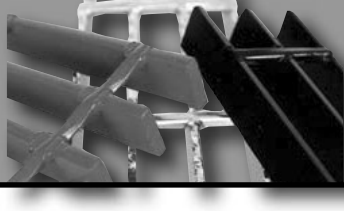


Light Duty Steel Design Criteria

The tables of safe loads which follow have been computed using the following design parameters:

U = Uniform Load - lbs/ft2

C = Concentrated Load - lbs/ft of grating width

S = Section Modulus - in3/ft of grating width

I = Moment of Inertia - in4/ft of grating width

L = Simple Clear Span - feet

D = Deflection - inches

E = Modulus of Elasticity (30,000,000 psi)

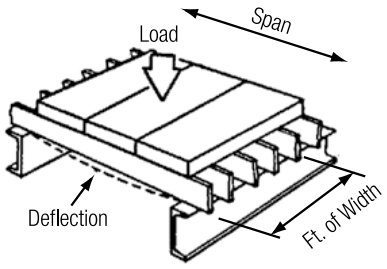
F = Allowable Bending Stress (18,000 psi)

M = Bending Moment

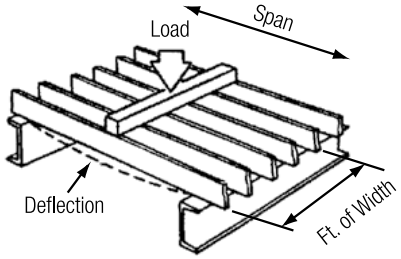
		Uniform Load		Concentrated Load
Step 1. Determine M:	M =	$\frac{FS}{12}$	M =	$\frac{FS}{12}$
Step 2. Determine U or C:	U =	$\frac{8M}{L^2}$	C =	$\frac{4M}{L}$
Step 3. Check D*	D =	$\frac{5UL\ (L \times 12)^3}{384\ EI}$	D =	$\frac{C\ (L \times 12)^3}{48\ EI}$

*Deflection should be limited to 1/4" under 100# uniform load to afford pedestian comfort.

Uniform Load



Concentrated Load

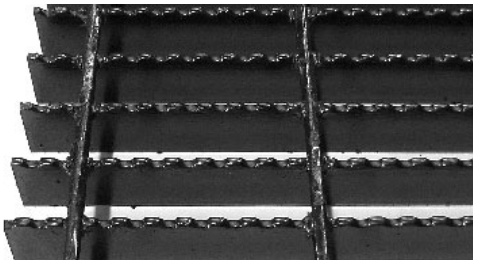


Light Duty Welded Steel (W Series)

HOW TO SPECIFY:

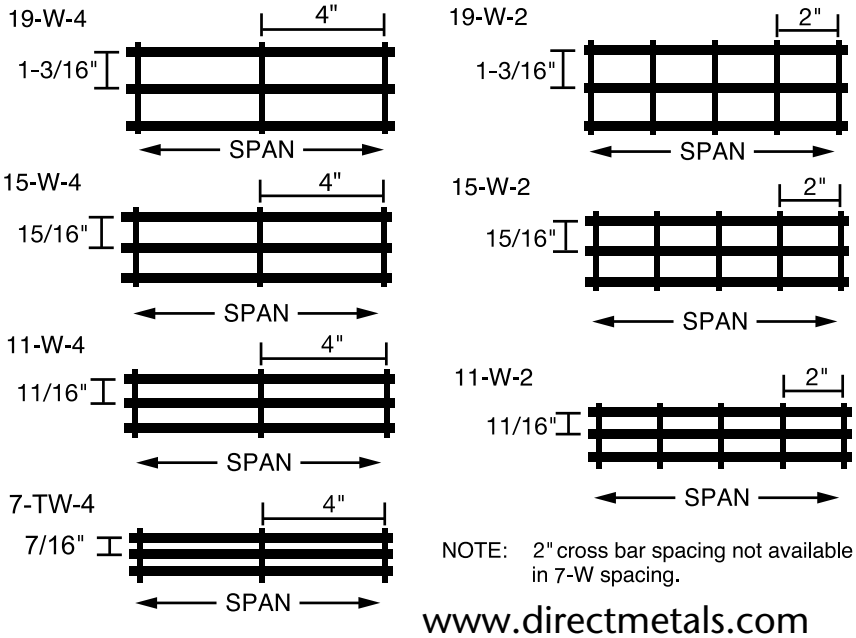
1. **Grating:** Light Duty Welded Steel W Series.
2. **Bearing Bars:** Rectangular Bar on 1-3/16" centers maximum. (**Note:** Other spacings may be specified at the discretion of the architect/ engineer.)
3. **Cross Bars:** Electroforge welded at right angles to bearing bars at 4" centers maximum. (**Note:** 2" cross bar centers may be specified at the discretion of the architect/engineer.)
4. **Surface:** Plain. (**Note:** A serrated surface may be specified for maximum skid resistance.)
5. **Loading:** Grating to carry a pedestrian loading equal to 100# per square foot over the required clear span with deflection not to exceed 1/4". (**Note:** Alternate loading requirements may be specified at the discretion of the architect/engineer.)
6. **Finish:** Galvanized or manufacturer's standard black paint at the discretion of the architect/engineer.
7. **Fabrication and Tolerances:** In accordance with the NAAMM Metal Bar Grating Manual.

For those areas requiring the corrosion resistance of stainless steel, Direct Metals stocks 1" x 3/16", 1-1/4" x 3/16" and 1-1/2" x 3/16" 19-W-4 Type 304 stainless steel electroforge welded grating. Since the welding process discolors the stainless surface, this grating is best suited for industrial applications only and should not be specified where cosmetic appearance is important.



Serrated Surface

GRATING TYPES - LIGHT DUTY WELDED STEEL W SERIES



NOTE: 2" cross bar spacing not available in 7-W spacing.