Barrie Single DADU

Barrie, Ontario

PROJECT NO. 2025-12

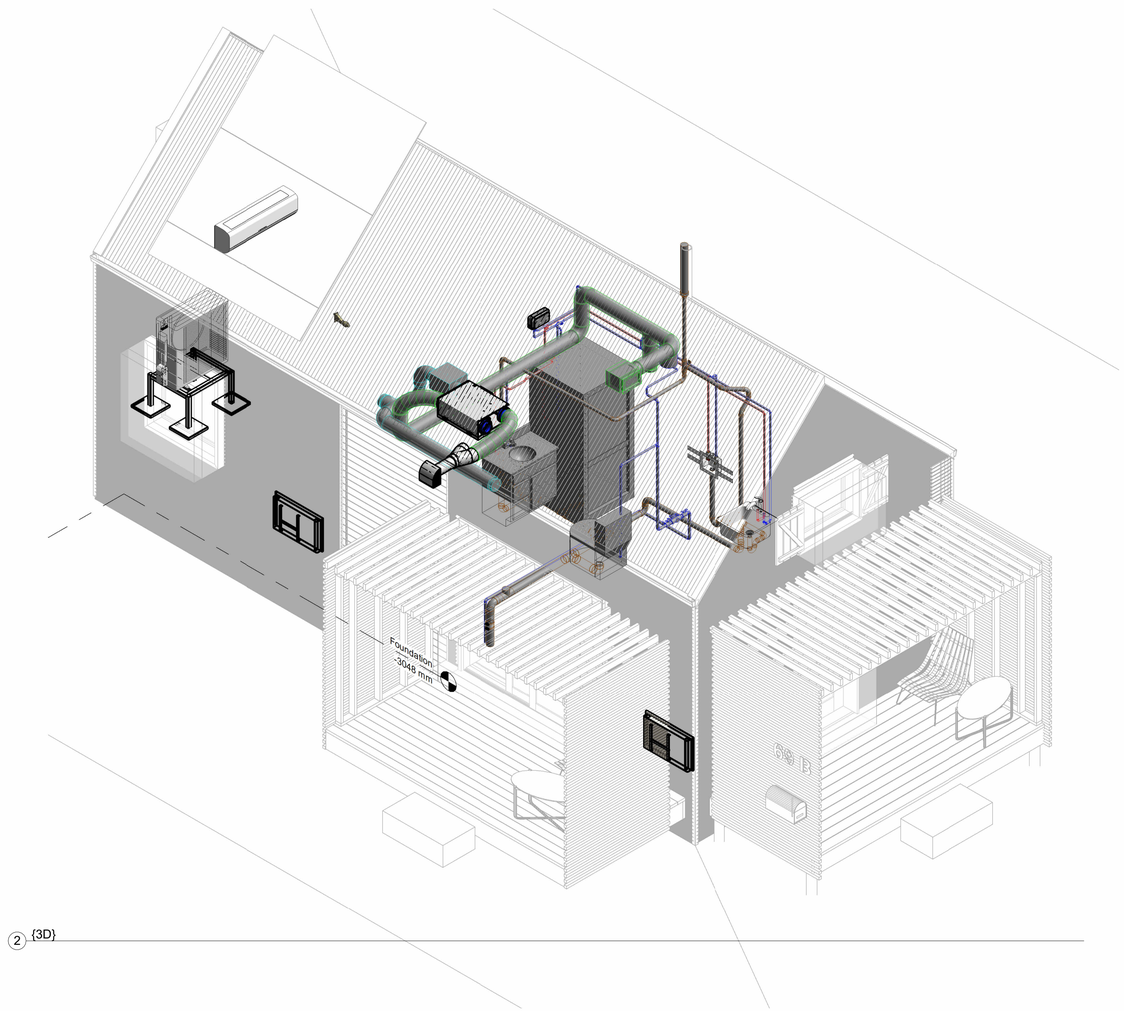
Designed & Drafted by:

Delta-T Designs

Mechanical Sheet List	
M000	Specifications
M001	Specifications
M002	Specifications
M003	Specifications
M004	Specifications
M100	Plumbing Drawings
M101	Plumbing Drawings
M301	HVAC Drawings
M302	HVAC Drawings

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	02	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
ENT	ENTERING		BACKFLOW PREVENTER
ET	EXPANSION TANK	RTU	ROOF TOP UNIT
EUH	ELECTRIC UNIT HEATER	RV	REFRIGERANT VAPOR
EWT	ENTERING WATER TEMPERATURE	RWL	RAIN WATER LEADER
ERV	ENERGY RECOVERY VENTILATOR	RZ	RADIANT ZONE
FCO	FLOOR CLEANOUT	SA	SUPPLY AIR
FCU	FAN COIL UNIT	SANI	SANITARY PIPING
FD	FIRE DAMPER	STORM	STORM PIPING
FD	FLOOR DRAIN	SCH	SCHEDULE
FE	IRON	SD	STORM DRAIN
FM	FORCED MAIN	SF	SQUARE FEET
FT	FEET	SF	SUPPLY FAN
FT	FINNED TUBE	SGR	SNOWMELT GLYCOL RETURN
FSD	FIRE SMOKE DAMPER	SGS	SNOWMELT GLYCOL SUPPLY
GAL	GALLONS	SH	STEAM HUMIDIFIER
GALV	GALVANIZED	SMZ	SNOWMELT ZONE
GI	GREASE INTERCEPTOR	SP	STATIC PRESSURE
GMT	GLYCOL MAKE-UP TANK	SS	STAINLESS STEEL
GPM	GALLONS PER MINUTE	TA	TRANSFER AIR
HB	HOSE BIBB	TEMP	TEMPERATURE
HC	HEATING COIL	TDH	TOTAL DEVELOPED HEAD
HGR	HEATING GLYCOL RETURN	TSP	TRAP SEAL PRIMER
HGS	HEATING GLYCOL SUPPLY	TYP	TYPICAL
HRV	HEAT RECOVERY VENTILATOR	UH	UNIT HEATER
HW	HOT WATER	UL	UNDERWRITER'S LABORATORY
HWC	HOT WATER CIRCULATION	UON	UNLESS OTHERWISE NOTED
HWR	HEATING WATER RETURN	UPC	UNIFORM PLUMBING CODE
HWS	HEATING WATER SUPPLY	VAV	VARIABLE AIR VOLUME
HX	HEAT EXCHANGER	VFD	VARIABLE FREQUENCY DRIVE
IBC	INTERNATIONAL BUILDING CODE	VTR	VENT THROUGH ROOF
ID	INSIDE DIAMETER	V	VENT
IFC	INTERNATIONAL FIRE CODE	W	WASTE
IFGC	INTERNATIONAL FUEL GAS CODE	W/	WITH
IMC	INTERNATIONAL MECHANICAL CODE	WC	WATER CLOSET
IN	INCHES	W.C.	WATER COLUMN
LAV	LAVATORY	WCO	WALL CLEANOUT
LF	LINEAR FEET	WH	WATER HEATER
LGT	LEAVING GLYCOL TEMP	WHA	WATER HAMMER ARRESTOR
LHGR	LOW TEMP HEATING GLYCOL RETURN	WPD	WATER PRESSURE DROP
LHGS	LOW TEMP HEATING GLYCOL SUPPLY	WRT	WITH RESPECT TO
LHWR	LOW TEMP HEATING WATER RETURN	YCO	YARD CLEANOUT
LHWS	LOW TEMP HEATING WATER SUPPLY		
LVG	LEAVING		
LWT	LEAVING WATER TEMPERATURE		



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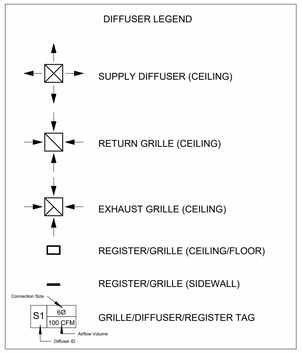
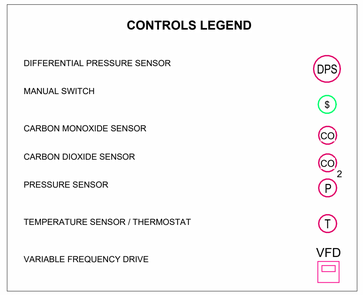


Diffuser Legend
NTS

Ductwork Legend
NTS



1 Controls Legend
NTS

General Notes

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The contractor shall verify all dimensions on site and report any discrepencies 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 executions.

Under no circumstances shall the contractor proceed in uncertainty.

This drawing expresses the intent of the designer only, and it is the responsibility of the contractor to verify all site conditions prior to providing aquote, 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 pior 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 scalled 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 19 2025
3	WIP	June 19 2025
4	City of Barrie Comments	October 7 2025

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Client Name
TBD

Project Number
2025-12

Project Name & Address
Barrie Single Dedicated Accessory Dwelling Unit

Barrie, Ontario

Sheet Name
Cover Sheet

Drawn By
Author

Reviewed By
Checker

Sheet Number
G01

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 reviewed 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 consultants' 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 discrepency, 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 unpack, 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.
.1 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 Demonstrations 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 Support and attachment components for equipment, piping, and other plumbing 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 B633 - Standard Specification for Electrodeposited 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 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 stud 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 Nameplates.
.2 Tags.
.3 Pipe markers.
PART 2 PRODUCTS
2.1 IDENTIFICATION APPLICATIONS
.1 Piping: Pipe markers.
.2 Pumps: Nameplates.
2.2 NAMEPLATES
.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 nameplates with corrosive-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 Piping insulation.
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 E96/E96M - 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 Ksi (K) 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).

