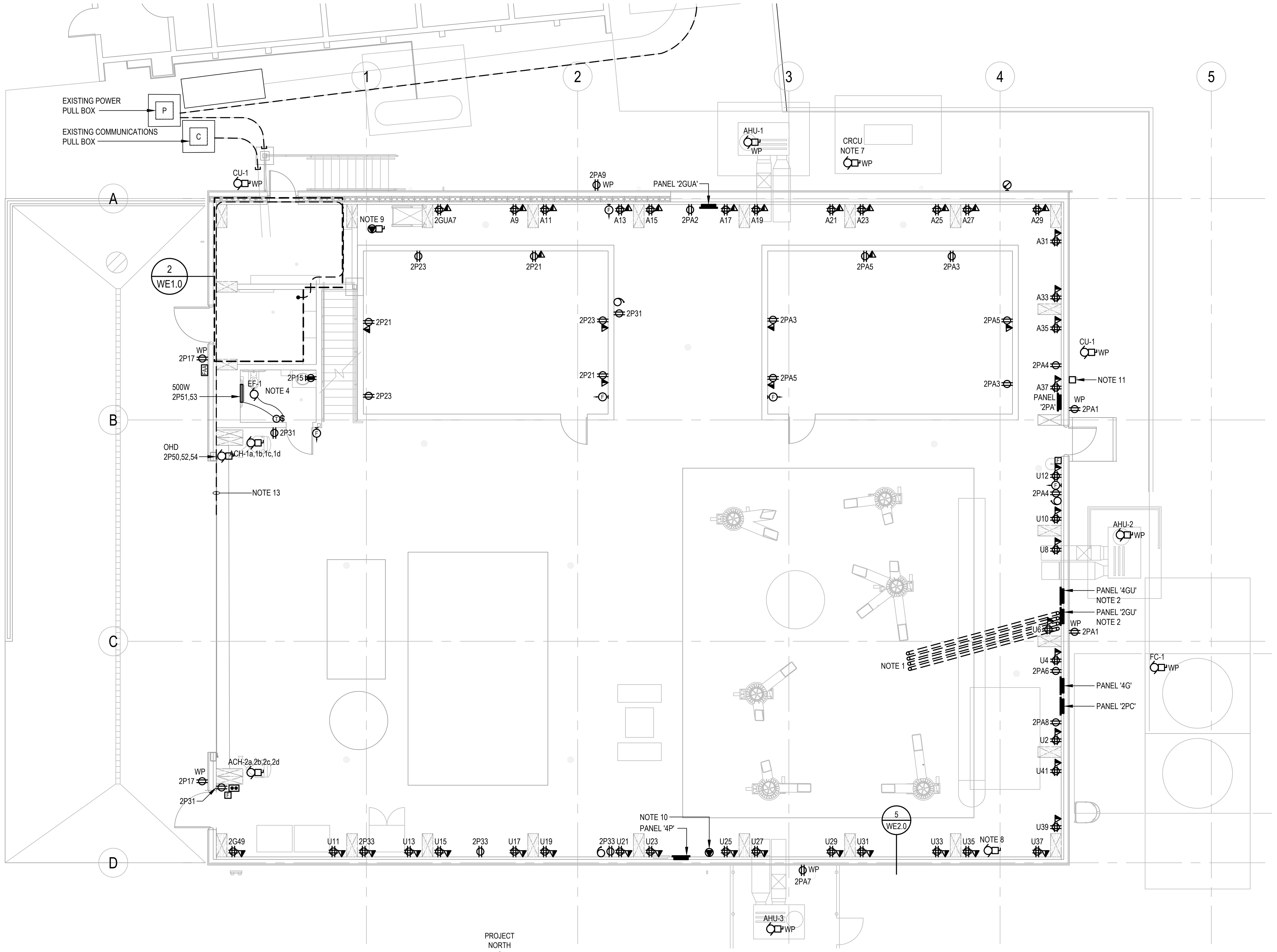
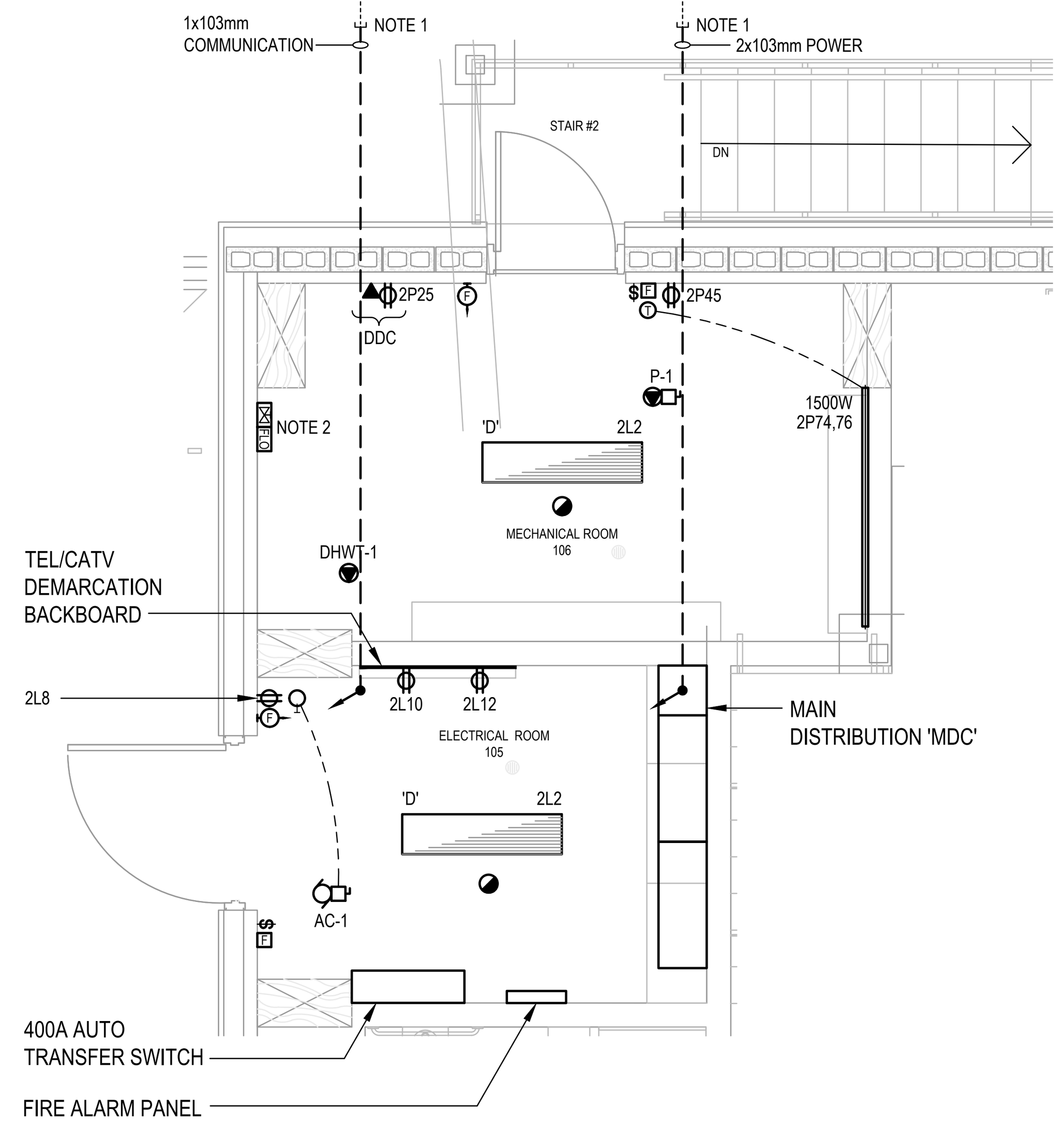


PROJECT NORTH

1 / WE1.0 LOWER FLOOR POWER AND SYSTEMS

0 2000 4000 6000 1:100



2 / WE1.0 ELECTRICAL ROOM LAYOUT

0 1000 2000 3000 1:50

NOTES:
1. EXTEND EXISTING COMMUNICATIONS AND POWER CONDUIT STUBS TO LOCATIONS SHOWN. COORDINATE LOCATIONS ON SITE AND WITH SWITCHBOARD LAYOUTS.
2. CONFIRM LOCATION, QUANTITY AND TYPE OF SPRINKLER DEVICES WITH MECHANICAL DESIGN AND SHOP DRAWINGS. COORDINATE AS REQUIRED.

