GENERAL MECHANICAL SPECIFICATIONS

1. GENERAL SCOPE OF WORK
   - 1.1. SUPPLY AND INSTALL ALL THE ITEMS, ARTICLES, MATERIALS, INCLUDE ALL LABOUR, EQUIPMENT, TOOLS, NECESSARY TO COMPLETE ALL SYSTEMS SHOWN ON THE DRAWINGS AND SPECIFICATIONS, PROVIDING A COMPLETE AND OPERATING INSTALLATION.
   - 1.2. THE CONTRACTOR SHALL PERFORM THE WORK STIPULATED IN THE CONTRACT AND ANY OR ALL CONTRACT CHANGES AND CHANGE DIRECTIVES, AND SHALL FURNISH, UNLESS OTHERWISE PROVIDED IN THE CONTRACT, EVERYTHING NECESSARY FOR THE PROPER PERFORMANCE AND COMPLETION OF THE WORK.
   - 1.3. GENERAL CONTRACTOR TO COORDINATE SCOPE OF WORK BETWEEN ALL TRADES. TRADES INCLUDE, BUT ARE NOT LIMITED TO, MECHANICAL, ELECTRICAL, CONTROLS, ENVIRONMENTAL, BASE BUILDING SERVICES (SPRINKLER/FIRE PROTECTION, ELEVATOR, ETC.).
   - 1.4. ALL WORK SHALL BE FULLY COMPLETED, TESTED, COMMISSIONED AND IN GOOD WORKING ORDER AT TIME OF HAND-OVER.
   - 1.5. DISCONNECT, RECONNECT OR RELOCATE EXISTING EQUIPMENT OR SERVICES AS REQUIRED TO PERMIT NEW WORK TO BE INSTALLED WITHOUT INTERFERENCES. ENSURE THAT REQUIRED SERVICES ARE MAINTAINED.
   - 1.6. MAKE GOOD ANY DAMAGES TO EXISTING EQUIPMENT AND/OR SYSTEM(S).
   - 1.7. MATERIALS AND WORK WHICH FAILS TO MEET SPECIFIED REQUIREMENTS WILL BE REJECTED BY THE ENGINEER WHENEVER FOUND AT ANY TIME PRIOR TO FINAL ACCEPTANCE AND REGARDLESS OF PREVIOUS INSPECTIONS. WHEN REJECTED, DEFECTIVE MATERIALS OR WORK SHALL BE PROMPTLY REMOVED, REPLACED OR REPAIRED TO THE SATISFACTION OF THE ENGINEER AT NO EXPENSE TO THE OWNER.
   - 1.8. PROVIDE SCANNING AND X-RAY OF EXISTING FLOORS AND WALLS PRIOR TO DRILLING AND CUTTING TO AVOID INTERFERENCE OR DAMAGE OF CONCEALED SERVICES.
   - 1.9. INFILL ALL UNUSED FLOOR, CEILING AND WALL OPENING AS A RESULT OF DEMOLITION WORK.

2. CONTRACT DOCUMENTS (DRAWINGS AND SPECIFICATIONS)
   - 2.1. DRAWINGS SHOW GENERAL INTENT OF THE WORK AND PROPOSED ROUTING ONLY.
   - 2.2. DRAWINGS DO NOT SHOW ALL PIPING OFFSETS AND FITTINGS, CONTRACTOR SHALL PROVIDE ALL REQUIRED SPECIALTIES. CONFIRM FINAL ROUTING AND INSTALLATION OF THE MECHANICAL EQUIPMENT AND SERVICES WITH SITE CONDITIONS.
   - 2.3. COMPLY WITH THE GENERAL AND APPLICABLE SECTIONS OF THE GENERAL CONTRACT SPECIFICATIONS.
   - 2.4. CONTRACTOR SHALL CONFIRM ALL DIMENSIONS BY FIELD MEASUREMENT BEFORE PROCEEDING WITH THE WORK.
   - 2.5. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING POSSIBLE INTERFERENCES AND INFORMING THE ENGINEER PRIOR TO STARTING ANY WORK.
   - 2.6. ENGINEERING DRAWINGS SHALL NOT BE SCALED.

3. STANDARDS AND REGULATIONS
   - 3.1. ALL WORK SHALL BE COMPLIANT WITH THE MOST RECENT ISSUES OF THE APPLICABLE CODES, STANDARDS, BY-LAWS, REGULATIONS AND BASE BUILDING SPECIFICATIONS FOR GENERAL CONDITIONS, MATERIALS AND WORKMANSHIP.
   - 3.2. ALL EQUIPMENT AND MATERIALS SHALL BE NEW COMMERCIAL GRADE AND BE CSA, ULC OR CGA APPROVED UNLESS OTHERWISE INDICATED
   - 3.3. ONLY FIRST CLASS WORKMANSHIP WILL BE ACCEPTED WITH RESPECT TO STANDARD PRACTICES, SAFETY, ACCESSIBILITY, DURABILITY AND NEATNESS OF INSTALLATION WORK.
   - 3.4. MATERIALS USED IN PLENUMS SHALL HAVE FLAME SPREAD RATING OF NOT GREATER THAN 25 AND SMOKE DEVELOPMENT CLASSIFICATION OF NO GREATER THAN 50.

4. PERMITS
   - 4.1. OBTAIN ALL REQUIRED PERMITS AND APPROVALS. ARRANGE FOR INSPECTION OF THE WORK BY INSPECTION AUTHORITY.
   - 4.2. RETAIN ALL INSPECTION CERTIFICATES. PROVIDE FINAL CERTIFICATES TO THE OWNER.
   - 4.3. PAY FOR ALL PERMIT AND INSPECTION FEES.

5. EXISTING CONDITIONS
   - 5.1. EXAMINE SITE CONDITIONS TO ENSURE THAT WORK CAN BE SATISFACTORILY CARRIED OUT AS SHOWN. IF SITE EXAMINATION REVEALS ANY DIFFICULTIES THAT WILL PREVENT THE WORK FROM BEING CARRIED OUT AS DESIGNED, THESE MUST BE INDICATED IN THE TENDER PRICE AND BROUGHT TO THE ATTENTION OF THE ENGINEER.
   - 5.2. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY ADDITIONAL DIFFICULTIES, INTERFERENCES AND SITE CONSTRAINTS THAT MAY BE IDENTIFIED DURING THE CONSTRUCTION PERIOD.
   - 5.3. ROUTING OF NEW SERVICES MAY BE ADJUSTED TO ACCOMMODATE EXISTING SERVICES AND CONDITIONS PROVIDED THAT THE INTENT OF THE DRAWINGS IS MET AND THE ORIGINAL STANDARDS ARE MAINTAINED.
   - 5.4. PROVIDE DRAWINGS OF PROPOSED REVISIONS TO ENGINEER FOR APPROVAL BEFORE BEGINNING ANY WORK. INCORPORATE ALL CHANGES IN AS BUILT DRAWINGS.
   - 5.5. COORDINATE ALL ROUTING CHANGES WITH OTHER TRADES THAT MAY BE AFFECTED PRIOR TO ANY WORK.
   - 5.6. ENGINEER TO BE ADVISED PRIOR TO CHANGES WHERE CHANGES COULD BE SIGNIFICANT.
   - 5.7. ALL ASSOCIATED COSTS OF SUCH WILL BE PASSED TO THE CONTRACTOR.

6. SITE CONSTRUCTION MANAGEMENT
   - 6.1. COORDINATE SITE ACCESS AND DELIVERIES WITH FACILITY MANAGEMENT.
   - 6.2. COORDINATE WORK AND WORKING HOURS WITH THE FACILITY MANAGEMENT AND OTHER TRADES TO MINIMIZE DISRUPTION.
   - 6.3. THE CONTRACTOR IS TO TAKE EXTRA CARE DURING THIS INSTALLATION NOT TO DISTURB THE OPERATIONS OF THE FACILITY. ALL NOISY WORK SHALL BE PERFORMED AFTER NORMAL BUSINESS HOURS: BETWEEN 6PM AND 7AM, MONDAY THROUGH FRIDAY; AND ON WEEKENDS, FRIDAY 6PM THROUGH MONDAY 7AM.
   - 6.4. COORDINATE WITH THE FACILITY MANAGEMENT BEFORE INTERRUPTING ANY ESSENTIAL SERVICES. PROVIDE METHOD OF PROCEDURE FOR ANY SHUTDOWNS OR INTERRUPTIONS OF THE EXISTING SERVICES FOR FACILITY MANAGEMENT AND ENGINEER REVIEW AND ACCEPTANCE.
   - 6.5. OPEN FLAMES AND WELDING
     - 6.5.1. NO OPEN FLAMES OR WELDING IS PERMITTED WITHIN THE BUILDING WITHOUT WRITTEN PERMISSION BY THE OWNER AND/OR THE ENGINEER.
     - 6.5.2. HOT WORK PERMIT MUST BE VISIBLE AT ALL TIMES.
     - 6.5.3. ADEQUATE NUMBER OF FIRE EXTINGUISHERS MUST BE PROVIDED DURING THE OPEN FLAME PROCESS.
     - 6.5.4. FUME VENTILATION AND FILTRATION UNITS SHALL BE PROVIDED FOR ANT WELDING WITHIN THE FACILITY.
     - 6.5.5. WELDING SHALL BE UNDERTAKEN BY A COMPANY CERTIFIED BY CANADIAN WELDING BUREAU UNDER REQUIREMENTS OF CAN/CSA W47.1.
     - 6.5.6. WELDING SHALL BE PERFORMED IN ACCORDACNE WITH ANSI/ASME B31.1, B31.1, BOILER AND PRESSURE VESSELS CODE.
     - 6.5.7. SUBMIT WELDER'S QUALIFICATIONS AND WELDING PROCEDURES PRIOR TO ANY WORK.
     - 6.5.8. WELDING AND OTHER SMOKE/DUST GENERATING WORK IN MECHANICAL ROOMS USED AS AN AIR PLENUM OF AIR HANDLING SYSTEM SHALL BE COMPLETED DURING AFTER HOURS OR OUTSIDE OF EQUIPMENT OCCUPANCY SCHEDULE. CONTRACTOR SHALL VERIFY OPERATING SCHEDULE WITH THE FACILITY MANAGEMENT. COMPLETE THOROUGH CLEANING OF THE ROOM AND/OR PLENUM PRIOR TO REINSTATING AIR HANDLING EQUIPMENT IN SERVICE.
   - 6.6. CLEANING
     - 6.6.1. CLEAN PREMISES DAILY AT THE END OF EACH WORK DAY.
     - 6.6.2. DO NOT ACCUMULATE EQUIPMENT, TOOLS, DEBRIS AND WASTE MATERIALS ON SITE. REMOVE FROM SITE DAILY.
     - 6.6.3. COMPLETELY REMOVE ALL DEBRIS AND RUBBISH FROM SPACE ONCE WORK IS COMPLETE.
     - 6.6.4. ALL MATERIALS TO BE DISPOSED OF CONSTRUCTION SITE IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

7. SHOP DRAWINGS
   - 7.1. SUBMIT SHOP DRAWINGS, ELECTRONICALLY IN PDF FORMAT, FOR ENGINEER'S REVIEW.
   - 7.2. SHOP DRAWINGS SHALL BE ISSUED BY EQUIPMENT OR MATERIAL SUPPLIER, SHOP DRAWINGS CREATED BY CONTRACTOR WILL NOT BE REVIEWED.
   - 7.3. SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR ENGINEER'S REVIEW COVERING ALL RELEVANT DETAILS, DIMENSIONS AND PERFORMANCE. SUBMITTAL MUST CLEARLY IDENTIFY PROPOSED EQUIPMENT AND SELECTED OPTIONS, FEATURES, ACCESSORIES. GENERIC SUBMITTALS WILL NOT BE ACCEPTED.
   - 7.4. SHOP DRAWINGS MUST BE REVIEWED, STAMPED AND SIGNED BY THE CONTRACTOR AND THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO CONSULTANT / ENGINEER FOR REVIEW.
   - 7.5. CO-ORDINATE ALL DIMENSIONS WITH THE EQUIPMENT SHOP DRAWINGS.

8. CUTTING, PATCHING AND PAINTING REQUIREMENTS
   - 8.1. PROVIDE CUTTING, PATCHING AND PAINTING FOR ALL OPENINGS. USE QUALIFIED TRADES FOR THIS WORK. RESTORE FINISHES TO MATCH EXISTING SURROUNDINGS.
   - 8.2. REPAIR ALL FLOOR, WALL AND CEILING FINISHES TO MATCH EXISTING DUE TO REMOVAL OF THE EQUIPMENT OR SERVICES TO PRESERVE VISUAL AESTHETICS.
   - 8.3. SUPPLY AND INSTALL APPROVED FIRESTOPS AS REQUIRED TO MAINTAIN FIRE RATING.