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

General Notes

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The contractor shall verify all dimensions on site and report any discrepencies 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 executions.

Under no circumstances shall the contractor proceed in uncertainty.

This drawing expresses the intent of the designer only, and it is the responsibility of the contractor to verify all site conditions prior to providing aquote, 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 pior 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 scalled 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 19 2025
3	WIP	June 19 2025
4	City of Barrie Comments	October 7 2025

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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
Author

Reviewed By
Checker

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 aluminized film; moisture vapour transmission when tested in accordance with ASTM E96/E96M of 0.029 ng/Pa s m (0.02 perm-inches).

PART 3 EXECUTION
3.1 EXAMINATION
.1 Verify that piping has been tested before applying insulation materials.
.2 Verify that surfaces are clean and dry, with foreign material removed.
3.2 INSTALLATION
.1 Install in accordance with manufacturer's instructions.
.2 Install in accordance with TIAC Best Practices Guide.
.3 Exposed Piping: Locate insulation and cover seams in least visible locations.
.4 Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
.5 Glass fiber insulated pipes conveying fluids below ambient temperature:
.1 Provide vapour barrier jackets, factory-applied or site-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapour barrier mastic.
.2 Insulate fittings, joints, and valves with moulded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapour barrier adhesive or PVC fitting covers.
.6 Exterior Applications: Provide vapour barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapour barrier cement. Cover with aluminum jacket in accordance with TIAC CPF/5 with seams located on bottom side of horizontal piping.
.7 Buried Piping: Provide factory fabricated assembly with inner all-purpose service jacket with self-sealing lap, and asphalt impregnated open mesh glass fabric, with 0.025 mm (one mil) thick aluminum foil sandwiched between three layers of bituminous compound; outer surface faced with a polyester film.
.8 Heat Traced Piping: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size large enough to enclose pipe and heat tracer. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

END OF SECTION 220719

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 Specialties:
.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 B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.
.9 ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.
.10 ASTM D2235 - 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 D3034 - Standard Specification for Type PSM 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 Compendium; 2021.
.25 CSA B137 Series - Thermoplastic Pressure Piping Compendium; 2017.
.26 NSF 61 - Drinking Water System Components - Health Effects; 2017.
.27 NSF 372 - Drinking Water System Components - Lead Content; 2020.
.28 PPI TR-4 - 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 Potable 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 F628.
.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 F628.
.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 F628.
.1 Fittings: ABS.
.2 Joints: Solvent welded with ASTM D2235 cement.
.2 PVC Pipe: CAN/CSA 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 CAN/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 BPVC-IV certified and labelled.

PART 3 EXECUTION
3.1 EXAMINATION
.1 Verify that excavations are to required grade, dry, and not over-excavated.
3.2 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.
3.3 INSTALLATION
.1 Install in accordance with manufacturer's instructions.
.2 Provide non-conducting dielectric connections wherever jointing 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 hangers 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 welded to structural building 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 Sleeve pipes passing through partitions, walls and floors.
3.4 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.
3.5 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 Inject disinfectant, free chlorine in liquid, powder, tablet 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.
3.6 SERVICE CONNECTIONS
.1 Provide new sanitary sewer services. Before commencing work check invert elevations required 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 221005

SECTION 224000
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 showerheads 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, vandalproof cover locking device.
.2 Water Consumption: 6 L (1.6 gal) per flush, maximum.
.2 Toilet Seats:
.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 (1.1 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 A112.19.2 / 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) centreset spacing.
.2 Carrier:
.1 ASME A112.6.1M; cast iron 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 A112.19.2 / CSA B45.1; self-rimming, 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) centreset spacing.
.3 Under-Mount Basin:
.1 Vitreous China: ASME A112.19.2 / 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.
.4 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 200 mm (8 inch) centreset spacing.
.5 Supply Faucet:
.1 ASME A112.18.1 / CSA B125.1; chrome plated combination supply fitting with pop-up waste, water 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.
.1 Drain: 38 mm (1-1/2 inch) _____ 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.
.1 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 Trim: 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, bent 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, bent 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 footings, floors, walls, and partitions. Seal pipe including sleeve penetrations to achieve fire resistance equivalent to fire separation required.
.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 230517

SECTION 230529
HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL
1.1 SECTION INCLUDES
.1 Support and attachment components for equipment, piping, and other HVAC/hydronic 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 QUALITY ASSURANCE
.1 Comply with applicable building code.
.2 Maintain at the project site a copy of each referenced document that prescribes execution requirements.

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 Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot 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:

1 Spec 2
3/16" = 1'-0"

General Notes

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Drawings are scalled 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 19 2025
3	WIP	June 19 2025
4	City of Barrie Comments	October 7 2025

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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
Author

Reviewed By
Checker

Sheet Number
M001

.1 Equipment Supports: 13 mm (1/2 inch) diameter.
.2 Piping up to 25 mm nominal: 6 mm (1/4 inch) diameter.
.4 Pipe Supports:
.1 Liquid Temperatures Up To 50 degrees C (122 degrees F):
.1 Overhead Support: MSS SP-58 Types 1, 3 through 12.
.2 Support From Below: MSS SP-58 Types 35 through 38.
.5 Beam Clamps: MSS SP-58 Types 19 through 23, 25 or 27 through 30 based on required load.
.1 Material: ASTM A36/A36M carbon steel or ASTM A181/A181M forged steel.
.2 Provide clamps with hardened steel cup-point set screws and lock-nuts for anchoring in place.
.6 Riser Clamps:
.1 Provide copper plated clamps for copper tubing support.
.2 For insulated pipe runs, provide two bolt-type clamps designed for installation under insulation.
.7 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 Structural Engineer.
.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 stud 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 230529

SECTION 230553
IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL
1.1 SECTION INCLUDES
.1 Nameplates.
.2 Tags.
.3 Stencils.
.4 Pipe markers.
1.2 RELATED REQUIREMENTS
.1 Section 099123 - Interior Painting: Identification painting.
1.3 REFERENCE STANDARDS
.1 ASTM D709 - Standard Specification for Laminated Thermosetting Materials; 2017.

PART 2 PRODUCTS
2.1 IDENTIFICATION APPLICATIONS
.1 Air Handling Units: Nameplates.
.2 Control Panels: Nameplates.
.3 Ductwork: Stencilled painting.
.4 Piping: Pipe markers.
.5 Pumps: Nameplates.
.6 Relays: Tags.
.7 Thermostats: Nameplates.
.8 Valves: Tags and ceiling tacks where located above lay-in ceiling.
.9 Water Treatment Devices: Nameplates.
2.2 NAMEPLATES
.1 Letter Colour: White.
.2 Background Colour: Black.
.3 Plastic: Conform to ASTM D709.
2.3 TAGS
.1 Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background colour. Tag size minimum 40 mm (1-1/2 inch) diameter.
.2 Metal Tags: Brass with stamped letters; tag size minimum 40 mm (1-1/2 inch) diameter with smooth edges.
.3 Valve Tag Chart: Typewritten letter size list in anodized aluminum frame.
2.4 STENCILS
.1 Stencils: With clean cut symbols and letters of following size:
.1 20-30 mm (3/4 to 1-1/4 inch) Outside Diameter of Insulation or Pipe: 200 mm (8 inch) long colour field, 13 mm (1/2 inch) high letters.
.2 40-50 mm (1-1/2 to 2 inch) Outside Diameter of Insulation or Pipe: 200 mm (8 inch) long colour field, 20 mm (3/4 inch) high letters.
.3 65-150 mm (2-1/2 to 6 inch) Outside Diameter of Insulation or Pipe: 300 mm (12 inch) long colour field, 30 mm (1-1/4 inch) high letters.
2.5 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.

PART 3 EXECUTION
3.1 PREPARATION
.1 Degrease and clean surfaces to receive adhesive for identification materials.
3.2 INSTALLATION
.1 Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
.2 Install tags with corrosion resistant chain.
.3 Apply stencil painting in accordance with Section 099123.
.4 Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.
.5 Install ductwork with stencilled painting. Identify with air handling unit identification number and area served. Locate identification at air handling unit, at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION 230553

SECTION 230593
TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL
1.1 SECTION INCLUDES
.1 TAB procedure for air distribution systems.
.2 Testing, adjustment, and balancing of hydronic and refrigerating systems.
1.2 REFERENCE STANDARDS
.1 AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition; 2016.
.2 ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2024.
.3 SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2002.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION
3.1 GENERAL REQUIREMENTS
.1 Perform total system balance in accordance with one of the following:
.1 AABC (NSTSB), AABC National Standards for Total System Balance.
.2 ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
.3 SMACNA (TAB).
.2 Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Performance of the project.
.3 Where HVAC systems and/or components interface with life safety systems, including fire and smoke detection, alarm, and control, coordinate scheduling and testing and inspection procedures with the authorities having jurisdiction.
.4 TAB Agency Qualifications:
.1 Company specializing in the testing, adjusting, and balancing of systems specified in this section.
.2 Having minimum of three years documented experience.
.3 Certified by one of the following:
.1 AABC, Associated Air Balance Council: www.aabc.com/#/sle; upon completion submit AABC National Performance Guaranty.
.2 NEBB, National Environmental Balancing Bureau: www.nebb.org/#/sle.
.3 TABB, The Testing, Adjusting, and Balancing Bureau of National Energy Management Institute: www.tabbcertified.org/#/sle.
.5 TAB Supervisor and Technician Qualifications: Certified by same organization as TAB agency.
3.2 EXAMINATION
.1 Verify that systems are complete and operable before commencing work. Ensure the following conditions:
.1 Systems are started and operating in a safe and normal condition.
.2 Temperature control systems are installed complete and operable.
.3 Proper thermal overload protection is in place for electrical equipment.
.4 Final filters are clean and in place. If required, install temporary media in addition to final filters.
.5 Duct systems are clean of debris.
.6 Fans are rotating correctly.
.7 Fire and volume dampers are in place and open.
.8 Air coil fins are cleaned and combed.
.9 Access doors are closed and duct end caps are in place.
.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.
.2 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 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 cocks, valves, and fittings. Do not use service or shut-off valves for balancing unless indexed 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 Specification for Mineral Fiber Block 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 Test Methods for Gravimetric Determination of Water Vapor Transmission of Materials; 2022.
.7 ASTM G21 - 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 Fibre Thermal Insulation for Buildings, Part 1: Material Specification; 2021.
.10 SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).
.11 TIAC - 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.

