



The following pages are an excerpt from the North American Product Technical Guide, Volume 1: Direct Fastening Technical Guide, Edition 24.

Please refer to the publication in its entirety for complete details on this product including data development, base materials, general suitability, installation, corrosion, and product specifications.

[Direct Fastening Technical Guide, Edition 24](#)

To consult directly with a team member regarding our direct fastening products, contact Hilti's team of technical support specialists between the hours of 7:00am - 5:00pm CST.

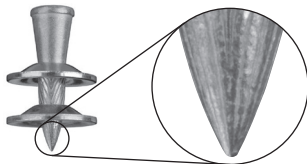
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3.5.3.1 Product description
 3.5.3.2 Material specifications
 3.5.3.3 Technical data
 3.5.3.4 Ordering information



X-ENP-19 L15 MX and MXR



X-ENP-19 L15

Approvals/Listings

ICC-ES (International Code Council)
 ESR-2776 with LABC/LARC Supplement,
 ESR-2197 with LABC/LARC Supplement,
 ESR-1169, ESR-2657

IAPMO (Uniform Evaluation Service)
 Co-listings ER-0217, ER-0161, ER-0329

FM (Factory Mutual)
 For attaching Class 1 Steel Roof Decks
 with wind uplift ratings up to 1-330.
 Refer to FM RoofNav for specific
 assembly listings.

UL (Underwriters Laboratories)
 Fasteners for attaching steel roof deck
 (uplift and fire classification)

ABS (American Bureau of Shipping)



3.5.3 X-ENP-19 FOR FASTENING DECK TO STRUCTURAL STEEL

3.5.3.1 PRODUCT DESCRIPTION

The Hilti structural steel deck fastening system consists of powder-actuated tools which are primarily used with one fastener: the X-ENP-19 L15, which is available either collated or non-collated.

For most structural steel decking jobs, the tool of choice is the DX 9-ENP tool. This self-contained stand up decking tool is powered by 0.27 caliber long cartridges, which are loaded into the tool in strips of 40. The cartridges drive the X-ENP-19 L15 MXR fastener (collated version) into almost any type of steel deck and base steel thicknesses greater than or equal to 1/4". These fasteners are available in

collated strips of 10. Four of these strips are loaded into the DX 9-ENP tool along with the cartridge strip, and enable the operator to fasten at a rate of up to 1,000 quality fastenings per hour.

Other tools include the hand held DX 76-MX, a semi-automatic magazine tool. Other configurations of the DX 76 include a single fastener guide variation of the tool for miscellaneous use.

Hilti X-ENP-19 steel deck fasteners comply with ANSI/SDI RD1.0, C1.0 and NC1.0 standards.

3.5.3.2 MATERIAL SPECIFICATIONS

Fastener	Fastener material	Fastener plating	Nominal fastener hardness
X-ENP-19 L15	Carbon Steel	5 µm Zinc ¹	58 HRC

¹ ASTM B633, SC 1, Type III. Reference Section 2.3.3.1 for more information.

3.5.3.3 TECHNICAL DATA

Allowable pullout loads for attachments to steel base material lb (kN)^{1, 2, 3}

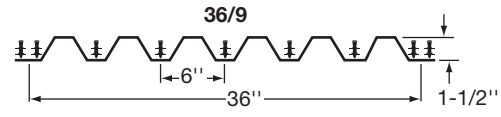
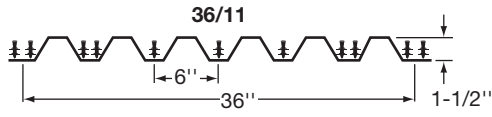
Fastener	Base material thickness (in.)			
	1/4	3/8	1/2 ⁴	≥ 5/8 ⁴
X-ENP-19 L15	905 (4.03)	1125 (5.00)	1010 (4.49)	965 (4.29)

¹ These values represent testing performed in ASTM A36 plate steel.
² The values must be compared with allowable tensile pullover values.
³ Allowable values based on safety factor of 5.0.
⁴ Allowable values are based on minimum 1/2" penetration depth through or into base steel. For 3/8" penetration depth into 1/2" and thicker steels, reduce the allowable load capacity to 635 lb (2.79 kN).

Allowable pullover and shear bearing loads for attaching steel deck^{1,2,3}

Fastener	Steel deck gauge (in.)											
	16 (0.0598)		18 (0.0474)		20 (0.0358)		22 (0.0295)		24 (0.0239)		26 (0.0179)	
	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)	Tension lb (kN)	Shear lb (kN)
X-ENP-19 L15	940 (4.14)	1050 (4.62)	875 (3.85)	840 (3.70)	755 (3.32)	640 (2.82)	665 (2.93)	535 (2.35)	400 (1.78)	440 (1.94)	185 (0.81)	335 (1.47)

¹ Minimum base steel thickness must be greater than or equal to 1/4" (6 mm).
² Allowable values are based on a safety factor of 3.0.
³ Loads based on ASTM A1008, or minimum ASTM A653 SQ33 steel deck.



Allowable Stress Design (ASD)-Allowable diaphragm shears, S_{ASD} , (plf) and stiffness factors, G' , (kips/in.) for standard 1-1/2" deep flutes, 6" center-to-center steel deck ($F_y \geq 50$ ksi; $F_u \geq 65$ ksi) installed with Hilti X-ENP-19 L15 fasteners with 36/11 or 36/9 end and interior support fastener patterns^{1,2,3,4,5,6,7}

