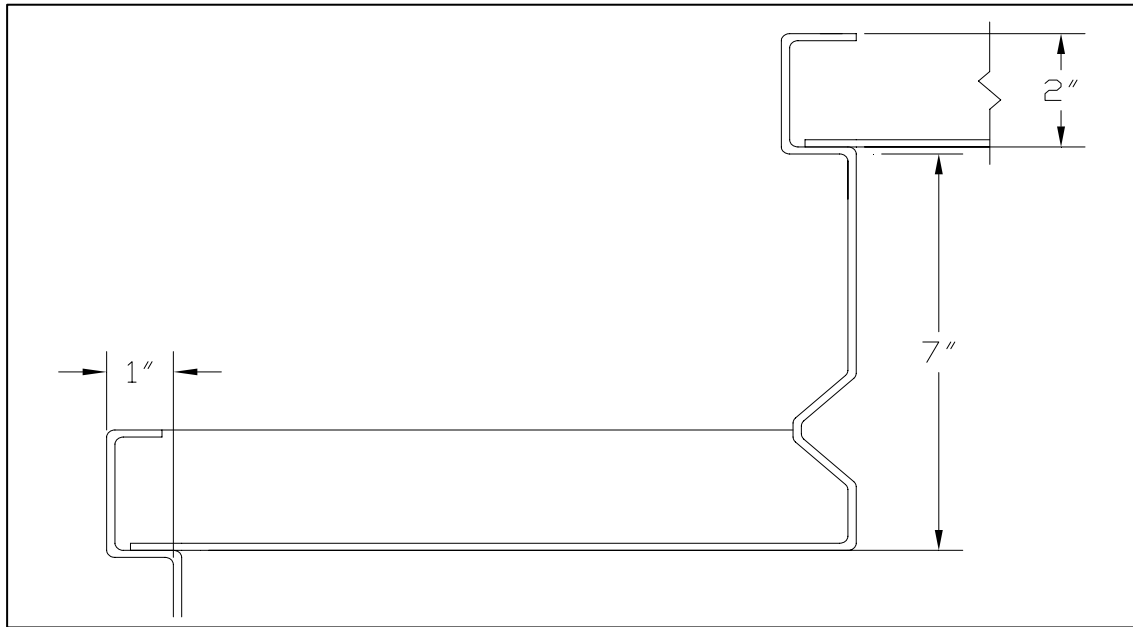


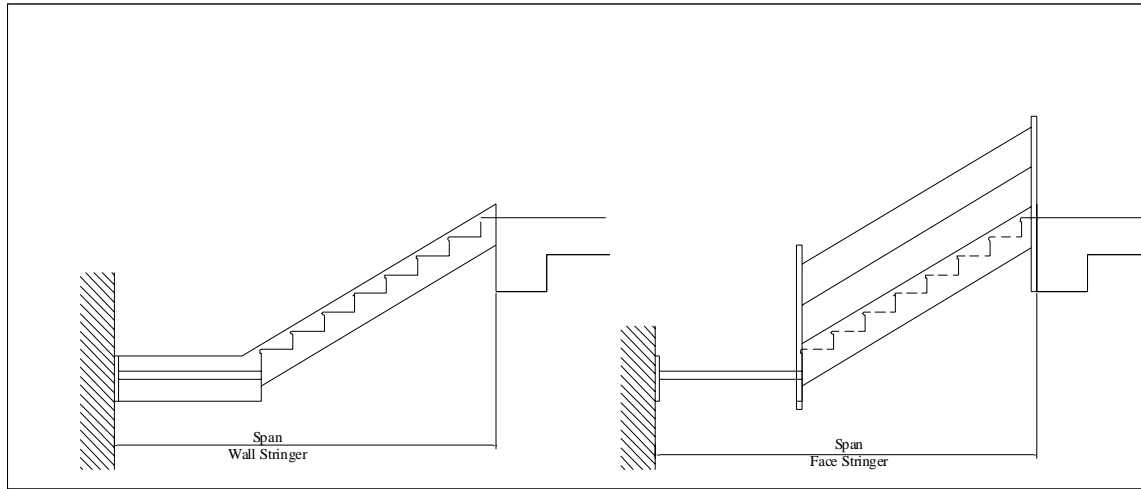
## LOADS AND DEFLECTIONS FOR SHEET STEEL RISER-SUBTREADS



SECTION		LOADS AND DEFLECTIONS FOR VARIOUS SPANS X 1000 LBS							
Thickness	I	S	34"	44"	56"	66"	78"	88"	100"
14 gage (.0747)	14.2	2.13	9.0	7.0	5.5	4.6	3.9	3.5	3.1
12 gage (.1046)	19.7	2.97	12.6	9.7	7.6	6.5	5.5	4.9	4.3
10 gage (.1345)	24.9	3.74	15.8	12.2	9.6	8.2	6.9	6.1	5.4
Deflection, $\Delta$ , inches			0.011	0.019	0.030	0.043	0.059	0.075	0.097

Total allowable uniform loads (W) in kips and deflections ( $\Delta$ ) in inches for sheet steel riser with subtread and concrete fill without metal mesh reinforcing. Riser supported laterally by bolted connections or welding. Minimum bolt size 1/4", maximum spacing 15". Design fiber stress 18,000 psi. Weight of material not included.

## DETERMINING DEFLECTION UNDER LIGHTER LOADS



Span in feet given in the table is the horizontal distance between supports.

### **METHOD OF DETERMINING DEFLECTION:**

Assume stair 4'0" wide, with a 10'0" span of twelve 10" treads. Live load 100 psf, dead load 50 psf. Total load =  $150 \times 4 \times 10 = 6,000$  lb. Load on one stringer =  $1/2$  of 6,000 or 3,000 lb. From table, 10 MC x 8.4, 10' span, has allowable load of 9.4 kips and a deflection of 0.23 inches.

$$\text{Deflection} = [3,000 \text{ (actual load)} / 9.400 \text{ (allowable load)}] \times .23" = .074"$$

Concentrated loads such as header reactions will increase deflections.

SOURCE: Catalog, NAAMM, AMP Architectural Metal Products Division of NAAMM, The National Association of Architectural Metal Manufacturers, Metal Stairs Manual Fifth Edition, Page 5-11, Copyright 1992