

Dead Loads and Idealization of Structural Members

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What is a Dead Load?

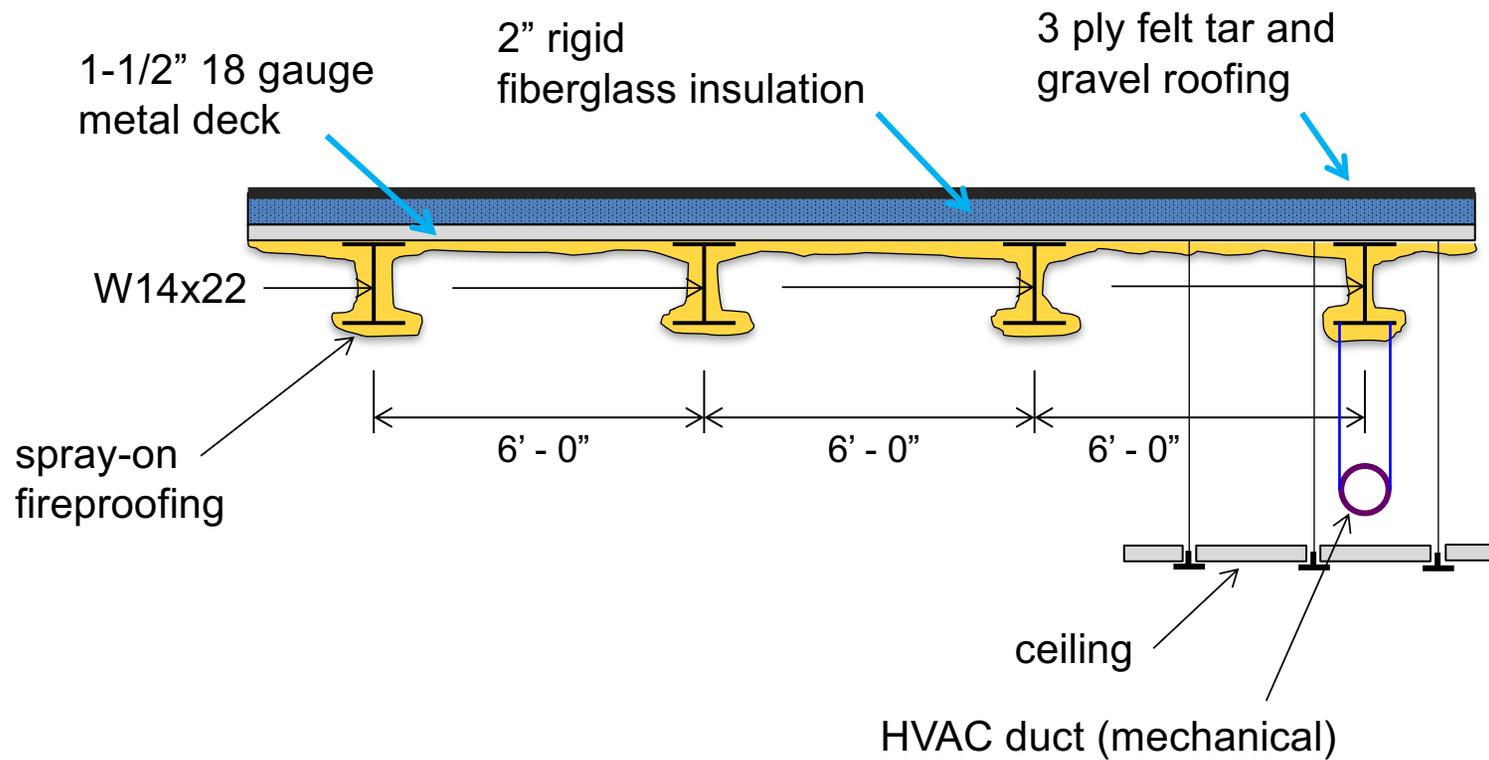
Dead Loads are Fixed Position Gravity Loads

Examples are weights of the following:

- Ceiling,
- Flooring,
- Façade,
- Structural Members.

