

CONDUCTOR DATA

DRAWING NUMBER	SHT.	DRAWING TITLE	DWG REV.	BOM REV.
C-24-04.00	1 – 1	GENERAL INFORMATION	0	-
C-24-04.01	1 – 1	BARE CONDUCTORS ELECTRICAL PROPERTIES	G	-
C-24-04.02	1 – 1	BARE CONDUCTORS PHYSICAL PROPERTIES	C	-
C-24-04.03	1 – 1	INSULATED SECONDARY CONDUCTORS ELECTRICAL PROPERTIES	A	-
C-24-04.04	1 – 1	INSULATED SECONDARY CONDUCTORS PHYSICAL PROPERTIES	A	-
C-24-04.05	1 – 1	TRANSFORMER RISERS – COPPER	B	-

SaskPower - DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK	DRN. ARU
L. MOEN	A. UHREN	CHKD.
		2017-05-03

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CONDUCTOR DATA

1. THIS SECTION PROVIDES BASIC INFORMATION ON ELECTRICAL AND PHYSICAL PROPERTIES OF THE COMMONLY USED BARE AND INSULATED OVERHEAD CABLES FOR CONSTRUCTION.
2. FOR MORE DETAILED INFORMATION ON THESE CABLES OR FOR INFORMATION ON CABLES NOT LISTED, CONTACT DISTRIBUTION ENGINEERING IN REGINA.
3. CABLE WEIGHTS ARE GIVEN AS A GUIDE. FOR WEIGHTS AND DIMENSIONS OF SHIPPING REELS AND CABLE, CONTACT REGINA STORES.

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SASKATCHEWAN POWER CORP. – DISTRIBUTION ENGINEERING STANDARDS

DRN. <i>B</i>	DESIGN CHK.	SAFETY APP.	APPROVAL	GENERAL INFORMATION	
CHKD. <i>FTK</i>					
DATE 86-10-15	DATE	DATE	DATE		
DATE OF ISSUE 87-02-01			DRAWING NO. C-24-04.00	SHEET 1 OF 1	REV. 0

CONDUCTOR	CODE NO.	AMPACITY AMPS	RAC OHMS/KM 20°C
#8 HICON H.S.C. – 130 STRANDED 3-WIRE	2 90 08	10	10.87
		15	11.34
		25	11.93
#6 HICON H.S.C. – 130 STRANDED 3-WIRE	2 90 06	15	7.34
		20	7.58
		25	8.08

WITH STEEL CONDUCTORS, RESISTANCES ARE AT VARIOUS VALUES OF LINE CURRENT, NO CONDUCTOR OPERATING TEMPERATURE SPECIFIED.

CONDUCTOR	CODE NO.	AMPACITY AMPS		RAC OHMS/KM		
		40°C	0°C	25°C	50°C	75°C
#8A CWC (COPPERWELD-COPPER)	2 89 08	113	146	2.181	2.398	U/A
#4A CWC (COPPERWELD-COPPER)	2 89 04	196	254	0.867	0.960	U/A
#6 ACSR SB – HERRING (200%)	2 76 06	108	140	2.150	2.461	2.677
#2 ACSR SB – PICKEREL (200%)	2 76 02	190	246	0.850	1.010	1.102
#2 ACSR – SPARROW	2 78 02	194	252	0.850	1.010	1.102
1/0 ACSR – RAVEN	2 78 10	257	333	0.536	0.647	0.709
3/0 ACSR – PIGEON	2 78 30	332	431	0.339	0.396	0.474
4/0 ACSR – PENGUIN	2 78 40	382	497	0.270	0.350	0.380
266.8 kcmil ACSR – PARTRIDGE	2 78 50	498	647	0.214	0.234	0.255
477 kcmil ACSR – PELICAN	2 78 82	697	908	0.121	0.133	0.145
266.8 kcmil AL – DAISY	2 74 51	480	624	0.217	0.239	0.260
336.4 kcmil AL – TULIP	2 74 70	559	728	0.173	0.190	0.206
477 kcmil AL – COSMOS	2 74 80	699	909	0.122	0.134	0.146

NOTES:

- AMPACITY COLUMNS ARE FOR AMBIENT TEMPERATURES OF 40°C AND 0°C, WITH A CONDUCTOR OPERATING TEMPERATURE OF 100°C.
- AMPACITY CALCULATED, EXCEPT FOR THE STEEL CONDUCTORS, WITH ANSI/IEEE (STD 738-1986) WITH THE FOLLOWING CONDITIONS:
 - WIND SPEED 2FPS
 - EMISSIVITY .6
 - ABSORPTIVITY .5
 - LATITUDE 50°
 - ELEVATION 1900 FT
 - LINE DIRECTION E-W
 - CLEAR ATMOSPHERE
 - LOCAL SUN TIME 12pm

