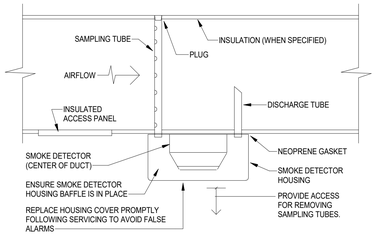
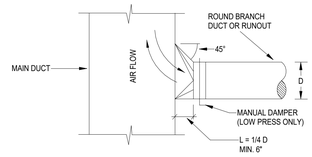


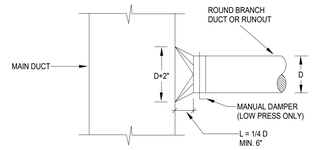
NOTES:
1. INSTALL IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. NEW SMOKE DETECTOR TO BE FURNISHED BY ELECTRICAL (DIVISION 26) AND MOUNTED IN DUCTS BY MECHANICAL (DIVISION 23).
3. SAMPLING TUBE MUST BE INSTALLED ACROSS GREATEST DUCT DIMENSION.
4. WHERE DUCT ASPECT RATIO IS GREATER THAN 3 TO 1, INSTALL SAMPLING AND DISCHARGE TUBES IN THE LONG DIMENSION.
5. PROVIDE WITH WEATHERPROOF COVER FOR EXTERIOR MOUNTING WHERE REQUIRED.

DUCT MOUNTED SMOKE DETECTOR DETAIL
No Scale

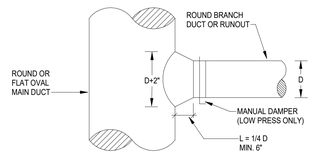
6



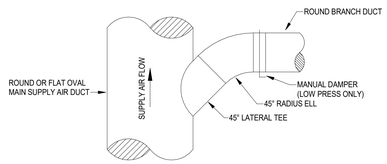
TYPICAL ROUND BRANCH ON RECTANGULAR MAIN - 45° ENTRY



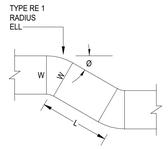
TYPICAL ROUND BRANCH ON RECTANGULAR MAIN - CONICAL



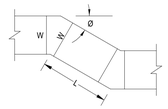
TYPICAL ROUND BRANCH FROM ROUND/FLAT OVAL - CONICAL



TYPICAL ROUND BRANCH FROM ROUND/FLAT OVAL - 45° LATERAL



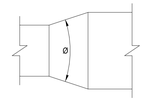
OFFSET TYPE 3 - RADIUSED



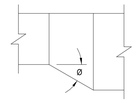
OFFSET TYPE 2 - MITERED

- FOR L<X, MAX ANGLE 15°
- FOR X<L<2X, MAX ANGLE 30°
- FOR 2X<L<3X, MAX ANGLE 45°
- FOR L>3X, NO ANGLE RESTRICTION (STANDARD ELBOWS GOVERN)

TYPICAL RECTANGULAR OFFSETS

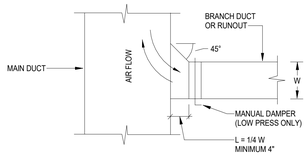


CONCENTRIC TRANSITION
Ø MAX = 45° DIVERGING, 60° CONVERGING

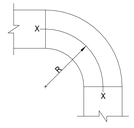


ECCENTRIC TRANSITION
Ø MAX = 30°

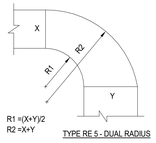
TYPICAL RECTANGULAR TRANSITIONS



TYPICAL RECTANGULAR BRANCH



TYPE RE 1 - RADIUS

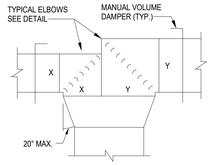


R1 =(X+Y)/2
R2 =X+Y

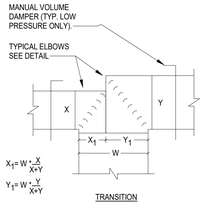
TYPE RE 5 - DUAL RADIUS

- TYPE RE 1 RADIUS ELLS SHALL BE USED IN ALL LOCATIONS WHERE SPACE PERMITS
- NOT RESTRICTED TO 90° - USE FOR ALL ANGLES
- LONG RADIUS (>1500 FPS): CENTERLINE RADIUS (R)=2(X)
- STANDARD (1000-1500 FPS): CENTERLINE RADIUS (R)=1.5(X)
- SHORT RADIUS (<1000 FPS): CENTERLINE RADIUS (R)=(X)

