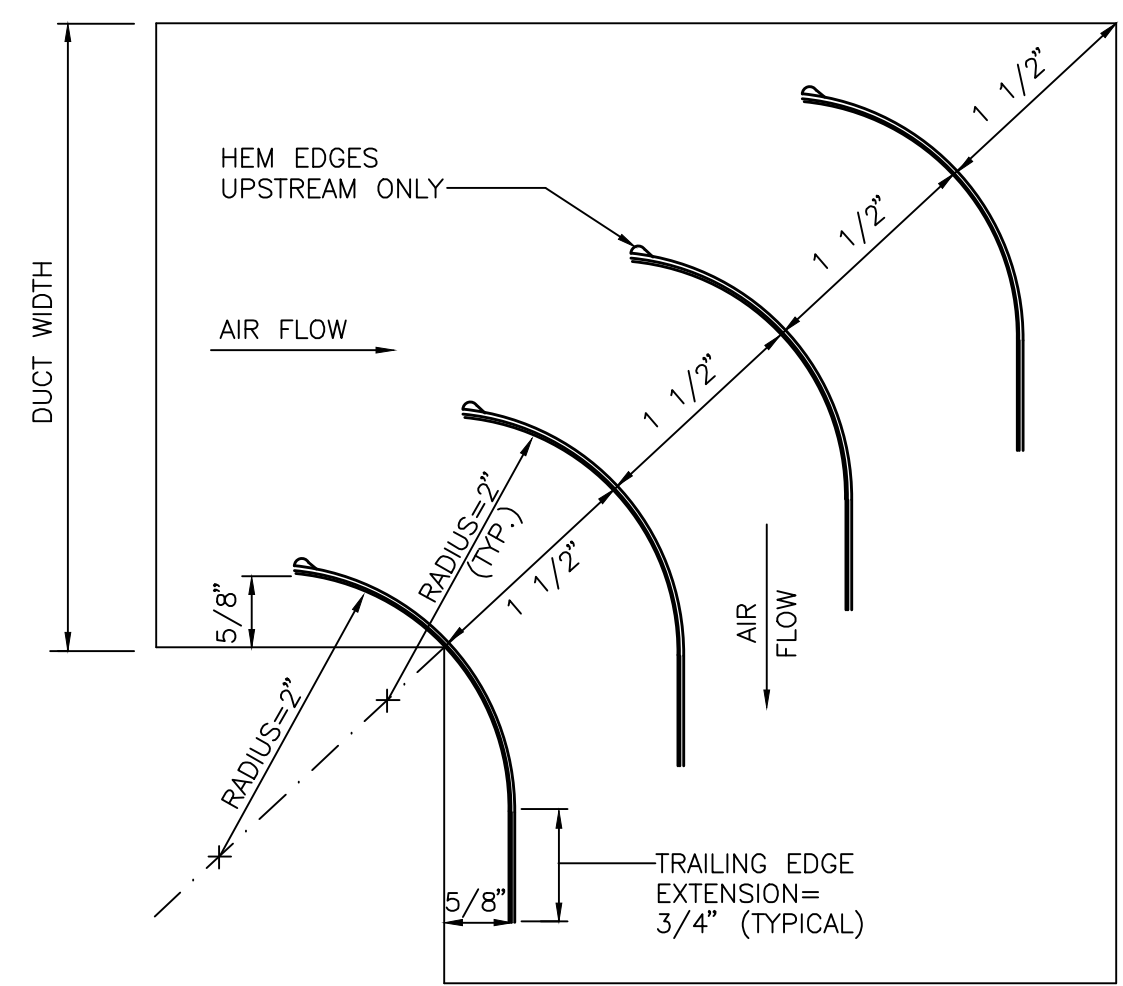


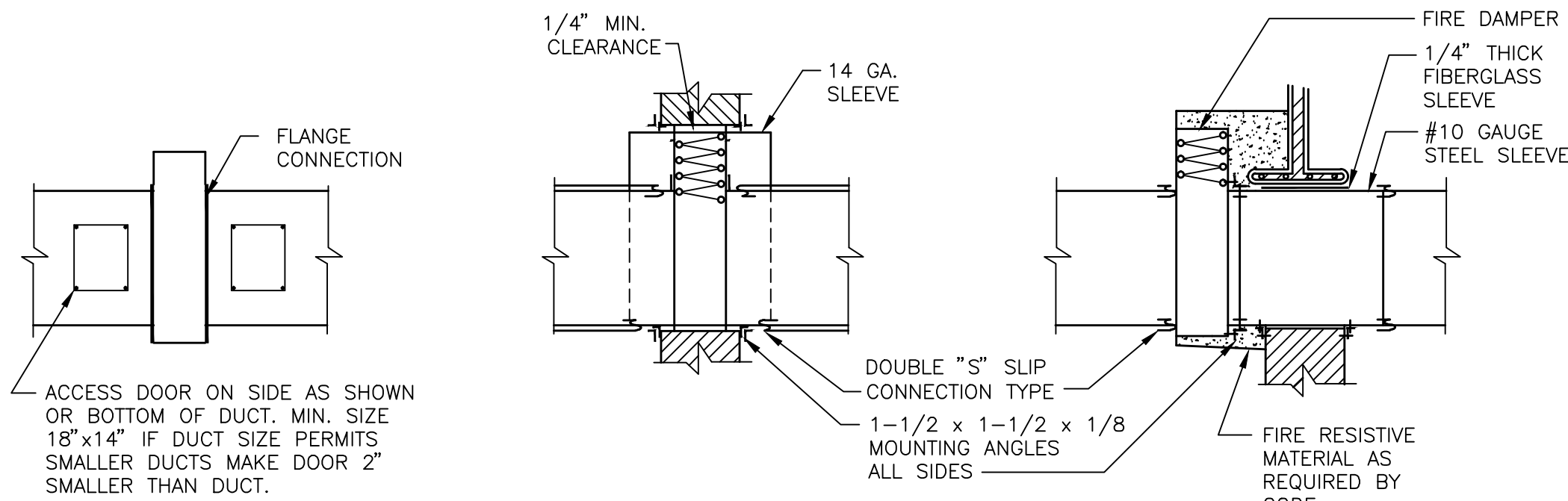
**TYPICAL SINGLE LINE DUCT STANDARDS**  
(NOT TO SCALE)



**NOTES:**

- ALL TURNING VANES TO BE MADE OF 18 GAUGE GALV. SHEET METAL, 2" RADIUS, 1 1/2" SPACING ON DIAGONAL, 3/4" TRAILING EDGE, SINGLE THICKNESS, FOR DUCT VELOCITIES ABOVE 2000 FPM.
- EDGES OF VANES SHALL BE CLEANLY SHEARED WITH NO BURRS, ETC.
- VANES SHALL BE SECURELY WELDED TO RUNNERS, AND WELD RUNNERS TO DUCT SIDES, AS SHOWN IN SMACNA MANUAL.

