



# DANE COUNTY CAPITOL SQUARE SOUTH PARKING RAMP

## REQUEST FOR BID NO. 317022

# HEATING & VENTILATING EQUIPMENT REPLACEMENT

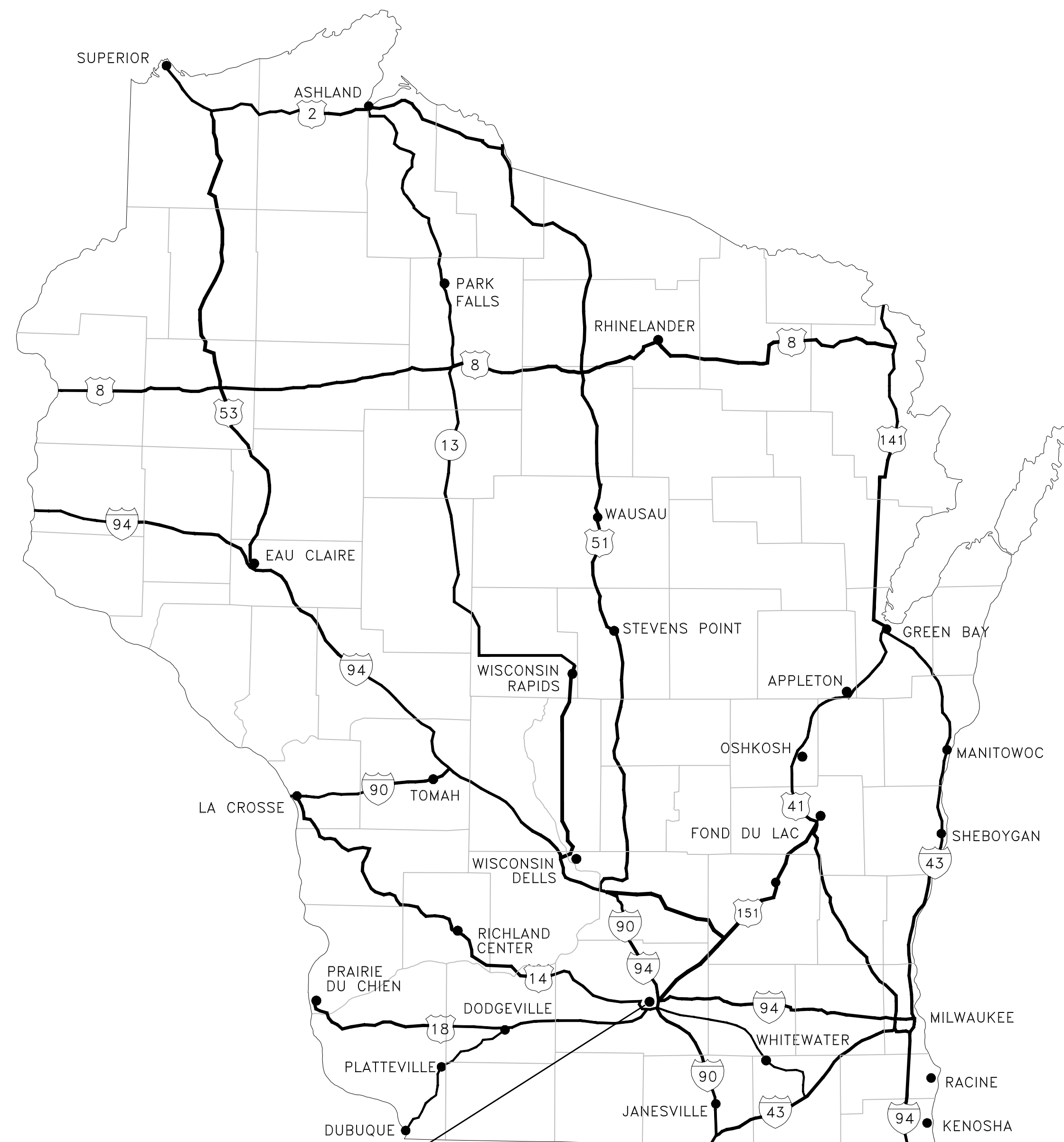
**Engineering 370, LLC**  
MECHANICAL CONSULTING

Oregon, WI 53575  
T: 608-225-9273  
F: 608-835-2077  
Email: info@eng370.com

Project No. 17-0505

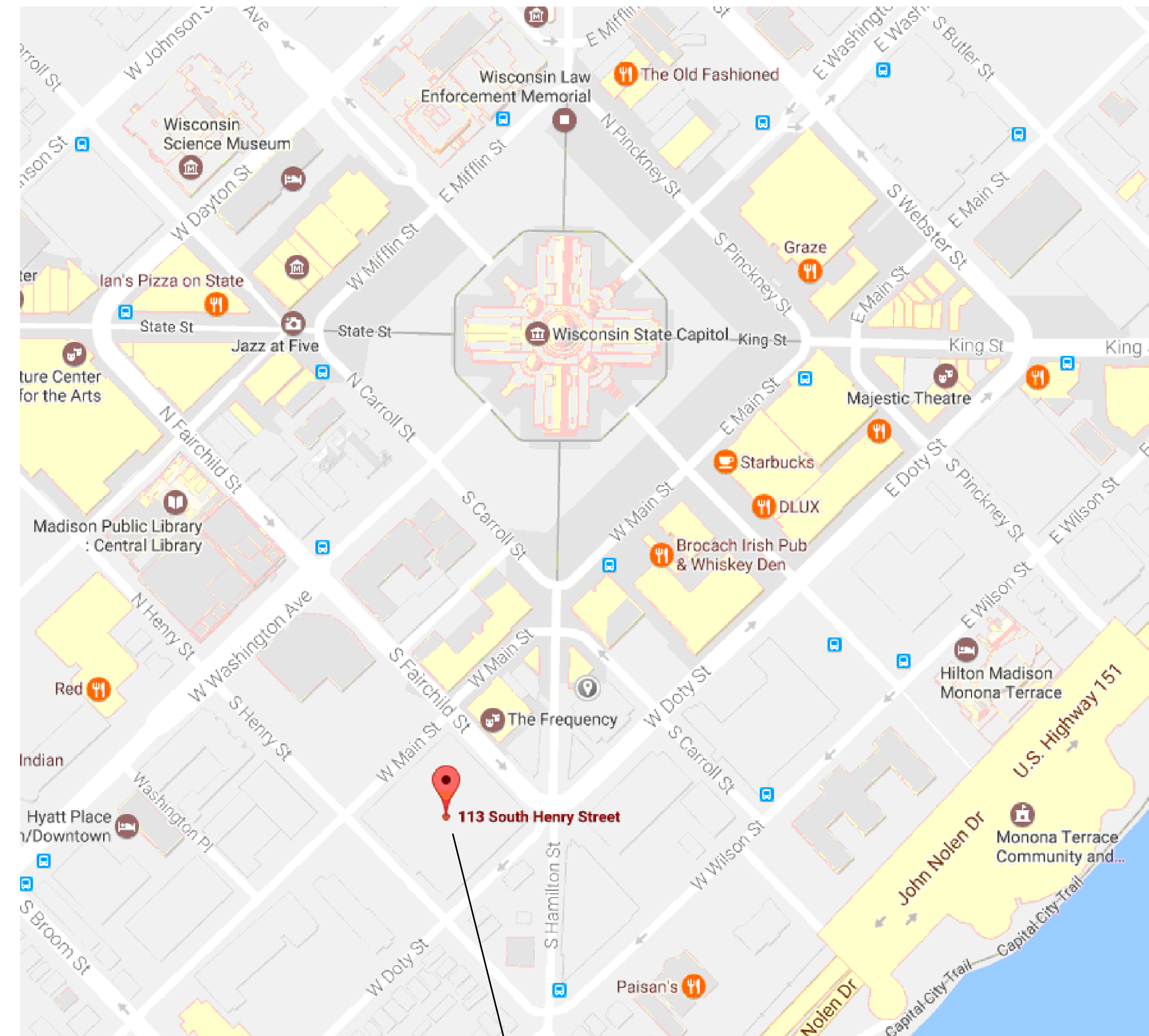
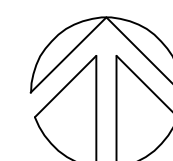
Dane County Department of Public Works,  
Highway and Transportation  
Public Works Engineering Division  
1919 Alliant Energy Center Way  
Madison, WI 53713

