



Building Storage Sheds and Detached Garages



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NOTE

Detached accessory buildings, such as garages and storage sheds, vary in size and area. It is beyond the scope of this booklet to deal with every possible situation. The requirements and construction guidelines that follow are provided to assist you in designing and constructing a detached garage or storage shed which will comply with the regulations. If the nature of your project is different than that contained in this booklet and you are not familiar with the regulations which may be applicable, it is recommended that you contact someone who is knowledgeable in this area.

The Middlesex Centre Building By-law is primarily an administrative document that adopts the Ontario Building Code and related standards to provide construction requirements. Throughout this booklet the information provided is based on the minimum standards set out in the Ontario Building Code and Municipal Zoning By-law. Every effort has been made to ensure the accuracy of information contained in this booklet. In the event of a discrepancy between this booklet and the governing Act, regulation or by-law, the Act, regulation, or by-law will take precedence.

We encourage applicants to discuss their specific projects with Middlesex Centre Building Services staff prior to submitting an application.

Municipality of Middlesex Centre

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Accessibility: If you require this document in a different format, or require assistance with any of the images, please contact Middlesex Centre Building Services staff at the address above.

Acknowledgement: This guide is based on the “Detached Residential Accessory Buildings” booklet by the City of Sarnia. Some images taken from “A Guide to Detached Residential Garages and Residential Workshops” by the Regional District of Okanagan-Similkameen.

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BUILDING PERMITS

Building requirements may vary depending on property lot sizes. We encourage applicants to discuss their specific project with the Building Department prior to submitting an application.

Is a building permit required to build a detached garage, storage shed or carport?

Any accessory building over 15m² in size will require a building permit.

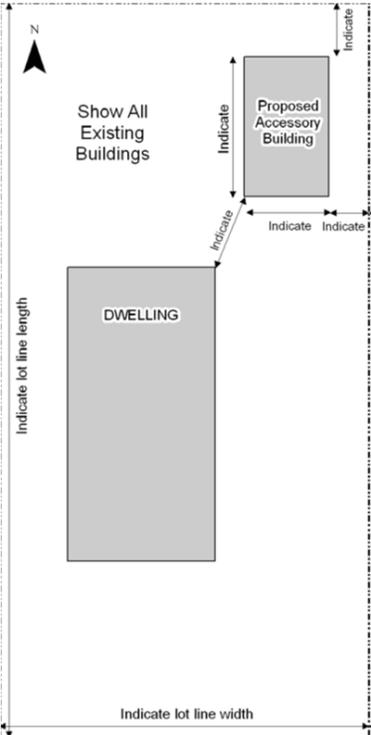
What information do I need to obtain a building permit?

You need to submit an Application, Site Plan, Construction Plan and a Schedule One document.

Application – You are to complete a building permit application in full. This will be completed online by following a link to Cloudpermit from the Building Services webpage at middlesexcentre.ca/building

Site Plan – You will need to attach a site plan indicating approximate property dimensions, dwelling, septic system, and measurements. Indicate front, side, and rear setbacks from the lot lines. Location and size of the proposed garage or shed must also be included. See example below.

