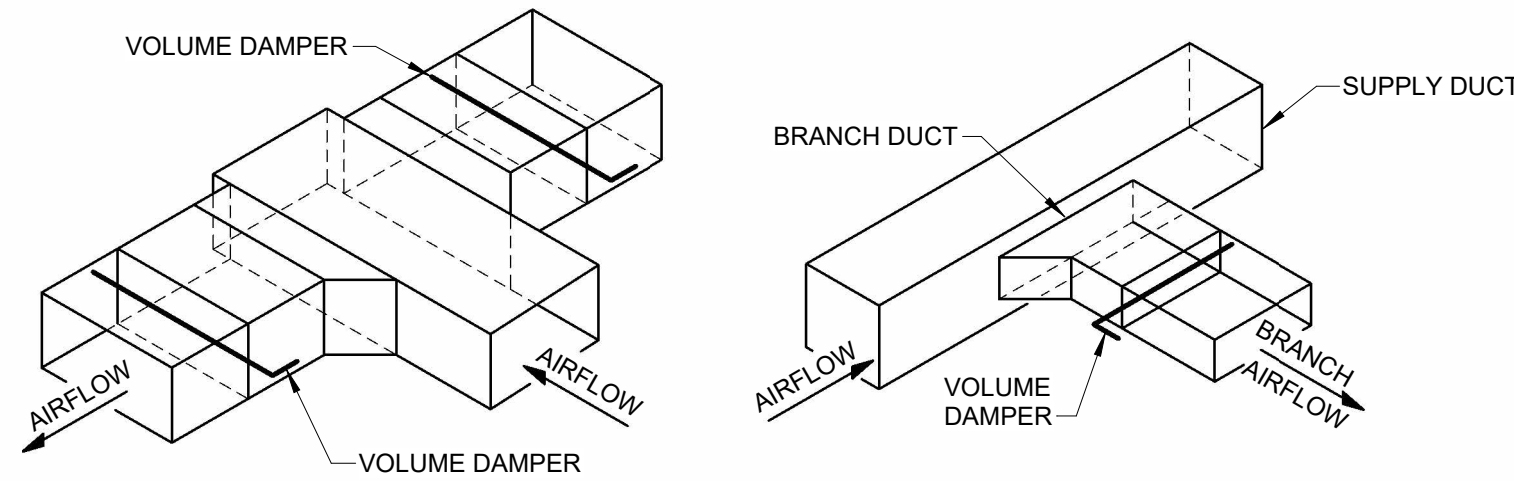
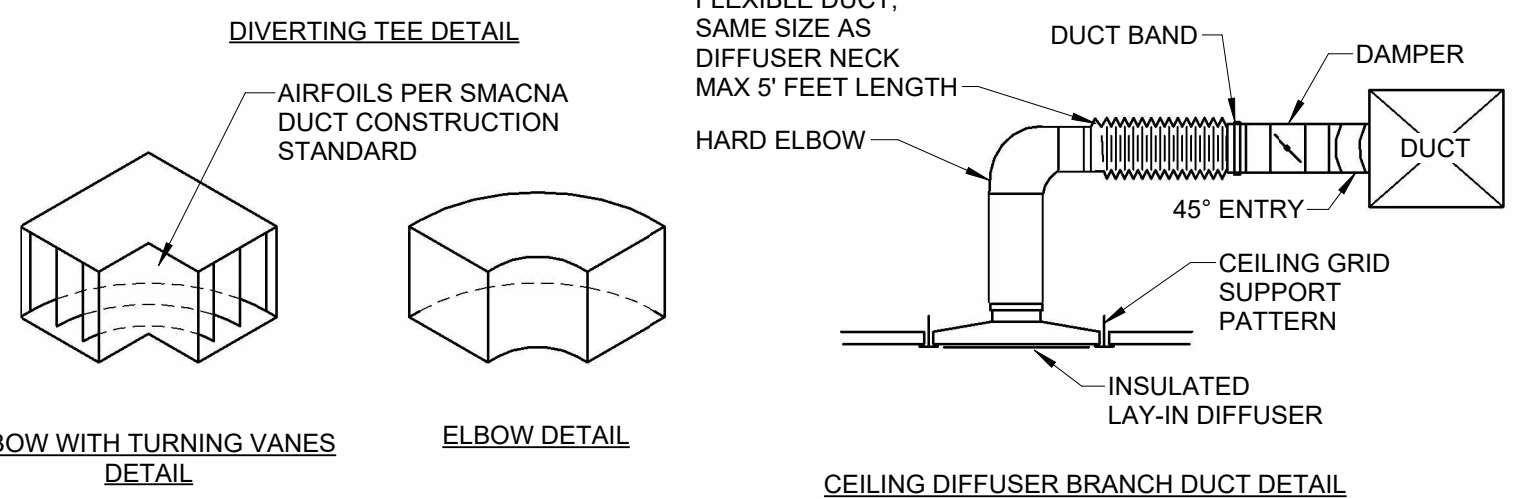