PART 2 PRODUCTS
2.1 REGULATORY REQUIREMENTS
.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 TIAC 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 Vapour Absorption: 5.0 percent by weight.
.2 Vapor Barrier Jacket:
.1 Kraft paper with glass fibre yarn and bonded to aluminized film.
.2 Moisture Vapour 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.
2.3 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 Vapour 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 Vapour 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 Coefficients:
.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.

PART 3 EXECUTION
3.1 EXAMINATION
.1 Verify that ducts have been tested before applying insulation materials.
.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 TIAC guidelines.
.3 Insulated ducts conveying air below ambient temperature:
.1 Provide insulation with vapour barrier jackets.
.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.
.7 Duct and Plenum Liner Application:
.1 Adhere insulation with adhesive for 90 percent coverage.
.2 Secure insulation with mechanical liner fasteners. Refer to SMACNA (DCS) for spacing.
.3 Seal and smooth joints. Seal and coat transverse joints.
.4 Seal liner surface penetrations with adhesive.
.5 Duct dimensions indicated are net inside dimensions required for air flow. Increase duct size to allow for insulation thickness.

END OF SECTION 230713

SECTION 230719
HVAC PIPING INSULATION

PART 1 GENERAL
1.1 SECTION INCLUDES
.1 Piping insulation.
.2 Jackets and accessories.
.3 Engineered wall outlet seals and refrigerant piping insulation protection.
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 C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2020a.
.3 ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2018).
.4 ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.
.5 ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission of Materials; 2022.
.6 ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
.7 ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2016).
.8 ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.
.9 ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013 (Reapproved 2021).
.10 CAN/ULC S102.2 - Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies; 2018.
.11 CAN/ULC S702.1 - Standard for Mineral Fibre Thermal Insulation for Buildings, Part 1: Material Specification; 2021.

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, RIGID
.1 Insulation: CAN/ULC S702.1 and ASTM C795; rigid molded, noncombustible.
.1 Ksi (K) 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).
.3 Maximum Moisture Absorption: 0.2 percent by volume.
.2 Vapour Barrier Jacket: White kraft paper with glass fibre yarn, bonded to aluminized film; moisture vapour transmission when tested in accordance with ASTM E96/E96M of 0.029 ng/Pa s m (0.02 perm-inches).
.3 Tie Wire: 1.22 mm (0.048 inch) stainless steel with twisted ends on maximum 300 mm (12 inch) centers.
2.3 FLEXIBLE ELASTOMERIC CELLULAR INSULATION
.1 Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.
.1 Minimum Service Temperature: Minus 40 degrees C (Minus 40 degrees F).
.2 Maximum Service Temperature: 82 degrees C (180 degrees F).
.3 Connection: Waterproof vapour barrier adhesive.
2.4 JACKETS
.1 PVC Plastic.
.1 Jacket: One piece molded type fitting covers and sheet material, off-white colour.
.1 Minimum Service Temperature: minus 18 degrees C (0 degrees F).
.2 Maximum Service Temperature: 66 degrees C (150 degrees F).
.3 Moisture Vapour Permeability: 0.0029 ng/Pa s m (0.002 perm inch), maximum, when tested in accordance with ASTM E96/E96M.
.4 Thickness: 0.25 mm (10 mil).
.5 Connections: Brush on welding adhesive.
2.5 ENGINEERED WALL OUTLET SEALS AND REFRIGERANT PIPING INSULATION PROTECTION
.1 Pipe Penetration Wall Seal: Seals HVAC piping wall penetrations with compression gasket wall mounted rigid plastic outlet cover.
.1 Outlet Cover Colour: Gray.
.2 Water Penetration: Comply with ASTM E331.
.3 Air Leakage: Comply with ASTM E283.
.4 Air Permeance: Comply with ASTM E2178.
.2 Insulation Protection System: Refrigerant piping insulation PVC protective cover.
.1 PVC Insulation Cover Colour: _____ with full-length velcro fastener.
.2 Weatherization and Ultraviolet Exposure Protection: Comply with ASTM G153.
.3 Water/Vapour Permeability: Comply with ASTM E96/E96M.

PART 3 EXECUTION
3.1 EXAMINATION
.1 Verify that piping has been tested before applying insulation materials.
.2 Verify that surfaces are clean and dry, with foreign material removed.
3.2 INSTALLATION
.1 Install in accordance with manufacturer's instructions.
.2 Install in accordance with NAIMA National Insulation Standards.
.3 Exposed Piping: Locate insulation and cover seams in least visible locations.
.4 Insulated pipes conveying fluids below ambient temperature; insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
.5 Glass fibre insulated pipes conveying fluids below ambient temperature:
.1 Provide vapour barrier jackets, factory-applied or site-applied; secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapour barrier mastic.
.2 Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapour barrier adhesive or PVC fitting covers.
.6 For hot piping conveying fluids 60 degrees C (140 degrees F) or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
.7 Glass fibre insulated pipes conveying fluids above ambient temperature.
.1 Provide standard jackets, with or without vapour barrier, factory-applied or site-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
.2 Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
.8 Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions.
.9 Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 3 meters (10 feet) above finished floor): Finish with canvas jacket sized for finish painting.

END OF SECTION 230719

SECTION 230913
INSTRUMENTATION AND CONTROL DEVICES FOR HVAC

PART 1 GENERAL
1.1 SECTION INCLUDES
.1 Control panels.
.2 Control Valves:
.1 Ball valves and actuators.
.2 Electronic operators.
.3 Dampers.
.4 Damper Operators:
.1 Electric operators.
.5 Humidistats:
.1 Room humidistats.
.6 Input/Output Sensors:
.1 Temperature sensors.
.2 Humidity sensors.
.3 Static pressure (air pressure) sensors.
.7 Thermostats:
.1 Electric room thermostats.
.2 Low-limit temperature cutout switch (freezestat).
.3 Line voltage thermostats.
.4 Room thermostat accessories.
.5 Outdoor reset thermostats.
.6 Immersion thermostats.
.7 Airstream thermostats.
.8 Time clocks.
.9 Sensors with transmitters:
.1 Room pressure monitors.
1.2 RELATED REQUIREMENTS
.1 Section 260583 - Wiring Connections: Electrical characteristics and wiring connections.
.2 Section 262726 - Wiring Devices: Elevation of exposed components.

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

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Revision Schedule

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1	Issued for Coordination	May 15 2025
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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
Author

Reviewed By
Checker

Sheet Number
M002

1.3 **REFERENCE STANDARDS**
.1 AMCA 500-D - Laboratory Methods of Testing Dampers for Rating; 2012.
.2 ANSI/FCI 70-2 - Control Valve Seat Leakage; 2013.
.3 NEMA DC 3 - Residential Controls - Electrical Wall-Mounted Room Thermostats; 2013.
1.4 **SUBMITTALS**
.1 See Section 013000 - Administrative Requirements for submittal procedures.
.2 Product Data: Provide description and engineering data for each control system component. Include sizing as requested. Provide data for each system component and software module.
.3 Shop Drawings: Indicate complete operating data, system Drawings, wiring diagrams, and written detailed operational description of sequences. Submit schedule of valves indicating size, flow, and pressure drop for each valve. For automatic dampers indicate arrangement, velocities, and static pressure drops for each system.

