STRONGHOLD INSULATED CONCRETE FORM (ICF) STRUCTURAL GUIDELINE (CANADA)

Date	Jan 28, 2021
File No.	0068-7-2
For	Stronghold Insulation Systems, Inc.
Address	P.O. Box 351, Pelican Rapids, MN 56572

Subject

Stronghold Insulated Concrete Form (ICF) System

Scope of Stronghold ICF Structural guide

This guideline is for building with Stronghold Insulated Concrete Forms (ICF) to comply with the Structural requirements of the 2015 National Building Code of Canada (NBC).

The reinforcing tables prepared are intended to be used as guidance for i) Tables 1-12: Preparing prescriptive installations in compliance with NBC Part 9, and, ii) Appendix Tables A1-A12 and B1-B12: Estimating reinforcing for construction where professional design is required in accordance with NBC Part 4. The Lintel details, general information on preparation of ICF walls, and all diagram and drawing details are prepared to apply to both the Part 9 and Part 4 design tables.

Appendix Foundation Tables A1-A6 and B1-B6 for equitable wall sizes are separated in to three groupings of Seismic Design Categories: 1) PGA ≤ 0.15, 2) 0.15 < PGA ≤ 0.4, and 3) 0.4 < PGA ≤ 0.65. Appendix Above-Grade Tables A7-A9 and B7-B9 for equitable wall sizes are separated in to three groupings of Seismic Design Categories: 1) $S_a(0.2) \leq 0.4$, 2) $0.4 < S_a(0.2) \leq 0.8$, and 3) $0.8 < S_a(0.2) \leq 1.5$. There are different reinforcing details for these groupings and care must be made to use the correct table corresponding to the project site details.

Stronghold ICF forms and this structural guide are for the forming of concrete walls only. All other structural elements and non-structural elements of the building interacting with the stay-in-place forms and concrete walls are not provided by Stronghold ICF and must comply with Code.

This prescriptive engineering guide shall be used as a reference only. It is not to be used as a specification or drawing detail as design documents for any construction project. It is the user's responsibility to ensure the information provided meets local building code requirements and construction practices. Structural designers using this guide must prepare project-specific calculations and drawings corresponding to the actual building design conditions. Stronghold ICF and BOCA Engineering assume no responsibility for misinterpretation or misuse of this guide.

Compliance Statement: The concrete wall structural details when installed per the conditions as specified in this report meet the 2015 National Building Code of Canada (NBC).

This report has been prepared and reviewed on behalf of Boca Engineering Co. by:

Christopher Bowness, P.Eng., P.E. — 2021-01-28 — Date

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Stronghold ICF Description

Stronghold ICF FX and KD Series are permanent concrete forms for preparing above or below grade concrete walls, consisting of two panels of expanded polystyrene (EPS) foam plastic joined by thermoplastic cross ties, leaving an open cavity for placing reinforcing and concrete. Foam plastic panels are 1.45 pcf (23.2 kg/m^3) nominal density, 2.75-in (70 mm) thick, and the concrete wall thickness is 4, 6, 8, 10 or 12 inches (100, 150, 200, 250, 305 mm). Stronghold ICF stay-in-place concrete forms conform to CAN/ULC S701 as required in NBC 9.15.4.1, and CAN/ULC S717.1 *Standard Specification for ICF*.

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Design Parameters for Using Stronghold ICF Wall Reinforcing Tables

GENERAL

The building dimensions, weight of materials, occupancy loading, and climatic loading must be within the limitations of NBC 9.1.1. (Additional limitations apply for concrete walls-above-grade as outlined subsequently in this guide)

Weight of concrete in Stronghold ICF walls estimated as 150 lbs/ft^3 (2400 kg/m^3).

MAXIMUM DESIGN LOADS – Part 9 Sections of this Guide (service level, non-factored)[1][2]				
	DEAD		**LIVE**	
	PSF	**kPa**	**PSF**	**kPa**
ROOF/CEILING	15	0.8	80 (snow + live)	2.3 (snow + live)
FLOOR/CEILING	10	0.5	40	1.9
ROOF OVERHANG	2 FT max, 8 PSF DL (0.6 m max, 0.4 kPa)			
GROUND SNOW LOAD	Maximum Ground Snow Load: S_s = 70 PSF (3.33 kPa)			
	Importance Category: Normal			
WIND	EXPOSURE CATEGORY: Rough $q_{1/50}$ = 14 PSF (0.7 kPa) Foundations, 25 PSF (1.2 kPa) Above-Grade			
	Importance Category: Normal (I_w ULS: 1 and SLS: 0.75)			
SEISMIC	Seismic Spectral Response Acceleration S_a(0.2) = 0.4			
	Importance Category: Normal ((I_w ULS: 1)			

1. Design loads in this table shall provide maximum loading constraints used in the design tables provided in this guide unless alternate loading is specified in the tables contained in this guide.
2. Design loads used for Engineered tables of this guide are shown at the beginning of Appendix A.

Appendix Tables A1-A12 and B1-B12 of this guide provide for ranges of commonly encountered wall and backfill heights, backfill equivalent fluid pressures, snow, wind and seismic conditions. All design loads shown are service-level (unfactored). Design model calculations are made with all applicable load factors per NBC Part 4, Importance Factor of 1.

FOUNDATION WALLS BELOW GRADE

The bearing surface is to have a suitable allowable bearing pressure for the building conditions and in no case less than 1570 psf (75 kPa).

Walls are not subjected to hydrostatic pressure or surcharges, with level surface grade of backfill.

Foundation walls shall be laterally supported at the top and bottom as required by NBC 9.15.5.3 by methods satisfactory to the Code as acceptable to the building authority.

Foundation walls are to support light framed walls over, or,

Foundation walls supporting ICF Concrete walls built in accordance with this guide.

Where using Tables 1-4 of this guide for prescriptive installations to NBC 9.15, additional limitations apply:

i) Backfill is drained earth with a maximum equivalent fluid pressure of 30 pcf (480 kg/m^3) and is not subjected to hydrostatic pressure or surcharges, and,

ii) Seismic spectral acceleration S_a(0.2) is a maximum of 0.35.

ABOVE GRADE WALLS

Above-grade concrete walls must fall within the building dimensions and loading conditions of this guide, and:

i) Building height does not exceed two stories, individual storey height of 10 ft (3 m), nor a mean roof height of 35 ft (10.7 m), plan dimensions in either direction do not exceed 60 ft, floor spans are no greater than 32 ft (9.8m) and roof spans are no greater than 40 ft (12 m).

Where using Tables 5-8 of this guide for prescriptive installations to NBC 9.20.17, additional limitations apply:

ii) The building is to contain a single dwelling unit, and,
iii) Seismic spectral acceleration $S_a(0.2)$ is a maximum of 0.4.

Walls are constructed in accordance with the details and within the dimensional limits of the drawings in this guide.

Walls must be laterally supported on the top and bottom by a floor or roof framing system or slab on grade, by methods acceptable per NBC 9.20.17.5-6 or Part 4.

The minimum reinforcing and solid wall lengths are installed according to the tables in this guide, for the applicable referenced building dimension and loading conditions.

Solid wall length tables in this guide show commonly encountered design conditions.

At all exterior wall corners, as per NBC 9.20.17.3 and 9.20.17.4 solid wall segments are required each way with minimum length of four (4) ft (1.2 m), as reflected in Tables 5-8 of this guide. Buildings constructed in accordance with Part 4 are not subject to this limitation, and the engineered Tables A7-A12 and B7-B12 have employed a minimum 2 ft (0.6 m) solid wall segment at each corner.

Solid wall segment lengths must be a minimum of two (2) ft (0.61 m), and no more than two segments of less than four (4) ft (1.6 m) may be used to calculate the total summed length.

The length of solid wall total is taken as the summation of all qualifying solid wall segments along the projected straight line of a sidewall or end wall as shown in diagram 0068-015 of this guide.

The cumulative width in openings must not exceed 70% of the total wall length.

The maximum clear span of any opening is 18 ft (5.5 m), and in load-bearing walls is not to exceed the maximum allowable span of the corresponding Lintel detail.

LINTELS IN LOAD-BEARING WALL OPENINGS

Reinforced lintels are required in openings greater than 2 ft (0.6 m) in all load-bearing Stronghold ICF walls.

The figures and tables in this guide for lintel reinforcing of load-bearing walls are based on NBC Tables 9.20.17.4.-A – C, simplified to commonly encountered design conditions and optimized for the Stronghold ICF system.

The lintel tables in this guide apply to uniformly loaded spans up to those specified in the lintel tables. Lintels supporting concentrated loads such as from beams or girders, spans exceeding those specified in the lintel tables or loading conditions other than as stated, requires lintels designed per CSA A23.3.

WALL PREPARATION INFORMATION, TABLES AND FIGURES

FOR USE IN DESIGN AND CONSTRUCTION BEGIN NEXT PAGE

Preparation of Stronghold ICF Foundation Walls

Concrete materials and preparation must comply with CSA A23.1, and have a 28-day minimum compressive strength of 2900 psi (20 MPa) with a maximum aggregate size of ¾-inch (19 mm).

Reinforcing steel must conform to CSA G30.18 with a minimum yield strength of 60,000 psi (400 MPa).

Backfill drainage is to be prepared as per NBC 9.4.4.6, or Part 4.

Waterproofing and damproofing is to be prepared as per NBC 9.13, or Part 4.

Footings are to be prepared in accordance with NBC 9.15.3 or Part 4 and connected in to Stronghold ICF wall forms by 15M bars spaced not more than 4 ft (1.2 m).

Walls interrupted by openings greater than 2 ft (0.6 m) are to be additionally reinforced in accordance with NBC 9.15.4.5.(4) with extra vertical and horizontal bars of minimum 2-10M placed within 12-inches (300 mm) of all four sides and extending minimum 2 ft (0.6 m) beyond the opening.

Lintels in openings of foundation walls are to be prepared in accordance with Tables 9-12 of this guide based on NBC Tables 9.20.17.4.-A-C and NBC 9.20.17.4, or designed to Part 4.

Openings within 4 ft (1.2 m) of inside or outside corners are not permitted, and in accordance with NBC 9.15.4.3 additional reinforcing is required in openings when the width exceeds 4 ft (1.2 m) or when the total width exceeds 25% of the total wall.

Lap splices in horizontal and vertical reinforcing bars are to comply with NBC 9.3.1.1.(4)(b)(iii) or CSA A23.3 12.15. The minimum overlap of 10M bars is 18-inches (450 mm) and 15M bars is 26-inches (650 mm). The maximum gap between splice bars is 3.5-inches (90 mm) for 10M and 5-inches (130 mm) for 15M.

Control joints are required per NBC 9.15.4.9 at a minimum of 49 ft (15 m). In reinforced walls, the reinforcing shall run continuous through construction joints with minimum lap splice distance each way.

General Notes to Stronghold ICF Foundation Wall Tables 1-4

1. Soil pressures are approximated in accordance with soil classes of the Unified Soil Classification system as per ASTM D2487-17 and Foundations and Earth Structures, NAVFAC DM-7.2 (1986), where table values are only applicable to those actual pressures shown.
2. Table values are based on a reinforcing yield strength of 60,000 psi (400 MPa).
3. NR indicates that reinforcing is not required by the NBC.
4. A dashline (–) in a box indicates that the application is not recommended at that corresponding thickness, height, and bar size.
5. Allowable deflection is L/240, where L is the unsupported height of the foundation wall.
6. Interpolation is not permitted.
7. Where walls will retain 4 feet (1.2 m) or more of unbalanced backfill, they shall be laterally supported at the top and bottom before backfilling.
8. Vertical reinforcement is to be placed with 1.25-inches (30 mm) cover from the inside face of the wall, with an acceptable inwards tolerance of 10% of the wall thickness.
9. Concrete is to have a minimum specified 28-day compressive strength of 2900 psi (20 MPa).

BELOW GRADE WALL REINFORCING TABLES AND DIAGRMS BEGIN NEXT PAGE

TABLE 1: PART 9 APPLICATION STRONGHOLD ICF UNREINFORCED FOUNDATION WALLS, SEISMIC $S_a(0.2) \le 0.35$ [1][2][3][4][7][8]				
TYPE OF FOUNDATION WALL	MIN. WALL THICKNESS, in (mm)	MAXIMUM HEIGHT OF FINISHED GROUND ABOVE BASEMENT FLOOR OR CRAWL SPACE GROUND COVER, ft-in (m)		
		HEIGHT OF FOUNDATION WALL LATERALLY SUPPORTED AT THE TOP, ft-in (m)		
		≤ 8'-0" (2.5 m)	> 8'-0" (2.5 m) AND ≤ 9'0" (2.75 m)	> 9'0" (2.75 m) AND ≤ 10'0" (3.0 m)
SOLID CONCRETE, 20 MPa MIN. STRENGTH	6" (150 mm)	5'-3" (1.6 m)	5'-3" (1.6 m)	5'-3" (1.6 m)
	8" (200 mm)	7'-2" (2.2 m)	7'-2" (2.2 m)	6'-6" (2.0 m)
	10" (250 mm)	7'-2" (2.2 m)	8'-6" (2.6 m)	8'-6" (2.6 m)
	12" (300 mm)	7'-2" (2.2 m)	8'-6" (2.6 m)	9'-10" (3.0 m)

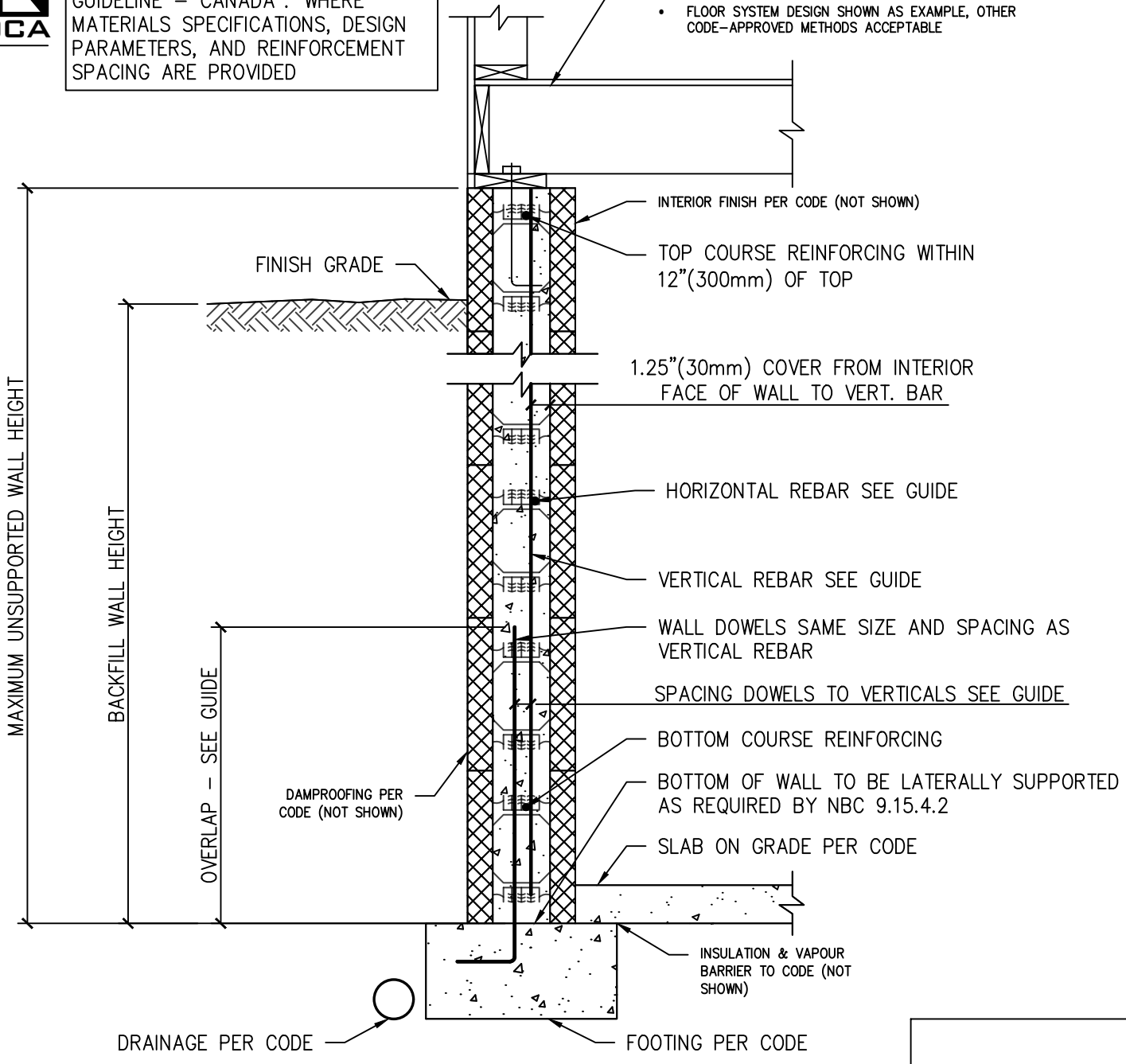
TABLE 2: PART 9 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 6" (150 mm) FOUNDATION WALLS, SEISMIC $S_a(0.2) \le 0.35$ [1][2][3][4][7][8]							
MAXIMUM UNBALANCED BACKFILL HEIGHT, ft-in (m)	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, in (mm)						MINIMUM HORIZONTAL BAR SIZE AND SPACING, in (mm)
	MAXIMUM WALL HEIGHT, ft-in (m)						
	8'-0" (2.44 m)		9'-0" (2.75 m)		10'-0" (3.00 m)		
	10M	15M[5]	10M	15M[5]	10M	15M[5]	
4'-5" (1.35 m)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	10M @ 24" (600) o.c.
5'-3" (1.6 m)	16" (400)	16" (400)	8" (200)	16" (400)	8" (200)	16" (400)	10M @ 24" (600) o.c.
6'-6" (2.0 m)	8" (200)	16" (400)	8" (200)	16" (400)	8" (200)	16" (400)	10M @ 24" (600) o.c.
7'-2" (2.2 m)	8" (200)	16" (400)	8" (200)	16" (400)	8" (200)	16" (400)	10M @ 24" (600) o.c.
7'-8" (2.35 m)	n/a	n/a	8" (200)	16" (400)	8" (200)	16" (400)	10M @ 24" (600) o.c.
8'-6" (2.6 m)	n/a	n/a	8" (200)	16" (400)	8" (200)	16" (400)	10M @ 24" (600) o.c.
9'-10" (3.0 m)	n/a	n/a	n/a	n/a	n/a	8" (200)	10M @ 24" (600) o.c.

TABLE 3: PART 9 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 8" (200 mm) FOUNDATION WALLS, SEISMIC $S_a(0.2) \le 0.35$ [1][2][3][4][7][8]							
MAXIMUM UNBALANCED BACKFILL HEIGHT, ft-in (m)	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, in (mm)						MINIMUM HORIZONTAL BAR SIZE AND SPACING, in (mm)
	MAXIMUM WALL HEIGHT, ft-in (m)						
	8'-0" (2.44 m)		9'-0" (2.75 m)		10'-0" (3.00 m)		
	10M	15M[5]	10M	15M[5]	10M	15M[5]	
7'-2" (2.2 m)	NR	NR	8" (200)	16" (400)	8" (200)	16" (400)	10M @ 24" (600) o.c.
7'-8" (2.35 m)	n/a	n/a	8" (200)	16" (400)	8" (200)	16" (400)	10M @ 24" (600) o.c.
8'-6" (2.6 m)	n/a	n/a	8" (200)	16" (400)	n/a	16" (400)	10M @ 24" (600) o.c.
9'-10" (3.0 m)	n/a	n/a	n/a	n/a	n/a	16" (400)	10M @ 24" (600) o.c.

TABLE 4: PART 9 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 10" (250 mm) FOUNDATION WALLS, SEISMIC $S_a(0.2) \le 0.35$ [1][2][3][4][6][7][8]							
MAXIMUM UNBALANCED BACKFILL HEIGHT, ft-in (m)	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, in (mm)						MINIMUM HORIZONTAL BAR SIZE AND SPACING, in (mm)
	MAXIMUM WALL HEIGHT, ft-in (m)						
	8'-0" (2.44 m)		9'-0" (2.75 m)		10'-0" (3.00 m)		
	10M	15M[5]	10M	15M[5]	10M	15M[5]	
7'-2" (2.2 m)	NR	NR	NR	NR	NR	NR	10M @ 24" (600) o.c.
8'-6" (2.6 m)	n/a	n/a	n/a	16" (400)	n/a	16" (400)	10M @ 24" (600) o.c.
9'-10" (3.0 m)	n/a	n/a	n/a	n/a	n/a	16" (400)	10M @ 24" (600) o.c.