Figure 1: Example of a Typical Site Plan

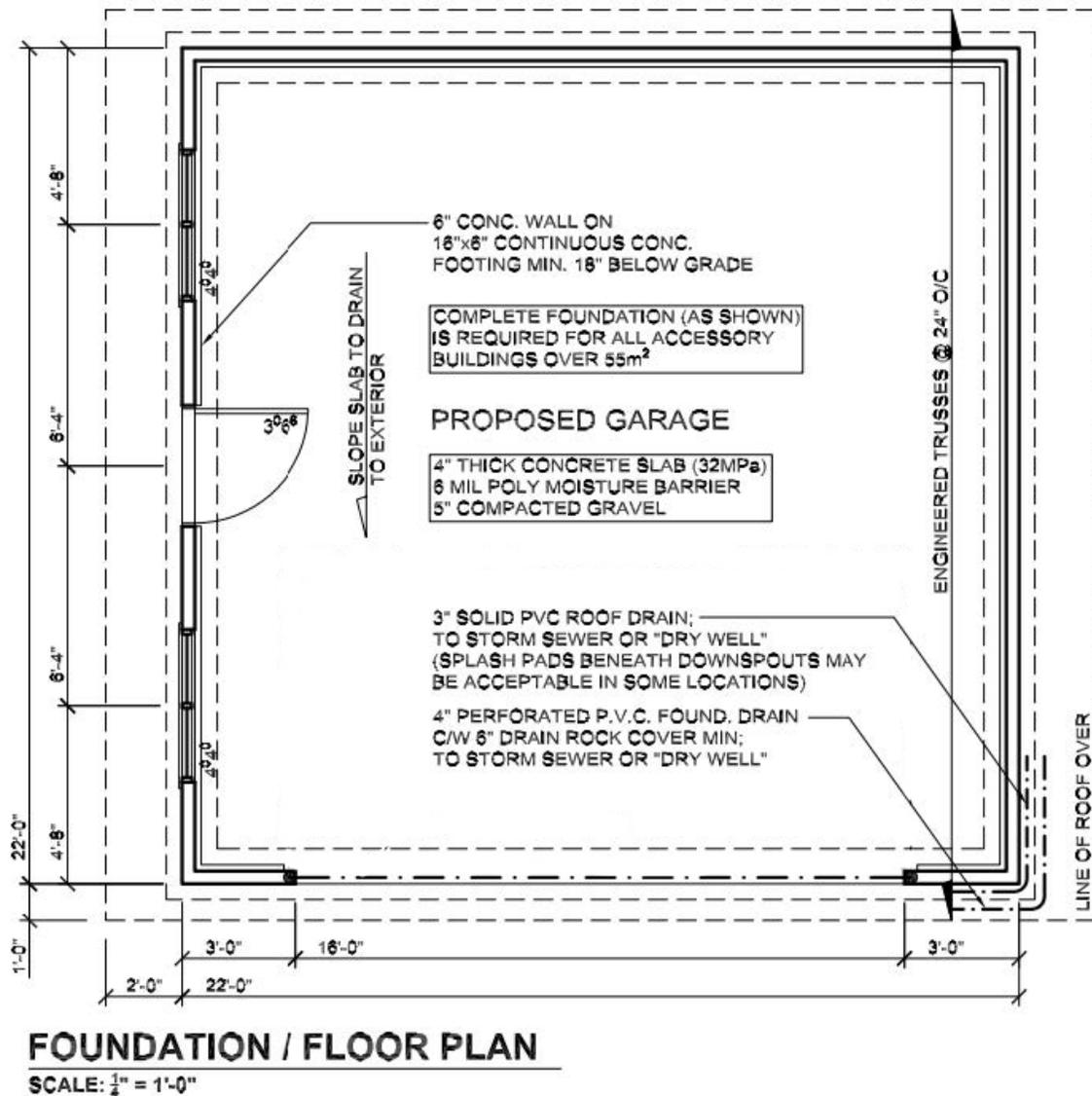


Construction Plans – These typically include submission of a floor plan, section and elevations. There must also be sufficient detail to allow building staff to determine compliance to the Ontario Building Code.

What is required to be shown on the floor plan?

- Size of garage/shed with dimensions
- Location and sizes of windows, doors, etc.
- Size of beams/lintels in wall openings, if required
- Direction of roof trusses/rafters

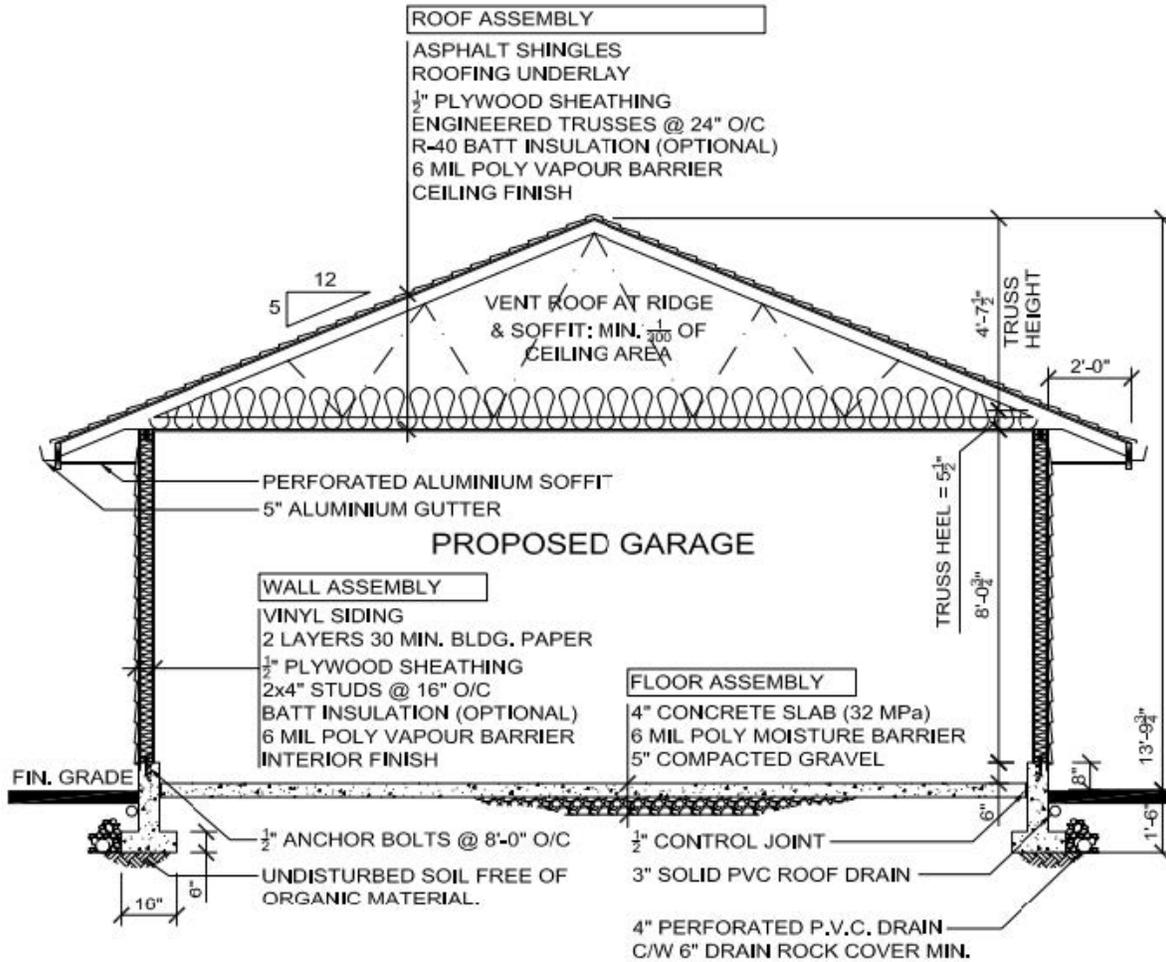
Figure 2: Example of a Typical Floor Plan



What details are required on the section drawing?

- Type and thickness of materials in the roof, walls, and floor construction assembly
- Dimension of height of wall, pitch of roof and size of overhang

