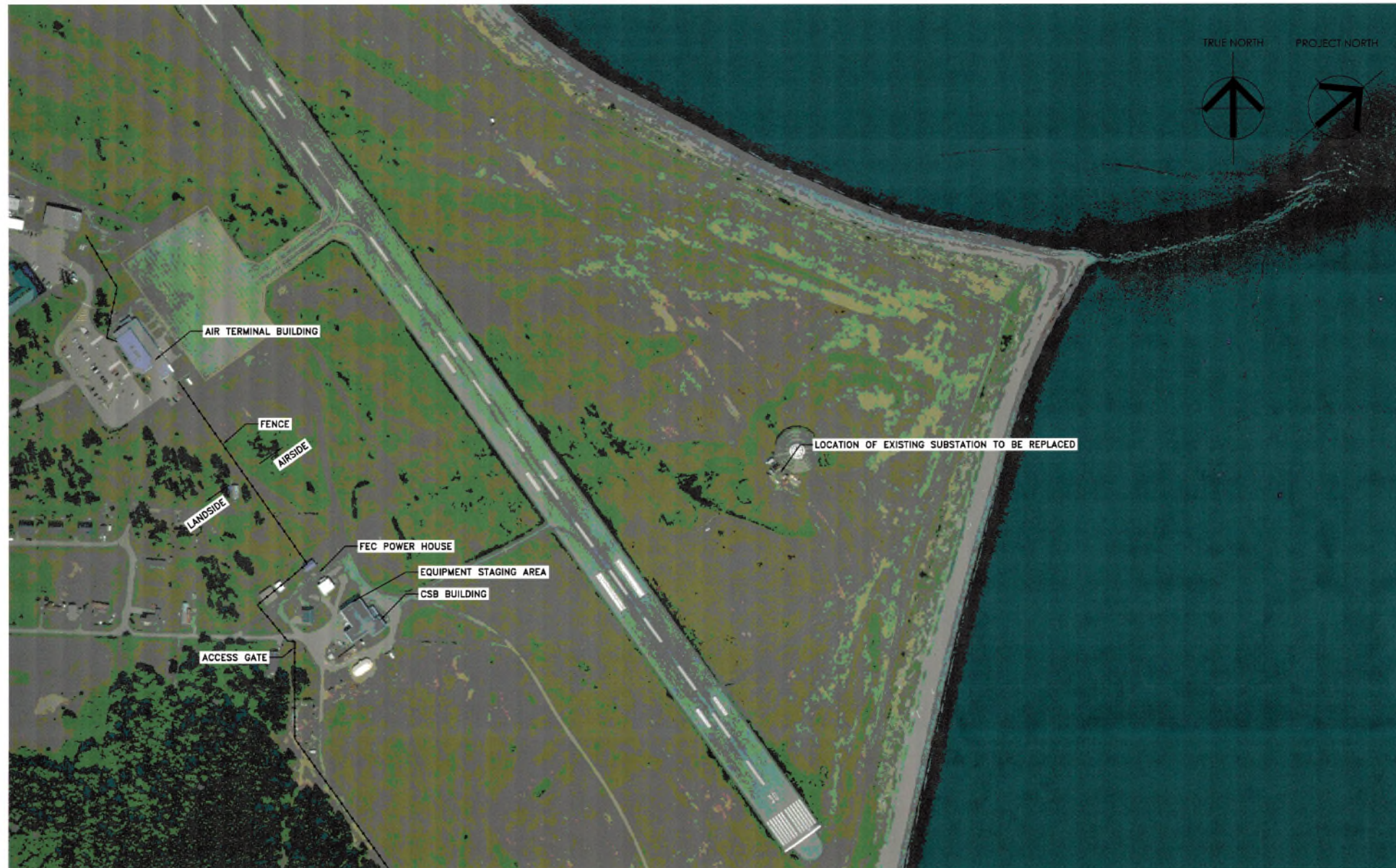


TRANSPORT CANADA, SANDSPIT AIRPORT AIRFIELD SUBSTATION REPLACEMENT PROJECT

SANDSPIT, BC

Pr. No. R.108255.001



1 KEY PLAN
E01 NTS

GENERAL NOTES

- GENERAL EQUIPMENT/MATERIAL STAGING AREA INDICATED ON KEY PLAN ABOVE. EXACT LOCATION AND REQUIREMENTS TO BE COORDINATED WITH TRANSPORT CANADA AIRPORT MANAGER.
- ALL INFORMATION SHOWN ON DRAWINGS IS ACQUIRED THROUGH LIMITED VISUAL INSPECTION OF SITE AND AS-BUILT DRAWINGS. SHOULD DISCREPANCIES BE FOUND BETWEEN ANY INFORMATION SHOWN ON DRAWINGS, SINGLE LINE DIAGRAMS, SCHEDULES OR DETAILS, ELECTRICAL CONTRACTOR TO NOTE ACTUAL CONFIGURATION ON AS-BUILT DRAWINGS, AND NOTIFY DEPARTMENTAL REPRESENTATIVE IF THE DISCREPANCY MAY IMPACT PROJECT SCOPE OF WORK OR SCHEDULE.
- ALL ELECTRICAL EQUIPMENT USED TO BE CSA TYPE 3R MINIMUM WEATHER RESISTANCE. ALL EXPOSED MATERIAL TO BE MARINE GRADE ALUMINUM. ALL HARDWARE TO BE STAINLESS STEEL. ANY EXPOSED CONDUIT TO BE PVC COATED RIGID GALVANIZED STEEL, OR RIGID PVC.
- WORK INVOLVES SHUT DOWN OF NAV CANADA NAVIGATION EQUIPMENT AND THEREFORE REQUIRES COORDINATION WITH OTHER PARTIES. CONTRACTOR TO PROVIDE DETAILED SCHEDULE, INCLUDING APPROXIMATED DURATION FOR EACH ITEM NOTED IN SCOPE OF WORK TO DEPARTMENTAL REPRESENTATIVE FOR COORDINATION WITH TRANSPORT CANADA AND NAV CANADA. REFER TO SPECIFICATION FOR FURTHER DETAILS.
- REPLACEMENT TO BE SCHEDULED FOR WHEN WEATHER IS FORECASTED TO BE CLEAR FOR DURATION OF INSTALLATION, AS POSSIBLE.
- ALL WORK WILL BE DONE ON THE AIR SIDE AND CONTRACTOR SHALL ADHERE TO SECURITY REQUIREMENTS NOTED IN SPECIFICATION SECTION: 01 32 16.
- CONTRACTOR TO INCLUDE FOR COSTS ASSOCIATED WITH PROVISION OF LOAD BANK FOR TESTING OF NEW SUBSTATION.
- PRIOR TO PROCUREMENT OF SUBSTATION, CONTRACTOR TO PERFORM DETAILED FIELD MEASUREMENTS OF EXISTING PAD AND CONDUIT STUB-OUTS TO ENSURE NEW SUBSTATION CONFIGURATION WILL BE APPROPRIATE FOR LOCATION OF EXISTING CONDUITS AND FOR EXISTING PAD.

