

2" W.G. TABLE 1-5 RECTANGULAR DUCT REINFORCEMENT

| DUCT DIMENSION | NO. REINFORCEMENT | MINIMUM RIGIDITY CLASS ON MINIMUM GAGE DUCT REINFORCEMENT SPACING | | | | | | |
|----------------|-------------------|---|------|------|------|----|--------|----|
| | | 10" | 8" | 6" | 4" | 3" | 2 1/2" | 2" |
| 10" DN | 26 ga | | | | | | | |
| 11, 12" | 24 ga | | | | | | | |
| 13, 14" | 22 ga | A-28 | A-28 | | | | | |
| 15, 16" | 20 ga | A-22 | A-24 | A-26 | | | | |
| 17, 18" | 20 ga | A-22 | A-24 | A-26 | | | | |
| 19, 20" | 18 ga | B-20 | B-22 | A-26 | | | | |
| 21, 22" | 18 ga | B-20 | B-22 | A-26 | | | | |
| 23, 24" | 18 ga | C-20 | C-22 | B-26 | | | | |
| 25, 26" | | C-20 | C-22 | B-26 | | | | |
| 27, 28" | | C-18 | C-20 | C-24 | B-26 | | | |
| 29, 30" | | D-18 | D-20 | C-24 | C-26 | | | |
| 31 - 36" | | E-16 | E-18 | D-24 | D-24 | | | |
| 37 - 42" | | E-16 | E-22 | E-24 | | | | |
| 43 - 48" | | G-16 | F-20 | E-22 | E-24 | | | |
| 49 - 54" | | G-18 | F-20 | F-24 | | | | |
| 55 - 60" | | H-18 | G-20 | G-22 | G-24 | | | |
| 61 - 72" | | H-18 | F-20 | H-22 | F-20 | | | |
| 73 - 84" | NOT ALLOWED | J-18 | J-20 | F-20 | H-24 | | | |
| 85 - 96" | | K-18 | K-20 | J-20 | F-20 | | | |
| 97" UP | | | | H-18 | | | | |

TABLE 1-18 FLAT DRIVE ACCEPTED AS CLASS A REINFORCEMENT

| DUCT WALL | MAXIMUM DUCT WIDTH W AND MAXIMUM REINFORCEMENT SPACING (S) | | | | | | | |
|-----------------|--|------|-------|------|-------|------|---------------|------|
| | 26 ga | | 24 ga | | 22 ga | | 20 ga or more | |
| STATIC PRESSURE | W | S | W | S | W | S | W | S |
| 1/2" wg | 20" | 10" | 20" | N.R. | 20" | N.R. | 20" | N.R. |
| 1" wg | 18" | N.R. | 20" | N.R. | 18" | N.R. | 20" | N.R. |
| 2" wg | 14" | 10" | 14" | N.R. | 18" | N.R. | 20" | N.R. |
| 3" wg | 12" | N.R. | | | | | | |
| 4" wg | 20" | 5" | 18" | 8" | 18" | 10" | 18" | N.R. |
| 5" wg | | | 12" | N.R. | 14" | N.R. | 14" | N.R. |
| 6" wg | | | 10" | N.R. | 12" | N.R. | 14" | N.R. |
| 8" wg | | | 8" | N.R. | 10" | 8" | 12" | N.R. |
| 10" wg | | | 8" | N.R. | 8" | 8" | 10" | N.R. |
| 12" wg | | | 8" | N.R. | 8" | 8" | 10" | N.R. |

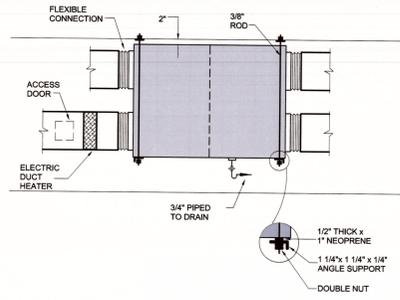
ALTHOUGH THE FLAT DRIVE SLIP T-1 DOES NOT SATISFY THE E1 CALCULATION REQUIREMENT FOR CLASS A REINFORCEMENT, TESTS CONFIRM ITS STABILITY FOR USE AS CLASS A REINFORCEMENT WITHIN THE LIMITS OF THE TABLE.

