

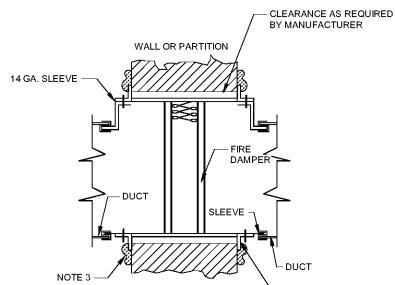
TAKEOFF	PLAN SYMBOL	REQUIRED FITTING
TYPE 1		SQUARE TO ROUND AS REQUIRED FLEXIBLE DUCT VOLUME DAMPER (VD) NOTE 3
TYPE 2		SQUARE TO ROUND FLEXIBLE DUCT VD
TYPE 3		SEE TYPE 1 OR TYPE 2 TAKEOFF

NOTES:

- OTHER PLAN SYMBOLS SIMILAR.
- SUPPLY, RETURN AND EXHAUST SIMILAR.
- A SPN-IN CONNECTION WITH BUTTERFLY BALANCE DAMPER PERMITTED UNLESS A SPECIFIC FITTING IS INDICATED OR REQUIRED (SUCH AS A CONCEALED REGULATOR DAMPER, ETC.) SUPPLY SPN-INS SHALL BE PROVIDED WITH A SCOOP.
- PROVIDE 2" STAND OFF BRACKET FOR DAMPER CONTROL ON INSULATED DUCT. FOR SPN IN DAMPERS, PROVIDE A SHAFT EXTENSION.

LOW PRESSURE DUCT TAKEOFFS DETAIL

NOT TO SCALE

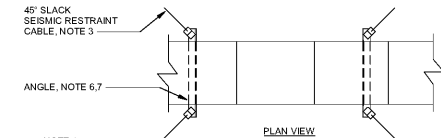


NOTES:

- INSTALLATION SHALL COMPLY WITH NFPA-90A, UL555, UL555S, LOCAL AUTHORITIES AND MANUFACTURER'S REQUIREMENTS.
- INSTALLATION MUST INCLUDE A U/L INSTALLATION ALLOWING OR REQUIRING ANGLES ON BOTH SIDES OF THE RATED ASSEMBLY. ANGLES ON ONE SIDE, EVEN WHERE PERMITTED BY THE TESTED ASSEMBLY, ARE NOT ALLOWED.
- SEAL ANGLE WITH CAULKING LISTED FOR USE WITH THE DAMPER.
- DAMPER SHALL BE LOCATED OUT OF AIR STREAM.
- PROVIDE DUCT ACCESS DOOR.
- PROVIDE ALL CEILING, FLOOR, AND WALL ACCESS DOORS NECESSARY FOR ACCESS TO FIRE DAMPER.
- ON INSULATED DUCTS, INSULATION SHALL BE INSTALLED OVER ANGLES AND SEALED TO WALL.
- SMOKE DAMPERS AND COMBINATION FIRE-SMOKE DAMPERS INSTALLED SIMILARLY.
- DETAIL IS NOT INTENDED TO SHOW SPECIFIC STYLE OF DAMPER REQUIRED. SEE SPECIFICATIONS.

FIRE SMOKE DAMPER DETAIL

NOT TO SCALE

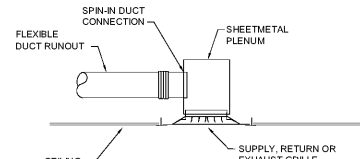


NOTES:

- ATTACH ROD TO STRUCTURE. PROVIDE 1/4" CLEARANCE BETWEEN STRUCTURE AND TOP OF ISOLATOR
- PROVIDE TWO NUTS WITH 1/8" CLEARANCE BETWEEN BOTTOM OF ISOLATOR AND WASHER.
- CABLE SHALL BE AT 45 DEGREES FROM UNIT AND CEILING. ALTERNATE DIRECTIONS EVERY OTHER SET OF CABLES.
- CABLE, ROD, SLEEVE, HANGER, AND SPACING SHALL BE CALCULATED BY SEISMIC ENGINEER, BUT IN NO CASE SHALL BE LESS THAN MIN. SIZE SPECIFIED.
- PROVIDE VIBRATION ISOLATOR WHEN SPECIFIED.
- ATTACH ANGLE TO DUCT 6" ON CENTER.
- INSULATION, IF REQUIRED ON EXTERIOR OF DUCT, INSULATE AROUND ANGLE AND SEAL TO DUCT INSULATION WITH MASTIC.

