CANADA
REAL PROPERTY, SAFETY AND SECURITY

**PACIFIC BIOLOGICAL STATION
TECHNICAL SERVICES BUILDING
ELECTRICAL UPGRADES**

SCHEDULES

SCALE AS NOTED
DATE OCTOBER 2019
DRAWING NUMBER **E2.0**
REVISION **2**

D.WG. NO.	DRAWING REFERENCES	NOTES	NO.	DATE	REVISIONS
			4	2019-11-26	RE-ISSUED FOR TENDER
			3	2019-11-20	ISSUED FOR TENDER
			2	2019-11-12	ISSUED FOR 100% REVIEW
			1	2019-10-17	ISSUED FOR REVIEW