22x34in

GENERAL MECHANICAL SPECIFICATIONS

   - 8.4. PIPING AND VENTS THROUGH WALL AND ROOF SHALL BE BY THE MECHANICAL DIVISION CONTRACTOR, INCLUDING ALL PATCHING.

9. CORING REQUIREMENTS
   - 9.1. FOR ALL CORING LESS THEN 3" DIA. CONTRACTOR SHALL BE RESPONSIBLE FOR SCANNING AREA PRIOR TO CORING THROUGH FLOORS/CEILINGS.
   - 9.2. FOR ALL CORING GREATER THEN 3" DIA. CONTRACTOR SHALL BE RESPONSIBLE FOR X-RAYING AREA PRIOR TO CORING THROUGH FLOORS/CEILINGS. X-RAY ACTIVITIES SHALL BE CARRIED OUT ONLY AFTER HOURS, ONCE ADJACENT FLOORS AND SPACES HAVE BEEN CONFIRMED TO BE FULLY UNOCCUPIED. COORDINATE WITH FACILITY MANAGEMENT.
   - 9.3. CONTRACTOR SHALL SURVEY FLOOR/CEILING OR WALL SURFACE ON THE OPPOSITE SIDE OF THE CORE TO CONFIRM TO OBSTRUCTIONS, ALLOW FOR OFFSETS WITH THE PERMISSION FROM ENGINEER TO AVOID ANY OBSTRUCTIONS.

10. PENETRATIONS THROUGH FLOORS AND WALLS
   - 10.1. WHERE PIPING PASS THROUGH FIRE PARTITIONS, FIRE WALLS, SMOKE PARTITIONS, OR FLOORS, PROVIDE A FIRE STOP THAT PROVIDES AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FIRE, SMOKE, AND GASES.
   - 10.2. FIRESTOPPING SYSTEMS SHALL BE TESTED AND LISTED TO CAN/ULC S115, STANDARD METHOD OF FIRE TESTS OF FIRESTOP SYSTEMS.
   - 10.3. FIRE STOPPING MATERIALS SHALL BE PROVIDED BY A SINGLE MANUFACTURER; FOR ANY WORK IN EXISTING BUILDING, CONFIRM STANDARD FIRESTOPPING SUPPLIER WITH THE FACILITY MANAGEMENT.
   - 10.4. FIRESTOPPING CAULKING SHALL BE "3M FIRE BARRIER" FIRETEMP CAULK OR APPROVED EQUIVALENT.
   - 10.5. APPLY FIRESTOP SYSTEMS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
   - 10.6. ALL FIRE STOPPING SYSTEMS SHALL MEET OR EXCEED RATINGS FOR THE PARTICULAR FIRE RATING OF THE PENETRATED SURFACE.
   - 10.7. FIRESTOPPING CONTRACTOR MUST BE A LICENSED 3M CERTIFIED INSTALLER WITH A MINIMUM 3 YEARS OF EXPERIENCE IN PROJECTS OF SIMILAR SCOPE AND SCALE, PROVIDE CERTIFICATIONS AND QUALIFICATIONS OF THE PERSONNEL PRIOR TO ANY WORK.
   - 10.8. FIRESTOPPING MATERIALS SHALL BE FREE OF WATER SOLUBLE EXPANSION MATERIALS AND FREE OF ASBESTOS CONTAINING MATERIALS.
   - 10.9. MATERIALS SHALL BE TESTED, LISTED AND LABELED BY ULC FOR INSTALLATION IN DESIGNATED FIRE STOPPING AND SMOKE SEAL SYSTEMS, TO PROVIDE A POSITIVE FIRE, WATER AND SMOKE SEAL AND A FIRE RESISTANCE RATING (FLAME, HOSE STREAM AND TEMPERATURE) NOT LESS THAN THE FIRE RATING FOR SURROUNDING CONSTRUCTION. MATERIALS SHALL BE COMPATIBLE WITH ABUTTING DISSIMILAR MATERIALS AND FINISHES.
   - 10.10. PROVIDE SLEEVES FOR PIPE PENETRATIONS THRU FLOORS AND WALLS, COMPLETE WITH ADEQUATE REINFORCING AND SIZED TO ALLOW FOR MOVEMENT DUE TO EXPANSION. SLEEVES IN JANITOR CLOSETS, MECHANICAL ROOMS, PLENUM, SHAFTS AND OTHER SPACES SUBJECT TO WATER LEAKS AND ACCUMULATION SHALL EXTEND MINIMUM 50mm (2") ABOVE FLOOR. PROVIDE TIGHT FITTING CLAMPS ON EACH SIDE OF SLEEVE.
   - 10.11. BELOW GRADE PIPING PENETRATIONS THRU WALLS SHALL BE SEALED WITH ELASTOMERIC MODULAR LINK SEAL ASSEMBLY.

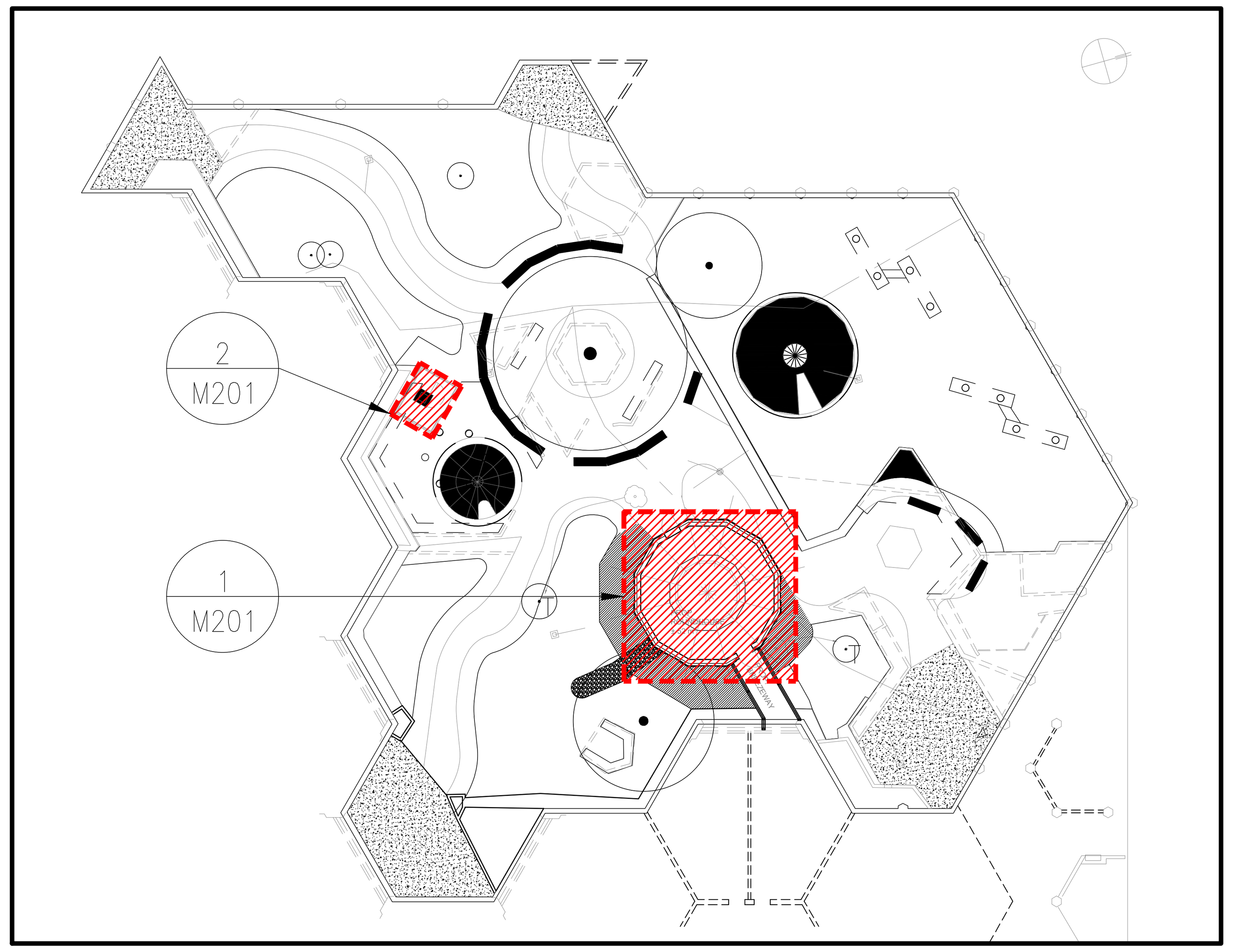
11. AS BUILT DRAWINGS
   - 11.1. MAINTAIN RECORD OF ALL REVISIONS AND PREPARE RED LINE RECORD DRAWINGS IN A NEAT MANNER SHOWING ALL ALTERATION IN WORK. SUBMIT PROGRESS RECORDS OF REVISIONS TO ENGINEER ON BI-WEEKLY BASIS.
   - 11.2. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS REQUIRED TO MAKE CHANGES AND REVISIONS OF DRAWINGS IN AUTOCAD FORMAT; ISSUED FOR CONSTRUCTION AUTOCAD DRAWINGS WILL BE PROVIDED BY CONSULTANT FOR CONTRACTOR'S USE. COMPLY WITH OWNER'S CAD GUIDELINES AND STANDARDS. SUBMIT PREPARED AUTOCAD DRAWINGS TO OWNER'S AUTOCAD/RECORDS DEPARTMENT FOR REVIEW AND APPROVAL, MAKE ALL NECESSARY CHANGES REQUIRED FOR COMPLIANCE PRIOR TO SUBMISSION TO ENGINEER.
   - 11.3. UPON COMPLETION OF WORK, SUBMIT ELECTRONIC FORMAT DRAWINGS (IN AUTOCAD 2020 FORMAT) FOR REVIEW AND APPROVAL OF ENGINEER.
   - 11.4. MAKE CHANGES AS DIRECTED BY ENGINEER.
   - 11.5. ONCE APPROVED, SUBMIT THREE HARD COPIES OF AS BUILT DRAWINGS IN FULL SIZE AND THREE USB DRIVES WITH AUTOCAD DRAWINGS AND INCLUDE IN O&M MANUALS.

12. OPERATION AND MAINTENANCE MANUALS
   - 12.1. SUBMIT O&M MANUAL ELECTRONICALLY IN PDF FORMAT TO ENGINEER FOR REVIEW. MANUALS SHALL INCLUDE SHOP DRAWINGS OF ALL NEW EQUIPMENT, TEST AND BALANCING REPORTS, COMMISSIONING REPORTS, WARRANTIES, MAINTENANCE AND OPERATION PROCEDURES AND AS BUILT DRAWINGS.
   - 12.2. UPON ENGINEER'S REVIEW AND ACCEPTANCE PROVIDE TWO(2) COMPLETE BINDERS INCLUDING ALL DOCUMENTS AND SOFT COPY TO THE OWNER.

13. WARRANTY
   - 13.1. SUBMIT A "CERTIFICATE OF GUARANTEE" FOR WORKMANSHIP AND MATERIALS FOR ONE YEAR FROM DATE OF FINAL ACCEPTANCE; SUCH AS SUBSTANTIAL COMPLETION OR OCCUPANCY CERTIFICATE.
   - 13.2. THIS GUARANTEE SHALL BIND THE CONTRACTOR TO CORRECT, REPAIR OR REPLACE PROMPTLY ANY DEFECTIVE EQUIPMENT OR WORKMANSHIP WITHOUT COST TO THE OWNER.
   - 13.3. ASSUME FULL RESPONSIBILITY FOR LAYOUT OF ALL WORK AND FOR ANY DAMAGE CAUSED TO OWNER OR OTHERS BY IMPROPER CARRYING OUT OF THE WORK.

SCOPE OF WORK

1. ALL WORK AS PER DRAWINGS AND SPECIFICATIONS, COMPLY WITH ALL APPLICABLE CODES AND MUNICIPAL BYLAWS.
2. PROVIDE NEW WALL MOUNTED AIR HANDLING UNIT C/W DUCTWORK DISTRIBUTION, GRILLES, DAMPERS AND ACCESSORIES AS INDICATED.
3. PROVIDE TESTING, ADJUSTMENT AND BALANCING OF HVAC SYSTEMS.
4. PROVIDE NEW EXHAUST FAN FOR ROUNDHOUSE C/W DUCTWORK AND TERMINATE AT ROOF.
5. FREEZE EXISTING HEATING WATER PIPING, CUT PIPING, PROVIDE NEW ISOLATION VALVES AND DEMOLISH EXISTING WALL FIN HEATER. PROVIDE NEW WALL FIN HEATER AND EXTEND PIPING SERVICES TO NEW LOCATION AS INDICATED. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF THE EXISTING PIPING SERVICES PRIOR TO ANY WORK.
6. PROVIDE NEW EXHAUST FAN 'ORTON VENT MASTER' FOR THE KILN.
7. PROVIDE NEW EXHAUST FAN FOR THE SHED C/W THERMOSTAT.
8. COORDINATE ALL SHUT DOWNS WITH THE FACILITY.
9. COORDINATE ALL WORK WITH ELECTRICAL AND CONTROLS CONTRACTORS.



