

# **OVERHEAD DESIGN MANUAL**


## **Section 9 – Cable Data**

Approved by: F. ZAINI

# OVERHEAD DESIGN MANUAL


## SECTION 9 CABLE DATA

Subsection	Title
1.	TABLE OF CONTENTS.
2.	CABLE SELECTION GUIDELINES
3.	ELECTRICAL RATINGS
4.	MECHANICAL PROPERTIES
5.	BROADBAND COMMUNICATIONS CABLE ID
6.	ENGINEERING BACKGROUND

A	ORIGINAL ISSUE	 ©COPYRIGHT 2015 ENERGEX This document must not be reproduced in part or whole without written permission from ENERGEX	SCALE NTS		CABLE DATA TABLE OF CONTENTS				
	APP'D F. ZAINI								
	DATE 20/10/2015								
	REC'D								
	CKD K. GOSDEN		10824-A4	SECT 9	SUB 1	SHT 1	REV A		
	DRN W. DE LEON								
	CAD								

## **CABLE SELECTION**

<b>CABLE</b>	<b>GUIDELINES</b>
INSULATED CONDUCTORS	<p>For use:</p> <ul style="list-style-type: none"> <li>• in the vicinity of vegetation (present or future)</li> <li>• where there is a likelihood of objects falling or blowing onto the mains, eg tree branches, chains</li> <li>• where wildlife may otherwise cause outages</li> <li>• where mains are likely to be contacted by crane jibs, boat masts or other objects</li> <li>• where there is minimal clearance from structures.</li> </ul> <p>Note that clearing profiles for HVABC are significantly smaller than for CCT.</p>
AAC	<p>All-aluminium conductors are recommended for stringing tensions up to and including T110. These have excellent conductivity and since their weight is low, the tensions upon structures are moderate. AAC can suffer from annealing when subjected to excessive heat, eg due to overloading or cane fires.</p>
ACSR	<p>Aluminium conductors with galvanized steel reinforcing are recommended for stringing tensions of T110 and above. ACSR is stronger than AAC, but has inferior conductivity. ACSR conductors are typically used in rural applications where spans are very long and electrical loads are light. ACSR is more prone to corrosion in polluted environments than AAC, particularly where salt spray is present.</p> <p>NOTE: Due to rising fault levels consult Protection Department for application of Raisin within 12km of a substation.</p>
HDC AND SC/GZ	<p>Hard drawn copper and steel (galvanized) conductors are obsolete and would normally only be specified for sleeving of short sections onto existing mains.</p>

A	DATE		  © COPYRIGHT 2015 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	APP'D	F. ZAINI	<b>CABLE DATA</b> CABLE SELECTION GUIDELINES				
APP'D				DATE	20/10/2015					
CKD				REC'D						
ATHR				CKD	P. RELF	10824-A4	SEC 9	SUB 2	SHT 1	REV A
ORIGINAL ISSUE				AUTHR	K.GOSDEN					
					WORD					

## ELECTRICAL RATINGS OF CONDUCTORS

### STANDARD NOMINAL RATINGS (in Amps) FOR ENERGEX CIRCUITS

- Category "A" Circuits = Single Circuits, Sub-circuits & Super -circuits with Skip Poles

- Category "B" Circuits = Super-circuits without Skip Poles

S/D = Summers Day

W/N = Winters Night

ATR = Allowable Temperature Rise (above ambient)


		55 Deg C Design				75 Deg C Design			
		Cat "A" Cct's			Cat "B" Cct's	Cat "A" Cct's			Cat "B" Cct's
		S/D	S/D (Emrg)	W/N	All Year	S/D	S/D (Emrg)	W/N	All Year
Conductor	Ref Table	5.2	5.4	5.3	5.3	5.2	5.4	5.3	5.3
	ATR (°C)	20	20	40	40	40	40	60	60
	Max Conductor Temperature (°C)	55	55	55	55(WN)-90(SD)	75	75	75	75(WN)-110(SD)

