USA RESIDENTIAL
STRUCTURAL WALL & LINTEL DESIGN TABLES

KEYSTONE
STRUCTURAL SOLUTIONS

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Design Limitations and Tables for Below and Above Grade Walls and Lintels for the Nudura® Insulated Concrete Form (ICF) System

Nudura® ICFs are now part of the Tremco Construction Products Group and are now marketed under Tremco CPG Inc.

Nudura

Design Limitations for Walls and Lintels

Introduction

The structural wall reinforcing and lintel design tables contained within the Nudura Installation Manual have been prepared consistent with the design principles and practices that have been applied throughout the United States ICF industry for the prescriptive design of insulating concrete form walls. The intent of these specific tables is to enable design and building reviewing professionals to competently determine reinforcement requirements for walls specifically constructed using the Nudura® Insulating Concrete Form (ICF) System. For this reason, reinforcement specifications may vary slightly from prescriptive reinforcement configurations that may be specified within the 2015, 2018, 2021, and 2024 International Residential Codes (IRC) or referenced documents therein, as the design reflects the specific geometry and reinforcement capabilities that are unique to the Nudura ICF Wall System.

Wall Design – General

1. These tables apply to one- and two-family residential structures that conform to the requirements of the 2015, 2018, 2021, and 2024 IRC and referenced design guides. All construction shall comply with the appropriate local building Codes.

2. It is the responsibility of the parties involved, including the builder and subcontractors to review the applicability of these tables and notes to the project-specific conditions. Keystone Structural Solutions and Tremco CPG Inc. assume no responsibility with regard to the misinterpretation or misuse of the attached tables.

3. The engineer's professional stamps provided in this document are intended to confirm that the tables have been developed under the direction of a professional engineer and have been evaluated for the codes indicated below. The seals should not be used to obtain building permits for specific projects. If a seal is needed for a specific project, the engineer of record, a local engineer, or Keystone Structural Solutions should provide a project specific seal in that instance.

4. If the proposed construction does not meet the design or applicability parameters noted herein, a local design professional engineer shall be retained to prepare the design in accordance with applicable standards and design Codes.

5. These tables have been designed to resist gravity, wind, and earthquake forces, as specifically noted, in accordance with the International Residential Code, along with the design loads and factors that are indicated in Notes 5 & 6 and within the structural tables contained in this Appendix.

6. The following maximum UNFACTORED loads were assumed in the design of the structural tables featured in this appendix:

    A. Roof Snow Load (Live) = 54 psf (70 psf ground snow load)
    B. Occupancy Load (Live) = 40 psf
    C. Roof and Floor Load (Dead) = 15 psf
    D. Soil Equivalent Fluid Pressure = 30, 45, and 60 psf / ft
    E. Concrete Density (Dead) = 150 lb/ft3
    F. Seismic Design Categories A, B, C, D0, D1, and D2

7. Design assumes that ALL walls are laterally supported at the top and bottom by building foundation, roof and floor systems, and associated diaphragms, designed by others.

8. Design limits concrete deflection to L/360.

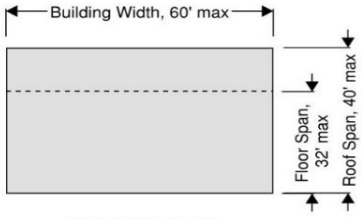
9. Foundation walls are not designed for either hydrostatic pressure or additional lateral soil pressure associated with surcharge loading. These loading conditions require additional review.

10. Design assumes that the minimum 28-day compressive strength of concrete used in the installation shall be 3,000 psi. Actual design of the concrete mix is the responsibility of the ready mix supplier. Additionally, the water to cement ratio (w/c) shall not exceed 0.60 and the slump shall be between 5″ and 6″.

11. Design assumes that the reinforcing steel will be deformed rebar, placed in accordance with standard industry practice and ACI placement requirements and shall be supplied at the following yield strength:

    - ASTM A615 Grade 60 (fy = 60 ksi), (ASTM A706 Grade 60 for projects in SDC D)
    - Grade 40 reinforcement may be substituted at 1.5 times the number of bars noted, or similarly 2/3 the spacing listed for requirements specified as"on center spacing."

12. All wall reinforcement shall be proportionally and evenly distributed in both the transverse and longitudinal directions of the building.

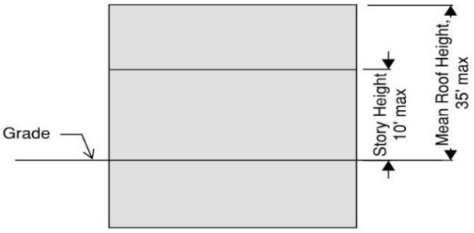


BUILDING PLAN

Design Limitations

13. The following maximum building dimensions are permitted for use:

    A. Building Width = 60 ft
    B. Floor Span = 32 ft
    C. Roof Span = 40 ft



BUILDING ELEVATION

14. Design is limited to one floor below grade and a maximum of two stories above grade, as well as a maximum mean roof height of 35 feet.

15. Maximum height of above grade walls = 10 ft. Reinforcement and wall information provided beyond this height as indicated by tan shaded section on each design table is for estimating purposes only. A local design professional is to be contacted for a site specific design at these locations.

16. Maximum height of foundation walls = 10 ft. Reinforcement and wall information provided beyond this height as indicated by tan shaded section on each design table is for estimating purposes only. A local design professional is to be contacted for a site specific design at these locations.

17. It is the responsibility of the roof or floor designer to ensure that adequate bearing for all framing members is provided on the concrete walls.

Use of Wall Design Tables

Specific Notes Regarding Vertical & Horizontal Steel Specifications

General

18. Height of foundation wall is defined as "the distance from the top of the basement floor slab to the point of bearing for the floor system".

19. Backfill height is defined as "the distance from the top of the basement floor slab to the finished exterior grade level".

20. Except as otherwise indicated in Details C-12 through C-16, C-17 and C-19, all below grade wall vertical reinforcing shall be placed with the center axis of the bar being located 1½" from the interior face of the concrete in the ICF forms (on the tension side of the wall).

21. Interpolation between backfill heights and soil equivalent fluid density is not permitted.

22. For walls above grade, vertical reinforcing shall be placed at the middle (or center axis) of the wall.

23. Horizontal reinforcing shall be as indicated in the tables. There shall be (1) #4 continuous bar within 12" from the top of the wall and at floor levels, unless noted within the wall tables.

Rules for Reinforcement at Openings

24. In addition to the wall reinforcing indicated with the design tables of this Appendix D, a minimum of (2) #4 bars shall be installed at both sides of all openings in concrete, maintaining a minimum cover of 1½". Bars shall extend vertically for the full height of the wall pour, as shown in drawing L1 located within the "Lintel Design Limitations" document for concrete lintels. Vertical bars shall be installed with adequate splices at construction joints. (2) #4 bars shall also be installed at the base of the opening, and, (consistent with the required top and bottom bar lintel steel specified in the Lintel Tables Section extended a minimum of 24" beyond both sides of the opening.

25. For foundation walls, the length of solid wall between two openings should be equal to the average width of the openings and shall be no less than a minimum of 4'-0".

26. Openings in a foundation wall shall not exceed a maximum width of 6'-0". Egress walls outside of the foundation shall be self-supporting and shall not be designed or constructed to induce additional lateral loading on the ICF foundation.

27. Each foundation wall shall not have a total width of openings in the wall constituting more than 25% of the length of the wall.

28. For sections of wall between openings conforming to the above notes, the spacing of the vertical reinforcing must be decreased in these walls by a factor as calculated within the following formula

$$\frac{\text{width of wall between openings}}{\text{(width of wall between openings + average width of the two openings)}}$$

29. If the spacing of the wall vertical reinforcing required between or on each side of openings is determined by the above calculation to be less than 4", a local design professional shall be retained to prepare the design in accordance with applicable standards.

Shear Walls

30. Shear walls and lateral resisting elements are to be in accordance with the 2015, 2018, 2021, and 2024 IRC. Refer to the latest PCA 100 design guide as referenced and required by these Codes for guidance on required shear wall lengths and reinforcement, including Seismic Design Category D, and design wind speeds exceeding 160 mph, 136 mph, and 125 mph for exposure categories B, C, and D respectively.

31. Reinforcement tables are not to be used for structures classified as irregular in Seismic Design Categories C and D.

32. Reinforcement tables are not to be used for structures located where topographic factors may induce additional lateral loading without prior consultation by a local design professional.

Point Loads

33. All point loads, such as concentrated loads created by girder trusses, columns and beams, shall bear directly on top of the concrete wall, and shall not be hung or in any other manner create an eccentric loading on the concrete wall.

34. The minimum horizontal length of solid wall without openings directly below point loads, such as concentrated loads created by girder trusses, columns and beams, shall be 6′-0″. In addition to the wall reinforcing required within the structural tables of this Appendix (D), two additional #5 vertical bars shall be installed directly below the point load.

Reinforcement at Corners

35. Two full-height vertical bars, equal to the vertical reinforcing within the wall system, are to be installed at all corners.

Installation

General

36. The design and construction of all work on site shall conform to the latest editions of the applicable building codes for the region where installation is taking place, including local applicable code regulations and bylaws as well as all applicable health and safety regulations.

