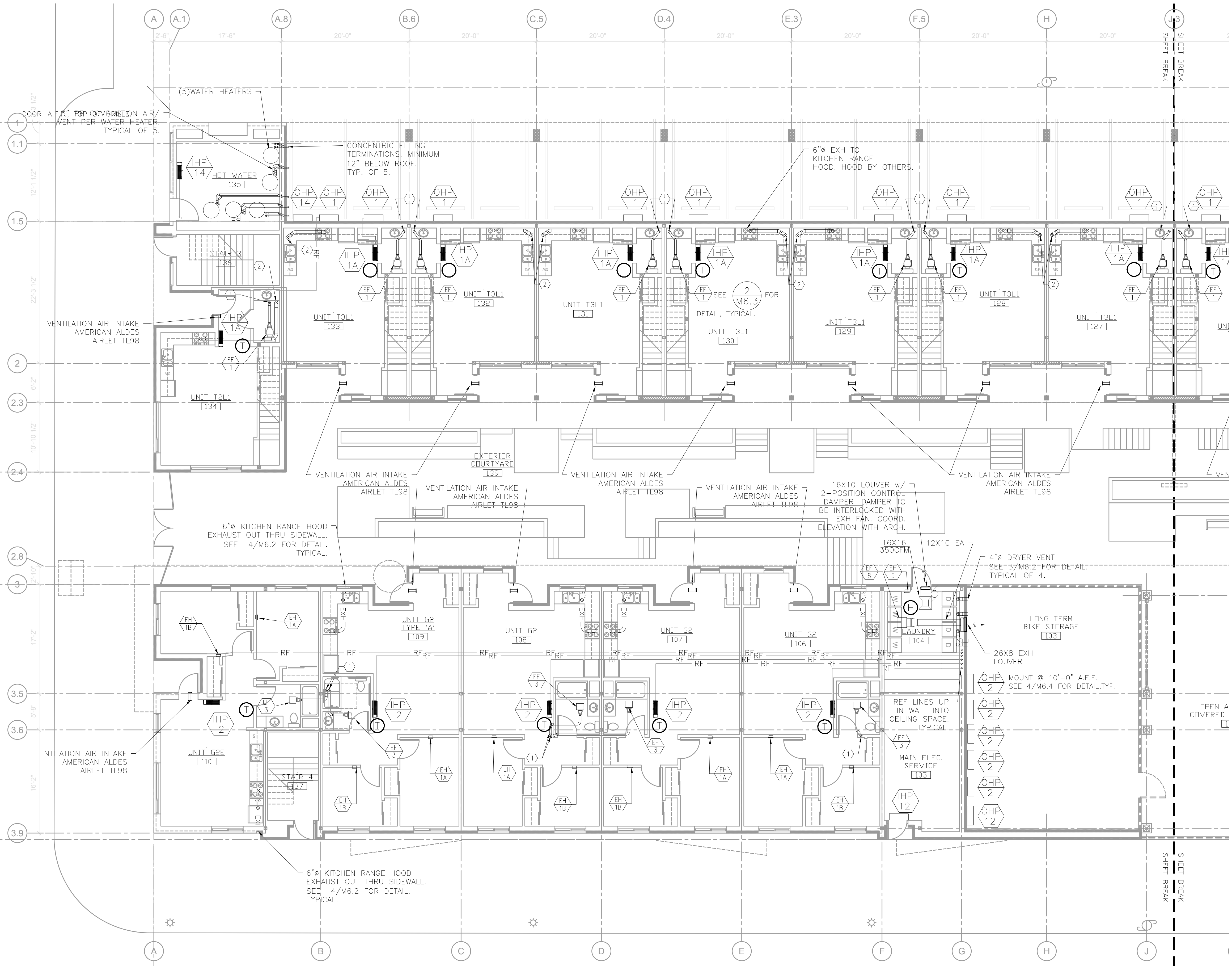


- KEYED NOTES:**
- 4" BA EXH UP.
  - 6" RANGE HOOD EXH UP.
  - LINT TRAPS ON DRYER. SEE 5/M6.4 FOR DETAIL. 4" DRYER EXHAUST DUCT WITH RECESSED DRYER BOX. CONSTRUCTION SOLUTIONS DBX1000, OR APPROVED EQUAL. 22X4 RA DN IN WALL TO LOW RA GRILLE. INSTALL RA GRILLE @ 12" ABOVE COMMUNITY ROOM F.F. ELEV.
  - 28X4 RA DN IN WALL TO LOW RA GRILLE. INSTALL RA GRILLE @ 12" ABOVE OFFICE F.F. ELEVATION WITH FIRE DAMPER. SEE 6/M6.2 FOR DETAIL.
  - INSTALL RA GRILLE ON CENTER ABOVE
- GENERAL NOTES:**
- LIQ & SUCTION REF LINES ARE SHOWN AS A SINGLE PIPE FOR THE PURPOSE OF SHOWING ROUTING OF THE PIPING.
  - SIDEWALL EXHAUST TERMINATIONS TO BE LOCATED 3'-0" MIN RADIUS FROM ANY OPERABLE WINDOWS. SEE ARCHITECTURAL ELEVATIONS.
  - TYPICAL DRYER DUCT TO BE CONSTRUCTED AS FOLLOWS: MATERIAL SHALL HAVE A SMOOTH INTERIOR FINISH AND BE 0.016 INCH THICK. RIVET OR SCREW PENETRATIONS TO THE DUCT WALL ARE NOT ACCEPTABLE. DRYER DUCT SHALL BE SUPPORTED EVERY 4 FOOT INTERVALS.
  - SEE SHEET M6.8 FOR WALL PENETRATION DETAILS. SEE ARCHITECTURAL FOR FLOOR/CEILING PENETRATION DETAIL.



1 MECHANICAL FIRST FLOOR PLAN - SOUTH  
 M2.0A SCALE: 1/8" = 1'-0"

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**KING+PARKS MULTI-FAMILY RESIDENCES**

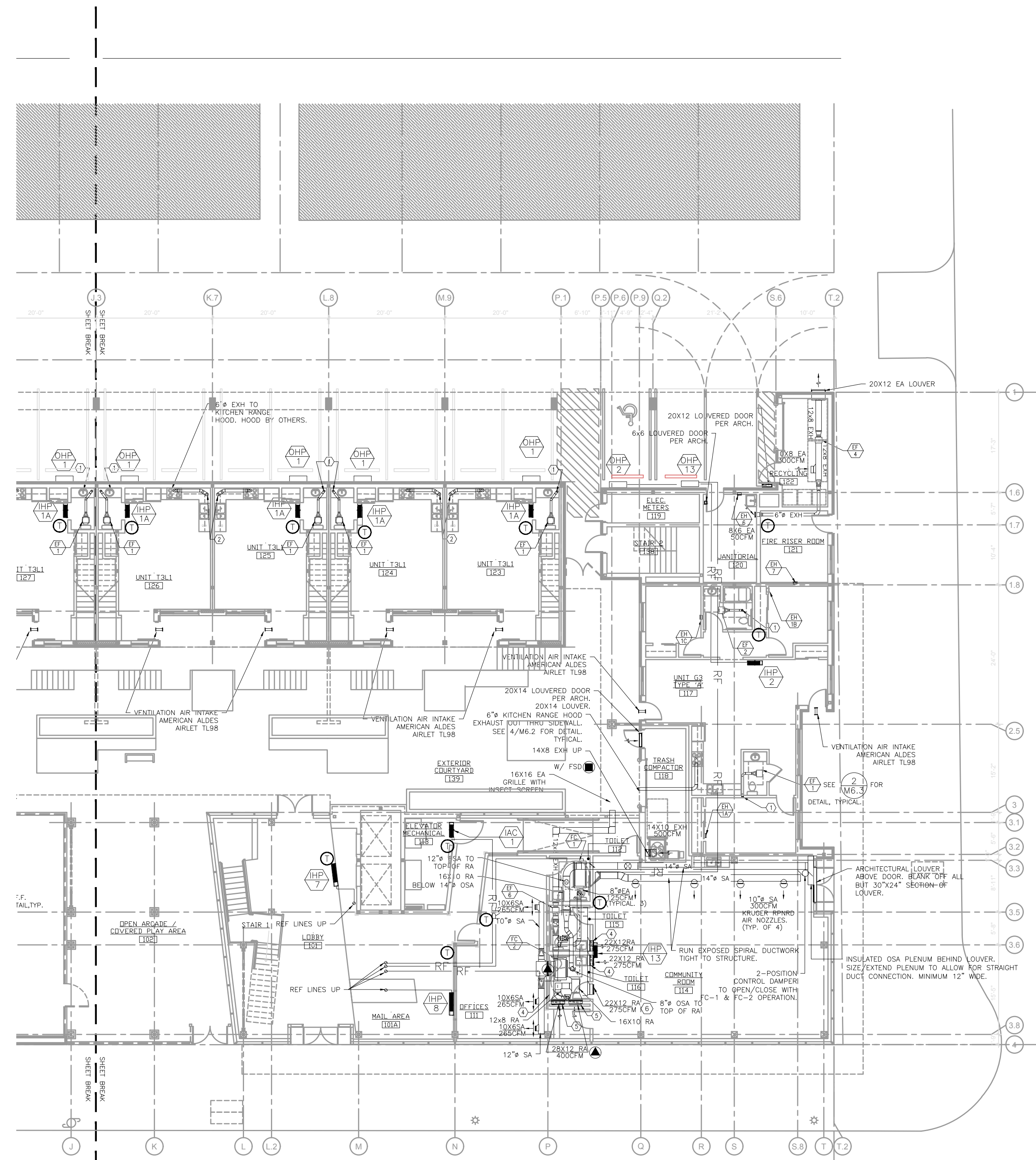
PROJECT SITE: NE Martin Luther King Jr. Boulevard & N Rosa Parks Way  
 OWNER: Portland Community Reinvestment Initiatives Inc. (PCRI)  
 6329 NE Martin Luther King Jr. Blvd. Portland, Oregon 97211

PROJECT NO. 16-0602  
 ISSUE DATE 11.15.2017  
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SHEET  
 MECHANICAL 1ST  
 FLOOR PLAN - SOUTH  
**M2.0A**

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- KEYED NOTES:**
- 4" Ø BA EXH UP.
  - 6" Ø RANGE HOOD EXH UP.
  - LINT TRAPS ON DRYER. SEE 5/M6.4 FOR DETAIL. 4" Ø DRYER EXHAUST DUCT WITH RECESSED DRYER BOX, CONSTRUCTION SOLUTIONS DBX1000, OR APPROVED EQUAL.
  - 22X4 RA DN IN WALL TO LOW RA GRILLE. INSTALL RA GRILLE @ 12" ABOVE COMMUNITY ROOM F.F. ELEV.
  - 28X4 RA DN IN WALL TO LOW RA GRILLE. INSTALL RA GRILLE @ 12" ABOVE OFFICE F.F. ELEVATION WITH FIRE DAMPER. SEE 6/M6.2 FOR DETAIL.
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  - SEE SHEET M6.8 FOR WALL PENETRATION DETAILS. SEE ARCHITECTURAL FOR FLOOR/CEILING PENETRATION DETAIL.

1 MECHANICAL FIRST FLOOR PLAN - NORTH  
M2.0B SCALE: 1/16" = 1'-0"

**KING+PARKS MULTI-FAMILY RESIDENCES**

PROJECT SITE: NE Martin Luther King Jr. Boulevard & N Rosa Parks Way  
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PROJECT NO. 16-0602  
ISSUE DATE 11.15.2017

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NO.	DESCRIPTION

SHEET  
MECHANICAL 1ST  
FLOOR PLAN - NORTH  
**M2.0B**

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**KING+PARKS MULTI-FAMILY RESIDENCES**

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PROJECT NO. 16-0602  
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SHEET  
 MECHANICAL 2ND  
 FLOOR PLAN - SOUTH  
**M2.1A**

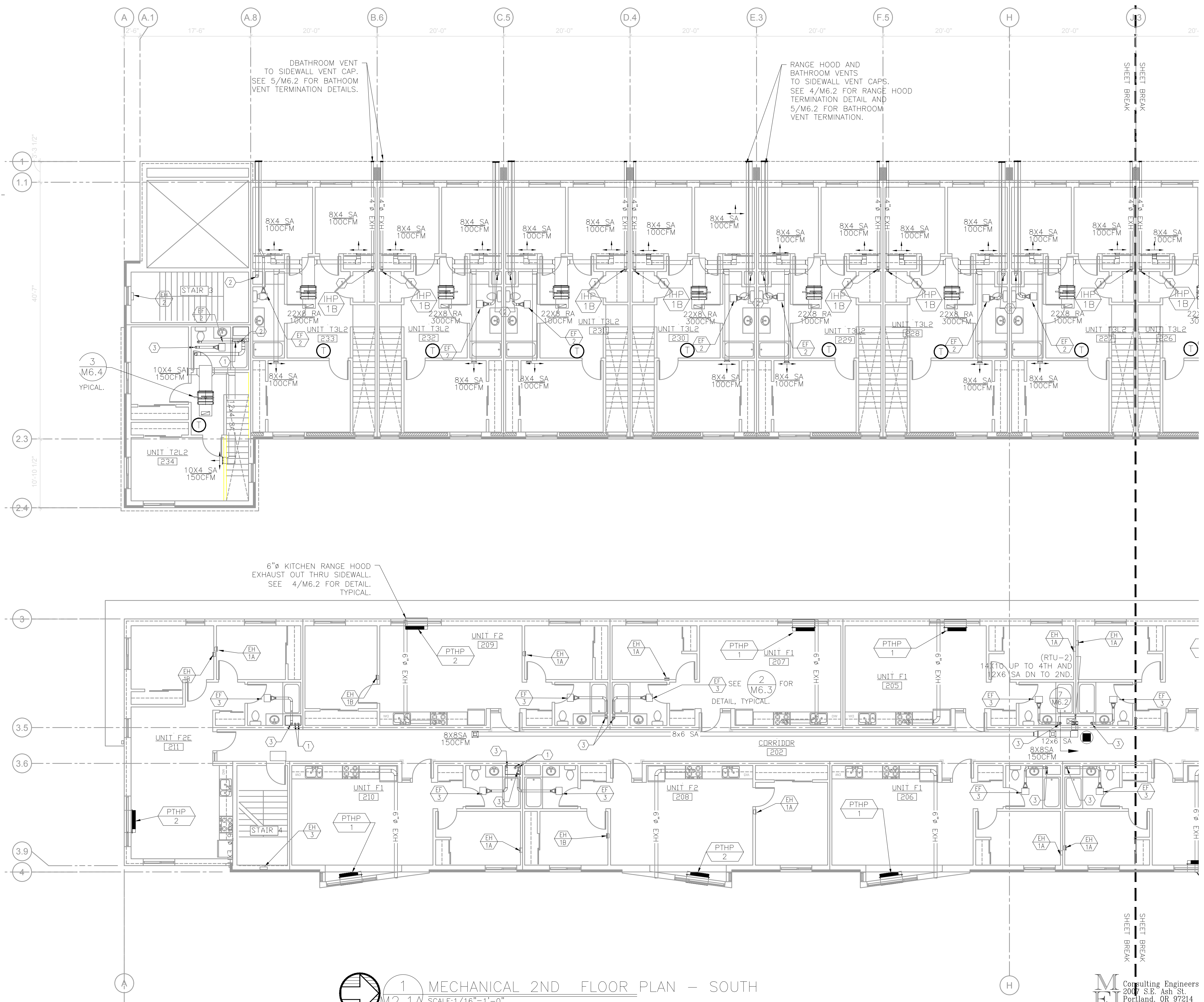
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**KEYED NOTES:**

- 4" BA EXH FROM BELOW.
- 6" RANGE HOOD EXH FROM BELOW.
- 4" BA EXH UP.
- LINT TRAPS ON DRYER. SEE 5/M6.4 FOR DETAIL. 4" DRYER EXHAUST DUCT WITH RECESSED DRYER BOX, CONSTRUCTION SOLUTIONS DBX1000, OR APPROVED EQUAL.

**GENERAL NOTES:**

- LIQ & SUCTION REF LINES ARE SHOWN AS A SINGLE PIPE FOR THE PURPOSE OF SHOWING ROUTING OF THE PIPING.
- SIDEWALL EXHAUST TERMINATIONS TO BE LOCATED 3'-0" MIN RADIUS FROM ANY OPERABLE WINDOWS. SEE ARCHITECTURAL ELEVATIONS.
- TYPICAL DRYER DUCT TO BE CONSTRUCTED AS FOLLOWS: MATERIAL SHALL HAVE A SMOOTH INTERIOR FINISH AND BE 0.016 INCH THICK. RIVET OR SCREW PENETRATIONS TO THE DUCT WALL ARE NOT ACCEPTABLE. DRYER DUCT SHALL BE SUPPORTED EVERY 4 FOOT INTERVALS.
- SEE SHEET M6.8 FOR WALL PENETRATION DETAILS. SEE ARCHITECTURAL FOR FLOOR/CEILING PENETRATION DETAIL.



**1 MECHANICAL 2ND FLOOR PLAN - SOUTH**  
 SCALE: 1/16" = 1'-0"

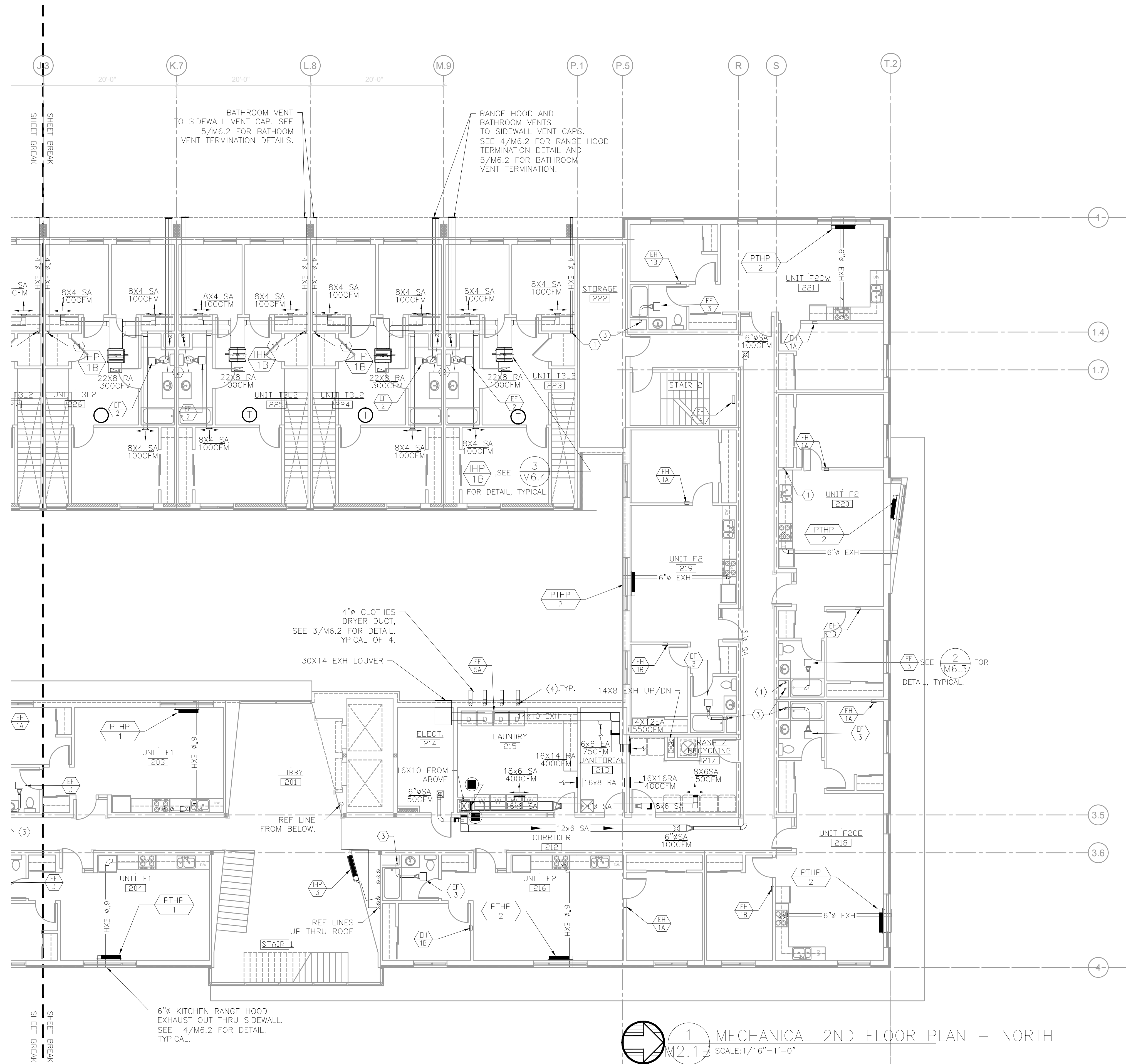
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- KEYED NOTES:**
- 4" BA EXH FROM BELOW.
  - 6" RANGE HOOD EXH FROM BELOW.
  - 4" BA EXH UP.
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1 MECHANICAL 2ND FLOOR PLAN - NORTH  
 M2.1B SCALE: 1/16" = 1'-0"

**KING+PARKS MULTI-FAMILY RESIDENCES**

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PROJECT NO. 16-0602  
 ISSUE DATE 11.15.2017

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NO.	DESCRIPTION

SHEET  
 MECHANICAL 2ND FLOOR PLANS-NORTH  
**M2.1B**

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 CONTACT: Takako Baker

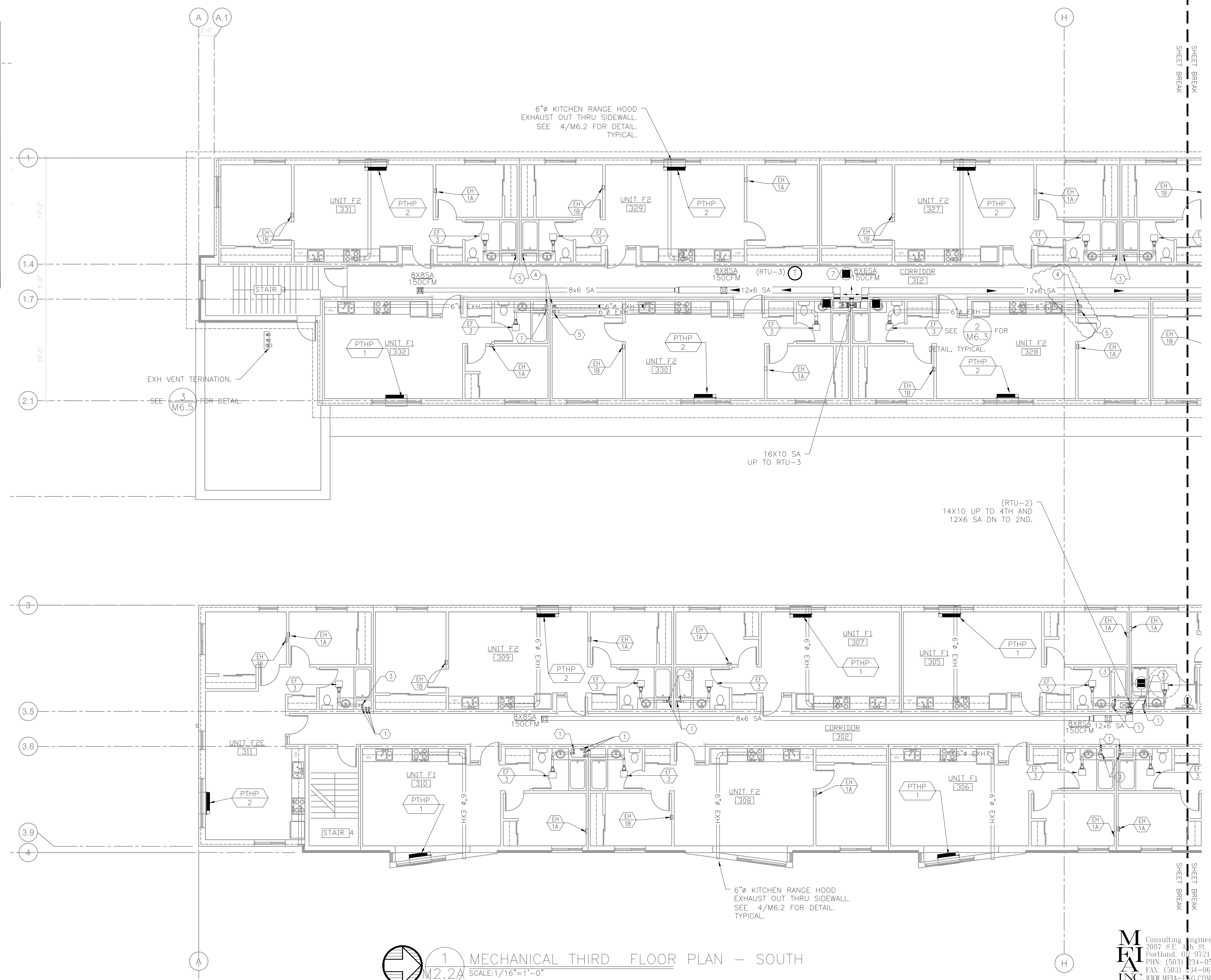
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- KEYED NOTES:**
- 4" BA EXH FROM BELOW AND UP.
  - 6" RANGE HOOD EXH FROM BELOW AND UP.
  - 4" BA EXH UP.
  - 6" RANGE HOOD EXH UP THRU ROOF.
  - 6" EXH UP.
  - LINT TRAPS ON DRYER. SEE 5/M6.4 FOR DETAIL. 4" DRYER EXHAUST DUCT WITH RECESSED DRYER BOX, CONSTRUCTION SOLUTIONS DBX1000, OR APPROVED EQUAL.
  - SEE 1/M6.2 FOR HIGH WALL SUPPLY GRILLE WITH FIRE/SMOKE DAMPER INSTALLATION.
- GENERAL NOTES:**
- LIQ & SUCTION REF LINES ARE SHOWN AS A SINGLE PIPE FOR THE PURPOSE OF SHOWING ROUTING OF THE PIPING.
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1 MECHANICAL THIRD FLOOR PLAN - SOUTH  
 M2.2A SCALE: 1/16" = 1'-0"

