

**GENERAL REQUIREMENTS**

- All work shall conform to the requirements of the British Columbia Building Code (BCBC), 2018. All documents designated therein and all local codes and bylaws.
- The General Contractor shall compare and coordinate the drawings of all the disciplines and report any discrepancies to the Architect and the Engineers for assessment / clarification before proceeding with the work. It is assumed these drawings accurately reflect actual site conditions.
- This design has been reviewed for the adequacy of permanent primary structural components only. Excavation, soil mechanics, shoring and falsework components necessary for construction safety are not included and will not be reviewed by the structural engineer.
- The Contractor is responsible for the safety in and around the work site during construction, and for the design, erection and inspection of all temporary structure, formwork, falsework, shoring, etc. needed during construction as required by the Worker's Compensation Board (WCB).
- These structural drawings do not include the design of non-structural elements, including, but not limited to: handrails, snow retention, skylights, glazing systems, brick & stone veneer ties, and seismic restraint of mechanical and electrical equipment.
- The General Contractor must check his/her work and the work of his/her subtrades before review by the Engineer.
- Where conflicts exist between structural documents, the strictest requirements, as indicated by the Structural Engineer, shall govern.
- No Structural member shall be cut or notched or otherwise reduced in strength unless approved by the Engineer.

**SITE REVIEWS**

- Site reviews of construction will be performed by the Engineer. The contractor shall give 24 HOURS NOTICE for request of any such reviews. These reviews will be limited to concrete reinforcing steel installation, structural steelwork & decking, reinforced masonry and rough carpentry items only. They will not include site safety, methods of construction, electrical or mechanical installations.

**DESIGN CRITERIA**

- Building Code  
British Columbia Building Code (BCBC) 2018

**FOUNDATIONS / FOUNDATION WALLS**

- The Owner is responsible for engaging a Geotechnical Engineer.
- No review of slope stability or ground bearing conditions for this have been performed by the Structural Engineer. Such reviews, if required, shall be performed by a Geotechnical Engineer.
- The design uses the following assumed values:
  - Allowable bearing pressure = 1500 psf
  - Frost depth = 2'-10"
  - Lateral soil pressure = 50 psf per foot of depth
  - Seismic Site Class D
- Willerton Engineering recommends a Geotechnical Engineer review and approve the above assumed values. All costs associated with incorrect assumptions are the responsibility of the Owner.
- The Contractor shall be responsible for maintaining any excavations in a stable condition without adversely affecting surrounding properties including services. This includes obtaining all necessary approvals for shoring and anchoring systems.
- Footings near boundaries must not be located higher or lower than footings of adjacent properties unless approved.
- Keep footings clean and free of loose material before inspection, immediately prior to pouring concrete and during pouring.
- Footings are to bear on native undisturbed soil or rock, free of all organic material with a frost protection as specified above, unless otherwise directed / supervised and approved by a Geotechnical Engineer.
- Use engineering for all walls backfilled greater than 4'-0". Walls backfilled less than 4'-0" do not require engineering.
- Ensure free draining backfill and drainage is in place.
- Footings are to be constructed and backfilled as soon as possible following excavation to avoid softening or drying out by exposure.

**CONCRETE - CAST IN PLACE**

- All concrete placement and performance shall be in accordance with CSA-A23.1.
- Mix designs shall be submitted by the contractor to the testing agency for review.
- Maximum nominal aggregate size is to be 20mm. No chlorides are permitted.
- No coring, holes, chases or embedment of pipes other than those shown on the structural drawings is permitted without written permission from Willerton Engineering.
- The Contractor shall provide minimum 24 hours notice for reinforcement inspections. Concrete shall not be poured until the reinforcing has been inspected by Willerton Engineering and final approval is obtained.
- Concrete should be protected at all times from being damaged during construction.
- No more than 2 hours shall elapse between concrete batching and concrete placement unless approved by the testing agency. No water should be added after initial batching. These items are to be monitored by the Contractor.
- Formed concrete shall be cured for a minimum of 7 days prior to stripping of formwork.
- For all footings, foundation walls, columns and shear walls, concrete is to be 30 MPa at 28 days.
- For slabs on grade and suspended slabs, concrete is to be 30 MPa at 28 days, and is to have a curing agent (i.e. Master Seal) applied immediately after finishing the surface with a steel power trowel to a smooth and flat finish.
- Use a minimum of 4" concrete slab-on-grade, reinforced with 10m bars @ 18" c/c each way placed at mid-depth, unless noted otherwise.
- Damp proof all walls below grade with 2 coats of asphalt emulsion, and plug tie holes with fiber-gum.
- All concrete shall be compacted with mechanical vibrators.
- Concrete testing shall be done by a testing laboratory at the Owner's expense. Concrete testing shall be conducted for every 70 cubic yards of concrete, but not less than 1 test for concrete cast each day.
- Construction joints shall be installed at 100 ft c/c maximum spacing, unless noted otherwise.
- Control joints in slab-on-grade shall be saw cut at a maximum distance of 50 times the slab thickness or 20 feet (whichever is less) before shrinkage cracks can form.

