MSE-001-1 General - Project documents

1. Structural drawings shall be read in conjunction with all other relevant contract documents.
2. Contractor shall verify all existing conditions and dimensions at the site. Contractor shall report any discrepancies or ambiguities requiring clarification or revision, and any perceived deficiency or omission before commencing with the work.
3. Refer to other relevant consultant drawings for locations of non-structural items, openings and equipment. Where shown on structural drawings and unless specifically noted, these items are only indicated approximately as to size and location.
4. Contractor shall verify all dimensions with the architectural, mechanical and electrical drawings prior to construction and report discrepancies to the architect for review and comment before proceeding with work. Scales noted on the drawings are provided for general information only. Do not obtain dimensional information by scaling from the drawings.
5. No modification to the structural elements and no openings, perforations or cuts are allowed unless specifically shown on these drawings and modified only with written consent from the Structural Engineer.
6. These drawings show requirements for the completed structure only. No provisions or allowances have been made for the construction sequence or methods unless specifically noted on these drawings.
7. The use of these drawings is limited to that identified in the revision column. Do not use these drawings unless marked "Issued for Construction" in the revision column.
8. All drawings and related documents are the property of Moses Structural Engineers Inc. and may not be used or reprinted without written consent.
9. This work applies to the design of new structure and modifications to existing structures. The remainder of the existing structures have not been checked by Moses Structural Engineers Inc. and remain responsibility of others.

MSE-001-2 General - Codes and standards

1. All materials, workmanship, design and construction shall conform to the project documents, the 2012 Ontario Building Code, and federal and municipal regulations and by-laws.
2. In addition, the following standards shall apply, where more stringent, and as modified by the building code:
   a. CAN/CSA A23.1, A23.2 and A23.3 for concrete construction requirements.
   b. CAN/CSA O86 for wood construction requirements.
3. Where project documents reference documents and standards, they shall be the latest editions, unless otherwise noted.

MSE-001-3 General - List of submissions and review process

1. Where submissions listed below are required to be sealed by an Engineer, the Professional Engineer shall be registered in the jurisdiction noted in MSE-001-2 and provide proof of a valid Certificate of Authorization in the jurisdiction noted in MSE-001-2, as required.
2. The following submissions are required for this project:
   a. Concrete mix designs for each element and strength of cast-in-place concrete.
   b. Mock-up of wood frame shear wall, including nail samples.
   c. Reinforcing steel shop drawings.
   d. Formwork and/or shoring drawings.
   e. Pre-fabricated wood truss shop drawings, sealed by a Professional Engineer.
   f. Wood I-joist and structural composite lumber (SCL) shop drawings, sealed by a Professional Engineer.
   g. Calculations, upon request, sealed by a Professional Engineer for any of the above-noted submittals.
3. Submit electronic copy or four (4) hardcopies of shop drawings for review by the Structural Engineer. Shop drawings to show complete information for the fabrication and erection of the structural components.
4. Only shop drawings marked "No exceptions", "Note comments" or "Revise as noted" may be used by the contractor in the work.
5. Dimensions and quantities on shop drawings are not reviewed by the Structural Engineer. The Engineer's review is only to assess that the submitted shop drawings reflect the intent of the structural design.
6. Contractor to review and stamp the shop drawings prior to the review by the Engineer. Contractor to review drawings for conformance with the means, methods, techniques, sequences and operations of construction, as well as for all applicable safety precautions.
7. In case of deviations, discrepancies or conflicts between shop drawing submittals and contract documents, the design drawings and specifications shall control and shall be followed.
8. Shop drawing submittals processed by the consultants are not change orders.
9. Contractor-initiated changes shall be explicitly submitted in writing to the consultants for approval, prior to fabrication or construction. Changes shown on shop drawings only will not satisfy this requirement.

MSE-001-4 General - Miscellaneous

1. Provide temporary bracing and shoring for construction loading conditions and stability of the structure during construction. Construction loads shall not exceed horizontal and vertical design loads as noted in these drawings. It shall also be the contractor's responsibility to provide all necessary bracing, shoring, sheet piling or other temporary supports to safeguard all existing or adjacent construction affected by this work.
2. Contractor to retain a Professional Engineer to design and take responsibility for any temporary shoring, bracing, scaffolding or other designs required to complete construction.
3. Contractor shall be responsible for all safety precautions pursuant to the Occupational Health and Safety Act (OHSA).
4. Where the scope of the structural work is delineated into phases on the drawings and details, the scope of the initial phase(s) shall include the supply and installation of all work shown cast or set into this initial work, as well as all dowels and the like that may project out of this work.
5. Unless specifically shown on these drawings, do not cut or drill any openings or cope structural elements without written permission from the Structural Engineer.
6. All dimensions are in metric units unless noted otherwise.
7. Structural plans show bearing walls and columns above the storey plan being shown.
8. Attachment of non-structural elements for seismic loads is the responsibility of others.

MSE-002 Design criteria

1. All design has been completed in accordance with the 2012 Ontario Building Code (OBC), for Minden, Ontario.

MSE-002-1 Design criteria - Loading

1. Specified roof live/snow load schedule.

TABLE 002-1.1

Item		Value	Reference (OBC)
Roof live load		1.00 kPa	Table 4.1.5.3
ULS importance factor (Normal)	(I_h)	1.00	Table 4.1.6.2.A
SLS importance factor (Normal)	(I_h)	0.90	Table 4.1.6.2.A
Ground snow load	(S_s)	2.70 kPa	Table 2, SB-1
Basic roof snow factor	(C_b)	0.55	Clause 9.4.2.2 (1)
Associated rain load	(S_r)	0.40 kPa	Table 2, SB-1
Flat roof snow load	(S)	1.9 kPa	Clause 9.4.2.2 (1)

2. Specified gravity load schedule.

TABLE 002-1.2

All loads shown are in kPa		
Area	Floors	Roof
Component		
Total dead load	1.2	1.0
Specified live load	1.9	-

   a. Snow and wind loads per tables 002-1.1 & 002-1.3.

3. Specified lateral load design schedule.

TABLE 002-1.3

Wind load data			
Item		Value	Reference (OBC)
ULS importance factor (Normal)	(I_w)	1.00	Table 4.1.7.3
SLS importance factor (Normal)	(I_w)	0.75	Table 4.1.7.3
Reference velocity pressure	($q_{1/50}$)	0.35 kPa	Table 2, SB-1
Exposure factor	(C_e)	1.00	Clause 4.1.7.3 (5) and (7)
Topographic factor	(C_t)	1.00	Article 4.1.7.4
External gust effect factor	(C_g)	2.0	Clause 4.1.7.3 (8)(a)
External pressure factor	(C_p)	Varies	Article 4.1.7.5 and 4.1.7.6
Comb. ext. pressure & gust factor	(C_gC_p)	Varies	Figure 4.1.7.6.A
Non-uniformly distributed openings from Table 4.1.7.7 have been considered for internal pressure. All doors and windows must be non-significant or designed to be wind resistant and must remain closed during storms.			
Seismic load data			
Item		Value	Reference (OBC)
ULS importance factor (Normal)	(I_E)	1.00	Table 4.1.8.5
SLS importance factor (Normal)	(I_E)	1.00	Table 4.1.8.5
Peak ground acceleration	(PGA)	0.073	Table 3, SB-1
Peak ground velocity	(PGV)	0.071	Table 3, SB-1
0.2 sec spectral acceleration	(S_a (0.2))	0.124	Table 3, SB-1
0.5 sec spectral acceleration	(S_a (0.5))	0.089	Table 3, SB-1
1.0 sec spectral acceleration	(S_a (1.0))	0.054	Table 3, SB-1
2.0 sec spectral acceleration	(S_a (2.0))	0.028	Table 3, SB-1
5.0 sec spectral acceleration	(S_a (5.0))	0.0071	Table 3, SB-1
10.0 sec spectral acceleration	(S_a (10.0))	0.0031	Table 3, SB-1
Ductility force mod. factor	(R_d)	3.0	Nailed shear walls (wood based panels) table 4.1.8.9
Overstrength mod. factor	(R_o)	1.7	Nailed shear walls (wood based panels) table 4.1.8.9
Site class		E	Per Geotechnical Report

4. Wind uplift on roofs.
   Supplier-designed roof components (for example, trusses, joists, steel deck) and their connections are to be designed for a net factored uplift of 1.0 kPa minimum.

MSE-002-2 Design criteria - Serviceability

1. Typical horizontal elements have been designed so that the theoretical deflections do not exceed the following values.

TABLE 002-2.1

Type of member	Deflection to be considered	Deflection limit
Flat roofs not supporting non-structural elements and finishes likely to be damaged by large deflections	Immediate deflection due to specified live load	L/180
Floors not supporting non-structural elements likely to be damaged by large deflections	Immediate deflection due to specified live load	L/360
Roofs or floors supporting non-structural elements likely to be damaged by large deflections	Portion of deflection occuring after attachment of non-structural elements	L/360
Roofs or floors supporting non-structural elements not likely to be damaged by large deflections	Sum of long-term deflections due to permanent loads and immediate deflection due to specified live load	L/300

MSE-002-3 Design criteria - Provision for future extensions and existing structures

1. This structure has not been designed for any future extensions or changes in occupancy.

MSE-003-1 Geotechnical considerations - Geotechnical report

1. Refer to Geotechnical report prepared by GHD report number 11205754, dated 2020/02/07.
2. Design of foundations is based on the following from the geotechnical report capacities:
   a. Pad footings: 75 kPa allowable bearing pressure (SLS)
      130 kPa ultimate bearing pressure (ULS)
   b. Strip footings: 75 kPa allowable bearing pressure (SLS)
      130 kPa ultimate bearing pressure (ULS)
3. Provide minimum frost protection cover of 1400 mm.
4. Contractor to read Geotechnical Report and become familiar with its findings and recommendations. copy of the report is available from the Consultant. Visit the site as required.
5. No responsibility is accepted by the owner or the Consultant for the correctness of the report, nor shall its accuracy or any omissions affect the provisions of this contract.

*Capacities based on engineering fill specifications per Geotechnical Engineer's report.

MSE-003-2 Geotechnical considerations - Foundations

1. Unless specifically noted, found all footings on naturally consolidated undisturbed soil capable of sustaining the above mentioned bearing pressures.
2. Foundation bearing material shall be protected from rain, frost, snow and water infiltration. Disturbed and softened material shall be removed and the foundation depth lowered to suit. For isolated footings, if the foundation depth is lowered by more than 600 mm, notify the Structural Engineer.
3. Centre all footings under centroid of columns and walls unless specifically noted otherwise.
4. No foundations shall be poured before bearing material has been reviewed and approved by the Geotechnical Engineer. MSE is not responsible for verifying bearing capacities of soils. Provide 50 mm ground seal under footings as required by soil conditions after approval. Pour foundations on the same day that approval was received from Geotechnical Engineer.
5. Foundation depths as indicated on the drawings are general and represent minimum values to be used. Firm bearing depths for footings and fill shall be established from the geotechnical report. Found footings exposed to freezing below the minimum frost protection depth under finished grade as mentioned above.
6. Provide temporary frost protection, during construction, for all interior footings which are not founded at the minimum frost protection depth as mentioned above.
7. Before proceeding with the work, contact Geotechnical Engineer and Structural Engineer for written instructions regarding site conditions that differ from what is shown on these drawings and indicated in the Geotechnical Report.
8. When located adjacent to existing footings, found new footing at the same elevation as existing ones unless specifically noted otherwise.
9. Provide footings as per typical details for all load bearing and for non-load bearing walls thicker than 190 mm. All non-load bearing walls 190 mm thick or less shall rest on a slab thickening as per typical details or as noted on the drawings.
10. The line of slope between adjacent footings or excavations or along stepped footings shall not exceed a rise of 7 in a run of 10.
11. Where unsuitable bearing material is found at the indicated foundation depth, excavate to suitable bearing material as approved by the Geotechnical Engineer. Fill the excavation with a lean mix concrete such that the foundations are founded at the indicate depths. The concrete shall fill an area no less than the plan dimensions of the foundation(s).

MSE-003-3 Geotechnical considerations -Excavation, backfill and compaction

1. The contractor is responsible for shoring, underpinning and protection of existing and adjacent structures against detrimental influence from the excavation process (drainage included). All documents relating to this work shall be sealed by a Professional Engineer registered in the jurisdiction noted in MSE-001-3. Design and field review of excavation, shoring and backfill is not carried out by MSE.
2. Footings may have to be lowered to accommodate mechanical or electrical services. Footings shall not be undermined by excavation for services or pits.
3. Retaining walls have been designed to resist lateral pressures for free draining compacted granular backfill unless specifically noted in these drawings. Material to be approved by Geotechnical Engineer.
4. Slabs-on-grade, floor construction and all structural elements framing into retaining walls must be in place and have attained 70% of specified strength before backfilling.

MSE-003-3 Geotechnical considerations -Excavation, backfill and compaction

1. The contractor is responsible for shoring, underpinning and protection of existing and adjacent structures against detrimental influence from the excavation process (drainage included). All documents relating to this work shall be sealed by a Professional Engineer registered in the jurisdiction noted in MSE-001-3. Design and field review of excavation, shoring and backfill is not carried out by MSE.
2. Footings may have to be lowered to accommodate mechanical or electrical services. Footings shall not be undermined by excavation for services or pits.
3. Retaining walls have been designed to resist lateral pressures for free draining compacted granular backfill unless specifically noted in these drawings. Material to be approved by Geotechnical Engineer.
4. Slabs-on-grade, floor construction and all structural elements framing into retaining walls must be in place and have attained 70% of specified strength before backfilling.
5. Backfilling against foundation walls where there is grade on both sides shall be carried out in such a manner that the level of backfilling on either side of the wall never differs by more than 500 mm from the level on the other side of the wall.
6. See Geotechnical report/specifications for sub-grade design and preparation.