CEILING FILTER RETURN GRILLE DETAILS



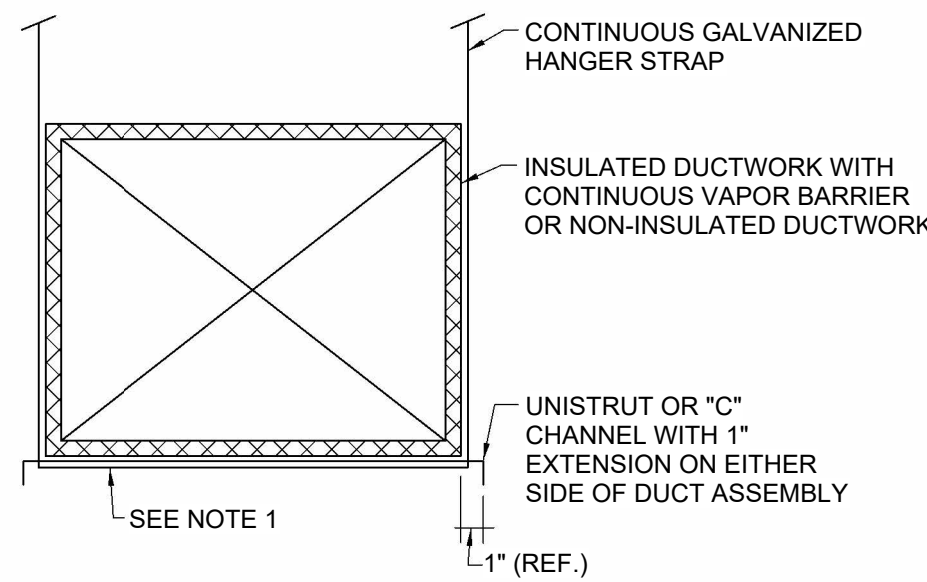
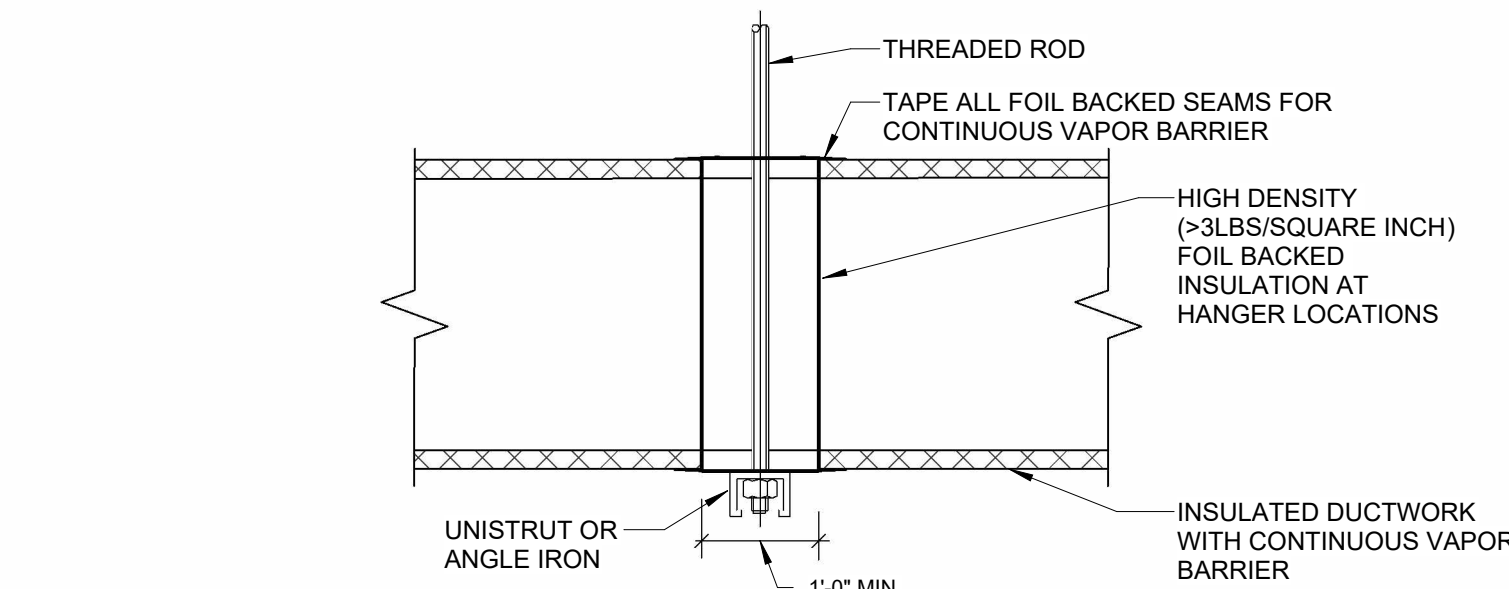
BRANCH TAKE-OFF DETAIL



