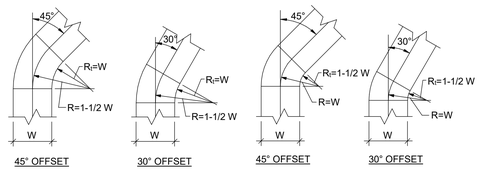
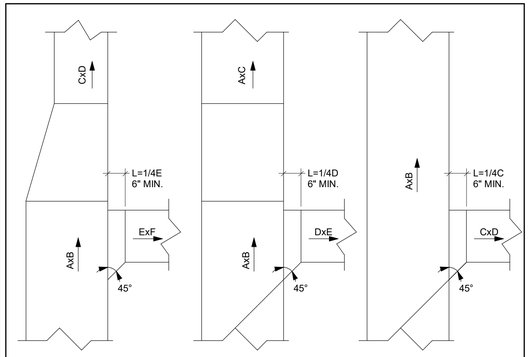


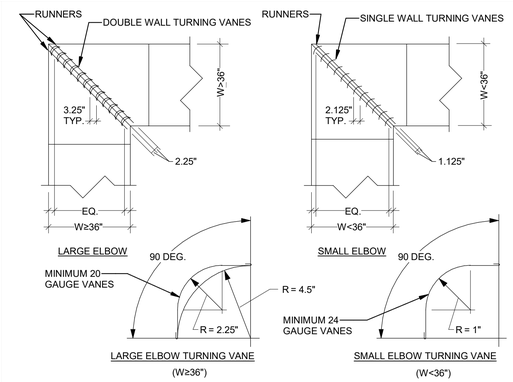
NOTES:
1. USE ONLY LONG RADIUS ELBOWS ON KITCHEN HOOD AND DISHWASHER HOOD EXHAUST DUCTWORK.
2. USE LONG RADIUS ELBOWS ON ALL DUCTWORK SYSTEMS WHERE POSSIBLE OR UNLESS OTHERWISE INDICATED.
3. ONLY WHEN IT IS IMPOSSIBLE TO USE LONG RADIUS ELBOWS, USE LARGEST POSSIBLE RADIUS WITH A MINIMUM RADIUS EQUAL TO THAT OF A SHORT RADIUS ELBOW.

1 RECTANGULAR 45° & 30° RADIUS ELBOW
N.T.S.



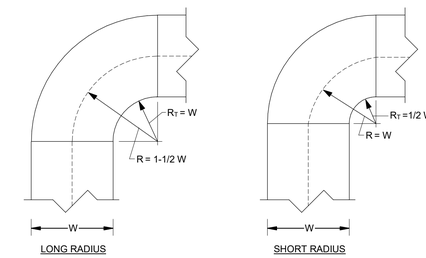
NOTES:
1. DIMENSIONS A, B, C, D, E, AND F AS INDICATED ON THE DRAWINGS.
2. TRANSITIONS MAY BE FLAT ON TOP, FLAT ON BOTTOM OR CONCENTRIC.
3. SAME FOR RETURN AND EXHAUST DUCTS EXCEPT AIRFLOW IS REVERSED.
4. TAP HEIGHT DIMENSION SHOULD BE 2" SMALLER THAN MAIN DUCT HEIGHT.

2 RECTANGULAR 90° SIDE TAP
N.T.S.



NOTES:
1. ALL VANES SHALL BE SECURE AND STABLE IN OPERATING POSITION.
2. VANES SHALL BE SECURELY FASTENED TO RUNNERS.
3. INSTALL VANES IN SECTIONS OR USE TIE RODS TO LIMIT THE UNBRACED LENGTH TO 60".
4. VANES ARE NOT TO HAVE TRAILING EDGES.

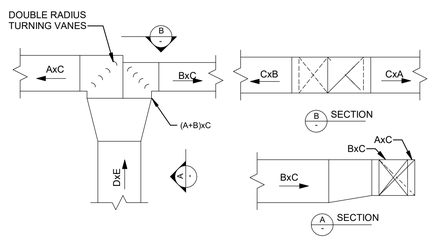
3 RECTANGULAR 90° MITERED ELBOW
N.T.S.



NOTES:
1. USE ONLY LONG RADIUS ELBOWS ON KITCHEN HOOD AND DISHWASHER HOOD EXHAUST DUCTWORK.
2. USE LONG RADIUS ELBOWS ON ALL DUCTWORK SYSTEMS WHERE POSSIBLE OR UNLESS OTHERWISE INDICATED.
3. ONLY WHEN IT IS IMPOSSIBLE TO USE LONG RADIUS ELBOWS, USE LARGEST POSSIBLE RADIUS WITH A MINIMUM RADIUS EQUAL TO THAT OF A SHORT RADIUS ELBOW.