MSE-010-1 Cast-in-place concrete notes - Concrete properties

1. Concrete to conform to the requirements of CAN/CSA A23.1 and Table 010-1.1. All cement to be Type 10 Portland Cement and normal weight unless noted otherwise.

TABLE 010-1.1

Location	Minimum compressive strength f'_c at 28 days (MPa)	Slump [b] (mm)	Exposure class	Maximum water/ cement ratio	Air content [b] (%)
Exterior (exposed to de-icing chemicals)	35	75 ± 20	C-1[a,c]	0.40	5 - 8
Foundations	30	75 ± 20	F-2[c]	0.55[c]	4 - 7
Interior structural slabs/beams	30	75 ± 20	N[c]	[c]	[c]

   a. Concrete shall have minimum cementing materials content of 320 kg/m³.
   b. Specified slump refers to slump before the addition of any superplasticizing admixtures, greater slumps are not acceptable. Slump after the addition of superplasticizing admixture shall remain below the point at which segregation will occur. All admixtures shall conform to CSA A23.5.
   c. For walls and columns below grade level or slabs in contact with grade, provide concrete for exposure class S-3, water-cement ratio of 0.50 and 4 to 7% air content, unless protected by a waterproof membrane.

2. Specified air content is for 14 to 20 mm aggregate only. Adjust air content for different size aggregates.
3. Maximum aggregate size is 10 mm for concrete toppings and masonry grout.
4. Where any two different structural elements are cast monolithically, cast both elements with concrete of the higher specified strength.
5. Exterior concrete and frost slabs shall be considered exposed to de-icing chemicals. Direct corrosion inhibitor shall also be added to the concrete where reinforcement is indicated. See architectural drawings for other areas exposed to de-icing chemicals.
6. No Calcium chloride, in any form, is permitted without written permission from the Structural Engineer.
7. Fly ash may be used in concrete mixes. Fly ash shall conform to ASTM C618, class F and its addition shall not exceed 15% of the cement weight.

MSE-010-2 Cast-in-place concrete notes - Reinforcement

1. Reinforcing bars shall be deformed and shall conform to CAN/CSA G30.18 with fy = 400 MPa.
2. Weldable low alloy deformed steel reinforcing bars shall be grade 400W and shall conform to CAN/CSA G30.18.
3. Minimum concrete cover to reinforcement in non-corrosive environment:
   a. All concrete cast against and permanently exposed to earth or rock: 75 mm.
   b. All concrete cast against forms as follows:
      i. Beams and columns exposed to earth or weather: 50mm
      ii. Beams and columns not exposed to earth or weather: 40mm
      iii. Slabs and walls exposed to earth or weather: 40mm
      iv. Slabs and walls not exposed to earth and weather: 25mm
      v. Ties, stirrups, and spirals: 40mm
4. Unless otherwise noted, provide minimum rebar lap splice lengths as per Table 010-2.2 to Table 010-2.5:

TABLE 010-2.2

Bar size	Tension development length for concrete strengths (mm)		
	25 MPa	30 MPa	35 MPa
10M	300 (400)	300 (350)	300 (350)
15M	450 (600)	400 (550)	400 (500)
20M	600 (750)	550 (700)	500 (650)
25M	900 (1200)	850 (1100)	800 (1000)

TABLE 010-2.3

Bar size	Compression development length for concrete strengths (mm)		
	25 MPa	30 MPa	35 MPa
10M	200	200	200
15M	300	300	300
20M	400	400	400
25M	500	450	450

ABBREVIATIONS

&	AND	CLR	CLEAR	EXT	EXTERIOR	LL	LIVE LOAD	PSL	PARALLEL STRAND LUMBER (PARALLAM)
@	AT	C/W	COMPLETE WITH	EXIST	EXISTING	LH	LONG LEG HORIZONTAL		
AB	ANCHOR BOLT	CS	COUNTERSINK	FDN	FOUNDATION	LLV	LONG LEG VERTICAL	P/T	POST-TENSION
ADD'L	ADDITIONAL	CSP	CANADIAN SOFTWOOD PLYWOOD	FTG	FOOTING	LSL	LAMINATED STRAND LUMBER (TIMBERSTRAND)	PT	PRESSURE TREATED
ALT	ALTERNATE			GALV	GALVANIZED			REINF	REINFORCING
BTW	BETWEEN	CL	CENTERLINE	GL	GLULAM	LVL	LAMINATED VENEER LUMBER (MICROLLAM)	R/W	REINFORCE WITH
BCE	BOTTOM CHORD EXTENSION	COL	COLUMN	Grl	GRID LINE			SB	SLAB BAND
BLL	BOTTOM LOWER LAYER	DL	DEAD LOAD	GT	GIRDER TRUSS	MAX	MAXIMUM	SIM	SIMILAR
BOT	BOTTOM	DO	DO OVER	H1E	HOOK ONE END	Mf	FACTORED MOMENT	SOG	SLAB ON GRADE
BUL	BOTTOM UPPER LAYER	DP	DEEP	H2E	HOOK TWO ENDS	MIN	MINIMUM	SS	STAINLESS STEEL
CANT	CANTILEVER	DFIR	DOUGLAS FIR	HDG	HOT DIPPED GALVANIZED	NLT	NAILLAMINATED TIMBER	STAGG	STAGGER
CONC	CONCRETE	EA	EACH	H&V	HORIZONTAL AND VERTICAL	NTS	NOT TO SCALE	TBC	TO BE CONFIRMED
CONT	CONTINUOUS	EE	EACH END	HORIZ	HORIZONTAL	OC	ON CENTRE	T&B	TOP AND BOTTOM
Cf	FACTORED COMPRESSION FORCE	EF	EACH FACE	I/F	INSIDE FACE	OD	OUTSIDE DIAMETER	Tf	FACTORED TENSION FORCE
CIP	CAST IN PLACE	EL	ELEVATION	INT	INTERIOR	O/F	OUTSIDE FACE	T&G	TONGUE AND GROOVE
CJ	CONTROL JOINT	ES	EACH SIDE	KD	KILN DRIED	PL	PLATE	THK	THICK
CLT	CROSS LAMINATED TIMBER	EW	EACH WAY	LG	LONG	PLY	PLYWOOD	TL	TOTAL LOAD (DL+LL)
								TLL	TOP LOWER LAYER
								TO	TOP OF
								TOS	TOP OF SLAB
								TS	TIMBERSTRAND
								TUL	TOP UPPER LAYER
								TYP	TYPICAL
								UDL	UNIFORMLY DISTRIBUTED LOAD
								UNO	UNLESS NOTED OTHERWISE
								U/S	UNDERSIDE
								VERT	VERTICAL
								Vf	FACTORED SHEAR FORCE
								W/	WITH
								WD	WIDTH
								WP	WORKING POINT
								WWM	WELDED WIRE MESH

DRAWING LIST

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LICENSED PROFESSIONAL ENGINEER
M.E.R. ALEXANDER
100200138
16-May-2023
PROVINCE OF ONTARIO

Project:

GULL RIVER HOUSING BUILDING 4

MINDEN, ON

Project No:

20.029

Scale: AS NOTED
Drawn By: MG/KM
Checked By: MA/SN

MSE START DATE: 16-JUN-2022
REVISIONS AND DISTRIBUTION LOG

Rev	Date	Note
	29-APR-2022	Issued for Bldg Permit
	17-MAY-2022	Re-Issued for Bldg Permit
	08-AUG-2022	Issued for Bldg Permit
	16-MAY-2023	Issued for Tender

Drawing Title:

GENERAL NOTES

Drawing No:

S001

cm in

TABLE 010-2.4			
Bar size	Tension splice "Class B" for concrete strengths (mm)		
	25 MPa	30 MPa	35 MPa
10M	400 (500)	400 (450)	400 (450)
15M	550 (750)	500 (700)	500 (650)
20M	750 (1000)	700 (900)	650 (850)
25M	1200 (1550)	1100 (1400)	1000 (1300)

a. Top bar splice lengths are denoted in parenthesis and should be used when horizontal spliced bars are placed such that there is no more than 300 mm of concrete poured below the bar. All horizontal bars in walls shall be treated as top bars.

b. Unless noted otherwise, provide embedment lengths for reinforcement bars and dowels per Table 010-2.2 above.

5. All reinforcing bars noted as continuous shall be tension spliced unless otherwise noted.
6. All bars shall have a standard hook at non-continuous ends.
7. No splices other than those noted on these drawings are permitted without written permission from the Structural Engineer.
8. All reinforcing steel to be free of loose scale, dirt or any other foreign materials which would be detrimental to the bond to the concrete. Storage of the reinforcing steel on site shall be off the ground.
9. All reinforcement to be uncoated. Provide corrosion inhibitors instead of epoxy bars if required for corrosion protection.
10. Detailing of reinforcing steel (including hooks and bends) shall be in accordance with CSA A23.1.
11. All reinforcing bars shall be tied securely to prevent displacement. All dowels shall be tied securely in place prior to pouring concrete. Wet doweling of any reinforcement steel is not permitted.
12. After initial fabrication, reinforcing steel shall not be re-bent or straightened unless approved in writing by the Structural Engineer.
13. Provide corner bars to match horizontal wall reinforcement and provide dowels between footings and walls or piers/columns to match size, number and spacing of vertical reinforcement or element above.

MSE-010-3 Cast-in-place concrete notes - Installation

1. Forms shall be free from debris, hardened concrete and any other foreign materials prior to pouring concrete. Formwork shall conform to CSA A23.1 and CSA S269.3 and falsework shall conform to CSA S269.1.
2. Concrete mixing, transportation, handling and placing shall conform to CSA A23.1.
3. All concrete curing to conform to CSA A23.1 and special precautions shall be taken when placing and curing concrete above 30°C. Curing and sealing compounds to conform to ASTM C309. All concrete surfaces are to be sealed unless noted otherwise. Sealing compounds are to be compatible with applied finishes.
4. Keys at all construction joints shall be as per Table 010-3.1. Provide water stops for all construction joints below grade.

TABLE 010-3.1	
Slab Thickness (mm)	Key size (mm)
THK <150	40x40
150<THK<250	40x90
250<THK<350	40x140
THK>350	40xTHK/2

5. Control joints shall be provided in all slabs-on-grade at a maximum spacing of 4500 mm in both directions unless noted otherwise on these drawings. Saw cuts to be 3 x 38 mm and to be cut no longer than 18 hours after concrete is finished. Seal all saw cuts.
6. Coordinate control joint spacing in concrete walls, interior and exterior, to match the control joints in masonry above. Coordinate with architectural drawings. Provide control joints at a maximum of 7500 mm on-centre unless noted otherwise.
7. Joint filler shall be installed in expansion joints and construction joints where indicated on the drawings.
8. Welded Wire Mesh reinforcement where approved for slabs-on-grade to be placed 40 mm from the top of slabs with proper reinforcement chairs.
9. Where concrete surfaces are to be exposed, only non-corrosive type reinforcing chairs shall be used to support the reinforcement steel. If pre-cast concrete blocks are used as reinforcement chairs, they shall be of the same quality as the concrete specified for the structure.
10. Uncoated metal ties shall not extend more than 5 mm into concrete cover.
11. Inserts, frame-outs, sleeves, brackets, conduits and fastening devices shall be installed as required by the drawings and specifications in a manner that shall not impair the structural strength of the system, and be installed so that they shall not require the cutting, bending or displacement of the reinforcement other than as shown on typical details.
12. Openings and driven fasteners required in the concrete after concrete is placed shall be approved by the Structural Engineer before proceeding.
13. Use mechanical vibrators to compact concrete throughout.
14. All honeycombing shall be cut out and filled with concrete using an approved bonding agent. Refer to architectural drawings and specifications for required finish of exposed concrete. Concrete finishes shall conform to CSA A23.1.
15. Chamfer all exposed edges of concrete with a 20 mm chamfer unless noted otherwise.
16. No bars partially embedded in hardened concrete shall be field bent unless specifically noted or approved by the Structural Engineer.
17. Do not substitute deformed wire or wire mesh for reinforcing bars without the prior approval of the Structural Engineer.
18. Non-shrink grout shall be furnished by an approved manufacturer and shall be mixed and placed in strict accordance with the manufacturer's published recommendations. Grout strength shall be at least equal to the material on which it is placed, but not less than 20 MPa.
19. Do not cover concrete with finishes until curing period of concrete is complete and surfaces are completely dry. Surfaces to be considered dry if no moisture is visible on the underside of a 450 x 450 mm sheet of polyethylene plastic taped to the slab surface for 16 hours. Allow 28 days for drying after moist curing.
20. Anchor bolts for structural steel and embedded plates shall be securely tied or fastened in place prior to pouring concrete. Wet doweling of anchor bolts and embedded plates is not permitted.
21. Concrete shall be tested in conformance with CSA A23.1, CSA A23.2, MSE-061 and the project specifications.