TABLE 3-2 ROUND DUCT GAUGE SELECTION GALVANIZED STEEL

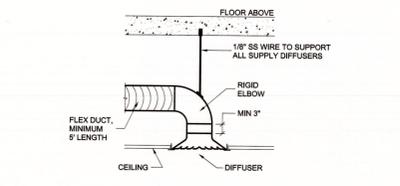
| DUCT DIAMETER IN INCHES | MAXIMUM 2" W.G. STATIC POSITIVE | | MAXIMUM 10" W.G. STATIC POSITIVE | | MAXIMUM 2" W.G. STATIC NEGATIVE | |
|-------------------------|---------------------------------|-------------------------|----------------------------------|-------------------------|---------------------------------|-------------------------|
| | Spiral Seam Gauge | Longitudinal Seam Gauge | Spiral Seam Gauge | Longitudinal Seam Gauge | Spiral Seam Gauge | Longitudinal Seam Gauge |
| 3 thru 8 | 28 | 24 | 26 | 24 | 26 | 24 |
| 9 thru 14 | 26 | 24 | 26 | 24 | 26 | 24 |
| 15 thru 26 | 24 | N/A | 24 | 22 | 24 | N/A |
| 27 thru 36 | 22 | N/A | 22 | 20 | 22 | N/A |
| 37 thru 50 | 20 | N/A | 20 | 20 | 20 | N/A |
| 51 thru 60 | 20 | N/A | 18 | 18 | 18 | N/A |
| 61 thru 84 | 18 | N/A | 18 | 16 | 16 | N/A |

TABLE 3-1 MITERED ELBOWS

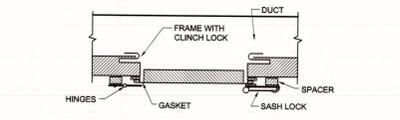
| DUCT VELOCITY | R/D RATIO CENTERLINE RADII TO DUCT DIAMETER | NUMBER OF MITERED PIECES | | |
|------------------|---|--------------------------|--------|--------|
| | | 90 deg | 60 deg | 45 deg |
| Up to 1000 fpm | 0.5 | 3 | 2 | 2 |
| 1001 to 1500 fpm | 1.0 | 4 | 3 | 2 |
| Above 1500 fpm | 1.5 | 5 | 4 | 3 |



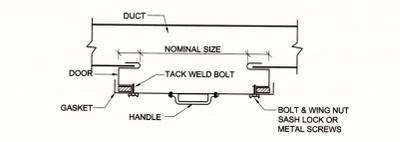
DETAIL NO.1/722 HEAT RECOVERY UNIT N.T.S.



DETAIL NO.2/722 SUPPLY DIFFUSER N.T.S.

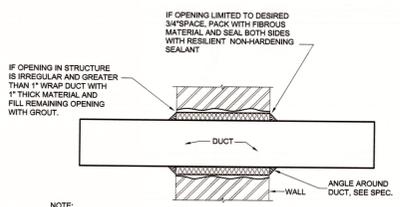


ACCESS DOOR IN INSULATED DUCT



ACCESS DOOR IN UNINSULATED DUCT

DETAIL NO.3/722 ACCESS DOORS IN DUCTWORK N.T.S.



DETAIL NO.4/722 TYPICAL WALL & FLOOR PENETRATION DETAIL N.T.S.

