MECHANICAL LEGEND

- SUPPLY AIR DIFFUSER
- RETURN AIR DIFFUSER
- EXHAUST AIR DIFFUSER
- DIRECTIONAL AIR FLOW
- MANUAL VOLUME DAMPER
- SUPPLY/OUTSIDE AIR DUCT UP & DOWN
- RETURN AIR DUCT UP & DOWN
- EXHAUST AIR DUCT UP & DOWN
- (D) DEMOLISH
- (E) EXISTING
- CONNECT TO EXISTING
- THERMOSTAT
- TEMPERATURE SENSOR
- NOTE
- EQUIPMENT DESIGNATOR
- GATE VALVE/SHUT-OFF VALVE SEE SPECS
- CHECK VALVE
- BALANCING VALVE
- FLOW CONTROL/LIMITING VALVE
- THERMOMETER
- DIRECTION OF FLOW
- PUMP
- STRAINER W/DRAIN VALVE
- PRESSURE GUAGE
- PETE'S PLUG
- DOUBLE CHECK ASSEMBLY
- PRESSURE REDUCING VALVE
- UNION
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- TRIPLE DUTY VALVE
- CAP
- MOTORIZED DAMPER
- MOTORIZED DAMPER
- BALL/SHUT-OFF VALVE(SEE SPECS)
- FIRE DAMPER
- FIRE / SMOKE DAMPER
- SMOKE DAMPER
- FAN MOTOR

AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
B.D.	BOTTOM OF DUCT
BHP	BRAKE HORSEPOWER
BOG	BOTTOM OF GRILLE
BTU	BRITISH THERMAL UNITS
CFM	CUBIC FEET PER MINUTE
CONN.	CONNECTION
CONT.	CONTINUATION
CW	DOMESTIC COLD WATER
DB	DRY BULB
DIA.	DIAMETER
DIST.	DISTRIBUTION
EXH	EXHAUST AIR
EDB	ENTERING DRY BULB TEMPERATURE
EWB	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
FF	FINISH FLOOR
FIXT.	FIXTURE
F.O.B.	FLAT ON BOTTOM
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT.	FEET / FOOT
GA.	GAUGE
GEXH	GREASE EXHAUST AIR DUCT
GPM	GALLONS PER MINUTE
H	HEIGHT
HP	HORSEPOWER
I.D.	INSIDE DIAMETER
IN.	INCHES
L	LENGTH
LBS.	POUNDS
LDB	LEAVING DRY BULB
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MA	MAKE UP AIR
MAX.	MAXIMUM
MBH	THOUSANDS OF BTUs PER HOUR
MD	MOTORIZED DAMPER
MIN.	MINIMUM
MVD	MANUAL VOLUME DAMPER
NC	NOISE CRITERIA
N.C.	NORMALLY CLOSED
N.I.M.	NOT IN MECHANICAL
NO.	NUMBER
N.O.	NORMALLY OPEN
O.A.	OUTSIDE AIR
P	PERSON
PSI	POUNDS PER SQUARE INCH
P/T	PRESSURE / TEMPERATURE
R.A.	RETURN AIR
RECT.	RECTANGULAR
REQ'D	REQUIRED
S.A.	SUPPLY AIR
S.P.	STATIC PRESSURE
SQ.	SQUARE
TEMP.	TEMPERATURE
TYP.	TYPICAL
VAV	VARIABLE AIR VOLUME
W	WIDTH
WB	WET BULB
WPD	WATER PRESSURE DROP
ø	DIAMETER

- (E) EXISTING
- (D) DEMOLISH
- NEW WORK
- G — (G) NATURAL GAS
- CD — (CD) CONDENSATE DRAIN
- RF — (RF) TWO OR THREE REFRIGERANT LINES
- HWS — (HWS) HEATING WATER SUPPLY
- HWR — (HWR) HEATING WATER RETURN
- CHS — (CHWS) CHILLED WATER SUPPLY
- CHR — (CHWR) CHILLED WATER RETURN
- EQUIPMENT MAINTENANCE CLEARANCE AND ACCESS

MECHANICAL GENERAL NOTES

A. THE DRAWINGS ARE DIAGRAMMATIC. PROVIDE ALL MATERIAL (NEW AND UNDAMAGED) AND LABOR FOR A COMPLETE AND OPERABLE SYSTEM. VERIFY ALL BUILDING MEASUREMENTS DIMENSIONS AND EQUIPMENT LOCATIONS BEFORE PROCEEDING WITH ANY OF THE WORK.

B. VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. REPORT DISCREPANCIES BACK TO THE ENGINEER.

C. VERIFY INDICATED (E)DUCTWORK/PIPE SIZES PRIOR TO RECONNECTING NEW EQUIPMENT. EQUIPMENT SHALL NOT BE CONNECTED TO EXISTING DUCT/PIPE OF SMALLER DIAMETER THAN NEW DUCT/PIPE. REPORT DISCREPANCIES BACK TO ENGINEER.

D. DO NOT FABRICATE EQUIPMENT SUPPORTS/BASES W/O CONFIRMING SPACE EXISTS AND THE BUILDING ATTACHMENT POINTS.

E. REFER TO THE MECHANICAL SPECIFICATIONS FOR MATERIALS, EQUIPMENT, AND ADDITIONAL CONSTRUCTION INSTRUCTIONS NOT COVERED BY THESE PLANS.

F. ALL INSTALLATIONS SHALL COMPLY WITH APPLICABLE FEDERAL AND STATE CODES INCLUDING, 2019 OREGON STRUCTURAL SPECIALTY CODE (OSSC) INCLUDING APPENDIX N FOR OREGON FIRE CODE REGULATIONS, 2021 OREGON PLUMBING SPECIALTY CODE (OPSC), 2019 OREGON MECHANICAL SPECIALTY CODE (OMSC), 2021 OREGON ENERGY EFFICIENCY SPECIALTY CODE (OEESC)-BASED ON ASHRAE 90.1-2019, AND NATIONAL FIRE PROTECTION ASSOCIATION (NFPA). WHERE TWO CODES DIFFER THE MORE STRICT OF THE TWO SHALL BE FOLLOWED.

G. OBTAIN ALL NECESSARY PERMITS AND INSPECTIONS REQUIRED BY THE GOVERNING AUTHORITIES HAVING JURISDICTION. SUBMIT ALL CERTIFICATES PRIOR TO ACCEPTANCE.

H. COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.

I. COORDINATE OTHER TRADES FOR PATCH/REPAIR OF WALLS WHERE EXISTING SENSORS ARE REMOVED OR MODIFIED.

J. PATCH & REPAIR WALLS / FLOORS / CEILING WHERE OLD DUCTWORK/PIPES HAVE BEEN REMOVED TO MATCH EXISTING FINISHES.

K. COORDINATE WITH OTHER CRAFTS AS REQUIRED TO COMPLETE WORK IN ACCORDANCE WITH CONSTRUCTION SCHEDULE.

L. PROVIDE OWNER INSTRUCTION BY QUALIFIED PERSONNEL ON EQUIPMENT AND SYSTEMS AT OWNER'S REQUEST.

M. ALL DUCTWORK SHALL BE GALVANIZED STEEL, UNLESS OTHERWISE INDICATED, CONFORMING TO LATEST SMACNA, ASHRAE, OMSC, NFPA, AND UL STANDARDS.

N. MANUFACTURERS AND MODEL NUMBERS LISTED IN THE EQUIPMENT SCHEDULES ARE THE BASIS OF DESIGN.

O. CUT WALLS FOR PROPER EQUIPMENT, DUCT OR PIPE INSTALLATION. FILL HOLES WHICH ARE CUT OVERSIZED FOR A TIGHT FIT AROUND OBJECTS PASSING THROUGH.

P. PROVIDE UL LISTED FIRESTOP SYSTEM TO MAINTAIN THE CODE REQUIRED F AND T RATING OF THE CONSTRUCTION ASSEMBLY AT A DUCT/PIPE PENETRATION THROUGH A RATED BUILDING CONSTRUCTION.

Q. INSTALL LABELS ON ALL MECHANICAL EQUIPMENT. SEE SPECIFICATIONS FOR CRITERIA.

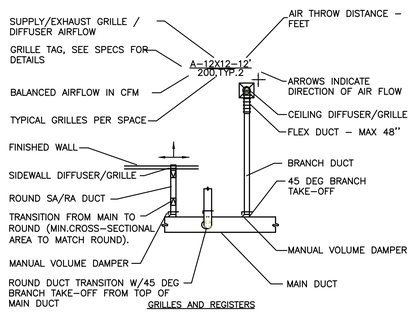
R. CONTROLS AND WIRING SHALL MEET ALL ELECTRICAL REQUIREMENTS OF APPLICABLE ELECTRICAL SPECIFICATIONS AND REQUIREMENTS OF OWNER, BUILDING OFFICIALS AND EQUIPMENT SUPPLIERS OF EQUIPMENT INSTALLED ON PROJECT.

S. ELECTRIC MOTORS SHALL HAVE BUILT-IN THERMAL OVERLOAD PROTECTION OR BE PROTECTED EXTERNALLY WITH SEPARATE THERMAL OVERLOAD DEVICES, WITH LOW-VOLTAGE RELEASE OR LOCK OUT AS REQUIRED.

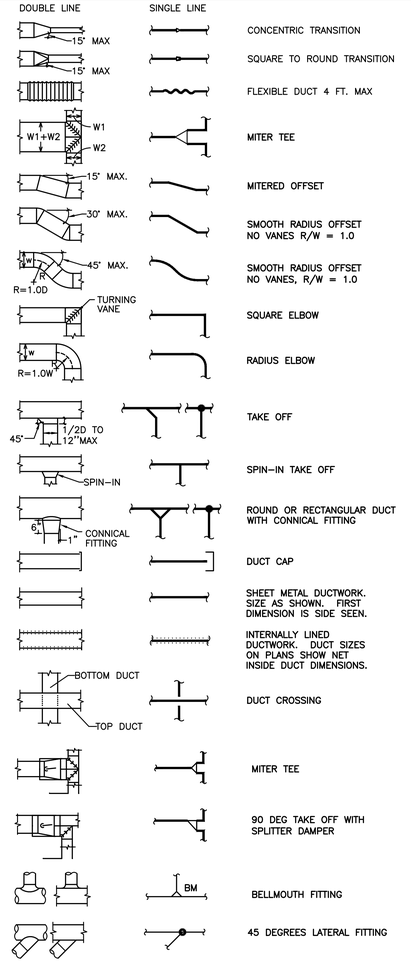
T. ALL NEW EQUIPMENT, PIPING, CONDUIT, AND DUCTWORK SHALL BE INSTALLED PER CURRENT SEISMIC CODE REQUIREMENTS.

U. PROVIDE LOW LEAK AUTOMATIC DAMPERS ON OUTSIDE AIR, EXHAUST AIR AND RELIEF AIR CONTROL DAMPERS WHERE THESE ARE INDICATED.

AIR DISTRIBUTION DETAILS



AIR DISTRIBUTION DETAILS



SYSTEM COMMISSIONING-VERIFICATION AND TESTING REQUIREMENTS:
ASHRAE 90.1-2019 REQUIREMENTS
SECTION 4.2.5 THROUGH 4.2.5.3

THE OWNER OR GC SHALL PROCURE A COMMISSIONING PROVIDER THAT MEETS ONE OF THE FOLLOWING.

THE COMMISSIONING PROVIDER SHALL BE:
a. A THIRD PARTY ENTITY NOT ASSOCIATED WITH THE BUILDING PROJECT
b. AN OWNER'S QUALIFIED EMPOLYEE.
c. AN INDIVIDUAL ASSOCIATED WITH THE DESIGN FIRM, BUT NOT DIRECTLY ASSOCIATED WITH THE DESIGN OR INSTALLATION OF THE BUILDING SYSTEMS.

EXCEPTIONS:
1. BUILDING IS LESS THAN 10,000 SQ FT

CONTRACTOR RESPONSIBILITIES
- THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL THE REQUIREMENTS OF ASHRAE 90.1-2019.
- THE GENERAL CONTRACTOR OR OWNER SHALL HIRE AND UTILIZE AN APPROVED CX AGENT
- THE CX AGENT SHALL
1. PREPARE A CX PLAN
2. OVERSEE THE TAB MEASUREMENTS
3. CONDUCT THE PR-FUNCTIONAL & FUNCTIONAL TESTS
4. PREPARE THE PRELIMINARY CX REPORT
5. REVIEW THE TAB REPORT
6. REVIEW THE O&M'S
7. PREPARE THE SYSTEMS MANUALS

- SYSTEMS REQUIRED TO BE COMMISSIONED
1. SERVICE WATER HEATERS
2. MIXING VALVES & RECIRC SYSTEMS
3. ROOFTOP UNIT - HALLWAY VENTILATION
4. SPLIT SYSTEM FAN COILS
5. ERV'S (SAMPLE SELECTION).
6. DWELLING UNIT EXHAUST FANS (ERV'S) (SAMPLE SELECTION).
7. LIGHTING CONTROL SYSTEMS
8. OCCUPANCY SENSORS
9. EMERGENCY POWER SYSTEMS (GENERATOR)
10. THERMOSTAT OPERATIONS AND SET POINTS

3.2 DUCTWORK INSULATION

A. Ductwork: Insulate the following:

1. All supply and return ductwork in systems routed in unconditioned spaces or exposed to the outside conditions.
2. All outside air intake ducts.
3. All ductwork required to be insulated by code.
4. The last 5' of duct work connected to a louver or exhaust termination.

B. Insulation Thickness: Select board and blanket insulation of thickness required to provide the following installed R-value.

1. All heating or cooling system supply and return ducts located on the exterior of the insulated building envelope, including ventilated attics, and all outside air intake ducts, R-8.
2. All heating and cooling system supply and return ducts located in unconditioned spaces within the building insulation envelope, R-5.
3. All heating and cooling system supply ducts located in conditioned spaces and where exposed in unfinished spaces or concealed from view in finished spaces, R-3.3. Exposed ductwork in finished spaces shall not be externally insulated.
4. Ducts located within or below concrete slabs on grade, R-4.

C. Fittings: Install with wire, straps, and duct adhesive as required. To prevent sagging on all rectangular or square ducts over 24" wide, install Gramweld or equal welding pins on the bottom. Maximum spacing 18" on center in both directions.

D. Installation: Applied with butt joints, all seams sealed with vapor seal mastic or taped with 2" wide vapor-proof, pressure-sensitive tape. Seal all penetrations with vapor barrier adhesive.

E. Internally Lined Ductwork: Where internally lined ductwork is indicated on the Drawings and/or specified, no exterior insulation is required. Select duct lining to provide the required R-value. Carefully lap the ends of the exterior insulation a minimum of 6" past the interior insulation unless otherwise shown. Seal the end of vapor barrier jacket to the duct with mastic where the vapor barrier is required.
E.1. Line Supply and Return ducts for 10' on intake and discharge of fan.
E.2. Line Supply ducts routed in vertical shafts directly below RTUs

FIRE PENETRATION REQUIREMENTS FOR DUCTS:

2019 OMSC (OREGON MECHANICAL SPECIALTY CODE) & 2019 OSSC (OREGON STRUCTURAL SPECIALTY CODE)

CODE SECTIONS -SPECIFIC REQUIREMENTS, EXCEPTIONS AND DESIGN APPROACH REQUIREMENTS.

SECTION 607.6 - HORIZONTAL ASSEMBLIES
PENETRATIONS BY DUCTS OF A FLOOR/CEILING OR ROOF/CEILING ASSEMBLY SHALL BE PROTECTED BY A SHAFT ENCLOSURE THAT COMPLIES WITH SECTIONS 713, 717.6.1 THROUGH 717.6.3 (OSSC)
(SEE BELOW FOR VERTICAL ASSEMBLIES/SHAFT PENETRATIONS OR VERTICAL FIRE PARTITIONS - THIS WILL APPLY TO ALL DUCTS THAT ARE ROUTED UP IN A RATED SHAFT).
OR
SECTIONS 607.6.1 THROUGH 607.6.3 THROUGH PENETRATIONS OF NOT MORE THAN TWO FLOORS TO BE PROTECTED WITH EITHER LISTED FIRE DAMPER OR A THROUGH PENETRATION PER SECTION 714.5
EXCEPTIONS: DUCTS PERMITTED TO PENETRATE THREE FLOORS OR LESS IF ALL 5 EXCEPTIONS ARE MET UNDER SECTION 607.6.1.

SECTION 607.5.5 SHAFT ENCLOSURES - PENETRATIONS ARE PERMITTED BY DUCTS WITH A LISTED FIRE AND SMOKE DAMPER OR
EXCEPTIONS: (THE FOLLOWING EXCEPTIONS ARE USED IN PART OR IN WHOLE ON THIS PROJECT)
1. FIRE DAMPERS ARE NOT REQUIRED FOR ANY OF THE FOLLOWING
1.1 STEEL EXHAUST SUBDUCTS ARE EXTENDED NOT LESS THAN 22 INCHES ON A SUBDUCT SYSTEM WITH CONTINUOUS FLOW
1.2 PENETRATIONS ARE TESTED IN ACCORDANCE WITH ASTM E119 OR UL263 (SEE ATTACHED CUT SHEETS ON UL PENETRATION DETAILS).
2. GROUP R OCCUPANCIES USING A SUB DUCT SYSTEM AS NOTED ABOVE.
3. SMOKE DAMPERS ARE NOT REQUIRED AT PENETRATIONS OF EXHAUST SHAFTS IN PARKING GARAGES WHEN SHAFTS ARE SEPARATED FROM OTHER SHAFTS BY NOT LESS THAN A 2 HOUR RATING.
4. FIRE OR FIRE SMOKE DAMPERS ARE NOT REQUIRED IN KITCHEN OR CLOTHES DRYER EXHAUST SYSTEMS.

