GENERAL REQUIREMENTS

1. 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.
2. The General Contractor shall compare and coordinate the drawings of all the disciplines and report any discrepancy to the Architect and the Engineers for assessment / clarification before proceeding with the work.
3. 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.
4. 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).
5. 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.
6. The General Contractor must check his/her work and the work of his/her sub-trades before review by the Engineer.
7. Where conflicts exist between structural documents, the strictest requirements, as indicated by the Structural Engineer, shall govern.
8. No Structural member shall be cut or notched or otherwise reduced in strength unless approved by the Engineer.

SITE REVIEWS

1. 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

1. Building Code
   British Columbia Building Code (BCBC) 2018

FOUNDATIONS / FOUNDATION WALLS

GENERAL

1. The Owner is responsible for engaging a Geotechnical Engineer.
2. 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.
3. Do not backfill foundation walls more than 4'-0" (1220mm) until floor construction at top and bottom is completed.
   Ensure free draining backfill and drainage is in place.
4. Footings are to be constructed and backfilled as soon as possible following excavation to avoid softening or drying out by exposure.

DESIGN

1. The design uses the following assumed values:
   a. Allowable bearing pressure = 2000 psf
   b. Frost depth = 3'-0"
   c. Lateral soil pressure = 45 psf per foot of depth
   d. Seismic Site Class D
2. 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.
3. Use engineering for al walls backfilled greater than 4'-0" (1200mm). Walls backfilled less than 4'-0" (1200mm) do not require engineering.

SITE PREPARATION

1. 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.
2. Footings near boundaries must not be located higher or lower than footings of adjacent properties unless approved.
3. Keep footings clean and free of loose material before inspection, immediately prior to pouring concrete ad during pouring.
4. 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.

TEMPORARY SHORING AND BRACING

1. Temporary shoring and bracing, formwork, falsework, etc, are the responsibility of the Contractor.
2. These drawings show the completed structure only and not components that may be required for construction and safety during construction.
3. All work shall be carried out in accordance with WorkSafe BC (or authority having jurisdiction) requirements.

REINFORCING STEEL

GENERAL

1. Detail and place reinforcing steel in accordance with the "Reinforcing Steel Manual of Standard Practice" and CSA-A23.1 unless noted otherwise.
2. Provide deformed bars with yield strength of 400 MPa as specified in CSA G30.18.
3. Provide welded wire fabric as specified in CSA G40.20/G40.21.
4. Provide a minimum of (2) 15M bars extending 2'-0" (610mm) beyond all corners at wall and slab openings greater than 2'-0" (610mm) wide.

INSTALLATION

1. 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 doweled with the exception of anchor bolts.
2. All bars shown as being bent on the drawings are to be machine bent prior to being placed.
3. Concrete cover and bar splices are to be as indicated or in accordance with N.B.C.
4. The minimum clear cover for reinforcement in non-pre-stressed concrete with expose to earth or weather shall be as shown on the drawings.
5. 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 4'-0" (1200mm) for beams and columns.
6. Provide a minimum of (2) 15M bars extending 2'-0" (610mm) beyond all corners at wall and slab openings greater than 2'-0" (610mm) wide.
7. All wall and grade beam reinforcing shall be continuous at corners and intersections. Use corner bars.
8. Provide chairs, spacer bars, support bars & other accessories to support reinforcing in accordance with the latest editions of CSA A23.1 and A23.3

Min. reinforcing bar lap / splice U.N.O.:

Bar Size	Inches	mm		Bar Size	Inches	mm
10M	16"	410		20M	36"	915
15M	24"	610		25M	44"	1200

CONCRETE - CAST IN PLACE

GENERAL

1. 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.
2. No coring, holes, chases or embedment of pipes other than those shown on the structural drawings is permitted without written permission from Willerton Engineering.
3. Mix designs shall be submitted by the contractor to the testing agency for review.
4. No chlorides are permitted.
5. For slabs on grade and suspended slabs, concrete 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.
6. Use a minimum of 4" (102mm) concrete slab-on-grade, reinforced with 10M bars @ 18" c/c (460mm) each way placed at mid-depth, UNO.
7. Damp proof all walls below grade with (2) coats of asphalt emulsion, and plug tie holes with fiber-gum.
8. Construction joints shall be installed at 100'-0" (30.0m) c/c maximum spacing, unless noted otherwise.
9. Control joints in slab-on-grade shall be saw cut at a maximum distance of 50 times the slab thickness or 20'-0" (6.0m) whichever is less, before shrinkage cracks can form.