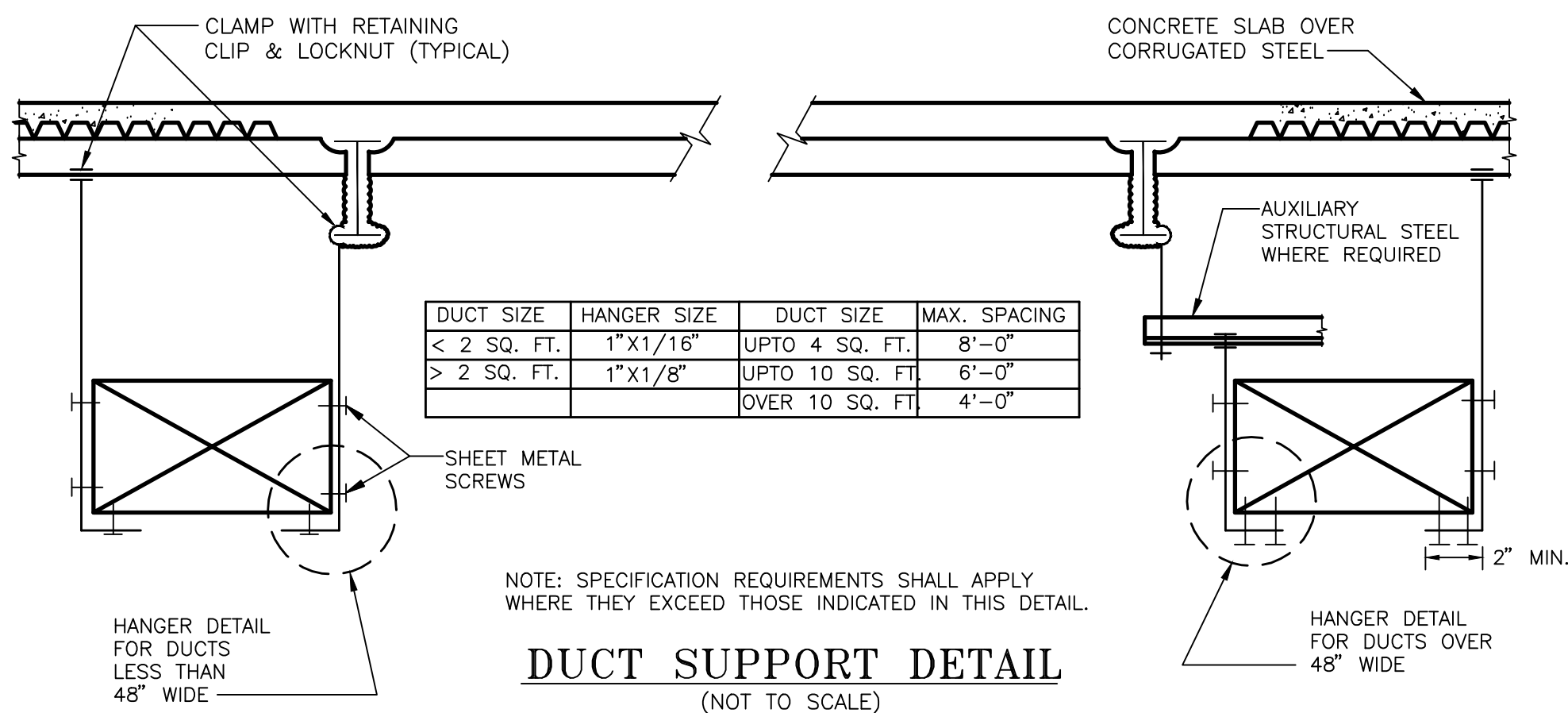
**TURNING VANES FOR SQUARE ELBOWS IN MEDIUM VELOCITY DUCTWORK OF MAXIMUM 36 X 36 CROSS-SECTION**  
(NOT TO SCALE)