MSE-010-4 Cast-in-place concrete notes - Cold weather requirements

1. Forms and reinforcing steel shall be free from ice or snow.
2. Mixing water shall be heated, as required, to produce a minimum concrete temperature of 10°C at point of pouring.
3. Concrete shall not be placed on or against a surface which is at a temperature of less than 5°C.
4. Slabs shall be covered with a canvas or similar, kept a few inches clear of the surface.
5. Temperature of the concrete at all surfaces shall be kept at a minimum of 20°C for 3 days or 10°C for 7 days. Concrete shall be kept above freezing temperatures until it reaches 7 MPa of strength.
6. Storey below shall be enclosed and if temperature falls below -4°C provided with artificial heating. Heating is to start at least one hour before pouring and is to be maintained for 3 days after pouring.
7. See CSA A23.1 for additional requirements. Follow the above mentioned as a minimum.

MSE-010-5 Cast-in-place concrete notes - Stripping notes

1. No column or wall forms shall be removed before concrete has reached 10 MPa.
2. No slab or beam forms shall be removed before concrete has reached 17 MPa or 75% of design strength (whichever is greater).
3. The design of re-shoring is the responsibility of the contractor. Re-shoring drawings to be submitted to the Structural Engineer before stripping the forms per the requirements of MSE-001-3.
4. All slabs, beams and girders to be shored until concrete reaches full design strength.
5. Strength of concrete for stripping and shoring purposes to be determined from field-cured cylinders. Alternate methods may be used, subject to the approval of the Structural Engineer.
6. See Structural Drawings for special shoring requirements.

MSE-010-6 Cast-in-place concrete notes - Construction tolerances

1. Tolerances for placing structural concrete, reinforcing steel, cast-in hardware and for floor and roof finishes shall be as specified in CSA A23.1, except as noted below. These tolerances are structural guidelines only, more stringent tolerances shall be maintained where architectural details or others require it.
2. Variation from the plumb:
   a. 0.25% of height (1 in 400) for lines and surfaces of columns, piers, walls and in arrises. Only one curvature allowed per 3000 mm. Tolerance is given for maximum deviation from plumb line and all measurements shall be to the same side of the plumb line.
   b. 0.125% of height (1 in 800) for exposed corner columns, control joints, grooves and other conspicuous lines. Only one curvature allowed per 6000 mm.
   c. 0.2% of opening width at window bays.
3. Variation from the level or from the grades or cambers indicated on these drawings:
   a. Unless specified elsewhere, floor finishes shall be class A "Conventional", with a tolerance of ± 8 mm per 3000 mm. Only one curvature allowed per 3000 mm.
   b. Tolerance is given for maximum deviation from specified levels.
   c. Closer tolerances may be required to give the quality of finish floor surfaces called for elsewhere in the contract documents.
4. Location of columns and walls: columns per CSA A23.1, use column requirements for walls.
5. Variation of cross-sectional dimensions of columns and beams and in the thickness of slabs and walls: as in CSA A23.1. Only one curvature per 3000 mm.
6. Footings:
   a. Variation in dimensions in plan: +50 mm / -10 mm.
   b. Misplacement or eccentricity: maximum of 2% of the footing width in the direction of misplacement, but not more than 50 mm.
   c. Reduction in thickness: not more than 5% of specified thickness.
7. The above requirements do not relieve the contractor of this responsibility of meeting more rigid requirements specified elsewhere in the construction documents or as required by equipment shop drawings or specifications (for example, elevators).
8. Where any deviation occurs and it is deemed acceptable by the Structural Engineer and Architect, the contractor is responsible for adjustment of other building elements to accommodate such deviation. Cost of remedial work for deviations not accepted shall be borne by the contractor.

MSE-040-1 Wood frame - Materials

1. All structural wood frame construction shall conform to CAN/CSA O86 and the requirements of the building code noted in MSE-001-2.
2. All structural lumber to be kiln-dried (KD) spruce-pine-fir (SPF) #2 or better, unless noted otherwise, conforming to CSA O141 with a maximum moisture content of 19% at the time of installation. Solid wood posts to be SPF #1 or better, unless noted otherwise. Lumber shall bear the grade stamp of a grading agency approved by the Canadian Lumber Standards Accreditation Board.
3. Finger jointed studs are not permitted in load bearing walls.
4. Nails and spikes shall be manufactured to CSA B111.
5. Screws and lag screws shall be manufactured to ANSI/ASME B18.2.1, complete with standard cut washers when bearing against wood. Lag screws shall have minimum half the bolt length threaded with sharp threads. Dull threads or insufficient thread length will be rejected.
6. Bolts shall be ASTM A307 or better, unless noted otherwise, complete with standard cut washers when bearing against wood.
7. Steel plates shall be ASTM A36 or better, unless noted otherwise.
8. All steel hardware including, but not limited to, bolts, screws, nuts and washers are to be hot dipped galvanized.
9. Framing anchors, joist hangers, beam hangers, post caps, anchors, and straps as manufactured by Simpson Strong Tie (or approved equivalent) to have all nail holes filled with the nail types specified by the manufacturer. Joist hangers to have a minimum resistance of 6.3 kN or fully nailed pressure block for all flush framing, unless noted otherwise.
10. Plywood for roofs and floors shall be exterior grade Douglas fir plywood to CSA O121 or Canadian Softwood plywood to CSA O151. Plywood to be legibly identified as exterior type.
11. Preservative treatment, where required, to conform to CAN/CSA O80 Series-08 for pressure treatment. Field apply compatible preservative to all field cuts and drilled holes. Provide preservative treatment and finishes to consultants' approval for all exposed wood elements. Provide flashing to architect's approval for all exposed end grain.

MSE-040-2 Wood frame - Installation

1. Store all wood products off the ground with spacer blocks between members, keeping wrapping in place until installed. Cut holes in wrapping to provide ventilation and prevent moisture accumulation. Provide protection of installed elements from weather until permanent protection is in place.
2. All framing, bridging, blocking and nailing shall be in accordance with Part 9 of the building code noted in MSE-001-2. Provide minimum 38x38 bridging at 2000 mm on-centre for all spans greater than 3000 mm with a 13 mm gap between bridging.
3. Built-up beams and posts shall consist of a minimum of 2 members. Minimum lintels shall be 1-89x241 TimberStrand LSL or 2-38x235, unless noted otherwise.
4. Sill plates for stud walls to be full width and anchored using cast-in-place 19 mm diameter anchor bolts x 250 mm long with 75 mm hooks at 1200 mm on-centre maximum and at 200 mm from ends of walls and corners, and at edges of window and door openings. Epoxied anchor bolts may be used with 19 mm diameter and 200 mm embedment using Hilti HIT HY 200 epoxy system or equivalent.
5. Studs to be continuous full storey height with no splice.
6. Provide minimum 2 top plates for load bearing walls, unless noted otherwise. Lap plates at corners and intersections.
7. Provide minimum 2 studs at corners, intersections and each side of openings, installing double cripples under lintels, unless noted otherwise.
8. Provide blocking at mid-height of stud walls where no plywood sheathing is applied.
9. Laminate studs solid beneath all beam ends and carry through to concrete foundation below. Built-up stud columns shall match the number of laminations in built-up members being supported. Fully block at joist spaces below point loads. Take care to ensure beams bear fully on supporting members.
10. Re-tighten all accessible bolts late in construction where shrinkage of timbers may have occurred.

MSE-043-1 Structural composite lumber (SCL) - Materials

1. The following manufacturers are acceptable with substitution permitted only with Structural Engineer's written approval:
   a. Parallam (PSL) — 2.0E by Ilevel
   b. Laminated Veneer Lumber (LVL) — 1.9E Microllam by Ilevel; 2.0E LVL by Nordic
   c. Laminated Strand Lumber (LSL) — 1.5E TimberStrand by Ilevel
   d. Oriented Strand Lumber (OSL) — 0.8E Durastrand by Ainsworth
2. Wood substrate and adhesives to be in accordance with approved manufacturer's standards and applicable CSA standards.
3. All members shall bear manufacturer's name and plant number, grade, NER or CCMC report number and name of quality control agency.
4. Substitution of the above structural composite lumber is permitted only with the Structural Engineer's written approval.
5. All PSL exposed to view to be architectural quality finished, unless noted otherwise.

MSE-043-2 Structural composite lumber (SCL) - Installation

1. Manufacturer is responsible for the supply of all steel hangers and brackets required to support the members.
2. Follow the manufacturer's recommendations for handling, storage, installation and detailing of structural composite lumber, including fastening multiple laminations.
3. Minimum end bearing shall be 75 mm unless noted otherwise.
4. For single spans, members shall be continuous between supports and not spliced.
5. Where individual members are butted together, joints shall occur over supports, except that where beams are continuous over more than one support, joints may be located within 150 mm of the quarter points of the clear spans. Such joints shall be staggered end for end.
6. Nailing and/or bolting of multi-ply members shall be in accordance with the manufacturer's instructions and in no case less than 2 rows of 1-6d 75 mm long nails at 300 mm on-centre, each row.
7. Members bearing onto masonry or concrete at or below grade level shall be pressure treated to prevent decay or protected at the bearing with a minimum of 0.05 polyethylene film or type S roll roofing.
8. Unless noted otherwise, at beams terminating on concrete or masonry walls, provide 200 mm deep pocket (or full depth for thinner walls) and provide 200x400x16 thick bearing plate and 2-19Ø x200 embed anchors with HY-200 epoxy system by Hilti and 6 mm side plates with 2-16Ø through bolts. Provide a damp-proof course around beam per note 7 and shim beam tight in pocket.
9. Notching and drilling shall only be allowed with written permission of the Structural Engineer and shall be within the limitations of the manufacturer and the building code.

MSE-046 Prefabricated wood trusses

1. Prefabricated wood trusses shall be designed by a Professional Engineer registered in the jurisdiction noted in MSE-001-3. Design of trusses and components shall conform to CSA O86 and the requirements of the Truss Plate Institute of Canada to carry the design loads and not to exceed the deflection limits as specified on the drawings.
2. Camber up trusses for dead loads plus 50% live load deflection.
3. Trusses shall be manufactured with structural wood chords and webs with galvanized steel connector plates between members, in a plant approved by ICBO or Standards Council of Canada under the supervision of an approved third party inspection agency. All lumber used shall have a moisture content between 6% and 8% at time of manufacture.
4. Manufacturer is responsible for design and supply of all bridging, blocking, accessories and metal connection hardware required for stability of the truss assembly.
5. Submit 4 sets of shop drawings per MSE-001-3 indicating design loads, truss type and all connection and bracing details to the Engineer prior to fabrication of trusses. Shop drawings shall be sealed by a Professional Engineer registered in the jurisdiction noted in MSE-001-2. Fabrication is not allowed until approved by the Engineer.
6. Trusses shall be handled, stored and erected in accordance with the manufacturer's erection drawings. All trusses shall be plumb and the chords held in a straight line.
7. Contractor is responsible for temporary stability of the trusses during erection.
8. The following are not permitted: temporarily removing web members; drilling or cutting chords; altering the trusses in any manner.

MSE-048 Wood sheathing diaphragm

1. Plywood for roofs and floors shall be exterior grade Douglas fir plywood to CSA O121 or Canadian Softwood plywood to CSA O151. Plywood to be legibly identified as exterior type.
2. Unless noted otherwise, plywood panels for floors and roofs shall be laid up with grain perpendicular to supports, with a half-sheet stagger and be fastened to supports with 65 mm common nails at 100 mm on-centre along panel edges and at 300 mm on-centre along intermediate supports, unless noted otherwise on the plans. Use roof sheathing with minimum performance mark 1R24 and floor sheathing with minimum performance mark 1F24 with minimum thicknesses as noted on the plans.
3. Make butt joints on solid material.
4. When diaphragm is noted as blocked, provide blocking 38x38 or larger, securely nailed between framing elements.
5. For roof sheathing, provide at least a 2 mm gap between the sheets using tongue-and-groove sheathing or H-clips.
6. Sub-flooring shall be glued and nailed to all joists. Glue to be a high solids, rubber contact type supplied in cartridges. Use a continuous glue bead and run into grooves just before inserting groove of tongue and groove plywood.
7. Unless specifically noted on the plans, no openings greater than 102 mm in diameter may be cut through the sheathing without authorization by the Structural Engineer.
8. Unless specifically noted otherwise, bottom plate of exterior stud walls at floor levels and top plate at roof level to be considered diaphragm chord/drag strut elements and to be structurally continuous. Provide full capacity splice unless splice axial force is noted or splice detail is shown on these drawings. No site coping, drilling or cutting is permitted of diaphragm chord/drag strut elements.

