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Construction Services & Inspections

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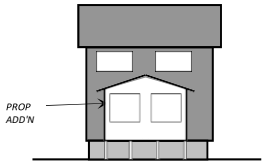
Doc 150-A-0519

Residential Design Guidelines for Additions on Posts 120 SF or Less

Peaked Roof, 1'0" Overhangs and Lookouts, (2) – Posts/Piers

A x B		DIMENSION 'B'							Table assumes 1'-0" overhangs & lookouts
		4'	6'	8'	10'	12'	14'	16'	
DIMENSION 'A' see Note 13	4'	11"	12"	14"	15"	16"	17"	19"	Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8	2x8	2x8	2x8	Joist Size @ 16" O.C.
		1-2x8 / 529	1-2x8 / 643	1-2x8 / 757	1-2x8 / 871	1-2x8 / 985	1-2x8 / 1,099	1-2x8 / 1,213	Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x10	2-2x12	3-2x12	3-2x12	Beam 'B'
	6'	12"	14"	16"	17"	18"	20"		Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8	2x8	2x8		Joist Size @ 16" O.C.
		1-2x8 / 793	2-2x8 / 964	2-2x8 / 1,135	2-2x8 / 1,306	2-2x8 / 1,477	3-2x8 / 1,648		Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	3-2x12		Beam 'B'
	8'	13"	15"	17"	19"	20"	22"		Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8	2x8	2x10		Joist Size @ 16" O.C.
		2-2x8 / 1,057	3-2x8 / 1,285	3-2x8 / 1,513	3-2x8 / 1,741	3-2x8 / 1,969	3-2x10 / 2,197		Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x12	3-2x10	3-2x12		Beam 'B'
	10'	15"	17"	19"	21"	22"			Min. Footing Bottom Diameter
		2x8	2x8	2x10	2x10	2x10			Joist Size @ 16" O.C.
		3-2x8 / 1,322	3-2x8 / 1,607	3-2x10 / 1,892	3-2x10 / 2,177	3-2x10 / 2,462			Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x12	3-2x12			Beam 'B'
	12'	16"	18"	20"	22"				Min. Footing Bottom Diameter
		2x10	2x10	2x10	2x12				Joist Size @ 16" O.C.
		3-2x10 / 1,586	3-2x10 / 1,928	3-2x10 / 2,270	3-2x12 / 2,612				Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x12				Beam 'B'
	14'	17"	19"	21"					Min. Footing Bottom Diameter
		2x10 @ 12" O.C.	2x12	2x12					Joist Size @ 16" O.C.
		3-2x10 / 1,850	3-2x12 / 2,249	3-2x12 / 2,648					Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10					Beam 'B'

Additions on posts / piers which exceed 120 SF or deviate from this table will require a complete design and drawings certified by a MN licensed Structural Engineer



NOTES:

1. Roof framing is assumed to have overhangs and lookouts ≤ 1'-0".
2. Roof framing is parallel to existing house.
3. Floor joists are perpendicular to existing house.
4. Footings are at corners of addition with no intermediate (center) footing.
5. CANTILEVERS may not exceed depth of joist or beam.
6. Beam sizes for Beams 'A' and 'B' are for Southern Pine No. 2 or Better.
7. Wood for Beam 'B' must be pressure treated.
8. Diagonal bracing (beam to post) is required on all additions ≥ 4'-0" from grade to top of floor elevation. If Beam 'B' is attached directly to the top of the concrete piers, diagonal bracing is not required.

DESIGN LOADS:

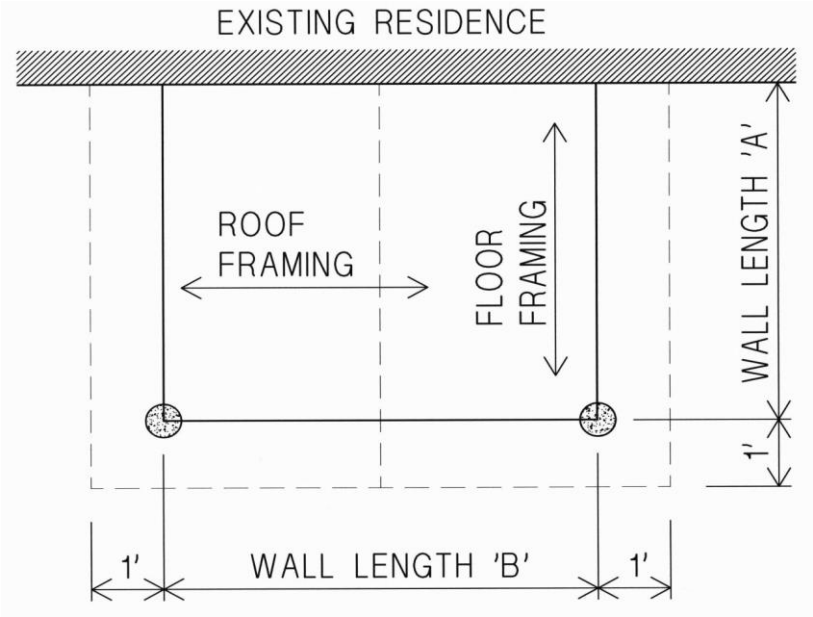
Roof Load = 42 psf LL + 15 psf DL L/240
Wall Load = 10 psf DL
Floor Load = 40 psf LL + 10 psf DL L/360
Soil Bearing = 2,000 psf
Capacity of (1) - 1/2 inch dia. lag bolt = 180 lbs
Capacity of (1) - 1/2 inch dia. thru-bolt = 350 lbs

#posts; #engineer; #porch

9. Beams shall be attached to the posts with a post / column cap or the post notched 3 inches from one side (two 2x only) and thru bolted with two or three 1/2 inch diameter bolts and washers.
10. Posts shall be a minimum 6x6 and be attached to the concrete piers with a post base and anchor bolt or approved equal.
11. Concrete piers shall be reinforced with a minimum of (1) - #4 bar vertical.
12. The ledger shall be attached to the existing rim with a minimum of two rows 1/2 inch diameter lag bolts at 16 inches O.C.

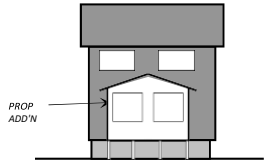
*13. Beam 'A' may not be able to be connected to the ledger due to its reaction. Beam 'A' may have to be pocketed into the wall with solid bearing to the foundation (flash as req.). The connection of Beam 'A' at the residence must be reviewed and approved. The ledger attachment to the existing rim / structure controls.

14. Maximum grade to top of floor elevation shall not exceed 10'-0".
15. All wood exposed to the elements must be decay resistant or treated.
16. Walls and roof system to use the requirements shown in the Minnesota Residential Code.



