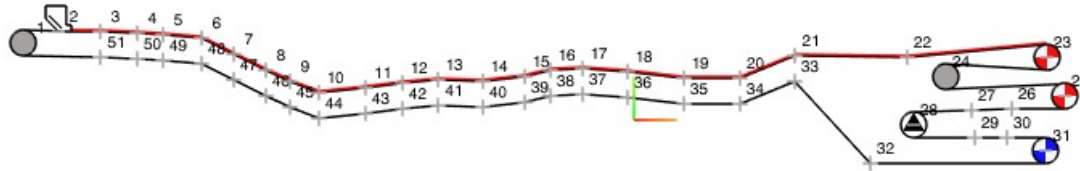


Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



Conveyor Material

Material	Hematite Ore, Secondary crushed	Surcharge Angle	20 °
Low Bulk Density	2200 kg/m³	Angle of Repose	36 °
High Bulk Density	2350 kg/m³	Material Lump size	100 mm

Conveyor Data

Conveying Distance	10212.39 m	Design Capacity	2200 tonnes/hr
Nett Lift / Lower(-)	-4.68 m	Belt Speed	4.1 m/s

Belt Details

Belt Width	1050 mm	Calculated Belt % Full	55.39 %
Belt Class & Run Safety Factor	ST-3000 6.98	Top Cover Thickness	9 mm
Belt Rated Tension	422 kN/m	Bottom Cover Thickness	7 mm
Belt Total Length	20531.7 m	Belt Mass	36.57 kg

Belt Tensions and Power Calculations Visco

Effective Tens. Fully Loaded	326.89 kN	Belt Power - Empty Belt	541.54 kW
Maximum Tension Tmax	451.06 kN	Belt Power - Inclines Loaded	1337.98 kW
Minimum Tension Tmin	127.27 kN	Belt Power - Declines Loaded	559.32 kW
Sag Tension 1%	39.82 kN	Belt Power - Fully Loaded	1340.27 kW
Takeup Type	Horizontal Gravity	Drive Efficiency	95.00 %
Takeup Mass	26000 kg	Absorbed Power Fully Loaded	1410.82 kW
Takeup Pulley Belt Tension	127.49 kN	Installed Motor Power	1400 kW

Carry and Return Idlers

Carry Idler Trough Angle	35 °	Return Idler Trough Angle	10 °
Carry Idler Spacing	1.75 m	Return Idler Spacing	3.5 m
Carry Idler No Rolls x Dia	3 x 178 mm	Return Idler No Rolls x Dia	2 x 152 mm

Dynamics and Miscellaneous Data

Startup Factor - Fully Loaded	120.00 %	CEMA Temperature Factor Kt	1
Startup Factor - Empty	120.00 %	Total Braking Torque LSS	40.00 kNm
Starting Time - Fully Loaded	213.42 sec	Stop Time - Loaded, Braking	34.44 sec
Starting Time - Empty	27.49 sec	Stop Time - Loaded, Coasting	40.72 sec

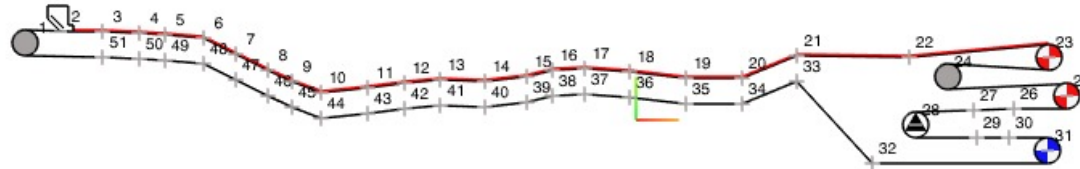
Designers Comments

Overland conveyor CV334 10km long with 2 drives. Run this with ISO and then with VISCO and compare demand power and belt tensions. The VISCO calculation is much lower demand power and this matches the actual site measured demand power, this conveyor was able to operate at 2200tph with only 2 x 700kW motors installed. VISCO method is applicable in this case.

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
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CV334 - 10km OLC



Station / Section

Station	Description	Section Length m	Section Lift m	X co-ord m	Y co-ord m	Z co-ord m	Capacity tph	Ten Adj. kN	Idler Spacing m	Skirt Length m	No. of Scrapers	Friction Factor Input
1	Tail	5.78	0.02	0.00	0.00	414.23	0		1			0.00000
2	Hopper	5.80	0.00	5.78	0.00	414.85	2200		0.25	4.00		0.00000
3	Int. Pt	92.96	-3.38	11.58	0.00	414.85	2200		1.75			0.00000
4	Int. Pt	495.79	-16.26	104.48	0.00	411.47	2200		1.75			0.00000
5	Int. Pt	350.01	-2.24	600.00	0.00	395.21	2200		1.75			0.00000
6	Int. Pt	300.05	-5.67	950.00	0.00	392.97	2200		1.75			0.00000
7	Int. Pt	1750.15	-23.14	1250.00	0.00	387.30	2200		1.75			0.00000
8	Int. Pt	280.00	-0.66	3000.00	0.00	364.16	2200		1.75			0.00000
9	Int. Pt	320.00	-1.30	3280.00	0.00	363.50	2200		1.75			0.00000
10	Int. Pt	590.00	1.57	3600.00	0.00	362.20	2200		1.75			0.00000
11	Int. Pt	160.13	6.37	4190.00	0.00	363.77	2200		1.75			0.00000
12	Int. Pt	1270.00	0.76	4350.00	0.00	370.14	2200		1.75			0.00000
13	Int. Pt	730.04	7.24	5620.00	0.00	370.90	2200		1.75			0.00000
14	Int. Pt	450.04	6.23	6350.00	0.00	378.14	2200		1.75			0.00000
15	Int. Pt	300.04	-4.68	6800.00	0.00	384.37	2200		1.75			0.00000
16	Int. Pt	500.00	-1.32	7100.00	0.00	379.69	2200		1.75			0.00000
17	Int. Pt	400.01	2.92	7600.00	0.00	378.37	2200		1.75			0.00000
18	Int. Pt	800.05	8.82	8000.00	0.00	381.29	2200		1.75			0.00000
19	Int. Pt	520.20	14.57	8800.00	0.00	390.11	2200		1.75			0.00000
20	Int. Pt	440.22	-8.28	9320.00	0.00	404.68	2200		1.75			0.00000
21	Int. Pt	234.48	-0.75	9760.14	0.00	396.40	2200		1.75			0.00000
22	Int. Pt	222.41	14.52	9994.62	0.00	395.65	2200		1.75			0.00000
23	Drive	51.78	-7.28	10216.61	0.00	409.25	0		4		2	0.00000
24	Bend	10.86	1.57	10165.61	0.00	400.14	0		4			0.00000
25	Drive	36.61	-0.03	10176.61	0.00	399.96	0		3.5			0.00000
26	Int. Pt	20.00	0.00	10140.00	0.00	399.00	0		3.5			0.00000
27	Int. Pt	25.00	-0.25	10120.00	0.00	399.00	0		3.5			0.00000
28	Takeup	10.02	0.60	10095.00	0.00	398.15	0		3.5			0.00000
29	Int. Pt	9.50	0.00	10105.00	0.00	398.15	0		3.5			0.00000
30	Int. Pt	9.52	-0.65	10114.50	0.00	398.15	0		3.5			0.00000
31	Brake	129.39	-1.09	10124.00	0.00	396.85	0		3.5			0.00000
32	Int. Pt	234.48	0.75	9994.62	0.00	395.10	0		3.5			0.00000
33	Int. Pt	440.22	8.28	9760.14	0.00	395.85	0		3.5			0.00000

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

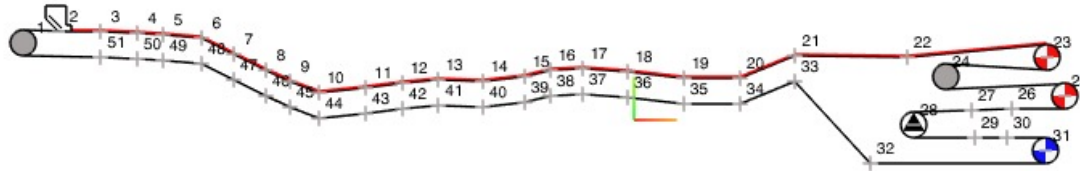
Station / Section

Station	Description	Section Length m	Section Lift m	X co-ord m	Y co-ord m	Z co-ord m	Capacity tph	Ten Adj. kN	Idler Spacing m	Skirt Length m	No. of Scrapers	Friction Factor Input
34 Int. Pt		520.20	-14.57	9320.00	0.00	404.13	0		3.5			0.00000
35 Int. Pt		800.05	-8.82	8800.00	0.00	389.56	0		3.5			0.00000
36 Int. Pt		400.01	-2.92	8000.00	0.00	380.74	0		3.5			0.00000
37 Int. Pt		500.00	1.32	7600.00	0.00	377.82	0		3.5			0.00000
38 Int. Pt		300.04	4.68	7100.00	0.00	379.14	0		3.5			0.00000
39 Int. Pt		450.04	-6.23	6800.00	0.00	383.82	0		3.5			0.00000
40 Int. Pt		730.04	-7.23	6350.00	0.00	377.59	0		3.5			0.00000
41 Int. Pt		1270.00	-0.76	5620.00	0.00	370.35	0		3.5			0.00000
42 Int. Pt		160.13	-6.36	4350.00	0.00	369.59	0		3.5			0.00000
43 Int. Pt		590.00	-1.57	4190.00	0.00	363.22	0		3.5			0.00000
44 Int. Pt		320.00	1.30	3600.00	0.00	361.65	0		3.5			0.00000
45 Int. Pt	Horiz IP	280.00	0.66	3280.00	0.00	362.95	0		3.5			0.00000
46 Int. Pt		1750.15	23.14	3000.00	0.00	363.61	0		3.5			0.00000
47 Int. Pt		300.05	5.67	1250.00	0.00	386.75	0		3.5			0.00000
48 Int. Pt		350.01	2.24	950.00	0.00	392.42	0		3.5			0.00000
49 Int. Pt		495.79	16.26	600.00	0.00	394.66	0		3.5			0.00000
50 Int. Pt		92.96	3.38	104.48	0.00	410.92	0		3.5			0.00000
51 Int. Pt	Skirt	11.60	-0.67	11.58	0.00	414.30	0		3.5	2.00		0.00000
Totals:		20516.61	6.75					0.00	6.00	2.00		

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
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Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



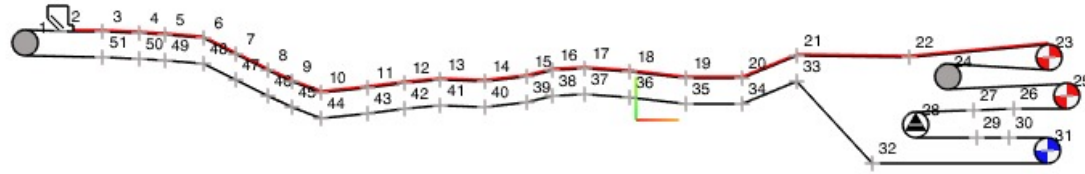
Drive Torque Start-up Factor Loaded	120.00 %	Takeup Pulley Belt Tension	127.49 kN
Drive Torque Start-up Factor Empty	120.00 %	Takeup Mass	26000 kg

Drive / Brake Number	Running		Starting		Braking	
	Fully Loaded	Empty Belt	Fully Loaded	Empty Belt	Fully Loaded	Empty Belt
Drive No. 1 Type: Drive	Drive 1					
Pulley No. 23 Lagging Type:	Rubber					
Wrap Angle	175.19	175.19	175.19	175.19	175.19	175.19
Co-efficient of Friction	0.25	0.25	0.35	0.35	0.35	0.35
Drive Factor Cw	0.871	0.871	0.522	0.522	0.522	0.522
Calculated Belt Tension T1	kN 451.06	257.53	498.74	400.63	211.66	206.91
Calculated Belt Tension T2	kN 289.36	192.58	313.10	263.36	170.70	168.12
Minimum Required T2	kN 140.84	56.57	96.90	71.65	21.38	20.25
Surplus T2 Tension (T1-T2)	kN 148.52	136.01	216.20	191.71	149.32	147.87
Drive No. 2 Type: Drive	Drive 2					
Pulley No. 25 Lagging Type:	Rubber					
Wrap Angle	204.6	204.6	204.6	204.6	204.6	204.6
Co-efficient of Friction	0.25	0.25	0.35	0.35	0.35	0.35
Drive Factor Cw	0.694	0.694	0.402	0.402	0.402	0.402
Calculated Belt Tension T1	kN 289.72	192.51	313.57	264.21	170.34	167.38
Calculated Belt Tension T2	kN 127.28	127.27	127.20	126.70	128.61	128.27
Minimum Required T2	kN 112.73	45.28	74.92	55.28	16.78	15.72
Surplus T2 Tension (T1-T2)	kN 14.55	81.99	52.28	71.42	111.83	112.55
Drive No. 3 Type: Brake	Brake					
Pulley No. 31 Lagging Type:	Rubber					
Wrap Angle	180	180	180	180	180	180
Co-efficient of Friction	0.25	0.25	0.35	0.35	0.35	0.35
Drive Factor Cw	0.838	0.838	0.499	0.499	0.499	0.499
Calculated Belt Tension T1	kN 128.22	128.22	128.27	128.66	127.86	127.88
Calculated Belt Tension T2	kN 128.86	128.86	128.95	129.59	184.31	184.35
Minimum Required T2	kN 0.54	0.54	0.34	0.46	28.17	28.18
Surplus T2 Tension (T1-T2)	kN 127.68	127.68	127.93	128.20	99.69	99.70

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
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CV334 - 10km OLC



Drive Torque Start-up Factor Loaded	120 %	Takeup Pulley Belt Tension	127.49 kN
Drive Torque Start-up Factor Empty	120 %	Takeup Mass	26000 kg

Station No	Running				Starting		Braking		Coasting	
	Fully Loaded Tension kN	Empty Tension kN	Inclines Loaded Tension kN	Declines Loaded Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN
1 Tail	170.72	170.72	170.72	170.72	179.00	235.03	175.42	178.82	127.30	137.69
2 Hopper	171.64	171.64	171.64	171.64	179.96	236.25	176.09	179.52	128.01	138.46
3 Int. Pt	174.94	172.12	174.95	175.12	183.30	236.86	179.20	179.90	131.15	138.87
4 Int. Pt	171.43	171.70	174.53	171.61	180.15	237.15	173.47	178.95	125.76	138.09
5 Int. Pt	155.91	170.10	172.93	156.09	166.54	239.35	146.12	174.52	100.23	134.53
6 Int. Pt	161.83	172.29	175.12	162.01	173.80	244.23	143.68	174.70	99.09	135.34
7 Int. Pt	160.10	172.82	175.65	160.28	173.23	247.06	134.79	173.52	91.30	134.69
8 Int. Pt	168.04	179.47	182.30	168.19	187.91	267.15	100.95	170.15	63.90	134.44
9 Int. Pt	174.84	181.63	184.46	174.99	195.79	271.46	101.06	170.71	65.05	135.50
10 Int. Pt	181.58	183.90	186.73	181.73	203.76	276.19	100.16	171.15	65.33	136.50
11 Int. Pt	201.17	189.50	206.26	187.33	225.63	286.32	105.67	173.37	73.01	139.78
12 Int. Pt	217.27	193.15	222.35	190.98	242.34	291.20	117.94	176.10	85.87	142.80
13 Int. Pt	254.21	204.26	259.22	202.10	284.18	312.06	124.57	179.95	97.17	148.90
14 Int. Pt	287.64	213.08	292.62	210.92	320.42	326.49	140.57	184.59	115.86	154.84
15 Int. Pt	311.36	219.15	316.32	216.99	345.87	336.01	153.54	188.08	130.49	159.13
16 Int. Pt	311.05	220.03	317.19	216.86	346.72	339.19	146.07	187.25	124.13	158.83
17 Int. Pt	322.29	223.82	320.97	228.42	359.89	346.82	145.38	188.18	125.27	160.65
18 Int. Pt	338.50	228.28	337.17	232.88	377.64	354.36	152.04	190.35	133.40	163.53
19 Int. Pt	376.30	238.26	374.98	242.86	418.52	370.48	170.74	195.75	155.05	170.36
20 Int. Pt	416.91	247.92	415.59	252.52	461.13	384.13	198.93	202.43	185.16	177.97
21 Int. Pt	413.70	248.70	416.36	249.62	459.62	388.29	185.21	200.69	173.06	177.01
22 Int. Pt	418.65	250.43	418.08	254.74	465.47	391.82	184.56	201.08	173.27	177.82
23 Drive	451.06	257.53	450.48	261.84	498.74	400.63	211.66	206.91	201.19	184.04

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
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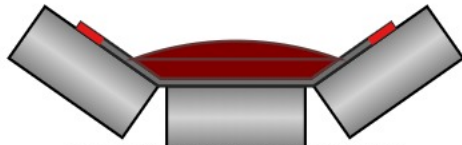
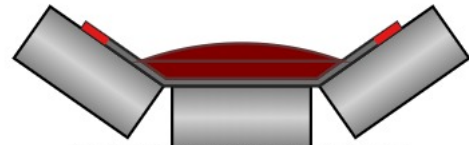
Station No	Running				Starting		Braking		Coasting	
	Fully Loaded Tension kN	Empty Tension kN	Inclines Loaded Tension kN	Declines Loaded Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN
24 Bend	287.75	190.98	287.45	193.13	311.53	262.10	168.83	166.27	164.98	155.88
25 Drive	289.72	192.51	289.43	194.68	313.57	264.21	170.34	167.38	166.57	157.12
26 Int. Pt	127.40	127.40	127.40	127.40	127.36	127.09	128.52	128.21	131.37	130.42
27 Int. Pt	127.48	127.48	127.48	127.48	127.45	127.31	128.49	128.19	131.36	130.43
28 Takeup	127.49	127.49	127.49	127.49	127.49	127.49	127.49	127.49	127.49	127.49
29 Int. Pt	128.38	128.38	128.38	128.38	128.42	128.69	128.12	128.14	128.16	128.21
30 Int. Pt	128.42	128.42	128.42	128.42	128.47	128.80	128.11	128.13	128.16	128.22
31 Brake	128.22	128.22	128.22	128.22	128.27	128.66	127.86	127.88	127.91	127.99
32 Int. Pt	128.96	128.96	128.96	128.96	129.17	130.57	183.71	183.80	127.87	128.13
33 Int. Pt	130.05	130.05	130.05	130.05	130.45	133.13	183.63	183.79	127.97	128.47
34 Int. Pt	134.57	134.57	134.57	134.57	135.32	140.41	185.94	186.25	130.63	131.57
35 Int. Pt	131.17	131.17	131.17	131.17	132.34	140.28	179.94	180.42	125.02	126.49
36 Int. Pt	130.82	130.82	130.82	130.82	132.64	144.95	175.58	176.33	121.28	123.57
37 Int. Pt	131.18	131.18	131.18	131.18	133.32	147.81	173.94	174.82	119.95	122.64
38 Int. Pt	133.41	133.41	133.41	133.41	135.96	153.18	173.66	174.71	120.06	123.26
39 Int. Pt	136.14	136.14	136.14	136.14	138.93	157.79	174.89	176.04	121.52	125.02
40 Int. Pt	135.49	135.49	135.49	135.49	138.64	159.97	171.99	173.28	118.97	122.92
41 Int. Pt	135.46	135.46	135.46	135.46	139.20	164.52	168.30	169.84	115.84	120.54
42 Int. Pt	139.65	139.65	139.65	139.65	144.42	176.67	166.13	168.09	114.66	120.64
43 Int. Pt	137.93	137.93	137.93	137.93	142.83	175.96	163.61	165.62	112.26	118.40
44 Int. Pt	139.44	139.44	139.44	139.44	144.81	181.17	162.17	164.37	111.27	118.01
45 Int. Pt	141.03	141.03	141.03	141.03	146.66	184.76	162.15	164.47	111.50	118.57
46 Int. Pt	142.25	142.25	142.25	142.25	148.11	187.74	161.97	164.38	111.54	118.89
47 Int. Pt	156.69	156.69	156.69	156.69	163.96	213.16	167.65	170.64	118.57	127.69
48 Int. Pt	159.78	159.78	159.78	159.78	167.30	218.13	169.24	172.33	120.39	129.81
49 Int. Pt	161.81	161.81	161.81	161.81	169.61	222.35	169.52	172.72	120.93	130.72
50 Int. Pt	169.38	169.38	169.38	169.38	177.58	233.03	174.60	177.97	126.40	136.69
51 Int. Pt	170.92	170.92	170.92	170.92	179.19	235.16	175.68	179.08	127.55	137.93

