

## 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

| DESIGN LOADS          |          |
|-----------------------|----------|
| Ground Snow Load      | 73 psf   |
| Roof Design Snow Load | 42.3 psf |
| Roof Dead Load        | 15 psf   |
| Floor Dead Load       | 15 psf   |
| Floor Live Load       | 40 psf   |
| Deck Dead Load        | 15 psf   |
| Deck Live Load        | 40 psf   |

## 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 = 3'-0"
  - Lateral soil pressure = 45 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 ad 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 al walls backfilled greater than 4'-0". Walls backfilled less than 4'-0" do not require engineering.
- Do not backfill foundation walls more than 4'-0" until floor construction at top and bottom is completed. Ensure free draining backfill and drainage 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 700 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 uno.
- 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 if unexpected weather occurs.
- 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 the 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 the 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.

## TEMPORARY SHORING AND BRACING

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

## WOOD

- GENERAL
  - All materials shall be kept dry and protected from the environment at all times.
  - No cutting or notching of members without the approval from the Structural Engineer.
- DIMENSIONAL LUMBER
  - All sawn lumber is to conform to CAN/CSA O141.
  - All dimensional lumber shall be graded in accordance with the National Lumber Grades Authority.
  - All dimensional lumber shall be dry with a maximum moisture content of 12%.
  - All dimensional lumber shall be SPF No. 2 or better unless noted otherwise.
  - Wood in contact with concrete or masonry shall be pressure treated or separated from contact with a moisture barrier.
- STRUCTURAL COMPOSITE LUMBER
  - All manufactured beams are to be minimum 2.0E/2900Fb unless noted otherwise and identified with a stamp indicating the product type and grade.
- SHEATHING (Plywood and Oriented Strand Board)
  - All floor, roof and wall sheathing shall be plywood conforming to CAN/CSA O121 or CAN/CSA O151 or Oriented Strand Board (OSB) to CAN/CSA O325.
  - Sheathing shall be fastened directly to the supporting framing with the face grain oriented perpendicular to the framing.
  - Panel edges and openings shall be reinforced with back framing, h-clips or tongue and groove.
- BUILT-UP BEAMS
  - (2) ply built-up beams shall be fastened together with minimum (2) rows of 3 1/2" common nails @ 10" c/c unless noted otherwise.
  - (3) ply built-up beams shall be fastened together with minimum (2) rows of 3 1/2" common nails @ 10" c/c on each face unless noted otherwise.
  - (4) ply and (5) ply built-up beams shall be fastened together with minimum (2) rows of 1/2" Ø bolts @ 16" c/c unless noted otherwise.
  - Equivalent length 1/4" Ø structural screws (GRK or Simpson) may be used in place of common nails.
- BUILT-UP COLUMNS
  - (2) ply built-up columns shall be fastened together with minimum (2) rows of 3" common nails @ 9" c/c alternating face (1 row for 2x4 lumber).
  - (3) ply built-up columns shall be fastened together with minimum (2) rows of 4 1/2" common nails @ 9" c/c alternating face.
  - (4) ply built-up columns shall be fastened together with minimum (2) rows of 6" common nails @ 9" c/c alternating face.
  - (5) ply built-up columns shall be fastened together with minimum (1) 1/2" Ø bolt @ 12" c/c unless noted otherwise.
  - Equivalent length 1/4" Ø structural screws (GRK or Simpson) may be used in place of common nails.

