



Canada  Oil Sands  
Surmont 2 Project



BANTREL	JOB	VP NO.	REV
VENDOR PRINT	1061-P-1501-0154		0
EQUIPMENT NUMBER	SEE TAGS LISTED		
CLIENT CROSS REF			

Permission to proceed does not constitute acceptance or approval of design details, calculations, analyses, test methods or materials developed or selected by the supplier and does not relieve the supplier from full compliance with contractual obligations.

1.  Work may proceed.
2.  Revise and resubmit. Work may proceed subject to incorporation of changes indicated.
3.  Revise and resubmit. Work may NOT proceed.
4.  Review not required. Work may proceed.

BY: Andrew Cij DATE: 2013-12-10

SDN - ACD09

- 299-SWG-7001
- 299-SWG-7002
- 299-PDT-3001
- 299-PDT-3002
- 299-PDT-3003
- 299-PDT-3004
- 299-PDT-3005
- 299-PDT-3006
- 299-PDT-3007
- 299-PDT-3008
- 299-PDT-3009
- 299-PDT-3010
- 299-PDT-3011
- 299-PDT-3012
- 299-PDT-3013
- 299-PDT-3014
- 299-PDT-3015
- 299-SUB-7001
- 299-SUB-7002
- 299-SUB-7003
- 299-SUB-7004
- 299-SUB-7005
- 299-SUB-7006
- 299-SUB-7007
- 299-SUB-7008
- 299-SUB-7009
- 299-SUB-7010
- 299-SUB-7011
- 299-SUB-7101
- 299-SUB-7102
- 299-SUB-7103
- 299-SUB-7104



Project Document # PO1061-PO-P-1501AC  
Supplier Document #ACD-J01

# **SURMONT 2 PROJECT CONOCOPHILLIPS CANADA RESOURCES CORP**

## **OPERATIONS AND MAINTENANCE MANUAL**

**MODEL S-PDC-HV-25KV-5CELL  
25KV SWITCHGEAR ASSEMBLY**

**A.C. DANDY PRODUCTS LTD.**  
**Manufacturers of Quality Custom Electrical Products**

*4012 - 49 Street  
Wetaskiwin, Alberta, T9A 2K1*

*PH: 800-642-2952*

*PH: 780-361-5300*

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### 1. GENERAL:

The successful and safe operation of dry type transformers and distribution (gear) is dependent upon proper handling, installation, and maintenance. Neglecting certain fundamental installation and maintenance requirements may lead to personnel injury and the premature failure of the transformers as well as damage to other property.

**Warning – DANGER,** There is a hazard of electric shock or burn whenever working in or around electrical equipment. Power must be off before working inside a transformer enclosure.

Every transformer and distribution is tested per all applicable standards at the factory, after which it is inspected and prepared for shipment.

### 2. INSPECTION UPON RECEIPT:

Immediately upon receipt of the shipment, identify all units and check them against the shipping list. Make a visual examination to detect any damage which may have been incurred during transit. This examination should be external and internal. If any damage is discovered, file a claim immediately with the carrier and send notice of the extent of damage to the local sales office, giving complete identification, carrier's name and railroad car number if shipment was made by rail. The information will enable the company to supply necessary data in support of the claim.

### 3. HANDLING:

Unless special arrangements have been made with the customer, all transformers and distribution are shipped with the components, core, and coil assembly attached to the external enclosure. This is to facilitate lifting and handling, and to provide protection during shipment. All gear should be gently lifted into position. Core and coil units are shipped on skids and should be left on the skid for handling because the base structure is not designed for skidding or rolling. Lifting eyes are located on the top of the cabinet or bottom frame. The eyes are designed to allow overhead lifts with a crane. Care should be taken when lifting to prevent cables or slings from damaging enclosures or other parts of the transformer. The use of a spreader is generally recommended.

**CAUTION – Never attempt to lift the distribution and transformer from points other than the lifting eyes provided. No distribution or transformer should be laid on its side or end for any reason. The windings, structure, vibration isolators, and electrical components are designed to handle the normal weight and stress from shipment and usage. These parts are not designed to accept stresses from tipping or similar actions. Damage beyond repair can occur if the assembly is turned on its side or end. First and foremost never lift a cabinet or transformer assembly from its roof, if skid is provided with the unit or unit is frozen or stuck on the ground. Excess force will damage the unit or skid. Skid units must always be lifted from skid due to the weight.**



#### 4. BEFORE ENERGIZATION:

Before energizing the transformer, loosen or remove all shipping hardware, and store for future use.

Transformers are provided with vibration isolators, under the core and coil assembly. These isolators are made ineffective during shipment by shipping bars and bolt-down hardware.

Check all tap jumpers for proper locations, and all bolted connections for tightness.

#### 5. REMOVING FROM SERVICE:

If the unit is to be moved, it will be necessary to replace the core & coil transit bolts and any shipping braces that might protect the assembly during movement.

#### 6. OPERATION:

To maintain safe operating conditions do not remove panels or covers over openings in the enclosure while the transformer is energized.

**CAUTION – Never attempt to modify, service, change taps, or connections unless the assembly is de-energized and all supply and loads are grounded.**

For all relatively clean and dry indoor installations, the distribution and transformer will operate satisfactorily under normal conditions of energization and load. There is no concern over the assemblies' ability to retain its electrical strength during reasonable periods of shut down. Under severe conditions and extended shutdown periods condensation may form and ultimately be absorbed into the insulation.

If such a situation occurs, the assembly should be inspected for visible signs of moisture before re-energized. The transformers should be dried. See 4.1 for drying procedures.

Assemblies and transformers should not be overloaded for a long period of time. The resulting temperature can cause insulation deterioration and transformer failure. Transformers 300kVA and above (Class ANN) are suitable for the addition of fan cooling equipment (Class ANN/ANF) which will permit load increases over the self-cooled nameplate rating without exceeding temperature ratings. Only forced-air equipment recommended or supplied by the factory should be installed. It is recommended that caution be exercised when operating in the forced rating. While temperature will not be exceeded, provided all fans are kept operational, the loss of a fan motor can allow damaging temperatures. The ANN/ANF rating is intended to supply additional capacity for emergency and peak loading rather than capacity for a normal operating condition. EXTERNAL FANS, i.e.: fans blowing on the outside of the enclosure or louvers must not be added to the unit. This practice can result in misdirected air flow which can retard or stop normal convection through cooling ducts, and can result in over-heating.



## **7. MAINTENANCE:**

### **7.1 Inspection:**

Inspection should be made at regular intervals and corrective measures taken when necessary to assure the most satisfactory service. The frequency at which the transformer should be inspected depends on operating conditions: i.e.: For clean, dry locations, an inspection annually may be sufficient, for other locations, such as contaminated with dust or chemical fumes, monthly inspections may be required.

Points for inspection:

- a) Dirt, especially accumulations on insulating surfaces or areas which would tend to restrict air flow.
- b) Loose or corroded connections.
- c) Signs of overheating and of voltage creepage over insulating surfaces as evidenced by tracking or carbonization.
- d) Evidence of rusting, or corrosion of the paint should be corrected.

### **7.2 Cleaning:**

If excessive accumulations of dirt are found on the electrical components, transformer windings, or insulators, etc. the dirt should be removed to permit free air circulation and to guard against the possibility of insulation breakdowns. The windings may be cleaned with a vacuum cleaner, or with dry compressed air. The use of a vacuum cleaner is preferred as the first step in cleaning, followed by the use of compressed dry air or nitrogen. (25PSI Max.)

### **7.3 Modifications:**

Any modification, alterations, additions or changes to the assembly, components, and functionality must be approved by A.C. Dandy Products Ltd. Any work done prior to and without factory approval will void the warranty and could cause loss of certification and safety to the equipment and assembly.

### **7.4 Field Service, Parts, Setups, and Startups:**

Where field service is required A.C. Dandy field service technicians, electricians, and engineers are available. Parts must be of original type, style, and manufacture. Field adjustments e.g. trip sets, labeling, etc. are the responsibility of the customer.

## **8. STANDARD POLICY**

The above is based on acceptable industry procedure and practice. Modifications and variances may be required to suit specific site conditions. These should be discussed with the factory as needed.



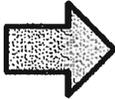
**NOTES:**



**SAFETY GUIDELINES**

➤ **Safety Message Levels**

The following symbols have been implemented in this manual to emphasize the level of severity and/or other pertinent information:

	<p><b>DANGER:</b></p> <p>Signifies the presence of a hazard which will, if not avoided, cause serious injury or death and/or property damage.</p>		<p><b>NOTICE:</b></p> <p>Signifies important installation, operating or maintenance information.</p>
	<p><b>WARNING:</b></p> <p>Signifies the presence of a hazard which can, if not avoided, cause serious injury or death and/or property damage.</p>		<p><b>ELECTRICAL HAZARD:</b></p> <p>Signifies the possibility of electrical risks if instructions are not followed in a proper manner.</p>
	<p><b>CAUTION:</b></p> <p>Signifies the presence of a hazard which could, if not avoided, cause injury or property damage.</p>		



# TROUBLE SHOOTING

Note: THIS SYSTEM IS 25KV – ONLY QUALIFIED PERSONEL TO WORK ON THIS EQUIPMENT.  
ELECTROCUTION HAZARD.

Symptom	Probable Cause	Corrective Action
POWER OUTAGE	-BLOWN FUSE  -SUPPLY SOURCE DEAD	DE-ENERGIZE AND LOCKOUT AND CONTINUITY TEST FUSE  DE-ENERGIZE LOCKOUT AND CHECK SUPPLY CIRCUIT
SECONDARY MAIN CB TRIP (600V MCB)	OVERLOAD ON A GROUND FAULT	SECTIONALIZE LOAD BRANCH CIRCUIT AND RESET
BRANCH CIRCUIT BREAKER TRIP	OVERLOAD OF SHORT CIRCUIT ON LOAD FEED	DE-ENERGIZE, TEST AND ISOLATE
ERATIC TRIPS ON 600V MCB	LSIG SET WRONG	CONTACT ENGINEERING AND CHECK SET POINTS
CONTINUAL PRIMARY FUSE BLOWING	WEAK FUSE DUE TO PRIOR FUSE BLOW	CHANGE ALL 3 FUSES AS PREVIOUS BLOW WEAKENED OTHER FUSE LINK
CONTINUAL COMPONENT FAILURE	IMPROPER COMPONENTS USED	CONTACT FACTORY FOR PROPER PART
TRANSFORMER OVERHEATING	-CORES ARE BLANKETED  -LOOSE CONNECTION	VACUUM AND CLEAN  TORQUE LOAD AND INFRARED UNIT (DUCTOR AS REQUIRED)

A.C. Dandy  
2011

Bantrel Co.  
Conoco Phillips

Surmont 2 Project

ESK = Drawing Schedule

- ESK #1 = Temp. Power - Single Line (1/10)
- ESK #2 = Temp. Power - Single Line (2/10)
- ESK #3 = Temp. Power - Single Line (3/10)
- ESK #4 = Temp. Power - Single Line (4/10)
- ESK #4A = Temp. Power - Single Line (5/10)
- ESK #5 = Temp. Power - Single Line (6/10)
- ESK #6 = Temp. Power - Single Line (7/10)
- ESK #7 = Temp. Power - Single Line (8/10)
- ESK #8 = Temp. Power - Single Line (9/10)
- ESK #8A = Temp. Power - Single Line (10/10)
- ESK #9 = Temp. Power - 25kV Feeder Line Up #1 'S-PDC-25kV-5CELL' (Front View)
- ESK #10 = Temp. Power - 25kV Feeder Line Up #1 'S-PDC-25kV-5CELL' (Top & Front Views)
- ESK #11 = Temp. Power - 25kV Feeder Line Up #2 'S-PDC-25kV-5CELL' (Front View)
- ESK #12 = Temp. Power - 25kV Feeder Line Up #2 'S-PDC-25kV-5CELL' (Top & Front Views)
- ESK #13 = Temp. Power - 25kV Switch Cell 'S-DHVS-1-25'
- ESK #14 = Temp. Power - 25kV Switch Cell 'S-DHVS-1-25' (Side Views)
- ESK #15 = 25kV Power Distribution Centre
- ESK #16 = 25kV Power Distribution Assembly 'S-PHV-US' (Top View)
- ESK #17 = 25kV Power Distribution Assembly 'S-PHV-US' (Side View)
- ESK #18 = 600V Power Distribution Centre
- ESK #19 = S-DUS-D1 Unit Substation 600V (Front, Rear, & Base Views)
- ESK #20 = S-DUS-D1 Unit Substation 600V (Side Views)
- ESK #20A = DUS-D1-225 Unit Sub
- ESK #21 = General Instructions
- ESK #22 = Distribution Labeling
- ESK #23 = Distribution Labeling
- ESK #24 = Distribution Labeling
- ESK #25 = Lifting Details For 25kV Switchgear Assembly (5 Cell)
- ESK #26 = Lifting Details For 25kV - 600V 1000kVA Power Distribution Centre
- ESK #27 = Lifting Details For 600 - 120/208V Power Distribution Centre
- ESK #28 = Component Schedule
- ESK #29 = Door Detail Schedule For Tag #299-SWG-7001
- ESK #30 = Door Detail Schedule For Tag #299-SWG-7002
- ESK #31 = 1/2" Plate Lifting Member Details

Reg. Number: 1061-P-1501AC-REV-0  
 Purchase Order Number: 1061-PO-P-1501AC  
 Buyer: Bantrel Co.  
 Project/Locations: Surmont 2 Project  
 Equipment Description: As Per Above  
 Seller's Name: A.C. Dandy Products Ltd.  
 Seller's Document: F2076  
 Reference Number: As Per Individual ESK's  
 Revision Number: As Per Individual ESK's

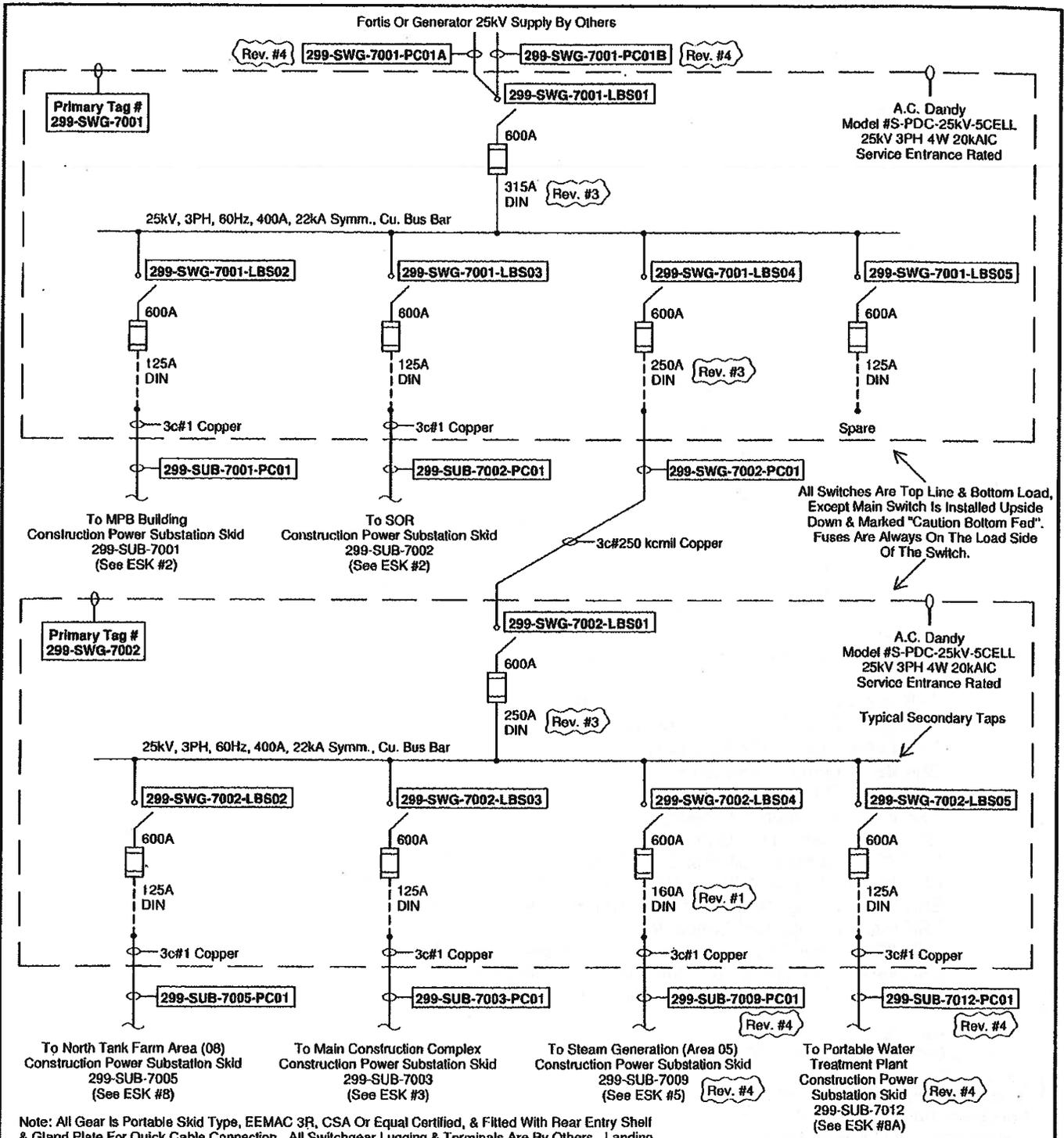
**AS BUILT**



A.C. DANDY PRODUCTS LTD.   
 4012 - 49 STREET  
 WETASKIWIN, ALBERTA T9A 2K1  
 PH: (780) 361-5300 FAX: (780) 352-2249  
 SIDNEY, BC PH: (250) 656-6196

"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV	DESCRIPTION:
11-03-24	00	Drawing Schedule
11-03-28	01	PROJECT NAME: Surmont 2 Project
11-03-30	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
11-11-04	05	DRAWING NUMBER: AB11032401
DRAWN BY:	AB	ESK



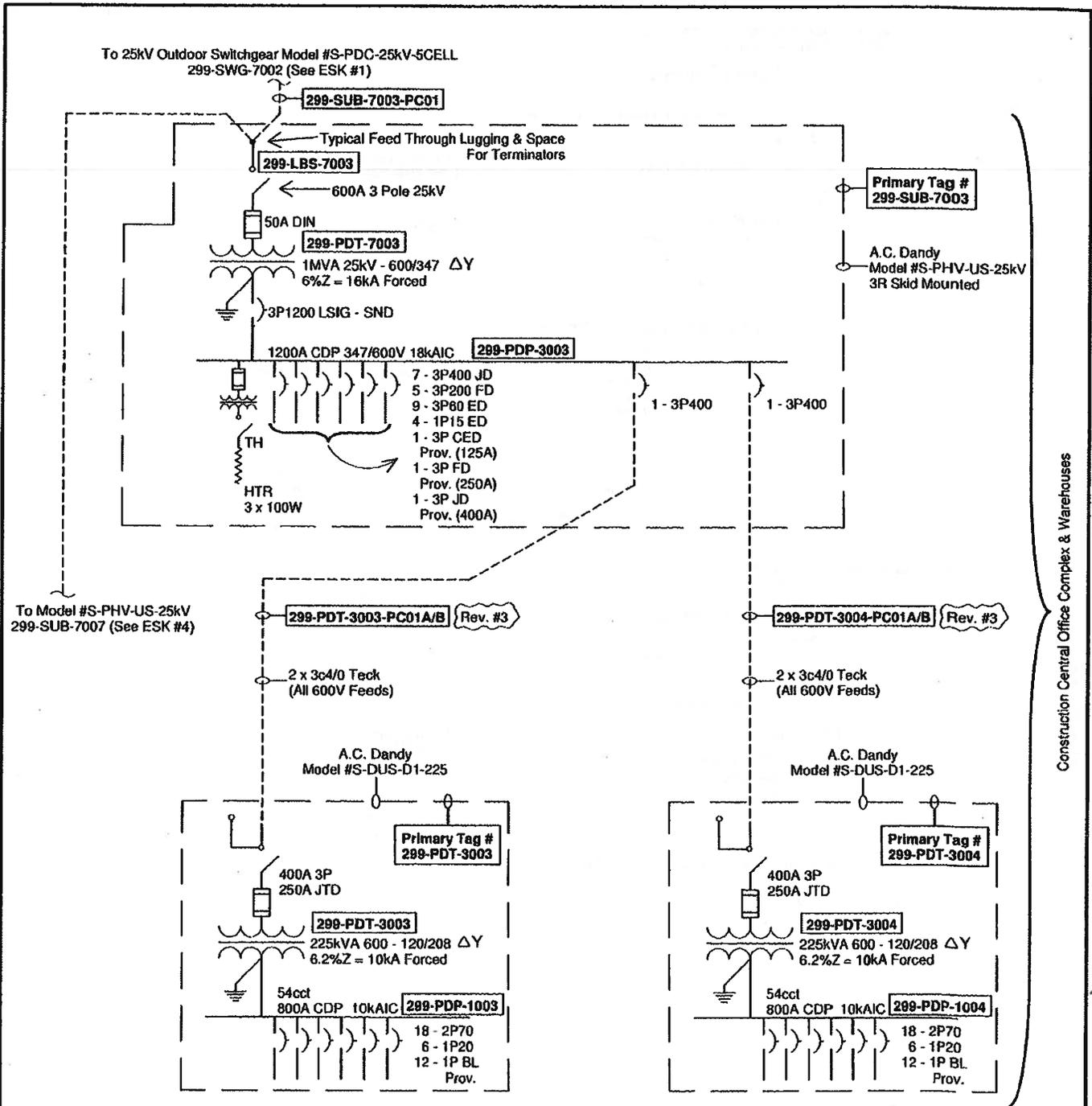
Note: All Gear Is Portable Skid Type, EEMAC 3R, CSA Or Equal Certified, & Filled With Rear Entry Shell & Gland Plate For Quick Cable Connection. All Switchgear Lugging & Terminals Are By Others. Landing Pads For Lugs Are Mounted By A.C. Dandy.