OSSC
SECTION 713.8 PENETRATIONS.
PENETRATIONS IN A SHAFT ENCLOSURE SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 714 AS REQUIRED FOR FIRE BARRIERS.

SECTION 714.2 A LISTED PENETRATION FIRESTOP SYSTEM SHALL BE INSTALLED.

SECTION 714.4.1 THROUGH PENETRATIONS
EXCEPTIONS #2
THE MATERIAL USED TO FILL THE ANNULAR SPACE SHALL PREVENT THE PASSAGE OF FLAME AND HOT GASSES SUFFICIENT TO INGITE COTTON WASTE WHEN SUBJECTED TO ASTM E119 OR UL 263.

SECTION 714.4.1.2 THROUGH PENETRATION FIRE STOP SYSTEM
THROUGH PENETRATIONS SHALL BE PROTECTED BY AN APPROVED PENETRATION FIRE STOP SYSTEM INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL1479 (ASSEMBLY TEST) AND SHALL HAVE A F RATING NOT LESS THAN THE REQUIRED FIRE RESISTIVE RATING OF THE WALL PENETRATING.

DUCT CONSTRUCTION AND ROUTING:
- UNLESS PROJECT EXPLICITLY USES A SUB DUCT SYSTEM, SERVED BY ROOF FANS ON A BACK UP POWER SUPPLY, ALL DUCTS ARE ROUTED INDIVIDUALLY TO SIDEWALL OR ROOF TERMINATIONS WITH NO INTER-CONNECTIONS OF DUCT WORK.
- ALL DUCTWORK IS CONSTRUCTED PER OSMC AND PER SMACNA STANDARDS PER THE REQUIRED PRESSURE CLASSES. ALL DUCTWORK WILL BE SEALED TO BE AIR-TIGHT AND WILL NO ALLOW TRANSFER OF SMOKE BETWEEN UNITS OR TO LEAK SMOKE INTO SHAFTS.

BUILDING CONSTRUCTION, FIRE RATED WALLS AND RATED SHAFTS:
- SEE ARCHITECTURAL LIFE SAFETY PLANS FOR RATED WALLS AND SHAFTS
- SEE ARCHITECTURAL WALL SECTION DETAILS AND SHAFT WALL CONSTRUCTION DETAILS FOR REQUIRED FIRE RATINGS AND CONSTRUCTION METHODS.
- PROVIDE A UL LISTED FIRE STOP SYSTEM TO MATCH DUCT CONSTRUCTION AND WALL OR FLOOR CEILING CONSTRUCTION TO ENSURE COMPLIANCE WITH ASTM E119 AND UL 263 STANDARDS - WHICH IS DEMONSTRATED BY THE USE OF UL CONSTRUCTION METHODS COMPLYING WITH ASTM E814 OR UL1479.

MECHANICAL SHEET INDEX

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STAMP 3-15-22

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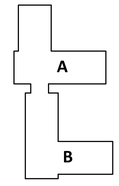
JULY 11, 2008
MARK D. DENYER
EXPIRES: 31DEC23

REVISION NO.	DATE



KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

HOME FORWARD
5600 NE 42ND
PORTLAND, OR 97218

ISSUANCE
PERMIT SET

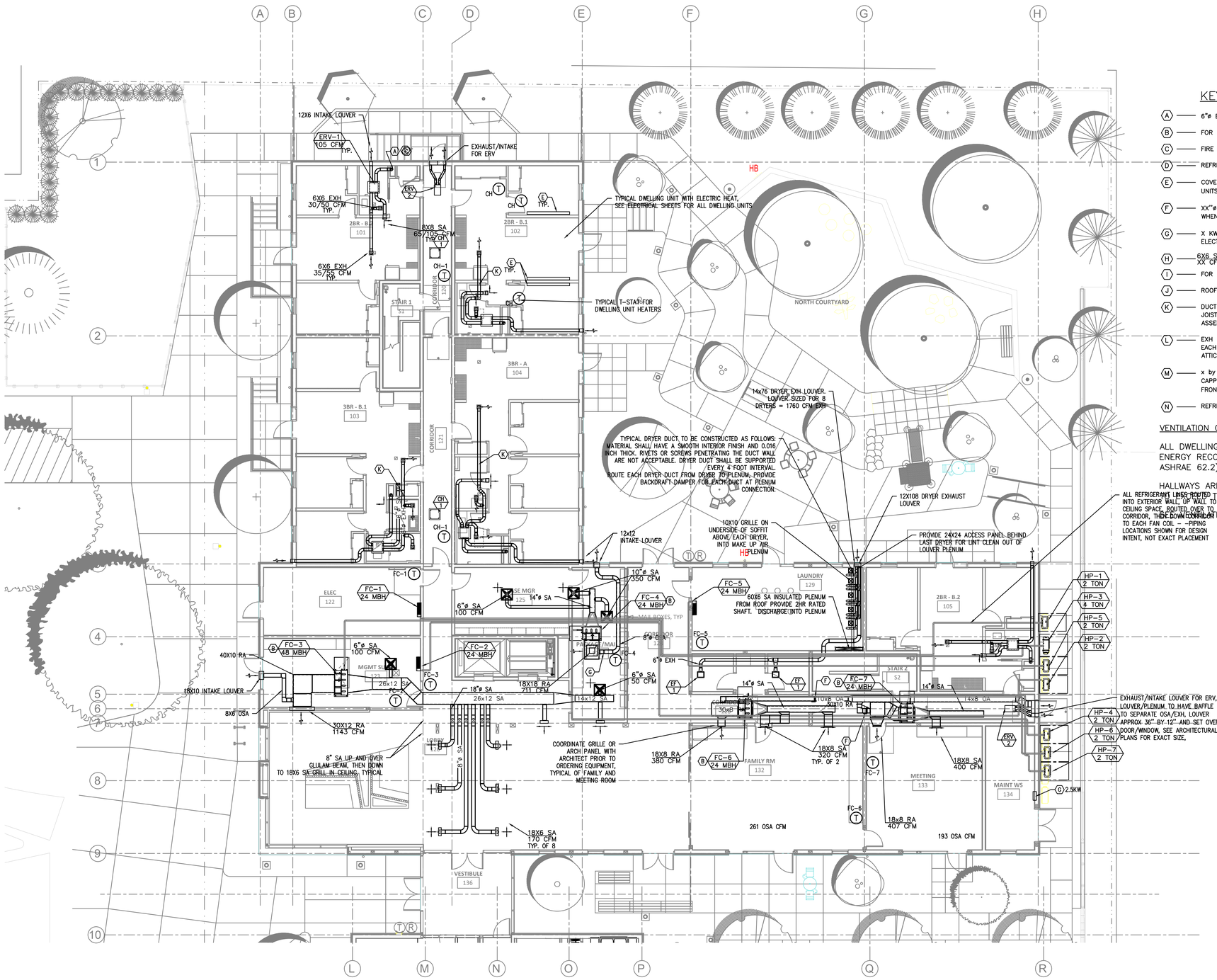
PROJECT NUMBER
2003

DATE
MARCH 18, 2022

SCALE
As indicated

DRAWING TITLE
MECHANICAL COVER SHEET

SHEET NUMBER
M0.01



KEY NOTES:

- (A) — 6"ø ERV EXHAUST UP TO ROOF IN RATED SHAFT.
- (B) — FOR DUCTED FAN COIL DETAIL, SEE 1/M6.01
- (C) — FIRE PENETRATION DETAIL FOR DUCTS ENTERING RATED SHAFT, SEE 4/M6.02
- (D) — REFRIGERANT LINESETS FROM CONDENSERS TO FAN COILS ON 1ST FLOOR.
- (E) — COVE STYLE WALL HEATERS FOR LIVING UNITS, 1400 W (118" LONG) FOR STUDIO UNITS, 1125 W (94" LONG) FOR 1&2 BEDROOM LIVING UNITS. INSTALL AT 90" AFF.
- (F) — XX"ø OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2–POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES.
- (G) — X KW WALL(SEE PLANS) HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY.
- (H) — 6X6 SA XX CFM CEILING SUPPLY GRILLE, SEE 4/M6.01
- (I) — FOR SPLIT SYSTEM CONDENSING UNIT DETAIL, SEE 3/M6.01
- (J) — ROOFTOP DOGHOUSE FOR ERV EXH., SEE 2/M6.01
- (K) — DUCT UP INTO JOIST BAY, THEN DROP OUT TO SOFFIT AND ROUTE TO EXTERIOR. JOIST BAY TO BE LINED BY GC WITH SHEET ROCK TO MAINTAIN RATED ASSEMBLY. 3/M6.02
- (L) — EXH DUCT UP THROUGH FIRE RATING AND INTO ATTIC, PROVIDE WITH FIRE DAMPER AT EACH PENETRATION OF THE RATED CEILING – DUCT BETWEEN FIRE DAMPERS IN THE ATTIC TO BE INSULTED WITH R–8 INSULATION.
- (M) — x by x INTAKE AND EXHAUST GRILLES FOR FUTURE TI SPACES, LOUVERS TO BE CAPPED AT INTERIOR FOR FUTURE CONNECTIONS – COORDINATE WITH SOFFIT/STORE FRONT SYSTEM. (SEE PLANS FOR SIZES, SEE ARCHITECTURAL FOR EXACT SIZES).
- (N) — REFRIGERANT LINESETS FOR TI SPLIT SYSTEM HEATPUMPS.

VENTILATION CALCULATIONS:

ALL DWELLING UNITS ARE VENTILATED BY MECHANICAL VENTILATION, ENERGY RECOVERY VENTILATORS RUN CONTINUOUSLY (SIZED PER ASHRAE 62.2).

HALLWAYS ARE VENTILATED BY ENERGY RECOVERY VENTILATORS SIZED TO THE MINIMUM 0.06 CFM/SQ FT REQUIREMENT

SEE VENTILATION SCHEDULES FOR OTHER COMMON SPACES

1 / M1.01A — LEVEL 1 BLDG A – MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

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PERMIT SET

PROJECT NUMBER
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DATE
MARCH 18, 2022

SCALE
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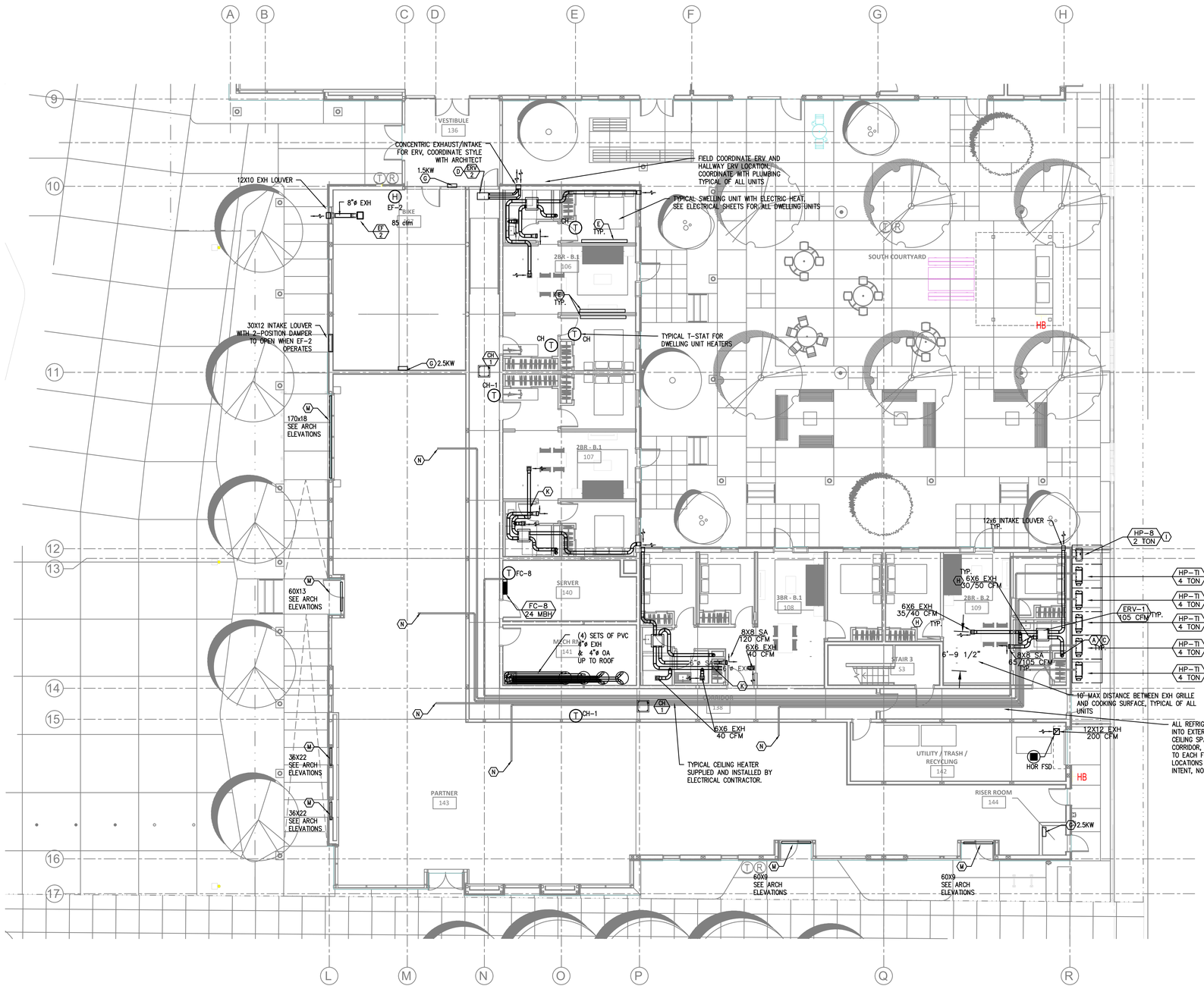
DRAWING TITLE
LEVEL 1 BUILDING A MECHANICAL FLOOR PLAN

SHEET NUMBER
M1.01A



1 M1.01B LEVEL 1 BLDG B – MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

KEY NOTES:

- (A) — 6"ø ERV EXHAUST UP TO ROOF IN RATED SHAFT.
- (B) — FOR DUCTED FAN COIL DETAIL, SEE 1/M6.01
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- (L) — EXH DUCT UP THROUGH FIRE RATING AND INTO ATTIC, PROVIDE WITH FIRE DAMPER AT EACH PENETRATION OF THE RATED CEILING – DUCT BETWEEN FIRE DAMPERS IN THE ATTIC TO BE INSULTED WITH R-8 INSULATION.
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- (N) — REFRIGERANT LINESETS FOR TI SPLIT SYSTEM HEATPUMPS.