## TIMBER FRAMING

- TIMBERS
  - All timbers shall be graded in accordance with the national lumber grades authority (niga) standard grading rules for canadian lumber (2019)
  - All timbers shall be d. fr no. 1 or better u.n.o.
  - Lumber shall be seasoned or kiln dried with a moisture content at construction of 12% or less.
  - The use of end grain sealer is recommended for all timbers to help resist end checking. Surface sealers to resist moisture penetration are recommended for all timber exposed to weather.
  - Some warping, twisting, checking, and splitting of timbers as they reach equilibrium moisture content can be expected.
- TIMBER CONNECTORS
  - Screws:
    - "RSS" (Rugged Structural Screws) high tensile/bending yield strength by GRK FASTENERS, or equal. Screws shall be washer-headed. Shaft diameters shall be 5/16" diameter up to 7 1/2" long and 3/8" diameter from 8" long and above. Screws shall penetrate a minimum of 4" in receiving timber. Where heads would be visible, screws shall be installed in counter-bored holes to clear the head and allow approximately 1/2" for plugging. See www.grkfasteners.com for additional information.
    - "ASSY-VG-CSK all-threaded, zinc plated (electroplated with a zinc layer thickness of 5-8 micro meters), self-countersinking screws (ICC/ESR #3178) provided by My-Ti-Con Timber Connectors (my-ti-con.com).
  - Lag Screws:
    - Lag screws shall be "galvanized" unless otherwise noted. Drill two lead holes: the first for the threads at 65% to 85% of the shank diameter in wood with a specific gravity (SG) greater than 0.60; 60% to 75% for an SG between 0.50 and 0.60; and 40% to 70% for an SG equal to or less than 0.50 to insure a "tight grip" into the timber receiving the threads, and, the lead hole for the smooth shank equal to the diameter of the shank.
  - Pegs:
    - 1" Diameter, Structural, Straight Grained, Black Walnut, White Oak, Red Oak or Locust treated with paraffin, linseed oil or similar sealing substance.
  - Tenons: (minimum dimensions unless otherwise noted)
    - STUB TENONS: 2" Thick By 3/4" Long
    - FULL TENONS: 2" Thick By 4-1/2" Long (1 1/2" tenons into 5/12" thick timber)
    - SPACING: End Distance: 2 1/2", Edge Distance: 2"; Spacing: 2 1/2" to 3"
  - Bolts and Pins:
    - ASTM Grade A307 (Interior) or Grade 316 Stainless Steel (Exterior) unless otherwise noted. (Installer Note: At least two full threads shall extend past the face of any nuts.) Bolt holes in timber shall be drilled to yield a tight fit requiring 'moderate' driving force with a mallet to seat the bolts. To compensate for the effects of cross grain shrinkage on bolted connections in "green" timber, re-tighten all bolts: a) immediately prior to occupancy; b) six months after occupancy; and, c) 18 months after occupancy. Where the equilibrium moisture content is equal to or less than 19%, re-tighten bolts: a) immediately prior to occupancy; and, b) 12 months after occupancy.
  - Timberlinx™ by www.timberlinx.com
    - Type and size noted on the details.
  - Dowels and Threaded Rod Tension Tie Bolts:
    - ASTM Grade A36 (Installer Note: At least two full threads shall extend past the face of any nuts or threaded turn-buckle sleeves.) Hi-Strength rods where noted shall be ASTM Grade A572 Gr 50.
  - Concrete Anchor System:
    - Cold Weather: Simpson AT-XP Acrylic Adhesive (14 degree limit), Warm Weather: Simpson SET-XP (45 degree limit) or SET-3G (40 degree limit) All installed in strict accordance with Simpson instructions. Installer Note: Temperatures are "base material temperatures NOT air temperature with differences in cure time vs temperature.
  - Steel Angles, Plates and Fabricated Connections:
    - As detailed.
  - Post Bases/Brackets:
    - As detailed.
  - Finishes:
    - All steel connections and hardware exposed to weather to be hot-dip galvanized, electrostatically coated or stainless steel unless otherwise noted.
- TF JOINERY/CONNECTIONS (As noted below and on the drawings and details)
  - Housings/Connections
    - Rafters: 1/2" unless otherwise noted w/2-9" screws GRK-RSS screws
    - Floor Joists: 3/4" unless otherwise noted w/2-9" screws GRK-RSS Screws
    - Non-load bearing beams and connecting girts: 1" plus 3 1/2" tenon as described below (unless otherwise noted) w/ 2 pegs or connecting splines as shown plus two (2) GRK RSS Screws from top of beam 3 1/2" min. into receiving timber
    - Load bearing beams: 1 1/2" plus 3 1/2" tenon as described below (unless otherwise noted) w/2 pegs or connecting splines as shown plus two (2) GRK RSS Screws from top of beam 3 1/2" min. into receiving timber
  - Rafters to Posts:
    - 1 1/2" housings with 2-Peg M&T connection or two (2) GRK RSS screws with 3 1/2" min. into receiving timber.
  - Pegs:
    - Quantity Shown (see specs for mortise and tenon sizes and peg spacing)

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.

REFER TO TRUSS AND JOIST DRAWINGS BY SALMON ARM TRUSS SYSTEMS LTD. FOR FURTHER INFORMATION.

## DRAWING INDEX

|      |  |
|------|--|
| S0.1 | PROJECT NOTES                            |
| S1.1 | PARTIAL FOUNDATION PLAN                  |
| S2.1 | MAIN & UPPER FLOOR PARTIAL FRAMING PLANS |



**WILLERTON  
ENGINEERING**

4408 28th STREET, VERNON, B.C.  
Phone : 250-542-5434  
email : admin@willerton.ca  
web : willerton.ca

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CONSULTANTS

## REVISIONS

| NO. | DATE   | DESCRIPTION  |
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| 0   | 210812 | CONSTRUCTION |
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## PROJECT

