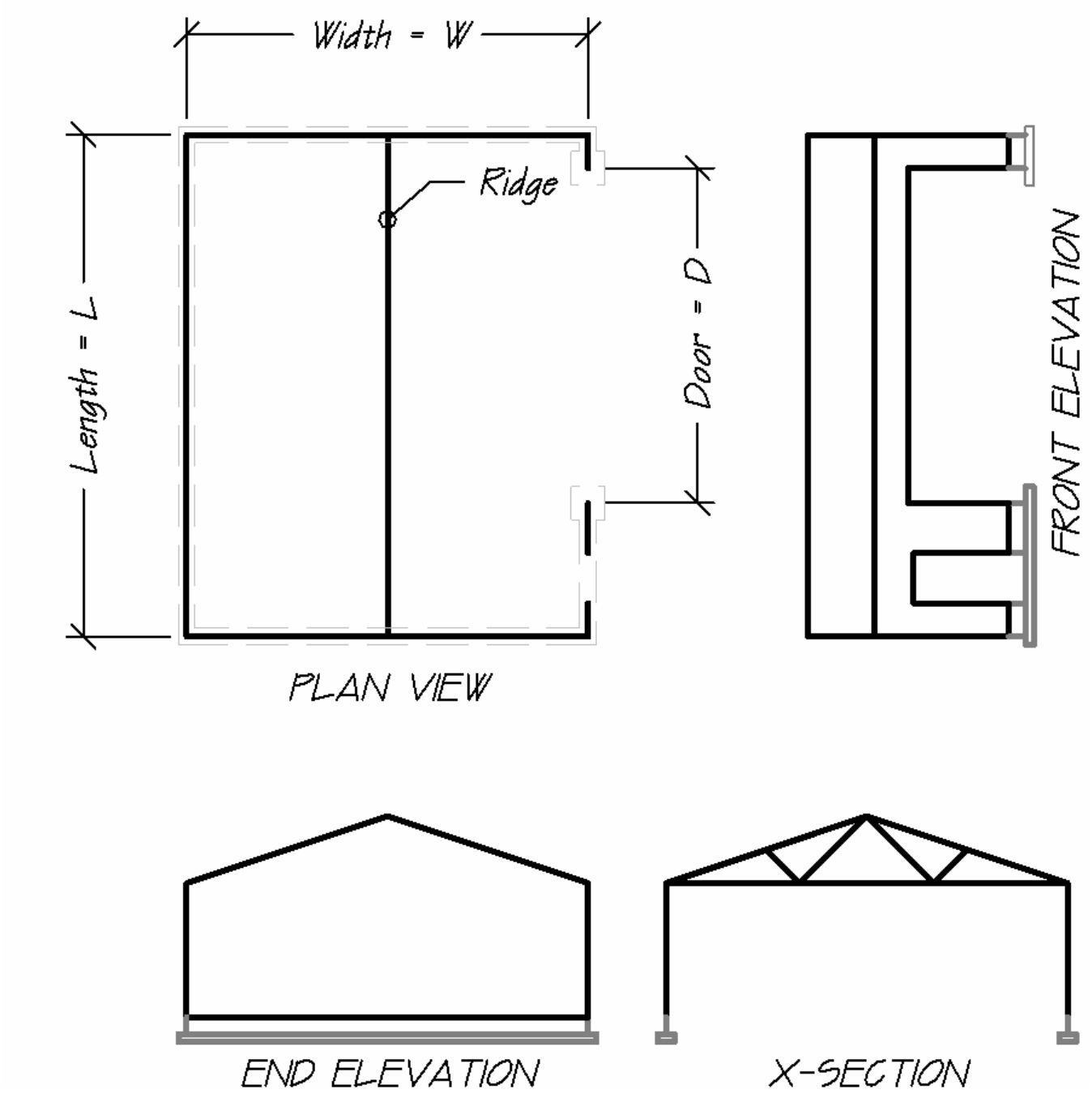
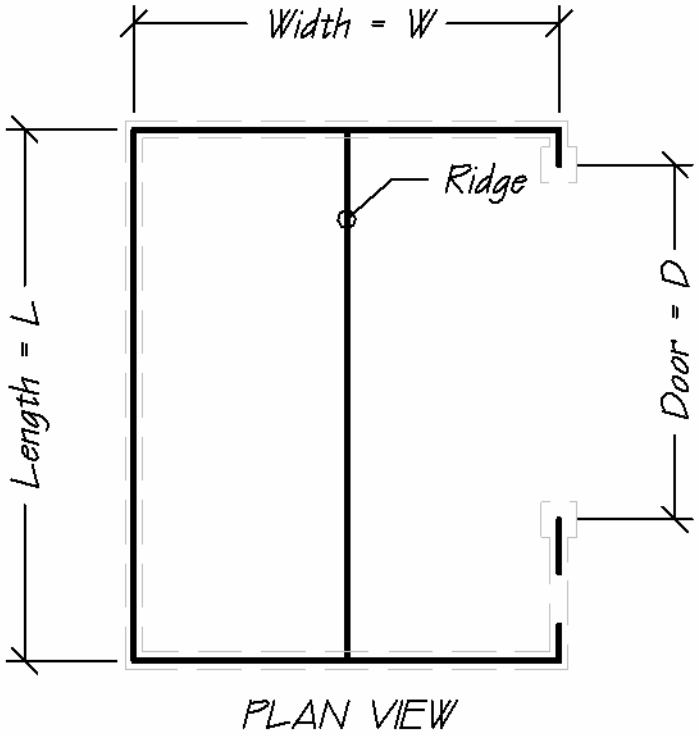
