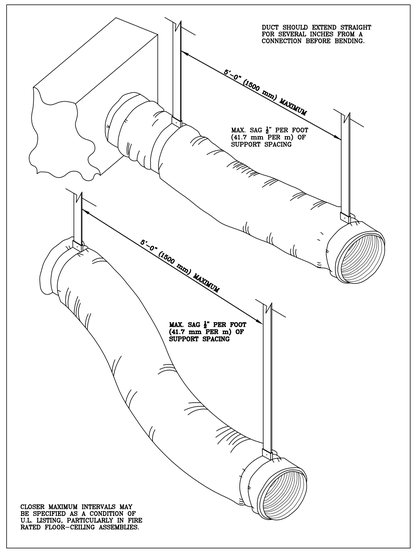


FLEXIBLE DUCT SUPPORTS

FLEXIBLE DUCT INSTALLATION STANDARDS

1. Unless otherwise designated, the term "flexible air duct" is used for all ducts classified by UL as either flexible air ducts or flexible connectors.

2. These provisions apply to ducts used for indoor comfort heating, ventilating, and air conditioning service. They do not apply to service for conveying particulates, corrosive fumes and vapors, high temperature air, corrosive or contaminated atmosphere, etc.

3. It is presumed that project specifications define the specific materials, pressure limits, velocity limits, friction rate, thermal conductivity, acoustical ratings, and other attributes.

4. When ducts must conform to NFPA Standard 90A or 90B, flexible ducts must be tested in accordance with Underwriters Laboratory's *Standard for Factory made Duct Materials* UL-181, and must be installed in accordance with the conditions of their UL listing. Separate installation limitations for flexible connectors and flexible ducts are identified in NFPA Standard 90A. By UL Standard 181, a flexible connector is defined as . a flexible air duct not having certain flame penetration, puncture, and impact tests.

5. The minimum length of flexible duct should be used.

6. Bends shall be made with not less than 1 duct diameter centerline radius. Ducts should extend a few inches beyond the end of a sheet metal connection before bending. Ducts should not be compressed.

7. Ducts shall be located away from hot equipment such as furnaces and steam pipes to avoid excess temperature exposure.

8. Illustrations of accessories, sleeves, and collars are representative of classes of items. The use of components not precisely identical to these is acceptable.

9. If the application guidelines dictated by the flexible duct manufacturer are more stringent than the specifications in this manual, those of the manufacturer shall govern.

SPECIFICATION FOR SUPPORTING FLEXIBLE DUCT

1. Flexible duct shall be supported at the manufacturer's recommended intervals but at least every 5' (1.5m). Maximum permissible sag is a 1/2 inch per foot (41.7 *mmlm*) of spacing between supports. A connection to another duct or to equipment is considered a support point.

2. Hanger or saddle material in contact with the flexible duct shall be wide enough so that it does not reduce the internal diameter of the duct when the supported section rests on the hanger or saddle material. In no case will the material contacting the flexible duct be less than 1" wide. Narrower hanger material may be used in conjunction with a sheet metal saddle that meets this specification. This saddle must cover one-half the circumference of the outside diameter of the flexible duct and fit neatly around the lower half of the duct's outer circumference.

3. Factory-installed suspension systems that are integral to the flexible duct are acceptable for hanging when the manufacturer's recommended procedures are followed.

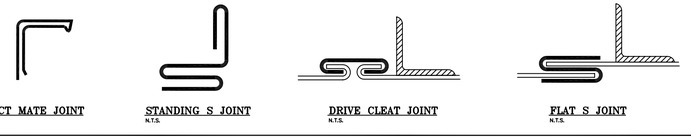
4. Hangers shall be adequately attached to the building structure.

5. To avoid tearing the vapor barrier, do not support the entire weight of the flexible duct on anyone hanger during installation. Avoid contacting the flexible duct with sharp edges of the hanger material. Damage to the vapor barrier may be repaired with approved tape. If the internal core is penetrated, replace the flexible duct or treat the tear as a connection.

6. Terminal devices connected by flexible duct shall be supported independently of the flexible duct.

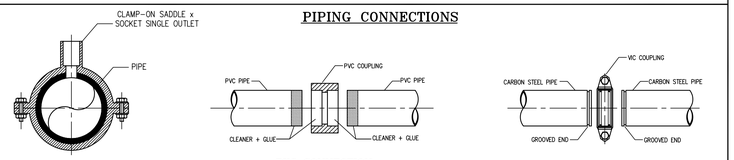
DUCTWORK TRANSVERSE JOINT REINFORCEMENTS

ACCORDING TO SMACNA TABLES 1-4 EX / 1-5 EX



DUCT MATE JOINT N.T.S. | STANDING S JOINT N.T.S. | DRIVE CLEAT JOINT N.T.S. | FLAT S JOINT N.T.S.

PIPING CONNECTIONS

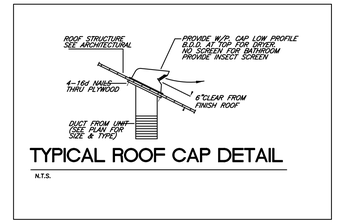


TYPICAL PIPE BRANCHING N.T.S. | PVC CONNECTION N.T.S. | VICTAULIC CONNECTION N.T.S.

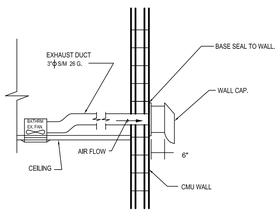
AIR DISTRIBUTION SCHEDULE

SYMBOL	USE	TYPE	ACCESSORIES	MFG. & MODEL NO.
A	SUPPLY AIR	CEILING DIFFUSER	O.B.D.	TITUS 250-AA
B	RETURN AIR	CEILING GRILLE	O.B.D.	TITUS 3F

NOTE: ALL AIR DISTRIBUTION SHALL BE FINISHED WHITE BAKED ENAMEL.