1 / M100 KEY PLAN

SCALE: NTS

DRAWING LIST

M100	GENERAL NOTES, KEY PLAN, DRAWING LEGEND AND SPECIFICATIONS
M101	SPECIFICATIONS CONT'D AND DETAILS
M102	DETAILS
M103	SCHEDULES
M201	MECHANICAL MODIFICATIONS

LEGEND

SYMBOL	DESCRIPTION
	EXISTING TO BE REMOVED
	EXISTING TO REMAIN
	NEW WORK
	DOMESTIC COLD WATER (DCW)
	DOMESTIC HOT WATER (DHW)
	DOMESTIC HOT WATER RECIRC. (DHWR)
SAN	SANITARY DRAIN (BELOW GRADE)
SAN	SANITARY DRAIN (ABOVE GRADE)
	PIPE DOWN
	PIPE UP
RD	ROOF DRAIN
FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
	P-TRAP
	END CAP
	PIPING BREAK/CONTINUATION
	CLEANOUT - FLOOR
	CLEANOUT - PLUG
	FLANGED UNION
	ISOLATION VALVE
	PUMP
	BALANCING VALVE
	CHECK VALVE
	PRESSURE REDUCING VALVE
	STRAINER
	PRESSURE RELIEF VALVE
LW	LOW WATER CUT OFF
FS	FLOW SWITCH
AV	MANUAL AIR VENT
AAV	AUTOMATIC AIR VENT
T	TEMPERATURE GAUGE
	PRESSURE GAUGE
NG	NATURAL GAS REGULATOR
	BACKFLOW PREVENTER (DOUBLE CHECK VALVE ASSEMBLY)
	BACKFLOW PREVENTER (REDUCED PRESSURE ZONE ASSEMBLY)
AFF	ABOVE FINISHED FLOOR
BDD	BACK DRAFT DAMPER
CO	CLEANOUT
CTE	CONNECT TO EXISTING
FF	FINISHED FLOOR LEVEL
FD	FLOOR DRAIN
FFD	FLOOR FUNNEL DRAIN
FD	HUB DRAIN
VFD	VARIABLE FREQUENCY DRIVE
TYP	TYPICAL
	RETURN/EXHAUST DUCT UP
	RETURN/EXHAUST DUCT DOWN
	SUPPLY DUCT UP
	SUPPLY DUCT DOWN
	INTERNALLY LINED DUCT
	THERMALLY INSULATED DUCT
	DUCT ACCESS PANEL
	SQUARE CONE/PLAQUE DIFFUSER
	RETURN GRILLE
	AIRFLOW DIRECTION
BD	BALANCING DAMPER
	FIRE DAMPER
	FIRE AND SMOKE DAMPER
M	MOTORIZED DAMPER
T	ZONE TEMPERATURE SENSOR
FE	FIRE EXTINGUISHER

No	Revisions	Date
4	ISSUED FOR TENDER/PERMIT	30SEPT2025
3	ISSUED FOR 99% DESIGN REVIEW	28AUG2025
2	ISSUED FOR 66% DESIGN REVIEW	21FEB2025
1	ISSUED FOR 33% DESIGN REVIEW	11DEC2024

Orientation

Seal

LICENSED PROFESSIONAL ENGINEER
SEPT30,2025
D. BEREZOVSKI
100222327
PROVINCE OF ONTARIO

The Contractor shall check and verify all dimensions and report all errors and omissions to the IO-Owner's/MBS Designee (as applicable) for his/her written direction before proceeding with the Work.

A — A Detail No

B — B Sheet No where detailed

DYNAMIS ENGINEERING INC

Infrastructure Ontario

Ministry PSIF Number
PSIF NUMBER

Project
OCI INDIGENOUS YARD

Location
109 McLAUGHLIN ROAD SOUTH
BRAMPTON, ONTARIO

IO Project No	Site No	Building No
240060	210060	B18609

Client
SOLGEN/COLLIERS

Colliers Project Leaders

Drawing Title
GENERAL NOTES, KEY PLAN, DRAWING LEGEND AND LIST

Scale	Project Start Date	hsai Proj. No
	20241004	24451

Drawn by: NC

Substantial Performance Date: 2025XXXX

Designed by: DB/NC

Approved by: DB

Floor No: 1

Drawing No: M100 of

CADD File NAME DE25-147 OCI IY MECH 99% 2025-08-28.DWG

PLOT DATE Sep. 30, 25

HVAC SPECIFICATIONS

1. DUCTWORK
   1.1. DUCTWORK SHALL BE CONSTRUCTED TO ASHRAE/SMACNA STANDARDS.
   1.2. DUCT SIZES ARE LISTED ON DRAWINGS. ALL DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS.
   1.3. ALL FLEXIBLE DUCTWORK TO DIFFUSERS SHALL BE ALUMINUM SPIRAL, MAXIMUM LENGTH 5FT.
   1.4. SEAL ALL NEW LOW PRESSURE DUCTS (<2IN.WC.) AND LOW PRESSURE DUCT MODIFICATIONS TO SMACNA SEAL CLASS 'C' USING SEALANT OR ALUMINUM TAPE; OR A COMBINATION THEREOF.
   1.5. HIGH PRESSURE DUCTS (=>2IN.WC.) SHALL BE CONSTRUCTED OF FACTORY FABRICATED, SPIRAL WOUND, GALVANIZED STEEL WITH MATCHING FITTINGS AND SPECIALS TO SMACNA. USE SPLIT TYPE JOINTS WITH SEALANT FOR DUCTS UP TO 36IN.
   1.6. SEAL ALL NEW HIGH PRESSURE DUCTS (=>2IN.WC.) AND HIGH PRESSURE DUCT MODIFICATIONS TO SMACNA SEAL CLASS 'A' USING SEALANT.

2. FLEXIBLE DUCTS
   2.1. HEATING AND COOLING APPLICATIONS, NON INSULATED, LOW PRESSURE – NON-COLLAPSIBLE, COATED WOVEN FIBERGLASS SUPPORTED BY COATED SPRING STEEL WIRE HELIX.
   2.2. HEATING AND COOLING APPLICATIONS, INSULATED, LOW PRESSURE – NON-COLLAPSIBLE, COATED MINERAL BASE PERFORATED FABRIC TYPE HELICALLY SUPPORTED BY AND MECHANICALLY BONDED TO STEEL WIRE WITH FACTORY APPLIED FLEXIBLE GLASS FIBRE ACOUSTIC INSULATION AND ENCASED IN ALUMINUM FOIL AND MYLAR LAMINATE VAPOUR BARRIER.
   2.3. MAXIMUM LENGTH SHALL BE 5FT.
   2.4. HIGH PRESSURE SYSTEMS – NO FLEXIBLE DUCTWORK IS ALLOWED.
   2.5. PROVIDE FLEXIBLE DOCT SUPPORT AT EACH 90 DEG. VERTICAL ELBOW TO PREVENT SAGGING.
   2.6. PROVIDE MINIMUM 3 TIMES DUCT DIAMETERS OF STRAIGHT FLEX ON INLET OF EACH DIFFUSER/GRILLE.

3. ELBOWS
   3.1. FOR LOW PRESSURE SYSTEM: ELBOWS SHALL HAVE RADIUS OF NOT LESS THAN DUCT WIDTH, ELBOWS WITH RADIUS LESS THAN DUCT WIDTH SHALL BE PROVIDED WITH TURNING VANES (DUCTMATE OR APPROVED EQUAL).
   3.2. FOR HIGH PRESSURE SYSTEM: SMOOTH RADIUS AND/OR 5-PIECE (FOR 90°), 3-PIECE (FOR 45°) WITH CENTRELINE RADIUS AT 1.5 X DIAMETER. USE 45° CONICAL TRANSITIONS FOR BRANCH CONNECTIONS.

4. BALANCING DAMPERS
   4.1. BALANCING DAMPERS SHALL BE MANUALLY OPERATED OPPOSED BLADE OR SPLITTER TYPE. SPLITTER DAMPERS SHALL BE COMPLETE WITH CONTROL ROD, PIVOT BRACKET AND BALL JOINT FITTING WITH LOCKING SETSCREW.
   4.2. SPLITTER DAMPERS SHALL BE INSTALLED ON ALL BRANCH DUCT CONNECTIONS (OR TAKE-OFFS) FROM DUCTS.
   4.3. OPPOSED BLADE DAMPERS SHALL BE USED FOR ALL DIFFUSER/GRILLE BALANCING DAMPERS.

5. BALANCING
   5.1. EMPLOY THE SERVICES OF AABC OR NEBB CERTIFIED BALANCING COMPANY TO BALANCE THE AIR SYSTEMS TO ACHIEVE THE AIRFLOW SHOWN. THE BALANCING COMPANY SHALL SUBMIT A COMPLETE REPORT. ACCEPTANCE OF BALANCING AND REPORT WILL BE SUBJECT TO ON SITE MEASUREMENT AND/OR VERIFICATION OF THE REPORT BY THE ENGINEER.
   5.2. NOTIFY ENGINEER OF ANY DISCREPANCIES GREATER THAN ±5% OF DESIGN VALUES PRIOR OF SUBMISSION OF REPORT.

6. FLEXIBLE CONNECTIONS
   6.1. FLEXIBLE CONNECTIONS TO BE FIRE RESISTANT NEOPRENE COATED GLASS FABRIC.
   6.2. INSTALL DUCT FLEXIBLE CONNECTIONS AT INLETS AND OUTLETS OF SUPPLY AND EXHAUST AIR UNITS AND WHERE INDICATED ON DRAWINGS.

7. GRILLES, REGISTERS AND DIFFUSERS
   7.1. PROVIDE ALL REGISTERS, GRILLES AND DIFFUSERS WITH BAKED ENAMEL FINISH TO MATCH ADJACENT FINISHES. REFER TO DRAWINGS FOR TYPES AND QUANTITIES.
   7.2. ALL DIFFUSER/GRILLE/REGISTER COLOURS SHALL BE CONFIRMED AT THE SHOP DRAWING STAGE BY THE ARCHITECT OR INTERIOR DESIGNER. PROVIDE SAMPLES OF FINISHES WITHIN SHOP DRAWING.
   7.3. PROVIDE REQUIRED DUCT TRANSITIONS, ADAPTERS AND OTHER FITTINGS TO COMPLETE CONNECTION BETWEEN DUCTWORK AND GRILLES.
   7.4. REFER TO DRAWINGS FOR SIZES AND LOCATIONS.

8. THERMAL INSULATION FOR DUCTS
   8.1. INSULATION THICKNESS AND PERFORMANCE SHALL MEET ASHRAE 90.1-2013 REQUIREMENTS.
   8.2. BLANKET OR RIGID THERMAL INSULATION ON INDOOR DUCTS SHALL BE PROVIDED AND INSTALLED AS FOLLOWS UNLESS OTHERWISE INDICATED:
      8.2.1. INSULATE FULL LENGTH OF FRESH AIR SUPPLY DUCTS.
      8.2.2. INSULATE FIRST 4.6m (15 FT) OF EXHAUST DUCTS FROM EXTERIOR WALL OR ROOF.
      8.2.3. INSULATE FULL LENGTH OF SUPPLY AND RETURN DUCTS THAT ARE ROUTED THROUGH A NON-CONDITIONED SPACE.
      8.2.4. THERMAL INSULATION IS NOT REQUIRED ON SUPPLY AND RETURN DUCTS CONFINED WITHIN A CONDITIONED SPACE (INCLUDING RETURN PLENUM CEILINGS).
      8.2.5. USE RIGID INSULATION AND DRYWALL TYPE CORNER BEADS IN AREAS WHERE INSULATION IS EASILY SUSCEPTIBLE TO DAMAGE.
   8.3. INSULATION SHALL BE FOIL FACED HAVING FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPMENT CLASSIFICATION OF 50 OR LESS.
   8.4. THERMAL INSULATION SHALL BE 1-1/2" THICK BLANKET MINERAL FIBER OR 1" THICK RIGID MINERAL FIBERBOARD FOR WARM AIR DUCTS AND DUCTS BETWEEN OUTSIDE WALLS AND MIXING PLENUMS.
   8.5. THERMAL INSULATION FOR COLD AIR DUCTS SHALL BE 1-1/2" THICK RIGID INSULATION, OR 2" THICK BLANKET MINERAL FIBRE.
   8.6. VAPOUR-RETARDER MEMBRANE SHALL BE INSTALLED WITH INSULATION ON COLD, DUAL-TEMP AND FRESH AIR AIR SUPPLY DUCTS.
   8.7. ACCEPTABLE BLANKET MINERAL FIBER SHALL BE JOHNS MANVILLE MICROLITE DUCT WRAP TYPE 100 OR EQUIVALENT.
   8.8. ACCEPTABLE RIGID MINERAL FIBERBOARD SHALL BE JOHNS MANVILLE 800 SERIES SPIN-GLASS TYPE OR EQUIVALENT.
   8.9. SEAL ALL JOINTS WITH ULC LISTED SELF-ADHESIVE INSULATION TAPE FOR INDOOR DUCTS AND INSULATION.
   8.10. USE RIGID INSULATION AND DRYWALL TYPE CORNER BEADS IN AREAS WHERE INSULATION IS EASILY SUSCEPTIBLE TO DAMAGE.
   8.11. EXTERIOR DUCTWORK INSULATION SHALL BE COVERED BY A .04" THICK ALUMINUM JACKET (FORMING THE DOUBLE SKIN). ALL LONGITUDINAL SEAMS SHALL BE FORMED ALONG THE BOTTOM. ENSURE THAT ALUMINUM JACKET IS FASTENED WITH SECURE, WATERTIGHT MECHANICAL CONNECTIONS. APPLY EXTERIOR GRADE SEALANT AT ALL SEAMS.

