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

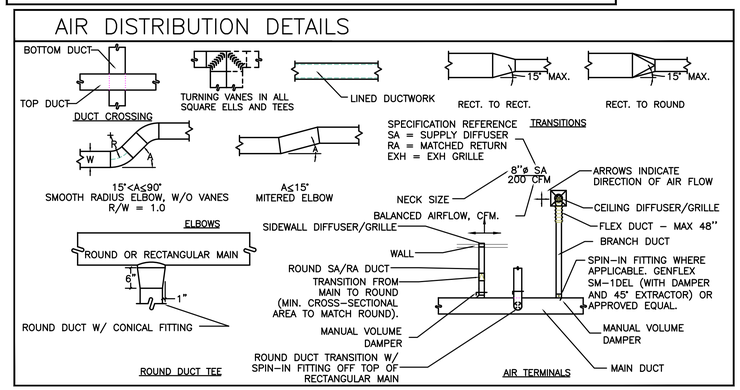
AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
B.D.	BOTTOM OF DUCT
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNITS
CFM	CUBIC FEET PER MINUTE
CONN.	CONNECTION
CONT.	CONTINUATION
CW	DOMESTIC COLD WATER
DB	DRY BULB
DIA.	DIAMETER
DIST.	DISTRIBUTION
EA	EXHAUST AIR
EDB	ENTERING DRY BULB TEMPERATURE
EWB	ENTERING 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



ROOFTOP HVAC UNITS

MARK NUMBER		RTU-1 6 TON	RTU-2 5 TON
SYSTEM		SOUTH CORRIDOR	NORTH CORRIDOR
TYPE		C.V.	C.V.
DISCHARGE		HORIZONTAL	HORIZONTAL
FAN SECTION	TOTAL CFM	2400	2000
	ECONOMIZER	NONE-100% OSA	NONE-100% OSA
	MIN. OSA	2400	2000
	MAX OSA (FULL OCCUPANCY)	NA	NA
	CO2 CONTROL	NA	NA
	EXTERNAL SP. ("H20)	0.75	0.75
	TOTAL SP. ("H20)	---	---
	RPM	731	2125
	WHEEL TYPE/ SIZE	F.C. --- (DIRECT)	F.C. --- (DIRECT)
	MOTOR HP.	1.32 BHP	1.02 BHP
	POWER EXH FAN/ACCESSORY	NONE	NONE
MIN FILTER SIZE		4-16X20	2-16X25
FILTER TYPE		2"- 30%	2"- 30%
HEATING	GAS INPUT/OUTPUT (MBH)	150 / 120	150 / 120
	EFF. (AFUE)	80.0%	80.0%
	STAGES/TYPE	2-S.S. HIGH HEAT	2-S.S. HIGH HEAT
COOLING	TOTAL CLG. (TONS)	6.0	5.0
	SENSIBLE CLG. (MBH)	79.73	62.75
	ENT. EVAP AIR TEMP (DB/WB.)	90/67	90/67
	LVG. EVAP AIR TEMP (DB/WB.)	55/54	55/54
	AMBIENT AIR (°F)	95	95
	EER/IEER	12/14	14 SEER
	REFRIGERANT	410A	410A
	REFRIGERANT CHARGE	XX	XX
DESIGN WEIGHT (LBS.)		867	625
SMOKE DETECTOR (SUPPLY DUCT)		YES	YES
SPRING ISOLATION ROOF CURB - *		YES	YES
CONVENIENCE OUTLET - ALWAYS POWERED		NO	NO
VOLTAGE/PHASE - ***		208/3	208/3
MCA/MOCP - ***		34/50 AMPS	31/45 AMPS
BASIS OF DESIGN - CARRIER MODEL		48HCTD07A2A5	48FCTA06A2A5

* - PROVIDE MICROMETL CURB 0403-972E, 21" TALL, 375 LBS.
*** - ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DESIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS. ELECTRICAL CONTRACTOR RESPONSIBLE FOR SIZING ALL CONDUCTORS & OVERCURRENT PROTECTION. VERIFY WITH EQUIPMENT SUBMITTALS FOR EQUIPMENT ELECTRICAL REQUIREMENTS

SUPPLY FAN

MARK NUMBER	SF 1
SIZE CFM	600
DUCT SIZE	12X12
EX SP.	0.25
RPM	1394
WEIGHT	85
HP	1/8
POWER (VOLTS/PHASE) *	120/1
BASIS OF DESIGN: GREENHECK	SQ-95-D

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

COVE HEATERS

MARK NUMBER	CH 1
LOCATION	UNITS
STYLE	COVE HEATER
WATTS	1125
POWER (VOLTS/PHASE)	208/1
LENGTH	94"

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

ELECTRIC DUCT HEATER

MARK NUMBER	DH 1
SIZE (KW)	6 KW
DUCT SIZE	12X12
STEPS	2
WEIGHT (LB)	--
POWER (VOLTS/PHASE) *	230/1
GREENHECK	IDHB

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

EXHAUST FANS

MARK NUMBER	EF 1	EF 2	EF 3	EF 4	EF 5	EF 6	EF 7	EF 8	TF 1	EF 9
TYPE	IN-LINE 5"ø	CEILING CABINET	CEILING CABINET	CEILING CABINET	ROOF DIRECT DRIVE	CEILING CABINET	CEILING CABINET	CEILING CABINET	CEILING CABINET	CEILING CABINET
SYSTEM	1-BEDROOM	BATHROOM	PPOE 117	TRASH 119	TRASH	RESTROOM	BIKE 117	BIKE RM 130	CORRIDOR	ELEV MACH RM
CFM	65	30/80	100	200	500	100	200	300	300	100
TOTAL SP. (IN H20)	0.375	0.20	0.125	0.125	0.5	0.125	0.125	0.125	0.125	0.125
RPM	2146	1062/1146	1250	740	1590	1250	740	2500	2500	1250
TIP SPEED (FPM)	NA	NA	-	--	--	-	--	--	--	-
MOTOR WATTS OR HP	38 W	5/11.7 W	100 W	127 W	1/10 HP	100 W	127 W	135 W	135 W	100 W
CONTROLLED BY	CONTINUOUS	*	LIGHTS	CONTINUOUS	PRESSURE	LIGHTS	HUMIDISTAT	HUMIDISTAT	CONTINUOUS	T-STAT
INTERLOCK WITH	NA	MOTION SENSOR	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
FAN SPEED CONTROLLER	YES- ****	YES	NO	YES	YES	NO	YES	YES	YES	NO
WHEEL TYPE	BI	BI	FC	BI	BI	FC	BI	BI	BI	FC
BACK DRAFT DAMPER	YES	YES	GRAVITY	GRAVITY	NONE	GRAVITY	GRAVITY	GRAVITY	GRAVITY	GRAVITY
ISOLATION	NONE	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER
DESIGN WEIGHT (LBS)	10	25	25	23	45	25	23	25	25	25
MAX. SONES	3.0	0.3/0.6	1.5	1.7	11.5	1.5	1.7	4.5	4.5	1.5
MAX AMPS - ***	--	0.27	1.3	1.8	1.38	1.3	1.8	1.34	1.34	1.3
POWER (VOLTS/PHASE/HZ) - ***	120/1/60	120/1/60	120/60/1	120/60/1	120/60/1	120/60/1	120/60/1	120/60/1	120/60/1	120/60/1
BASIS OF DESIGN:	S & P TD-125	PANASONIC FV-05-11VKS2	BROAN L100	BROAN L200	GREENHECK G-090-VG	BROAN L100	BROAN L200	GREENHECK SP-A390	GREENHECK SP-A390	BROAN L100

* - FAN TO RUN AT LOW SPEED CONTINUOUSLY, AND INCREASE TO HIGH SPEED UPON ACTIVATION OF THE MOTION SENSOR.

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), 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.

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 Grannweld 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

Approval Stamp:

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W.PA Job Number 1318

3-11-22
REGISTERED PROFESSIONAL ENGINEER
54,607
OREGON
JULY 11, 2006
MARK R. DENYER
EXPIRES: 31DEC23

09.20.2021

PERMIT SET

SET ISSUE

1 PLAN REVIEW #1 02.11.2022
2 PERMIT 05.20.2022
CHECKSHEET RESPONSE

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JACOBS

LEGEND, SCHEDULES AND DETAILS

M0.01

INDOOR UNITS – *

MARK NUMBER	FC-1 0.75 MBH	FC-2 18 MBH	FC-3 36 MBH	FC 30	FC-5 30 MBH	FC-6 18	FC-7 18 MBH	FC-8A 12 MBH	FC-8B 9	FC 9	FC-9A 9 MBH	
SYSTEM	OFFICE	MAKER SPACE	LOBBY	A	FITNESS	RC	AMENITY 535	2ND FLOOR AMENITY	2ND FL	2ND F	RESIDE	
TYPE	WALL MOUNTED	CEILING CASSETTE	DUCTED	WALL	WALL MOUNTED	CEILI	WALL MOUNTED	WALL MOUNTED	WALL	WAL	CEILI	
EFFICIENCY	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SEE	SEE OUTDOOR UNIT	SEE	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SEE	SEE	SEE	
NOMINAL COOLING CAPACITY	9,000 BTUH	16,000 BTUH	36,000 BTUH	30	30,000 BTUH	1	18,000 BTUH	12,000 BTUH	9,(	9		
HEATING CAPACITY	9,000 BTUH	18,000 BTUH	36,000 BTUH/10 KW ELECT	3(	30,000 BTUH		18,000 BTUH	12,000 BTUH	9,			
TOTAL SUPPLY CFM	380	420	1150		870		680	380				
OSA CFM	–	0	XXX		--		--	--				
EXTERNAL SP. ("H20)	0.25	0.25	0.25		0.25		0.25	0.25				
VOLTS/PHASE	–	208–1	208/1		208/1		208/1	208/1				
MCA/MOP	–	–	45.5/60	SI	SEE OUTDOOR UNIT		SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SE		NIT	F
WEIGHT	20	40	135		50		30	30				
BASIS OF DESIGN	CARRIER 40MAQB09B--3	CARRIER 40MBCQ18---3****	CARRIER FMC4Z3600AL	-3	CARRIER 40MAQB30B--3	-3****	CARRIER 40MAQB12B--3	CARRIER 40MAHBQ09XA3	A3	XA3		
OUTDOOR UNIT	HP-1 3/4 TON	HP-2 1.5 TON	HP-3 3 TON	2.5 TO	HP-4 2.5 TON		HP-7 1.5 TON	HP-8 2 TON			HP-9 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.
1. ACCESS PANEL FOR INDOOR UNIT , MODEL # KFAGP0201COV.
2. ELECTRIC HEAT MODEL NUMBER EHK3-10B, 10KW 240V ELECTRIC HEAT WITH CIRCUIT BREAKER.

OUTDOOR UNITS – SPLIT SYSTEM HEAT PUMP

MARK NUMBER	HP-1 3/4 TON	HP-2 1.5 TON	HP-3 3 TON	HP-4 2.5	HP-5 2.5 TON	HP-6 1.5 TON	HP-7 1.5 TON	HP-8 2 TON	HP-9 2 T
SYSTEM	OFFICE	MAKER SPACE	LOBBY	A	FITNESS	RO	AMENITY 535	2ND FLOOR AMENITY	RESIDENT
TYPE	1–PORT HEAT PUMP	1–PORT HEAT PUMP	1–PORT HEAT PUMP	1- HE	1–PORT HEAT PUMP		1–PORT HEAT PUMP	3–PORT HEAT PUMP	3- HEA
NORMAL COOLING CAPACITY	12,000 BTUH	16,000 BTUH	36,000 BTUH	3(	30,000 BTUH	1	18,000 BTUH	24,000 BTUH	24
NORMAL HEATING CAPACITY	12,000 BTUH	18,000 BTUH	36,000 BTUH	3	30,000 BTUH		20,000 BTUH	24,000 BTUH	2
EFFICIENCY SEER/EER	22.5/13	19/12.5	14.0/11.0		16.5/9.5		20/12.5	23/12.5	
EFFICIENCY HSPF/COP	12/3.56	9/3.3	8.5/3.85		9.6/2.92		10.3/3.14	10.3/3.9	
REFRIGERANT	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	
MAX OPERATING TEMPS	115/5	122/–22	115/5		122/–4		122/–4	122/–4	
MAX PIPING LENGTH	82 FT	98 FT	200 FT		164 FT		98 FT	98 FT	
MAX PIPING HEIGHT	32 FT	65 FT	80 FT		82 FT		65 FT	65 FT	
VOLTS–PHASE – **	208/230–1 PHASE	208/230–1 PHASE	208/230–3 PHASE	HASE	208/230–1 PHASE	PHASE	208/230–1 PHASE	208/230–1 PHASE	HASE
MCA/MOP – **	9/15 AMPS	18/25 AMPS	11.7/20.0 AMPS	PS	20/30 AMPS	MPS	15/20 AMPS	25/35 AMPS	PS
COMPRESSOR	VARIABLE SPEED	VARIABLE SPEED	CONSTANT SPEED	PEED	VARIABLE SPEED	SPEED	VARIABLE SPEED	VARIABLE SPEED	PEED
WEIGHT	100 LBS	120 LBS	227 LBS	200 LBS	200 LBS	BS	105 LBS	175 LBS	S
BASIS OF DESIGN	CARRIER 38MAQB12B--3	CARRIER 38MAQB18R--3	CARRIER 25HCE436AP05	CARRIER 38MAQB30R-3	CARRIER 38MAQB30R-3	CARRIER 38MAQB18R--3	CARRIER 38MAQB18R-3	CARRIER 38MGRQ24C--3	ER 38MGRQ24C--3

