

TRANSFORMATION

DRAWING NUMBER	SHT.	DRAWING TITLE	DWG REV.	BOM REV
A-08-00	1	TRANSFORMATION - GENERAL INFORMATION	D	-
A-08-00	2	TRANSFORMATION - SUBSTATIONS 25 kV - 2.4/4.16 kV	A	-
A-08-00	3	TRANSFORMATION - PROTECTION AND OPERATION OF SUBSTATIONS	0	-
A-08-00	4 – 7	3Ø TRANSFORMER CONNECTION DIAGRAM	B/C/B/C	-
A-08-00	8	TRANSFORMER CONNECTION DIAGRAM WYE-DELTA (3Ø 4 WIRE)	C	-
A-08-00	9	TRANSFORMER CONNECTION DIAGRAM WYE-WYE (3Ø 4 WIRE)	A	-
A-08-00	10	TRANSFORMER CONNECTION DIAGRAM DELTA-DELTA (3Ø 4 WIRE)	0	-
A-08-00	11	TRANSFORMER CONNECTION DIAGRAM DELTA-WYE (3Ø 4 WIRE)	0	-
A-08-00	12	TRANSFORMER CONNECTION DIAGRAM WYE-DELTA (3Ø 3 WIRE)	0	-
A-08-00	13	TRANSFORMER CONNECTION DIAGRAM DELTA-DELTA (3Ø 3 WIRE)	0	-
A-08-00	14	TRANSFORMER CONNECTION DIAGRAM OPEN WYE-OPEN DELTA (3Ø 4 WIRE)	0	-
A-08-00	15	TRANSFORMER CONNECTION DIAGRAM OPEN WYE-OPEN DELTA (3Ø 3 WIRE)	0	-
A-08-00	16	TRANSFORMER CONNECTION DIAGRAM OPEN DELTA-OPEN DELTA (3Ø 4 WIRE)	0	-
A-08-00	17	TRANSFORMER CONNECTION DIAGRAM OPEN DELTA-OPEN DELTA (3Ø 3 WIRE)	0	-
A-08-00	18	TRANSFORMER CONNECTION DIAGRAM OPEN WYE-OPEN DELTA (3Ø 3 WIRE)	0	-
A-08-00	19	TRANSFORMER CONNECTION DIAGRAM OPEN WYE-OPEN DELTA (3Ø 4 WIRE)	0	-
A-08-00	20	DISTRIBUTION TRANSFORMERS FUSING CHART	0	-
A-08-00	21	DISTRIBUTION TRANSFORMERS FUSING CHART	B	-
A-08-00	22	OILFIELD AND IRRIGATION TRANSFORMER FUSING CHART	C	-
A-08-00	23	TRANSFORMER SECONDARY COPPER RISER	B	-
A-08-00	24	TRANSFORMER MASS	0	-
A-08-00	25	TRANSFORMER POLE LOADING	A	-
A-08-00	26	1Ø TRANSFORMER VOLTAGE DESIGNATION	0	-
A-08-00	27	3Ø TRANSFORMER VOLTAGE DESIGNATION	0	-

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. DCD	INDEX
L. MOEN	D. DONAIS	CHKD.	
		2018-12-14	
DATE OF ISSUE: 2019-01-02		DRAWING NO: A-08-INDEX	SHEET 1 of 2 REV. K

TRANSFORMATION

DRAWING NUMBER	SHT.	DRAWING TITLE	DWG REV.	BOM REV.
A-08-01	1 - 4	TRANSFORMER STRUCTURE - 3Ø TOWN SUBSTATION 25/4.16 kV SINGLE OR DOUBLE FEEDER	C / C	A / B
A-08-02	1 - 3	TRANSFORMER STRUCTURE - 3Ø TOWN SUBSTATION 25 - 2.4/4.16 kV - SINGLE FEEDER	D / D	D
A-08-03	1 - 5	TRANSFORMER STRUCTURE - 3Ø TOWN SUBSTATION 25/2.4 kV - DOUBLE FEEDER	0/0/0	A / B
A-08-04	1 - 4	TRANSFORMER STRUCTURE - 3Ø PLATFORM MOUNT	G / C	F / F
A-08-05	1 - 2	TRANSFORMER STRUCTURE - 3Ø PLATFORM MOUNT ADDITIONAL TRANSF.	F	E
A-08-06	1 - 3	TRANSFORMER STRUCTURE - 3Ø POLE MOUNT	H	G / D
A-08-07	1 - 4	TRANSFORMER STRUCTURE - 3Ø CLUSTER MOUNT	G / E	I / D
A-08-08	1 - 2	TRANSFORMER STRUCTURE - 1Ø OILFIELD & RURAL (INCLUDING FARM)	H	I
A-08-09	1 - 3	TRANSFORMER STRUCTURE - 1Ø 2.4 kV URBAN	D	D / 0
A-08-10	1 - 2	TRANSFORMER STRUCTURE - 1Ø URBAN	D	F
A-08-11	1 - 2	TRANSFORMER STRUCTURE - 1Ø 14.4 kV RURAL W/ OH NEUTRAL	G	H
A-08-20	1 - 1	WILDLIFE GUARDS	A	-

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. DCD	INDEX
L. MOEN	D. DONAIS	CHKD.	
		2018-12-17	
DATE OF ISSUE: 06 FEB 2018		DRAWING NO: A-08-INDEX	SHEET 2 of 2 REV. U

TRANSFORMATION

1. MINIMUM 13.7m (45') POLES TO BE USED IN URBAN AREAS FOR TRANSFORMER STRUCTURES AND MINIMUM 12.2m (40') POLES TO BE USED IN NON JOINT-USE AREAS UNLESS OTHERWISE INDICATED.
2. WILDLIFE GUARDS ARE AVAILABLE FOR USE ON TRANSFORMER BUSHINGS AS REQUIRED.
3. STIRRUPS ARE TO BE USED WITH HOT LINE CLAMPS ON ALUMINUM OR ACSR CONDUCTORS.
4. ALL CONDUCTORS RUNNING DOWN THE POLE MUST BE LOCATED OPPOSITE TO THE CLIMBING SIDE AND BE MECHANICALLY PROTECTED. FARM METERING CABLE DOES NOT HAVE TO BE MECHANICALLY PROTECTED.
5. ALL GROUND WIRES TO BE KEPT A MINIMUM OF 150mm FROM HARDWARE OR ELSE BONDED TO THAT HARDWARE TO PREVENT RADIO INTERFERENCE.
6. ARRESTERS SHALL BE INSTALLED ON ALL TRANSFORMER STRUCTURES.
7. ARRESTERS SHALL BE CONNECTED TO GROUND WITH A CONTINUOUS GROUND WIRE. THE PRIMARY, SECONDARY, AND TRANSFORMER CASE GROUNDS SHALL BE CONNECTED TO THE ARRESTER GROUND USING COMPRESSION CONNECTORS.
 PREFERRED MOUNTING LOCATIONS OF ARRESTER:
 - a. TRANSFORMER ARRESTER STUDS, OR
 - b. TRANSFORMER LID HOLD DOWN BOLTS, OR
 - c. ON X-ARM MOUNT BRACKET (13532) OR "T" BRACKET (13531) ABOVE TRANSFORMER.
8. A TRANSFORMER CLUSTER BRACKET IS REQUIRED FOR TWO OR THREE TRANSFORMERS REGARDLESS OF WEIGHT. FOR CLUSTER MOUNTING REFER TO A-08-07.
9. SINGLE PHASE TRANSFORMERS WILL BE MOUNTED USING 3/4" BOLTS. SOME EXISTING SMALL KVA UNITS REQUIRE 5/8" BOLTS.
10. ALL POLE MOUNTED CUTOUTS ARE TO BE LOCATED 90° TO THE LEFT SIDE WHEN FACING THE TRANSFORMER.
11. TRANSFORMER STRUCTURES THAT HAVE THE CUTOUTS MOUNTED ON A CROSSARM SHALL HAVE THE CUTOUT BRACKET POSITIONED SO THE POINT OF ATTACHMENT WILL BE AT THE BOTTOM OF THE CROSSARM.
12. WHERE A DISCONNECT MEANS IS REQUIRED WITH AN OPTION OF FUSING, A SOLID LINK (73800) WITH A RATING OF 300 AMPS CAN BE USED IN CUTOUTS THAT ACCEPT A BUTTON HEAD TYPE T FUSE.
13. ON 3Ø TRANSFORMER STRUCTURES, ALL SECONDARY RISERS SHALL BE THE SAME SIZE.
14. WHEN REPLACING A TRANSFORMER, MAKE SURE TO REPLACE CUSTOMER INSTALLED GROUND RESISTOR LABEL FOR THAT PARTICULAR SERVICE. REFER TO SECTION A-30 'SIGNS & MARKERS' FOR EXPLANATION OF LABELLING.
15. THE 3Ø 100 & 150 KVA TRANSFORMERS MAY BE MOUNTED ON A SINGLE POLE OR TWO POLE PLATFORM STRUCTURE IF WARRANTED BY SOIL CONDITIONS.
16. ON 3Ø TRANSFORMER BANKS, THE TRANSFORMER IMPEDANCE MUST BE WITHIN 7.5% OF EACH OTHER. (EX. A 3% IMPEDANCE TRANSFORMER CAN ONLY BE MATCHED WITH IMPEDANCES IN THE RANGE OF 2.775% TO 3.225%)

SaskPower - DISTRIBUTION STANDARDS				
APPROVAL	DESIGN CHK	DRN. ARU	GENERAL INFORMATION	
L. MOEN	A. UHREN	CHKD.		
		2016-02-29		
DATE OF ISSUE:	2016/05/04	DRAWING NO: A-08-00	SHEET 1 of 27	REV. D

TRANSFORMATION
SUBSTATIONS – 25 kV – 2.4/4.16 kV

1. POLES SHALL BE AS STATED ON THE FRAMING DRAWINGS.
2. IF A 25KV G.O.P.T. SWITCH IS TO BE USED, IT SHALL BE A LOADBREAK AND LOCATED ON A STRUCTURE ONE SPAN AHEAD OF THE SUBSTATION.
3. ALL CUTOUTS ARE TO BE LOADBREAK STYLE.
4. ARRESTERS ARE TO BE MOUNTED ON THE TRANSFORMER TANK OR ON THE CUTOUT ARM ABOVE THE TRANSFORMER.
5. FEEDERS THAT RUN PERPENDICULAR TO THE SUBSTATION SHALL RUN STRAIGHT OUT AT LEAST ONE SPAN AND THEN TURN.
6. RISERS:
 - a. HIGH VOLTAGE – 25 kV – #2/7 STR CU
 - b. LOW VOLTAGE – 2.4 kV – #2/0 /7 STR CU
 - c. LOW VOLTAGE – 4.16 kV – #2/0 /7 STR CU
7. BUS:
 - a. HIGH VOLTAGE – 25 kV – SAME AS LINE CONDUCTOR
 - b. LOW VOLTAGE – 2.4 kV – #4/0 /19 STR CU
 - c. LOW VOLTAGE – 4.16 kV – #4/0 /19 STR CU







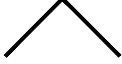
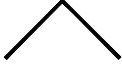


SaskPower - DISTRIBUTION STANDARDS			
APPROVAL L. MOEN	DESIGN CHK J.ARSENAULT	DRN. JDA CHKD. 2018-11-15	TRANSFORMATION – SUBSTATIONS 25 kV – 2.4/4.16 kV
DATE OF ISSUE: 2019-01-02		DRAWING NO: A-08-00	
		SHEET 2 of 27	REV. A

PROTECTION AND OPERATION OF 25 kV – 2.4/4.16 kV SUBSTATIONS

1. HIGH SIDE 25 kV:
 - a. G.O.P.T. – 600 AMP LOADBREAK SWITCH
 - b. CUTOUTS – 27 kV, 100 AMP LOADBREAK
2. LOW SIDE 2.4 – 4.16 kV:
 - a. 200 AMP – CUTOUT 27 kV, 200 AMP LOADBREAK
 - b. 200 – 300 AMP – CUTOUT 7.8 kV – LOADBREAK (2-12-08) (FUSE 7-39-XX)
 - c. OVER 300 AMPS – REDUCE LOADS IF POSSIBLE, IF NOT, USE O.C.R. ON FEEDER
3. RE-FUSING AND LOADBREAK ON THE HIGH VOLTAGE SIDE SHALL BE DONE VIA THE LOAD-BREAK G.O.P.T. SWITCH (IF AVAILABLE) AND VIA LOADBREAK CUTOUTS ON THE LOW VOLTAGE SIDE.
4. THE AVAILABLE FAULT LEVELS SHOULD NOT EXCEED THE INTERRUPTING CAPABILITY OF THE CUTOUTS. ON LARGER FEEDER LOADS AND FAULT LEVELS, O.C.R.'S OR BREAKERS MAY BE REQUIRED. SEE ALSO SECTION A-26.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS





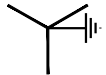
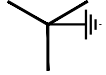
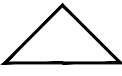
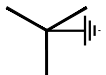
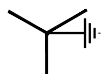
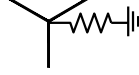
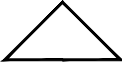
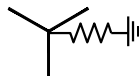






DRN. <i>DK</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMATION – PROTECTION AND OPERATION OF SUBSTATIONS	
CHKD. <i>FTK</i>					
DATE 87-05-19	DATE	DATE	DATE		
DATE OF ISSUE 87-06-01			DRAWING NO. A-08-00	SHEET 3 of 27	REV. 0

TYPE OF SERVICE	2400 VOLT DELTA SYSTEM
<p>* 120/240 -4 WIRE</p> <p>OR</p> <p>* 240 -3 WIRE (GRD NOT USED ON SECONDARY)</p>	<p> OPEN DELTA</p> <p> OPEN DELTA GROUNDED</p> <hr/> <p> DELTA</p> <p> DELTA GROUNDED</p>
<p>120/208 Y GRD WYE -4 WIRE</p> <p>277/480 Y GRD WYE -4 WIRE</p>	<p> DELTA</p> <p> WYE GROUNDED</p>
<p>240 DELTA -3 WIRE</p> <p>480 DELTA (OILFIELD) -3 WIRE</p> <p>600 DELTA -3 WIRE</p>	<p> OPEN DELTA</p> <p> OPEN DELTA</p> <hr/> <p> DELTA</p> <p> DELTA</p>

* NOT TO BE USED FOR NEW CUSTOMERS



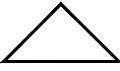



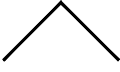
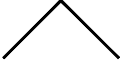


SaskPower – DISTRIBUTION STANDARDS

APPROVAL L.MOEN	DESIGN CHK. A.UHREN	DRN. D.REDEKOPP CHKD.	3 PHASE TRANSFORMER CONNECTION DIAGRAM	
DATE OF ISSUE 2016/11/08		2016-10-04		
REV. B			REV. B	REV. B

TYPE OF SERVICE	4160 VOLT WYE SYSTEM	
* 120/240 - 4 WIRE OR * 240 - 3 WIRE (GRD NOT USED ON SECONDARY)		OPEN GRD WYE
		OPEN GRD DELTA
		WYE - USE DOUBLE BUSHING TRANSFORMERS
		GRD DELTA
120/208 Y GRD WYE - 4 WIRE 277/480 Y GRD WYE - 4 WIRE 347/600 Y GRD WYE - 4 WIRE		GRD WYE
		GRD WYE
		DELTA
		GRD WYE
277/480 Y HIGH RESISTANCE GRD WYE - 3 WIRE 347/600 Y HIGH RESISTANCE GRD WYE - 3 WIRE		GRD WYE
		X _o NOT GROUNDED - GROUND THRU CUSTOMER RESISTOR
		DELTA
		X _o NOT GROUNDED - GROUND THRU CUSTOMER RESISTOR
240 DELTA - 3 WIRE 480 DELTA OR WYE - 3 WIRE 600 DELTA OR WYE - 3 WIRE		OPEN GRD WYE
		OPEN DELTA
		WYE - USE DOUBLE BUSHING TRANSFORMERS
		DELTA
	 	DELTA WYE

* NOT TO BE USED FOR NEW CUSTOMERS










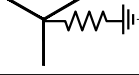

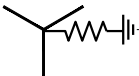

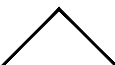




SaskPower - DISTRIBUTION STANDARDS				
APPROVAL L.MOEN	DESIGN CHK. A.UHREN	DRN. D.REDEKOPP CHKD.	3 PHASE TRANSFORMER CONNECTION DIAGRAM	
DATE OF ISSUE 2016/11/08		2016-10-04		
DRAWING NO. A-08-00		SHEET 5 of 27	REV. C	

TYPE OF SERVICE	14,400 VOLT DELTA OR WYE SYSTEM
<p>* 120/240 - 4 WIRE OR * 240 - 3 WIRE (GRD NOT USED ON SECONDARY)</p>	<p> OPEN DELTA</p> <p> OPEN DELTA GROUNDED</p> <hr/> <p> DELTA</p> <p> DELTA GROUNDED</p>
<p>120/208 Y GRD WYE - 4 WIRE 347/600 - 4 WIRE * 2400/4160 - 4 WIRE</p>	<p> DELTA</p> <p> WYE GROUNDED</p>
<p>* 240 DELTA - 3 WIRE 480 DELTA (OILFIELD) - 3 WIRE 600 DELTA - 3 WIRE 2400 DELTA - 3 WIRE</p>	<p> OPEN DELTA</p> <p> OPEN DELTA</p> <hr/> <p> DELTA</p> <p> DELTA</p>

* NOT TO BE USED FOR NEW CUSTOMERS

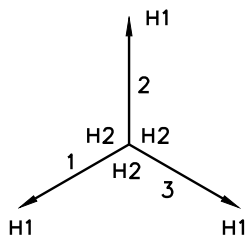
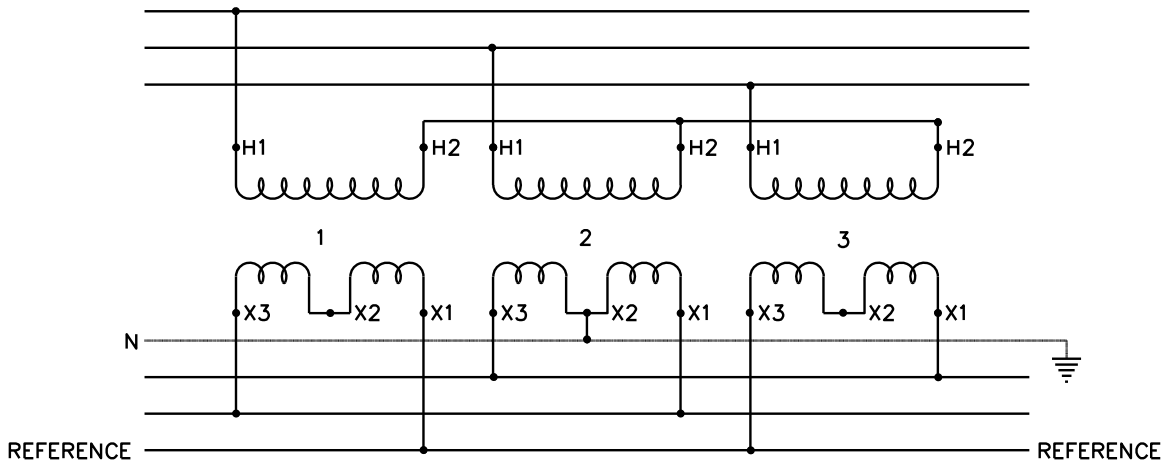
SaskPower – DISTRIBUTION STANDARDS

APPROVAL L.MOEN	DESIGN CHK. A/UHREN	DRN. D.REDEKOPP CHKD.	3 PHASE TRANSFORMER CONNECTION DIAGRAM
		2016-10-04	
DATE OF ISSUE	2016/11/08	DRAWING NO. A-08-00	SHEET 6 of 27 REV. B

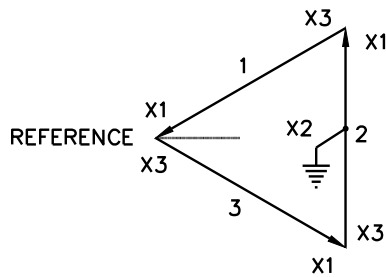
TYPE OF SERVICE	25,000 VOLT WYE SYSTEM	
* 120/240 - 4 WIRE OR * 240 - 3 WIRE (GRD NOT USED ON SECONDARY)		OPEN GRD WYE
		OPEN GRD DELTA
		WYE - USE DOUBLE BUSHING TRANSFORMERS
		GRD DELTA - **
120/208 Y GRD WYE - 4 WIRE 277/480 Y GRD WYE - 4 WIRE 347/600 Y GRD WYE - 4 WIRE * 2400/4160 Y GRD WYE - 4 WIRE		GRD WYE
		GRD WYE
		DELTA
		GRD WYE
277/480 Y HIGH RESISTANCE GRD WYE - 3 WIRE 347/600 Y HIGH RESISTANCE GRD WYE - 3 WIRE		GRD WYE
		X ₀ NOT GROUNDED - GROUND THRU CUSTOMER RESISTOR
		DELTA
		X ₀ NOT GROUNDED - GROUND THRU CUSTOMER RESISTOR
240 DELTA - 3 WIRE 480 DELTA OR WYE - 3 WIRE 600 DELTA OR WYE - 3 WIRE 1080 DELTA (OILFIELD) - 3 WIRE 2400 DELTA - 3 WIRE		OPEN GRD WYE
		OPEN DELTA
		WYE - USE DOUBLE BUSHING TRANSFORMERS
		DELTA
		DELTA
		WYE

* NOT TO BE USED FOR NEW CUSTOMERS
** DO NOT INSTALL ARRESTORS. REMOVE ARRESTORS BEFORE RE-ENERGIZING.

SaskPower – DISTRIBUTION STANDARDS				
APPROVAL L.MOEN	DESIGN CHK. A.UHREN	DRN. D.REDEKOPP CHKD.	3 PHASE TRANSFORMER CONNECTION DIAGRAM	
		2016-10-04		
DATE OF ISSUE	2016/11/08	DRAWING NO. A-08-00	SHEET 7 of 27	REV. C



PRIMARY



SECONDARY

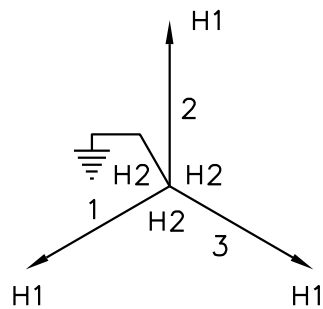
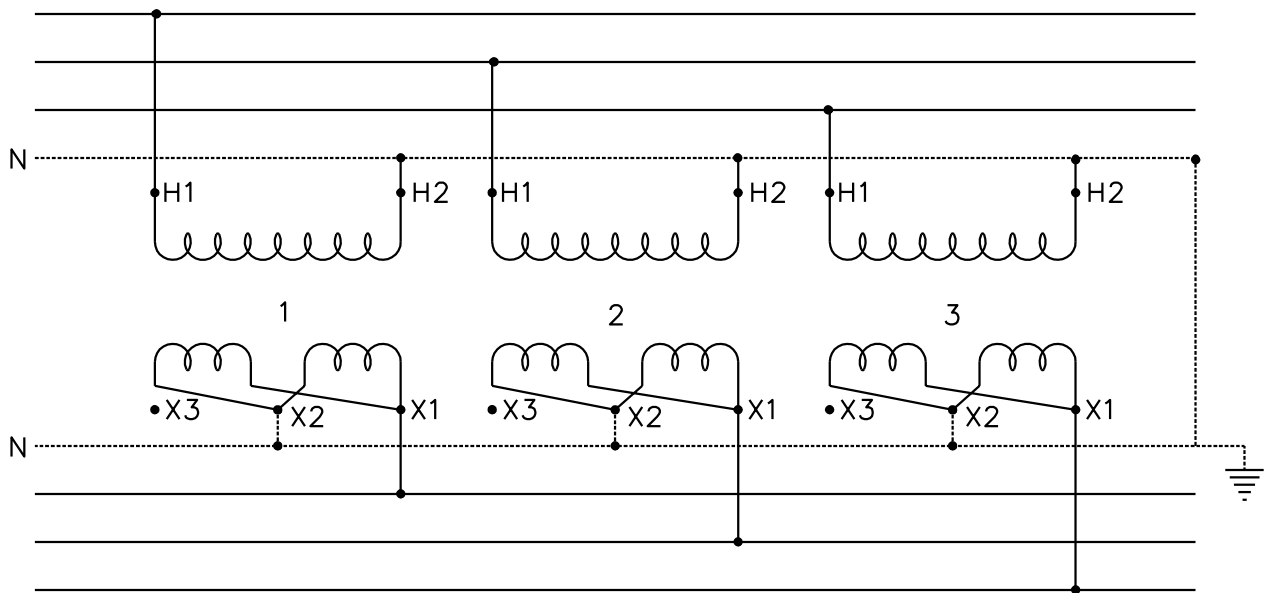
1. WYE POINT MUST NOT BE GROUNDED FOR NORMAL OPERATION, BUT MUST BE TEMPORARILY GROUND DURING SWITCHING OPERATION.
2. SINGLE BUSHING TRANSFORMERS CANNOT BE USED FOR UNGROUNDED WYE SERVICE.
3. THE REFERENCE PHASE IS 208 V TO GROUND.
4. WHEN USING TRANSFORMERS WITH 4 SECONDARY BUSHINGS, JUMPER X2 TO X3, AND X4 IS CONNECTED AS X3 SHOWN ABOVE.
5. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.
6. DO NOT INSTALL ARRESTORS. REMOVE ARRESTORS BEFORE RE-ENERGIZING.

FOR STATION SERVICE ONLY

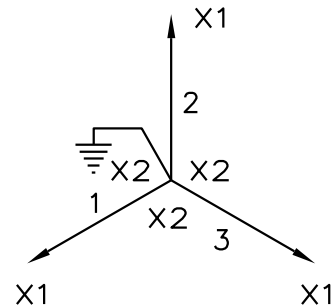
SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SaskPower – DISTRIBUTION STANDARDS

APPROVAL M.ERETH	DESIGN CHK. L.BAILEY	DRN. A.GATZKE CHKD.	TRANSFORMER CONNECTION DIAGRAM WYE-DELTA (3Ø 4 WIRE)
		2014-07-23	
DATE OF ISSUE	2014/11/17	DRAWING NO. A-08-00	SHEET 8 of 27 REV. C



PRIMARY



SECONDARY

1. WHEN USING 4 BUSHING TRANSFORMERS, SECONDARY WINDINGS SHALL BE PARALLELED OUTSIDE THE TANK BY PLACING JUMPERS BETWEEN X1 AND X3 AND BETWEEN X2 AND X4.
2. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.
3. HV AND LV NEUTRALS MUST BE INTERCONNECTED AND SOLIDLY GROUNDED.

