

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 strctural 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 strctural 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	84 psf
	Roof Dead Load	10 psf
	Roof Design Snow Load	48.3 psf
	Interior Floor Dead Load	15 psf
	Interior Floor Live Load	40 psf
	Deck Dead Load	40 psf
	Deck Live Load	40 psf
	Garage Floor Dead Load	70 psf
	Garage Floor Live Load OR	100 psf
	Garage Floor Concentrated Point Load	4,000 lbs
	Live Load Deflection Floor	L/360

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 Strctural 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 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 uno.
- Provide deformed bars with yield strength of 400 MPa as specified in CSA G30.18.
- 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 doweilled 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 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.

DRAWING INDEX

SHEET	DRAWING TITLE	REV #	ISSUE DATE	DESCRIPTION
S0.1	PROJECT NOTES + DRAWING INDEX	1	8 JUNE 2021	REVISIONS
S1.1	PARTIAL FOUNDATION PLAN	1	8 JUNE 2021	REVISIONS
S2.1	PARTIAL MAIN FLOOR FRAMING PLAN	1	8 JUNE 2021	REVISIONS
S3.1	STRUCTURAL DETAILS	1	8 JUNE 2021	REVISIONS
S3.2	STRUCTURAL DETAILS	1	8 JUNE 2021	REVISIONS

REFER TO HOUSE PLANS BY WOOD CREEK CONSTRUCTION LTD. FOR FURTHER INFORMATION.

REFER TO TRUSS LAYOUTS, JOIST LAYOUTS AND DESIGN BY SALMON ARM TRUSS FOR FURTHER INFORMATION.

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



**WILLERTON
ENGINEERING**

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WILLERTON ENGINEERING

CONSULTANTS

REVISIONS

NO.	DATE	DESCRIPTION
0	210603	CONSTRUCTION
1	210608	REVISIONS

PROJECT

**PAULIN
RESIDENCE**

258 SUNSET LANE
SICAMOUS, BC

DRAWING

PROJECT NOTES

FILE

21-156

DATE

8 JUNE 2021

SCALE

1/4" = 1'-0"

DESIGN

BH

ENGINEER

CW

SEAL

SHEET NUMBER

REV

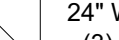

S0.1

1

ICF WALL SCHEDULE

FW1	<p>8" ICF FOUNDATION WALL</p> <ul style="list-style-type: none"> - (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 - ADD CORNER BARS WHERE INDICATED ON PLAN <p>20" WIDE x 8" DEEP CONCRETE STRIP FOOTING</p> <ul style="list-style-type: none"> - (3) 15M CONTINUOUS BARS
FW2	<p>6" FOUNDATION WALL</p> <ul style="list-style-type: none"> - (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 8" LONG ALTERNATING HOOKS + MIN 24" PROJECTION PAST TOP OF FOOTING - ALL WALL STEEL PLACED IN CENTER OF WALL - ADD CORNER BARS WHERE INDICATED ON PLAN <p>48" WIDE x 8" DEEP CONCRETE STRIP FOOTING</p> <ul style="list-style-type: none"> - 15M BARS @ 16" c/c EACHWAY, CHAIRED 3" CLEAR OF GRADE
FW3	<p>PART 9 IFC FOUNDATION WALL + STRIP FOOTING</p> <ul style="list-style-type: none"> - NOT IN WILLERTON ENGINEERING'S DESIGN SCOPE

CONCRETE STRIP FOOTING SCHEDULE

	<p>24" WIDE x 8" DEEP CONCRETE STRIP FOOTING</p> <ul style="list-style-type: none"> - (3) 15M CONTINUOUS BARS - 10M LATERAL BARS @ 16" c/c
	<p>PART 9 INTERIOR STRIP FOOTING</p> <ul style="list-style-type: none"> - NOT IN WILLERTON ENGINEERING'S DESIGN SCOPE

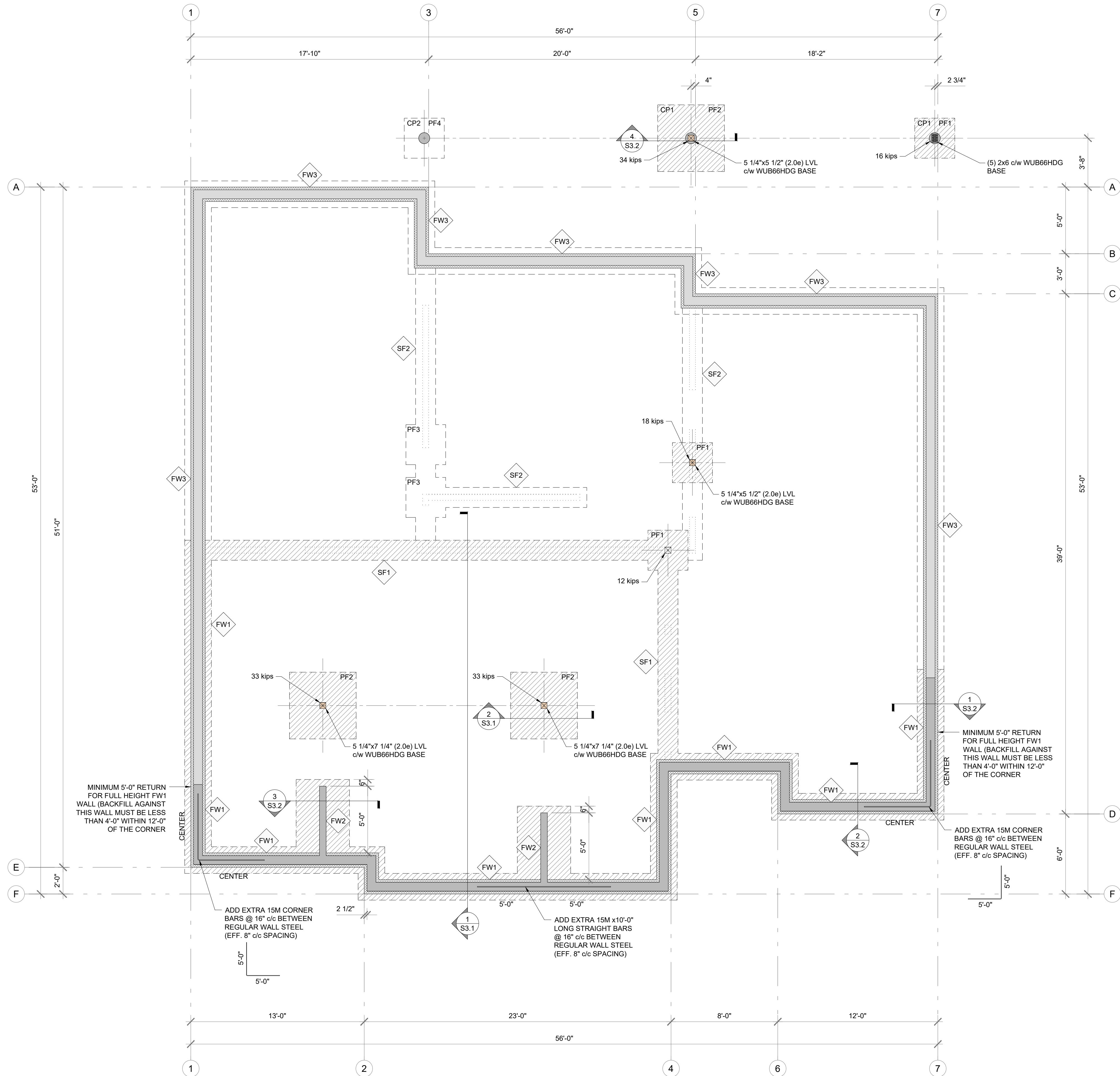
CONCRETE PAD FOOTING SCHEDULE

PF1	3'-6"x3'-6"x8" THICK CONCRETE PAD FOOTING c/w (4) 15M BARS EACHWAY, CHAISED 3" CLEAR OF GRADE
PF2	5'-0"x5'-0"x10" THICK CONCRETE PAD FOOTING c/w (6) 15M BARS EACHWAY, CHAISED 3" CLEAR OF GRADE
PF3	PART 8 PAD FOOTING NOT IN WILLERTON ENGINEERING'S DESIGN SCOPE