Gauge	Number of Hilti SLC per span	Factor	Span (ft.-in.)														
			4'-0"		5'-0"		6'-0"		7'-0"		8'-0"		9'-0"		10'-0"		
			Fasteners per sheet to support														
		11		9		11		9		11		9		11		9	
22	2	S_{ASD}	1223	1057	1006	876	834	730	708	619	613	535	543	474	489	427	
		G'	66.9	65.4	73.2	70.9	77.1	74.0	79.2	75.5	80.0	75.8	80.0	75.2	79.4	74.2	
	3	S_{ASD}	1329	1156	1099	964	927	823	787	698	682	604	605	536	544	482	
		G'	67.7	66.3	74.3	72.3	78.5	75.8	80.9	77.7	82.1	78.3	82.3	78.0	81.9	77.2	
	4	S_{ASD}	1430	1247	1189	1048	1013	899	866	777	752	674	667	598	600	538	
		G'	68.3	67.1	75.2	73.5	79.7	77.4	82.5	79.6	83.9	80.5	84.4	80.6	84.2	80.0	
	5	S_{ASD}	1526	1333	1275	1128	1091	972	945	851	821	743	728	659	655	593	
		G'	68.8	67.8	76.0	74.5	80.9	78.8	83.9	81.3	85.6	82.5	86.3	82.8	86.3	82.4	
	6	S_{ASD}	1616	1411	1359	1203	1166	1042	1018	915	890	812	790	721	711	649	
		G'	69.3	68.4	76.8	75.4	81.9	80.0	85.2	82.8	87.1	84.3	88.0	84.9	88.2	84.7	
	7	S_{ASD}	1701	1484	1438	1275	1239	1109	1084	978	960	872	852	782	766	704	
		G'	69.7	68.9	77.4	76.2	82.8	81.1	86.3	84.2	88.5	86.0	89.6	86.7	90.0	86.8	
	20	2	S_{ASD}	1584	1372	1305	1138	1092	961	928	815	804	706	709	621	637	558
			G'	94.0	91.2	100.0	96.2	102.9	98.0	103.6	97.9	103.0	96.6	101.4	94.5	99.3	92.0
3		S_{ASD}	1733	1509	1436	1262	1221	1080	1041	929	904	805	797	709	717	638	
		G'	95.3	92.9	101.8	98.5	105.2	100.9	106.4	101.3	106.1	100.3	104.8	98.6	102.9	96.3	
4		S_{ASD}	1874	1636	1562	1380	1334	1186	1154	1037	1003	904	885	797	796	717	
		G'	96.4	94.3	103.4	100.5	107.2	103.4	108.8	104.3	108.9	103.7	107.9	102.2	106.3	100.2	
5		S_{ASD}	2006	1753	1683	1490	1443	1288	1259	1130	1102	1003	973	885	875	796	
		G'	97.4	95.5	104.9	102.2	109.1	105.7	111.0	107.0	111.4	106.7	110.7	105.5	109.3	103.7	
6		S_{ASD}	2130	1859	1799	1594	1548	1385	1354	1220	1201	1087	1061	974	955	876	
		G'	98.3	96.6	106.1	103.8	110.8	107.7	113.0	109.4	113.7	109.5	113.3	108.6	112.1	107.0	
7		S_{ASD}	2246	1956	1909	1691	1650	1478	1447	1306	1286	1168	1149	1054	1034	955	
		G'	99.0	97.6	107.3	105.2	112.3	109.5	114.9	111.5	115.9	112.0	115.7	111.3	114.7	110.0	
18		2	S_{ASD}	1915	1659	1578	1377	1332	1172	1133	997	983	865	867	762	775	680
			G'	147.3	141.5	150.7	143.3	150.2	141.4	147.3	137.6	143.3	132.8	138.6	127.7	133.7	122.4
	3	S_{ASD}	2099	1829	1740	1531	1481	1310	1273	1138	1106	988	977	871	873	778	
		G'	149.9	144.9	154.2	147.6	154.3	146.5	152.0	143.2	148.4	138.8	144.0	133.9	139.2	128.9	
	4	S_{ASD}	2272	1984	1896	1675	1619	1441	1410	1261	1229	1111	1086	981	971	876	
		G'	152.2	147.8	157.3	151.4	158.1	151.0	156.3	148.3	153.0	144.3	148.9	139.7	144.4	134.8	
	5	S_{ASD}	2435	2127	2045	1811	1754	1567	1531	1375	1352	1223	1195	1090	1069	975	
		G'	154.3	150.4	160.1	154.8	161.5	155.1	160.2	152.9	157.3	149.3	153.5	145.0	149.2	140.3	
	6	S_{ASD}	2587	2257	2187	1938	1883	1686	1649	1486	1463	1325	1304	1194	1168	1073	
		G'	156.2	152.7	162.6	157.9	164.5	158.8	163.7	157.1	161.2	153.9	157.7	149.8	153.6	145.4	
	7	S_{ASD}	2728	2375	2322	2056	2008	1799	1763	1592	1568	1424	1410	1286	1266	1170	
		G'	157.9	154.7	164.9	160.6	167.4	162.1	167.0	160.9	164.8	158.1	161.6	154.3	157.7	150.1	
	16	2	S_{ASD}	1956	1696	1613	1410	1368	1201	1168	1031	1015	896	896	790	801	706
			G'	202.8	193.1	200.9	189.1	195.1	181.9	187.6	173.4	179.4	164.7	171.2	156.3	163.3	148.3
3		S_{ASD}	2152	1876	1787	1573	1521	1348	1319	1175	1147	1028	1014	908	907	811	
		G'	207.5	198.9	206.6	196.1	201.6	189.7	194.6	181.7	186.8	173.3	178.8	165.0	171.0	157.0	
4		S_{ASD}	2336	2041	1953	1727	1670	1488	1454	1303	1280	1156	1131	1025	1013	917	
		G'	211.6	204.0	211.8	202.3	207.5	196.7	201.1	189.3	193.6	181.2	185.9	173.1	178.2	165.2	
5		S_{ASD}	2507	2190	2111	1870	1813	1621	1584	1425	1403	1268	1249	1141	1119	1023	
		G'	215.3	208.5	216.5	207.9	212.9	203.1	207.0	196.2	199.9	188.5	192.5	180.6	184.9	172.8	
6		S_{ASD}	2667	2325	2261	2003	1951	1747	1709	1542	1518	1377	1364	1241	1224	1129	
		G'	218.7	212.5	220.7	212.9	217.9	208.9	212.5	202.5	205.8	195.2	198.6	187.5	191.2	179.8	
7		S_{ASD}	2814	2447	2403	2127	2083	1866	1831	1654	1630	1482	1466	1339	1330	1220	
		G'	221.7	216.2	224.6	217.5	222.4	214.1	217.5	208.3	211.2	201.4	204.3	193.9	197.1	186.4	

1 Tabulated diaphragm shear values are for attachment of steel deck to a base steel thickness, $t_p \geq 1/4"$.

2 Tabulated ASD diaphragm shear loads are calculated with a safety factor (Ω) of 2.00 for wind loads. To calculate ASD values for load combinations involving earthquake, multiply S_{ASD} values in table by 2.00 and divide by a safety factor (Ω) of 2.30. Panel buckling has been checked.

3 Please refer to footnotes 3 through 7 on page 171.



Allowable Stress Design (ASD)-Allowable diaphragm shears, S_{ASD} , (plf) and stiffness factors, G' , (kips/in.) for standard 1-1/2" deep flutes, 6" center-to-center steel deck ($F_y \geq 50$ ksi; $F_u \geq 65$ ksi) installed with Hilti X-ENP-19 L15 fasteners with 36/7 or 36/4 end and interior support fastener patterns^{1,2,3,4,5,6,7}

