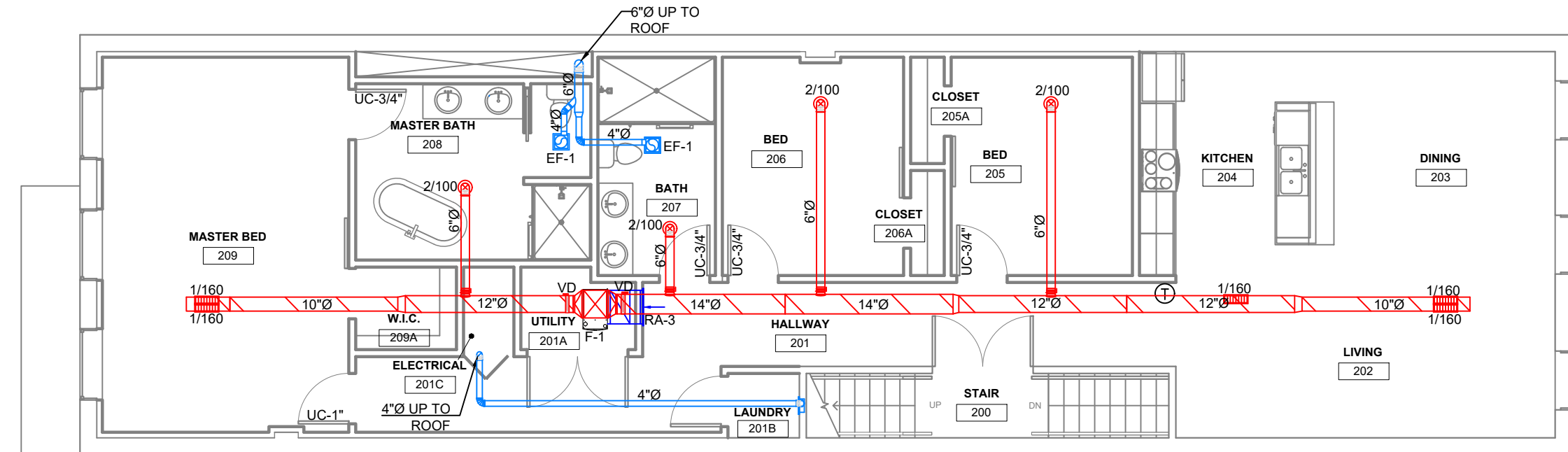


THIRD FLOOR HVAC LAYOUT

1/8" = 1/4"

NOTE: ALL DUCTWORK TO BE KEPT AT LEAST 5' FROM WINDOWS



SECOND FLOOR HVAC LAYOUT

1/8" = 1/4"