Note: DMS Meter & CT On Model #S-PHV-US Deleted On This Order

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	11-03-24	00	Temp. Power - Single Line (1/10)
	11-03-30	01	PROJECT NAME:
	11-10-10	02	Surmont 2 Project
	11-11-04	04	CUSTOMER NAME:
DRAWN BY:	AB	AB11032402	ESK #1





Construction Central Office Complex & Warehouses

To Model #S-PHV-US-25kV  
299-SUB-7007 (See ESK #4)

Note: All Gear Is Portable Skid Type, EEMAC 3R, CSA Or Equal Certified, & Fitted With Rear Entry Shelf & Gland Plate For Quick Cable Connection.  
All Switchgear Lugging & Terminals Are By Others. Landing Pads For Lugs Are Mounted By A.C. Dandy.

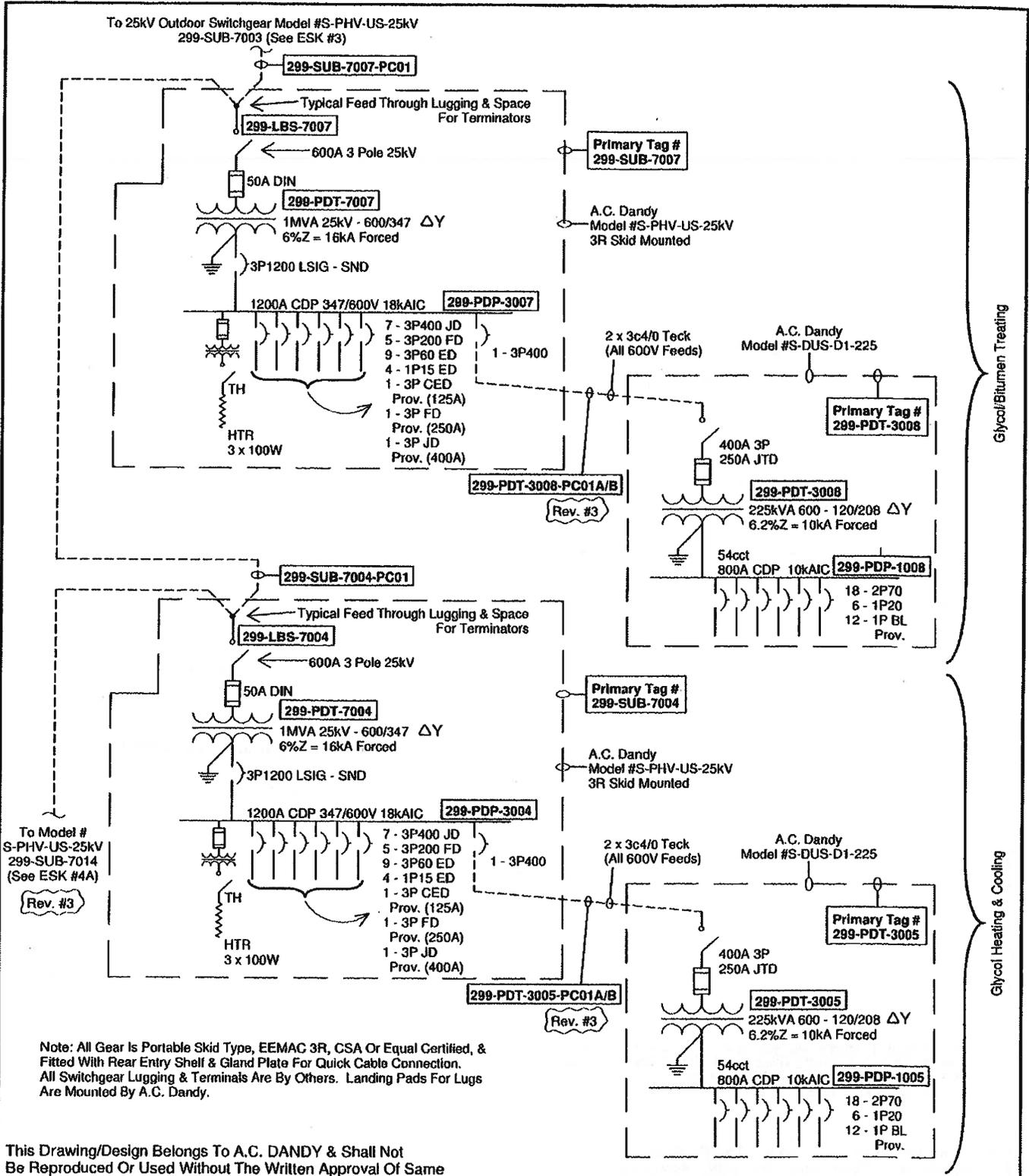
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"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV	DESCRIPTION:
11-03-24	00	Temp. Power - Single Line (3/10)
11-03-30	01	PROJECT NAME: Surmont 2 Project
11-10-10	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
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DRAWN BY:	AB	ESK #3



Glycol/Bitumen Treating

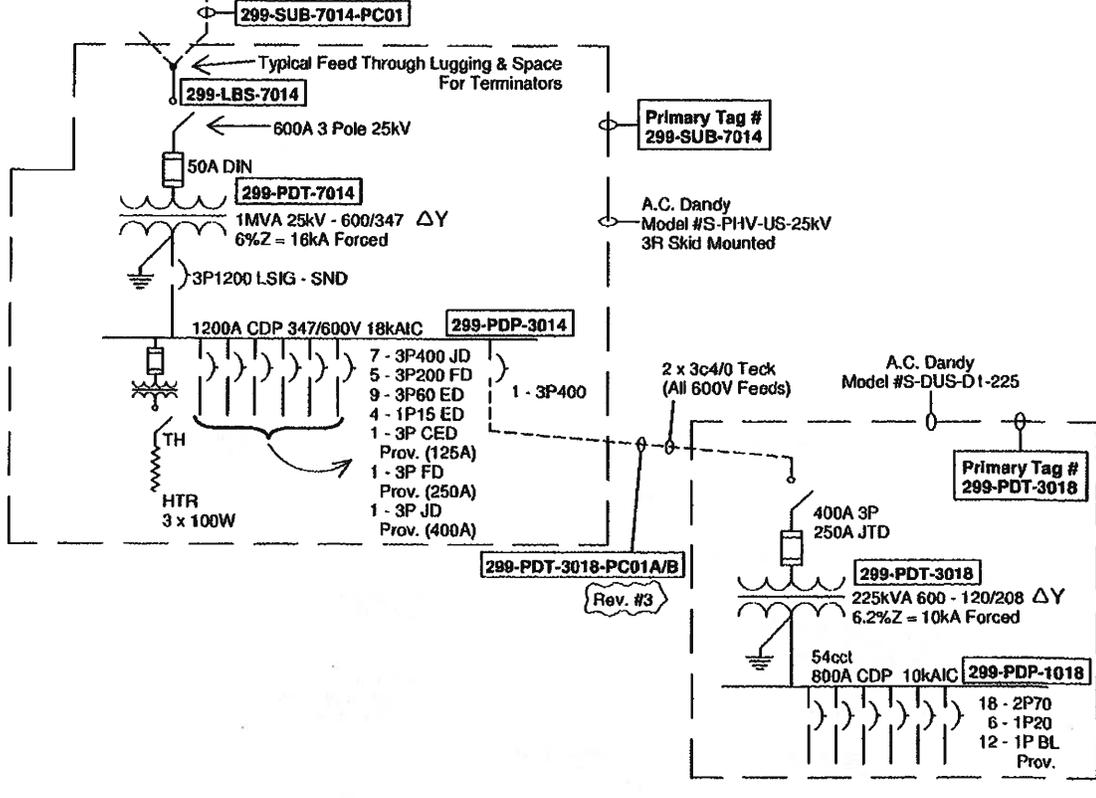
Glycol Heating & Cooling

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 SIDNEY, BC PH: (250) 656-6196  
**"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"**

DATE	REV	DESCRIPTION:
11-03-24	00	Temp. Power - Single Line (4/10)
11-03-30	01	PROJECT NAME: Surmont 2 Project
11-10-10	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
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DRAWN BY:	AB	ESK #4

To 25kV Outdoor Switchgear Model #S-PHV-US-25kV  
299-SUB-7004 (See ESK #4)

Rev. #3



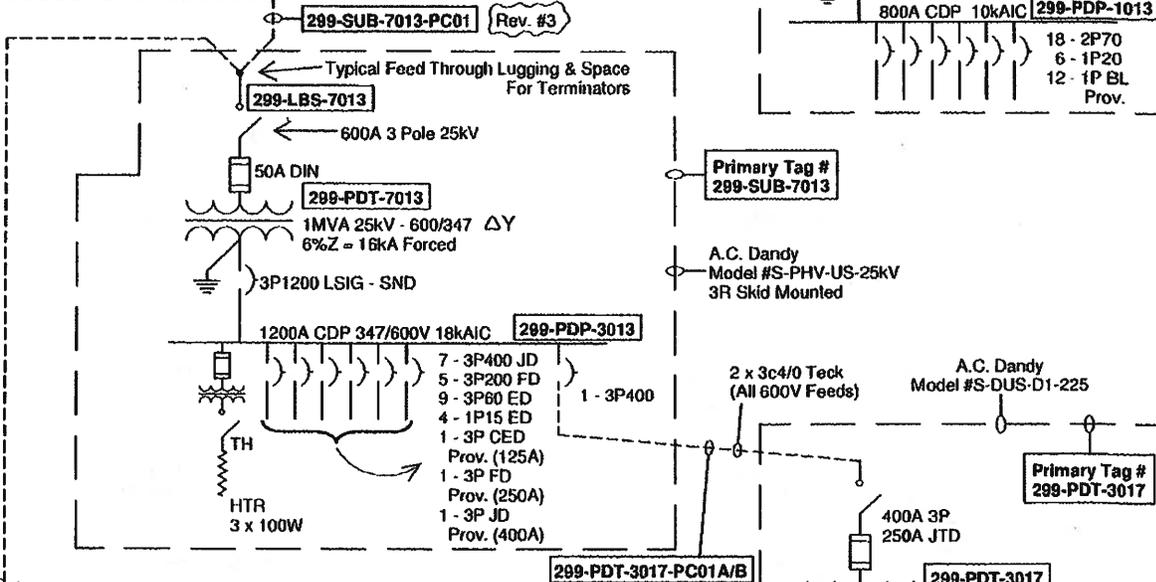
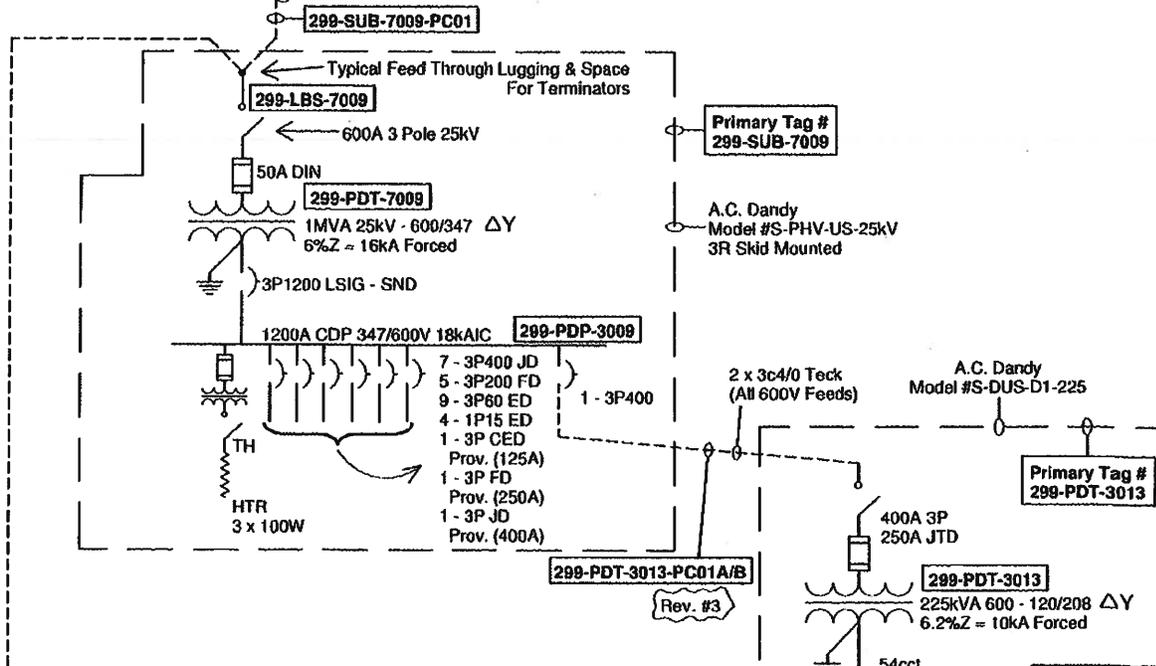
Note: All Gear Is Portable Skid Type, EEMAC 3R, CSA Or Equal Certified, & Fitted With Rear Entry Shelf & Gland Plate For Quick Cable Connection. All Switchgear Lugging & Terminals Are By Others. Landing Pads For Lugs Are Mounted By A.C. Dandy.

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	11-10-18	00	Temp. Power - Single Line (5/10)
	11-11-04	01	PROJECT NAME: Surmont 2 Project
			CUSTOMER NAME: Bantrel Co./Conoco Phillips
			DRAWING NUMBER: AB11101801 ESK #4A
DRAWN BY:	AB		

To 25kV Outdoor Switchgear Model #S-PDC-25kV-5CELL  
299-SWG-7002 (See ESK #1)

Rev. #3



To Model #S-PHV-US-25kV  
299-SUB-7008 (See ESK #6)

Note: All Gear Is Portable Skid Type, EEMAC 3R, CSA Or Equal Certified, & Fitted With Rear Entry Shelf & Gland Plate For Quick Cable Connection. All Switchgear Lugging & Terminals Are By Others. Landing Pads For Lugs Are Mounted By A.C. Dandy.

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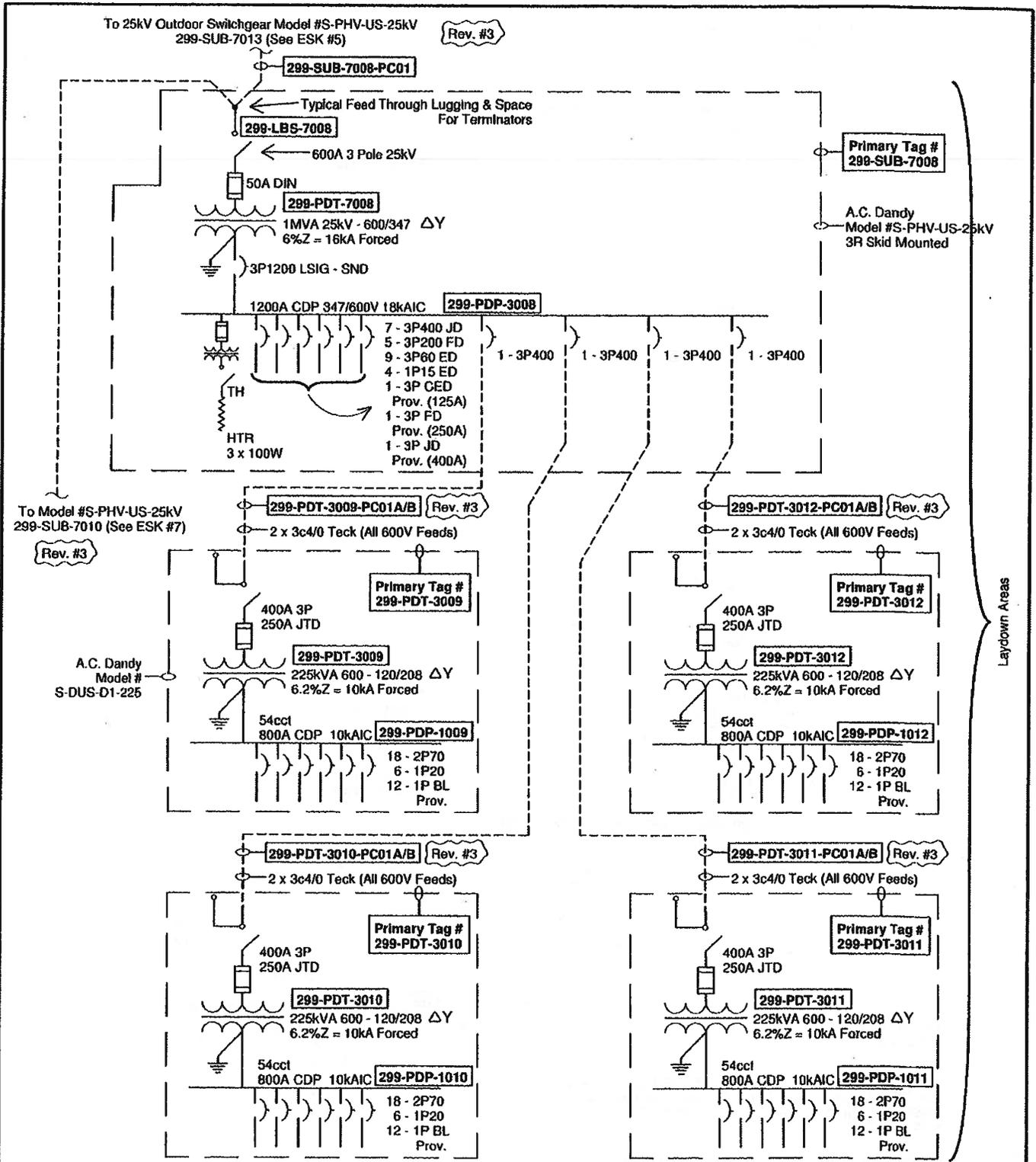


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"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV	DESCRIPTION:
11-03-24	00	Temp. Power - Single Line (6/10)
11-03-30	01	PROJECT NAME: Surmont 2 Project
11-10-10	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
11-11-04	04	DRAWING NUMBER: AB11032407
DRAWN BY: AB		ESK #5

Rev. #3  
Steam Generation (Area 05)



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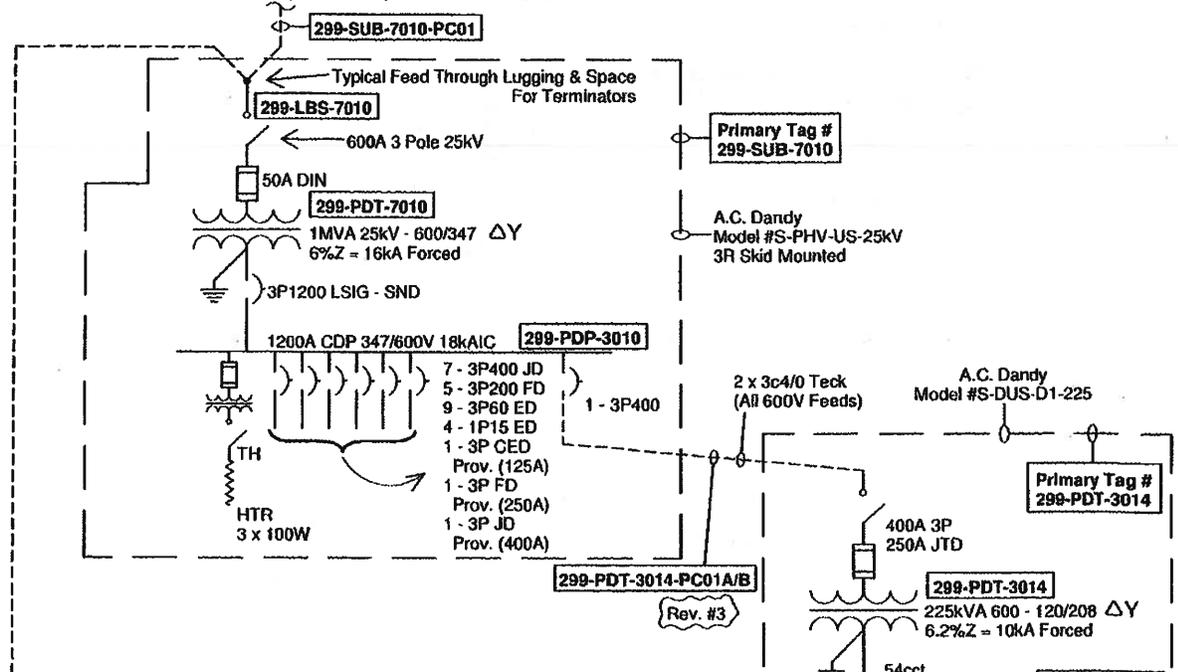