Footing Reinforcement

37. Strip footings are to be fitted with dowels to provide connection between the footing and the wall cavity. Dowels shall be installed along the center axis of the strip footings and shall be installed as per the details shown in Appendix C of this manual.

38. Where footings or frost walls are not a requirement, when the footing is incorporated as part of a slab on grade foundation, dowels shall be embedded in the slab at equal size and spacing as the vertical reinforcement. Minimum embedment into both the slab and wall cavity shall be consistent with bar development and lapping requirements.

General Reinforcement Installations

39. Reinforcement placement must be in accordance with the specified design as determined per these notes and tables of this Appendix (D) and as per the applicable detail drawings as provided under Appendix C of this manual.

40. Minimum bar lap length shall be per table below:

Bar	Min Lap Length
#4	29″
#5	36″
#6	43″
#7	63″
#8	72″
#9	81″
#10	91″
#11	101″

Concrete Placement

41. Concrete work shall conform to the latest editions of ACI and ASTM standards for materials, placement, and workmanship.

42. Construction joints shall be made and located so as not to impair the strength of the structure. All specified reinforcing bars shall have minimum lap lengths across all construction joints.

43. Placement of concrete including adequate vibration is the responsibility of the contractor

44. Concrete pours shall be terminated at locations of lateral support, such as provided by roof and floor systems.

Protection of Structure During Installation

45. Adequate frost protection shall be provided for all foundation walls and footings both during construction and in the final installation.

46. The contractor shall make adequate provisions to protect concrete from exposure to freezing temperatures and precipitation for at least seven days after concrete placement.

47. Backfill shall be drained in accordance with IRC requirements.

48. Walls shall be laterally supported at top and bottom prior to backfilling.

49. Surface grading around the foundation shall be sloped away from building to allow surface runoff to drain away. Provide a minimum slope of 6″ over the first 10 feet or adequate drainage swales.

50. The contractor shall make adequate provision for construction loads and temporary bracing to keep structure plumb and in true alignment at all phases of construction.

51. All work shall conform to the latest editions of ANY of the following Codes and Standards that are deemed applicable for your region including but not limited to:

    - 2015, 2018, 2021, and 2024 International Residential Code.
    - Latest version of Document PCA 100 as referenced in the 2015, 2018, 2021, and 2024 IRC.
    - Local building codes, local regulations, and laws.
    - Occupational Safety and Health Association Regulations.

Substitutions

52. Reinforcing substitution options are provided within the notes of each structural table showing a **proposed** bar diameter and spacing followed by a **dash and greater than sign (->). The bar diameter and spacing noted after the sign represents an equivalent or greater reinforcing ration that will satisfy the structural requirements. The dash and greater than sign may be interpreted as "may be substituted with"**. The options cannot be applied in reverse of this notation.

Some notes from the Wall Design criteria are intentionally repeated here for clarity and context of their applicability to lintel design as well.

1. The lintel tables provided in this Appendix apply to one and two-family residential structures only that conform to the requirements of the 2015, 2018, 2021, and 2024 International Residential Building Code and referenced design guides. All construction shall comply with the appropriate local building codes.

2. It is the responsibility of the parties involved, including the builder and subcontractors, to review the applicability of these tables and notes to the project-specific conditions. Keystone Structural Solutions and Tremco CPG Inc. assume no responsibility with regard to the interpretation or misuse of the attached tables.

3. If the proposed construction does not meet the design or applicability parameters noted herein, a local design professional engineer shall be retained to prepare the design in accordance with applicable standards and design Codes.

4. The allowable uniformly distributed loads indicated within the lintel tables of this manual are unfactored. The actual uniformly distributed load for each lintel design case is to be calculated by multiplying the floor and/or roof loads by the tributary floor and/or roof width, and adding together all applicable loading for each lintel including concrete wall weight and all supported live, snow, and dead loads. The tributary width is determined by taking half of the overall floor and / or roof spans.

5. Lintels are designed for uniformly distributed gravity loads only. A local design professional engineer shall be retained to prepare the design of lintels to resist lateral loads or point loads, such as concentrated loads from girders, columns, beam reactions, or offset openings, in accordance with the Code.

6. Designs limit total initial deflection to L/360.

7. Design assumes that the reinforcing steel will be deformed rebar, placed in accordance with standard industry practice and ACI placement requirements and shall be supplied at the following yield strength:

    - ASTM A615 Grade 60 (fy = 60 ksi)
    - Grade 40 reinforcement may be substituted at 1.5 times the number of bars noted

8. Design assumes that the minimum 28-day compressive strength of concrete used in the installation shall be 3,000 psi. Actual design of the concrete mix is the responsibility of the ready-mix supplier.

9. Minimum lintel reinforcing shall consist of the following:

    - One single #4 top bar located 1½" from the top of the lintel extended a minimum of 24" beyond the opening at each end.
    - Bottom bars equal to the quantity and diameter specified in the lintel tables, installed with a concrete cover of 1½" and extended a minimum of 24" beyond the opening at each end.
    - When required in the lintel tables, #3 'S' or 'C' hook stirrups shall be installed around the top and bottom bars, in accordance with the dimensions and spacing indicated in the tables and drawings of this manual. Stirrups are required where "stirrup end distance" listed is greater than 0. Place stirrups from each end of lintel to "stirrup end distance" listed in table.

10. Where there is less than 12" of concrete wall length between openings, the lintel shall be reinforced to span over both openings.

11. Where there is less than 24" of concrete wall length between openings, and where either opening is greater than five feet in length, the lintel shall be reinforced to span over both openings.

12. Construction joints shall not be installed within 24" on either side of any wall opening.

13. Minimum bar lap length shall be per the table below.

Bar	Min Lap Length
#4	29″
#5	36″
#6	43″
#7	63″
#8	72″
#9	81″
#10	91″
#11	101″

14. Where bars within a lintel cannot achieve a minimum concrete side cover and spacing of ¾″, the bars are required to be bundled. The following notes apply to all bundled bars:
    - A maximum of two parallel reinforcing bars may be bundled together in contact with each other and assumed to act as a single unit. Bundled bars shall be tied, wired, or otherwise fastened together to ensure that they remain in position.
    - Splices of individual bars within a bundle are not to overlap.
    - Lintels with bundled reinforcement are to have stirrups installed.
15. Twenty-foot span lintels shown in tables (and highlighted in tan) are for estimation purposes only. This span exceeds IRC limitations and therefore additional review is required by a local design professional.
16. Any lintel cells noted in lavender indicate that the steel strain, ε_t, is less than 0.002. Further review by design professional is required.
17. Adequate bracing, shoring, and formwork are the responsibility of the contractor, including all means and methods of construction.
18. Top of lintels shall be laterally supported by building floor or roof systems, and diaphragms, by others.
19. Placement of concrete including adequate vibration is the responsibility of the contractor.
20. Refer to the design limitations and ICF wall requirements within this manual for additional concrete and reinforcement requirements, and limitations.
21. Bottom Bar reinforcement substitution options are provided within the notes of each lintel table showing a proposed bottom bar (or combination of bars) and their diameters followed by the words “may be substituted for” and an alternative bar number and diameter solution of (usually) lesser cross sectional area appearing after it. **The options cannot be applied in reverse of this notation.**

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WALL DESIGN TABLES

Below-Grade Walls Built with Nudura Insulated Concrete Forms (All IRC Codes)
Vertical and Horizontal Steel Reinforcement for Seismic Design Categories A, B, and C

