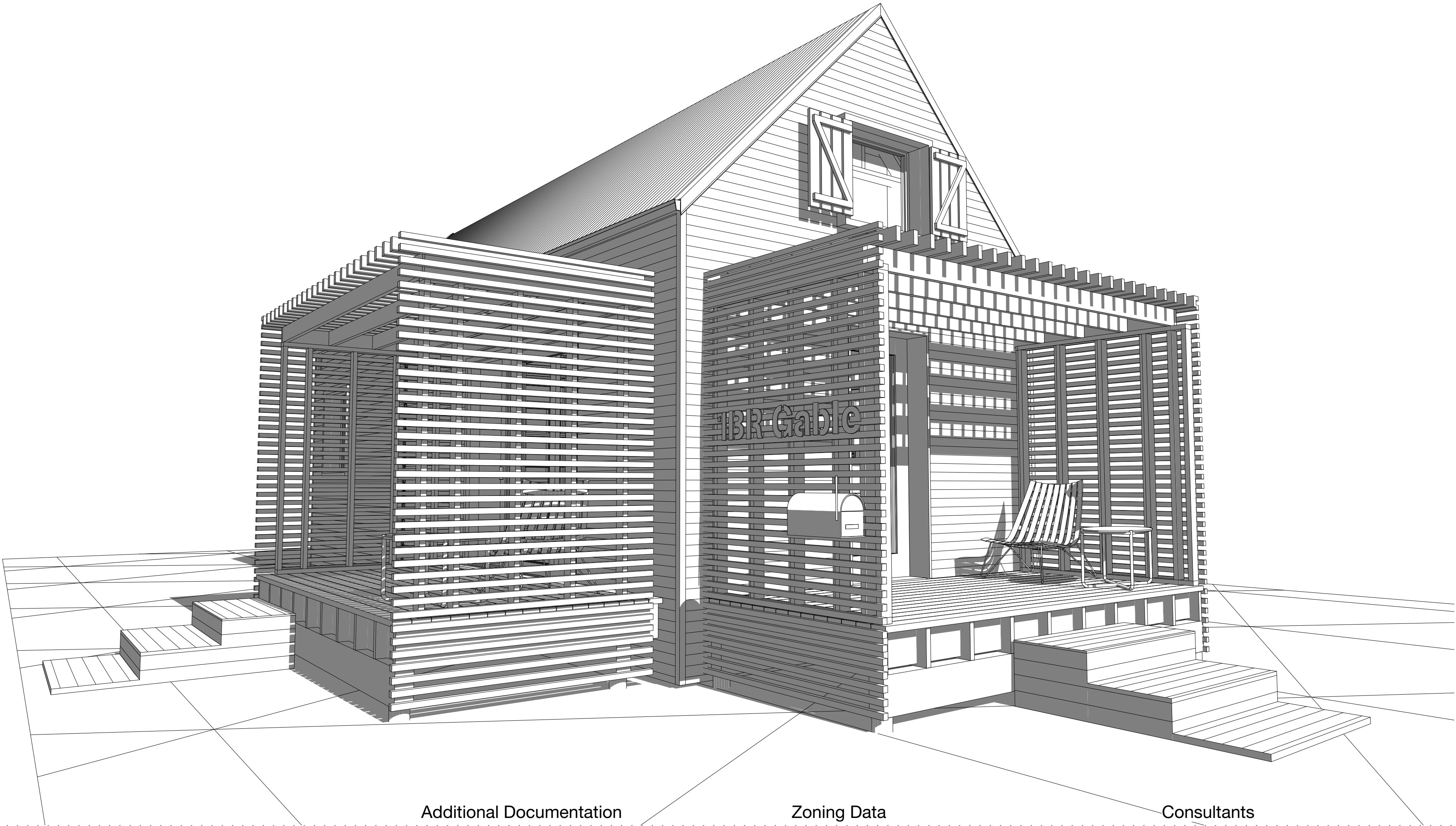


Construction Document Index

General Information		
A0.01	02 - WIP	Cover Sheet
A0.02	02 - WIP	Notes & Legends 1-6
A0.03	02 - WIP	Notes & Legends 7-12
A0.04	02 - WIP	Notes & Legends 13-18
A0.05	02 - WIP	Notes & Legends 19-24
A0.06	02 - WIP	Abbreviations
A0.07	02 - WIP	Legends
A0.08	02 - WIP	Construction Assemblies
A0.09	02 - WIP	Detailed Assemblies
A0.10	02 - WIP	Control Layers
A0.11	02 - WIP	Keynotes
A0.12	02 - WIP	OBC Matrix & Code Notes
A0.13	02 - WIP	SB12 & Energy
Site Plans		
A1.01	02 - WIP	Site Plan
Proposed Design Plans		
A2.41	02 - WIP	Design Floor Plan
A2.42	02 - WIP	Roof Plan
Proposed Construction Plans		
S2.43	02 - WIP	Foundation Framing Plans
S2.45	02 - WIP	Main Floor Framing Plans
S2.46	02 - WIP	Roof Framing Plans
A2.46	02 - WIP	Main Floor Plan
A2.47	02 - WIP	Main Floor Electrical Plans
A2.48	02 - WIP	Assembly Perspective
A2.49	02 - WIP	Assembly Perspective
A2.410	02 - WIP	Framing Perspective
Elevations		
A4.01	02 - WIP	North & South Elevations
A4.02	02 - WIP	East & West Elevations
S4.03	02 - WIP	Framing Elevations
S4.04	02 - WIP	Framing Elevations
Building Sections		
A5.01	02 - WIP	Building Sections
A5.02	02 - WIP	Building Sections
A5.03	02 - WIP	Building Sections
A5.04	02 - WIP	Building Sections
Wall Sections		
A5.05	02 - WIP	WALL SECTIONS
Details		
A6.01	02 - WIP	Details
A6.02	02 - WIP	Details
Interior Elevations		
A7.01	02 - WIP	Interior Elevations
Schedules		
A8.01	02 - WIP	Door & Window Schedule
A8.02	02 - WIP	Electrical Schedule
A8.04	02 - WIP	Room Finish Schedules
3D Documents		
A9.01	02 - WIP	3D Views
A9.02	02 - WIP	3D Views
A9.03	02 - WIP	3D Views
A9.04	02 - WIP	3D Views
A9.05	02 - WIP	3D Views
A9.06	02 - WIP	3D Views
3D Mechanical Documents		
M1.01	02 - WIP	G01 Sheet
M1.02	02 - WIP	M000 Sheet
M1.03	02 - WIP	M001 Sheet
M1.04	02 - WIP	M002 Sheet
M1.05	02 - WIP	M003 Sheet
M1.06	02 - WIP	M004 Sheet
M1.07	02 - WIP	M100 Sheet
M1.08	02 - WIP	M301 Sheet
M1.09	02 - WIP	M302 Sheet
M1.10	02 - WIP	F280
M1.11	02 - WIP	F280, F326



City of Barrie Review Notes

Additional Documentation

Zoning Data

Consultants

Review Stamp and Comments can be placed in this section below.

- All drawings must be stamped by Architect and Engineer prior to certification. **PENDING**
- Provide Appendix B - Rough Opening Guide. **PENDING**
- 9.5.2.4. Stud Wall reinforcement. Update reference to OBC 2024. **UPDATED**
- 3.8.3.13.(2)(g) grab bars. Update reference to OBC 2024. **UPDATED**
- 9.23.15. Subflooring. Update reference to OBC 2024. **UPDATED**
- 9.8.7. Handrails & 9.8.8. Guards. Update reference to OBC 2024. **UPDATED**
- 9.3.2.5 Moisture Content. Update reference to 2024 OBC. **UPDATED**
- 9.8.8.5. Openings in Guards. Update reference to OBC 2024. **UPDATED**
- 9.8.8.5. Openings in Guards. Update reference to OBC 2024. **UPDATED**
- 3.4.6.5.(12). Update reference to OBC 2024. **UPDATED**
- 3.6.1.6. Fixed Access Ladders. Update reference to OBC 2024. **UPDATED**
- 9.8.4.3. Dimensions of Tapered Treads. Update reference to OBC 2024. **UPDATED**
- Stairs 9.8.2. to 9.8.4. Update reference to OBC 2024. **UPDATED**
- 9.27.4. Sealants not Cladding Update reference to OBC 2024. **UPDATED**
- 9.27.4.1.(3) Required Sealants Update reference to OBC 2024. **UPDATED**
- 3.8.3.3.(1) 1) Every doorway that is located in a barrier-free path of travel shall have a clear width of not less than 850 mm when the door is in the open position. Update reference to OBC 2024. **UPDATED**
- 3.3.1.20. Transparent Doors. Update reference to OBC 2024. **UPDATED**
- 1800mm 9.32.3.13. Update reference to OBC 2024. **PENDING wrt MEP**
- 9.32.3.12. HRV. Update reference to 2024. **PENDING wrt MEP**
- Helical Piles. Provide details of helical piles. Manufacturer, Model size. Provide loads on each pile. Provide CCMC report for helical piles. Provide stamped Manufacturer specifications. **REQUIRES CONTRACTOR/CONTRACTOR/PIER SUPPLIER - BY OTHERS**
- Provide SA in sleeping rooms. 9.10.19.3. **UPDATED**
- Mechanical Loft Area 6.52 m2. Provide construction details of floor. **PRESENT**
- Show deck boards running perpendicular to joists. **UPDATED (BOTH DECKS SAME)**
- Provide construction details of wall supporting rafters on exterior decks. **PRESENT**
- Provide spatial separation. 9.10.15.4. EBF/GO & Limiting Distance. **GUIDANCE UPDATED**
- Are Trusses manufactured on Site? P.Eng report will be required. **PENDING (GR or MNFCTR. MET?)**
- R40 not listed on A0.08 Construction Assemblies. Update list or change roof assembly to one that is listed. **UPDATED**
- Provide Roof Assembly Tag. **UPDATED**
- Provide detail of frost protection for sanitary and water pipes as they exit building. Ensure to include length of protection above and below grade. **IN NOTES - PENDING ON DRAWINGS (Carapace by HEATLINE)**
- Minimum 1" water service per City of Barrie Water Transmission and Distribution Design Standard. **PENDING MEP**

Appendix A

Assembly Reports: Construction-Assembly-based Building Science reports by UBAKUS.de have been appended to this set (not listed in drawings index). These include static dew-point and thermal resilience analysis as well as identify moisture risk avoidance strategies (adequate venting, vapour-open assemblies, etc).

Appendix B

Rough Openings Guide: One way to ensure compliance with CSA A440.4:19 (R2024) - required under OBC - for Door and Window installation is to plan for a fully-flashed rough-opening that window and doors can plug into. Our RO Guide shows the correct lapping sequence of a qualifying self-adhered WRB, to protect your investment, with a 'deep buck' approach using 3/4" plywood surrounds to best accommodate flashing and exterior insulation details.

Appendix C

Designer Information Sheet, Not Applicable for Architect/ Engineer designed projects, where licensed professionals have directly sealed relevant sheets in this document set.

NOTE:

This DRAFT/WIP Document Set shall be sealed by both Architect/Engineer teams on permit application once a site and owner have been selected. All pages noted above and in the Construction Document Index shall form part of any/all related Contract Documentation.

Barrie Zone

Zoning Data will be added on customization once a site and contracting owner has been selected, and shall include all setbacks and noted restrictions for DADU units.

Structural Engineer

Bridgewood Engineering
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Contact: Nicolas Fond, P.Eng, Ing.
info@bridgewoodengineeringservices.com
416-838-7436

Civil Consultant

N/A

Geotechnical Engineer

N/A

Landscape

N/A

Ontario Land Surveyor

N/A

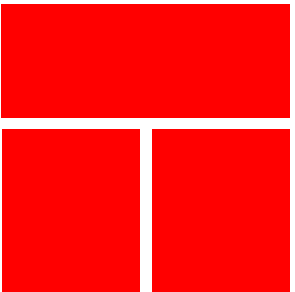
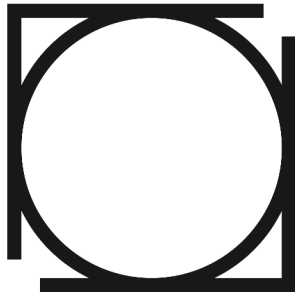
Mechanical Consultant

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L0L 2L0
Niss Feiner, CET, CHD, RASDT, RHDT, RVDT
niss@deltatdesigns.ca
705-791-9000

Planning Consultant

N/A

BeHome 1BR Gable



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of Architects

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de l'Ontario

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BeHome 1BR Gable
project no. 2023.011

Client:
City of Barrie
70 Collier St.
BarrieON L4M 4T5

Revision
02 - WIP
Cover Sheet

Issued for Certification Review 02 - WIP

Project Address: TBD

A0.01

GENERAL CONSTRUCTION NOTES & OUTLINE SPECIFICATIONS: 2025-07-22

All generic specifications noted below are typical and relevant to this project unless struck through. Notes on these pages apply to all other Architectural pages and sheets A0.00 through A0.13 containing these notes must be included in any subcontractor tender package together with all other relevant pages pertaining the subject scope of work. General and construction notes are intended to apply at all locations affected by the work. © Thomson Architecture, Inc. 2025. Notes updated to reflect change in OBC up to O.Reg 163/24.

00 00 00 General Construction Notes

- Copyright:** Copyright of these drawings and text is reserved by the Architect. The drawings and all associated documents are an *Instrument of Service* and are property of the Architect. The drawings and the information contained therein may not be modified or reproduced in whole or in part without prior written permission of the Architect.
- Interpretation:** The Architect bears no responsibility for the interpretation of these documents by the Contractor. Upon written application, the Architect will provide written/graphic clarification or supplementary information regarding the intent of the Contract Documents. If Construction Administration services are included in the Architect's scope of work, The Architect will review Shop Drawings submitted by the Contractor for design conformance only.
- Dimensions:** Drawings are *not* to be scaled for construction. The Contractor is to verify all existing conditions and dimensions required to perform the work and report any discrepancies with the Contract Documents to the Architect before commencing or continuing with any work. Grid Dimensions are to centre of structural element unless noted otherwise. Dimensions shown in room labels and Finish Schedules are Net - to face of finished walls UNO. Dimensions of Doors and Windows in Schedule Sheets govern over Plans and Elevations, where centring dimensions are provided. Construction Tolerances are set at +/- 1mm (prefabrication tolerances) UNO. Framing dimensions may be to face or centre of structural elements, Contractor is expected to verify.
- Level of Detail:** Drawings shall be provided at the LOD as set out in the Standard OAA 800 or 600 Contract. For Schematic or Bronze Level Design, LOD shall be capped at a scale of 1:50. For Design Development or a Silver Level Design LOD shall be capped at a scale of 1:10 and for Gold and Platinum Level Design or Construction Documents LOD shall be capped at a scale of 1:10 with number of drawings and type as indicated in the contract.
- Architectural Geometry:** Positions of exposed finished mechanical or electrical devices, fittings, and fixtures may be indicated on architectural drawings. The *positions* shown on the architectural drawings govern over the Mechanical and Electrical drawings but do not supersede sizes required by engineering. Those items not clearly located may be located as directed by the Architect.
- Issuance:** These drawings are not to be used for construction unless noted below as **"Issued: For Construction"** and sealed with signature by the Architect.
- OBC:** All work is to be carried out in conformance with the most current Building Code (**O.Reg 163/24**) and Bylaws of the authorities having jurisdiction. All plumbing and drainage work to conform to current Ontario regulations. All electrical work to conform to Ontario Hydro Electrical Safety Code as amended.
- No Warranty:** The Architect of these plans and specifications gives no warranty or representation to any party about the constructibility of the building(s) represented by them. Any Contractor or Subcontractor must satisfy themselves when bidding (through the process of *Requests for Information* or RFIs) and at all times, to ensure that they can properly and completely construct the work represented by these plans for their bid price as *they otherwise are*,

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2025 Outline Specifications | Version 2.2 | Page 1 of 34

without significant or unreasonable extras or change orders/CCOs (Contemplated Change Orders) agreed to by all parties to the Contract. A *Builder* must be a licensed and bonded contractor with registrations with HCRA/Tarion as required by the ONHWPA where applicable and/or other providers of warranties, with WSIB and all safety clearances, and notices of insurance in place as required by law.

- Duty of Care:** The Architect has exercised the skill of a reasonable practitioner and has drafted these 2-Dimensional and in some instances 3-Dimensional representations of an Architectural work to a level of sufficiency and *Level of Detail (LOD)* representing the Architect's *Duty of Care* to both the owner and to the public. An Architect's *Duty of Care* should not be confused with a *Standard of Perfection*, such as is rendered in automotive or aviation design. The *LOD* provided to the Owner is commensurate with the list of services provisioned for in the contract for Architectural Services (OAA800 or OAA600) related to any/all of the following: Issuance for a) Permit to Construct, b) Construction Documentation, c) Tendering, all representing an escalating LOD which requires an ever increasing level of effort, scale, number of, and detail of drawings and specifications and a corresponding corresponding increase in fees to execute. The Architect has provided the owner with the services negotiated and mutually agreed upon to be necessary for construction of the project as per the noted form of *Project Delivery* in the Architect's Contract. Unless provisioned in the contract, any expectation of or demand for;
a) additional services such as the provision of a *LOD* beyond those enumerated in the Architect's Contract, or
b) a "Holographic" level of completeness of either the BIM model (ie. LOD 500) or,
c) design to a *Standard of Perfection*, requiring exhaustive documentation, prototypes and/or mockups of assemblies, are considered unreasonable for construction in the Ontario market and such demands are likewise untenable.
- Coordination:** All Architectural drawings are to be read in conjunction with that of other consultant drawings for coordination of trades. For locations of work refer to structural, mechanical and electrical documents, in addition to architectural.
- Making Good:** Any disturbed areas subject to renovations or for testing are to be patched and made good with compatible and matching materials UNO.
- Site Safety:** The Contractor/Constructor is solely responsible for maintaining site safety in and around the construction site, and must comply with Occupational Health and Safety Act and Regulations for Construction Projects. The Contractor shall construct hoarding or fencing in compliance with the rules, regulations and practices required by the applicable construction safety legislation as required to protect the project, occupants and the general public. *Contractor to apply for Notice of Project with Ministry of Labour and provide Architect with notices of WSIB clearance and all insurance policies covering site safety.*
- Quality of Work:** All work is to be done in good workmanlike fashion and accord with best practices and manufacturer's instructions, Referring To Manufacturer Specifications (RTMS) for every material and product used on the project.
- Garbage Removal:** Contractor is to maintain the work site in a tidy condition and safely store and remove waste on a frequent basis.
- Substitutions:** Any substitutions to materials, assemblies or finishes at any time in the contract delivery process that deviates from contract documents must be approved by the Architect in writing (**per Architect's Act 49 (B)**). Changes made by contractors with owner approval, but without Architect review or approval may result in a derogation from OBC compliance and may have significant implications on the structural, fire, life safety, accessibility, quality, durability, performance, or intended design-function and maintenance aspects of the building, resulting in

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significant additional fees to re-design and coordinate with consultants to bring back into compliance with the OBC or the original design intent and may additionally result in delays, stop-work orders and orders to remedy, which must be undertaken at the owner's expense.

- Zoning Compliance:** Thomson Architecture (TAI) designs for compliance wherever possible, but full compliance can never be fully assured due to changing requirements and legislation that is constantly in flux and/or pending updates from the Planning Act at the Provincial level down to Official Plans and zoning by-laws at the local level which may or may not be under appeal or revision at any given time. We have also experienced differences in interpretation which may or may not be subjective or inadequately defined in nature, such as graphic or geometric descriptions of structures or setbacks that are described in by-laws with text but that may not be supported by illustrations. We have also encountered pre-existing conditions of adverse possession that have not been noted on existing surveys and need formal resolution with updated surveys and formal descriptions with updated legal definitions and even CoFA hearings to bring legal non-conforming conditions and uses up to date. This is why TAI requires updated surveys (never than 1997) prepared by a licensed and insured OLS to be provided by owners for all jobs *without exception*.
- Energy Performance & Sustainability:** Thomson Architecture, Inc. (TAI) undertakes Building Energy Modelling (BEM) on every project in order to benchmark expected performance with the Mechanical Consultant's own analysis, but this BEM does not guarantee that a finished building will meet the proposed targeted performance due to widely divergent user behaviours, assumptions in 'Ideal Weather Year' files and/or availability of localized weather files for the site in question, construction methods, contractor experience and other site, weather and climate factors that are beyond the control or predictive power of any software standard. Compliance packages and performance simulations are not intended to *predict* actual performance, but rather to set *targets* over a baseline or reference case or benchmark target (EUI) using the same methods: *"actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this standard, changes in energy rates between design of the building and occupancy, and precision of the calculation tool"* (**ASHRAE Standard 90.1-2013, 11.2 Informative Note**). The Architect is not liable to compensate the owner, occupant or any other person by reason of anything done by or on behalf of the owner in the reasonable exercise of its efforts to develop or reach BEM Energy Targets.

The Contractor may be asked (based on form of Construction Contract) to provide required documentation (incl. EPD sheets) for all sustainable products as identified in Product Specifications aka. Provide Manufacturer's Certificate: Certify that specified [products] meet or exceed [specified requirements] to the owner to form part of the Owner's Manual at project closeout.

18. Optional Resilience Measures (Draft 2025.06.18)

Resilience measures are broken into six categories, 1- Thermal, 2- Fire, 3- Wind and 4- Water 5- Electrical and 6- Biological. Resilience measures are taken to resist loads and forces in excess of the minimums set out in the OBC with an eye towards future weather scenarios as described at the website <https://climateatlas.ca>. In our professional opinion, the loads and requirements in the OBC have become obsolete as minimums.

- Thermal Resilience:** Buildings shall be designed to remain habitable for a period of >5 days in the event of a complete power failure by means of adequate insulation of thermal mass (Total Bldg. Avg.-U Value of <0.36WK/m2);

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2025 Outline Specifications | Version 2.2 | Page 3 of 34

- airtightness measures (<0.6ACH @50PA), as well as some form of portable or permanent backup heating system. Care shall be taken to ensure adequate combustion air to supply combustion appliances is completely airtight and decoupled from household ventilation air systems. Passive thermal design such as physical shading, low albedo surfaces and appropriate building orientations shall *strive* to keep interior temperatures above 0°C and below 30°C even without mechanical heating and air conditioning systems, as demonstrated by "Unmet Loads Analysis" in the BEM. No construction assembly shall indicate a *thermal Phase Lag* (a measure of thermal transmission equilibrium exterior/interior) of less than 6hrs (measured by LBAKUS or software or OBJECTIVE 3.04+.)
- Fire Resilience** measures shall consider non-combustible exterior cladding wherever possible and noncombustible shutters at openings where practical as an extra measure, which is of escalating importance as housing is sited every in urban/wilderness boundaries. Non-combustible construction shall be considered where feasible. One area of safe refuge shall be considered (typically in a basement) with a minimum FRR of 2hrs enclosing every surface, including the door, complete with a dedicated fresh air supply duct. Reinforced flooring shall protect occupants from potential collapse of building elements from above. Wherever possible "Firemart" strategies shall be deployed for site and building design.
 - Wind Resilience:** Steel tie-down straps or other connections shall be used at every roof member to fasten to wall systems and at every floor/wall junction with hold-down anchors embedded to foundation walls. All concrete foundation walls shall use *reinforced* concrete without exception. Exterior shutters at all openings can limit damage from airborne debris. Steel roofing is considered to have superior resistance to wind uplift than built-up, ballasted, membrane, asphalt shingles or other roofing approaches.
 - Water Resilience:** Anticipation of flash flood events shall require inclusion of back-flow preventer devices, foundation up-stand walls (to min. 6" AFG), door-sill extensions/dams, a sump in all below-grade spaces with discharges located down-slope from the lowest portion of finished grade, increase of all gutter, scupper and RWL sizes (ie from 4" to 6") and/or trench drains and french drains, and appropriate landscaping ie. swales to divert bulk-site water away from building foundations and walls and/or temporary bulk water storage/swales or other protective means.
 - Electrical Resilience:** Backup power systems shall be designed to provide (ie. Tesla Wall, Delta EcoFlow, Generator, Vehicle-to-Grid/Home or other) sufficient power to run small appliances, radios, lights, computers, etc. for a period of at least 5 days. Separate behind-the-meter, isolated circuits to power critical appliances like a stove/top or refrigerator can be provided to direct wire to a battery backup system (aka. "Emergency Outlets") in lieu of full generator backup systems, ensuring compliance with electrical codes.
 - Biological and Insect Resistance:** Below grade foam insulation products and wall assemblies to be detailed to resist insect intrusion per OBC 9.3.2.9. Preference to be given to cellular glass insulation over EPS/EXP/STIRPU insulation products that have better insect resistance. Inorganic materials shall be used in any instance of contact with soil are water. Interior Relative Humidity shall be maintained at between 40% to 60% without exception to limit mould and mildew and interior surface temperatures to min. -15°C. All construction materials shall be within moisture content guidelines for new materials.

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2025 Outline Specifications | Version 2.2 | Page 4 of 34

03 31 00 Cast In Place Concrete & Foundations

Concrete – General

- Cast-in-place concrete construction shall conform to the requirements of CAS standard CAN3-A23.1-M84.
- All concrete shall have a min. compressive strength of 25 MPa at 28 days unless noted otherwise on plans.
- Provide 7% air entrainment for all concrete exposed to weather.
- Provide tooled joints or saw cuts to control cracking/expansion and broom finishes for all concrete slabs exposed to weather.
- All reinforcing steel to be deformed bars conforming to CSA G30.12-M Grade 400 unless noted otherwise.
- Cold weather concreting shall conform to CSA standard CAN3-A23.1-M84 and provide temporary enclosure and heating when required (allowance for all Winter conditions to be carried by contractor in price as req'd).
- Provide saw cuts as req'd by Structural or provide fibreglass reinforcement in slab admixture as alternate
- Any exterior concrete walkways, patios or balconies shall be sloped min. 2% away from the building to facilitate drainage and integrate drip edges where slab edges are exposed UNO
- Provide [analysis] [testing] of concrete.
- Test samples in accordance with CSA-A23.2.
- Three (3) concrete test cylinders will be taken for every [<67 or less cu m] <<65 cu yd>>] [<76 or less cu m] <<85 cu yd>>]. [of each class] of concrete placed otherwise: **Core drilled samples as requested by Architect/Structural**
- One (1) additional test cylinder will be taken during cold weather concreting, and be cured on job site under same conditions as concrete it represents.
- One (1) slump test will be taken for each set of test cylinders taken.
- Indicate on Shop Drawings, bar sizes, spacings, locations, and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices
- Prepare Shop Drawings under seal of Professional Structural Engineer registered in the place where the Project is located.
- Provide formed openings where required for pipes, conduits, sleeves, and other work to be embedded in and passing through concrete members.
- Coordinate work of other sections involved in forming and setting openings, slots, chases, sleeves, bolts, anchors, and other inserts.

Foundations

- Footings shall be founded on native, inorganic, undisturbed soil capable of sustaining min 3,000 psf of allowable bearing pressure UNO (refer to structural engineering).
- Slope between stepped or adjacent footings shall be a max. of 7 vertical and 10 horizontal unless approved by soil engineer to be greater. Steps shall not exceed 2'-0" vertically.
- Exterior footings shall be founded at a level at least 5'-0" below fin. grade.
- Contractor to carry allowances for all geotechnical and concrete inspections and testing
- Contractor is responsible for all backfill and interim site grading ensuring that there is a positive slope away from the building and that access to the rear of the site is possible. Refer to civil consultant drawings for site grading.
- Install weep tile e/w with filter cloth at foundations over min. 6" compacted gravel base to limit soil fines and connect to GB or downslope of building or as directed by civil consultant UNO.

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2025 Outline Specifications | Version 2.2 | Page 5 of 34

04 20 00 Concrete Unit Masonry Foundations

- Build masonry plumb, level, and true to line, with vertical joints in alignment.
- Lay-out coursing and bond to achieve correct coursing heights and continuity of bond above and below openings, with minimum of cutting.
- Provide continuous control joints [as indicated].
- Break vertical mortar bond with extruded neoprene gasket.
- Control joint shall be primed to prevent drying out of caulking material.

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3. Drawings are not to be scaled for construction. The Contractor is to verify all existing conditions and dimensions required to perform the work and report any discrepancies with the Contract Documents to the Architect before commencing or continuing with any work.

4. Positions of exposed finished mechanical or electrical devices, fittings, and fixtures may be indicated on architectural drawings. The locations shown on the architectural drawings govern over the Mechanical and Electrical drawings. Those items not clearly located will be located as directed by the Architect. General and construction notes are intended to apply at all locations affected by the work. For locations of work refer to structural, mechanical and electrical documents, in addition to architectural.

5. These drawings are not to be used for construction unless noted below as "Issuance For Construction" and counter-signed by the Architect.

6. All work is to be carried out in conformance with the most current Building Code and Bylaws of the authorities having jurisdiction. All plumbing and drainage work to conform to current Ontario regulations. All electrical work to conform to Ontario Hydro Electrical Safety Code as amended.

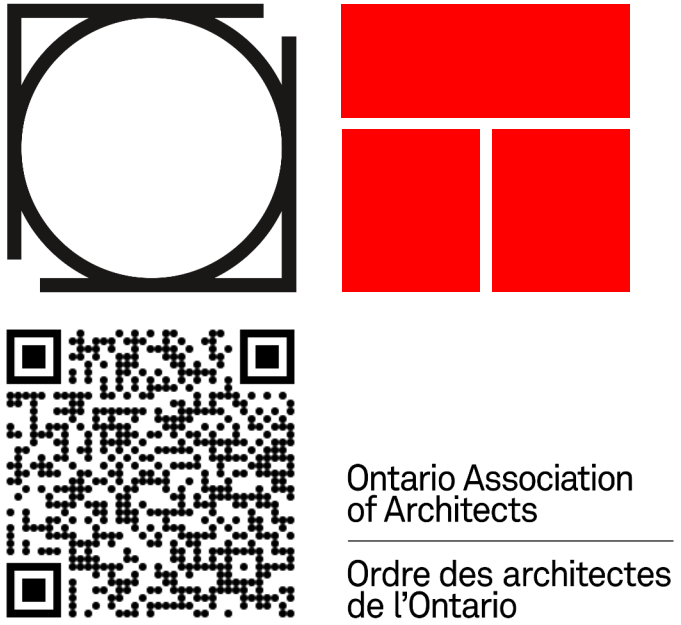
7. The Architect of these plans and specifications gives no warranty or representation to any party about the constructibility of the building(s) represented by them. Any Contractor or Subcontractor must satisfy themselves when bidding (through the process of Requests for Information or RFIs) and at all times, to ensure that they can properly and completely construct the work represented by these plans for their bid price as they otherwise are,

8. Original Drawings and designs generally provided by CMHC's "Pattern Book" from 1947 dated 07/19/2015 for Canadians available at the link: https://opencontent.mtl.ca/opencontent/mec/opencontent/mec/project/archives/house_plans/canada/071915.pdf

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Rev. ID Transmittal Set Name Change ID Change Name Date

102-WIP Issuance for Certification Review Work in Progress



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BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

Revision
02 - WIP
Notes & Legends 1-6

A0.02

04-50 00 — Masonry

- a) Masonry construction shall conform to CSA Standard CAN3-A371-M84.
- b) All plain and reinforced masonry shall conform to CAN3-A165 series-M85 for CMU and CAN/CSA-A82.1-M87 for burned clay units.
- c) All veneer masonry shall be installed c/w thermally-broken, 2-part brick-ties at 400mm OC vertically and horizontally fastened to structural sheathing. Mortar-net, ALU Metal Flashings, Weepers, Edge Dams shall be provided as required by CSA-A82.1
- d) All CMU shall have a min. ultimate compressive strength of 22 MPa on net area.
- e) Mortar for all masonry walls shall be type "S" as defined in CSA standard A179-M1976.
- f) CMU walls shall be reinforced horiz. w/ standard "blok-lok" at 16" OC vertically as per manfet-specs.
- g) Reinforced masonry shall be grouted with 15 MPa concrete, 3/8" aggregate ("pea" gravel) w/ 2" slump.

Brick Veneer Masonry: Placing And Bonding:

- a) Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work. Remove excess mortar as Work progresses.
- b) Perform job site outting of masonry units with proper tools to provide straight, clean, unchipped edges.. Prevent broken masonry unit corners or edges.
- c) Isolate top joint of masonry walls from horizontal structural framing members and slabs or decks with compressible joint filler.
- d) Install weeps for full height of vertical joints spaced at 600 mm/ 24 inches on centre horizontally above through-wall flashing, above shelf angles and lintels, at bottom of walls.
- e) Mortar net.: Do not permit mortar to drop or accumulate into cavity air space or to plug weeps.
- f) Secure anchors to stud framed back-up and embed into masonry veneer at maximum 400mm/ 16 inches on centre vertically and 900mm/ 36 inches on centre horizontally.. Place at maximum 76mm/ 3 inches on centre each way around perimeter of openings, within 300mm/ 12 inches of openings
- g) Reinforce joint corners and intersections with strap anchors 400mm/ 16 inches on centre.

Masonry Flashings:

- a) Extend flashings horizontally at foundation walls, above ledge or shelf angles and lintels, under parapet caps, at bottom of walls.
- b) Turn flashing up minimum 200mm/ 8 inches and seal to sheathing over stud/ framed back-up.
- c) Lap end joints minimum 160mm/ 6 inches and seal watertight.
- d) Turn flashing, fold, and seal at corners, bends, and interruptions.

Control Joints:

- a) Install preformed joint filler and sealant in continuous lengths.. Seal butt and corner joints in accordance with manufacturer's instructions.

Brick Or Masonry Ties To Structure - Important For Net Zero Target & OBC- SB10 Compliance

- a) 2-Part Barrel or Wingnut-Style Thermally-broken Brick Ties (one point of contact through insulation)

- b) Spaced 400mm OC Vert & Horiz or RTMS.
- c) Connected to Structure (Typ)
- d) Aacceptable Brands Include: Hohman & Barnard 2-Seal, or
- e) Thermal-Grip Cl- (by TruFast: <https://www.trufastwalls.com/thermal-grip-masonry-veneer-anchor/>), or
- f) Fix-Firm (Fibre Composite Threaded Tie), or
- g) 2-part SS ties may be considered an acceptable alternative on review by Architect.

05 50 00 Hardware

- a) All metallic hardware shall resist effects of galvanic corrosion - by use of like metals, UNO
- b) All exterior fasteners and/or fasteners exposed to moisture to be Galvanized UNO
- c) Care must be taken to assure hardware does not cause corrosive staining on adjacent materials, and if staining occurs, contractor to remedy at first signs. For most species, galvanized or ceramic coated sufficient.
- d) For high tannic content woods, ie. Cedar, to be fastened only with Stainless steel or ceramic-coated fasteners OAA.
- e) For Cedar shakes and Shingles, Use of copper banding and traditional copper fasteners is recommended to limit staining and for its anti-fungal properties.
- f) SIPs Screws to be GV steel c/w ceramic- or epoxy-coating (non-corrosive), Torx Head. Brands; TruFast, PowerPro, GRK, SFS Intec, etc. Strength as req'd by Structural. ie. <https://www.rothoblaas.com/products/fastening/screws/screws-structures/dgz>
- g) Continuous Exterior Insulation Fasteners to be 2-part Stick-Pin type where possible due to reduced thermal bridging effects (for spacing RTMS), or specialty insulation screws with cap-washers (ie. <https://www.rothoblaas.com/products/fastening/screws/screws-carpentry/thermowasher/>), otherwise 2-Part Washer (plastic) fasteners to foundation materials only.

06 00 00 Wood Framing [as per OBC 9.3.2.5] (Note Steel Framing also here)

Framing

- a) Carry all partition and exterior studs (Wood and Steel) to underside of structure above (allow for structural deflection where req'd) UNO, and where acoustic separation is to be maintained between suites, full construction assembly including insulation must be continuous to U/S of structure, irrespective of ceiling height (ie. demising walls with a noted FRR or STC).
- b) Construct double joist headers at floor and ceiling openings. Construct double joists under wall studding.
- c) Place sill gasket directly on sill flashing or cementitious foundation. Puncture gasket clean and fit tight to protruding foundation anchor bolts.
- d) Secure subfloor perpendicular to floor framing with end joints staggered. Secure sheet edges over firm bearing. Attach sheathing with adhesive and screw fasteners.
- e) Place building paper between underlayment and sub-flooring.
- f) Secure flooring underlayment. Apply perpendicular to sub-flooring. Stagger end joints of underlayment.
- a) Moisture content of lumber shall not be more than 19% (as per OBC 9.3.2.5)
- b) Lumber dimensions to be in conformance with CSA 0141

- c) A clearance of not less than 200mm [8"] shall be provided between the finished grade and the cladding that is adversely affected by moisture, such as untreated wood, OSB, hardboard and 457mm [18"] in areas with Termites or carpenter ants per OBC 9.3.2.9.
- d) All sill plates over exterior concrete foundation walls and interior walls on concrete slabs to be constructed from PT lumber over closed cell foam gaskets as capillary break and caulked and/or wrapped with membranes to maintain air and/or vapour barrier continuity as detailed.
- e) Sheathing membranes shall conform to CAN/CGSB-51.32m [all wood framing that is not pressure treated and is in contact with concrete shall be separated from the concrete w/ approved closed cell foam gasketing.
- f) All joists to be bridged w/ 38mmx38mm [2"x2"] cross bridging or solid blocking at 2100mm [7'-10"] OC max.
- g) Strapping shall be 19mmx164mm [1"x3"] spaced at 2100mm [7'-0"] OC where specified.
- h) Blocking Perpendicular: To fasten top and sill-plates securely when walls run perpendicular to joist spans, provide blocking b/t joists spaced @1200mm [3'-11"] max.
- i) Blocking Parallel: Provide blocking@1200mm [3'-11"] max. below walls running parallel to joists.
- j) Solid wood bearing comprised of built-up wood studs to be constructed in accordance w/ OBC 9.17.4.2(2)
- k) Stud wall reinforcement for grab bars in washrooms shall be installed adjacent to toilets, shower, and bathtub in all washrooms. [as per OBC 9.5.2.4, 3.8.3.8(1)(d), 3.8.3.13(2)(g). Architect shall accept continuous 16mm [3/4"] Sheathing as a superior alternative to discrete inlet blocking.
- k) Sub-flooring shall be as per OBC 9.23.15 and installed as per 9.23.3.5
- l) All floor finishes to be made level with adjacent floor finishes UNO. Max. allowable threshold is 13mm [1/2"] per OBC.
- m) Alternatively, steel framing may be used in place of wood only as approved by architect when structural gauge matches the equivalent in wood as per: 362S250-54 metal studs @ 400 OC match the stiffness of 2x4s for internal pressures. Track to match the gauge 362T125-54. 33mils = 20 gauge (min structural gauge) 362T125-33. 43mils = 18 ga. 54mils = 16 ga

06 00 00 Pressure Treated Lumber (where applicable)

- a) All cut edges or faces of pressure treated lumber shall be primed prior to installation.
- b) All framing at or above roof, including curbs, parapets, cant blocks, plywood, etc. to be of pressure-treated OAA moisture and rot resistant materials UNO.
- c) Contractor to use hidden/concealed deck screw fastening systems to minimize exposure to weather and maximize durability

06 43 00 — Stairs and handrails (updated 2025.07.22)

- a) Guardrail/handrails [as per OBC 9.8.7]
- b) Handrails are required on at least one side of stairs or ramps less than 1100mm [3'-7"] in width with no position on a ramp or stair further than 825mm from a handrail (vertical dim).
- c) Handrails are required on both sides of stairs or ramps greater than 1100mm [3'-7"] in width
- d) All guards secured in conformance to OBC standards [OBC 9.8.8]
- e) Rail@int landing = 900mm [2'-11"]
- f) Rail@int stair = 800mm [2'-7"]
- g) Rail@ext landing [greater than 1800 above fin. grade] = 1070mm [3'-6"]

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2025 Outline Specifications | Version 2.2 | Page 7 of 34

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2025 Outline Specifications | Version 2.2 | Page 8 of 34

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2025 Outline Specifications | Version 2.2 | Page 9 of 34

- h) Rail@ext landing = 900mm [2'-11"]
- i) Rail@ext stair = 900mm [2'-11"]
- j) Vertical Pickets max. 100mm [4"] [OBC 9.8.7.5] UNO
- k) Clearance of not less than 60mm [2"] is required between the handrail and the surface behind it. [OBC 9.8.7.5(1)(b)]
- l) Guards are required if there is a difference in elevation greater than 600mm [24"] between the walking surface and any adjacent surface.
- i) 12" or 300mm Horizontal railing extensions at the top and bottom of railings required per OBC 9.8.7.3.(2) and 3.4.6.5.(12)(a), (b)

All stairs' exterior stairs (Part 9 Residential-Only aka. "Private Stairs")

- m) max. rise = 200mm [7 7/8"] -- "Public Stairs" not more than 180mm per 3.4.6.8.(2)
- n) min. run = 265mm [1'-0"] -- "Public Stairs" not less than 280mm per 9.8.4.1
- o) min. nosing = 25mm [1"]
- p) min. headroom = 1950mm [6'-5"] per 3.4.7.5.(2)
- q) min. width = 860mm [2'-10"]
- r) min. rise = 125mm
- s) max. run = 365mm
- t) Fixed or non-fixed ladders for access to non-habitable spaces (ie. storage lofts) shall not be subject to OBC stair requirements except where ladders are designed to provide roof access per OBC 3.6.1.6.

for curved stairs per 9.8.4.3

- u) min. run = 160mm [5 7/8"]
- v) examples with Table 9.8.4.1 when measured at a point 300mm from the centreline of the handrail at the narrow end of the tread (ie. min. 265mm at 300mm from handrail CL)
- w) Ladders required for RTUs shall be provided as required by CSA/ESA.

07 21 05 Sealants

Compatible Sealants designed to remain flexible in cold weather applications to be installed and tooled in good workman-like manner including tooling joints and application on bone-dry and clean surfaces at all gaps and junctions UNO between materials including but not limited to:

- a) Door frames - all sides
- b) Thresholds for doors - all sides
- c) Junctions of all dissimilar materials or systems
- d) Vertical Joints in Cladding UNO
- e) In-front of backer rod at all window frames, casework and trims (provisions for flashing drip edges at sills and heads notwithstanding)
- f) Plumbing fixtures and adjacent surfaces - Neatly tool surface before curing (silicone, white colour UNO).
- g) Interface of cabinet millwork and washroom fixtures and accessories with walls, floors and tiles UNO ie. intended and detailed 'splash gaps' at 0.25" to allow for cleaning.
- h) Wall bases at floor and wall
- i) Seal joints and penetrations through building construction air tight.

- j) Place sealant or gaskets where necessary to arrest weather penetration.

Ventilated cavity assemblies, otherwise known as RainScreen cladding or facade systems shall remain un-caulked and open to atmosphere for drainage and facade pressurization without exception. This requirement conforms with all applicable codes, and failure to adhere to this requirement shall render null and void all claims to warranty of wall assemblies, per ProDemnity Non-Drained Exterior Wall Exclusion cited below:

"...Exterior above-grade walls or wall assemblies designed according to Rainscreen principles include both Primary and Secondary Planes of Protection (water barriers), provision for drying of the assembly, and an air space no less than 10mm deep behind the cladding with positive drainage to the exterior to protect the interior of the building from precipitation that penetrates the Primary Plane of Protection. Regardless of the building code classification of the project, "Primary and Secondary Planes of Protection" shall have the meaning given to "First and Second Planes of Protection" respectively by the Ontario Building Code 2006, 9.27.2.3 (1)(a), (1)(b) and (1)(c)...."

Interior Sealants

- a) Interior: Acrylic Sealant (Visible to View): Single component, chemical curing, non-sagging, paintable, colour-matched to adjacent surfaces UNO.
- b) Exterior: Butyl Sealant (Not Visible to View): Single component, chemical partial curing, permanently uncured, Gray colour.
- c) Acoustic Sealant: Single component, non-skinning, high solids content, synthetic rubber, non-corrosive to metals or concrete.
- d) Silicone Sealant (Visible to View): Single component, mildew and fungi resistant, intended for moist interior environment, colour-matched to adjacent surfaces UNO.
- e) Primer: As recommended by sealant manufacturer.
- f) Install acrylic flange in conjunction with gypsum board work.

07 60 00 Flashing

- a) Installation of flashing shall conform to OBC 9.27.3.8. All flashing shall be GVM UNO.
- b) Sealants [as per OBC 9.27.4] UNO
- c) Caulking shall be provided at vertical joints between different cladding materials unless the joint is suitably lapped or flashed to prevent the entry of rain. [OBC 9.27.4.1.(1), (3)]
- d) The attachment of cladding shall be as per OBC 9.27.5
- e) Drips below window sills shall be provided w/ outward slope and a drip located not less than 25mm [1"] from the wall surface, complete with end-dams at any vertical termination.
- f) Custom architectural, heavy-duty 18ga GVM flashings as noted shall not be substituted by light gauge and/or aluminum products
- g) Spray foam at window framing/openings is to limit air infiltration/exfiltration only and shall never be relied on as window opening flashing.
- j) Soft flashing (ie. a) Dupont FlexWrap NF or b) Huber Stretch Tape or c) SIGA Wigluv and/or SIGA Majvest SA shall be applied at ALL exterior openings prior to window or door installation and adhered and lapped per manufacturers

- instructions. Architect will provide manufacturer's suggested detailing on request - OR - Contractor to provide soft flashing in the form of c) ZIP Liquid Applied Flashing (c/w back dams at all opening sills) - OR - d) ALU or GV metal "pan" flashings at all openings PRIOR to installation of windows/doors. Refer to Thomson Architecture's "Openings" guide for "Remote Wall" or other deep exterior insulated assemblies for detailing and sealing deep plywood window bucks.
- h) All exterior cladding shall have a min. 9mm airspace backing to allow for drying, drainage and pressure equalization without exception, aka. "Rain Screen" detailing, and shall be screened top and bottom as required, and flashed to provide positive exterior drainage. Drainage openings shall never be caulked. Rigid mineral batt fire-stop material must be applied at any cavity greater than 19mm as required by OBC (typically at every floor level unless ventilated air-space is terminated by other means)
- i) ZIP liquid-applied flashing or WRB tapes designed for concrete (ie. SIGA Rissan) shall be troweled smooth over the concrete: sheathing transition from min. 6" below TOW of Concrete and min. 8" above TOW of Concrete over sheathing. All ZIP or Plywood Wall Sheathing and Roofing Board joints and screw holes to be sealed with ZIP liquid-applied flashing as per manufacturers instructions. Un-faced OSB shall NOT be uses as exterior sheathing for roofs or walls without exception due to both poor screw-hold performance but also reduced durability wrt moisture resistance and vapour diffusion and drying potential.
- k) Pressure-equalized rain-screen cladding and all continuous linear roof vents to be vented with airspace of min. 9mm, tops and bottoms to be screened to prevent insect and vermin entry with Cor-a-Vent or metal screening material.

07 20 00 Insulation

- a) R-Values calculated for Nominal R-Values of Assemblies assume min. R4 for 2x4 at 10% of assembly (typ). No air films or other assembly layers contribute to Nominal R noted in Assembly Schedules - only insulation and framing. Actual Effective R-values for assemblies are higher than noted and may be calculated per ubakus.de assembly sheets included in an Appendix.
- b) Exterior Insulation shall be applied with furring outboard of the plane of insulation and is therefore the 'Rci' or Continuous Insulation and so Nominal Values shall be the same as Effective values.
- j) Foamed-in-place insulation at junctions and joints of wall and roof materials shall achieve a thermal and air/vapour seal.
- k) Install Insulation as noted, in exterior walls, roof, and between ceiling framing spaces without gaps or voids.
- l) Carefully split batts to sandwich around wiring drilled through vertical studs but note any/all dedicated electrical chases to preserve continuity of insulation.
- m) Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation UNO. Leave no gaps or voids.
- n) Uninsulated cavities with WRB and ARB membranes and insulation layers exterior to wall sheathing do not require airtight electrical boxes where such boxes face the conditioned space.
- o) Rigid Foamed Plastics Products: Install any factory applied membrane facing towards warm side of construction. Lap ends and side flanges of membrane [over] [between] framing members. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

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2025 Outline Specifications | Version 2.2 | Page 10 of 34

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2025 Outline Specifications | Version 2.2 | Page 11 of 34

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2025 Outline Specifications | Version 2.2 | Page 12 of 34

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2. These Contract Documents are the property of the Architect. The Architect bears no responsibility for the interpretation of these documents by the Contractor. Upon written application, the Architect will provide written graphic clarification or supplementary information regarding the intent of the Contract Documents. If Construction Administration services are included in the Architect's scope of work, the Architect will review Shop Drawings submitted by the Contractor for design conformance only.

3. Drawings are not to be scaled for construction. The Contractor is to verify all setting conditions and dimensions required to perform the work and report any discrepancies with the Contract Documents to the Architect before commencing or continuing with any work.

4. Positions of rebar and other mechanical or electrical devices, fittings, and fixtures may be indicated on architectural drawings. The locations shown on the architectural drawings govern over the Mechanical and Electrical drawings. Those items not clearly indicated will be located as directed by the Architect. General and construction notes are intended to apply to all locations affected by the work. For locations of work refer to structural, mechanical and electrical documents, in addition to architectural.

5. These drawings are not to be used for construction unless noted below as "Issuance For Construction" and counter-signed by the Architect.

6. All work is to be carried out in conformance with the most current Building Code and Orders of the authorities having jurisdiction. All planning and change work to conform to current Ontario regulations. All electrical work to conform to Ontario Hydro Electrical Safety Code as amended.

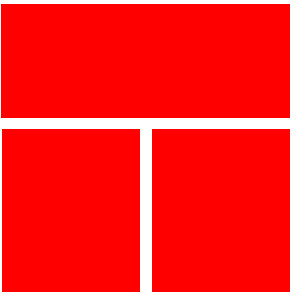
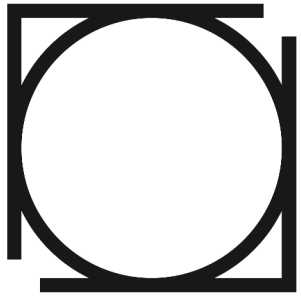
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8. Original Drawings and designs generally provided by CMHC's "Pattern Book" from 1947 dated 87 remain the Copyrights available at the link: https://open.parliament.ca/bills/100/annexes/net/compdocs/content/1/project/architecthouse_plans/tables/annex1-104-41282-2018

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Rev. ID	Transmitted Set Name	Change ID	Change Name	Date
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Work in Progress



Ontario Association of Architects
Ordre des architectes de l'Ontario

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BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

Revision
02 - WIP
Notes & Legends 7-12

A0.03

- p) SIPPU: Apply min. 2lb Polyurethane insulation by [spray] [froth] method, to a uniform monolithic density without voids and apply in all spaces and crevices in exterior wall and roof construction in order to maintain continuity of air seal and vapour retarder as per Manufacturer guidelines and specifications.
- q) SIPPU under Slab On Grade Construction: Apply SIPPU insulation directly over tamped engineered gravel fill as noted in the Architect's Assembly Schedule page. Contractor to let in 6mil PU OAA at slab edges to preserve Vapour Barrier Continuity up concrete foundation walls. Any substitution to under-slab SIPPU must include a continuous Vapour Barrier such as 10mil PE with all seams taped (per above section 03 31 00: Slab On Grade).
- r) Always apply Insulation to achieve continuity of enclosure thermal resistance.
- s) Reduction of embodied carbon and Greenhouse Gas Intensity (GHGI) of all Insulated materials shall preference cellulosic and mineral fibre insulation over any/all board foam and spray in place plastic insulation products.

07 25 00 Weather Barriers: Building Science and Membranes

For Building Science supporting proposed wall and roof assemblies including vapour diffusion port detailing, Thomson Architecture closely follows the recommendations of Joe Lstiburek of BSI, refer to Building Science Corporation Bulletins:

- a) <https://www.buildingscience.com/documents/insights/bsi-001-the-perfect-wall>
- b) <https://www.buildingscience.com/documents/insights/bsi-088-venting-vapor>
- c) <https://www.buildingscience.com/documents/building-science-insights-newsletters/bsi-096-hot-and-wet-dry>

Available for free download at: <https://www.buildingscience.com>

It is important to consider the role and function of several different *Control Layers* or *Barriers* in Floors, Walls and Roofs, each has a different function and requires to be located in a different depth in each assembly. The Architect has clearly indicated the Control Layer type and placement in the Assemblies Schedule on page A0.07. The continuity and integrity of these respective Control Layers is fundamental to the building's ability to divert bulk water, limit heat loss through air leakage, and promote durability through limiting vapour diffusion and condensation within the Construction Assemblies. Failure to adhere to the noted specifications and Manufacturer's Specifications for the noted Control Layer products can have adverse consequences on both building performance and durability, and the Architect will not permit substitutions to the Control Layer products without review and approval.

Provision for Blower Door/Doorfan Airtightness testing shall be provided for a minimum of 2-intervals, a) The 'Pre-Drywall' Test, in order to determine Airtightness level prior to completion of interior finishes and to allow for remedial airtightness work and b) Conformation or 'Post-Drywall' testing, resulting in the final ACH number to match specified target and establish baseline for thermal systems performance.

Vapour Barriers: Inboard of Primary Insulation Layer

Use membranes and compatible sealant materials for controlling vapour diffusion. It should be noted that whichever interior AVB material is selected, its permeance rating must be noted, and any material exterior to that interior AVB must maintain a permeance of 10x the interior AVB material. That means if an interior AVB has a permeance of 1, then any/all

materials outboard of that AVB need to have a permeance of 10 or greater to prevent condensation from occurring. Moisture shedding and moisture impermeable materials to used bridge and seal openings and penetrations between the interior and exterior environments shall be detailed to permit the free diffusion of vapour and diversion of bulk water away from building assemblies. Where an Interior AVB is noted, product shall be;

- a) MemBrain by Certainteed/St.Gobain - which is designed to promote bi-directional drying or,
- b) Pro Clima Intello X (suitable for walls and roofs) or
- c) SIGA Majrex (applied with Twinnet DST and Rissan Tape, Print Side Facing Interior)
- d) Acoustic caulk or gasket or tape with compatible products, RTMS and lap AVB materials over structure, sill and top plates and fasten with DSA/T or hammer-tack AVB only along AVB caulked seams.
- e) All exterior openings to be flashed with a) Dupont FlexWrap NF or b) Huber Stretch Tape or Huber ZIP liquid applied flashing or c) VISCONN Liquid Applied flashing or d) SIGA Wigluf WRB Tape and lapped and adhered to interior AVB without exception, RTMS.
- f) ADA - Airtight Drywall/Plywood approach may be considered an accepted alternative to interior vapour barrier membranes only when specified and appropriately detailed with tapes or gaskets at all seams.