ELECTRICAL SYMBOL LEGEND

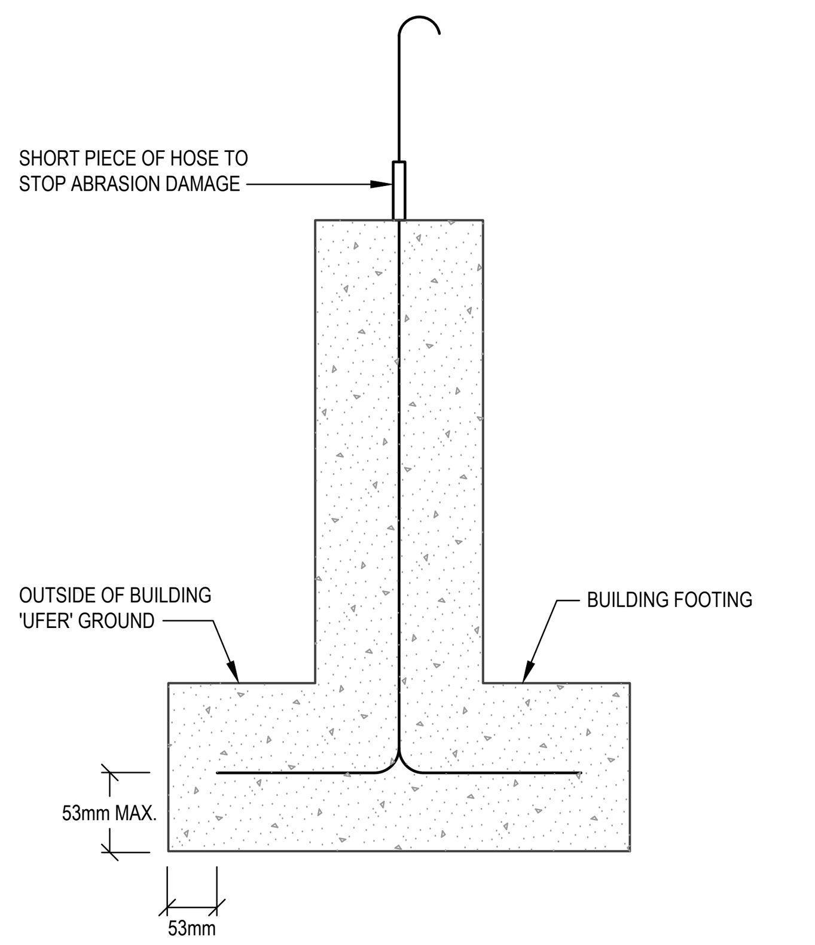
ABBREVIATIONS	
NOTE	EQUIPMENT SHOWN DOTTED IS EXISTING AND TO REMAIN UNLESS INDICATED OTHERWISE
WP	WEATHER PROOF

LIGHTING
EMERGENCY LIGHT LUMINAIRE
SURFACE MOUNTED LUMINAIRE
CEILING SUSPENDED LINEAR LUMINAIRE
LINEAR STRIP LIGHT
WALL MOUNTED DOWN LIGHT
SINGLE POLE TOGGLE SWITCH, GANGED AS SHOWN
THREE WAY TOGGLE SWITCH
EXIT SIGN - ARROWS AS INDICATED
PHOTOCELL

FIRE ALARM
FIRE ALARM PULLSTATION
FIRE ALARM STROBE/SPEAKER
FIRE ALARM SPEAKER
FIRE ALARM SMOKE DETECTOR
FIRE ALARM HEAT DETECTOR
FIRE ALARM PANEL
FIRE ALARM ANNUNCIATOR
SPRINKLER FLOW SWITCH
SPRINKLER VALVE SUPERVISORY
END OF LINE RESISTER

POWER
SINGLE RECEPTACLE
DUPLEX RECEPTACLE
GROUND FAULT INTERRUPTER DUPLEX RECEPTACLE
ABOVE COUNTER GFCI DUPLEX RECEPTACLE
FLOOR MOUNTED DUPLEX RECEPTACLE
PUSH BUTTON FOR OVERHEAD DOOR
PANEL BOARD
GENERATOR CONNECTION
THERMOSTAT
BASEBOARD HEATER, WATTAGE AS NOTED ON PLANS
CEILING FAN
MECHANICAL EQUIPMENT DIRECT CONNECTION
EQUIPMENT CONNECTION
MECHANICAL MOTOR CONNECTION
DISCONNECT SWITCH
GROUND BUS
CONDUIT RUN UP

COMMUNICATIONS	
	COMBINATION TELEPHONE AND DATA OUTLET, WALL MOUNTED
	TELEPHONE OUTLET
NOTE	REFER TO SPECIFICATIONS FOR COMMUNICAITONS SCOPE OF WORK



NOTES:
1. PROVIDE AND INSTALL A MINIMUM OF 6.0m OF 3/0 BARE COPPER 'UFER' GROUND IN THE BUILDING FOOTINGS. COMPRESSION THE CONDUCTORS TO RE-BAR IN THE FOOTINGS OF EVERY 1.5m, EXTEND 'UFER' GROUND PIGTAILS TO MAIN GND BUS. THE RE-BAR IN 2 WIDELY SEPARATED COLUMNS TO BE INCLUDED IN UFER GROUND.

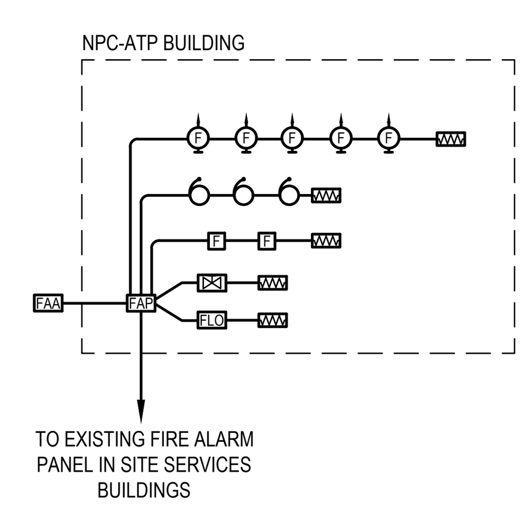
3 / WE1.0 UFER GROUND DETAIL

NOT TO SCALE

NOTES:
1. 4x103mm CONDUIT STUBBED UP UNDER ASSEMBLY FRAME AND TO EXTERIOR WALL PROVIDE 8x 120V, 15A RECEPTACLES MOUNTED TO ASSEMBLY FRAME.
2. TRANSFORMER FIX PANEL '4GU' LOCATED IN UPPER ELECTRICAL ROOM 3/WE2.0
3. NOT USED.
4. PROVIDE 120V POWER FOR HANDS-FREE FAUCETS.
5. OVERHEAD DOOR IS 208V, 3PH, 5HP. CIRCUIT 2P50,52,54.
6. NOT USED.
7. COLD ROOM CONDENSING UNIT CRCU- OWNER SUPPLIED EQUIPMENT. COORDINATE REQUIREMENTS DURING CONSTRUCTION.
8. DRY AIR COMPRESSOR. OWNER SUPPLIED EQUIPMENT. COORDINATE REQUIREMENTS DURING CONSTRUCTION.
9. CLEAN ROOM AIR CIRCULATION. OWNER SUPPLIED EQUIPMENT. COORDINATE REQUIREMENTS DURING CONSTRUCTION.
10. LAB SCALE TEST SYSTEM. OWNER SUPPLIED EQUIPMENT. COORDINATE REQUIREMENTS DURING CONSTRUCTION. PROVIDE DISCONNECT SWITCHES AND CONNECTIONS.
    - COMPRESSOR COLD HEAD - 480V, 3PH, 12.5kW 4x#8Cu. 4P2,4,6
    - HELIUM COMPRESSOR - 480V, 3PH, 15kW, 4x#8Cu. + GND. 4P8,10,12
    - CONDENSING UNIT - 480V, 3PH, 6kW, 4x#10Cu. + GND 4P14,16,18
11. CONNECTIONS BOX FOR PORTABLE GENERATOR. 400A, 3Ø, 4W, 120V/208V, C/W START SIGNAL FROM ATS. SEE 4/WE2.0
12. EXTERIOR BUILDING MOUNTED LIGHTING IS TO BE CONTROLLED VIA PHOTOCELL ON BUILDING NORTH EXTERIOR.
13. BUILDING UFER GROUND INSTALLED IN CONCRETE FOOTING IN ACCORDANCE WITH CEC 10-700 AND DETAIL 3/WE1.0. COORDINATE WITH STRUCTURAL FOR EXACT PLACEMENT.