Wall Height	Backfill Height	Vertical Steel									Horizontal Steel
		Equivalent Fluid Pressure									
		30 psf/ft			45 psf/ft			60 psf/ft			All Soils
ft	ft	6" Wall	8" Wall	10" Wall	6" Wall	8" Wall	10" Wall	6" Wall	8" Wall	10" Wall	All Wall Thicknesses
8	4	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 36" o.c.
	5	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 32"	#4 @ 48"	#4 @ 48"	#4 @ 36" o.c.
	6	#4 @ 40"	#4 @ 48"	#4 @ 48"	#4 @ 32"	#4 @ 40"	#4 @ 48"	#4 @ 24"	#4 @ 32"	#4 @ 40"	#4 @ 36" o.c.
	7	#4 @ 32"	#4 @ 48"	#4 @ 48"	#4 @ 24"	#4 @ 32"	#4 @ 40"	#4 @ 16"	#4 @ 24"	#4 @ 32"	#4 @ 36" o.c.
	8	#4 @ 24"	#4 @ 32"	#4 @ 48"	#4 @ 16"	#4 @ 24"	#4 @ 32"	#5 @ 16"	#4 @ 16"	#4 @ 24"	#4 @ 36" o.c.
9	4	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 36" o.c.
	5	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 40"	#4 @ 48"	#4 @ 48"	#4 @ 32"	#4 @ 48"	#4 @ 48"	#4 @ 36" o.c.
	6	#4 @ 40"	#4 @ 48"	#4 @ 48"	#4 @ 24"	#4 @ 40"	#4 @ 48"	#4 @ 16"	#4 @ 32"	#4 @ 40"	#4 @ 36" o.c.
	7	#4 @ 32"	#4 @ 40"	#4 @ 48"	#4 @ 16"	#4 @ 24"	#4 @ 40"	#4 @ 16"	#4 @ 24"	#4 @ 24"	#4 @ 36" o.c.
	8	#4 @ 24"	#4 @ 32"	#4 @ 40"	#4 @ 16"	#4 @ 24"	#4 @ 24"	#5 @ 16"	#4 @ 16"	#4 @ 16"	#4 @ 36" o.c.
	9	#4 @ 16"	#4 @ 24"	#4 @ 32"	#5 @ 16"	#4 @ 16"	#4 @ 24"	#4 @ 8"	#5 @ 16"	#4 @ 16"	#4 @ 36" o.c.
10	4	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 40"	#4 @ 48"	#4 @ 48"	#4 @ 36" o.c.
	5	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 32"	#4 @ 48"	#4 @ 48"	#4 @ 24"	#4 @ 40"	#4 @ 48"	#4 @ 36" o.c.
	6	#4 @ 40"	#4 @ 48"	#4 @ 48"	#4 @ 24"	#4 @ 40"	#4 @ 48"	#4 @ 16"	#4 @ 24"	#4 @ 32"	#4 @ 36" o.c.
	7	#4 @ 24"	#4 @ 40"	#4 @ 48"	#4 @ 16"	#4 @ 24"	#4 @ 32"	#5 @ 16"	#4 @ 16"	#4 @ 24"	#4 @ 36" o.c.
	8	#4 @ 16"	#4 @ 24"	#4 @ 40"	#5 @ 16"	#4 @ 16"	#4 @ 24"	#5 @ 16"	#4 @ 16"	#4 @ 16"	#4 @ 36" o.c.
	9	#4 @ 16"	#4 @ 24"	#4 @ 32"	#5 @ 16"	#4 @ 16"	#4 @ 16"	#4 @ 8"	#5 @ 16"	#4 @ 16"	#4 @ 36" o.c.
	10	#5 @ 16"	#4 @ 16"	#4 @ 24"	#4 @ 8"	#5 @ 16"	#4 @ 16"	#5 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 36" o.c.
11	4	#4 @ 48"	#4 @ 48"	#4 @ 48"	#4 @ 40"	#4 @ 48"	#4 @ 48"	#4 @ 32"	#4 @ 48"	#4 @ 48"	#4 @ 36" o.c.
	6	#4 @ 32"	#4 @ 48"	#4 @ 48"	#4 @ 24"	#4 @ 32"	#4 @ 40"	#4 @ 16"	#4 @ 24"	#4 @ 32"	#4 @ 36" o.c.
	8	#4 @ 16"	#4 @ 24"	#4 @ 32"	#5 @ 16"	#4 @ 16"	#4 @ 24"	#5 @ 16"	#5 @ 16"	#4 @ 16"	#4 @ 36" o.c.
	10	#5 @ 16"	#4 @ 16"	#4 @ 24"	#4 @ 8"	#5 @ 16"	#4 @ 16"	#5 @ 8"	#4 @ 8"	#5 @ 16"	#4 @ 36" o.c.
	11	#5 @ 16"	#5 @ 16"	#4 @ 16"	#5 @ 8"	#5 @ 16"	#5 @ 16"	#5 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 36" o.c.
12	4	#4 @ 40"	#4 @ 48"	#4 @ 48"	#4 @ 32"	#4 @ 48"	#4 @ 48"	#4 @ 32"	#4 @ 40"	#4 @ 48"	#4 @ 36" o.c.
	6	#4 @ 24"	#4 @ 40"	#4 @ 48"	#4 @ 16"	#4 @ 32"	#4 @ 40"	#4 @ 16"	#4 @ 24"	#4 @ 32"	#4 @ 36" o.c.
	8	#4 @ 16"	#4 @ 24"	#4 @ 32"	#5 @ 16"	#4 @ 16"	#4 @ 24"	#4 @ 8"	#5 @ 16"	#4 @ 16"	#4 @ 36" o.c.
	10	#5 @ 16"	#4 @ 16"	#4 @ 16"	#6 @ 16"	#5 @ 16"	#5 @ 16"	#5 @ 8"	#4 @ 8"	#5 @ 16"	#4 @ 36" o.c.
	12	#4 @ 8"	#5 @ 16"	#5 @ 16"	#5 @ 8"	#4 @ 8"	#5 @ 16"	-	#5 @ 8"	#6 @ 16"	#4 @ 36" o.c.

Notes

1) Cells shaded in tan color indicate reinforcing for estimating purposes only. Wall heights exceed IRC prescriptive limits. A local design professional shall be consulted for additional review for these wall heights.
2) This table is to be used in conjunction with the "Design Limitations" prepared by Keystone Structural Solutions.
3) Refer to the "Design Limitations" for information on Codes, construction methods, material specifications, design loads, additional wall reinforcing requirements around openings, minimum wall length, and additional design and installation requirements.
4) Allowable substitutions: #4 @ 32 ->#5 @ 48, #4 @ 24 ->#5 @ 32, #4 @ 16 ->#5 @ 24, and #4 @ 8 ->#6 @ 16 (See Note 52).

Below-Grade WallsBuilt with NuduraInsulated Concrete Forms (Applies to 2015 IRC and 2018 IRC Only)
Vertical and Horizontal Steel Reinforcement for Seismic Design Category D

Wall Height	Backfill Height	Vertical Steel									Horizontal Steel
		Equivalent Fluid Pressure									
		30 psf/ft			45 psf/ft			60 psf/ft			All Soils
ft	ft	6" Wall	8" Wall	10" Wall	6" Wall	8" Wall	10" Wall	6" Wall	8" Wall	10" Wall	All Wall Thicknesses
8	4	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	5	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	6	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	7	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	8	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
9	4	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	5	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	6	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	7	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	8	#4 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	9	#4 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 8"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
10	4	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	5	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	6	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	7	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	8	#4 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	9	#4 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 8"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	10	#5 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 8"	#5 @ 16"	#4 @ 8"	#5 @ 8"	#4 @ 8"	#4 @ 8"	(2) #4 @ 18"
11	4	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	6	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	8	#4 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 8"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	10	#5 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 8"	#5 @ 16"	#4 @ 8"	#5 @ 8"	#4 @ 8"	#4 @ 8"	(2) #4 @ 18"
	11	#4 @ 8"	#5 @ 16"	#4 @ 8"	#5 @ 8"	#4 @ 8"	#4 @ 8"	#6 @ 8"	#6 @ 16"	#4 @ 8"	(2) #4 @ 18"
12	4	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	6	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 16"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	8	#4 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 16"	#5 @ 16"	#4 @ 8"	#4 @ 8"	#5 @ 16"	#4 @ 8"	(2) #4 @ 18"
	10	#5 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#5 @ 8"	#4 @ 8"	#4 @ 8"	(2) #4 @ 18"
	12	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 8"	#6 @ 16"	#4 @ 8"	-	#5 @ 8"	#6 @ 16"	(2) #4 @ 18"

Notes

1) Cells shaded in tan color indicate reinforcing for estimating purposes only. Wall heights exceed IRC prescriptive limits. A local design professional shall be consulted for additional review for these wall heights.
2) This table is to be used in conjunction with the "Design Limitations" prepared by Keystone Structural Solutions.
3) Refer to the "Design Limitations" for information on Codes, construction methods, material specifications, design loads, additional wall reinforcing requirements around openings, minimum wall length, and additional design and installation requirements.
4) Allowable substitutions: #4 @ 8 ->#6 @ 16" (See Note 52).

Below-Grade Walls Built with Nudura Insulated Concrete Forms (Applies to IRC 2021 and IRC 2024 only)
Vertical and Horizontal Steel Reinforcement for Seismic Design Category D

Wall Height	Backfill Height	Vertical Steel									Horizontal Steel
		Equivalent Fluid Pressure									
		30 psf/ft			45 psf/ft			60 psf/ft			All Soils
ft	ft	6" Wall	8" Wall	10" Wall	6" Wall	8" Wall	10" Wall	6" Wall	8" Wall	10" Wall	All Wall Thicknesses
8	4	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	5	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	6	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	7	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	8	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
9	4	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	5	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	6	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	7	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	8	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	9	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#4 @ 8"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
10	4	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	5	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	6	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	7	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	8	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	9	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#4 @ 8"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	10	#5 @ 16"	#4 @ 8"	#6 @ 16"	#4 @ 8"	#4 @ 8"	#6 @ 16"	#5 @ 8"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
11	4	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	6	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	8	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#4 @ 8"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	10	#5 @ 16"	#4 @ 8"	#6 @ 16"	#4 @ 8"	#4 @ 8"	#6 @ 16"	#5 @ 8"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	11	#4 @ 8"	#4 @ 8"	#6 @ 16"	#5 @ 8"	#4 @ 8"	#6 @ 16"	#6 @ 8"	#6 @ 16"	#6 @ 16"	(2) #4 @ 18"
12	4	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	6	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	8	#5 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 16"	#4 @ 8"	#6 @ 16"	#4 @ 8"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	10	#5 @ 16"	#4 @ 8"	#6 @ 16"	#6 @ 16"	#4 @ 8"	#6 @ 16"	#5 @ 8"	#4 @ 8"	#6 @ 16"	(2) #4 @ 18"
	12	#6 @ 16"	#4 @ 8"	#6 @ 16"	#6 @ 8"	#6 @ 16"	#6 @ 16"	-	#5 @ 8"	#6 @ 16"	(2) #4 @ 18"

Notes

1) Cells shaded in tan color indicate reinforcing for estimating purposes only. Wall heights exceed IRC prescriptive limits. Cell values in this Table Apply only to states in Seismic Category D adopting the 2021 or 2024 IRC Codes. A local design professional shall be consulted for additional review for these wall heights.
2) This table is to be used in conjunction with the "Design Limitations" prepared by Keystone Structural Solutions.
3) Refer to the "Design Limitations" for information on Codes, construction methods, material specifications, design loads, additional wall reinforcing requirements around openings, minimum wall length, and additional design and installation requirements.
4) Allowable substitutions: #4 @ 8" -> #6 @ 16" (See Note 52).