SCHEDULE No.1/722 SCHEDULE OF HEAT RECOVERY UNITS

| HRV No. | MANUFACTURER | TYPE | SIZE | AIR FLOW (CFM) | PRESSURE DROP SUPPLY | PRESSURE DROP EXHAUST | EFFECT. SENSIBLE | ENTHALPIC TRANSFER | | CONDITIONS (cf) WINTER/SUMMER | | | | | | FILTERS | DRIVES | MOTORS | ELECT. | REMARKS |
|---------|--------------|-----------|------|----------------|----------------------|-----------------------|------------------|--------------------|--------|-------------------------------|------|----|---------------|----|----|-----------|--------|------------|----------|--|
| | | | | | | | | WINTER | SUMMER | S U P P L Y | | | E X H A U S T | | | | | | | |
| HRV-1 | RENEWAIRE | EV300 | 300 | 300 | 0.75 | 0.75 | 70% | 65 | 46 | -1 | 48 | -3 | 39 | 70 | 35 | 2' MERV 8 | DIRECT | 2 @ 0.2 HP | 120/1/60 | CW DISC.SW. (NON-FUSED 24 VAC XFMR, DOUBLE WALL CONSTRUCTION HANGING BRACKETS) |
| HRV-2 | RENEWAIRE | EV450 IN | 450 | 400 | 0.80 | 0.80 | 75% | 70 | 58 | -1 | 52 | -3 | 41.5 | 70 | 35 | 2' MERV 8 | DIRECT | 2 @ 3/4 HP | 208/1/60 | CW DISC.SW. (NON-FUSED 24 VAC XFMR, DOUBLE WALL CONSTRUCTION HANGING BRACKETS) |
| HRV-3 | RENEWAIRE | HEXINH IX | 590 | 590 | 0.80 | 0.80 | 74% | 70 | 58 | -1 | 51.7 | -3 | 41.6 | 70 | 35 | 2' MERV 8 | DIRECT | 2 @ 3/4 HP | 208/1/60 | CW DISC.SW. (NON-FUSED 24 VAC XFMR, DOUBLE WALL CONSTRUCTION HANGING BRACKETS) |
| HRV-4 | RENEWAIRE | EV450 IN | 450 | 350 | 0.95 | 0.95 | 78% | 70 | 60 | -1 | 53 | -3 | 42.5 | 70 | 35 | 2' MERV 8 | DIRECT | 2 @ 3/4 HP | 208/1/60 | CW DISC.SW. (NON-FUSED 24 VAC XFMR, DOUBLE WALL CONSTRUCTION HANGING BRACKETS) |

NOTE: ALL UNITS ECM MOTORS

SCHEDULE No.2/722 SCHEDULE OF DOMESTIC HOT WATER TANK

| DHW # | SERVICE | LOCATION | MANUFACT. | MODEL | DIMENSION (H") | KW | DOMESTIC CONN (H") | TANK CAPACITY | ELECTRICS | REMARKS |
|-------|---------------|-----------|-----------|---------------|-------------------|-----|--------------------|---------------|-----------|---------|
| DHW-1 | DOM HOT WATER | BOILER RM | VAUGHN | ME-40W 454208 | 22 3/4" x 58 1/4" | 4.5 | 3/4" | 40 gal | 208/1/60 | - |

SCHEDULE No.3/722 SCHEDULE OF EXPANSION TANKS

| EXPANSION TANK No. | MANUFACT. | MODEL No. | TOTAL VOLUME (gal) | SIZE | | SYSTEM DIA" x OL" | MIN. PRESS. P.S.I. | SYSTEM | REMARKS |
|--------------------|------------|-----------|--------------------|------|-----|-------------------|--------------------|----------------|---------|
| | | | | DIA" | OL" | | | | |
| ET-1 | EXPANOFLEX | AL-30V | 105 | 12" | 30" | 3/4" | 15 | HEATING WATER | - |
| ET-2 | EXPANOFLEX | BFA-20V | 75 | 12" | 20" | 3/4" | 40 | DOM. HOT WATER | - |

SCHEDULE No.4/722 SCHEDULE OF BOILERS

| BOILER No. | SERVICE | LOCATION | MANUFACT. | MODEL | NET IBR (MBH) | OUTPUT CSA/DOE (MBH) | FUEL INPUT | INPUT MBH | WORKING PRESSURE (PSI) | EFFICIENCY | VOLTAGE | REMARKS |
|------------|---------|-------------|-----------|--------|---------------|----------------------|------------|-----------|------------------------|------------|----------|------------------------------------|
| B-1 | HEATING | BOILER ROOM | VISSMAN | VBZ-33 | 101 | 116 | 0.96 | 135 | 15 | 87.2 | 120/1/60 | BURNER: RIELLO MODEL F20, 120/1/60 |