CEILING DIFFUSER BRANCH DUCT DETAIL

**1 TYPICAL DUCTWORK**

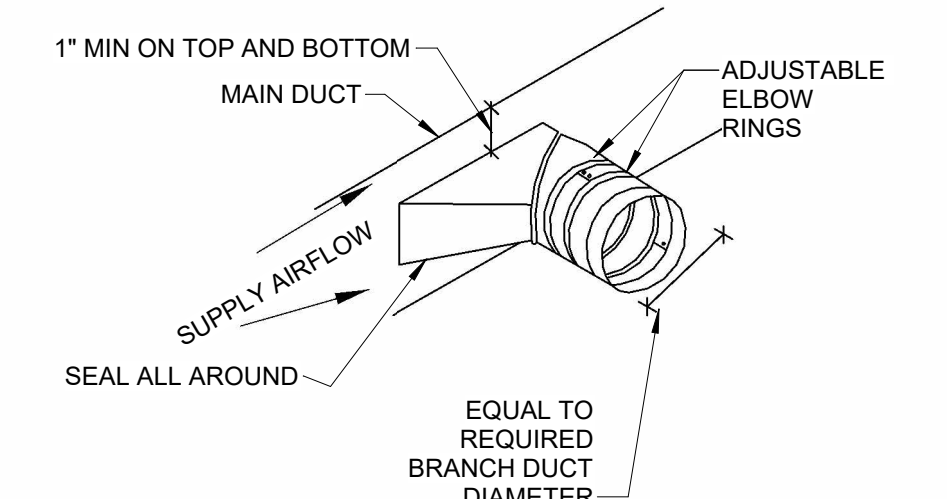
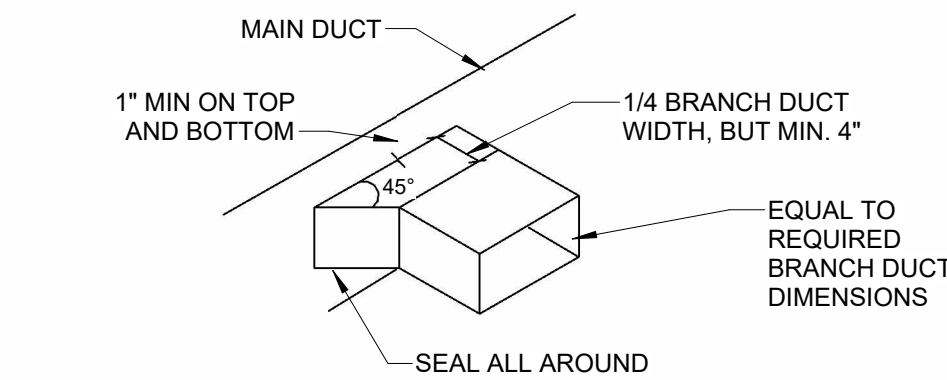
SCALE: NTS



- NOTES:
- RECTANGULAR DUCT REINFORCEMENT SHALL BE PROVIDED AS REQUIRED BY THE LATEST ADDITION OF SMACNA 006, CHAPTER 2.
  - DUCT SUPPORTS AND REINFORCEMENT SHALL BE SPACED AND SIZED AS PER SMACNA BASED ON PRESSURE CLASS, DUCT DIMENSIONS, MATERIAL THICKNESS AND JOINT CONSTRUCTION TYPE.
  - CONTRACTOR SHALL DETAIL AND CONSTRUCT HANGER WITH ZERO DUCT PENETRATIONS.

