

2

Sections & Details

WOOD SILL and FLOOR CONSTRUCTION

NOTES

Commonly Used Lumber

Common LENGTHS include: 8', 10', 12', 14, 16'

NOMINAL SIZES

2 x 4

2 x 6

2 x 8

2 x 10

2 x 12



ACTUAL SIZES

1 ½ x 3 ½

1 ½ x 5 ½

1 ½ x 7 ½

1 ½ x 9 ¼

1 ½ x 11 ¼

**Commonly used lumber is determined based on code and drawing specifications*

****Structurally GRADED according to KNOTS (size, tightness, placement), **WANE**, and STRAIGHTNESS.**

What does **WANE** mean?

A defect in a plank or board characterized by bark or insufficient wood at a corner or along an edge; due to the curvature of the log.



Let me tell you about the...

SILL

Prevents air infiltration
(fiberglass insulation is frequently used as a sill sealer between the sill and the foundation wall.)



Rests on top of the foundation wall.

Supports the floor joists.

Must be PRESSURE TREATED LUMBER

Used as a transition between masonry and standard lumber.

Anchor bolts embedded into masonry are commonly used to tie the sill to the foundation

Nails can be shot into concrete with a low-caliber nail gun

Let me tell you about the...

JOIST

Provides support for the floor.

May be WOOD or STEEL.



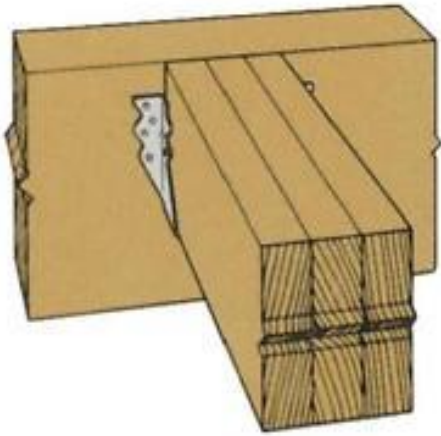
Recommended LIVE LOAD (40 psf)

*Distance between supports
(clear span)*

Size depends upon:

- *Species of lumber*
- *Wood grade*
- *Spacing*
 - 1) *12", 16", or 24" O.C. [spacing is common]*
 - 2) *works with the 48" module
common to plywood and OSB*

Refer to joist manufacturer's chart



DOUBLE JOISTS

*Must be provided under walls running PARALLEL to the joist direction.

*May be solid
or
created by joining two joists*

*May have solid blocking
between doubled joists
to allow for plumbing
that passes through the floor*

***May be solid blocking placed
PERPENDICULAR between joists.**



****May be DIAGONAL wood
members between floor joists
(metal or 1 x 3 wood cross bridging)**



Let me tell you about ...

BRIDGING

*Transfers the floor loads
to adjacent joists*

May be used between joists

Stiffens joists

Aligns joists vertically

*May be used in place of solid
lumber joists to provide
support for the floor*

Able to span **LONGER DISTANCES** than solid lumber joists

- 1) *reduce or eliminate the need for girders, piers, and columns*
- 2) *allow for designing open spaces*
- 3) *formed with top and bottom HORIZONTAL CHORDS
and DIAGONAL WEBS constructed of standard size lumber*

Let me tell you about ...

WOOD FLOOR TRUSSES

Typical placed 24" O.C.

***Sizes are determined from
Manufacturers' charts**

Open web construction

- 1) *reduces sound transmission through floors*
- 2) *aids in ease of plumbing, electrical, and
heating systems installation*



Let me tell you about ...

WOOD I-JOISTS

Similar to wood floor joists

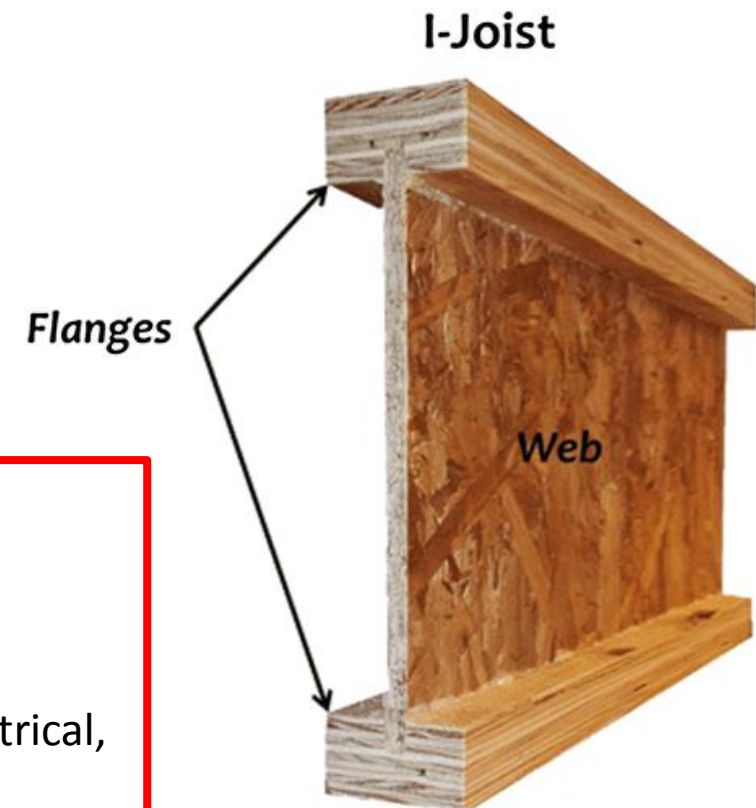
May be used in place of solid lumber Joists to provide support for the floor.