PART 2 PRODUCTS
2.1 **EQUIPMENT - GENERAL**
.1 Products Requiring Electrical Connection: Listed and classified as suitable for the purpose specified and indicated by an organization recognized by Standards Council of Canada and acceptable to authorities having jurisdiction.Listed.
2.2 **CONTROL PANELS**
.1 Unitized cabinet type for each system under automatic control with relays and controls mounted in cabinet and temperature indicators, pressure gauges, pilot lights, push buttons and switches flush on cabinet panel face.
2.3 **CONTROL VALVES**
.1 Ball Valves and Actuators:
.1 Service: Use for brine (30 percent glycol), chilled water, or hot water.
.2 Flow Characteristic: Include 2-way and 3-way diverting operation configured to fail normally closed (NC).
.3 Replacements in Kind: Provide pressure-independent type.
.4 Rangeability: 500 to 1.
.5 ANSI Rating: Class 150.
.6 Leakage: Class IV (0.1 percent of rated capacity) per ANSI/FCI 70-2.
.7 Actuator Requirements:
.1 Assembly: Factory-mounted.
.2 Input: 0 to 10 VDC configured for proportional control.
.3 Accessories: Provide with valve position indicator and manual override.
2.4 **DAMPERS**
.1 Performance: Test in accordance with AMCA 500-D.
.2 Frames: Galvanized steel, welded or riveted with corner reinforcement, minimum 12 gauge, 2.66 mm (12 gauge, 0.1046 inch).
.3 Blades: Galvanized steel, maximum blade size 200 mm (8 inches) wide, 1,200 mm (48 inches) long, minimum 22 gauge, 0.76 mm (22 gauge, 0.0299 inch), attached to minimum 13 mm (1/2 inch) shafts with set screws.
2.5 **DAMPER OPERATORS**
.1 General: Provide smooth proportional control with sufficient power for air velocities 20 percent greater than maximum design velocity and to provide tight seal against maximum system pressures. Provide spring return for two position control and for fail safe operation.
.2 Electric Operators:
.1 Spring return, adjustable stroke motor having oil immersed gear train, with auxiliary end switch.
2.6 **HUMIDISTATS**
.1 Room Humidistats:
.1 Wall mounted, proportioning type.
.2 Throttling Range: Adjustable 2 percent relative humidity.
.3 Operating Range: 30 to 80 percent.
.4 Maximum Temperature: 43 degrees C (110 degrees F).
2.7 **INPUT/OUTPUT SENSORS**
.1 Temperature Sensors:
.1 Use thermistor or RTD type temperature sensing elements with characteristics resistant to moisture, vibration, and other conditions consistent with the application without affecting accuracy and life expectancy.
.2 Temperature Sensing Device: Compatible with project DDC controllers.
.2 Static Pressure (Air Pressure) Sensors:
.1 Unidirectional with ranges not exceeding 150 percent of maximum expected input.
.2 Temperature compensate with typical thermal error of 0.06 percent of full scale in temperature range of 5 to 40 degrees C (40 to 100 degrees F).
.3 Accuracy: One percent of full scale with repeatability 0.3 percent.
.4 Output: 0 to 5 VDC with power at 12 to 28 VDC.
2.8 **THERMOSTATS**
.1 Electric Room Thermostats:
.1 Type: NEMA DC 3, 24 volts, with setback/setup temperature control.
2.9 **TIME CLOCKS**
.1 Seven day programming switch timer with synchronous timing motor and seven day dial, continuously charged Ni-cad battery driven power failure 8-hour carry over and multiple switch trippers to control systems for minimum of two and maximum of eight signals per day with two normally open and two normally closed output switches.
2.10 **SENSORS WITH TRANSMITTERS**
.1 Room Pressure Monitor:
.1 Type: Externally-powered, remote differential pressure transmitter interconnected via tubing or cables to pick-up sensors located inside wall-section fitted module.
.2 Transmitter: Five percent accuracy, adjustable zero and span, 100 to 1 turndown, 0.1 percent of calibrated span linearity, 30 to 50 millisecond response time, minimum overpressure of 150 percent over highest range value, alphanumeric indicating display, wired or wireless connectivity for configuration, and terminal strip within enclosed electronic components.
.3 Differential Pressure Monitoring Range: 0 to 124.4 Pa (0 to 0.5 in-wc), bidirectional.

PART 3 EXECUTION
3.1 **EXAMINATION**
.1 Verify existing conditions before starting work.
.2 Verify that systems are ready to receive work.
.3 Beginning of installation means installer accepts existing conditions.
.4 Sequence work to ensure installation of components is complementary to installation of similar components in other systems.
.5 Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.
.6 Ensure installation of components is complementary to installation of similar components.
.7 Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.
3.2 **INSTALLATION**
.1 Install in accordance with manufacturer's instructions.
.2 Check and verify location of thermostats with plans and room details before installation. Locate 1,500 mm (60 inches) above floor. Align with lighting switches and humidistats. See Section 262726.
.3 Provide conduit and electrical wiring in accordance with Section 260583. Electrical material and installation shall be in accordance with appropriate requirements of Division 26.

END OF SECTION 230913

SECTION 232300
REFRIGERANT PIPING

PART 1 GENERAL
1.1 **SECTION INCLUDES**
.1 Piping.
.2 Moisture and liquid indicators.
.3 Valves.
.4 Strainers.
.5 Expansion valves.
.6 Engineered wall sesls and insulation protection.
1.2 **REFERENCE STANDARDS**
.1 ASHRAE Std 15 - Safety Standard for Refrigeration Systems; 2013.
.2 ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2018.
.3 ASME B31.5 - Refrigeration Piping and Heat Transfer Components; 2016.
.4 ASME B31.9 - Building Services Piping; 2014.
.5 ASTM B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service; 2020.
.6 AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding; 2011 (Amended 2012).
.7 CSA B52 - Mechanical Refrigeration Code; 2018.
.8 CSA W55.3 - Certification of Companies for Resistance Welding of Steel and Ahminum; 2008 (Reaffirmed 2018).
.9 CSA W117 - Safety in Welding, Cutting, and Allied Processes; 2019.
.10 MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2009.
.11 UL 207 - Standard for Refrigerant-Containing Components and Accessories, Nonelectrical; Current Edition, Including All Revisions.
1.3 **QUALITY ASSURANCE**
.1 Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum 3 years of documented experience.

PART 2 PRODUCTS
2.1 **SYSTEM DESCRIPTION**
.1 Where more than one piping system material is specified ensure system components are compatible and joined to ensure the integrity of the system is not jeopardized. Provide necessary joining fittings. Ensure flanges, unions, and couplings for servicing are consistently provided.
.2 Provide pipe hangers and supports in accordance with ASME B31.5 unless indicated otherwise.
.3 Liquid Indicators:
.1 Use line size liquid indicators in main liquid line leaving condenser.
.4 Valves:
.1 Use service valves on suction and discharge of compressors.
.5 Filter-Driers:
.1 Use a filter-drier immediately ahead of liquid-line controls, such as thermostatic expansion valves, solenoid valves, and moisture indicators.
2.2 **REGULATORY REQUIREMENTS**
.1 Comply with ASME B31.9, CSA W55.3, CSA W117 and CSA B52 for installation of piping system.
.2 Welding Materials and Procedures: Comply with CSA B52 and applicable provincial regulations.
.3 Welders Certification: In accordance with the requirements of the Authority Having Jurisdiction.
.4 Products Requiring Electrical Connection: Listed and classified by UL, as suitable for the purpose indicated.
2.3 **PIPING**
.1 Copper Tube: ASTM B280, H58 hard drawn or O60 soft annealed.
.1 Fittings: ASME B16.22 wrought copper.
.2 Joints: Braze, AWS A5.8M/A5.8 BCuP silver/phosphorus/copper alloy.
.3 Mechanical Press Sealed Fittings: Double pressed type complying with UL 207 and CSA B52.
.2 Pipe Supports and Anchors:
.1 Provide hangers and supports that comply with MSS SP-58.
.1 If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
.2 Hangers for Pipe Sizes 50 mm (2 Inches) and Over: Carbon steel, adjustable, clevis.
.3 Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
.4 Wall Support for Pipe Sizes to 75 mm (3 Inches): Cast iron hook.
.5 Vertical Support: Steel riser clamp.
.6 Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
.7 Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.
.8 Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.
2.4 **MOISTURE AND LIQUID INDICATORS**
.1 Indicators: Single port type, UL listed, with copper or brass body, flared or solder ends, sight glass, colour coded paper moisture indicator with removable element cartridge and plastic cap; for maximum temperature of 93 degrees C (200 degrees F) and maximum working pressure of 3,450 kPa (500 psi).
2.5 **VALVES**
.1 Service Valves:
.1 Forged brass body with copper stubs, brass caps, removable valve core, integral ball check valve, flared or solder ends, for maximum pressure of 3,450 kPa (500 psi).
2.6 **STRAINERS**

PART 3 EXECUTION
3.1 **PREPARATION**
.1 Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
.2 Remove scale and dirt on inside and outside before assembly.
.3 Prepare piping connections to equipment with flanges or unions.
3.2 **INSTALLATION**
.1 Install refrigeration specialties in accordance with manufacturer's instructions.
.2 Route piping in orderly manner, with plumbing parallel to building structure, and maintain gradient.
.3 Install piping to conserve building space and avoid interference with use of space.
.4 Group piping whenever practical at common elevations and locations. Slope piping one percent in direction of oil return.
.5 Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
.6 Arrange piping to return oil to compressor. Provide traps and loops in piping, and provide double risers as required. Slope horizontal piping 0.40 percent in direction of flow.
.7 Provide clearance for installation of insulation and access to valves and fittings.
.8 Flood piping system with nitrogen when brazing.
.9 Follow ASHRAE Std 15 procedures for charging and purging of systems and for disposal of refrigerant.
.10 Provide replaceable cartridge filter-driers, with isolation valves and valved bypass.

END OF SECTION 232300

SECTION 233100
HVAC DUCTS AND CASINGS

PART 1 GENERAL
1.1 **SECTION INCLUDES**
.1 Metal ductwork.
.2 Nonmetal ductwork.
.3 Casing and plenums.
.4 Kitchen hood ductwork.
.5 Duct cleaning.
1.2 **REFERENCE STANDARDS**
.1 ASHRAE (FUND) - ASHRAE Handbook - Fundamentals; Most Recent Edition Cited by Referring Code or Reference Standard.
.2 ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
.3 ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
.4 CAN/ULC S102 - Method of Testing for Surface Burning Characteristics of Building Materials and Assemblies; 2018.
.5 NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
.6 SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).