NOTE: ALL DUCTWORK TO BE KEPT AT LEAST 5' FROM WINDOWS

NOTES

- DUCT DIMENSIONS INSIDE, AND ARE BASED ON METAL DUCT WRAPPED.
- DUCT TO BE INSTALLED AND SEALED ACCORDING TO STATE CODE AND SMACNA GUIDELINES. SEALING TO MEET 2009 IECC THAT REQUIRES CLASS A OR B SEAL TO BE USED OVER SMACNA'S REQUIREMENTS.
- DUCT TO BE INSULATED TO STATE CODE. (SEE CHART)
- MAXIMUM FLEX LENGTH PERMITTED IS 5' OR MORE IF APPROVED BY DESIGNER. FLEX CONNECTOR LIMITED TO 14' MAX.
- FRESH AIR INTAKE TO BE AT LEAST 10' FROM ANY VENT OR FLUE HORIZONTALLY, OR 3' BELOW EXHAUST OR FLUE. INTAKE TO BE AT LEAST 12" ABOVE ANTICIPATED SNOW DEPTH.
- FRESH AIR INTAKE TO BE PROTECTED FROM THE ELEMENTS.
- RELIEF TO BE AT LEAST 2' ABOVE ROOF OR GROUND.
- FLUES TO BE MOUNTED AT LEAST 2' ABOVE ROOF AND 2' ABOVE ANY STRUCTURE WITHIN A 10' RADIUS.
- VENT EXHAUST FANS/OUTLETS TO EXTERIOR OF BUILDING AS SHOWN ON PLAN. INSTALL AS TO NOT CAUSE A NUISANCE.
- THERMOSTAT MOUNTING TO BE IN ACCORDANCE WITH A.D.A. REQUIRING 48" ABOVE FLOOR TO TOP OF STAT.
- CONTRACTOR TO CONFIRM VOLTAGES. ALSO ELECTRICIAN MUST PROVIDE A PROTECTED OUTLET THAT IS WITHIN 20" OF EACH PIECE OF EQUIPMENT.
- CONTRACTOR TO INSTALL AND ADJUST EQUIPMENT PER MANUFACTURER'S GUIDELINES.
- VENTILATION TO RUN CONTINUOUSLY DURING OCCUPANCY.
- UPON COMPLETION OF INSTALLATION, CONTRACTOR TO AIR BALANCE SYSTEM AND LEAVE A REPORT WITH BUILDING OWNER CERTIFYING AIR FLOWS THROUGH REGISTERS, F.A.I. & EXHAUST AS LISTED. THIS REPORT TO BE KEPT ON FILE BY OWNER FOR STATE INSPECTION WHEN REQUESTED.
- OWNER TO MAINTAIN & SERVICE EQUIPMENT ACCORDING TO MANUFACTURER'S GUIDELINES MINIMAL, OR MORE OFTEN IF CONDITIONS WARRANT. CONTRACTOR TO LEAVE A COMPLETE SET OF EQUIPMENT OPERATION MANUALS WITH OWNER. CONTRACTOR SHALL PROVIDE THE BUILDING OWNER WITH WRITTEN INSTRUCTIONS FOR OPERATION OF HVAC SYSTEM.
- PROVIDE FOR CONDENSATE REMOVAL FOR FURNACES, FAN COILS & A.C. COILS.
- ELECTRIC HEATER IN TOILETS TO BE AT LEAST 6" ABOVE FLOOR.
- EXHAUST FANS TO BE CONTROLLED BY TIME CLOCK TO OPERATE DURING BUILDING'S OCCUPIED SCHEDULE. OVERRIDE SWITCH TO BE PROVIDED TO OPERATE FAN DURING BUILDING UNOCCUPIED SCHEDULE.
- THERMOSTATS ARE TO BE SETBACK TYPE AND HAVE 5' DEADBAND.
- IF CEILING IS FIRE RATED, FIRE DAMPERS OR RADIATION DAMPERS TO BE INSTALLED IN ALL REGISTERS IN CEILING AND ANNULAR AREA AROUND DUCT TO BE FILLED WITH UL APPROVED MATERIAL.
- PROVIDE BALANCING DAMPER IN EACH SUPPLY OR EXHAUST DUCT RUNOUT. ACCESS TO DAMPER TO BE PROVIDED AT EACH LOCATION IF HIDDEN.
- GAS PIPING TO BE SIZED & INSTALLED ACCORDING TO N.F.P.A. 54 CODE BOOK. IF HIGH PRESSURE GAS USED, PRESSURE REGULATORS TO BE USED TO REDUCE PRESSURE TO APPLIANCES AS REQUIRED.
- AIR INTAKES & EXHAUST SHALL BE AT LEAST 10 FEET FROM A PROPERTY OR LOT LINE OR AN ADJACENT BUILDING ON THE SAME PROPERTY. THIS RESTRICTION DOES NOT APPLY TO PROPERTY LINES ALONG STREETS OR ALLEYS. A MINIMUM OF 10' FROM CENTER OF STREET MUST BE MAINTAINED.
- AS PER IFCC 503.3.3 ALL GAS APPLIANCE VENTING MUST TERMINATE AT LEAST 7' OR GREATER ABOVE ADJACENT WALK IF MANUFACTURER HAS A MORE RESTRICTIVE HEIGHT REQUIREMENT THAT MUST BE FOLLOWED IF GREATER THEN 7'.
- IF WALL CAVITY IS USED FOR RETURN AIR, METAL LINING MUST BE USED ON ALL SIDES, EXCEPT RESIDENTIAL UNITS THAT ARE FIRE SEPARATED FROM EACH OTHER.
- CONDENSER LOCATION IF NOT SHOWN TO BE DETERMINED AT SITE.
- CONTRACTOR TO DETERMINE THERMOSTAT LOCATION.
- IF RETURN AIR CFM (SINGLE OR COMBINED) IS 2000 CFM OR GREATER LISTED OR TESTED, SMOKE SENSOR IN RETURN AIR DUCT TO BE INSTALLED & WIRED TO ALARM OR CONTROL SMOKE/FIRE CENTER AS REQUIRED BY CODE.
- CONDENSER PAD TO LOCATE BOTTOM OF CONDENSER UNIT 6" MIN. ABOVE FINISHED GRADE.
- CO DETECTORS TO BE INSTALLED BY ELECTRICIAN WHERE REQUIRED BY WI. STATUTES 101.149 IN ALL RESIDENTIAL APPLICATIONS IF THERE IS AN ATMOSPHERIC BURNING APPLIANCE INSTALLED. (FURNACE, WATER HEATER, DRYERS, STOVES ETC.) MUST BE HARD WIRED AND HAVE BATTERY BACKUP.

