

WEST SAANICH NRC UPS REPLACEMENT R.095211.003

SHARED SERVICES CANADA

5071 W SAANICH ROAD,
VICTORIA, BC V9E 2E7



AREA OF WORK

DRAWING LIST

- E0.0 - COVER SHEET
- E1.0 - EXISTING ELECTRICAL ROOM UPS DETAILS
- E1.1 - EXISTING MECHANICAL ROOM UPS DETAILS
- E2.0 - REVISED ELECTRICAL ROOM AND DETAILS
- E3.0 - PARTIAL FLOOR PLAN AND TEMPORARY POWER DETAILS
- E4.0 - EXISTING SINGLE LINE DIAGRAM
- E4.1 - REVISED SINGLE LINE DIAGRAM
- E5.0 - TEMPORARY CONNECTION SINGLE LINE DIAGRAM
- M0.0 - MECHANICAL COVER SHEET AND SITEPLAN
- M1.0 - MECHANICAL PLAN



AES PROJECT #1-20-054



0	ISSUED FOR TENDER	20210507

Revision/ Révision	Description/Description	Date/Date
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Client/client	SHARED SERVICES CANADA	
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Project title/Titre du projet	WEST SAANICH NRC UPS REPLACEMENT	
	5071 W SAANICH ROAD VICTORIA, BC	

Consultant Signature Only	-	
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Designed by/Concept par	JB	
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Drawn by/Dessiné par	RS	
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PWGC Project Manager/Administrateur de Projets TPSGC	Jason Beange	
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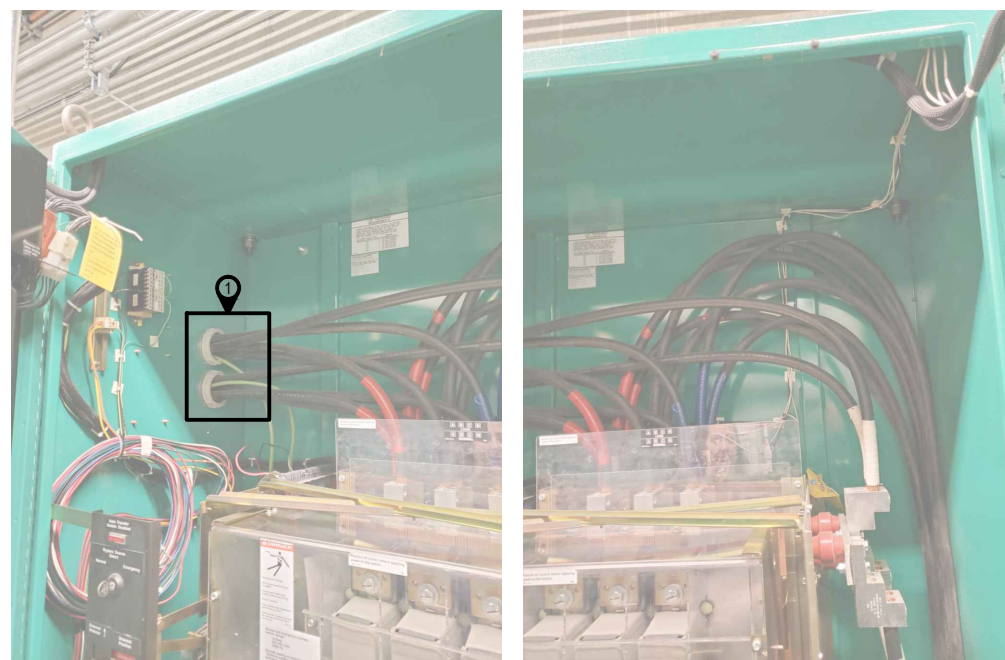
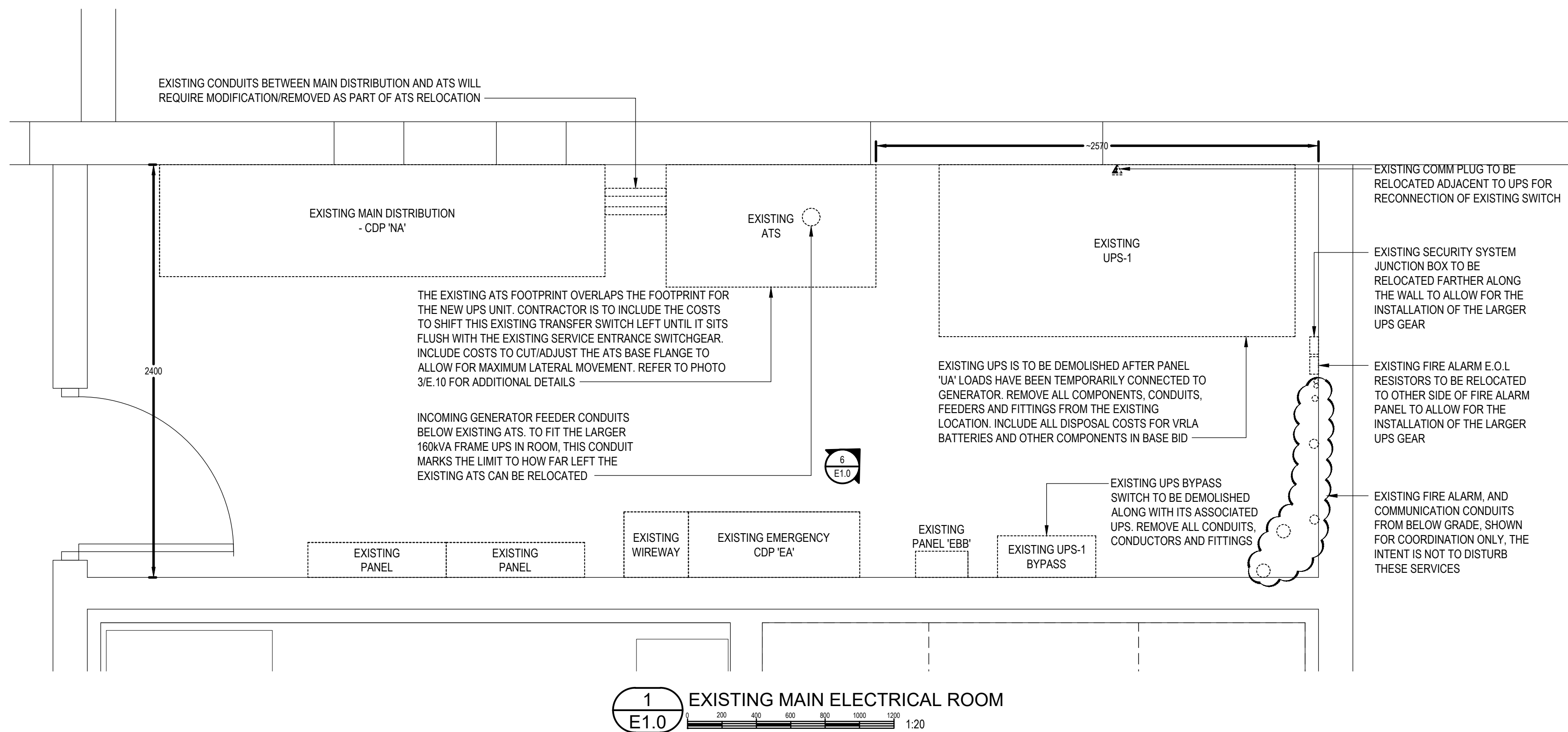
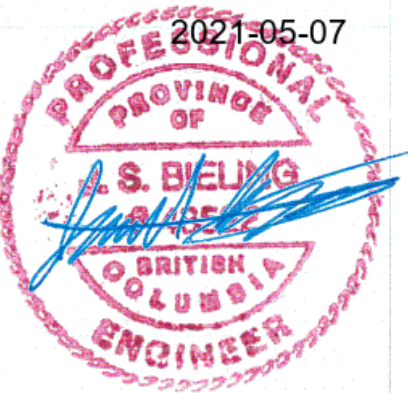
Regional Manager, Architectural and Engineering Services Gestionnaire régionale, Services d'architecture et de génie, TPSGC	Freestipal Paul	
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Drawing title/Titre du dessin	COVER SHEET	
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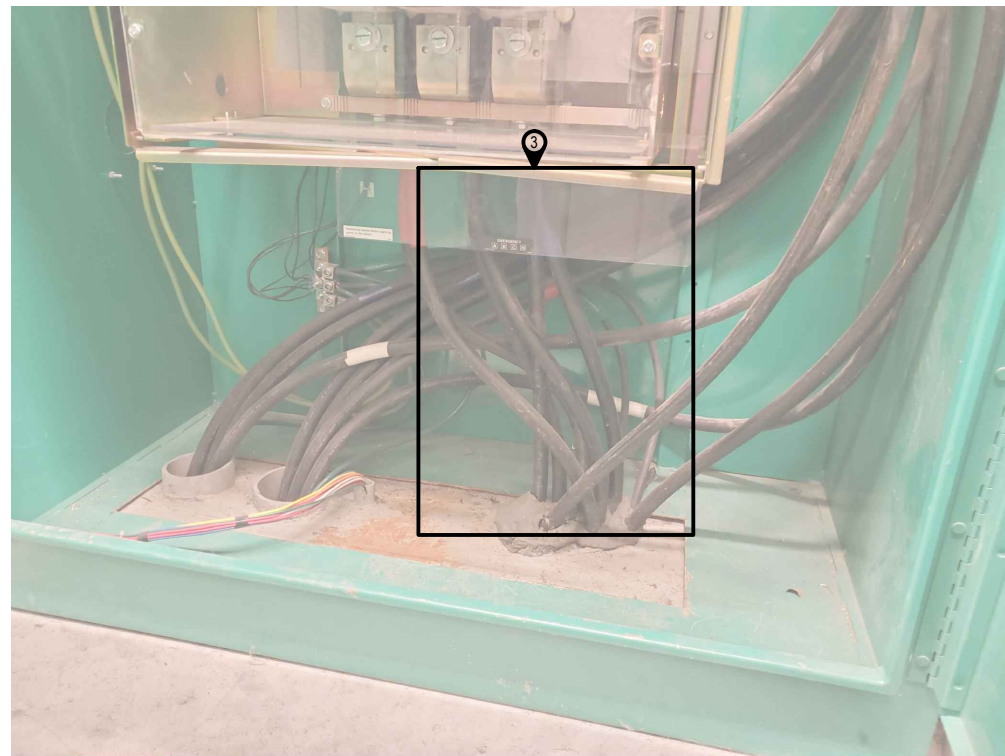
KEYNOTES - 3/E1.0

