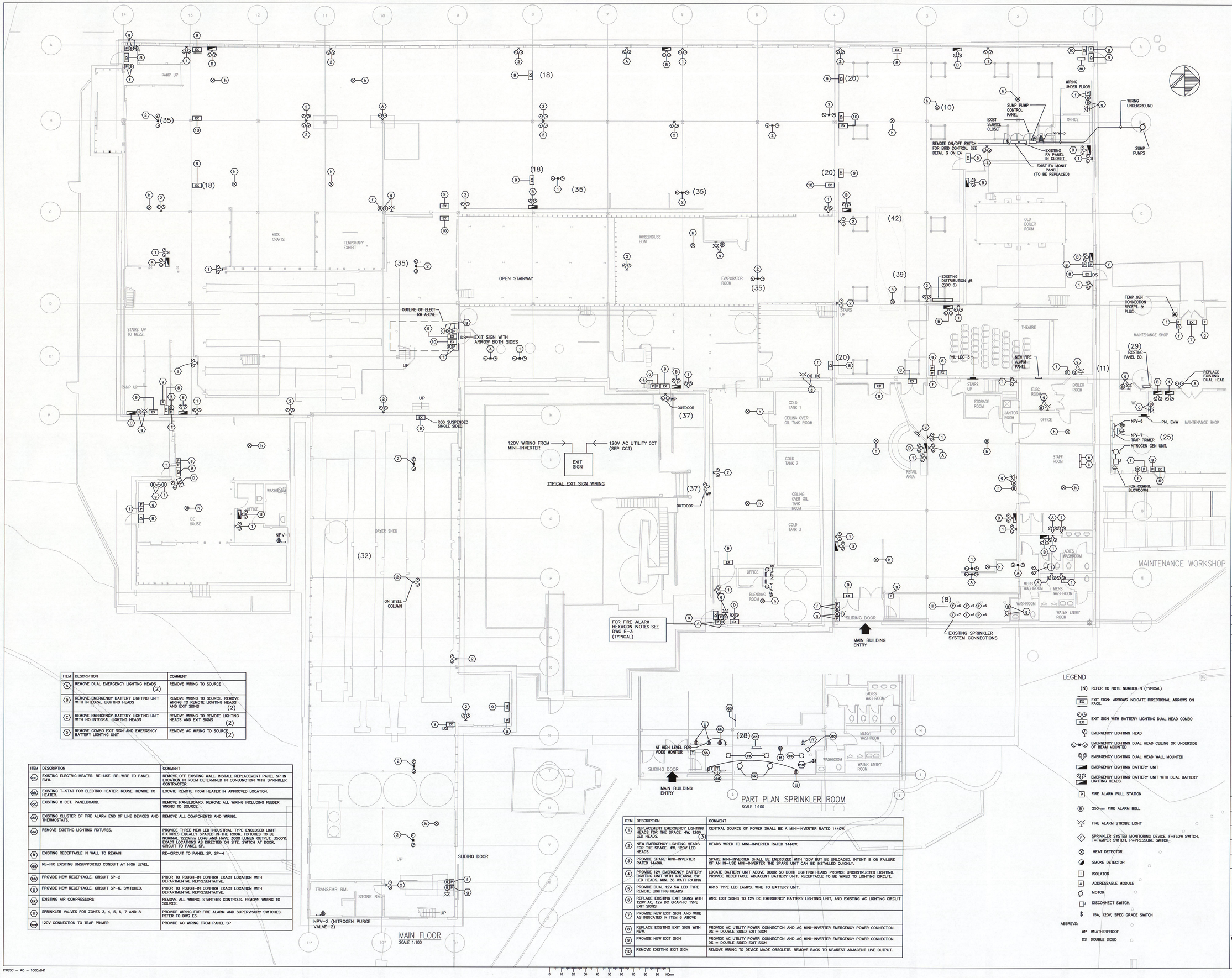

ITEM	DESCRIPTION	COMMENT
(A)	REMOVE DUAL EMERGENCY LIGHTING HEADS (2)	REMOVE WIRING TO SOURCE
(B)	REMOVE EMERGENCY BATTERY LIGHTING UNIT WITH INTEGRAL LIGHTING HEADS	REMOVE WIRING TO SOURCE. REMOVE WIRING TO REMOTE LIGHTING HEADS AND EXIT SIGNS (2)
(C)	REMOVE EMERGENCY BATTERY LIGHTING UNIT WITH NO INTEGRAL LIGHTING HEADS	REMOVE WIRING TO REMOTE LIGHTING HEADS AND EXIT SIGNS (2)
(D)	REMOVE COMBO EXIT SIGN AND EMERGENCY BATTERY LIGHTING UNIT	REMOVE AC WIRING TO SOURCE (2)

ITEM	DESCRIPTION	COMMENT
(aa)	EXISTING ELECTRIC HEATER. RE-USE. RE-WIRE TO PANEL EMW.	REMOVE OFF EXISTING WALL. INSTALL REPLACEMENT PANEL SP IN LOCATION IN ROOM DETERMINED IN CONJUNCTION WITH SPRINKLER CONTRACTOR.
(bb)	EXISTING T-STAT FOR ELECTRIC HEATER. REUSE. REWIRE TO HEATER.	LOCATE REMOTE FROM HEATER IN APPROVED LOCATION.
(cc)	EXISTING 8 CCT. PANELBOARD.	REMOVE PANELBOARD. REMOVE ALL WIRING INCLUDING FEEDER WIRING TO SOURCE.
(dd)	EXISTING CLUSTER OF FIRE ALARM END OF LINE DEVICES AND THERMOSTATS.	REMOVE ALL COMPONENTS AND WIRING.
(ee)	REMOVE EXISTING LIGHTING FIXTURES.	PROVIDE THREE NEW LED INDUSTRIAL TYPE ENCLOSED LIGHT FIXTURES EQUALLY SPACED IN THE ROOM. FIXTURES TO BE NOMINAL 1220mm LONG AND HAVE 3000 LUMEN OUTPUT, 3500K; EXACT LOCATIONS AS DIRECTED ON SITE. SWITCH AT DOOR, CIRCUIT TO PANEL SP.
(ff)	EXISTING RECEPTACLE IN WALL TO REMAIN	RE-CIRCUIT TO PANEL SP. SP-4
(gg)	RE-FIX EXISTING UNSUPPORTED CONDUIT AT HIGH LEVEL.	
(hh)	PROVIDE NEW RECEPTACLE. CIRCUIT SP-2	PRIOR TO ROUGH-IN CONFIRM EXACT LOCATION WITH DEPARTMENTAL REPRESENTATIVE.
(ii)	PROVIDE NEW RECEPTACLE. CIRCUIT SP-6. SWITCHED.	PRIOR TO ROUGH-IN CONFIRM EXACT LOCATION WITH DEPARTMENTAL REPRESENTATIVE.
(kk)	EXISTING AIR COMPRESSORS	REMOVE ALL WIRING, STARTERS CONTROLS. REMOVE WIRING TO SOURCE.
(ll)	SPRINKLER VALVES FOR ZONES 3, 4, 5, 6, 7 AND 8	PROVIDE WIRING FOR FIRE ALARM AND SUPERVISORY SWITCHES. REFER TO DWG E3.
(mm)	120V CONNECTION TO TRAP PRIMER	PROVIDE AC WIRING FROM PANEL SP

ITEM	DESCRIPTION	COMMENT
(1)	REPLACEMENT EMERGENCY LIGHTING HEADS FOR THE SPACE. 4W, 120V LED HEADS. (3)	CENTRAL SOURCE OF POWER SHALL BE A MINI-INVERTER RATED 1440W.
(2)	NEW EMERGENCY LIGHTING HEADS FOR THE SPACE. 4W, 120V LED HEADS.	HEADS WIRED TO MINI-INVERTER RATED 1440W.
(3)	PROVIDE SPARE MINI-INVERTER RATED 1440W.	SPARE MINI-INVERTER SHALL BE ENERGIZED WITH 120V BUT BE UNLOADED. INTENT IS ON FAILURE OF AN IN-USE MINI-INVERTER THE SPARE UNIT CAN BE INSTALLED QUICKLY.
(4)	PROVIDE 12V EMERGENCY BATTERY LIGHTING UNIT WITH INTEGRAL 5W LED HEADS. MIN. 36 WATT RATING	LOCATE BATTERY UNIT ABOVE DOOR SO BOTH LIGHTING HEADS PROVIDE UNOBSTRUCTED LIGHTING. PROVIDE RECEPTACLE ADJACENT BATTERY UNIT. RECEPTACLE TO BE WIRED TO LIGHTING CIRCUIT.
(5)	PROVIDE DUAL 12V 5W LED TYPE REMOTE LIGHTING HEADS	MR16 TYPE LED LAMPS. WIRE TO BATTERY UNIT.
(6)	REPLACE EXISTING EXIT SIGNS WITH 120V AC, 12V DC GRAPHIC TYPE EXIT SIGNS	WIRE EXIT SIGNS TO 12V DC EMERGENCY BATTERY LIGHTING UNIT, AND EXISTING AC LIGHTING CIRCUIT
(7)	PROVIDE NEW EXIT SIGN AND WIRE AS INDICATED IN ITEM 6 ABOVE	
(8)	REPLACE EXISTING EXIT SIGN WITH NEW.	PROVIDE AC UTILITY POWER CONNECTION AND AC MINI-INVERTER EMERGENCY POWER CONNECTION. DS = DOUBLE SIDED EXIT SIGN
(9)	PROVIDE NEW EXIT SIGN	PROVIDE AC UTILITY POWER CONNECTION AND AC MINI-INVERTER EMERGENCY POWER CONNECTION. DS = DOUBLE SIDED EXIT SIGN
(10)	REMOVE EXISTING EXIT SIGN	REMOVE WIRING TO DEVICE MADE OBSOLETE. REMOVE BACK TO NEAREST ADJACENT LIVE OUTPUT.

LEGEND

- (N) REFER TO NOTE NUMBER N (TYPICAL)
- EX EXIT SIGN: ARROWS INDICATE DIRECTIONAL ARROWS ON FACE.
- EX EXIT SIGN WITH BATTERY LIGHTING DUAL HEAD COMBO
- EMERGENCY LIGHTING HEAD
- EMERGENCY LIGHTING DUAL HEAD CEILING OR UNDERSIDE OF BEAM MOUNTED
- EMERGENCY LIGHTING DUAL HEAD WALL MOUNTED
- EMERGENCY LIGHTING BATTERY UNIT
- EMERGENCY LIGHTING BATTERY UNIT WITH DUAL BATTERY LIGHTING HEADS.
- P FIRE ALARM PULL STATION
- B 250mm FIRE ALARM BELL
- FIRE ALARM STROBE LIGHT
- SPRINKLER SYSTEM MONITORING DEVICE. F=FLOW SWITCH, T=TAMPER SWITCH, P=PRESSURE SWITCH
- HEAT DETECTOR
- SMOKE DETECTOR
- I ISOLATOR
- A ADDRESSABLE MODULE
- MOTOR
- DISCONNECT SWITCH.
- $ 15A, 120V, SPEC GRADE SWITCH

ABBREVS:

WP WEATHERPROOF
DS DOUBLE SIDED

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

RATIO
ARCHITECTURE.
INTERIOR DESIGN.
PLANNING.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA L.P. GANDER
June 27, 2018

L.P. GANDER & ASSOCIATES LTD.
CONSULTING ENGINEERS ELECTRICAL

Revision/ Revision	Description/Description	Date/Date
6		
5		
4		
3		
2		
1	Issued for Tender	06/27/2018

Client/client

PARKS CANADA

Project title/Titre du projet

FIRE SPRINKLER REHABILITATION GULF OF GEORGIA CANNERY

Consultant Approval Box Only
-

Designed by/Concept par
LPG

Drawn by/Dessiné par
FN

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC Regional Manager, Architectural and Engineering Services/ Gestionnaire régional, Services d'architecture et de génie, TPSGC
MARK BURGER

Drawing title/Titre du dessin

LIFE SAFETY SYSTEMS UPGRADE

MAIN FLOOR

Project No./No. du projet	Sheet/Feuille	Revision no./ La révision no.
R.089515.001	E1 OF 4	