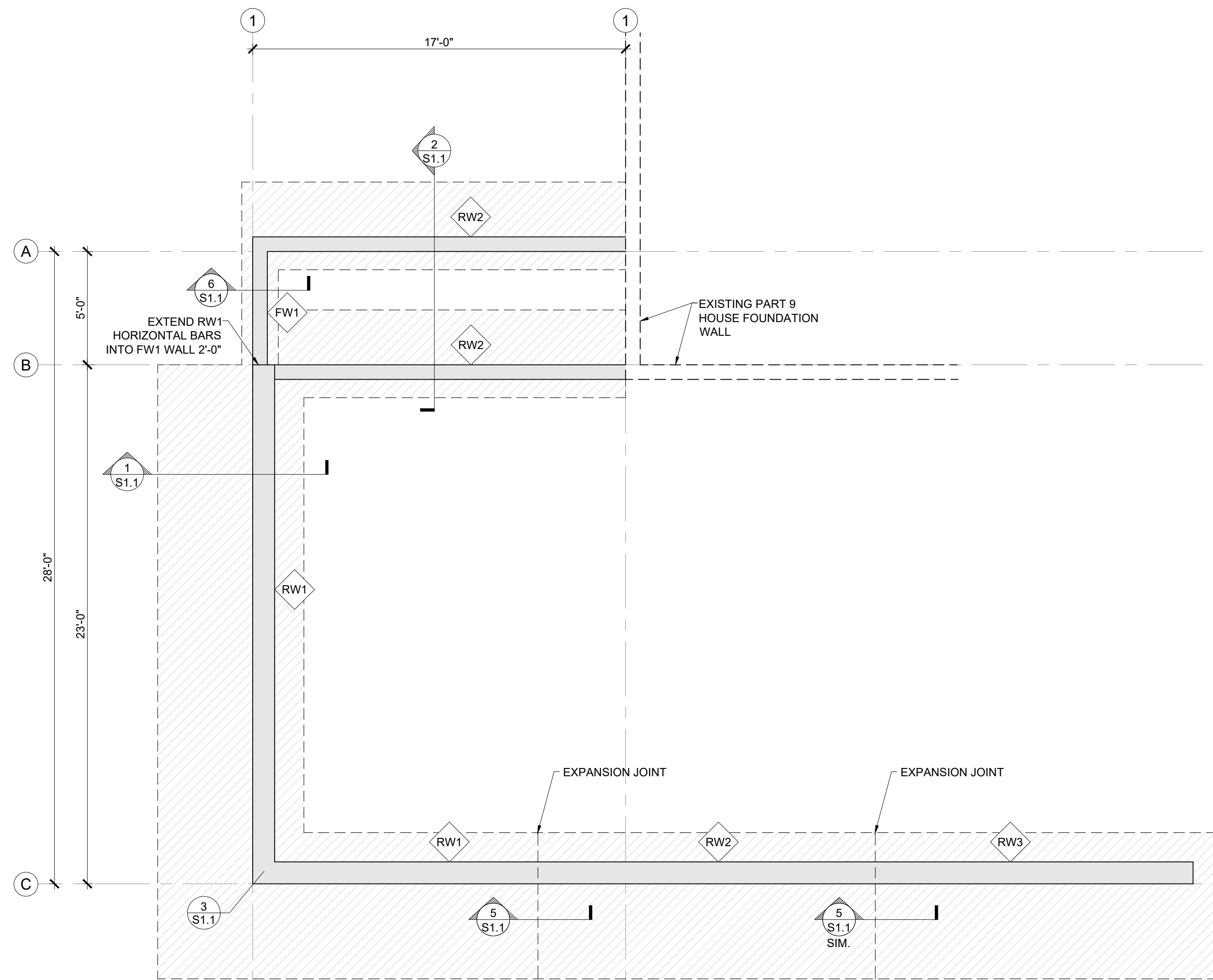
**REINFORCING STEEL**

- Detail and place reinforcing steel in accordance with the "Reinforcing Steel Manual of Standard Practice" and CSA-A23.1 u10.
- Provide deformed bars with yield strength of 400 MPa as specified in CSA C30.18.
- Provide welded wire fabric as specified in CSA G40.20/G40.21.
- Reinforcing steel is to be free of all dirt, excessive rust and scale at the time of placing and is to be securely in place prior to placing any concrete. No bars are to be wet dowelled with the exception of anchor bolts.
- All bars shown as being bent on the drawings are to be machine bent prior to being placed.
- Concrete cover and bar splices are to be as indicated or in accordance with N.B.C.
- The minimum clear cover for reinforcement in non-pre-stressed concrete with expose to earth or weather shall be as shown on the drawings.
- Reinforcing steel which requires splicing must have a minimum lap of 40 bar diameters. Bars must be continuous around corners and at intersections of walls, either by bending around the corner, or by adding corner bars with the minimum 40 bar diameter lap length. Space laps so that no more than 50% of bars placed are lapped within 48" for beams and columns.
- Provide a minimum of 2-15M bars extending 2'-0" beyond all corners at wall and slab openings greater than 2'-0" wide.
- All wall and grade beam reinforcing shall be continuous at corners and intersections. Use corner bars.
- Provide chairs, spacer bars, support bars and other accessories to support reinforcing in accordance with the latest editions of CSA A23.1 and A23.3

**COLD WEATHER CONCRETE REQUIREMENTS**

- Forecasted temperature no below 2 degrees Celsius:
  - If concrete drops below 10 degrees Celsius at point of pouring, the mixing water shall be heated to maintain a minimum concrete temperature of 10 degrees Celsius.
  - Concrete shall not be placed on or against any surface which is at temperatures less than 4 degrees Celsius.
  - Contractor should be prepared to cover concrete pour in unexpected.
- Forecasted temperature below 2 degrees Celsius but above -4 degrees Celsius:
  - Forms and steel should be free of ice and snow.
  - Mixing water shall be heated to give a minimum concrete temperature of 10 degrees Celsius at point of pour.