**WOOD CREEK  
LOT 17**

1631 2nd STREET SE,  
SALMON ARM, BC

## DRAWING

**PROJECT  
NOTES**

FILE  
21-292

DATE  
12 AUGUST 2021

SCALE  
AS NOTED

DESIGN  
CD

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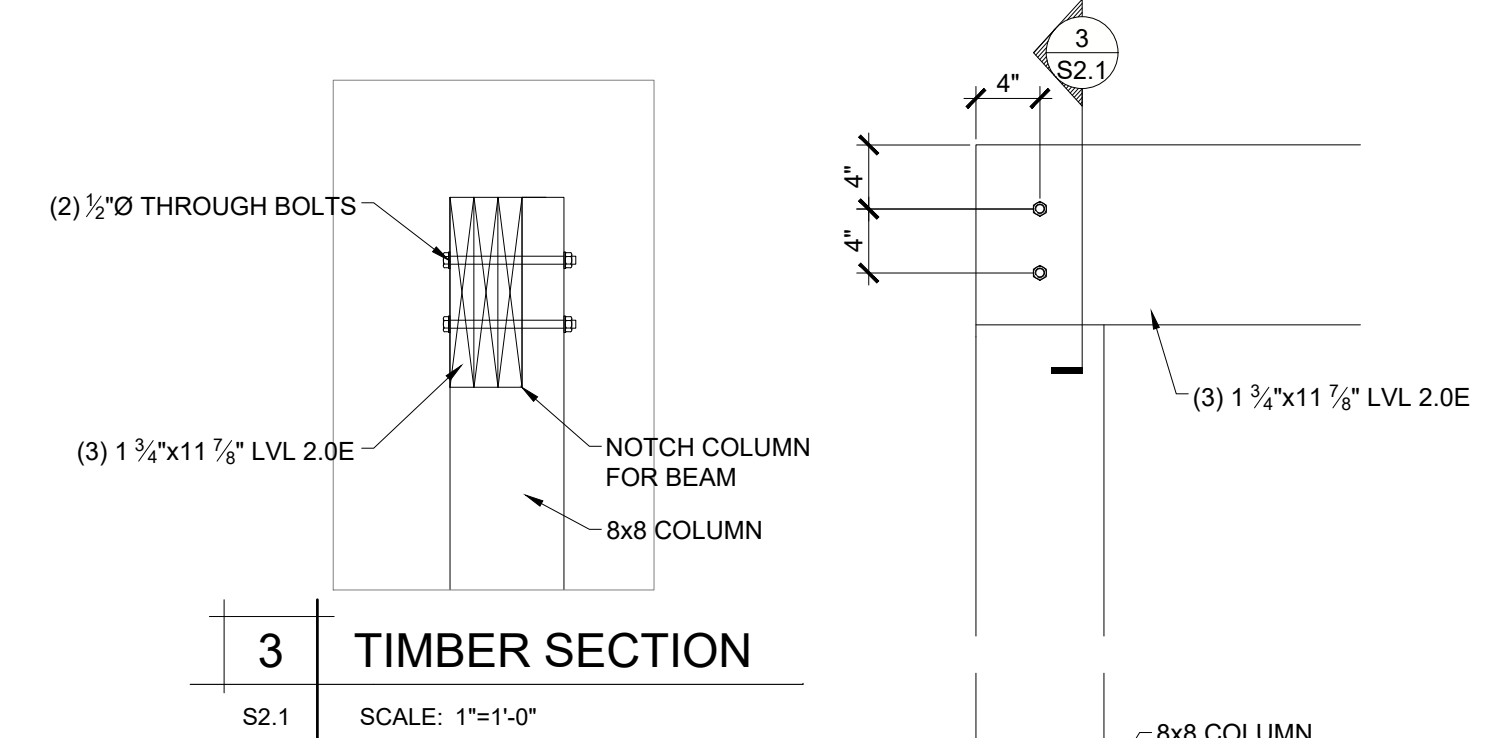
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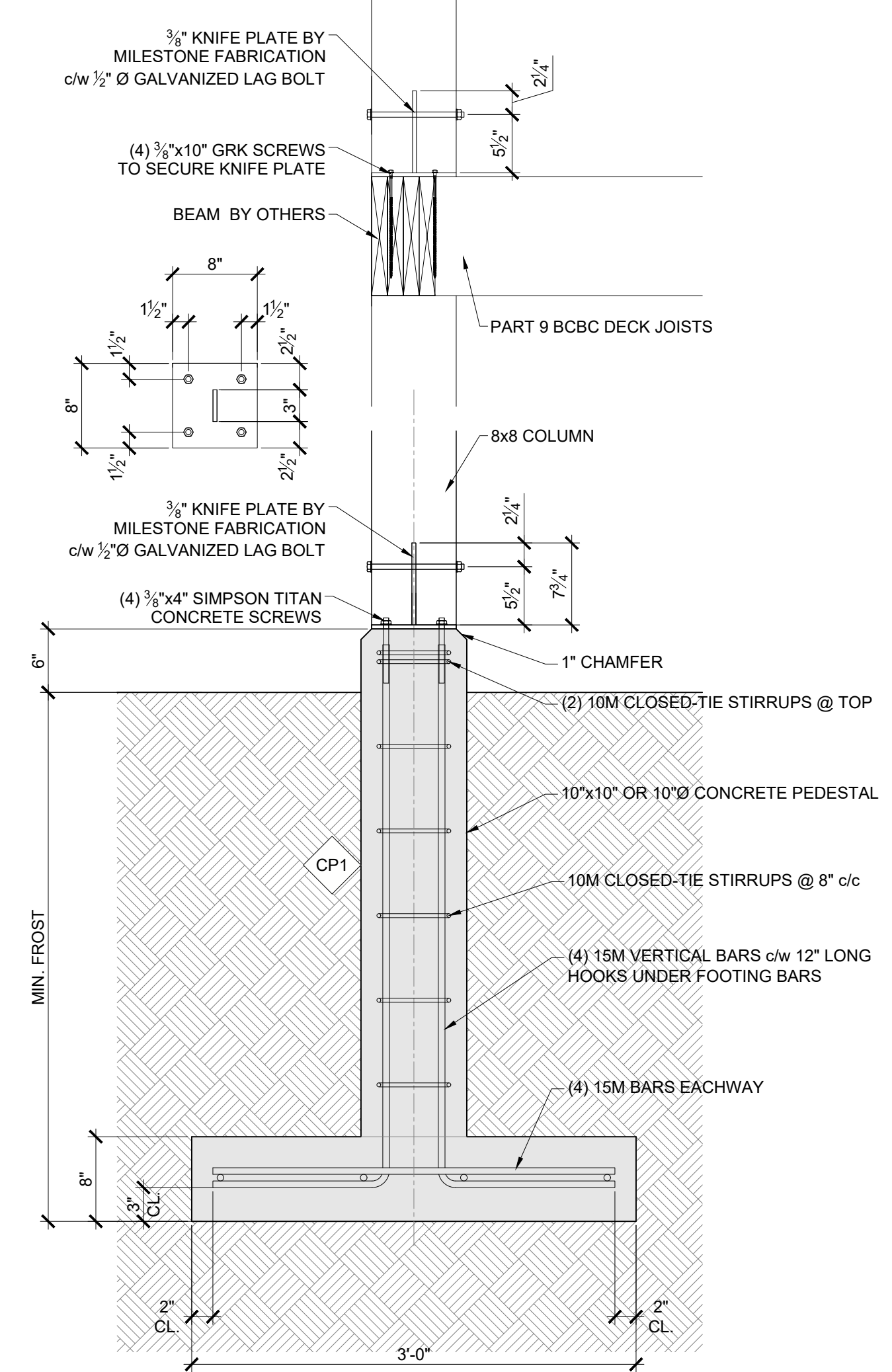
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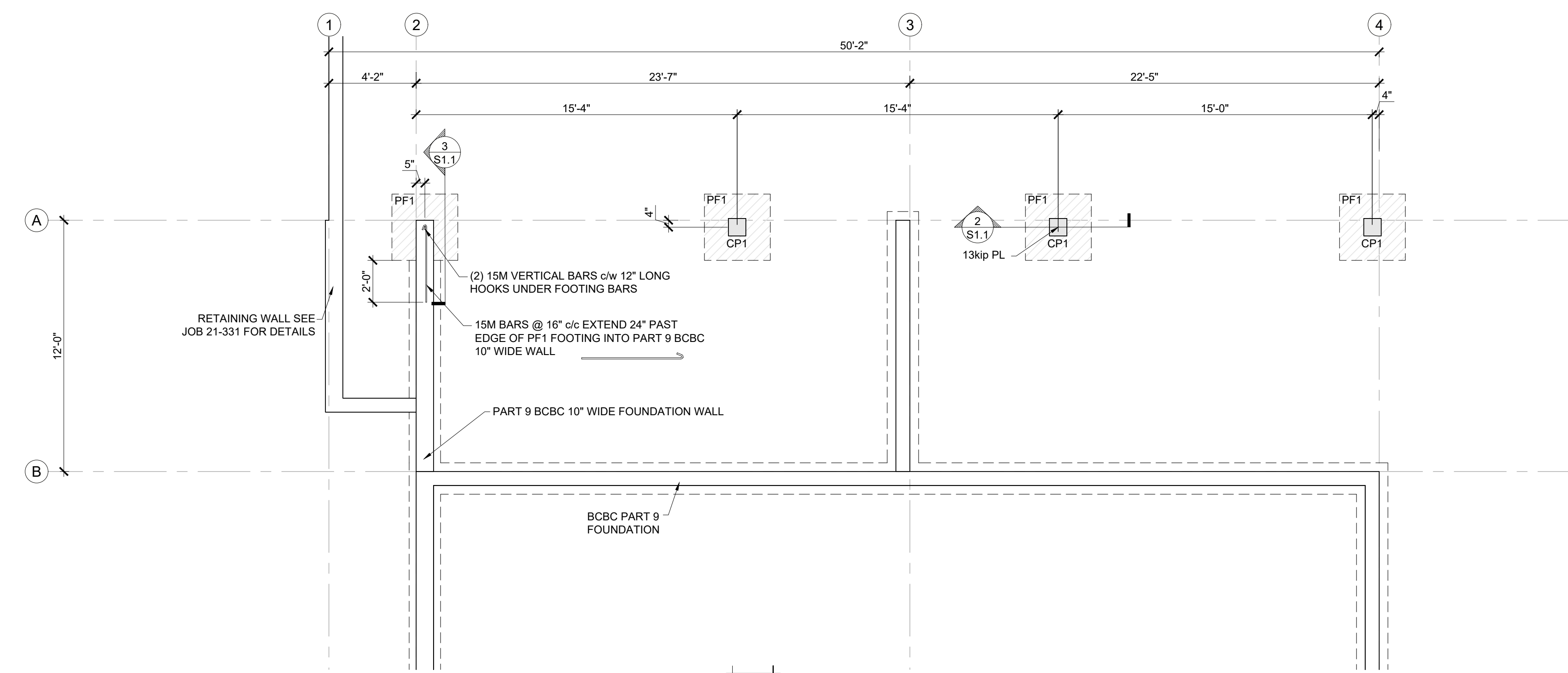
| PAD FOOTING SCHEDULE       |  |
|----------------------------|--|
| PF1                        | 3'-0"x3'-0"x8" THICK CONCRETE PAD FOOTING c/w (4) 15M BARS EACH WAY, CHAIRED 3" CLEAR OF GRADE   |
| CONCRETE PEDESTAL SCHEDULE |  |
| CP1                        | 10"x10" or 10"Ø CONCRETE PEDESTAL c/w 10M CLOSED-TIE STIRRUPS @ 8" c/c AROUND (4) 15M VERTICAL BARS c/w 12" LONG HOOKS UNDER FOOTING BARS. |



