Garage Design Guide

The Corporation of the Township of Hamilton

8235 Majestic Hills Drive,
P.O. Box 1060,
Cobourg Ontario
K9A 4W5
Tel: 905-342-2810
Fax: 905-342-2818
Email:
Tim Jeronimus (Chief Building Official): tjeronimus@hamiltontownship.ca
Michael Fraser (Deputy Chief Building Official): mfraser@hamiltontownship.ca
Web: www.hamiltontownship.ca

This guide is for informational purposes only. It is the responsibility of the Applicant/Designer to review the building code to ensure all information is complete, accurate, and up to date.

Definitions

Stud: An upright support in a wall to which sheathing, drywall etc. are attached.

Lintel: A horizontal support comprised of timber, stone concrete or steel across the top of a window or door opening.

Rafter: Dimensional lumber extending from the eaves to the peak that frames the roof system.

Truss: An engineered structural framework at forms the roof system.

Collar Tie: Dimensional lumber used to reduce the overall span of rafters.

Ceiling Joist: Dimensional lumber used in conjunction with rafters located on top of the wall to prevent blow out.

OBC: Refers to the current amended version of the Ontario Building Code.

Important notes

The design and construction of a garage must comply with Hamilton Township Zoning By-Laws as well as OBC Section 9.35.

Building permit application checklist	
Completed application for a ‘Permit to Construct or Demolish	
Completed Schedule 1: Designer Information	
Completed Applicable Law checklist	
Site survey indicating	
Refer to Figure A	
Location of garage in relation to house	
Dimensions of proposed garage	
Distance to property line(s)	
Other buildings ie. shed or septic system	
Drainage control	
Plans & Section drawings indicating	
Refer to Figures B, C, D & E	
Floor plans including dimensions	
Footing & foundation construction	
Location of windows & doors	
Elevation drawings	
Wall construction including height	
Building height from finished grade	
Roof construction ie. trusses or rafters	
Cross section detail	

General information

Foundation: Foundations for detached garages shall be constructed on either frost walls & footings or a 'floating' slab. Floating slabs greater than 592 ft^2 (55m^2) shall be designed by a Professional Engineer.

Concrete: Poured concrete with a minimum compressive strength of 4641 psi (32 MPa) after 28 days shall be used for garage floors and shall have air entrainment of 5 to 8% **[OBC 9.3.1.6.]**.

Frost Wall Depth: Where frost walls & footings are used, the footings shall be at a minimum depth of at least 48" (1.2m) **[OBC 9.12.2.2]**.

Studs: Loadbearing wall studs shall be not less than 2x4 (38x89) spaced more than 24" (610mm) on centre. These studs shall have a maximum height of 9'-10" (3.0m) **[OBC 9.23.10.1.]**. Studs outside of this parameter shall be addressed on a case by case basis.

Lintels: Openings in loadbearing walls greater than the required stud spacing shall be framed with lintels designed to carry the superimposed loads **[OBC 9.23.12.2.]**.

Maximum spans for spruce-pine-fir lintels (SPF No1 or No2)*		
	Lintel size	Maximum span**, (ft)
Supporting roof and ceiling only	2-2x4	3'-7 3/4"
	2-2x6	5'-5 3/8"
	2-2x8	6'-7 1/2"
	2-2x10	8'-1 1/4"
	2-2x12	9'-5"

*Maximum span based on a specified snow load of 1.5kPa.
** Spans based on a maximum roof joist or rafter span of 16'-1" and a maximum roof truss span of 32'-1 3/4".

Anchor bolts: Anchor bolts shall have a minimum diameter of 1/2" (12.7mm) spaced not more than 7'-10 1/2" (2.4m) **[OBC 9.23.6.1]**.

Roof Trusses: Roof trusses shall be designed in accordance with Part 4 and sealed by a Professional Engineer **[OBC 9.23.13.11.]**.

Roof Rafters: Roof rafters shall be continuous **[OBC 9.23.13.1.]** with a minimum end bearing not less than 1 1/2" (38mm) **[OBC 9.23.13.3.]**.