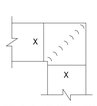
TYPICAL RADIUSED RECTANGULAR DUCT ELBOWS



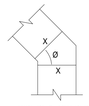
EQUAL



TRANSITION



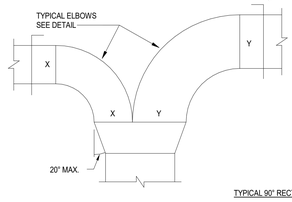
TYPE RE 2 - SQUARE THROAT



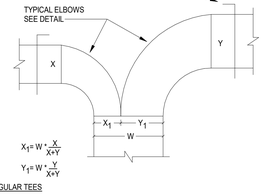
TYPE RE 6 - MITERED

- FOR USE ONLY WHERE SPACE DOES NOT PERMIT USE OF A RADIUSED ELL
- NOT RESTRICTED TO 90° - USE FOR ALL ANGLES
- PROVIDE DOUBLE THICKNESS VANES PER SMACNA DUCT CONSTRUCTION STANDARDS
- VANES SHALL BE UTILIZED IN ALL MITERED ELLS GREATER THAN 45" WHEN VELOCITY EXCEEDS 750 FPS
- FOR VERY LOW VELOCITY (<750 FPS) VANES MAY BE OMITTED

TYPICAL MITERED RECTANGULAR DUCT ELBOWS



EQUAL



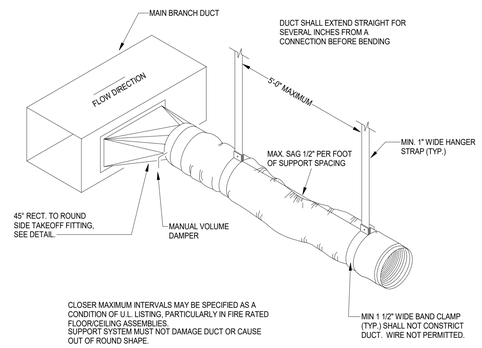
TRANSITION

TYPICAL 90° RECTANGULAR TEES

NOTE:
MANUAL VOLUME DAMPER REQUIRED WHERE BRANCH SERVES MULTIPLE DIFFUSERS/GRILLES.

TYPICAL RECTANGULAR DUCT FITTING CONSTRUCTION
No Scale

1

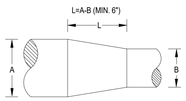


FLEXIBLE DUCT SUPPORT DETAIL
No Scale

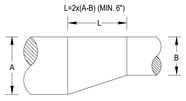
7

RADIUS ELL

- RADIUS ELLS SHALL BE USED IN ALL LOCATIONS WHERE SPACE PERMITS
- NOT RESTRICTED TO 90° - USE FOR ALL ANGLES
- LONG RADIUS (>1500 FPS): CENTERLINE RADIUS (R)=2(D)
- STANDARD RADIUS (1000-1500 FPS): CENTERLINE RADIUS (R)=1.5(D)
- SHORT RADIUS (<1000 FPS): CENTERLINE RADIUS (R)=(D)