WRB: Weather Resistive Barrier = Combined Air & Weather Barrier

- a) Lap WRB membranes and apply compatible sealants between layers. WRB shall cover **entire roof surface** and not only comprise areas traditionally reserved for ice dam protection. Caulk all edges and seams to ensure completeness of air seal.
- g) AWRB/Air Barrier is to be lapped and adhered over entire exterior of structural sheathing and folded inwards at all edges and exterior openings.
- b) Materials and installation methods for air seal materials and assemblies, acceptable products include;
- c) Pro Clima Solitex ADHERO (Waterproof, Vapour-Open, Peel & Stick) primer recommended RTMS or
- d) ProClima MENTO 1000 (Waterproof, Vapour-Open, not Peel & Stick) or
- e) ProClima MENTO Plus (only where sheathing/underlayment is not required and as insulation retainer) or
- f) ProClima VISCONN Liquid Applied WRB & VISCONN Fibre (for gaps) or
- g) SIGA Majvest 500 SA WRB laps sealed with Wigluf Tapes and roller-applied or
- h) Huber ZIP Sheathing for Roofs or Walls (use appropriate product for location) c/w ZIP Tape or Liquid Applied Flashing. If ZIP System is used, tape or otherwise seal all fastener penetrations with ZIP liquid applied flashing or tape. Trowel on liquid applied ZIP flashing along bottom edge of sheathing at foundation wall joint and 16" above TOW of Foundation wall.
- i) Air seal materials to bridge and seal openings and penetrations of window frames, door frames, plumbing and vent stacks thru roofing, and other openings between the interior and exterior environments that will permit the designed free passage of air using products compatible with the Control Layer selected.

Vapour Diffusion Ports in 'Unvented' Hot Roof Assemblies (per: 2018 IRC Section R806.5.2)

Vapour diffusion ports must be provided at the peak of cathedral roofs (min. slope of 3:12 or greater is required to induce buoyancy) and are not to be confused with ridge vents, although they can use the same parts. Provided the roof assembly is comprised of a continuous air/vapour control layer on the warm side of the insulation (typically 1/3rd of the way towards

the Interior of the R-Value layers), diffusion into the assembly is not a concern. However exterior air can still condense on any exterior assembly that is open to the atmosphere if the assembly drops below the dew point. For this reason a method of venting vapour diffusion as the assembly warms above the dew point should allow this vapour pressure to escape. Here are a few vapour-open membranes that can be used at the roof peak:

- a) Cosella-Dörken Delta-Maxx Titan, rated at 28 perms
- b) Cosella-Dörken Vent S, rated at 120 perms
- c) Cosella-Dörken Delta-Foxx, rated at 550 perms (BSC test preference)
- d) VaproShield SlopeShield, rated at 59 perms
- e) Nemco Industries RoofAquaGuard BREA, rated at 146 perms
- f) Dupont Tyvek (58 perms)

Any membrane must be rated at min. 20 Perms or higher and be rated for high-temperature applications. Vent widths should be 1:600 of ceiling area, (per Joe Lstiburek). Standard metal ridge-vent flashings may be used over the Vapour Diffusion Port. Any roof sheathing at the diffusion port must never be less than the perm rating of the selected membranes. Base or Soffit Venting is considered unnecessary and in fact is counterproductive and should not be used in 'hot roof' assemblies.

Ground Moisture Barrier AKA Damp-Proofing

- a) Liquid applied damp-proofing acts as a capillary break and limits water ingress through concrete structures and shall be applied at all substructure locations in contact with soil UNO.
- b) Alternatives to liquid applied damp-proofing such as rigid free-draining insulation with a full-height, water impervious insulation protection board is used (ie. GV Sheeting or Delta/Dimple Board & Cementitious panel, etc.) may be used where there are no stories below-grade.

Radon Control

- c) Section Pending. Note new OBC 9.1.1.7, 9.13.4 and MMAH SB-9 "Requirements for Soil Gas Control", and NBC requirements for same. Crawlspace buildings open to air are exempt.

Subgrade Membrane

- a) Provide sealed sheet membrane capable of preventing migration of [radon and methane] gas and moisture into building interior.
- b) Gas [and Moisture] Barrier Membrane multi-ply low-density polyethylene (LDPE) conforming to ASTM D4651, one (1) layer of aluminum foil, one (1) layer reinforcing mesh.
- c) Joint and Lap Seal membrane and seal with non-hardening, permanently flexible, high-performance sealant with vapour barrier properties as recommended by membrane manufacturer.

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2025 Outline Specifications | Version 2.2 | Page 13 of 34

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2025 Outline Specifications | Version 2.2 | Page 15 of 34

Insect & Vermin Barriers

- a) Biological and Insect Resistance: Below grade foam insulation products and wall assemblies to be detailed to resist insect intrusion per OBC 9.3.2.9.
- b) Preference shall be given to cellular glass or mineral fibre insulation over EPS/EXP/SIPPU insulation products exposed to soil or air (ie. rainscreen or roof ventilation cavities), below that have better insect resistance.
- c) Inorganic materials shall be used in any instance of contact with soil or water. Interior
- h) Any/all gaps in cladding or between different materials greater than 6mm (1/4") shall be taped, caulked or fitted with screening to prevent the intrusion of insect and vermin.
- i) All landscape plantings shall maintain min. 3" clearance from any building exterior wall or foundation, and maintained for the service life of the building, to limit insect access to foundations and transitional materials and permit use of insect barriers such as diatomaceous earth.

07 80 00 Fire stop (where applicable): Fire stop to be carried out in good construction practice including, but not limited to:

- a) Top and bottom of rated wall assemblies
- b) Gaps at junctions of fire protection rated columns and beams
- c) Vertical and horizontal surrounding service penetrations through a fire separation
- d) Each trade is responsible for fire stopping around their penetration thru a rated wall or floor (as required).
- e) Putty back and stuff w. mineral batt insulation any electrical outlets in a Fire Separation
- f) Any exposed electrical wiring to be armoured cable or in GV conduits c/w appropriate fasteners
- g) Each trade to provide details of rated fire stops to architect.
- h) All wood blocking, framing & bulkheads to be constructed with same fire resistance as required by partition rating.

07 90 00 Joint Protection

(Section Pending)

08 10 00 Doors and Frames

- a) Install all doors to requirements of OBC 3.8.
- b) All doors in any *Barrier Free Path of Travel* to permit min. 850mm clear unencumbered width per OBC 3.8.3.3.(1)
- c) All doors in barrier free path of travel to be provided with power door operators and Universal button activators on both sides where required by OBC.
- d) A qualified hardware consultant is required to specify hardware for all doors noted (08 71 00).
- e) Trim interior door height by cutting bottom edges to a maximum of 12.5 mm for return air pathways UNO.
- f) Exterior doors are to have aluminium cladding or frames, thermally broken with a rigid vinyl extrusion with thermally-broken door sills.
- g) All exterior glazing is to be triple sealed pane, clear, low E.
- h) Tempered safety glass and/or low-iron to be provided only as required.
- i) Exterior doors weather stripping is required for the full perimeter and be made of resilient material drop sill sweeps for the full width of the door leaf.
- j) Insect Screens are to be black, glass fibre mesh, woven.
- k) All glass frame tracks to be aluminum extrusions UNO.

- l) Interior Doors shall be at minimum solid core wood with V1 finished wood veneers by Metrie, Masonite, OAA complete with painted hollow metal frames or as directed by owner.

08 50 00 Windows

- a) Provide thermal isolation where components penetrate or disrupt building insulation with foam insulation.
- b) Coordinate placement and seal of perimeter air barrier, vapour retarder materials, and crevice and crack sealing.
- c) Install perimeter sealant and backing materials to achieve weather-tight installation.
- d) All doors and windows to conform to minimum values required by SB10/SB12 for the noted building type or better, c/ w triple-glazed panes, non-conductive glazing spacers, insulated gas fills, low-e coatings and thermally broken frames and sashes OAA.
- e) Types of glass, thickness, tempering, laminations etc. shall be governed by OBC Table 9.6.1.3 for glass in Doors, and any glazing that could be mistaken for a door (such as sidelights wider than 500mm, glass curtain wall extending to within 900mm of AFG) shall bear the same requirements.
- f) It is the responsibility of the door & window manufacturer and supplier/installer to provide only glazed assemblies that meet or exceed all OBC and CSA requirements and additional Architectural Specifications for structural sufficiency, thermal performance, type and protection of glass for the noted building.
- g) Glass guards shall be tempered as per OBC 9.8.8.7
- h) Transparent Doors and Panels as per OBC 3.3.1.20: Non-transparent markers, guards or other fixtures shall be applied so that the panel/door's existence and position is readily apparent

09 00 00 Finishes

- a) Where applicable: Commercial kitchen walls walk-in coolers and other food prep. areas & ceilings to be lined with approved, prefinished hygienic metal liner or approved alternate mounted on min. 1/2" plywood using pan screws in white or approved hygienic equivalent.
- b) All finish-side GWB to receive taping, mudding, sanded flush, with min. 1 coat primer & 2 coats premium latex paint - aka. P1 finish (typ.) except where other materials noted.
- c) All high traffic areas to use SS corner guards to ht. of top of door casing UNO.
- m) All high traffic areas to use SS wainscot height panel guards to height of min. 36" (915mm) UNO.
- d) Any finish that is either generic ie. 'Wood Sliding' or 'Porcelain Tile' or 'Paint' or 'Hardwood Flooring' and/or otherwise not specified shall be priced at a 'premium' level of quality subject to Architect and Owner approval through a standard RFI at the Tender Phase of the project.

09 20 00 Plaster & Gypsum Board

Handling

- a) Install and finish gypsum board when ambient temperature is between 14 and 22°C. Maintain this temperature range in areas to receive gypsum board for 48 hours before and during application and until joint cement and adhesives are fully cured.
- b) Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.

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2025 Outline Specifications | Version 2.2 | Page 18 of 34

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3. Drawings are not to be scaled for construction. The Contractor is to verify all seating conditions and dimensions required to perform the work and report any discrepancies with the Contract Documents to the Architect before commencing or continuing with any work.

4. Positions of rebar and mechanical or electrical devices, fittings, and fixtures may be indicated on architectural drawings. The locations shown on the architectural drawings govern over the Mechanical and Electrical drawings. Those items not clearly indicated will be located as directed by the Architect. General and construction notes are intended to apply at all locations affected by the work. For locations of work refer to structural, mechanical and electrical documents, in addition to architectural.

5. These drawings are not to be used for construction unless noted below as "Issuance For Construction" and counter-signed by the Architect.

6. All work is to be carried out in accordance with the most current Building Code and Orders of the authorities having jurisdiction. All planning and change work to conform to current Ontario regulations. All electrical work to conform to Ontario Hydro Electrical Safety Code as amended.

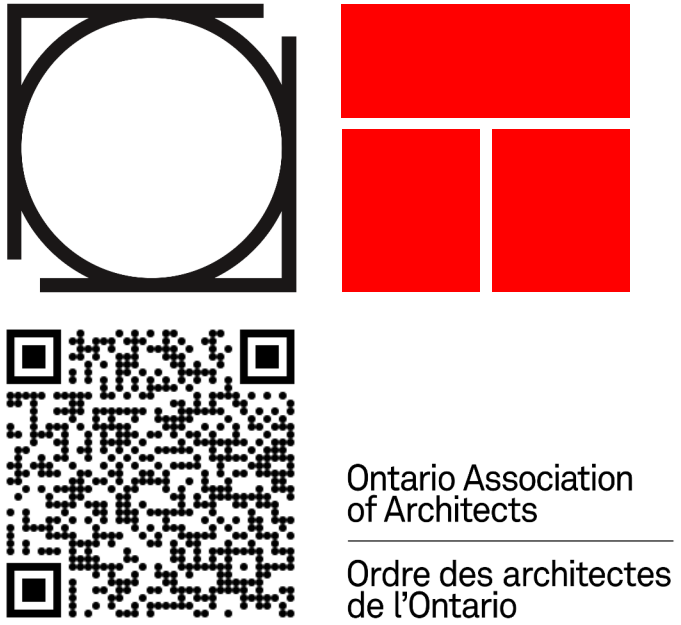
7. The Architect of these plans and specifications gives no warranty or representation to any party about the constructability of the buildings represented by them. All contractors or subcontractors must satisfy themselves when bidding and at all times ensure that they can properly construct the work represented by these plans.

8. Original Drawings and designs generously provided by CMHC's "Problem Book" from 1947-1960.

9. For more information on the firm, please visit the firm's website at www.thomsonarchitecture.ca or contact the firm at thomsonarch@icloud.com.

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BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

Revision
02 - WIP
Notes & Legends 13-18

A0.04

Fire Rated Assemblies

- Provide fire rated gypsum and cement board components and assemblies as indicated. Where firehose cabinets, electrical panels or other fixtures or equipment are recessed into fire rated partitions, provide fire rated backing to maintain required fire rating.
- Protect recessed fixtures in fire rated ceilings in accordance with fire rated assembly design report and/or as indicated.
- Bulkheads / partitions in ceiling spaces above fire rated glazed screens, doors or other elements shall have same fire rating as doors over which they occur.
- When fire or sound resistant ratings are necessary, water resistant gypsum board required for the rating shall extend down to the floor behind the fixtures so that the construction will equal that of the tested system.
- Fire-stopping is required for all through penetrations of fire rated assemblies and must confirm to ULC 40 U19 FIRE STOP SYSTEMS.
- All electrical outlet boxes with openings through a membrane must be offset min 400mm/ 16"on opposite sides of the assembly and sealed with acoustical sealant.

Shaft Wall Assemblies

VERTICAL: Metal framed, ULC labelled Gypsum Board Shaftwall System by CGC or equivalent product by other manufacturer approved by Consultant.
HORIZONTAL: Canadian Gypsum Co. (CGC) Horizontal Shaft Wall Assembly, consisting of 1" thick CGC Shaft wall liner and three layers of "A" thick Shootrock Firecode "C" panels, fitted and fastened with metal studs, channels, runners, screws, anchors, trim and sealants as recommended by manufacturer. [Fire resistance rating: 2 hours, unless indicated otherwise.]

Ceilings

- Renovated and New Basement Suites:** All GWB ceilings and stair soffit to be furred down from U/S floor joists or structure using 1/2" galvanized resilient channel spaced max. 600mm OC, and constructed with (2 layers) 5/8" "Type X" GWB. Joist cavities to be filled with Roxul Batt to achieve 45min. required rating and STC49. All electrical to be concealed within floor joist and wall cavities fully clad in GWB, otherwise cable must be enclosed in conduit. Ceiling mounted light fixtures to be SURFACE mounted – NO POT LIGHTS. ALL mechanical and plumbing penetrations of the rated ceiling assembly shall be fire stopped without exception.

Acoustical Materials

- Acoustic Insulation: Acoustical Fire Batt by Roxul or equivalent product by Fibrex.
- Caulking: to CAN/CGSB-19.21-M87: Acoustical Sealant by Tremco, or CGC Acoustical Sealant.

Installation: Gypsum Board

Install work level to tolerance of 1:1200.Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

- Do not install damaged or damp boards.
- Do not apply gypsum board/cement board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.
- Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

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- Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C 840 except where specified otherwise.
- Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles, etc.
- Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
- Install 150 mm continuous strip of 12.7 mm gypsum board along base of partitions where resilient furring installed.
- Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre.
- Install casing beads around perimeter of suspended ceilings.
- Install casing beads where gypsum board butts against surfaces having not having trim to conceal the junction and where indicated. Seal joints with sealant.
- Furr duct shafts, beams, columns, pipes and exposed services where indicated.
- Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior doorframes, to provide thermal break.
- Install access doors to electrical and mechanical fixtures specified in respective sections.
- Rigidly secure frames to furring or framing systems.
- Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- Finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board
- Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
- Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- Unless otherwise specified, erect gypsum board vertically or horizontally, whichever results in fewer end joints.
- Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.
- Locate board end joints over supporting members.
- Horizontal butt joints on opposite sides of a partition in single layer applications shall be staggered not less than 12".
- Vertical joints on opposite sides of a partition in single layer applications shall not occur on the same stud.
- aa) Cut and fit gypsum board as required to accommodate other work.
- bb) Unless otherwise shown or specified, extend gypsum board on both sides of partitions to underside of structural deck above. Fasten gypsum board to studs, not to top channel. Allow for 13 mm deflection.
- cc) Do not install gypsum board until wood blocking or other back-up components are installed. Remove and reinstall gypsum board at no extra cost to Contract where this requirements is not complied with.

Fastening

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- FOR TWO LAYERS 5/8": FIRST LAYER 1 5/8" S drywall screws spaced 8" oc at edges, and 12" oc in the field. SECOND LAYER: 2 1/4" S OR W drywall screws spaced 8" oc at edges, and 12" oc in the field.[face layer screws must penetrate min. 20mm[3/4"] into wood framing members.
- FOR ONE LAYER 1/2": 1 5/8" type S drywall screws 16" oc.
- FOR ONE LAYER 5/8": 1 1/4" type S drywall screws 12" oc, 1" type S screws spaced 16" oc]
- For gypsum board on ceilings, screws should not be more than 12" apart.
- Use only fasteners approved for use by board manufacturers.
- Drywall screws: self-drilling, self-tapping, case hardened.
- Laminating adhesive: CGC Durabond 90 compound by CGC, or equivalent product by CertainTeed.
- Apply gypsum board/cement board to metal furring or framing using screw fasteners for first layer. Maximum spacing of screws 300 mm on centre.
- Fasten gypsum board to supports with screws spaced at maximum 12" o.c. [Closer fastening dimensions may reduce STC]
- Fastening resilient channels should be 38mm/ 1 1/2" from gypsum board edges.
- Gypsum gypsum sheathing horizontally at outside of exterior wall steel studs. Fasten each board at each stud with minimum 3 screws.
- Adhesive bonded gypsum board; apply 'A' x 'A' ribbons of laminating adhesive to back side of board, parallel to long dimension; space adhesive ribbons at max.6" o.c. temporarily brace boards until complete adhesive bond develops.
- Where double layer gypsum board is required, screw fasten second layer through first, into framing; offset joints in second layer.
- Steel drill screws: to ASTM C 1002.
- Nails: to ASTM F547ASTM C 514.
- Stud adhesive: to CAN/CGSB-71.25 and ASTM C 657.

Sealants

- Sealants: in accordance with Section 07 92 00 - Joint Sealing.
- To ensure integrity of STC ratings, seal all cracks or openings, apply sealants below plates in stud walls, between bottom of drywall sheets and structure behind, and around all penetrations for services.
- Acoustical sealant should be butyl rubber-based.

Finishing Materials: Joint Compound

Board for paint finish:

- Board: polymer modified, fibreglass mesh reinforced concrete board, 'A' thick, tapered edges: PermaBoard by Unifix.
- Joint tape: 3" wide alkali resistant fibreglass mesh tape; Unitate by Unifix.
- Unless otherwise specified, the face layers of all systems, except exterior gypsum sheathing panels, shall have joints taped with either paper tape of glass fibre mesh tape [min. level 1 as specified in GA-214. Base layers of multi-layer systems shall not be required to have joints or fasteners taped or covered with joint compound.
- Joint compound: acrylic based: Acryjoint by Unifix.
- Fill coat: Acrybase by Unifix.
- Board for textured finish or backing for ceramic tile: Durock by CGC V-i thick, or equivalent product by other manufacturer approved by Consultant.

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Procedure: Joint Compound

- Tape and fill exposed joints, fastener heads, edges, corners, to produce an acceptable surface ready for decoration.
- Conceal exposed flanges of corner beads, casing beads and other trim sections with at least 3 coats of cement, feathered out minimum 8".
- Fill depressions at fastener head with cement, then apply 2 additional coats of cement to produce smooth, level surface.
- Treat joints using 3 coat method as follows:
- Apply thin uniform layer of cement and embed joint tape.
- Immediately apply thin skim coat of cement over tape and allow to dry.
- Apply 2 additional coats of cement. Allow first coat to dry before applying second coat.
- Sand each coat of topping cement with fine sandpaper as required to produce smooth surface. Do not sand paper face of gypsum board
- Finish concealed fastener heads at fire rated gypsum board elements in manner specified for exposed
- work.
- Finish concealed joints at fire rated and at acoustically insulated gypsum board elements in manner specified for exposed work.
- Joint tape: 2" perforated tape.
- Joint filler and topping cement: casein, vinyl or latex base, slow setting.
- Joint compound: to ASTM C 475, asbestos-free.

Control And Relief Joints

- Provide control joints where shown and at maximum 25' o.c.
- Break continuity of gypsum board and framing system at control joints; install continuous metal control joint section.
- Relief Joints:
- Provide relief joints where shown and where gypsum board assemblies abutt dissimilar construction.
- Stop gypsum board V' from abutting construction at dissimilar building elements, unless otherwise indicated.
- Where gypsum board comes into contact with window frames or exterior door/screen frames install thermal break. Adhere self-sticking tape to casing bead and compress during installation of gypsum board.
- Where indicated, install reveal mouldings.

Installation: Cementitious Board

- Screw fasten board to each supporting member at maximum 12" o.c.
- Finish cementitious board joints at locations scheduled to be painted with 3-step joint finishing system as recommended by board manufacturer. Apply fill coat over entire board surface to achieve smooth, uniform surface, ready for painting. Provide corner and casing beads similar to gypsum board installation.

Sound Control

- Acoustical Insulation: Provide acoustical insulation in gypsum board partitions and ceilings as indicated. Unless otherwise noted provide 2" thick insulation. Extend acoustical insulation overfull height of partition, including portions located above ceiling.

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References

- American Society for Testing and Materials International, (ASTM)
- ASTM C 36/C 36M-01, C1396 Specification for Gypsum Wallboard, including the requirements for Type X.
- ASTM C 475-01, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- ASTM C 514-01, Specification for Nails for the Application of Gypsum Board.
- ASTM C 630/C 630M-01, Specification for Water-Resistant Gypsum Backing Board.

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09 30 00 Tiled Areas:

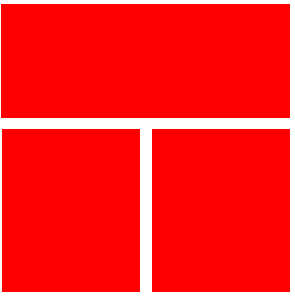
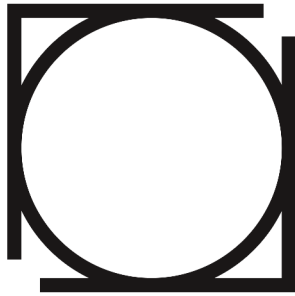
- Construct shower/tub base & thresholds from pressure-treated lumber UNO.
- Tiled surfaces to be installed over min. 3/4" T&G plywood screwed and glued on floor joists UNO.
- All tile to be min. 1/2" Porcelain material UNO
- Apply 1/2" cementitious tile backer to all wall surfaces to receive tile UNO.
- All tile to use Laticrete systems and accessories for thin-set mortar, hydro-ban membranes, epoxy grout, etc.
- All tile edging, transitions, and exterior corners to use Schluter anodized aluminum profiles UNO.
- All floors to receive tile shall be applied over Schluter Ditra decoupling membrane (aka. "Bond Breaker"). Decoupling membrane to be adhered to tile backer with modified thin-set mortar per manufacturer instructions.
- If ceramic tile is specified use matching ceramic cove tile base transition profile at all corners & threshold UNO.
- Where applicable, Shower tile over built-up mortar base or Schluter Kerdi Board Systems sloped to drain at 4% typ.
- Tile to be installed on min.1/2" mortar setting bed or on 1 1/2" concrete topping [w/ wire mesh reinforcing at mid-depth] on Concrete Structural Deck or on min. 3/4" T&G plywood screwed and glued on floor joists UNO.
- For wood-frame buildings, construct shower/tub base & thresholds from PT lumber c/w cut-end treatment UNO.
- Cover shower base, threshold framing and entire washroom or wet-areas floors with waterproof membrane (ie. Schluter Ditra bond-breaker) and extend min. 8" up walls UNO.
- A tile bond-breaker is required (ie. Schluter Ditra bond-breaker) over any framed floor system to limit cracking
- Extend Tile Baseboard min. 8" up all walls otherwise;
- Extend Wall Tile to height of door head casing UNO.
- Wall tiles use thin-set mortar and epoxy tile grout system.
- Thin-set mortar and grout system: Laticrete Spectralock PRO Premium Epoxy (In colour selected by consultant)
- All work to be installed in accordance with manufacturer's directions and in accordance with TTMAC specifications.
- Refer to Room Finish Schedule Sheet for Tile Brand, Format, Colour and Grout Colours

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7. The Architect of these plans and specifications gives no warranty or representation to any party about the constructability of the buildings represented by them. All contractors or subcontractors must satisfy themselves when bidding and at all times ensure that they can properly construct the work represented by these plans.
8. Original Drawings and designs generally provided by CMHC's "Pattern Book" from 1947-1966.
9. If printed for Canadians available at the link: https://openaccess2013.library.utoronto.ca/bitstream/handle/1807/10300/1/CMHC_Pattern_Book.pdf
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BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

Revision
02 - WIP
Notes & Legends 19-24

A0.05

- t) Colour match any/all caulking or sealants to grout colour UNO.
- u) TILE WALLS: Substitute GWB for Cementitious Tile Backer (CTB) on any wall to receive tile finish or ADD CTB if part of a rated assembly.
- v) Provide moisture-resistant GWB at all partitions in wet areas not receiving tile, such as kitchens, bathrooms, janitor closets except where GWB forms part of a fire separation or UNO.
- w) When varying thicknesses of GWB or other partitions abut, faces shall be flush and plumb UNO.
- x) Tile Edging, Thresholds, Transition/ Reducer Strips, Stair Treads
- y) Mortar
- z) Adhesive
- aa) Grout
- bb) Sealer
- cc) Install ceramic tile [and thresholds] to TTMAC Details.

09 60 00 Hardwood Flooring

- Provide samples: Submit two (2) samples 12x12 inches in size illustrating wood grain, colour, and sheen.
- Provide Moisture Barrier: Black high density foam with 6 mil polyethylene moisture barrier film.
- Provide adhesive: Water resistive type as recommended by flooring manufacturer.
- Apply Subfloor Layer: Premix latex cementitious type where required.
- Provide expansion Space: Provide minimum <6 mm> <1/4 inch> expansion space at walls and other terminations of flooring, unless otherwise indicated on Drawings.
- Install transition/reducer strips [at centreline of door openings and where flooring terminates with other floor areas.
- Seal all flooring penetrations and perimeters at wet areas with silicone sealant.

~~10 30 00~~ ~~Fireplaces And Stoves~~

- a) Fireplaces shall conform to CBC 9.22 [as per CBC 9.21.1.3]
- b) Direct vent gas fireplace vent to be a min 300mm [12"] from any opening and AFG.
- c) Direct venting gas furnace vent direct vent furnace terminal min.900mm [36"] from gas regulator min. 300mm [12"] AFG, from all openings, exhaust and intake vents.

22 10 00 Plumbing & Piping: Weeping Tile, Sumps, Drainage & Gutters, Rwl

- a) Use Polyvinyl Chloride Pipe: Perforated, plain end, 100mm/4 inches inside diameter; with required fittings.
- b) OR
- c) Corrugated Plastic Tubing: Flexible tube, perforated; 100mm/4 inches diameter, with required fittings.
- d) Loosely butt pipe ends. Place 300mm/12 inch wide joint cover strip, around pipe diameter centred over joint.
- e) Place pipe with perforations facing down. Mechanically join pipe ends.
- f) Lay pipe to slope gradients with maximum variation from true slope of 3 mm in 3 m, 1/8 inch in 10 ft.
- g) Insulate any exposed pipes and ducts as required to limit condensation and heat trace any pipes subject to freezing.

22 40 00 Plumbing Fixtures (22) and Accessories (10)

- a) Install water closets in accordance with OBC section 3.8.3.9

- b) Supply and install all fixtures, accessories and washroom components per Manufacturer's specifications.
- c) Where applicable; Supply and install all washroom accessories and fixtures noted. All barrier-free fixtures and accessories to be installed in accordance with OBC section 3.8.3.8. Securely anchor grab bars and other accessories to wall to resist all required loads (typ 1.3kN) and to meet OBC Section 3.8 "Barrier-Free Design" requirements.
- d) Provide 3/4" let-in (recessed) plywood support blocking in walls for wall mounted fixtures, accessories and grab bars (to withstand transferred weight required) between min. & max. mounting heights per OBC. Align wall mounted fixtures and accessories with wall tile joints, keeping within max and min dimensions per OBC.
- e) Insulate any exposed pipes or as required to limit condensate and heat trace any pipes subject to freezing.
- f) Supply and install all washroom components per Manufacturer's specifications.
- g) Where applicable; Supply and install all washroom accessories and fixtures noted.
- h) All barrier-free fixtures and accessories to be installed in accordance with OBC section 3.8.3.8.
- i) Securely anchor grab bars and other accessories to wall to resist all required loads (typ 1.3kN) and to meet OBC Section 3.8 "Barrier-Free Design" requirements.
- j) Provide 3/4" let-in (recessed) plywood support blocking in walls for wall mounted fixtures, accessories and grab bars (to withstand transferred weight required) between min. & max. mounting heights per OBC.
- k) Align wall mounted fixtures and accessories with wall tile joints, keeping within max and min dimensions per OBC.
- l) Blocking to be provided for future grab bars as noted.

Plumbing Penetrations & Access

- Flash and counter flash where plumbing piping passes through weather or waterproofed walls, floors and roofs.
- Flash vent and soil pipes projecting above finished roof surface. For pipes through outside walls turn flame back into wall and seal.
- Set sleeves in position in advance of concrete work. Arrange reinforcing around sleeves.
- Extend sleeves through floors 100 mm/4 inches above finished floor level. Seal opening perimeter with sealant and provide floor cover plate.
- Install chrome plated escutcheons where piping passes through finished surfaces.
- Provide and install access doors to concealed plumbing piping, flush with surrounding surface. Provide access doors for maintenance or adjustments purposes for valves, clean outs, traps, controls.

23 70 00 Centralized Ventilation Equipment

- a) HRV intake to be min. 1800mm [6'-0"] from all exhaust terminals. [refer to gas utilization code] [as per OBC 9.32.3.13.3].
- b) Washroom and kitchen mechanical exhaust to be connected to HRV, noting all req'd clearances (e. min 1800mm 6' from range). (HRAI/R2000 best practice)
- c) HRV to be installed, insulated and balanced by HRAI licensed professional and per HRAI and manufacturer specifications.
- d) Adequate attic, crawlspace and/or cavity venting (per OBC 9.32.3.11&12) to be installed by contractor - proposed crawlspaces are 100% open to air, no screening.
- e) HRV/ERV to be installed, insulated and balanced by HRAI licensed professional and per HRAI and manufacturer specifications, CSA-F326-M91 and as per OBC 9.32.3.11&12 and OBC 6.2.1.6 (efficiency)

- f) Controls: Airthings Wave+ c/w Radon & CO2 monitoring, programmed with IFTTT trigger to call HRV operation via Ecobee4 Thermostats at levels over 600ppm to 450ppm or RH of 60% or greater, OAA
- g) Design for Relative Humidity targeting between 40-60% UNO.
- h) Drain Water Heat Recovery (DWHR) units (42% Efficiency) shall be installed as required by OBC SB12 3.1.1.12 at any/all showers except where there is no vertical storey/crawlspace to accommodate the DWHR

28 40 00 Safety Detectors Install Safety Detectors In The Following Locations:

- a) Fire/Heat Detector: [Fixed temperature.] [Combination rate of rise and fixed temperature,] rated, self contained audible alarm, [120 VAC.] [Battery DC powered.] Locations:
 - b) Kitchen.
 - c) Sleeping area.
 - d) Smoke Detector: [Ultraviolet] [Infrared] radiation type, self contained audible alarm, [120 VAC.] [Battery DC powered.] Locations:
 - e) Near furnace.
 - f) Main floor hallway.
 - g) Upstairs hallway.
 - h) Sleeping area.
 - i) Carbon Dioxide Detector: Sensor activated, self contained audible alarm, [120 VAC.] [Battery DC powered.] Locations:
 - Near furnace.
 - j) Install at ceiling locations appropriate to optimum sensing.

26 10 00 Electrical

- a) All switches and outlets to be Lutron Decora OAA.
- b) All Electrical outlets shown on Drawings are approximate locations unless dimensioned.
- n) Outlet and switch heights per CBC.
- c) Do not install boxes back-to-back in walls, provide separation, except provide minimum 600 mm/24 inch separation in acoustic walls.
- e) Use multiple-gang boxes where more than one device are mounted together; [do not use sectional boxes].
- d) Install boxes in walls without damaging wall insulation.
- f) Install plastic air seal covers and apply acoustic sealant at all boxes at exterior walls and all ceilings with attic space above.
- g) Vertically align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices.
- h) Set floor boxes level and flush with finish flooring material.
- i) Install wall switches 1.2m/48 inches above floor, OFF position down.
- j) Install convenience receptacles 450mm/18 inches above floor, 150mm/6 inches above counter backsplash; grounding pole on bottom.
- k) Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.
- c) **Renovated Basement Suites Only:** Potlights to be removed and replaced with surface-mounted fixtures (for fire protection) that shall accommodate Philips LED Edison-base fixtures on dimmers. Switch and fixture locations to be coordinated on-site with Finish Contractor and reviewed by architect

[illegible]

Rev. ID	Transmittal Set Name	Change ID	Change Name	Date
02 - WIP	Issues for Certification Review			Work in Progress

Work in Progress

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Water Control Checklist:	ABBREVIATIONS		DF	DOUGLAS FIR	RD	ROOF DRAIN	TOFW	TOP OF FOUNDATION WALL	
			DH-W	DOMESTIC HOT WATER HEATER	RM	ROOM	TOJ	TOP OF JOIST	
			DMPF	DAMPPOOFING	RTS	REFER TO STRUCTURAL	TOM	TOP OF MASONRY	
			DIA	DIAMETER	RTMS	REFER TO MANUFACTURER	TOP	TOP OF PARAPET	
Contractor is to satisfy themselves that the Architect's Drawings indicate the following:			DIM	DIMENSION	SPECIFICATIONS		TOS	TOP OF SLAB TOP OF STEEL	
Design Stage		ALU	ALUMINUM	DPTN	DEMOUNTABLE PARTITION	RTFM	READ THE F'CKING MANUAL	TYP	TYPICAL
	1. All wall and window systems comply with OBC, Insurer's & Warranty requirements of featuring at least two planes of drainage.	AFF	ABOVE FINISH FLOOR	DN	DOWN	RO	ROUGH OPENING	U/S	UNDERSIDE
2. Primary building massing shall feature drainage planes designed to overlap and direct bulk water away from all building openings (ie. Doors, Windows, Mechanical Penetrations), and that bulk water shall not pool on walking surfaces or architectural elements unless designed for bulk water retention and freezing effects.		AFG	ABOVE FINISHED GRADE	DSA/T	DUAL-SIDED ADHESIVE/TAPE	SCP	SCUPPER	UNO	UNLESS NOTED OTHERWISE
		APPROX	APPROXIMATE	DTL	DETAIL	SLNT	SEALANT	UR	URINAL
3. Fundamentals of Building Science is considered with respect to Airtightness (1.0ACH @50Pa or better is targeted, to be tested and confirmed)		A/V	AUDIO VISUAL	DWGS	DRAWINGS	SECT	SECTION	U/S B	UNDERSIDE OF BEAM
		AVB	AIR/VAPOUR BARRIER aka. VAPOUR	ECR	EMBODIED CARBON RATIO (MTCO2e/MT)	SW	SIDEWALK	U/S J	UNDERSIDE OF JOIST
4. Vapour Control and Diffusion (complete barriers and vents)			RESISTIVE MEMBRANE			SI	SITE INSTRUCTION	U/S SD	UNDERSIDE OF STRUCTURAL DECK
		BAS	BUILDING AUTOMATION SYSTEM	EIFS	EXTERIOR INSULATION & FINISH	SIM	SIMILAR	VERT	VERTICAL
5. IAQ/EAQ Humidity Control (between 40-60% RH)		BD	BOARD	SYSTEM		SIP PU	SPRAY IN PLACE POLYURETHANE	VEST	VESTIBULE
		B/F	BARRIER FREE	ELEC	ELECTRICAL	INSULATION		VOC	VOLATILE ORGANIC COMPOUND
6. Drainage and Drying (preserve assembly moisture between 8-14% for interior wood and 12-18% exterior) per: https://cwc.ca/wp-content/uploads/2019/03/publications-BP1_MoistureAndWoodFrameBuildings.pdf)		BFF	BELOW FINISHED FLOOR	ELEV	ELEVATOR	SPF	SPRUCE/PINE/FIR	W/	WITH
		BFG	BELOW FINISHED GRADE	EPD	ENVIRONMENTAL PRODUCT DECLARATION (Data Sheets)	SS	STAINLESS STEEL	WC	WATER CLOSET
7. Ventilation effects (min. req'd ACH with 100% fresh air and Heat Recovery >80%)		BHD	BULKHEAD			ST	STAIRS	WD	WOOD WOOD DOOR
		B/T	BETWEEN	EQ	EQUAL	SJ/OWWSJ	STEEL JOIST/OPEN WEB STEEL JOIST	WDMa	WINDOW & DOOR MANUFACTURERS
8. Prevention of unnecessary wetting (provision of Overhangs, Ledges, Flashings, Drip Edges).		CCO	CONTEMPLATED CHANGE ORDER	EL	ELEVATION	STOR	STORAGE		ASSOCIATION
	9. Protection of exterior doors and windows from precipitation, capillarity, snow-accumulation/melt by means of flashings with drip edges, positioning, roof overhangs, partial exterior frame insulation (ie. Thermal Bucks).		CH	COAT HOOK	EXP	EXPOSED	STRUCT	STRUCTURAL	WGL
10. Design shall provide minimum overhangs of 24" (610mm) except where inverter roofs/parapets used (TAI standard) or where 2 planes of drainage are otherwise provided to divert bulk water ingress and promote drying.			CR	CARD READER	EXT	EXTERIOR	SATC	SUSPENDED ACOUSTICAL TILE	WH
		C/W	COMPLETE WITH	EXST	EXISTING		CEILING	W/O	WITHOUT
11. Groundwater control measures are complete, from foundation protection to diversion to Sump and Sump discharge locations, damp-proofing, capillary breaks at all concrete, and moisture barriers under crawlspaces and vapour barriers under slabs.		CB	CATCH BASIN	EXST GR	EXISTING GRADE	TBV	TO BE VERIFIED BY CONTRACTOR	WPM	WATERPROOF MEMBRANE
		CJ	CONTROL JOINT	EUI or TEUI	OPERATIONAL TOTAL ENERGY USE INTENSITY (kgCO2e/m2/yr)	TMPD GL	TEMPERED GLASS	WP	WATERPROOFING
Bid Stage		CI	CONTINUOUS INSULATION			THK	THICKNESS	WP	WORKING POINT
		CIP	CAST-IN-PLACE CONCRETE	F2F	FLOOR TO FLOOR HEIGHT	THERM	THERMAL GLAZING AS REQ'D BY OBC	WRB	WEATHER RESISTIVE BARRIER (Vapour Open)
12. All roof drains, scuppers and diversion measures noted in sufficient quantity and size		CG	CORNER GUARD	FRR	FIRE RESISTANCE RATING	THRES	THRESHOLD		
	13. Details of All Roof/Wall, Roof Curb and Parapet Details noting two planes of drainage where applicable are shown.		CL	CENTRE LINE	FD	FLOOR DRAIN	THRU	THROUGH	WRC
14. Ventilation and Drainage of all Wall Systems (Construction Assemblies Page: (A0.06) is noted.			CLG	CEILING	FF	FINISHED FLOOR	TFA	TO FLOOR ABOVE	WT
		CNTR	COUNTER	FG	FINISH GRADE	TFB	TO FLOOR BELOW		
15. Directionality of Drainage for all Roofs and Floors is noted.		Co/A	COMMITTEE OF ADJUSTMENT	Co/A	FINISHED OPENING	TJ	TRUSS JOIST/WOOD-I BEAM		
	16. Mechanical, Structural and other Sub-consultants to respect the Architect's design for prevention of prevention of bulk water ingress and vapour & humidity control.		C/W	COMPLETE WITH	FHC	FIRE HOSE CABINET	TO	TOP OF ____	
		C/C	CENTRE TO CENTRE	FH	FIRE HYDRANT	TOB	TOP OF BEAM		
17. Bulk water is designed to avoid pooling on walking surfaces or architectural elements		CMU	CONCRETE MASONRY UNIT	FP	FIREPLACE	TOC	TOP OF CONCRETE		
		COMM	COMMUNICATION	FR	FIRE RATED	TOC FTG	TOP OF CONCRETE FOOTING		
		CC	CONCRETE	FSR	FLAME SPREAD RATING - or - FLOOR	TOC WALL	TOP OF CONCRETE WALL		
		COND	CONDITION		SPACE RATIO (%)	TOW	TOP OF WALL		
		CPT	CARPET	GA	GAUGE	TFF	TOP OF FINISH FLOOR		
		CT 1	COUNTERTOP TYPE 1 (VARIABLE)	GCA	GROSS CONSTRUCTION AREA	TOF	TOP OF FLOOR TOP OF FOOTING		
		CTR	CENTRE	GFA	GROSS FLOOR AREA		TOP OF FRAMING		

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Revision
02 - WIP
Abbreviations

A0.06

SJ/OWW/SJ	STEEL JOIST/OPEN WEB STEEL JOIST	U/S B	UNDERSIDE OF BEAM
STOR	STORAGE	U/S J	UNDERSIDE OF JOIST
STRUCT	STRUCTURAL	U/S SD	UNDERSIDE OF STRUCTURAL DECK
SATC	SUSPENDED ACOUSTICAL TILE	VERT	VERTICAL
	CEILING	VEST	VESTIBULE
TBV	TO BE VERIFIED BY CONTRACTOR	VOC	VOLATILE ORGANIC COMPOUND
TMPD GL	TEMPERED GLASS	W/	WITH
THK	THICKNESS	WC	WATER CLOSET
THERM	THERMAL GLAZING AS REQ'D BY OBC	WD	WOOD WOOD DOOR
THRES	THRESHOLD	WDMA	WINDOW & DOOR MANUFACTURERS ASSOCIATION
THRU	THROUGH		
TFA	TO FLOOR ABOVE	WGL	WIRED GLASS
TFB	TO FLOOR BELOW	WH	WEEP HOLE - or - WALL HUNG
TJI	TRUSS JOIST/WOOD-I BEAM	W/O	WITHOUT
TO	TOP OF ____	WPM	WATERPROOF MEMBRANE
TOB	TOP OF BEAM	WP	WATERPROOFING
TOC	TOP OF CONCRETE	WP	WORKING POINT
TOC FTG	TOP OF CONCRETE FOOTING	WRB	WEATHER RESISTIVE BARRIER (Vapour-Open)
TOC WALL	TOP OF CONCRETE WALL		
TOW	TOP OF WALL	WRC	WESTERN RED CEDAR
TFF	TOP OF FINISH FLOOR	WT	WEEPING TILE C/W FILTER CLOTH
TOF	TOP OF FLOOR TOP OF FOOTING TOP OF FRAMING		
TOFW	TOP OF FOUNDATION WALL		
TOJ	TOP OF JOIST		
TOM	TOP OF MASONRY		
TOP	TOP OF PARAPET		
TOS	TOP OF SLAB TOP OF STEEL		
TYP	TYPICAL		
U/S	UNDERSIDE		
UNO	UNLESS NOTED OTHERWISE		
UR	URINAL		

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SYMBOLS LEGEND

C4

Drawing Title

1 : SCALE

0

20 mm

50mm

A#

D#

PAGE #

DWG #

D#

A#

BUILDING SECTION/ELEVATION REFERENCE

X

AY

WALL/PARTIAL SECTION

2

1

A#

D#

3

4

INTERIOR ELEVATION

#

DRAWING KEYNOTES

E01

EXISTING WALL AND DOOR TO REMAIN

E01

DEMOLISH WALL AND/OR DOOR

D01

NEW WALL AND DOOR

W1

NEW WALL TYPE

EW

EXISTING WALL TYPE

3000

ELEVATION OF NOTED ELEMENT

Room Name

001

A2C3

ROOM IDENTIFICATION
A = FLOOR FINISH TYPE
2 = BASE FINISH TYPE
C = WALL FINISH TYPE
3 = CEILING FINISH TYPE

9F AFF

SCO

Indicates Smoke & CO **alarms** - to be hard-wired and interconnected with battery backup (for Part 9 Buildings per **OBC 9.10.19**)

V

VENT STACK

FD

FLOOR DRAIN

SD

SINK/SHOWER DRAIN

LD

LAUNDRY DRAIN

TD

TOILET DRAIN

HB

HOSE BIB (FROST PROTECTED)

WT

WEEPING TILE C/W FILTER CLOTH

Commonly Referenced CSA Standards

(See OAA CSA page)

Commonly Referenced ULc Standards

TABLE OF CONTENTS: STANDARDS

- 03 CONCRETE**
- a) CONCRETE MATERIALS CSA-A3001
 - b) CONCRETE PAVING MATERIALS CAN/CSA-A438,
 - c) CONCRETE FORMWORK, REINFORCING, CAST-IN-PLACE CONCRETE CSA-A23.1, CAN/CSA-S269.3, CAN/CSA-A23.1M
 - d) CONCRETE SOFT PLYWOOD FORMS CSA-O151
 - e) CONCRETE AIR ENTRAINMENT ASTM C260
 - f) CONCRETE AGGREGATES CAN/CSA-A23.1M
 - g) CONCRETE CEMENT CAN/CSA-A5M
 - h) CONCRETE CHEMICAL ADMIXTURES Chemical Admixtures: ASTM C494/C494M
 - i) CONCRETE REINFORCING FABRICATION CSA-A23.1,CAN/CSA-A23.1M
 - j) CONCRETE MIXTURES, PLACEMENT, AND REINFORCING CSA-A23.1
 - k) CONCRETE FIELD QUALITY CONTROL CSA-A23.2
 - l) CAST-IN-PLACE CONCRETE CAN/CSA-A23.1M and CAN/CSA-A23.3M

- 04 MASONRY**
- a) BRICK VENEER MASONRY CSA-A371, CSA-A82, CSA-A165 Series, and CSA-A179.
 - b) MORTAR, GROUT, PARGING AND POINTING MORTAR CSA-A179
 - c) MORTAR AGGREGATE CSA A82.56M
 - d) CONCRETE MASONRY CSA-A371-04, CSA-A165 Series-04, and CSA-A179-04.
 - e) HOLLOW AND SOLID LOAD BEARING CONCRETE UNITS CSA-A165.1
 - f) CONCRETE MORTAR AND GROUT CSA-A179

- 05 METALS**
- a) STEEL FRAMING CSSBI 51 Lightweight Steel Framing Design Manual
 - b) STEEL WELDING CSA-W47.1, CSA-W59 and AWS D1.3
 - c) LIGHT STEELFRAMING ASTM A653/A653M
 - d) LIGHT STEEL FRAMING FASTENERS ASTM A307

- 06 WOOD, PLASTICS AND COMPOSITES**
- a) PLYWOOD FLOOR, WALL, ROOF, UNDERLAYMENT/SHEATHING CSA-O151
 - b) WOOD FRAMING CSA-O86
 - c) PRESSURE TREATED WOOD CAN/CSA-S406 and CSA-Q322

1. Copyright of this drawing is reserved by the Architect. The drawing and all associated documents are an instrument of service by the Architect. The drawing and the information contained herein may not be modified or reproduced in whole or in part without prior written permission of the Architect.

2. These Contract Documents are the property of the Architect. The Architect bears no responsibility for the interpretation of these documents by the Contractor. Upon written application, the Architect will provide written graphic clarification or supplementary information regarding the intent of the Contract Documents. If Construction Administration services are included in the Architect's scope of work, The Architect will review Shop Drawings submitted by the Contractor for design conformance only.

3. Drawings are not to be used for construction. The Contractor is to verify all existing conditions and dimensions required to perform the work and report any discrepancies with the Contract Documents to the Architect before commencing or continuing with any work.

4. Portions of repeated finished mechanical or electrical devices, fittings, and fixtures may be indicated on architectural drawings. The locations shown on the architectural drawings govern over the Mechanical and Electrical drawings. Those items not clearly located will be located as directed by the Architect. General and construction notes are intended to apply to all locations affected by the work. For locations of work refer to structural, mechanical and electrical documents, in addition to architectural.

5. These drawings are not to be used for construction unless noted below as "Issuance For Construction" and countersigned by the Architect.

6. All work is to be carried out in conformance with the most current Building Code and Bylaws of the authority having jurisdiction. All planning and change work to conform to current Ontario regulations. All electrical work to conform to Ontario Hydro Electrical Safety Code as amended.

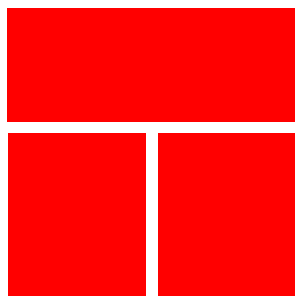
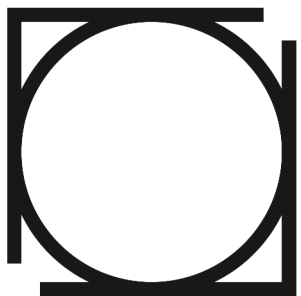
7. The Architect of these plans and specifications gives no warranty or representation to any party about the constructability of the buildings represented by them. All contractors or subcontractors must satisfy themselves when bidding and at all times ensure that they can properly construct the work represented by these plans.

8. Original Drawings and designs generously provided by CMHC's "Pattern Book" from 1947-1982.

9. * Notes for Contractors available at the link: https://openknowledge2013.blob.core.windows.net/contractdocuments/contractarchivehouse_planscatalogue.aspx?1-m4-41265-24-000

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Ontario Association of Architects
Ordre des architectes de l'Ontario

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BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

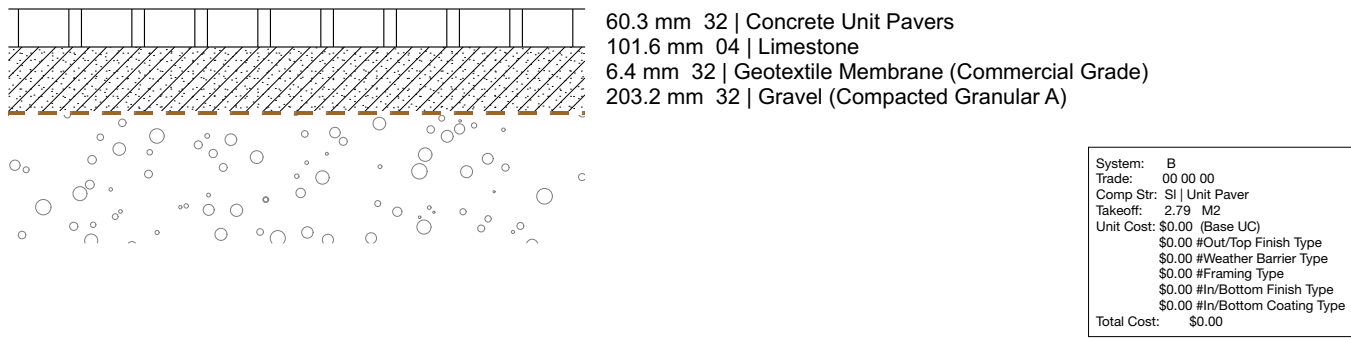
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02 - WIP
Legends

A0.07

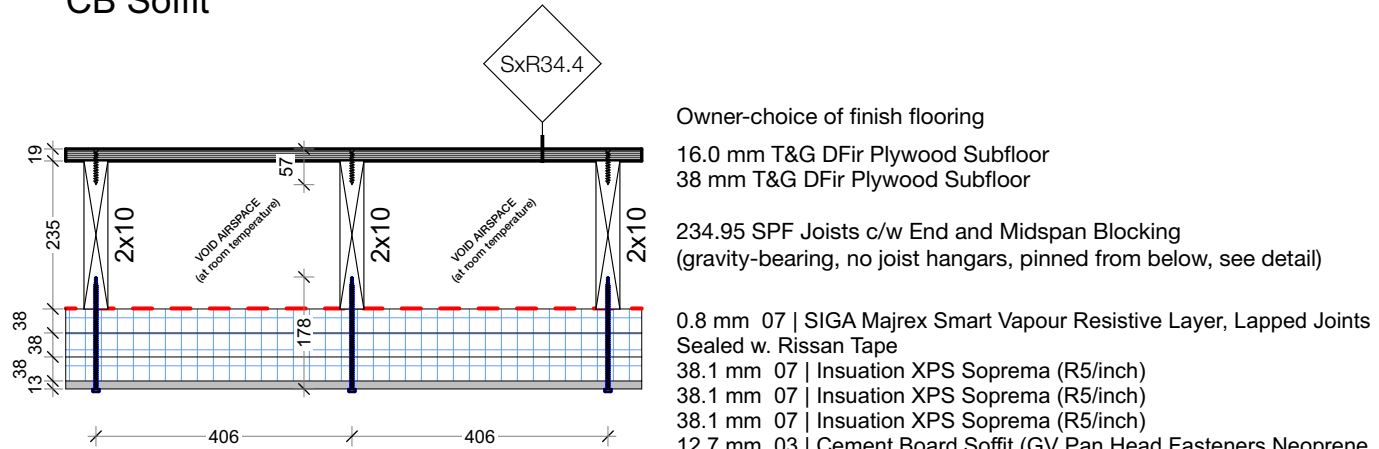
Structure

Plan ViewOBC/UL Assembly

LSup
SI | Unit Paver



SxR34.4
Sx | R22.5 Crawlspace Outboard Insulated +
CB Soffit

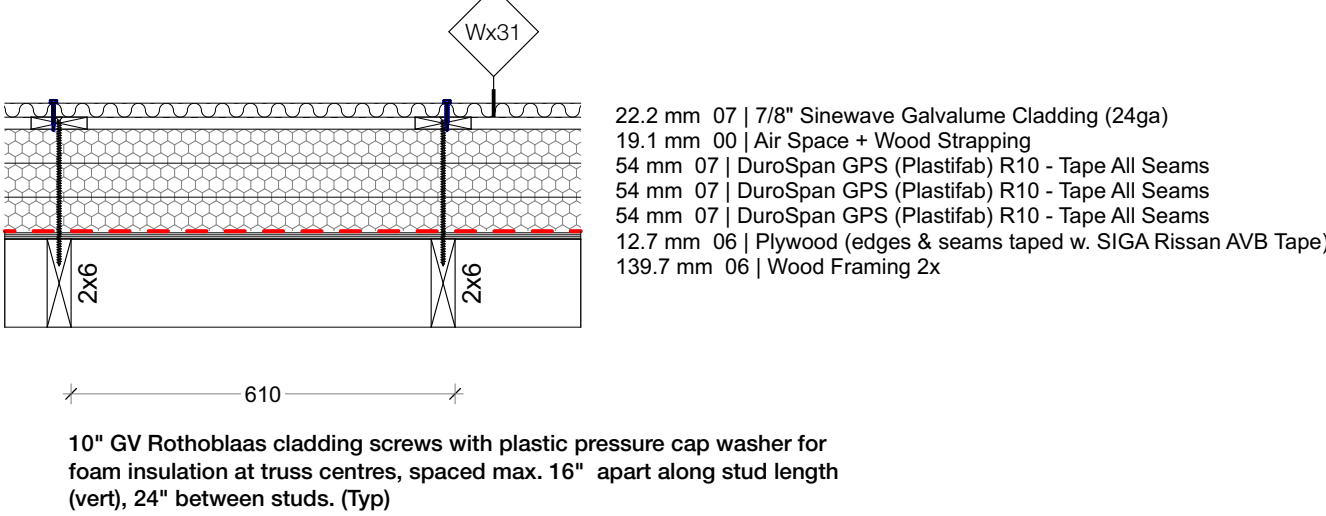


10" GV Rothoblaas cladding screws with plastic pressure cap washer for foam insulation at truss centres, spaced max. 16" apart along stud length (vert), 24" between studs. Flush washers to U/S of Cement board Crawlspace Soffit. (Typ)

Walls Exterior

Plan ViewOBC/UL Assembly

Wx31
Wx | R31 2x6 +3x GPS + GV Rainscreen



WHY EXTERIOR INSULATION?