1) See "General Notes to Stronghold ICF Foundation Walls Tables 1 – 4" for additional table requirements.
2) Tables are based on 2015 NBC Tables 9.15.4.2.-A, 9.15.4.5.-A, 9.15.4.5.-B and 9.15.4.5.-C.
3) Tables are to be used in conjunction with "Stronghold ICF Structural Guideline - Canada" and drawings 0068-001 to 0068-004 prepared by BOCA Engineering Co which contain materials specifications, building conditions, design limitations and installation details.
4) Seismic limitations for using Part 9 prescriptive tables are recommended based on notes in NBC 4.1.8.16.(7), using $I_E = 1$, $F_a = 1$, $S_a(0.2) = 0.35$.
5) All 15M rebar options provided are based on equivalent strength calculations of 10M spacing specified by code, except where 10M labeled "n/a", 15M required by code.
6) Reinforcement shown may be applied to 12" (300mm) foundation walls.
7) Per NBC A-9.4.4.6, backfill is drained earth with a maximum equivalent fluid pressure of 30 pcf (480 kg/m^3) and is not subjected to hydrostatic pressure or surcharges.
8) See Appendix A Engineered Foundation tables for scenarios beyond the limitations shown herein.

DRAWING TO BE USED WITH GUIDE TITLED "STRONGHOLD ICF STRUCTURAL GUIDELINE – CANADA": WHERE MATERIALS SPECIFICATIONS, DESIGN PARAMETERS, AND REINFORCEMENT SPACING ARE PROVIDED



6"(150mm) STRONGHOLD ICF FOUNDATION WALL (TYP.)

NOT–TO–SCALE

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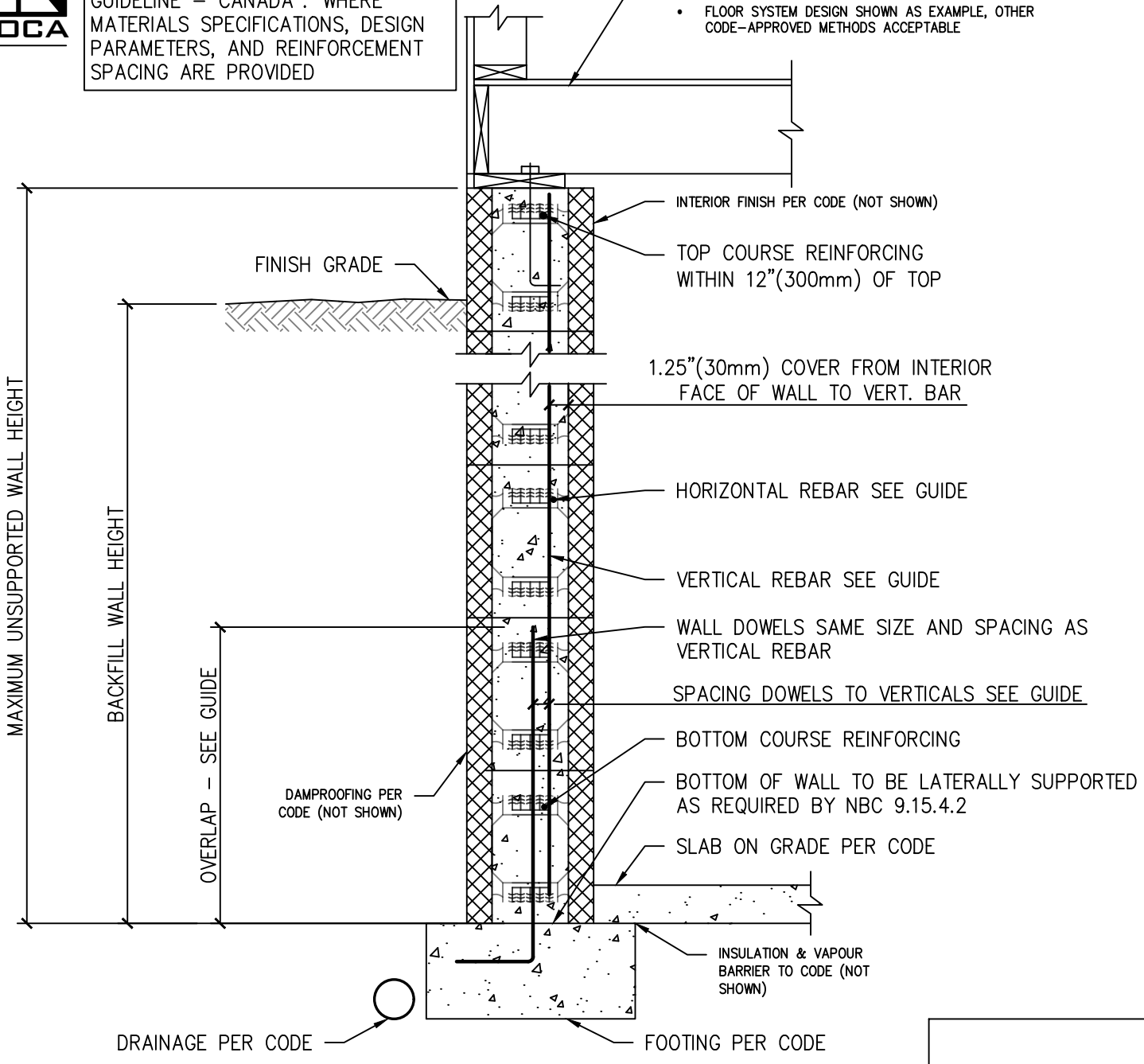

8"(200mm) STRONGHOLD ICF FOUNDATION WALL (TYP.)

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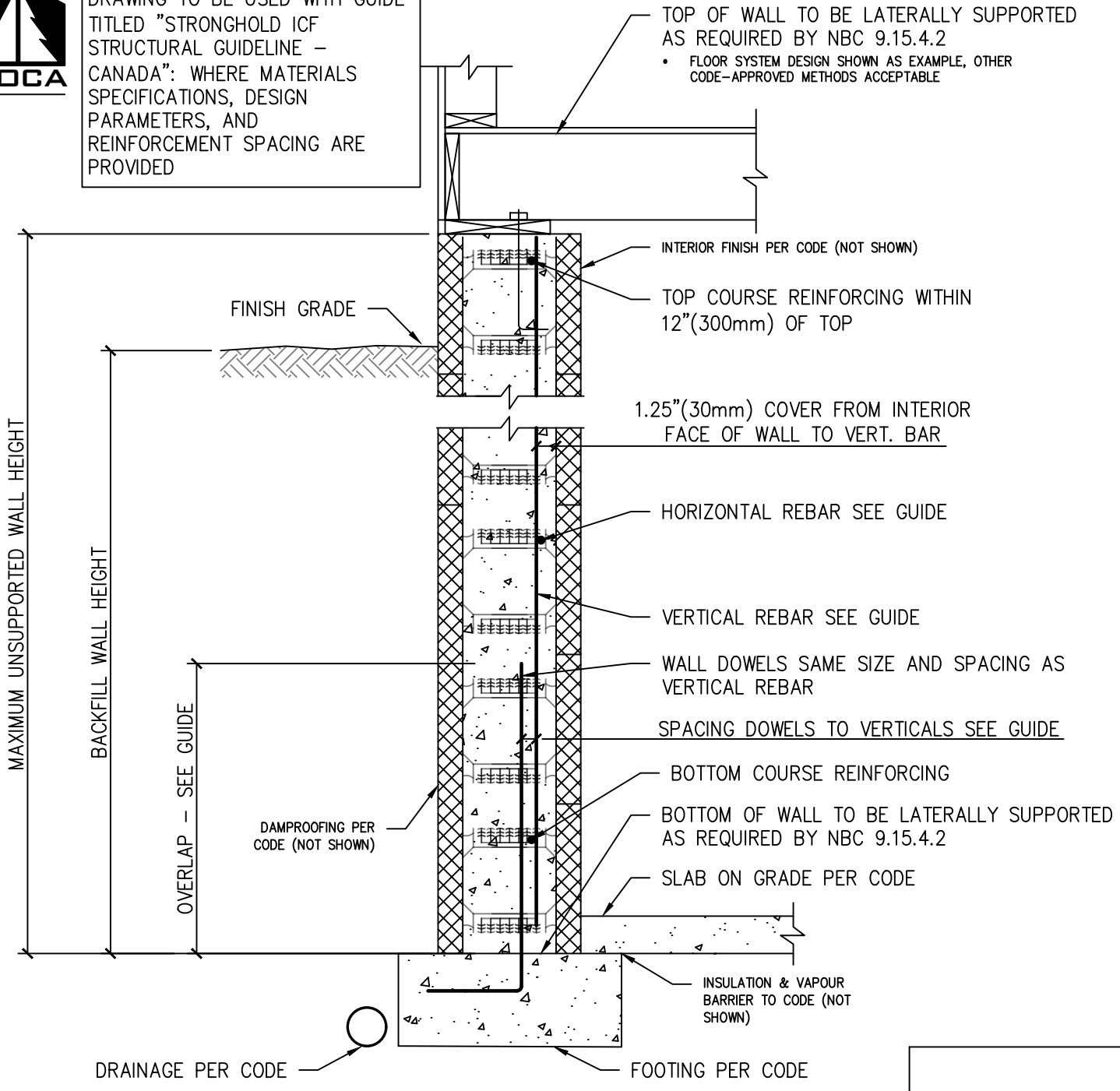

10"(250mm) STRONGHOLD ICF FOUNDATION WALL (TYP.)

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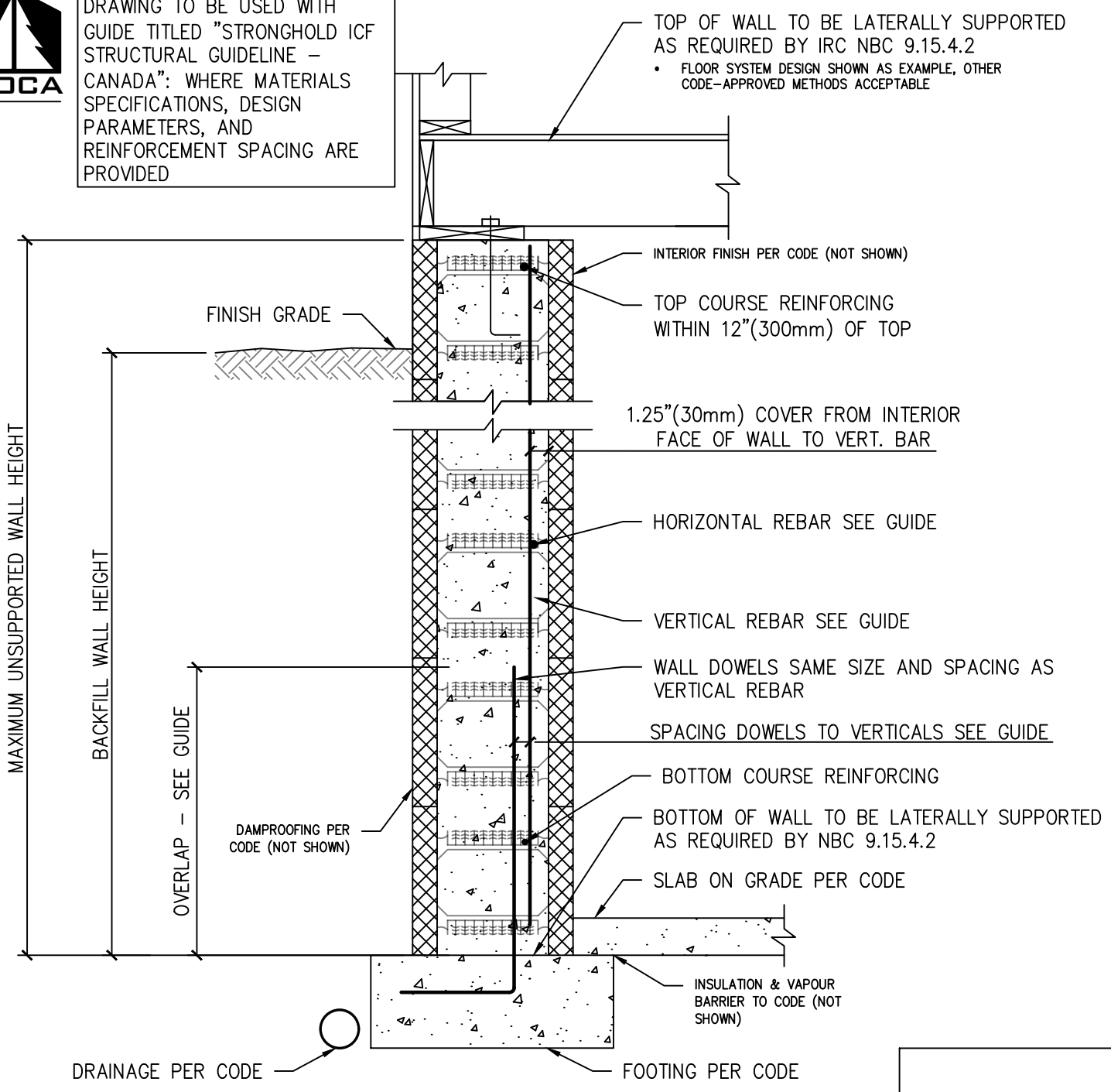

12"(300mm) STRONGHOLD ICF FOUNDATION WALL (TYP.)

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Preparation of Stronghold ICF Above Grade Walls

Concrete materials and preparation must comply with CSA A23.1, and have a 28-day minimum compressive strength of 2900 psi (20 MPa) with a maximum aggregate size of ¾-inch (19 mm).

Reinforcing steel must conform to CSA G30.18 with a minimum yield strength of 60,000 psi (400 MPa).

Portions of walls above openings of non-loadbearing walls shall be a minimum depth of 8-inches (200 mm).

Lintels in openings wider than 2 ft (600 mm) of loadbearing walls are to be prepared in accordance with Tables 9-12 of this guide based on NBC Tables 9.20.17.4.-A-C and NBC 9.20.17.4, or designed to Part 4.

Walls interrupted by openings greater than 2 ft (0.6 m) are to be additionally reinforced in accordance with NBC 9.15.4.5.(4) with extra vertical and horizontal bars of minimum 2-10M placed within 12-inches (300 mm) of all four sides and extending minimum 2 ft (0.6 m) beyond the opening.

Lap splices in horizontal and vertical reinforcing bars are to comply with NBC 9.3.1.1.(4)(b)(iii) or CSA A23.3 12.15. The minimum overlap of 10M bars is 18-inches (450 mm) and 15M bars is 26-inches (650 mm). The maximum gap between splice bars is 3.5-inches (90 mm) for 10M and 5-inches (130 mm) for 15M.

Reinforcing shall be continuous through storey breaks where there are concrete walls above or below. Lap splicing is permissible following the guidelines for lap splice development length.

Vertical bars at the ends of solid wall lengths, and adjacent to openings, shall be terminated at ends with a 90° hook.

The exterior is to be protected from precipitation and damage with finish materials as per NBC 9.27 or Part 5.

General Notes to Stronghold ICF Above Grade Wall Tables 5-8

1. Table is to be used in conjunction with "Stronghold ICF Structural Guideline - Canada" and drawings 0068-010 to 0068-016 prepared by BOCA Engineering Co which contain materials specifications, building conditions, design limitations and installation details.
2. Table is based on prescriptive details in Part 9 and checked by NBC Section 4.1.7.3 Wind Loads – Static Procedure using a mean roof height of 35 feet (10.7m), exposure factor, C_e, equal to 0.7 for rough terrain, topographic factor, C_t equal to 1.0, product of pressure coefficient and gust factor, C_pC_g equal to 2.2, and ultimate limit state importance factor for wind load, I_w equal to 1.0.
3. Table is based prescriptive details in Part 9 and checked by NBC Section 4.1.8.11 Equivalent Static Force Procedure for Structures Satisfying the Conditions of Article 4.1.8.7. using site coefficient, F(0.2) = 1.0, higher mode factor, M_v equal to 1.0, ductility-related force modification factor, R_d equal to 1.5, overstrength-related force modification factor, R_o equal to 1.3, and ultimate limit state importance factor for wind load, I_E equal to 1.0.
4. Minimum concrete 28-day compressive strength of 2900 psi (20 MPa); reinforcing steel bar yield strength of 60,000 psi (400 MPa).
5. Interpolation is not permitted.

ABOVE GRADE WALL REINFORCING TABLES AND DIAGRAMS BEGIN NEXT PAGE

TABLE 5: PART 9 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR ABOVE GRADE WALLS, WHERE SEISMIC SPECTRAL RESPONSE ACCELERATION $S_a(0.2) \leq 0.4$[(1)]

MAXIMUM REFERENCE VELOCITY PRESSURE, $q_{1/50}$ psf (kPa)	MAXIMUM UNSUPPORTED WALL HEIGHT PER STORY ft (m)	MINIMUM 10M BAR VERTICAL REINFORCEMENT SPACING, in (m)								MINIMUM HORIZ. BAR SIZE AND SPACING, in (mm)[(4)]
		Minimum nominal wall thickness, in (mm)								
		6" (150 mm)		8" (200 mm)		10" (250 mm)		12" (300 mm)[(3)(4)]		
		Top[(2)]	Side[(2)]	Top[(2)]	Side[(2)]	Top[(2)]	Side[(2)]	Top[(2)]	Side[(2)]	
25 psf (1.2 kPa)	8'-0" (2.44 m)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	10M @ 24" (600) o.c.
	9'-0" (2.75 m)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	10M @ 24" (600) o.c.
	10'-0" (3.00 m)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	16" (400)	10M @ 24" (600) o.c.

SHADED AREA THICKNESS OVER 10" BEYOND PART 9 LIMITS REQUIRE ENGINEERED DESIGN. REINFORCING SHOWN FOR ESTIMATING PURPOSES ONLY.

1) See "General Notes to Stronghold ICF Above Grade Wall Tables 5 – 8" for additional table requirements.
2) "Top" loading means gravity loading from roof, floor or wall construction bearing on top the wall. "Side" loading means gravity load from floor construction which is transferred to the wall through a wood ledger or cold-formed steel track bolted to the side of the wall.
3) 12" wall reinforcing specified in table shall be placed in two layers parallel with wall faces to satisfy CSA A23.3 – 14 Cl. 14.1.8.3.
4) 12" wall horizontal reinforcing shall be a double grid at 24" o/c spacing to satisfy CSA A23.3 – 14 Cl. 14.1.8.3.