Formed with horizontal wooden (solid lumber Or micro lam) top and bottom flanges – grooved to receive a solid plywood or OSB vertical web.

I – joists are able to **SPAN LONGER DISTANCES** than solid lumber joists

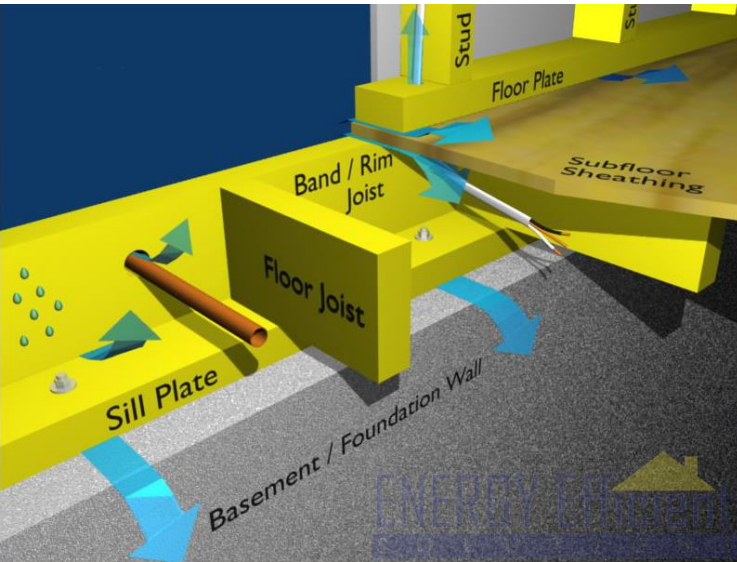
*Advantages of using I – joists:

- 1) speed construction
- 2) very straight
- 3) may come with circular knock-outs for easy placement of utilities (electrical, piping, etc.)



Used as RIM JOIST with I – joist construction.

Should be strapped to the sill in high wind area.



Let me tell you about ...

JOIST HEADER

[Rim joist or Butt joist]

Can be used with truss construction.

*Double under exterior walls
parallel to joist direction.*

Let me tell you about ...

GIRDERS

[Beams]

Built - up

PSL
(Parallel Strand Lumber)

5 TYPES OF BEAMS

Glulam
(Glue Laminated Lumber)

Steel

LVL
(Laminated Veneer Lumber)

Let me tell you about ...

BUILT – UP GIRDERS

[Built – Up beams]

Formed with **SOILID LUMBER**
nailed together

****BUILT ON JOB SITE**

Disadvantages of using GLULAM:

- 1) *Weight*
- 2) *Expense*

Solid 1 x ____ lumber
(glued together under pressure)

Able to span long distances

Let me tell you about ...

GLULAM

[Glue laminated lumber]