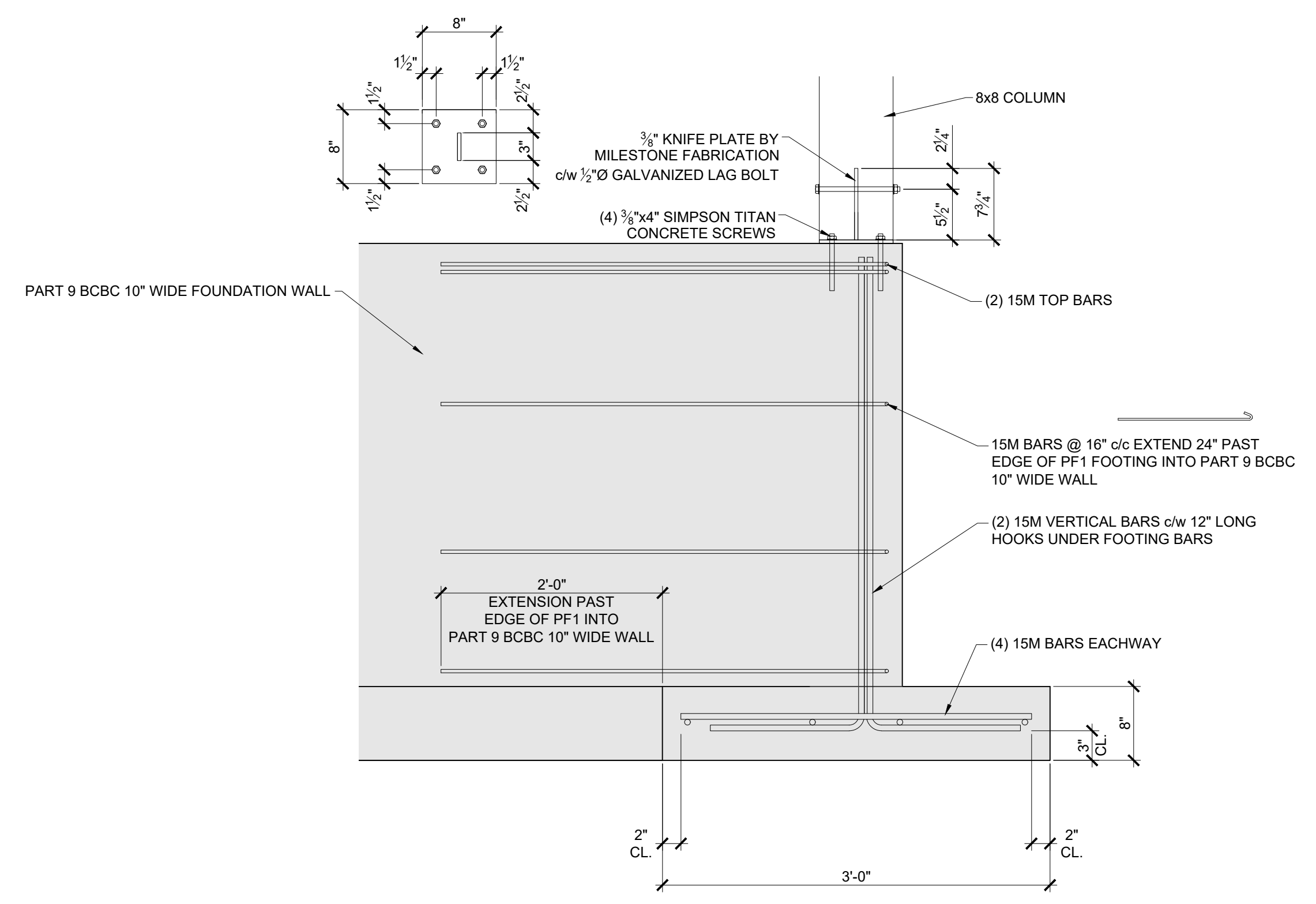
**3** TIMBER SECTION  
S2.1 SCALE: 1"=1'-0"