#### ACSR/GZ - IMPERIAL

3/4/.093	K'BURRA	76	95	141	141	122	145	168	168
6/1/.118	FERRET	127	162	246	246	210	250	292	292
6/1/.144	MINK	158	202	318	318	267	318	377	377
6/1/.161	RACON	175	226	362	362	301	360	429	429
6/.186 +7/.062	DOG	202	265	434	434	357	427	515	515
30/7/.102	WOLF	259	350	602	602	485	582	715	715
30/7/.118	PANTHER	296	408	727	727	578	694	864	864
30/7/.132	BEAR	325	461	840	840	660	794	998	998
30/7/.146	GOAT	350	523	953	953	740	903	1132	1132
54/7/.132	CAMEL	394	646	1173	1173	895	1125	1393	1393

#### ACSR/GZ - METRIC

3/4/2.50	RAISIN	81	102	152	152	130	155	180	180
6/1/3.00	APPLE	126	160	243	243	207	247	289	289
6/1/3.75	BANANA	160	205	324	324	271	324	384	384
6/4.75 +7/1.60	CHERRY	200	263	432	432	355	425	512	512
30/7/2.50	GRAPE	251	337	575	575	465	557	683	683
30/7/3.00	LEMON	296	409	728	728	578	695	865	865
54/7/3.25	ORANGE	386	620	1126	1126	863	1078	1338	1338

<b>A</b>	DATE			APP'D	F. ZAINI	<b>CABLE DATA</b> <b>ELECTRICAL RATINGS</b>				
APP'D			© COPYRIGHT 2015 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	DATE	20/10/2015					
CKD				REC'D						
ATHR				CKD	P. RELF					
ORIGINAL ISSUE				AUTHR	K.GOSDEN	10824-A4	SEC	SUB	SHT	REV
				WORD			9	3	1	A

**STANDARD NOMINAL RATINGS (in Amps) FOR ENERGEX CIRCUITS**

- Category "A" Circuits = Single Circuits, Sub-circuits & Super -circuits with Skip Poles

- Category "B" Circuits = Super-circuits without Skip Poles

S/D = Summers Day

W/N = Winters Night

ATR = Allowable Temperature Rise (above ambient)

		55 Deg C Design				75 Deg C Design			
		Cat "A" Cct's			Cat "B" Cct's	Cat "A" Cct's			Cat "B" Cct's
		S/D	S/D (Emrg)	W/N	All Year	S/D	S/D (Emrg)	W/N	All Year
Conductor	Ref Table	5.2	5.4	5.3	5.3	5.2	5.4	5.3	5.3
	ATR (°C)	20	20	40	40	40	40	60	60
	Max Conductor Temperature (°C)	55	55	55	55(WN)-90(SD)	75	75	75	75(WN)-110(SD)

**HARD DRAWN COPPER - IMPERIAL**

7/.064	7/16	90	111	158	158	140	166	188	188
7/.080	7/14	116	144	210	210	183	218	250	250
7/.104	7/12	155	195	293	293	251	299	348	348
7/.136	7/.136Cu	207	265	412	412	348	415	490	490
19/.064	19/16	157	198	299	299	256	305	355	355
19/.072	18/15	179	227	347	347	295	352	412	412
19/.083	19/14	208	267	416	416	351	419	495	495
19/.101	19/.101Cu	256	332	535	535	445	531	636	636
19/.104	19/12	263	343	556	556	461	551	661	661

**HARD DRAWN COPPER - METRIC**

7/2.75	COPPER	162	204	308	308	264	314	366	366
--------	--------	-----	-----	-----	-----	-----	-----	-----	-----


**AAC - IMPERIAL**

7/.118	GRUB	141	178	272	272	231	276	322	322
7/.134	FLY	161	206	320	320	270	322	379	379
7/.144		174	223	351	351	294	351	416	416
7/.161		195	253	405	405	337	402	480	480
7/.173	WASP	210	274	444	444	367	439	527	527
7/.186		226	297	487	487	401	479	578	578
7/.211		256	341	573	573	466	559	680	680
37/.102		283	381	657	657	529	635	780	780
37/.118		323	445	793	793	630	757	942	942