Gauge	Number of Hilti SLC per span	Factor	Span (ft. in.)														
			4'-0"		5'-0"		6'-0"		7'-0"		8'-0"		9'-0"		10'-0"		
			Fasteners per sheet to support														
			7	4	7	4	7	4	7	4	7	4	7	4	7	4	
22	2	S_{ASD}	765	563	627	475	522	409	444	355	385	308	342	273	308	246	
		G'	61.9	65.9	67.6	67.9	67.1	65.8	64.0	12.1	14.6	16.7	18.6	20.2	21.5	22.6	
	3	S_{ASD}	874	639	722	549	613	478	523	421	455	376	404	334	363	301	
		G'	63.5	68.1	70.4	71.1	70.8	69.7	68.3	12.2	14.7	17.0	19.0	20.7	22.2	23.5	
	4	S_{ASD}	974	702	811	613	692	540	602	480	524	430	465	390	419	355	
		G'	64.7	69.9	72.7	73.9	73.9	73.2	72.0	12.3	14.9	17.2	19.3	21.1	22.7	24.1	
	5	S_{ASD}	1067	754	896	668	768	595	670	533	594	481	527	437	474	400	
		G'	65.7	71.4	74.7	76.3	76.7	76.2	75.3	12.4	15.0	17.4	19.5	21.5	23.2	24.7	
	6	S_{ASD}	1151	796	975	715	841	643	737	581	654	528	588	482	530	443	
		G'	66.6	72.7	76.4	78.4	79.1	79.0	78.2	12.4	15.1	17.5	19.7	21.7	23.5	25.1	
	7	S_{ASD}	1229	831	1050	756	910	686	801	625	713	571	641	524	582	483	
		G'	67.4	73.8	77.9	80.2	81.3	81.4	80.9	12.4	15.1	17.6	19.9	22.0	23.8	25.5	
	20	2	S_{ASD}	1005	739	826	627	695	541	591	475	514	415	453	366	408	329
			G'	85.2	88.0	88.0	86.5	84.0	81.1	78.1	18.9	22.4	25.3	27.7	29.5	31.0	32.0
3		S_{ASD}	1156	842	958	728	815	636	705	563	613	503	542	454	487	408	
		G'	87.9	91.5	92.3	91.3	89.3	86.7	83.8	19.1	22.8	25.9	28.5	30.6	32.3	33.6	
4		S_{ASD}	1295	924	1083	813	926	720	807	643	712	579	630	525	566	480	
		G'	90.0	94.5	95.9	95.5	93.9	91.6	88.9	19.3	23.0	26.3	29.1	31.4	33.4	34.9	
5		S_{ASD}	1421	990	1200	885	1033	794	903	715	801	648	718	591	646	542	
		G'	91.9	97.0	99.1	99.1	97.9	96.0	93.5	19.4	23.3	26.6	29.6	32.1	34.2	35.9	
6		S_{ASD}	1535	1043	1309	946	1133	857	996	779	886	711	797	652	723	600	
		G'	93.4	99.2	101.8	102.4	101.6	99.9	97.7	19.5	23.4	26.9	30.0	32.6	34.9	36.8	
7		S_{ASD}	1637	1086	1409	996	1228	912	1084	836	968	768	872	708	793	655	
		G'	94.8	101.1	104.3	105.2	104.8	103.4	101.5	19.6	23.6	27.2	30.3	33.1	35.5	37.5	
18		2	S_{ASD}	1220	897	1003	762	848	658	724	577	629	511	556	451	497	403
			G'	129.4	128.1	124.0	118.6	112.9	107.2	101.8	35.1	40.4	44.3	47.1	49.0	50.0	50.5
	3	S_{ASD}	1406	1022	1166	885	992	775	862	686	752	614	665	554	596	501	
		G'	134.5	134.4	131.1	126.4	121.0	115.4	110.0	35.8	41.4	45.9	49.2	51.5	53.0	53.9	
	4	S_{ASD}	1576	1122	1320	989	1130	877	985	784	871	706	775	641	694	586	
		G'	138.9	139.9	137.4	133.2	128.2	122.8	117.5	36.2	42.2	47.0	50.7	53.5	55.4	56.7	
	5	S_{ASD}	1730	1201	1463	1076	1260	966	1103	872	979	791	879	722	792	663	
		G'	142.6	144.6	143.0	139.3	134.6	129.6	124.4	36.6	42.9	48.0	52.0	55.2	57.4	59.0	
	6	S_{ASD}	1868	1264	1596	1149	1384	1043	1217	950	1083	868	975	796	885	734	
		G'	145.8	148.8	147.9	144.8	140.5	135.7	130.7	36.9	43.4	48.8	53.1	56.5	59.1	61.1	
	7	S_{ASD}	1993	1314	1719	1209	1500	1109	1325	1018	1184	937	1068	864	971	800	
		G'	148.6	152.5	152.3	149.7	145.8	141.3	136.5	37.2	43.8	49.4	54.0	57.7	60.6	62.8	
	16	2	S_{ASD}	1256	923	1034	786	875	680	752	597	655	531	579	473	518	423
			G'	173.1	165.7	156.3	146.7	137.6	129.1	121.3	56.7	63.1	67.1	69.3	70.0	69.9	69.0
3		S_{ASD}	1454	1052	1208	915	1029	803	894	712	787	638	697	577	624	526	
		G'	181.6	175.5	166.9	157.7	148.7	140.1	132.2	58.2	65.4	70.3	73.3	74.8	75.2	74.9	
4		S_{ASD}	1632	1154	1371	1023	1175	910	1026	815	908	736	814	669	730	612	
		G'	188.9	184.1	176.3	167.6	158.7	150.2	142.2	59.3	67.3	72.9	76.6	78.7	79.7	79.8	
5		S_{ASD}	1793	1234	1522	1111	1314	1002	1152	907	1023	824	919	754	834	693	
		G'	195.2	191.7	184.7	176.5	167.9	159.4	151.5	60.3	68.7	75.0	79.3	82.0	83.6	84.1	
6		S_{ASD}	1936	1296	1661	1184	1444	1080	1272	987	1134	904	1021	831	928	768	
		G'	200.8	198.4	192.3	184.5	176.2	168.0	160.0	61.0	70.0	76.7	81.6	84.8	86.9	87.9	
7		S_{ASD}	2063	1345	1788	1244	1566	1146	1386	1056	1240	975	1120	902	1020	837	
		G'	205.7	204.4	199.0	191.8	183.9	175.8	167.9	61.6	71.0	78.2	83.5	87.3	89.7	91.1	

1 Tabulated diaphragm shear values are for attachment of steel deck to a base steel thickness, $t_f \geq 1/4"$.
 2 Tabulated ASD diaphragm shear loads are calculated with a safety factor (Ω) of 2.00 for wind loads. To calculate ASD values for load combinations involving earthquake, multiply S_{ASD} values in table by 2.00 and divide by a safety factor (Ω) of 2.30. Panel buckling has been checked.
 3 Please refer to footnotes 3 through 7 on page 171.



