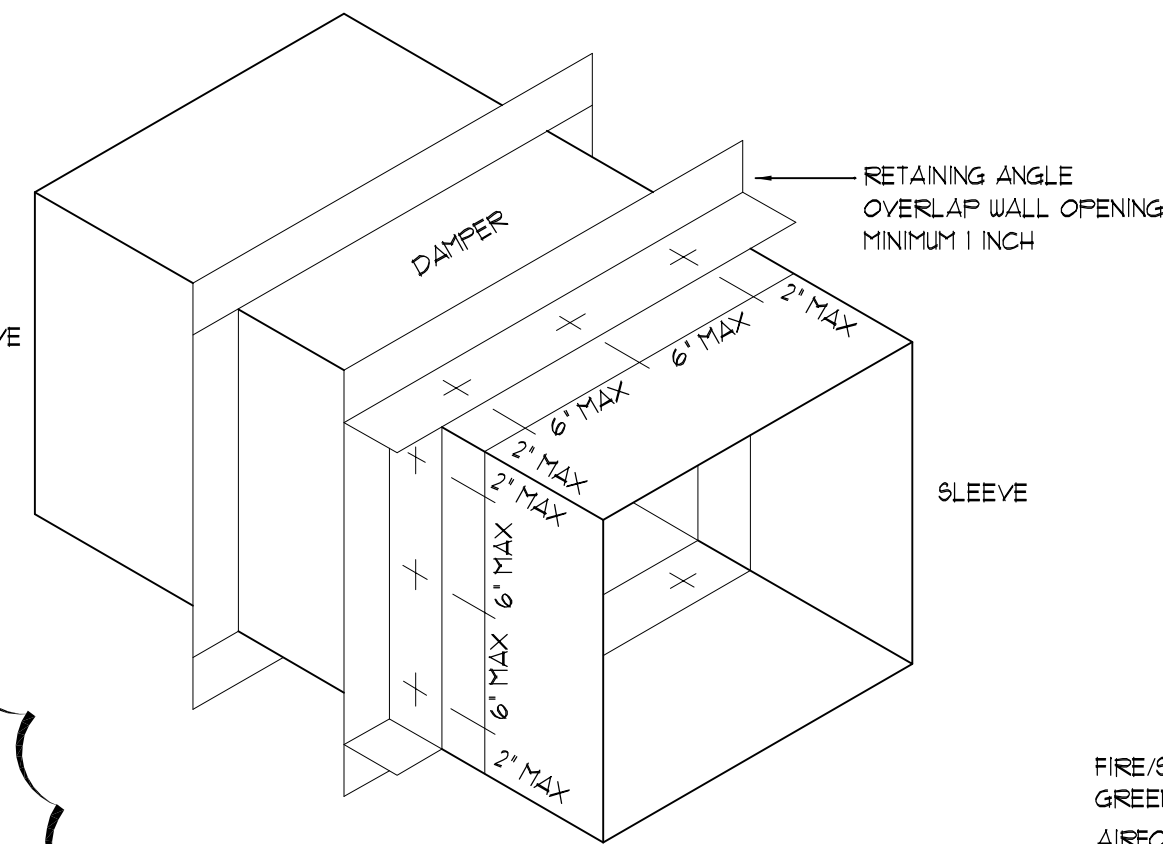


**PREPARATION OF OPENINGS IN STUD WALLS**

- A. GYPSUM WALL BOARD MUST BE FASTENED 12" O.C. TO ALL STUD AND RUNNER FLANGES SURROUNDING OPENING.
- B. ALL CONSTRUCTION AND FASTENERS MUST MEET THE REQUIREMENTS OF THE APPROPRIATE WALL DESIGN (UL DIRECTORY) AND OR LOCAL CODES.