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DRAWN BY:	AB	ESK #6

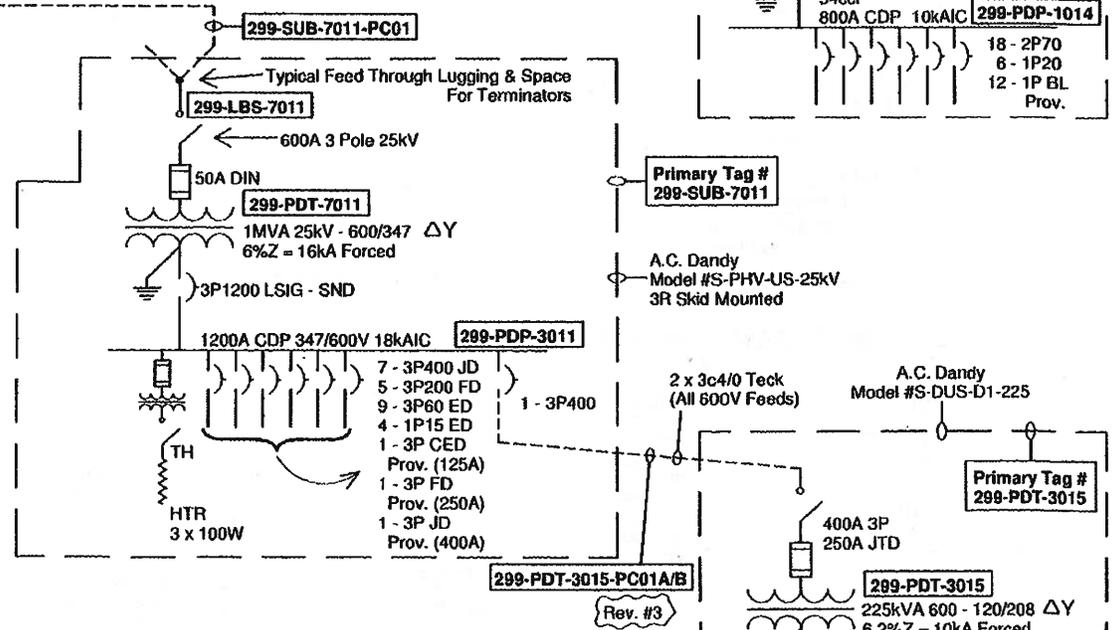
"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

To 25kV Outdoor Switchgear Model #S-PHV-US-25kV  
299-SUB-7008 (See ESK #6)

Rev. #3



Sulphur & Prod. Gas



Water Treatment (Area 04)

Note: All Gear Is Portable Skid Type, EEMAC 3R, CSA Or Equal Certified, & Fitted With Rear Entry Shelf & Gland Plate For Quick Cable Connection. All Switchgear Lugging & Terminals Are By Others. Landing Pads For Lugs Are Mounted By A.C. Dandy.

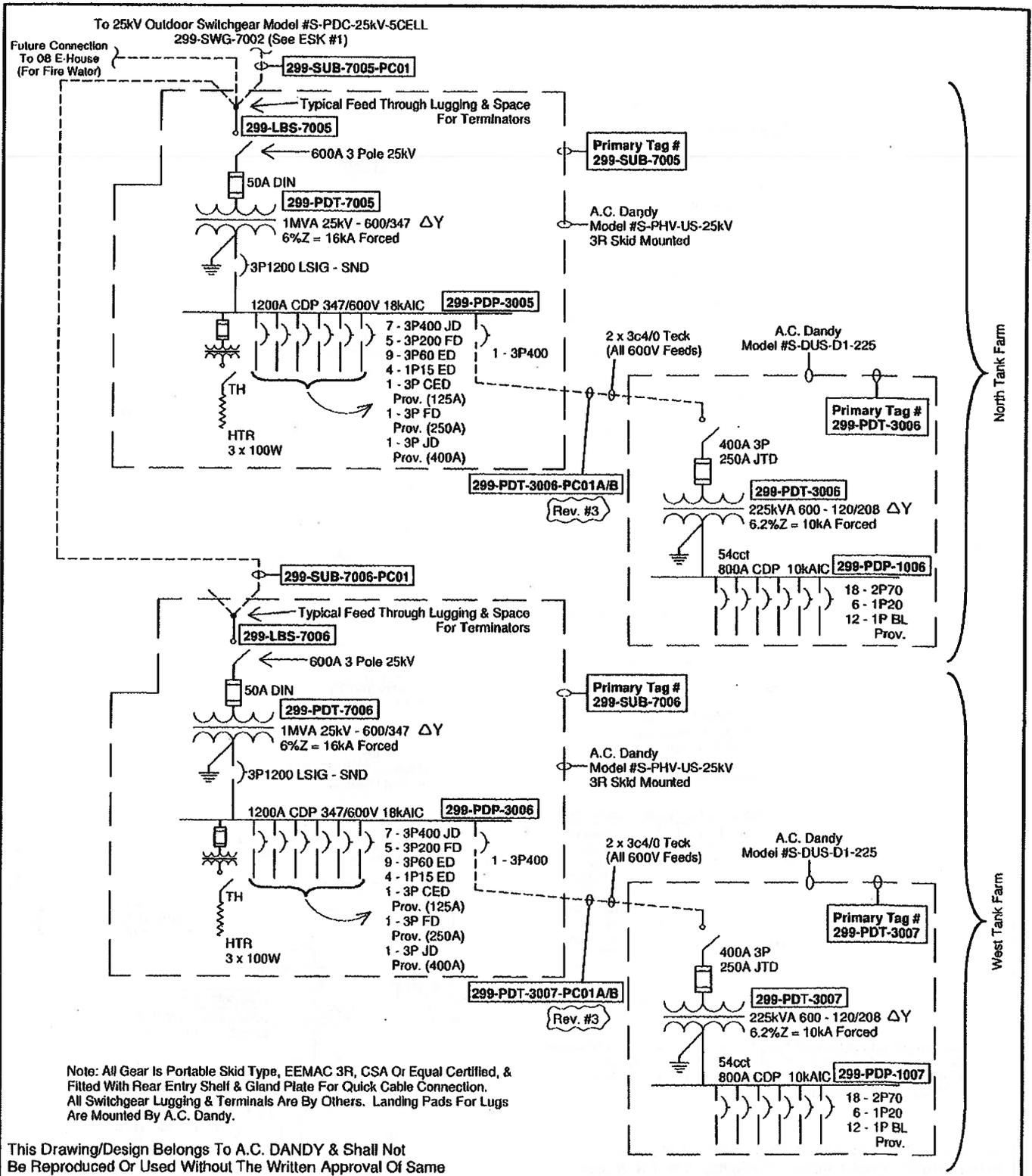
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"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

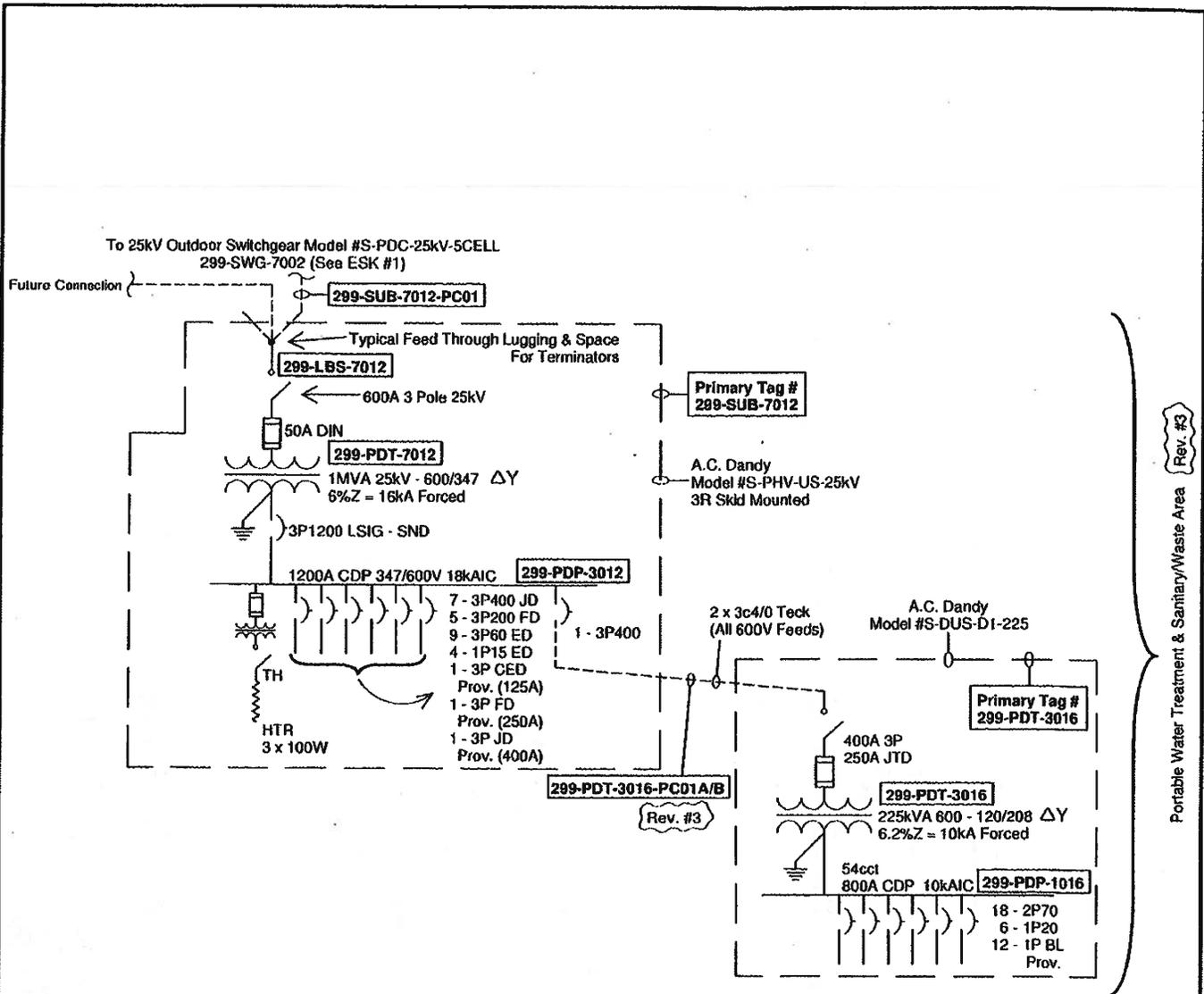
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11-03-24	00	Temp. Power - Single Line (8/10)
11-03-30	01	PROJECT NAME: Surmont 2 Project
11-10-10	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
11-11-04	04	DRAWING NUMBER: AB11032408
DRAWN BY: AB		ESK #7



North Tank Farm

West Tank Farm

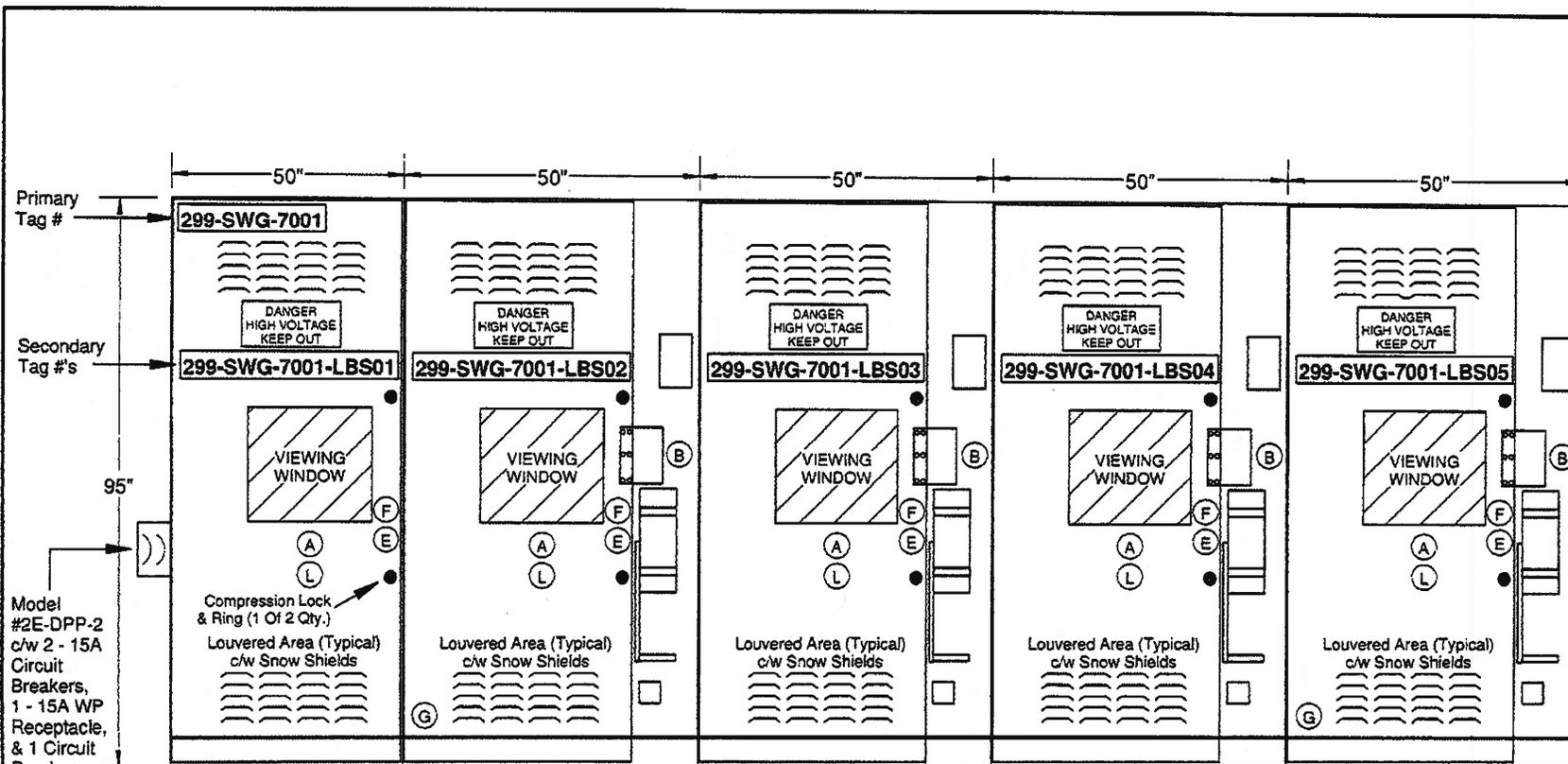
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	11-03-24	00	Temp. Power - Single Line (9/10)
	11-03-30	01	PROJECT NAME:
	11-10-10	02	Surmont 2 Project
	11-11-04	04	CUSTOMER NAME: Bantrel Co./Conoco Phillips
DRAWN BY:	AB	AB11032409	ESK #8



Note: All Gear Is Portable Skid Type, EEMAC 3R, CSA Or Equal Certified, & Fitted With Rear Entry Shelf & Gland Plate For Quick Cable Connection. All Switchgear Lugging & Terminals Are By Others. Landing Pads For Lugs Are Mounted By A.C. Dandy.

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	11-10-18	00	Temp. Power - Single Line (10/10)
	11-11-04	01	PROJECT NAME: Surmont 2 Project
			CUSTOMER NAME: Bantrel Co./Conoco Phillips
			DRAWING NUMBER: AB11101802 ESK #8A
DRAWN BY:	AB		



Primary Tag #

Secondary Tag #'s

95"

Model #2E-DPP-2 c/w 2 - 15A Circuit Breakers, 1 - 15A WP Receptacle, & 1 Circuit Breaker For Heaters 120V Supply By Others

Front View Of Primary Tag #299-SWG-7001  
(Shown With Covers Closed - Excluding I-Beam Base)

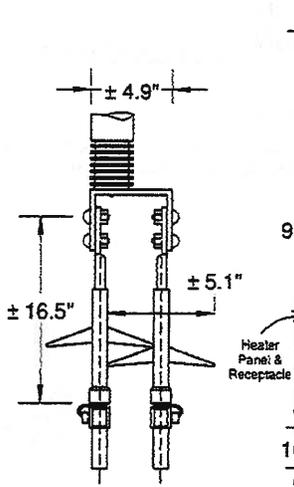
○ Denotes Labels See ESK #'s 22, 23, & 24

This Drawing/Design Belongs To A.C. DANDY & Shall Not Be Reproduced Or Used Without The Written Approval Of Same

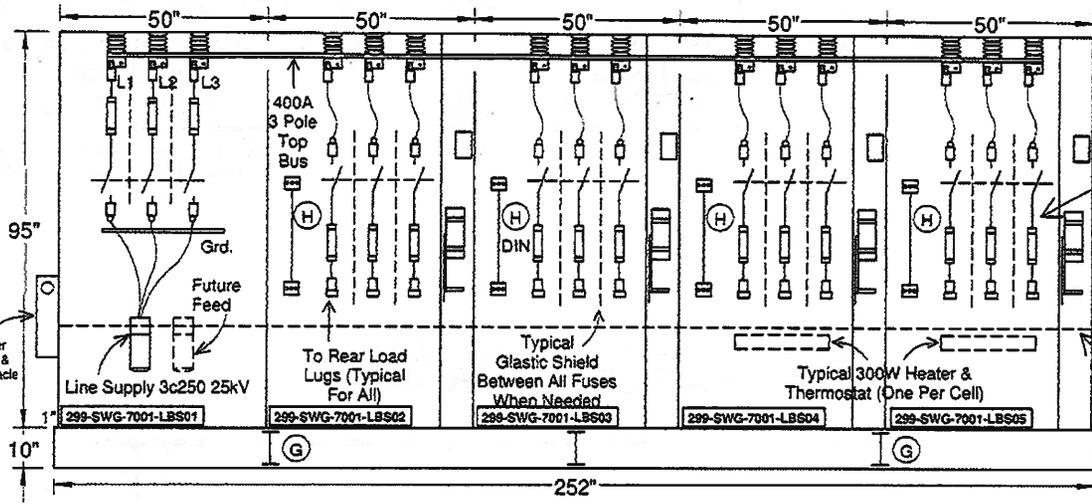
Model #S-PDC-25kV-5CELL-SP

NOTE:  
Interior Component Dimensions May Vary At Time Of Manufacture. Exterior Dimensions Will Not.

 <p><b>A.C. DANDY PRODUCTS LTD.</b> 4012 - 49 STREET WETASKIWIN, ALBERTA T9A 2K1 PH: (780) 361-5300 FAX: (780) 352-2249 SIDNEY, BC PH: (250) 656-6196</p> <p>"ELECTRICAL ENCLOSURE &amp; EQUIPMENT MANUFACTURERS"</p>	DATE	REV	<p>DESCRIPTION: Temp. Power - 25kV Feeder Line Up #1 'S-PDC-25kV-5CELL' (Front View) PROJECT NAME: Surmont 2 Project CUSTOMER NAME: Bantrel Co./Conoco Phillips DRAWING NUMBER: AB11032501 ESK #9</p>
	11-03-25	00	
	11-03-30	01	
	DRAWN BY:	AB	



**Principle Of Cable Connection**  
(Standard Dimensions To Be Confirmed)

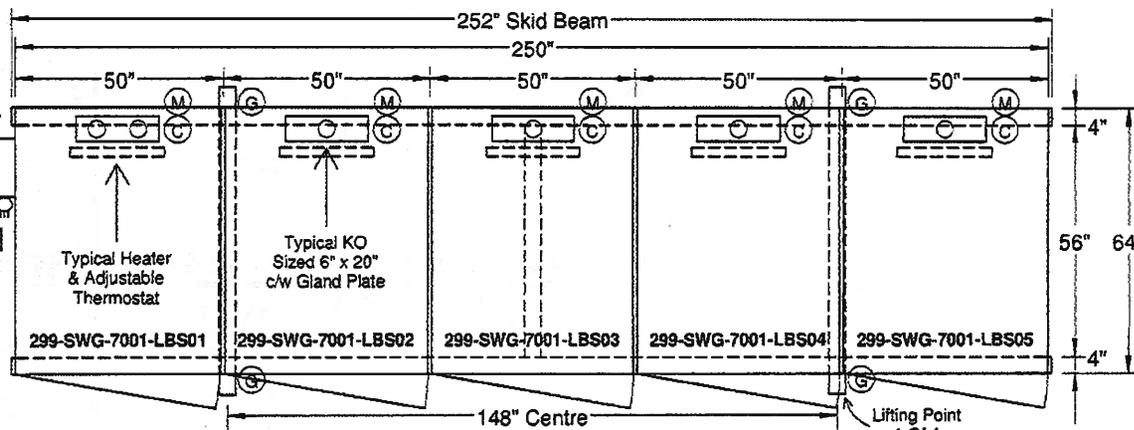


**Front View Of Tag #299-SWG-7001**

Typical 600A 3 Pole 25kV Load Make/Break Switch c/w DIN Fuses (As Per ESK #1) & Door Operator (Main is Mounted Upside Down)

Door Operator Handle c/w Interlock To Door So Switch Must Be Open To Enter c/w Kirk Keys

Rear Elevated Quick Entry Platform



**Top View Of Tag #299-SWG-7001**

**Notes:**

- Assembly To Be Lifted With Spreader Bars To Assure Direct Vertical Lift On 4 Member Lifting Points ONLY
- Interior Component Dimensions May Vary At Time Of Manufacture. Exterior Dimensions Will Not.