9. ACOUSTIC LINING
   9.1. RIGID FIBER GLASS BOARD MEETING OR EXCEEDING ASTM C1071 TYPE II DUCT LINER REQUIREMENTS.
   9.2. PROVIDE ACOUSTIC LINING IN PLENUMS AND DUCTWORK AS INDICATED ON DRAWINGS. UNLESS INDICATED OTHERWISE LINING THICKNESS SHALL BE 1" FOR ALL DUCT DISTRIBUTION.
   9.3. THERMAL CONDUCTANCE OF 0.23 BTU-in/HR-FT^2-°F AT 75°F MEAN.
   9.4. SOUND ABSORPTION COEFFICIENTS:

THICKNESS	SOUND ABSORPTION COEFFICIENT AT FREQUENCY						
IN	125	250	500	1000	2000	4000	NRC
1"	0.04	0.26	0.69	1.00	1.07	1.02	0.75
1-1/2"	0.14	0.52	1.01	1.07	1.03	0.97	0.90
2"	0.26	0.73	1.10	1.10	1.04	1.03	1.00
3"	0.56	1.18	1.24	1.12	1.04	1.03	1.15
4"	0.81	1.30	1.26	1.12	1.04	1.05	1.20

   9.5. FLAME SPREAD OF 25 OR LESS AND SMOKE DEVELOPMENT OF 50 OR LESS.
   9.6. APPROVALS AND LISTINGS: NFPA 90A, NFPA 90B, NFPA 259, ASHRAE 62, CAN/ULC S102.
   9.7. ADHESIVES TO ASTM C916.
   9.8. PROVIDE DUCT SIZES INDICATE CLEAR INSIDE DIMENSIONS.
   9.9. STANDARD OF ACCEPTANCE: JOHN MANVILLE LINACOUSTIC R-300, OWENS CORNING QUIETR OR APPROVED EQUIVALENT.
   9.10. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, PROVIDE REQUIRED FASTENERS.
   11.5. APPLY BLACK ACRYLIC POLYMER COATING TO ALL FIELD CUT EDGES AS PER SMACNA STANDARDS.

CONTROLS

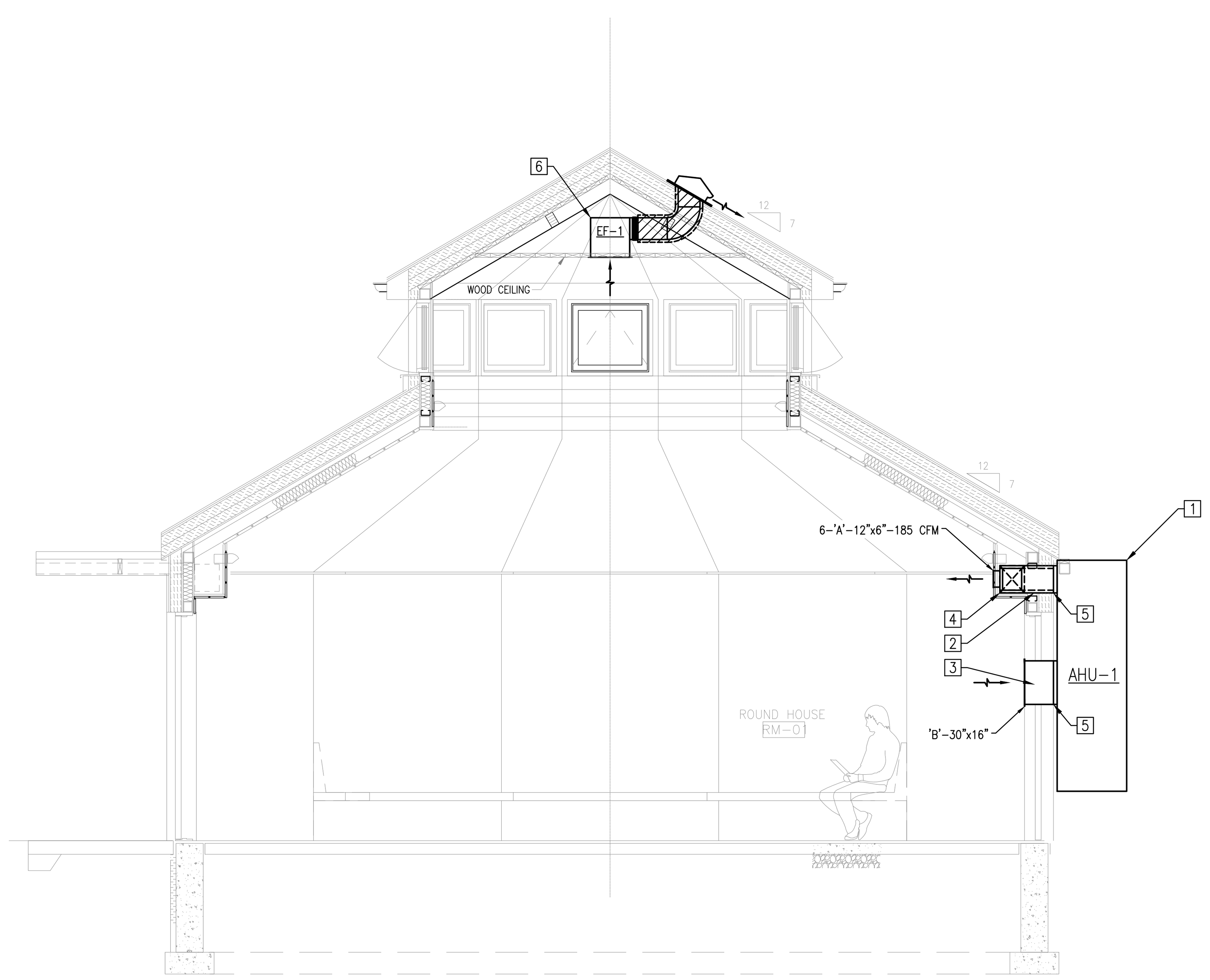
1. CONTROLS CONTRACTOR SHALL PROVIDE ALL REQUIRED LABOUR, MATERIALS AND EQUIPMENT AS REQUIRED FOR A FULLY FUNCTIONING SYSTEM.
2. ALL LOW VOLTAGE CONTROL WIRING (<50V) SHALL BE BY THE CONTROL DIVISION.
3. ALL NEW EQUIPMENT SHALL BE COMPATIBLE WITH THE EXISTING BASE BUILDING CONTROL SYSTEM.
4. PROVIDE ALL REQUIRED CONTROL DEVICES INCLUDED BUT NOT LIMITED TO DAMPERS C/W ACTUATORS AND END SWITCHES, RELAYS, SUPERVISORY AND FIELD CONTROLLERS, SENSORS, I/O AND EXPANSION MODULES, CONTROL PANELS, WIRING, CONDUIT AND ALL RELATED ACCESSORIES AND MATERIALS FOR A FULLY FUNCTIONING SYSTEM.
5. REFER TO DRAWINGS FOR PROPOSED LOCATIONS OF THE EQUIPMENT, COORDINATE FINAL LOCATIONS WITH MECHANICAL AND ELECTRICAL CONTRACTORS.
6. TEST AND VERIFY ALL DEVICES LOCALLY AT THE DEVICE LEVEL AND AT THE BAS GRAPHICS. TEST, ADJUST AND CALIBRATE ALL SENSORS IN FIELD WITH STANDALONE (TEMPERATURE, RELATIVE HUMIDITY, CO/2, ETC) INSTRUMENT. PROVIDE REPORTING TO ENGINEER NOTING BAS INITIAL/AS-FOUND, AS-TESTED BY INSTRUMENT, FINAL BAS ADJUSTED AND FINAL INSTRUMENT VERIFIED VALUES.
7. PROVIDE ALL REQUIRED INTERLOCKS, SEQUENCING, ALARMING, TRENDING AND BASE BUILDING AUTOMATION SYSTEM TIE-INS (AS REQUIRED AND SPECIFIED).
8. REMOVE GRAPHICS FOR ALL DEMOLISHED/OBSOLETE EQUIPMENT AND SYSTEMS. PROVIDE NEW GRAPHICS FOR ALL NEW EQUIPMENT AND SYSTEMS.
9. TEST AND VERIFY SEQUENCES OF OPERATION, PROVIDE SENSOR CALIBRATION REPORTS, POINT TO POINT VERIFICATION AND COMMISSIONING REPORT FOR EACH UNIT.
10. PROVIDE TRAINING TO O&M PERSONNEL FOR BAS, SEQUENCE OF OPERATIONS, CONTROLS.
11. ALL BAS INTEGRATION AND CONTROL WORK SHALL BE COMPLETED BY BASEBUILDING VENDOR:
    BGIS ITS

WALL MOUNTED UNIT

1. REFRIGERANT & EFFICIENCY
   1.1. REFRIGERANT: R-454B (A2L, LOW GWP).
   1.2. EFFICIENCY METRICS: EER, IPLV, COP RATED PER ANSI/ARI STANDARD 390.
   1.3. MEETS ANSI/ASHRAE/IES 90.1-2022 EFFICIENCY STANDARDS.
   1.4. SCROLL 2-STAGE COMPRESSORS.
2. COMPRESSOR & REFRIGERATION SYSTEM
   2.1. TWO-STAGE SCROLL COMPRESSORS
   2.2. FLOATING COMPRESSOR BASE AND SOUND COVER FOR REDUCED NOISE
   2.3. LIQUID LINE FILTER/DRIER STANDARD
3. FAN SECTION
   3.1. INDOOR ECM BLOWER MOTOR WITH CONSTANT CFM CONTROL (UP TO 1" ESP)
   4.2. TWIN BLOWER / DUAL SHAFT DESIGN FOR QUIET OPERATION
   4.3. ENCLOSED OUTDOOR FAN MOTOR WITH BALL BEARINGS
5. COILS & MATERIALS
   5.1. COPPER TUBING WITH ALUMINUM FIN COILS
   5.2. EVAPORATOR COIL TREATED WITH "GREEN FIN" HYDROPHILIC COATING
   5.3. CORROSION PROTECTION OPTIONS AVAILABLE FOR COILS AND CABINETS
6. CABINET, INSULATION & CONSTRUCTION
   6.1. HEAVY-DUTY 20 GAUGE STEEL CONSTRUCTION WITH 16 GAUGE GALVANIZED STEEL BASE.
   6.2. INSULATION: NON-FIBERGLASS, FOIL-FACED RECYCLED MATERIAL (DENIM/COTTON WITH FSK FACING
   6.3. FILTER ACCESS: DEDICATED DOOR, SUPPORTS 1" OR 2" FILTERS, UP TO MERV 13
7. ELECTRICAL / CONTROLS
   7.1. CIRCUIT PROTECTION: BREAKERS STANDARD ON 208V
   7.2. PHASE ROTATION MONITORING ON THREE-PHASE MODELS
   7.3. BUILT-IN SAFEGUARDS: SHORT CYCLE PROTECTION, HIGH/LOW PRESSURE SWITCHES, REFRIGERANT LEAK SENSORS, DIAGNOSTIC LEDS, COMPRESSOR TIMING
   7.4. LOCKABLE HINGED COVER WITH RIGHT-SIDE ACCESS
8. VENTILATION & INDOOR AIR QUALITY OPTIONS
   8.1. VENTILATION PACKAGES: ENERGY RECOVERY VENTILATOR
9. CLEARANCES & INSTALLATION REQUIREMENTS
   9.1. SERVICE CLEARANCES (TYPICAL LARGE UNIT): 20" LEFT, 20" RIGHT, 10 FT FRONT
10. HEATING
   10.1. ELECTRIC – FACTORY INSTALLED 15kW STRIP HEAT WITH CIRCUIT BREAKER DISCONNECT.
   10.2. HEAT PUMP – COP OF 3.3 AT AMBIENT TEMPERATURE OF 47.0°F.
11. CERTIFICATIONS & STANDARDS
   11.1. PERFORMANCE CERTIFIED TO ANSI/AHRI STANDARD 390 (SPVU)
   11.2. SAFETY COMPLIANCE: ANSI/UL 60335-1, UL 60335-2-40, CSA EQUIVALENTS
   11.3. ETL LISTED, ISO 9001:2015 MANUFACTURER
12. OPTIONS
   12.1. ENERGY RECOVERY VENTILATOR
   12.2. 2" PLEATED MERV 8 FILTER – SUPPLY FOUR (4) SPARE SETS OF FILTERS, COORDINATE STORAGE LOCATION WITH THE FACILITY.
   12.3. STANDARD CABINET, BLOW THROUGH CONDENSER FAN.
   12.4. HIGH AND LOW PRESSURE SWITCHES.
   12.5. COMPRESSOR CONTROL MODULE.
   12.6. REFRIGERANT LEAK DETECTION.
   12.7. LOW AMBIENT CONTROL.
   12.8. REFRIGERANT ALARM RELAY.
   12.9. TOUCH SCREEN THERMOSTAT, CO2 VENTILATION CONTROL AND OCCUPANCY SENSOR.
   12.10. TOP RAIN FLASHING.
   12.11. BACnet MS/TP GATEWAY FOR BAS INTEGRATION.
   12.12. RETURN AIR GRILLE, ANODIZED FINISH TO MATCH ROUNDHOUSE WALL FINISHES.

