

DUCTWORK SYMBOLS

| RECTANGULAR | ROUND / OVAL | |
|-------------|--------------|---|
| | | ROUND BRANCH DUCTWORK |
| | | RECTANGULAR BRANCH DUCTWORK |
| | | SQUARE TEE WITH TURNING VANES NOTE: ALL SQUARE ELBOWS IN RECTANGULAR AND ROUND / OVAL DUCTWORK SHALL BE PROVIDED WITH TURNING VANES. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS. |
| | | RADIUS'D TEE |
| | | RADIUS'D BRANCH |
| | | EXISTING DUCTWORK TO REMAIN |
| | | EXISTING DUCTWORK TO BE REMOVED |
| | | RETURN AIR, RELIEF AIR, OR TRANSFER AIR DUCTWORK (UP AND DOWN) RADIUS'D OR SQUARE WITH TURNING VANES |
| | | SUPPLY AIR OR OUTDOOR AIR DUCTWORK (UP AND DOWN) RADIUS'D OR SQUARE WITH TURNING VANES |
| | | EXHAUST AIR DUCTWORK (UP AND DOWN) RADIUS'D OR SQUARE WITH TURNING VANES |
| | | RECTANGULAR AND ROUND / OVAL DUCTWORK RISE / DROP WITH 45° RADIUS'D OR SQUARE ELBOWS AND TURNING VANES |
| | | RADIUS ELBOW |
| | | 90° SQUARE ELBOW WITH TURNING VANES NOTE: ALL SQUARE ELBOWS IN RECTANGULAR AND ROUND DUCTWORK SHALL BE PROVIDED WITH TURNING VANES. |
| | | SQUARE THROAT / RADIUS HEEL FITTINGS NOT ACCEPTABLE |
| | | ACCESS DOOR OR PANEL |
| | | DUCTWORK RISE IN DIRECTION OF AIR FLOW |
| | | DUCTWORK DROP IN DIRECTION OF AIR FLOW |
| | | FLEXIBLE DUCTWORK |
| | | DUCTWORK WITH ACOUSTICAL LINER. LISTED DUCT SIZES ARE INSIDE CLEAR DIMENSIONS |
| | | FLEXIBLE CONNECTION |
| | | DUCTWORK CONSTRUCTED OF SPECIAL MATERIAL AS NOTED |
| | | DIRECTION OF PITCH |
| | | RECTANGULAR DUCTWORK DIMENSIONS (W X H) |
| | | ROUND DUCTWORK DIMENSIONS (DIA) |
| | | OVAL DUCTWORK DIMENSIONS (W X H) |

DUCTWORK DEVICE SYMBOLS

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| | AR DEVICE. A3 = DESIGNATION (REFER TO FLOOR PLANS AND AIR DEVICE SCHEDULE FOR VARIOUS DESIGNATIONS). 10a = NECK SIZE (IN INCHES). 300 = REQUIRED CFM. ALL AIR DEVICE DISCHARGE 4-WAY UNLESS NOTED WITH FLOW ARROWS. AIR DEVICE SHOWN IS 2-WAY SIDE THROW. METHOD OF IDENTIFICATION ALSO APPLIES TO OTHER CEILING MOUNTED AIR DEVICES. |
| | WALL OR DUCTWORK MOUNTED AIR DEVICE. SG1 = DESIGNATION (REFER TO AIR DEVICE SCHEDULE). 20x12 = DUCT CONNECTION SIZE (IN INCHES). 300 = REQUIRED CFM. 5'-0" = MOUNTING HEIGHT FROM FLOOR TO BOTTOM OF GRILLE. |
| | MANUAL BALANCING DAMPER WITH LOCKING DEVICE |
| | BDD = BACK DRAFT DAMPER CBD = COUNTER-BALANCED BACK DRAFT DAMPER |
| | FIRE DAMPER A = TYPE (REFER TO FLOOR PLANS FOR VARIOUS TYPES) D OR S = DYNAMIC OR STATIC |
| | SD = SMOKE DAMPER FS = COMBINATION FIRE - SMOKE DAMPER MDD = MOTORIZED DAMPER AFMS = AIR FLOW MEASURING STATION |
| | DUCT MOUNTED SMOKE DETECTOR. COORDINATE LOCATION. |
| | HUMIDITY SENSOR - DUCT MOUNTED |
| | STATIC PRESSURE SENSOR - DUCT MOUNTED |
| | CARBON DIOXIDE SENSOR - DUCT MOUNTED |
| | TEMPERATURE SENSOR - DUCT MOUNTED |