Found from tables of weights of building materials (usually listed in weight/unit area)

Cross Section of Roof



Ceiling Support Hangers from Steel Framing at New Rec Center



Construct Dead Load Table

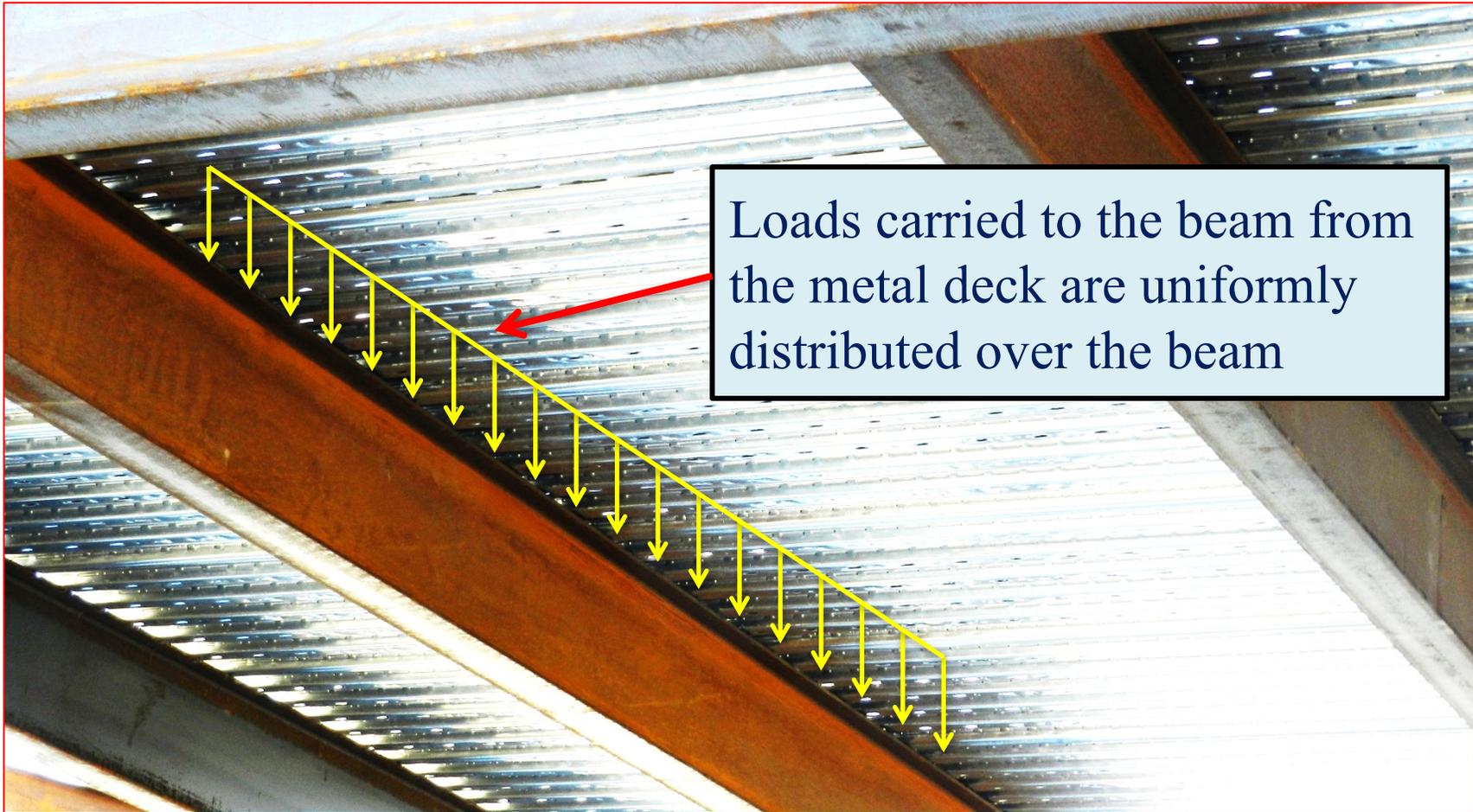
Load Path →

Material	To metal deck	To beams (W14x22)	To girders, truss (Lines 1-3)	To columns
1-1/2" 18 gauge metal deck	2.82 (A)	2.82	2.82	2.82
Fireproofing	0.5	0.5	0.5	0.5
2" Rigid fiberglass insulation	3 (B)	3	3	3
3 ply felt tar and gravel roofing	5.5 (B)	5.5	5.5	5.5
Ceiling and Lighting	1 (B)	1	1	1
W14x22 @ 6 ft o.c.		3.7 (C)	3.7	3.7
Mechanical (plumbing, HVAC)		4	4	4
W18x50, truss			4	4
Weight of columns				1
Misc.	3	3	3	3
Total	15.82	23.52	27.52	28.52
Use	16 psf	24 psf	28 psf	29 psf