SaskPower – DISTRIBUTION STANDARDS

APPROVAL
L.MOEN

DESIGN CHK.
A.UHREN

DRN. D.REDEKOPP
CHKD.

2016-07-26

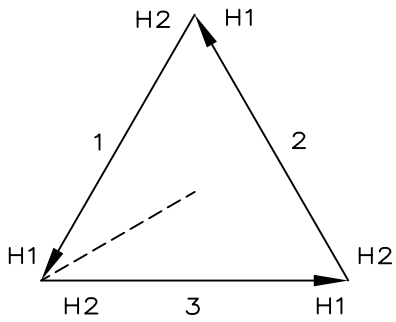
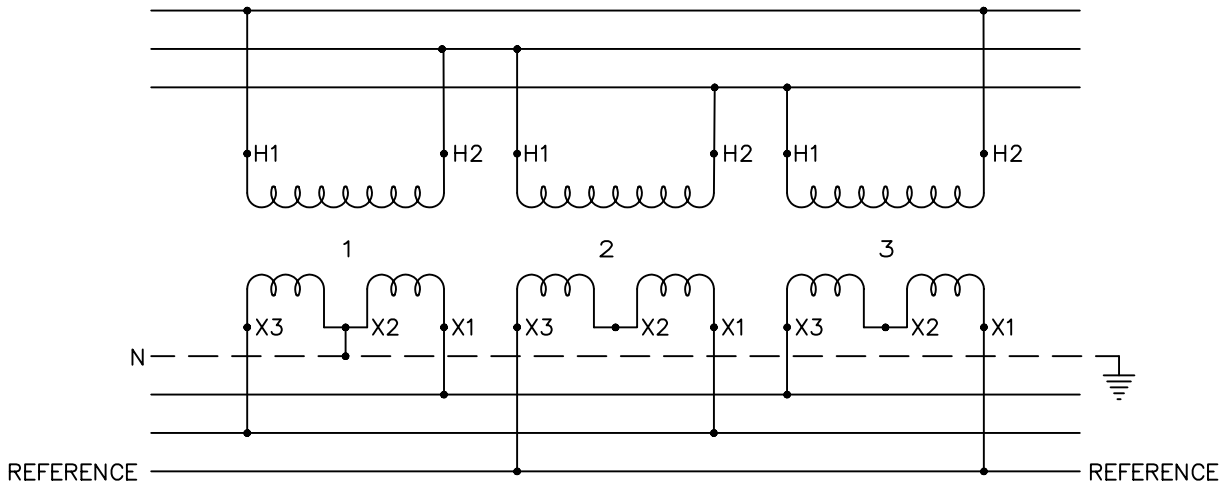
TRANSFORMER CONNECTION DIAGRAM
WYE-WYE (3Ø 4 WIRE)

DATE OF ISSUE **2016/11/08**

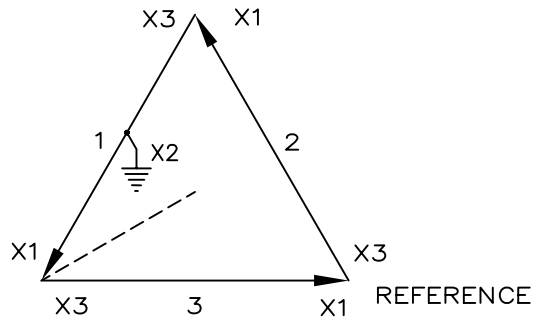
DRAWING NO. A-08-00

SHEET 9 of 27

REV. A



PRIMARY

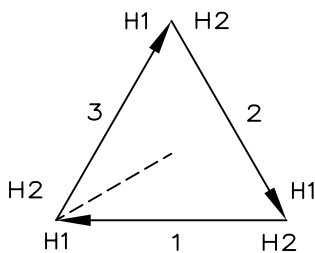
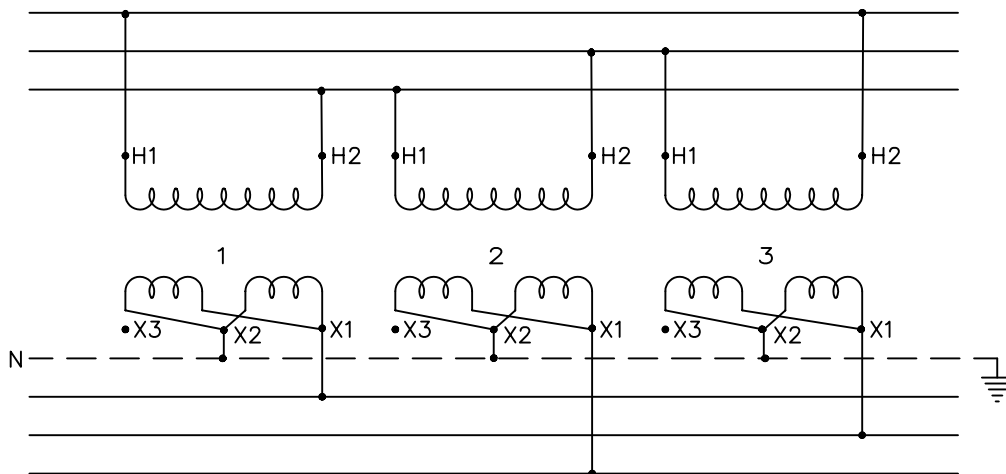


SECONDARY

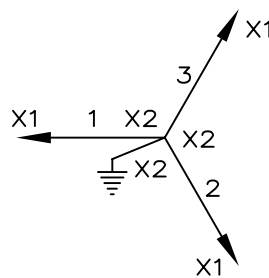
1. THE REFERENCE PHASE IS 208 V TO GROUND.
2. WHEN USING TRANSFORMERS WITH 4 SECONDARY BUSHINGS, JUMPER X2 TO X3, AND X4 IS CONNECTED AS X3 SHOWN ABOVE.
3. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER CONNECTION DIAGRAM DELTA- DELTA (3Ø 4 WIRE)	
CHKD. <i>FTK</i>	DATE	DATE	DATE		
DATE 86-05-12	DATE	DATE	DATE		
DATE OF ISSUE	87-06-01	DRAWING NO.	A-08-00	SHEET 10 of 27	REV. 0



PRIMARY

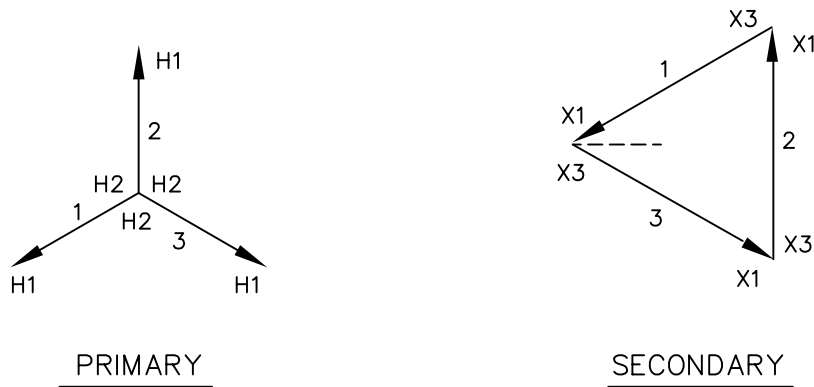
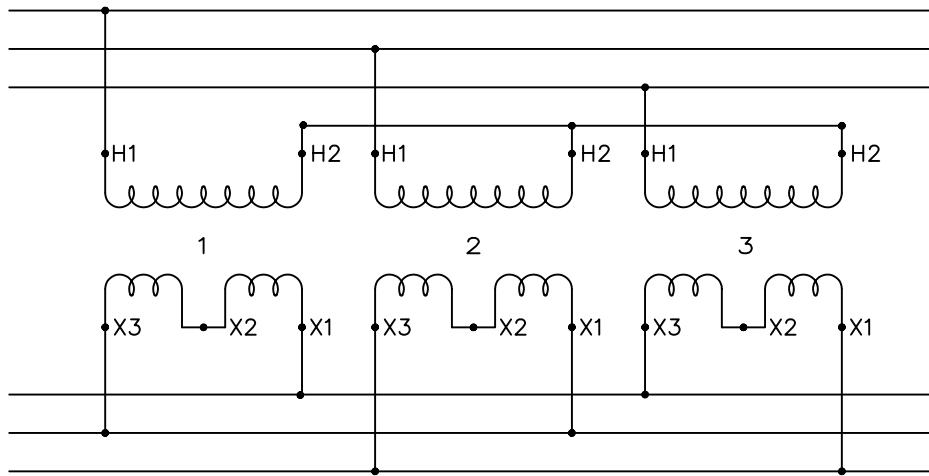


SECONDARY

1. WHEN USING 4 BUSHING TRANSFORMERS, SECONDARY WINDINGS SHALL BE PARALLELED OUTSIDE THE TANK BY PLACING JUMPERS BETWEEN X1 AND X3 AND BETWEEN X2 AND X4.
2. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

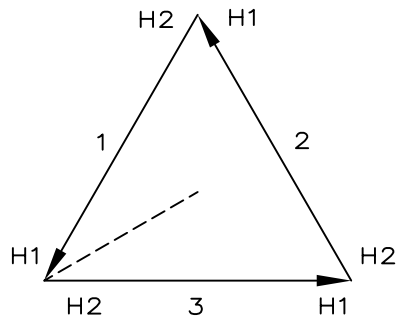
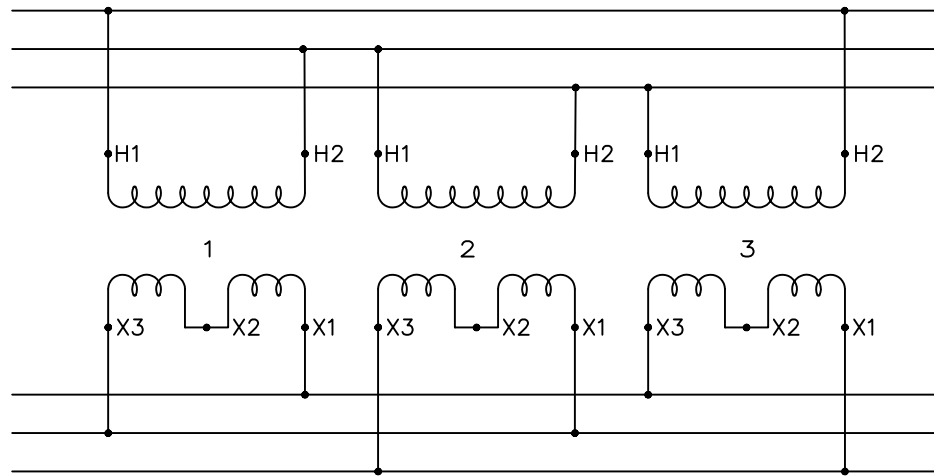
DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER CONNECTION DIAGRAM DELTA-WYE (3Ø 4 WIRE)	
CHKD. <i>FTK</i>					
DATE 86-05-12	DATE	DATE	DATE		
DATE OF ISSUE	87-06-01	DRAWING NO.	A-08-00	SHEET 11 of 27	REV. 0



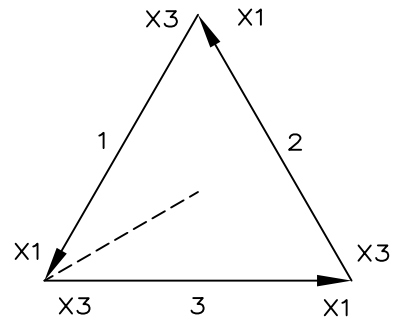
1. WYE POINT MUST NOT BE GROUNDED.
2. SINGLE BUSHING TRANSFORMERS CANNOT BE USED FOR UNGROUNDED WYE SERVICE.
3. THE SECONDARY LINE TO GROUND VOLTAGE IS UNDETERMINABLE.
4. WHEN USING TRANSFORMERS WITH 4 SECONDARY BUSHINGS, JUMPER X2 TO X3, AND X4 IS CONNECTED AS X3 SHOWN ABOVE.
5. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>DL</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER CONNECTION DIAGRAM WYE-DELTA (3Ø 3 WIRE)	
CHKD. <i>FTK</i>	DATE	DATE	DATE		
DATE 86-05-06	DATE	DATE	DATE		
DATE OF ISSUE	87-06-01	DRAWING NO.	A-08-00	SHEET 12 of 27	REV. 0



PRIMARY

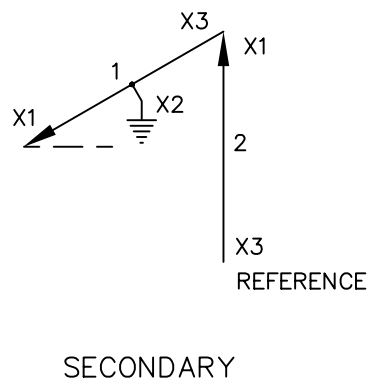
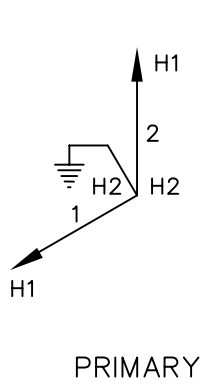
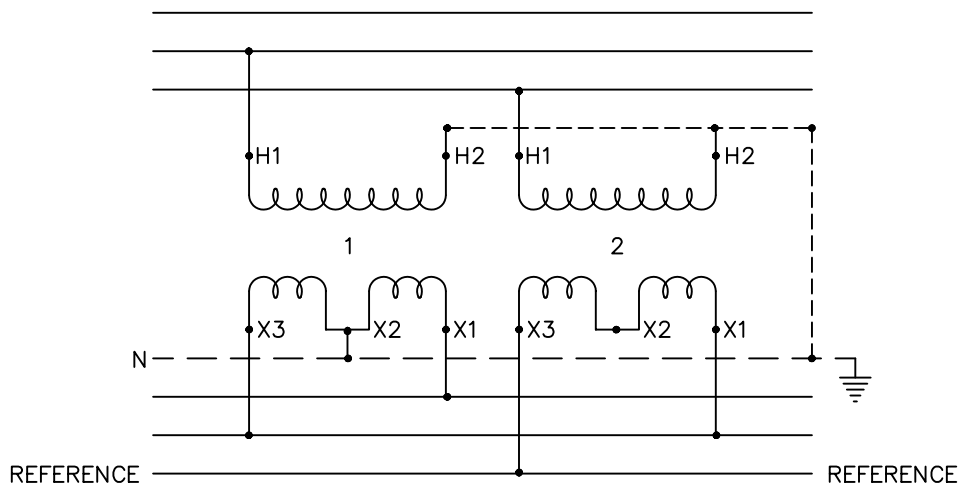


SECONDARY

1. THE LINE TO GROUND VOLTAGE IS UNDETERMINABLE.
2. WHEN USING TRANSFORMERS WITH 4 SECONDARY BUSHINGS, JUMPER X2 TO X3, AND X4 IS CONNECTED AS SHOWN ABOVE.
3. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

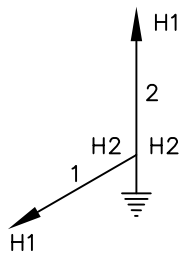
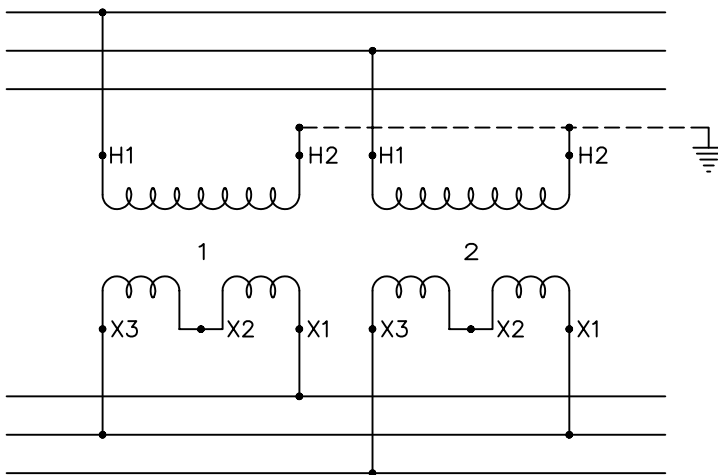
DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER CONNECTION DIAGRAM DELTA-DELTA (3Ø 3 WIRE)
CHKD. <i>FTK</i>				
DATE 86-05-12	DATE	DATE	DATE	
DATE OF ISSUE 87-06-01		DRAWING NO. A-08-0		SHEET 13 of 27
REV. 0				



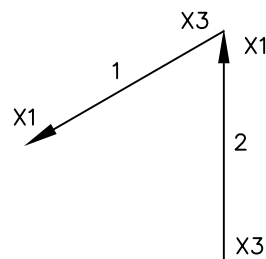
1. THE REFERENCE PHASE IS 208 V TO GROUND.
2. WHEN USING TRANSFORMERS WITH 4 SECONDARY BUSHINGS, JUMPER X2 AND X3, AND X4 IS CONNECTED AS X3 SHOWN ABOVE.
3. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER CONNECTION DIAGRAM OPEN WYE-OPEN DELTA (3Ø 4 WIRE)	
CHKD. <i>FTK</i>	DATE	DATE	DATE		
DATE 86-05-06	DATE	DATE	DATE		
DATE OF ISSUE	87-06-01	DRAWING NO.	A-08-00	SHEET 14 of 27	REV. 0



PRIMARY

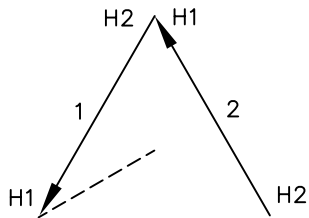
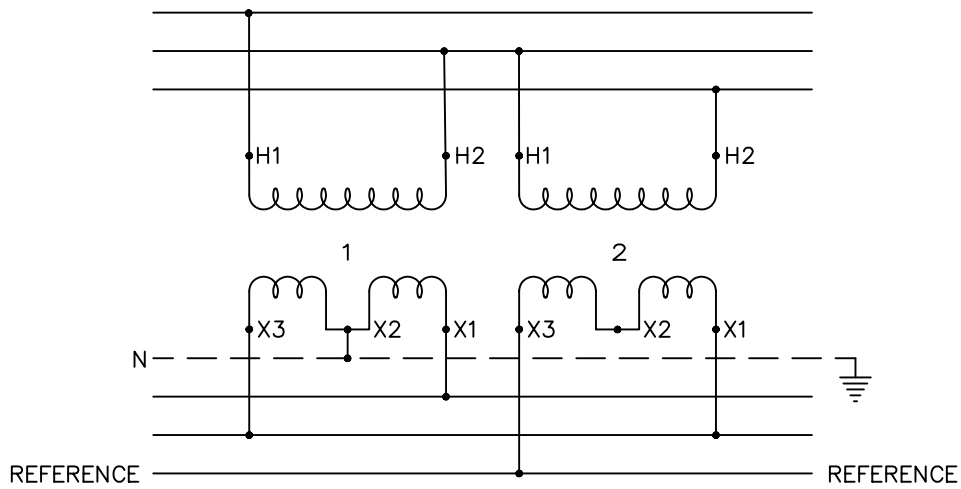


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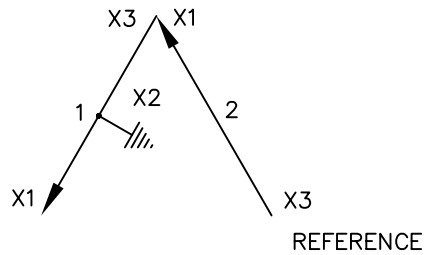
1. THE SECONDARY LINE TO GROUND VOLTAGE IS UNDETERMINABLE.
2. WHEN USING TRANSFORMERS WITH 4 SECONDARY BUSHINGS, JUMPER X2 TO X3, AND X4 IS CONNECTED AS X3 SHOWN ABOVE.
3. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER CONNECTION DIAGRAM OPEN WYE–OPEN DELTA (3Ø 3 WIRE)
CHKD. <i>FTK</i>	DATE	DATE	DATE	
DATE 86-05-13	DATE	DATE	DATE	
DATE OF ISSUE 87-06-01	DRAWING NO. A-08-00		SHEET 15 of 27	REV. 0



PRIMARY

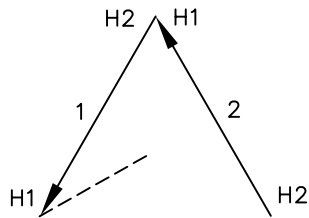
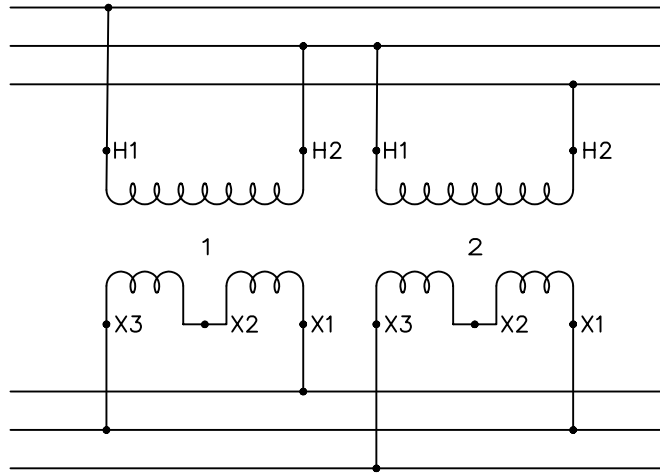


SECONDARY

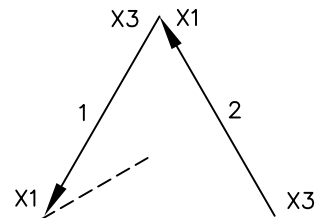
1. THE REFERENCE PHASE IS 208 V TO GROUND.
2. WHEN USING TRANSFORMERS WITH 4 SECONDARY BUSHINGS, JUMPER X2 TO X3, AND X4 IS CONNECTED AS X3 SHOWN ABOVE.
3. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER CONNECTION DIAGRAM OPEN DELTA-OPEN DELTA (3Ø 4 WIRE)
CHKD. <i>FTK</i>	DATE	DATE	DATE	
DATE 86-05-13	DATE	DATE	DATE	
DATE OF ISSUE 87-06-01	DRAWING NO. A-08-00		SHEET 16 of 27	REV. 0



PRIMARY

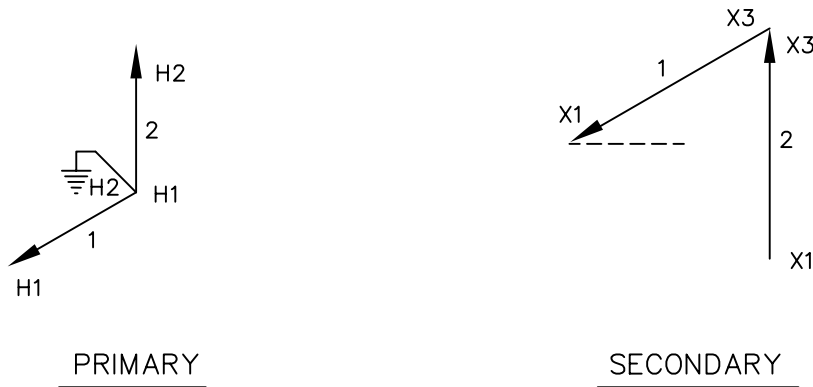
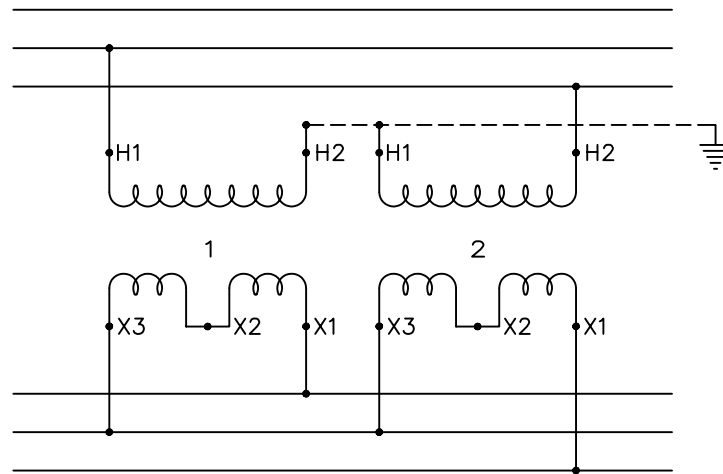


SECONDARY

1. THE LINE TO GROUND VOLTAGE IS UNDETERMINABLE.
2. WHEN USING TRANSFORMERS WITH 4 SECONDARY BUSHINGS, JUMPER X2 TO X3, AND X4 IS CONNECTED AS X3 SHOWN ABOVE.
3. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

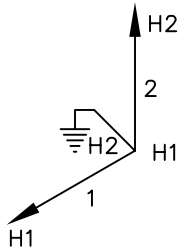
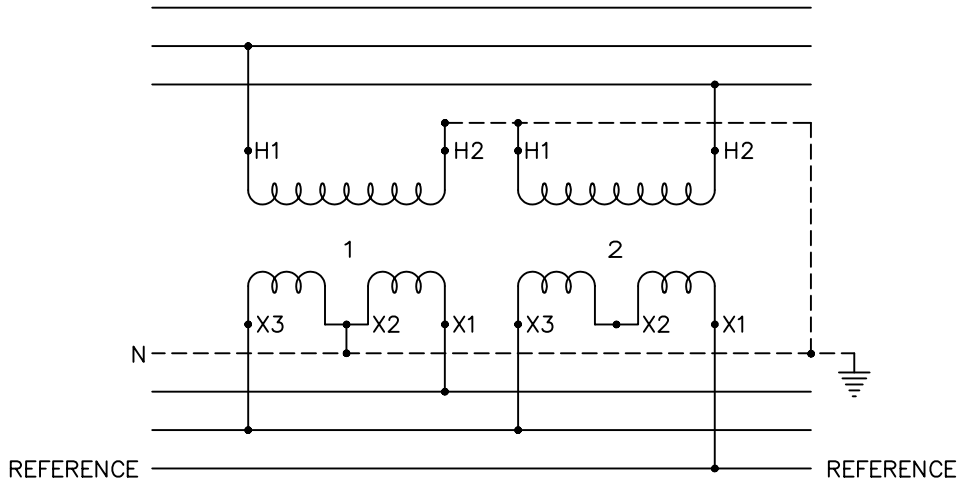
DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER CONNECTION DIAGRAM OPEN DELTA-OPEN DELTA (3Ø 3 WIRE)
CHKD. <i>FTK</i>	DATE	DATE	DATE	
DATE 86-05-14	DATE	DATE	DATE	
DATE OF ISSUE 87-06-01	DRAWING NO. A-08-00		SHEET 17 of 27	REV. 0