PWGSC – AO – 1000x841

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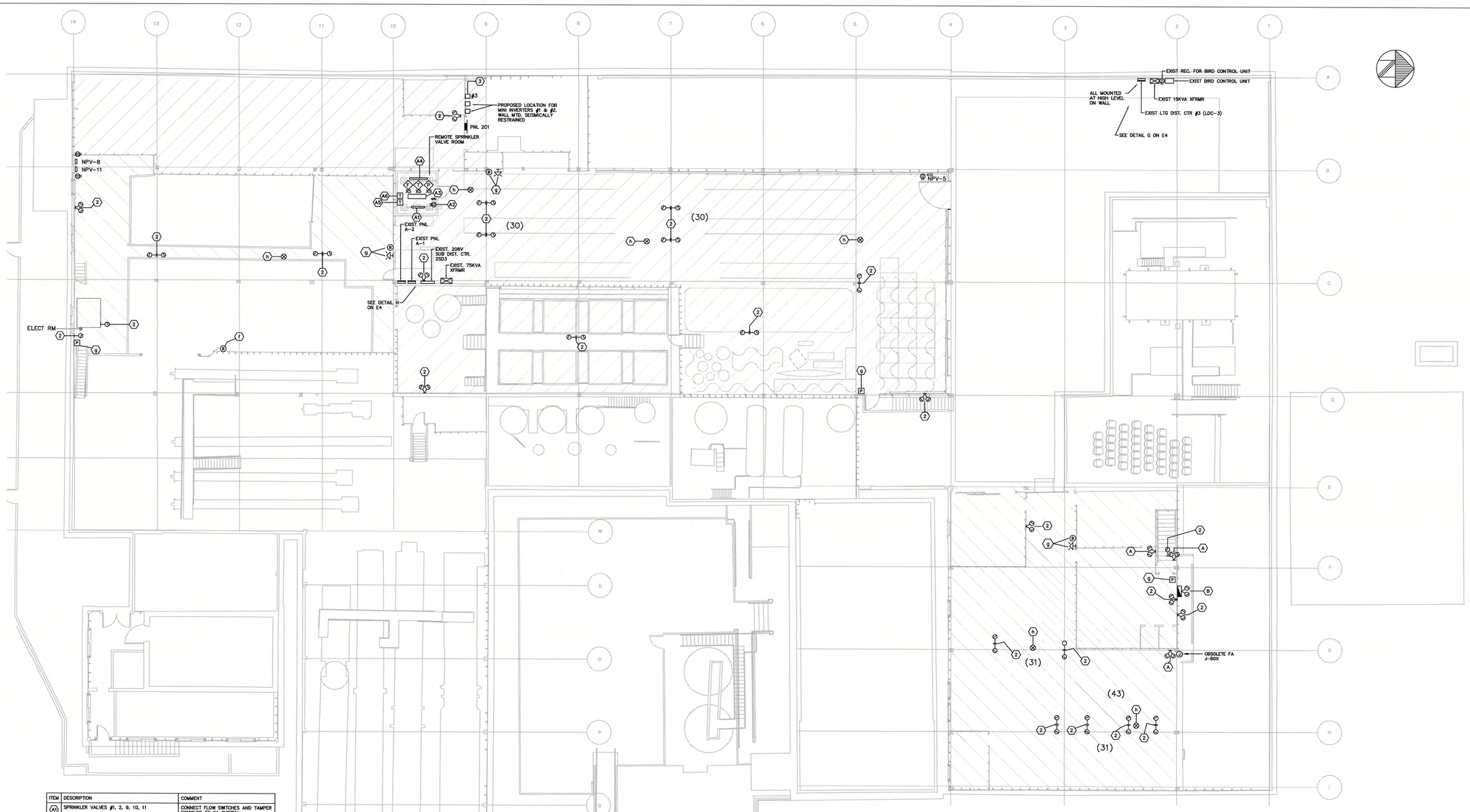
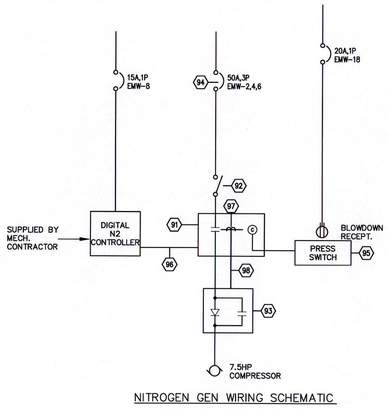


ITEM	DESCRIPTION	COMMENT
A1	SPRINKLER VALVES #1, 2, 9, 10, 11	CONNECT FLOW SWITCHES AND TAMPER SWITCHES TO FA SYSTEM
A2	CONVENIENCE RECEPTACLES	WIRE TO CIRCUIT 2C1-8
A3	1220mm LONG INDUSTRIAL TYPE LED LIGHT FIXTURE WITH CLEAR ACRYLIC ENCLOSURE 3500° LEDs, 3000 LUMEN OUTPUT.	CIRCUIT EM1-12 SURFACE MTD OR CHAIN HUNG. PROVIDE SWITCH AT DOOR.
A4	1 KW 208V BASEBOARD HEATER.	REMOTE THERMOSTAT. CIRCUIT EM1-8,10
A5	REMOTE HEATING THERMOSTAT WITH IN-BUILT THERMOMETER.	LINE VOLTAGE
A6	INDUSTRIAL TYPE DIAL THERMOSTAT WITH TEMPERATURE MARKINGS DOWN TO 0°C	COOLING TYPE THERMOSTAT, CONTACTS CLOSE AS TEMPERATURE FALLS. SET AT 5°C. SEE NOTE #19

MEZZANINE FLOOR
SCALE 1:100

ITEM	DESCRIPTION	COMMENTS
91	DOL STARTER FOR NITROGEN GENERATOR SUPPLIED BY MECHANICAL CONTRACTOR	
92	DISC SWITCH FOR NIGROGEN GENERATOR	PROVIDED BY DIV 26 CONTRACTOR. MOUNT ADJACENT NITROGEN GEN.
93	10HP RATED SOFT STARTER	PROVIDED BY DIV 26 CONTRACTOR. MOUNT ON WALL ADJACENT TO NITROGEN GENERATOR.
94	RETAIN	
95	PRESSURE SWITCH AT NITROGEN COMPRESSOR.	CONTROL FOR DOL STARTER
96	WIRING BETWEEN DOL STARTER AND DIGITAL CONTROLLER FOR NITROGEN SYSTEM.	WIRING IS SUPPLIED BY MECH. CONTRACTOR, INSTALLED IN EMT BY ELECTRICAL CONTRACTOR.
97	SPLIT JAW CURRENT SENSOR RELAY. SENSITIVE ENOUGH TO DETECT AS LOW AS A FEW mA.	WHEN PRESSURE SWITCH SIGNALS DOL NITROGEN GEN TO START THE LOAD SIDE SOFT STARTER STARTS.
98	INTERCONNECTING CONTROL WIRING BY ELECTRICAL CONTRACTOR.	IN EMT



NITROGEN GEN WIRING SCHEMATIC

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LIFE SAFETY SYSTEMS UPGRADE

MEZZANINES

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R.089515.001	E2 OF 4	

PWGSC – AO – 1000x841

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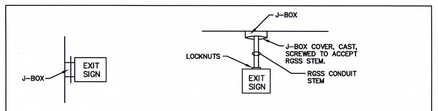
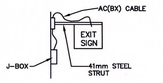


DETAIL 1.

DETAIL 2.



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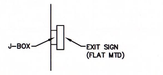


DETAIL 4.

NOTES:

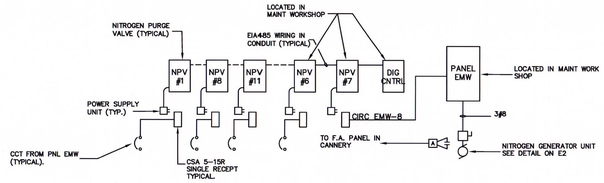
a. ALL EXIT SIGNS SHALL BE VISIBLE FROM A DISTANCE OF AT LEAST 30 METERS, WHICH MEANS THEY SHALL BE ROD SUSPENDED OR OTHERWISE MADE VISIBLE WITHOUT OBSTRUCTIONS.

b. IN MANY CASES DETAIL 3 OR A VARIATION OF IT MAY HAVE TO BE FABRICATED. FOR THE PURPOSES OF FORMULATING A TENDER PRICE ASSUME THE MATERIAL AND LABOR NECESSARY TO FABRICATE MOUNTING AS INDICATED, FOR ALL EXIT SIGNS SHOWN ON THE FLOOR PLANS, IS TO BE PROVIDED UNDER THIS CONTRACT.

c. ALL EXIT SIGNS SHALL BE RIGIDLY MOUNTED TO BE SQUARE TO BUILDING LINES. IF THE OUTLET BOX TO WHICH THE DEVICE IS TO BE MOUNTED IS NOT SQUARELY AND SOLIDLY MOUNTED IT SHALL HAVE MOUNTING ADJUSTED TO SUIT.

EXIT SIGN DETAILS
NTS

DETAIL 'A'



TYPICAL WIRING DETAILS NITROGEN PURGE SYSTEM (10)

NOTES:

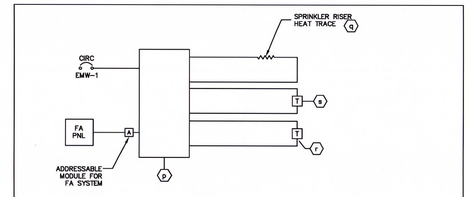
a. POWER SUPPLY UNITS FOR NITROGEN PURGE ANNUNCIATORS AND VALVES SHALL BE PROVIDED WITH RESTRAINT FIXINGS TO PREVENT THE POWER SUPPLY UNIT FROM INADVERTENTLY BEING REMOVED FROM THE RECEPTACLE INTO WHICH IT IS PLUGGED (DIV 26 CONTRACTOR TO SUPPLY RESTRAINT FIXINGS).

b. PROVIDE EIA485 (RS 485) WIRING IN CONDUIT BETWEEN COMPONENTS AS INDICATED. TERMINATE CONDUIT IN ENCLOSURE. TERMINATE WIRING ON TERMINALS. PRIOR TO INSTALLATION CONFIRM COMPLETE WIRING REQUIREMENTS WITH MECHANICAL CONTRACTOR. CONTRACTOR TO NOTE LOCATIONS OF NVP ON FLOOR PLANS. SIGNIFICANT AMOUNT OF EMT REQUIRED TO BE INSTALLED.

c. NITROGEN GEN UNIT SHALL BE MONITORED FOR TROUBLE BY F.A. PANEL IN CANNERY.

d. EXACT LOCATIONS FOR NPV'S SHALL BE AS DETERMINED BY COORDINATION WITH SPRINKLER CONTRACTOR. NOTE THERE ARE TOTAL 11 NVP's

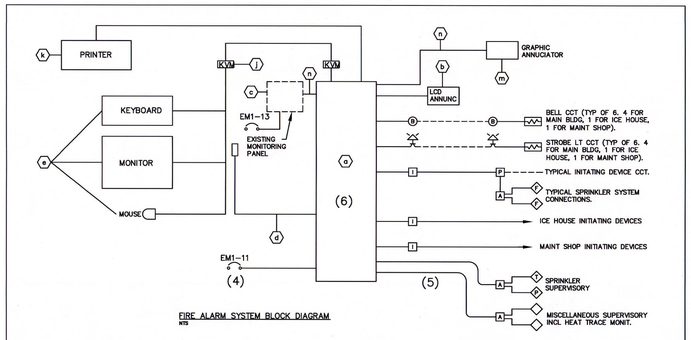
DETAIL 'B'



HEAT TRACE WIRING DETAILS
(TYPICAL FOR 2 SYSTEMS CANNERY)

ITEM	DESCRIPTION	COMMENTS
(a)	SELF-CONTAINED HEAT TRACE MONITOR CONTROL PANEL. LOCATED IN SPRINKLER ROOM. HEAT TRACE MONITOR PANEL SHALL BE SET UP BY AN INDEPENDENT COMPANY FAMILIAR WITH PROGRAMMING THE CONTROL PANEL. PROVIDE VERIFICATION CERTIFICATE PERTAINING TO THE HEAT TRACE MONITOR CONTROL PANEL.	STANDARD OF ACCEPTABILITY DIGITRACE C910, ETI GFT-3. MUST PROVIDE ALARM ON LOSS OF AC POWER, GROUND FAULT ON HEAT TRACE CABLE, LOW TEMPERATURE ON HEAT TRACE CABLE, LOW ROOM TEMPERATURE ALSO. PROVIDE SEPARATE CONTROL PANEL FOR EACH SYSTEM.
(g)	HEAT TRACE ON SPRINKLER PIPES. REFER TO MECHANICAL DRAWINGS FOR PIPES AND LENGTHS TO BE HEAT TRACED.	
(f)	CAPILLARY TYPE RTD THERMOSTAT FOR HEAT TRACE. LOCATED IN CRAWLSPACE ADJACENT TO HEAT TRACE ON PIPE UNDER INSULATION. WIRE IN EMT.	THERMOSTAT TEMPERATURE RANGE TO BE IN CELSIUS AND HAVE A RANGE ABOVE AND BELOW 0'C TO SUIT APPLICATION FOR HEAT TRACE. ALSO BE SUITABLE FOR USE WITH THE HEAT TRACE MONITOR CONTROL PANEL.
(e)	RTD TYPE THERMOSTAT FOR ROOM TEMP MONITORING. WIRE IN EMT.	