VALVES AND FITTINGS

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|--|--|
| | CHECK VALVE |
| | SHUTOFF VALVE (REFER TO SPECIFICATIONS FOR REQUIRED TYPE BASED ON APPLICATIONS) |
| | COMBINATION SHUTOFF AND BALANCING VALVE (REFER TO SPECIFICATIONS FOR REQUIRED TYPE BASED ON APPLICATIONS) |
| | CONCENTRIC PIPE REDUCER |
| | ECCENTRIC PIPE REDUCER |
| | PRESSURE GAUGE |
| | TEMPERATURE GAUGE OR THERMOMETER |
| | UNION |
| | CLEANOUT |
| | STRAINER |
| | STRAINER WITH A BLOW DOWN VALVE AND HOSE CONNECTION |
| | DRAIN VALVE WITH HOSE END CONNECTION |
| | AUTOMATIC FLOW CONTROLLER WITH PIT PLUG IN AND OUT |
| | EXPANSION JOINT |
| | MANUAL AIR VENT |
| | AUTOMATIC AIR VENT |
| | PRESSURE REDUCING VALVE |
| | MODULATING 2 PORT AUTOMATIC CONTROL VALVE |
| | 2 PORT AUTOMATIC CONTROL VALVE, 2-POSITION UNLESS SPECIFIED OTHERWISE |
| | MODULATING 3 PORT AUTOMATIC CONTROL VALVE |
| | 3 PORT AUTOMATIC CONTROL VALVE, 2-POSITION UNLESS SPECIFIED OTHERWISE |
| | AUTOMATIC PRESSURE INDEPENDENT CONTROL VALVE |
| | QUICK OPENING MANUAL VALVE |
| | SAFETY RELIEF VALVE. FOR HYDRONIC SYSTEMS PIPE DISCHARGE AIR GAPPED TO FLOOR DRAIN UNLESS NOTED OTHERWISE. FOR STEAM SYSTEMS PIPE DISCHARGE TO OUTDOORS. |
| | VACUUM BREAKER |
| | NEEDLE VALVE |
| | PRESSURE AND TEMPERATURE TEST PLUG |
| | VACUUM GAUGE WITH STOP |
| | END CAP |
| | GLOBE VALVE |
| | SHUTOFF VALVE AND BOX |
| | SHUTOFF VALVE ON RISER |
| | SOLENOID VALVE |
| | FLOW METER |
| | BIMETALLIC STEAM TRAP AND DRIP ASSEMBLY |
| | THERMODYNAMIC STEAM TRAP AND DRIP ASSEMBLY |
| | INVERTED BUCKET STEAM TRAP AND DRIP ASSEMBLY |
| | FLOAT AND THERMOSTATIC STEAM TRAP AND DRIP ASSEMBLY |
| | THERMOSTATIC STEAM TRAP AND DRIP ASSEMBLY |
| | PRESSURE GAUGE WITH COCK AND SIPHON LOOP |

MISC SYMBOLS

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| | CARBON DIOXIDE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 48" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT. |
| | CARBON MONOXIDE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 48" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT. |
| | DIFFERENTIAL PRESSURE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 48" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT. |
| | HUMIDITY SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 48" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT. |
| | TEMPERATURE SENSOR. WHEN WALL MOUNTED, MOUNTING HEIGHT 48" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT. |
| | TEMPERATURE SENSOR MOUNTED IN CEILING PLENUM. |
| | STATIC PRESSURE SENSOR. |
| | SPACE TEMPERATURE SENSOR / THERMOSTAT. WHEN WALL MOUNTED, MOUNTING HEIGHT 48" TO MEET ADA REQUIREMENTS. WHEN MOUNTED NEXT TO WALL SWITCH COORDINATE WITH ARCHITECT. |
| | EMERGENCY SHUTOFF STATION. 48" MOUNTING HEIGHT UNLESS NOTED OTHERWISE. |

GENERAL FLOOR PLAN NOTES

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| | PLAN NOTE. APPLIES ONLY TO THE SHEET WHICH IT IS SHOWN UNLESS NOTED OTHERWISE. |
| | DETAIL NOTE. APPLIES ONLY TO THE ASSOCIATED DETAIL. |
| | EQUIPMENT, DEVICE, OR PLUMBING FIXTURE MARK. LETTER DESIGNATIONS REFER TO SCHEDULES. |
| | EQUIPMENT REFERENCE. LETTER DESIGNATION VARIES. REFER TO SCHEDULES. |
| | RISER OR STACK NUMBER |
| | DETAIL: B = DETAIL DESIGNATION H2 = SHEET WHERE DETAIL IS LOCATED |
| | SECTION: 1 = SECTION DESIGNATION H2 = SHEET WHERE DETAIL IS LOCATED |
| | "UP TO" SYMBOL (ITEM ON FLOOR ABOVE) |
| | APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF EQUIPMENT, UNLESS NOTED OTHERWISE |
| | APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO CENTERLINE OF PIPE, UNLESS NOTED OTHERWISE |
| | APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF DUCTWORK, UNLESS NOTED OTHERWISE |
| | APPROXIMATE DIMENSION ABOVE FINISHED FLOOR TO TOP OR BOTTOM OF DUCTWORK, UNLESS NOTED OTHERWISE |
| | DOOR UNDERCUT. X = HEIGHT OF UNDERCUT IN INCHES. 0.75 INCH UNDERCUT IF NO HEIGHT IS NOTED. COORDINATE WITH GC. |
| | DOOR LOUVER. 1 = SQUARE FEET OF LOUVER. |
| | CONNECT TO EXISTING |
| | DEMOLISH TO POINT INDICATED |

PIPING SYMBOLS

| DOUBLE LINE | SINGLE LINE | |
|-------------|-------------|---|
| | | BOTTOM CONNECTION (45°) |
| | | BOTTOM CONNECTION (90°) |
| | | BRANCH TEE CONNECTION (NOTE: BULLHEAD TEES ARE NOT PERMITTED) |
| | | DIRECTION OF PITCH |
| | | ELBOW DOWN |
| | | ELBOW UP |
| | | EXISTING PIPE TO BE REMOVED |
| | | EXISTING PIPE TO REMAIN |
| | | FLOW DIRECTION DESIGNATION |
| | | PIPE RISER |
| | | PUMP |
| | | RISE |
| | | TOP CONNECTION (45°) |
| | | TOP CONNECTION (90°) |

