

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	
Garage Floor Dead Load	70 psf
Garage Floor Live Load or Concentrated Live Load	100 psf 4000lbs
Floor Live Load Deflection	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 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 = 4'-0"
- 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 all 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.
- All cement is to be Type 10. 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-gun.
- 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 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 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.

STRUCTURAL STEEL AND STRUCTURAL WELDING

- Structural Steel Shall Comply with CAN/CSA-S16-14 and the following grades and specifications, unless otherwise noted:
 - Rolled Sections : CAN/CSA-G40.20 & G40.21 - 350W
 - Plates : CSA G40.21 - 300W
 - HSS (Tube) Sections : CAN/CSA-G40.21 - 350W Class C
 - Steel to Steel Connection Bolts - ASTM A325
 - Anchor Bolts : ASTM A307
- All welding work and materials shall comply with CSA W59.
- All structural steel shall be detailed, fabricated and erected in accordance with CAN/CSA S16-14.
- Center all bearing plates under beams unless noted otherwise.
- Do not cut or core any openings in any structural steel members without prior written approval from Willerton Engineering.

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, DETAILS & SECTIONS
S2.1	GARAGE FRAMING PLAN
S2.2	GARAGE DETAILS & SECTIONS



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CONSULTANTS

REVISIONS

NO.	DATE	DESCRIPTION
0	200825	CONSTRUCTION

PROJECT

**BECK
RESIDENCE**

1021 - 17 AVE SE
SALMON ARM, BC

DRAWING

**PROJECT
NOTES**

FILE

20-199

DATE

25 AUGUST 2020

SCALE

AS NOTED

DESIGN

CD

ENGINEER

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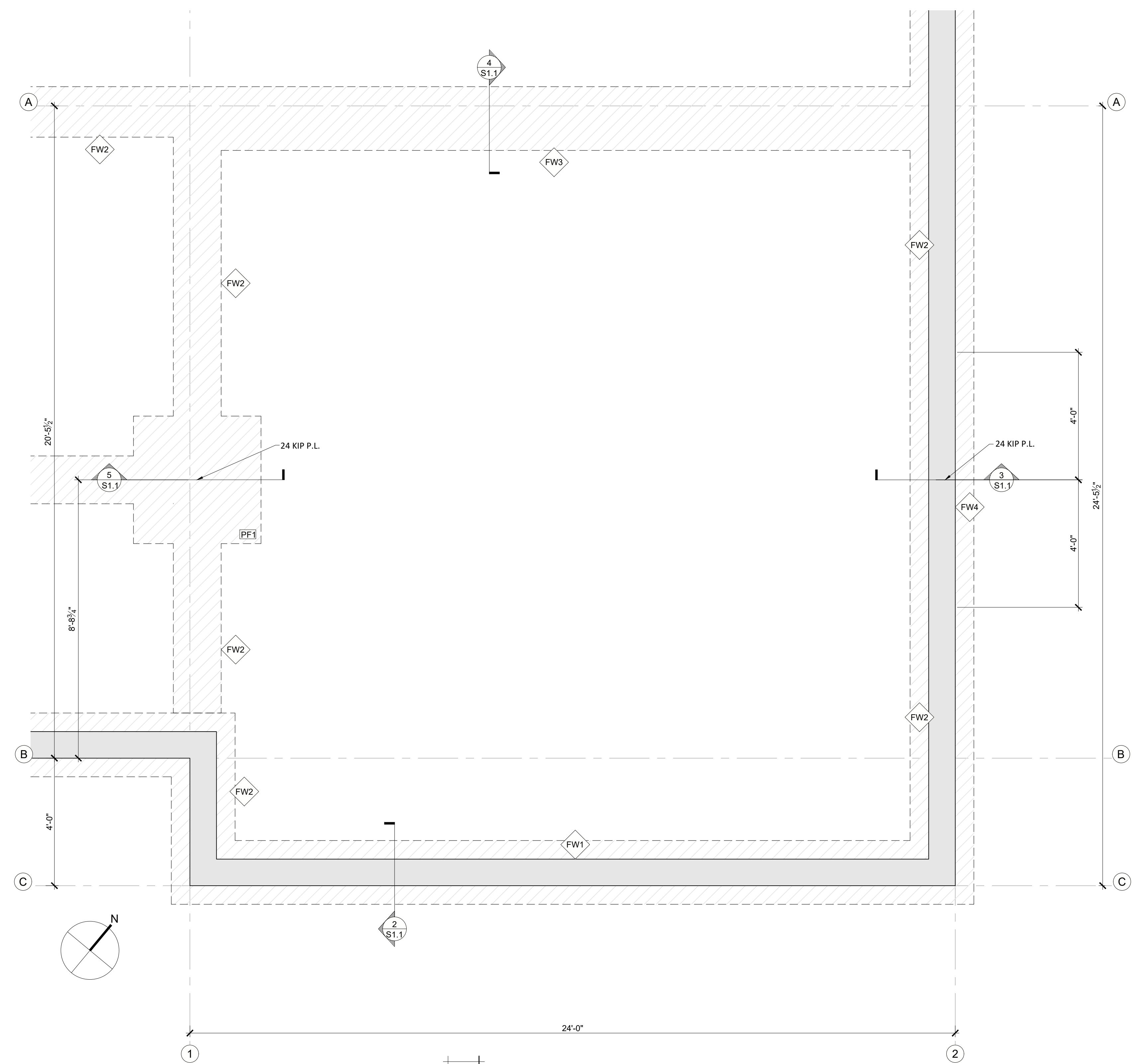
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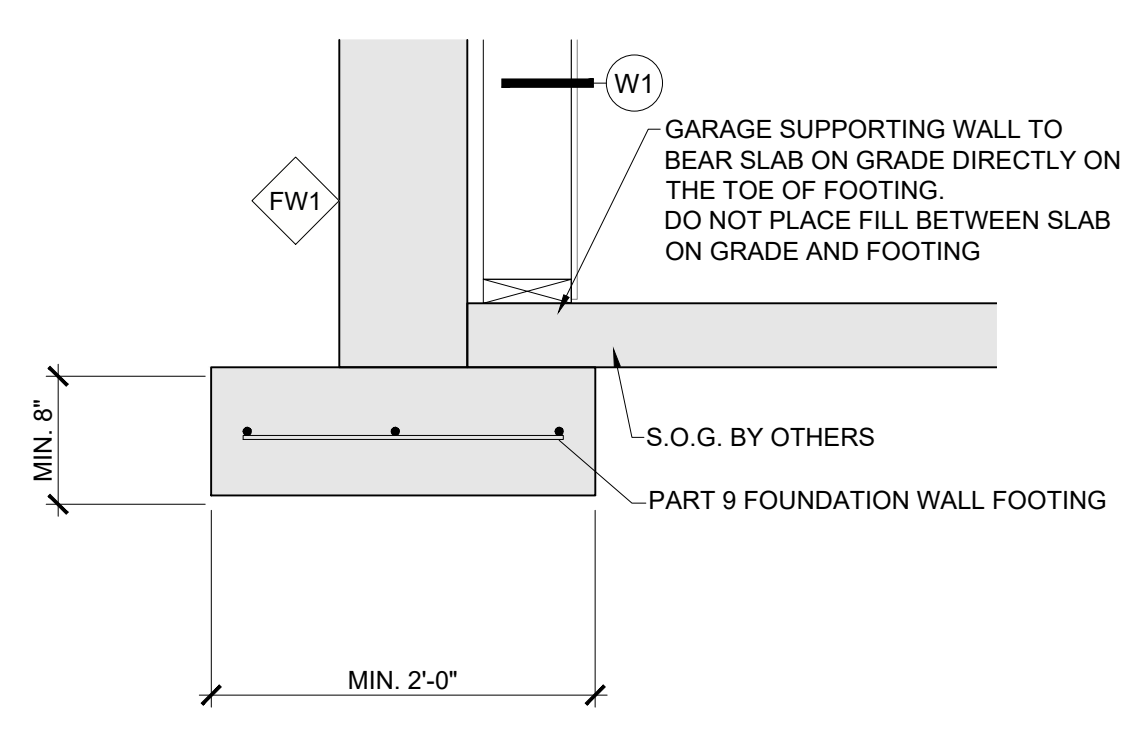
FOUNDATION WALL SCHEDULE	
FW1	PART 9 FOUNDATION WALL SUPPORTING GARAGE FLOOR FRAMING
FW2	PART 9 FOUNDATION WALL OR STRIP FOOTING NOT SUPPORTING FLOOR GARAGE FRAMING
FW3	INTERIOR STRIP FOOTING SUPPORTING GARAGE FLOOR FRAMING - 24" WIDE x 8" DEEP CONCRETE STRIP FOOTING - (3) 15M CONTINUOUS BARS
FW4	10" THICK FULL HEIGHT CONCRETE 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 10" LONG ALTERNATING HOOKS 30° LONG - ALL WALL STEEL PLACED IN CENTER OF WALL 24" WIDE x 8" DEEP CONCRETE STRIP FOOTING - (3) 15M CONTINUOUS BARS