**2** CROSS SECTION  
S2.1 SCALE: 1"=1'-0"



**1** PARTIAL FOUNDATION PLAN  
SCALE: 1/4"=1'-0"



**3** CROSS SECTION  
S1.1 SCALE: 1"=1'-0"

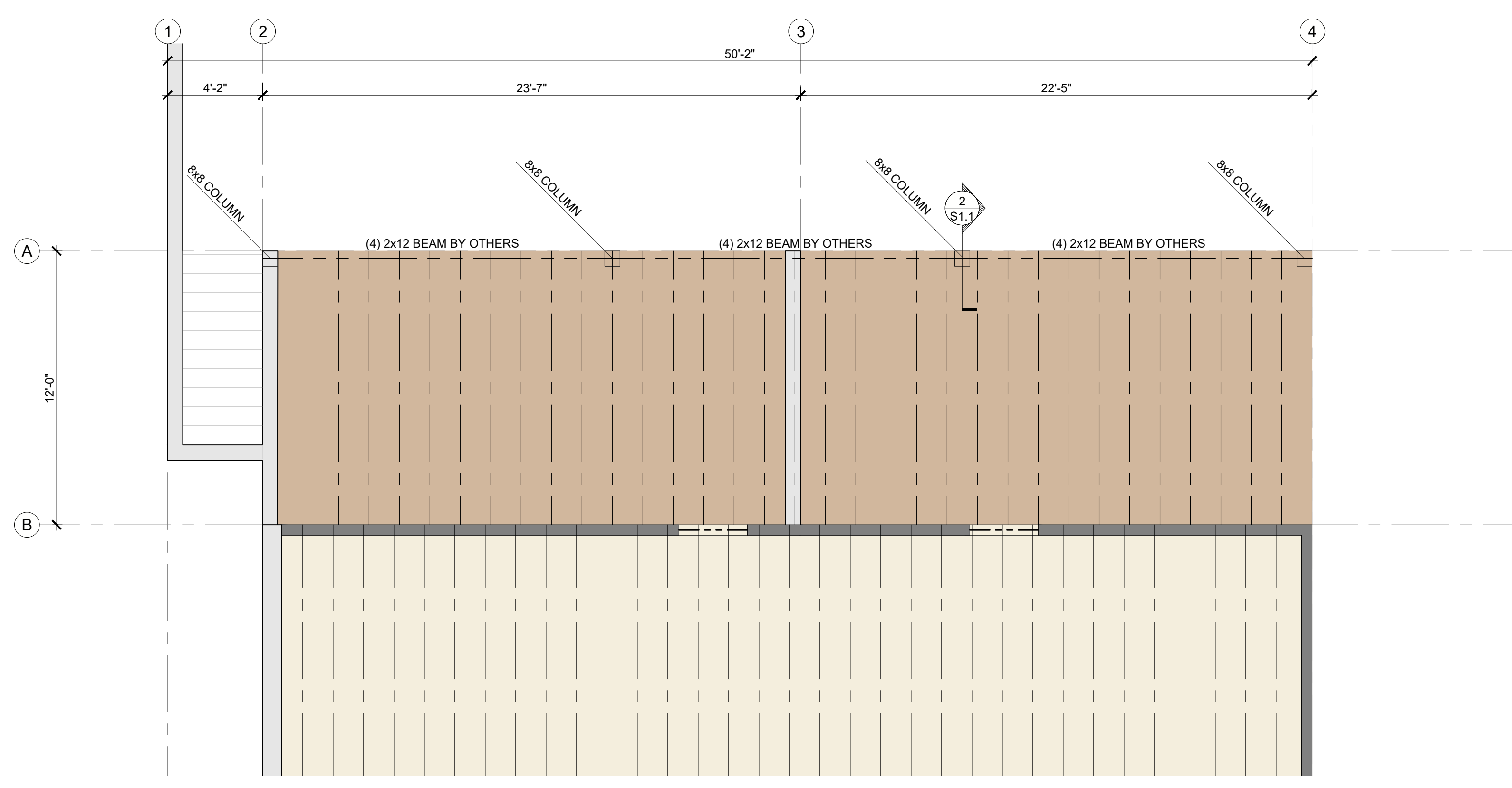
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PROJECT  
**WOOD CREEK  
LOT 17**  
1631 2nd STREET SE,  
SALMON ARM, BC