INSTALLATION

1. All concrete placement and performance shall be in accordance with CSA-A23.1.
2. 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.
3. Concrete should be protected at all times from being damaged during construction.
4. All concrete shall be compacted with mechanical vibrators.
5. Formed concrete shall be cured for a minimum of 7 days prior to stripping of formwork.

TESTING

1. 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.

CONCRETE MIX DESIGN:

LOCATION	28 Day Strength (MPa)	Air Content (%)	Water Cement Ratio	MAX. AGGREGATE SIZE (in) (20mm)
Footings Perimeter	30	1 to 3	0.55	
Retaining walls	30	5 to 8	0.55	

The concrete mix shall be in conformance with CSA A23.1 Strength, water cement ratio, and air content shall conform to Tables 7, 8 & 9 of CSA A23.1

COLD WEATHER REQUIREMENT

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

ITEMS NOT SPECIFICALLY DETAILED AND DIMENSIONED ARE TO CONFORM TO PART 9 OF THE BRITISH COLUMBIA BUILDING CODE (BCBC) AND ARE BY OTHERS.

REFER TO ARCHITECTURAL DRAWINGS BY WOOD CREEK CONSTRUCTION FOR FURTHER INFORMATION.

DRAWING INDEX

WILLERTON ENGINEERING

4408 28th STREET, VERNON, B.C.
phone: 250-542-5434
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CONSULTANTS

REVISIONS

NO.	DATE	DESCRIPTION
A	22/03/04	BUILDING PERMIT
0	22/03/08	CONSTRUCTION

PROJECT

DOWNER
RETAINING WALL

829 ARMENTIERES RD.
SORRENTO, B.C.

DRAWING

PROJECT NOTES

FILE
22-083

DATE
Mar. 8, 2022

SCALE
AS NOTED

DESIGN
CD

ENGINEER
CW

SEAL

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
C. L. WILLERTON
39579

2022-03-08
PERMIT TO PRACTICE No. 1001581

SHEET NUMBER	REV
S0.1	0

FOUNDATION SCHEDULE:

GENERAL
1. DOWELS CANNOT BE WET SET AND MUST BE MACHINE BENT
2. SPLICE BARS REQ'D IN ALL WALL CORNER/INTERSECTIONS UNO.
3. ALL DOWELS TO HAVE MIN. 2'-0" PROJECTION ABOVE FTG. U.N.O.

RW1

10" WIDE x 8'-0" EXPOSED FACE RETAINING WALL
- BACKFILL MAT REINFORCING, 1½" CLEAR OF BACKFILL
- 15M VERTICAL BARS @ 16" c/c
- 15M HORIZONTAL BARS @ 16" c/c
- (2) 15M CONTINUOUS TOP BARS

90"x12" STRIP FOOTING
- (8) 15M CONTINUOUS TOP BARS
  - 2" CLEAR OF TOP OF FOOTING
- (2) 15M CONTINUOUS BOTTOM BARS
  - 3" CLEAR OF GRADE
- 15M LATERAL BARS @ 8"c/c
- 15M DOWELS @ 8" c/c
  - ALTERNATE TALL & SHORT DOWELS

RW2

8" WIDE x 6'-0" EXPOSED FACE RETAINING WALL
- BACKFILL MAT REINFORCING, 1½" CLEAR OF BACKFILL
- 15M VERTICAL BARS @ 12" c/c
- 15M HORIZONTAL BARS @ 16" c/c
- (2) 15M CONTINUOUS TOP BARS

