

MECHANICAL SYMBOLS LEGEND (AS APPLICABLE)			
PIPING AND SPECIALTIES			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
— RD —	REFRIGERANT DISCHARGE	— PGR —	PROPYLENE GLYCOL RETURN
— RL —	REFRIGERANT LIQUID	— PGS —	PROPYLENE GLYCOL SUPPLY
— RS —	REFRIGERANT SUCTION	— FOR —	FUEL OIL RETURN
— CD —	COIL CONDENSATE DRAIN	— FOS —	FUEL OIL SUPPLY
— LPS (XX) —	LOW PRESSURE STEAM (PRESSURE)	— FOV —	FUEL OIL VENT
— MPS (XX) —	MEDIUM PRESSURE STEAM (PRESSURE)	— CR —	CONDENSER WATER RETURN
— HPS (XX) —	HIGH PRESSURE STEAM (PRESSURE)	— CS —	CONDENSER WATER SUPPLY
— LPC —	LOW PRESSURE CONDENSATE	— HPR —	HEAT PUMP WATER RETURN
— MPC —	MEDIUM PRESSURE CONDENSATE	— HPWS —	HEAT PUMP WATER SUPPLY
— HPC —	HIGH PRESSURE CONDENSATE	— D R —	PITCH OF PIPE, RISE (R) OR DROP (D)
— PC —	PUMPED CONDENSATE	— MA —	PIPE ANCHOR - MAIN
— MU —	MAKE-UP WATER	— IM —	PIPE ANCHOR - INTERMEDIATE
— HCR —	HOTCHILLED WATER RETURN	— H —	HANGER - ROD
— HCS —	HOTCHILLED WATER SUPPLY	— HS —	HANGER - SPRING
— HWR —	HEATING WATER RETURN	— H —	HANGER
— HWS —	HEATING WATER SUPPLY	— AG —	ALIGNMENT GUIDE
— CWR —	CHILLED WATER RETURN	— FC —	FLEX CONNECTOR
— CWS —	CHILLED WATER SUPPLY	— EL —	EXPANSION - LOOP
— EGR —	ETHYLENE GLYCOL RETURN	— EJ —	EXPANSION - JOINT
— EGS —	ETHYLENE GLYCOL SUPPLY		
DUCTWORK			
	SUPPLY, OUTSIDE OR MIXED AIR DUCT (UP)		RECTANGLE DUCT (WIDTH/HEIGHT)
	SUPPLY, OUTSIDE OR MIXED AIR DUCT (DOWN)		ROUND DUCT (DIAMETER)
	RETURN AIR DUCT (UP)		FLAT OVAL DUCT (WIDTH/HEIGHT)
	RETURN AIR DUCT (DOWN)		FLEXIBLE DUCTWORK TO EQUIPMENT
	RETURN AIR DUCT (SECTION)		INSULATED FLEXIBLE DUCTWORK
	RELIEF OR EXHAUST AIR DUCT (UP)		ELEVATION CHANGE (RISE OR DROP)
	RELIEF OR EXHAUST AIR DUCT (DOWN)		HIGH EFF. TAKE OFF FITTING WITH VOLUME DAMPER
	RELIEF OR EXHAUST AIR DUCT (SECTION)		BACKDRAFT DAMPER
	ROUND DUCT (UP)		TURNING VANES
	ROUND DUCT (DOWN)		VOLUME CONTROL DAMPER
	ROUND DUCT (SECTION)		VOLUME CONTROL DAMPER
	ROUND DUCT (SECTION)		DUCT END CAP
H.V.A.C.			