Residential Design Guidelines for Additions on Posts 120 SF or Less

Peaked Roof, 1'0" Overhangs and Lookouts, (3) – Posts/Piers



A x B		DIMENSION 'B' see Note 14												Table assumes 1'-0" overhangs & lookouts
		8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	
DIMENSION 'A' see Note 13	4'	12"	13"	14"	14"	15"	16"	17"	18"	18"	19"	19"	20"	Corner Footing Bottom Dia.
		12"	13"	15"	16"	17"	16"	17"	18"	18"	19"	20"	21"	Center Footing Bottom Dia.
		2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	Joist Size @ 16" O.C.
		1-2x8 / 757	1-2x8 / 871	1-2x8 / 985	1-2x8 / 1,099	1-2x8 / 1,213	2-2x8 / 1,327	2-2x8 / 1,441	2-2x8 / 1,555	2-2x8 / 1,669	2-2x8 / 1,783	2-2x8 / 1,897	2-2x8 / 2,011	Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x8	2-2x8	3-2x8	3-2x8	3-2x10	3-2x10	3-2x10	3-2x12	3-2x12	Beam 'B'
	6'	13"	15"	16"	17"	18"	18"	19"						Corner Footing Bottom Dia.
		13"	14"	15"	17"	18"	17"	18"						Center Footing Bottom Dia.
		2x8	2x8	2x8	2x8	2x8	2x8	2x8						Joist Size @ 16" O.C.
		2-2x8 / 1,135	2-2x8 / 1,306	2-2x8 / 1,477	3-2x8 / 1,648	3-2x8 / 1,819	3-2x8 / 1,990	3-2x8 / 2,161						Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x8	2-2x10	3-2x8	3-2x8						Beam 'B'
	8'	15"	16"	17"	19"									Corner Footing Bottom Dia.
		14"	15"	17"	18"									Center Footing Bottom Dia.
		2x8	2x8	2x8	2x10									Joist Size @ 16" O.C.
		3-2x8 / 1,513	3-2x8 / 1,741	3-2x8 / 1,969	3-2x10 / 2,197									Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x8									Beam 'B'
	10'	16"	18"	19"										Corner Footing Bottom Dia.
		15"	16"	18"										Center Footing Bottom Dia.
		2x10	2x10	2x10										Joist Size @ 16" O.C.
		3-2x10 / 1,892	3-2x10 / 2,177	3-2x10 / 2,462										Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8										Beam 'B'
	12'	18"	19"											Corner Footing Bottom Dia.
		15"	17"											Center Footing Bottom Dia.
		2x10	2x12											Joist Size @ 16" O.C.
		3-2x10 / 2,270	3-2x12 / 2,612											Beam 'A' / Reaction lbs *
		2-2x8	2-2x8											Beam 'B'
	14'	19"												Corner Footing Bottom Dia.
		16"												Center Footing Bottom Dia.
		2x12												Joist Size @ 16" O.C.
		3-2x12 / 2,648												Beam 'A' / Reaction lbs *
		2-2x8												Beam 'B'

Multi-Span	
L ≤ 8'-0"	L ≤ 8'-0"

Corner — Center (See Note 14) — Corner

Simple Span	Simple Span
L > 8'-0"	L > 8'-0"

Corner — Center (See Note 14) — Corner

Additions on posts / piers which exceed 120 SF or deviate from this table will require a complete design and drawings certified by a MN licensed Structural Engineer

NOTES:

1. Roof framing is assumed to have overhangs and lookouts ≤ 1'-0".
2. Roof framing is parallel to existing house.
3. Floor joists are perpendicular to existing house.
4. Footings are at corners of addition with one intermediate (center) footing.
5. CANTILEVERS may not exceed depth of joist or beam.
6. Beam sizes for Beams 'A' and 'B' are for Southern Pine No. 2 or Better.
7. Wood for Beam 'B' must be pressure treated.

DESIGN LOADS:

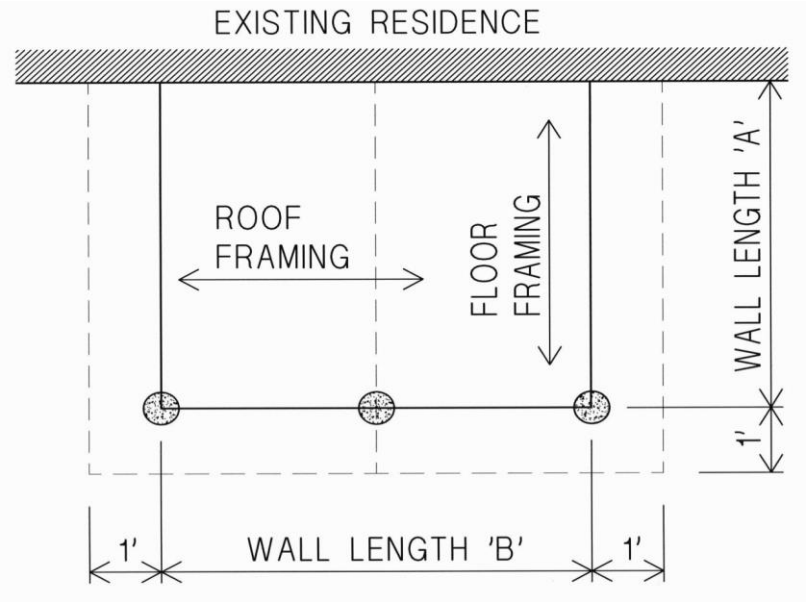
Roof Load = 42 psf LL + 15 psf DL — L/240
Wall Load = 10 psf DL
Floor Load = 40 psf LL + 10 psf DL — L/360
Soil Bearing = 2,000 psf
Capacity of (1) - 1/2 inch dia. lag bolt = 180 lbs
Capacity of (1) - 1/2 inch dia. thru-bolt = 350 lbs

#posts; #engineer; #porch

8. Diagonal bracing (beam to post) is required on all additions ≥ 4'-0" from grade to top of floor elevation. If Beam 'B' is attached directly to the top of the concrete piers, diagonal bracing is not required.
9. Beams shall be attached to the posts with a post / column cap or the post notched 3 inches from one side (two 2x only) and thru bolted with two or three 1/2 inch diameter bolts and washers. Three ply 2x beams require post / column caps.
10. Posts shall be a minimum 6x6 and be attached to the concrete piers with a post base and anchor bolt (with 7 inches embedment) or approved equal.
11. Concrete piers shall be reinforced with a minimum of (1) - #4 bar vertical.
12. The ledger shall be attached to the existing rim with a min. of two rows 1/2 inch diameter lag bolts at 16 inches O.C.