**CCT (AAC) - METRIC**

7/4.75CCT	120 CCT	Values for an 80°C Conductor Temp				379	449	533	
-----------	---------	-----------------------------------	--	--	--	-----	-----	-----	--

**AAC – METRIC**

A	DATE		  © COPYRIGHT 2015 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	APP'D	F. ZAINI	<b>CABLE DATA</b> ELECTRICAL RATINGS					
APP'D				DATE	20/10/2015						
CKD				REC'D							
ATHR				CKD	P. RELF						
ORIGINAL ISSUE					AUTHR	K.GOSDEN	10824-A4	SEC	SUB	SHT	REV
					WORD			9	3	2	A

**STANDARD NOMINAL RATINGS (in Amps) FOR ENERGEX CIRCUITS**

- Category "A" Circuits = Single Circuits, Sub-circuits & Super -circuits with Skip Poles

- Category "B" Circuits = Super-circuits without Skip Poles

S/D = Summers Day


W/N = Winters Night

ATR = Allowable Temperature Rise (above ambient)

		55 Deg C Design				75 Deg C Design			
		Cat "A" Cct's			Cat "B" Cct's	Cat "A" Cct's			Cat "B" Cct's
		S/D	S/D (Emrg)	W/N	All Year	S/D	S/D (Emrg)	W/N	All Year
Conductor	Ref Table	5.2	5.4	5.3	5.3	5.2	5.4	5.3	5.3
	ATR (°C)	20	20	40	40	40	40	60	60
	Max Conductor Temperature (°C)	55	55	55	55(WN)-90(SD)	75	75	75	75(WN)-110(SD)
7/3.00	LIBRA	141	178	272	272	231	276	323	323
7/3.75	MARS	179	230	362	362	303	362	430	430
7/4.75	MOON	228	299	490	490	403	483	582	582
19/3.25	NEPTUNE	256	340	573	573	466	558	680	680
19/3.75	PLUTO	293	397	689	689	553	664	818	818
19/4.75	TAURUS	360	513	936	936	734	883	1112	1112
37/3.00	SATURN	323	446	794	794	631	758	943	943
<b>AAAC 6201- METRIC</b>									
7/3.75	GARNET	167	215	338	338	284	339	403	403
37/3.00	RUBY	302	416	742	742	591	710	884	884
<b>AAAC 1120 - METRIC</b>									
7/3.75	HELIUM	176	226	356	356	299	357	423	423
7/4.75	IODINE	224	294	483	483	397	475	573	573
19/3.75	NEON	288	391	678	678	545	654	806	806
19/4.75	OXYGEN	354	505	921	921	723	870	1094	1094
37/3.00	NITROGEN	318	438	782	782	621	746	929	929
<b>STEEL</b>									
3/12	3/.104 STEEL	31	39	56	56	49	59	66	66
7/12	7/.104 STEEL	50	62	94	94	80	95	111	111


**Notes:**

- Category 'A' circuits are standard lines designed for 75°C operation (or 55°C for certain older lines designed prior to 1980).
- Category 'B' circuits are HV (mostly 33kV) lines designated for high temperature operation for increased current rating, having similar current ratings for both Summer Day and Winter Night conditions. These lines may operate up to 110°C (or 90°C for older lines) under summer day conditions. The planning group may provide advice as to which feeders are classified as Category 'B'. Alternatively, information may be obtained from the Equipment Rating (ERAT) Database custodian.