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**KING+PARKS MULTI-FAMILY RESIDENCES**

PROJECT SITE: NE Martin Luther King Jr. Boulevard & N Rosa Parks Way  
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PROJECT NO.	ISSUE DATE
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SHEET  
 MECHANICAL 3RD  
 FLOOR PLANS  
**M2.2A**

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# KING+PARKS MULTI-FAMILY RESIDENCES

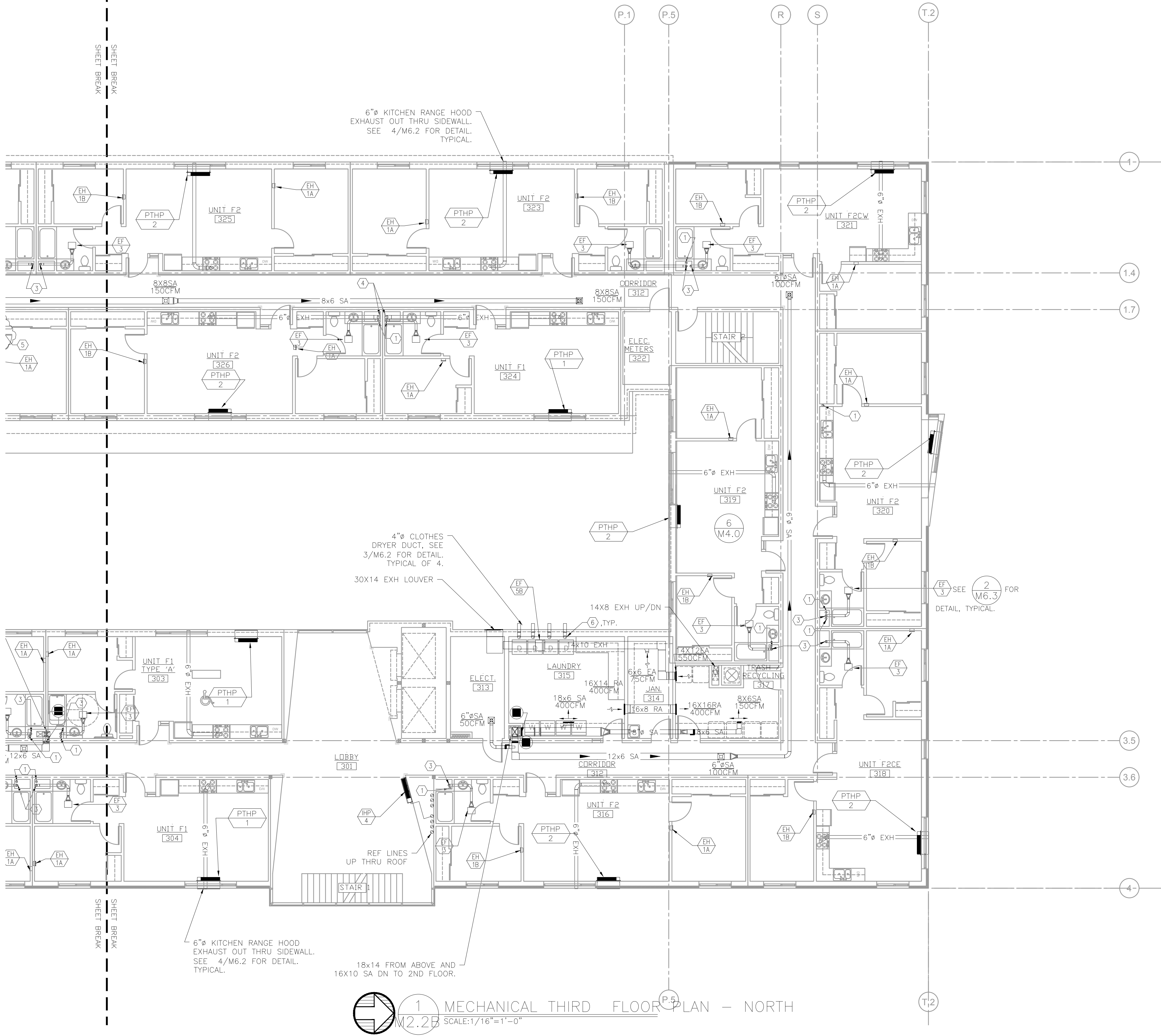
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PROJECT NO. 16-0602  
ISSUE DATE 11.15.2017

REVISIONS

SHEET  
MECHANICAL 3RD  
FLOOR PLAN  
**M2.2B**  
PERMIT SET  
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- KEYED NOTES:**
- 4" BA EXH FROM BELOW AND UP.
  - 6" RANGE HOOD EXH FROM BELOW AND UP.
  - 4" BA EXH UP.
  - 6" RANGE HOOD EXH UP THRU ROOF.
  - 6" EXH UP.
  - LINT TRAPS ON DRYER. SEE 5/M6.4 FOR DETAIL. 4" DRYER EXHAUST DUCT WITH RECESSED DRYER BOX, CONSTRUCTION SOLUTIONS DBX1000, OR APPROVED EQUAL WITH FIRE/SMOKE DAMPER INSTALLATION.
- GENERAL NOTES:**
- LIO & SUCTION REF LINES ARE SHOWN AS A SINGLE PIPE FOR THE PURPOSE OF SHOWING ROUTING OF THE PIPING.
  - SIDEWALL EXHAUST TERMINATIONS TO BE LOCATED 3'-0" MIN RADIUS FROM ANY OPERABLE WINDOWS. SEE ARCHITECTURAL ELEVATIONS.
  - TYPICAL DRYER DUCT TO BE CONSTRUCTED AS FOLLOWS: MATERIAL SHALL HAVE A SMOOTH INTERIOR FINISH AND BE 0.016 INCH THICK. RIVET OR SCREW PENETRATIONS TO THE DUCT WALL ARE NOT ACCEPTABLE. DRYER DUCT SHALL BE SUPPORTED EVERY 4 FOOT INTERVALS.
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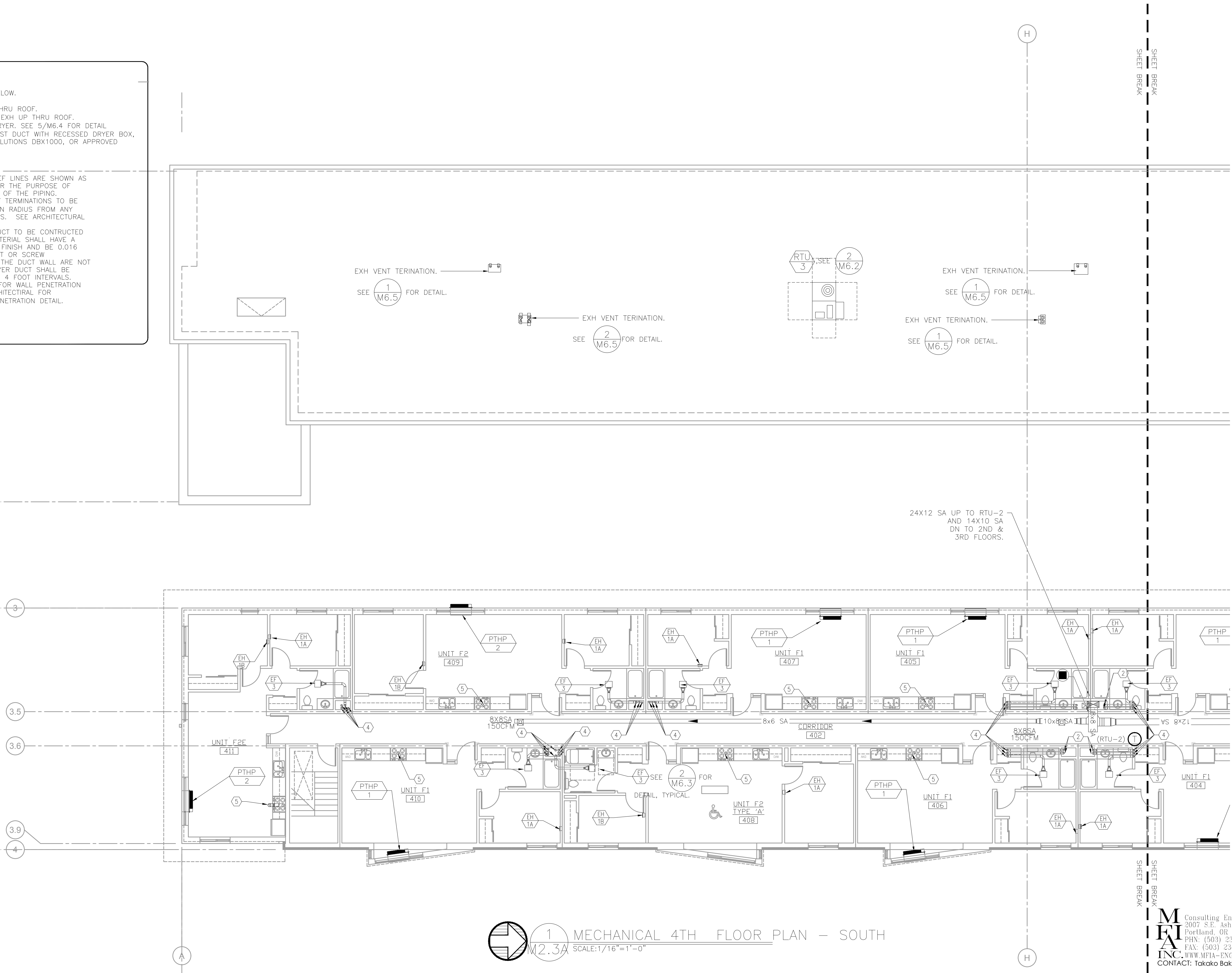
**1 MECHANICAL THIRD FLOOR PLAN - NORTH**  
SCALE: 1/16" = 1'-0"

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- KEYED NOTES:**
- 4"Ø EXH FROM BELOW.
  - 4"Ø EA EXH UP THRU ROOF.
  - 6"Ø RANGE HOOD EXH UP THRU ROOF.
  - LINT TRAPS ON DRYER. SEE 5/M6.4 FOR DETAIL.
  - 4"Ø DRYER EXHAUST DUCT WITH RECESSED DRYER BOX, CONSTRUCTION SOLUTIONS DBX1000, OR APPROVED EQUAL.
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1 MECHANICAL 4TH FLOOR PLAN - SOUTH  
 M2.3A SCALE: 1/16"=1'-0"

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 CONTACT: Takako Baker

**KING+PARKS MULTI-FAMILY RESIDENCES**

PROJECT SITE: NE Martin Luther King Jr. Boulevard & N Rosa Parks Way  
 OWNER: Portland Community Reinvestment Initiatives Inc. (PCRI)  
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PROJECT NO. 16-0602  
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SHEET  
 MECHANICAL 4TH  
 FLOOR PLAN  
**M2.3A**

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# KING+PARKS MULTI-FAMILY RESIDENCES

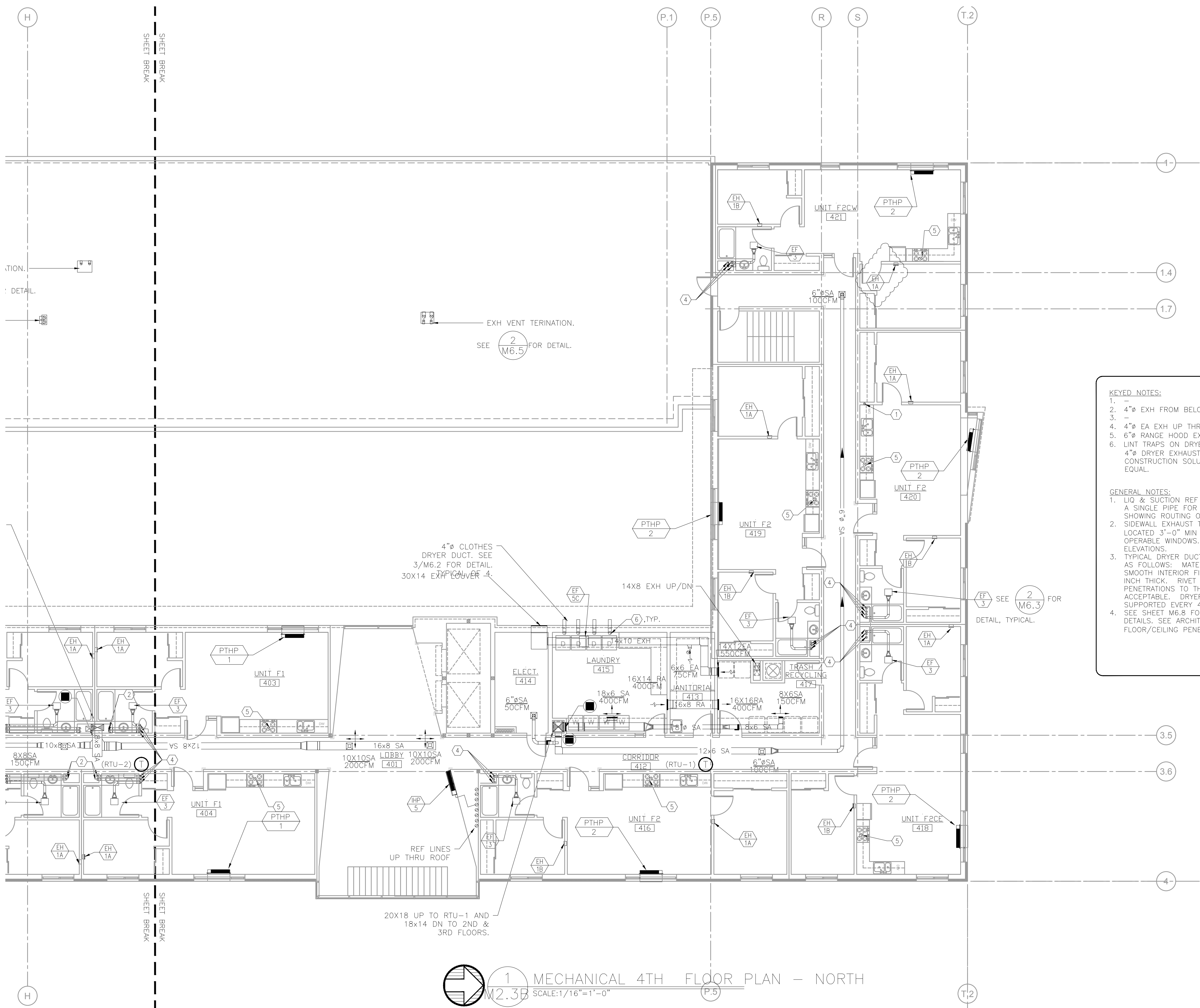
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SHEET  
 MECHANICAL 4TH FLOOR PLAN - NORTH  
**M2.3B**  
 PERMIT SET  
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**KEYED NOTES:**

1. -
2. 4" EXH UP FROM BELOW.
3. -
4. 4" EA EXH UP THRU ROOF.
5. 6" RANGE HOOD EXH UP THRU ROOF.
6. LINT TRAPS ON DRYER. SEE 5/M6.4 FOR DETAIL.

4" DRYER EXHAUST DUCT WITH RECESSED DRYER BOX. CONSTRUCTION SOLUTIONS DBX1000, OR APPROVED EQUAL.

**GENERAL NOTES:**

1. LIQ & SUCTION REF LINES ARE SHOWN AS A SINGLE PIPE FOR THE PURPOSE OF SHOWING ROUTING OF THE PIPING.
2. SIDEWALL EXHAUST TERMINATIONS TO BE LOCATED 3'-0" MIN RADIUS FROM ANY OPERABLE WINDOWS. SEE ARCHITECTURAL ELEVATIONS.
3. TYPICAL DRYER DUCT TO BE CONTRACTED AS FOLLOWS: MATERIAL SHALL HAVE A SMOOTH INTERIOR FINISH AND BE 0.016 INCH THICK. RIVET OR SCREW PENETRATIONS TO THE DUCT WALL ARE NOT ACCEPTABLE. DRYER DUCT SHALL BE SUPPORTED EVERY 4 FOOT INTERVALS.
4. SEE SHEET M6.8 FOR WALL PENETRATION DETAILS. SEE ARCHITECTURAL FOR FLOOR/CEILING PENETRATION DETAIL.

1 MECHANICAL 4TH FLOOR PLAN - NORTH  
 M2.3B SCALE: 1/16" = 1'-0"

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**KING+PARKS MULTI-FAMILY RESIDENCES**

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NO.	REVISIONS

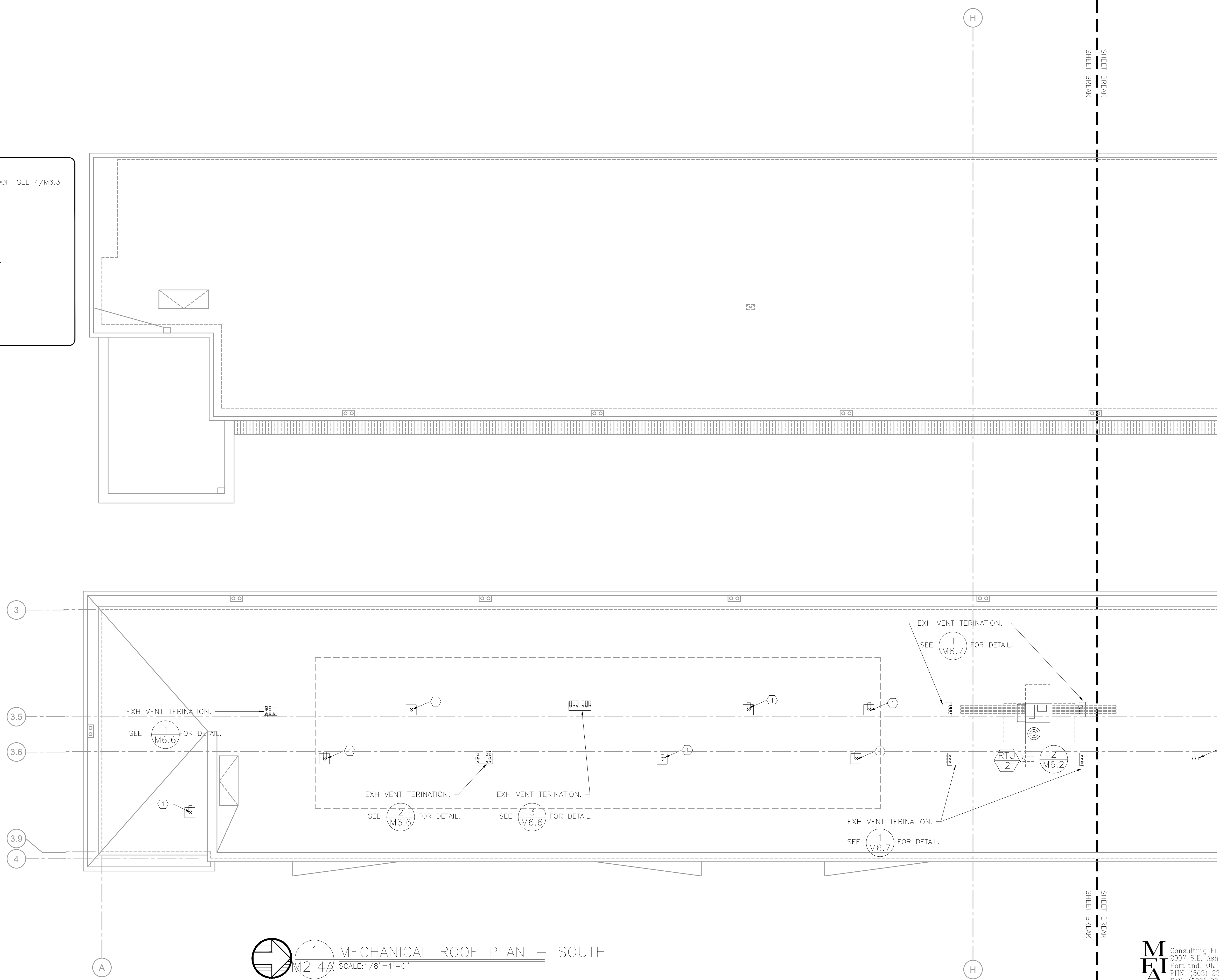
SHEET  
**MECHANICAL**  
**ROOF PLAN - NORTH**  
**M2.4A**

**PERMIT SET**  
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**KEYED NOTES:**  
 1. 6"Ø RANGE HOOD VENT TERMINATION AT ROOF. SEE 4/M6.3 FOR DETAIL.

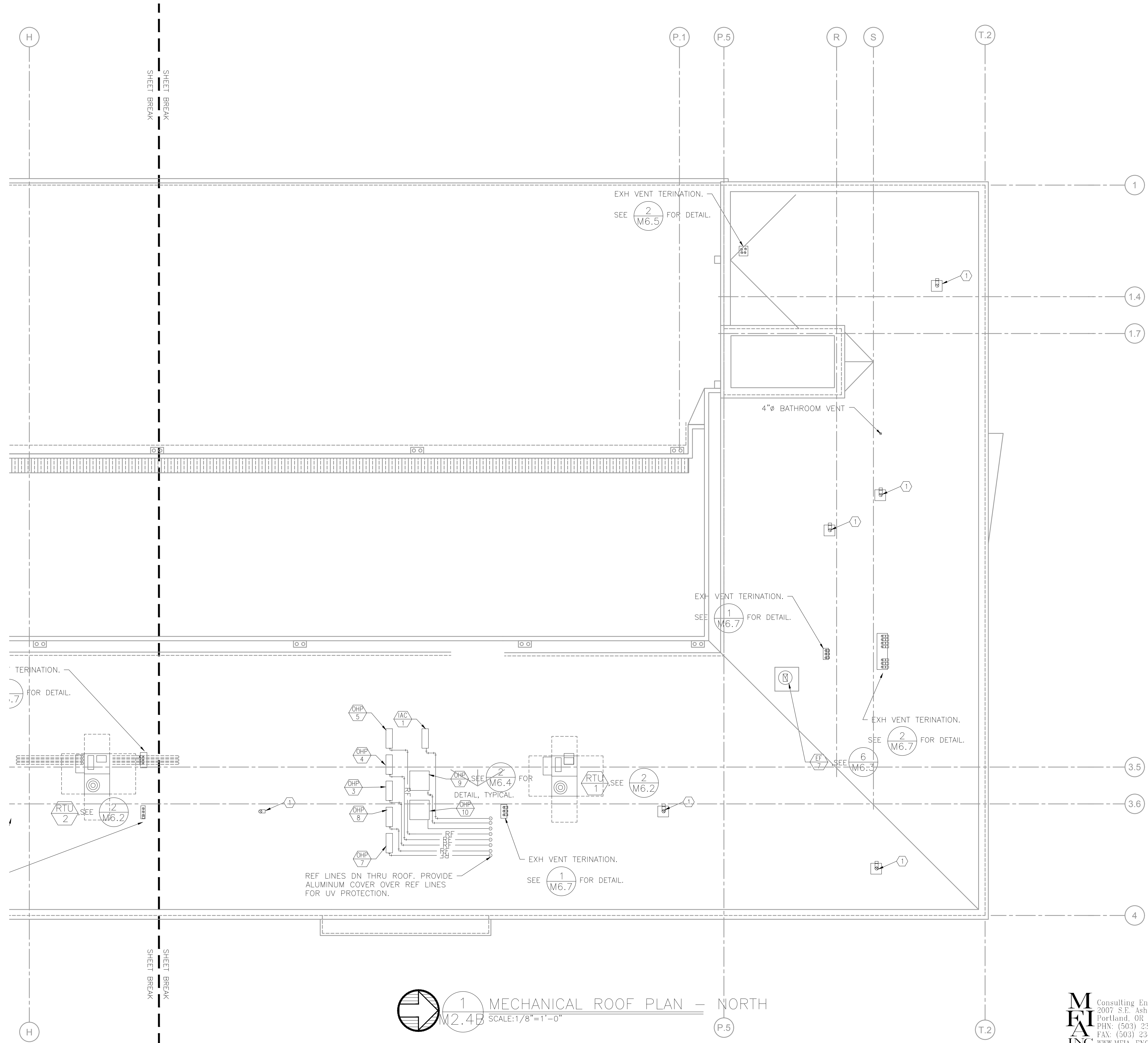
**GENERAL NOTES:**  
 1. LIQ & SUCTION REF LINES ARE SHOWN AS A SINGLE PIPE FOR THE PURPOSE OF SHOWING ROUTING OF THE PIPING.  
 2. OSA INTAKES AT RTU'S TO BE LOCATED MINIMUM OF 10'-0" RADIUS FROM ANY EXHAUST VENTS, PLUMBING VENTS OR FLUE TERMINATIONS.