Decades of advances in Canadian Building Science have shown that hybrid wall assemblies (insulated structural cavities) are difficult to correctly construct. Because of this, out-boarded of insulation is considered a new best-practice as advanced by NRCan's LEEPCore wall details, Morrison Herschfield's research documents, and the CCHRC's Remote Wall guide for cold climates: <https://cchrc.org/remote-walls/>

**Doors and Window Detailing is available as part of this full document set.*

Advantages:

Structural materials are always at room temperature, warm wood = no condensate, no condensate = no mould
A single control layer for air-tightness is easier to apply in one continuous wrap over roof and wall sheathing
Outboard insulation is fast and easy to install with special, long screws
Interstitial condensation is completely avoided. Airtight electrical and plumbing penetrations are not necessary in the stud cavity, only where these exit the structure & Insulation

per: more resources link: M+H Research, LEEPCore walls, TAI research. <https://natural-resources.canada.ca/energy-efficiency/home-energy-efficiency/leep-nze-wall-guides>

https://morrisonherschfield.com/bpa_library/considerations-for-exterior-and-split-insulated-net-zero-energy-ready-wall-systems/

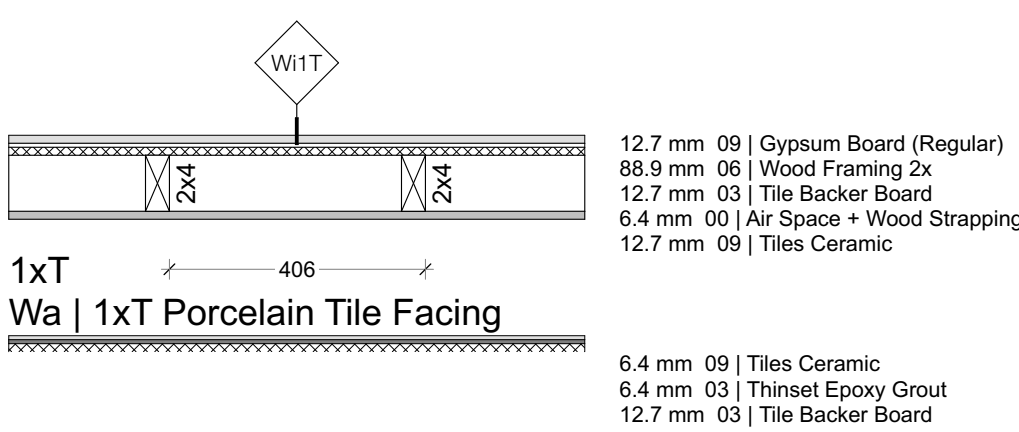
NOTE: Disclaimer...

STC/FRR

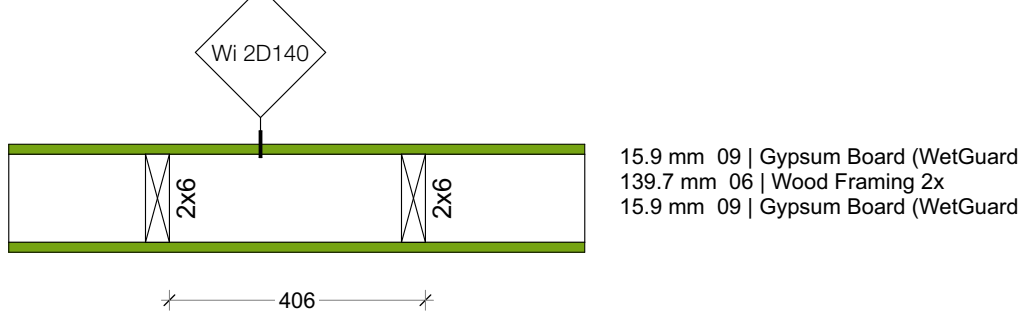
Walls Interior

Plan ViewOBC/UL Assembly

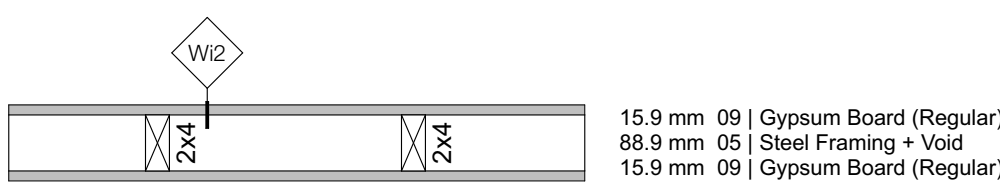
Wi1T
Wi | 1x Tile (13)+89 W.Stud



Wi 2D140
Wi | W2d | 2xGypsum(16)+89 W.Stud



Wi2
Wi | 2xGypsum(13)+89 S.Stud

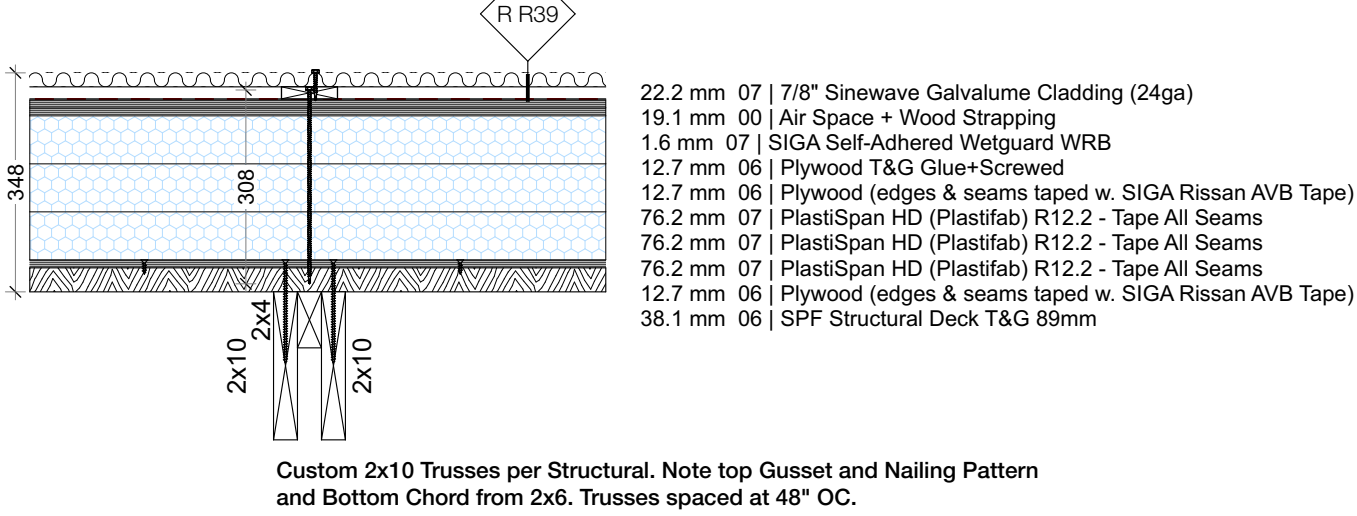


STC/FRR

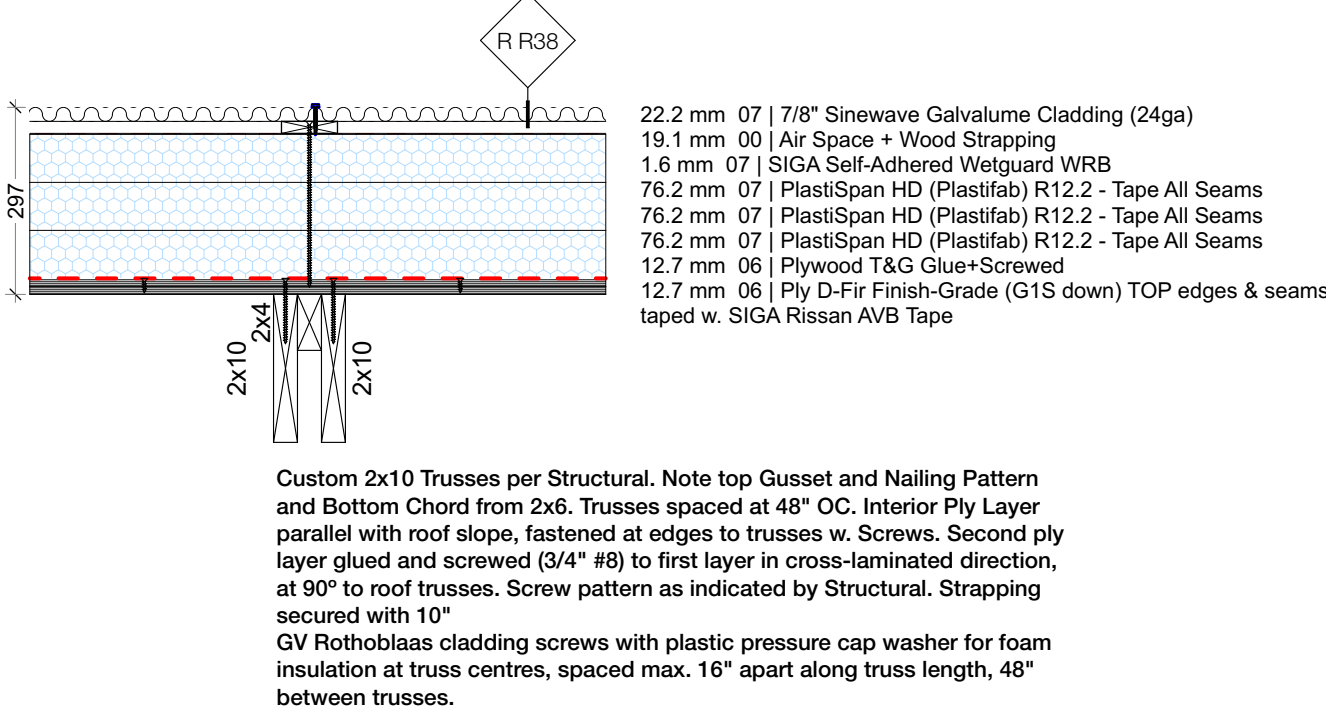
Roofs

Section View OBC/UL Assembly

R R39
Rx | R39 SD (Option A)



R R38
Rx | R38 PLY (Option B)



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2. These Contract Documents are the property of the Architect. The Architect takes no responsibility for the interpretation of these documents by the Contractor. Upon written application, the Architect will provide written graphic clarification or supplementary information regarding the intent of the Contract Documents. If Construction Administration services are included in the Architect's scope of work, the Architect will review Shop Drawings submitted by the Contractor for design conformance only.

3. Drawings are not to be used for construction. The Contractor is to verify all existing conditions and dimensions observed to perform the work and report any discrepancies with the Contract Documents to the Architect before commencing or continuing with any work.

4. Positions of repeated tested mechanical or electrical devices, fittings, and fixtures may be indicated on architectural drawings. The locations shown on the architectural drawings govern over the Mechanical and Electrical drawings. Those items not clearly located will be located as directed by the Architect. General and construction notes are intended to apply to all locations affected by the work. For locations of work refer to structural, mechanical and electrical documents, in addition to architectural.

5. These drawings are not to be used for construction unless noted below as "Issuance For Construction" and countersigned by the Architect.

6. All work is to be carried out in accordance with the most current Building Code and Rules of the authority having jurisdiction. All planning and change work to conform to current Ontario regulations. All electrical work to conform to Ontario Hydro Electrical Safety Code as amended.

7. The Architect of these plans and specifications gives no warranty or representation to any party about the constructability of the building represented by them. All contractors or subcontractors must satisfy themselves when bidding and at all times ensure that they can properly construct the work represented by these plans.

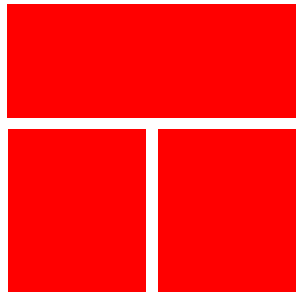
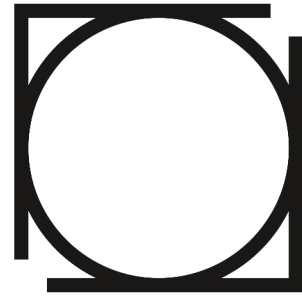
8. Original Drawings and designs generally provided by CMHC's "Pattern Book" from 1947 dated:

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Rev.	ID	Transmitted Set Name	Change ID	Change Name	Date
02 - WIP		Issued for Certification			Work in Progress

Work in Progress



Ontario Association
of Architects
Ordre des architectes
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BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

Revision
02 - WIP
Construction Assemblies

A0.08

QUESTIONS: Please! Please! Please! R10 is specified as a least-cost moderate-high performance wall, available from Homestead Structural Steel members at a minimum yield strength of $R_{m12} = 12$. 12" PWR covers are used to secure strapping & insulation to structure.

History: EPS is not in our office since 2002.

Detail: EPS is specified with EPS insulation to be analyzed by TA! have shown that concrete design is bypassed by ignoring sheathing actions on the "warm" side. Interior A/WB can be omitted as it is redundant. The assembly can be specified in R10, R20 and R30 assembly options by ignoring insulation & EPS to comply with current practices. In R20 and R30 walls, interior bare insulation can also be omitted as studies show the dead air space alone can contribute as much as R2 to the assembly.

Applicability: We specify this on ultra-organic projects such as the Behlman LAQUA and AQUA projects (residential accessorial dwellings), which were part of the first round of the CMAA Housing Study Program.

Regionality: Only used in the West.

Trends: This is an emergent trend, with low GWP and ease of construction, combined with low cost, could be a potential solution for a wide range of economy projects where fire resistance is less of a concern and mixed or combustible construction is permitted.

Regional: Only used in the West.

Issue: Some inspectors question omission of an interior "PWR A/WB". With exterior insulation this is not needed, we provide inspectors with documents by BSCQ/CANADA, etc., to explain the rational, but we add that 3 coats of latex paint can also be considered. The BSCQ/CANADA Manual requires that it is difficult to construct strapping to studs. For this reason we recommend meeting the omission of the bounding wall of each stud to assist with alignments and ensure the air and WRB layers. Many kinds of strapping material have been tested, TP (pwood) rigid used is preferred by some contractors over 1x4 SPF for straightness/less warpage and was added to provide for better cladding panels. Top and bottom of studs must always be covered to prevent gaps in insulation to present gaps in ease of wall-finish and to prevent air entry.

[illegible]

NOTE: Disclaimer...

QUESTIONS:

1. Broad Preference: Resilient as Dupont with BASF / Nippon Gyp Gypsum-Infused EPS insulation. Discussion is readily available from the Home Depot at -340/HX sheet of P₁₀₀ 10, 8" Thick screws are used to secure sheathing & insulation to studs.

2. History: Since 2022, starting with our production facilities and 741 office installation near Mission, ON.

3. Novelty: We have utilized up EPS type insulation due to low cost and high performance, including low GWP.

4. Impact: We specify this on ultra-green projects such as the Belknap and ADAC projects (residential accessory dwellings), which were part of the first round of the CMHC Housing Study. Anywhere mixed or combustible construction is permitted.

5. Regional: Ontario.

6. Trend: In an emerging trend, with GWP and ease of construction (lightweight, large panels), combined with a moderate cost premium, this could be a potential solution for a wide range of economy projects where the resilience is less of a concern and mixed or combustible construction is permitted. The value of "steel" assemblies has been mooted by Quick Turn, RDM and BSC, providing sufficient outward insulation to protect these can be superior details.

7. Benefits: R10 and R19 are integral as control layers in the board insulation product. This detail prevents condensation from ground moisture in crawlspaces as the joists are encapsulated in insulation. Per buildingcons.com

8. Issues: Careful detailing to limit vertical and in-situ moisture must be considered. We plan to use metal sheathing over the entire surface.

Sx34.4

Rev. ID	Transmittal Set Name	Change ID	Change Name	Date
02 - WIP	Issues for Certification Review			Work in Progress

The logos are positioned at the bottom right of the page. On the left is the logo of the Ontario Association of Architects, which consists of a stylized black circle with thick lines, partially enclosed by L-shaped corner brackets. To its right is the logo of the Ordre des architectes de l'Ontario, featuring three solid red squares arranged in a larger square pattern (one on top, two side-by-side below). Below these logos is a large QR code. At the very bottom right, there is a horizontal line followed by the text "Ontario Association of Architects" and "Ordre des architectes de l'Ontario" stacked vertically.

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BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

Revision
02 - WIP
Detailed Assemblies

A0.09

INTERIORS



JUST SAY NO TO TUCK TAPE

Use only premium tapes
specified at appropriate
locations, RTMS



JUST SAY NO TO POLY

Use only premium
membranes specified at
appropriate locations,
RTMS



SIGA RISSAN

Use Rissan at all Interior
AVB Penetrations and
seams, RTMS



SIGA MAJREX

Use Majrex (Smart AVB)
for all Interior AVB
Applications, RTMS

EXTERIORS



JUST SAY NO TO TUCK TAPE

Use only premium tapes
specified at appropriate
locations, RTMS



JUST SAY NO TO TYVEK

Use only premium
membranes specified at
appropriate locations,
RTMS



SIGA WIGLUV

Use Rissan at all
Exterior WRB
Penetrations and
seams, RTMS



SIGA MAJVEST

Use Majrex (Smart AVB)
for all Exterior WRB
Applications, RTMS

[illegible]

Rev. ID	Transmittal Set Name	Change ID	Change Name	Date
02 - WIP	Issues for Certification Review			Work in Progress

Work in Progress



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BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

Revision
02 - WIP
Control Layers

A0.10

The Targeting EUI Calculator BETA v3.037
(for use with MS Excel Only, Arctic Edition)

2025.04.10

Blue = Required User Input Cells
Pink = Defaults Not Editable
Black = Locked - Calculated
Red = Reference Values

SECTION 1: Key Values									
Reference		Target	Actual	Reference					
T.1	Lifetime Carbon	29.1	21.3	N/A	N/A				
T.2	Annual Carbon	26.6	18.8	N/A	71%				
T.3	TEUI	192.4	136.0	N/A	71%				
SECTION 2: Building Information									
T.B.1 Cost of Energy by Source					T.B.2 Cost of Energy by Source				
R.1	Major Occupancy	C- Residential	R.1	Reporting Period	2025	R.1	Electricity	\$0.1300 /kWh	
R.2	Reference Standard	OSBC 2012/13 1.2.2.4	R.2	Service Life (Years)	50	R.2	Gas	\$0.3070 /Gaj	
R.3	Actual (Bills) or Targeted (Design) Use	Targeted Use	R.3	Project Name	BeHome 2.5	R.3	Propane	\$1.6200 /Gaj	
R.4	Carbon Benchmarking Standard	Self Reported	R.4	Conditioned Area	39.00 (Net m ²)	R.4	Woodst ¹	\$180.00 /Gaj	
R.5	Embodied Carbon Target	125.00 kgCO2e/m ²	R.5	Certifier	Thomson Architecture Inc.	R.5	Oil	\$1.0000 /Gaj	
License No: 8154									
SECTION 3: Climate Calculations									
°C		°F	°C		°F	°C		°F	Reference
L.1	Province	ON	L.1	City	Barrie	L.1	Climate Zone	6.0	
L.2	Heating Degree Days (HDD)	4380	L.2	Current or Future /Present		L.2	HDD Reference Lookup	HDD - Energy Star	
L.3	Cooling Degree Days (CDD)	158	L.3	Capacitance	Static	L.3	CDD Reference Lookup	CDD - Energy Star	
L.4	Ground Facing GF HDD	2940	L.4	GF CDD	0				
L.5	Coldest Days (Location Specific)	-26	L.5	Test Heating	22	L.5	Test Heating	74	✓ 100%
L.6	Hottest Days (Location Specific)	33	L.6	Test Cooling	24	L.6	Test Cooling	76	✓ 108%
SECTION 4: Actual vs. Target Energy & Emissions									
ACTUAL ENERGY (80% Btu)		ACTUAL NET	E-1 EMISSIONS	TARGET ENERGY (Design)	TARGET NET	E-1 EMISSIONS	EMISSION FACTORS		
T.4	Total Electricity Use	5,099.55 kWh/yr	0.00	5,304.55 kWh/yr	5,304.55	732.03	138.00	gCO2e/kWh	732.03
T.5	Total Fossil Gas Use	0.00 m ³ /yr	0.00	0.00 m ³ /yr	0.00	0.00	1,821.00	gCO2e/m ³	0.00
T.6	Total Propane Use	0.00 kg/yr	0.00	0.00 kg/yr	0.00	0.00	2,870.00	gCO2e/kg	0.00
T.7	Total Oil Use	0.00 m ³ /yr	0.00	0.00 m ³ /yr	0.00	0.00	2,753.00	gCO2e/m ³	0.00
T.8	Total Wood Use	0.00 m ³ /yr	0.00	0.00 m ³ /yr	0.00	0.00	180.00	gCO2e/m ³	0.00
T.9	Operational GHG & Energy Subtotals	5,099.55	0.00	5,304.55	5,304.55	732.03			
T.10	Total Net Energy	18.80 GJ/yr		19.10 GJ/yr					
T.11	Annual Renewable Energy	2,900.00 kWh Actual	9.00 GJ Actual	2,602.28 kWh Target	9.55 GJ Target	366.81 kWh/yr			
T.12	Primary Energy	5,304.55 kWh/yr	136.01 kWh/m ² /yr	5,304.55 kWh/yr	136.01 kWh/m ² /yr				N/A
SECTION 5: CO2e Emissions (E-1 = Scope 1&2, E-3 = Scope 3)									
kgCO2e/m ²		kgCO2e/m ²		kgCO2e/m ²		kgCO2e/m ²		Reference	
E.1	GHG Operational (BE) Emissions/yr	18.80	13.60	E.1	GHG Operational (BE) Emissions/yr	18.80	13.60	E.1	GHG Operational (BE) Emissions/yr
E.2	Typology-Based Carbon Intensity (A1-3)	PL3 Res. Stick Frame	125.00	E.2	Typology-Based Carbon Intensity (A1-3)	125.00	125.00	E.2	Typology-Based Carbon Intensity (A1-3)
E.3	Total Embodied Carbon Emitted (A1-3)	5.12 MT CO2e/Service	125.00	E.3	Embodied Carbon Target	125.00	125.00	E.3	Embodied Carbon Target
E.4	Lifetime Avoided (BE) Emissions	15.18 MT CO2e	125.00	E.4	Modelled Value (A1-3)	125.00	125.00	E.4	Modelled Value (A1-3)
SECTION 6: Renewable Energy									
kWh/yr		kWh/yr		kWh/yr		kWh/yr		Reference	
R.1	On-site Energy Subtotals	0.00	0.00	R.1	On-site Renewable (REC)	0.00	0.00	R.1	On-site Renewable (REC)
R.2	Photovoltaics	0.00	0.00	R.2	WWS Electricity	0.00	0.00	R.2	WWS Electricity
R.3	Wind	0.00	0.00	R.3	Green Natural Gas	0.00	0.00	R.3	Green Natural Gas
R.4	Remove EV Charging from TEUI	0.00	0.00	R.4	Reserved (other removals)	0.00	0.00	R.4	Reserved (other removals)
SECTION 7: Water Use (B7)									
Targeted		Actual		Actual		Actual		Reference	
W.1	Total Hot-Cold Water Use (Method)	User Defined	150.00 l/psday / F User Defined	150.00	105.500	150.00	105.500	W.1	Total Hot-Cold Water Use (Method)
W.2	DHW Use (40% W.U. 1.0)			60.00	42.800	60.00	42.800	W.2	DHW Use (40% W.U. 1.0)
W.3	DHW or SHW Energy Source	Electric	0.00 Gas m ³ /yr	W.3	ekWh/yr Net Thermal Demand	2,290.74	2,290.74	W.3	DHW or SHW Energy Source
W.4	DHW or SHW Efficiency Factor (EF)	100%	1.00 COP/shw	W.4	(WZDN) Net Demand - Recovered	2,290.74	2,290.74	W.4	DHW or SHW Efficiency Factor (EF)
W.5	Drain Water Heat Recovery Efficiency	0%	0.00 kWh/yr	W.5	(WZDN) SHW Wasted	2,290.74	2,290.74	W.5	Drain Water Heat Recovery Efficiency
W.6	System Losses (% → W.1.3 Eqpt Gains)	229.07 kWh/yr		W.6	Exhaust (if Gas or Oil)	0.00	0.00	W.6	System Losses (% → W.1.3 Eqpt Gains)
SECTION 8: Indoor Air Quality									
Targeted		Guidance Limits		Guidance Limits		Guidance Limits		Reference	
A.1	Radon (annual avg.)	≤ 2 Bq/m ³	150 Bq/m ³	A.1	Radon (annual avg.)	≤ 2 Bq/m ³	150 Bq/m ³	A.1	Radon (annual avg.)
A.2	CO2 (annual avg.)	550 ppm	1000 ppm	A.2	CO2 (annual avg.)	550 ppm	1000 ppm	A.2	CO2 (annual avg.)
A.3	TVOC (annual avg.)	100 ppm	400 ppm	A.3	TVOC (annual avg.)	100 ppm	400 ppm	A.3	TVOC (annual avg.)
A.4	Rel. Indoor Humidity (annual avg.)	40% RH	30-60 %	A.4	Rel. Indoor Humidity (annual avg.)	40% RH	30-60 %	A.4	Rel. Indoor Humidity (annual avg.)
A.5	Atmospheric Offsets	0.00 MT/yr CO2e		A.5	Atmospheric Offsets	0.00 MT/yr CO2e		A.5	Atmospheric Offsets
SECTION 9: Occupant + Internal Gains									
Unit Qty		Annual kWh/yr		Htg Gain kWh/yr		Cooling Gain kWh/yr		Reference	
G.1	Occupants per Building (declared)	2	Occupied Hrs/Day 12	4380 / 8760				G.1	Occupants per Building (declared)
G.2	Occupant Activity	Normal	117	1,026.92	689.30 @ 35.67%	337.62 @ 35.67%		G.2	Occupant Activity
G.3	Plug Loads	5	854.10	573.36 @ 66.67%	286.80 @ 29.67%			G.3	Plug Loads
G.4	Lighting Loads	1.5	256.23	171.99 @ 6.90%	84.24 @ 8.90%			G.4	Lighting Loads
G.5	Equipment Loads	3.00	512.46	343.98 @ 17.80%	168.48 @ 17.80%			G.5	Equipment Loads
G.6	Elevator Loads (WU) → Eqpt Gains	No Elevators						G.6	Elevator Loads (WU) → Eqpt Gains
G.7	DHW System Losses		229.07	153.76 @ 7.96%	75.31 @ 7.96%			G.7	DHW System Losses
G.8	Plug Load/Cool. Subtotals		1,822.75	1,243.03	688.83			G.8	Plug Load/Cool. Subtotals
G.9	Internal Gains Totals		2,876.75	1,932.34	946.46	100%		G.9	Internal Gains Totals
SECTION 10: Radiant Gains									
Orientation		SHGC		Winter Shading		Summer Shading		Solar Gain	
R.1	Doors	0.00	Average	0.50	0%	0%	0%	0.00 @ 0.00%	0.00 @ 0.00%
R.2	Window Area North	0.00	North	0.50	0%	0%	0%	0.00 @ 0.00%	0.00 @ 0.00%
R.3	Window Area East	1.10	East	0.50	0%	0%	0%	54.63 @ 12.45%	42.35 @ 12.45%
R.4	Window Area South	7.33	South	0.50	0%	0%	0%	560.97 @ 82.53%	280.48 @ 82.53%
R.5	Window Area West	1.32	West	0.50	0%	0%	0%	34.14 @ 5.02%	17.07 @ 5.02%
R.6	Skylights	0.00	Skylight	0.50	0%	0%	0%	0.00 @ 0.00%	0.00 @ 0.00%
R.7	Subtotal Solar Gains							676.74	100%
R.8	Gains Utilization Factor (n-Factor)	NRC 50%	2,612.07	Total Gains	50.00%			1,338.64	G-3 Net Usable Gains by Method Selected
R.9	Net Usable Heating Season Gains	PH Method	2,612.07	Total Gains	57.31%			2,947.81	Net Usable Gains by PH Method (Reference)
R.10	Net UN-usable Htg. Gains							1,306.04	
SECTION 11: Transmission Losses									
Area m ²		R-Value		Heatloss		Heatloss		Reference	
T.1	Roof	51.04	40.26	7.69	0.141	30.14%	756.64 @ 20.35%	27.29 @ 20.35%	✓ 146%
T.2	Walls Above Grade (Excludes Openings)	72.29	30.77	1.42	0.185	41.25%	1,402.05 @ 27.71%	50.68 @ 27.71%	✓ 129%
T.3	Floor Exposed	33.46	34.44	6.67	0.185	576.84 @ 16.60%	20.92 @ 16.60%	✓ 108%	
T.4	Doors	0.00	6.31	1.111	0.900	0.00%	0.00 @ 0.00%	0.00 @ 0.00%	✓ 178%
T.5	Window Area North	0.00	6.31	1.111	0.900	0.00%	0.00 @ 0.00%	0.00 @ 0.00%	✓ 178%
T.6	Window Area East	1.10	6.31	1.111	0.900	0.66%	104.07 @ 2.80%	3.75 @ 2.80%	✓ 178%
T.7	Window Area South	7.33	6.31	1.111	0.900	4.74%	750.24 @ 20.18%	27.08 @ 20.18%	✓ 178%
T.8	Window Area West	1.32	6.31	1.111	0.900	0.33%	124.86 @ 3.36%	4.50 @ 3.36%	✓ 178%
T.9	Skylights	0.00	6.31	1.111	0.900	0.00%	0.00 @ 0.00%	0.00 @ 0.00%	✓ 178%
T.10	Walls Below Grade (Conditioned Space)	0.00	22.71	4.90	0.250	0.00%	0.00 @ 0.00%	0.00 @ 0.00%	✓ 108%
T.11	Floor Slab (Conditioned Space)	0.00	21.01	3.79	0.270	0.00%	0.00 @ 0.00%	0.00 @ 0.00%	✓ 189%
T.12	B.11 Interior Floors (incl. garages)	7.48	-	-	-	-	-	-	-
T.13	Thermal Bridge Penalty (min. 5-70%)	10%	(Assume Code Minimum Construction at 50%)				31.77 @ 10.00%	0.00 @ 0.00%	
T.14	Envelope Totals	167.14	24.39			100%	3,171.71	144.11	100%
SECTION 12: Volume and Surface Metrics									
U-Value		Loss Rate		Heatloss		Heatloss		Reference	
R.1	Total Area Exposed to Air (Aa)	167.14 m ²	U-Val for Ae	0.233	24.47	4,089.50	0.88	147.52	100.00%
R.2	Total Area Exposed to Ground (Ag)	0.00 m ²	U-Val for Ag	0.000	0.00	0.00	0.00	0.00 @ 0.00%	
R.3	Heating Natural Air Leakage Headloss	1 Stories	B.16.3 Shielding	5.65	22.25	2.00	7.55 @ 5.11%		
R.4	Building U-Value Combined Total & Transmission Losses & Gains			0.233		4,308.75	147.52	100%	N/A
R.5	Total Conditioned Volume	198.54 m ³	Volume/Area	65%	Area/Volume	154%			
R.6	Total Floor Area (Cond. + Uncond.)	45.84 m ²	Only used in E.3.2						
R.7	Window Wall Ratio (WWR)	12.52%							✓ 23%
R.8	MBT ₅₀ Target Method NSC-2025 (Part 5)	A1-49	B.10.1 Target	0.23	U/m ²				
R.9	ACH ₅₀ Target (Converts B.18.1)	1.28	B.18.1 Measured	1.00					✓ 100%
R.10	A _{eq} or EL _{Aeq} (m ²)	0.038	B.18.1 n-Factor	22.2	B.18.1 A _{eq} Zone	2			✓ 130007%
SECTION 13: Mechanical Loads									
kWh/yr		kWh/yr		kWh/yr		kWh/yr		Reference	
M.1	Primary Heating System	Heatpump	M.1.1 HSPF	12.5	M.1.2 COPheat	3.66	M.1.3 COPcool	2.7	M.1.4 Sink
M.2	Heating System Demand	893.17					M.1.5 CEER	9.1	M.1.6 Sink
M.3	Heating Fuel Input (kWh/yr)	0.00	M.3.1 COPheat (only if value is provided)	3.66	M.3.2 COPcool (only if value is provided)	2.7	M.3.3 CEER	9.1	M.3.4 Sink
M.4	Heatpump or Dedicated Cooling System	Cooling							✓ 124%
M.5	Heatpump Cool Elect. Load	467.85					M.5.1 CEER	9.1	
M.6	HVAC/EHVAC Efficiency (SRE)	83.06%	V.1.2 Ventilation Method	Volume Constant			M.6.1 ACH	0.17	ACH (only if Value)
M.7	Per Person Ventilation Rate	6.33 l/s per person	V.1.3 Summer Boost	None					✓ 67%
M.8	Volumetric Ventilation Rate	10.55 l/s							
M.9	Heating Season Ventil. Energy	1,242.23	V.1.3 Heating Season Ventil. Energy Recovered	1.073.78			M.9.1 Net Htg Season Ventil. Load	268.45	
M.10	Incoming Cooling Season Ventil. Energy	71.77	V.1.3 Latent Load Factor (Calculated on Cooling Workheat)	161%					
M.11	Outgoing Cooling Season Ventil. Energy	62.22							
M.12	Ventilation Free Cooling/Vent Capacity	9%	V.1.3 Free Cooling Limit	131.28 kWh/yr	Days Active Cooling Required (Experimental)				✓ 0
SECTION 14: TEDI & TEUI Targeted									
kWh/yr		kWh/m ² /yr		kWh/yr		kWh/yr		Reference	
T.1	TED Targeted	3,272.16	T.1	TEDI	83.90	Includes V.1.3 Net Ventilation Losses, Excludes V.1.3 CEDs for Ae			✓ 60%
T.2	TED Envelope (Excludes Ventilation)	3,663.72	T.2	TEDI (Excludes V)	77.62				
T.3	CED Cooling Load (Unmitigated)	1,519.59	T.3	CED Unmitigated	38.98	T.3.2 Less Free Cool & Vent. Exhaust			1,326.06
T.4	CEDI Cooling Load	4.45 W/m ² /Unmitigated	T.4	CEDI Mitigated	3.88 W/m ² Mitigated				
T.5	TEL Total Envelope Headloss	4,309.75	T.5	TEUI	110.91				

This site plan has been provided by the **Owner/Applicant** for reference only and has no legal value.

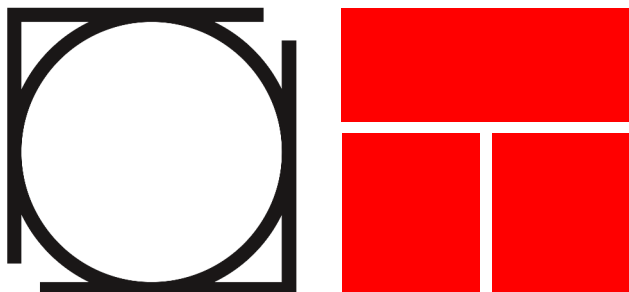
For Zoning Compliance and Site Plan Design, Refer to Planning Consultant submissions.

Property Line Dimensions are as noted in Documents provided by owner. The Architect bears no responsibility for the accuracy of dimensions provided. If a current legal survey is required for the purpose of submitting for a Permit to Construct, the owner must contract an OLS Surveyor to furnish these dimensions to the AHJ's satisfaction. The Architect can subsequently provide or update site dimensions for submission as required.

NOT TO SCALE

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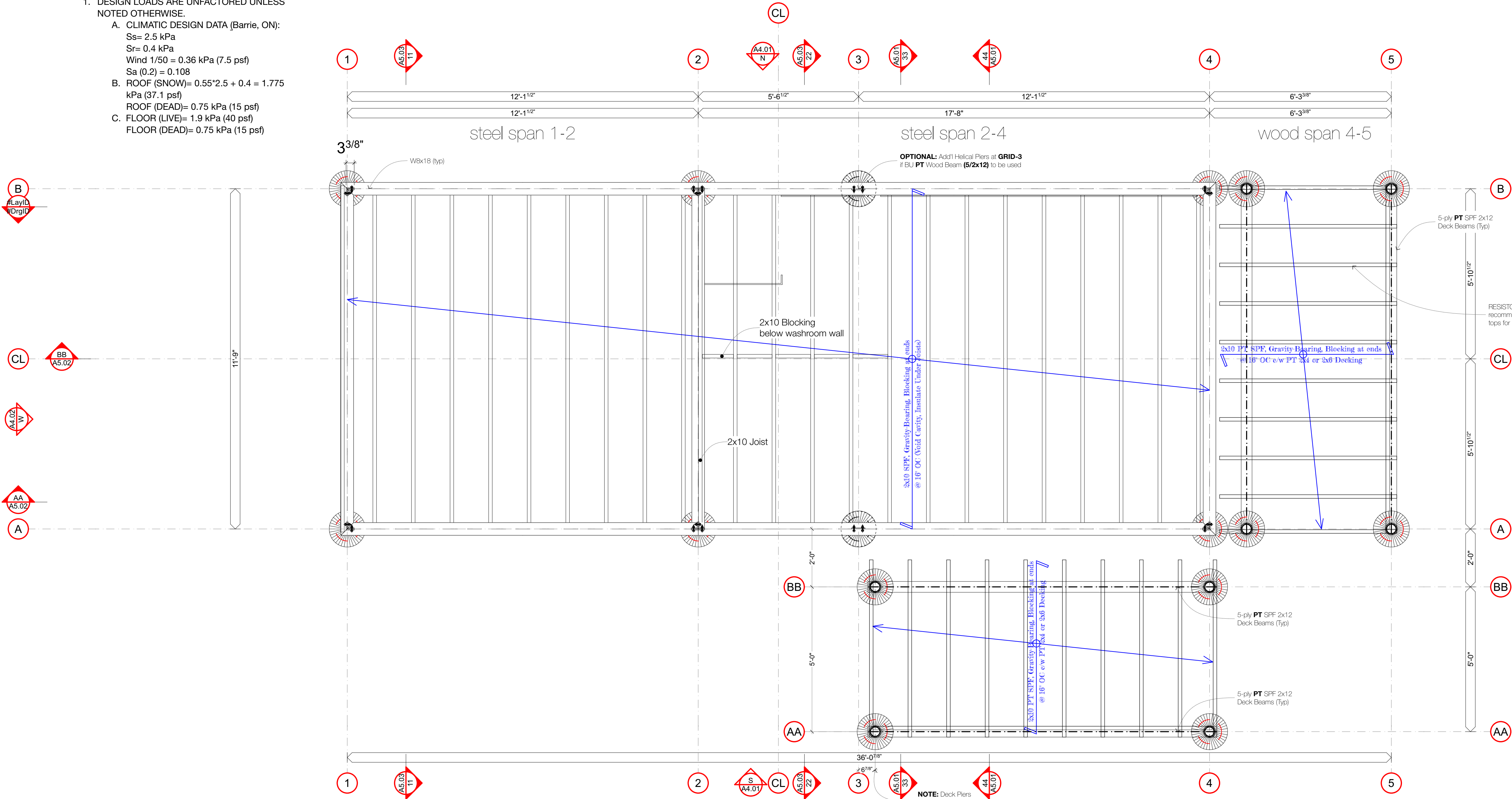
project no. 2024.12

Site Address: TBD

Revision
02 - WIP
Design Floor Plan

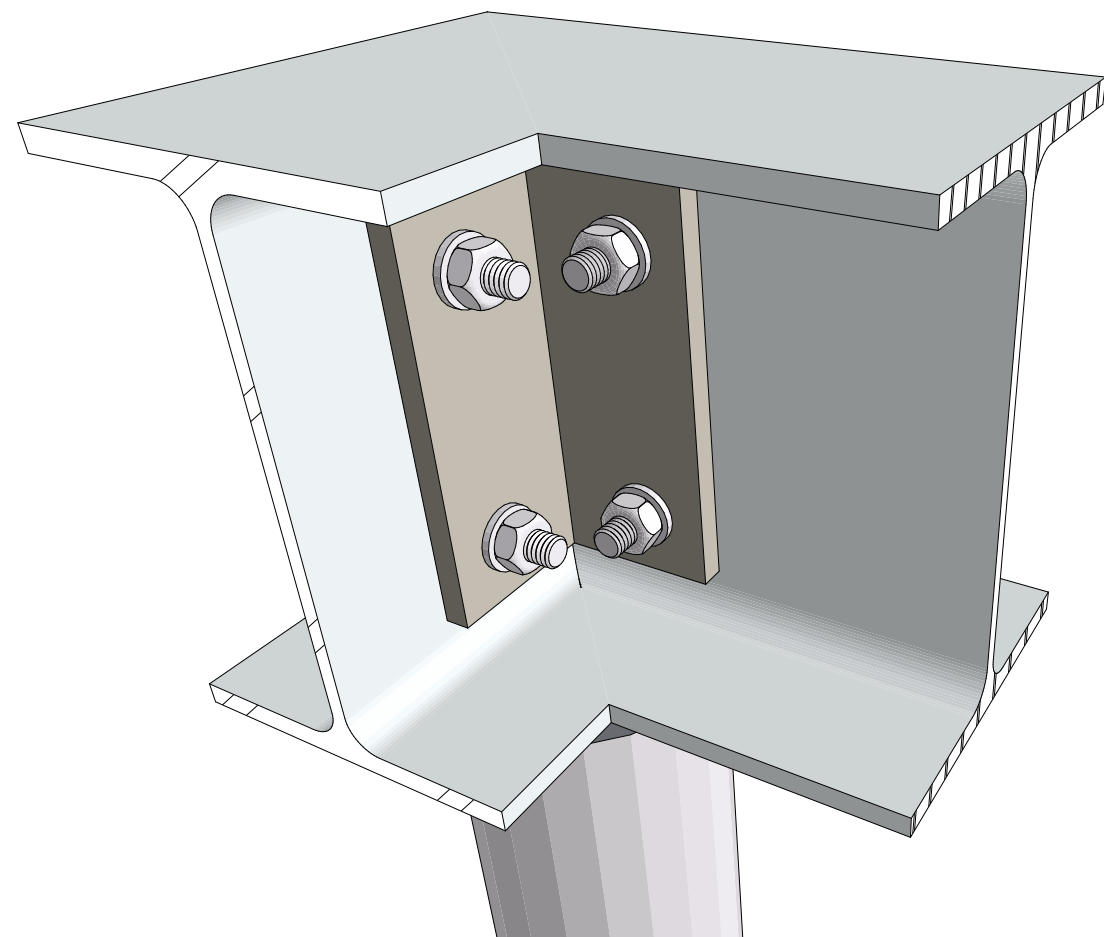
A2.41

- DESIGN LOADS:
1. DESIGN LOADS ARE UNFACTORED UNLESS NOTED OTHERWISE.
- A. CLIMATIC DESIGN DATA (Barrie, ON):
Ss= 2.5 kPa
Sr= 0.4 kPa
Wind 1/50 = 0.36 kPa (7.5 psf)
Sa (0.2) = 0.108
- B. ROOF (SNOW)= 0.55*2.5 + 0.4 = 1.775 kPa (37.1 psf)
ROOF (DEAD)= 0.75 kPa (15 psf)
- C. FLOOR (LIVE)= 1.9 kPa (40 psf)
FLOOR (DEAD)= 0.75 kPa (15 psf)

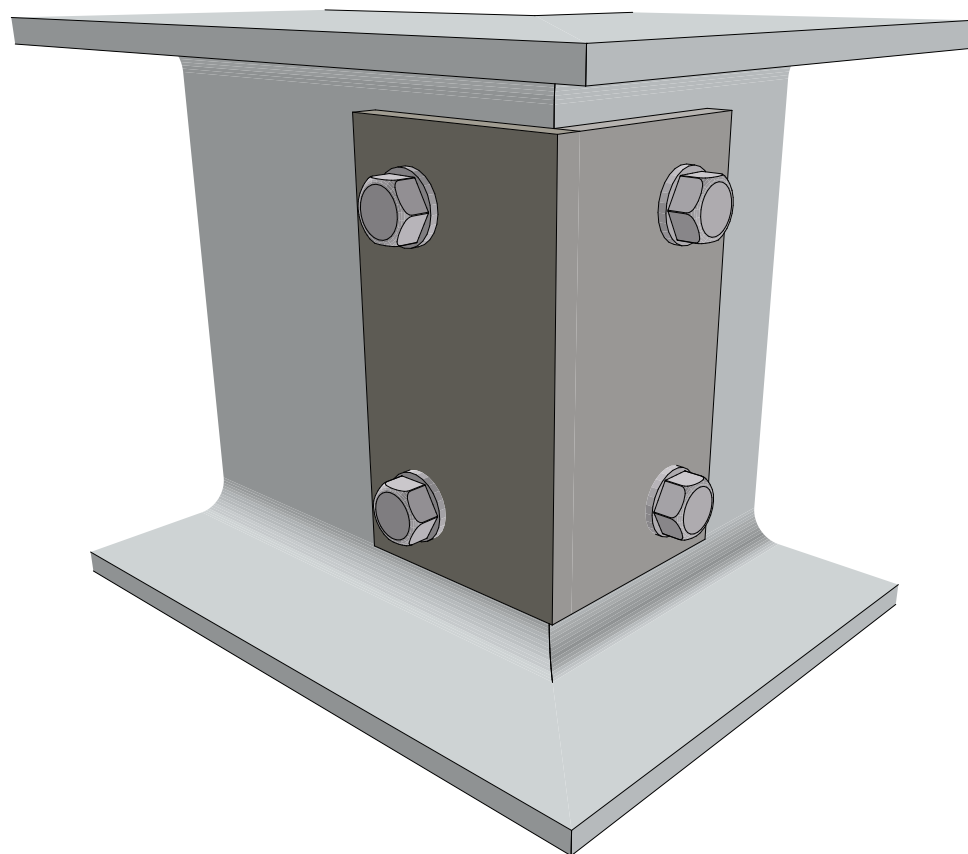


3
S2.43

House Main Floor Plan
Scale: 1:24



15 Mitred Steel Connection
NOT TO SCALE



16 Mitred Steel Outside Corner
NOT TO SCALE

Mitred W8x18 Steel Beams (GV or Primed+Painted)

3/8" GV Steel Angle Fastened w. 2x 1/2" GV Steel Bolts per Leg spaced min. 1" from edges. Angles to Exterior and Exterior. Cut Steel to Mitre cleanly. Prime + Paint or GV Treat all finished surfaces.

Wood Alternate also possible (5-ply PT 2x12 in GV Steel saddles in Helical Pier Caps). However this Detailing will push decks above 24" AFG, which will then required they have full guards and railings. In this sense the steel may be more economical.

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8. Original Drawings and designs generally provided by CMHC's "Pattern Book" from 1947-1984.