PART 2 PRODUCTS
2.1 **DUCT ASSEMBLIES**
.1 Regulatory Requirements: Construct ductwork to comply with NFPA 90A standards.
.2 Ducts: Galvanized steel, unless otherwise indicated.
.3 Low Pressure Supply (Heating Systems): 125 Pa (1/2 in-wc) pressure class, galvanized steel.
.4 Low Pressure Supply (System with Cooling Coils): 125 Pa (1/2 in-wc) pressure class, galvanized steel.
.5 General Exhaust: 125 Pa (1/2 inch w.g.) pressure class, galvanized steel.
.6 Kitchen Cooking Hood Exhaust: 125 Pa (1/2 in-wc) pressure class, galvanized steel.
.7 Outside Air Intake: 125 Pa (1/2 in-wc) pressure class, galvanized steel.
.8 Transfer Air and Sound Boots: 125 Pa (1/2 in-wc) pressure class, fibreon glass.
2.2 **MATERIALS**
.1 Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.
.2 Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
.1 Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
.2 VOC Content: Not more than 250 g/L, excluding water.
.3 Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with CAN/ULC S102.
.3 Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.
2.3 **DUCTWORK FABRICATION**
.1 Fabricate and support in accordance with SMACNA (DCS) and as indicated.
.2 No variation of duct configuration or size permitted except by written permission. Size round duct installed in place of rectangular ducts in accordance with ASHRAE (FUND) Handbook - Fundamentals.
.3 Provide duct material, gauges, reinforcing, and sealing for operating pressures indicated.
.4 Provide turning vanes of perforated metal with glass fibre insulation when acoustical lining is indicated.
.5 Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
.6 Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).
.7 Where ducts are connected to exterior wall louvres and duct outlet is smaller than louvre frame, provide blank-out panels sealing louvre area around duct. Use same material as duct, painted black on exterior side; seal to louvre frame and duct.
2.4 **MANUFACTURED DUCTWORK AND FITTINGS**
.1 Flat Oval Ducts: Machine made from round spiral lockseam duct.
.1 Manufacture in accordance with SMACNA (DCS).
.2 Fittings: Manufacture at least two gauges heavier metal than duct.
.3 Provide duct material, gauges, reinforcing, and sealing for operating pressures indicated.
.2 Spiral Ducts: Round spiral lockseam duct with galvanized steel outer wall.
.1 Manufacture in accordance with SMACNA (DCS).
.3 Round Ducts: Round lockseam duct with galvanized steel outer wall.
.1 Manufacture in accordance with SMACNA (DCS).
.4 Flexible Ducts: Two ply vinyl film supported by helically wound spring steel wire.
.1 Insulation: Fibreglass insulation with polyethylene vapour barrier film.
.2 Pressure Rating: 2.50 kPa (10 in-wc) positive and 250 Pa (1.0 in-wc) negative.
.3 Maximum Velocity: 20.3 m/sec (4000 fpm).
.4 Temperature Range: Minus 23 degrees C to 71 degrees C (Minus 10 degrees F to 160 degrees F).

PART 3 EXECUTION
3.1 **INSTALLATION**
.1 Install, support, and seal ducts in accordance with SMACNA (DCS).
.2 Install in accordance with manufacturer's instructions.
.3 During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
.4 Flexible Ducts: Connect to metal ducts with adhesive.
.5 Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
.6 Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
.7 Use crimp joints with or without bead for joining round duct sizes 200 mm (8 inch) and smaller with crimp in direction of air flow.
.8 Use double nuts and lock washers on threaded rod supports.
.9 Connect terminal units to supply ducts directly or with 300 mm (one foot) maximum length of flexible duct. Do not use flexible duct to change direction.
.10 At exterior wall louvres, seal duct to louvre frame and install blank-out panels.
3.2 **CLEANING**
.1 Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air, clean half the system at a time. Protect equipment that could be harmed by excessive dirt with temporary filters, or bypass during cleaning.

END OF SECTION 233100

SECTION 233300
AIR DUCT ACCESSORIES

PART 1 GENERAL
1.1 **SECTION INCLUDES**
.1 Air turning devices/extractors.
.2 Backdraft dampers - metal.
.3 Backdraft dampers - fabric.
.4 Combination fire and smoke dampers.
.5 Duct access doors.
.6 Fire dampers.
.7 Flexible duct connectors.
.8 Smoke dampers.
.9 Volume control dampers.
.10 Low leakage (Class 1A) control dampers.
.11 Miscellaneous products:
.1 Damper operators.
.2 Damper position switch.
.3 Duct opening closure film.
1.2 **RELATED REQUIREMENTS**
.1 Section 233100 - HVAC Ducts and Casings.
.2 Section 253513 - Integrated Automation Actuators and Operators: Damper operators.
.3 Section 253516 - Integrated Automation Sensors and Transmitters: Damper position switch.
1.3 **REFERENCE STANDARDS**
.1 NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
.2 NFPA 92 - Standard for Smoke Control Systems; 2018.
.3 NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations; 2017.
.4 SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).
.5 UL 33 - Safety Heat Responsive Links for Fire-Protection Service; Current Edition, Including All Revisions.
.6 UL 555 - Standard for Fire Dampers; Current Edition, Including All Revisions.
.7 UL 555C - Standard for Safety Ceiling Dampers; 2014.

PART 2 PRODUCTS
2.1 **AIR TURNING DEVICES/EXTRACTORS**
.1 Multi-blade device with blades aligned in short dimension; steel construction; with individually adjustable blades, mounting straps.
2.2 **BACKDRAFT DAMPERS - METAL**
.1 Multi-Blade, Parallel Action Gravity Balanced Backdraft Dampers: Galvanized steel, with center pivoted blades of maximum 150 mm (6 inch) width, with felt or flexible vinyl sealed edges, linked together in rattle-free manner with 90 degree stop, steel ball bearings, and plated steel pivot pin; adjustment device to permit setting for varying differential static pressure.
2.3 **BACKDRAFT DAMPERS - FABRIC**
.1 Fabric Backdraft Dampers: Factory-fabricated.
.1 Blades: Neoprene coated fabric material.
.2 Birdscreen: 12 mm (1/2 inch) nominal mesh of galvanized steel or aluminum.
.3 Maximum Velocity: 1000 fpm (5 mps) face velocity.
2.4 **COMBINATION FIRE AND SMOKE DAMPERS**
2.5 **DUCT ACCESS DOORS**
.1 Fabrication: Rigid and close-fitting of galvanized steel with sealing gaskets and quick fastening locking devices. For insulated ducts, install minimum 25 mm (1 inch) thick insulation with sheet metal cover.
.1 Less Than 300 mm (12 inches) Square: Secure with sash locks.
.2 Up to 450 mm (18 inches) Square: Provide two hinges and two sash locks.
2.6 **FIRE DAMPERS**
.1 Fabricate in accordance with NFPA 90A and UL 555, and as indicated.
.2 Ceiling (Radiation) Dampers: Galvanized steel, 22 gauge, 0.76 mm (22 gauge, 0.0299 inch) frame and 16 gauge, 1.52 mm (16 gauge, 0.0598 inch) flap, two layers 3.2 mm (0.125 inch) ceramic fibre on top side and one layer on bottom side for round flaps, with locking clip.
.1 Boot Fitting: Factory-provided el type (90 degree). Include fire-provided collar.
.2 Rated for _____ hour service in compliance with UL 555c.
.3 Curtain Type Dampers: Galvanized steel with interlocking blades. Provide stainless steel closure springs and latches for horizontal installations. Configure with blades out of air stream except for 250 Pa (1.0 in-wc) pressure class ducts up to 300 mm (12 inches) in height.
.4 Fusible Links: UL 33, separate at 71 degrees C (160 degrees F) with adjustable link straps for combination fire/balancing dampers.
2.7 **FLEXIBLE DUCT CONNECTORS**
.1 Fabricate in accordance with SMACNA (DCS) and as indicated.
.2 Flexible Duct Connections: Fabric crimped into metal edging strip.
2.8 **SMOKE DAMPERS**
2.9 **VOLUME CONTROL DAMPERS**
.1 Fabricate in accordance with SMACNA (DCS) and as indicated.
.2 Splitter Dampers:
.1 Material: Same gauge as duct to 600 mm (24 inches) size in either direction, and two gauges heavier for sizes over 600 mm (24 inches).
.2 Blade: Fabricate of single thickness sheet metal to streamline shape, secured with continuous hinge or rod.
.3 Operator: Minimum 6 mm (1/4 inch) diameter rod in self aligning, universal joint action, flanged bushing with set screw .
.3 Single Blade Dampers:
.1 Fabricate for duct sizes up to 150 by 750 mm (6 by 30 inch).
.2 Blade: 24 gauge, 0.61 mm (24 gauge, 0.0239 inch), minimum.
2.10 **LOW LEAKAGE (CLASS 1A) CONTROL DAMPERS**
.1 Maximum Leakage Allowed: 15.2 L/sec sq m at 0.25 kPa (3 cfm/sf at 1 inch wg).
.2 Frame:
.1 Material: 12 gage galvanized steel.
.2 Free-area: Single cross section.
.3 Blade:
.1 Type: Multi-blade such as V or 3V for low to medium pressure.
.2 Operation: Opposed type.
.3 Maximum Individual Blade Height: 203 mm (8 inches).
.4 Material: 12 gauge galvanized steel.
2.11 **MISCELLANEOUS PRODUCTS**
.1 Damper manual operators supplied in compliance with Section 253513.
.2 Damper position switch supplied in compliance with Section 253516.
.3 Duct Opening Closure Film: Mold-resistant, self-adhesive film to keep debris out of ducts during construction.
.1 Thickness: 0.05 mm (2 mils).
.2 High tack water based adhesive.
.3 UV stable light blue colour.
.4 Elongation Before Break: 325 percent, minimum.