**1** MECHANICAL ROOF PLAN - SOUTH  
 M2.4A SCALE: 1/8"=1'-0"

**KEYED NOTES:**  
 1. 6"Ø RANGE HOOD VENT TERMINATION AT ROOF. SEE 4/M6.3 FOR DETAIL.

**GENERAL NOTES:**  
 1. LIQ & SUCTION REF LINES ARE SHOWN AS A SINGLE PIPE FOR THE PURPOSE OF SHOWING ROUTING OF THE PIPING.  
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**1 MECHANICAL ROOF PLAN - NORTH**  
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SHEET  
**MECHANICAL**  
**ROOF PLAN - NORTH**  
**M2.4B**

**PERMIT SET**  
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# MECHANICAL LEGEND

	SUPPLY AIR DIFFUSER	AFF	ABOVE FINISH FLOOR
	RETURN AIR GRILLE	AHU	AIR HANDLING UNIT
	EXHAUST AIR GRILLE	B.D.	BOTTOM OF DUCT
	PERFORATED RETURN AIR PANEL	BHP	BRAKE HORSEPOWER
	DIRECTIONAL AIR FLOW	BTU	BRITISH THERMAL UNITS
	MANUAL VOLUME DAMPER	CFM	CUBIC FEET PER MINUTE
	SUPPLY OR OUTSIDE AIR DUCT UP & DOWN	CONN.	CONNECTION
	RETURN AIR DUCT UP & DOWN	CONT.	CONTINUATION
	EXHAUST AIR DUCT UP & DOWN	CW	DOMESTIC COLD WATER
	SUPPLY OR OUTSIDE AIR DUCT UP & DOWN	DB	DRY BULB
	RETURN AIR DUCT UP & DOWN	DIA.	DIAMETER
	EXHAUST AIR DUCT UP & DOWN	EA	EXHAUST AIR
	SUPPLY OR OUTSIDE AIR DUCT UP & DOWN	EDB	ENTERING DRY BULB TEMPERATURE
	RETURN AIR DUCT UP & DOWN	EWB	ENTERING WET BULB TEMPERATURE
	EXHAUST AIR DUCT UP & DOWN	EWB	ENTERING WET BULB TEMPERATURE
	SUPPLY OR OUTSIDE AIR DUCT UP & DOWN	FF	FINISH FLOOR
	RETURN AIR DUCT UP & DOWN	FIXT.	FIXTURE
	EXHAUST AIR DUCT UP & DOWN	FPM	FEET PER MINUTE
	SUPPLY OR OUTSIDE AIR DUCT UP & DOWN	FPS	FEET PER SECOND
	RETURN AIR DUCT UP & DOWN	FT.	FEET / FOOT
	EXHAUST AIR DUCT UP & DOWN	GA.	GAUGE
	SUPPLY OR OUTSIDE AIR DUCT UP & DOWN	GPM	GALLONS PER MINUTE
	RETURN AIR DUCT UP & DOWN	H	HEIGHT
	EXHAUST AIR DUCT UP & DOWN	HP	HORSEPOWER
	VAV TERMINAL UNIT	I.D.	INSIDE DIAMETER
	VAV TERMINAL UNIT	IN.	INCHES
	VAV TERMINAL UNIT	L	LENGTH
	VAV TERMINAL UNIT	LBS.	POUNDS
	VAV TERMINAL UNIT	LDB	LEAVING DRY BULB
	VAV TERMINAL UNIT	LWB	LEAVING WET BULB
	VAV TERMINAL UNIT	LWT	LEAVING WATER TEMPERATURE
	VAV TERMINAL UNIT	MAX.	MAXIMUM
	VAV TERMINAL UNIT	MBH	THOUSANDS OF BTUs PER HOUR
	VAV TERMINAL UNIT	MIN.	MINIMUM
	VAV TERMINAL UNIT	NC	NOISE CRITERIA
	VAV TERMINAL UNIT	N.C.	NORMALLY CLOSED
	VAV TERMINAL UNIT	N.I.M.	NOT IN MECHANICAL
	VAV TERMINAL UNIT	NO.	NUMBER
	VAV TERMINAL UNIT	N.O.	NORMALLY OPEN
	VAV TERMINAL UNIT	O.A.	OUTSIDE AIR
	VAV TERMINAL UNIT	P	PERSON
	VAV TERMINAL UNIT	PSI	POUNDS PER SQUARE INCH
	VAV TERMINAL UNIT	P/T	PRESSURE / TEMPERATURE
	VAV TERMINAL UNIT	R.A.	RETURN AIR
	VAV TERMINAL UNIT	RECT.	RECTANGULAR
	VAV TERMINAL UNIT	REQ'D	REQUIRED
	VAV TERMINAL UNIT	S.A.	SUPPLY AIR
	VAV TERMINAL UNIT	S.P.	STATIC PRESSURE
	VAV TERMINAL UNIT	SO.	SQUARE
	VAV TERMINAL UNIT	TEMP.	TEMPERATURE
	VAV TERMINAL UNIT	TYP.	TYPICAL
	VAV TERMINAL UNIT	VAV	VARIABLE AIR VOLUME
	VAV TERMINAL UNIT	W	WIDTH
	VAV TERMINAL UNIT	WB	WET BULB
	VAV TERMINAL UNIT	WPD	WATER PRESSURE DROP
	VAV TERMINAL UNIT	Ø	DIAMETER
	PRESSURE GAUGE	(E)	EXISTING
	PET'S PLUG	(D)	DEMOLISH
	DOUBLE CHECK ASSEMBLY		NEW WORK
	PRESSURE REDUCING VALVE	HWS	(HWS) HEATING WATER SUPPLY
	UNION	HWR	(HWR) HEATING WATER RETURN
	2-WAY CONTROL VALVE		FIRE DAMPER
	3-WAY CONTROL VALVE		FIRE / SMOKE DAMPER
	CAP		SMOKE DAMPER
	SMOKE DETECTOR		SEISMIC BRACING
	MOTORIZED DAMPER		LATERAL BRACING
			LONGITUDINAL BRACING
			LONGITUDINAL & LATERAL BRACING

### VENTILATION AIR SCHEDULE

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)	BATHROOM EXHAUST (CFM)
	Az	Pz	Rp	Ra	Vbz		
<b>Residential Units</b>							
Townhouse 2 BED 1.5 BA			3	15		45	60
							90
							EF-1:CONTINUOUS
							EF-2: ON/OFF WITH MOTION SENSOR
Townhouse 3 BED 2 BA			4	15		60	60
							90
							EF-1:CONTINUOUS
							EF-2: ON/OFF WITH MOTION SENSOR
2 BED 1 BA			3	15		45	45/60
							EF-3: LOW SPEED CONTINUOUS/
							HIGH SPEED WITH MOTION SENSOR
ADA Suite: 3 BED 1.5 BA			3	15		45	60
							90
							EF-1:CONTINUOUS
							EF-2: ON/OFF WITH MOTION SENSOR

### VENTILATION AIR SCHEDULE

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)	AIR SYSTEMS
	Az	Pz	Rp	Ra	Vbz	Ez	Voz	Vpz	Zp			
OFFICE SPACE	460	5	3	5	0.06	43	1.0	43	0.05	800	0	FC-2/OHP-10
COMMUNITY ROOM	1215	50	61	5	0.06	378	1.0	378	0.31	1200	0	FC-1/OHP-9
CORRIDORS 312	1187	0	0	0	0.06	71	1.0	71	0.08	900	0	RTU-3
CORRIDORS 412	760	0	0	0	0.06	46	1.0	46	0.23	200	0	RTU-1
LAUNDRY 415	260	20	6	7.5	0.06	61	1.0	400				RTU-1
JANITORIAL 413	110	0	0	0	0	0	1.0					RTU-1
TRASH/RECYLING 417	225	0	0	0	0	0	1.0					RTU-1
ELECT ROOM 414	125	0	0	0	0.12	15	1.0	150	0.30	0	0	RTU-1
CORRIDORS 312	760	0	0	0	0.06	46	1.0	200	0.23	0	0	RTU-1
LAUNDRY 315	260	20	6	7.5	0.06	61	1.0	400				RTU-1
JANITORIAL 313	110	0	0	0	0	0	1.0					RTU-1
TRASH/RECYLING 317	225	0	0	0	0	0	1.0	150				RTU-1
ELECT ROOM 314	125	0	0	0	0.12	15	1.0	50	0.30	0	0	RTU-1
CORRIDORS 212	760	0	0	0	0.06	46	1.0	200	0.23	0	0	RTU-1
LAUNDRY 215	260	20	6	7.5	0.06	61	1.0	400				RTU-1
JANITORIAL 213	110	0	0	0	0	0	1.0					RTU-1
TRASH/RECYLING 217	225	0	0	0	0	0	1.0	150				RTU-1
ELECT ROOM 214	125	0	0	0	0.12	15	1.0	50	0.30	0	0	RTU-1
<b>TOTAL</b>								<b>2400</b>			<b>1875</b>	
CORRIDORS 402	760	0	0	0	0.06	46	1.0	46	0.15	0	0	RTU-2
CORRIDORS 302	760	0	0	0	0.06	46	1.0	46	0.15	0	0	RTU-2
CORRIDORS 202	760	0	0	0	0.06	46	1.0	46	0.15	0	0	RTU-2
LOBBY 401, 301, 201,101	3823	0	0	0	0.06	229	1.0	229	0.57	0	0	RTU-2
<b>TOTAL</b>								<b>1300</b>				

#### VENTILATION CALCULATIONS:

ALL DWELLING UNITS ARE VENTILATED BY MECHANICAL VENTILATION, SIZED FOR:  
 30 CFM ON 1 BEDROOM UNITS  
 45 CFM ON 2 BEDROOMS UNITS  
 60 CFM ON 3 BEDROOMS UNITS

FRESH AIR INTO UNITS WITH PTACS ARE PROVIDED DIRECTLY THROUGH PTACS.

FRESH AIR INTO UNITS WITH SPLIT SYSTEMS ARE PROVIDED FROM VENTILATION INTAKE INLETS (AMERICAN ALDES AIRLET TL98).

COMMON SPACES AND HALLWAYS ARE VENTILATED BY PACKAGED ROOF TOP UNITS PROVIDING 100% OUTSIDE AIR THAT FAR EXCEEDS THE MINIMUM 0.06 SQFT REQUIREMENT.

SEE VENTILATION SCHEDULES FOR ALL OTHER COMMON SPACES WITH DEDICATED HVAC/VENTILATION SYSTEMS.

### ROOFTOP HVAC UNITS

MARK NUMBER	RTU 1	RTU 2	RTU 3
SYSTEM	WEST HALLWAYS	NORTH HALLWAYS	EAST HALLWAYS
TYPE	C.V.	C.V.	C.V.
DISCHARGE	VERTICAL	VERTICAL	VERTICAL
TOTAL CFM	2400	1300	900
ECONOMIZER	NONE-100% OSA	NONE-100% OSA	NONE-100% OSA
MIN. OSA	-	-	-
MAX OSA (FULL OCCUPANCY)	NA	NA	NA
CO2 CONTROL	NA	NA	NA
EXTERNAL SP. ("H2O)	1.20"	1.0"	0.75
TOTAL SP. ("H2O)	---	---	---
RPM	1007	1007	1007
WHEEL TYPE/ SIZE	F.C. 10X10(DIRECT)	F.C. 1X010 (DIRECT)	F.C. 10X10 (DIRECT)
MOTOR HP.	2.5, NOTE 1	1.0, NOTE 1	0.50" NOTE 1
POWER EXH FAN/ACCESSORY	NONE	NONE	NONE
FILTER TYPE	2"- MERV 8	2"- MERV 8	2"- MERV 8
GAS INPUT/OUTPUT (MBH)	150 / 120	130	90
EFF. (AFUE)	80.0%	82%	82%
STAGES/TYPE	2-S.S. HIGH HEAT	1-S.S. HIGH HEAT	2-S.S. HIGH HEAT
TOTAL CLG. (TONS)	6.0	4.0	3
SENSIBLE CLG. (MBH)	70	34.58	28
ENT. EVAP AIR TEMP (DB/WB.)	90/67	90/67	90/67
LVG. EVAP AIR TEMP (DB/WB.)	55/54	55/54	55/54
AMBIENT AIR (°F)	95	95	95
EER/SEER	11 SEER	14.0 SEER	14.0 SEER
REFRIGERANT	410A	410A	410A
DESIGN WEIGHT (LBS.)	750	650	600
SMOKE DETECTOR (RETURN DUCT)	NO	NO	NO
SPRING ISOLATION ROOF CURB	YES	YES	YES
CONVENIENCE OUTLET - ALWAYS POWERED	YES	YES	YES
VOLTAGE/PHASE	208/3	208/1	208/1
BASIS OF DESIGN - CARRIER MODEL	48TCTA07	48KCTA05	48KCTA04

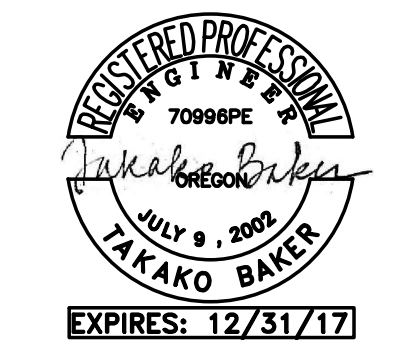
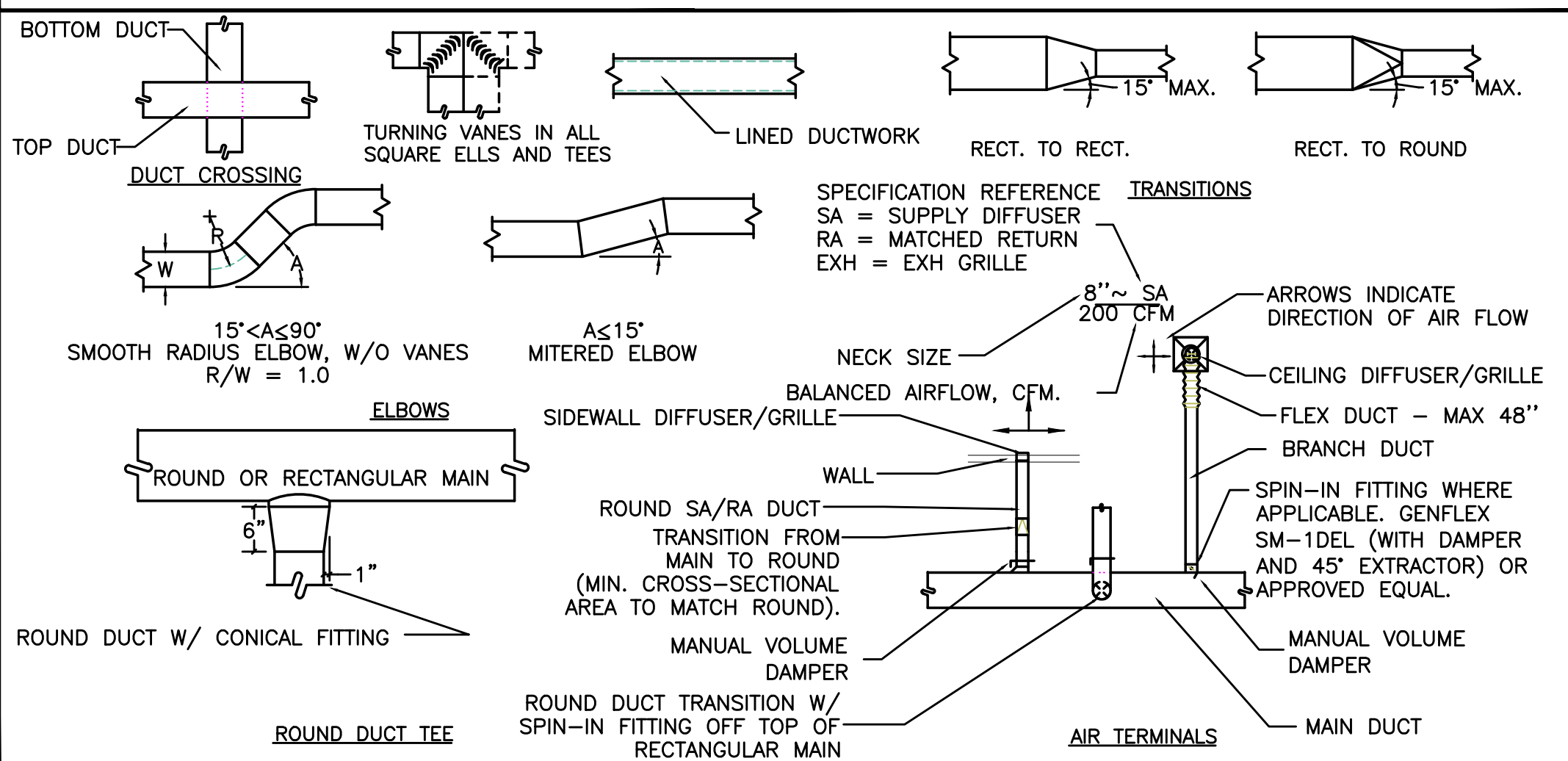
NOTES:  
1. PROVIDE WITH HIGH STATIC FAN.

### PACKAGED TERMINAL HEAT PUMP

MARK NUMBER	PTHP 1	PTHP 2
TYPE	THRU-THE-WALL HEAT PUMP	THRU-THE-WALL HEAT PUMP
SYSTEM	UNITS	UNITS
NOMINAL COOLING CAPACITY (BTUH)	12,000	14,400
HEATING CAPACITY (BTUH)	11,500	13,800
47°F OUTDOOR AIR TEMP		
ELECTRIC HEATING CAPACITY (KW)	3.2	3.2
CFM (HI/LOW) (WET COIL)	340/245	390/340
MIN OSA (CFM)	60	60
LVG. AIR TEMP (°F)	55°F	55°F
REMOTE THERMOSTAT	YES	YES
EFFICIENCY (EER)	11.9	11.2
EFFICIENCY (COP)	3.5	3.1
ARCHITECTURAL GRILLE	YES	YES
DESIGN WT. (LBS)	135	145
ELECT (VOLTS/PHASE/HTZ)	208/1/60	208/1/60
TOTAL AMPS (HEAT)	15.5	15.5
MCA/MOP	19.8/20	19.8/20
CONDENSATE DRAIN KIT	YES	YES
BASIS OF DESIGN: AMMANA	PTHP123	PTHP153

NOTES:  
1. PROVIDE WITH MERV 8 REPLACEABLE FILTERS.

# AIR DISTRIBUTION DETAILS

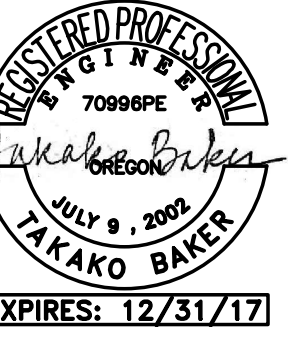


**KING+PARKS MULTI-FAMILY RESIDENCES**  
 PROJECT SITE: NE Martin Luther King Jr. Boulevard & N Rosa Parks Way  
 OWNER: Portland Community Reinvestment Initiatives Inc. (PCRI)  
 6329 NE Martin Luther King Jr. Blvd. Portland, Oregon 97211

PROJECT NO: 16-0602  
 ISSUE DATE: 11.15.2017

SHEET  
**MECHANICAL LEGENDS AND SCHEDULES**  
**M6.0**  
 PERMIT SET  
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SPLIT SYSTEMS/ HEAT PUMP & AC UNITS														
SYSTEM	TOWNHOUSES		1ST FLOOR/2BA&3BA	2ND FLOOR LOBBY	3RD FLOOR LOBBY	4TH FLOOR LOBBY	NOT USED		1ST FLOOR LOBBY	ELECT.	COMMUNITY	WATER HEATER RM	ELEV. MACH	
INDOOR UNIT MARK NUMBER	IHP 1A	IHP 1B	IHP 2	IHP 3	IHP 4	IHP 5	NOT USED		IHP 7	IHP 8	IHP 12	IHP 13	IHP 14	IAC 1
TYPE (INDOOR UNIT)	WALL MTD	DUCTED FC	WALL MTD	WALL MTD	WALL MTD	WALL MTD	NOT USED		WALL MTD	WALL MTD	WALL MTD	WALL MTD	WALL MTD	
HEATING CAPACITY	9000 BTUH	9000 BTUH	18,000 BTUH	36,000 BTUH	36,000 BTUH	36,000 BTUH	NOT USED		34,800 BTUH	-	27,000 BTUH	12,000 BTUH		
COOLING CAPACITY(SENSIBLE)	9000 BTUH	9000 BTUH	20,000 BTUH	22,160 BTUH	22,160 BTUH	22,160 BTUH	NOT USED		21,030 BTUH	14,130 BTUH	18,000 BTUH	8,100 BTUH	26,200 BTUH	
CFM (HIGH)	380 CCFM	305 CCFM	500 CCFM	960 CCFM	960 CCFM	960 CCFM	NOT USED		890 CCFM	583 CCFM	635 CCFM	380 CCFM	920 CCFM	
WEIGHT	20 #	50 #	35 #	50 #	50 #	50 #	NOT USED		50 #	45 #	35 #	35 #	50#	
BASIS OF DESIGN: DAIKIN	FTX09LVJU	FDXS09LVJU	FAQ18PVJU	FTXS36LVJU	FTXS36LVJU	FTXS36LVJU	NOT USED		FTXS30LVJU	FTKN18NMVJU	FAQ24PVJU	FTXS09LVJU	MITSUBISHI *PKA-A36KA4	
OUTDOOR UNIT MARK NUMBER	OHP 1	OHP 2	OHP 2	OHP 3	OHP 4	OHP 5	NOT USED		OHP 7	OHP 8	OHP 12	OHP 13	OHP 14	OAC 1
TYPE (OUTDOOR UNIT)	HEAT PUMP	HEAT PUMP	HEAT PUMP	HEAT PUMP	HEAT PUMP	HEAT PUMP	NOT USED		HEAT PUMP	COOLING ONLY	HEAT PUMP	HEAT PUMP	COOLING ONLY	
OUTDOOR COOLING CAPACITY	18,000 BTU/HR	18,000 BTU/HR	18,000 BTU/HR	36,000 BTU/HR	36,000 BTU/HR	36,000 BTU/HR	NOT USED		31,400 BTU/HR	17,100 BTU/HR	27,000 BTU/HR	9,000 BTU/HR	34,200 BTU/HR	
OUTDOOR HEATING CAPACITY	18,900 BTU/HR	20,000 BTU/HR	34,400 BTU/HR	34,400 BTU/HR	34,400 BTU/HR	34,400 BTU/HR	NOT USED		34,800 BTU/HR		24,000 BTU/HR	12,000 BTU/HR	-	
COOLING EFFICIENCY (SEER)	16.45 SEER	18.6	15.9 SEER	15.9 SEER	15.9 SEER	15.9 SEER	NOT USED		17.5 SEER	15.0	17.6	24.5	14.0	
HTG EFFICIENCY (HSPF/COP)	9.45 HSPF	8.7/3.0	9.2/2.78	9.2/2.78	9.2/2.78	9.2/2.78	NOT USED		9.3/29.2	11	9.1 HPSF	12.5/4.47	-	
MAX PIPING LENGTH	82 FT PER UNIT	165 FT	98 FT	98 FT	98 FT	98 FT	NOT USED		98 FT	98 FT	165 FT	98 FT	165 FT	
MAX PIPING ELEV. CHANGE	49 FT.	98 FT.	66 FT.	66 FT.	66 FT.	66 FT.	NOT USED		66 FT.	66 FT.	98 FT.	66 FT.	100	
OUTDOOR UNIT DESIGN WT.	130 LBS.	150 LBS.	150 LBS.	150 LBS.	150 LBS.	150 LBS.	NOT USED		150 LBS.	150 LBS.	150 LBS.	150 LBS.	165#	
PUMPED CONDENSATE	YES - **	YES - **	YES - **	YES - **	YES - **	YES - **	NOT USED		YES - **	YES - **	YES - **	YES - **	YES - **	
BOD: DAIKIN	2MXS18NMVJU	RZQ18PVJU9	RXS36LVJU	RXS36LVJU	RXS36LVJU	RXS36LVJU	NOT USED		RXS30LVJU	RKN18NMVJU	RZQ24PVJU9	RXS09LVJU	MITSUBISHI *PUY-A36NHA4	
ELECTRICAL	208/1	208/1	208/1	208/1	208/1	208/1	NOT USED		208/1	208/1	208/1	208/1	208/1	

\* - ROUTE CONDENSATE PUMP IN WALL TO A FLOOR ABOVE. PROVIDE A CONDENSATE PUMP WITH MINIMUM 15FT LIFT.  
 \*\* - PROVIDE ALL UNITS THAT CANNOT BE DRAINED BY GRAVITY WITH A CONDENSATE PUMP. ROUTE CONDENSATE DRAINS FROM EACH UNIT TO FLOOR DRAINS OR SINK/LAV TAIL PIECES AS SHOWN ON PLUMBING PLANS. KEEP ALL CONDENSATE DRAINS HIDDEN WITHIN STRUCTURE AS MUCH AS POSSIBLE. COORDINATE ALL CONDENSATE LINES WITH ARCHITECT PRIOR TO INSTALLATION.