CONCRETE PEDESTAL SCHEDULE

CP1	10" Ø CONCRETE SONOTUBE OR 10"x10" SQUARE PEDESTAL c/w 10M CLOSED-TIE STIRRUPS @ 8" c/c AROUND (4) 15M VERTICAL BARS c/w 8" LONG HOOKS UNDER FOOTING BARS
CP2	PART 9 PEDESTAL - NOT IN WILLERTON ENGINEERING'S DESIGN SCOPE

POINT LOADS OVER 10,000 LBS ARE INDICATED ON PLAN AND ARE UN-FACTORED.



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

[illegible]

PROJECT

PAULIN
RESIDENCE

258 SUNSET LANE
SICAMOUS, BC

DRAWING

PARTIAL
FOUNDATION
PLAN

FILE

21-156

DATE _____

3 JUNE 2021

SCALE

$$1/4" = 1'-0"$$

DESIGN

BH

ENGINEER

CW

SEAL

SHEET NUMBER	REV
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S1.1

1

FRAMING NOTES

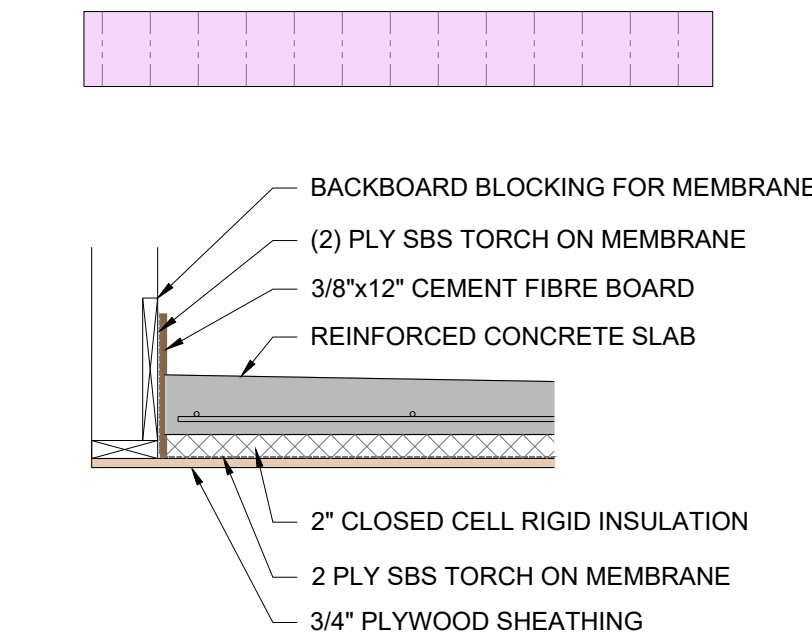
1. ALL BEAMS/HEADERS PER SUPPLIER OR BC BUILDING CODE, 2019, PART 9, UNLESS NOTED OTHERWISE
2. ALL BEAMS / HEADERS ARE TO BE SUPPORTED PER FRAMING SPECIFICATIONS OUTLINED IN BC BUILDING CODE, 2019, PART 9, UNLESS NOTED OTHERWISE
3. POST NOTATION LEGEND:
- NUMBER OF FULL HEIGHT STUDS
STUD SIZE
NUMBER OF CRIPPLES
- 2x6/2
- INDICATES POINT LOAD FROM ABOVE
4. ALL POINT LOADS TO BE BLOCKED SOLID TO FOUNDATION OR A SUPPORTING BEAM

WALL TYPES

- 1.1 GARAGE FLOOR LOAD BEARING WALL FRAMING TYPE W1
- 2x6 STUDS @ 12" o/c
 - PLACE STUDS DIRECTLY BENEATH EVERY GARAGE JOIST
 - BLOCK SOLID BETWEEN JOISTS @ 1/2 HEIGHT
 - 1/2" Ø ANCHOR BOLTS @ 48" c/c EMBED 5"
- 1.2 LOAD BEARING WALL FRAMING
- STUD SIZE AND SPACING PER PART 9, BCBC
 - NOT IN WILLERTON ENGINEERING'S DESIGN SCOPE
- 1.3 NON-LOAD BEARING WALL FRAMING
- STUD SIZE AND SPACING PER PART 9, BCBC
 - NOT IN WILLERTON ENGINEERING'S DESIGN SCOPE

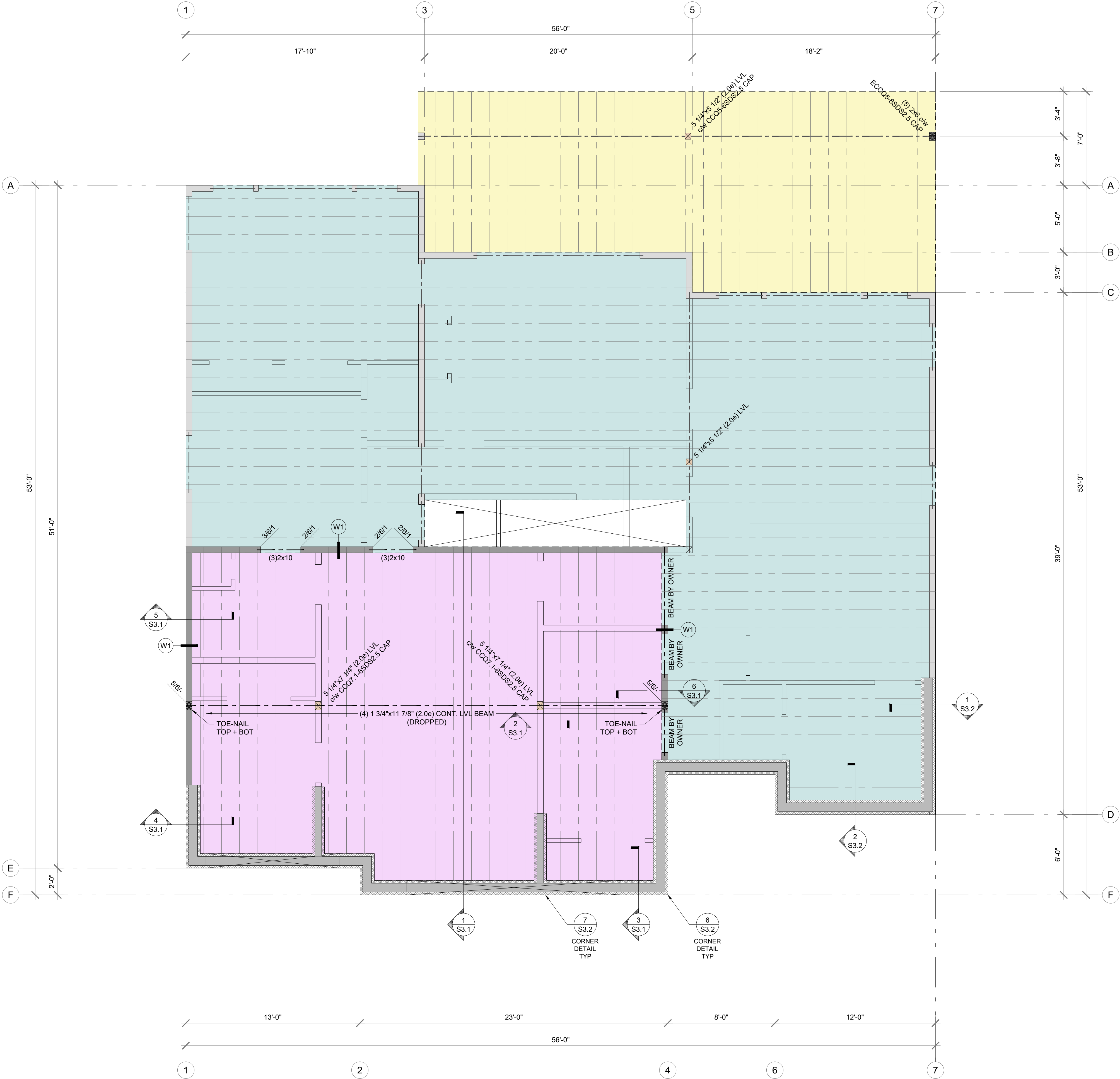
GARAGE FLOOR SYSTEM (GFS)