HVAC PIPING DESIGNATIONS

| | |
|--------|---|
| —CHS— | CHILLED WATER SUPPLY PIPE |
| —CHR— | CHILLED WATER RETURN PIPE |
| —CWS— | CONDENSER WATER SUPPLY PIPE |
| —CWR— | CONDENSER WATER RETURN PIPE |
| —CHGS— | CHILLED WATER GLYCOL SOLUTION SUPPLY PIPE |
| —CHGR— | CHILLED WATER GLYCOL SOLUTION RETURN PIPE |
| —D— | DRAIN LINE. PITCH IN DIRECTION INDICATED |
| —HWR— | HEATING HOT WATER RETURN PIPE |
| —HWS— | HEATING HOT WATER SUPPLY PIPE |
| —MU— | WATER MAKE-UP PIPE |
| —V— | VENT PIPE |
| —ET— | EXPANSION TANK PIPE |
| —HG— | REFRIGERANT HOT GAS LINE |
| —RL— | REFRIGERANT LIQUID LINE |
| —RS— | REFRIGERANT SUCTION LINE |
| —ID— | STEAM SUPPLY PIPE - NUMBER INDICATES P.S.I.G. |
| —HPC— | HIGH PRESSURE CONDENSATE RETURN PIPE |
| —HPS— | HIGH PRESSURE STEAM SUPPLY PIPE |
| —LPC— | LOW PRESSURE CONDENSATE RETURN PIPE |
| —LPS— | LOW PRESSURE STEAM SUPPLY PIPE |
| —MPC— | MEDIUM PRESSURE CONDENSATE RETURN PIPE |
| —MPS— | MEDIUM PRESSURE STEAM SUPPLY PIPE |
| —PC— | PUMPED CONDENSATE RETURN PIPE |