### EXHAUST FANS

MARK NUMBER	EF 1	EF 2	EF 3	EF 4	EF 5A	EF 5B	EF 5C	EF 6	EF 7	EF 8
TYPE	CEILING CABINET	CEILING CABINET	CEILING CABINET	CABINET DIRECT DRIVE	CEILING DIRECT DRIVE	CEILING DIRECT DRIVE	CEILING DIRECT DRIVE	CABINET DIRECT DRIVE	ROOF DIRECT DRIVE	CEILING DIRECT DRIVE
SYSTEM	TOWNHOUSE	BATHROOM	BATHROOM	RECYCLING	1ST JAN/TRASH	2ND JAN/TRASH	3RD JAN/TRASH	1ST FL. R.R.	TRASH COMP.	LAUNDRY 104
CFM	60	90	45/90	350	625	625	625	375	500	340
TOTAL SP. (IN H2O)	0.25	0.25	0.25	0.375"	0.50"	0.50"	0.50"	0.375"	0.50"	0.50"
RPM	1100	0/1146	1062/1146	1315	1006	1006	1006	1320	1448	1070
TIP SPEED (FPM)	---	NA	NA	---	---	---	---	---	---	---
MOTOR POWER (HP OR WATTS)	7.8	11.7	5/11.7	135 W	254 W	254 W	254 W	135 WATTS	1/8 HP	224 WATTS
CONTROLLED BY	CONTINUOUS	**	*	CONTINUOUS	CONTINUOUS	CONTINUOUS	CONTINUOUS	CONTINUOUS	CONTINUOUS	HUMIDISTAT
INTERLOCK WITH		MOTION SENSOR	MOTION SENSOR							2-POS DAMPER
FAN SPEED CONTROLLER	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES
WHEEL TYPE	BI	BI	BI	FC	FC	FC	FC	FC	BI	FC
BACK DRAFT DAMPER	GRAVITY	GRAVITY	GRAVITY	GRAVITY	2-POS CONTROL DAMPER			GRAVITY	2-POS CTRL DMP	GRAVITY
ISOLATION	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER
DESIGN WEIGHT (LBS)	25	25	25	25	35	35	35	25	20	35
MAX. SONES	0.6	0.3/0.6	0.3/0.6	3.0	1.2	1.2	1.2	0.7	8.1	4.0
BASIS OF DESIGN:	PANASONIC FV-05-11VK1	PANASONIC FV-05-11VK1	PANASONIC FV-05-11VK1	GREENHECK CSP-A390	GREENHECK CSP-A700	GREENHECK CSP-A700	GREENHECK CSP-A700	GREENHECK CSP-A390	GREENHECK G-095-D	GREENHECK SP-A510
VOLTS/Hz/PHASE	120/60/1	120/60/1	120/60/1	120/60/1	120/60/1	120/60/1	120/60/1	120/60/1	120/60/1	120/60/1

\* - FAN TO RUN AT LOW SPEED CONTINUOUSLY, AND INCREASE TO HIGH SPEED UPON ACTIVATION OF THE MOTION SENSOR. PROVIDE FAN WITH MOTION SENSOR AND MULTI SPEED CONTROL WITH TIME DELAY.  
 \*\* - FAN TO BE NORMALLY OFF. FAN TO OPERATE UPON ACTIVATION OF THE MOTION SENSOR. PROVIDE FAN WITH MOTION SENSOR AND MULTI SPEED CONTROL WITH TIME DELAY.

### ELECTRIC WALL HEATER

MARK NUMBER	EH 1A	EH 1B	EH 1C	EH 2	EH 3	EH 4	EH 5	EH 6	EH 7
TYPE	RECESSED/WALL MTD	RECESSED/WALL MTD	RECESSED/WALL MTD	RECESSED/WALL MTD	RECESSED/WALL MTD	RECESSED/WALL MTD	RECESSED/WALL MTD	RECESSED/WALL MTD	RECESSED/WALL MTD
SYSTEM	BEDROOM	STAIR 3	STAIR 4	STAIR 2	LAUNDRY 104	JANITORS	FIRE RISER ROOM		
VOLTS/PHASE	120/1	208/1	208/1	208/1	208/1	208/1	208/1	208/1	208/1
ELECT HEAT KW	1.5 KW	2.0 KW	2.0 KW	2.0 KW	2.0 KW	2.0 KW	2.0 KW	2.0 KW	2.0 KW
BASIS OF DESIGN-BERKO	SRA1512DSF	SRA2020DSF	SRA2020DSF	SRA2020DSF	SRA2020DSF	SRA2020DSF	SRA2020DSF	SRA2020DSF	SRA2020DSF
NOTES:	1	1,2	1,2	1,2	1,2	3	3	3	3

NOTES:  
 1. PROVIDE TAMPER-PROOF THERMOSTAT, WALL CAN, AND GRILL  
 2. INSTALL ON MIDLANDING BETWEEN 1ST AND 2ND FLOORS.  
 3. SET TO 50°F (ADJUSTABLE).

### INDOOR UNITS

MARK NUMBER	FC 1	FC 2
SYSTEM GROUND FLOOR	COMMUNITY	OFFICE
TYPE	DUCTED	DUCTED
EFFICIENCY	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT
NOMINAL COOLING CAPACITY	36,000 BTUH	24,000 BTUH
HEATING CAPACITY	27,300 BTUH/8 KW ELECT	20,500 BTUH/6 KW ELECT
TOTAL SUPPLY CFM	1200	800
OSA CFM	260	45
EXTERNAL SP. ("H2O)	0.25	0.25
VOLTS/PHASE	208/1	208/1
MCA/MOP	42 MCA/50 MOP	33 MCA/35 MOP
WEIGHT	30	30
BASIS OF DESIGN	FIRST CO 36HXX8	FIRST CO 25HXX6
OUTDOOR UNIT	OHP 9	OHP 10

1. INDOOR UNIT REQUIRES A SEPARATE CONNECTION, SEE WIRING DIAGRAM ON EQUIPMENT CUT SHEET FOR WIRING & PROTECTION DETAILS.  
 2. PROVIDE ALL UNITS THAT CANNOT BE DRAINED BY GRAVITY WITH A CONDENSATE PUMP. ROUTE CONDENSATE DRAINS FROM EACH UNIT TO FLOOR DRAINS SHOWN ON PLUMBING PLANS. KEEP ALL CONDENSATE DRAINS HIDDEN WITHIN STRUCTURE AS MUCH AS POSSIBLE. COORDINATE ALL CONDENSATE LINES WITH ARCHITECT PRIOR TO INSTALLATION.  
 3. PROVIDE UNIT WITH OPTIONAL HIGH STATIC TAP. PROVIDE FAN WITH ECM MOTOR.  
 4. PROVIDE WITH A RETURN FILTER RACK FOR MINIMUM OF MERV 8 FILTERS.

### OUTDOOR UNITS - SPLIT SYSTEM HEAT PUMP

MARK NUMBER	OHP 9	OHP 10
SYSTEM	COMMUNITY	OFFICE
TYPE	HEAT PUMP	HEAT PUMP
NORMAL COOLING CAPACITY	36,000 BTUH	24,000 BTUH
NORMAL HEATING CAPACITY	36,000 BTUH	24,900 BTUH
EFFICIENCY SEER/EER	14.0	14
EFFICIENCY HSPF/COP	8.2	8.2
REFRIGERANT	410 A	410 A
MAX OPERATING TEMPS	115/5	115/5
MAX PIPING LENGTH	200 FT	200 FT
MAX PIPING HEIGHT	80 FT	80 FT
VOLTS-PHASE	208/1	208/1
MCA/MOP	18/30 AMPS	11/15 AMPS
COMPRESSOR	CONSTANT SPEED	CONSTANT SPEED
WEIGHT	270 LBS	250 LBS
BASIS OF DESIGN	CARRIER 25HCE436C030	CARRIER 25HBC524A030

KING+PARKS MULTI-FAMILY RESIDENCES

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 OWNER: Portland Community Reinvestment Initiatives Inc. (PCRI)  
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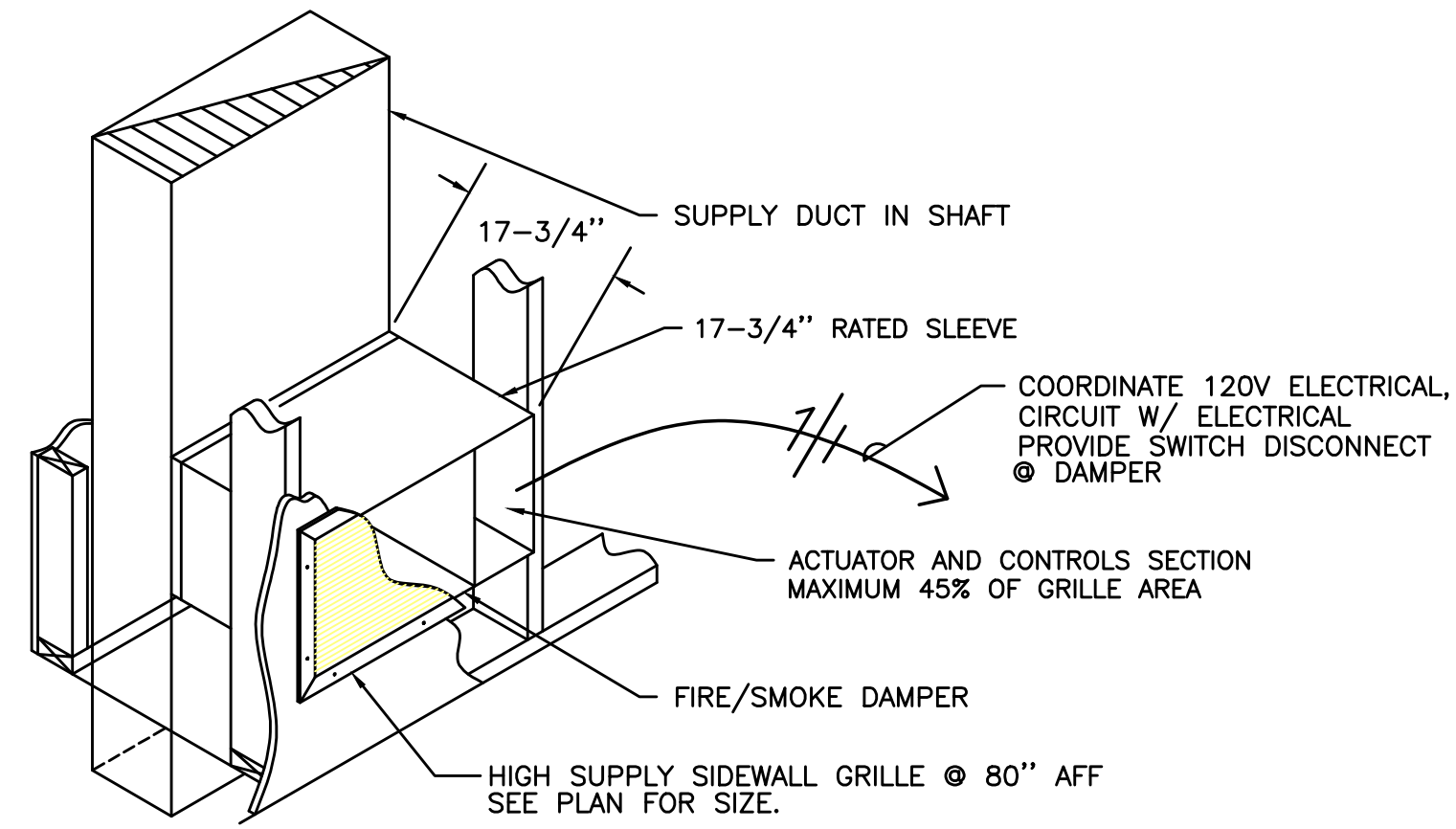
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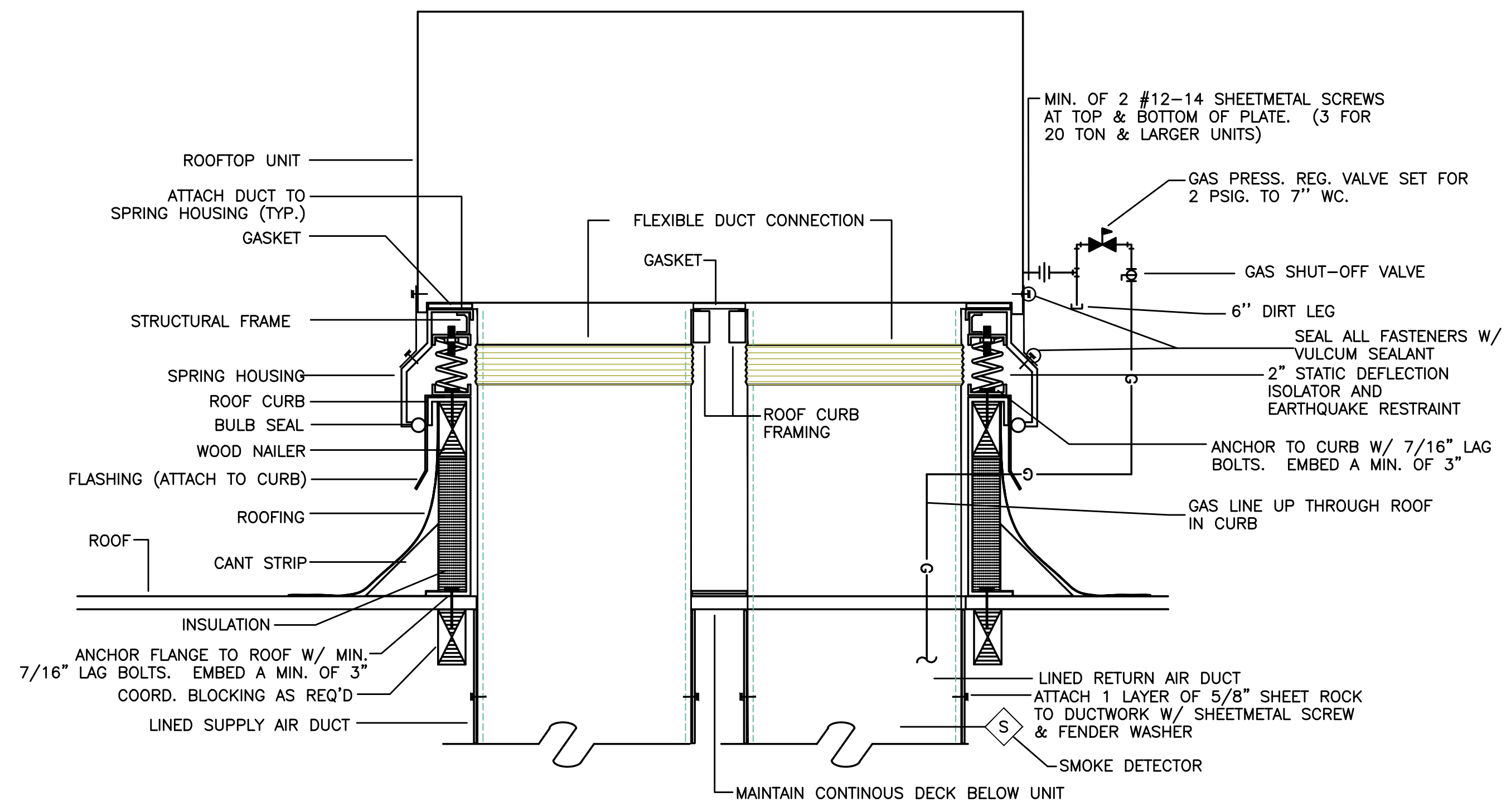
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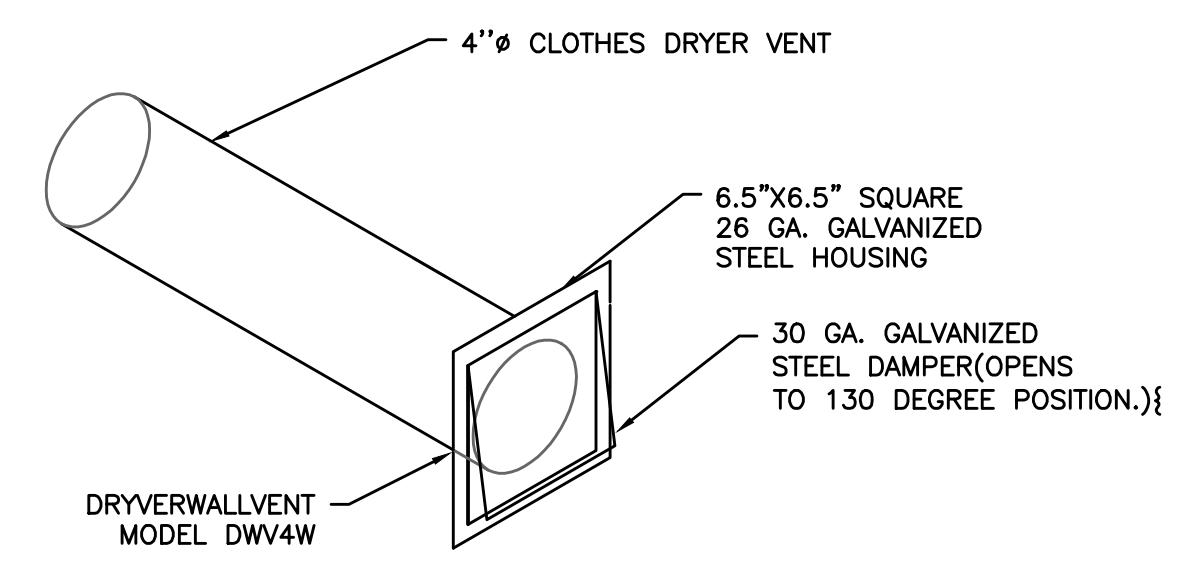
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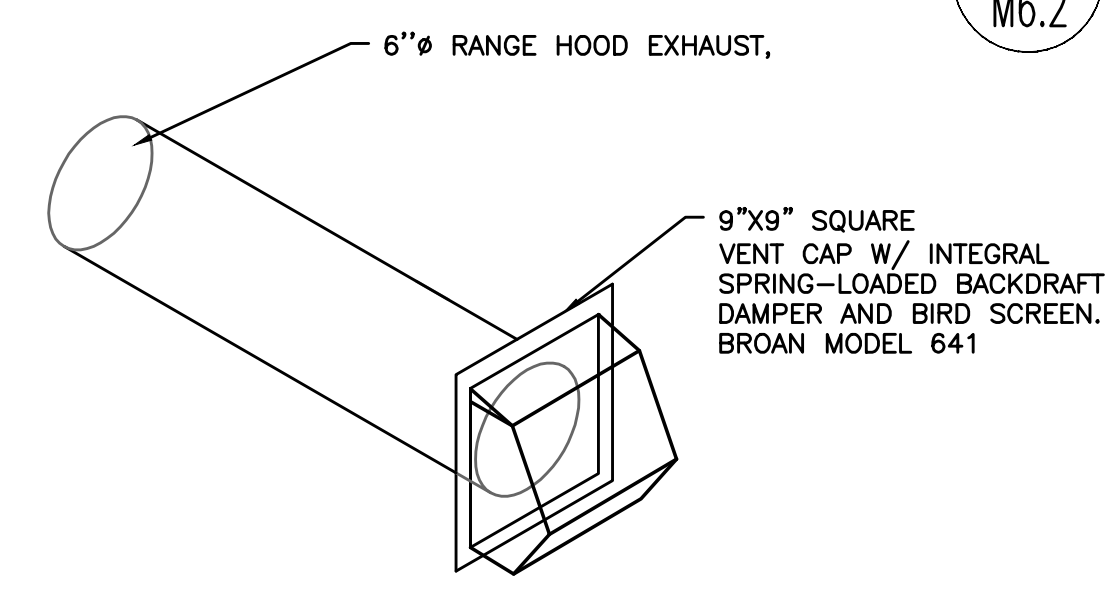
1 HIGH SUPPLY W/ FIRE/SMOKE DAMPER  
M6.2 SCALE: DETAIL



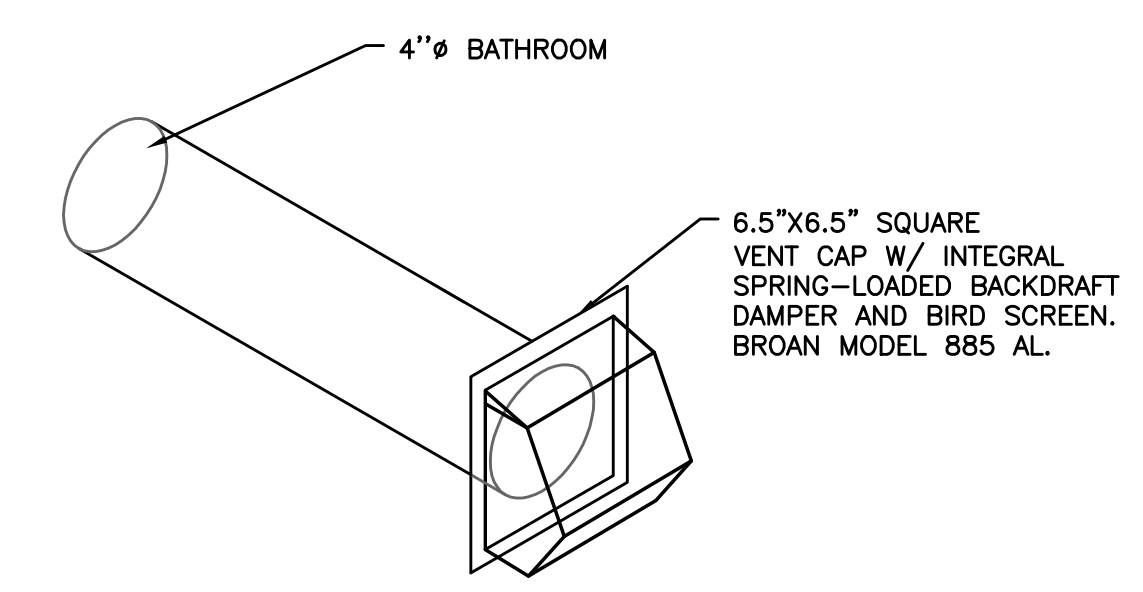
2 ROOF TOP UNIT W/ VIBRATION ISOLATION CURB  
M6.2 SCALE: DETAIL