MSE-051 Wood sheathed shear walls

1. Plywood for walls shall be exterior grade Douglas fir plywood to CSA O121 or Canadian Softwood plywood to CSA O151. Plywood to be legibly identified as exterior type.
2. Unless noted otherwise, plywood panels for walls shall be applied with grain perpendicular to studs, with a half-sheet stagger and be fastened to supports with 75 mm common nails at 100 mm on-centre along panel edges and at 300 mm on-centre along intermediate studs, unless noted otherwise on the plans. All unsupported sheathing edges to be blocked with 38x89 blocking on flat and nailed as above.
3. Stud walls with sheathing nailed at 75 mm on-centre, or less, or walls with sheathing on both sides shall have double studs. Provide 38x140 blocking on flat at all unsupported sheathing edges. Nail double studs with 75 mm common nails at 50 mm staggered over full height.
4. Refer to shear wall schedule on plans for additional requirements including plywood thickness, nailing and anchoring requirements.
5. Nail gun pressure shall be tested and carefully set to ensure nail heads do not embed more than 3 mm into the face of the sheathing.
6. Provide at least a 2 mm gap between the sheets.
7. Fasten bottom wall plate to floor sheathing with 80 mm spikes at 100 on-centre and to concrete with 19mm diameter x 250 mm long anchor bolts complete with 65 mm diameter x 6 mm thick plate washers at 600 mm on-centre maximum and at 200 mm from ends of walls and corners, and at edges of window and door openings. Add hold down anchors by Simpson Strong Tie where noted on plan.
8. Lap wall top plates 1200 mm and connect with minimum 12 - 76 mm nails staggered, unless noted otherwise.
9. Drill adequate holes in exterior walls for ventilation.

MSE-059 Non-structural elements

1. Non-structural (secondary) elements include but are not limited to the following:
   a. Architectural components such as guard and hand rails, flag posts, canopies, ceilings, etc.
   b. Cladding, window mullions, glazing, interior and exterior partition or infill walls
   c. Skylights
   d. Architectural pre-cast and pre-cast cladding
   e. Attachments and bracing for electrical and mechanical components
   f. Brick or block veneers and their attachments
   g. Interior and exterior light gauge steel stud walls
   h. Non-load bearing masonry
   i. Non-structural concrete topping
   j. Landscape elements such as benches, light posts, planters, etc.
   k. Roofing material
2. Design and detailing of the above items and their attachments are not the responsibility of the Structural Engineer. They shall be designed by Specialty Structural Engineers retained by the contractor, who will seal all related shop drawings, review the components in the field and provide all required sealed letters to the authorities having jurisdiction.
3. Secondary or non-structural components and their attachments shall be designed in accordance with Part 4 of the building code.
4. Sealed shop drawings of the secondary or non-structural components which may affect the primary structural system shall be submitted to the Structural Engineer only for the review of their effect on the primary structural system. The subcontractor of these components is responsible for protection of aluminum-steel connections against galvanic corrosion.
5. Installation of non-structural elements to commence at least one month after the reinforced concrete slab supporting the non-structural elements has been poured and the re-shores removed.
6. Non-structural elements must be designed and detailed to accommodate the anticipated deformations as noted above.
7. In addition to construction tolerance, non-structural components shall be detailed for the following building movement and deflection:
   a. Vertical deflections of beams, slabs and decking: ± 20 mm
   b. Differential vertical deflections of edges beams and edges of slabs: ± 16 mm
   c. Horizontal drift during wind and earthquake between floors:
      i. Drift without damage to non-structural components: ± 13 mm
      ii. Drift without collapse of non-structural components: ± 50 mm
   d. Movement at expansion joints:
      i. Perpendicular ± 50 mm
      ii. Parallel ± 50 mm
      iii. Vertical ± 25 mm

MSE-060 Field Review

1. The contractor on projects shall provide the Structural Engineer with a minimum of 72 hours (3 business days) advance notice prior to pouring or concealment for field reviews. Field reviews shall be scheduled to be carried out during normal business hours unless special arrangements are made with the Structural Engineer.
2. Field review is only for the work shown on these structural drawings. This review is not a "full time" review but is a periodic review at the sole discretion of the Structural Engineer in order to ascertain that the work is in general conformance with the plans and supporting documents prepared by the Structural Engineer. Field review is not carried out for the contractor's benefit nor does it make the Structural Engineer guarantor of the contractor's work. It remains the contractor's responsibility to build and review the contractor's (and sub-trades) work in conformance with the contract documents. The Structural Engineer shall not be responsible for the acts or omissions of the contractor, sub-contractor, or any other persons performing any of the work or for the failure of any of them to carry out the work in accordance with the contract documents.
3. The following field reviews are considered to be the minimum number of structural field reviews requiring written review by the Structural Engineer for the project:
   a. Concrete: reinforcing steel shall be reviewed prior to placing concrete. Reinforcing in concrete walls shall be reviewed prior to "buttoning up" wall forms.
   b. Masonry (including non-load bearing partitions): reinforcing steel shall be reviewed prior to pouring all bond beams. Bond beam and vertical reinforcing shall be in place at the time of field review.
   c. Timber: framing shall be reviewed prior to covering any framing and before additional loads such as concrete topping and mechanical equipment are applied.
   d. Steel: structural steel shall be reviewed after the members have been fabricated and are in their final position with all connections complete and all bolts installed and torqued.

MSE-061 Testing and inspection

1. A Geotechnical consultant and an independent inspection and testing company are to be engaged to carry out the following services:
   a. Soil bearing - refer to MSE-003 and soils report.
   b. Fill under slabs-on-grade - confirm that fill material used is satisfactory and that the required degree of compaction has been attained.
   c. Cast-in-place and pre-cast concrete - routine inspection of materials, including slump, cylinder and air entrainment tests and reinforcing rod tests when required or directed in accordance with CSA A23.2. Unless permitted by the Structural Engineer, a minimum of 3 test cylinders shall be cast for each 50 cubic metres or each day's pour, whichever is less. Test one at 7 days and two at 28 days and submit written reports for review by the Structural Engineer. For high fly ash concrete (33% or more) provide one additional test cylinder tested at 56 days. Test reports shall be identified by grid lines, location and elevation for the batch of placed concrete. Submit test results maximum 24 hours after test.
   d. The contractor is to advise the Geotechnical Engineer a minimum of 24 hours or to a time they approve in advance of a concrete pour for a review of preparations.
   e. Structural steel - routine shop and field inspection shall be carried out in accordance with the requirements of CAN/CSA S16. The owner shall appoint an independent testing agency to carry out representative testing of bolt torque and welding on structural steel work, including decking as directed by the Structural Engineer. This testing shall take place prior to concealment of all structural steel. The contractor must make accommodation for the testing to take place without additional costs.
   f. Masonry - when required or directed, concrete blocks shall be tested in accordance with CAN/CSA A165, bricks in accordance with CSA/CAN3-A82.2-M78, and mortar and/or grout in accordance with CSA A179.
2. All inspection and testing services are to be performed by companies certified by the Canadian Standards Association and, for welding, inspectors certified by the Canadian Welding Bureau.
3. Materials testing shall be as directed by the Structural Engineer at the expense of the owner.
4. Additional testing and field review resulting from the rejection of more than 5% of work tested will be at the contractor's expense.

SYMBOLS	
S###	DENOTES PARTIAL SECTION
S###	DENOTES ELEVATION
S###	DENOTES DETAIL
#	DENOTES REVISION ON PLAN/SECTION
	DENOTES CONCRETE TOPPING ON SECTION
	DENOTES NEW CONCRETE ON PLAN & SECTION
	DENOTES NEW WOOD WALL ON PLAN
	DENOTES JOISTS ON PLAN
L H	DENOTES STEPPED FLOOR OR ROOF (LOW/HIGH) SEE ARCH FOR DATUMS
	DENOTES HANGER
	DENOTES INVERTED HANGER
	DENOTES MOMENT CONNECTION

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100200138
16-May-2023
PROVINCE OF ONTARIO

Project:

GULL RIVER HOUSING BUILDING 4

MINDEN, ON

Project No:

20.029

Scale: AS NOTED
Drawn By: MG/KM
Checked By: MA/SN

MSE START DATE: 16-JUN-2022
REVISIONS AND DISTRIBUTION LOG

Rev	Date	Note
	29-APR-2022	Issued for Bldg Permit
	17-MAY-2022	Re-Issued for Bldg Permit
	08-AUG-2022	Issued for Bldg Permit
	16-MAY-2023	Issued for Tender

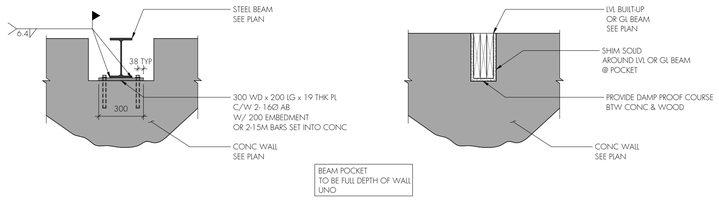
Drawing Title:

GENERAL NOTES

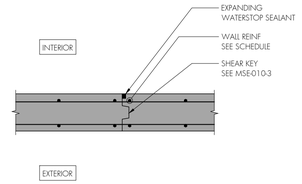
Drawing No:

S002

cm in



10 S003 TYP BEAM POCKET DETAIL IN CONC WALL
NTS



9 S003 WALL CONSTRUCTION JOINT
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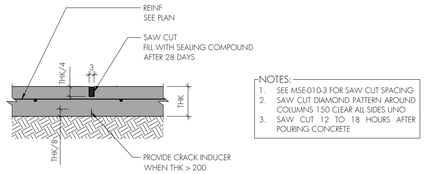

8 S003 CONTROL JOINT IN SOG
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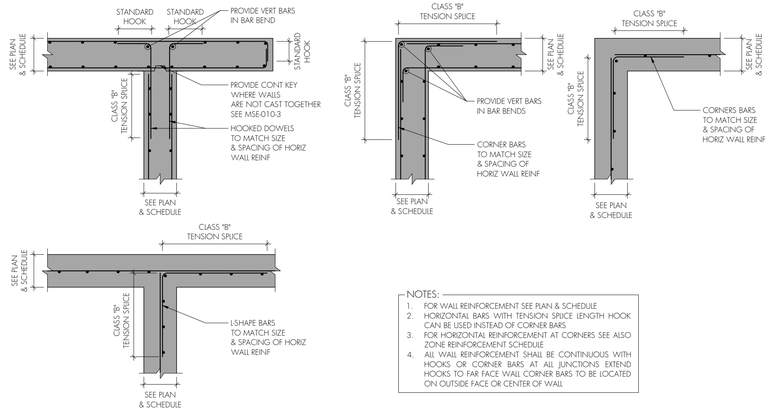
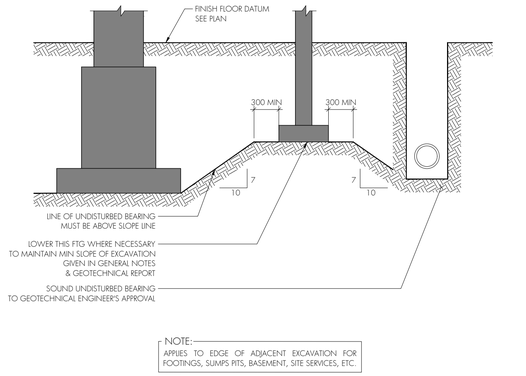
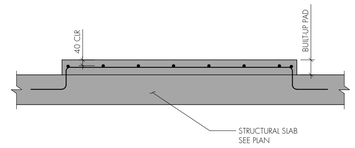


7 S003 PLANS - TYP HORIZ REINF AT WALL INTERSECTIONS
NTS



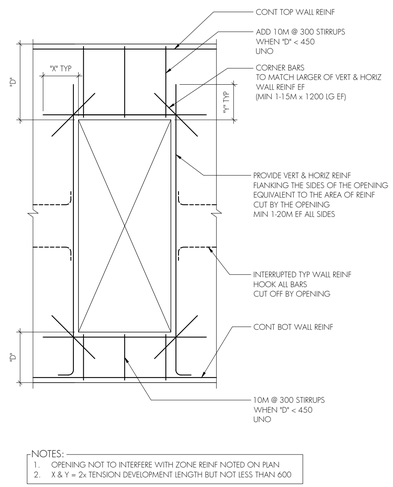
6 S003 ELEVATIONS OF ADJACENT FOOTINGS AND EXCAVATIONS
NTS



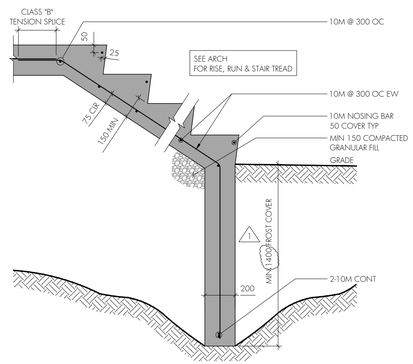
PAD THICKNESS "THK"	REINFORCEMENT
50	152MW×152MW18.7×MW18.7WWF 1 LAYER
100	152MW×152MW18.7×MW18.7WWF 2 LAYERS
150	10M @ 300 OC MID-DEPTH OF "THK" EW
200	10M @ 250 OC TOP & BOT EW