PAD FOOTING SCHEDULE	
PF1	4'-0" x 4'-0" x 10" THICK CONCRETE PAD FOOTING - (5) 15M BARS EACH WAY CHAIRED 3" OFF GRADE

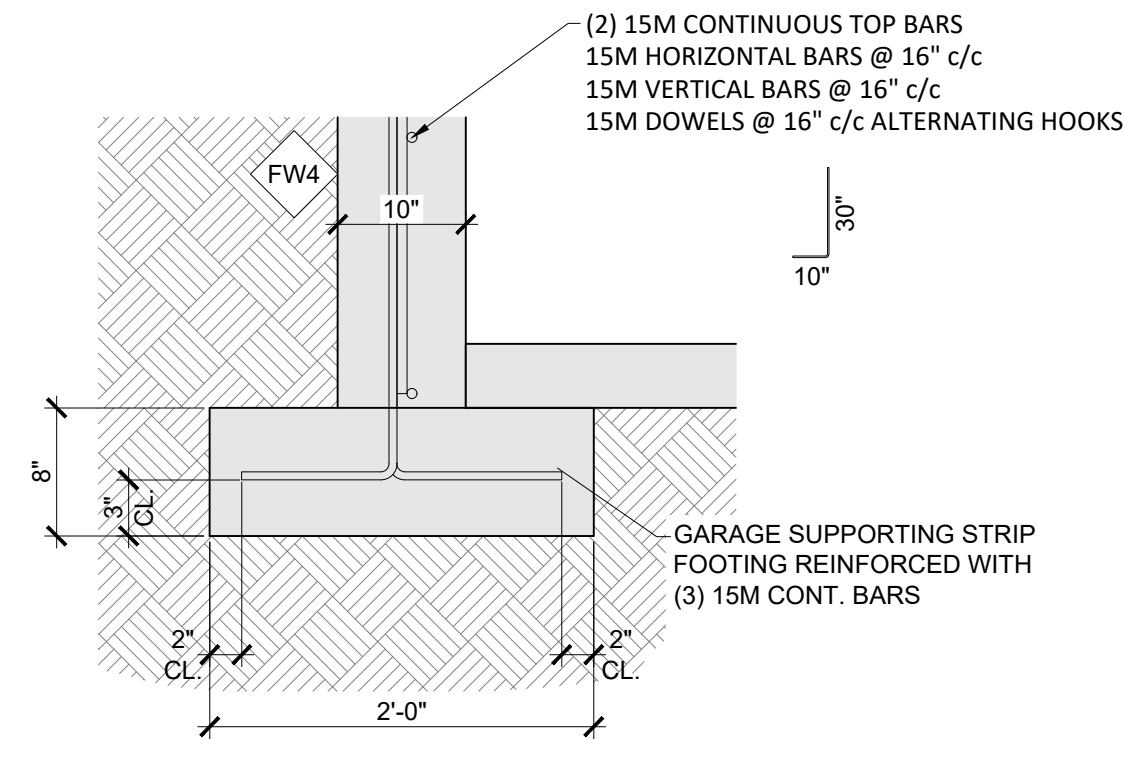
POINT LOADS OVER 10,000 lbs ARE INDICATED AND ARE UNFACTORED



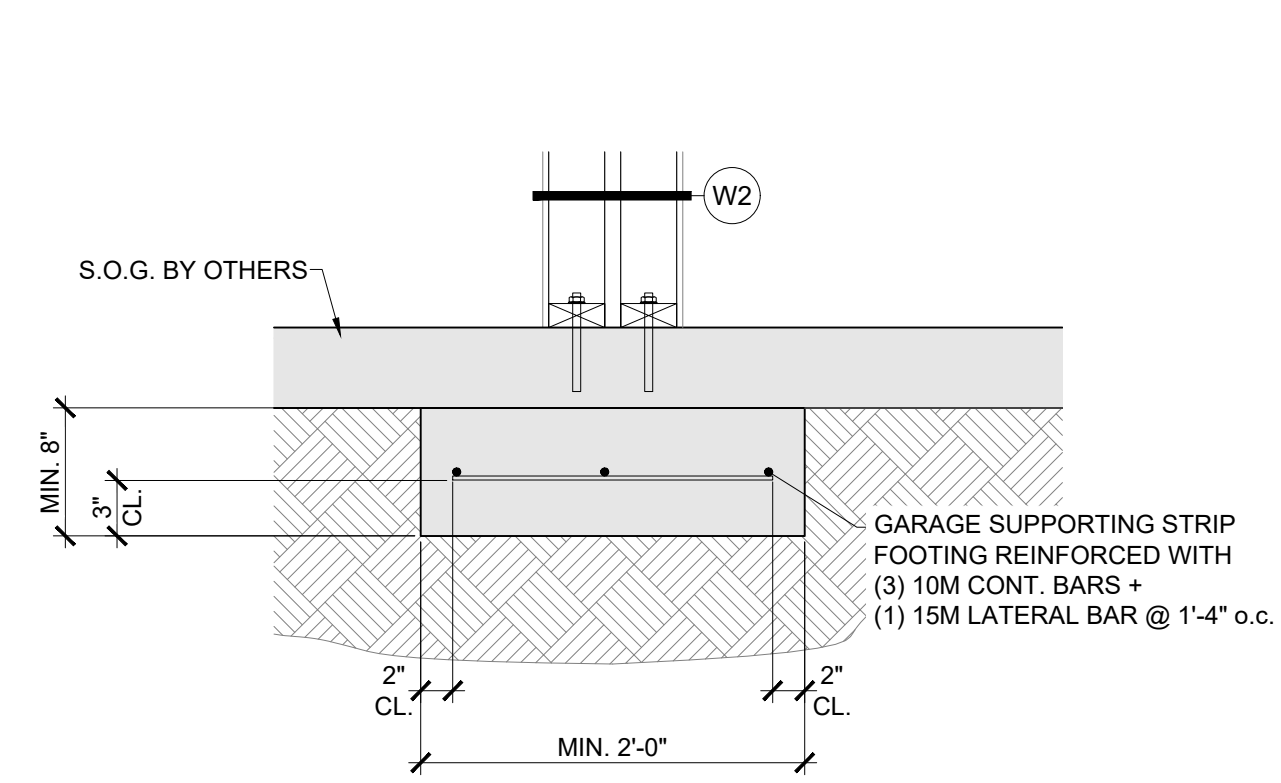
1 PARTIAL FOUNDATION PLAN
SCALE: 1/2"=1'-0"