Load Resistance Factor Design (LRFD) – Factored resistance diaphragm shears, S_{LRFD} , (plf) and stiffness factors, G' , (kips/in.) for standard 1-1/2" deep flutes, 6" center-to-center steel deck ($F_y \geq 50$ ksi; $F_u \geq 65$ ksi) installed with Hilti X-ENP-19 L15 fasteners with 36/11 or 36/9 end and interior support fastener patterns^{1,2,3,4,5,6,7}

Gauge	Number of Hilti SLC per span	Factor	Span (ft. - in.)															
			4'-0"		5'-0"		6'-0"		7'-0"		8'-0"		9'-0"		10'-0"			
			Fasteners per sheet to support															
		11		9		11		9		11		9		11		9		
22	2	S_{LRFD}	1957	1692	1610	1401	1334	1169	1132	990	980	856	869	759	782	683		
		G'	66.9	65.4	73.2	70.9	77.1	74.0	79.2	75.5	80.0	75.8	80.0	75.2	79.4	74.2		
	3	S_{LRFD}	2127	1849	1759	1542	1482	1317	1259	1117	1091	967	968	857	871	772		
		G'	67.7	66.3	74.3	72.3	78.5	75.8	80.9	77.7	82.1	78.3	82.3	78.0	81.9	77.2		
	4	S_{LRFD}	2288	1996	1902	1677	1621	1438	1386	1244	1202	1078	1067	956	960	860		
		G'	68.3	67.1	75.2	73.5	79.7	77.4	82.5	79.6	83.9	80.5	84.4	80.6	84.2	80.0		
	5	S_{LRFD}	2441	2132	2041	1805	1745	1555	1513	1362	1313	1189	1165	1055	1049	949		
		G'	68.8	67.8	76.0	74.5	80.9	78.8	83.9	81.3	85.6	82.5	86.3	82.8	86.3	82.4		
	6	S_{LRFD}	2585	2258	2174	1925	1865	1667	1629	1465	1424	1300	1264	1153	1138	1038		
		G'	69.3	68.4	76.8	75.4	81.9	80.0	85.2	82.8	87.1	84.3	88.0	84.9	88.2	84.7		
	7	S_{LRFD}	2722	2375	2302	2039	1982	1774	1735	1564	1535	1395	1363	1252	1226	1127		
		G'	69.7	68.9	77.4	76.2	82.8	81.1	86.3	84.2	88.5	86.0	89.6	86.7	90.0	86.8		
	20	2	S_{LRFD}	2535	2194	2088	1821	1747	1537	1484	1304	1287	1130	1134	994	1020	894	
			G'	94.0	91.2	100.0	96.2	102.9	98.0	103.6	97.9	103.0	96.6	101.4	94.5	99.3	92.0	
3		S_{LRFD}	2773	2415	2298	2020	1954	1727	1666	1486	1446	1288	1275	1135	1147	1020		
		G'	95.3	92.9	101.8	98.5	105.2	100.9	106.4	101.3	106.1	100.3	104.8	98.6	102.9	96.3		
4		S_{LRFD}	2998	2618	2500	2208	2134	1898	1847	1659	1604	1447	1416	1276	1273	1147		
		G'	96.4	94.3	103.4	100.5	107.2	103.4	108.8	104.3	108.9	103.7	107.9	102.2	106.3	100.2		
5		S_{LRFD}	3210	2804	2693	2384	2308	2061	2014	1808	1763	1606	1557	1417	1400	1274		
		G'	97.4	95.5	104.9	102.2	109.1	105.7	111.0	107.0	111.4	106.7	110.7	105.5	109.3	103.7		
6		S_{LRFD}	3408	2975	2878	2550	2477	2216	2167	1952	1922	1740	1698	1558	1527	1401		
		G'	98.3	96.6	106.1	103.8	110.8	107.7	113.0	109.4	113.7	109.5	113.3	108.6	112.1	107.0		
7		S_{LRFD}	3593	3130	3054	2705	2639	2364	2315	2090	2058	1868	1839	1686	1654	1528		
		G'	99.0	97.6	107.3	105.2	112.3	109.5	114.9	111.5	115.9	112.0	115.7	111.3	114.7	110.0		
18		2	S_{LRFD}	3064	2654	2525	2203	2131	1876	1812	1596	1574	1384	1388	1219	1239	1088	
			G'	147.3	141.5	150.7	143.3	150.2	141.4	147.3	137.6	143.3	132.8	138.6	127.7	133.7	122.4	
	3	S_{LRFD}	3359	2926	2785	2449	2369	2095	2037	1821	1770	1581	1563	1394	1397	1245		
		G'	149.9	144.9	154.2	147.6	154.3	146.5	152.0	143.2	148.4	138.8	144.0	133.9	139.2	128.9		
	4	S_{LRFD}	3636	3175	3034	2680	2591	2306	2255	2017	1967	1777	1737	1569	1554	1402		
		G'	152.2	147.8	157.3	151.4	158.1	151.0	156.3	148.3	153.0	144.3	148.9	139.7	144.4	134.8		
	5	S_{LRFD}	3896	3403	3272	2898	2806	2507	2449	2201	2163	1957	1912	1744	1711	1560		
		G'	154.3	150.4	160.1	154.8	161.5	155.1	160.2	152.9	157.3	149.3	153.5	145.0	149.2	140.3		
	6	S_{LRFD}	4138	3611	3499	3101	3014	2698	2638	2378	2341	2120	2087	1910	1868	1717		
		G'	156.2	152.7	162.6	157.9	164.5	158.8	163.7	157.1	161.2	153.9	157.7	149.8	153.6	145.4		
	7	S_{LRFD}	4365	3800	3715	3290	3214	2879	2821	2547	2508	2278	2255	2057	2026	1872		
		G'	157.9	154.7	164.9	160.6	167.4	162.1	167.0	160.9	164.8	158.1	161.6	154.3	157.7	150.1		
	16	2	S_{LRFD}	3130	2714	2581	2256	2189	1921	1868	1650	1624	1433	1434	1264	1282	1129	
			G'	202.8	193.1	200.9	189.1	195.1	181.9	187.6	173.4	179.4	164.7	171.2	156.3	163.3	148.3	
3		S_{LRFD}	3444	3002	2859	2517	2434	2156	2110	1881	1836	1645	1622	1452	1451	1298		
		G'	207.5	198.9	206.6	196.1	201.6	189.7	194.6	181.7	186.8	173.3	178.8	165.0	171.0	157.0		
4		S_{LRFD}	3738	3265	3125	2763	2671	2380	2327	2084	2047	1850	1810	1640	1620	1468		
		G'	211.6	204.0	211.8	202.3	207.5	196.7	201.1	189.3	193.6	181.2	185.9	173.1	178.2	165.2		
5		S_{LRFD}	4012	3504	3377	2992	2900	2593	2534	2280	2246	2029	1998	1826	1790	1637		
		G'	215.3	208.5	216.5	207.9	212.9	203.1	207.0	196.2	199.9	188.5	192.5	180.6	184.9	172.8		
6		S_{LRFD}	4267	3720	3618	3205	3121	2795	2735	2467	2429	2203	2182	1986	1959	1806		
		G'	218.7	212.5	220.7	212.9	217.9	208.9	212.5	202.5	205.8	195.2	198.6	187.5	191.2	179.8		
7		S_{LRFD}	4503	3915	3845	3402	3333	2985	2930	2647	2608	2370	2346	2142	2128	1952		
		G'	221.7	216.2	224.6	217.5	222.4	214.1	217.5	208.3	211.2	201.4	204.3	193.9	197.1	186.4		

1 Tabulated diaphragm shear values are for attachment of steel deck to a base steel thickness, $t_f \geq 1/4"$.
 2 Tabulated LRFD diaphragm shear loads are calculated with a phi factor (Φ) of 0.80 for wind loads. To calculate LRFD values for load combinations involving earthquake, divide values in table by 0.80 and multiply by a phi factor (Φ) of 0.70. Panel buckling has been checked.
 3 Please refer to footnotes 3 through 7 on page 171.