SECTION 1

NOT TO SCALE



REFERENCE NOTES

1	NEW WALL MOUNTED UNIT, REFER TO SCHEDULES FOR PERFORMANCE. COORDINATE INSTALLATION WITH ELECTRICAL DIVISION AND MANUFACTURER'S INSTRUCTIONS.
2	NEW 30"x10" SUPPLY AIR PLENUM, PROVIDE 1/4" CLEARANCE AROUND SUPPLY AIR DUCT PENETRATION.
3	NEW 30"x16" RETURN AIR PLENUM, TERMINATE WITH GRILLE ON THE INSIDE WALL.
4	9"x10" SUPPLY AIR PLENUM ALONG THE PERIMETER, CONCEALED IN BULKHEAD. PROVIDE PROPER DUCT SUPPORTS AND COORDINATE INSTALLATION WITH ARCHITECTURAL DRAWINGS.
5	PROVIDE WEATHERPROOF CAULKING AND SEALANT AROUND THE SUPPLY AND RETURN AIR OPENING. PROVIDE THROUGH WALL SLEEVES FOR BOTH OPENINGS.
6	NEW CEILING MOUNTED EXHAUST FAN C/W ALUMINUM GRILLE WITH WHITE ENAMEL FINISH, SEE SCHEDULES FOR PERFORMANCE. PROVIDE THERMALLY INSULATED DUCTWORK AND TERMINATE WITH A PITCHED ROOF CAP (GREENHECK MODEL RJ-6x9 OR EQUIVALENT) AT ROOF. COORDINATE INSTALLATION WITH ARCHITECTURAL AND ELECTRICAL DIVISION.

No	Revisions	Date
4	ISSUED FOR TENDER/PERMIT	30SEPT2025
3	ISSUED FOR 99% DESIGN REVIEW	28AUG2025
2	ISSUED FOR 66% DESIGN REVIEW	21FEB2025
1	ISSUED FOR 33% DESIGN REVIEW	11DEC2024

Orientation

Seal

LICENSED PROFESSIONAL ENGINEER
SEPT30,2025
D. BEREZOVSKI
100222327
PROVINCE OF ONTARIO

The Contractor shall check and verify all dimensions and report all errors and omissions to the IO-Owner's/MBS Designee (as applicable) for his/her written direction before proceeding with the Work.

A Detail No
B Sheet No where detailed

DYNAMIS ENGINEERING INC

Infrastructure Ontario

Ministry PSIF Number
PSIF NUMBER

Project
OCI INDIGENOUS YARD

Location
109 McLAUGHLIN ROAD SOUTH
BRAMPTON, ONTARIO

IO Project No	Site No	Building No
240060	210060	B18609

Client
SOLGEN/COLLIERS

Colliers Project Leaders

Drawing Title
SPECIFICATIONS CONT'D AND DETAILS

Scale	Project Start Date	hsai Proj. No
	20241004	24451

Drawn by: NC
Designed by: DB/NC
Approved by: DB
Floor No: 1
Substantial Performance Date: 2025XXXX
Drawing No: M101 of

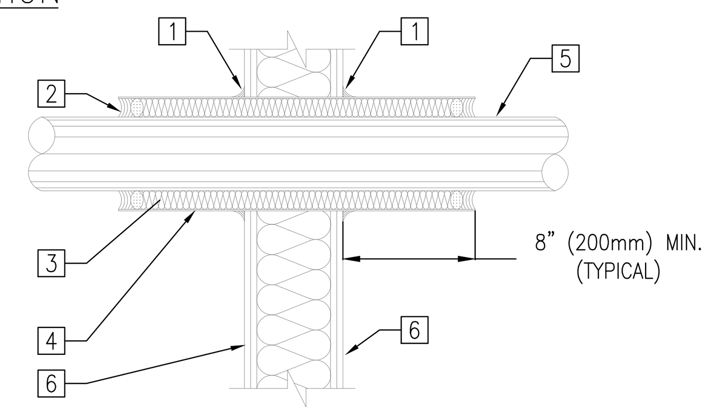
CADD File NAME DE25-147 OCI IY MECH 99% 2025-08-28.DWG
PLOT DATE Sep. 30, 25

22x34in

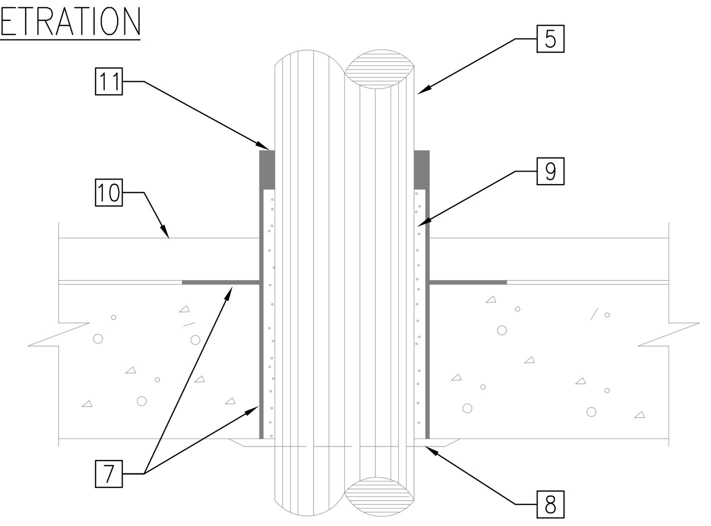
DETAIL 1 – FIRE STOP

NOT TO SCALE

WALL PENETRATION



FLOOR PENETRATION



1 SEALANT. CONNECT TO STUD WITH "L" BRACKET IF NECESSARY (BOTH SIDES)

2 BACKER ROD & SEALANT

3 13 (1/2") RIGID FIBERGLASS INSULATION

4 SHEET METAL SLEEVE (SCHEDULE 10 STEEL)

5 DUCT OR PIPE

6 WALL (TYPE VARIES – FOR CAVITY WALL USE SPLIT SLEEVE)

7 PIPE SLEEVE WITH ANCHOR RING

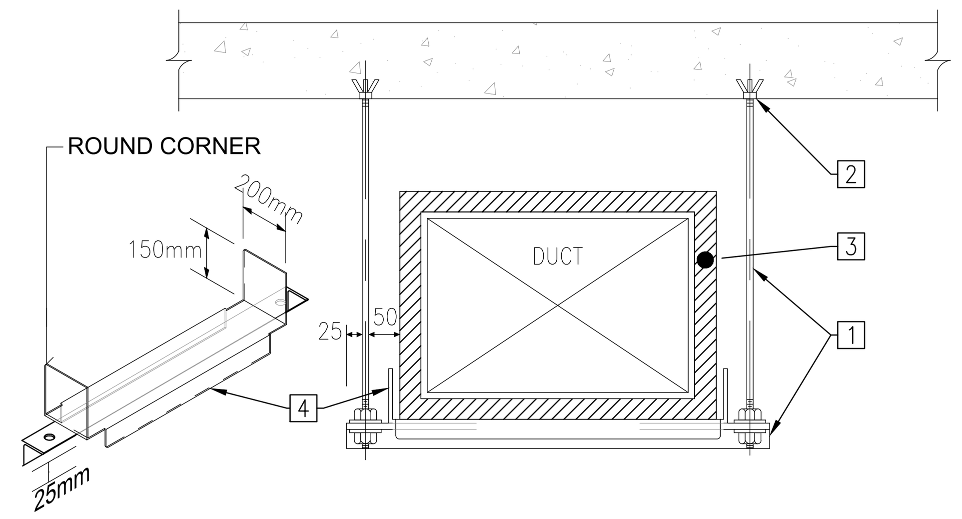
8 PIPE ESCUTCHEON PLATE

9 FIRE-STOPPING MATERIAL

10 FINISHED FLOOR

NON-HARDENING SEALANT

DETAIL 2 – DUCT HANGER



1 PROVIDE THREADED RODS AND ANGLE SUPPORT AS FOLLOWS

DUCT SIZE (mm)	ANGLE SIZE (MM)	ROD SIZE (MM)
UP TO 750	25 X 25 X 3	6
751 TO 1500	40 X 40 X 3	10
1501 TO 2100	50 X 50 X 3	10
2101 TO 2400	50 X 50 X 5	10
2401 AND OVER	50 X 50 X 6	10

2 SUPPORT UPPER HANGER FROM STRUCTURE AS FOLLOWS:

CONCRETE: MANUFACTURED CONCRETE INSERTS
STEEL JOIST: MANUFACTURED JOIST CLAMP
STEEL BEAM: MANUFACTURED BEAM CLAMP

3 DUCT INSULATION, WHERE SPECIFIED.

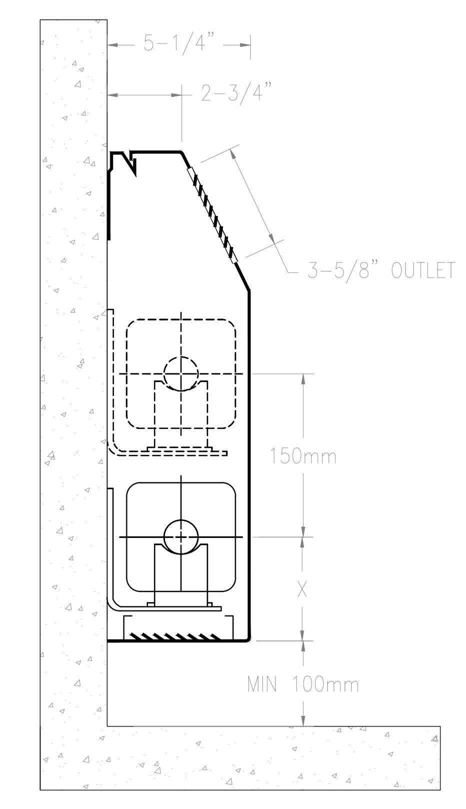
4 PROVIDE 20 GAUGE GALVANIZED STEEL SUPPORT BELOW ALL INSULATED DUCTWORK.