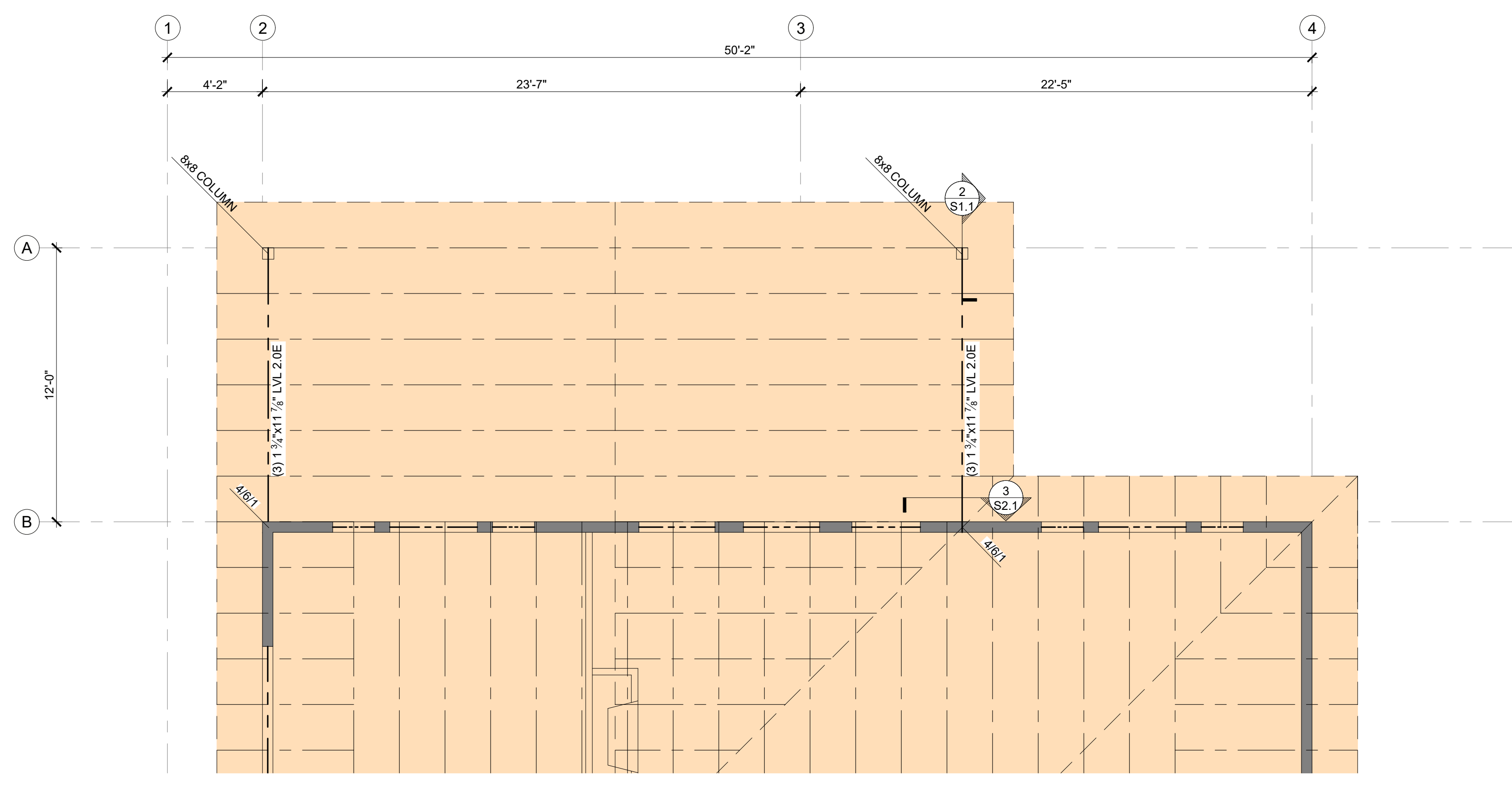
DRAWING  
**PARTIAL  
FOUNDATION  
PLAN**