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

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		
LOBBY	1027	0	0	0	0.06	62	0.8	77	1000	0.08	1000	0	0.96	80.06	FC-3
PACKAGES	143	0	0	0	0.12	17	0.8	21	1000	0.02	1000	0	1.02	22.30	FC-3
OFFICE	140	5	1	5	0.06	13	0.8	17	1000	0.02	1000	0	1.02	17.41	FC-3
MAKER SPACE	382	5	2	5	0.06	33	0.8	41	1000	0.04	1000	0	1.00	42.77	FC-3
TOTAL	**1692**		**3**			**125**		**156**	**4000**		**4000**	**0**	**0.96**	**163**	
								Vou	**Vps**				**Ev**		
						CORRECTED TOTAL OUTDOOR AIR FLOW RATE		**163**	**CFM**	**Corrected OSA Fractio**				**Zs =**	**0.04**

VENTILATION AIR SCHEDULE - SF-1

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		
BIKE ROOM	982	0	0	0	0.12	118	0.8	147	120	1.23	1000	0	0.84	175.07	SF-1
HEALTH CLUB/WEIGHT ROOM	785	10	8	20	0.06	207	0.8	259	260	1.00	1000	0	1.07	307.68	SF-1
TOTAL	**1767**		**8**			**325**		**406**	**380**		**2000**	**0**	**0.84**	**483**	
								Vou	**Vps**				**Ev**		

VENTILATION AIR SCHEDULE - LEVEL 2 - AMENITY - CONFERENCE

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		
AMENITY	336	30	11	7.5	0.06	103	0.8	128	1000	0.13	0	0	0.96	133.29	RTU-1
OFFICE SPACE	135	50	7	5	0.06	43	0.8	54	1000	0.05	0	0	1.04	55.96	RTU-1
TOTAL	**471**		**18**			**146**		**182**	**2000**		**0**	**0**	**0.96**	**189**	
								Vou	**Vps**				**Ev**		
						CORRECTED TOTAL OUTDOOR AIR FLOW RATE		**189**	**CFM**	**Corrected OSA Fractio**				**Zs =**	**0.09**

2

DEFERRED SUBMITTALS - MECHANICAL

DEFERRED SUBMITTALS SHOWING THE ANCHOR DETAILS AND CALCULATION WILL BE PROVIDED TO THE CITY OF PORTLAND 30 DAYS PRIOR TO THE START OF WORK AND SHALL INCLUDE THE FOLLOWING EQUIPMENT

EQUIPMENT	DESCRIPTION	WEIGHT	SUBMITTED	INSPECTOR CHECK
RTU-1	PACKAGED UNIT	867 LBS		
RTU-2	PACKAGED UNIT	625 LBS		
FC-3	DUCTED FAN COIL	135 LBS		
HP-1,2,3,5,7,8A	ROOFTOP MOUTED CONDENSER	227 LBS		

PACKAGED TERMINAL HEAT PUMP

MARK NUMBER	PTHP-1 9 MBH	PTHP-2 12 MBH	PTHP-3 15 MBH
TYPE	THRU–THE–WALL HEAT PUMP	THRU–THE–WALL HEAT PUMP	THRU–THE–WALL HEAT PUMP
SYSTEM	STUDIO	1–BEDROOM	2&3–BEDROOM
NOMINAL COOLING CAPACITY (BTUH)	9,000	11,500	14,000
HEATING CAPACITY (BTUH) @ 47°F OUTDOOR AIR TEMP	8,300	11,500	13,800
ELECTRIC HEATING CAPACITY (KW)	3.5	3.5	5.0
CFM (HI/LOW) (WET COIL)	290/264	290/264	340/314
MIN OSA (CFM)	65 CFM	65 CFM	65 CFM
LVG. AIR TEMP (°F)	55°F	55°F	55°F
REMOTE THERMOSTAT	YES	YES	YES
EFFICIENCY (EER)	11.1	10.2	9.6
EFFICIENCY (COP)	3.3	3.1	2.9
ARCHITECTURAL GRILLE 42x16	YES	YES	YES
DESIGN WT. (LBS)	115	120	130
ELECT (VOLTS/PHASE/HTZ) – ***	230/1/60	230/1/60	230/1/60
TOTAL AMPS – ***	11.2	15.5	15.5
MCA/MOP – ***	14.1/15	19.5/20	19.5/20
REFRIGERANT	410a	410a	410a
REFRIGERANT CHARGE	1.325 LBS	1.34 LBS	1.95 LBS
CONDENSATE DRAIN KIT *	YES – *	YES – *	YES – *
BASIS OF DESIGN: AMANA	PTH093EG35A	PTH123EG35A	PTH153EG50A

* – CONDENSATE DRAIN KIT PROVIDED BY MECHANICAL CONTRACTOR, ALL CONDENSATE PIPING TO BE PROVIDED AND INSTALLED BY PLUMBING CONTRACTOR FROM PTHP TO HUB DRAINS PROVIDED BY PLUMBING CONTRACTOR.
***– ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DEIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS

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CHECKSHEET RESPONSE

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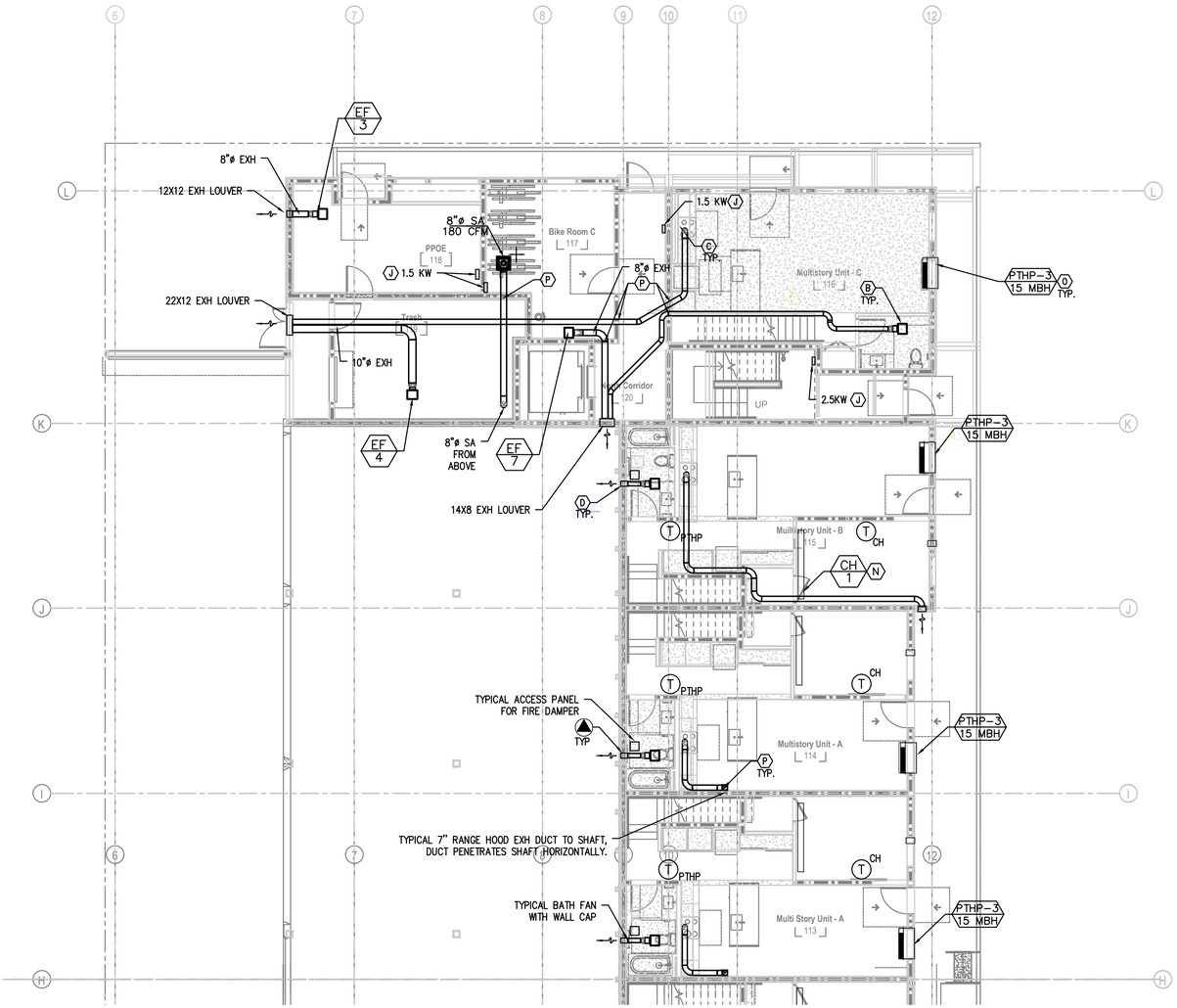
MECHANICAL SCHEDULES

M0.02



1 M1.01A LEVEL 1 MECHANICAL PLAN – NORTH

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

KEY NOTES:

(A) SUPPLY DUCT FROM ROOF TO 2ND FLOOR CEILING – TRANSITION TO SMALLER DUCT SIZES AFTER SUPPLY BRANCH TAKE OFF, SEE CHART.

(B) PANASONIC WHISPERGREEN CEILING FAN WITH 4"ø DUCT TO ROOFTOP DOGHOUSE/SIDEWALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT-IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE EF 2 / 1 M6.02

(C) 7"ø HOOD DUCT TO SIDEWALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO HOOD. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. HOOD FAN TO OPERATE INTERMITTENTLY.

(D) EXTERIOR EXHAUST PLENUM – SEE 2 M6.02 MAINTAIN 36" CLEAR TO OPERABLE WINDOWS AND DOORS.

(E) AC PORT IN BEDROOMS DETAIL, SEE 2 M6.02 FOR

(F) IN-LINE CEILING FAN FOR 1-BEDROOM DWELLING UNITS, SEE 4 M6.01 EF 1 FAN LOCATED ABOVE FALSE CEILING AND BELOW FIRE RATED FLOOR/CEILING ASSEMBLY. W/ TYPICAL 18X18 ACCESS PANEL.

(G) X"ø OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2-POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES. DAMPER TO BE A LOW LEAK CLASS 1 DAMPER.

(H) REFRIGERANT LINESETS ROUTED FROM CONDENSING UNITS ON ROOF TO FAN COILS ON ALL FLOORS.

(I) FOR DUCTED FAN COIL DETAIL, SEE 1 M6.03

(J) X KW WALL HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY.

(K) SUPPLY AIR OR RETURN GRILLE, SIZED FOR BOTH FREE AREA AND FOR ACTUATOR ACCESS, SEE 2 M6.03 FOR GRILLE INSTALLATION, AND SEE 3 M6.03 FOR TYPICAL F/S INSTALLATION, AND CONTROLS.

(L) ROOM TO ROOM TRANSFER FAN FOR DARK BEDROOMS. TJERNLUND AS-1 WITH WALL MOUNTED SWITCH. BLOWER FAN MOUNTED LOW IN LIVING ROOM, WITH HIGH DISCHARGE IN BEDROOM. SET APPROXIMATELY 8" AFF, AND 8" BELOW CEILING. SET BOTH INTAKE AND SUPPLY ABOVE DOOR ON UNITS LOCATED 3 M6.01 ABOVE ENTRY DOOR.

(M) 6x6 SA XX CFM CEILING SUPPLY GRILL, SEE 1 M6.01 TYPICAL CEILING GRILLE INKITCHEN TO BE LOCATED BETWEEN 3' & 10' OF COOKING SURFACE.

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(O) AMANA PTHP (PACKAGED TERMINAL HEAT PUMP) WITH FACTORY WALL SLEEVE, CONDENSATE DRAIN KIT, AND 42X16 ALUMINUM ARCHITECTURAL GRILLE AT EXTERIOR. INSTALL GRAVITY CONDENSATE DRAIN KIT, PLUMBING CONTRACTOR TO MAKE CONNECTION AT DRAIN KIT AND CONTINUE DRAIN LINE TO AN APPROVED LOCATION. 2 M6.01

(P) FIRE PENETRATION DETAILS, SEE 1 M6.02 4 M6.02 5 M6.02

(Q) 16X16 NON RATED ACCESS PANEL FOR FSD.