NOTE:
GROUT ALL CRACKS IN THE HOUSEKEEPING PAD WITH MORTAR AND BONDING AGENT OR AS NOTED IN SPECIFICATIONS

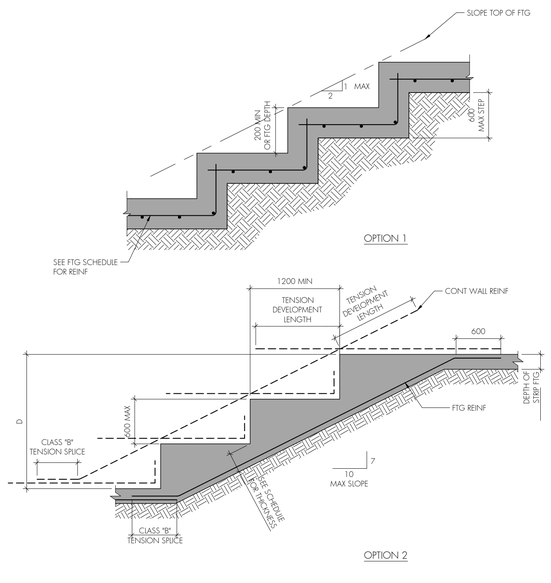
5 S003 TYP HOUSEKEEPING PAD
NTS



4 S003 TYP DOOR OPENING IN CONCRETE WALL
NTS



3 S003 TYP STAIR ON GRADE
NTS



2 S003 TYP STEPPED FOOTING OPTIONS
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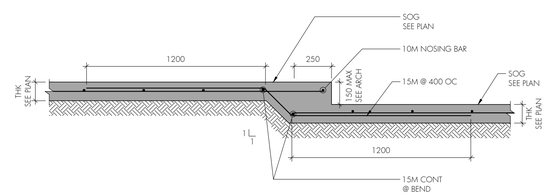

1 S003 STEP UP TO 6" IN SLAB-ON-GRADE
NTS

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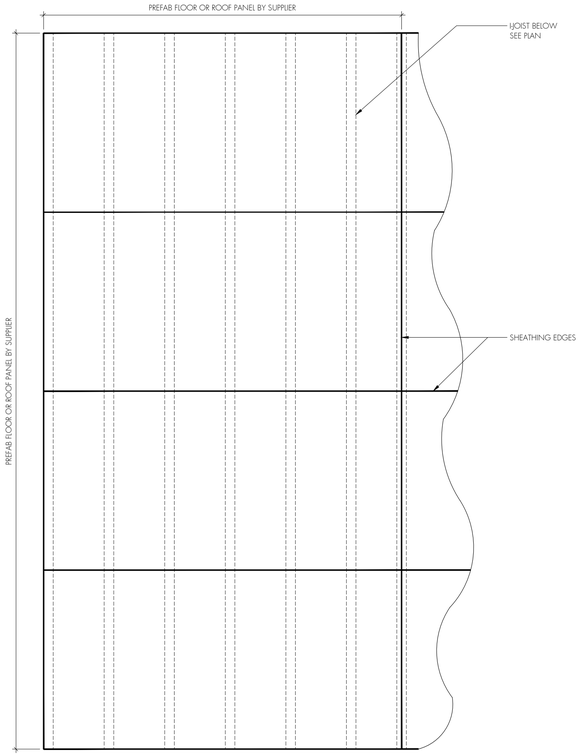
Drawing Title:

TYPICAL DETAILS

Drawing No:

S003

cm in



7 S004 TYP FLOOR SHEATHING PATTERN
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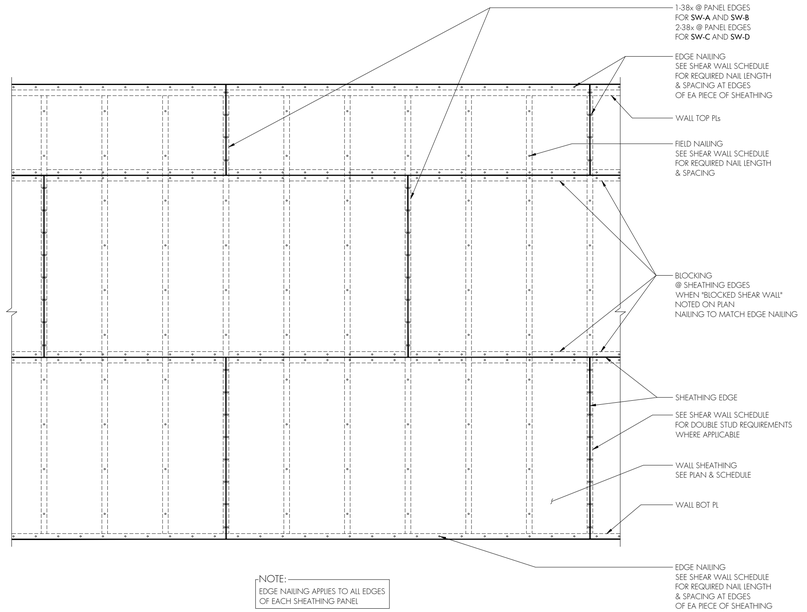

6 S004 TYP SHEAR WALL SHEATHING NAILING DETAIL
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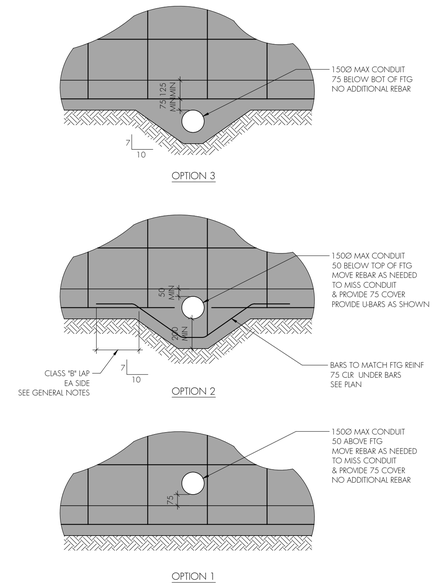

5 S004 TYP DETAILS FOR CONDUITS THROUGH FDN
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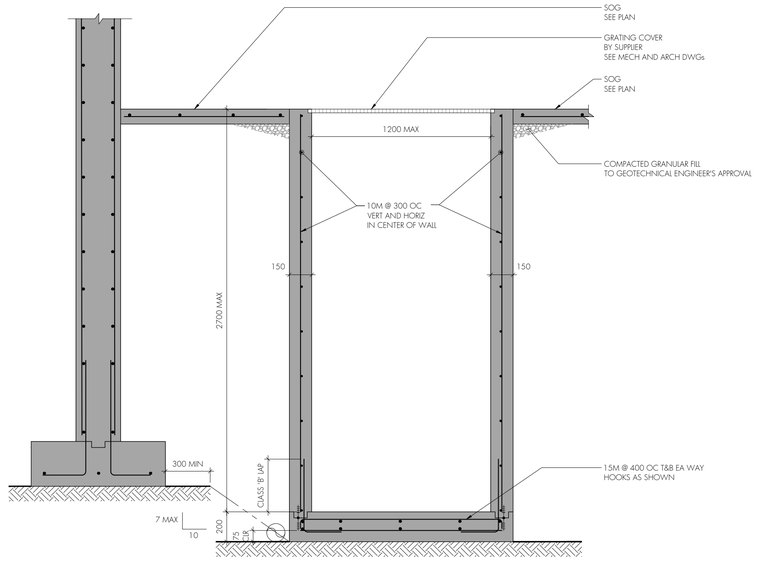

3 S004 TYP SUMP PIT
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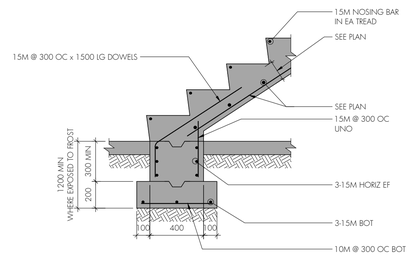

4 S004 TYP SECTION AT CONCRETE STAIR FOUNDATION
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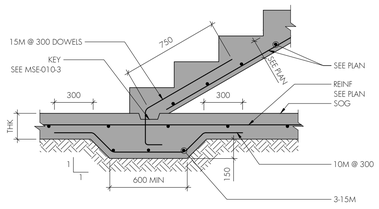

2 S004 TYP SLAB ON GRADE THICKENING UNDER CONCRETE STAIRS
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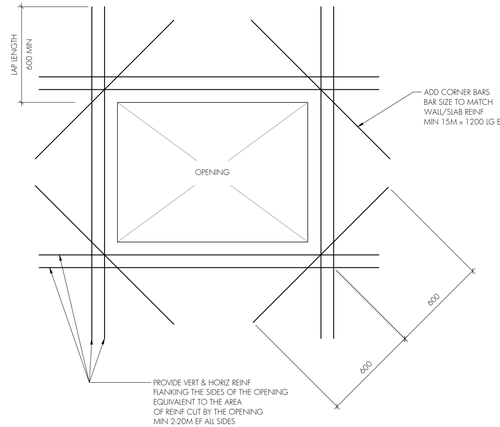

1 S004 TYP REINFORCING AROUND WALL AND SLAB OPENINGS
NTS

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LICENSED PROFESSIONAL ENGINEER
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100200138
16-May-2023
PROVINCE OF ONTARIO

Project:

GULL RIVER HOUSING BUILDING 4

MINDEN, ON

Project No:

20.029

Scale: AS NOTED
Drawn By: MG/KM
Checked By: MA/SN

MSE START DATE: 16-JUN-2022
REVISIONS AND DISTRIBUTION LOG

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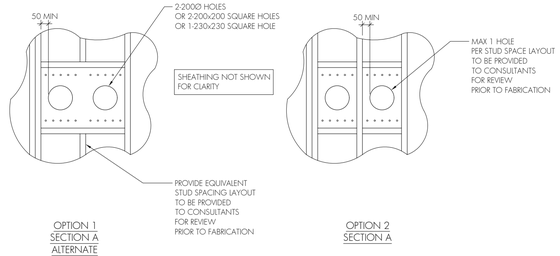
Drawing Title:

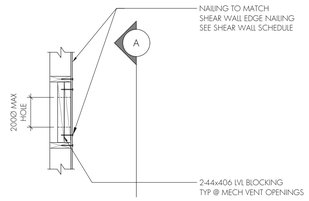
TYPICAL DETAILS

Drawing No:

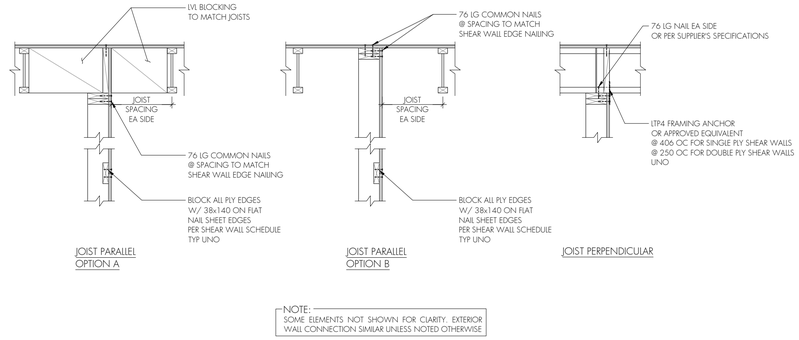
S004

cm in

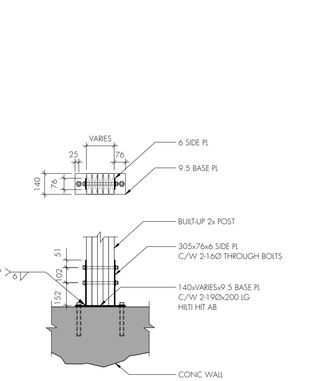




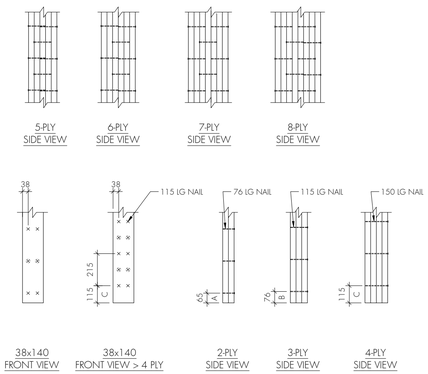
10 / S005 TYP BLOCKING AT VENTS IN SHEAR WALLS
NTS



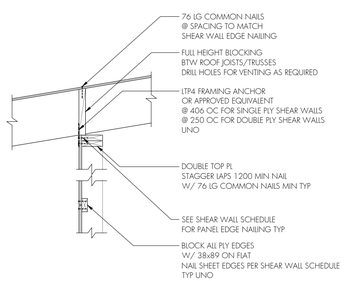
7 / S005 TYP SHEAR WALL TO DIAPHRAGM CONNECTION
NTS



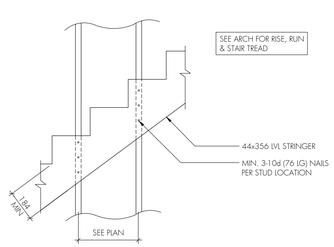
9 / S005 TYP ISOLATED BUILT-UP 2x POST TO FDN WALL
NTS



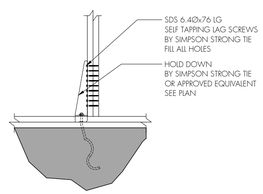
8 / S005 TYP NAILING FOR BUILT-UP 2x POSTS
NTS



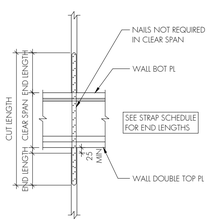
6 / S005 TYP SHEAR WALL TO SLOPED ROOF CONNECTION
NTS



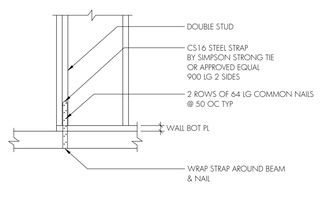
5 / S005 TYP STAIR STRINGER DETAIL
NTS



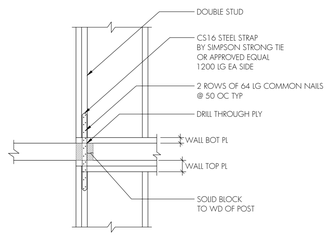
4 / S005 HOLD DOWN TO CONCRETE (CAST-IN)
NTS



