

LVT REFERENCE LIST - IMPERIAL VERSION (issued November 2021)

	Project Name	Country	Owner	Traffic start	Environment	LVT Type	Fastening	Rail	Axle load (sh.t)	Spacing (inch)	Annual traffic (MGT)	Speed (mph)	Length (miles)
1	New York / New Jersey	USA	PATH	1991	Tunnel	Project specific	Sonneville S.75	100 lb	14.30	22.5			0.1
2	Channel Tunnel	England - France	EUROTUNNEL	1993	Tunnel	Standard	Sonneville S.75	UIC 60	25.30	23.6	150 projected / 120 effective	125 design / 100 effective	62.1
3	St Louis, MO	USA	METRO LINK	1993	Tunnel / @Grade	Low Profile	Pandrol e-clip	132 lb	14.30	30.0			1.7
4	Grauholz Tunnel	Switzerland	SBB	1995	Tunnel	Standard	Vossloh W14	UIC 60	25.30	23.6	30 effective	125 design / 100 effective	0.5
5	San Francisco, CA	USA	BART	1995	Tunnel	Standard	Pandrol e-clip	119 lb	14.30	30.0			0.2
6	Atlanta, GA	USA	MARTA	1996	Tunnel / @Grade	Low Profile	Sonneville S.75	115 lb	15.40	30.0			0.4
7	Dallas, TX	USA	DART	1997	Tunnel / Bridge	Standard	Pandrol e-clip	115 lb	15.40	30.0			6.1
8	Rio Metro	Brazil	RIO TRILHOS	1998	Tunnel / Viaduct	Standard	Sonneville S.75	TR 57	18.70	29.5	19 effective	53 effective	1.6
9	Lantau And Airport Railway, Hong Kong	China	MTRC	1998	Tunnel / @Grade / Viaduct	Standard	Pandrol e-clip	UIC 60	18.70	25.6	75 projected	87 effective	18.6
10	Portland, OR	USA	TRI-MET	1998	Tunnel / @Grade	Low Profile	Sonneville S.75	115 lb	12.10	30.0			6.3
11	Incheon Metro Line 1	South Korea	IRTC	1999	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	24.6	17 effective	50 effective	30.4
12	Red Line, Los Angeles, CA	USA	LACMTA	1999	Tunnel	Project specific	Pandrol e-clip	115 lb	13.20	30.0			0.1
13	Connecticut	USA	DOT	1999	@Grade	Low Profile	Pandrol e-clip	132 lb	33.00	24.0			0.1
14	Oresund Tunnel	Denmark	ØK	2000	Tunnel	Low Profile	Pandrol Fastclip	UIC 60	27.50	23.6	10 effective	125 design / 125 effective	4.6
15	Porto Alegre	Brazil	TRENSURB	2000	Viaduct	Standard	Sonneville S.75	TR 57	23.10	25.6	20 effective	56 effective	3.1
16	Atlanta, GA	USA	MARTA	2000	Tunnel / @Grade	Low Profile	Sonneville S.75	115 lb	15.40	30.0			0.5
17	Quarry Bay, Hong Kong	China	MTRC	2001	Tunnel	Standard	Pandrol e-clip	UIC 60	18.70	25.6			2.1
18	Tseung Kwan O, Hong Kong	China	MTRC	2002	Tunnel	Standard	Pandrol e-clip	UIC 60	18.70	27.6			8.6
19	Copenhagen Metro	Denmark	METRO	2003	Tunnel / @Grade	Standard	Vossloh W14	UIC 54	13.20	27.6			11.8
20	West Rail, Hong Kong	China	KCRC	2003	Tunnel	Standard & Turnout	Pandrol e-clip	UIC 60	19.80	24.0			18.3
21	1st Bundang Line Installation	South Korea	KRC	2003	Tunnel	Standard	Pandrol e-clip	KS 60	19.80	24.6		50 effective	6.2
22	San Francisco, CA	USA	BART	2003	Tunnel	Standard	Pandrol e-clip	119 lb	14.30	30.0			3.5
23	Philadelphia, PA	USA	SEPTA	2003	Tunnel	Project specific	Pandrol e-clip	100 lb	9.90	24.0			0.2