VENTILATION CALCULATIONS:

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HALLWAYS ARE VENTILATED BY ENERGY RECOVERY VENTILATORS SIZED TO EXCEED THE MINIMUM 0.06 CFM/SQ FT REQUIREMENT

SEE VENTILATION SCHEDULES FOR OTHER COMMON SPACES

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KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

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ISSUANCE
PERMIT SET

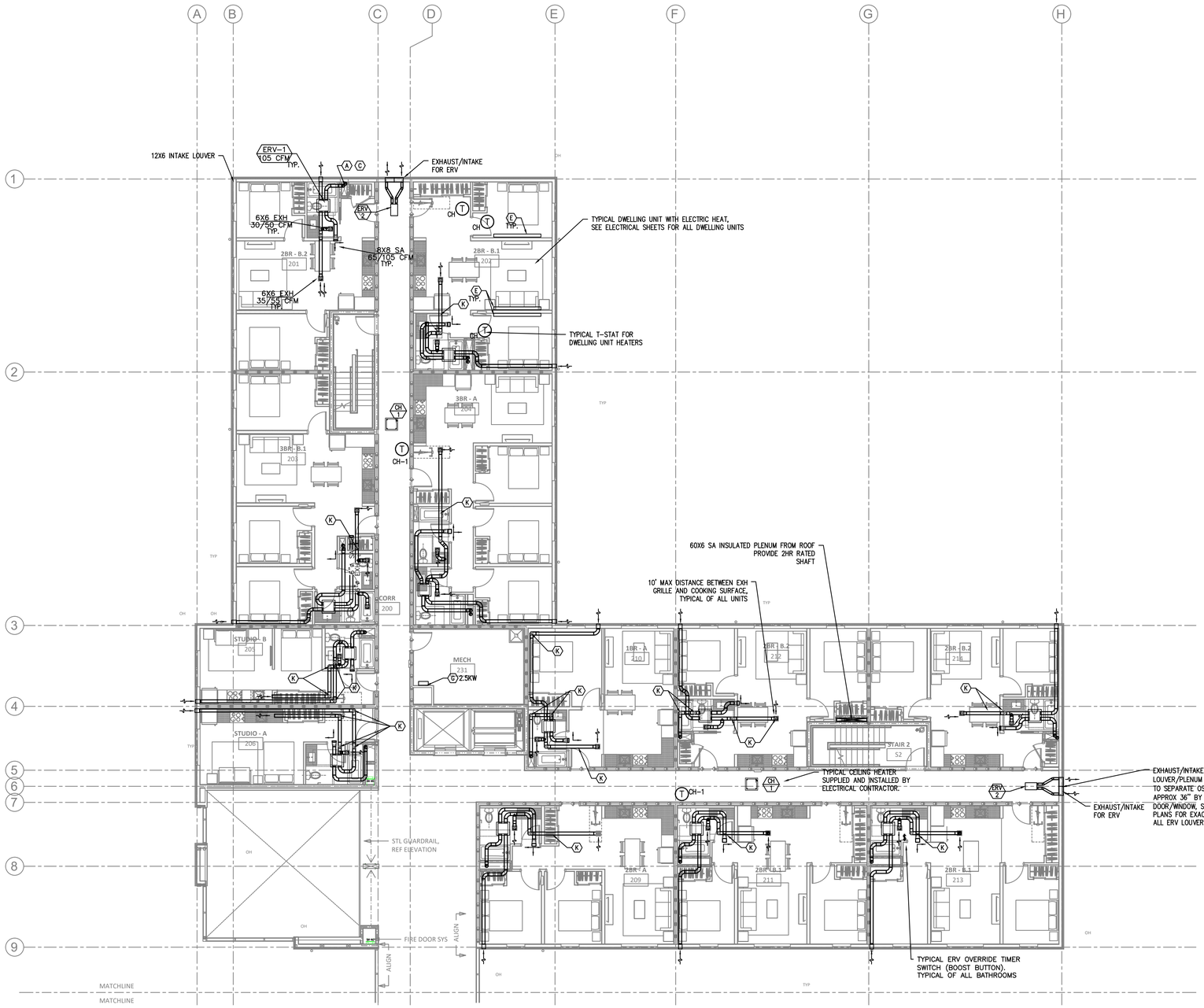
PROJECT NUMBER
2003

DATE
MARCH 18, 2022

SCALE
As indicated

DRAWING TITLE
LEVEL 1 BUILDING B MECHANICAL FLOOR PLAN

SHEET NUMBER
M1.01B



1 M1.02A LEVEL 2 BLDG A – MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

KEY NOTES:

- (A) 6"ø ERV EXHAUST UP TO ROOF IN RATED SHAFT.
- (B) FOR DUCTED FAN COIL DETAIL, SEE 1/M6.01
- (C) FIRE PENETRATION DETAIL FOR DUCTS ENTERING RATED SHAFT, SEE 4/M6.02
- (D) REFRIGERANT LINESETS FROM CONDENSERS TO FAN COILS ON 1ST FLOOR.
- (E) COVE STYLE WALL HEATERS FOR LIVING UNITS, 1400 W (118" LONG) FOR STUDIO UNITS, 1125 W (94" LONG) FOR 1&2 BEDROOM LIVING UNITS. INSTALL AT 90" AFF.
- (F) XX"ø OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2-POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES.
- (G) X KW WALL(SEE PLANS) HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY.
- (H) 6X6 SA XX CFM CEILING SUPPLY GRILLE, SEE 4/M6.01
- (I) FOR SPLIT SYSTEM CONDENSING UNIT DETAIL, SEE 3/M6.01
- (J) ROOFTOP DOGHOUSE FOR ERV EXH., SEE 2/M6.01
- (K) DUCT UP INTO JOIST BAY, THEN DROP OUT TO SOFFIT AND ROUTE TO EXTERIOR. JOIST BAY TO BE LINED BY GC WITH SHEET ROCK TO MAINTAIN RATED ASSEMBLY. 3/M6.02
- (L) EXH DUCT UP THROUGH FIRE RATING AND INTO ATTIC, PROVIDE WITH FIRE DAMPER AT EACH PENETRATION OF THE RATED CEILING – DUCT BETWEEN FIRE DAMPERS IN THE ATTIC TO BE INSULTED WITH R-8 INSULATION.
- (M) x by x INTAKE AND EXHAUST GRILLES FOR FUTURE TI SPACES, LOUVERS TO BE CAPPED AT INTERIOR FOR FUTURE CONNECTIONS – COORDINATE WITH SOFFIT/STORE FRONT SYSTEM. (SEE PLANS FOR SIZES, SEE ARCHITECTURAL FOR EXACT SIZES).
- (N) REFRIGERANT LINESETS FOR TI SPLIT SYSTEM HEATPUMPS.

VENTILATION CALCULATIONS:

ALL DWELLING UNITS ARE VENTILATED BY MECHANICAL VENTILATION, ENERGY RECOVERY VENTILATORS RUN CONTINUOUSLY (SIZED PER ASHRAE 62.2).

HALLWAYS ARE VENTILATED BY ENERGY RECOVERY VENTILATORS SIZED TO EXCEED THE MINIMUM 0.06 CFM/SQ FT REQUIREMENT

SEE VENTILATION SCHEDULES FOR OTHER COMMON SPACES

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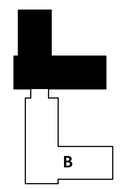
STAMP 3-15-22

REGISTERED PROFESSIONAL ENGINEER
54,607
OREGON
JULY 11, 2008
MARK R. DENYER
EXPIRES: 31DEC23

REVISION NO. DATE



KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

HOME FORWARD
5600 NE 42ND
PORTLAND, OR 97218

ISSUANCE
PERMIT SET

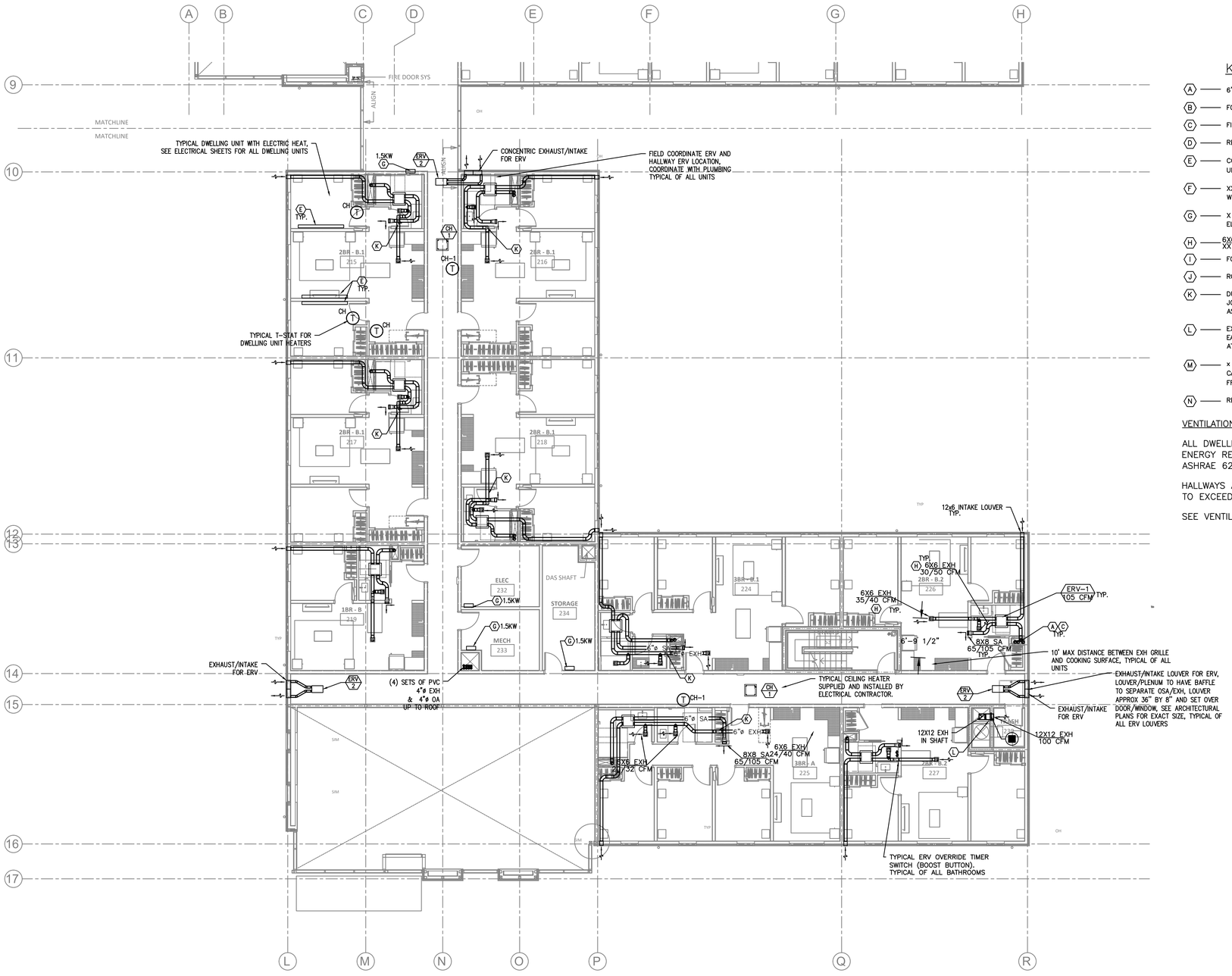
PROJECT NUMBER
2003

DATE
MARCH 18, 2022

SCALE
As indicated

DRAWING TITLE
LEVEL 2 BUILDING A MECHANICAL FLOOR PLAN

SHEET NUMBER
M1.02A



1 M1.02B LEVEL 2 BLDG B – MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

KEY NOTES:

- (A) 6"ø ERV EXHAUST UP TO ROOF IN RATED SHAFT.
- (B) FOR DUCTED FAN COIL DETAIL, SEE 1/M6.01
- (C) FIRE PENETRATION DETAIL FOR DUCTS ENTERING RATED SHAFT, SEE 4/M6.02
- (D) REFRIGERANT LINESETS FROM CONDENSERS TO FAN COILS ON 1ST FLOOR.
- (E) COVE STYLE WALL HEATERS FOR LIVING UNITS, 1400 W (118" LONG) FOR STUDIO UNITS, 1125 W (94" LONG) FOR 1&2 BEDROOM LIVING UNITS. INSTALL AT 90" AFF.
- (F) XX"ø OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2-POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES.
- (G) X KW WALL(SEE PLANS) HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY.
- (H) 6X6 SA XX CFM CEILING SUPPLY GRILLE, SEE 4/M6.01
- (I) FOR SPLIT SYSTEM CONDENSING UNIT DETAIL, SEE 3/M6.01
- (J) ROOFTOP DOGHOUSE FOR ERV EXH., SEE 2/M6.01
- (K) DUCT UP INTO JOIST BAY, THEN DROP OUT TO SOFFIT AND ROUTE TO EXTERIOR. JOIST BAY TO BE LINED BY GC WITH SHEET ROCK TO MAINTAIN RATED ASSEMBLY. 3/M6.02
- (L) EXH DUCT UP THROUGH FIRE RATING AND INTO ATTIC, PROVIDE WITH FIRE DAMPER AT EACH PENETRATION OF THE RATED CEILING – DUCT BETWEEN FIRE DAMPERS IN THE ATTIC TO BE INSULTED WITH R-8 INSULATION.
- (M) x by x INTAKE AND EXHAUST GRILLES FOR FUTURE TI SPACES, LOUVERS TO BE CAPPED AT INTERIOR FOR FUTURE CONNECTIONS – COORDINATE WITH SOFFIT/STORE FRONT SYSTEM. (SEE PLANS FOR SIZES, SEE ARCHITECTURAL FOR EXACT SIZES).
- (N) REFRIGERANT LINESETS FOR TI SPLIT SYSTEM HEATPUMPS.

VENTILATION CALCULATIONS:

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HALLWAYS ARE VENTILATED BY ENERGY RECOVERY VENTILATORS SIZED TO EXCEED THE MINIMUM 0.06 CFM/SQ FT REQUIREMENT

SEE VENTILATION SCHEDULES FOR OTHER COMMON SPACES

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54,607
OREGON
JULY 11, 2008
MARK R. DENYER
EXPIRES: 31DEC23

REVISION NO. DATE

A
KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

HOME FORWARD
5600 NE 42ND
PORTLAND, OR 97218

ISSUANCE
PERMIT SET

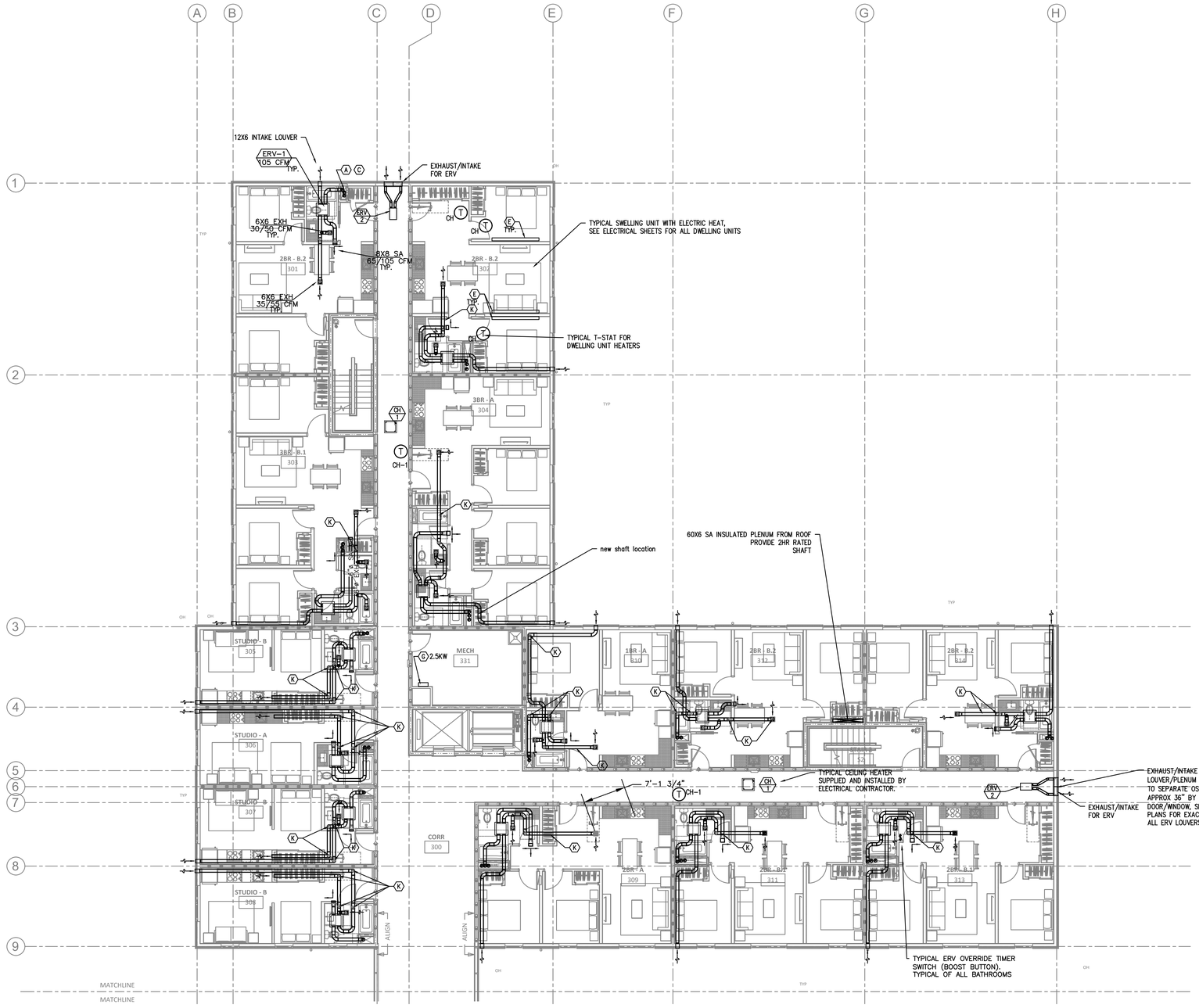
PROJECT NUMBER
2003

DATE
MARCH 18, 2022

SCALE
As indicated

DRAWING TITLE
LEVEL 1 BUILDING A MECHANICAL FLOOR PLAN

SHEET NUMBER
M1.02B



1 M1.03A LEVEL 3 BLDG A – MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

KEY NOTES:

- (A) — 6"ø ERV EXHAUST UP TO ROOF IN RATED SHAFT.
- (B) — FOR DUCTED FAN COIL DETAIL, SEE 1/M6.01
- (C) — FIRE PENETRATION DETAIL FOR DUCTS ENTERING RATED SHAFT, SEE 4/M6.02
- (D) — REFRIGERANT LINESETS FROM CONDENSERS TO FAN COILS ON 1ST FLOOR.
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- (F) — XX"ø OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2-POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES.
- (G) — X KW WALL(SEE PLANS) HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY.
- (H) — 6X6 SA XX CFM CEILING SUPPLY GRILLE, SEE 4/M6.01
- (I) — FOR SPLIT SYSTEM CONDENSING UNIT DETAIL, SEE 3/M6.01
- (J) — ROOFTOP DOGHOUSE FOR ERV EXH., SEE 2/M6.01
- (K) — DUCT UP INTO JOIST BAY, THEN DROP OUT TO SOFFIT AND ROUTE TO EXTERIOR. JOIST BAY TO BE LINED BY GC WITH SHEET ROCK TO MAINTAIN RATED ASSEMBLY. 3/M6.02
- (L) — EXH DUCT UP THROUGH FIRE RATING AND INTO ATTIC, PROVIDE WITH FIRE DAMPER AT EACH PENETRATION OF THE RATED CEILING – DUCT BETWEEN FIRE DAMPERS IN THE ATTIC TO BE INSULTED WITH R-8 INSULATION.
- (M) — x by x INTAKE AND EXHAUST GRILLES FOR FUTURE TI SPACES, LOUVERS TO BE CAPPED AT INTERIOR FOR FUTURE CONNECTIONS – COORDINATE WITH SOFFIT/STORE FRONT SYSTEM. (SEE PLANS FOR SIZES, SEE ARCHITECTURAL FOR EXACT SIZES).
- (N) — REFRIGERANT LINESETS FOR TI SPLIT SYSTEM HEATPUMPS.