1. CONCRETE SLAB (MAX 5" THICK SLOPING TO MIN 3" THICK @ DRAINS) 4" AVERAGE THICKNESS c/w 10M BARS @ 16" c/c EACH WAY.
2. 2" CLOSED CELL RIGID INSULATION WITH MIN 20 PSI COMPRESSIVE STRENGTH. USE 3/8" x 12" CEMENT FIBRE BOARD ON VERTICAL SURFACE OVER SBS MEMBRANE TO PROTECT MEMBRANE FROM CONCRETE. ATTACH CEMENT FIBRE BOARD WITH PL400 GLUE. - DO NOT PUNCTURE MEMBRANE.
3. (2) LAYERS OF SBS TORCH ON MODIFIED BITUMEN ROOFING MEMBRANE. ENSURE MEMBRANE WRAPS MIN 12" UP WALL FACES AND 6" DOWN EXTERIOR DOOR OPENINGS. BLOCK BETWEEN WALL STUDS TO PROVIDE A SOLID SURFACE FOR TORCH ON MEMBRANE TO ADHERE TO.
4. 3/4" PLYWOOD SHEATHING.
5. 2x12 SELECT STRUCTURAL FLOOR JOISTS @ 12" c/c. ENSURE PLYWOOD SHEATHING IS FASTENED TO JOISTS WITH MIN. 2 1/2" COMMON WIRE NAILS @ MAX 6" c/c ALONG FRAMING MEMBERS.



FLOOR ASSEMBLIES

- 1.1 MAIN FLOOR FRAMING
- MAIN FLOOR FRAMING PER PART 9, BC BUILDING CODE ON JOISTS BY JOIST SUPPLIER
- 1.2 EXTERIOR DECK FRAMING
- DECK FRAMING PER PART 9, BC BUILDING CODE ON JOISTS BY JOIST SUPPLIER



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

REVISIONS		
NO.	DATE	DESCRIPTION
0	210603	CONSTRUCTION
1	210608	REVISIONS

PROJECT

PAULIN
RESIDENCE

258 SUNSET LANE
SICAMOUS, BC

DRAWING

PARTIAL MAIN
FLOOR FRAMING
PLAN

FILE
21-156

DATE
8 JUNE 2021

SCALE
1/4" = 1'-0"

DESIGN
BH

ENGINEER
CW

SEAL

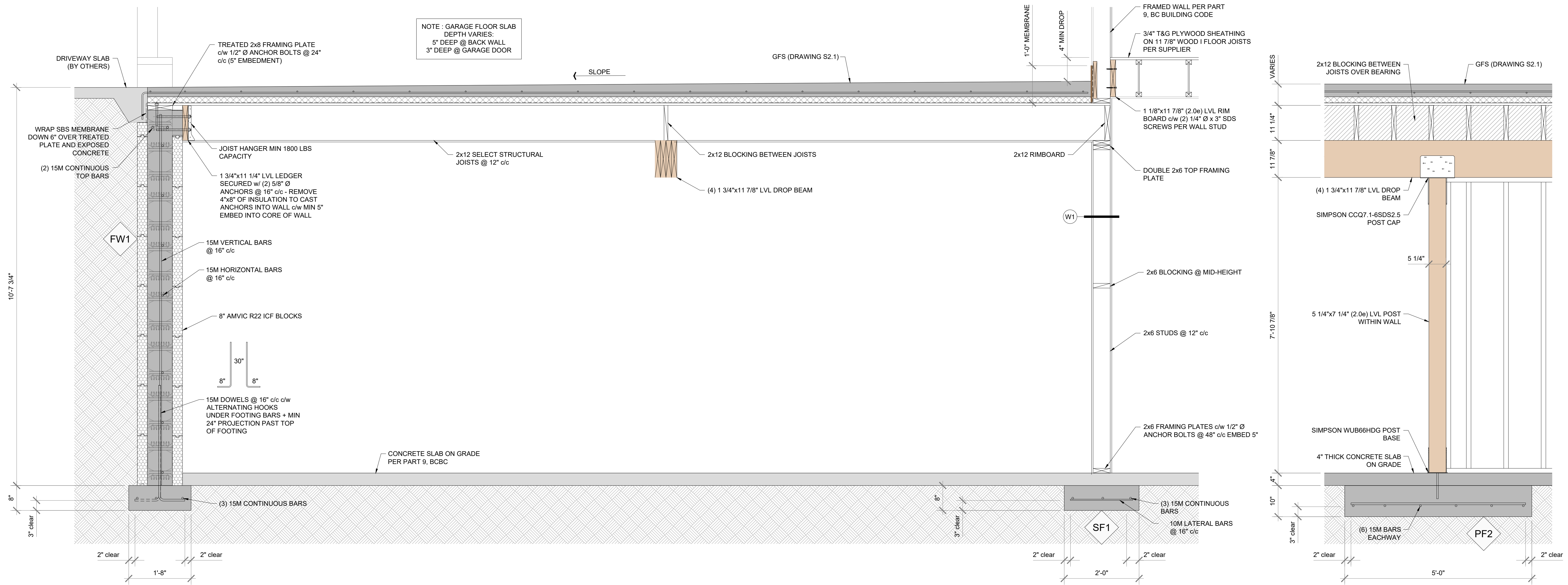
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PROJECT
**PAULIN
RESIDENCE**
258 SUNSET LANE
SICAMOUS, BC

