



City of Whitehorse

2121 - 2nd Avenue, Whitehorse, Yukon Y1A 1C2 Bus: (867) 667-6401 Fax: (867) 668-8398

DOES MY PERMANENT WOOD FOUNDATION (PWF) REQUIRE ENGINEERING?

January 20, 2025

Use of Permanent Wood Foundations (PWF) is permitted for Part 9 Buildings (houses, townhouses, small commercial buildings) as defined in the National Building Code (NBC) without professional engineering oversight if the specific parameters are met. See Articles 9.15.1.1 and 9.15.2.4 NBC that set out the limits of Part 9 foundations and permission to use PWF so long as they comply with the CSA S406-16 Standard.

National Building Code of Canada 2020 is available free here:

<https://nrc.canada.ca/en/certifications-evaluations-standards/codes-canada/codes-canada-publications/national-building-code-canada-2020>

The CSA S406-16 Standard is available here: <https://www.csagroup.org/store/>

In order to determine if professional oversight is required, please consider the following questions:

- Are there small repetitive structural members (wall studs) that are spaced **over 600 mm o.c., or does the clear span for roof trusses exceed** 12.2 m (NBC Article 9.4.2.1.)?
- Will there be any surcharges on the footings or foundation wall (NBC Clause 9.15.1.1(1)(b)? Surcharges can include parking areas on grade higher/lower than the basement/crawlspace floor, other building foundations in close proximity and higher than the proposed footing (the opposite is also possible whereby the new footing would impose a surcharge on existing)? Note that this would not include lighter-weight items such as oil and propane tanks.
- Will the footings be founded on disturbed (fill) soils (NBC Sentence 9.12.2.1.(1)? Note that the required 300 mm drainage layer is not considered as fill for the purposes of this question.
- Are the footings located **above** the site-specific frost penetration depth (generally up to 3 m around residential buildings) (NBC Sentence 9.12.2.2.1(1) and Table 9.12.2.2)?
- Is the owner and/or builder **not** familiar with the CSA S406-16 Standard (NBC Article 9.15.2.4)?
- Is the building area (largest footprint) greater than 600 sq m, and/or the building is more than 3 stories in building height above the foundation (Clause 1.2 CSA S406-16)?

THE WILDERNESS CITY

www.whitehorse.ca

- Will the basement or crawlspace floor **not** have a wood sleeper floor near the bottom or a concrete slab located at the bottom (providing lateral support of the bottom of the wall) and/or is **not** laterally supported at the top (Clause 4.5.2 CSA S406-16)?
- Is the safe soil bearing pressure for footings **less** than 75 kPa (Clause 4.3(b) CSA S406-2016)? See table 9.4.4.1 NBC (geotechnical engineer confirmation may be required to determine this in some circumstances)
- Does the floor live load of any floor exceed 1.9 kPa (40 psf)(Clause 4.3(d) CSA S406-16)?
- Are the roof overhangs **greater** than 610 mm (2 ft), and/or roofs are **not** clear span and/or bearing on exterior walls (Clause 4.3(j) CSA S-406-16)?
- Is the above grade floor-to-floor (ceiling) height **greater** than 2.44 m (8 ft.) for any floor?
- Is the floor framing **other than** standard platform or balloon framing as recognized in Section 9.23 NBC, such as knee wall support, use of ledgers etc.?
- Are the soils proposed for backfill use problem soils such as pyritic or frost susceptible being used (Clause 16.6 CSA S406-16)? Note that all native Whistle Bend soils in current construction phases are frost susceptible 'problem' soils unless sand is encountered, whereas elsewhere, it is site dependent.
- Will the final grading around the building be sloped away from the building **less** than 1:12 (8.33 %) (Clause 16.7 CSA S406-16).
- Are snow retention devices (snow stops or retainer/clips) or solar panels proposed (a material change to the loading conditions outside the scope of the S406 Standard and Part 9)?

If you answered **yes** to any of the above questions, your project requires the services of a Yukon licenced professional engineer for all or parts of the project, as necessary. For clarity, any of the prescriptive items, either in the NBC or in the CSA S4-406-16, that are not met must be designed per Part 4 of the NBC, which requires design by a professional engineer.

Please note that in addition to the above, the CSA S406-16 Standard contains numerous tables and other requirements that inform the design and construction of PWF. It is incumbent on the applicant to provide sufficient details on the building permit plans to show how the NBC and the S406-16 Standard will be met (Sentence 2.2.2.1.(1) Div C NBC).

If you have any specific questions or require clarification, please contact Land and Building Services at inquirybuilding@whitehorse.ca

Sincerely,

CITY OF WHITEHORSE



Richard Diamond, RBO
Supervisor Building Inspections
Land and Building Services