A	DATE		  © COPYRIGHT 2015 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	APP'D	F. ZAINI	<b>CABLE DATA</b> <b>ELECTRICAL RATINGS</b>				
APP'D				DATE	20/10/2015					
CKD				REC'D						
ATHR				CKD	P. RELF					
ORIGINAL ISSUE				AUTHR	K.GOSDEN	10824-A4	SEC 9	SUB 3	SHT 3	REV A
				WORD						

**MECHANICAL PROPERTIES  
STANDARD DISTRIBUTION CABLES**


Code Name	Stranding/Area		Nom. Overall Dia. (mm)	Cross-Sectional Area (mm <sup>2</sup> )	Min. Breaking Load (kN)	Mass (kg/m)	Modulus of Elasticity (GPa)	Coefficient of Linear Expansion (°C x 10 <sup>-6</sup> )
	Metric (mm/mm <sup>2</sup> )	Imperial (Inches/Gauge)						
Bare AAC								
LIBRA	7/3.00		9.0	49.48	7.91	0.135	59	23
MARS	7/3.75		11.3	77.31	11.9	0.212	59	23
MOON	7/4.75		14.3	124	18.8	0.340	59	23
PLUTO	19/3.75		18.8	209.8	32.3	0.578	56	23
Bare ACSR								
APPLE	6/1/3.00		9.0	49.48	14.9	0.171	79	19.3
BANANA	6/1/3.75		11.3	77.31	22.8	0.268	79	19.3
RAISIN	3/4/2.50		7.5	34.36	24.4	0.193	139	13.9
Insulated/Covered								
LVABC95	4 x 95 AAC		38.4	380	53.2	1.35	56	23
HVABC35	3 x 35 AAC + 1 x 60 GZ (catenary)		55.0	59.7	74.4	1.90	186	11.5
HVABC120	3 x 120 AAC + 1 x 60 GZ (catenary)		69.8	59.7	70.5	3.19	166	11.5
Pilot 20 Pair	Muticore + 7/2.00 GZ (catenary)		42.0	21.99 (Catenary Wire)	26.0 (Catenary Wire)	1.31	193 (Catenary Wire)	11.5 (Catenary Wire)
ADSS 72 CORE (Post 2017)			12.5		28.00	0.120	13	7.2
CCT 120mm <sup>2</sup>	7/4.75 AAC 1350		21.6	124	18.9	0.570	65	23
CCT 120mm <sup>2</sup>	7/4.75 AAAC 1120		21.6	124	27.1	0.570	65	23
Other								
OPGW 62mm <sup>2</sup>	3/3.35 ACS 4/3.35 AA		11.0	62	37.9	0.285	95	17.0
OPGW 65mm <sup>2</sup> (Pre 2017 Cable)	2/3.7 ACS 4/3.7 AA		11.1	65	37.9	0.284	96	17.2
OPGW 115mm <sup>2</sup>	8/2.26 ACS 11/3.10 AA		14.48	115	65.4	0.473	91	18

<b>B</b>	DATE	01/06/17		  © COPYRIGHT 2017 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	APP'D	F. ZAINI	<b>CABLE DATA</b> MECHANICAL PROPERTIES				
	APP'D	F Zaini			DATE	20/10/2015					
	CKD	P Relf			REC'D						
	ATHR	F Zaini			CKD	P. RELF	10824-A4	SEC 9	SUB 4	SHT 1	REV B
	Sht 1 data updated to include latest Pilot, ADSS and OPGW cable data.				AUTHR	K. GOSDEN					
				WORD							