DRAWING
**STRUCTURAL
DETAILS**

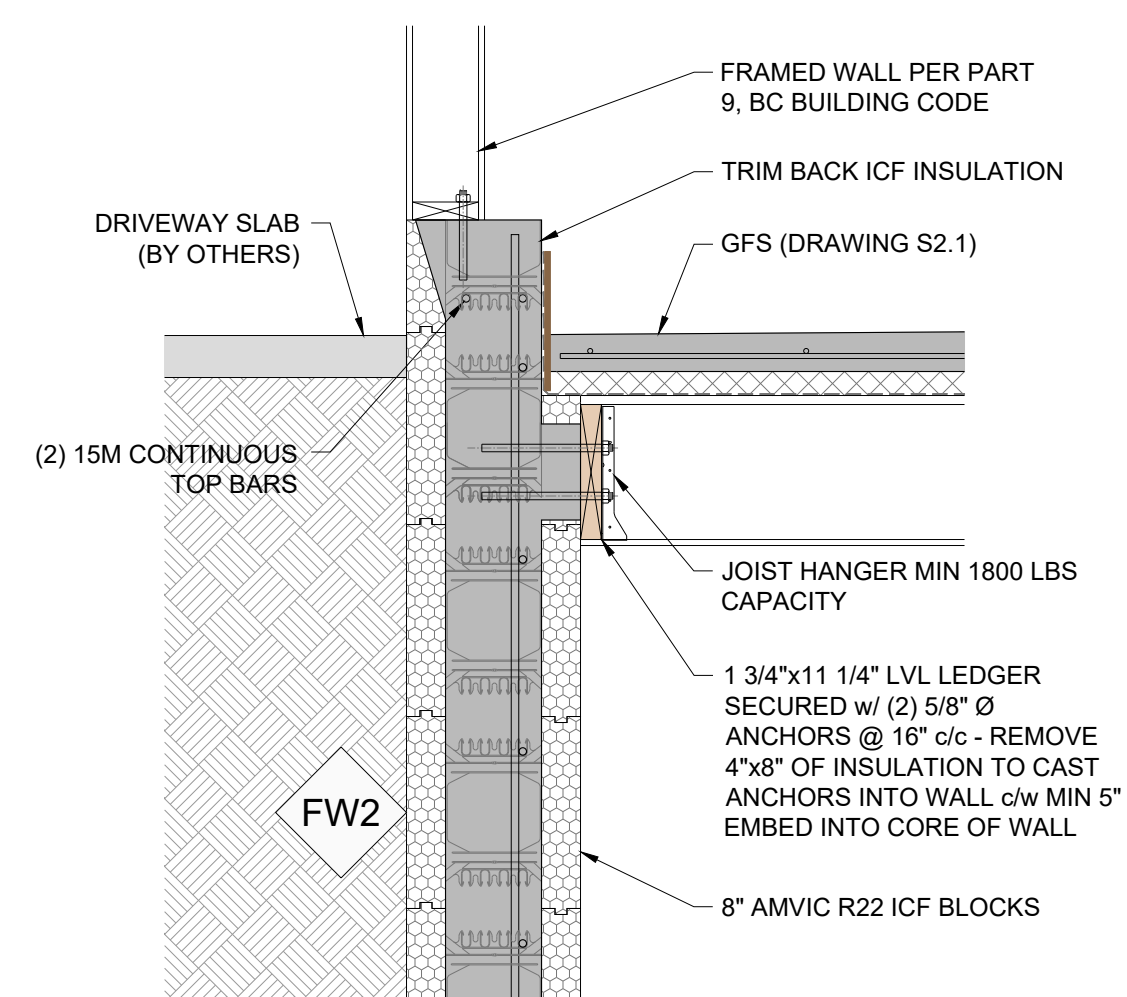
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SHEET NUMBER
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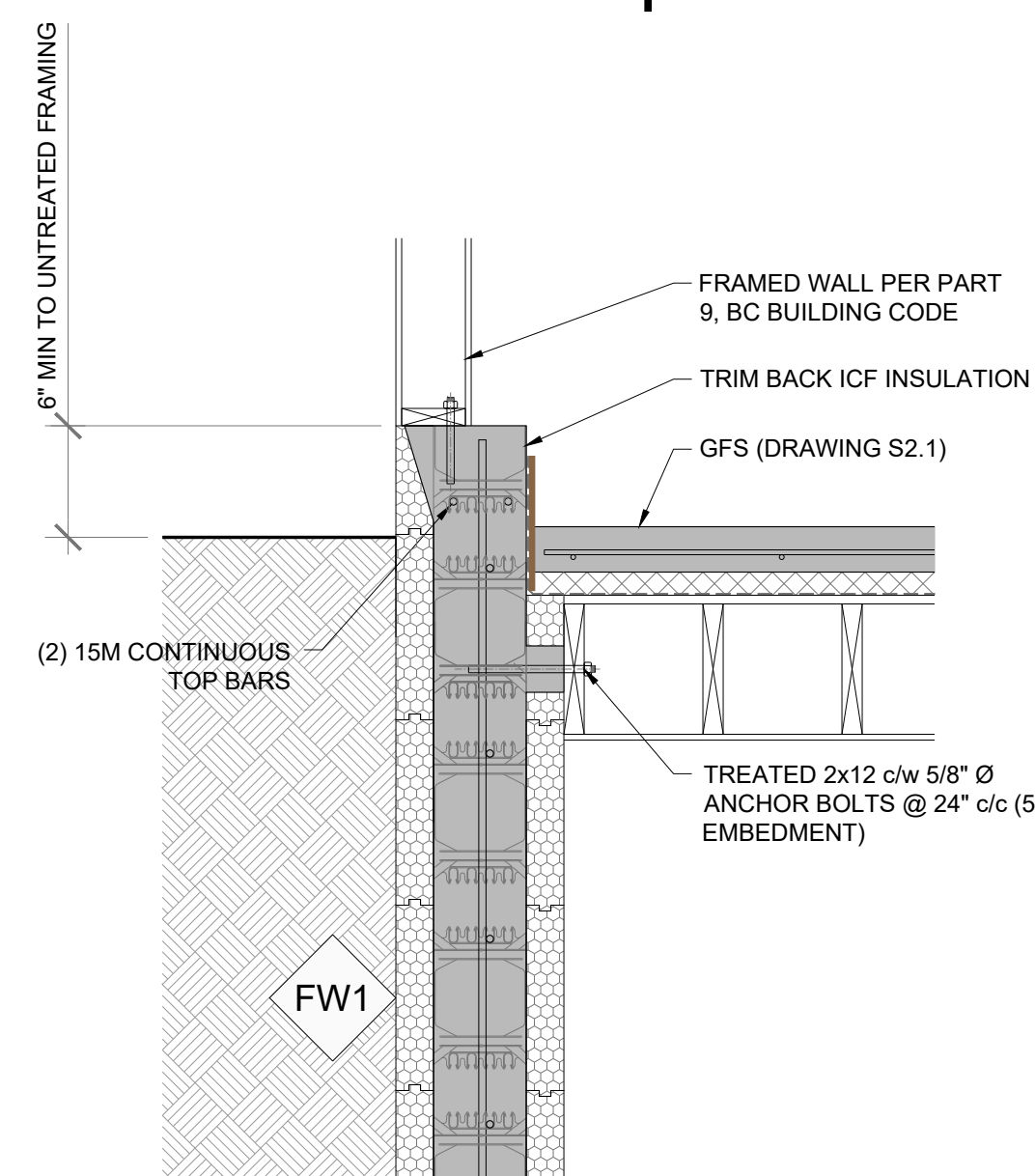