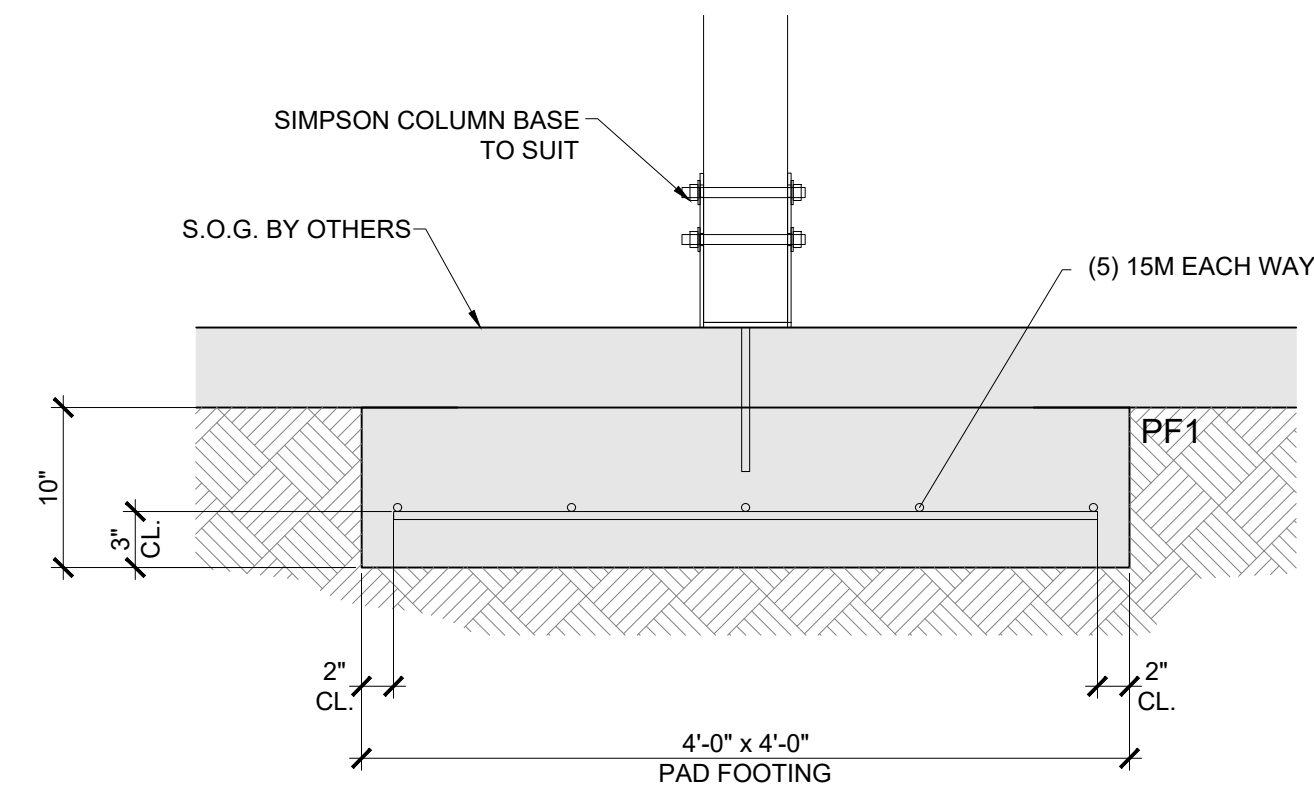
2 FOOTING SECTION
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3 FOOTING SECTION
SCALE: 1"=1'-0"



4 FOOTING DETAIL
SCALE: 1"=1'-0"



5 PAD FOOTING DETAIL
SCALE: 1"=1'-0"

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DRAWING
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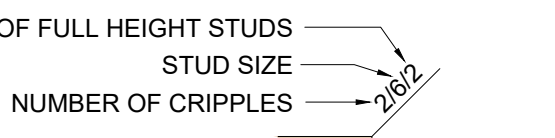
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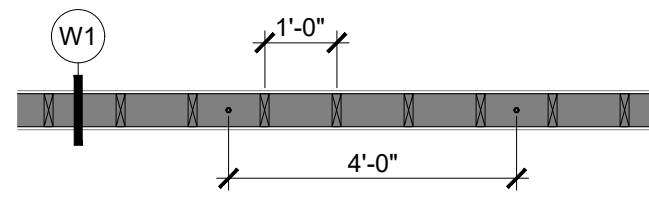
GARAGE FRAMING NOTES

- ALL NEW WOOD BEAMS/HEADERS TO BE AS PER SUPPLIER OR BCBC 2018, PART 9 (UNLESS NOTED OTHERWISE ON PLAN)
- ALL COLUMNS ARE TO BE AS PER SUPPLIER OR BCBC 2018, PART 9 (UNLESS NOTED OTHERWISE ON PLAN)
- POST NOTATION LEGEND:

- JOIST HANGERS MINIMUM 1800 LBS CAPACITY UNO
- ALL POINT LOADS TO BE BLOCKED SOLID TO FOUNDATION OR A SUPPORTING BEAM
- WHEN GARAGE JOISTS CONTACT HOUSE BEARING FRAMED BEARING WALL IN PARALLEL, ATTACH GARAGE JOISTS TO WALL WITH (2) 1/4"x3" SIMPSON SDS SCREWS PER WALL STUD

WALL TYPES

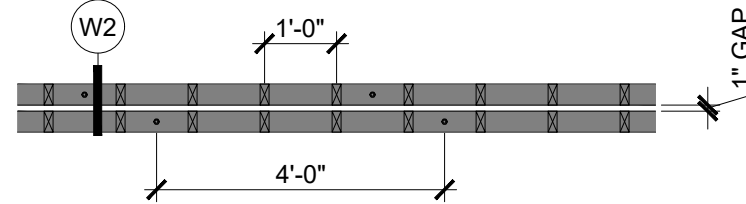
1.1 GARAGE SUPPORTING FRAMED WALL

- 2x6 STUDS @ 12" c/c
- (1) STUD BENEATH EVERY GARAGE JOIST BLOCKED AT 1/2 HEIGHT
- 1/2" Ø ANCHOR BOLTS @ 48" c/c (5" EMBEDMENT)



1.2 GARAGE SUPPORTING FRAMED WALL

- (2) 2x4 STUDS @ 1'-0" o.c.
- (1) STUD BENEATH EVERY GARAGE JOIST BLOCKED AT 1/2 HEIGHT
- 1/2" Ø ANCHOR BOLTS @ 48" c/c (5" EMBEDMENT)