Notes:



**MADISON**

STATE OF WISCONSIN



**113 SOUTH HENRY STREET  
MADISON, WI**

### SHEET INDEX

<b>T100</b>	<b>TITLE SHEET</b>
<b>H100</b>	<b>BASEMENT FLOOR PLAN - DEMOLITION AND NEW WORK</b>
<b>H101</b>	<b>MECHANICAL ROOM FLOOR PLANS - DEMOLITION AND NEW WORK</b>
<b>H200</b>	<b>HVAC SCHEDULES AND DETAILS</b>

7/25/17	ISSUED FOR CONSTRUCTION	
Date	Issuance/Revisions	Symbol

**DANE COUNTY  
CAPITOL SQUARE  
SOUTH RAMP**  
REQUEST FOR BID NO. 317022

**HEATING & VENTILATING  
EQUIPMENT REPLACEMENT**

**113 SOUTH HENRY STREET  
MADISON, WI**

Drawing Title:  
**TITLE  
SHEET**

Drawn By:  
FBN

Drawing No.  
**T100**

**Notes:**

**ELECTRICAL NOTES: DRAWINGS H100 AND H101:**

1. THESE NOTES APPLY TO ALL ELECTRICAL DEMOLITION AND NEW WORK FOR THIS PROJECT.
2. REFER TO H100 AND H101 FOR THE EQUIPMENT LOCATIONS REFERENCED IN THESE NOTES.
3. NOTES IN THIS SECTION ARE NOT INDICATED ON THE DRAWINGS.
4. ALL WORK SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE, WISCONSIN ELECTRICAL CODE AND THE CITY OF MADISON ELECTRICAL CODE REQUIREMENTS.
5. DISCONNECT POWER TO EXISTING EXHAUST FAN SERVED BY PANEL IN MECHANICAL ROOM.
6. DISCONNECT POWER TO EXISTING MAKE UP AIR UNIT FAN SERVED BY PANEL IN MECHANICAL ROOM.
7. PROVIDE NEW POWER CONNECTION TO MAKE UP AIR UNIT MUA-1 FROM EXISTING PANEL. PROVIDE NEW 208V, 3 PHASE, 20A BREAKER IN PANEL, STARTER, DISCONNECT SWITCH, CONDUIT AND WIRING. FEED WITH 3#12, 1#12G, 1/2 INCH CONDUIT
8. PROVIDE NEW POWER CONNECTION TO EXHAUST FAN EF-G1 FROM EXISTING PANEL. PROVIDE NEW 208V, 3 PHASE, 20A BREAKER IN PANEL, STARTER, DISCONNECT SWITCH, CONDUIT AND WIRING. FEED WITH 3#12, 1#12G, 1/2 INCH CONDUIT. PORTIONS OF EXISTING CONDUIT MAY BE REUSED IF FOUND IN SERVICEABLE CONDITION.
9. PROVIDE 120V, 20A CONNECTION TO CONTROL PANEL IN MECHANICAL ROOM AND TO GAS DETECTION CONTROL PANEL IN OFFICE. PROVIDE A NEW 20/1 BREAKER IN EXISTING PANEL IN MECHANICAL ROOM. FEED WITH 2#12, 1#12G, 1/2 INCH CONDUIT.

**DEMOLITION NOTES - PLAN A-H100 AND B-H100:**

1. REMOVE EXISTING EXHAUST FAN, DUCTWORK DAMPERS AND CONTROLS.
2. EXISTING 12/36 EXHAUST DUCT UP TO REMAIN FOR NEW CONNECTION.
3. REMOVE EXISTING FAN ELECTRICAL DISCONNECT AND ELECTRICAL ASSOCIATED WITH EXHAUST FAN.
4. SEE PHOTO OF EQUIPMENT TO BE REMOVED ON THIS DRAWING.
5. EXISTING VERTICAL FURNACE STACK TO REMAIN.
6. EXISTING HORIZONTAL 12 INCH TRANSITE FURNACE VENT TO BE REMOVED BY OWNER.