TABLE 6: PART 9 APPLICATION LENGTH OF SOLID WALL REQUIRED IN EACH EXTERIOR ENDWALL FOR WIND PERPENDICULAR TO RIDGE ONE STOREY OR TOP OF TWO STOREY, WHERE SEISMIC SPECTRAL RESPONSE ACCELERATION $S_a(0.2) \leq 0.4$[(1)]

SIDEWALL LENGTH ft (m)[(5)]	ENDWALL LENGTH ft (m)[(5)]	ROOF SLOPE[(5)]	LENGTH OF SOLID WALL REQUIRED IN ENDWALLS FOR WIND PERPENDICULAR TO RIDGE, ft (m)[(2)(3)(4)]							
			Minimum nominal wall thickness, in (mm)							
			6" (150 mm)		8" (200 mm)		10" (250 mm)		12" (300 mm)	
			Maxiumum Reference Velocity Pressure, $q_{1/50}$, psf (kPa)							
			14 psf (0.7 kPa)	25 psf (1.2 kPa)	14 psf (0.7 kPa)	25 psf (1.2 kPa)	14 psf (0.7 kPa)	25 psf (1.2 kPa)	14 psf (0.7 kPa)	25 psf (1.2 kPa)
15 ft (4.6 m)	15 ft (4.6 m)	5:12	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)
		12:12	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)
	30 ft (9.1 m)	5:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
		12:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
	45 ft (13.7 m)	5:12	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)
		12:12	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)
	60 ft (18.3 m)	5:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
		12:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
30 ft (9.1 m)	15 ft (4.6 m)	5:12	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)
		12:12	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)
	30 ft (9.1 m)	5:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
		12:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
	45 ft (13.7 m)	5:12	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)
		12:12	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)
	60 ft (18.3 m)	5:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
		12:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
60 ft (18.3 m)	15 ft (4.6 m)	5:12	8' (2.4 m)	8.5' (2.5 m)	8' (2.4 m)	8.5' (2.5 m)	8' (2.4 m)	8.5' (2.5 m)	8' (2.4 m)	8.5' (2.5 m)
		12:12	8' (2.4 m)	10' (3 m)	8' (2.4 m)	10' (3 m)	8' (2.4 m)	10' (3 m)	8' (2.4 m)	10' (3 m)
	30 ft (9.1 m)	5:12	9.5' (2.8 m)	10' (2.9 m)	9.5' (2.8 m)	10' (2.9 m)	9.5' (2.8 m)	10' (2.9 m)	9.5' (2.8 m)	10' (2.9 m)
		12:12	9.5' (2.8 m)	13' (3.9 m)	9.5' (2.8 m)	13' (3.9 m)	9.5' (2.8 m)	13' (3.9 m)	9.5' (2.8 m)	13' (3.9 m)
	45 ft (13.7 m)	5:12	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)
		12:12	14' (4.2 m)	16' (4.8 m)	14' (4.2 m)	16' (4.8 m)	14' (4.2 m)	16' (4.8 m)	14' (4.2 m)	16' (4.8 m)
	60 ft (18.3 m)	5:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
		12:12	18.5' (5.5 m)	19.5' (5.8 m)	18.5' (5.5 m)	19.5' (5.8 m)	18.5' (5.5 m)	19.5' (5.8 m)	18.5' (5.5 m)	19.5' (5.8 m)

SHADED AREA THICKNESS OVER 10" BEYOND PART 9 LIMITS REQUIRE ENGINEERED DESIGN. REINFORCING SHOWN FOR ESTIMATING PURPOSES ONLY.

1) See "General Notes to Stronghold ICF Above Grade Wall Tables 5 – 8" for additional table requirements.
2) Solid wall lengths shall not be reduced under any circumstances.
3) Minimum length of solid wall lengths included shall be greater than or equal to 24 inches (0.6 m) in length, and not more than two solid wall lengths greater than or equal to 24 inches (0.6 m) in length and less than 48 inches (1.2 m) in length shall be included in the required total length of solid wall.
4) Table shows minimum summation of solid wall length. Plans are permitted to exceed the minimum length.
5) Where actual sidewall, endwall and roof slope values fall between values provided in table, the next highest design value in the table shall be used.

TABLE 7: PART 9 APPLICATION LENGTH OF SOLID WALL REQUIRED IN EACH EXTERIOR ENDWALL FOR WIND PERPENDICULAR TO RIDGE FIRST STOREY OF TWO STOREY, WHERE SEISMIC SPECTRAL RESPONSE ACCELERATION $S_a(0.2) \leq 0.4$[1]

SIDEWALL LENGTH ft (m)[5]	ENDWALL LENGTH ft (m)[5]	ROOF SLOPE[5]	LENGTH OF SOLID WALL REQUIRED IN ENDWALLS FOR WIND PERPENDICULAR TO RIDGE, ft (m)[2][3][4]							
			Minimum nominal wall thickness, in (mm)							
			6" (150 mm)		8" (200 mm)		10" (250 mm)		12" (300 mm)	
			Maxiumum Reference Velocity Pressure, $q_{1/50}$, psf (kPa)							
			14 psf (0.7 kPa)	25 psf (1.2 kPa)	14 psf (0.7 kPa)	25 psf (1.2 kPa)	14 psf (0.7 kPa)	25 psf (1.2 kPa)	14 psf (0.7 kPa)	25 psf (1.2 kPa)
15 ft (4.6 m)	15 ft (4.6 m)	5:12	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)
		12:12	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)	8' (2.4 m)
	30 ft (9.1 m)	5:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
		12:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
	45 ft (13.7 m)	5:12	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)
		12:12	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)
	60 ft (18.3 m)	5:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
		12:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
30 ft (9.1 m)	15 ft (4.6 m)	5:12	8' (2.4 m)	11' (3.3 m)	8' (2.4 m)	11' (3.3 m)	8' (2.4 m)	11' (3.3 m)	8' (2.4 m)	11' (3.3 m)
		12:12	8' (2.4 m)	12' (3.6 m)	8' (2.4 m)	12' (3.6 m)	8' (2.4 m)	12' (3.6 m)	8' (2.4 m)	12' (3.6 m)
	30 ft (9.1 m)	5:12	9.5' (2.8 m)	12' (3.5 m)	9.5' (2.8 m)	12' (3.5 m)	9.5' (2.8 m)	12' (3.5 m)	9.5' (2.8 m)	12' (3.5 m)
		12:12	9.5' (2.8 m)	13.5' (4 m)	9.5' (2.8 m)	13.5' (4 m)	9.5' (2.8 m)	13.5' (4 m)	9.5' (2.8 m)	13.5' (4 m)
	45 ft (13.7 m)	5:12	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)	14' (4.2 m)
		12:12	14' (4.2 m)	15' (4.5 m)	14' (4.2 m)	15' (4.5 m)	14' (4.2 m)	15' (4.5 m)	14' (4.2 m)	15' (4.5 m)
	60 ft (18.3 m)	5:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
		12:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
60 ft (18.3 m)	15 ft (4.6 m)	5:12	12.5' (3.8 m)	21.5' (6.5 m)	12.5' (3.8 m)	21.5' (6.5 m)	12.5' (3.8 m)	21.5' (6.5 m)	12.5' (3.8 m)	21.5' (6.5 m)
		12:12	13.5' (4.1 m)	23.5' (7.1 m)	13.5' (4.1 m)	23.5' (7.1 m)	13.5' (4.1 m)	23.5' (7.1 m)	13.5' (4.1 m)	23.5' (7.1 m)
	30 ft (9.1 m)	5:12	13.5' (4 m)	23' (6.9 m)	13.5' (4 m)	23' (6.9 m)	13.5' (4 m)	23' (6.9 m)	13.5' (4 m)	23' (6.9 m)
		12:12	15.5' (4.7 m)	26.5' (8 m)	15.5' (4.7 m)	26.5' (8 m)	15.5' (4.7 m)	26.5' (8 m)	15.5' (4.7 m)	26.5' (8 m)
	45 ft (13.7 m)	5:12	14.5' (4.3 m)	24.5' (7.3 m)	14.5' (4.3 m)	24.5' (7.3 m)	14.5' (4.3 m)	24.5' (7.3 m)	14.5' (4.3 m)	24.5' (7.3 m)
		12:12	17.5' (5.2 m)	29.5' (8.9 m)	17.5' (5.2 m)	29.5' (8.9 m)	17.5' (5.2 m)	29.5' (8.9 m)	17.5' (5.2 m)	29.5' (8.9 m)
	60 ft (18.3 m)	5:12	18.5' (5.5 m)	25.5' (7.7 m)	18.5' (5.5 m)	25.5' (7.7 m)	18.5' (5.5 m)	25.5' (7.7 m)	18.5' (5.5 m)	25.5' (7.7 m)
		12:12	19' (5.7 m)	32.5' (9.8 m)	19' (5.7 m)	32.5' (9.8 m)	19' (5.7 m)	32.5' (9.8 m)	19' (5.7 m)	32.5' (9.8 m)

SHADED AREA THICKNESS OVER 10" BEYOND PART 9 LIMITS REQUIRE ENGINEERED DESIGN. REINFORCING SHOWN FOR ESTIMATING PURPOSES ONLY.

1) See "General Notes to Stronghold ICF Above Grade Wall Tables 5 – 8" for additional table requirements.
2) Solid wall lengths shall not be reduced under any circumstances.
3) Minimum length of solid wall lengths included shall be greater than or equal to 24 inches (0.6 m) in length, and not more than two solid wall lengths greater than or equal to 24 inches (0.6 m) in length and less than 48 inches (1.2 m) in length shall be included in the required total length of solid wall
4) Table shows minimum summation of solid wall length. Plans are permitted to exceed the minimum length.
5) Where actual sidewall, endwall and roof slope values fall between values provided in table, the next highest design value in the table shall be used.

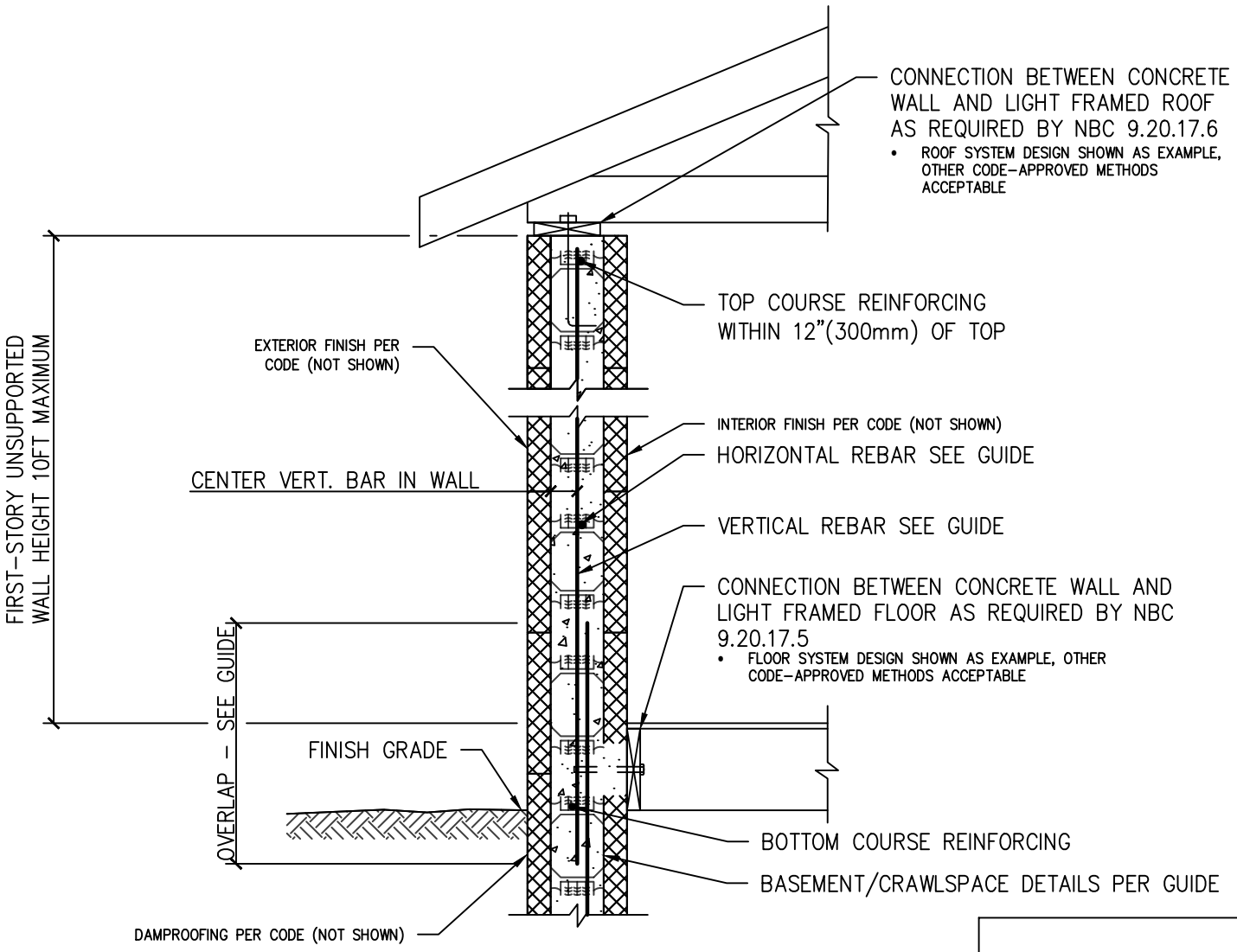
TABLE 8: PART 9 APPLICATION LENGTH OF SOLID WALL REQUIRED IN EACH EXTERIOR SIDEWALL FOR WIND PARALLEL TO RIDGE, WHERE SEISMIC SPECTRAL RESPONSE ACCELERATION $S_a(0.2) \leq 0.4$[1]

SIDEWALL LENGTH ft (m)[5]	ENDWALL LENGTH ft (m)[5]	ROOF SLOPE[5]	LENGTH OF SOLID WALL REQUIRED IN SIDEWALLS FOR WIND PARALLEL TO RIDGE, ft (m)[2][3][4]							
			Minimum nominal wall thickness, in (mm)							
			6" (150 mm)		8" (200 mm)		10" (250 mm)		12" (300 mm)	
			Maxiumum Reference Velocity Pressure, $q_{1/50}$, psf (kPa)							
			14 psf (0.7 kPa)	25 psf (1.2 kPa)	14 psf (0.7 kPa)	25 psf (1.2 kPa)	14 psf (0.7 kPa)	25 psf (1.2 kPa)	14 psf (0.7 kPa)	25 psf (1.2 kPa)
One story or top story of two story										
< 30 ft (9.1 m)	15 ft (4.6 m)	5:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
		12:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
	30 ft (9.1 m)	5:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
		12:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
	45 ft (13.7 m)	5:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
		12:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
	60 ft (18.3 m)	5:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
		12:12	9.5' (2.8 m)	13' (3.9 m)	9.5' (2.8 m)	13' (3.9 m)	9.5' (2.8 m)	13' (3.9 m)	9.5' (2.8 m)	13' (3.9 m)
60 ft (18.3 m)	45 ft (13.7 m)	5:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
		12:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
	60 ft (18.3 m)	5:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
		12:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
First story of two story										
< 30 ft (9.1 m)	15 ft (4.6 m)	5:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
		12:12	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)	9.5' (2.8 m)
	30 ft (9.1 m)	5:12	9.5' (2.8 m)	11' (3.3 m)	9.5' (2.8 m)	11' (3.3 m)	9.5' (2.8 m)	11' (3.3 m)	9.5' (2.8 m)	11' (3.3 m)
		12:12	9.5' (2.8 m)	12' (3.6 m)	9.5' (2.8 m)	12' (3.6 m)	9.5' (2.8 m)	12' (3.6 m)	9.5' (2.8 m)	12' (3.6 m)
	45 ft (13.7 m)	5:12	10' (3 m)	16.5' (5 m)	10' (3 m)	16.5' (5 m)	10' (3 m)	16.5' (5 m)	10' (3 m)	16.5' (5 m)
		12:12	11' (3.3 m)	18.5' (5.6 m)	11' (3.3 m)	18.5' (5.6 m)	11' (3.3 m)	18.5' (5.6 m)	11' (3.3 m)	18.5' (5.6 m)
	60 ft (18.3 m)	5:12	13.5' (4 m)	23' (6.9 m)	13.5' (4 m)	23' (6.9 m)	13.5' (4 m)	23' (6.9 m)	13.5' (4 m)	23' (6.9 m)
		12:12	15.5' (4.7 m)	26.5' (8 m)	15.5' (4.7 m)	26.5' (8 m)	15.5' (4.7 m)	26.5' (8 m)	15.5' (4.7 m)	26.5' (8 m)
60 ft (18.3 m)	45 ft (13.7 m)	5:12	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)	18.5' (5.5 m)
		12:12	18.5' (5.5 m)	18.5' (5.6 m)	18.5' (5.5 m)	18.5' (5.6 m)	18.5' (5.5 m)	18.5' (5.6 m)	18.5' (5.5 m)	18.5' (5.6 m)
	60 ft (18.3 m)	5:12	18.5' (5.5 m)	23' (6.9 m)	18.5' (5.5 m)	23' (6.9 m)	18.5' (5.5 m)	23' (6.9 m)	18.5' (5.5 m)	23' (6.9 m)
		12:12	18.5' (5.5 m)	26.5' (8 m)	18.5' (5.5 m)	26.5' (8 m)	18.5' (5.5 m)	26.5' (8 m)	18.5' (5.5 m)	26.5' (8 m)

SHADED AREA THICKNESS OVER 10" BEYOND PART 9 LIMITS REQUIRE ENGINEERED DESIGN. REINFORCING SHOWN FOR ESTIMATING PURPOSES ONLY.

1) See "General Notes to Stronghold ICF Above Grade Wall Tables 5 – 8" for additional table requirements.
2) Solid wall lengths shall not be reduced under any circumstances.
3) Minimum length of solid wall lengths included shall be greater than or equal to 24 inches (0.6 m) in length, and not more than two solid wall lengths greater than or equal to 24 inches (0.6 m) in length and less than 48 inches (1.2 m) in length shall be included in the required total length of solid wall
4) Table shows minimum summation of solid wall length. Plans are permitted to exceed the minimum length.
5) Where actual sidewall, endwall and roof slope values fall between values provided in table, the next highest design value in the table shall be used.

DRAWING TO BE USED WITH GUIDE TITLED "STRONGHOLD ICF STRUCTURAL GUIDELINE – CANADA": WHERE MATERIALS SPECIFICATIONS, DESIGN PARAMETERS, AND REINFORCEMENT SPACING ARE PROVIDED



ABOVE–GRADE CONCRETE SINGLE STORY WALL (TYP. 4", 6", 8" & 10" WALLS)

NOT–TO–SCALE

DRAWING FOR STRONGHOLD INSULATED CONCRETE FORMS STRUCTURAL GUIDE – NOT FOR USE AS CONSTRUCTION DESIGN DOCUMENTS

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			DATE: JANUARY 20, 2021	DRN: LI
				CHK: CB

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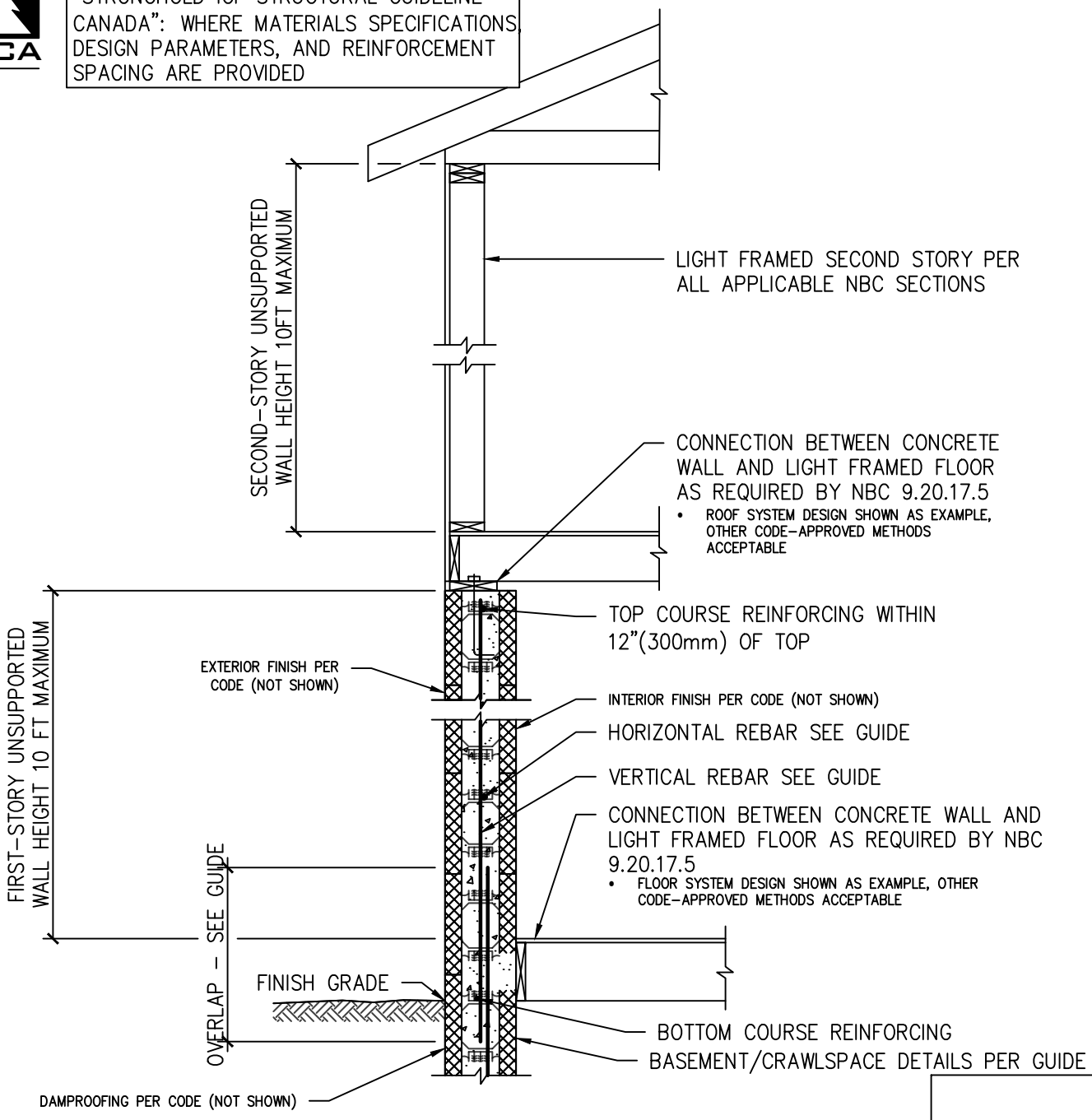