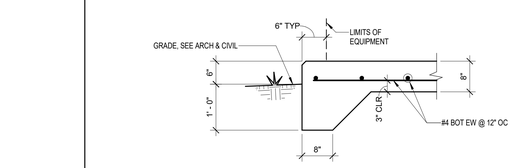
TYPICAL CONCENTRIC REDUCER



TYPICAL ECCENTRIC REDUCER

TYPICAL ROUND DUCT FITTING CONSTRUCTION
No Scale

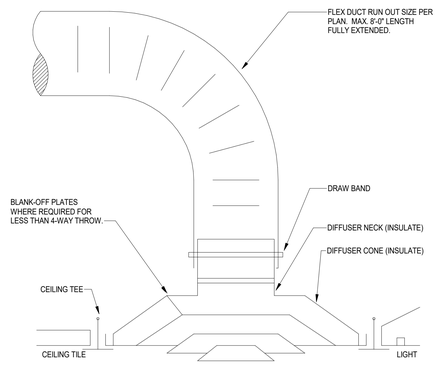
4



REFER TO STRUCTURAL DRAWINGS FOR MORE INFORMATION

EQUIPMENT PAD ON GRADE
No Scale

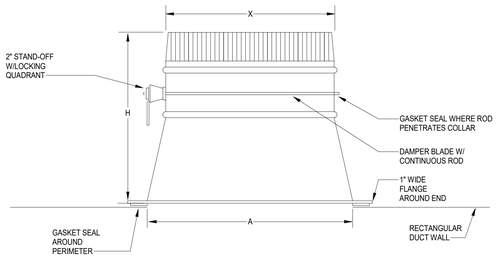
8



ELEVATION VIEW

DIFFUSER MOUNTING DETAIL
No Scale

5



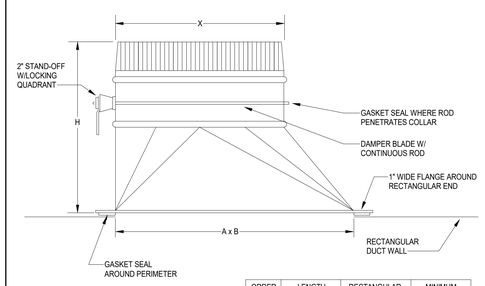
NOTES:
1. USE CONICAL BRANCH TAKEOFF FITTING FOR ALL DIFFUSER RUN-OUTS.
2. SPRAY PAINT ALL DAMPER HANDLES ORANGE.

ORDER SIZE "X"	LENGTH W/ DAMPER "H"	CONE DIAMETER "A"	MINIMUM RECTANGULAR DUCT HEIGHT
4"	10"	5 7/8"	6"
5"	10"	6 7/8"	8"
6"	10"	7 7/8"	9"
7"	10"	8 7/8"	10"
8"	10"	9 7/8"	10"
9"	10"	10 7/8"	12"
10"	10"	11 7/8"	14"
12"	10"	13 7/8"	16"
14"	10"	15 7/8"	17"
16"	10"	17 7/8"	18"

- MINIMUM 26 GAUGE, G-90 GALVANIZED STEEL
- VOLUME DAMPER WITH 2" INSULATION BUILD-OUT AND LOCKING HAND QUADRANT
- BASIS OF DESIGN: FLEXMASTER "CB-D"

CONICAL DIFFUSER TAKEOFF FITTING DETAIL
No Scale

3



NOTES:
1.USE RECTANGULAR TO ROUND BRANCH TAKEOFF FITTING FOR ALL DIFFUSER RUN-OUTS.
2. SPRAY PAINT ALL DAMPER HANDLES ORANGE.

ORDER SIZE "X"	LENGTH W/ DAMPER "H"	RECTANGULAR DUCT OPENING "A x B"	MINIMUM RECTANGULAR DUCT HEIGHT
5"	13"	5"x9"	7"
6"	13"	5"x9"	7"
7"	13"	5"x11"	7"
8"	13"	6"x12"	8"
9"	13"	7"x13"	9"
10"	13"	8"x14"	10"
12"	13"	10"x16"	12"
14"	13"	12"x18"	14"
16"	13"	14"x20"	16"

- MINIMUM 26 GAUGE, G-90 GALVANIZED STEEL
- 1" WIDE MOUNTING FLANGE WITH DIE FORMED CORNER CLIPS
- PRE-PUNCHED MOUNTING HOLES
- ADHESIVE COATED GASKET
- VOLUME DAMPER WITH 2" INSULATION BUILD-OUT AND LOCKING HAND QUADRANT
- BASIS OF DESIGN: FLEXMASTER "STOD"

BEVELED DIFFUSER TAKEOFF FITTING DETAIL
No Scale

2

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Professional Engineer
License No. 84276

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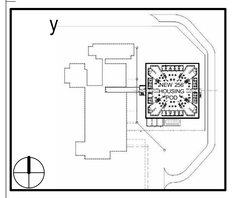
Christopher Floegel

Digitally signed by Christopher Floegel
DN: CN=Christopher Floegel, C=US, O=TLC ENGINEERING SOLUTIONS, INC., OU=Mechanical, E=cfloegel@tlcengineers.com
Date: 2020.07.22 16:39:37 -04'00'



No.	Description	Date
	ISSUED FOR PERMIT	7-24-20

REVISIONS

DRAWN BY	C FLOEGEL
APPROVED BY	C FLOEGEL
CHECKED BY	C FLOEGEL
DATE	JULY 24, 2020

SCALE As indicated

TITLE
HVAC DETAILS

PROJECT NO. 50101397

M-701

SHEET NO.

DESTROY AFTER USE