1. CONDUIT INTERIOR ENTRY VIEW OF CONNECTION BETWEEN ATS AND MAIN DISTRIBUTION PANEL BOARD.
2. THE EXISTING CONDUIT ALLOWS ~250mm OF MAXIMUM LATERAL MOVEMENT OF THE ATS. CONTRACTOR WILL NEED TO MOVE THIS ATS AND CUT PART OF THE GREEN SHEET STEEL BASE TO ALLOW FOR THE EXISTING CONDUCTORS TO PASS THROUGH.
3. INCLUDE COSTS TO COMPRESSION SPLICE C/W 2 LAYERS OF HEAT SHRINK AND EXTEND EXISTING INCOMING FEEDER CABLES TO REACH ATS CONNECTION TERMINALS AFTER ATS IS RELOCATED. REFER TO SINGLE LINE DIAGRAMS FOR EXISTING FEEDER SIZE, AND ASSUME 2m ADDITIONAL LENGTH FOR EACH CABLE.

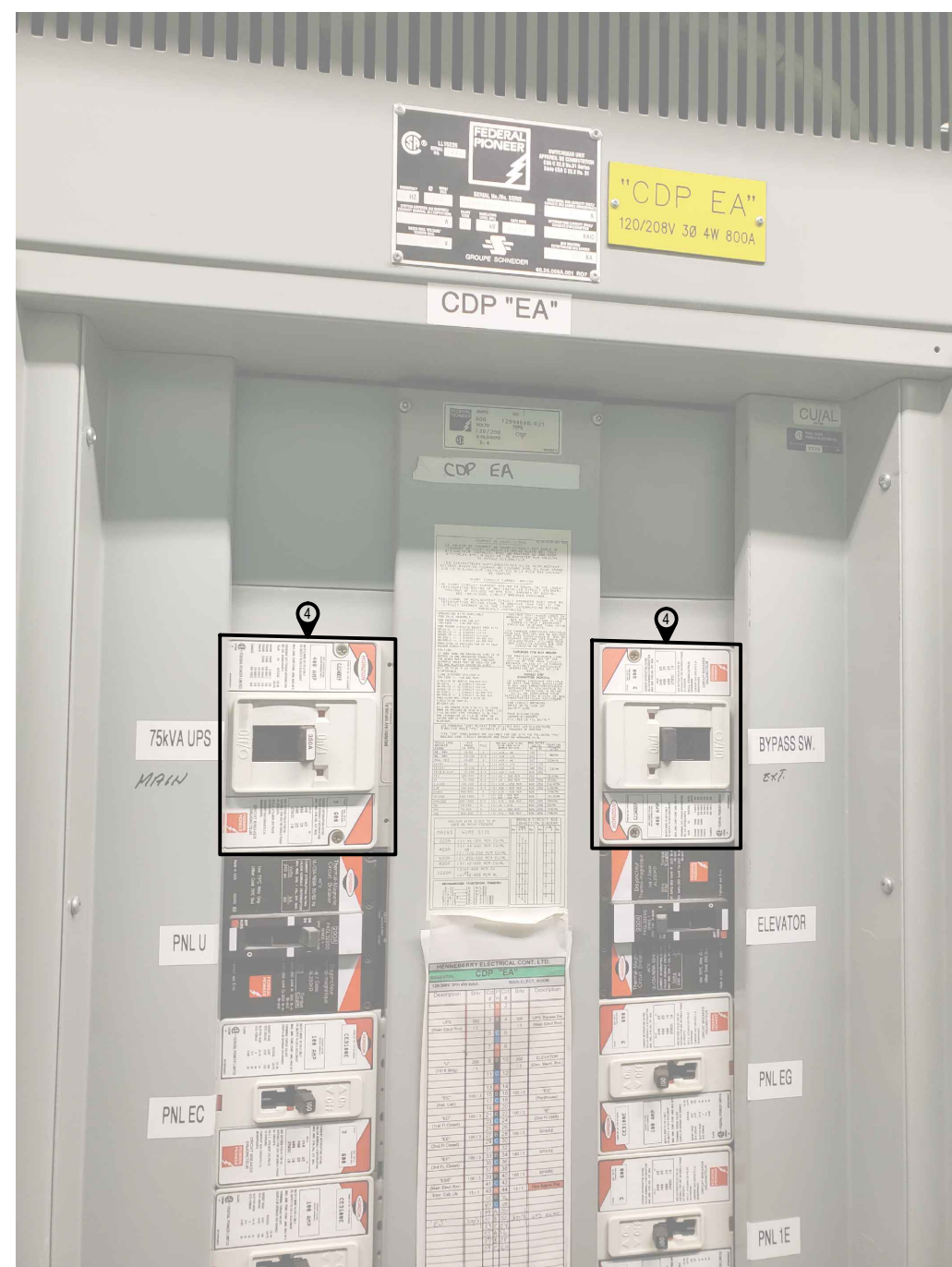


KEYNOTES - 4/E1.0

4. EXISTING BREAKER TO UPS-1 & UPS-1 BYPASS SWITCH. TO BE TURNED OFF AND MARKED AS SPARE, WITH EXISTING UPS-1 CONDUCTORS AND CONDUITS DEMOLISHED.



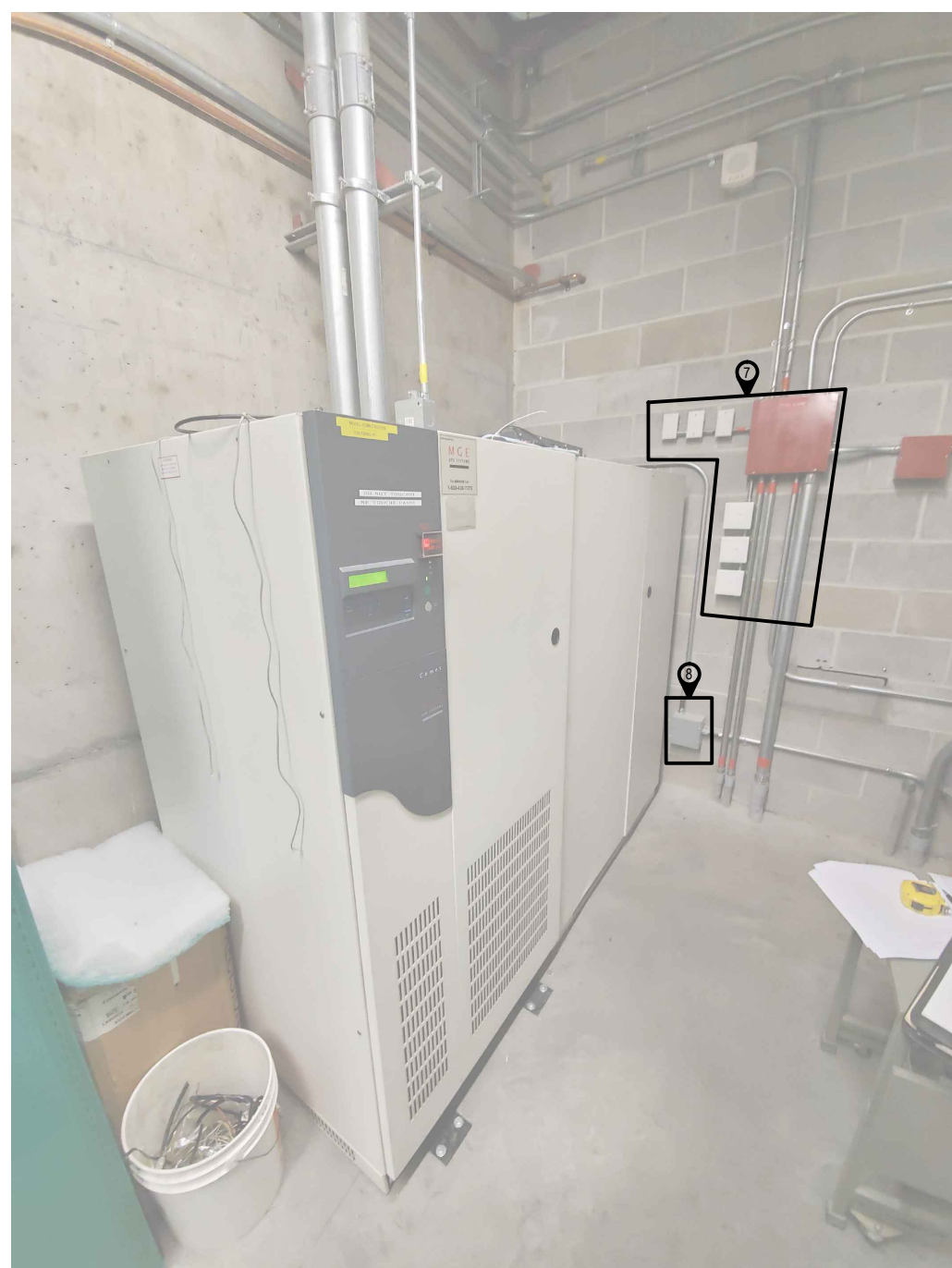
3 EXISTING ATS INTERNAL LAYOUT
E1.0 NOT TO SCALE



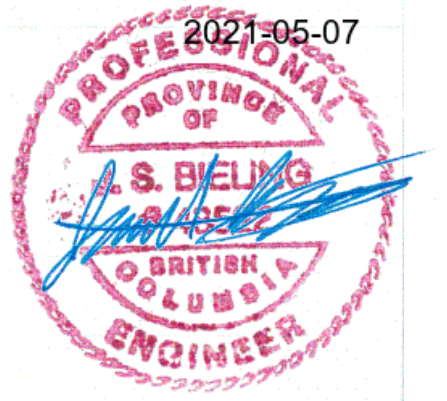
4 CDP 'EA' UPS-1 BREAKERS
E1.0 NOT TO SCALE



5 CDP 'EA' UPS-2 BREAKER AND SPACES
E1.0 NOT TO SCALE



6 EXISTING UPS-1
E1.0 NOT TO SCALE



2 EXISTING UPS-2
E1.1

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UPS REPLACEMENT**

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Drawing title/Titre du dessin