Figure 3: Example of a Typical Section Drawing



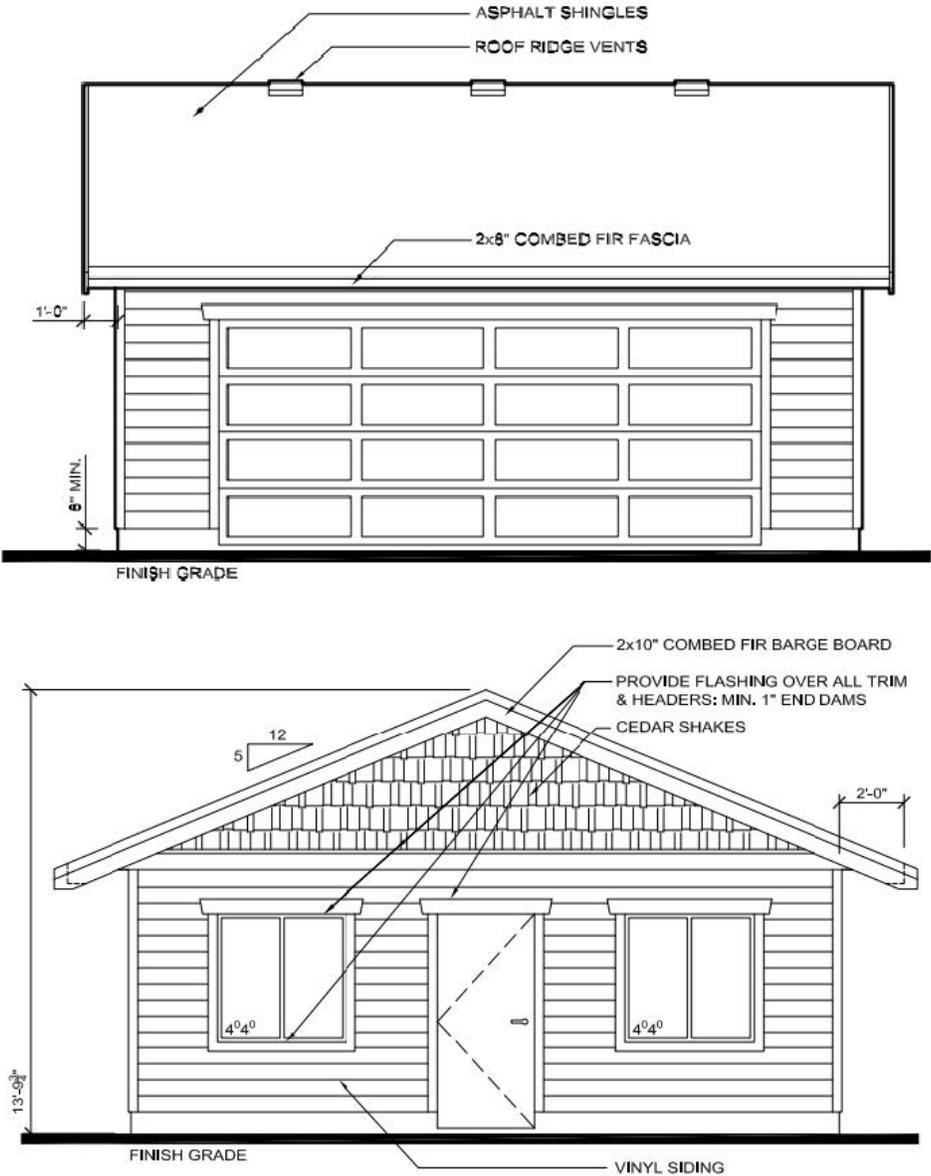
CROSS SECTION

SCALE: 1/4" = 1'-0"

What information should be indicated on the elevation drawing?

- Type of finish siding material
- Window and door location
- Indicate roof slope and overhang
- Total building height
- Foundation line
- Grade line

Figure 4: Example of a Typical Elevation Drawing (Front and Side)



ZONING

Can I assume that the sidewalk, edge of pavement, or neighbor's fence is the property line?

No. To accurately determine the location of your property line, please speak to a Land Surveyor.

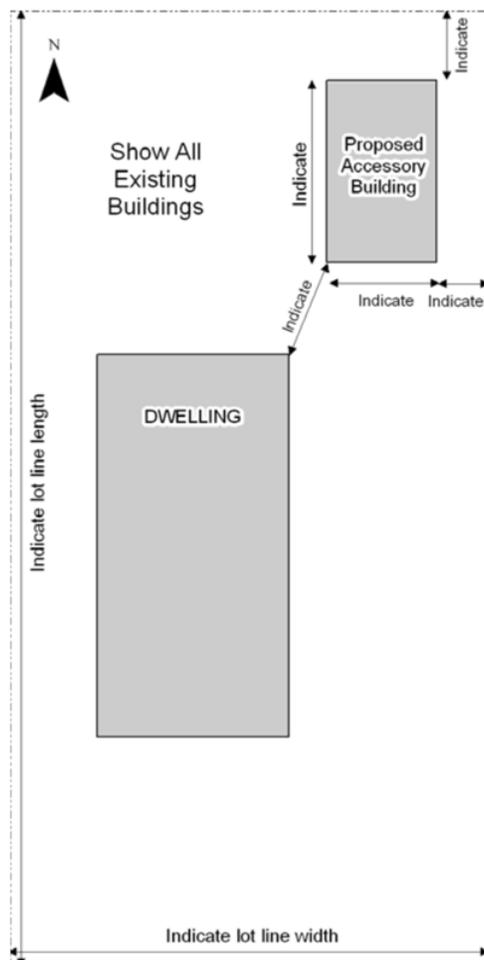
How far away from the property line should my building be?

NOTE: The following setbacks are only generalized guidelines. Speak with the Planning Department to confirm setback requirements for your specific property.

Any accessory building needs a minimum clearance of 1.2m from a dwelling located on the same lot.

In most cases, to build in a rear yard, a detached accessory building needs to have a minimum building setback of 1.5m from the rear and side property lines (Figure 5).

Figure 5: Minimum Setbacks from Rear and Side Property Lines



The setbacks for detached accessory buildings on corner lots vary—depending on the location of the corner lot where they are built, and the configuration of the abutting lots.

For corner lots, it is recommended that you contact the Building Department to discuss your building proposal.

Do these setbacks include the overhang?

The setback does not include an eave projection which is permitted to encroach 0.6m closer to a property line.

What is the maximum height allowable?

The maximum height for an accessory building is outlined in the municipality’s zoning by-law and will vary depending on the property zoning and lot size. A summary of height restrictions can be found in section 4.2 of the Middlesex Centre Zoning By-law.

How large of a garage can I build?

The maximum size for an accessory building is also outlined in the municipality’s zoning by-law and will vary depending on the property zoning and lot size. A summary of height restrictions can be found in section 4.1 of the Middlesex Centre Zoning By-law.