SCOPE OF WORK – SUMMARY

- PROCUREMENT AND DELIVERY OF SUBSTATION AND TEMPORARY GENERATOR.
- FINAL COORDINATION OF NAVIGATION EQUIPMENT SHUT DOWNS WITH NAV CANADA VIA THE DEPARTMENTAL REPRESENTATIVE.
- SET UP OF TEMPORARY GENERATOR AT AIRFIELD SUBSTATION LOCATION.
- NOTIFY NAV CANADA OF SHUT DOWN.
- SHUT DOWN EXISTING AIRFIELD SUBSTATION AT BREAKER IN ESSENTIAL DISTRIBUTION SWITCHGEAR LOCATED IN THE FEC/POWERHOUSE BUILDING.
- INSTALL TEMPORARY POWER CONNECTIONS FROM GENERATOR TO TX-AW051 AND PANEL PH AND START GENERATOR TO ENERGIZE AW05, VOR/DME (LABELED VOR/TACAN ON SITE), MONCO, CODAR AND ACTIVE GPS.
- REMOVE EXISTING SUBSTATION.
- TEST INSULATION RESISTANCE OF EXISTING SUBSTATION FEEDER CABLE FROM 'TX-T8' IN THE FEC/POWERHOUSE TO SUBSTATION, INCLUDING EXISTING SPLICE.
- REPLACE EXISTING SUBSTATION FEEDER SPLICE LOCATED IN PULLBOX 'PB-04'
- TEST INSULATION RESISTANCE OF EXISTING SUBSTATION FEEDER CABLE WITH NEW SPLICE FROM 'TX-T8' IN THE FEC/POWERHOUSE TO SUBSTATION, INCLUDING NEW SPLICE.
- INSTALL AND TEST NEW TX-AW051 TRANSFORMER CABLES.
- INSTALL AND TEST NEW PANEL PH / IPU POWERHOUSE CABLES. TEST EXISTING LOCALIZER/STORAGE BUILDING CABLES.
- TEST GROUND RESISTANCE OF EXISTING SUBSTATION GROUNDING SYSTEM.
- INSTALL WOOD BORDER FRAME AND PROVIDE GRANULAR FILL AROUND NEW SUBSTATION.
- INSTALL NEW SUBSTATION AND TERMINATE ALL CABLES IN NEW SUBSTATION.
- TO REDUCE DURATION OF SHUT DOWN, TEST NEW SUBSTATION USING LOAD BANK TO ENSURE THERE WILL BE NO ISSUES WHEN TEMP. GENERATOR IS REMOVED WHEN NEW SUBSTATION IS INSERTED IN SYSTEM.
- NOTIFY NAV CANADA OF SHUT DOWN.
- SHUT DOWN GENERATOR AND REMOVE TEMPORARY POWER CONNECTIONS AT TX-AW051 AND PANEL PH AND TERMINATE NEW CABLES FROM SUBSTATION.
- ENERGIZE AND COMMISSION NEW SUBSTATION.
- REMOVE ALL CONSTRUCTION EQUIPMENT, TEMPORARY GENERATOR AND OLD SUBSTATION FROM SITE.

*SHOULD ANY ITEM LISTED ABOVE FAILS CONTRACTOR TO NOTIFY DEPARTMENTAL REPRESENTATIVE AND BEGIN WORK TO CORRECT DEFICIENCY AS SOON AS POSSIBLE.

SHUTDOWN SCHEDULE

- SHUTDOWN 1:**
- SCOPE ITEMS 5 AND 6 – SETUP OF TEMPORARY GENERATOR.
- DURATION: 2 HOURS
SYSTEMS AFFECTED: AW05, ILS, VOR/DME, CODAR, ACTIVE GPS
- TEMPORARY GENERATOR TO SUPPLY ALL NAVIGATION EQUIPMENT DURING SCOPE ITEMS 7 THROUGH 16.
- SHUTDOWN 2:**
- SCOPE ITEMS 17 – 19 – REMOVAL OF TEMPORARY GENERATOR, FINAL COMMISSIONING OF SUBSTATION.
- DURATION: 6 HOURS
SYSTEMS AFFECTED: AW05, ILS, VOR/DME, CODAR, ACTIVE GPS

DRAWING LIST	
E01	SITE KEY PLAN, SYMBOL LEGEND, NOTES
E02	SITE PLAN
E03	SINGLE LINE DIAGRAM – SUBSTATION REPLACEMENT
E04	SINGLE LINE DIAGRAM – FINAL SITE (1/2)
E05	SINGLE LINE DIAGRAM – FINAL SITE (2/2)
E06	SUBSTATION DETAILS
E07	PHOTOS

GENERAL SYMBOLS	
(#)	NOTE REFERENCE
(E) (H) (D)	EQUIPMENT REFERENCE
(A)	REVISION NUMBER
(W)	WIRING HOME RUN

SCHEMATIC SYMBOLS	
(C)	LOW VOLTAGE CIRCUIT BREAKER
(CB)	HIGH VOLTAGE CIRCUIT BREAKER
(LBS)	LOAD BREAK SWITCH
(DS)	DISCONNECT SWITCH
(F)	FUSE
(T)	TRANSFORMER
(AT)	AUTOTRANSFORMER
(CT#)	CURRENT TRANSFORMERS (# INDICATES NUMBER OF CTs IN GROUP)
(ZCT)	ZERO SEQUENCE CURRENT TRANSFORMER
(PT#)	POTENTIAL TRANSFORMERS (# INDICATES NUMBER OF PTs IN GROUP)
(TS)	TRANSFER SWITCH / MAINTENANCE BYPASS
(NO)	NORMALLY OPEN CONTACT
(NC)	NORMALLY CLOSED CONTACT
(G)	GENERATOR
(M)	REVENUE METER
(DM)	DIGITAL INFORMATION METER
(Δ)	DELTA CONNECTION
(Y)	WYE CONNECTION
(±)	GROUND CONNECTION
(P)	POTHEAD
(C)	CAPACITOR
(SPD)	SURGE PROTECTIVE DEVICE
(LA)	LIGHTNING ARRESTOR
(PB)	PANELBOARD
(GB)	GROUND BUS
(K)	KEY SWITCH/KEY INTERLOCK
(V)	VOLTMETER
(C)	CONNECTION
(R)	RESISTOR
(SH)	SPACE HEATER
(TB)	TERMINAL BLOCK IN MOTOR STARTER OR PANEL
(TBL)	TERMINAL BLOCK IN PLC
(L)	LIGHT
(S)	SWITCH, NORMALLY OPEN
(BL)	BREAK LINE
(C)	CONTINUATION BREAK

