

Article 9.15.4.2 of the 2005 National Building Code limits the maximum height of a 200mm concrete foundation wall to 2.5m in unsupported height. Table 9.15.4.2 permits 2.3 m of backfill against a 200mm concrete foundation wall with 20MPa minimum strength.

The Building Standards Branch engaged the services of a structural engineer to provide engineered designs for foundation walls exceeding 2.5m in unsupported height. The tables below are the result of that report. Effective June 1, 2008, any foundation wall exceeding 2.5 m in unsupported height within the City of Saskatoon must meet these minimum requirements or be sealed by a structural engineer or registered architect licensed to practice in Saskatchewan.

Table 1.1

Required Vertical Reinforcing for > 2.5m and <= 2.75m high basement wall (Assume min. 2-10M T/M/B Horizontal)		
Final Grade Height (ft)	Size of Vertical Bars	Bar Spacing (inches)
4.0	10M	48
4.5	10M	48
5.0	10M	32
5.5	10M	24
6.0	10M	20
6.5	10M	16
7.0	10M	12
7.5	15M	24
8.0	15M	20
8.5	15M	18

Design Assumptions

1. 20 MPa, Type 50 Cement
2. Reinforcement to be on inside face with a minimum cover of 1 inch and a maximum cover of 2 inches
3. Basement wall height is measured from the top of the concrete floor to the underside of floor joists
4. Final grade height is measured from the top of the basement floor to the maximum grade adjacent to the foundation wall
5. 15M bar may be substituted for 10M bar and the spacing may then be doubled up to 48 inches o/c
6. Horizontal reinforcement is provided as per table.

Table 1.2

Required Vertical Reinforcing for > 2.75m and <= 3m high basement wall (Assume min. 2-10M T/M/B Horizontal)		
Final Grade Height (ft)	Size of Vertical Bars	Bar Spacing (inches)
4.0	10M	48
4.5	10M	32
5.0	10M	24
5.5	10M	20
6.0	10M	16
6.5	10M	12
7.0	15M	22
7.5	15M	18
8.0	15M	16
8.5	15M	12

Figure 1 – Reinforcement of Foundation Wall