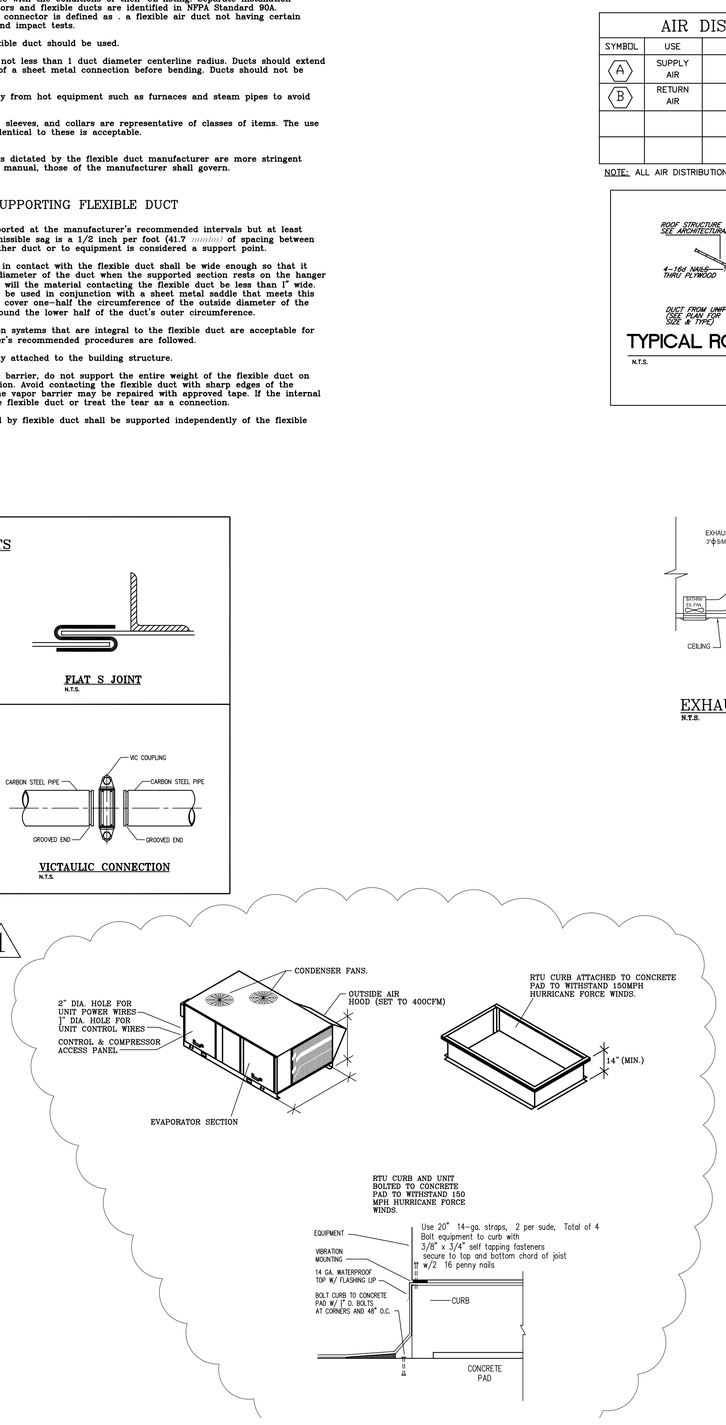


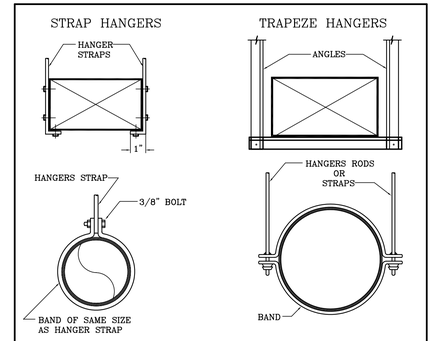
TYPICAL ROOF CAP DETAIL
N.T.S.



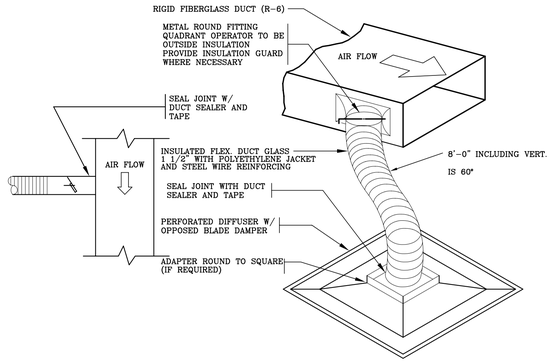
EXHAUST FAN DETAIL
N.T.S.

INSULATION NOTE:
PROVIDE MINIMUM INSULATION OF R-4.1 IN WALLS R-30 IN CEILING.



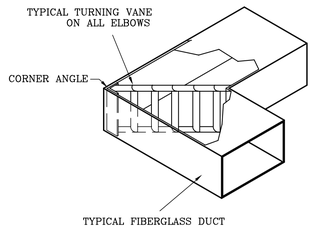


HANGERS FOR DUCTS



FLEXIBLE DUCT CONNECTION DETAIL
N.T.S.

NOTE: ALL BRANCH DUCT TAKE-OFF SHALL HAVE A LOW LOSS BRANCH CONNECTION.



ELBOW TURNING VANE DETAIL
N.T.S.

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DESIGN — INSPECTIONS

2 1 M-4 4 OF 6