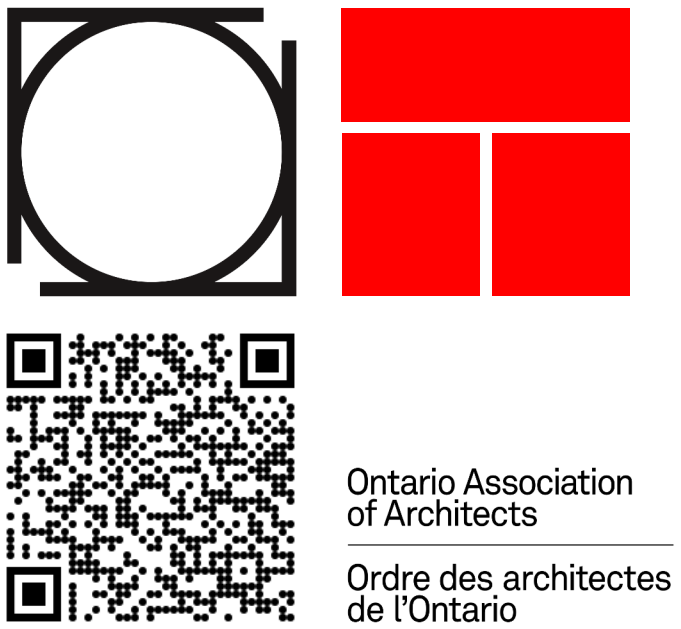
9. Notes for Contractors available at the link: <https://openhouse.ca/1340-complexities-of-architectural-drawings>

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BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

Revision
02 - WIP
Foundation Framing Plans

S2.43

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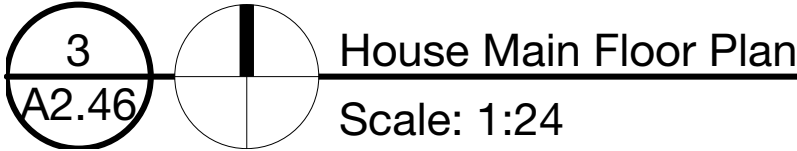
Revision
02 - WIP
Main Floor Plan

A2.46

A. CLIMATIC DESIGN DATA (Barrie, ON):
 $S_s = 2.5 \text{ kPa}$
 $S_r = 0.4 \text{ kPa}$
 $\text{Wind } 1/50 = 0.36 \text{ kPa (7.5 psf)}$
 $S_a (0.2) = 0.108$

B. ROOF (SNOW) = $0.55 \cdot 2.5 + 0.4 = 1.775 \text{ kPa (37.1 psf)}$
 ROOF (DEAD) = $0.75 \text{ kPa (15 psf)}$

C. FLOOR (LIVE) = 1.9 kPa (40 psf)
 FLOOR (DEAD) = $0.75 \text{ kPa (15 psf)}$

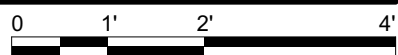


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Revision
02 - WIP
Main Floor Framing Plans

1
S2.45

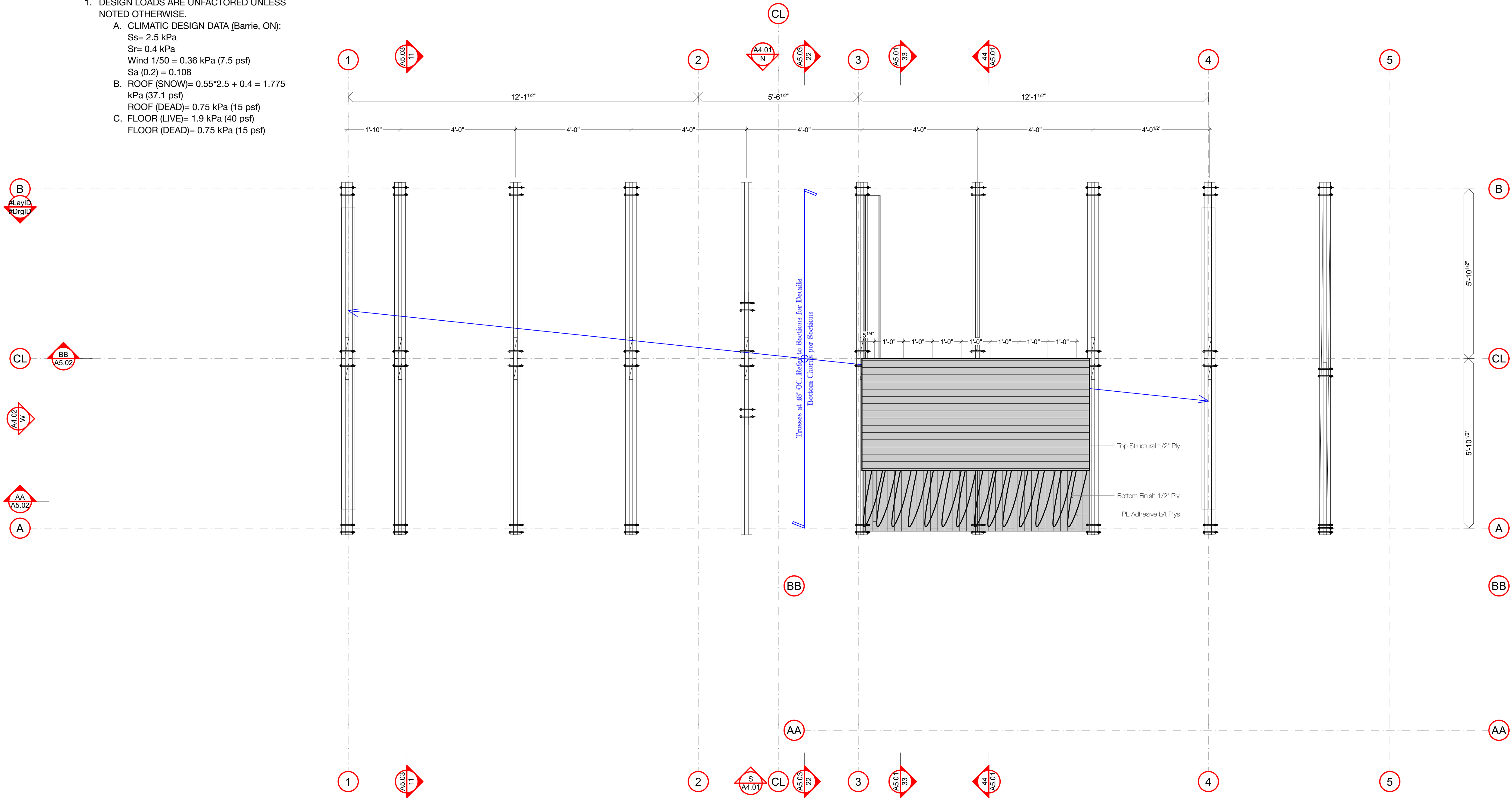
House Main Floor Plan
Scale: 1:24



\$2.45

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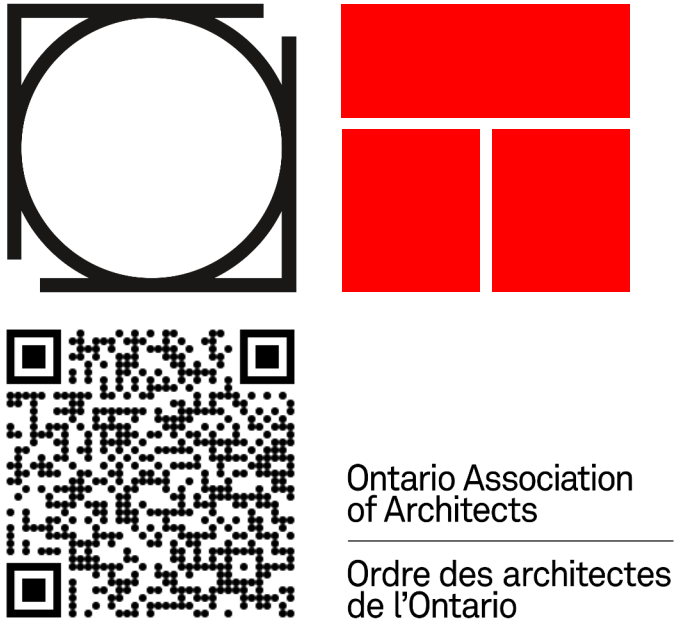
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9. Notes for Contractors available at the link:
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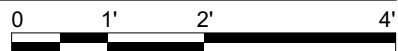
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email: thomsonarch@icloud.com

BeHome 1BR Gable

project no. 2024.12
Site Address: TBD

Revision
02 - WIP
Roof Framing Plans



S2.46

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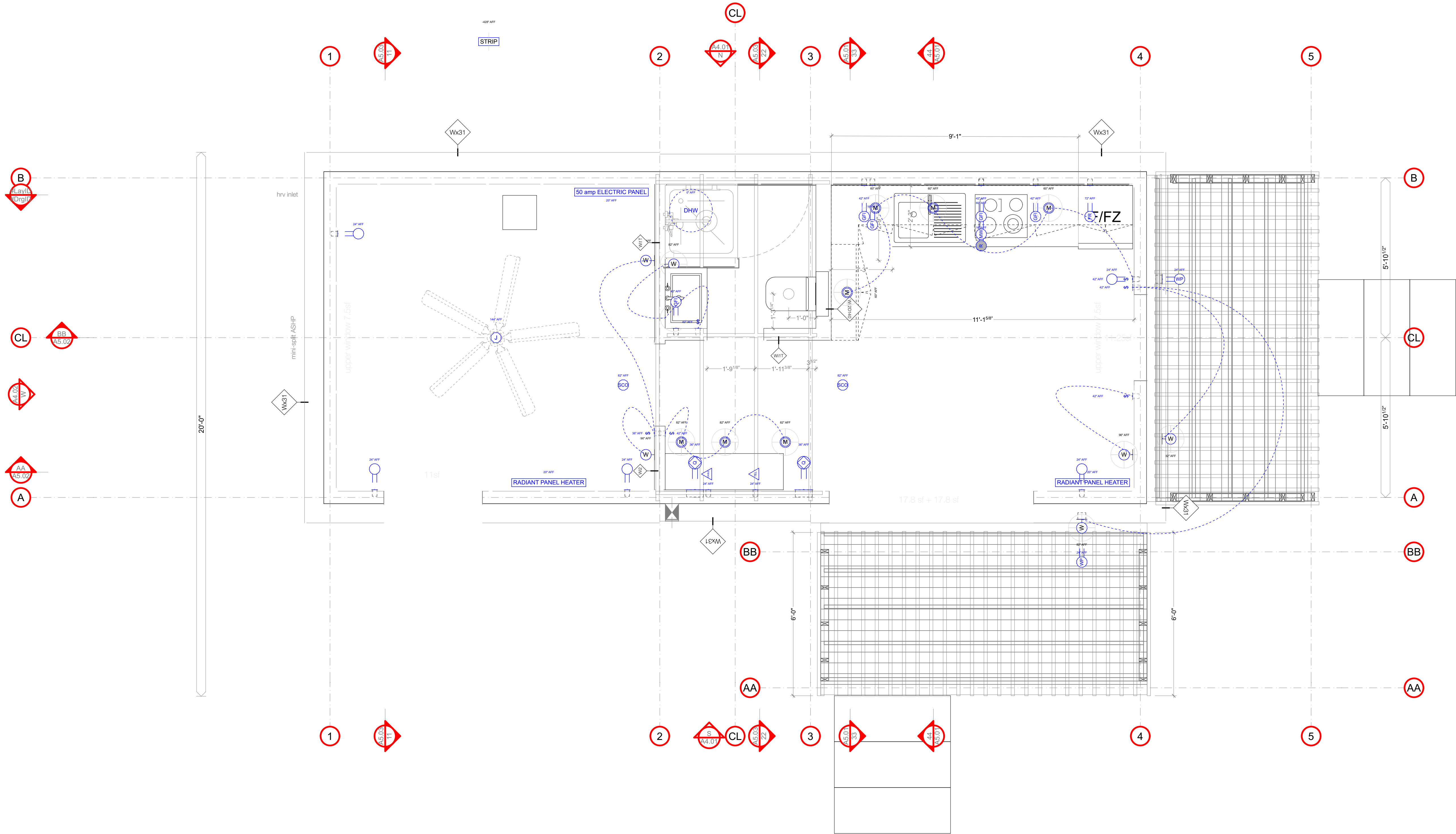
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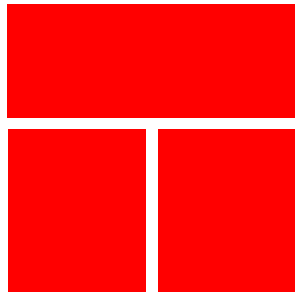
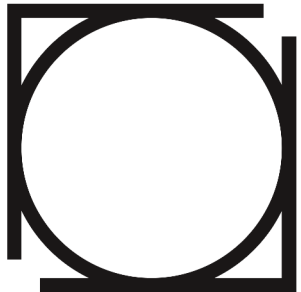
9. Notes for Contractors available at the link:
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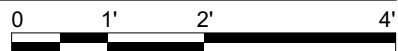
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cell: 705.935.0355 office: 705.935.0355
email: thomsonarch@icloud.com

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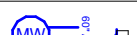
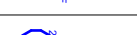
project no. 2024.12

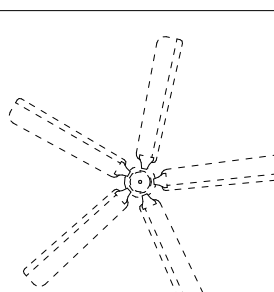
Site Address: TBD

Revision
02 - WIP
Main Floor Electrical Plans



A2.47

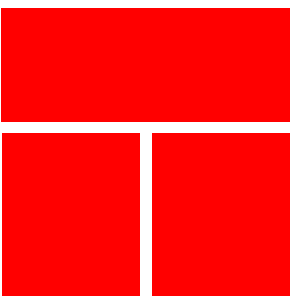
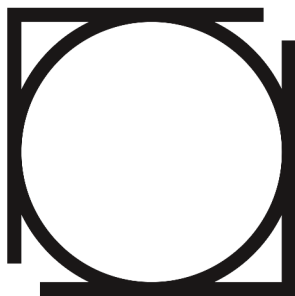
ACE Switch, Outlet, Electrical + Mechanical Schedule															
Key	ID	Name	QTY	Cost	Description	Manufacturer	Housing/Accessories	Part #	Trim #	Energy Data				Mounting	Notes
										VOLTS	WATTS	HRS	W-H		
	OUTLET		5	150.00	Standard Outlet					110.00	0.00		100.00		
	SWITCH 1	\$	6	150.00	Single Gang Switchbox					110.00	0.00		---		
	50 amp ELECTRICAL PANEL	Breaker Panel	1	500.00	Panel					110.00	0.00		480.00	In-Cabinet	
	CAB/TEL/DAT	CABLE	1	100.00	Cable/Telephone/Data					12.00	0.00		24.00		
	DHW	DHW	1	500.00	Electric Tank					110.00	0.00		14400.00	In-Cabinet	
	MW	GFI	1	150.00	Ground Fault Interrupt for Microwave					110.00	0.00		100.00		
	GFI	GFI	5	200.00	Ground Fault Interrupt					110.00	0.00		100.00		
	FR	GFI	1	200.00	Ground Fault Interrupt for Fridge					110.00	0.00		100.00		
	FAN OUTLET	J	1	150.00	Standard Octagon Junction					110.00	0.00		0.00		
	RADIANT PANEL HEATER	Panel Rad	2	400.00	Instantaneous Radiant Heater					110.00	0.00		480.00		
	QUAD	Q	2	200.00	Quad Outlet					110.00	0.00		100.00		
	RANGE	R	1	200.00	220A Range Receptacle					220.00	0.00		1800.00		
	SMOKE	SCO	2	200.00	Smoke + CO Detector					12.00	0.00		12.00	U/S Decking	
	CAB/TEL/DAT	TEL	1	100.00	Cable/Telephone/Data					12.00	0.00		24.00		
	GFI	WP	1	200.00	Weather Protected Outdoor GFI					110.00	0.00		100.00		
	GFI	WP	1	200.00	Weather Protected Outdoor GFI					110.00	0.00		2.00		
			32	6550.00						19214.00					

ACE Light Fixture Schedule																	
Key	Name	ID	QTY	Unit Cost	Bulb	Description	Housing/Accessories	Lens	Manufa...	Part #	Trim #	Energy Data				Position/Mounting	NOTES
												VOLTS	WATTS	HRS	W-H		
	---	FAN	1	600.00	MR16-L...	Contemporary	24" Extension	UV	G Squa...	00-00	00-00	110.00	40.00		238.36	Ceilling	Straight Blades
	M	MILLWORK	7	20.00	XENON ...	Millwork	Lucite Bezel					110.00	3.00		18.00	Millwork Underside	
	STRIP	LED STRIP	1	45.00	LED	Pendant	Tulip Glass	Removed	Juno			110.00	7.00		42.00	Bulkhead	
	W	LED SCONCE	7	90.00	LED MR16	Potlight (Halogen)	Lucite Bezel					110.00	3.00		18.00		
			16	1415.00											532.36		

[illegible]

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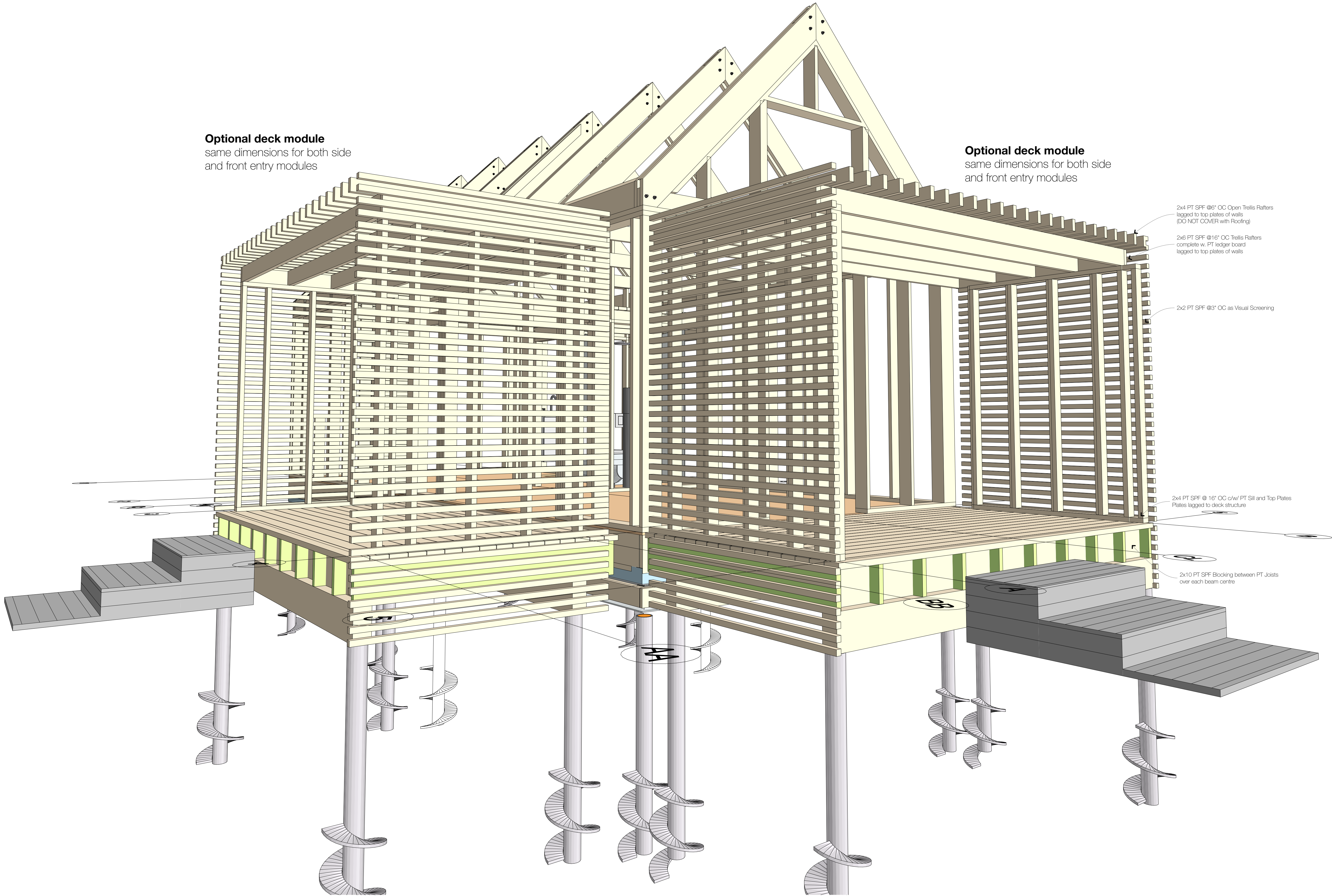
BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

Revision
02 - WIP
Electrical Schedule

A8.02



Optional deck module
same dimensions for both side
and front entry modules

Optional deck module
same dimensions for both side
and front entry modules

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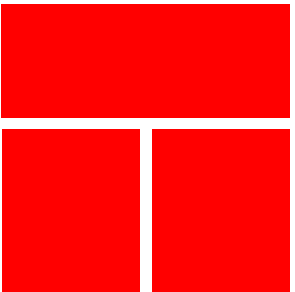
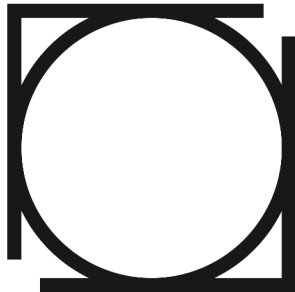
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project no. 2024.12

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Revision
02 - WIP
Assembly Perspective

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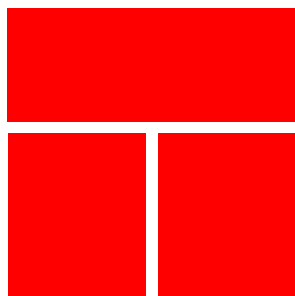
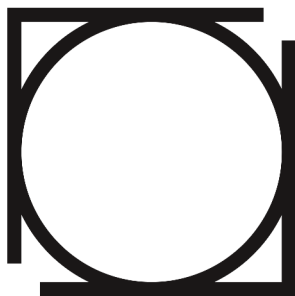
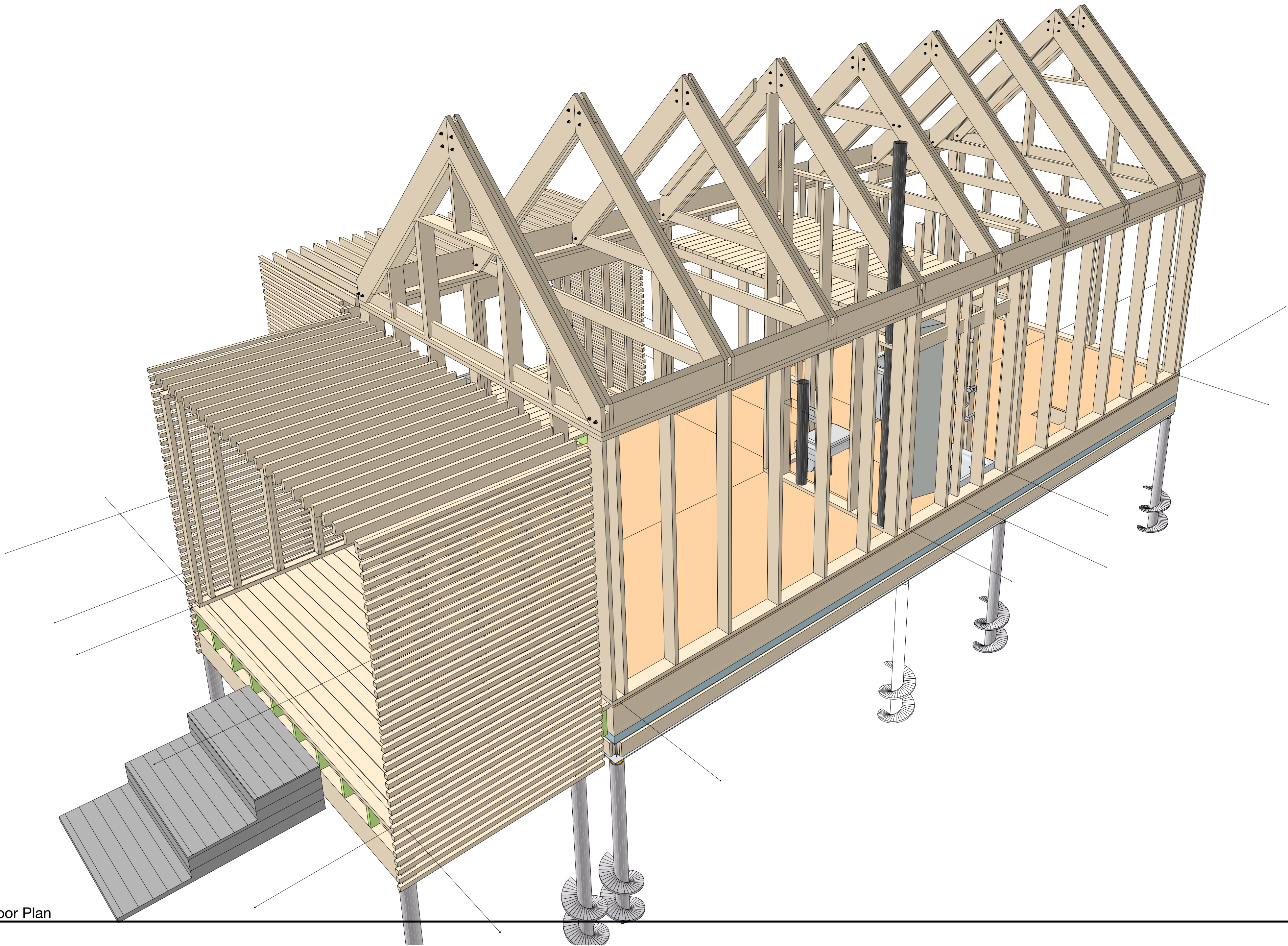
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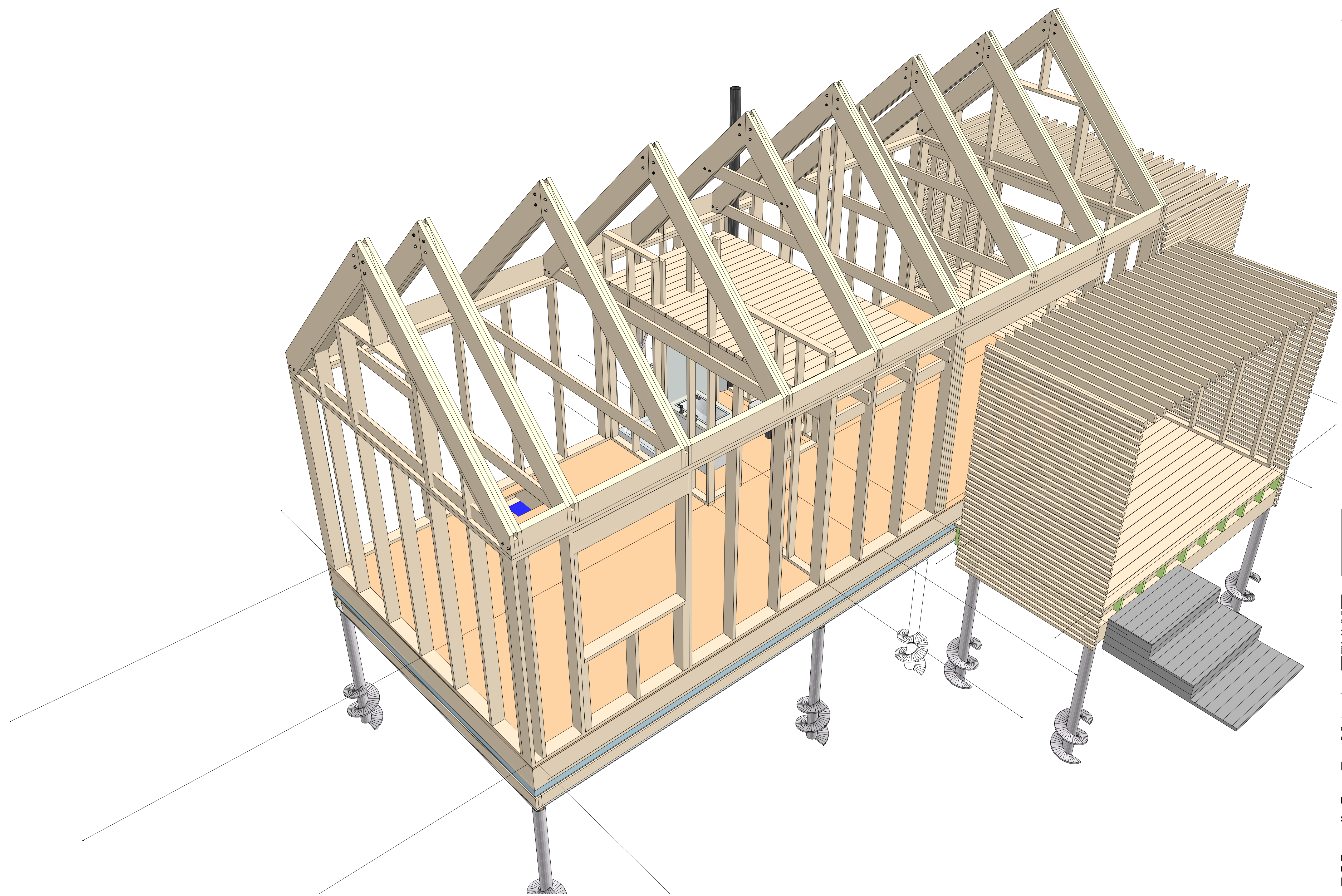
BeHome 1BR Gable

project no. 2024.12

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Revision
02 - WIP
Assembly Perspective

A2.49



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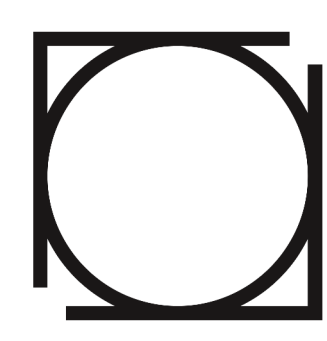
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Revision
02 - WIP
Framing Perspective

A2.410

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*LD of any adjacent structure must also be calculated

N North House Elevation
SCALE: 1:24

*LD of any adjacent structure must also be calculated

S South House Elevation
SCALE: 1:24

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North & South Elevations

A4.01

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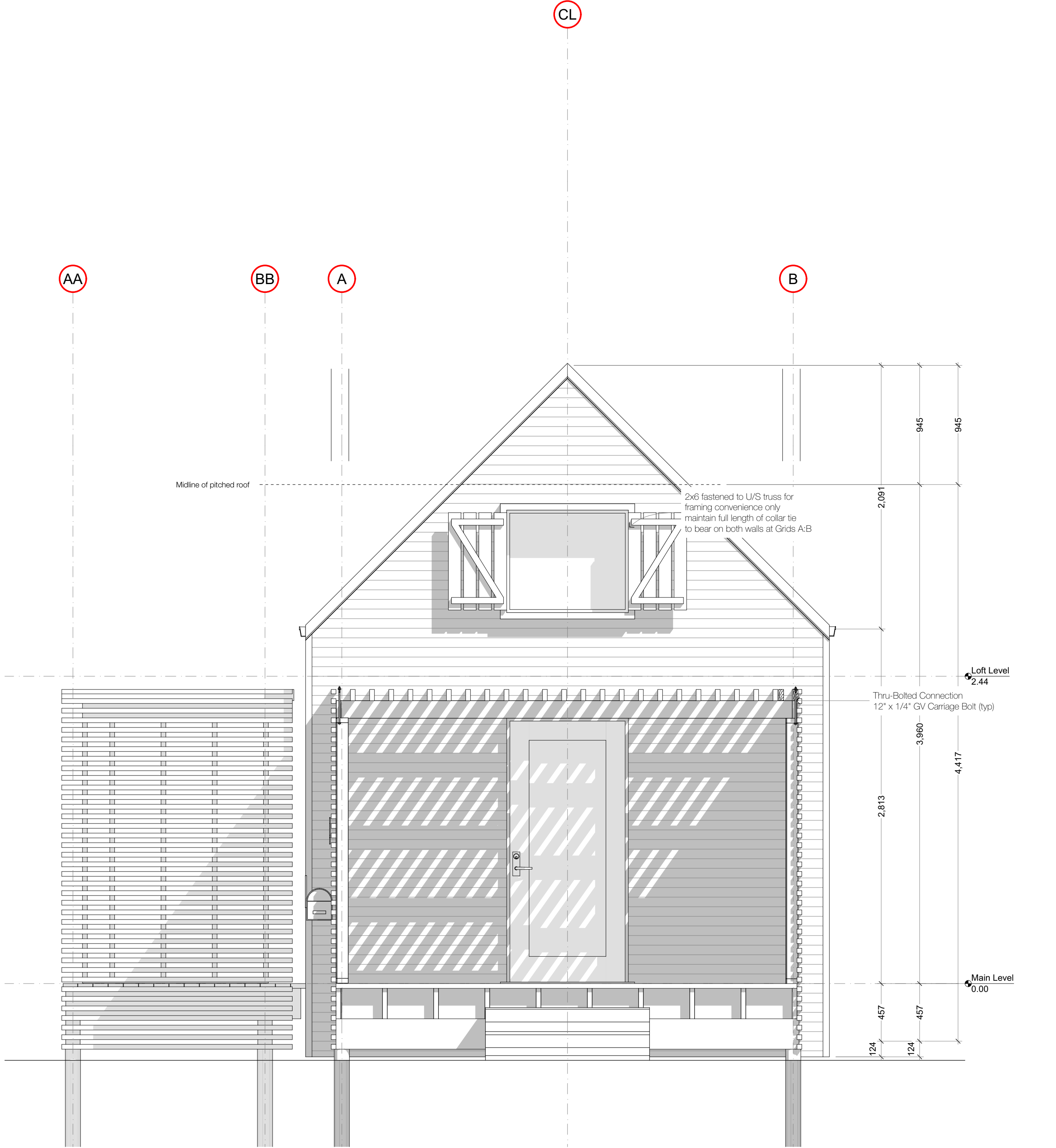
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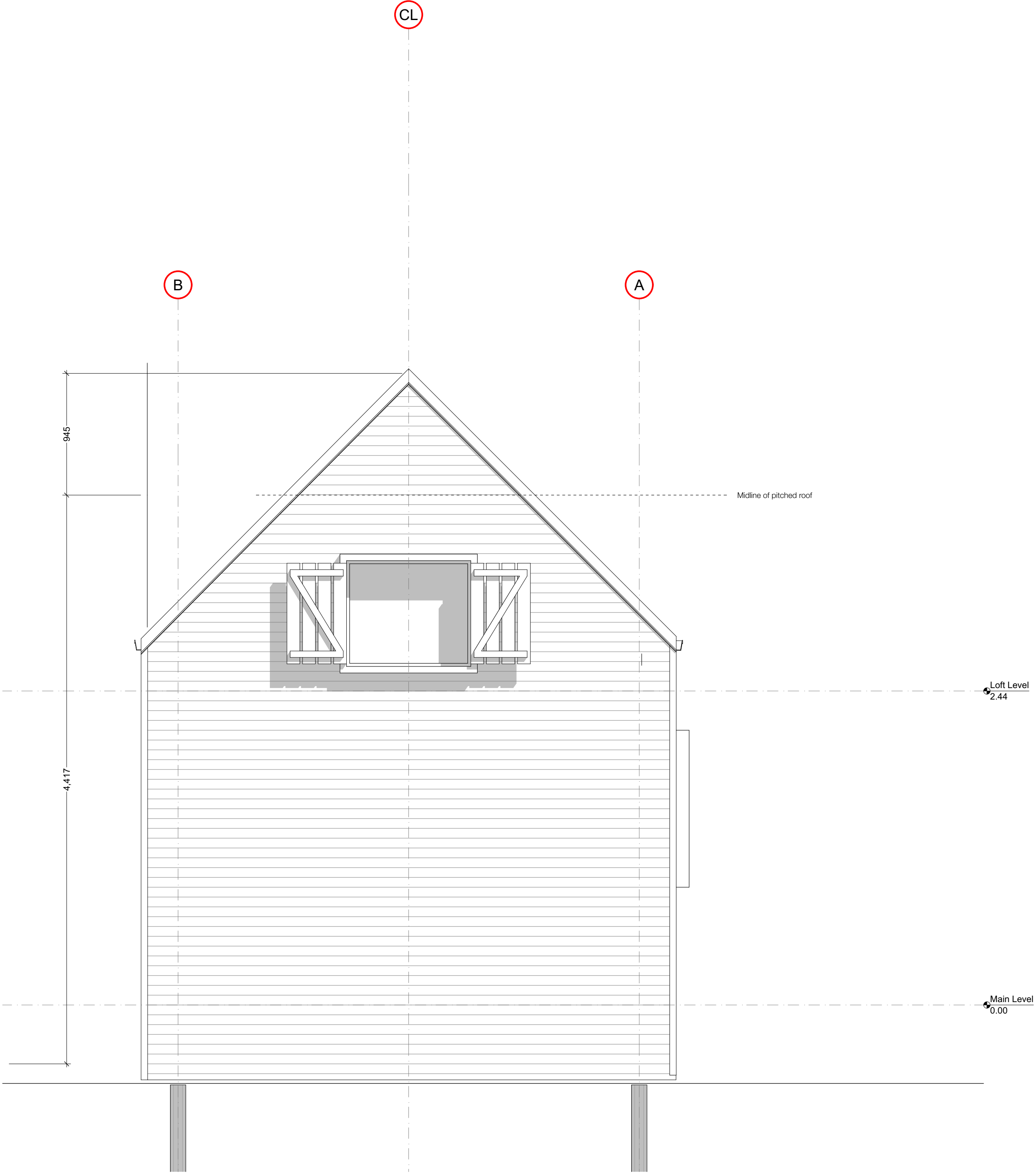
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Work in Progress



E East House Elevation
SCALE: 1:24



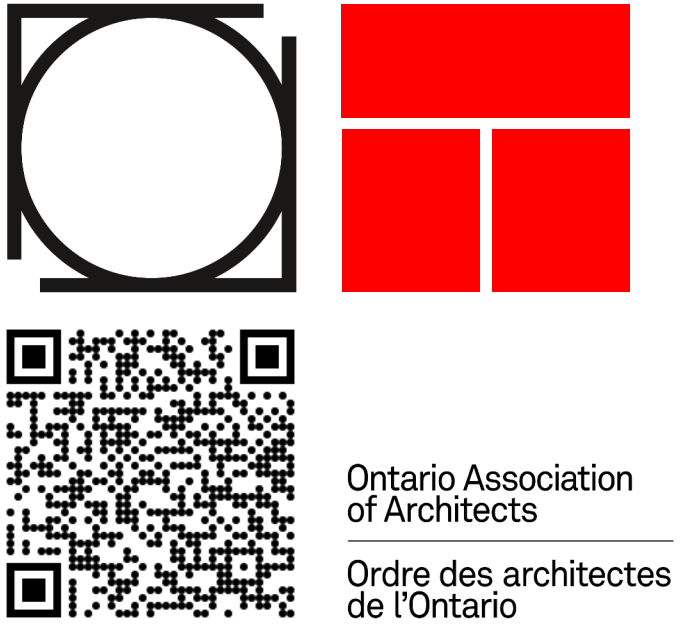
W West House Elevation
SCALE: 1:24

per **OBC 9.10.14.4**: This elevation, with **15.8%** openings and non-combustible cladding (combustible construction) is permitted to be placed less not less than **2.0m** to an adjacent property line (PL) or other *structure

**LD of any adjacent structure must also be calculated*

per **OBC 9.10.14.4**: This elevation, with **5.3%** openings and non-combustible cladding (combustible construction) is permitted to be placed not less than **1.5m** to an adjacent property line (PL) or other *structure

**LD of any adjacent structure must also be calculated*



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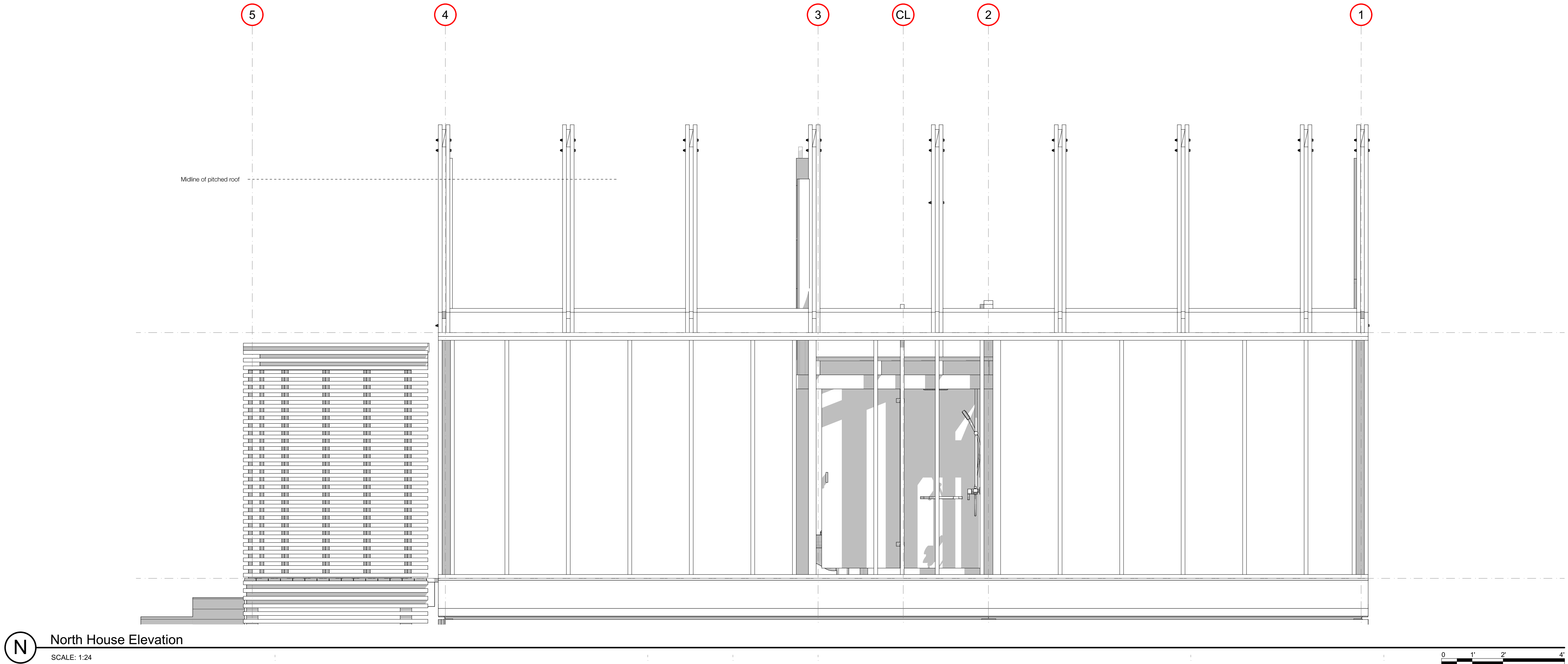
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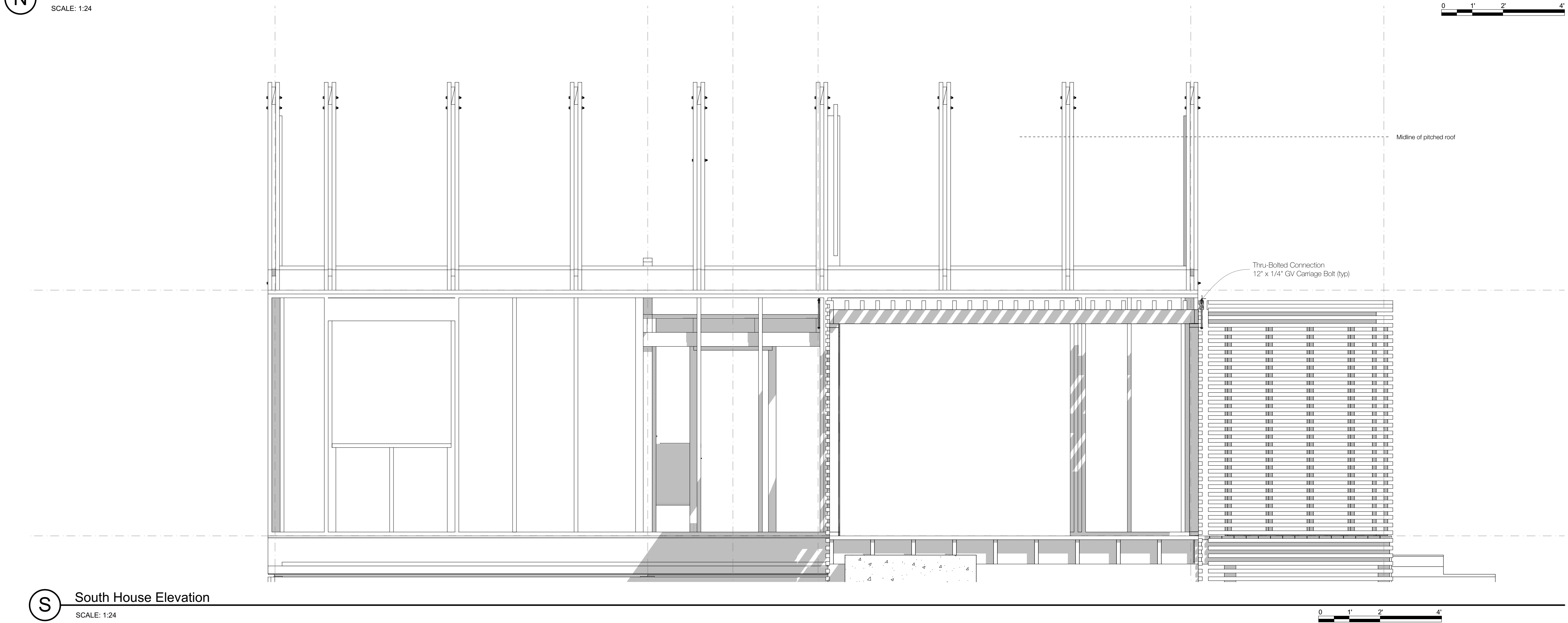
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Revision
02 - WIP
East & West Elevations

A4.02



N North House Elevation
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S South House Elevation
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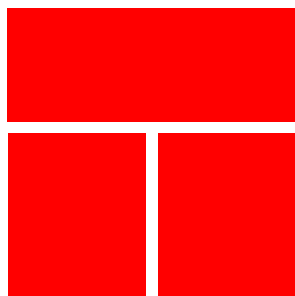
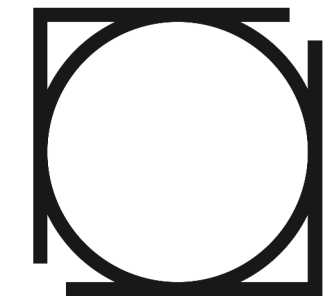
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Framing Elevations

\$4.03

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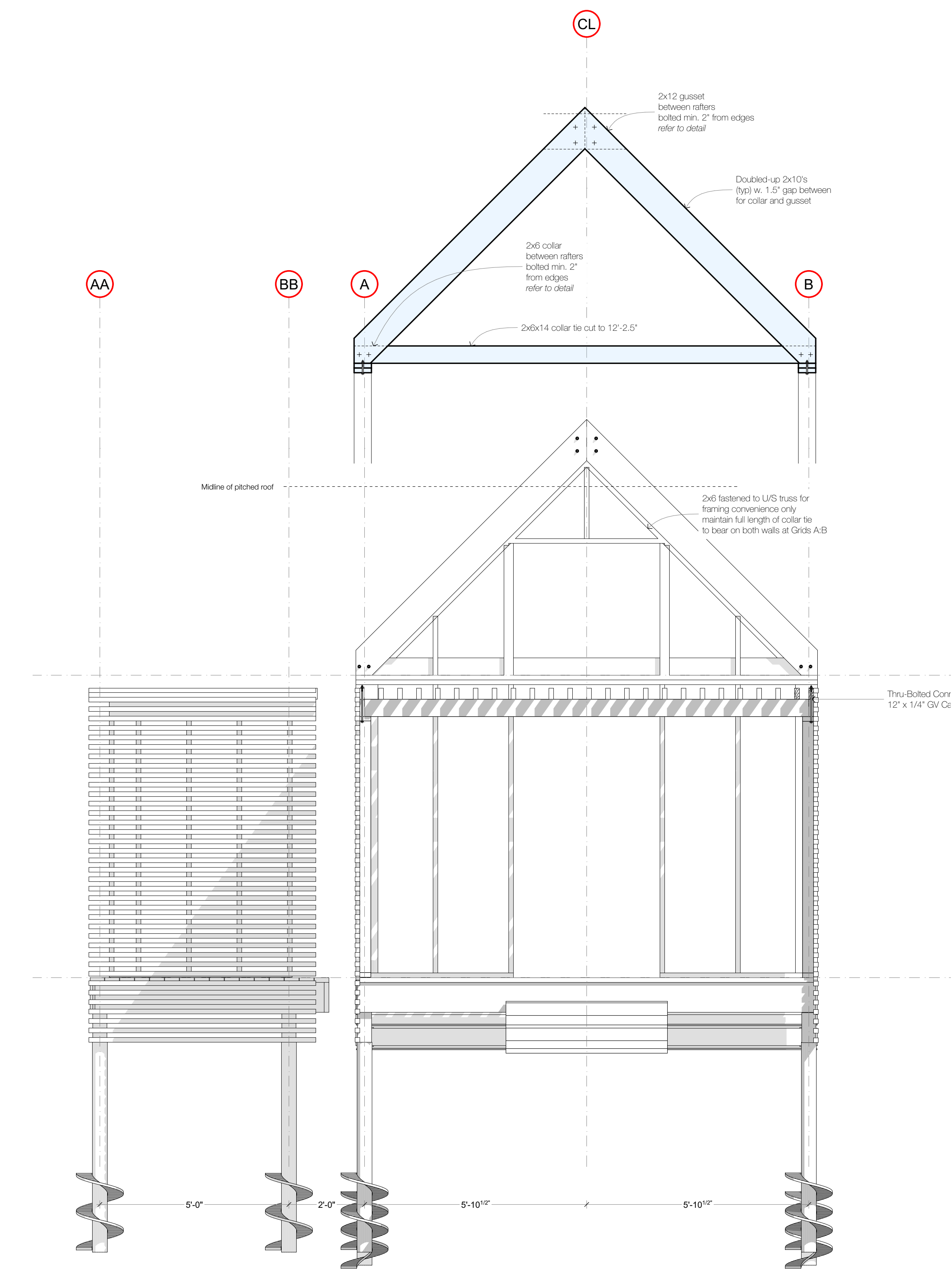
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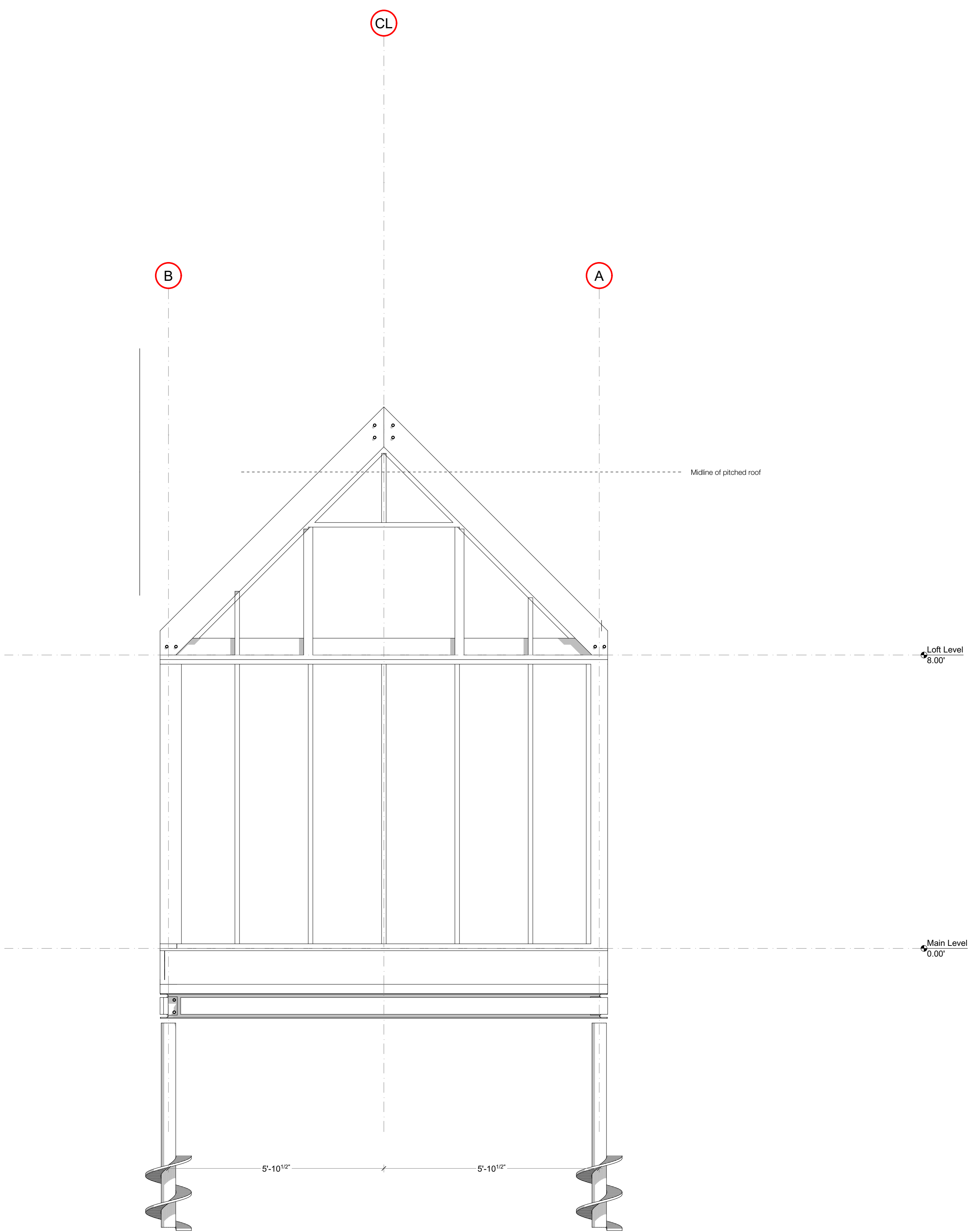
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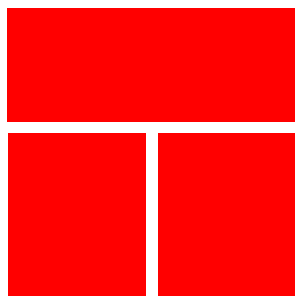
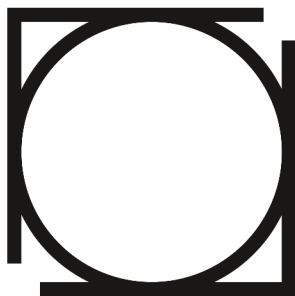
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E East House Elevation
SCALE: 1:24



