



County of Prince George, Virginia

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Structural Design Load Information Required on Plans for Commercial New Construction and Additions

The following checklist contains the structural load information required on all plans prior to processing the building permit application. Please address any questions to the commercial plan review staff at 722-8659. Per VUSBC part 1 Construction Code section 109.3 Engineering Details and IBC Chapter 16 Construction Documents, provide on the plans:

Live loads (1603.1.1 and 1603.1.2)

- Floor live load(s) including concentrated load(s).
- Roof live load(s).

Roof snow load (1603.1.3)

- Flat roof snow load, Pf.
- Snow exposure factor, Ce.
- Snow load importance factor, I.
- Thermal factor, Ct.

Wind design data (1603.1.4)

- Basic wind speed in mph (per 3 second gust).
- Wind Importance factor and occupancy category.
- Wind exposure. Where more than one wind exposure is utilized, the wind exposure and applicable wind direction shall be indicated.
- The applicable internal pressure coefficient.
- Components and cladding. The design wind pressures in terms of psf to be used for the design of exterior component and cladding materials not specifically designed by the structural engineer.

Earthquake design data (1603.1.5)

- Seismic importance factor, I, and occupancy category.
- Mapped spectral responses S_s and S₁.
- Site class.
- Spectral response coefficients, S_{ds} and S_{d1}.
- Seismic design category.
- Basic seismic-force-resisting system(s).
- Design base shear (Fully Calculated).
- Seismic response coefficient(s), C_s.

- Response modification factor(s), R.
- Analysis procedure used

Design load-bearing values of soils (1603.1.6)

- Design bearing capacity
- Minimum depth(s) to bottom of footings

Systems and components requiring special inspections for seismic resistance (1603.1.9)

- For buildings that are seismic design category C or higher specify on the structural plans all non-structural architectural, mechanical, electrical, hazardous material and fire protection system components that required seismic bracing designed in accordance with ASCE 7 chapter 13 and that require special inspection per IBC section 1707. Specify all component seismic designs that are included with the building permit plan submittal and note any systems that must be designed by others, such as fire protection system bracing.

Wood frame shear wall construction (2505, 2506, 2507)

- Note on the plans, which walls or portions of walls are to be used as shear walls and provide on the plans, the complete shear wall design(s) including the required nailing schedules and panel connection details.

Concrete construction (1901.4)

- The specified compressive strength of concrete at the stated stages of construction for which each concrete element is designed.
- The specified strength or grade of reinforcement.
- The size and location of structural elements, reinforcement, and anchors.
- Provision for dimensional changes resulting from creep, shrinkage and temperature.
- The magnitude and location of pre-stressing forces.
- Anchorage length of reinforcement and location and length of lap splices.
- Type and location of mechanical and welded splices of reinforcement.
- Details and location of contraction or isolation joints specified for plain concrete.
- Minimum concrete compressive strength at time of post-tensioning.
- Stressing sequence for post-tensioning tendons.
- For structures assigned to Seismic Design Category D, E or F, a statement if slab on grade is designed as a structural diaphragm (see Section 21.10.3.4 of ACI 318).

Masonry construction (2101.3)

- Specified size, grade, type and location of reinforcement, anchors and wall ties.
- Reinforcing bars to be welded and welding procedure.
- Size and location of structural elements.
- Provisions for dimensional changes resulting from elastic deformation, creep, shrinkage, temperature and moisture.
- Loads used in the design of masonry.
- Specified compressive strength of masonry at stated ages or stages of construction for which masonry is designed, except where specifically exempted by the code.

Steel Joist construction (2206.2)

- Steel joist and girder designations per SJI specifications.
- Requirements for design, layout, end support, anchorage, bridging, bridging termination connections, bearing connections to resist uplift and lateral loads.
- Special loads including: concentrated loads, non-uniform loads, net uplift loads, axial loads, end-moments, connection forces.

- Special consideration for nonstandard joist and girder configuration profiles, oversized or non-standard web openings, extended ends.
- Deflection criteria for live and total loads for non-SJI-standard joists.

Conventional light frame construction provisions if used (2308)

- Floor and roof live loads.
- Ground snow loads, Pg.
- Basic wind speed (3-second gust) in miles per hour and the wind exposure factor.
- Seismic Design Category and Site Class.
- Design load-bearing values of soils.
- Locations of braced wall lines per IBC 2308.3.
- Locations of braced wall panels per IBC 2308.9.3.
- The method of constructing the braced wall panels per 2308.9.3 (reference the method, 1-8, outlined in section 2308.9.3)