GENERAL NOTES:

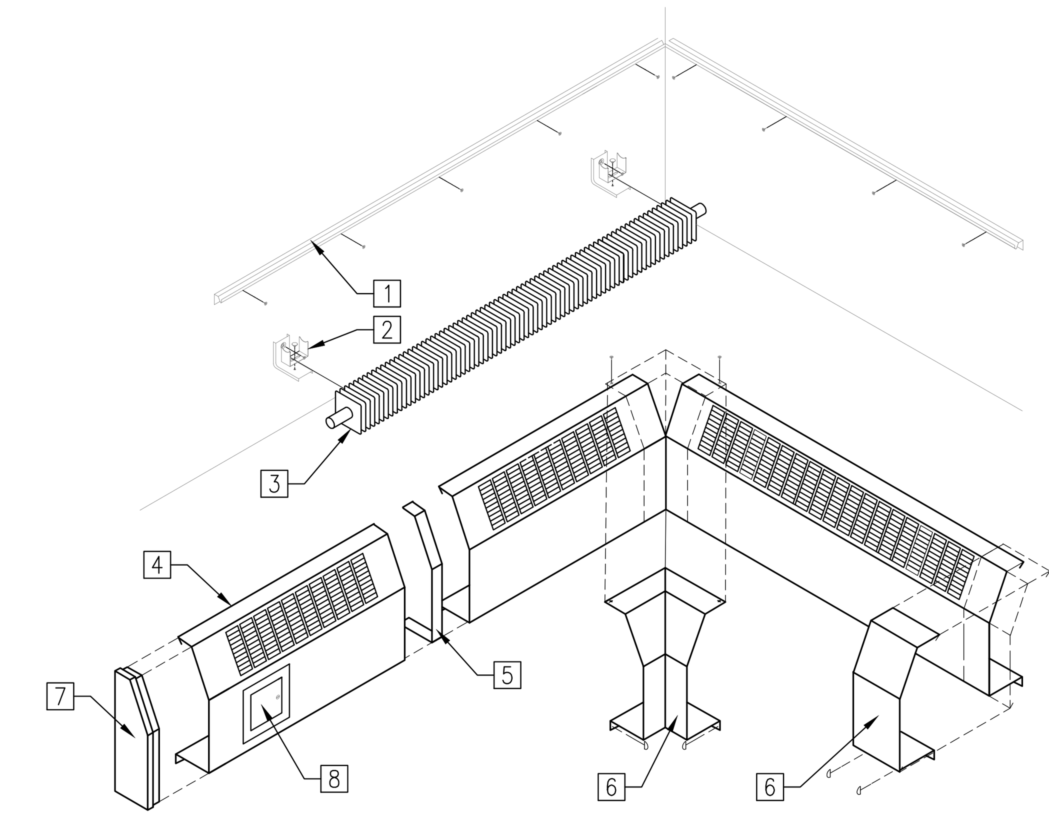
1. ALL STEEL SUPPORTS SHALL BE PAINTED WITH ZINC RICH PAINT. PROVIDE PAINT TO MATCH CEILING FINISHES (FINAL FINISH TO BE APPROVED BY CONSULTANT OR ARCHITECT) IN ALL EXPOSED AREAS.
2. HANGER SPACING SHALL BE IN ACCORDANCE WITH SMACNA AND AT MINIMUM EVERY 3m FOR DUCTS WIDTHS UNDER 1,500mm AND EVERY 2.5m FOR DUCTS WIDTHS ABOVE 1,500mm.

DETAIL 3 – WALL FIN RADIATOR INSTALLATION

NOT TO SCALE



SECTION VIEW



ENCLOSURE AND TRIM

1 HANGER STRIP SPANNING ENTIRE WIDTH OF ENCLOSURE, FASTEN TO WALL (TYP).

2 FINTUBE CRADLE AND MOUNTING BRACKET BELOW HANGER STRIP, SPACING IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

3 HEATING ELEMENT MOUNTED ON CRADLE, PROTECT FINNED SURFACES DURING INSTALLATION.

4 WALL FIN ENCLOSURE SECURED ONTO HANGER STRIP, ENCLOSURE TO CONCEAL FULL LENGTH OF HEATING ELEMENT AND ALL HYDRONIC VALVES AND FITTINGS.

5 FOR EXTENDED LENGTH REQUIRING TWO OR MORE ENCLOSURES, PROVIDE INTERNAL PANEL JOINER.

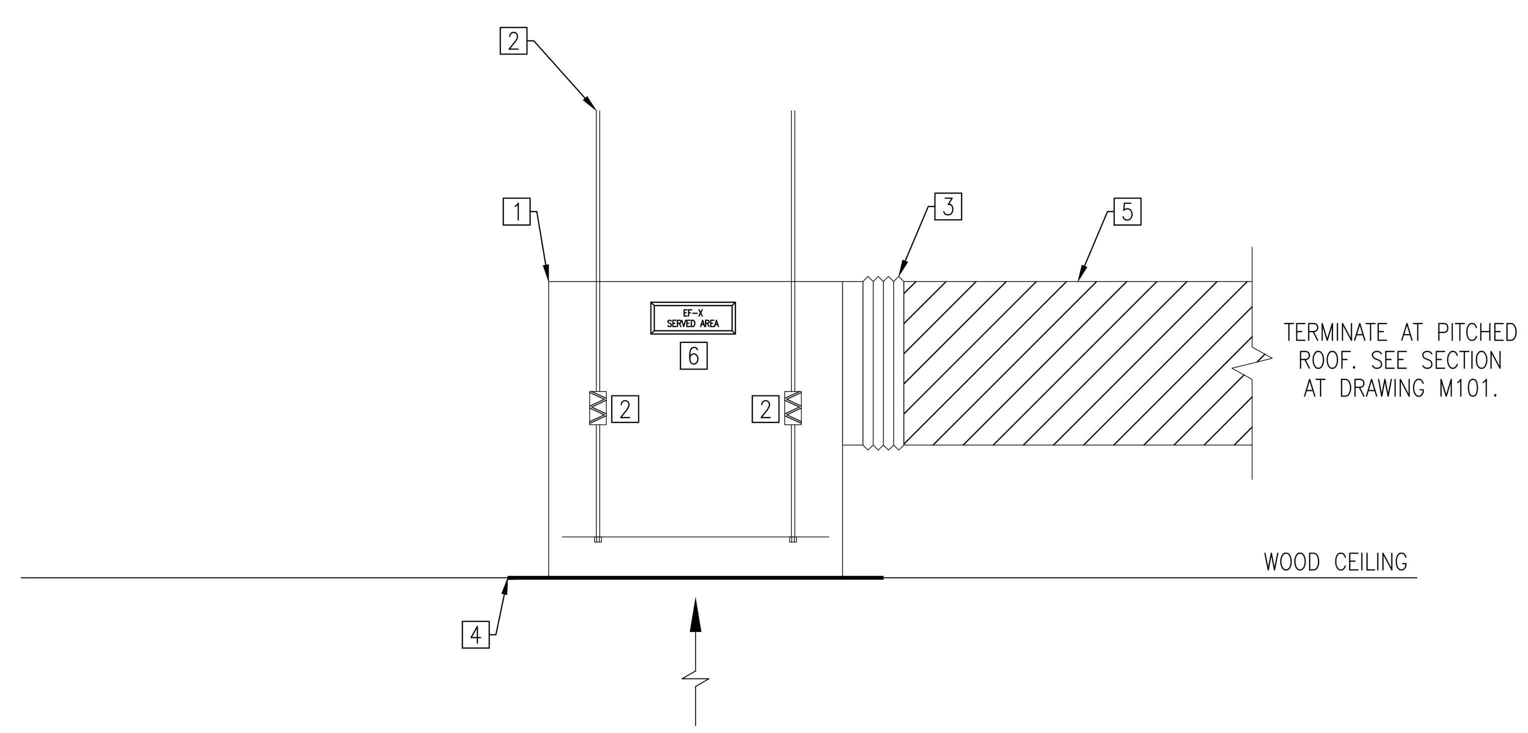
6 TRIM STRIPS TO BE PROVIDE FOR ALL OFFSETS, CHANGES IN DIRECTIONS AND EXTENSIONS TO SUIT WALL FIN ELEMENTS OR AS NOTED ON DRAWINGS.

7 END CAP TO BE PROVIDED AT EACH END OF ENCLOSURE.

8 SCREW DRIVER OPERATED ACCESS DOOR TO BE PROVIDED FOR ACCESS TO CONTROL VALVE.

DETAIL 4 – CEILING MOUNTED EXHAUST FAN

NOT TO SCALE



1 CEILING EXHAUST FAN. REFER TO SCHEDULE FOR PERFORMANCE AND PLANS FOR LOCATION. SEE SECTION 1 – M101 FOR INFORMATION.

2 SUSPEND UNIT FROM STRUCTURE C/W SPRING HANGERS.

3 PROVIDE FLEXIBLE CONNECTORS ON ALL DUCT CONNECTION FROM EXHAUST FAN.

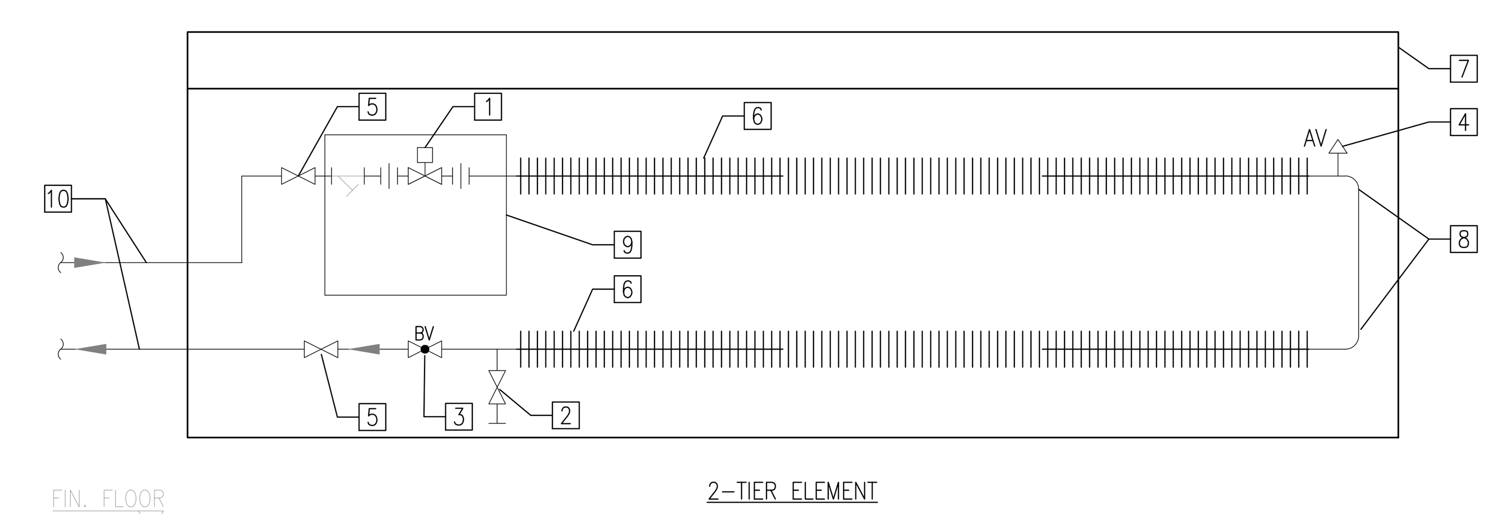
4 ALUMINUM GRILLE WITH WHITE ENAMEL FINISH.

5 PROVIDE DUCTWORK WITH 1" THICK R4.3 INSULATION.

6 EQUIPMENT NAMEPLATE, INDICATE – FAN TAG, SERVED AREA, POWER SOURCE

DETAIL 5 – WALL FIN RADIATOR AND CONVECTOR PIPING CONNECTIONS

NOT TO SCALE



2-TIER ELEMENT

1 2-WAY MODULATING CONTROL VALVE (DDC) C/W UNIONS AND REDUCERS ON EACH SIDE AS REQUIRED.

2 13mm BALL VALVE DRAIN WITH HOSE CONNECTION AND CAP.

3 CIRCUIT BALANCING VALVE.

4 MANUAL AIR VENT VALVE – 3MM [⅛"].

5 ISOLATION BALL VALVE, SIZE TO MATCH LINE.

6 FINNED TUBE HEATING ELEMENT, REFER TO SCHEDULES FOR SIZING.

7 WALL FIN ENCLOSURE TO CONCEAL ENTIRE LENGTH OF WALL FIN, PIPE (WHERE NOTED) AND ALL VALVES, SPECIALTIES AND FITTINGS.

8 LONG RADIUS ELBOWS.

9 200mm X 200mm HINGED STEEL ACCESS DOOR WITH SCREWDRIVER OPERATED CAM LATCH AND MOUNTING FRAME.

10 HEATING WATER SUPPLY AND RETURN WALL FIN CONNECTIONS, SIDE WALL OR BOTTOM CONNECTIONS – SEE PLANS FOR MORE INFORMATION.

No	Revisions	Date
4	ISSUED FOR TENDER/PERMIT	30SEPT2025
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2	ISSUED FOR 66% DESIGN REVIEW	21FEB2025
1	ISSUED FOR 33% DESIGN REVIEW	11DEC2024

Orientation

Seal

LICENSED PROFESSIONAL ENGINEER
SEPT30.2025
D. BEREZOWSKI
PROVINCE OF ONTARIO

The Contractor shall check and verify all dimensions and report all errors and omissions to the IO-Owner's/MBS Designee (as applicable) for his/her written direction before proceeding with the Work.