**SECURING OF DAMPER/SLEEVE ASSEMBLY**

- A. DAMPER/SLEEVE ASSEMBLIES MUST BE INSTALLED IN WALL AND FLOOR OPENINGS USING RETAINING ANGLES ON EACH SIDE OF THE WALL/FLOOR AS DESCRIBED BELOW:  
 RETAINING ANGLES MUST BE A MINIMUM OF 16 GA STEEL AND HAVE A MINIMUM 1 1/2" x 1 1/2" LEGS.  
 RETAINING ANGLES MUST BE ATTACHED TO THE DAMPER USING ONE OR MORE OF THE FOLLOWING METHODS:  
 TACK OR SPOT WELDS  
 #10 (3/4" MAX) SHEET METAL SCREWS  
 1/4" BOLTS AND NUTS  
 3/16" STEEL POP RIVETS
- B. ATTACHMENTS MUST BE SPACED A MAXIMUM OF 6" O.C. AND A MAXIMUM OF 2" FROM CORNERS. THE ANGLES MUST BE ATTACHED ON ALL 4 SIDES OF THE SLEEVE WITH BUTT JOINTS AT EACH CORNER. A MINIMUM OF 2 ATTACHMENTS ARE REQUIRED ON EACH SIDE, TOP AND BOTTOM. ENSURE THAT THE ATTACHMENT DEVICE DOES NOT INTERFERE WITH THE OPERATION OF THE DAMPER. THE ANGLES NEED NOT BE ATTACHED TO EACH OTHER AT THE CORNERS. DO NOT SECURE THE RETAINING ANGLE TO THE FIRE SEPARATION.



**THROUGH PENETRATION**

**ACTUATOR CONNECTIONS**

- A. ELECTRICAL CONNECTIONS TO DAMPERS SHALL BE IN ACCORDANCE WITH WIRING DIAGRAMS DEVELOPED IN COMPLIANCE WITH APPLICABLE CODES, ORDINANCES AND REGULATIONS.

**SLEEVE LENGTH AND WALL THICKNESS**

- A. THE SLEEVE MAY EXTEND A MAXIMUM OF 16 IN BEYOND THE WALL OR FLOOR ON THE ACTUATOR SIDE OF THE DAMPER AND A MAXIMUM OF 6 IN ON THE OPPOSITE SIDE. RECOMMENDED STANDARD SLEEVE LENGTHS FOR VARIOUS WALL THICKNESSES ARE:

WALL THICKNESS	SLEEVE LENGTH
4 TO 6 IN	16 IN
7 TO 10 IN	20 IN
11 TO 13 IN	24 IN

**DUCT TO SLEEVE CONNECTION**

- A. SHALL BE BREAKAWAY TYPE.

