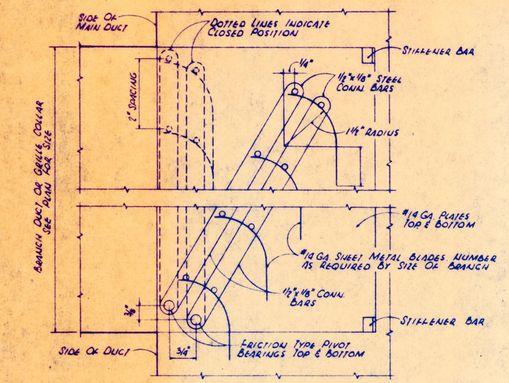
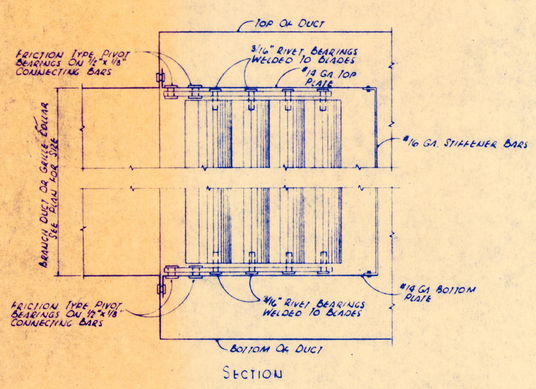


PLAN

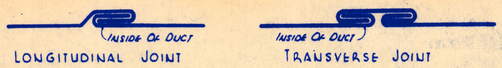


SECTION

DETAIL OF ADJUSTABLE DEFLECTORS FOR BRANCH DUCTS & GRILLES OFF SIDE OF DUCT
ONE HALF FULL SIZE

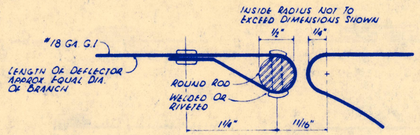
PLBG. & HTG. SYMBOLS

- SOIL OR WASTE PIPING
- VENT PIPING
- COLD WATER PIPING
- HOT WATER PIPING
- DOWN SPOUT PIPING
- HWS — HOT WTR. (HEATING) SUPPLY PIPING
- HWR — HOT WTR. (HEATING) RETURN PIPING
- GAS PIPING
- RISE & DROP IN PIPING
- SWING OR CUSHION CHECK VALVE
- GLOBE VALVE
- GATE VALVE
- UNION
- LUBRICATED PLG COCK
- ANCHOR
- DIRECTION OF FLOW IN PIPES
- PRESSURE THERMOSTAT
- ECCENTRIC REDUCER
- WELDED ELBOW
- A — COMPRESSED AIR PIPING
- C.O. — CLEAN OUT
- F.C.O. — FLUSH CLEAN OUT
- HWC — DOMESTIC HOT WATER CIRCULATING LINE
- KHW — KITCHEN HOT WATER LINE (1 BOY)
- KHWC — KITCHEN HOT WATER CIRC. LINE

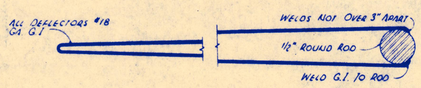


LONGITUDINAL JOINT — TRANSVERSE JOINT

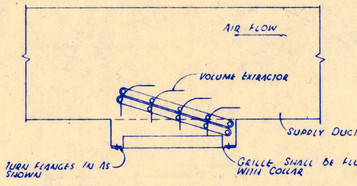
CORNER JOINTS FOR ELBOWS
DETAILS OF JOINTS IN G.I. DUCTS
NOT TO SCALE



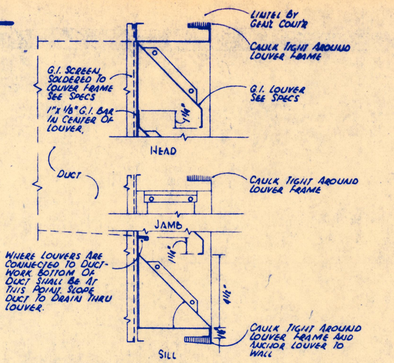
DETAIL OF DEFLECTOR
15" & SHORTER
NOT TO SCALE



