SUN ROOMS AND SCREENED ENCLOSURES

BUILDING DEPARTMENT
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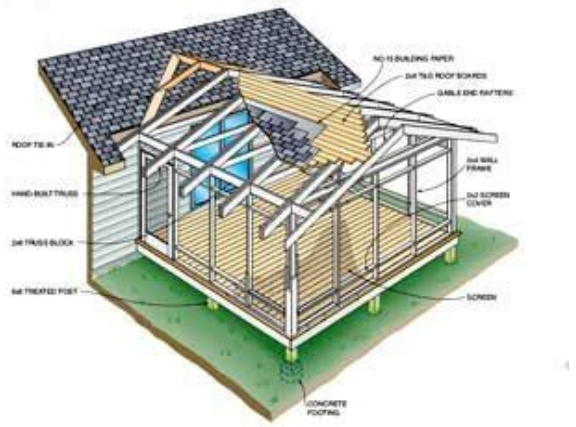


This handout is intended only as a guide and is based in part on the 2015 Minnesota State Building Code, Minnetrista City ordinances, and good building practice. While every attempt has been made to insure the correctness of this handout, no guarantees are made to its accuracy or completeness. Responsibility for compliance with applicable codes and ordinances falls on the owner or contractor. For specific questions regarding code requirements, refer to the applicable codes or contact your local Building Department.

GENERAL CAUTIONS

If you are considering constructing a sunroom or screened enclosure ***on your existing deck***, please be aware that you will likely need to make significant alterations to the framing and supports of your deck in order to support the additional weight of a porch unless your deck was originally designed for that purpose. If you are constructing your sunroom or screened enclosure from scratch, you can design it without those concerns.

It is common practice to use "concrete piers" or "post footings" to support these additions. Be aware that these types of foundations are a ***significant compromise*** compared to continuous perimeter foundations used for the rest of the dwelling. Pier foundations are more susceptible to independent movement that can result in shifting of the structure resulting in cracked or jammed windows and doors and cracked wall finishes. Also, piers are usually sized just large enough to support anticipated loads based on average soil conditions leaving little safety factor. If your home is located in an area with clay or unpredictable soils, you may wish to consult with a soils engineer or structural engineer to aid in designing your foundation. There are no guaranteed methods to prevent piers from heaving. Problems can show up 5, 10, or even 20 years after the structure was built. But you can take steps to minimize the potential for problems by taking certain precautions. And remember, the Minnesota State Building Code is only a ***minimum*** code.

When sunrooms or screened enclosures are constructed seven feet or more above grade, homeowners sometimes wish to enclose the underside with screening or a combination of walls and screening. Two problems can arise. First, if walls are securely placed under the perimeter of the porch and on top of a patio slab below, there is a risk frost will move the slab enough to place pressure on the structure above potentially causing damage. Second, if the construction is supported from the structure above, additional and unanticipated weight placed on the foundation may cause settlement. Again, if you anticipate these types of alterations in the future, plan your project accordingly.

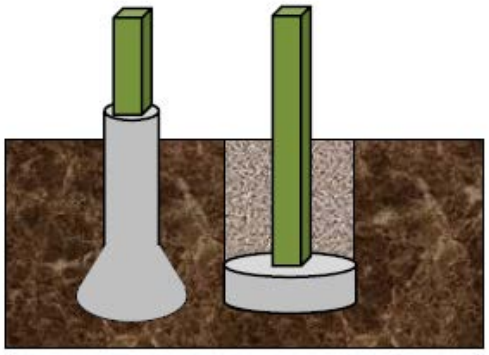
PERMITS AND PLANS

A building permit is required to construct a sunroom or screened enclosure. Two sets of plans must be included with permit applications. Plans must include a site plan, cross sections, floor plans, and elevations. For more information on plans, see the handout on "Building Plans".

THE ENERGY CODE

Screened enclosures need not meet Energy Code requirements. Additions constructed for year round use may need to meet all or a portion of the Energy Code depending on how the addition is designed and built. Because of the number of variables presented by varying designs and the Energy Code, it is recommended that discuss your plans for enclosed structures with a Building Department Staff member early in the design stage to avoid any surprises.

FOUNDATIONS



Designs must result in a framing system to transfer all loads to the ground. This includes roof dead loads, snow loads, wall loads, floor dead loads, and floor live loads. Your plans should include detailed information on the sizing of all framing members. If you need assistance determining the size of beams, columns, and footings, you may wish to consult with a structural engineer.