DETAIL 'C'



FIRE ALARM SYSTEM BLOCK DIAGRAM
NTS

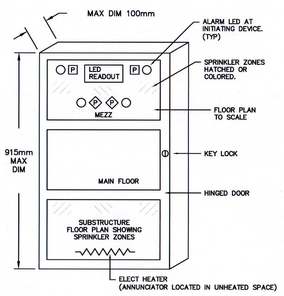
ITEM	DESCRIPTION	COMMENTS
(a)	ADDRESSABLE FIRE ALARM PANEL	IN RETAIL AREA ELECT ROOM
(b)	LCD ANNUNCIATOR AT WORK STATION (STORE PAY AREA)	SURFACE MOUNTED. EXACT LOCATION AT WORK STATION AS DIRECTED ON SITE.
(c)	EXISTING FIRE ALARM MONITORING PANEL	ASSIST THE OWNER IN SOLICITING QUOTE FOR REPLACEMENT OF THE EXISTING SYSTEM A SYSTEM THAT MEETS ULC S561. PROVIDE NEW AC CIRCUIT
(d)	EXISTING AC POWER CONNECTION FOR F.A. PANEL	EXTEND TO NEW F.A. PANEL AND LOCATION FOR MONITOR, PRINTER AND MOUSE. PROVIDE DOUBLE DUPLEX RECEPTACLE IN FS BOX WITH CAST COVERPLATE.
(e)	REMOTE MONITOR, KEYBOARD AND MOUSE	
(f)	REMOVE EXISTING COMPONENT	
(g)	NEW COMPONENT OF TYPE AS INDICATED	
(h)	REMOVE EXISTING HEAT DETECTOR (TYPICAL).	SEE NOTE 7
(j)	PROVIDE KVM EXTENDER FOR REMOTE DEVICES	
(k)	PROVIDE REMOTE PRINTER ADJACENT REMOTE KEYBOARD, MONITOR AND MOUSE	PROVIDE EXTENSION COMPONENTS AS NECESSARY TO ALLOW PRINTER TO BE USED IN REMOTE LOCATION.
(m)	GRAPHIC ANNUNCIATOR ASSEMBLY. SEE SPECIFICATION	SURFACE MOUNTED. PROVIDE 120V CIRCUIT FOR HEATER FROM PANEL EM1.
(n)	PROVIDE NEW WIRING TO SUIT FROM FA PANEL TO MONITORING PANEL	WIRING IN EMT.

FIRE ALARM ZONES FOR SPRINKLERS

a. ZONE 3 (SUBSTRUCTURE) MAIN VALVE ROOM
b. ZONE 4 (SUBSTRUCTURE) MAIN VALVE ROOM
c. ZONE 5 (SUBSTRUCTURE) MAIN VALVE ROOM
d. ZONE 6 (MAINT WORKSHOP) MAIN VALVE ROOM
e. ZONE 7 (MAINT WORKSHOP SUBSTRUCTURE) MAIN VALVE ROOM
f. ZONE 8 (WEST EXTERIOR EXPOSURE) MAIN VALVE ROOM
g. ZONE 1 (SUBSTRUCTURE) MEZZ VALVE ROOM
h. ZONE 2 (SUBSTRUCTURE) MEZZ VALVE ROOM
i. ZONE 9 (SUPERSTRUCTURE) MEZZ VALVE ROOM
j. ZONE 10 (SUPERSTRUCTURE) MEZZ VALVE ROOM
k. ZONE 11 (SUPERSTRUCTURE) MEZZ VALVE ROOM

SUPERVISORY ZONES

a. INCOMING SUPPLY VALVES TAMPER MAIN VALVE ROOM
a. ZONE 3 VALVE TAMPER MAIN VALVE ROOM
b. ZONE 4 VALVE TAMPER MAIN VALVE ROOM
c. ZONE 5 VALVE TAMPER MAIN VALVE ROOM
d. ZONE 6 VALVE TAMPER MAIN VALVE ROOM
e. ZONE 7 VALVE TAMPER MAIN VALVE ROOM
f. ZONE 8 VALVE TAMPER MAIN VALVE ROOM
g. ZONE 10 VALVE TAMPER (REMOTE)
h. ZONE 2 VALVE TAMPER (REMOTE)
i. ZONE 9 VALVE TAMPER (REMOTE)
j. ZONE 10 VALVE TAMPER (REMOTE)
k. ZONE 11 VALVE TAMPER (REMOTE)
l. NITROGEN PURGE TROUBLE MAINT. BLDG.
m. MAIN SPRINKLER VALVE ROOM LOW TEMPERATURE
n. MEZZ SPRINKLER VALVE ROOM LOW TEMPERATURE
o. ZONE 1 LOW N_2 PRESSURE
p. ZONE 2 LOW N_2 PRESSURE
q. ZONE 3 LOW N_2 PRESSURE
r. ZONE 4 LOW N_2 PRESSURE
s. ZONE 5 LOW N_2 PRESSURE
t. ZONE 6 LOW N_2 PRESSURE
u. ZONE 7 LOW N_2 PRESSURE
v. ZONE 8 LOW N_2 PRESSURE
w. ZONE 9 LOW N_2 PRESSURE
x. ZONE 10 LOW N_2 PRESSURE
y. ZONE 11 LOW N_2 PRESSURE
z. ZONE 12 HEAT TRACE TROUBLE SYSTEM 1
oo. ZONE 13 HEAT TRACE TROUBLE SYSTEM 2
ob. MAIN VALVE ROOM LOW TEMP
oc. MEZZ VALVE ROOM LOW TEMP



TYPICAL ACTIVE GRAPHIC LAYOUT
NTS

NOTES:

a. BACK BOX AND TRIM, CUSTOM PAINTED BROWN. EXACT COLOR TO BE ADVISED AT TIME OF SHOP DWG SUBMISSION.

SPECIFICATION FOR PRE-COMMISSIONING OF HEAT TRACE INSTALLATION

a. PERFORM PRE-COMMISSIONING OF HEAT TRACE CABLES.
  a.1. PERFORM 500V DC MEGGER TEST ON CONDUCTORS BEFORE THEY ARE INSTALLED. NOTE READINGS. COMPARE WITH VALUES MANUFACTURER INDICATES ARE ACCEPTABLE.
  a.2. REPEAT MEGGER TEST AFTER INSTALLATION OF HEAT TRACE CABLE. NOTE READINGS. IF THE INSTALLED READINGS ARE NOT WITHIN FIVE PERCENTAGE POINTS OF THE PRE-INSTALLED READINGS INFORM MECHANICAL CONTRACTOR.
b. PERFORM PRE-COMMISSIONING OF HEAT TRACE CONTROLS.
  b.1. FOR EACH ALARM OR TROUBLE CONDITION INPUT PROVIDE AN OFF-NORMAL CONDITION BY EITHER CAUSING THE CONDITION THAT WILL PROVOKE ALARM OR BY SIMULATING THE CONDITION. SPECIFICALLY OPEN BREAKERS TO HEAT TRACE TO SIMULATE LOSS OF POWER. SIMULATE THERMOSTAT/S OPERATION, GROUND FAULT, ETC. PERFORM FOR EACH HEAT TRACE SYSTEM SEPARATELY.
    b.1.1. CONFIRM APPROPRIATE RESPONSE OCCURS.
    b.1.2. CONFIRM AUDIBLE DEVICE SOUNDS
    b.1.3. CONFIRM SILENCE BUTTON SILENCES AUDIBLE DEVICE BUT LIGHT REMAINS OPERATIONAL. (AS APPLICABLE)
    b.1.4. CONFIRM RESET BUTTON CLEARS THE PANEL, ONCE THE ABNORMAL CONDITION IS REMOVED. (AS APPLICABLE)
  b.2. CONFIRM ON BREAKER SUPPLYING HEAT TRACE THAT LOCK-ON DEVICE IS INSTALLED.
c. PROVIDE A REPORT OF ALL PRE-COMMISSIONING ABOVE. PRE-COMMISSIONING SHALL BE PERFORMED BY THE ELECTRICAL CONTRACTOR IN THE PRESENCE OF THE DEPARTMENTAL REPRESENTATIVE.

PANEL EMW					3ø 4W 120/208V 100A
* HEAT TRACE SPRKR RISER	20	1	2	50	7.5 HP NITROGEN GEN COMP
* HEAT TRACE SPRKR MAIN	20	3	4		
LTG CCT MAINT BLDG	15	5	6		
LTG CCT MAINT BLDG	15	7	8	15	NPV ANNUN. NPV-6,7,+DIGITAL CNTL
NPV-1, 2, 10	15	9	10	20	ELECT HEAT MAIN SPRKR ROOM 3KW
NPV-4, 9	15	11	12		
NPV-3, 5, 8, 11	15	13	14	15	ELECT HEAT MEZZ SPRKER RM 1KW
SPARE	15	15	16		
SPACE		17	18	15	AIR COMP BLOWDOWN RECEPT
SPACE		19	20	15	SPARE
SPACE		21	22		SPACE
SPACE		23	24		SPACE

NOTES:
a. SURFACE MOUNTED TRIM
* BRKR TO HAVE 30mA GROUND FAULT DETECTION

PANEL MW	100A MAIN BRKR			3ø 4W 120/208V 100A	
EXISTING CCT RECONNECTED	15	1	2	15	EXISTING CCT RECONNECTED
EXISTING CCT RECONNECTED	15	3	4	15	EXISTING CCT RECONNECTED
EXISTING CCT RECONNECTED	15	5	6	15	EXISTING CCT RECONNECTED
EXISTING CCT RECONNECTED	15	7	8	15	EXISTING CCT RECONNECTED
EXISTING CCT RECONNECTED	15	9	10	15	EXISTING CCT RECONNECTED
EXISTING CCT RECONNECTED	15	11	12	15	EXISTING CCT RECONNECTED
EXISTING CCT RECONNECTED	15	13	14	15	EXISTING CCT RECONNECTED
EXISTING CCT RECONNECTED	15	15	16	15	EXISTING CCT RECONNECTED
EXISTING CCT RECONNECTED	15	17	18	15	EXISTING CCT RECONNECTED
		19	20	15	EXISTING CCT RECONNECTED
EXISTING CCT RECONNECTED	15	21	22	30	EXISTING CCT RECONNECTED
		23	24		
SPARE	15	25	26		SPACE
SPARE	15	27	28		SPCAE
SPARE	15	29	30	15	HEAT TRACE DRAIN *
SPARE	15	31	32	15	SPARE
SPACE		33	34	15	TRAP PRIMER TP-2
SPACE		35	36	15	SPARE
XFER SWITCH	100	37	38	15	SPARE
		39	40	15	SPARE
		41	42	15	SPARE

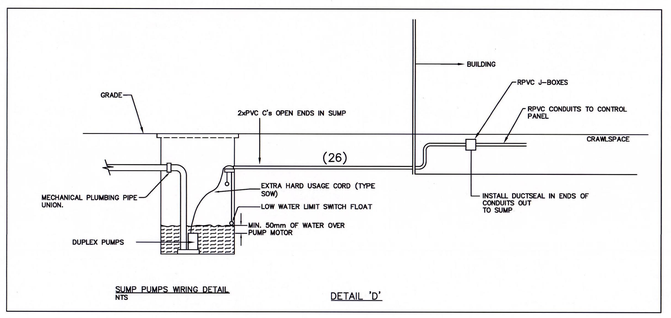
NOTES:
a. FLUSH MTD. TRIM.
b. EXIST CCTS RECONNECTED FROM PANEL REMOVED
* BREAKER TO HAVE 30mA GROUND FAULT DETECTION.