**NEW WORK NOTES - PLAN A-H100:**

1. INSTALL CARBON MONOXIDE (CO) AND NITROGEN DIOXIDE (NO2) DETECTORS AT 60 INCHES ABOVE THE FLOOR.
2. FUTURE METHANE (NATURAL GAS) (CH4) DETECTOR TO BE MOUNTED 8 INCHES BELOW CEILING. THIS DETECTOR IS NOT PART OF THE PRESENT HEATING AND VENTILATION PROJECT.
3. 6 INCH DIAMETER FURNACE VENT TO BE INSTALLED FROM THE EXISTING MECHANICAL ROOM TO EXISTING VERTICAL STACK. INSTALL ON EXISTING WALL SUPPORTS WHERE EXISTING VENT HAS BEEN REMOVED.
4. INSTALL GAS DETECTION PANEL IN OFFICE AREA. COORDINATE FINAL LOCATION WITH OWNERS REPRESENTATIVE.
5. INSTALL 16 GAGE STAINLESS STEEL BAND 18 INCHES HIGH AROUND EXISTING 12 INCH ROUND STACK WHERE EXISTING HORIZONTAL VENT HAS BEEN REMOVED AND EXISTING CLEANOUT ACCESS HAS BEEN REMOVED. SEE DETAIL 'A' ON DRAWING SHEET H200.
6. PROVIDE CONNECTION IN UPPER STAINLESS STEEL BAND FOR 6 INCH FURNACE VENT CONNECTION.
7. NEW FURNACE THERMOSTAT.

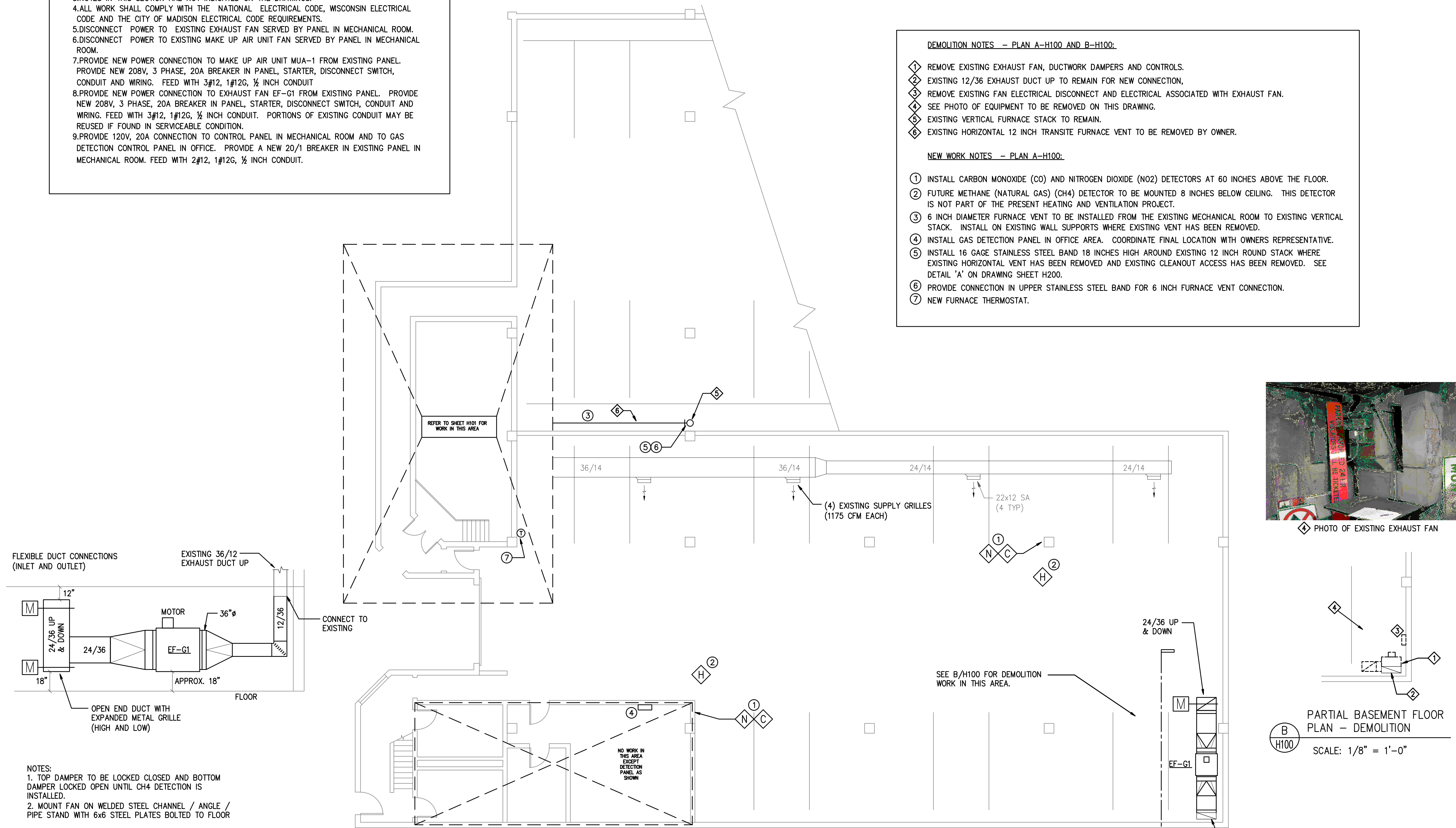
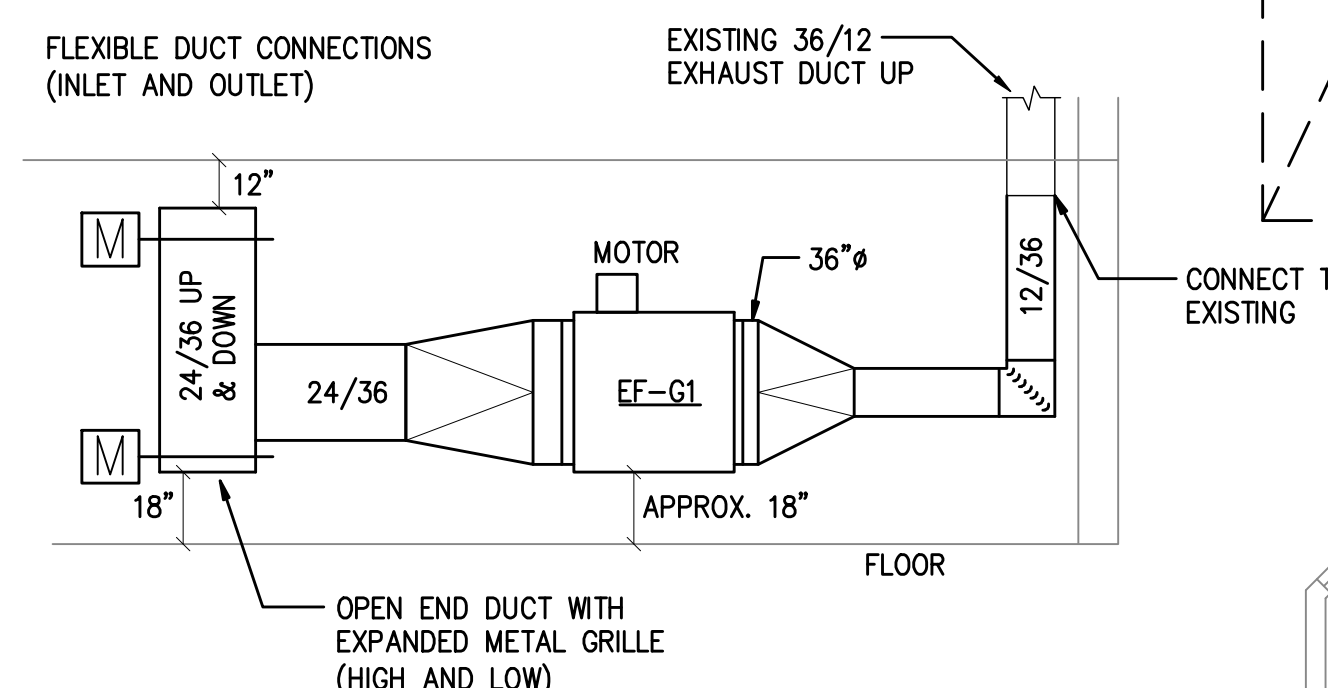


