

**ADDENDUM NO. 1**

During the Site Meeting of 1 June 2015, the Detailed Scope of Work and the Tender Drawing Set were reviewed and discussed at the FORCE Substation site.

During and subsequent to the meeting, several questions/requests for clarification have been received. For the record, we offer the following information for your review and consideration when preparing your tender quotation:

1. The group-operated loadbreak switch was specified with a hookstick operator. A manual operating handle with vertical / pipe linkage operator, located at the base of Pole No. 1, may be installed, provided a gradient mat and grounding/bonding conductors are installed between the mat, switch operating handle, switch operating shaft and the substation ground grid as indicated in Detail 9 on the original substation design drawing (Dwg. No. 023-478-D-3023, Rev. Z01), attached. A group-operated switch is required since FORCE is required to meet Section 36 of the Canadian Electrical Code.
2. The minimum size of the overhead phase conductors shall be #2/0 AWG, ACSR “Quail” or #2/0AWG, AAC “Aster”. Larger ACSR and AAC conductors may be used with the agreement of the engineer and FORCE.
3. It is understood that the substation grade will be disturbed for the installation of the four utility poles. Any damage to the embedded ground grid shall be repaired immediately using materials approved by the engineer and FORCE. Following setting of the poles, the substation grade shall be return to its existing condition.
4. The contractor shall provide a credit amount that would be applicable if all materials installed as part of the 25kV Bypass Circuit are returned (made available for pickup) to the contractor following the decommissioning and removal of the bypass circuit (by others), scheduled for November 2016. A revised copy of Page 2 of the Supplementary Information is attached, providing Line Item 1.2.7 to identify the credit amount, if any.
5. A portable toilet will be provided and serviced by FORCE outside the substation fence for use by all contractors working at the FORCE substation. The portable toilet will be in place prior to the commencement of the 25kV Bypass Circuit project.
6. NSPI will provide isolation of the existing distribution circuit (37N-415) from the Parrsboro substation and provide visual grounds on the existing conductors that span between the NSPI deadend poles, located outside the FORCE substation, and the steel A-Frame structure, located inside the substation. NSPI will also install 25kV deadend and horizontal insulators on each of their deadend poles for the connection of the #2/0AWG

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conductors from Bypass Circuit Pole No. 1. NSPI will provide the jumpers and clamps to connect the existing 556.5kcmil transmission line conductors to the Bypass Circuit #2/0AWG conductors. The NSPI contact for this work will be Kevin Smith, Parrsboro Area Supervisor, Tel: (902) 694-7081. NSPI cannot provide a fixed price for their work without carrying out a site scoping exercise, therefore a value of “As Required” has been entered in Line Item 1.2.2 on Page 2 of the Supplementary Information.

7. The contractor shall supply and install the #2/0AWG ACSR conductors which will span between the NSPI deadend poles and Bypass Circuit Pole No. 1 and will supply and install the deadend insulators and stirrup clamps associated with this span, at Pole No. 1.
8. The proposed completion date of 1 July 2016, may be adjusted as required to meet the delivery dates of the contractor supplied equipment. FORCE will negotiate the completion date with the successful contractor following determination of material delivery dates.
9. Access to the FORCE Substation will be arranged through the FORCE Onshore Access Permit system. When an Access Permit is secured, the contractor will have access to the substation on a mutually agreed schedule, including extended hours and weekends, if desired.



**SUPPLEMENTARY INFORMATION**

**1. REQUIREMENTS**

.1 The Contractor shall submit the following information to the Owner with the Tender Form:

.1 Construction Schedule; highlighting milestone events, including proposed dates for the de-energization/isolation of the substation from the existing NSPI 25kV distribution circuit and the re-energization following completion and testing and commissioning of the 25kV Bypass Circuit.

.2 A Breakdown of the Tender Price as follows:

.1 Electrical Wiring Permit	\$ _____
.2 NSPI Isolation and Reconnection	\$ <u>As Required</u>
.3 Bypass Circuit Materials	\$ _____
.4 Construction Labour	\$ _____
.5 Equipment Rental	\$ _____
.6 Other	\$ _____
.7 Credit for Return of Bypass Circuit Materials	\$ _____