CONTROL SEQUENCE

ALL HEATING/COOLING UNITS CONTROLLED BY ELECTRONIC THERMOSTAT WITH SETBACK CAPABILITIES. CONTROL SWITCHES WILL HAVE HEAT/OFF/COOL AND ON/FAN/AUTO SWITCHES. OCCUPANT WILL SELECT OPERATION REQUIRED AND SET TEMPERATURE TO THEIR SELECTED LEVEL (68-72 HEAT, 75-80 COOL) WHEN A CALL FOR HEATING OR COOLING OCCURS. THERMOSTAT WILL CAUSE HVAC UNIT TO OPERATE UNTIL COMFORT LEVEL IS ACHIEVED +/- 1.5°. OCCUPANT CAN ALSO CHOOSE FAN CONTINUOUS OR CYCLE WITH CALL FOR HEATING OR COOLING.

DUCT INSULATION SCHEDULE

DUCT LOCATION	COOLING INSULATION R-VALUE	HEATING INSULATION R-VALUE
EXTERIOR OF BUILDING	8.0	8.0 (R-10 REC.)
ATTIC OF BUILDING	8.0	8.0
INTERIOR	NONE REQUIRED	NONE REQUIRED
T0&1.5	6.0	6.0

NOTE: EXTERIOR IS OUTSIDE OF BUILDING ENVELOPE. ATTIC IS INTERIOR BUT OUTSIDE BUILDING INSULATION ENVELOPE. INTERIOR IS BELOW INTERIOR ENVELOPE BUT ABOVE CONDITIONED AREA. INSULATION IS SUGGESTED IN TBAR AREA & SOFFITS TO AVOID CONDENSATE DRIPPING. AS REQUIRED BY WISC. CODE. CONTINUOUS VAPOR BARRIER IS REQUIRED ON ALL INSULATED DUCTWORK. ALL DUCTWORK EXTERIOR OF THE BUILDING MUST BE MADE WEATHERTIGHT WITH AN APPROVED WEATHER COATING. UNDERGROUND DUCT INSULATION MUST MEET EXTERIOR R-VALUE.

DUCT SEALING

LABELING FOR APPROVED MASTICS & TAPES		UL LISTING
SEALANT DUCT CONNECTION TYPE		
PRESSURE SENSITIVE TAPES		181A-P
MASTIC		181A-M
HEAT SENSITIVE TAPE		181A-H
FLEXIBLE AIR DUCT-PRESSURE SENSITIVE TAPE		181B-FX
FLEXIBLE AIR DUCT-MASTIC		181B-M

NOTE: ALL TRANSVERSE & LONGITUDINAL SEAMS, JOINTS & CONNECTIONS OF SUPPLY, RETURN & EXHAUST DUCTS TO BE SECURELY FASTENED AND SEALED. DUCT PRESSURE CLASSIFICATIONS: LOW < 2" W.G., MEDIUM > 2" BUT < 3", AND HIGH PRESSURE > 3". PLAN TO SHOW WHICH WAS USED FOR DESIGN.