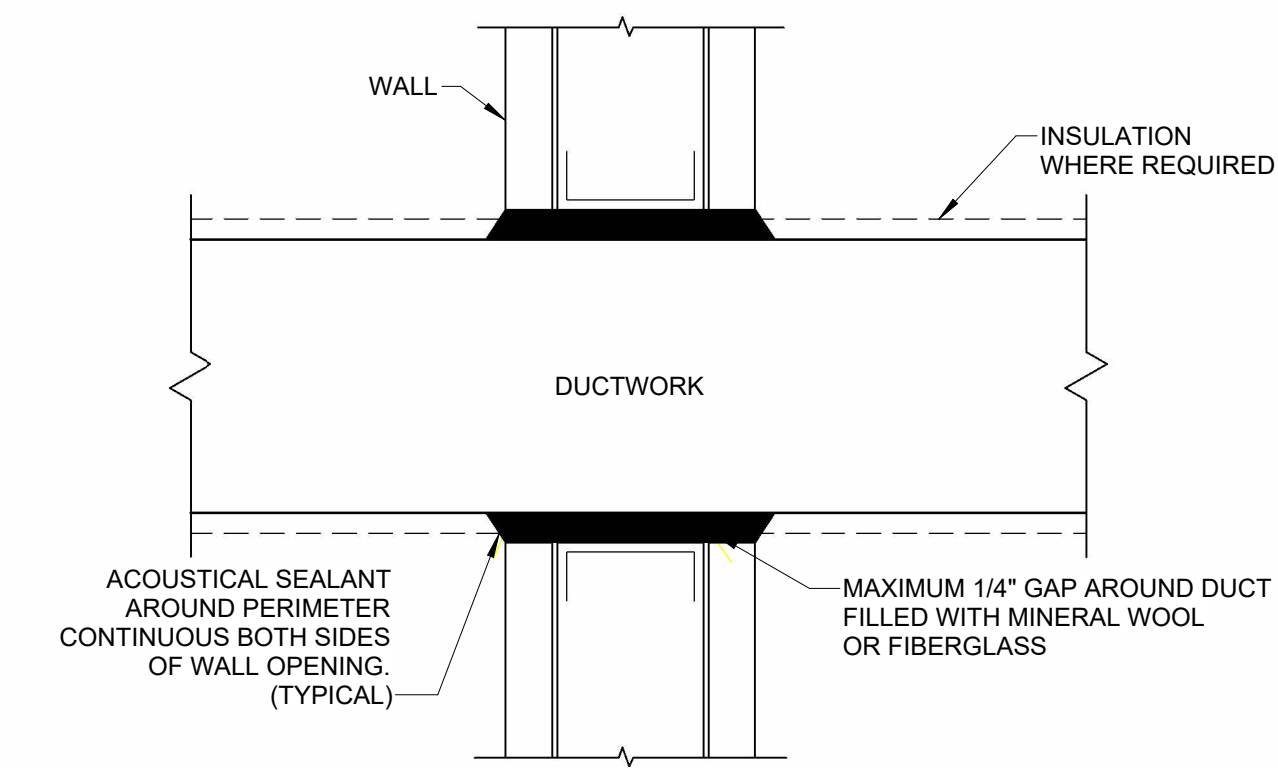
**2 RECTANGULAR HANGER SUPPORT**

SCALE: NTS



**3 TYPICAL BRANCH TAKEOFF FITTING**