Typical Skid Sized 10" x 4" (W10-22 5 3/4" Top) (1" Overhang On Each End)

Weatherproof Panel c/w One 1P15A Circuit Breaker For Five 300W 120V Heaters & Thermostat (One Per Cell) Outlet #OFM0302BL-TB1

120V 30A 3 Wire Flush Male Twist Lock For Generator Supply To Heaters (L530R)

○ Denotes Labels See ESK #'s 22, 23, & 24

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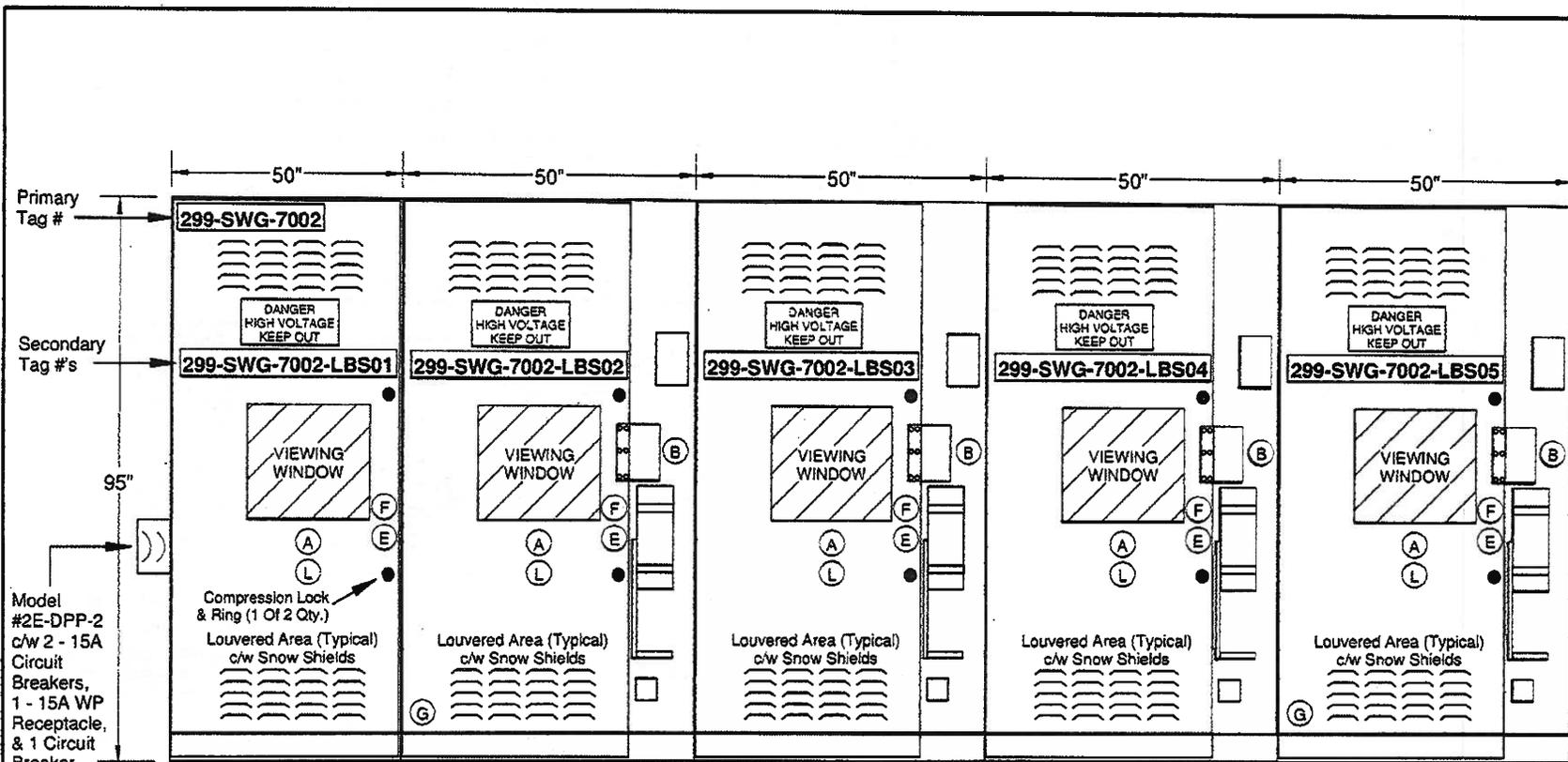
DATE	REV
11-03-25	00
11-03-30	01
11-10-10	02
11-11-04	04
DRAWN BY:	AB

DESCRIPTION: Temp. Power - 25kV Feeder Line Up #1 'S-PDC-25kV-5CELL' (Top & Front Views)

PROJECT NAME: Surmont 2 Project

CUSTOMER NAME: Bantrel Co./Conoco Phillips

DRAWING NUMBER: AB11032502 ESK #10



Front View Of Primary Tag #299-SWG-7002  
(Shown With Covers Closed - Excluding I-Beam Base)

Model #2E-DPP-2  
c/w 2 - 15A  
Circuit  
Breakers,  
1 - 15A WP  
Receptacle,  
& 1 Circuit  
Breaker  
For Heaters  
120V Supply  
By Others

○ Denotes Labels  
See ESK #'s 22, 23, & 24

This Drawing/Design Belongs To A.C. DANDY & Shall Not  
Be Reproduced Or Used Without The Written Approval Of Same

Model #S-PDC-25kV-5CELL-SP

NOTE:  
Interior Component  
Dimensions May Vary  
At Time Of  
Manufacture. Exterior  
Dimensions Will Not.

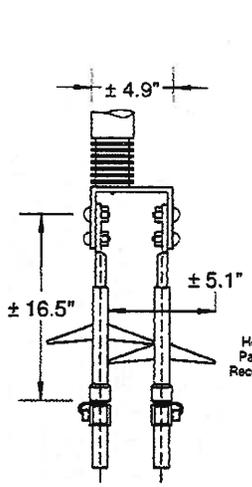


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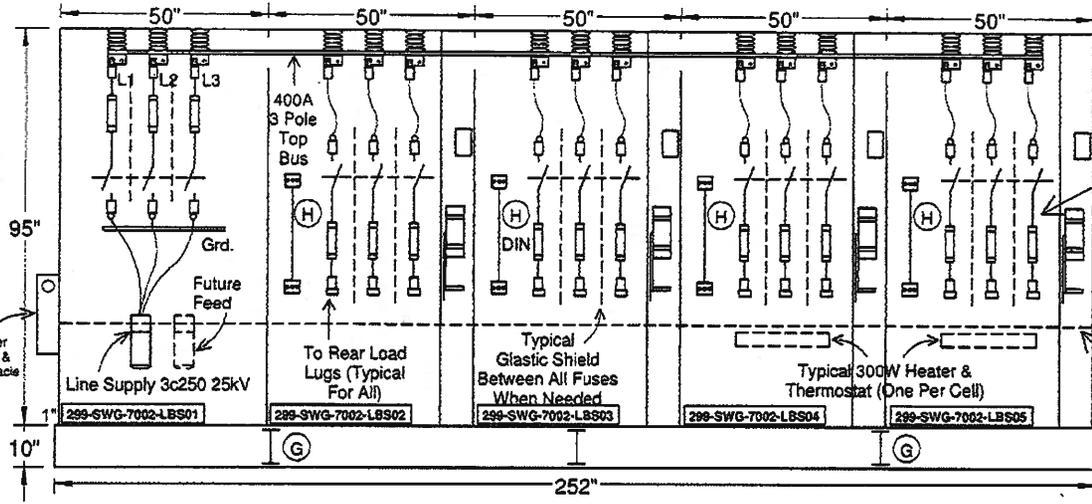
"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV
11-03-25	00
11-03-30	01
DRAWN BY:	AB

DESCRIPTION: Temp. Power - 25kV Feeder Line  
Up #2 'S-PDC-25kV-5CELL' (Front View)  
PROJECT NAME: Surmont 2 Project  
CUSTOMER NAME: Bantrel Co./Conoco Phillips  
DRAWING NUMBER:  
AB11032503 ESK #11



**Principle Of Cable Connection**  
(Standard Dimensions To Be Confirmed)

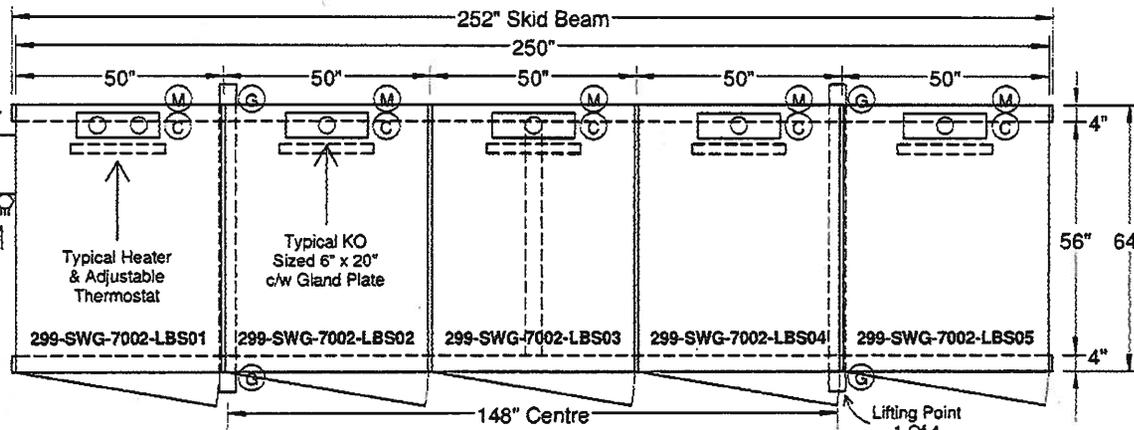


**Front View Of Tag #299-SWG-7002**

Typical 600A 3 Pole 25kV Load Make/Break Switch c/w DIN Fuses (As Per ESK #1) & Door Operator (Main Is Mounted Upside Down)

Door Operator Handle c/w Interlock To Door So Switch Must Be Open To Enter c/w Kirk Keys

Rear Elevated Quick Entry Platform



**Top View Of Tag #299-SWG-7002**

**Notes:**

- Assembly To Be Lifted With Spreader Bars To Assure Direct Vertical Lift On 4 Member Lifting Points ONLY
- Interior Component Dimensions May Vary At Time Of Manufacture. Exterior Dimensions Will Not.

Typical Skid Sized 10" x 4" (W10-22 5 3/4" Top) (1" Overhang On Each End)

Weatherproof Panel c/w One 1P15A Circuit Breaker For Five 300W 120V Heaters & Thermostat (One Per Cell). Ouellet #OFM0302BL-TB1

120V 30A 3 Wire Flush Male Twist Lock For Generator Supply To Heaters (L530R)

○ Denotes Labels See ESK #'s 22, 23, & 24

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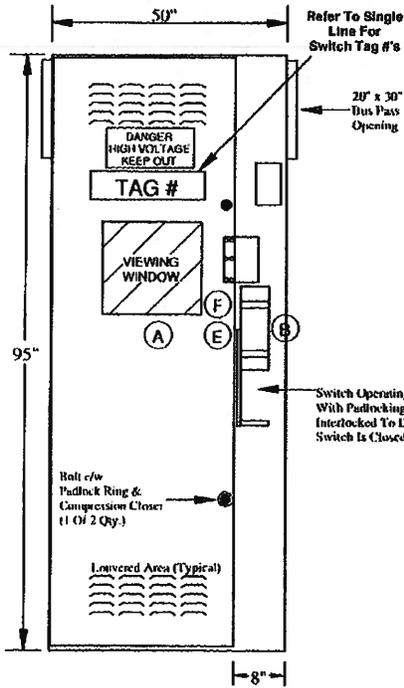
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"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

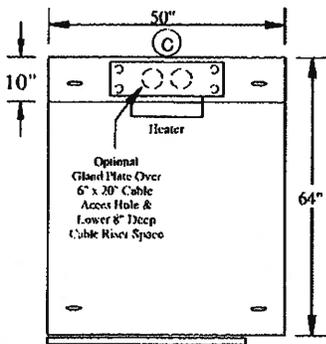
DATE	REV	DESCRIPTION
11-03-25	00	Temp. Power - 25kV Feeder Line Up #2 'S-PDC-25kV-5CELL' (Top & Front Views)
11-03-30	01	PROJECT NAME: Surmont 2 Project
11-10-10	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
11-11-04	04	DRAWING NUMBER: AB11032504
DRAWN BY:	AB	ESK #12

DESCRIPTION: Temp. Power - 25kV Feeder Line Up #2 'S-PDC-25kV-5CELL' (Top & Front Views)  
PROJECT NAME: Surmont 2 Project  
CUSTOMER NAME: Bantrel Co./Conoco Phillips  
DRAWING NUMBER: AB11032504

# 25kV LOAD BREAK/LOAD MAKE FUSIBLE SWITCH - SERIES NALF-SERIES "DHVS" - REAR LOAD ACCESS STYLE



Front View



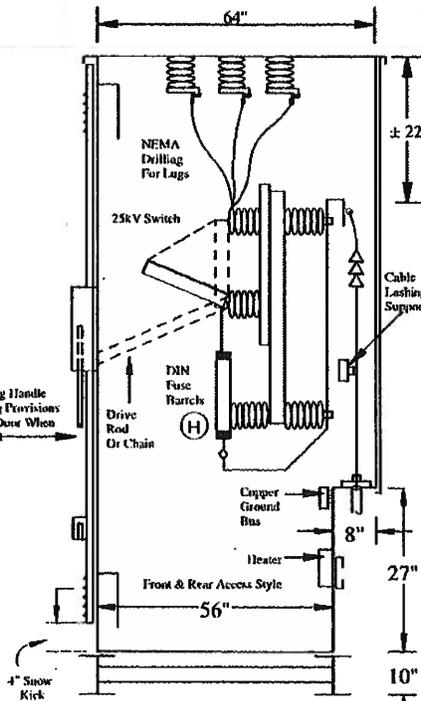
Top View

"Shown 1 Cell Only"

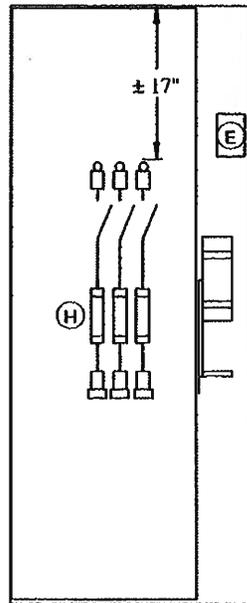
"Shown Single Section Of 5 Quantity"

○ Denotes Labels  
See ESK #'s 22, 23, & 24

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Right Side View



Front View Open

## Model #S-DHVS-400A/630A/1250A

\* EEMAC 3R Enclosure - Vented  
\* AC Dandy Disconnecter Type High Voltage Switches Have Been Designed Primarily For Use As:

- Line & Transformer Switches
- Within Distribution Networks
- Motor Switches
- Capacitor Switches

By Combining The Federal Pacific Auto Jet II Switch Which Disconnects Load & Small Fault Currents Combined With Current Limiting Fuses Which Break Large Fault Currents, The Result Is An Ideal Combination Towards All Types Of Faults In The Network c/w 25kV Load Break/Load Make Switch 600A 3 Pole Federal Pacific #0038-4-53152M

\* ASA 61 Grey Powder Paint Finish  
\* Size: 95" H x 50" W x 64" Deep

\* Front Door Hinged On Left Side c/w 8" Flange & Padlockable Handle

\* Viewing Window In Door 15" x 14" Safety Glass Wire Type

\* Warning Labels As Noted

\* Louvers On Door Top & Bottom c/w Inner Snow Shield

\* NEMA Drilling For Customers 1 x 1/0 Line Lugs With Rear Load Cable Terminals & Easy Access Cover. Adequate Space For Customer Cable Terminator & Connectors

\* Mechanically Interlock So Door Cannot Be Opened With Switch Closed - Lever Type Handle

\* Safety "Cornerform" Roof With Driphood Overhang On Front & Rear

### Options Included

- \* Top Line Bus 400A - 3P Continuous Segmented Length Style
- \* Ingoing & Outgoing Riser Rear Space & Terminal Pads With Barriers For 1 x 1/0 Nema Lugs/Phase
- \* Skid Mount Bottom Rear Entry Style
- \* Anticondensation Heater & Thermostat In Each Cell c/w Common Primary Supply 120V Point By Others On Main Line Up
- \* Lower 10" x 5 1/2" I-Beam Base & End Lifting Eyes & Roll
- \* Continuous Copper Ground Bus Throughout

### Note:

\* Refer To ESK #14 For Various Line & Load Style Configurations

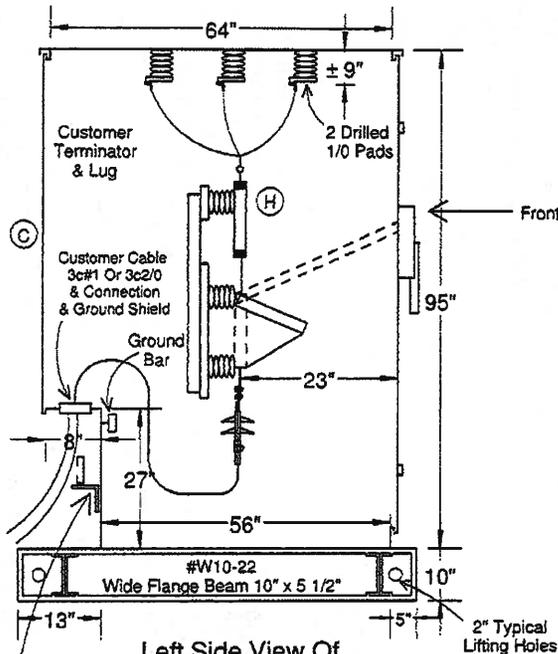
Model #	kV	Pole	Dimensions ("") H x W x D
S-DHVS-1-25	25	3	95 x 50 x 64



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"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV	DESCRIPTION:
11-03-25	00	Temp. Power - 25kV Switch Cell 'S-DHVS-1-25'
11-03-30	01	PROJECT NAME: Surmont 2 Project
11-10-18	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
		DRAWING NUMBER: AB11032505 ESK #13 N.T.S
DRAWN BY:	AB	

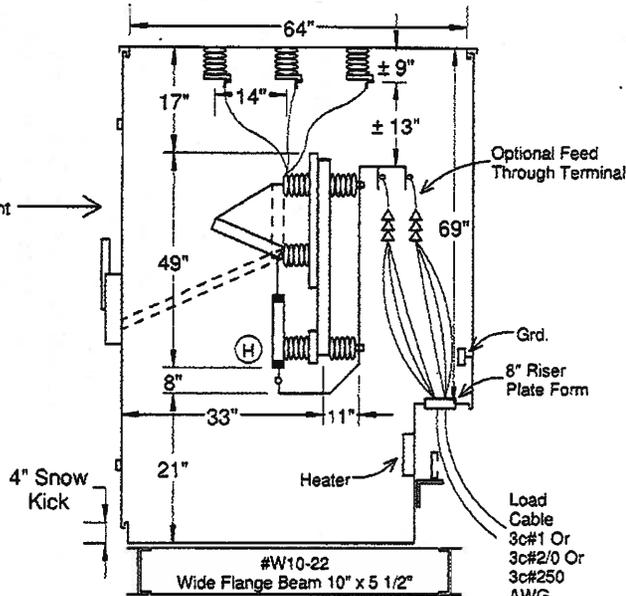


Left Side View Of  
 Main #1 = Tag #299-SWG-7001  
 Main #2 = Tag #299-SWG-7002

Factory Strut For Customer Clamping (13" Centre)  
 Line Side Supply Cubical (Noting Lifting Members) For Bottom Feed Top Load

○ Denotes Labels See ESK #'s 22, 23, & 24

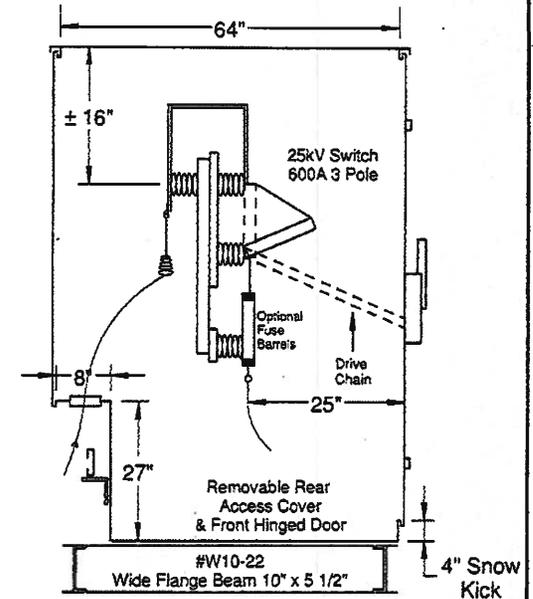
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Right Side View Of  
 Model #S-DHVS-1-25

Typical Load Switch (Without Lifting Members) When Fed From Top Bus  
 Typical For Tag #299-SWG-7001-LBS03 Or Tag #299-SWG-7001-LBS05

Fuses Are:  
 - Feed Cell Fuses = Din 3028413-200A Or 125A (20") As Noted On ESK #1  
 - Fuse In #S-PHV's = Din 3028813-50A (20")



Side End View Of Individual  
 Model #S-DHVS-1-25 Switch Cell

When Fed From Feed Through Rear Bus (Similar For All Units In 'S-PDC' Main Line Up & 'S-PHV-US' Unit Subs)

NOTE:  
 Interior Component Dimensions May Vary At Time Of Manufacture. Exterior Dimensions Will Not.