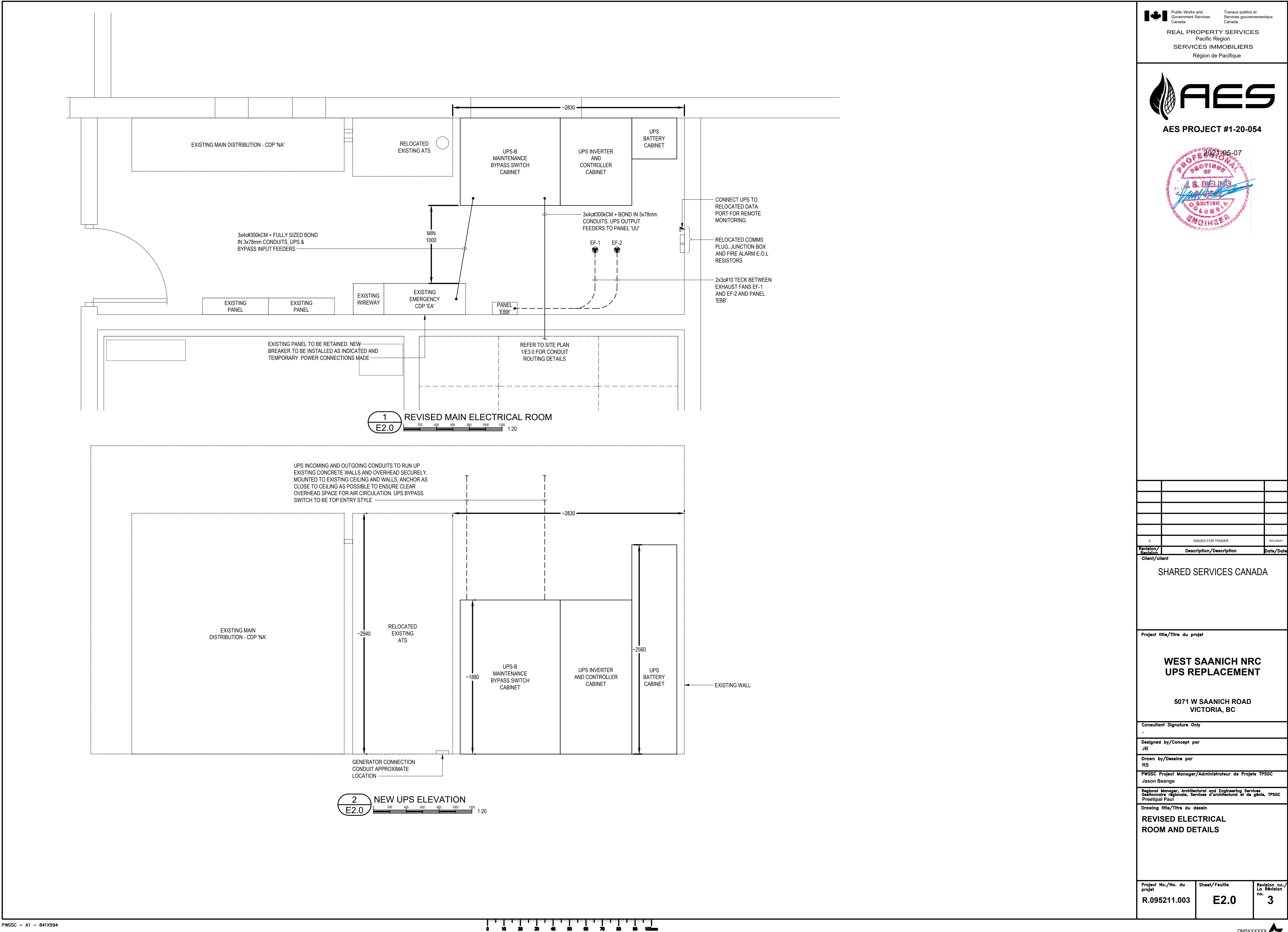
EXISTING MECHANICAL ROOM UPS DETAILS

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E1.1

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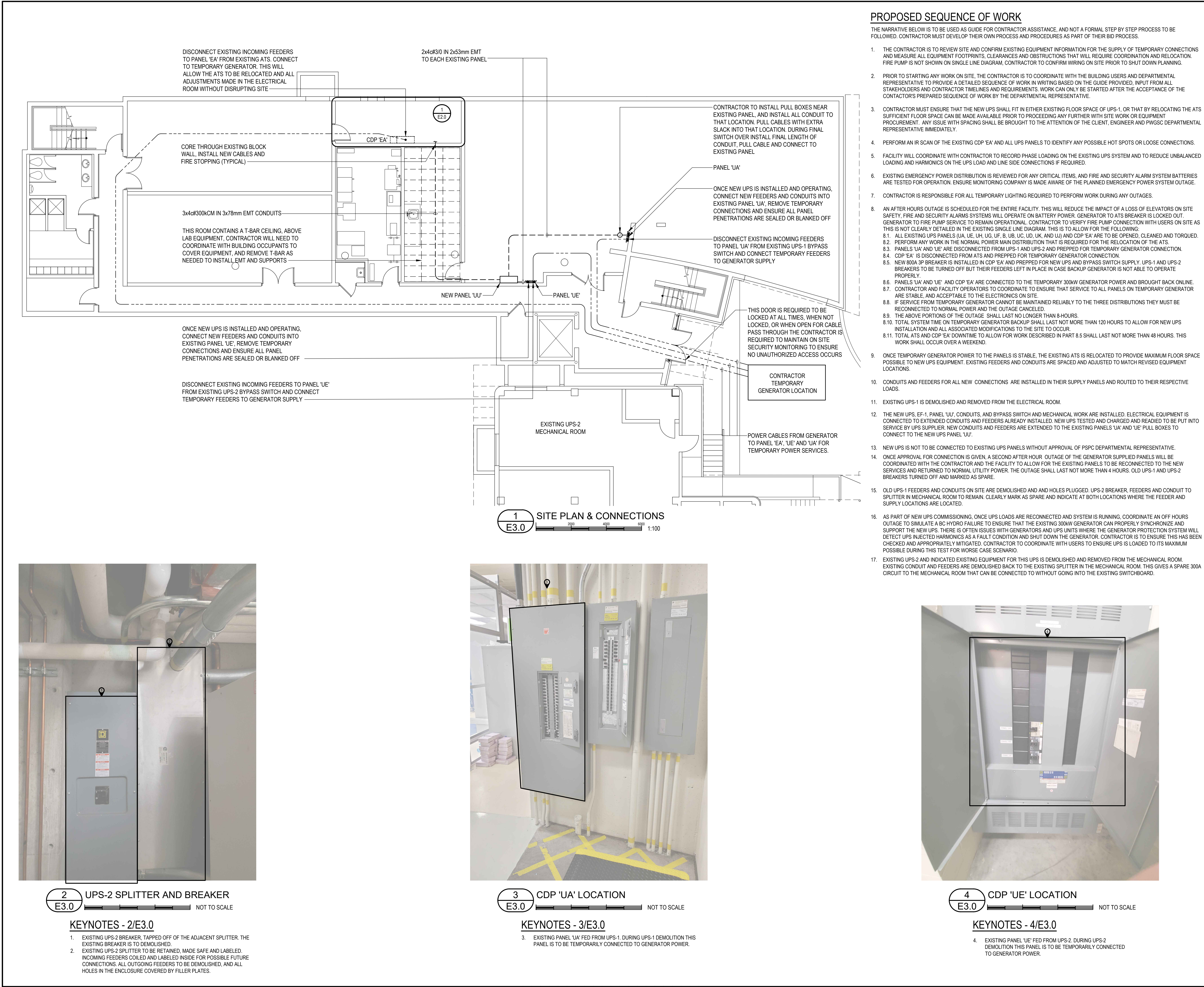
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REVISED ELECTRICAL
ROOM AND DETAILS