24	Newark, NJ	USA	AMTRAK	2003	@Grade	Special Cavity	Pandrol e-clip	136 lb	36.30	22.0			0.1
25	Pueblo, CO High Tonnage Loop	USA	TTCI	2003	@Grade	Standard	Sonneville STL	136 lb	39.60	24.0	100 effective	40 effective	0.0
26	Zimmerberg Tunnel	Switzerland	SBB	2004	Tunnel	Standard	Vossloh W14	UIC 60	25.30	23.6	23 effective	125 design / 100 effective	11.2
27	East Rail MOS & TST, Hong Kong	China	KCRC	2004	Tunnel / Viaduct	Standard & Turnout	Pandrol e-clip	UIC 60	19.80	27.6			1.6
28	1st Cholla Line Installation	South Korea	KRC	2004	Tunnel	Standard	Pandrol e-clip	KS 60	24.20	24.6	20 effective	62 effective	5.6
29	Minneapolis, MN	USA	HIAWATHA	2004	Tunnel / @Grade	Low Profile	Pandrol Fastclip	115 lb	15.40	30.0			3.7
30	New York, NY	USA	MTA	2004	Tunnel	Project specific	Pandrol e-clip	100 lb	20.90	22.5			0.1
31	Daegu Metro Line 2	South Korea	DRTC	2005	Tunnel	Standard & Turnout	Pandrol e-clip	KS 60	18.70	24.6	14 effective	50 effective	27.9
32	Busan Metro Line 3	South Korea	BUTA	2005	Tunnel	Standard & Turnout	Pandrol e-clip	KS 60	18.70	24.6	15 effective		13.8
33	St Louis, MO	USA	METRO LINK	2007	Tunnel / @Grade	Standard	Pandrol Fastclip	115 lb	14.30	30.0			3.7
34	Lötschberg Tunnel	Switzerland	BLS	2007	Tunnel	Standard	Vossloh W14	UIC 60	27.55 design	23.6		155 design / 125 effective	31.9
35	Trupo Tunnel	Taiwan	THSRC	2007	Tunnel	Standard	Vossloh W14	JIS 60	15.40 / 19.80 / 27.50	25.6			16.3
36	LMC, Hong Kong	China	KCRC	2007	Tunnel / Viaduct	Standard & Turnout	Pandrol e-clip	UIC 60	19.80	27.6			6.3
37	Incheon Airport Phase 1	South Korea	AREX	2008	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	24.6	25 projected	62 projected	17.4
38	Ocean Parkway, New York	USA	MTA	2007	Tunnel	Project specific	Pandrol e-clip	100 lb	20.90	22.5			0.1
39	Rio Metro Copacabana Ext.	Brazil	RIO TRILHOS	2007/09	Tunnel	Standard	Sonneville S.75	TR 57	18.70	29.5		56 effective	2.5
40	Taebaek Line	South Korea	KRNA	2014	Tunnel	Standard	Pandrol e-clip	KS 60	24.20	24.6		93 design	16.8
41	New South Ferry, New York	USA	MTA	2009	Tunnel	Project specific & Turnout	Pandrol e-clip	115 lb	20.90	22.5			0.6
42	Janghang Line	South Korea	KRNA	2007	Tunnel	Standard	Pandrol e-clip	KS 60	24.20	24.6		93 design	0.7
43	Gold Line, Los Angeles, CA	USA	LACMTA	2009	Tunnel	Low Profile & HA	Pandrol e-clip	115 lb	13.20	30.0			3.4
44	KyungJeon Line 3	South Korea	KRNA	2010	Tunnel	Standard	Pandrol e-clip	KS 60	24.20	24.6		93 design	7.5
45	RearRailway, New Busan Port 2	South Korea	KRNA	2010	Tunnel	Standard	Pandrol e-clip	KS 60	24.20	24.6		93 design	3.1
46	Seoul Metro Line 9	South Korea	SMG	2009	Tunnel	Standard	Pandrol e-clip	KS 60	17.60	24.6		50 effective	29.8