W West House Elevation
SCALE: 1:24



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Framing Elevations

S4.04

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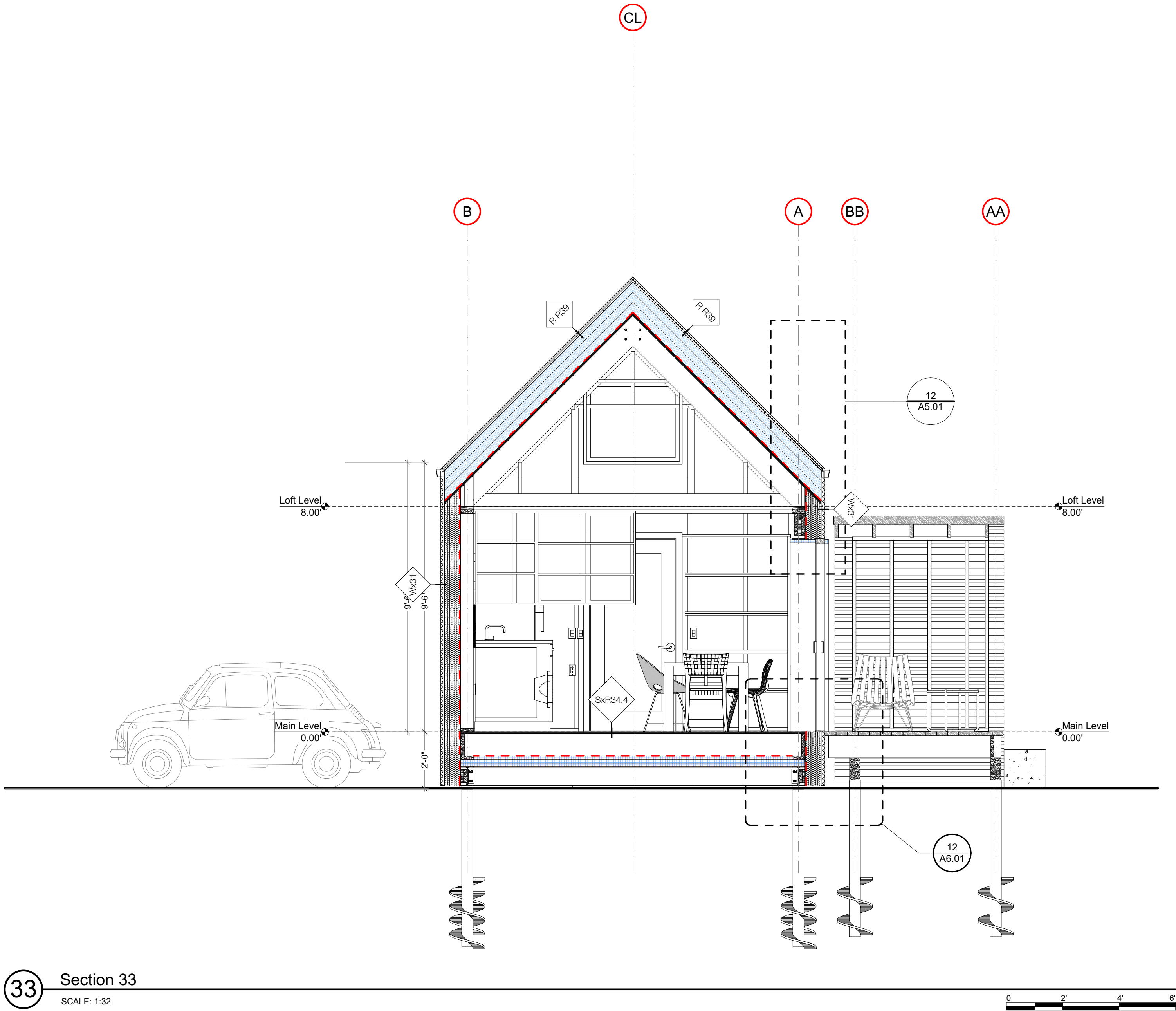
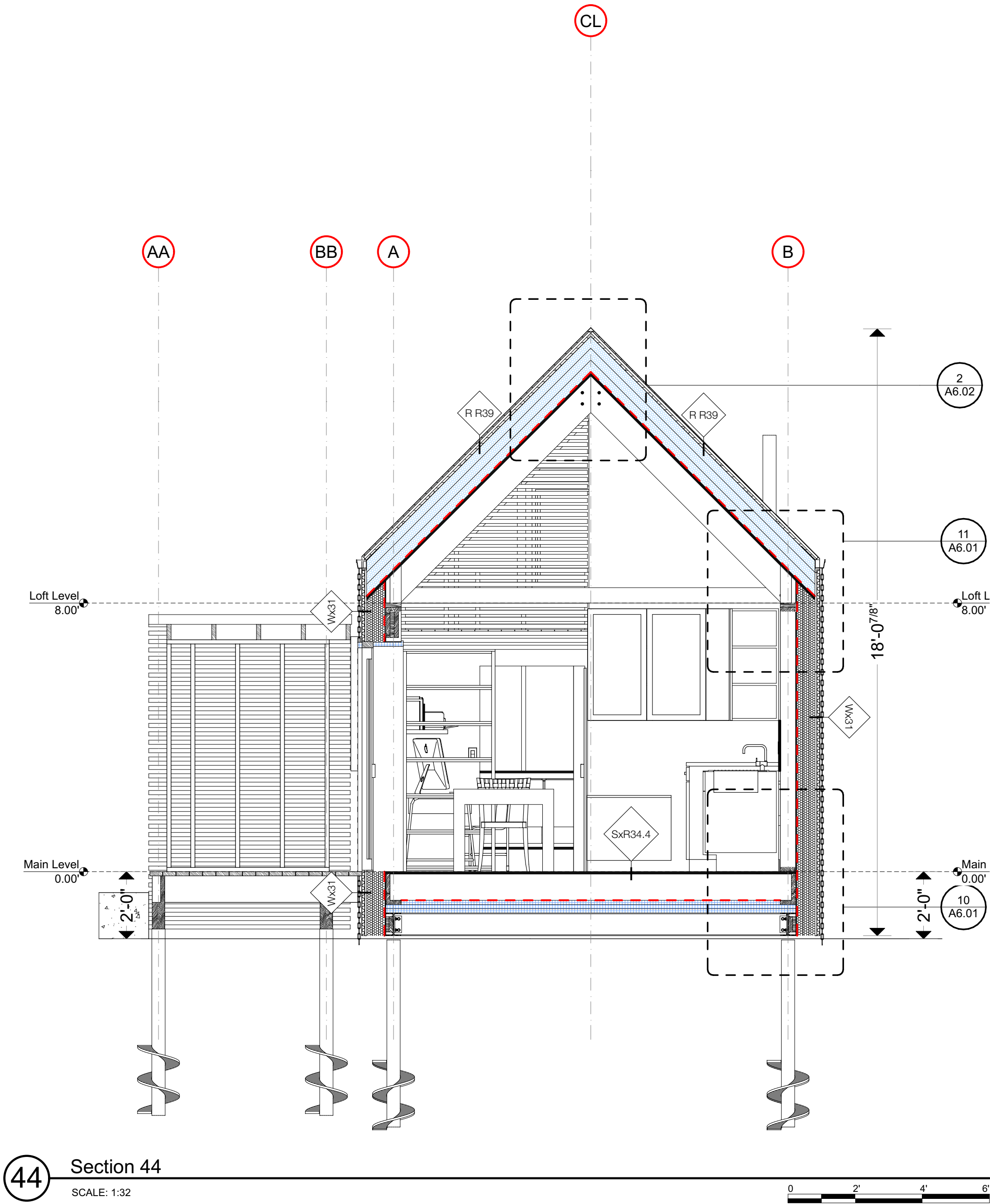
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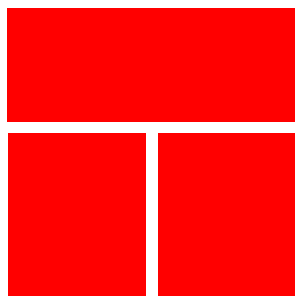
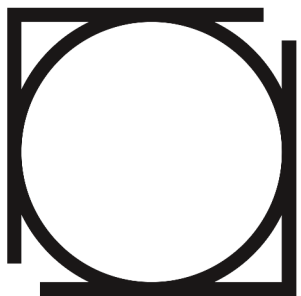
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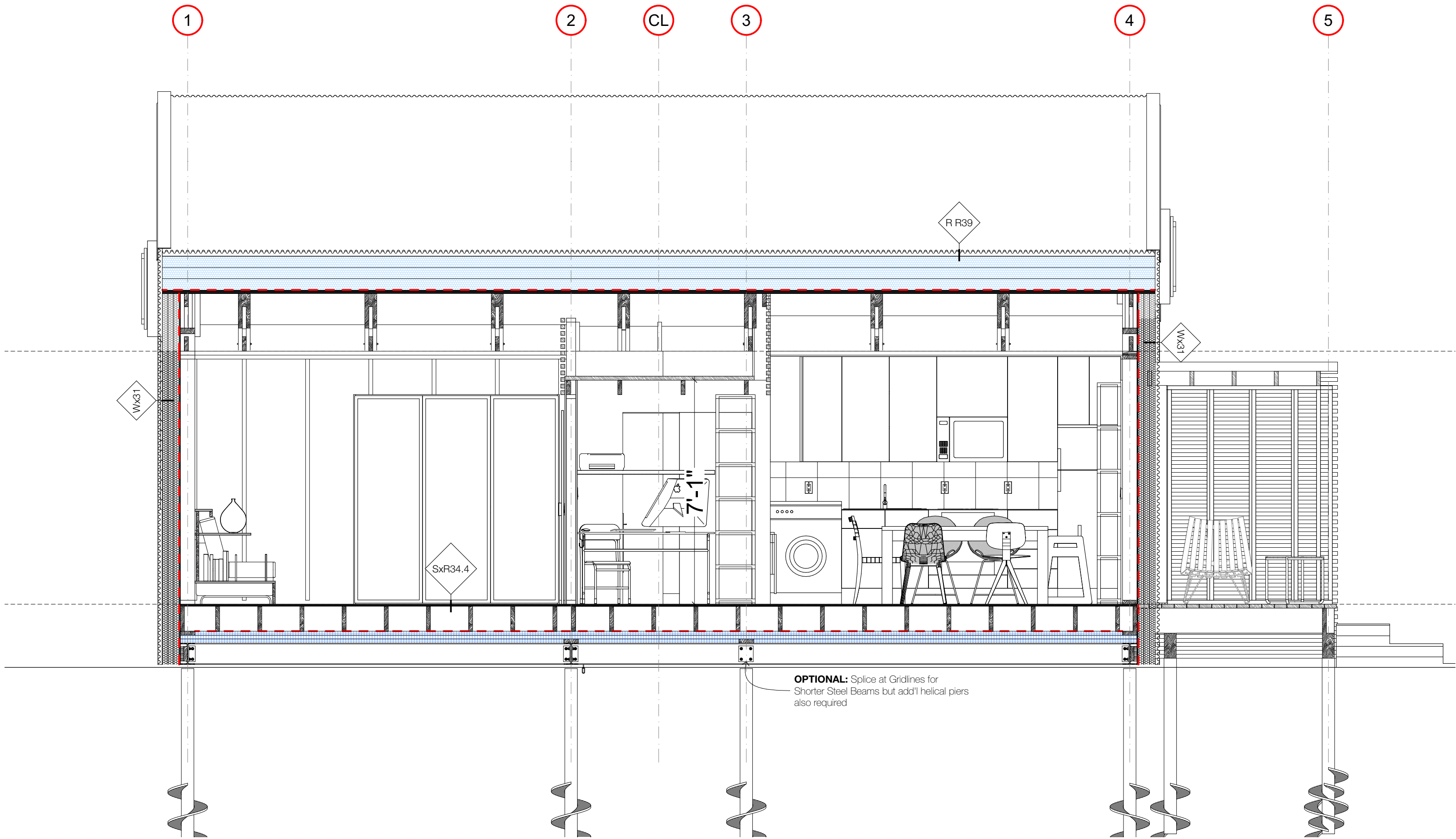
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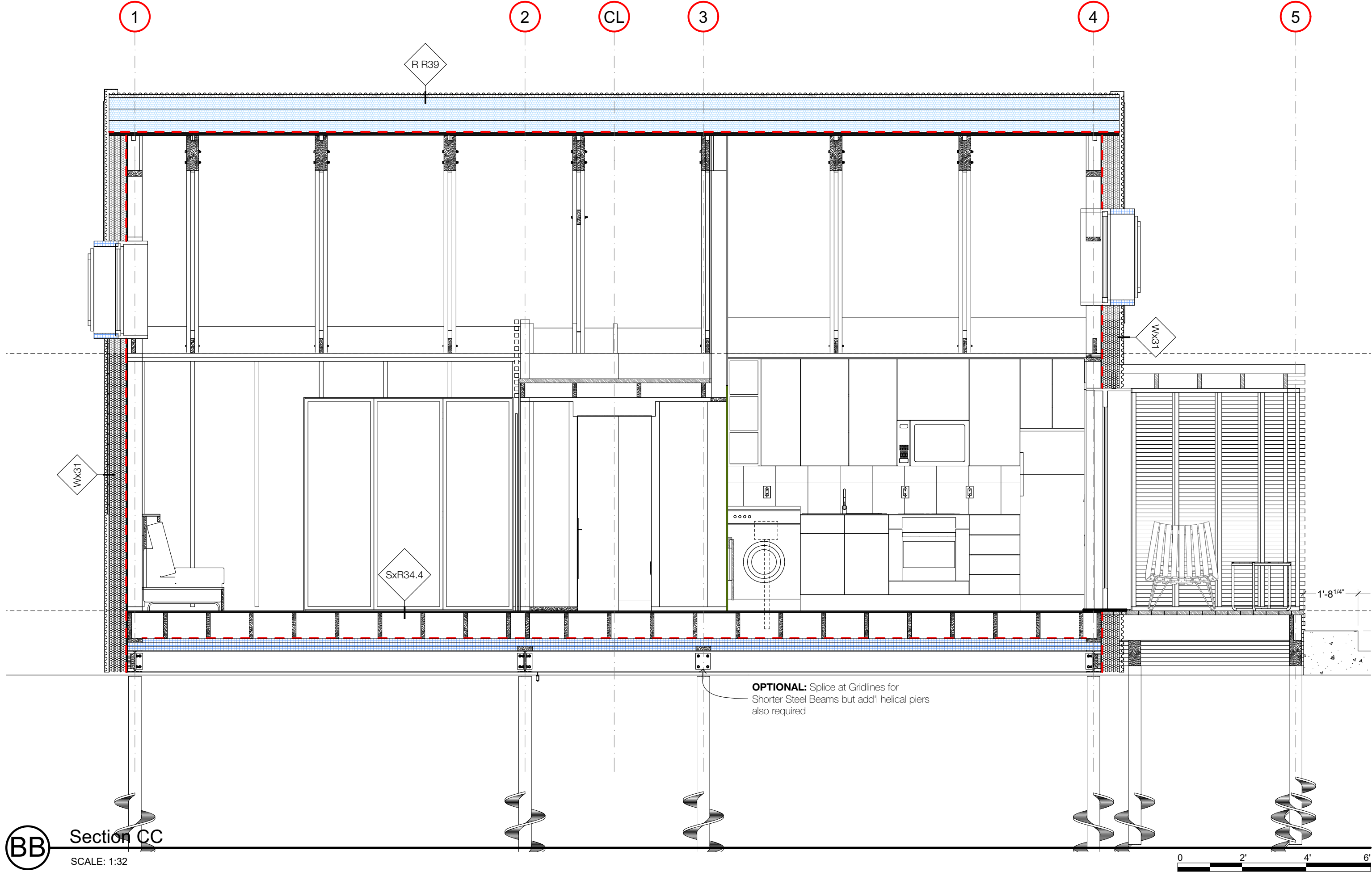
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Building Sections

A5.01



AA Section AA
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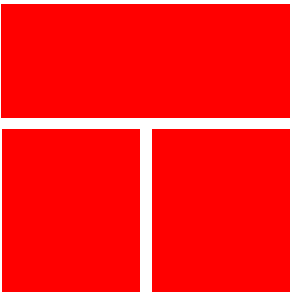
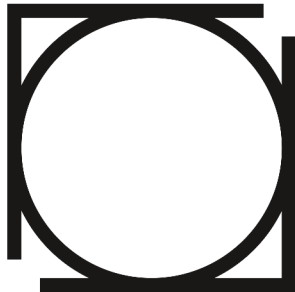
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Building Sections

A5.02

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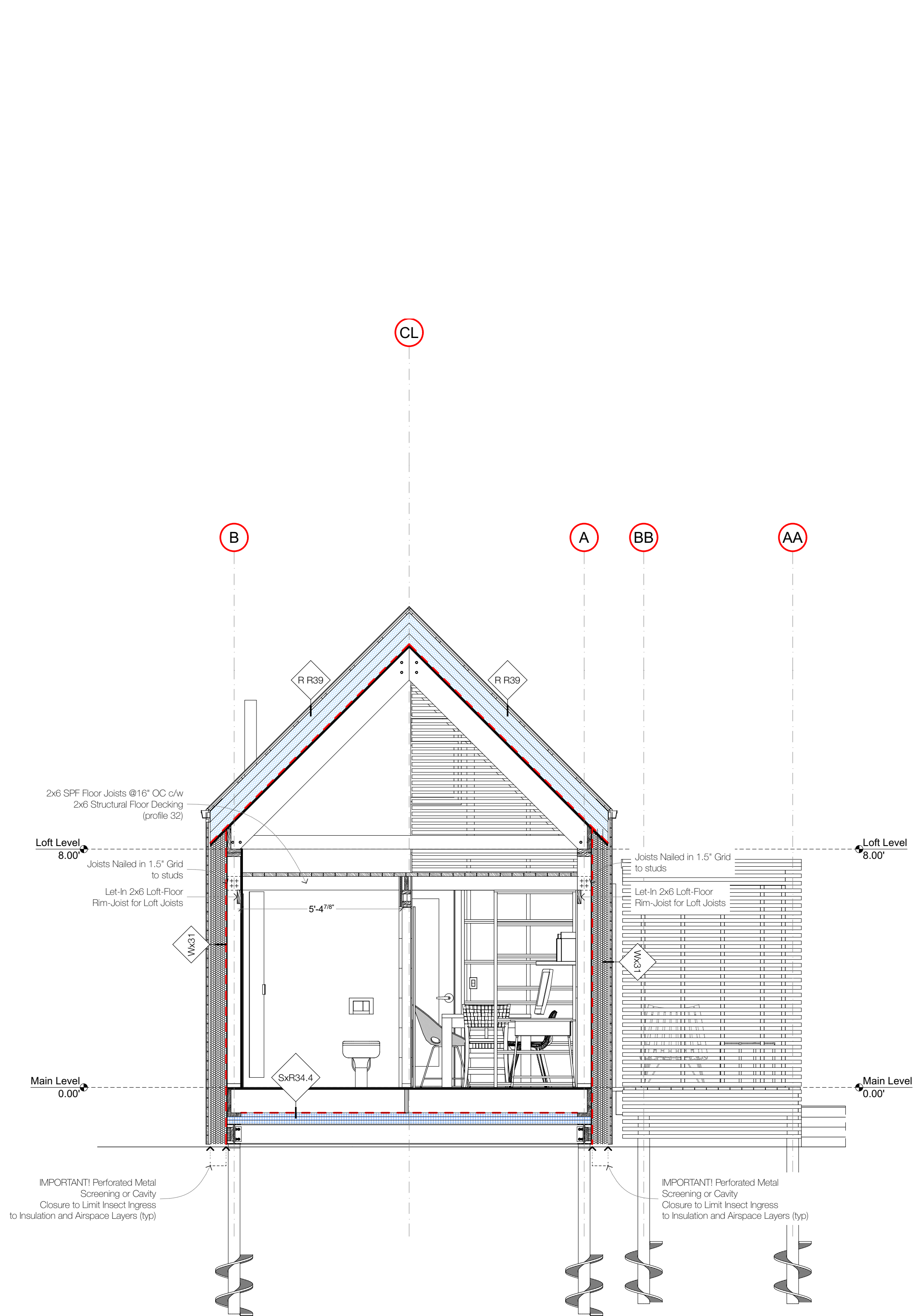
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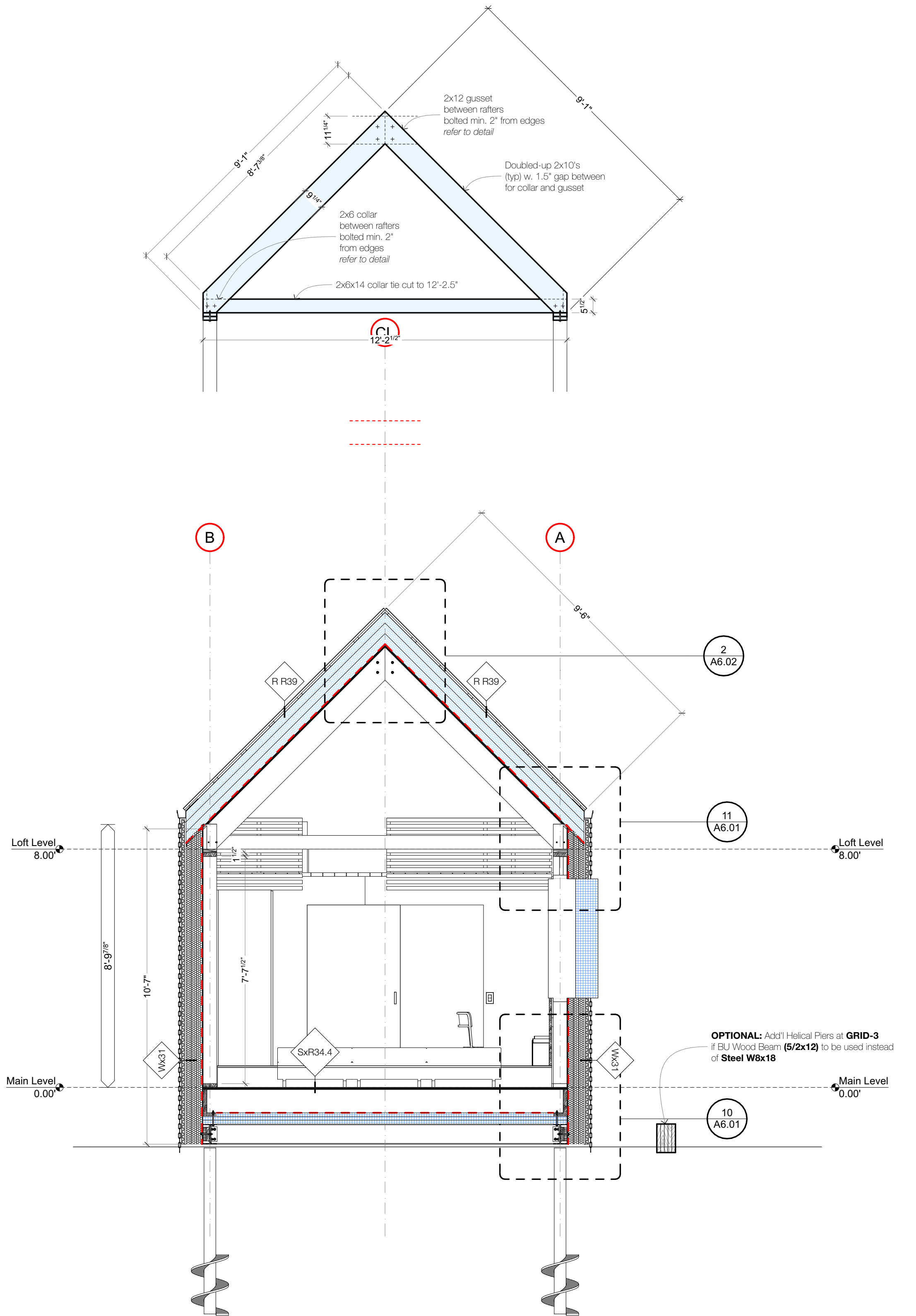
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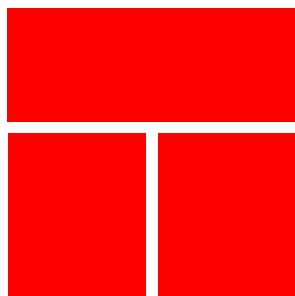
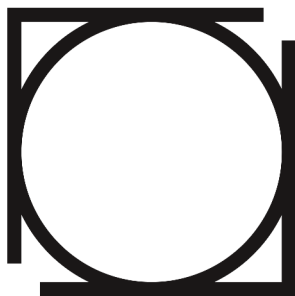
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22 Section 22
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11 Section 11
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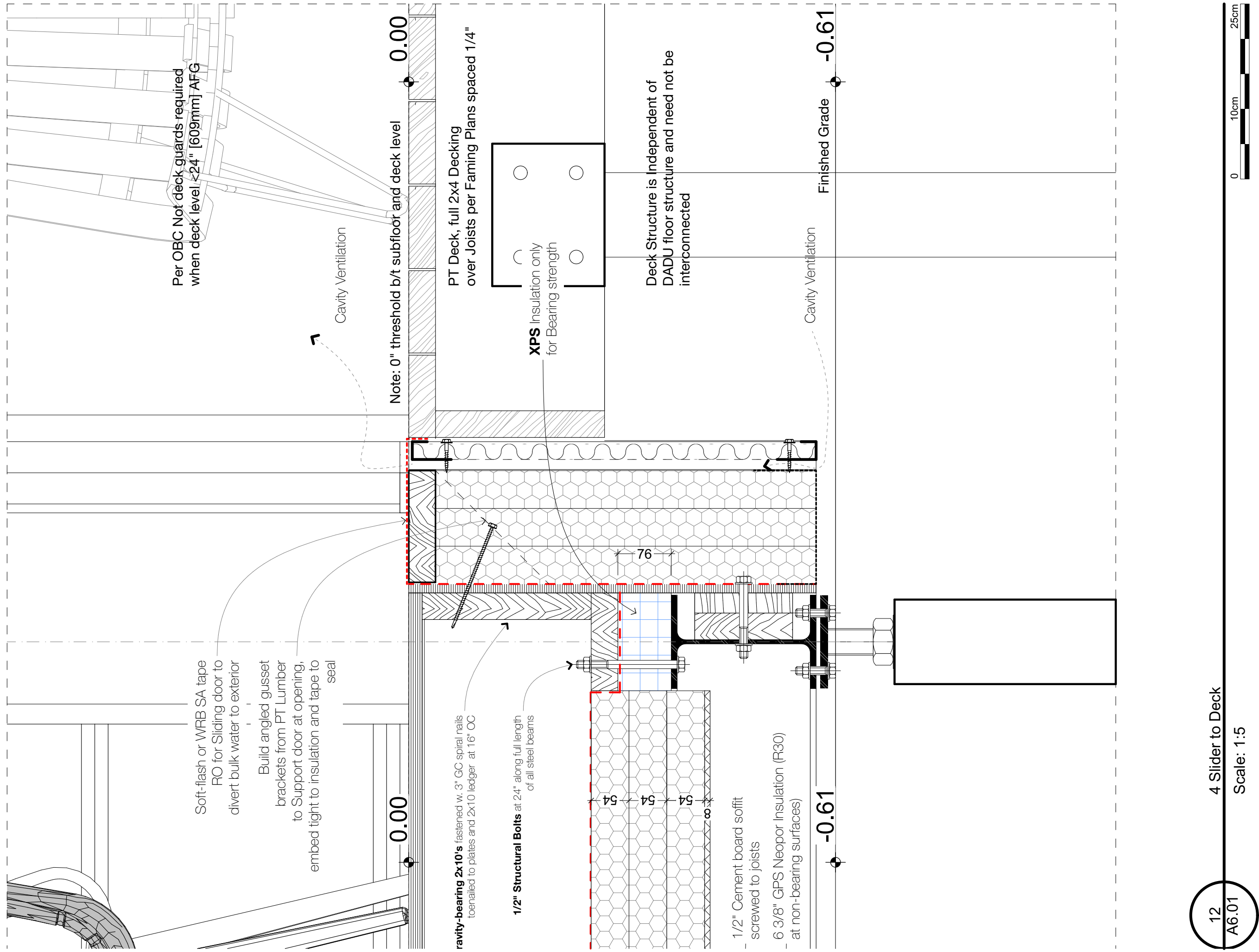
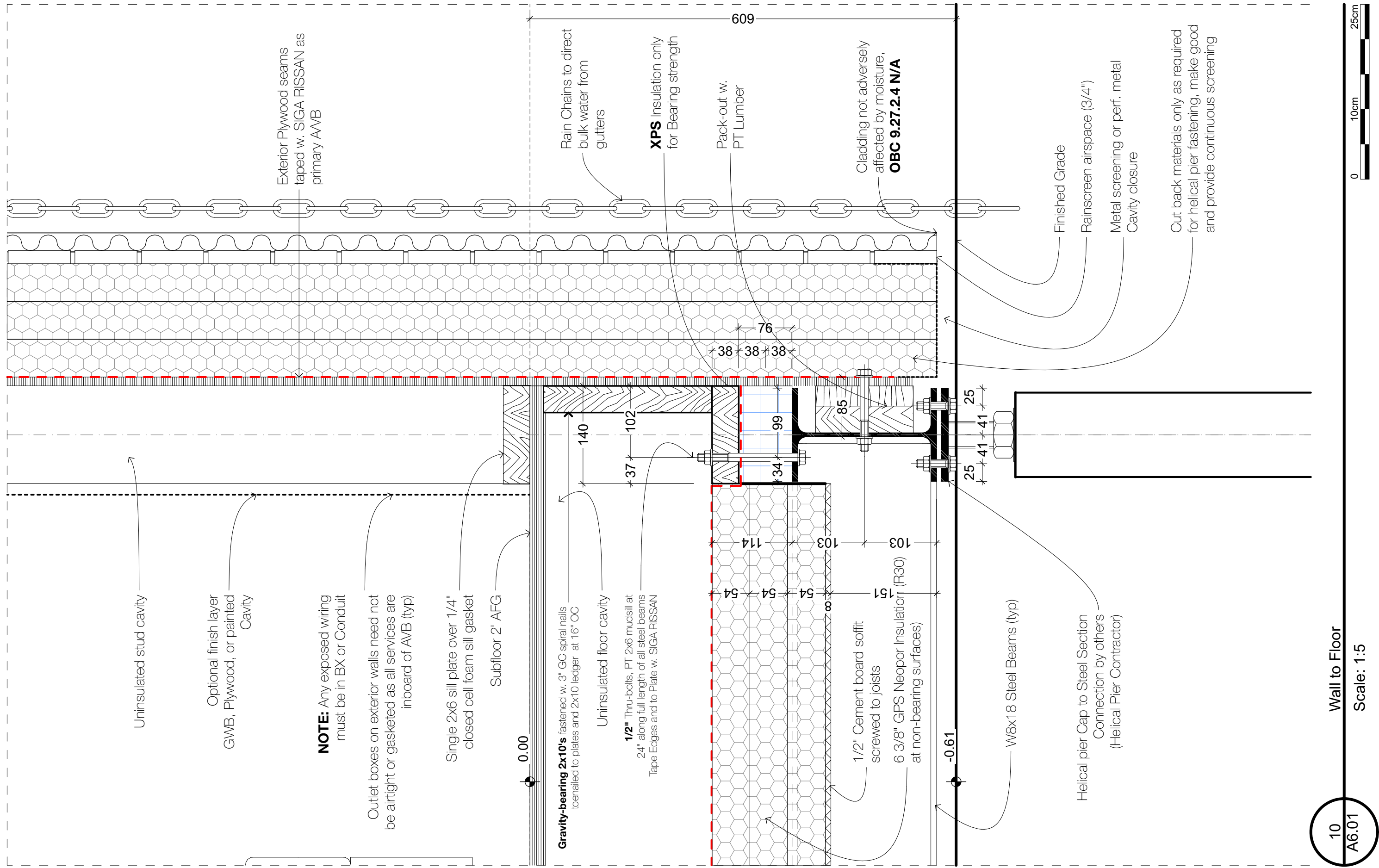
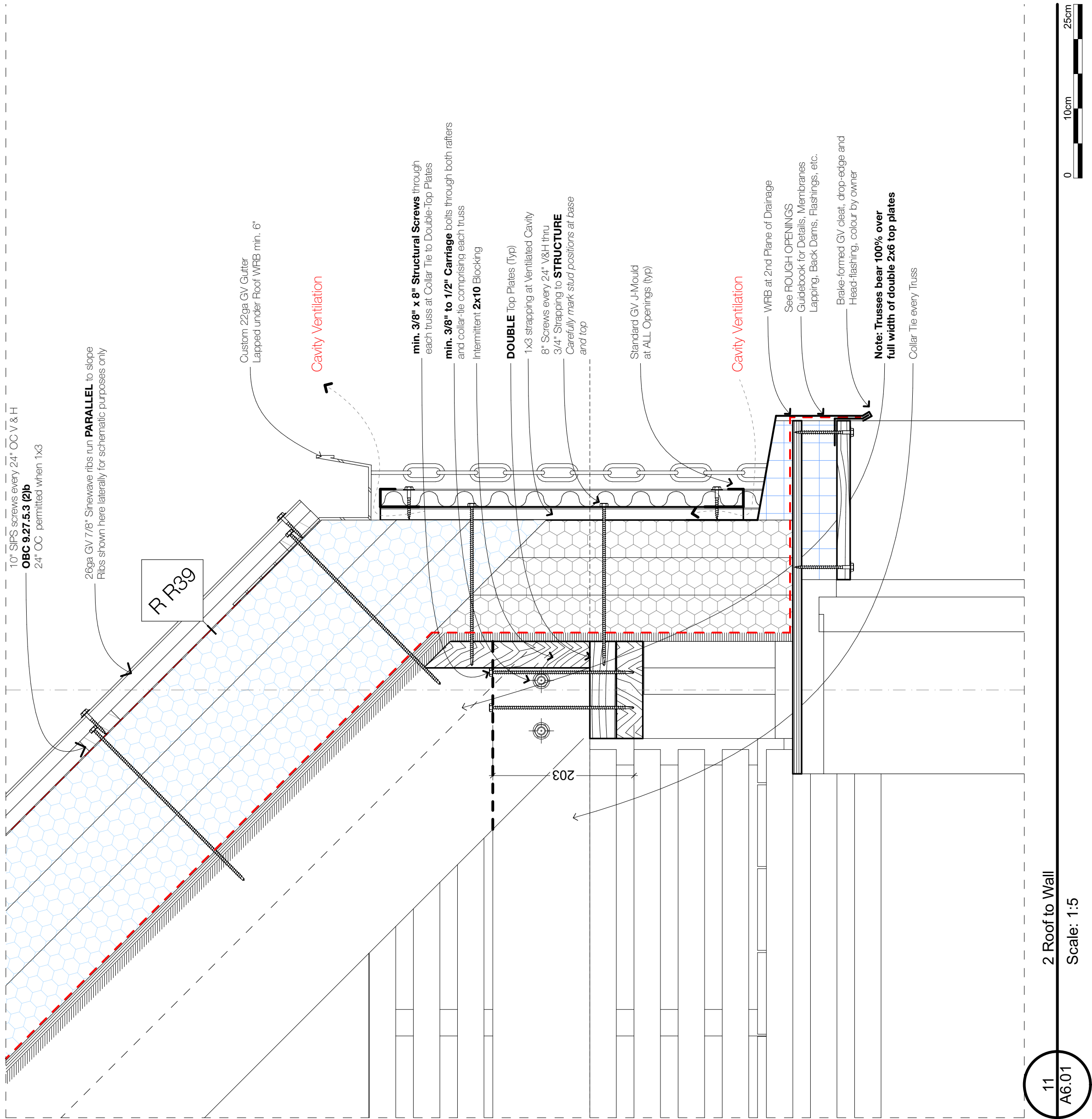
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Revision
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Building Sections

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8. Original Drawings and design generally provided by CMHC's "Pattern Book" from 1947-1960.

9. Refer to the following website for the full text of the Building Code of Ontario: <https://www.bcoo.on.ca/ontario/building-code>

10. Refer to the following website for the full text of the Building Code of Ontario: <https://www.bcoo.on.ca/ontario/building-code>

11. Refer to the following website for the full text of the Building Code of Ontario: <https://www.bcoo.on.ca/ontario/building-code>

12. Refer to the following website for the full text of the Building Code of Ontario: <https://www.bcoo.on.ca/ontario/building-code>

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Rev. ID	Transmitted Set Name	Change ID	Change Name	Date
02 - WIP	Issued for Certification			

Work in Progress



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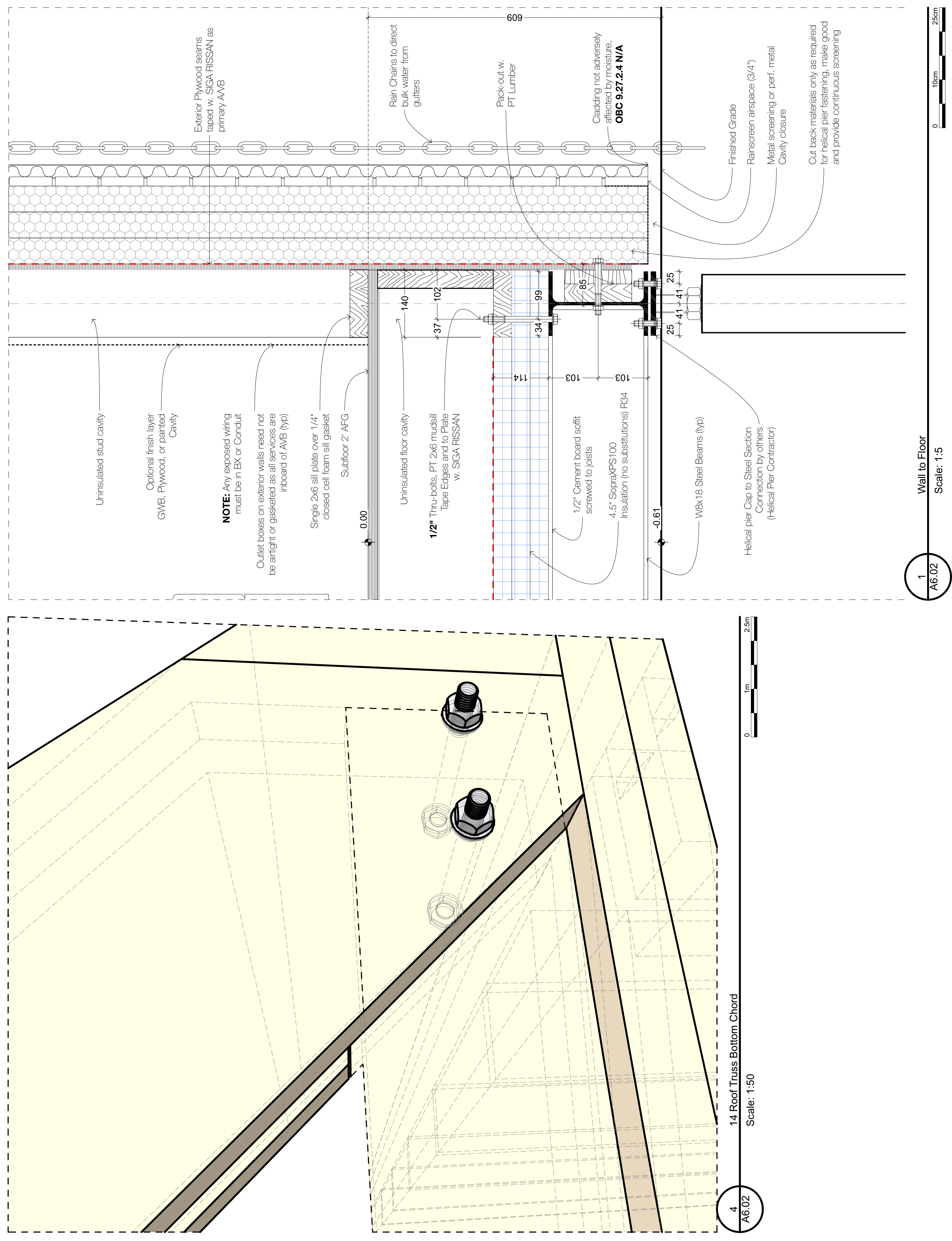
BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

Revision
02 - WIP
Details

A6.01



Rev. ID	Transmittal Set Name	Change ID	Change Name	Date
02 - WIP	Issues for Certification Review			Work in Progress



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BeHome 1BR Gable

project no. 2024.12

Site Address: TBD

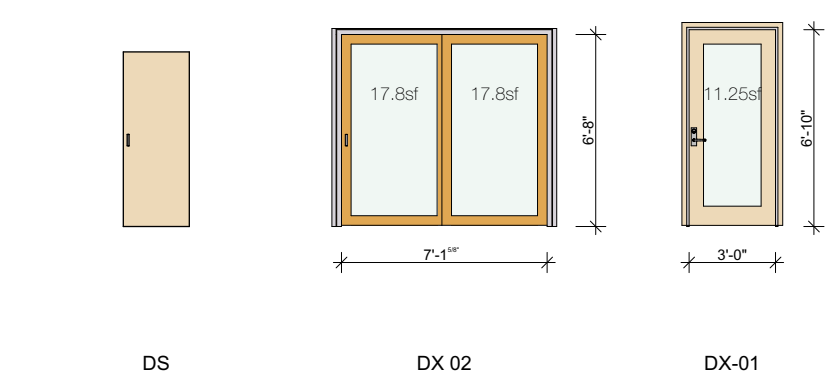
Revision
02 - WIP
Details

A6.02

A6.02

DOOR SCHEDULE																									
ID	ZONE	QTY	FROM	TO	DOOR PANEL								DOOR FRAME				HARDWARE						CASING IN	CASING OUT	NOTES/REMARKS
					WDTH	HT	THCK	FRR	STC	PANEL TYPE	PANEL MAT'L	FINISH	GLAZING	FRAME	FRAME FINISH	THRESHOLD	THRESHOLD TYPE	Hardware Key Side Room #	HARDWARE	OPERATION	HANDLE INSIDE	HANDLE OUTSIDE			
DS	100	1	3PC	SRO	2'-2"	6'-0"	0 ³ / ₄ "			---	06 Pine V			06 Pine V		☐				Off	Knob 12		☐	☐	custom 3/4" birch ply rail surface slider
DS	100	1	SRO	<Undefined>	3'-0"	6'-0 ³ / ₄ "	0 ³ / ₄ "			---	06 Pine V			06 Pine V		☐				Off	Knob 12		☐	☐	custom 3/4" birch ply rail surface slider
DX 02	100	1	SRO	<Undefined>	7'-1"	6'-8"	1 ³ / ₄ "			---	06 Oak Veneer			06 Oak Veneer		☒				Knob 12	Knob 12		☒	☒	Triple-glazed thermally broken Full-Glass L&S ...
DX-01	100	1	SRO	<Undefined>	3'-0"	6'-10"	1 ³ / ₄ "	-	-	---	06 Pine H	PT	-	06 Pine H		☒		HD.8		Handle 8	Handle 5		☒	☒	Triple-glazed thermally broken Full-Glass Swin...

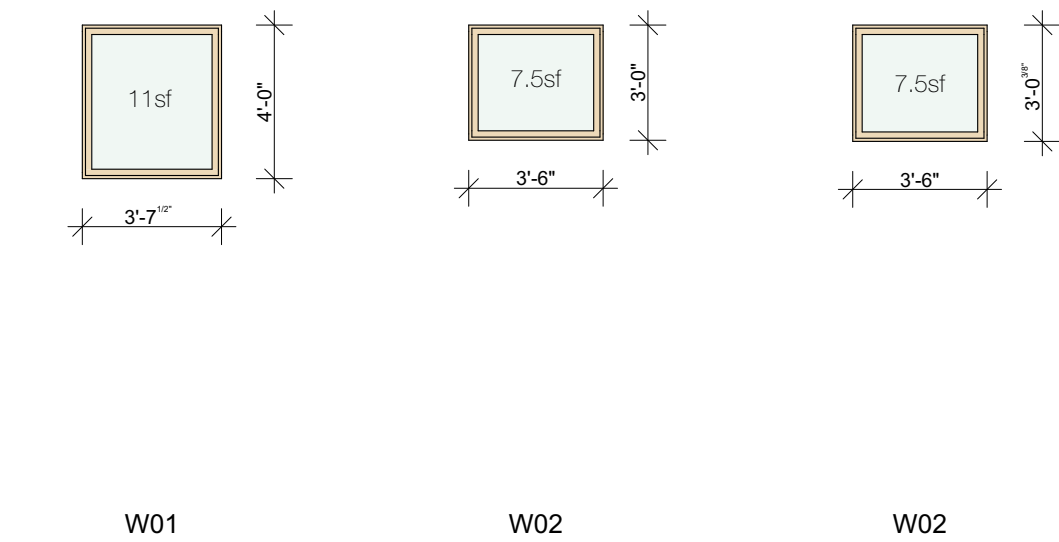
DOOR LEGEND



WINDOW & SCREEN SCHEDULE

ID	ZONE	QTY	OPENS FROM	WIDTH	HEIGHT	SILL HT.	STC	FRR	MANUFACTURER	OPERATION	NOTES/REMARKS	Finish	Frame Type	Glazing	MAX. U-value (SI)	Hinges	Hardware Set	Jamb Detail
W01	103	1	<Undefined>	3'-7 ^{1⁄2} "	4'-0"	0.91		N/R				Ano Aluminum Exterior/Wood Interior	---	TRIPLE LOW-E, ARGON c/w NC Edge Spacers				
W02		1	<Undefined>	3'-6"	3'-0"	0.14		N/R				Ano Aluminum Exterior/Wood Interior	---	TRIPLE LOW-E, ARGON c/w NC Edge Spacers				
W02		1	<Undefined>	3'-6"	3'-0 ^{3⁄8} "	0.14		N/R				Ano Aluminum Exterior/Wood Interior	---	TRIPLE LOW-E, ARGON c/w NC Edge Spacers				
3																		

WINDOW LEGEND



DOOR KEY

D	SINGLE LEAF
D2	DOUBLE DOOR
D-PCKT	POCKET DOOR
D-X.	SINGLE LEAF EXTERIOR DOOR
D-XSL	EXTERIOR SLIDER
HMF	HOLLOW METAL FRAME (NON-THERMAL)
IMF	INSULATED METAL FRAME (THERMALLY-BROKEN)
SCW	SOLID CORE WOOD LEAF
SCWG	SOLID CORE WOOD LEAF W. GLAZED INSERT
SCWGT	SOLID CORE WOOD LEAF
W. GLAZED	INSERT & TRANSOM
SCWGS	SOLID CORE WOOD LEAF
W. GLAZED	INSERT & SIDELIGHT & TRANSOM

HMC	HOLLOW METAL CORE LEAF
IMC	INSULATED METAL CORE LEAF (THERMALLY-BROKEN)
*D2X-IMCG	EXISTING DOOR W. NEW HARDWARE
THERM	GLAZING ELEMENTS PER OBC, REFER TO NOTE BELOW

NOTE: All Exterior-Facing Doors and Windows shall conform with Energy Performance Requirements as noted in the Ontario Building Code Matrix for this project (refer to page A0.03 of this set)

Contractor to supply & install Screen Doors at Exterior Swing and Sliding doors UNO

WINDOW KEY

W1	FIXED STOREFRONT UNIT
WI	INTERIOR WINDOW WALL
R	ROLLING SCREEN
ANO	ANODIZED ALUMINUM EXTERIOR c/w WOOD INTERIOR

HARDWARE KEY

DB	DEADBOLT (SEE HW MASTER LIST)
Knob 12	Lever-style multipoint Ext. Lockable
Handle 5	Lever Style Ext. Lockable
Handle 8	Lever Style Thumb-Turn Lock

NOTE: All Exterior-Facing Doors and Windows shall conform with Energy Performance Requirements as noted in the Ontario Building Code Matrix for this project (refer to page A0.03 of this set) UNO

1. Copyright of this drawing is reserved by the Architect. The drawing and all associated documents are an instrument of service by the Architect. The drawing and the information contained herein may not be modified or reproduced in whole or in part without prior written permission of the Architect.

2. These Contract Documents are the property of the Architect. The Architect takes no responsibility for the interpretation of these documents by the Contractor. Upon written application, the Architect will provide written graphic clarification or supplementary information regarding the intent of the Contract Documents. If Construction Administration services are included in the Architect's scope of work, the Architect will review Shop Drawings submitted by the Contractor for design conformance only.

3. Drawings are not to be used for construction. The Contractor is to verify all existing conditions and dimensions required to perform the work and report any discrepancies with the Contract Documents to the Architect before commencing or continuing with any work.

4. Portions of repeated fastened mechanical or electrical devices, fittings, and fasteners may be indicated on architectural drawings. The locations shown on the architectural drawings govern over the Mechanical and Electrical drawings. These items are shown located and located as directed by the Architect. General and construction notes are intended to apply to all locations affected by the work. For locations of work refer to structural, mechanical and electrical documents, in addition to architectural.

5. These drawings are not to be used for construction unless noted below as "Issuance For Construction" and countersigned by the Architect.

6. All work is to be carried out in accordance with the most current Building Code and Rules of the authority having jurisdiction. All planning and change work to conform to current Ontario regulations. All electrical work to conform to Ontario Hydro Electrical Safety Code as amended.

7. The Architect of these plans and specifications gives no warranty or representation to any party about the constructability of the buildings represented by them. All contractors or subcontractors must satisfy themselves when bidding and at all times ensure that they can properly construct the work represented by these plans.

8. Original Drawings and designs generally provided by CMHC's "Pattern Book" from 1947-1984.

9. Refer to the following website for the link: https://openaccess2017.bibcon.com/abstract/view/10.1007/978-1-4939-9999-9_10

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Rev. ID Transmittal Set Name Change ID Change Name Date

02 - WIP Issued for Certification Work in Progress



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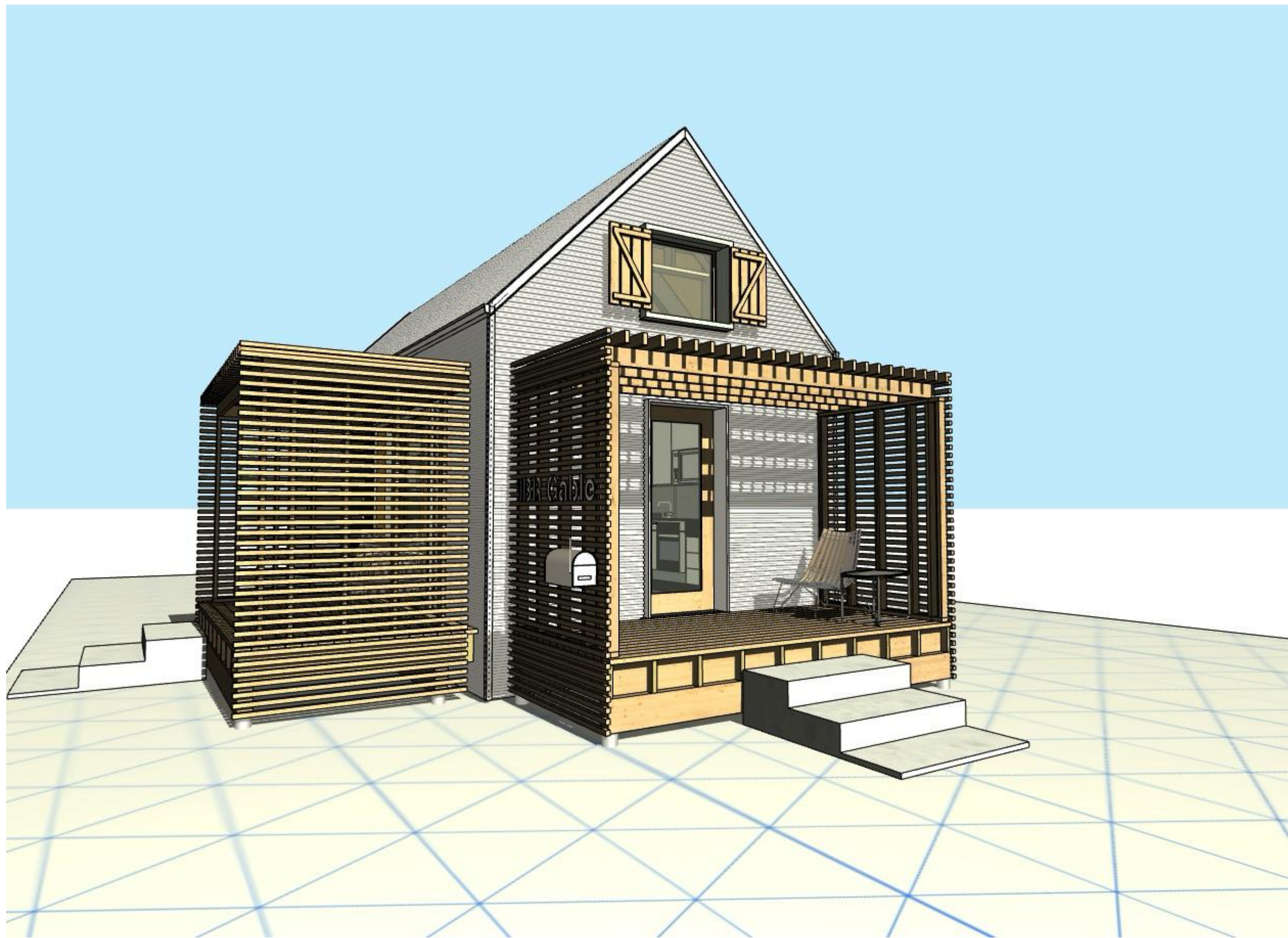
BeHome 1BR Gable

project no. 2024.12

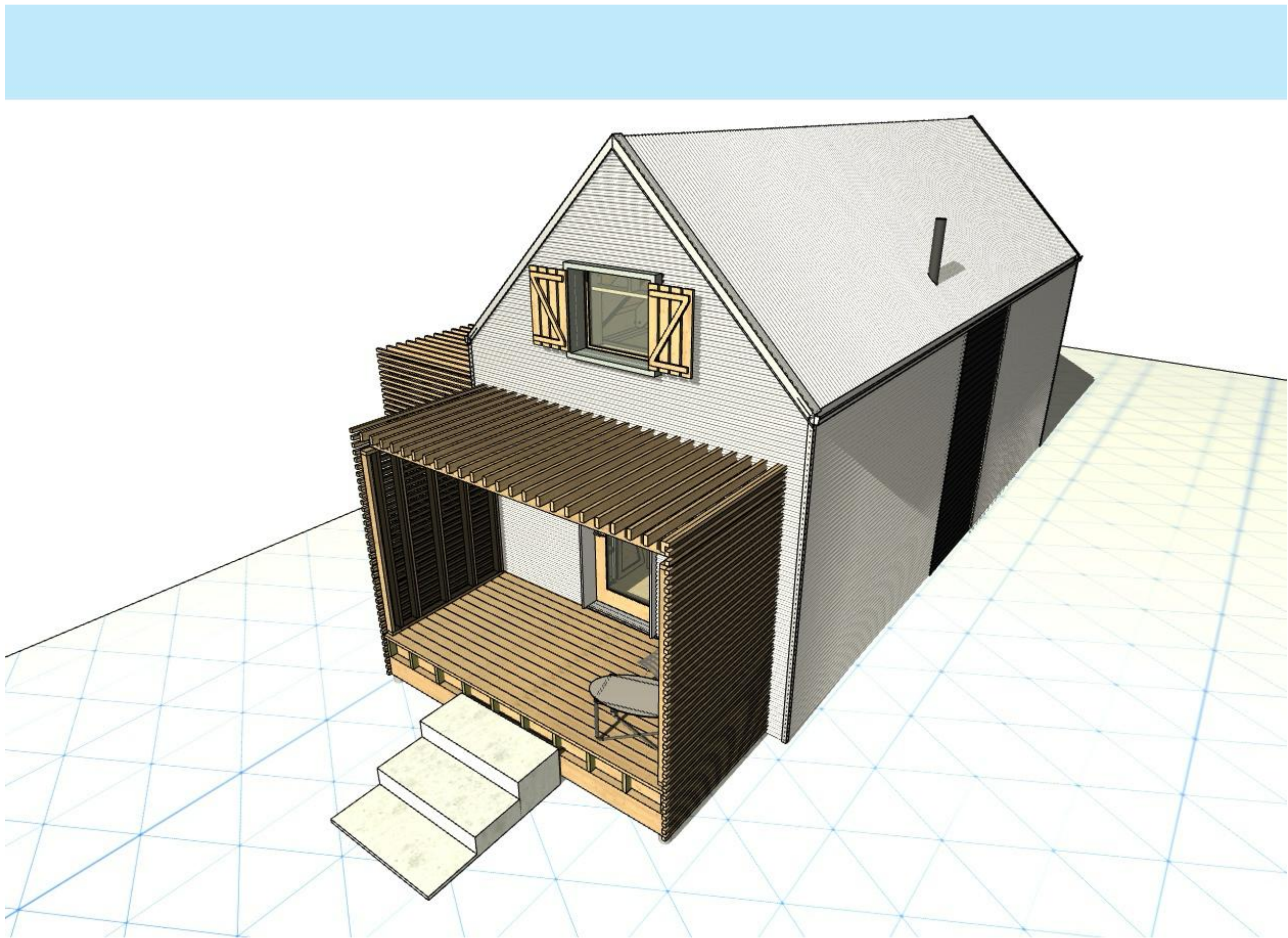
Site Address: TBD

Revision
02 - WIP
Door & Window Schedule

A8.01



1 Camera
NOT TO SCALE



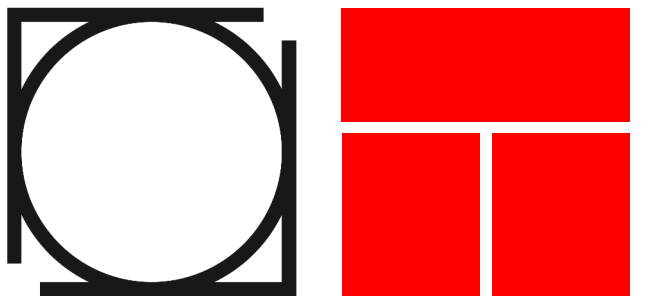
5 Camera
NOT TO SCALE



2 Camera
NOT TO SCALE



3 Camera
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BeHome 1BR Gable
project no. 2023.011

Client:
City of Barrie
70 Collier St.
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Revision
02 - WIP
3D Views