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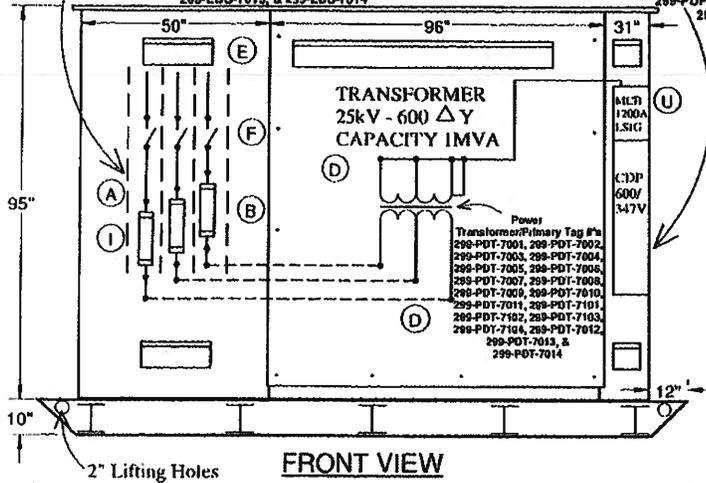
DATE	REV
11-03-25	00
11-03-28	01
11-03-30	02
11-11-04	06
DRAWN BY:	AB

DESCRIPTION: Temp. Power - 25kV Switch Cell 'S-DHVS-1-25' (Side Views)  
 PROJECT NAME: Surmont 2 Project  
 CUSTOMER NAME: Bantrel Co./Conoco Phillips  
 DRAWING NUMBER: AB11032506  
 ESK #14 N.T.S.

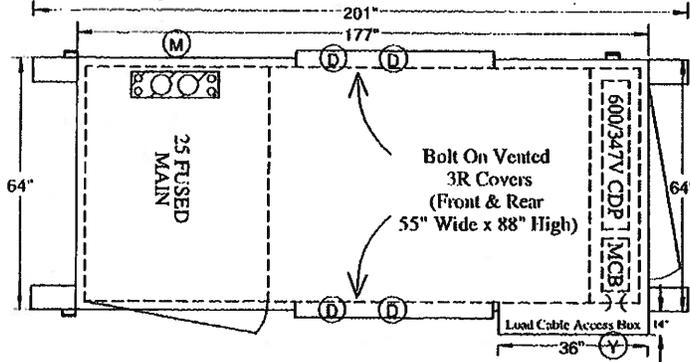
# PORTABLE HIGH VOLTAGE UNIT SUB SKID - SERIES PHV-US

Main H.V. Switch Tag #'s 299-LBS-7001, 299-LBS-7002, 299-LBS-7003, 299-LBS-7004, 299-LBS-7005, 299-LBS-7006, 299-LBS-7007, 299-LBS-7008, 299-LBS-7009, 299-LBS-7010, 299-LBS-7011, 299-LBS-7101, 299-LBS-7102, 299-LBS-7103, 299-LBS-7104, 299-LBS-7012, 299-LBS-7013, & 299-LBS-7014

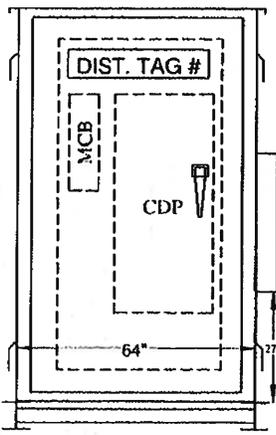
Distribution Panel Tag #'s 299-PDP-3001, 299-PDP-3002, 299-PDP-3003, 299-PDP-3004, 299-PDP-3005, 299-PDP-3006, 299-PDP-3007, 299-PDP-3008, 299-PDP-3009, 299-PDP-3010, 299-PDP-3011, 299-PDP-3101, 299-PDP-3102, 299-PDP-3103, 299-PDP-3104, 299-PDP-3012, 299-PDP-3013, & 299-PDP-3014



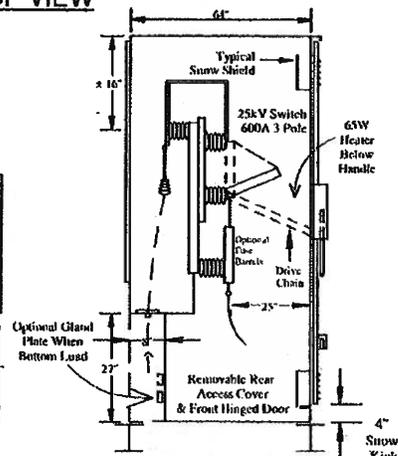
FRONT VIEW



TOP VIEW



CDP SIDE END VIEW



High Voltage Side End View

## Model #S-PHV-US

- \* EEMAC 3R Enclosure - Weatherproof
- \* Designed As A H.D. Portable Skid Mounted Power Distribution Centre c/w Primary 25kV 3P 600A Fused Disconnect, 25kV - 600V Transformer, 600V 1200A LSIIG Secondary Breaker, & CDP
- \* I-Beam 10" Skid Base c/w 14" End Overhang, End Lifting Eyes, & Cross Members
- \* 25kV Primary Switch Cubical Has Rear Access & Feed Through Lugging For 3c - 25kV Teck, c/w Lower Cable Entry Plate & Space For Customer Lugs & Terminators. Disconnect Switch Is ABB NALF 600A 3 Pole Load Make/Load Break & Lever Handle, Chain Drive, Door Interlock, & DIL50 Fuses. Feed In Lugs Have Vertical Isolation Barriers. Shield & Line Ground Bus Is Interconnected To Transformer & CDP Compartments. Front & Rear Doors Are Hinged c/w Padlockable Bolt Fasteners. Front Has Window To View Switch c/w Labeling As Noted On ESK #5
- \* Transformer Is Federal Pacific #TK1000, 1000KVA 25kV - 600/347 Δ Y c/w 2 & 2 Secondary Load Taps @ 5% - 60Hz. Individual Access Covers For Front & Rear Are Bolt Fitted
- \* Primary & Secondary Are Cable Connected To HV Switch & CDP To Allow For Flex.
- \* 600V CDP Has Siemens ND63B120 - 1200A 3 Pole LSIIG Main Breaker. CDP Is Siemens FC1 - 18kAIC Style (See Single Line For Breaker Counts). Exterior Door Has Full Hidden Piano Hinge & Padlocking Clasps. CDP Has Dead Front Inner Cover
- \* Assembly Is Sized 95" x 177" x 64" Plus 10" Lower Skid c/w 12" Skid End Overhang, Rated EEMAC 3R, & Finished In ASA 61 Grey Powder Coat
- \* Rear Of HV Section Has 600V CDP Cable Entry Box c/w Screw Cover Sized 36" x 40" x 14" Mounted 24" From Top Of Skid & Is Designed For Easy Field Load Side Cable Access To CDP Circuit Breakers
- \* Assembly Has 65W Heater & Thermostat In HV Cell
- \* HV Switch & Transformer Covers/Door All Have Padlocking Model #DPLBC Bolt Covers On Primary Disconnect

### NOTES:

- Fuse Location Will Vary Depending On Transformer Bushing Connection
- Interior Component Dimensions May Vary At Time Of Manufacture.
- Exterior Dimensions Will Not.

This Drawing/Design Belongs To A.C. DANDY & Shall Not Be Reproduced Or Used Without The Written Approval Of Same

(Refer To ESK #13 For Notes)

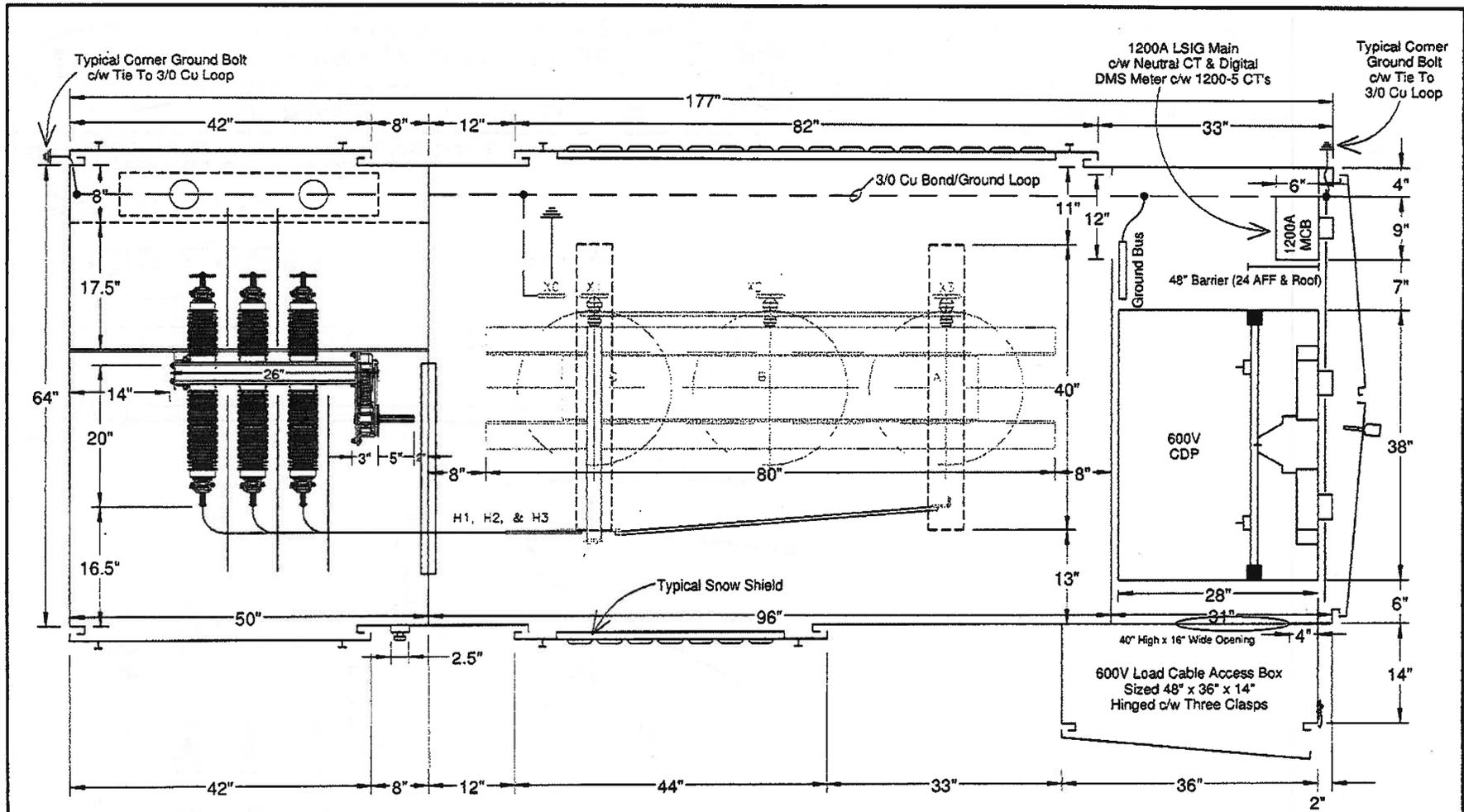
○ Denotes Labels See ESK #'s 22, 23, & 24



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"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV	DESCRIPTION:
11-03-25	00	25kV Power Dist. Centre
11-03-30	01	PROJECT NAME: Surmont 2 Project
11-10-18	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
		DRAWING NUMBER: AB11032507
DRAWN BY:	AB	ESK #15



Refer To ESK #'s 1 To 8 For Tag #'s  
 Refer To ESK #'s 22 To 24 For Labels

**Top View**

**NOTES:**

- MCB Will Be Barrired From GDP So As To Separate It From The GDP On The Line Side With Dead Front Inner Shield
- Interior Component Dimensions May Vary At Time Of Manufacture

Typical For  
 1 Of 15 Quantity

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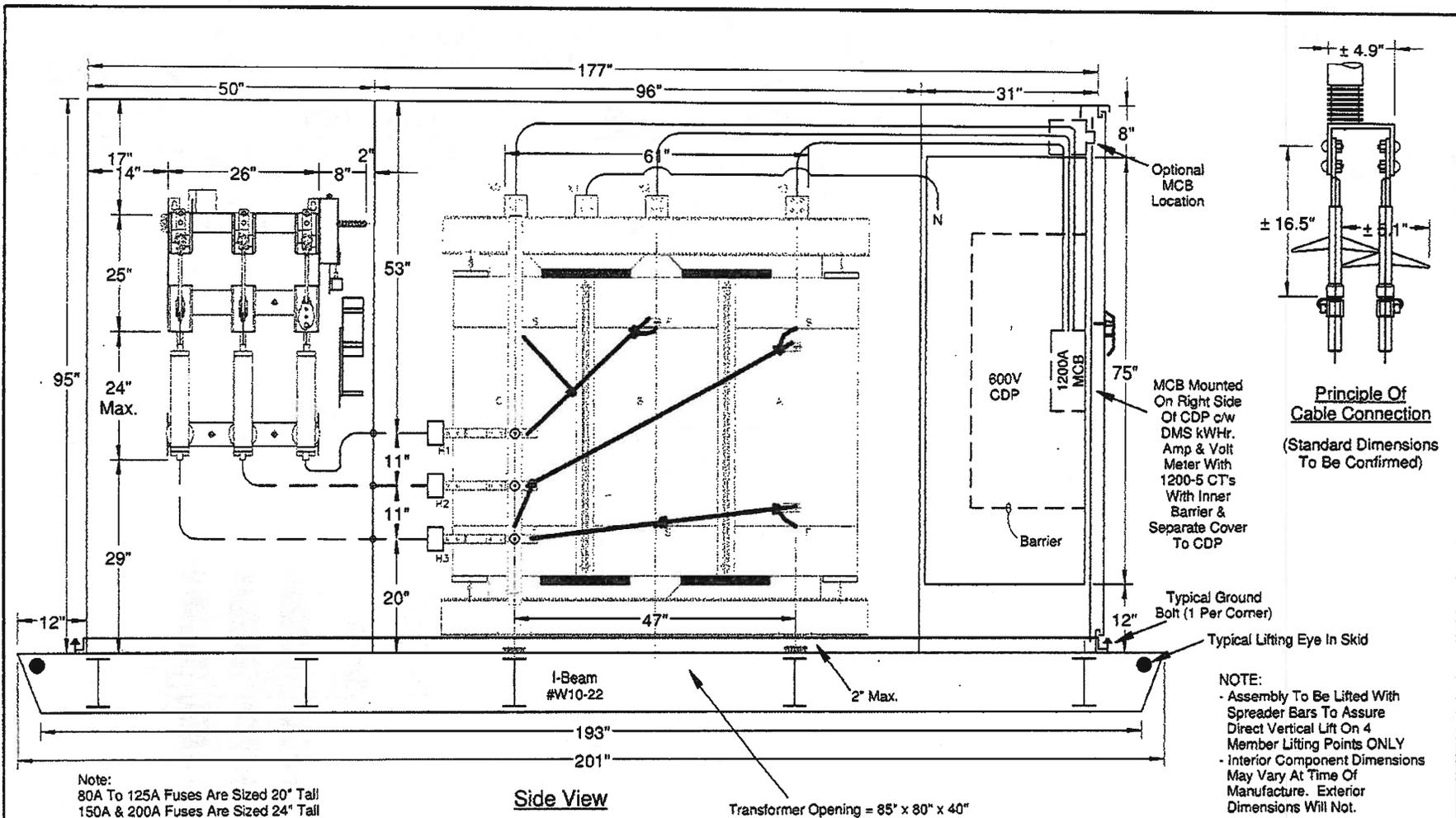
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DATE	REV
11-03-18	00
11-03-28	01
11-03-30	02
DRAWN BY:	AB

**DESCRIPTION:** 25kV Power Distribution Assembly  
 'S-PHV-US' (Top View)  
**PROJECT NAME:** Surmont 2 Project  
**CUSTOMER NAME:** Bantrel Co./Conoco Phillips  
**DRAWING NUMBER:**  
 AB11031802      ESK #16

**"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"**



Note:  
80A To 125A Fuses Are Sized 20" Tall  
150A & 200A Fuses Are Sized 24" Tall

Side View

Transformer Opening = 85" x 80" x 40"

NOTE:  
- Assembly To Be Lifted With Spreader Bars To Assure Direct Vertical Lift On 4 Member Lifting Points ONLY  
- Interior Component Dimensions May Vary At Time Of Manufacture. Exterior Dimensions Will Not.

Side View  
Portable Unit Substation  
Model #S-PHV-US-25KV  
1000kVA - 25kV - 600/347  
Typical For 1 Of 15 Quantity

Refer To ESK #'s 1 To 8 For Tag #'s  
Refer To ESK #'s 22 To 24 For Labels  
This Drawing/Design Belongs To A.C. DANDY & Shall Not Be Reproduced Or Used Without The Written Approval Of Same



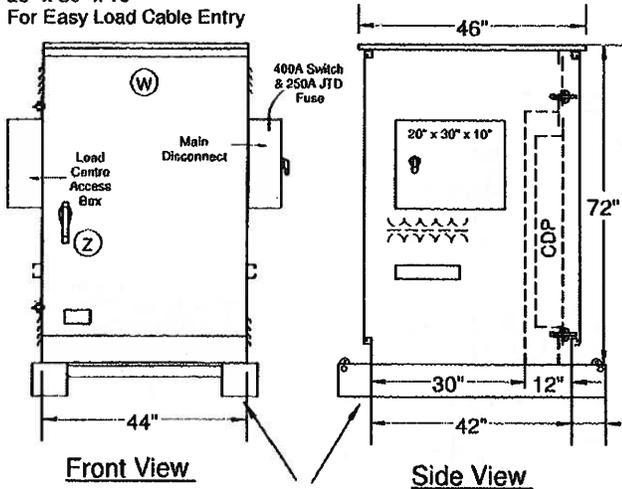
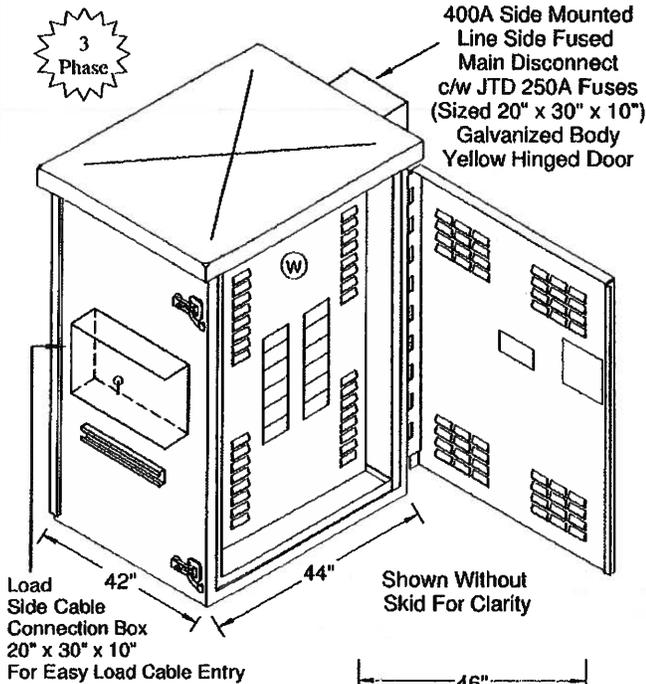
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"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV
11-03-18	00
11-03-28	01
11-03-30	02
11-04-08	03
DRAWN BY:	AB

DESCRIPTION: 25kV Power Distribution Assembly  
'S-PHV-US' (Side View)  
PROJECT NAME: Surmont 2 Project  
CUSTOMER NAME: Bantrel Co./Conoco Phillips  
DRAWING NUMBER:  
AB11031801 ESK #17