SHAFT DUCT SIZES

FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU-1
5TH	26 X 22	2290	NA	NA	RTU-1
4TH	26 X 22	1720	NA	NA	RTU-1
3RD	26 X 18	1150	NA	NA	RTU-1
2ND	26 X 18	570	NA	NA	RTU-1
1ST	26 X 18	1150	NA	NA	RTU-1
BSMNT	26 X 18	570	NA	NA	RTU-1

SHAFT DUCT SIZES

FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU-2
5TH	26 X 22	2290	NA	NA	RTU-2
4TH	26 X 22	1720	NA	NA	RTU-2
3RD	26 X 18	1150	NA	NA	RTU-2

VENTILATION CALCULATIONS:

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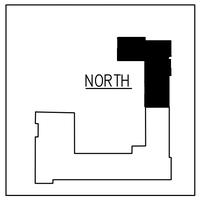
KEY PLAN



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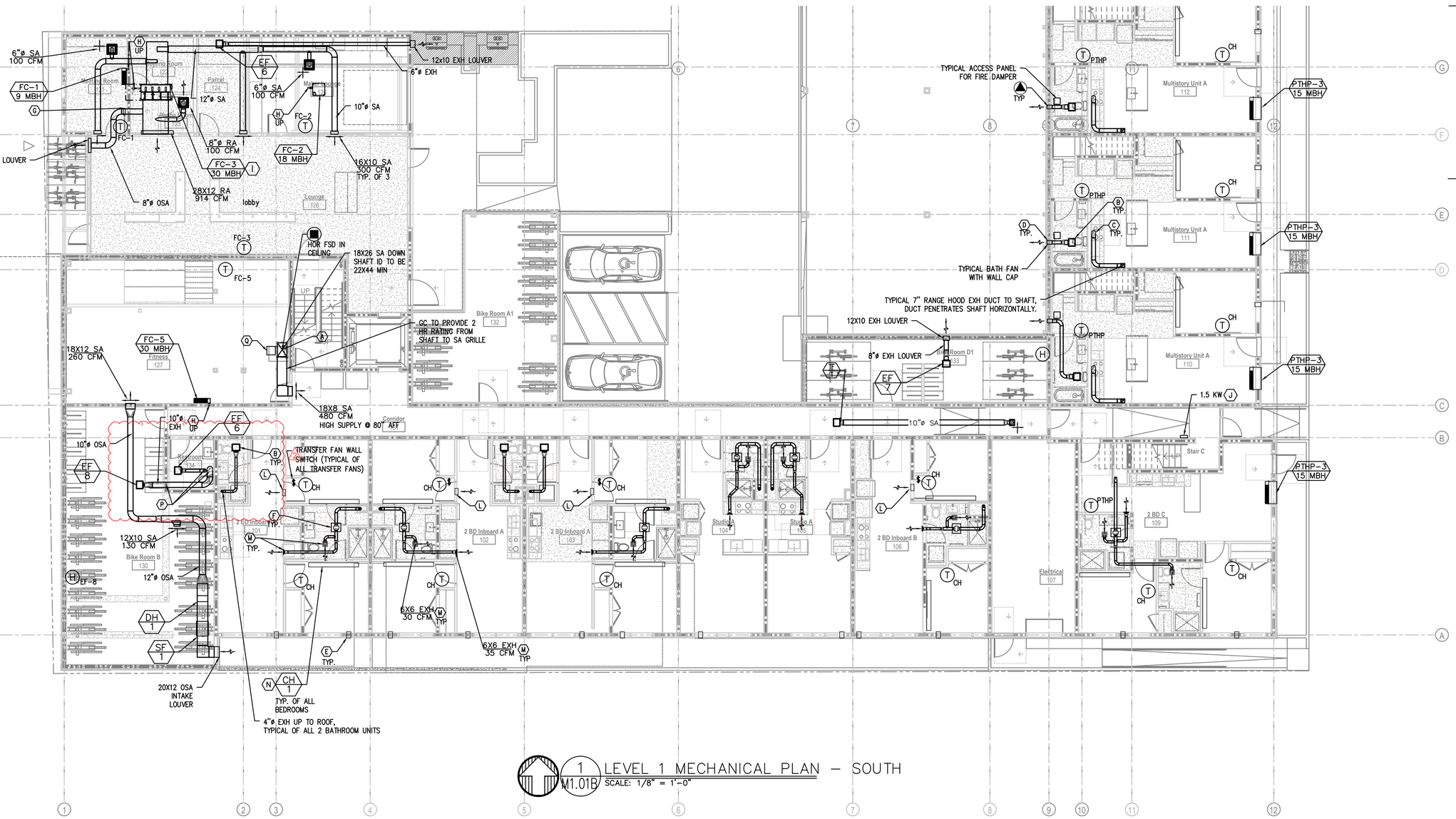
1	PLAN REVIEW #1	02.11.2022
2	PERMIT CHECKSHEET RESPONSE	05.20.2022
4	PERMIT CHECKSHEET RESPONSE	08.10.2022

LEVEL 1 MECHANICAL PLAN - NORTH

M1.01A



1 M1.01B LEVEL 1 MECHANICAL PLAN – SOUTH
SCALE: 1/8" = 1'-0"

KEY NOTES:

- (A) SUPPLY DUCT FROM ROOF TO 2ND FLOOR CEILING – TRANSITION TO SMALLER DUCT SIZES AFTER SUPPLY BRANCH TAKE OFF, SEE CHART.
- (B) PANASONIC WHISPERGREEN CEILING FAN WITH 4"ø DUCT TO ROOFTOP DOGHOUSE/SIDEWALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT-IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE EF/2 1/M6.02
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- (P) FIRE PENETRATION DETAILS, SEE 1/M6.02 4/M6.02 5/M6.02
- (Q) 16X16 NON RATED ACCESS PANEL FOR FSD.

SHAFT DUCT SIZES					
FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU-1
5TH	26 X 22	2290	NA	NA	RTU-1
4TH	26 X 22	1720	NA	NA	RTU-1
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BSMNT	26 X 18	570	NA	NA	RTU-1

SHAFT DUCT SIZES					
FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU-2
5TH	26 X 22	2290	NA	NA	RTU-2
4TH	26 X 22	1720	NA	NA	RTU-2
3RD	26 X 18	1150	NA	NA	RTU-2

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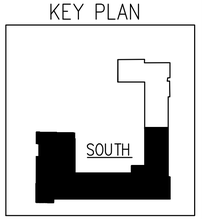

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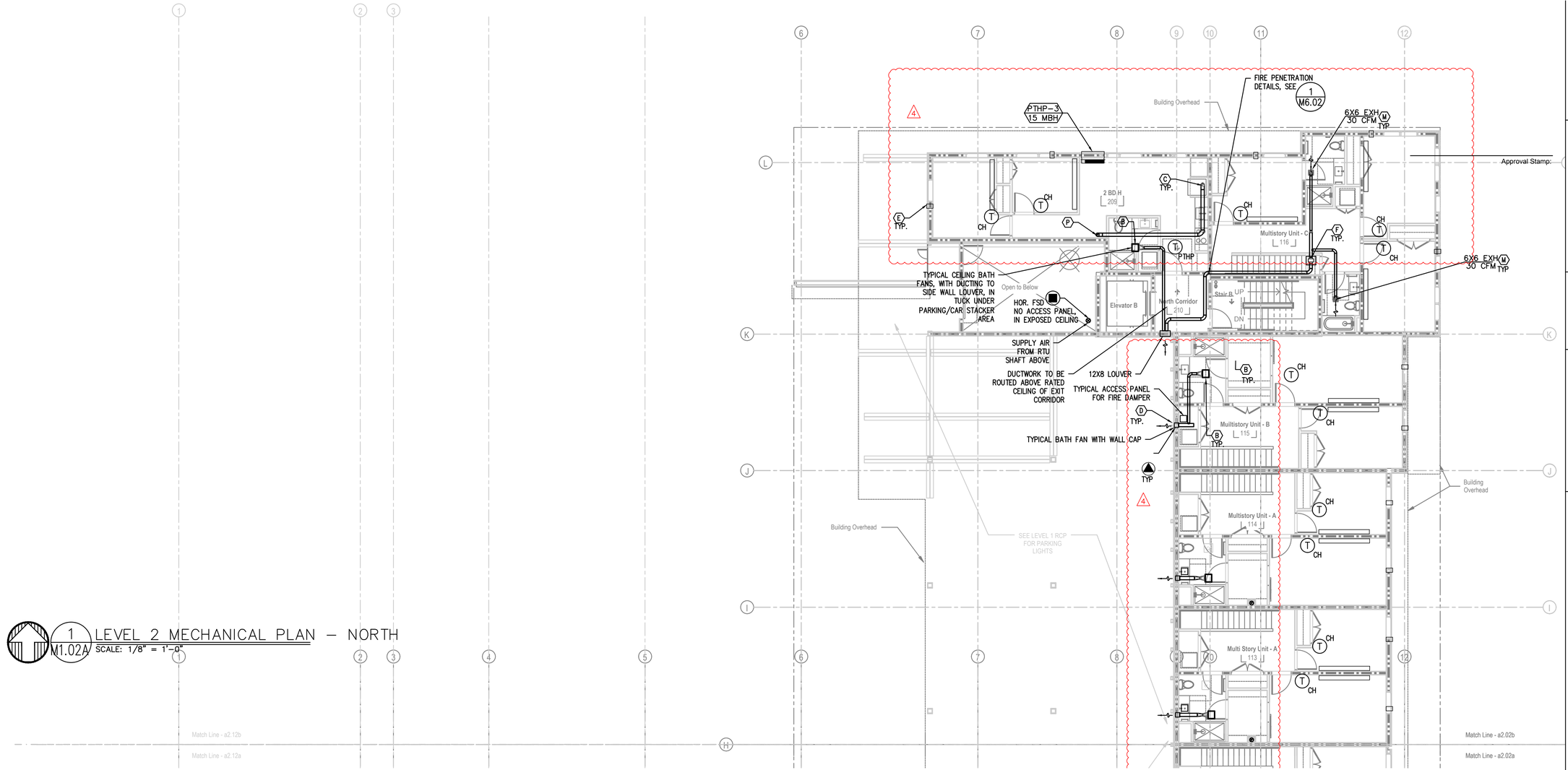
2 PERMIT CHECKSHEET RESPONSE 05.20.2022

LEVEL 1 MECHANICAL PLAN -SOUTH

M1.01B



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

KEY NOTES:

- (A) SUPPLY DUCT FROM ROOF TO 2ND FLOOR CEILING – TRANSITION TO SMALLER DUCT SIZES AFTER SUPPLY BRANCH TAKE OFF, SEE CHART.
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- (I) FOR DUCTED FAN COIL DETAIL, SEE 1 M6.03

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- (Q) 16X16 NON RATED ACCESS PANEL FOR FSD.

SHAFT DUCT SIZES

FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU-1
5TH	26 X 22	2290	NA	NA	RTU-1
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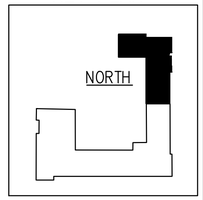

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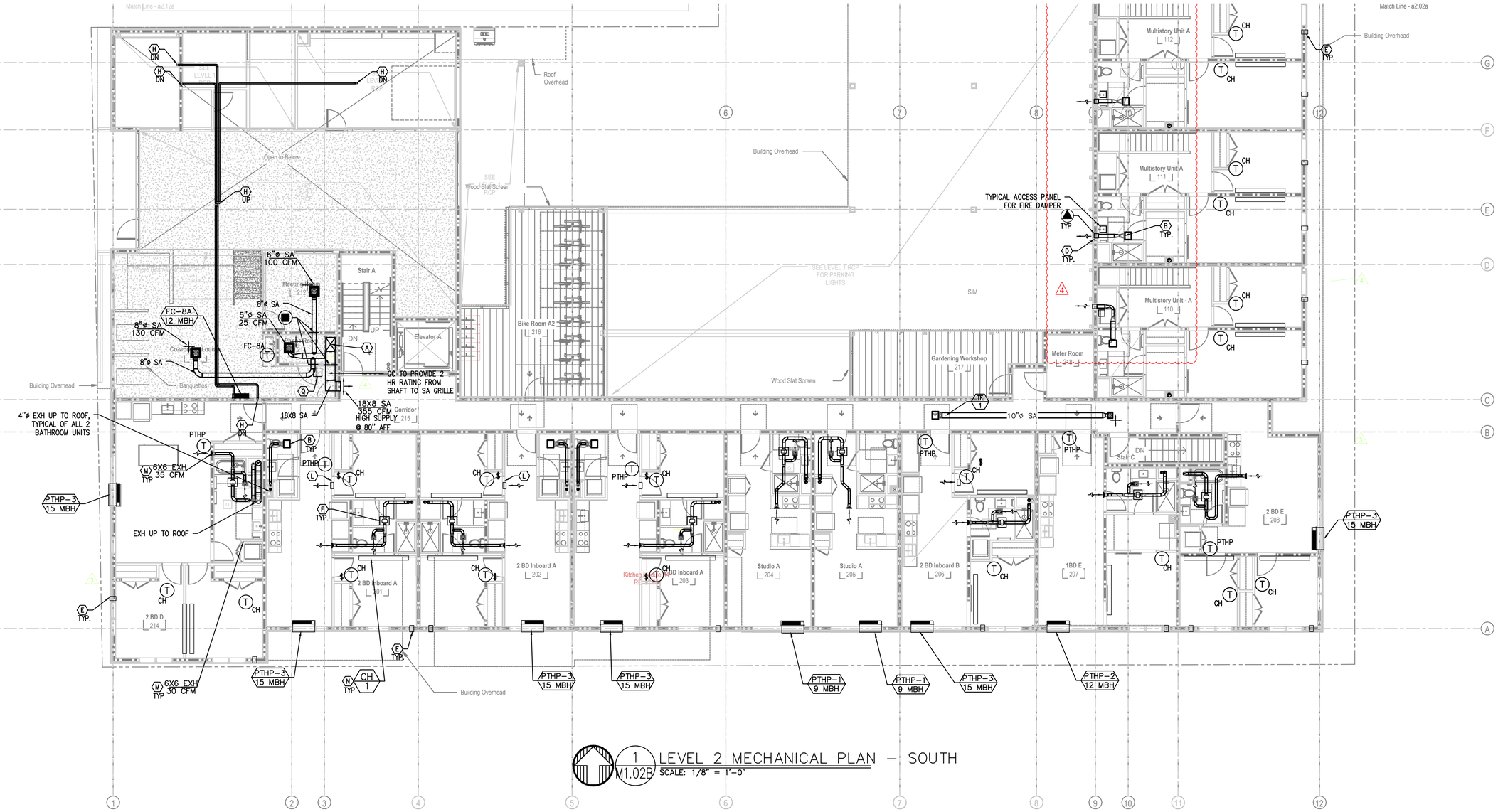
LEVEL 2 MECHANICAL PLAN - NORTH

M1.02A



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

KEY NOTES:

- (A) SUPPLY DUCT FROM ROOF TO 2ND FLOOR CEILING – TRANSITION TO SMALLER DUCT SIZES AFTER SUPPLY BRANCH TAKE OFF, SEE CHART.
- (B) PANASONIC WHISPERGREEN CEILING FAN WITH 4"ø DUCT TO ROOFTOP DOGHOUSE/SIDEWALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT–IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE EF/2, 1/M6.02
- (C) 7"ø HOOD DUCT TO SIDEWALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO HOOD. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. HOOD FAN TO OPERATE INTERMITTENTLY.
- (D) EXTERIOR EXHAUST PLENUM – SEE 2/M6.02 MAINTAIN 36" CLEAR TO OPERABLE WINDOWS AND DOORS.
- (E) AC PORT IN BEDROOMS DETAIL, SEE 2/M6.02 FOR
- (F) IN–LINE CEILING FAN FOR 1–BEDROOM DWELLING UNITS, SEE 4/M6.01 EF/1 FAN LOCATED ABOVE FALSE CEILING AND BELOW FIRE RATED FLOOR/CEILING ASSEMBLY. W/ TYPICAL 18X18 ACCESS PANEL.
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- (H) REFRIGERANT LINESETS ROUTED FROM CONDENSING UNITS ON ROOF TO FAN COILS ON ALL FLOORS.
- (I) FOR DUCTED FAN COIL DETAIL, SEE 1/M6.03
- (J) X KW WALL HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY.
- (K) SUPPLY AIR OR RETURN GRILLE, SIZED FOR BOTH FREE AREA AND FOR ACTUATOR ACCESS, SEE 2/M6.03 FOR GRILLE INSTALLATION, AND SEE 3/M6.03 FOR TYPICAL F/S INSTALLATION, AND CONTROLS.
- (L) ROOM TO ROOM TRANSFER FAN FOR DARK BEDROOMS. TJERNLUND AS–1 WITH WALL MOUNTED SWITCH. BLOWER FAN MOUNTED LOW IN LIVING ROOM, WITH HIGH DISCHARGE IN BEDROOM. SET APPROXIMATELY 8" AFF, AND 8" BELOW CEILING. SET BOTH INTAKE AND SUPPLY ABOVE DOOR ON UNITS LOCATED 3/M6.01 ABOVE ENTRY DOOR.
- (M) 6x6 SA XX CFM CEILING SUPPLY GRILL, SEE 1/M6.01 TYPICAL CEILING GRILLE INKITCHEN TO BE LOCATED BETWEEN 3' & 10' OF COOKING SURFACE.
- (N) TYPICAL COVE HEATER FOR EACH BEDROOM. TYPICAL WALL T–STAT FOR COVE HEATERS –– COORDINATE EXACT LOCATION WITH ARCHITECT.
- (O) AMANA PTHP (PACKAGED TERMINAL HEAT PUMP) WITH FACTORY WALL SLEEVE, CONDENSATE DRAIN KIT, AND 42X16 ALUMINUM ARCHITECTURAL GRILLE AT EXTERIOR. INSTALL GRAVITY CONDENSATE DRAIN KIT, PLUMBING CONTRACTOR TO MAKE CONNECTION AT DRAIN KIT AND CONTINUE DRAIN LINE TO AN APPROVED LOCATION. 2/M6.01
- (P) FIRE PENETRATION DETAILS, SEE 1/M6.02, 4/M6.02, 5/M6.02
- (Q) 16X16 NON RATED ACCESS PANEL FOR FSD.

SHAFT DUCT SIZES

FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU–1
5TH	26 X 22	2290	NA	NA	RTU–1
4TH	26 X 22	1720	NA	NA	RTU–1
3RD	26 X 18	1150	NA	NA	RTU–1
2ND	26 X 18	570	NA	NA	RTU–1
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SHAFT DUCT SIZES

FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU–2
5TH	26 X 22	2290	NA	NA	RTU–2
4TH	26 X 22	1720	NA	NA	RTU–2
3RD	26 X 18	1150	NA	NA	RTU–2

VENTILATION CALCULATIONS:

ALL DWELLING UNITS ARE VENTILATED BY NATURAL VENTILATION, BATHROOM EXHAUST FANS RUN CONTINUOUSLY (SIZED PER ASHRAE 62.2).

COMMON SPACES AND HALLWAYS ARE VENTILATED BY PACKAGED ROOF TOP UNITS SIZED TO EXCEED THE MINIMUM 0.06 CFM/SQ FT REQUIREMENT

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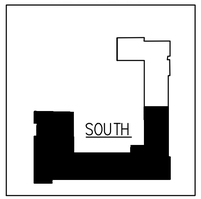
KEY PLAN



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Approval Stamp:

3-11-22
REGISTERED PROFESSIONAL ENGINEER
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JULY 11, 2006
MARK R. DENYER
EXPIRES: 31DEC23

09.20.2021

PERMIT SET

SET ISSUE

1	PLAN REVIEW #1	02.11.2022
2	PERMIT CHECKSHEET RESPONSE	05.20.2022
4	PERMIT CHECKSHEET RESPONSE	08.10.2022

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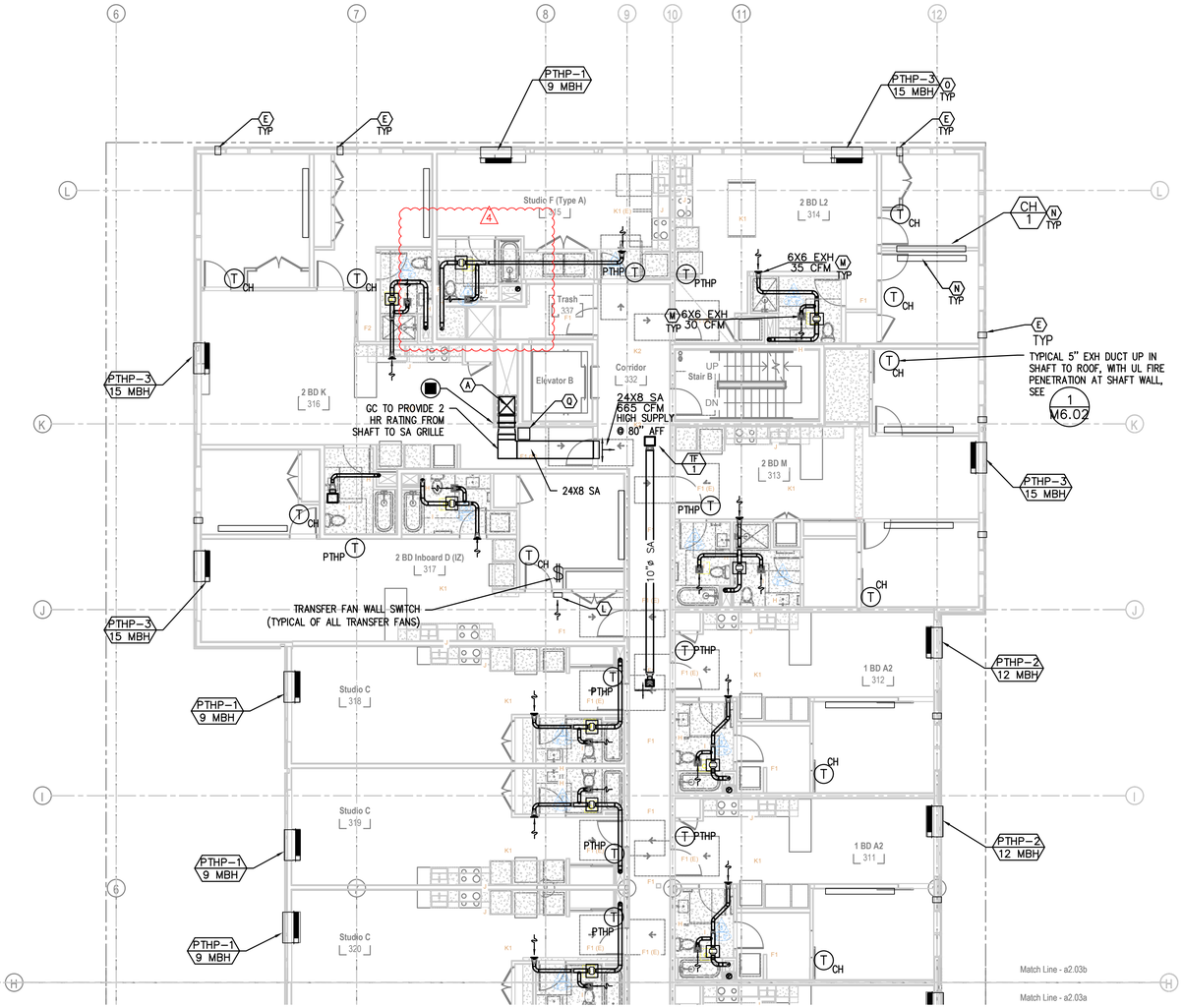
JACOBS

LEVEL 2 MECHANICAL PLAN - SOUTH

M1.02B



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

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SHAFT DUCT SIZES

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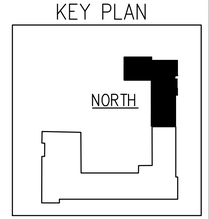

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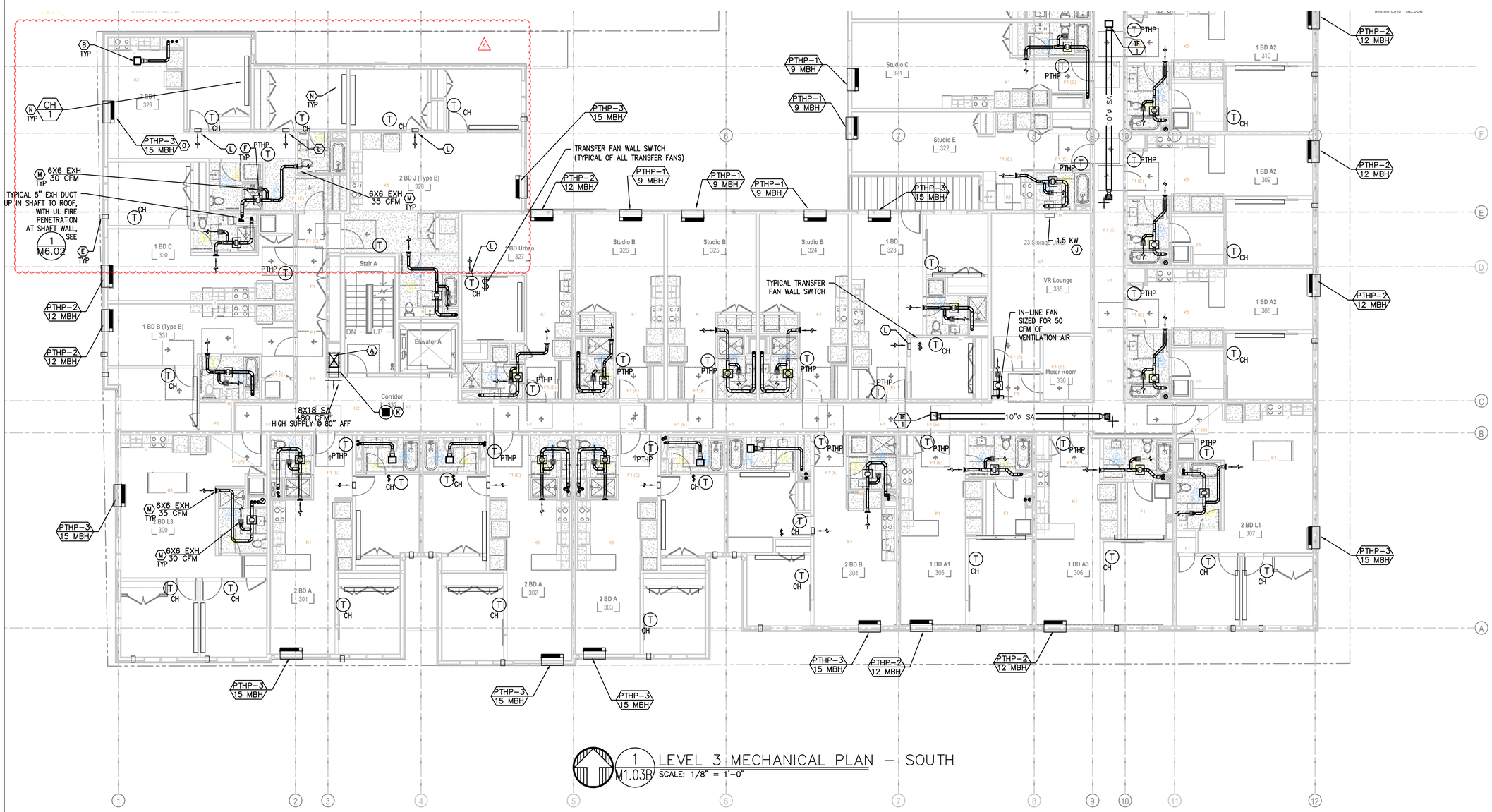
LEVEL 3 MECHANICAL PLAN - NORTH

M1.03A



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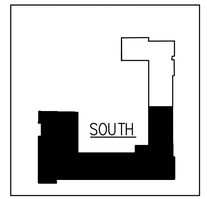