1 FOUNDATION SECTION
S1.1 SCALE: 3/4"=1'-0"

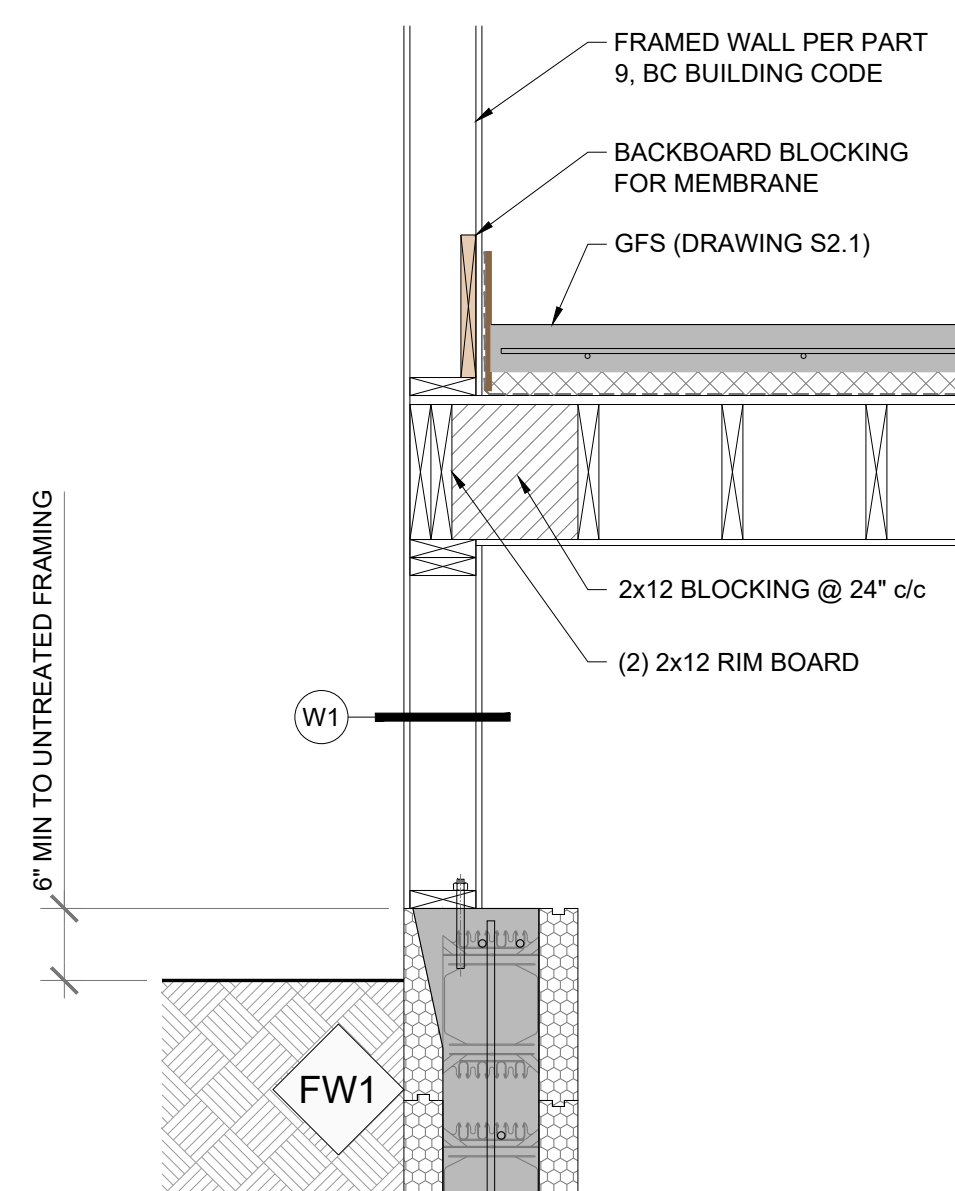
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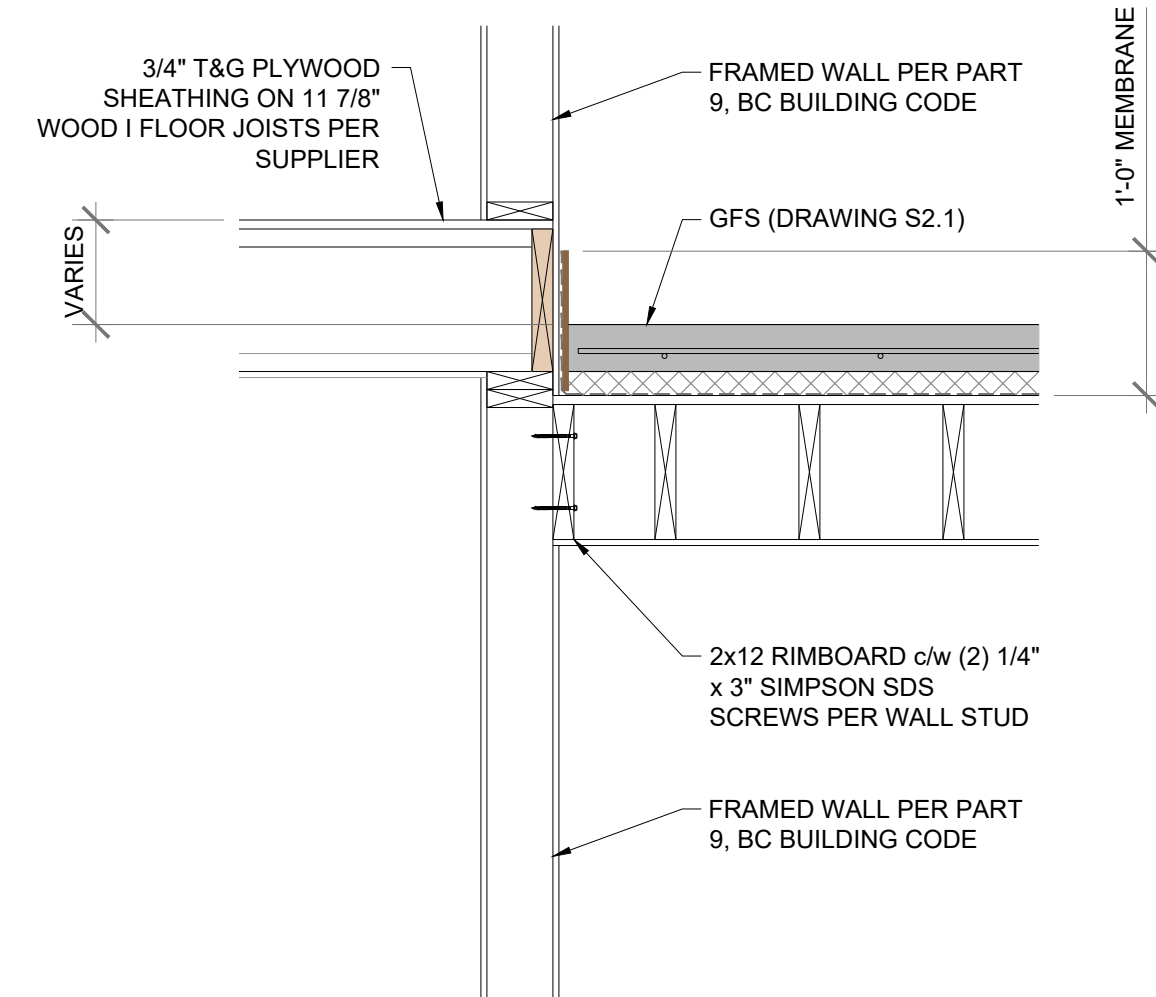
3 GARAGE FLOOR FRAMING DETAIL
S1.1 SCALE: 3/4"=1'-0"