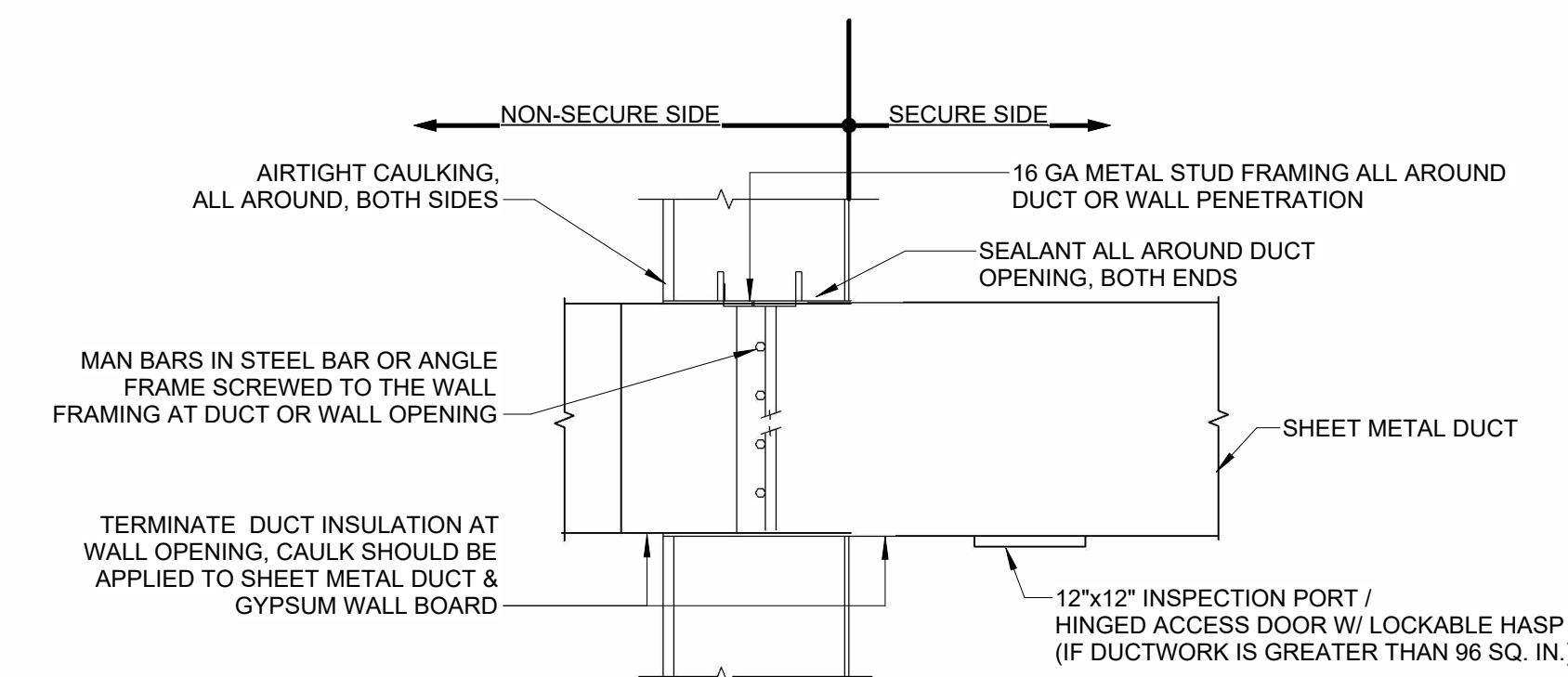
SCALE: NTS



- NOTES:
- REFER TO "DUCT AND OPENINGS SECURE AREA PENETRATION DETAIL," FOR DUCTWORK GREATER THAN 96 SQ. IN.