ABOVE–GRADE CONCRETE WALL FIRST STORY, LIGHT FRAMED SECOND STORY (TYP. 4", 6", 8" & 10" WALLS)

NOT–TO–SCALE

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			DATE: JANUARY 20, 2021	DRN: LI
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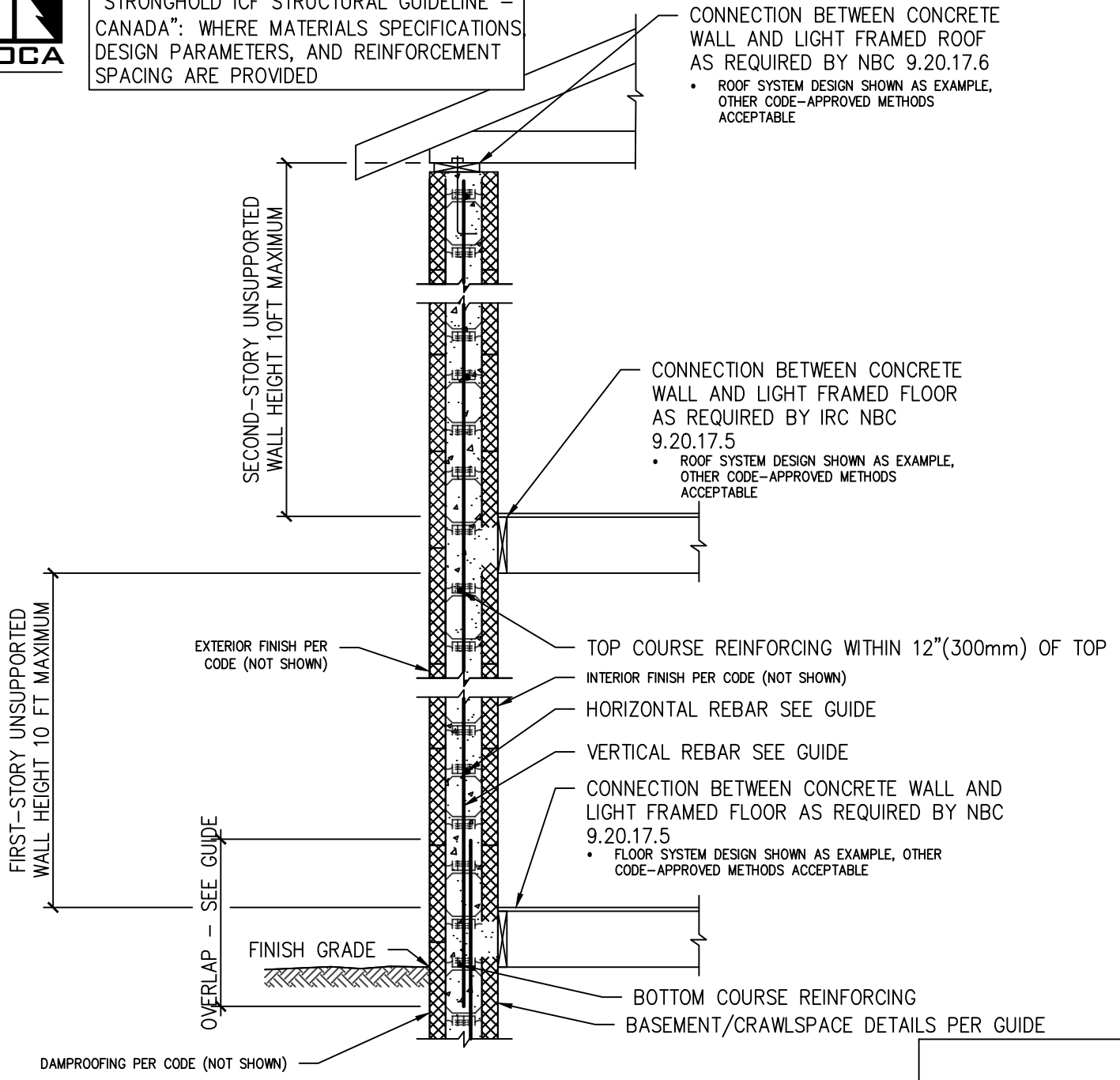

ABOVE–GRADE CONCRETE WALL TWO STORY (TYP. 4", 6", 8" & 10" WALLS)

NOT–TO–SCALE

DRAWING FOR STRONGHOLD INSULATED CONCRETE FORMS STRUCTURAL GUIDE – NOT FOR USE AS CONSTRUCTION DESIGN DOCUMENTS

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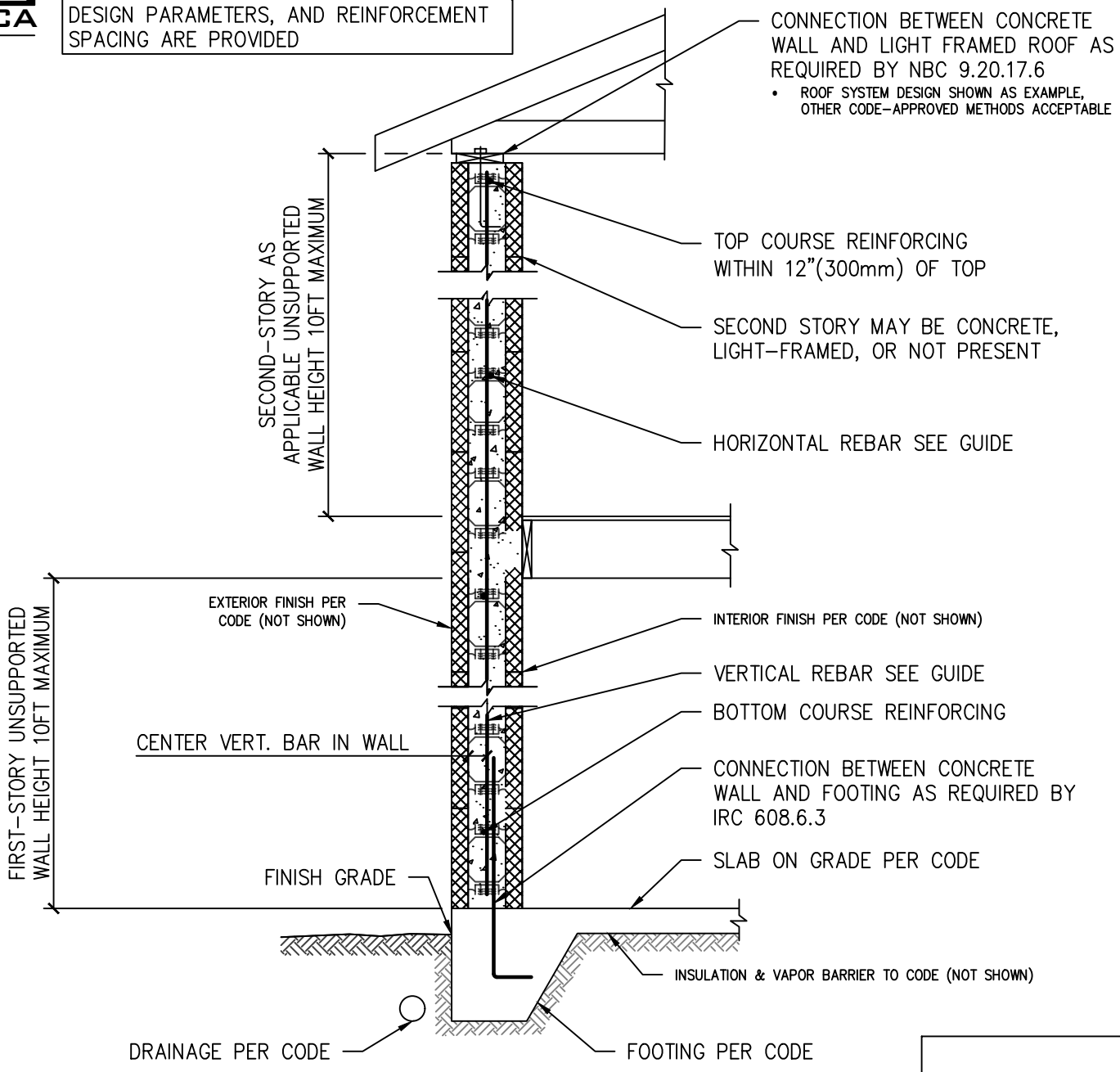

ABOVE–GRADE CONCRETE WALL SUPPORTED ON MONOLITHIC SLAB–ON–GRADE FOOTING (TYP. 4", 6", 8" & 10" WALLS)

NOT–TO–SCALE

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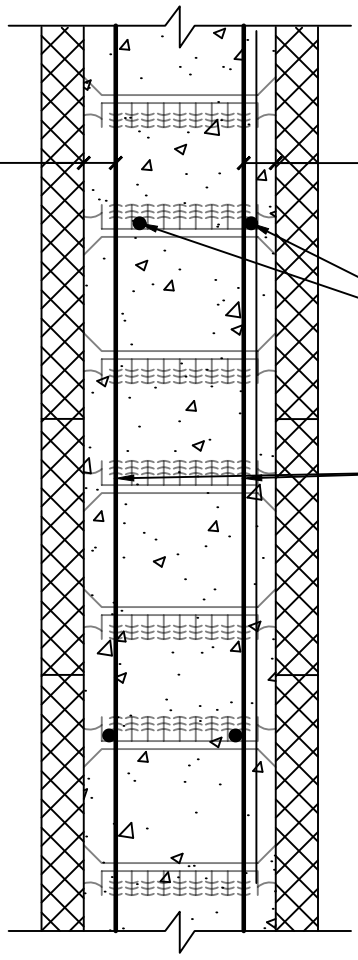
			DATE: JANUARY 20, 2021	DRN: LI
				CHK: CB

DRAWING TO BE USED WITH GUIDE TITLED "STRONGHOLD ICF STRUCTURAL GUIDELINE – CANADA": WHERE MATERIALS SPECIFICATIONS, DESIGN PARAMETERS, AND REINFORCEMENT SPACING ARE PROVIDED



NOTE: STRUCTURAL WALL ELEVATION DRAWINGS 0068–10 TO 0068–13 ARE APPLICABLE TO THE 12"(300mm) STRONGHOLD ICF ABOVE GRADE WALL DOUBLE GIRD REINFORCING DETAILS SHOWN HERE

12"(300mm) STRONGHOLD ICF ABOVE–GRADE CONCETE WALL DETAIL (TYP.)

NOT–TO–SCALE

DRAWING FOR STRONGHOLD INSULATED CONCRETE FORMS STRUCTURAL GUIDE – NOT FOR USE AS CONSTRUCTION DESIGN DOCUMENTS

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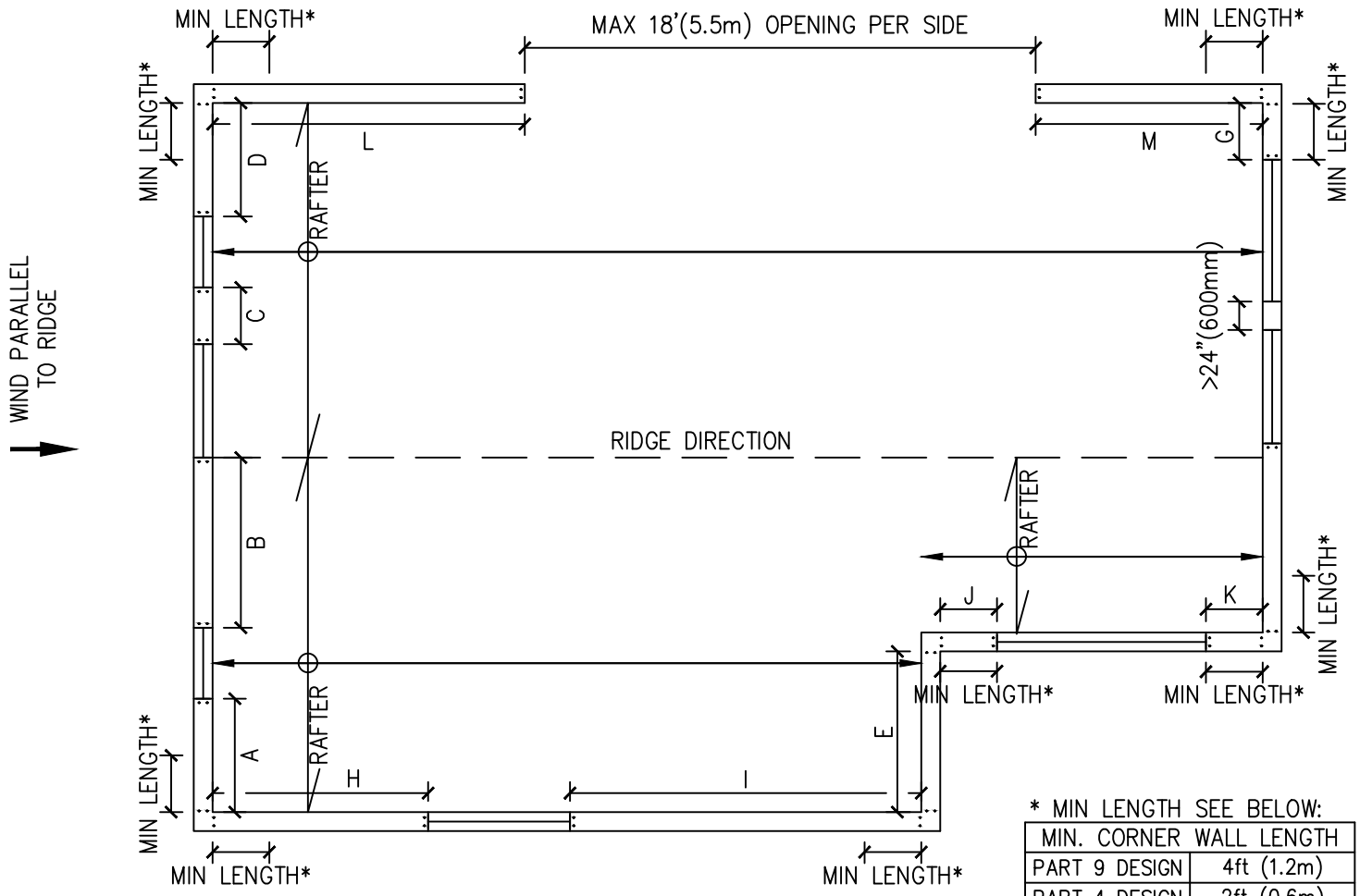
			DATE: JANUARY 20, 2021	DRN: LI
				CHK: CB

NOTE: BUILDING PLAN DIMENSIONS, SHAPE AND SOLID WALL LENGTHS SHOWN ARE FOR REFERENCE AND GUIDANCE ONLY. ACTUAL BUILDING PLAN DIMENSIONS, SHAPE AND SOLID WALL LENGTHS ACCORDING TO BUILDING DESIGNER PLANS.

WIND PERPENDICULAR TO RIDGE



* MIN LENGTH SEE BELOW:

MIN. CORNER WALL LENGTH	
PART 9 DESIGN	4ft (1.2m)
PART 4 DESIGN	2ft (0.6m)

ENDWALL SOLID WALL (SW) LENGTH SAMPLE CALCULATION
WIND PERPENDICULAR TO RIDGE

LEFT SIDE: SW LENGTH = A + B + C + D = APPLICABLE LENGTH FROM TABLE 6/A10/B10 OR 7/A11/B11
RIGHT SIDE: SW LENGTH = E + F + G = APPLICABLE LENGTH FROM TABLE 6/A10/B10 OR 7/A11/B11

SIDEWALL SOLID WALL (SW) LENGTH SAMPLE CALCULATION
WIND PARALLEL TO RIDGE

BOTTOM SIDE: SW LENGTH = H + I + J + K = APPLICABLE LENGTH FROM TABLE 8/A12/B12
TOP SIDE: SW LENGTH = L + M = APPLICABLE LENGTH FROM TABLE 8/A12/B12
END SOLID WALL LENGTHS SHALL BE A MIN. 2ft OR 4ft AT EACH CHANGE IN WALL DIRECTION.

TYP. STRONGHOLD ICF SOLID WALL BUILDING PLAN REFERENCE

NOT-TO-SCALE

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STRONGHOLD INSULATION SYSTEMS INC.	STRONGHOLD INSULATED CONCRETE FORM (ICF) STRUCTURAL GUIDE	STRONGHOLD ICF ABOVE GRADE WALL DETAIL	0068-015	CB
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				CHK: CB

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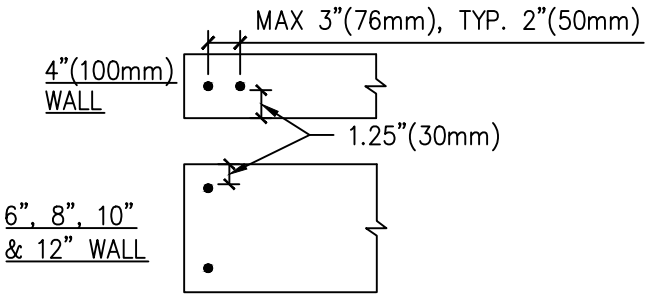
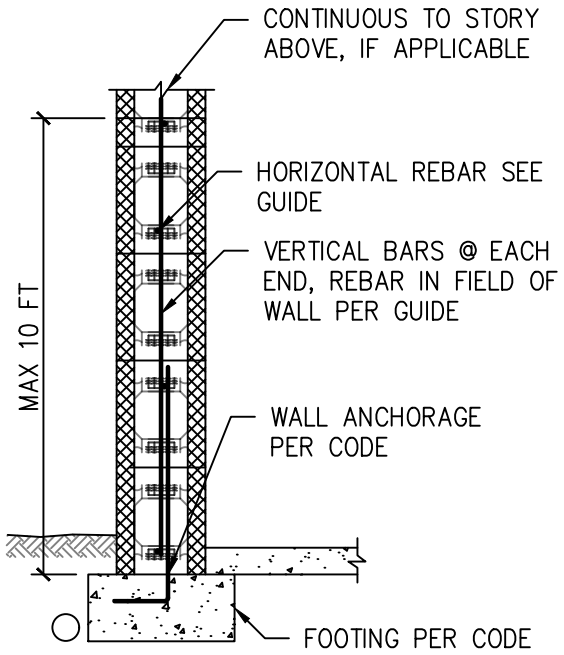
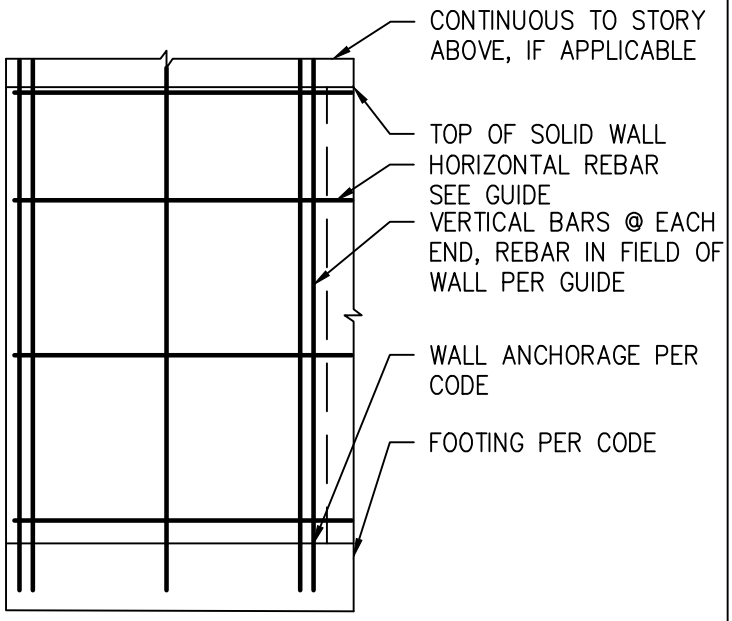


TYP. REBAR LAYOUT @ ENDS
TOP VIEW



1 – TYP. SOLID WALL SECTION
NOT-TO-SCALE



2 – TYP. SOLID WALL ELEV. SECTION
NOT-TO-SCALE

TYP. STRONGHOLD ICF SOLID WALL DETAILS

NOT-TO-SCALE

DRAWING FOR STRONGHOLD INSULATED CONCRETE FORMS STRUCTURAL GUIDE – NOT FOR USE AS CONSTRUCTION DESIGN DOCUMENTS

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STRONGHOLD INSULATION SYSTEMS INC.	STRONGHOLD INSULATED CONCRETE FORM (ICF) STRUCTURAL GUIDE	STRONGHOLD ICF ABOVE GRADE WALL DETAIL	0068–016	CB
			DATE: JANUARY 20, 2021	DRN: LI
				CHK: CB

Preparation of Stronghold ICF Lintels in Wall Openings

Concrete and steel reinforcing materials specifications and installation of lintels are to be consistent with the details of the wall section where the opening occurs.