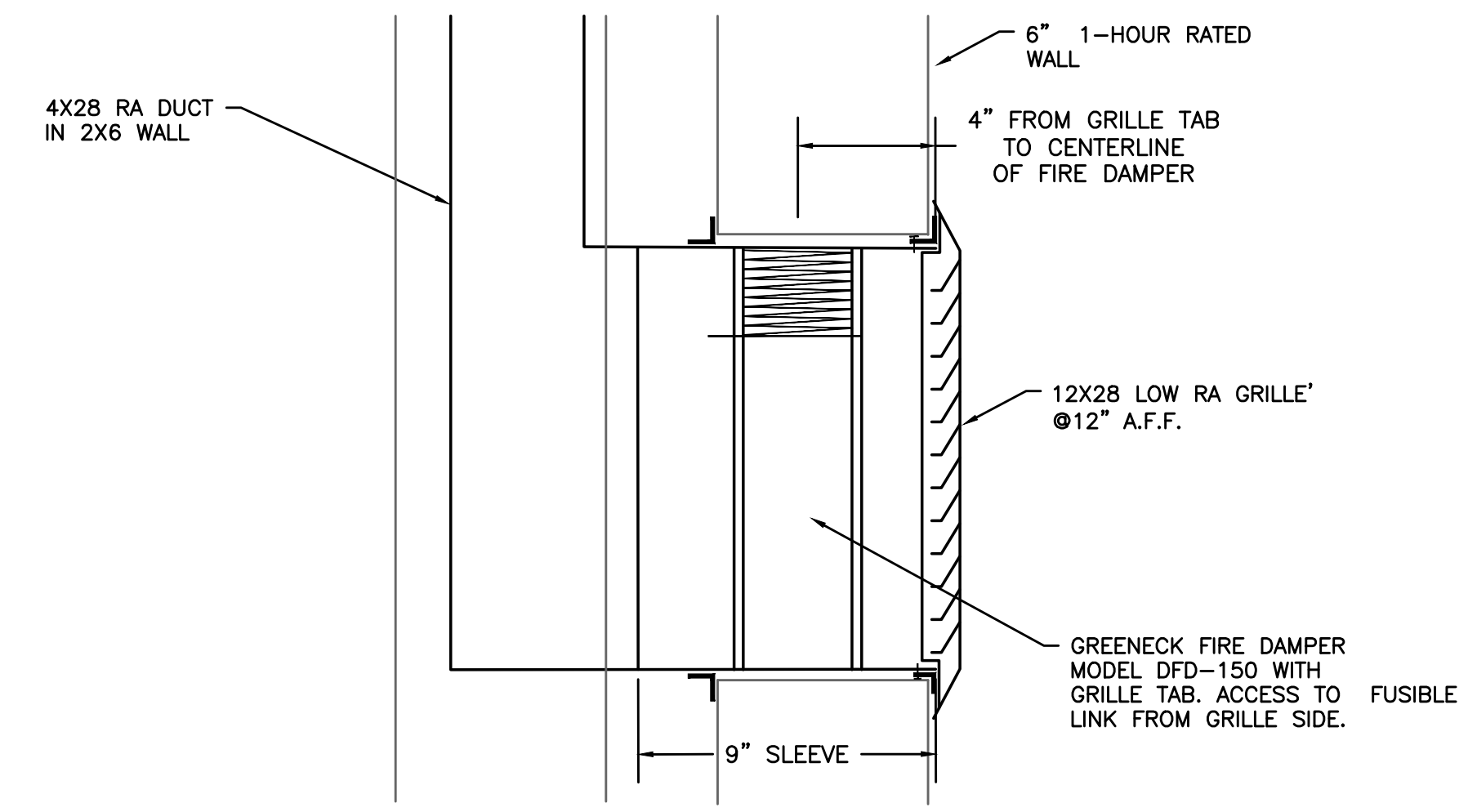
3 CLOTHES DRYER VENTING  
M6.2 NOT TO SCALE



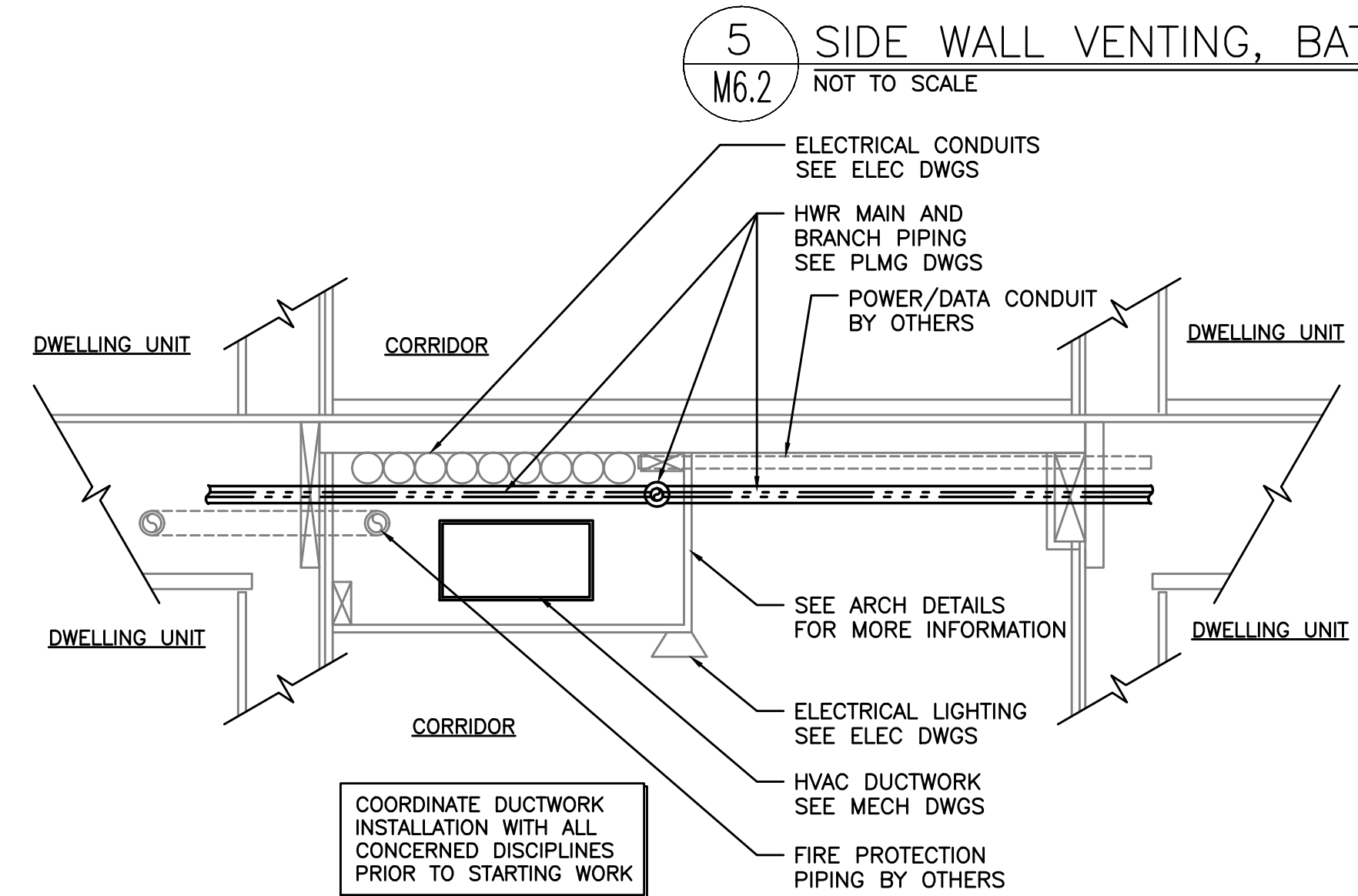
4 SINGLE RANGE HOOD VENT  
M6.2 NOT TO SCALE



5 SIDE WALL VENTING, BATHROOM EXH FAN  
M6.2 NOT TO SCALE



6 LOW RA GRILLE  
M6.2 SCALE: DETAIL



7 DUCT/PIPE SECTION @ CORRIDOR  
M6.2 DIAGRAMATIC

KING+PARKS MULTI-FAMILY RESIDENCES

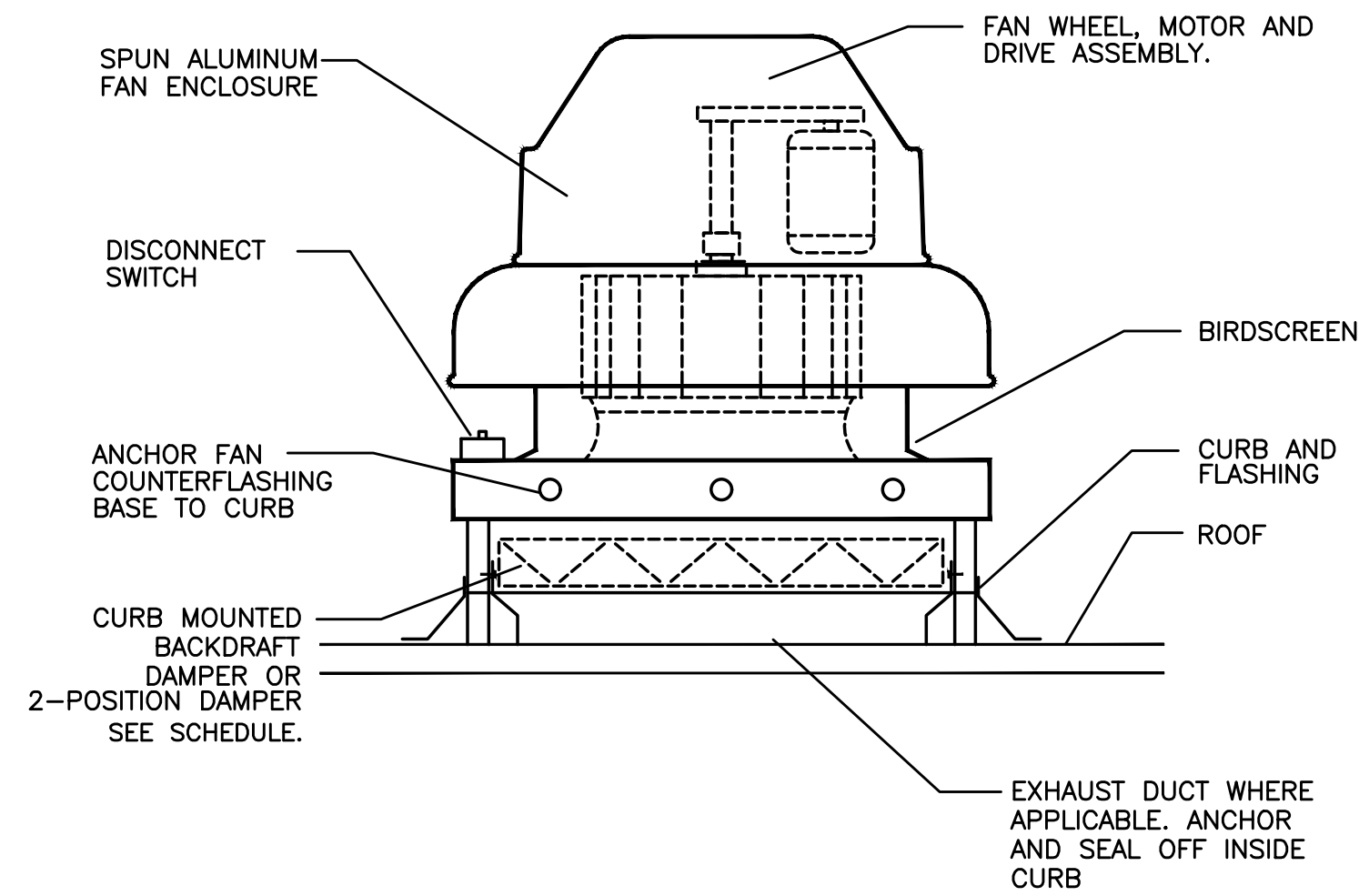
PROJECT SITE: NE Martin Luther King Jr. Boulevard & N Rosa Parks Way  
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MBA

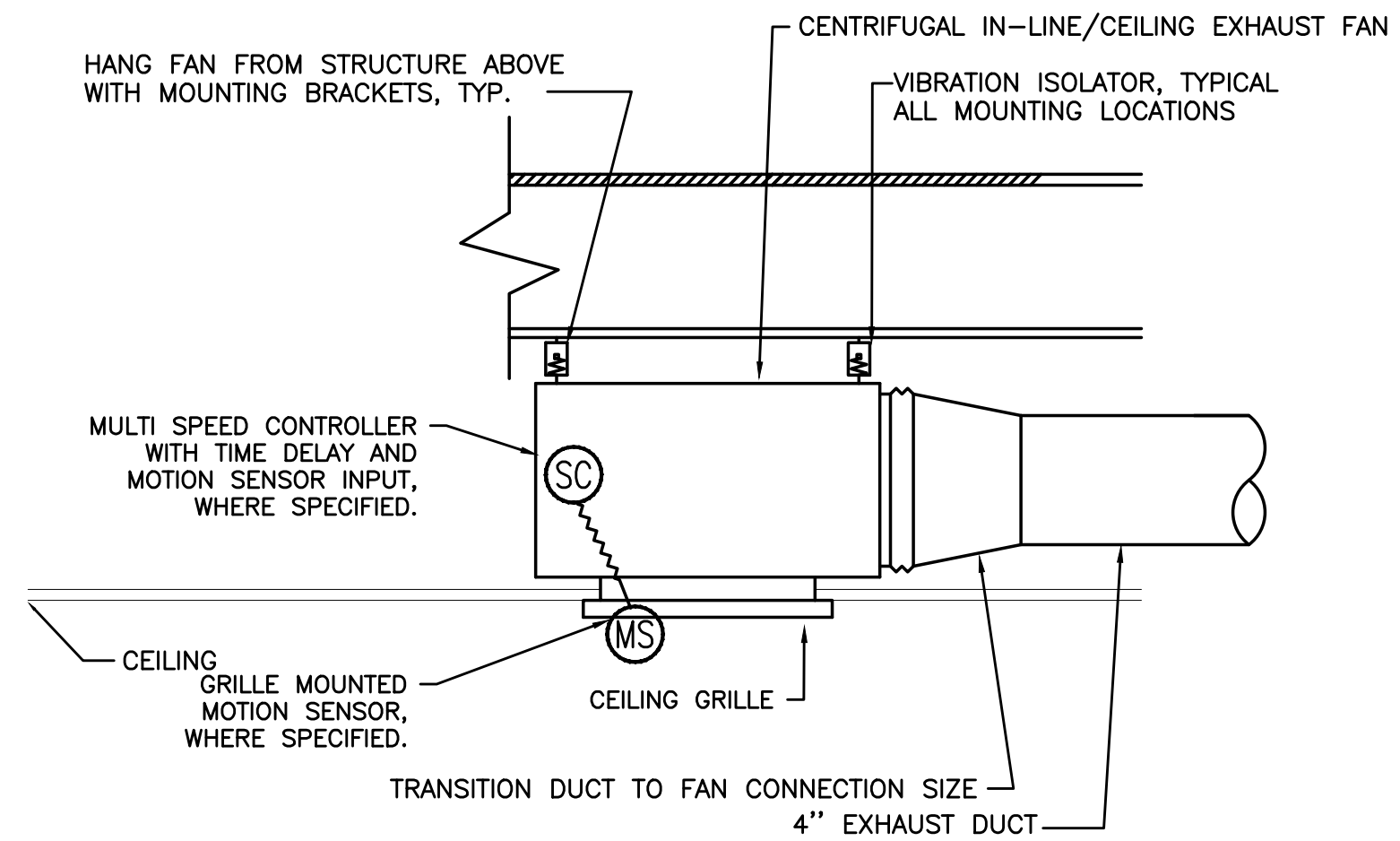
PROJECT NO. 16-0602  
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MECHANICAL DETAILS  
M6.2  
PERMIT SET  
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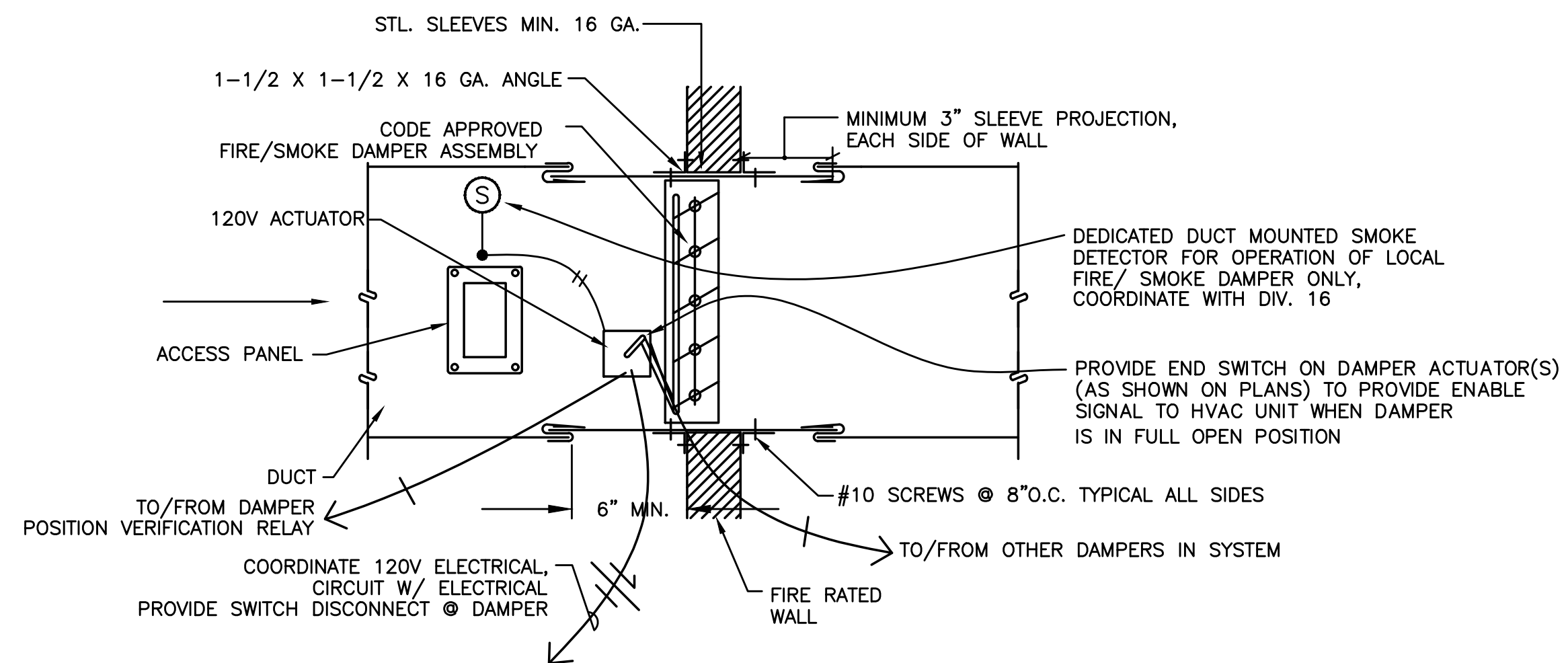
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Consulting Engineers  
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1 EXHAUST FAN  
M6.3 DETAIL



2 RESTROOM EXHAUST FAN  
M6.3 SCALE:DETAIL



3 FIRE/SMOKE DAMPER W/SMOKE DETECTOR  
M6.3 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

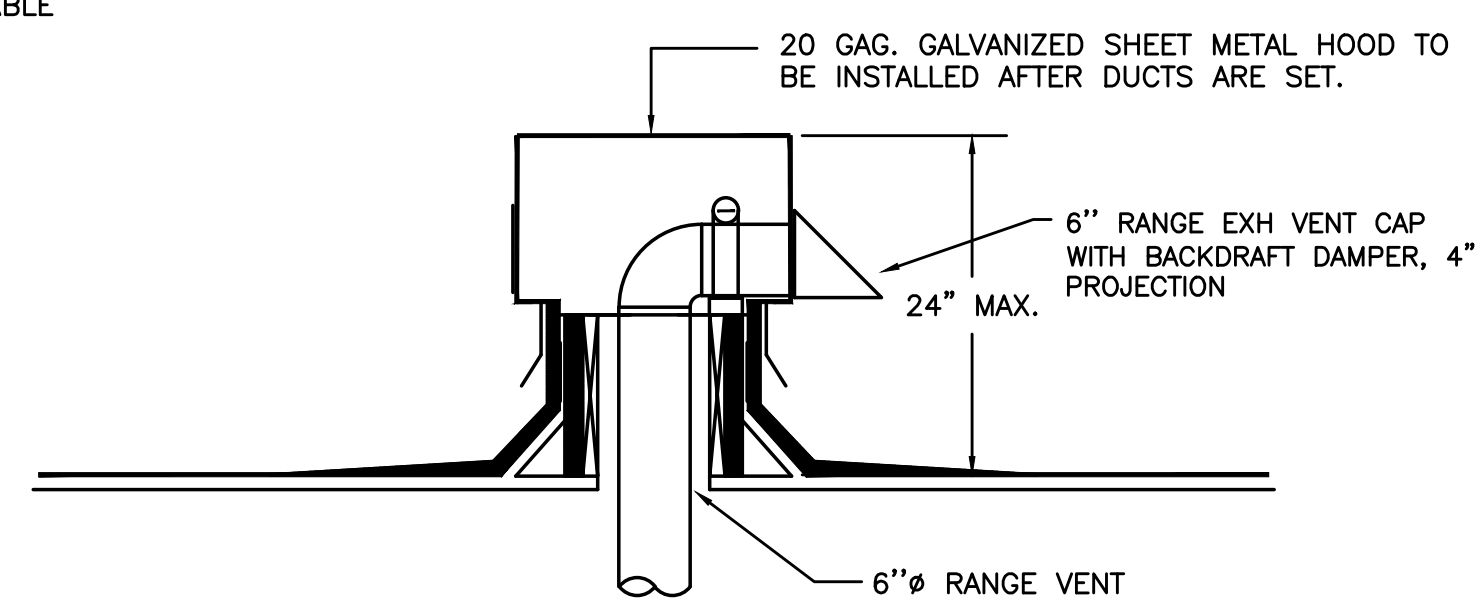
**EXHAUST DUCTS/FANS** - FIRE/SMOKE DAMPER TO CLOSE UPON SHUTDOWN OF ASSOCIATED EXHAUST FAN.