4 GARAGE FLOOR FRAMING DETAIL
S1.1 SCALE: 3/4"=1'-0"



5 GARAGE FLOOR FRAMING DETAIL
S1.1 SCALE: 3/4"=1'-0"



6 GARAGE FLOOR FRAMING DETAIL
S1.1 SCALE: 3/4"=1'-0"

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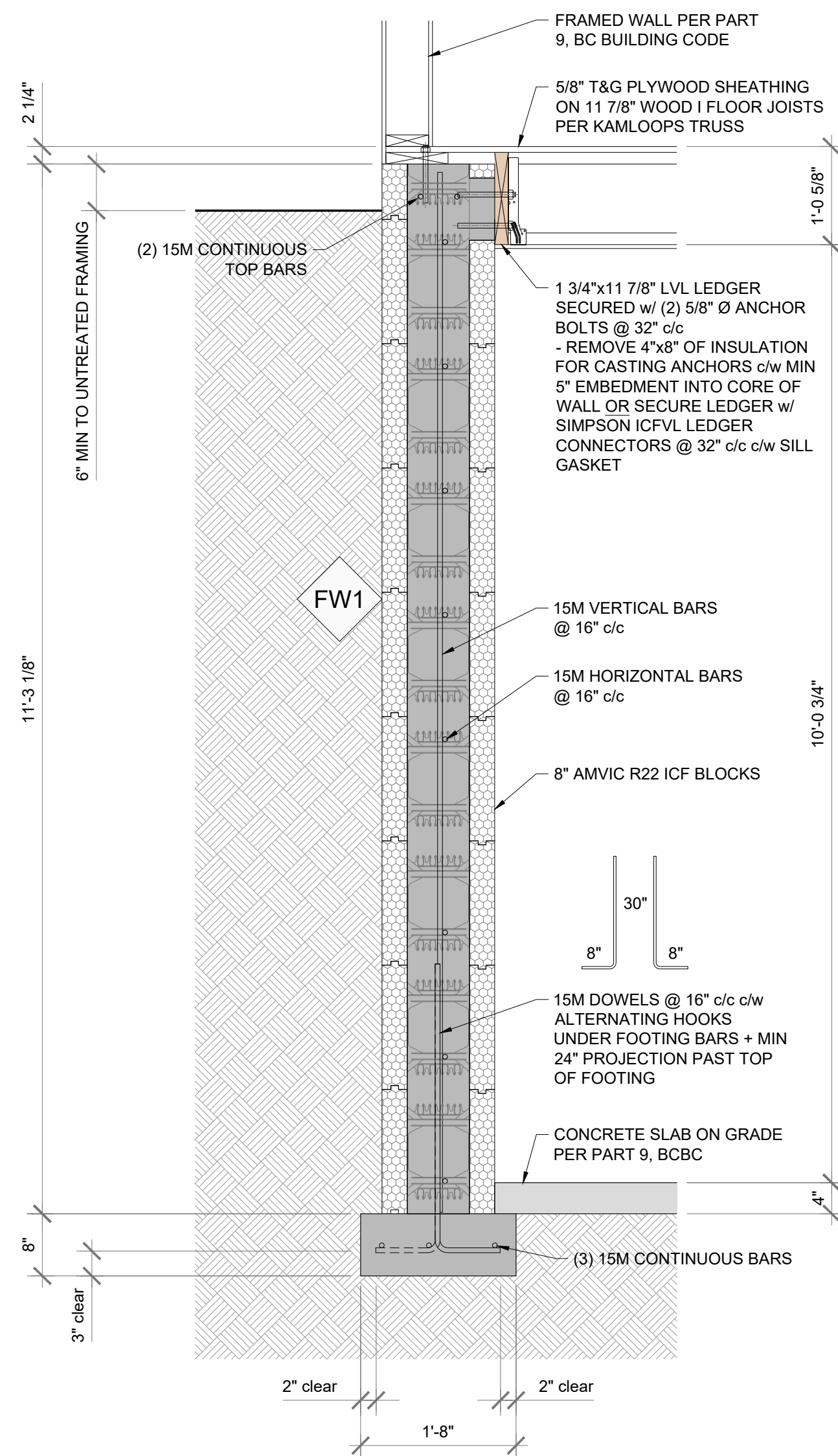
PROJECT
PAULIN RESIDENCE
258 SUNSET LANE
SICAMOUS, BC

DRAWING
STRUCTURAL DETAILS

FILE
21-156
DATE
8 JUNE 2021
SCALE
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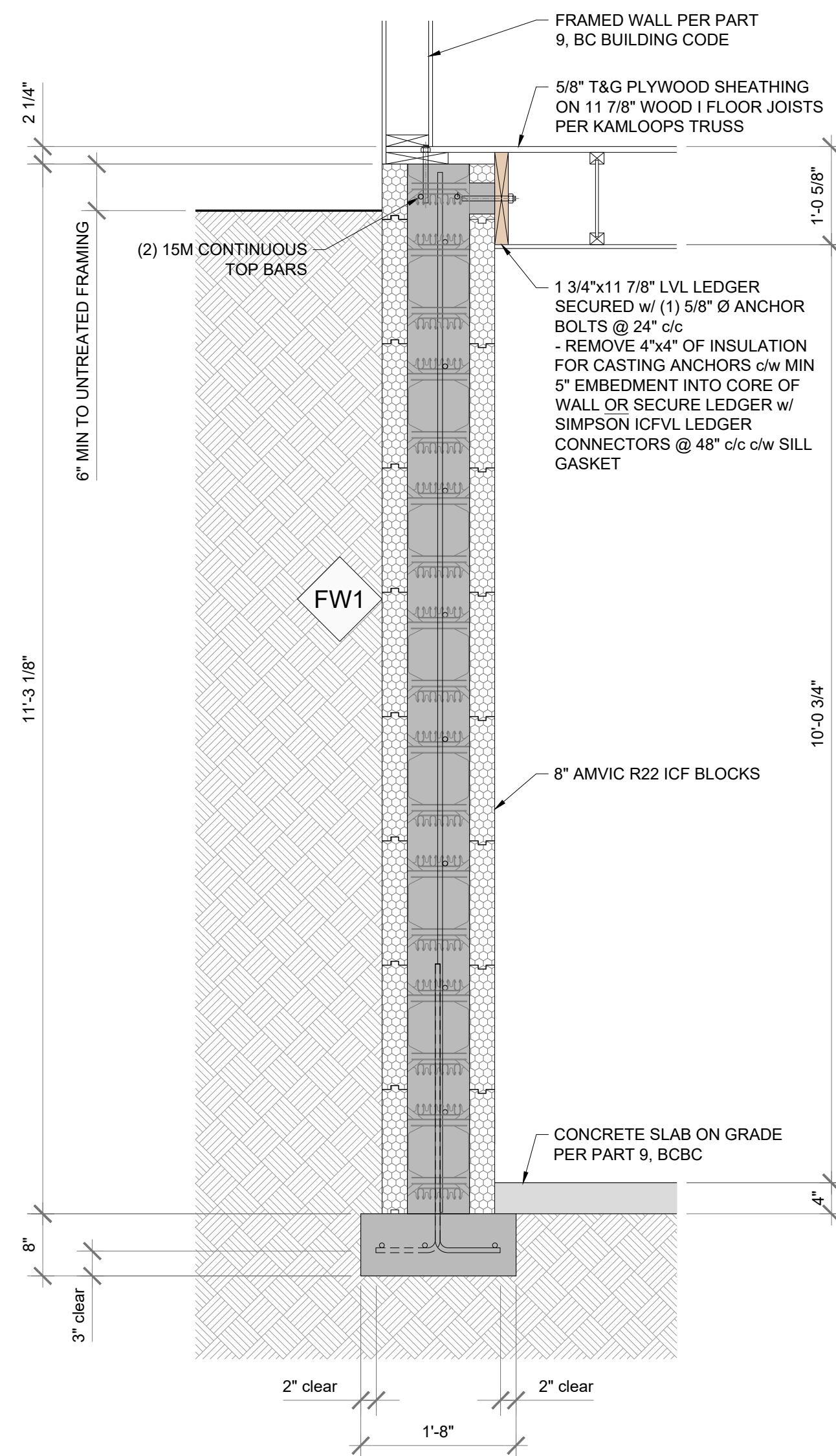
SHEET NUMBER REV