FURNACE & A/C SCHEDULE

DESIG.	F-1	F-2
MANUFACTURER	RHEEM	RHEEM
MODEL#	R95PA0701317MSA	R95PA0701317MSA
TYPE	UPFLOW	UPFLOW
FUEL	NATURAL GAS	NATURAL GAS
BTU INPUT	70,000	70,000
BTU OUTPUT	68,000	68,000
AFUE/EFF.	95.00%	95.00%
CFM HC	1200 CFM	1200 CFM
S.P. HC	.70	.70
H.P.	1/2	1/2
VOLTAGE	115-10-60HZ	115-10-60HZ
AMPS	11	11
MOCP	15	15
FILTER SIZE	16"x25"x1"	16"x25"x1"
A-COIL #	3 TON CASED	3 TON CASED
COND. UNIT #	RA1336AJ1NB	RA1336AJ1NB
DESIG.	CU-1	CU-2
BTU TOTAL	36,000	36,000
BTU SENSIBLE	26,900	26,900
SEER	13.0	13.0
VOLTAGE	208/230-10-60HZ	208/230-10-60HZ
MCA	23	23
MOCP	35	35
WEIGHT FURNACE&COIL	132LBS/50LBS	132LBS/50LBS
THERMOSTAT	SETBACK	SETBACK
SYSTEM STATIC	INCLUDED	INCLUDED
ECONOMIZER	N/A	N/A
RELIEF	N/A	N/A
OPTIONS		
FRESH AIR C.F.M.	0	0

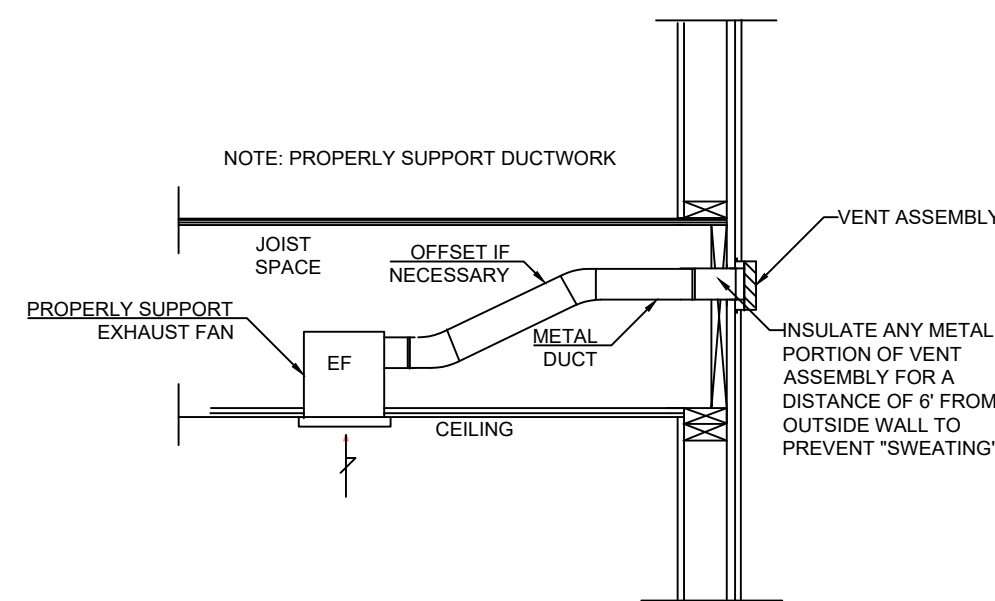
REGISTER SCHEDULE

DESIG.	1	2	3
MANUFACTURER	SHOEMAKER	SHOEMAKER	SHOEMAKER
MODEL#	USR34	90	1050
SIZE	16"x3"	6"	24"x24"
TYPE	SUPPLY	SUPPLY	RETURN
AIR PATTERN	4-WAY THROW	360° THROW	CUBED LATTICE
LOCATION	SIDEWALL SPIRAL	CEILING	SIDEWALL
DAMPER	OPPOSED	OPPOSED	NA
FINISH	METAL	WHITE	WHITE