FIRE ALARM SCH. ATP INTEG. FACILITY

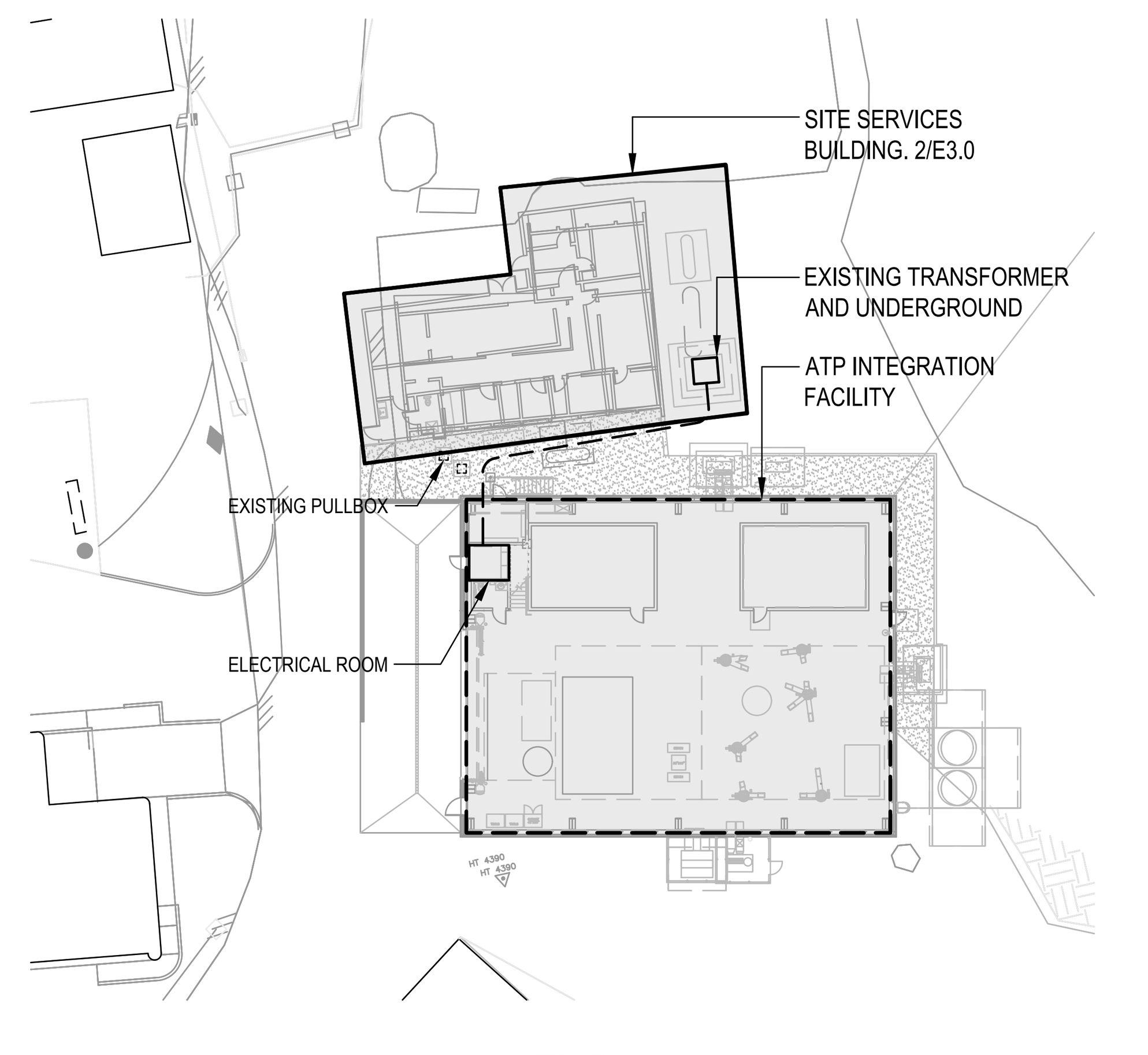
ZONE	AREA	DEVICES
Z1	SPINKLER FLOW	FLOW
Z2	PULL STATIONS	MANUAL
Z3	SMOKE DETECTORS	SMOKES
T1	TAMPER SWITCH	TAMPER



NOTES:
1. REFER TO FLOORPLANS FOR QUANTITIES AND LOCATIONS.

4 / WE1.0 FIRE ALARM SYSTEM RISER

NOT TO SCALE



KEYPLAN
1:500

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

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

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Designing A Better Tomorrow
AES PROJECT NO. 1-15-160

PROFESSIONAL PROVINCE OF BRITISH COLUMBIA ENGINEER I. A. BARNES # 32870
2019-03-06

PROJECT NORTH

Revision/ Revision	Description/Description	Date/Date
4	ISSUED FOR TENDER	2019.03.05
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2	ISSUED FOR 100% CD REVIEW	2018.03.14
1	ISSUED FOR 90% CD REVIEW	2018.02.22

Client/client

Project title/Titre du projet
5071 WEST SAANICH ROAD
VICTORIA, BC, CANADA

NRC HERZBERG ASTRONOMY AND ASTROPHYSICS ATP INTEGRATION FACILITY

Consultant Signature Only

Designed by/Concept par
I.B.

Drawn by/Dessine par
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PREETIPAL PAUL

Drawing title/Titre du dessin
ELECTRICAL LAYOUT AND LEGEND - WOOD OPTION

Project No./No. du projet	Sheet/Feuille	Revision no./La Révision no.
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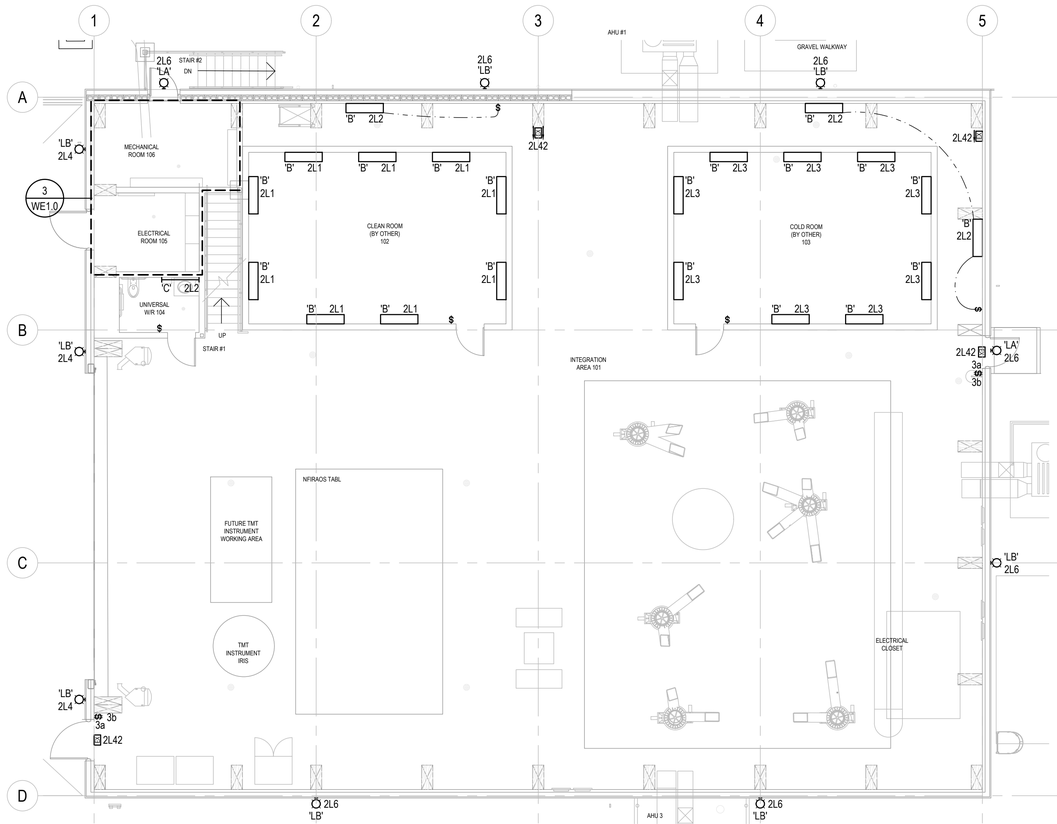
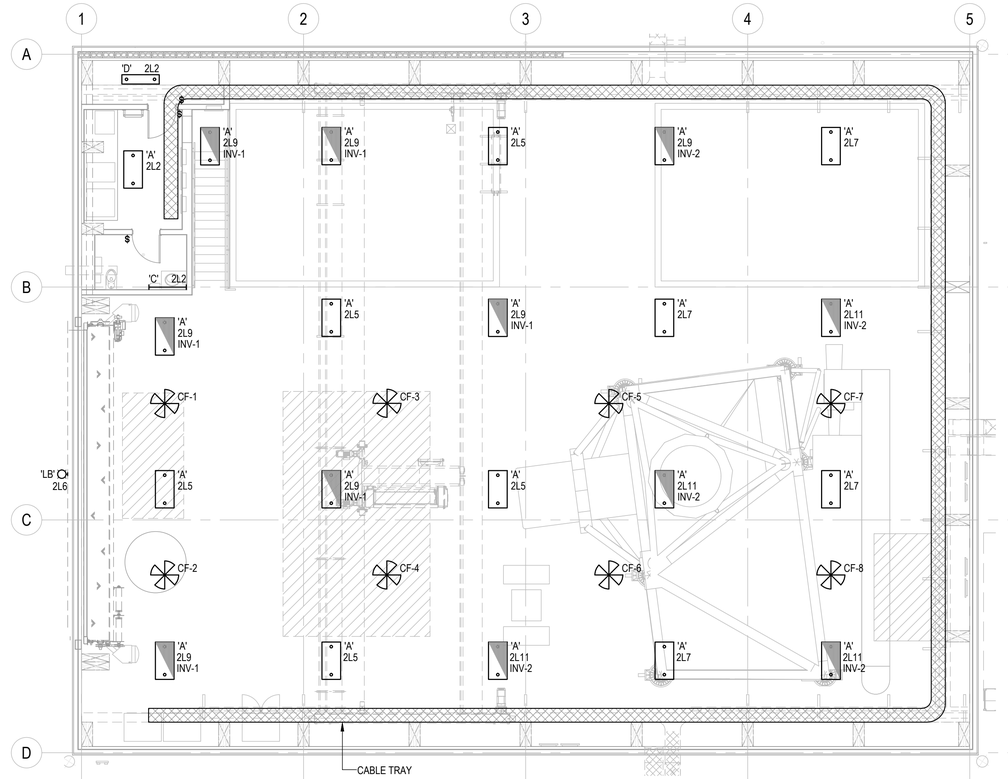