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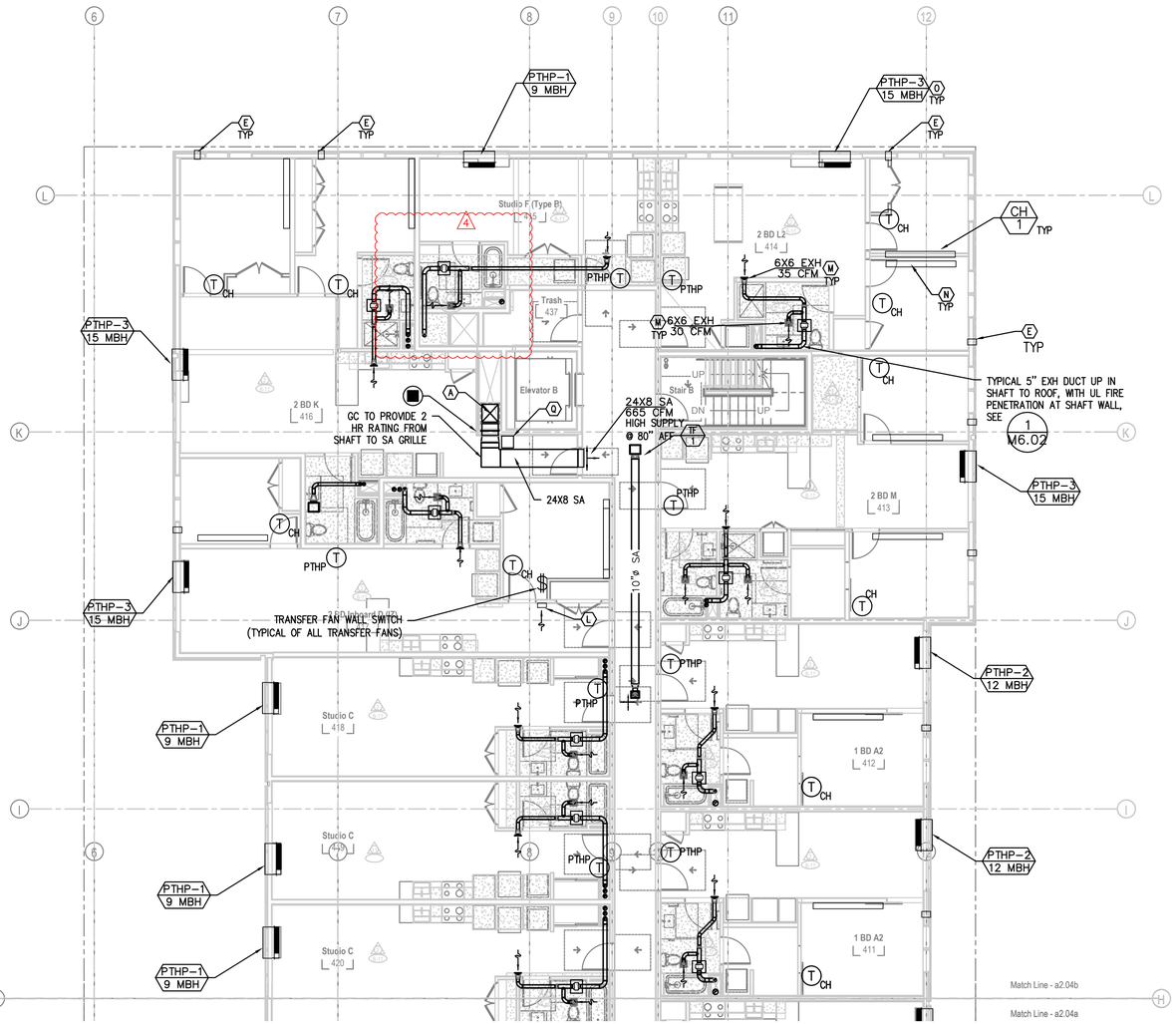

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- (P) FIRE PENETRATION DETAILS, SEE 1 M6.02 4 M6.02 5 M6.02
- (Q) 16X16 NON RATED ACCESS PANEL FOR FSD.

SHAFT DUCT SIZES					
FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU-1
5TH	26 X 22	2290	NA	NA	RTU-1
4TH	26 X 22	1720	NA	NA	RTU-1
3RD	26 X 18	1150	NA	NA	RTU-1
2ND	26 X 18	570	NA	NA	RTU-1
1ST	26 X 18	1150	NA	NA	RTU-1
BSMNT	26 X 18	570	NA	NA	RTU-1

SHAFT DUCT SIZES					
FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU-2
5TH	26 X 22	2290	NA	NA	RTU-2
4TH	26 X 22	1720	NA	NA	RTU-2
3RD	26 X 18	1150	NA	NA	RTU-2

VENTILATION CALCULATIONS:

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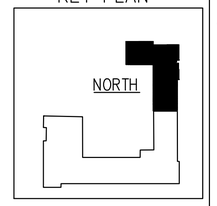

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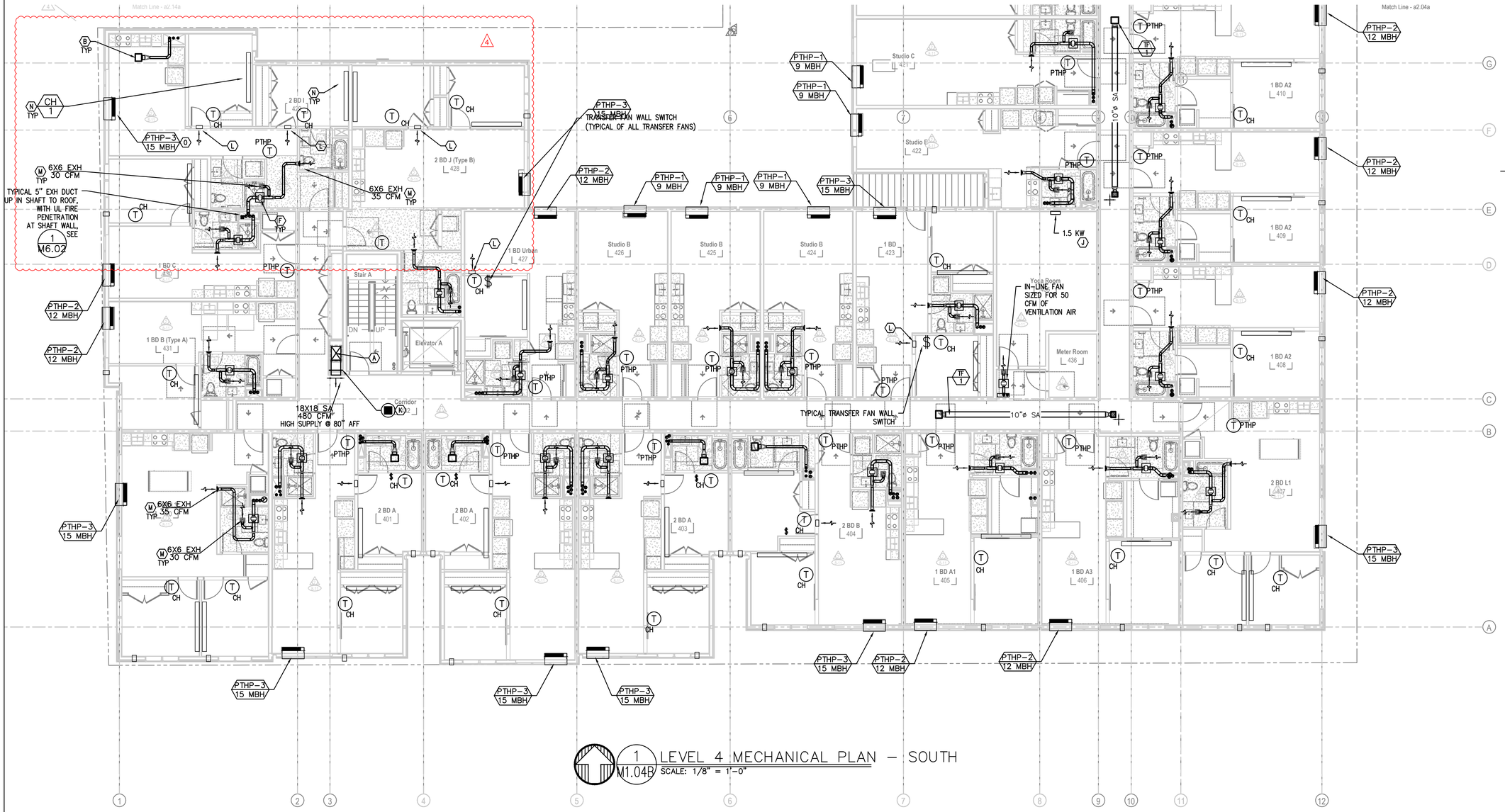
LEVEL 4 MECHANICAL PLAN - NORTH

1.04A



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

KEY NOTES:

- (A) SUPPLY DUCT FROM ROOF TO 2ND FLOOR CEILING – TRANSITION TO SMALLER DUCT SIZES AFTER SUPPLY BRANCH TAKE OFF, SEE CHART.
- (B) PANASONIC WHISPERGREEN CEILING FAN WITH 4"ø DUCT TO ROOFTOP DOGHOUSE/SIDEWALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT-IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE EF/2, 1/M6.02
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- (E) AC PORT IN BEDROOMS DETAIL, SEE 2/M6.02 FOR
- (F) IN-LINE CEILING FAN FOR 1-BEDROOM DWELLING UNITS, SEE 4/M6.01, EF/1 FAN LOCATED ABOVE FALSE CEILING AND BELOW FIRE RATED FLOOR/CEILING ASSEMBLY. W/ TYPICAL 18X18 ACCESS PANEL.
- (G) X"ø OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2-POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES. DAMPER TO BE A LOW LEAK CLASS 1 DAMPER.
- (H) REFRIGERANT LINESETS ROUTED FROM CONDENSING UNITS ON ROOF TO FAN COILS ON ALL FLOORS.
- (I) FOR DUCTED FAN COIL DETAIL, SEE 1/M6.03
- (J) X KW WALL HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY.
- (K) SUPPLY AIR OR RETURN GRILLE, SIZED FOR BOTH FREE AREA AND FOR ACTUATOR ACCESS, SEE 2/M6.03 FOR GRILLE INSTALLATION, AND SEE 3/M6.03 FOR TYPICAL F/S INSTALLATION. AND CONTROLS.
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SHAFT DUCT SIZES

FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU-2
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3RD	26 X 18	1150	NA	NA	RTU-2

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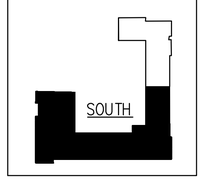

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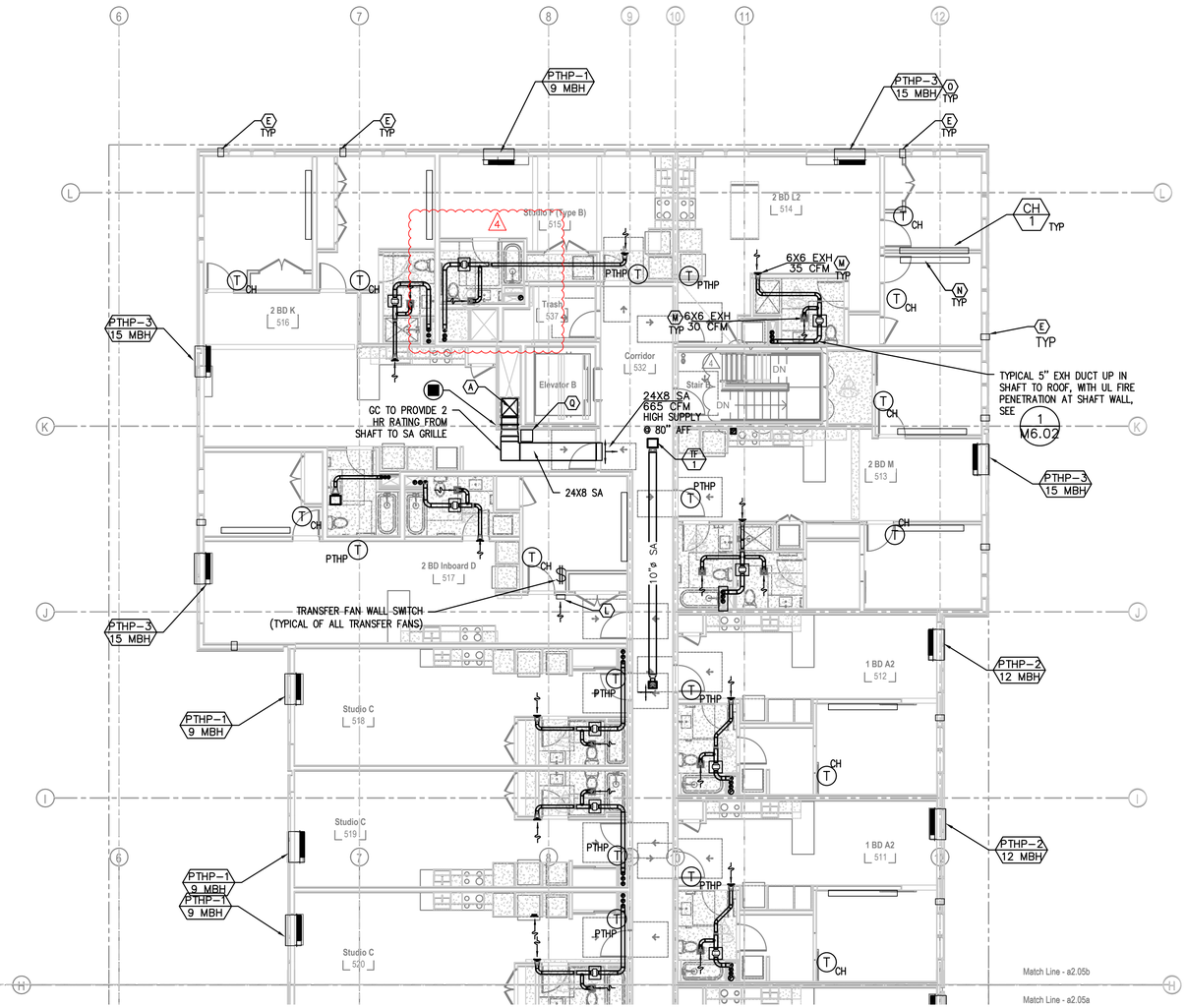
LEVEL 4 MECHANICAL PLAN - SOUTH

1.04B



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

KEY NOTES:

- (A) SUPPLY DUCT FROM ROOF TO 2ND FLOOR CEILING – TRANSITION TO SMALLER DUCT SIZES AFTER SUPPLY BRANCH TAKE OFF, SEE CHART.
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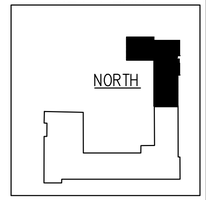