3 / S005 VERTICAL STRAP CUT LENGTH
NTS



2 / S005 VERTICAL STRAP OVER BEAM
NTS



1 / S005 VERTICAL STRAP FLOOR TO FLOOR
NTS

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16-May-2023
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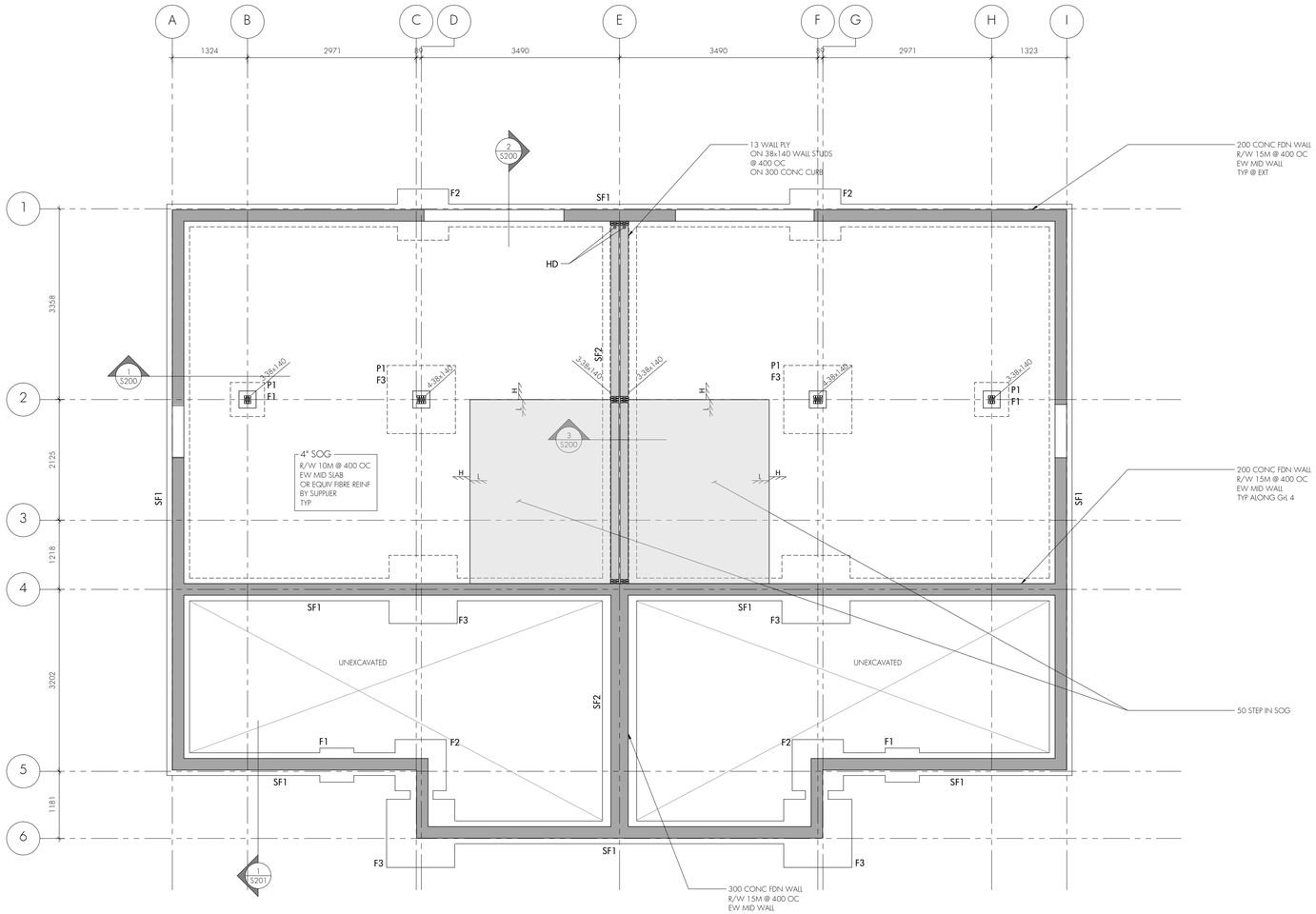
Drawing Title:

TYPICAL DETAILS

Drawing No:

S005

cm in



1 FOUNDATION/BASEMENT PLAN
S100 1:50

NOTE:
ALL COLUMNS TO BE DOUBLES TO MATCH WALL STUDS, UNO

CONCRETE PIER SCHEDULE			
LABEL	DIMENSION	REINFORCEMENT	ARRANGEMENT
P1	300x300	4-15M VERT + 10M TIES @ 200 OC	

FOOTING SCHEDULE			
LABEL	TYPE	DIMENSIONS	REINFORCEMENT
F1	PAD	600x600x200 DP	2-15M BOT EW
F2	PAD	900x900x200 DP	2-15M BOT EW
F3	PAD	1200x1200x250 DP	3-15M BOT EW
SF1	STRIP	400x200 DP	2-15M BOT CONT
SF2	STRIP	600x200 DP	2-15M BOT CONT

SHEAR WALL SCHEDULE

LABEL	SHEATHING		NAILING			BLOCKING	ANCHORAGE	FRAMING ANGLES SPACING TOP OF EACH WALL AND EACH PLY*		
	THICKNESS	# SIDES	SIZE	EDGE NAILING	FIELD NAILING			A35	LTP4	LTP5
SW-A	13 PLY	1 SIDE	3.660x65 IG COMMON NAILS	150 OC	300 OC	ALL EDGES	19Ø AB @ 1220 OC EMBED 200 MIN	600 OC	400 OC	400 OC
SW-B				100 OC		ALL EDGES	19Ø AB @ 1220OC EMBED 200 MIN	400 OC	300 OC	400 OC
SW-C				75 OC		ALL EDGES & DOUBLE STUDS	19Ø AB @ 915OC EMBED 200 MIN	300 OC	300 OC	300 OC

NOTES:
1. ALL EXTERIOR AND LOAD BEARING WALLS TO BE **SW-A** UNO.
2. SEE GENERAL NOTES, TYPICAL DETAILS PLANS AND SECTIONS FOR ADDITIONAL SHEAR WALL INFORMATION.
3. CONTRACTOR SHOULD BE AWARE THAT NAILS FOR NAIL GUNS OFTEN HAVE A SMALLER DIAMETER THAN TYPICAL COMMON NAILS. CONTRACTOR TO CONFIRM NAILS MATCH THE SIZE LISTED IN THE TABLE.
4. 13 PLY MAY BE SUBSTITUTED WITH 11 OSB ONLY WITH WRITTEN PERMISSION FROM THE ENGINEER. SPACING AND SIZES WILL BE AFFECTED.
5. SEE SECTIONS FOR LOCATION OF FRAMING ANGLES.
6. SYMBOLS:

SW-X	DENOTES SHEAR WALL ON PLAN.
HD	HOLD DOWN: HDU4-SDS 2.5 BY SIMPSON STRONG-TIE.
HD-2	HOLD DOWN: HDU11-SDS 2.5 BY SIMPSON STRONG-TIE.
*	VERTICAL STRAPS: CS14x1400 LG BY SIMPSON STRONG-TIE.
*1	VERTICAL STRAPS: CMST14x1900 LG BY SIMPSON STRONG-TIE.
	HORIZONTAL STRAPS: CMST14x1600 LG MIN BY SIMPSON STRONG-TIE. SEE PLAN FOR LENGTH. BLOCK UNDER STRAP.

7. *REQUIRED MAXIMUM SPACING OF FRAMING ANGLES ALONG ENTIRE Grl WHERE SHEAR WALL OCCURS.

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16-May-2023
PROVINCE OF ONTARIO

TRUE NORTH

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GULL RIVER HOUSING BUILDING 4

MINDEN, ON

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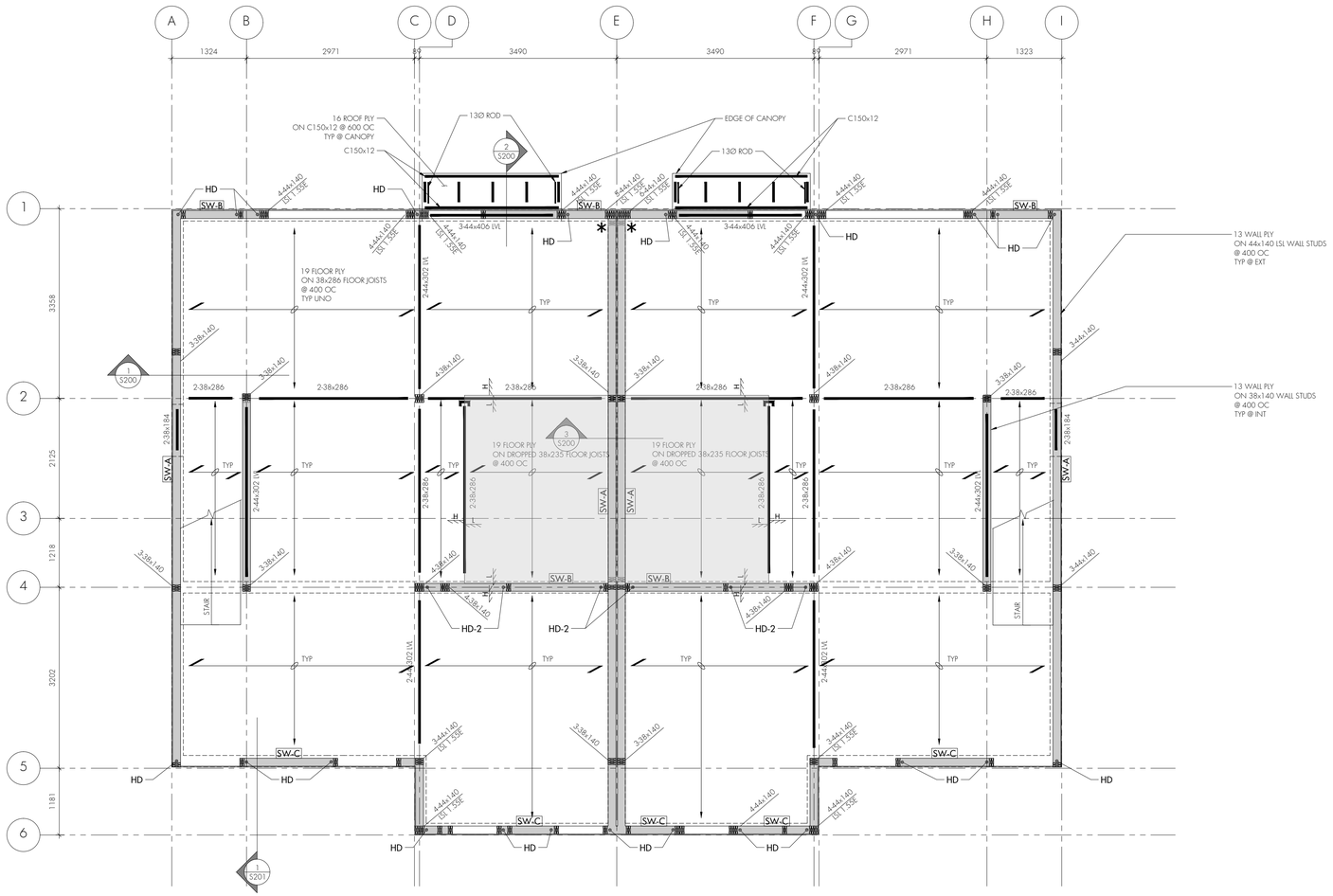
Drawing Title:

BASEMENT /FOUNDATION PLAN

Drawing No:

S100

cm in



1 GROUND FLOOR PLAN
S101 1:50

NOTES:
1. ALL COLUMNS TO BE DOUBLES TO MATCH WALL STUDS, UNO.
2. ALL EXTERIOR STEEL TO BE HDG.

SHEAR WALL SCHEDULE

LABEL	SHEATHING		NAILING			BLOCKING	ANCHORAGE	FRAMING ANGLES SPACING TOP OF EACH WALL AND EACH PLY*		
	THICKNESS	# SIDES	SIZE	EDGE NAILING	FIELD NAILING			A35	LTP4	LTP5
SW-A	13 PLY	1 SIDE	3.66Ø x65 IG COMMON NAILS	150 OC	300 OC	ALL EDGES	19Ø AB @ 1220 OC EMBED 200 MIN	600 OC	400 OC	400 OC
SW-B				100 OC		ALL EDGES	19Ø AB @ 1220OC EMBED 200 MIN	400 OC	300 OC	400 OC
SW-C				75 OC		ALL EDGES & DOUBLE STUDS	19Ø AB @ 915OC EMBED 200 MIN	300 OC	300 OC	300 OC

NOTES:
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3. CONTRACTOR SHOULD BE AWARE THAT NAILS FOR NAIL GUNS OFTEN HAVE A SMALLER DIAMETER THAN TYPICAL COMMON NAILS. CONTRACTOR TO CONFIRM NAILS MATCH THE SIZE LISTED IN THE TABLE.
4. 13 PLY MAY BE SUBSTITUTED WITH 11 OSB ONLY WITH WRITTEN PERMISSION FROM THE ENGINEER. SPACING AND SIZES WILL BE AFFECTED.
5. SEE SECTIONS FOR LOCATION OF FRAMING ANGLES.
6. SYMBOLS:

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- - -	HORIZONTAL STRAPS: CMST14x1600 LG MIN BY SIMPSON STRONG-TIE. SEE PLAN FOR LENGTH. BLOCK UNDER STRAP.