DUCT SEISMIC DETAIL (ROD SUPPORT)

NOT TO SCALE



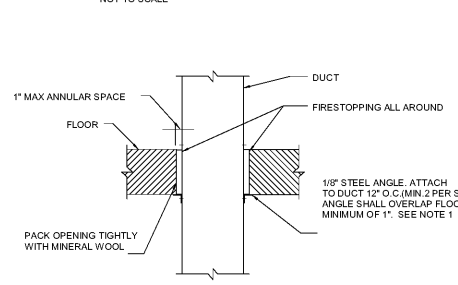
FLEXIBLE DUCT CONNECTION TO GRILLE DETAIL (CONFINED SPACES)

NOT TO SCALE

- PLENUM SHALL BE PROVIDED WHEN SPACE ABOVE THE GRILLE NECK IN LESS THAN 2-1/2 TIMES THE DUCT DIAMETER.
- INSTALLATION SHALL BE SIMILAR TO STANDARD GRILLE INSTALLATION.
- SEAL THE PLENUM TO THE GRILLE WITH DUCT SEALANT.
- INSULATE THE PLENUM SIMILAR TO THE DUCT SYSTEM.
- THE PLENUM SHALL BE SIZED AS REQUIRED.
- SEE AIR DISTRIBUTION UNIT SEISMIC DETAIL FOR SEISMIC SUPPORT REQUIREMENTS.

DUCT THROUGH NON-RATED FLOOR DETAIL

NOT TO SCALE

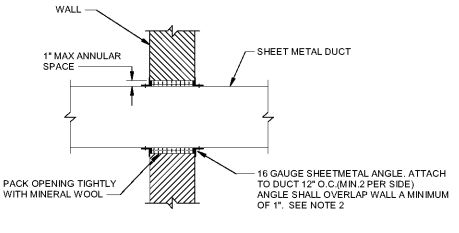


NOTES:

- BLANKET INSULATION WHERE SPECIFIED, SHALL BE INSTALLED OVER ANGLES AND SEALED TO FLOOR.

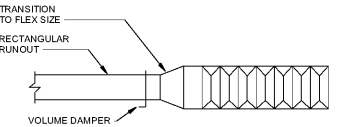
DUCT THROUGH NON-RATED WALL DETAIL

NOT TO SCALE



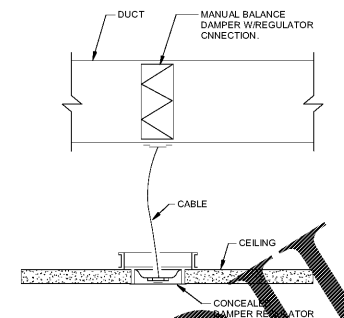
NOTES:

- BLANKET INSULATION WHERE SPECIFIED, SHALL BE INSTALLED OVER ANGLES AND SEALED TO WALL.
- THE FOLLOWING DUCTS SHALL NOT HAVE FASTENERS THROUGH THE DUCT:
 - ROUND DUCT WHERE SYSTEM PRESSURE IS 2" WG OR GREATER SHALL HAVE ANGLES ATTACHED TO DUCT W/SEALANT.



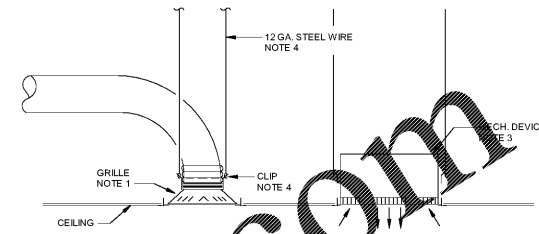
DUCT TRANSITION TO RUNOUT FLEX DETAIL

NOT TO SCALE



NOTES:

- COORDINATE CEILING FRAMING WITH BUILDING CONTRACTOR.
- DAMPER MAY BE BOTTOM OR SIDE REGULATOR. IF SIDE CONNECTION, PROVIDE MIN. ACCESS REQUIRED.



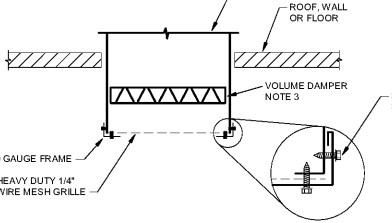
CEILING MOUNTED MECHANICAL COMPONENT DETAIL