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SEE VENTILATION SCHEDULES FOR OTHER COMMON SPACES

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OREGON
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MARK R. DENYER
EXPIRES: 31DEC23

REVISION NO. DATE

B
KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

HOME FORWARD
5600 NE 42ND
PORTLAND, OR 97218

ISSUANCE
PERMIT SET

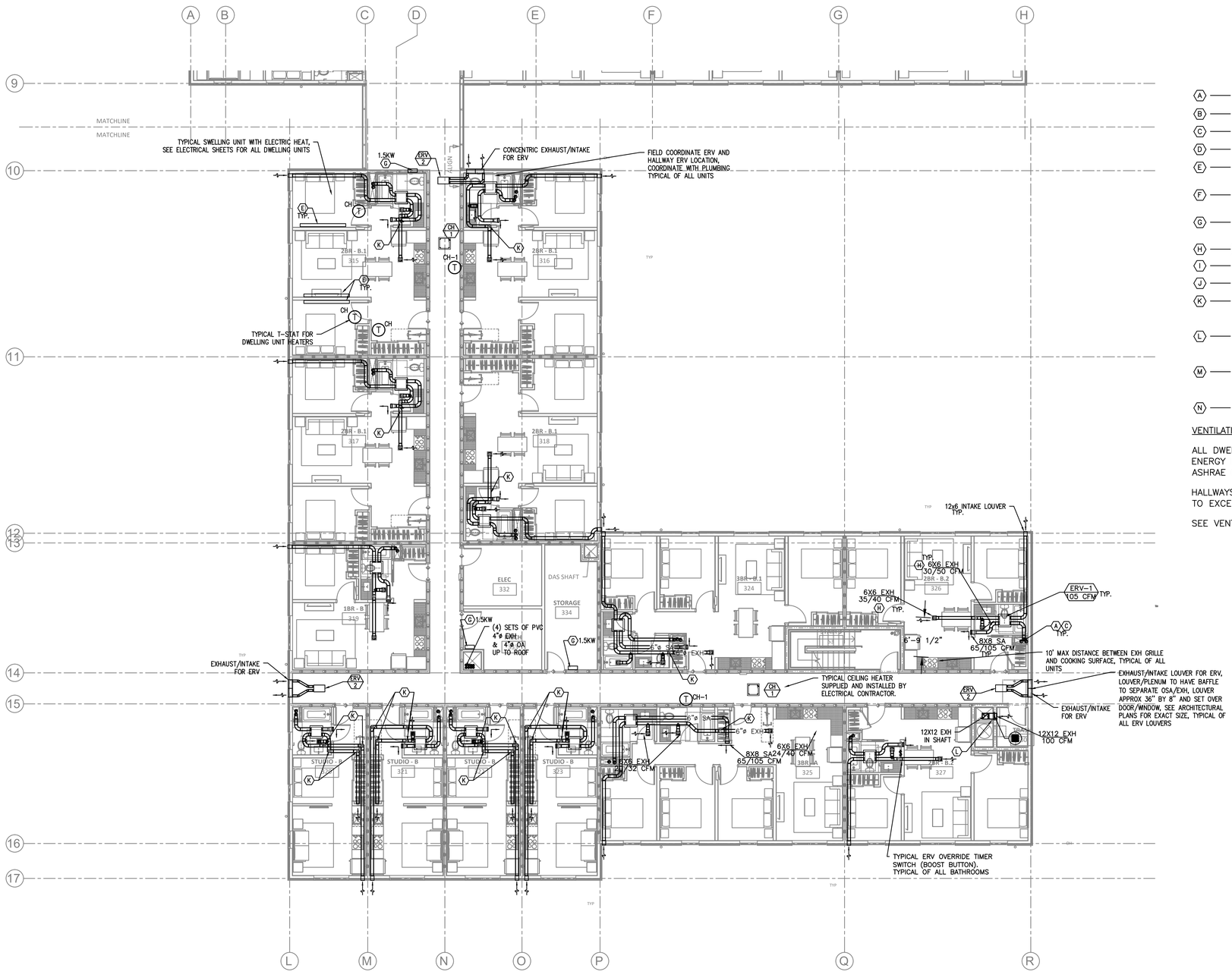
PROJECT NUMBER
2003

DATE
MARCH 18, 2022

SCALE
As indicated

DRAWING TITLE
LEVEL 3 BUILDING A MECHANICAL FLOOR PLAN

SHEET NUMBER
M1.03A



1 M1.03B LEVEL 3 BLDG B – MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

KEY NOTES:

- (A) 6"ø ERV EXHAUST UP TO ROOF IN RATED SHAFT.
- (B) FOR DUCTED FAN COIL DETAIL, SEE 1/M6.01
- (C) FIRE PENETRATION DETAIL FOR DUCTS ENTERING RATED SHAFT, SEE 4/M6.02
- (D) REFRIGERANT LINESETS FROM CONDENSERS TO FAN COILS ON 1ST FLOOR.
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- (H) 6X6 SA XX CFM CEILING SUPPLY GRILLE, SEE 4/M6.01
- (I) FOR SPLIT SYSTEM CONDENSING UNIT DETAIL, SEE 3/M6.01
- (J) ROOFTOP DOGHOUSE FOR ERV EXH., SEE 2/M6.01
- (K) DUCT UP INTO JOIST BAY, THEN DROP OUT TO SOFFIT AND ROUTE TO EXTERIOR. JOIST BAY TO BE LINED BY GC WITH SHEET ROCK TO MAINTAIN RATED ASSEMBLY. 3/M6.02
- (L) EXH DUCT UP THROUGH FIRE RATING AND INTO ATTIC, PROVIDE WITH FIRE DAMPER AT EACH PENETRATION OF THE RATED CEILING – DUCT BETWEEN FIRE DAMPERS IN THE ATTIC TO BE INSULTED WITH R-8 INSULATION.
- (M) x by x INTAKE AND EXHAUST GRILLES FOR FUTURE TI SPACES, LOUVERS TO BE CAPPED AT INTERIOR FOR FUTURE CONNECTIONS – COORDINATE WITH SOFFIT/STORE FRONT SYSTEM. (SEE PLANS FOR SIZES, SEE ARCHITECTURAL FOR EXACT SIZES).
- (N) REFRIGERANT LINESETS FOR TI SPLIT SYSTEM HEATPUMPS.

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OREGON
JULY 11, 2008
MARK V. DENYER
EXPIRES: 31DEC23

REVISION NO. DATE

A
KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

HOME FORWARD
5600 NE 42ND
PORTLAND, OR 97218

ISSUANCE
PERMIT SET

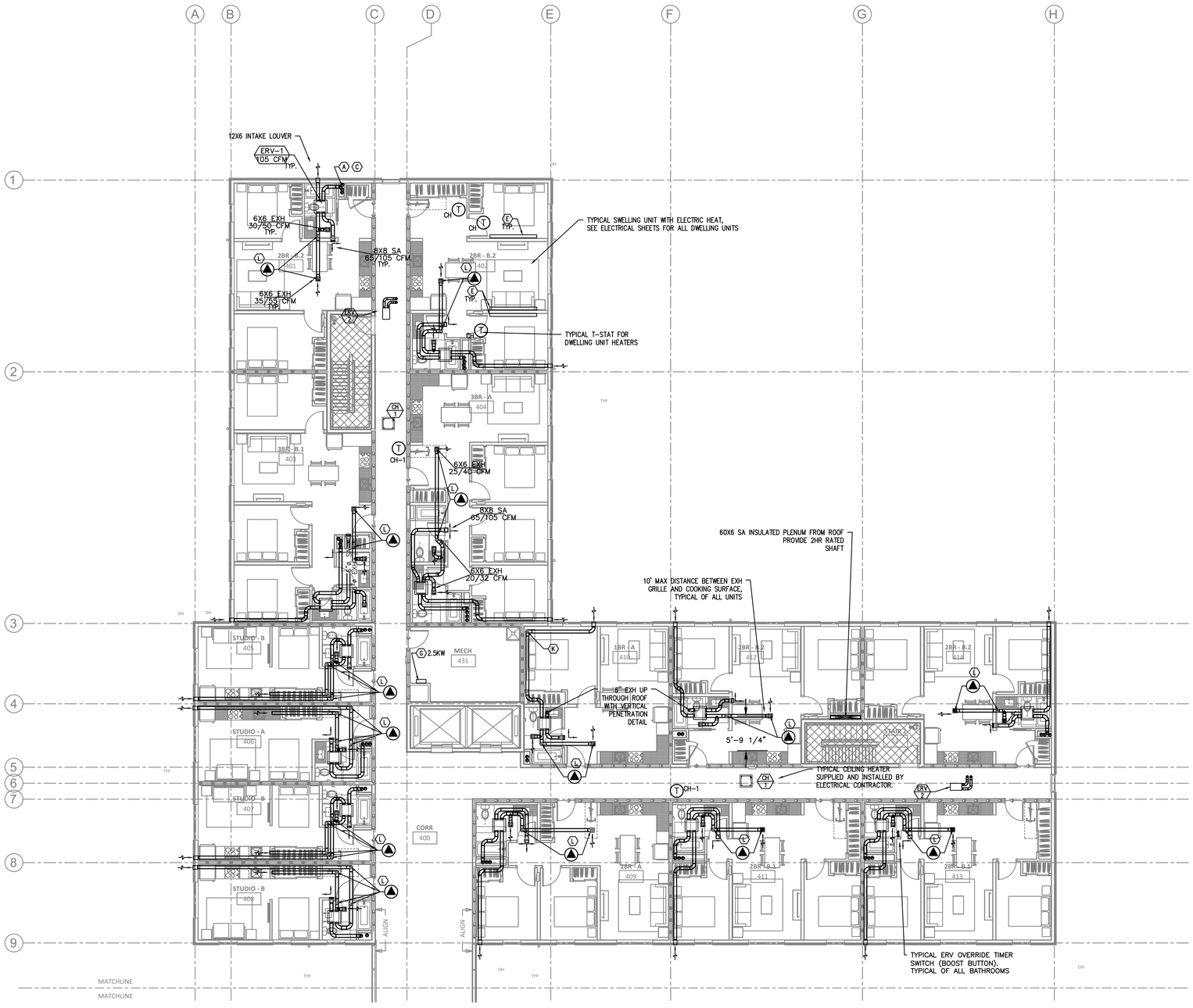
PROJECT NUMBER
2003

DATE
MARCH 18, 2022

SCALE
As indicated

DRAWING TITLE
LEVEL 3 BUILDING B MECHANICAL FLOOR PLAN

SHEET NUMBER
M1.03B



1 M1.04A LEVEL 4 BLDG A – MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

KEY NOTES:

- (A) — 6"ø ERV EXHAUST UP TO ROOF IN RATED SHAFT.
- (B) — FOR DUCTED FAN COIL DETAIL, SEE 1/M6.01
- (C) — FIRE PENETRATION DETAIL FOR DUCTS ENTERING RATED SHAFT, SEE 4/M6.02
- (D) — REFRIGERANT LINESETS FROM CONDENSERS TO FAN COILS ON 1ST FLOOR.
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- (F) — XX"ø OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2-POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES.
- (G) — X KW WALL(SEE PLANS) HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY.
- (H) — 6X6 SA XX CFM CEILING SUPPLY GRILLE, SEE 4/M6.01
- (I) — FOR SPLIT SYSTEM CONDENSING UNIT DETAIL, SEE 3/M6.01
- (J) — ROOFTOP DOGHOUSE FOR ERV EXH., SEE 2/M6.01
- (K) — DUCT UP INTO JOIST BAY, THEN DROP OUT TO SOFFIT AND ROUTE TO EXTERIOR. JOIST BAY TO BE LINED BY GC WITH SHEET ROCK TO MAINTAIN RATED ASSEMBLY. 3/M6.02
- (L) — EXH DUCT UP THROUGH FIRE RATING AND INTO ATTIC, PROVIDE WITH FIRE DAMPER AT EACH PENETRATION OF THE RATED CEILING – DUCT BETWEEN FIRE DAMPERS IN THE ATTIC TO BE INSULTED WITH R-8 INSULATION.
- (M) — x by x INTAKE AND EXHAUST GRILLES FOR FUTURE TI SPACES, LOUVERS TO BE CAPPED AT INTERIOR FOR FUTURE CONNECTIONS – COORDINATE WITH SOFFIT/STORE FRONT SYSTEM. (SEE PLANS FOR SIZES, SEE ARCHITECTURAL FOR EXACT SIZES).
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SEE VENTILATION SCHEDULES FOR OTHER COMMON SPACES

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STAMP 3-15-22

REGISTERED PROFESSIONAL ENGINEER
54,607
OREGON
JULY 11, 2008
MARK R. DENYER
EXPIRES: 31DEC23

REVISION NO. DATE

KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

HOME FORWARD
5600 NE 42ND
PORTLAND, OR 97218

ISSUANCE
PERMIT SET

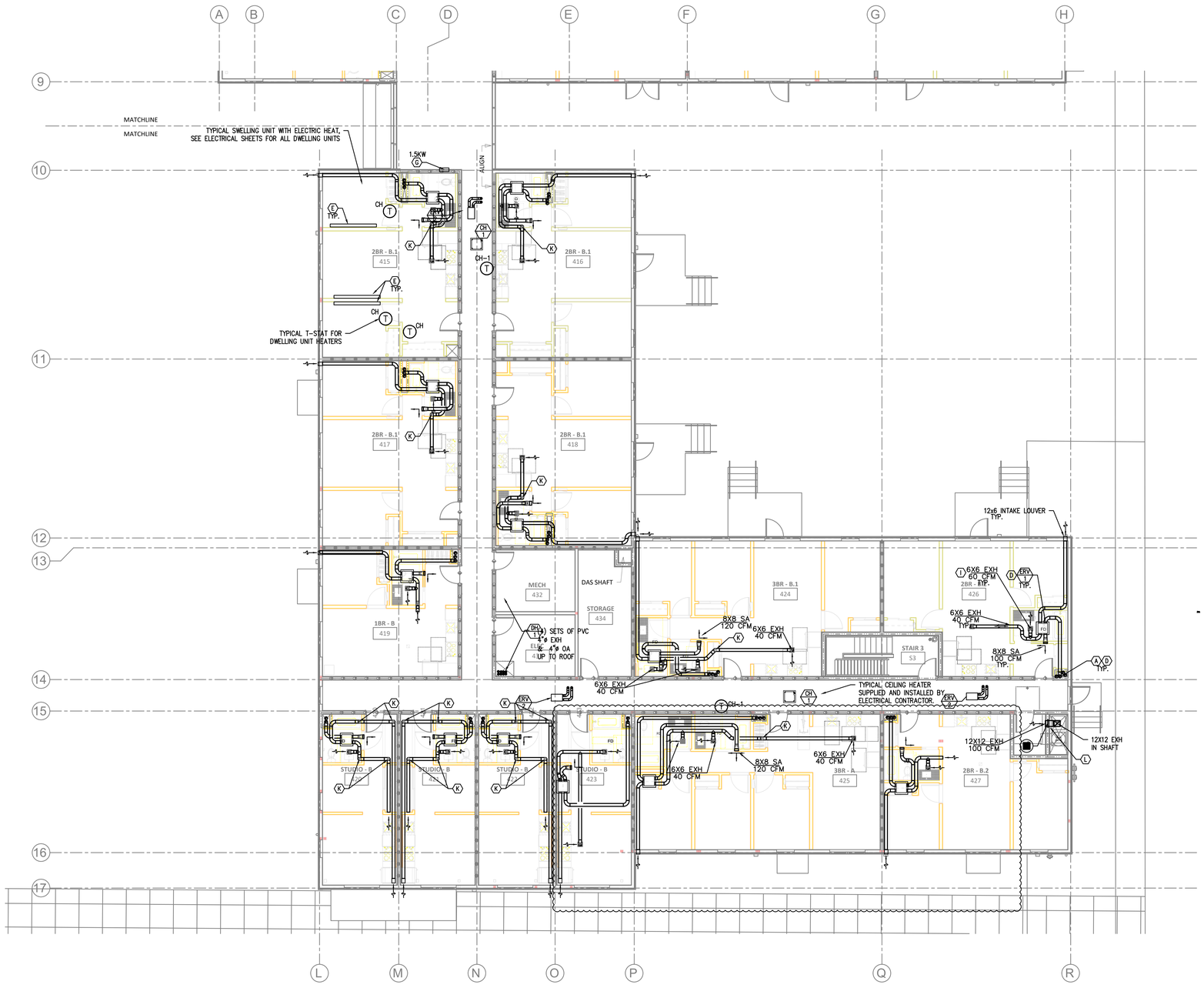
PROJECT NUMBER
2003

DATE
MARCH 18, 2022

SCALE
As indicated

DRAWING TITLE
LEVEL 4 BUILDING A MECHANICAL FLOOR PLAN

SHEET NUMBER
M1.04A



1 M1.04B LEVEL 4 BLDG B – MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

KEY NOTES:

- (A) 6"ø ERV EXHAUST UP TO ROOF IN RATED SHAFT.
- (B) FOR DUCTED FAN COIL DETAIL, SEE 1/M6.01
- (C) FIRE PENETRATION DETAIL FOR DUCTS ENTERING RATED SHAFT, SEE 4/M6.02
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- (H) 6X6 SA XX CFM CEILING SUPPLY GRILLE, SEE 4/M6.01
- (I) FOR SPLIT SYSTEM CONDENSING UNIT DETAIL, SEE 3/M6.01
- (J) ROOFTOP DOGHOUSE FOR ERV EXH., SEE 2/M6.01
- (K) DUCT UP INTO JOIST BAY, THEN DROP OUT TO SOFFIT AND ROUTE TO EXTERIOR. JOIST BAY TO BE LINED BY GC WITH SHEET ROCK TO MAINTAIN RATED ASSEMBLY. 3/M6.02
- (L) SUPPLY AIR OR RETURN GRILLE, SIZED FOR BOTH FREE AREA AND FOR ACTUATOR ACCESS, SEE 1/M6.02 FOR GRILLE INSTALLATION, AND SEE 2/M6.02 FOR TYPICAL F/S INSTALLATION, AND CONTROLS.
- (M) 36X24 INTAKE AND EXHAUST GRILLES FOR FUTURE TI SPACES, LOUVERS TO BE CAPPED AT INTERIOR FOR FUTURE CONNECTIONS – COORDINATE WITH SOFFIT/STORE FRONT SYSTEM.
- (N) REFRIGERANT LINESETS FOR TI SPLIT SYSTEM HEATPUMPS.