Maximum span for spruce-pine-fir rafters (SPF No1 or No2)*, (ft)			
	12" on centre	16" on centre	24" on centre
2x4	8'-11"	8'-1 1/4"	7'-1"
2x6	14'-0 1/2"	12'-9 1/8"	11'-1 7/8"
2x8	18'-5 1/4"	16'-9 1/4"	14'-5 5/8"
2x10	23'-6 3/4"	21'-4 3/4"	17'-8 1/4"
2x12	28'-8 1/8"	25'-1 1/2"	20'-6"

*Maximum span based on a specified snow load of 1.5kPa.

Ceiling Joists: When rafters are used ceiling joists not less than 2x4 (38x89) are permitted to be assumed to provide intermediate support to reduce rafter spans **[OBC 9.23.13.7.]**.

Maximum span for spruce-pine-fir ceiling joists (SPF No1 or No2)*, (ft)			
Attic not accessible by a stairway			
	12" on centre	16" on centre	24" on centre
2x4	10'-2 1/2"	9'-3 1/2"	8'-1 1/4"
2x6	16'-1"	14'-7 1/4"	12'-9 1/8"
2x8	21'-1 1/2"	19'-2 1/4"	16'-9 1/4"
2x10	26'-11 5/8"	24'-6 1/8"	21'-4 3/4"
2x12	32'-9 3/4"	29'-9 7/8"	26'-0 58"

Collar Ties: When rafters are used, collar ties not less than 2x4 (38x89) are permitted to be assumed to provide intermediate support to reduce rafter spans **[OBC 9.23.13.7.]**.

Ridge Support: Ridge support can either be in the form of a ridge board or a ridge beam. Ridge boards shall be a minimum of one size greater than the rafters and shall be used in conjunction with appropriately sized ceiling joists. Ridge beams shall have a minimum bearing of 1 1/2" (89mm) **[OBC 9.23.13.8. (1)(b)]**.

Maximum span for spruce-pine-fir ridge beams (SPF No1 or No2)*, (ft)	
3-2x8	8'-1 5/8"
4-2x8	9'-4 5/8"
5-2x8	10'-2"
3-2x10	9'-11 3/8"
4-2x10	11'-5 7/8"
5-2x10	12'-10"
3-2x12	11'-6 1/2"
4-2x12	13'-3 7/8"
5-2x12	14'-10 3/4"