ABBREVIATIONS

| | | | |
|--------|---|---------------|--|
| AC | AIR COMPRESSOR OR AIR CONDITIONER | ID | INSIDE DIAMETER |
| ACCU | AIR COOLED CONDENSING UNIT | INV | INVERT ELEVATION |
| ADJ | ACCESS DOOR OR AREA DRAIN | IN | INCHES |
| AFS | ADJUSTABLE | KEC | KITCHEN EQUIPMENT CONTRACTOR |
| AFS | ABOVE FINISHED GRADE | L | LENGTH |
| AFMS | AIR FLOW MEASURING STATION | LAV | LEAVING AIR TEMPERATURE |
| ALT | ALTERNATE | LAV | LAVATORY |
| AP | ACCESS PANEL | LBS | POUNDS |
| APPROX | APPROXIMATE | LPC | LOW PRESSURE CONDENSATE RETURN |
| ARCH | ARCHITECT OR ARCHITECTURAL | LPS | LOW PRESSURE STEAM SUPPLY |
| ASSY | ASSEMBLY | LWT | LEAVING WATER TEMPERATURE |
| ATC | AUTOMATIC TEMPERATURE CONTROL (SYNONYMOUS WITH BAS) | MAX | MAXIMUM |
| BAS | BUILDING AUTOMATION SYSTEM | MDD | MOTORIZED DAMPER |
| BDD | BACK DRAFT DAMPER | MEZZ | MEZZANINE |
| BIP | BACKFLOW PREVENTER | MFR | MANUFACTURER |
| BLDG | BUILDING | MH | MANHOLE |
| BOB | BOTTOM OF BEAM | MIN | MINIMUM OR MINUTE |
| BOD | BOTTOM OF DUCT | MISC | MISCELLANEOUS |
| BOE | BOTTOM OF EQUIPMENT | MTD | MOUNTED |
| BOF | BOTTOM OF FOOTING | MTG | MOUNTING |
| BOG | BOTTOM OF GRILLE | MPC | MEDIUM PRESSURE CONDENSATE RETURN |
| BOP | BOTTOM OF PIPE | MPS | MEDIUM PRESSURE STEAM SUPPLY |
| BOT | BOTTOM | WATER MAKE-UP | WATER MAKE-UP |
| BTU | BRITISH THERMAL UNIT | NIC | NORMALLY CLOSED |
| BTUH | BRITISH THERMAL UNIT PER HOUR | NO | NOT IN CONTRACT |
| CBD | COUNTER-BALANCED BACKDRAFT DAMPER | NIO | NORMALLY OPEN |
| CFCI | CONTRACTOR FURNISHED CONTRACTOR INSTALLED | NOM | NOMINAL |
| CFM | CUBIC FEET PER MINUTE | NPT | NATIONAL PIPE THREAD |
| CHS | CHILLED WATER SUPPLY | NTS | NOT TO SCALE |
| CHR | CHILLED WATER RETURN | OA | OUTDOOR AIR |
| CHNR | CHILLED WATER GLYCOL SOLUTION RETURN | OB | OPPOSED BLADE DAMPER |
| CHSG | CHILLED WATER GLYCOL SOLUTION SUPPLY | OD | OUTSIDE DIAMETER |
| CLG | CEILING | OFR | OWNER FURNISHED CONTRACTOR |
| CMU | CONCRETE MASONRY UNIT | OFCI | OWNER FURNISHED CONTRACTOR INSTALLED |
| CO | CLEAN OUT | OFOW | OWNER FURNISHED OWNER INSTALLED |
| CO2 | CARBON DIOXIDE | P | PROPANE GAS |
| CONN | CONNECT OR CONNECTION | PC | PLUMBING CONTRACTOR (DIVISION 22) |
| CONTR | CONTRACTOR | PLBG | PLUMBING |
| CTR | CENTER | PRESS | PRESSURE |
| CW | COLD WATER | PSR | PRESSURE REGULATING VALVE |
| CWR | CONDENSER WATER RETURN | PSF | POUNDS PER SQUARE FOOT |
| CWS | CONDENSER WATER SUPPLY | PSG | POUNDS PER SQUARE INCH |
| D | DRAIN LINE | PSG | POUNDS PER SQUARE INCH GAUGE |
| DB | DRY BULB | RA | RETURN AIR |
| DDC | DIRECT DIGITAL CONTROLS | RAD | RADIUS |
| DI | DEIONIZED WATER | RCD | REFLECTED CEILING PLAN |
| DIA | DIAMETER | RFD | ROOF DRAIN |
| DIM | DIMENSION | REC | RECESSED |
| DN | DOWN | REGD | REQUIRED |
| DWG | DRAWING | RI | ROUGH IN |
| EA | EACH OR EXHAUST AIR | RL | REFRIGERANT LIQUID |
| EAT | ENTERING AIR TEMPERATURE | ROR | REVERSE OSMOSIS WATER SUPPLY |
| EC | ELECTRICAL CONTRACTOR (DIVISION 26) | ROS | REVERSE OSMOSIS WATER RETURN |
| EJ | EXPANSION JOINT | RPM | REVOLUTIONS PER MINUTE |
| ELEC | ELECTRICAL | RS | REFRIGERANT SUCTION |
| ELEV | ELEVATOR | S | SPRINKLER (WET) |
| EQUIP | EQUIPMENT | SA | SUPPLY AIR |
| ET | EXPANSION TANK | SAN | SANITARY OR SANITARY DRAIN |
| ETR | EXISTING TO REMAIN | SCH | SCHEDULE |
| EGS | EQUIPMENT SUPPLIER | SCW | SOFT COLD WATER |
| EWT | ENTERING WATER TEMPERATURE | SHT | SHEET |
| EXH | EXHAUST | SPEC | SPECIFICATIONS |
| EXP | EXPANSION | SD | SQUARE |
| EXT | EXTERIOR | SR | SUPPLY RISER |
| EX | EXISTING | SRV | SAFETY RELIEF VALVE |
| FD | FLOOR DRAIN | SS | STAINLESS STEEL |
| FF | FINISHED FLOOR ELEVATION | STD | STANDARD |
| FLR | FLOOR | STM | STORM OR STORM DRAINAGE |
| FOB | FLAT ON BOTTOM | STRUC | STRUCTURAL OR STRUCTURE |
| FOF | FUEL OIL FLOW | SUC | SITE UTILITY CONTRACTOR |
| FOG | FUEL OIL GAUGE | TEMP | TEMPERATURE |
| FOR | FUEL OIL RETURN | TOB | TOP OF BEAM |
| FOS | FUEL OIL SUPPLY | TOO | TOP OF DUCT |
| FOT | FLAT ON TOP | TOE | TOP OF EQUIPMENT |
| FRM | FEET PER MINUTE | TOP | TOP OF FOOTING |
| FSC | FIRE SUPPRESSION CONTRACTOR (DIVISION 21) | TOF | TOP OF FLOOR |
| FT | FEET | TOP | TOP OF PIPE |
| FTG | FOOTING | TOS | TOP OF SLAB OR TOP OF STEEL |
| G | GAS OR NATURAL GAS | TYP | TYPICAL |
| GA | GAUGE | UNO | UNLESS NOTED OTHERWISE |
| GAL | GALLON | V | VENT |
| GALV | GALVANIZED | VAC | VACUUM |
| GC | GENERAL TRADES CONTRACTOR | VEL | VELOCITY |
| GPM | GALLONS PER MINUTE | VFD | VARIABLE FREQUENCY DRIVE (ADJUSTABLE FREQUENCY MOTOR CONTROLLER) |
| HB | HOSE BIBB | VR | VENT THROUGH ROOF |
| HC | HVAC CONTRACTOR (DIVISION 23) | W | WITH |
| HD | HUB DRAIN | W/O | WITHOUT |
| HG | REFRIGERANT HOT GAS | WB | WET BULB |
| HP | HORSEPOWER | WRT | WATER RETURN |
| HPC | HIGH PRESSURE CONDENSATE RETURN | WV | WENT |
| HPS | HIGH PRESSURE STEAM SUPPLY | W/O | WALL CLEANOUT |
| HR | HOUR | | |
| HT | HEAT TRACE | | |
| HTR | HEATER | | |
| HVAC | HEATING, VENTILATING, AND AIR CONDITIONING | | |
| HW | HEATING WATER | | |
| HWR | HEATING HOT WATER RETURN | | |
| HWS | HEATING HOT WATER SUPPLY | | |