Above Grade Walls: Vertical and Horizontal Steel Reinforcement for Walls Built with Nudura Insulated Concrete Forms (All IRC Codes)					
Wall Height	Vertical Steel 115 mph Basic Wind Speed (3 second gust), Exposure B Seismic Design Category A, B, or C				Horizontal Steel All Scenarios
One Story Concrete Structure or Top Floor of 2 Story Concrete Structure Supporting Wood Frame Roof					
ft	**4" Wall**	**6" Wall**	**8" Wall**	**10" Wall**	
8	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
9	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
10	#4 @ 40" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
12	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
14	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
16	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
Lower Floor of 2 Story Concrete Structure Supporting 2nd Story Wood Framed Walls, Floor, & Roof					
ft	**4" Wall**	**6" Wall**	**8" Wall**	**10" Wall**	
8	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
9	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
10	#4 @ 40" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
12	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
14	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
16	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
Lower Floor of 2 Story Concrete Structure Supporting 2nd Story Concrete Walls and Wood Framed Floor, & Roof					
ft	**4" Wall**	**6" Wall**	**8" Wall**	**10" Wall**	
8	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
9	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
10	#4 @ 40" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
12	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
14	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
16	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.

Notes

1) Cells shaded in tan color indicate reinforcing for estimating purposes only. Wall heights exceed IRC prescriptive limits. A local design professional shall be consulted for additional review for these wall heights.
2) This table is to be used in conjunction with the "Design Limitations" prepared by Keystone Structural Solutions.
3) Refer to the "Design Limitations" for information on Codes, construction methods, material specifications, design loads, additional wall reinforcing requirements around openings, minimum wall length, and additional design and installation requirements.
4) For Exposure C conditions with 115 mph Wind Speed, use the 150 mph tables.
5) Allowable substitutions: #4 @ 32" -> #5 @48", #4 @ 24" -> #5 @ 32", #4 @ 16" -> #5 @ 24", and #4 @ 8" -> #6 @ 16" (See Note 52)

Above Grade Walls: Vertical and Horizontal Steel Reinforcement for Walls Built with Nudura Insulated Concrete Forms (All IRC Codes)					
Wall Height	Vertical Steel 150 mph Basic Wind Speed (3 second gust), Exposure B Seismic Design Category A, B, or C				Horizontal Steel All Scenarios
One Story Concrete Structure or Top Floor of 2 Story Concrete Structure Supporting Wood Frame Roof					
ft	**4" Wall**	**6" Wall**	**8" Wall**	**10" Wall**	
8	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
9	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
10	#4 @ 24" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
12	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
14	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
16	-	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
Lower Floor of 2 Story Concrete Structure Supporting 2nd Story Wood Framed Walls, Floor, & Roof					
ft	**4" Wall**	**6" Wall**	**8" Wall**	**10" Wall**	
8	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
9	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
10	#4 @ 24" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
12	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
14	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
16	-	#4 @ 40" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
Lower Floor of 2 Story Concrete Structure Supporting 2nd Story Concrete Walls and Wood Framed Floor, & Roof					
ft	**4" Wall**	**6" Wall**	**8" Wall**	**10" Wall**	
8	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
9	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
10	#4 @ 24" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
12	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
14	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
16	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.

Notes

1) Cells shaded in tan indicate reinforcing for estimating purposes only. Wall heights exceed IRC prescriptive limits. A local design professional shall be consulted for additional review for these wall heights.
2) This table is to be used in conjunction with the "Design Limitations" prepared by Keystone Structural Solutions.
3) Refer to the "Design Limitations" for information on Codes, construction methods, material specifications, design loads, additional wall reinforcing requirements around openings, minimum wall length, and additional design and installation requirements.
4) For Exposure C conditions with 150 mph Wind Speed, use the 180 mph tables.
5) Allowable Substitutions: #4 @ 32" = #5 @ 48", #4 @ 24" = #5 @ 32", and #4 @ 16" = #5 @ 24", and #4@8">#6@16" (See Note 52).

Above Grade Walls: Vertical and Horizontal Steel Reinforcement for Walls Built with Nudura Insulated Concrete Forms (All IRC Codes)					
Wall Height	Vertical Steel 180 mph Basic Wind Speed (3 second gust), Exposure B Seismic Design Category A, B, or C				Horizontal Steel All Scenarios
One Story Concrete Structure or Top Floor of 2 Story Concrete Structure Supporting Wood Frame Roof					
ft	**4" Wall**	**6" Wall**	**8" Wall**	**10" Wall**	
8	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
9	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
10	#4 @ 24" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
12	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
14	-	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
16	-	#4 @ 24" o.c.	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
Lower Floor of 2 Story Concrete Structure Supporting 2nd Story Wood Framed Walls, Floor, & Roof					
ft	**4" Wall**	**6" Wall**	**8" Wall**	**10" Wall**	
8	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
9	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
10	#4 @ 24" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
12	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
14	-	#4 @ 40" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
16	-	#4 @ 24" o.c.	#4 @ 40" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
Lower Floor of 2 Story Concrete Structure Supporting 2nd Story Concrete Walls and Wood Framed Floor, & Roof					
ft	**4" Wall**	**6" Wall**	**8" Wall**	**10" Wall**	
8	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
9	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
10	#4 @ 24" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
12	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
14	-	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.
16	-	#4 @ 32" o.c.	#4 @ 48" o.c.	#4 @ 48" o.c.	#4 @ 36" o.c.

Notes

1) Cells shaded in tan color indicate reinforcing for estimating purposes only. Wall heights exceed IRC prescriptive limits. A local design professional shall be consulted for additional review for these wall heights.
2) This table is to be used in conjunction with the "Design Limitations" prepared by Keystone Structural Solutions.
3) Refer to the "Design Limitations" for information on Codes, construction methods, material specifications, design loads, additional wall reinforcing requirements around openings, minimum wall length, and additional design and installation requirements.
4) For 180 mph Exposure C conditions, consult with a local design professional
5) Allowable Substitutions: #4 @ 32" -> #5 @ 48", #4 @ 24" -> #5 @ 32", #4 @ 16" -> #5 @ 24", and #4 @ 8" -> #6 @ 16" (See Note 52).

KEYSTONE STRUCTURAL SOLUTIONS

Above Grade Walls: Steel Reinforcement for Walls Built with Nudura Insulated Concrete Forms (All IRC Codes)								
Wall Height	Vertical & Horizontal Steel							
	115 - 180 mph Basic Wind Speed (3 second gust), Exposure B							
	Seismic Design Category D							
One Story Concrete Structure or Top Floor of 2 Story Concrete Structure Supporting Wood Frame Roof								
ft	4" Wall		6" Wall		8" Wall		10" Wall	
	Vertical Reinf.	Horizontal Reinf.	Vertical Reinf.	Horizontal Reinf.	Vertical Reinf.	Horizontal Reinf.	Vertical Reinf.	Horizontal Reinf.
8	#4 @ 16" o.c.	#4 @ 18" o.c.	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
9	#4 @ 16" o.c.	#4 @ 18" o.c.	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
10	#4 @ 16" o.c.	#4 @ 18" o.c.	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
12	-	-	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
14	-	-	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
16	-	-	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
Lower Floor of 2 Story Concrete Structure Supporting 2nd Story Wood Framed Walls, Floor, & Roof								
ft	4" Wall		6" Wall		8" Wall		10" Wall	
	Vertical Reinf.	Horizontal Reinf.	Vertical Reinf.	Horizontal Reinf.	Vertical Reinf.	Horizontal Reinf.	Vertical Reinf.	Horizontal Reinf.
8	#4 @ 16" o.c.	#4 @ 18" o.c.	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
9	#4 @ 16" o.c.	#4 @ 18" o.c.	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
10	#4 @ 16" o.c.	#4 @ 18" o.c.	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
12	-	-	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
14	-	-	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
16	-	-	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
Lower Floor of 2 Story Concrete Structure Supporting 2nd Story Concrete Walls and Wood Framed Floor, & Roof								
ft	4" Wall		6" Wall		8" Wall		10" Wall	
	Vertical Reinf.	Horizontal Reinf.	Vertical Reinf.	Horizontal Reinf.	Vertical Reinf.	Horizontal Reinf.	Vertical Reinf.	Horizontal Reinf.
8	#4 @ 16" o.c.	#4 @ 18" o.c.	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
9	#4 @ 16" o.c.	#4 @ 18" o.c.	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
10	#4 @ 16" o.c.	#4 @ 18" o.c.	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
12	-	-	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
14	-	-	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.
16	-	-	#5 @ 16" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.	#4 @ 8" o.c.	(2) #4 @ 18" o.c.