PANEL 2C1					3ø 4W 120/208V 150A
SUMP PUMP CNTL PNL	20	1	2	60	PANEL 'SP'
		3	4		
		5	6		
MEZZ SPRKR VALVE RM. HEATER	15	7	8	15	RECEPT. MEZZ SPR VALVE RM.
		9	10	15	LTG MEZZ SPR VALVE RM.
o MINI INVERTER #1	15	11	12	15	FA ANNUNL HTR
o MINI INVERTER #2	15	13	14	15	SPARE
o MINI INVERTER #3	15	15	16	15	SPARE
EXIT SIGNS	15	17	18	15	HEAT TRACE DRAIN *
SPACE		19	20		SPACE
SPCAE		21	22		SPACE
SPACE		23	24		SPACE

NOTES:
a. SURFACE MOUNTED TRIM
* BREAKER TO HAVE 30mA GROUND FAULT DETECTION.
o. LOCK-ON DEVICE ON BREAKER

(35)

SCHEDULE OF HEAT TRACE REQUIREMENTS				
HEAT TRACE LOCATION AND NOMINAL WATTAGE	CONTROL	COMPONENTS SUPPLIED AND INSTALLED BY MECHANICAL CONTRACTOR	COMPONENTS SUPPLIED AND INSTALLED BY ELECTRICAL CONTRACTOR	CIRCUITING
ON WET SPRINKLER LINE FROM MAIN VALVE ROOM TO REMOTE VALVE ROOM. 1850W, 120V	HEAT TRACE CONTROLLER	HEAT TRACE CABLE	CONTROLLER AND THERMOSTATS REQUIRED FOR CONTROLLER	PANEL EMW, CCT#3
ON DRAIN LINE FROM MAIN SPRINKLER VALVE RM TO SUMP IN YARD. 600W, 120V	THERMOSTAT	HEAT TRACE CABLE AND THERMOSTAT	WIRING TO THERMOSTAT AND CONNECTION TO HEAT TRACE CABLE	PANEL SP, CCT#1
ON DRAIN LINE FROM MAIN SPRINKLER VALVE RM STANDPIPE. 150W, 120V	THERMOSTAT	HEAT TRACE CABLE AND THERMOSTAT	WIRING TO THERMOSTAT AND CONNECTION TO HEAT TRACE CABLE	PANEL SP, CCT#5
ON DRAIN LINE FROM REMOTE SPRINKLER VALVE RM ON MEZZ TO SUMP IN YARD. 900W, 120V	THERMOSTAT	HEAT TRACE CABLE AND THERMOSTAT	WIRING TO THERMOSTAT AND CONNECTION TO HEAT TRACE CABLE	PANEL 2C1, CCT#18
ON MAIN INCOMING WATER LINE (EXISTING)	HEAT TRACE CONTROLLER	HEAT TRACE CABLE	CONTROLLER AND THERMOSTATS REQUIRED FOR CONTROLLER	PANEL EMW, CCT#1
ON DRAIN LINE FROM SPRINKLER SYSTEM IN MAINT. BLDG. 150W, 120V	THERMOSTAT	HEAT TRACE CABLE AND THERMOSTAT	WIRING TO THERMOSTAT AND CONNECTION TO HEAT TRACE CABLE	PANEL MW, CCT#30

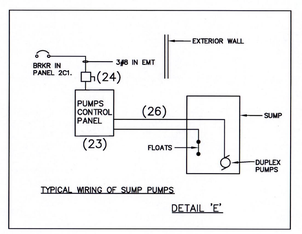


SUMP PUMPS WIRING DETAIL
NTS

DETAIL 'D'

PANEL SP					3ø 4W 120/208V 100A
* HEAT TRACE DRAIN	15	1	2	20	RECEPTACLES SHOP
TRAP PRIMER TP-1	15	3	4	15	RECEPT SPRKR ROOM
* HEAT TRACE DRAIN	15	5	6	20	RECEPTACLES SHOP
SWITCH RECEPT	20	7	8	15	SPR RM LTG.
SWITCH RECEPT	20	9	10	15	FA PANEL o
EXIT SIGNS	15	11	12	15	FA MONIT PNL. o
SPACE		13	14	15	SPARE
SPACE		15	16	15	SPARE
SPACE		17	18		SPACE

NOTES:
a. MIN. 10KA SYMM INT CAP BRKRS
* BREAKER TO HAVE 30MA GROUND FAULT DETECTION.
o. LOCK-ON DEVICE ON BREAKER



TYPICAL WIRING OF SUMP PUMPS

DETAIL 'E'

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada
REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

RATIO
ARCHITECTURE.
INTERIOR DESIGN.
PLANNING.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA L.P. GANDER
June 27, 2018

L.P. GANDER & ASSOCIATES LTD.
CONSULTING ENGINEERS ELECTRICAL

Revision/ Revision	Description/Description	Date/Date
6		
5		
4		
3		
2		
1	Issued for Tender	06/27/2018

Client/client

PARKS CANADA

Project title/Titre du projet

FIRE SPRINKLER REHABILITATION GULF OF GEORGIA CANNERY

Consultant Approval Box Only
-

Designed by/Concept par
LPG

Drawn by/Dessine par
FN

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régional, Services d'architectural et de génie, TPSGC
MARK BURGER

Drawing title/Titre du dessin

LIFE SAFETY SYSTEMS UPGRADE

DETAILS 1

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.089515.001	E3 OF 4	

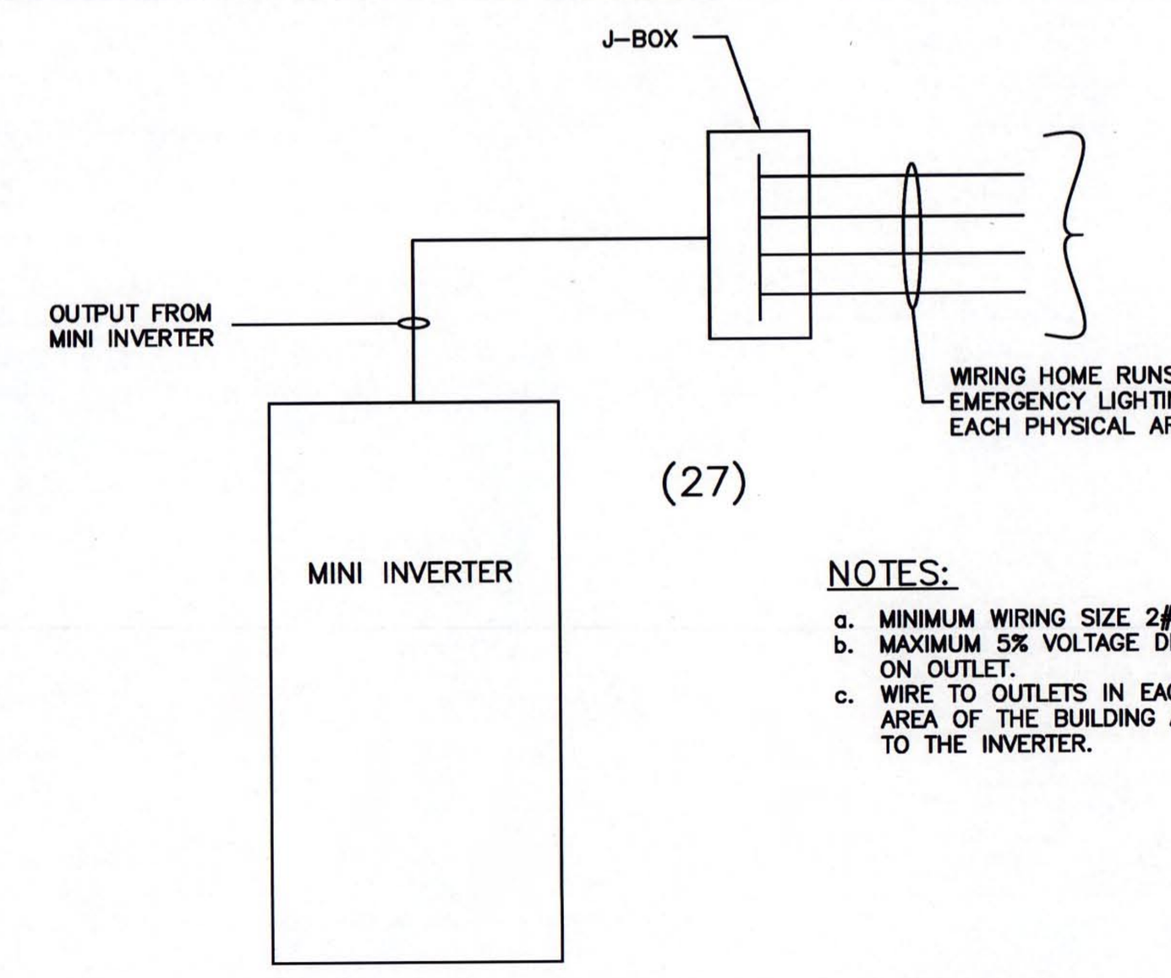
0 10 20 30 40 50 60 70 80 90 100mm

NOTES:

1. WIRING DETAILS
   a. THE FIRE ALARM AND INVERTER EMERGENCY LIGHTING SYSTEMS SHALL BE WIRED IN NEW EMT (OR RIGID PVC CONDUIT AS FURTHER INDICATED) OR IN EXISTING EMT AND OR CONDUIT. ALL CONDUCTORS FOR FIRE ALARM AND EMERGENCY LIGHTING WIRING SHALL BE NEW.
   b. WIRING IN GENERAL SHALL BE INSTALLED TO BE CONCEALED FROM VIEW BY THE PUBLIC, WHERE THIS IS POSSIBLE. TO CONCEAL WIRING FROM VIEW, IT WILL MEAN WIRING IN MANY CA'SES CANNOT BE INSTALLED DIRECT FROM POINT TO POINT. WIRING SHALL BE INSTALLED ON THE TOP SIDES OF JOISTS OR OTHER STRUCTURAL COMPONENTS SO THAT THE WIRING UNDER THIS PROJECT DOES NOT SPAN FROM COMPONENT TO COMPONENT EXPOSED, BUT SHALL BE INSTALLED ON THE SQUARE TO CONCEAL THE WIRING INSTALLED, FROM A VIEW FROM BELOW.
   c. OTHER MEANS OF INSTALLING WIRING SO THAT IT IS ESSENTIALLY "INVISIBLE" IS THAT IT BE INSTALLED EXPOSED ON WIRING RUNS WHERE NUMEROUS OTHER CONDUIT RUNS ARE ADJACENT, AND SO THAT THE NEW WIRING "BLENDS IN."
   d. NEW PROPOSED DEVICE LOCATIONS SHALL BE MARKED WITH MASKING TAPE PRIOR TO INSTALLATION. FURTHER, ONCE MARKED, THE LOCATION SHALL BE REVIEWED BY THE CONTRACTOR FOR HOW THE DEVICE AT THE LOCATION WILL BE WIRED. THE PROPOSED WIRING ROUTING AND PLAN FOR CONCEALMENT SHALL BE MARKED ON THE DRAWING. THEN THE CONTRACTOR SHALL CALL FOR A MEETING ON SITE WITH THE CONSULTANT, THE DEPARTMENTAL REPRESENTATIVE AND THE BUILDING USERS TO GET AGREEMENT ON WIRING ROUTING. MAKE ALLOWANCES FOR ADJUSTMENTS TO LOCATIONS AS MAY BE APPROPRIATE TO BETTER ACCOMMODATE AESTHETIC REQUIREMENTS. NOMINAL ADJUSTMENTS MAY INVOLVE 6 METERS OF EXTRA WIRING FOR EACH DEVICE. INCLUDE THE NECESSARY ALLOWANCE IN TENDER PRICE.
2. REMOVE WIRING TO SOURCE WHETHER IT BE AC CABLE, OR WIRING IN EMT OR CONDUIT. CONDUIT AND EMT TO BE REMOVED AS WELL AS CONDUCTORS.
3. EXISTING BATTERY LIGHTING SYSTEM SHALL REMAIN IN PLACE AND BE OPERATIONAL UNTIL THE NEW EMERGENCY LIGHTING SYSTEM IS INSTALLED. FOLLOWING THAT WORK THE EXISTING BATTERY LIGHTING SYSTEM INCLUDING EMT, WIRING AND BX CABLE SHALL BE REMOVED, INCLUDING AC WIRING TO BATTERY PACKS.
   a. EXISTING EXIT SIGN SYSTEM MAY BE IN TRANSITION AS WORK PROCEEDS WITH SOME OLD AND SOME NEW EXIT SIGNS. FOLLOWING WORK AT EACH EXIT SIGN LOCATION, REMOVE OBSOLETE EXIT SIGN AND WIRING MADE OBSOLETE BY INSTALLATION OF THE NEW SIGNS.
   b. NEW 120V, LED EMERGENCY LIGHTING HEADS PROPOSED LOCATIONS SHALL BE MARKED WITH MASKING TAPE PRIOR TO INSTALLATION. FURTHER, ONCE MARKED, THE LOCATION SHALL BE REVIEWED BY THE CONTRACTOR FOR HOW THE DEVICE AT THE LOCATION WILL BE WIRED. THE PROPOSED WIRING ROUTING AND PLAN FOR CONCEALMENT SHALL BE MARKED ON THE DRAWING. THEN THE CONTRACTOR SHALL CALL FOR A MEETING ON SITE WITH THE CONSULTANT, THE DEPARTMENTAL REPRESENTATIVE AND THE BUILDING USERS TO GET AGREEMENT ON WIRING ROUTING. MAKE ALLOWANCES FOR ADJUSTMENTS TO LOCATIONS AS MAY BE APPROPRIATE TO BETTER ACCOMMODATE AESTHETIC REQUIREMENTS. NOMINAL ADJUSTMENTS MAY INVOLVE 3 METERS OF EXTRA WIRING FOR EACH DEVICE. INCLUDE THE NECESSARY ALLOWANCE IN TENDER PRICE.
4. PAINT FIRE ALARM CIRCUIT BREAKER RED.
5. REPLACEMENT OF FIRE ALARM SYSTEM.
   THERE ARE AT LEAST TWO WAYS THAT THE FIRE ALARM SYSTEM CAN BE REPLACED.
   a. THE EXISTING SYSTEM CAN BE RETAINED IN OPERATION AND THE NEW SYSTEM INSTALLED IN PARALLEL TO IT. WHEN THE NEW SYSTEM IS INSTALLED THE CONDUIT AND WIRING FOR THE OBSOLETE SYSTEM SHALL BE REMOVED.
   b. THE EXISTING SYSTEM CAN BE TAKEN OUT OF SERVICE AND EXISTING CONDUIT BE RE-USED FOR NEW WIRING. IF THIS APPROACH IS USED THAN FOR THE DURATION OF THE TIME THE EXISTING SYSTEM IS OUT OF SERVICE A FIRE WATCH ACCEPTABLE TO THE DEPARTMENTAL REPRESENTATIVE SHALL BE PROVIDED. THE COST OF THE FIRE WATCH SHALL BE PAID FOR BY THE CONTRACTOR AND BE INCLUDED IN THE CONTRACT.
   c. THERE MAY BE A METHOD THAT IS A HYBRID OF a AND b ABOVE SUCH THAT PART OF THE FIRE ALARM SYSTEM IS TAKEN OUT OF SERVICE DURING THE DAY TO INSTALL NEW WIRING BUT THAT AT THE END OF THE DAY THE EXISTING SYSTEM IS RE-INSTATED BUT WITH NEW WIRING. IF THIS METHOD IS PROPOSED THEN VERIFICATION OF THE NEW INSTALLATION SHALL BE PERFORMED PRIOR TO RE-INSTATEMENT OF THIS NEW INSTALLATION ON THE EXISTING SYSTEM. THIS MAY MEAN VERIFICATION AT THE END OF EACH WORK SESSION. IN ANY CASE IF PART OF THE SYSTEM IS LEFT UNFINISHED AT THE END OF A WORK SESSION A FIRE WATCH FOR THE AFFECTED AREA ACCEPTABLE TO THE DEPARTMENTAL REPRESENTATIVE SHALL BE PROVIDED AND PAID FOR BY THE CONTRACTOR. AT THE END OF EACH WORK SESSION WHERE A VERIFICATION HAS BEEN PERFORMED TO PROVE ACCEPTABILITY, THE SYSTEM SHALL BE TESTED ONCE BEFORE BEING RE-CONNECTED AND BEFORE THE CONTRACTOR LEAVES THE SITE.
   d. EXISTING FIRE ALARM PULL STATIONS ARE ALL TOO HIGH TO MEET THE CURRENT ULC S524-14 STANDARD. IF EXISTING CONDUIT SYSTEM IS RE-USED ALL EXISTING PULL STATION OUTLET BOXES SHALL BE LOWERED TO MEET REQUIRED MOUNTING HEIGHT FOR PULL STATIONS, WHICH IS BETWEEN 1050MM AND 1150MM TO CENTER ABOVE FINISHED FLOOR.
   e. NOT ALL THE EXISTING FIRE ALARM SYSTEM HAS BEEN WIRED IN CONDUIT. THERE IS AN AMOUNT OF BX THAT HAS BEEN USED. FOR EXAMPLE IN THE ICE HOUSE. ALL OF THE NEW FIRE ALARM SYSTEM SHALL BE WIRED IN CONDUIT OR EMT.
6. THE NEW FIRE-ALARM PANEL SHALL BE LOCATED AS SHOWN. PROVIDE NEW CIRCUIT FORM PANEL SP AS SHOWN. THE EXISTING FIRE-ALARM PANEL MAY BE USED AS A PULL BOX FOR WIRING THE NEW FIRE-ALARM PANEL. IF USED AS A PULL BOX, ALL GLASS SHALL BE REMOVED FROM THE PANEL DOOR AND BLANK PRIMED SHEET STEEL SHALL BE POP RIVETED IN PLACE. THE COVER OF THE EXISTING BOX SHALL BE PRIMED AND FACTORY FINISH PAINTED RED AND HAVE LAMACOID LABEL INDICATING THAT IT IS A FIRE ALARM PULL BOX.
   a. THE EXISTING FIRE-ALARM MONITORING SHALL BE RE-USED UNTIL IT IS REPLACED WITH NEW. SEE E3.
   b. IF EXISTING FIRE-ALARM PANEL BACK BOX IS TO BE RE-USED AS A PULL BOX PROVIDE INTERCONNECTING CONDUITS BETWEEN NEW PANEL AND OLD BACK BOX AS NECESSARY AND TO SUIT.
7. FIRE ALARM HEAT DETECTORS INDICATED ARE EXISTING BUT NOT IN OPERATION. UNDER THIS CONTRACT ALL EXISTING HEAT DETECTORS AND THEIR WIRING SHALL BE REMOVED. WIRING TO BE REMOVED INCLUDES EMT, AC(BX) CABLE AND RED JACKETED FIRE ALARM CABLE. THE FLOOR PLANS SHOW A NUMBER OF DETECTORS HOWEVER THERE ARE LIKELY TO BE TWICE AS MANY AS INDICATED. MAKE ALLOWANCE FOR REMOVAL OF WIRING AND HEAT DETECTORS IN NUMBER TWICE AS MANY AS INDICATED ON THE PLANS AND THAT WILL BE SCATTERED THROUGHOUT THE FACILITY.
8. FOLLOWING INSTALLATION OF NEW SPRINKLER SYSTEM, CONNECTIONS TO EXISTING SYSTEM SHALL BE REMOVED AND ALL ASSOCIATED WIRING BE REMOVED BACK TO EXISTING FIRE ALARM PANEL (INCLUDING AC(BX) CABLE AND EMT).
9. ALL WIRING FOR ALL SYSTEMS WHERE EXPOSED SHALL NOT INVOLVE DRILLING OF BEAMS OR JOISTS. WIRING WHERE EXPOSED SHALL BE INSTALLED IN CORNERS OF FLOORS AND JOISTS AND SHALL NOT BE EXPOSED ON THE UNDERSIDE OF BEAMS OR JOISTS.
10. NITROGEN PURGE VALVES THROUGHOUT THE CANNERY BUILDING SHALL BE WIRED TO PANEL EMW IN MAINT BLDG. PROVIDE LAMICOID LABEL AT EACH VALVE TO INDICATE CIRCUIT NUMBER.
11. WIRING BETWEEN CANNERY BUILDING AND MAINTENANCE WORK SHOP SHALL BE SUPPORTED BY MEANS OF ONE OR MORE LENGTHS OF 41mmx41mm STAINLESS STEEL CHANNEL. WIRING SHALL BE IN RIGID PVC CONDUIT FIXED TO CHANNEL USING STAINLESS STEEL FIXINGS AND HARDWARE. LOCATE CHANNEL UNDER/ADJACENT EXISTING PIPES CROSSING BETWEEN BUILDINGS.
12. UNLESS INDICATED OTHERWISE ALL ITEMS REMOVED SHALL BE REMOVED FROM SITE AND DISPOSED OF IN AN ENVIRONMENTALLY ACCEPTABLE MANNER.
13. PROVIDE CIRCUIT NUMBER ON COVERPLATE OF NEW RECEPTACLES TO INDICATE PANEL AND CIRCUIT NUMBER.
14. NEW RECEPTACLES TO BE SPECIFICATION GRADE, TYPE AND COLOR TO MATCH EXISTING.
15. PRIOR TO ORDERING PANELBOARD CIRCUIT BREAKERS, COORDINATE WITH MECHANICAL CONTRACTOR TO CONFIRM AMPACITY REQUIREMENTS.
16. ALL FIRE ALARM JUNCTION BOXES THAT ARE NOT VISIBLE TO PATRONS OF THE FACILITIES SHALL HAVE COVERS PAINTED RED. ALL RED TO BE SAME SHADE. REPAINT ALL EXISTING RE-USED BOXES AS NECESSARY FOR BOX COVER TO BE SAME SHADE THROUGHOUT. DO SIMILARLY FOR INVERTER EMERGENCY LIGHTING JUNCTION BOXES EXCEPT COLOUR TO BE DARK BLUE.
17. A NUMBER OF EXISTING FIRE ALARM PULL STATIONS IN THE FACILITY HAVE ACRYLIC LIFT-UP COVERS TO DETER INAPPROPRIATE OPERATION. RELOCATE THESE STOPPING DEVICES (INCLUDING MOUNTING ACCOMMODATIONS) TO THE NEW PULL STATIONS AT THE SAME LOCATION. IF THE EXISTING DEVICES WILL NOT FIT THE NEW STATIONS PROVIDE NEW STOPPER DEVICES THAT WILL SUIT AND FIT.
18. EXIT SIGN SHALL BE DOUBLE-SIDED AND ROD SUSPENDED TO BE CLEARLY VISIBLE WITHIN THE EXIT PATH.
19. PROVIDE IN EACH SPRINKLER ROOM A COOLING THERMOSTAT WITH DIAL TEMPERATURE MARKINGS DOWN TO 0°C. THE THERMOSTAT SHALL BE SET AT 5°C AND BE MONITORED BY THE FIRE ALARM SYSTEM TO PROVIDE A SUPERVISORY ALARM IF THE TEMPERATURE DIPS BELLOW 5° C. PROVIDE A LAMACOID LABEL AT EACH THERMOSTAT TO STATE: "THERMOSTAT MONITORED FOR TEMPERATURE. DO NOT CHANGE SETTING"
20. EXIT SIGN SHALL BE SINGLE SIDED AND ROD SUSPENDED TO BE CLEARLY VISIBLE FROM THE SOUTH. PROVIDE WALL BRACKET AS MAY BE NECESSARY TO ROD SUSPEND EXIT SIGN.
21. THE WALL UPON WHICH 4SDC-6 IS LOCATED IS HIGHLY VISIBLE TO THE PUBLIC. REPLACE THE 60A SWITCH THAT FEEDS THE MAINTENANCE BUILDING IN SAME LOCATION.
22. PANEL 'SP' SHALL BE INSTALLED IN SPRINKLER ROOM IN LOCATION TO SUIT. COORDINATE WORK WITH SPRINKLER CONTRACTOR TO AVOID LOCATION CONFLICTS.
23. LOCATE SUMP PUMP CONTROL PANEL IN CLOSET. RELOCATE COMPONENTS AND WIRING TO CREATE SPACE AS NECESSARY.
24. DISCONNECT SWITCH FOR SUMP PUMP SHALL HAVE FACILITY FOR PADLOCKING ON AND OFF. PROVIDE LAMICOID LABEL ON DISC SW. TO SAY "DISC SW FOR SUMP PUMP IN NORTH YARD"
25. PROVIDE 120V SEP CCT FROM PANEL MW IN WORKSHOP FOR TRAP PRIMER.
26. UNDERGROUND FEEDS TO SUMP PUMP TO BE IN RIGID PVC CONDUIT ON 75mm SAND BED WITH 75mm SAND COVER. BACK FILL WITH 9mm MINUS ROAD MULCH COMPACTED IN 200mm LIFTS. RE-INSTATE PAVEMENT TO EXISTING THICKNESS. REMOVE EXCESS EXCAVATED MATERIAL FROM SITE. EXIT THE GROUND UNDER THE BUILDING AND INSTALL WIRING IN CRAWLSPACE TO SUMP PUMPS CONTROL PANEL.
27. LOAD INVERTER UNITS APPROXIMATELY EQUALLY SO THAT THE LOAD ON EACH IS WITH 10% OF THE OTHER.
28. AT SPRINKLER VALVES LOCATION PROVIDE FIRE ALARM CONNECTIONS SO THAT EACH ITEM CAN BE UNIQUELY IDENTIFIED. SEE MECHANICAL DRAWING F-1 FOR VALVE STATION DETAILS.
29. IN THE MAINTENANCE SHOP THE EXISTING PANEL BOARD IS SINGLE PHASE 3-WIRE WITH ADJACENT MAIN SWITCH. THE WORKSHOP IS FED WITH 3#6 AWG TECK FROM EXISTING DISTRIBUTION CENTER #6 IN THE MAIN BUILDING ON THE WALL OF THE THEATER. THE FEED FROM DISTRIBUTION #6 IS A 3-CONDUCTOR TECK BUT ONLY 2 CONDUCTORS ARE USED. THERE IS A 25 kVA SINGLE PHASE TRANSFORMER ON THE ROOF OF THE WC IN THE MAINTENANCE SHOP. TO PROVIDE 3-PHASE IN THE MAINTENANCE SHOP, DO THE FOLLOWING:
   a. REPLACE THE 25kVA TRANSFORMER WITH A 45 kVA 3-PHASE TRANSFORMER.
   b. RE-USE TECK CABLE. SPLICE AND EXTEND AS NECESSARY. REPLACE SWITCH AT ORIGIN END WITH A 3-PHASE FUSIBLE SWITCH WITH 60A FUSES.
   c. MOUNT TRANSFORMER IN SIMILAR LOCATION TO 25kVA UNIT. PROVIDE UNISTRUT FRAME TIED TO STRUCTURE FOR SEISMIC PURPOSES.
   d. REMOVE SINGLE PHASE PANEL AND MAIN SWITCH. INSTALL IN SAME PLACE, NEW 3-PHASE PANEL MW. CUT FURRING OPEN AS NECESSARY.
   e. CONDUCTORS FROM SECONDARY SIDE OF TRANSFORMER TO PANEL MW SHALL BE 2/0 SIZED.
   f. PROVIDE #6AWG GREEN GROUND BOND CONDUCTOR BACK TO DISTRIBUTION #6. TY-WRAP TO EXISTING TECK CABLE. IF A LOCAL GROUND SYSTEM WAS ESTABLISHED FOR THE 25kVA TRANSFORMER, CABLE TIE THAT INTO THE NEW 45kVA TRANSFORMER SECONDARY STAR POINT. TIE GROUND BOND CONDUCTOR NOTED ABOVE INTO STAR POINT.
   g. RECONNECT ALL EXISTING CIRCUITS INTO PANEL MW EXCEPT FOR LIGHTING CIRCUITS. ARRANGE AND PAY FOR FURRING TO BE RE-INSTALLED AT PANEL TO PRIOR EXISTING CONDITION.
   h. EXTEND ALL EXISTING LIGHTING CIRCUITS TO PANEL EMW.
30. THERE ARE TWO LONG N-S CORRIDORS BESIDE STORAGE RACKING THAT ARE TO BE LIT BY THESE LIGHTING HEADS. LOCATE TO SUIT.
31. THERE ARE 5 E-W CORRIDORS BESIDE STORAGE RACKING THAT ARE TO BE LIT BY THESE LIGHTING HEADS. LOCATE TO SUIT.
32. IN THE DRYER SHED THERE ARE 12 RLM DOME TYPE INCANDESCENT LIGHT FIXTURES THAT ARE BELIEVED TO BE OPERATIONAL BUT WITH BURNED OUT LAMPS. PROVIDE IN THE LIGHT FIXTURES PAR 38 LED INBUILT DRIVER TYPE LAMPS WITH THE FOLLOWING CHARACTERISTICS:
   - CRI = 80 MINIMUM
   - COLOR TEMPERATURE = 3000°K
   - L70 LIFE = 25,000 HRS MINIMUM
   - 40 DEGREE (FLOOD) BEAM PATTERN
   - INPUT WATTS = 32
   - LUMEN OUTPUT = 3000
   - LOCATION RATING = DAMP OR WET