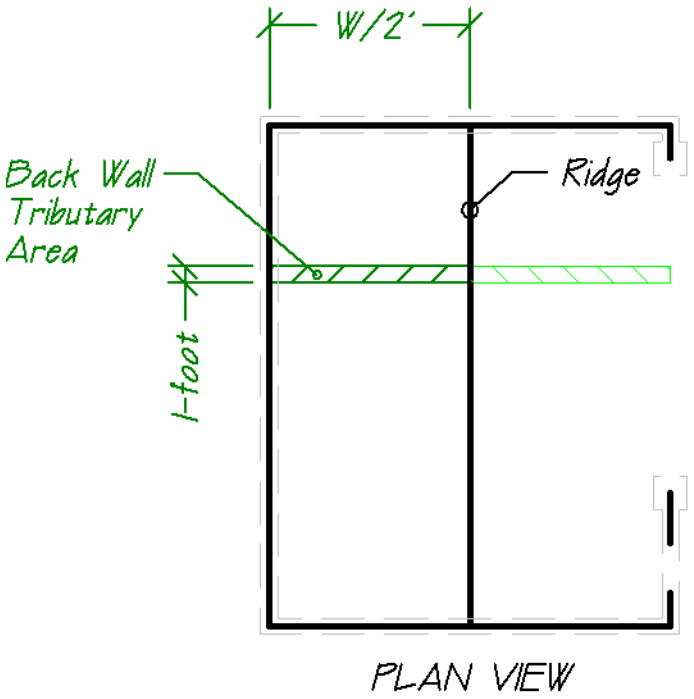
Footing Loads