Notes

1) Cells shaded in tan color indicate reinforcing for estimating purposes only. Wall heights exceed IRC prescriptive limits. A local design professional shall be consulted for additional review for these wall heights.
2) This table is to be used in conjunction with the "Design Limitations" prepared by Keystone Structural Solutions.
3) Refer to the "Design Limitations" for information on Codes, construction methods, material specifications, design loads, additional wall reinforcing requirements around openings, minimum wall length, and additional design and installation requirements.
4) Allowable substitutions: #4 @ 32" ->#5 @ 48", #4 @ 24" ->#5 @ 32", #4 @ 16" ->#5 @ 24", and #4 @ 8" ->#6 @ 16". (See Note 52)

KEYSTONE
STRUCTURAL SOLUTIONS

LINTEL DESIGN TABLES

9" Lintel Depth

Uniformly Distributed Load

Opening Width	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	13	1#4	14	1#4	14	1#4	15	1#4	15
4'-0"	1#4	0	1#4	0	1#4	16	1#4	18	1#4	19	1#5	20	1#5	20	1#5	21	1#5	21
5'-0"	1#4	0	1#4	20	1#4	22	1#5	24	1#5	25	1#6	26	1#5+1#6	26	2#6	27		
6'-0"	1#4	0	1#5	26	1#5	28	1#6	30	1#5+1#6	31								
8'-0"	1#5	33	2#5	38														
10'-0"																		
12'-0"																		
14'-0"																		
16'-0"																		
18'-0"																		
20'-0"																		

Stirrup spacing = 4-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For lavender colored cell values - refer to Lintel Note 16.

Permitted Substitutions

Refer to Lintel Note 21

(1)#4 + (1)#5 may replace (1)#6

(2) #4's may replace (1)#5

4" Thick

9" Deep

Table No.

L 4-9

12" Lintel Depth

Uniformly Distributed Load

Opening Width	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	18	1#4	19	1#4	19	1#4	20
5'-0"	1#4	0	1#4	0	1#4	0	1#4	21	1#4	23	1#5	24	1#5	25	1#5	25	1#6	26
6'-0"	1#4	0	1#4	0	1#4	25	1#5	27	1#5	29	1#6	30	1#6	31	1#6	31	1#7	32
8'-0"	1#4	0	1#5	33	1#6	37	1#6	39	1#7	41	2#7	42						
10'-0"	1#5	38	1#6	45	1#9	49												
12'-0"	1#6	50	2#7	57														
14'-0"																		
16'-0"																		
18'-0"																		
20'-0"																		

Stirrup spacing = 4-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For lavender colored cell values - refer to Lintel Note 16.

Permitted Substitutions

Refer to Lintel Note 21

(1)#4 + (1)#5 may replace (1)#6

(2) #4's may replace (1)#5

4" Thick

12" Deep

Table No.

L 4-12

15" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	23	1#5	24	1#5	24
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#5	26	1#5	28	1#5	29	1#6	30	1#6	30
8'-0"	1#4	0	1#4	0	1#5	33	1#5	36	1#6	38	1#7	40	1#7	41	1#7	42	1#5+1#6	42
10'-0"	1#4	0	1#5	41	1#6	45	1#7	48	1#5+1#6	50	1#10	52						
12'-0"	1#5	44	1#7	53	2#5	57	1#11	61										
14'-0"	1#6	56	1#5+1#6	65														
16'-0"	1#7	68																
18'-0"																		
20'-0"																		

Stirrup spacing = 4-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For lavender colored cell values - refer to Lintel Note 16.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

4" Thick
15" Deep
Table No.
L 4-15

18" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	27	1#5	28	1#5	29
8'-0"	1#4	0	1#4	0	1#5	0	1#5	34	1#5	36	1#6	38	1#6	39	1#7	40	1#7	41
10'-0"	1#5	0	1#5	0	1#6	42	1#6	46	1#7	48	1#7	50	1#5+1#6	51	1#8	52	2#6	53
12'-0"	1#5	0	1#6	48	1#7	54	1#7	58	1#5+1#6	60	2#7	62	1#8+1#9	63				
14'-0"	1#6	0	1#7	61	1#5+1#6	66	2#6	70	2#9	72								
16'-0"	1#6	62	1#5+1#6	72	1#11	79												
18'-0"	1#7	74	1#11	85														
20'-0"	2#7	86																

Stirrup spacing = 4-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.
4. For lavender colored cell values - refer to Lintel Note 16.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

4" Thick
18" Deep
Table No.
L 4-18

21" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0	1#5	0
8'-0"	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0	1#5	36	1#6	37	1#6	39	1#6	39
10'-0"	1#4	0	1#5	0	1#5	0	1#6	43	1#6	46	1#7	48	1#7	49	2#5	50	1#5+1#6	51
12'-0"	1#5	0	1#5	0	1#6	51	1#7	55	1#7	58	1#5+1#6	60	2#6	61	1#9	63	1#8+1#9	64
14'-0"	1#5	0	1#6	56	1#7	63	1#5+1#6	67	2#6	70	2#7	72	2#9	73				
16'-0"	1#6	0	1#7	68	1#5+1#6	75	1#9	79	2#9	82								
18'-0"	1#7	68	1#5+1#6	80	1#9	87	1#9+1#10	91										
20'-0"	1#7	80	1#9	92	1#9+1#10	99												

Stirrup spacing = 4-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.
4. For lavender colored cell values - refer to Lintel Note 16.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

4" Thick
21" Deep
Table No.
L 4-21

24" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0
8'-0"	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0	1#5	36	1#6	37	1#6	38
10'-0"	1#4	0	1#5	0	1#5	0	1#5	0	1#6	43	1#6	46	1#7	48	1#7	49	1#7	50
12'-0"	1#5	0	1#5	0	1#6	48	1#6	52	1#7	56	1#7	58	1#5+1#6	60	1#8	61	2#6	62
14'-0"	1#5	0	1#6	0	1#7	60	1#7	64	1#5+1#6	67	2#6	70	1#9	72	2#7	73	2#9	74
16'-0"	1#6	0	1#7	64	2#5	71	1#8	76	1#9	80	2#7	82	1#9+1#10	84				
18'-0"	1#6	0	1#7	76	2#6	84	2#7	88	1#9+1#10	92								
20'-0"	1#7	74	1#5+1#6	88	2#7	96	1#9+1#10	101										

Stirrup spacing = 4-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.
4. For lavender colored cell values - refer to Lintel Note 16.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

4" Thick
24" Deep
Table No.
L 4-24

9" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	13	1#4	14
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	16	1#4	17	1#5	18	1#5	19	1#5	20
5'-0"	1#4	0	1#4	0	1#4	0	1#5	21	1#5	22	1#6	24	1#6	24	1#6	25	1#7	26
6'-0"	1#4	0	1#4	0	1#5	24	1#6	27	1#6	28	1#7	30	1#9	31				
8'-0"	1#5	0	1#6	33	1#7	37	2#7	39										
10'-0"																		
12'-0"																		
14'-0"																		
16'-0"																		
18'-0"																		
20'-0"																		

Stirrup spacing = 6-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For lavender colored cell values - refer to Lintel Note 16.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

6" Thick
9" Deep
Table No.
L 6-9

12" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	11	1#4	11
4'-0"	1#4	0	1#4	0	1#4	0	1#4	11	1#4	13	1#4	14	1#4	16	1#4	17	1#4	17
5'-0"	1#4	0	1#4	0	1#4	13	1#4	17	1#4	19	1#5	20	1#5	22	1#5	23	1#5	23
6'-0"	1#4	0	1#4	14	1#4	19	1#5	23	1#5	25	1#6	27	1#6	28	1#6	29	1#7	29
8'-0"	1#4	16	1#5	26	1#6	31	1#6	35	1#7	37	2#5	39	1#5+1#6	40	1#11	41		
10'-0"	1#5	28	1#6	38	1#7	44	1#5+1#6	47	1#11	49								
12'-0"	1#6	40	2#5	50	1#11	56												
14'-0"																		
16'-0"																		
18'-0"																		
20'-0"																		

Stirrup spacing = 6-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For lavender colored cell values - refer to Lintel Note 16.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

6" Thick
12" Deep
Table No.
L 6-12

15" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	14	1#4	15
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	15	1#5	17	1#5	19	1#5	20	1#5	21
6'-0"	1#4	0	1#4	0	1#4	14	1#5	19	1#5	21	1#5	23	1#5	25	1#5	26	1#6	27
8'-0"	1#4	0	1#5	20	1#5	26	1#5	31	1#6	33	1#6	36	1#7	37	1#7	38	1#5+1#6	39
10'-0"	1#5	19	1#5	32	1#6	38	1#7	43	2#5	46	1#5+1#6	48	2#6	49	1#9	50		
12'-0"	1#5	31	1#7	44	1#7	51	1#8	55	1#9	58	1#8+1#9	60						
14'-0"	1#6	43	2#5	56	2#6	62	1#8+1#9	67										
16'-0"	1#7	55	2#6	68														
18'-0"																		
20'-0"																		

Stirrup spacing = 6-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For lavender colored cell values - refer to Lintel Note 16.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