**4 NON-SECURE DUCTWORK PENETRATION**

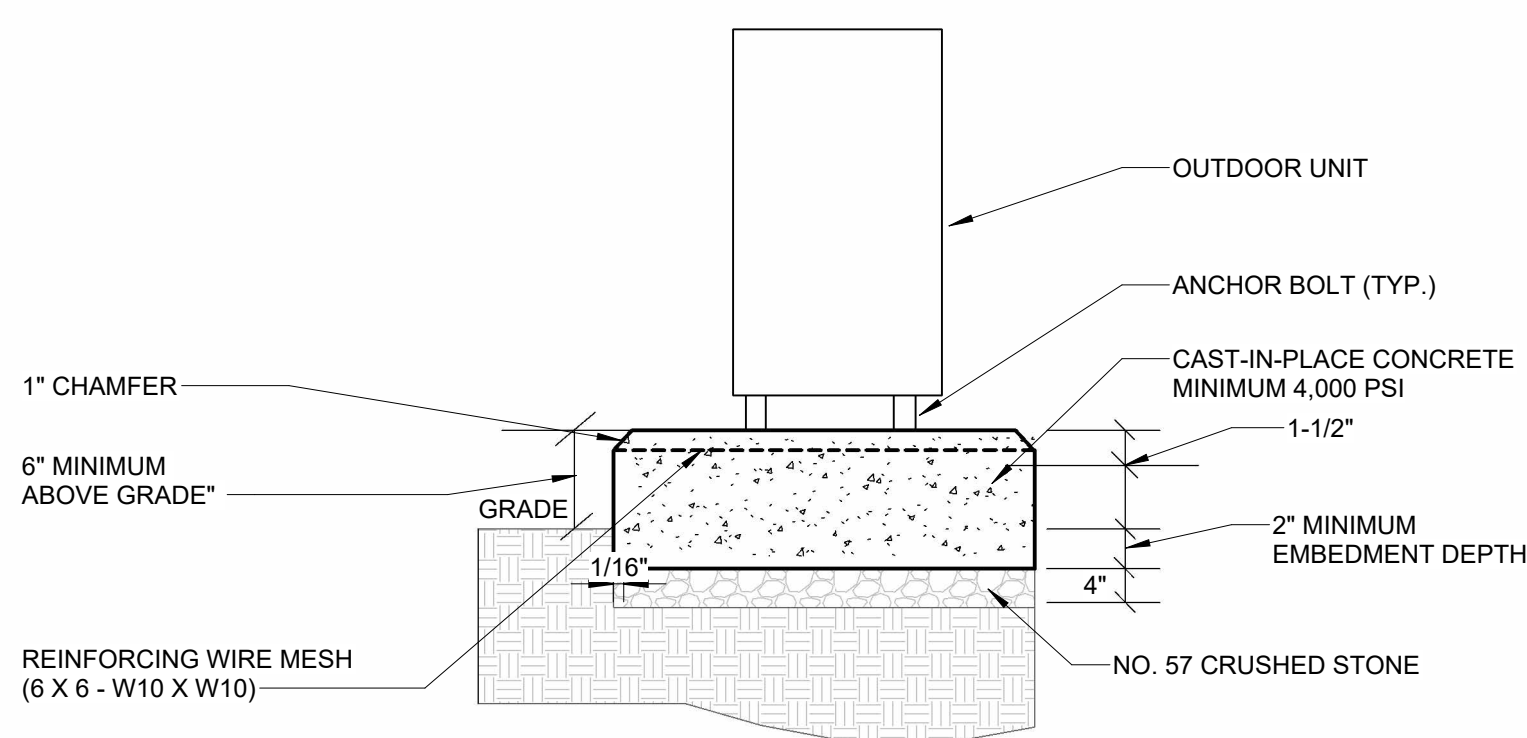
SCALE: NTS



- NOTES:
- PROVIDE 12"x12" INSPECTION PORT WITH HINGED ACCESS DOOR WITH LOCKABLE HASP ON SECURE SIDE FOR VISUAL AND PHYSICAL INSPECTION OF MANBAR INSTALLATION. ENSURE ACCESS HATCH OPENS A MINIMUM OF 90 DEGREES AND IS NOT OBSTRUCTED.
  - DUCT AND OPENINGS WITH CROSS AREA LESS THAN 96 SQ. IN. AND LESS THAN 6" IN ALL DIRECTIONS DO NOT REQUIRE SECURITY BARS.
  - SECURITY BAR ARRAY: BARS SHALL BE 1/2" DIA STEEL, WELDED VERTICALLY AND HORIZONTALLY 6" ON CENTER. A MAXIMUM DEVIATION OF 1/2" IN VERTICAL AND/OR HORIZONTAL SPACING IS ACCEPTABLE. SEE "MAN BAR ELEVATION DETAIL," THIS SHEET.
  - DUCTS, WALL, AND ROOF OPENINGS OVER 96 SQUARE INCHES THAT PENETRATE THE PERIMETER WALL MUST HAVE 1/2" MAN BARS INSTALLED AT THE POINT OF ENTRY.
  - MANBAR SPACING TO BE WITHIN 1/2" VERTICAL AND/OR 1/2" HORIZONTAL SPACING TOLERANCE.

**5 DUCT AND OPENINGS SECURE AREA PENETRATION**

SCALE: NTS



**7 CONCRETE PAD ON GRADE**

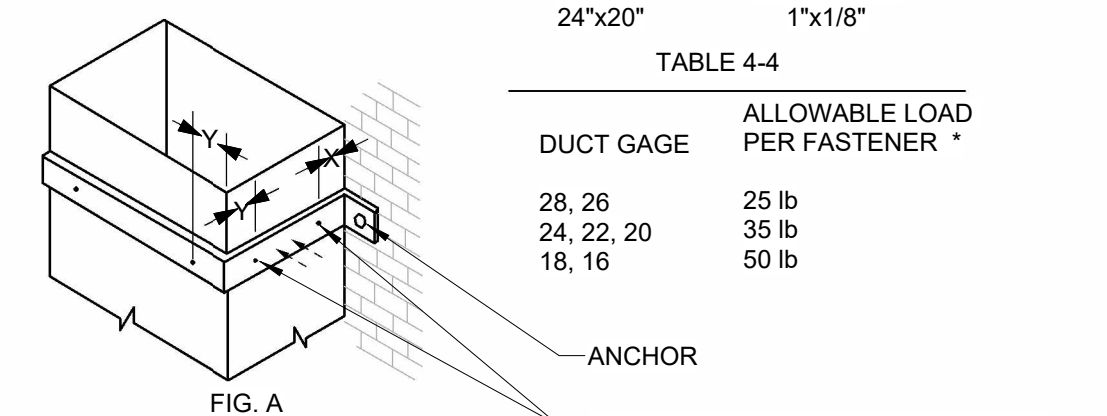
SCALE: NTS

FIG. A - SUGGESTED SIZING

DUCT SIZE	BAND
18"x12"	1 1/2"x16 GA
24"x20"	1"x1/8"