Table 1: Yard Regulations for Garages and Carports

Location	Minimum Distance from Main Building	Minimum Distance from Interior Side Lot Line	Minimum Distance from Exterior Lot Line	Minimum Distance from Rear Lot Line	Maximum Height (Urban Residential or Community Residential Zone)	Maximum Height (Hamlet Residential Zone)	Maximum Height (Agricultural, Restricted Agricultural or Surplus Residence Zone)
Joined to Main Building	Not Applicable	Same as for main building	Same as for main building	Same as for main building	Same as for main building	Same as for main building	Same as for main building
In Side Yard	1.2 m (4 ft)	1.5 m (4.9 ft)	Accessory structures shall not be erected within a required exterior side yard	1.5 m (4.9 ft)	5.5 (18 ft)	6.0 m (19.6 ft)	6.5 m (21.3 ft)
In Rear Yard	1.2 m (4 ft)	1.5 m (4.9 ft)	1.5 m (4.9 ft)	1.5 m (4.9 ft)	5.5 (18 ft)	6.0 m (19.6 ft)	6.5 m (21.3 ft)

FOUNDATIONS

What type of foundation is required for a one-story wood frame detached garage?

For a detached garage having a building area of less than 55m², the Ontario Building Code allows a concrete slab with a thickness of not less than 100mm be used as shown in Figure 6a. A slab is not permitted to support two-story buildings or those with a brick or masonry veneer.

Figure 6a: Foundation Diagram

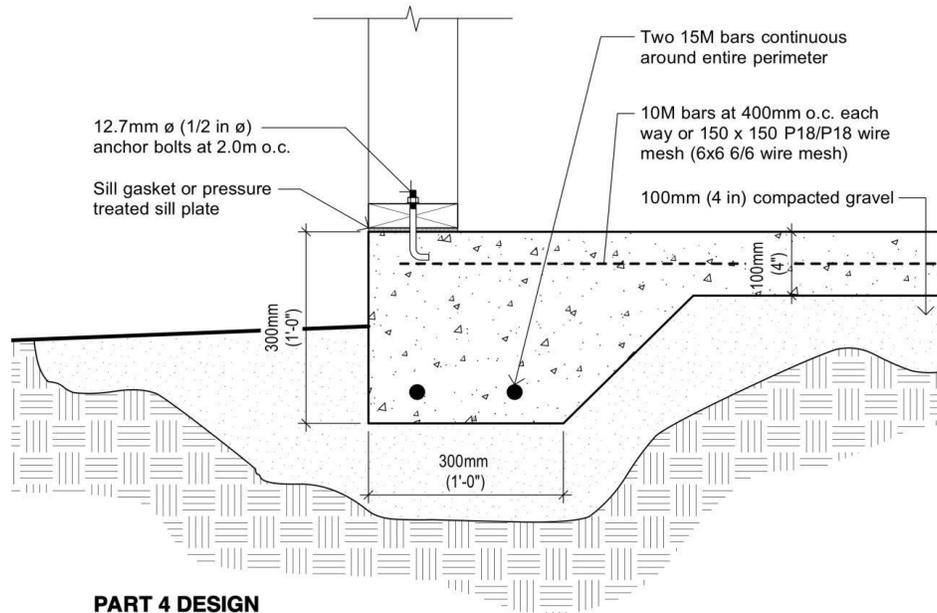
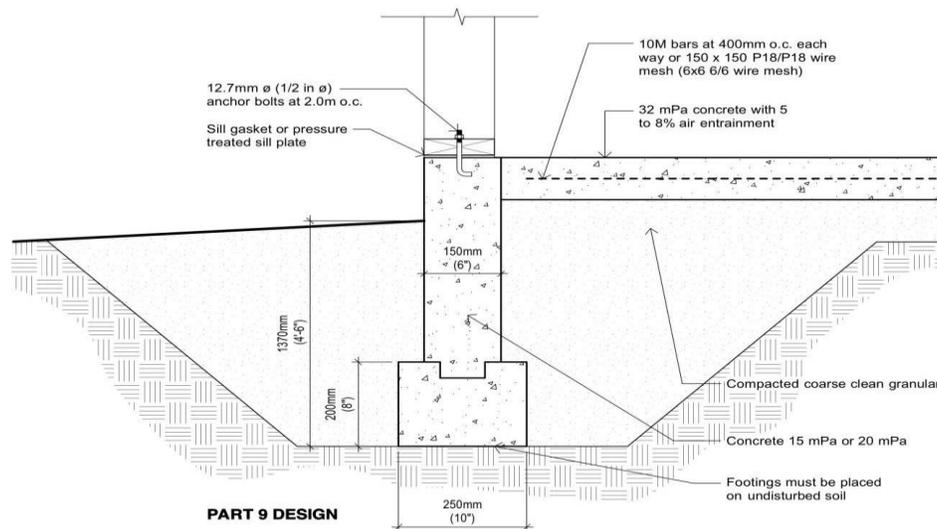


Figure 6b: Footing Foundation



What if I add on to my existing garage?

For a garage, shed or carport addition to an existing structure, the entire foundation, both the existing and the addition, must be the same foundations type as the existing to comply with the foundation requirements above or alternatively the foundation must be designed by a professional engineer.

Can I vary from the foundation slab details shown in this guide?

The details and standards in this guide are considered non-engineered details and are based on past “good construction practice.” Variations from these design standards are permitted where they can be shown to comply with the Ontario Building Code. Alternately, where the design is by a professional engineer.

Some variations that will require an engineer are:

- Wood mudsill foundation and anchorage details to prevent uplift due to wind.
- Foundation slab that includes a curb of more than 150mm or retaining wall to hold back the earth where the lot is not level.
- Foundation slab that is greater than 55m²
- Foundation slab that supports brick or masonry construction.

What type of concrete do I require for my foundation slab?

Concrete used for all detached garage or shed foundation slabs must have a minimum compressive strength of 32 MPa after 28 days and must have air entrainment of 5 to 8 per cent.