SaskPower - DISTRIBUTION STANDARDS				
APPROVAL L. MOEN	DESIGN CHK A. UHREN	DRN. ARU	BARE CONDUCTORS ELECTRICAL PROPERTIES	
		CHKD. 2016-12-12		
DATE OF ISSUE: 2017/05/03	DRAWING NO: C-24-04.01	SHEET 1 of 1		
			REV G	

CONDUCTOR	CODE NO.	OD Mm	WEIGHT kg/km	UTS		GMR
				N	lbf	mm
#8 HI-CON	2 90 08	5.26	112	12967	2915	U/A
#8A CWC	2 89 08	5.05	111	9932	2233	1.201
#4A CWC	2 89 04	7.37	240	17516	3938	1.841
#6 HI-CON	2 90 06	6.40	166	19106	4295	U/A
#6 ACSR SB – HERRING	2 76 06	4.62	54	10675	2400	U/A
#2 ACSR SB – PICKEREL	2 76 02	7.37	136	25733	5785	U/A
#2 ACSR – SPARROW	2 78 02	8.03	136	12411	2790	1.274
1/0 ACSR – RAVEN	2 78 10	10.11	216	19038	4280	1.360
3/0 ACSR – PIGEON	2 78 30	12.75	342	29713	6680	1.829
4/0 ACSR – PENGUIN	2 78 40	14.30	433	37454	8420	2.481
266.8 kcmil ACSR – PARTRIDGE	2 78 50	16.30	545	49998	11240	6.61
477 kcmil - PELICAN	2 78 82	20.68	772	52489	11800	8.96
266.8 kcmil AL – DAISY	2 74 51	14.88	369	22352	5025	5.40
336.4 kcmil AL – TULIP	2 74 70	16.92	467	29381	6605	6.40
477 kcmil AL – COSMOS	2 74 80	20.12	664	39990	8990	7.62

NOTES:

UTS – ULTIMATE TENSILE STRENGTH.

SaskPower - DISTRIBUTION STANDARDS					
APPROVAL	DESIGN CHK	DRN.	BARE CONDUCTORS PHYSICAL PROPERTIES		
		CHKD.			
DATE OF ISSUE: 2011-04-01		DRAWING NO: C-24-04.02		SHEET 1 of 1 REV. C	

CONDUCTOR – NEUTRAL	CODE NO.	AMPACITY AMPS	R _{AC} PHASE OHMS/km	R _{AC} NEUTRAL OHMS/km
#6 AL DUPLEX – #6 ACSR	3 12 02	92	2.692	2.461
#4 AL TRIPLEX – #6 ACSR	5 38 03	97	1.692	2.461
#2 AL TRIPLEX – #2 ACSR	5 38 12	128	1.064	1.013
#1/0 AL TRIPLEX – #2 ACSR	5 38 17	169	0.6692	1.013
#3/0 AL TRIPLEX – 1/0 ACSR	5 38 20	223	0.4212	0.652
#2 AL QUADRUPLX – #2 ACSR	5 40 12	113	1.064	1.013
#1/0 AL QUADRUPLX – #2 ACSR	5 40 17	148	0.6692	1.013
#3/0 AL QUADRUPLX (300 V)–1/0 ACSR	5 40 18	194	0.4212	0.652
#3/0 AL QUADRUPLX–1/0 ACSR	5 40 19	194	0.4212	0.652

NOTES:

1. THESE AMPACITIES ARE FOR AMBIENT TEMPERATURE OF 40°C AND CONDUCTOR TEMPERATURE OF 80°C.
2. R_{AC} FOR PHASE CONDUCTORS IS AT 80°C AND FOR NEUTRAL CONDUCTORS IS AT 50°C.
3. SHADED CONDUCTORS ARE NO LONGER PURCHASED.
4. ALL PHASE CONDUCTORS HAVE 600V INSULATION AS OF 2010.