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

Station No	Running				Starting		Braking		Coasting	
	Fully Loaded Tension kN	Empty Tension kN	Inclines Loaded Tension kN	Declines Loaded Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN
Minimum Tension	127.40	127.40	127.40	127.40	127.36	127.09	100.16	127.49	63.90	118.01
Maximum Tension	451.06	257.53	450.48	261.84	498.74	400.63	211.66	206.91	201.19	184.04
Effective Tension	326.89	132.08	326.34	136.42						
Ave.Belt Tension	199.15	172.14	202.25	170.57	215.23	240.14	155.14	177.10	114.90	137.24
Belt Elong. m	7.010	4.564	7.290	4.422	8.465	10.720	3.025	5.013	-0.617	1.405
T/up Travel m	3.505	2.282	3.645	2.211	4.233	5.360	1.513	2.507	-0.309	0.702

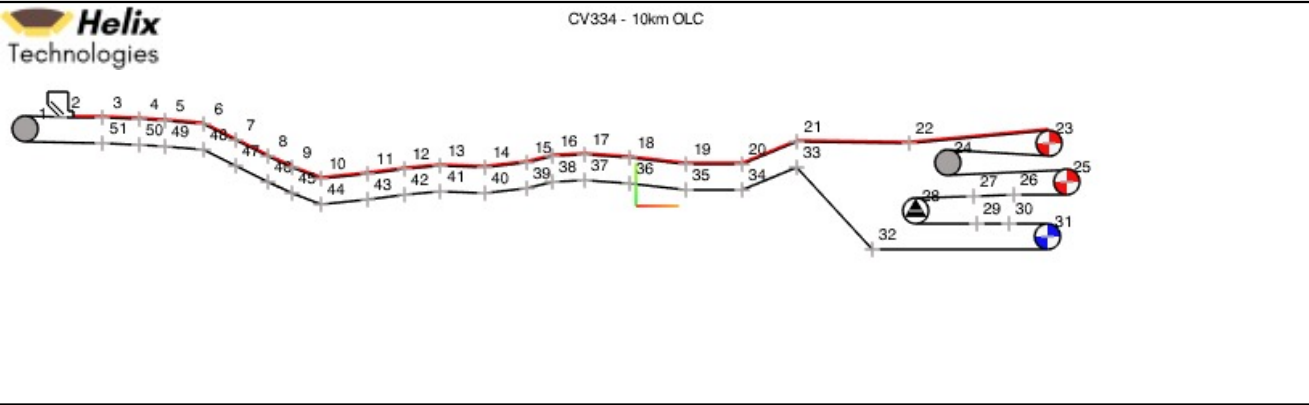
Helix Technologies Pty Ltd

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

Low Bulk Density: 2200 kg/m³High Bulk Density: 2350 kg/m³

Conveyed Material		Belt Speed & Capacity	
Material Description	Hematite Ore, Secondary crushed	Belt Speed	4.1 m/s
Low Bulk Density	2200 kg/m³	Belt Design Capacity Input	2200 tonnes/hr
High Bulk Density	2350 kg/m³	Section Loading Max Capacity	2200 tonnes/hr
Surcharge Angle	20 °	Carry Idler Trough Angle	35 °
Angle of Repose	36 °	Belt Dimensions	
Material Lump Size	100 mm	Top Cover Thickness	9 mm
Belt Make & Class		Bottom Cover Thickness	7 mm
Belt Category	Bando Steel	Belt Carcass Thickness	5.4 mm
Belt Description	BANDO STEEL CORD	Belt Total Thickness	21.4 mm
Belt Class / Plies	ST-3000	Total Belt (Tape) Length	20531.7 m
Belt Reinforcement Fibre	STEEL	Time for 1 Revolution	5007.7 sec
Belt Width	1050 mm	Belt Load Area & Capacity at 2200kg/m³	
Belt Modulus	216000 kN/m	Minimum Rec. Edge Distance	81 mm
Cord Diameter		Actual Edge Distance	181 mm
Cord Pitch		Load Burden Depth	141 mm
Number of Cords		Load Burden Width	634 mm
Belt Tensions		Belt Load Area at Minimum Recommended Edge Distance	0.1223 m²
Belt Rated Tension / m width	422 kN/m	Belt Load Area utilised at Low Bulk Density	0.0678 m²
Calculated Tension / m width	429.6 kN/m	Belt Actual % Full at Low BD	55.4 %
Belt Rated Tension for width	443.1 kN	Belt Load Area & Capacity at 2350 kg/m³	
Calculated Max Run Tension	451.1 kN	Minimum Recommended Edge Distance	81 mm
Minimum Tension Tmin	127.3 kN	Actual Edge Distance High BD	190 mm
Allowable Tension Rise, Starting	150 %	Belt Load Area Utilised at High Bulk Density	0.0634 m²
Allowable Belt Tension, Starting	664.7 kN	Belt Actual % Full at High BD	51.9 %
Actual Belt Tension, Starting	498.7 kN	Flooded Belt Capacity at 2350 kg/m³	
Belt and Material Mass		Flooded Belt Load Area at Zero Edge Distance	0.1762 m²
Belt Top Cover Mass	10.7 kg/m	Flooded Belt Capacity	6110 tonnes/hr
Belt Bottom Cover Mass	8.3 kg/m	Flooded Belt Material Mass	413.9 kg/m
Belt Carcass Mass	17.6 kg/m		
Belt Mass Wb (per linear m)	36.6 kg/m		
Material Mass Wm (per linear m)	149.1 kg/m		
Total Mass (Wb + Wm)	185.6 kg/m		
Total Belt Mass (Wb x L)	750,844 kg		

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



Allowable Belt Sag % Running	1 %	Takeup Pulley Belt Tension	127.49 kN
Allowable Belt Sag % Start / Stop	5 %	Takeup Mass	26000 kg

Station No	Running				Starting		Braking		Coasting	
	Fully Loaded Tension kN	Empty Tension kN	Inclines Loaded Tension kN	Declines Loaded Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN
1 Tail	170.72	170.72	170.72	170.72	179.00	235.03	175.42	178.82	127.30	137.69
Idler Spacing m	1.00									
Belt Sag %	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.04	0.03
2 Hopper	171.64	171.64	171.64	171.64	179.96	236.25	176.09	179.52	128.01	138.46
Idler Spacing m	0.25									
Belt Sag %	0.03	0.01	0.03	0.03	0.03	0.00	0.03	0.01	0.04	0.01
3 Int. Pt	174.94	172.12	174.95	175.12	183.30	236.86	179.20	179.90	131.15	138.87
Idler Spacing m	1.75									
Belt Sag %	0.23	0.05	0.04	0.23	0.22	0.03	0.22	0.04	0.30	0.06
4 Int. Pt	171.43	171.70	174.53	171.61	180.15	237.15	173.47	178.95	125.76	138.09
Idler Spacing m	1.75									
Belt Sag %	0.23	0.05	0.04	0.23	0.22	0.03	0.23	0.04	0.32	0.06
5 Int. Pt	155.91	170.10	172.93	156.09	166.54	239.35	146.12	174.52	100.23	134.53
Idler Spacing m	1.75									
Belt Sag %	0.26	0.05	0.05	0.26	0.24	0.03	0.27	0.04	0.40	0.06
6 Int. Pt	161.83	172.29	175.12	162.01	173.80	244.23	143.68	174.70	99.09	135.34
Idler Spacing m	1.75									
Belt Sag %	0.25	0.05	0.04	0.25	0.23	0.03	0.28	0.04	0.40	0.06
7 Int. Pt	160.10	172.82	175.65	160.28	173.23	247.06	134.79	173.52	91.30	134.69
Idler Spacing m	1.75									
Belt Sag %	0.25	0.05	0.04	0.25	0.23	0.03	0.30	0.05	0.44	0.06
8 Int. Pt	168.04	179.47	182.30	168.19	187.91	267.15	100.95	170.15	63.90	134.44
Idler Spacing m	1.75									
Belt Sag %	0.24	0.04	0.04	0.24	0.21	0.03	0.39	0.05	0.62	0.06

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Project		Demo 06 Mine ore transport				Client		ABC Iron Pty Ltd			
Project No.		P0972				Prepared By		Peter Burrow			
Conveyor No.		CV334 - 10km OLC				Design Date		01 Oct 2019			
Station No	Running				Starting		Braking		Coasting		
	Fully Loaded Tension kN	Empty Tension kN	Inclines Loaded Tension kN	Declines Loaded Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN	
9 Int. Pt	174.84	181.63	184.46	174.99	195.79	271.46	101.06	170.71	65.05	135.50	
Idler Spacing m	1.75										
Belt Sag %	0.23	0.04	0.04	0.23	0.20	0.03	0.39	0.05	0.61	0.06	
10 Int. Pt	181.58	183.90	186.73	181.73	203.76	276.19	100.16	171.15	65.33	136.50	
Idler Spacing m	1.75										
Belt Sag %	0.22	0.04	0.21	0.04	0.20	0.03	0.40	0.05	0.61	0.06	
11 Int. Pt	201.17	189.50	206.26	187.33	225.63	286.32	105.67	173.37	73.01	139.78	
Idler Spacing m	1.75										
Belt Sag %	0.20	0.04	0.19	0.04	0.18	0.03	0.38	0.05	0.55	0.06	
12 Int. Pt	217.27	193.15	222.35	190.98	242.34	291.20	117.94	176.10	85.87	142.80	
Idler Spacing m	1.75										
Belt Sag %	0.18	0.04	0.18	0.04	0.16	0.03	0.34	0.04	0.46	0.05	
13 Int. Pt	254.21	204.26	259.22	202.10	284.18	312.06	124.57	179.95	97.17	148.90	
Idler Spacing m	1.75										
Belt Sag %	0.16	0.04	0.15	0.04	0.14	0.03	0.32	0.04	0.41	0.05	
14 Int. Pt	287.64	213.08	292.62	210.92	320.42	326.49	140.57	184.59	115.86	154.84	
Idler Spacing m	1.75										
Belt Sag %	0.14	0.04	0.14	0.04	0.12	0.02	0.28	0.04	0.34	0.05	
15 Int. Pt	311.36	219.15	316.32	216.99	345.87	336.01	153.54	188.08	130.49	159.13	
Idler Spacing m	1.75										
Belt Sag %	0.13	0.04	0.02	0.18	0.12	0.02	0.26	0.04	0.31	0.05	
16 Int. Pt	311.05	220.03	317.19	216.86	346.72	339.19	146.07	187.25	124.13	158.83	
Idler Spacing m	1.75										
Belt Sag %	0.13	0.04	0.02	0.18	0.11	0.02	0.27	0.04	0.32	0.05	
17 Int. Pt	322.29	223.82	320.97	228.42	359.89	346.82	145.38	188.18	125.27	160.65	
Idler Spacing m	1.75										
Belt Sag %	0.12	0.04	0.12	0.03	0.11	0.02	0.27	0.04	0.32	0.05	
18 Int. Pt	338.50	228.28	337.17	232.88	377.64	354.36	152.04	190.35	133.40	163.53	
Idler Spacing m	1.75										
Belt Sag %	0.12	0.03	0.12	0.03	0.11	0.02	0.26	0.04	0.30	0.05	
19 Int. Pt	376.30	238.26	374.98	242.86	418.52	370.48	170.74	195.75	155.05	170.36	
Idler Spacing m	1.75										
Belt Sag %	0.11	0.03	0.11	0.03	0.10	0.02	0.23	0.04	0.26	0.05	

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Station No	Running				Starting		Braking		Coasting	
	Fully Loaded Tension kN	Empty Tension kN	Inclines Loaded Tension kN	Declines Loaded Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN
20 Int. Pt	416.91	247.92	415.59	252.52	461.13	384.13	198.93	202.43	185.16	177.97
Idler Spacing m	1.75									
Belt Sag %	0.10	0.03	0.02	0.16	0.09	0.02	0.20	0.04	0.22	0.04
21 Int. Pt	413.70	248.70	416.36	249.62	459.62	388.29	185.21	200.69	173.06	177.01
Idler Spacing m	1.75									
Belt Sag %	0.10	0.03	0.02	0.16	0.09	0.02	0.21	0.04	0.23	0.04
22 Int. Pt	418.65	250.43	418.08	254.74	465.47	391.82	184.56	201.08	173.27	177.82
Idler Spacing m	1.75									
Belt Sag %	0.10	0.03	0.10	0.03	0.09	0.02	0.22	0.04	0.23	0.04
23 Drive	451.06	257.53	450.48	261.84	498.74	400.63	211.66	206.91	201.19	184.04
Idler Spacing m	4.00									
Belt Sag %	0.04	0.07	0.04	0.07	0.04	0.04	0.08	0.09	0.09	0.10
24 Bend	287.75	190.98	287.45	193.13	311.53	262.10	168.83	166.27	164.98	155.88
Idler Spacing m	4.00									
Belt Sag %	0.06	0.09	0.06	0.09	0.06	0.07	0.11	0.11	0.11	0.12
25 Drive	289.72	192.51	289.43	194.68	313.57	264.21	170.34	167.38	166.57	157.12
Idler Spacing m	3.50									
Belt Sag %	0.05	0.08	0.05	0.08	0.05	0.06	0.09	0.09	0.09	0.10
26 Int. Pt	127.40	127.40	127.40	127.40	127.36	127.09	128.52	128.21	131.37	130.42
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
27 Int. Pt	127.48	127.48	127.48	127.48	127.45	127.31	128.49	128.19	131.36	130.43
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
28 Takeup	127.49	127.49	127.49	127.49	127.49	127.49	127.49	127.49	127.49	127.49
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
29 Int. Pt	128.38	128.38	128.38	128.38	128.42	128.69	128.12	128.14	128.16	128.21
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
30 Int. Pt	128.42	128.42	128.42	128.42	128.47	128.80	128.11	128.13	128.16	128.22
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Helix Technologies Pty Ltd

Station No	Running				Starting		Braking		Coasting	
	Fully Loaded Tension kN	Empty Tension kN	Inclines Loaded Tension kN	Declines Loaded Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN
31 Brake	128.22	128.22	128.22	128.22	128.27	128.66	127.86	127.88	127.91	127.99
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
32 Int. Pt	128.96	128.96	128.96	128.96	129.17	130.57	183.71	183.80	127.87	128.13
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.12	0.09	0.09	0.12	0.12
33 Int. Pt	130.05	130.05	130.05	130.05	130.45	133.13	183.63	183.79	127.97	128.47
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.12	0.09	0.09	0.12	0.12
34 Int. Pt	134.57	134.57	134.57	134.57	135.32	140.41	185.94	186.25	130.63	131.57
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.11	0.08	0.08	0.12	0.12
35 Int. Pt	131.17	131.17	131.17	131.17	132.34	140.28	179.94	180.42	125.02	126.49
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.11	0.09	0.09	0.13	0.12
36 Int. Pt	130.82	130.82	130.82	130.82	132.64	144.95	175.58	176.33	121.28	123.57
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.11	0.09	0.09	0.13	0.13
37 Int. Pt	131.18	131.18	131.18	131.18	133.32	147.81	173.94	174.82	119.95	122.64
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.11	0.09	0.09	0.13	0.13
38 Int. Pt	133.41	133.41	133.41	133.41	135.96	153.18	173.66	174.71	120.06	123.26
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.12	0.10	0.09	0.09	0.13	0.13
39 Int. Pt	136.14	136.14	136.14	136.14	138.93	157.79	174.89	176.04	121.52	125.02
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.11	0.10	0.09	0.09	0.13	0.13
40 Int. Pt	135.49	135.49	135.49	135.49	138.64	159.97	171.99	173.28	118.97	122.92
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.11	0.10	0.09	0.09	0.13	0.13
41 Int. Pt	135.46	135.46	135.46	135.46	139.20	164.52	168.30	169.84	115.84	120.54
Idler Spacing m	3.50									
Belt Sag %	0.12	0.12	0.12	0.12	0.11	0.10	0.09	0.09	0.14	0.13

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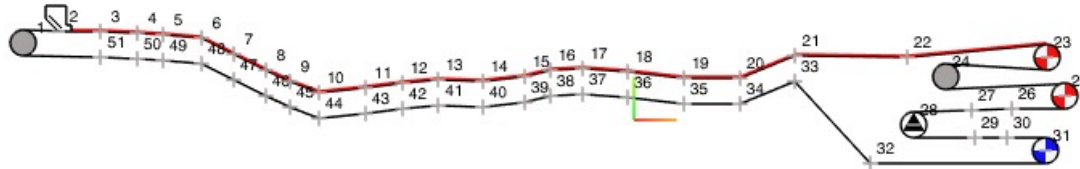
Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

Station No	Running				Starting		Braking		Coasting	
	Fully Loaded Tension kN	Empty Tension kN	Inclines Loaded Tension kN	Declines Loaded Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN	Fully Loaded Tension kN	Empty Tension kN
42 Int. Pt	139.65	139.65	139.65	139.65	144.42	176.67	166.13	168.09	114.66	120.64
Idler Spacing m	3.50									
Belt Sag %	0.11	0.11	0.11	0.11	0.11	0.09	0.09	0.09	0.14	0.13
43 Int. Pt	137.93	137.93	137.93	137.93	142.83	175.96	163.61	165.62	112.26	118.40
Idler Spacing m	3.50									
Belt Sag %	0.11	0.11	0.11	0.11	0.11	0.09	0.10	0.09	0.14	0.13
44 Int. Pt	139.44	139.44	139.44	139.44	144.81	181.17	162.17	164.37	111.27	118.01
Idler Spacing m	3.50									
Belt Sag %	0.11	0.11	0.11	0.11	0.11	0.09	0.10	0.10	0.14	0.13
45 Int. Pt	141.03	141.03	141.03	141.03	146.66	184.76	162.15	164.47	111.50	118.57
Idler Spacing m	3.50									
Belt Sag %	0.11	0.11	0.11	0.11	0.11	0.08	0.10	0.10	0.14	0.13
46 Int. Pt	142.25	142.25	142.25	142.25	148.11	187.74	161.97	164.38	111.54	118.89
Idler Spacing m	3.50									
Belt Sag %	0.11	0.11	0.11	0.11	0.11	0.08	0.10	0.10	0.14	0.13
47 Int. Pt	156.69	156.69	156.69	156.69	163.96	213.16	167.65	170.64	118.57	127.69
Idler Spacing m	3.50									
Belt Sag %	0.10	0.10	0.10	0.10	0.10	0.07	0.09	0.09	0.13	0.12
48 Int. Pt	159.78	159.78	159.78	159.78	167.30	218.13	169.24	172.33	120.39	129.81
Idler Spacing m	3.50									
Belt Sag %	0.10	0.10	0.10	0.10	0.09	0.07	0.09	0.09	0.13	0.12
49 Int. Pt	161.81	161.81	161.81	161.81	169.61	222.35	169.52	172.72	120.93	130.72
Idler Spacing m	3.50									
Belt Sag %	0.10	0.10	0.10	0.10	0.09	0.07	0.09	0.09	0.13	0.12
50 Int. Pt	169.38	169.38	169.38	169.38	177.58	233.03	174.60	177.97	126.40	136.69
Idler Spacing m	3.50									
Belt Sag %	0.09	0.09	0.09	0.09	0.09	0.07	0.09	0.09	0.12	0.11
51 Int. Pt	170.92	170.92	170.92	170.92	179.19	235.16	175.68	179.08	127.55	137.93
Idler Spacing m	3.50									
Belt Sag %	0.09	0.09	0.09	0.09	0.09	0.07	0.09	0.09	0.12	0.11
Minimum Tension	127.40	127.40	127.40	127.40	127.36	127.09	100.16	127.49	63.90	118.01
Maximum Sag %	0.26	0.12	0.21	0.26	0.24	0.12	0.40	0.12	0.62	0.13

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC


Run Fully Loaded

Takeup Mass	26000 kg	Takeup Pulley Belt Tension	127.49 kN
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Station	Section Length m	Section Lift m	Tensions		CEMA-5(1) Tp Pulley kN	Drive Te kN	Tension Adj. kN	Material Accel. kN	Skirt Friction kN	Scraper Friction kN	Section Effective Tension kN	VISCO Friction Factor	
			T1 Run kN	T2 Run kN									
1 Tail	5.78	0.02	170.72	171.56	0.84						0.08	0.0215	
2 Hopper	5.80	0.00	171.64	171.64				2.51	0.49		0.31	0.0187	
3 Int. Pt	92.96	-3.38	174.94	174.94							-3.51	0.0145	
4 Int. Pt	495.79	-16.26	171.43	171.43							-15.52	0.0145	
5 Int. Pt	350.01	-2.24	155.91	155.91							5.92	0.0145	
6 Int. Pt	300.05	-5.67	161.83	161.83							-1.73	0.0146	
7 Int. Pt	1750.15	-23.14	160.10	160.10							7.94	0.0145	
8 Int. Pt	280.00	-0.66	168.04	168.04							6.80	0.0145	
9 Int. Pt	320.00	-1.30	174.84	174.84							6.74	0.0145	
10 Int. Pt	590.00	1.57	181.58	181.58							19.59	0.0144	
11 Int. Pt	160.13	6.37	201.17	201.17							16.10	0.0143	
12 Int. Pt	1270.00	0.76	217.27	217.27							36.94	0.0142	
13 Int. Pt	730.04	7.24	254.21	254.21							33.43	0.0141	
14 Int. Pt	450.04	6.23	287.64	287.64							23.72	0.0140	
15 Int. Pt	300.04	-4.68	311.36	311.36							-0.31	0.0139	
16 Int. Pt	500.00	-1.32	311.05	311.05							11.24	0.0139	
17 Int. Pt	400.01	2.92	322.29	322.29							16.21	0.0139	
18 Int. Pt	800.05	8.82	338.50	338.50							37.80	0.0138	
19 Int. Pt	520.20	14.57	376.30	376.30							40.61	0.0138	
20 Int. Pt	440.22	-8.28	416.91	416.91							-3.21	0.0137	
21 Int. Pt	234.48	-0.75	413.70	413.70							4.95	0.0137	
22 Int. Pt	222.41	14.52	418.65	418.65							32.41	0.0137	
23 Drive	51.78	-7.28	451.06	289.36	1.74	161.71					0.83	-2.44	0.0084
24 Bend	10.86	1.57	287.75	289.12	1.37						0.60	0.0084	