A Detail No
B Sheet No where detailed

DYNAMIS ENGINEERING INC

Infrastructure Ontario

Ministry PSIF Number
PSIF NUMBER

Project
OCI INDIGENOUS YARD

Location
109 McLAUGHLIN ROAD SOUTH
BRAMPTON, ONTARIO

IO Project No 240060 | Site No 210060 | Building No B18609

Client
SOLGEN/COLLIERS

Colliers Project Leaders

Drawing Title
DETAILS

Scale

Project Start Date 20241004 | hsai Proj. No 24451

Drawn by NC

Substantial Performance Date 2025XXXX

Designed by DB/NC

Drawing No
M102 of

Approved by DB | Floor No 1

CADD File NAME DE25-147 OCI IY MECH 99% 2025-08-28.DWG
PLOT DATE Sep. 30, 25

22x34in

WALL FIN SCHEDULE

TAG	MANUFACTURER [1]	MODEL	LOCATION	ELEMENT	HEATING ELEMENT				FLOW (GPM)	CAPACITY @170°F AVERAGE WATER TEMPERATURE, 65°F EAT	OPTIONS	REMARKS
					TUBE DIA(IN) x ROWS	FIN WxH (IN)	ELEMENT LENGTH (IN)	ENCLOSURE LENGTH (IN)		DESIGN (BTU/hr)		
WF-1	SIGMA	SWE-18S	THERAPY ROOM	44C075	3/4 x 2	4x4	86	100	1.340	13,384	SLOPE STANDARD WIDTH ENCLOSURE C/W END CAPS	

NOTES:
1 – BASIS OF THE DESIGN: SIGMA, APPROVED ALTERNATES: ENGINEERED AIR, TRANE. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL DESIGN OR CONSTRUCTION WORK ASSOCIATED WITH ALTERNATE EQUIPMENT.
2 – CONTRACTOR TO FIELD MEASURE WALL FIN ENCLOSURE LENGTH TO SUIT EACH SPACE, PROVIDE END CAPS, MOUNTING HARDWARE, ACCESS PANEL AT EACH ENCLOSURE.

EXHAUST FAN SCHEDULE

TAG	MANUFACTURER	MODEL	LOCATION	SERVICE	PERFORMANCE		MOTOR			WEIGHT (LB)	REMARKS
					AIR FLOW (CFM)	ESP (IN W.C.)	HP	RPM	POWER		
EF-1	GREENHECK	SP-A510-VG	CEILING	ROUND HOUSE – SMUDGING	400	0.25	1/10	1037	115/1/60	47	C/W ALUMINUM WHEEL, 8"ø ROUND OUTLET DUCT COLLAR WITH BACKDRAFT DAMPER, HOA 1-FUNCTION SWITCH, ROUND DUCT CONNECTOR, ISOLATION KIT, ROOF JACK (RJ-6x9), AND 1" THICK R4.3 INSULATION. ALUMINUM GRILLE WITH WHITE ENAMEL FINISH.
EF-2	ORTON	ORTON VENT MASTER	KILN SHED	KILN EXHAUST	73	0.2	–	–	115/1/60	–	C/W FAN ASSEMBLY, COLLECTOR CUP, HIGH TEMPERATURE GASKET, 2"ø HIGH TEMP. BLACK FLEX HOSE, ADJUSTABLE HEIGHT FOOT KIT (FOOT, STUD, SPRING), PLASTIC CAP, 2 – 2"ø HOSE CLAMPS, AND 4"ø HEAVY DUTY FLEXIBLE ALUMINUM DUCT WITH CLAMP.
EF-3	CANARM	SD08	KILN SHED	SHED EXHAUST	360	0.0	0.03	1600	115/1/60	13	C/W 9FT CORD, 3-PRONG PLUG, THERMOSTAT MODEL 'KP16110' WITH PLUG, WHA8-10 WEATHER HOOD C/W BIRDSCREEN.

FORCE FLOW HEATER SCHEDULE

TAG	MANUFACTURER [1]	MODEL	LOCATION	HEATING SOURCE	NOMINAL CFM	ELECTRICAL				CAPACITY @60°C EAT	DIMENSIONS	WEIGHT	FORCE FLOW CONFIGURATIONS	UNIT CONFIGURATIONS	REMARKS
						POWER	MOTOR CURRENT (A)	MOTOR HP	RPM	TOTAL (BTU/hr)	(LXWXD) (mm)	(LB)			
FFH-1	OULLET	OACP-4000	BREEZE WAY	ELECTRIC	160	208/1/60	_	_	_	13,661	410X33X561	24	FRONT IN FRONT OUT	CEILING MOUNTED, C/W BUILT IN THERMOSTAT, SINGLE FAN UNIT	4kW ELECTRIC UNIT

NOTES:
1 – BASIS OF THE DESIGN: SIGMA & OULLET, APPROVED ALTERNATES: ENGINEERED AIR, TRANE. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL DESIGN OR CONSTRUCTION WORK ASSOCIATED WITH ALTERNATE EQUIPMENT.

WALL MOUNTED AIR HANDLING UNIT SCHEDULE

TAG	MANUFACTURER	MODEL	SERVICE	SUPPLY FAN		OUTDOOR AIR (CFM)	HEATING – ELECTRIC		HEATING – HEAT PUMP			COOLING					HEAT RECOVERY – WINTER			HEAT RECOVERY – SUMMER			FILTERS	POWER			PHYSICAL	
				AIR FLOW (CFM)	ESP (IN W.C.)		HEATER SIZE (kW)	VOLTAGE	EAT/LAT (°F)	CAPACITY (BTU/HR) AT 47.0°F AMBIENT	COP	REFRIGERANT	COMPRESSORS	TOTAL CAPACITY (BTU/HR)	SENSIBLE CAPACITY (BTU/HR)	EER/IPLV	AIRFLOW (CFM)	HEAT RECOVERY SENSIBLE/LATENT (BTU/HR)	EFFECTIVENESS (%)	AIRFLOW (CFM)	HEAT RECOVERY SENSIBLE/LATENT (BTU/HR)	EFFECTIVENESS (%)		V/PH/Hz	MCA	MOP	DIMENSION (WxDxH) IN	WEIGHT (LB)
AHU-1	BARD	C36HF B15RP4XXJ	ROUND HOUSE	1,100	--	375	15	208	70.0/85.8	32,600	3.3	R-454B	SCROLL 2 STAGE	36,000	26,200	11.8/15	450	23,328/--	80	450	6,318/1,711	65	2" MERV 8	208/3/60	52	60	38.2x17.125x70.563	526

NOTES:
1 – HEAT PUMP HEATING PERFORMANCE IS BASED ON 47.0°F OUTDOOR AIR TEMPERATURE
2 – C/W HIGH & LOW PRESSURE SWTICH, COMPRESSOR CONTROL MODULE, REFRIGERANT LEAK DETECTOR, LOW AMBIENT CONTROL, REFRIGERANT PRESSURE ALARM RELAY WITH NO/NC CONTACTS, CONTROLLER WITH HUMIDITY, VENTILATION, OCCUPANCY FUNCTIONS, BACnet COMMUNICATION CARD

GRILLES, REGISTERS AND DIFFUSERS

TAG	MANUFACTURER	MODEL	TYPE	SIZE (in)	FINISH	MOUNTING	ACCESSORIES
A	EH PRICE	620	DOUBLE DEFLECTION SUPPLY GRILLE	AS INDICATED	WHITE (B12)	DRYWALL/DUCT, 1-1/4 IN. FLAT	DOUBLE DEFLECTION 20mm BLADE SPACING, OPPOSED BLADE DAMPER
B		610Z	LOUVERED RETURN GRILLE	AS INDICATED	WHITE (B12)	DRYWALL/DUCT, 1-1/4 IN. FLAT	RETURN WITH 45° DEFLECTION, 20mm BLADE SPACING, OPPOSED BLADE DAMPER
C	GREENHECK	RJ-6x9	PITCHED ROOF CAP VENT	8"ø ROUND DUCT	BLACK ENAMEL FINISH	ROOF MOUNTED	C/W BACKDRAFT DAMPER, BIRD SCREEN, AND FLASHING FLANGE
D	WCNS	WC4NS	EXHAUST WALL CAP VENT – KILN SHED	4"ø ROUD DUCT	DARK GREY (28)	WALL MOUNTED	C/W BACKDRAFT DAMPER AND BIRD SCREEN

DESIGNATION ON DRAWINGS: A-'B'-C-D
(A) – QUANTITY OF DIFFUSERS/GRILLES
(B) – TAG OF DIFFUSER/GRILLE
(C) – SIZE OF GRILLE OR DIFFUSER NECK
(D) – AIR QUANTITY IN L/s

NOTE: FINAL GRILLE FINISHES TO BE SELECTED BY ARCHITECT AT SUBMITTAL STAGE, INCLUDE FOR PREMIUM FINISHES

No	Revisions	Date
4	ISSUED FOR TENDER/PERMIT	30SEPT2025
3	ISSUED FOR 99% DESIGN REVIEW	28AUG2025
2	ISSUED FOR 66% DESIGN REVIEW	21FEB2025
1	ISSUED FOR 33% DESIGN REVIEW	11DEC2024

Orientation

Seal

LICENSED PROFESSIONAL ENGINEER
SEPT30.2025
D. BEREZOWSKI
PROVINCE OF ONTARIO

The Contractor shall check and verify all dimensions and report all errors and omissions to the IO-Owner's/MBS Designee (as applicable) for his/her written direction before proceeding with the Work.