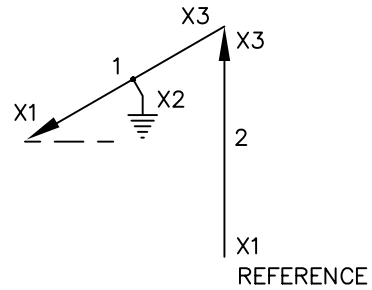
1. THIS SPECIAL CONNECTION IS TO BE USED ONLY WHERE PHYSICAL CONDITIONS DICTATE THAT ADJACENT HIGH VOLTAGE BUSHINGS MUST BE AT GROUND POTENTIAL.
2. THE SECONDARY LINE TO GROUND VOLTAGE IS UNDETERMINABLE.
3. WHEN USING TRANSFORMERS WITH 4 SECONDARY BUSHINGS, JUMPER X2 TO X3, AND X4 IS CONNECTED AS X3 SHOWN ABOVE.
4. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>DL</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER CONNECTION DIAGRAM OPEN WYE-OPEN DELTA (3Ø 3 WIRE)	
CHKD. <i>FTK</i>					
DATE 86-05-14	DATE	DATE	DATE		
DATE OF ISSUE	87-06-01	DRAWING NO.	A-08-00	SHEET 18 of 27	REV. 0



PRIMARY

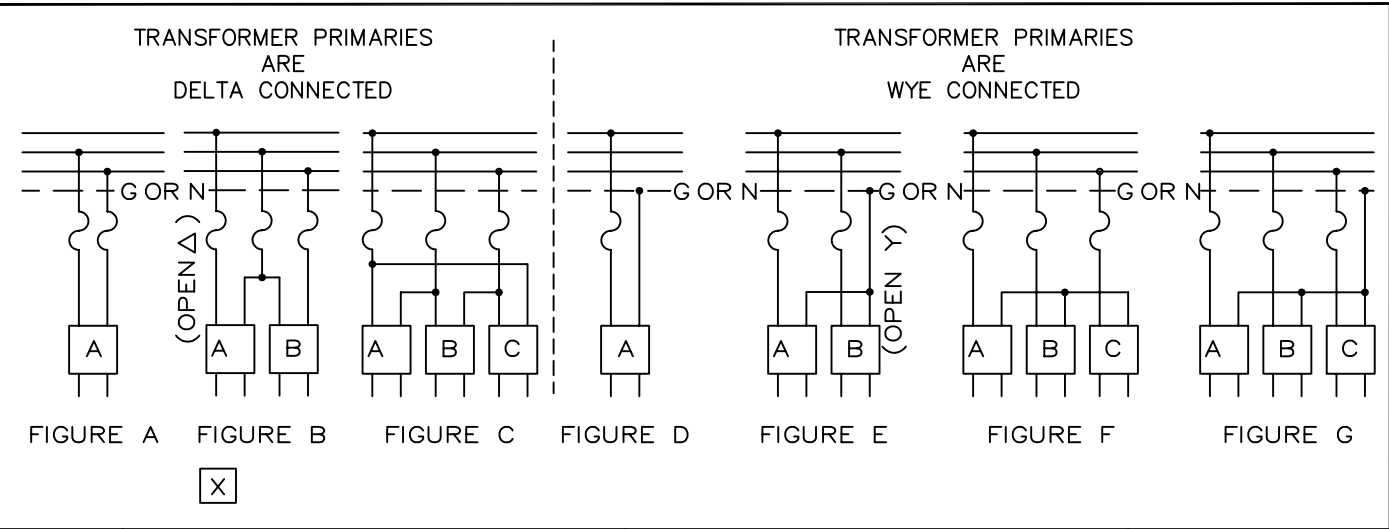


SECONDARY

1. THIS SPECIAL CONNECTION IS TO BE USED ONLY WHERE PHYSICAL CONDITIONS DICTATE THAT ADJACENT HIGH VOLTAGE BUSHINGS MUST BE AT GROUND POTENTIAL.
2. THE REFERENCE PHASE IS 208 V TO GROUND.
3. WHEN USING TRANSFORMERS WITH 4 SECONDARY BUSHINGS, JUMPER X2 TO X3, AND X4 IS CONNECTED AS X3 SHOWN ABOVE.
4. TRANSFORMERS SHOWN HAVE ADDITIVE POLARITY.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER CONNECTION DIAGRAM OPEN WYE–OPEN DELTA (3Ø 4 WIRE)
CHKD. <i>FTK</i>				
DATE 86-05-14	DATE	DATE	DATE	
DATE OF ISSUE 87-06-01	DRAWING NO. A-08-00		SHEET 19 of 27	REV. 0



SYSTEM VOLTAGE	2400 DELTA				2400/4160 Y				2400/4160 Y	
TRANSF SIZE (kVA) θ	FIGURE A & B		FIGURE C		FIGURE A & B		FIGURE C		FIGURES D,E,F,G	
	RATED AMPS	LINK T RATING	RATED AMPS	LINK T RATING	RATED AMPS	LINK T RATING	RATED AMPS	LINK T RATING	RATED AMPS	LINK T RATING
3	1.25	3	2.16	3	0.72	3	1.25	3	1.25	3
5	2.08	3	3.61	6	1.2	3	2.08	3	2.08	3
7 1/2	3.13	6	5.42	10	1.8	3	3.13	6	3.13	6
10	4.17	8	7.22	12	2.4	3	4.17	8	4.17	8
15	6.25	10	10.80	15	3.61	6	6.25	10	6.25	10
25	10.42	15	18.05	25	6.01	10	10.42	15	10.42	15
37 1/2	15.63	20	27.05	40	9.01	15	15.63	25	15.63	25
50	20.80	30	36.10	50	12.02	20	20.80	30	20.80	30
75	31.25	50	54.20	65	18.03	25	31.25	50	31.25	50
100	41.67	65	72.20	100	24.04	40	41.67	65	41.67	65
167	69.40	100	119.00	140	40.73	65	69.40	100	69.40	100
250	104.20	140	180.50	200	60.10	80	104.20	140	104.20	140
333	138.80	140	238.00	200	80.05	100	138.80	140	138.80	140
500	208.40	200	—	—	120.20	140	—	—	—	—

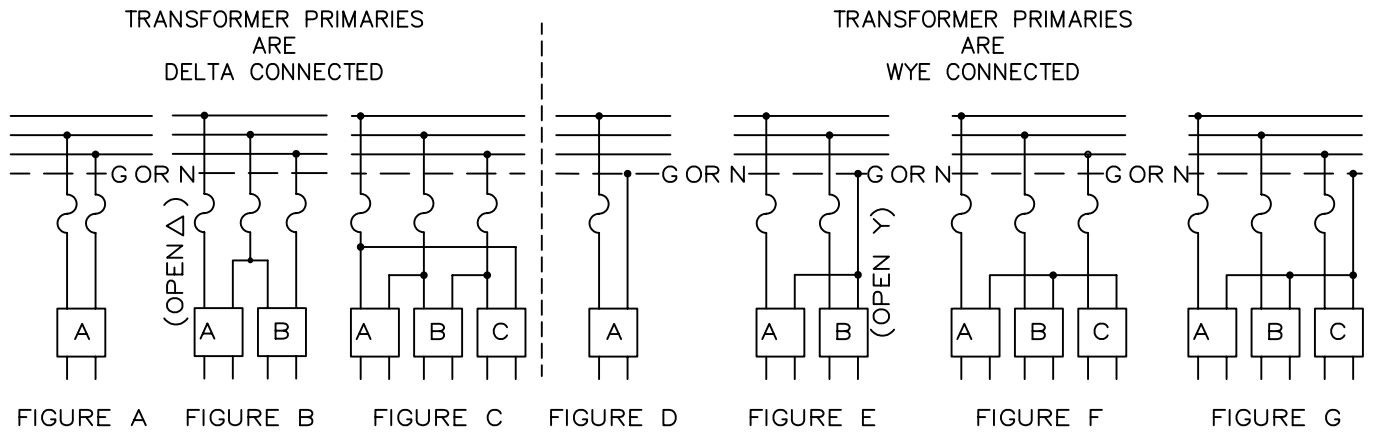
θ SIZE IS PER TRANSFORMER. WHEN READING ACROSS 100, EACH TRANSFORMER IN ANY FIGURE IS 100 kVA. FOR A 3Ø 500 kVA, OR A BANK OF 500 kVA, SELECT FUSES ACROSS 167 (500 ÷ 3 = 167)

X FOR AN OPEN-DELTA BANK ON 2400V SYSTEM, IF A = 100 AND B IS 25, USE TWO 65A FUSES ACROSS A. THE THIRD FUSE WILL BE 15A.

OILFIED TRANSFORMER FUSING — SEE DWG. A-08-00 SHEET 22.
SMALLEST FUSE SIZE STOCKED FOR BUTTON HEAD TYPE 'T' LINK IS 3 AMP.

SASKATCHEWAN POWER CORP. — DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>DL</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	DISTRIBUTION TRANSFORMERS FUSING CHART	
CHKD. <i>FTK</i>					
DATE 86-05-15	DATE	DATE	DATE		
DATE OF ISSUE 87-06-01			DRAWING NO. A-08-00	SHEET 20 of 27	REV. 0



X

SYSTEM VOLTAGE	8300/14,400 Y				14,400/25,000 Y				14,400/25,000 Y	
TRANSF. SIZE (kVA) θ	FIGURE A & B		FIGURE C		FIGURE A & B		FIGURE C		FIGURES D,E,F,G	
	RATED AMPS	LINK T RATING	RATED AMPS	LINK T RATING	RATED AMPS	LINK T RATING	RATED AMPS	LINK T RATING	RATED AMPS	LINK T RATING
3	0.21	3	0.36	3	0.12	3	0.21	3	0.21	3
5	0.35	3	0.59	3	0.20	3	0.35	3	0.35	3
7 1/2	0.52	3	0.90	3	0.30	3	0.52	3	0.52	3
10	0.69	3	1.20	3	0.40	3	0.69	3	0.69	3
15	1.04	3	1.80	3	0.60	3	1.04	3	1.04	3
25	1.74	3	3.01	6	1.00	3	1.74	3	1.74	3
37 1/2	2.61	3	4.52	8	1.50	3	2.61	3	2.61	3
50	3.47	6	5.94	10	2.00	3	3.47	6	3.47	6
75	5.21	10	9.01	15	3.00	3	5.21	10	5.21	6
100	6.94	10	12.01	20	4.00	6	6.94	10	6.94	8
167	11.60	20	20.10	30	6.68	10	11.60	20	11.60	12
250	17.40	25	30.10	50	10.00	15	17.40	25	17.40	20
333	23.10	30	40.00	65	13.32	20	23.10	30	23.10	25
500	34.80	50	60.00	80	20.00	30	34.80	50	34.80	40

θ SIZE IS PER TRANSFORMER. WHEN READING ACROSS 100, EACH TRANSFORMER IN ANY FIGURE IS 100 kVA. FOR A 3Ø 500 kVA, OR A BANK OF 500 kVA, SELECT FUSES ACROSS 167 (500 ÷ 3 = 167)

X FOR AN OPEN-DELTA BANK ON 2400 V SYSTEM, IF A = 100 AND B IS 25, USE TWO 65A FUSES ACROSS A. THE THIRD FUSE WILL BE 15A.

OILFIELD TRANSFORMER FUSING – SEE DWG. A-08-00 SHEET 22.
SMALLEST FUSE SIZE STOCKED FOR BUTTON HEAD TYPE 'T' LINK IS 3 AMP.

SaskPower – DISTRIBUTION STANDARDS

DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	DISTRIBUTION TRANSFORMERS FUSING CHART	
CHKD. <i>FTK</i>					
DATE 86-05-14	DATE	DATE	DATE		
DATE OF ISSUE 2004/03/15			DRAWING NO. A-08-00	SHEET 21 of 27	REV. B

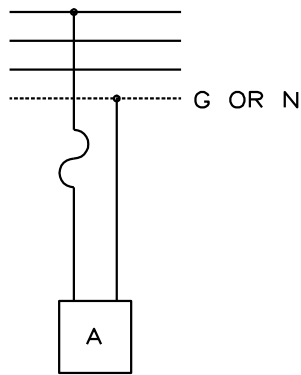


FIGURE D

TRANSFORMER PRIMARY
WYE OR DELTA CONNECTED

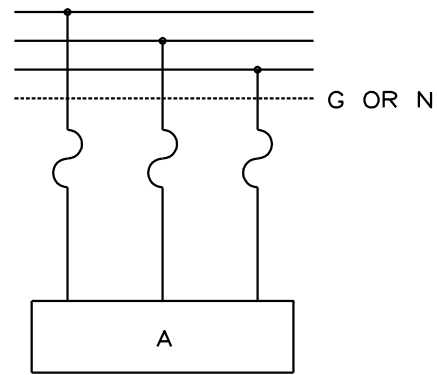


FIGURE H

SYSTEM VOLTAGE	14,400/25,000 Y		SYSTEM VOLTAGE	14,400/25,000 Y	
TRANSF SIZE (kVA) 1Ø	FIGURE D		TRANSF SIZE (kVA) 3Ø	FIGURE H	
	RATED AMPS	LINK X RATING		RATED AMPS	LINK X RATING
7 1/2	0.52	1/2	10	0.23	1/2
10	0.69	1	15	0.35	1/2
15	1.04	1	30	0.69	1
25	1.74	2	45	1.04	1
50	3.47	4	60	1.39	1 1/2
75	5.21	5 1/2	75	1.74	2
100	6.94	7	100	2.31	2 3/4
			150	3.47	4
			225	5.21	5 1/2
			300	6.94	7
			450	10.42	10
			* 2x300	13.88	15
			* 2x450	20.84	25T

* NOTES:

1. THE 2 X 300kVA AND 2 X 450kVA OPTIONS ARE FOR MAINTENANCE ONLY.
2. THE 2 X 300kVA FUSING MAY BE UPSIZED TO A 25T IF HIGH MOTOR LOADS ARE PRESENT. THIS IS THE ABSOLUTE MAXIMUM FUSING ALLOWED AND SHOULD ONLY BE DONE IF THERE IS NUISANCE TRIPPING ON THE 15X FUSE.
3. THE 2 X 450kVA FUSING MAY BE UPSIZED TO A 30T OR 40T IF HIGH MOTOR LOADS ARE PRESENT. THIS IS THE ABSOLUTE MAXIMUM FUSING ALLOWED AND SHOULD ONLY BE DONE IF THERE IS NUISANCE TRIPPING ON THE 25T FUSE.

SaskPower – DISTRIBUTION STANDARDS

APPROVAL L.MOEN	DESIGN CHK. A.UHREN	DRN. Y.HAO CHKD. 2017-01-06	OILFIELD AND IRRIGATION TRANSFORMER FUSING CHART
DATE OF ISSUE	2017/05/03	DRAWING NO. A-08-00	
		SHEET 22 of 27	REV. C

TOTAL TRANSFORMER CAPACITY	RISER CODE	RISER SIZE	TOTAL TRANSFORMER CAPACITY	RISER CODE	RISER SIZE
120/240 V – 1Ø			480 V. – 3Ø DELTA & 277/480 V. – 3Ø WYE		
15 KVA 25 37 1/2 50 75* 100* 167* 200*	2-86-02 2-86-20 2-87-40 2-87-40 2-87-40 2-87-40 2-91-92 2-91-92	#2 2/0 4/0 4/0 2 x 4/0 2 x 4/0 2 x 500 3 x 500	10 kVA 15 30 45 60 75 100 150 225 300 450	2-86-02 2-86-02 2-86-02 2-86-02 2-86-02 2-86-02 2-86-20 2-87-40 2-91-90 2-87-40 2-91-90	#2 #2 #2 #2 #2 #2 2/0 4/0 350 2 x 4/0 2 x 350
480 V. – 1Ø					
15 KVA 25 50 75* 100* 200* 250*	2-86-02 2-86-02 2-86-20 2-87-40 2-87-40 2-87-40 2-91-90	#2 #2 2/0 4/0 4/0 2 x 4/0 2 x 350	600 V. – 3Ø DELTA		
			100 kVA 225	2-95-20 2-91-90	2/0 350
120/208V. – 3Ø WYE			347/600V. – 3Ø WYE		
3 x 15 KVA 3 x 25 3 x 37 1/2 3 x 50 3 x 75	2-86-20 2-87-40 2-87-40 2-87-40 2-91-92	2/0 4/0 2 x 4/0 2 x 4/0 2 x 500	3 x 25 kVA 3 x 50 3 x 75 3 x 100 3 x 150 3 x 167	2-95-16 2-95-20 2-91-90 2-91-90 2-91-90 2-91-90	#2 2/0 350 350 2 x 350 2 x 350
240 V. – 3Ø DELTA					
3 x 15 KVA 3 x 25 3 x 37 1/2 3 x 50 3 x 75	2-86-20 2-87-40 2-91-90 2-87-40 2-91-90	2/0 4/0 350 2 x 4/0 2 x 350	1080 V. – 3Ø DELTA		
			100 KVA 150 225	2-95-16 2-95-16 2-95-20	#2 #2 2/0

1. RISER SIZE IS BASED ON A NOMINAL 200% OF TRANSFORMER CAPACITY.
2. REFER TO C-24-04 FOR RISER AMPACITY.
3. #2 COPPER IS MINIMUM RISER SIZE.
4. WHEN RISERS ARE BUNDLED, REDUCE AMPACITY AS FOLLOWS:
2 CONDUCTOR = 90% ; 3 CONDUCTOR = 85% ; 4 CONDUCTOR = 80 %
5. *NOT TO BE USED ON RURAL INSTALLATIONS (SINGLE WIRE EARTH RETURN).

SaskPower – DISTRIBUTION STANDARDS

DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER SECONDARY COPPER RISER	
CHKD. <i>FTK</i>					
DATE 91-05-30	DATE	DATE	DATE		
DATE OF ISSUE			DRAWING NO. A-08-00	SHEET 23 of 27	REV. B

TRANSFORMER MASS

25 kV 3Ø UNITS	
kVA	MAX. WEIGHT—kg
10	314
15	314
30	423
45	668
60	727
75	852
100	909
150	1150
225	1293
450	2318

1Ø UNITS		
kVA	14.4 kV MAX. MASS kg	2.4 kV MAX. MASS kg
7 1/2	100	—
10	130	141
15	180	218
25	198	327
37 1/2	—	400
50	355	427
75	500	450
100	582	477
150	755	595
167	—	677

1. THESE TABLES ARE A GUIDE FOR THE MASS OF TRANSFORMERS MANUFACTURED AFTER 1960. OLDER TRANSFORMERS OF THE SAME kVA SIZE ARE GENERALLY HEAVIER AND THEIR WEIGHTS SHOULD BE CHECKED BEFORE INSTALLATION.
2. TRANSFORMERS WITH WEIGHTS IN EXCESS OF SINGLE POLE BEARING CAPABILITY MUST BE PLATFORM MOUNTED.
3. SEE DWG. A-08-00 SHT. 25 FOR POLE LOADING INFORMATION.

SASKATCHEWAN POWER CORP. — DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>DK</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER MASS	
CHKD. <i>FTK</i>					
DATE 87-05-30	DATE	DATE	DATE		
DATE OF ISSUE 87-06-01			DRAWING NO. A-08-00	SHEET 24 of 27	REV. 0

1Ø OR 3Ø SINGLE TRANSFORMER
MAXIMUM MASS

POLE		RURAL (90m RS)		URBAN (60m RS)	
HEIGHT	CLASS	UNGUYED	GUYED	UNGUYED	GUYED
m (ft)		kg	kg	kg	kg
10.7 (35)	3	910	910	N/A	N/A
	4	910	910		
	5	680	—		
12.2 (40)	3	910	910	910	910
	4	910	630	910	910
	5	680	—	—	—
13.7 (45)	3	910	910	910	910
	4	910	—	910	910
	5	680	—	—	—
15.2 (50)	3	910	410	910	910
	4	910	—	680	—
	5	680	—	—	—

CLUSTER – MOUNT TRANSFORMER STRUCTURES
MAXIMUM MASS PER TRANSFORMER

POLE		RURAL (90m RS)		URBAN (60m RS)	
HEIGHT	CLASS	UNGUYED	GUYED	UNGUYED	GUYED
m (ft)		kg	kg	kg	kg
10.7 (35)	3	600	600	N/A	N/A
	4	480	340		
	5	230	—		
12.2 (40)	3	600	560	600	600
	4	480	210	400	330
	5	230	—	—	—
13.7 (45)	3	600	430	600	600
	4	480	—	400	300
	5	230	—	—	—
15.2 (50)	3	600	140	600	400
	4	480	—	230	—
	5	230	—	—	—



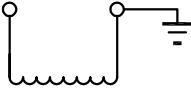
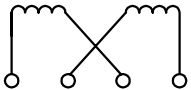
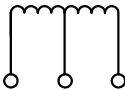
NOTE:

1. TABLES BASED ON CLASS 5 SOIL OR BETTER.
2. TABLES BASED ON HEAVY LOADING CONDITION FOR CONDUCTORS UP TO "PENGUIN" 4/0 ACSR. PLEASE VERIFY SUITABILITY OF APPLICATION WITH LARGER CONDUCTORS. SECONDARY AND COMMUNICATIONS CABLES ARE ALSO CONSIDERED ON URBAN STRUCTURES.
3. LOADING FOR CLUSTER MOUNT STRUCTURES ASSUMES THREE TRANSFORMERS IN TOTAL, EACH WITH THE MASS SHOWN.
4. EXISTING POLES SHOULD BE CHECKED FOR THEIR CONDITION BEFORE INSTALLING A TRANSFORMER.
5. "GUYED" REFERS TO 45 DEGREE DOWN GUYS ONLY, NOT SHORT GUYS.

SaskPower – DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK.	DRN. <i>DK</i> CHKD. <i>FTK</i>	TRANSFORMER POLE LOADING		
DATE OF ISSUE 2010-04-21		DRAWING NO. A-08-00	SHEET 25 of 27	REV. A	

SINGLE PHASE TRANSFORMER

VOLTAGE DESIGNATION		TYPICAL WINDING DIAGRAM	DESCRIPTION
SYMBOL	NAMEPLATE MARKING		
E	24940 600 480		E SHALL INDICATE A WINDING OF E VOLTS THAT IS SUITABLE FOR Δ CONNECTION OF AN E VOLT SYSTEM.
E/E ₁ Y	14400/24940 Y 4160/7200 Y 2400/4160 Y 347/600 Y 277/480 Y		E/E ₁ Y SHALL INDICATE A WINDING OF E VOLTS THAT IS SUITABLE FOR Δ CONNECTION ON AN E VOLT SYSTEM OR FOR Y CONNECTION ON AN E ₁ VOLT SYSTEM.
E ₁ GrdY/E	4160 GrdY/2400 24940 GrdY/14400		E ₁ GrdY/E SHALL INDICATE A WINDING OF E VOLTS WITH REDUCED INSULATION AT THE NEUTRAL END. THE NEUTRAL END MAY BE CONNECTED DIRECTLY TO THE TANK FOR Y OR FOR SINGLE-PHASE OPERATION ON AN E ₁ VOLT SYSTEM, PROVIDED THE NEUTRAL END OF THE WINDING IS EFFECTIVELY GROUNDED.
E/2E	240/480 120/240		E/2E SHALL INDICATE A WINDING, THE SECTIONS OF WHICH CAN BE CONNECTED IN MULTIPLE FOR OPERATION AT E VOLTS, OR WHICH CAN BE CONNECTED IN SERIES FOR OPERATION AT 2E VOLTS, OR CONNECTED IN SERIES WITH A CENTRE TERMINAL FOR THREE-WIRE OPERATION AT 2E VOLTS BETWEEN THE EXTREME TERMINALS AND E VOLTS BETWEEN THE CENTRE TERMINAL AND EACH OF THE EXTREME TERMINALS.
2E/E	480/240 240/120		2E/E SHALL INDICATE A WINDING FOR 2E VOLTS, TWO-WIRE FULL kV.A BETWEEN EXTREME TERMINALS, OR FOR 2E/E VOLTS THREE-WIRE SERVICE WITH ONE-HALF kV.A AVAILABLE ONLY, FROM MIDPOINT TO EACH EXTREME TERMINAL.

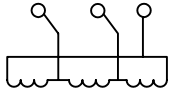
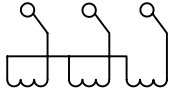
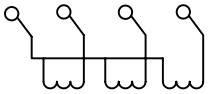
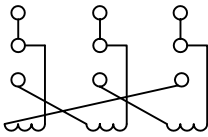
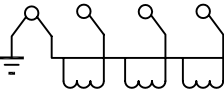
NOTES:

- 1) $E_1 = \sqrt{3} E$
- 2) BASED ON CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD CZ-M1982, TABLE 2.
- 3) NOT ALL POSSIBLE CSA DESIGNATIONS ARE SHOWN ABOVE, ONLY THOSE FOR WHICH WE STOCK TRANSFORMERS.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>RA</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	SINGLE PHASE TRANSFORMER VOLTAGE DESIGNATION
CHKD. <i>FTK</i>	DATE	DATE	DATE	
DATE 87-05-28	DATE	DATE	DATE	
DATE OF ISSUE 87-06-01		DRAWING NO. A-08-00		SHEET 26 of 27
				REV. 0

THREE PHASE TRANSFORMER

VOLTAGE DESIGNATION		TYPICAL WINDING DIAGRAM	DESCRIPTION
SYMBOL	NAMEPLATE MARKING		
E	24940 4160 1080 600 480		E SHALL INDICATE A WINDING THAT IS PERMANENTLY Δ CONNECTED FOR OPERATION ON AN E VOLT SYSTEM.
E ₁ Y	24940Y		E ₁ Y SHALL INDICATE A WINDING THAT IS PERMANENTLY Y CONNECTED WITHOUT A NEUTRAL BROUGHT OUT (ISOLATED) FOR OPERATION ON AN E ₁ VOLT SYSTEM.
E ₁ Y/E	4160Y/2400 600Y/347 480Y/277 208Y/120		E ₁ Y/E SHALL INDICATE A WINDING THAT IS PERMANENTLY Y CONNECTED WITH A FULLY INSULATED NEUTRAL BROUGHT OUT FOR OPERATION ON AN E ₁ VOLT SYSTEM, WITH E VOLTS AVAILABLE FROM LINE TO NEUTRAL.
E/E ₁ Y	2400/4160Y		E/E ₁ Y SHALL INDICATE A WINDING THAT MAY BE Δ CONNECTED FOR OPERATION ON AN E VOLT SYSTEM, OR MAY BE Y CONNECTED WITHOUT A NEUTRAL BROUGHT OUT (ISOLATED) FOR OPERATION ON A E ₁ VOLT SYSTEM.
E ₁ GrdY/E	4160 GrdY/2400 14400 GrdY/8320 24940 GrdY/14400		E ₁ GrdY/E SHALL INDICATE A WINDING WITH REDUCED INSULATION AND PERMANENTLY Y CONNECTED. THE NEUTRAL END MAY BE CONNECTED TO THE TANK OR BROUGHT OUT AND EFFECTIVELY GROUNDED FOR OPERATION ON AN E ₁ VOLT SYSTEM WITH E VOLTS AVAILABLE FROM LINE TO NEUTRAL.