7. *REQUIRED MAXIMUM SPACING OF FRAMING ANGLES ALONG ENTIRE GirL WHERE SHEAR WALL OCCURS.

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16-May-2023
PROVINCE OF ONTARIO

Project:

GULL RIVER HOUSING BUILDING 4

MINDEN, ON

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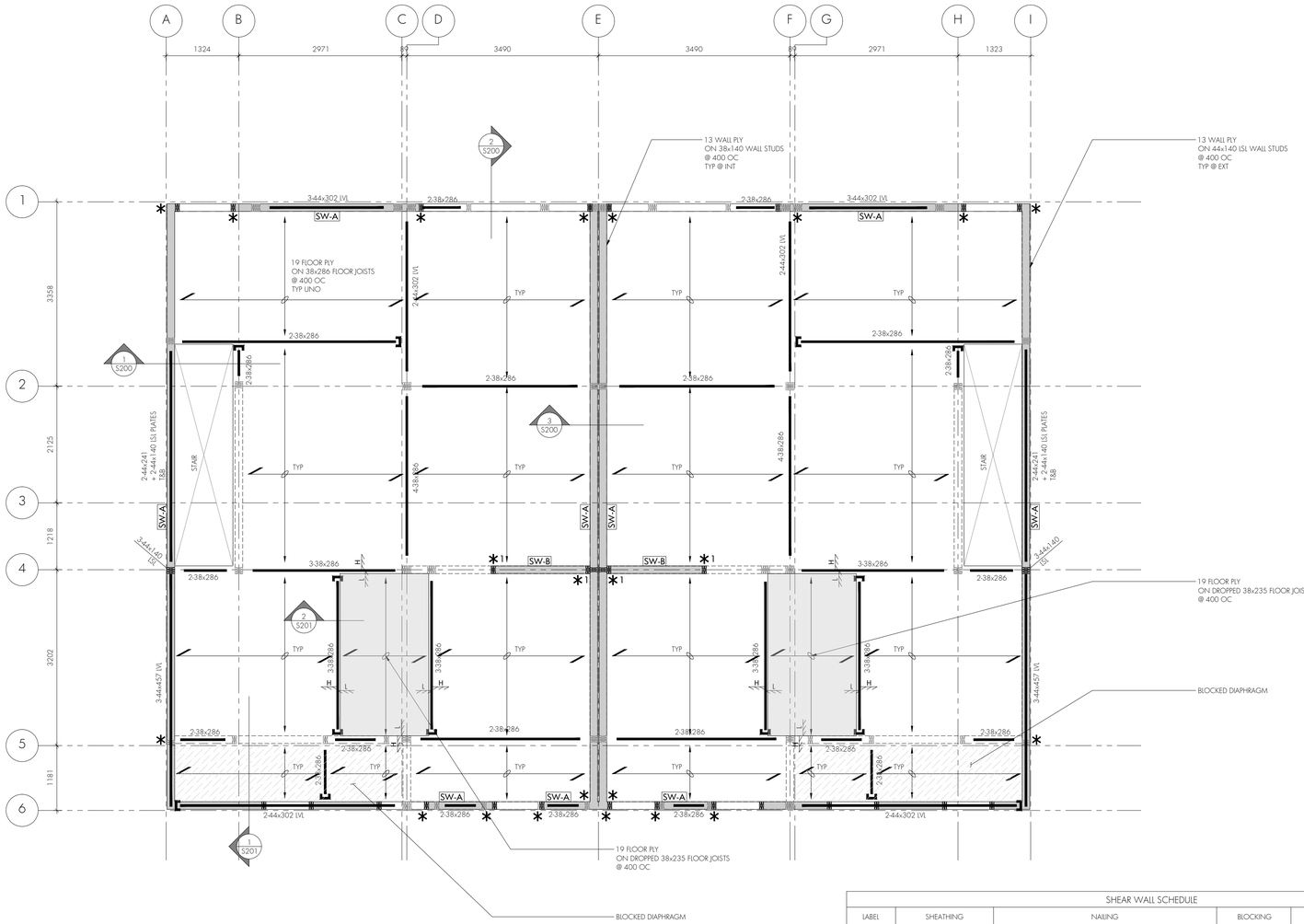
Drawing Title:

GROUND FLOOR PLAN

Drawing No:

S101

cm in



NOTE:
ALL COLUMNS TO BE DOUBLES TO MATCH WALL STUDS, UNO

SHEAR WALL SCHEDULE

LABEL	SHEATHING		NAILING			BLOCKING	ANCHORAGE	FRAMING ANGLES SPACING TOP OF EACH WALL AND EACH PLY*		
	THICKNESS	# SIDES	SIZE	EDGE NAILING	FIELD NAILING			A35	LTP4	LTP5
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SW-B				100 OC		ALL EDGES	19Ø AB @ 1220OC EMBED 200 MIN	400 OC	300 OC	400 OC
SW-C				75 OC		ALL EDGES & DOUBLE STUDS	19Ø AB @ 915OC EMBED 200 MIN	300 OC	300 OC	300 OC

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*1	VERTICAL STRAPS: CMST14x1900 LG BY SIMPSON STRONG-TIE.
- - - -	HORIZONTAL STRAPS: CMST14x1600 LG MIN BY SIMPSON STRONG-TIE. SEE PLAN FOR LENGTH. BLOCK UNDER STRAP.

7. *REQUIRED MAXIMUM SPACING OF FRAMING ANGLES ALONG ENTIRE GH WHERE SHEAR WALL OCCURS.

1 SECOND FLOOR PLAN
S102 1:50

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16-May-2023
PROVINCE OF ONTARIO

TRUE NORTH

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GULL RIVER HOUSING BUILDING 4

MINDEN, ON

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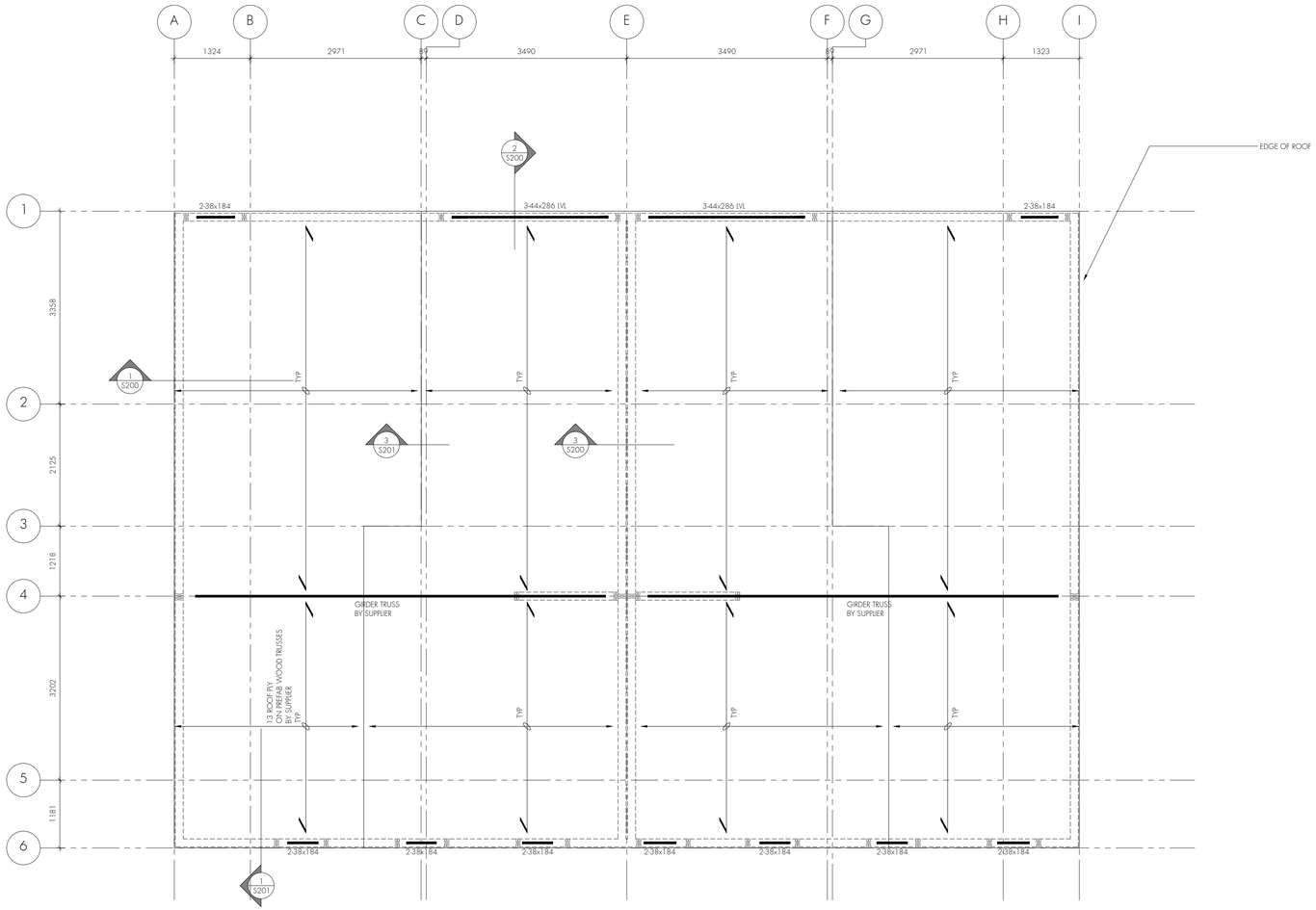
Drawing Title:

SECOND FLOOR PLAN

Drawing No:

S102

cm in



1 S103 ROOF PLAN 1:50

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100200138
16-May-2023
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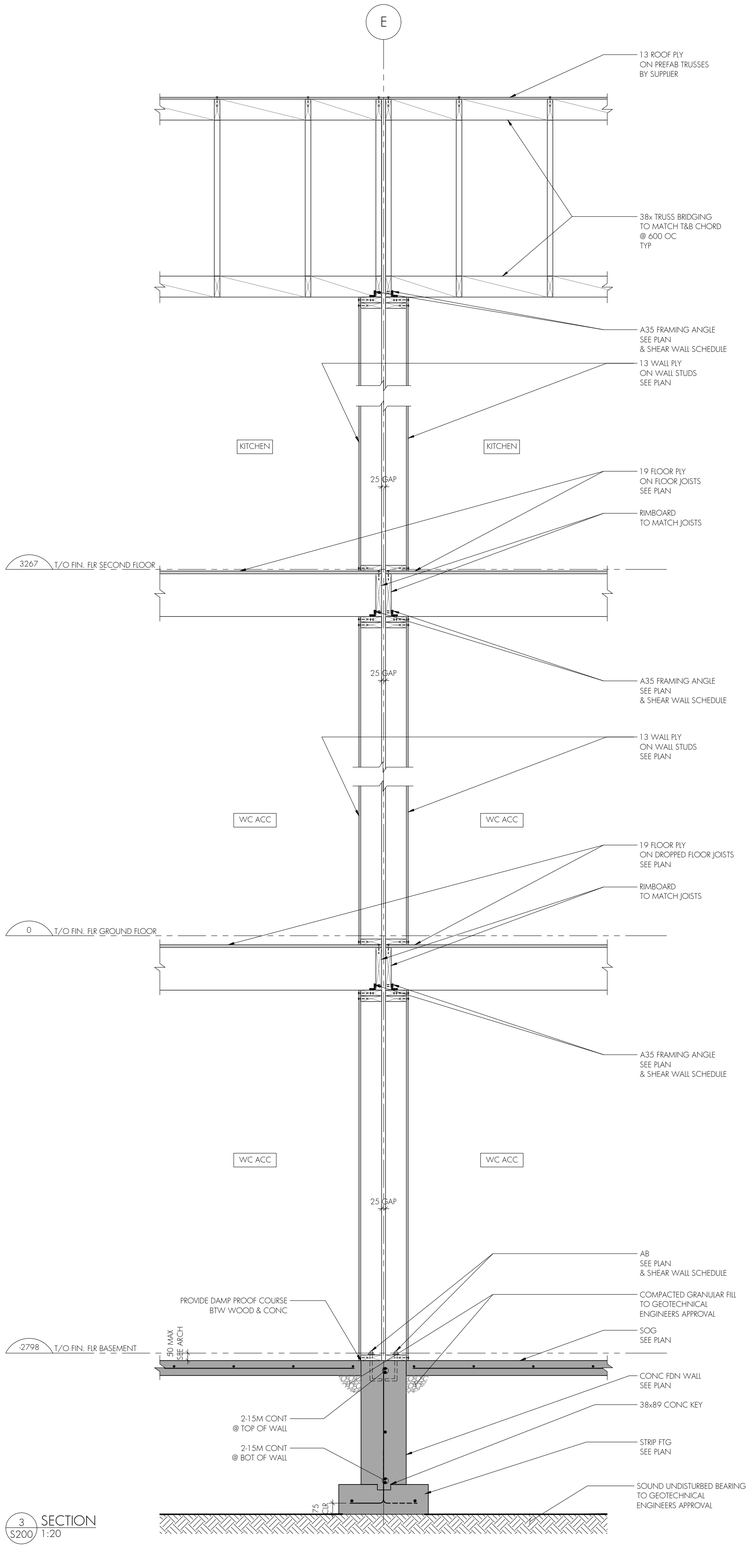
Drawing Title:

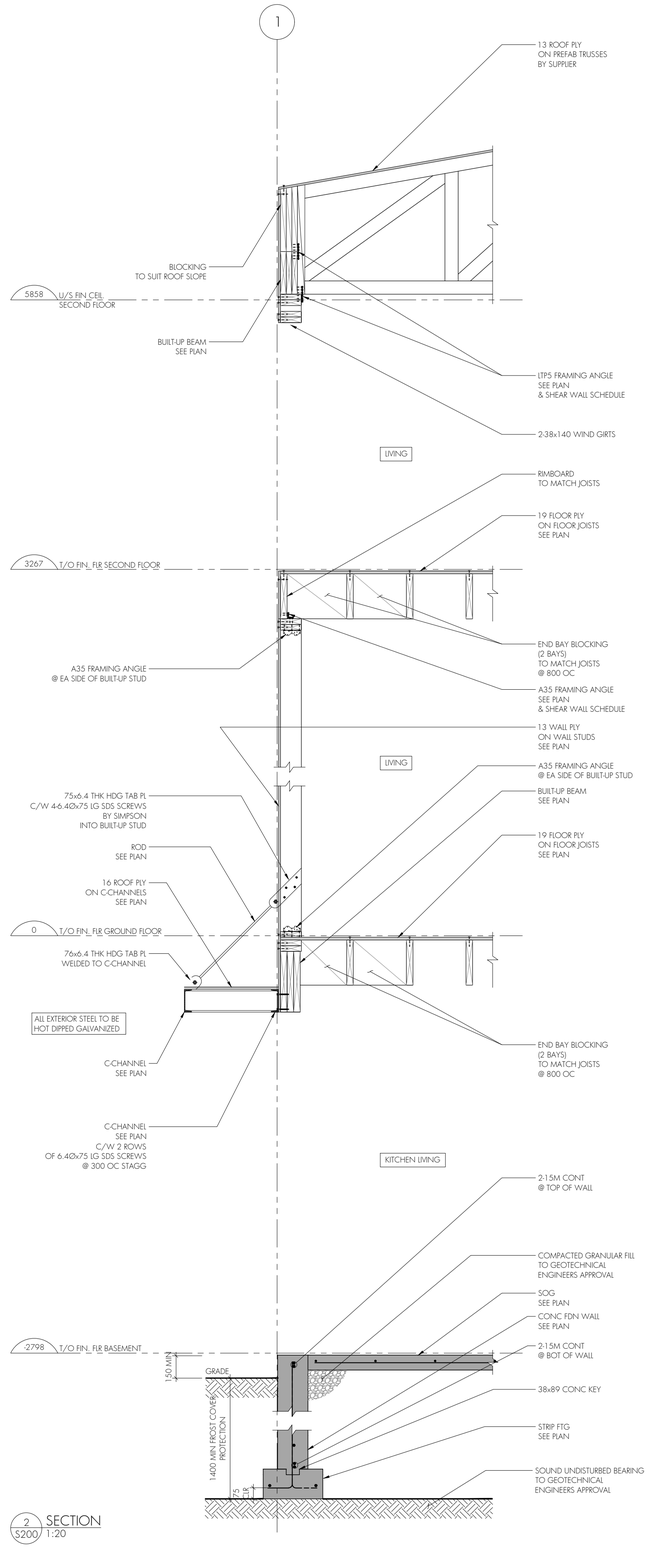
ROOF PLAN

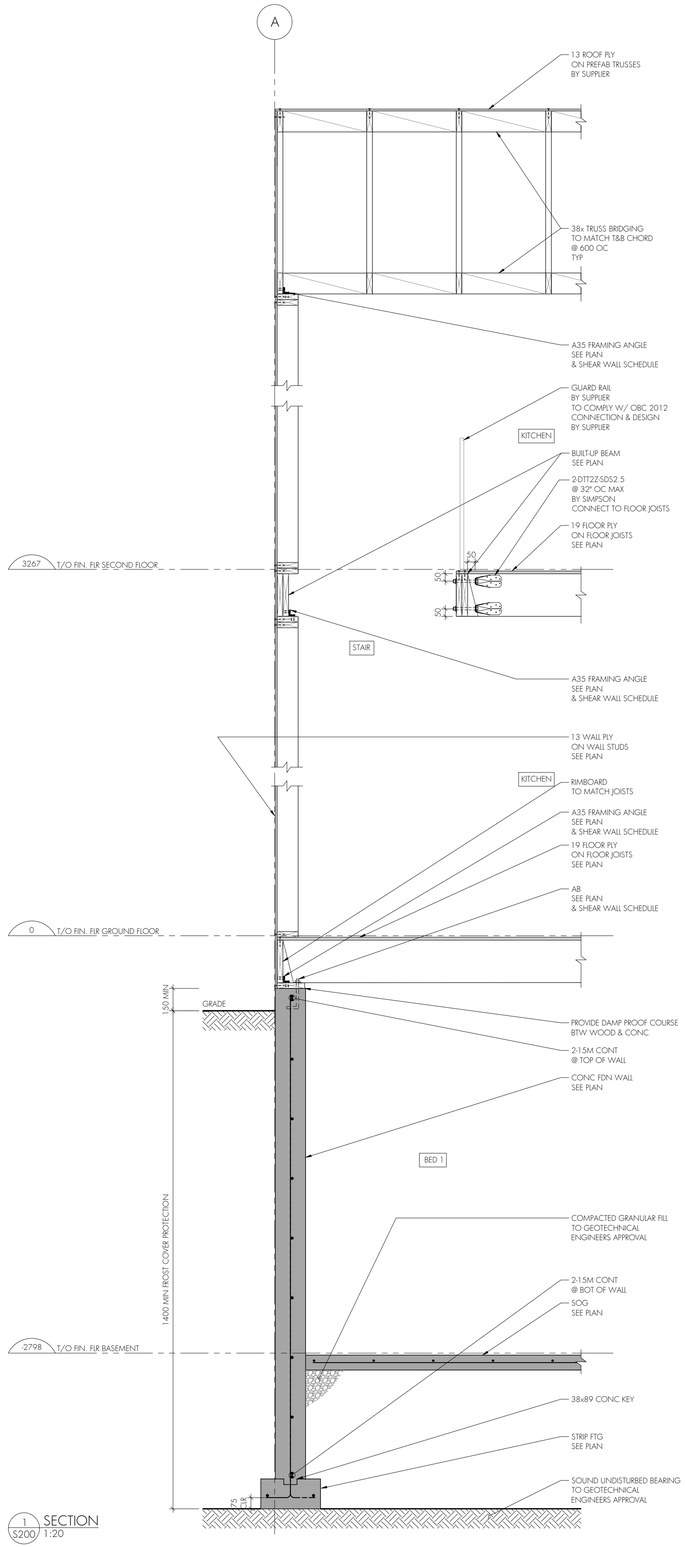
Drawing No:

S103

cm in







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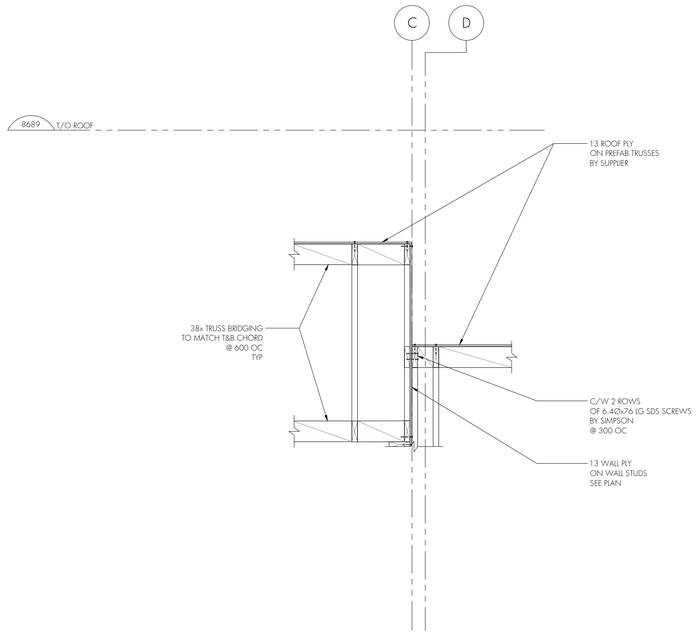
Drawing Title:

SECTIONS

Drawing No:

S200

cm in



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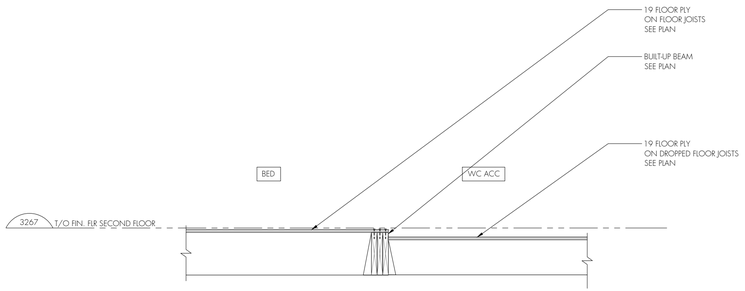
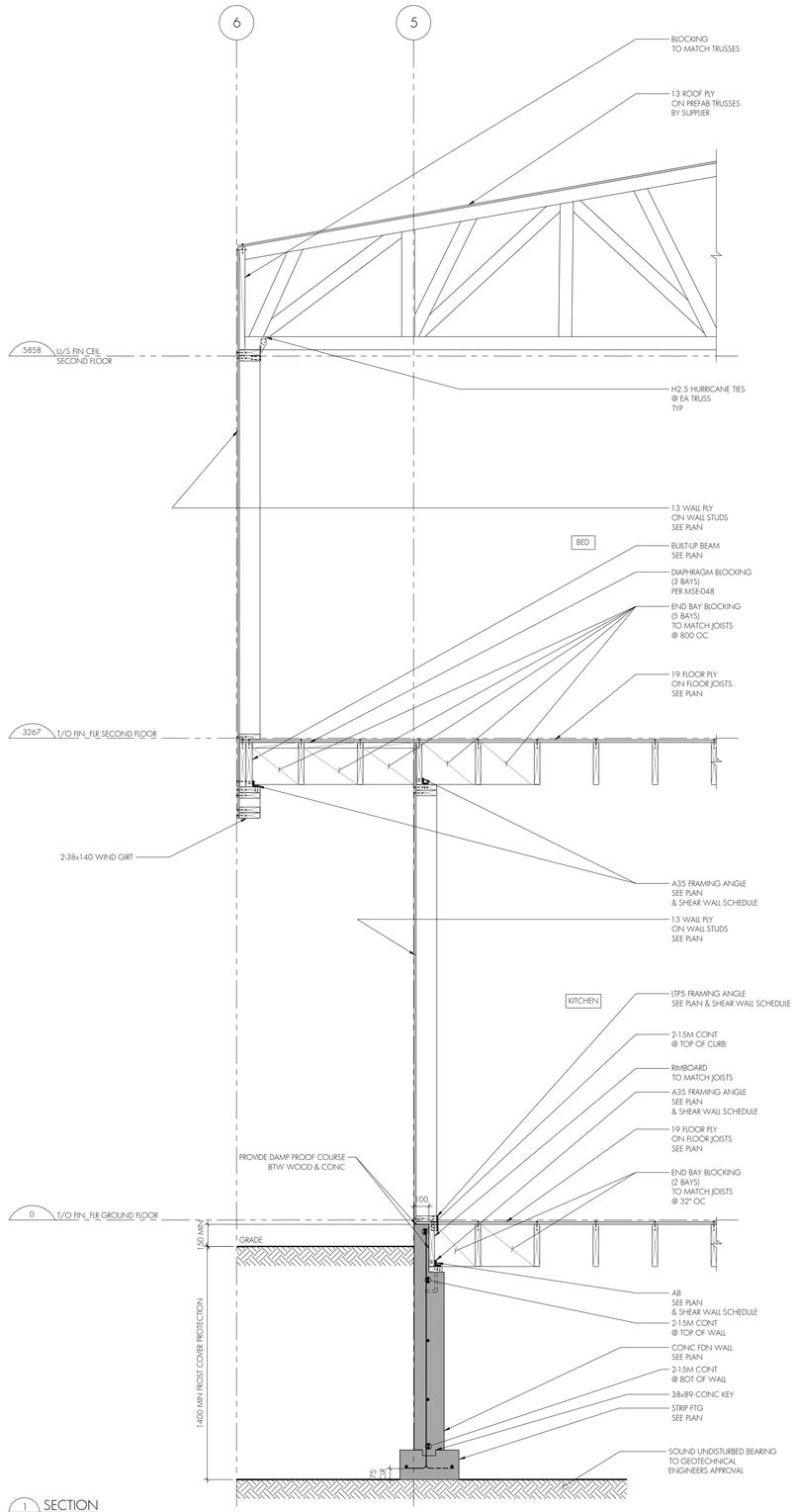


2 S201 SECTION 1:20



1 S201 SECTION 1:20

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Drawing Title:

SECTIONS

Drawing No:

S201

cm in