Load Resistance Factor Design (LRFD) – Factored resistance diaphragm shears, S_{LRFD} , (plf) and stiffness factors, G' , (kips/in.) for standard 1-1/2" deep flutes, 6" center-to-center steel deck ($F_y \geq 50$ ksi; $F_u \geq 65$ ksi) installed with Hilti X-ENP-19 L15 fasteners with 36/7 or 36/4 end and interior support fastener patterns^{1,2,3,4,5,6,7}

Gauge	Number of Hilti SLC per span	Factor	Span (ft. in.)															
			4'-0"		5'-0"		6'-0"		7'-0"		8'-0"		9'-0"		10'-0"			
			Fasteners per sheet to support															
		7		4		7		4		7		4		7		4		
22	2	S_{LRFD}	1225	900	1004	761	836	655	711	568	617	492	547	437	492	393		
		G'	61.9	65.9	67.6	67.9	67.1	65.8	64.0	12.1	14.6	16.7	18.6	20.2	21.5	22.6		
	3	S_{LRFD}	1398	1022	1155	878	980	765	838	674	728	601	646	535	581	482		
		G'	63.5	68.1	70.4	71.1	70.8	69.7	68.3	12.2	14.7	17.0	19.0	20.7	22.2	23.5		
	4	S_{LRFD}	1558	1123	1298	981	1107	864	963	768	839	689	744	623	670	568		
		G'	64.7	69.9	72.7	73.9	73.9	73.2	72.0	12.3	14.9	17.2	19.3	21.1	22.7	24.1		
	5	S_{LRFD}	1706	1206	1433	1069	1229	952	1073	853	950	770	843	700	759	641		
		G'	65.7	71.4	74.7	76.3	76.7	76.2	75.3	12.4	15.0	17.4	19.5	21.5	23.2	24.7		
	6	S_{LRFD}	1842	1274	1561	1144	1346	1029	1179	930	1047	845	940	771	848	709		
		G'	66.6	72.7	76.4	78.4	79.1	79.0	78.2	12.4	15.1	17.5	19.7	21.7	23.5	25.1		
	7	S_{LRFD}	1966	1330	1680	1209	1457	1098	1281	999	1140	913	1026	838	932	773		
		G'	67.4	73.8	77.9	80.2	81.3	81.4	80.9	12.4	15.1	17.6	19.9	22.0	23.8	25.5		
	20	2	S_{LRFD}	1609	1182	1321	1003	1112	866	946	759	822	664	725	585	652	526	
			G'	85.2	88.0	88.0	86.5	84.0	81.1	78.1	18.9	22.4	25.3	27.7	29.5	31.0	32.0	
3		S_{LRFD}	1850	1347	1533	1165	1304	1018	1127	901	981	805	866	726	779	653		
		G'	87.9	91.5	92.3	91.3	89.3	86.7	83.8	19.1	22.8	25.9	28.5	30.6	32.3	33.6		
4		S_{LRFD}	2072	1479	1733	1302	1482	1153	1292	1029	1139	926	1007	840	906	767		
		G'	90.0	94.5	95.9	95.5	93.9	91.6	88.9	19.3	23.0	26.3	29.1	31.4	33.4	34.9		
5		S_{LRFD}	2273	1584	1920	1417	1652	1270	1445	1144	1282	1037	1148	945	1033	867		
		G'	91.9	97.0	99.1	99.1	97.9	96.0	93.5	19.4	23.3	26.6	29.6	32.1	34.2	35.9		
6		S_{LRFD}	2455	1669	2094	1513	1813	1372	1593	1246	1417	1137	1275	1043	1157	961		
		G'	93.4	99.2	101.8	102.4	101.6	99.9	97.7	19.5	23.4	26.9	30.0	32.6	34.9	36.8		
7		S_{LRFD}	2619	1737	2255	1594	1965	1459	1734	1337	1548	1228	1396	1132	1269	1047		
		G'	94.8	101.1	104.3	105.2	104.8	103.4	101.5	19.6	23.6	27.2	30.3	33.1	35.5	37.5		
18		2	S_{LRFD}	1952	1435	1604	1219	1357	1053	1158	924	1007	818	890	721	796	644	
			G'	129.4	128.1	124.0	118.6	112.9	107.2	101.8	35.1	40.4	44.3	47.1	49.0	50.0	50.5	
	3	S_{LRFD}	2250	1635	1866	1416	1588	1240	1379	1097	1204	982	1065	886	953	802		
		G'	134.5	134.4	131.1	126.4	121.0	115.4	110.0	35.8	41.4	45.9	49.2	51.5	53.0	53.9		
	4	S_{LRFD}	2521	1794	2112	1583	1808	1404	1576	1255	1394	1130	1239	1026	1110	938		
		G'	138.9	139.9	137.4	133.2	128.2	122.8	117.5	36.2	42.2	47.0	50.7	53.5	55.4	56.7		
	5	S_{LRFD}	2768	1921	2341	1722	2017	1546	1765	1395	1567	1266	1407	1155	1268	1060		
		G'	142.6	144.6	143.0	139.3	134.6	129.6	124.4	36.6	42.9	48.0	52.0	55.2	57.4	59.0		
	6	S_{LRFD}	2989	2022	2554	1838	2214	1669	1947	1519	1733	1388	1560	1274	1416	1175		
		G'	145.8	148.8	147.9	144.8	140.5	135.7	130.7	36.9	43.4	48.8	53.1	56.5	59.1	61.1		
	7	S_{LRFD}	3188	2103	2750	1935	2401	1775	2121	1629	1894	1499	1708	1383	1554	1281		
		G'	148.6	152.5	152.3	149.7	145.8	141.3	136.5	37.2	43.8	49.4	54.0	57.7	60.6	62.8		
	16	2	S_{LRFD}	2010	1476	1654	1258	1400	1088	1203	956	1048	850	926	757	829	677	
			G'	173.1	165.7	156.3	146.7	137.6	129.1	121.3	56.7	63.1	67.1	69.3	70.0	69.9	69.0	
3		S_{LRFD}	2326	1684	1933	1464	1646	1285	1431	1140	1259	1021	1114	923	999	841		
		G'	181.6	175.5	166.9	157.7	148.7	140.1	132.2	58.2	65.4	70.3	73.3	74.8	75.2	74.9		
4		S_{LRFD}	2612	1847	2193	1636	1880	1456	1641	1305	1453	1178	1303	1070	1168	980		
		G'	188.9	184.1	176.3	167.6	158.7	150.2	142.2	59.3	67.3	72.9	76.6	78.7	79.7	79.8		
5		S_{LRFD}	2869	1974	2435	1778	2102	1603	1843	1451	1637	1319	1471	1206	1334	1109		
		G'	195.2	191.7	184.7	176.5	167.9	159.4	151.5	60.3	68.7	75.0	79.3	82.0	83.6	84.1		
6		S_{LRFD}	3098	2074	2657	1895	2310	1728	2035	1578	1814	1446	1634	1330	1485	1229		
		G'	200.8	198.4	192.3	184.5	176.2	168.0	160.0	61.0	70.0	76.7	81.6	84.8	86.9	87.9		
7		S_{LRFD}	3301	2153	2861	1990	2505	1834	2218	1690	1984	1559	1792	1443	1631	1339		
		G'	205.7	204.4	199.0	191.8	183.9	175.8	167.9	61.6	71.0	78.2	83.5	87.3	89.7	91.1		