Tributary Areas

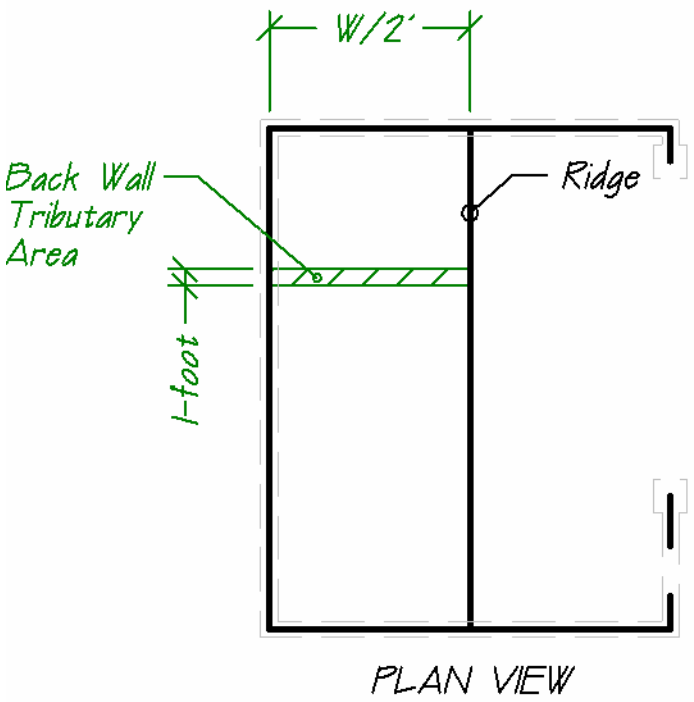

Width = W
Length = L
Ridge
Door = D
PLAN VIEW
FRONT ELEVATION
END ELEVATION
X-SECTION



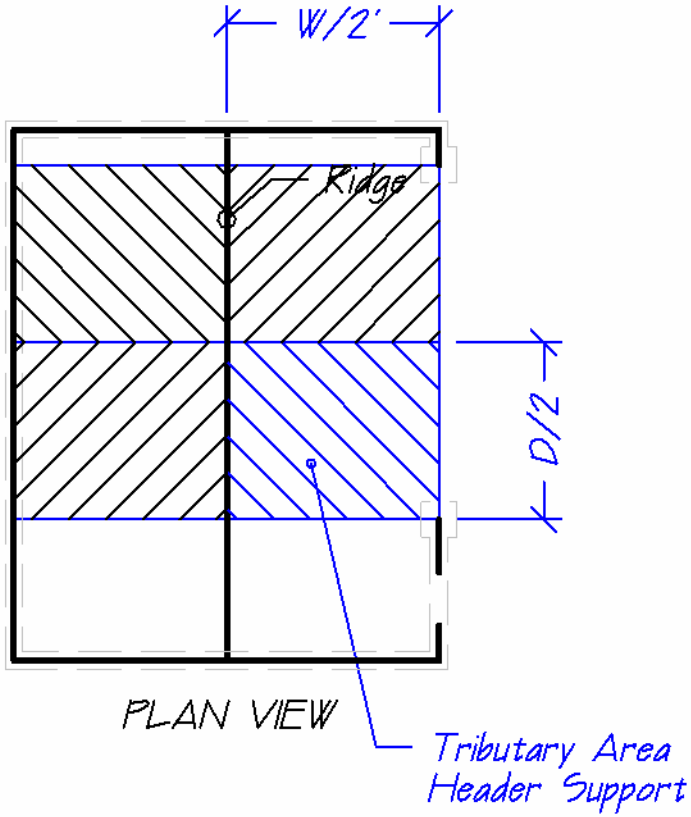
- Given:
    - Building with: Width: **W**; Length: **L**; Door: **D**
- Required:
    - Load on Rear Wall Footing
    - Load on Door Footing



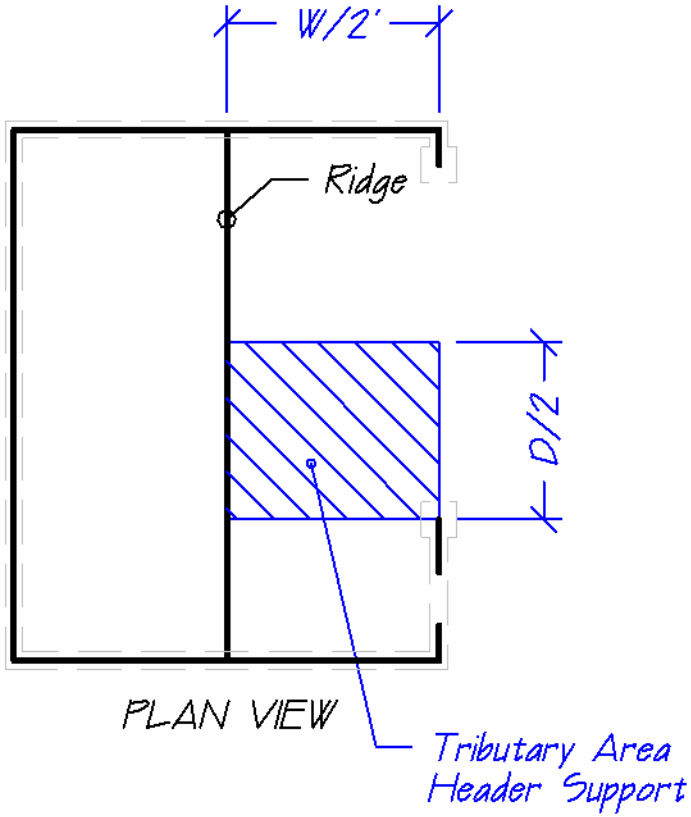
- Solution: Load on rear footing…
  - Select a section 1 foot wide
  - The truss distributes the load ½ to the front… ½ to the rear…