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

Station	Section Length m	Section Lift m	Tensions		CEMA-5(1) Tp Pulley kN	Drive Te kN	Tension Adj. kN	Material Accel. kN	Skirt Friction kN	Scraper Friction kN	Section Effective Tension kN	VISCO Friction Factor
			T1 Run kN	T2 Run kN								
25 Drive	36.61	-0.03	289.72	127.28	1.01	162.44					0.12	0.0084
26 Int. Pt	20.00	0.00	127.40	127.40							0.08	0.0085
27 Int. Pt	25.00	-0.25	127.48	127.48							0.01	0.0085
28 Takeup	10.02	0.60	127.49	128.13	0.64						0.25	0.0085
29 Int. Pt	9.50	0.00	128.38	128.38							0.04	0.0085
30 Int. Pt	9.52	-0.65	128.42	128.42							-0.20	0.0085
31 Brake	129.39	-1.09	128.22	128.86	0.64	0.00					0.10	0.0085
32 Int. Pt	234.48	0.75	128.96	128.96							1.09	0.0085
33 Int. Pt	440.22	8.28	130.05	130.05							4.52	0.0085
34 Int. Pt	520.20	-14.57	134.57	134.57							-3.40	0.0085
35 Int. Pt	800.05	-8.82	131.17	131.17							-0.35	0.0085
36 Int. Pt	400.01	-2.92	130.82	130.82							0.36	0.0085
37 Int. Pt	500.00	1.32	131.18	131.18							2.23	0.0085
38 Int. Pt	300.04	4.68	133.41	133.41							2.73	0.0085
39 Int. Pt	450.04	-6.23	136.14	136.14							-0.65	0.0085
40 Int. Pt	730.04	-7.24	135.49	135.49							-0.03	0.0085
41 Int. Pt	1270.00	-0.76	135.46	135.46							4.19	0.0085
42 Int. Pt	160.13	-6.37	139.65	139.65							-1.72	0.0085
43 Int. Pt	590.00	-1.57	137.93	137.93							1.51	0.0085
44 Int. Pt	320.00	1.30	139.44	139.44							1.59	0.0085
45 Int. Pt	280.00	0.66	141.03	141.03							1.22	0.0085
46 Int. Pt	1750.15	23.14	142.25	142.25							14.44	0.0085
47 Int. Pt	300.05	5.67	156.69	156.69							3.09	0.0085
48 Int. Pt	350.01	2.24	159.78	159.78							2.03	0.0085
49 Int. Pt	495.79	16.26	161.81	161.81							7.57	0.0085
50 Int. Pt	92.96	3.38	169.38	169.38							1.54	0.0085
51 Int. Pt	11.60	-0.67	170.92	170.92							-0.20	0.0085

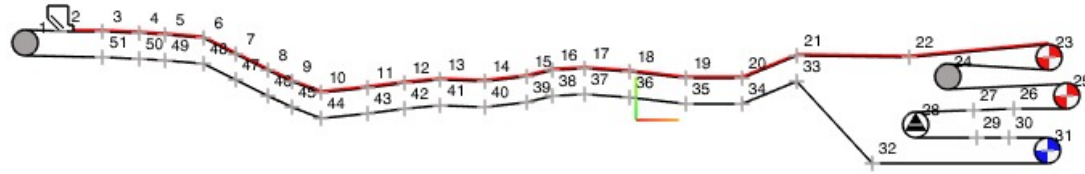
Totals					6.24	324.15	0.00	2.51	0.49	0.83	316.83	
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Maximum Tension	451.06 kN	Total Effective Tension	326.89 kN
Minimum Tension	127.28 kN	Total Belt Power	1340.25 kW
Average Tension Fully Loaded	199.15 kN	Belt Modulus	216000 kN/m
Average Tension Belt Stationary	121.72 kN	Total Belt Length	20531.70 m
Average Tension Difference	77.43 kN	Belt Elastic Elongation	7.010 m
		Takeup Movement	3.505 m

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



Run Empty

Takeup Mass **26000 kg** Takeup Pulley Belt Tension **127.49 kN**

Station	Section Length m	Section Lift m	Tensions		CEMA-5(1) Tp Pulley kN	Drive Te kN	Tension Adj. kN	Material Accel. kN	Skirt Friction kN	Scraper Friction kN	Section Effective Tension kN	VISCO Friction Factor
			T1 Run kN	T2 Run kN								
1 Tail	5.78	0.02	170.72	171.56	0.84						0.08	0.0215
2 Hopper	5.80	0.00	171.64	171.64							0.48	0.0600
3 Int. Pt	92.96	-3.38	172.12	172.12							-0.42	0.0169
4 Int. Pt	495.79	-16.26	171.70	171.70							-1.60	0.0169
5 Int. Pt	350.01	-2.24	170.10	170.10							2.19	0.0169
6 Int. Pt	300.05	-5.67	172.29	172.29							0.53	0.0169
7 Int. Pt	1750.15	-23.14	172.82	172.82							6.65	0.0169
8 Int. Pt	280.00	-0.66	179.47	179.47							2.16	0.0169
9 Int. Pt	320.00	-1.30	181.63	181.63							2.27	0.0169
10 Int. Pt	590.00	1.57	183.90	183.90							5.60	0.0169
11 Int. Pt	160.13	6.37	189.50	189.50							3.65	0.0169
12 Int. Pt	1270.00	0.76	193.15	193.15							11.11	0.0169
13 Int. Pt	730.04	7.24	204.26	204.26							8.82	0.0169
14 Int. Pt	450.04	6.23	213.08	213.08							6.07	0.0169
15 Int. Pt	300.04	-4.68	219.15	219.15							0.88	0.0169
16 Int. Pt	500.00	-1.32	220.03	220.03							3.79	0.0169
17 Int. Pt	400.01	2.92	223.82	223.82							4.46	0.0169
18 Int. Pt	800.05	8.82	228.28	228.28							9.98	0.0169
19 Int. Pt	520.20	14.57	238.26	238.26							9.66	0.0169
20 Int. Pt	440.22	-8.28	247.92	247.92							0.78	0.0169
21 Int. Pt	234.48	-0.75	248.70	248.70							1.73	0.0169
22 Int. Pt	222.41	14.52	250.43	250.43							7.10	0.0169
23 Drive	51.78	-7.28	257.53	192.58	1.09	64.95				0.83	-2.43	0.0084
24 Bend	10.86	1.57	190.98	191.91	0.94						0.60	0.0085

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

Station	Section Length m	Section Lift m	Tensions			Drive Te kN	Tension Adj. kN	Material Accel. kN	Skirt Friction kN	Scraper Friction kN	Section Effective Tension kN	VISCO Friction Factor
			T1 Run kN	T2 Run kN	CEMA-5(1) Tp Pulley kN							
25 Drive	36.61	-0.03	192.51	127.27	0.80	65.25					0.13	0.0085
26 Int. Pt	20.00	0.00	127.40	127.40							0.08	0.0085
27 Int. Pt	25.00	-0.25	127.48	127.48							0.01	0.0085
28 Takeup	10.02	0.60	127.49	128.13	0.64						0.25	0.0085
29 Int. Pt	9.50	0.00	128.38	128.38							0.04	0.0085
30 Int. Pt	9.52	-0.65	128.42	128.42							-0.20	0.0085
31 Brake	129.39	-1.09	128.22	128.86	0.64						0.10	0.0085
32 Int. Pt	234.48	0.75	128.96	128.96							1.09	0.0085
33 Int. Pt	440.22	8.28	130.05	130.05							4.52	0.0085
34 Int. Pt	520.20	-14.57	134.57	134.57							-3.40	0.0085
35 Int. Pt	800.05	-8.82	131.17	131.17							-0.35	0.0085
36 Int. Pt	400.01	-2.92	130.82	130.82							0.36	0.0085
37 Int. Pt	500.00	1.32	131.18	131.18							2.23	0.0085
38 Int. Pt	300.04	4.68	133.41	133.41							2.73	0.0085
39 Int. Pt	450.04	-6.23	136.14	136.14							-0.65	0.0085
40 Int. Pt	730.04	-7.24	135.49	135.49							-0.03	0.0085
41 Int. Pt	1270.00	-0.76	135.46	135.46							4.19	0.0085
42 Int. Pt	160.13	-6.37	139.65	139.65							-1.72	0.0085
43 Int. Pt	590.00	-1.57	137.93	137.93							1.51	0.0085
44 Int. Pt	320.00	1.30	139.44	139.44							1.59	0.0085
45 Int. Pt	280.00	0.66	141.03	141.03							1.22	0.0085
46 Int. Pt	1750.15	23.14	142.25	142.25							14.44	0.0085
47 Int. Pt	300.05	5.67	156.69	156.69							3.09	0.0085
48 Int. Pt	350.01	2.24	159.78	159.78							2.03	0.0085
49 Int. Pt	495.79	16.26	161.81	161.81							7.57	0.0085
50 Int. Pt	92.96	3.38	169.38	169.38							1.54	0.0085
51 Int. Pt	11.60	-0.67	170.92	170.92							-0.20	0.0085

Totals			4.94	129.56	0.00				0.83	126.31		
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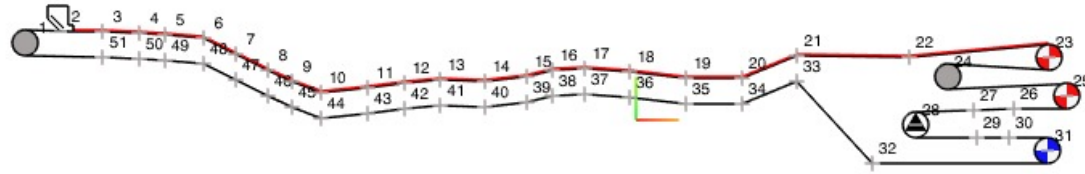
Maximum Tension	257.53 kN	Total Effective Tension	132.08 kN
Minimum Tension	127.27 kN	Total Belt Power	541.54 kW
Average Tension Empty	172.14 kN	Belt Modulus	216000 kN/m
Average Tension Belt Stationary	121.72 kN	Total Belt Length	20531.70 m
Average Tension Difference	50.42 kN	Belt Elastic Elongation	4.564 m
		Takeup Movement	2.282 m

Helix Technologies Pty Ltd

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



Run Inclines Loaded

Takeup Mass **26000 kg** Takeup Pulley Belt Tension **127.49 kN**

Station	Section Length m	Section Lift m	Tensions		CEMA-5(1) Tp Pulley kN	Drive Te kN	Tension Adj. kN	Material Accel. kN	Skirt Friction kN	Scraper Friction kN	Section Effective Tension kN	VISCO Friction Factor
			T1 Run kN	T2 Run kN								
1 Tail	5.78	0.02	170.72	171.56	0.84						0.08	0.0215
2 Hopper	5.80	0.00	171.64	171.64				2.51	0.49		0.31	0.0187
3 Int. Pt	92.96	-3.38	174.95	174.95							-0.42	0.0169
4 Int. Pt	495.79	-16.26	174.53	174.53							-1.60	0.0169
5 Int. Pt	350.01	-2.24	172.93	172.93							2.19	0.0169
6 Int. Pt	300.05	-5.67	175.12	175.12							0.53	0.0169
7 Int. Pt	1750.15	-23.14	175.65	175.65							6.65	0.0169
8 Int. Pt	280.00	-0.66	182.30	182.30							2.16	0.0169
9 Int. Pt	320.00	-1.30	184.46	184.46							2.27	0.0169
10 Int. Pt	590.00	1.57	186.73	186.73							19.53	0.0144
11 Int. Pt	160.13	6.37	206.26	206.26							16.09	0.0143
12 Int. Pt	1270.00	0.76	222.35	222.35							36.87	0.0142
13 Int. Pt	730.04	7.24	259.22	259.22							33.40	0.0141
14 Int. Pt	450.04	6.23	292.62	292.62							23.70	0.0140
15 Int. Pt	300.04	-4.68	316.32	316.32							0.87	0.0169
16 Int. Pt	500.00	-1.32	317.19	317.19							3.78	0.0168
17 Int. Pt	400.01	2.92	320.97	320.97							16.20	0.0139
18 Int. Pt	800.05	8.82	337.17	337.17							37.81	0.0138
19 Int. Pt	520.20	14.57	374.98	374.98							40.61	0.0138
20 Int. Pt	440.22	-8.28	415.59	415.59							0.77	0.0168
21 Int. Pt	234.48	-0.75	416.36	416.36							1.72	0.0168
22 Int. Pt	222.41	14.52	418.08	418.08							32.40	0.0137
23 Drive	51.78	-7.28	450.48	289.06	1.75	161.42				0.83	-2.44	0.0084
24 Bend	10.86	1.57	287.45	288.83	1.38						0.60	0.0084

Helix Technologies Pty Ltd

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

Station	Section Length m	Section Lift m	Tensions			Drive Te kN	Tension Adj. kN	Material Accel. kN	Skirt Friction kN	Scraper Friction kN	Section Effective Tension kN	VISCO Friction Factor
			T1 Run kN	T2 Run kN	CEMA-5(1) Tp Pulley kN							
25 Drive	36.61	-0.03	289.43	127.28	1.02	162.15					0.12	0.0084
26 Int. Pt	20.00	0.00	127.40	127.40							0.08	0.0085
27 Int. Pt	25.00	-0.25	127.48	127.48							0.01	0.0085
28 Takeup	10.02	0.60	127.49	128.13	0.64						0.25	0.0085
29 Int. Pt	9.50	0.00	128.38	128.38							0.04	0.0085
30 Int. Pt	9.52	-0.65	128.42	128.42							-0.20	0.0085
31 Brake	129.39	-1.09	128.22	128.86	0.64						0.10	0.0085
32 Int. Pt	234.48	0.75	128.96	128.96							1.09	0.0085
33 Int. Pt	440.22	8.28	130.05	130.05							4.52	0.0085
34 Int. Pt	520.20	-14.57	134.57	134.57							-3.40	0.0085
35 Int. Pt	800.05	-8.82	131.17	131.17							-0.35	0.0085
36 Int. Pt	400.01	-2.92	130.82	130.82							0.36	0.0085
37 Int. Pt	500.00	1.32	131.18	131.18							2.23	0.0085
38 Int. Pt	300.04	4.68	133.41	133.41							2.73	0.0085
39 Int. Pt	450.04	-6.23	136.14	136.14							-0.65	0.0085
40 Int. Pt	730.04	-7.24	135.49	135.49							-0.03	0.0085
41 Int. Pt	1270.00	-0.76	135.46	135.46							4.19	0.0085
42 Int. Pt	160.13	-6.37	139.65	139.65							-1.72	0.0085
43 Int. Pt	590.00	-1.57	137.93	137.93							1.51	0.0085
44 Int. Pt	320.00	1.30	139.44	139.44							1.59	0.0085
45 Int. Pt	280.00	0.66	141.03	141.03							1.22	0.0085
46 Int. Pt	1750.15	23.14	142.25	142.25							14.44	0.0085
47 Int. Pt	300.05	5.67	156.69	156.69							3.09	0.0085
48 Int. Pt	350.01	2.24	159.78	159.78							2.03	0.0085
49 Int. Pt	495.79	16.26	161.81	161.81							7.57	0.0085
50 Int. Pt	92.96	3.38	169.38	169.38							1.54	0.0085
51 Int. Pt	11.60	-0.67	170.92	170.92							-0.20	0.0085

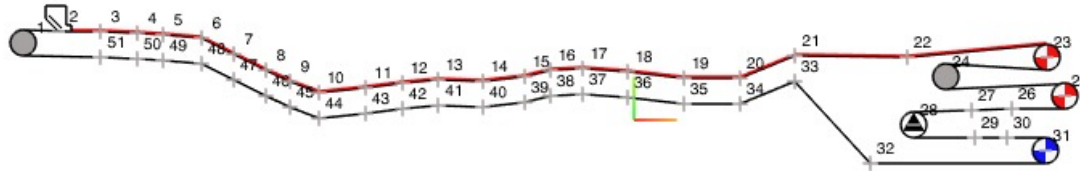
Totals					6.27	322.93	0.00	2.51	0.49	0.83	316.24	
Maximum Tension			450.48	kN							326.34	kN
Minimum Tension			127.28	kN							1337.98	kW
Average Tension Incl. Loaded			202.25	kN							216000	kN/m
Average Tension Belt Stationary			121.72	kN							20531.70	m
Average Tension Difference			80.53	kN							7.290	m
											3.645	m

Helix Technologies Pty Ltd

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



Run Declines Loaded

Takeup Mass	26000 kg	Takeup Pulley Belt Tension	127.49 kN
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Station	Section Length m	Section Lift m	Tensions		CEMA-5(1) Tp Pulley kN	Drive Te kN	Tension Adj. kN	Material Accel. kN	Skirt Friction kN	Scraper Friction kN	Section Effective Tension kN	VISCO Friction Factor	
			T1 Run kN	T2 Run kN									
1 Tail	5.78	0.02	170.72	171.56	0.84						0.08	0.0215	
2 Hopper	5.80	0.00	171.64	171.64				2.51	0.49		0.48	0.0600	
3 Int. Pt	92.96	-3.38	175.12	175.12							-3.51	0.0144	
4 Int. Pt	495.79	-16.26	171.61	171.61							-15.52	0.0144	
5 Int. Pt	350.01	-2.24	156.09	156.09							5.92	0.0145	
6 Int. Pt	300.05	-5.67	162.01	162.01							-1.73	0.0146	
7 Int. Pt	1750.15	-23.14	160.28	160.28							7.91	0.0145	
8 Int. Pt	280.00	-0.66	168.19	168.19							6.80	0.0145	
9 Int. Pt	320.00	-1.30	174.99	174.99							6.74	0.0145	
10 Int. Pt	590.00	1.57	181.73	181.73							5.60	0.0169	
11 Int. Pt	160.13	6.37	187.33	187.33							3.65	0.0169	
12 Int. Pt	1270.00	0.76	190.98	190.98							11.12	0.0169	
13 Int. Pt	730.04	7.24	202.10	202.10							8.82	0.0169	
14 Int. Pt	450.04	6.23	210.92	210.92							6.07	0.0169	
15 Int. Pt	300.04	-4.68	216.99	216.99							-0.13	0.0142	
16 Int. Pt	500.00	-1.32	216.86	216.86							11.56	0.0142	
17 Int. Pt	400.01	2.92	228.42	228.42							4.46	0.0169	
18 Int. Pt	800.05	8.82	232.88	232.88							9.98	0.0169	
19 Int. Pt	520.20	14.57	242.86	242.86							9.66	0.0169	
20 Int. Pt	440.22	-8.28	252.52	252.52							-2.90	0.0141	
21 Int. Pt	234.48	-0.75	249.62	249.62							5.12	0.0141	
22 Int. Pt	222.41	14.52	254.74	254.74							7.10	0.0169	
23 Drive	51.78	-7.28	261.84	194.73	1.10	67.11					0.83	-2.43	0.0084
24 Bend	10.86	1.57	193.13	194.08	0.95						0.60	0.0085	