POWER PLAN SYMBOLS	
(R)	DUPLEX 5-15R RECEPTACLE
(R-GF)	DUPLEX 5-15R RECEPTACLE C/W INTEGRAL GFCI PROTECTION
(R-S)	DUPLEX 5-20R RECEPTACLE, T-SLOT
(J)	IN-GRADE JUNCTION (PULL/SPLICE) BOX
(GB)	GROUND BUS BAR
(PP)	POWER PANELBOARD
(CS)	CONDUIT STUB
(CU)	CONDUIT UP
(CD)	CONDUIT DOWN
(GR)	GROUND ROD (COPPER CLAD STEEL, 20mm # x 3m L)
(---)	DASHED LINE INDICATED UNDERGROUND CONDUIT

ABBREVIATIONS	
EX	EXISTING DEVICE TO REMAIN
RE	REMOVE EXISTING DEVICE
RP	REPLACE EXISTING DEVICE WITH NEW DEVICE
RL	RELOCATE EXISTING DEVICE
ER	EXISTING DEVICE IN RELOCATED POSITION
AF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
GF	GROUND FAULT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
JB	JUNCTION BOX
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
TYP	TYPICAL
WP	WEATHERPROOF



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Revision/	Description/Description	Date/Date
0	ISSUED FOR TENDER	2021/09/08

Client/client

TRANSPORT CANADA

Project title/Titre du projet

SANDSPIT, B.C.

TRANSPORT CANADA,
SANDSPIT AIRPORT

AIRFIELD SUBSTATION
REPLACEMENT PROJECT

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Designed by/Concept par

Job

Drawn by/Dessiné par

Job

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Regional Manager, Architectural and Engineering Services

Divisionnaire Régionale, Services d'architectural et de génie, TPSCC

Pretilipol Paul

Drawing title/Titre du dessin

SITE KEY PLAN, SYMBOL

LEGEND, NOTES

Project No./No. du projet

R.108255.001

Sheet/Fauille

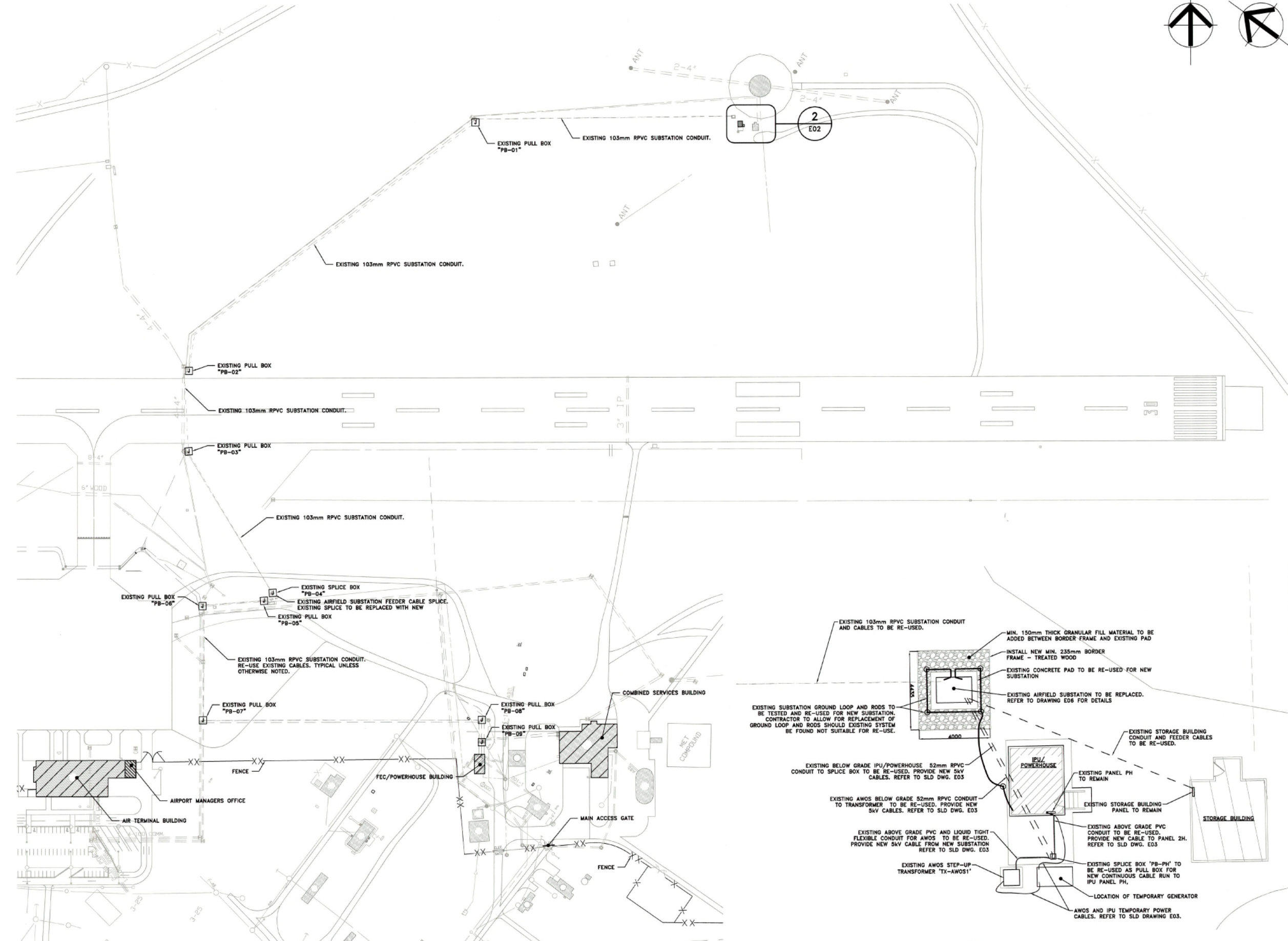
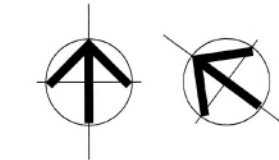
E01

Revision no./

La Révision no. 0

1 OF 7



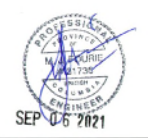


1 SITE PLAN
E02 1:1250

2 DETAILED PLAN - AIRFIELD SUBSTATION
E02 1:100



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Revision/Revision	Description/Description	Date/Date
0	ISSUED FOR TENDER	2021/09/06