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SEE VENTILATION SCHEDULES FOR OTHER COMMON SPACES

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STAMP

NOT FOR CONSTRUCTION

REVISION NO. DATE

KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

HOME FORWARD
5600 NE 42ND
PORTLAND, OR 97218

ISSUANCE
50% CD

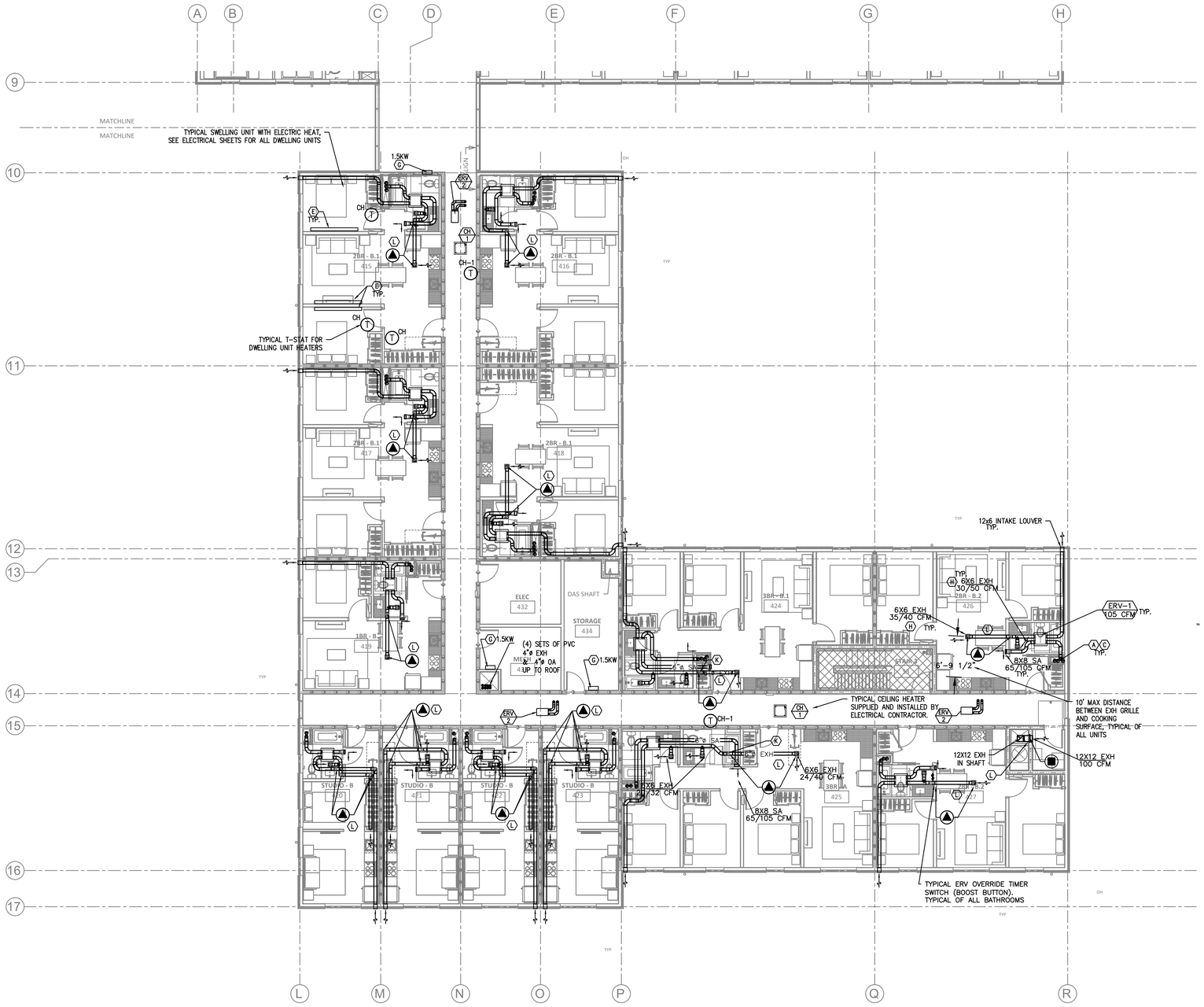
PROJECT NUMBER
2003

DATE
OCT 27, 2021

SCALE
As indicated

DRAWING TITLE
LEVEL 4 BUILDING B MECHANICAL FLOOR PLAN

SHEET NUMBER
M1.04B



1 M1.04B LEVEL 4 BLDG B – MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

KEY NOTES:

- (A) — 6"ø ERV EXHAUST UP TO ROOF IN RATED SHAFT.
- (B) — FOR DUCTED FAN COIL DETAIL, SEE 1/M6.01
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REGISTERED PROFESSIONAL ENGINEER 54,607 OREGON JULY 11, 2008 MARK R. DENYER
EXPIRES: 31DEC23

REVISION NO. DATE

A
KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

HOME FORWARD
5600 NE 42ND
PORTLAND, OR 97218

ISSUANCE
PERMIT SET

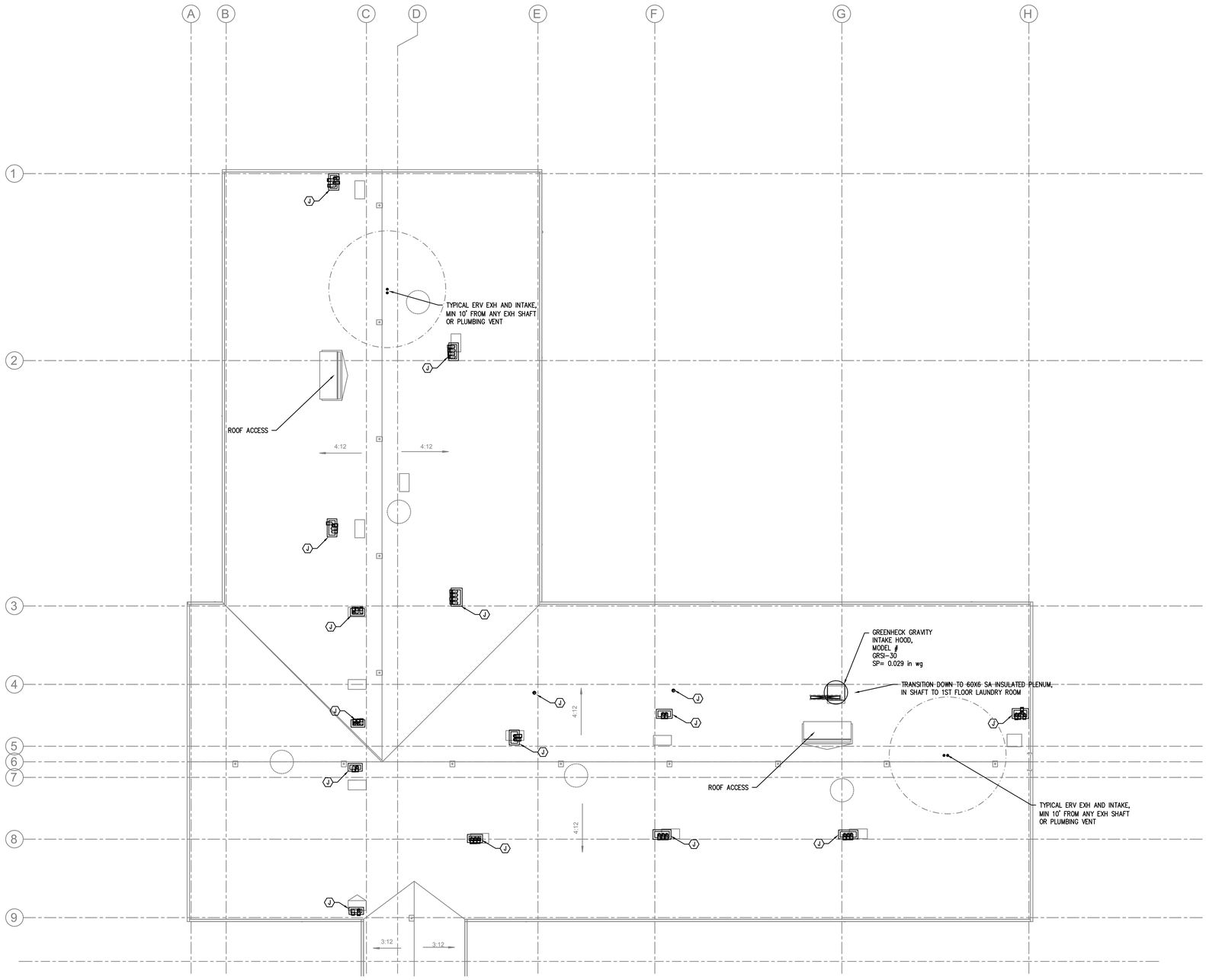
PROJECT NUMBER
2003

DATE
MARCH 18, 2022

SCALE
As indicated

DRAWING TITLE
LEVEL 4 BUILDING B MECHANICAL FLOOR PLAN

SHEET NUMBER
M1.04B



KEY NOTES:

- (A) 6"ø ERV EXHAUST UP TO ROOF IN RATED SHAFT.
- (B) FOR DUCTED FAN COIL DETAIL, SEE 1/M6.01
- (C) FIRE PENETRATION DETAIL FOR DUCTS ENTERING RATED SHAFT, SEE 4/M6.02
- (D) REFRIGERANT LINESETS FROM CONDENSERS TO FAN COILS ON 1ST FLOOR.
- (E) COVE STYLE WALL HEATERS FOR LIVING UNITS, 1400 W (118" LONG) FOR STUDIO UNITS, 1125 W (94" LONG) FOR 1&2 BEDROOM LIVING UNITS. INSTALL AT 90" AFF.
- (F) XX"ø OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2-POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES.
- (G) X KW WALL(SEE PLANS) HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY.
- (H) 6X6 SA XX CFM CEILING SUPPLY GRILLE, SEE 4/M6.01
- (I) FOR SPLIT SYSTEM CONDENSING UNIT DETAIL, SEE 3/M6.01
- (J) ROOFTOP DOGHOUSE FOR ERV EXH., SEE 2/M6.01
- (K) DUCT UP INTO JOIST BAY, THEN DROP OUT TO SOFFIT AND ROUTE TO EXTERIOR. JOIST BAY TO BE LINED BY GC WITH SHEET ROCK TO MAINTAIN RATED ASSEMBLY. 3/M6.02
- (L) EXH DUCT UP THROUGH FIRE RATING AND INTO ATTIC, PROVIDE WITH FIRE DAMPER AT EACH PENETRATION OF THE RATED CEILING – DUCT BETWEEN FIRE DAMPERS IN THE ATTIC TO BE INSULTED WITH R-8 INSULATION.
- (M) x by x INTAKE AND EXHAUST GRILLES FOR FUTURE TI SPACES, LOUVERS TO BE CAPPED AT INTERIOR FOR FUTURE CONNECTIONS – COORDINATE WITH SOFFIT/STORE FRONT SYSTEM. (SEE PLANS FOR SIZES, SEE ARCHITECTURAL FOR EXACT SIZES).
- (N) REFRIGERANT LINESETS FOR TI SPLIT SYSTEM HEATPUMPS.

VENTILATION CALCULATIONS:

ALL DWELLING UNITS ARE VENTILATED BY MECHANICAL VENTILATION, ENERGY RECOVERY VENTILATORS RUN CONTINUOUSLY (SIZED PER ASHRAE 62.2).

HALLWAYS ARE VENTILATED BY ENERGY RECOVERY VENTILATORS SIZED TO EXCEED THE MINIMUM 0.06 CFM/SQ FT REQUIREMENT

SEE VENTILATION SCHEDULES FOR OTHER COMMON SPACES

1/M1.05A ROOF BLDG A – MECHANICAL PLAN
SCALE:1/8" = 1'-0"

ARCHITECTS
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homeforward

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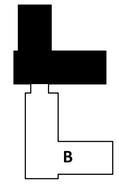
CONTACT: MARK DENYER

STAMP 3-15-22

REGISTERED PROFESSIONAL ENGINEER
54.607
OREGON
JULY 11, 2008
MARK R. DENYER
EXPIRES: 31DEC23

REVISION NO. DATE



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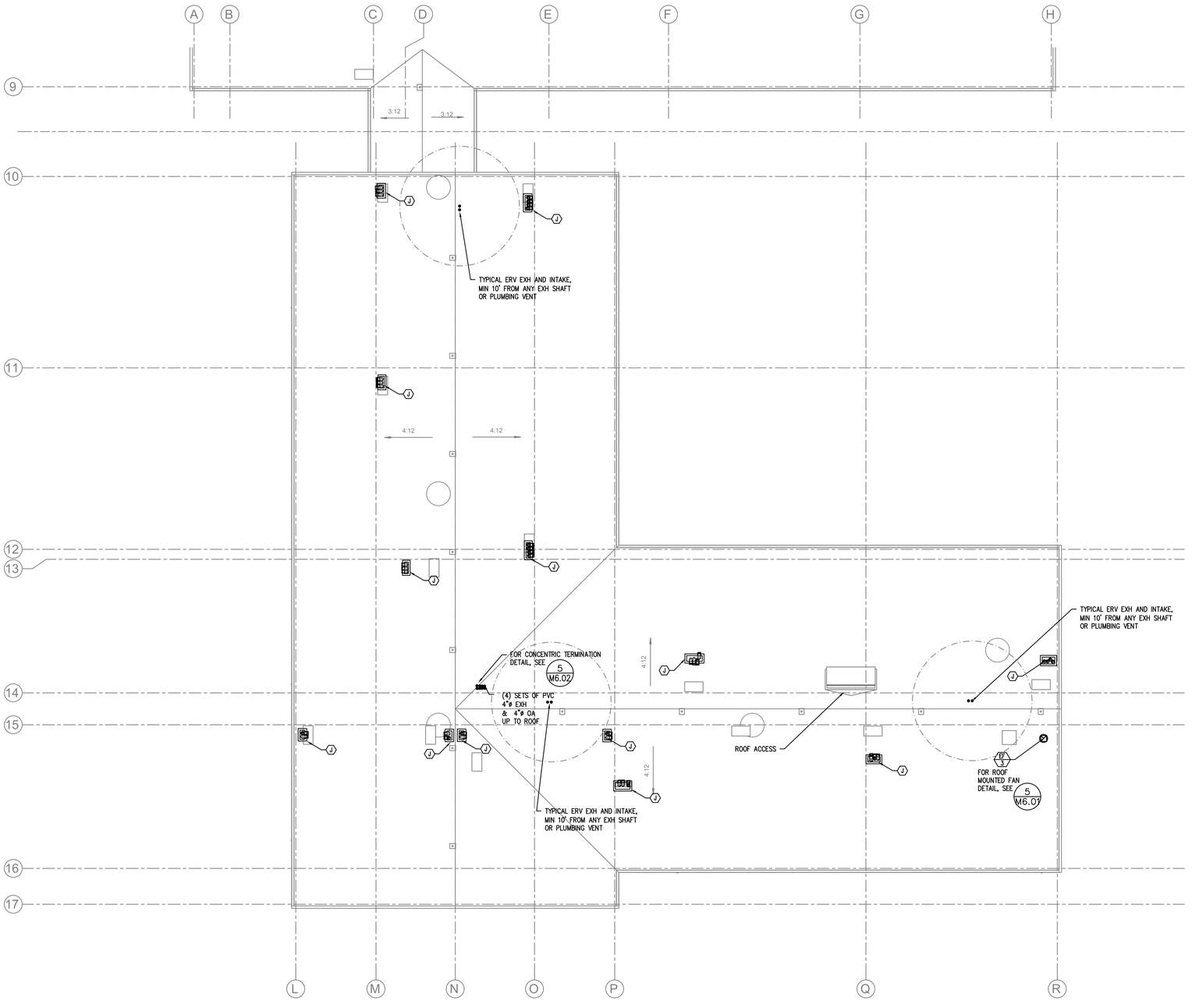
ROOF BUILDING A MECHANICAL FLOOR PLAN

SHEET NUMBER
M1.05A



1 M1.05B ROOF BLDG B – MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

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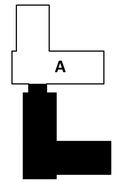