A9.01



12 Camera
NOT TO SCALE



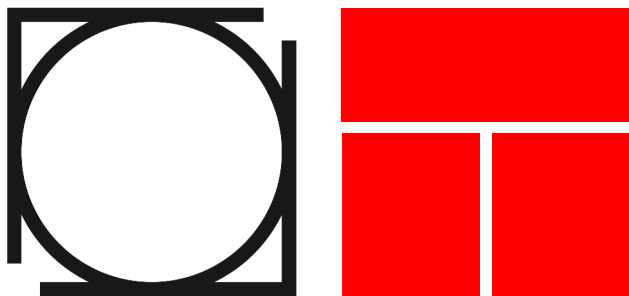
7 Camera
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11 Camera
NOT TO SCALE



6 Camera
NOT TO SCALE



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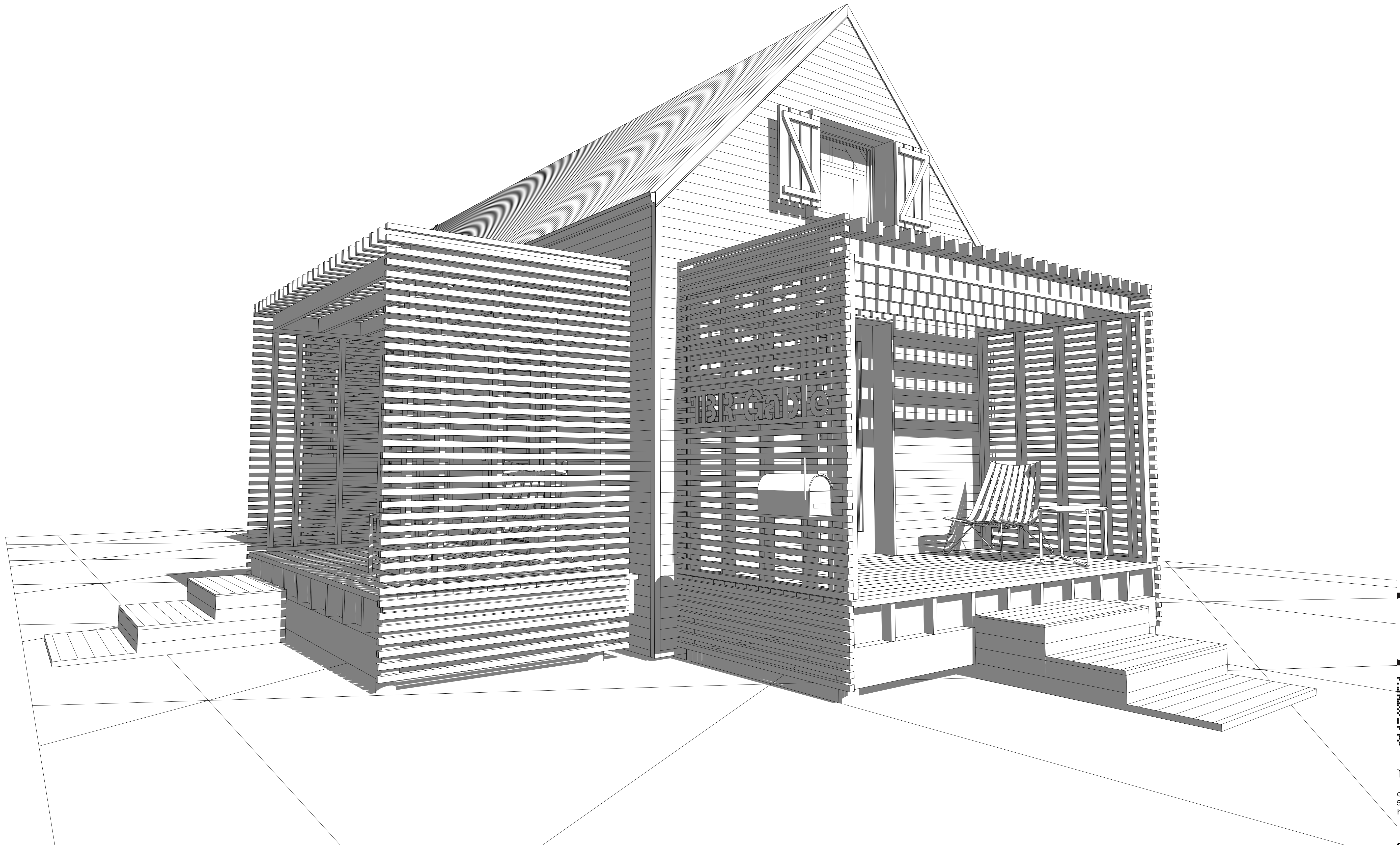
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3D Views

A9.02



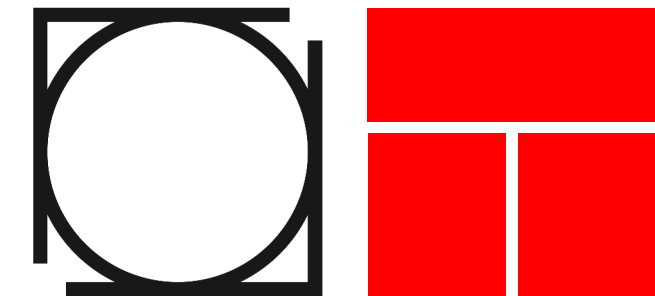
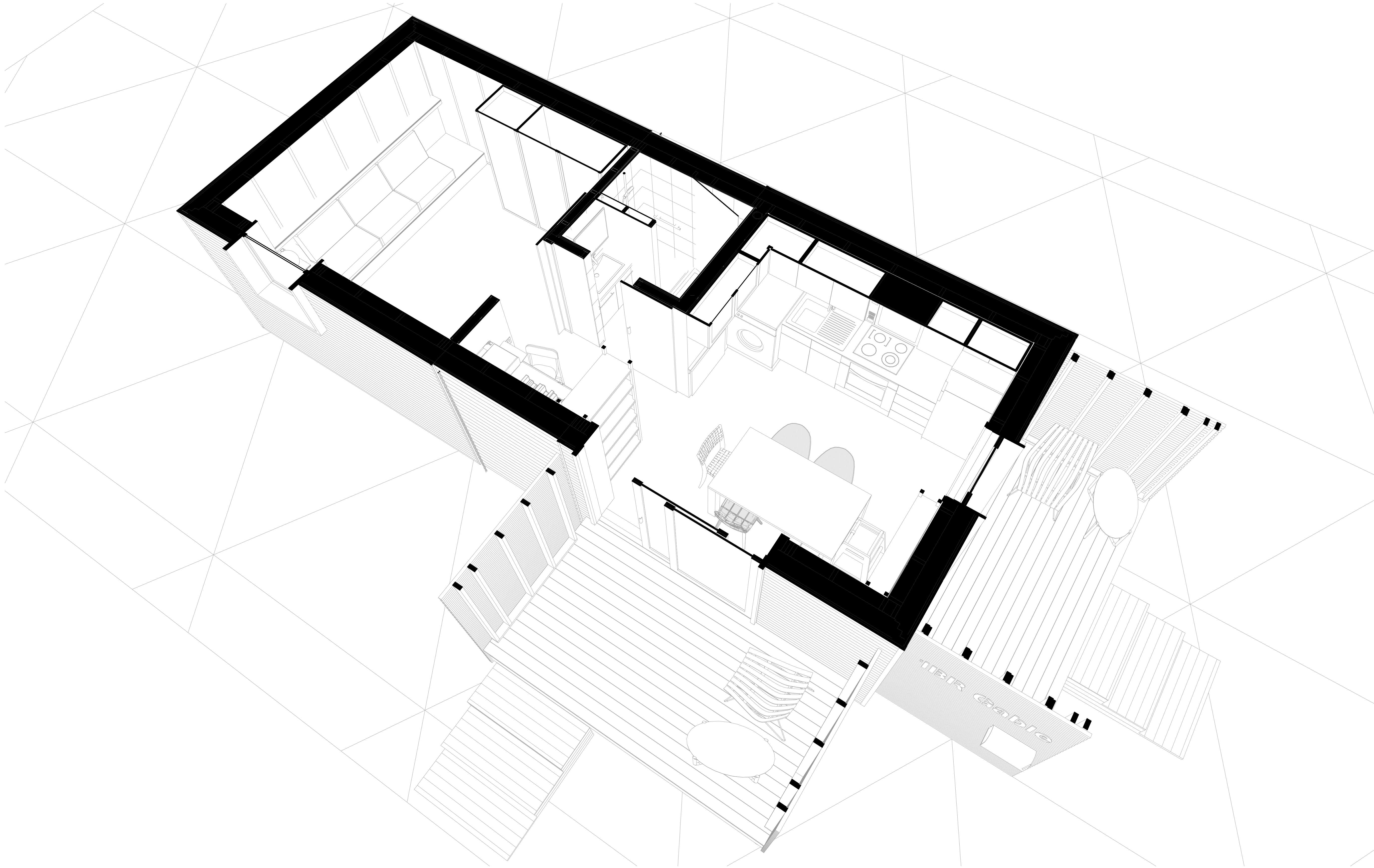
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homsonarch@icloud.com

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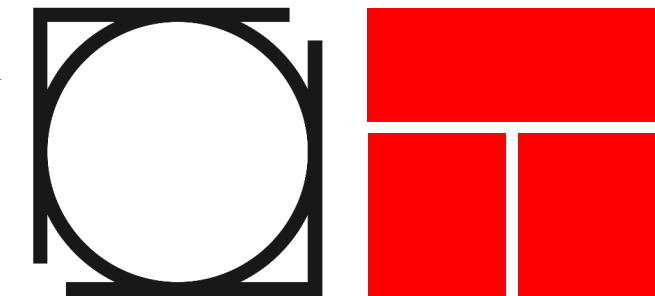
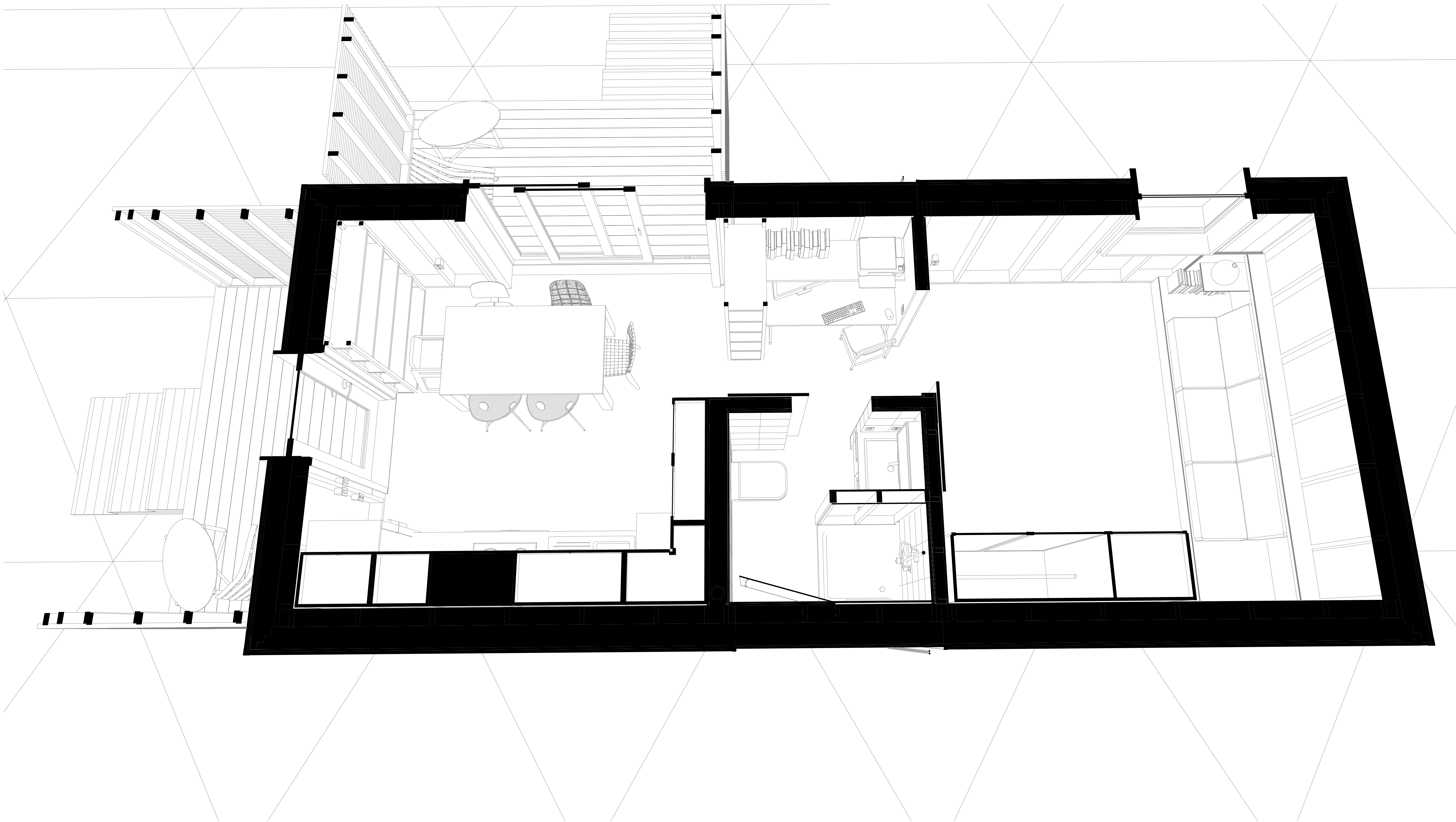
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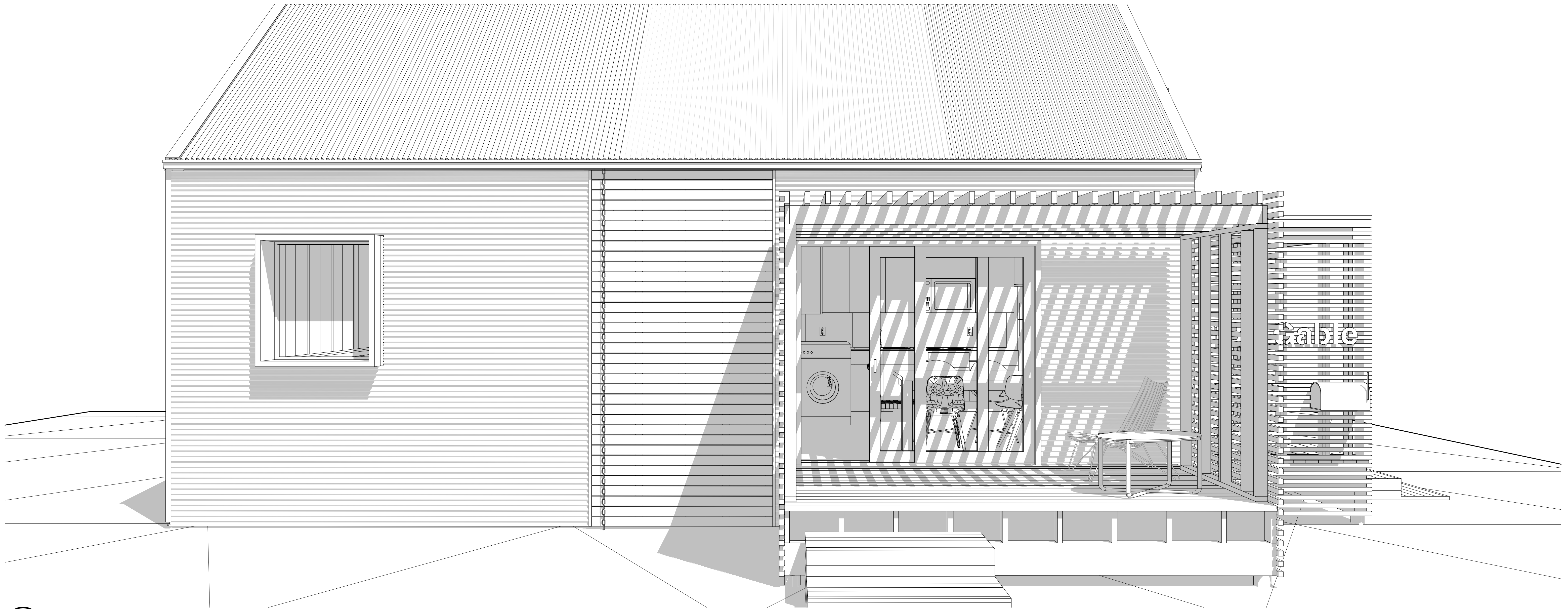
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Revision
02 - WIP
3D Views



1
A9.06

House Main Floor Plan
Scale: 1:29.91



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Revision
02 - WIP
3D Views

A9.06

Barrie Single DADU

Barrie, Ontario

PROJECT NO. 2025-12

Designed & Drafted by:



Mechanical Sheet List	
M000	Specifications
M001	Specifications
M002	Specifications
M003	Specifications
M004	Specifications
M100	Plumbing Drawings
M301	HVAC Drawings
M302	HVAC Drawings

General Notes

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The contractor shall verify all dimensions on site and repo discrepancies to Delta-T Designs Inc. once discovered an prior to proceeding with the work.

All changes shall be approved by Delta-T Designs Inc. pri executions.

Under no circumstances shall the contractor proceed in uncertainty.

This drawing expresses the intent of the designer only, ar the responsibility of the contractor to verify all site conditic prior to providing aquote, and/or commencing work.

If there is an inconsistency between what is drawn, and w site conditions allow, it is the responsibility of the installing contractor to notify the designer prior to proceeding. Delta- Designs Inc shall not be held liable for any issues that ma arise due to the contractor not requesting clarification beforehand.

Drawings are scaled for Arch D - 24x36

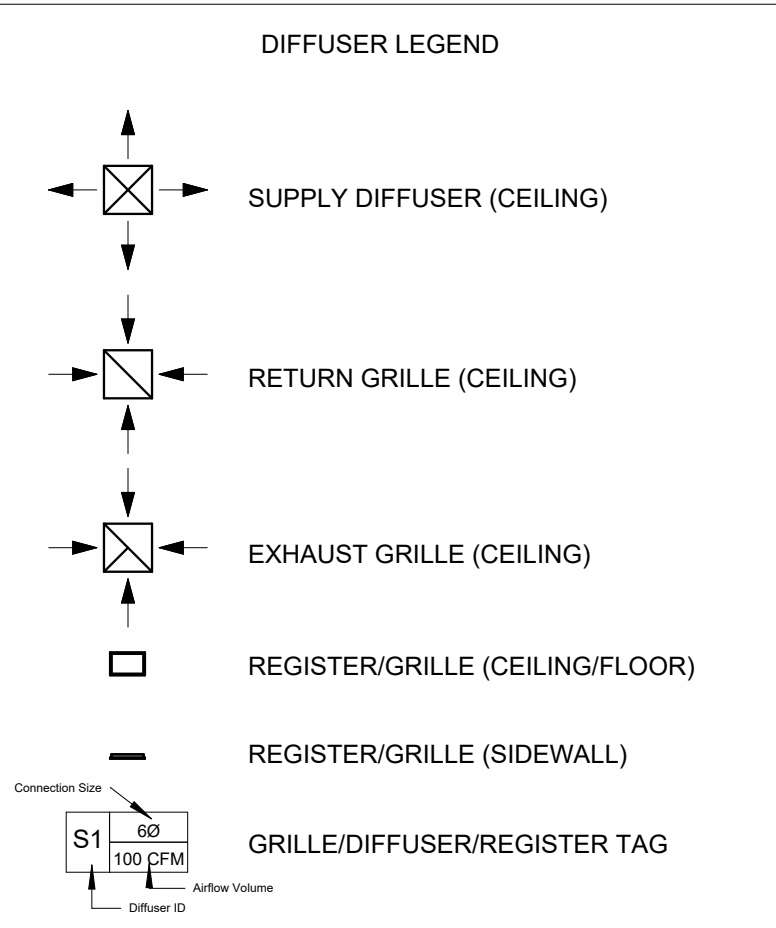
Designer Seal

P.Eng Seal (If Required)

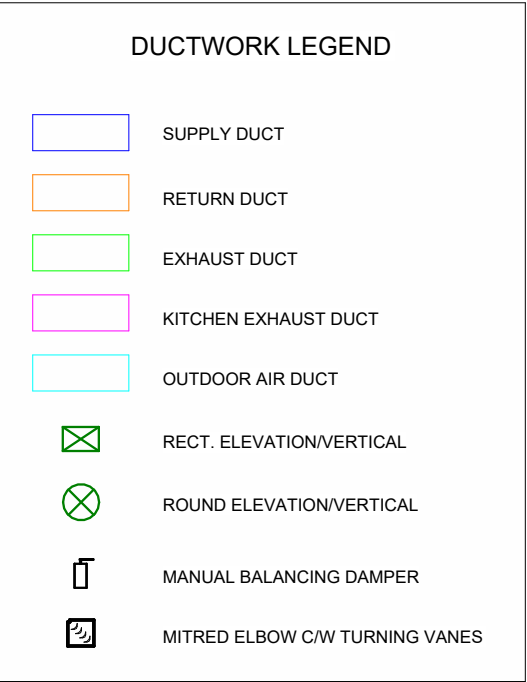
P.Eng Contact Info (If Required)

Revision Schedule

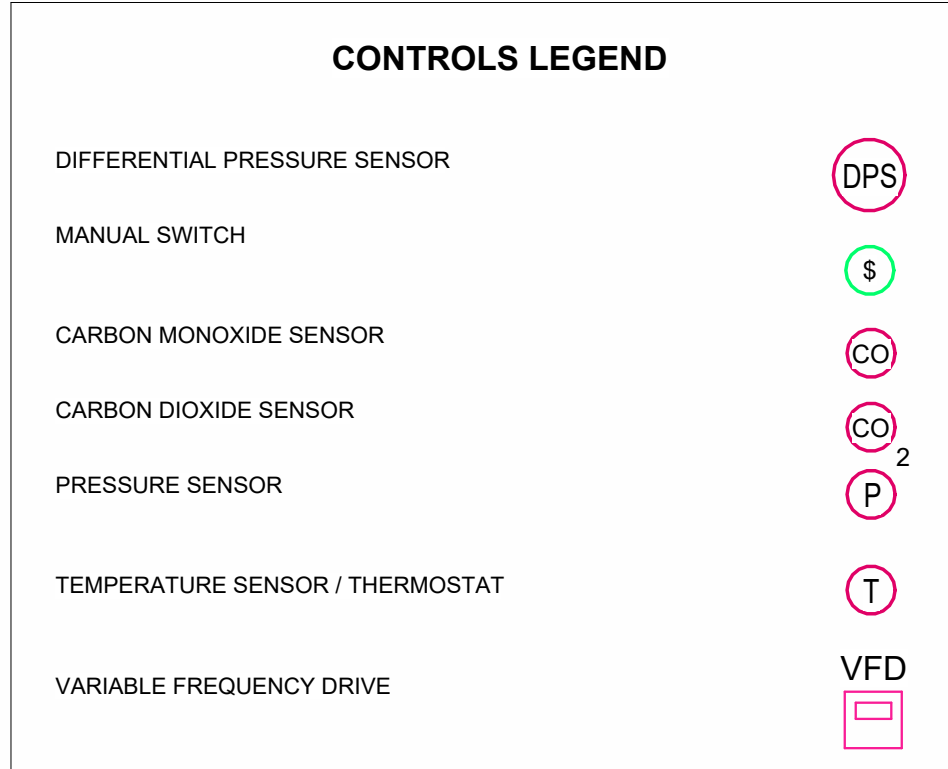
Revision Number	Revision Description	Revis Dat
1	Issued for Coordination	May 15 2025
2	Updated for Coordination	June 1 2025
3	WIP	June 1 2025



Diffuser Legend
NTS



Ductwork Legend
NTS



Controls Legend
NTS



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Oro-Medonte, Ontario
L0L 2L0

705.791.9000
niss@deltatdesigns.ca

Client Name

TBD

Project Number

2025-12

Project Name & Address

Barrie Single Dedicated Accessory Dwelling Unit

Barrie, Ontario

Sheet Name

Cover Sheet

Drawn By

Al

Reviewed By

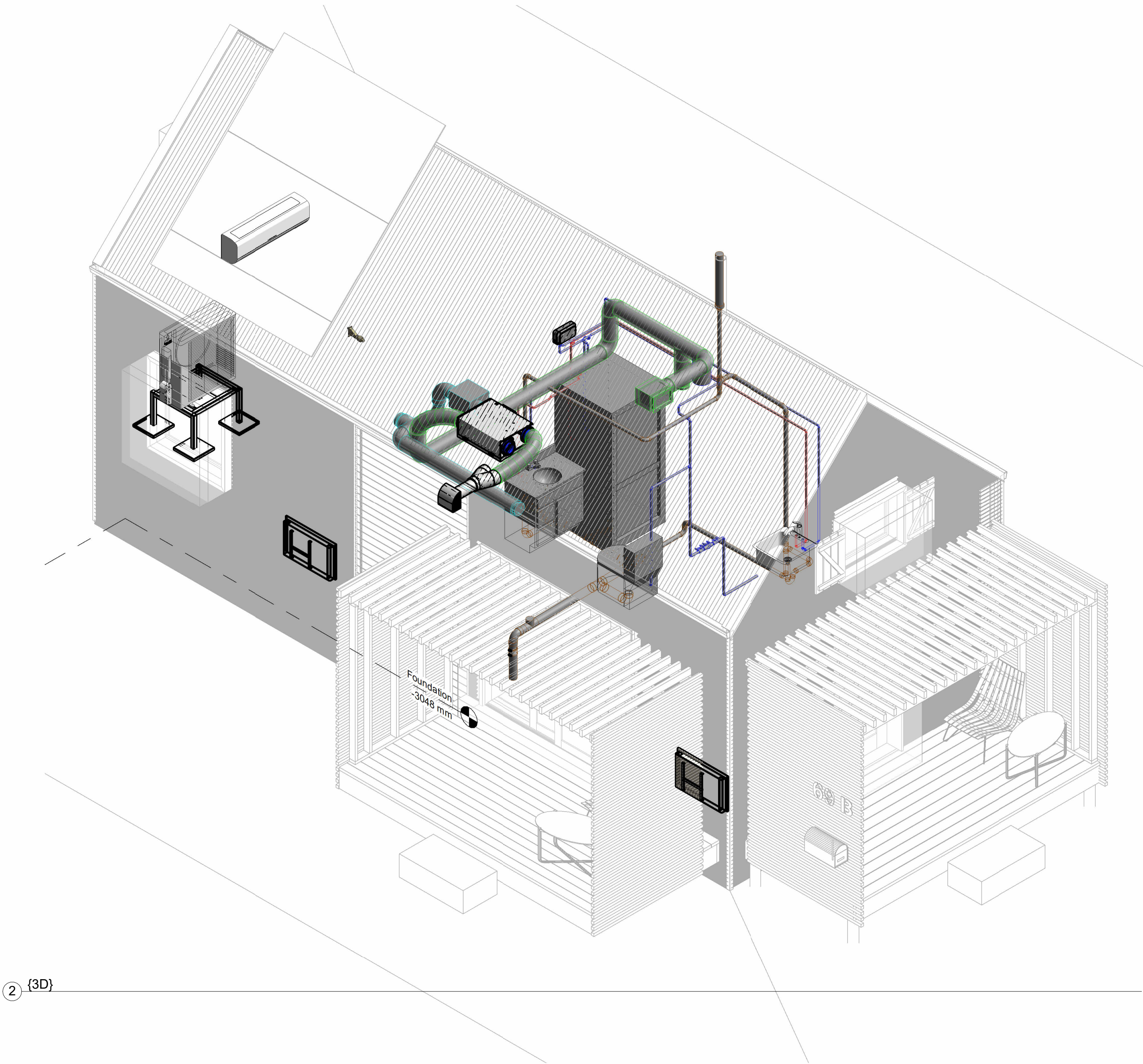
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Sheet Number

G01

PROJECT ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
AGT	AVERAGE GLYCOL TEMPERATURE	MBH	THOUSAND BTU's PER HOUR
AHAP	AS HIGH AS POSSIBLE	MIN	MINIMUM
AHU	AIR HANDLING UNIT	MISC	MISCELLANEOUS
APPROX	APPROXIMATE	NC	NORMALLY CLOSED
AS	AIR SEPARATOR	NO	NORMALLY OPEN
BFP	BACKFLOW PREVENTOR	NO.	NUMBER
CA	COMPRESSED AIR	NPCW	NON POTABLE COLD WATER
CFM	CUBIC FEET PER MINUTE	O2	OXYGEN
CGR	CHILLED GLYCOL RETURN	OA	OUTSIDE AIR
CGS	CHILLED GLYCOL SUPPLY	OC	ON CENTER
CIRC	CIRCULATION	OED	OPEN ENDED DUCT
CH	CHILLER	ORD	OVERFLOW ROOF DRAIN
CO	CARBON MONOXIDE	ORL	OVERFLOW RAIN LEADER
CO2	CARBON DIOXIDE	OSA	OUTSIDE AIR SUPPLY
CONT	CONTINUATION, CONTINUED	P	PUMP
CP	CIRCULATING PUMP	PCR	PUMPED CONDENSATE RETURN
CTE	CONNECT TO EXISTING	PD	PRESSURE DROP
CU	COPPER	PDI	PLUMBING & DRAINAGE INSTITUTE
CW	COLD WATER	PG	PROPYLENE GLYCOL
C/W	COMPLETE WITH	PHC	PRE HEAT COIL
CWR	CHILLED WATER RETURN	POC	POINT OF CONNECTION
CWS	CHILLED WATER SUPPLY	PSIG	POUNDS PER SQUARE INCH GAUGE
(D)	DEMOLISH	PSI	POUNDS PER SQUARE INCH
DCVA	DUAL CHECK VALVE ASSEMBLY	PW	PUMPED WASTE
DDC	DIRECT DIGITAL CONTROLS	RA	RETURN AIR
DEMO	DEMOLISH	RCP	RADIANT CEILING PANEL
Ø / DIA	DIAMETER	RD	ROOF DRAIN
DN	DOWN	RECIRC	RECIRCULATION
DX	DIRECT EXPANSION	RFL	REFRIGERANT LIQUID
(E)	EXISTING	RFM	RADIANT FLOOR MANIFOLD
EA	EXHAUST AIR	RFS	REFRIGERANT SUCTION
EBB	ELECTRIC BASEBOARD	RHC	REHEAT HEATING COIL
EF	EXHAUST FAN	RL	RAINLEADER
EGT	ENTERING GLYCOL TEMPERATURE	RPBP	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
ENT	ENTERING	RTU	ROOF TOP UNIT
ET	EXPANSION TANK	RV	REFRIGERANT VAPOR
EUH	ELECTRIC UNIT HEATER	RWL	RAIN WATER LEADER
EWT	ENTERING WATER TEMPERATURE	RZ	RADIANT ZONE
ERV	ENERGY RECOVERY VENTILATOR	SA	SUPPLY AIR
FCO	FLOOR CLEANOUT	SANI	SANITARY PIPING
FCU	FAN COIL UNIT	STORM	STORM PIPING
FD	FIRE DAMPER	SCH	SCHEDULE
FD	FLOOR DRAIN	SD	STORM DRAIN
FE	IRON	SF	SQUARE FEET
FM	FORCED MAIN	SF	SUPPLY FAN
FT	FEET	SGR	SNOWMELT GLYCOL RETURN
FT	FINNED TUBE	SGS	SNOWMELT GLYCOL SUPPLY
FSD	FIRE SMOKE DAMPER	SH	STEAM HUMIDIFIER
GAL	GALLONS	SMZ	SNOWMELT ZONE
GALV	GALVANIZED	SP	STATIC PRESSURE
GI	GREASE INTERCEPTOR	SS	STAINLESS STEEL
GMT	GLYCOL MAKE-UP TANK	TA	TRANSFER AIR
GPM	GALLONS PER MINUTE	TEMP	TEMPERATURE
HB	HOSE BIBB	TDH	TOTAL DEVELOPED HEAD
HC	HEATING COIL	TSP	TRAP SEAL PRIMER
HGR	HEATING GLYCOL RETURN	TYP	TYPICAL
HGS	HEATING GLYCOL SUPPLY	UH	UNIT HEATER
HRV	HEAT RECOVERY VENTILATOR	UL	UNDERWRITER'S LABORATORY
HW	HOT WATER	UON	UNLESS OTHERWISE NOTED
HWC	HOT WATER CIRCULATION	UPC	UNIFORM PLUMBING CODE
HWR	HEATING WATER RETURN	VAV	VARIABLE AIR VOLUME
HWS	HEATING WATER SUPPLY	VFD	VARIABLE FREQUENCY DRIVE
HX	HEAT EXCHANGER	VTR	VENT THROUGH ROOF
IBC	INTERNATIONAL BUILDING CODE	V	VENT
ID	INSIDE DIAMETER	W	WASTE
IFC	INTERNATIONAL FIRE CODE	W/	WITH
IFGC	INTERNATIONAL FUEL GAS CODE	WC	WATER CLOSET
IMC	INTERNATIONAL MECHANICAL CODE	W.C.	WATER COLUMN
IN	INCHES	WCO	WALL CLEANOUT
LAV	LAVATORY	WH	WATER HEATER
LF	LINEAR FEET	WHA	WATER HAMMER ARRESTOR
LGT	LEAVING GLYCOL TEMP	WPD	WATER PRESSURE DROP
LHGR	LOW TEMP HEATING GLYCOL RETURN	WRT	WITH RESPECT TO
LHGS	LOW TEMP HEATING GLYCOL SUPPLY	YCO	YARD CLEANOUT
LHWR	LOW TEMP HEATING WATER RETURN		
LHWS	LOW TEMP HEATING WATER SUPPLY		
LVG	LEAVING		
LWT	LEAVING WATER TEMPERATURE		



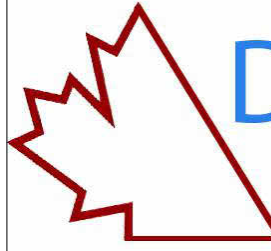
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pec 1
1/16" = 1'-0"

DIVISION 01 – GENERAL REQUIREMENTS	
SECTION 013000	
ADMINISTRATIVE REQUIREMENTS	
PART 1 GENERAL	
1.1	SECTION INCLUDES
1	General administrative requirements.
2	Coordination Drawings.
3	Submittals for review, information, and project closeout.
4	Number of copies of submittals.
5	Requests for Information (RFI) procedures.
6	Submittal procedures.
1.2	GENERAL ADMINISTRATIVE REQUIREMENTS
1	Comply with requirements of Section 017000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
2	Make the following types of submittals to Consultant:
1	Requests for Information (RFI).
2	Requests for substitution.
3	Shop Drawings, product data, and samples.
4	Test and inspection reports.
5	Design data.
6	Coordination Drawings.
7	Correction Punch List and Final Correction Punch List for Substantial Performance.
8	Closeout submittals.
PART 2 PRODUCTS - Not Used	
PART 3 EXECUTION	
3.1	COORDINATION DRAWINGS
1	Provide information required by Project Coordinator for preparation of coordination Drawings.
2	Review Drawings prior to submission to Consultant.
3.2	REQUESTS FOR INFORMATION (RFI)
1	Definition: A request seeking one of the following:
1	An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed, or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in the Contract Documents.
2	A resolution to an issue which has arisen due to site conditions and affects design intent.
2	Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
3	Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of the Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
1	Prepare a separate RFI for each specific item.
1	Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
2	Do not forward requests which solely require internal coordination between subcontractors.
4	Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
1	Unacceptable Uses for RFIs: Do not use RFIs to request the following:
1	Approval of submittals (use procedures specified elsewhere in this section).
2	Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
3.3	SUBMITTALS FOR REVIEW
1	When the following are specified in individual sections, submit them for review:
1	Product data.
2	Shop Drawings.
2	Submit to Consultant for review for the limited purpose of checking for compliance with information given and the design concept expressed in the Contract Documents.
3	After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below 017800 - Closeout Submittals.
3.4	SUBMITTALS FOR INFORMATION
1	When the following are specified in individual sections, submit them for information:
1	Design data.
2	Certificates.
3	Test reports.
4	Inspection reports.
5	Manufacturer's instructions.
6	Manufacturer's site reports.
7	Other types indicated.
2	Submit for Consultant's knowledge as contract administrator or for Owner.
3.5	SUBMITTALS FOR PROJECT CLOSEOUT
1	Submit Correction Punch List for Substantial Performance.
2	Submit Final Correction Punch List for Substantial Performance.
3	When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 017800 - Closeout Submittals:
1	Project record documents.
2	Operation and maintenance data.
3	Warranties.
4	Bonds.
5	Other types as indicated.
4	Submit for Owner's benefit during and after project completion.
3.6	NUMBER OF COPIES OF SUBMITTALS
1	Digital Documents: Submit one digital copy in PDF format; a digitally-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
3.7	SUBMITTAL PROCEDURES
1	General Requirements:
1	Use a single transmittal for related items.
2	Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
3	Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
4	Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
5	Distribute revised submittals. Instruct parties to promptly report inability to comply with requirements.
2	Product Data Procedures:
1	Submit only information required by individual specification sections.
2	Collect required information into a single submittal.
3	Submit concurrently with related shop drawing submittal.
4	Do not submit (Material) Safety Data Sheets for materials or products.
3	Shop Drawing Procedures:
1	Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related work.
2	Generic, non-project-specific information submitted as Shop Drawings do not meet the requirements for Shop Drawings.
4	Samples Procedures:
1	Transmit related items together as single package.
2	Identify each item to allow review for applicability in relation to Shop Drawings showing installation locations.
3.8	SUBMITTAL REVIEW
1	Submittals for Review: Consultant will review each submittal, and approve, or take other appropriate action.
2	Submittals for Information: Consultant
3	Consultant's actions will be reflected by marking each returned submittal using virtual stamp on digital submittals.
4	Consultant's and consultant's actions on items submitted for review:
1	Authorizing purchasing, fabrication, delivery, and installation:
1	In General Conformance with Design: Indicates that submittal has no notes, marks or changes; work affected by submittal can proceed.
2	In General Conformance with Design as Noted: Indicates that submittal has notes, marks or changes that do not affect the submittal review process; work affected by submittal can proceed without resubmission.
2	Not Authorizing fabrication, delivery, and installation:
1	Revise and Resubmit: Indicates that there is an error or concern within the submittal of a significant nature; work affected by the submittal cannot proceed and requires resubmission except as follows:
1	Resubmit revised item, with review notations acknowledged and incorporated.
END OF SECTION 013000	
SECTION 014100	
REGULATORY REQUIREMENTS	
PART 1 GENERAL	
1.1	SUMMARY
1	This Section references to laws, by laws, ordinances, rules, regulations, codes, orders of Authority Having Jurisdiction, and other legally enforceable requirements applicable to Work and that are, or become, in force during performance of Work.
1.2	SUMMARY OF GOVERNING BUILDING CODES AND STANDARDS
1	OBC - Ontario Building Code (Regulation 163/24); 2024.
1.3	REFERENCES TO REGULATORY REQUIREMENTS
1	Perform Work in accordance with (the referenced Building Code) including amendments up to closing date; and other codes of provincial or local application provided that in case of conflict or discrepancy, the more stringent requirements will prevail.
2	Specific design and performance requirements listed in Specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code and will meet or exceed the requirements of the:
1	Contract Documents;

2. Specified standards and referenced documents.	
PART 2 PRODUCTS - NOT USED	
PART 3 EXECUTION - NOT USED	
END OF SECTION 014100	
SECTION 014216	
DEFINITIONS	
PART 1 GENERAL	
1.1	SUMMARY
1	This section supplements the definitions contained in the General Conditions.
2	Other definitions are included in individual specification sections.
1.2	DEFINITIONS
1	Supply: To procure, deliver, unload, and inspect for damage.
2	Install: To inspect, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.
3	Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.
4	Provide: To supply and install.
PART 2 PRODUCTS - NOT USED	
PART 3 EXECUTION - NOT USED	
END OF SECTION 014216	
SECTION 017800	
CLOSEOUT SUBMITTALS	
PART 1 GENERAL	
1.1	SECTION INCLUDES
1	Project Record Documents.
2	Operation and Maintenance Data.
3	Warranties and Bonds.
1.2	RELATED REQUIREMENTS
1	See Section 013000 - Administrative Requirements, for submittal procedures.
2	Individual Product Sections: Specific requirements for operation and maintenance data.
3	Individual Product Sections: Warranties required for specific products or Work.
1.3	SUBMITTALS
1	See Section 013000 - Administrative Requirements, for submittal procedures.
2	Project Record Documents: Submit documents to Owner & Consultant.
3	Operation and Maintenance Data:
1	Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Consultant will review draft and return one copy with comments.
2	For equipment or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
3	Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Consultant comments. Revise content of all document sets as required prior to final submission.
4	Submit two sets of revised final documents in final form within 10 days after final inspection.
4	Warranties and Bonds:
1	For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
2	Make other submittals within 10 days after Date of Substantial Performance, prior to final Application for Payment.
3	For items of Work for which acceptance is delayed beyond Date of Substantial Performance, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.
PART 2 PRODUCTS - Not Used	
PART 3 EXECUTION	
3.1	PROJECT RECORD DOCUMENTS
1	Maintain on site one set of the following record documents; record actual revisions to the Work:
1	Drawings.
2	Specifications.
3	Addenda.
4	Change Orders and other modifications to the Contract.
5	Reviewed Shop Drawings, product data, and samples.
6	Manufacturer's instruction for assembly, installation, and adjusting.
2	Ensure entries are complete and accurate, enabling future reference by Owner.
3	Store record documents separate from documents used for construction.
4	Record information concurrent with construction progress.
5	Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
1	Manufacturer's name and product model and number.
2	Product substitutions or alternates utilized.
3	Changes made by Addenda and modifications.
6	As-Built Drawings: Drawings prepared and updated by the contractor throughout the Work, indicating a compilation of construction changes indicated in the original Contract Documents: Legibly mark each item to record actual construction including:
1	Site changes of dimension and detail.
2	Details not on original Contract Drawings.
3.2	OPERATION AND MAINTENANCE DATA
1	Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
2	Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance Drawings.
3	Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
3.3	OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS
1	For Each Item of Equipment and Each System:
1	Description of unit or system, and component parts.
2	Identify function, normal operating characteristics, and limiting conditions.
3	Include performance curves, with engineering data and tests.
4	Complete nomenclature and model number of replaceable parts.
2	Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
3	Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
4	Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
5	Provide servicing and lubrication schedule, and list of lubricants required.
6	Include manufacturer's printed operation and maintenance instructions.
7	Include sequence of operation by controls manufacturer.
8	Provide original manufacturer's parts list, illustrations, assembly Drawings, and diagrams required for maintenance.
9	Provide control diagrams by controls manufacturer as installed.
10	Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
11	Include test and balancing reports.
12	Additional Requirements: As specified in individual product specification sections.
3.4	ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS
1	Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
2	Where systems involve more than one specification section, provide separate tabbed divider for each system.
3	Binders: Commercial quality, 216 by 280 mm (8-1/2 by 11 inch) three D side ring binders with durable plastic covers; 50 mm (2 inch) maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
4	Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
5	Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
6	Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
7	Text: Manufacturer's printed data, or typewritten data on 20 pound paper.
8	Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger Drawings to size of text pages.
3.5	WARRANTIES AND BONDS
1	Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
2	Verify that documents are in proper form, contain full information, and are notarized.
3	Co-execute submittals when required.
4	Retain warranties and bonds until time specified for submittal.
END OF SECTION 017800	
SECTION 017900	
DEMONSTRATION AND TRAINING	
PART 1 GENERAL	
1.1	SUMMARY
1	Demonstration of products and systems where indicated in specific specification sections.

2	Training of Owner personnel in operation and maintenance is required for:
1	HVAC systems and equipment.
2	Plumbing equipment.
1.2	RELATED REQUIREMENTS
1	Section 019113 - General Commissioning Requirements: Additional requirements applicable to demonstration and training.
1.3	SUBMITTALS
1	See Section 013000 - Administrative Requirements, for submittal procedures.
1.4	QUALITY ASSURANCE
1	Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
2	Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
2	Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.
PART 2 PRODUCTS - NOT USED	
PART 3 EXECUTION	
3.1	DEMONSTRATION - GENERAL
1	Demonstration conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.
2	Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
1	Perform demonstrations not less than two weeks prior to Substantial Performance.
2	For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
3	Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
1	Perform demonstrations not less than two weeks prior to Substantial Performance.
END OF SECTION 017900	
DIVISION 22 - PLUMBING	
SECTION 220529	
HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT	
PART 1 GENERAL	
1.1	SECTION INCLUDES
1.2	REFERENCE STANDARDS
1	ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.
2	ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
3	ASTM B633 - Standard Specification for Electroplated Coatings of Zinc on Iron and Steel; 2019.
4	MFMA-4 - Metal Framing Standards Publication; 2004.
PART 2 PRODUCTS	
2.1	SUPPORT AND ATTACHMENT COMPONENTS
1	General Requirements:
1	Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
2	Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
3	Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
4	Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
5	Steel Components: Use corrosion resistant materials suitable for the environment where installed.
1	Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
2	Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
2.2	Metal Channel (Strut) Framing Systems:
1	Provide factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for site-assembly of supports.
2	Comply with MFMA-4.
3	Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
1	Minimum Size, Unless Otherwise Indicated or Required:
1	Equipment Supports: 15 mm (1/2 inch) diameter.
2	Piping up to 1 inch (25 mm) nominal: 8 mm (1/4 inch) diameter.
3	Piping larger than 1 inch (25 mm) nominal: 10 mm (3/8 inch) diameter.
4	Anchors and Fasteners:
1	Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
PART 3 EXECUTION	
3.1	INSTALLATION
1	Install products in accordance with manufacturer's instructions.
2	Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
3	Unless specifically indicated or approved by Consultant, do not provide support from suspended ceiling support system or ceiling grid.
4	Unless specifically indicated or approved by Consultant, do not provide support from roof deck.
5	Do not penetrate or otherwise notch or cut structural members without approval of Consultant.
6	Equipment Support and Attachment:
1	Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
2	Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow and walls when wall strength is not sufficient to resist pull-out.
3	Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
4	Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
7	Secure fasteners according to manufacturer's recommended torque settings.
8	Remove temporary supports.
END OF SECTION 220529	
SECTION 220553	
IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT	
PART 1 GENERAL	
1.1	SECTION INCLUDES
1	Namesplates.
2	Tags.
3	Pipe markers.
PART 2 PRODUCTS	
2.1	IDENTIFICATION APPLICATIONS
1	Piping: Pipe markers.
2	Pumps: Namesplates.
2.2	NAMESPLATES
1	Description: Laminated three-layer plastic with engraved letters.
1	Letter Colour: White.
2	Background Colour: Black.
3	Plastic: Conform to ASTM D709.
2.3	PIPE MARKERS
1	Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
2	Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
PART 3 EXECUTION	
3.1	PREPARATION
1	Degrease and clean surfaces to receive adhesive for identification materials.
3.2	INSTALLATION
1	Install plastic namesplates with corrosion-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
2	Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.
END OF SECTION 220553	
SECTION 220719	
PLUMBING PIPING INSULATION	
PART 1 GENERAL	
1.1	SECTION INCLUDES
1.2	REFERENCE STANDARDS
1	ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019.
2	ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2018).
3	ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.
4	ASTM E86/E86M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission of Materials; 2022.
5	CAN/ULC S102.2 - Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies; 2018.
6	CAN/ULC S702.1 - Standard for Mineral Fibre Thermal Insulation for Buildings, Part 1: Material Specification; 2021.
7	TIAC - Best Practices Guide; Current.
PART 2 PRODUCTS	
2.1	REGULATORY REQUIREMENTS
1	Surface Burning Characteristics: Comply with CAN/ULC S102.2 or ASTM E84 where permitted by Authority Having Jurisdiction for flame-spread rating and smoke developed classification.
2.2	GLASS FIBRE
1	Insulation: CAN/ULC S702.1 and ASTM C795; rigid molded, noncombustible.
1	K _{si} (K _{SI} Value: ASTM C177, 0.035 at 24 degrees C (0.24 at 75 degrees F).
2	Maximum Service Temperature: 454 degrees C (850 degrees F).

General Notes		
This drawing is the property of Delta-T Designs Inc. and is to be reproduced without permission.		
The contractor shall verify all dimensions on site and report discrepancies to Delta-T Designs Inc. once discovered and prior to proceeding with the work.		
All changes shall be approved by Delta-T Designs Inc. prior to execution.		
Under no circumstances shall the contractor proceed in uncertainty.		
This drawing expresses the intent of the designer only, and the responsibility of the contractor to verify all site conditions prior to providing quote, and/or commencing work.		
If there is an inconsistency between what is drawn, and what site conditions allow, it is the responsibility of the installing contractor to notify the designer prior to proceeding. Delta-T Designs Inc shall not be held liable for any issues that may arise due to the contractor not requesting clarification beforehand.		
Drawings are scaled for Arch D - 24x36		
Designer Seal		P.Eng Seal (If Required)
P.Eng Contact Info (If Required)		
Revision Schedule		
Revision Number	Revision Description	Revision Date
1	Issued for Coordination	May 15 2025
2	Updated for Coordination	June 1 2025
3	WIP	June 1 2025
		
Delta-T Designs Inc. 16 Winstar Rd Unit 4 Oro-Medonte, Ontario L0L 2L0 705.791.9000 niss@deltatdesigns.ca		
Client Name		TBD
Project Number		2025-12
Project Name & Address		
Barrie Single Dedicated Accessory Dwelling Unit Barrie, Ontario		
Sheet Name		
Specifications		
Drawn By		Aut
Reviewed By		Cher
Sheet Number		
M000		

3 Maximum Moisture Absorption: 0.2 percent by volume

2 Vapour Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminumized film; moisture vapour transmission when tested in accordance with ASTM E96/TESTM of 0.029 ng Pa s m (0.02 perm-inches).

PART 3 EXERCISE

CUTION

EXAMINATION

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1 Verify that piping has been tested before applying insulation materials.

2 Verify that surfaces are clean and dry, with foreign material removed.

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SECTION 221005 PLUMBING PIPING	
PART 1 GENERAL	
1.1 SECTION INCLUDES	
1.	System pipe and pipe fittings.
1.	Sanitary sewer.
2.	Domestic water.
3.	Valves.
2. SPECITIES:	
1.	Flow controls.
2.	Water pressure reducing valves.
3.	Relief valves.
3.	Connections for piping systems.
1.2 RELATED REQUIREMENTS	
1.	Section 083100 - Access Doors and Panels.
1.3 REFERENCE STANDARDS	
1.	ANSI Z21.22 - American National Standard for Relief Valves and Automatic Gas Shutoff Devices for Hot Water Supply Systems; 2015.
2.	ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes; 2024.
3.	ASME B31.9 - Building Services Piping; 2014.
4.	ASME BPVC-IV - Boiler and Pressure Vessel Code, Section IV - Rules for Construction of Heating Boilers; 2023, with Errata (2024).
5.	ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2020.
6.	ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2020.
7.	ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2020.
8.	ASTM B1813 - Standard Specification for Liquid and Phase Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.
9.	ASTM B828 - Standard Specification for Making Capillary Joints by Soldering of Copper and Copper Alloy Tubes and Fittings; 2016.
10.	ASTM D2255 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings; 2022.
11.	ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2020.
12.	ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2020.
13.	ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2021.
14.	ASTM D2855 - Standard Practice for the Two-Step (Primer & Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2020.
15.	ASTM D3054 - Standard Specification for Type PSN Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2021.
16.	ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe; 2014 (Reapproved 2021).
17.	ASTM F628 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe with a Cellular Core; 2022.
18.	ASTM F876 - Standard Specification for Crosslinked Polyethylene (PEX) Tubing; 2022, with Editorial Revision.
19.	ASTM F877 - Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems; 2022.
20.	ASTM F1960 - Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-Linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing; 2021.
21.	AWWA C651 - Disinfecting Water Mains; 2014.
22.	AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. Through 12 in. (100 mm Through 300 mm), for Water Transmission and Distribution; 2016.
23.	CAN/CSA B356 - Water Pressure Reducing Valves for Domestic Water Supply Systems; 2010 (Reaffirmed 2020).
24.	CAN/CSA B1800 - Thermoplastic Nonpressure Piping Compounds; 2021.
25.	CAN S4137 Series - Thermoplastic Pressure Piping Compounds; 2017.
26.	NSF 61 - Drinking Water System Components - Health Effects; 2017.
27.	NSF 372 - Drinking Water System Components - Lead Content; 2020.
28.	PPH TRA - PPI Listing of Hydrostatic Design Basis (HDB), Hydrostatic Design Stress (HDS), Strength Design Basis (SDB), Pressure Design Basis (PDB), and Minimum Required Strength (MRS) Ratings For Thermoplastic Piping Materials or Pipe; 2017.
1.4 QUALITY ASSURANCE	
1.	Perform work in accordance with applicable codes.
2.	Comply with ASME B31.9.
3.	Valves: Manufacturer's name and pressure rating marked on valve body.
4.	Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

- 1. Possible Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.2 SANITARY SEWER PIPING, BURIED BEYOND 1500 MM (5 FEET) OF BUILDING

- 1. ABS Pipe: ASTM F626.
 - 1. Fittings: ABS.
 - 2. Joints: Solvent welded with ASTM D2235 cement.
- 2. PVC Pipe: ASTM D3034, DR-35.
 - 1. Fittings: PVC.
 - 2. Joints: Push-on, using ASTM F477 elastomeric gaskets.

2.3 SANITARY SEWER PIPING, BURIED WITHIN 1500 MM (5 FEET) OF BUILDING

- 1. ABS Pipe: ASTM F626.
 - 1. Fittings: ABS.
 - 2. Joints: Solvent welded with ASTM D2235 cement.
- 2. PVC Pipe: ASTM D2665 or ASTM D3034.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.4 SANITARY SEWER PIPING, ABOVE GRADE

- 1. ABS Pipe: ASTM F626.
 - 1. Fittings: ABS.
 - 2. Joints: Solvent welded with ASTM D2235 cement.
- 2. PVC Pipe: CANSICA B1800 or ASTM D2729.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.5 DOMESTIC WATER PIPING, BURIED BEYOND 1500 MM (5 FEET) OF BUILDING

- 1. Copper Pipe: ASTM B42, annealed.
 - 1. Fittings: ASME B16.26, cast bronze.
 - 2. Joints: Flared.
- 2. PVC Pipe: AWWA C900 and CSA B137 Series.