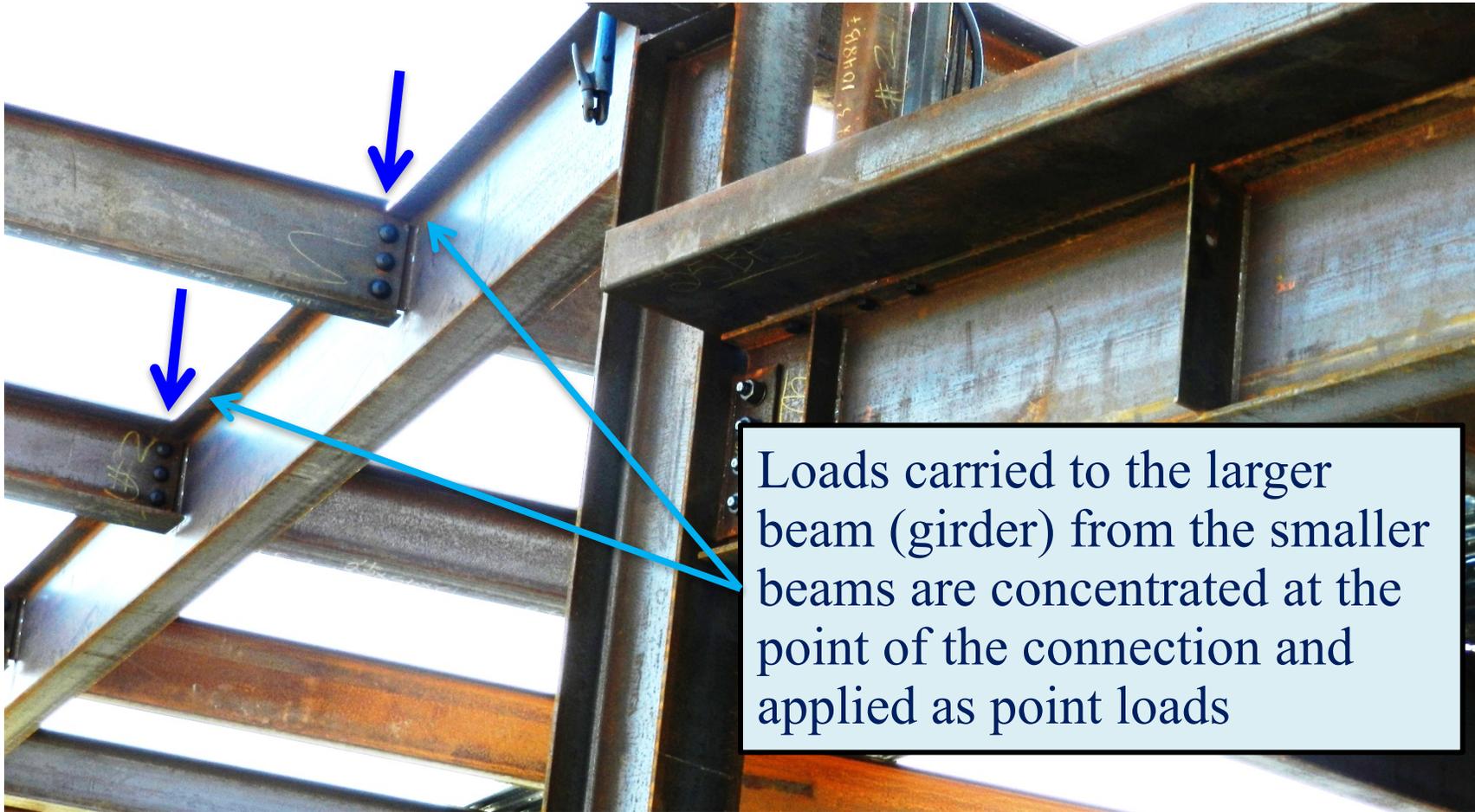
Notes:

- A. From Vulcraft deck catalog.
- B. From AISC steel manual "Weights of Building Materials".
- C. W14x22: $(22 \text{ lb/ft}) / (6 \text{ ft}) = 3.7 \text{ psf}$.