NOT TO SCALE

- DETAIL APPLIES TO ALL TYPES OF AIR DISTRIBUTION DEVICES, HEATERS, FANCOILS AND OTHER COMPONENTS MOUNTED IN A CEILING SYSTEM. COMPONENTS UP TO 56# SHALL BE POSITIVELY ATTACHED TO CEILING GRID THEMSELVES. TWO WIRES TO STRUCTURE, THE CONTRACTOR HAS THE OPTION OF PROVIDING:
 - HURRICANE CLIPS SUITABLE FOR GRID.
 - INSTALLING TWO #10 SHEET METAL SCREWS IN CONCEALED PORTION OF GRID TO HOLD COMPONENT ONTO GRID.
- COMPONENTS GREATER THAN 56# SHALL BE SUPPORTED INDEPENDENT OF THE CEILING GRID SYSTEM.
- WHEN TWO WIRES ARE REQUIRED:
 - ATTACH CLIPS TO GRILLE.
 - ATTACH WIRES TO STRUCTURE. PROVIDE ADDITIONAL ANCHORS AND CLIPS, PERMANENTLY FASTENED TO STRUCTURE. WIRE SHALL ALLOW A MAXIMUM OF 6" INCHES FALL.
 - WIRE CONNECTION SHALL BE MADE WITH A MINIMUM OF 3 COMPLETE TURNS.

WIRE GRILLE DETAIL

NOT TO SCALE



NOTES:

- PROVIDE ADDITIONAL BRACING ON GRILLES GREATER THAN 24".
- SUBMIT SHOP DRAWINGS.
- VOLUME DAMPER MAY BE OMITTED WHERE FAN SYSTEM HAS A SINGLE OUTLET.

DUCT SUPPORT DETAILS (NON-SEISMIC)

NOT TO SCALE

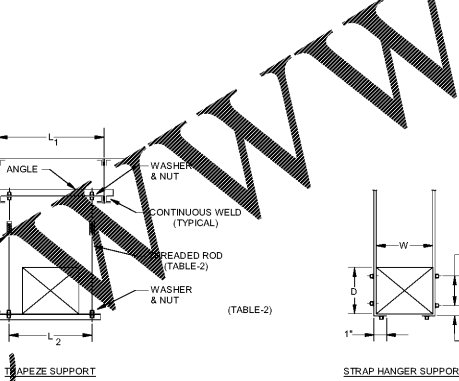


TABLE-1 STRAP HANGERS (PAIR) SPACED

SPACING	MAX. DUCT WEIGHT	MAX. DUCT LENGTH	OR LESS
10'-0"	1" x 22Ga	1" x 22Ga	1" x 22Ga
12'-0"	1" x 20Ga	1" x 22Ga	1" x 22Ga
14'-0"	1" x 18Ga	1" x 22Ga	1" x 22Ga
16'-0"	1" x 18Ga	1" x 18Ga	1" x 18Ga
18'-0"	1" x 16Ga	1" x 18Ga	1" x 16Ga

TABLE-2 ALLOWABLE HANGER LOADS - MAX.

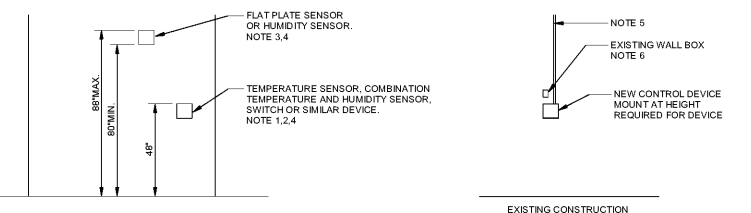
STRAPS	LBS.	RODS	LBS.
2 - 1"x22Ga.	520	2 - 1/4" DIA.	540
2 - 1"x20Ga.	640	2 - 3/8" DIA.	1360
2 - 1"x18Ga.	840	2 - 1/2" DIA.	2500
2 - 1"x16Ga.	1400	2 - 5/8" DIA.	4000
		2 - 3/4" DIA.	6000

TABLE-3 TRAPEZE ANGLE LOAD - MAX.

L1 OR L2	2"x2"x1/4"	2-1/2"x2-1/2"x1/4"
36"	1200 LBS.	1940 LBS.
48"	1160 LBS.	1900 LBS.
60"	1060 LBS.	1800 LBS.
72"	900 LBS.	1640 LBS.
84"	660 LBS.	1400 LBS.
96"	320 LBS.	1060 LBS.