# UNIT SUBSTATION DISTRIBUTION CENTRE - SERIES "D1"



## Model #S-DUS-D1

- \* EEMAC 3R Enclosure
- \* Designed As A Weatherproof Assembly c/w Step Down Transformer & Distribution Section For Portable Use c/w Side Mounted Fused Line Disconnect & Load Side Terminal Box & Skids Each Side c/w #W8-31 Wide Flange I-Beam Skid Base
- \* Rain Proof & Sleet Resistant For Outdoor Use
- \* Oversized Hood Provides Maximum Weather Resistance
- \* "Cornerform" Style Corners Provide Maximum Safety
- \* Factory Prewired Unit Substation c/w Dead Front Inner Door Over CDP & Vented Exterior Door Over CDP & Transformer
- \* Ventilation Louvers Punched In Doors & Inner Covers c/w Snow Shields
- \* Steel Construction c/w ASA 61 Grey Powder Finish
- \* Front Distribution Door Is Hinged, Gasketed & Padlockable
- \* Rear Transformer Cover Is Bolted On & Gasketed
- \* Both Doors Have Raised 4" Kick Space From Base
- \* Separate Ground Lugs For Each Section
- \* Raised Transformer Base c/w Rubber Isolators
- \* Load Centre Siemens 'P3' With Bolt-In Breakers In Separate Section

## Options Included

- \* Side Mounted Primary Main Fused Disconnect c/w JTD 250A Fuses & Strut In DWPS Series DWPS 20-30-10 Enclosure - Galvanized Body c/w ASA 61 Grey Door
- \* Skid Base c/w Lifting Eyes 8" x 8" x 66" Long I-Beam c/w 8" Overhang On Each End c/w Lower Strut
- \* Exit Junction Box & Strut In DWPS Series DWPS 20-30-10 Enclosure - Galvanized Body c/w ASA 61 Grey Door
- \* 225kVA 600-120/208V Sq. D #EE225T65H Transformer Has 2" x 2.5" FCAN & 2" x 2.5" FCBN Taps
- \* Siemens P3 800A 120/208V 10kAIC 42cct CDP c/w 6 Qty. - 1P20 BL & 18 Qty. - 2P70 BL Branch Circuit Breakers, & 12 Qty. - Provisions
- \* ASA 61 Grey Powder Coat Body & Black Skid

Model #	Estimated Cabinet Size (") H x W x D	Phase	Wire	kVA	Transformer		CDP Main/Cct
					Pri.	Sec.	
S-DUS-D1-225	60 x 44 x 42	3	4	225	600	120/208	800A/42cct

○ Denotes Labels  
See ESK #'s 22, 23, & 24

This Drawing/Design Belongs To A.C. DANDY & Shall Not Be Reproduced Or Used Without The Approval Of Same

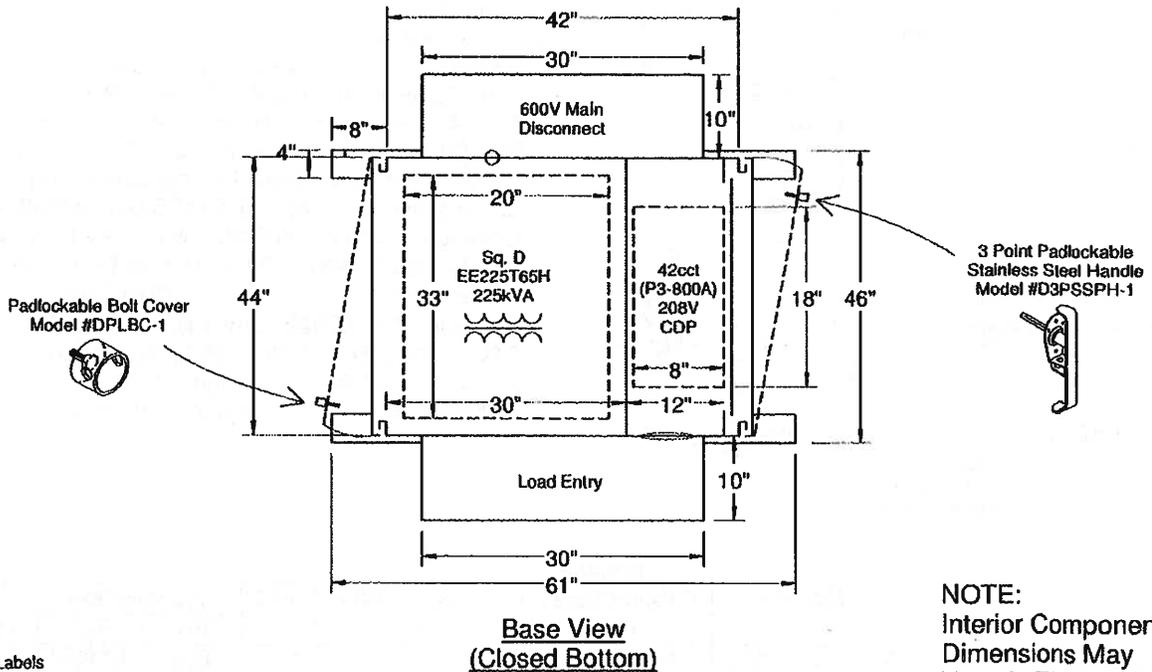
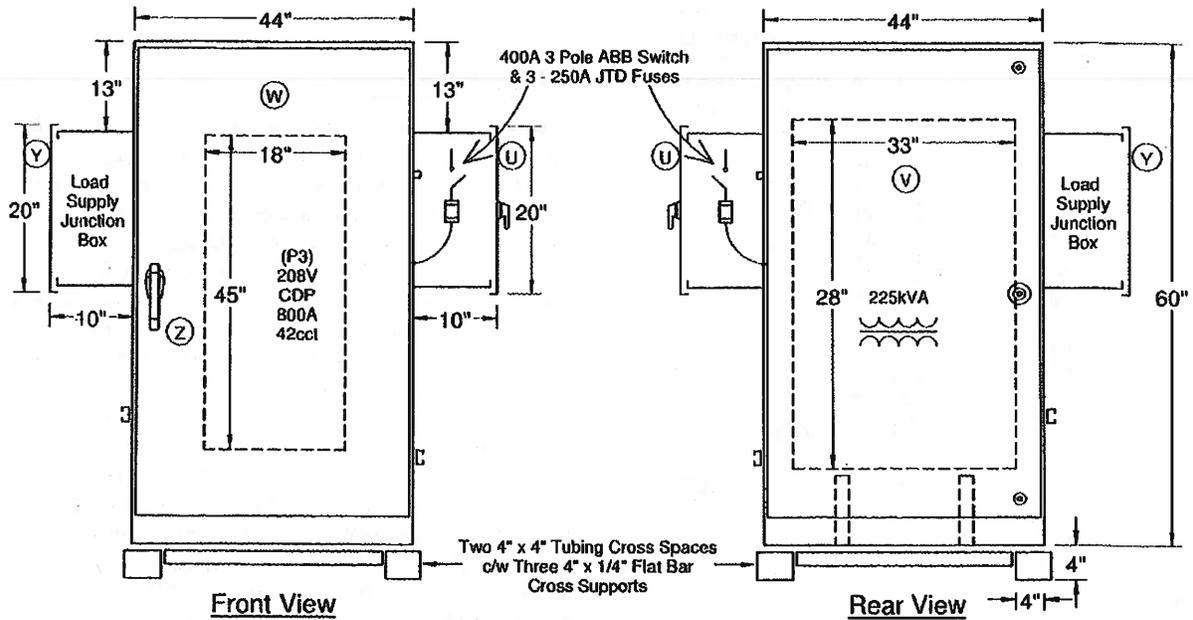
Revision #1 - April 6th, 2011  
Revised From 40" To 44" Wide



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WETASKIWIN, ALBERTA T9A 2K1  
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SIDNEY, BC PH: (250) 656-6196

"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV	DESCRIPTION:
11-03-28	00	600V Power Distribution Centre
11-03-30	01	PROJECT NAME: Surmont 2 Project
11-04-06	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
11-10-18	05	DRAWING NUMBER: AB11032801
DRAWN BY:	AB	ESK #18



NOTE:  
Interior Component  
Dimensions May  
Vary At Time Of  
Manufacture. Exterior  
Dimensions Will Not.

○ Denotes Labels  
See ESK #'s 22, 23, & 24

This Drawing/Design Belongs To A.C. DANDY & Shall Not  
Be Reproduced Or Used Without The Approval Of Same

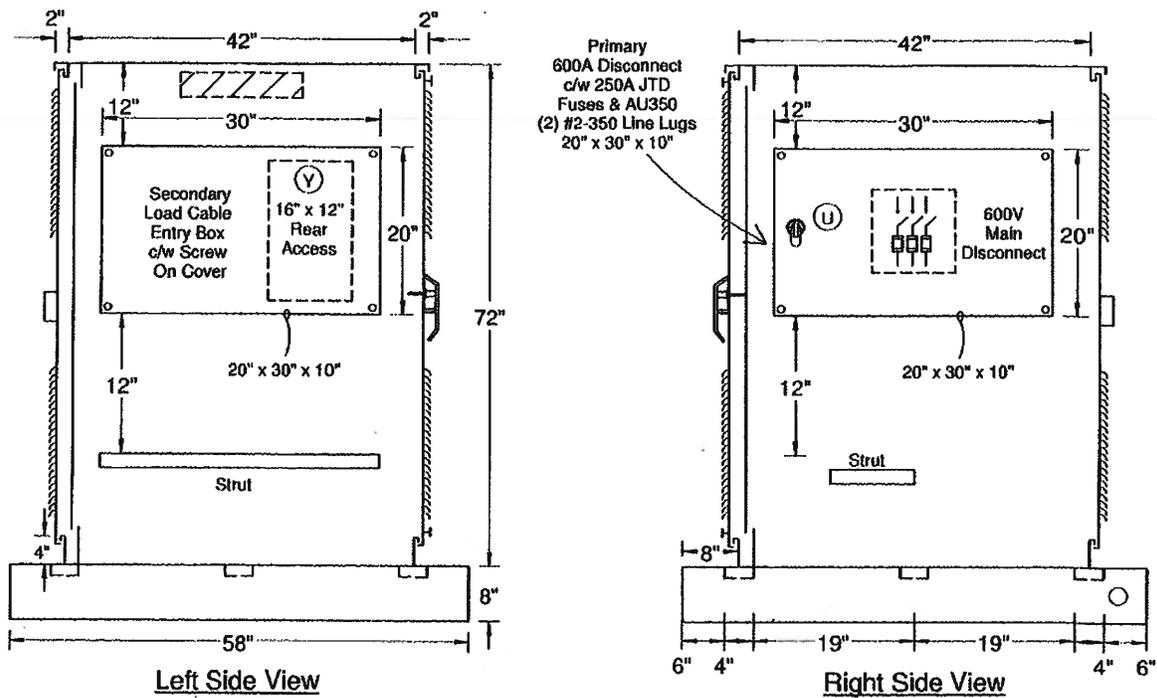
Revision #1 - April 6th, 2011  
Revised From 40" To 44" Wide



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SIDNEY, BC PH: (250) 656-6196

"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV	DESCRIPTION:
11-03-28	00	S-DUS-D1 Unit Substation 600V
11-03-30	01	PROJECT NAME:
11-04-06	02	Surmont 2 Project
11-10-18	04	CUSTOMER NAME:
		Bantrel Co./Conoco Phillips
		DRAWING NUMBER:
		AB11032802 ESK #19 N.T.S
DRAWN BY:	AB	



Primary  
600A Disconnect  
c/w 250A JTD  
Fuses & AU350  
(2) #2-350 Line Lugs  
20" x 30" x 10"

Secondary  
Load Cable  
Entry Box  
c/w Screw  
On Cover

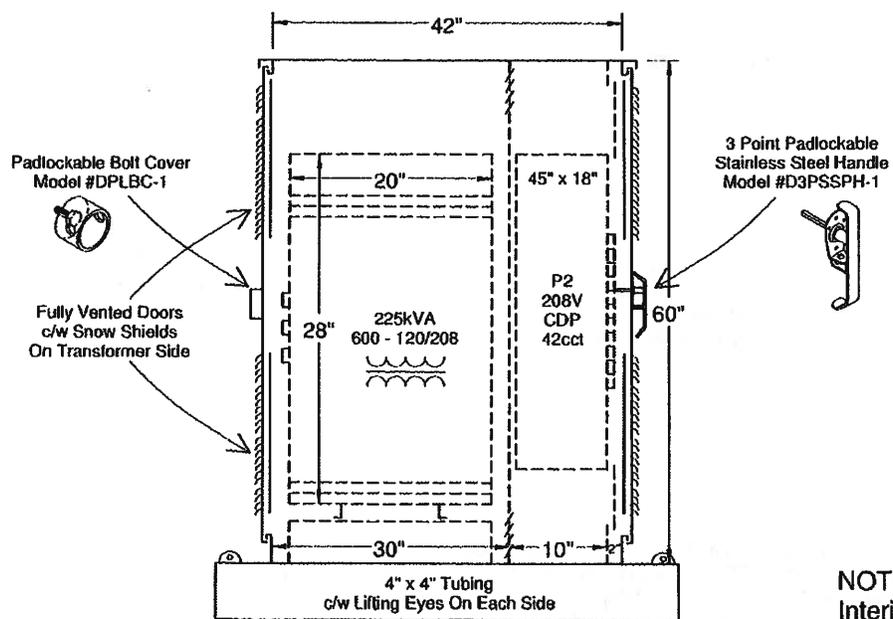
16" x 12"  
Rear  
Access

600V  
Main  
Disconnect

20" x 30" x 10"

Strut

Strut



Padlockable Bolt Cover  
Model #DPLBC-1

Fully Vented Doors  
c/w Snow Shields  
On Transformer Side

225kVA  
600 - 120/208

P2  
208V  
CDP  
42cct

3 Point Padlockable  
Stainless Steel Handle  
Model #D3PSSPH-1

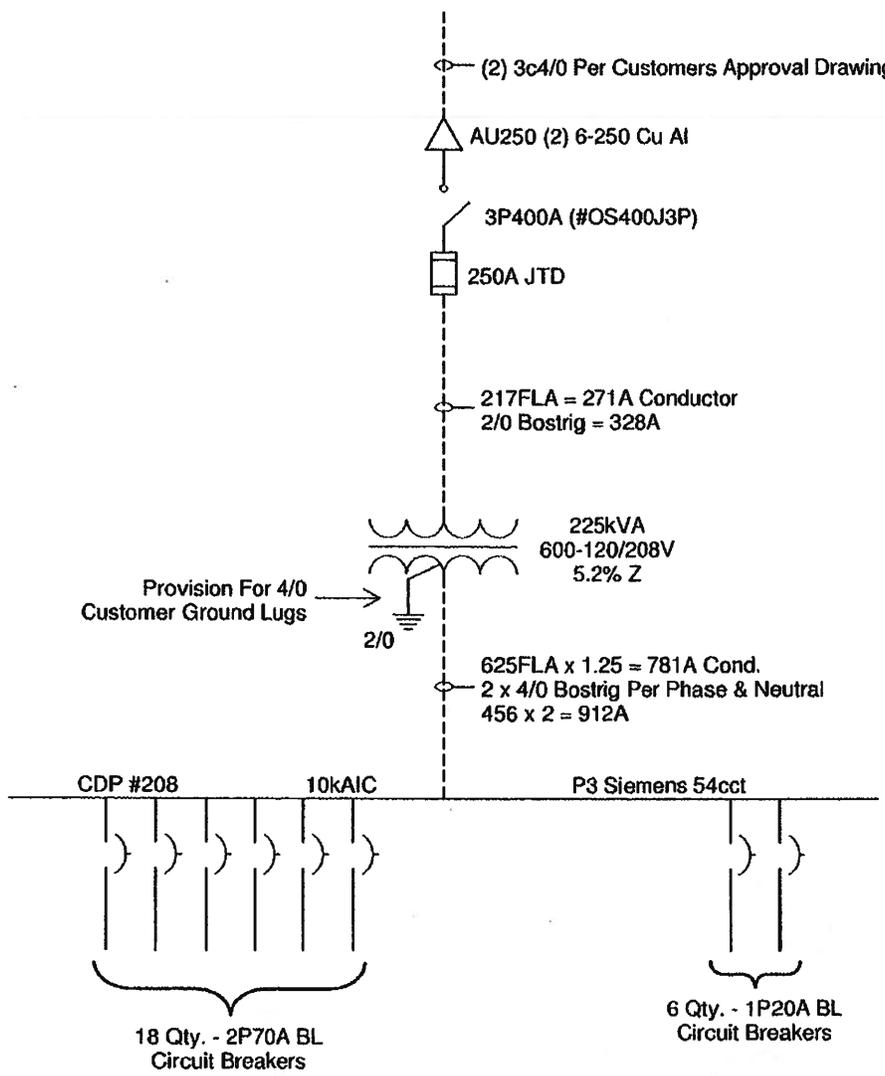
4" x 4" Tubing  
c/w Lifting Eyes On Each Side

**NOTE:**  
Interior Component  
Dimensions May  
Vary At Time Of  
Manufacture. Exterior  
Dimensions Will Not.

○ Denotes Labels  
See ESK #'s 22, 23, & 24

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<p><b>A.C. DANDY PRODUCTS LTD.</b> 4012 - 49 STREET WETASKIWIN, ALBERTA T9A 2K1 PH: (780) 361-5300 FAX: (780) 352-2249 SIDNEY, BC PH: (250) 656-6196 "ELECTRICAL ENCLOSURE &amp; EQUIPMENT MANUFACTURERS"</p>	DATE	REV	DESCRIPTION:
	11-03-28	00	S-DUS-D1 Unit Substation 600V
	11-03-30	01	PROJECT NAME: Surmont 2 Project
	11-06-02	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
	11-10-18	03	DRAWING NUMBER: AB11032803 ESK #20 N.T.S
DRAWN BY:	AB		



**Notes:**

- \* Approval Drawings Were Marked Up To (2) 3c4/0 Supply Tecks
- \* Specification Was For 42cct - ACD Altered To 54cct To Allow For Some Extra Future Provisions
- \* Specification Called For 600A MCB On 208V Panel, But Single Line Showed 250A Fuse - ACD Selected 250A Fuse As Better Arc Flash Protection

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TAG #'s 299-PDT-3001 To 299-PDT-3015  
Serial #'s 11-1667 To 11-1687



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"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV	DESCRIPTION:
11-06-06	00	DUS-D1-225 Unit Sub
11-06-16	01	PROJECT NAME: Summont 2 Project
11-10-18	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
		DRAWING NUMBER: AB11060601 ESK #20A N.T.S
DRAWN BY:	AB	

# GENERAL INSTALLATION & TORQUING SPECIFICATIONS

## PRIOR TO ENERGIZING, FOR MAINTENANCE, & AFTER EACH UNIT RELOCATION

1. Hazardous voltage in electrical equipment can cause severe personal injury or death. Inspection and maintenance should only be performed with the equipment power turned off, isolated, and grounded to acceptable safety standards. Arc flash potential may be present.
2. The assembly must be grounded, bonded, and protected as per acceptable code and engineering standards. **CAUTION** primary generally has neutral earth return.
3. Installation, operation, and maintenance should only be conducted by qualified personnel with proper protective equipment trained to such equipment. Depending on the application and conditions, testing and maintenance should be done regularly.
4. As vibration and twisting in transportation, handling, and unstable foundation can cause connections and parts to loosen and become misaligned; all bolted connections must be re-torqued to recommended specifications and clearance checked regularly. This is a very important issue.
5. In the event the specifications are not available, torque the bolts to the top range of the values given below. Follow the manufacturer's instructions whenever possible.
6. Remove all blocks or other holding means used in shipping for all component devices and the component interior.
7. Check all bus bar mounts for tightness. Ensure the enclosure has received no damage that will reduce the electrical spacing or cause cracking of the bus bar mounts.
8. Refer to CEC, applicable local regulations, and all safety standards for installation and maintenance. Always consult factory with any concerns.
9. Prior to energizing; conduct proper phase to phase and phase to ground insulation tests. Adjust all breakers and overloads to proper set points with the minimum acceptable trip set points to prevent damage resulting from overload or fault safely.
10. When replacement parts are required, use only original factory components.
11. The assembly must only be used in a location, classification, and for use as intended and acceptable to the authority having jurisdiction and A.C. Dandy Products Ltd.
12. Upon completion this unit must be locked and secured to prevent unauthorized entry.
13. **CARE** must be taken when units are ventilated. Additional cleaning may be required prior to and after installation. When filters are supplied proper cleaning and replacement is required. Where site conditions cause contamination or blanketing additional cleaning and maintenance will be required to prevent tracking, over heating, etc. When fans, filters, shields, heaters, thermostats, etc. are used seasonal maintenance must be completed subject to site conditions.
14. When electrical components are supplied with adjustments such as trip point, time delays, etc., proper field adjustments must be made by installer prior to energizing.
15. Prior to energizing all transformers that have been placed in storage where susceptible to condensation, etc must be heated with a minimum of 1/2 W/Lb for a minimum of 48 hours.
16. All assemblies that are subject to dust and blanketing accumulation must be checked regularly in order to prevent excess heat build up, contamination, or corrosion causing breakdown or arching ventilation must be kept operable.
17. When assemblies are supplied with 50kA or over supply lashing bars may be required to secure cable from movement. Consult factory.
18. Installation must not reduce required phase to phase or phase to ground clearance. Stress shall not be placed on termination points.