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

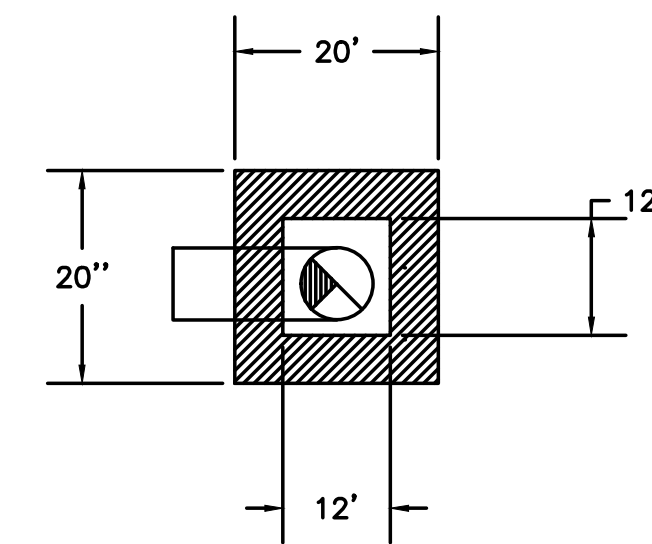
**GENERAL NOTES:**

PROVIDE ACCESS IN CEILING OR WALL FOR DAMPER AND SMOKE DETECTOR

SEE ELECTRICAL DRAWINGS FOR WIRING INSTALLATION

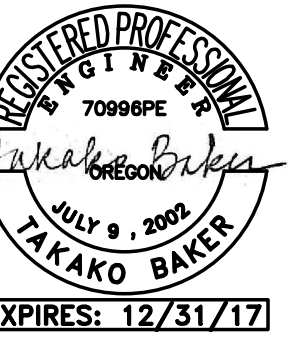


SECTION VIEW



TYPICAL PLAN VIEW (1-6"Ø DUCT)

4 TYPICAL ROOFTOP OUTLET HOOD  
M6.3 NOT TO SCALE



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CONTACT: Takako Baker



**KING+PARKS MULTI-FAMILY RESIDENCES**

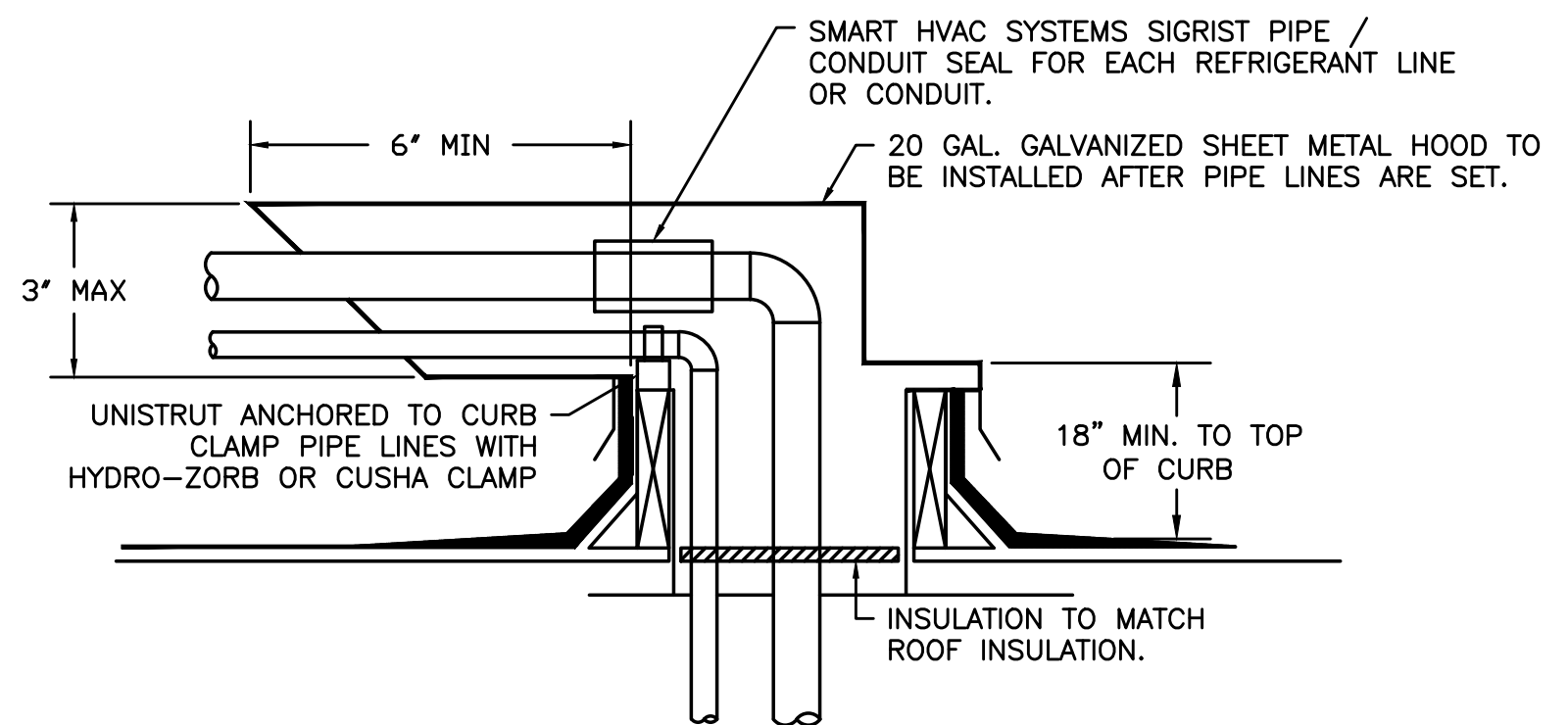
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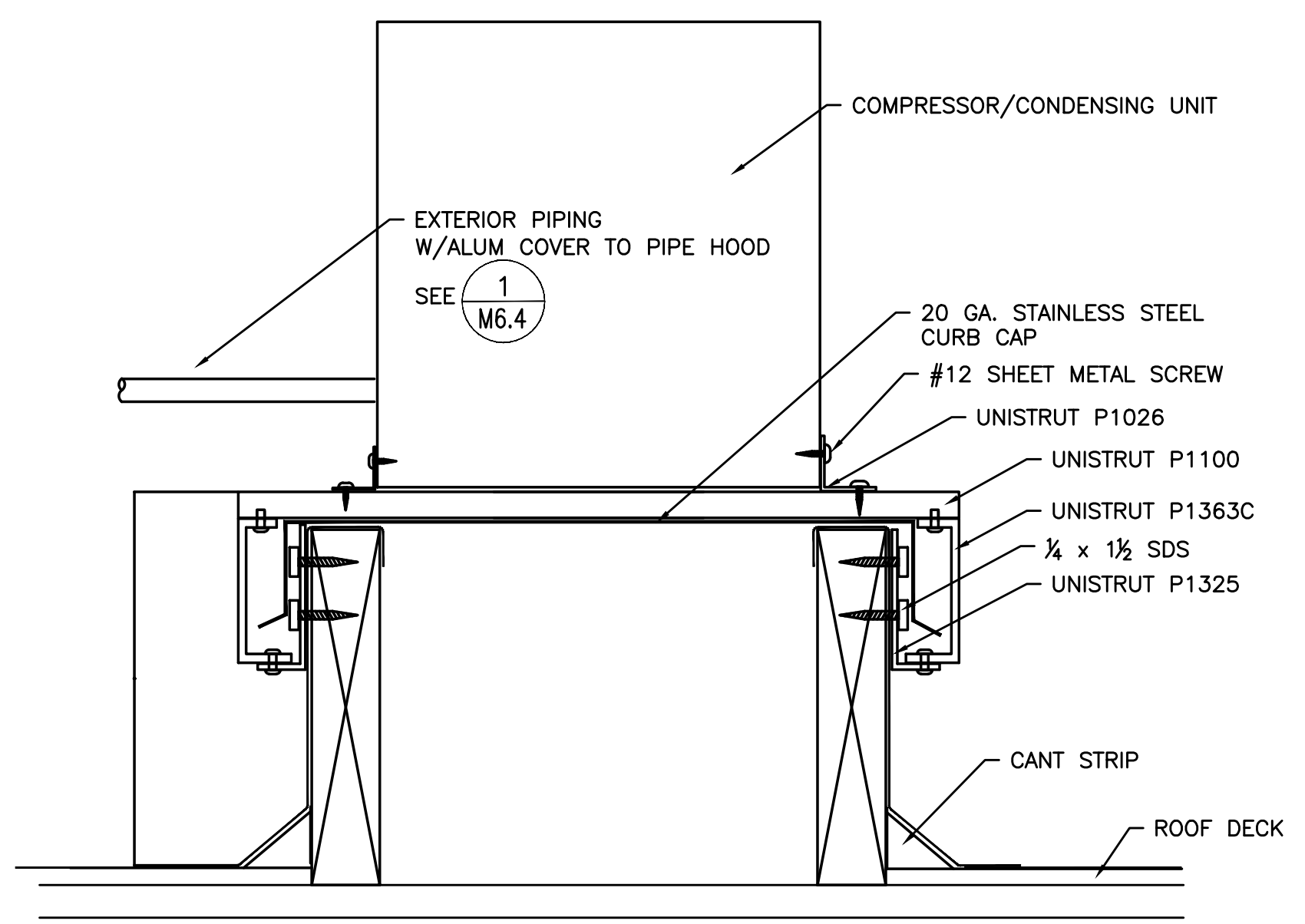
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**M6.4**  
 PERMIT SET  
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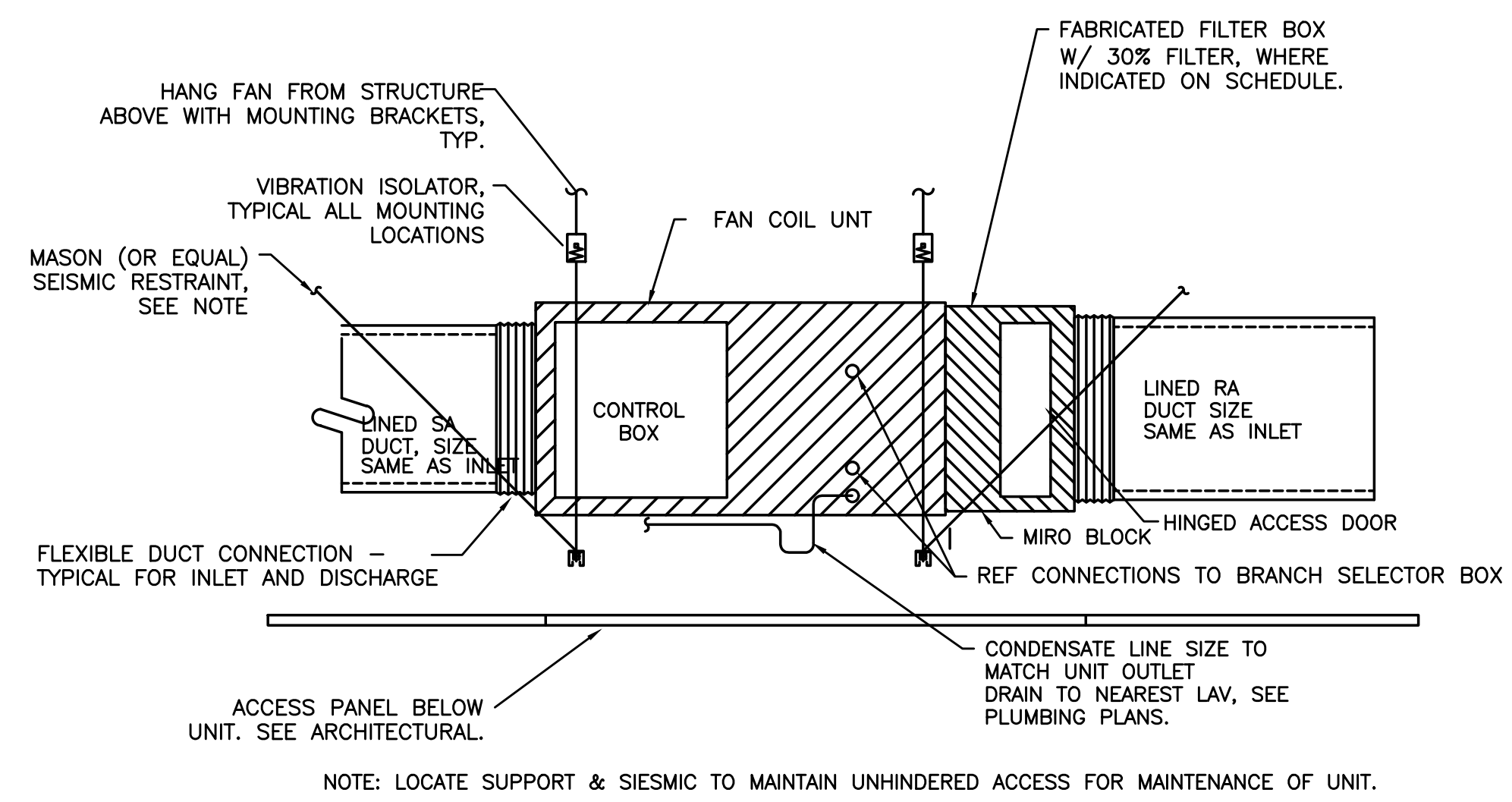


**1** PIPE HOOD DETAIL  
 M6.4 SCALE: DETAIL



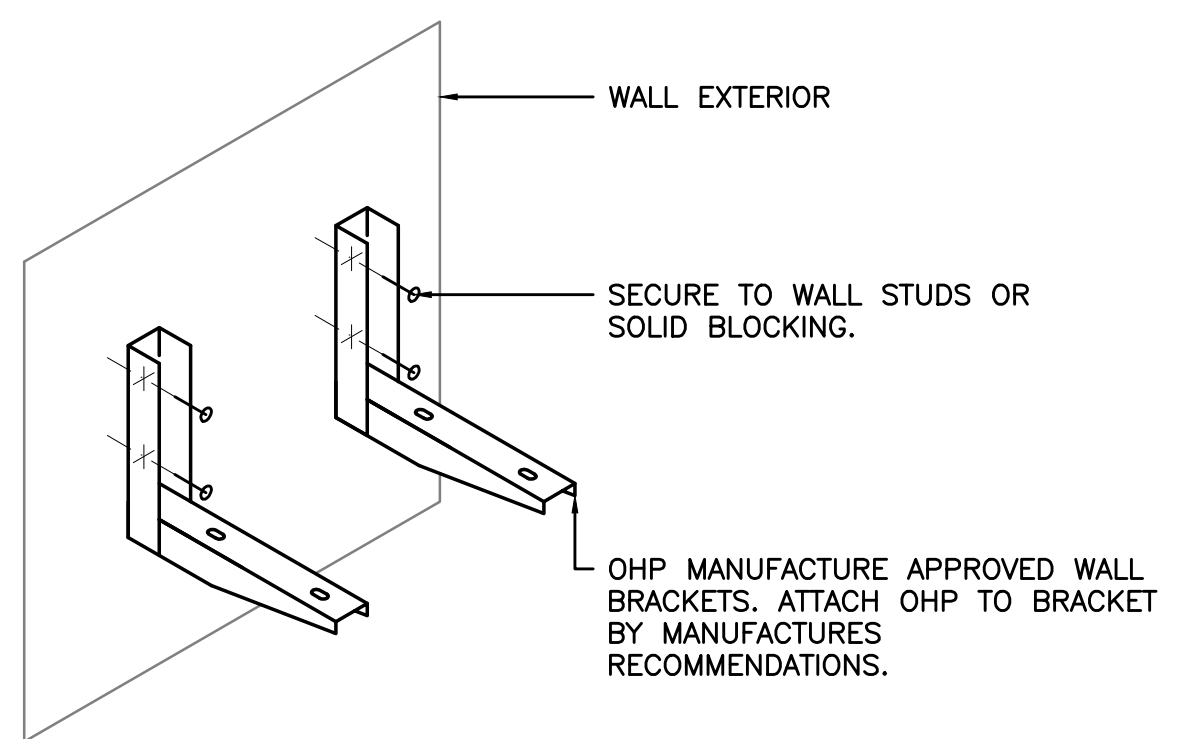
NO ANCHORS IN CURB CAP ALLOWED

**2** CONDENSER W/ CURB  
 M6.4 SCALE: DETAIL

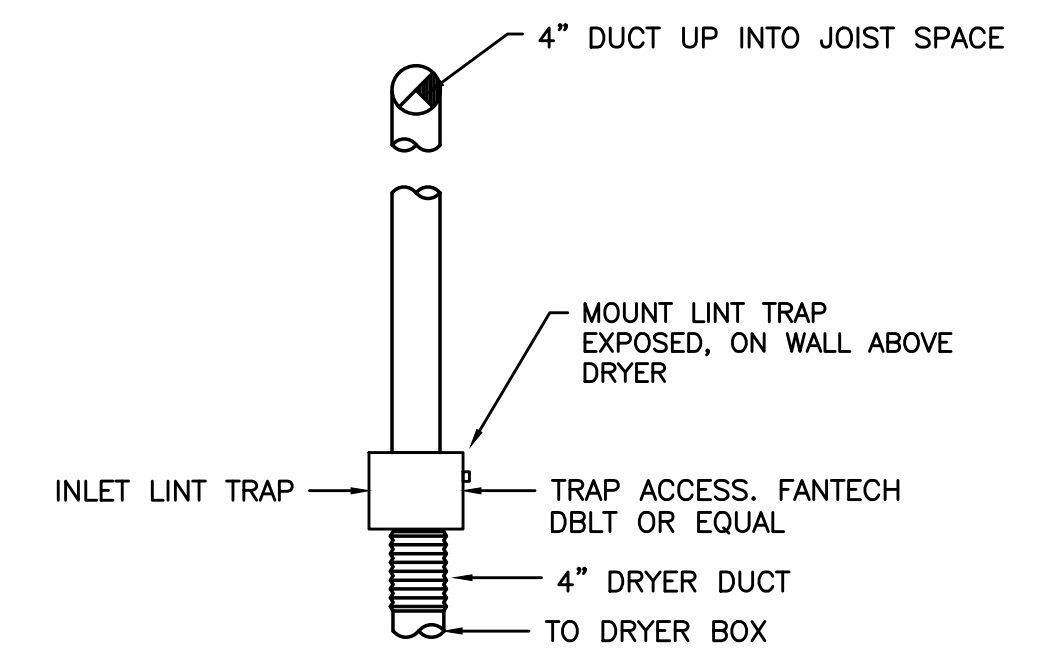


NOTE: LOCATE SUPPORT & SIESMIC TO MAINTAIN UNHINDERED ACCESS FOR MAINTENANCE OF UNIT.

**3** DUCTED FAN COIL (IHP)  
 M6.4 SCALE: DETAIL

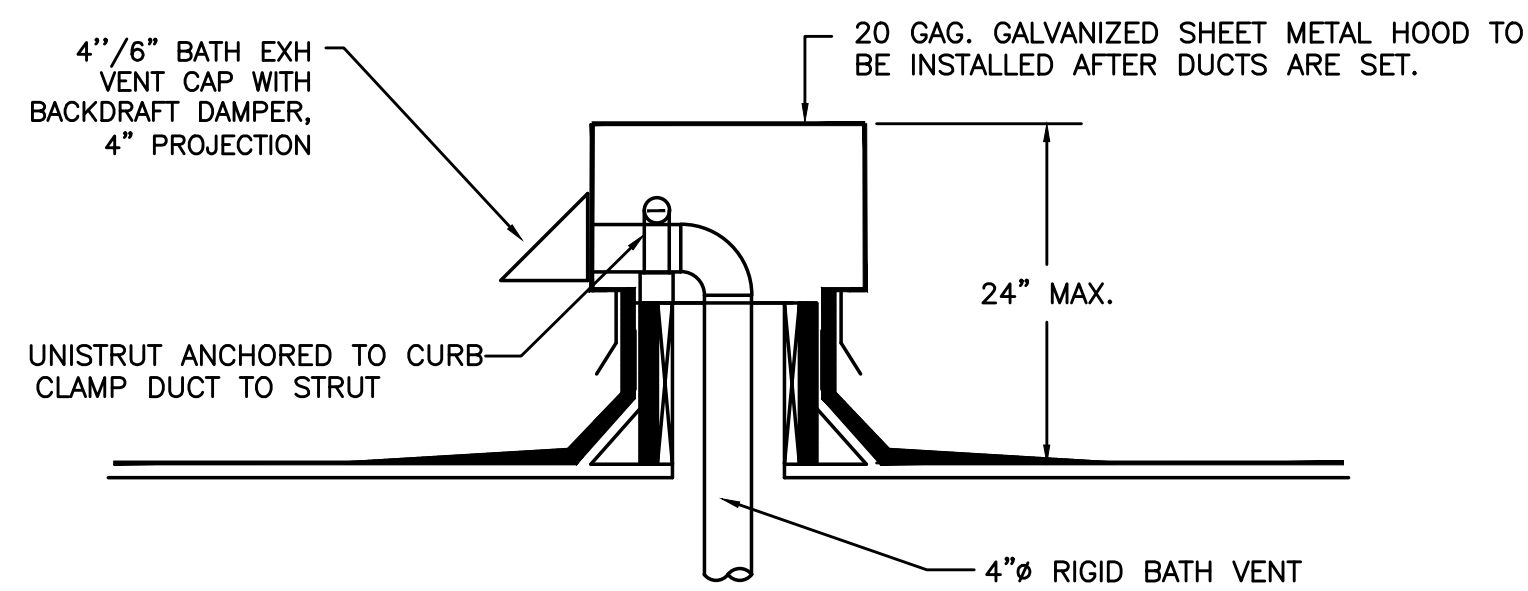


**4** OHP MOUNTING DETAIL  
 M6.4 SCALE: DETAIL

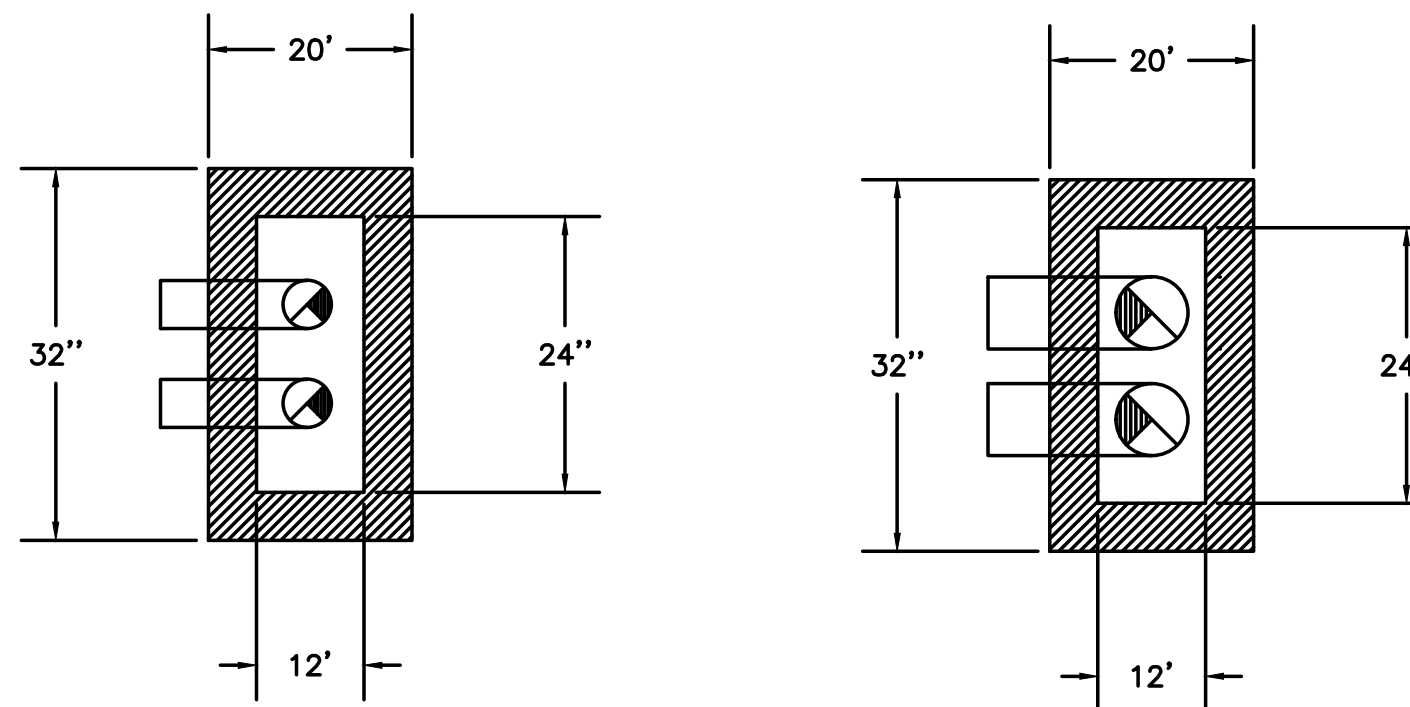


**5** LINT TRAP  
 M6.4 DETAIL

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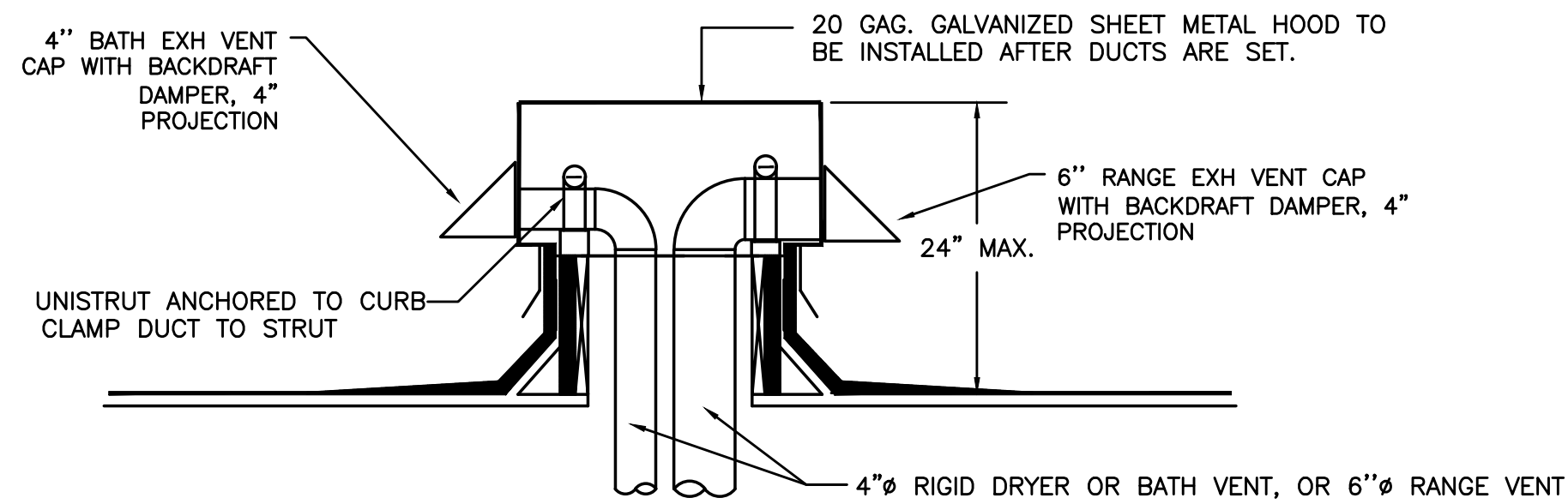