1.3 LOAD BEARING WALL FRAMING

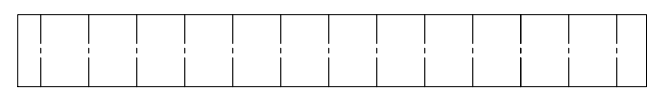
- WALL STUDS AND SPACING PER PART 9



FLOOR ASSEMBLIES

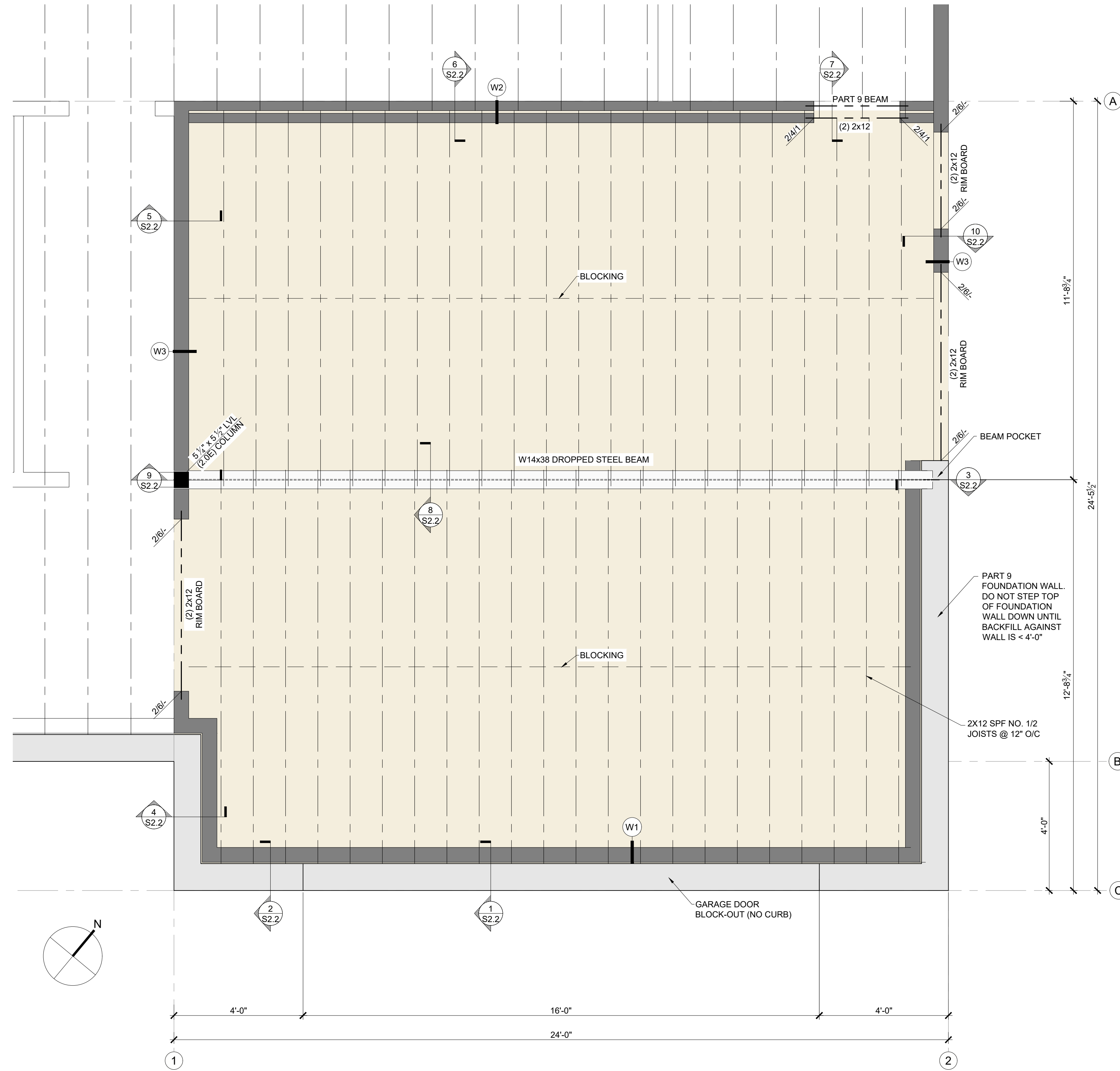
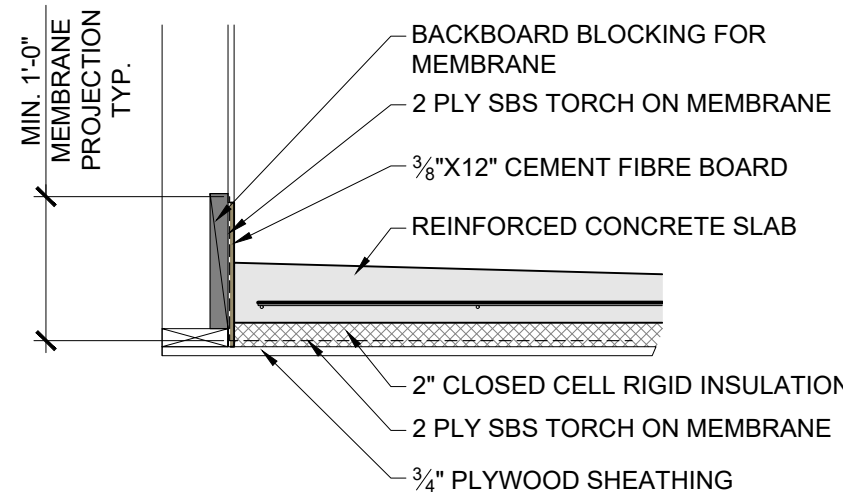
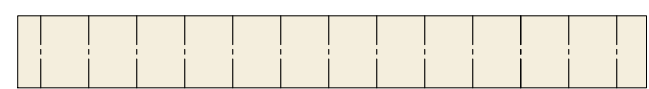
1.1 MAIN FLOOR FRAMING

- JOISTS AS PER MANUFACTURER DESIGN.



GARAGE FLOOR SYSTEM (GFS)

- CONCRETE SLAB (MAX 5" THICK SLOPING TO MIN 3" THICK) 4" AVERAGE THICKNESS c/w 10M BARS @ 16" c/c EACH WAY.
- 2" CLOSED CELL RIGID INSULATION WITH MIN 20 PSI COMPRESSIVE STRENGTH. USE 3/8"x12" 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.
- 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.
- 3/4" PLYWOOD SHEATHING
- 2X12 SPF NO. 1/2 JOISTS @ 12" O/C W/BLOCKING WHERE INDICATED ON PLAN. FASTEN PLYWOOD SHEATHING TO JOISTS WITH PL400 GLUE AND 2-1/2" COMMON WIRE NAILS @ MAX 6" O/C ALONG FRAMING MEMBERS.