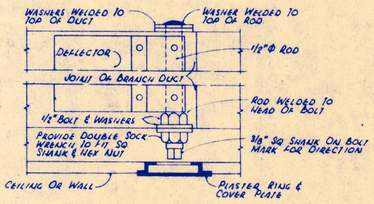
DETAIL OF DEFLECTOR
OVER 15" LONG
NOT TO SCALE



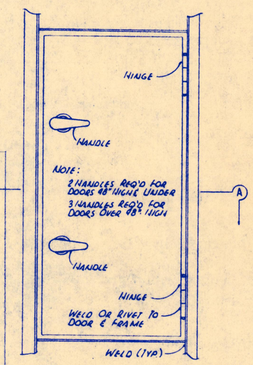
DETAIL OF GRILLE ON SIDE OF EXPOSED DUCT
NOT TO SCALE



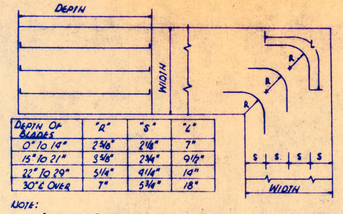
TYPICAL DETAIL OF LOUVER
NOT TO SCALE



DETAIL OF ADJUSTABLE DAMPERS
IN CONCEALED DUCTS
NOT TO SCALE

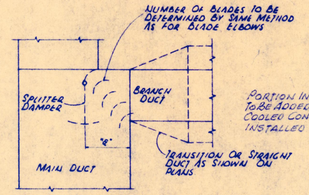


ELEVATION OF
HOUSING DOORS
NOT TO SCALE



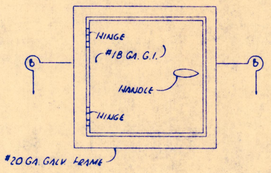
NOTE:
BLADES IN TRANSITION ELBOWS SHALL BE DETERMINED ACCORDING TO SMALLEST DEPTH OF ELBOW BLADES SHALL BE SAME GAGE AS DUCT

METHOD OF LAYOUT FOR BLADE ELBOWS
NOT TO SCALE

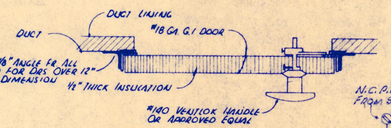


TYPICAL DETAIL OF BRANCH CONN.
FROM MAIN SUPPLY DUCT
NOT TO SCALE

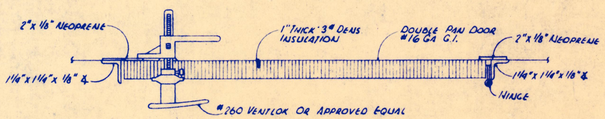
NOTE: DIMENSION "B" SHALL BE DETERMINED ACCORDING TO THE VOLUME OF AIR IN THE BRANCH DUCT AS THE VELOCITY OF AIR IN THE MAIN DUCT AT THIS POINT