SECTION VIEW

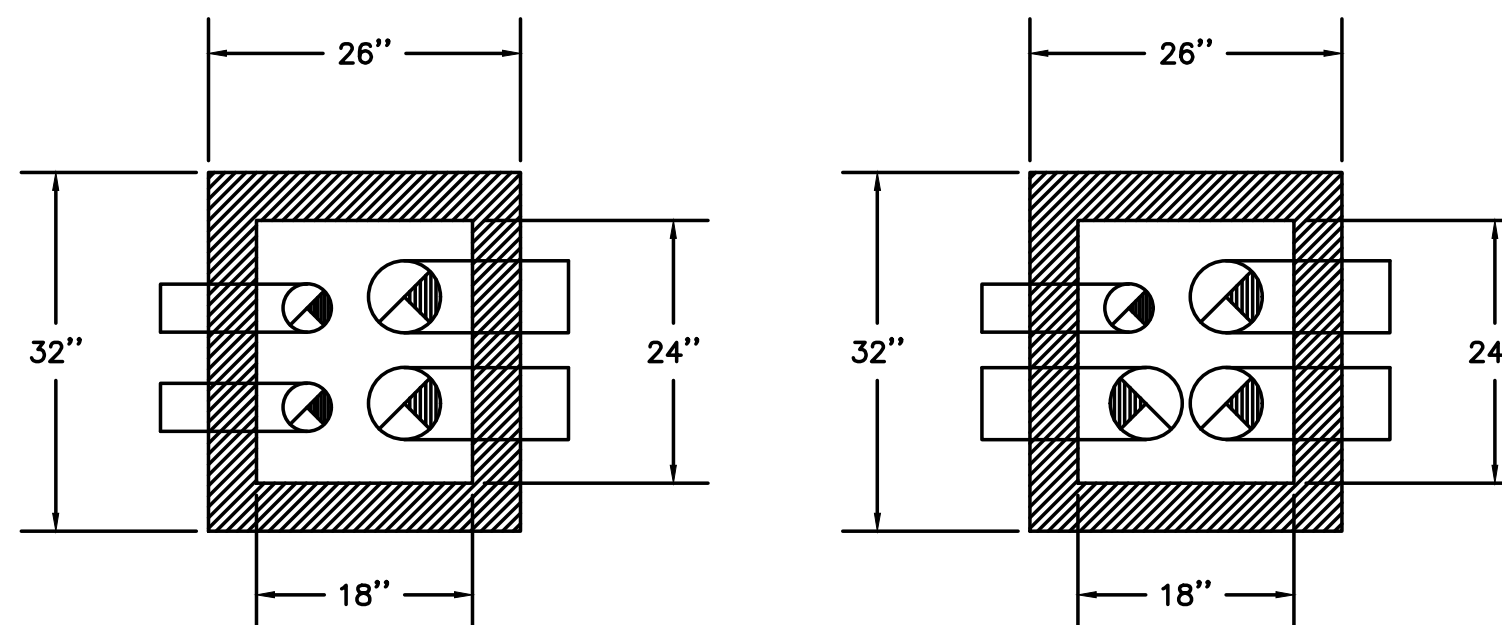


TYPICAL PLAN VIEW (2-4" Ø DUCTS) & (2-6" Ø DUCTS)

1 TYPICAL ROOFTOP OUTLET HOOD  
M6.5 NOT TO SCALE

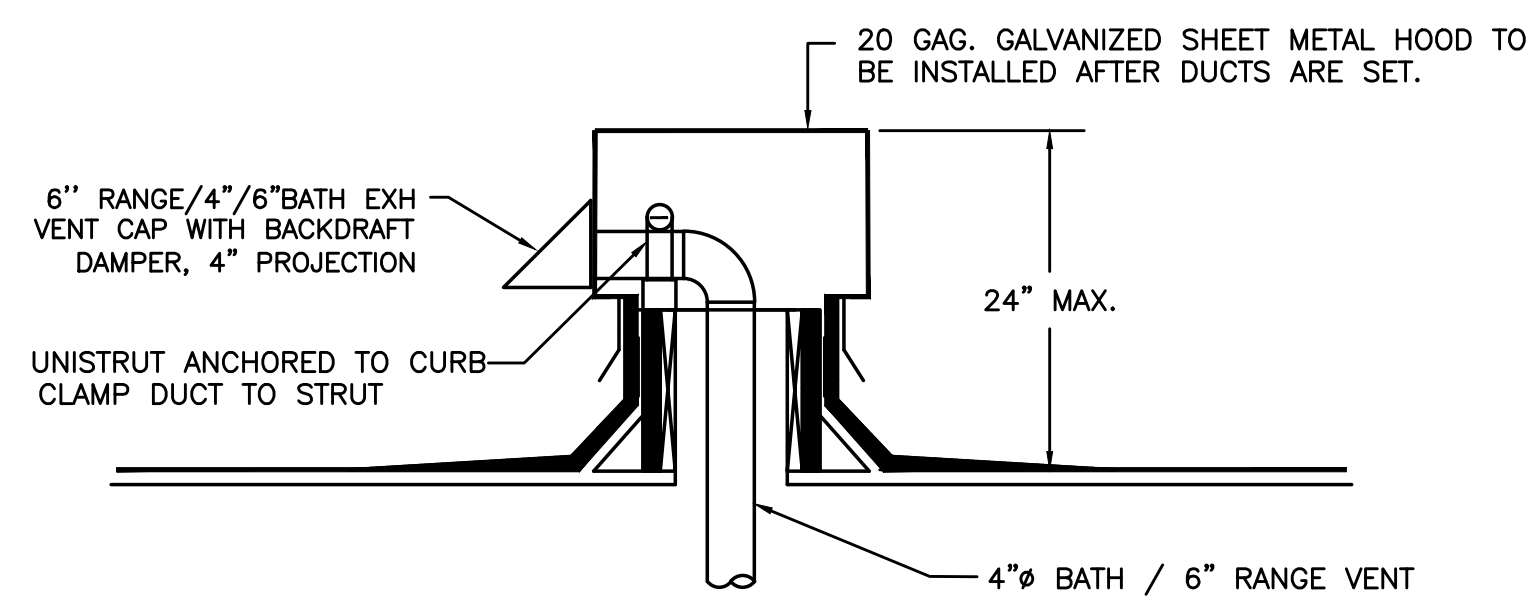


SECTION VIEW

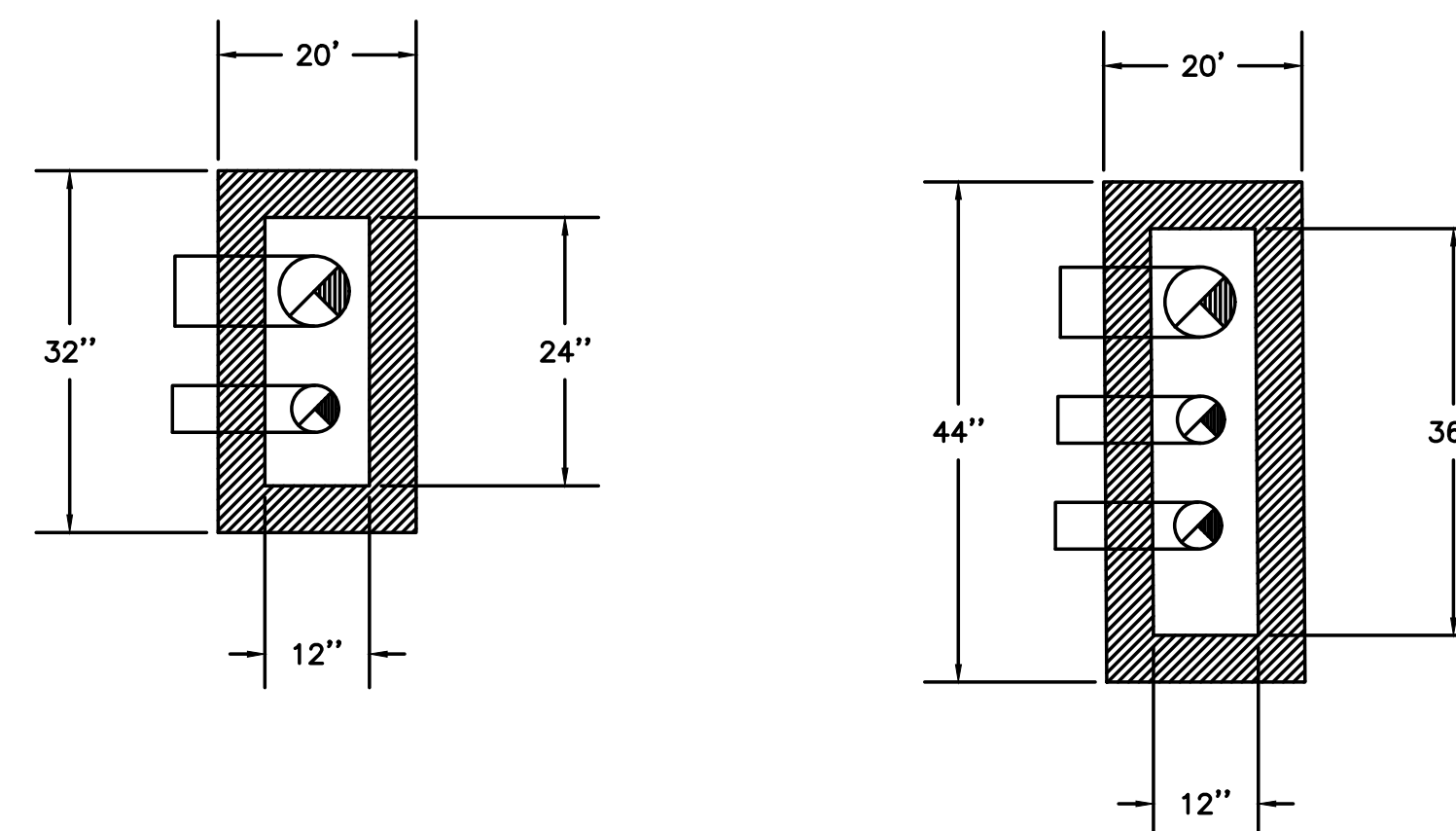


TYPICAL PLAN VIEW (2-4" Ø DUCTS & 2-6" Ø DUCTS) OR  
TYPICAL PLAN VIEW (2-4" Ø DUCTS & 3-6" Ø DUCTS) OR

2 TYPICAL ROOFTOP OUTLET HOOD  
M6.5 NOT TO SCALE

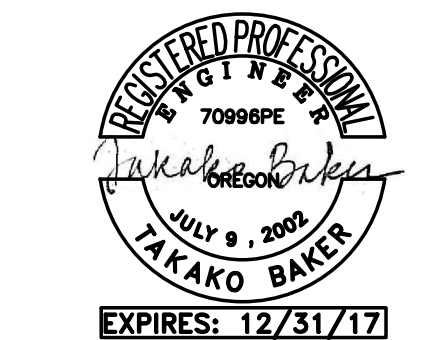


SECTION VIEW



TYPICAL PLAN VIEW (1-6" Ø DUCT & 1- 4" Ø DUCT)

3 TYPICAL ROOFTOP OUTLET HOOD  
M6.5 NOT TO SCALE



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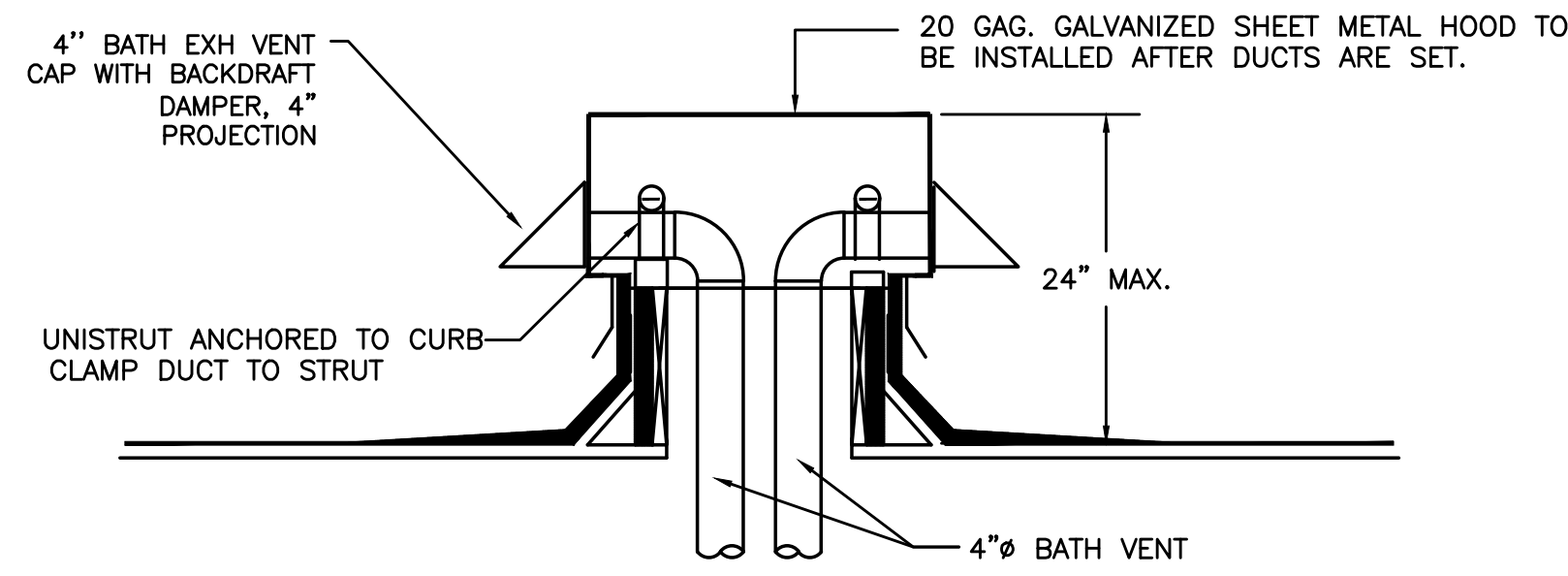
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DETAILS  
**M6.5**  
PERMIT SET  
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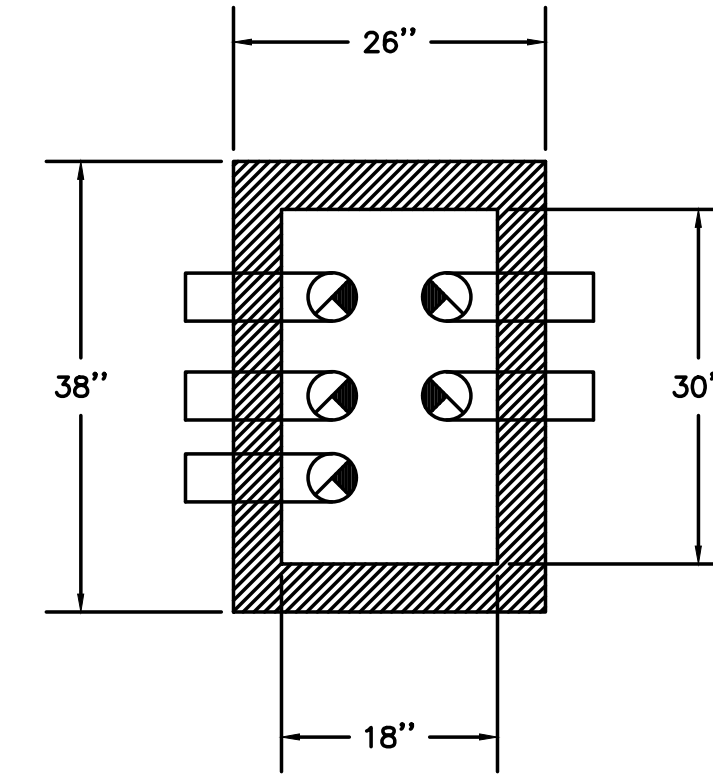
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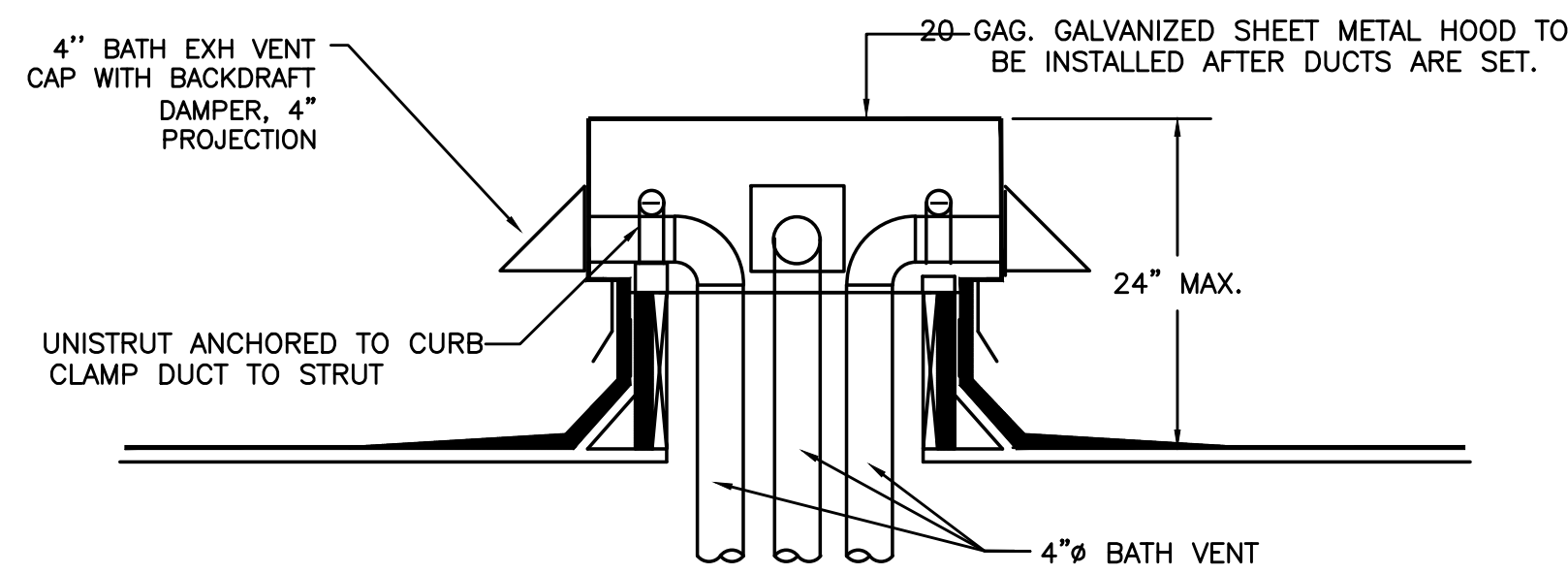


SECTION VIEW

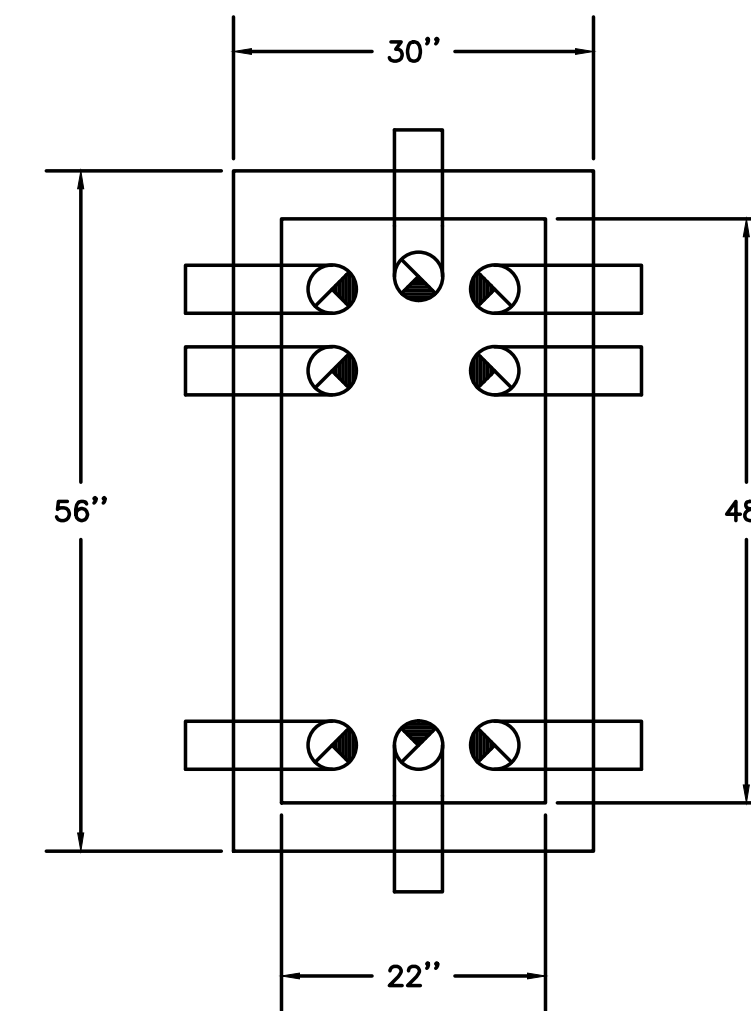


TYPICAL PLAN VIEW (5-4" Ø DUCTS)

1 TYPICAL ROOFTOP OUTLET HOOD  
M6.6 NOT TO SCALE

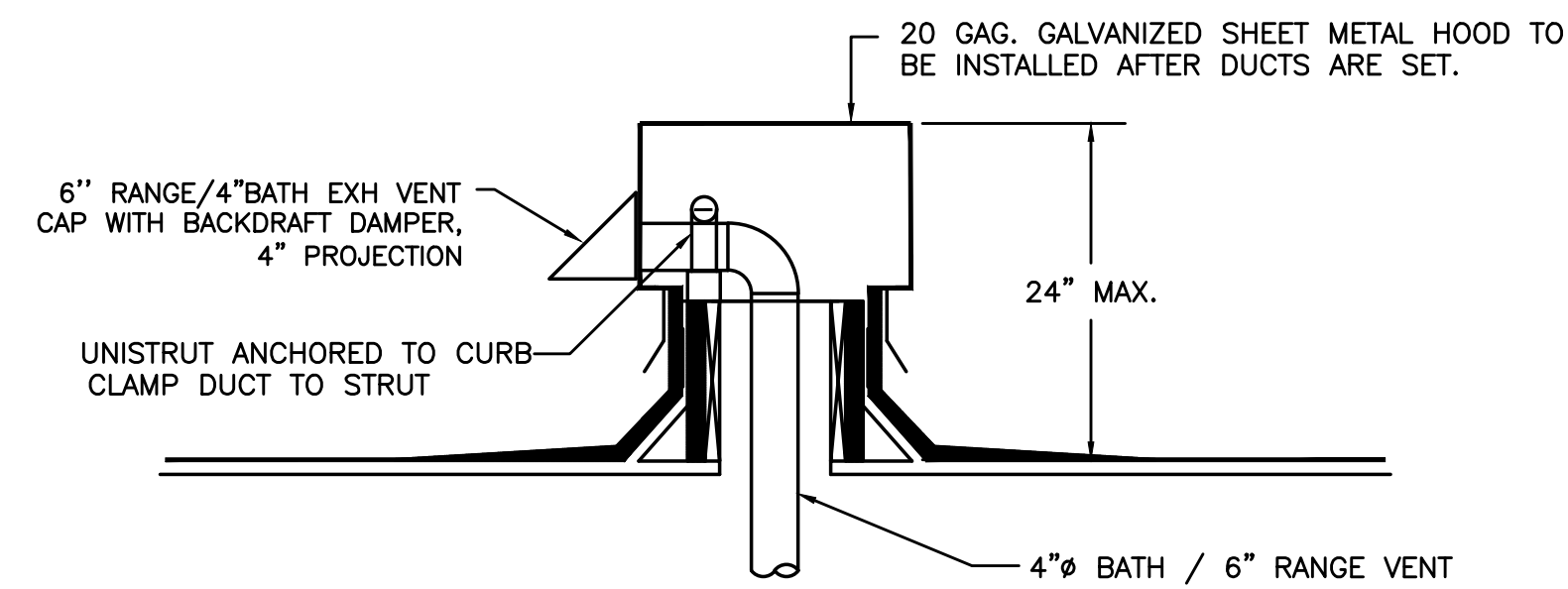


SECTION VIEW

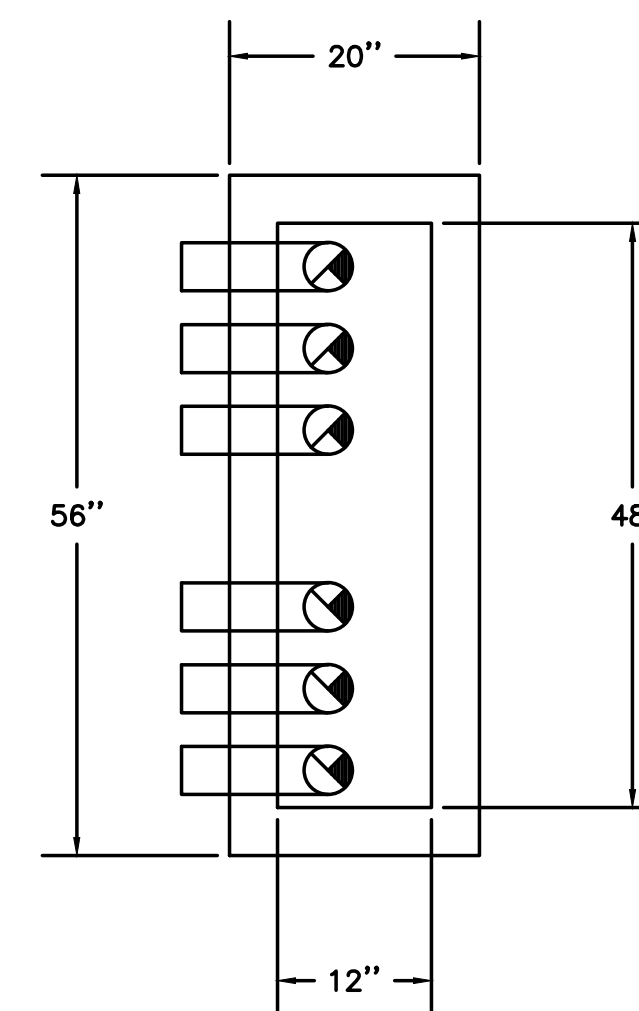


TYPICAL PLAN VIEW (8- 4" Ø DUCTS)