TABLE 4-4

DUCT GAGE	ALLOWABLE LOAD PER FASTENER *
28, 26	25 lb
24, 22, 20	35 lb
18, 16	50 lb

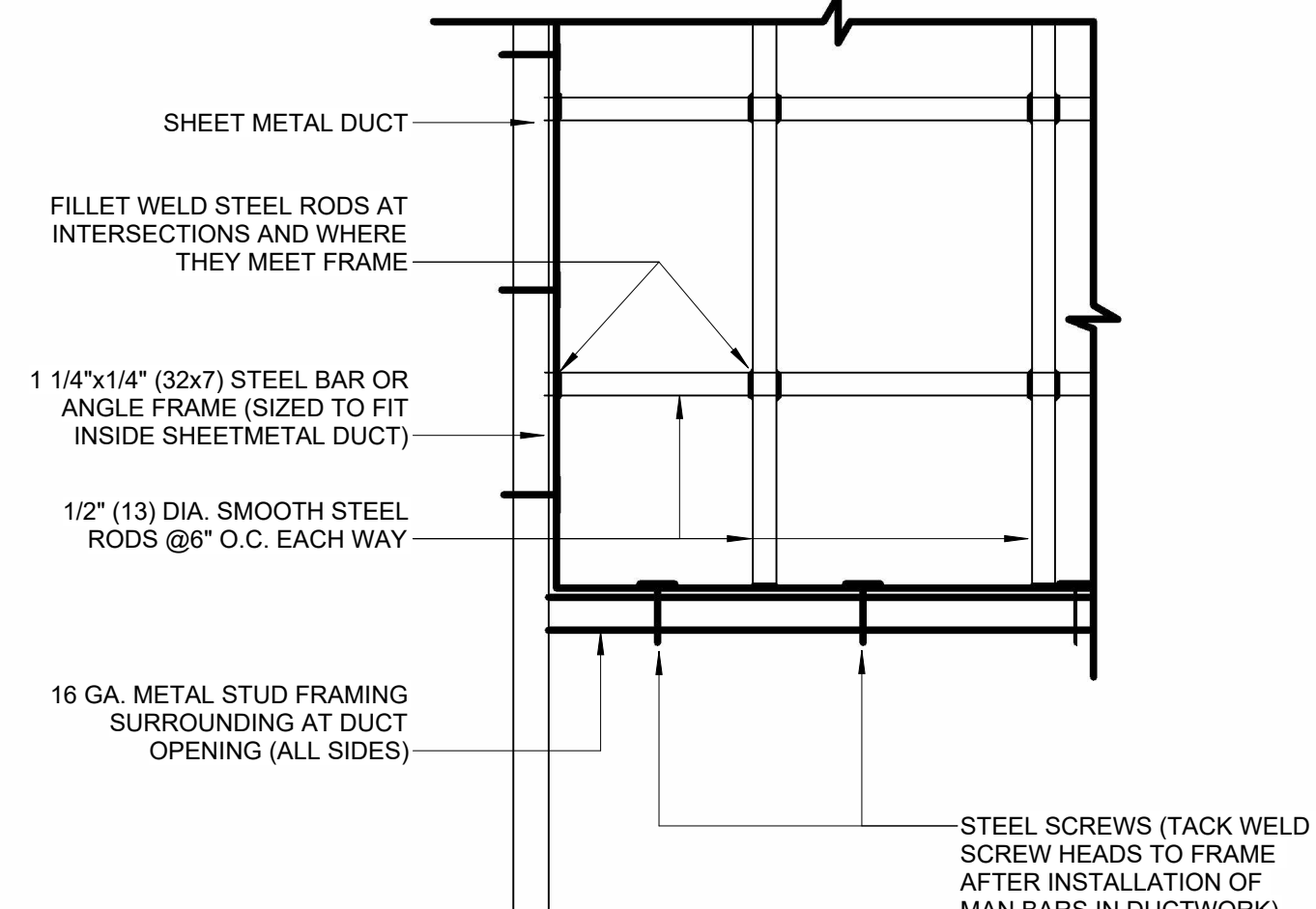


WELD, BOLT OR NO. 8 SCREW (MIN.) DEVIATION PERMITTED BY OTHER ANALYSIS. X=1", Y=2"; ADD OTHERS TO ACCOMMODATE LOAD. MINIMUM OF 3 ON 24" WIDTH AND UP. ADD ALONG SIDES NEAREST ANCHORS.