TRANSPORT CANADA

SANDSPIT, B.C.
TRANSPORT CANADA,
SANDSPIT AIRPORT
AIRFIELD SUBSTATION
REPLACEMENT PROJECT

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Presidential Pool

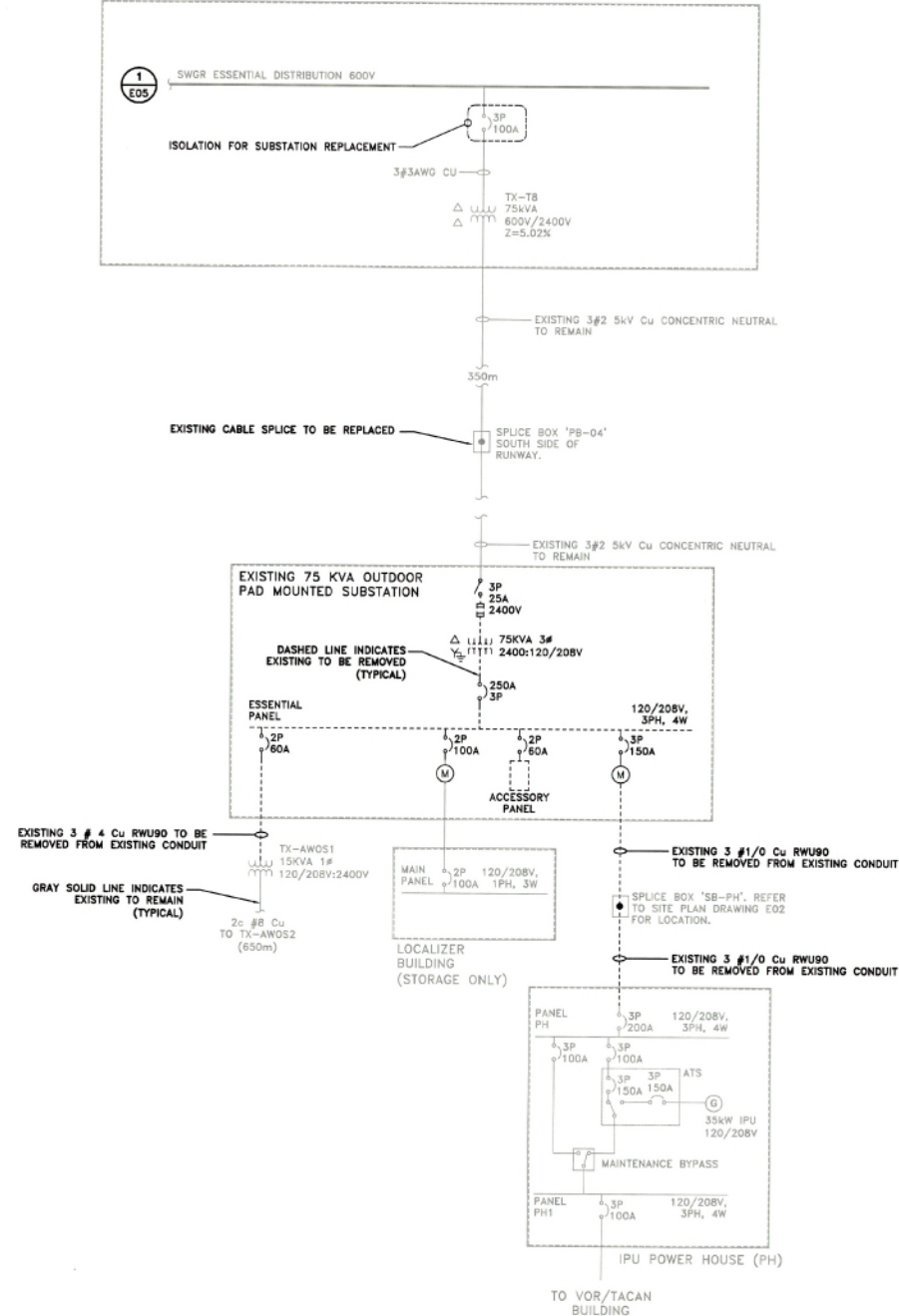
Drawing title/Titre du dessin
SITE PLAN

Project No./No. du projet R.108255.001	Sheet/Feuille E02	Revision no./La Révision no. 0
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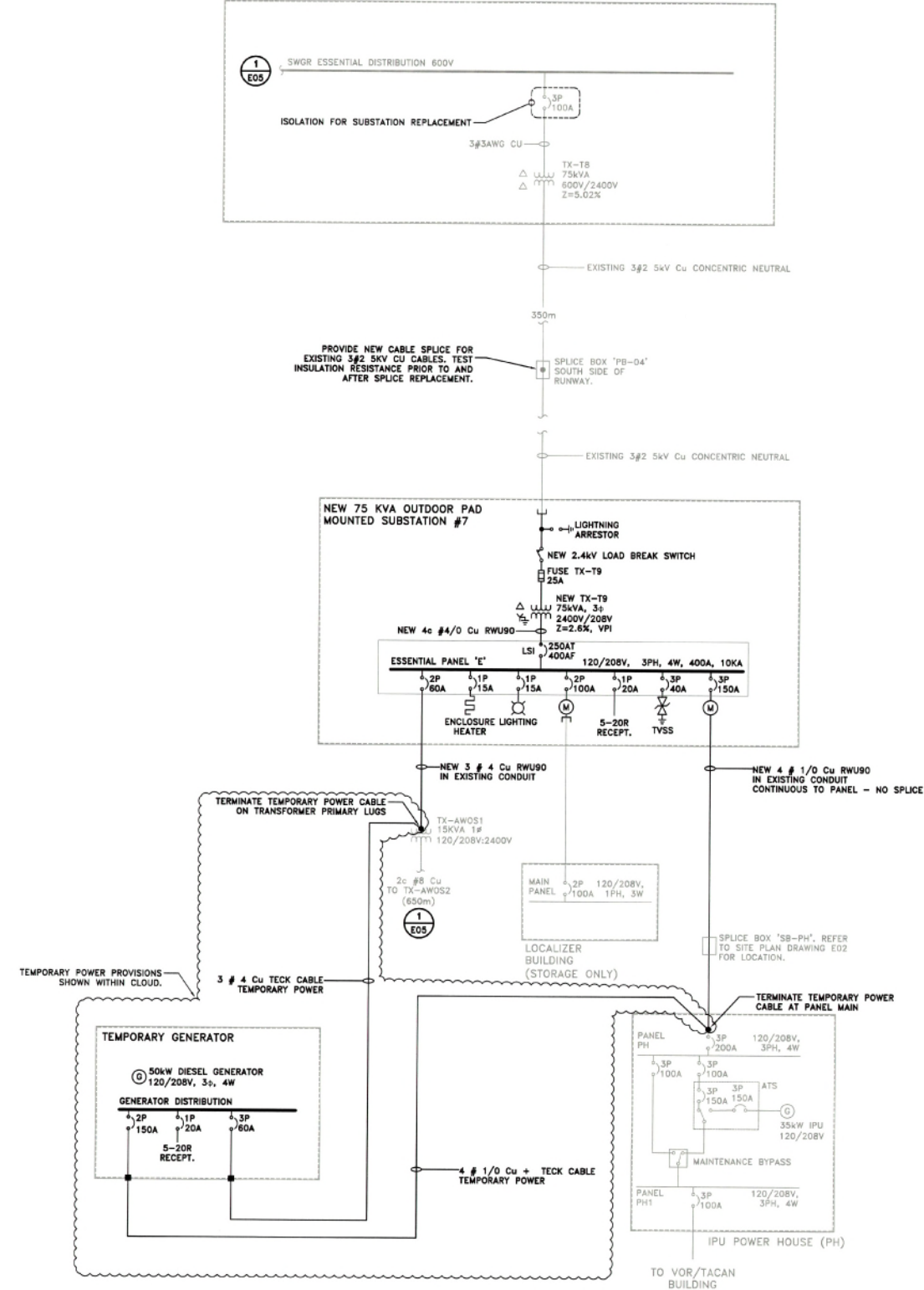