S3.2 1



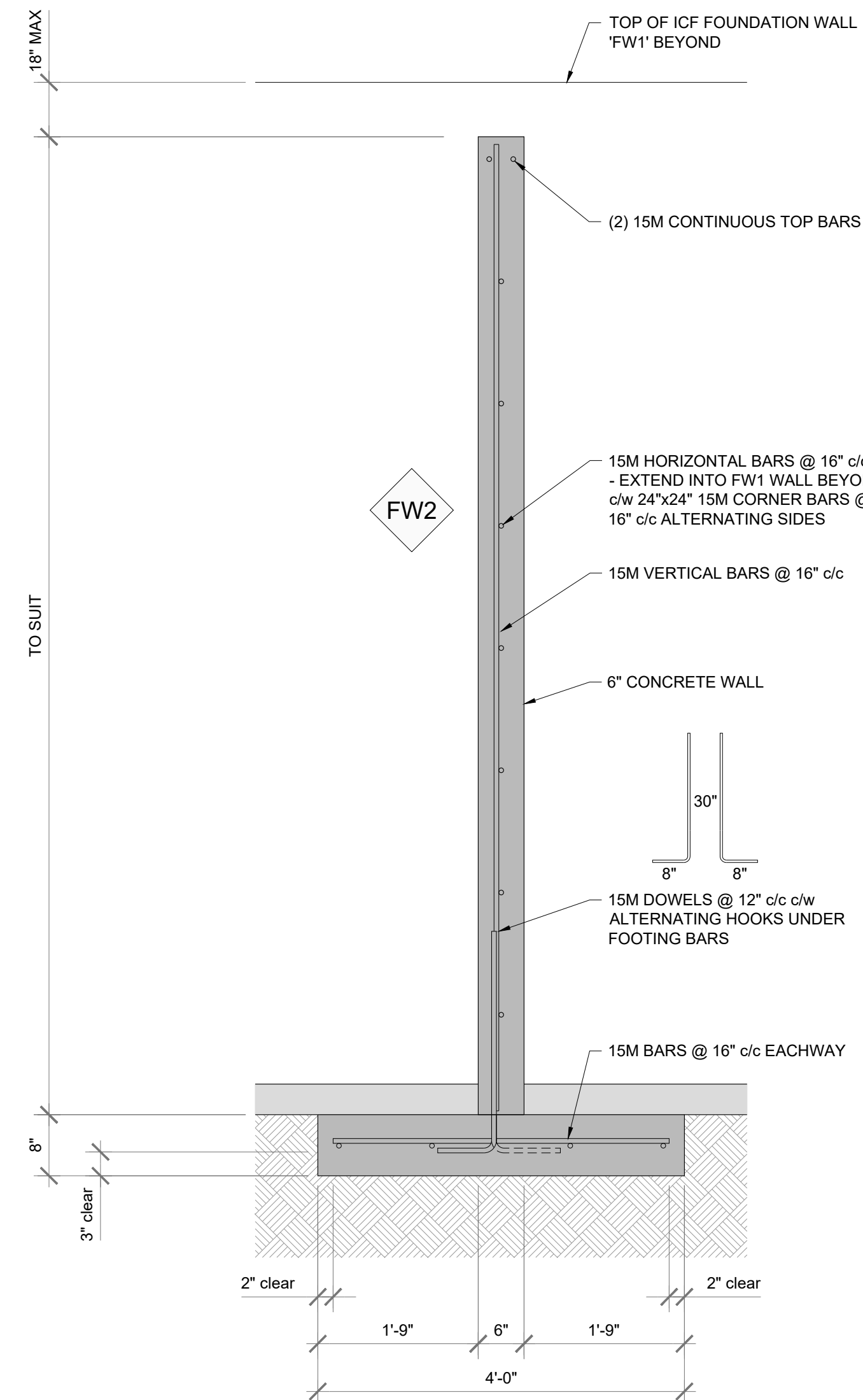
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S1.1 SCALE: 3/4"=1'-0"



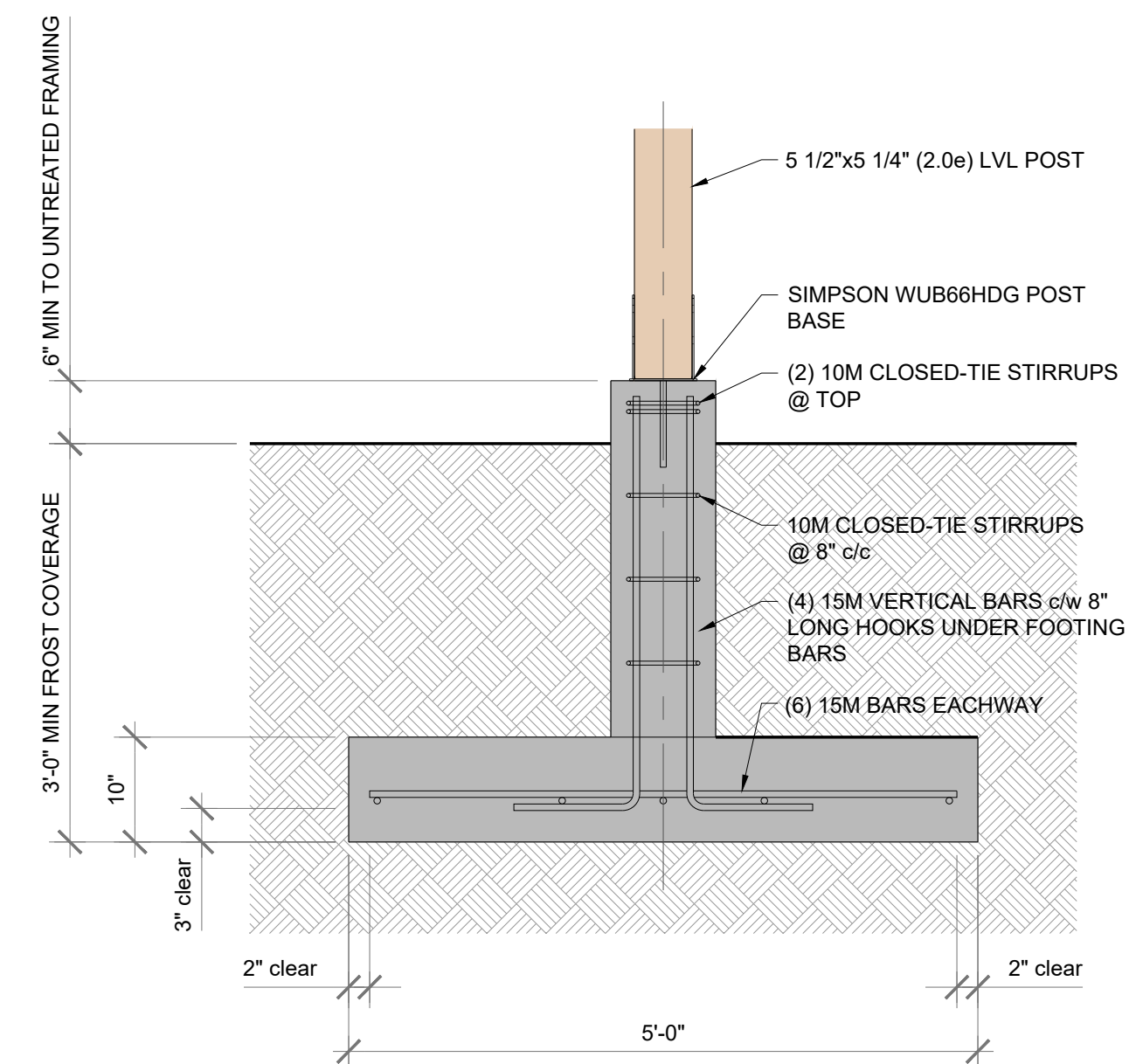
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S1.1 SCALE: 3/4"=1'-0"