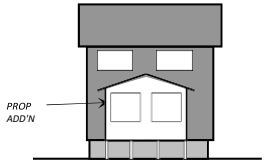
*13. Beam 'A' may not be able to be connected to the ledger due to its reaction. Beam 'A' may have to be pocketed into the wall with solid bearing to the foundation (flash as req.). The connection of Beam 'A' at the residence must be reviewed and approved. Ledger attachment to the existing rim / structure controls.

14. Beam 'B' ≤ 16'-0" (wall length B) shall be one length of lumber (multi-span condition). Beam 'B' > 16'-0" (wall length B) shall be two separate lengths of lumber (two simple spans) and spliced at the center post / pier.
15. Maximum grade to top of floor elevation shall not exceed 10'-0".



Residential Design Guidelines for Additions on Posts 120 SF or Less

Peaked Roof, 2'0" Overhangs and Lookouts, (2) – Posts/Piers



A x B		DIMENSION 'B'							Table assumes 2'-0" overhangs & lookouts
		4'	6'	8'	10'	12'	14'	16'	
DIMENSION 'A' see Note 13	4'	12"	13"	15"	16"	18"	19"		Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8	2x8	2x8		Joist Size @ 16" O.C.
		1-2x8 / 643	1-2x8 / 757	1-2x8 / 871	1-2x8 / 985	1-2x8 / 1,099	2-2x8 / 1,213		Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x12	2-2x12	3-2x12		Beam 'B'
	6'	13"	15"	17"	18"	20"	21"		Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8	2x8	2x8		Joist Size @ 16" O.C.
		2-2x8 / 964	2-2x8 / 1,135	2-2x8 / 1,306	2-2x8 / 1,477	3-2x8 / 1,648	3-2x8 / 1,819		Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x12	3-2x10	3-2x12		Beam 'B'
	8'	15"	17"	18"	20"	22"			Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8	2x10			Joist Size @ 16" O.C.
		3-2x8 / 1,285	3-2x8 / 1,513	3-2x8 / 1,741	3-2x8 / 1,969	3-2x10 / 2,197			Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x12	3-2x12			Beam 'B'
	10'	16"	18"	20"	22"	23"			Min. Footing Bottom Diameter
		2x8	2x10	2x10	2x10	2x12			Joist Size @ 16" O.C.
		3-2x8 / 1,607	3-2x10 / 1,892	3-2x10 / 2,177	3-2x10 / 2,462	3-2x12 / 2,747			Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x12	3-2x12			Beam 'B'
	12'	17"	19"	21"	23"				Min. Footing Bottom Diameter
		2x10	2x10	2x12	2x12				Joist Size @ 16" O.C.
		3-2x10 / 1,928	3-2x10 / 2,270	3-2x12 / 2,612	3-2x12 / 2,954				Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x12				Beam 'B'
	14'	18"	21"						Min. Footing Bottom Diameter
		2x12	2x12						Joist Size @ 16" O.C.
		3-2x12 / 2,249	3-2x12 / 2,648						Beam 'A' / Reaction lbs *
		2-2x8	2-2x8						Beam 'B'

Additions on posts / piers which exceed 120 SF or deviate from this table will require a complete design and drawings certified by a MN licensed Structural Engineer

NOTES:

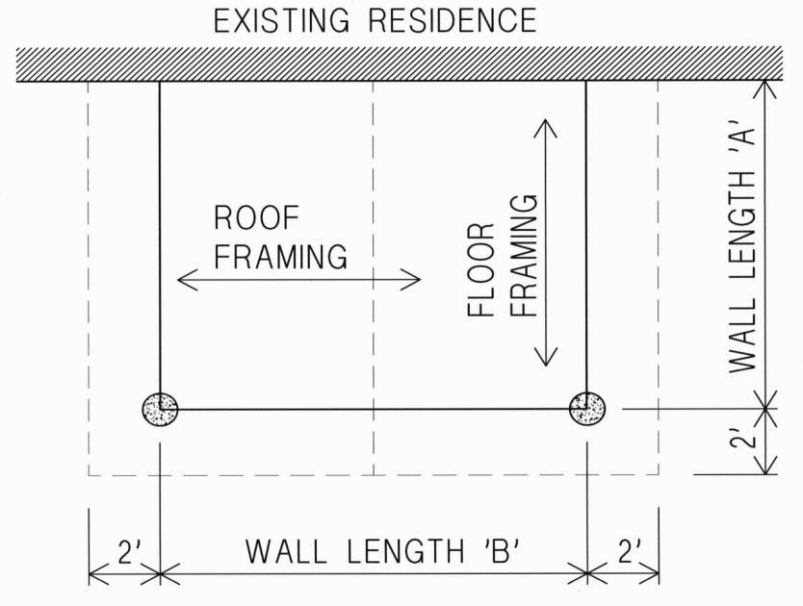
1. Roof framing is assumed to have overhangs and lookouts > 1'-0", but ≤ 2'-0".
2. Roof framing is parallel to existing house.
3. Floor joists are perpendicular to existing house.
4. Footings are at corners of addition with no intermediate (center) footing.
5. CANTILEVERS may not exceed depth of joist or beam.
6. Beam sizes for Beams 'A' and 'B' are for Southern Pine No. 2 or Better.
7. Wood for Beam 'B' must be pressure treated.
8. Diagonal bracing (beam to post) is required on all additions ≥ 4'-0" from grade to top of floor elevation. If Beam 'B' is attached directly to the top of the concrete piers, diagonal bracing is not required.
9. Beams shall be attached to the posts with a post / column cap or the post notched 3 inches from one side (two 2x only) and thru bolted with two or three 1/2 inch diameter bolts and washers. Three ply 2x beams require post / column caps.
10. Posts shall be a minimum 6x6 and be attached to the concrete piers with a post base and anchor bolt or approved equal.

DESIGN LOADS:

Roof Load = 42 psf LL + 15 psf DL L/240
Wall Load = 10 psf DL
Floor Load = 40 psf LL + 10 psf DL L/360
Soil Bearing = 2,000 psf
Capacity of (1) - 1/2 inch dia. lag bolt = 180 lbs
Capacity of (1) - 1/2 inch dia. thru-bolt = 350 lbs

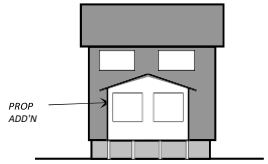
#posts; #engineer; #porch

11. Concrete piers shall be reinforced with a minimum of (1) - #4 bar vertical.
12. The ledger shall be attached to the existing rim with a minimum of two rows 1/2 inch diameter lag bolts at 16 inches O.C.
*13. Beam 'A' may not be able to be connected to the ledger due to its reaction. Beam 'A' may have to be pocketed into the wall with solid bearing to the foundation (flash as req.). The connection of Beam 'A' at the residence must be reviewed and approved. The ledger attachment to the existing rim / structure controls.
14. Maximum grade to top of floor elevation shall not exceed 10'-0".