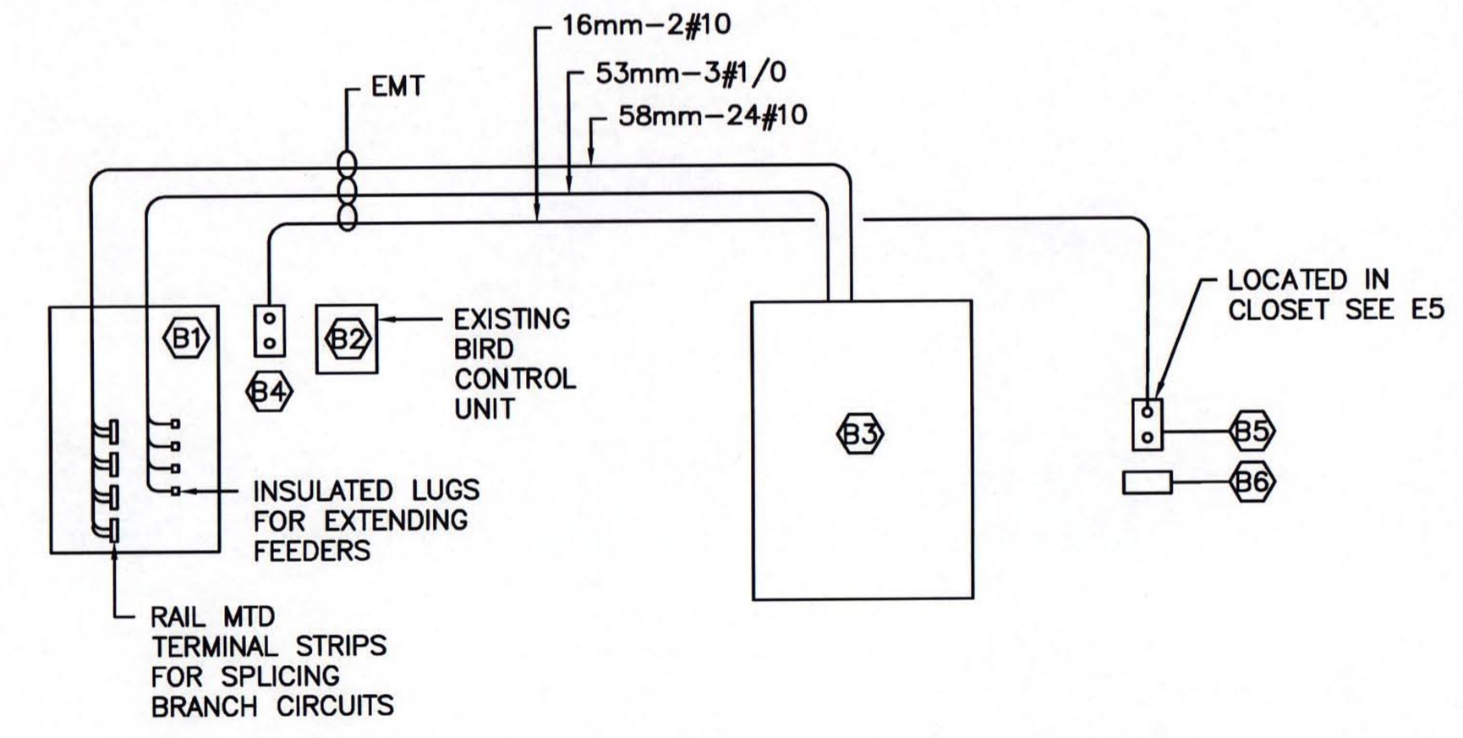
   SUBMIT SHOP DRAWING PRIOR TO PURCHASE.
   PROVIDE LAMPHOLDER BASE REDUCERS AS NECESSARY FOR CONVERSION FROM MOGUL BASE TO MEDIUM BASE SCREW TYPE LAMPHOLDERS.
33. UNDER THE SCAFFOLDING ON THE MAIN FLOOR THAT IS PROVIDED BY THE CONTRACTOR, TEMPORARY LED LIGHTING SHALL BE PROVIDED TO A LEVEL OF NOMINAL 200 LUX AVERAGE ON THE FLOOR. THE COLOR TEMPERATURE SHALL BE 3000°K. IF "BREWERY CORD" TYPE LIGHTING IS USED IT SHALL BE STRUNG UP TO BE WITHOUT CATENARIES IN IT. THE LIGHTING MUST BE SAFE AS THE PUBLIC WILL HAVE ACCESS TO THE SPACE. MAKE REFERENCE TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF SCAFFOLDING. ALSO, CONSULT WITH SPRINKLER CONTRACTOR ABOUT THE LOCATIONS WHERE SCAFFOLDING MAY BE CONSTRUCTED.
34. CONTRACTOR SHALL ALLOW FOR 10 ADDED 120V DUAL EMERGENCY LIGHTING HEADS AND 20 METERS OF WIRING FOR EACH SO THAT FOLLOWING INSTALLATION OF THE DESIGNED LIGHTING HEADS ANY AREAS WITH QUESTIONABLE LIGHTING CAN BE ADDRESSED.
35. LOCATED ON THE EITHER SIDE OF JOIST AT BOTTOM. DO NOT DRILL THROUGH JOIST FOR WIRING.
36. MINI-INVERTER LIGHTING COMMISSIONING.
   a. AIM LIGHTING HEADS TO BEST LIGHT EXIT PATHS. DO WORK AT NIGHT WITH ALL LIGHTING IN THE BUILDING OFF EXCEPT MINI-INVERTER LIGHTING.
   b. PUT MINI INVERTER UNITS UNDER LOAD TEST FOR THE LENGTH OF TIME THEY WILL CARRY LOAD UNTIL BATTERIES ARE DISCONNECTED BECAUSE OF LOW BATTERY VOLTAGE. RECORD VALUE OF LOAD AND THE LENGTH OF TIME LOAD IS CARRIED.
   c. ON A SEPARATE NIGHT FROM THAT IN a. ABOVE ARRANGE WITH THE DEPARTMENTAL REPRESENTATIVE FOR A SITE VISIT TO VIEW THE LIGHTING AND MAKE ADJUSTMENTS TO IT AS NECESSARY. (THE VISIT IN b. SHALL BE TO MAKE ADJUSTMENTS IT SHALL NOT BE TO INITIALLY SET THE SYSTEM UP). ADJUSTMENTS TO THE LIGHTING SHALL BE MADE AS THEY ARE NOTED AND BE CARRIED OUT DURING THE SITE VISIT.
   d. MEASURE LIGHTING LEVEL ON EXIT PATHS TO ENSURE LEVELS MEET THOSE MANDATED BY THE BUILDING CODE. TYPICAL IS AVERAGE 10 LUX, MINIMUM 1 LUX MEASURE LIGHTING LEVELS AT NIGHT.
37. EXTERIOR WEATHER PROOF INVERTER EMERGENCY LIGHTING HEADS SHALL BE FACTORY FINISHED WHITE. MOUNT UNITS OVER SHALLOW PAN TYPE OUTLET BOXES SO THAT TRIM OF FIXTURES FITS TIGHT TO WALL.
38. HARDWARE USED AT THE EXTERIOR OF THE BUILDING SHALL BE STAINLESS STEEL. THIS INCLUDES THE FOLLOWING: UNISTRUT CHANNEL, BOLTS, NUTS, WASHERS, SCREWS, STRAPS, ETC.
39. ELECTRICAL INSTALLATION AT SKIFF DISPLAY IS TO BE DISCONNECTED WHEN DISPLAY MOVED. WIRING TO BE PULLED DOWN TO TO UNDER FLOOR AREA AND COILED UP. WHEN SKIFF DISPLAY RETURNED AT END OF PROJECT, RE INSTALL WIRING. WHEN WIRING RE-INSTALLED, EXTEND AND REPLACE AS NECESSARY TO SUIT THE DISPLAY. PROVIDE RECEPTACLE AS NECESSARY.
40. BIDDING ELECTRICAL CONTRACTORS SHALL ENSURE THEY FULLY UNDERSTAND THE SCOPE OF THE PROJECT AND SHALL ENSURE THEY READ THE WHOLE OF THE SPECIFICATIONS NOT JUST THE ELECTRICAL SECTION. THE WHOLE SPECIFICATION CONTAINS INFORMATION PERTINENT TO AND GOVERNING THE ELECTRICAL CONTRACT.
41. CONTRACTOR SHALL ALLOW IN TENDER PRICE FOR A RETURN TO THE SITE AT THE 11th MONTH FOLLOWING SUBSTANTIAL PERFORMANCE TO CARRY OUT A LOAD TEST INDICATED IN NOTE 26 b, TO ENSURE THE UNITS ARE OPERATING SATISFACTORILY PRIOR TO EXPIRATION OF WARRANTY PERIOD.
42. UNIT HEATERS UNDER SCAFFOLDING SHALL HAVE WIRING EXTENDED ADJUSTED AS NECESSARY TO ACCOMMODATE INSTALLATION OF SCAFFOLDING AND RELOCATION OF HEATERS BY MECHANICAL CONTRACTOR. COORDINATE WITH APPROPRIATE CONTRACTORS AS NECESSARY.
43. PROVIDE AN LED REPLACEMENT LIGHT FIXTURE FOR ONE OF THE METAL HALIDE FIXTURES AT THE MEZZANINE LEVEL ABOVE THE RETAIL STORE. THE REPLACEMENT FIXTURE SHALL BE ROUND LOW BAY/HIGH BAY STYLE SIMILAR TO THE EXISTING TYPES IN PLACE. LUMINAIRE OUTPUT SHALL BE 18000 LUMENS AT 4000°K. PROVIDE SHOP DRAWING. EXACT FIXTURE TO BE REPLACED TO BE AS INSTRUCTED BY DEPARTMENTAL REPRESENTATIVE.
44. THE FOLLOWING SYSTEMS IN THE CANNERY SHALL BE FED FROM PANEL EMW IN THE MAINTENANCE SHOP.
   i TWO CIRCUITS OF HEAT TRACE IN MAIN SPRINKLER ROOM.
   ii ELECTRIC HEATHER IN MAIN SPRINKLER ROOM.
   iii ELECTRIC HEATER IN MAZZANINE SPRINKLER ROOM.
   iv NITROGEN PURGE VALVES (NPVs)

   REFER TO PANEL SCHEDULE ON DWG E3. TO MITIGATE VOLTAGE DROP WIRE THE FIRST 30m OF EACH CIRCUIT WITH #8AWG. FROM THEN ON WIRE WITH #10AWG.
45. IN THE CANNERY MAIN SPRINKLER ROOM, CONNECT THE EXISTING HEAT TRACE CABLE ON THE INCOMING WATER LINE TO ONE OF THE TWO HEAT TRACE MONITOR PANELS.
46. IN THE MAINTENANCE BUILDING, CONNECT THE LIGHTING CIRCUIT TO PANEL EMW SO THE MAYBE POWERED BY A PORTABLE GENERATOR.