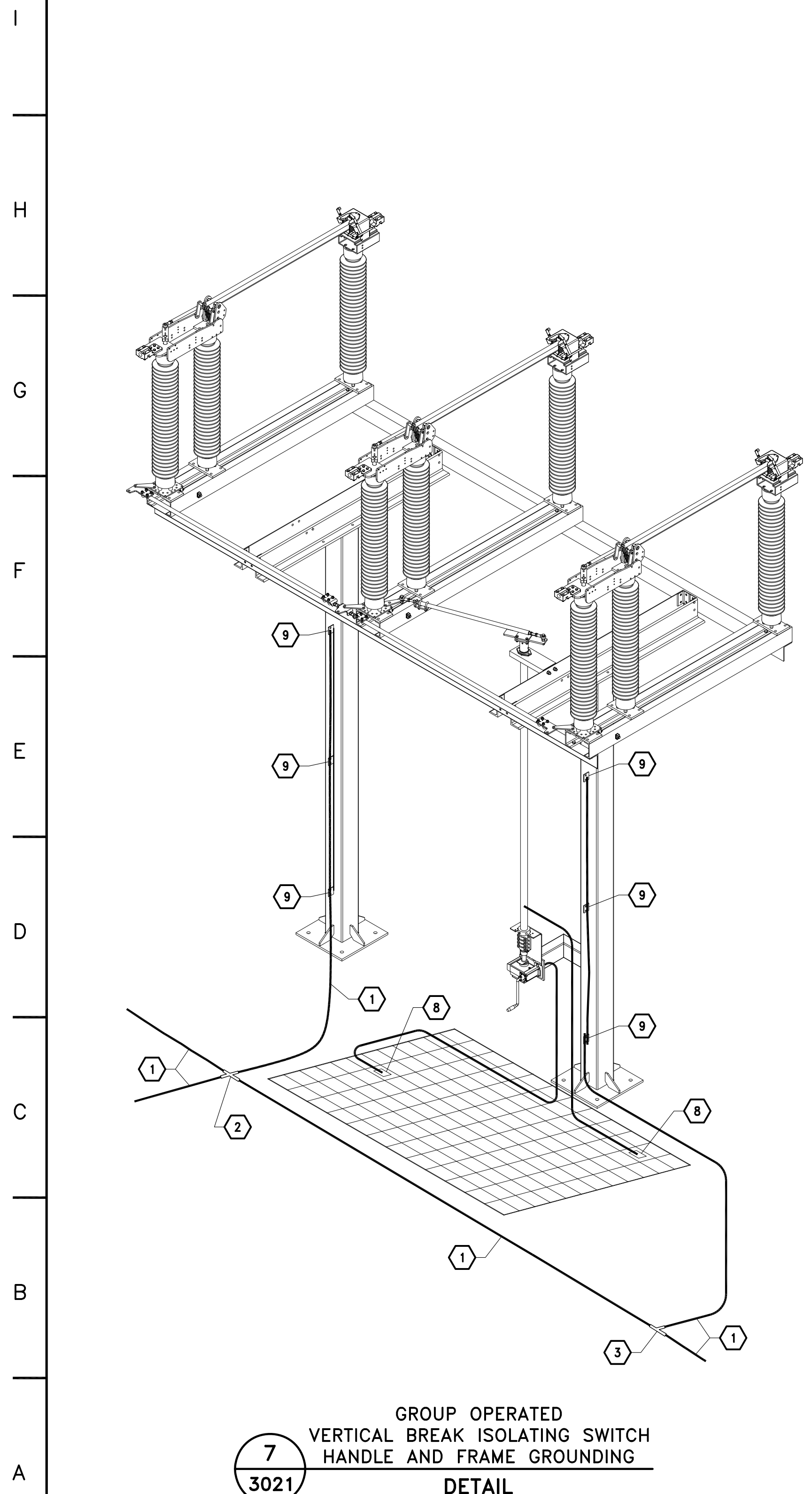
.2 A List of Proposed Sub-Contractors:

	<b><u>SUB-CONTRACTOR</u></b>	<b><u>TRADE &amp; TASKS</u></b>
1	_____	_____
2	_____	_____
3	_____	_____