Residential Design Guidelines for Additions on Posts 120 SF or Less

Peaked Roof, 2'0" Overhangs and Lookouts, (3) – Posts/Piers



A x B		DIMENSION 'B' see Note 14												Table assumes 2'-0" overhangs & lookouts
		8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	
DIMENSION 'A' see Note 13	4'	12"	14"	14"	15"	16"	17"	18"	19"	19"	20"	21"	21"	Corner Footing Bottom Dia.
		13"	15"	16"	17"	18"	17"	18"	19"	20"	21"	22"	22"	Center Footing Bottom Dia.
		2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	Joist Size @ 16" O.C.
		1-2x8 / 871	1-2x8 / 985	1-2x8 / 1,099	1-2x8 / 1,213	2-2x8 / 1,327	2-2x8 / 1,441	2-2x8 / 1,555	2-2x8 / 1,669	2-2x8 / 1,783	2-2x8 / 1,897	2-2x8 / 2,011	2-2x8 / 2,125	Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x8	2-2x10	3-2x8	3-2x8	3-2x10	3-2x10	3-2x12	3-2x12	3-2x12	Beam 'B'
	6'	14"	16"	17"	18"	19"	20"	20"						Corner Footing Bottom Dia.
		14"	16"	17"	18"	20"	19"	20"						Center Footing Bottom Dia.
		2x8	2x8	2x8	2x8	2x8	2x8	2x8						Joist Size @ 16" O.C.
		2-2x8 / 1,306	2-2x8 / 1,477	3-2x8 / 1,648	3-2x8 / 1,819	3-2x8 / 1,990	3-2x8 / 2,161	3-2x8 / 2,332						Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x8	2-2x10	3-2x8	3-2x10						Beam 'B'
	8'	16"	17"	18"	20"									Corner Footing Bottom Dia.
		15"	17"	18"	19"									Center Footing Bottom Dia.
		2x8	2x8	2x10	2x10									Joist Size @ 16" O.C.
		3-2x8 / 1,741	3-2x8 / 1,969	3-2x10 / 2,197	3-2x10 / 2,425									Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x10									Beam 'B'
	10'	18"	19"	20"										Corner Footing Bottom Dia.
		16"	17"	19"										Center Footing Bottom Dia.
		2x10	2x10	2x12										Joist Size @ 16" O.C.
		3-2x10 / 2,177	3-2x10 / 2,462	3-2x12 / 2,747										Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8										Beam 'B'
	12'	19"	20"											Corner Footing Bottom Dia.
		16"	18"											Center Footing Bottom Dia.
		2x12	2x12											Joist Size @ 16" O.C.
		3-2x12 / 2,612	3-2x12 / 2,954											Beam 'A' / Reaction lbs *
		2-2x8	2-2x8											Beam 'B'
	14'													

Multi-Span		
L ≤ 8'-0"	L ≤ 8'-0"	
Corner	Center See Note 14	Corner

Simple Span	Simple Span	
L > 8'-0"	L > 8'-0"	
Corner	Center See Note 14	Corner

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NOTES:

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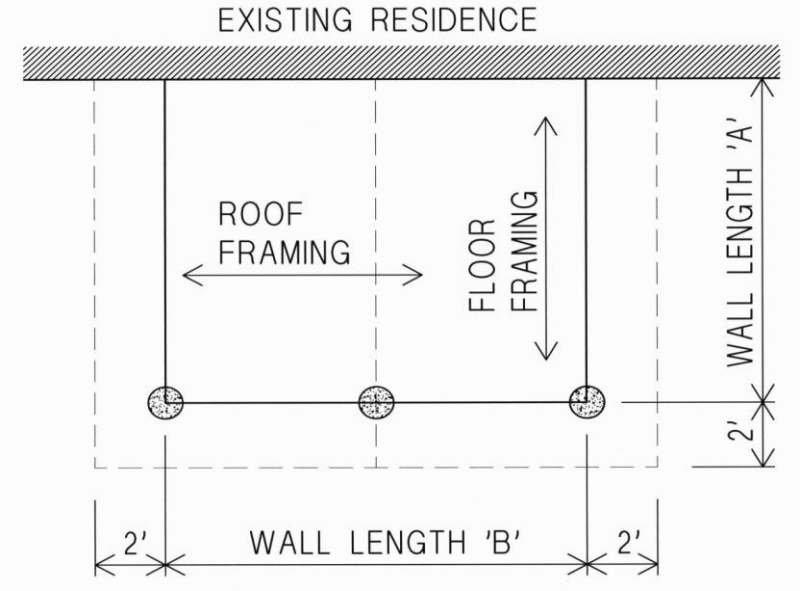
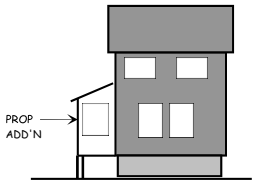
Capacity of (1) - 1/2 inch dia. thru-bolt = 350 lbs

8. Diagonal bracing (beam to post) is required on all additions ≥ 4'-0" from grade to top of floor elevation. If Beam 'B' is attached directly to the top of the concrete piers, diagonal bracing is not required.
9. Beams shall be attached to the posts with a post / column cap or the post notched 3 inches from one side (two 2x only) and thru bolted with two or three 1/2 inch diameter bolts and washers. Three ply 2x beams require post / column caps.
10. Posts shall be a minimum 6x6 and be attached to the concrete piers with a post base and anchor bolt (with 7 inches embedment) or approved equal.
11. Concrete piers shall be reinforced with a minimum of (1) - #4 bar vertical.
12. The ledger shall be attached to the existing rim with a min. of two rows 1/2 inch diameter lag bolts at 16 inches O.C.
*13. Beam 'A' may not be able to be connected to the ledger due to its reaction. Beam 'A' may have to be pocketed into the wall with solid bearing to the foundation (flash as req.). The connection of Beam 'A' at the residence must be reviewed and approved. Ledger attachment to the existing rim / structure controls.
14. Beam 'B' ≤ 16'-0" (wall length B) shall be one length of lumber (multi-span condition). Beam 'B' > 16'-0" (wall length B) shall be two separate lengths of lumber (two simple spans) and spliced at the center post / pier.
15. Maximum grade to top of floor elevation shall not exceed 10'-0".