PART 3 EXECUTION
3.1 **INSTALLATION**
.1 Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). See Section 233100 for duct construction and pressure class.
.2 Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.
.3 Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, combination fire and smoke dampers, and elsewhere as indicated. Provide for cleaning kitchen exhaust ducts in accordance with NFPA 96 Provide minimum 200 by 200 mm (8 by 8 inch) size for hand access, size for shoulder access, and as indicated. Provide 100 by 100 mm (4 by 4 inch) for balancing dampers only. Review locations prior to fabrication.
.4 Provide fire dampers, combination fire and smoke dampers, and smoke dampers at locations indicated, where ducts and outlets pass through fire rated components, and where required by Authorities Having Jurisdiction. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
.5 Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92.
.6 Demonstrate re-setting of fire dampers to Owner's representative.
.7 At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.
.8 At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.
.9 Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.
.10 Use splitter dampers only where indicated.
.11 Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

END OF SECTION 233300

SECTION 233700
AIR OUTLETS AND INLETS

PART 1 GENERAL
1.1 **SECTION INCLUDES**
.1 Registers/grilles:
.1 Floor-mounted, supply register/grilles.
.2 Ceiling-mounted, exhaust and return register/grilles.
.3 Ceiling-mounted, supply register/grilles.
.4 Wall-mounted, supply register/grilles.
.5 Wall-mounted, exhaust and return register/grilles.
.2 Duct-mounted supply and return registers/louvres.
.3 Door grilles.

1 Spec 4
1/8" = 1'-0"

General Notes

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The contractor shall verify all dimensions on site and report any discrepencies 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 executions.

Under no circumstances shall the contractor proceed in uncertainty.

This drawing expresses the intent of the designer only, and it is the responsibility of the contractor to verify all site conditions prior to providing aquote, 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 pior 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 scalled 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 19 2025
3	WIP	June 19 2025
4	City of Barrie Comments	October 7 2025

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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
Author

Reviewed By
Checker

Sheet Number
M003

.4 Louvres:
.1 Combination louvres.
.5 Goosenecks.

1.2 RELATED REQUIREMENTS
.1 Section 099123 - Interior Painting: Painting of ducts visible behind outlets and inlets.

1.3 REFERENCE STANDARDS
.1 SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.
.2 SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2005 (Revised 2009).

1.4 SUBMITTALS
.1 See Section 013000 - Administrative Requirements for submittal procedures.
.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.

PART 2 PRODUCTS

2.1 CEILING SUPPLY REGISTERS/GRILLES
.1 Type: Streamlined and individually adjustable curved blades to discharge air along face of grille, two-way deflection.
.2 Frame: 32 mm (1-1/4 inch) margin with countersunk screw mounting and gasket.
.3 Construction: Made of aluminum extrusions with factory enamel finish.
.4 Color: As indicated.
.5 Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

2.2 CEILING EXHAUST AND RETURN REGISTERS/GRILLES
.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.
.2 Frame: 32 mm (1-1/4 inch) margin with countersunk screw mounting.
.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.
.4 Color: As indicated.

2.3 WALL SUPPLY REGISTERS/GRILLES
.1 Type: Streamlined and individually adjustable 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, double deflection.
.2 Frame: 32 mm (1-1/4 inch) margin with countersunk screw mounting and gasket.
.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.
.4 Color: As indicated.
.5 Damper: Integral, gang-operated opposed blade type with removable key operator, operable from face.

2.4 WALL EXHAUST AND RETURN REGISTERS/GRILLES
.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.
.2 Fabrication: Steel frames and blades, with factory baked enamel finish.
.3 Color: As indicated on the Drawings.

2.5 FLOOR SUPPLY REGISTERS/GRILLES
.1 Individually adjustable blades, wide stamped border, single or double blade damper with set screw adjustment.

2.6 DOOR GRILLES
.1 Type: V-shaped louvres 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.
.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.

2.7 LOUVRES
.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.
.2 Fabrication: 16 gauge, 0.0598 inch (1.52 mm) thick galvanized steel thick galvanized steel welded assembly, with factory prime coat finish.

2.8 GOOSENECKS
.1 Fabricate in accordance with SMACNA (DCS) of minimum 18 gauge, 1.21 mm (18 gauge, 0.0598 inch) galvanized steel.
.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

3.1 INSTALLATION
.1 Install in accordance with manufacturer's instructions.
.2 Comply with SMACNA (ASMM) for flashing/counter-flashing of roof penetrations and supports for roof curbs and roof mounted equipment.
.3 Check location of outlets and inlets and make necessary adjustments in position to comply with architectural features, symmetry, and lighting arrangement.
.4 Install diffusers to ductwork with air tight connection.
.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.
.6 Paint ductwork visible behind air outlets and inlets matte black. Refer to Section 099123.

END OF SECTION 233700

SECTION 237223
PACKAGED AIR-TO-AIR ENERGY RECOVERY UNITS

PART 1 GENERAL

1.1 SECTION INCLUDES
.1 Energy recovery units.
.2 Filters.
.3 Vibration isolation.
.4 Accessories.

1.2 WARRANTY
.1 See Section 017800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.1 ENERGY RECOVERY UNITS
.1 Energy Recovery Units for Spot Ventilation or Whole House Ventilation: Prefabricated packaged system designed by manufacturer with exchange capillary core.
.1 Access: Hinged and/or screwed access panels on front.
.2 Suspension brackets at the unit base.
.3 Framing: Galvanized steel body.
.4 Provide a ceiling grille or access panel.
.5 Provide with MERV 13 filters on supply and exhaust air ducts.
.6 Provide exterior wall cap.
.7 Permanent name plate listing manufacturer mounted inside door near electrical panel.

2.2 ACCESSORIES
.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

3.1 EXAMINATION
.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.

3.2 INSTALLATION
.1 Provide openings for suitable ductwork connection.

3.3 SYSTEM STARTUP
.1 Provide services of manufacturer's authorized representative to provide start up of unit.

3.4 CLEANING
.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

1.1 SECTION INCLUDES
.1 Air-source heat pumps.
.2 Air cooled condensing units.
.3 Indoor air handling (fan and coil) unit for ductless systems.
.4 Controls.

1.2 RELATED REQUIREMENTS
.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 AHRI 210/240 - Standard for Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment; 2008, Including All Addenda.
.2 AHRI 520 - Performance Rating of Positive Displacement Condensing Units; 2004.
.3 ASHRAE Std 15 - Safety Standard for Refrigeration Systems; 2013.
.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 CSA B52 - Mechanical Refrigeration Code; 2018.
.6 NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.
.7 NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2018.
.8 UL 207 - Standard for Refrigerant-Containing Components and Accessories, Nonelectrical; Current Edition, Including All Revisions.

1.4 SUBMITTALS
.1 See Section 013000 - Administrative Requirements for submittal procedures.
.2 Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
.3 Shop Drawings: Indicate assembly, required clearances, and location and size of field connections.
.4 Design Data: Indicate refrigerant pipe sizing.

PART 2 PRODUCTS

2.1 SYSTEM DESIGN
.1 Split-System Heating and Cooling Units: Self-contained, packaged, matched factory-engineered and assembled, pre-wired indoor and outdoor units; UL listed.
.1 Heating and Cooling: Air-source electric heat pump located in outdoor unit with evaporator; auxiliary electric heat.
.2 Provide refrigerant lines internal to units and between indoor and outdoor units, factory cleaned, dried, pressurized and sealed, with insulated suction line.
.2 Performance Requirements: See Drawings for additional requirements.
.3 Electrical Characteristics:
.1 Disconnect Switch: Field installed weatherproof disconnect.

2.2 INDOOR AIR HANDLING UNITS FOR DUCTLESS SYSTEMS
.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 Location: High-wall.
.2 Filter return air with washable, antioxidant pre-filter and a pleated anti-allergy enzyme filter.
.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 Construction and Ratings: In accordance with AHRI 210/240 and UL 207.
.2 Manufacturer: System manufacturer.
.3 Remote Actuators:

2.3 OUTDOOR UNITS
.1 Outdoor Units: Self-contained, packaged, pre-wired unit consisting of cabinet, with compressor and condenser.
.1 Comply with AHRI 210/240.
.2 Cabinet: Galvanized steel with baked enamel finish, easily removed and secured access doors with safety interlock switches, glass fiber insulation with reflective liner.
.3 Construction and Ratings: In accordance with AHRI 210/240 with testing in accordance with ASHRAE Std 23.1 and UL 207.
.2 Air Cooled Condenser: Aluminum fin and copper tube coil, AHRI 520 with direct drive axial propeller fan resiliently mounted, galvanized fan guard.
.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 Provide thermostatic expansion valves.
.4 Operating Controls:
.1 Control by room thermostat to maintain room temperature setting.
.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).

2.4 ACCESSORY EQUIPMENT
.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 System selector switch (heat-off-cool) and fan control switch (auto-on).
.2 Automatic switching from heating to cooling.
.3 Preferential rate control to minimize overshoot and deviation from setpoint.
.4 Short cycle protection.
.5 Programming based on weekdays, Saturday and Sunday.
.6 Selection features including degree F or degree C display, 12 or 24 hour clock, keyboard disable, remote sensor, fan on-auto.
.7 Battery replacement without program loss.
.8 Thermostat Display:
.1 Time of day.
.2 Actual room temperature.
.3 Programmed temperature.
.4 Programmed time.
.5 Day of week.
.6 System Mode Indication: Heating, Cooling, Fan Auto, Off, and On, Auto or On, Off.

PART 3 EXECUTION

3.1 EXAMINATION
.1 Verify that substrates are ready for installation of units and openings are as indicated on Shop Drawings.
.2 Verify that proper power supply is available and in correct location.
.3 Verify that proper fuel supply is available for connection.

3.2 INSTALLATION
.1 Install in accordance with manufacturer's instructions and requirements of local authorities having jurisdiction.
.2 Install in accordance with NFPA 90A and NFPA 90B.
.3 Install refrigeration systems in accordance with CSA B52 and ASHRAE Std 15.