Lap splices in horizontal and vertical reinforcing bars are to comply with NBC 9.3.1.1.(4)(b)(iii) or CSA A23.3 12.15. The minimum overlap of 10M bars is 18-inches (450 mm) and 15M bars is 26-inches (650 mm). The maximum gap between splice bars is 3.5-inches (90 mm) for 10M and 5-inches (130 mm) for 15M.

Continuous horizontal reinforcing bars may be used as lintel reinforcing bars when positioned according to the lintel diagrams in this guide.

In non-load-bearing walls, wall portions above openings may alternately be prepared following NBC 9.20.17.3, further explained in the section of this guide titled “Preparation of Stronghold ICF Above Grade Walls.”

General Notes to Stronghold ICF Lintel Tables 9 – 12

1. Table is to be used in conjunction with "Stronghold ICF Structural Guideline" and drawing 0068-017 prepared by BOCA Engineering Co. which contains materials specifications, building conditions, design limitations and installation details.
2. Table values are based on uniform loading. Design by professional required for lintels supporting point loads.
3. Deflection criteria is L/240 where L is the clear span of the lintel in inches or ½-inch (12 mm), whichever is less.
4. Linear interpolation is not permitted.
5. Minimum concrete 28-day compressive strength of 2900 psi (20 MPa); reinforcing steel bar yield strength of 60,000 psi (400MPa).
6. Stirrups shall be fabricated from reinforcing bars having the same yield strength as that used for the main longitudinal reinforcement.
7. Maximum allowable clear span without stirrups applicable to all lintel sizes shall be as specified in Table 12. All spans greater than the specified maximum spans for the applicable lintel size shall require stirrups spaced at not more than d/2, d being the depth of the lintel. The maximum span of lintels with stirrups shall be as specified in Tables 9 -11.
8. Bottom reinforcement for all lintels without stirrups shall be not less than the least amount of reinforcement required for a lintel of the same depth with stirrups. Tables 9 - 11 shall be used to determine the lintel bottom reinforcement required for the applicable lintel size and loading condition.
9. A dash line (–) in a box indicates that the application is not provided in NBC Part 9 at that corresponding thickness, depth, and load case.

LINTEL REINFORCING TABLES AND DIAGRAMS BEGIN NEXT PAGE

TABLE 9: PART 9 APPLICATION STRONGHOLD ICF MAXIMUM ALLOWABLE CLEAR SPAN FOR LINTELS WITH 1-10M BOTTOM BAR[1]					
Minimum Lintel Thickness, in (mm)	Minimum Lintel Depth, in (mm)	Maximum Clear Span, ft (m)			
		Supporting light frame roof only		Supporting ICF Second Storey and Light-Frame Roof	
		Maximum Ground Snow Load, psf (kN/m^2)			
		30 psf (1.5)	70 psf (3.33)	30 psf (1.5)	70 psf (3.33)
6" (150 mm)	8" (200 mm)	4.6' (1.41 m)	3.8' (1.18 m)	2.6' (0.82 m)	2.4' (0.75 m)
	12" (300 mm)	5.8' (1.78 m)	4.9' (1.5 m)	3.5' (1.09 m)	3.3' (1.01 m)
	16" (400 mm)	6.8' (2.08 m)	5.7' (1.75 m)	4.3' (1.31 m)	3.9' (1.21 m)
	20" (500 mm)	7.6' (2.33 m)	6.4' (1.97 m)	4.9' (1.49 m)	4.5' (1.38 m)
	24" (600 mm)	8.3' (2.55 m)	-	-	-

1) See "General Notes to Stronghold ICF Lintel Tables 9 – 12" for additional table requirements.

TABLE 10: PART 9 APPLICATION STRONGHOLD ICF MAXIMUM ALLOWABLE CLEAR SPAN FOR LINTELS WITH 1-15M BOTTOM BAR[1]					
Minimum Lintel Thickness, in (mm)	Minimum Lintel Depth, in (mm)	Maximum Clear Span, ft (m)			
		Supporting light frame roof only		Supporting ICF Second Storey and Light-Frame Roof	
		Maximum Ground Snow Load, psf (kN/m^2)			
		30 psf (1.5)	70 psf (3.33)	30 psf (1.5)	70 psf (3.33)
6" (150 mm)	8" (200 mm)	5.4' (1.67 m)	4.9' (1.49 m)	3.6' (1.11 m)	3.3' (1.02 m)
	12" (300 mm)	8.1' (2.48 m)	6.8' (2.08 m)	4.9' (1.51 m)	4.5' (1.39 m)
	16" (400 mm)	9.5' (2.9 m)	8' (2.44 m)	5.9' (1.82 m)	5.5' (1.68 m)
	20" (500 mm)	10.7' (3.26 m)	9' (2.75 m)	6.8' (2.08 m)	6.3' (1.92 m)
	24" (600 mm)	11.7' (3.57 m)	9.9' (3.02 m)	7.5' (2.31 m)	7' (2.14 m)
8" (200 mm)	8" (200 mm)	6' (1.83 m)	5.3' (1.64 m)	3.5' (1.08 m)	3.2' (1 m)
	12" (300 mm)	8.1' (2.48 m)	6.8' (2.09 m)	4.8' (1.46 m)	4.4' (1.35 m)
	16" (400 mm)	9.4' (2.88 m)	8' (2.44 m)	5.7' (1.75 m)	5.3' (1.63 m)
	20" (500 mm)	10.5' (3.22 m)	9' (2.74 m)	6.5' (2 m)	6.1' (1.86 m)
	24" (600 mm)	11.5' (3.52 m)	9.8' (2.99 m)	8.1' (2.48 m)	7.5' (2.28 m)
10" (250 mm)	8" (200 mm)	6.3' (1.93 m)	5.4' (1.65 m)	3.4' (1.05 m)	3.2' (0.98 m)
	12" (300 mm)	8.1' (2.47 m)	6.8' (2.08 m)	4.6' (1.41 m)	4.3' (1.31 m)
	16" (400 mm)	9.4' (2.86 m)	7.9' (2.43 m)	5.5' (1.68 m)	5.1' (1.57 m)
	20" (500 mm)	10.4' (3.19 m)	8.9' (2.72 m)	6.3' (1.92 m)	5.8' (1.79 m)
	24" (600 mm)	11.4' (3.47 m)	9.7' (2.97 m)	6.9' (2.12 m)	6.5' (1.98 m)

1) See "General Notes to Stronghold ICF Lintel Tables 9 – 12" for additional table requirements.

TABLE 11: PART 9 APPLICATION STRONGHOLD ICF MAXIMUM ALLOWABLE CLEAR SPAN FOR LINTELS WITH 2-15M BOTTOM BARS[1]

Minimum Lintel Thickness, in (mm)	Minimum Lintel Depth, in (mm)	Maximum Clear Span, ft (m)			
		Supporting light frame roof only		Supporting ICF Second Storey and Light-Frame Roof	
		Maximum Ground Snow Load, psf (kN/m^2)			
		30 psf (1.5)	70 psf (3.33)	30 psf (1.5)	70 psf (3.33)
6" (150 mm)	8" (200 mm)	5.4' (1.67 m)	4.9' (1.49 m)	4.3' (1.33 m)	4.1' (1.25 m)
	12" (300 mm)	8.1' (2.48 m)	7.3' (2.23 m)	6.5' (1.99 m)	6.1' (1.87 m)
	16" (400 mm)	10.8' (3.29 m)	9.7' (2.96 m)	8.6' (2.64 m)	8' (2.45 m)
	20" (500 mm)	15.7' (4.8 m)	12.1' (3.68 m)	9.4' (2.87 m)	9' (2.74 m)
	24" (600 mm)	16' (4.87 m)	13.8' (4.2 m)	10.5' (3.2 m)	9.9' (3.02 m)
8" (200 mm)	8" (200 mm)	6' (1.83 m)	5.3' (1.64 m)	4.6' (1.41 m)	4.3' (1.33 m)
	12" (300 mm)	9.4' (2.87 m)	8' (2.44 m)	6.9' (2.11 m)	6.5' (2 m)
	16" (400 mm)	12.4' (3.78 m)	10.6' (3.24 m)	7.9' (2.41 m)	7.3' (2.24 m)
	20" (500 mm)	14.6' (4.46 m)	12.5' (3.81 m)	9.1' (2.77 m)	8.4' (2.57 m)
	24" (600 mm)	15.9' (4.86 m)	13.7' (4.18 m)	10.1' (3.08 m)	9.4' (2.86 m)
10" (250 mm)	8" (200 mm)	6.8' (2.07 m)	5.7' (1.74 m)	4.8' (1.46 m)	4.5' (1.38 m)
	12" (300 mm)	10' (3.07 m)	8.5' (2.59 m)	6.3' (1.93 m)	5.9' (1.8 m)
	16" (400 mm)	12.9' (3.95 m)	11.1' (3.38 m)	7.6' (2.33 m)	7.1' (2.18 m)
	20" (500 mm)	14.4' (4.4 m)	12.5' (3.8 m)	8.7' (2.67 m)	8.1' (2.49 m)
	24" (600 mm)	15.7' (4.78 m)	13.6' (4.16 m)	9.7' (2.96 m)	9.1' (2.77 m)

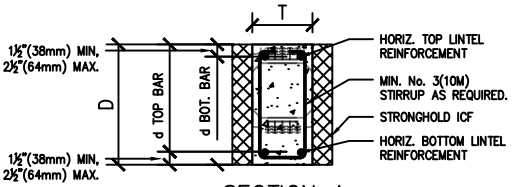
1) See "General Notes to Stronghold ICF Lintel Tables 9 – 12" for additional table requirements.

TABLE 12: PART 9 APPLICATION STRONGHOLD ICF MAXIMUM ALLOWABLE CLEAR SPAN FOR LINTELS WITH NO STIRRUPS PROVIDED[1]

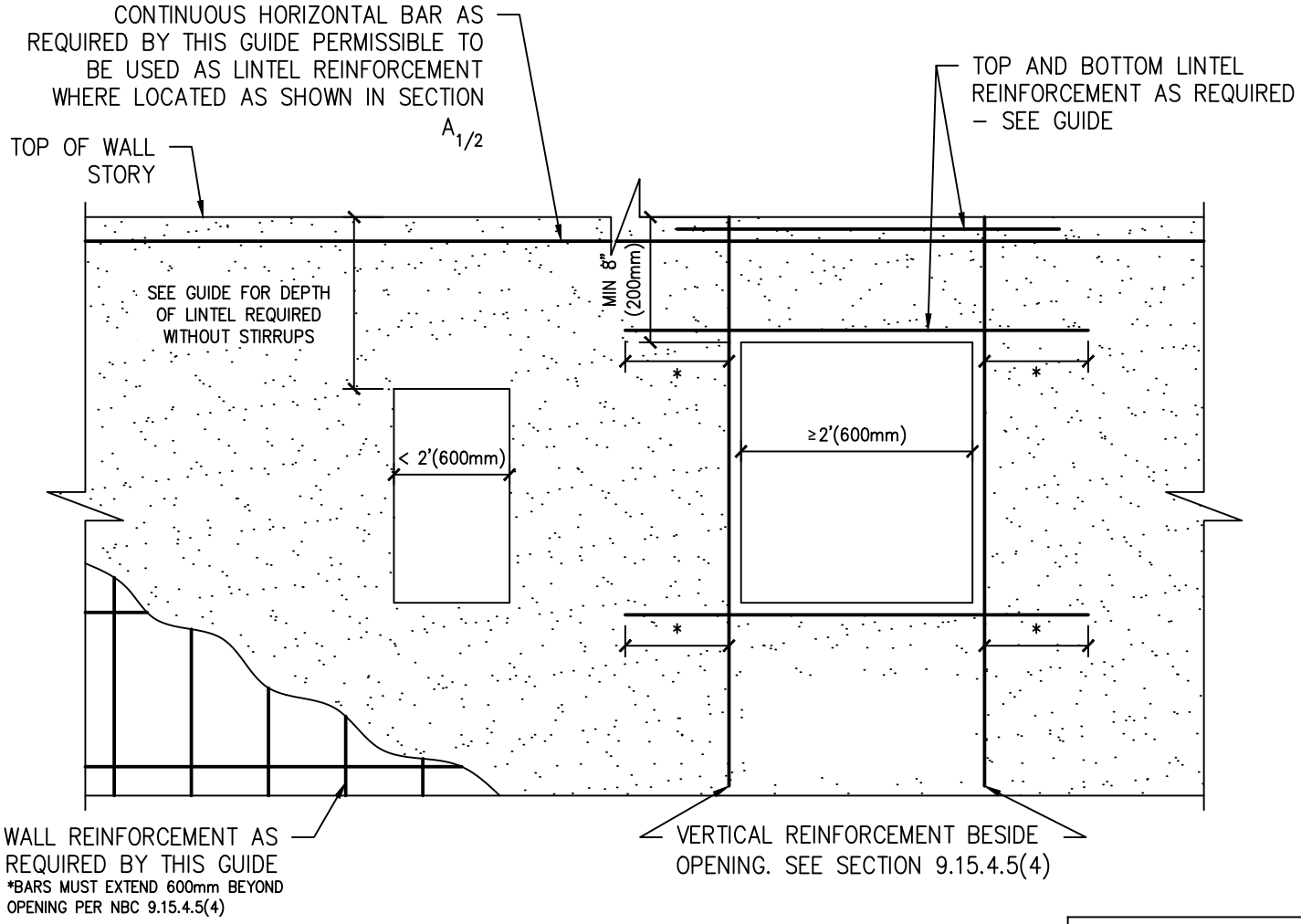
Minimum Lintel Thickness, in (mm)	Minimum Lintel Depth, in (mm)	Maximum Clear Span ft (m)			
		Supporting light frame roof only		Supporting ICF Second Storey and Light-Frame Roof	
		Maximum Ground Snow Load, psf (kN/m^2)			
		30 psf (1.5)	70 psf (3.33)	30 psf (1.5)	70 psf (3.33)
6" (150 mm)	8" (200 mm)	3.5' (1.07 m)	2.4' (0.73 m)	1.3' (0.41 m)	1.1' (0.35 m)
	12" (300 mm)	3.9' (1.2 m)	3.5' (1.08 m)	2' (0.62 m)	1.7' (0.52 m)
	16" (400 mm)	3.9' (1.2 m)	3.9' (1.2 m)	2.6' (0.81 m)	2.2' (0.69 m)
	20" (500 mm)	3.9' (1.2 m)	3.9' (1.2 m)	3.3' (1.01 m)	2.8' (0.86 m)
	24" (600 mm)	3.9' (1.2 m)	3.9' (1.2 m)	3.9' (1.2 m)	3.3' (1.02 m)
8" (200 mm)	8" (200 mm)	3.9' (1.2 m)	3.1' (0.97 m)	1.6' (0.5 m)	1.4' (0.43 m)
	12" (300 mm)	3.9' (1.2 m)	3.9' (1.2 m)	2.4' (0.75 m)	2.1' (0.64 m)
	16" (400 mm)	3.9' (1.2 m)	3.9' (1.2 m)	3.2' (0.99 m)	2.7' (0.85 m)
	20" (500 mm)	3.9' (1.2 m)	3.9' (1.2 m)	3.9' (1.2 m)	3.4' (1.05 m)
	24" (600 mm)	3.9' (1.2 m)	3.9' (1.2 m)	3.9' (1.2 m)	3.9' (1.2 m)
10" (250 mm)	8" (200 mm)	3.9' (1.2 m)	3.9' (1.2 m)	1.9' (0.58 m)	1.6' (0.5 m)
	12" (300 mm)	3.9' (1.2 m)	3.9' (1.2 m)	2.8' (0.86 m)	2.4' (0.75 m)
	16" (400 mm)	3.9' (1.2 m)	3.9' (1.2 m)	3.7' (1.13 m)	3.2' (0.98 m)
	20" (500 mm)	3.9' (1.2 m)	3.9' (1.2 m)	3.9' (1.2 m)	3.9' (1.2 m)
	24" (600 mm)	3.9' (1.2 m)	3.9' (1.2 m)	3.9' (1.2 m)	3.9' (1.2 m)

1) See "General Notes to Stronghold ICF Lintel Tables 9 – 12" for additional table requirements.

DRAWING TO BE USED WITH GUIDE TITLED "STRONGHOLD ICF STRUCTURAL GUIDELINE – CANADA": WHERE MATERIALS SPECIFICATIONS, DESIGN PARAMETERS, AND REINFORCEMENT SPACING ARE PROVIDED



SECTION A



TYP. LINTEL ELEVATION (TYP. ALL WALL THICKNESS')

NOT-TO-SCALE

DRAWING FOR STRONGHOLD INSULATED CONCRETE FORMS STRUCTURAL GUIDE – NOT FOR USE AS CONSTRUCTION DESIGN DOCUMENTS

THESE DRAWINGS APPLY TO THE GUIDELINE ASSEMBLY ONLY AND DO NOT IMPLY THAT THE SIGNATORY ENGINEER IS THE DESIGNER OF RECORD FOR ANY FUTURE CONSTRUCTION ON WHICH THEY ARE USED
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CLIENT:	PROJECT:	TITLE:	DRAWING NO.	DES
STRONGHOLD INSULATION SYSTEMS INC.	STRONGHOLD INSULATED CONCRETE FORM (ICF) STRUCTURAL GUIDE	STRONGHOLD ICF ABOVE GRADE WALL DETAIL	0068–017	CB
			DATE: JANUARY 20, 2021	DRN: LI
				CHK: CB

Appendix A: Imperial Units - Engineered Reinforcing Tables

FOR USE WHEN BUILDING DESIGN CONDITIONS ARE BEYOND NBC PART 9 LIMITS AND REQUIRE ENGINEERED DESIGN. REINFORCING SCHEDULE FOR ESTIMATING PURPOSES ONLY.

MAXIMUM DESIGN LOADS – Part 4 Engineered Tables of this Guide (service level, non-factored)[1]				
	DEAD		**LIVE**	
	PSF	**kPa**	**PSF**	**kPa**
ROOF/CEILING	15	0.8	80 (snow + live)	2.3 (snow + live)
FLOOR/CEILING	10	0.5	40	1.9
ROOF OVERHANG	2 FT max, 8 PSF DL (0.6 m max, 0.4 kPa)			
GROUND SNOW LOAD	Maximum Ground Snow Load: S_s = 70 PSF (3.33 kPa)			
	Importance Category: Normal (I_w ULS: 1 and SLS: 0.9)			
WIND	EXPOSURE CATEGORY: Rough $q_{1/50}$ = 14 PSF (0.7 kPa) Foundations $q_{1/50}$ = 25 PSF (1.2 kPa) Above-Grade			
	Importance Category: Normal (I_w ULS:1 and SLS: 0.75)			
SEISMIC	Peak Ground Acceleration, PGA = 0.65 Foundations, Seismic Spectral Response Acceleration, S_a(0.2) = 1.5 Above Grade			
	Importance Category: Normal			

1. Design loads in this table shall provide maximum loading constraints used in the design tables provided in this guide unless alternate loading is specified in the tables contained in this guide.