1 WE2.0 LOWER LIGHTING LAYOUT

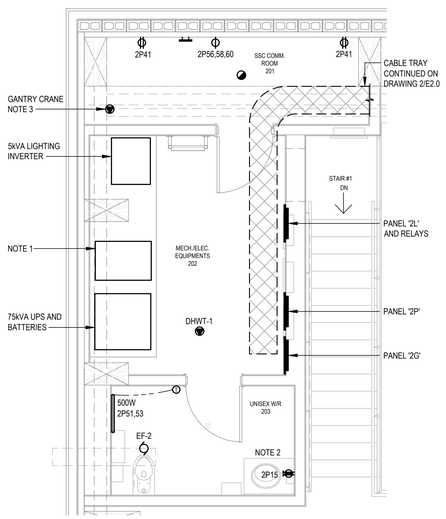
0 2000 4000 6000 1:100

NOTES:

1. TYPE 'A' LUMINAIRES MOUNTED AT CEILING STRUCTURE CLEAR OF CRANE AND RAILS.
2. LUMINAIRES NOTED AS EMERGENCY TO BE FED VIA INVERTER AND TO SWITCH DURING UTILITY FAILURE.
3. TYPE 'A' LUMINAIRES ARE SWITCHED A/B INTERNALLY FOR 50% OUTPUT.
4. TYPE 'A' LUMINAIRE NOTED AS 'EMERGENCY' TO USE BYPASS RELASY TO ENERGIZE FULL OUTPUT IN EVENT OF POWER FAILURE. NORMAL AND INVERTER CIRCUITS NOTED.
5. REFER TO ARCHITECTURAL AND STRUCTURAL DETAILS FOR CABLE TRAY MOUNTING AND ELEVATIONS. COORDINATE DUCT AND TRAY MOUNTING ARRANGEMENTS.

2 WE2.0 FLOOR PLAN UPPER LIGHTING AND FAN LAYOUT

0 2000 4000 6000 1:100

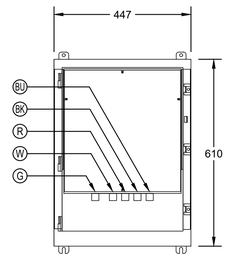


3 WE2.0 UPPER ELECTRICAL ROOM

0 1000 2000 3000 1:50

NOTES:

1. INSTALL ALL TRANSFORMERS FLOOR, WALL AND CEILING MOUNTED IN THIS AREA. COORDINATE TRANSFORMER LOCATIONS WITH UPS AND INVERTER REQUIREMENTS. PROVIDE STRUCTURAL SEISMIC MOUNTS AND RESTRAINTS AS REQUIRED.
2. PROVIDE 120V POWER FOR HANDS-FREE FAUCETS.
3. GANTRY CRANE POWER CONNECTION TO RAILS AT CEILING LEVEL. PROVIDE FUSED DISCONNECT AND WEATHERHEAD WITH CONNECTIONS TO CRANE RAILS

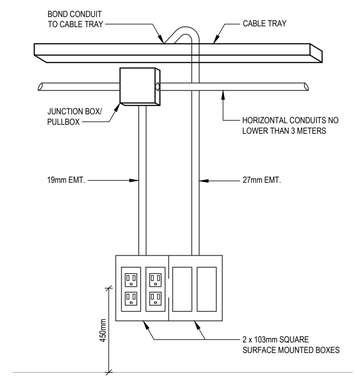


NOTES:

1. NEMA 3R ENCLOSURE, STAINLESS STEEL CONSTRUCTION.
2. PROVIDE JUNCTION BOX AND WIRING EXTENDING START/RUN SIGNALING FROM ATS TO THIS LOCATION FOR CONNECTION TO PORTABLE GENERATOR

4 WE2.0 GENERATOR CONNECTION BOX DETAIL

0 100 200 300 400 500 600 1:10



NOTES:

1. THIS DETAIL IS TYPICAL FOR ALL WORK AREA RECEPTACLES AND DATA.

5 WE2.0 DATA/POWER DETAIL

NOT TO SCALE

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SERVICES IMMOBILIERS
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AES PROJECT NO. 1-15-160

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA I.A. BARNES # 21570

2019-03-06

PROJECT NORTH

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Client/client

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5071 WEST SAANICH ROAD
VICTORIA, BC, CANADA

NRC HERZBERG
ASTRONOMY AND ASTROPHYSICS
ATP INTEGRATION FACILITY

Consultant Signature Only

Designed by/Concept par
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PREETIPAL PAUL

Drawing title/Titre du dessin
ELECTRICAL LAYOUTS - WOOD OPTION

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.077596.001	WE2.0 2 OF 4	4

PWGSC – A1 – 841X594

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

FEEDER SCHEDULE

F1	2 x (4c 600MCM Cu. + GND) IN 2 x 103mm C.
F2	4 x #4 Cu. + GND IN 53mm C.
F3	4 x 250MCM Cu. + GND IN 103mm C.
F4	4 x #2Cu. + GND IN 53mm C.
F5	4 x #6Cu. + GND IN 53mm C.
F6	4 x #600MCM Cu. + GND IN 103mm C.
F7	3 x 250MCM Cu. + GND IN 53mm C.
F8	3 x #2 Cu. + GND IN 53mm C.
F9	3 x 600MCM Cu. + GND IN 103mm C.
F10	4 x 3/0Cu. + GND IN 78mm C.
F11	4 x #1Cu. + GND IN 53mm C.
F12	2 x (4 x 4/0 Cu + GND IN 78mm C.)

TRANSFORMER SCHEDULE

T1	75kW	208:600/347V, 3PH, 4W
T2	30kVA	208:208/120V, 3PH, 4W
T3	112.5kVA	208:277/480V, 3PH, 4W
T4	30kVA	208:277/480V, 3PH, 4W

NOTES:

1. SUPPLY AND INSTALL NEW SCHNEIDER 'P' FRAME CIRCUIT BREAKER IN PREPARED SPACE AT PAD MOUNT TRANSFORMER.
2. OWNER SUPPLIED EQUIPMENT. COORDINATE WITH ACTUAL EQUIPMENT SHOP DRAWING.