FRAMING

What types of framing methods are acceptable?

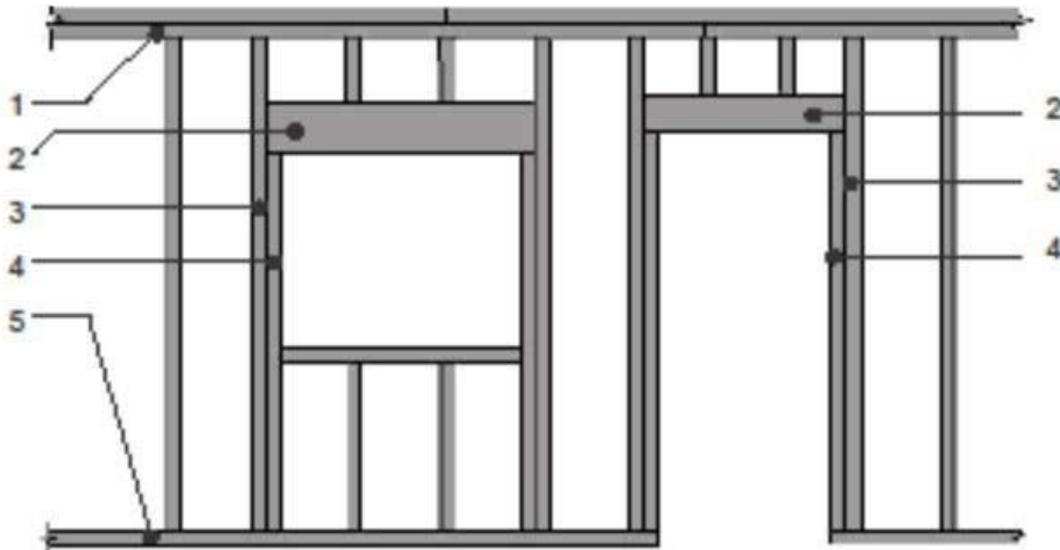
The framing details described in this pamphlet are based on a one-story wood framed structure that do not include any additional superimposed loads. Further design consideration may be required to address additional superimposed loads.

Framing methods must be in accordance with good engineering practice. A detailed discussion of this aspect of construction is beyond the scope of this publication. However, some common framing details are indicated on the following pages.

For more detailed information refer to the book *Canadian Wood Frame House Construction* from the Canada Mortgage and Housing Corporation (CMHC). This publication is an excellent guide to good framing methods and construction techniques. It also includes information for wall and roof coverings, etc. You can find this book in the “library” of the CMHC website (cmhc-schl.gc.ca). Be sure to review the most recent version of this document.

Where the structure will not be a standard wood frame structure, such as post and beam, concrete block, brick (including brick veneer) or metal framing or where the framing members exceed that prescribed in this pamphlet, the design must be by a professional engineer and drawings must be submitted under the seal and signature of a professional engineer.

Figure 7: Wall Framing and Lintel Detail



Notes to Figure 7

1. DOUBLE TOP PLATE: Joints must be staggered at least one stud spacing. Joints are to be lapped or suitably tied at corners or intersecting walls.

2. LINTEL: Refer to Table 1 to determine the size of lintel required for the opening width you select.
3. KING STUD: Refer to Table 2 to determine the maximum spacing and maximum unsupported height of studs.
4. JACK STUD: The Building Code requires these studs to be a single full-length piece of lumber extending from the underside of the lintel to the bottom plate. Two studs are required on both sides of opening when opening is greater than 3m.
5. SINGLE BOTTOM PLATE: To prevent uplift, this bottom plate should be firmly anchored down at each side of door openings, at each end of each wall, and at intervals not exceeding 2.4m. Bottom plate is to be pressure treated and/or separated from concrete by poly-membrane to resist decay.

Table 2: Size and Spacing of Studs

Supported Loads (including dead loads)	Minimum Stud Size, mm (in)	Maximum Stud Spacing, mm (in)	Maximum Unsupported Height, m (ft in)
Roof with or without attic storage	38x64 (2x3)	400 (16)	2.4 (7' 10")
	38x89 (2x4)	600 (24)	3.0 (9' 10")
Roof with or without attic storage plus one floor	38x89 (2x4)	400 (16)	3.0 (9' 10")
	38x140 (2x6)	600 (24)	3.0 (9' 10")

Notes to Table 2

1. This table is for use with all Spruce, Pine, Fir Lumber Grade 1 and 2 and minimum grades of standard, stud and No. 2. Solid Bridging to be provided at 1200mm O.C. between studs.

Table 3: Wood Lintel Spans for Windows and Man Doors

Size of Lintels	Maximum Allowable Spans
2 — 38 x 89 mm (2—2 x 4)	1.01 m (3 ft 3 ¾ in)
2—38 x 140 mm (2— 2 x 6)	1.48 m (4 ft 10 ¼ in)
2—38 x 184 mm (2— 2 x 8)	1.80 m (5 ft 10 7/8 in)

Notes to Table 3

1. This table is for use with Spruce-Pine-Fir lumber grades 1 & 2.
2. Built-up lintels must be constructed of full-length members. No splicing of members is permitted between supports.