Bolt Diameter	Torque Range
5/32" (No. 8)	10 - 15 inch/pounds
3/16" (No. 10)	15 - 20 inch/pounds
1/4"	5 - 7 foot/pounds
5/16"	10 - 12 foot/pounds
3/8"	18 - 20 foot/pounds
1/2"	40 - 50 foot/pounds
3/4"	145 - 155 foot/pounds

June 2007 (R2)

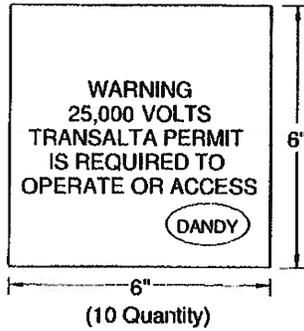


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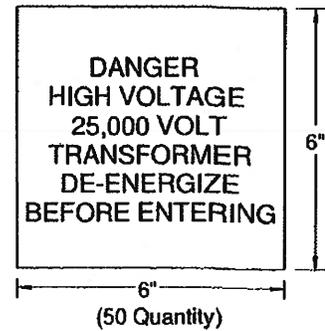
**"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"**

DATE	REV	DESCRIPTION:
11-03-28	00	General Instructions
		PROJECT NAME:
		Surmont 2 Project
		CUSTOMER NAME:
		Bantrel Co./Conoco Phillips
		DRAWING NUMBER:
		AB11032804 ESK 21
DRAWN BY:	AB	

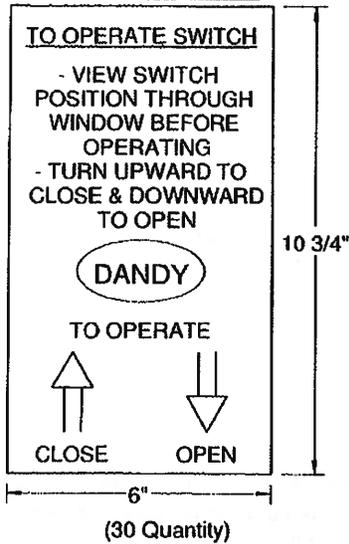
**LABEL #A**



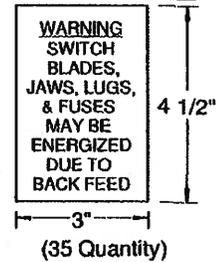
**LABEL #D**



**LABEL #B**



**LABEL #E**

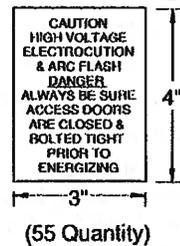


**NOTES:**

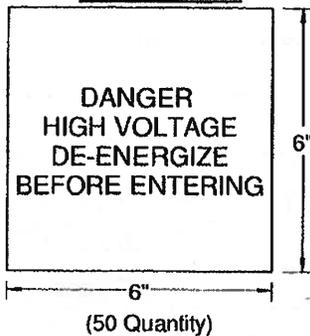
- ALL "WARNING & CAUTION" LABELS HAVE YELLOW LETTERS WITH RED BACKGROUND
- BALANCE OF THE LETTERS ARE BLACK WITH WHITE BACKGROUND

*Note: All Warning, Caution, & Danger Lettering Must Be Minimum 3/4" Lettering*

**LABEL #F**



**LABEL #C**



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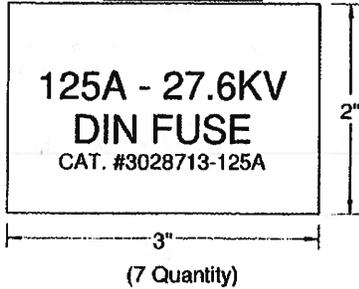


DATE	REV
11-03-28	00
11-03-30	01
11-04-04	02
11-05-25	03
DRAWN BY:	AB

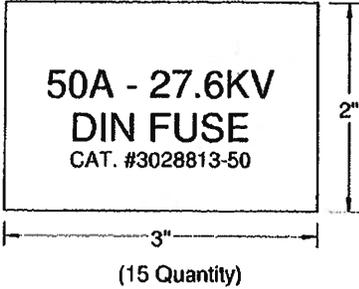
**DESCRIPTION:**  
 Distribution Labeling  
**PROJECT NAME:**  
 Surmont 2 Project  
**CUSTOMER NAME:**  
 Bantrel Co./Conoco Phillips  
**DRAWING NUMBER:**  
 AB11032805 ESK #22

**"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"**

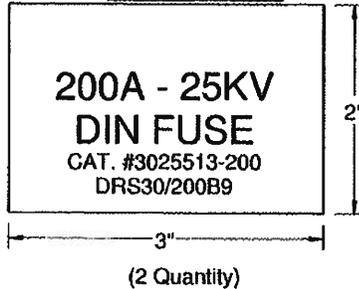
**LABEL #H**



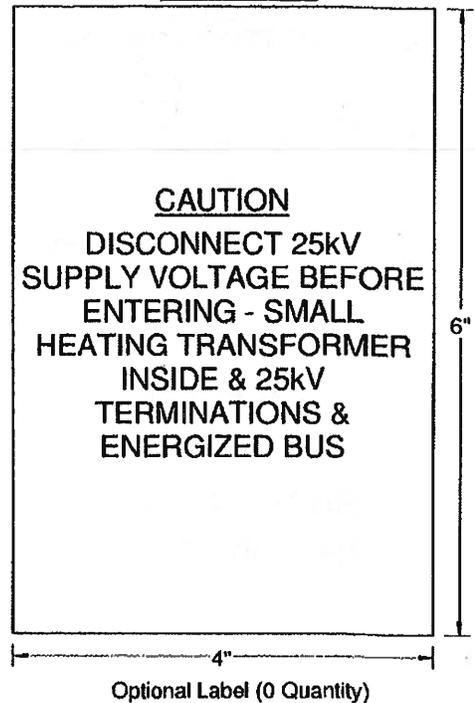
**LABEL #I**



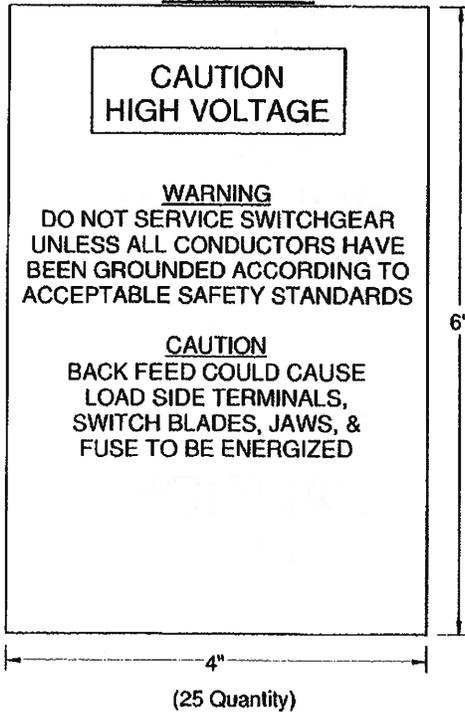
**LABEL #I-2**



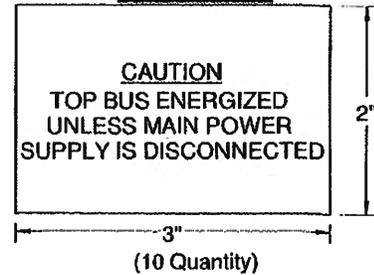
**LABEL #K**



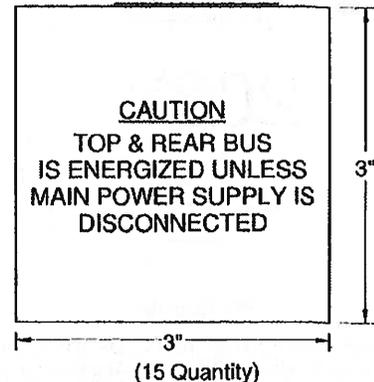
**LABEL #J**



**LABEL #L**



**LABEL #M**



**NOTES:**

- ALL "WARNING & CAUTION" LABELS HAVE YELLOW LETTERS WITH RED BACKGROUND
- BALANCE OF THE LETTERS ARE BLACK WITH WHITE BACKGROUND

*Note: All Warning, Caution, & Danger Lettering Must Be Minimum 3/4" Lettering*

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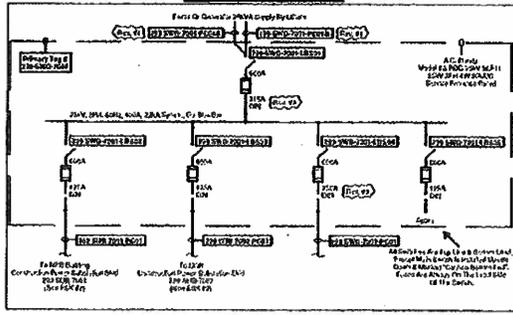
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"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV	DESCRIPTION:
11-03-28	00	Distribution Labeling
11-03-30	01	PROJECT NAME: Surmont 2 Project
11-04-25	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
		DRAWING NUMBER: AB11032806 ESK #23
DRAWN BY:	AB	

**LABEL #N**

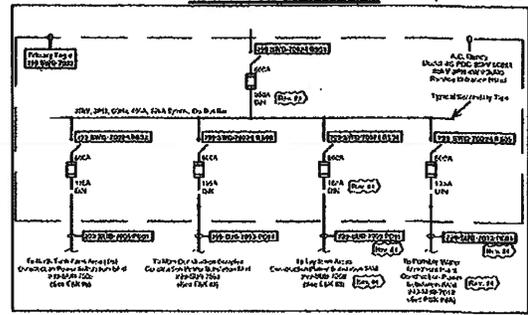
(See ESK #29)



10" (1 Quantity) 6"

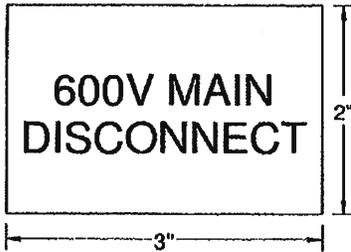
**LABEL #N-2**

(See ESK #30)



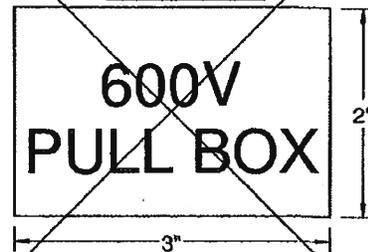
10" (1 Quantity) 6"

**LABEL #U**



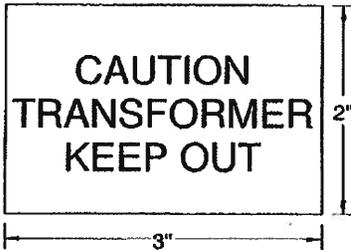
(15 Quantity)

~~LABEL #X~~



(0 Quantity)

**LABEL #V**



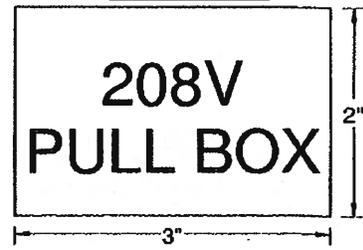
(15 Quantity)

**NOTES:**

- ALL "WARNING & CAUTION" LABELS HAVE YELLOW LETTERS WITH RED BACKGROUND
- BALANCE OF THE LETTERS ARE BLACK WITH WHITE BACKGROUND

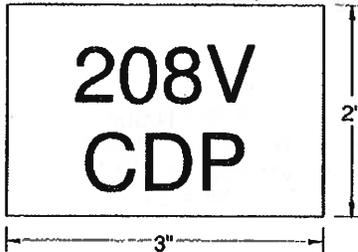
*Note: All Warning, Caution, & Danger Lettering Must Be Minimum 3/4" Lettering*

**LABEL #Y**



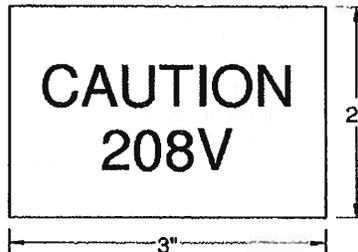
(15 Quantity)

**LABEL #W**



(15 Quantity)

**LABEL #ZZ**



(16 Quantity)

**LABEL #Z**



(16 Quantity)

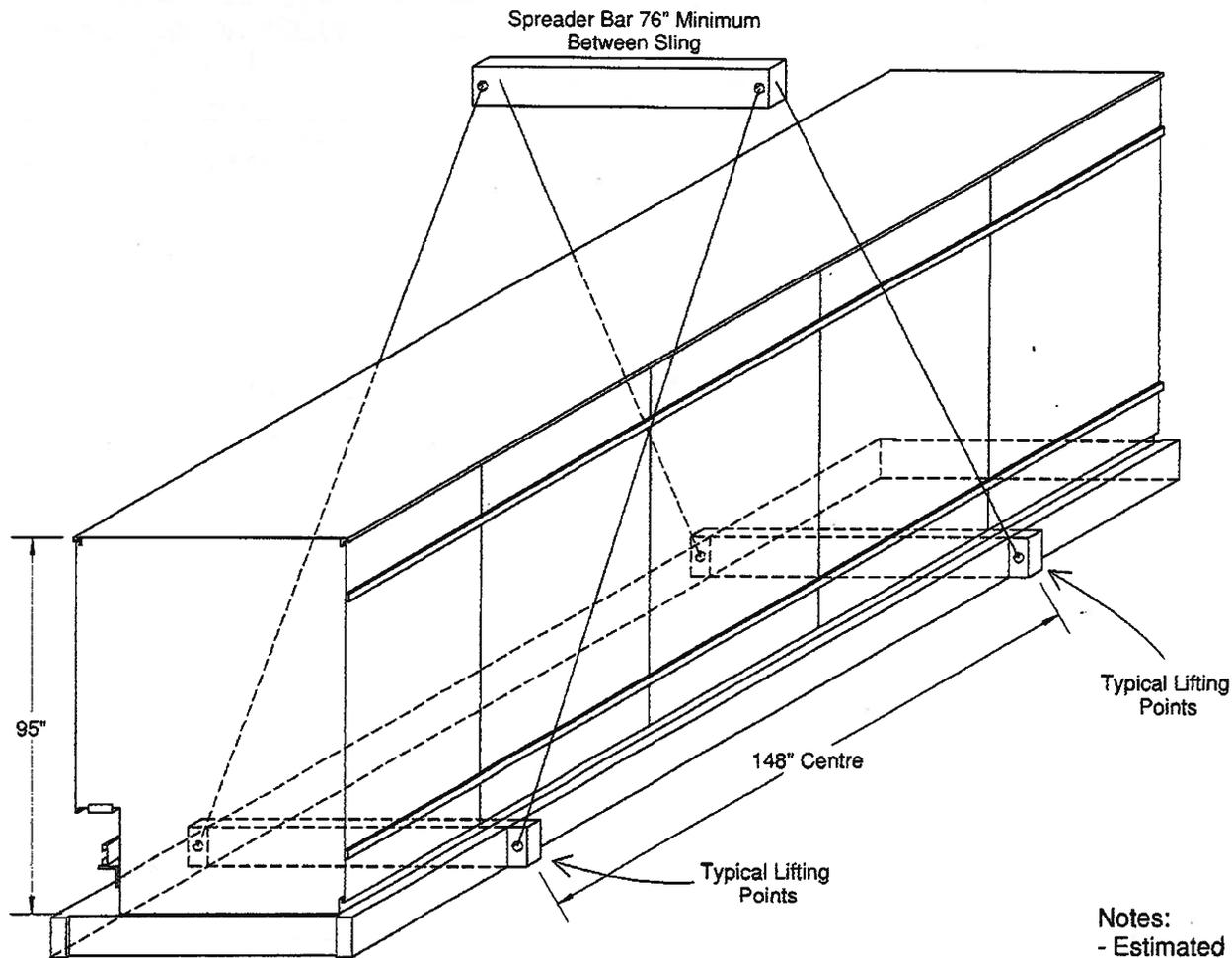
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DATE	REV	DESCRIPTION:
11-03-28	00	Distribution Labeling
11-03-30	01	PROJECT NAME: Surmont 2 Project
11-04-04	02	CUSTOMER NAME: Bantrel Co./Conoco Phillips
11-10-18	05	DRAWING NUMBER: AB11032807
DRAWN BY:	AB	ESK #24

"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"



- Notes:
- Estimated Weight 13,000 Lb's
  - Load Not Equally Balanced
  - Lifting Points = 4
  - Spreader Bar & Slings Required

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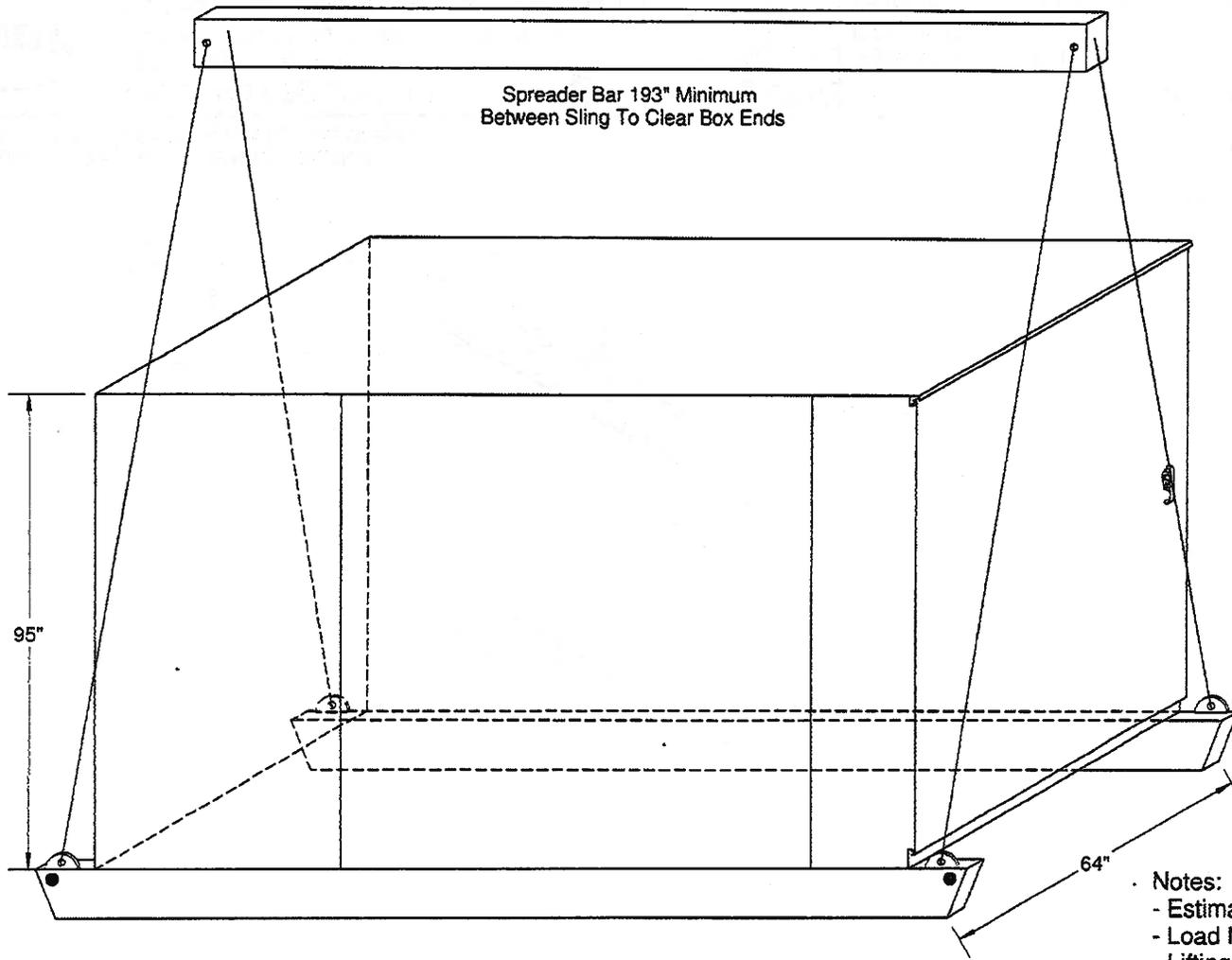


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 SIDNEY, BC PH: (250) 656-6196

"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV
11-03-28	00
DRAWN BY:	AB

DESCRIPTION: Lifting Details For 25kV Switchgear Assembly (5 Cell) Model #S-PDC-25kV-5CELL  
 PROJECT NAME: Surmont 2 Project  
 CUSTOMER NAME: Bantrel Co./Conoco Phillips  
 DRAWING NUMBER:  
 AB11032808 ESK #25



Spreader Bar 193" Minimum  
Between Sling To Clear Box Ends

95"

64"

- Notes:
- Estimated Weight 14,800 Lb's
- Load Not Equally Balanced
- Lifting Points = 4
- Spreader Bar & Slings Required