NRC-ATP LOAD CALCULATION

Basic Load - CEC Table 14

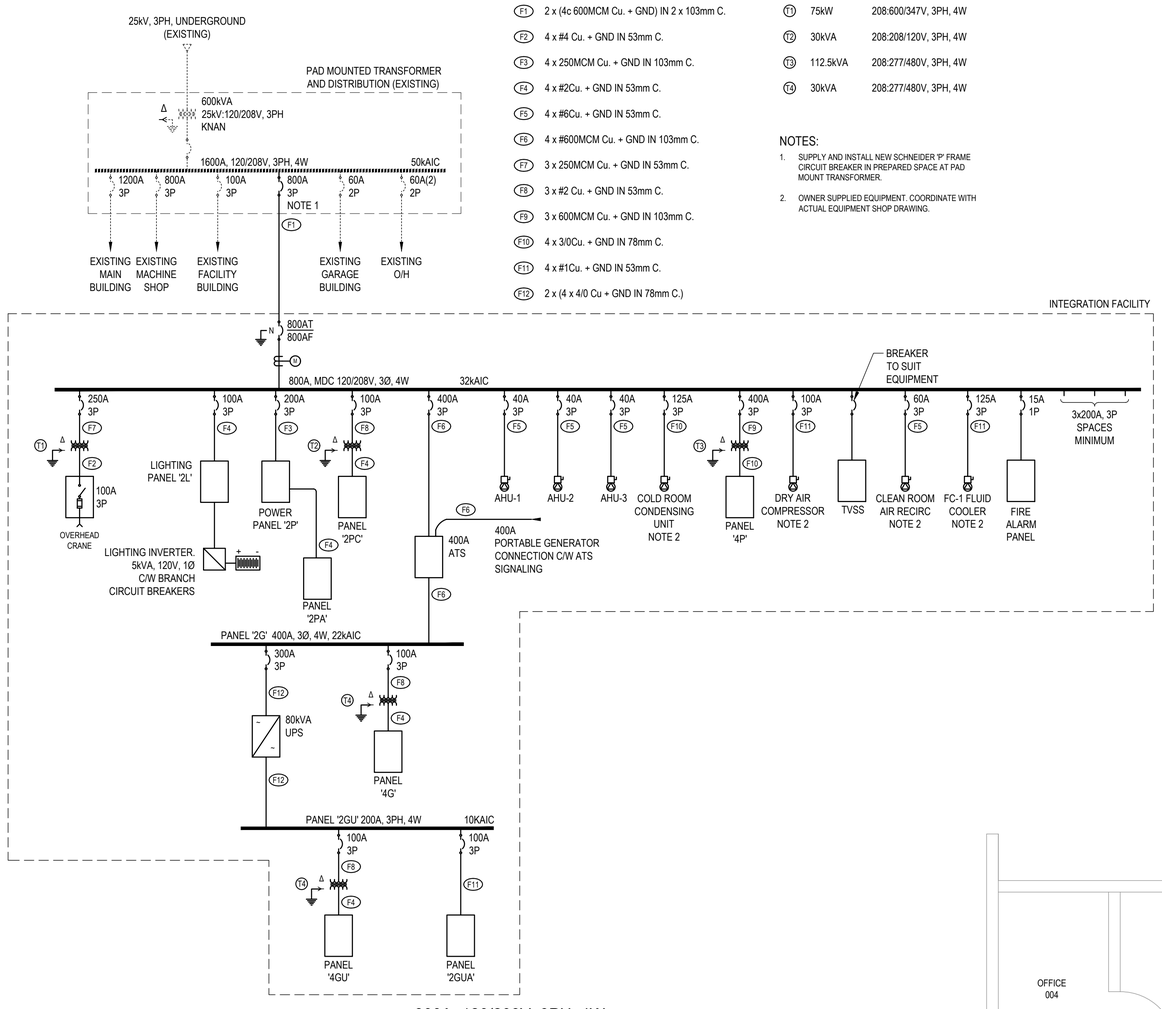
Industrial and Commercial	669 m^2	x	25 W/m^2	=	16725 W
			TOTAL BASIC LOAD		**16725 W**

Electric Heating

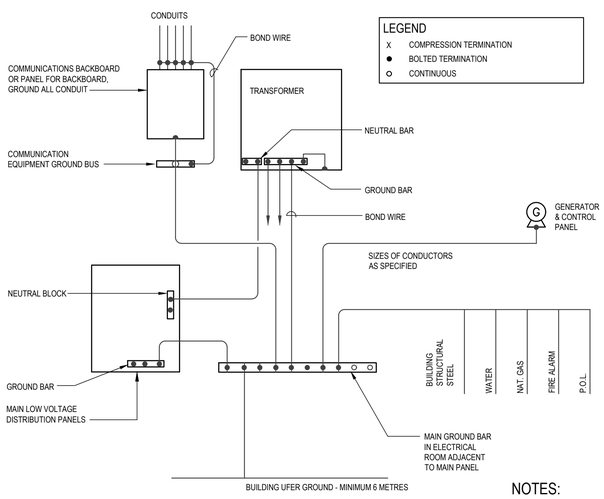
Total Electric Heating	3000 W				
First	10000 W	@	100%	=	3000 W
Remaining	0	@	75%	=	0 W
			TOTAL ELECTRIC HEATING		**3000 W**

Equipment

ACH-1 (4)					3500 W
ACH-2 (4)					3500 W
AC-1					208 W
CU-1					2700 W
AHU-1					11000 W
AHU-2					11000 W
AHU-3					11000 W
EF-1					17 W
EF-2					17 W
CEILING FANS (X8)	8 UNITS	@	750 W	=	6000 W
FLUID COOLER (FUTURE)					30000 W
SCEINCE LOADS					100000 W
			TOTAL EQUIPMENT LOAD		**178942 W**
			TOTAL BUILDNG LOAD		**198667 W**
198667 W	@	208 V	3 PH	=	551 A
		551 A	x 125%	=	689 A
			SERVICE SIZE		**800 A**



1 WE3.0 800A, 120/208V, 3PH, 4W SINGLE LINE DIAGRAM — NOT TO SCALE



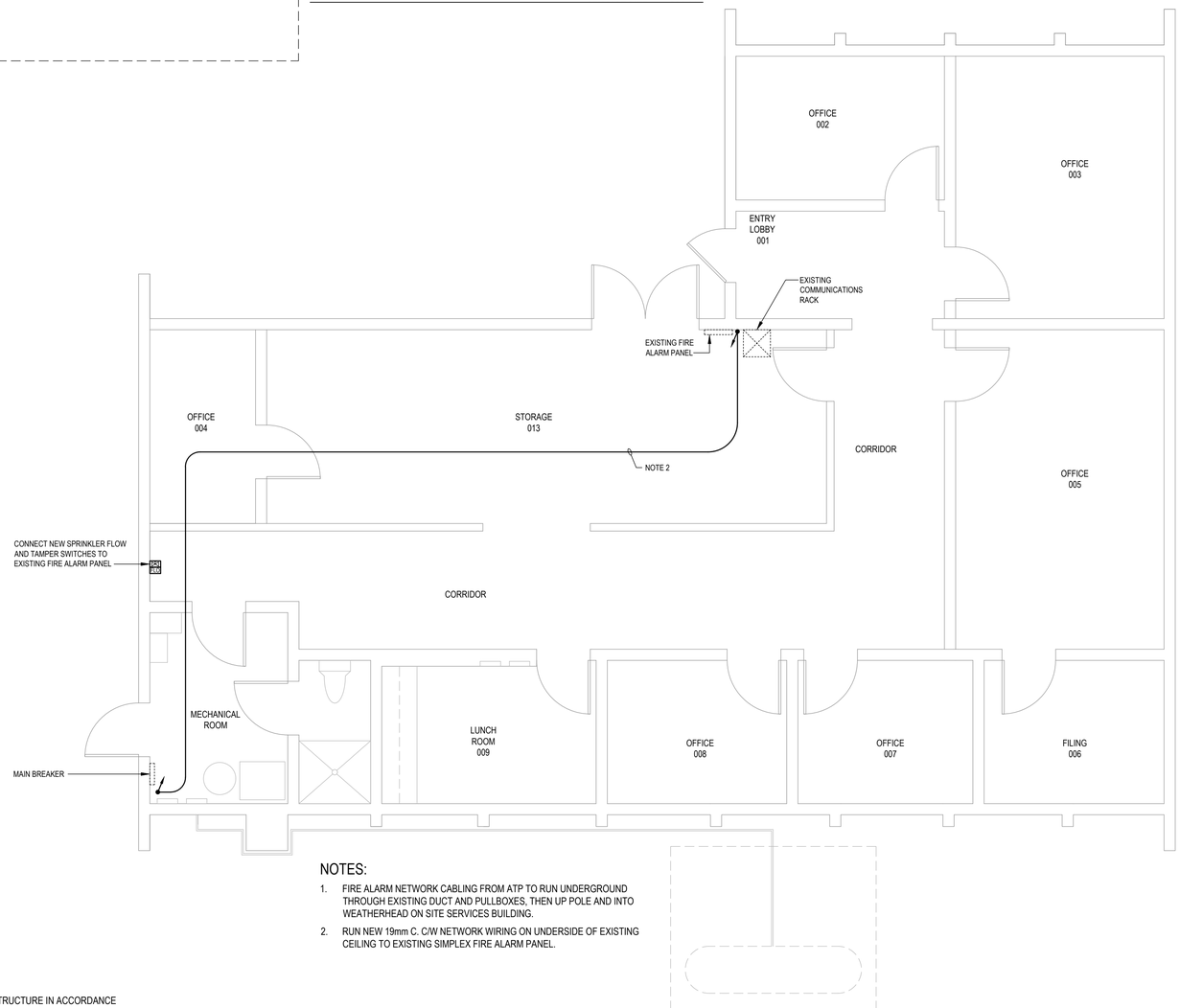
NOTES:

1. BOND ALL NON-CURRENT CARRYING METALLIC PARTS/STRUCTURE IN ACCORDANCE WITH THE CEC.
2. DIAGRAM IS SCHEMATIC AND DOES NOT INCLUDE ALL CONNECTION DETAILS REQUIRED.

3 WE3.0 GROUNDING AND BONDING DETAIL — NOT TO SCALE

NOTES:

1. EXISTING FIRE ALARM PANEL IS SIMPLEX. CONNECT NEW FLOW AND TAMPER DEVICES TO EXISTING PANEL. PROVIDE VERIFICATION OF NEW ZONES.
2. ALL WIRING TO BE SURFACE MOUNTED EMT CONDUIT ROUTING AS SHOWN.
3. INTERCONNECT EXISTING FIRE ALARM PANEL WITH NEW PANEL SHOWN IN DETAIL 4/WE1.0. PROVIDE NEW ZONE ON EXISTING PANEL FOR NEW BUILDING.