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ROOF BUILDING B
MECHANICAL FLOOR
PLAN

SHEET NUMBER
M1.05B

MECHANICAL LEGEND

- SUPPLY AIR DIFFUSER
- RETURN AIR GRILLE
- EXHAUST AIR GRILLE
- PERFORATED RETURN AIR PANEL
- OR — DIRECTIONAL AIR FLOW
- MANUAL VOLUME DAMPER
- SUPPLY OR OUTSIDE AIR DUCT UP & DOWN
- RETURN AIR DUCT UP & DOWN
- EXHAUST AIR DUCT UP & DOWN
- SUPPLY OR OUTSIDE AIR DUCT UP & DOWN
- RETURN AIR DUCT UP & DOWN
- EXHAUST AIR DUCT UP & DOWN
- VAV TERMINAL UNIT
- VVT TERMINAL UNIT
- (E) EXISTING
- CONNECT TO EXISTING
- AC-4 THERMOSTAT OR TEMP. SENSOR
- ? NOTE
- XX/? EQUIPMENT DESIGNATOR
- BALL VALVE
- GATE VALVE
- CHECK VALVE
- BALANCING VALVE
- THERMOMETER
- DIRECTION OF FLOW
- PUMP
- STRAINER
- PRESSURE GAUGE
- PETE'S PLUG
- DOUBLE CHECK ASSEMBLY
- PRESSURE REDUCING VALVE
- UNION
- 2-WAY CONTROL VALVE
- 3-WAY CONTROL VALVE
- CAP
- S SMOKE DETECTOR
- MOTORIZED DAMPER

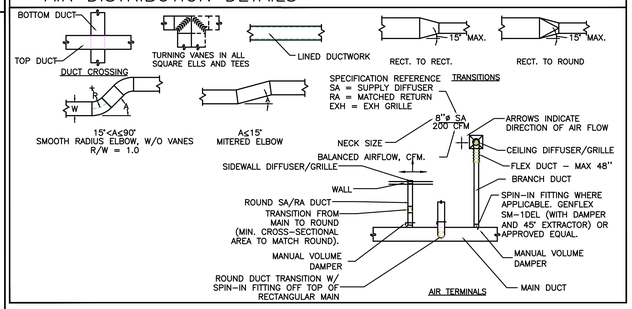
AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
B.D.	BOTTOM OF DUCT
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNITS
CFM	CUBIC FEET PER MINUTE
CONN.	CONNECTION
CONT.	CONTINUATION
CW	DOMESTIC COLD WATER
DB	DRY BULB
DIA.	DIAMETER
DIST.	DISTRIBUTION
EA	EXHAUST AIR
EDB	ENTERING DRY BULB TEMPERATURE
EWB	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
FF	FINISH FLOOR
FIXT.	FIXTURE
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT.	FEET / FOOT
GA.	GAUGE
GPM	GALLONS PER MINUTE
H	HEIGHT
HP	HORSEPOWER
I.D.	INSIDE DIAMETER
IN.	INCHES
L	LENGTH
LBS.	POUNDS
LDB	LEAVING DRY BULB
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MAX.	MAXIMUM
MBH	THOUSANDS OF BTUs PER HOUR
MIN.	MINIMUM
NC	NOISE CRITERIA
N.C.	NORMALLY CLOSED
N.I.M.	NOT IN MECHANICAL
NO.	NUMBER
N.O.	NORMALLY OPEN
O.A.	OUTSIDE AIR
P	PERSON
PSI	POUNDS PER SQUARE INCH
P/T	PRESSURE / TEMPERATURE
R.A.	RETURN AIR
RECT.	RECTANGULAR
REQ'D	REQUIRED
S.A.	SUPPLY AIR
S.P.	STATIC PRESSURE
SQ.	SQUARE
TEMP.	TEMPERATURE
TYP.	TYPICAL
VAV	VARIABLE AIR VOLUME
W	WIDTH
WB	WET BULB
WPD	WATER PRESSURE DROP
ø	DIAMETER

- (E) EXISTING
- (D) DEMOLISH
- NEW WORK
- HWS (HWS) HEATING WATER SUPPLY
- HWR (HWR) HEATING WATER RETURN
- FIRE DAMPER
- FIRE / SMOKE DAMPER
- SMOKE DAMPER

SEISMIC BRACING

- LATERAL BRACING
- LONGITUDINAL BRACING
- LONGITUDINAL & LATERAL BRACING

AIR DISTRIBUTION DETAILS



EXHAUST FANS

MARK NUMBER	EF 1	EF 2	EF 3
TYPE	CEILING CABINET	CEILING CABINET	ROOF DIRECT DRIVE
SYSTEM	RESTROOM	BIKE 137	TRASH
CFM	100	200	600
TOTAL SP. (IN H20)	0.125	0.125	0.5
RPM	1250	740	1533
TIP SPEED (FPM)	—	— —	4365
MOTOR WATTS OR HP	100 W	127 W	1/6 HP
CONTROLLED BY	LIGHTS	HUMIDISTAT	CONTINUOUS
INTERLOCK WITH	NONE	NONE	NONE
FAN SPEED CONTROLLER	NO	YES	YES
WHEEL TYPE	FC	BI	BI
BACK DRAFT DAMPER	GRAVITY	GRAVITY	NONE
ISOLATION	RUBBER	RUBBER	RUBBER
DESIGN WEIGHT (LBS)	25	23	45
MAX. SONES	1.5	1.7	9.1
MAX AMPS — ***	1.3	1.8	2.2
POWER (VOLTS/PHASE/HZ) — ***	120/60/1	120/60/1	120/60/1
BASIS OF DESIGN:	BROAN L100	BROAN L200	GREENHECK G-095-VG

*** — ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DESIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS

INDOOR UNITS — *

MARK NUMBER	FC-1 24 MBH	FC-2 24 MBH	FC-3 48 MBH	FC-4 24 MBH	FC-5 24 MBH	FC-6 24 MBH	FC-7 24 MBH	FC-8 24 MBH
SYSTEM	ELEC 122	MGMT SUITE 123	HALL/MAIL 127	CASE MNGR 124 & 125	LAUNDRY 129	FAMILY RM 132	MEETING 133	SERVER 140
TYPE	WALL MOUNTED	WALL MOUNTED	DUCTED	DUCTED	WALL MOUNTED	DUCTED	DUCTED	WALL MOUNTED
EFFICIENCY	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT
NOMINAL COOLING CAPACITY	24,000 BTUH	24,000 BTUH	48,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH
HEATING CAPACITY	24,000 BTUH	24,000 BTUH	50,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH
TOTAL SUPPLY CFM	635	635	1400	1130	635	1130	1130	635
OSA CFM	— —	— —	— —	247	— —	247	247	— —
EXTERNAL SP. ("H20)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
VOLTS/PHASE	208/1	208/1	208/1	208/1	208/1	208/1	208/1	208/1
MCA/MOP	0.6/15	SEE OUTDOOR UNIT	3.4/15	2.9/15	0.6/15	2.9/15	2.9/15	0.6/15
WEIGHT	31	31	120 LBS	110	31	110	110	31
BASIS OF DESIGN	DAIKIN FTX24NMVJU	DAIKIN FTX24NMVJU	DAIKIN FBQ48PVJU	DAIKIN FBQ24PVJU	DAIKIN FTX24NMVJU	DAIKIN FBQ24PVJU	DAIKIN FBQ24PVJU	DAIKIN FTX24NMVJU
OUTDOOR UNIT	HP-1 2 TON	HP-2 2 TON	HP-3 4 TON	HP-4 2 TON	HP-5 2 TON	HP-6 2 TON	HP-7 2 TON	HP-8 2 TON

* — PROVIDE ALL UNITS THAT CANNOT BE DRAINED BY GRAVITY WITH CONDENSATE PUMP, ROUTE ALL CONDENSATE LINES HIDDEN WITHIN STRUCTURE TO AN APPROVED LOCATION PROVIDED BY THE PLUMBER.

OUTDOOR UNITS — SPLIT SYSTEM HEAT PUMP

MARK NUMBER	HP-1 2 TON	HP-2 2 TON	HP-3 4 TON	HP-4 2 TON	HP-5 2 TON	HP-6 2 TON	HP-7 2 TON	HP-8 2 TON
SYSTEM	ELEC 122	MGMT SUITE 123	HALL/MAIL 127	CASE MNGR 124 & 125	LAUNDRY 129	FAMILY RM 132	MEETING 133	SERVER 140
TYPE	1-PORT HEAT PUMP	1-PORT HEAT PUMP	1-PORT HEAT PUMP	1-PORT HEAT PUMP	1-PORT HEAT PUMP	1-PORT HEAT PUMP	1-PORT HEAT PUMP	1-PORT HEAT PUMP
NORMAL COOLING CAPACITY	24,000 BTUH	24,000 BTUH	48,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH
NORMAL HEATING CAPACITY	24,000 BTUH	24,000 BTUH	50,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH	24,000 BTUH
EFFICIENCY SEER/EER	17.6/10.2	17.6/10.2	14.0/8.6	17.6/10.2	17.6/10.2	17.6/10.2	17.6/10.2	17.6/10.2
EFFICIENCY HSPF/COP	8.4/— —	8.4/— —	8.4/— —	8.4/— —	8.4/— —	8.4/— —	8.4/— —	8.4/— —
REFRIGERANT	410 A	410 A	410 A	410 A	410 A	410 A	410 A	410 A
REFRIGERANT CHARGE	X LBS	X LBS	X LBS	X LBS	X LBS	X LBS	X LBS	X LBS
MAX OPERATING TEMPS	115/5	115/5	115/5	115/5	115/5	115/5	115/5	115/5
MAX PIPING LENGTH	98 FT	98 FT	230 FT	98 FT	98 FT	98 FT	98 FT	98 FT
MAX PIPING HEIGHT	65 FT	65 FT	98 FT	65 FT	65 FT	65 FT	65 FT	65 FT
VOLTS-PHASE — **	208/230-1 PHASE	208/230-1 PHASE	208/230-1 PHASE	208/230-1 PHASE	208/230-1 PHASE	208/230-1 PHASE	208/230-1 PHASE	208/230-1 PHASE
MCA/MOP — **	16.5/20.0 AMPS	16.5/20.0 AMPS	29.1/35	16.5/20.0 AMPS	16.5/20.0 AMPS	16.5/20.0 AMPS	16.5/20.0 AMPS	16.5/20.0 AMPS
COMPRESSOR	VARIABLE SPEED	VARIABLE SPEED	VARIABLE SPEED	VARIABLE SPEED	VARIABLE SPEED	VARIABLE SPEED	VARIABLE SPEED	VARIABLE SPEED
WEIGHT	172 LBS	172 LBS	200	172 LBS	172 LBS	172 LBS	172 LBS	172 LBS
BASIS OF DESIGN	DAIKIN RX24NMVJU	DAIKIN RX24NMVJU	DAIKIN RZQ48TAVJUA	DAIKIN RX24NMVJU	DAIKIN RX24NMVJU	DAIKIN RX24NMVJU	DAIKIN RX24NMVJU	DAIKIN RX24NMVJU

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MECHANICAL SCHEDULES

SHEET NUMBER
M6.00

VENTILATION AIR SCHEDULE - FC-2

ROOM NUMBER AND NAME	AREA (SQ. FT.)	OCCUPANT LOAD (#/1000 SQ. FT.)	NUMBER OF OCCUPANTS	OUTSIDE AIR REQUIREMENT (CFM/P)	OUTSIDE AIR REQUIREMENT (CFM/SQ.FT.)	OUTSIDE AIR REQUIRED (CFM)		ZONE OSA (CFM)	SUPPLY AIR (CFM)	PRIMARY OSA FRACTION	RETURN AIR (CFM)	EXHAUST AIR (CFM)	Zone Ventilation Efficiency	Corrected OSA CFM	AIR SYSTEMS
	Az		**Pz**	**Rp**	**Ra**	**Vbz**	**Ez**	**Voz**	**Vpz**	**Zp**			**Evz**		
OFFICE SPACE	364	5	2	5	0.06	32	0.8	40	1000	0.04	1000	0	1.00	39.80	FC-2
TOTAL	**364**		**2**			**32**		**40** Vou	**1000** Vps		**1000**	**0**	**1.00** Ev	**40**	
					CORRECTED TOTAL OUTDOOR AIR FLOW RATE			**40**	**CFM**	**Corrected OSA Fractio**			**Zs =**	**0.04**	

VENTILATION AIR SCHEDULE - FC-3

ROOM NUMBER AND NAME	AREA (SQ. FT.)	OCCUPANT LOAD (#/1000 SQ. FT.)	NUMBER OF OCCUPANTS	OUTSIDE AIR REQUIREMENT (CFM/P)	OUTSIDE AIR REQUIREMENT (CFM/SQ.FT.)	OUTSIDE AIR REQUIRED (CFM)		ZONE OSA (CFM)	SUPPLY AIR (CFM)	PRIMARY OSA FRACTION	RETURN AIR (CFM)	EXHAUST AIR (CFM)	Zone Ventilation Efficiency	Corrected OSA CFM	AIR SYSTEMS
	Az		**Pz**	**Rp**	**Ra**	**Vbz**	**Ez**	**Voz**	**Vpz**	**Zp**			**Evz**		
HALL/MAIL 127	2012	0	0	0	0.06	121	0.8	151	1300	0.12	1143	0	1.02	203.64	FC-3
MGMT SUITE 123	360	5	2	5	0.06	32	0.8	40	100	0.40	0	0	0.74	53.31	FC-3
TOTAL	**2372**		**2**			**152**		**190** Vou	**1400** Vps		**1143**	**0**	**0.74** Ev	**257**	
					CORRECTED TOTAL OUTDOOR AIR FLOW RATE			**257**	**CFM**	**Corrected OSA Fractio**			**Zs =**	**0.18**	

VENTILATION AIR SCHEDULE - FC-4

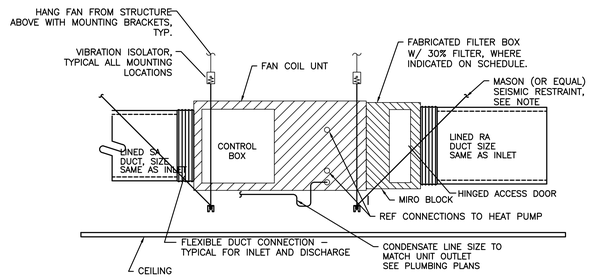
ROOM NUMBER AND NAME	AREA (SQ. FT.)	OCCUPANT LOAD (#/1000 SQ. FT.)	NUMBER OF OCCUPANTS	OUTSIDE AIR REQUIREMENT (CFM/P)	OUTSIDE AIR REQUIREMENT (CFM/SQ.FT.)	OUTSIDE AIR REQUIRED (CFM)		ZONE OSA (CFM)	SUPPLY AIR (CFM)	PRIMARY OSA FRACTION	RETURN AIR (CFM)	EXHAUST AIR (CFM)	Zone Ventilation Efficiency	Corrected OSA CFM	AIR SYSTEMS
	Az		**Pz**	**Rp**	**Ra**	**Vbz**	**Ez**	**Voz**	**Vpz**	**Zp**			**Evz**		
PACKAGE/BRK RM 124	225	0	0	0	0.12	27	0.8	34	600	0.06	1000	0	1.04	44.53	FC-4
CASE MGR 125	285	5	2	5	0.06	27	0.8	34	100	0.34	1000	0	0.76	44.70	FC-4
TOTAL	**510**		**2**			**54**		**68** Vou	**700** Vps		**2000**	**0**	**0.76** Ev	**89**	
					CORRECTED TOTAL OUTDOOR AIR FLOW RATE			**89**	**CFM**	**Corrected OSA Fractio**			**Zs =**	**0.13**	

VENTILATION AIR SCHEDULE - FC-6

ROOM NUMBER AND NAME	AREA (SQ. FT.)	OCCUPANT LOAD (#/1000 SQ. FT.)	NUMBER OF OCCUPANTS	OUTSIDE AIR REQUIREMENT (CFM/P)	OUTSIDE AIR REQUIREMENT (CFM/SQ.FT.)	OUTSIDE AIR REQUIRED (CFM)		ZONE OSA (CFM)	SUPPLY AIR (CFM)	PRIMARY OSA FRACTION	RETURN AIR (CFM)	EXHAUST AIR (CFM)	Zone Ventilation Efficiency	Corrected OSA CFM	AIR SYSTEMS
	Az		**Pz**	**Rp**	**Ra**	**Vbz**	**Ez**	**Voz**	**Vpz**	**Zp**			**Evz**		
FAMILY ROOM 132	724	30	22	7.5	0.06	208	0.8	261	1000	0.26	1000	0	1.00	260.55	FC-6
TOTAL	**724**		**22**			**208**		**261** Vou	**1000** Vps		**1000**	**0**	**1.00** Ev	**261**	
					CORRECTED TOTAL OUTDOOR AIR FLOW RATE			**261**	**CFM**	**Corrected OSA Fractio**			**Zs =**	**0.26**	

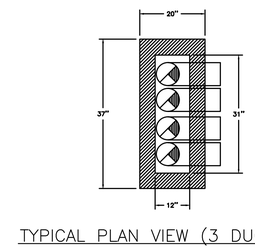
VENTILATION AIR SCHEDULE - FC-7

ROOM NUMBER AND NAME	AREA (SQ. FT.)	OCCUPANT LOAD (#/1000 SQ. FT.)	NUMBER OF OCCUPANTS	OUTSIDE AIR REQUIREMENT (CFM/P)	OUTSIDE AIR REQUIREMENT (CFM/SQ.FT.)	OUTSIDE AIR REQUIRED (CFM)		ZONE OSA (CFM)	SUPPLY AIR (CFM)	PRIMARY OSA FRACTION	RETURN AIR (CFM)	EXHAUST AIR (CFM)	Zone Ventilation Efficiency	Corrected OSA CFM	AIR SYSTEMS
	Az		**Pz**	**Rp**	**Ra**	**Vbz**	**Ez**	**Voz**	**Vpz**	**Zp**			**Evz**		
MEETING 133	490	50	25	5	0.06	154	0.8	193	1000	0.19	1000	0	1.00	193.00	FC-7
TOTAL	**490**		**25**			**154**		**193** Vou	**1000** Vps		**1000**	**0**	**1.00** Ev	**193**	
					CORRECTED TOTAL OUTDOOR AIR FLOW RATE			**193**	**CFM**	**Corrected OSA Fractio**			**Zs =**	**0.19**	

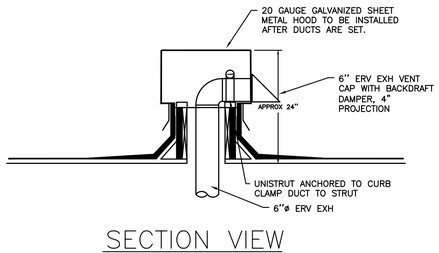


NOTE: LOCATE SUPPORT & SIESMIC TO MAINTAIN UNHINDERED ACCESS FOR MAINTENANCE OF UNIT.