Deck Carries Uniform Load to Beams

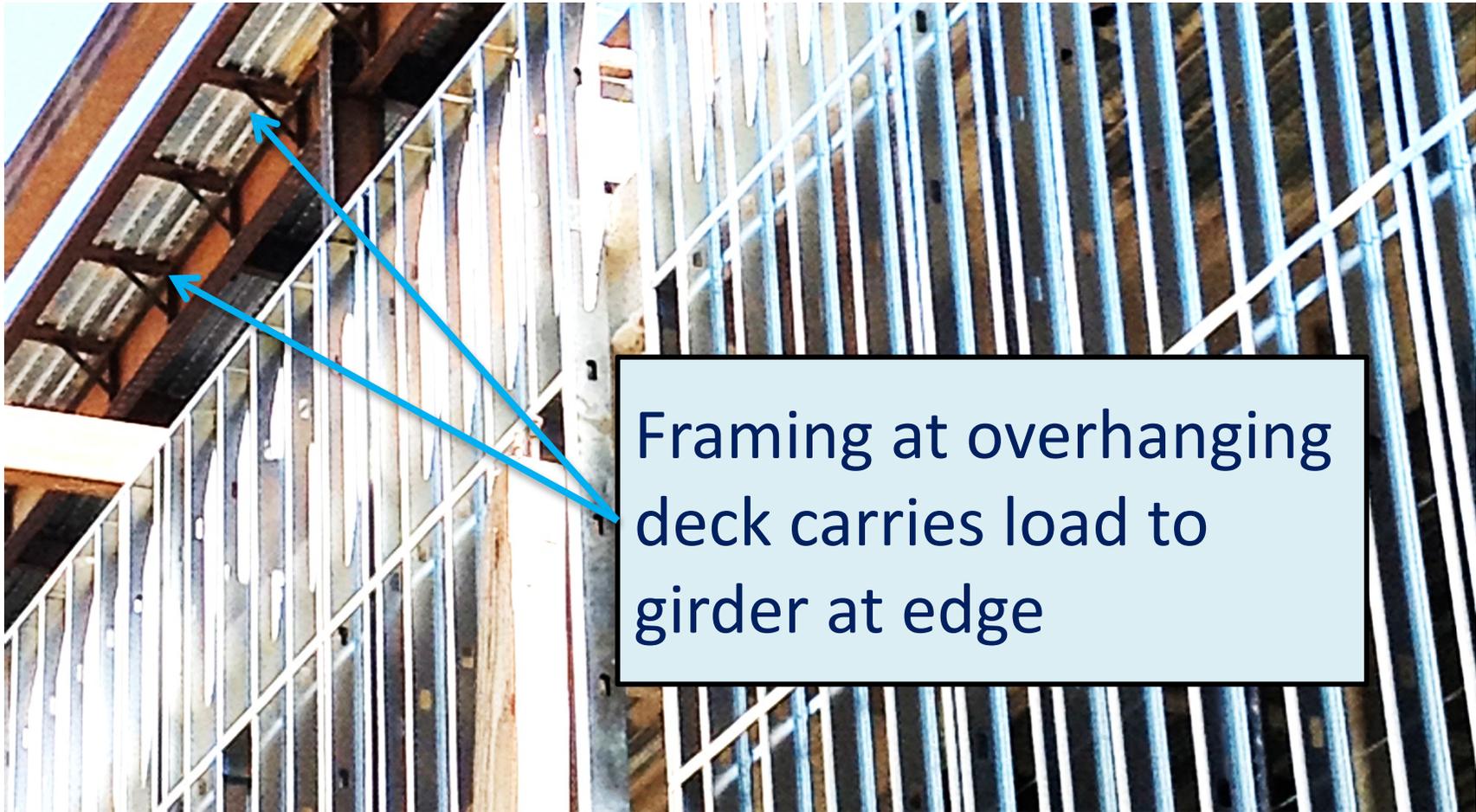


Vertical (Gravity) Load Path



Loads carried to the larger beam (girder) from the smaller beams are concentrated at the point of the connection and applied as point loads

Framing at Deck Overhang



Idealization of Structural Members