2.6 DOMESTIC WATER PIPING, BURIED WITHIN 1500 MM (5 FEET) OF BUILDING

- 1. Copper Pipe: ASTM B42, annealed.
 - 1. Fittings: ASME B16.26, cast bronze.
 - 2. Joints: Flared.
- 2. Cross-Linked Polyethylene (PEX) Pipe: ASTM F876 or ASTM F877.
 - 1. PPI TR-4 Pressure Design Basis:
 - 2. Fittings: Brass and copper.
 - 3. Fittings: Brass and engineered polymer (EP) ASTM F1960.
 - 4. Joints: Mechanical compression fittings.
 - 5. Joints: ASTM F1960 cold-expansion fittings.

2.7 DOMESTIC WATER PIPING, ABOVE GRADE

- 1. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).
 - 1. Mechanical Press Sealed Fittings: Double pressed type, NSF 61 and NSF 372 approved or certified, utilizing EPDM, non toxic synthetic rubber sealing elements.
- 2. Cross-Linked Polyethylene (PEX) Pipe: ASTM F876 or ASTM F877.

.1 PPI TR-4 Pressure Design Basis:
.2 Fittings: Brass and engineered polymer (EP) ASTM F1960.
.3 Joints: Mechanical compression fittings.
.4 Joints: ASTM F1960 cold-expansion fittings.

2.8 BALL VALVES
2.9 PIPING SPECIALTIES

.1 Flow Controls:
.1 Construction: Class 125, Brass or bronze body with union on inlet and outlet, temperature and pressure test plug on inlet and outlet, blowdown/backflush drain.
.2 Calibration: Control flow within 5 percent of selected rating, over operating pressure range of 10 times minimum pressure required for control, maximum minimum pressure 24 kPa (3.5 psi).

.2 Water Pressure Reducing Valves:
.1 Up to 50 mm (2 inches)
.1 ANSI/CSA B356, bronze body, stainless steel, and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded single union ends.

.3 Relief Valves
.1 Pressure:
.1 ANSI Z21.22, AGA certified, bronze body, teflon seat, steel stem and springs, automatic, direct pressure actuated.
.2 Temperature and Pressure:
.1 ANSI Z21.22, AGA certified, bronze body, teflon seat, stainless steel stem and springs, automatic, direct pressure actuated, temperature relief maximum 98.9 degrees C (210 degrees f), capacity ASME BPV-C certified and labeled.

PART 3 EXECUTION

EXAMINATION

1. Verify that excavations are to required grade, dry, and not over-excavated.

PREPARATION

1. Ream pipe and tube ends. Remove burrs.
2. Remove scale and dirt, on inside and outside, before assembly.
3. Prepare piping connections to equipment with flanges or unions.

INSTALLATION

1. Install in accordance with manufacturer's instructions.
2. Provide non-conducting dielectric connections wherever joining dissimilar metals.
3. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
4. Install piping to maintain headroom, conserve space, and not interfere with use of space.
5. Group piping whenever practical at common elevations.
6. Provide clearance in launders and from structure and other equipment for installation of insulation and access to valves and fittings.
7. Provide access where valves and fittings are not exposed.
1. Coordinate size and location of access doors with General Contractor.
8. Where pipe support members are required, build framing, scrape, brush clean, and apply one coat of zinc rich primer to welding.
9. Provide support for utility meters in accordance with requirements of utility companies.
10. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF-61 and NSF 372.
11. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
12. Steel pipes pass through partitions, walls and floors.

APPLICATION

1. Install unions downstream of valves and at equipment or apparatus connections.
2. Install gate valves for shut-off and to isolate equipment, part of systems, or vertical risers.
3. Provide spring loaded check valves on discharge of water pumps.
4. Provide flow controls in water recirculating systems where indicated.

DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

1. Prior to starting work, verify system is complete, flushed and clean.
2. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
3. Flush disinfectant free chlorine in liquid, powder, or gas form, throughout system to obtain 50 to 80 mg/L residual.
4. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
5. Maintain disinfectant in system for 24 hours.
6. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
7. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
8. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

SERVICE CONNECTIONS

1. Provide new required service laterals. Before commencing work check invert elevations for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.
2. Provide new water service complete with approved reduced pressure backflow preventer and water meter with by-pass valves, pressure reducing valve, and sand strainer.

END OF SECTION 271005

END OF SECTION 221005

SECTION 221005 PLUMBING FIXTURES

PART 1 GENERAL

1.1 SECTION INCLUDES

1. Tank type water closets.
2. Dual flush water closets.
3. Lavatories.
4. Sinks.
5. Bathtubs and showers.
6. Showers.
7. Hose bib boxes.

1.2 REFERENCE STANDARDS

1. ASME A112.6.1M - Supports for Off-the-Floor Plumbing Fixtures for Public Use: 1997 (Reaffirmed 2017).
2. ASME A112.18.1 / CSA B125.1 - Plumbing Supply Fittings; 2018, with Errata.
3. ASME A112.19.1 / CSA B45.2 - Enamelled Cast Iron and Enamelled Steel Plumbing Fixtures; 2018.
4. ASME A112.19.2 / CSA B45.1 - Ceramic Plumbing Fixtures; 2018, with Errata.
5. ASME A112.19.3 / CSA B45.4 - Stainless Steel Plumbing Fixtures; 2017, with Errata.
6. ASME A112.19.14 - Six Liter Water Closets Equipped with Dual Flushing Device; 2013 (Reaffirmed 2018).
7. ASME A112.1070 / ASSE 1070 / CSA B125.70 - Performance Requirements for Water Temperature Limiting Devices; 2020.
8. NSF/ANSI/CAN 61 - Drinking Water System Components - Health Effects; 2021.
9. NSF 372 - Drinking Water System Components - Lead Content; 2020.
10. ULC (DIR) - Online Certifications Directory (Canada); Current Edition.

1.3 SUBMITTALS

1. See Section 013000 - Administrative Requirements for submittal procedures.
2. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

1. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF/ANSI/CAN 61 and NSF 372 for maximum lead content; label pipe and fittings.
2. Water Efficiency: Provide water closets, urinals, lavatory faucets, and showersheds that comply with local water efficiency legislation.

2.2 REGULATORY REQUIREMENTS

1. Comply with applicable codes for installation of plumbing systems.
2. Comply with ULC (DIR) requirements, where permitted by Authority Having Jurisdiction.

2.3 TANK-TYPE WATER CLOSETS

1. Floor-Mounted Bowl:
 1. ASME A112.19.2 / CSA B45.1: siphon jet, vitreous china, 420 mm (16.5 inches) high, close-coupled closet combination with elongated rim, insulated vitreous china closet tank with fittings and lever flushing valve, bolt caps, vandaproof cover locking device.
 2. Water Consumption: 6 L (1.6 gal) per flush, maximum.
2. Toilet Seat:

1. Plastic: Solid, white, elongated, open front, slow-closing hinged seat cover, and brass bolts with covers.

2.4 DUAL FLUSH WATER CLOSETS

1. ASME A112.19.14: high efficiency and low consumption, vitreous china, dual flush, tank type.
 1. Flush System: Pressure-assisted, wash down with a half-flush consumption of 4 L (1 gal) per flush.
 2. Bowl: Elongated.
 3. Rough in: 305 mm (12 inch).
 4. Seat: Manufacturer's standard or recommended elongated closed front seat with lid.
 5. Color: White.

2.5	LAVATORIES
.1	Wall-Hung Basin: .1 Vitreous China: ASME A12.19.2 / CSA B45.1; white, round basin with splash lip, front overflow, soap depression, and hanger. Size as indicated on Drawings with 100 mm (4 inch) centerset spacing. .2 Carrier: .1 ASME A12.6 JIM, cast steel and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, bearing plate and studs.
.2	Drop-In Basin: .1 Vitreous China: ASME A12.19.2 / CSA B45.1; self-trimming, white, round shape, front overflow, soap depression, seal of putty, calking, or concealed vinyl gasket, and white finish. Size as indicated on Drawings with 100 mm (4 inch) centerset spacing.
.3	Under-Mount Basin: .1 Vitreous China: ASME A12.19.2 / CSA B45.1; white, round shape, front overflow, soap depression, seal of putty, calking, or concealed vinyl gasket, and white finish. Size as indicated on Drawings.
	Pedestal Basin:

		1	Vitreous China: ASME A112.19.2 / CSA B45.1; white, round shape, integral rear splash rim, front overflow, and steel hanger. Size as indicated on Drawings with maximum 200 mm (8 inch) centrestap spacing.
5.	Supply Facer:	1	ASME A112.18.1 / CSA B125.1; chrome plated combination supply fitting with pop-up waste, waste economy aerator with maximum flow of 8.3 lpm (2.2 gpm), indexed handles.
6.	Thermostatic Mixing Valve:	1	ASME A112.1070 / ASSE 1070 / CSA B125.70 listed with combination stop, strainer, and check valves, and flexible stainless steel connectors.
2.6	SINKS		
1.	Single Compartment Bowl:	ASME A112.19.3 / CSA B45.4; Type 302 stainless steel, self rimming and undercoated, with ledge back drilled for trim.	
	Drain:	38 mm (1-1/2 inch) chromed brass drain.	
2.	Double Compartment Bowl:	ASME A112.19.3 / CSA B45.4; Type 302 stainless steel, self rimming and undercoated, with ledge back drilled for trim.	
	Drain:	38 mm (1-1/2 inch) chromed brass drain.	
2.7	BATHTUBS AND SHOWERS		
1.	Bathtub:	ASME A112.19.1 / CSA B45.2 enamelled cast iron bathtub with slip resistant surface, contoured front apron, 1500 mm (60 inches) long, _____ colour.	
2.	Bath Tub:	ASME A112.18.1 / CSA B125.1; concealed over rim supply with spout and indexed handles, lever operated pop-up waste and overflow.	
3.	Bath and Shower Trim:	ASME A112.18.1 / CSA B125.1; concealed shower and over rim supply with diverter spout, indexed handles, bath shower arm with adjustable spray ball joint showerhead with maximum 9.5 liters per minute (2.5 gallons per minute) flow and escutcheon, lever operated pop-up waste and overflow.	
4.	Bath and Shower Trim:	ASME A112.18.1 / CSA B125.1; concealed shower and over rim supply with diverter spout, pressure balanced mixing valve, bath shower arm with adjustable spray ball joint showerhead with maximum 9.5 liters per minute (2.5 gallons per minute) flow and escutcheon, lever operated pop-up waste and overflow.	
2.8	HOSE BIB BOXES		
1.	Material:	316 stainless steel.	
2.	Finish:	Satin.	
3.	Mount in wall	fully recessed.	
4.	Provide with one-valve supply.		
5.	Provide with NPT PVC ball valves and fittings.		
6.	Provide with internal hose drain bracket and waste outlet.		
PART 3 EXECUTION			
3.1	EXAMINATION		
1.	Verify that walls and floor finishes are prepared and ready for installation of fixtures.		
2.	Verify that electric power is available and of the correct characteristics.		
3.	Confirm that millwork is constructed with adequate provision for the installation of countertop lavatories and sinks.		
3.2	PREPARATION		
1.	Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.		
3.3	INSTALLATION		
1.	Install each fixture with trap, easily removable for servicing and cleaning.		
2.	Provide chrome-plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.		
3.	Install components level and plumb.		
4.	Install and secure fixtures in place with wall supports and bolts.		
3.4	INTERFACE WITH WORK OF OTHER SECTIONS		
1.	Review millwork Shop Drawings. Confirm location and size of fixtures and openings before rough-in and installation.		
3.5	PROTECTION		
1.	Protect installed products from damage due to subsequent construction operations.		
2.	Do not permit use of fixtures by construction personnel.		
3.	Repair or replace damaged products before Date of Substantial Performance.		

END OF SECTION 224000

DIVISION 23 - HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

SECTION 230517

SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Pipe sleeves.
- .2 Manufactured sleeve-seal systems.

1.2 REFERENCE STANDARDS

- .1 ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a (Reapproved 2017).

1.3 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- .2 Clean equipment, pipes, valves, and fittings of grease, metal cuttings, and sludge that may have accumulated from the installation and testing of the system.

PART 2 PRODUCTS

2.1 PIPE SLEEVES

- .1 Vertical Piping:
 - .1 Sleeve Length: 25 mm (1 inch) above finished floor.
 - .2 Provide sealant for watertight joint.
- .2 Pipe Passing Through Below Grade Exterior Walls:
 - .1 Zinc coated or cast iron pipe.
 - .2 Provide watertight space with link rubber or modular seal between sleeve and pipe on both pipe ends.
- .3 Pipe Passing Through Mechanical, Laundry, and Animal Room Floors above Basement:
 - .1 Galvanized steel pipe or black iron pipe with asphalt coating.
 - .2 Connect sleeve with floor plate except in mechanical rooms.
- .4 Clearances:
 - .1 Provide allowance for insulated piping.
 - .2 Wall, Floor, Floor, Partitions, and Beam Flanges: 25 mm (1 inch) greater than external; pipe diameter.
 - .3 All Rated Openings: Caulked tight with fire stopping material in compliance with ASTM E814 in accordance with Section 078400 to prevent the spread of fire, smoke, and gases.

PART 3 EXECUTION

3.1 INSTALLATION

- .1 Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.
- .2 Install piping to conserve building space, to not interfere with use of space and other work.
- .3 Install piping and pipe sleeves to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- .4 Provide sleeves when penetrating floors, floors, walls, and partitions. Seal pipe including sleeve penetrations to achieve fire resistance equivalent to fire separation region.
- .5 When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

END OF SECTION 290517

END OF SECTION 230529	SECTION 230529	HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT
PART 1 GENERAL	SECTION INCLUDES	
1.1	1. Support and attachment components for equipment, piping, and other HVAC/hydraulic work.	
1.2	REFERENCE STANDARDS	
	1. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024. 2. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a. 3. ASTM A181/A181M - Standard Specification for Carbon Steel Forgings, for General - Purpose Piping; 2022. 4. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019. 5. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019. 6. MFMA-4 - Metal Framing Standards Publication; 2004. 7. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2009.	
1.3	1. Comply with applicable building code.	
	QUALITY ASSURANCE	
	2. Maintain at the project site a copy of each referenced document that prescribes execution requirements.	
PART 2 PRODUCTS	SUPPORT AND ATTACHMENT COMPONENTS	
2.1	General Requirements:	
	1. Provide all required hangers, supports, unlabeled, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work. 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable. 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. 4. Do not use wire, chain, perforated pipe strap, or wad for permanent supports unless specifically indicated or permitted. 5. Steel Components: Use corrosion resistant materials suitable for the environment where installed. 1. Zinc-Plated Steel: Electroplated in accordance with ASTM B633. 2. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.	
	2. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-sold metal channel (strut) and associated fittings, accessories, and hardware required for site-assembly of supports. 1. Comply with MFMA-4. 2. Channel Material: 1. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel. 3. Minimum Channel Thickness: Steel-sheet, 12 gauge, 2.66 mm (12 gauge, 0.1046 inch).	
	3. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated. 1. Minimum Size, Unless Otherwise Indicated or Required:	

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Drawings are scaled for Arch D - 24x36 	
Designer Seal	P.Eng Seal (If Required)

Revision Schedule		
Revision Number	Revision Description	Revis Dat
1	Issued for Coordination	May 15 2025
2	Updated for Coordination	June 1 2025
3	WIP	June 1 2025

 **Delta-T
Design**

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Client Name	TBD
Project Number	2025-12
Project Name & Address	Barrie Single Dedicated Accessory Dwelling Unit Barrie, Ontario
Sheet Name	Specifications
Drawn By	Aut
Reviewed By	Che
Sheet Number	M001

$$\frac{\text{Spec 2}}{3/16'' = 1'-0'}$$

spec 3
3/16" = 1'-0"

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		10	Air outlets are installed and connected.
		11	Duct system leakage is minimized.
		12	Hydronic systems are flushed, filled, and vented.
		13	Pumps are rotating correctly.
		14	Proper strainer baskets are clean and in place.
		15	Service and balance valves are open.
		16	Submit site reports. Report defects and deficiencies that will or could prevent proper system balance.
		3	Beginning of work means acceptance of existing conditions.
3.3			ADJUSTMENT TOLERANCES
	1		Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.
	2		Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.
		3	Hydronic Systems: Adjust to within plus or minus 10 percent of design.
3.4			TAB PROCEDURE FOR AIR DISTRIBUTION SYSTEMS
	1		Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.
	2		Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
	3		Measure air quantities at air inlets and outlets.
	4		Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
	5		Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.
	6		Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.
	7		Provide system schematic with required and actual air quantities recorded at each outlet or inlet.
	8		Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.
	9		Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.
	10		Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.
3.5			TAB PROCEDURE FOR WATER DISTRIBUTION SYSTEMS
	1		Adjust water systems to provide required or design quantities.
	2		Use calibrated Venturi tubes, orifices, or other metered fittings and pressure gauges to determine flow rates for system balance. Where flow metering devices are not installed, base flow balance on temperature difference across various heat transfer elements in the system.
	3		Adjust systems to provide specified pressure drops and flows through heat transfer elements prior to thermal testing. Perform balancing by measurement of temperature differential in conjunction with air balancing.
	4		Effect system balance with automatic control valves fully open to heat transfer elements.
	5		Effect adjustment of water distribution systems by means of balancing coils, valves, and fittings. Do not use service or shut-off valves for balancing unless indicated for balance point.
	6		Where available pump capacity is less than total flow requirements or individual system parts, full flow in one part may be simulated by temporary restriction of flow to other parts.
END OF SECTION 230593			

SECTION 230713 DUCT INSULATION			
PART 1 GENERAL			
1.1	SECTION INCLUDES	.1	Duct insulation.
		.2	Duct liner.
		.3	Insulation jackets.
		.1.2	REFERENCE STANDARDS
.1	ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.	.2	ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013 (Reapproved 2019).
		.3	ASTM C612 - Standard Test Method for Mineral Fiber Insulation and Board Thermal Insulation; 2014 (Reapproved 2019).
		.4	ASTM C916 - Standard Specification for Adhesives for Duct Thermal Insulation; 2020.
		.5	ASTM C1071 - Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material); 2019.
.6	ASTM E96/E96M - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).	.7	ASTM E96/E96M - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).
		.8	CAN/ULC S102 - Method of Testing for Surface Burning Characteristics of Building Materials and Assemblies; 2018.
		.9	CAN/ULC S702.1 - Standard for Mineral Fiber Thermal Insulation for Buildings, Part 1: Material Specification; 2021.
		.10	SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).
.11	TLAC - Best Practices Guide; Current.	.12	UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.
		.1.3	QUALITY ASSURANCE
		.1	Applicator Qualifications: Company specializing in performing the type of work specified in this section, documented experience.
		.2.1	PRODUCTS
2.1	SURFACE BURNING CHARACTERISTICS: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with CAN/ULC S102 or UL 723.	.2	Comply with TLAC Mechanical Insulation Best Practices Guide and CAN/ULC S702.1.
		.2.2	GLASS FIBRE, FLEXIBLE
		.1	Insulation: ASTM C553, flexible, noncombustible blanket.
		.1	Ksi (K) value: 0.052 at 24 degrees C (0.36 at 75 degrees F), when tested in accordance with ASTM C518.
.2	Maximum Service Temperature: 649 degrees C (1200 degrees F).	.3	Maximum Water Vapor Absorption: 5.0 percent by weight.
		.2	Vapor Barrier Jacket:
		.1	Kraft paper with glass fibre yarn and bonded to aluminized film.
		.2	Moisture Vapor Permeability: 0.029 ng/Pa s m (0.02 perm inch), when tested in accordance with ASTM E96/E96M.
.3	Secure with pressure sensitive tape.	.3	Secure with pressure sensitive tape.
		.3	Vapor Barrier Tape:
		.1	Kraft paper reinforced with glass fibre yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.
2.3	GLASS FIBRE, RIGID	.1	Insulation: ASTM C612, rigid, noncombustible blanket.
		.1	Ksi (K) Value: 0.035 at 24 degrees C (0.24 at 75 degrees F), when tested in accordance with ASTM C518.
		.2	Maximum Service Temperature: 232 degrees C (450 degrees F).
		.3	Maximum Water Vapor Absorption: 5.0 percent.
.4	Maximum Density: 128 kg/cu m (8.0 lb/cu ft).	.2	Vapor Barrier Jacket:
		.1	Kraft paper with glass fibre yarn and bonded to aluminized film.
		.2	Moisture Vapor Permeability: 0.029 ng/Pa s m (0.02 perm inch), when tested in accordance with ASTM E96/E96M.
		.3	Secure with pressure sensitive tape.
.3	Vapor Barrier Tape:	.1	Kraft paper reinforced with glass fibre yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.
		.2.4	DUCT LINER
		.1	Glass Fibre Insulation: Non-corrosive, incombustible glass fibre complying with ASTM C1071; flexible blanket, rigid board, and preformed round liner board; impregnated surface and edges coated with poly vinyl acetate polymer, acrylic polymer, or black composite.
		.1	Fungal Resistance: No growth when tested according to ASTM G21.
.2	Apparent Thermal Conductivity: Maximum of 0.045 at 24 degrees C (0.31 at 75 degrees F).	.3	Service Temperature: Up to 121 degrees C (250 degrees F).
		.4	Rated Velocity on Coated Air Side for Air Erosion: 25.4 m/s (5,000 fpm), minimum.
		.5	Minimum Noise Reduction Coefficient:
		.1	13 mm (1/2 inch) Thickness: 0.30.
.2	25 mm (1 inch) Thickness: 0.45.	.2	Adhesive: Waterproof, fire-retardant type, ASTM C916.
		.2.3	EXAMINATION
		.1	Verify that ducts have been tested before applying insulation materials.
.2	Verify that surfaces are clean, foreign material removed, and dry.	.2	Verify that surfaces are clean, foreign material removed, and dry.
		.3.2	INSTALLATION
		.1	Install in accordance with manufacturer's instructions.
.2	Install in accordance with TLAC guidelines.	.2	Install in accordance with TLAC guidelines.
		.3	Insulated ducts conveying air below ambient temperature:
		.1	Provide insulation with vapour barrier jackets.
.3	Insulated ducts conveying air above ambient temperature:	.2	Finish with tape and vapour barrier jacket.
		.3	Continue insulation through walls, sleeves, hangers, and other duct penetrations.
		.4	Insulate entire system including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.
		.4	Insulated ducts conveying air above ambient temperature:
.1	Provide with or without standard vapour barrier jacket.	.2	Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.
		.5	Ducts Exposed in Mechanical Equipment Rooms or Finished Spaces (below 3 meters above finished floor) (below 10 feet above finished floor): Finish with canvas jacket sized for finish painting.
		.6	External Duct Insulation Application:
		.1	Secure insulation with vapour barrier with wires and seal jacket joints with vapour barrier adhesive or tape to match jacket.
.2	Secure insulation without vapour barrier with staples, tape, or wires.	.3	Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.
		.4	Seal vapour barrier penetrations by mechanical fasteners with vapour barrier adhesive.
		.5	Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

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Spec 4 1/8" = 1'-0"	Project Number 2025-12 Project Name & Address Barrie Single Dedicated Accessory Dwelling Unit Barrie, Ontario Sheet Name Specifications Drawn By AU Reviewed By Che Sheet Number M003
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4	Louvers:	2	Provide refrigerant lines internal to units and between indoor and outdoor units, factory cleaned, dried, pressurized and sealed, with insulated suction line.
5	1 Combination louvers.	2	Performance Requirements: See Drawings for additional requirements.
1.2	Goose necks.	3	Electrical Characteristics:
1	RELATED REQUIREMENTS	1	Disconnect Switch: Field installed weatherproof disconnect.
1	Section 099123 - Interior Painting: Painting of ducts visible behind outlets and inlets.	INDOOR AIR HANDLING UNITS FOR DUCTLESS SYSTEMS	
1.3	REFERENCE STANDARDS	1	Indoor Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, evaporator coil, and controls; wired for single power connection with control transformer.
1	SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.	1	1 Location: High-wall.
2	SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).	2	2 Filter return air with washable, antioxidant pre-filter and a pleated anti-allergy enzyme filter.
1.4	SUBMITTALS	2	Evaporator Coils: Copper tube aluminum fin assembly, galvanized or polymer drain pan sloped in all directions to drain, drain connection, refrigerant piping connections, restricted distributor or thermostatic expansion valve.
1	See Section 013000 - Administrative Requirements for submittal procedures.	1	1 Construction and Ratings: In accordance with AHRI 210/240 and UL 207.
2	Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.	2	2 Manufacturer: System manufacturer.
PART 2 PRODUCTS		3	Remote Actuators:
2.1	CEILING SUPPLY REGISTERS/GRILLES	2.3	OUTDOOR UNITS
1	Type: Streamlined and individually adjustable curved blades to discharge air along face of grille, two-way deflection.	1	Outdoor Units: Self-contained, packaged, pre-wired unit consisting of cabinet, with compressor and condenser.
2	Frame: 32 mm (1-1/4 inch) margin with countersunk screw mounting and gasket.	1	1 Comply with AHRI 210/240.
3	Construction: Made of aluminum extrusions with factory enamel finish.	2	2 Cabinet: Galvanized steel with baked enamel finish, easily removed and secured access doors with safety interlock switches, glass fiber insulation with reflective liner.
4	Color: As indicated.	3	3 Construction and Ratings: In accordance with AHRI 210/240 with testing in accordance with ASHRAE Std 23.1 and UL 207.
5	Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.	2	2 Air Cooled Condenser: Aluminum fin and copper tube coil, AHRI 520 with direct drive axial propeller fan resiliently mounted, galvanized fan guard.
2.2	CEILING EXHAUST AND RETURN REGISTERS/GRILLES	3	3 Accessories: Filter drier, high pressure switch (manual reset), low pressure switch (automatic reset), service valves and gauge ports, thermometer well (in liquid line).
1	Type: Streamlined blades, 19 mm (3/4 inch) minimum depth, 19 mm (3/4 inch) maximum spacing, with blades set at 45 degrees, vertical face.	1	1 Provide thermostatic expansion valves.
2	Frame: 32 mm (1-1/4 inch) margin with countersunk screw mounting.	WALL SUPPLY REGISTERS/GRILLES	
3	Fabrication: Steel with 20 gauge, 0.91 mm (20 gauge, 0.0359 inch) minimum frames and 22 gauge, 0.76 mm (22 gauge, 0.0299 inch) minimum blades, steel and aluminum with 20 gauge, 0.91 mm (20 gauge, 0.0359 inch) minimum frame, or aluminum extrusions, with factory baked enamel finish.	1	1 Control by room thermostat to maintain room temperature setting.
4	Color: As indicated.	2	2 Low Ambient Kit: Provide refrigerant pressure switch to cycle condenser fan on when condenser refrigerant pressure is above 1965 kPa (285 psig) and off when pressure drops below 965 kPa (140 psig) for operation to minus 18 degrees C (0 degrees F).
5	Damper: Integral, gang-operated opposed blade type with removable key operator, operable from face.	2.4	ACCESSORY EQUIPMENT
2.4	WALL EXHAUST AND RETURN REGISTERS/GRILLES	1	1 Room Thermostat: Wall-mounted, electric solid state microcomputer based room thermostat with remote sensor to maintain temperature setting; low-voltage, with following features:
1	Type: Streamlined blades, 19 mm (3/4 inch) minimum depth, 19 mm (3/4 inch) maximum spacing, with spring or other device to set blades, vertical face.	1	1 System selector switch (heat-off-cool) and fan control switch (auto-on).
2	Fabrication: Steel frames and blades, with factory baked enamel finish.	2	2 Automatic switching from heating to cooling.
3	Color: As indicated on the Drawings.	3	3 Preferential rate control to minimize overshoot and deviation from setpoint.
2.5	FLOOR SUPPLY REGISTERS/GRILLES	4	4 Short cycle protection.
1	Individually adjustable blades, wide stamped border, single or double blade damper with set screw adjustment.	5	5 Programming based on weekdays, Saturday and Sunday.
2.6	DOOR GRILLES	6	6 Selection features including degree F or degree C display, 12 or 24 hour clock, keyboard disable, remote sensor, fan on-auto.
1	Type: V-shaped louvers of 20 gauge, 0.91 mm (20 gauge, 0.0359 inch) thick steel, 25 mm (1 inch) deep on 13 mm (1/2 inch) centers.	7	7 Battery replacement without program loss.
2	Frame: 20 gauge, 0.91 mm (20 gauge, 0.0359 inch) steel with auxiliary frame to give finished appearance on both sides of door, with factory prime coat finish.	8	8 Thermostat Display:
3	Fabrication: 16 gauge, 0.0598 inch (1.52 mm) thick galvanized steel thick galvanized steel welded assembly, with factory prime coat finish.	1	1 Time of day.
2.7	GOOSENECKS	2	2 Actual room temperature.
1	Type: 100 mm (4 inch) deep frame with adjustable, corrosive resistant blades blades on 45-degree slope with center baffle and return bend, heavy channel frame, 13 mm (1/2 inch) square mesh screen over intake or exhaust end.	3	3 Programmed temperature.
2	Fabrication: 16 gauge, 0.0598 inch (1.52 mm) thick galvanized steel thick galvanized steel welded assembly, with factory prime coat finish.	4	4 Programmed time.
2.8	GOOSENECKS	5	5 Day of week.
1	Fabricate in accordance with SMACNA (DCS) of minimum 18 gauge, 1.21 mm (18 gauge, 0.0598 inch) galvanized steel.	6	6 System Mode Indication: Heating, Cooling, Fan Auto, Off, and On, Auto or On, Off.
2	Mount on minimum 300 mm (12 inch) high curb base where size exceeds 230 mm by 230 mm (9 inch by 9 inch).	PART 3 EXECUTION	
PART 3 EXECUTION		3.1	EXAMINATION
3.1	INSTALLATION	1	1 Verify that substrates are ready for installation of units and openings are as indicated on Shop Drawings.
1	Install in accordance with manufacturer's instructions.	2	2 Verify that proper power supply is available and in correct location.
2	Comply with SMACNA (ASMM) for flashing/counter-flashing of roof penetrations and supports for roof curbs and roof mounted equipment.	3	3 Verify that proper fuel supply is available for connection.
3	Check location of outlets and inlets and make necessary adjustments in position to comply with architectural features, symmetry, and lighting arrangement.	3.2	INSTALLATION
4	Install diffusers to ductwork with air tight connection.	1	1 Install in accordance with manufacturer's instructions and requirements of local authorities having jurisdiction.
5	Provide balancing dampers on duct take-off to diffusers, and grilles and registers, despite whether dampers are specified as part of the diffuser, or grille and register assembly.	2	2 Install in accordance with NFPA 90A and NFPA 90B.
6	Paint ductwork visible behind air outlets and inlets matte black. Refer to Section 099123.	3	3 Install refrigeration systems in accordance with CSA B52 and ASHRAE Std 15.
END OF SECTION 233700		END OF SECTION 238126.13	

SECTION 237223	
PACKAGED AIR TO-AIR ENERGY RECOVERY UNITS	
PART 1 GENERAL	
SECTION INCLUDES	
1.1	1 Energy recovery units.
2	2 Filters.
3	3 Vibration isolation.
4	4 Accessories.
1.2	WARRANTY
1	1 See Section 017800 - Closeout Submittals for additional warranty requirements.
PART 2 PRODUCTS	
ENERGY RECOVERY UNITS	
2.1	1 Energy Recovery Units for Spot Ventilation or Whole House Ventilation: Prefabricated packaged system designed by manufacturer with exchange capillary core.
1	1 Access: Hinged and/or screwed access panels on front.
2	2 Suspension brackets at the unit base.
3	3 Framing: Galvanized steel body.
4	4 Provide a ceiling grille or access panel.
5	5 Provide with MERV 15 filters on supply and exhaust air ducts.
6	6 Provide exterior wall cap.
7	7 Permanent name plate listing manufacturer mounted inside door near electrical panel.
2.2	ACCESSORIES
1	1 Remote Indicating Panel: Provide remote indication of status of unit power on, wheel rotation alarm, outside air dirty filter and return air dirty filter.
PART 3 EXECUTION	
EXAMINATION	
3.1	1 Verify that structure is ready for installation of unit, that openings in deck for ductwork, if required, are correctly sized and located, and that mechanical and electrical utilities supplying unit are of correct capacities and are accessible.
INSTALLATION	
3.2	1 Provide openings for suitable ductwork connection.
SYSTEM STARTUP	
3.3	1 Provide services of manufacturer's authorized representative to provide start up of unit.
CLEANING	
3.4	1 Clean filters, air plenums, interior and exposed-to-view surfaces prior to Substantial Performance.
END OF SECTION 237223	

SECTION 238126.13	
SMALL-CAPACITY SPLIT-SYSTEM AIR CONDITIONERS	
PART 1 GENERAL	
SECTION INCLUDES	
1.1	1 Air-source heat pumps.
2	2 Air-cooled condensing units.
3	3 Indoor air handling (fan and coil) unit for ductless systems.
4	4 Controls.
1.2	RELATED REQUIREMENTS
1	1 Section 260583 - Wiring Connections: Electrical characteristics and wiring connections and installation and wiring of thermostats and other controls components.
1.3	REFERENCE STANDARDS
1	1 AHRI 210/240 - Standard for Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment; 2008, Including All Addenda.
2	2 AHRI 520 - Performance Rating of Positive Displacement Condensing Units; 2004.
3	3 ASHRAE Std 15 - Safety Standard for Refrigeration Systems; 2013.
4	4 ASHRAE Std 23.1 - Methods of Testing for Rating the Performance of Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Temperatures of the Refrigerant; 2010.
5	5 CSA B52 - Mechanical Refrigeration Code; 2018.
6	6 NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
7	7 NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2018.
8	8 UL 207 - Standard for Refrigerant-Containing Components and Accessories, Nonelectrical; Current Edition, Including All Revisions.
1.4	SUBMITTALS
1	1 See Section 013000 - Administrative Requirements for submittal procedures.
2	2 Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
3	3 Shop Drawings: Indicate assembly, required clearances, and location and size of field connections.
4	4 Design Data: Indicate refrigerant pipe sizing.
PART 2 PRODUCTS	
SYSTEM DESIGN	
2.1	1 Split-System Heating and Cooling Units: Self-contained, packaged, matched factory-engineered and assembled, pre-wired indoor and outdoor units; UL listed.
1	1 Heating and Cooling: Air-source electric heat pump located in outdoor unit with evaporator; auxiliary electric heat.

General Notes

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Under no circumstances shall the contractor proceed in uncertainty.

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Drawings are scaled for Arch D - 24x36	
1	
Designer Seal	P.Eng Seal (If Required)
P.Eng Contact Info (If Required)	

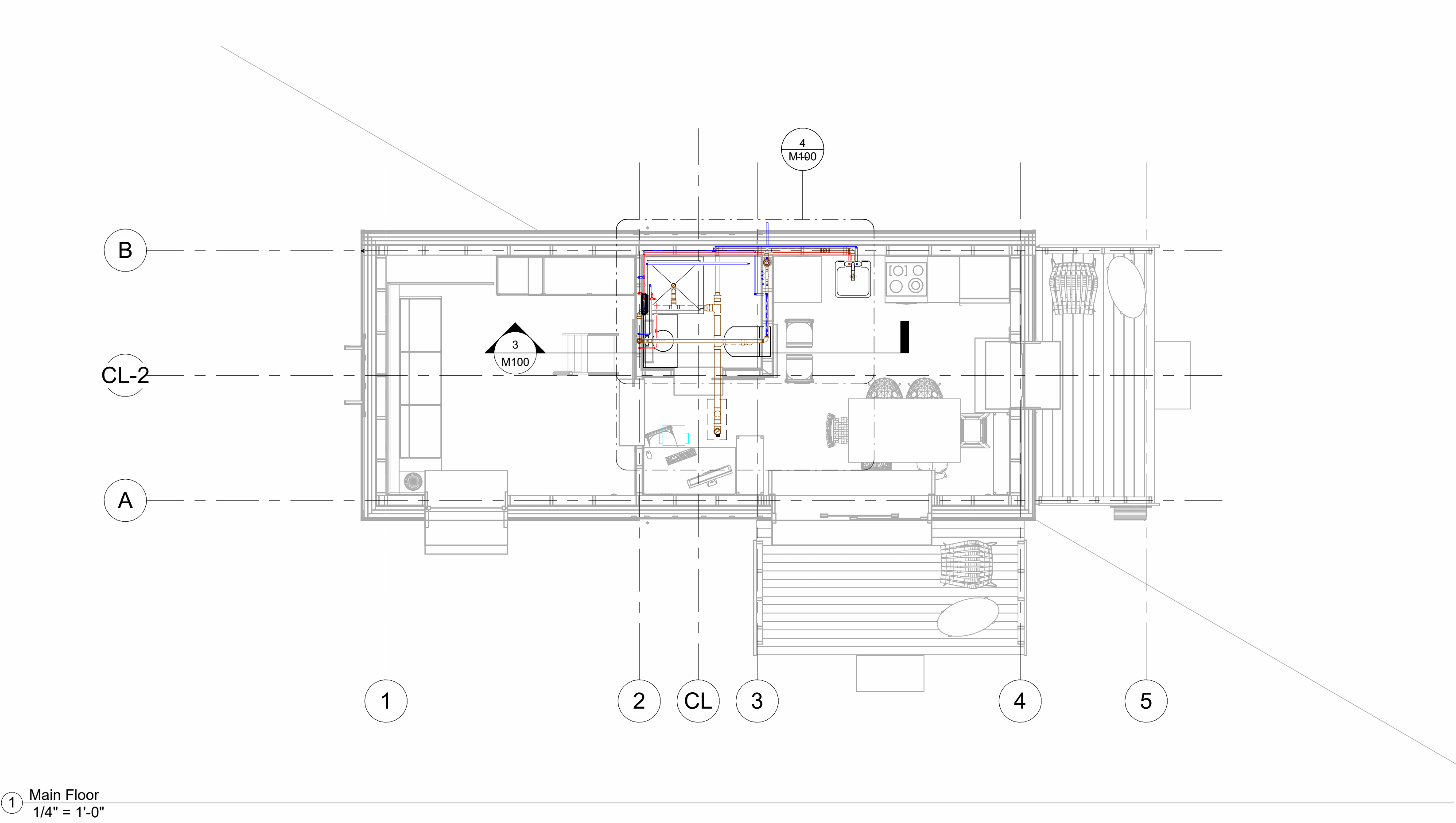
Revision Schedule		
Revision Number	Revision Description	Revis Dat
1	Issued for Coordination	May 15 2025
2	Updated for Coordination	June 1 2025
3	WIP	June 1 2025



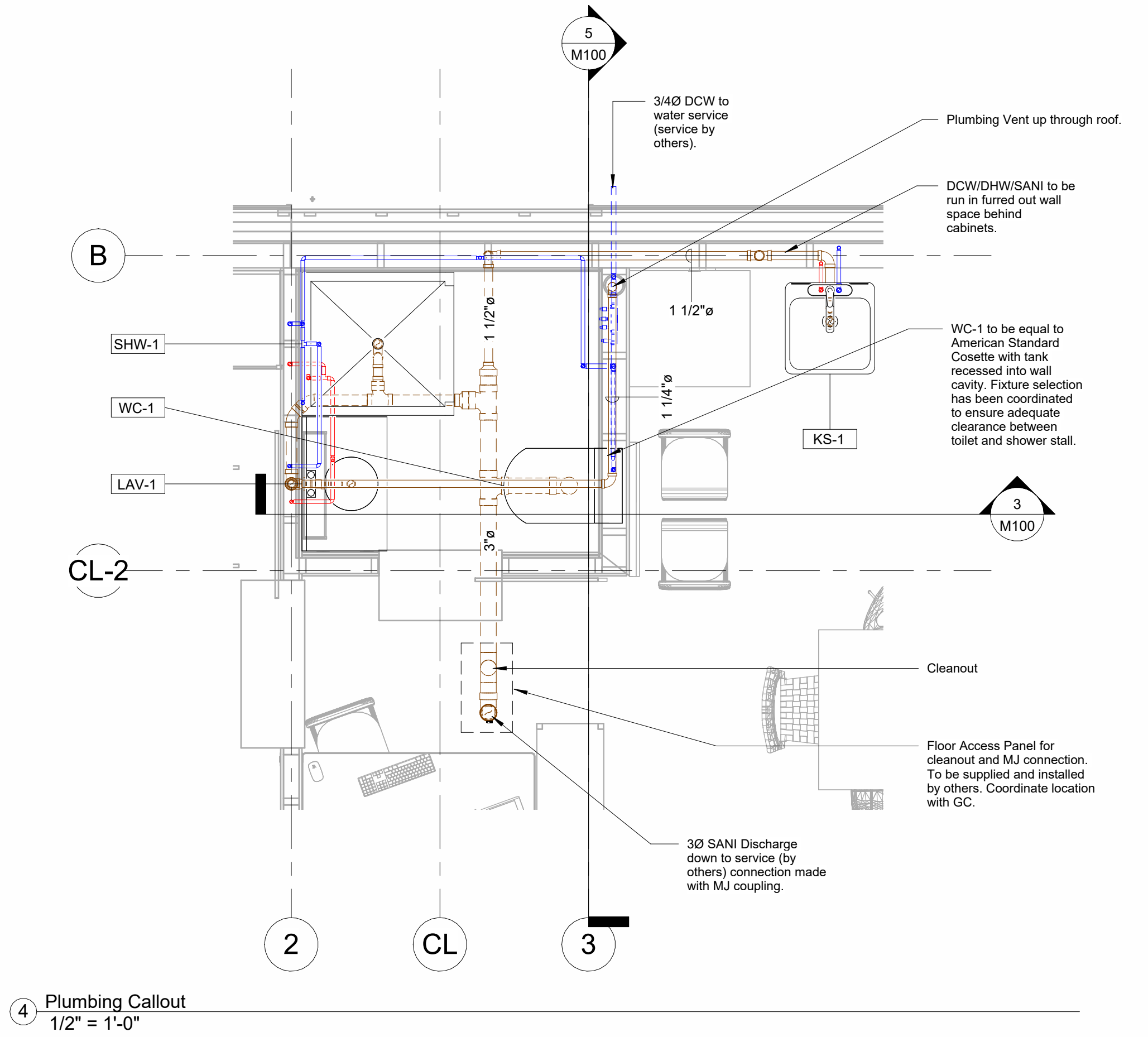
Delta-T Designs Inc.
16 Winstar Rd Unit 4
Oro-Medonte, Ontario
L0L 2L0

705.791.9000
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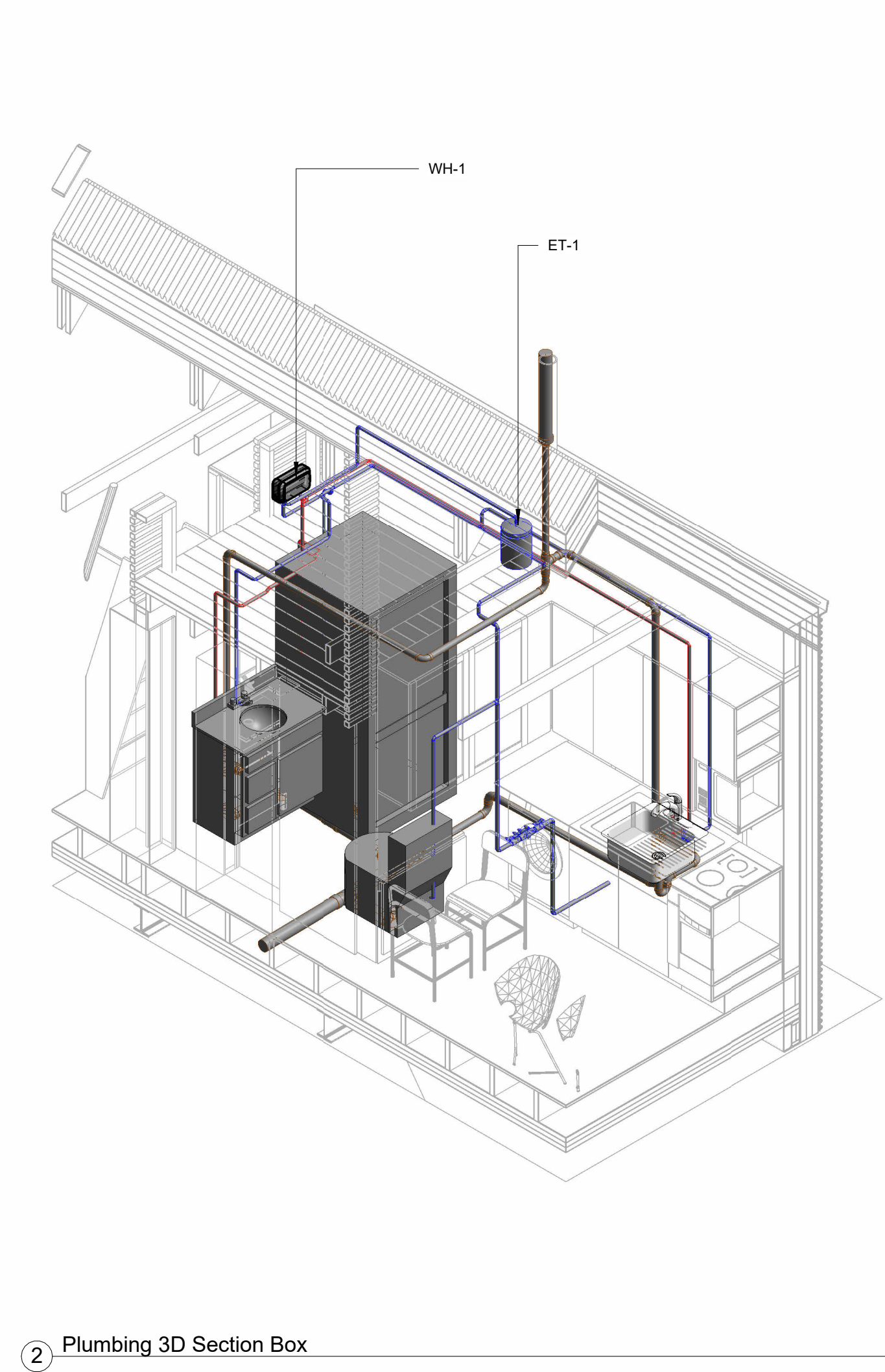
Client Name	TBD
Project Number	2025-12
Project Name & Address	Barrie Single Dedicated Accessory Dwelling Unit Barrie, Ontario
Sheet Name	Specifications
Drawn By	Al
Reviewed By	Che
Sheet Number	M004



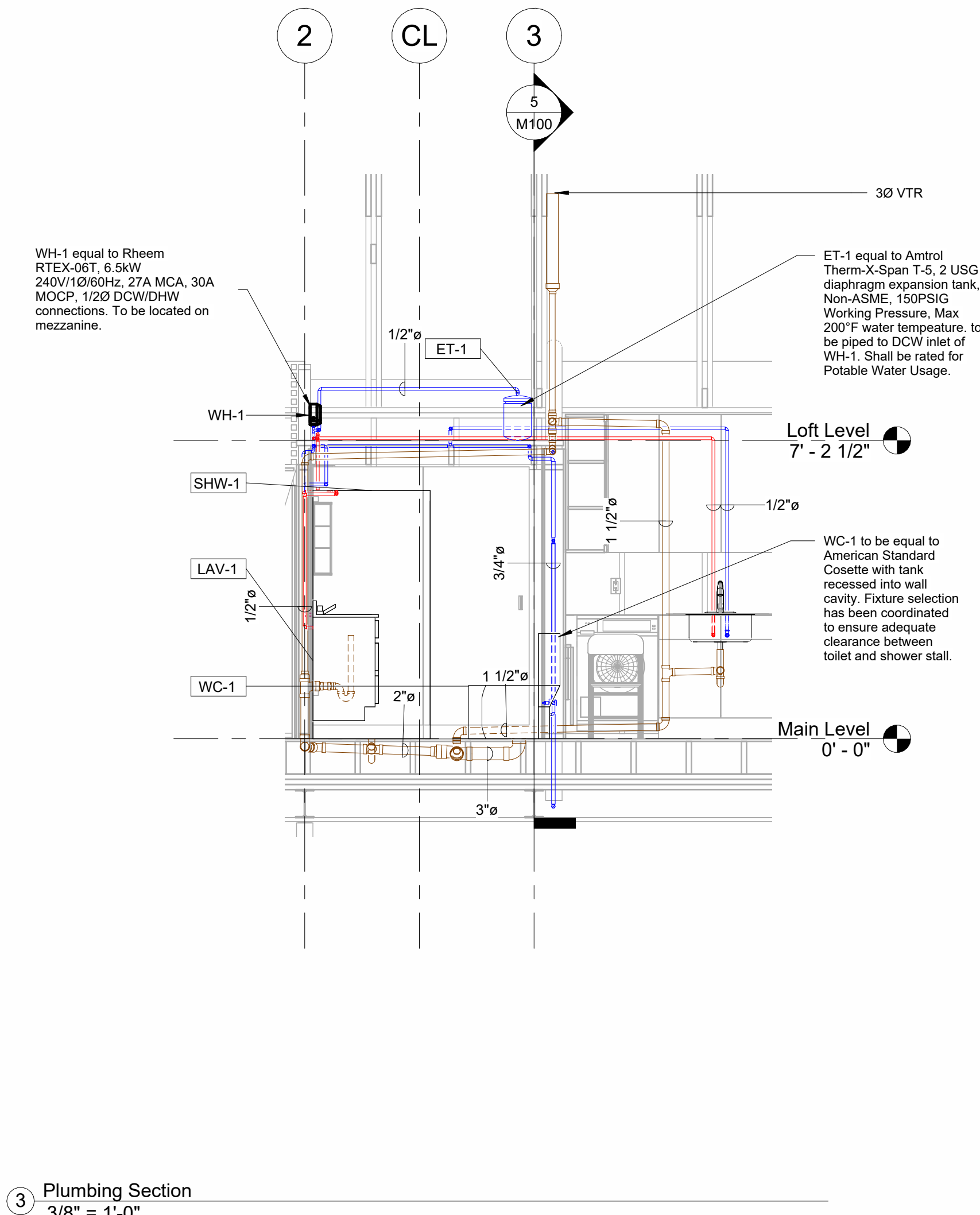
1 Main Floor
1/4" = 1'-0"



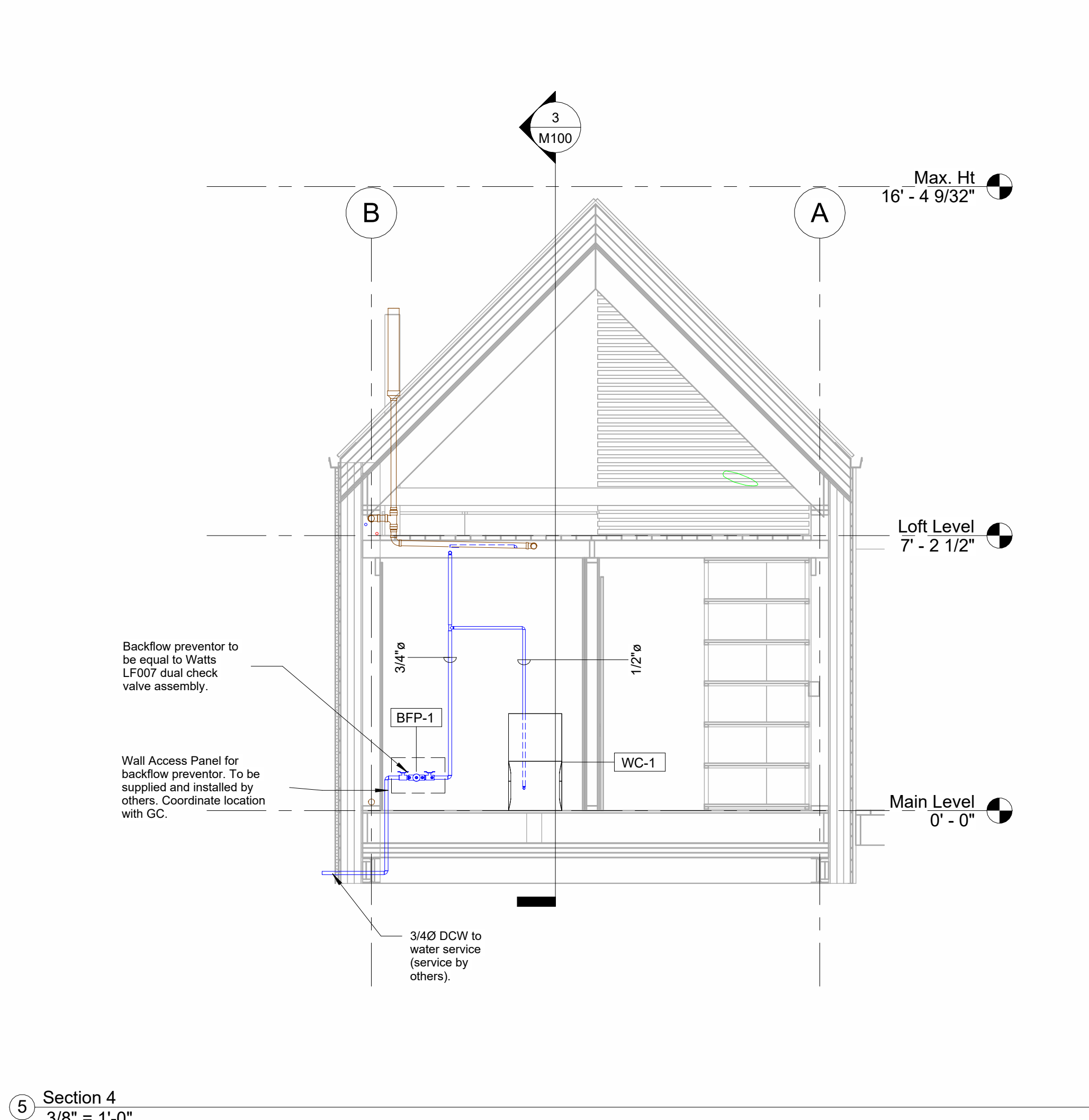
4 Plumbing Callout
1/2" = 1'-0"