A Detail No
B Sheet No where detailed

DYNAMIS ENGINEERING INC

Infrastructure Ontario

Ministry PSIF Number
PSIF NUMBER

Project
OCI INDIGENOUS YARD

Location
109 McLAUGHLIN ROAD SOUTH
BRAMPTON, ONTARIO

IO Project No 240060 | Site No 210060 | Building No B18609

Client
SOLGEN/COLLIERS

Colliers Project Leaders

Drawing Title
SCHEDULES

Scale

Project Start Date 20241004 | hsai Proj. No 24451

Drawn by NC

Substantial Performance Date 2025XXXX

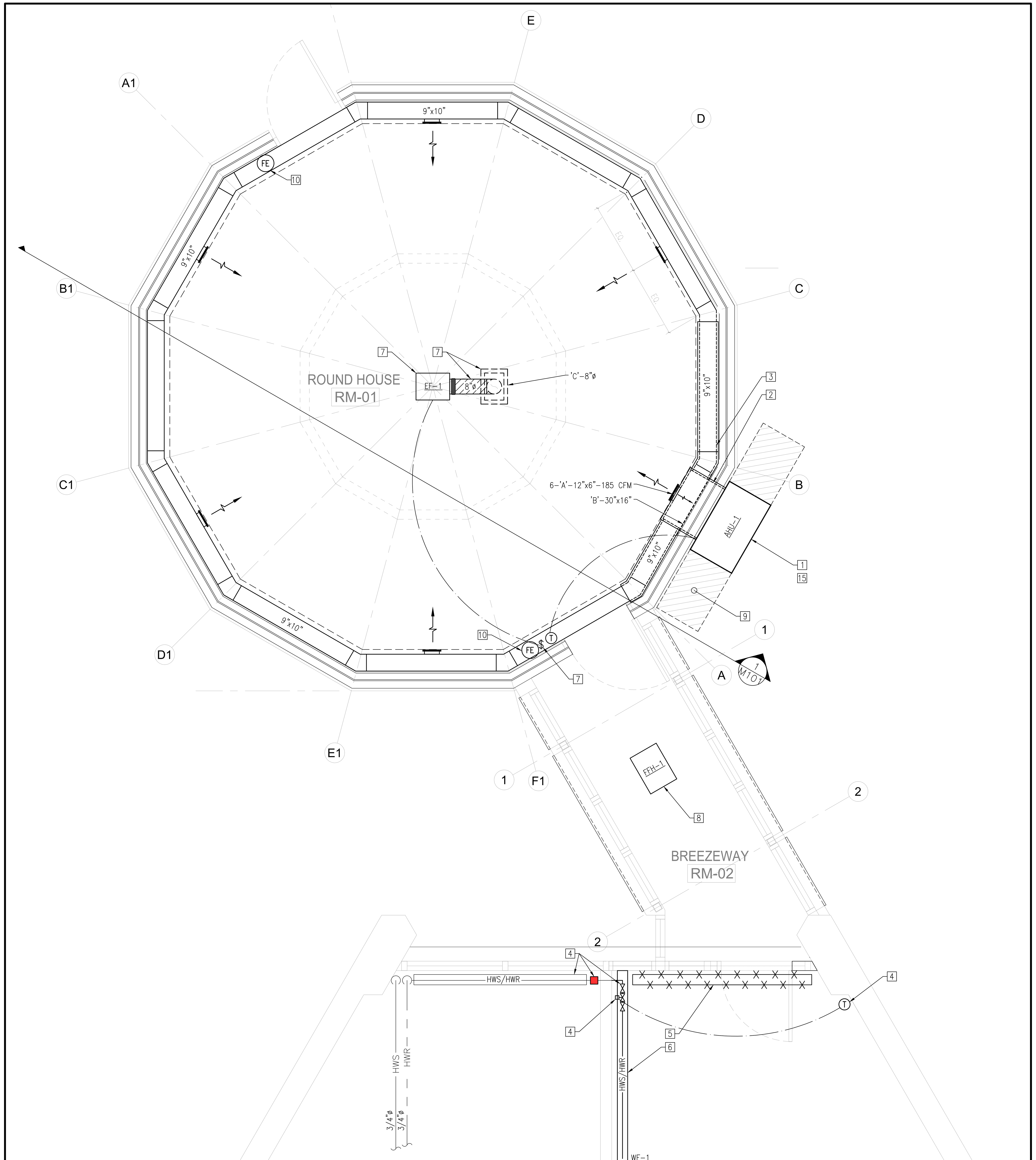
Designed by DB/NC

Drawing No
M103 of

Approved by DB | Floor No 1

CADD File NAME DE25-147 OCI IY MECH 99% 2025-08-28.DWG
PLOT DATE Sep. 30, 25

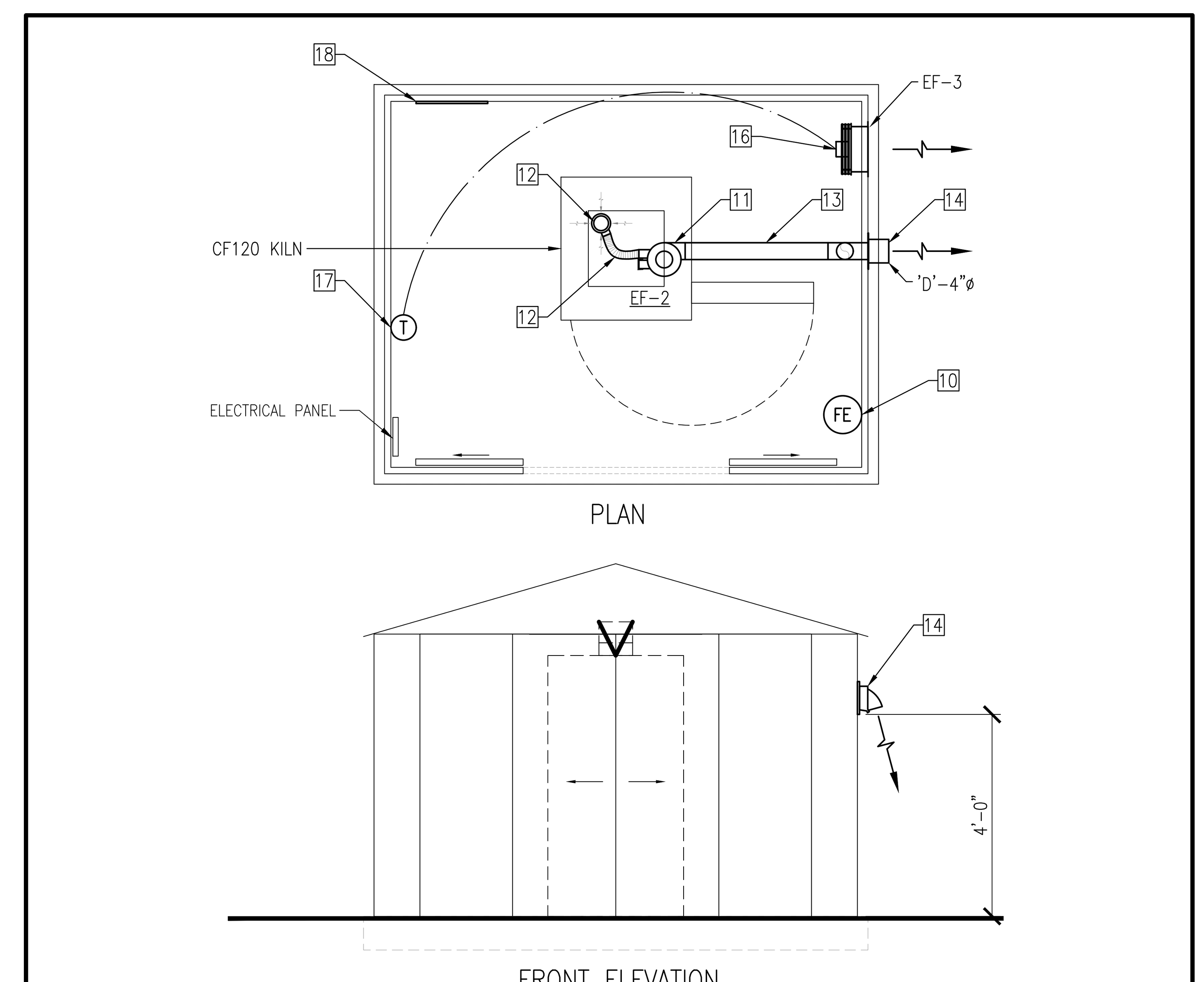
22x34in



1 M201
MECHANICAL MODIFICATIONS - ROUNDHOUSE
SCALE: 3/8"=1'-0"

REFERENCE NOTES

1. PROVIDE NEW WALL MOUNTED UNIT, REFER TO SCHEDULES FOR PERFORMANCE. COORDINATE INSTALLATION WITH ELECTRICAL DIVISION AND MANUFACTURER'S INSTRUCTIONS.
2. PROVIDE NEW 30"x10" SUPPLY AIR PLENUM AND 30"x16" RETURN AIR PLENUM. PROVIDE WALL OPENINGS AND FRAMING IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, ENSURE 1/4" CLEARANCE AROUND SUPPLY AIR DUCT PENETRATION.
3. 9"x10" SUPPLY AIR PLENUM ALONG THE PERIMETER, CONCEALED IN BULKHEAD. PROVIDE PROPER DUCT SUPPORTS AND COORDINATE INSTALLATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ACOUSTIC LINING ON PLENUM AND DUCT DISTRIBUTION AS INDICATED ON DRAWINGS, DUCT DIMENSIONS INDICATE CLEAR INSIDE DIMENSION.
4. REMOVE EXISTING WALL FIN ENCLOSURE, PROVIDE PIPE FREEZING OF EXISTING 3/4" HEATING WATER SUPPLY AND RETURN LINES WITHIN THE ENCLOSURE IN ADJACENT SPACE AS INDICATED. CUT PIPING BACK TO WALL AND PROVIDE NEW ISOLATION VALVE AS INDICATED FOR RECONNECTION TO NEW WALL FIN HEATER. FIELD VERIFY EXACT SIZING AND ROUTING OF PIPING ON SITE. REINSTATE WALL FIN ENCLOSURE FOLLOWING COMPLETION OF WORK. ALLOW FOR INSTALLATION OF NEW CONTROL VALVE, THERMOSTAT AND CONTROL WIRING.
5. DEMOLISH EXISTING WALL FIN HEATER C/W PIPING BACK TO WALL AS INDICATED.
6. PROVIDE NEW WALL FIN HEATER AND EXTEND NEW PIPING FROM NEW ISOLATION VALVE. REFER TO SCHEDULES FOR PERFORMANCE AND DETAILS FOR INSTALLATION. PROVIDE NEW 3/4"ø CONTROL VALVE AND PLATE TYPE ZONE TEMPERATURE SENSOR AS INDICATED C/W INTEGRATION INTO BUILDING AUTOMATION SYSTEM (BAS) BY CONTROLS VENDOR.
7. PROVIDE NEW CEILING MOUNTED EXHAUST FAN, SEE SCHEDULE FOR PERFORMANCE. PROVIDE THERMAL INSULATION FOR DUCTWORK AND TERMINATE EXHAUST WITH A PITCHED ROOF CAP (GREENHECK MODEL RJ-6x9 OR EQUIVALENT). FAN SHALL BE C/W WALL MOUNTED SWITCH FOR SMUDGING CEREMONIES/SERVICES. SWITCH SHALL ENABLE EXHAUST FAN OPERATION AND AHU-1, PROVIDE REQUIRED INTERLOCKS AND RELAYS. COORDINATE FINAL FAN LOCATION AND ROOF OPENING WITH STRUCTURAL BEAMS, REFER TO DRAWING M101 SECTION 1 FOR INFORMATION.
8. PROVIDE NEW ELECTRIC FORCE FLOW HEATER, SEE SCHEDULES FOR PERFORMANCE. COORDINATE INSTALLATION WITH ELECTRICAL DRAWINGS AND MANUFACTURER'S INSTRUCTIONS.
9. MAINTAIN MINIMUM 36" SERVICE CLEARANCE ON LEFT AND RIGHT HAND SIDE OF THE UNIT.
10. PROVIDE NEW WALL MOUNTED 5LB CLASS 3-A, 10-B, C DRY CHEMICAL FIRE EXTINGUISHER, TO BE MOUNTED IN SEMI-RECESSED STAINLESS STEEL CABINET 'NATIONAL FIRE MODEL 102RS-SS' OR EQUIVALENT. COORDINATE INSTALLATION WITH GENERAL TRADE. TOP OF THE EXTINGUISHER IS NOT MORE THAN 4.9' (1.5m) ABOVE FINISHED FLOOR LEVEL. LOCATE FIRE EXTINGUISHER 12" FROM DOOR JAMB ON LATCH SIDE.
11. PROVIDE NEW "ORTON VENT MASTER SYSTEM KIT", REFER TO SCHEDULES FOR PERFORMANCE. INTERLOCK FAN WITH THE KILN CONTROLLER COORDINATE INSTALLATION WITH ELECTRICAL DIVISION. INSTALL KIT AS SPECIFIED BY MANUFACTURER'S INSTRUCTIONS.
12. INSTALL THE COLLECTOR CUP C/W HIGH TEMPERATURE GASKET TO BOTTOM OF KILN AND CONNECT 2"ø HIGH TEMPERATURE BLACK FLEX HOSE TO THE FAN ASSEMBLY. PARTS ARE INCLUDED WITH THE "ORTON VENT MASTER SYSTEM KIT".
13. PROVIDE NEW 4"ø HEAVY DUTY FLEXIBLE ALUMINUM DUCT C/W HOSE CLAMP. RUN DUCTWORK TOWARDS THE REAR OF THE SHED, AS INDICATED.
14. PROVIDE NEW 4"ø WALL CAP VENT, INSTALL 4' ABOVE FINISHED GROUND LEVEL (MINIMUM). REFER TO SCHEDULE FOR INFORMATION. COORDINATE INSTALLATION WITH ARCHITECTURAL DRAWINGS, PROVIDE SEALANT AROUND OPENING.
15. PROVIDE BAS INTEGRATION AND MONITORING OF POINTS AS FOLLOWS:
    - AHU-1 STATUS (DI)
    - AHU-1 ALARM (DI)
    - ROUND HOUSE SPACE TEMPERATURE (AI)
    - HIGH SPACE TEMPERATURE (DI) - ABOVE 26C, 15 MIN DELAY
    - LOW SPACE TEMPERATURE (DI) - BELOW 20C, 15 MIN DELAY
16. PROVIDE NEW WALL MOUNTED EXHAUST FAN AT HIGH LEVEL, REFER TO SCHEDULE FOR PERFORMANCE. INSTALL FAN IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTION.
17. PROVIDE NEW REVERSE ACTING THERMOSTAT, SET AT 96'F.
18. PROVIDE LAMINATED 11"x17" SHEET, FONT SIZE 48, ALL CAPITAL LETTERS, READING:
    1) KILN OPERATION SHALL BE AS PER MANUFACTURER'S INSTRUCTION.
    2) DO NOT STORE OR USE COMBUSTIBLE MATERIALS IN KILN.
    3) WHEN OPERATING KILN, KEEP THE DOORS OPEN AND ENSURE FAN IS ON.



2 M201
MECHANICAL MODIFICATIONS - GARDEN SHED FOR KILN
SCALE: 3/8"=1'-0"

No	Revisions	Date
4	ISSUED FOR TENDER/PERMIT	30SEPT2025
3	ISSUED FOR 99% DESIGN REVIEW	28AUG2025
2	ISSUED FOR 66% DESIGN REVIEW	21FEB2025
1	ISSUED FOR 33% DESIGN REVIEW	11DEC2024

Orientation: NORTH

Seal: LICENSED PROFESSIONAL ENGINEER — SEPT30.2025 — D. BEREZOVSKI — PROVINCE OF ONTARIO

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A — Detail No
B — Sheet No where detailed

DYNAMIS ENGINEERING INC

Infrastructure Ontario

Ministry PSIF Number: PSIF NUMBER

Project: OCI INDIGENOUS YARD

Location: 109 McLAUGHLIN ROAD SOUTH BRAMPTON, ONTARIO

IO Project No: 240060 | Site No: 210060 | Building No: B18609

Client: SOLGEN/COLLIERS — Colliers Project Leaders

Drawing Title: MECHANICAL MODIFICATIONS

Scale	Project Start Date	hsai Proj. No
	20241004	24451

Drawn by: NC
Designed by: DB/NC
Approved by: DB
Floor No: 1
Substantial Performance Date: 2025XXXX
Drawing No: M201 of

CADD File NAME: DE25-147 OCI IY MECH 99% 2025-08-28.DWG
PLOT DATE: Sep. 30, 25

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