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PROPOSED SEQUENCE OF WORK

THE NARRATIVE BELOW IS TO BE USED AS GUIDE FOR CONTRACTOR ASSISTANCE, AND NOT A FORMAL STEP BY STEP PROCESS TO BE FOLLOWED. CONTRACTOR MUST DEVELOP THEIR OWN PROCESS AND PROCEDURES AS PART OF THEIR BID PROCESS.

- THE CONTRACTOR IS TO REVIEW SITE AND CONFIRM EXISTING EQUIPMENT INFORMATION FOR THE SUPPLY OF TEMPORARY CONNECTIONS AND MEASURE ALL EQUIPMENT FOOTPRINTS, CLEARANCES AND OBSTRUCTIONS THAT WILL REQUIRE COORDINATION AND RELOCATION. FIRE PUMP IS NOT SHOWN ON SINGLE LINE DIAGRAM, CONTRACTOR TO CONFIRM WIRING ON SITE PRIOR TO SHUT DOWN PLANNING.
- PRIOR TO STARTING ANY WORK ON SITE, THE CONTRACTOR IS TO COORDINATE WITH THE BUILDING USERS AND DEPARTMENTAL REPRESENTATIVE TO PROVIDE A DETAILED SEQUENCE OF WORK IN WRITING BASED ON THE GUIDE PROVIDED. INPUT FROM ALL STAKEHOLDERS AND CONTRACTOR TIMELINES AND REQUIREMENTS. WORK CAN ONLY BE STARTED AFTER THE ACCEPTANCE OF THE CONTRACTOR'S PREPARED SEQUENCE OF WORK BY THE DEPARTMENTAL REPRESENTATIVE.
- CONTRACTOR MUST ENSURE THAT THE NEW UPS SHALL FIT IN EITHER EXISTING FLOOR SPACE OF UPS-1, OR THAT BY RELOCATING THE ATS SUFFICIENT FLOOR SPACE CAN BE MADE AVAILABLE PRIOR TO PROCEEDING ANY FURTHER WITH SITE WORK OR EQUIPMENT PROCUREMENT. ANY ISSUE WITH SPACING SHALL BE BROUGHT TO THE ATTENTION OF THE CLIENT, ENGINEER AND PWGSC DEPARTMENTAL REPRESENTATIVE IMMEDIATELY.
- PERFORM AN IR SCAN OF THE EXISTING CDP 'EA' AND ALL UPS PANELS TO IDENTIFY ANY POSSIBLE HOT SPOTS OR LOOSE CONNECTIONS.
- FACILITY WILL COORDINATE WITH CONTRACTOR TO RECORD PHASE LOADING ON THE EXISTING UPS SYSTEM AND TO REDUCE UNBALANCED LOADING AND HARMONICS ON THE UPS LOAD AND LINE SIDE CONNECTIONS IF REQUIRED.
- EXISTING EMERGENCY POWER DISTRIBUTION IS REVIEWED FOR ANY CRITICAL ITEMS, AND FIRE AND SECURITY ALARM SYSTEM BATTERIES ARE TESTED FOR OPERATION. ENSURE MONITORING COMPANY IS MADE AWARE OF THE PLANNED EMERGENCY POWER SYSTEM OUTAGE.
- CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LIGHTING REQUIRED TO PERFORM WORK DURING ANY OUTAGES.
- AN AFTER HOURS OUTAGE IS SCHEDULED FOR THE ENTIRE FACILITY. THIS WILL REDUCE THE IMPACT OF A LOSS OF ELEVATORS ON SITE SAFETY, FIRE AND SECURITY ALARMS SYSTEMS WILL OPERATE ON BATTERY POWER. GENERATOR TO ATS BREAKER IS LOCKED OUT. GENERATOR TO FIRE PUMP SERVICE TO REMAIN OPERATIONAL. CONTRACTOR TO VERIFY FIRE PUMP CONNECTION WITH USERS ON SITE AS THIS IS NOT CLEARLY DETAILED IN THE EXISTING SINGLE LINE DIAGRAM. THIS IS TO ALLOW FOR THE FOLLOWING:
 - ALL EXISTING UPS PANELS (UA, UE, UH, UG, UF, B, UB, UC, UD, UK, AND UJ) AND CDP 'EA' ARE TO BE OPENED, CLEANED AND TORQUED.
 - PERFORM ANY WORK IN THE NORMAL POWER MAIN DISTRIBUTION THAT IS REQUIRED FOR THE RELOCATION OF THE ATS.
 - PANELS 'UA' AND 'UE' ARE DISCONNECTED FROM UPS-1 AND UPS-2 AND PREPARED FOR TEMPORARY GENERATOR CONNECTION.
 - CDP 'EA' IS DISCONNECTED FROM ATS AND PREPARED FOR TEMPORARY GENERATOR CONNECTION.
 - NEW 800A 3P BREAKER IS INSTALLED IN CDP 'EA' AND PREPARED FOR NEW UPS AND BYPASS SWITCH SUPPLY. UPS-1 AND UPS-2 BREAKERS TO BE TURNED OFF BUT THEIR FEEDERS LEFT IN PLACE IN CASE BACKUP GENERATOR IS NOT ABLE TO OPERATE PROPERLY.
 - PANELS 'UA' AND 'UE' AND CDP 'EA' ARE CONNECTED TO THE TEMPORARY 300kW GENERATOR POWER AND BROUGHT BACK ONLINE.