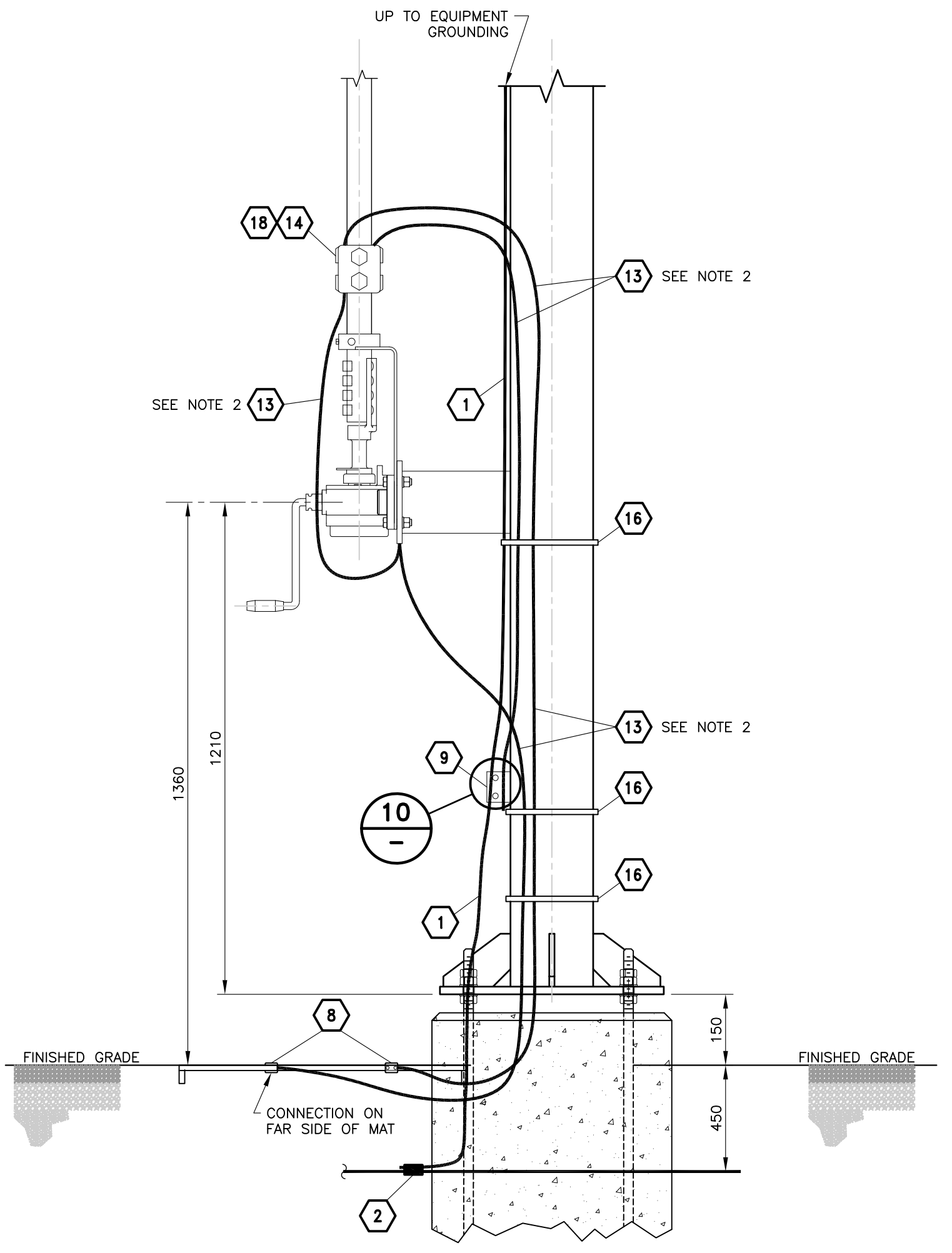
.3 A Letter of Good Standing from the Workers' Compensation Board of Nova Scotia.

.4 A Letter of Good Standing from the Nova Scotia Construction Safety Association.