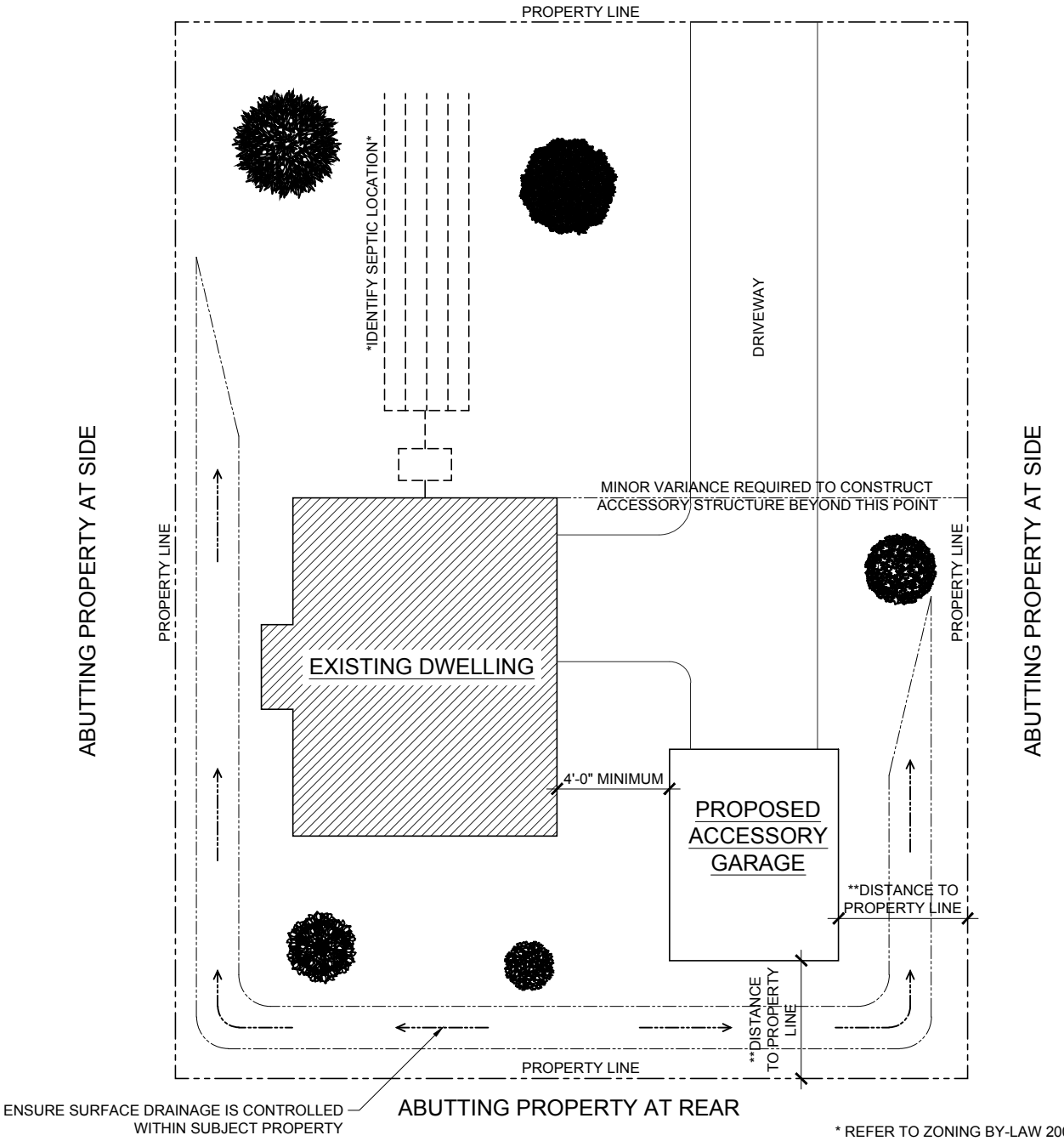
*Maximum span based on a specified snow load of 1.5kPa.

Nailing: Refer to OBC Table 9.23.3.4. for nailing of framing elements.

NOTE:

BASIC RECTANGULAR PROPERTY & ACCESSORY GARAGE SHOWN
FOR REPRESENTATION PURPOSES ONLY.
SIZE AND SHAPE OF ACCESSORY GARAGE TO BE DETERMINED
BY APPLICANT AND LOT SIZE.