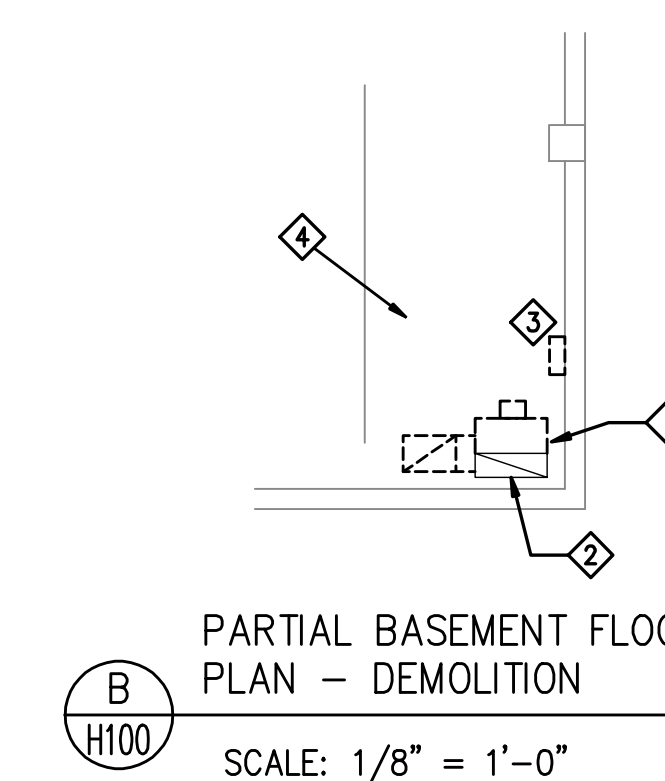
PHOTO OF EXISTING EXHAUST FAN



- NOTES:**
1. TOP DAMPER TO BE LOCKED CLOSED AND BOTTOM DAMPER LOCKED OPEN UNTIL CH4 DETECTION IS INSTALLED.
  2. MOUNT FAN ON WELDED STEEL CHANNEL / ANGLE / PIPE STAND WITH 6x6 STEEL PLATES BOLTED TO FLOOR

**C**  
H100 FAN SECTION  
SCALE: 1/4" = 1'-0"

**A**  
H100 BASEMENT FLOOR PLAN - DEMOLITION & NEW WORK  
SCALE: 1/8" = 1'-0"



**B**  
H100 PARTIAL BASEMENT FLOOR PLAN - DEMOLITION  
SCALE: 1/8" = 1'-0"

**DETECTOR LEGEND**

	CO - CARBON MONOXIDE - MOUNT @ 60" ABOVE FLOOR
	NO2 - NITROGEN DIOXIDE - MOUNT @ 60" ABOVE FLOOR
	CH4 - METHANE (NATURAL GAS - NG) MOUNT 6" MINIMUM / 12" MAXIMUM BELOW HIGH POINT OF CEILING (FUTURE)

7/25/17	ISSUED FOR CONSTRUCTION	
Date	Issuance/Revisions	Symbol

**DANE COUNTY  
CAPITOL SQUARE  
SOUTH RAMP**  
REQUEST FOR BID NO. 317022

**HEATING & VENTILATING  
EQUIPMENT REPLACEMENT**

113 SOUTH HENRY STREET  
MADISON, WI

Drawing Title:  
**BASEMENT FLOOR PLAN -  
DEMOLITION AND  
NEW WORK**

Drawn By:  
FBN

Drawing No.  
**H100**

DEMOLITION WORK NOTES – PLAN B-H101:

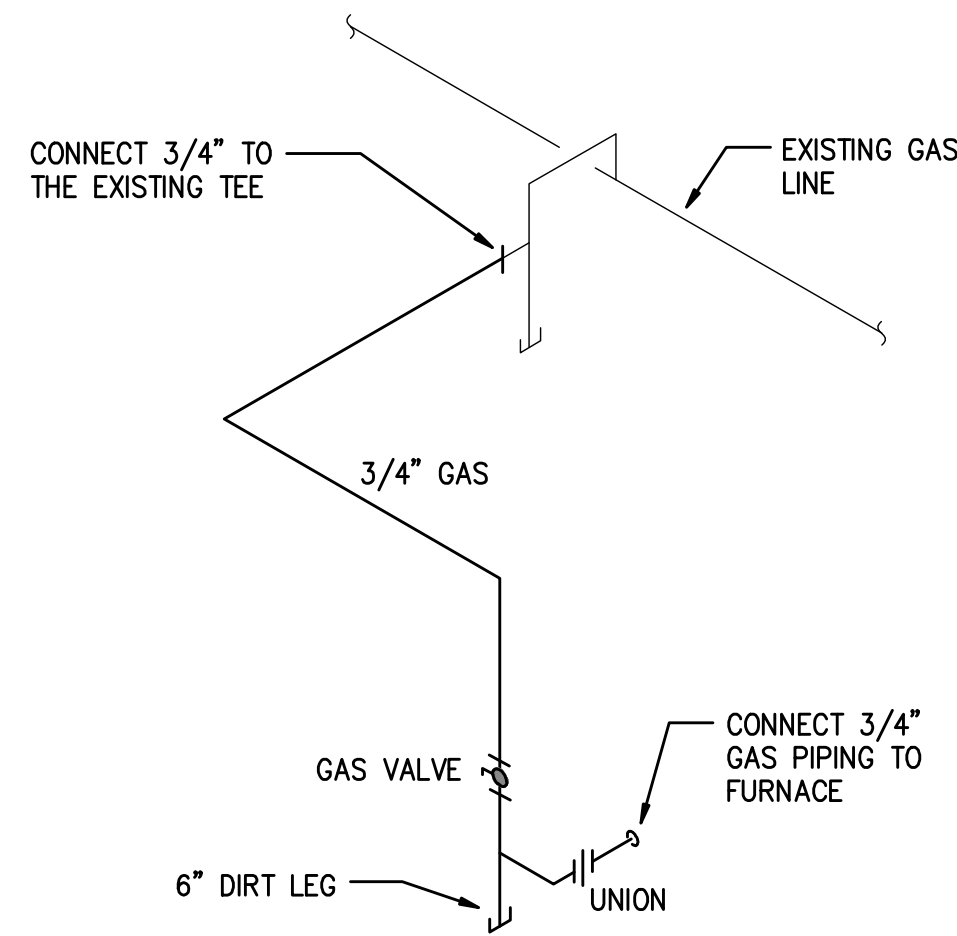
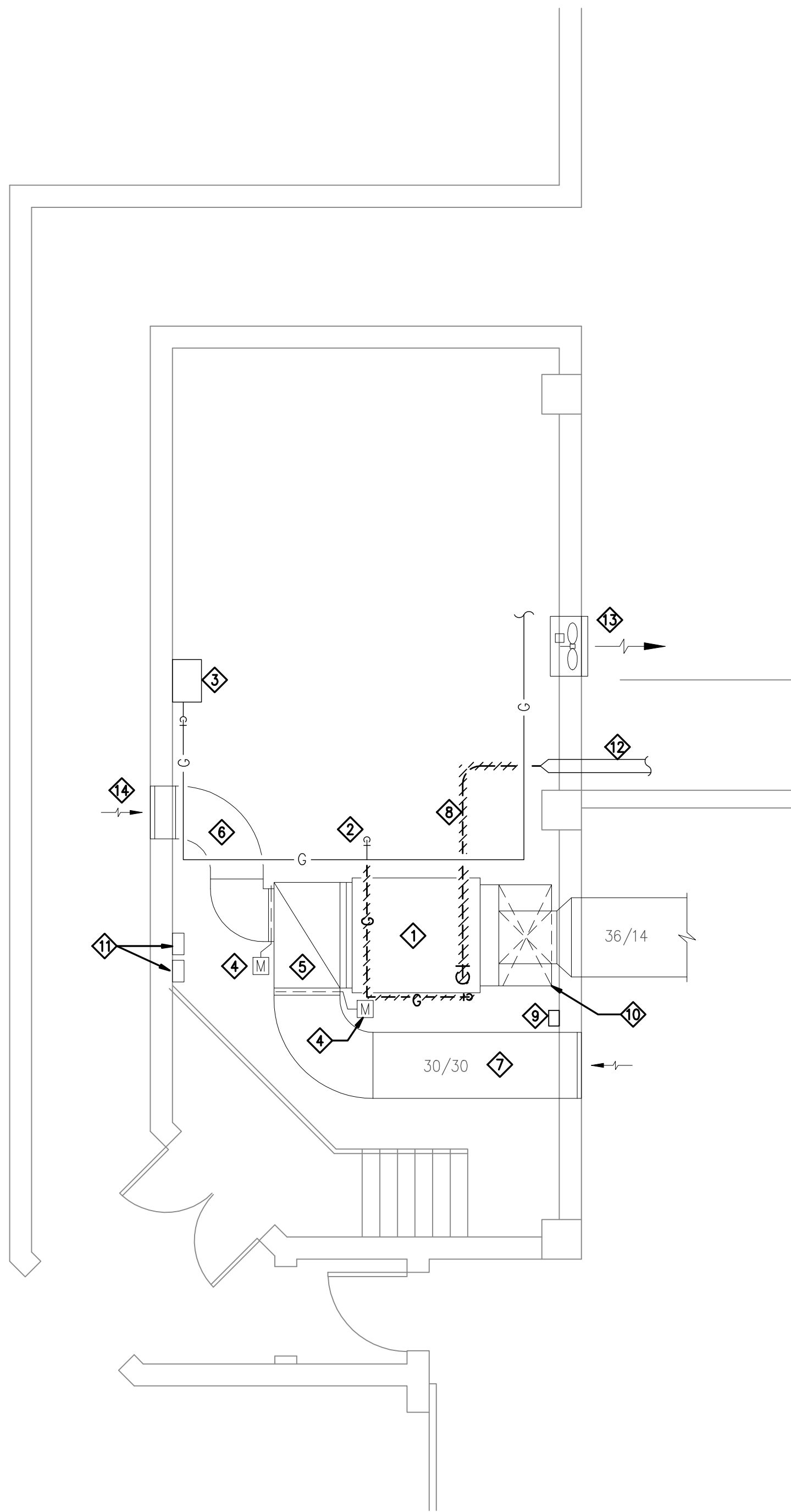
- ◇ REMOVE EXISTING GAS FIRED HEATING UNIT.
- ◇ REMOVE GAS PIPING FROM TEE IN DROP TO HEATING UNIT.
- ◇ EXISTING GAS METER TO REMAIN
- ◇ REMOVE DAMPER ACTUATOR. (DAMPER TO REMAIN, NEW ACTUATOR TO BE INSTALLED)
- ◇ REMOVE RETURN DUCT FROM FLEXIBLE CONNECTOR TO UNIT (SEE NEW UNIT ELEVATION)
- ◇ OUTSIDE AIR DUCT TO REMAIN.
- ◇ RETURN AIR DUCT AND RETURN GRILLE TO REMAIN.
- ◇ REMOVE UNIT BURNER VENT DUCT TO CONNECTION TO TRANSITE PIPE.
- ◇ HEATING UNIT DISCONNECT SWITCH. REMOVE WIRING AND CONDUIT FROM SWITCH TO UNIT.
- ◇ SUPPLY AIR DUCT TO REMAIN.
- ◇ ELECTRICAL PANELS TO REMAIN.
- ◇ TRANSITE PIPE (HEATING UNIT VENT) TO BE REMOVED BY OWNER.
- ◇ EXHAUST FAN TO REMAIN UNALTERED.
- ◇ REMOVE LOUVER.