SCHEDULE No.5/722 SCHEDULE OF PUMPS

| PUMP No. | SERVICE | LOCATION | MANUFACT. | MODEL | SIZE | TYPE | FLOW US GPM | HEAD FT. | HORSE POWER | ELECTRICS | R.P.M. | MEDIUM | SUCTION GUIDE | FLO-TREX | REMARKS |
|----------|-----------|-------------|-----------|-------|---------|---------|-------------|----------|-------------|-----------|----------|--------|---------------|----------|---|
| P1 | INFLOOR | BOILER ROOM | GRUNDFOS | MAGNA | 32-100F | IN-LINE | 15 | 20' | 1/4 | 208/1/60 | VARIABLE | WATER | N/A | N/A | ECM MOTOR CIRCULATOR W/ AUTO ADAPT FUNCTION |
| P2 | WALL FIN. | BOILER ROOM | GRUNDFOS | ALPHA | 15-55F | IN-LINE | 2 | 10' | FRACT | 115/1/60 | VARIABLE | WATER | N/A | N/A | ECM MOTOR CIRCULATOR W/ AUTO ADAPT FUNCTION |

SCHEDULE No.6/722 SCHEDULE OF ELECTRIC DUCT HEATERS

| DUCT HEATER No. | MANUFACTURER | HRV UNIT | AIR FLOW (CFM) | HEATING CAPACITY (KW) | ELECTRICS | SCR CONTROL | REMARKS |
|-----------------|--------------|----------|----------------|-----------------------|-----------|-------------|---|
| DH-1 | THERMOLEC | HRV-1 | 300 | 7 KW | 208/3/60 | YES | DUCT HEATER CW DISCONNECT SWITCH, MANUAL & AUTO RESETS, DIFFERENTIAL PRESSURE SWITCH, SCR & ROOM TEMPERATURE CONTROLLER |
| DH-2 | THERMOLEC | HRV-1 | 400 | 10 KW | 208/3/60 | YES | DUCT HEATER CW DISCONNECT SWITCH, MANUAL & AUTO RESETS, DIFFERENTIAL PRESSURE SWITCH, SCR & ROOM TEMPERATURE CONTROLLER |
| DH-3 | THERMOLEC | HRV-1 | 590 | 15 KW | 208/3/60 | YES | DUCT HEATER CW DISCONNECT SWITCH, MANUAL & AUTO RESETS, DIFFERENTIAL PRESSURE SWITCH, SCR & ROOM TEMPERATURE CONTROLLER |
| DH-4 | THERMOLEC | HRV-1 | 350 | 9 KW | 208/3/60 | YES | DUCT HEATER CW DISCONNECT SWITCH, MANUAL & AUTO RESETS, DIFFERENTIAL PRESSURE SWITCH, SCR & ROOM TEMPERATURE CONTROLLER |



Fortress of Louisbourg National Historic Site of Canada

Forteresse de Louisbourg Site Historique National du Canada

revisions date

| revisions | date |
|-----------|------|
| - | - |



APPROVED AS REFLECTING STRUCTURAL DESIGN TEAM DECISIONS

RESTORATION ARCHITECT
PROJECT MANAGER
HEAD OF HISTORICAL RESOURCES
MANAGER, ASSET MANAGEMENT
APPROVED
FIELD UNIT SUPERINTENDENT

A detail no. detail n°
B location dwg. sur dessin n°
C drawing no. dessin n°

date MAR, 2015 scale/échelle 1/4" = 1'-0"
designed by/conçu par V.J. BELLIVEAU
drawn by/tracé par M. MORELL

project title titre du projet
REPURPOSING OF SANTIER-VALLEE MAGASIN HOUSES

drawing title titre du dessin
MECHANICAL DETAILS & SCHEDULES

reference no. n° de référence
dwg. no. dessin n°
722