ACCESS DOOR
16" WIDE OR LESS
NOT TO SCALE



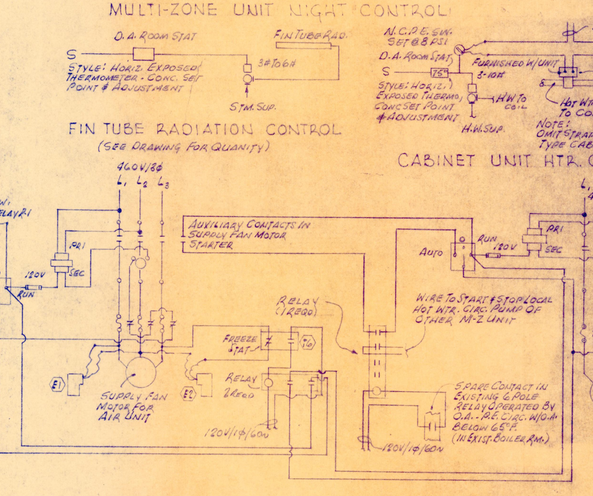
SECTION B-B
NOT TO SCALE



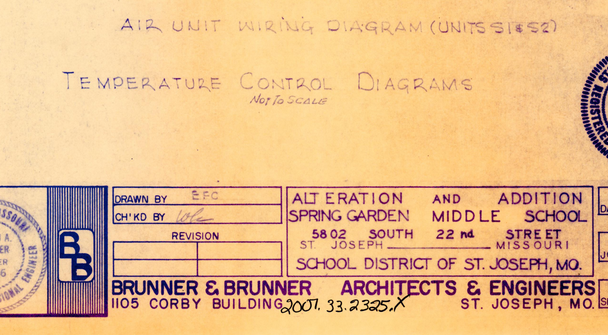
SECTION A-A THRU HOUSING DOOR
NOT TO SCALE



TYPICAL ANGLE STIFFENER
DETAIL FOR HOUSINGS
NOT TO SCALE



MULTI-ZONE UNIT CONTROL (UNITS S1 & S2)



AIR UNIT WIRING DIAGRAM (UNITS S1 & S2)

TEMPERATURE CONTROL DIAGRAMS
NOT TO SCALE

GRILLE SCHEDULE

CEILING SUPPLY

DESIGN.	SIZE	CFM MAX
SA	9"x9"	250
SB	12"x12"	450
SC	15"x15"	750
SD	18"x18"	1000
SE	21"x21"	1200

SA-200 — CFM / DESIGN & SIZE

RETURN AIR

DESIGN	SIZE	CFM MAX
RA	9"x9"	250
RB	12"x12"	400
RC	15"x15"	625
RD	18"x18"	900
RE	21"x21"	1200

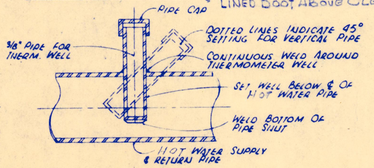
RA-200 — CFM / DESIGN & SIZE

EXHAUST

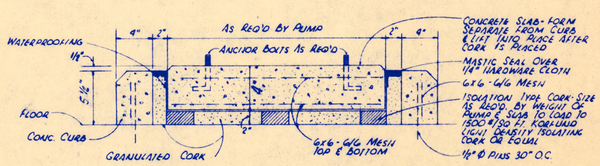
DESIGN	SIZE	CFM MAX
EA	8"x8"	150
EB	10"x10"	250
EC	12"x12"	450
ED	14"x14"	600

EA-150 — CFM / DESIGN & SIZE

6" Longer Than Width Of Boot — Lined Boot Above Clg.



DETAIL OF THERMOMETER
WELLS IN PIPES
NOT TO SCALE



TYPICAL DETAIL OF PUMP BASES
NOT TO SCALE

TYPICAL PIPE SUPPORT FOR CHILLED WATER & FREON SUCTION RISERS
NOT TO SCALE

W. L. CASSELL & ASSOCIATES, INC.
MECHANICAL & ELECTRICAL ENGINEERS
912 BALTIMORE AVENUE
KANSAS CITY, MISSOURI 64105

STATE OF MISSOURI — WILLIAM A. BRUNNER — NUMBER E-9246 — REGISTERED PROFESSIONAL ENGINEER

STATE OF MISSOURI — W. L. CASSELL — NUMBER E-134 — REGISTERED PROFESSIONAL ENGINEER

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REVISION	
DATE	1-11-12
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ALTERATION AND ADDITION
SPRING GARDEN MIDDLE SCHOOL
5802 SOUTH 22nd STREET
ST. JOSEPH MISSOURI
SCHOOL DISTRICT OF ST. JOSEPH, MO.

BRUNNER & BRUNNER ARCHITECTS & ENGINEERS
1105 CORBY BUILDING ST. JOSEPH, MO.