**MECHANICAL PROPERTIES  
STANDARD DISTRIBUTION CABLES**

Code Name	Stranding/Area		Nom. Overall Dia. (mm)	Cross-Sectional Area (mm <sup>2</sup> )	Min. Breaking Load (kN)	Mass (kg/m)	Modulus of Elasticity (GPa)	Coefficient of Linear Expansion (°C x 10 <sup>-6</sup> )
	Metric (mm/mm <sup>2</sup> )	Imperial (Inches/Gauge)						
Service Cables								
2B25	2 x 25 AAC		13.8	50	7.64	0.18	59	23
3B25	3 x 25 AAC		16	75	11.46	0.27	59	23
4B25	4 x 25 AAC		22.2	100	15.28	0.36	59	23
4B35	4 x 35 AAC		24.9	140	21.39	0.5	59	23
2B6	2 x 6 HDC		10.6	12	4.8	0.153	124	17
Bare AAC								
THRIP		7/.074	5.64	19.42	3.42	0.054	59	23
GNAT		7/.087	6.62	26.84	4.73	0.074	59	23
JUPITER	7/2.25		6.75	27.8	4.76	0.076	59	23
LOCUST		7/.093	7.08	30.67	5.41	0.085	59	23
GRUB		7/.118	9.0	49.39	8.23	0.135	59	23
FLY		7/.134	10.21	63.69	10.61	0.174	59	23
		7/.144	10.97	73.54	11.82	0.201	59	23
WASP		7/.173	13.18	106.16	17.7	0.290	59	23
MERCURY	7/4.50			111	16.8	0.305	59	23
		7/.186	14.17	122.7	19.17	0.327	59	23
		7/.211	16.08	158.0	24.68	0.421	59	23
		37/.102	18.13	195.0	30.54	0.537	56	23
		37/.118	20.98	261.0	40.35	0.719	56	23
SATURN	37/3.00		21.0	261.5	41.8	0.721	56	23
Bare AAAC (Alloy 1120)								
IODINE	7/4.75		14.25	124	27.1	0.339	59	23
OXYGEN	19/4.75		23.75	336.7	73.6	0.925	56	23


**B** DATE 01/06/17  
 APP'D F Zaini  
 CKD P Relf  
 ATHR F Zaini  
 Sht 1 data updated to include latest Pilot, ADSS and OPGW cable data.

  
 © COPYRIGHT 2017 ENERGEX  
 This drawing must not be reproduced in part or whole without written permission from ENERGEX

APP'D	F. ZAINI	<b>CABLE DATA</b> MECHANICAL PROPERTIES				
DATE	20/10/2015					
REC'D						
CKD	P. RELF					
AUTHR	K. GOSDEN					
WORD		10824-A4	SEC 9	SUB 4	SHT 2	REV B


**MECHANICAL PROPERTIES  
STANDARD DISTRIBUTION CABLES**

Code Name	Stranding/Area		Nom. Overall Dia. (mm)	Cross-Sectional Area (mm <sup>2</sup> )	Min. Breaking Load (kN)	Mass (kg/m)	Modulus of Elasticity (GPa)	Coefficient of Linear Expansion (°C x 10 <sup>-6</sup> )
	Metric (mm/mm <sup>2</sup> )	Imperial (Inches/Gauge)						
Bare ACSR								
FERRET		6/1/.118	9.0	49.4	14.74	0.171	86	19.3
MINK		6/1/.144	10.97	73.54	21.67	0.255	86	19.3
RACoon		6/1/.161	12.26	91.9	26.96	0.319	86	19.3
DOG		6/.186+7/.062	14.15	118.5	32.5	0.396	83	19.9
CHERRY	6/4.75+7/1.60		14.3	120.4	33.2	0.404	76	19.9
WOLF		30/7/.102	18.13	194.9	69.2	0.732	80	18.4
LEMON	30/7/3.00		21.0	261.5	90.1	0.973	80	18.4
PANTHER		30/7/.118	21.0	261.5	92.25	0.975	80	18.4
BEAR		30/7/.132	23.46	326.6	111.34	1.22	92	18.4
GOAT		30/7/.146	25.96	399.6	135.47	1.494	92	18.4
CAMEL		54/7/.132	30.17	538.6	145.14	1.809	83	19.9
KOOKABURRA		3/4/.093	7.09	30.7	22.29	0.174	139	13.9
Bare Copper								
		7/.064 (7/16)	4.87	14.5	6.1	0.131	124	17
		7/.080 (7/14)	6.09	22.7	9.45	0.206	124	17
		7/.104 (7/12)	7.92	38.4	15.78	0.348	124	17
		19/.044	5.58	18.36	7.82	0.168	124	17
		19/.052	6.6	26.0	10.82	0.236	124	17
		19/.064 (19/16)	8.12	39.4	16.2	0.357	124	17
		19/.072	9.14	49.9	20.5	0.452	124	17
		19/.083 (19/14)	10.54	66.3	26.97	0.603	124	17
		19/.101 (19/12)	12.8	98.2	39.64	0.890	124	17
		19/.116	14.73	129.6	51.72	1.175	124	17
		37/.064 (37/16)	11.37	76.8	31.24	0.698	124	17
		37/.072	12.8	97.2	39.53	0.883	124	17
		37/.083 (37/14)	14.75	129.1	51.5	1.170	124	17
		37/.093	16.53	162.2	64.7	1.470	124	17
		37/.103 (37/12)	18.31	198.9	79.37	1.803	124	17