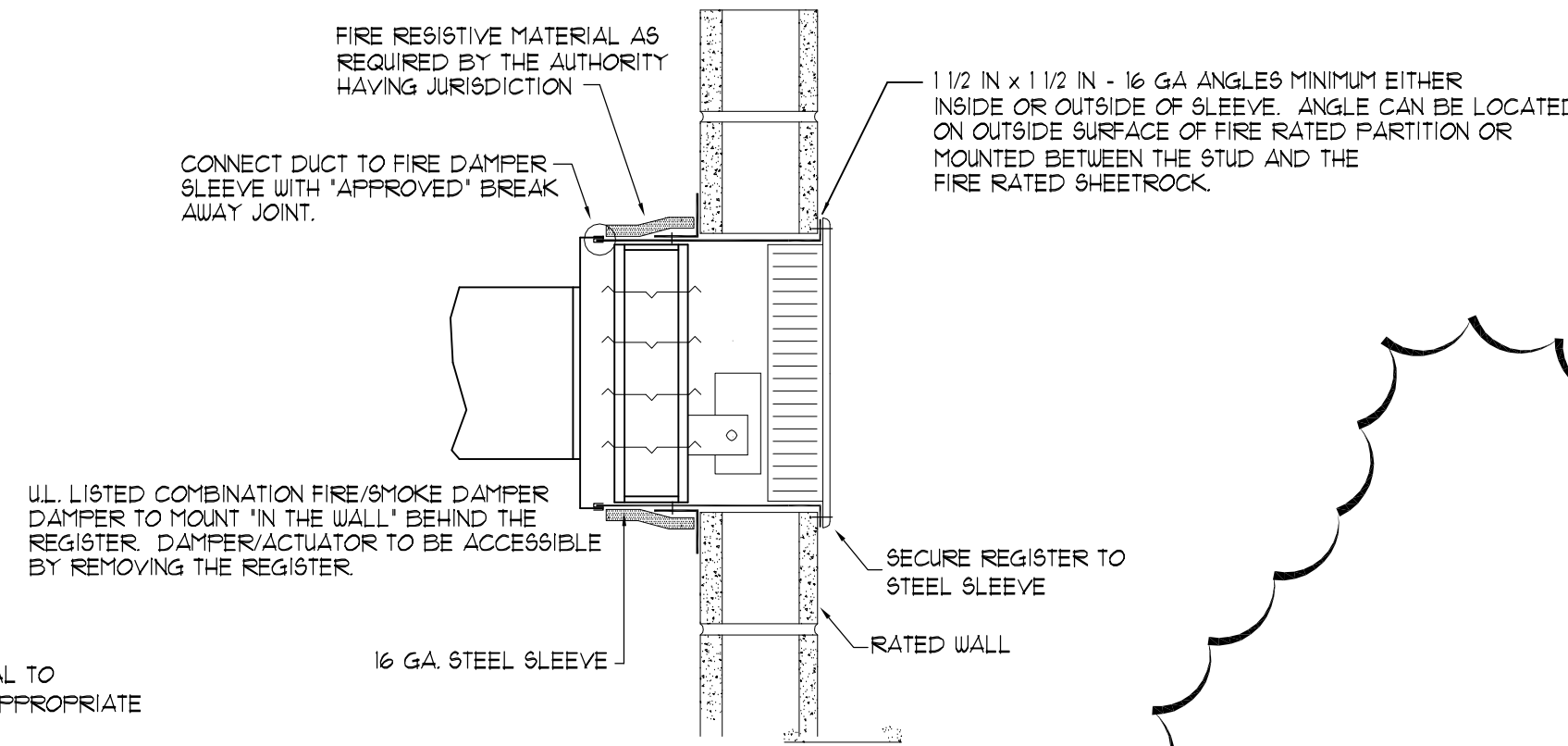
**ELECTRICAL GUIDELINES**

- A. ALL WIRING SHOULD BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE, ANSI/NFPA-70 LATEST EDITION.

**CLEARANCES BETWEEN DAMPERS AND WALL OPENINGS**

- A. DAMPER/SLEEVE ASSEMBLIES EXPAND DURING PERIODS OF INTENSE HEAT. THEREFORE, IT IS ESSENTIAL THAT OPENINGS IN WALLS OR FLOORS BE LARGER THAN THE DAMPER/SLEEVE TO ALLOW FOR EXPANSION. MINIMUM CLEARANCES REQUIRED BETWEEN THE OUTSIDE OF THE DAMPER/SLEEVE AND THE OPENING ARE:

- GALVANIZED STEEL DAMPERS AND SLEEVES: 1/8" PER FOOT OF DAMPER WIDTH + HEIGHT WITH A MINIMUM CLEARANCE OF 1/4", MAXIMUM OF 1 1/2".
- RECOMMENDED CLEARANCES FOR WIDTH AND HEIGHT DIMENSIONS OF:  
 48" OR LESS: 1/2" CLEARANCE  
 48" TO 96": 1" CLEARANCE  
 MORE THAN 96": 1 1/2" CLEARANCE