Residential Design Guidelines for Additions on Posts 120 SF or Less

Shed Roof, 1'0" Overhangs and Lookouts, (2) – Posts/Piers



A x B		DIMENSION 'B'							Table assumes 1'-0" overhangs & lookouts
		4'	6'	8'	10'	12'	14'	16'	
DIMENSION 'A' see Note 13	4'	11"	12"	13"	15"	16"	17"		Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8	2x8	2x8		Joist Size @ 16" O.C.
		1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415		Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x10	2-2x12	3-2x12		Beam 'B'
	6'	12"	14"	15	17"	18"			Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8	2x8			Joist Size @ 16" O.C.
		1-2x8 / 622	1-2x8 / 622	1-2x8 / 622	1-2x8 / 622	1-2x8 / 622			Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x12	3-2x12			Beam 'B'
	8'	14"	16"	17"	19"	20"			Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8	2x8			Joist Size @ 16" O.C.
		2-2x8 / 829	2-2x8 / 829	2-2x8 / 829	2-2x8 / 829	2-2x8 / 829			Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x12	3-2x12	3-2x12			Beam 'B'
	10'	15"	17"	19"	21"				Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8				Joist Size @ 16" O.C.
		3-2x8 / 1,037	3-2x8 / 1,037	3-2x8 / 1,037	3-2x8 / 1,037				Beam 'A' / Reaction lbs *
		2-2x8	2-2x10	2-2x12	3-2x12				Beam 'B'
	12'	16"	19"	20"	22"				Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8				Joist Size @ 16" O.C.
		3-2x8 / 1,244	3-2x8 / 1,244	3-2x8 / 1,244	3-2x8 / 1,244				Beam 'A' / Reaction lbs *
		2-2x8	2-2x10	2-2x12	3-2x12				Beam 'B'
	14'	18"	20"	22"					Min. Footing Bottom Diameter
		2x10	2x10	2x10					Joist Size @ 16" O.C.
		3-2x10 / 1,451	3-2x10 / 1,451	3-2x10 / 1,451					Beam 'A' / Reaction lbs *
		2-2x8	2-2x10	3-2x10					Beam 'B'

Additions on posts / piers which exceed 120 SF or deviate from this table will require a complete design and drawings certified by a MN licensed Structural Engineer

NOTES:

1. Roof framing is assumed to have overhangs and lookouts ≤ 1'-0".
2. Roof framing is perpendicular to existing house.
3. Floor joists are perpendicular to existing house.
4. Footings are at corners of addition with no intermediate (center) footing.
5. CANTILEVERS may not exceed depth of joist or beam.
6. Beam sizes for Beams 'A' and 'B' are for Southern Pine No. 2 or Better.
7. Wood for Beam 'B' must be pressure treated.
8. Diagonal bracing (beam to post) is required on all additions ≥ 4'-0" from grade to top of floor elevation. If Beam 'B' is attached directly to the top of the concrete piers, diagonal bracing is not required.
9. Beams shall be attached to the posts with a post / column cap or the post notched 3 inches from one side (two 2x only) and thru bolted with two or three 1/2 inch diameter bolts and washers. Three ply 2x beams require post / column caps.
10. Posts shall be a minimum 6x6 and be attached to the concrete piers with a post base and anchor bolt or approved equal.

DESIGN LOADS:

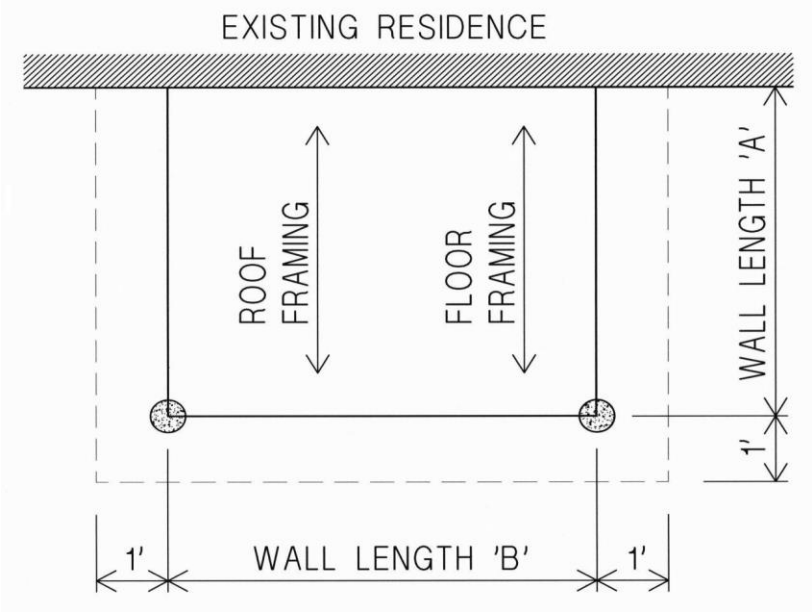
Roof Load = 42 psf LL + 15 psf DL L/240
Wall Load = 10 psf DL
Floor Load = 40 psf LL + 10 psf DL L/360
Soil Bearing = 2,000 psf
Capacity of (1) - 1/2 inch dia. lag bolt = 180 lbs
Capacity of (1) - 1/2 inch dia. thru-bolt = 350 lbs

#posts; #engineer; #porch

11. Concrete piers shall be reinforced with a minimum of (1) - #4 bar vertical.
12. The ledger shall be attached to the existing rim with a minimum of two rows 1/2 inch diameter lag bolts at 16 inches O.C.

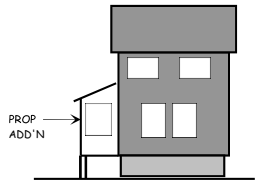
*13. Beam 'A' may not be able to be connected to the ledger due to its reaction. Beam 'A' may have to be pocketed into the wall with solid bearing to the foundation (flash as req.). The connection of Beam 'A' at the residence must be reviewed and approved. The ledger attachment to the existing rim / structure controls.