NOTES:
a. MINIMUM WIRING SIZE 2# 12AWG.
b. MAXIMUM 5% VOLTAGE DROP TO LAST DEVICE ON OUTLET.
c. WIRE TO OUTLETS IN EACH LOGICAL PHYSICAL AREA OF THE BUILDING AND THEN HOME RUN TO THE INVERTER.

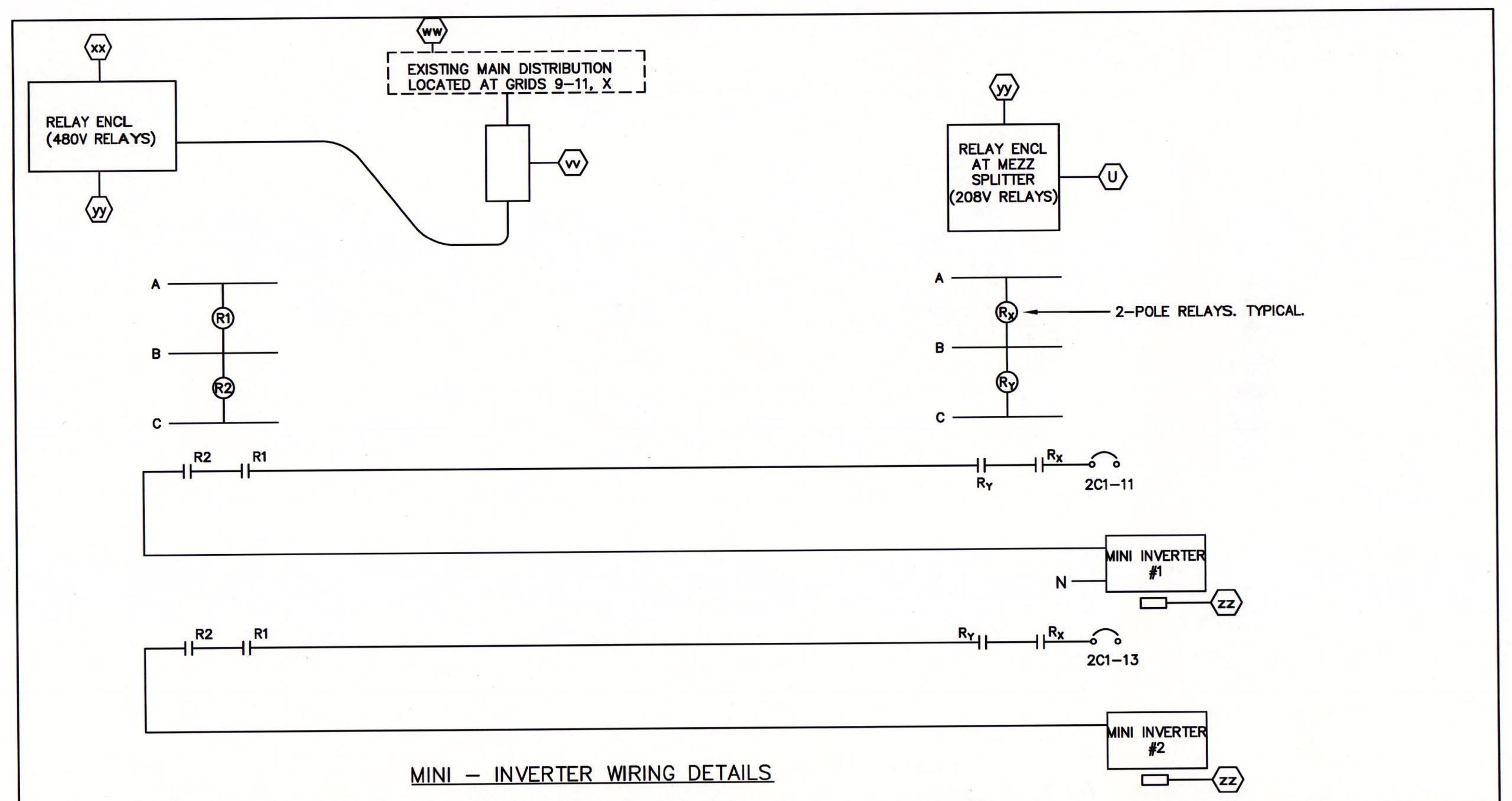
DETAIL OF WIRING OUT FROM MINI-INVERTER (34)



RELOCATION OF PANEL AND BIRD CONTROL

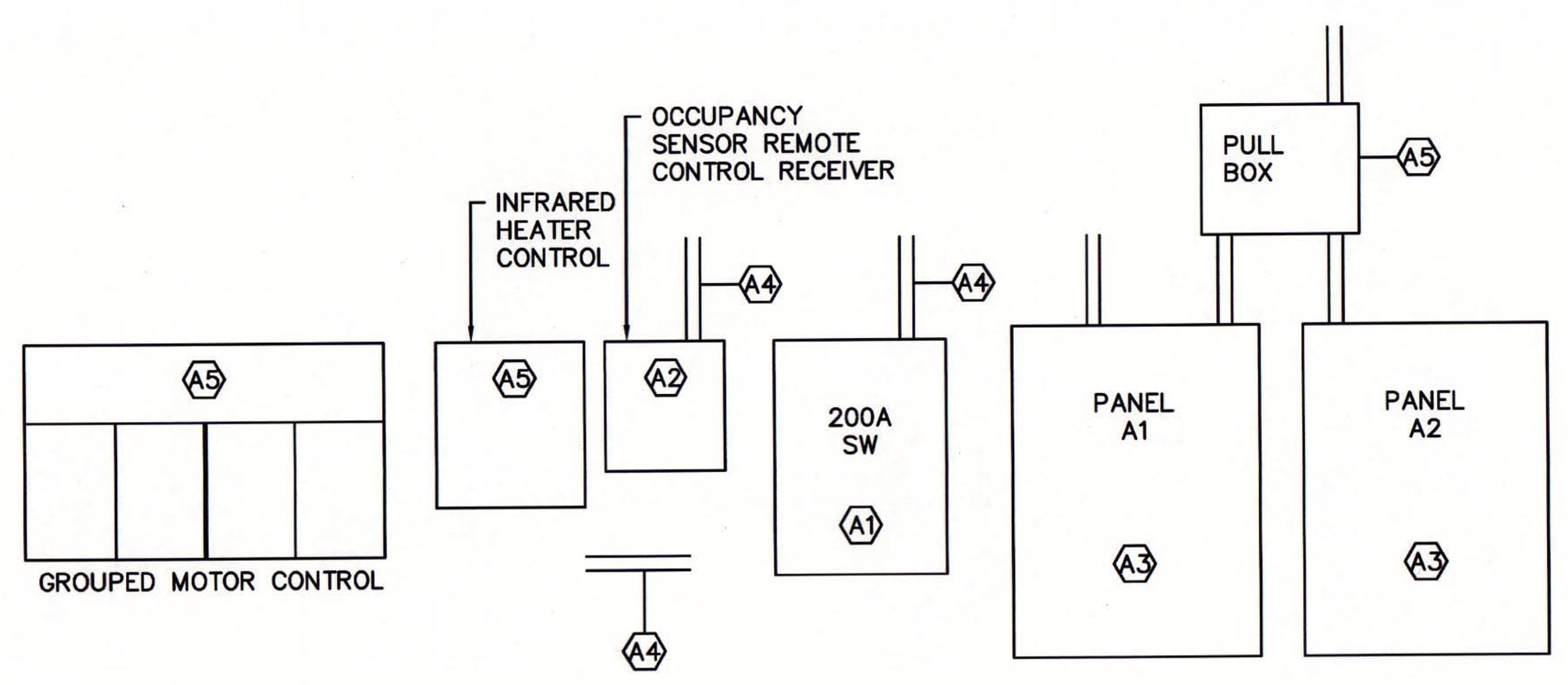
DETAIL G

ITEM	DESCRIPTION	COMMENTS
B1	EXISTING PANEL LDC-3 AT HIGH LEVEL ON WEST WALL AT NORTH END. SEE DWG E2	a. PERFORM WORK AT NIGHT. b. STRIP GUTS OUT OF PANEL. INSTALL TERMINALS. c. RE-INSTALL EXISTING COVER ON PANELBOARD d. SCREW THE DOOR OF THE PANELBOARD PERMANENTLY CLOSED. e. PROVIDE BLACK LAMICOID LABEL WITH WHITE LETTERING MIN. 4mm HIGH TO SAY "J-BOX FOR PANEL LDC-3 LOCATED AT STAIRS UP TO NE MEZZANINE ABOVE RETAIL"
B2	EXISTING BIRD-X BIRD CONTROL	REMAINS IN PLACE.
B3	NEW PANELBOARD LDC-3. SEE DWG E1	EXTEND FEEDER AND BRANCH CIRCUITS. PANELBOARD LOCATED APPROX GRID REF E-2, 3
B4	EXISTING DUPLEX RECEPTACLE BESIDE BIRD CONTROL UNIT THAT PROVIDES POWER FOR UNIT	RE-WIRE TO RECEPTACLE SO THAT RECEPTACLE IS SWITCHED REMOTELY.
B5	INDUSTRIAL GRADE CORBIN TYPE LOCKING SWITCH WITH FLAT SERRATED KEY. KEY REMOVABLE IN ON OR OFF POSITION	ONE MANUFACTURER THAT PROVIDES THIS PRODUCT IS ARROW HART 1190 SERIES. ANY SIMILAR PRODUCT ACCEPTABLE.
B6	LAMICOID LABEL IN WHITE UPPER CASE LETTERS ON BLACK BACKGROUND TO SAY "NORTHWEST BIRD CONTROL UNIT ON/OFF SW"	