1 GARAGE FRAMING
SCALE: 1/2"=1'-0"

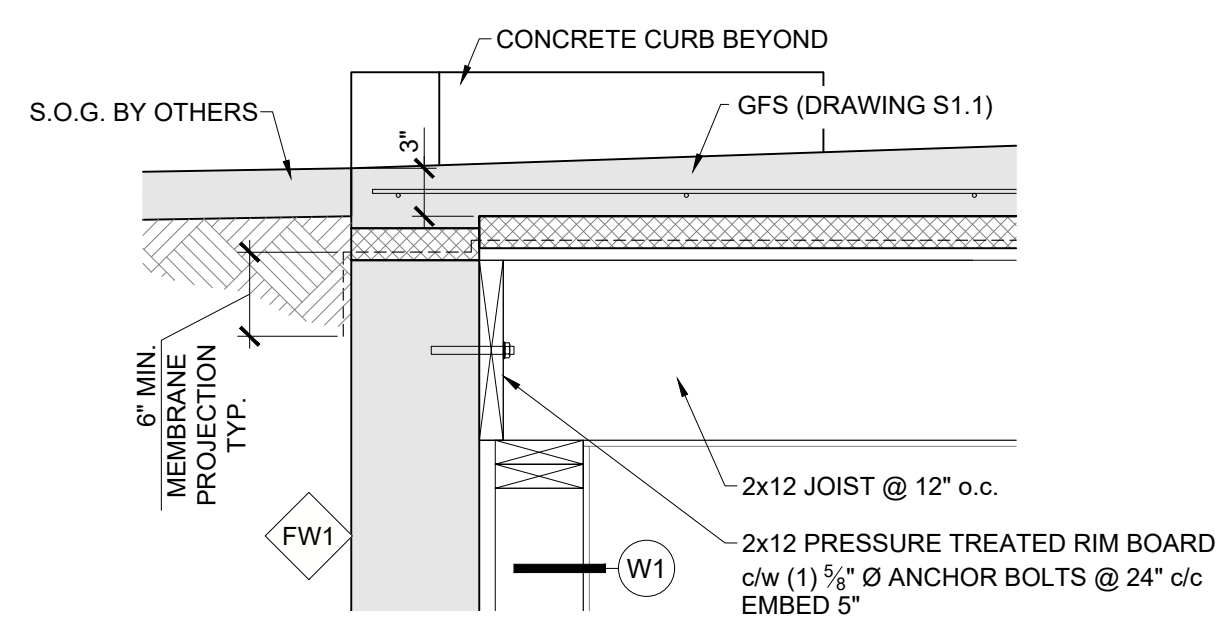
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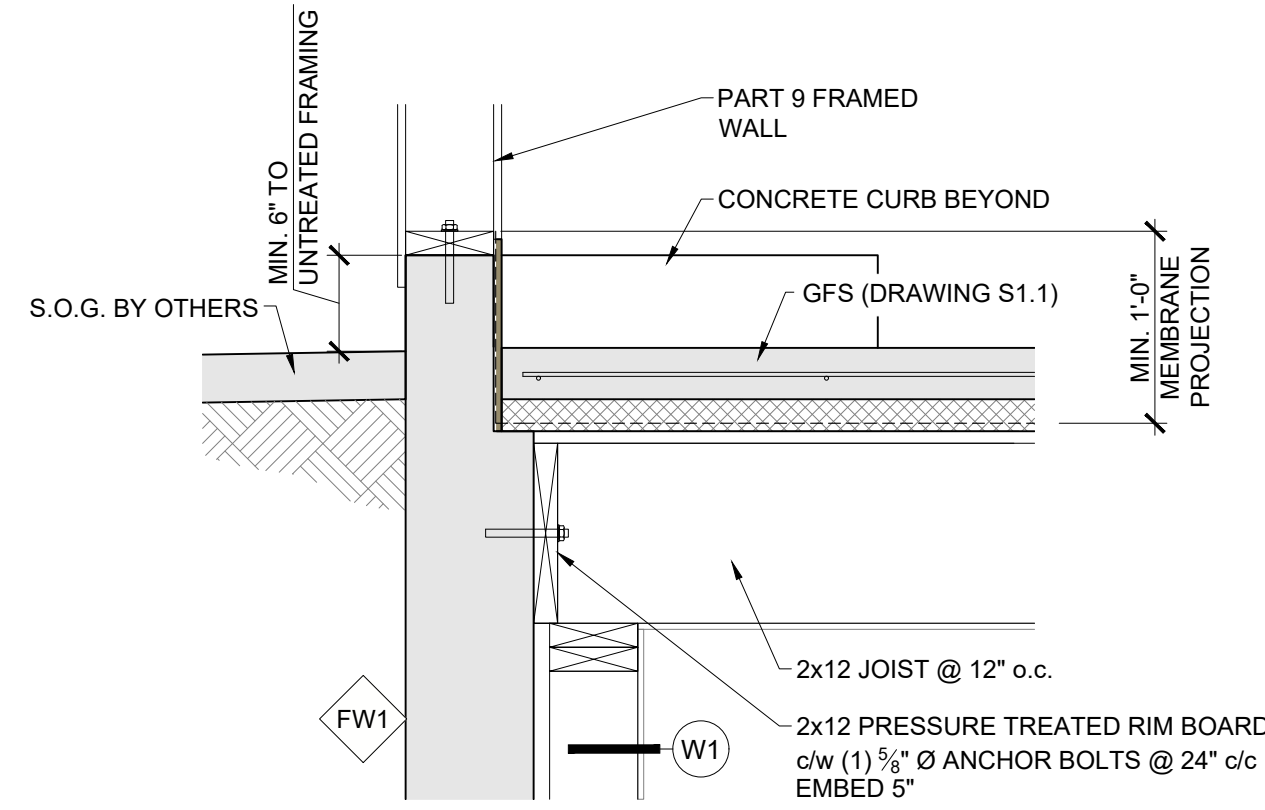
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GARAGE
FRAMING