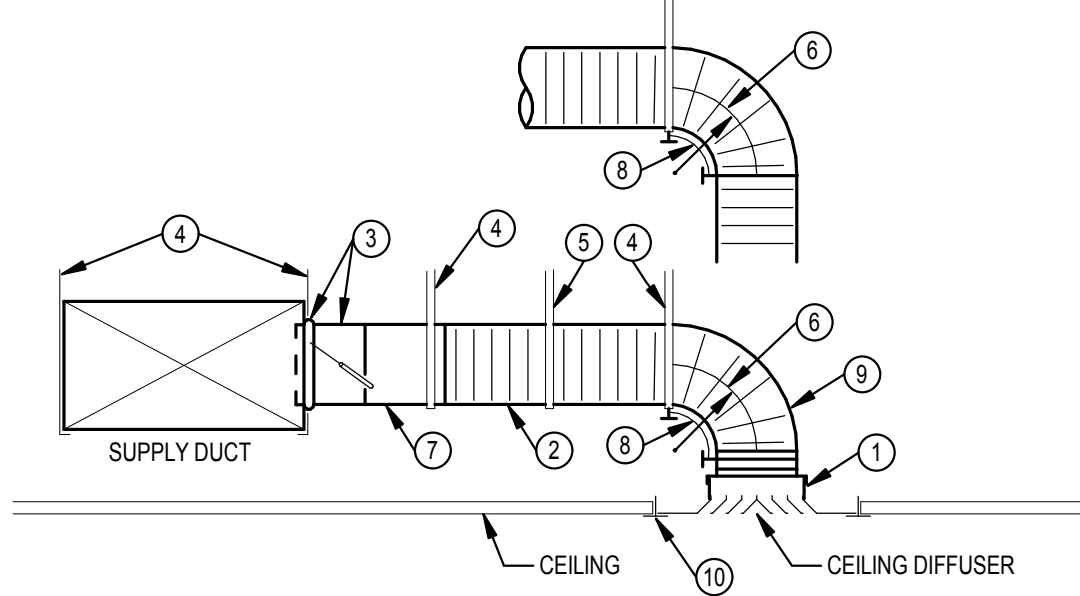
NOTE: ALL SYMBOLS AND ABBREVIATIONS ARE SUBJECT TO MODIFICATIONS ON OTHER DRAWINGS.

ALL SYMBOLS OR ABBREVIATIONS MIGHT NOT NECESSARILY BE USED ON THIS PROJECT.

GENERAL NOTES

- COORDINATE THE LOCATION OF ALL DEVICES LOCATED IN THE CEILING WITH THE ARCHITECT'S REFLECTED CEILING PLAN AND OTHER TRADES DURING CONSTRUCTION. ALL CEILING AIR DEVICES SMALLER THAN THE GRID DIMENSIONS SHALL BE MOUNTED CENTERED WITHIN THE CEILING GRID TILE.
- ALL EQUIPMENT ABOVE THE CEILING REQUIRING MAINTENANCE ACCESS SHALL BE MOUNTED A MAXIMUM OF 18" ABOVE CEILING TO ALLOW FOR ACCESS.
- ANNULAR SPACE AROUND DUCTWORK, PIPING, CONDUIT, AND OTHER SIMILAR PENETRATIONS OR COMBINATIONS OF PENETRATIONS THROUGH FIRE RATED ASSEMBLIES SHALL BE FIRESTOPPED TO RETARD THE PASSAGE OF FIRE AND SMOKE. REFER TO SPECIFICATION SECTION 23 05 05 FIRESTOPPING.
- H.C. TO COORDINATE LOCATIONS OF ALL EQUIPMENT, DUCTWORK, PIPING, AND AIR DEVICES WITH STRUCTURAL MEMBERS AND THE WORK OF OTHER TRADES PRIOR TO FINAL INSTALLATION. OFFSET PIPING AND DUCTWORK AS REQUIRED TO MAINTAIN ALL MANUFACTURER'S RECOMMENDED CLEARANCES.
- COORDINATE ALL WALL OPENINGS WITH GENERAL TRADES CONTRACTOR.
- IN GENERAL, KEEP DUCT AND PIPING MAINS HIGH IN CEILING CAVITY, TIGHT TO STRUCTURE, WHERE POSSIBLE. ALL DUCTS AND PIPES SHALL BE RUN ABOVE CEILING UNLESS NOTED OTHERWISE.
- BRANCH DUCTS TO AIR DEVICES SHALL BE EQUAL TO DEVICE INLET SIZE UNLESS NOTED OTHERWISE.
- HVAC CONTRACTOR SHALL CLEAN AND PREPARE FOR PAINTING ALL HVAC DUCTWORK, AND HVAC TEMPERATURE CONTROL LOCATED IN FINISHED ROOMS WHICH DO NOT HAVE A CEILING. THESE ITEMS ARE EXPOSED DUE TO THE LACK OF A CEILING AND WILL BE PAINTED BY THE GENERAL CONTRACTOR.
- RUN-OUTS TO SUPPLY DIFFUSERS, RETURN GRILLES, AND EXHAUST GRILLES SHALL INCLUDE MANUAL DAMPERS PER DETAILS (NOT SHOWN ON PLANS FOR CLARITY). PROVIDE ADDITIONAL DAMPERS AS SHOWN ON FLOOR PLANS OR WHERE REQUIRED FOR SYSTEM BALANCING REGARDLESS OF BEING SHOWN OR NOT.
- ALL SQUARE CORNER DUCT FITTINGS SHALL BE EQUIPPED WITH TURNING VANES SPECIFIED IN 23 31 13.
- ALL RETURN GRILLES OPEN TO THE CEILING PLENUM SHALL HAVE A RETURN AIR SOUND BOOT PER DETAIL.
- MEP ABOVE-CEILING COORDINATION: ALL CONTRACTORS SHALL PARTICIPATE IN DEVELOPMENT OF COORDINATION DRAWINGS IN ACCORDANCE WITH THE SPECIFICATIONS. THE CONTRACT DRAWINGS SHOW THE INTENDED ARRANGEMENT FOR MEP SYSTEMS, BUT IT IS UNDERSTOOD ADJUSTMENTS MAY RESULT FROM THE COORDINATION PROCESS. WHEN THIS OCCURS, THE FOLLOWING SHALL SERVE AS THE GENERAL GUIDELINE FOR ARRANGEMENT OF THE VARIOUS MEP SYSTEMS AND EQUIPMENT: DUCT MAINS AND ELECTRICAL FEEDER CONDUIT SHALL BE HIGH; HYDRONIC AND PLUMBING PIPING SHALL BE BELOW THESE ITEMS; CABLE TRAY AND HVAC EQUIPMENT SHALL BE NOT MORE THAN 18" ABOVE THE CEILING; SPRINKLER PIPING, BRANCH CIRCUITRY CONDUIT, AND BRANCH DUCTWORK SHALL BE PLACED WHERE NECESSARY FOR COORDINATION.
- HVAC CONTRACTOR SHALL COORDINATE CLOSELY WITH OTHER TRADES IN LOCATING AND INSTALLING ALL SYSTEMS ABOVE CORRIDORS. SPECIFICALLY, COORDINATE LAYOUT WITH E.C. TO ALLOW SUFFICIENT SPACE FOR CABLE TRAY SYSTEM.