ELECTRICAL NOTES: DRAWINGS H100 AND H101:

1. THESE NOTES APPLY TO ALL ELECTRICAL DEMOLITION AND NEW WORK FOR THIS PROJECT.
2. REFER TO H100 AND H101 FOR THE EQUIPMENT LOCATIONS REFERENCED IN THESE NOTES.
3. NOTES IN THIS SECTION ARE NOT INDICATED ON THE DRAWINGS.
4. ALL WORK SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE, WISCONSIN ELECTRICAL CODE AND THE CITY OF MADISON ELECTRICAL CODE REQUIREMENTS.
5. DISCONNECT POWER TO EXISTING EXHAUST FAN SERVED BY PANEL IN MECHANICAL ROOM.
6. DISCONNECT POWER TO EXISTING MAKE UP AIR UNIT SERVED BY PANEL IN MECHANICAL ROOM.
7. PROVIDE NEW POWER CONNECTION TO MAKE UP AIR UNIT MUA-1 FROM EXISTING PANEL. PROVIDE NEW 208V, 3 PHASE, 20A BREAKER IN PANEL, STARTER, DISCONNECT SWITCH, CONDUIT AND WIRING. FEED WITH 3#12, 1#12G, 1/2 INCH CONDUIT
8. PROVIDE NEW POWER CONNECTION TO EXHAUST FAN EF-G1 FROM EXISTING PANEL. PROVIDE NEW 208V, 3 PHASE, 20A BREAKER IN PANEL, STARTER, DISCONNECT SWITCH, CONDUIT AND WIRING. FEED WITH 3#12, 1#12G, 1/2 INCH CONDUIT. PORTIONS OF EXISTING CONDUIT MAY BE REUSED IF FOUND IN SERVICEABLE CONDITION.
9. PROVIDE 120V, 20A CONNECTION TO CONTROL PANEL IN MECHANICAL ROOM AND TO GAS DETECTION CONTROL PANEL IN OFFICE. PROVIDE A NEW 20/1 BREAKER IN EXISTING PANEL IN MECHANICAL ROOM. FEED WITH 2#12, 1#12G, 1/2 INCH CONDUIT.

NEW WORK NOTES – PLAN A-H101:

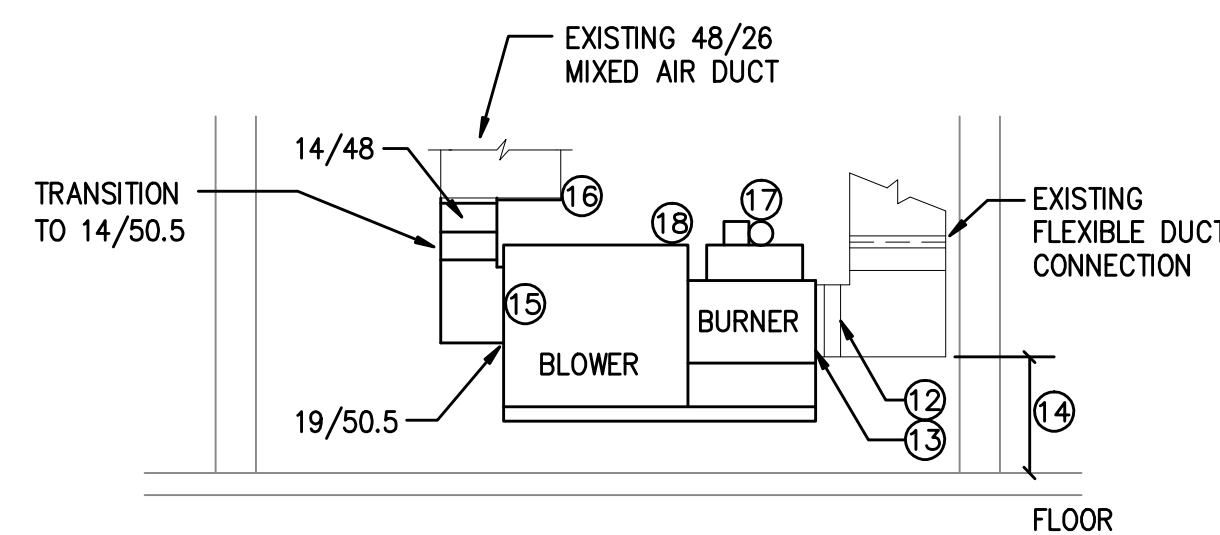
- ① CONNECT 6 INCH TO UNIT BURNER POWER VENT FAN WITH 6" DOUBLE WALL PRESSURE VENT.
- ② RUN VENT THROUGH WALL AT REMOVED VENT. PROVIDE SHEET METAL TO ENCLOSE OPENING BETWEEN NEW VENT AND CONCRETE WALL, EACH SIDE OF WALL.
- ③ CONNECT 3/4" INCH GAS PIPING TO EXISTING TEE AT REMOVED GAS LINE. RUN AND CONNECT TO FURNACE. REFER TO GAS PIPING DETAIL.
- ④ NEW BLOWER UNIT AND GAS FIRED FURNACE UNIT. INSTALL IN LOCATION OF REMOVED UNIT. REFER TO UNIT ELEVATION DETAIL.
- ⑤ INSTALL NEW DAMPER ACTUATOR ON EXISTING DAMPER.
- ⑥ NEW UNIT ELECTRICAL DISCONNECT.
- ⑦ NEW UNIT TIME CLOCK AND VENTILATION CONTROL PANEL.
- ⑧ NEW LOUVER L-1 INSTALLED IN EXISTING OPENING. PROVIDE TAMPER PROOF SCREWS.
- ⑨ EXISTING NATURAL GAS METER.
- ⑩ EXISTING EXHAUST FAN.
- ⑪ EXISTING ELECTRICAL PANELS.
  - a. LEFT PANEL SERVES EXISTING FURNACE INDICATED ON PLAN B-H101 AND EXHAUST FAN INDICATED ON PLAN B-H100.
  - b. EXISTING EXHAUST FAN IS SERVED BY A 208V, 3 PHASE, 20A BREAKER
  - c. EXISTING MAKEUP AIR UNIT IS SERVED BY A 208V, 3 PHASE, 20A BREAKER.