14. Maximum grade to top of floor elevation shall not exceed 10'-0".



Residential Design Guidelines for Additions on Posts 120 SF or Less

Shed Roof, 1'0" Overhangs and Lookouts, (3) – Posts/Piers



A x B		DIMENSION 'B' see Note 14												Table assumes 1'-0" overhangs & lookouts
		8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	
DIMENSION 'A' see Note 13	4'	11"	11"	12"	13"	13"	14"	15"	15"	16"	16"	17"	17"	Corner Footing Bottom Dia.
		13"	15"	16"	17"	18"	17"	18"	19"	20"	21"	22"	22"	Center Footing Bottom Dia.
		2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	Joist Size @ 16" O.C.
		1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	1-2x8 / 415	Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x8	2-2x10	3-2x8	3-2x8	3-2x10	3-2x10	3-2x12	3-2x12	3-2x12	Beam 'B'
	6'	12"	13"	14"	15"	15"	16"	17"						Corner Footing Bottom Dia.
		15"	17"	18"	20"	21"	20"	21"						Center Footing Bottom Dia.
		2x8	2x8	2x8	2x8	2x8	2x8	2x8						Joist Size @ 16" O.C.
		1-2x8 / 622	1-2x8 / 622	1-2x8 / 622	1-2x8 / 622	1-2x8 / 622	1-2x8 / 622	1-2x8 / 622						Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x10	2-2x10	3-2x10	3-2x10						Beam 'B'
	8'	14"	15"	16"	16"									Corner Footing Bottom Dia.
		17"	18"	20"	22"									Center Footing Bottom Dia.
		2x8	2x8	2x8	2x8									Joist Size @ 16" O.C.
		2-2x8 / 829	2-2x8 / 829	2-2x8 / 829	2-2x8 / 829									Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x10									Beam 'B'
	10'	15"	16"	17"										Corner Footing Bottom Dia.
		18"	20"	22"										Center Footing Bottom Dia.
		2x8	2x8	2x8										Joist Size @ 16" O.C.
		3-2x8 / 1,037	3-2x8 / 1,037	3-2x8 / 1,037										Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10										Beam 'B'
	12'	16"	18"											Corner Footing Bottom Dia.
		19"	22"											Center Footing Bottom Dia.
		2x8	2x8											Joist Size @ 16" O.C.
		3-2x8 / 1,244	3-2x8 / 1,244											Beam 'A' / Reaction lbs *
		2-2x8	2-2x8											Beam 'B'
	14'	18"												Corner Footing Bottom Dia.
		21"												Center Footing Bottom Dia.
		2x10												**Joist Size @ 12" O.C.**
		3-2x10 / 1,451												Beam 'A' / Reaction lbs *
		2-2x8												Beam 'B'

Additions on posts / piers which exceed 120 SF or deviate from this table will require a complete design and drawings certified by a MN licensed Structural Engineer

Multi-Span		
L ≤ 8'-0"	L ≤ 8'-0"	
Corner	Center See Note 14	Corner

Simple Span	Simple Span	
L > 8'-0"	L > 8'-0"	
Corner	Center See Note 14	Corner

NOTES:

1. Roof framing is assumed to have overhangs and lookouts not exceeding 1'-0".
2. Roof framing is perpendicular to existing house.
3. Floor joists are perpendicular to existing house.
4. Footings are at corners of addition with one intermediate (center) footing.
5. CANTILEVERS may not exceed depth of joist or beam.
6. Beam sizes for Beams 'A' and 'B' are for Southern Pine No. 2 or Better.

DESIGN LOADS:

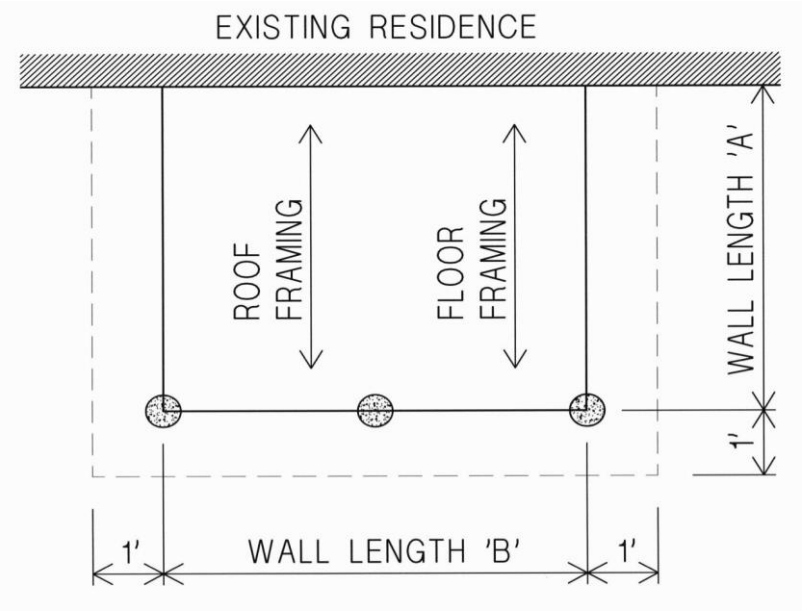
Roof Load = 42 psf LL + 15 psf DL L/240
Wall Load = 10 psf DL
Floor Load = 40 psf LL + 10 psf DL L/360
Soil Bearing = 2,000 psf
Capacity of (1) - 1/2 inch dia. lag bolt = 180 lbs
Capacity of (1) - 1/2 inch dia. thru-bolt = 350 lbs

#posts; #engineer; #porch

7. Wood for Beam 'B' must be pressure treated.
8. Diagonal bracing (beam to post) is required on all additions ≥ 4'-0" from grade to top of floor elevation. If Beam 'B' is attached directly to the top of the concrete piers, diagonal bracing is not required.
9. Beams shall be attached to the posts with a post / column cap or the post notched 3 inches from one side (two 2x only) and thru bolted with two or three 1/2 inch diameter bolts and washers. Three ply 2x beams require post / column caps.
10. Posts shall be a minimum 6x6 and be attached to the concrete piers with a post base and anchor bolt (with 7 inches embedment) or approved equal.
11. Concrete piers shall be reinforced with a minimum of (1) - #4 bar vertical.
12. The ledger shall be attached to the existing rim with a min. of two rows 1/2 inch diameter lag bolts at 16 inches O.C.

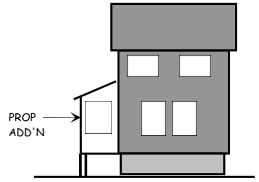
*13. Beam 'A' may not be able to be connected to the ledger due to its reaction. Beam 'A' may have to be pocketed into the wall with solid bearing to the foundation (flash as req.). The connection of Beam 'A' at the residence must be reviewed and approved. Ledger attachment to the existing rim / structure controls.

14. Beam 'B' ≤ 16'-0" (wall length B) shall be one length of lumber (multi-span condition). Beam 'B' > 16'-0" (wall length B) shall be two separate lengths of lumber (two simple spans) and spliced at the center post / pier.
15. Maximum grade to top of floor elevation shall not exceed 10'-0".