1 Tabulated diaphragm shear values are for attachment of steel deck to a base steel thickness, $t_b \geq 1/4"$.
 2 Tabulated LRFD diaphragm shear loads are calculated with a phi factor (Φ) of 0.80 for wind loads. To calculate LRFD values for load combinations involving earthquake, divide values in table by 0.80 and multiply by a phi factor (Φ) of 0.70. Panel buckling has been checked.
 3 Please refer to footnotes 3 through 7 on page 171.



Limit States Design (LSD) – Factored resistance diaphragm shears, S_{LSD} , (N/mm) and stiffness factors, G' , (10^3 N/mm) for standard 38mm deep flutes, 152mm center-to-center deck ($F_y \geq 345$ Mpa; $F_u \geq 450$ Mpa) installed with Hilti X-ENP-19 L15 fasteners with 914/11 (36/11) or 914/9 (36/9) end and interior support fastener patterns^{1,2,3,4,5,6,7}

Gauge	Number of Hilti SLC per span	Factor	Span (mm)															
			1200		1500		1800		2100		2400		2700		3000			
			Fasteners per sheet to support															
		11		9		11		9		11		9		11		9		
22	2	S_{LSD}	27.2	23.4	22.4	19.5	18.6	16.4	15.8	13.8	13.7	12.0	12.2	10.5	11.0	9.5		
		G'	11.6	11.4	12.8	12.4	13.5	13.0	13.9	13.2	14.0	13.3	14.1	13.2	14.0	13.1		
	3	S_{LSD}	29.6	25.7	24.5	21.5	20.7	18.3	17.6	15.6	15.2	13.5	13.5	11.9	12.2	10.8		
		G'	11.8	11.5	12.9	12.6	13.7	13.3	14.2	13.6	14.4	13.7	14.5	13.7	14.4	13.6		
	4	S_{LSD}	31.7	27.6	26.4	23.3	22.5	20.0	19.4	17.4	16.8	15.0	14.9	13.4	13.4	12.0		
		G'	11.9	11.7	13.1	12.8	13.9	13.5	14.4	13.9	14.7	14.1	14.8	14.1	14.8	14.1		
	5	S_{LSD}	33.8	29.6	28.4	25.1	24.2	21.6	21.0	18.9	18.3	16.5	16.2	14.7	14.6	13.2		
		G'	12.0	11.8	13.2	13.0	14.1	13.8	14.7	14.2	15.0	14.5	15.1	14.5	15.2	14.5		
	6	S_{LSD}	35.9	31.2	30.2	26.7	25.8	23.1	22.7	20.3	19.8	18.2	17.6	16.1	15.8	14.4		
		G'	12.0	11.9	13.4	13.1	14.3	14.0	14.9	14.5	15.2	14.8	15.4	14.9	15.5	14.9		
	7	S_{LSD}	37.7	32.9	32.0	28.2	27.5	24.6	24.0	21.8	21.3	19.4	18.9	17.4	16.1	15.6		
		G'	12.1	12.0	13.5	13.3	14.4	14.1	15.1	14.7	15.5	15.0	15.7	15.2	15.8	15.2		
	20	2	S_{LSD}	35.1	30.5	29.0	25.2	24.3	21.5	20.7	18.2	18.0	15.8	15.8	13.8	14.1	12.5	
			G'	16.4	15.9	17.5	16.8	18.0	17.2	18.2	17.2	18.1	17.0	17.9	16.7	17.5	16.2	
3		S_{LSD}	38.4	33.5	32.0	28.1	27.2	24.0	23.3	20.7	20.1	18.0	17.7	15.8	15.9	14.3		
		G'	16.6	16.2	17.8	17.2	18.4	17.7	18.7	17.8	18.6	17.7	18.4	17.4	18.1	17.0		
4		S_{LSD}	41.6	36.3	34.7	30.6	29.6	26.3	25.7	23.0	22.4	20.1	19.8	17.9	17.7	15.9		
		G'	16.8	16.4	18.1	17.6	18.8	18.1	19.1	18.3	19.1	18.2	19.0	18.0	18.7	17.7		
5		S_{LSD}	44.4	38.9	37.4	33.0	32.0	28.5	27.9	25.1	24.6	22.4	21.8	19.8	19.5	17.7		
		G'	17.0	16.7	18.3	17.9	19.1	18.5	19.5	18.8	19.6	18.8	19.5	18.6	19.2	18.3		
6		S_{LSD}	47.1	41.1	39.9	35.3	34.4	30.8	30.0	27.0	26.7	24.2	23.7	21.8	21.3	19.5		
		G'	17.1	16.8	18.5	18.1	19.4	18.8	19.8	19.2	20.0	19.2	19.9	19.1	19.7	18.8		
7		S_{LSD}	49.7	43.2	42.3	37.4	36.6	32.7	32.1	29.0	28.5	26.0	25.7	23.4	21.5	21.3		
		G'	17.2	17.0	18.7	18.4	19.6	19.2	20.1	19.5	20.3	19.7	20.3	19.6	20.2	19.4		
18		2	S_{LSD}	42.5	36.8	35.1	30.6	29.7	26.1	25.2	22.2	21.9	19.4	19.4	17.0	17.3	15.2	
			G'	25.7	24.7	26.3	25.0	26.2	24.7	25.8	24.1	25.1	23.3	24.3	22.4	23.4	21.5	
	3	S_{LSD}	46.5	40.5	38.7	33.9	32.9	29.1	28.4	25.4	24.6	22.1	21.8	19.5	19.5	17.4		
		G'	26.1	25.3	26.9	25.8	27.0	25.6	26.6	25.1	26.0	24.3	25.2	23.5	24.4	22.6		
	4	S_{LSD}	50.4	44.0	42.0	37.2	36.0	32.0	31.4	28.1	27.5	24.8	24.2	21.9	21.6	19.5		
		G'	26.5	25.8	27.4	26.4	27.6	26.4	27.3	26.0	26.8	25.3	26.1	24.5	25.3	23.6		
	5	S_{LSD}	54.0	47.1	45.3	40.1	38.9	34.8	34.1	30.6	30.2	27.2	26.7	24.3	23.9	21.8		
		G'	26.9	26.2	27.9	27.0	28.2	27.1	28.0	26.8	27.5	26.2	26.9	25.4	26.1	24.6		
	6	S_{LSD}	57.3	50.0	48.5	42.9	41.9	37.4	36.6	33.0	32.6	29.4	29.1	26.6	26.0	23.9		
		G'	27.2	26.6	28.4	27.6	28.7	27.8	28.6	27.5	28.2	27.0	27.6	26.3	26.9	25.5		
	7	S_{LSD}	60.3	52.5	51.5	45.5	44.6	39.9	39.2	35.3	34.8	31.7	31.4	28.5	28.2	26.0		
		G'	27.5	27.0	28.8	28.0	29.2	28.3	29.2	28.2	28.9	27.7	28.3	27.1	27.7	26.3		
	16	2	S_{LSD}	43.4	37.7	35.9	31.4	30.5	26.7	26.0	23.0	22.7	20.0	20.0	17.6	17.9	15.8	
			G'	35.6	33.9	35.4	33.3	34.4	32.1	33.1	30.7	31.8	29.2	30.3	27.7	29.0	26.3	
3		S_{LSD}	47.7	41.6	39.6	35.0	33.8	29.9	29.4	26.1	25.5	23.0	22.7	20.3	20.3	18.2		
		G'	36.4	34.9	36.3	34.5	35.5	33.5	34.4	32.1	33.0	30.7	31.7	29.2	30.3	27.9		
4		S_{LSD}	51.8	45.2	43.4	38.3	37.1	33.0	32.3	29.0	28.5	25.7	25.2	22.8	22.5	20.4		
		G'	37.1	35.8	37.2	35.6	36.6	34.7	35.5	33.4	34.2	32.0	32.9	30.6	31.6	29.3		
5		S_{LSD}	55.5	48.5	46.8	41.4	40.2	36.0	35.1	31.7	31.2	28.2	27.8	25.4	24.9	22.8		
		G'	37.7	36.6	38.0	36.5	37.5	35.8	36.5	34.6	35.3	33.3	34.0	31.9	32.7	30.6		
6		S_{LSD}	59.0	51.5	50.1	44.4	43.2	38.7	38.0	34.2	33.8	30.6	30.3	27.6	27.3	25.1		
		G'	38.3	37.2	38.8	37.4	38.3	36.8	37.4	35.7	36.3	34.5	35.1	33.1	33.8	31.8		
7		S_{LSD}	62.3	54.0	53.3	47.1	46.2	41.4	40.7	36.8	36.2	32.9	32.6	29.7	29.6	27.2		
		G'	38.8	37.9	39.4	38.2	39.1	37.7	38.3	36.7	37.3	35.5	36.1	34.3	34.8	33.0		