MINI - INVERTER WIRING DETAILS

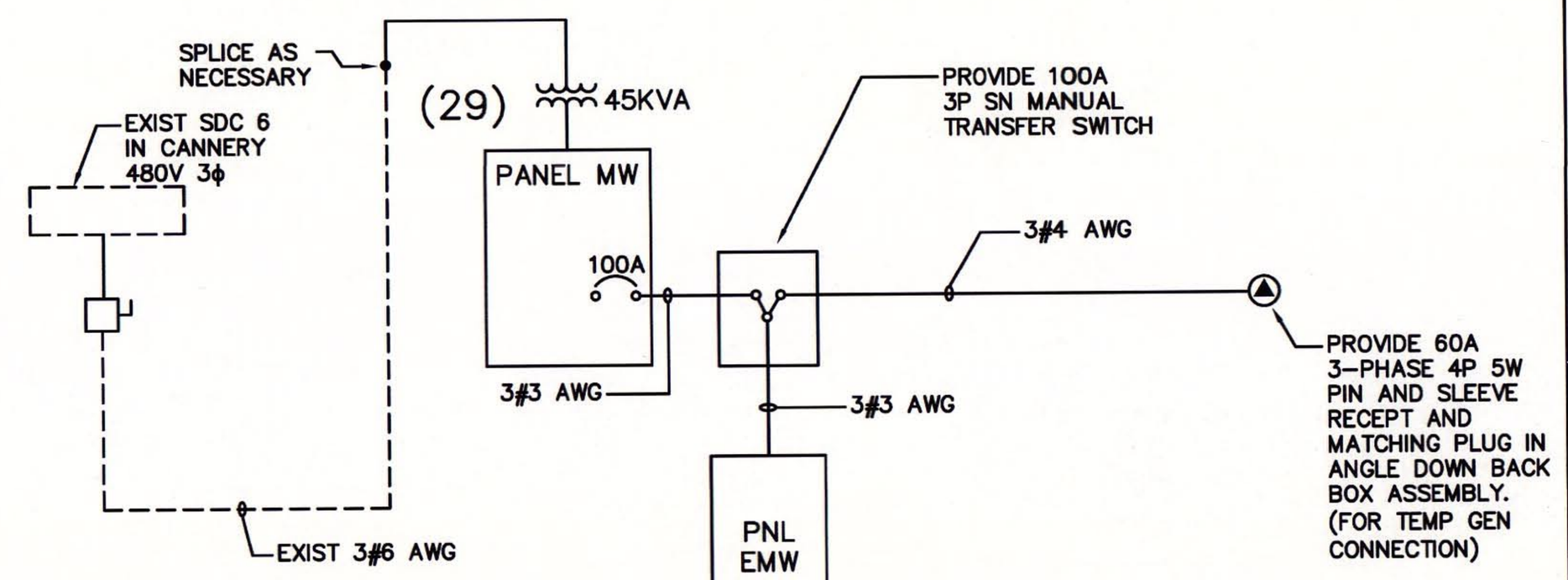
ITEM	DESCRIPTION	COMMENTS
vv	PROVIDE NEW 480V 30A 3P FUSIBLE SWITCH WITH 15A HRC-J FUSES	HEAVY DUTY STYLE. ARRANGE FOR SHUTDOWN TO INSTALL CONNECTION TO EXISTING MAIN DISTRIBUTION SPLITTER BUSBARS.
ww	EXISTING MAIN DISTRIBUTION	ARRANGE WITH DEPARTMENTAL REPRESENTATIVE FOR A POWER SHUTDOWN AT NIGHT TO INSTALL CONNECTIONS TO MAIN DISTRIBUTION.
xx	PROVIDE ADJACENT TO THE MAIN DISTRIBUTION A SHEETMETAL ENCLOSURE WITH VOLTAGE MONITORING RELAYS. RELAYS SHALL BE 480V RATED TWO-POLE 15A AND BE PLUG-IN TYPE.	CONNECT TO MAIN BUSSING TO BE MONITORED FOR LOSS OF POWER.
yy	LAMICOID LABEL ON EXTERIOR OF BOX TO SAY 'CAUTION EMERGENCY LIGHTING MONITORING RELAYS. MORE THAN I LIVE CIRCUIT IN ENCLOSURE.'	ON INSIDE OF COVER OF BOX PROVIDE A SCHEDULE OF CIRCUIT NUMBERS IN THE BOX AND ORIGIN FROM WHICH THEY ARE FED.
zz	LAMICOID LABEL ON MINI-INVERTER TO IDENTIFY UNIT NUMBER	



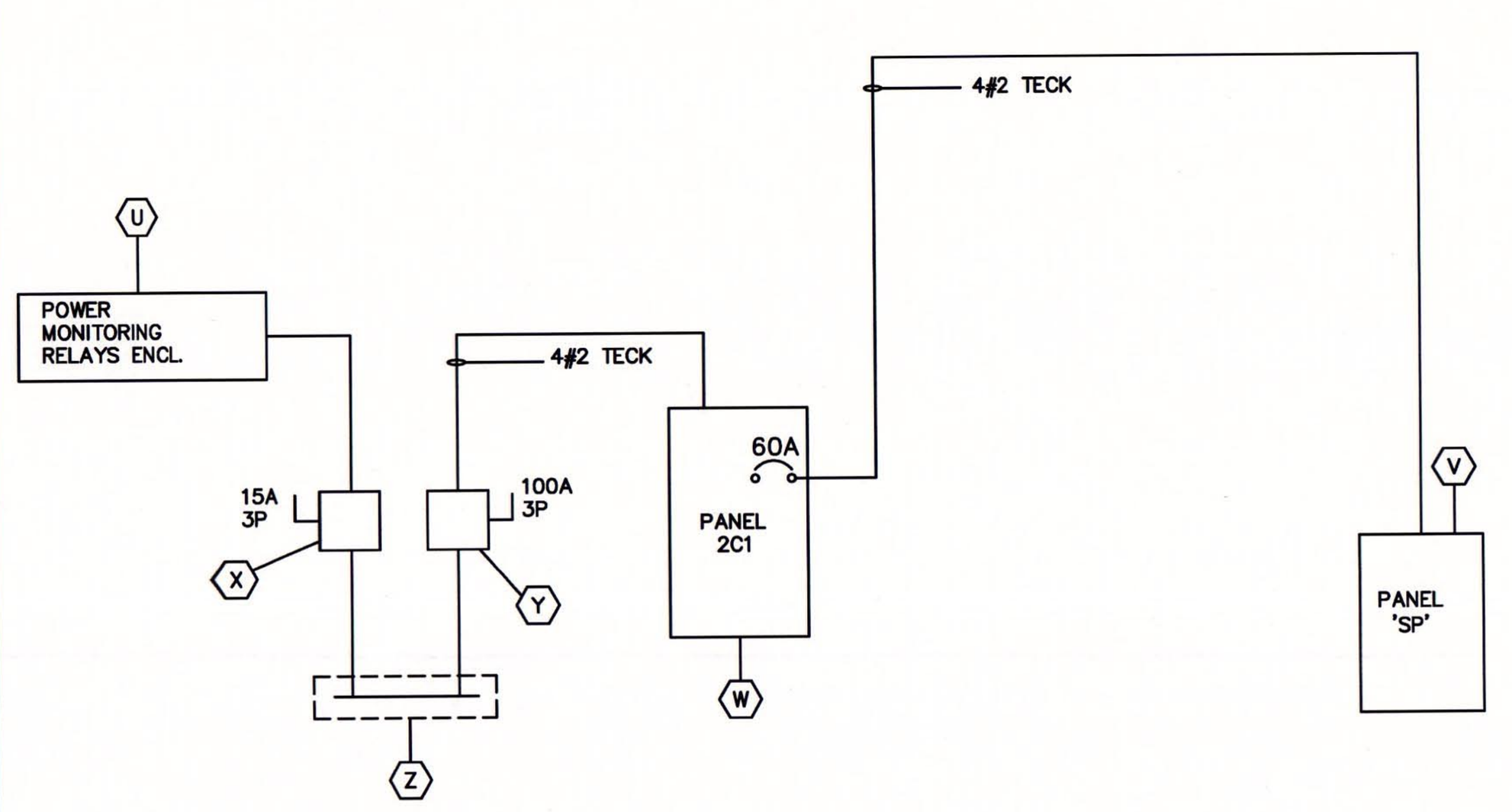
ELEVATION AT 2SD3

DETAIL H

ITEM	DESCRIPTION	COMMENTS
A1	EXISTING 200A FUSIBLE SWITCH (RUSTED)	REPLACE COMPONENT WITH NEW FUSIBLE SWITCH. PERFORM WORK AT NIGHT SO THAT OPERATION OF THE FACILITY IS UNAFFECTED. CUT RUSTED CONDUIT OUT OF THE INSTALLATION. EXTEND CONDUITS WITH NEW SECTIONS. PULL WIRING BACK AND LATER RE-INSTALL AS NECESSARY TO ALLOW RUSTED CONDUIT TO BE REMOVED.
A2	EXISTING NOMINAL 300x300x150 DEEP BOX. (RUSTED)	REMOVE COMPONENTS FROM IN THE BOX. REMOVE BOX AND RUSTED CONDUITS. INSTALL NEW BOX AND CONDUIT SECTIONS. RE-INSTATE ELECTRICAL SYSTEM.
A3	EXISTING COMPONENTS WITH SURFACE RUST	WITH BRUSH LOOSE RUST OFF COMPONENTS. PAINT THE RUSTED SECTIONS WITH AN ANTE-RUST, RUST CONVERSION PRODUCT AND PRIMER. PAINT THE SURFACE WITH AN OIL-BASED GLOSS PAINT TO MATCH THE COLOUR OF THE ENCLOSURE. LEAVE IN A PROFESSIONALLY FINISHED CONDITION TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.
A4	EXISTING CONDUITS WITH SURFACE RUST. (TYPICAL)	TREAT EMT AND CONDUIT AS OUTLINED IN ITEM A3. PAINT CONDUIT WITH SAME COLOUR PAINT AS GREY USED ELSEWHERE. PAINT TO CLEAR DEMARCATION LINES ON THE CONDUIT. DO NOT PAINT TO RAGGED STOPS.
A5	EXISTING GROUPED MOTOR CONTROL AND OTHER ADJACENT COMPONENTS.	REMOVE DEBRIS OFF TOP OF COMPONENTS. CLEAN THE TOPS CAREFULLY USING A DAMP (NOT WET) RAG. LEAVE TOPS CLEAN AND CLEAR OF DEBRIS.



S.L. DIAGRAM FOR MAINT BLDG



PART SINGLE LINE DIAGRAM

ITEM	DESCRIPTION	COMMENTS
Z	EXISTING SPLITTER ON MEZZANINE	SUB-DISTN CENTER 2SD3
Y	100A 3P FUSED SWITCH IN CEMA 1 ENCLOSURE. WHERE POSSIBLE WITHIN 3 METERS OF SPLITTER	TAP OFF EXISTING SPLITTER TO FEED TO SWITCH. USE #1/0 CONDUCTORS FOR TAP
X	15A 3P FUSED SWITCH IN CEMA 1 ENCLOSURE. MOUNT WITHIN 3M OF SPLITTER. PROVIDE LAMICOID LABEL.	TAP OFF EXISTING SPLITTER TO FEED SWITCH. USE #10 AWG
W	NEW PANEL 2C1. 120/208V 3φ 4W. BOLT-ON BREAKERS. SURFACE MOUNTING WITH FLUSH DOOR IN TRIM WITH FLUSH LOCKING DOOR LATCH. COPPER BUSSING. PROVIDE LAMICOID LABEL.	LOCATE AT MEZZANINE LEVEL ADJACENT SPLITTER
V	NEW PANEL SP.	INSTALL IN SPRINKLER ROOM. EXACT LOCATION TO SUIT.
U	PROVIDE TWO-POLE 15A, 208V PLUG-IN TYPE RELAYS IN SHEETMETAL ENCLOSURE.	CONNECT TO CIRCUITS TO BE MONITORED FOR LOSS OF POWER AS INDICATED.

TYPICAL WORDING FOR DISTRIBUTION PANEL BREAKER

PANEL X2
LOC LEVEL 2 CNTL.
32mm C-4#2, 3PH 4W
125A BRKR. 120/208V

WHITE LETTERING ON BLACK LAMICOID. EPOXY OR EQUIVALENT CEMENTING IN PLACE. PRE-GUMMED WILL BE REJECTED.

SCALE: FULL SIZE (ADJUST EXACT WORDING TO SUIT PROJECT).

TYPICAL WORDING FOR PANELBOARD

PANEL X2
FED FROM MECH PNTHSE
32mm C-4#2, 3PH 4W
125A BRKR. 120/208V

SCALE: FULL SIZE (ADJUST EXACT WORDING TO SUIT PROJECT).

TYPICAL LABELLING DETAILS
PANELBOARDS & DISTRIBUTION PANEL SWITCHES AND BREAKERS

DETAIL F

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

RATIO
ARCHITECTURE.
INTERIOR DESIGN.
PLANNING.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA L.P. GANDER
June 27, 2018.

L.P. GANDER & ASSOCIATES LTD.
CONSULTING ENGINEERS ELECTRICAL

Revision/Revision	Description/Description	Date/Date
6		
5		
4		
3		
2		
1	Issued for Tender	06/27/2018

Client/client
PARKS CANADA

Project title/Titre du projet
FIRE SPRINKLER REHABILITATION
GULF OF GEORGIA CANNERY

Consultant Approval Box Only
-

Designed by/Concept par
LPG

Drawn by/Dessine par
FN

PWGSC Project Manager/Administrateur de Projets TPSGC
TOM DUNPHY

PWGSC, Regional Manager, Architectural and Engineering Services/ Gestionnaire régionale, Services d'architectural et de génie, TPSGC
MARK BURGER

Drawing title/Titre du dessin
LIFE SAFETY SYSTEMS UPGRADE

DETAILS 2

Project No./No. du projet	Sheet/Feuille	Revision no./La Révision no.
R.089515.001	E4 OF 4	

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