EXHAUST FAN SCHEDULE

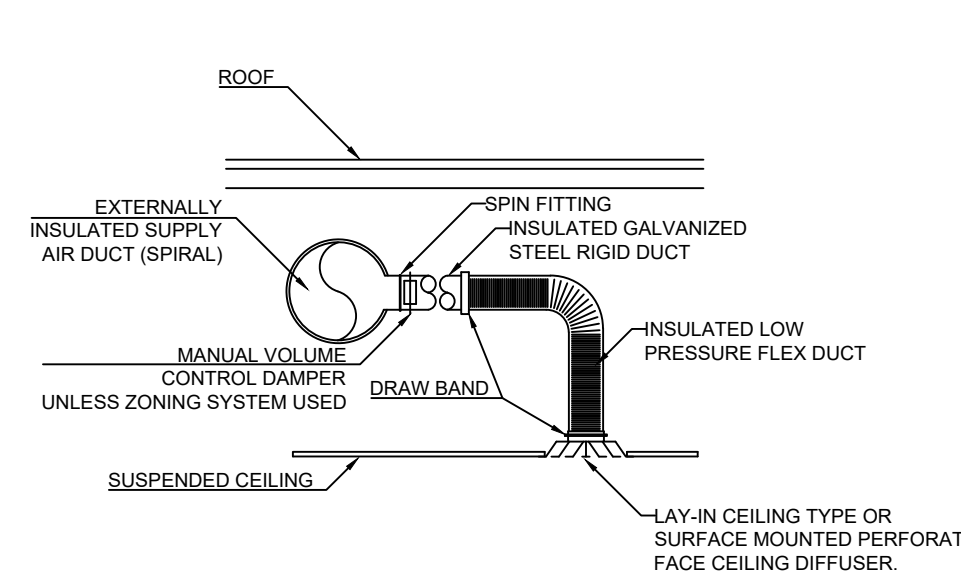
DESIG.	EF-1
MANUFACTURE	BROAN
MODEL#	AE80
C.F.M.	75
EST SP.	.25"
TYPE	CEILING
CURB	NA
VOLTAGE	115V
WEIGHT (LBS)	8 LBS.
OPTIONS	ROOF CAP
NOTES	TO BE CONTROLLED BY SWITCH IN ROOM

PROVIDE FOR CONDENSATE DISPOSAL WITH INTERIOR DRAIN COLLECTION. USE OF PLEATED FILTERS RECOMMENDED. UNLESS NOTED OTHERWISE FURNACES ARE 2 PIPE SEALED COMBUSTION. INSTALL LOW AMBIENT LOCKOUT ON CONDENSING UNIT TO PREVENT OPERATION BELOW 55°, UNLESS LOW AMBIENT OPERATION CONTROL IS INSTALLED ON UNIT.



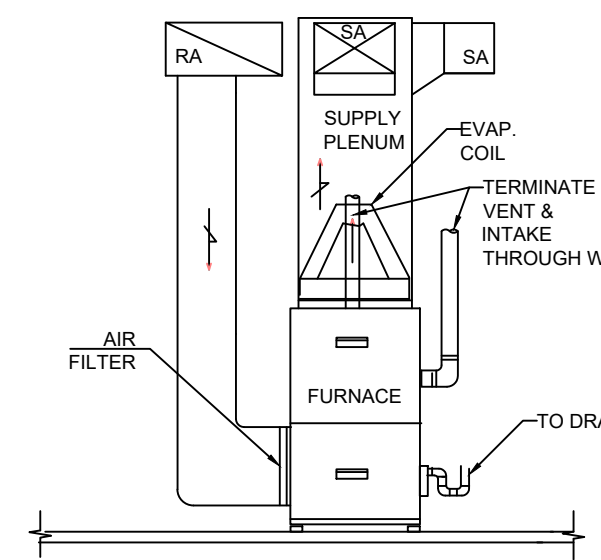
TYPICAL EXHAUST DETAIL

NTS



TYPICAL DUCT TO DIFFUSER CONNECTION

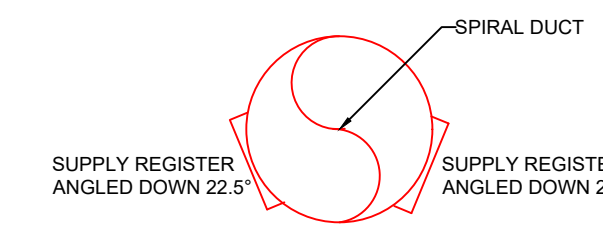
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FURNACE DETAIL