ROAD ALLOWANCE



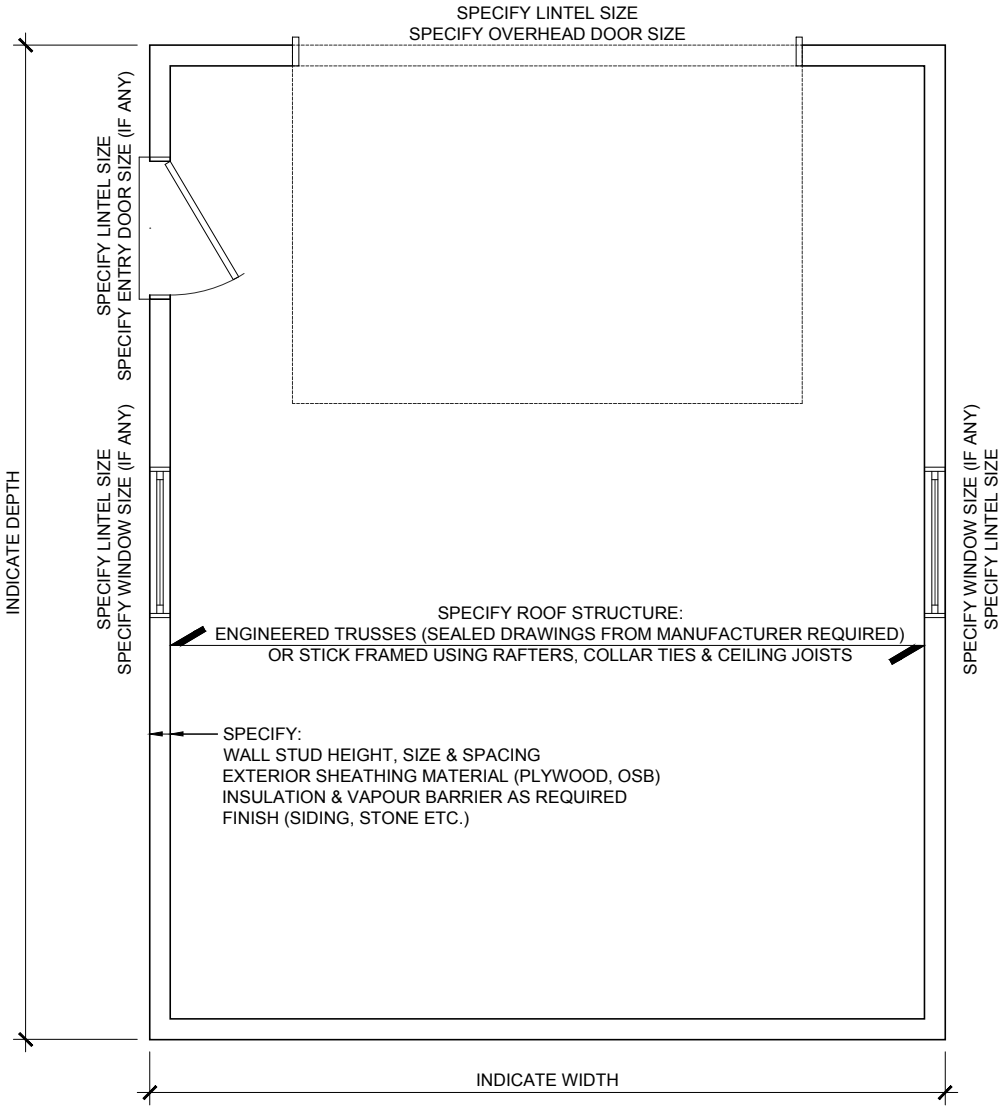
* REFER TO ZONING BY-LAW 2001-58
FOR ZONE SPECIFIC LOT COVERAGES

** REFER TO ZONING BY-LAW 2001-58
FOR ZONE SPECIFIC SETBACK ALLOWANCES

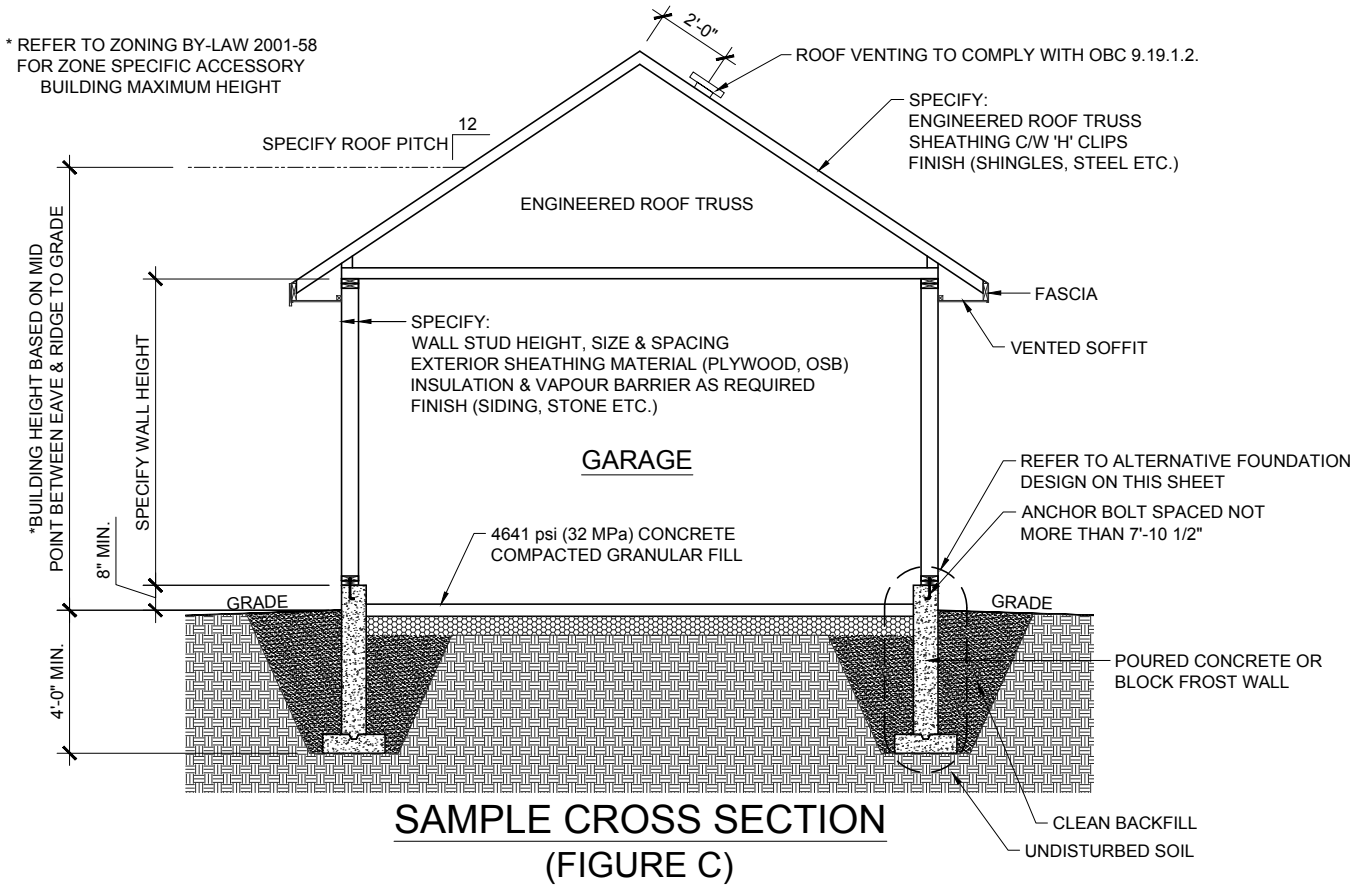