Residential Design Guidelines for Additions on Posts 120 SF or Less

Shed Roof, 2'0" Overhangs and Lookouts, (2) – Posts/ Piers



A x B		DIMENSION 'B'							Table assumes 2'-0" overhangs & lookouts
		4'	6'	8'	10'	12'	14'	16'	
DIMENSION 'A' see Note 13	4'	12"	13"	15"	16"	17"	18"		Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8	2x8	2x8		Joist Size @ 16" O.C.
		1-2x8 / 529	1-2x8 / 529	1-2x8 / 529	1-2x8 / 529	1-2x8 / 529	1-2x8 / 529		Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x12	3-2x10	3-2x12		Beam 'B'
	6'	13"	15"	17"	18"	19"			Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8	2x8			Joist Size @ 16" O.C.
		1-2x8 / 793	1-2x8 / 793	1-2x8 / 793	1-2x8 / 793	1-2x8 / 793			Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x12	3-2x12			Beam 'B'
	8'	15"	17"	18"	20"				Min. Footing Bottom Diameter
		2x8	2x8	2x8	2x8				Joist Size @ 16" O.C.
		2-2x8 / 1,057	2-2x8 / 1,057	2-2x8 / 1,057	2-2x8 / 1,057				Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x12	3-2x12				Beam 'B'
	10'	16"	18"	20"	22"				Min. Footing Bottom Diameter
		2x10	2x10	2x10	2x10				Joist Size @ 16" O.C.
		2-2x10 / 1,322	2-2x10 / 1,322	2-2x10 / 1,322	2-2x10 / 1,322				Beam 'A' / Reaction lbs *
		2-2x8	2-2x10	2-2x12	3-2x12				Beam 'B'
	12'	18"	20"	22"	23"				Min. Footing Bottom Diameter
		2x10	2x10	2x10	2x10				Joist Size @ 16" O.C.
		3-2x10 / 1,586	3-2x10 / 1,586	3-2x10 / 1,586	3-2x10 / 1,586				Beam 'A' / Reaction lbs *
		2-2x8	2-2x10	3-2x10	3-2x12				Beam 'B'
	14'	19"	21"	23"					Min. Footing Bottom Diameter
		2x10	2x10	2x10					Joist Size @ 16" O.C.
		3-2x10 / 1,850	3-2x10 / 1,850	3-2x10 / 1,850					Beam 'A' / Reaction lbs *
		2-2x8	2-2x10	3-2x10					Beam 'B'

Additions on posts / piers which exceed 120 SF or deviate from this table will require a complete design and drawings certified by a MN licensed Structural Engineer

NOTES:

1. Roof framing is assumed to have overhangs and lookouts > 1'-0", but ≤ 2'-0".
2. Roof framing is perpendicular to existing house.
3. Floor joists are perpendicular to existing house.
4. Footings are at corners of addition with no intermediate (center) footing.
5. CANTILEVERS may not exceed depth of joist or beam.
6. Beam sizes for Beams 'A' and 'B' are for Southern Pine No. 2 or Better.
7. Wood for Beam 'B' must be pressure treated.
8. Diagonal bracing (beam to post) is required on all additions ≥ 4'-0" from grade to top of floor elevation. If Beam 'B' is attached directly to the top of the concrete piers, diagonal bracing is not required.
9. Beams shall be attached to the posts with a post / column cap or the post notched 3 inches from one side (two 2x only) and thru bolted with two or three 1/2 inch diameter bolts and washers. Three ply 2x beams require post / column caps.
10. Posts shall be a minimum 6x6 and be attached to the concrete piers with a post base and anchor bolt or approved equal.
11. Concrete piers shall be reinforced with a minimum of (1) - #4 bar vertical.

DESIGN LOADS:

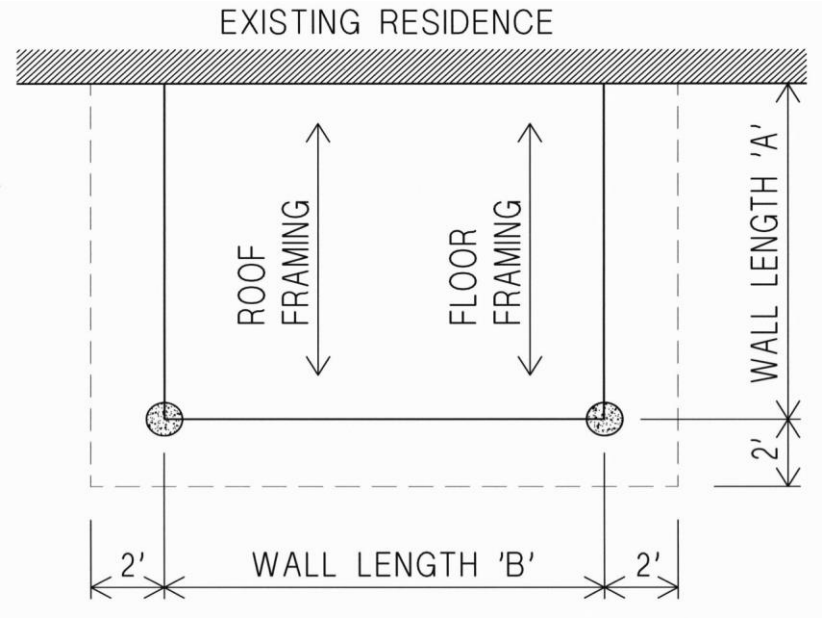
Roof Load = 42 psf LL + 15 psf DL L/240
Wall Load = 10 psf DL
Floor Load = 40 psf LL + 10 psf DL L/360
Soil Bearing = 2,000 psf
Capacity of (1) - 1/2 inch dia. lag bolt = 180 lbs
Capacity of (1) - 1/2 inch dia. thru-bolt = 350 lbs

#posts; #engineer; #porch

12. The ledger shall be attached to the existing rim with a minimum of two rows 1/2 inch diameter lag bolts at 16 inches O.C.

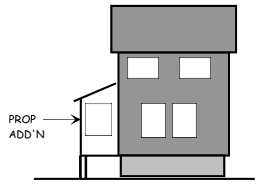
*13. Beam 'A' may not be able to be connected to the ledger due to its reaction. Beam 'A' may have to be pocketed into the wall with solid bearing to the foundation (flash as req.). The connection of Beam 'A' at the residence must be reviewed and approved. The ledger attachment to the existing rim / structure controls.