| SHEET LIST | |
|--------------|-------------------------------|
| SHEET NUMBER | SHEET NAME |
| M001 | LEGEND, INDEX & GENERAL NOTES |
| M002 | SCHEDULES & DETAILS |
| M100 | HVAC FLOOR PLANS |

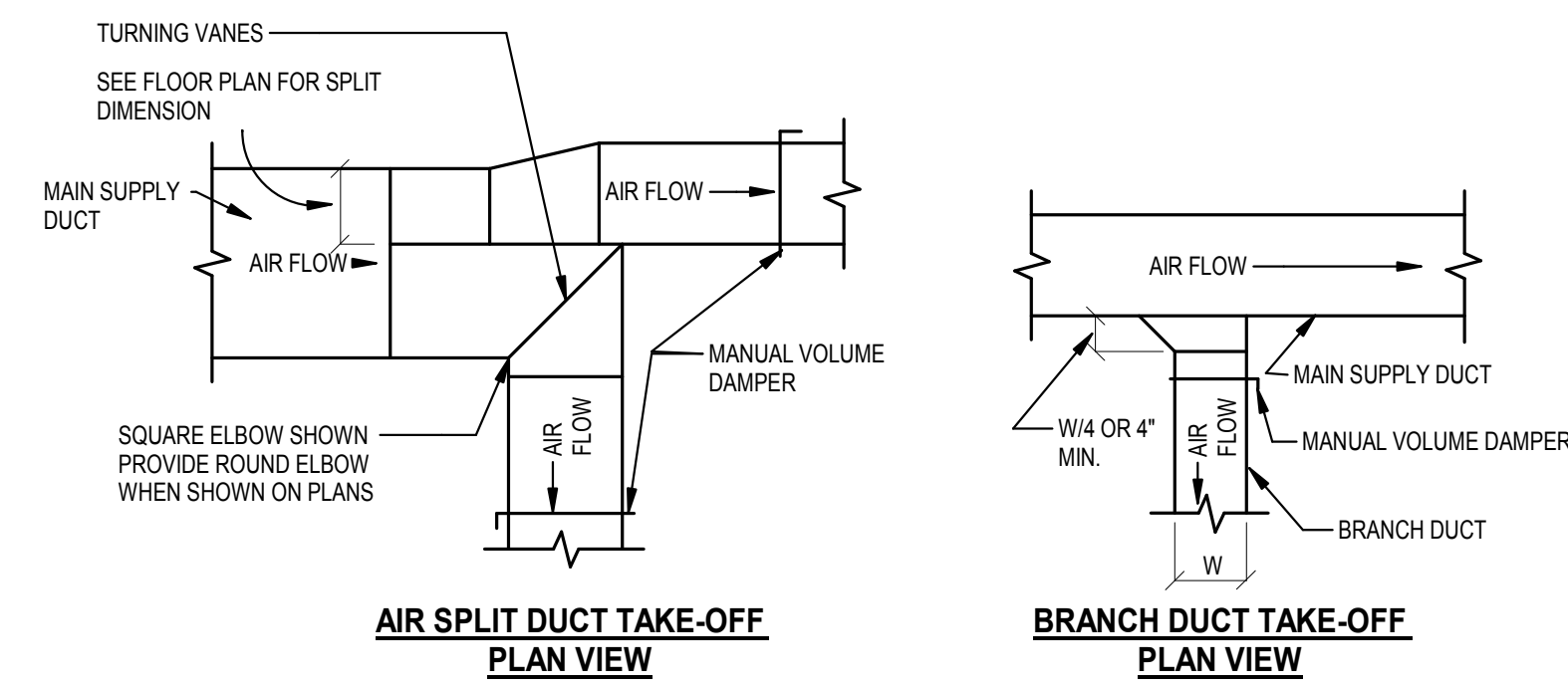


NOTES

- SQUARE-TO-ROUND ADAPTER IF DIFFUSER NECK IS SQUARE. CONNECT ADAPTOR TO DIFFUSER. SEAL TO AIR DEVICE. SEAL CLASS A. INSULATE ADAPTOR AND EXPOSED BACKSIDE SURFACES OF AIR DEVICE.
- INSULATED FLEXIBLE DUCT SAME DIAMETER AS BRANCH DUCT (7). 5 FT. MAXIMUM TOTAL LENGTH PER AIR DEVICE. STRETCH FLEXIBLE DUCT TO AT LEAST 90% OF FULLY EXTENDED LENGTH.
- SPIN-IN BRANCH TAP FITTING, STRAIGHT SIDE WITH MANUAL DAMPER. DAMPER SHAFT IN HORIZONTAL. INTEGRAL INSULATION GUARD SLEEVE REQUIRED FOR TAP FITTING TO MAIN DUCT WITH INTERNAL INSULATION. AND EXTENDED DAMPER SHAFT AND HANDLE WITH STAND-OFF TO ACCOMMODATE EXTERNAL INSULATION.
- DUCT STRAP HANGER. ATTACH TO STRUCTURE.
- STRAP HANGER REQUIRED IF LENGTH OF FLEXIBLE DUCT IS LONGER THAN 4 FT.
- MINIMUM CENTERLINE RADIUS EQUAL TO DUCT DIAMETER.
- ROUND SHEET METAL BRANCH DUCT, SAME SIZE AS DIFFUSER INLET UNLESS NOTED OTHERWISE.
- FLEXIBLE DUCT ELBOW SUPPORT. INSTALLED WITH NYLON BANDING PER MANUFACTURER'S INSTRUCTIONS.
- A RADIUS SHEET METAL ELBOW MAY BE USED IN LIEU OF A FLEXIBLE ELBOW SUPPORT WHEN CONNECTED DIRECTLY TO AIR DEVICE.
- CEILING T-BAR SUPPORT (FOR LAY-IN APPLICATIONS). COORDINATE AND VERIFY T-BAR TYPE FOR COMPATIBILITY WITH DIFFUSER.