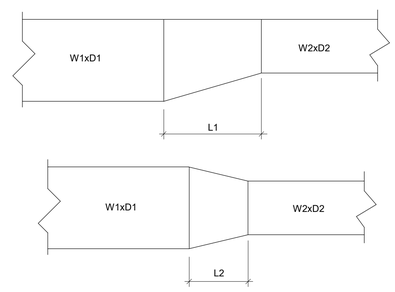
NOTE:
ELBOWS WITH 90 DEGREE SQUARE ON INSIDE RADIUS ARE NOT ACCEPTABLE.

4 RECTANGULAR 90° RADIUS ELBOW
N.T.S.



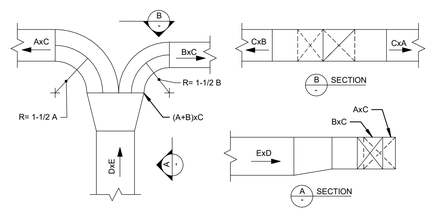
NOTES:
1. DIMENSIONS A, B, C, D, AND E AS INDICATED ON DRAWINGS.
2. TRANSITIONS SHOWN CONCENTRIC IN PLAN, MAY BE FLAT ON EITHER SIDE. TRANSITION SHOWN FLAT ON TOP IN SECTION, MAY BE FLAT ON BOTTOM OR CONCENTRIC. TRANSITION DUCT AS FIELD CONDITIONS DICTATE.
3. SAME FOR RETURN AND EXHAUST DUCTS EXCEPT AIRFLOW IS REVERSED.

5 RECTANGULAR TEE SQUARE ELBOW
N.T.S.



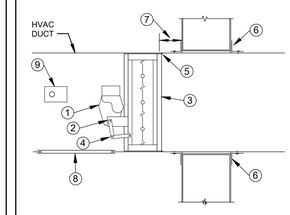
NOTES:
1. DIMENSIONS W1, W2, D1, AND D2 AS INDICATED ON THE DRAWINGS.
2. FOR LOW VELOCITY DUCTWORK (1800 FPM OR LESS)
   L1 = 4 x (W1-W2) OR 4 x (D1-D2) WHICHEVER IS GREATER.
   L2 = 2 x (W1-W2) OR 2 x (D1-D2) WHICHEVER IS GREATER.
3. FOR MEDIUM AND HIGH VELOCITY DUCTWORK (OVER 1800 FPM)
   L1 = 7 x (W1-W2) OR 7 x (D1-D2) WHICHEVER IS GREATER.
   L2 = 3.5 x (W1-W2) OR 3.5 x (D1-D2) WHICHEVER IS GREATER.

6 RECTANGULAR TRANSITION
N.T.S.



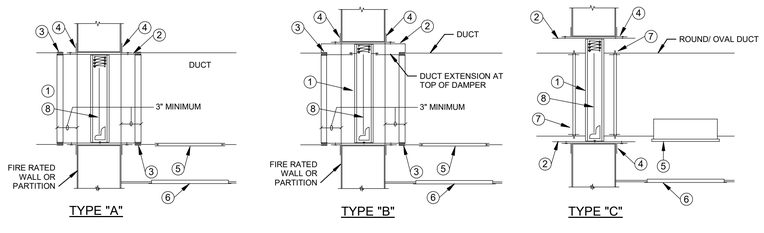
NOTES:
1. DIMENSIONS A, B, C, D, AND E AS INDICATED ON DRAWINGS.
2. TRANSITIONS SHOWN CONCENTRIC IN PLAN, MAY BE FLAT ON EITHER SIDE. TRANSITION SHOWN FLAT ON TOP IN SECTION, MAY BE FLAT ON BOTTOM OR CONCENTRIC. TRANSITION DUCT AS FIELD CONDITIONS DICTATE.
3. SAME FOR RETURN AND EXHAUST DUCTS EXCEPT AIRFLOW IS REVERSED.