2 Plumbing 3D Section Box



3 Plumbing Section
3/8" = 1'-0"



5 Section 4
3/8" = 1'-0"

General Notes

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Drawings are scaled for Arch D - 24x36

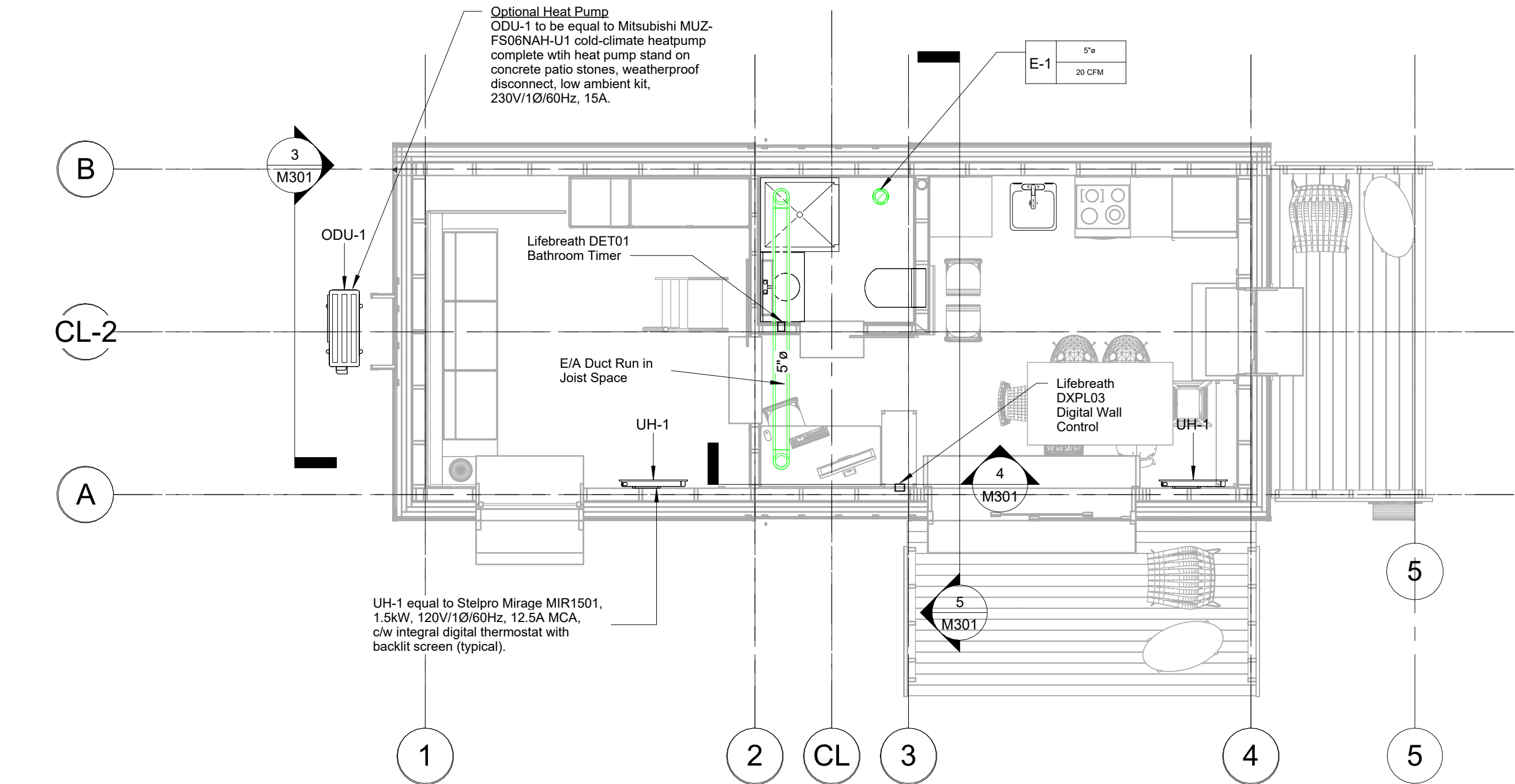
Revision Number	Revision Description	Revision Date
1	Issued for Coordination	May 15, 2025
2	Updated for Coordination	June 1, 2025
3	WIP	June 1, 2025

Delta-T Design

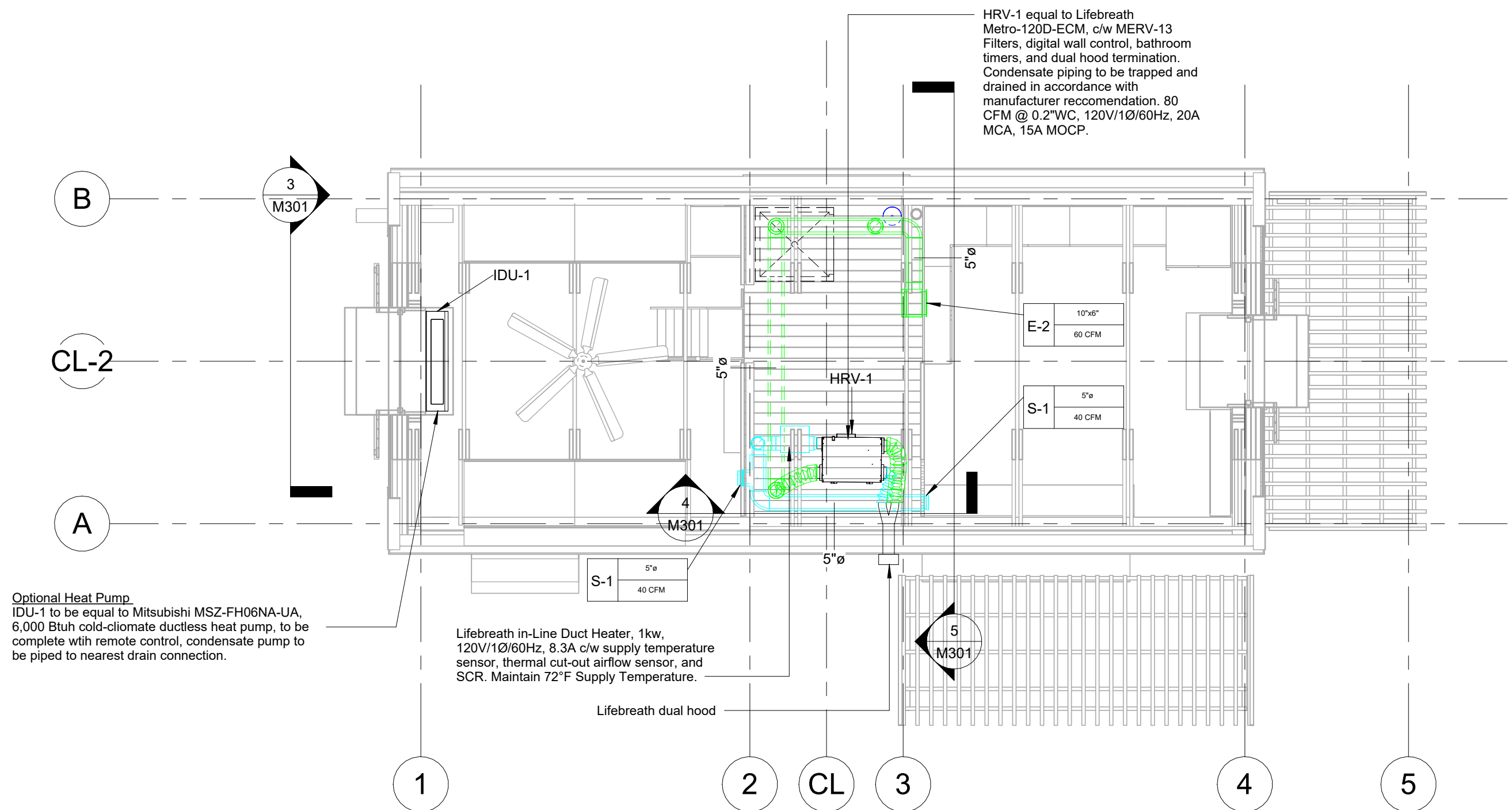
Delta-T Designs Inc.
16 Winstar Rd Unit 4
Oro-Medonte, Ontario
L0L 2L0

705.791.9000
niss@deltatdesigns.ca

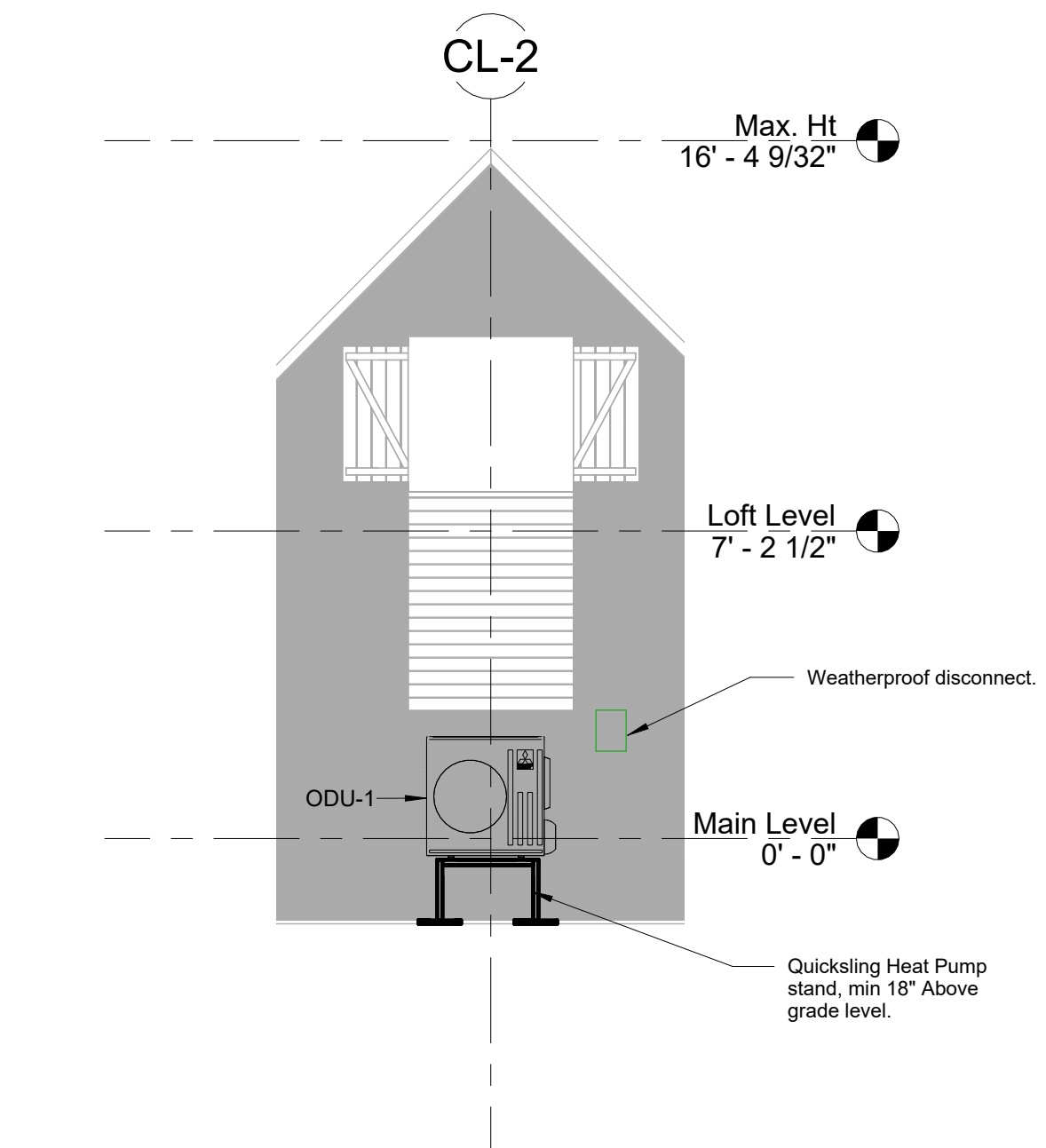
Client Name	Project Number	Project Name & Address	Sheet Name	Drawn By	Reviewed By	Sheet Number
TBD	2025-12	Barrie Single Dedicated Accessory Dwelling Unit Barrie, Ontario	Plumbing Drawings			M100



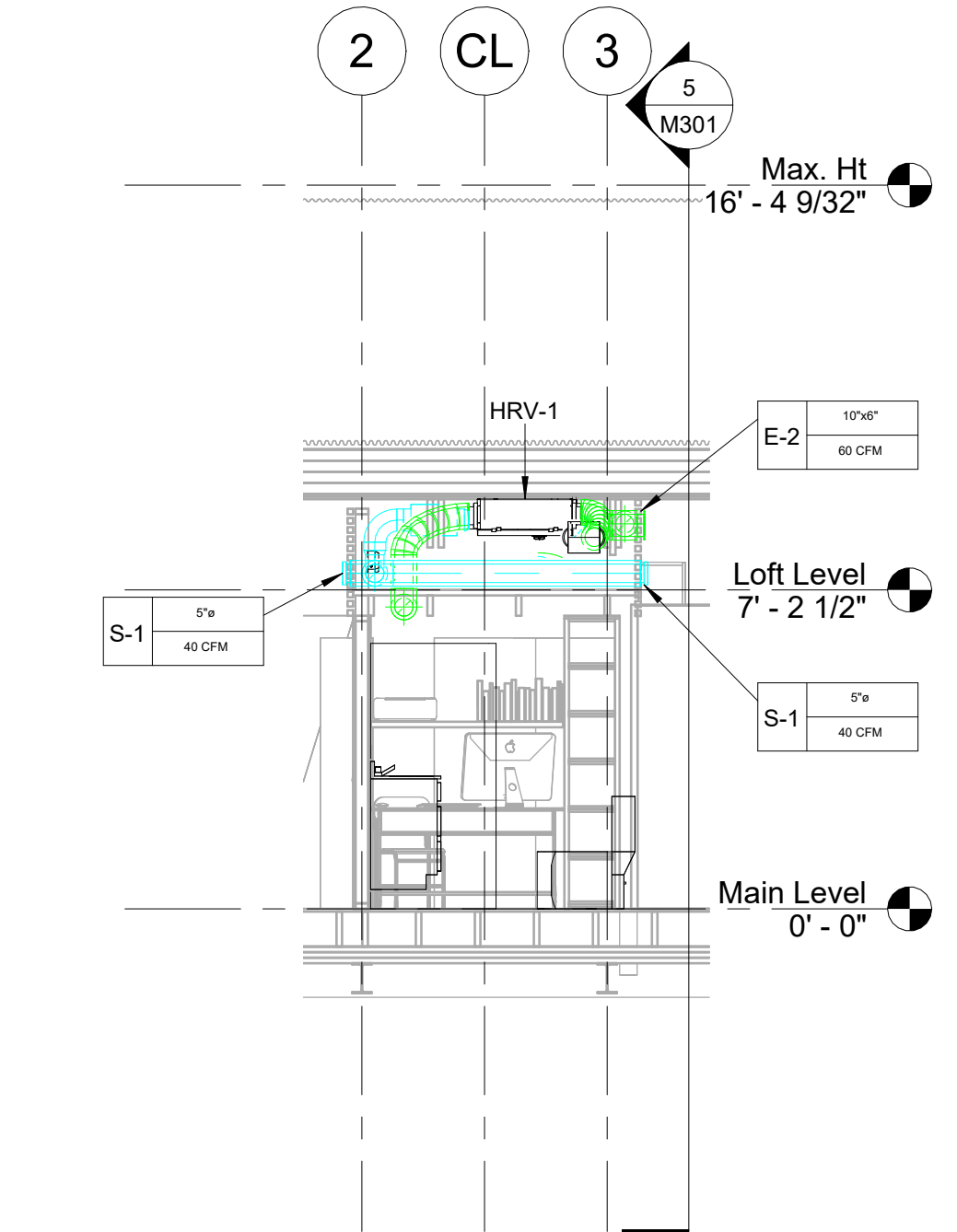
① HVAC Main Level
1/4" = 1'-0"



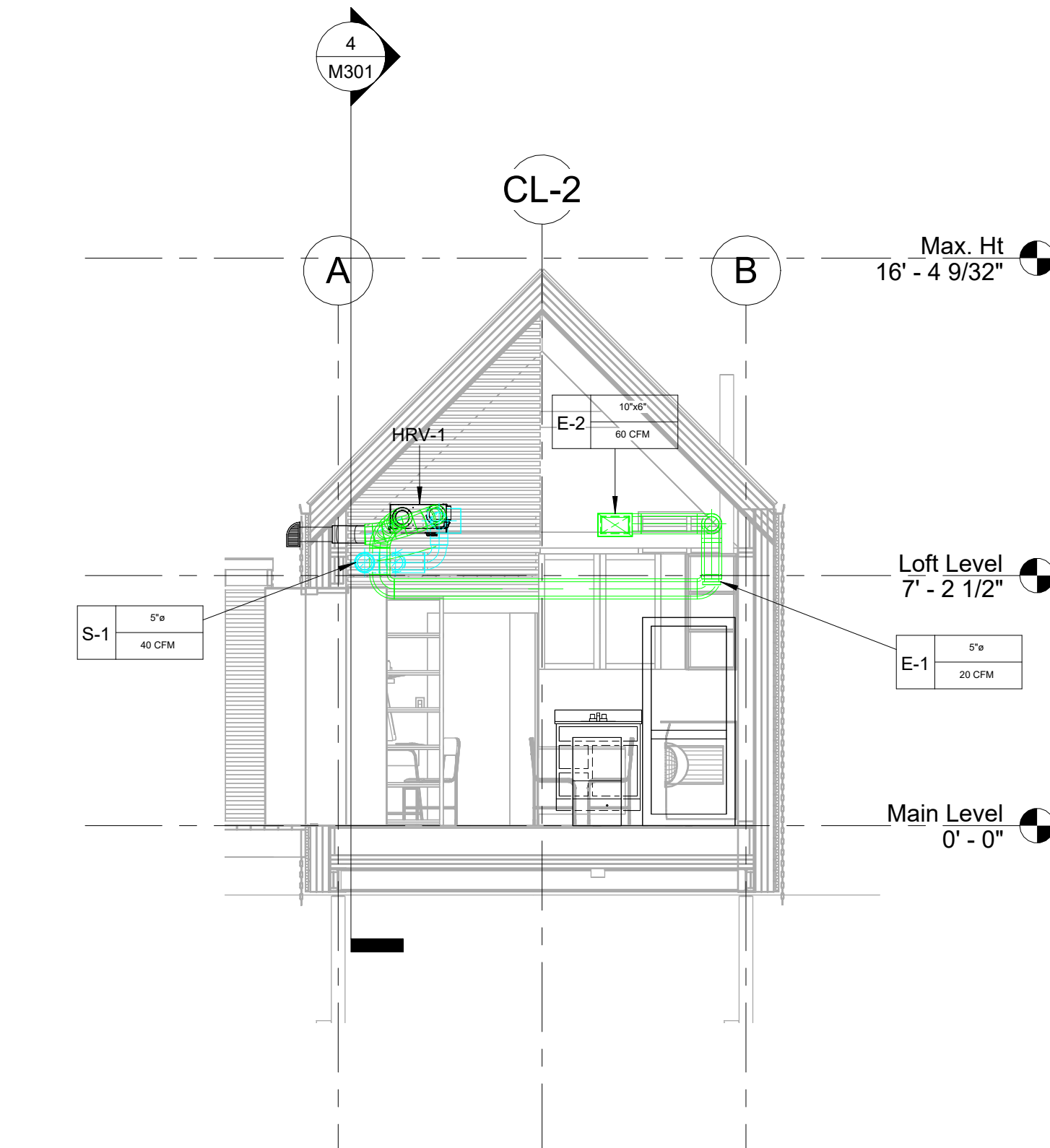
② Loft Level
1/4" = 1'-0"



③ Section 1
1/4" = 1'-0"



④ Section 2
1/4" = 1'-0"



⑤ Section 3
1/4" = 1'-0"

General Notes

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Drawings are scaled for Arch D - 24x36

Designer Seal

P.Eng Seal (If Required)

P.Eng Contact Info (If Required)

Revision Schedule		
Revision Number	Revision Description	Revision Date
1	Issued for Coordination	May 15, 2025
2	Updated for Coordination	June 1, 2025
3	WIP	June 1, 2025

Delta-T Designs Inc.

16 Winstar Rd Unit 4

Oro-Medonte, Ontario

L0L 2L0

705.791.9000

niss@deltatdesigns.ca

Client Name

TBD

Project Number

2025-12

Project Name & Address

Barrie Single Dedicated Accessory Dwelling Unit

Barrie, Ontario

Sheet Name

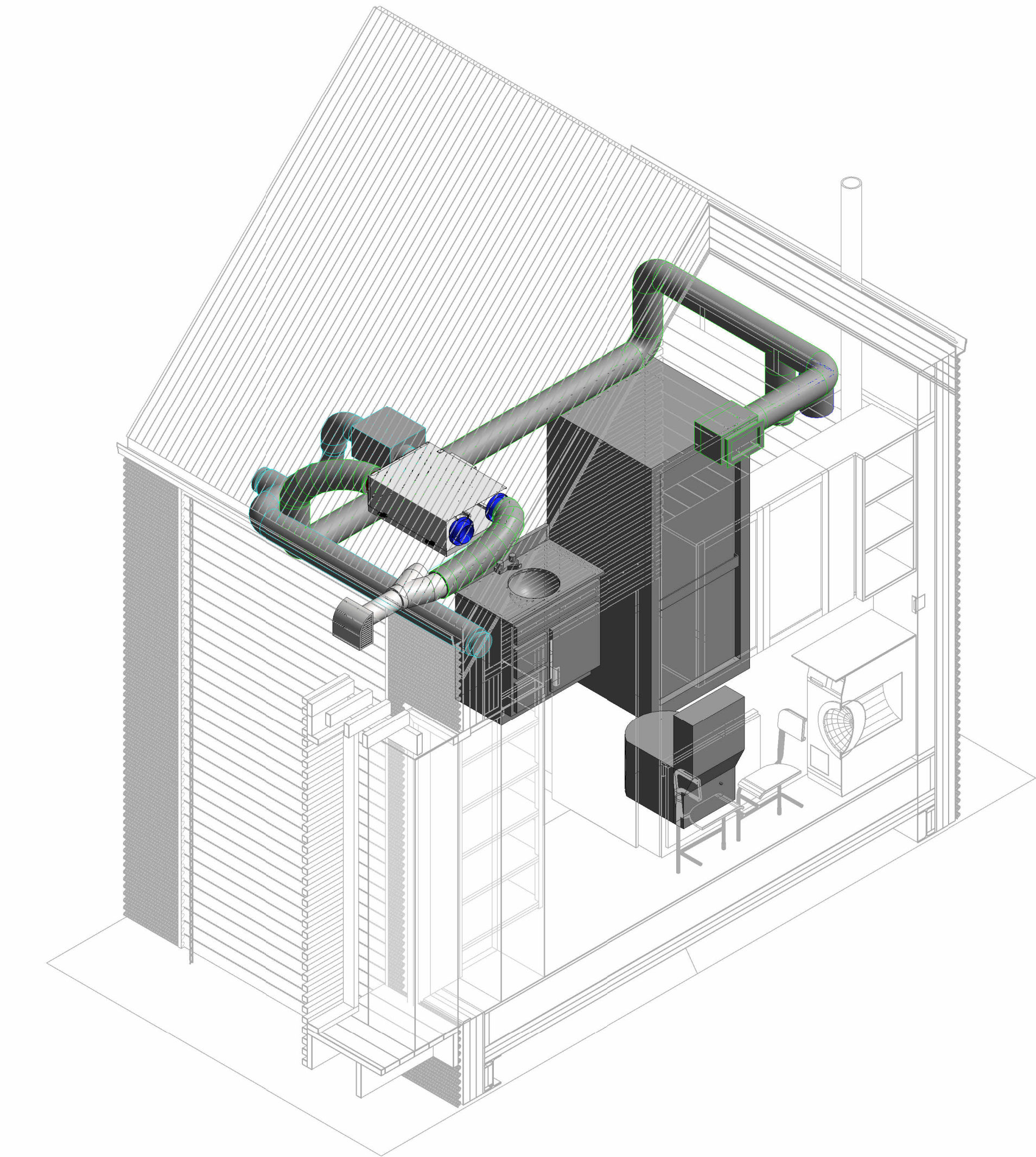
HVAC Drawings

Drawn By

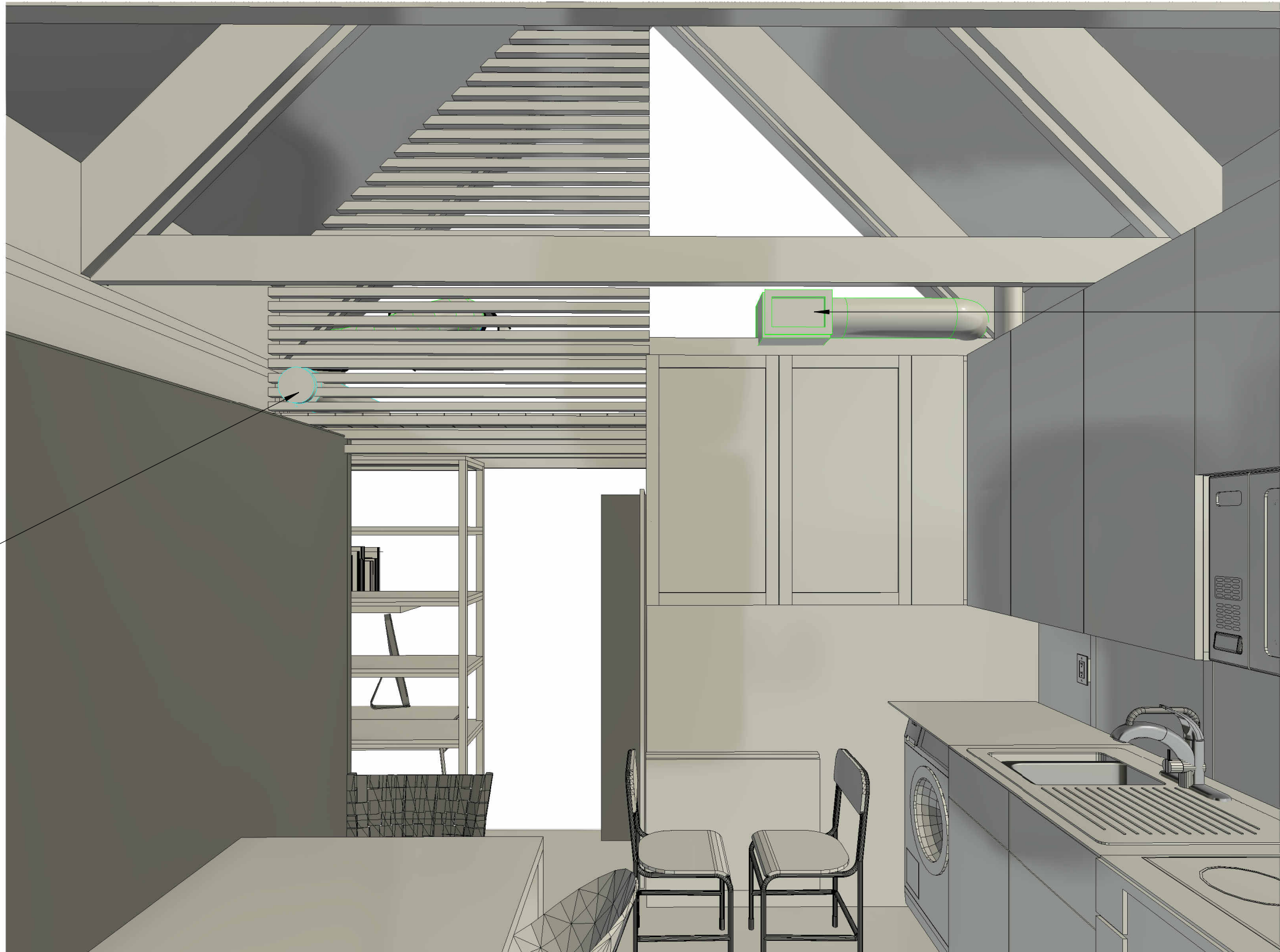
Reviewed By

Sheet Number

M301



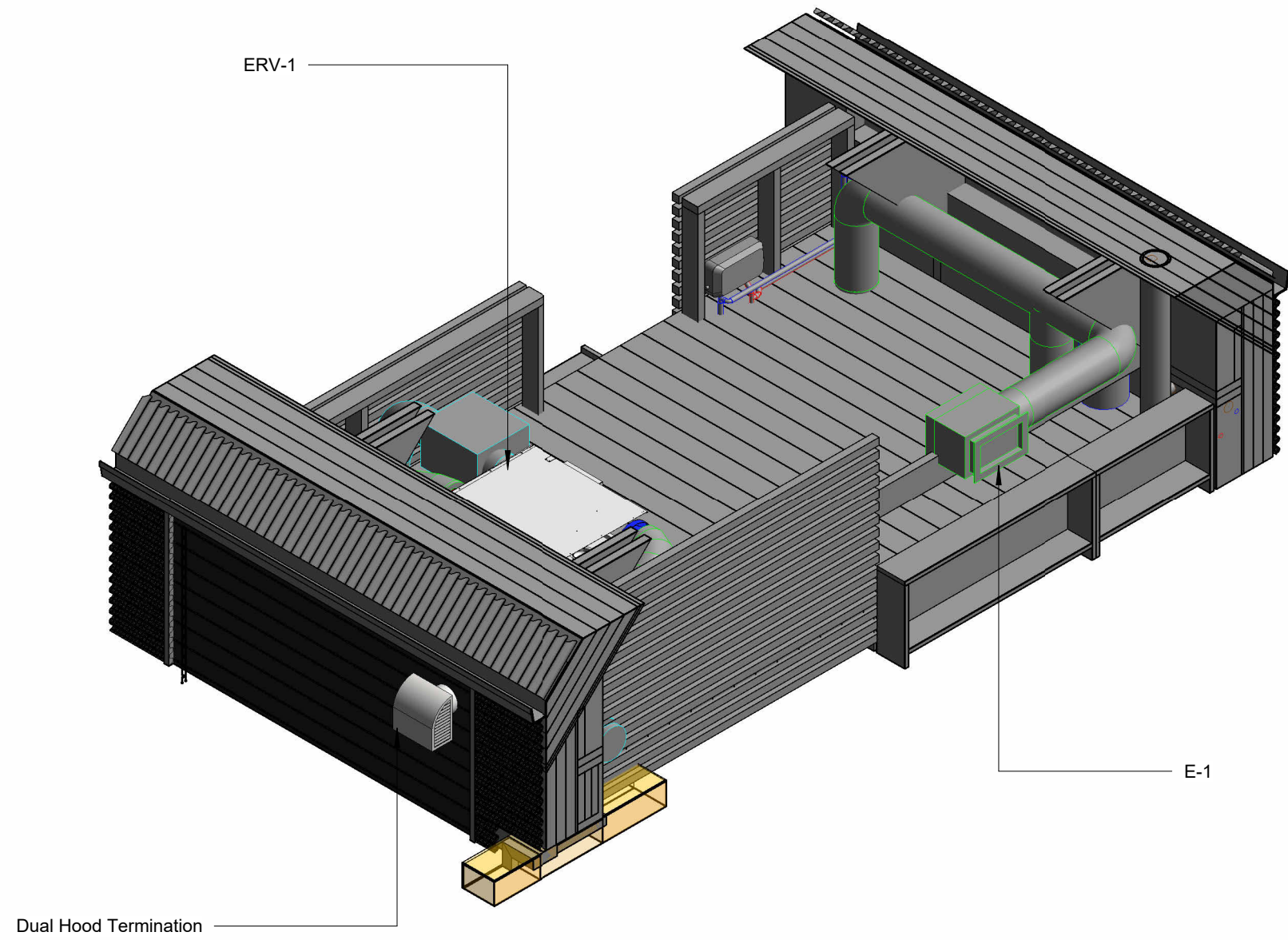
1 HVAC 3D Section



2 3D View 1



3 3D View 2



4 Mechanical Loft 3D

General Notes

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Under no circumstances shall the contractor proceed in the absence of the designer's approval.

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Drawings are scaled for Arch D - 24x36

Designer Seal P.Eng Seal (If Required)

P.Eng Contact Info (If Required)

Revision Schedule		
Revision Number	Revision Description	Revision Date
1	Issued for Coordination	May 15, 2025
2	Updated for Coordination	June 1, 2025
3	WIP	June 1, 2025

Delta-T Design

Delta-T Designs Inc.
16 Winstar Rd Unit 4
Oro-Medonte, Ontario
L0L 2L0

705.791.9000
niss@deltatdesigns.ca

Client Name TBD

Project Number 2025-12

Project Name & Address
Barrie Single Dedicated Accessory Dwelling Unit
Barrie, Ontario

Sheet Name
HVAC Drawings

Drawn By

Reviewed By

Sheet Number

M302

Heat loss and gain calculation summary sheet

These documents issued for the use of **Delta-T Designs Inc.** and may not be used by any other persons without authorization. Documents for permit and/or construction are signed in red.

CSA/F2001/Metric
Standard Form No. 1
Project no:
2025-12 Rev-2

Building location					
Model:		Site:			
Address:		Lot:			
City and Province:		Barrie		Postal code:	
		On			

Calculations based on					
Dimensional information based on:					
Attachment:		Detached		Floor facing: North Assumed? No	
Number of stories:		1		Air tightness: Present (1961-1) (ACH=3.57) Assumed? Yes	
Weather location:		Barrie, ON, CA		Wind exposure: Light local shielding	
HRV?		Vented		Internal shading: (none) Occupants: 2	
Recovery %:		75 %		Units: Imperial (I-P)	

Heating design conditions			Cooling design conditions		
Outdoor temp:	-11 °F	Indoor temp:	72 °F	Mean soil temp:	0 °F
Above grade walls			Below grade walls		
Style A:	p.u.s.s.w. - firm wall, mtl ext, +1/32 cav ins, 1/2" wood inf fresh, +20 ext bd ins, 2x4" wood fin, 1/2" c.o. stud			Style A	
Style B:				Style B	
Style C:				Style C	
Style D:				Style D	

Floors on soil		Ceilings	
Style A:		Style A:	1250 pfc/cy ceiling, asphalt shingles roof mat, wd corr, +6 deck ins, 1" thins
Style B:		Style B:	
Style C:		Style C:	

Exposed floors		Doors	
Style A:	15A17 (2 ft floor, firm ft, 1/2" thins, vinyl ft fresh, +30 cav ins, amb ext)	Style A:	
Style B:		Style B:	

Windows		Skylights	
Style A:	+ -3 glazing, cl bare out, 1/2" gss, insulated vinyl firm mat, cl bare mat, argon gas, 1x4" trk, cl inv, 5 ft overhang (2 ft window ft, 0.5 ft exp.), 11 ft head ht	Style C:	
Style B:	+ -3 glazing, cl bare out, 1/2" gss, insulated vinyl firm mat, cl bare mat, argon gas, 1x4" trk, cl inv, 5 ft overhang (2 ft window ft, 0.5 ft exp.), 11 ft head ht	Style B:	
Style C:	+ -3 glazing, cl bare out, 1/2" gss, insulated vinyl firm mat, cl bare mat, argon gas, 1x4" trk, cl inv, 6:07 ft head ht	Style A:	
Style D:	+ -3 glazing, cl bare out, 1/2" gss, insulated vinyl firm mat, cl bare mat, argon gas, 1x4" trk, cl inv, 5 ft overhang (2 ft window ft, 0.5 ft exp.), 6:07 ft head ht	Style B:	

Attached documents:

Notes: Orientation is unknown. Will be placed anywhere in Barrie.

Calculations performed by	
Name:	
Company: Delta-T Designs Inc.	
Address: 16 Winstar Rd, Unit 4	
City and Province:	Oro-Medonte On
Postal code:	L0L 2L0
Telephone:	705-791-9000
E-mail: niss@deltatdesigns.ca	

MRP cert.#: 9049


Load Short Form
Entire Building
Delta-T Designs Inc.

Job: 2025-12 Rev-2
 Date: May 14, 2025
 By:

Cert.#: 9049
 16 Winstar Rd, Unit 4, Oro-Medonte, On L0L 2L0 Phone: 705-791-9000 Email: riss@delatdesigns.ca License: BCIN#38852, OACETT #893546



Loads for Multiple Orientations
Entire Building
Delta-T Designs Inc.

Job: 2025-12 Rev-2
 Date: May 14, 2025
 By:

Cert.#: 9049

16 Winstar Rd, Unit 4, Oro-Medonte, On L0L 2L0 Phone: 705-791-9000 Email: ries@delatadesigns.ca License: BCIN #38852, OACETT #893456



Building Analysis
Entire Building
Delta-T Designs Inc.

Job: 2025-12 Rev-2
 Date: May 14, 2025
 By:

Cert #: 9049
 16 Winger Rd, Unit 4, Oro-Medonte, ON L0L 2L0 Phone: 705-791-0000 Email: niss@delatadesigns.ca License: BCN #38852, OACETT #930546

Project Information				
For:	Barrie DADU Singles Barrie, On			
Design Information				
	Htg	Ctg	Infiltration	
Outside db (°F)	-11	82	Method	F280-12
Inside db (°F)	72	75	Expos. categ	Light local shielding
Design TD (°F)	83	7	Const. categ	Present (1961+) (ACH=3-57)
Daily range		M	Number of stories	1.0.
Inside humidity (%)	30	50		
Moisture difference (gr/lb)	33	24		

HEATING EQUIPMENT		COOLING EQUIPMENT	
Make		Make	
Trade		Trade	
Model		Cond	
AHRI ref		Coil	
		AHRI ref	
Efficiency	80 AFUE	Efficiency	0 SEER
Heating input	0 Btuh	Sensible cooling	0 Btuh
Heating output	0 Btuh	Latent cooling	0 Btuh
Temperature rise	0 °F	Total cooling	0 Btuh
Actual air flow	347 cfm	Actual air flow	347 cfm
Air flow factor	0.032 cfm/Btuh	Air flow factor	0.044 cfm/Btuh
Static pressure	0 in H ₂ O	Static pressure	0 in H ₂ O
Space thermostat		Load sensible heat ratio	0.77

ROOM NAME	Area (ft ²)	Htg load (Btu/h)	Ctg load (Btu/h)	Htg AV/F (cfm)	Ctg AV/F (cfm)
Bedroom	127	4084	3644	131	161
Bath	53	697	162	22	7
Kitch/Din	160	6049	4066	194	179
Entire Building	d	319	10830	7872	347
Other equip loads		0	0		
Equip. @ 0.87 RSM			6856		
Latent cooling			2362		
TOTALS	319	10830	9218	347	347

Bold/Italic values have been manually overridden

 **wrightsoft®** AMRAP | Facilities Training Company Right-Suite® Universal 2023.0.0.4 RSU22459 2025-May-15 22:03:13

...gle DADU2025-12 DADU F280 Load Cells Rev-2.nip Calc = F280-12 Front Door faces: N Page 1

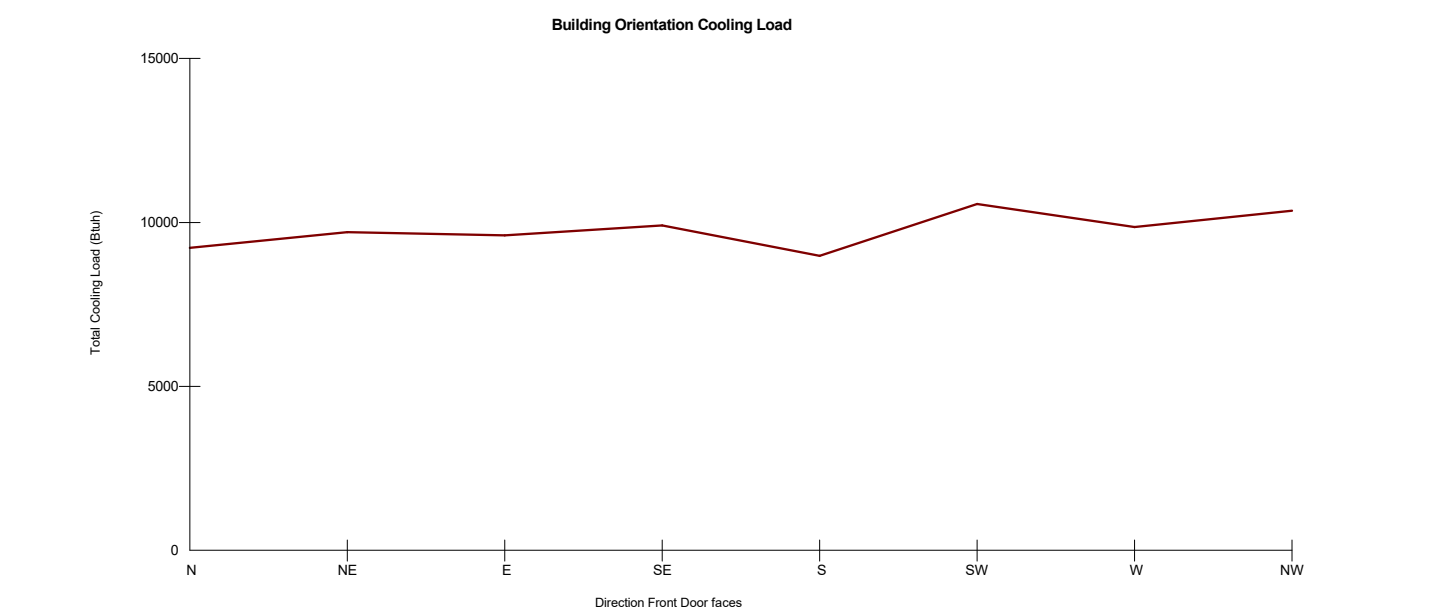
wrightsoft®
ANALYSIS / BUILDING SOFTWARE COMPANY

Right-Strike® Universal 2023 23.0.0.4 RSU22459
 2025-May-15 22:13:03

...gle DADU2025-12 DADU F280 Load Calc Rev-2.rup Calc = F280-12 Front Door faces: N
 Page 1

Project Information				
For:	Barrie DADU Singles Barrie, On			
Design Conditions				
Location:		Indoor:	Heating	Cooling
Barrie, ON, CA		Indoor temperature (°F)	72	75
Elevation: 968 ft		Design TD (°F)	83	7
Latitude: 44°N		Relative humidity (%)	30	50
Outdoor:	Heating	Cooling	Moisture difference (grlb)	32.5
Dry bulb (°F)	-11	82	Infiltration:	24.0
Daily range (°F)	-	19 (M)		
Wet bulb (°F)	-	70		

Front Door	North	Northeast	East	Southeast	South	Southwest	West	Northwest
Sensible Load (Btuh)	6856	7219	7148	7369	6681	7856	7330	7706
Latent Load (Btuh)	2362	2486	2462	2538	2301	2706	2525	2654
Total Load (Btuh)	9218	9705	9611	9907	8982	10562	9855	10361
Heating AVF (cfm)	347	365	362	373	338	398	371	390
Cooling AVF (cfm)	347	365	362	373	338	398	371	390



Current Orientation: Front Door faces North
Highest Cooling Load: Front Door faces Southwest


 Right-Suite® Universal 2023 23.0.04 RSU24259
 2025-May-15 22:13:03

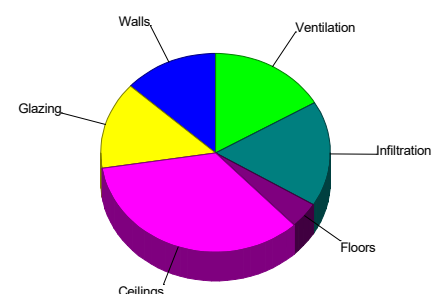
..gle DADU\2025-12 DADU F280 Load Calc Rev-2.rup Calc = F280-12 Front Door faces: N
 Page 1

Project Information				
For:	Barrie DADU Singles Barrie, On			
Design Conditions				
Location:		Indoor:	Heating	Cooling
Barrie, On, CA		Indoor temperature (°F)	72	75
Elevation:	968 ft	Design TD (°F)	63	63
Latitude:	44°N	Relative humidity (%)	30	50
Outdoor:	Heating	Cooling	Infiltration:	
Dry bulb (°F)	-11	82	F280-12	
Daily range (°F)	-	19 (M)	Method	Light load shielding
Wet bulb (°F)	-	70	Expos. catag	Presnet (196-1) (ACH=3.57)
Wind speed (mph)	15.0	7.5	Const. catag	
			Number of stories	10



Component	Btu/h ^{ft}	Btu/h	% of load
Walls	2.5	1439	13.3
Glazing	13.1	1538	14.2
Doors	0	0	0
Ceilings	8.7	3740	34.5
Floors	1.4	458	4.2
Infiltration	15.9	1858	17.2
Ducts	0	0	0
Hydronic	0	0	0
Humidification	0	0	0
Ventilation	0	1797	16.6
Adjustments	0	0	0
Total		10830	100.0

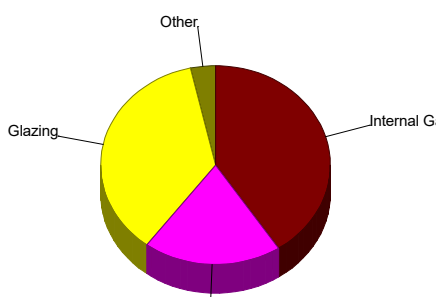
A pie chart illustrating the distribution of the total heating load across various building components. The largest portion is for Ceilings at 34.5%, followed by Infiltration at 17.2%, Ventilation at 16.6%, Glazing at 14.2%, Walls at 13.3%, and Floors at 4.2%. All other components (Doors, Ducts, Hydronic, Humidification, and Adjustments) contribute 0% to the total load.



Cooling

Component	Btuh/ft²	Btuh	% of load
Walls	0.1	73	0.9
Glazing	24.4	2854	36.3
Doors	0	0	0
Ceilings	3.6	1533	19.5
Floors	0.0	13	0.2
Infiltration	0.3	38	0.5
Ducts		0	0
Ventilation		153	1.9
Internal gains		3206	40.7
Blower		0	0
Adjustments		0	0
Total		7872	100.0

A 3D pie chart illustrating the distribution of cooling load components. The largest slice is 'Internal Gains' in dark red, representing 40.7% of the total load. The next largest is 'Glazing' in yellow, representing 36.3%. 'Ceilings' in magenta represent 19.5%. Smaller slices include 'Ventilation' (light blue, 1.9%), 'Walls' (light green, 0.9%), 'Floors' (light orange, 0.2%), and 'Infiltration' (light purple, 0.5%). The remaining categories—'Ducts', 'Blower', and 'Adjustments'—each represent 0% of the load and are not visible in the chart.



Latent Cooling Load = 2362 Btuh
Overall U-value = 0.063 Btuh/ft²·°F, Window / Floor Area = 36.7 %
WARNING: window to floor area ratio = 36.7% - more than 25%.


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AMBA® / ISO9001:2015 Certified Company

Right Suite® Universal 2023 23.0.04 RSU22459 2025-May-15 22:13:04
 ..gle DADU2025-12 DADU F280 Load Calcs Rev-2.rpt Calc = F280-12 Front Door faces: N Page 1


Component Constructions
Entire Building
Delta-T Designs Inc.

Job: 2025-12 Rev-2
 Date: May 14, 2025
 By:

Cert. #: 9049
 16 Wistar Rd. Unit 4, Oro-Medonte, ON L0L 2L0 Phone: 705-791-9000 Email: rtss@delatdesigns.ca License: BCIN #38852, OACETT #893546

Project Information	
For:	Barrie DADU Singles Barrie, On

Design Conditions					
Location:	Barrie, ON, CA		Indoor:	Heating	Cooling
Elevation:	968 ft		Indoor temperature (°F)	72	75
Latitude:	44°N		Design TD (°F)	83	
			Relative humidity (%)	30	50
Outdoor:	Heating	Cooling	Moisture difference (gr/lb)	32.5	24.0
Dry bulb (°F)	-11	82	Infiltration:		
Daily range (°F)	-	19	F280-12		
Wet bulb (°F)	-	70	Expos. cat		Light local shielding
Wind speed (mph)	15.0	7.5	Cons. cat		Present (1961-) (ACH=3.57)
			Number of stories	1.0	

Construction descriptions	Or	Area ft ²	R-value ft ² /hBtu	Insul R ft ² /hBtu	AFR Btu/ft ²	Htg TD/R	Loss Btu/h	Cld TD/R	Gain Btu/h
Walls									
Fm wall, mtl ext, r-13 cav ins, 1/2" wood int fnsh, r-20 ext btd ins, 2"x4"	n	232	33.4	33.0	6.9	2.49	578	0.01	2
wood fmn, 16" o.c. stud	e	83	33.4	33.0	2.5	2.49	205	0.30	25
	s	102	33.4	33.0	4.8	2.49	403	0.09	19
	w	102	33.4	33.0	3.0	2.49	253	0.30	31
	all	578	33.4	33.0	17.3	2.49	1439	0.13	73
Partitions (none)									
Windows									
3 glazing, dr lowe out; 1/2" gap, insulated vinyl fmn mat, dr lowe mid, argon gas, 1/4" thk, dr innr: 3 glazing, dr lowe out; 1/2" gap, insulated vinyl fmn mat, dr lowe mid, argon gas, 1/4" thk, dr innr; 5 ft overhead (4 ft window ht, 0.5 ft sep.); 11 ft head ht	e	12	6.3	0	1.9	13.1	158	19.7	236
3 glazing, dr lowe out; 1/2" gap, insulated vinyl fmn mat, dr lowe mid, argon gas, 1/4" thk, dr innr: 3 glazing, dr lowe out; 1/2" gap, insulated vinyl fmn mat, dr lowe mid, argon gas, 1/4" thk, dr innr; 5 ft overhead (7 ft window ht, 0.5 ft sep.); 11 ft head ht	e	21	6.3	0	3.3	13.1	276	31.1	653
3 glazing, dr lowe out; 1/2" gap, insulated vinyl fmn mat, dr lowe mid, argon gas, 1/4" thk, dr innr: 3 glazing, dr lowe out; 1/2" gap, insulated vinyl fmn mat, dr lowe mid, argon gas, 1/4" thk, dr innr; 6.67 ft head ht	s	14	6.3	0	2.2	13.1	184	30.6	429
3 glazing, dr lowe out; 1/2" gap, insulated vinyl fmn mat, dr lowe mid, argon gas, 1/4" thk, dr innr: 3 glazing, dr lowe out; 1/2" gap, insulated vinyl fmn mat, dr lowe mid, argon gas, 1/4" thk, dr innr; 6.67 ft head ht	w	14	6.3	0	2.2	13.1	184	46.3	647
3 glazing, dr lowe out; 1/2" gap, insulated vinyl fmn mat, dr lowe mid, argon gas, 1/4" thk, dr innr: 3 glazing, dr lowe out; 1/2" gap, insulated vinyl fmn mat, dr lowe mid, argon gas, 1/4" thk, dr innr; 5 ft overhead (7 ft window ht, 0.5 ft sep.); 6.67 ft head ht	s	56	6.3	0	8.8	13.1	736	15.9	886
Doors (none)									

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ligns								
12K0: Rf/dg ceiling, asphalt shingles roof mat, wd cons, r6 deck ins, 1" thins	431	9.6		6.0	44.9	8.67	3740	3.56
15A17: Fir floor frm fir, 10" thins, vinyl flr fresh, r30 cavi ins, amb cov	319	29.0		30.0	11.0	1.44	458	0.04

 **Project Summary**
Entire Building
Delta-T Designs Inc.

Job: 2025-12 Rev-2
Date: May 14, 2025
By:

Conf.#: 9049
10 Windsor Rd Unit 4, Oro-Medonte, ON L0L 2L0 Phone: 705-791-9000 Email: rrs@delatadesigns.ca License: BCIN #38852, OACETT #893456

For: **Barrie DADU Singles**
Barrie, On

Notes: Orientation is unknown. Will be sited anywhere in Barrie.

Design Information

Weather: Barrie, ON, CA					
Winter Design Conditions			Summer Design Conditions		
Outside db	-11	°F	Outside db	82	°F
Inside db	72	°F	Inside db	75	°F
Design TD	83	°F	Design TD	7	°F
			Daily range	50	%
			Relative humidity	50	%
			Moisture difference	24	gr/lb
Heating Summary			Sensible Cooling Equipment Load Sizing		
Structure	10830	Btuh	Structure	7872	Btuh
Ducts	0	Btuh	Ducts	0	Btuh
Central vent (0 cfm)	0	Btuh	Central vent (0 cfm)	0	Btuh
(none)	0	Btuh	(none)	0	Btuh
Humidification	0	Btuh	Blowdown	0	Btuh
Piping	0	Btuh	Use manufacturer's data	n	
Equipment load	10830	Btuh	Rating/wing multiplier	0.87	
			Equipment sensible load	6856	Btuh
Infiltration			Latent Cooling Equipment Load Sizing		
Method	F280-12		Structure	2362	Btuh
Expos. categ	Light local shielding		Ducts	0	Btuh
Cong. categ	Present (1961-) (ACH=3.57)		Central vent (0 cfm)	0	Btuh
Number of stories	1.0		Equipment latent load	2362	Btuh
			Equipment total load (Sen+Lat)	9218	Btuh
Heating	Cooling		Req. total capacity at 0.70 SHR	0.8	ton
Area (ft²)	319	319			
Volume (ft³)	3350	3350			
Air changes/hour	0.37	0.09			
Equiv. AVF (cfm)	21	5			

Heating Equipment Summary				Cooling Equipment Summary			
Make				Make			
Trade				Trade			
Model				Cond			
AHRI ref				Coil			
Efficiency	80	AFLUE		AHRI ref		0	SEER
Heating input	0	Btuh		Sensible cooling	0	Btuh	
Heating output	0	Btuh		Latent cooling	0	Btuh	
Temperature rise	0	° F		Total cooling	0	Btuh	
Actual air flow	347	cfm		Actual air flow	347	cfm	
Air flow factor	0.032	cfm/Btuh		Air flow factor	0.044	cfm/Btuh	
Static pressure	0	in H2O		Static pressure	0	in H2O	
Space thermostat				Load sensible heat ratio	0.77		

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