SAMPLE SITE PLAN
(FIGURE A)

NOTE:

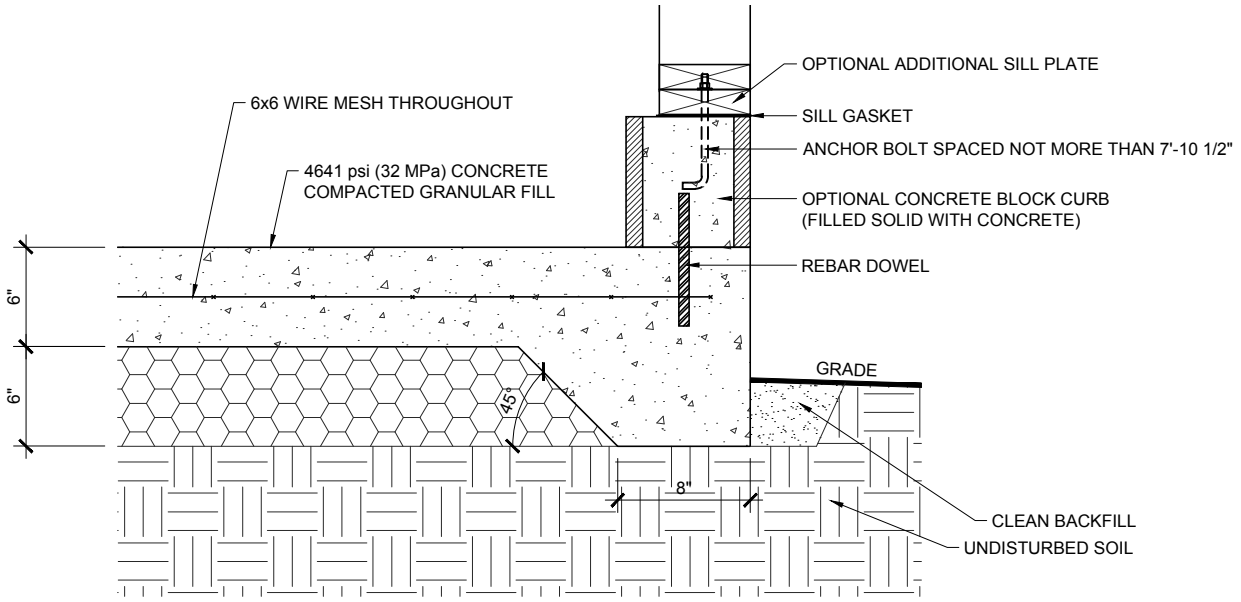
BASIC RECTANGULAR ACCESSORY GARAGE SHOWN
FOR REPRESENTATION PURPOSES ONLY.
SIZE AND SHAPE OF ACCESSORY GARAGE TO BE DETERMINED
BY APPLICANT AND LOT SIZE.