 - CONTRACTOR AND FACILITY OPERATORS TO COORDINATE TO ENSURE THAT SERVICE TO ALL PANELS ON TEMPORARY GENERATOR ARE STABLE, AND ACCEPTABLE TO THE ELECTRONICS ON SITE.
 - IF SERVICE FROM TEMPORARY GENERATOR CANNOT BE MAINTAINED RELIABLY TO THE THREE DISTRIBUTIONS THEY MUST BE RECONNECTED TO NORMAL POWER AND THE OUTAGE CANCELED.
 - THE ABOVE PORTIONS OF THE OUTAGE SHALL LAST NO LONGER THAN 8-HOURS.
 - TOTAL SYSTEM TIME ON TEMPORARY GENERATOR BACKUP SHALL LAST NOT MORE THAN 120 HOURS TO ALLOW FOR NEW UPS INSTALLATION AND ALL ASSOCIATED MODIFICATIONS TO THE SITE TO OCCUR.
 - TOTAL ATS AND CDP 'EA' DOWNTIME TO ALLOW FOR WORK DESCRIBED IN PART 8.5 SHALL LAST NOT MORE THAN 48 HOURS. THIS WORK SHALL OCCUR OVER A WEEKEND.
- ONCE TEMPORARY GENERATOR POWER TO THE PANELS IS STABLE, THE EXISTING ATS IS RELOCATED TO PROVIDE MAXIMUM FLOOR SPACE POSSIBLE TO NEW UPS EQUIPMENT. EXISTING FEEDERS AND CONDUITS ARE SPACED AND ADJUSTED TO MATCH REVISED EQUIPMENT LOCATIONS.
- CONDUITS AND FEEDERS FOR ALL NEW CONNECTIONS ARE INSTALLED IN THEIR SUPPLY PANELS AND ROUTED TO THEIR RESPECTIVE LOADS.
- EXISTING UPS-1 IS DEMOLISHED AND REMOVED FROM THE ELECTRICAL ROOM.
- THE NEW UPS, EF-1, PANEL 'UU', CONDUITS, AND BYPASS SWITCH AND MECHANICAL WORK ARE INSTALLED. ELECTRICAL EQUIPMENT IS CONNECTED TO EXTENDED CONDUITS AND FEEDERS ALREADY INSTALLED. NEW UPS TESTED AND CHARGED AND READY TO BE PUT INTO SERVICE BY UPS SUPPLIER. NEW CONDUITS AND FEEDERS ARE EXTENDED TO THE EXISTING PANELS 'UA' AND 'UE' PULL BOXES TO CONNECT TO THE NEW UPS PANEL 'UU'.
- NEW UPS IS NOT TO BE CONNECTED TO EXISTING UPS PANELS WITHOUT APPROVAL OF PSPC DEPARTMENTAL REPRESENTATIVE.
- ONCE APPROVAL FOR CONNECTION IS GIVEN, A SECOND AFTER HOUR OUTAGE OF THE GENERATOR SUPPLIED PANELS WILL BE COORDINATED WITH THE CONTRACTOR AND THE FACILITY TO ALLOW FOR THE EXISTING PANELS TO BE RECONNECTED TO THE NEW SERVICES AND RETURNED TO NORMAL UTILITY POWER. THE OUTAGE SHALL LAST NOT MORE THAN 4 HOURS. OLD UPS-1 AND UPS-2 BREAKERS TURNED OFF AND MARKED AS SPARE.
- OLD UPS-1 FEEDERS AND CONDUITS ON SITE ARE DEMOLISHED AND HOLES PLUGGED. UPS-2 BREAKER, FEEDERS AND CONDUIT TO SPLITTER IN MECHANICAL ROOM TO REMAIN. CLEARLY MARK AS SPARE AND INDICATE AT BOTH LOCATIONS WHERE THE FEEDER AND SUPPLY LOCATIONS ARE LOCATED.
- AS PART OF NEW UPS COMMISSIONING, ONCE UPS LOADS ARE RECONNECTED AND SYSTEM IS RUNNING, COORDINATE AN OFF HOURS OUTAGE TO SIMULATE A BC HYDRO FAILURE TO ENSURE THAT THE EXISTING 300kW GENERATOR CAN PROPERLY SYNCHRONIZE AND SUPPORT THE NEW UPS. THERE IS OFTEN ISSUES WITH GENERATORS AND UPS UNITS WHERE THE GENERATOR PROTECTION SYSTEM WILL DETECT UPS INJECTED HARMONICS AS A FAULT CONDITION AND SHUT DOWN THE GENERATOR. CONTRACTOR IS TO ENSURE THIS HAS BEEN CHECKED AND APPROPRIATELY MITIGATED. CONTRACTOR TO COORDINATE WITH USERS TO ENSURE UPS IS LOADED TO ITS MAXIMUM POSSIBLE DURING THIS TEST FOR WORSE CASE SCENARIO.
- EXISTING UPS-2 AND INDICATED EXISTING EQUIPMENT FOR THIS UPS IS DEMOLISHED AND REMOVED FROM THE MECHANICAL ROOM. EXISTING CONDUIT AND FEEDERS ARE DEMOLISHED BACK TO THE EXISTING SPLITTER IN THE MECHANICAL ROOM. THIS GIVES A SPARE 300A CIRCUIT TO THE MECHANICAL ROOM THAT CAN BE CONNECTED TO WITHOUT GOING INTO THE EXISTING SWITCHBOARD.