**FIRE DAMPER DUCT DETAIL**  
(NOT TO SCALE)

**NOTES:**

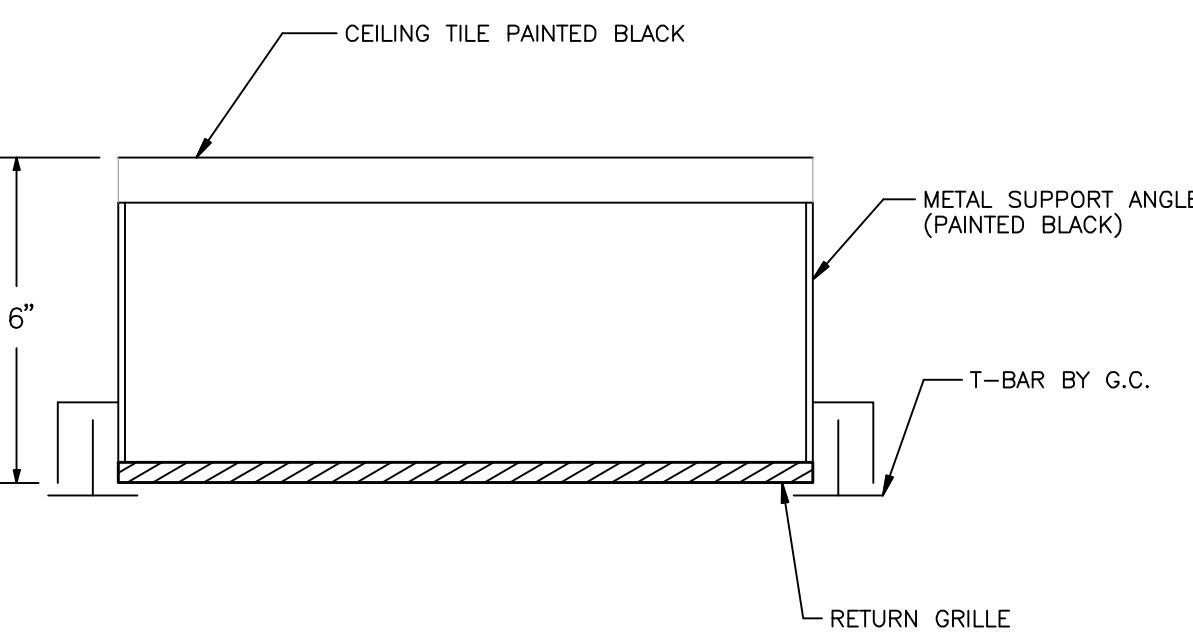
- ALL FIRE DAMPERS SHALL BE RATED TO MAINTAIN THE RATING OF THE FIRE SEPARATION. THEY SHALL BE APPROVED AND LABELED BY UNDERWRITER'S LABORATORIES (U.L.), THE INSTALLATION SHALL BE IN ACCORDANCE WITH NFPA 90A, UL 555 AND SIMON'S FIRE SMOKE AND RADIATION DAMPER INSTALLATION GUIDE FOURTH EDITION 1992.
- ALL DUCT-COLLAR CONNECTIONS SHALL COMPLY WITH UL 555 AND SMACNA.
- GAUGES FOR COLLAR AND RECTANGULAR DUCT SHALL BE AS FOLLOWS:
  - CONNECTIONS BETWEEN COLLAR AND DUCT WORK SHALL BE BREAK-AWAY TYPE SUCH AS "S" SLIP, CRIMP, OR OTHER SLIP TYPE IN ACCORDANCE WITH SMACNA FIRE DAMPER GUIDE, 1992. UNLESS OTHERWISE REQUIRED BY CODE.
  - FIRE DAMPER COLLARS SHALL BE SAME GAUGE AS DUCTWORK WITH A MINIMUM OF 16 GAUGE FOR DUCTWORK UP TO 36" WIDE. FOR DUCTWORK ABOVE 36" WIDE, THE COLLAR SHALL BE 14 GAUGE.
  - PROVIDE STEEL STUD FRAMING IN THE DRY WALL OPENING TO ACCEPT THE FIRE DAMPER ASSEMBLY (INCLUDING SLEEVES, ETC.) AS SHOWN.
  - AFTER THE INSTALLATION OF DAMPERS, THE CONTRACTOR SHALL SEAL AND TAPE ALL JOINTS FOR AIR TIGHTNESS.
- TO ALLOW FOR EXPANSION, DAMPERS SHALL HAVE A CLEARANCE EQUIVALENT TO 1/8" FOR EACH FOOT OF DAMPER HEIGHT. THE SIDE CLEARANCE SHALL BE 1/8" FOR EACH FOOT OF DAMPER WIDTH DIVIDED EQUALLY TO THE RIGHT AND TO THE LEFT OF THE COLLAR. THE MAXIMUM CLEARANCE FOR THE TOP AND THE TOTAL OF BOTH SIDES SHALL BE 1/2" EACH. THE RETAINING ANGLES SHALL BE 1-1/2 x 1-1/2 x 1/8 SO THAT THERE WILL BE A MINIMUM OF 1" OVERLAP ON THE FIRE SEPARATION.
- DAMPER SHALL BE SECURED TO COLLAR WITH EITHER 1/2" TACK WELDS, NO. 10 SHEETMETAL SCREWS, 1/4" DIA., NUTS AND BOLTS, OR 3/16" STEEL POP RIVETS, ALL 6" ON CENTER.
- RETAINING ANGLES SHALL BE SECURED TO COLLAR, SLEEVE OR PLATE WITH EITHER 1/2" TACKWELDS, NO. 10 SHEETMETAL SCREWS, 1/4" DIA., NUTS AND BOLTS, OR 3/16" STEEL POP RIVETS, ALL 6" ON CENTER.
- WHERE HUNG CEILING DOES NOT HAVE REMOVABLE TILES, AN ACCESS DOOR (FIRE RATED WHERE REQUIRED) SHALL BE INSTALLED IN CEILING NEAR LOCATION OF FIRE DAMPER. PROVIDE ACCESS DOOR FOR INSTALLATION IN CEILING BY G.C.
- ALL RETAINING ANGLES SHALL BE GALVANIZED STEEL.
- INSTALL FIRE DAMPER IN THIS FASHION SO THE LOCKING DEVICE CAN BE ACCESSED WHEN THE DAMPER IS CLOSED.



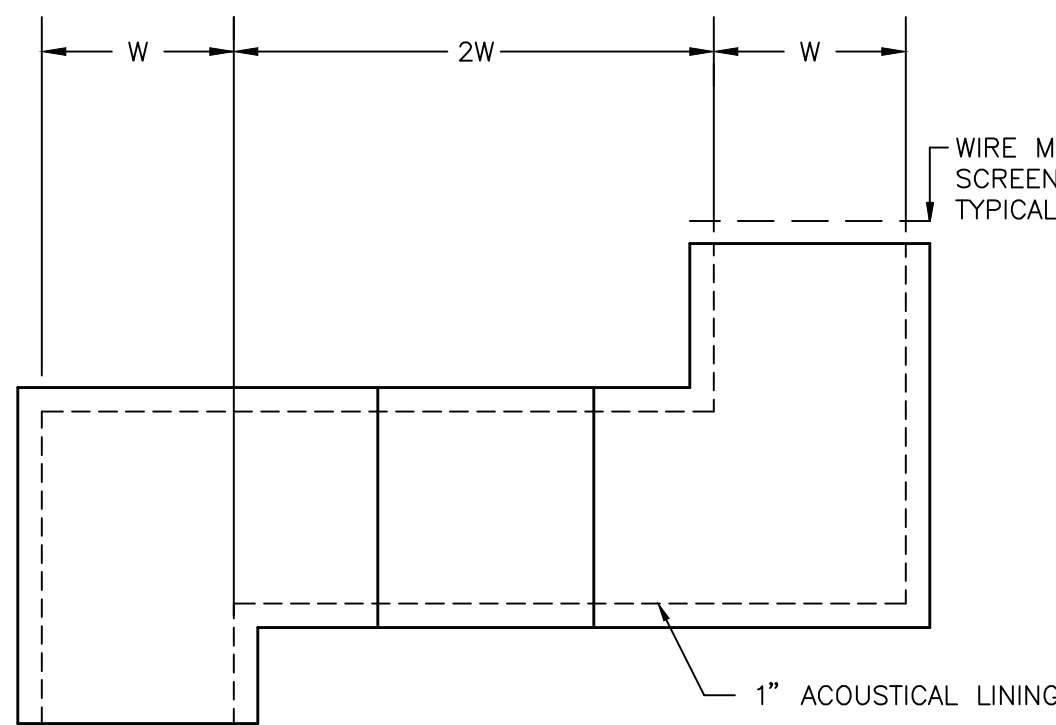
**DUCT SUPPORT DETAIL**  
(NOT TO SCALE)

NOTE: RADIUS ELBOWS SHALL HAVE A THROAT RADIUS EQUAL TO 1.5 TIMES DUCT WIDTH.