FRAMING

Because the weight of a roofed addition is significantly greater than a deck, all framing members and connections will need to be larger and stronger. Columns and beams need to support roof as well as floor loads. Ledgers are not permitted to support beams and girders. They can only support joists. This means that the exterior wall of the home will need to be opened to allow beams to extend into the wall for support. Roof framing cannot be attached to fascia boards but must extend onto the top plate of the exterior wall. Because vaulted or cathedral ceilings are often desired, roof framing systems must be designed with a beam at the ridge since no wall ties or ceiling joists will be available to prevent walls from bowing. See the handout on Basic Wood Framing for additional information. **All floors must be protected on the underside with a minimum 5/8" wood structural panel unless joists are 2X10 or 2X12 dimension lumber.**

SAFETY GLAZING

Large windows are often popular. Windows adjacent doors, including patio doors, and windows exceeding certain size limitations must have tempered or laminated glass. The Building Department has a handout on safety glazing to help identify locations where protection is required. If you have any questions regarding safety glazing, contact the Building Department.

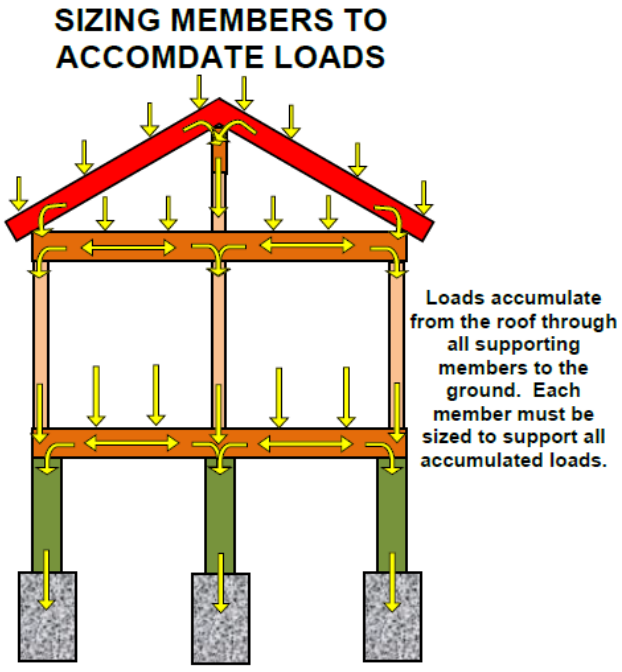
GUARDS/GUARDRAILS

Floors enclosed with screening that are more than 30 inches above grade must have guard rails not less than 36 inches in height meeting guard requirements. Insect screening **is not** an acceptable substitute. The Building Department has a handout on Guards. To avoid installation of a guard, you may wish to start the screening 36 inches off the floor and have a solid wall below the screening. Or, you may construct the wall with balusters as a guard in accordance with the building code.

SIZING PIER FOOTINGS

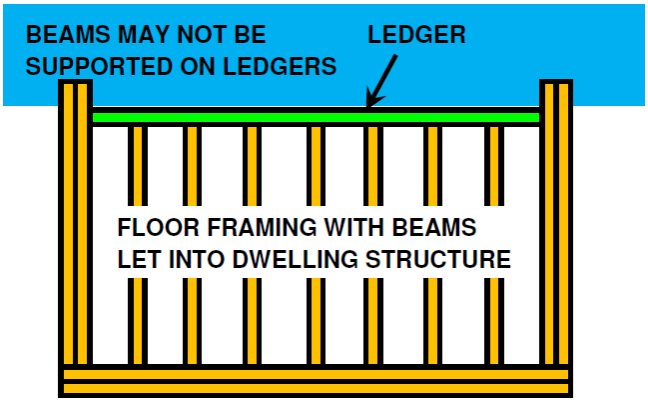
Because there are so many variable in how these structures can be framed, there is no simple illustration that can be provided to simplify sizing of footings. Following is one example of how loads transfer to the footing. The total area of the roof (including overhangs) and floor supported by a member must be used in sizing that footing. Footing sizes are based on all accumulated loads. The following design loads are used:

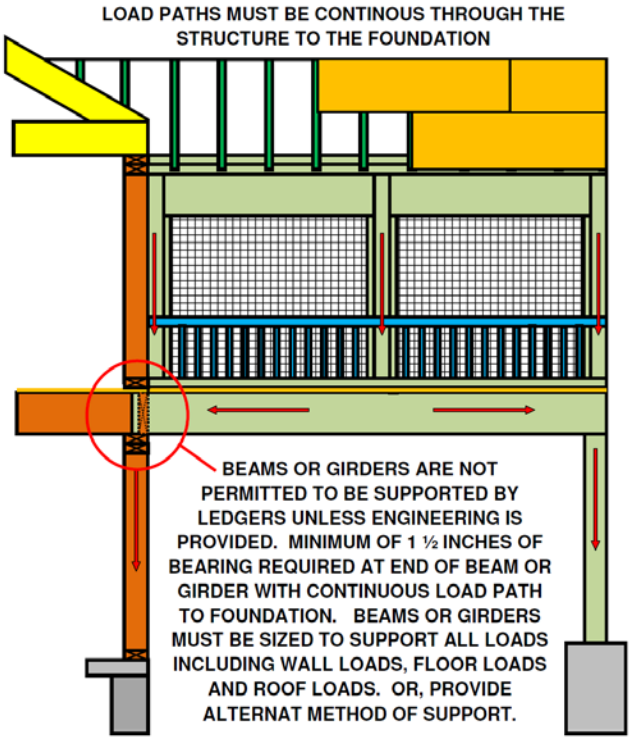
- Roof loads – 60 psf
- Floor loads – 50 psf
- Wall loads – 80-120 plf (wall loads can vary depending on construction of the wall)
- Soil bearing – 1500 psf