NTS

NOTE: FOR 1,800 CFM OR GREATER, DUAL RETURN AIR REQUIRED, EITHER SIDE AND BOTTOM OR BOTH SIDES

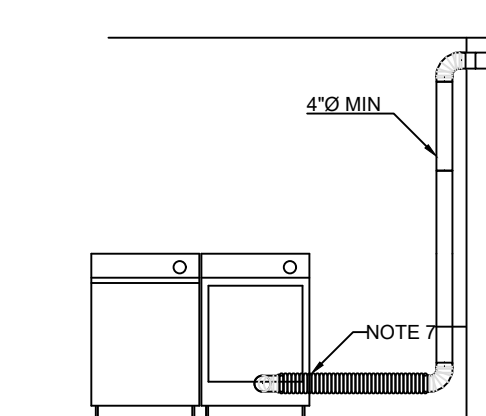


REGISTER DETAIL

NTS

NOTES

- DRYERS TO BE EXHAUSTED ACCORDING TO MANUFACTURER'S INSTRUCTIONS (504.1)
- NO EXHAUST PENETRATIONS IN FIREBLOCKING, DRAFTSTOPPING, WALL, FLOOR/CEILING OR OTHER ASSEMBLY THAT IS FIRE RESISTIVE UNLESS SUCH DUCT IS CONSTRUCTED OF STEEL OR ALUMINUM WITH THICKNESS SPECIFIED BY SECTION 603.3 OF THE CODE. (504.2)
- CLEANOUT TO BE PROVIDED ON EACH VERTICAL RISER. (504.3)
- RIGID METAL DUCTWORK SHALL BE SECURED WITH POP RIVETS OR CLAMPING DEVICE (NO SCREWS INTO DUCT) TO EACH SECTION (504.4)
- DRYER TO BE VENTED TO EXTERIOR OF BUILDING. MAY NOT BE VENTED IN CONJUNCTION WITH OTHER DRYERS OR OTHER EXHAUST DEVICES. MAY NOT BE CONNECTED TO A VENT, CONNECTOR, VENT, OR CHIMNEY. DUCT MAY NOT GO INTO OR THROUGH DUCTS OR PLENUMS.
- MAKEUP AIR TO BE PROVIDED IF CFM OF DRYER IS 200 CFM OR GREATER. IF INSTALLED IN CLOSET AN OPENING OF 100 SQ INCHES TO BE PROVIDED. (504.5)
- DUCTWORK FOR DRYER TO BE METAL WITH SMOOTH INTERIOR FINISH. MINIMUM DIAMETER TO BE 4". THE ENTIRE SYSTEM TO BE SUPPORTED & SECURED IN PLACE EVERY 4'. A MAXIMUM OF 8' OF TRANSITION DUCT TO BE PERMITTED BETWEEN DRYER & EXHAUST DUCT. (504.6)
- A MAXIMUM OF 35 FEET OF DUCT FROM DUCT BEGINNING TO OUTLET IS PERMITTED. FOR ELBOWS FIGURE 5' FOR 90° & 2.5' FOR 45°. LONGER LENGTH OF VENTING IS ONLY PERMITTED IF DRYER USED IS LISTED FOR THAT LENGTH OR LONGER. A WARNING LABEL MUST BE PLACED BY VENT BEGINNING STATING THAT DRYER CONNECTED TO THIS DUCT TO BE ABLE TO VENT THE DISTANCE LISTED ON LABEL. (EX 45) (504.6.1)
- NO BOOSTER FAN TO BE PERMITTED TO BE USED UNLESS DRYER MANUFACTURER SPECIFICALLY LIST IN THEIR INSTALLATION BOOK THE USE OF A BOOSTER FAN.
- ALL DRYER VENTS MUST BE VENTED AT LEAST 3' FROM ANY OPENABLE DOOR OR WINDOW OR 2' ABOVE OPENINGS AS LONG AS THERE ARE NO OPENINGS ABOVE. ALSO, CLEARANCES TO SOFFIT VENTS MUST BE CONSIDERED.
- WHEREVER DRYER DUCT GOES THROUGH FRAMING MEMBERS, A PROTECTIVE METAL SHIELD PLATE SHALL BE PROVIDED ON BOTH SIDES TO PROTECT THE DUCTWORK IMC 504.6.7.
- IF DUCTWORK FOR DRYER EXCEEDS 35' WITH ELBOWS, AN IDENTIFICATION PLATE LISTING TOTAL LENGTH OF DUCT INSTALLED SHALL BE PLACED WITHIN 8' OF DUCT CONNECTION. PER IMC 504.6.5. DRYER BEING INSTALLED MUST MEET THIS LENGTH REQUIREMENT.



DRYER INSTALLATION DETAIL

NTS

DRAWN BY
AJB

APPROVED BY
GRH

DATE	REVISIONS

DESIGN AIR
5518 FERRITE DR. • MADISON, WI 53718
PH: 920-739-7005 • 1-800-444-0101

CONTRACTOR
CAPITAL HEATING AND COOLING

JOB INFORMATION:
THIRD WARD LOFTS
1105-1111 N OLD WORLD 3RD ST
MILWAUKEE, WI 53203

PAGE INDEX

PAGE	DESCRIPTION

PROJECT NO.
XXXXXX
DATE
6/18/2018
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