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47	2nd Cholla Line Installation	South Korea	KRNA	2009	Tunnel	Standard	Pandrol e-clip	KS 60	24.20	24.6		93 design	5.6
48	Gautrain	South Africa	Gauteng Province	2010	Tunnel	Low Profile & Turnout	Pandrol Fastclip	NR60E2	17.60	27.6		100 design	13.2
49	East London Line	England	TfL	2010	Tunnel / Viaduct / @Grade	HA, Standard & Turnout	Vossloh/Pandrol	CEN56E1	16.50	25.6			6.6
50	Dong (East) Gwangyang Line	South Korea	KRNA	2010	Tunnel	Standard	Pandrol e-clip	KS 60	24.20	24.6		93 design	4.3
51	3rd Cholla Line	South Korea	KRNA	2010	Tunnel	Standard	Pandrol e-clip	KS 60	24.20	24.6		93 design	5.6
52	Incheon Line 1 Extension	South Korea	IRTC	2010	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	24.6	17 effective	50 effective	7.5
53	Citytunnel Malmö	Sweden	Banverket	2010	Tunnel	HA, Standard & Turnout	Pandrol/Vossloh	UIC 60	20.90	25.6		100 design	7.5
54	Incheon Airport Phase 2	South Korea	AREX	2010	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	24.6	25 projected	75 projected	17.4
55	Daegu Line 2 Extension	South Korea	DRTC	2012	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	24.6	14 projected	50 design	4.1
56	2nd Bundang Line Installation	South Korea	KRNA	2015	Tunnel	Standard	Pandrol e-clip	KS 60	19.80	24.6		68 design	8.4
57	Alptransit Gotthard	Switzerland	SBB	2016	Tunnel	Standard	Vossloh W14	UIC 60	27.50	23.6		155 design	70.8
58	Manises - Riba-Roja	Spain	GVA-CIT	2013	Tunnel	HA	Vossloh W3	UIC 54	15.40	28.3		50 design	1.1
59	KyungJeon Line 4	South Korea	KRNA	2010	Tunnel	Standard	Pandrol e-clip	KS 60	24.20	24.6		93 design	1.9
60	RearRailway, New Busan Port 3	South Korea	KRNA	2011	Tunnel	Standard	Pandrol e-clip	KS 60	24.20	24.6		93 design	2.5
61	Extension of Bundang Line	South Korea	KRNA	Expected 2022	Tunnel	Standard	Pandrol e-clip	KS 60		24.6		93 design	9.9
62	38th Street Yard New York	USA	MTA	Expected 2020	@Grade	Standard & Turnout	Pandrol e-clip	115 lb	20.90	22.5			0.2
63	Culver Viaduct New York	USA	MTA	2013	Viaduct	Standard	Pandrol e-clip	115 lb	20.90	22.5			3.1
64	Porto Alegre	Brazil	TRENSURB	2012	Viaduct	Standard	Sonneville S.75	TR 57	23.10	25.6	20 projected	56 design	11.7
65	Barcelona Metro Line 9	Spain	Metro Barcelona	2016	@Grade	Standard, HA, Turnout	Vossloh W3	UIC 54	17.60	29.5		50 design	0.4
66	Canal Tunnel London	England	Network Rail	Expected 2018	Tunnel	HA, Turnout	Pandrol Fastclip	UIC 60	16.50	25.6			0.6
67	Marmaray BC1	Turkey	TCCD	2013	Tunnel	Standard, HA, Projects specific, Turnout	Vossloh	UIC 60	27.50	24.8		62 design	15.6
68	Daegu Line 1 Extension	South Korea	DRTC	2012	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	24.6			3.9
69	Extension of New Bundang Line	South Korea	KRNA	2016	Tunnel	Standard	Pandrol e-clip	KS 60		24.6			15.5