1 M6.01 DUCTED FAN COIL
SCALE: DETAIL

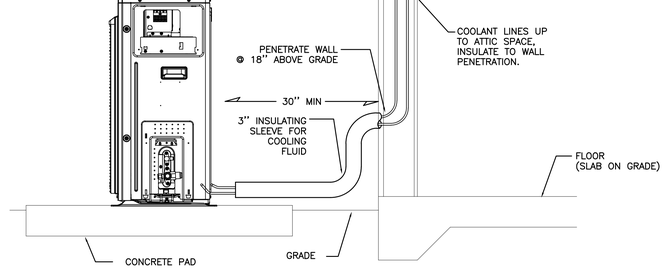


TYPICAL PLAN VIEW (3 DUCTS)

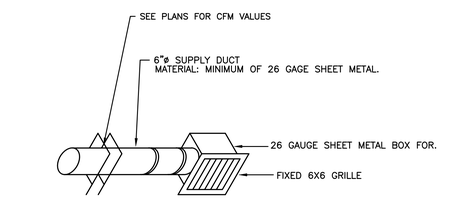


SECTION VIEW

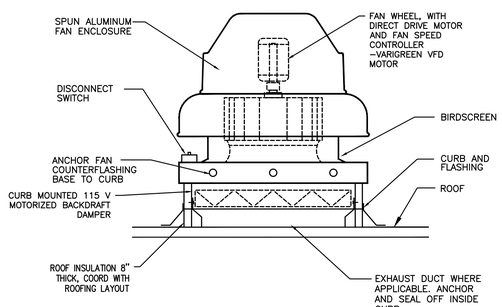
2 M6.01 TYPICAL ROOFTOP OUTLET HOOD
NOT TO SCALE



3 M6.01 HEAT PUMP PAD MOUNT
SCALE: DETAIL



4 M6.01 CEILING DIFFUSER/GRILLE
NOT TO SCALE



5 M6.01 ROOF EXHAUST FAN
DETAIL

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MFA INC. Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PHN: (503) 234-0548
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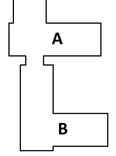
CONTACT: MARK DENYER

STAMP 3-15-22

REGISTERED PROFESSIONAL ENGINEER
54,607
OREGON
JULY 11, 2000
MARK W. DENYER
EXPIRES: 31DEC23

REVISION NO. DATE



KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

HOME FORWARD
5600 NE 42ND
PORTLAND, OR 97218

ISSUANCE
PERMIT SET

PROJECT NUMBER
2003

DATE
MARCH 18, 2022

SCALE
As indicated

DRAWING TITLE
MECHANICAL SCHEDULES/DETAILS

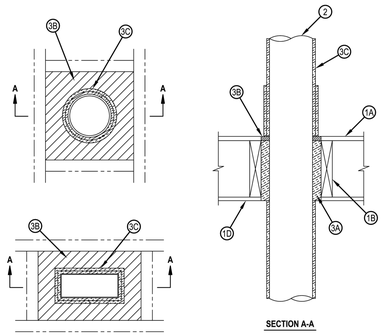
SHEET NUMBER
M6.01

System No. F-C-7057

FC 7057

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 Hr	F Rating — 1 Hr
T Rating — 1 Hr	FT Rating — 1 Hr
	FH Rating — 1 Hr
	FTH Rating — 1 Hr



SECTION A-A

Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. March 27, 2017

System No. F-C-7057

FC 7057

1. Floor-Ceiling Assembly — The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction details of the floor-ceiling assembly are summarized below:
   A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max area of floor opening is 150 in.2 (0.098 m2) with a max 1.5 in. (38 mm) annular space between duct and framing members.
   B. Wood Joists — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped. Additional framing members installed to form a square enclosure around the perimeter of the opening in the floor and ceiling.
   C. Furring Channels — (Where Required - Not Shown) - Resilient galv steel furring installed perpendicular to wood joists between gypsum board and wood joists as specified in the individual Floor-Ceiling Design. Furring channels spaced max 24 in. (610 mm) OC. If furring channels are used within the assembly, additional furring channels to be installed along the periphery of the opening.
   D. Gypsum Board* — Nom 4 ft (1.2 m) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Gypsum board secured to wood joists or furring channels as specified in the individual Floor-Ceiling Design. Max area of ceiling opening is 150 in.2 (0.098 m2) with a max 1.5 in. (38 mm) annular space between duct and framing members.
2. Steel Air Duct — Max 7 in. (178 mm) diam by min 0.0157 in. (No. 30 gauge or 0.40 mm) thick galv steel air duct to be centered within the opening. Max one steel air duct to be installed within opening. Steel duct to be rigidly supported on top side of floor-ceiling assembly.

2A. Steel Air Duct — Max 10 by 4 in. (254 by 102 mm) rectangular by min 0.022 in (no. 26 gauge or 0.56 mm) thick galv steel air duct to be centered within the firestop system. Max one steel air duct to be installed within opening. Steel duct to be rigidly supported on top side of floor-ceiling assembly.

3. Firestop System — The firestop system shall consist of the following:
   A. Packing Material — Min 9-7/8 in. (251 mm) thickness of unfaced duct wrap material compressed min 25 percent into opening as a permanent form between the insulated steel duct and the periphery of the opening. Packing material to be installed flush with bottom surface of ceiling and recessed from top surface of floor to accommodate the required thickness of fill material.
   B. Fill, Void or Cavity Material* - Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within annulus on top surface of floor.
      SPECIFIED TECHNOLOGIES INC — SpecSeal Series SSS Sealant or SpecSeal LCI Sealant
      EGS NELSON FIRESTOP — ES1399 Sealant
      HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE-MAX Intumescent Sealant
      TREMCO INC — Fyre-Sil Sealant
      DAP PRODUCTS INC — DAP Fire Stop Fire-Rated Silicone Sealant
      3M COMPANY 3M FIRE PROTECTION PRODUCTS — FB-1000 NS Sealant
      NUCO INC — Self Seal GG-200
   C. Duct Wrap Materials* — Nom 1/2 in. (13 mm) thick, 8 pcf (128 kg/m3) or nom 1-1/2 in. (38 mm) thick, 6 pcf (96 kg/m3) with foil-scrim facers. The steel duct shall be wrapped with one layer of duct wrap installed in accordance with Ventilation Assembly No. V-32. The duct wrap is secured with min No. 18 Gauge (0.040 in. or 1 mm) galvanized steel wire formed into a loop on one end, with the other end passed through the loop, pulled hand tight and bent over. Tie wires spaced a max 12 in. (305 mm) OC See Ventilation Duct Assemblies in Vol. 2 of the Fire Resistance Directory. The annular space between the insulated steel duct and the periphery of the opening shall be a nom 1-1/2 in. (38 mm). A min 1/2 in. high collar consisting of an additional layer of 1/2 in. (13 mm) thick, 8 pcf (128 kg/m3) or nom 1-1/2 in. (38 mm) thick, 6 pcf (96 kg/m3) duct wrap, installed over the duct wrap flush with the top surface of the floor and extending upward. All seams and edges shall be sealed with min 3 in. (76 mm) wide pressure sensitive aluminum foil tape.
      UNIFRAX I L L C — FyreWrap® DPS or FyreWrap® Elite 1.5

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. March 27, 2017

1 M6.02 FLOOR CEILING PENETRATION
SCALE: DETAIL

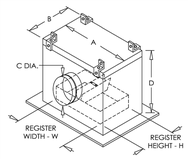
SHOEMAKER MANUFACTURING

1.866.940.0696 sm@shoemakermfg.com

Fire Rated Submittal

1 Hour Ceiling Box Assembly Unit with Rectangular Ceiling Radiation Butterfly Damper

MODEL: 2700CBA Series



"A" = W+3" "B" = H+3"

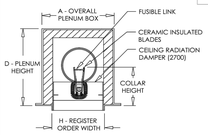
"D" = Collar Dia.+6"

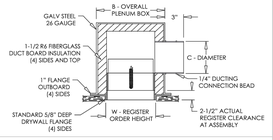
Standard Features:
- Factory assembled plenum box with side outlet and square or rectangular ceiling radiation damper
- UL rated for floor/ceiling and roof/ceiling wood truss assemblies L528, L558, L562, L563, L574, L585, P533, P544, P545 and P547 types
- Meets UL263 and NFPA 90A requirements
- CSFM California State Fire Marshal listed

Ceiling Radiation Damper:
- 165° fusible link
- 22 gauge galvanized steel blades with ceramic fiberglass cover*
- Roll formed 22 gauge galvanized steel frame

Plenum Box:
- Plenum outer box made of 26 gauge galvanized steel
- Roll formed 26 gauge galvanized steel collar with 1/4" bead
- Fiberglass duct board 1 1/2" thick (R6)
- Minimum size 4"x4"x2" (collar)
- Maximum size 16"x16"x12" (collar)

Options:
- ☐ Extended length drywall flange
- ☐ Stainless steel





Product Notes:
*Ceramic fiber blade insulation is not U.L. required on dampers with free areas less than 80 sq. inches. Dampers with free areas greater than 80 sq. inches are constructed with ceramic fiber blade insulation

Additional Information:

	Submittal Notes
Project / Location:	
Engineer:	
Architect:	
Contractor:	

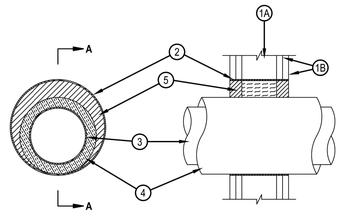
3 M6.06 CEILING RADIATION DAMPER BOX
SCALE: DETAIL

System No. W-L-7018

WL 7018

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 1/2 Hr	FT Rating — 1-1/2 Hr
	FH Rating — 2 Hr
	FTH Rating — 1-1/2 Hr



SECTION A-A

1. Wall Assembly — The 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Two layers of nom 5/8 in. (16 mm) thick gypsum wallboard as specified in the individual Wall and Partition Design No. Max diam of opening is 9 in. (229 mm).
2. Metallic Sleeve — Cylindrical sleeve fabricated from min 0.016 in. (0.40 mm) thick (No. 28 gauge) galv steel sheet steel and having a min 2 in. (51 mm) lap along the longitudinal seam. Length of sleeve to be 1/8 in. (3 mm) less than thickness of wall. Sleeve to be installed by coiling the sheet metal to a diam smaller than the through opening, inserting the coil through the openings and releasing the coil to let it uncoil against the circular cutouts in the gypsum wallboard layers.

Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 27, 2015

System No. W-L-7018

WL 7018

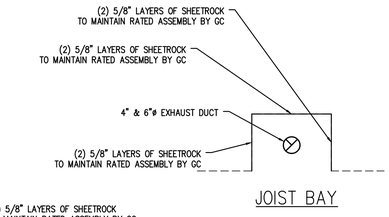
3. Steel Duct — Nom 6 in. (152 mm) diam (or smaller) No. 28 gauge (or heavier) galv steel duct to be installed concentrically within the firestop system. Duct to be rigidly supported on both sides of the wall assembly.
4. Pipe Covering* — Nom 1 in. (25 mm) thick hollow cylindrical heavy density (3.5 pcf or 56 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Tranverse joints secured with metal fasteners or with butt tape supplied with the product. The annular space between the insulated pipe and the steel sleeve shall be min 0 in. (point contact) to max 1 in. (25 mm).
   See Pipe Equipment Covering — Materials — (BRGU) Category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
5. Fill, Void or Cavity Material* — Sealant — Min 1-1/4 in. (32 mm) depth of sealant applied within the annulus, flush with each surface of the wall assembly. At the point contact location between insulated pipe and wall, a min 1/2 in. (13 mm) diam bead of sealant shall be applied on both surfaces of wall, lapping 1/4 in. (6 mm) beyond the periphery of the opening.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

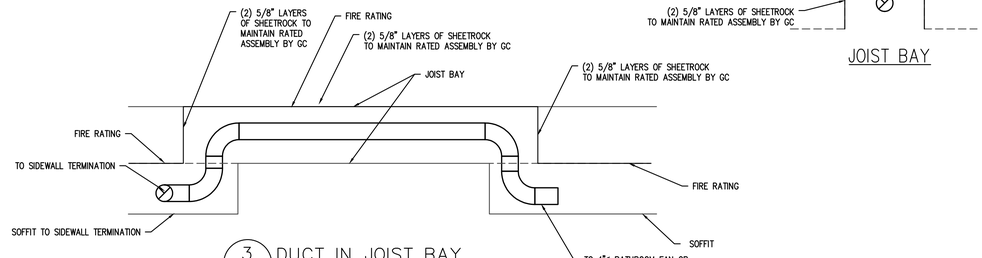
Hilti Firestop Systems

Reproduced by HILTI, Inc. Courtesy of Underwriters Laboratories, Inc. January 27, 2015

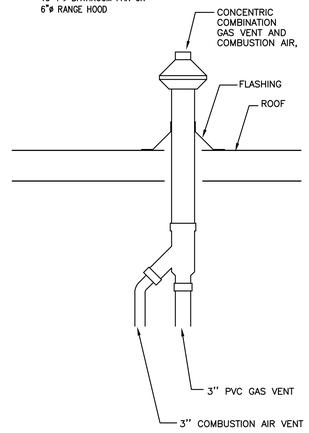
4 M6.02 FIRE PENETRATION DETAIL – 5'' or 6'' DUCTS
DETAIL



JOIST BAY



3 M6.02 DUCT IN JOIST BAY
NOT TO SCALE



5 M6.02 CONCENTRIC GAS VENT
DETAIL

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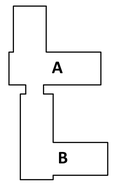
CONTACT: MARK DENYER

STAMP 3-15-22

REGISTERED PROFESSIONAL ENGINEER
54,607
OREGON
JULY 11, 2000
MARK V. DENYER
EXPIRES: 31DEC23

REVISION NO.	DATE



KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

HOME FORWARD
5600 NE 42ND
PORTLAND, OR 97218

ISSUANCE
PERMIT SET

PROJECT NUMBER
2003

DATE
MARCH 18, 2022

SCALE
As indicated

DRAWING TITLE
MECHANICAL DETAILS

SHEET NUMBER
M6.02

ENERGY RECOVERY VENTILATOR

MARK NUMBER	ERV–1 105 CFM	ERV 2
SYSTEM	DWELLING UNIT	CORRIDOR
CFM	65/105 CFM	40 CFM
CORE TYPE	MEDIA MEMBRANE	ENTHALPY PLATE
CONTROL	*	CONTINUOUS
HEAT	NONE	––
VOLTS–PHASE	120/1	120/1
AMP RATING	0.9	0.15
ESP ("H20)	0.20	0.1
EFFICIENCY @64CFM & 95F	68%	36%
WATTS **	103	154/60
WEIGHT	40 LBS	40 LBS
BASIS OF DESIGN	BROAN ** ERVS100S	PANASONIC FV–04VE1

* PROVIDE VB20W, 20 MINUTE PUSH BUTTON TIMER, PROVIDES HIGH SPEED VENTILATION. UNIT TO RUN AT 65 CFM CONTINUOUS, AND 105 CFM IN BOOST MODE

** ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DESIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS

Duct Pressure Drop Calcs (worst case unit)

Size inches		cfm	Duct Length ft	# Elbows	Pressure Elbows inches/h20	Termination Fitting(s) inches of h20	Total EQ. Length	Friction in/100'	Total Pressure Drop of EQ.length "H20	Total with Fittings "H20	
4	---	0	0	0	0	0.09	0	0.4	0	0.09	
6	ERV	105	70	10	0.010	0.2	70	0.1	0.07	0.372	HIGH SPEED
6	ERV	65	70	10	0.004	0.15	70	0.038	0.0266	0.216	LOW SPEED
8		0	0	0	0	0	0	0.4	0	0	

Fittings pressure Loss

90 elbow
Radius=1

Duct size inches	CFM	Velocity ft/min	Fitting coefficient	Pressure in/h20	Pressure Drop Straight duct "/100'	Eq length of elbow (Reference)
4	0	0	0.57	0	0.4	0
6	105	534.7606	0.57	0.010162	0.1	10.16222094
6	65	331.0423	0.57	0.003894	0.038	10.24833118
8	0	0	0.57	0	0.07	0

EQUIPMENT CAPACITY VERIFICATION

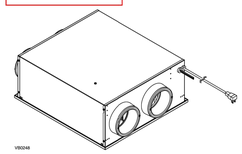
THE ERV IS RATED FOR 105 CFM AT 0.4" OF STATIC – DESIGN CONDITION OF WORST CASE UNIT IS 0.372"(HIGH SPEED) & 0.216" (LOW SPEED). MINIMUM REQUIRED VENTILATION FOR THE TWO BEDROOM UNIT IS 60 CFM AND A ONE BEDROOM IS 45 CFM.