BILL OF MATERIAL	
ITEM NO.	DESCRIPTION (OR EQUAL)
1	#4/0 AWG, 19 STRAND, BARE COPPER CONDUCTOR
2	CONNECTOR, CROSS, 4/0 AWG COPPER - 4/0 AWG COPPER, AMP WRENCH-LOK CAT. # 83748-2
3	CONNECTOR, TEE, 4/0 AWG COPPER - 4/0 AWG COPPER, AMP WRENCH-LOK CAT. # 83748-2
4	GROUND ROD, COPPERWELD, TAPERED, 19x3000mm, c/w DRIVING STUD AND THREADED COUPLER
5	CONNECTOR, GROUND ROD, 19mm - 4/0 AWG COPPER, AMP WRENCH-LOK CAT. # 83751-1
6	GROUND ELECTRODE ACCESS ENCLOSURE, MOLDED HIGH DENSITY POLYETHYLENE, c/w HIGH DENSITY POLYETHYLENE LID, FENCELL #PE-10HD.
7	METALLIC GRADIENT CONTROL MAT WITHOUT GROUNDING CONNECTORS, HOT-DIPPED GALVANIZED STEEL, 1220x1830 (4'x6') WITH 150x150 (6"x6") WELDED STEEL MESH, THOMAS & BETTS-BLACKBURN CAT. No. 64660.
8	SERVICE CONNECTOR FOR GROUNDING METALLIC GRADIENT CONTROL MAT TO 2/0 AWG, EXTRA-FLEXIBLE COPPER GROUNDING CONDUCTOR, TIN-PLATED COPPER ALLOY, BURNDY-FCI CAT. No. KVSU28.
9	4/0 AWG x 4/0 AWG CABLE TO FLAT BAR MECHANICAL GROUND CLAMP, CAST COPPER ALLOY, 1/2" HARDWARE, BURNDY-FCI CAT. No. GL2929.
10	FENCE POST GROUNDING CONNECTOR, HIGH COPPER ALLOY, 32mm (1 1/4") IPS, BURNDY #GAR1629.
11	FENCE POST GROUNDING CONNECTOR, HIGH COPPER ALLOY, 32mm (1 1/4") IPS, BURNDY #GP1629
12	GROUNDING CONNECTOR, TIN PLATED COPPER ALLOY, SERVIT TYPE, BARBED WIRE - 4/0 AWG COPPER CONDUCTOR STRANDS, BURNDY #KVSU29
13	2/0 AWG EXTRA-FLEXIBLE SOFT-DRAWN COPPER GROUNDING CONDUCTOR WITH CLEAR PVC JACKET, 1323 FINE STRANDS, HUBBELL-CHANCE CAT. No. S6450.
14	TUBING TO CABLE GROUNDING CONNECTOR, TIN-PLATED COPPER ALLOY, FOR CONNECTION TO 50 (2") IPS SWITCH OPERATING SHAFT, BURNDY-FCI CAT. No. GD1829.
15	FENCE POST GROUNDING CONNECTOR, HIGH COPPER ALLOY, 53mm (2") IPS, BURNDY #GAR1829W.
16	STAINLESS-STEEL BAND CLAMP COMPLETE WITH BANDING BUCKLE, 19 (3/4") WIDE, LENGTH TO SUIT.
17	FENCE CORNER POST GROUNDING CONNECTOR, HIGH COPPER ALLOY, 76mm (3") IPS, BURNDY #GAR2029W.
18	COPPER GROUNDING FERRULE FOR 2/0 AWG, 1323 FINE STRANDS PVC JACKETED COPPER CONDUCTOR, PLAIN-PLUG SHROUDED TYPE, HUBBELL-CHANCE CAT. No. C6002632.
19	COPPER C-TAPS, 3/0-250MCM, TO 6-2/0 AWG COPPER GROUND, BURNDY CAT No. YGHC29C26
20	#2 AWG, 7 STRAND, BARE COPPER CONDUCTOR