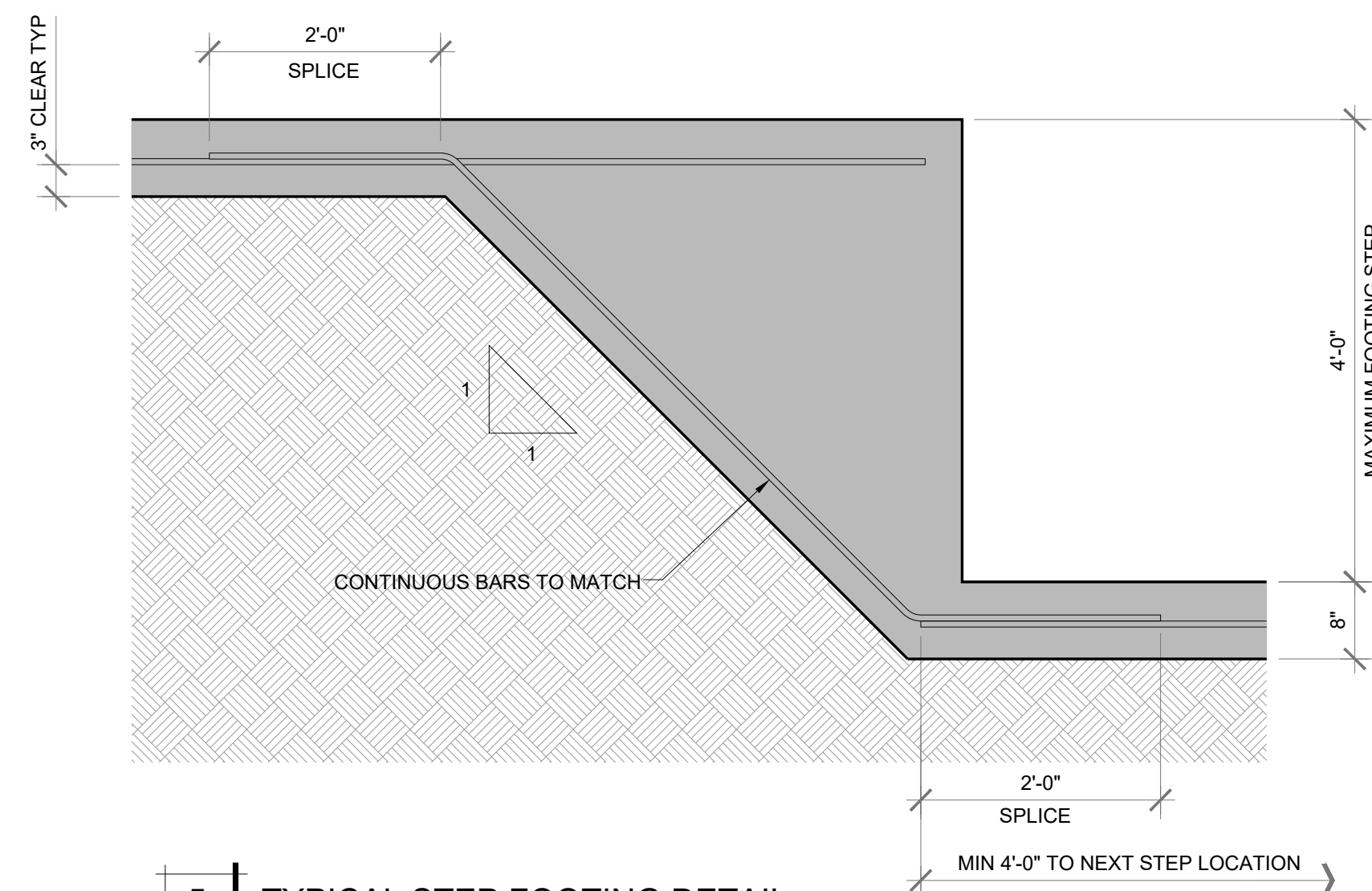
3 BUTTRESS WALL DETAIL

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



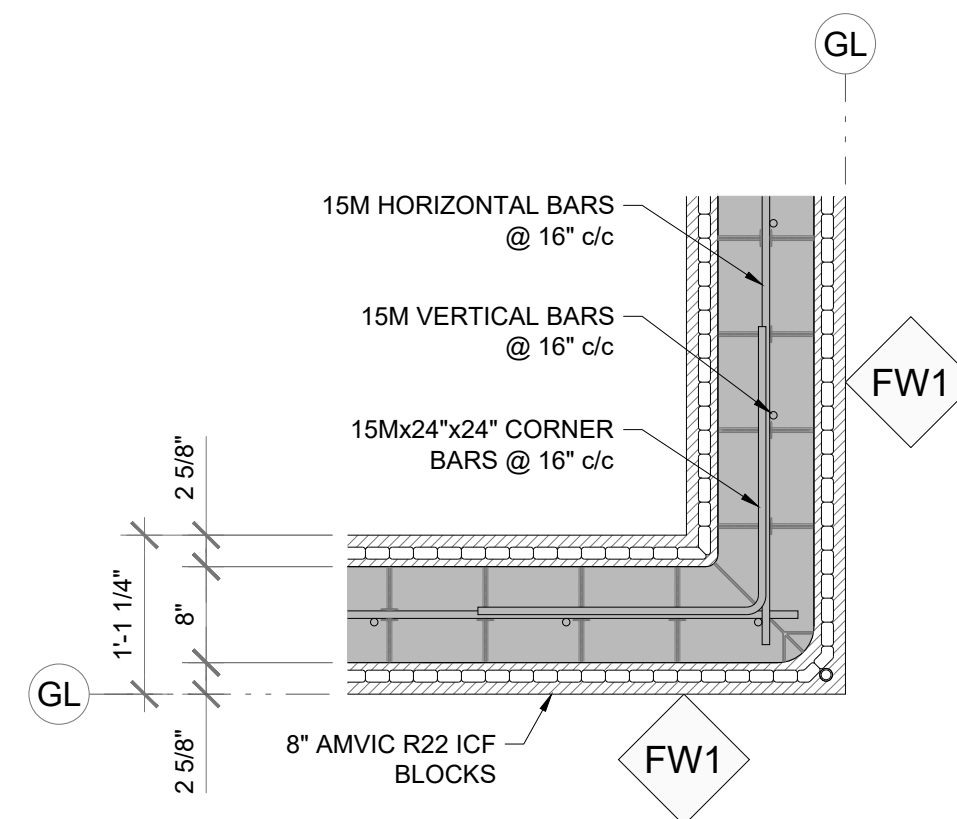
4 PAD FOOTING / PEDESTAL DETAIL

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



5 TYPICAL STEP FOOTING DETAIL

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



6 ICF CORNER DETAIL

S2.1 SCALE: 3/4"=1'-0"