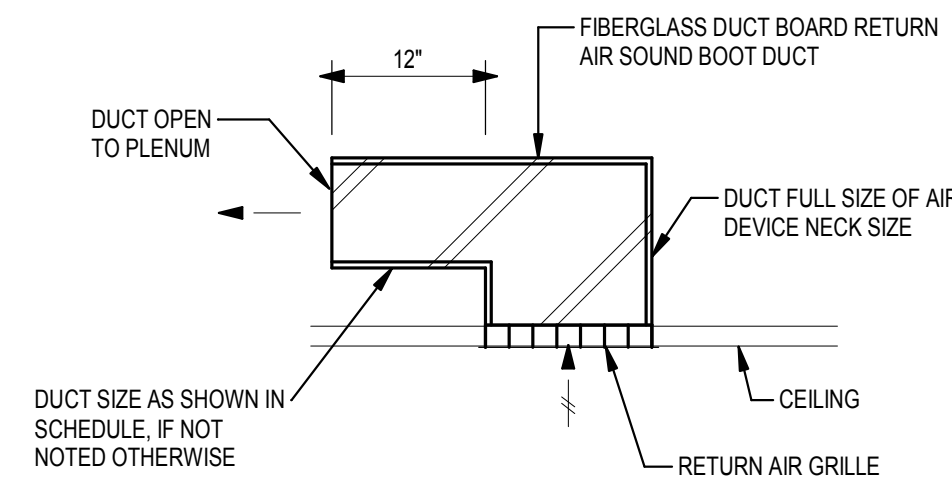
1 CEILING DIFFUSER DUCT CONNECTION

SCALE: NONE



3 SUPPLY DUCTWORK BRANCH TAKE-OFFS

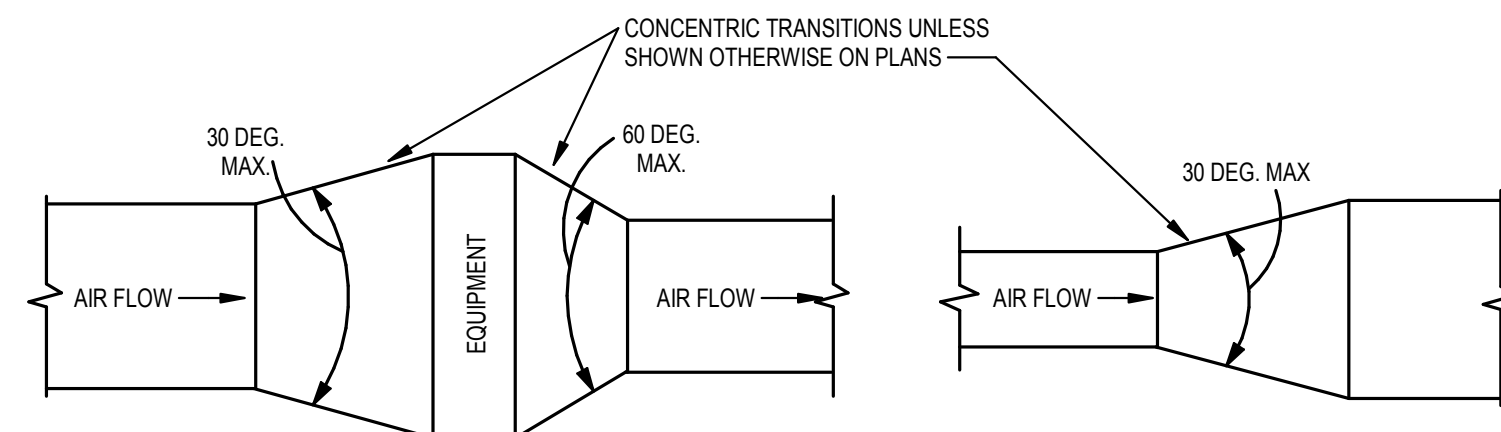
SCALE: NONE



2 RETURN AIR SOUND BOOT

SCALE: NONE

| AIR DEVICE SIZE | DUCT SIZE |
|-----------------|-----------|
| 12x12 | 12x10 |
| 24x12 | 12x12 |
| 24x24 | 24x12 |



4 DUCTWORK TRANSITIONS

SCALE: NONE

- NOTE:
- UNLESS OTHERWISE INDICATED ON PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.
 - TRANSITION ANGLES IN AND OUT OF FANS SHALL BE 90% OF THOSE SHOWN ABOVE.