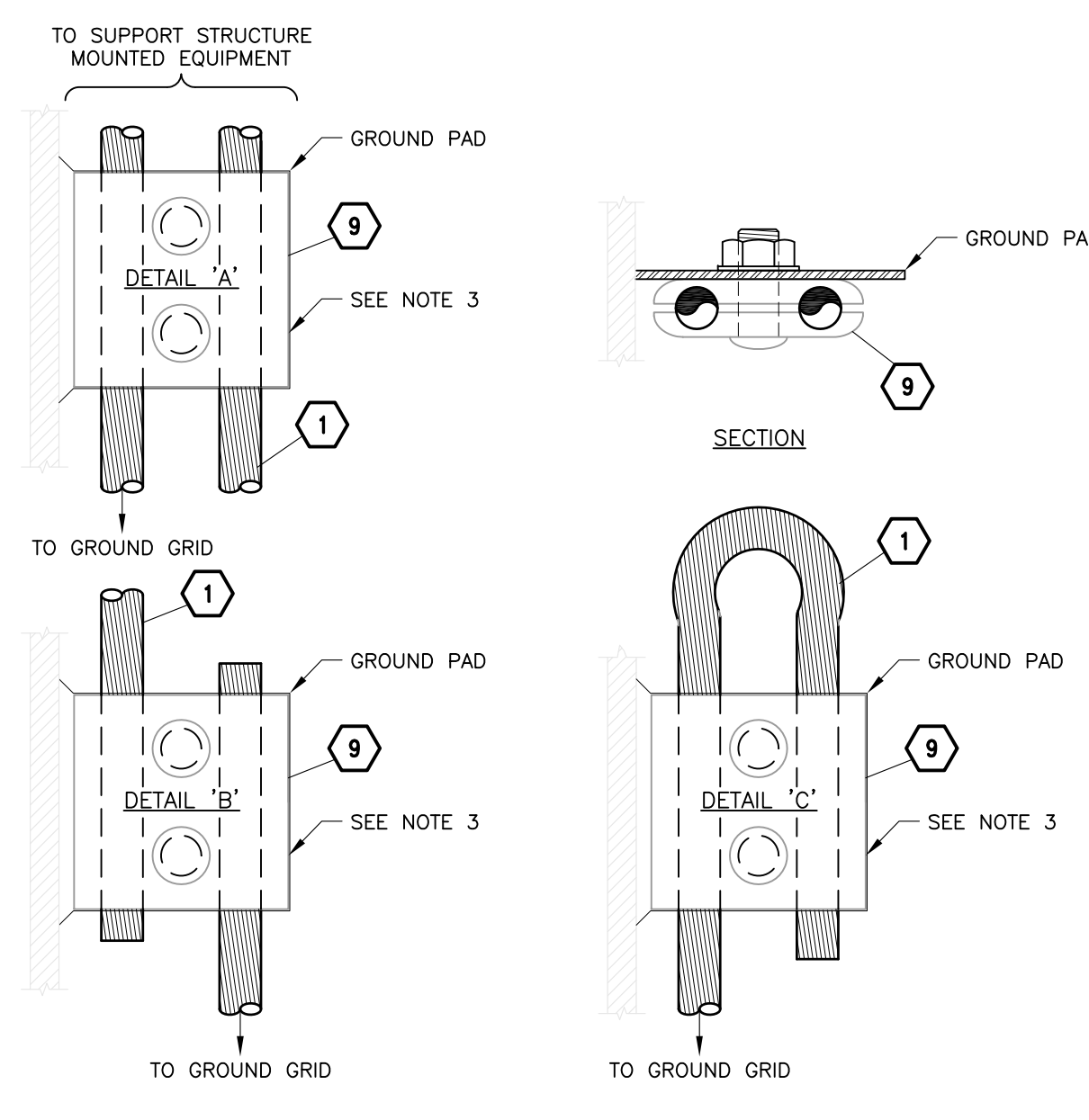


**7**  
**3021**  
**GROUP OPERATED VERTICAL BREAK ISOLATING SWITCH HANDLE AND FRAME GROUNDING**  
DETAIL  
N.T.S.



**9**  
**3021**  
**GROUP OPERATED VERTICAL BREAK ISOLATING SWITCH HANDLE AND FRAME GROUNDING**  
DETAIL  
N.T.S.

**8**  
**3021**  
**GRADIENT CONTROL MAT INSTALLATION**  
DETAIL  
N.T.S.



**10**  
**STEEL SUPPORT STRUCTURE GROUND CONNECTOR**  
DETAIL  
N.T.S.

**NOTE**

- MAINTAIN CLEARANCE OF AT LEAST 300mm FROM OTHER CONNECTIONS TO THE STATION GROUND GRID AND 150mm FROM CONCRETE.
- CONTRACTOR SHALL ALLOW ENOUGH SLACK IN CABLE TO ALLOW FOR ROTATION OF SHAFT AND MOVEMENT OF HANDLE.
- SCRATCH BRUSH ALL CONTACT SURFACES AND CONDUCTOR UNTIL BRIGHT AND CLEAN. APPLY OXIDE INHIBITING COMPOUND TO ALL CONTACT SURFACES BEFORE MAKING CONNECTION. REMOVE EXCESS COMPOUND AFTER CONNECTION HAS BEEN COMPLETED.

**LEGEND**

# BILL OF MATERIAL ITEM NUMBER (THIS DRAWING)

REFERENCE DRAWINGS	DWG. NO'S	NO.	DATE	LOCATION	REVISIONS	MADE BY	NO.	DATE	LOCATION	REVISIONS	MADE BY

**STRUM ENGINEERING ASSOCIATES LTD.**  
DARTMOUTH & SYDNEY, NOVA SCOTIA

SCALE: AS NOTED  
QA/QC: N.S.

CLIENT: **FUNDY OCEAN RESEARCH CENTER FOR ENERGY**  
HALIFAX, NOVA SCOTIA

TITLE: **IN-STREAM TIDAL POWER GENERATING PLANT SUBSTATION DEVELOPMENT EQUIPMENT GROUNDING AND BILL OF MATERIAL**

DATE (YYYY-MM-DD): 2011-04-15  
DWG. No. **023-478-D-3023**  
Rev. **Z01**