END OF SECTION 238126.13

1 Spec 5
3/16" = 1'-0"

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Drawings are scalled 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 19 2025
3	WIP	June 19 2025
4	City of Barrie Comments	October 7 2025

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Client Name
TBD

Project Number
2025-12

Project Name & Address
Barrie Single Dedicated Accessory Dwelling Unit

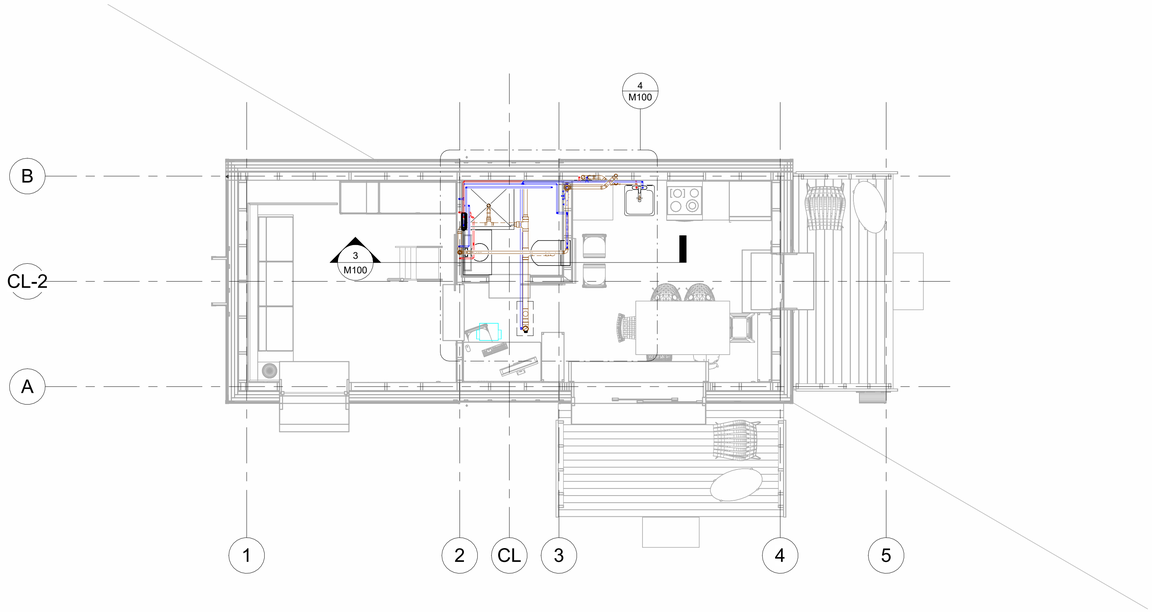
Barrie, Ontario

Sheet Name
Specifications

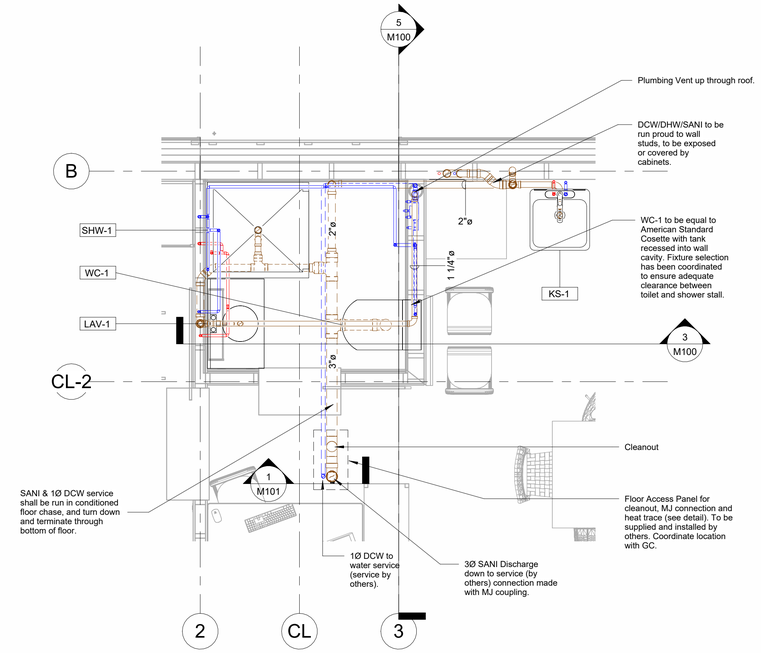
Drawn By
Author

Reviewed By
Checker

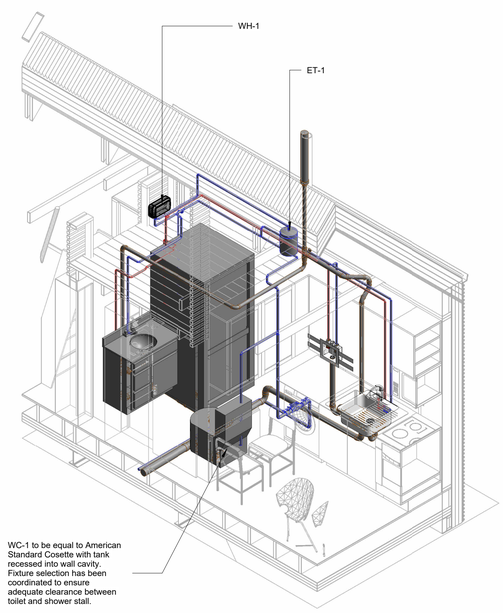
Sheet Number
M004



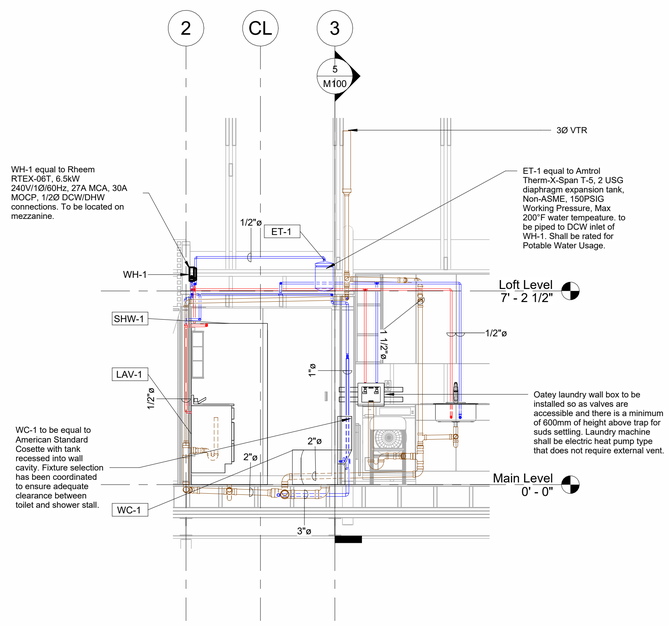
1 Main Floor
1/4" = 1'-0"



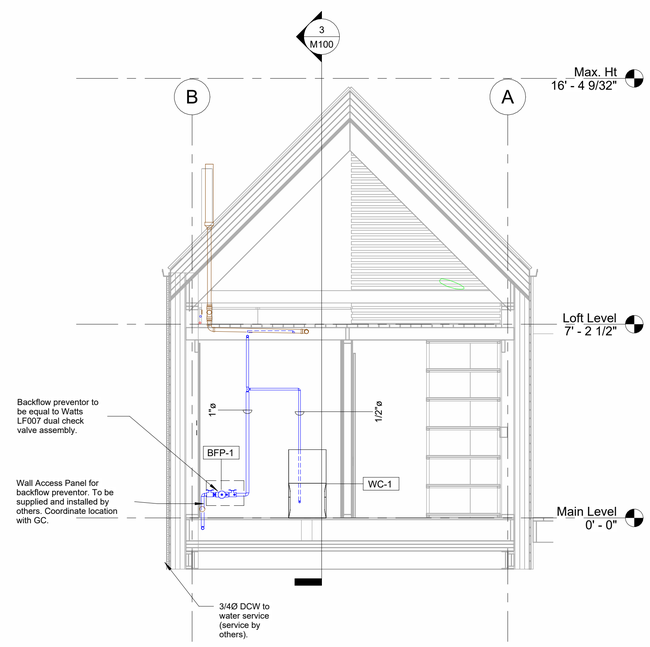
4 Plumbing Callout
1/2" = 1'-0"



2 Plumbing 3D Section Box



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



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

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Project Number
2025-12

Project Name & Address
Barrie Single Dedicated Accessory Dwelling Unit

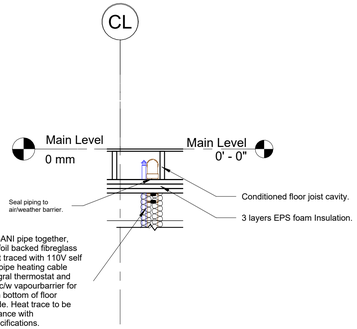
Barrie, Ontario

Sheet Name
Plumbing Drawings

Drawn By NF

Reviewed By NF

Sheet Number
M100



Group DCW and SANI pipe together, wrapped with R-6 foil backed fibreglass insulation and heat traced with 110V self regulating electric pipe heating cable complete with integral thermostat and plug end. Insulate c/w vapourbarrier for full length between bottom of floor assembly and grade. Heat trace to be installed in accordance with manufacturers specifications.