- The area tributary to the rear wall: (W/2)(1 foot) = W/2
  - One Half the building width is “trib” to the rear wall
  - (…the other half is trib to the front wall…)



- Given: The same building…
- Required: The “tributary” area to the large door opening footing…
- Solution:
  - The Area contributing to the footings is the
    - Building Width **W** and…
    - The Door Header **D…**

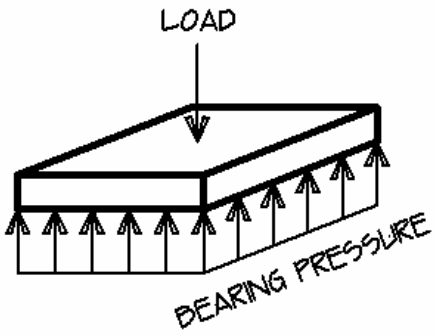


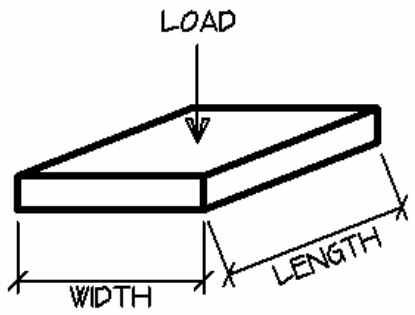
- Because the load is distributed…. uniformly…
  - ½ the building width (W/2) …
  - ½ the opening width (D/2) … goes to each footing at each side of the door.
- The “tributary” area is ½ the building width times ½ the opening width.
- (D/2)(W/2)

Load To Footing

- (Trib. Area)(DL + LL)
- Rear Footing:
  - (Trib Area)(DL + LL)
  - (W/2)(1)(DL + LL)
  - (W/2)(DL + LL)
- Door Footing:
  - (Trib Area)(DL + LL)
  - ((W/2)(D/2))(DL +LL)

$$\text{STRESS} = \frac{\text{LOAD}}{\text{AREA}}$$



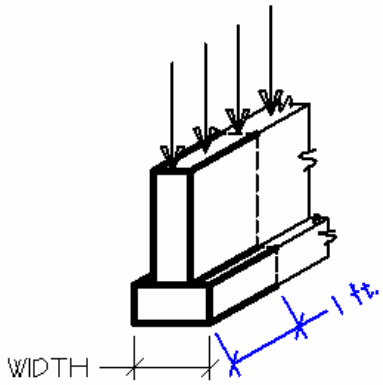


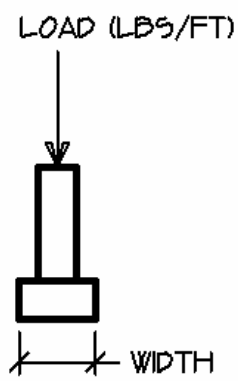
$$\text{BEARING PRESSURE} = \frac{\text{LOAD}}{\text{LENGTH} \times \text{WIDTH}}$$

OR

$$\text{LENGTH} \times \text{WIDTH} = \frac{\text{LOAD}}{\text{BEARING PRESSURE}}$$

ISOLATED FOOTING





$$\text{BEARING PRESSURE} = \frac{\text{LOAD}}{\text{LENGTH} \times \text{WIDTH}}$$

$$(1\ \text{ft.}) \times \text{WIDTH} = \frac{\text{LOAD}}{\text{BEARING PRESSURE}}$$

$$\text{WIDTH} = \frac{\text{LOAD}}{\text{BEARING PRESSURE}}$$

OR

$$\text{BEARING PRESSURE} = \frac{\text{LOAD}}{\text{WIDTH}}$$

CONTINUOUS FOOTING