FEC/POWERHOUSE



1 EXISTING SUBSTATION SINGLE LINE DIAGRAM
E03 NTS

FEC/POWERHOUSE



2 NEW SUBSTATION SINGLE LINE DIAGRAM
E03 NTS

GENERAL NOTES - SINGLE LINE DIAGRAM

- ALL NEW CONDUCTORS SHOWN ARE TO BE ROUTED THROUGH EXISTING CONDUIT AND PULL BOXES. NO NEW CONDUIT INSTALLATION OR TRENCHING REQUIREMENTS INCLUDED IN SCOPE OF THIS PROJECT.
- SINGLE LINE DIAGRAMS ARE PRODUCED USING AVAILABLE AS-BUILTS AND VIA VISUAL OBSERVATION - NOTE THAT DISCREPANCIES MAY EXIST BETWEEN INFORMATION SHOWN ON DRAWINGS AND ACTUAL EXISTING INSTALLATION. CONTRACTOR TO NOTE DISCREPANCIES ON AS-BUILT DRAWINGS.

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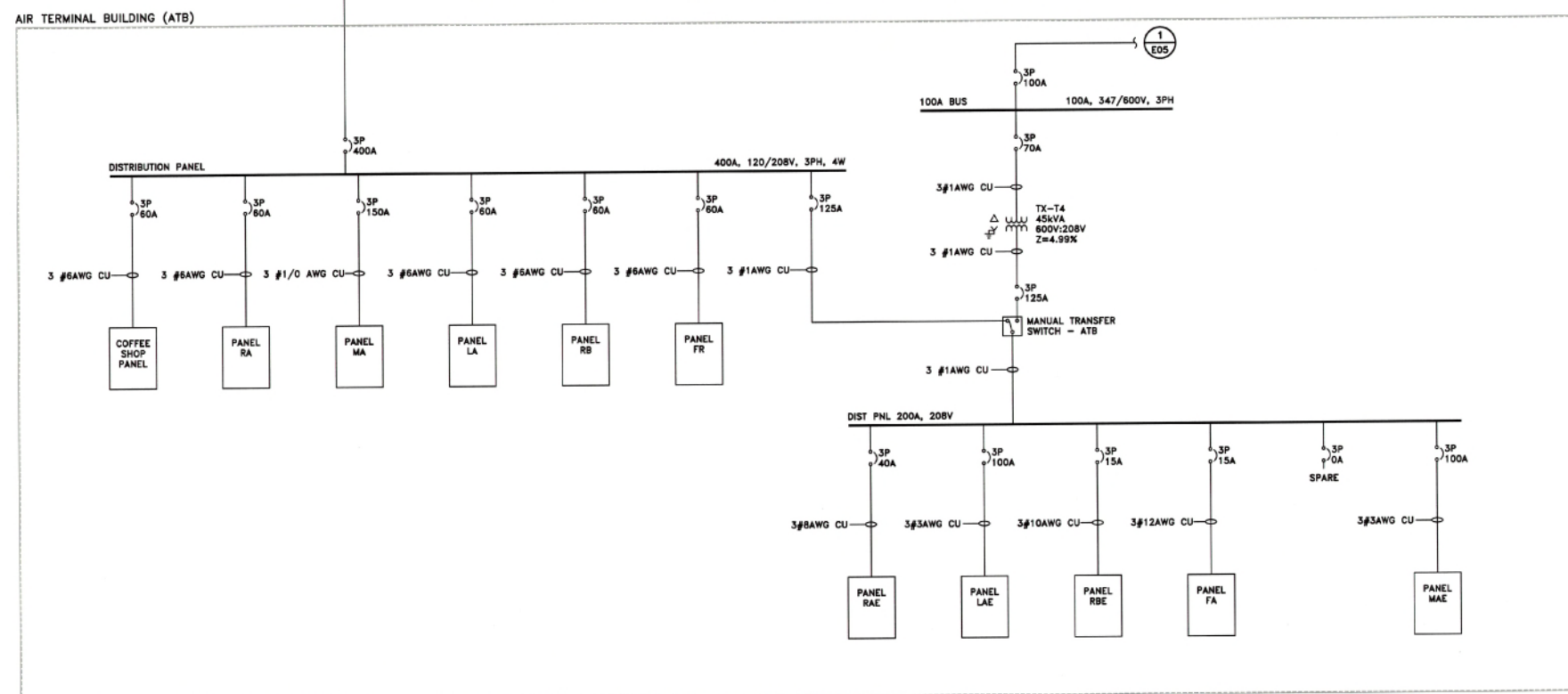
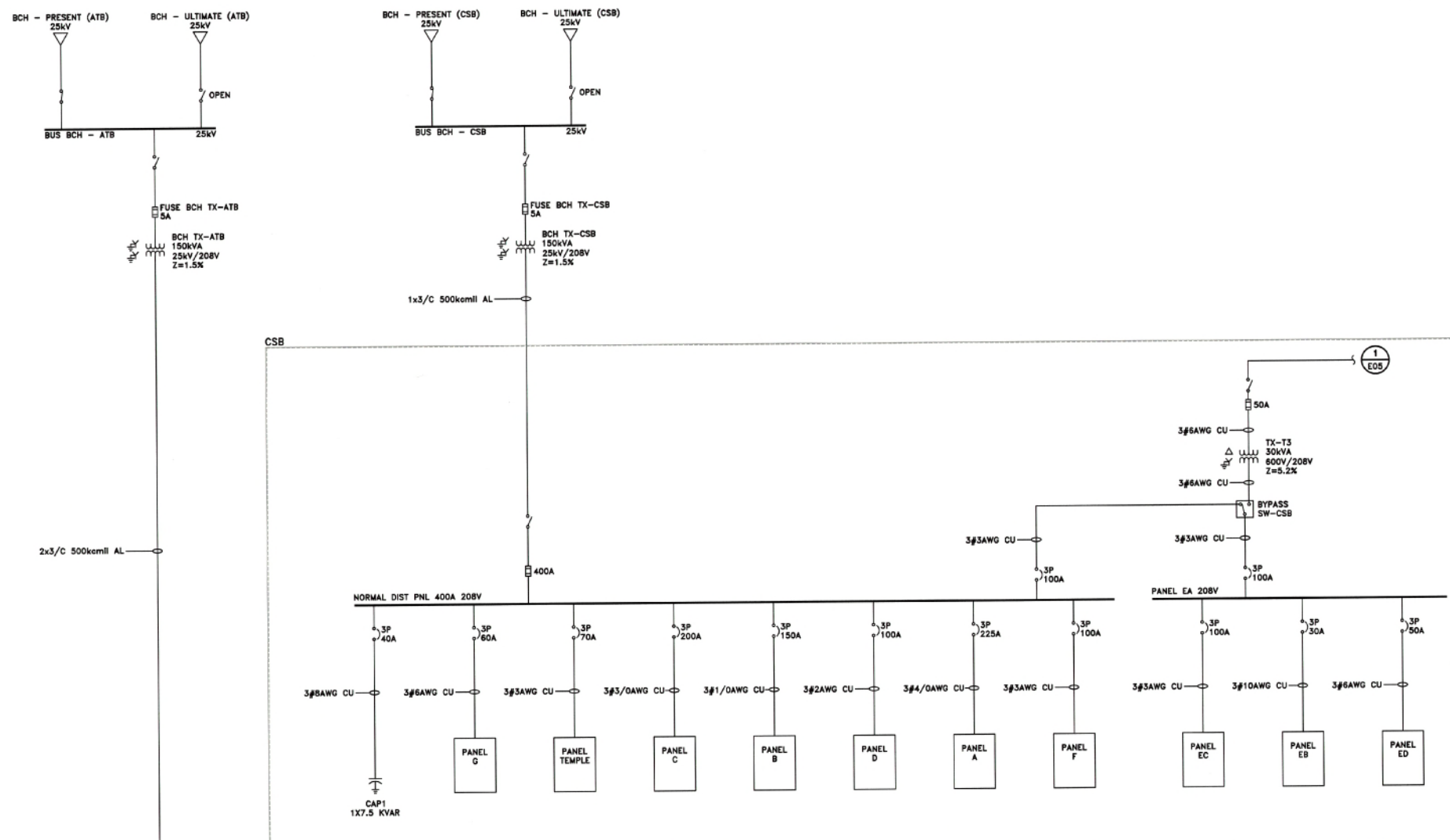
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SANDSPIT AIRPORT
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Frederic Paul
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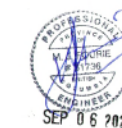
SINGLE LINE DIAGRAM
SUBSTATION REPLACEMENT