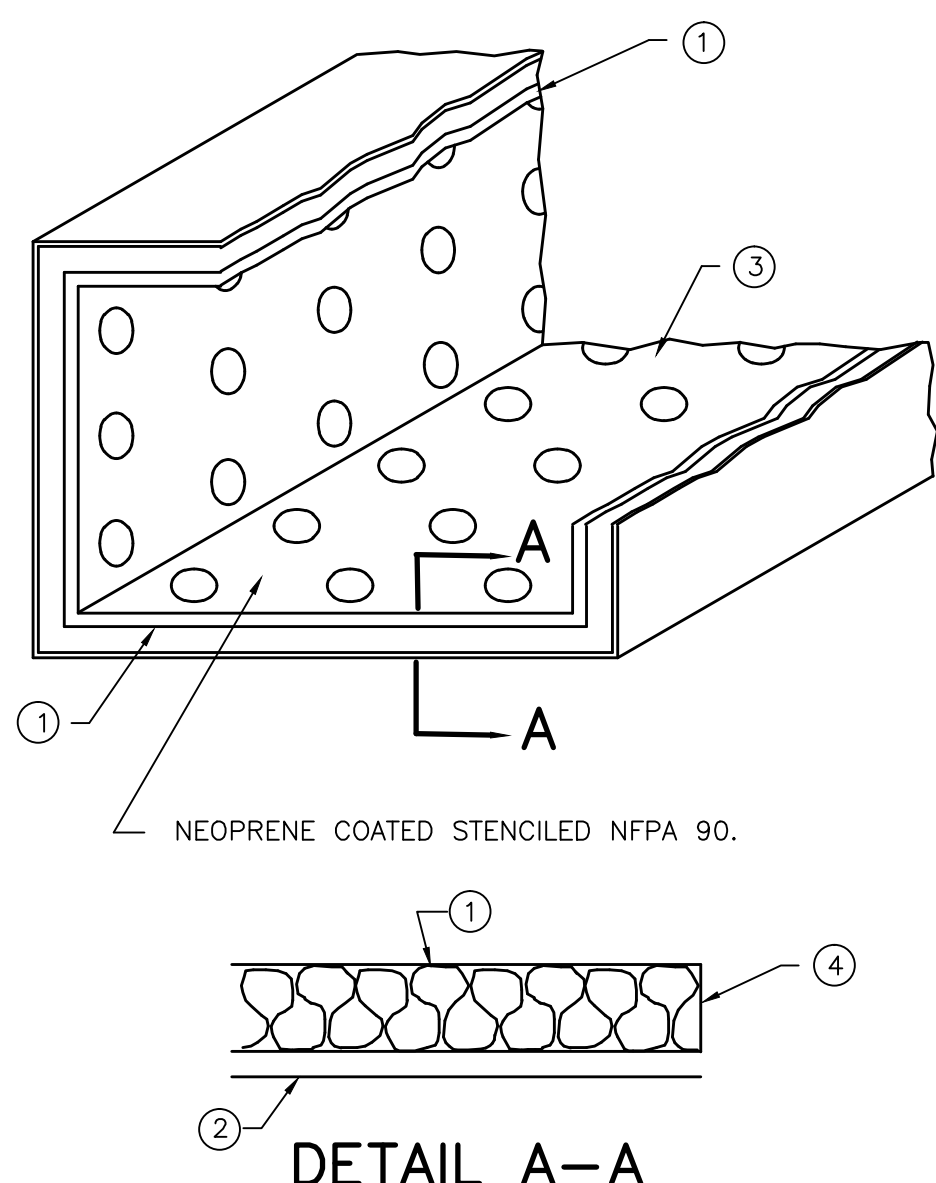
**LOW VELOCITY DUCTWORK ELBOWS**  
(NOT TO SCALE)