7 RECTANGULAR TEE LONG RADIUS ELBOW
N.T.S.



1. 120V. ELECTRIC, FAST ACTING TWO-POSITION ACTUATOR HELD OPEN. MOTOR TO BE FACTORY MOUNTED ON OUTSIDE OF SLEEVE.
2. MOTOR OPERATING SHAFT.
3. SINGLE DAMPER ASSEMBLY, INSTALLED WITHIN 24" OF WALL PENETRATION.
4. EXTERNAL LINKAGE BETWEEN MOTOR AND OFFSET DAMPER SHAFT. FACTORY MOUNTED.
5. CAULKING MATERIAL, CONTINUOUS AROUND DAMPER/SLEEVE (EITHER SIDE OF DAMPER FRAME). AIR TIGHT SEAL.
6. RETAINING ANGLE ALL FOUR SIDES, 1.5"x1.5" LEGS (MIN.), 16 GAUGE. 1" MINIMUM OVERLAP OF WALL BEYOND OPENING. EXTENDED LEG MAY BE REQUIRED. BOLT, SCREW, OR TACK WELD TO WALL SLEEVE. SPACING OF FASTENERS PER SMACNA.
7. 24" MAX.
8. DUCT ACCESS PANEL AND FRAME. REMOVEABLE CAM LOCK LATCHES, GASKETED, DOUBLE WALL. SQUARE SIZE AS LARGE AS PERMITTED BY DUCT SIZE, WITH PLEXIGLASS VIEW PORT.
9. DUCT SMOKE DETECTOR, FURNISHED AND WIRED BY E.C., INSTALLED IN DUCT BY H.C.

8 SMOKE DAMPER
N.T.S.



NOTE:
AT 2 HR. FIRE WALL WITH DOUBLE WALL CONSTRUCTION, ONLY A SINGLE DAMPER IS REQUIRED PER 2006 NFPA 221 (NOT A HIGH CHALLENGE FIRE WALL) PROVIDE SINGLE SLEEVE CONTINUOUS THRU BOTH WALLS WITH FIRE DAMPER CENTERED IN SLEEVE FOR GYMNASIUM RETURN AIR, INSTALL SLEEVE DURING CONSTRUCTION OF WALL; TERMINATE SLEEVE IN MORTAR JOINTS AROUND OPEN AIR BLOCK (GYM SIDE). SLEEVE TO EXTEND THRU CORRIDOR SIDE WALL AND UTILIZE SINGLE SIDE MOUNTING ANGLE (RUSKIN FAST OR EQUAL). PROVIDE MULTIPLE SECTION DAMPER WITH FRAME AS REQUIRED FOR OPENING. CENTER TYPE "A" DAMPER(S) IN CORRIDOR SIDE WALL.

9 FIRE DAMPERS DETAIL
N.T.S.

GENERAL NOTES

-FIRE DAMPERS SHALL BE UL CLASSIFIED.

-FIRE DAMPERS SHALL BE 1.5 HOUR RATED FOR 2 HOUR RATED WALLS OR LESS; 3 HOUR FIRE RATED FOR 3 HOUR WALLS.

-FIRE DAMPERS SHALL BE DYNAMIC RATED, CURTAIN TYPE, SPRING OPERATED

-DIFFERENTIAL PRESSURE RATING OF 4" MINIMUM, HIGHER WHERE REQUIRED TO MATCH DUCT CONSTRUCTION.

-2000 FPM MAX. AIRFLOW RATING, EXCEPT 4000 FPM WHERE DESIGN DUCT VELOCITY IS OVER 2000 FPM.

-FIRE CLOSURE FUSIBLE LINK OF 165 DEG. F. EXCEPT WHERE REQUIRED TO BE HIGHER BY APPLICATION.

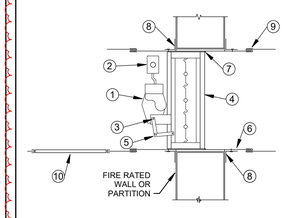
-GALVANIZED STEEL CONSTRUCTION IN GALVANIZED DUCT, STAINLESS STEEL IN OTHER APPLICATIONS.

-NOMINAL 4" STANDARD FRAME WIDTH.

-INSTALLATION OF FIRE DAMPERS AND ACCESSORIES INCLUDING INSULATION SHALL CONFORM TO NFPA 90A, SMACNA AND MANUFACTURER'S INSTRUCTIONS.

-DETAILS SHOW INSTALLATION OF FIRE DAMPER IN WALL. DAMPER INSTALLATION IN FLOOR SIMILAR. REFER TO PLANS FOR ACCESS LOCATION.