Figure 8: Exterior Corner

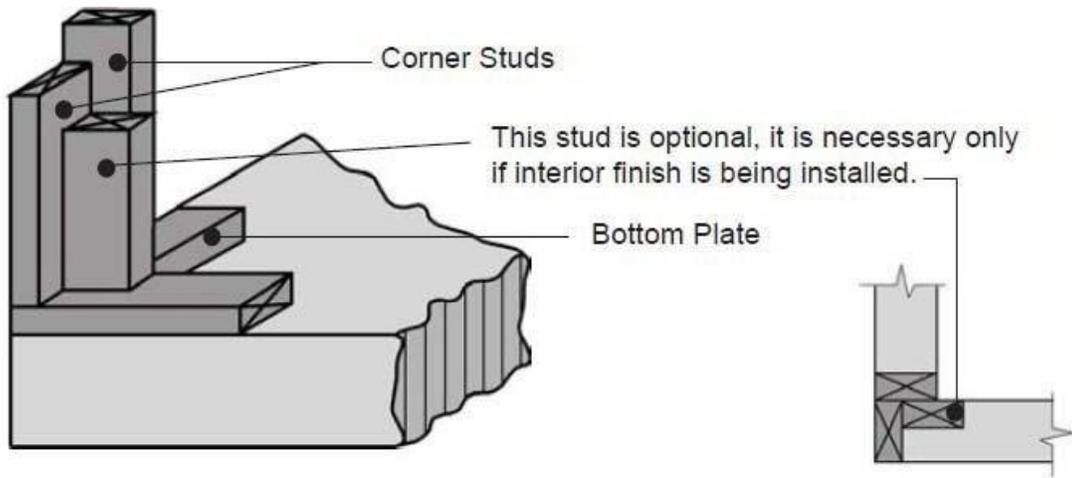
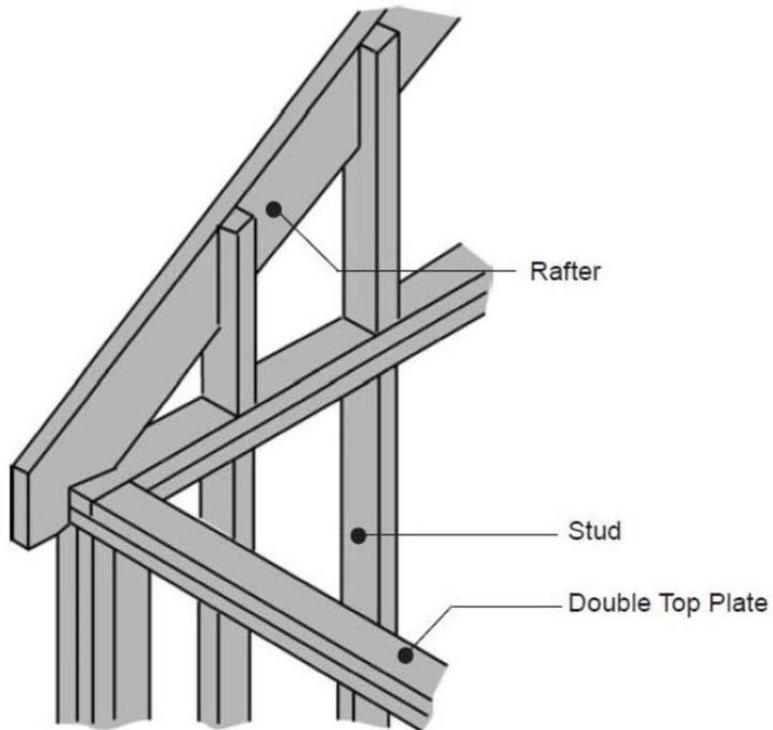


Figure 9: Exterior Wall Framing at Gable End Detail



OVERHEAD DOOR LINTELS

What size of lintel is required for the overhead door?

The size of lintel required depends entirely upon the load which it must support which, in this case, is determined by the style of roof. See Tables 3 & 4.

How are the tables used in determining the required overhead door lintel size?

If the roof style selected is Gable #1 as shown in Figure 10, then Table 3 is used to determine the lintel size. This table is used where the door opening DOES NOT SUPPORT the roof, i.e., where the roof framing elements such as trusses or rafters run parallel to the door opening.

Figure 10: Roof Style with Lintel NOT SUPPORTING Roof Framing

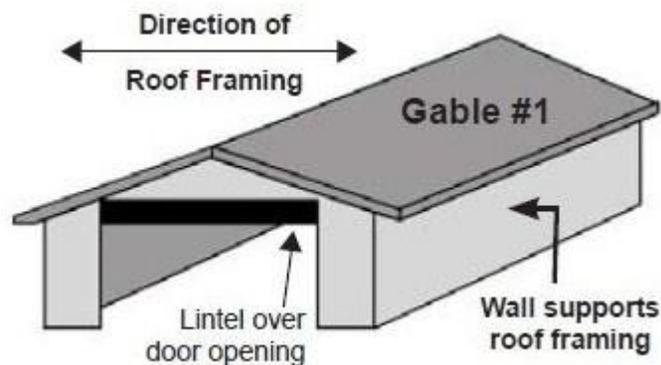


Table 4: Wood Lintels – NOT SUPPORTING Roof Loads

Maximum Door Opening Width	Lintels—Gable Roof Only (Door in Gable End)
4.18 m (13 ft 8 9/16 in)	2—38 x 184 mm (2—2 x 8)
5.34 m (17 ft 6 ¼ in)	2—38 x 235 mm (2—2 x 10)
6.21 m (20 ft 4 ½ in)	2—38 x 286 mm (3—2 x 12)

Notes to Table 4

1. This table is for use with Spruce-Pine-Fir lumber grades 1 & 2.
2. Built-up lintels must be constructed of full-length members. No splicing of members is permitted between supports.

If the roof type selected is as shown in Figure 11, i.e., Gable #2, Hip, Mono, or Flat, then Table 5 is used to determine the lintel size. This table is used where the lintel over the door opening SUPPORTS the roof, i.e., where the roof framing elements such as trusses or rafters run perpendicular to the door opening.

To select a size of wood lintel simply match the door opening size with the appropriate supported length in Table 4 to find the minimum lintel size.