FILE  
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DATE  
12 AUGUST 2021  
SCALE  
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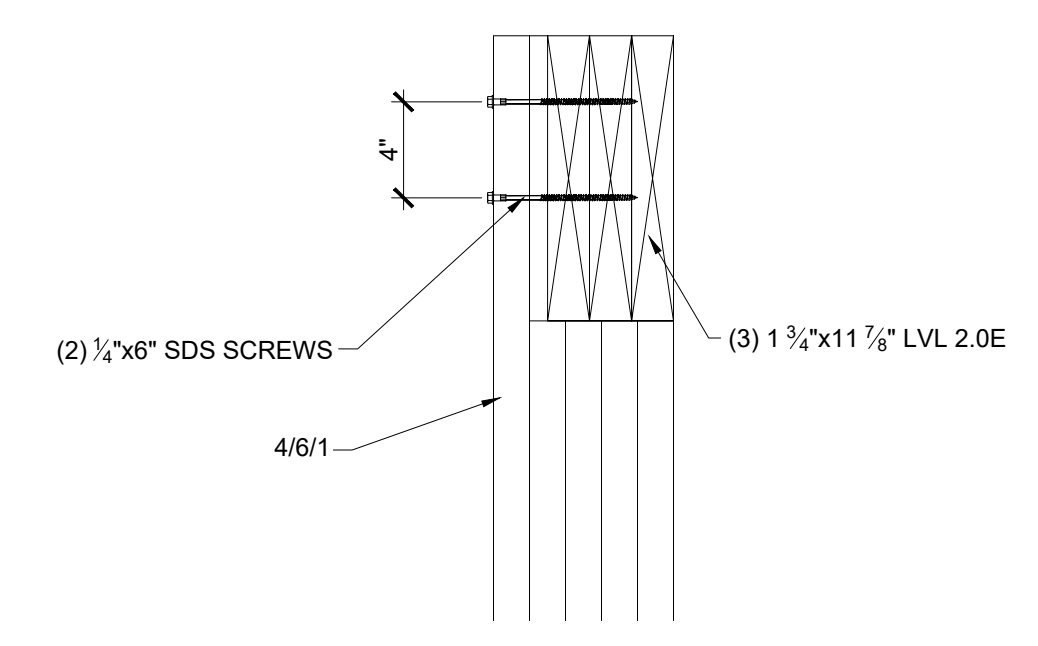
|   |
|---|
| <b>FRAMING NOTES</b>  |
| 1. ALL NEW WOOD BEAMS/HEADERS TO BE AS PER SUPPLIER OR BCBC 2018, PART 9 (UNLESS NOTED OTHERWISE ON PLAN) |
| 2. ALL NEW WOOD COLUMNS TO BE AS PER SUPPLIER OR BCBC 2018, PART 9 (UNLESS NOTED OTHERWISE ON PLAN)       |
| <b>WALL TYPES</b>   |
| 1.1 PART 9 BCBC FRAMED WALLS  |
|   |
| <b>FLOOR TYPES</b>  |
| 1.1 MAIN FLOOR FRAMING - BY OTHERS  |
|   |
| 1.2 DECK FRAMING - BY OTHERS  |
|   |
| <b>ROOF TYPES</b>   |
| 1.1 ROOF FRAMING - BY OTHERS  |
|   |



**1 PARTIAL MAIN FLOOR FRAMING PLAN**  
SCALE: 1/4"=1'-0"



**2 PARTIAL ROOF FRAMING PLAN**  
SCALE: 1/4"=1'-0"



**3 SECTION**  
SCALE: 1 1/2"=1'-0"

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PROJECT  
**WOOD CREEK LOT 17**  
1631 2nd STREET SE,  
SALMON ARM, BC

DRAWING  
**MAIN & UPPER FLOOR PARTIAL FRAMING PLANS**

FILE  
21-292  
DATE  
12 AUGUST 2021  
SCALE  
AS NOTED  
DESIGN  
CD  
ENGINEER  
CW  
SEAL