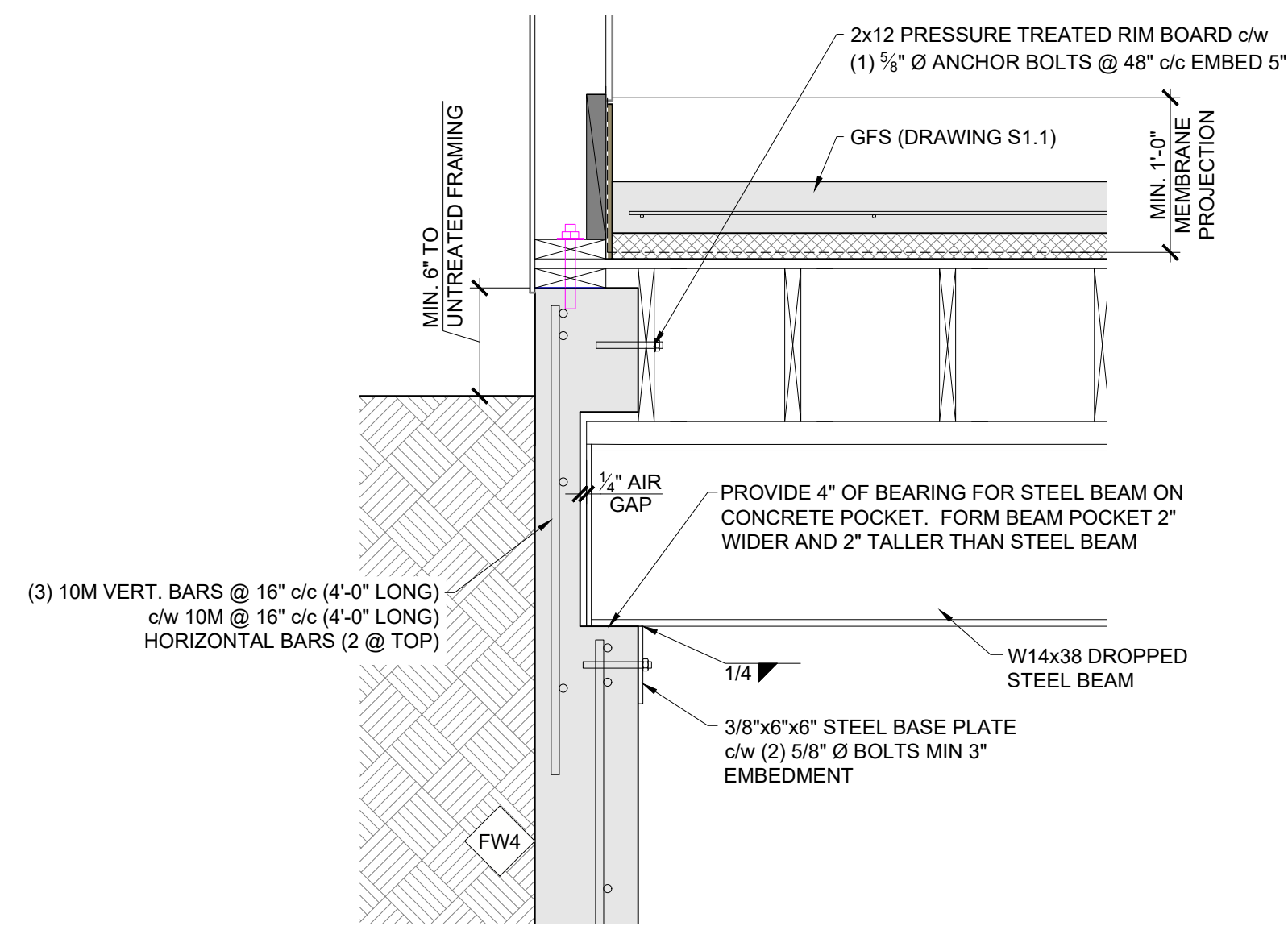
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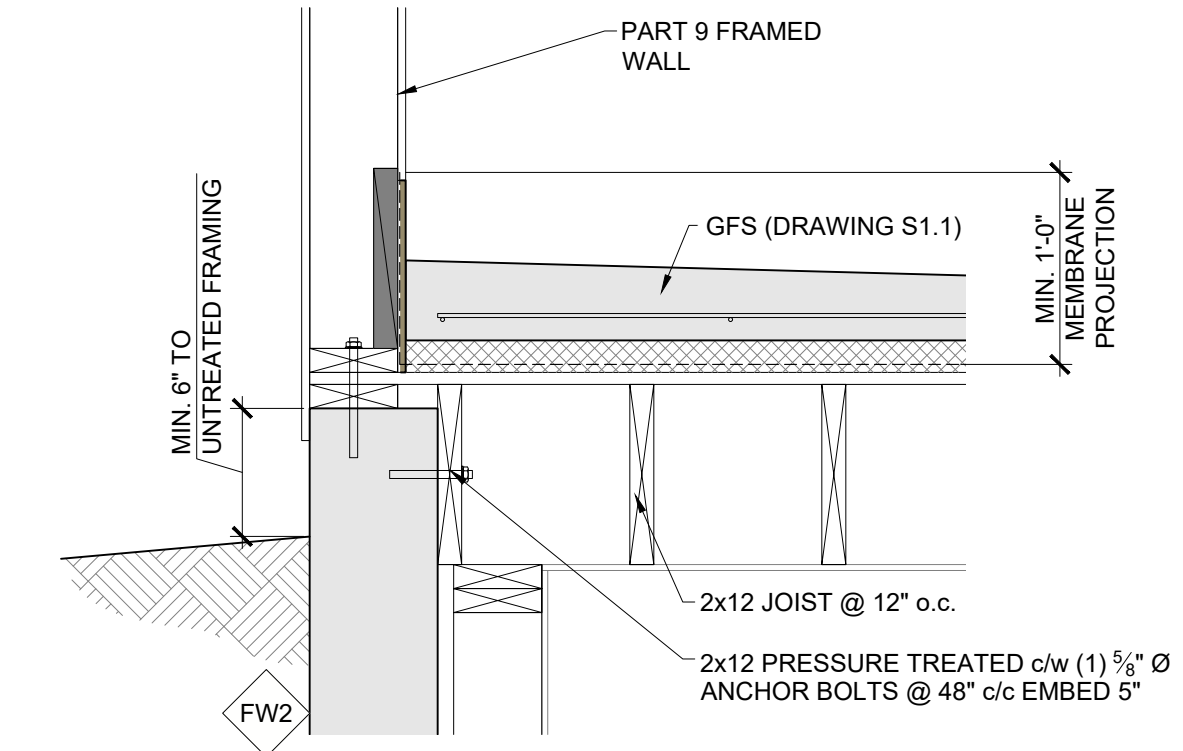
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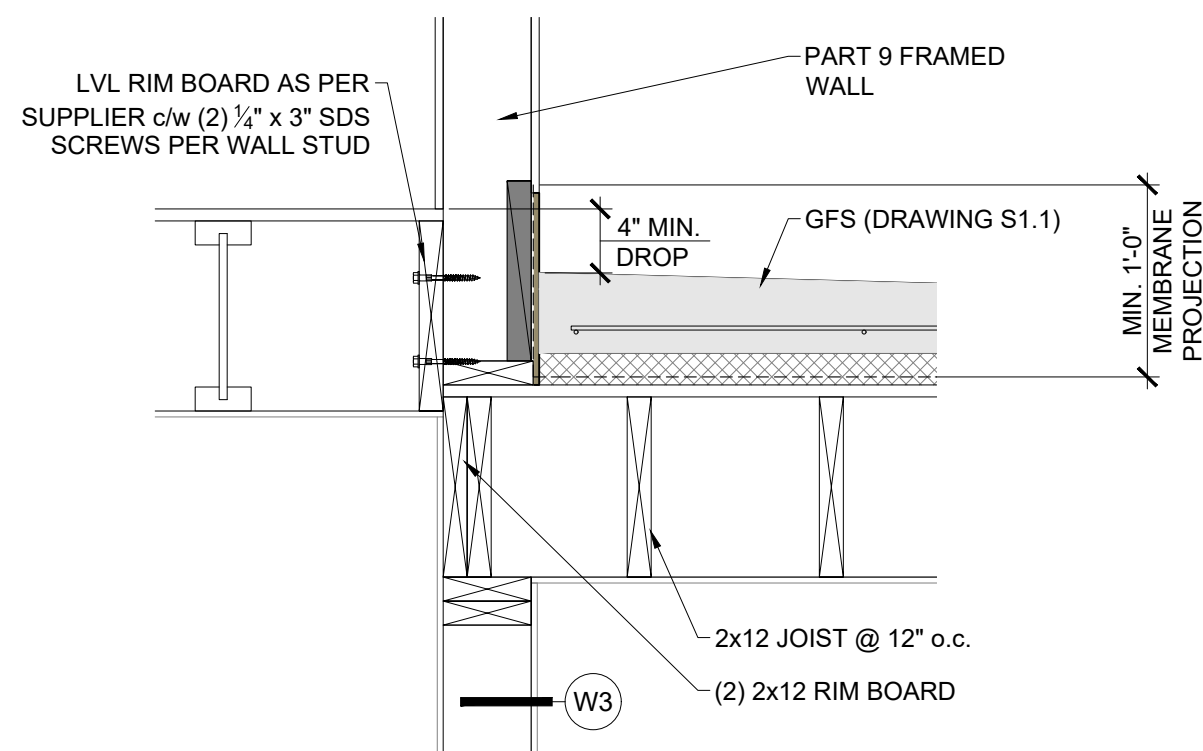
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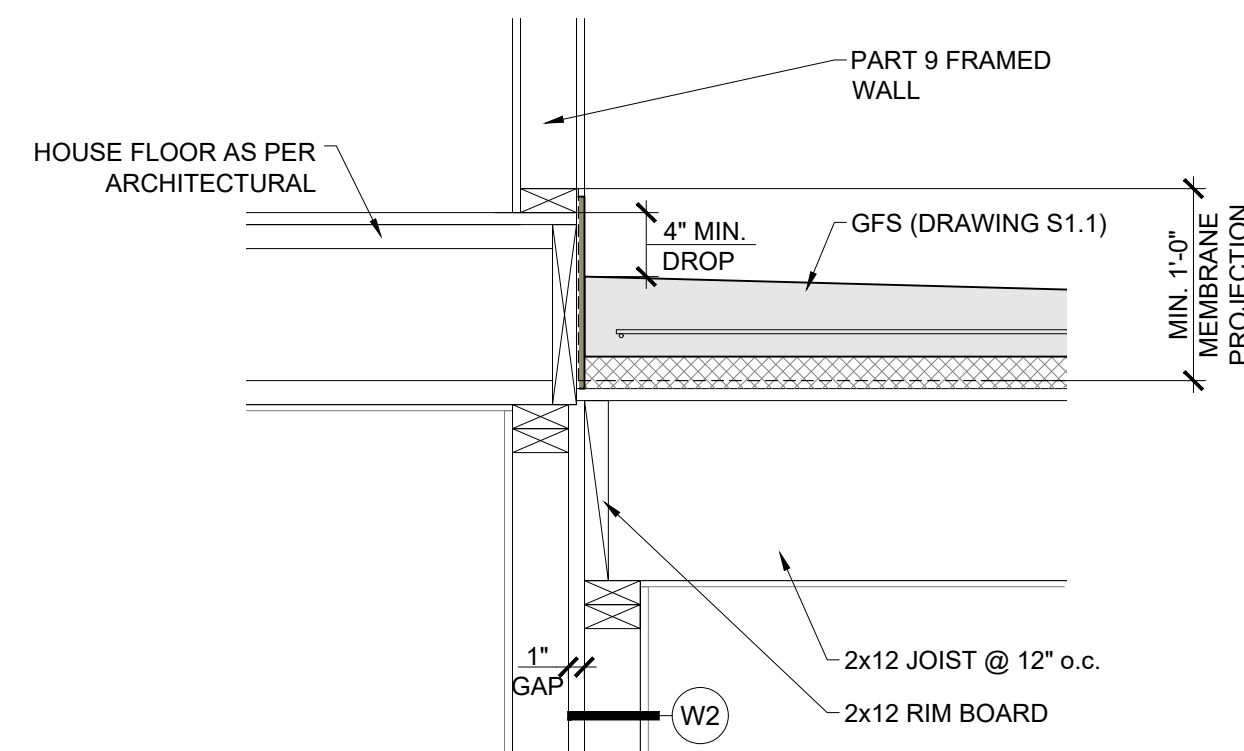