General Notes for Engineered Foundation Tables A1-A6

1. Table is to be used in conjunction with "Stronghold ICF Structural Guideline - Canada" and drawings 0068-001 to 0068-004 prepared by BOCA Engineering Co which contain materials specifications, building conditions, design limitations and installation details.
2. Tables are based on 2015 NBC Part 4, calculations to CSA A23.3-14 of design strength, minimum/maximum reinforcing area and spacing for the conditions listed.
3. Soil pressures are approximated in accordance with soil classes of the Unified Soil Classification system as per ASTM D2487-17 and Foundations and Earth Structures, NAVFAC DM-7.2 (1986), where table values are only applicable to those actual pressures shown.
4. Boxes with "-" indicates reinforcement is not possible within the scope of this guide.
5. NR = Not Required. Where NR is identified, plain concrete wall per CSA A23.3-14 satisfies strength for loading condition. Serviceability reinforcing optional, see note 13.
6. Green highlighted boxes reflect the recommended most economical materials and labor option for a given loading and size condition.
7. Allowable deflection is L/240, where L is the unsupported height of the foundation wall.
8. Interpolation is not permitted.
9. Where walls retain 4 feet (1.2 m) or more of unbalanced backfill, they shall first be laterally supported at the top and bottom.
10. Vertical reinforcement is to be placed with 1.25-inches (30 mm) cover from the inside face of the wall, with an acceptable inwards tolerance of 10% of the wall thickness.
11. The dynamic seismic lateral earth pressure load effect is an assumed horizontal resultant force equal to 60*PGA*H^2 lb/ft-width (9.4*PGA*H^2 kN/m-width), which is added on to the at-rest backfill pressure; where H is equal to the height of unbalanced backfill in feet (meters) applied at a location equal to 0.5*H; where PGA = max value specified for table, soil density = 120 pcf (18.8 kN/m^3), and load factor 1.0E is applied to all soil lateral loads. Seismic loading based on input values I_E = 1, F(PGA) = 1.
12. A geotechnical (subsurface) investigation is required as per NBC 4.2.2. Where seismic loading condition does not fit into provided loading scenario per note 3 of this table, the actual values received from the investigation must be used to perform calculations per CSA A23.3-14 to determine the required reinforcing.
13. Where NR is identified for vertical reinforcement, it is recommended to provide vertical and horizontal reinforcement of 10M @ 32" (800mm) o.c. for serviceability improvements such as crack control and concrete consolidation.
14. Minimum concrete 28-day compressive strength of 2900 psi (20 MPa); reinforcing steel bar yield strength of 60,000 psi (400 MPa).

ENGINEERED BELOW GRADE REINFORCING TABLES BEGIN NEXT PAGE

TABLE A1: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 6" & 8" FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION PGA ≤ 0.15 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT ft-in	MAXIMUM UNBALANCED BACKFILL HEIGHT ft-in	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, in																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per foot depth, psf																		
		GW, GP, SW, SP						GM, GC, SM, SM-SC and ML						SC, ML-CL and Inorganic						
		30 psf						45 psf						60 psf						
		Minimum nominal wall thickness, in																		All soil classes and wall thicknesses
		6"			8"			6"			8"			6"			8"			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
8'-0"	4'-0"	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	[2]
	5'-0"	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	[2]
	6'-0"	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	16"	16"	16"	8"	16"	16"	[2]
	7'-0"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	8'-0"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
9'-0"	4'-0"	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	[2]
	5'-0"	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	[2]
	6'-0"	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	16"	16"	16"	8"	16"	16"	[2]
	7'-0"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	9'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
10'-0"	4'-0"	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	[2]
	5'-0"	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	16"	16"	16"	NR	NR	NR	[2]
	6'-0"	16"	16"	16"	NR	NR	NR	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	7'-0"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	9'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
11'-0"	4'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	[2]
	6'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	-	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	11'-0"	-	8"	16"	8"	16"	16"	-	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
12'-0"	4'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	[2]
	6'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	-	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
	12'-0"	-	8"	8"	8"	8"	16"	-	8"	8"	8"	8"	16"	-	8"	8"	8"	8"	16"	[2]

SHADED AREA FITS INTO TABLE 1-4 OF THIS GUIDE, WHICH ALTERNATIVELY MAY BE USED FOR PRESCRITIVE DESIGN BASED ON NBC 2015 PART 9
GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables A1 – A6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE A2: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 10" & 12" FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION PGA ≤ 0.15 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT ft-in	MAXIMUM UNBALANCED BACKFILL HEIGHT ft-in	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, in																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per foot depth, psf																		
		GW, GP, SW, SP 30 psf						GM, GC, SM, SM-SC and ML 45 psf						SC, ML-CL and Inorganic 60 psf						
		Minimum nominal wall thickness, in																		All soil classes and wall thicknesses
		10"			12"			10"			12"			10"			12"			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
8'-0"	4'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	5'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	6'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	7'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	8'-0"	NR	NR	NR	NR	NR	NR	8"	16"	16"	NR	NR	NR	8"	16"	16"	NR	NR	NR	[2]
9'-0"	4'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	5'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	6'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	7'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	8"	16"	16"	NR	NR	NR	[2]
	8'-0"	NR	NR	NR	NR	NR	NR	8"	16"	16"	NR	NR	NR	8"	16"	16"	NR	NR	NR	[2]
	9'-0"	8"	16"	16"	NR	NR	NR	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
10'-0"	4'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	5'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	6'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	7'-0"	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	8"	16"	16"	NR	NR	NR	[2]
	8'-0"	8"	16"	16"	NR	NR	NR	8"	16"	16"	NR	NR	NR	8"	16"	16"	8"	16"	16"	[2]
	9'-0"	8"	16"	16"	NR	NR	NR	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
11'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	8'-0"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	11'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
12'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	8'-0"	8"	16"	16"	24"	24"	24"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	12'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
14'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	8'-0"	8"	16"	16"	24"	24"	24"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	12'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	14'-0"	-	8"	16"	8"	8"	16"	-	8"	16"	8"	8"	16"	-	8"	16"	8"	8"	16"	[2]

SHADED AREA FITS INTO TABLE 1-4 OF THIS GUIDE, WHICH ALTERNATIVELY MAY BE USED FOR PRESCRITIVE DESIGN BASED ON NBC 2015 PART 9

GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables A1 – A6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE A3: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 6" & 8" FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION 0.15 < PGA ≤ 0.4 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT ft-in	MAXIMUM UNBALANCED BACKFILL HEIGHT ft-in	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, in																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per foot depth, psf																		
		GW, GP, SW, SP 30 psf						GM, GC, SM, SM-SC and ML 45 psf						SC, ML-CL and Inorganic 60 psf						
		Minimum nominal wall thickness, in																		All soil classes and wall thicknesses
		6"			8"			6"			8"			6"			8"			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
8'-0"	4'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	[2]
	5'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	6'-0"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	7'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
9'-0"	4'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	[2]
	5'-0"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	7'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
	9'-0"	-	8"	16"	8"	16"	16"	-	8"	16"	8"	16"	16"	-	8"	16"	8"	16"	16"	[2]
10'-0"	4'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	[2]
	5'-0"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	7'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
	9'-0"	-	8"	8"	8"	16"	16"	-	8"	8"	8"	16"	16"	-	8"	8"	8"	16"	16"	[2]
	10'-0"	-	8"	8"	8"	8"	16"	-	8"	8"	-	8"	16"	-	8"	8"	8"	8"	16"	[2]
11'-0"	4'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
	10'-0"	-	8"	8"	-	8"	16"	-	8"	8"	-	8"	16"	-	8"	8"	-	8"	16"	[2]
12'-0"	4'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	-	8"	16"	8"	16"	16"	-	8"	16"	8"	16"	16"	-	8"	16"	8"	16"	16"	[2]
	10'-0"	-	8"	8"	-	8"	16"	-	8"	8"	-	8"	16"	-	8"	8"	-	8"	16"	[2]

GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables A1 – A6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE A4: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 10" & 12" FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION 0.15 < PGA ≤ 0.4 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT ft-in	MAXIMUM UNBALANCED BACKFILL HEIGHT ft-in	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, in																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per foot depth, psf																		
		GW, GP, SW, SP 30 psf						GM, GC, SM, SM-SC and ML 45 psf						SC, ML-CL and Inorganic 60 psf						
		Minimum nominal wall thickness, in																		All soil classes and wall thicknesses
		10"			12"			10"			12"			10"			12"			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
8'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	5'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	8"	16"	16"	24"	24"	24"	[2]
	7'-0"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
9'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	5'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	24"	24"	24"	24"	24"	24"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	[2]
	7'-0"	8"	16"	16"	24"	24"	24"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	9'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
10'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	5'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	[2]
	7'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	9'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	8"	8"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
11'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
12'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
14'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	24"	24"	24"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]

GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables A1 – A6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE A5: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 6" & 8" FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION 0.4 < PGA ≤ 0.65 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT ft-in	MAXIMUM UNBALANCED BACKFILL HEIGHT ft-in	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, in																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per foot depth, psf																		
		GW, GP, SW, SP 30 psf						GM, GC, SM, SM-SC and ML 45 psf						SC, ML-CL and Inorganic 60 psf						
		Minimum nominal wall thickness, in																		All soil classes and wall thicknesses
		6"			8"			6"			8"			6"			8"			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
8'-0"	4'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	[2]
	5'-0"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	7'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
	8'-0"	-	8"	16"	8"	16"	16"	-	8"	16"	8"	16"	16"	-	8"	16"	8"	16"	16"	[2]
9'-0"	4'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	24"	24"	24"	16"	16"	16"	8"	16"	16"	[2]
	5'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	7'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
	8'-0"	-	8"	8"	8"	8"	16"	-	8"	8"	8"	8"	16"	-	8"	8"	8"	8"	16"	[2]
	9'-0"	-	8"	8"	-	8"	16"	-	8"	8"	-	8"	16"	-	8"	8"	-	8"	16"	[2]
10'-0"	4'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	5'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	6'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	7'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
	8'-0"	-	8"	8"	8"	8"	16"	-	8"	8"	8"	8"	16"	-	8"	8"	8"	8"	16"	[2]
	9'-0"	-	8"	8"	-	8"	16"	-	8"	8"	-	8"	16"	-	8"	8"	-	8"	16"	[2]
	10'-0"	-	-	8"	-	8"	8"	-	-	8"	-	8"	8"	-	-	8"	-	8"	8"	[2]
11'-0"	4'-0"	16"	16"	16"	24"	24"	24"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
	8'-0"	-	8"	8"	8"	8"	16"	-	8"	8"	8"	8"	16"	-	8"	8"	8"	8"	16"	[2]
	10'-0"	-	-	-	-	8"	8"	-	-	-	-	8"	8"	-	-	-	-	8"	8"	[2]
12'-0"	4'-0"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	16"	16"	16"	8"	16"	16"	[2]
	6'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
	8'-0"	-	8"	8"	8"	8"	16"	-	8"	8"	-	8"	16"	-	8"	8"	-	8"	16"	[2]
	10'-0"	-	-	-	-	8"	8"	-	-	-	-	8"	8"	-	-	-	-	8"	8"	[2]

GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables A1 – A6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE A6: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 10" & 12" FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION 0.4 < PGA ≤ 0.65 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT ft-in	MAXIMUM UNBALANCED BACKFILL HEIGHT ft-in	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, in																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per foot depth, psf																		
		GW, GP, SW, SP						GM, GC, SM, SM-SC and ML						SC, ML-CL and Inorganic						
		30 psf						45 psf						60 psf						
		Minimum nominal wall thickness, in																		All soil classes and wall thicknesses
		10"			12"			10"			12"			10"			12"			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
8'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	5'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	8"	16"	16"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	8"	16"	16"	8"	16"	16"	[2]
	7'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
9'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	5'-0"	24"	24"	24"	24"	24"	24"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	7'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	9'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
10'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	5'-0"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	8"	16"	16"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	7'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	9'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
	10'-0"	-	8"	16"	8"	8"	16"	-	8"	16"	8"	8"	16"	-	8"	16"	8"	8"	16"	[2]
11'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	-	8"	16"	8"	8"	16"	-	8"	16"	8"	8"	16"	-	8"	16"	8"	8"	16"	[2]
12'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	10'-0"	-	8"	8"	8"	8"	16"	-	8"	8"	8"	8"	16"	-	8"	8"	8"	8"	16"	[2]
14'-0"	4'-0"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	24"	[2]
	6'-0"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	8"	16"	16"	[2]
	8'-0"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	8"	8"	16"	8"	16"	16"	[2]
	10'-0"	-	8"	8"	-	8"	16"	-	8"	8"	-	8"	16"	-	8"	8"	-	8"	16"	[2]

GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables A1 – A6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

General Notes for Engineered Above Grade Tables A7-A12

1. Table is to be used in conjunction with "Stronghold ICF Structural Guideline - CANADA" and drawings 0068-010 to 0068-016 prepared by BOCA Engineering Co which contains materials specifications, building conditions, design limitations and installation details.
2. Tables are based on 2015 NBC Part 4, calculations to CSA A23.3-14 of design strength, minimum/maximum reinforcing area and spacing for the conditions listed.
3. Table is based on NBC Section 4.1.7.3 Wind Loads – Static Procedure using a mean roof height of 35 feet (10.7m), exposure factor, C_e, equal to 0.7 for rough terrain, topographic factor, C_t equal to 1.0, product of pressure coefficient and gust factor, C_pC_g equal to 2.2, and ultimate limit state importance factor for wind load, I_w equal to 1.0.
4. Table is based on NBC Section 4.1.8.11 Equivalent Static Force Procedure for Structures Satisfying the Conditions of Article 4.1.8.7. using site coefficient, F(0.2) = 1.0, higher mode factor, M_v equal to 1.0, ductility-related force modification factor, R_d equal to 1.5, overstrength-related force modification factor, R_o equal to 1.3, and ultimate limit state importance factor for wind load, I_E equal to 1.0.
5. Minimum concrete 28-day compressive strength of 2900 psi (20 MPa); reinforcing steel bar yield strength of 60,000 psi (400 MPa).
6. Interpolation is not permitted.

ENGINEERED ABOVE GRADE REINFORCING TABLES BEGIN NEXT PAGE

TABLE A7: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR ABOVE GRADE WALLS WHERE SEISMIC SPECTRAL RESPONSE ACCELERATION $S_a(0.2) \leq 0.4$ WITH DESIGN PER CSA A23.3-14[1]

MAXIMUM REFERENCE VELOCITY PRESSURE, $q_{1/50}$ (psf)	MAXIMUM UNSUPPORTED WALL HEIGHT PER STORY (ft-in)	MINIMUM VERTICAL REINFORCEMENT BAR SIZE & SPACING, (inches)[3]								MINIMUM HORIZ. BAR SIZE AND SPACING, (inches)[3][5]
		Minimum nominal wall thickness (inches)								
		6"		8"		10"[4][5]		12"[4][5]		
		Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	
25	8'-0"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	(6)
	9'-0"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	(6)
	10'-0"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	10M @ 24"	(6)

TABLE A8: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR ABOVE GRADE WALLS WHERE SEISMIC SPECTRAL RESPONSE ACCELERATION $0.4 < S_a(0.2) \leq 0.8$ WITH DESIGN PER CSA A23.3-14[1]

MAXIMUM REFERENCE VELOCITY PRESSURE, $q_{1/50}$ (psf)	MAXIMUM UNSUPPORTED WALL HEIGHT PER STORY (ft-in)	MINIMUM VERTICAL REINFORCEMENT BAR SIZE & SPACING, (inches)[3]								MINIMUM HORIZ. BAR SIZE AND SPACING, (inches)[3][5]
		Minimum nominal wall thickness (inches)								
		6"		8"		10"[4][5]		12"[4][5]		
		Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	
25	8'-0"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	(6)
	9'-0"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	(6)
	10'-0"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	(6)

TABLE A9: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR ABOVE GRADE WALLS WHERE SEISMIC SPECTRAL RESPONSE ACCELERATION $0.8 < S_a(0.2) \leq 1.5$ WITH DESIGN PER CSA A23.3-14[1]

MAXIMUM REFERENCE VELOCITY PRESSURE, $q_{1/50}$ (psf)	MAXIMUM UNSUPPORTED WALL HEIGHT PER STORY (ft-in)	MINIMUM VERTICAL REINFORCEMENT BAR SIZE & SPACING, (inches)[3]								MINIMUM HORIZ. BAR SIZE AND SPACING, (inches)[3][5]
		Minimum nominal wall thickness (inches)								
		6"		8"		10"[4][5]		12"[4][5]		
		Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	
25	8'-0"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	(6)
	9'-0"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	(6)
	10'-0"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	10M @ 16"	10M @ 16"	15M @ 16"	15M @ 16"	(6)

1) See “General Notes for Engineered Above Grade Tables A7 – A12” for additional table requirements.
2) "Top" loading means gravity loading from roof, floor or wall construction bearing on top the wall. "Side" loading means gravity load from floor construction which is transferred to the wall through a wood ledger or cold-formed steel track bolted to the side of the wall.
3) Vertical and horizontal single grid reinforcement is to be placed within the middle third of the wall section.
4) 10” & 12" wall reinforcing specified in table shall be placed in two layers parallel with wall faces to satisfy CSA A23.3 – 14 Cl. 14.1.8.3.
5) 10” & 12" wall horizontal reinforcing shall be a double grid at 24" o/c spacing to satisfy CSA A23.3 – 14 Cl. 14.1.8.3.
6) Horizontal reinforcement shall be equal to the provided vertical reinforcement, optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE A10: PART 4 APPLICATION LENGTH OF SOLID WALL REQUIRED IN EACH EXTERIOR ENDWALL FOR WIND PERPENDICULAR TO RIDGE ONE STOREY OR TOP OF TWO STOREY, WHERE MAXIMUM REFERENCE VELOCITY PRESSURE $q_{1/50} \leq 25$ psf WITH DESIGN PER CSA A23.3-14[1]

SIDEWALL LENGTH ft[5]	ENDWALL LENGTH ft[5]	ROOF SLOPE[5]	LENGTH OF SOLID WALL REQUIRED IN ENDWALLS FOR WIND PERPENDICULAR TO RIDGE, ft[2][3][4]											
			Minimum nominal wall thickness, in											
			6"			8"			10"			12"		
			Maximum Seismic Spectral Response Acceleration $S_a(0.2)$											
			0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5
15 ft	15 ft	5:12	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'
		12:12	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'
	30 ft	5:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
		12:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
	45 ft	5:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
		12:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
	60 ft	5:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
		12:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
30 ft	15 ft	5:12	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'
		12:12	4.5'	4.5'	6'	4.5'	4.5'	6'	4.5'	4.5'	6'	4.5'	4.5'	6'
	30 ft	5:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
		12:12	9'	9'	9.5'	9'	9'	9.5'	9'	9'	9.5'	9'	9'	9.5'
	45 ft	5:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
		12:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
	60 ft	5:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
		12:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
60 ft	15 ft	5:12	4.5'	6'	8'	4.5'	6'	7.5'	4.5'	6'	7.5'	5'	6'	7.5'
		12:12	7'	9'	12'	6.5'	9'	12'	6.5'	9'	11.5'	6.5'	9'	11.5'
	30 ft	5:12	9'	9'	11'	9'	9'	10.5'	9'	9'	10.5'	9'	9'	10.5'
		12:12	11'	14.5'	19'	10.5'	14.5'	19'	10.5'	14.5'	18.5'	10.5'	14.5'	18.5'
	45 ft	5:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
		12:12	14.5'	20'	26'	14.5'	19.5'	25.5'	14.5'	19.5'	25.5'	14.5'	19.5'	25.5'
	60 ft	5:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
		12:12	18.5'	25.5'	33'	18.5'	25'	32.5'	18.5'	25'	32.5'	18'	25'	32.5'

1) See "General Notes for Engineered Above Grade Tables A7 – A12" for additional table requirements.
2) Solid wall lengths shall not be reduced under any circumstances.
3) Minimum length of solid wall lengths included shall be greater than or equal to 24 inches (0.6 m) in length, and not more than two solid wall lengths greater than or equal to 24 inches (0.6 m) in length and less than 48 inches (1.2 m) in length shall be included in the required total length of solid wall.
4) Table shows minimum summation of solid wall length. Plans are permitted to exceed the minimum length.
5) Where actual sidewall, endwall and roof slope values fall between values provided in table, the next highest design value in the table shall be used.