Helix Technologies Pty Ltd

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

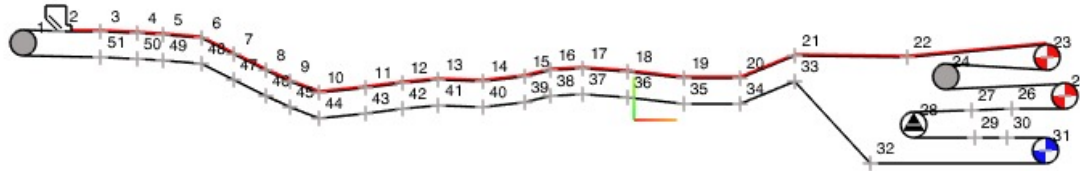
Station	Section Length m	Section Lift m	Tensions			Drive Te kN	Tension Adj. kN	Material Accel. kN	Skirt Friction kN	Scraper Friction kN	Section Effective Tension kN	VISCO Friction Factor
			T1 Run kN	T2 Run kN	CEMA-5(1) Tp Pulley kN							
25 Drive	36.61	-0.03	194.68	127.27	0.80	67.41					0.13	0.0085
26 Int. Pt	20.00	0.00	127.40	127.40							0.08	0.0085
27 Int. Pt	25.00	-0.25	127.48	127.48							0.01	0.0085
28 Takeup	10.02	0.60	127.49	128.13	0.64						0.25	0.0085
29 Int. Pt	9.50	0.00	128.38	128.38							0.04	0.0085
30 Int. Pt	9.52	-0.65	128.42	128.42							-0.20	0.0085
31 Brake	129.39	-1.09	128.22	128.86	0.64						0.10	0.0085
32 Int. Pt	234.48	0.75	128.96	128.96							1.09	0.0085
33 Int. Pt	440.22	8.28	130.05	130.05							4.52	0.0085
34 Int. Pt	520.20	-14.57	134.57	134.57							-3.40	0.0085
35 Int. Pt	800.05	-8.82	131.17	131.17							-0.35	0.0085
36 Int. Pt	400.01	-2.92	130.82	130.82							0.36	0.0085
37 Int. Pt	500.00	1.32	131.18	131.18							2.23	0.0085
38 Int. Pt	300.04	4.68	133.41	133.41							2.73	0.0085
39 Int. Pt	450.04	-6.23	136.14	136.14							-0.65	0.0085
40 Int. Pt	730.04	-7.24	135.49	135.49							-0.03	0.0085
41 Int. Pt	1270.00	-0.76	135.46	135.46							4.19	0.0085
42 Int. Pt	160.13	-6.37	139.65	139.65							-1.72	0.0085
43 Int. Pt	590.00	-1.57	137.93	137.93							1.51	0.0085
44 Int. Pt	320.00	1.30	139.44	139.44							1.59	0.0085
45 Int. Pt	280.00	0.66	141.03	141.03							1.22	0.0085
46 Int. Pt	1750.15	23.14	142.25	142.25							14.44	0.0085
47 Int. Pt	300.05	5.67	156.69	156.69							3.09	0.0085
48 Int. Pt	350.01	2.24	159.78	159.78							2.03	0.0085
49 Int. Pt	495.79	16.26	161.81	161.81							7.57	0.0085
50 Int. Pt	92.96	3.38	169.38	169.38							1.54	0.0085
51 Int. Pt	11.60	-0.67	170.92	170.92							-0.20	0.0085

Totals					4.97	133.87	0.00	2.51	0.49	0.83	127.62	
Maximum Tension			261.84	kN	Total Effective Tension						136.42	kN
Minimum Tension			127.27	kN	Total Belt Power						559.32	kW
Average Tension Decl Loaded			170.57	kN	Belt Modulus						216000	kN/m
Average Tension Belt Stationary			121.72	kN	Total Belt Length						20531.70	m
Average Tension Difference			48.85	kN	Belt Elastic Elongation						4.422	m
					Takeup Movement						2.211	m

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC

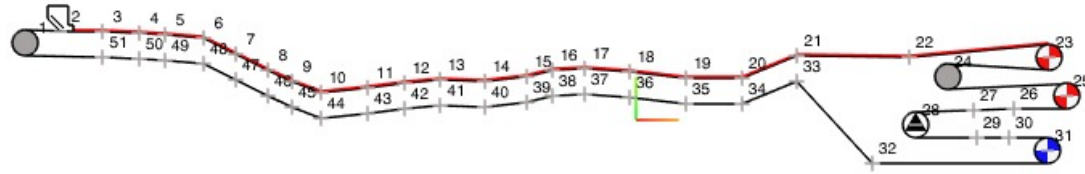


System Masses		Input Data	
Mass of Belt	750,856 kg	Belt Speed	4.1 m/s
Mass of Material	1,522,172 kg	Belt Rated Tension	422 kN/m
Carry Idler Equivalent Mass	152,972 kg	Allowable Belt Start Tension Rise	150 %
Return Idler Equivalent Mass	57,302 kg	Drive Inertia	1147.50 kg-m ²
Pulley Equivalent Mass	14,845 kg	Total Braking Torque	40.00 kNm
Drive Equivalent Mass	748,587 kg	Start Up Factor - Full	120 %
Total System Equivalent Mass	3,246,734 kg	Start Up Factor - Empty	120 %
Conveyor load inertia at HSS	4,976.88 kgm ²		
Tensions and Accelerating Forces		Installed Power	1400 kW
Effective Tension Fully Loaded	326.89 kN	Drive Efficiency (Average)	95.00 %
Effective Tension Empty	132.08 kN	Stopping Times & Deceleration Rates	
Total Braking Force	59.61 kN	Stopping Time Loaded Braking	34.44 s
Tension Available to Accelerate conveyor		Stopping Time Loaded Coasting	40.72 s
Accelerating Tension - Loaded	62.37 kN	Stopping Time Empty Braking	36.89 s
Accelerating Tension - Empty	257.19 kN	Stopping Time Empty Coasting	53.53 s
Starting Times & Acceleration Rates		Deceleration - Loaded Braking	-0.12 m/s ²
Starting Time - Fully Loaded	213.42 s	Deceleration - Loaded Coasting	-0.10 m/s ²
Starting Time - Empty	27.49 s	Deceleration - Empty Braking	-0.11 m/s ²
Acceleration Rate - Loaded	0.02 m/s ²	Deceleration - Empty Coasting	-0.08 m/s ²
Acceleration Rate - Empty	0.15 m/s ²	Stopping distances & Discharge Volumes	
Belt Tension Rise Starting / Braking		Stopping Distance Loaded Braking	70.6 m
Max Belt Tension Start / Brake	498.74 kN	Stopping Distance Loaded Coasting	83.48 m
Belt Width	1050 mm	Stopping Distance Empty Braking	75.61 m
Max Belt Tension / Width	474.99 kN/m	Stopping Distance Empty Coasting	109.74 m
Belt Rated Tension / Width	422 kN/m		
Actual Max Tension Start/Brake	112.6 %	Discharge Mass Braking	10,523 kg
Allowable Tension Rise Start/Brake	150 %	Discharge Mass Coasting	12,443 kg
		Discharge Volume Braking	4.78 m ³
		Discharge Volume Coasting	5.66 m ³

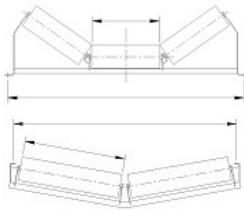
Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC

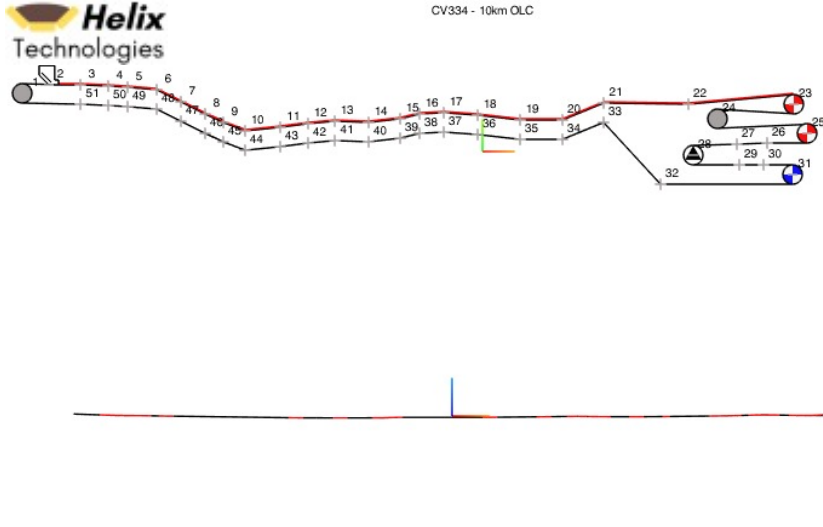


		Carry Side Idlers	Return Side Idlers
Idler Category	Prok Carry		Prok Vee Return
Idler Description	Series 40 3 Roll Carry 178 Plain Inline		Vee Return Series 20 2 Roll 152 Dia
Idler Design Belt Width		1050 mm	1050 mm
Idler Series		40	20
Drawing Number			
Nominal Idler Spacing		1.75 m	3.5 m
Total Number of Idlers		5861	2944
Troughing Angle		35 deg	10 deg
Idler Shaft Diameter		30 mm	27 mm
Idler Bearing Diameter		30 mm	25 mm
Number of Idler Rolls		3	2
Idler Centre Roll Diameter		178 mm	152 mm
Idler Wing Roll Diameter		178 mm	152 mm
Idler Rotation Speed		440 rpm	515 rpm
Centre Roll Face Width		391 mm	566 mm
Wing Roll Face Width		391 mm	566 mm
Roll Bearing Centres		324.8 mm	507.4 mm
Shaft Support Centres		414.4 mm	589.4 mm
Idler Support Fixing Width		1300 mm	1300 mm
Idlerset Rotating Mass		26.1 kg	19.2 kg
Idlerset Total Mass		55.3 kg	37 kg
Idler Vertical Misalignment Allowance		9 mm	36 mm
Dynamic Load Factor		1.50	1.40
Belt Deviation Load		0 N	0 N
Total Load on Centre Roll		2900 N	1075 N
Type of Bearing		Ball	Ball
Bearing Designation		6306	6205
Bearing Dynamic Load Rating C		28,100 N	14,000 N
Bearing L10h Life		275,614 hrs	571,883 hrs
Allowable Shaft deflection At Bearing		8 min	10 min
Actual Shaft deflection At Bearing		4.34 min	3.51 min



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Belt Width	1050 mm	% Belt Mass for Lift off Calculation	75 %
Belt Mass - New Belt	36.57 kg/m	Curve Tension Safety Factor	1
Top Cover Mass - New Belt	10.68 kg/m	Average Drive Torque safety Factor - Loaded	120 %
Bottom Cover Mass	8.31 kg/m	Average Drive Torque safety Factor - Empty	120 %
Worn Belt Mass	27.43 kg/m	Belt Modulus	216,000 kN/m
Reduction of Top Cover Mass	85.6 %	Belt Rated Tension	Running: 422 kN/m Starting: 443.1 kN
Conveyed Material Mass	149.05 kg/m	Allowable Edge Tension	Running: 105 % Starting: 150 %

Station / Section Information				Running				Starting				Braking				Minimum Required Radius m
Station	Curve Type	Load Capacity tph	Design Curve Radius m	Fully Loaded		Empty		Fully Loaded		Empty		Fully Loaded		Empty		
				Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	
1	Tail			170.72		170.72		179.00		235.03		175.42		178.82		
2	Hopper	2,200		171.64		171.64		179.96		236.25		176.09		179.52		
3	Int. Pt	Convex	2,200	174.94		172.12		183.30		236.86		179.20		179.90		

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Station	Curve Type	Load Capacity tph	Design Curve Radius m	Fully Loaded		Empty		Fully Loaded		Empty		Fully Loaded		Empty		
				Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	
					104		103		108		133		106		106	133
					99		101		94		71		97		96	
				Infinity		Infinity		Infinity		Infinity		Infinity		Infinity		
				Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	
				-Infinity		Infinity		-Infinity		-Infinity		-Infinity		-Infinity		
4	Int. Pt	2,200		171.43		171.70		180.15		237.15		173.47		178.95		
5	Int. Pt	Concave	2,200	18936	155.91		170.10	166.54		239.35		146.12		174.52		890
					580		632	619		890		543		649		
					73		67	68		48		78		65		
					49		51	51		67		48		52		
6	Int. Pt	Convex	2,200	16003	161.83		172.29	173.80		244.23		143.68		174.70		137
					100		104	104		137		94		104		
					109		101	100		68		125		99		
					2.13		2.13	2.13		2.13		2.13		2.13		
					163.97	37 %	174.42	39 %	175.94	40 %	246.37	56 %	145.81	33 %	176.84	40 %
					161.12		173	173.09		243.52		142.97		173.99		
7	Int. Pt	2,200	35249	160.10		172.82		173.23		247.06		134.79		173.52		
8	Int. Pt	Concave	2,200	18387	168.04		179.47	187.91		267.15		100.95		170.15		993
					625		667	699		993		375		633		
					68		63	61		43		113		67		
					51		53	55		77		42		51		
9	Int. Pt	2,200		174.84		181.63		195.79		271.46		101.06		170.71		
10	Int. Pt	2,200	29746	181.58		183.90		203.76		276.19		100.16		171.15		

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Station / Section Information				Running				Starting				Braking				Minimum Required Radius m
Station	Curve Type	Load Capacity tph	Design Curve Radius m	Fully Loaded		Empty		Fully Loaded		Empty		Fully Loaded		Empty		
				Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	
11 Int. Pt	Concave	2,200	8628	201.17		189.50		225.63		286.32		105.67		173.37		1064
	Min Concave Lift Off Radius				748		705		839		1064		393		645	
	Min Edge Tension Radius				57		60		50		40		108		66	
	Max Centre Tension Radius				57		55		63		85		42		52	
12 Int. Pt	Convex	2,200	4598	217.27		193.15		242.34		291.20		117.94		176.10		174
	Min Edge Tension Radius				122		111		136		174		87		105	
	Max Buckling Radius				78		89		69		56		158		98	
	Belt Edge Tension Rise at Curve kN			7.43		7.43		7.43		7.43		7.43		7.43		
	Total Edge Tension at Curve kN and %			224.7	51 %	200.58	45 %	249.77	56 %	298.63	67 %	125.37	28 %	183.53	41 %	
	Centre Tension at Curve kN			214.8		195.63		239.87		288.72		115.47		173.63		
13 Int. Pt		2,200	21481	254.21		204.26		284.18		312.06		124.57		179.95		
14 Int. Pt		2,200	50824	287.64		213.08		320.42		326.49		140.57		184.59		
15 Int. Pt	Convex	2,200	9513	311.36		219.15		345.87		336.01		153.54		188.08		254
	Min Edge Tension Radius				197		123		254		235		97		109	
	Max Buckling Radius				52		77		47		48		115		91	
	Belt Edge Tension Rise at Curve kN			3.59		3.59		3.59		3.59		3.59		3.59		
	Total Edge Tension at Curve kN and %			314.95	71 %	222.74	50 %	349.46	79 %	339.6	77 %	157.13	35 %	191.67	43 %	
	Centre Tension at Curve kN			310.17		220.35		344.68		334.81		152.35		186.89		
16 Int. Pt	Concave	2,200	23149	311.05		220.03		346.72		339.19		146.07		187.25		1289
	Min Concave Lift Off Radius				1156		818		1289		1261		543		696	
	Min Edge Tension Radius				37		52		33		34		78		61	
	Max Centre Tension Radius				98		62		128		120		48		55	
17 Int. Pt		2,200	20158	322.29		223.82		359.89		346.82		145.38		188.18		
18 Int. Pt		2,200	26803	338.50		228.28		377.64		354.36		152.04		190.35		

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Station / Section Information				Running				Starting				Braking				Minimum Required Radius m
Station	Curve Type	Load Capacity tph	Design Curve Radius m	Fully Loaded		Empty		Fully Loaded		Empty		Fully Loaded		Empty		
				Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	
19 Int. Pt	Concave	2,200	25888	376.30		238.26		418.52		370.48		170.74		195.75		1556
	Min Concave Lift Off Radius				1399		886		1556		1377		635		728	
	Min Edge Tension Radius				30		48		27		31		67		58	
	Max Centre Tension Radius				170		67		324		160		51		56	
20 Int. Pt	Convex	2,200	8971	416.91		247.92		461.13		384.13		198.93		202.43		7356
	Min Edge Tension Radius				627		140		7356		374		114		115	
	Max Buckling Radius				38		67		35		42		86		84	
	Belt Edge Tension Rise at Curve kN			3.81		3.81		3.81		3.81		3.81		3.81		
	Total Edge Tension at Curve kN and %			420.72	95 %	251.73	57 %	464.94	105 %	387.94	88 %	202.73	46 %	206.24	47 %	
	Centre Tension at Curve kN			415.64		249.19		459.86		382.86		197.66		201.16		
21 Int. Pt	Concave	2,200	13431	413.70		248.70		459.62		388.29		185.21		200.69		1709
	Min Concave Lift Off Radius				1538		925		1709		1444		689		746	
	Min Edge Tension Radius				28		46		25		29		61		57	
	Max Centre Tension Radius				294		70		2690		197		54		57	
22 Int. Pt	Concave	2,200	4000	418.65		250.43		465.47		391.82		184.56		201.08		1731
	Min Concave Lift Off Radius				1556		931		1731		1457		686		748	
	Min Edge Tension Radius				27		45		24		29		62		57	
	Max Centre Tension Radius				325		71		-69799		206		54		57	
23 Drive				451.06		257.53		498.74		400.63		211.66		206.91		
24 Bend				287.75		190.98		311.53		262.10		168.83		166.27		
25 Drive				289.72		192.51		313.57		264.21		170.34		167.38		
26 Int. Pt				127.40		127.40		127.36		127.09		128.52		128.21		
27 Int. Pt				127.48		127.48		127.45		127.31		128.49		128.19		
28 Takeup				127.49		127.49		127.49		127.49		127.49		127.49		

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Station / Section Information				Running				Starting				Braking				Minimum Required Radius m
Station	Curve Type	Load Capacity tph	Design Curve Radius m	Fully Loaded		Empty		Fully Loaded		Empty		Fully Loaded		Empty		
				Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	
29 Int. Pt	Convex			128.38		128.38		128.42		128.69		128.12		128.14		43
	Min Edge Tension Radius				27		27		27		27		27		27	
	Max Buckling Radius				43		43		43		43		43		43	
	Belt Edge Tension Rise at Curve kN			Infinity		Infinity		Infinity		Infinity		Infinity		Infinity		
	Total Edge Tension at Curve kN and %			Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	
	Centre Tension at Curve kN			-Infinity		Infinity		-Infinity		-Infinity		-Infinity		-Infinity		
30 Int. Pt	Convex			128.42		128.42		128.47		128.80		128.11		128.13		43
	Min Edge Tension Radius				27		27		27		27		27		27	
	Max Buckling Radius				43		43		43		43		43		43	
	Belt Edge Tension Rise at Curve kN			Infinity		Infinity		Infinity		Infinity		Infinity		Infinity		
	Total Edge Tension at Curve kN and %			Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	
	Centre Tension at Curve kN			-Infinity		Infinity		-Infinity		-Infinity		-Infinity		-Infinity		
31 Brake				128.22		128.22		128.27		128.66		127.86		127.88		
32 Int. Pt	Concave		4000	128.96		128.96		129.17		130.57		183.71		183.80		683
	Min Concave Lift Off Radius				479		479		480		485		683		683	
	Min Edge Tension Radius				88		88		88		87		62		62	
	Max Centre Tension Radius				14		14		14		14		16		16	
33 Int. Pt	Concave		13431	130.05		130.05		130.45		133.13		183.63		183.79		683
	Min Concave Lift Off Radius				484		484		485		495		683		683	
	Min Edge Tension Radius				88		88		87		86		62		62	
	Max Centre Tension Radius				14		14		14		14		16		16	
34 Int. Pt	Convex		8971	134.57		134.57		135.32		140.41		185.94		186.25		

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Station / Section Information				Running				Starting				Braking				Minimum Required Radius m
Station	Curve Type	Load Capacity tph	Design Curve Radius m	Fully Loaded		Empty		Fully Loaded		Empty		Fully Loaded		Empty		
				Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	
	Min Edge Tension Radius				28		28		28		28		33		33	41
	Max Buckling Radius				41		41		41		39		28		28	
	Belt Edge Tension Rise at Curve kN			2.3		2.3		2.3		2.3		2.3		2.3		
	Total Edge Tension at Curve kN and %			136.87	31 %	136.88	31 %	137.63	31 %	142.72	32 %	188.25	42 %	188.56	43 %	
	Centre Tension at Curve kN			132.26		136.88		133.02		138.11		183.64		183.95		
35 Int. Pt	Concave		25888	131.17		131.17		132.34		140.28		179.94		180.42		
	Min Concave Lift Off Radius				488		488		492		522		669		671	671
	Min Edge Tension Radius				87		87		86		81		63		63	
	Max Centre Tension Radius				14		14		14		14		16		16	
36 Int. Pt			26803	130.82		130.82		132.64		144.95		175.58		176.33		
37 Int. Pt			20158	131.18		131.18		133.32		147.81		173.94		174.82		
38 Int. Pt	Concave		23149	133.41		133.41		135.96		153.18		173.66		174.71		
	Min Concave Lift Off Radius				496		496		505		570		646		650	650
	Min Edge Tension Radius				85		85		84		74		66		65	
	Max Centre Tension Radius				14		14		14		15		16		16	
39 Int. Pt	Convex		9513	136.14		136.14		138.93		157.79		174.89		176.04		
	Min Edge Tension Radius				28		28		28		30		32		32	40
	Max Buckling Radius				40		40		39		34		30		30	
	Belt Edge Tension Rise at Curve kN			2.17		2.17		2.17		2.17		2.17		2.17		
	Total Edge Tension at Curve kN and %			138.31	31 %	138.31	31 %	141.1	32 %	159.97	36 %	177.07	40 %	178.21	40 %	
	Centre Tension at Curve kN			133.97		138.31		136.76		155.62		172.72		173.86		
40 Int. Pt			50824	135.49		135.49		138.64		159.97		171.99		173.28		
41 Int. Pt			21481	135.46		135.46		139.20		164.52		168.30		169.84		