NOTES:

- 1) $E_1 = \sqrt{3} E$
- 2) BASED ON CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD CZ-M1982, TABLE 4.
- 3) NOT ALL POSSIBLE CSA DESIGNATION ARE SHOWN ABOVE, ONLY THOSE FOR WHICH WE STOCK TRANSFORMERS.

SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

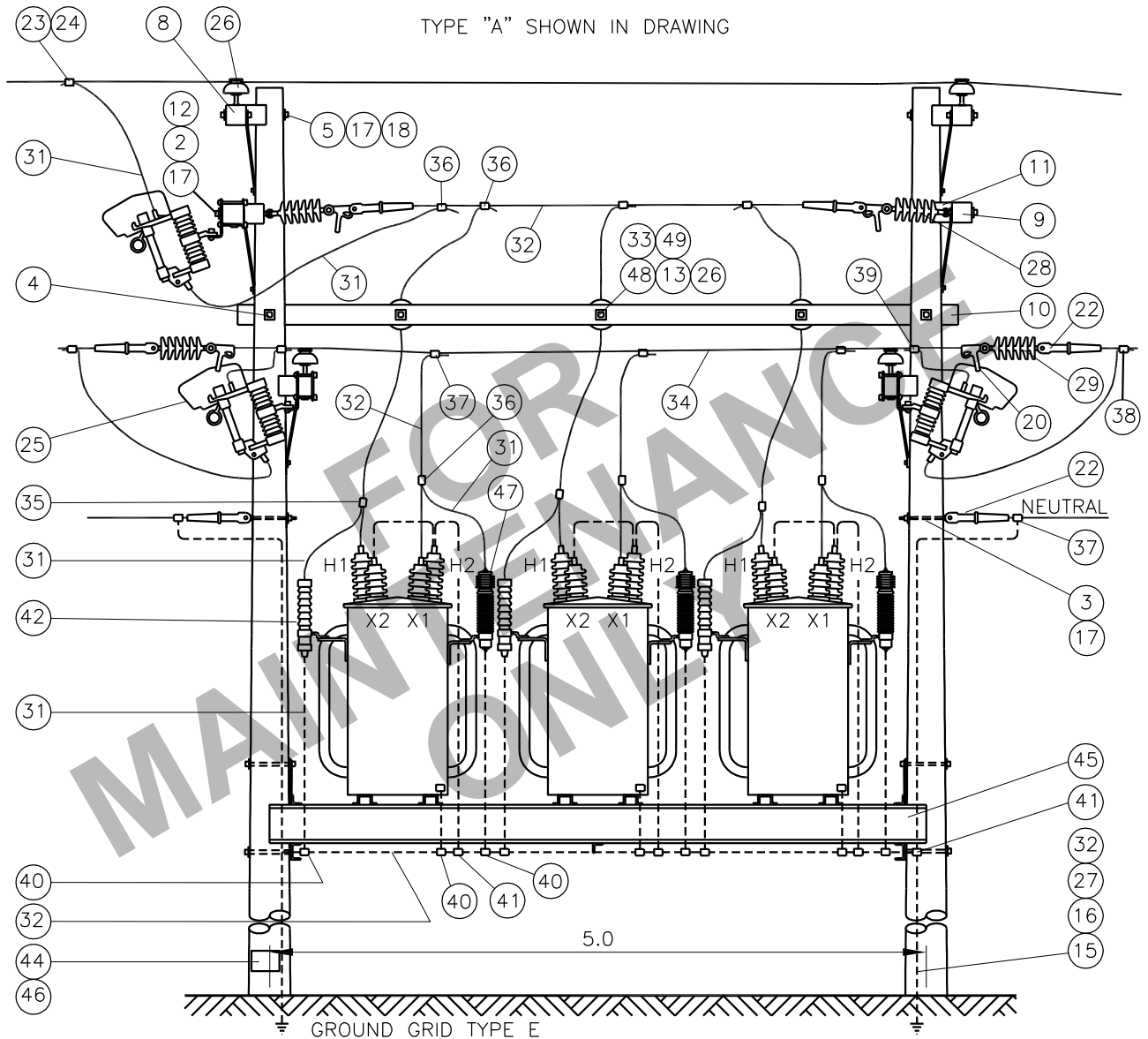
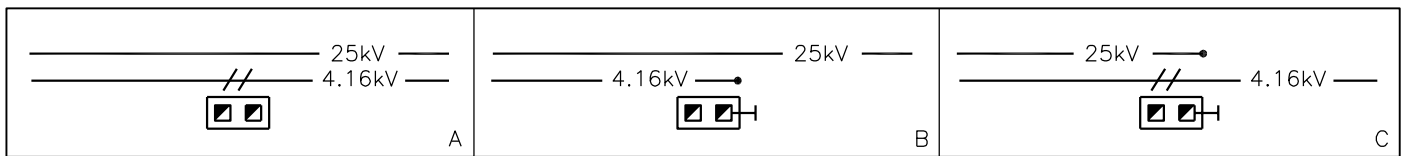
DRN. <i>R</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	THREE PHASE TRANSFORMER VOLTAGE DESIGNATION	
CHKD. <i>FTK</i>	DATE	DATE	DATE		
DATE 87-05-28	DATE	DATE	DATE		
DATE OF ISSUE 87-06-01		DRAWING NO. A-08-00		SHEET 27 of 27	REV. 0

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY		DESCRIPTION
		1 FDR	2 FDR	
1	1-08-38	6	5	BOLT CARRIAGE -3/8" x 4 1/2"
2	1-11-08	4	2	BOLT EYE -5/8" x 8"
3	1-11-12	1	2	BOLT EYE -5/8" x 12"
4	1-13-16	2	2	BOLT MACHINE -5/8" x 16"
5	1-13-20	4	4	BOLT MACHINE -5/8" x 20"
6	1-14-14	4	4	BOLT MACHINE -3/4" x 14"
7	1-19-32	4	4	BRACE CROSSARM -32"
8	1-29-10	2	3	CROSSARM WOOD -4" x 5" x 10'
9	1-29-39	2	1	CROSSARM WOOD -6" x 6" x 9'
10	PURCHASE LOCALLY	1	1	TIMBER -6" x 6" x 18'
11	1-32-86	4	4	GAIN POLE WOOD
12	1-50-00	2	1	NUT-EYE - 5/8"
13	1-53-09	9	12	PIN STEEL INSULATOR
14	1-78-12	5	6	SCREW LAG -1/2" x 4 1/2"
15	1-85-01	1/2 lb	1/2 lb	STAPLE FENCE
16	1-85-02	24	24	STAPLE MOULDING
17	1-93-42	17	18	WASHER SQUARE - 2 1/4" x 2 1/4" x 13/16" HOLE
18	1-93-95	4	4	WASHER SQUARE - 3" x 3" x 13/16" HOLE
19	2-02-04	6	6	CLAMP DEAD-END - #4/0 CU BUS
20	2-XX-XX	1	2	CLAMP DEAD-END (SEE NOTE 1)
21	2-XX-XX	3	6	CLAMP DEAD-END (SEE NOTE 1)
22	2-XX-XX	9	9	CLAMP DEAD-END (SEE NOTE 1)
23	2-06-XX	3	3	CONNECTOR AMPACT (SEE NOTE 2)
24	2-06-9X	3	3	SHELL AMPACT
25	2-12-62	6	9	COUTOUT LOAD-BREAK – 27 KV 100 AMP
26	2-20-23	9	12	INSULATOR – PIN TYPE
27	2-27-00	40 ft	40ft	MOULDING GROUND WIRE
28	2-29-24	6	3	DEAD-END POLYMER – TONGUE CLEVIS
29	2-29-25	6	9	DEAD-END POLYMER – TONGUE/TONGUE
30	2-65-85	3	3	CONNECTOR HYLUG - #2/0 (IF REQUIRED)
31	2-83-02	18m	18m	WIRE – CU #2/7 STR
32	2-83-20	40m	40m	WIRE – CU #2/0 /7 STR
<p>NOTE:</p> <p>1. REFER TO DWG. A-14-00 FOR SPECIFIC MATERIAL REQ'S.</p> <p>2. REFER TO SECTION A-36 FOR SPECIFIC MAERIAL REQ'S.</p>				

SaskPower - DISTRIBUTION STANDARDS

DRN.	DESIGN CHK.	APPROVAL	TRANSFORMER STRUCTURE - 3Ø TOWN SUBSTATION 25/4.16 KV – SINGLE & DOUBLE FEEDER
CHKD.		DATE	
DATE	DATE	DATE	
DATE OF ISSUE 87-12-01		DRAWING NO: A-08-01	SHEET 1 of 4 REV. A



NOTES:

1. REFER TO GENERAL NOTES A-08-00 "SUBSTATIONS - 25kV - 2400/4160 VOLT" IN FRONT OF SECTION.
2. REFER TO A-33 FOR GROUNDING AND GROUND GRID TYPE.
3. RUN GROUND WIRE ON OPPOSITE SIDE OF CUTOUTS.
4. REFER TO A-32 FOR GUYING AND ANCHORING.
5. MAXIMUM WEIGHT OF THE TRANSFORMERS IS 4500 LBS. EACH.
6. MINIMUM 15.2m POLES TO BE USED.
7. USE MINIMUM CLASS 3 POLE.
8. FOR SECONDARY LOADS OVER 100 AMPS, USE 200 AMP CUTOUTS (2-12-63) AND LARGER FUSES (7-39-XX).
9. FOR 3 SECONDARY FEEDERS, BUILD ANOTHER SUBSTATION OR CONTACT DISTRIBUTION PLANNING & STANDARDS IN REGINA FOR METHOD OF SPLITTING LOAD.

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

APPROVED FOR CONSTRUCTION

SaskPower - DISTRIBUTION STANDARDS

APPROVAL L.MOEN	DESIGN CHK. D.DONAIS	DRN.D.REDEKOPP CHKD. 2018-12-17	TRANSFORMER STRUCTURE - 3 ϕ TOWN SUBSTATION 25/4.16kV - DOUBLE FEEDER
DATE OF ISSUE	1987-2-1	DRAWING NO. A-08-01	
		SHEET 2 of 4	REV. C

BILL OF MATERIAL

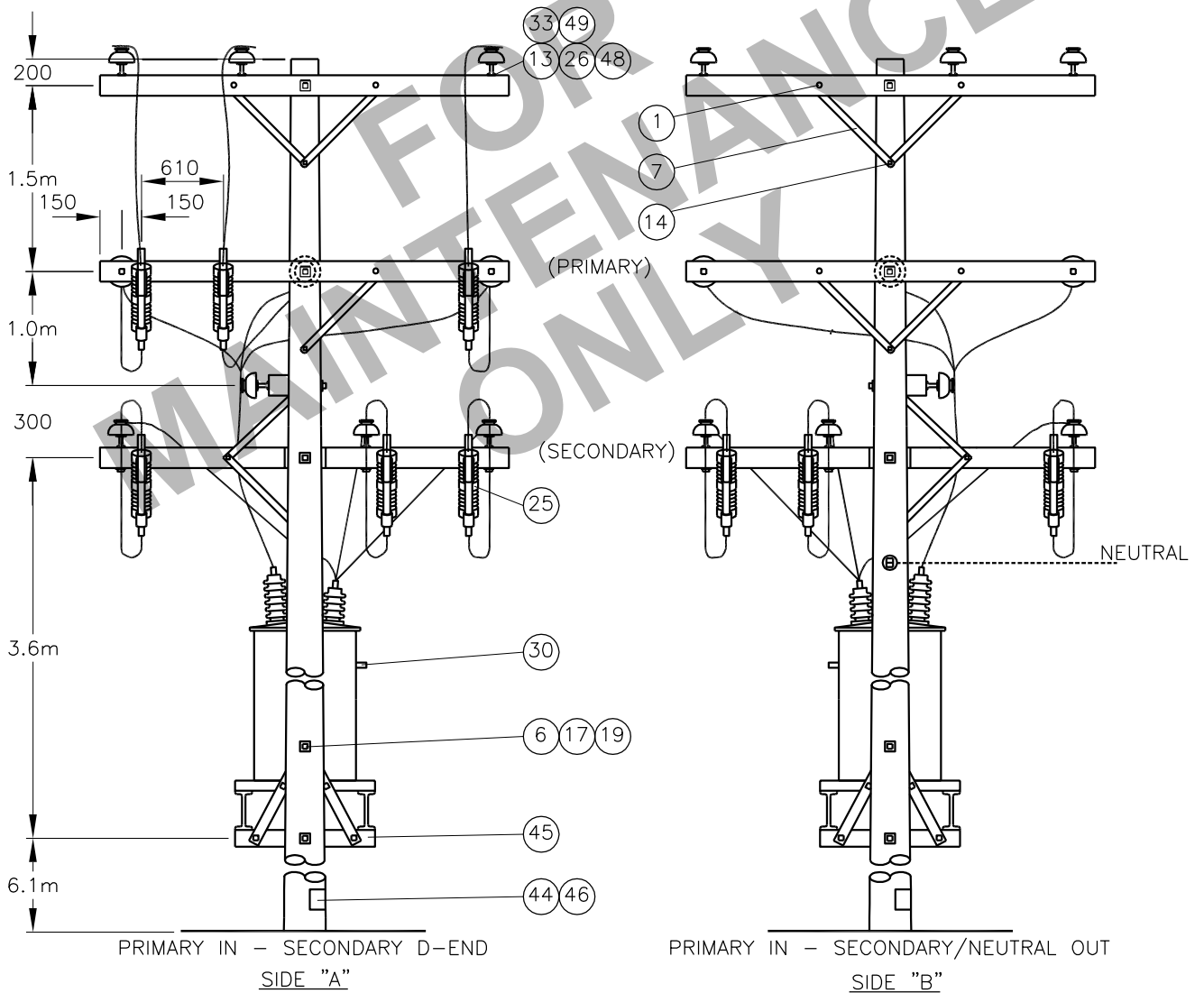
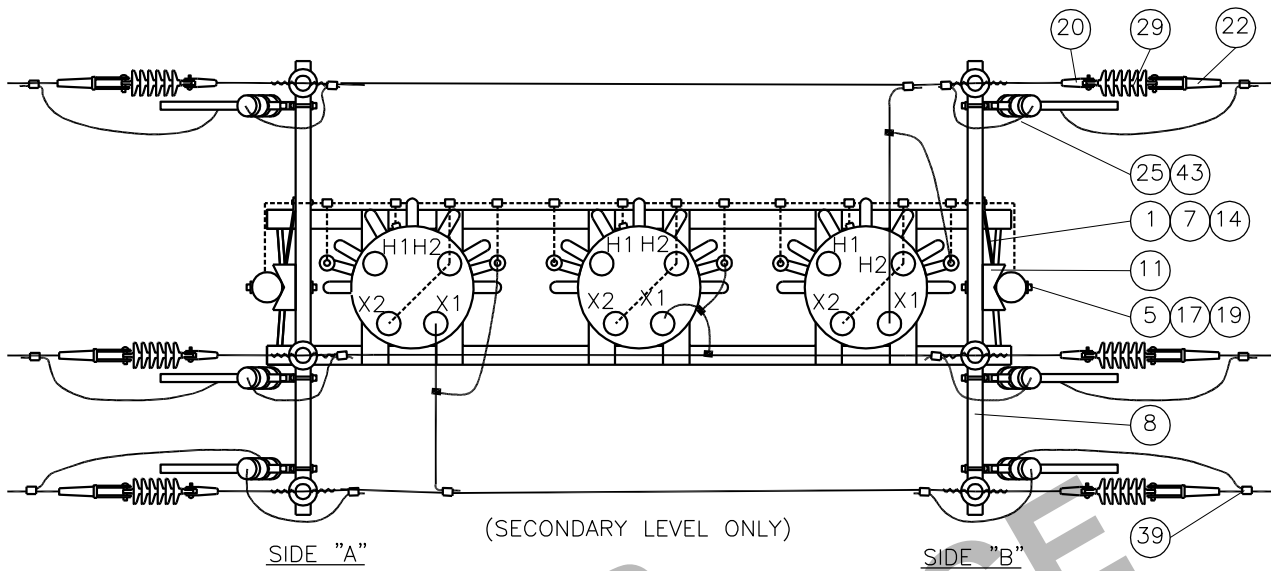
ITEM NO.	CODE NO.	QUANTITY		DESCRIPTION
		1 FDR	2 FDR	
33	2-97-50	9	12	UNI-TIE
34	2-98-01	18	21	WIRE CU-#4/0 /19 STR
35	5-09-10	3	3	CONNECTOR COMPRESSION-#2/0 TO #2/0
36	5-09-15	3	3	CONNECTOR COMPRESSION-#2/0 TO #4/0
37	5-09-29	3	6	CONNECTOR COMPRESSION-#4/0 TO #4/0
38	5-09-XX	1	2	CONNECTOR COMPRESSION (SEE NOTE 2)
39	5-09-XX	3	6	CONNECTOR COMPRESSION (SEE NOTE 2)
40	5-09-XX	6	6	CONNECTOR COMPRESSION (SEE NOTE 2)
41	5-12-10	10	10	CRIMPIT-#2/0 TO #2/0
42	6-02-21	3	3	ARRESTER 21 kV (RURAL)
43	7-38-XX	6	9	FUSE BUTTON HEAD
44	7-63-30	1/4 lb	1/4 lb	NAILS SPIRAL-4"
45	8-30-50	1	1	PLATFORM ALUMA-FORM - 5 m
46	05-640-000	2	2	SIGN-"DANGER H.V."

NOTE:

1. REFER TO DWG. A-14-00 FOR SPECIFIC MATERIAL REQ'S.
2. REFER TO SECTION A-36 FOR SPECIFIC MAERIAL REQ'S.

SaskPower - DISTRIBUTION STANDARDS

DRN.	DESIGN CHK.	APPROVAL	TRANSFORMER STRUCTURE - 3Ø TOWN SUBSTATION 25/4.16 KV – SINGLE & DOUBLE FEEDER
CHKD.			
DATE	DATE	DATE	
DATE OF ISSUE 95-07-10		DRAWING NO: A-08-01	SHEET 3 of 4 REV. B



SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

APPROVED FOR CONSTRUCTION

SaskPower – DISTRIBUTION STANDARDS

APPROVAL L.MOEN	DESIGN CHK. D.DONAIS	DRN.D.REDEKOPP CHKD. 2018-12-17	TRANSFORMER STRUCTURE – 3 ϕ TOWN SUBSTATION 25/4.16kV – SINGLE OR DOUBLE FEEDER
DATE OF ISSUE	1987 12 11	DRAWING NO. A-08-01	
		SHEET 4 of 4	REV. C

BILL OF MATERIAL

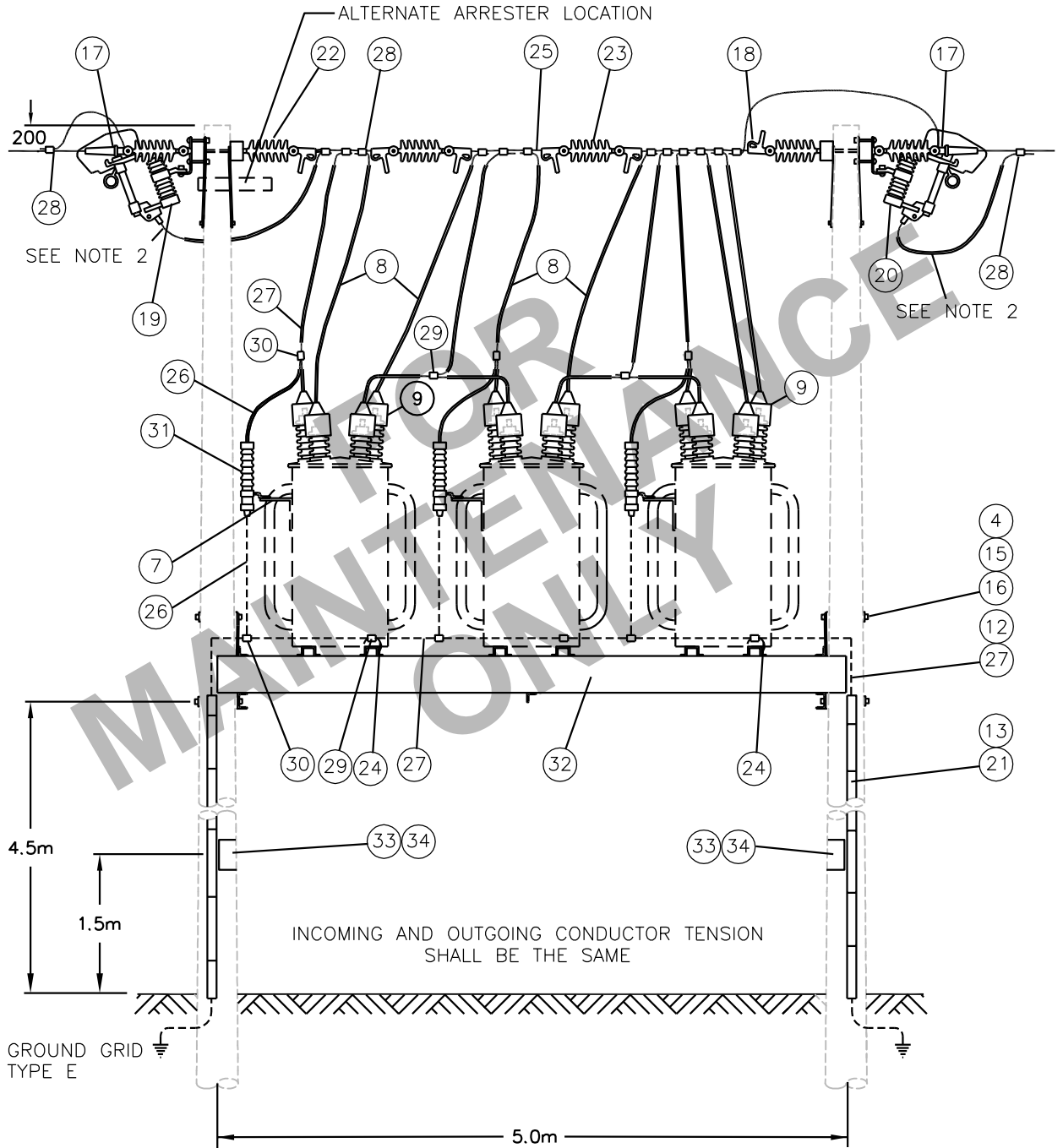
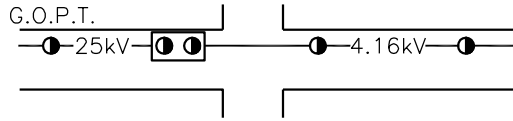
ITEM NO.	CODE NO.	QUANTITY		DESCRIPTION
		A	B	
1	1 08 38	4	4	BOLT CARRIAGE - 3/8" x 4 1/2"
2	1 11 18	4	4	BOLT EYE - 5/8" x 18"
3	1 09 18	6	6	BOLT EYE DOUBLE ARM - 5/8" x 18"
4	1 14 14	4	4	BOLT MACHINE - 3/4" x 14"
5	1 19 32	4	4	BRACE CROSSARM – 32"
6	1 29 10	4	4	CROSSARM - 4" x 5" x 10'
7	1 35 32	3	3	BRACKET-X ARM FOR CUTOUTS, ARR, OR TERM
8	1 35 38	70 ft	70 ft	RISER COVER FOR WILDLIFE GUARD
9	1 35 40	12	12	WILDLIFE GUARD, POLYMER TYPE
10	1 50 00	14	14	NUT EYE - 5/8"
11	1 78 12	6	6	SCREW LAG - 1/2" x 4 1/2"
12	1 85 03	1/2 lb	1/2 lb	STAPLE – FENCE
13	1 85 02	24	24	STAPLE – MOULDING
14	1 93 25	4	4	WASHER LOCK – 3/8"
15	1 93 42	42	42	WASHER SQUARE – 2 1/4" x 2 1/4" x 13/16" HOLE
16	1 93 96	4	4	WASHER CURVED – 3" x 3" x 13/16" HOLE
17	2 01 XX	6	6	DEADEND – AUTOMATIC (SEE NOTE 1)
18	2 02 XX	12	14	CLAMP – DEADEND (SEE NOTE 1)
19	2 12 62	3	3	CUTOUT LOAD-BREAK – 27 kV 100 AMP
20	2 12 63	3	3	CUTOUT LOAD-BREAK – 27 kV 200 AMP
21	2 27 00	4	4	MOULDING-WOOD-10'LONG-FOR GROUND WIRE
22	2 29 24	12	16	DEADEND POLYMER – TONGUE TO CLEVIS
23	2 29 25	3	2	DEADEND POLYMER – TONGUE TO TONGUE
24	2 65 85	2	2	HYLUG – 2/0 STR
25	2 78 XX	15 m	25 m	CABLE ALUMINUM – ACSR
26	2 83 02	6 m	6 m	WIRE CU - #2/7 STR
27	2 83 20	32 m	32 m	WIRE CU – 2/0 /7 STR
28	5 09 XX	17	22	CONNECTOR AL – CRIMPIT (SEE NOTE 1)
29	5 12 10	8	5	CONNECTOR CU – 2/0C2/0
30	5 12 25	6	6	CONNECTOR CU – 2/0C2
31	8 02 18	3	3	ARRESTER – SURGE 18 kV (RURAL)
32	8 30 50	1	1	PLATFORM ALUMA-FORM
33	7 63 30	0.08	0.08	SCREWS - #10 X 1 1/2" (100/BOX)
34	05 640 000	2	2	SIGN "DANGER H.V."