**DETAIL OF RETURN REGISTER IN HUNG CEILING**  
(NOT TO SCALE)



**TRANSFER DUCT DETAIL**  
(NOT TO SCALE)

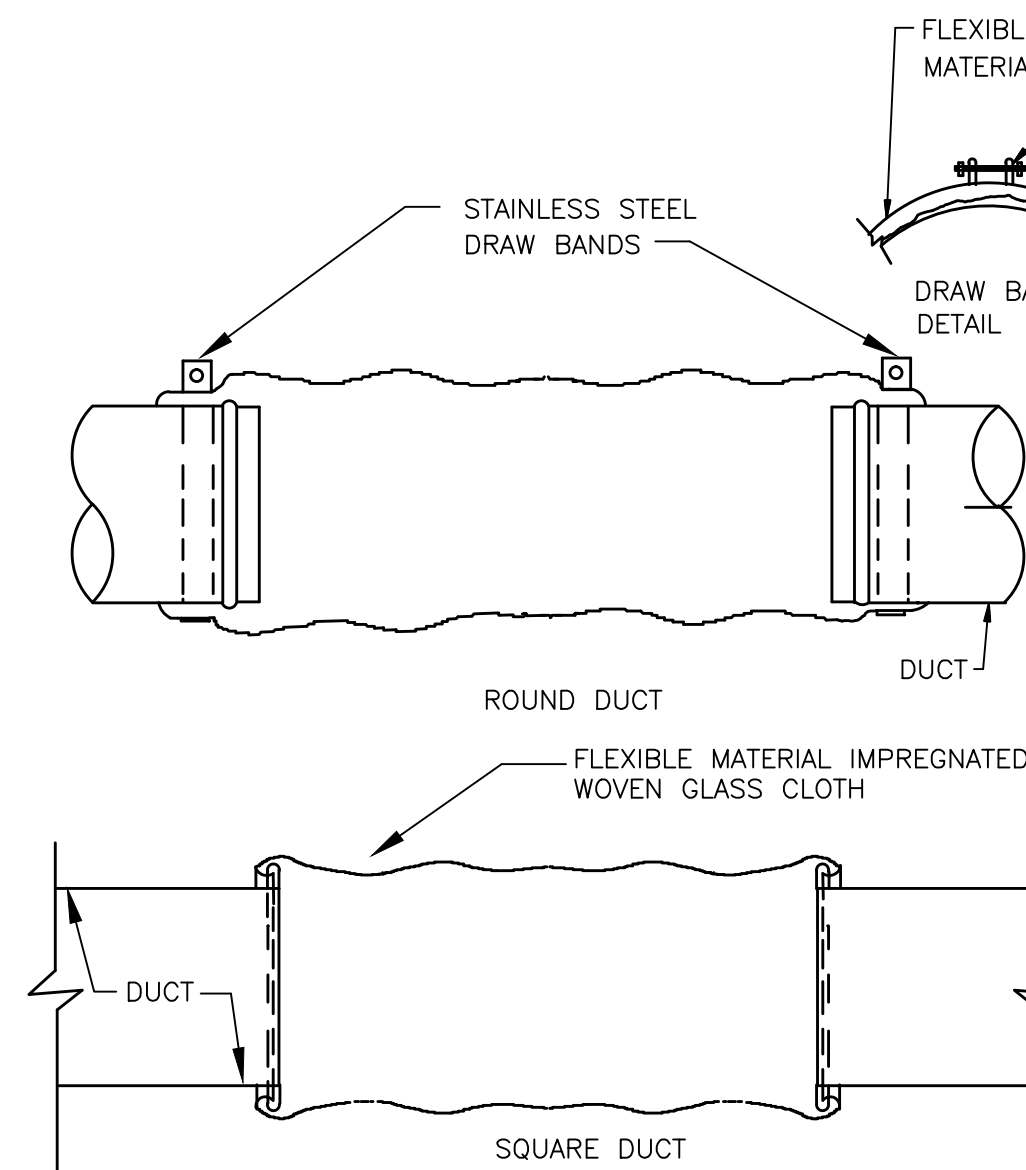


**DETAIL A-A**

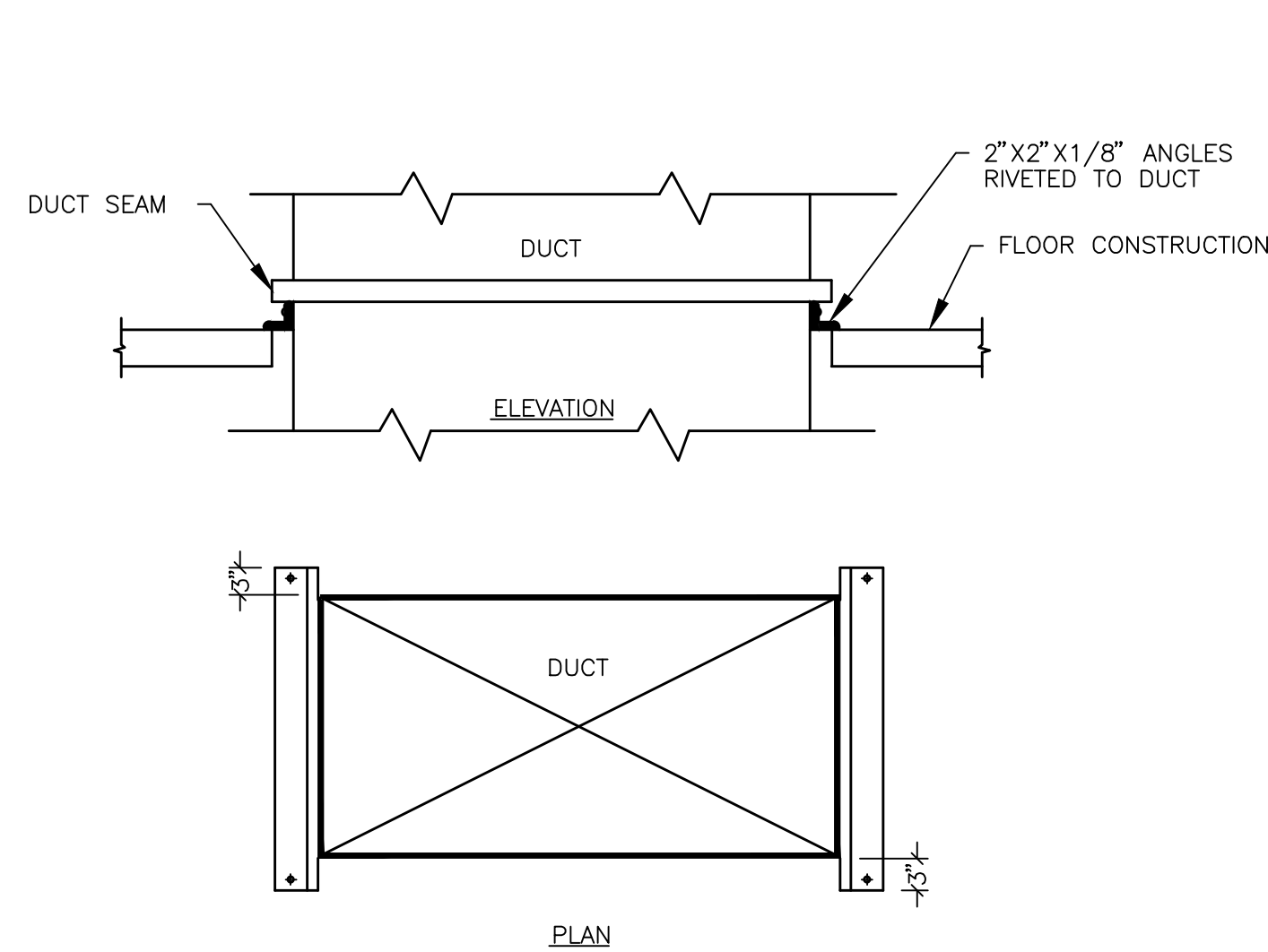
**NOTES:**

- MAT-FACED FIBERGLASS ACOUSTIC LINING WITH EPA REGISTERED ANTIMICROBIAL COATING APPROVED TYPE BY N.F.P.A. 90. THICKNESS AND DENSITY AS PER SPEC.
- DUCT LINER SHALL BE ADHERED TO THE DUCT WITH AN APPROVED FIRE RETARDANT ADHESIVE (6" WIDE @ 12" O.C. MINIMUM)
- MECHANICAL FASTENERS WHICH DO NOT PIERCE THE SHEET METAL SHALL BE ON 16" INCH CENTERS AND WITHIN 3" OF EACH EDGE (WELD PINS WITH 2" WASHERS).
- ACOUSTICAL EDGES AT TRANSVERSE AND LONGITUDINAL CONNECTIONS SHALL BE SEALED.