<b>B</b>	DATE	01/06/17	  © COPYRIGHT 2017 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	APP'D	F. ZAINI	<b>CABLE DATA</b> MECHANICAL PROPERTIES								
	APP'D	F Zaini		DATE	20/10/2015									
	CKD	P Relf		REC'D		10824-A4								
	ATHR	F Zaini		CKD	P. RELF						SEC	SUB	SHT	REV
	Sht 1 data updated to include latest Pilot, ADSS and OPGW cable data.			AUTHR	K. GOSDEN						9	4	3	B
			WORD											

**MECHANICAL PROPERTIES  
STANDARD DISTRIBUTION CABLES**

Code Name	Stranding/Area		Nom. Overall Dia. (mm)	Cross-Sectional Area (mm <sup>2</sup> )	Min. Breaking Load (kN)	Mass (kg/m)	Modulus of Elasticity (GPa)	Coefficient of Linear Expansion (/°C x 10 <sup>-6</sup> )
	Metric (mm/mm <sup>2</sup> )	Imperial (Inches/Gauge)						
Cadmium-Copper								
		7/.113	8.6	45.3	26.5	0.410	124	17
		19/.089	11.3	76.2	45.14	0.695	124	17
Bare Steel								
		3/.104 (3/12)	5.1	16.77	21.85	0.130	193	11.52
		7/.104 (7/12)	7.92	38.70	50.83	0.304	193	11.52
	7/2.75		8.25	41.58	51.77	0.326	193	11.52
	19/2.00		10.0	56.59	74.0	0.483	193	11.52
		19/.080 (19/14)	10.16	61.61	76.79	0.499	193	11.52
	19/2.75		13.75	112.9	140.56	0.888	193	11.52

B	DATE	01/06/17		  © COPYRIGHT 2017 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	APP'D	F. ZAINI	CABLE DATA MECHANICAL PROPERTIES				
APP'D	F Zaini				DATE	20/10/2015					
CKD	P Relf				REC'D						
ATHR	F Zaini				CKD	P. RELF					
Sht 1 data updated to include latest Pilot, ADSS and OPGW cable data.					AUTHR	K. GOSDEN	10824-A4	SEC 9	SUB 4	SHT 4	REV B
					WORD						

## **BROADBAND COMMUNICATION CABLE (BBCC) IDENTIFICATION**

### **TELSTRA**

Where multiple circuits are present, Telstra take the bottom position.

Earthing of catenary is via a driven stake near the base of a wood pole.

Cantilever brackets may be present.

Power supply units are clearly marked and are small shoe box sized units.

Fibre optic cables are underground, ie no overhead fibre

Lashing wire is generally terminated within the expansion loop.

Service 'drops' are taken from service 'T' hooks at the pole. These hooks may be present even though no service is attached.