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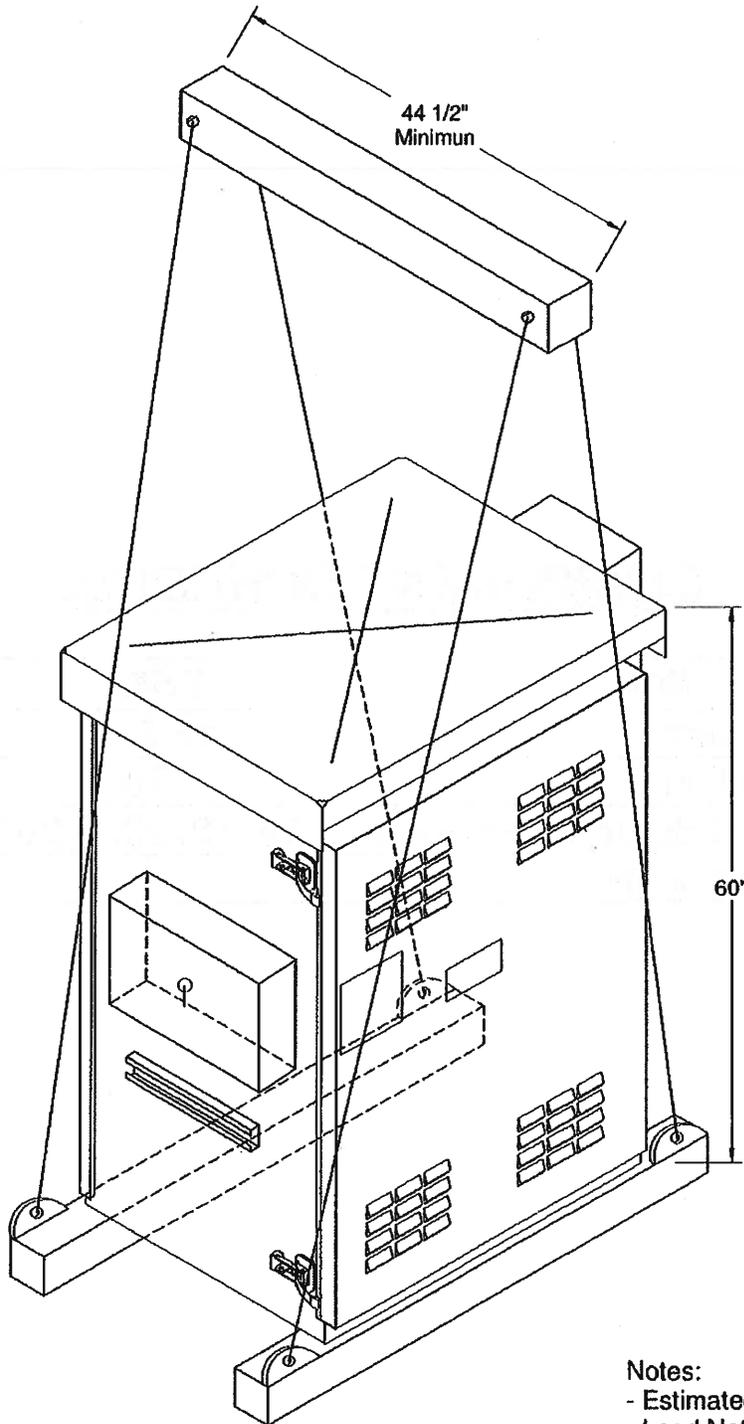


A.C. DANDY PRODUCTS LTD.   
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 PH: (780) 361-5300 FAX: (780) 352-2249  
 SIDNEY, BC PH: (250) 656-6196

"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV
11-03-28	00
11-03-30	01
11-10-18	02
DRAWN BY:	AS

DESCRIPTION: Lifting Details For 25kV - 600V  
 1000kVA Power Distribution Centre  
 Model #S-PHV-US-25kV (Qty. = 1 Of 18)  
 PROJECT NAME: Surmont 2 Project  
 CUSTOMER NAME: Bantrel Co./Conoco Phillips  
 DRAWING NUMBER: AB11032809 ESK #26



- Notes:
- Estimated Weight 2,300 Lb's
  - Load Not Equally Balanced
  - Lifting Points = 4
  - Spreader Bar & Slings Required

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 SIDNEY, BC PH: (250) 656-6196

"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV
11-03-28	00
11-06-02	01
11-10-18	02
DRAWN BY:	AB

DESCRIPTION: Lifting Details For  
 600 - 120/208V Power Distribution  
 Centre - Model #S-DUS-D1-225  
 (Qty. = 1 Of 18)  
 PROJECT NAME:  
 Summit 2 Project  
 CUSTOMER NAME:  
 Bantrel Co./Conoco Phillips  
 DRAWING NUMBER:  
 AB11032810 ESK #27

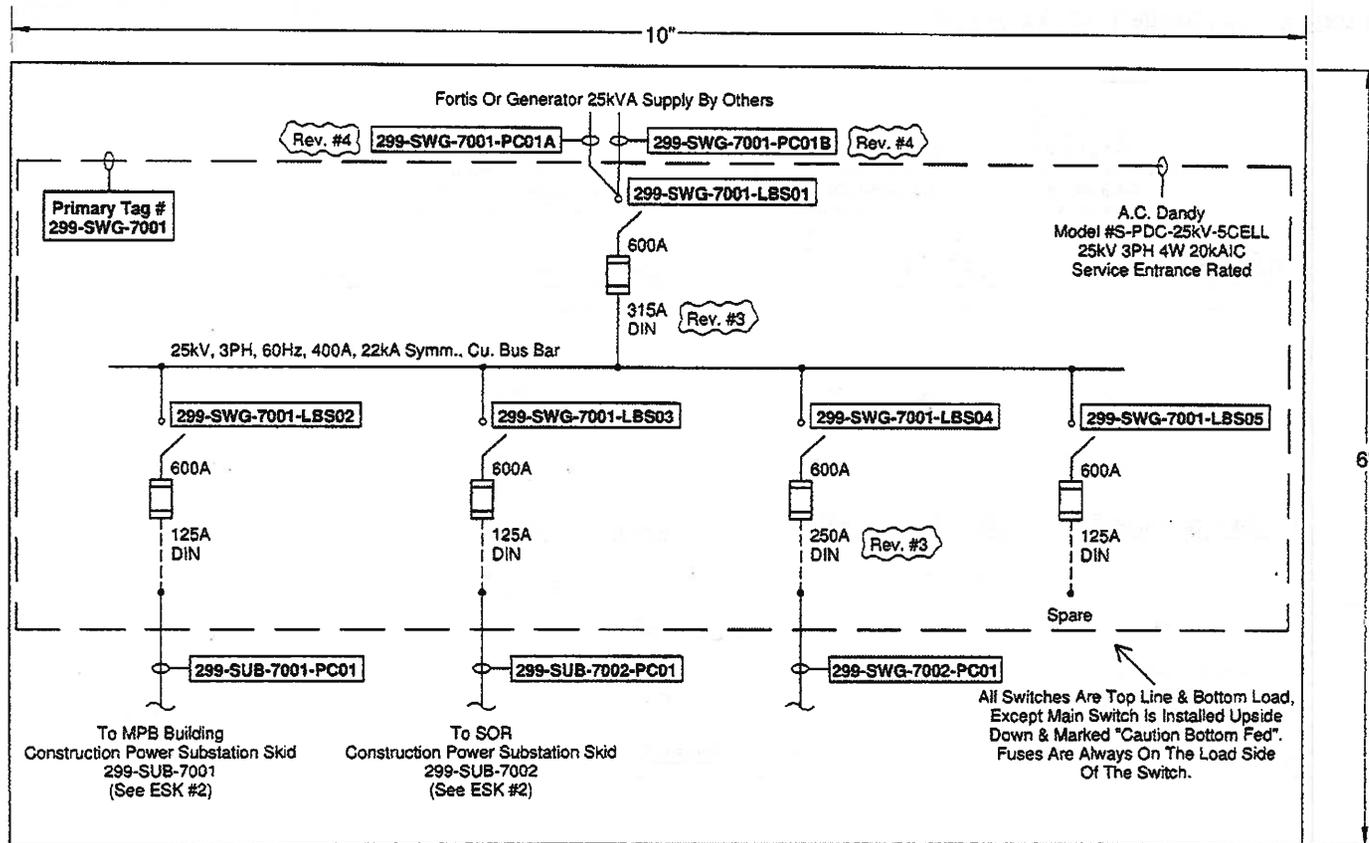
## COMPONENT SCHEDULE

#	Item	ESK #	# Of Pages
1	ABB 25kV Switch	13 & 14	2 Pages
2	Fuse Information	1 To 8	8 Pages
3	Breaker/Panel Board Information	15, 18, 20, & 20A	4 Pages
4	CSA Test Certificate		1 Page

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	<b>A.C. DANDY PRODUCTS LTD.</b>  4012 - 49 STREET WETASKIWIN, ALBERTA T9A 2K1 PH: (780) 361-5300 FAX: (780) 352-2249 SIDNEY, BC PH: (250) 656-6196 <b>"ELECTRICAL ENCLOSURE &amp; EQUIPMENT MANUFACTURERS"</b>	DATE	REV	DESCRIPTION: Component Schedule PROJECT NAME: Surmont 2 Project CUSTOMER NAME: Bantrel Co./Conoco Phillips DRAWING NUMBER: AB11032811      ESK #28
		11-03-28	00	
		11-10-10	01	
		DRAWN BY:	AB	

# LABEL CATALOGUE #N



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Label Has Yellow Letters With A Red Background



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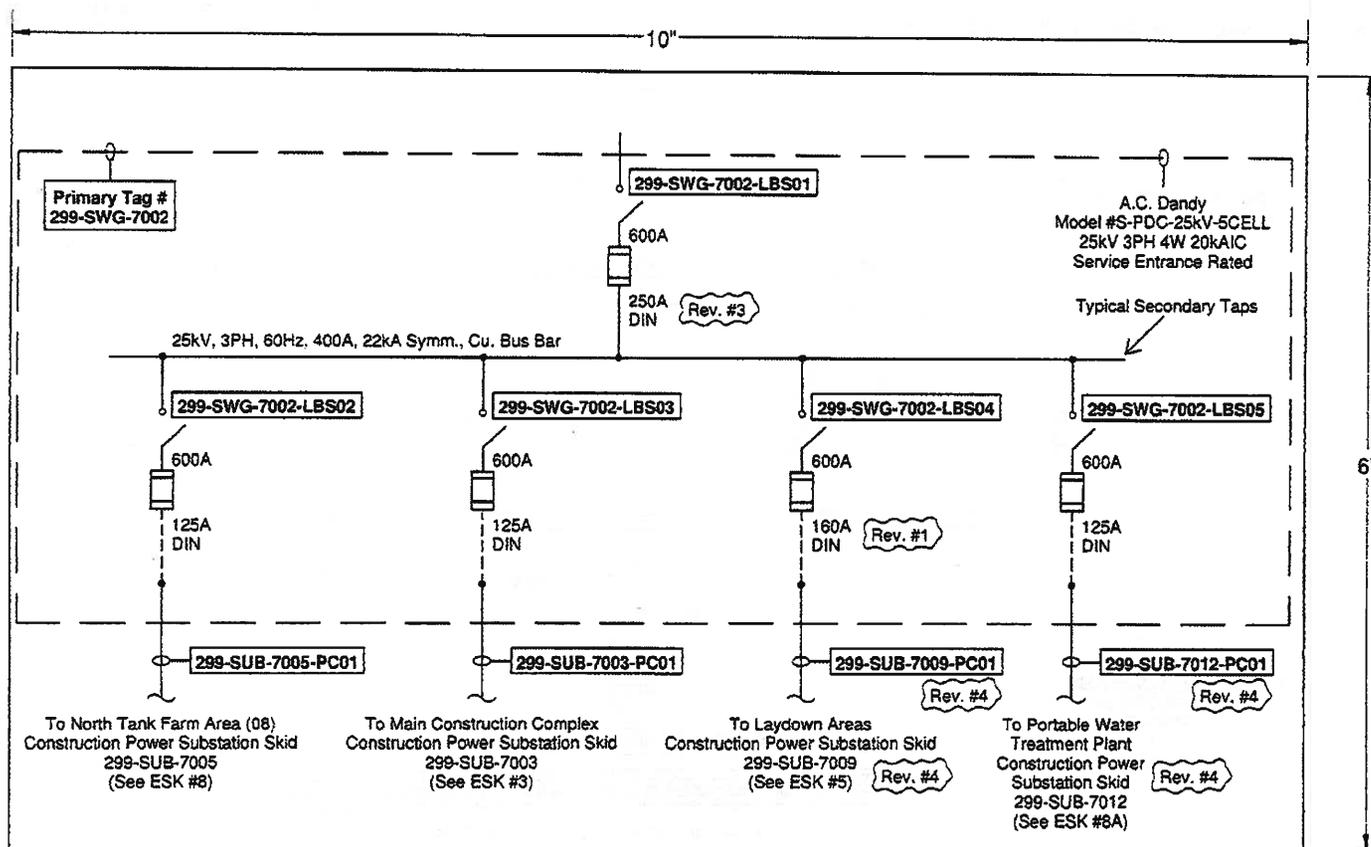
"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV
11-03-28	00
11-03-30	01
11-10-10	02
11-10-18	03
DRAWN BY:	AB

DESCRIPTION: Door Detail Schedule  
 For Tag #299-SWG-7001  
 PROJECT NAME: Surmont 2 Project  
 CUSTOMER NAME: Bantrel Co./Conoco Phillips  
 DRAWING NUMBER:  
 AB11032812 ESK #29

# LABEL CATALOGUE #N-2

Note: All Switches Are Top Line & Bottom Load,  
Except Main Switch Is Installed Upside  
Down & Marked "Caution Bottom Fed".  
Fuses Are Always On The Load Side  
Of The Switch.



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Label Has Yellow Letters With A Red Background

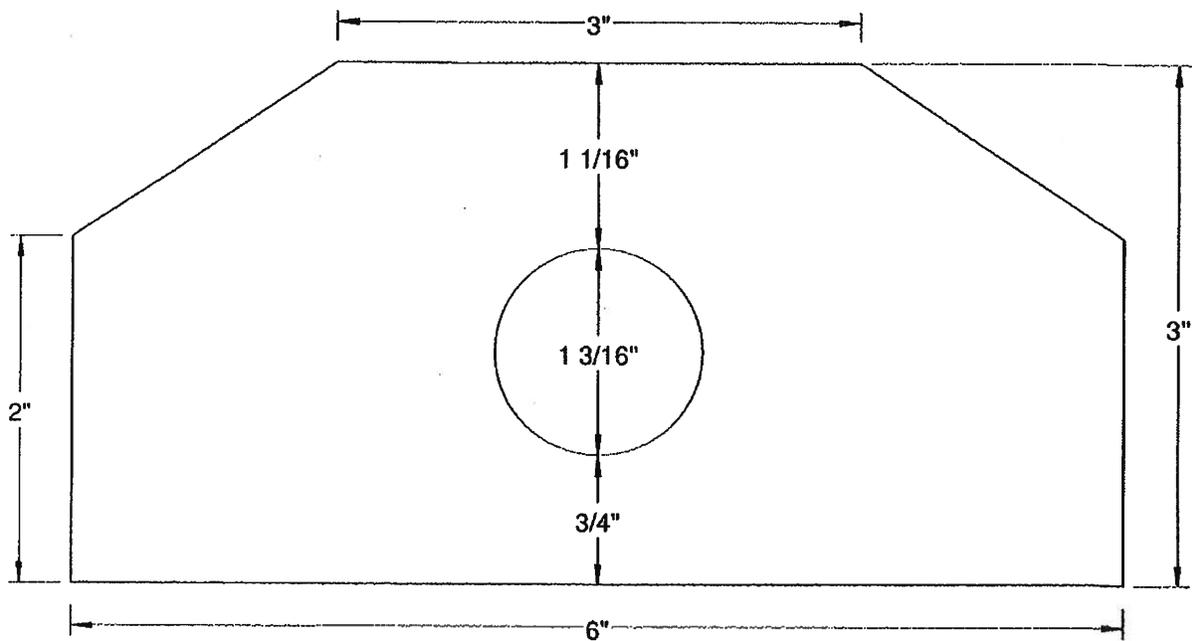


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"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV
11-03-28	00
11-03-30	01
11-10-18	02
DRAWN BY:	AB

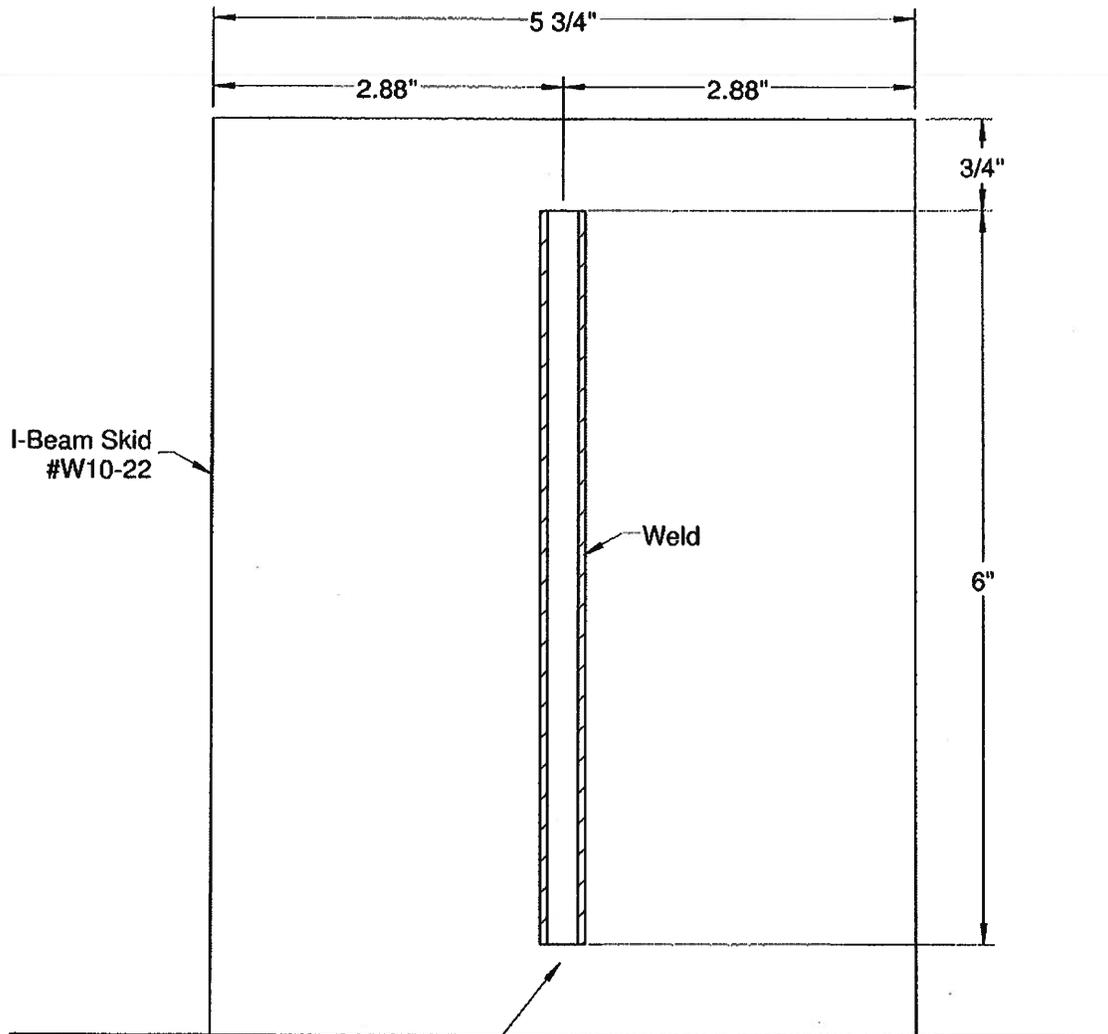
DESCRIPTION: Door Detail Schedule  
For Tag #299-SWG-7002  
PROJECT NAME: Surrmont 2 Project  
CUSTOMER NAME: Bantrel Co./Conoco Phillips  
DRAWING NUMBER:  
AB11032813 ESK #30



**1/2" Plate Lifting Member  
Four Per Skid - 25k Load  
Dandy Model #D-LM25-4-1 3/16**

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	11-11-02	01	1/2" Plate Lifting Member
	11-11-03	02	Surmont 2 Project
			CUSTOMER NAME:
			Bantrel Co./Conoco Phillips
<b>DRAWN BY:</b>	AB	AB11110201	ESK #31



I-Beam Skid  
#W10-22

Weld

1/2" Plate Lifting Member  
Four Per Skid - 25k Load  
Dandy Model #D-LM25-4-1 3

Top View

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"ELECTRICAL ENCLOSURE & EQUIPMENT MANUFACTURERS"

DATE	REV
11-11-15	00
DRAWN BY:	AB

DESCRIPTION:  
 Lifting Member Location Details  
 PROJECT NAME:  
 Surmont 2 Project  
 CUSTOMER NAME:  
 Bantrel Co./Conoco Phillips  
 DRAWING NUMBER:  
 AB11111501 ESK #32