NOTES:

1. REFER TO SECTION A-36 FOR SPECIFIC MATERIAL REQUIREMENTS.
2. COLUMN A IS FOR 4.16kV SECONDARY
COLUMN B IS FOR 2.4kV SECONDARY

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. DCD	TRANSFORMER STRUCTURE – 3Ø TOWN SUBSTATION 25 kV – 2.4/4.16kV
L. MOEN	D. DONAIS	CHKD.	
		2018-08-17	
DATE OF ISSUE	2018-09-13	DRAWING NO.	A-08-02
			SHEET 1 OF 3
			REV. D



NOTE:

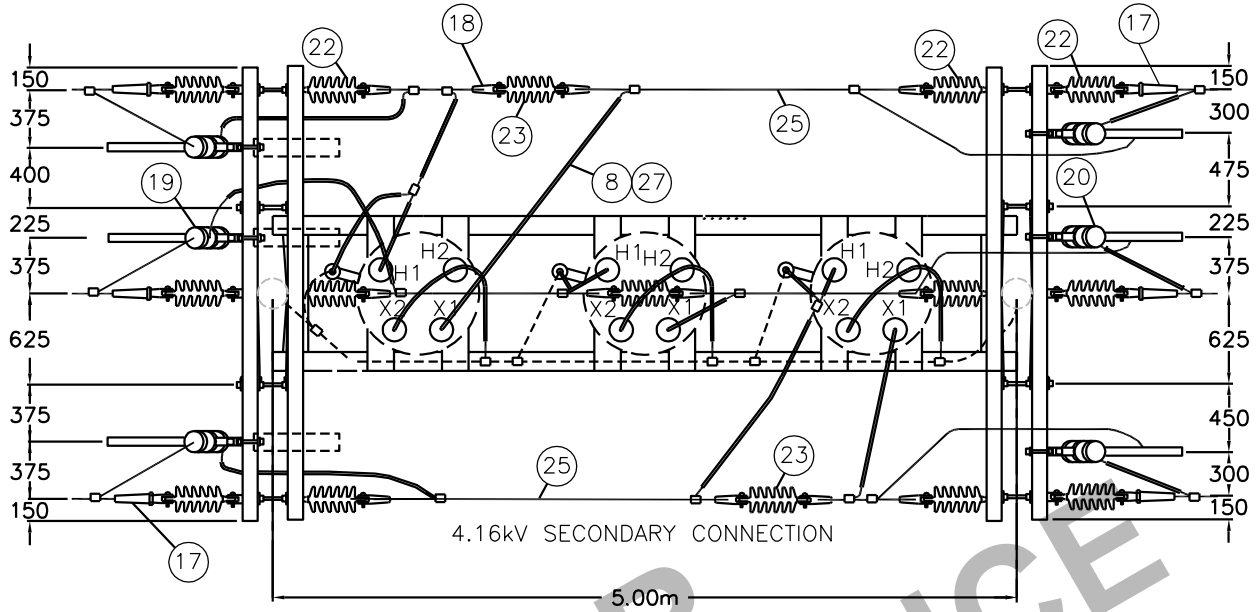
1. USE MINIMUM 12.2m (40') TALL CLASS 3 POLES FOR RURAL; MINIMUM 13.7m (45') TALL CLASS 3 FOR URBAN. SET POLES 2.4m (8') DEEP.
2. INSTALL RISER COVER 127-152mm (5-6") BELOW CUTOUT.

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

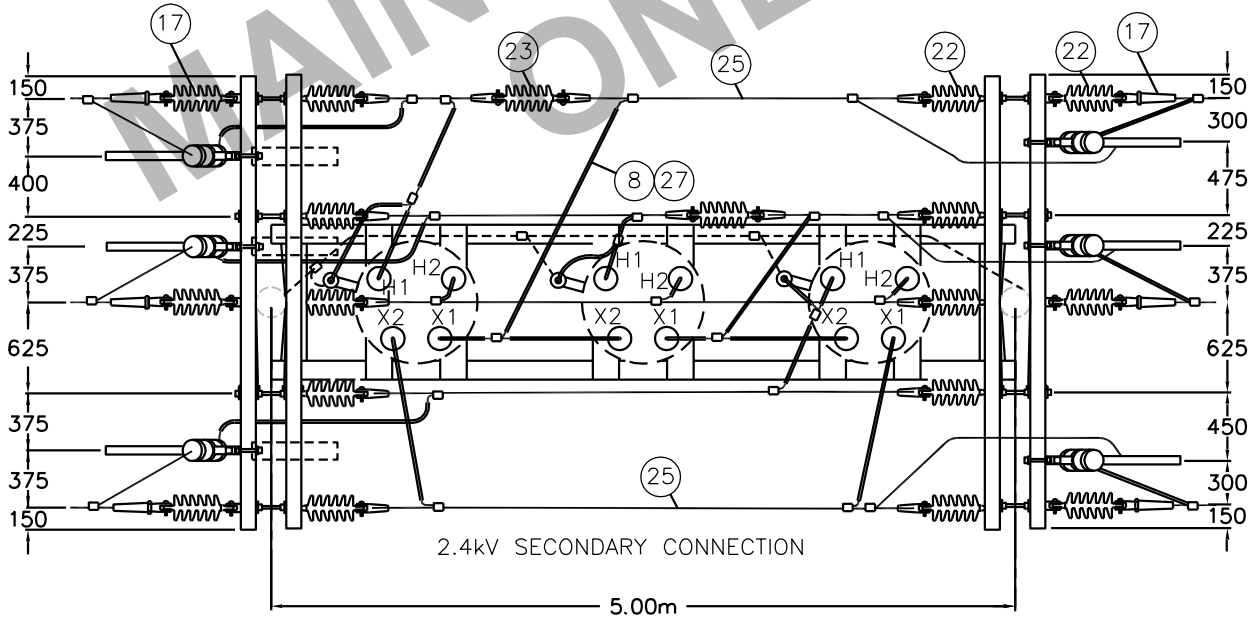
APPROVED FOR CONSTRUCTION

SaskPower – DISTRIBUTION STANDARDS

APPROVAL L.MOEN	DESIGN CHK. D.DONAIS	DRN.D.REDEKOPP CHKD. 2018-12-17	TRANSFORMER STRUCTURE – 3 ϕ TOWN SUBSTATION 25kV – 2.4/4.16kV
DATE OF ISSUE 08 FEB 2019	DRAWING NO. A-08-02	SHEET 2 of 3	
			REV. D



INCOMING AND OUTGOING CONDUCTOR TENSION SHALL BE THE SAME



SCALE: N.T.S.

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

APPROVED FOR CONSTRUCTION

SaskPower – DISTRIBUTION STANDARDS

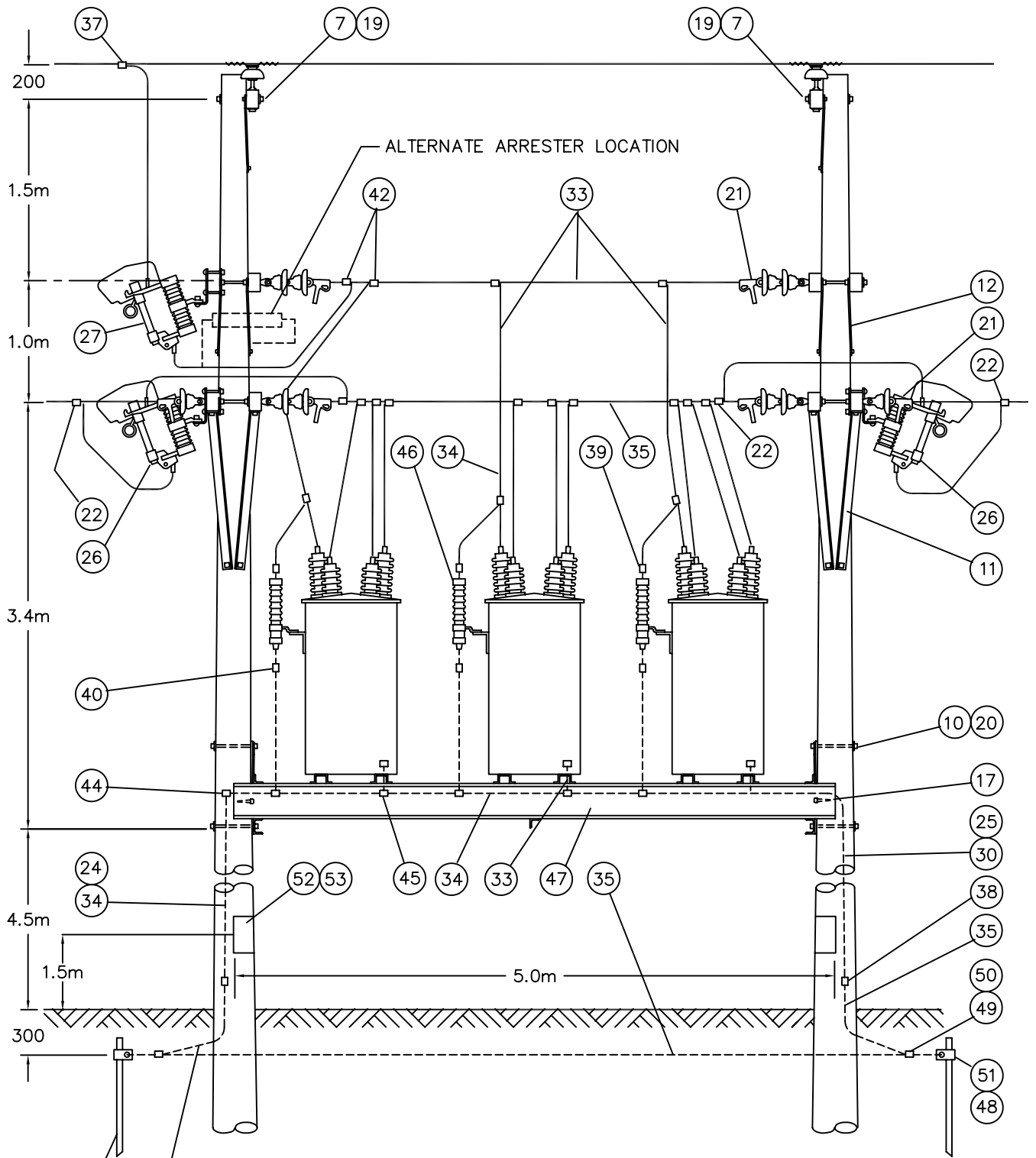
APPROVAL L.MOEN	DESIGN CHK. D.DONAIS	DRN.D.REDEKOPP CHKD. 2018-12-17	TRANSFORMER STRUCTURE – 3Ø TOWN SUBSTATION 25kV – 2.4/4.16kV	
DATE OF ISSUE	GF8E9E13	DRAWING NO. A-08-02	SHEET 3 of 3	REV. D

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
1	1-08-38	10	BOLT CARRIAGE -3/8" x 4 1/2"
2	1-09-18	4	BOLT DOUBLE ARMING -5/8" x 18"
3	1-09-20	8	BOLT DOUBLE ARMING -5/8" x 20"
4	1-11-18	2	BOLT EYE -5/8" x 18"
5	1-12-08	4	BOLT MACHINE -1/2" x 8"
6	1-13-12	2	BOLT MACHINE -5/8" x 12"
7	1-13-14	2	BOLT MACHINE -5/8" x 14"
8	1-13-18	2	BOLT MACHINE -5/8" x 18"
9	1-13-20	2	BOLT MACHINE -5/8" x 20"
10	1-14-14	4	BOLT MACHINE -3/4" x 14"
11	1-17-72	4	BRACE ALLEY ARM
12	1-19-32	10	BRACE CROSSARM -32"
13	1-29-08	4	CROSSARM -3 3/4" x 4 3/4" x 8'
14	1-29-10	6	CROSSARM -4" x 5" x 10'
15	1-50-00	18	NUT EYE
16	1-53-09	6	PIN STEEL -6" x 1" THREAD
17	1-78-12	8	SCREW LAG -1/2" x 4 1/2"
18	1-93-30	4	WASHER ROUND -9/16"
19	1-93-42	58	WASHER SQUARE - 2 1/4" x 2 1/4" x 13/16" HOLE
20	1-93-95	4	WASHER SQUARE - 3" x 3" x 13/16" HOLE
21	2-02-03	20	CLAMP DEAD-END
22	2-06-XX	8	AMPACT
24	1-85-00	1/2 lb	STAPLE FENCE
25	1-85-38	20	STAPLE MOULDING
26	2-12-63	6	CUTOUT LOAD-BREAK -27 kV 200 AMP
27	2-12-62	3	CUTOUT LOAD-BREAK -27 kV 100 AMP
28	2-20-23	6	INSULATOR PIN
29	2-22-06	28	INSULATOR SUSPENSION CP8080
30	2-27-00	40 ft	MOULDING GROUND WIRE
31	2-60-10	4	ROD GROUND -10'

SaskPower - DISTRIBUTION STANDARDS

DRN.	DESIGN CHK.	APPROVAL	TRANSFORMER STRUCTURE - 3Ø TOWN SUBSTATION 25/2.4 kV - DOUBLE FEEDER	
CHKD.				
DATE	DATE	DATE		
DATE OF ISSUE 87-12-01		DRAWING NO: A-08-03	SHEET 1 of 5	REV. A



FOR MAINTENANCE ONLY
 -DO NOT BUILD-
 FORMERLY A6-32 DRAWING

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SASKATCHEWAN POWER CORP. - DISTRIBUTION ENGINEERING STANDARDS

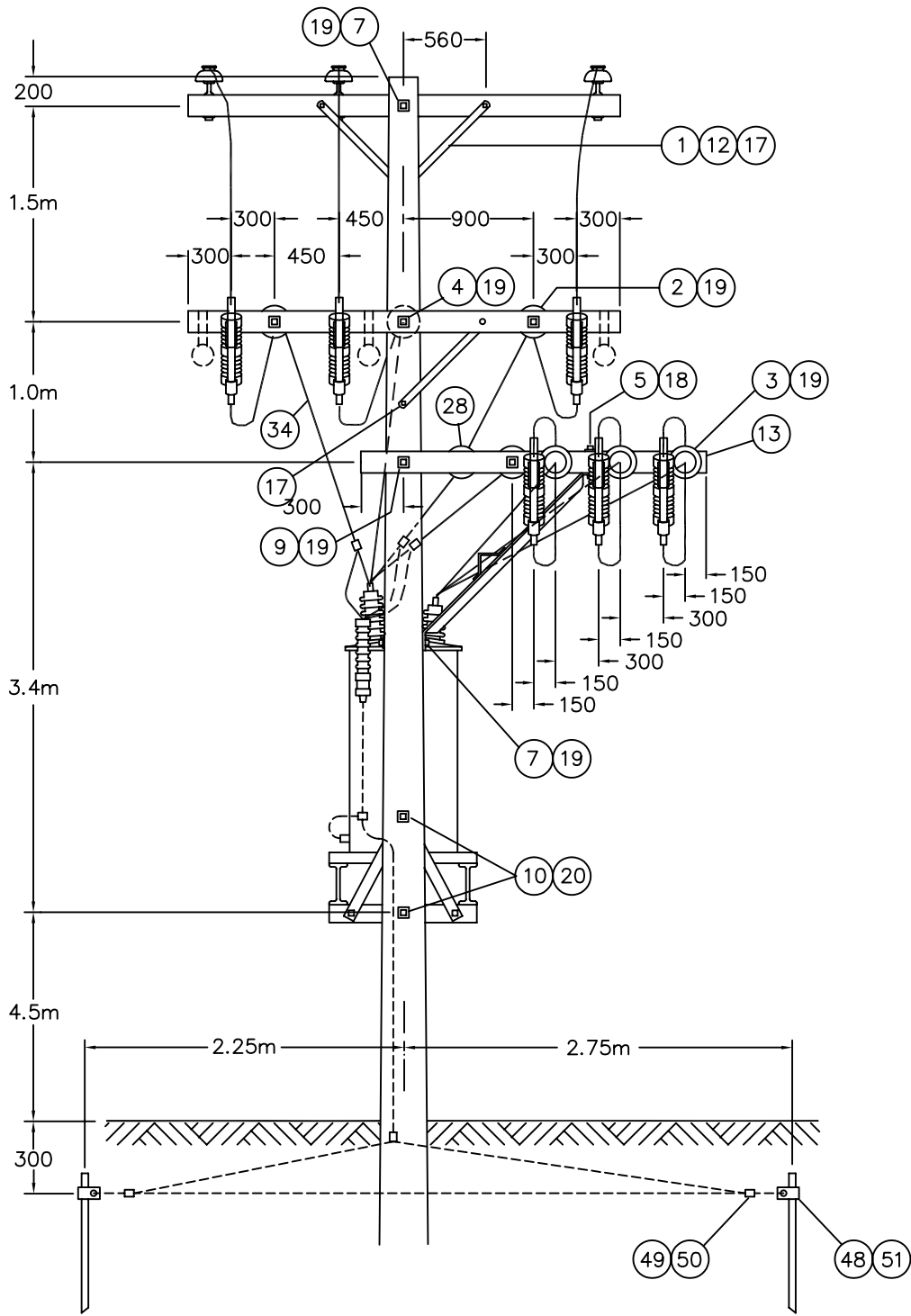
DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER STRUCTURE - 3Ø TOWN SUBSTATION 25/2.4 kV - DOUBLE FEEDER
CHKD. <i>FTK</i>	DATE	DATE	DATE	
DATE 86-05-28	DATE	DATE	DATE	
DATE OF ISSUE 87-06-01	DRAWING NO. A-08-03		SHEET 2 of 5	REV. 0

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
33	2-83-02	35 m	WIRE CU-#2/7 STR
34	2-83-20	40 m	WIRE CU-#2/0 /7 STR
35	2-98-01	55 m	WIRE CU-#4/0 /19 STR
37	5-09-XX	3	CRIMPIT
38	5-09-15	9	CRIMPIT #2/0 TO #4/0
39	5-09-25	3	CRIMPIT #6 TO #2/0
40	5-09-27	3	CRIMPIT #6 TO #2
41	5-09-29	3	CRIMPIT #4/0 TO #4/0
42	5-12-01	9	CRIMPIT #2 TO #2
44	5-12-10	6	CRIMPIT #2/0 TO #2/0
45	5-12-25	3	CRIMPIT #2 TO #2/0
46	6-02-21	3	ARRESTER-21 kV (RURAL)
47	8-30-50	1	PLATFORM ALUMA-FORM - 5 m
48	70-18-13	4	CADWELD CARTRIDGE COMPLETE WITH POWDER
49	70-18-14	3	CADWELD CARTRIDGE COMPLETE WITH POWDER
50	70-18-56	1	CADWELD MOULD
51	70-18-66	1	CADWELD MOULD
52	05-640-000	2	SIGN "DANGER H.V."
53	7-63-30	1/4 lb	NAILS SPIRAL - 4"

SaskPower - DISTRIBUTION STANDARDS

DRN.	DESIGN CHK.	APPROVAL	TRANSFORMER STRUCTURE - 3Ø TOWN SUBSTATION 25/2.4 kV - DOUBLE FEEDER	
CHKD.				
DATE	DATE	DATE		
DATE OF ISSUE 95-07-10		DRAWING NO: A-08-03	SHEET 3 of 5	REV. B

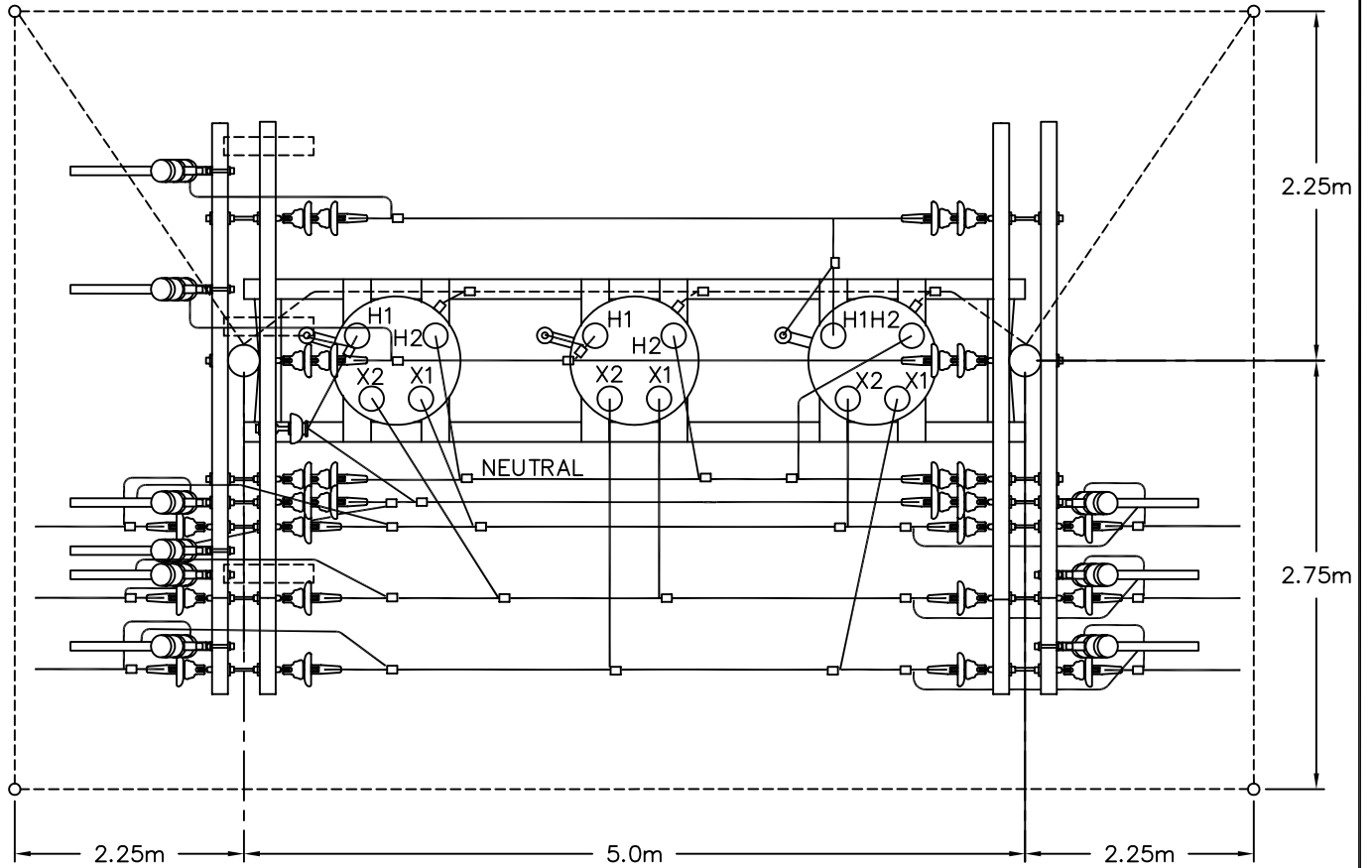


FOR MAINTENANCE ONLY
 -DO NOT BUILD-
 FORMERLY A6-32 DRAWING

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SASKATCHEWAN POWER CORP. - DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER STRUCTURE - 3Ø TOWN SUBSTATION 25/2.4 kV - DOUBLE FEEDER
CHKD. <i>FTK</i>				
DATE 86-05-29	DATE	DATE	DATE	
DATE OF ISSUE 87-06-01	DRAWING NO. A-08-03		SHEET 4 of 5	REV. 0



NOTE: 3 PHASE PRIMARY NOT SHOWN FOR CLARITY.

FOR MAINTENANCE ONLY
 -DO NOT BUILD-
 FORMERLY A6-32 DRAWING

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SASKATCHEWAN POWER CORP. - DISTRIBUTION ENGINEERING STANDARDS

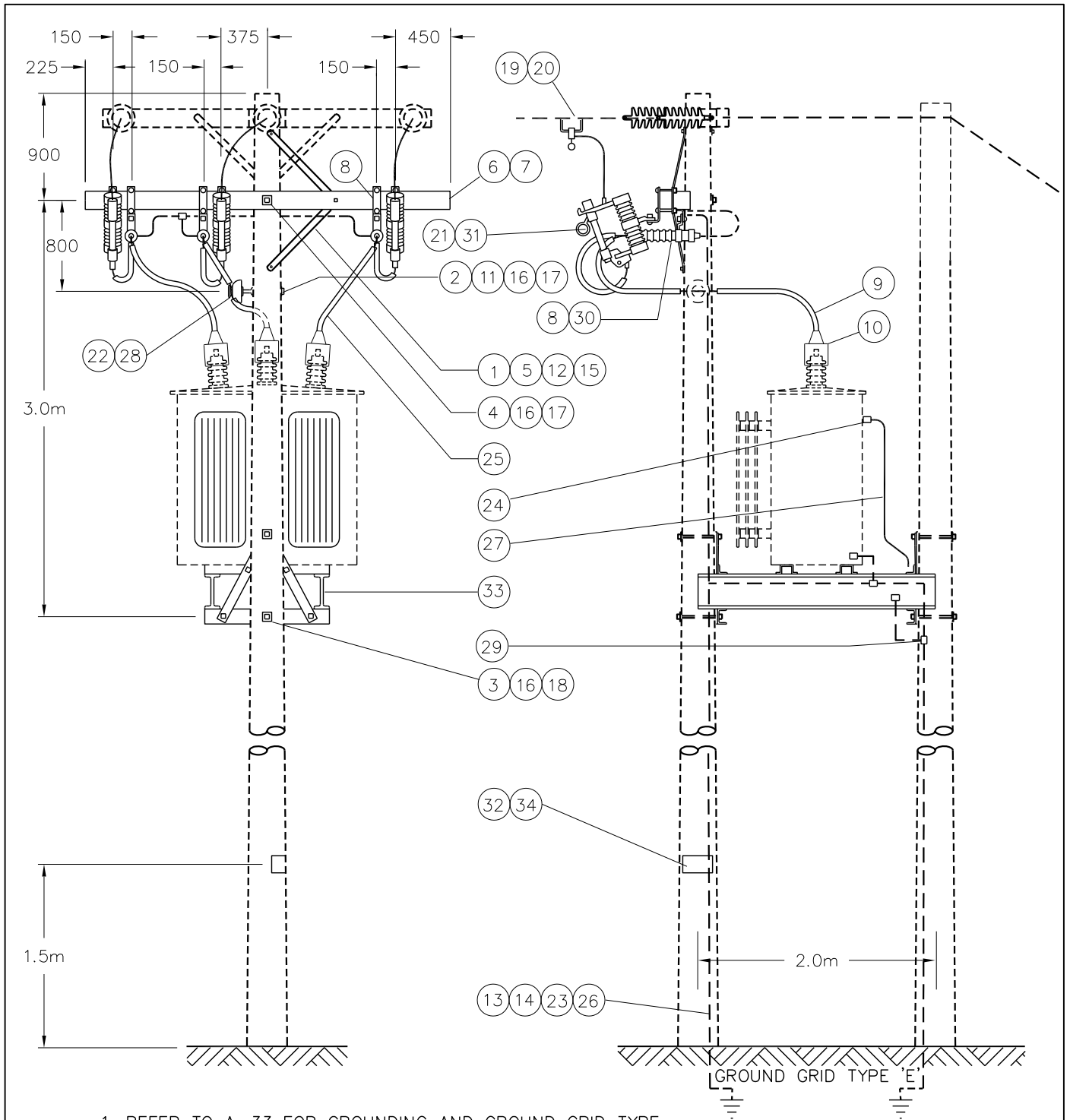
DRN. <i>DC</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	TRANSFORMER STRUCTURE - 3Ø TOWN SUBSTATION 25/2.4 kV - DOUBLE FEEDER
CHKD. <i>FTK</i>	DATE	DATE	DATE	
DATE 86-05-30	DATE	DATE	DATE	
DATE OF ISSUE 87-06-01	DRAWING NO. A-08-03		SHEET 5 of 5	REV.