6" Thick
15" Deep
Table No.
L 6-15

18" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	16	1#5	18	1#5	19
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#5	18	1#5	21	1#5	22	1#6	24	1#6	25
8'-0"	1#4	0	1#5	0	1#5	22	1#6	27	1#6	30	1#6	33	1#6	35	1#7	36	1#7	37
10'-0"	1#5	0	1#6	26	1#6	34	1#6	39	1#7	42	1#7	45	1#5+1#6	47	1#5+1#6	48	2#6	49
12'-0"	1#6	23	1#6	38	1#7	46	1#7	51	1#5+1#6	54	2#6	57	1#9	59	2#7	60	1#11	61
14'-0"	1#6	35	1#7	50	1#5+1#6	58	2#6	63	2#7	66	2#7	69						
16'-0"	1#7	47	1#5+1#6	62	2#6	70	2#7	75	1#9+1#10	78								
18'-0"	1#7	59	2#6	74	2#7	82												
20'-0"	1#5+1#6	71	2#7	86														

Stirrup spacing = 6-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.
4. For lavender colored cell values - refer to Lintel Note 16.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

6" Thick
18" Deep
Table No.
L 6-18

21" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	20	1#5	22	1#5	23
8'-0"	1#4	0	1#4	0	1#5	0	1#5	23	1#6	27	1#6	30	1#6	32	1#6	34	1#6	35
10'-0"	1#4	0	1#5	20	1#6	29	1#6	35	1#6	39	1#7	42	1#7	44	1#7	46	1#5+1#6	47
12'-0"	1#5	0	1#6	32	1#6	41	1#7	47	1#7	51	1#5+1#6	54	1#8	56	1#9	58	2#7	59
14'-0"	1#6	27	1#6	44	1#7	53	1#5+1#6	59	2#6	63	1#9	66	2#7	68	1#10	70	1#11	71
16'-0"	1#6	39	1#7	56	1#5+1#6	65	1#9	71	2#7	75	1#11	78	1#9+1#10	80				
18'-0"	1#7	51	1#5+1#6	68	1#9	77	2#7	83	1#11	87								
20'-0"	2#5	62	1#9	80	2#7	89	1#9+1#10	95										

Stirrup spacing = 6-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

6" Thick
21" Deep
Table No.
L 6-21

24" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0
8'-0"	1#4	0	1#4	0	1#4	0	1#5	0	1#5	23	1#6	27	1#6	29	1#6	31	1#6	33
10'-0"	1#4	0	1#5	0	1#5	24	1#6	31	1#6	36	1#6	39	1#7	42	1#7	44	1#7	45
12'-0"	1#5	0	1#6	26	1#6	36	1#6	43	1#7	48	1#7	51	1#5+1#6	53	1#5+1#6	55	2#6	57
14'-0"	1#6	0	1#6	38	1#7	48	1#7	55	1#5+1#6	60	2#6	63	1#9	66	2#7	68	2#7	69
16'-0"	1#6	31	1#7	50	2#5	60	1#8	67	1#9	72	2#7	75	1#10	78	1#11	80	1#8+1#9	81
18'-0"	1#6	43	2#5	62	2#6	72	2#7	79	1#10	84	1#11	87	1#8+1#9	90				
20'-0"	1#7	55	1#8	74	2#7	85	1#10	91	1#11	96								

Stirrup spacing = 6-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

6" Thick
24" Deep
Table No.
L 6-24

9" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	16	1#5	17	1#5	18
5'-0"	1#4	0	1#4	0	1#4	0	1#5	0	1#5	20	1#6	21	1#6	22	1#6	23	1#7	24
6'-0"	1#4	0	1#4	0	1#5	0	1#6	24	1#6	26	1#7	27	1#7	28				
8'-0"	1#5	0	1#6	0	1#7	33	1#5+1#6	36										
10'-0"																		
12'-0"																		
14'-0"																		
16'-0"																		
18'-0"																		
20'-0"																		

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".

STATE OF OHIO
ANTHONY L. MOSCOLLIC
E-63078
REGISTERED
PROFESSIONAL ENGINEER

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

8" Thick
9" Deep
Table No.
L 8-9

12" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	11	1#5	13	1#5	14	1#5	15
5'-0"	1#4	0	1#4	0	1#4	0	1#5	12	1#5	15	1#5	17	1#5	19	1#5	20	1#5	21
6'-0"	1#4	0	1#4	0	1#5	14	1#5	18	1#5	21	1#6	23	1#6	25	1#6	26	1#7	27
8'-0"	1#5	0	1#5	19	1#6	26	1#6	30	1#7	33	1#7	35	1#5+1#6	37	1#8	38		
10'-0"	1#5	18	1#6	31	1#7	38	1#5+1#6	42	2#6	45								
12'-0"	1#6	31	1#7	44	2#6	50	2#7	54										
14'-0"																		
16'-0"																		
18'-0"																		
20'-0"																		

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".

STATE OF OHIO
ANTHONY L. MOSCOLLIC
E-63078
REGISTERED
PROFESSIONAL ENGINEER

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

8" Thick
12" Deep
Table No.
L 8-12

15" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	13	1#5	15	1#5	17	1#5	18
6'-0"	1#4	0	1#4	0	1#4	0	1#5	0	1#5	17	1#6	19	1#6	21	1#6	23	1#6	24
8'-0"	1#4	0	1#5	0	1#6	20	1#6	25	1#6	29	1#6	31	1#7	34	1#7	35	2#5	36
10'-0"	1#5	0	1#6	23	1#6	32	1#7	37	1#7	41	1#5+1#6	43	2#6	45	1#9	47		
12'-0"	1#6	20	1#7	35	1#7	44	1#5+1#6	49	1#9	53	2#7	56						
14'-0"	1#6	32	2#5	47	2#6	56	2#7	61	1#11	65								
16'-0"	1#7	44	2#6	59	2#7	68												
18'-0"																		
20'-0"																		

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

8" Thick
15" Deep
Table No.
L 8-15

18" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	18	1#6	20	1#6	22
8'-0"	1#4	0	1#5	0	1#5	0	1#6	20	1#6	24	1#6	28	1#6	30	1#7	32	1#7	34
10'-0"	1#5	0	1#6	0	1#6	26	1#6	32	1#7	37	1#7	40	1#5+1#6	42	1#5+1#6	44	2#6	46
12'-0"	1#6	0	1#6	27	1#7	38	1#7	44	1#5+1#6	48	2#6	52	1#9	54	2#7	56	2#7	58
14'-0"	1#6	21	1#7	40	1#5+1#6	50	2#6	56	1#9	61	2#7	64	1#11	67				
16'-0"	1#7	33	1#5+1#6	51	2#6	62	2#7	68	1#11	73								
18'-0"	1#7	45	2#6	63	2#7	74	1#11	81										
20'-0"	1#5+1#6	57	2#7	76														

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

8" Thick
18" Deep
Table No.
L 8-18

21" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0	1#5	0
8'-0"	1#4	0	1#4	0	1#5	0	1#5	0	1#6	20	1#6	24	1#7	27	1#7	29	1#7	31
10'-0"	1#5	0	1#5	0	1#6	20	1#7	27	1#7	32	1#7	36	1#7	39	1#7	41	1#5+1#6	43
12'-0"	1#5	0	1#6	20	1#7	32	1#7	39	1#7	44	1#5+1#6	48	1#8	51	2#6	53	1#9	55
14'-0"	1#6	0	1#7	32	1#7	44	1#5+1#6	51	2#6	56	1#9	60	2#7	63	1#10	65	1#11	67
16'-0"	1#7	24	1#7	44	1#5+1#6	56	1#9	63	2#7	68	1#11	72	1#11	75				
18'-0"	1#7	36	1#5+1#6	56	1#9	68	2#7	75	1#11	81	1#8+1#9	84						
20'-0"	1#5+1#6	47	1#9	69	2#7	80	1#11	88	2#9	92								

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

8" Thick
21" Deep
Table No.
L 8-21

24" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0
8'-0"	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0	1#6	0	1#6	24	1#6	26	1#7	28
10'-0"	1#4	0	1#5	0	1#6	0	1#6	0	1#7	28	1#7	32	1#7	36	1#7	38	1#7	40
12'-0"	1#5	0	1#6	0	1#7	26	1#7	34	1#7	40	1#7	44	1#5+1#6	48	1#5+1#6	50	2#6	52
14'-0"	1#6	0	1#7	25	1#7	38	1#7	46	1#5+1#6	52	2#6	56	1#9	60	2#7	62	2#7	64
16'-0"	1#7	0	1#7	37	1#5+1#6	50	1#8	58	1#9	64	2#7	68	1#10	72	1#11	75	1#8+1#9	77
18'-0"	1#7	26	2#5	49	2#6	62	2#7	71	2#7	76	1#11	81	1#8+1#9	84				
20'-0"	1#7	38	1#8	61	2#7	74	1#10	83	1#11	89	1#8+1#9	93						

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

8" Thick
24" Deep
Table No.
L 8-24

9" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0	1#5	0	1#5	16
5'-0"	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0	1#6	19	1#6	20	1#6	22	1#7	22
6'-0"	1#4	0	1#5	0	1#5	0	1#6	0	1#6	23	1#7	25	1#7	27	2#5	27		
8'-0"	1#5	0	1#6	0	1#7	29	2#5	33	1#8	36								
10'-0"	1#6	0																
12'-0"																		
14'-0"																		
16'-0"																		
18'-0"																		
20'-0"																		