MINIMUM EXH CFM FOR A 1 BATHROOM UNIT IS 45 CFM AND A TWO BATHROOM UNIT IS 65 CFM. THE ERV FOR ALL UNITS WILL OPERATE AT 65 CFM CONTINUOUS AND BOOST TO 105 CFM WITH WALL SWITCH (20 MINUTE TIMER).

FULL SIZE INTEGRAL ACCESS PANEL FOR ERV S–100 UNIT ACCESS DOOR IS ALSO CEILING ACCESS PANEL. UNIT INSTALLED IN A NON–RATED CEILING. ACCESS DOOR CONTAINS FAN CUT–OFF SWITCH (FAN DISCONNECT) TO ALLOW SERVICE OF ERV.

BROAN

BROAN™ ERVS100
Part no. ERVS100S
65-105 CFM (0.4 in. w.g.)



V002248

THE FRESH AIR SOLUTION FOR SOUTHERN REGIONS

The Broan ERVS100 is an effective, balanced ventilation solution designed specifically for homes in southern regions. The ERVS100 provides a continuous supply of fresh air to the home while exhausting stale air and pollluants. Plus it manages excess moisture – making it a centerpiece for tightly-constructed, energy efficient homes in hot and humid or dry climates.

- 65 to 105 CFM at 0.4 in. w.g;
- Energy recovery core recovering up to 51% of the excess moisture and up to 71% of the apparent heat or coolness;
- Built-in humidity sensor limiting the ventilation during periods of excessive outdoor humidity levels contributes to maintain a comfortable living area and mitigate the risks of mold growth;
- Exclusive bracket system providing a faster and easier installation in the ceiling, an attic or in a closet. See the Installation and User guide for more details;
- Integrates with existing furnace ducting for easy installation but runs independently to limit energy consumption related to ventilation;
- Built-in damper on fresh air supply port to prevent outdoor air infiltration when the unit is turned off;
- Integrated control to easily set the unit at installation.

REPAIRS AND MAINTENANCE

All parts requiring maintenance can be removed in less than 5 minutes allowing easy access for repairs. The PSC motors are permanently lubricated.

WARRANTY

The BROAN™ ERV5100 is protected by a 5-year warranty on parts only. The energy recovery core is covered by a 5-year warranty, with the original proof of purchase.

Product balancing

The ERVS100 is equipped with 2 high static pressure blowers and is factory balanced. Once installed, the ERVS100 will remain balanced (within a 10% total difference between the exhaust and supply airflows) when the static pressure difference between the exhaust and the supply remains below 0.2 in. w.g.
No balancing dampers are required when this condition is met.

Filters

- 2 washable filters, 20 PPI
- MERV 8 optional filters, part V21030.

Defrosting system

Unit performs a negative defrost during 10 minutes every 20 minutes when outdoor temperature is below 14°F, and 10 minutes every 10 minutes below -4°F.

Energy Recovery Core

Material: Polymerized paper
Type: Cross flow
Warranty: 5 years

Options

- Broan VTYIK1 Tandem transition (requires an additional backdraft damper, not included)
- Broan VB20W 20-minute push-button control
- Broan 69V Single-Function Control, Ivory (Dry contact standby switch)
- Broan 69W Single-Function Control, White (Dry contact standby switch)
- Broan 634M black exhaust roof cap 6" with backdraft damper and bird screen
- Broan 843BL black exhaust wall cap 6" with backdraft damper and bird screen
- Broan 641 aluminum exhaust wall cap 6"
- Broan 641FA aluminum inlet wall cap 6" with bird screen
- Broan CVG6 interior inlet plastic grille 6"
- Broan CVL6 mounting sleeve for inlet grille CVG6
- Broan CVLD6 sleeve with 6" backdraft damper

Requirements and standards

- Complies with the UL 1812 requirements regulating the installation of Energy Recovery Ventilators;
- HVI certified;
- Airflow and energy recovery performance tested in accordance with CSA C439 standard.

Noise level
0.4 sone @ 105 cfm at grille with 5' of flexible ducting (tested in accordance with ISO 5136 and HVI 915).

Specifications

Model : Broan ERVS100

Part number: ERVS100S

Total assembled weight including packaging: 40 lb.

Insulated round ports: 6" diameter

Built-in magnetic backdraft damper to close outdoor fresh air supply when the unit is turned off

Energy recovery core:
-Type cross flow
-Media membrane: Polymerized paper with aluminum

Core filters: 2 washable filters 20 PPI
Optional MERV 8 filter kit, part no. V21030

Housing material: galvanized steel 22 ga

Door and door frame material: White pre-painted steel 20 ga

Insulation material: Molded Expanded polystyrene, UL certified for Energy recovery ventilators requirements

Supply and exhaust blower motors:
-PSC motors
-Protection type: Thermally protected
-Lock rotor electronic detection stops unit if motors failed

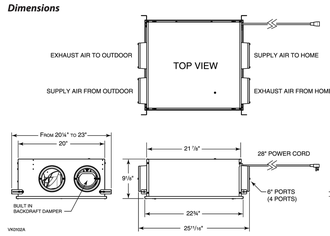
Installation brackets: included with the unit, allow attic, flush to ceiling and under-ceiling installations. Unit must be installed with the door facing upward or downward. No vertical installation allowed.

Unit electrical characteristics
-Power cord 28" with 3-prong plug

Volts	Frequency	Ampere	Watts
120	60 hz	0.9	103

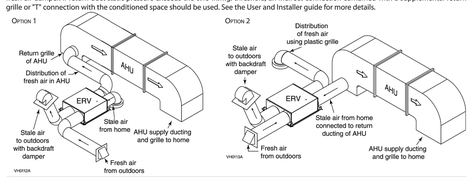
Low voltage connections for optional controls energized by unit

Dimensions



Combining with an AHU

Recommended configurations
Option 1 – When the distribution of fresh air from the ERV is connected to the return of an AHU (such as in the image below, on the left), static pressure where the fresh air from the ERV enters the AHU return ducting must be below 0.15 in.w.g. to ensure proper functionning of the built-in fresh air damper. If return duct static pressure exceeds the 0.15 in.w.g. threshold, an indirect connection combined with a supplemental return grille or "T" connection with the conditioned space should be used. See the User and Installer guide for more details.

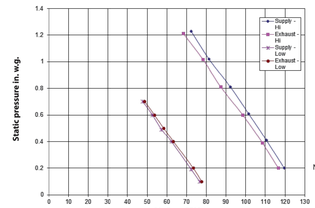


Energy performance ERVS100

Supply Temperature		Net Air Flow	Power Consumed	Sensible Recovery Efficiency	Adjusted Sensible Recovery Efficiency	Apparent Sensible Effectiveness*	Latent Recovery/ Moisture Transfer	Total Recovery Efficiency	Adjusted Total Recovery Efficiency
	°F	CFM	Watts	%	%	%	%	%	
Cooling	95	64	46			62	45	48	51
	95	106	103			55	35	38	41
Heating	32	64	46	64	68	71	51		
	32	106	103	57	63	67	42		

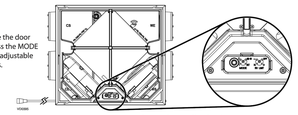
*Data not certified by HVI.
NOTE: All specifications are subject to change without notice.

Ventilation performance



Note: In high speed, account for an increase in static pressure of proximately 0.2 in. w.g. when installed with the Broan VTYIK1 Tandem transition, depending on installation.

Mode and RH Adjustable Controls Location



Control Ventilation modes

Position	Mode	Description
SB*	Standby	Unit is off. Unit can be activated in high speed by the VB20W 20-minute push-button control, if applicable
INT	Intermittent	Unit works 20 minutes per hour in low speed. Unit can be activated in high speed by the VB20W 20-minute push-button control, if applicable.
1	Low Speed	Unit runs at 65 cfm. Unit can be activated in high speed by VB20W 20-minute push-button, if applicable.
2	High Speed	Unit runs at 105 cfm. Unit can be activated in high speed by the VB20W 20-minute push-button control, if applicable.

*Factory setting

Relative humidity limit

The ERVS100 monitors the outdoor air conditions (temperature and humidity level) every 10 minutes with a built-in sensor. When the outdoor conditions are above the set limits, the unit will limit the ventilation to 10 minutes per hour and come back to its previous setting when the conditions get back to the set limit. The accepted RH limit varies in function of the outdoor conditions and can be adjusted to 4 different positions:

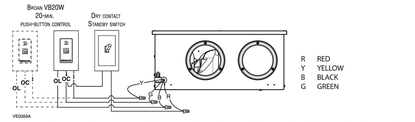
Position	Description	RH* limit of distributed air: Outdoor temp. <73°F	Outdoor temp. ≥73°F
OFF	Relative humidity limit is deactivated.	-	-
+	Higher relative humidity limit.	Up to 60%	Up to 80%**
N	Factory set relative humidity limit.	Up to 55%	Up to 75%**
-	Lower relative humidity limit.	Up to 50%	Up to 70%**

* The RH limit of distributed air is calculated at 75°F.
** When the outdoor temperature is equal or above 73°F, the maximum relative humidity level accepted is higher considering that the air conditionning will partly dehumidify the incoming fresh air after it is distributed and mixed with the conditionned indoor air.

Optional controls wiring

-Broan VB20W 20-minute push-button control: Activates 105 cfm speed in all ventilation modes (recommended when the unit exhausts from a bathroom).

-Dry contact standby switch (Broan 69W and 69V): Unit remains powered on, but is put on Standby mode when the switch is turned on.



This connection allows the operation of VB20W push-button controls even if the dry contact standby switch is turned off.

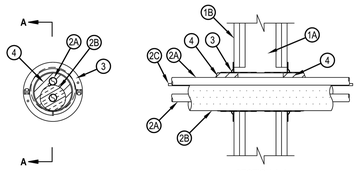
ERVS100d210406

System No. W-L-8110

WL 8110

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Ratings — 1 and 2 Hr (See Item 1)
	FTH Rating — 0 Hr



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described within the individual U300, U400, V400 or W400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
   A. Studs — Wall framing shall consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening 5 in. (127 mm).
   The hourly F, FH Rating of the firestop system is dependent upon the hourly rating of the wall in which it is installed.
2. Air Conditioning (AC) Line Sets — AC line set consists of max two pipes or tubes (Item 2A), tubing insulation (Item 2B) and a thermostat cable (Item 2C). The AC line sets shall be rigidly supported on both sides of the wall assembly.
   A. Metallic Penetrants — A max of two pipes or tubes to be installed in each AC line set. The following types and sizes of through penetrants may be used:
      1. Steel Pipe — Nom 3/4 in. (19 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
      2. Iron Pipe — Nom 3/4 in. (19 mm) diam (or smaller) cast or ductile iron pipe.
      3. Copper Pipe — Nom 3/4 in. (19 mm) diam (or smaller) Regular (or heavier) copper pipe.
      4. Copper Tube — Nom 3/4 in. (19 mm) diam (or smaller) Type L (or heavier) copper tube.
   B. Tube Insulation - Plastics# — Nom 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The tube insulation may be installed on one max 3/4 in. (19 mm) diam pipe or tube in each AC line set. The space between the insulated and uninsulated pipes or tubes within each AC line set shall be 0 in. (point contact).
   See Plastics# (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94V-0 may be used.
   C. Cable — One 4 pair No. 18 AWG (or smaller) thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials may be installed with each AC line set.

Hilti Firestop Systems

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Page: 1 of 2

System No. W-L-8110

WL 8110

3. Firestop Device* — Firestop device consists of a corrugated steel tube with flanges and gasketing material. Device slid into wall such that ends project an equal distance from the approximate centerline of the wall assembly. Device flanges are spun clockwise onto device threads, over gasketing material butting tightly to both sides of wall. The annular space between the device and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. (25 mm).
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-SL SK 4" Firestop Sleeve
4. Fill, Void or Cavity Material* - Plug — Nom 4 in. (102 mm) plug sized for the firestop device (Item 3) friction fit within the sleeve flush with the end of the sleeve on both sides of the wall assembly. Plug cut to fit around the line set and installed tightly within the sleeve.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CFS-PL Firestop Plug

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Hilti Firestop Systems

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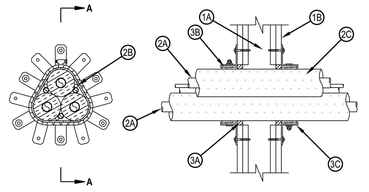
Page: 2 of 2

System No. W-L-8081

WL 8081

Classified by Underwriters Laboratories, Inc. to UL 1479 and CAN/ULC-S115

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)
T Rating —0 and 1 Hr (See Item 1)	FT Rating —0 and 1 Hr (See Item 1)
	FH Rating — 1 and 2 Hr (See Item 1)
	FTH Rating — 0 and 1 Hr (See Item 1)



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 6 in. (152 mm).
   The hourly F, FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed. The hourly T, FT, FTH Ratings of the firestop system are 0 hr for 1 hr fire rated wall assemblies and 1 hr for 2 hr fire rated wall assemblies.
2. Air Conditioning (AC) Line Set — Max of three AC line sets bundled within the opening. Each line set consists of one metallic pipe, one insulated metallic pipe and one electrical cable. The aggregate cross-sectional area of the penetrants does not exceed 84 percent of the cross-sectional area of the wall opening. The annular space between the penetrants and the periphery of opening shall be min 0 in. (point contact) to max 1-1/2 in. (38 mm). Penetrants to be rigidly supported on both sides of wall assembly.
   2A. Metallic Pipes — The following types and sizes of metallic pipes, conduits or tubing may be used:
      A. Steel Pipe — Nom 1 in. (25 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
      B. Iron Pipe — Nom 1 in. (25 mm) diam (or smaller) cast or ductile iron pipe.
      C. Conduit — Nom 1/2 in (13 mm) diam (or smaller) steel conduit or EMT.
      D. Copper Pipe or Tube — Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper tube or Regular (or heavier) copper pipe.

Hilti Firestop Systems

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Page: 1 of 2

System No. W-L-8081

WL 8081

2B. Cables — Max 4 pair No. 18 AWG (or smaller) thermostat cable with PVC insulation and jacket.
2C. Pipe Covering — The following pipe covering shall be used with the metallic pipes (Types 2A, 2B and 2D only) having a nom diam greater than 1/2 in. (13 mm):
   A. Tube Insulation - Plastics# — Nom 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing.
   See Plastics (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.
3. Firestop System — The details of the firestop system shall be as follows:
   A. Fill, Void or Cavity Material* - Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. Fill material forced into grouped penetrant interstices to max extent possible within opening.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant
   B. Fill, Void or Cavity Material* — Wrap Strip - Nom 3/16 in. (5 mm) thick by 1-3/4 in. (44 mm) wide intumescent wrap strip. Wrap strip is continuously wrapped around the outer circumference of bundled penetrants two times with ends butted and held in place with tape. Wrap strip installed flush with both surfaces of wall assembly.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — CP648-E- W25/1-3/4" Wrap Strip
   C. Steel Collar — Steel collar fabricated from coils of precut min 0.016 in. (0.41 mm) thick (No. 28 gauge) galv steel available from fill material manufacturer. Collar shall be min 1-3/4 in. (44 mm) deep with 1 in. (25 mm) wide by 2 in. (51 mm) long anchor tabs on 1-3/4 in. (44 mm) centers for securement to both surfaces of wall. In addition, collars contain preformed retainer tabs 1/2 in. (13 mm) wide by 3/16 in. (5 mm) long, located opposite the anchor tabs. Collar shall be tightly wrapped over the wrap strip, overlapping min 1 in. (25 mm) at seam and compressed with a min 1/2 in. (13 mm) wide by 0.028 in. (0.71 mm) thick stainless steel band at collar mid-height. Every other anchor tab of collar secured to surface of wall with min 1-1/2 in. (38 mm) long drywall or laminate screws with min 3/4 in. (19 mm) steel washers.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Bearing the UL Recognized Component Marking

Hilti Firestop Systems

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Page: 2 of 2

1 M602 SINGLE HVAC LINESET PENETRATION
SCALE: DETAIL

2 M602 MULTIPLE HVAC LINESET PENETRATION
SCALE: DETAIL

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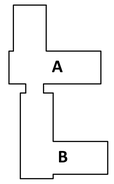

KEY PLAN - (NTS)

TRUE NORTH PLAN NORTH

HOME FORWARD
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PORTLAND, OR 97218

ISSUANCE
PERMIT SET

PROJECT NUMBER
2003

DATE
MARCH 18, 2022

SCALE
As indicated

DRAWING TITLE
MECHANICAL
DETAILS & SCHEDULES

SHEET NUMBER
M6.03