3 STEEL BEAM POCKET DETAIL
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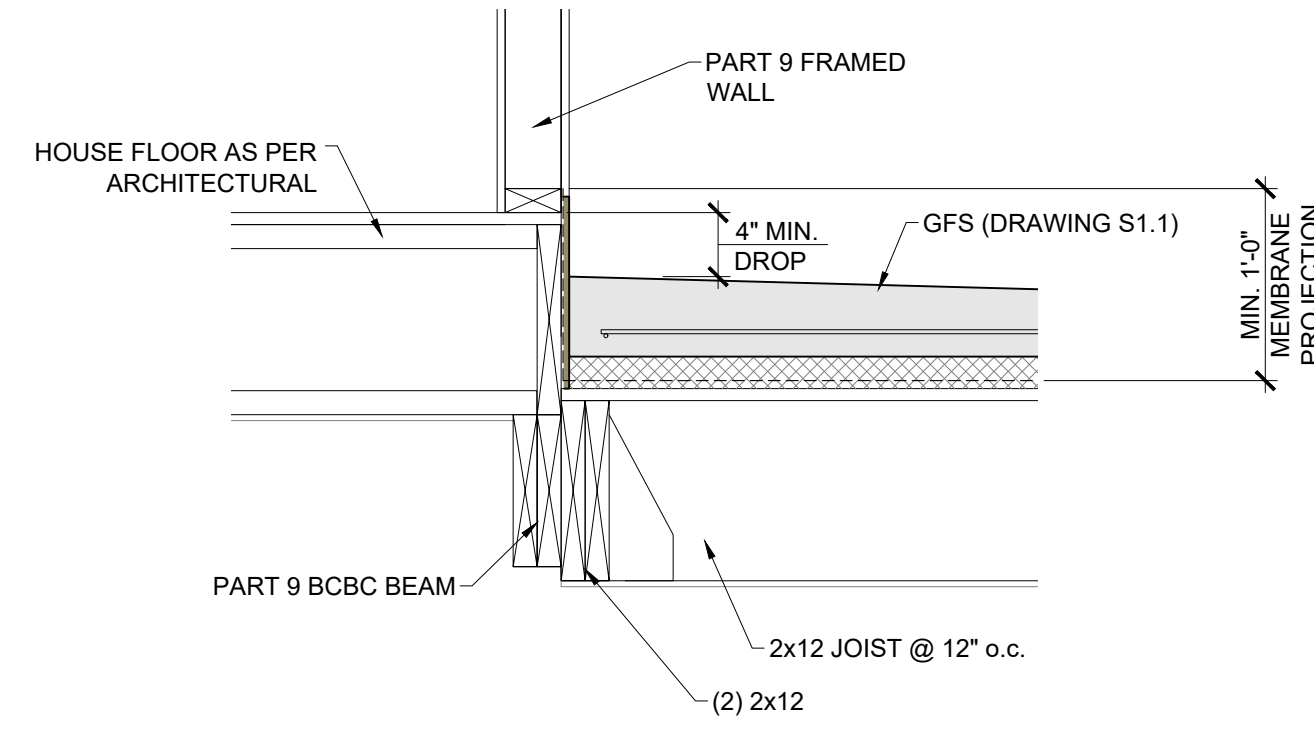
4 GARAGE DETAIL
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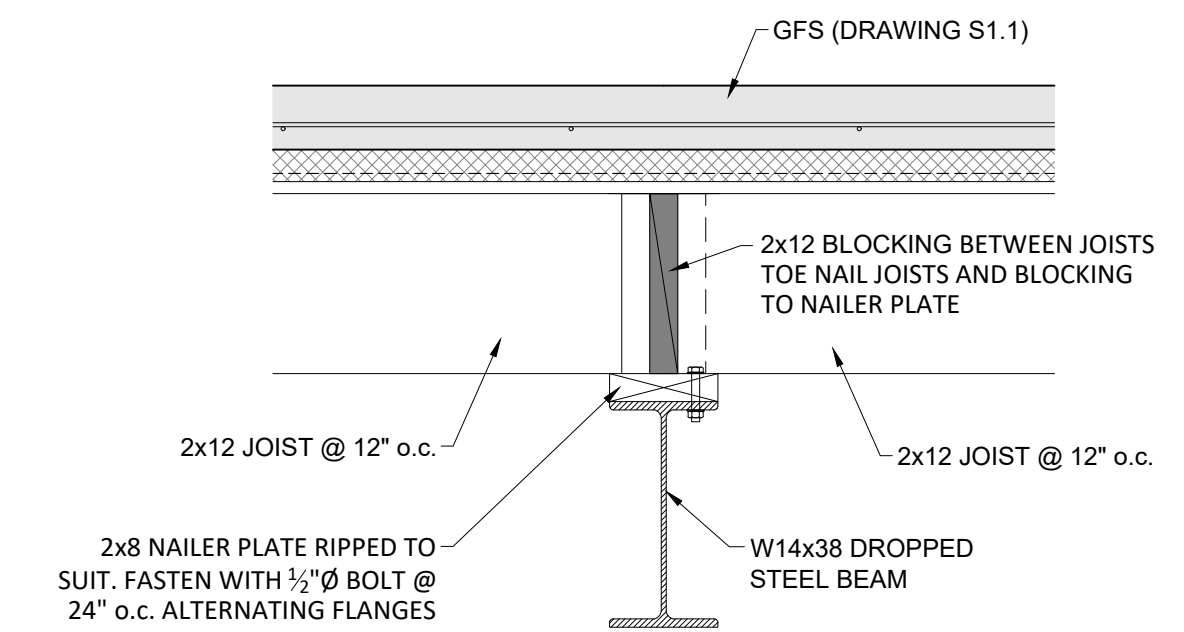
5 GARAGE DETAIL
 S2.1 SCALE: 1"=1'-0"