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

10" Thick

9" Deep

Table No.
L 10-9

12" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	12	1#5	13
5'-0"	1#4	0	1#4	0	1#4	0	1#5	0	1#5	12	1#5	14	1#6	16	1#6	18	1#6	19
6'-0"	1#4	0	1#4	0	1#5	0	1#5	14	1#6	18	1#6	20	1#6	22	1#6	24	1#7	25
8'-0"	1#5	0	1#6	13	1#6	21	1#6	26	1#7	30	1#7	32	1#5+1#6	34	1#8	36	2#6	37
10'-0"	1#6	0	1#6	25	1#7	33	1#5+1#6	38	2#6	42	1#9	45						
12'-0"	1#6	22	2#5	37	2#6	45	2#7	50										
14'-0"	1#7	34																
16'-0"																		
18'-0"																		
20'-0"																		

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

10" Thick

12" Deep

Table No.
L 10-12

15" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	14	1#5	15
6'-0"	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#6	15	1#6	18	1#6	20	1#6	21
8'-0"	1#4	0	1#5	0	1#6	0	1#6	20	1#6	24	1#6	27	1#7	30	1#7	32	2#5	33
10'-0"	1#5	0	1#6	15	1#6	25	1#7	32	2#5	36	1#5+1#6	39	2#6	42	1#9	44	2#7	46
12'-0"	1#6	0	1#7	27	1#7	38	1#5+1#6	44	1#9	49	2#7	52	1#10	54				
14'-0"	1#6	21	1#5+1#6	39	2#6	49	2#7	56	1#11	61	1#11	64						
16'-0"	1#7	33	2#6	51	2#7	62												
18'-0"																		
20'-0"																		

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".

STATE OF OHIO
ANTHONY L. MOSCOLLIC
E-63078
REGISTERED
PROFESSIONAL ENGINEER

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

10" Thick
15" Deep

Table No.
L 10-15

18" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0	1#5	0	1#5	0
8'-0"	1#4	0	1#5	0	1#5	0	1#6	0	1#6	19	1#7	23	1#7	26	1#7	26	1#7	26
10'-0"	1#5	0	1#6	0	1#7	18	1#7	26	1#7	31	1#7	35	1#5+1#6	38	1#5+1#6	38	1#5+1#6	38
12'-0"	1#6	0	1#7	18	1#7	30	1#7	38	1#5+1#6	43	2#6	47	1#9	50	1#9	50	1#9	50
14'-0"	1#7	0	1#7	30	1#5+1#6	42	2#6	50	1#9	55	2#7	59	1#11	62	1#11	62	1#11	62
16'-0"	1#7	21	1#5+1#6	42	1#9	54	2#7	62	1#11	68	1#8+1#9	71						
18'-0"	2#5	32	2#6	54	2#7	66	1#11	74	1#8+1#9	79								
20'-0"	1#8	45	2#7	66														

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.

STATE OF OHIO
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REGISTERED
PROFESSIONAL ENGINEER

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

10" Thick
18" Deep

Table No.
L 10-18

21" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0	1#5	0
8'-0"	1#4	0	1#4	0	1#5	0	1#5	0	1#6	0	1#6	0	1#7	22	1#7	25	1#7	27
10'-0"	1#5	0	1#5	0	1#6	0	1#7	20	1#7	26	2#5	30	1#5+1#6	34	1#5+1#6	37	1#5+1#6	39
12'-0"	1#5	0	1#6	0	1#7	23	1#5+1#6	32	1#5+1#6	38	1#5+1#6	42	1#8	46	2#6	49	1#9	51
14'-0"	1#6	0	1#7	22	1#5+1#6	35	1#5+1#6	44	2#6	50	1#9	55	2#7	58	1#10	61	1#11	63
16'-0"	1#7	0	1#5+1#6	33	1#5+1#6	47	1#9	56	2#7	62	1#11	67	1#11	70	1#8+1#9	73		
18'-0"	1#5+1#6	22	1#5+1#6	45	1#9	59	2#7	68	1#11	74	1#8+1#9	79	2#9	82				
20'-0"	1#5+1#6	34	1#9	58	2#7	71	1#11	80	2#9	86	1#9+1#10	91						

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

10" Thick
21" Deep
Table No.
L 10-21

24" Lintel Depth

Opening Width	Uniformly Distributed Load																	
	500 lb/ft		750 lb/ft		1000 lb/ft		1250 lb/ft		1500 lb/ft		1750 lb/ft		2000 lb/ft		2250 lb/ft		2500 lb/ft	
	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist	Bottom Reinf. Steel	Stirrup End Dist
3'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
4'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
5'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0
6'-0"	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0
8'-0"	1#4	0	1#4	0	1#5	0	1#5	0	1#5	0	1#6	0	1#6	0	1#6	0	1#7	24
10'-0"	1#4	0	1#5	0	1#6	0	1#6	0	1#7	0	1#7	26	2#5	30	1#5+1#6	33	1#5+1#6	36
12'-0"	1#5	0	1#6	0	1#7	0	1#7	26	1#5+1#6	33	1#5+1#6	38	1#5+1#6	42	1#5+1#6	45	2#6	48
14'-0"	1#6	0	1#7	0	1#5+1#6	28	1#5+1#6	38	1#5+1#6	45	2#6	50	1#9	54	2#7	57	2#7	60
16'-0"	1#7	0	1#5+1#6	25	1#5+1#6	40	1#8	50	1#9	57	2#7	62	1#10	66	1#11	69	1#11	72
18'-0"	1#5+1#6	0	1#5+1#6	37	2#6	52	2#7	62	2#7	69	1#11	74	1#8+1#9	78	2#9	81		
20'-0"	1#5+1#6	23	2#6	49	2#7	64	1#10	74	1#11	81	1#8+1#9	86	1#9+1#10	90				

Stirrup spacing = 8-inches.

Notes:

1. This table to be used in conjunction with the general notes and details located at the beginning of this section.
2. All Stirrup End Distance notations above are listed in "inches".
3. For tan colored cell values - refer to Lintel Note 15.

Permitted Substitutions
Refer to Lintel Note 21
(1)#4 + (1)#5 may replace (1)#6
(2) #4's may replace (1)#5

10" Thick
24" Deep
Table No.
L 10-24

Summary of Adopted State Code Regulations and Stamps

These Wall and Lintel Reinforcement Tables forming Appendix D for use in the USA have been reviewed and certified on August 20, 2024 by Keystone Structural Solutions for use in the continental USA. These Tables are deemed in valid compliance to the 2015, 2018, 2021 and 2024 International Building Codes as well as the 2015, 2018, 2021 and 2024 International Residential Codes for those states already listed as adopting these code as well as for any State Regulation adopting the 2021 or 2024 IBC and the 2021 or 2024 IRC Codes after August 20 ,2024 In addition, these tables have also been reviewed for conformance to the following Codes and Regulations that were in place on the above date:

At time of Stamps issue for this document, the following regulations were in effect in each State:

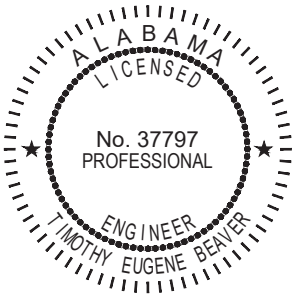
Alabama:	Alabama Building Code 2021. based on 2021 IRC and 2021 IBC.
Alaska:	Alaska Building Code 2021. Statewide with local amendments based on 2021 IRC and 2021 IBC.
Arizona:	2009 IRC and 2018 IBC. Adopted for health care facilities & manufactured housing statewide. Local jurisdictions have option to adopt
Arkansas:	2021 Arkansas Building Code. based on 2021 IIRC and 2021 IBC. (Applies to state buildings only, not to local)
California:	2022 California Building Standards Code. based on 2021 IRC and 2021 IBC. Los Angeles and San Francisco have amended state code
Colorado:	2021 IRC and 2021 IBC. Applied to all state agencies and institutions of higher education owned facilities.
Connecticut:	2022 Connecticut State Building Code. Statewide Based on 2021 IRC and 2021 IBC.
Delaware:	No statewide code – 2015 IRC and 2018 IBC. adopted as by county or jurisdiction
DC:	2017 District of Columbia Construction Code: Based on 2015 IRC and 2015 IBC.
Florida:	2023 (Eighth Edition) Florida Building Code Based on 2021 IRC and 2021 IBC.
Georgia:	2018 IRC and 2018 IBC. with Georgia Amendments.