### **OPTUS**

Where multiple circuits are present, Optus take the top position.

Earthing of the catenary is via the ENERGEX neutral.

Power supply units are clearly marked and are larger than Telstra Units.


Overhead fibre optic cables are present in ENERGEX's area of supply. These are indicated by:

- 'Figure of eight' configurations,
- Cables that continue straight through the expansion loops.

Lashing wire is generally terminated outside the expansion loop area.

Service 'drops' may be attached either at the pole or in-line (flying fox). Usually it is only Optus that employs in-line service arrangements.

**Note:** Refer 'Shared Assets Installations Manual' 7192-A4, for further detail.

<b>A</b>	DATE		 <p>© COPYRIGHT 2015 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX</p>	APP'D	F. ZAINI	<b>CABLE DATA</b> BROADBAND COMM'S CABLE ID.							
APP'D				DATE	20/10/2015								
CKD				REC'D									
ATHR				CKD	P. RELF								
ORIGINAL ISSUE				AUTHR	K. GOSDEN	10824-A4	SEC	9	SUB	5	SHT	1	REV
			WORD										

## ENGINEERING BACKGROUND

### MECHANICAL PROPERTIES

**Nominal or projected diameter** is of relevance when determining cable behaviour under wind conditions. Insulation, if present, is included.

**Cross-sectional area** is important in determining the cable strength, weight and potential elastic stretch. Where a cable has a supporting catenary, only the cross-sectional area of the catenary is included. Current-carrying conductors and insulation, if present, are excluded.

**Mass** determines the amount of sag within a span strung at a given tension, or conversely the amount of tension applied to the supports by a line with a given sag.

**Minimum breaking load** is the ultimate tensile strength of the cable. In general, conductor tension should not exceed 50% of breaking load, even under wind conditions or cold conditions.

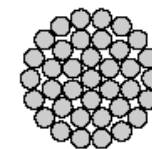
**Modulus of elasticity** is a measure of stress or load applied to a material to cause a given strain (deformation or stretch).

**Coefficient of Linear Expansion** is the degree to which a cable expands in length as temperature increases. This determines the relationship between sag/tension and temperature.

### CABLE DESIGNATIONS

Cables may be known by:

- A code name, eg “MOON”, which represents 7/4.75 AAC
- Stranding and material, eg “7/4.75 AAC”. Here the ‘7’ is the number of strands and the ‘4.75’ is the strand diameter in millimetres. For older imperial conductor sizes, the diameter may be expressed in terms of inches (eg “7/.104”) or as a standard wire gauge (eg “7/12”). The smaller the wire gauge number, the larger the diameter. ACSR conductors have a more complex designation because of the combination of materials, eg RAISIN is designated “3/4/2.50”, having 3 strands of aluminium and 4 strands of galvanized steel, all with a 2.5mm diameter.
- Nominal cross-sectional area, eg “LVABC95” (95mm<sup>2</sup> LVABC) or “CCT120” (120mm<sup>2</sup> covered conductor with added insulation thickness). This is used primarily with insulated conductors and cables. Note that actual cross-sectional area may differ slightly from nominal cross-sectional area.

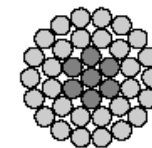


37/3.00  
AAC  
(SATURN)

3.00 mm




7/3.00  
AAC  
(LIBRA)



30/7/3.00  
ACSR  
(LEMON)



LVABC

A	DATE		  © COPYRIGHT 2015 ENERGEX This drawing must not be reproduced in part or whole without written permission from ENERGEX	APP'D	F. ZAINI	<b>CABLE DATA</b> ENGINEERING BACKGROUND				
APP'D				DATE	20/10/2015					
CKD				REC'D						
ATHR				CKD	P. RELF	10824-A4	SEC 9	SUB 6	SHT 1	REV A
ORIGINAL ISSUE				AUTHR	K. GOSDEN					
					WORD					