OTHER HANDOUTS

The Building Department has a number of other handouts on fasteners, wood framing, stairs, and a host of other topics not covered in this handout.





RIDGE BEAM SPANS
GROUND SNOW LOAD – 50 PSF ROOF DEAD LOAD – 10 PSF

SIZE	BUILDING WIDTH		
	12	24	36
	MAXIMUM RIDGE BEAM SPANS (ft.-in.) FOR COMMON LUMBER SPECIES		
1 – 2X6	4-8	3-4	2-9
1 – 2X8	5-11	4-2	3-5
1 – 2X10	7-3	5-2	4-2
1 – 2X12	8-5	6-0	4-10
2 – 2X6	7-0	4-11	4-0
2 – 2X8	8-10	6-3	5-1
2 – 2X10	10-9	7-7	6-3
2 – 2X12	12-6	8-10	7-3
3 – 2X8	11-0	7-10	6-4
3 – 2X10	13-6	9-6	7-9
3 – 2X12	15-8	11-1	9-0
4 – 2X8	12-9	9-0	7-4
4 – 2X10	15-7	11-0	9-0
4 – 2X12	18-1	12-9	10-5

AF&PA WOOD FRAME CONSTRUCTION MANUAL - 2001

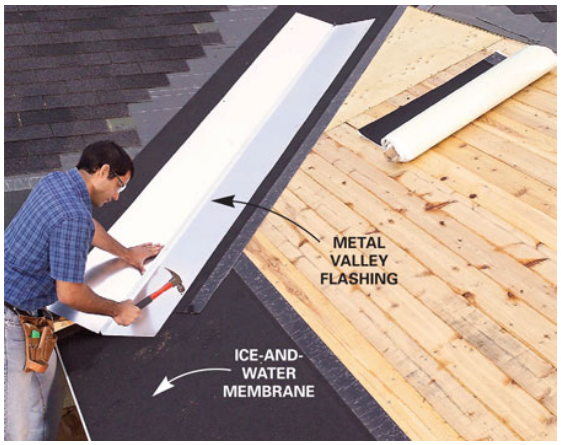
TYING YOUR NEW ROOF INTO AN EXISTING ROOF

One of the more complicated facets of constructing a dwelling addition is framing the new roof into the old roof in such a way that you maintain the structural integrity of the existing dwelling and do not compromise the roofing in a way that will cause leaks.

If you frame your addition with a ridge beam, the loads placed on the beam must be transferred to the foundation at each end of the beam. At the house end of the beam, it is best to allow the beam to bear on a column that is supported by the exterior wall of the dwelling. Extending the load of the beam onto the existing roof system significantly complicates the transfer. If you provide a column to support the beam above the exterior wall of the dwelling, you must open the roof to allow the column to bear on the wall plate below the roof sheathing. As is usually the case, you will have an opening in the wall below for a patio door. The size of the header above this door must be checked to determine if it can support the additional load imposed by the beam above. If it is undersized, you will either need to replace the header, reduce the size of the opening, or transfer the load from the beam to the founation via a different route. If you choose to extend the load on the beam to the existing roof system, you will need to consult with a structural engineer and have them prepare a design.

Once your roof framing is complete you will need to ty the new roofing into the existing roofing. This almost always means portions of the existing roofing will need to be removed. The valley must either be provided with flashing or the roofing may be a closed valley. In either case, follow the roofing manufacturer's installation instructions. The use of caulking or roofing cement to seal the joint between the new and the old roof is not acceptable.

The new roof extends onto an existing roof using a ridge board. No loads from the new roof are transferred to the existing dwelling. The existing roofing has not yet been trimmed.



The installation of flashing in the new valley is shown. Note that existing shingles have been removed and ice and water barrier has been applied.

There are a number of things going on in this photo. It shows the ridge beam continuing on to the existing roof. But, there is also a "notch" in the existing roof where a column would go that will later support the end of the beam at the addition so that none of the roof load from the addition will be supported on the existing roof. Also shown are two plumbing vents that need to be extended through the roof. Having a plumbing vent in the middle of a valley is an invitation for a roof leak. These are far enough away. The last arrow shows the existing roofing cut out along the new valley in preparation for tying in the new roof.