Hawaii:	2018 IRC and 2018 IBC. with Hawaii Amendments
Idaho:	2020 Idaho Code based on 2018 IRC and 2018 IBC.
Illinois:	Statewide code effective 1/1/2025. -based on 2021 IRC and 2021 IBC. adopted as by county or jurisdiction
Indiana:	2020 Indiana Residential Code and 2014 Indiana Building Code, based on 2018 IRC and 2012 IBC.
Iowa:	2015 IRC and 2015 IBC. Statewide
Kansas:	2018 IRC and 2018 IBC. adopted as by county or jurisdiction
Kentucky:	2018 Kentucky Building Code based on 2015 IRC and 2015 IBC.
Louisiana:	Louisiana Building Code 2021. Statewide based on 2021 IRC and 2021 IBC.
Maine:	Maine Uniform Building and Energy Code (MUBEC). Enforceable for cities with population > 4,000 Based on 2015 IRC and 2015 IBC.
Maryland:	Maryland Building Code 2021. Statewide with local amendments based on 2021 IRC and 2021 IBC.
Massachusetts:	Massachusetts Building Code 2015. Statewide with local amendments; Based on 2015 IRC and 2015 IBC.
Michigan:	Michigan Building Code 2015. Statewide Based on 2015 IRC and 2015 IBC.
Minnesota:	2020 Minnesota Building Code Based on 2018 IRC and 2018 IBC.
Mississippi:	Mississippi Building Code 2018 Based on 2018 IRC and 2018 IBC.
Missouri:	Missouri Building Code 2018. Adopted at local level; Based on 2015 IRC and 2018 IBC.
Montana:	Montana Building Code 2021. Local jurisdictions have option to enforce Based on 2021 IRC and 2021 IBC.
Nebraska:	Nebraska Building Code 2018. Local jurisdictions have option to enforce; Based on 2018 IRC and 2018 IBC.
Nevada:	Nevada Building Code 2018. Statewide with local amendments; Based on 2018 IRC and 2018 IBC.
New Hampshire:	Building Code of the State of New Hampshire. State wide; Based on 2018 IRC and 2018 IBC.
New Jersey:	New Jersey Building Code 2021. Statewide; Based on 2021 IRC and 2021 IBC.
New Mexico:	New Mexico Building Code 2021. Statewide; Based on 2021 IRC and 2021 IBC.
New York:	2020 Building Code of New York State. Statewide; Based on 2018 IRC and 2018 IBC. except NYC (2015 IBC.)

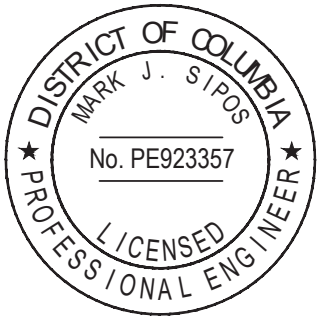
North Carolina:	2018 North Carolina Building Code. Statewide; Based on 2015 IRC and 2015 IBC.
North Dakota:	North Dakota Building Code 2021. Statewide; Based on 2021 IRC and 2021 IBC.
Ohio:	2024 Ohio Building Code. Statewide Based on 2018 IRC and 2021 IBC.
Oklahoma:	Oklahoma Building Code 2018. Statewide & requires local adoption ordinances; Based on 2018 IRC and 2018 IBC.
Oregon:	Oregon Structural Specialty Code (OSSC) 2022. Statewide; Based on 2021 IRC and 2021 IBC.
Pennsylvania:	Pennsylvania Building Code 2018. Most jurisdictions opt in,: Based on 2018 IRC and 2018 IBC. Philadelphia has custom code.in, Based on 2018 IRC and 2018 IBC. Philadelphia has custom code.
Rhode Island:	2021 Rhode Island Building Code. Statewide; Based on 2018 IRC and 2018 IBC.
South Carolina:	2021 South Carolina Building Code. Statewide; Based on 2021 IRC and 2021 IBC.
South Dakota:	South Dakota Building Code. Local jurisdictions have option to adopt; Based on 2021 IRC and 2021 IBC.
Tennessee:	Tennessee Building Code 2012. Local jurisdictions have option to adopt; Based on 2018 IRC and 2012 IBC.
Texas:	Building Code of the Texas IHB. Local can be more current than state; Based on 2015 IRC and 2015 IBC.
Utah:	Utah Building Code 2021. State buildings – local adoptions sometimes lag behind ; Based on 2021 IRC and 2021 IBC.
Vermont:	2015 Vermont Fire and Building Safety Code; Based on 2012 IRC and 2015 IBC.
Virginia:	Virginia Construction Code (VCC) 2021. Statewide; Based on Based on 2021 IRC and 2021 IBC.
Washington	2021 Washington State Building Code: Statewide: Based on 2021 IRC and 2021 IBC.
West Virginia:	West Virginia Building Code 2018. Statewide; Based on 2018 IRC and 2018 IBC.
Wisconsin:	Wisconsin Building Code 2015. Modified as the Wisconsin Uniform Dwelling Code: Based on 2018 IBC. Only, No Adoption of IRC.
Wyoming:	Wyoming Building Code 2021. Local jurisdictions have option to adopt.

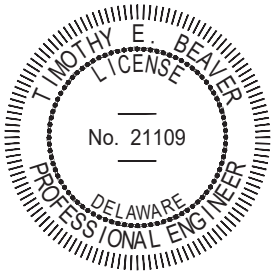
* Codes Adopted at State Level. Local Jurisdiction Requirements to be Confirmed.

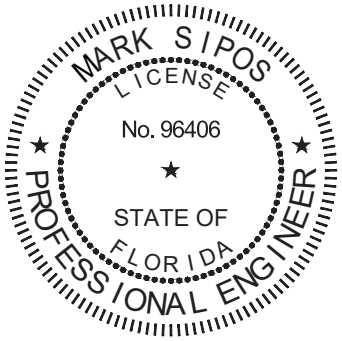
REGULATION SUMMARY & STATE STAMPS

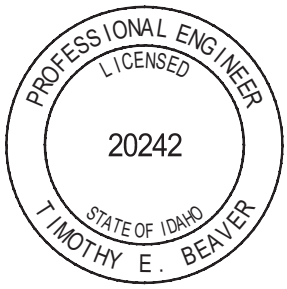


EXPIRES: 30 SEPT 2027

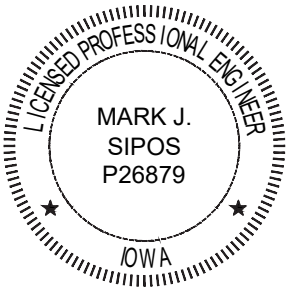


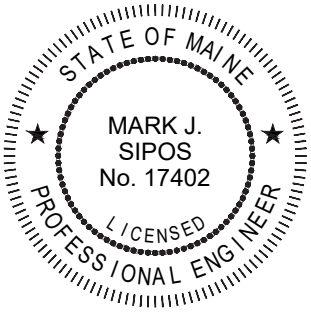


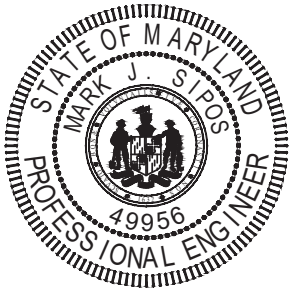


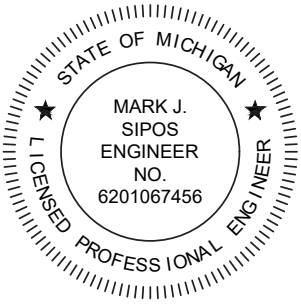


REGULATION SUMMARY & STATE STAMPS



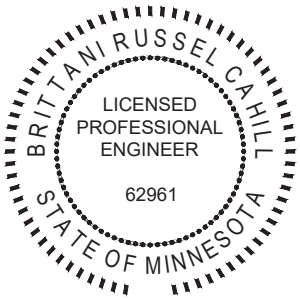




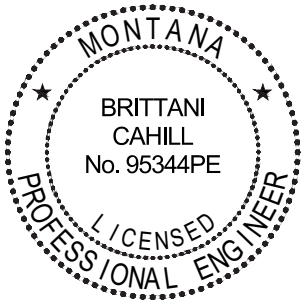


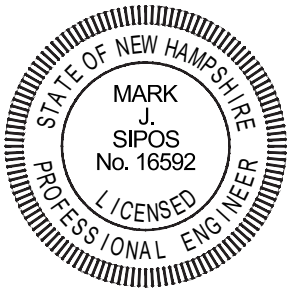
PROFESSIONAL CERTIFICATION
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland,

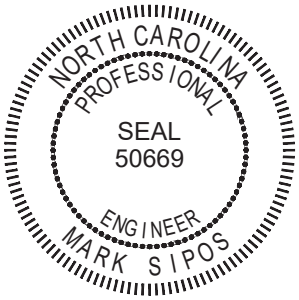
License No. 0049956
Expiration Date: 09-25-2026



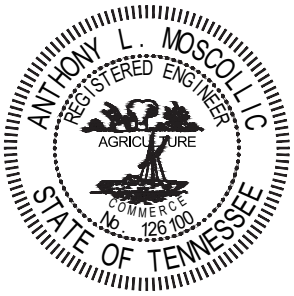
REGULATION SUMMARY & STATE STAMPS

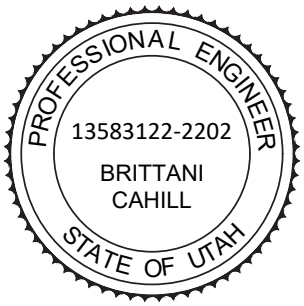


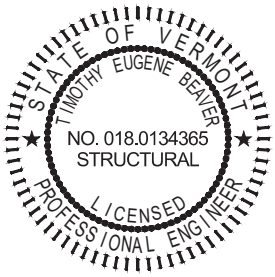


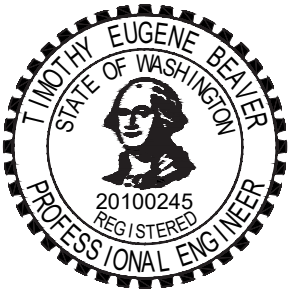


REGULATION SUMMARY & STATE STAMPS









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