	SUPPLY DIFFUSER		VAV TERMINAL UNIT
	SUPPLY REGISTER		FAN POWERED VAV TERMINAL UNIT
	SUPPLY SLOT DIFFUSER		SIDE WALL DIFFUSER
	RETURN REGISTER		ROUND DIFFUSER
	RETURN GRILLE		EXTERIOR LOUVER
	EXHAUST REGISTER		SUPPLY IDENTIFICATION TAG X DENOTES TYPE
	EXHAUST GRILLE		RETURN EXHAUST/LOUVER IDENTIFICATION TAG X DENOTES TYPE
	DUAL DUCT TERMINAL UNIT		MOTORIZED ACTUATOR
	DUAL DUCT TERMINAL UNIT		PNEUMATIC ACTUATOR
PLUMBING			
— DW —	DOMESTIC COLD WATER PIPING	— PA —	PROCESSED AIR
— HW —	DOMESTIC HOT WATER SUPPLY	— IR —	IRRIGATION PIPING
— DW —	DOMESTIC HOT WATER RECIRC.	— P —	TRAP PRIMER
— SAN —	PIPE REMOVAL	— G (GX) —	NATURAL GAS PIPING (PSIG)
— SAN —	SANITARY BELOW FLOOR OR GRADE	— HB —	HOSE BIBB
— SAN —	EXISTING SANITARY BELOW FLOOR/GRADE	— WH —	WALL HYDRANT
— SAN —	SANITARY ABOVE FLOOR OR GRADE	— CO —	CLEAN OUT
— ST —	STORM BELOW FLOOR OR GRADE	— FCO —	FLOOR CLEAN OUT
— ST —	EXISTING STORM BELOW FLOOR/GRADE	— VTR —	FLOOR DRAIN
— ST —	STORM ABOVE FLOOR OR GRADE	— VTR —	VENT THRU ROOF (X DENOTES IDENTIFICATION)
— ST —	STORM OVERFLOW BELOW FLOOR/GRADE	— RD —	ROOF DRAIN
— ST —	EXIST. STORM OVERFLOW BELOW FLOOR/GRADE	— ORD —	OVERFLOW ROOF DRAIN
— ST —	STORM OVERFLOW ABOVE FLOOR/GRADE	— DSN —	DOWNSPOUT NOZZLE
— ST —	STORM OVERFLOW ABOVE FLOOR/GRADE		
VALVES			
	GATE VALVE		STOP/CHECK GATE VALVE (ARROW IND. FLOW)
	ANGLE GATE VALVE		SPRING GATE CHECK VALVE (ARROW IND. FLOW)
	BALL VALVE		SWING GATE CHECK VALVE (ARROW IND. FLOW)
	LOCKABLE BALL VALVE		ANGLE STOPCHECK VALVE
	BUTTERFLY VALVE		2-WAY ELECTROMOTOR VALVE
	GLOBE VALVE		2-WAY AIR MOTOR VALVE
	ANGLE GLOBE VALVE		2-WAY MANUAL VALVE
	PLUG VALVE		3-WAY ELECTROMOTOR VALVE
	DIAPHRAGM VALVE		3-WAY AIR MOTOR VALVE
	DIAPHRAGM ACTUATED VALVE		3-WAY MANUAL VALVE
	VALVE IN VERTICAL LINE		SAFETY PRESSURE RELIEF VALVE
	HOSE GATE VALVE		PRESSURE RELIEF VALVE
	HOSE GLOBE VALVE		TEMPERATURE MIXING VALVE
	HOSE ANGLE VALVE		AUTO FLOW VALVE
	SOLENOID VALVE		FLOAT VALVE
	POST INDICATOR VALVE		LOCK SHIELD
			CIRCUIT SETTER

FITTINGS			
	ELBOW		ELBOW - DOUBLE BRANCH
	LONG RADIUS ELBOW		ELBOW - SIDE OUTLET UP
	SHORT RADIUS ELBOW		ELBOW - SIDE OUTLET DOWN
	45° ELBOW		ELBOW - OUTLET DOWN
	TEE		ELBOW - OUTLET UP
	CROSS		TEE - OUTLET DOWN
	LATERAL		TEE - OUTLET UP
	TEE - SINGLE SWEEP		TEE - SIDE OUTLET DOWN
			TEE - SIDE OUTLET UP
			SIAMESE CONNECTION