SaskPower – DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK.	DRN. <i>B</i>	INSULATED SECONDARY CONDUCTORS ELECTRICAL PROPERTIES
		CHKD. <i>FTK</i>	
		DATE 86-10-17	
DATE OF ISSUE: 2011-04-01		DRAWING NO. C-24-04.03	SHEET 1 OF 1
			REV. A

CONDUCTOR	CODE NO.	OD mm	WEIGHT kg/km	UTS	
				N	lbf
#6 AL DUPLEX	3 12 02	11.3	110	5182	1165
#4 AL TRIPLEX	5 38 03	15.6	217	5182	1165
#2 AL TRIPLEX	5 38 12	18.4	378	12410	2780
#1/0 AL TRIPLEX	5 38 17	23.6	570	18400	4136
#3/0 AL TRIPLEX	5 38 20	28.0	805	19038	4280
#2 AL QUADRUPLEX	5 40 12	23.7	500	12410	2780
#1/0 AL QUADRUPLEX	5 40 17	30.4	766	18400	4136
#3/0 AL QUADRUPLEX (300 V)	5 40 18	36.4	1170	28900	6497
#3/0 AL QUADRUPLEX	5 40 19	41.6	1340	28900	6497

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NOTES:

1. UTS – ULTIMATE TENSILE STRENGTH.
2. OD – CIRCUMSCRIBED DIAMETER OF THE CABLE.
3. SHADED CONDUCTORS ARE NO LONGER PURCHASED.
4. ALL PHASE CONDUCTORS HAVE 600V INSULATION AS OF 2010.

SaskPower – DISTRIBUTION STANDARDS

APPROVAL	DESIGN CHK.	DRN. <i>B</i>	INSULATED SECONDARY CONDUCTORS PHYSICAL PROPERTIES
		CHKD. <i>FTK</i>	
		DATE 86-10-17	
DATE OF ISSUE: 2011-04-01		DRAWING NO. C-24-04.04	SHEET 1 OF 1 REV. A

TRANSFORMER SECONDARY RISERS - COPPER

CONDUCTOR	CODE #	AMPACITY (A)	DIAMETER (mm)	
			OVER CONDUCTOR	OVER INSULATION
300V PE				
#4	2 86 04	125	5.84	7.45
#2	2 86 02	170	7.39	9.75
2/0	2 86 20	265	10.46	13.6
4/0	2 87 40	360	13.34	16.5
600V TWH				
#2	2 95 16	170	7.42	10.4
2/0	2 95 20	265	9.55	14.5
4/0	2 95 23	360	12.06	17.21
600V RW90 XLPE				
4/0	2 91 86	385	12.06	17.21
350 kcmil	2 91 90	530	15.65	21.7
500 kcmil	2 91 92	660	18.69	25.4

NOTES:

1. PE – POLYETHYLENE INSULATION – MAX. CONDUCTOR TEMPERATURE 75°C.
2. TWH – THERMOPLASTIC INSULATION – MAX. CONDUCTOR TEMPERATURE 75°C.
3. RW90 – CROSSLINKED POLYETHYLENE INSULATION – MAX. CONDUCTOR TEMPERATURE 90°C.
4. THESE AMPACITIES ARE FOR AMBIENT TEMPERATURE OF 30°C
5. WHEN RISERS ARE BUNDLED, REDUCE AMPACITY AS FOLLOWS, 2 CONDUCTOR = 90%, 3 CONDUCTOR = 85%, 4 CONDUCTOR = 80% OF VALUES LISTED ABOVE.
6. WIRE SIZES SMALLER THAN #1 ARE REGULAR STRANDED, SIZES #1 AND LARGER ARE COMPACT STRANDED. TYPE OF STRANDING ALSO VARIES WITH INSULATION LEVEL AND MATERIAL.

TRANSFORMER PRIMARY RISERS – COPPER

CONDUCTOR	CODE #	AMPACITY (A)	DIAMETER (mm)	
			OVER CONDUCTOR	OVER INSULATION
BARE				
#4	2 83 04	189	5.89	--
#2	2 83 02	217	7.42	--
2/0	2 83 20	339	10.64	--
4/0	2 98 01	532	13.41	--

NOTES:

1. BARE – MAX. CONDUCTOR TEMPERATURE 100°C AT 40°C AMBIENT.
2. IF AN OLDER OR UNKNOWN COPPER CONDUCTOR (SPECIFIC ALLOY COMPOSITION) IS BEING USED, REDUCE AMPACITIES TO 75% OF RATED.
3. RISERS FOR SOLID BLADE DISCONNECT TAKE-OFF STRUCTURES SHALL BE UPGRADED TO 2/0 COPPER WHERE THE UNDERGROUND CABLE IS 4/0 ALUMINUM.

SaskPower - DISTRIBUTION STANDARDS

DRN.	DESIGN CHK.	APPROVAL	TRANSFORMER RISERS COPPER
CHKD.			
DATE	DATE	DATE	
DATE OF ISSUE: 2007/04/16		DRAWING NO: C-24-04.05	SHEET 1 of 1
			REV. B