1 Tabulated diaphragm shear values are for attachment of steel deck to a base steel thickness, $t_b \geq 6$ mm.
 2 Tabulated LSD diaphragm shear loads are calculated with a phi factor (Φ) of 0.75 for wind loads. To calculate LSD values for load combinations involving earthquake, divide values in table by 0.75 and multiply by a phi factor (Φ) of 0.55. Panel buckling has been checked.
 3 Please refer to footnotes 3 through 7 on page 171.



Limit States Design (LSD) – Factored resistance diaphragm shears, S_{LSD} , (N/mm) and stiffness factors, G' , (10^3 N/mm) for standard 38mm deep flutes, 152mm center-to-center deck ($F_y \geq 345$ Mpa; $F_u \geq 450$ Mpa) installed with Hilti X-ENP-19 L15 fasteners with 914/7 (36/7) or 914/4 (36/4) end and interior support fastener patterns^{1,2,3,4,5,6,7}

Gauge	Number of Hilti SLC per span	Factor	Span (mm)															
			1200		1500		1800		2100		2400		2700		3000			
			Fasteners per sheet to support															
		7		4		7		4		7		4		7		4		
22	2	S_{LSD}	17.0	12.5	14.0	10.5	11.7	9.2	9.9	8.0	8.6	6.9	7.7	6.0	6.9	5.4		
		G'	10.8	2.1	11.5	2.5	11.9	2.9	11.9	3.2	11.8	3.5	11.6	3.7	11.3	3.9		
	3	S_{LSD}	19.4	14.1	16.1	12.2	13.7	10.7	11.7	9.3	10.2	8.4	9.0	7.5	8.1	6.8		
		G'	11.1	2.1	11.9	2.6	12.3	2.9	12.5	3.3	12.4	3.6	12.3	3.9	12.0	4.1		
	4	S_{LSD}	21.6	15.5	18.0	13.5	15.3	12.0	13.4	10.7	11.7	9.6	10.4	8.7	9.3	8.0		
		G'	11.3	2.1	12.2	2.6	12.7	3.0	12.9	3.3	13.0	3.7	12.9	3.9	12.7	4.2		
	5	S_{LSD}	23.6	15.5	19.8	14.7	17.1	13.2	14.9	11.9	13.2	10.7	11.7	9.8	10.5	8.9		
		G'	11.4	2.1	12.5	2.6	13.1	3.0	13.4	3.4	13.5	3.7	13.4	4.0	13.2	4.2		
	6	S_{LSD}	25.5	17.5	21.6	15.8	18.6	14.3	16.4	12.9	14.6	11.7	13.1	10.7	11.9	9.8		
		G'	11.6	2.1	12.7	2.6	13.3	3.0	13.7	3.4	13.9	3.8	13.9	4.1	13.7	4.4		
	7	S_{LSD}	27.2	18.3	23.3	16.7	20.3	15.2	17.7	13.8	15.8	12.6	14.3	11.6	12.9	10.7		
		G'	11.7	2.1	12.9	2.6	13.6	3.0	14.0	3.4	14.2	3.8	14.3	4.1	14.2	4.4		
20	2	S_{LSD}	22.4	16.4	18.3	14.0	15.5	12.0	13.2	10.5	11.4	9.3	10.1	8.1	9.0	7.4		
		G'	14.9	3.3	15.4	3.9	15.5	4.4	15.2	4.8	14.8	5.1	14.3	5.4	13.8	5.6		
	3	S_{LSD}	25.7	18.6	21.3	16.1	18.2	14.1	15.8	12.5	13.7	11.1	12.0	10.1	10.8	9.2		
		G'	15.3	3.3	16.0	3.9	16.2	4.5	16.1	4.9	15.7	5.3	15.3	5.6	14.8	5.9		
	4	S_{LSD}	28.7	20.4	24.0	18.0	20.6	15.9	18.0	14.3	15.9	12.9	14.1	11.7	12.6	10.7		
		G'	15.7	3.3	16.5	4.0	16.8	4.6	16.8	5.0	16.5	5.5	16.1	5.8	15.7	6.1		
	5	S_{LSD}	31.5	21.9	26.6	19.5	23.0	17.6	20.1	15.9	17.9	14.4	16.1	13.1	14.4	12.0		
		G'	16.0	3.4	17.0	4.0	17.4	4.6	17.4	5.1	17.2	5.6	16.9	5.9	16.5	6.3		
	6	S_{LSD}	33.9	23.0	29.0	20.9	25.2	18.9	22.1	17.3	19.7	15.8	17.7	14.4	16.1	13.4		
		G'	16.3	3.4	17.3	4.1	17.8	4.7	18.0	5.2	17.9	5.7	17.6	6.1	17.2	6.4		
	7	S_{LSD}	36.2	23.9	31.2	21.9	27.3	20.1	24.0	18.5	21.5	17.0	19.4	15.6	17.6	14.6		
		G'	16.5	3.4	17.7	4.1	18.3	4.7	18.5	5.3	18.4	5.7	18.2	6.2	17.9	6.5		
18	2	S_{LSD}	27.0	19.8	22.2	17.0	18.9	14.6	16.1	12.8	14.0	11.4	12.5	10.1	11.1	9.0		
		G'	22.6	6.1	22.4	7.0	21.7	7.7	20.8	8.2	19.8	8.5	18.8	8.7	17.9	8.8		
	3	S_{LSD}	31.2	22.7	26.0	19.7	22.1	17.1	19.2	15.2	16.8	13.7	14.9	12.3	13.2	11.1		
		G'	23.5	6.2	23.5	7.2	23.0	8.0	22.1	8.5	21.2	9.0	20.3	9.2	19.3	9.4		
	4	S_{LSD}	35.0	24.8	29.3	21.9	25.1	19.4	21.9	17.4	19.4	15.6	17.3	14.3	15.5	13.1		
		G'	24.2	6.3	24.5	7.3	24.1	8.2	23.3	8.8	22.5	9.3	21.6	9.7	20.6	9.9		