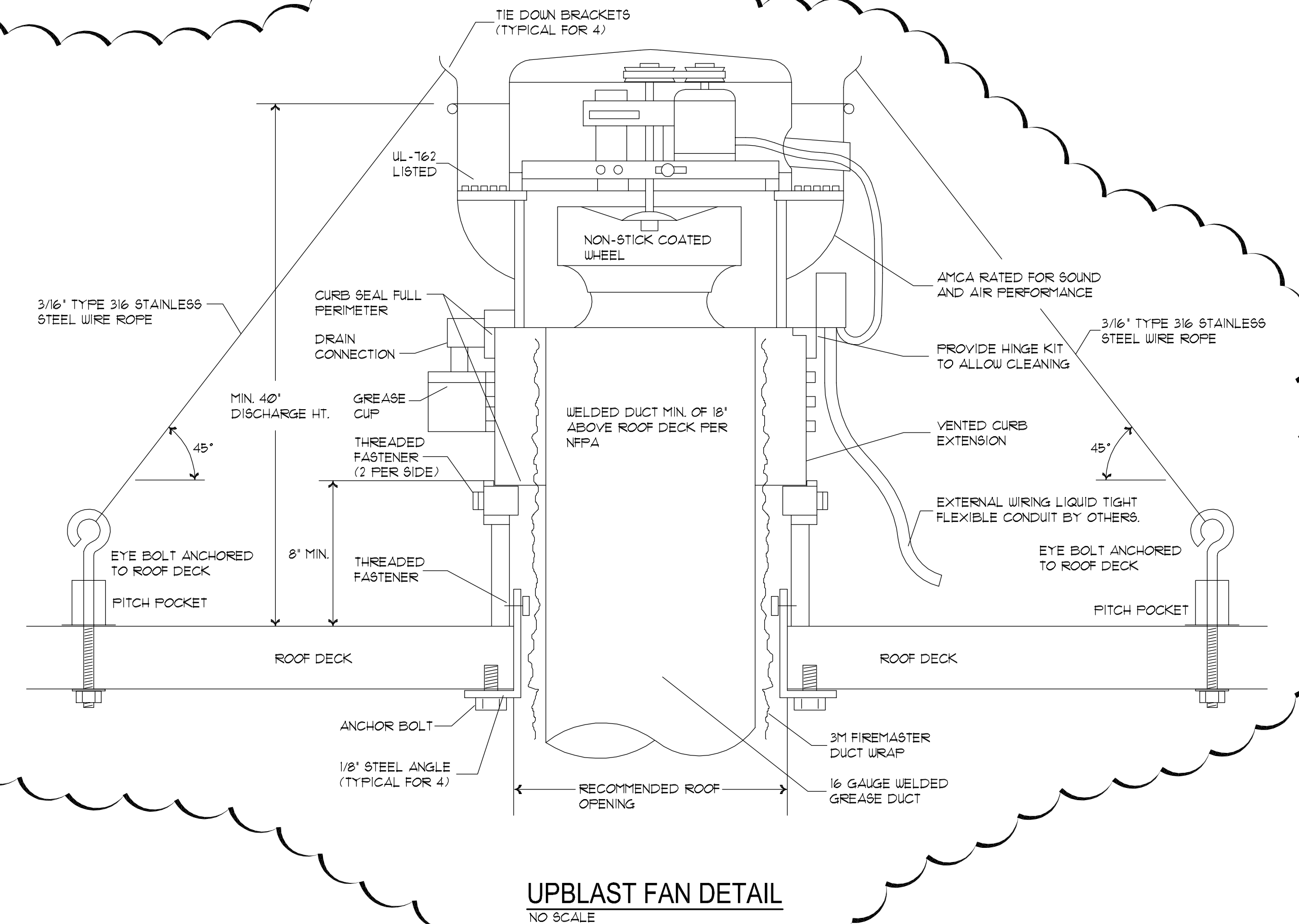


**TERMINATION AT WALL**

- FIRE/SMOKE DAMPERS SHALL BE EQUAL TO GREENHECK FSD-33 OR OFSD-33 AS APPROPRIATE
- AIRFOIL BLADES, DYNAMIC RATED
- 1 1/2 HOUR RATED
- 120 VOLT INTERNALLY MOUNTED ACTUATOR
- UL LISTED 955 4 9555
- FACTORY SLEEVE WITH BREAK-AWAY CONNECTIONS
- OPEN/CLOSED INDICATION
- CONTROL WITH SMOKE DETECTOR AT ROOFTOP UNIT