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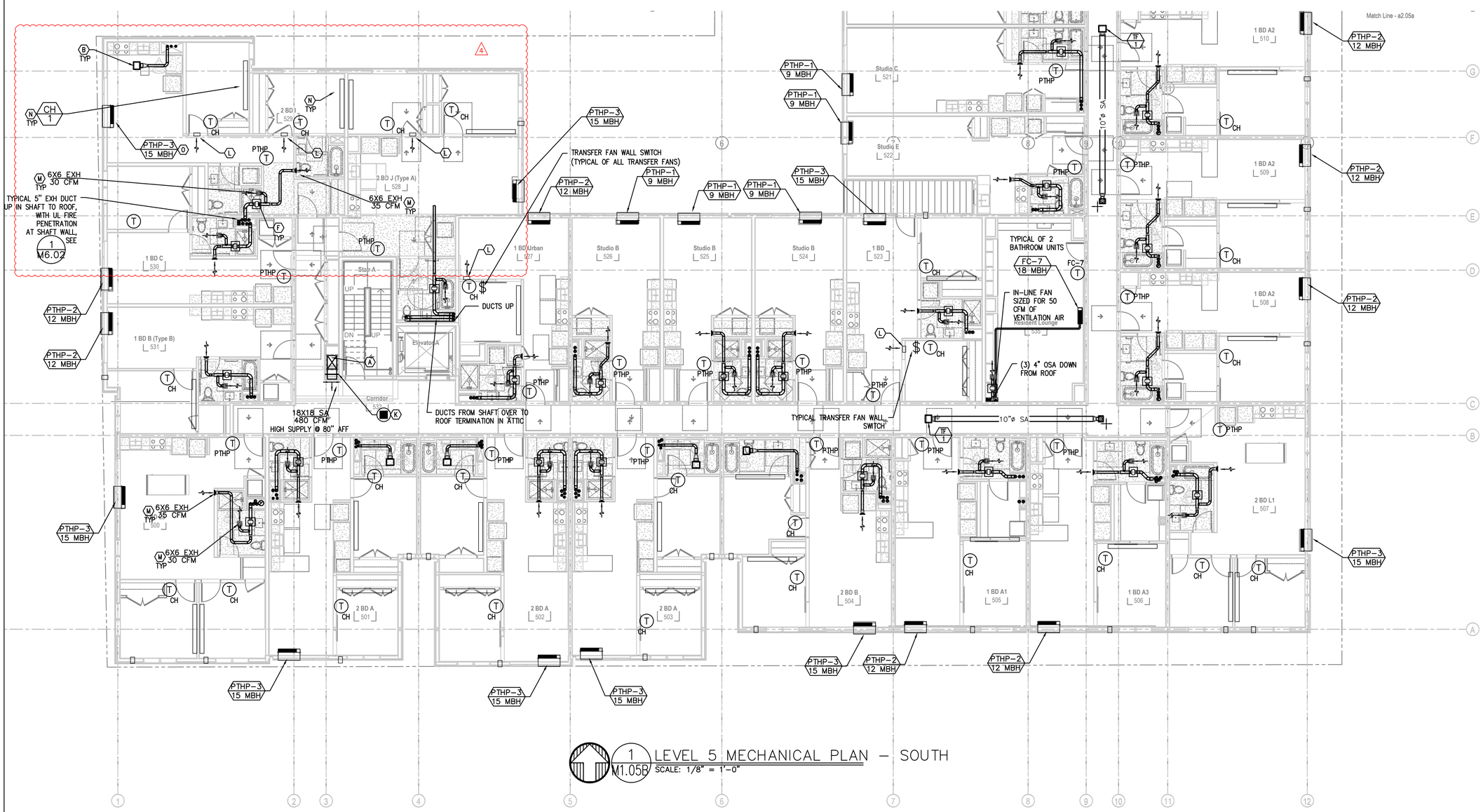
LEVEL 5 MECHANICAL PLAN - NORTH

M1.05A



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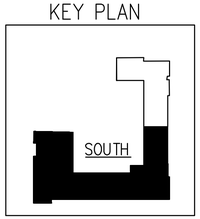

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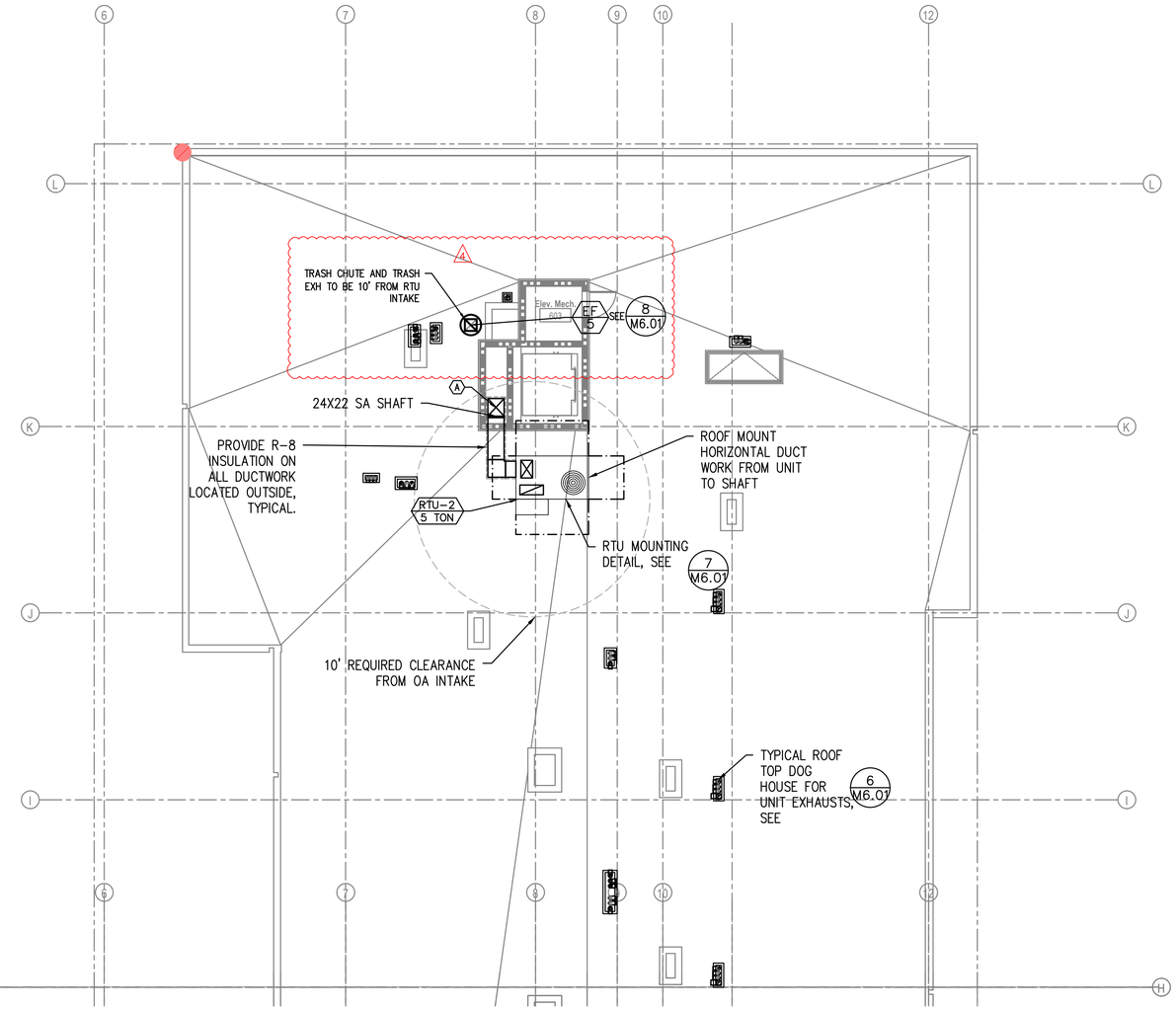
LEVEL 5 MECHANICAL PLAN -SOUTH

M1.05B



1 M1.06A ROOF MECHANICAL PLAN – NORTH
SCALE: 1/8" = 1'-0"

KEY NOTES:

(A) SUPPLY DUCT FROM ROOF TO 2ND FLOOR CEILING – TRANSITION TO SMALLER DUCT SIZES AFTER SUPPLY BRANCH TAKE OFF, SEE CHART.

(B) PANASONIC WHISPERGREEN CEILING FAN WITH 4"ø DUCT TO ROOFTOP DOGHOUSE/SIDEWALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT–IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE EF 2 / 1 M6.02

(C) 7"ø HOOD DUCT TO SIDEWALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO HOOD. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. HOOD FAN TO OPERATE INTERMITTENTLY.

(D) EXTERIOR EXHAUST PLENUM – SEE 2 M6.02 MAINTAIN 36" CLEAR TO OPERABLE WINDOWS AND DOORS.

(E) AC PORT IN BEDROOMS DETAIL, SEE 2 M6.02 FOR

(F) IN–LINE CEILING FAN FOR 1–BEDROOM DWELLING UNITS, SEE 4 M6.01 EF 1 FAN LOCATED ABOVE FALSE CEILING AND BELOW FIRE RATED FLOOR/CEILING ASSEMBLY. W/ TYPICAL 18X18 ACCESS PANEL.

(G) X"ø OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2–POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES. DAMPER TO BE A LOW LEAK CLASS 1 DAMPER.

(H) REFRIGERANT LINESETS ROUTED FROM CONDENSING UNITS ON ROOF TO FAN COILS ON ALL FLOORS.

(I) FOR DUCTED FAN COIL DETAIL, SEE 1 M6.03

(H) REFRIGERANT LINESETS ROUTED FROM CONDENSING UNITS ON ROOF TO FAN COILS ON ALL FLOORS.

(I) FOR DUCTED FAN COIL DETAIL, SEE 1 M6.03

(J) X KW WALL HEATER QMARK AWH4404F OR EQUAL. EQUIPMENT BY ELECTRICAL CONTRACTOR. SHOWN FOR REFERENCE ONLY.

(K) SUPPLY AIR OR RETURN GRILLE, SIZED FOR BOTH FREE AREA AND FOR ACTUATOR ACCESS, SEE 2 M6.03 FOR GRILLE INSTALLATION, AND SEE 3 M6.03 FOR TYPICAL F/S INSTALLATION, AND CONTROLS.

(L) ROOM TO ROOM TRANSFER FAN FOR DARK BEDROOMS. TJERNLUND AS–1 WITH WALL MOUNTED SWITCH. BLOWER FAN MOUNTED LOW IN LIVING ROOM, WITH HIGH DISCHARGE IN BEDROOM. SET APPROXIMATELY 8" AFF, AND 8" BELOW 3 M6.01 CEILING. SET BOTH INTAKE AND SUPPLY ABOVE DOOR ON UNITS LOCATED ABOVE ENTRY DOOR.

(M) 6x6 SA XX CFM CEILING SUPPLY GRILL, SEE 1 M6.01 TYPICAL CEILING GRILLE INKITCHEN TO BE LOCATED BETWEEN 3' & 10' OF COOKING SURFACE.

(N) TYPICAL COVE HEATER FOR EACH BEDROOM. TYPICAL WALL T–STAT FOR COVE HEATERS –– COORDINATE EXACT LOCATION WITH ARCHITECT.

(O) AMANA PTHP (PACKAGED TERMINAL HEAT PUMP) WITH FACTORY WALL SLEEVE, CONDENSATE DRAIN KIT, AND 42X16 ALUMINUM ARCHITECTURAL GRILLE AT EXTERIOR. INSTALL GRAVITY CONDENSATE DRAIN KIT, PLUMBING CONTRACTOR TO MAKE CONNECTION AT DRAIN KIT AND CONTINUE DRAIN LINE TO AN APPROVED LOCATION. 2 M6.01

(P) FIRE PENETRATION DETAILS, SEE 1 M6.02 4 M6.02 5 M6.02

(Q) 16X16 NON RATED ACCESS PANEL FOR FSD.

SHAFT DUCT SIZES					
FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU–1
5TH	26 X 22	2290	NA	NA	RTU–1
4TH	26 X 22	1720	NA	NA	RTU–1
3RD	26 X 18	1150	NA	NA	RTU–1
2ND	26 X 18	570	NA	NA	RTU–1
1ST	26 X 18	1150	NA	NA	RTU–1
BSMNT	26 X 18	570	NA	NA	RTU–1

SHAFT DUCT SIZES					
FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU–2
5TH	26 X 22	2290	NA	NA	RTU–2
4TH	26 X 22	1720	NA	NA	RTU–2
3RD	26 X 18	1150	NA	NA	RTU–2

VENTILATION CALCULATIONS:

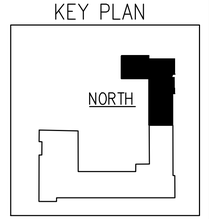
ALL DWELLING UNITS ARE VENTILATED BY NATURAL VENTILATION, BATHROOM EXHAUST FANS RUN CONTINUOUSLY (SIZED PER ASHRAE 62.2).

COMMON SPACES AND HALLWAYS ARE VENTILATED BY PACKAGED ROOF TOP UNITS SIZED TO EXCEED THE MINIMUM 0.06 CFM/SQ FT REQUIREMENT

SEE VENTILATION SCHEDULES FOR OTHER UNITS

ALL DUCTWORK TO BE ROUTED UNDER THE RATED FLOOR/CEILING ASSEMBLY. ALL DUCTWORK LOCATED EITHER IN SOFFIT OR EXPOSED BELOW RATED CEILING.