Figure 11: Roof Styles with Lintel Support Roof Framing

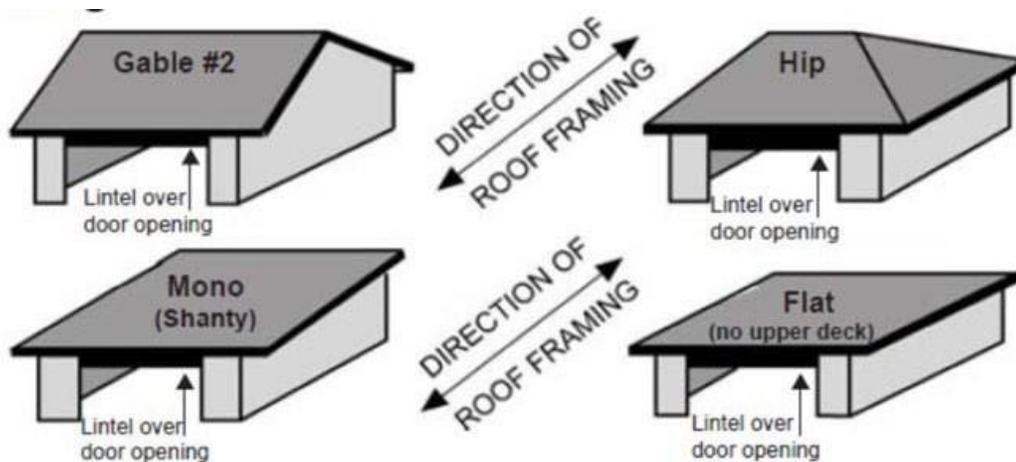


Table 5: Wood Lintels –SUPPORTING Roof Loads

Width of Opening (Lintel Span)	Supported Length 2.44 m (8ft)	Supported Length 3.66 m (12ft)	Supported Length 4.88 m (16ft)
2.44 m (8ft)	2 — 38 x 286mm (2 — 2 x 12)	2 — 38 x 286mm (2 — 2 x 12)	2 — 38 x 286mm (2 — 2 x 12)
2.74 m (9ft)	3 — 38 x 235mm (3 — 2 x 10)	3 — 38 x 235mm (3 — 2 x 10)	3 — 38 x 235mm (3 — 2 x 10)
3.05 m (10ft)	3 — 38 x 286mm (3 — 2 x 12)	3 — 38 x 286mm (3 — 2 x 12)	3 — 38 x 286mm (3 — 2 x 12)
3.66 m (12ft)	130 x 304 Glue-Laminated Timber	130 x 304 Glue-Laminated Timber	130 x 304 Glue-Laminated Timber
4.27 m (14ft)	130 x 304 Glue-Laminated Timber	130 x 304 Glue-Laminated Timber	130 x 304 Glue Laminated Timber
4.88 m (16ft)	130 x 304 Glue-Laminated Timber	80 x 380 Glue-Laminated Timber	80 x 418 Glue Laminated Timber
5.49 m (18ft)	130 x 342 Glue Laminated Timber	130 x 380 Glue Laminated Timber	130 x 418 Glue Laminated Timber
6.10 m (20ft)	130 x 380 Glue Laminated Timber	80 x 532 Glue Laminated Timber	Intentionally Left Blank

Notes to Table 5

1. The lintels in this table are Spruce-Pine-Fir lumber grades 1 & 2.
2. Built-up lintels must be constructed of full-length members. No splicing of members is permitted between supports.
3. Supported length means half the span of trusses, roof joists, or rafters supported by the lintel plus the length of the overhang beyond the lintel (see Figure 12).
4. If the supported length is between the sizes shown, use the column with the greater depth. For garages or storage sheds with a door width or supported length greater than shown on the tables, consult a Professional Engineer.
5. The spans shown in the table are the clear spans between the load bearing supports at each end of the lintel. To find the total length of lintel needed, add the two bearing lengths of the support to the clear span.
6. The minimum bearing length of the support at each end of the lintel must be 89 mm where spans are greater than 3.6 m; where spans are less than 3.6 m, the minimum bearing length of the support at each end of the lintel must be 76 mm.
7. Lintel sizes smaller than those shown on these tables may be used provided the lintel has been designed by a Professional Engineer and the lintel design and calculations are submitted and accepted.
8. The above noted lintels are not designed to carry masonry or floors above the overhead door. For these types of applications consult a Professional Engineer.
9. Glue Laminated Timber to conform to CAN/CSA-0122-M and CAN/CSA-0177-M and 20fE stress grade.

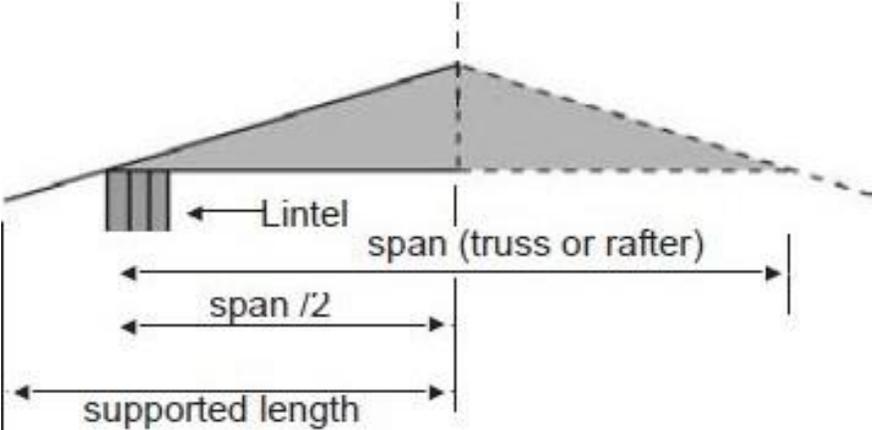
Lintel Size Selection for an Overhead Door – Example

To select the correct size of lintel in cases where it is supporting the roof, three pieces of information are needed: the size of the garage, the width of the overhead door opening, and the size of the roof overhang. As an example, assume a 7.32m x 7.32m garage with a 2.74m overhead door opening and a 0.6m overhang. Refer to Table 4.

Begin by selecting the row for a 2.74m overhead door opening. Next, knowing that the supported length will be half the distance of the roof span plus the overhang (see Figure 12), we divide the 7.32m roof span distance by 2 and add the 0.6m roof overhang to get the total supported length of 4.27m.

Now looking along the table to column 4 where the supported length is 4.27m, we see that the proper size of lintel would be 3 - 38 x 235mm.

Figure 12: Supported Length of Wood Lintel



RAFTERS AND TRUSSES

What roof framing choices are there?