SAMPLE FLOOR PLAN
(FIGURE B)

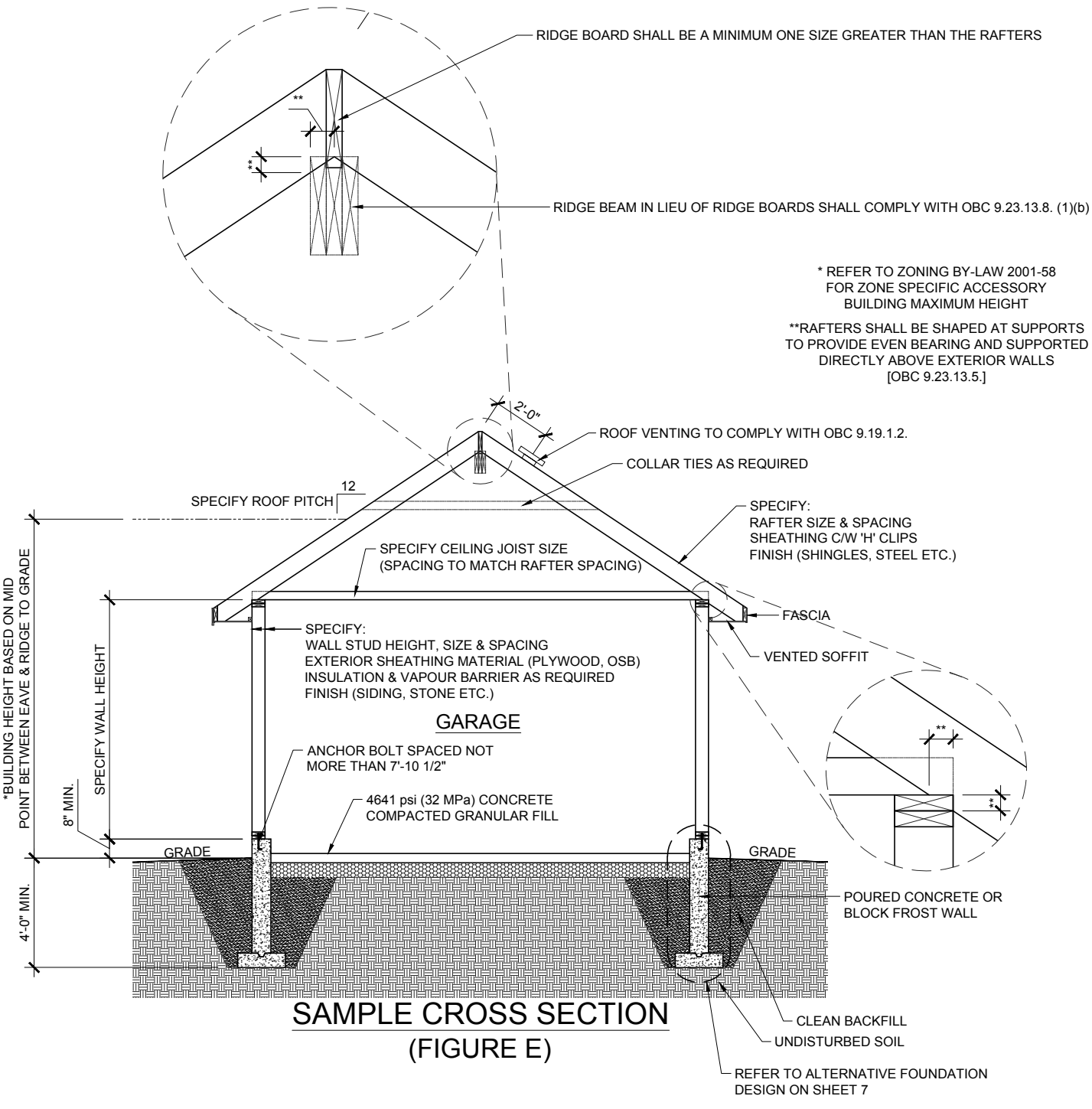


SAMPLE CROSS SECTION
(FIGURE C)



ALTERNATIVE SLAB FOUNDATION DESIGN*
(FIGURE D)

* ALTERNATIVE SLAB FOUNDATION'S EXCEEDING 592ft^2 (55m^2) REQUIRE A DESIGN BY A PROFESSIONAL ENGINEER.



SAMPLE CROSS SECTION
(FIGURE E)

Table 9.23.3.4.
Nailing for Framing
Forming Part of Sentence 9.23.3.4.(1)

Construction Detail	Minimum Length of Nails, mm	Minimum Number or Maximum Spacing of Nails
Floor joist to plate – toe nail	82	2
Wood or metal strapping to underside of floor joists	57	2
Cross bridging to joists	57	2 at each end
Double header or trimmer joists	76	300 mm (o.c.)
Floor joist to stud (balloon construction)	76	2
Ledger strip to wood beam	82	2 per joist
Joist to joist splice (See also Table 9.23.13.8.)	76	2 at each end
Header joist end nailed to joists along perimeter	101	3
Tail joist to adjacent header joist	82	5
(end nailed) around openings	101	3
Each header joist to adjacent trimmer joist	82	5
(end nailed) around openings	101	3
Stud to wall plate (each end) toe nail	62	4
or end nail	82	2
Doubled studs at openings, or studs at walls or wall intersections and corners	76	750 mm (o.c.)