	5	S_{LSD}	38.3	26.4	32.4	23.7	27.9	21.3	24.5	19.4	21.8	17.6	19.5	16.1	17.7	14.7		
		G'	24.9	6.3	25.3	7.4	25.0	8.3	24.4	9.0	23.6	9.6	22.7	10.0	21.9	10.3		
	6	S_{LSD}	41.4	27.9	35.4	25.4	30.8	23.1	27.0	21.0	24.0	19.2	21.6	17.7	19.7	16.2		
		G'	25.4	6.4	26.0	7.5	25.9	8.5	25.4	9.2	24.6	9.8	23.8	10.3	23.0	10.6		
	7	S_{LSD}	44.1	29.0	38.1	26.7	33.3	24.5	29.4	22.5	26.3	20.7	23.7	19.2	21.6	17.7		
		G'	25.9	6.4	26.6	7.6	26.6	8.6	26.2	9.4	25.6	10.0	24.8	10.5	24.0	10.9		
16	2	S_{LSD}	27.9	20.4	23.0	17.4	19.5	15.2	16.8	13.2	14.6	11.9	12.9	10.5	11.6	9.5		
		G'	30.5	9.9	29.2	11.0	27.7	11.7	26.0	12.1	24.4	12.3	22.9	12.3	21.6	12.2		
	3	S_{LSD}	32.3	23.3	26.9	20.3	22.8	17.9	19.8	15.8	17.6	14.1	15.5	12.8	14.0	11.7		
		G'	31.9	10.1	30.9	11.4	29.5	12.3	27.9	12.8	26.4	13.1	24.9	13.2	23.5	13.2		
	4	S_{LSD}	36.2	25.5	30.5	22.7	26.1	20.1	22.8	18.0	20.3	16.4	18.2	14.9	16.2	13.7		
		G'	33.2	10.3	32.4	11.7	31.1	12.7	29.6	13.4	28.1	13.8	26.6	14.0	25.2	14.0		
	5	S_{LSD}	39.8	27.2	33.8	24.6	29.1	22.2	25.5	20.1	22.7	18.3	20.4	16.7	18.6	15.3		
		G'	34.3	10.5	33.7	11.9	32.6	13.1	31.2	13.8	29.7	14.3	28.2	14.6	26.8	14.8		
	6	S_{LSD}	42.8	28.5	36.8	26.1	32.0	23.9	28.2	21.8	25.2	20.0	22.7	18.5	20.6	17.0		
		G'	35.2	10.6	34.9	12.2	33.9	13.4	32.6	14.2	31.1	14.8	29.7	15.2	28.3	15.4		
	7	S_{LSD}	45.6	29.6	39.6	27.5	34.7	25.4	30.8	23.4	27.5	21.6	24.9	20.0	22.7	18.6		
		G'	36.1	10.7	35.9	12.3	35.1	13.6	33.8	14.6	32.5	15.2	31.1	15.7	29.7	16.0		

1 Tabulated diaphragm shear values are for attachment of steel deck to a base steel thickness, $t_b \geq 6$ mm.
 2 Tabulated LSD diaphragm shear loads are calculated with a phi factor (Φ) of 0.75 for wind loads. To calculate LSD values for load combinations involving earthquake, divide values in table by 0.75 and multiply by a phi factor (Φ) of 0.55. Panel buckling has been checked.
 3 Please refer to footnotes 3 through 7 on page 171.

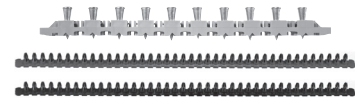
3.5.3.4 ORDERING INFORMATION

DX 9-ENP Decking System

Tools description	Notes	Qty
DX 9-ENP Stand-Up Decking Tool	Use-on-demand service provides daily rental	1 pcs

Accessories description	Notes	Qty
DX 9-ENP Piston and Brake Spares Pack	Replacement piston and brake for DX 9-ENP	1 pcs

Fasteners (combos with 40-strip cartridges) description	Base steel thickness	Qty
X-ENP-19 MXR bulk fastener/cartridge combo	$t_f \geq 1/4"$ (6 mm)	2,000 pcs
X-ENP-19 MXR pallet fastener/cartridge combo	$t_f \geq 1/4"$ (6 mm)	32,000 pcs

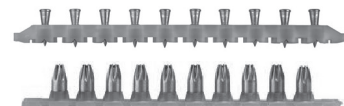


DX 76 Decking System

Tools description	Notes	Qty
DX 76 Hand Held Decking Tool with MX76 Magazine	Includes 10 fastener magazine	1 pcs

Accessories description	Notes	Qty
MX 76 Magazine	Replacement magazine for DX 76-MX	1 pcs
X-76-FN-15	Single fastener baseplate for DX 76	1 pcs
X-76-P-ENP Piston with stopper	Replacement piston and stopper for DX 76	1 pcs
X-76-PS Piston Stopper	Replacement stopper for DX 76	1 pcs

Fasteners (combos with 10-strip cartridges) description	Base steel thickness	Qty
X-ENP-19 MX bulk fastener/cartridge combo	$t_f \geq 1/4"$ (6 mm)	1,000 pcs
X-ENP-19 MX pallet fastener/cartridge combo	$t_f \geq 1/4"$ (6 mm)	32,000 pcs



Fasteners (non-combo) description	Base steel thickness	Qty
X-ENP-19 L15 Fastener (singles)	$t_f \geq 1/4"$ (6 mm)	100 pcs