NOTES:

1. FIRE ALARM NETWORK CABLING FROM ATP TO RUN UNDERGROUND THROUGH EXISTING DUCT AND PULLBOXES, THEN UP POLE AND INTO WEATHERHEAD ON SITE SERVICES BUILDING.
2. RUN NEW 19mm C. C/W NETWORK WIRING ON UNDERSIDE OF EXISTING CEILING TO EXISTING SIMPLEX FIRE ALARM PANEL.

2 WE3.0 FIRE ALARM SITE SERVICES BUILDING — 0 1000 2000 3000 — 1:50

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AES PROJECT NO. 1-15-160

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA I.A. BARNES # 27570
2019-03-06

PROJECT NORTH

4	ISSUED FOR TENDER	2019.03.05
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VICTORIA, BC, CANADA

NRC HERZBERG
ASTRONOMY AND ASTROPHYSICS
ATP INTEGRATION FACILITY

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PREETIPAL PAUL

Drawing title/Titre du dessin
SITE SERVICE BUILDING
ELECTRICAL LAYOUT
AND SINGLE LINE DIAGRAM

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.077596.001	WE3.0 3 OF 4	4

DM5XXXXXX

PANELBOARD SCHEDULE

JOB NO./NAME : 1-15-160/NRC HERZBERG
PANEL : 2G
SYSTEM : 120/208V 3Ø, 4W
TYPE : LOAD CENTRE
LOCATION : MEZZANINE
MOUNTING : SURFACE
NO. CIRCUITS : 42
BUS SIZE : 400A
SYM. FAULT RATING : 22kAIC

DESCRIPTION	BRK	POLE	CCT	CCT	POLE	BRK	DESCRIPTION
50.0kVA UPS	200A	3	01	02	3	100	PANEL 4G
			03	04			
			05	06			
SPARE	15	1	07	08	3	15	SPARE
SPARE	15	1	09	10			
SPARE	15	1	11	12			
SPARE	15	1	13	14	3	15	SPARE
SPARE	15	1	15	16			
SPARE	15	1	17	18			
SPARE	15	1	19	20	3	15	SPARE
SPARE	15	1	21	22			
SPARE	15	1	23	24			
SPARE	15	1	25	26	3	15	SPARE
SPARE	15	1	27	28			
SPARE	15	1	29	30			
SPARE	15	1	31	32	3	15	SPARE
SPARE	15	1	33	34			
SPARE	15	1	35	36			
SPARE	15	1	37	38	3	15	SPARE
SPARE	15	1	39	40			
SPARE	15	1	41	42			

PANELBOARD SCHEDULE

JOB NO./NAME : 1-15-160/NRC HERZBERG
PANEL : 2GU
SYSTEM : 120/208V, 3PH, 4W
TYPE : LOAD CENTRE
LOCATION : WORKING AREA
MOUNTING : SURFACE
NO. CIRCUITS : 42
BUS SIZE : 200A
SYM. FAULT RATING : 10kAIC

DESCRIPTION	BRK	POLE	CCT	CCT	POLE	BRK	DESCRIPTION
PANEL '4GU'	100	3	01	02	1	15	RECEPTACLE
			03	04	1	15	RECEPTACLE
			05	06	1	15	RECEPTACLE
PANEL '2GUA'	100	3	07	08	1	15	RECEPTACLE
			09	10	1	15	RECEPTACLE
			11	12	1	15	RECEPTACLE
RECEPTACLE	15	1	13	14	3	15	SPARE
RECEPTACLE	15	1	15	16			
RECEPTACLE	15	1	17	18			
RECEPTACLE	15	1	19	20	3	15	SPARE
RECEPTACLE	15	1	21	22			
RECEPTACLE	15	1	23	24			
RECEPTACLE	15	1	25	26	3	15	SPARE
RECEPTACLE	15	1	27	28			
RECEPTACLE	15	1	29	30			
RECEPTACLE	15	1	31	32	3	15	SPARE
RECEPTACLE	15	1	33	34			
RECEPTACLE	15	1	35	36			
RECEPTACLE	15	1	37	38	3	15	SPARE
RECEPTACLE	15	1	39	40			
RECEPTACLE	15	1	41	42			

PANELBOARD SCHEDULE

JOB NO./NAME : 1-15-160/NRC HERZBERG
PANEL : 2L
SYSTEM : 120/208V, 3PH, 4W
TYPE : LOAD CENTRE
LOCATION : MEZZANINE
MOUNTING : SURFACE
NO. CIRCUITS : 42
BUS SIZE : 100A
SYM. FAULT RATING : 10kAIC

DESCRIPTION	BRK	POLE	CCT	CCT	POLE	BRK	DESCRIPTION
CLEAN ROOM	15	1	01	02	1	15	MECH/ELEC/LOWER
COLD ROOM	15	1	03	04	1	15	EXTERIOR LIGHTS (R)
(R) HIGH BAY LIGHTS	20	1	05	06	1	15	EXTERIOR LIGHTS (R)
(R) HIGH BAY LIGHTS	20	1	07	08	1	15	RECEPTACLE
(R) HIGH BAY LIGHTS	20	1	09	10	1	15	COMMS RECEPTACLE
(R) HIGH BAY LIGHTS	20	1	11	12	1	15	COMMS RECEPTACLE
INVERTER	60	1	13	14	1	15	SPARE
SPARE	15	1	15	16	1	15	SPARE
SPARE	15	1	17	18	1	15	SPARE
SPARE	15	1	19	20	1	15	SPARE
SPARE	15	1	21	22	1	15	SPARE
SPARE	15	1	23	24	1	15	SPARE
SPARE	15	1	25	26	1	15	SPARE
SPARE	15	1	27	28	1	15	SPARE
SPARE	15	1	29	30	1	15	SPARE
SPARE	15	1	31	32	1	15	SPARE
SPARE	15	1	33	34	1	15	SPARE
SPARE	15	1	35	36	1	15	SPARE
SPARE	15	1	37	38	1	15	SPARE
SPARE	15	1	39	40	1	15	SPARE
SPARE	15	1	41	42	1	15	EXIT SIGNS

(R) Control Through Low Voltage Relay Panel

PANELBOARD SCHEDULE

JOB NO./NAME : 1-15-160 NRC HERZBERG
PANEL : 2PA
SYSTEM : 120/208V, 3Ø, 4W
TYPE : -
LOCATION : FLOOR
MOUNTING : SURFACE
NO. CIRCUITS : 42
BUS SIZE : 200
SYM. FAULT RATING : 10kAIC

DESCRIPTION	BRK	POLE	CCT	CCT	POLE	BRK	DESCRIPTION
* EXTERIOR RECEPTACLES	15	1	01	02	1	15	RECEPTACLES
COLD ROOM	15	1	03	04	1	15	RECEPTACLES
COLD ROOM	15	1	05	06	1	15	RECEPTACLES
* EXTERIOR RECEPTACLES	15	1	07	08	1	15	RECEPTACLES
* EXTERIOR RECEPTACLES	15	1	09	10	1	15	RECEPTACLES
SPARE	15	1	11	12	1	15	SPARE
SPARE	15	1	13	14	1	15	SPARE
SPARE	15	1	15	16	1	15	SPARE
SPARE	15	1	17	18	1	15	SPARE
SPARE	15	1	19	20	1	15	SPARE
SPARE	15	1	21	22	1	15	SPARE
SPARE	15	1	23	24	1	15	SPARE
SPARE	15	1	25	26	1	15	SPARE
SPARE	15	1	27	28	1	15	SPARE
SPARE	15	1	29	30	1	15	SPARE
SPARE	15	1	31	32	1	15	SPARE
SPARE	15	1	33	34	1	15	SPARE
SPARE	15	1	35	36	1	15	SPARE
SPARE	15	1	37	38	1	15	SPARE
SPARE	15	1	39	40	1	15	SPARE
SPARE	15	1	41	42	1	15	SPARE

* GFCI Breaker

PANELBOARD SCHEDULE

JOB NO./NAME : 1-15-160/NRC HERZBERG
PANEL : 2P
SYSTEM : 120/208V, 3PH, 4W
TYPE : LOAD CENTRE
LOCATION : MEZZANINE
MOUNTING : SURFACE
NO. CIRCUITS : 84
BUS SIZE : 200A
SYM. FAULT RATING : 10kAIC