72"x10" STRIP FOOTING
- (7) 15M CONTINUOUS TOP BARS
  - 2" CLEAR OF TOP OF FOOTING
- (2) 15M CONTINUOUS BOTTOM BARS
  - 3" CLEAR OF GRADE
- 15M LATERAL BARS @ 12"c/c
- 15M DOWELS @ 12" c/c

RW3

8" WIDE x 4'-4" EXPOSED FACE RETAINING WALL
- BACKFILL MAT REINFORCING, 1½" CLEAR OF BACKFILL
- 15M VERTICAL BARS @ 16" c/c
- 15M HORIZONTAL BARS @ 16" c/c
- (2) 15M CONTINUOUS TOP BARS

44"x10" STRIP FOOTING
- (5) 15M CONTINUOUS TOP BARS
  - 2" CLEAR OF TOP OF FOOTING
- (2) 15M CONTINUOUS BOTTOM BARS
  - 3" CLEAR OF GRADE
- 15M LATERAL BARS @ 16"c/c
- 15M DOWELS @ 16" c/c

RW4

PART 9 RETAINING WALL BY OTHERS
MAX. 4'-0" BACKFILL DIFFERENTIAL

A KEY PLAN
- SCALE: 3/32"=1'-0"

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A	22/03/04	BUILDING PERMIT
0	22/03/08	CONSTRUCTION

PROJECT

DOWNER RETAINING WALL

829 ARMENTIERES RD.
SORRENTO, B.C.

DRAWING

RETAINING WALL KEY PLAN

FILE
22-083

DATE
Mar. 8, 2022

SCALE
AS NOTED

DESIGN
CD

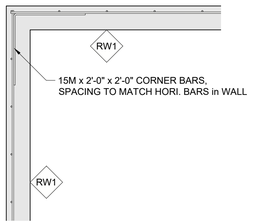
ENGINEER
CW

SEAL

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
C. L. WILLERTON
29519

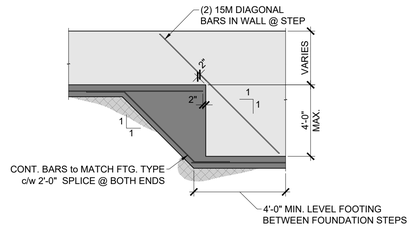
2022-03-08
PERMIT TO PRACTICE No. 1001581

SHEET NUMBER	REV
S1.1	0



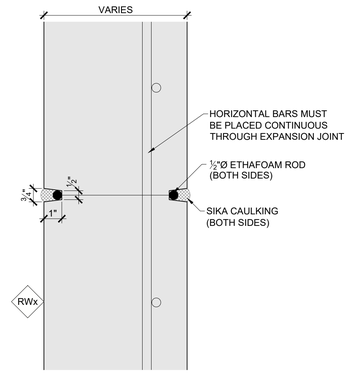
1 TYP. CORNER BAR DETAIL

S1.1 SCALE: 1/2"=1'-0"



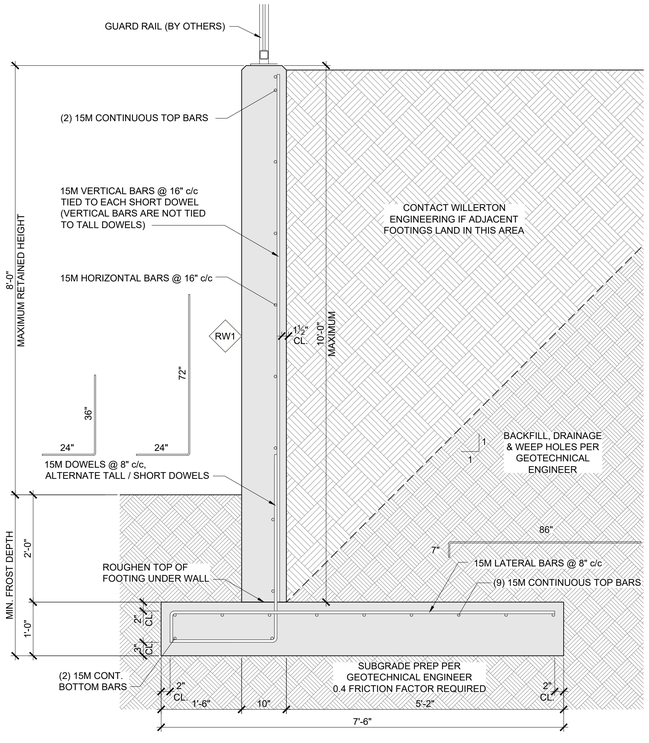
2 STEP FOOTING DETAIL

- SCALE: N.T.S.