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Station / Section Information				Running				Starting				Braking				Minimum Required Radius m
Station	Curve Type	Load Capacity tph	Design Curve Radius m	Fully Loaded		Empty		Fully Loaded		Empty		Fully Loaded		Empty		
				Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	
42 Int. Pt	Convex		4598	139.65		139.65		144.42		176.67		166.13		168.09		
	Min Edge Tension Radius				28		28		29		32		31		31	
	Max Buckling Radius				39		39		38		30		32		31	
	Belt Edge Tension Rise at Curve kN			4.5		4.5		4.5		4.5		4.5		4.5		
	Total Edge Tension at Curve kN and %			144.15	33 %	144.15	33 %	148.92	34 %	181.17	41 %	170.63	39 %	172.59	39 %	
	Centre Tension at Curve kN			135.15		144.15		139.92		172.17		161.64		163.6		
43 Int. Pt	Concave		8628	137.93		137.93		142.83		175.96		163.61		165.62		
	Min Concave Lift Off Radius				513		513		531		654		608		616	
	Min Edge Tension Radius				83		83		80		65		70		69	
	Max Centre Tension Radius				14		14		14		16		15		15	
44 Int. Pt			29746	139.44		139.44		144.81		181.17		162.17		164.37		
45 Int. Pt				141.03		141.03		146.66		184.76		162.15		164.47		
46 Int. Pt	Concave		18387	142.25		142.25		148.11		187.74		161.97		164.38		
	Min Concave Lift Off Radius				529		529		551		698		602		611	
	Min Edge Tension Radius				80		80		77		61		70		69	
	Max Centre Tension Radius				14		14		14		17		15		15	
47 Int. Pt			35249	156.69		156.69		163.96		213.16		167.65		170.64		
48 Int. Pt	Convex		16003	159.78		159.78		167.30		218.13		169.24		172.33		
	Min Edge Tension Radius				30		30		31		37		31		31	
	Max Buckling Radius				33		33		32		23		31		31	
	Belt Edge Tension Rise at Curve kN			1.29		1.29		1.29		1.29		1.29		1.29		
	Total Edge Tension at Curve kN and %			161.07	36 %	161.07	36 %	168.59	38 %	219.42	50 %	170.53	38 %	173.62	39 %	
	Centre Tension at Curve kN			158.49		161.07		166		216.84		167.95		171.03		
49 Int. Pt	Concave		18936	161.81		161.81		169.61		222.35		169.52		172.72		

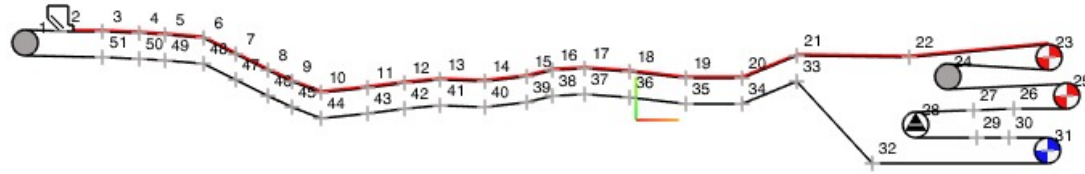
Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

Station / Section Information				Running				Starting				Braking				Minimum Required Radius m
Station	Curve Type	Load Capacity tph	Design Curve Radius m	Fully Loaded		Empty		Fully Loaded		Empty		Fully Loaded		Empty		
				Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	Tension kN	Radius m	
Min Concave Lift Off Radius					602		602		631		827		630		642	827
Min Edge Tension Radius					70		70		67		51		67		66	
Max Centre Tension Radius					15		15		16		19		16		16	
50 Int. Pt				169.38		169.38		177.58		233.03		174.60		177.97		
51 Int. Pt Convex				170.92		170.92		179.19		235.16		175.68		179.08		40
Min Edge Tension Radius					31		31		32		40		32		32	
Max Buckling Radius					31		31		29		22		30		29	
Belt Edge Tension Rise at Curve kN				Infinity		Infinity		Infinity		Infinity		Infinity		Infinity		
Total Edge Tension at Curve kN and %				Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	Infinity	Infinity %	
Centre Tension at Curve kN				-Infinity		Infinity		-Infinity		-Infinity		-Infinity		-Infinity		

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CV334 - 10km OLC



Viscoelastic Calculations Input Data

Belt Rubber Description	Goodyear Low Resistance Rubber	Carry Idler Centre Roll Dia	178 mm
Top Cover Dynamic Modulus E'	6 N/mm2	Carry Idler Centre Roll Drag	1.63 N
Top Cover Dynamic Loss Factor Tan(delta)	0.12	Carry Idler Wing Roller Dia	178 mm
Belt Top Cover Temperature	40 deg C	Carry Idler Wing Roller Dia	1.63 N
Rolling Resistance Factor Top: 0.066 Bottom: 0.072		Return Idler Centre Roll Dia	152 mm
Bottom Cover Dynamic Modulus E	6 N/mm2	Return Idler Centre Roll Drag	1.4 N
Bottom Cover Dynamic Loss Factor Tan(delta)	0.12	Return Idler Wing Roll Dia	152 mm
Belt Bottom Cover Temperature	40 deg C	Return Idler Wing Roll Drag	1.4 N
Belt & Material Flexure Adjustment Factor	1	Idlerset Skew Angle	0.1 deg
Belt has Turnover on return run	No	Idlerset Forward Tilt Angle	0.1 deg

Station	Section Length m	Idler Spacing m	Loaded										Empty friction factor f
			Total Loaded friction factor f	Indentation factor fi	Indentation factor %	Freq- uency rad/s	Matl. & Belt Flexure friction fm	Belt Flexure friction %	Idler Drag factor fr	Idler Drag factor %	Idler Skew & Tilt Tilt friction ft	Idler Skew & Tilt Tilt friction %	
1 Tail	5.78	1.00	0.0215	0.00633	29.5	1712	0.00020	0.9	0.01364	63.5	0.00131	6.1	0.0215
2 Hopper	5.80	0.25	0.0187	0.00542	28.9	1339	0.00152	8.1	0.01075	57.4	0.00105	5.6	0.0600
3 Int. Pt	92.96	1.75	0.0145	0.01036	71.7	700	0.00151	10.4	0.00154	10.6	0.00105	7.2	0.0169
4 Int. Pt	495.79	1.75	0.0145	0.01036	71.7	700	0.00151	10.4	0.00154	10.6	0.00105	7.2	0.0169
5 Int. Pt	350.01	1.75	0.0145	0.01036	71.4	700	0.00158	10.9	0.00154	10.6	0.00105	7.2	0.0169
6 Int. Pt	300.05	1.75	0.0146	0.01036	71.2	700	0.00162	11.1	0.00154	10.5	0.00105	7.2	0.0169
7 Int. Pt	1750.15	1.75	0.0145	0.01036	71.2	700	0.00160	11.0	0.00154	10.6	0.00105	7.2	0.0169
8 Int. Pt	280.00	1.75	0.0145	0.01036	71.4	700	0.00158	10.9	0.00154	10.6	0.00105	7.2	0.0169
9 Int. Pt	320.00	1.75	0.0145	0.01036	71.6	700	0.00152	10.5	0.00154	10.6	0.00105	7.2	0.0169
10 Int. Pt	590.00	1.75	0.0144	0.01036	71.9	700	0.00147	10.2	0.00154	10.6	0.00105	7.2	0.0169
11 Int. Pt	160.13	1.75	0.0143	0.01036	72.3	700	0.00139	9.7	0.00154	10.7	0.00105	7.3	0.0169
12 Int. Pt	1270.00	1.75	0.0142	0.01036	72.8	700	0.00129	9.1	0.00154	10.8	0.00105	7.3	0.0169
13 Int. Pt	730.04	1.75	0.0141	0.01036	73.4	700	0.00117	8.3	0.00154	10.9	0.00105	7.4	0.0169
14 Int. Pt	450.04	1.75	0.0140	0.01036	74.1	700	0.00104	7.4	0.00154	11.0	0.00105	7.5	0.0169
15 Int. Pt	300.04	1.75	0.0139	0.01036	74.6	700	0.00096	6.9	0.00154	11.0	0.00105	7.5	0.0169
16 Int. Pt	500.00	1.75	0.0139	0.01036	74.7	700	0.00093	6.7	0.00154	11.1	0.00105	7.5	0.0169
17 Int. Pt	400.01	1.75	0.0139	0.01036	74.8	700	0.00091	6.6	0.00154	11.1	0.00105	7.5	0.0169
18 Int. Pt	800.05	1.75	0.0138	0.01036	75.0	700	0.00088	6.4	0.00154	11.1	0.00105	7.6	0.0169
19 Int. Pt	520.20	1.75	0.0138	0.01036	75.3	700	0.00083	6.0	0.00154	11.1	0.00105	7.6	0.0169
20 Int. Pt	440.22	1.75	0.0137	0.01036	75.6	700	0.00076	5.5	0.00154	11.2	0.00105	7.6	0.0169
21 Int. Pt	234.48	1.75	0.0137	0.01036	75.8	700	0.00073	5.3	0.00154	11.2	0.00105	7.6	0.0169
22 Int. Pt	222.41	1.75	0.0137	0.01036	75.8	700	0.00073	5.3	0.00154	11.2	0.00105	7.6	0.0169

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
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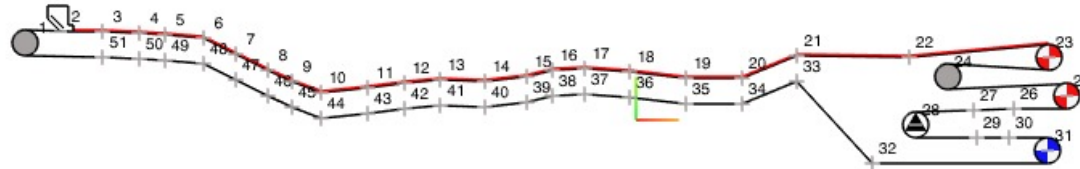
Station	Section Length m	Idler Spacing m	Loaded										Empty
			Total Loaded friction factor f	Indent factor fi	Indent factor %	Freq- uency rad/s	Matl. & Belt Flexure friction fm	Flexure friction %	Idler Drag factor fr	Drag factor %	Idler Skew & Tilt friction ft	Tilt friction %	Empty friction factor f
23 Drive *	51.78	4.00	0.0084	0.00595	70.9	1070	0.00006	0.7	0.00195	23.3	0.00043	5.1	0.0084
24 Bend *	10.86	4.00	0.0084	0.00595	70.7	1070	0.00009	1.0	0.00195	23.2	0.00043	5.1	0.0085
25 Drive *	36.61	3.50	0.0084	0.00569	67.4	1119	0.00008	1.0	0.00223	26.4	0.00043	5.1	0.0085
26 Int. Pt *	20.00	3.50	0.0085	0.00569	66.8	1119	0.00017	2.0	0.00223	26.2	0.00043	5.1	0.0085
27 Int. Pt *	25.00	3.50	0.0085	0.00569	66.8	1119	0.00017	2.0	0.00223	26.2	0.00043	5.1	0.0085
28 Takeup*	10.02	3.50	0.0085	0.00569	66.8	1119	0.00017	2.0	0.00223	26.2	0.00043	5.1	0.0085
29 Int. Pt *	9.50	3.50	0.0085	0.00569	66.8	1119	0.00017	2.0	0.00223	26.2	0.00043	5.1	0.0085
30 Int. Pt *	9.52	3.50	0.0085	0.00569	66.8	1119	0.00017	2.0	0.00223	26.2	0.00043	5.1	0.0085
31 Brake *	129.39	3.50	0.0085	0.00569	66.8	1119	0.00017	2.0	0.00223	26.2	0.00043	5.1	0.0085
32 Int. Pt *	234.48	3.50	0.0085	0.00569	66.8	1119	0.00017	2.0	0.00223	26.2	0.00043	5.1	0.0085
33 Int. Pt *	440.22	3.50	0.0085	0.00569	66.8	1119	0.00017	1.9	0.00223	26.2	0.00043	5.1	0.0085
34 Int. Pt *	520.20	3.50	0.0085	0.00569	66.8	1119	0.00016	1.9	0.00223	26.2	0.00043	5.1	0.0085
35 Int. Pt *	800.05	3.50	0.0085	0.00569	66.8	1119	0.00016	1.9	0.00223	26.2	0.00043	5.1	0.0085
36 Int. Pt *	400.01	3.50	0.0085	0.00569	66.8	1119	0.00016	1.9	0.00223	26.2	0.00043	5.1	0.0085
37 Int. Pt *	500.00	3.50	0.0085	0.00569	66.8	1119	0.00016	1.9	0.00223	26.2	0.00043	5.1	0.0085
38 Int. Pt *	300.04	3.50	0.0085	0.00569	66.8	1119	0.00016	1.9	0.00223	26.2	0.00043	5.1	0.0085
39 Int. Pt *	450.04	3.50	0.0085	0.00569	66.8	1119	0.00016	1.9	0.00223	26.2	0.00043	5.1	0.0085
40 Int. Pt *	730.04	3.50	0.0085	0.00569	66.9	1119	0.00016	1.9	0.00223	26.2	0.00043	5.1	0.0085
41 Int. Pt *	1270.00	3.50	0.0085	0.00569	66.9	1119	0.00016	1.9	0.00223	26.2	0.00043	5.1	0.0085
42 Int. Pt *	160.13	3.50	0.0085	0.00569	66.9	1119	0.00016	1.8	0.00223	26.2	0.00043	5.1	0.0085
43 Int. Pt *	590.00	3.50	0.0085	0.00569	66.9	1119	0.00016	1.8	0.00223	26.2	0.00043	5.1	0.0085
44 Int. Pt *	320.00	3.50	0.0085	0.00569	66.9	1119	0.00016	1.8	0.00223	26.2	0.00043	5.1	0.0085
45 Int. Pt *	280.00	3.50	0.0085	0.00569	66.9	1119	0.00015	1.8	0.00223	26.2	0.00043	5.1	0.0085
46 Int. Pt *	1750.15	3.50	0.0085	0.00569	66.9	1119	0.00015	1.8	0.00223	26.2	0.00043	5.1	0.0085
47 Int. Pt *	300.05	3.50	0.0085	0.00569	66.9	1119	0.00015	1.7	0.00223	26.2	0.00043	5.1	0.0085
48 Int. Pt *	350.01	3.50	0.0085	0.00569	67.0	1119	0.00014	1.6	0.00223	26.3	0.00043	5.1	0.0085
49 Int. Pt *	495.79	3.50	0.0085	0.00569	67.0	1119	0.00014	1.6	0.00223	26.3	0.00043	5.1	0.0085
50 Int. Pt *	92.96	3.50	0.0085	0.00569	67.0	1119	0.00013	1.6	0.00223	26.3	0.00043	5.1	0.0085
51 Int. Pt *	11.60	3.50	0.0085	0.00569	67.1	1119	0.00013	1.6	0.00223	26.3	0.00043	5.1	0.0085

* Indicates Return conveyor section

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



Running Fully Loaded Belt Resonance

Carry Roll Diameter	178 mm	Belt Speed	4.1 m/s
Return Roll Diameter	152 mm	Takeup Mass	26000 kg
		Belt Resonance +/- Tolerance	2 %

<u>Station / Section</u>		Start Belt Tension kN	End Belt Tension kN	Belt Transverse Wave Frequency Range		Idler Roll Excitation Frequency Hz	Section Idler Spacing m	Critical Idler Spacing Start m	Critical Idler Spacing End m	Idler Spacing Within +/- 2% m	Mode
Station	Description			Hz	to Hz						
1	Tail Tail	171.56	171.64	34.12	34.13	7.33	1	4.65	4.66	OK	
2	Hopper Trans	171.64	174.94	59.71	60.3	7.33	0.25	2.04	2.06	OK	
3	Int. Pt Skirt	174.94	171.43	8.61	8.52	7.33	1.75	2.06	2.03	OK	
4	Int. Pt	171.43	155.91	8.52	8.11	7.33	1.75	2.03	1.94	OK	
5	Int. Pt IP	155.91	161.83	8.11	8.27	7.33	1.75	1.94	1.97	OK	
6	Int. Pt IP	161.83	160.1	8.27	8.23	7.33	1.75	1.97	1.96	OK	
7	Int. Pt IP	160.1	168.04	8.23	8.44	7.33	1.75	1.96	2.01	OK	
8	Int. Pt IP	168.04	174.84	8.44	8.61	7.33	1.75	2.01	2.06	OK	
9	Int. Pt Horiz IP	174.84	181.58	8.61	8.78	7.33	1.75	2.06	2.1	OK	
10	Int. Pt IP	181.58	201.17	8.78	9.26	7.33	1.75	2.1	2.21	OK	
11	Int. Pt IP	201.17	217.27	9.26	9.63	7.33	1.75	2.21	2.3	OK	
12	Int. Pt IP	217.27	254.21	9.63	10.44	7.33	1.75	2.3	2.49	OK	
13	Int. Pt IP	254.21	287.64	10.44	11.13	7.33	1.75	2.49	2.66	OK	
14	Int. Pt IP	287.64	311.36	11.13	11.58	7.33	1.75	2.66	2.77	OK	
15	Int. Pt IP	311.36	311.05	11.58	11.58	7.33	1.75	2.77	2.76	OK	
16	Int. Pt IP	311.05	322.29	11.58	11.79	7.33	1.75	2.76	2.81	OK	
17	Int. Pt IP	322.29	338.5	11.79	12.09	7.33	1.75	2.81	2.89	OK	
18	Int. Pt IP	338.5	376.3	12.09	12.76	7.33	1.75	2.89	3.05	OK	
19	Int. Pt IP	376.3	416.91	12.76	13.44	7.33	1.75	3.05	3.21	OK	
20	Int. Pt IP	416.91	413.7	13.44	13.39	7.33	1.75	3.21	3.2	OK	
21	Int. Pt IP	413.7	418.65	13.39	13.47	7.33	1.75	3.2	3.21	OK	
22	Int. Pt	418.65	451.06	13.47	13.99	7.33	1.75	3.21	3.34	OK	
23	Drive Drive 1	289.36	287.75	11.1	11.06	8.59	4	5.17	5.15	OK	
24	Bend HT Bend	289.12	289.72	11.09	11.1	8.59	4	5.17	5.17	OK	
25	Drive Drive 2	127.28	127.4	8.39	8.39	8.59	3.5	3.42	3.42	OK	
26	Int. Pt	127.4	127.48	8.39	8.39	8.59	3.5	3.42	3.42	OK	
27	Int. Pt	127.48	127.49	8.39	8.39	8.59	3.5	3.42	3.42	OK	

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
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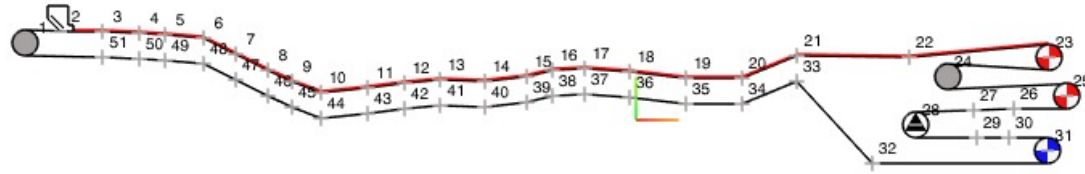
<u>Station / Section</u>		Start Belt Tension kN	End Belt Tension kN	Belt Transverse Wave Frequency Range Hz to Hz		Idler Roll Excitation Frequency Hz	Section Idler Spacing m	Critical Idler Spacing Start m	Critical Idler Spacing End m	Idler Spacing Within +/- 2% m	Mode
Station	Description										
28	Takeup	128.13	128.38	8.42	8.42	8.59	3.5	3.43	3.43	Caution	1
29	Int. Pt	128.38	128.42	8.42	8.43	8.59	3.5	3.43	3.43	Caution	1
30	Int. Pt	128.42	128.22	8.42	8.42	8.59	3.5	3.43	3.43	Caution	1
31	Brake	128.86	128.96	8.44	8.44	8.59	3.5	3.44	3.44	Caution	1
32	Int. Pt	128.96	130.05	8.44	8.48	8.59	3.5	3.44	3.46	Caution	1
33	Int. Pt	130.05	134.57	8.48	8.63	8.59	3.5	3.46	3.52	Caution	1
34	Int. Pt	134.57	131.17	8.63	8.52	8.59	3.5	3.52	3.47	Caution	1
35	Int. Pt	131.17	130.82	8.52	8.5	8.59	3.5	3.47	3.47	Caution	1
36	Int. Pt	130.82	131.18	8.5	8.52	8.59	3.5	3.47	3.47	Caution	1
37	Int. Pt	131.18	133.41	8.52	8.59	8.59	3.5	3.47	3.5	Caution	1
38	Int. Pt	133.41	136.14	8.59	8.68	8.59	3.5	3.5	3.54	Caution	1
39	Int. Pt	136.14	135.49	8.68	8.66	8.59	3.5	3.54	3.53	Caution	1
40	Int. Pt	135.49	135.46	8.66	8.66	8.59	3.5	3.53	3.53	Caution	1
41	Int. Pt	135.46	139.65	8.66	8.79	8.59	3.5	3.53	3.58	Caution	1
42	Int. Pt	139.65	137.93	8.79	8.73	8.59	3.5	3.58	3.56	OK	
43	Int. Pt	137.93	139.44	8.73	8.78	8.59	3.5	3.56	3.58	Caution	1
44	Int. Pt	139.44	141.03	8.78	8.83	8.59	3.5	3.58	3.6	OK	
45	Int. Pt	141.03	142.25	8.83	8.87	8.59	3.5	3.6	3.62	OK	
46	Int. Pt	142.25	156.69	8.87	9.31	8.59	3.5	3.62	3.8	OK	
47	Int. Pt	156.69	159.78	9.31	9.41	8.59	3.5	3.8	3.83	OK	
48	Int. Pt	159.78	161.81	9.41	9.47	8.59	3.5	3.83	3.86	OK	
49	Int. Pt	161.81	169.38	9.47	9.69	8.59	3.5	3.86	3.95	OK	
50	Int. Pt	169.38	170.92	9.69	9.73	8.59	3.5	3.95	3.97	OK	
51	Int. Pt	170.92	170.72	9.73	9.73	8.59	3.5	3.97	3.96	OK	