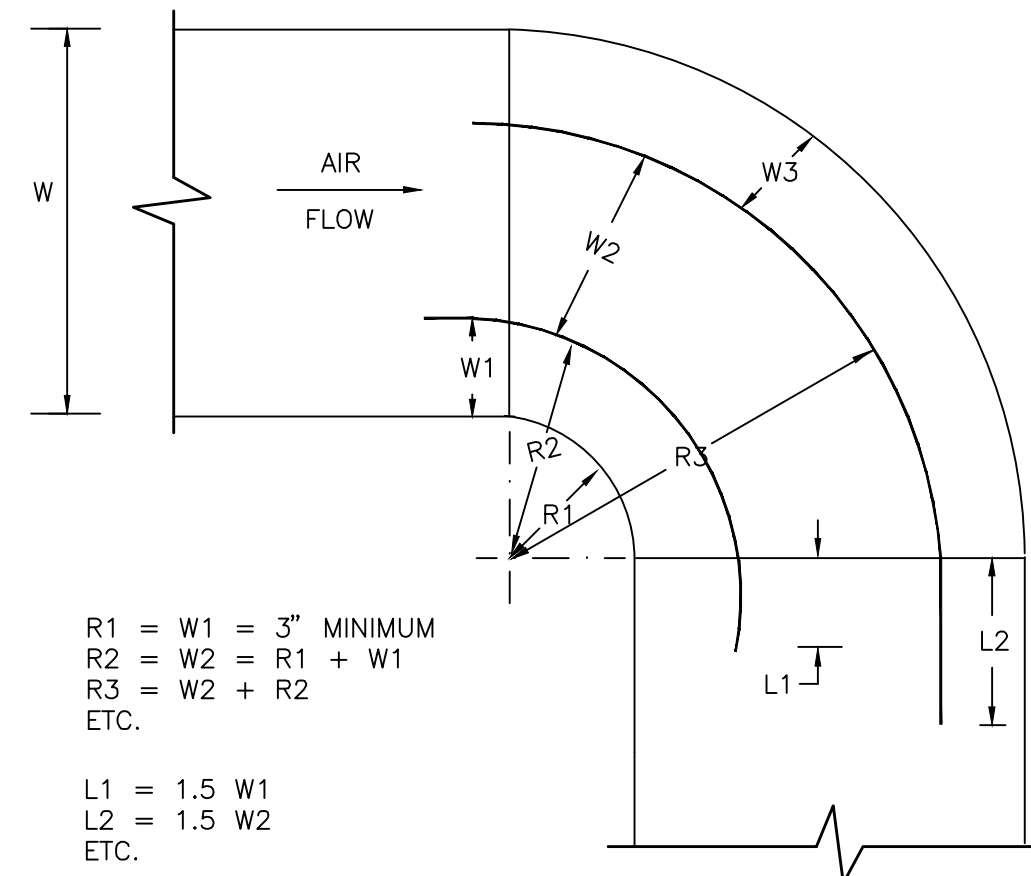
**DETAIL OF DUCTWORK WITH ACOUSTIC LINING**  
(NOT TO SCALE)



**DETAIL OF FLEXIBLE DUCT CONNECTOR**  
(NOT TO SCALE)



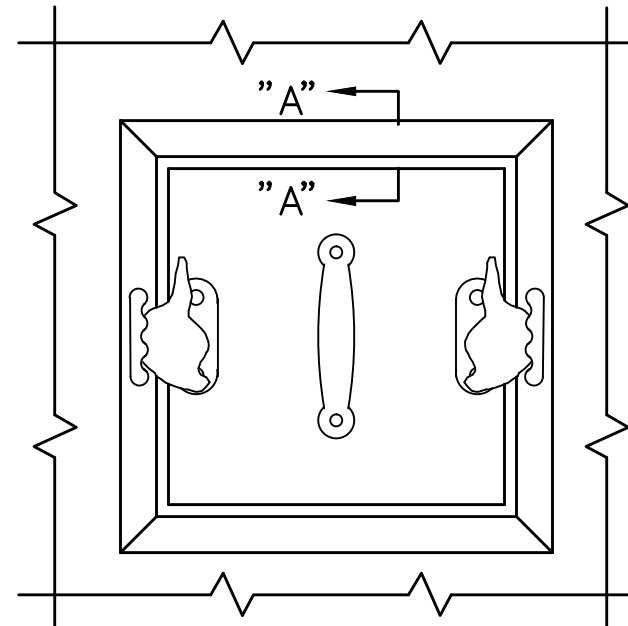
**SUPPORT DETAIL FOR VERTICAL DUCTS**  
(NOT TO SCALE)



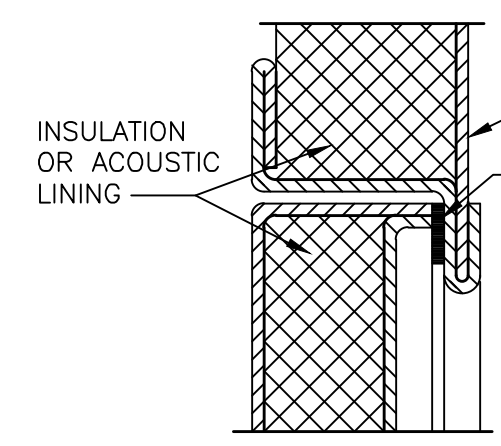
**NOTES:**

- RADIUS ELBOWS, WHERE POSSIBLE SHOULD HAVE THROAT RADIUS AT LEAST EQUAL TO 1.5 TIMES DUCT WIDTH, W.
- ALL RADIUS ELBOWS WITH A THROAT RADIUS LESS THAN THE DUCT WIDTH ARE TO BE FABRICATED WITH SPLITTERS AS SHOWN, IN THIS DWG. WHEN THROAT IS SQUARE, W1 IS TO BE 3 INCHES, W2 THEN = 6", W3 = 12", ETC.
- WHERE VANED ELBOWS ARE REQUIRED FOR MEDIUM VELOCITY (>2000 FPM) SYSTEMS DUE TO SPACE CONDITIONS, THIS IS ONE APPROVED TYPE OF ELBOW, DO NOT USE DOUBLE THICKNESS TURNING VANES FOR THIS APPLICATION.
- NUMBER OF SPLITTERS TO SUIT TOTAL DUCT WIDTH.