70	Suin Line	South Korea	KRNA	2016	Tunnel	Standard	Pandrol e-clip	KS 60		24.6			37.3
71	Tren Eléctrico Lima, Line 1	Peru	Tren Eléctrico Lima	2012	Viaduct	Standard	Pandrol e-clip	115 lb	18.70	25.6	14 projected	50 design	0.2
72	Seoul Metro Line 9, stage 2	South Korea	SMG	2014	Tunnel	Standard	Pandrol e-clip	KS 60	17.60	24.6		50 actual	11.2
73	Cityringen Copenhagen Metro	Denmark	Metroselskabet	Expected 2019	Tunnel	Standard, HA	Vossloh W14	UIC 54	13.20	27.6	11.7 projected	56 design	20.3
74	Durchmesserlinie Zürich	Switzerland	SBB	2014	Tunnel	Standard, HA, Turnout	Vossloh W14	UIC 60	24.20	23.6			8.3
75	Sagrera-Mollet	Spain	ADIF	2013	Tunnel	Standard HA	Vossloh W21	UIC 60	18.70	25.6		155 design	0.2
76	Line 7 Extension	USA	MTA	2015	Tunnel	Standard, Turnout	Pandrol e-clip	115 lb	20.90	22.5			2.7
77	2nd Avenue Subway, Phase I	USA	MTA	2017	Tunnel	Standard, Turnout	Pandrol e-clip	115 lb	20.90	22.5			3.7
78	Tunnel 6, Moscow - Adler	Russia	RZD	2013	Tunnel	Standard	Vossloh W14	R65	29.70	23.4		60	0.5
79	Tunnel 7, Moscow - Adler	Russia	RZD	2013	Tunnel	Standard	Vossloh W14	R65	29.70	23.4		60	0.6
80	Nangang Extension	Taiwan	THSRC	2016	Tunnel	Standard	Vossloh W14	JIS 60	19.80	25.6			8.1
81	WSB Aarau - Binzenhof	Switzerland	AAR	2014	Tunnel	Low profile	Vossloh W14	SBB I (46 E1)	13.20	23.6			0.2
82	Sokolnicheskaya line extension	Russia	Metro Moscow	2015	Tunnel	Special Cavity	GBR 65	R65	18.70	24.0		44	8.1
83	Lyublinsko-Dmitrovskaya line extension	Russia	Metro Moscow	2015	Tunnel	Special Cavity	GBR 65	R65	18.70	24.0		44	12.8
84	Cleveland Tunnel rehabilitation	USA	GCRTA	2013	Tunnel	Standard, Turnout	Pandrol e-clip	115 lb	18.70	24.0			0.7
85	Metro Rio Line 4	Brazil	RIO TRILHOS	2016	Tunnel	Standard	Sonneville S.75	TR 57	18.70	29.5		50 design	18.6
86	Salvador Bahia, Line 1	Brazil	CCR Metro	2014	Viaduct / @Grade	Standard, Turnout	Pandrol e-clip	UIC 60	18.70	29.5		62 design	7.0
87	Double-Track Electric Railroad (Seongnam-Yeouju)	South Korea	KRNA	2016	Tunnel	Standard	Pandrol e-clip	KS 60		24.6			31.1
88	Busan Metro Line 1 Ext. (Dadea line)	South Korea	BUTA	2017	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	24.6			8.4
89	Incheon Line 1 Extension	South Korea	IRTC	Expected 2018	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	24.6			1.9
90	Salvador Bahia, Line 2	Brazil	CCR Metro	2017	Viaduct / @Grade	Standard, Turnout	Pandrol e-clip	UIC 60	18.70	29.5		100 design	26.1
91	Durchmesserlinie Zürich Viaduct	Switzerland	SBB	2015	Viaduct	Standard	Vossloh W14	UIC 60	24.20	23.6			1.0
92	Sha Tin - Central	China	MTRC	Expected 2020	Tunnel	HA	Pandrol e-clip	UIC 60	19.80	27.6			1.6

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93	Ceneri Base Tunnel	Switzerland	SBB	2020	Tunnel	Standard, Turnout	Vossloh W14	UIC 60	24.20	23.6		155 design	19.1