- NOTES:
- BRACKETS ARE SIZED FOR 12 FEET OF DUCT, MAXIMUM.
  - LOCATE DUCTS AGAINST WALL OR MAXIMUM OF 2" AWAY FROM WALL.
  - EACH WALL ANCHOR SHALL SATISFY THE FOLLOWING CRITERIA UNLESS OTHER ANALYSIS IS MADE:
    - TENSILE LOAD = 3/8 x DUCT WEIGHT; SAFETY FACTOR 4.
    - SHEAR LOAD x 1/2 x DUCT WEIGHT; SAFETY FACTOR 4.

**8 WALL SUPPORTED DUCTWORK**

SCALE: NTS



- NOTES:
- MAN BARS IN STEEL BAR OR ANGLE FRAME SCREWED TO THE WALL FRAMING AT DUCT OPENING.
  - MAN BARS REQUIRED FOR DUCT, WALL, AND ROOF OPENINGS GREATER THAN 96 SQ INCHES. MAN BARS NOT REQUIRED FOR DUCT OPENING EQUAL TO OR LESS THAN 96 SQ INCHES.
  - ALL SCREW HEADS INTO THE MANBAR FRAME AND THE 16 GAUGE FRAME SHALL BE MADE NON-REMOVABLE BY TACK WELDING SCREW HEADS TO FRAME AFTER INSTALLATION.

**6 MAN BAR ELEVATION**

SCALE: NTS

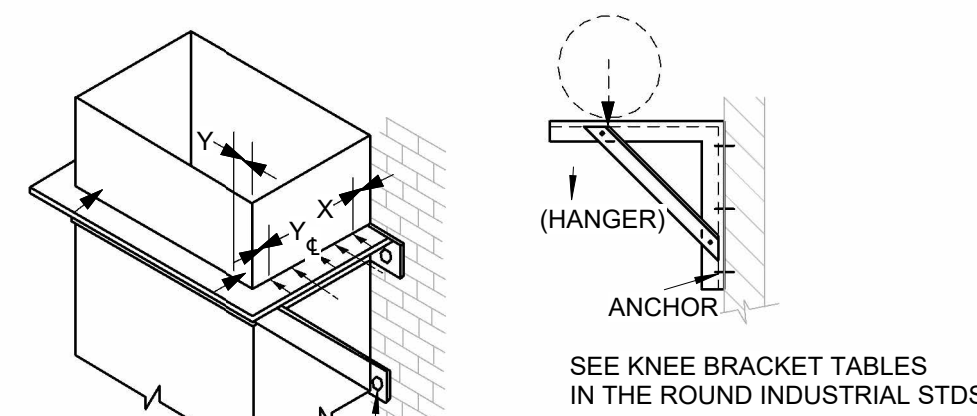


FIG. B - SUGGESTED SIZING

DUCT SIZE	ANGLE
30" x 12"	1" x 1" x 1/8"
36" x 18"	1" x 1" x 1/8"
42" x 24"	1 1/4" x 1 1/4" x 1/8"
48" x 30"	1 1/4" x 1 1/4" x 1/8"

- NOTES:
- BRACKETS ARE SIZED FOR 12 FEET OF DUCT, MAXIMUM.
  - LOCATE DUCTS AGAINST WALL OR MAXIMUM OF 2" AWAY FROM WALL.
  - EACH WALL ANCHOR SHALL SATISFY THE FOLLOWING CRITERIA UNLESS OTHER ANALYSIS IS MADE:
    - TENSILE LOAD = 3/8 x DUCT WEIGHT; SAFETY FACTOR 4.
    - SHEAR LOAD x 1/2 x DUCT WEIGHT; SAFETY FACTOR 4.

**9 DOWNBLAST EXHAUST FAN**

SCALE: NTS

NO.	DATE	DESCRIPTION
2	06/10/26	BID PHASE REVISIONS

BID DOCUMENTS

PROJECT NUMBER: SHYQ149104

DESIGNED: SRG MODELED: APT CHECKED: MJM

DATE: JANUARY 2026

DRAWING TITLE: MECHANICAL

DETAILS 1

DRAWING NO.:

M501