Doubled top wall plates	76	600 mm (o.c.)
Bottom wall plate or sole plate to joists or blocking (exterior walls)(1)	82	400 mm (o.c.)
Interior walls to framing or subflooring	82	600 mm (o.c.)
Horizontal member over openings in non-*loadbearing* walls – each end	82	2
Lintels to studs	82	2 at each end
Ceiling joist to plate – toe nail each end	82	2
Roof rafter, roof truss or roof joist to plate – toe nail	82	3
Rafter plate to each ceiling joist	101	2
Rafter to joist (with ridge supported)	76	3
Rafter to joist (with ridge unsupported)	76	See Table 9.23.13.8.
Gusset plate to each rafter at peak	57	4
Rafter to ridge board – toe nail – end nail	82	3
Collar tie to rafter – each end	76	3
Collar tie lateral support to each collar tie	57	2
Jack rafter to hip or valley rafter	82	2
Roof strut to rafter	76	3
Roof strut to *loadbearing* wall – toe nail	82	2
38 mm × 140 mm or less plank decking to support	82	2
Plank decking wider than 38 mm × 140 mm to support	82	3
38 mm edge laid plank decking to support (toe nail)	76	1
38 mm edge laid plank to each other	76	450 mm (o.c.)
Column 1	2	3

Notes to Table 9.23.3.4.:
(1) See Sentence 9.23.3.4.(2).