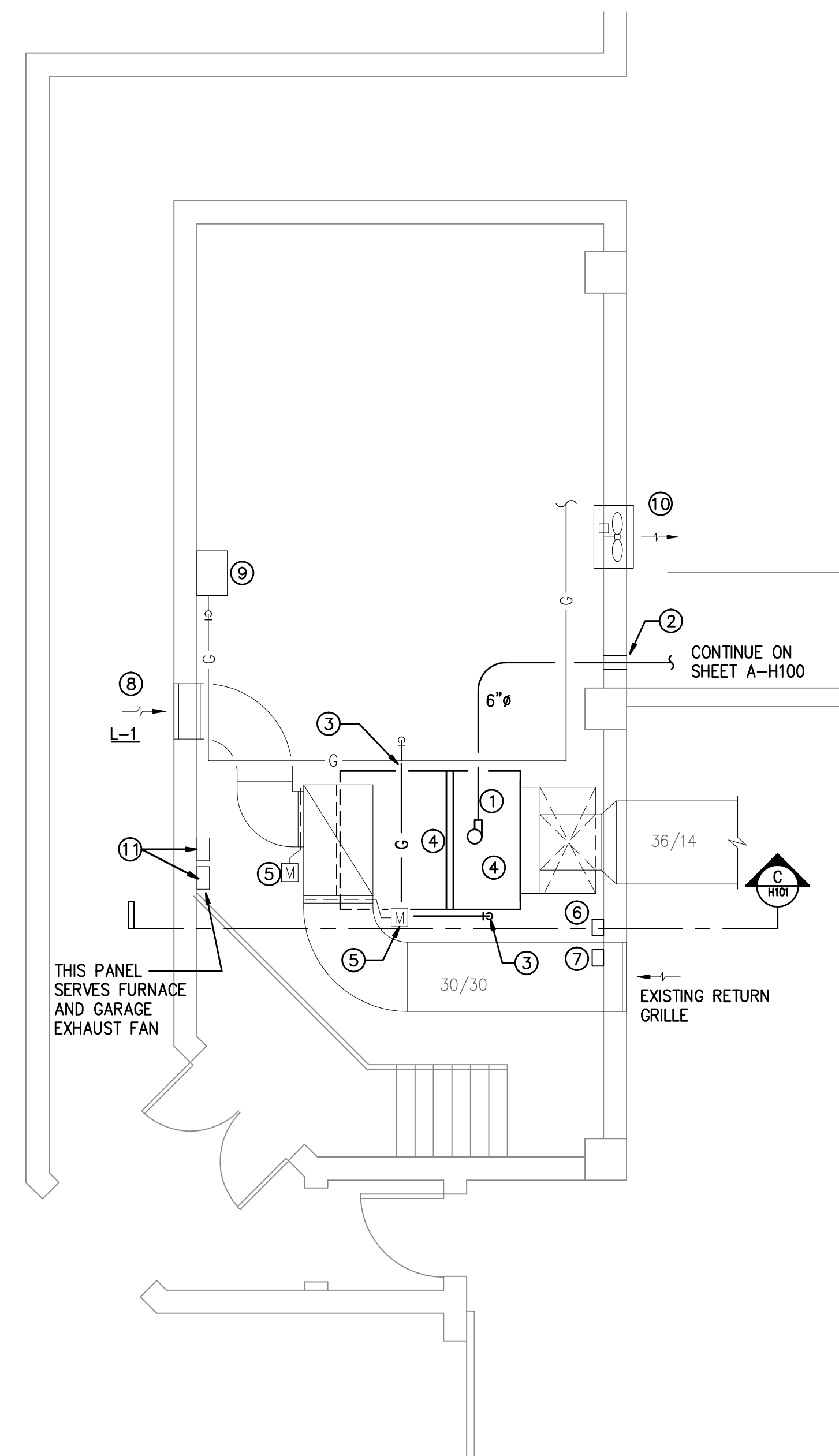
D H101 GAS PIPING DETAIL  
NOT TO SCALE

NEW WORK NOTES – SECTION C-H101:

- ⑫ EXISTING 18/46 SUPPLY DUCT
- ⑬ CONNECT UNIT 19/46 UNIT OUTLET TO EXISTING DUCT.
- ⑭ SET UNIT HEIGHT TO MATCH UNIT OUTLET TO THE EXISTING SUPPLY DUCT.
- ⑮ CONNECT 19/51.5 TO UNIT INTAKE.
- ⑯ BLANK OFF PORTION OF THE MIXED AIR DUCT.
- ⑰ 6" VENT CONNECTION TO VENT FAN.
- ⑱ SUSPEND UNIT FROM STRUCTURE.



C H101 SECTION OF BLOWER UNIT  
SCALE: 1/4" = 1'-0"



A H101 MECHANICAL ROOM FLOOR PLAN – NEW WORK  
SCALE: 1/4" = 1'-0"

B H101 MECHANICAL ROOM FLOOR PLAN – DEMOLITION  
SCALE: 1/4" = 1'-0"

Engineering 370, LLC  
MECHANICAL CONSULTING

Oregon, WI 53575  
T: 608-225-9273  
F: 608-835-2077  
Email: info@eng370.com

Project No. 17-0505

Dane County Department of Public Works,  
Highway and Transportation  
Public Works Engineering Division  
1919 Alliant Energy Center Way  
Madison, WI 53713

Notes:

7/25/17	ISSUED FOR CONSTRUCTION	
Date	Issuance/Revisions	Symbol

DANE COUNTY  
CAPITOL SQUARE  
SOUTH RAMP  
REQUEST FOR BID NO. 317022

HEATING & VENTILATING  
EQUIPMENT REPLACEMENT

113 SOUTH HENRY STREET  
MADISON, WI

Drawing Title:  
MECHANICAL ROOM FLOOR  
PLANS - DEMOLITION  
AND NEW WORK

Drawn By:  
FBN  
Drawing No.  
H101

**Engineering 370, LLC**  
MECHANICAL CONSULTING

Oregon, WI 53575  
T: 608-225-9273  
F: 608-835-2077  
Email: info@eng370.com

Project No. 17-0505

Dane County Department of Public Works,  
Highway and Transportation  
Public Works Engineering Division  
1919 Alliant Energy Center Way  
Madison, WI 53713

Notes:

**FAN SCHEDULE**

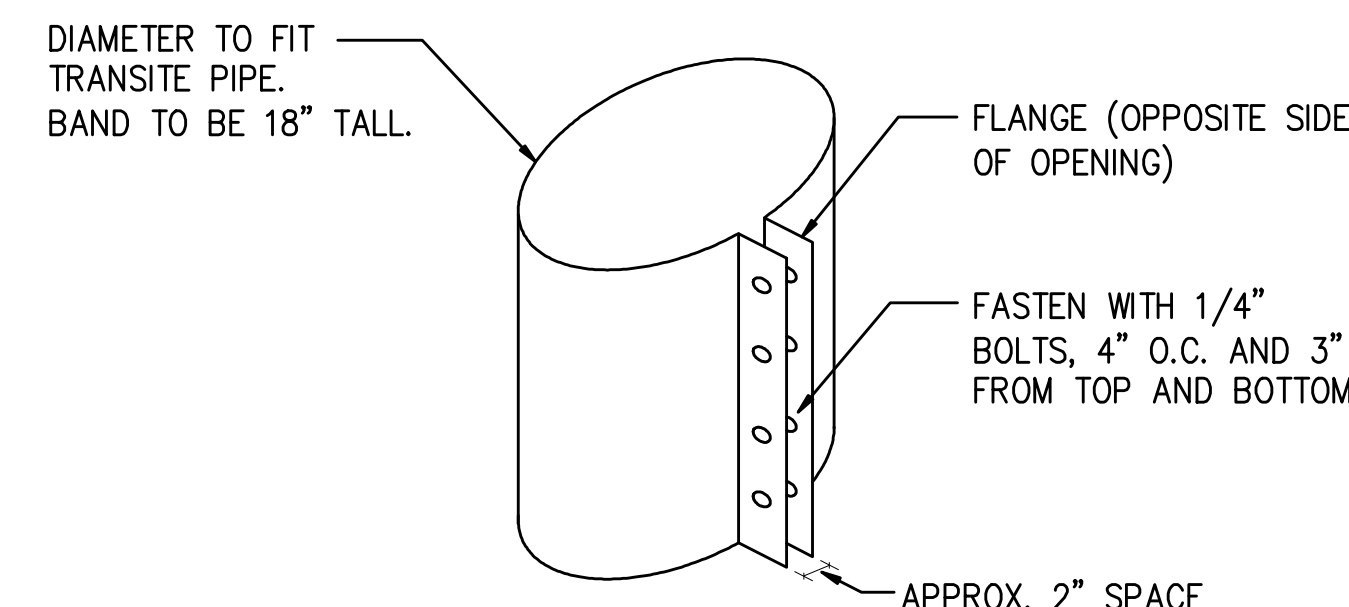
MARK	MANUFACTURER	MODEL NO.	FAN DATA								MOUNTING		MOTOR DATA				REMARKS
			AIR FLOW (CFM)	EXT. STATIC PRESS	FAN TYPE	WHEEL TYPE	DRIVE TYPE	RPM		TIP SPEED	POSITION	MOUNTING	ENCL	BHP	HP	VOLTS / PHASE	
								MOTOR	FAN								
EF-G1	GREENHECK	TCB-1-22-15	4700	0.5	INLINE	BI	BELT	1725	993	5559	HORIZONTAL	FLOOR STAND	TEFC	1.1	1 1/2	208/60/3	1 THRU 8
Notes																	
1 ALUMINUM WHEEL, HOUSING AND RUB RING																	
2 AMCA TYPE B SPARK RESISTANCE																	
3 INLET AND OUTLET COMPANION FLANGES																	
4 ONE SET SPARE BELTS																	
5 ISOLATOR SPRINGS, 1 INCH																	
6 NEMA-1 TOGGLE SWITCH																	
7 MOTOR STARTER - MODEL MSAC-1-9/J-G8-40, 1.5 HP, 280/60/3																	
8 INSPECTION SECTION ON INLET END OF FAN																	

**GAS FIRED MAKE-UP AIR UNIT**

MARK	MANUFACTURER	MODEL NO.	UNIT ARRANG.	DISCH. POSITION	CAPACITY						FAN			ELECTRICAL DATA				REMARKS	
					HEATING TYPE	GAS PRESS. IN. w.c.	HEATING MBH		INPUT MBH	OUTPUT MBH	CFM	EXT SP. IN. VC.	TOTAL SP.	MOTOR RPM	FAN RPM	BHP	HP		VOLTS / PHASE
							EAT °F	LAT °F											
MUA-1	STERLING	ME-40A	HORIZ	HORIZ	NAT GAS	14	-15	55	400	1049.8	4,700	0.7		1725			2.00	208/3	1 THROUGH 18
REMARKS																			
1 RETURN FIRES TAT																			
2 409 STAINLESS STEEL FURNACES																			
3 SINGLE STAGE BURNER CONTROL																			
4 STANDARD BLOWER																			
5 MAXITROL ELECTRONIC MODULATION BURNER CONTROL																			
6 PREMIUM EFFICIENCY MOTOR																			
7 MOTOR STARTER																			
8 REAR BLOWER INLET																			
9 1 INCH 30% FILTERS IN BLOWER CABINET																			
10 HIGH GAS PRESSURE SWITCH																			
11 LOW GAS PRESSURE SWITCH																			
12 GAS PRESSURE REGULATOR - IF REQUIRED FOR BURNER GAS PRESSURE																			
13 DIRTY FILTER SWITCH																			
14 NOTE THAT UNIT WILL OPERATE WITH 100% OUTSIDE AIR OR 100% RETURN AIR SEE CONTROL SPECIFICATION.																			

**LOUVER SCHEDULE**

MARK	MFR	MODEL NO.	INTAKE OR RELIEF	AIR FLOW CFM	SIZE		FREE AREA MIN SF	AIR PRESSURE		CONSTRUCTION						REMARKS
					W X H X D INCHES	MAX. * W.C.		BLADE STYLE	MATERIAL	THICKNESS (IN)		FRAME TYPE	BLADE ANGLE	BLADE ALIGNMENT		
										BLADE	FRAME					
L-1	GREENHECK	ESU-153	INTAKE	1,425	36 x 24	3.9	0.14	THINLINE	ALUM	0.05	0.063	FLANGE	30	HORIZ	1, 2, 3	
NOTES																
1 FREE AREA IS FOR SCHEDULED SIZE																
2 BIRDSCREEN																
3 MILL FINISH																



**A**  
EXISTING VENT STACK BAND DETAIL  
NOT TO SCALE

7/25/17 ISSUED FOR CONSTRUCTION  
Date Issuance/Revisions Symbol

**DANE COUNTY  
CAPITOL SQUARE  
SOUTH RAMP**  
REQUEST FOR BID NO. 317022

**HEATING & VENTILATING  
EQUIPMENT REPLACEMENT**

113 SOUTH HENRY STREET  
MADISON, WI

Drawing Title:  
**HVAC SCHEDULES  
AND DETAILS**

Drawn By:  
FBN  
**H200**