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Drawing title/Titre du dessin

PARTIAL FLOOR PLAN AND
TEMPORARY POWER DETAILS

Project No./No. du projet

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E3.0

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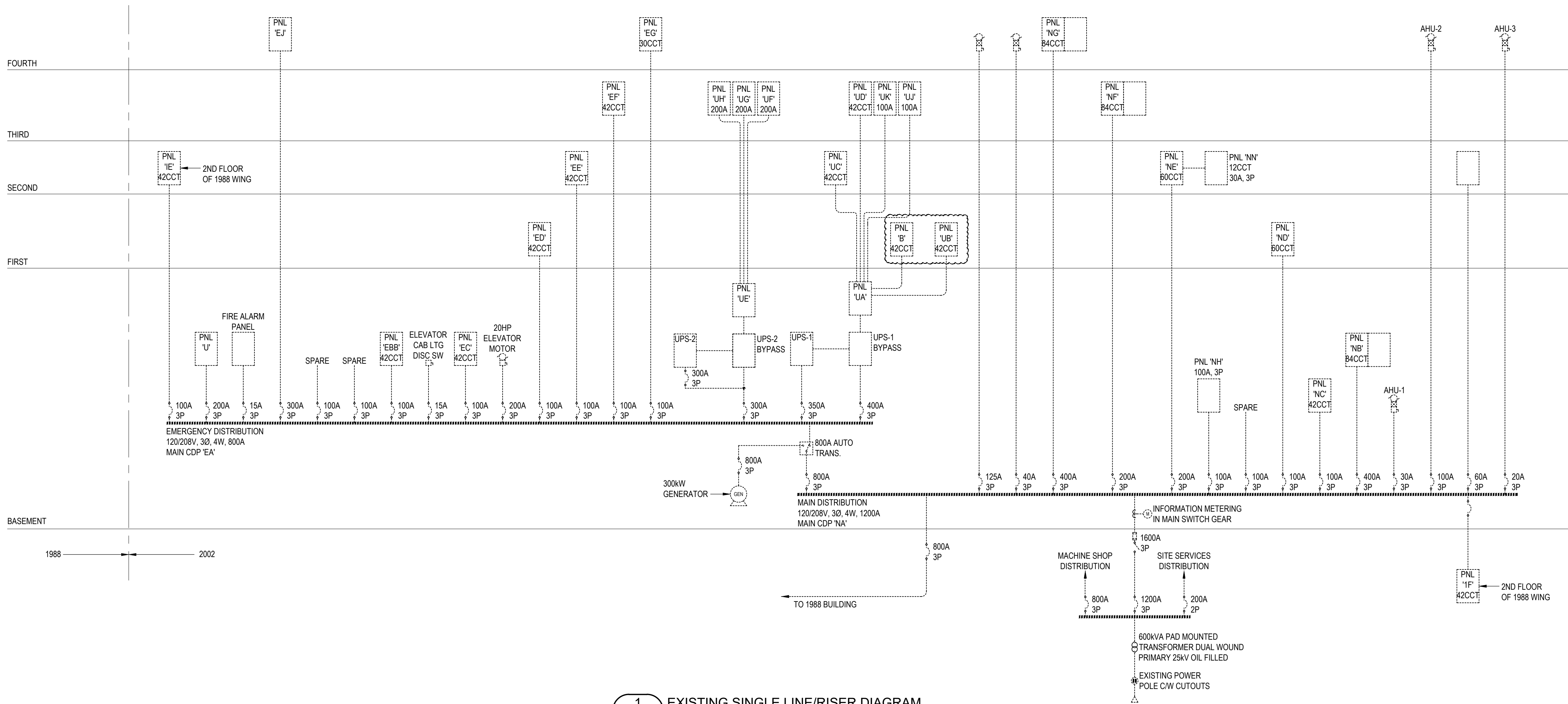
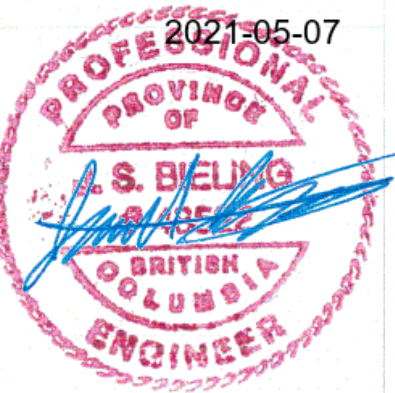
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AES PROJECT #1-20-054