2 TYPICAL ROOFTOP OUTLET HOOD  
M6.6 NOT TO SCALE



SECTION VIEW



TYPICAL PLAN VIEW (6-4" Ø DUCTS)

3 TYPICAL ROOFTOP OUTLET HOOD  
M6.6 NOT TO SCALE



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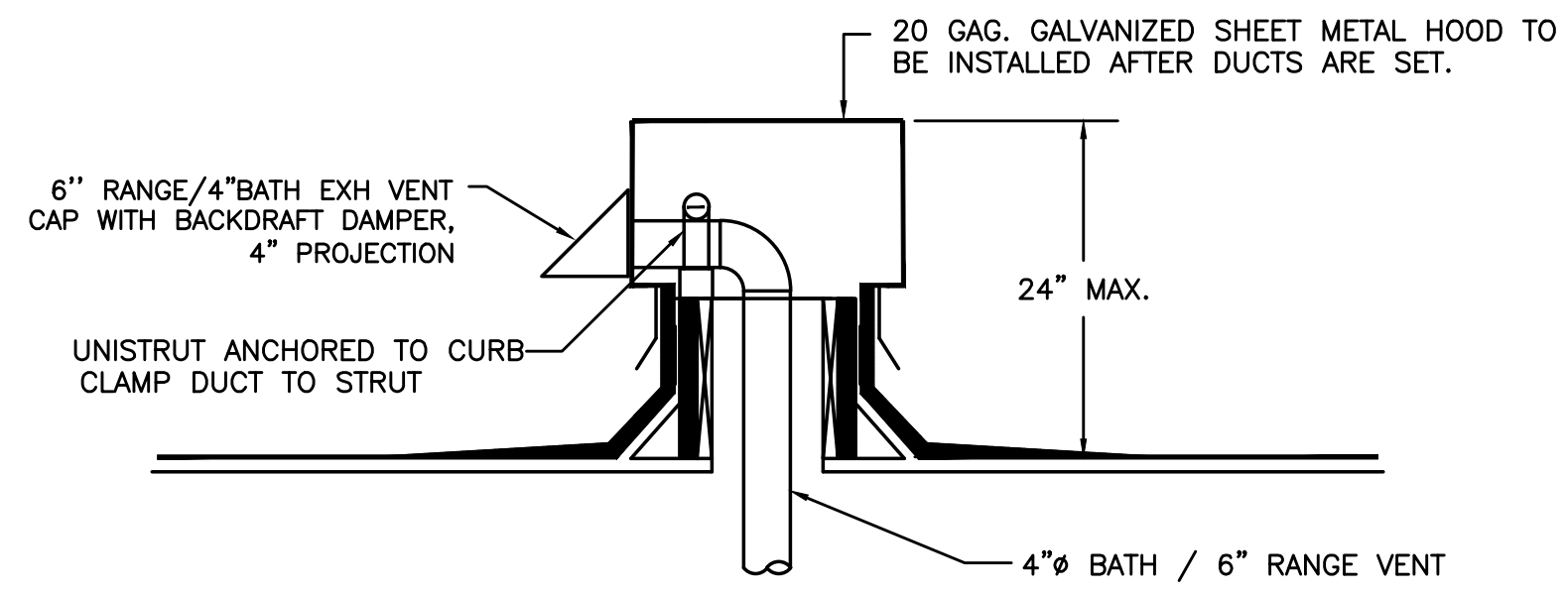
PROJECT NO.	ISSUE DATE
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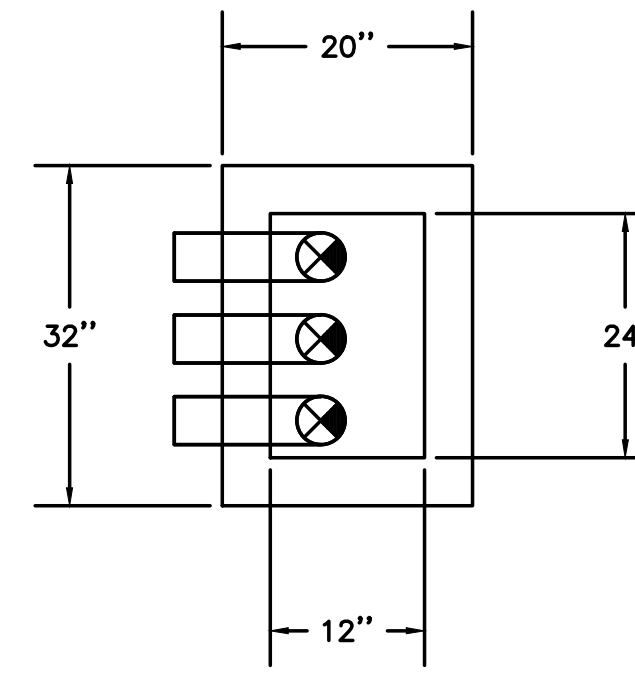
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DETAILS  
M6.6

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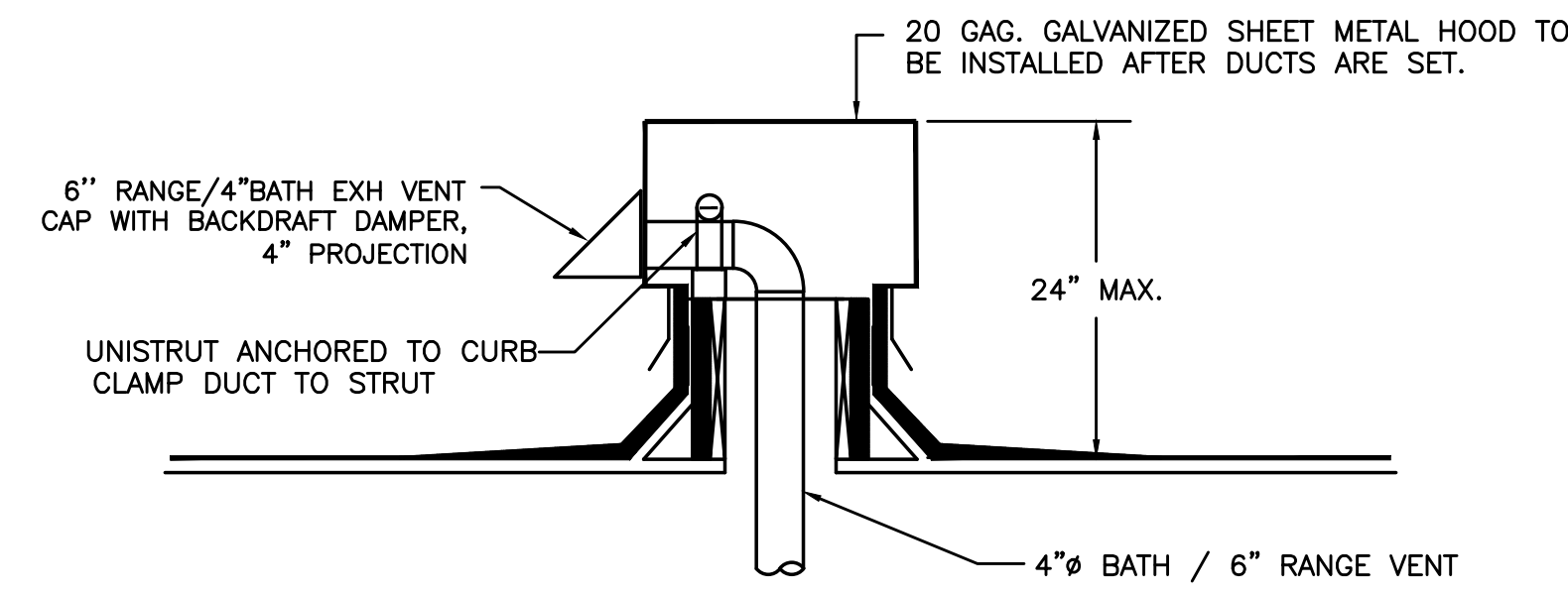


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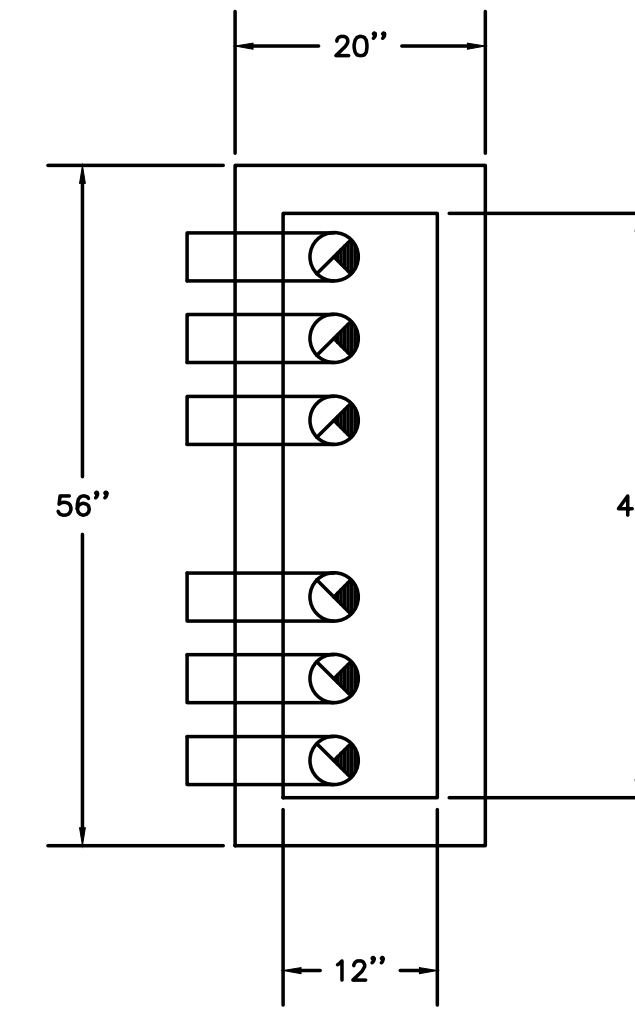


TYPICAL PLAN VIEW (3-4" Ø DUCTS)

1 TYPICAL ROOFTOP OUTLET HOOD  
M6.7 NOT TO SCALE

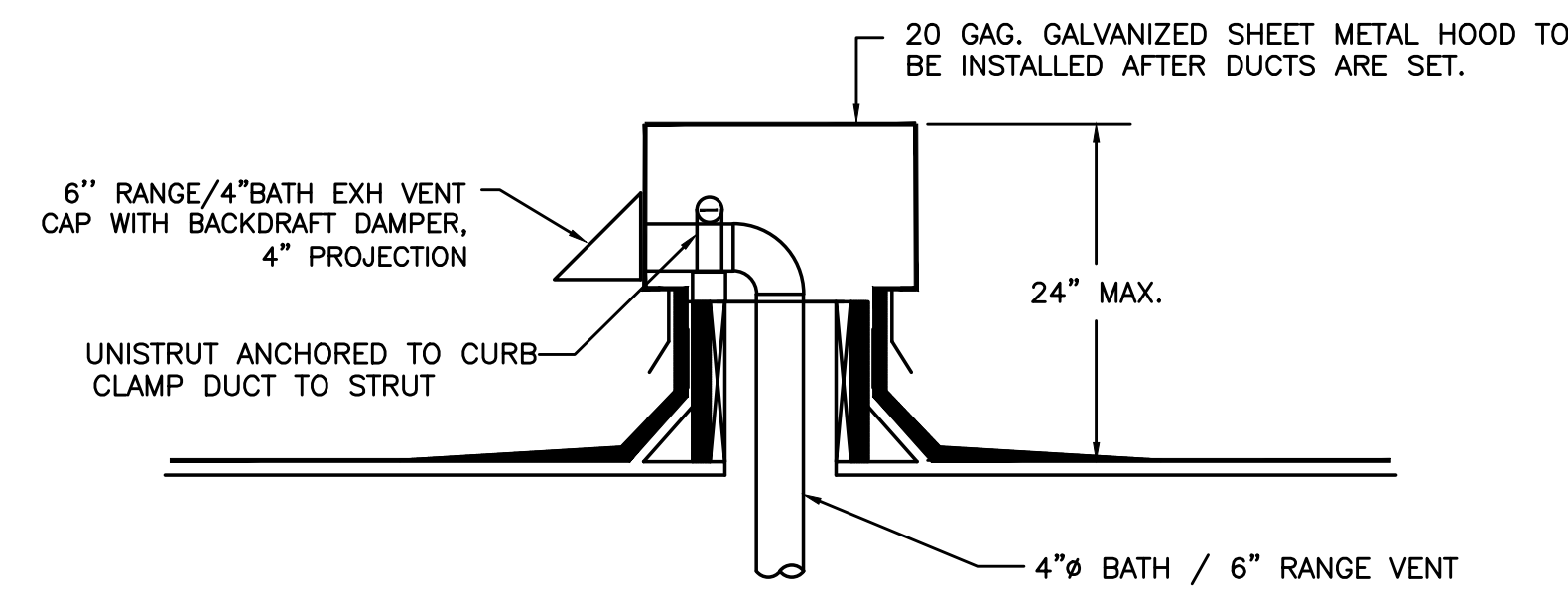


SECTION VIEW

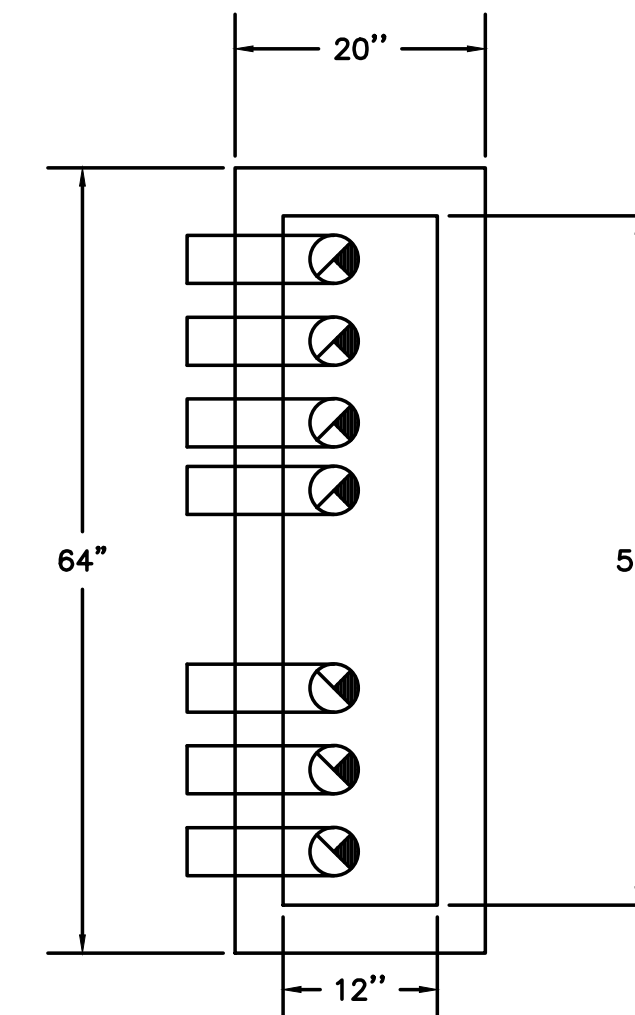


TYPICAL PLAN VIEW (6-4" Ø DUCTS)

2 TYPICAL ROOFTOP OUTLET HOOD  
M6.7 NOT TO SCALE



SECTION VIEW



TYPICAL PLAN VIEW (7-4" Ø DUCTS)

2 TYPICAL ROOFTOP OUTLET HOOD  
M6.7 NOT TO SCALE



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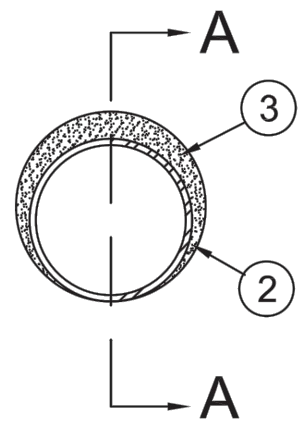
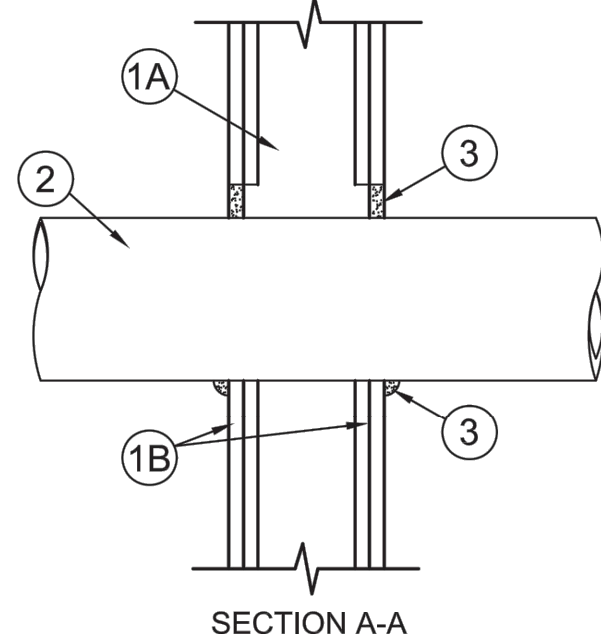


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 CONTACT: Takako Baker


**System No. W-L-7196**  
July 12, 2010  
F Ratings - 1 and 2 Hr (See Item 1)  
T Rating - 0 Hr

**SECTION A-A**

- 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, U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
  - 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.
  - Gypsum Board\*** - Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Diam of opening to be max 2 in. (51 mm) larger than OD of steel duct (Item 2). Max diam of opening is 14 in. (356 mm).


**The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.**
- Steel Duct** - Nom 12 in. (305 mm) diam (or smaller) No. 26 gauge (or heavier) spiral wound or long seam galv steel duct. The duct shall be constructed and reinforced in accordance with SMACNA construction standards. Annular space between duct and periphery of opening to be min 0 in. (point contact) to max 2 in. (51 mm). Duct to be rigidly supported on both sides of the wall assembly.
- 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. At point contact location, min 1/4 in. (6 mm) diam bead of fill material applied at steel duct/gypsum board interface on both surfaces of wall.

**3M COMPANY**  
**3M FIRE PROTECTION PRODUCTS** - IC 15WB+, CP 25WB+ or FB-3000 WT sealant  
\*Bearing the UL Classification Mark  
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**3M Fire Protection Products**  
www.3m.com/firestop

**W-L-7196 • 1 of 1**

Product Support Line  
1-800-328-1687



ENGINEERING JUDGMENT FOR:	
8/23/2017	
Rane Certain	
3M FPP Manufacturers Agent	
11700 Mukilteo Spdwy, Ste 201	
Mukilteo, WA 98275	

<b>Project:</b> King & Parks Multi Family	<b>Contractor:</b> Wall Construction
<b>Fire Stopping Category:</b> Pen Seals / Misc Mechanical	<b>Hourly Rating Requested/ Type:</b> 1 and 2 Hour / F
<b>Assembly Penetrated:</b> Gypsum Shaft Wall Assembly	<b>Opening Size:</b> Circle: Diameter : 10 inch
<b>Penetrating Item:</b> Duct: Penetrant Shape : Round Diameter : 6 inch	<b>Annular Space:</b> Min: 0 inch Max: 2 inch
<b>Space Between Penetrants:</b> Single Penetrating Item	

**Special Conditions:** Max 4 in. and 6 in. round steel 28 ga ducts penetrating gypsum shaft walls. Interior walls are 2 in. x 6 in. studs 24 in. on center with a single layer of gypsum each side and exterior walls are 2 in. x 6 in. studs 24 in. on center with double layer of gypsum both sides.

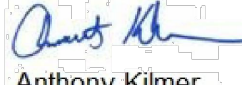

**Application Details:** To firestop this application, install in accordance with UL System W-L-7196 with the following modifications/clarifications:

- Install sealant into the annular space full depth of the gypsum on both sides of the assembly. Sealant to be tooled flush with the face of the wall on both sides of the assembly.
- Install an additional 1/2 in. depth of sealant at the duct/wall interface on both sides of the assembly.
- Due to the thinner gauge duct, the obtainable rating is reduced to "Up to 1 or 2 hours or as long as the duct remains fully intact in a fire scenario."

**Note:** If the ducts are dampered, this Engineering Judgment is null and void. Dampered ducts must be fire stopped per damper manufacturer's installation instructions. The ducts must be constructed to IMC and/or SMACNA guidelines for gauge, construction, and support.

**3M Fire Barrier Material:** CP 25WB+ Sealant, FB 3000WT Silicone Sealant  
**Based On:** W-L-7196

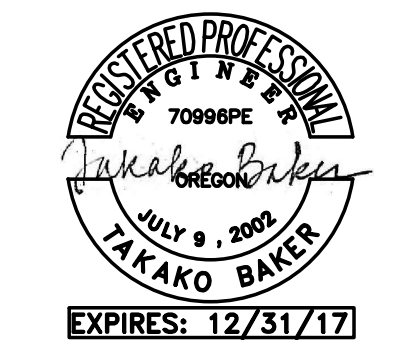
This Engineering Judgment (EJ) is based upon the sole and exclusive use of 3M brand Fire Protection Products as described within. Modification of any of the parameters of this EJ, including, without limitation, the use of non-3M brand Fire Protection Products, shall render this EJ null and void. The firestop design is expected to achieve the hourly rating indicated above. This engineering judgment is based on performance results obtained in testing with independent laboratories and / or internal 3M fire tests, which have been tested in accordance to ASTM E 814 (UL 1479).

Engineering Judgment Prepared By:  Anthony Kilmer Technical Service Representative	Reviewed By:  585412 Rev. 1 AEK 9-5-17: Modified per field conditions cc: Rane Certain Email: ranecertain@gmail.com
--	---

**3M Industrial Adhesive and Tapes**  
**Fire Protection Products**  
3M Center, Building 230-B-S-37-03  
St. Paul, MN 55144-1000

Page 1 of 1

1  
M6.8 WALL PENETRATION DETAIL  
NOT TO SCALE



**KING+PARKS MULTI-FAMILY RESIDENCES**

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