DESCRIPTION	BRK	POLE	CCT	CCT	POLE	BRK	DESCRIPTION
ACH-1a	15	2	01	02	3	15	CF-1
			03	04			
SPARE	15	2	05	06			
			07	08	3	15	CF-2
CU-1, AC-1	30	2	09	10			
			11	12			
EF-1, 2	15	1	13	14	3	15	CF-3
* WASHROOM RECEPTACLE	15	1	15	16			
* EXTERIOR RECEPTACLE	15	1	17	18			
DHWT-1	15	1	19	20	3	15	CF-4
CLEAN ROOM	15	1	21	22			
CLEAN ROOM	15	1	23	24			
DDC	15	1	25	26	3	15	CF-5
ACH-1b	15	2	27	28			
			29	30			
RECEPTACLE	20	1	31	32	3	15	CF-6
RECEPTACLE	20	1	33	34			
ACH-1c	15	1	35	36			
			37	38	3	15	CF-7
HANDS FREE	15	1	39	40			
COMMUNICATIONS CLOSET	20	1	41	42			
SPARE	15	1	43	44	3	15	CF-8
RECEPTACLE	15	1	45	46			
SPARE	15	1	47	48			
SPARE	15	1	49	50	3	30	OVERHEAD DOOR
BASEBOARD	15	2	51	52			
			53	54			
SPARE	15	1	55	56	3	20	COM
SPARE	15	1	57	58			
SPARE	15	1	59	60			
ACH-1d	15	2	61	62	2	15	ACH-2d
			63	64			
ACH-2a	15	2	65	66	1	15	P-1
			67	68	3	100	PANEL'2PA'
ACH-2b	15	2	69	70			
			71	72			
ACH-2c	15	2	73	74	2	15	BASEBOARD HEAT
			75	76			
SPARE	15	1	77	78	1	15	SPARE
SPARE	15	1	79	80	1	15	SPARE
SPARE	15	1	81	82	1	15	SPARE
SPARE	15	1	83	84	1	15	SPARE

* GFCI Breaker

PANELBOARD SCHEDULE

JOB NO./NAME : 1-15-160/NRC HERZBERG
PANEL : 2PC
SYSTEM : 120/208V, 3PH, 4W
TYPE : LOAD CENTRE
LOCATION : WORKING AREA
MOUNTING : SURFACE
NO. CIRCUITS : 42
BUS SIZE : 100A
SYM. FAULT RATING : 10kAIC

DESCRIPTION	BRK	POLE	CCT	CCT	POLE	BRK	DESCRIPTION
SPARE	15	1	01	02	3	15	SPARE
SPARE	15	1	03	04			
SPARE	15	1	05	06			
SPARE	15	1	07	08	3	15	SPARE
SPARE	15	1	09	10			
SPARE	15	1	11	12			
SPARE	15	1	13	14	3	15	SPARE
SPARE	15	1	15	16			
SPARE	15	1	17	18			
SPARE	15	1	19	20	3	15	SPARE
SPARE	15	1	21	22			
SPARE	15	1	23	24			
SPARE	15	1	25	26	3	15	SPARE
SPARE	15	1	27	28			
SPARE	15	1	29	30			
SPARE	15	1	31	32	3	15	SPARE
SPARE	15	1	33	34			
SPARE	15	1	35	36			
SPARE	15	1	37	38	3	15	SPARE
SPARE	15	1	39	40			
SPARE	15	1	41	42			

PANELBOARD SCHEDULE

JOB NO./NAME : 1-15-160/NRC HERZBERG
PANEL : 4G
SYSTEM : 277/480V, 3PH, 4W
TYPE : LOAD CENTRE
LOCATION : WORKING AREA
MOUNTING : SURFACE
NO. CIRCUITS : 42
BUS SIZE : 100A
SYM. FAULT RATING : 10kAIC

DESCRIPTION	BRK	POLE	CCT	CCT	POLE	BRK	DESCRIPTION
SPARE	15	1	01	02	3	15	SPARE
SPARE	15	1	03	04			
SPARE	15	1	05	06			
SPARE	15	1	07	08	3	15	SPARE
SPARE	15	1	09	10			
SPARE	15	1	11	12			
SPARE	15	1	13	14	3	15	SPARE
SPARE	15	1	15	16			
SPARE	15	1	17	18			
SPARE	15	1	19	20	3	15	SPARE
SPARE	15	1	21	22			
SPARE	15	1	23	24			
SPARE	15	1	25	26	3	15	SPARE
SPARE	15	1	27	28			
SPARE	15	1	29	30			
SPARE	15	1	31	32	3	15	SPARE
SPARE	15	1	33	34			
SPARE	15	1	35	36			
SPARE	15	1	37	38	3	15	SPARE
SPARE	15	1	39	40			
SPARE	15	1	41	42			

PANELBOARD SCHEDULE

JOB NO./NAME : 1-15-160/NRC HERZBERG
PANEL : 4GU
SYSTEM : 277/480V, 3PH, 4W
TYPE : LOAD CENTRE
LOCATION : WORKING AREA
MOUNTING : SURFACE
NO. CIRCUITS : 42
BUS SIZE : 100A
SYM. FAULT RATING : 10kAIC

DESCRIPTION	BRK	POLE	CCT	CCT	POLE	BRK	DESCRIPTION
SPARE	15	1	01	02	3	15	SPARE
SPARE	15	1	03	04		15	
SPARE	15	1	05	06		15	
SPARE	15	1	07	08	3	15	SPARE
SPARE	15	1	09	10		15	
SPARE	15	1	11	12		15	
SPARE	15	1	13	14	3	15	SPARE
SPARE	15	1	15	16		15	
SPARE	15	1	17	18		15	
SPARE	15	1	19	20	3	15	SPARE
SPARE	15	1	21	22		15	
SPARE	15	1	23	24		15	
SPARE	15	1	25	26	3	15	SPARE
SPARE	15	1	27	28		15	
SPARE	15	1	29	30		15	
SPARE	15	1	31	32	3	15	SPARE
SPARE	15	1	33	34		15	
SPARE	15	1	35	36		15	
SPARE	15	1	37	38	3	15	SPARE
SPARE	15	1	39	40		15	
SPARE	15	1	41	42		15	

PANELBOARD SCHEDULE

JOB NO./NAME : 1-15-160/NRC HERZBERG
PANEL : 4P
SYSTEM : 277/480V, 3Ø, 4W
TYPE : LOAD CENTRE
LOCATION : MEZZANINE
MOUNTING : SURFACE
NO. CIRCUITS : 42
BUS SIZE : 400A
SYM. FAULT RATING : 22kAIC

DESCRIPTION	BRK	POLE	CCT	CCT	POLE	BRK	DESCRIPTION
SPARE	15	1	01	02	3	20	COMPRESSOR COLD HEAD
SPARE	15	1	03	04			
SPARE	15	1	05	06			
SPARE	15	1	07	08	3	30	HELIUM COMPRESSOR
SPARE	15	1	09	10			
SPARE	15	1	11	12			
SPARE	15	1	13	14	3	15	CONDENSING UNIT
SPARE	15	1	15	16			
SPARE	15	1	17	18			
SPARE	15	1	19	20	3	15	SPARE
SPARE	15	1	21	22			
SPARE	15	1	23	24			
SPARE	15	1	25	26	3	15	SPARE
SPARE	15	1	27	28			
SPARE	15	1	29	30			
SPARE	15	1	31	32	3	15	SPARE
SPARE	15	1	33	34			
SPARE	15	1	35	36			
SPARE	15	1	37	38	3	15	SPARE
SPARE	15	1	39	40			
SPARE	15	1	41	42			

PANELBOARD SCHEDULE

JOB NO./NAME : 1-15-160/NRC HERZBERG
PANEL : 2GUA
SYSTEM : 120/208V, 3PH, 4W
TYPE : LOAD CENTRE
LOCATION : WORKING AREA NORTH
MOUNTING : SURFACE
NO. CIRCUITS : 42
BUS SIZE : 200A
SYM. FAULT RATING : 10kAIC

DESCRIPTION	BRK	POLE	CCT	CCT	POLE	BRK	DESCRIPTION
RECEPTACLE	15	1	01	02	3	15	SPARE
RECEPTACLE	15	1	03	04			
RECEPTACLE	15	1	05	06			
RECEPTACLE	15	1	07	08	3	15	SPARE
RECEPTACLE	15	1	09	10			
RECEPTACLE	15	1	11	12			
RECEPTACLE	15	1	13	14	3	15	SPARE
RECEPTACLE	15	1	15	16			
RECEPTACLE	15	1	17	18			
RECEPTACLE	15	1	19	20	3	15	SPARE
RECEPTACLE	15	1	21	22			
RECEPTACLE	15	1	23	24			
RECEPTACLE	15	1	25	26	3	15	SPARE
RECEPTACLE	15	1	27	28			
RECEPTACLE	15	1	29	30			
RECEPTACLE	15	1	31	32	3	15	SPARE
RECEPTACLE	15	1	33	34			
RECEPTACLE	15	1	35	36			
RECEPTACLE	15	1	37	38	3	15	SPARE
RECEPTACLE	15	1	39	40			
RECEPTACLE	15	1	41	42			