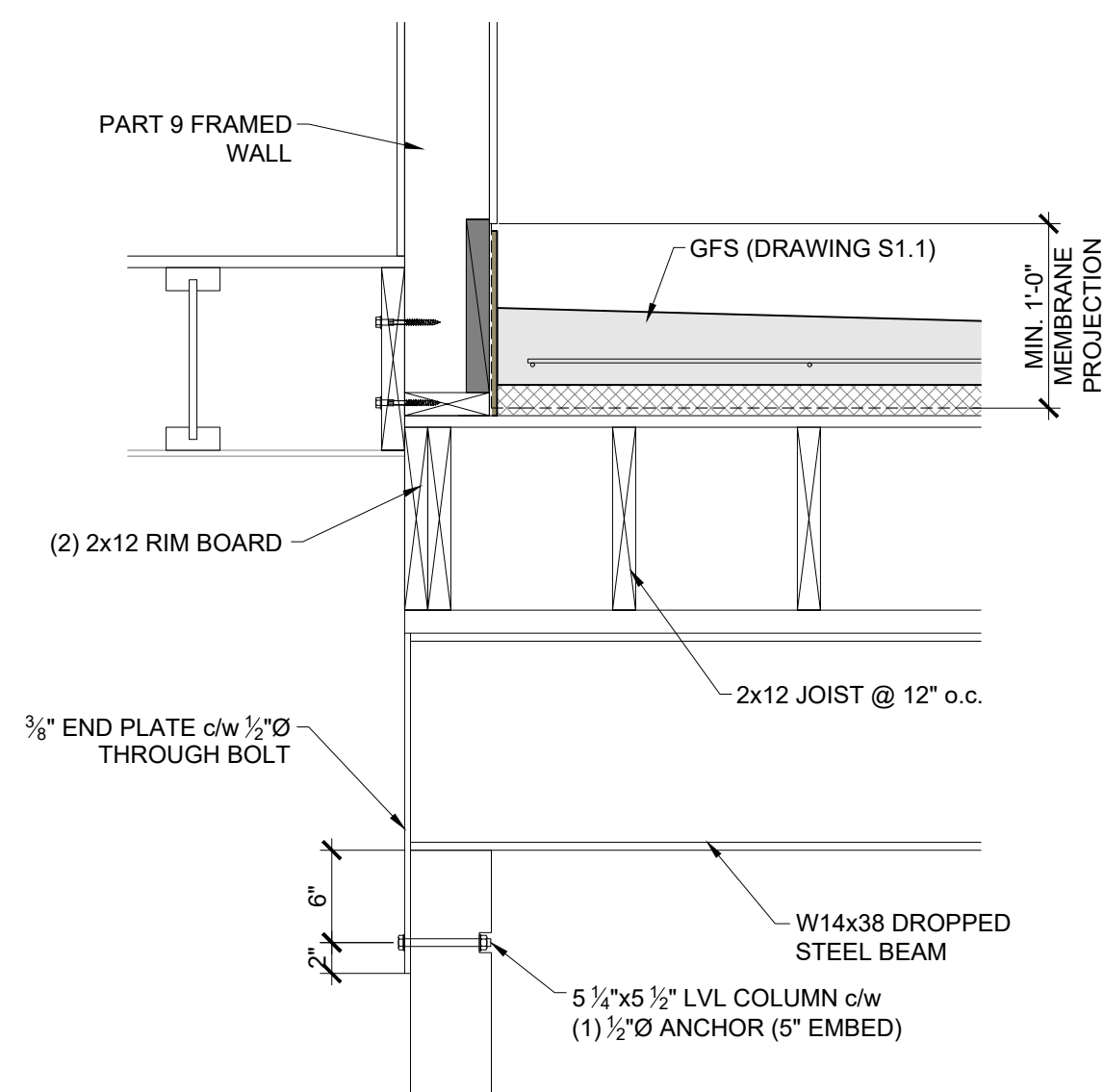
6 GARAGE DETAIL
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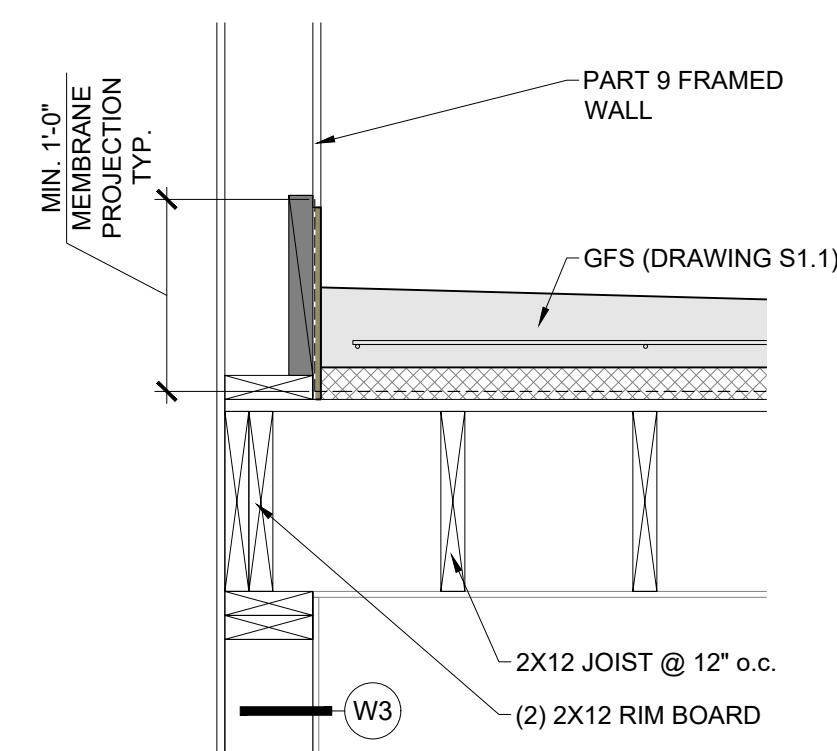
7 GARAGE DETAIL
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8 GARAGE DETAIL
 S2.1 SCALE: 1"=1'-0"



9 COLUMN TO STEEL BEAM DETAIL
 S2.1 SCALE: 1"=1'-0"



10 GARAGE DETAIL
 S2.1 SCALE: 1"=1'-0"

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