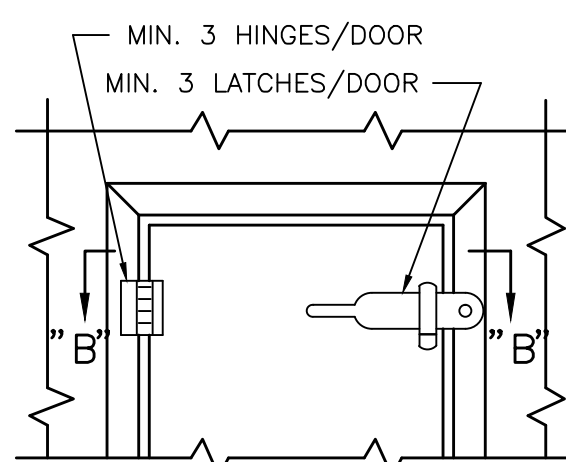
**MEDIUM VELOCITY DUCTWORK ELBOWS ABOVE 36 X 36 CROSS-SECTION**  
(NOT TO SCALE)



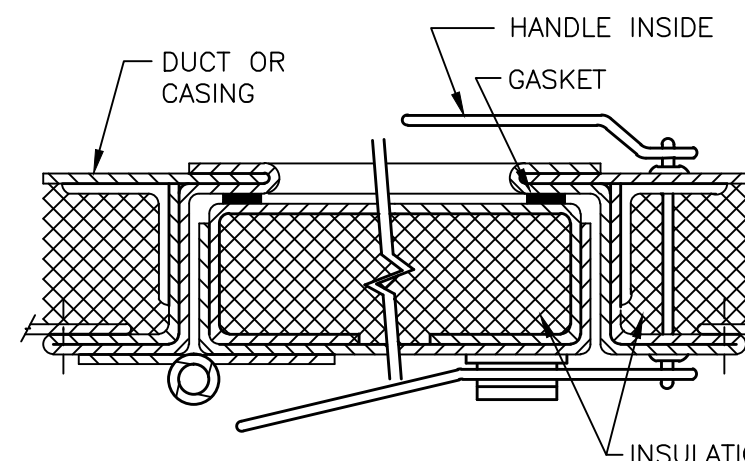
**ACCESS PANEL**



**SECTION "A" - "A"**



**ACCESS DOOR**

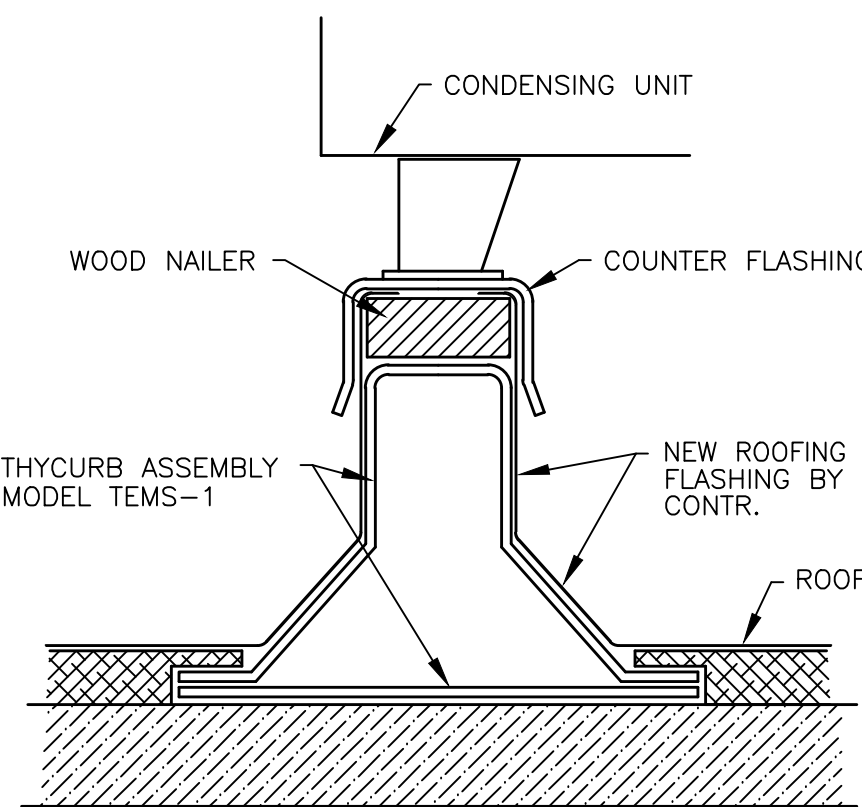


**SECTION "B" - "B"**

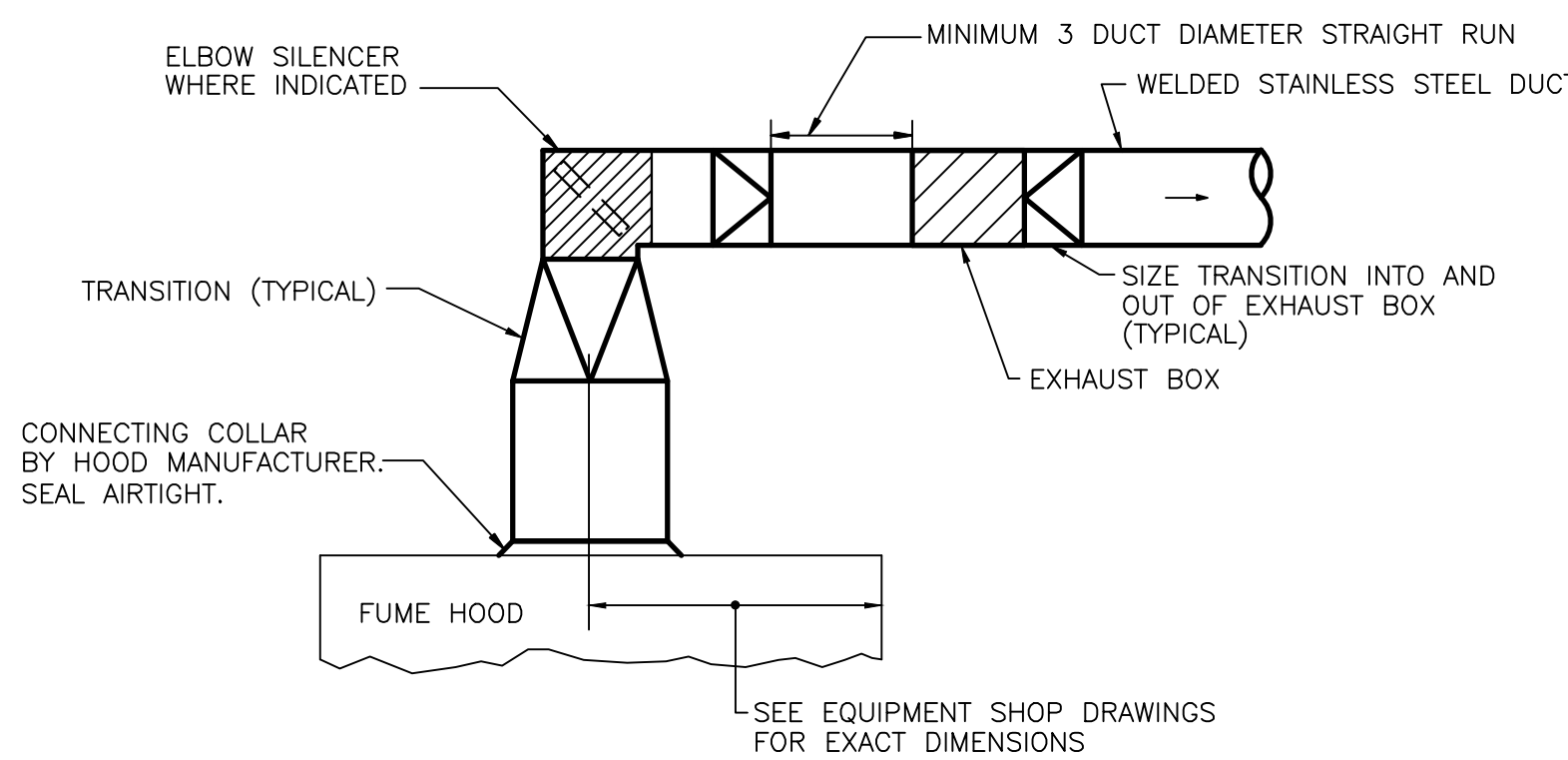
**NOTES:**

- LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY
- HINGES ON THE ACCESS DOORS SHALL HAVE NON-CORROSIVE PINS
- PROVIDE ACCESS DOORS ON AIR HANDLING UNITS AND DUCT WORK INSTALLED IN EQUIPMENT ROOMS. PROVIDE ACCESS PANELS ON ALL EQUIPMENT AND DUCTWORK INSTALLED ABOVE FINISHED CEILINGS WHERE SPACE LIMITATIONS DO NOT ALLOW HINGED DOORS TO OPEN.
- ACCESS DOOR INSTALLED IN THE DUCT EXPOSED TO WEATHER TO BE WEATHERPROOF. ALL HARDWARE SHALL BE STAINLESS STEEL IN THIS INSTANCE.

**ACCESS DOOR & PANEL DETAILS**  
(NOT TO SCALE)



**EQUIPMENT SUPPORT CURB DETAIL**  
(NOT TO SCALE)



**NOTES:**

- SIZE TRANSITION TYPICAL FOR INSTALLATION OF EXHAUST BOXES ASSOCIATED WITH GENERAL EXHAUST. PROVIDE SILENCERS AT LOCATIONS INDICATED ON DRAWINGS.

**TYPICAL FUME HOOD DUCT CONNECTION**  
(NOT TO SCALE)



OWNER:  
Ramapo College of New Jersey  
505 Ramapo Valley Road  
Mahwah, New Jersey 07430-1630