TABLE A11: PART 4 APPLICATION LENGTH OF SOLID WALL REQUIRED IN EACH EXTERIOR ENDWALL FOR WIND PERPENDICULAR TO RIDGE FIRST STOREY OF TWO STOREY, WHERE MAXIMUM REFERENCE VELOCITY PRESSURE $q_{1/50} \leq 25$ psf WITH DESIGN PER CSA A23.3-14[1]

SIDEWALL LENGTH ft[5]	ENDWALL LENGTH ft[5]	ROOF SLOPE[5]	LENGTH OF SOLID WALL REQUIRED IN ENDWALLS FOR WIND PERPENDICULAR TO RIDGE, ft[2][3][4]											
			Minimum nominal wall thickness, in											
			6"			8"			10"			12"		
			Maximum Seismic Spectral Response Acceleration $S_a(0.2)$											
			0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5
15 ft	15 ft	5:12	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	5'	5'	5'
		12:12	4.5'	4.5'	5.5'	4.5'	4.5'	5.5'	4.5'	4.5'	5.5'	5'	5'	5.5'
	30 ft	5:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
		12:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
	45 ft	5:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
		12:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
	60 ft	5:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
		12:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
30 ft	15 ft	5:12	5'	6.5'	8.5'	5.5'	6.5'	8.5'	6.5'	6.5'	8.5'	7.5'	7.5'	8.5'
		12:12	6'	8.5'	11'	6'	8'	10.5'	6.5'	8'	10.5'	7.5'	8'	10.5'
	30 ft	5:12	9'	9'	10'	9'	9'	10'	9'	9'	10'	10.5'	10.5'	10.5'
		12:12	9'	11'	14.5'	9'	11'	14'	9'	11'	14'	10.5'	11'	14'
	45 ft	5:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
		12:12	13.5'	13.5'	18'	13.5'	13.5'	17.5'	13.5'	13.5'	17.5'	13.5'	13.5'	17.5'
	60 ft	5:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
		12:12	18'	18'	21.5'	18'	18'	21'	18'	18'	21'	18'	18'	21'
60 ft	15 ft	5:12	10'	13'	17'	9.5'	13'	17'	11'	13'	17'	12.5'	13'	17'
		12:12	12'	16.5'	21.5'	12'	16'	21'	12'	16'	21'	12.5'	16'	21'
	30 ft	5:12	11.5'	15.5'	20'	12'	15.5'	20'	14'	15'	20'	16.5'	16.5'	19.5'
		12:12	16'	21.5'	28.5'	16'	21.5'	28'	15.5'	21.5'	28'	16.5'	21.5'	27.5'
	45 ft	5:12	13.5'	17.5'	23'	15'	17.5'	23'	17.5'	17.5'	22.5'	20'	20'	22.5'
		12:12	20'	27'	35.5'	19.5'	27'	35'	19.5'	26.5'	34.5'	20'	26.5'	34.5'
	60 ft	5:12	18'	20'	26'	18'	19.5'	25.5'	21'	21'	25.5'	23.5'	23.5'	25.5'
		12:12	24'	32.5'	42.5'	23.5'	32'	42'	23.5'	32'	41.5'	23.5'	32'	41.5'

1) See "General Notes for Engineered Above Grade Tables A7 – A12" for additional table requirements.
2) Solid wall lengths shall not be reduced under any circumstances.
3) Minimum length of solid wall lengths included shall be greater than or equal to 24 inches (0.6 m) in length, and not more than two solid wall lengths greater than or equal to 24 inches (0.6 m) in length and less than 48 inches (1.2 m) in length shall be included in the required total length of solid wall.
4) Table shows minimum summation of solid wall length. Plans are permitted to exceed the minimum length.
5) Where actual sidewall, endwall and roof slope values fall between values provided in table, the next highest design value in the table shall be used.

TABLE A12: PART 4 APPLICATION LENGTH OF SOLID WALL REQUIRED IN EACH EXTERIOR SIDEWALL FOR WIND PARALLEL TO RIDGE, WHERE MAXIMUM REFERENCE VELOCITY PRESSURE $q_{1/50} \leq 25$ psf WITH DESIGN PER CSA A23.3-14[1]

SIDEWALL LENGTH ft[5]	ENDWALL LENGTH ft[5]	ROOF SLOPE[5]	LENGTH OF SOLID WALL REQUIRED IN SIDEWALLS FOR WIND PARALLEL TO RIDGE, ft[2][3][4]											
			Minimum nominal wall thickness, in											
			6"			8"			10"			12"		
			Maximum Seismic Spectral Response Acceleration $S_a(0.2)$											
			0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5
One story or top story of two story														
< 30 ft	15 ft	5:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
		12:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
	30 ft	5:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
		12:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
	45 ft	5:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
		12:12	9'	9'	11.5'	9'	9'	11.5'	9'	9'	11.5'	9'	9'	11.5'
	60 ft	5:12	9'	9'	11'	9'	9'	10.5'	9'	9'	10.5'	9'	9'	10.5'
		12:12	11'	14.5'	19'	10.5'	14.5'	19'	10.5'	14.5'	18.5'	10.5'	14.5'	18.5'
60 ft	45 ft	5:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
		12:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
	60 ft	5:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
		12:12	18'	18'	19'	18'	18'	19'	18'	18'	18.5'	18'	18'	18.5'
First story of two story														
< 30 ft	15 ft	5:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
		12:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
	30 ft	5:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	10.5'	10.5'	10.5'
		12:12	9'	9'	11'	9'	9'	10.5'	9'	9'	10.5'	10.5'	10.5'	10.5'
	45 ft	5:12	9'	11'	14'	10'	10.5'	14'	11.5'	11.5'	14'	13.5'	13.5'	14'
		12:12	10.5'	14.5'	18.5'	10.5'	14'	18.5'	11.5'	14'	18.5'	13.5'	14'	18.5'
	60 ft	5:12	11.5'	15.5'	20'	12'	15.5'	20'	14'	15'	20'	16.5'	16.5'	19.5'
		12:12	16'	21.5'	28.5'	16'	21.5'	28'	15.5'	21.5'	28'	16.5'	21.5'	27.5'
60 ft	45 ft	5:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	20'	20'	20'
		12:12	18'	18'	18.5'	18'	18'	18.5'	18'	18'	18.5'	20'	20'	20'
	60 ft	5:12	18'	18'	20'	18'	18'	20'	21'	21'	21'	23.5'	23.5'	23.5'
		12:12	18'	21.5'	28.5'	18'	21.5'	28'	21'	21.5'	28'	23.5'	23.5'	27.5'

1) See "General Notes for Engineered Above Grade Tables A7 – A12" for additional table requirements.
2) Solid wall lengths shall not be reduced under any circumstances.
3) Minimum length of solid wall lengths included shall be greater than or equal to 24 inches (0.6 m) in length, and not more than two solid wall lengths greater than or equal to 24 inches (0.6 m) in length and less than 48 inches (1.2 m) in length shall be included in the required total length of solid wall.
4) Table shows minimum summation of solid wall length. Plans are permitted to exceed the minimum length.
5) Where actual sidewall, endwall and roof slope values fall between values provided in table, the next highest design value in the table shall be used.

Appendix B: Metric Units - Engineered Reinforcing Tables

FOR USE WHEN BUILDING DESIGN CONDITIONS ARE BEYOND NBC PART 9 LIMITS AND REQUIRE ENGINEERED DESIGN. REINFORCING SCHEDULE FOR ESTIMATING PURPOSES ONLY.

See Appendix A for Design Loads used to develop these tables.

General Notes for Engineered Foundation Tables B1-B6

1. Table is to be used in conjunction with "Stronghold ICF Structural Guideline - Canada" and drawings 0068-001 to 0068-004 prepared by BOCA Engineering Co which contain materials specifications, building conditions, design limitations and installation details.
2. Tables are based on 2015 NBC Part 4, calculations to CSA A23.3-14 of design strength, minimum/maximum reinforcing area and spacing for the conditions listed.
3. Soil pressures are approximated in accordance with soil classes of the Unified Soil Classification system as per ASTM D2487-17 and Foundations and Earth Structures, NAVFAC DM-7.2 (1986), where table values are only applicable to those actual pressures shown.
4. Boxes with "-" indicates reinforcement is not possible within the scope of this guide.
5. NR = Not Required. Where NR is identified, plain concrete wall per CSA A23.3-14 satisfies strength for loading condition. Serviceability reinforcing optional, see note 13.
6. Green highlighted boxes reflect the recommended most economical materials and labor option for a given loading and size condition.
7. Allowable deflection is L/240, where L is the unsupported height of the foundation wall.
8. Interpolation is not permitted.
9. Where walls will retain 4 feet (1.2 m) or more of unbalanced backfill, they shall be laterally supported at the top and bottom before backfilling.
10. Vertical reinforcement is to be placed with 1.25-inches (30 mm) cover from the inside face of the wall, with an acceptable inwards tolerance of 10% of the wall thickness.
11. The dynamic seismic lateral earth pressure load effect is an assumed horizontal resultant force equal to $60*PGA*H^2$ lb/ft-width ($9.4*PGA*H^2$ kN/m-width), which is added on to the at-rest backfill pressure; where H is equal to the height of unbalanced backfill in feet (meters) applied at a location equal to 0.5*H; where PGA = max value specified for table, soil density = 120 pcf (18.8 kN/m^3), and load factor 1.0E is applied to all soil lateral loads. Seismic loading based on input values I_E = 1, F(PGA) = 1.
12. A geotechnical (subsurface) investigation is required as per NBC 4.2.2. Where seismic loading condition does not fit into provided loading scenario per note 3 of this table, the actual values received from the investigation must be used to perform calculations per CSA A23.3-14 to determine the required reinforcing.
13. Where NR is identified for vertical reinforcement, it is recommended to provide vertical and horizontal reinforcement of 10M @ 32" (800mm) o.c. for serviceability improvements such as crack control and concrete consolidation.
14. Minimum concrete 28-day compressive strength of 2900 psi (20 MPa); reinforcing steel bar yield strength of 60,000 psi (400 MPa).

ENGINEERED BELOW GRADE REINFORCING TABLES BEGIN NEXT PAGE

TABLE B1: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 150 mm & 200 mm FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION PGA ≤ 0.15 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT m	MAXIMUM UNBALANCED BACKFILL HEIGHT m	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, mm																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per metre depth, kPa																		
		GW, GP, SW, SP						GM, GC, SM, SM-SC and ML						SC, ML-CL and Inorganic						
		4.8 kPa						7.1 kPa						9.5 kPa						
		Minimum nominal wall thickness, mm																		All soil classes and wall thicknesses
		150 mm			200 mm			150 mm			200 mm			150 mm			200 mm			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
2.44 m	1.22 m	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	[2]
	1.52 m	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	[2]
	1.82 m	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	400	400	400	200	400	400	[2]
	2.13 m	400	400	400	200	400	400	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	2.44 m	400	400	400	200	400	400	400	400	400	200	400	400	400	400	400	200	400	400	[2]
2.75 m	1.22 m	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	[2]
	1.52 m	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	[2]
	1.82 m	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	400	400	400	200	400	400	[2]
	2.13 m	400	400	400	200	400	400	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.75 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
3.00 m	1.22 m	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	[2]
	1.52 m	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	400	400	400	NR	NR	NR	[2]
	1.82 m	400	400	400	NR	NR	NR	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	2.13 m	400	400	400	200	400	400	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.75 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
3.34 m	1.22 m	400	400	400	600	600	600	400	400	400	600	600	600	400	400	400	600	600	600	[2]
	1.82 m	400	400	400	600	600	600	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	-	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.34 m	-	200	400	200	400	400	-	200	400	200	400	400	200	200	400	200	400	400	[2]
3.65 m	1.22 m	400	400	400	600	600	600	400	400	400	600	600	600	400	400	400	600	600	600	[2]
	1.82 m	400	400	400	600	600	600	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	-	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
	3.65 m	-	200	200	200	200	400	-	200	200	200	200	400	-	200	200	200	200	400	[2]

SHADED AREA FITS INTO TABLE 1-4 OF THIS GUIDE, WHICH ALTERNATIVELY MAY BE USED FOR PRESCRITIVE DESIGN BASED ON NBC 2015 PART 9

GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables B1 – B6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE B2: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 250 mm & 300 mm FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION PGA ≤ 0.15 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT m	MAXIMUM UNBALANCED BACKFILL HEIGHT m	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, mm																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per metre depth, kPa																		
		GW, GP, SW, SP 4.8 kPa						GM, GC, SM, SM-SC and ML 7.1 kPa						SC, ML-CL and Inorganic 9.5 kPa						
		Minimum nominal wall thickness, mm																		All soil classes and wall thicknesses
		250 mm			300 mm			250 mm			300 mm			250 mm			300 mm			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
2.44 m	1.22 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	1.52 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	1.82 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	2.13 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	2.44 m	NR	NR	NR	NR	NR	NR	200	400	400	NR	NR	NR	200	400	400	NR	NR	NR	[2]
2.75 m	1.22 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	1.52 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	1.82 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	2.13 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	200	400	400	NR	NR	NR	[2]
	2.44 m	NR	NR	NR	NR	NR	NR	200	400	400	NR	NR	NR	200	400	400	NR	NR	NR	[2]
	2.75 m	200	400	400	NR	NR	NR	200	400	400	200	400	400	200	400	400	200	400	400	[2]
3.00 m	1.22 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	1.52 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	1.82 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	[2]
	2.13 m	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	200	400	400	NR	NR	NR	[2]
	2.44 m	200	400	400	NR	NR	NR	200	400	400	NR	NR	NR	200	400	400	200	400	400	[2]
	2.75 m	200	400	400	NR	NR	NR	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
3.34 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	2.44 m	200	400	400	600	600	600	200	400	400	600	600	600	200	400	400	200	400	400	[2]
	3.00 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.34 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
3.65 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	2.44 m	200	400	400	600	600	600	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.65 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
4.26 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	2.44 m	200	400	400	600	600	600	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.65 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	4.26 m	-	200	400	200	200	400	-	200	400	200	200	400	-	200	400	200	200	400	[2]

SHADED AREA FITS INTO TABLE 1-4 OF THIS GUIDE, WHICH ALTERNATIVELY MAY BE USED FOR PRESCRITIVE DESIGN BASED ON NBC 2015 PART 9
GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables B1 – B6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE B3: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 150 mm & 200 mm FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION 0.15 < PGA ≤ 0.4 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT m	MAXIMUM UNBALANCED BACKFILL HEIGHT m	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, mm																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per metre depth, kPa																		
		GW, GP, SW, SP 4.8 kPa						GM, GC, SM, SM-SC and ML 7.1 kPa						SC, ML-CL and Inorganic 9.5 kPa						
		Minimum nominal wall thickness, mm																		All soil classes and wall thicknesses
		150 mm			200 mm			150 mm			200 mm			150 mm			200 mm			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
2.44 m	1.22 m	400	400	400	600	600	600	400	400	400	600	600	600	400	400	400	600	600	600	[2]
	1.52 m	400	400	400	600	600	600	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	1.82 m	400	400	400	200	400	400	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	2.13 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
2.75 m	1.22 m	400	400	400	600	600	600	400	400	400	600	600	600	400	400	400	600	600	600	[2]
	1.52 m	400	400	400	200	400	400	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	1.82 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.13 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
	2.75 m	-	200	400	200	400	400	-	200	400	200	400	400	-	200	400	200	400	400	[2]
3.00 m	1.22 m	400	400	400	600	600	600	400	400	400	600	600	600	400	400	400	600	600	600	[2]
	1.52 m	400	400	400	200	400	400	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	1.82 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.13 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
	2.75 m	-	200	200	200	400	400	-	200	200	200	400	400	-	200	200	200	400	400	[2]
	3.00 m	-	200	200	200	200	400	-	200	200	-	200	400	-	200	200	200	200	400	[2]
3.34 m	1.22 m	400	400	400	600	600	600	400	400	400	600	600	600	400	400	400	600	600	600	[2]
	1.82 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
	3.00 m	-	200	200	-	200	400	-	200	200	-	200	400	-	200	200	-	200	400	[2]
3.65 m	1.22 m	400	400	400	600	600	600	400	400	400	600	600	600	400	400	400	600	600	600	[2]
	1.82 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	-	200	400	200	400	400	-	200	400	200	400	400	-	200	400	200	400	400	[2]
	3.00 m	-	200	200	-	200	400	-	200	200	-	200	400	-	200	200	-	200	400	[2]

GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables B1 – B6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE B4: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 250 mm & 300 mm FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION 0.15 < PGA ≤ 0.4 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT m	MAXIMUM UNBALANCED BACKFILL HEIGHT m	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, mm																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per metre depth, kPa																		
		GW, GP, SW, SP 4.8 kPa						GM, GC, SM, SM-SC and ML 7.1 kPa						SC, ML-CL and Inorganic 9.5 kPa						
		Minimum nominal wall thickness, mm																		All soil classes and wall thicknesses
		250 mm			300 mm			250 mm			300 mm			250 mm			300 mm			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
2.44 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.52 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	600	600	600	600	600	600	600	600	600	600	600	600	200	400	400	600	600	600	[2]
	2.13 m	200	400	400	600	600	600	200	400	400	600	600	600	200	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
2.75 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.52 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	600	600	600	600	600	600	200	400	400	600	600	600	200	400	400	600	600	600	[2]
	2.13 m	200	400	400	600	600	600	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.75 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
3.00 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.52 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	200	400	400	600	600	600	200	400	400	600	600	600	200	400	400	600	600	600	[2]
	2.13 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.75 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	200	200	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
3.34 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	200	400	400	600	600	600	200	400	400	600	600	600	200	400	400	600	600	600	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
3.65 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	200	400	400	600	600	600	200	400	400	600	600	600	200	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	200	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
4.26 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	200	400	400	600	600	600	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	200	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]

GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables B1 – B6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE B5: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 150 mm & 200 mm FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION 0.4 < PGA ≤ 0.65 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT m	MAXIMUM UNBALANCED BACKFILL HEIGHT m	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, mm																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per metre depth, kPa																		
		GW, GP, SW, SP 4.8 kPa						GM, GC, SM, SM-SC and ML 7.1 kPa						SC, ML-CL and Inorganic 9.5 kPa						
		Minimum nominal wall thickness, mm																		All soil classes and wall thicknesses
		150 mm			200 mm			150 mm			200 mm			150 mm			200 mm			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
2.44 m	1.22 m	400	400	400	600	600	600	400	400	400	600	600	600	400	400	400	600	600	600	[2]
	1.52 m	400	400	400	200	400	400	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	1.82 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.13 m	200	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
	2.44 m	-	200	400	200	400	400	-	200	400	200	400	400	-	200	400	200	400	400	[2]
2.75 m	1.22 m	400	400	400	600	600	600	400	400	400	600	600	600	400	400	400	200	400	400	[2]
	1.52 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	1.82 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.13 m	200	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
	2.44 m	-	200	200	200	200	400	-	200	200	200	200	400	-	200	200	200	200	400	[2]
	2.75 m	-	200	200	-	200	400	-	200	200	-	200	400	-	200	200	-	200	400	[2]
3.00 m	1.22 m	400	400	400	600	600	600	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	1.52 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	1.82 m	200	200	400	200	400	400	200	200	400	200	400	400	200	400	400	200	400	400	[2]
	2.13 m	200	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
	2.44 m	-	200	200	200	200	400	-	200	200	200	200	400	-	200	200	200	200	400	[2]
	2.75 m	-	200	200	-	200	400	-	200	200	-	200	400	-	200	200	-	200	400	[2]
	3.00 m	-	-	200	-	200	200	-	-	200	-	200	200	-	-	200	-	200	200	[2]
3.34 m	1.22 m	400	400	400	600	600	600	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	1.82 m	200	400	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
	2.44 m	-	200	200	200	200	400	-	200	200	200	200	400	-	200	200	200	200	400	[2]
	3.00 m	-	-	-	-	200	200	-	-	-	-	200	200	-	-	-	-	200	200	[2]
3.65 m	1.22 m	400	400	400	200	400	400	400	400	400	200	400	400	400	400	400	200	400	400	[2]
	1.82 m	200	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
	2.44 m	-	200	200	200	200	400	-	200	200	-	200	400	-	200	200	-	200	400	[2]
	3.00 m	-	-	-	-	200	200	-	-	-	-	200	200	-	-	-	-	200	200	[2]

GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables B1 – B6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE B6: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR 250 mm & 300 mm FOUNDATION WALLS WHERE SEISMIC PEAK GROUND ACCELERATION 0.4 < PGA ≤ 0.65 WITH DESIGN PER CSA A23.3-14, ALL ABOVE GRADE WALL TYPES[1]

MAXIMUM WALL HEIGHT m	MAXIMUM UNBALANCED BACKFILL HEIGHT m	MINIMUM VERTICAL REINFORCEMENT BAR SIZE AND SPACING, mm																		MINIMUM HORIZONTAL BAR SIZE AND SPACING
		Soil Classes and Design lateral soil pressure per metre depth, kPa																		
		GW, GP, SW, SP 4.8 kPa						GM, GC, SM, SM-SC and ML 7.1 kPa						SC, ML-CL and Inorganic 9.5 kPa						
		Minimum nominal wall thickness, mm																		All soil classes and wall thicknesses
		250mm			300mm			250mm			300mm			250mm			300mm			
		10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	10M	15M	20M	
2.44 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.52 m	600	600	600	600	600	600	600	600	600	600	600	600	200	400	400	600	600	600	[2]
	1.82 m	200	400	400	600	600	600	200	400	400	600	600	600	200	400	400	200	400	400	[2]
	2.13 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
2.75 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.52 m	600	600	600	600	600	600	200	400	400	600	600	600	200	400	400	600	600	600	[2]
	1.82 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.13 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.75 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
3.00 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.52 m	200	400	400	600	600	600	200	400	400	600	600	600	200	400	400	600	600	600	[2]
	1.82 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.13 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.75 m	200	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
	3.00 m	-	200	400	200	200	400	-	200	400	200	200	400	-	200	400	200	200	400	[2]
3.34 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	-	200	400	200	200	400	-	200	400	200	200	400	-	200	400	200	200	400	[2]
3.65 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	3.00 m	-	200	200	200	200	400	-	200	200	200	200	400	-	200	200	200	200	400	[2]
4.26 m	1.22 m	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	[2]
	1.82 m	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	200	400	400	[2]
	2.44 m	200	200	400	200	400	400	200	200	400	200	400	400	200	200	400	200	400	400	[2]
	3.00 m	-	200	200	-	200	400	-	200	200	-	200	400	-	200	200	-	200	400	[2]

GREEN HIGHLIGHTED BOXES REFLECT THE RECOMMENDED MOST ECONOMICAL MATERIALS AND LABOR OPTION FOR A GIVEN LOADING AND SIZE CONDITION.