14. Maximum grade to top of floor elevation shall not exceed 10'-0".



Residential Design Guidelines for Additions on Posts 120 SF or Less

Shed Roof, 2'0" Overhangs and Lookouts, (3) – Posts/ Piers



A x B		DIMENSION 'B' see Note 14												Table assumes 2'-0" overhangs & lookouts
		8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'	
DIMENSION 'A' see Note 13	4'	12"	12"	13"	14"	15"	15"	16"	16"	17"	18"	18"		Corner Footing Bottom Dia.
		14"	16"	17"	19"	20"	19"	20"	21"	22"	23"	23"		Center Footing Bottom Dia.
		2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8	2x8		Joist Size @ 16" O.C.
		1-2x8 / 529	1-2x8 / 529	1-2x8 / 529	1-2x8 / 529	1-2x8 / 529	1-2x8 / 529	1-2x8 / 529	1-2x8 / 529	1-2x8 / 529	1-2x8 / 529	1-2x8 / 529		Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x8	2-2x10	3-2x8	3-2x10	3-2x10	3-2x12	3-2x12	3-2x12		Beam 'B'
	6'	13"	14"	15"	16"	17"	17"	18"						Corner Footing Bottom Dia.
		16"	18"	19"	21"	22"	21"	22"						Center Footing Bottom Dia.
		2x8	2x8	2x8	2x8	2x8	2x8	2x8						Joist Size @ 16" O.C.
		1-2x8 / 793	1-2x8 / 793	1-2x8 / 793	1-2x8 / 793	1-2x8 / 793	1-2x8 / 793	1-2x8 / 793						Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x8	2-2x10	2-2x10	3-2x10	3-2x10						Beam 'B'
	8'	15"	16"	17"	18"									Corner Footing Bottom Dia.
		17"	19"	21"	23"									Center Footing Bottom Dia.
		2x8	2x8	2x8	2x8									Joist Size @ 16" O.C.
		2-2x8 / 1,057	2-2x8 / 1,057	2-2x8 / 1,057	2-2x8 / 1,057									Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10	2-2x10									Beam 'B'
	10'	16"	17"	18"										Corner Footing Bottom Dia.
		19"	21"	23"										Center Footing Bottom Dia.
		2x8	2x8	2x8										Joist Size @ 16" O.C.
		3-2x8 / 1,322	3-2x8 / 1,322	3-2x8 / 1,322										Beam 'A' / Reaction lbs *
		2-2x8	2-2x8	2-2x10										Beam 'B'
	12'	18"	19"											Corner Footing Bottom Dia.
		20"	22"											Center Footing Bottom Dia.
		2x10	2x10											Joist Size @ 16" O.C.
		3-2x10 / 1,586	3-2x10 / 1,586											Beam 'A' / Reaction lbs *
		2-2x8	2-2x8											Beam 'B'
	14'	19"												Corner Footing Bottom Dia.
		21"												Center Footing Bottom Dia.
		2x10												**Joist Size @ 12" O.C.**
		3-2x10 / 1,850												Beam 'A' / Reaction lbs *
		2-2x8												Beam 'B'

Multi-Span		
L ≤ 8'-0"	L ≤ 8'-0"	
Corner	Center See Note 14	Corner

Simple Span	Simple Span	
L > 8'-0"	L > 8'-0"	
Corner	Center See Note 14	Corner

Additions on posts / piers which exceed 120 SF or deviate from this table will require a complete design and drawings certified by a MN licensed Structural Engineer

NOTES:

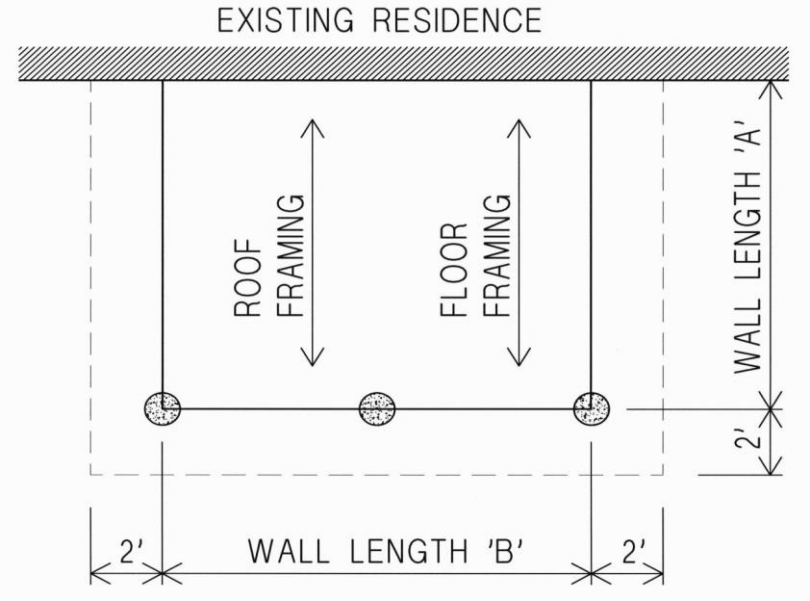
1. Roof framing is assumed to have overhangs and lookouts > 1'-0", but ≤ 2'-0".
2. Roof framing is perpendicular to existing house.
3. Floor joists are perpendicular to existing house.
4. Footings are at corners of addition with one intermediate (center) footing.
5. CANTILEVERS may not exceed depth of joist or beam.
6. Beam sizes for Beams 'A' and 'B' are for Southern Pine No. 2 or Better.

DESIGN LOADS:

Roof Load = 42 psf LL + 15 psf DL L/240
Wall Load = 10 psf DL
Floor Load = 40 psf LL + 10 psf DL L/360
Soil Bearing = 2,000 psf
Capacity of (1) - 1/2 inch dia. lag bolt = 180 lbs
Capacity of (1) - 1/2 inch dia. thru-bolt = 350 lbs

#posts; #engineer; #porch

7. Wood for Beam 'B' must be pressure treated.
8. Diagonal bracing (beam to post) is required on all additions ≥ 4'-0" from grade to top of floor elevation. If Beam 'B' is attached directly to the top of the concrete piers, diagonal bracing is not required.
9. Beams shall be attached to the posts with a post / column cap or the post notched 3 inches from one side (two 2x only) and thru bolted with two or three 1/2 inch diameter bolts and washers. Three ply 2x beams require post / column caps.
10. Posts shall be a minimum 6x6 and be attached to the concrete piers with a post base and anchor bolt (with 7 inches embedment) or approved equal.
11. Concrete piers shall be reinforced with a minimum of (1) - #4 bar vertical.
12. The ledger shall be attached to the existing rim with a min. of two rows 1/2 inch diameter lag bolts at 16 inches O.C.

*13. Beam 'A' may not be able to be connected to the ledger due to its reaction. Beam 'A' may have to be pocketed into the wall with solid bearing to the foundation (flash as req.). The connection of Beam 'A' at the residence must be reviewed and approved. Ledger attachment to the existing rim / structure controls.

14. Beam 'B' ≤ 16'-0" (wall length B) shall be one length of lumber (multi-span condition). Beam 'B' > 16'-0" (wall length B) shall be two separate lengths of lumber (two simple spans) and spliced at the center post / pier.
15. Maximum grade to top of floor elevation shall not exceed 10'-0".