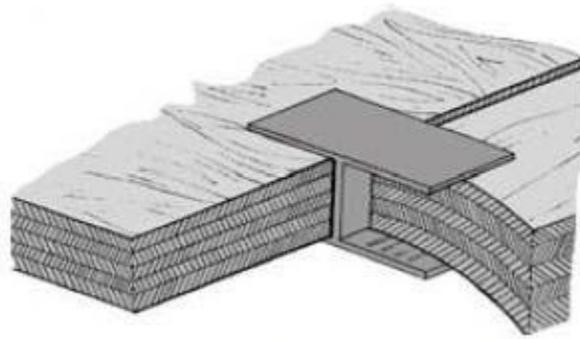
In wood framing, there are basically two methods for framing roofs. They are:

1) Framing the roof with pre-manufactured trusses.

There are several truss manufacturers and suppliers listed in the Yellow Pages under both LUMBER- RETAIL and TRUSSES. These firms can provide detailed information regarding the proper installation of their products.

Note: When using trusses or rafters at 600mm spacing with panel-type roof sheathing of less than 12.7mm thickness, support must be provided to all edges of each roof sheathing panel including those that meet at the ridge. This can be accomplished with the use of 'H' clips as shown in Figure 13 and/or solid blocking.

Figure 13: 'H' Clip Detail



2) Framing the roof with individual pieces of lumber.

This is commonly known as stick framing. Figure 14 shows a typical cross section of a gable roof and Table 5 indicates maximum rafter spans for various species and sizes of rafters. Note that Figure 14 makes use of collar ties as a means of reducing a full rafter span into two smaller spans. Collar ties can only be used in this fashion when the roof slope is 1 in 3 or greater.

If you are framing a roof containing hip or valley rafters, the hip and/or valley rafters must be not less than 50mm greater in depth than the common rafters and not less than 38mm in thickness.

Figure 14: Typical cross section of a gable roof

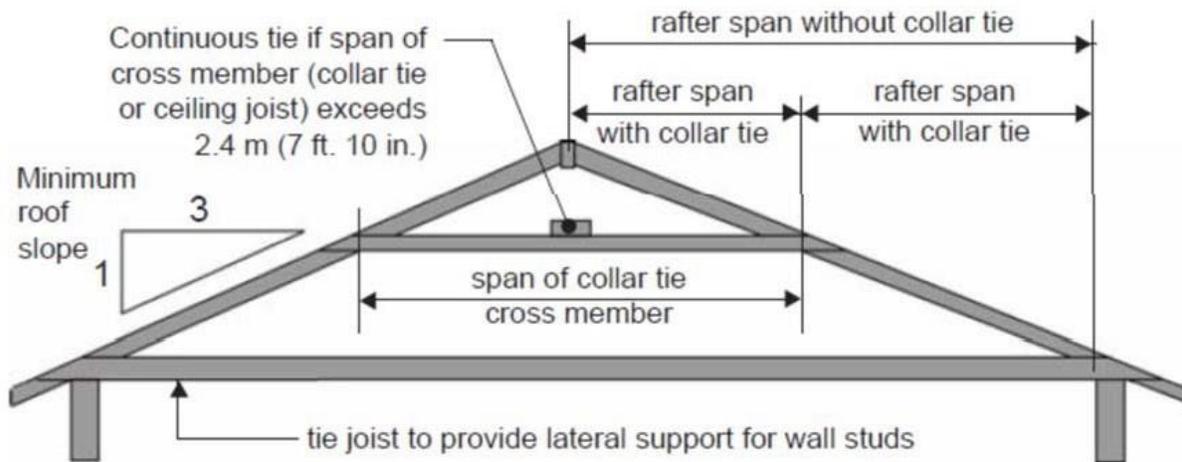


Table 6: Roof Rafter Spans — Rafter NOT SUPPORTING Ceiling

Member Size (in.)	12 in Rafter Spacing	16 in Rafter Spacing	24 in Rafter Spacing	Member Size (mm)	305 mm Rafter Spacing	406 mm Rafter Spacing	610 mm Rafter Spacing
2 x 4	8' 1"	7' 4"	6' 5"	38 x 89	2.47 m	2.24 m	1.96 m
2 x 6	12' 9"	11' 7"	10' 1"	38 x 140	3.89 m	3.53 m	3.08 m
2 x 8	16' 9"	15' 2"	12' 9"	38 x 184	5.11 m	4.64 m	3.89 m
2 x 10	21' 4"	19' 1"	15' 7"	38 x 235	6.52 m	5.82 m	4.75 m
2 x 12	25' 7"	22' 2"	18' 1"	38 x 286	7.80 m	6.76 m	5.52 m

Notes to Table 6

1. This table applies to roofs with a slope of 1 in 3 or greater. Roof slopes of less than 1 in 3 are subject to different loading conditions, e.g., adequate ridge support must be provided.
2. All rafters must have a commercial designation of Spruce-Pine-Fir and a grade of No. 1 and No. 2.

Roof Rafter Size Selection – Example

In order to select the correct rafter size for a 6.72m x 6.72m detached garage or storage shed with a gable roof having a slope of 1 in 3 or greater, and with spruce rafters (without collar ties) spaced 600mm apart, we will proceed as follows.

First, we must know the horizontal distance from the wall to the peak of the roof. In this example the distance is 6.72m divided by 2 or 3.36m and is called the rafter span.

Next, keeping in mind that 3.36m is the required rafter span distance, we look to Table 5 in the Spruce - Pine - Fir section for a 600mm rafter spacing. We are looking here for a span distance

that equals or exceeds 3.36m. We find in the table a span that meets our requirements, and it has a figure of 3.40m. We now look across to find the member size that is necessary to obtain this span. It is a 38 x 140mm rafter. This rafter size is the minimum size of rafter required for the span of 3.36m for this particular gable style roof.

If collar ties are permitted and are used, the required span would be less than 3.36m and a smaller member size could be looked up in the table.

Are there any other Building Code requirements?

Yes, there are various other requirements concerning framing, sheathing materials, sheathing paper, flashing, siding, shingling, stucco application, etc. Most of these aspects of construction are dealt with in the previously mentioned book available from Canada Mortgage and Housing.