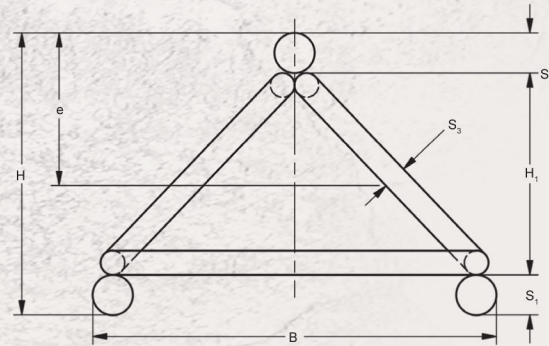


## LATTICE GIRDERS/ 3 BARS

With spaced diagonals, 3 bars are assembled to form a girder. The single bar can be located against the ground or towards the inside of the tunnel, fitting a specified design geometry. The spaced stiffening elements reduce the local buckling length of the bars, assure a high normal and bending moment resistance and secures a transfer of lateral forces in the lining before the shotcrete has reached its design strength.



TYPE	BAR SIZE			WEIGHT lbs/ft	H in	B in	e in	H <sub>3</sub> in	I <sub>x</sub> in <sup>4</sup>	S <sub>x</sub> in <sup>3</sup>	I <sub>y</sub> in <sup>4</sup>	S <sub>y</sub> in <sup>3</sup>	JOINT PLATE			FOOT PLATE																																																																																																																																																												
	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>										SIZE [in]	LENGTH [in]	UNIT WT [lbs]	SIZE [in]	UNIT WT [lbs]																																																																																																																																																											
50	6	8	0.39"	6.72	3.70	3.94	2.01	1.97	3.441	1.716	2.324	1.180	L4 x 3 x 3/8x	4	9/16	3.2	3/8 x 5 x 5	2.7																																																																																																																																																										
	6	10		8.26	3.94		1.88		4.676	2.226	2.395	1.216		4	9/16	3.2			70	6	8	0.39"	6.95	4.50	5.60	2.42	2.75	5.544	2.295	5.064	1.846	L4 x 3 x 3/8x	5	5/16	3.5	3/8 x 6 x 6	3.8	6	10	8.59	4.77	2.20	7.376	2.886	5.135	1.867	5	1/2	3.7	8	11	11.93	5.16	2.69	12.108	4.465	8.226	2.991	5	3/4	3.9	6	8	7.07	5.50	2.94	8.937	3.036	8.950	2.526	5	9/16	4.4	95	6	10	0.39"	8.7	5.77	7.09	2.59	3.75	11.741	3.751	9.028	2.548	L4 x 3 x 3/8x	6	3/4	4.6	3/8 x 7 x 8	6	8	11	12.05	6.16	3.18	18.883	5.854	14.840	4.188	7	1/16	4.8	6	8	7.94	6.25	3.37	12.182	3.636	13.906	3.210	7	11/16	8.0	115	6	10	0.47"	9.58	6.52	8.66	2.91	4.5	15.849	4.416	13.985	3.229	L5 x 3 x 1/2x	7	13/16	8.1	3/8 x 8 x 9 1/2	8.1	8	11	12.92	6.91	3.69	25.208	6.953	23.342	5.390	8	1/8	8.4	6	8	7.76	6.87	3.69	15.015	4.068	13.906	3.211	8	1/8	8.4	130	6	10	0.47"	9.39	7.14	8.66	3.15	5.12	19.379	4.929	13.977	3.229
70	6	8	0.39"	6.95	4.50	5.60	2.42	2.75	5.544	2.295	5.064	1.846		L4 x 3 x 3/8x	5	5/16	3.5	3/8 x 6 x 6		3.8																																																																																																																																																								
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