DEVICE MOUNTING HEIGHT DETAIL

NOT TO SCALE

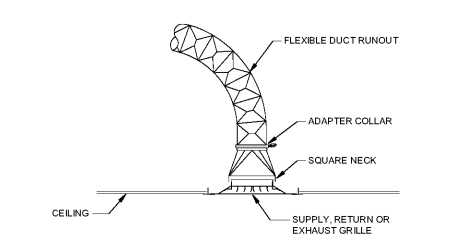


NOTES:

- DEVICES THAT REQUIRE ACCESS BY BUILDING OCCUPANTS OTHER THAN MAINTENANCE PERSONNEL.
- 44" TO TOP OF DEVICE WHEN OBSTACLE (SHELVING, COUNTER, ETC.) IN FRONT OF DEVICE.
- DEVICES THAT DO NOT REQUIRE ACCESS BY BUILDING OCCUPANTS OTHER THAN MAINTENANCE PERSONNEL.
- HEIGHT SHALL BE AS INDICATED UNLESS A DEVICE IS SPECIFICALLY REQUIRED TO BE LOCATED AT ANOTHER HEIGHT TO PERFORM ITS INTENDED FUNCTION.
- PROVIDE WIRE MOLD WHERE PERMITTED ON EXISTING WALL WHERE CONTROLS CANNOT BE INSTALLED IN THE WALL.
- PROVIDE OVERSIZED STAINLESS STEEL COVER PLATE IF BOX IS NOT RESIZED.

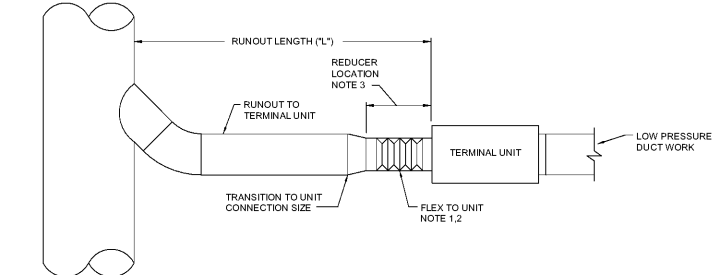
DUCT SEISMIC DETAIL (STRAP SUPPORT)

NOT TO SCALE



NOTES:

- FLEX DUCT SHALL BE STRAPPED TO COLLAR.
- PROVIDE ROUND TO SQUARE GRILLE ADAPTER.

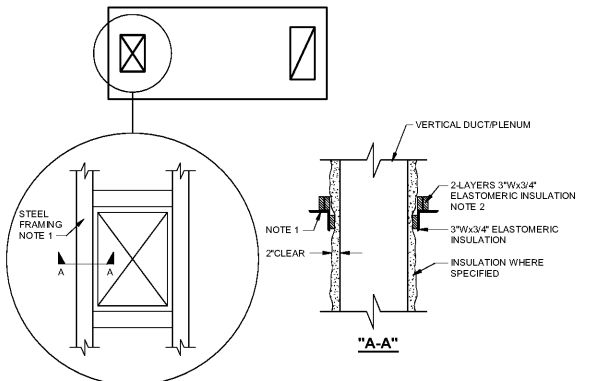


RUNOUT TO TERMINAL UNIT TABLE

LENGTH	RUNOUT DUCT DIAMETER
L<6FT	SAME AS TERMINAL UNIT CONNECTION
6FT<L<12FT	TERMINAL UNIT CONNECTION PLUS 2" DIA
L>12FT	TERMINAL UNIT CONNECTION PLUS 4" DIA
RUNOUT w/DAMPER	TERMINAL UNIT CONNECTION PLUS 4" DIA

NOTES:

- DUCT MAY BE HARD CONNECTED TO TERMINAL UNITS WITHOUT FANS AT CONTRACTOR'S OPTION UNLESS FLEXIBLE CONNECTOR IS REQUIRED BY SEISMIC DESIGN.
- MAXIMUM OFFSET OF 15 DEGREES IN FLEX TO CONNECT TO TERMINAL UNIT.
- REDUCER TO BE LOCATED 18" FROM UNIT ON UNIT CONNECTION SIZES UP TO 6". REDUCER TO BE LOCATED 36" FROM UNIT ON ALL LARGER SIZES.
- TABLE SHALL BE USED WHERE DUCT SIZE NOT INDICATED ON PLANS.



NOTES:

- ANGLE, CHANNEL OR SIMILAR FRAMING WHERE SHOWN ON STRUCTURAL PLANS SHALL BE COORDINATED BY THE MECHANICAL CONTRACTOR TO PROVIDE THE REQUIRED DUCT OPENING DIMENSIONS. WHERE THE PROPER DIMENSIONS ARE NOT PROVIDED, THE MECHANICAL CONTRACTOR SHALL PROVIDE AUXILIARY STEEL SO THAT REQUIRED CLEARANCE AS INDICATED ON THIS DETAIL ARE PROVIDED. SUPPLY AND RETURN DUCTS ARE SIMILAR.
- ELASTOMERIC INSULATION SHALL BE GLUED AND BANDED. INSTALL TIGHT TO STEEL FRAMING.

AIR HANDLER DUCT PENETRATIONS AT ROOF DETAIL

NOT TO SCALE



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