1. FIRE DAMPER TYPES -
   TYPE "A" - BLADES STORED IN AIR STREAM.
   TYPE "B" - BLADES STORED OUT OF AIR STREAM.
   TYPE "C" - ROUND/OVAL DUCT, BLADES STORED OUT OF AIR STREAM.
   ATTACH TO SLEEVE PER SMACNA, MINIMUM 4 CONNECTIONS (2 ON EACH SIDE OF BLADE CHANNEL) PER SIDE, MAX. 6" APART - TACK WELD, #10 SCREWS, 0.25" BOLTS/NUTS OR 3/16" STEEL POP RIVETS.
2. SHEETMETAL WALL SLEEVE, SAME MATERIAL AS DUCT. SHEETMETAL GAUGE PER SMACNA. MAINTAIN REQUIRED CLEARANCE TO WALL.
3. DUCT/SLEEVE CONNECTION, BREAKAWAY TYPE.
4. RETAINING ANGLE ALL FOUR SIDES, 1.5"x1.5" LEGS (MIN.), GAUGE PER SMACNA. 1" MINIMUM OVERLAP OF WALL BEYOND OPENING. EXTENDED LEG MAY BE REQUIRED. BOLT, SCREW, OR TACK WELD TO WALL SLEEVE. SPACING OF FASTENERS PER SMACNA.
5. DUCT ACCESS PANEL OR DOOR - 18"x16" EXCEPT SMALLER WHERE LIMITED BY DUCT SIZE.
6. CEILING ACCESS PANEL IF CEILING IS NOT ACCESSIBLE.
7. ROUND DUCT COUPLING.
8. STAINLESS STEEL CLOSURE SPRING.



1. 120V. ELECTRIC, FAST ACTING TWO-POSITION ACTUATOR HELD OPEN. MOTOR TO BE FACTORY MOUNTED ON OUTSIDE OF SLEEVE.
2. 165 DEG. F. ELECTRIC FUSE LINK WITH MANUAL RESET. FACTORY MOUNTED ON SLEEVE.
3. MOTOR OPERATING SHAFT.
4. SINGLE DAMPER ASSEMBLY, INSTALLED IN WALL OR FLOOR OPENING.
5. EXTERNAL LINKAGE BETWEEN MOTOR AND OFFSET DAMPER SHAFT. FACTORY MOUNTED.
6. INTEGRAL GALVANIZED STEEL SLEEVE, 16 GAUGE.
7. CAULKING MATERIAL, CONTINUOUS AROUND DAMPER/SLEEVE (EITHER SIDE OF DAMPER FRAME).
8. 1.5"x1.5"x16 GA. ANGLE (MINIMUM) ATTACHED TO SLEEVE AND WALL. TO OVERLAP WALL MINIMUM OF 1". REQUIRED ON ONLY ONE SIDE WHERE PERMITTED ON SMALL DUCTS. UTILIZE #10 BOLTS OR SCREWS AT 6" O.C. (SLEEVE), 12" O.C. WALL, MINIMUM OF TWO FASTENERS.
9. "BREAK-AWAY" TYPE DUCT/SLEEVE CONNECTION.
10. DUCT ACCESS PANEL AND FRAME. REMOVEABLE CAM LOCK LATCHES, GASKETED, DOUBLE WALL. SQUARE SIZE AS LARGE AS PERMITTED BY DUCT SIZE.

10 FIRE/SMOKE DAMPER
N.T.S.

NAUMAN & ZELINSKI LLC
204 S. Ludlow Street Suite 400 Dayton, Ohio 45402
Phone: (937) 223-3821 – Fax: (937) 223-3849
PROJECT # 23007

App Architecture
creative focused design
615 Woodside Drive, Englewood, Ohio 45322
T 937.836.8898 F 937.832.3696
www.app-arch.com

STATE OF OHIO
JEFFERY D. ZELINSKI
63822
REGISTERED PROFESSIONAL ENGINEER

JEFFERY D. ZELINSKI, LICENSE #63822
EXPIRATION DATE 12/21/2023

FACILITY RENOVATION
FAMILY HEALTH SERVICES OF DARKE COUNTY
5735 MEEKER ROAD, GREENVILLE, OH 45331

ISSUE

NO.	DATE	DESCRIPTION
	JULY 19, 2023	ISSUE FOR PERMIT & CONSTRUCTION
1	JULY 31, 2023	ADDENDUM 1

DATE	07/19/23
JOB NO.	3853.03
DRAWN	DRH
CHECKED	JDZ

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TITLE
DUCTWORK DETAILS

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