  - Concrete shall not be placed on or against any surface which is at temperatures less than 4 degrees Celsius.
  - Poured concrete shall be covered with canvas or similar and kept a few inches from the surface.
  - Protection should be maintained for at least 3 days.
- Forecasted temperature below -4 degrees Celsius:
  - Forms and steel should be free of ice and snow.
  - Mixing water shall be heated to give a minimum concrete temperature of 10 degrees Celsius at point of pour.
  - Concrete shall not be placed on or against any surface which is at temperatures less than 4 degrees Celsius.
  - Poured concrete shall be covered with canvas or similar and kept a few inches from the surface.
  - Temperature of the the concrete at all surfaces shall be kept at minimum of 20 degrees Celsius for 3 days, or 10 degrees Celsius for 5 days. The concrete must be kept above freezing for a minimum of 7 days.
  - The enclosure must be constructed so that air can circulate outside the outer of edge members.

FOUNDATION WALL SCHEDULE	
RW1	10" WIDE x 10'-0" HIGH CONCRETE RETAINING WALL - 15M HORIZONTAL BARS @ 16" c/c - 15M VERTICAL BARS @ 16" c/c - 15M DOWELS @ 8" c/c - REFER TO DETAIL FOR ALTERNATING LENGTHS  6'-6" WIDE x 12" DEEP CONCRETE STRIP FOOTING - (7) 15M CONTINUOUS TOP BARS - (2) 15M CONTINUOUS BOTTOM BARS - 15M LATERAL BARS @ 8" c/c
RW2	8" WIDE x 6'-0" HIGH CONCRETE RETAINING WALL - 15M HORIZONTAL BARS @ 16" c/c - 15M VERTICAL BARS @ 16" c/c - 15M DOWELS @ 16" c/c  4'-0" WIDE x 10" DEEP CONCRETE STRIP FOOTING - (4) 15M CONTINUOUS TOP BARS - (2) 15M CONTINUOUS BOTTOM BARS - 15M LATERAL BARS @ 16" c/c
RW3	PART 9 BCBC FOUNDATION WALL - NOT IN WILLERTON ENGINEERING'S SCOPE
FW1	8" FOUNDATION WALL - (2) 15M CONTINUOUS TOP BARS - 15M HORIZONTAL BARS @ 16" c/c - 15M VERTICAL BARS @ 16" c/c - 15M FOOTING DOWELS @ 16" c/c c/w 10" LONG ALTERNATING HOOKS + MIN 24" PROJECTION PAST TOP OF FOOTING - ALL WALL STEEL PLACED IN CENTER OF WALL  20" WIDE x 10" DEEP CONCRETE STRIP FOOTING - (3) 15M CONTINUOUS BARS



**1 RETAINING WALL PLAN**  
SCALE: 1/4"=1'-0"

DRAWING INDEX	
S0.1	PROJECT NOTES, RETAINING WALL PLAN
S1.1	SECTIONS & DETAILS

REVISIONS		
NO.	DATE	DESCRIPTION
0	200818	CONSTRUCTION