All Figures are Running Fully Loaded Scenario

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



Takeup Travel

Takeup Type	Horizontal Gravity
Takeup Mass Calculation Method	Manual
Takeup Mass Step Increment	500 kg
Max number of calc Increments	100
Takeup Mass kg (manual input)	26,000 kg
Takeup Tension (manual input)	127.49 kN
Takeup Mass calculated	26,000 kg

Takeup Travel Estimate

Safety Margin Top	+	1.00 m
Belt Splice Allowance	+	1.50 m
Dynamic Travel Up	+	5.00 m
Dynamic Travel Down	+	5.00 m
Safety Margin Bottom	+	1.00 m

Thermal Expansion Distance

Minimum Site Temperature	0 °C	
Maximum Site Temperature	45 °C	
Belt Expansion Coefficient mm per °C	0.0000117 mm/°C	
Total Belt Length	20531.70 m	
Thermal Expansion Distance	+	5.405 m

Permanent Belt Stretch

Permanent Stretch Co-efficient % of belt Length	0.15 %	
Permanent Belt Stretch Distance	+	15.399 m
Total Takeup Travel Distance	=	34.30 m

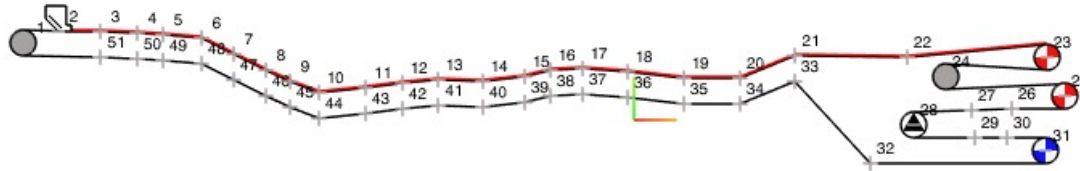


Helix Technologies Pty Ltd

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



Drive Number	1	Drive	Pulley Number	23
Drive Description		Head	Pulley Condition	Moist
Load Share on Drive Pulley		50 %	Pulley Lagging Type	Rubber
Starting Torque Factor Fully Loaded		120 %	Belt Wrap Angle	175.19 °
Starting Torque Factor Empty		120 %	Coefficient of Friction Running	0.25
Number of Motors on Drive Pulley		1	Drive Factor Cw Running	0.87
Motor Description		ASEA DC Motor	Coefficient of friction Starting	0.35
Motor Power Rating		700 kW	Drive Factor Cw Starting	0.52
Motor Voltage		620 V	Pulley and Shaft Dimensions	
Gearbox Description		Flender KZN630	Pulley Shell Diameter	1850 mm
Drive Efficiency		95 %	Pulley Lagging Thickness	16 mm
Fluid Coupling			Pulley Outside Diameter	1882 mm
Fluid Coupling		No Selection - Direct Drive	Pulley Shaft Diameter at Hub	300 mm
Fluid Coupling Size			Pulley Shaft Diameter at Bearing	300 mm
High Speed Coupling			Pulley and Belt Speed	
HS Coupling Make		Falk	Motor Full Load Speed	1000 rpm
HS Coupling Model		1080G	Required Gearbox Ratio	24.034 :1
Low Speed Coupling			Selected Gearbox Ratio	23.4 :1
LS Coupling Make		Falk	Required Pulley Speed	41.61 rpm
LS Coupling Model		1100G	Calculated Pulley Speed for Reducer	42.74 rpm
Brake			Required Belt Speed	4.1 m/s
Brake Location		Low Speed	Calculated Belt Speed	4.21 m/s
Low Speed Brake Torque Input		0 kNm	Drive Inertia	
Equivalent HS Brake Torque		0 kN	Motor Inertia	70 kg-m2
HoldBack			High Speed Coupling Inertia	1 kg-m2
Static Analysis RunBack Force Fv		-6,836 N	High Speed Brake Disc Inertia	0 kg-m2
Static Analysis Horizontal Force Fh		333,726 N	FlyWheel Inertia	500 kg-m2
Calculated HoldBack Torque		N/A Nm	Gearbox Inertia HSS	2.5 kg-m2
HoldBack Required (Yes/No) Fv>Fh/2		No	Total Drive Inertia	573.5 kg-m2
HoldBack Req Torque 3x Motor FLT		482,011 Nm	Total Drive Equivalent Mass	374,130 kg
HoldBack Make		Ringspann		
HoldBack Model		FXRT 260-63UX		
HoldBack Rated Torque		30000 Nm		

Helix Technologies Pty Ltd

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019
Drive Number	2	Drive	
Pulley Number		25	
Drive Description	Head	Pulley Condition	Moist
Load Share on Drive Pulley	50 %	Pulley Lagging Type	Rubber
Starting Torque Factor Fully Loaded	120 %	Belt Wrap Angle	204.6 °
Starting Torque Factor Empty	120 %	Coefficient of Friction Running	0.25
Number of Motors on Drive Pulley	1	Drive Factor Cw Running	0.69
Motor Description	ASEA DC Motor	Coefficient of friction Starting	0.35
Motor Power Rating	700 kW	Drive Factor Cw Starting	0.40
Motor Voltage	620 V		
Gearbox Description	Flender KZN630	Pulley and Shaft Dimensions	
Drive Efficiency	95 %	Pulley Shell Diameter	1850 mm
		Pulley Lagging Thickness	16 mm
Fluid Coupling		Pulley Outside Diameter	1882 mm
Fluid Coupling	No Selection - Direct Drive	Pulley Shaft Diameter at Hub	280 mm
Fluid Coupling Size		Pulley Shaft Diameter at Bearing	280 mm
High Speed Coupling		Pulley and Belt Speed	
HS Coupling Make	Falk	Motor Full Load Speed	1000 rpm
HS Coupling Model	1080G	Required Gearbox Ratio	24.034 :1
Low Speed Coupling		Selected Gearbox Ratio	23.4 :1
LS Coupling Make	Falk	Required Pulley Speed	41.61 rpm
LS Coupling Model	1100G	Calculated Pulley Speed for Reducer	42.74 rpm
Brake		Required Belt Speed	4.1 m/s
Brake Location	High Speed	Calculated Belt Speed	4.21 m/s
Low Speed Brake Torque Input	0 kNm	Drive Inertia	
Equivalent HS Brake Torque	0 kN	Motor Inertia	70 kg-m2
HoldBack		High Speed Coupling Inertia	1 kg-m2
Static Analysis RunBack Force Fv	-6,836 N	High Speed Brake Disc Inertia	0 kg-m2
Static Analysis Horizontal Force Fh	333,726 N	FlyWheel Inertia	500 kg-m2
Calculated HoldBack Torque	N/A Nm	Gearbox Inertia HSS	0 kg-m2
HoldBack Required (Yes/No) Fv>Fh/2	No	Total Drive Inertia	574 kg-m2
HoldBack Req Torque 3x Motor FLT	482,011 Nm	Total Drive Equivalent Mass	374,457 kg
HoldBack Make	Ringspann		
HoldBack Model	FXRT 260-63UX		
HoldBack Rated Torque	30000 Nm		

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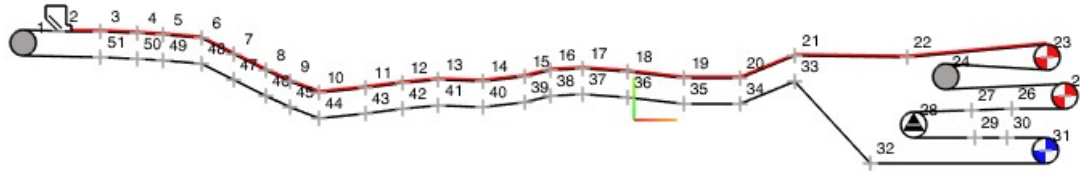
Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019
Drive Number	3	Pulley Number	31
Drive Description	Brake	Pulley Condition	Moist
Load Share on Drive Pulley	0 %	Pulley Lagging Type	Rubber
Starting Torque Factor Fully Loaded	110 %	Belt Wrap Angle	180 °
Starting Torque Factor Empty	110 %	Coefficient of Friction Running	0.25
Number of Motors on Drive Pulley	1	Drive Factor Cw Running	0.84
Motor Description	Brake Drive only	Coefficient of friction Starting	0.35
Motor Power Rating	0 kW	Drive Factor Cw Starting	0.50
Motor Voltage	0 V	Pulley and Shaft Dimensions	
Gearbox Description	No Gearbox - brake only	Pulley Shell Diameter	1310 mm
Drive Efficiency	94 %	Pulley Lagging Thickness	16 mm
Fluid Coupling		Pulley Outside Diameter	1342 mm
Fluid Coupling	No Selection - Direct Drive	Pulley Shaft Diameter at Hub	200 mm
Fluid Coupling Size		Pulley Shaft Diameter at Bearing	200 mm
High Speed Coupling		Pulley and Belt Speed	
HS Coupling Make	No Selection	Motor Full Load Speed	0 rpm
HS Coupling Model		Required Gearbox Ratio	1 :1
Low Speed Coupling		Selected Gearbox Ratio	1 :1
LS Coupling Make	No Selection Brake Only	Required Pulley Speed	0 rpm
LS Coupling Model		Calculated Pulley Speed for Reducer	0 rpm
Brake		Required Belt Speed	4.1 m/s
Brake Location	Low Speed	Calculated Belt Speed	4.1 m/s
Low Speed Brake Torque Input	40 kNm	Drive Inertia	
Equivalent HS Brake Torque	0 kN	Motor Inertia	0 kg-m2
HoldBack		High Speed Coupling Inertia	0 kg-m2
Static Analysis RunBack Force Fv	-6,836 N	High Speed Brake Disc Inertia	0 kg-m2
Static Analysis Horizontal Force Fh	333,726 N	FlyWheel Inertia	0 kg-m2
Calculated HoldBack Torque	N/A Nm	Gearbox Inertia HSS	0 kg-m2
HoldBack Required (Yes/No) Fv>Fh/2	No	Total Drive Inertia	1 kg-m2
HoldBack Req Torque 3x Motor FLT	0 Nm	Total Drive Equivalent Mass	0 kg
HoldBack Make	No Selection - brake only		
HoldBack Model			
HoldBack Rated Torque	0 Nm		

Helix Technologies Pty Ltd

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



Drive Number	1	Drive	Pulley Number	23
Drive Description		Head	Total Motor Power on Drive	700 kW
Number of Motors on Drive Pulley		1	Absorbed Power at Pulley	670.14 kW
Motor Category		DC Motor Dummy	Drive Efficiency	95 %
Motor Description		ASEA DC Motor	Absorbed Power at Motor	705.41 kW
Motor Power Rating		700 kW	Motor Full Load Speed	1000 rpm
Motor Voltage		620 V	Motor Full Load Torque	0 Nm
Number of Poles		99	Motor Full Load Current	1186 Amps
Motor Frame Size		LAN560K	Motor Efficiency at Duty Point	93.01 %
Motor Shaft Diameter		130 mm	Motor Power Factor at Duty Point	0.88
Motor Shaft Height		560 mm	Mass of Motor	0 kg
Motor Inertia		70.00 kgm ²	Selection Mode	Manual
Drive Number	2	Drive	Pulley Number	25
Drive Description		Head	Total Motor Power on Drive	700 kW
Number of Motors on Drive Pulley		1	Absorbed Power at Pulley	670.14 kW
Motor Category		DC Motor Dummy	Drive Efficiency	95 %
Motor Description		ASEA DC Motor	Absorbed Power at Motor	705.41 kW
Motor Power Rating		700 kW	Motor Full Load Speed	1000 rpm
Motor Voltage		620 V	Motor Full Load Torque	0 Nm
Number of Poles		99	Motor Full Load Current	1186 Amps
Motor Frame Size		LAN560K	Motor Efficiency at Duty Point	93.01 %
Motor Shaft Diameter		130 mm	Motor Power Factor at Duty Point	0.88
Motor Shaft Height		560 mm	Mass of Motor	0 kg
Motor Inertia		70.00 kgm ²	Selection Mode	Manual

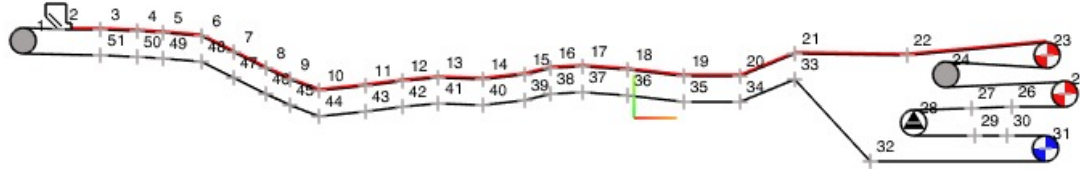
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Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019
Drive Number	3	Brake	Pulley Number
Drive Description	Brake	Total Motor Power on Drive	0 kW
Number of Motors on Drive Pulley	1	Absorbed Power at Pulley	0 kW
Motor Category	Toshiba 415 V	Drive Efficiency	94 %
Motor Description	Brake Drive only	Absorbed Power at Motor	0 kW
Motor Power Rating	0 kW	Motor Full Load Speed	0 rpm
Motor Voltage	0 V	Motor Full Load Torque	0 Nm
Number of Poles	0	Motor Full Load Current	0 Amps
Motor Frame Size		Motor Efficiency at Duty Point	999 %
Motor Shaft Diameter	0 mm	Motor Power Factor at Duty Point	16.3
Motor Shaft Height	0 mm	Mass of Motor	0 kg
Motor Inertia	0.00 kgm2	Selection Mode	Manual

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC

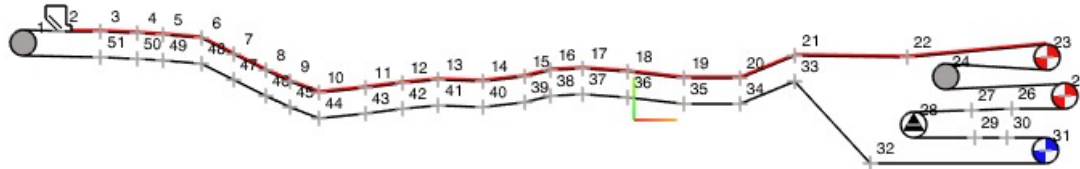


Drive Number	1	Drive	Pulley Number	23
Drive Description		Head	Coupling Size	
Number of Motors on Drive Pulley		1	Motor Power Rating	700 kW
Selection Mode		Auto	Motor Full Load Speed	1000 rpm
Coupling Category	Voith		Coupling Rated Slip	0 %
Coupling Description	No Selection - Direct Drive		Peak Torque	0 % FLT
Coupling Size			Run-up Torque % (2 sec)	0 % FLT
Coupling Power Rating		0 kW	Coupling Output Speed	1000 rpm
Min Required Ramping Time		0.08 s	Mass of Coupling	0 kg
Max Starting Time		0 s		
Drive Number	2	Drive	Pulley Number	25
Drive Description		Head	Coupling Size	
Number of Motors on Drive Pulley		1	Motor Power Rating	700 kW
Selection Mode		Auto	Motor Full Load Speed	1000 rpm
Coupling Category			Coupling Rated Slip	0 %
Coupling Description	No Selection - Direct Drive		Peak Torque	0 % FLT
Coupling Size			Run-up Torque % (2 sec)	0 % FLT
Coupling Power Rating		0 kW	Coupling Output Speed	1000 rpm
Min Required Ramping Time		0.00 s	Mass of Coupling	0 kg
Max Starting Time		0 s		
Drive Number	3	Brake	Pulley Number	31
Drive Description		Brake	Coupling Size	
Number of Motors on Drive Pulley		1	Motor Power Rating	0 kW
Selection Mode		Auto	Motor Full Load Speed	0 rpm
Coupling Category			Coupling Rated Slip	0 %
Coupling Description	No Selection - Direct Drive		Peak Torque	0 % FLT
Coupling Size			Run-up Torque % (2 sec)	0 % FLT
Coupling Power Rating		0 kW	Coupling Output Speed	0 rpm
Min Required Ramping Time		0.00 s	Mass of Coupling	0 kg
Max Starting Time		0 s		

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



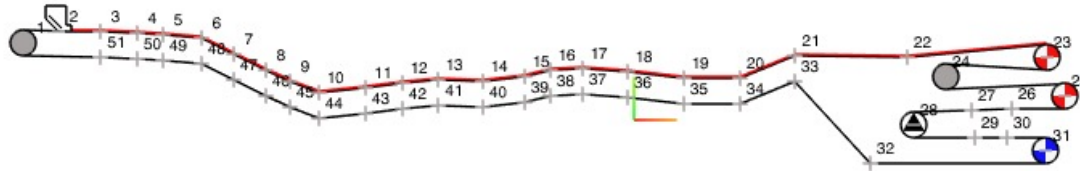
Drive Number	1	Drive	Pulley Number	23
Drive Description		Head	Motor Power Rating	700 kW
Number of Motors on Drive Pulley		1	Motor Full Load Speed	1000 rpm
Selection Mode		Manual	Motor Torque @ FL Speed	6685 Nm
Gearbox Category		Flender HI	Motor Torque at Pulley Speed	160658 Nm
Description		Flender KZN630	Gearbox Rated Torque	99999 Nm
Type		Helical Bevel Gear	Service Factor Required	1.5
Size		1	Service Factor Calculated	0.62
Code		KZN630	Plus Speed Selection Tolerance	5 %
Ratio		23.4	Minus Speed Selection Tolerance	5 %
Number of Stages		2	Fluid Coupling Slip	0 %
Design Efficiency (input)		95 %	Required Gearbox Ratio	24.034 :1
Gearbox actual Efficiency		94 %	Selected Gearbox Ratio	23.4 :1
Maximum Input Shaft Speed		1800 rpm	Required Pulley Speed	41.61 rpm
Minimum Input Shaft Speed		700 rpm	Calculated Pulley Speed for Reducer	42.74 rpm
Input Shaft Diameter		0 mm	Required Belt Speed	4.1 m/s
Output Shaft Diameter		0 mm	Calculated Belt Speed	4.21 m/s
Gearbox Inertia		3 kg/m2	Mass of Gearbox	0 kg

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019
Drive Number	2	Drive	Pulley Number
Drive Description	Head	Motor Power Rating	700 kW
Number of Motors on Drive Pulley	1	Motor Full Load Speed	1000 rpm
Selection Mode	Manual	Motor Torque @ FL Speed	6685 Nm
Gearbox Category	Flender HI	Motor Torque at Pulley Speed	160658 Nm
Description	Flender KZN630	Gearbox Rated Torque	99999 Nm
Type	Helical Bevel Gear	Service Factor Required	1.5
Size	1	Service Factor Calculated	0.62
Code	KZN630	Plus Speed Selection Tolerance	5 %
Ratio	23.4	Minus Speed Selection Tolerance	5 %
Number of Stages	2	Fluid Coupling Slip	0 %
Design Efficiency (input)	95 %	Required Gearbox Ratio	24.034 :1
Gearbox actual Efficiency	94 %	Selected Gearbox Ratio	23.4 :1
Maximum Input Shaft Speed	1800 rpm	Required Pulley Speed	41.61 rpm
Minimum Input Shaft Speed	700 rpm	Calculated Pulley Speed for Reducer	42.74 rpm
Input Shaft Diameter	0 mm	Required Belt Speed	4.1 m/s
Output Shaft Diameter	0 mm	Calculated Belt Speed	4.21 m/s
Gearbox Inertia	3 kg/m2	Mass of Gearbox	0 kg
Drive Number	3	Brake	Pulley Number
Drive Description	Brake	Motor Power Rating	0 kW
Number of Motors on Drive Pulley	1	Motor Full Load Speed	0 rpm
Selection Mode	Manual	Motor Torque @ FL Speed	NaN Nm
Gearbox Category	Flender HI	Motor Torque at Pulley Speed	NaN Nm
Description	No Gearbox - brake only	Gearbox Rated Torque	0 Nm
Type		Service Factor Required	1.5
Size		Service Factor Calculated	NaN
Code		Plus Speed Selection Tolerance	5 %
Ratio	1	Minus Speed Selection Tolerance	5 %
Number of Stages	0	Fluid Coupling Slip	0 %
Design Efficiency (input)	94 %	Required Gearbox Ratio	1 :1
Gearbox actual Efficiency	0 %	Selected Gearbox Ratio	1 :1
Maximum Input Shaft Speed	0 rpm	Required Pulley Speed	0 rpm
Minimum Input Shaft Speed	0 rpm	Calculated Pulley Speed for Reducer	0 rpm
Input Shaft Diameter	0 mm	Required Belt Speed	4.1 m/s
Output Shaft Diameter	0 mm	Calculated Belt Speed	4.1 m/s
Gearbox Inertia	0 kg/m2	Mass of Gearbox	0 kg