94	Heitersberg Tunnel	Switzerland	SBB	2015	Tunnel	Turnout	Vossloh	UIC 60	24.75	23.6		100 design	0.2
95	Crossing Walthamstow	England	London Undergr.	2015	Tunnel	Turnout	Pandrol e-clip	54E1 / 56E1	13.20	27.6			0.1
96	Wilson Station Chicago	USA	CTA	2018	Viaduct	Standard	Pandrol e-clip	115 lb	20.90	30.0			1.2
97	Queen Street Tunnel	Scotland	Network Rail	2016	Tunnel	Turnout	Vossloh	56E1	24.75	27.6	5 projected	50	0.2
98	Glasgow Subway Modernisation	Scotland	Glasgow Subway	2016	Tunnel	Standard, Turnout	Vossloh	39E1 (BS80A)	9.90	25.6		40	0.5
99	Tower City Station, Cleveland	USA	GCRTA	2016	Tunnel	Standard	Pandrol e-clip	115 lb	18.70	24.0			0.1
100	Extension Nordhavnen	Denmark	Metroselskabet	Expected 2020	Tunnel	HA	Vossloh W14	UIC 54	13.20	27.6		57 design	2.9
101	Blackburn Depot	England	Network Rail	2017	@Grade	Standard SE	Pandrol e-clip	56E1	11.00	25.6			0.2
102	Myrtle Avenue restoration, New York	USA	MTA	2017	Viaduct	Standard	Pandrol e-clip	100-8	20.90	22.5			0.5
103	Northern Line Extension	England	London Undergr.	Expected 2019	Tunnel	Standard, Turnout	Pandrol e-clip	56E1	13.20	27.0			3.5
104	Mariina Roscha - Petrovsko-Razumovskaya	Russia	Metro Moscow	2016	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	1.5
105	Rechnoy Vokzal - Hovrino	Russia	Metro Moscow	2016	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	2.1
106	Delovoy centr - Nizhnaya Maslovka	Russia	Metro Moscow	2016	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	5.9
107	Park Pobedy - Ramenki	Russia	Metro Moscow	2016	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	5.2
108	Ramenki - Rasskazovka	Russia	Metro Moscow	2016	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	1.1
109	CEVA F	France	SNCF	2017	Tunnel	Standard, HA	Vossloh W14	UIC 60	24.20	23.6			1.3
110	CEVA CH	Switzerland	SBB	Expected 2019	Tunnel	Standard, HA	Vossloh W14	UIC 60	24.20	23.6			10.9
111	Tunnel Tuapse	Russia	RZD	2018	Tunnel	Standard	Vossloh W14	R65	27.50	19.7			1.2
112	Jiribam – Tupul (Imphal) Project, Section 1	India	NF Railways	Expected 2018	Tunnel	Standard	Mark V	UIC 60	27.50	23.6		100 design	9.4
113	Loetschberg crest tunnel	Switzerland	BLS	Expected 2022	Tunnel	Standard SE, Turnout	W14 Nirotech	UIC 60	24.75	23.6	35	80	17.9
114	Wigan Depot	England	Network Rail	Expected 2019	@Grade	Standard SE	Pandrol Fastclip	36E1	11.00	25.6			0.2
115	Ruckhaldetunnel (DML St. Gallen)	Switzerland	Appenzeller Bahn	2018	Tunnel	Standard, HA	Vossloh W14	SBB I (46 E1)	9.90	23.6		40	0.4
116	Incheon Airport Terminal 2	South Korea	KRNA	2017	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	25.6		95 design	0.6
117	Seoul Metro Line 9, stage 3	South Korea	SMG	2018	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	25.6		75 design	13.0