MECHANICAL EQUIPMENT SCHEDULE

#	DESCRIPTION	EQUIPMENT LOCATION	LOAD			VOLTS	PHASE	UNIT			STARTER				DISC.			CONTROL					SUPPLY PANEL					WIRE & CONDUIT				NOTE
			MCA	KW	HP			SUPPLY	MOUNT	CONNECT	SUPPLY	MOUNT	CONNECT	TYPE	SUPPLY	MOUNT	CONNECT	SUPPLY	MOUNT	CONNECT	TYPE	FIRE ALARM	PANEL #	PANEL LOCATION	BREAKER AMPS	BREAKER P	BREAKER CCT NO'S	WIRE SIZE	NO.	CONDUIT SIZE (mm)	TOTAL AMPS	
ACH 1a,1b,1c,1d	AIR CURTAIN	OVERHEAD DOOR		0.87		208	1	M	M	E	M	M	E	INT	E	E	E	M	M	M	DDC	N	2P	MEZZANINE	15	2	see schedule	12	2	19	1	4
ACH 2a,2b,2c,2d	AIR CURTAIN	OVERHEAD DOOR		0.87		208	1	M	M	E	M	M	E	INT	E	E	E	M	M	M	DDC	N	2P	MEZZANINE	15	2	see schedule	12	2	19	1	4
AC-1	AIR CONDITIONING INDOOR UNIT	ELECTRICAL ROOM	1.0			208	1	M	M	E	M	M	E	INT	E	E	E	M	M	M	INT	N				2		12	2	19	1	2
CU-1	AIR CONDITIONING OUTDOOR UNIT	EXTERIOR	18.0			208	1	M	M	E	M	M	E	INT	E	E	E	M	M	M	INT	N	2P	MEZZANINE	30	2	9,11	10	2	19	13	2
AHU-1	AIR HANDLING UNIT	MECHANICAL ROOM	29.0			208	3	M	M	E	M	M	E	INT	E	E	E	M	M	M	DDC	N	MDC	ELECTRICAL ROOM	40	3	-	6	4	27	30	
AHU-2	AIR HANDLING UNIT	MECHANICAL ROOM	29.0			208	3	M	M	E	M	M	E	INT	E	E	E	M	M	M	DDC	N	MDC	ELECTRICAL ROOM	40	3	-	6	4	27	30	
AHU-3	AIR HANDLING UNIT	MECHANICAL ROOM	29.0			208	3	M	M	E	M	M	E	INT	E	E	E	M	M	M	DDC	N	MDC	ELECTRICAL ROOM	40	3	-	6	4	27	30	
DHWT-1	DOMESTIC HOT WATER TANK	W/C ROOF			FR	120	1	M	M	E	M	M	E	INT	E	E	E	M	M	M	INT	N	2P	MEZZANINE	15	1	19	12	2	19	5	
EF-1	EXHAUST FAN	W/C			FR	120	1	M	M	E	E	E	E	TS	E	E	E	M	M	M	SW	N	2P	MEZZANINE	15	1	13	12	2	19	2	6
EF-2	EXHAUST FAN	W/C			FR	120	1	M	M	E	E	E	E	TS	E	E	E	M	M	M	SW	N	2P	MEZZANINE	15	1	13	12	2	19	2	6
CF-1-8	CEILING FAN	OVERHEAD			1.0	208	3	M	M	E	M	M	E	VFD	E	E	E	M	M	M	DDC	N	2PA	MEZZANINE	15	3	see schedule	12	3	19	-	3
P-1	DOMESTIC RECIRCULATION PUMP	MECHANICAL ROOM		0.12		120	1	M	M	E	M	M	E	INT	E	E	E	M	M	M	INT	N	2P	MEZZANINE	15	1	66	12	2	19	2	

LEGEND

M = DENOTES BY MECHANICAL CONTRACTOR
E = DENOTES BY ELECTRICAL CONTRACTOR
N = NO
TS = TIMER SWITCH
HOA = MAGNETIC STARTER WITH HAND-OFF-AUTO SELECTOR
DDC = CONTROLLED BY DDC SYSTEM
VFD = VARIABLE FREQUENCY DRIVE
SW = H.P. RATED SWITCH
PS = PRESSURE SWITCH
INT = INTEGRAL WITH UNIT

NOTES

1. PROVIDE FULL SIZE, DEDICATED COPPER GROUND TO VFD.
2. CONTROL INTERCONNECTION BY MECHANICAL.
3. ALL CF FAN CONTROLLED BY COMMON CONTROLS FROM MECHANICAL (8 IN TOTAL)
4. INTERLOCK WITH OVERHEAD DOORS. QUANTITY OF FOUR UNITS.
5. INCLUDE MECHANICAL DRAWINGS, AND ANY WORK CALLED FOR BY ELECTRICAL, IN THIS CONTRACTS SCOPE OF WORK.
6. INTERLOCK WITH WASHROOM LIGHT.

LUMINAIRE SCHEDULE

TYPE	EXAMPLE FIXTURE PICTURES	FIXTURE PERFORMANCE REQUIREMENTS
A		30000lm LED 90 OR1 HIGHBAY LUMINAIRE WITH TASK DISTRIBUTION AND 5% UPLIGHT VENT SLOTS, 3500K. L70 AT MINIMUM 100,000 HOURS. MINIMUM 3-STEP MACADAM ECLIPSE COLOUR CONSISTENCY. CONFIGURE LED ARRAYS FOR BI-LEVEL (50%) SWITCHING.
B		3000 LUMEN, 3500K, 80CRI LED 1x4 WALL MOUNTED STRIP LIGHT, C/W POLYCARBONATE COVER AND SUITABLE FOR OPERATIONS UP TO -40°C . L70 AT MINIMUM 100,000 HOURS. MINIMUM 3-STEP MACADAM ELLIPSE COLOUR CONSISTENCY.
C		3000 LUMEN, 3000K, 80CRI LED ALUMINUM SURFACE MOUNTED FIXTURE. CORROSION RESISTANT HOUSING. L70 AT MINIMUM 50,0000 HOURS MINIMUM 4-STEP MACADAM ELLIPSE COLOUR CONSISTENCY. SUITABLE FOR OPERATION AT -20°C.
D		3000 LUMEN, 3500K, 80CRI LED SUSPENDED 1.23m STRIP LIGHT C/W DIFFUSER LENS. L70 AT MINIMUM 100,0000 HOURS.
LA		600 LUMEN, 3000K, 80CRI LED DIE CAST ALUMINUM IP66 BUILDING MOUNTED FIXTURE. CORROSION RESISTANT HOUSING. L70 AT MINIMUM 50,0000 HOURS MINIMUM 4-STEP MACADAM ELLIPSE COLOUR CONSISTENCY. SUITABLE FOR OPERATION AT -20°C. MOUNT AT APPROXIMATELY 150mm ABOVE DOOR. COORDINATE AND CONFIRM FINAL HEIGHT PRIOR TO ROUGH-IN.
LB		2300 LUMEN, 5000K, 65CRI LED DIE CAST ALUMINUM IP66 BUILDING MOUNTED FIXTURE. CORROSION RESISTANT HOUSING WITH MOLDED POLYCARBONATE LENS. L70 AT MINIMUM 50,0000 HOURS MINIMUM 4-STEP MACADAM ELLIPSE COLOUR CONSISTENCY. SUITABLE FOR OPERATION AT -20°C. MOUNT AT APPROXIMATELY 3000mm ABOVE GRADE. COORDINATE AND CONFIRM FINAL HEIGHT PRIOR TO ROUGH-IN.

LUMINAIRE SCHEDULE NOTES: LUMINAIRES ABOVE ARE THE MINIMUM ACCEPTABLE STANDARD. CONTRACTOR MAY PROPOSE ALTERNATES THAT MEET OR EXCEED THIS STANDARD.

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

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

AES
CALGARY | VANCOUVER | VICTORIA
Designing A Better Tomorrow
AES PROJECT NO. 1-15-160

PROFESSIONAL
PROVINCE OF
I. A. BARNES
32870
[illegible]
2019-03-06

PROJECT NORTH

Revision/Revision	Description/Description	Date/Date
4	ISSUED FOR TENDER	2019.03.05
3	ISSUED FOR TENDER	2018.03.27
2	ISSUED FOR 100% CD REVIEW	2018.03.14
1	ISSUED FOR 90% CD REVIEW	2018.02.22

Client/client

Project title/Titre du projet
5071 WEST SAANICH ROAD
VICTORIA, BC, CANADA

NRC HERZBERG
ASTRONOMY AND ASTROPHYSICS
ATP INTEGRATION FACILITY

Consultant Signature Only

Designed by/Concept par
I.B.

Drawn by/Dessine par
S.S.

PWGSC Project Manager/Administrateur de Projets TPSGC
PATRICK TRUONG

Regional Manager, Architectural and Engineering Services
Gestionnaire régionale, Services d'architectural et de génie, TPSGC
PREETIPAL PAUL

Drawing title/Titre du dessin
SCHEDULES

Project No./No. du projet: R.077596.001
Sheet/Feuille: WE4.0 — 4 OF 4
Revision no./La Révision no.: 4

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PWGSC – A1 – 841X594

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