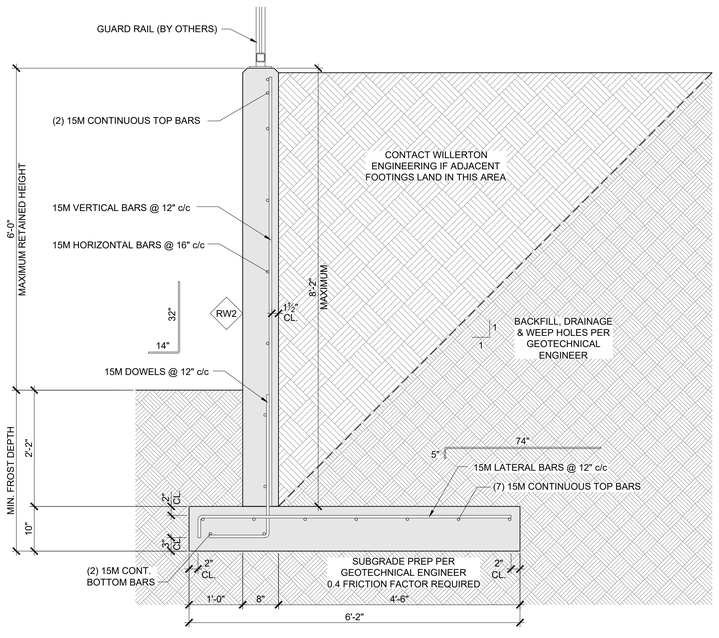
3 EXPANSION JOINT DETAIL

- SCALE: N.T.S.



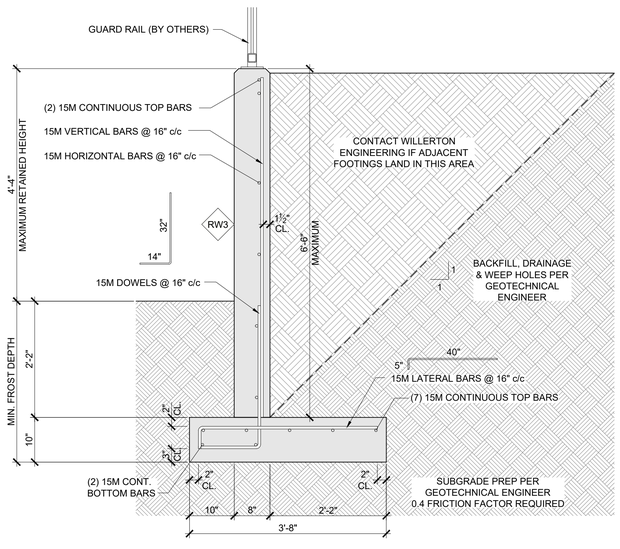
4 RETAINING WALL SECTION - RW1

S1.1 SCALE: 3/4"=1'-0"



5 RETAINING WALL SECTION - RW2

S1.1 SCALE: 3/4"=1'-0"



6 RETAINING WALL SECTION - RW3

S1.1 SCALE: 3/4"=1'-0"

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PROJECT

DOWNER RETAINING WALL

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SORRENTO, B.C.

DRAWING

RETAINING WALL DETAILS

FILE
22-083

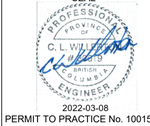
DATE
Mar. 8, 2022

SCALE
AS NOTED

DESIGN
CD

ENGINEER
CW

SEAL



2022-03-08
PERMIT TO PRACTICE No. 1001581

SHEET NUMBER	REV
S1.2	0