1
E4.0 EXISTING SINGLE LINE/RISER DIAGRAM
NOT TO SCALE

NOTES - 1/E4.0

1. THE EXISTING UPS UNIT IN THE ELECTRICAL ROOM IS KNOWN AS UPS-1, AND THE EXISTING UPS UNIT IN THE MECHANICAL ROOM IS KNOWN AS UPS-2.
2. PANELS 'B' AND 'UB' SUPPORT CRITICAL OFF SITE INFRASTRUCTURE DATA SERVICES. ANY WORK ON THESE PANELS IS TO BE COORDINATED WITH THE FACILITY, AND EXTRA CARE TAKEN WHEN WORKING ON THESE PANELS.

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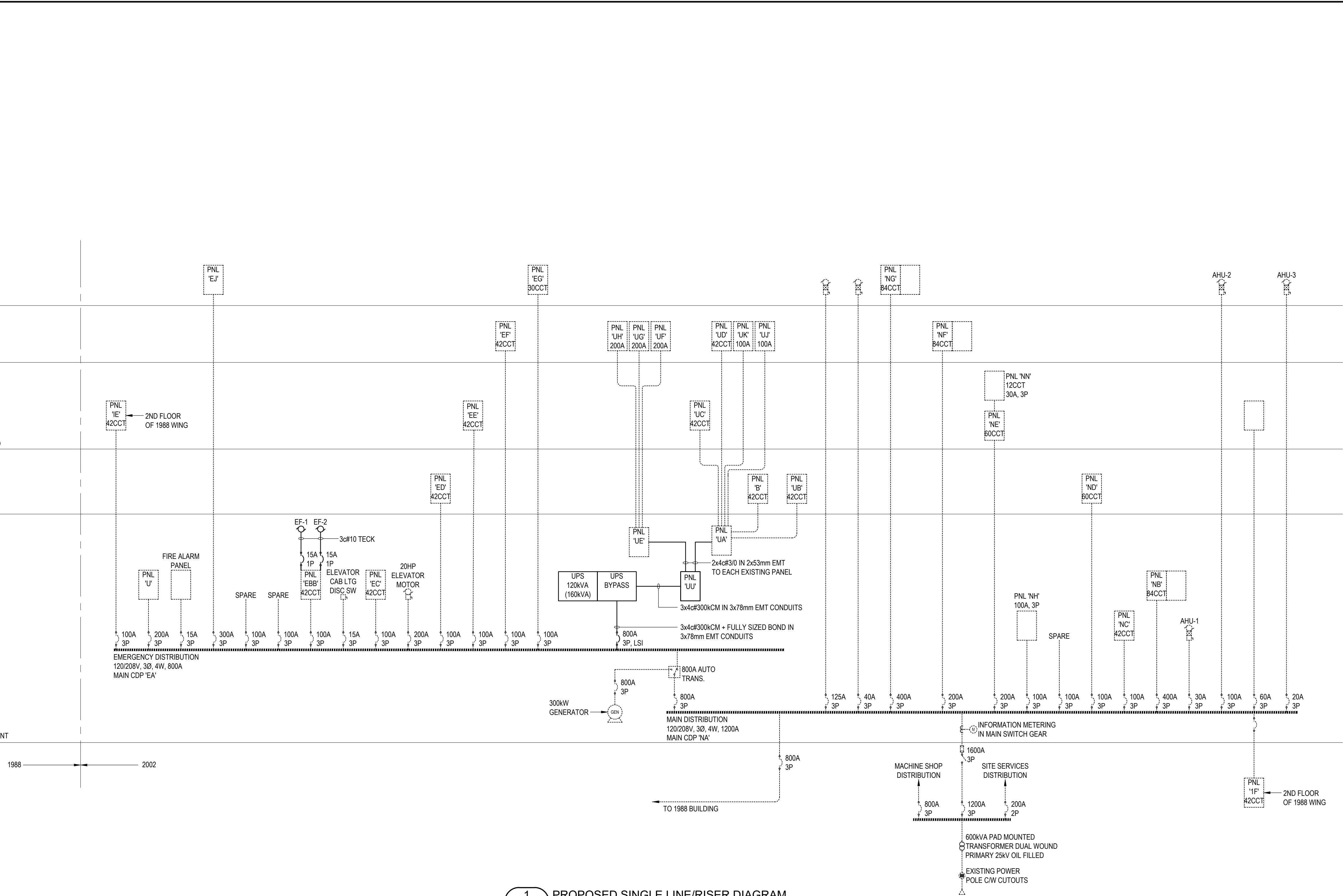
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EXISTING SINGLE LINE DIAGRAM

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1
E4.1 PROPOSED SINGLE LINE/RISER DIAGRAM
NOT TO SCALE

NOTES - 1/E4.1

- UPS BREAKER AND FEEDERS SIZES ARE BASED OFF THE BASIS OF DESIGN EQUIPMENT. FINAL SIZE OF ALL NEW UPS BREAKERS, FEEDERS AND CONDUITS ARE TO BE COORDINATED BETWEEN THE UPS VENDOR, AND THE INSTALLATION CONTRACTOR BASED ON THE UPS SHOP DRAWING OVERCURRENT PROTECTION REQUIREMENTS. THE CONTRACTOR IS TO REVISE THE BREAKER, CONDUIT AND FEEDERS SIZES UP OR DOWN TO MEET THESE REQUIREMENTS AND INCLUDE THOSE COSTS IN THE BASE BID.
- NEW PANEL 'UU' IS SIZED FOR THE BASIS OF DESIGN EQUIPMENT BREAKER SIZE REQUIREMENTS. THIS PANEL CAN BE REVISED BY THE CONTRACTOR THROUGH COORDINATION WITH THE UPS VENDOR BREAKER SIZE REQUIREMENTS AS PART OF THE BASE BID.
- AFTER ACCEPTANCE OF AS-BUILD RECORD DRAWINGS BY PSPC DEPARTMENTAL REPRESENTATIVE PROVIDE A FRAMED, PLEXIGLAS COVERED, B1 SIZED UPDATED SINGLE LINE DIAGRAM IN THE MAIN ELECTRICAL ROOM.