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



Drive Number	1	Drive	Pulley Number	23
Drive Description		Head	Brake Location	Low Speed
Load Share on Drive Pulley		50 %	Disc Material	Mild Steel
Brake Category		Svendborg BSFH 500	Disc Diameter	1250 mm
Brake Description		No Brake on Drive	Disc Thickness	30 mm
Caliper		No Selection	Co-eff of Friction (Pad-Disc)	0.4
Number of Motors on Drive Pulley		1		
Selection Mode		No Brake on Drive		
Brake Selection Input Data			Caliper Clamping Force Minimum	4000 N
Low Speed Brake Torque Input		0 kNm	Caliper Clamping Force Maximum	5600 N
Equivalent HS Brake Torque		0 Nm	Pad Offset Width W	60 mm
Design Braking Torque Input		40000 Nm	Air Gap	3 mm
Selected Brake's Torque Rating		1676 Nm		<i>Recomended working airgap is 1mm</i>
Design Stopping Time		35 sec	Disc Initial Speed	1000 rpm
Consecutive number of Stops		1	Disc Moment of Inertia	56.45 kgm²
Average number of Stops per hour		3	Required Gearbox Ratio	24.034 :1
Ambient Temperature		40 deg C	Drive Efficiency	95 %
Disc Temp after stops		79 deg C	Mass of Caliper	26 kg
Drive Number	2	Drive	Pulley Number	25
Drive Description		Head	Brake Location	High Speed
Load Share on Drive Pulley		50 %	Disc Material	Mild Steel
Brake Category		Svendborg BSFH 500	Disc Diameter	700 mm
Brake Description		No Brake on Drive	Disc Thickness	30 mm
Caliper		No Selection	Co-eff of Friction (Pad-Disc)	0.4
Number of Motors on Drive Pulley		1		
Selection Mode		No Brake on Drive		
Brake Selection Input Data			Caliper Clamping Force Minimum	9999 N
Low Speed Brake Torque Input		0 kNm	Caliper Clamping Force Maximum	0 N
Equivalent HS Brake Torque		0 Nm	Pad Offset Width W	60 mm
Design Braking Torque Input		800 Nm	Air Gap	1 mm
Selected Brake's Torque Rating		2560 Nm		<i>Recomended working airgap is 1mm</i>
Design Stopping Time		10 sec	Disc Initial Speed	1450 rpm
Consecutive number of Stops		3	Disc Moment of Inertia	5.55 kgm²
Average number of Stops per hour		3	Required Gearbox Ratio	24.034 :1
Ambient Temperature		30 deg C	Drive Efficiency	95 %
Disc Temp after stops		98 deg C	Mass of Caliper	0 kg

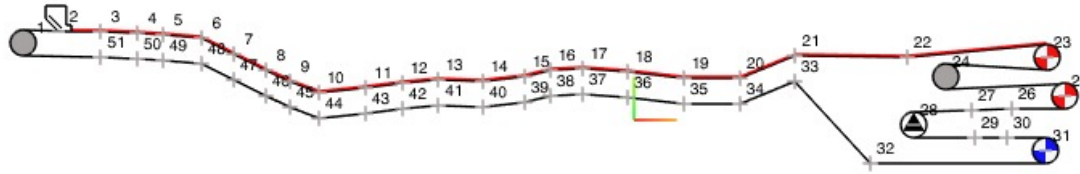
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Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019
Drive Number	3	Brake	Pulley Number
Drive Description	Brake	Brake Location	Low Speed
Load Share on Drive Pulley	0 %	Disc Material	Mild Steel
Brake Category	Svendborg BSFH 500	Disc Diameter	1250 mm
Brake Description	Svendborg	Disc Thickness	30 mm
Caliper	BSFH 512	Co-eff of Friction (Pad-Disc)	0.4
Number of Motors on Drive Pulley	1		
Selection Mode	Auto		
Brake Selection Input Data		Caliper Clamping Force Minimum	120000 N
Low Speed Brake Torque Input	40 kNm	Caliper Clamping Force Maximum	130000 N
Equivalent HS Brake Torque	0 Nm	Pad Offset Width W	220 mm
Design Braking Torque Input	40000 Nm	Air Gap	3 mm
Selected Brake's Torque Rating	41530 Nm		<i>Recomended working airgap is 1mm</i>
<i>Design Stopping Time</i>	35 sec	Disc Initial Speed	58 rpm
Consecutive number of Stops	1	Disc Moment of Inertia	56.45 kgm²
Average number of Stops per hour	3	Required Gearbox Ratio	1 :1
Ambient Temperature	40 deg C	Drive Efficiency	94 %
Disc Temp after stops	105 deg C	Mass of Caliper	380 kg

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



CV334 - 10km OLC



Drive Number	1	Drive	Pulley Number	23
Drive Description		Head	Motor Power Rating	700 kW
Load Share on Drive Pulley		50 %	Motor Full Load Speed	1000 rpm
Starting Torque Factor Fully Loaded		120 %	Motor Torque at Full Load Speed	6685 Nm
Starting Torque Factor Empty		120 %	Motor Torque at Pulley Speed	160658 Nm
Number of Motors on Drive Pulley		1	Pulley Shaft Diameter at Brg	300 mm
Drive Efficiency		95 %		
High Speed Coupling			Low Speed Coupling	
HS Coupling Category		Falk G82	LS Coupling Category	Falk G82
HS Coupling Make		Falk	LS Coupling Make	Falk
HS Coupling Model		1080G	LS Coupling Model	1100G
Coupling Type		Rigid Flanged	Coupling Type	Rigid Flanged
Coupling Torque Rating		170630 Nm	Coupling Torque Rating	311235 Nm
Service Factor Required		1.5	Service Factor Required	1.5
Service Factor Calculated		25.52	Service Factor Calculated	1.94
Maximum Shaft Bore		336.55 mm	Maximum Shaft Bore	393.7 mm
Minimum Shaft Bore		101.6 mm	Minimum Shaft Bore	127 mm
Maximum Rotation Speed		1750 rpm	Maximum Rotation Speed	1450 rpm
High Speed Coupling Inertia		0 kg-m2	Low Speed Coupling Inertia	0 kg-m2
Drawing Number			Drawing Number	
High Speed Coupling Mass		786 kg	Low Speed Coupling Mass	1209 kg
High Speed Coupling Price		0	Low Speed Coupling Price	0
Fluid Coupling				
Direct Drive		Yes		
Fluid Coupling		No Selection - Direct Drive		
Fluid Coupling Size				

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019
Drive Number	2	Drive	Pulley Number
			25
Drive Description	Head	Motor Power Rating	700 kW
Load Share on Drive Pulley	50 %	Motor Full Load Speed	1000 rpm
Starting Torque Factor Fully Loaded	120 %	Motor Torque at Full Load Speed	6685 Nm
Starting Torque Factor Empty	120 %	Motor Torque at Pulley Speed	160658 Nm
Number of Motors on Drive Pulley	1	Pulley Shaft Diameter at Brg	280 mm
Drive Efficiency	95 %		
High Speed Coupling		Low Speed Coupling	
HS Coupling Category	Falk G82	LS Coupling Category	Falk G82
HS Coupling Make	Falk	LS Coupling Make	Falk
HS Coupling Model	1080G	LS Coupling Model	1100G
Coupling Type	Rigid Flanged	Coupling Type	Rigid Flanged
Coupling Torque Rating	170630 Nm	Coupling Torque Rating	311235 Nm
Service Factor Required	1.5	Service Factor Required	1.5
Service Factor Calculated	25.52	Service Factor Calculated	1.94
Maximum Shaft Bore	336.55 mm	Maximum Shaft Bore	393.7 mm
Minimum Shaft Bore	101.6 mm	Minimum Shaft Bore	127 mm
Maximum Rotation Speed	1750 rpm	Maximum Rotation Speed	1450 rpm
High Speed Coupling Inertia	0 kg-m²	Low Speed Coupling Inertia	0 kg-m²
Drawing Number		Drawing Number	
High Speed Coupling Mass	786 kg	Low Speed Coupling Mass	1209 kg
High Speed Coupling Price	0	Low Speed Coupling Price	0
Fluid Coupling			
Direct Drive	Yes		
Fluid Coupling	No Selection - Direct Drive		
Fluid Coupling Size			

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019
Drive Number	3	Brake	Pulley Number
			31
Drive Description	Brake	Motor Power Rating	0 kW
Load Share on Drive Pulley	0 %	Motor Full Load Speed	0 rpm
Starting Torque Factor Fully Loaded	110 %	Motor Torque at Full Load Speed	Nm
Starting Torque Factor Empty	110 %	Motor Torque at Pulley Speed	Nm
Number of Motors on Drive Pulley	1	Pulley Shaft Diameter at Brg	200 mm
Drive Efficiency	94 %		
High Speed Coupling		Low Speed Coupling	
HS Coupling Category		LS Coupling Category	
HS Coupling Make	No Selection	LS Coupling Make	No Selection Brake Only
HS Coupling Model		LS Coupling Model	
Coupling Type		Coupling Type	
Coupling Torque Rating	0 Nm	Coupling Torque Rating	0 Nm
Service Factor Required	3.5	Service Factor Required	3.5
Service Factor Calculated		Service Factor Calculated	
Maximum Shaft Bore	0 mm	Maximum Shaft Bore	0 mm
Minimum Shaft Bore	0 mm	Minimum Shaft Bore	0 mm
Maximum Rotation Speed	0 rpm	Maximum Rotation Speed	0 rpm
High Speed Coupling Inertia	0 kg-m2	Low Speed Coupling Inertia	0 kg-m2
Drawing Number		Drawing Number	
High Speed Coupling Mass	0 kg	Low Speed Coupling Mass	0 kg
High Speed Coupling Price	0	Low Speed Coupling Price	0
Fluid Coupling			
Direct Drive	Yes		
Fluid Coupling	No Selection - Direct Drive		
Fluid Coupling Size			

Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

<u>Station / Section</u>		Shaft Length mm	Wrap Angle deg	T1 Run kN	T2 Run kN	Resultant Force kN	T1 Start kN	Calculated		Selected			Shaft Mass kg
Station	Description							Defl. Dia mm	Dt. Dia mm	Shaft Dia mm	Brg Dia mm	Brg Ctrs mm	
1 Tail	Tail	2260	180.0	170.7	171.6	341.4	179.0	203.2	208.1	240	220	1620	803
23 Drive	Drive 1	2380	175.2	451.1	289.4	738.1	498.7	246.3	301.9	300	300	1620	1321
24 Bend	HT Bend	2280	196.3	287.7	289.1	569.7	311.5	230.9	246.8	260	260	1620	950
25 Drive	Drive 2	2340	204.6	289.7	127.3	407.9	313.6	212.4	276.8	280	280	1620	1131
28 Takeup	Takeup	2220	180.0	127.5	128.1	255.0	127.5	188.9	188.8	200	200	1620	547
31 Brake	Brake	2220	180.0	128.2	128.9	256.4	128.3	189.1	189.2	200	200	1620	547

* Indicates Manual pulley shaft dimensions entered

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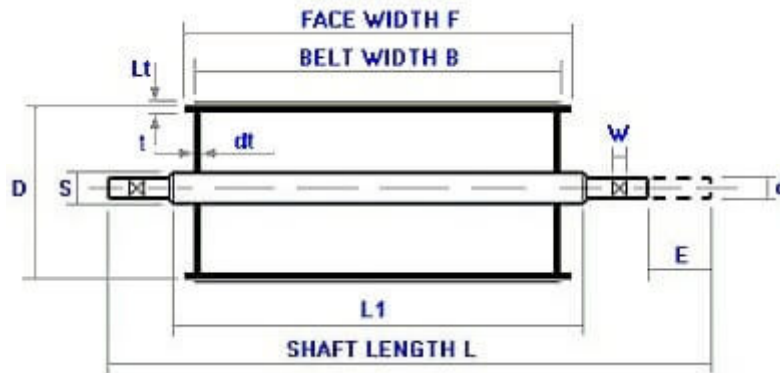
Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

Station / Section

Station	Description	Shell Dia mm	Lagging mm	Face Width mm	Shaft Length mm	Brg Ctrs mm	Shaft Dia mm	Brg Dia mm	Wrap Angle deg	Pulley Speed RPM	Pulley & Shaft Mass kg	Mom of Inertia kgm2
1	Tail	1200	12	1200	2260	1620	240	220	180.0	64.0	3331	599.8
23	Drive	1850	16	1200	2380	1620	300	300	175.2	41.6	6661	2888.2
24	Bend	1850	12	1200	2280	1620	260	260	196.3	41.8	6316	2853.1
25	Drive	1850	16	1200	2340	1620	280	280	204.6	41.6	6485	2884.4
28	Takeup	1200	12	1200	2220	1620	200	200	180.0	64.0	3096	596.8
31	Brake	1310	16	1200	2220	1620	200	200	180.0	58.3	3571	846.9

* Indicates Manual pulley dimensions entered

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Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019



Belt Width **1050 mm** Belt Class **ST-3000**

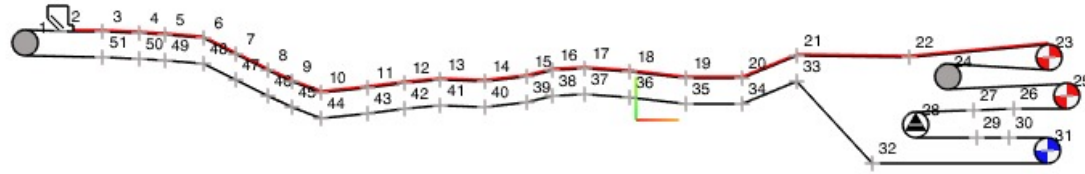
<u>Station / Section</u>		Shell Dia mm	Shell t mm	Calc Shell t mm	Lagging mm	OD mm	Face Width mm	Shaft Length mm	Shaft Dia mm	Brg Dia mm	Pulley & Shaft Mass kg	Mom of Inertia kgm2
Station	Description											
1	Tail	1200	28	21.9	12	1224	1200	2260	240	220	3331	599.8
23	Drive	1850	30	32.2	16	1882	1200	2380	300	300	6661	2888.2
24	Bend	1850	30	28.4	12	1874	1200	2280	260	260	6316	2853.1
25	Drive	1850	30	24.1	16	1882	1200	2340	280	280	6485	2884.4
28	Takeup	1200	28	18.9	12	1224	1200	2220	200	200	3096	596.8
31	Brake	1310	30	19	16	1342	1200	2220	200	200	3571	846.9

* Indicates Manual pulley dimensions entered

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CV334 - 10km OLC



Station / Section

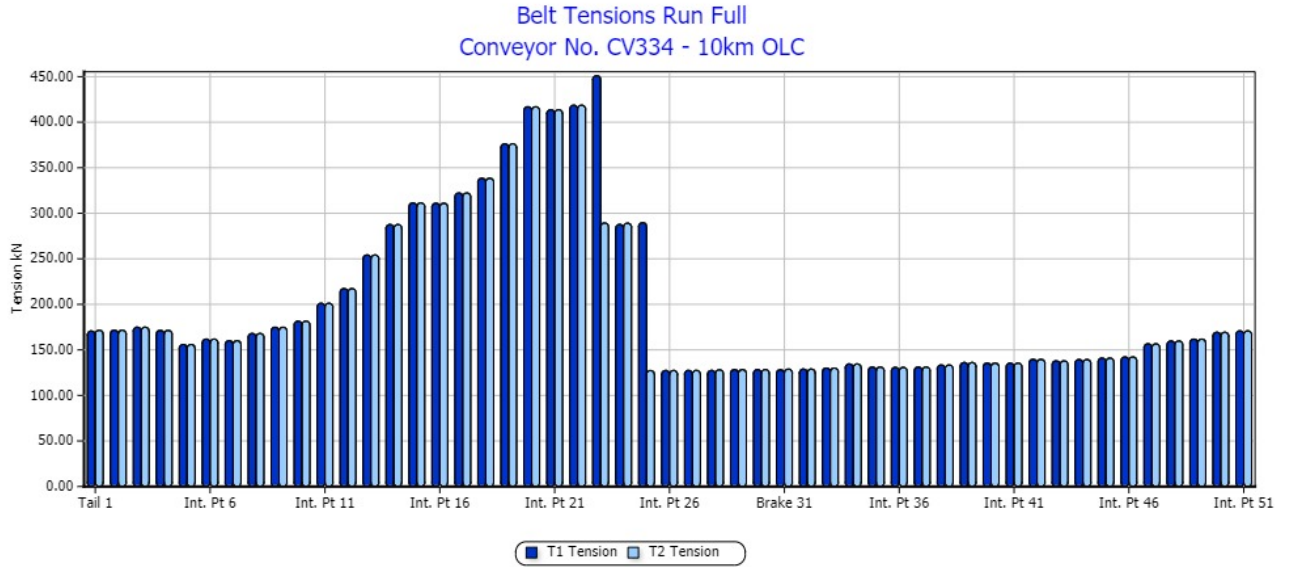
Station	Description	Shell Dia mm	Lagging mm	Face Width mm	Brg Ctrs mm	Drive Power kW	Wrap Angle deg	Pulley Speed rpm	T1 Run kN	T2 Run kN	T1 Start kN	T2 Start kN
1 Tail	Tail	1200	12	1200	1620		180.0	64.0	170.72	171.56	235.03	236.11
									Running Full		Starting Empty	
23 Drive	Drive 1	1850	16	1200	1620	700	175.2	41.6	451.06	289.36	498.74	313.1
									Running Full		Starting Full	
24 Bend	HT Bend	1850	12	1200	1620		196.3	41.8	287.75	289.12	311.53	312.96
									Running Full		Starting Full	
25 Drive	Drive 2	1850	16	1200	1620	700	204.6	41.6	289.72	127.28	313.57	127.2
									Running Full		Starting Full	
28 Takeup	Takeup	1200	12	1200	1620		180.0	64.0	127.49	128.13	127.49	128.36
									Running Full		Starting Empty	
31 Brake	Brake	1310	16	1200	1620	0	180.0	58.3	128.22	128.86	127.88	184.35
									Running Full		Braking Empty	

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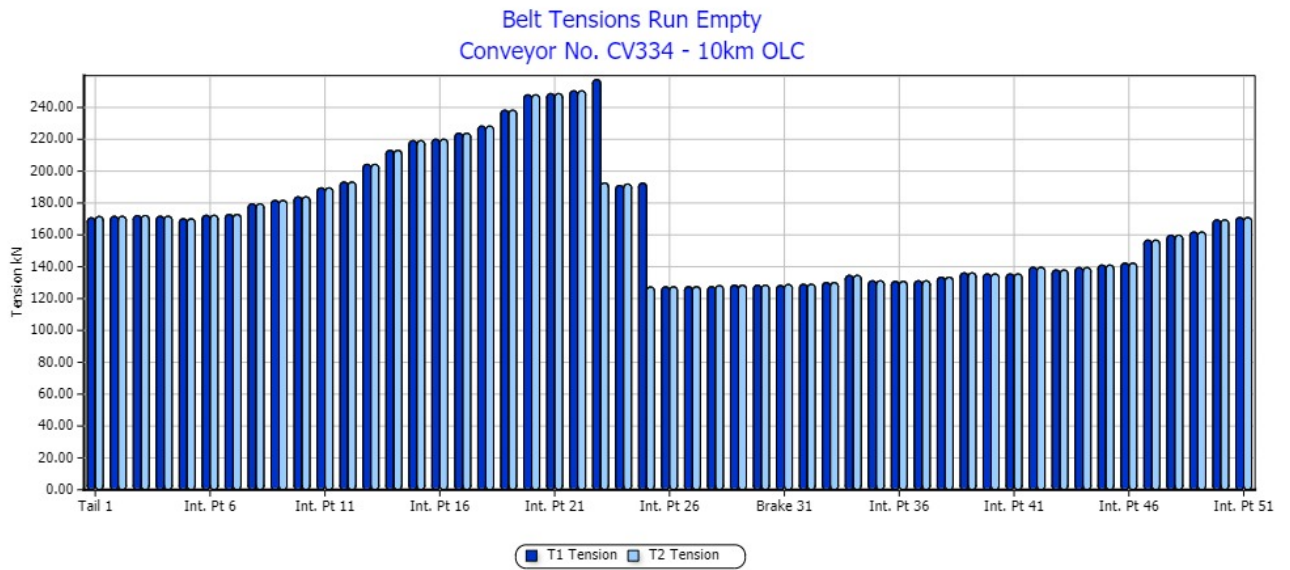
Conveyor Tension Graphs