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REPLACEMENT PROJECT**

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**SINGLE LINE DIAGRAM
FINAL SITE (1/2)**

Project No./No. du projet

R.108255.001

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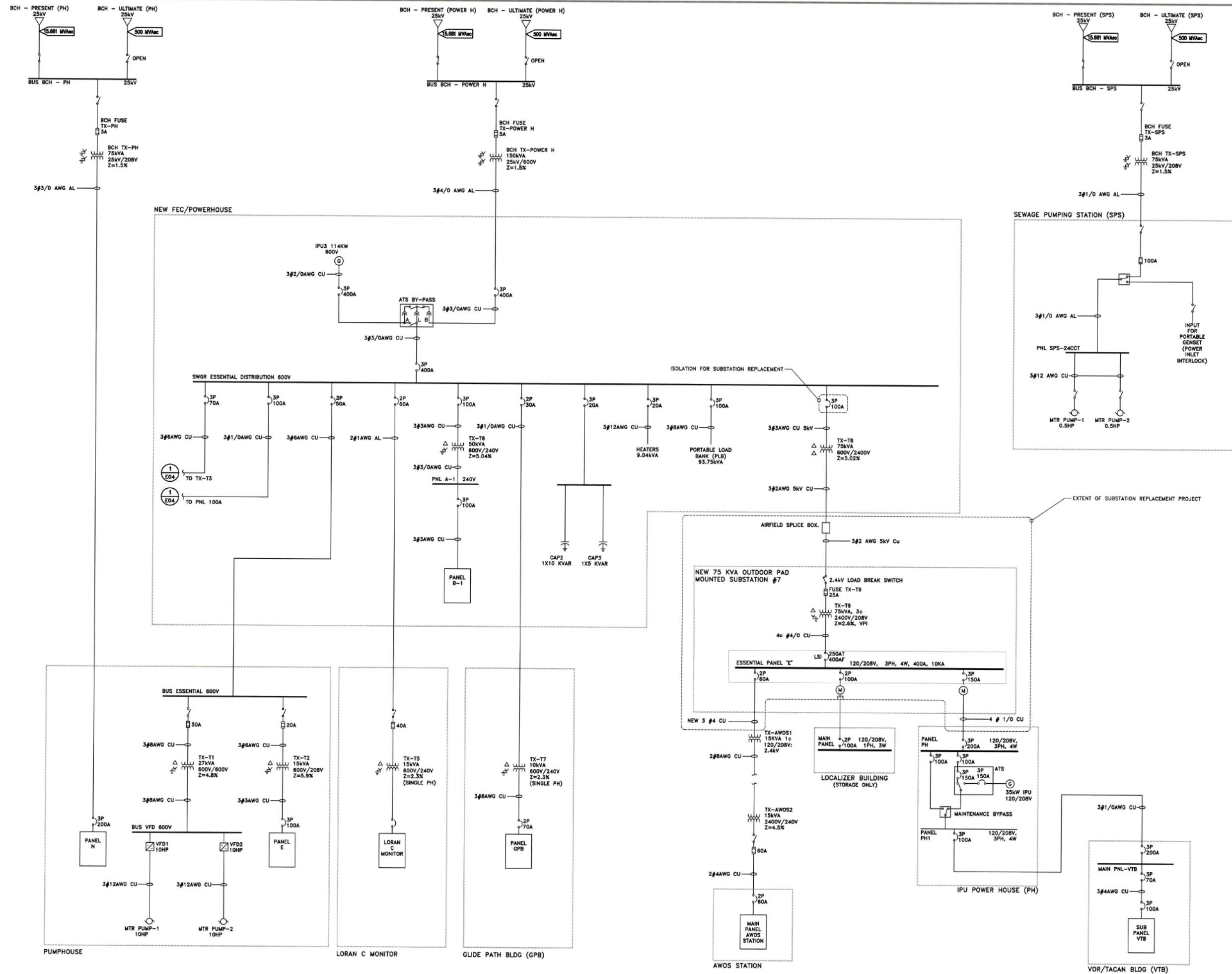
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Revision no./La Révision no.