PANELBOARD SCHEDULE							
JOB NO./NAME	1-20-054 DCU-NRC-CADC UPS REPLACEMENT						
PANEL	PANEL UU						
SYSTEM	120/208V 3Ø 4W						
TYPE	SWITCHBOARD						
LOCATION	MAIN ELECTRICAL ROOM						
MOUNTING	SURFACE						
NO. CIRCUITS	N/A						
BUS SIZE	800A						
SYM. FAULT RATING	50KAIC						
DESCRIPTION	BRK	POLE	CCT	CCT	POLE	BRK	DESCRIPTION
PANEL 'UE'	400	3	01	02	3	400	PANEL 'UA'
			03	04			
			05	06			
SPARE	400	3	07	08	3	400	SPARE
			09	10			
			11	12			
PREPARED SPACE	400	3	13	14	3	400	PREPARED SPACE
			15	16			
			17	18			

Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

REAL PROPERTY SERVICES

Pacific Region

SERVICES IMMOBILIERS

Région de Pacifique

AES

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2021-05-07

PROFESSIONAL

OF

S. BIELING

BRITISH COLUMBIA

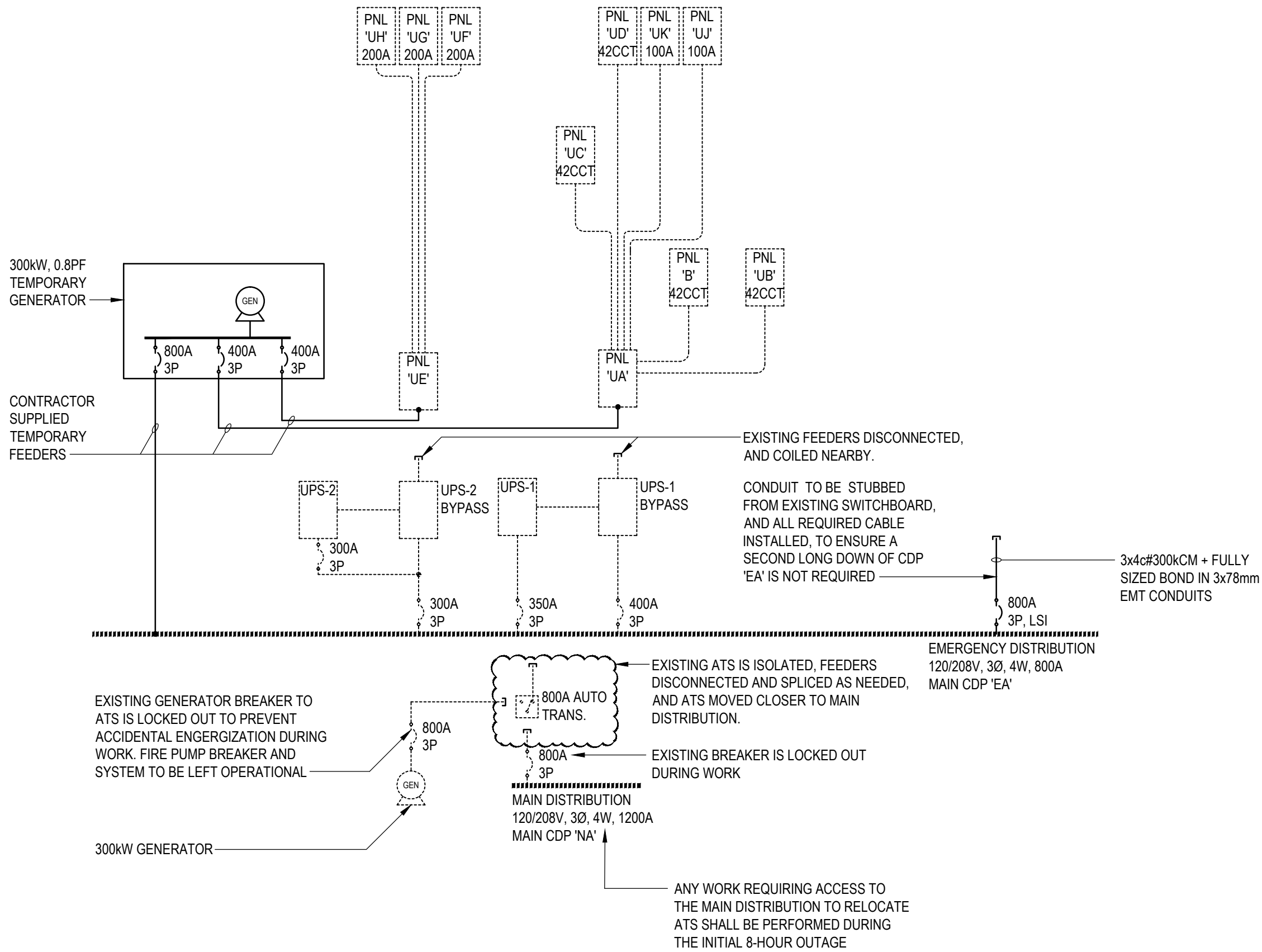
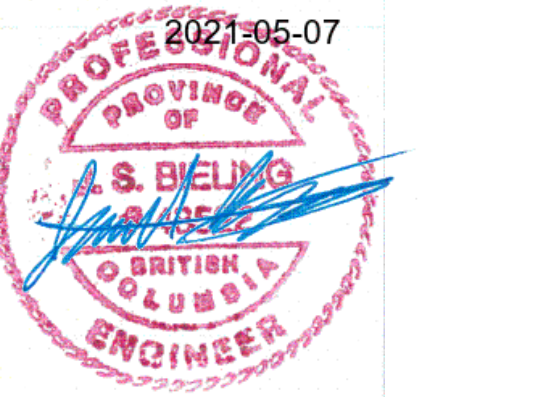
ENGINEER

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REVISED SINGLE LINE DIAGRAM				
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R.095211.003	E4.1	3		

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1 PARTIAL SINGLE LINE/RISER - OUTAGE & GENERATOR BACKUP
E5.0 NOT TO SCALE

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TEMPORARY CONNECTION

SINGLE LINE DIAGRAM

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