118	Hanam Line(Line 5 extension)	South Korea	SMG	Expected 2020	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	25.6		75 design	9.3
119	Suin Line (Suwon~Handae)	South Korea	KRNA	Expected 2020	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	25.6		95 design	9.0
120	Seoul Metro Line 7 Seoknam extension	South Korea	IRTC	Expected 2021	Tunnel	Standard	Pandrol e-clip	KS 60	18.70	25.6		75 design	5.3
121	Axenline	Switzerland	SBB	2019	Tunnel	Standard, HA, Panel, Traffic	Vossloh W14	UIC 60	24.75	23.6		50	3.6
122	Eppenbergtunnel	Switzerland	SBB	2020	Tunnel	Standard, HA, traffic	Vossloh W14	UIC 60	24.75	23.6		125	3.7
123	Bözbergtunnel	Switzerland	SBB	2020	Tunnel	Standard, Standard special	Vossloh W14	UIC 60	24.75	23.6		125	2.5
124	Regional Connector, Los Angeles	USA	LACMTA	Expected 2022	Tunnel	Standard, HA	Pandrol e-clip	115 lb	13.20	30.0			2.7
125	Metro Mumbai Line 3	India	MMRC	Expected 2022	Tunnel	HA type 1, Turnout	Vossloh W14	UIC 60	18.70	27.6		62	41.6
125	Bank Station	England	London Undergr.	Expected 2021	Tunnel	HA	Pandrol e-clip	56 E1	13.20	29.5		50	0.3
126	Cityringen Copenhagen Metro, Nordhavn	Denmark	Metroselskabet	2020	Tunnel	Standard, HA	Vossloh W14	UIC 54	13.20	27.6	11.7 projected	56 design	3.7
127	Cityringen Copenhagen Metro, Suedhavenen	Denmark	Metroselskabet	Expected 2024	Tunnel	Standard, HA	Vossloh W14	UIC 54	13.20	27.6	11.7 projected	56 design	5.6
128	Westlink Gothenburg	Sweden	Trafikverket	Expected 2026	Tunnel	Standard	Vossloh W14	UIC 60	24.75	25.6		62	7.5
130	Kuntsevskaya - Prospekt Vernadskogo, Line 11	Russia	Metro Moscow	Expected 2021	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	11.4
131	Prospekt Vernadskogo - Kakhovskaa, Line 11	Russia	Metro Moscow	Expected 2021	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	8.7
132	Khoroshevskaya - Mnevnik, Line 11	Russia	Metro Moscow	Apr 21	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	6.8
133	Mnevnik - Kuntsevskaya, Line 11	Russia	Metro Moscow	Expected 2021	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	4.3
134	Savyolovskaya - Aviamotornaya, Line 11	Russia	Metro Moscow	Expected 2022	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	17.4
135	Nizhegorodskaya - Kashirskaya, Line 11	Russia	Metro Moscow	Expected 2022	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	14.2
136	Nizhegorodskaya - Nekrasovka, Line 15	Russia	Metro Moscow	2020	Tunnel	Special Cavity	ARS	R65	18.70	24.0		44	31.4
137	Brisbane Cross River Rail	Australia	Queensland Rail	Expected 2022	Tunnel	Standard, HA	Vossloh W21	AS60	17.60	25.6			3.4
138	Auckland City Rail Link	New Zealand	Kiwi Rail	Expected 2022	Tunnel	Standard, HA, Turnout	Pandrol e-clip	R50	19.80	27.6		44	4.3
<b>Total length</b>													<b>1'115.100</b>