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
1	1 08 38	1	BOLT CARRIAGE - 3/8" x 4 1/2"
2	1 13 12	1	BOLT-MACHINE-5/8" x 12"
3	1 13 14	4	BOLT MACHINE - 5/8" x 14"
4	1 13 18	1	BOLT MACHINE - 5/8" x 18"
5	1 19 32	2	BRACE CROSSARM - 32"
6	1 29 10	1	CROSSARM WOOD - 4" x 5" x 10'
7	1 32 86	1	GAIN POLE WOOD
8	1 35 32	3	BRACKET-X ARM FOR CUTOUTS, ARR, OR TERM
9	1 35 38	12ft.	RISER COVER FOR WILDLIFE GUARD
10	1 35 40	3	WILDLIFE GUARD, POLYMER TYPE
11	1 53 13	1	FEMALE INSULATOR PIN
12	1 78 12	2	SCREW LAG - 1/2" x 4 1/2"
13	1 85 01	1 lb	STAPLE FENCE
14	1 85 02	24	STAPLE MOULDING
15	1 93 25	2	WASHER - LOCK DOUBLE COIL SPRING - 3/8"
16	1 93 27	5	WASHER - LOCK DOUBLE COIL SPRING - 5/8"
17	1 93 42	3	WASHER - SQUARE 2 1/4" x 2 1/4" - 13/16" HOLE
18	1 93 96	4	WASHER - CURVED 3" x 3" - 13/16" HOLE
19	2 02 71	3	CLAMP - LIVELINE
20	2 02 8X	3	CLAMP - HOTLINE, BAIL (SEE NOTE 1)
21	2 12 67	3	CUTOUT - 27 kV 100 AMP
22	2 20 23	1	PIN -TYPE INSULATOR
23	2 27 00	4	MOULDING - WOOD - 10' LONG-FOR GROUND WIRE
24	2 65 XX	3	CONNECTOR HYLUG
25	2 83 02	12 m	WIRE CU - #2/7 STR
26	2 83 20	22 m	WIRE CU - #2/0 /7 STR
27	2 XX XX	9 m	WIRE RISER SECONDARY IF REQUIRED
28	2 97 28	1.5m	TIE WIRE
29	5 12 10	5	CRIMPIT #2/0 TO #2/0
30	6 02 21	3	ARRESTER - 21 kV (RURAL)
31	7 38 XX	3	FUSE BUTTON HEAD T-LINK (COMMERCIAL)
31	7 41 XX	3	FUSE BUTTON HEAD X-LINK (OILFIELD)
32	7 69 62	0.08	WOOD SCREW - #10 -1 1/2" ROBERTSON ROUND
33	8 30 46	1	PLATFORM-2 m
34	5 640 000	2	SIGN "DANGER H.V."

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. LB	TRANSFORMER STRUCTURE - 3Ø PLATFORM MOUNT	
M. ERETH	L. BAILEY	CHKD.		
		2013-07-22		
DATE OF ISSUE: 2013/08/19		DRAWING NO: A-08-04	SHEET 1 OF 4	REV. F



1. REFER TO A-33 FOR GROUNDING AND GROUND GRID TYPE.
2. REFER TO A-08-00 FOR SECONDARY RISER SIZE IF REQUIRED & LOAD FUSE SIZE.
3. REFER TO A-24 FOR METERING MATERIAL AND LOCATION.
4. RUN GROUND WIRE ON OPPOSITE SIDE OF CUTOUTS.
5. THE TRANSFORMER TANK AND PLATFORM MUST BE GROUNDED SEPARATELY.
6. MAXIMUM 450 KVA TRANSFORMER.
7. MINIMUM 12.2 m (40') POLE RURAL; MINIMUM 13.7 m (45') POLE URBAN.
8. USE MINIMUM CLASS 3 POLE.
9. REFER TO A-32 FOR GUYING & ANCHORING.
10. WHEN SERVICING A 480V DELTA LOAD WITH A DELTA-WYE TRANSFORMER (16 85 XX), THE GROUND STRAP ON THE XO BUSHING MUST BE REMOVED.
11. INSTALL RISER COVER 5-6 INCHES BELOW CUTOUT

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

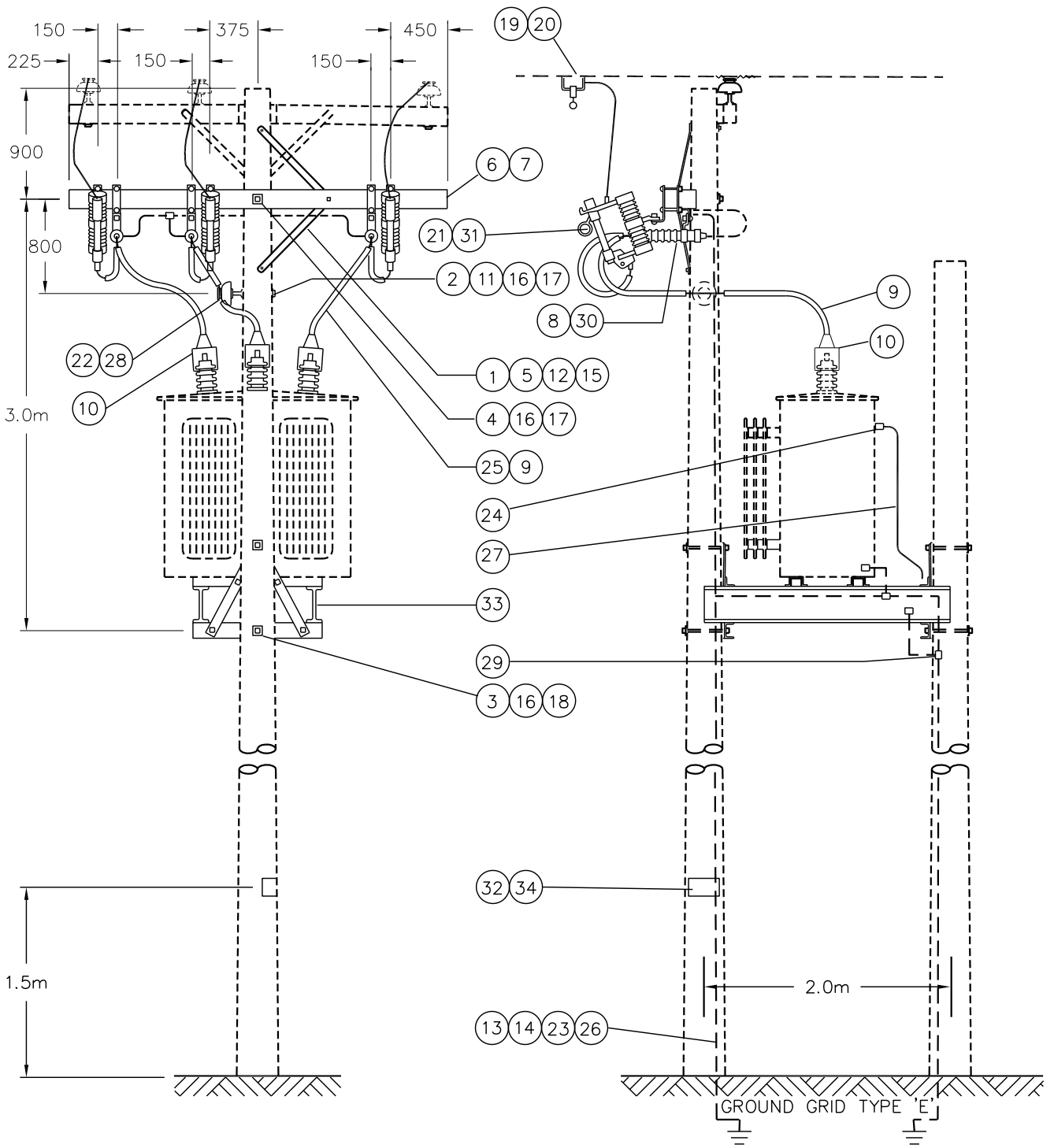
SaskPower – DISTRIBUTION STANDARDS				
APPROVAL	DESIGN CHK.	DRN. DC	TRANSFORMER STRUCTURE 3 ϕ PLATFORM MOUNT	
L.MOEN	L. BAILEY	CHKD.		
		2015-12-31		
DATE OF ISSUE	2016/02/05	DRAWING NO. A-08-04	SHEET 2 of 4	REV. G

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
			<p>NOTE:</p> <p>1. REFER TO SECTION A-36 FOR SPECIFIC CONNECTOR MATERIAL REQUIREMENTS.</p>

SaskPower - DISTRIBUTION STANDARDS

APPROVAL M. ERETH	DESIGN CHK L. BAILEY	DRN. LB CHKD.	TRANSFORMER STRUCTURE – 3Ø PLATFORM MOUNT	
		2013-07-22		
DATE OF ISSUE: 2013/08/19		DRAWING NO: A-08-04	SHEET 3 OF 4	REV. F



1. ALTERNATE A-08-04 FOR TANGENT INSTALLATION. SECOND POLE 5' SHORTER TO ALLOW INSTALLATION UNDER ENERGIZED LINE.
2. INSTALL RISER COVER 5-6" BELOW CUTOUT

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

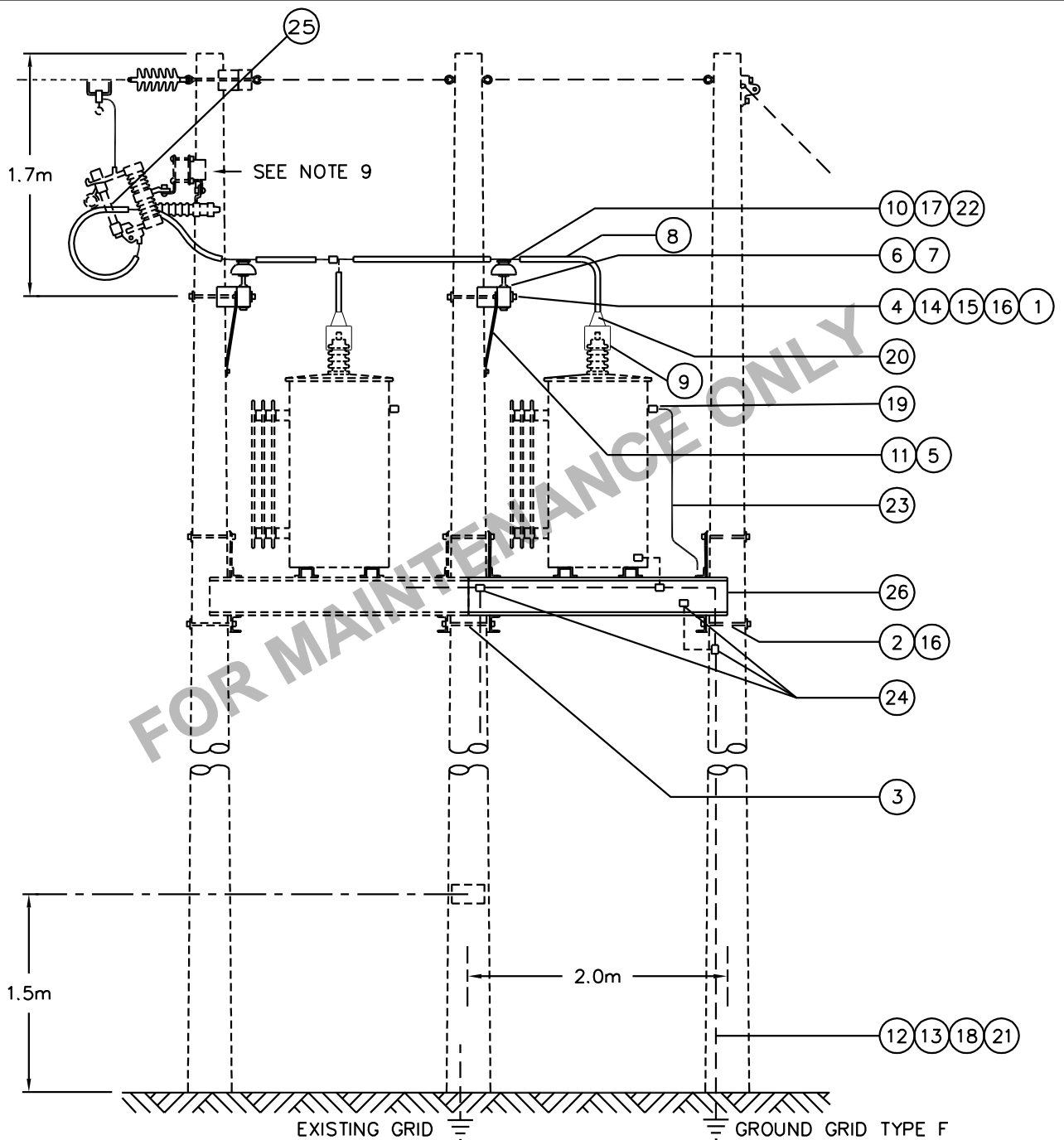
SaskPower – DISTRIBUTION STANDARDS				
APPROVAL	DESIGN CHK.	DRN. DC	TRANSFORMER STRUCTURE – 3Ø PLATFORM MOUNT	
L.MOEN	L. BAILEY	CHKD.		
		2015-12-31		
DATE OF ISSUE	2016/02/05	DRAWING NO. A-08-04	SHEET 4 of 4	REV. C

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
1	1 08 38	4	BOLT CARRIAGE - 3/8" x 4 1/2"
2	1 13 14	2	BOLT MACHINE - 5/8" x 14"
3	1 13 16	1	BOLT MACHINE - 5/8" x 16"
4	1 13 18	2	BOLT MACHINE - 5/8" x 18"
5	1 19 32	4	BRACE CROSSARM - 32"
6	1 29 10	2	CROSSARM WOOD - 4" x 5" x 10"
7	1 32 86	2	GAIN WOOD POLE
8	1 35 38	30ft.	RISER COVER FOR WILDLIFE GUARD
9	1 35 40	3	WILDLIFE GUARD, POLYMER TYPE
10	1 53 09	6	CROSSARM INSULATOR PIN
11	1 78 12	2	SCREW LAG -1/2" x 4 1/2"
12	1 85 01	¼ lb	STAPLE FENCE
13	1 85 02	12	STAPLE MOULDING
14	1 93 25	4	WASHER - LOCK DOUBLE COIL SPRING - 3/8"
15	1 93 27	2	WASHER - LOCK DOUBLE COIL SPRING - 5/8"
16	1 93 42	6	WASHER - SQUARE - 2 1/4" x 2 1/4" x 13/16" HOLE
17	2 20 23	6	PIN - TYPE INSULATOR
18	2 27 00	20 ft	MOULDING GROUND WIRE
19	2 65 XX	3	CONNECTOR HYLUG (SEE NOTE 1)
20	2 83 02	20 m	WIRE CU -#2/7 STR
21	2 83 20	10 m	WIRE CU - 2/0 /19 STR
22	2 97 28	3m	TIE WIRE
23	2 XX XX	12 m	WIRE SECONDARY RISER IF REQUIRED (SEE NOTE 2)
24	5 12 10	3	CRIMPIT - 2/0 TO 2/0
25	7 38 XX	3	FUSE BUTTON HEAD T-LINK (COMMERCIAL)
25	7 41 XX	3	FUSE BUTTON HEAD T-LINK (OILFIELD)
26	8 30 46	1	PLATFORM -2 m
			<p>NOTE:</p> <p>1. REFER TO SECTION A-36 FOR SPECIFIC MATERIAL REQUIREMENTS.</p> <p>2. RISER LENGTH IS FOR SINGLE RISERS. FOR PARALLEL RISERS, INCREASE WIRE LENGTH ACCORDINGLY.</p>

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. LB	TRANSFORMER STRUCTURE - 3Ø PLATFORM MOUNT- ADDITIONAL TRANSF.
M. ERETH	L. BAILEY	CHKD.	
		2014-01-10	
DATE OF ISSUE: 2014/11/17		DRAWING NO: A-08-05	SHEET 1 OF 2 REV. E



1. ADDITIONAL GRID IS INSTALLED FROM NEW POLE, TIE IN EXISTING GRID, TRANSFORMER AND BOND TO PLATFORM, REFER TO A-33 FOR GROUND GRID & LOCATION.
2. REFER TO A-24 FOR METERING MATERIAL & LOCATION.
3. REFER TO A-08-00 FOR SECONDARY RISER SIZE IF REQUIRED, AND LOAD FUSE SIZE.
4. OBSERVE PROPER PHASING WHEN CONNECTING ADDITIONAL TRANSFORMER.
5. REFER TO A-32 FOR GUYING & ANCHORING.
6. MAXIMUM 450 KVA TRANSFORMER.
7. FOR DOUBLE TRANSFORMER INSTALLATION COMBINE DRAWINGS A-08-04 & A-08-05.
8. TO TAKE O/H SECONDARY OFF PERPENDICULAR TO PRIMARY, USE 20 m MAXIMUM QUAD. SLACK SPAN THEN CONVERT TO NORMAL SPAN OPEN WIRE CONSTRUCTION.
9. MOVE CUTOUT/ARRESTER ARM TO OPPOSITE SIDE OF POLE.
10. DEADEND #2 Cu. BUS BY LOOPING AROUND PIN AND CRIMP - EXTEND TAIL TO CUTOUT & BUSHING.
11. WHEN SERVICING A 480V DELTA LOAD WITH A DELTA-WYE TRANSFORMER (16 85 XX), THE GROUND STRAP ON THE XO BUSHING MUST BE REMOVED.
12. INSTALL RISER COVER 5-6" BELOW CUTOUT

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

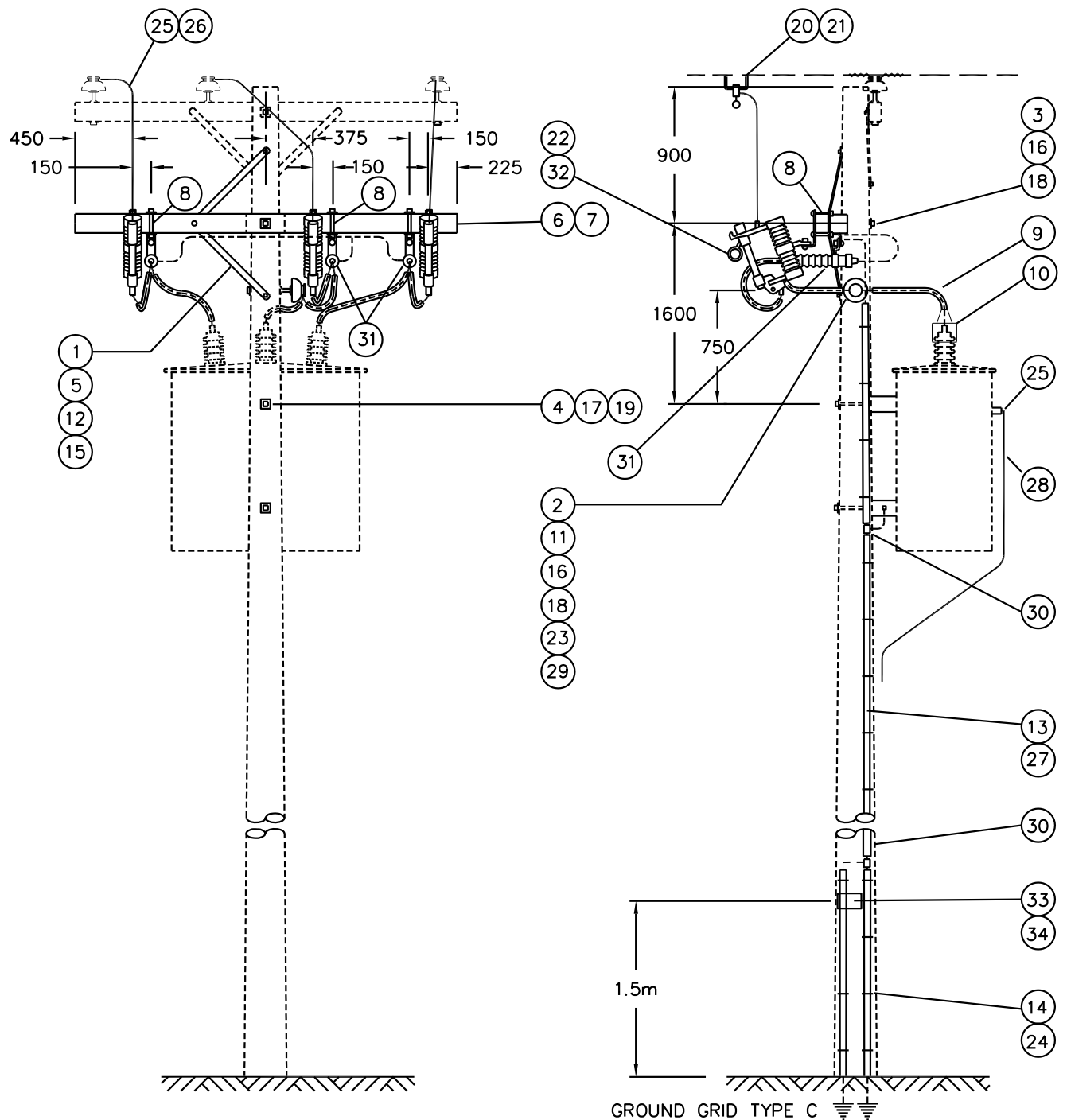
SaskPower - DISTRIBUTION STANDARDS			
APPROVAL L.MOEN	DESIGN CHK. A.UHREN	DRN. E.GOTANA CHKD. 2017-03-16	TRANSFORMER STRUCTURE - 3 ϕ PLATFORM MOUNT-ADDITIONAL TRANSF.
DATE OF ISSUE	2017/05/03	DRAWING NO. A-08-05	
		SHEET 2 of 2	REV. F

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
1	1 08 38	1	BOLT CARRIAGE - 3/8" x 4 1/2"
2	1 13 12	1	BOLT MACHINE - 5/8" x 12"
3	1 13 18	1	BOLT MACHINE - 5/8" x 18"
4	1 14 12	2	BOLT MACHINE - 3/4" x 12"
5	1 19 32	2	BRACE CROSSARM - 32"
6	1 29 10	1	CROSSARM WOOD - 4" x 5" x 10'
7	1 32 86	1	GAIN POLE WOOD
8	1 35 32	3	BRACKET - X ARM FOR CUTOUTS, ARR, OR TERM
9	1 35 38	12ft.	RISER COVER FOR WILDLIFE GUARD.
10	1 35 40	3	WILDLIFE GUARD, POLYMER TYPE.
11	1 53 13	1	FEMALE INSULATOR PIN
12	1 78 12	2	SCREW LAG - 1/2" x 4 1/2"
13	1 85 01	½ lb	STAPLE FENCE
14	1 85 02	18	STAPLE MOULDING (SEE NOTE 1)
15	1 93 25	1	WASHER - LOCK DOUBLE COIL SPRING - 3/8"
16	1 93 27	2	WASHER - LOCK DOUBLE COIL SPRING - 5/8"
17	1 93 28	2	WASHER - LOCK DOUBLE COIL SPRING - 3/4"
18	1 93 42	4	WASHER - SQUARE - 2 1/4" x 2 1/4" - 13/16" HOLE
19	1 93 96	2	WASHER - CURVED - 3" x 3" - 13/16" HOLE
20	2 02 71	3	CLAMP - LIVELINE
21	2 02 8X	3	CLAMP - HOTLINE, BAIL (SEE NOTE 2)
22	2 12 67	3	CUTOUT-27 kV 100 AMP
23	2 20 23	1	PIN - TYPE INSULATOR
24	2 27 00	3	MOLDING WOOD - 10' LONG (SEE NOTE 1)
25	2 65 XX	3	CONNECTOR HYLUG (SEE NOTE 2)
26	2 83 02	9 m	WIRE CU - #2/7 STR
27	2 83 04	15 m	WIRE CU - #4/7 STR
28	2 XX XX	3 m	WIRE SECONDARY RISER (SEE NOTE 3)
29	2 97 28	1.5m	TIE WIRE
MATERIAL LIST CON'T ON SHT. 3 OF 3.			

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. LB	TRANSFORMER STRUCTURE - 3Ø POLE MOUNT
M. ERETH	L. BAILEY	CHKD.	
		2013-07-22	
DATE OF ISSUE: 2013/08/19		DRAWING NO: A-08-06	SHEET 1 OF 3 REV. G



1. REFER TO A-33 FOR GROUNDING AND GROUND GRID TYPE.
2. REFER TO A-08-00 FOR SECONDARY RISER SIZE IF REQUIRED & LOAD FUSE SIZE.
3. RUN GROUND WIRE ON OPPOSITE SIDE OF CUTOUTS.
4. MINIMUM 12.2m(40') POLE RURAL; THE STRUCTURE CAN BE BUILT ON AN EXISTING 10.7m(35') POLE IF THERE IS NO OVERHEAD SECONDARY, IF IT IS NOT IN A FARMYARD, AND THE POLE IS IN GOOD CONDITION; MINIMUM 13.7m(45') POLE URBAN.
5. REFER TO A-08-00 SHT. 25 FOR TRANSFORMER POLE LOADING.
6. NEW CONSTRUCTION 150 KVA TRANSFORMER TO BE PLATFORM MOUNTED.
100KVA TX MUST BE PLATFORM MOUNTED WHERE SOIL CONDITIONS REQUIRE.
7. WHEN SERVICING A 480V DELTA LOAD WITH A DELTA-WYE TRANSFORMER (16 85 XX), THE GROUND STRAP ON THE XO BUSHING MUST BE REMOVED.
8. INSTALL RISER COVER 5-6" BELOW CUTOUT

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SaskPower – DISTRIBUTION STANDARDS				
APPROVAL	DESIGN CHK.	DRN. DC	TRANSFORMER STRUCTURE – 3 ϕ POLE MOUNT	
L.MOEN	L. BAILEY	CHKD.		
		2015-12-31		
DATE OF ISSUE	2016/02/05	DRAWING NO. A-08-06	SHEET 2 of 3	REV. H

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
30	5 12 06	4	CONNECTOR CU – 4C4
31	6 02 21	3	ARRESTER 21 kV (RURAL)
31	8 02 18	3	ARRESTER 18 kV (URBAN)
32	7 38 XX	3	FUSE BUTTON HEAD T-LINK (COMMERCIAL)
32	7 41 XX	-	FUSE BUTTON HEAD X-LINK (OILFIELD)
33	7 69 62	0.04	WOOD SCREW - #10 -1 1/2" ROBERTSON ROUND (100/BOX)
34	5 640 000	1	SIGN "DANGER H.V."