MISCELLANEOUS			
	EQUIPMENT IDENTIFICATION TAG (ELECTRICAL CONNECTION REQUIRED)		NEW CONNECTION POINT
	DETAIL REFERENCE		POINT OF DISCONNECT
	SECTION CUT REFERENCE		OUTSIDE AIR
	ELECTRICAL PANEL - SHOWN FOR COORDINATION PURPOSES ONLY		VENTILATION AIR
	ELECTRICAL PANEL - SHOWN FOR COORDINATION PURPOSES ONLY		EXHAUST AIR
	ELECTRICAL PANEL - SHOWN FOR COORDINATION PURPOSES ONLY		RELIEF OR RETURN AIR
	ELECTRICAL TRANSFORMER - SHOWN FOR COORDINATION PURPOSES ONLY		SUPPLY AIR
			MIXED AIR
			RELIEF OR RETURN FAN
			EXHAUST FAN
			TYPICAL
			WATER CLOSET
			URINAL
			LAVATORY
			SINK
			DRINKING FOUNTAIN
			ELECTRIC WATER COOLER
			SERVICE SINK
			SHOWER
			DOMESTIC WATER HEATER
			MOP SINK BASIN
			LIGHT LINEWORK - EXISTING OR DEMOLITION
			DARK LINEWORK - NEW

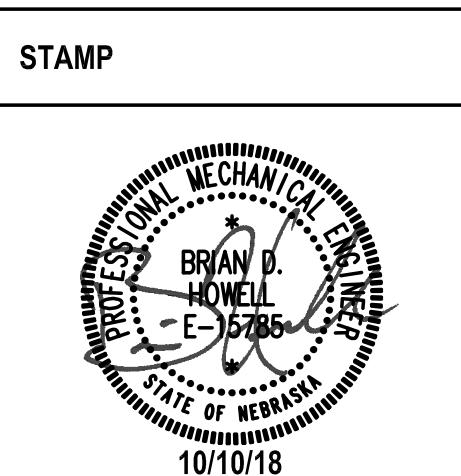
- GENERAL PLUMBING NOTES**
- A. LIGHT LINE WEIGHT INDICATES EXISTING ITEMS AND ASSOCIATED MATERIALS TO REMAIN. BOLD LINE WEIGHT INDICATES NEW WORK TO BE INSTALLED UNDER THIS CONTRACT.
- B. ROUTING INDICATED ON DRAWINGS IS APPROXIMATE AND DOES NOT INCLUDE ALL OFFSETS, FITTINGS, VALVES, ETC. CONTRACTOR TO FIELD VERIFY PIPE SIZE AND SERVICE PRIOR TO FINAL CONNECTION. COORDINATE LOCATION OF PLUMBING PIPING WORK WITH LIGHTING, STRUCTURAL MEMBERS, HVAC, PIPING SYSTEMS, ETC. PROVIDE OFFSETS AND CLEARANCES OR RELOCATE PLUMBING WORK AS REQUIRED TO AVOID CONFLICTS WITH WORK OF ALL OTHER TRADES.
- C. PLUMBING WORK SHALL NOT BE LOCATED OVER ELECTRICAL, DATA OR COMMUNICATION EQUIPMENT ROOMS. PLUMBING WORK SHALL NOT BE LOCATED ABOVE ELECTRICAL / DATA / COMMUNICATION EQUIPMENT OR PANELS.
- D. SUPPORT ALL PLUMBING PIPING, EQUIPMENT, ETC. FROM BUILDING STRUCTURE. HOLD PIPING TIGHT TO BOTTOM OF STRUCTURAL MEMBERS OR RUN THROUGH JOIST WEBS IF POSSIBLE. DO NOT USE WIRE OR PERFORATED METAL TO SUPPORT PIPING. DO NOT SUPPORT PIPING FROM OTHER PIPING, DUCTWORK AND/OR ELECTRICAL CONDUITS. DO NOT SUPPORT FROM BOTTOM OF CHORD OF BAR JOIST OR FROM METAL ROOF DECK.
- E. ROUTE ABOVE GRADE DRAINAGE PIPING AS HIGH AS POSSIBLE AND COORDINATE WITH OTHER TRADES.
- F. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SEALING PENETRATIONS THROUGH A FIRE RATED, SMOKE RATED OR COMBINATION FIRE & SMOKE RATED SEPARATIONS. SEE SPECIFICATIONS FOR FIRE & SMOKE RATED SEALANTS. SEE ARCHITECTURAL PLANS FOR RATED SEPARATIONS.