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 TRANSPORT CANADA,
 SANDSPIT AIRPORT
**AIRFIELD SUBSTATION
 REPLACEMENT PROJECT**

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 Drawn by/Cassine par: JD
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 Regional Manager, Architectural and Engineering Services
 Gestionnaire régionale, Services d'architecture et de génie, TP500
 Prentiss Pau
 Drawing title/Titre du dessin:

**SINGLE LINE DIAGRAM
 FINAL SITE (2/2)**

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FOR INFORMATION ONLY



EXISTING SUBSTATION ESSENTIAL PANEL 'E'

DESCRIPTION	BKR	CIRCUIT NO.	BKR	DESCRIPTION
ACCESSORY PANEL	2P 60A	1	2P 100A	"LOCALIZER" (STORAGE BUILDING)
SPACE		3		
SPACE		4		
SPACE		5		
SPACE		6		
SPACE		7		
SPACE		8		
SPACE		9		
SPACE		10		
SPACE		11		
SPACE		12		
SPACE		13		
SPACE		14		
SPACE		15		
SPACE		16		
SPACE		17		
SPACE		18		
SPACE		19		
SPACE		20		
SPACE		21		
SPACE		22		
SPACE		23		
SPACE		24		

MAINS: 400A
 MOUNTING: SURFACE
 MAIN BKR.: 250A
 FEEDER: -

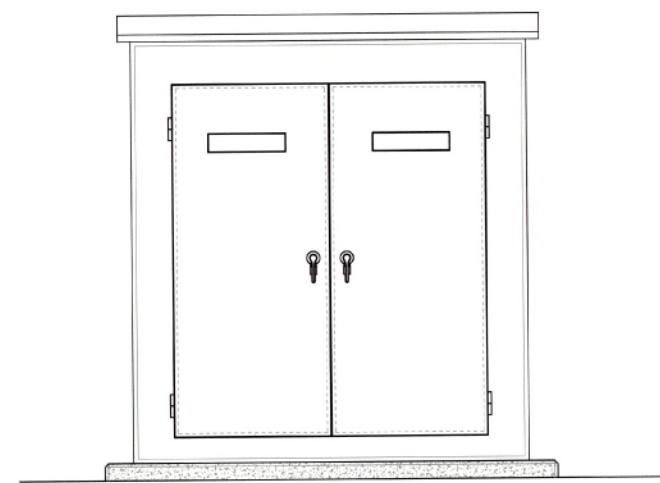
VOLTS: 120/208V 3PH, 4W
 LOCATION: AIRFIELD SUBSTATION KIOSK
 FED FROM: SUBSTN. TX / FEC 600V DIST.
 ENTER AT: BACK

NEW SUBSTATION ESSENTIAL PANEL 'E'

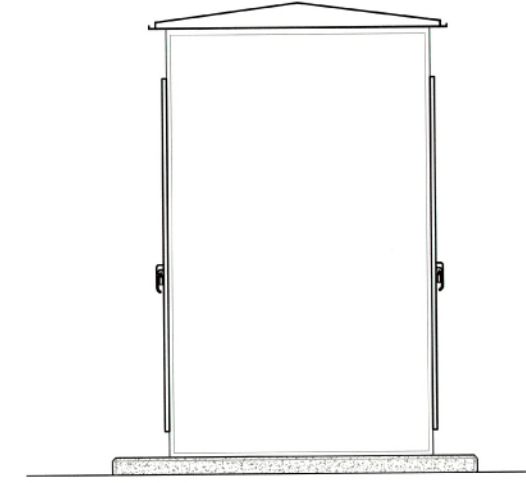
DESCRIPTION	BKR	CIRCUIT NO.	BKR	DESCRIPTION
AWOS	2P 90A	1	2P 100A	STORAGE BUILDING
TVSS	3P 40A	2	3P 150A	POWERHOUSE/ VORTAC
SPACE		3		
SPACE		4		
SPACE		5		
SPACE		6		
SPACE		7		
SPACE		8		
SPACE		9		
SPACE		10		
SPACE		11		
SPACE		12		
SPACE		13		
SPACE		14		
SPACE		15		
SPACE		16		
SPACE		17		
SPACE		18		
SPACE		19		
SPACE		20		
SPACE		21		
SPACE		22		
SPACE		23		
SPACE		24		

MAINS: 400A
 MOUNTING: SURFACE
 MAIN BKR.: 400AF
 SCCR: 10KA

VOLTS: 120/208V 3PH, 4W
 LOCATION: AIRFIELD SUBSTATION KIOSK
 FED FROM: SUBSTN. TX / FEC 600V DIST.
 ENTER AT: BACK

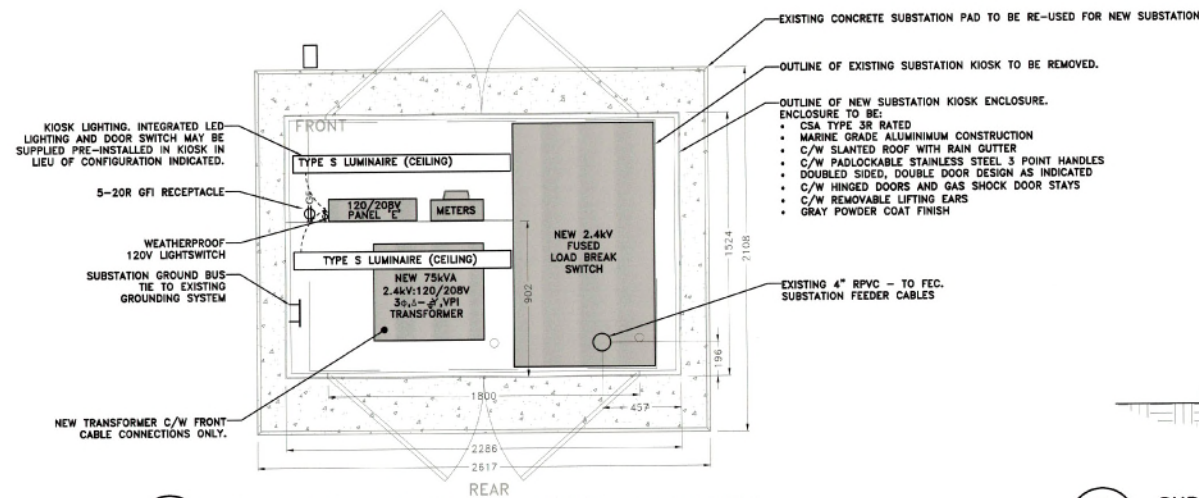


FRONT/BACK

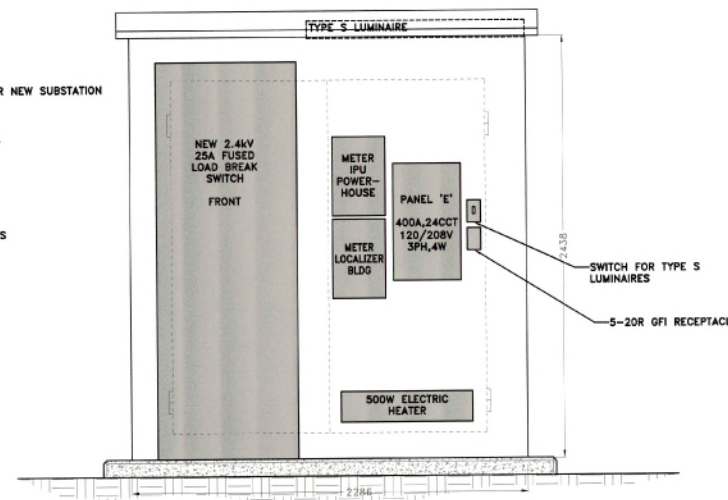


SIDE (TYP.)