KEY PLAN



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SET ISSUE

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2 PERMIT 05.20.2022
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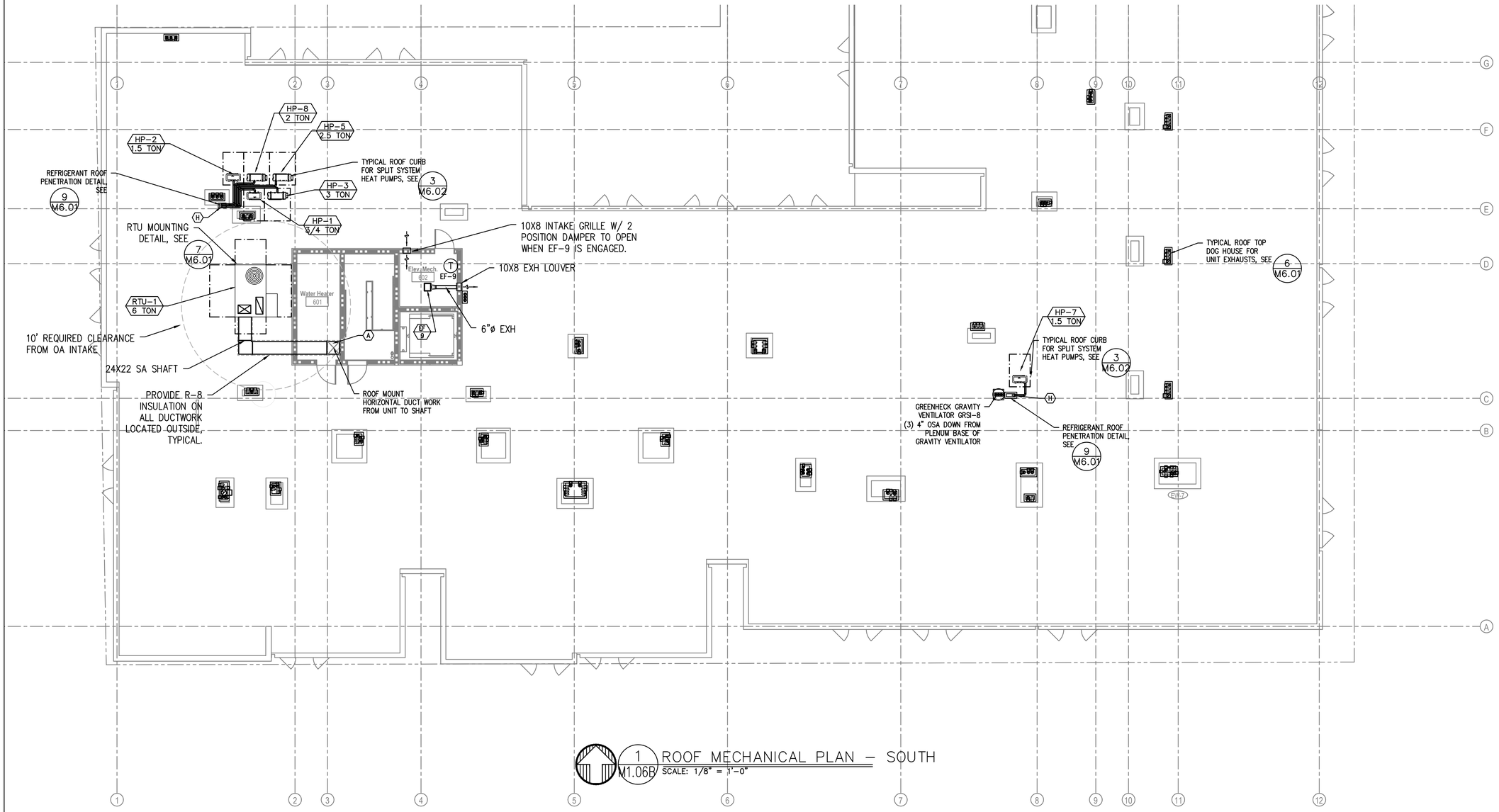
4 PERMIT 08.10.2022
CHECKSHEET RESPONSE

ROOF MECHANICAL PLAN - NORTH

M1.06A



1 M1.06B ROOF MECHANICAL PLAN – SOUTH
SCALE: 1/8" = 1'-0"

KEY NOTES:

(A) SUPPLY DUCT FROM ROOF TO 2ND FLOOR CEILING – TRANSITION TO SMALLER DUCT SIZES AFTER SUPPLY BRANCH TAKE OFF, SEE CHART.

(B) PANASONIC WHISPERGREEN CEILING FAN WITH 4"ø DUCT TO ROOFTOP DOGHOUSE/SIDEWALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT-IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE EF 2 / 1 M6.02

(C) 7"ø HOOD DUCT TO SIDEWALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO HOOD. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. HOOD FAN TO OPERATE INTERMITTENTLY.

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(E) AC PORT IN BEDROOMS DETAIL, SEE 2 / M6.02 FOR

(F) IN-LINE CEILING FAN FOR 1-BEDROOM DWELLING UNITS, SEE 4 / M6.01 EF 1 FAN LOCATED ABOVE FALSE CEILING AND BELOW FIRE RATED FLOOR/CEILING ASSEMBLY. W/ TYPICAL 18X18 ACCESS PANEL.

(G) X"ø OUTSIDE AIR TO FAN COIL, PROVIDE WITH 2-POSITION DAMPER TO OPEN WHENEVER FAN COIL OPERATES. DAMPER TO BE A LOW LEAK CLASS 1 DAMPER.

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(I) FOR DUCTED FAN COIL DETAIL, SEE 1 / M6.03

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(M) 6x6 SA XX CFM CEILING SUPPLY GRILL, SEE 1 / M6.01 TYPICAL CEILING GRILLE INKITCHEN TO BE LOCATED BETWEEN 3' & 10' OF COOKING SURFACE.

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(P) FIRE PENETRATION DETAILS, SEE 1 / M6.02, 4 / M6.02, 5 / M6.02

(Q) 16X16 NON RATED ACCESS PANEL FOR FSD.

SHAFT DUCT SIZES

FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU-1
5TH	26 X 22	2290	NA	NA	RTU-1
4TH	26 X 22	1720	NA	NA	RTU-1
3RD	26 X 18	1150	NA	NA	RTU-1
2ND	26 X 18	570	NA	NA	RTU-1
1ST	26 X 18	1150	NA	NA	RTU-1
BSMNT	26 X 18	570	NA	NA	RTU-1

SHAFT DUCT SIZES

FLOOR	SUPPLY AIR	CFM	RETURN AIR	CFM	UNIT
ATTIC	26 X 26	4000	NA	NA	RTU-2
5TH	26 X 22	2290	NA	NA	RTU-2
4TH	26 X 22	1720	NA	NA	RTU-2
3RD	26 X 18	1150	NA	NA	RTU-2

VENTILATION CALCULATIONS:

ALL DWELLING UNITS ARE VENTILATED BY NATURAL VENTILATION, BATHROOM EXHAUST FANS RUN CONTINUOUSLY (SIZED PER ASHRAE 62.2).

COMMON SPACES AND HALLWAYS ARE VENTILATED BY PACKAGED ROOF TOP UNITS SIZED TO EXCEED THE MINIMUM 0.06 CFM/SQ FT REQUIREMENT

SEE VENTILATION SCHEDULES FOR OTHER UNITS

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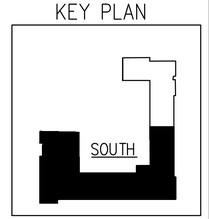
KEY PLAN



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EXPIRES: 31DEC23

09.20.2021

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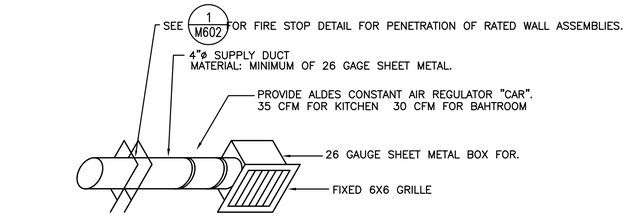
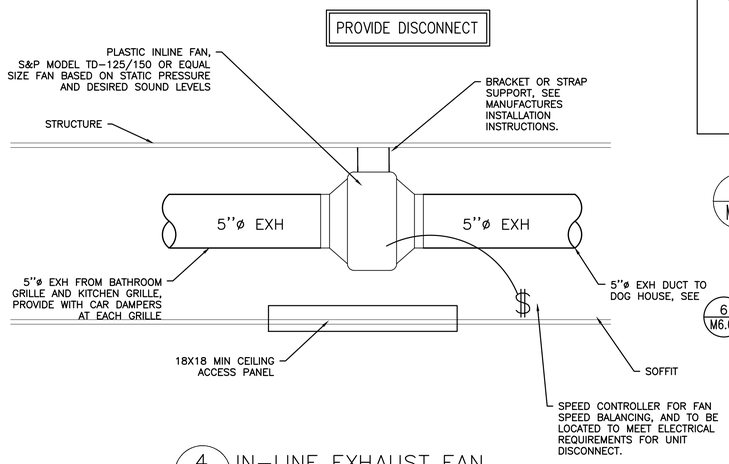
2 PERMIT 05.20.2022
CHECKSHEET RESPONSE

ROOF MECHANICAL PLAN -SOUTH

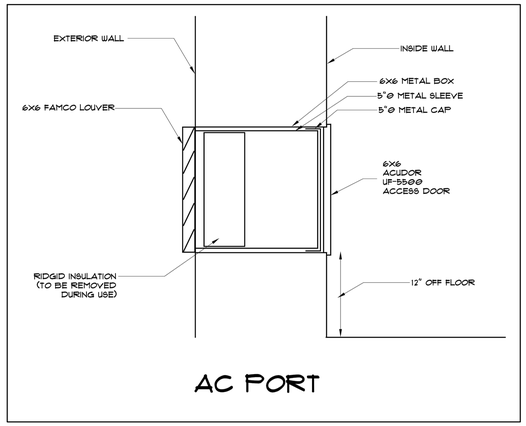
M1.06B



1 M6.01 CONSTANT AIR REGULATOR (CAR) – CEILING
NOT TO SCALE



4 M6.01 IN-LINE EXHAUST FAN
SCALE: DETAIL



2 M6.01 AC VENT PORT WITH ACCESS DOOR
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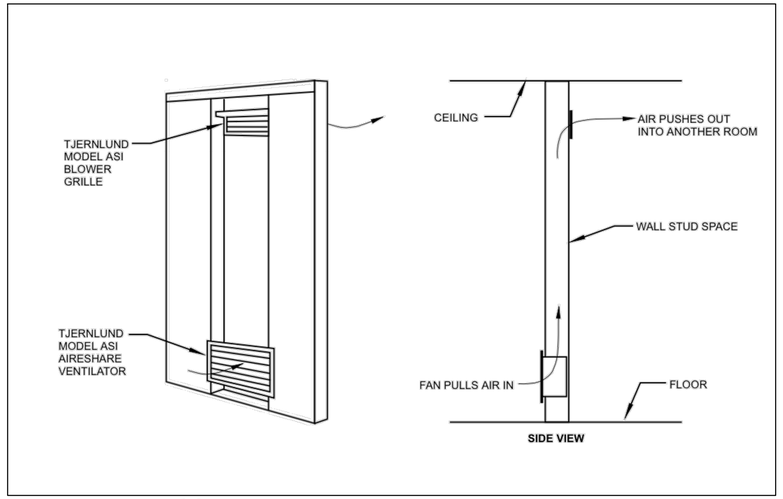
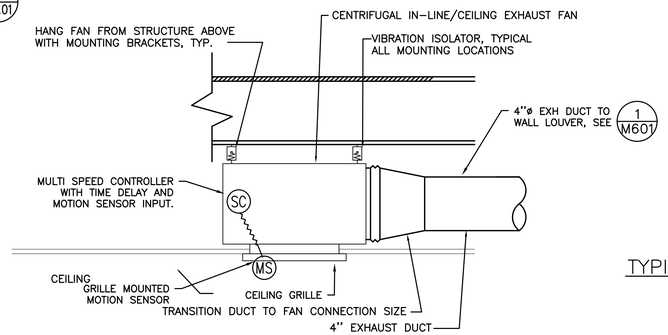


3 M6.01 ROOM TRANSFER FAN
DETAIL



5 M6.01 RESTROOM EXHAUST FAN
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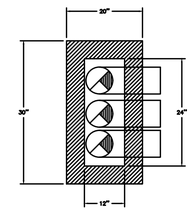
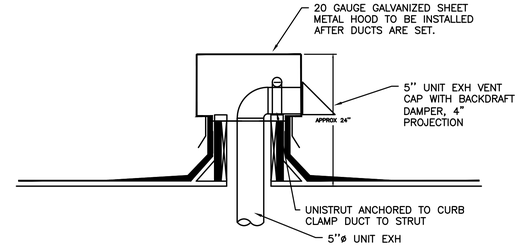
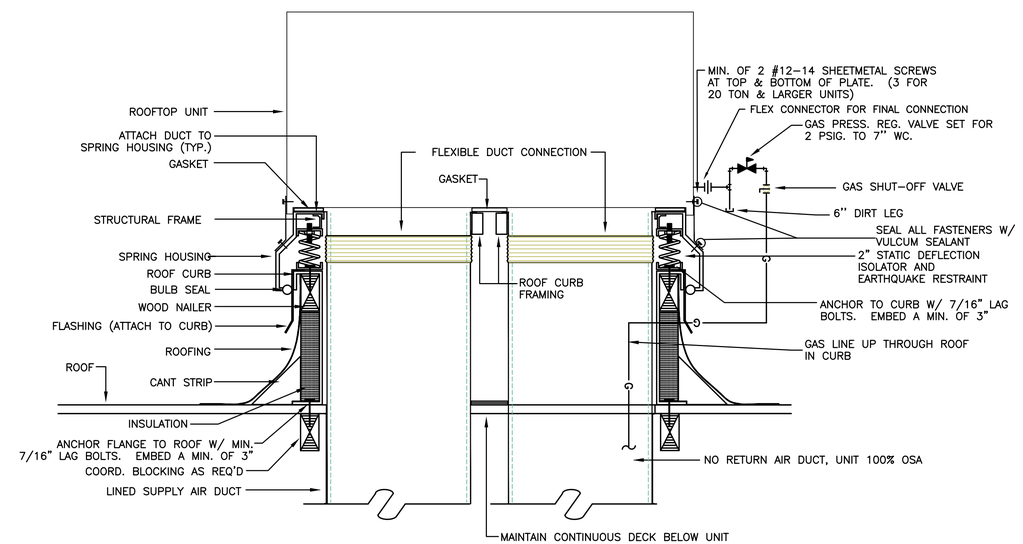