1) See "General Notes for Engineered Foundation Tables B1 – B6" for additional table requirements.

2) Where vertical reinforcement is required, horizontal reinforcement shall be 15M @ 16" (400mm) o.c., optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

General Notes for Engineered Above Grade Tables B7-B12

1. Table is to be used in conjunction with "Stronghold ICF Structural Guideline - CANADA" and drawings 0068-010 to 0068-016 prepared by BOCA Engineering Co which contains materials specifications, building conditions, design limitations and installation details.
2. Tables are based on 2015 NBC Part 4, calculations to CSA A23.3-14 of design strength, minimum/maximum reinforcing area and spacing for the conditions listed.
3. Table is based on NBC Section 4.1.7.3 Wind Loads – Static Procedure using a mean roof height of 35 feet (10.7m), exposure factor, C_e, equal to 0.7 for rough terrain, topographic factor, C_t equal to 1.0, product of pressure coefficient and gust factor, C_pC_g equal to 2.2, and ultimate limit state importance factor for wind load, I_w equal to 1.0.
4. Table is based on NBC Section 4.1.8.11 Equivalent Static Force Procedure for Structures Satisfying the Conditions of Article 4.1.8.7. using site coefficient, F(0.2) = 1.0, higher mode factor, M_v equal to 1.0, ductility-related force modification factor, R_d equal to 1.5, overstrength-related force modification factor, R_o equal to 1.3, and ultimate limit state importance factor for wind load, I_E equal to 1.0.
5. Minimum concrete 28-day compressive strength of 2900 psi (20 MPa); reinforcing steel bar yield strength of 60,000 psi (400 MPa).
6. Interpolation is not permitted.

ENGINEERED ABOVE GRADE REINFORCING TABLES BEGIN NEXT PAGE

TABLE B7: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR ABOVE GRADE WALLS WHERE SEISMIC SPECTRAL RESPONSE ACCELERATION $S_a(0.2) \leq 0.4$ WITH DESIGN PER CSA A23.3-14[1]

MAXIMUM REFERENCE VELOCITY PRESSURE, $q_{1/50}$ (kPa)	MAXIMUM UNSUPPORTED WALL HEIGHT PER STORY (m)	MINIMUM VERTICAL REINFORCEMENT BAR SIZE & SPACING, mm[3]								MINIMUM HORIZ. BAR SIZE AND SPACING, mm[3][5]
		Minimum nominal wall thickness, mm								
		150 mm		200 mm		250 mm[4][5]		300 mm[4][5]		
		Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	
1.2	2.44 m	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	[6]
	2.75 m	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	[6]
	3.00 m	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	10M @ 600	[6]

TABLE B8: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR ABOVE GRADE WALLS WHERE SEISMIC SPECTRAL RESPONSE ACCELERATION $0.4 < S_a(0.2) \leq 0.8$ WITH DESIGN PER CSA A23.3-14[1]

MAXIMUM REFERENCE VELOCITY PRESSURE, $q_{1/50}$ (kPa)	MAXIMUM UNSUPPORTED WALL HEIGHT PER STORY (m)	MINIMUM VERTICAL REINFORCEMENT BAR SIZE & SPACING, mm[3]								MINIMUM HORIZ. BAR SIZE AND SPACING, mm[3][5]
		Minimum nominal wall thickness, mm								
		150 mm		200 mm		250 mm[4][5]		300 mm[4][5]		
		Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	
1.2	2.44 m	10M @ 400	10M @ 400	15M @ 400	15M @ 400	10M @ 400	10M @ 400	15M @ 400	15M @ 400	[6]
	2.75 m	10M @ 400	10M @ 400	15M @ 400	15M @ 400	10M @ 400	10M @ 400	15M @ 400	15M @ 400	[6]
	3.00 m	10M @ 400	10M @ 400	15M @ 400	15M @ 400	10M @ 400	10M @ 400	15M @ 400	15M @ 400	[6]

TABLE B9: PART 4 APPLICATION STRONGHOLD ICF MINIMUM REINFORCEMENT FOR ABOVE GRADE WALLS WHERE SEISMIC SPECTRAL RESPONSE ACCELERATION $0.8 < S_a(0.2) \leq 1.5$ WITH DESIGN PER CSA A23.3-14[1]

MAXIMUM REFERENCE VELOCITY PRESSURE, $q_{1/50}$ (kPa)	MAXIMUM UNSUPPORTED WALL HEIGHT PER STORY (m)	MINIMUM VERTICAL REINFORCEMENT BAR SIZE & SPACING, mm[3]								MINIMUM HORIZ. BAR SIZE AND SPACING, mm[3][5]
		Minimum nominal wall thickness, mm								
		150 mm		200 mm		250 mm[4][5]		300 mm[4][5]		
		Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	Top[2]	Side[2]	
1.2	2.44 m	10M @ 400	10M @ 400	15M @ 400	15M @ 400	10M @ 400	10M @ 400	15M @ 400	15M @ 400	[6]
	2.75 m	10M @ 400	10M @ 400	15M @ 400	15M @ 400	10M @ 400	10M @ 400	15M @ 400	15M @ 400	[6]
	3.00 m	10M @ 400	10M @ 400	15M @ 400	15M @ 400	10M @ 400	10M @ 400	15M @ 400	15M @ 400	[6]

1) See “General Notes for Engineered Above Grade Tables B7 – B12” for additional table requirements.
2) "Top" loading means gravity loading from roof, floor or wall construction bearing on top the wall. "Side" loading means gravity load from floor construction which is transferred to the wall through a wood ledger or cold-formed steel track bolted to the side of the wall.
3) Vertical and horizontal single grid reinforcement is to be placed within the middle third of the wall section.
4) 10” & 12" wall reinforcing specified in table shall be placed in two layers parallel with wall faces to satisfy CSA A23.3 – 14 Cl. 14.1.8.3.
5) 10” & 12" wall horizontal reinforcing shall be a double grid at 24" o/c spacing to satisfy CSA A23.3 – 14 Cl. 14.1.8.3.
6) Horizontal reinforcement shall be equal to the provided vertical reinforcement, optimized based on CSA A23.3 Cl. 14.1.8 minimum area and/or maximum spacing and location of Stronghold ICF web ties.

TABLE A10: PART 4 APPLICATION LENGTH OF SOLID WALL REQUIRED IN EACH EXTERIOR ENDWALL FOR WIND PERPENDICULAR TO RIDGE ONE STOREY OR TOP OF TWO STOREY, WHERE MAXIMUM REFERENCE VELOCITY PRESSURE $q_{1/50} \leq 25$ psf WITH DESIGN PER CSA A23.3-14[1]

SIDEWALL LENGTH ft[5]	ENDWALL LENGTH ft[5]	ROOF SLOPE[5]	LENGTH OF SOLID WALL REQUIRED IN ENDWALLS FOR WIND PERPENDICULAR TO RIDGE, ft[2][3][4]											
			Minimum nominal wall thickness, in											
			6"			8"			10"			12"		
			Maximum Seismic Spectral Response Acceleration $S_a(0.2)$											
			0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5
15 ft	15 ft	5:12	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'
		12:12	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'
	30 ft	5:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
		12:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
	45 ft	5:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
		12:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
	60 ft	5:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
		12:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
30 ft	15 ft	5:12	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'
		12:12	4.5'	4.5'	6'	4.5'	4.5'	6'	4.5'	4.5'	6'	4.5'	4.5'	6'
	30 ft	5:12	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'	9'
		12:12	9'	9'	9.5'	9'	9'	9.5'	9'	9'	9.5'	9'	9'	9.5'
	45 ft	5:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
		12:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
	60 ft	5:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
		12:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
60 ft	15 ft	5:12	4.5'	6'	8'	4.5'	6'	7.5'	4.5'	6'	7.5'	5'	6'	7.5'
		12:12	7'	9'	12'	6.5'	9'	12'	6.5'	9'	11.5'	6.5'	9'	11.5'
	30 ft	5:12	9'	9'	11'	9'	9'	10.5'	9'	9'	10.5'	9'	9'	10.5'
		12:12	11'	14.5'	19'	10.5'	14.5'	19'	10.5'	14.5'	18.5'	10.5'	14.5'	18.5'
	45 ft	5:12	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'	13.5'
		12:12	14.5'	20'	26'	14.5'	19.5'	25.5'	14.5'	19.5'	25.5'	14.5'	19.5'	25.5'
	60 ft	5:12	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'	18'
		12:12	18.5'	25.5'	33'	18.5'	25'	32.5'	18.5'	25'	32.5'	18'	25'	32.5'

1) See "General Notes for Engineered Above Grade Tables A7 – A12" for additional table requirements.
2) Solid wall lengths shall not be reduced under any circumstances.
3) Minimum length of solid wall lengths included shall be greater than or equal to 24 inches (0.6 m) in length, and not more than two solid wall lengths greater than or equal to 24 inches (0.6 m) in length and less than 48 inches (1.2 m) in length shall be included in the required total length of solid wall.
4) Table shows minimum summation of solid wall length. Plans are permitted to exceed the minimum length.
5) Where actual sidewall, endwall and roof slope values fall between values provided in table, the next highest design value in the table shall be used.

TABLE B11: PART 4 APPLICATION LENGTH OF SOLID WALL REQUIRED IN EACH EXTERIOR ENDWALL FOR WIND PERPENDICULAR TO RIDGE FIRST STOREY OF TWO STOREY, WHERE MAXIMUM REFERENCE VELOCITY PRESSURE $q_{1/50} \leq 1.2$ kPa WITH DESIGN PER CSA A23.3-14[1]

SIDEWALL LENGTH m[5]	ENDWALL LENGTH m[5]	ROOF SLOPE[5]	LENGTH OF SOLID WALL REQUIRED IN ENDWALLS FOR WIND PERPENDICULAR TO RIDGE, m[2][3][4]											
			Minimum nominal wall thickness, mm											
			150 mm			200 mm			250 mm			300 mm		
			Maximum Seismic Spectral Response Acceleration $S_a(0.2)$											
			0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5
4.57 m	4.57 m	5:12	1.4 m	1.4 m	1.4 m	1.4 m	1.4 m	1.4 m	1.4 m	1.4 m	1.4 m	1.6 m	1.6 m	1.6 m
		12:12	1.4 m	1.4 m	1.6 m	1.4 m	1.4 m	1.6 m	1.4 m	1.4 m	1.6 m	1.6 m	1.6 m	1.6 m
	9.14 m	5:12	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m
		12:12	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m
	13.72 m	5:12	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m
		12:12	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m
	18.29 m	5:12	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m
		12:12	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m
9.14 m	4.57 m	5:12	1.6 m	2 m	2.6 m	1.6 m	2 m	2.6 m	2 m	2 m	2.6 m	2.4 m	2.4 m	2.6 m
		12:12	1.8 m	2.6 m	3.2 m	1.8 m	2.6 m	3.2 m	2 m	2.6 m	3.2 m	2.4 m	2.4 m	3.2 m
	9.14 m	5:12	2.8 m	2.8 m	3.2 m	2.8 m	2.8 m	3 m	2.8 m	2.8 m	3 m	3.2 m	3.2 m	3.2 m
		12:12	2.8 m	3.4 m	4.4 m	2.8 m	3.4 m	4.4 m	2.8 m	3.4 m	4.2 m	3.2 m	3.2 m	4.2 m
	13.72 m	5:12	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m	4.2 m
		12:12	4.2 m	4.2 m	5.4 m	4.2 m	4.2 m	5.4 m	4.2 m	4.2 m	5.4 m	4.2 m	4.2 m	5.4 m
	18.29 m	5:12	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m
		12:12	5.6 m	5.6 m	6.4 m	5.6 m	5.6 m	6.4 m	5.6 m	5.6 m	6.4 m	5.6 m	5.6 m	6.4 m
18.29 m	4.57 m	5:12	3 m	4 m	5.2 m	3 m	4 m	5.2 m	3.4 m	4 m	5.2 m	3.8 m	4 m	5.2 m
		12:12	3.6 m	5 m	6.4 m	3.6 m	5 m	6.4 m	3.6 m	5 m	6.4 m	3.8 m	4.8 m	6.4 m
	9.14 m	5:12	3.6 m	4.8 m	6.2 m	3.6 m	4.6 m	6 m	4.4 m	4.6 m	6 m	5 m	5 m	6 m
		12:12	4.8 m	6.6 m	8.6 m	4.8 m	6.6 m	8.6 m	4.8 m	6.6 m	8.4 m	5 m	6.4 m	8.4 m
	13.72 m	5:12	4.2 m	5.4 m	7 m	4.6 m	5.4 m	7 m	5.4 m	5.4 m	7 m	6 m	6 m	6.8 m
		12:12	6 m	8.2 m	10.8 m	6 m	8.2 m	10.6 m	6 m	8.2 m	10.6 m	6 m	8 m	10.6 m
	18.29 m	5:12	5.6 m	6 m	8 m	5.6 m	6 m	7.8 m	6.4 m	6.4 m	7.8 m	7.2 m	7.2 m	7.8 m
		12:12	7.2 m	9.8 m	12.8 m	7.2 m	9.8 m	12.8 m	7.2 m	9.8 m	12.6 m	7.2 m	9.6 m	12.6 m

1) See "General Notes for Engineered Above Grade Tables A7 – A12" for additional table requirements.
2) Solid wall lengths shall not be reduced under any circumstances.
3) Minimum length of solid wall lengths included shall be greater than or equal to 24 inches (0.6 m) in length, and not more than two solid wall lengths greater than or equal to 24 inches (0.6 m) in length and less than 48 inches (1.2 m) in length shall be included in the required total length of solid wall.
4) Table shows minimum summation of solid wall length. Plans are permitted to exceed the minimum length.
5) Where actual sidewall, endwall and roof slope values fall between values provided in table, the next highest design value in the table shall be used.

TABLE B12: PART 4 APPLICATION LENGTH OF SOLID WALL REQUIRED IN EACH EXTERIOR SIDEWALL FOR WIND PARALLEL TO RIDGE, WHERE MAXIMUM REFERENCE VELOCITY PRESSURE $q_{1/50} \leq 1.2$ kPa WITH DESIGN PER CSA A23.3-14[1]

SIDEWALL LENGTH m[5]	ENDWALL LENGTH m[5]	ROOF SLOPE[5]	LENGTH OF SOLID WALL REQUIRED IN SIDEWALLS FOR WIND PARALLEL TO RIDGE, m[2][3][4]											
			Minimum nominal wall thickness, mm											
			150 mm			200 mm			250 mm			300 mm		
			Maximum Seismic Spectral Response Acceleration $S_a(0.2)$											
			0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5	0.4	0.8	1.5
One story or top story of two story														
< 9.34 m	4.57 m	5:12	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m
		12:12	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m
	9.14 m	5:12	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m
		12:12	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m
	13.72 m	5:12	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m
		12:12	2.8 m	2.8 m	3.6 m	2.8 m	2.8 m	3.6 m	2.8 m	2.8 m	3.6 m	2.8 m	2.8 m	3.4 m
	18.29 m	5:12	2.8 m	2.8 m	3.2 m	2.8 m	2.8 m	3.2 m	2.8 m	2.8 m	3.2 m	2.8 m	2.8 m	3.2 m
		12:12	3.2 m	4.4 m	5.8 m	3.2 m	4.4 m	5.8 m	3.2 m	4.4 m	5.6 m	3.2 m	4.4 m	5.6 m
18.29 m	13.72 m	5:12	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m
		12:12	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m
	18.29 m	5:12	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m
		12:12	5.6 m	5.6 m	5.8 m	5.6 m	5.6 m	5.8 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m
First story of two story														
< 9.34 m	4.57 m	5:12	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m
		12:12	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m
	9.14 m	5:12	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	2.8 m	3.2 m	3.2 m	3.2 m
		12:12	2.8 m	2.8 m	3.2 m	2.8 m	2.8 m	3.2 m	2.8 m	2.8 m	3.2 m	3.2 m	3.2 m	3.2 m
	13.72 m	5:12	2.8 m	3.4 m	4.4 m	3 m	3.2 m	4.2 m	3.6 m	3.6 m	4.2 m	4 m	4 m	4.2 m
		12:12	3.2 m	4.4 m	5.6 m	3.2 m	4.4 m	5.6 m	3.6 m	4.4 m	5.6 m	4 m	4.2 m	5.6 m
	18.29 m	5:12	3.4 m	4.8 m	6.2 m	3.6 m	4.6 m	6 m	4.4 m	4.6 m	6 m	5 m	5 m	6 m
		12:12	4.8 m	6.6 m	8.6 m	4.8 m	6.6 m	8.6 m	4.8 m	6.6 m	8.4 m	5 m	6.4 m	8.4 m
18.29 m	13.72 m	5:12	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	6 m	6 m	6 m
		12:12	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	5.6 m	6 m	6 m	6 m
	18.29 m	5:12	5.6 m	5.6 m	6.2 m	5.6 m	5.6 m	6 m	6.4 m	6.4 m	6.4 m	7.2 m	7.2 m	7.2 m
		12:12	5.6 m	6.6 m	8.6 m	5.6 m	6.6 m	8.6 m	6.4 m	6.6 m	8.4 m	7.2 m	7.2 m	8.4 m

1) See "General Notes for Engineered Above Grade Tables A7 – A12" for additional table requirements.
2) Solid wall lengths shall not be reduced under any circumstances.
3) Minimum length of solid wall lengths included shall be greater than or equal to 24 inches (0.6 m) in length, and not more than two solid wall lengths greater than or equal to 24 inches (0.6 m) in length and less than 48 inches (1.2 m) in length shall be included in the required total length of solid wall.
4) Table shows minimum summation of solid wall length. Plans are permitted to exceed the minimum length.
5) Where actual sidewall, endwall and roof slope values fall between values provided in table, the next highest design value in the table shall be used.

END