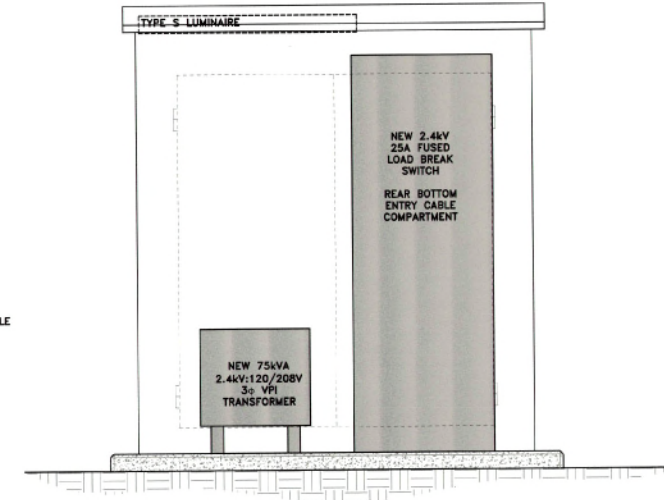
1 SUBSTATION ENCLOSURE - ELEVATIONS
 E06 1:20



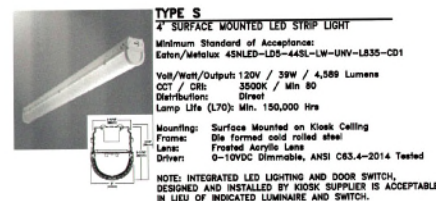
2 SUBSTATION - EQUIPMENT LAYOUT - PLAN VIEW
 E06 NTS



3 SUBSTATION - EQUIPMENT LAYOUT - FRONT ELEVATION
 E06 NTS



4 SUBSTATION - EQUIPMENT LAYOUT - REAR ELEVATION
 E06 NTS



5 LUMINAIRE SCHEDULE
 E06 1:20

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TRANSPORT CANADA

SANDSPIT, B.C.
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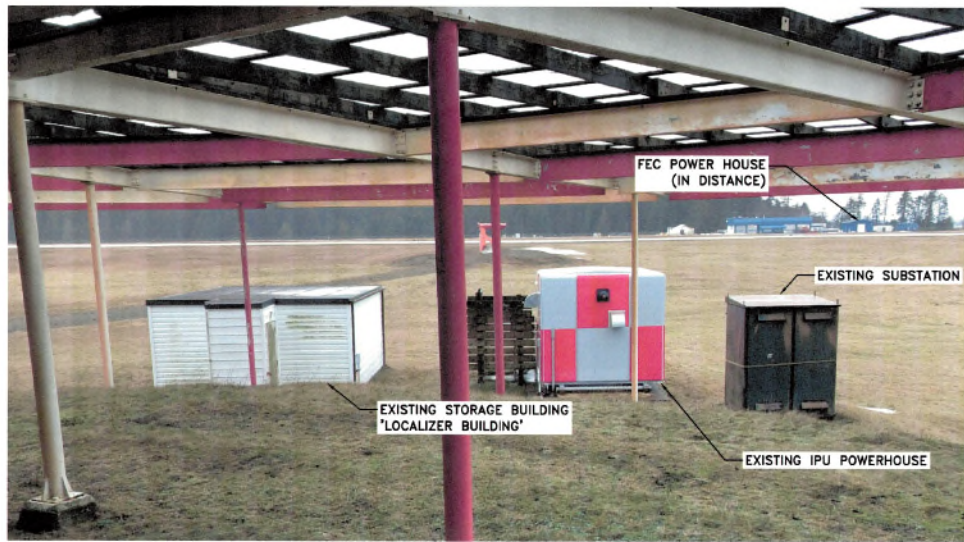
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SUBSTATION DETAILS

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R.108255.001	E06	0

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1 EXISTING SUBSTATION AREA
E07



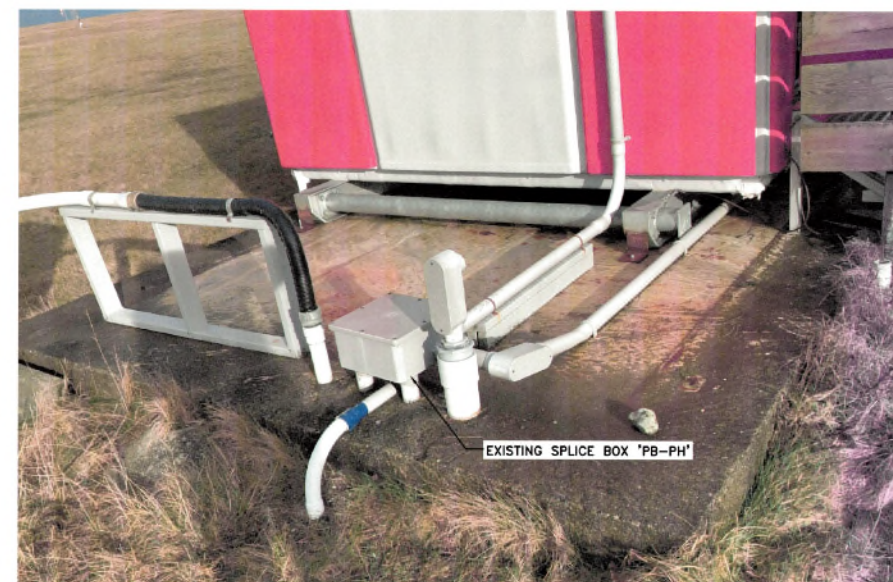
2 EXISTING SUBSTATION
E07



3 EXISTING SUBSTATION
E07



4 AWOS TRANSFORMER AND ABOVE GRADE FEEDER CONDUIT
E07



5 IPU POWER HOUSE AND AWOS TRANSFORMER ABOVE GRADE FEEDER CONDUITS
E07



6 EXISTING SPLICE BOX 'PB-04'
E07



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TRANSPORT CANADA

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SANDSPIT, B.C.
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SANDSPIT AIRPORT
AIRFIELD SUBSTATION
REPLACEMENT PROJECT

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E07

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