NOTE:

1. QUANTITIES SHOWN ARE FOR RURAL CONSTRUCTION. IN URBAN AREAS, USE AN ADDITIONAL 1 OF 2 27 00 (MOULDING) AND 6 OF 1 85 02 (MOULDING STAPLES).
2. REFER TO SECTION A-36 FOR SPECIFIC MATERIAL REQUIREMENTS.
3. RISER LENGTH IS FOR SINGLE RISERS. FOR PARALLEL RISERS, INCREASE WIRE LENGTH ACCORDINGLY.

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. LB	TRANSFORMER STRUCTURE – 3Ø POLE MOUNT
M. ERETH	L. BAILEY	CHKD.	
		2013-07-22	
DATE OF ISSUE: 2013/08/19		DRAWING NO: A-08-06	SHEET 3 OF 3 REV. D

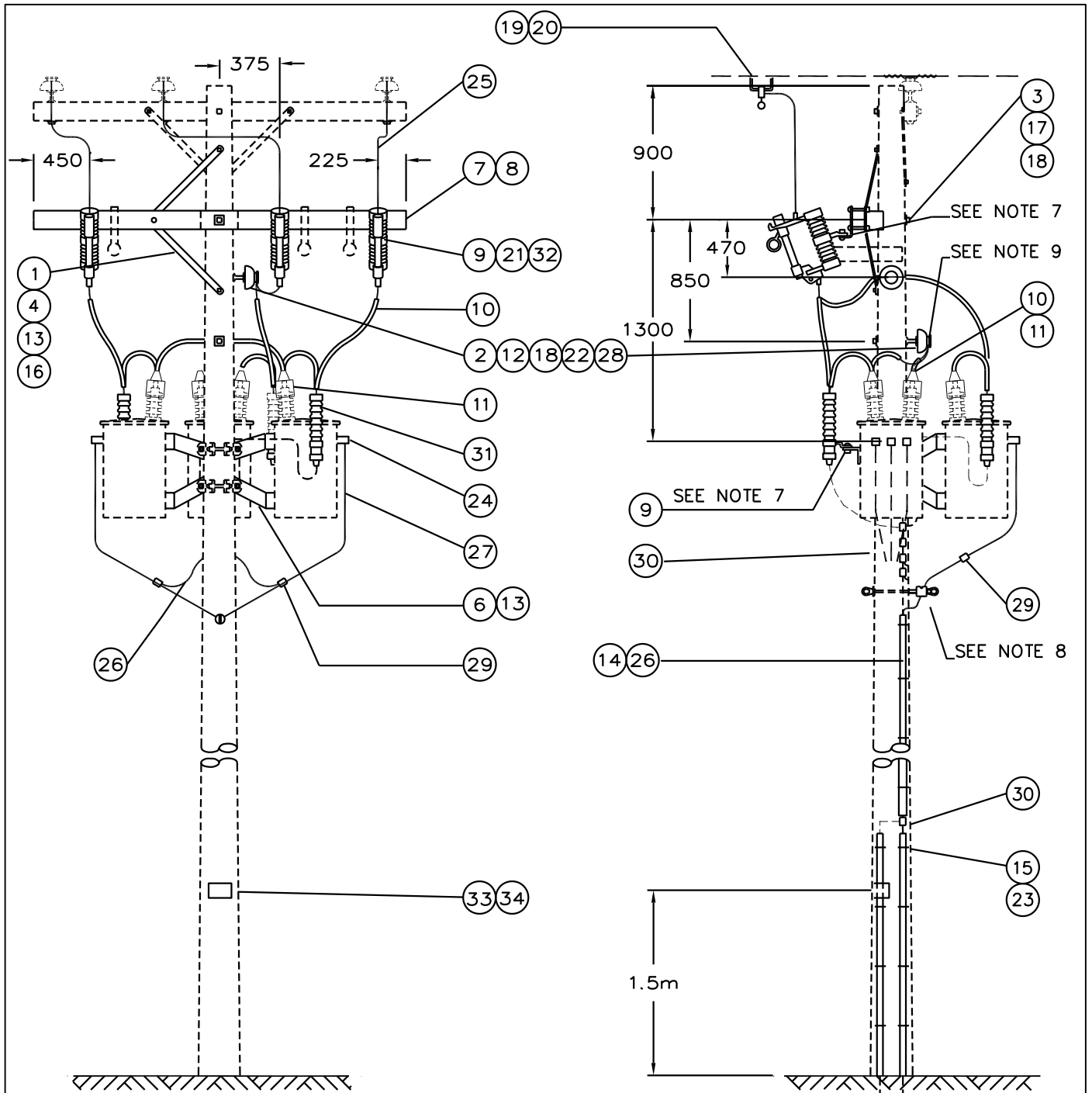
BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY		DESCRIPTION
		A	B	
1	1 08 38	1	1	BOLT CARRIAGE - 3/8" x 4 1/2"
2	1 13 12	2	2	BOLT MACHINE - 5/8" x 12"
3	1 13 18	1	1	BOLT MACHINE - 5/8" x 18"
4	1 19 32	2	2	BRACE CROSSARM-32"
5	1 21 04	--	--	SPREADER BRACKET (IF REQUIRED)
6	1 21 29	1	1	BRACKET CLUSTER – UP TO 167 kVA
7	1 29 10	1	1	CROSSARM WOOD - 4" x 5" x 10'
8	1 32 86	1	1	GAIN POLE WOOD
9	1 35 32	3	3	BRACKET – X ARM FOR CUTOUTS, ARR, OR TERM
10	1 35 38	15ft.	15ft.	RISER COVER FOR WILDLIFE GUARD.
11	1 35 40	6	6	WILDLIFE GUARD, POLYMER TYPE
12	1 53 13	2	2	FEMALE INSULATOR PIN
13	1 78 12	2	2	SCREW LAG-1/2" x 4 1/2"
14	1 85 01	½ lb	½ lb	STAPLE FENCE
15	1 85 02	18	24	STAPLE MOULDING
16	1 93 25	1	1	WASHER LOCK - DOUBLE COIL SPRING - 3/8"
17	1 93 27	1	1	WASHER LOCK - DOUBLE COIL SPRING - 5/8"
18	1 93 42	6	6	WASHER-SQUARE – 2 ¼" x 2 ¼" x 13/16" HOLE
19	2 02 71	3	3	CLAMP LIVELINE
20	2 02 8X	3	3	CLAMP-HOTLINE, BAIL
21	2 12 67	3	3	CUTOUT-27 kV 100 AMP
22	2 20 23	2	2	PIN -TYPE INSULATOR
23	2 27 00	3	4	MOULDING WOOD - 10'
24	2 65 XX	9	9	CONNECTOR HYLUG (SEE NOTE 1)
25	2 83 02	12 m	12 m	WIRE CU-#2/7 STR
26	2 83 04	16 m	18 m	WIRE CU-#4/7 STR
27	2 XX XX	18 m	18 m	WIRE SECONDARY RISER IF REQUIRED (SEE NOTE 3)
28	2 97 28	3 m	3 m	TIE WIRE
29	5 09 XX	3	3	CONNECTOR AL – CRIMPIT (SEE NOTE 1)
30	5 12 06	9	9	CONNECTOR CU – 4C4
31	6 02 21	3	--	ARRESTER 21 kV (RURAL)
31	8 02 18	--	3	ARRESTER 18 kV (URBAN)
32	7 38 XX	3	3	FUSE BUTTON HEAD
32	7 41 XX	3	3	FUSE BUTTON HEAD T-LINK (OILFIELD)

MATERIAL LIST CONTINUED ON SHEET 3 OF 4

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. LB	TRANSFORMER STRUCTURE – 3Ø CLUSTER MOUNT
M. ERETH	L. BAILEY	CHKD.	
		2014-01-10	
DATE OF ISSUE: 2014/11/17		DRAWING NO: A-08-07	SHEET 1 of 4
			REV. I



1. REFER TO A-33 FOR GROUNDING AND GROUND GRID TYPE.
2. REFER TO A-08-00 FOR SECONDARY RISER SIZE IF REQUIRED.
3. RUN GROUND WIRE ON OPPOSITE SIDE OF CUTOUTS.
4. THE TRANSFORMER TANK AND CLUSTER BRACKET MUST BE GROUND SEPARATELY.
5. MINIMUM 12.2m(40') POLE RURAL; THE STRUCTURE CAN BE BUILT ON AN EXISTING 10.7m(35') POLE, IF THERE IS NO OVERHEAD SECONDARY, IF IT IS NOT IN A FARMYARD, AND THE POLE IS IN GOOD CONDITION; MINIMUM 13.7m(45') POLE URBAN.
6. REFER TO A-08-00 SHT. 25 FOR CLASS OF POLE.
7. MOUNT ARRESTER ON ARM IF IT CANNOT BE MOUNTED ON TRANSFORMER.
8. IF REQUIRED TO SUPPORT CABLES NEAR TERMINALS , USE SPREADER BRACKET (1 21 04) & SQUARE WASHER (1 93 42).
9. ONLY REQUIRED FOR DELTA CONNECTED PRIMARY.
10. INSTALL RISER COVER 5-6" BELOW CUTOUT

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

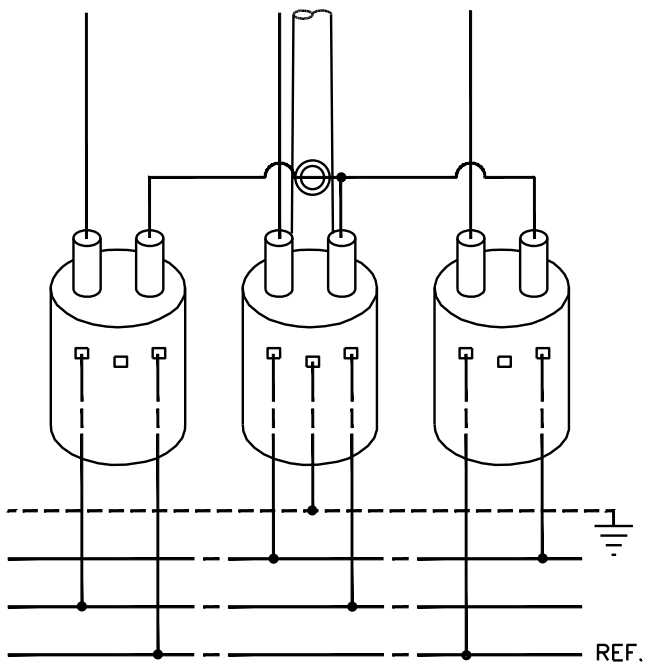
SaskPower – DISTRIBUTION STANDARDS			
APPROVAL L.MOEN	DESIGN CHK. L. BAILEY	DRN. DC CHKD. 2015-12-31	TRANSFORMER STRUCTURE – 3Ø CLUSTER MOUNT
DATE OF ISSUE	2016/02/05	DRAWING NO. A-08-07	
		SHEET 2 of 4	REV. G

BILL OF MATERIAL

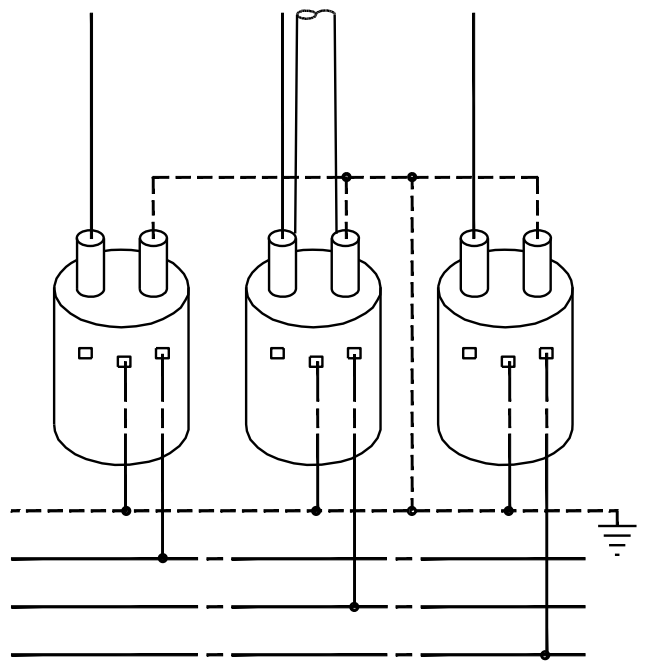
ITEM NO.	CODE NO.	QUANTITY		DESCRIPTION
		A	B	
33	7 69 62	0.04	0.04	WOOD SCREW - #10 -1 1/2" ROBERTSON ROUND (100/BOX)
34	5 640 000	1	1	SIGN "DANGER H.V."
<p>NOTE:</p> <ol style="list-style-type: none"> 1. REFER TO SECTION A-36 FOR SPECIFIC MATERIAL REQUIREMENTS. 2. REDUCE ITEMS 2, 12, 18, 22, AND 28 BY ONE FOR PRIMARY GROUNDED WYE CONNECTIONS. 3. RISER LENGTH IS FOR SINGLE RISERS. FOR PARALLEL RISERS, INCREASE WIRE LENGTH ACCORDINGLY. 4. COLUMN 'A' IS RURAL, 'B' IS URBAN. 5. IF USING SPREADER BRACKET, ITEM 18 SQUARE WASHER IS REQUIRED. 6. REFER TO SECTION A - 08 -07, SHEET 4 OF 4, FOR DELTA CONFIGURATION WITH DOUBLE BUSHING USE QUANTITY OF 6 FOR ITEMS # 10 AND 11. 				

SaskPower - DISTRIBUTION STANDARDS

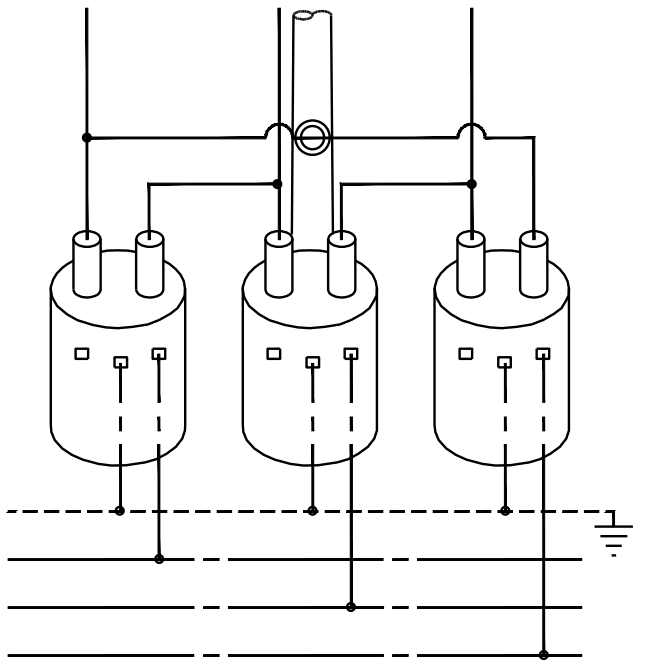
APPROVAL	DESIGN CHK	DRN. LB	TRANSFORMER STRUCTURE - 3Ø CLUSTER MOUNT	
M. ERETH	L. BAILEY	CHKD.		
		2013-07-22		
DATE OF ISSUE: 2013/08/19		DRAWING NO: A-08-07	SHEET 3 of 4	REV. D



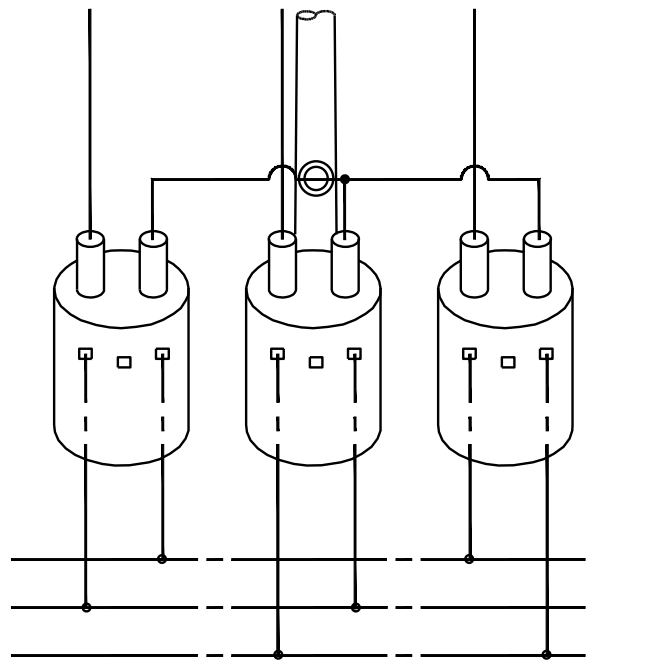
Y PRIMARY - 120/240 Δ SEC.
FOR STATION SERVICE ONLY



Y PRIMARY - 120/208 V. Y SEC.
- 277/480 V. Y SEC.
- 347/600 V. Y SEC.



Δ PRIMARY - 120/208 V. Y SEC.
- 277/480 V. Y SEC.
- 347/600 V. Y SEC.



Y PRIMARY - 480 V. Δ SEC.

1. OPEN WIRE SECONDARY SHOWN FOR CLARITY ONLY.
2. ARRESTERS NOT SHOWN FOR CLARITY.
3. SECONDARY NEUTRAL RISER SIZE TO BE SAME SIZE AS PHASE RISERS.
4. FOR DETAILS OF SPECIFIC CONNECTIONS SEE DWG. A-08-00 SHT. 8 TO 19.

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SaskPower - DISTRIBUTION STANDARDS

APPROVAL M. ERETH	DESIGN CHK. L. BAILEY	DRN. <i>RE</i> CHKD.	TRANSFORMER STRUCTURE - 3Ø CLUSTER MOUNT 3Ø SECONDARY CONNECTIONS	
DATE OF ISSUE	2014/11/17	DRAWING NO.	A-08-07	SHEET 4 of 4
			REV.	E

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
1	1 13 12	1	BOLT MACHINE – 5/8" X 12"
2	1 14 12	2	BOLT MACHINE – 3/4" X 12"
3	1 34 02	1	WILDLIFE GUARD - 16" DISK TYPE (SEE NOTE 3)
4	1 35 31	1	BRACKET - FOR CUTOUT, ARRESTER, TERMINATOR
5	1 35 38	6ft.	WILDLIFE GUARD - RISER COVER
6	1 35 40	-	WILDLIFE GUARD - BUSHING COVER, POLYMER (SEE NOTE 3)
7	1 78 12	1	SCREW LAG - 1/2" X 4 1/2"
8	1 85 01	1/2 lb	STAPLE – FENCE
9	1 85 02	18	STAPLE – MOULDING
10	1 93 27	1	WASHER LOCK - DOUBLE COIL SPRING – 5/8"
11	1 93 28	2	WASHER LOCK - DOUBLE COIL SPRING – 3/4"
12	1 93 42	1	WASHER – SQUARE – 2 1/4" x 2 1/4" x 13/16" HOLE
13	1 93 96	2	WASHER – CURVED – 3" x 3" x 13/16" HOLE
14	2 02 71	1	CLAMP - LIVELINE
15	2 02 8X	1	CLAMP- BAIL (SEE NOTE 1)
16	2 12 67	1	CUTOUT - 15 KV 100 AMPS
17	2 27 00	3	MOULDING WOOD – 10' LENGTH
18	2 83 02	2 m	WIRE CU - #2/7 STR
19	2 83 04	16 m	WIRE CU - #4/7 STR
20	2 XX XX	6 m	WIRE SECONDARY RISER (SEE NOTE 2)
21	5 09 XX	1	CONNECTOR AL – CRIMPIT (SEE NOTE 1)
22	5 12 06	2	CONNECTOR CU – 4C4
23	6 02 21	1	ARRESTER-21 KV (RURAL)
24	7 38 XX	1	FUSE BUTTON HEAD
24	7 41 XX	1	FUSE BUTTON HEAD T-LINK (OILFIELD)
25	7 69 62	0.04	WOOD SCREW - #10 1 1/2" ROBERTSON ROUND (100/BOX)
26	5 640 000	1	SIGN DANGER - "HIGH VOLTAGE ZONE"

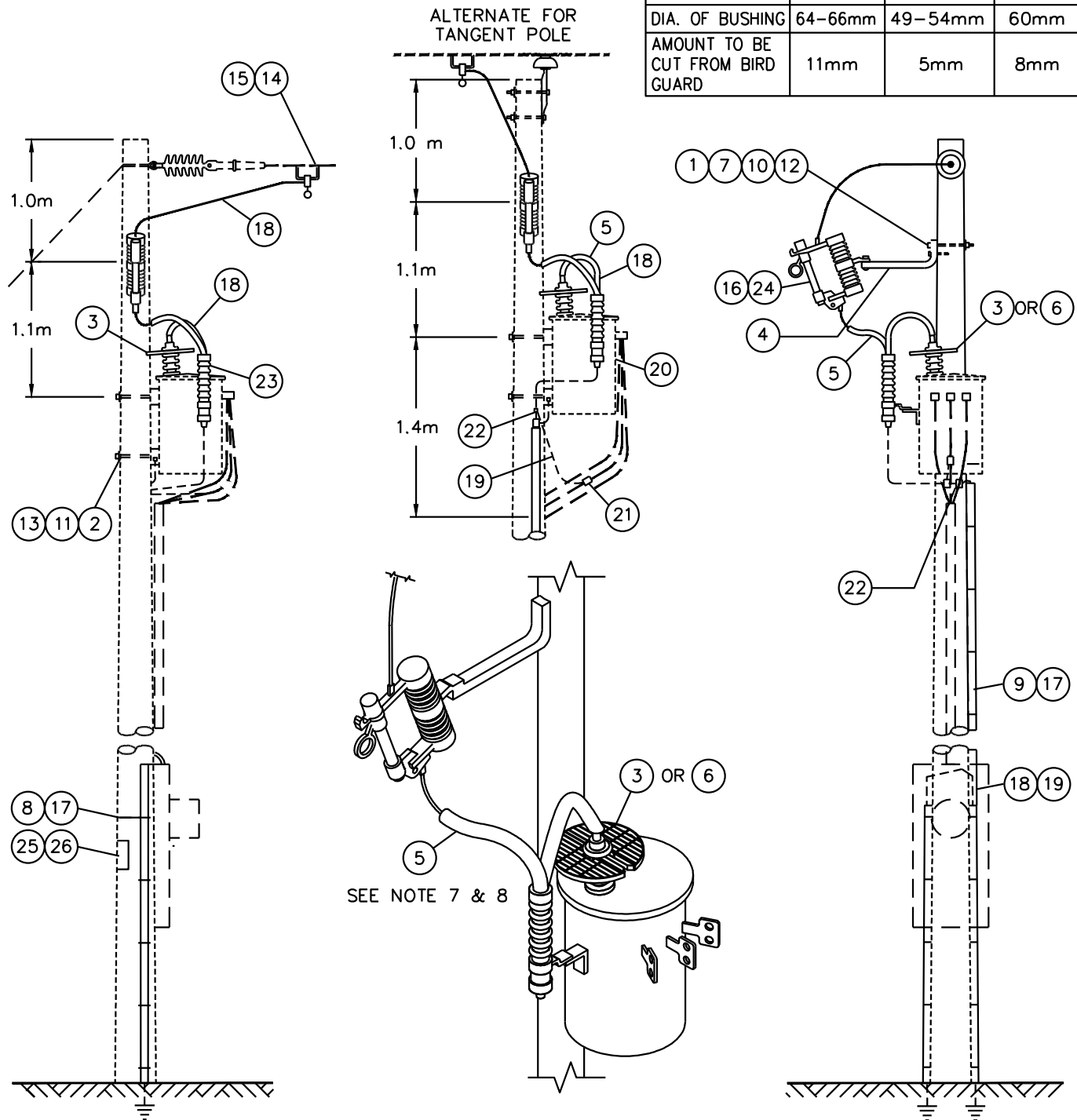
NOTE:

1. REFER TO SECTION A-36 FOR SPECIFIC MATERIAL REQUIREMENTS.
2. RISER LENGTH IS FOR SINGLE RISERS. FOR PARALLEL RISERS, INCREASE WIRE LENGTH ACCORDINGLY.
3. USE DISK OR BUSHING COVER AS AN OPTION.

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. LB	TRANSFORMER STRUCTURE - 1Ø OILFIELD AND RURAL (INCLUDING FARM)
L. MOEN	L. BAILEY	CHKD.	
		2015-02-05	
DATE OF ISSUE:	2016/02/05	DRAWING NO: A-08-08	SHEET 1 OF 2
			REV. I

	PTI	MOLONEY	SIEMENS
DIA. OF BUSHING	64-66mm	49-54mm	60mm
AMOUNT TO BE CUT FROM BIRD GUARD	11mm	5mm	8mm



GROUND GRID TYPE C

1. SEE SECTION A-33 FOR GROUNDING AND GROUND GRID TYPE.
2. RUN GROUND WIRE ON OPPOSITE SIDE OF CUTOUT.
3. SEE A-08-00 FOR SECONDARY RISER SIZE IF REQUIRED.
4. MINIMUM 12.2m(40') POLE RURAL; THE STRUCTURE CAN BE BUILT ON AN EXISTING 10.7m(35') POLE, IF THERE IS NO OVERHEAD SECONDARY, IF IT IS NOT IN A FARMYARD, AND THE POLE IS IN GOOD CONDITION.
5. THIS DRAWING COVERS ALL RURAL STRUCTURES OTHER THAN FARM SERVICES WITH NEUTRAL.
6. REFER TO A-08-00 SHT. 25 FOR TRANSFORMER POLE LOADING.
7. BIRD GUARD TO BE MOUNTED BELOW THE TOP MOST SKIRT AND ITS INNER OPENING MUST BE ENLARGED TO ALLOW IT TO FIT PROPERLY AROUND THE BUSHING CORE.
8. INSTALL RISER COVER 5 - 6 INCHES BELOW CUTOUT.