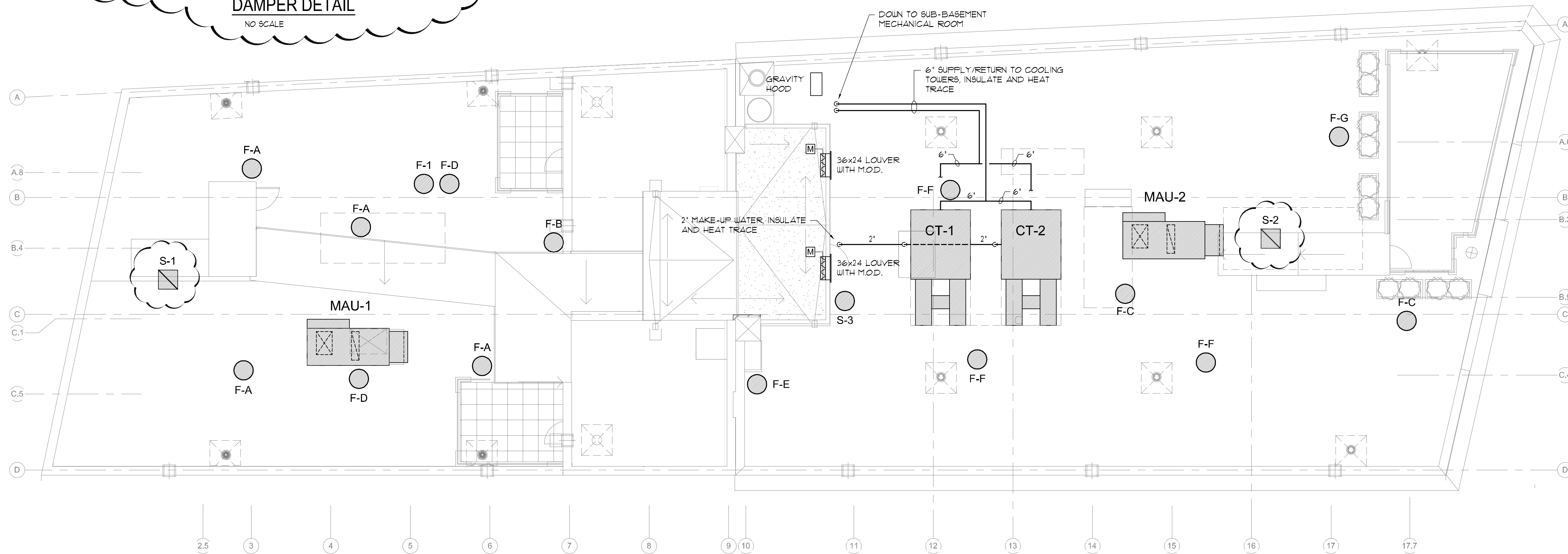
**COMBINATION FIRE/SMOKE DAMPER DETAIL**

NO SCALE



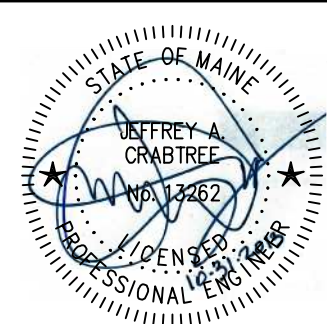
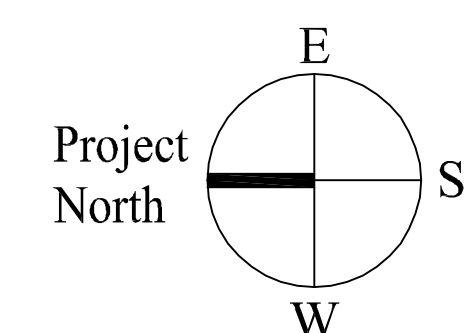
**UPBLAST FAN DETAIL**

NO SCALE



**ROOF PLAN - HVAC**

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



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Revisions:

1	13_10-14	Issue for Bid & Marriot Revw
2	13_10-21	Addendum #2
3	13_10-31	Addendum #3

Date:  
08 OCT 13

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

**ROOF  
HVAC PLAN**

**M8.00**