CONSTRUCTION MANAGERS:  
Cambridge Construction Management  
335 East Main Street  
Somerville, NJ 08876  
908-253-9500

ARCHITECT:  
Mitchell/Giurgola Architects, LLP  
630 Ninth Avenue, Suite 711  
New York, New York 10036  
212 663 4000

MEP ENGINEER:  
Joseph R. Loring & Associates, Inc.  
619 Pennsylvania Plaza  
New York, NY 10001  
212 563 7400

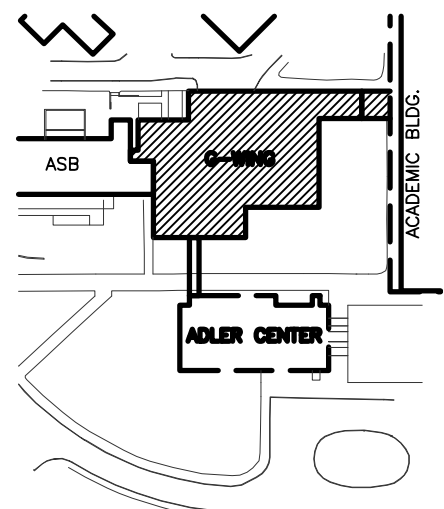
STRUCTURAL ENGINEER:  
Yarael A Seiniuk PC  
228 East 45th Street 2nd Floor  
New York, NY 10017  
212 687 2233

LANDSCAPE ARCHITECT:  
Dirtworks, PC  
200 Park Avenue South  
New York, NY 10003  
212 529 2263

SITE CIVIL ENGINEER:  
Langan Engineering  
619 River Drive Center 1  
Elmwood Park, NJ 07407-1338  
201 794 6900

AV CONSULTANT  
Cerami & Associates  
404 Fifth Avenue  
New York, NY 10018  
212 370 1776

**Key Plan:**



6/8/12	DCA FILING
7/19/12	ISSUED FOR BID
1/15/13	ISSUED FOR CONSTRUCTION
8/12/16	AS-BUILT CONSTRUCTION DOCUMENTS

NR	DATE	COMMENTS
ISSUE/REVISION		

ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.

Project:  
**G-WING RENOVATION & ADLER CENTER**

Submission:  
**CONSTRUCTION DOCUMENTS**

Drawing Title:  
**MECHANICAL DETAILS SHEET No.1**

PROJECT NR: 102700	DATE: 6/8/12
RCH PROJ. NR: 08-240C	SCALE: NOT TO SCALE

**H7.01**