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SaskPower – DISTRIBUTION STANDARDS

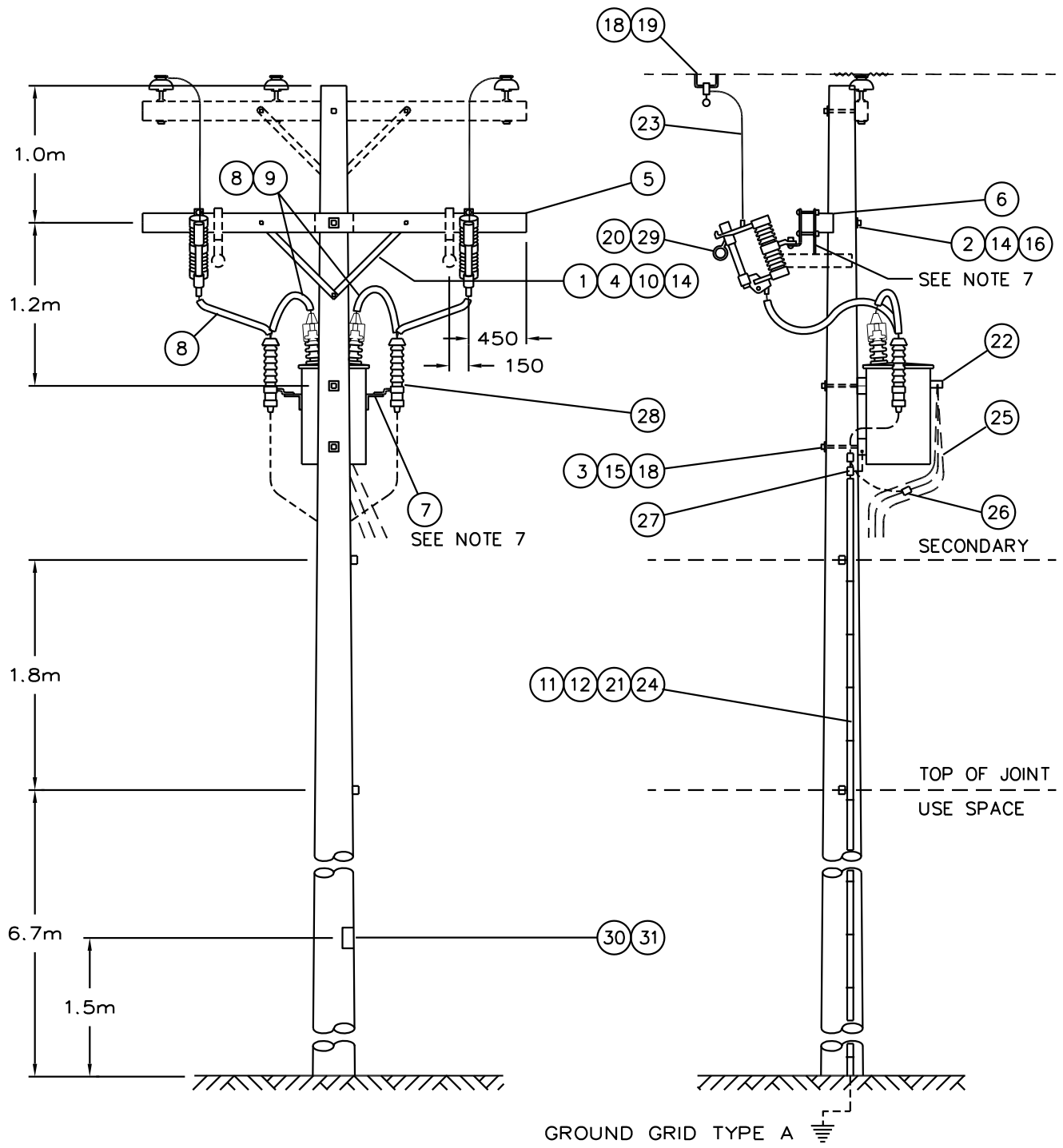
APPROVAL L.MOEN	DESIGN CHK. L.BAILEY	DRN. A.GATZKE CHKD. 2015-12-29	TRANSFORMER STRUCTURE - 1Ø OILFIELD AND RURAL (INCLUDING FARM)
DATE OF ISSUE 2016/02/05	DRAWING NO. A-08-08	SHEET 2 of 2	
		REV. H	

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
1	1 08 38	2	BOLT CARRIAGE - 3/8" x 4 1/2"
2	1 13 18	1	BOLT MACHINE - 5/8" x 18"
3	1 14 12	2	BOLT MACHINE - 3/4" x 12"
4	1 19 32	2	BRACE CROSSARM - 32"
5	1 29 10	1	CROSSARM WOOD - 4" x 5" x 10'
6	1 32 86	1	GAIN POLE WOOD
7	1 35 32	2	BRACKET - X ARM FOR CUTOUTS, ARRESTER, OR TERMINATOR
8	1 35 38	10ft.	RISER COVER FOR WILDLIFE GUARD.
9	1 35 40	2	WILDLIFE GUARD, POLYMER TYPE.
10	1 78 12	1	SCREW LAG -1/2" x 4 1/2"
11	1 85 01	1/2 lb	STAPLE FENCE
12	1 85 02	18	STAPLE MOULDING
13	1 93 25	1	WASHER - LOCK - 3/8"- DOUBLE COIL SPRING
14	1 93 27	1	WASHER - LOCK - 5/8"- DOUBLE COIL SPRING
15	1 93 28	2	WASHER - LOCK - 3/4"- DOUBLE COIL SPRING
16	1 93 42	2	WASHER - SQUARE 2 1/4" x 2 1/4" x 13/16" HOLE
17	1 93 96	2	WASHER - CURVED - 3" x 3" x 13/16"
18	2 02 70	2	CLAMP LIVELINE
19	2 02 8X	2	CLAMP-HOTLINE, BAIL (SEE NOTE 2)
20	2 12 67	2	CUTOUT -27 kV 100 AMP
21	2 27 00	3	MOULDING GROUND WIRE - 10' LENGTH
22	2 65 XX	3	CONNECTORS HYLUG
23	2 83 02	6 m	WIRE CU - 2/7 STR
24	2 83 04	13 m	WIRE CU - 4/7 STR
25	2 07 XX	6 m	WIRE SECONDARY RISER (SEE NOTE 1)
26	5 12 XX	1	CONNECTOR AL - CRIMPIT (SEE NOTE 2)
27	5 12 06	2	CONNECTOR CU - 4C4
28	6 02 03	2	ARRESTER - 3 kV
29	7 38 XX	2	FUSE BUTTON HEAD
			MATERIAL LIST CONTINUED ON SHEET 3 OF 3

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. LB	TRANSFORMER STRUCTURE - 1Ø 2.4 kV URBAN
M. ERETH	L. BAILEY	CHKD.	
		2013-07-22	
DATE OF ISSUE: 2013/08/19		DRAWING NO: A-08-09	SHEET 1 OF 3
			REV. D



1. SEE SECTION A-33 FOR GROUNDING & GROUND GRID TYPE.
2. RUN GROUND WIRE ON OPPOSITE SIDE OF CUTOUTS.
3. SEE A-08-00 FOR SECONDARY RISER SIZE.
4. MAXIMUM 167 kVA TRANSFORMER.
5. MINIMUM 13.7m(45') POLE.
6. REFER TO A-08-00 SHT. 25 FOR CLASS OF POLE.
7. MOUNT ARRESTER ON ARM IF IT CANNOT BE MOUNTED ON TRANSFORMER.
8. FOR DEADEND STRUCTURE THE TRANSFORMER IS UNDER THE GUY WIRE.
9. ALLOW 5-6" BETWEEN RISER COVER AND CUT-OUT FOR GROUNDING

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SaskPower – DISTRIBUTION STANDARDS				
APPROVAL	DESIGN CHK.	DRN. DC	TRANSFORMER STRUCTURE – 1Ø 2.4 kV URBAN	
L.MOEN	L.BAILEY	CHKD.		
		2015-12-31		
DATE OF ISSUE	2016/02/05	DRAWING NO.	A-08-09	SHEET 2 of 3
				REV. D

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
30	7 69 62	0.04	SCREW WOOD - #10 x 1 1/2" (100/BOX)
31	05 640 000	1	SIGN DANGER - "HIGH VOLTAGE ZONE"
			<p>NOTE:</p> <p>1. RISER LENGTH IS FOR SECONDARY RISERS. FOR PARALLEL RISERS, INCREASE WIRE LENGTH ACCORDINGLY.</p> <p>2. REFER TO SECTION A-36 FOR SPECIFIC MATERIAL.</p>

SaskPower - DISTRIBUTION STANDARDS

APPROVAL M. ERETH	DESIGN CHK L. BAILEY	DRN. LB CHKD.	<p align="center">TRANSFORMER STRUCTURE - 1Ø 2.4 kV URBAN</p>	
		2013-07-22		
DATE OF ISSUE: 2013/08/19		DRAWING NO: A-08-09	SHEET 3 OF 3	REV. 0

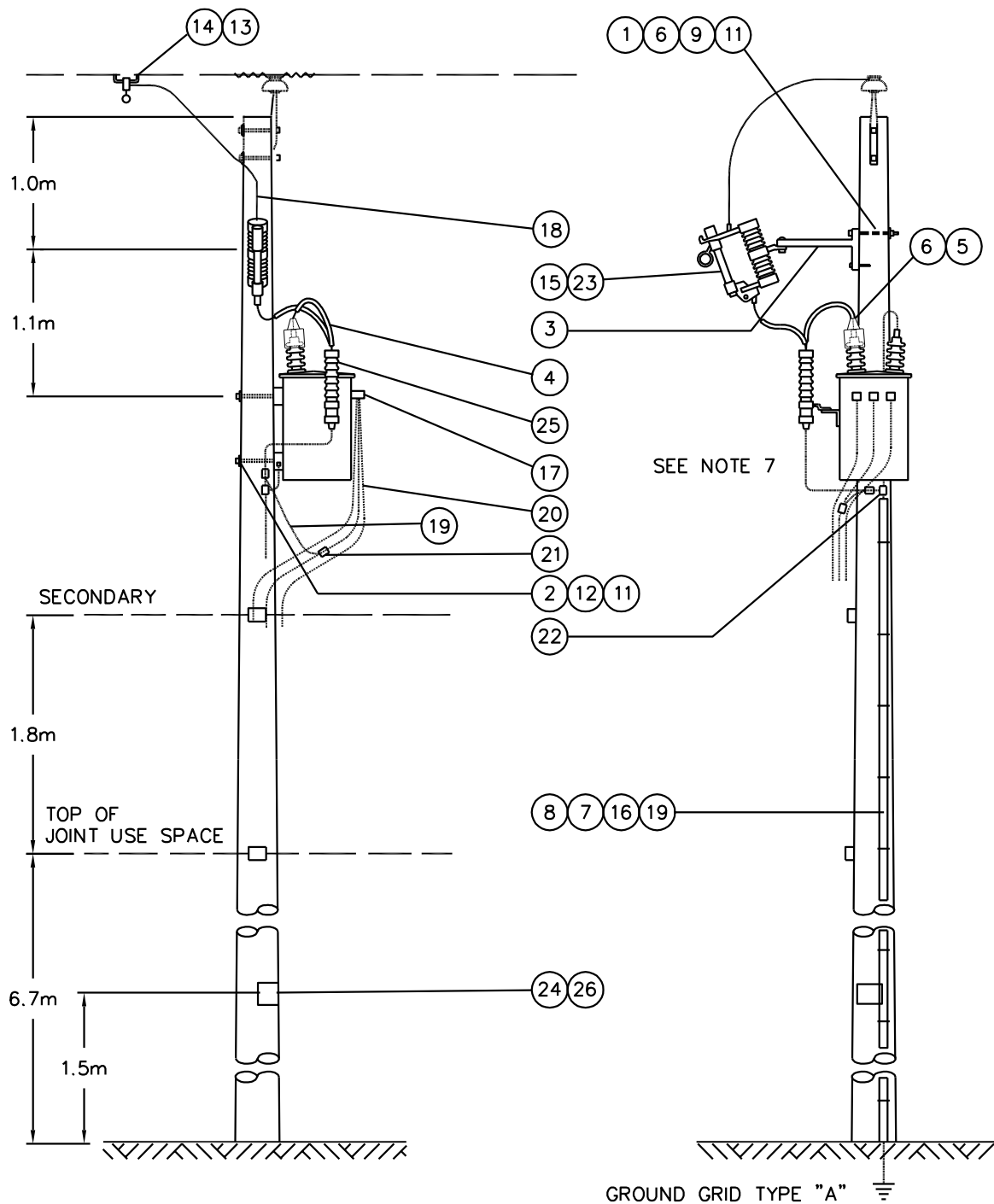
BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
1	1 13 12	1	BOLT MACHINE- 5/8" x 12"
2	1 14 12	2	BOLT MACHINE- 3/4" x 12"
3	1 35 31	1	BRACKET - FOR CUTOUT, ARRESTER, TERMINATOR
4	1 35 38	6ft.	WILDLIFE GUARD - RISER COVER.
5	1 35 40	1	WILDLIFE GUARD - BUSHING COVER, POLYMER
6	1 78 12	1	SCREW LAG-1/2" x 4 1/2"
7	1 85 01	1/2 lb	STAPLE - FENCE
8	1 85 02	18	STAPLE - MOULDING
9	1 93 27	1	WASHER - LOCK - 5/8"- DOUBLE COIL SPRING
10	1 93 28	2	WASHER LOCK - DOUBLE COIL SPRING - 3/4"
11	1 93 42	1	WASHER - SQUARE 2 1/4" x 2 1/4" x 13/16" HOLE
12	1 93 96	2	WASHER - CURVED 3" X 3" - 13/16" HOLE
13	2 02 70	1	CLAMP - LIVELINE
14	2 02 8X	1	CLAMP - HOTLINE, BAIL (SEE NOTE 1)
15	2 12 67	1	CUTOUT - 27 kV 100 AMP
16	2 27 00	3	MOULDING GROUND WIRE - 10' LENGTH
17	2 65 XX	3	CONNECTORS HYLUG (SEE NOTE 1)
18	2 83 02	2 m	WIRE CU- # 2/7 STR
19	2 83 04	10 m	WIRE CU- # 4/7 STR
20	2 XX XX	6 m	WIRE SECONDARY RISER (SEE NOTE 2)
21	5 09 XX	1	CONNECTOR AL - CRIMPIT (SEE NOTE 1)
22	5 12 06	2	CONNECTOR CU - 4C4
23	7 38 XX	1	FUSE BUTTON HEAD
24	7 69 62	0.04	SCREWS - WOOD - 1 1/2" (100/BOX)
25	8 02 18	1	ARRESTER-18 kV (URBAN)
26	5 640 000	1	SIGN DANGER - "HIGH VOLTAGE ZONE"

NOTE:
 1. REFER TO SECTION A-36 FOR SPECIFIC MATERIAL REQUIREMENTS.
 2. RISER LENGTH IS FOR SINGLE RISERS. FOR PARALLEL RISERS, INCREASE WIRE LENGTH ACCORDINGLY.

SaskPower - DISTRIBUTION STANDARDS

APPROVAL L. MOEN	DESIGN CHK L. BAILEY	DRN. LB CHKD. 2015-12-29	TRANSFORMER STRUCTURE - 1Ø URBAN
DATE OF ISSUE: 2016/02/05	DRAWING NO: A-08-10	SHEET 1 OF 2	
			REV. F



1. SEE SECTION A-33 FOR GROUNDING & GROUND GRID TYPE.
2. RUN GROUND WIRE ON OPPOSITE SIDE OF CUTOUT.
3. SEE A-08-00 FOR SECONDARY RISER SIZE.
4. MAXIMUM 167 kVA TRANSFORMER, (WHERE SYSTEM NEUTRAL EXISTS).
5. MINIMUM 13.7m(45') POLE.
6. REFER TO A-08-00 SHT. 25 FOR CLASS OF POLE.
7. MOUNT ARRESTOR ON T-BRACKET IF IT CANNOT BE MOUNTED ON TRANSFORMER.
8. INSTALL RISER COVER 5 - 6 INCHES BELOW CUTOUTS.

SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SaskPower – DISTRIBUTION STANDARDS				
APPROVAL L.MOEN	DESIGN CHK. L.BAILEY	DRN. N.KIM CHKD.	TRANSFORMER STRUCTURE – 1Ø URBAN	
		2016-03-30		
DATE OF ISSUE	2016/05/04	DRAWING NO. A-08-10	SHEET 2 of 2	REV. D

BILL OF MATERIAL

ITEM NO.	CODE NO.	QUANTITY	DESCRIPTION
1	1 13 12	1	BOLT MACHINE - 5/8" x 10"
2	1 14 12	2	BOLT MACHINE - 3/4" x 12"
3	1 34 02	1	WILDLIFE PROTECTOR - 16" DISK TYPE (SEE NOTE 2)
4	1 35 31	1	BRACKET - FOR ARRESTER, CUTOUT, TERMINATOR
5	1 35 38	6ft.	WILDLIFE GUARD - RISER COVER.
6	1 35 40	-	WILDLIFE GUARD - BUSHING COVER, POLYMER (SEE NOTE 2)
7	1 78 12	1	SCREW LAG - 1/2" x 4 1/2"
8	1 85 01	1/2 lb	STAPLE FENCE
9	1 85 02	24	STAPLE MOULDING
10	1 93 27	1	WASHER LOCK - DOUBLE COIL SPRING - 5/8"
11	1 93 28	2	WASHER LOCK - DOUBLE COIL SPRING - 3/4"
12	1 93 42	1	WASHER - SQUARE - 2 1/4" x 2 1/4" x 13/16" HOLE
13	1 93 96	2	WASHER - CURVED - 3" x 3" x 13/16" HOLE
14	2 02 71	1	CLAMP - LIVELINE
15	2 02 8X	1	CLAMP - BAIL (SEE NOTE 1)
16	2 12 67	1	CUTOUT - 27 kV 100 AMP
17	2 27 00	4	MOULDING GROUND WIRE - 10' LENGTH
18	2 83 02	3 m	WIRE CU - #2/7 STR
19	2 83 04	16 m	WIRE CU - #4/7 STR
20	5 09 XX	1	CONNECTOR AL - CRIMPIT (SEE NOTE 1)
21	5 12 06	6	CONNECTOR CU - 4C4
22	6 02 21	1	ARRESTER - 21 kV (RURAL)
23	7 38 XX	1	FUSE BUTTON HEAD
24	7 69 62	0.04	SCREWS - WOOD #10 - 1 1/2" (100/BOX)
25	05 640 000	1	SIGN "DANGER H.V."

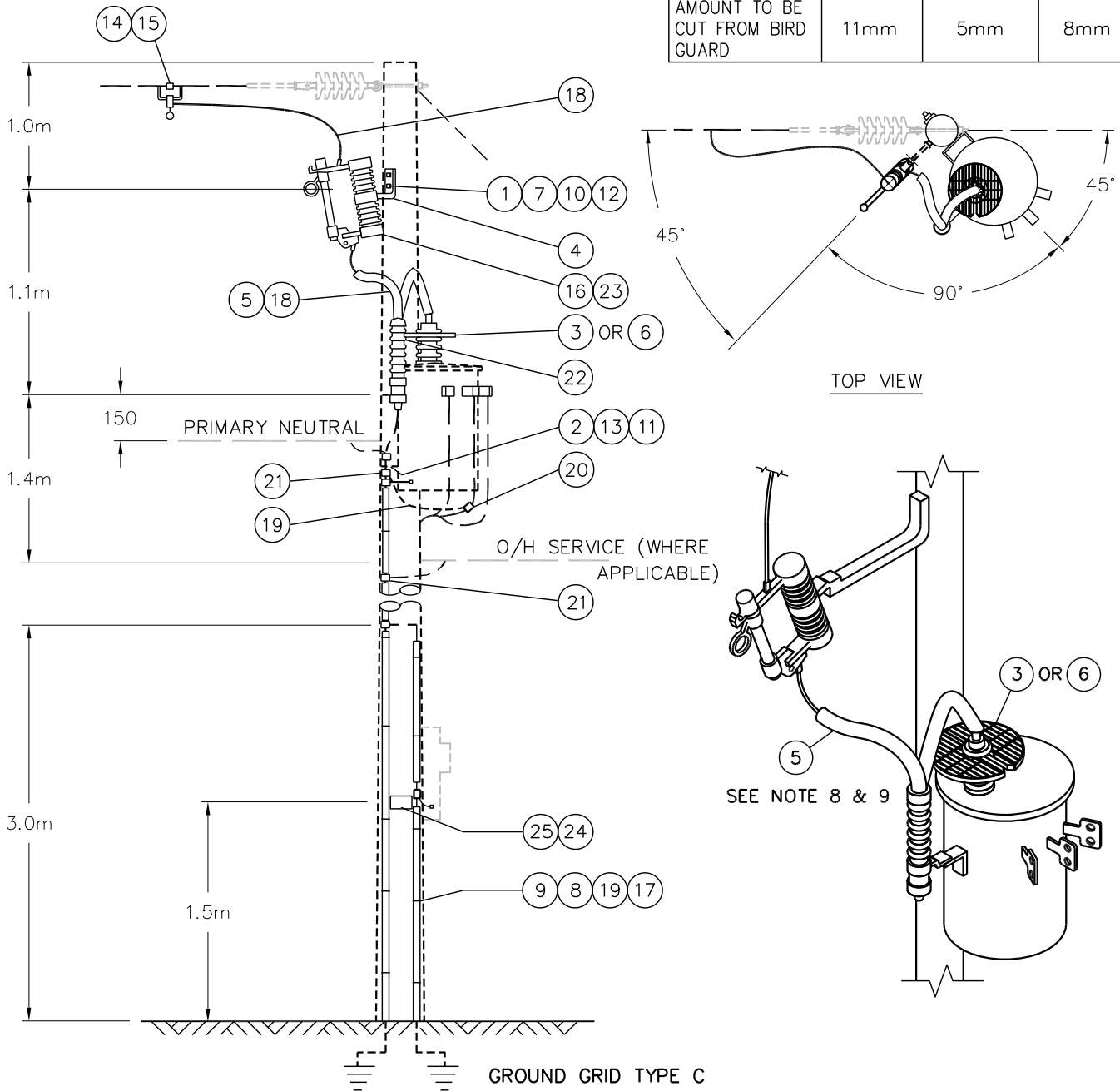
NOTE:

1. REFER TO SECTION A-36 FOR SPECIFIC MATERIAL REQUIREMENTS.
2. USE DISK OR RISER COVER WITH BUSHING COVER AS AN OPTION.

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. LB	TRANSFORMER STRUCTURE - 1Ø 14.4 kV RURAL W/ O.H. NEUTRAL	
L. MOEN	L. BAILEY	CHKD.		
		2015-12-30		
DATE OF ISSUE:	2016/02/05	DRAWING NO: A-08-11	SHEET 1 OF 2	REV. H

	PTI	MOLONEY	SIEMENS
DIA. OF BUSHING	64-66mm	49-54mm	60mm
AMOUNT TO BE CUT FROM BIRD GUARD	11mm	5mm	8mm

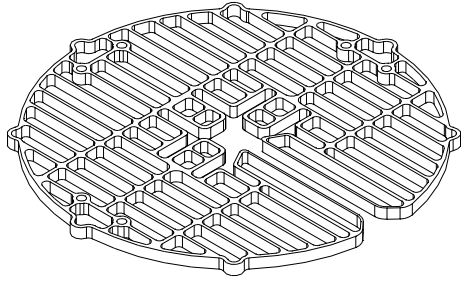


NOTE:

1. REFER TO A-33 FOR GROUNDING AND GROUND GRID TYPE.
2. RUN GROUND WIRES ON OPPOSITE SIDE OF CUTOUT AND SEPARATE BY 150mm (GROUND WIRE LOCATIONS ON DRAWING SHOWN ONLY FOR CLARITY).
3. REFER TO A-24 FOR FARM METERING AND MATERIAL.
4. MAXIMUM 50 KVA TRANSFORMER (INSTALL POLE KEY WITH 50 KVA REFER TO A-32-09).
5. MINIMUM 12.2m(40') POLE.
6. REFER TO A-08-00 SHT. 25 FOR CLASS OF POLE.
7. ADJUST MATERIAL REQUIREMENTS ACCORDING TO USE OF PRIMARY NEUTRAL, O/H SECONDARY OR TYPE OF GROUND GRID.
8. BIRD GUARD TO BE MOUNTED BELOW THE TOP MOST SKIRT AND ITS INNER OPENING MUST BE ENLARGED TO ALLOW IT TO FIT PROPERLY AROUND THE BUSHING CORE.
9. INSTALL RISER COVER 5-6 INCHES BELOW CUTOUT.

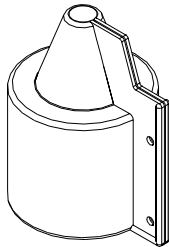
SCALE: N.T.S. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED

SaskPower – DISTRIBUTION STANDARDS			
APPROVAL L.MOEN	DESIGN CHK. L.BAILEY	DRN. A.GATZKE CHKD. 2015-12-31	TRANSFORMER STRUCTURE - 1Ø 14.4 kV RURAL W/ OH NEUTRAL
DATE OF ISSUE	2016/02/05	DRAWING NO. A-08-11	
		SHEET 2 of 2	REV. G



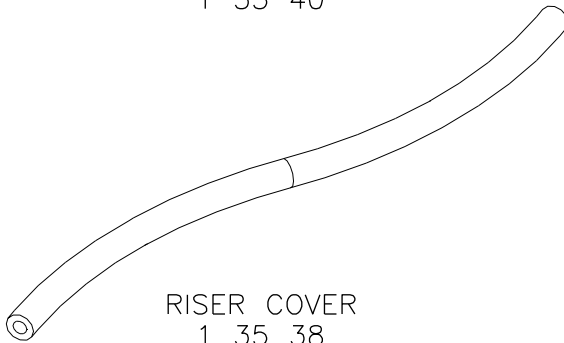
WILDLIFE GUARD
1 34 02

- FOR SINGLE BUSHING TRANSFORMERS
- CAN BE APPLIED ENERGIZED



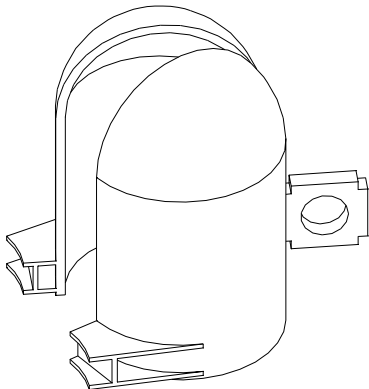
BUSHING COVER
1 35 40

- FOR DOUBLE BUSHING & 3 ϕ TRANSFORMERS
- MUST BE INSTALLED DE-ENERGIZED



RISER COVER
1 35 38

- TO BE INSTALLED UP TO CUTOUT, CUT TO LENGTH



HOT STICK INSTALLED
WILDLIFE GUARD
1 35 41

- FOR DOUBLE BUSHING & 3 ϕ TRANSFORMER
- TO BE INSTALLED WHERE WILDLIFE PROTECTION IS REQUIRED BUT OUTAGE IS UNDESIRABLE
- WILL GIVE LIMITED PROTECTION WITHOUT RISER COVER

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