Load Path
Following the Load From the Top of the Structure to the Foundation

Load Path
► Flow of Forces Through the Structure
► Visualize How a Drop of Water Would Run Down the Structure to the Foundation
► Similar to a Pipeline Distribution System (i.e., pressure and resistance)

Load Path
► This Becomes More Tricky for Lateral Loads
  ▪ Must Consider the Direction and Superimpose Vertical Loads
  ▪ Lateral Causes Compression and Tension in Same Member Depending on Direction
Load Path

- **Must Consider Physics of Structure**
  - Light-Frame Consists of Multiple Vertical Members Which the Load Can Follow Down
  - Light-Frame Horizontal Members are USUALLY Beams on Elastic Foundations in Reality

- **Must Simplify the Structure and Assume Simplified Paths In Order to Make Analysis Feasible**
Figure C12.5-14  Suggested methods for transferring roof diaphragm loads to braced wall panels

Figure C12.5-15  Alternate gable end brace

Figure C12.5-16  Wall parallel to truss bracing detail
Load Path

Figure C12.5-17  Wall parallel to truss alternate bracing detail

Load Path

Second Floor Perforated Shear Wall

P.S.W. Segment 4.0 ft

16.0 ft

12.0 ft

First Floor Perforated Shear Wall

h = 8.0 ft

P.S.W. Segment 4.0 ft

V = 2250 #

+ 350 = 2600 #

Tie Down

2813#

Tie Down

6693#

Tie Down

3880#

Tie Down for Load Path from 2nd Floor

2813#

Figure C12.4-6  Elevation for perforated shear wall Example 2

Configuration A

Configuration B

2nd Floor

Wood Structural Panel sheathing

Continuous rim joist

8d box toe-nail at 4.4" o.c.

for shear

or alternatively

Steel plate washer

1/2" Dia. anchor bolt at 33" o.c.

for shear and uplift (485 plf)

(Check axial strength and size plate washer)

2x preservatively treated sill plate

Concrete foundation

Metal plate connector

(e.g. A35 F at 42" o.c.)

Metal plate connector

(e.g. A35 F at 42" o.c.)

or metal angle

OR

2nd Floor

Wood Structural Panel sheathing

Blocking between joists

8d box toe-nail at 4.4" o.c.

for shear

or alternatively

Strap at 2'-0" o.c.

for uplift (352 plf)

Steel plate washer

1/2" Dia. anchor bolt at 33" o.c.

for shear

2x preservatively treated sill plate

Strap at 2'-0" o.c.

for uplift (837 plf)

or alternatively

Strap lapped under sill plate

Check axial strength and size plate washer (837 plf)

Figure C12.4-7  Details for perforated shear wall Example 2