TYPICAL PLAN VIEW (3 DUCTS)

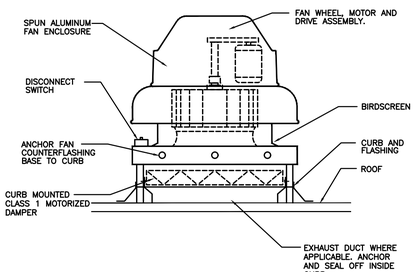


SECTION VIEW

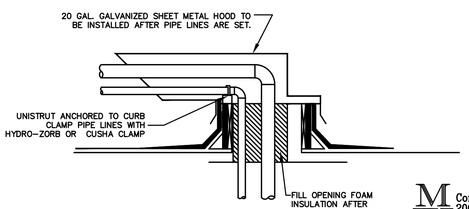
6 M6.01 TYPICAL ROOFTOP OUTLET HOOD
NOT TO SCALE



7 M6.01 ROOF TOP UNIT W/ VIBRATION ISOLATION CURB
SCALE: DETAIL



8 M6.01 EXHAUST FAN
NOT TO SCALE



9 M6.01 REFRIGERANT ROOF PENETRATIONS
DETAIL

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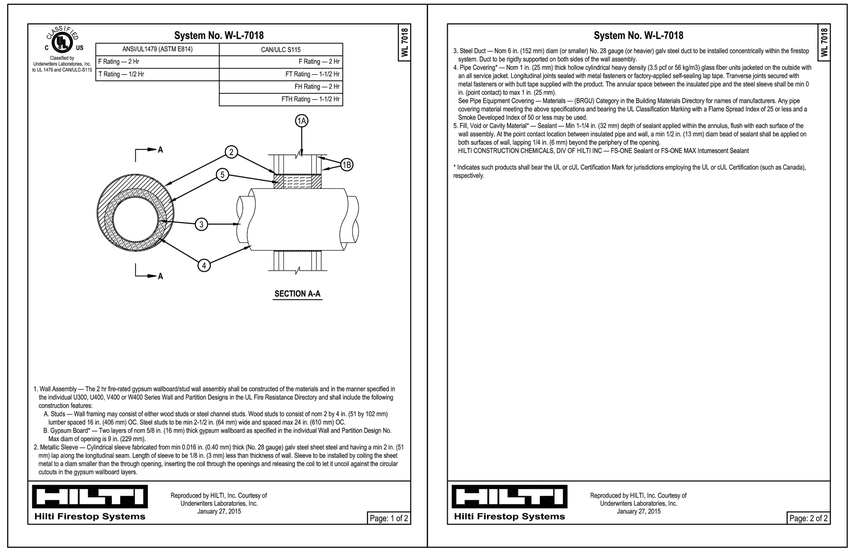
MECHANICAL DETAILS

M6.01



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

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Page: 1 of 2

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. Transverse 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

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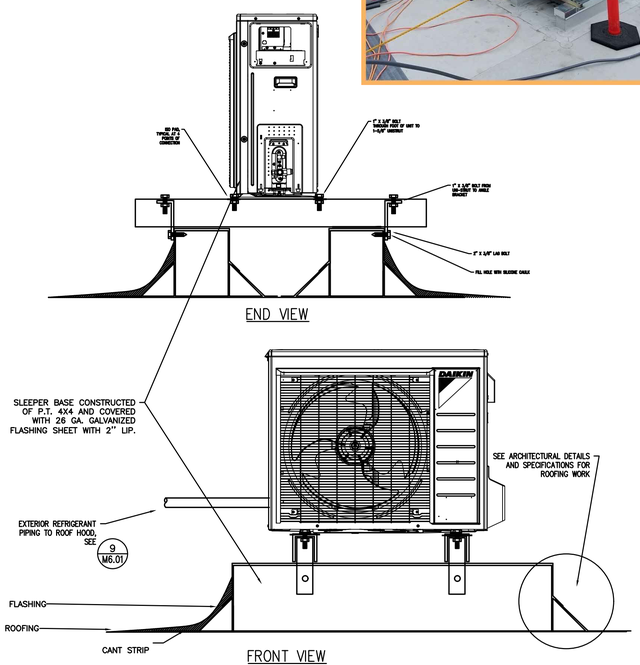
Page: 2 of 2

1 M6.02 WALL PENETRATION DETAIL – 2HR
DETAIL



3 M6.02 HEAT PUMP CURB
NOT TO SCALE

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

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Page: 1 of 2

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
      ECS 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 Material* — Nom 1/2 in. (13 mm) thick, 6 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 12 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

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Page: 2 of 2

2 M6.02 FLOOR CEILING PENETRATION–1 HR
SCALE: DETAIL

System No. W-L-7198 — WL 7198

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

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 2 Hr	FT Rating — 2 Hr
L Rating at Ambient — Less Than 1 CFM/sq ft	FH Rating — 2 Hr
L Rating at 400 F — Less Than 1 CFM/sq ft	FTH Rating — 2 Hr
	L Rating at Ambient — Less Than 1 CFM/sq ft
	L Rating at 400 F — Less Than 1 CFM/sq ft

SECTION A-A

1. Wall Assembly — The 2 hr fire rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400, V400 or W400 Series Wall and 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 shall consist of nom 2 by 6 in. (51 by 152 mm) wide wood studs spaced max 24 in. (610 mm) OC. Steel studs to be min 6 in. (152 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* — Min two layers of 5/8 in. (16 mm) thick gypsum board. Thickness, type and orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening is 5-1/2 in. (140 mm).
2. Steel Duct — Max 4 in. (102 mm) diam No. 30 gauge (or heavier) galv steel duct to be installed either concentrically or eccentrically within the firestop system. The space between the steel duct and periphery of opening shall be min 0 in. (point contact) to max 1-1/2 in. (38 mm). Steel duct to be rigidly supported within the wall assembly.
3. Fill, Void or Cavity Material* — Sealant — Min 1-1/4 in. (32 mm) thickness of fill material applied within the annulus, flush with surface of wall. Min 1/2 in. (13 mm) diam bead of fill material shall be applied at the point contact location between the steel duct and the gypsum board.
   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

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4 M6.02 FIRE PENETRATION DETAIL – 4" DUCTS
DETAIL

System No. W-L-7153 — WL 7153

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 - 1/2 Hr	FT Rating - 1/2 Hr
	FH Ratings - 1 and 2 Hr (See Item 1)
	FTH Rating - 1/2 Hr

SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U400, V400 or W400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs — Wall framing shall consist of channel studs. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Wallboard, Gypsum* — 5/8 in. (16 mm) thick, 4 ft (122 cm) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design in the UL Fire Resistance Directory. Max diam of opening is 23-1/2 in. (597 mm).
   The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

Hilti Firestop Systems

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Page: 1 of 2

System No. W-L-7153 — WL 7153

2. Steel Duct — Galv steel duct to be installed concentrically or eccentrically within the firestop system. Duct to be rigidly supported on both sides of wall assembly.
   A. Spiral Wound HVAC Duct — Nom 20 in. (508 mm) diam (or smaller) No. 24 MSG (or heavier) galv steel spiral wound duct.
   B. Sheet Metal Duct — Nom 12 in. (305 mm) diam (or smaller) No. 28 MSG (or heavier) galv sheet steel duct.
3. Duct Insulation* — Nom 1-1/2 in. (38 mm) thick glass fiber batt or blanket (min 3/4 pcf or 56 kg/m3) jacketed on the outside with a foil-scrim-kraft facing. Longitudinal and transverse joints sealed with aluminum foil tape. During the installation of the fill material, the batt or blanket shall be compressed 50% such that the annular space within the firestop system shall be min 1/4 in. (6 mm) to max 1 in. (25 mm).
   See Batts and Blankets - (BKNV) category in the Building Materials Directory for names of manufacturers. Any batt or blanket meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index 50 or less may be used.
4. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) or 1-1/4 in. (32 mm) thickness of fill material applied within annulus, flush with both surfaces of wall for 1 or 2 hr walls, respectively. If voids develop after the fill materials cures, the voids shall be sealed with additional fill material.
   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

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Page: 2 of 2

5 M6.02 8" DUCT – FIRE PENETRAION DETAIL
DETAIL

Approval Stamp:

W.PA
works progress architecture
811 SE Stark Street, Suite 210
Portland OR, 97214
(503) 234-2945
www.worksarchitecture.net

HIGHSTREET RESIDENTIAL

HSR Brooklyn

3230 SE Milwaukie Avenue
Portland, OR 97202

W.PA Job Number 1318

3-11-22

REGISTERED PROFESSIONAL ENGINEER
54,607 PE
OREGON
JULY 11, 2006
MARK R. DENYER
EXPIRES: 31DEC23

09.20.2021 PERMIT SET

SET ISSUE

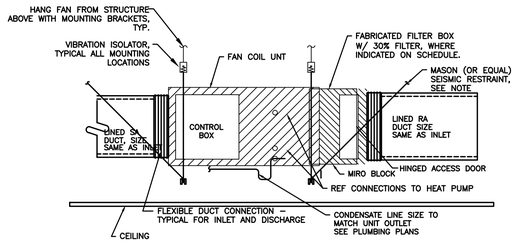
1 PLAN REVIEW #1 02.11.2022
2 PERMIT CHECKSHEET RESPONSE 05.20.2022

MFIA INC. Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PHN: (503) 234-0548
FAX: (503) 234-0677
WWW.MFIA-ENG.COM
CONTACT: MARK DENYER

JACOBS

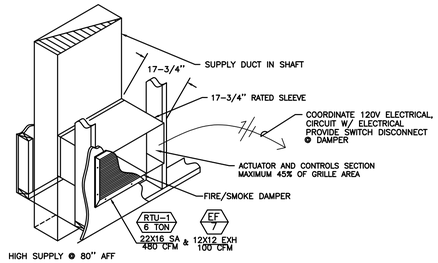
MECHANICAL DETAILS

M6.02

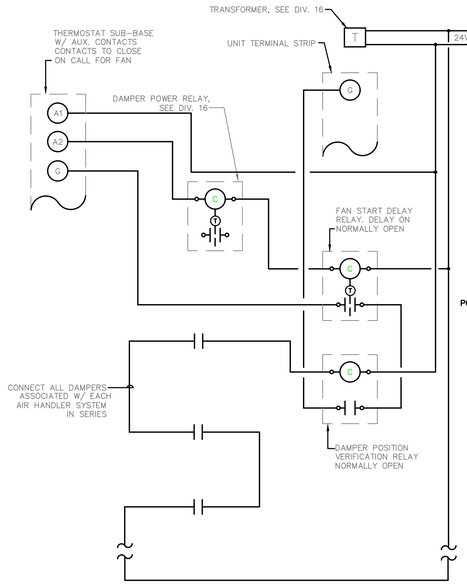


NOTE: LOCATE SUPPORT & SIESMIC TO MAINTAIN UNHINDERED ACCESS FOR MAINTENANCE OF UNIT.

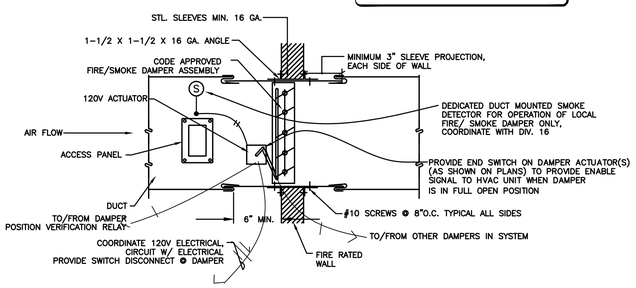
1 M6.03 DUCTED FAN COIL
SCALE: DETAIL



2 M6.03 HIGH SUPPLY W/ FIRE/SMOKE DAMPER
SCALE: DETAIL



ACCESS AND IDENTIFICATION:
ACCESS POINTS SHALL BE PERMANENTLY IDENTIFIED ON THE EXTERIOR BY A LABEL HAVING LETTERS NOT LESS THAN 1/2" IN HEIGHT AND READING: "SMOKE DAMPER" OR "FIRE DAMPER".



3 M6.03 FIRE/SMOKE DAMPER W/SMOKE DETECTOR
NOT TO SCALE

NOTE:

PROVIDE ALL REQUIRED CONTROL WIRING TO ACCOMPLISH:

FIRE/SMOKE DAMPER - FIRE/SMOKE DAMPER TO CLOSE UPON ACTIVATION OF LOCAL SMOKE DETECTOR

EXHAUST DUCTS/FANS - FIRE/SMOKE DAMPER TO CLOSE UPON SHUTDOWN OF ASSOCIATED EXHAUST FAN.

SUPPLY OR RETURN DUCTS/FANS - FIRE/SMOKE DAMPER TO CLOSE UPON SHUTDOWN OF ASSOCIATED AIR HANDLING UNIT.

GENERAL NOTES:

PROVIDE ACCESS IN CEILING OR WALL FOR DAMPER AND SMOKE DETECTOR

SEE ELECTRICAL DRAWINGS FOR WIRING INSTALLATION

Approval Stamp:

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54,607 PE
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JULY 11, 2006
MARK R. DENYER
EXPIRES: 31DEC23

09.20.2021

PERMIT SET

SET ISSUE

1	PLAN REVIEW #1	02.11.2022
2	PERMIT CHECKSHEET RESPONSE	05.20.2022

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MECHANICAL DETAILS

M6.03