Calculation Method

Visco

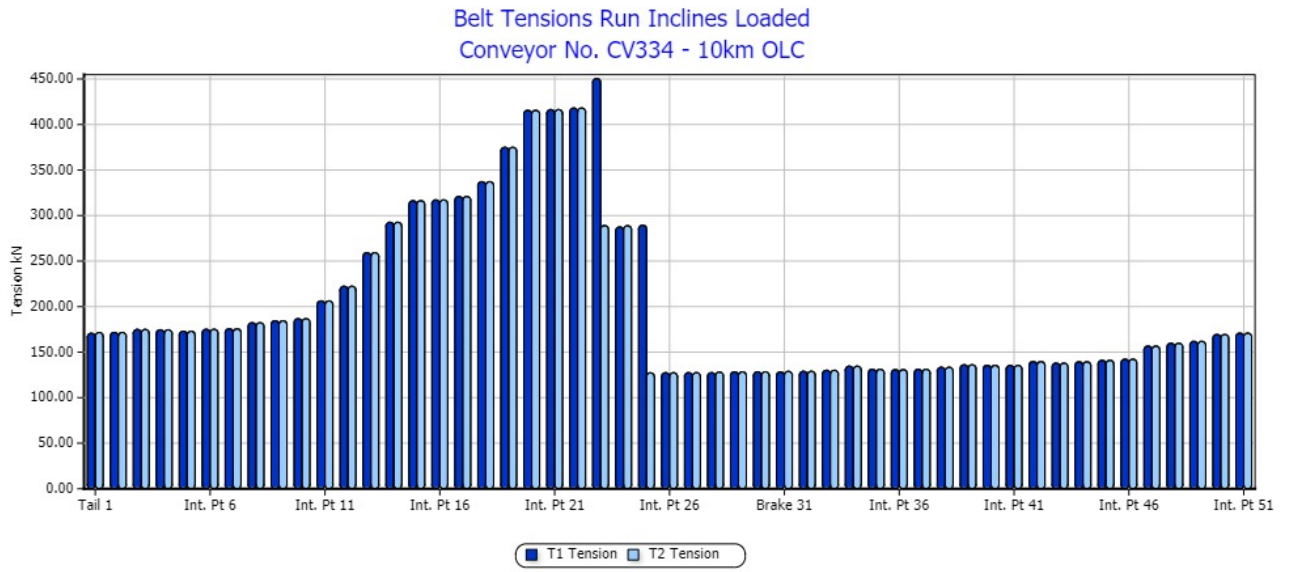


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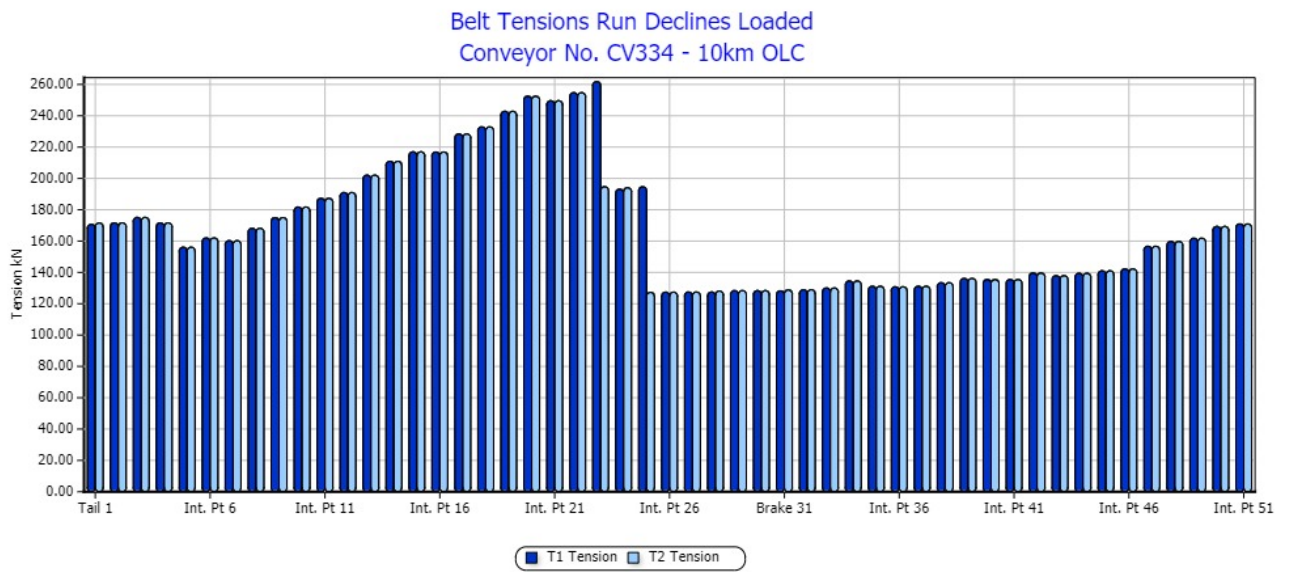


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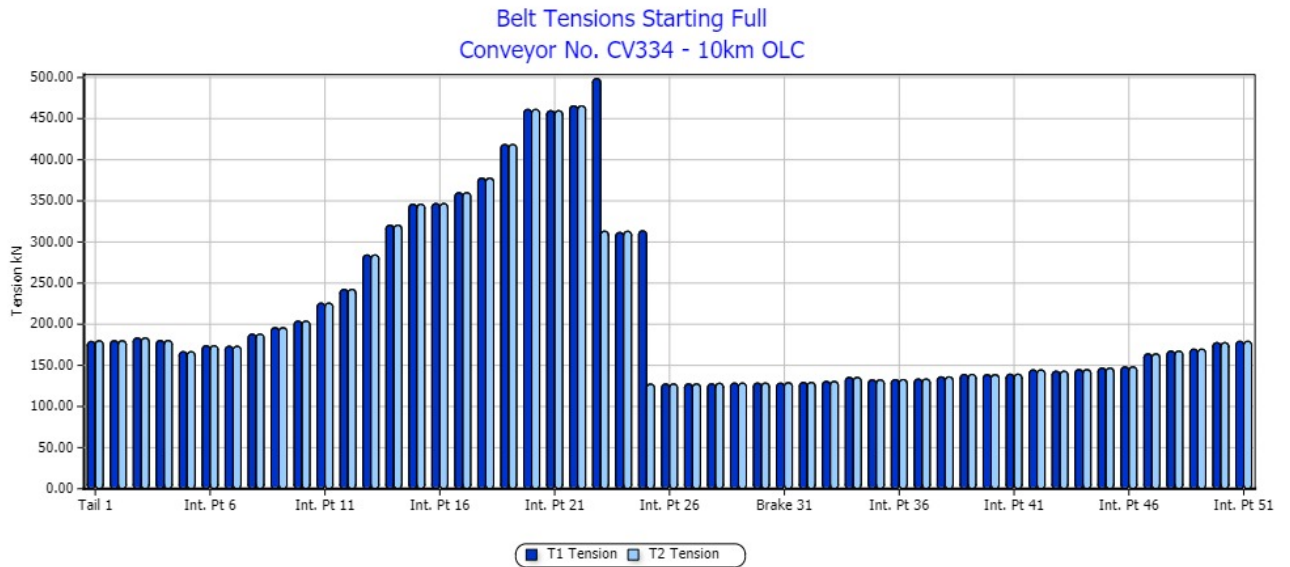


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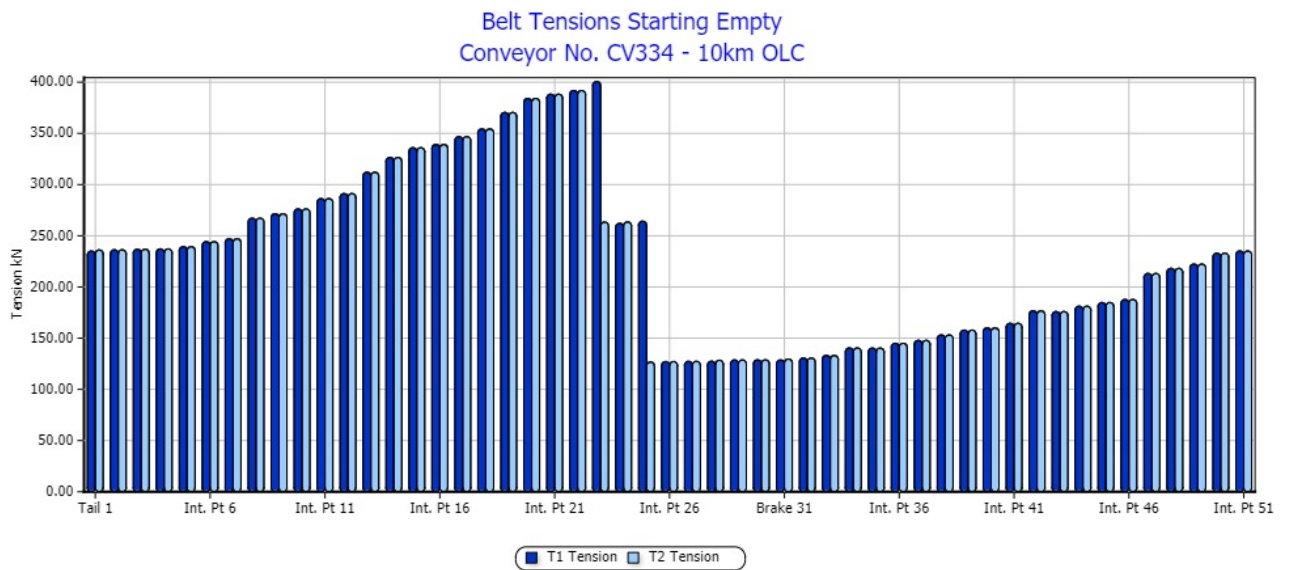


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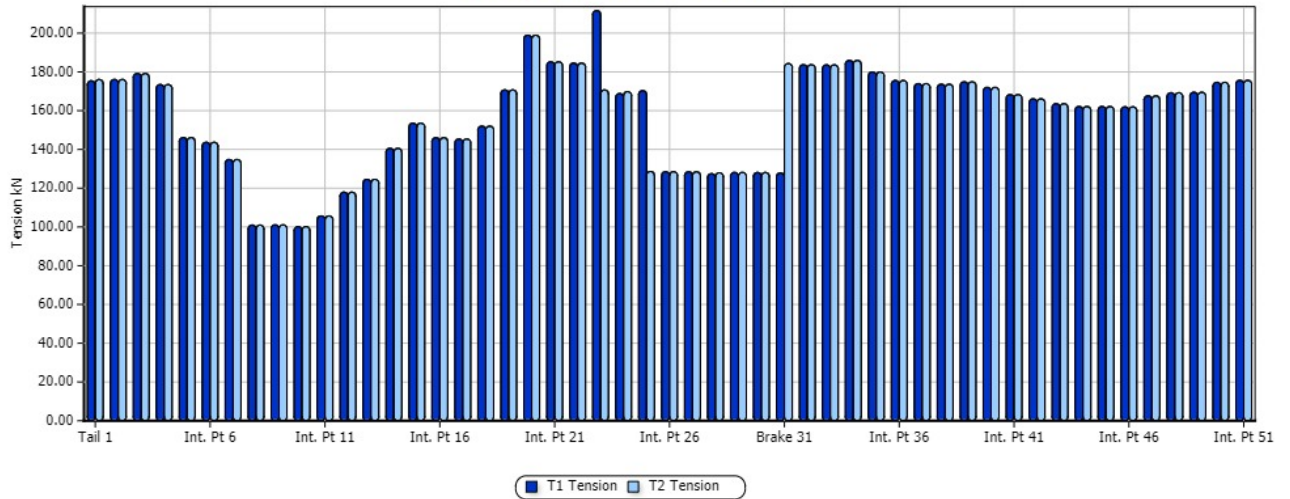
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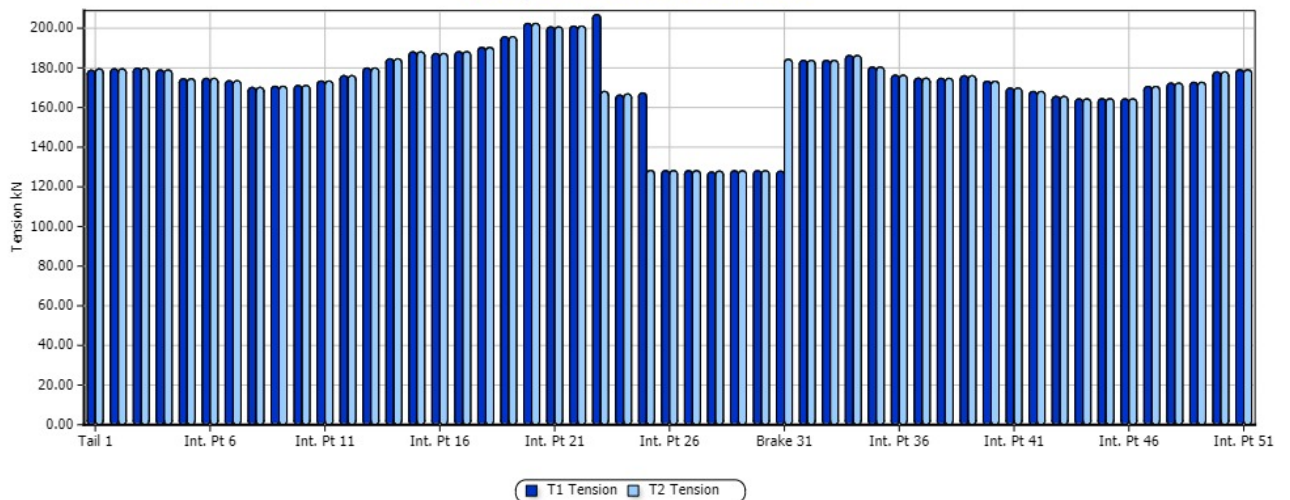
Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

Belt Tensions Stopping Braking Full
 Conveyor No. CV334 - 10km OLC



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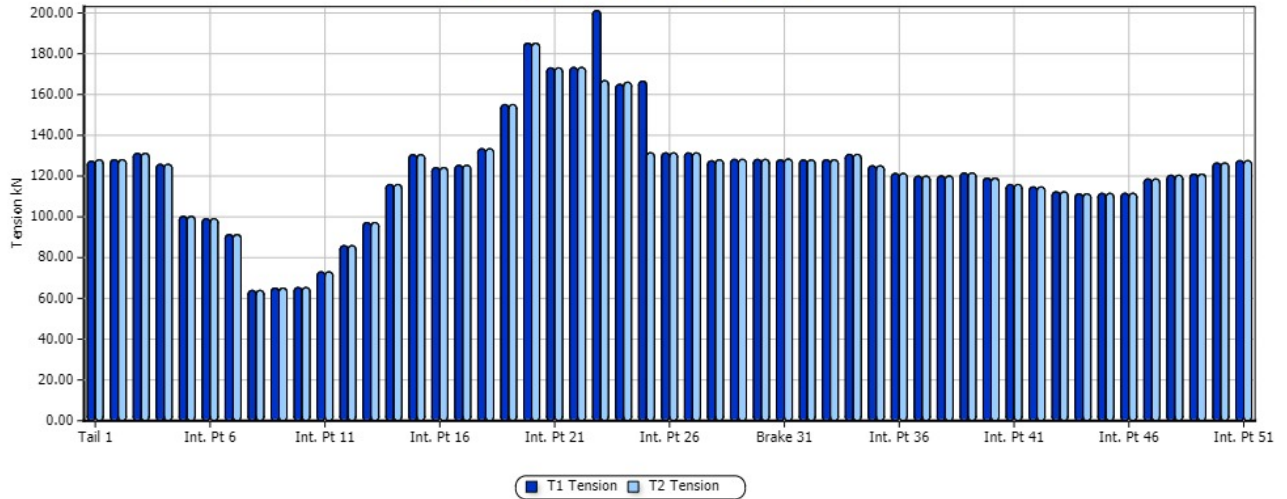
Belt Tensions Stopping Braking Empty
 Conveyor No. CV334 - 10km OLC



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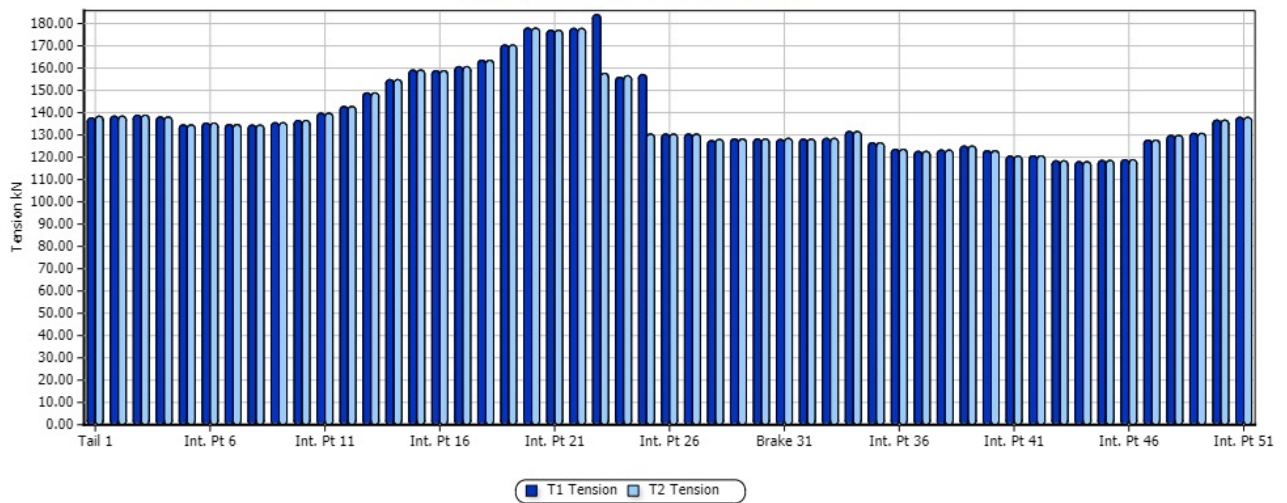
Project	Demo 06 Mine ore transport	Client	ABC Iron Pty Ltd
Project No.	P0972	Prepared By	Peter Burrow
Conveyor No.	CV334 - 10km OLC	Design Date	01 Oct 2019

Belt Tensions Stopping Coasting Full
 Conveyor No. CV334 - 10km OLC



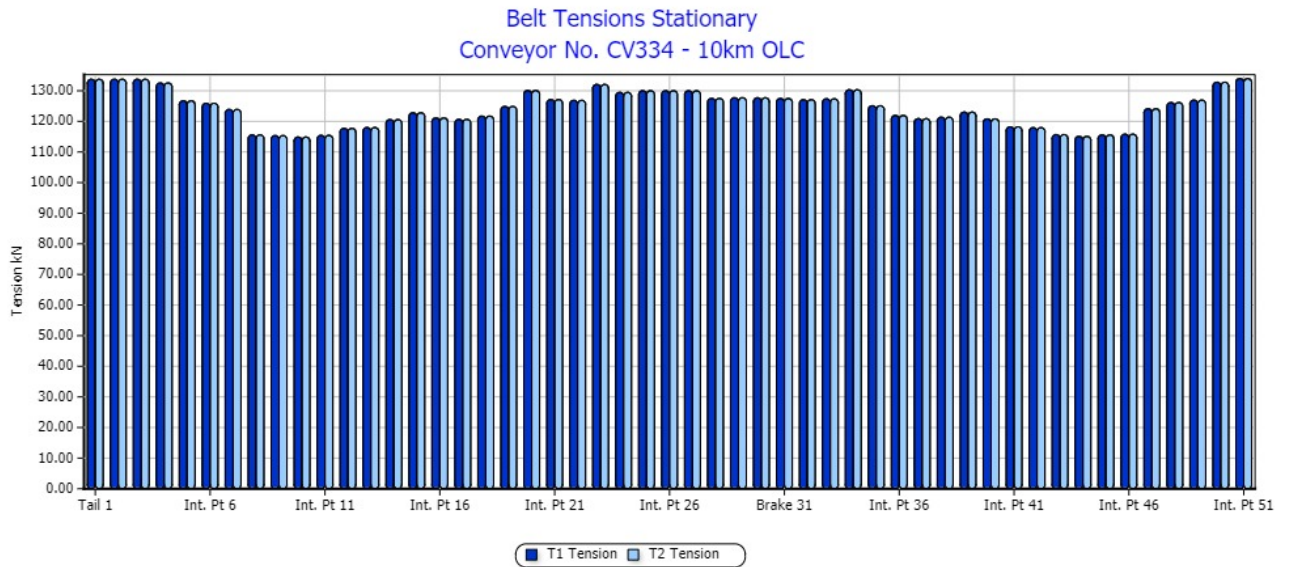
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Belt Tensions Stopping Coasting Empty
 Conveyor No. CV334 - 10km OLC



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