AIR DISTRIBUTION DEVICES

- GENERAL NOTES:
- ALL LAY-IN AIR DEVICES SHALL FIT IN 24"x24" LAY-IN CLG SYSTEM. VERIFY GRID TYPE AND COORDINATE AIR DEVICE COMPATIBILITY.
 - FINISH KEY: "W.B.E." - WHITE BAKED ENAMEL. "E.C.L." - ETCHED CLEAR LACQUER OR ANODIZED. "C.G.B.A." - CUSTOM COLOR SELECTED BY ARCHITECT.
 - SUPPLY AIR DIFFUSERS SHALL BE 4-WAY BLOW, UNLESS INDICATED OTHERWISE ON DRAWINGS.
 - PROVIDE AUX. FRAMES FOR AIR DEVICES IN PLASTER, GYPSUM BOARD, TILE OR OTHER HARD SURFACES.

NOTES:

| MARK | DESCRIPTION | MOUNTING TYPE | | | | MATERIAL | | | | FINISH | | | | BASIS OF DESIGN | | | SEE NOTE | |
|------|--|---------------------|--------|---------|-------|----------|-----------------|--------|--------|----------|----------------------|------------------------|--------------|-----------------|-------|--|----------|----|
| | | LAY-IN SURFACE DUCT | SPRINE | SNAP-IN | STEEL | ALUMINUM | STAINLESS STEEL | W.B.E. | E.C.L. | C.G.B.A. | OPPOSED BLADE DAMPER | SOFT FORD NECK-ADAPTOR | MANUFACTURER | MODEL | PRICE | | | |
| A1 | STANDARD SQ. CEILING DIFFUSER - ROUND NECK - 24 X 24 | | | | | | | | | | | | | | | | | |
| J1 | EGGCRATE RETURN GRILLE | | | | | | | | | | | | | | | | | 80 |

DUCT CONSTRUCTION, SEALING, AND INSULATION

- GENERAL NOTES:
- REFER TO SPECIFICATIONS FOR DUCT CONSTRUCTION: SHEET METAL DUCT; INTERIOR LINING; EXTERIOR INSULATION; FIBERGLASS DUCTBOARD; ETC.
 - DUCT CONSTRUCTION AND SEALING SHALL BE PER LATEST S.M.A.C.N.A. STANDARDS.

- NOTES:
- ROUND SHEET METAL RUN-OUTS TO AIR DEVICES DOWNSTREAM OF YAW BOXES SHALL BE EXTERNALLY INSULATED.
 - REFER TO DETAIL #2 ON SHEET M002.

| DUCT SYSTEM | S.P. CON-STRUCT. | SEAL CLASS | S.M.A.C.N.A. CLASS | | INTERNAL-LY LINED | EXTERNAL INSULATION | DOUBLE WALL INSULATED | NOT INSULATED | SEE NOTE |
|---|------------------|------------|--------------------|-----|-------------------|---------------------|-----------------------|---------------|----------|
| | | | RECT | RND | | | | | |
| SUPPLY DUCTWORK DOWNSTREAM OF YAW BOXES | +1* | A | 16 | 8 | | | | | 1 |
| TRANSFER/RETURN AIR SOUND BOOT | -1* | A | 16 | 8 | | | | | 2 |

HVAC DESIGN DATA

- GENERAL NOTES:
- OUTDOOR DESIGN CONDITIONS: 92°F DB SUMMER, 74°F WB SUMMER, 1°F DB WINTER.
 - DESIGN ALTITUDE: 850 FT.

- NOTES:
- LISTED RH IS MAXIMUM ANTICIPATED AT LISTED DB TEMPERATURE.
 - "FLOATING" MEANS THERE IS NO ACTIVE CONTROL.

| SPACE NAME / TYPE | INTERIOR DESIGN DATA | | | | SEE NOTE |
|-------------------|----------------------|---------------|--------|----------|----------|
| | SUMMER | | WINTER | | |
| | *F DB | % RH (NOTE 1) | *F DB | % RH | |
| CLASSROOMS | 72 | 50 | 68 | FLOATING | 2 |
| STORAGE ROOMS | 72 | 50 | 68 | FLOATING | 2 |
| ALL OTHER SPACES | 72 | 50 | 68 | FLOATING | 2 |

EXISTING AIR TERMINAL UNITS

- GENERAL NOTES:
- TYPES: "V.V." - VARIABLE VOLUME; "V.V.R." - VARIABLE VOLUME REHEAT; "C.V.R." - CONSTANT VOLUME REHEAT; "V.V.E." - VARIABLE VOLUME EXHAUST; "C.V.E." - CONSTANT VOLUME EXHAUST.

- NOTES:
- VAV BOX IS EXISTING TO REMAIN. H.C. SHALL VERIFY EXISTING AIR FLOWS.

| MARK | TYPE | DIAMETER | MINIMUM INLET SIZE | | CFM | REFER TO NOTE |
|------|--------|----------|--------------------|--------|-------|---------------|
| | | | WIDTH | HEIGHT | | |
| 9-5 | V.V.R. | 10" | | | 1,000 | 500 150 1 |
| 9-9 | V.V.R. | 8" | | | 500 | 250 90 1 |
| 9-10 | V.V.R. | 12" | | | 1,000 | 500 150 1 |
| 9-11 | V.V.R. | 12" | | | 1,000 | 500 150 1 |



REVISIONS:

| Number | Description | Date |
|------------|-------------|------|
| 03.11.2024 | | |

PRINTINGS:

| Permit Review | And Bid Set |
|---------------|-------------|
| | |

CONSULTANTS

PROJECT NO. 2023-09072

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SCHEDULES & DETAILS

M002