Graded according to appearance



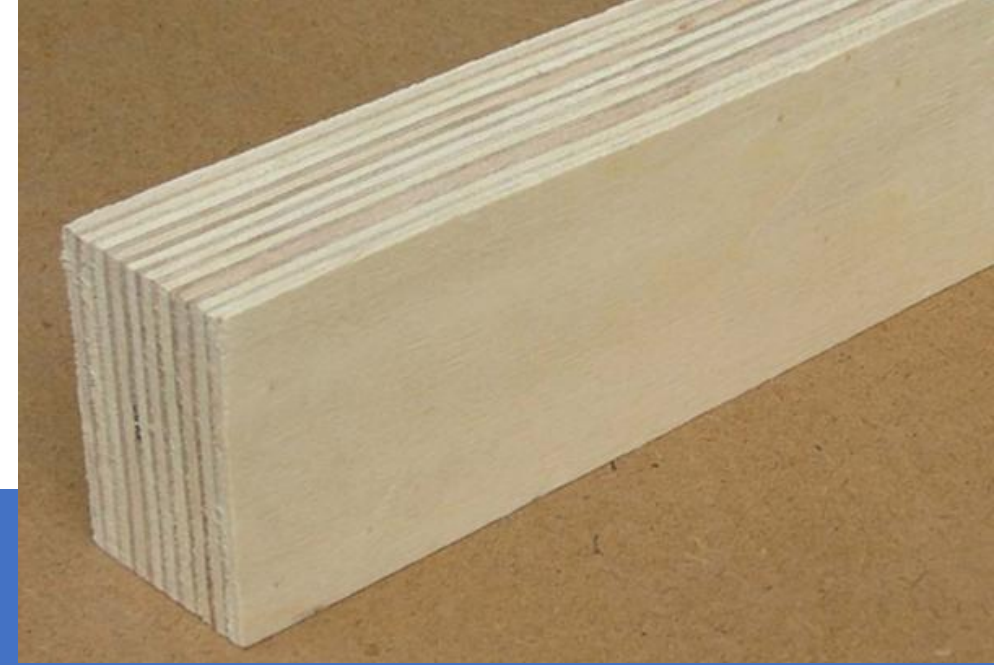
VERY STRONG

Glued veneer
(similar to plywood)

Let me tell you about ...

LVL

[Laminated veneer lumber]



Advantages of using LVL:

- 1) High strength
- 2) able to span long distances

Disadvantages of LVL:

- 1) Costly
- 2) Low moisture resistance causes delamination in high humidity

Composed of veneers cut into strands

Let me tell you about ...

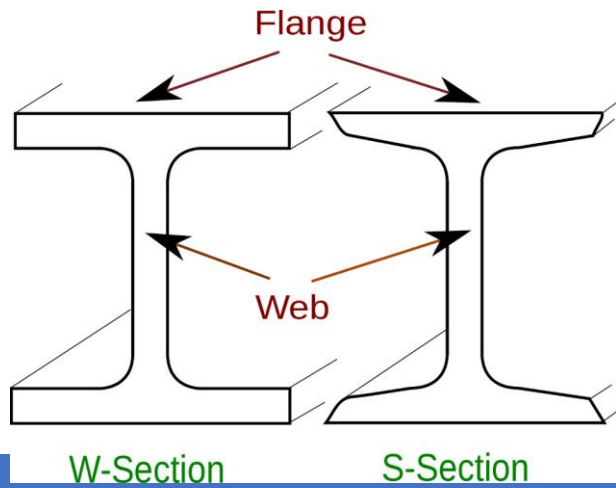
PSL

[Parallel strand lumber]

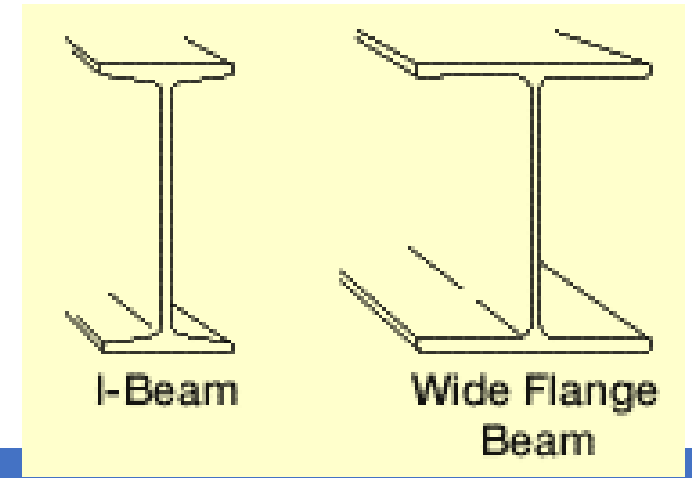
Allows long spans

***VERY STRONG**





I – beams come in two standards:
a) Wide flange
b) standard wide flange



Let me tell you about ...

STEEL BEAMS

ADVANTAGES:

- 1) very strong*
- 2) has the ability to span long distances*

DISADVANTAGES:

- 1) weight*
- 2) difficult to cut on job site*

How BEAMS are NOTED:

W 18 X 62"

(means "Wide flange beam, 18" tall and weighing 62 lbs/ft")

How GIRDERS are SIZED?

*where loads exceed material limits, the girder span must be reduced by using piers, piles, columns, or posts.

Determined by:

- 1) type of material used*
- 2) Loads imposed*
- 3) Clear span of the girder*

Types of GIRDERS

Flush girder

Drop girder

A ledger strip attached to the girder may support joists.

Metal connectors may support joists or hangers attached to the girder.

Where joists must tie to a steel girder, a wooden plate must be bolted to the steel.

Subfloor can be made of the following:

1 x _____ board lumber
(applied diagonally)

Plywood or OSB in 4' x 8' sheets
(reduces installation time)

Structural particle board
and composite board

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SUBFLOORING

Provides a base for the underlayment and/or finish flooring material

*single thickness underlayment/subfloor is generally constructed of $\frac{3}{4}$ " tongue and groove plywood

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CRAWL SPACE CONSIDERATIONS

**** ACCESS DOOR IS REQUIRED**



***Recommended SIZE
24" wide x 18" high**

**Door should be large enough
to allow for repair and/or replacement
of under-house mechanical systems.**

***Purpose of proper ventilation is to remove moisture from crawl space.**

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VENTILATION



VENTS
should be a minimum of 8" x 16"