1 DCW/SANI Heat Trace Detail
1/2" = 1'-0"

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P.Eng Contact Info (If Required)

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Client Name
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Project Number
2025-12

Project Name & Address
Barrie Single Dedicated Accessory Dwelling Unit

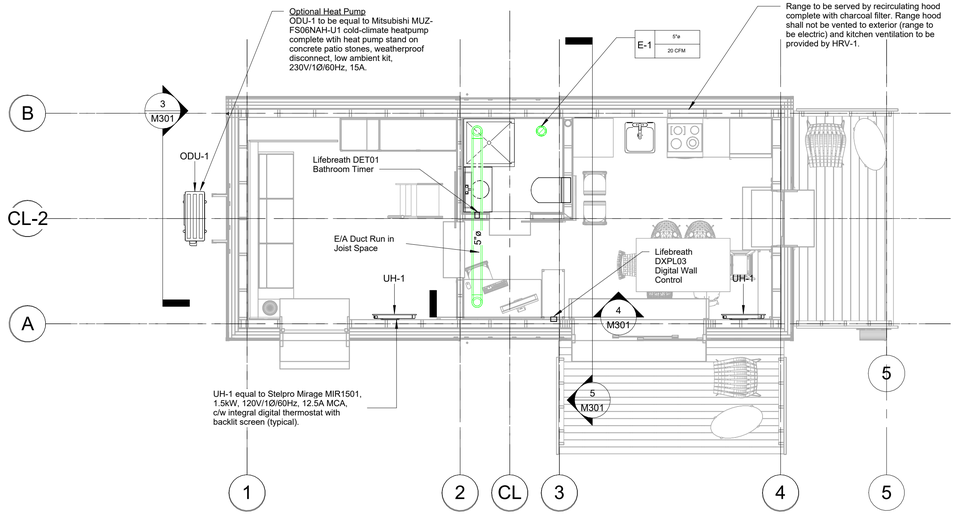
Barrie, Ontario

Sheet Name
Plumbing Drawings

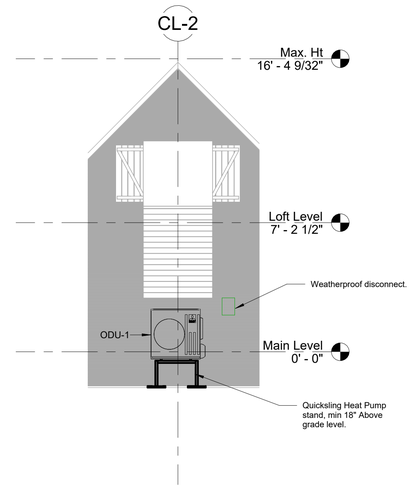
Drawn By NF

Reviewed By NF

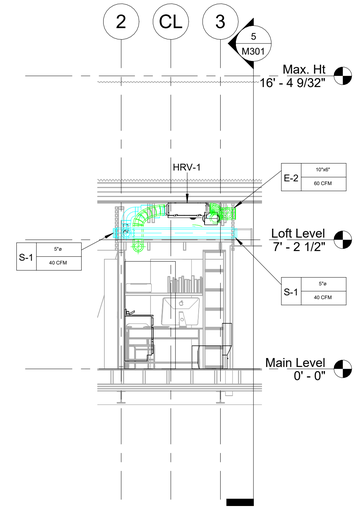
Sheet Number
M101



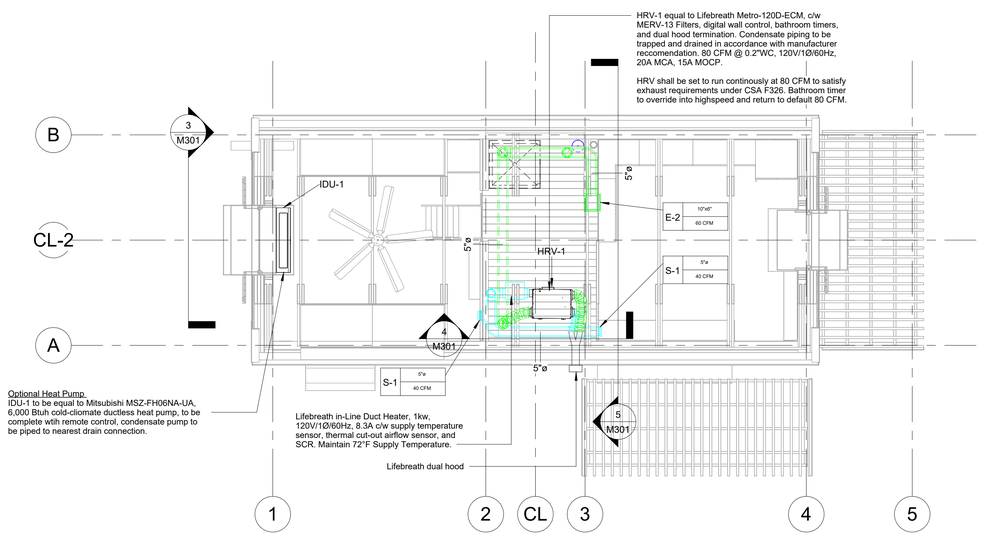
1 HVAC Main Level
1/4" = 1'-0"



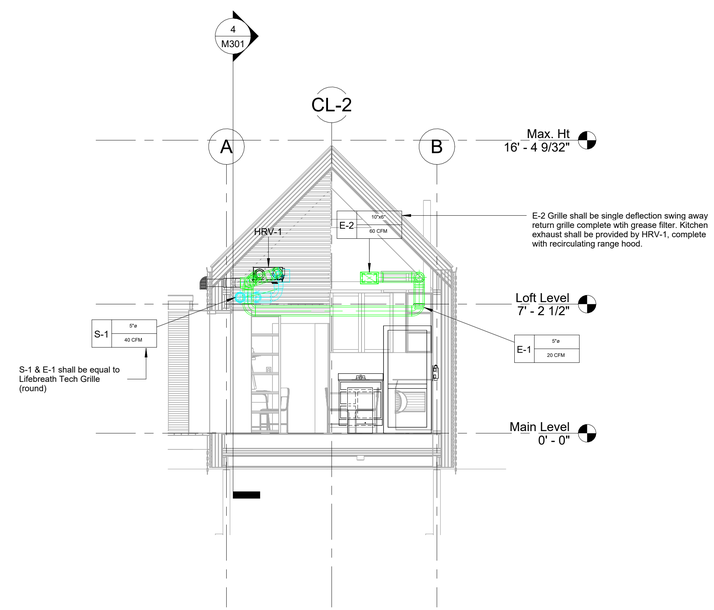
3 Optional ASHP Outdoor Unit Detail
1/4" = 1'-0"



4 Section 2
1/4" = 1'-0"



2 Loft Level
1/4" = 1'-0"



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

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Project Number
2025-12

Project Name & Address
Barrie Single Dedicated Accessory Dwelling Unit

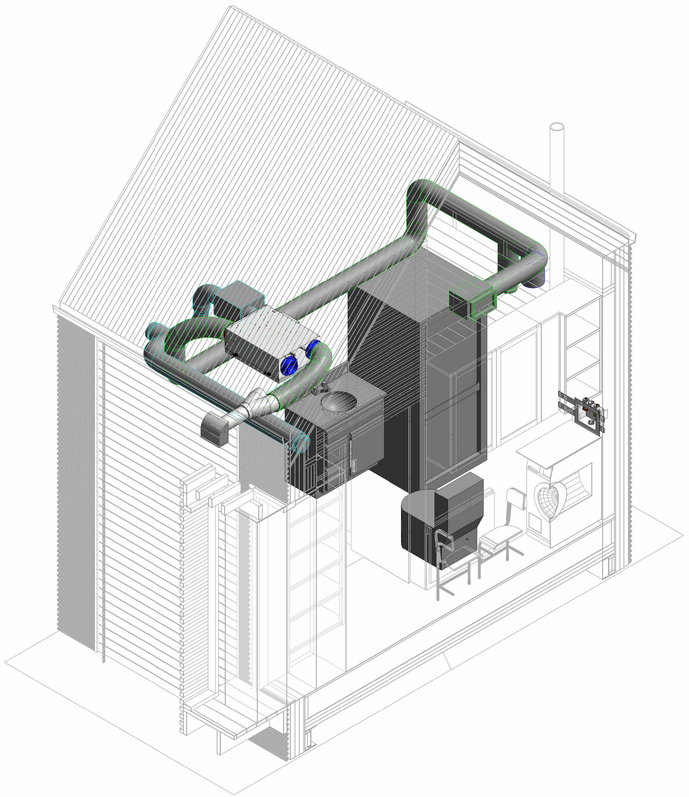
Barrie, Ontario

Sheet Name
HVAC Drawings

Drawn By
NF

Reviewed By
NF

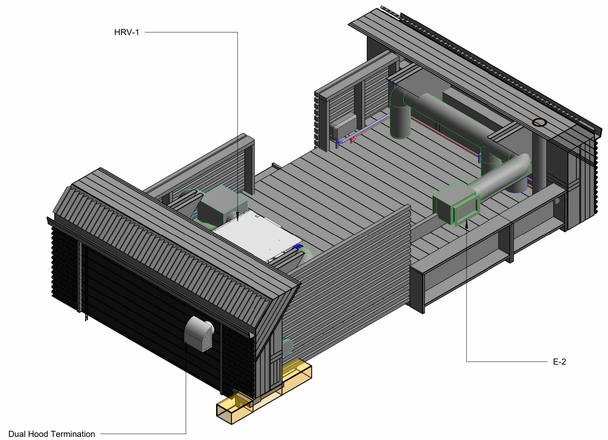
Sheet Number
M301



1 HVAC 3D Section

3 3D View 2

2 3D View 1



4 Mechanical Loft 3D

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Project Name & Address
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Barrie, Ontario

Sheet Name
HVAC Drawings

Drawn By NF

Reviewed By NF

Sheet Number
M302