- G. INSTALL ESCUTCHEON PLATES ON ALL WALL AND FLOOR PENETRATIONS SERVING EXPOSED PLUMBING PIPING WALL PENETRATIONS.
- H. ALL OPENINGS IN WALLS AND FLOORS FOR PIPING SHALL BE CORE DRILLED OR SAW CUT, UNLESS OTHERWISE NOTED.
- I. LOCATE AND INSTALL EQUIPMENT TO PROVIDE ALL CODE AND MANUFACTURER'S RECOMMENDED CLEARANCES. KEEP HVAC PIPING, DUCTWORK, ETC. OUT OF CLEARANCE AREAS.
- J. ALL PLUMBING PIPING WORK SHALL BE LOCATED ABOVE CEILINGS, IN A PIPE CHASE, OR OTHER CONCEALED LOCATIONS, UNLESS OTHERWISE NOTED. LOCATE AND ARRANGE VALVES, DRAIN FITTINGS, ETC. TO BE ACCESSIBLE THROUGH LAY-IN CEILINGS, ACCESS PANELS OR ACCESS DOORS. PROVIDE ACCESS PANEL OR ACCESS DOOR FOR ALL VALVES, DRAIN FITTINGS, ETC. AT NON-ACCESSIBLE LOCATIONS.
- K. INSTALL SECTIONAL VALVES ON EACH BRANCH AND/OR RISER SERVING TWO OR MORE PLUMBING FIXTURES OR EQUIPMENT CONNECTIONS. INSTALL VALVES ADJACENT TO MAIN.
- L. INSTALL SHUTOFF VALVES ON INLET AND OUTLET OF PLUMBING EQUIPMENT.
- M. INSTALL STOPS AT EACH PLUMBING FIXTURE EXCEPT AT FLOWSMETER LOCATIONS.
- N. SEAL ALL PLUMBING PIPING PENETRATIONS. SEAL PENETRATIONS THROUGH RATED WALLS, FLOORS OR CEILINGS WITH MATERIALS APPROPRIATE FOR RATING.
- O. PIPING IN EXTERIOR WALLS SHALL BE LOCATED ON THE INTERIOR SIDE OF BUILDING INSULATION AND VAPOR BARRIER.
- P. COORDINATE INSTALLATION OF BUILDING INSULATION TO RUN CONTINUOUS BETWEEN PIPING AND EXTERIOR WALL SURFACE.
- Q. COORDINATE EXACT LOCATION OF FLOOR DRAINS AND FLOOR SINKS. TOP OF GRATE SHALL BE 1/8" BELOW FINISHED FLOOR ELEVATION.
- R. COMPLY WITH LOCAL UTILITY COMPANY RULES AND REGULATIONS FOR ALL GAS METER INSTALLATIONS. COORDINATE EXACT LOCATION OF GAS CONNECTIONS WITH EQUIPMENT SUPPLIED.
- S. COPPER PIPING LOCATED ABOVE GRADE SHALL BE TYPE "L"; COPPER PIPING LOCATED BELOW GRADE SHALL BE TYPE "K" AND RUN CONTINUOUS WITHOUT JOINTS BELOW GRADE. TYPE "M" COPPER SHALL NOT BE USED ON PRESSURIZED PIPING SYSTEMS.
- T. DRAINAGE PIPING 3 INCHES AND SMALLER SHALL SLOPE NO LESS THAN 1/4 INCH PER FOOT. DRAINAGE PIPING 4 INCHES AND LARGER SHALL SLOPE NO LESS THAN 1/8 INCH PER FOOT.
- U. INSTALL WALL CLEAN OUTS (WCO) WHEN LOCATED BEHIND A WATER CLOSET AT 30" A.F.F. OR AT 42" A.F.F. ABOVE CABINETRY ON ALL SANITARY & STORM STACKS.
- V. COORDINATE EXACT STORM PIPE CONNECTIONS WITH STORM DRAIN LOCATIONS SHOWN ON ARCHITECTURAL ROOF PLAN.
- W. INSTALL VENT-THRU-ROOF (VTR) A MINIMUM OF 10'-0" AWAY FROM ANY OUTSIDE AIR INTAKE.
- X. REMOVE, REPAIR AND REPLACE WALLS, FLOORS, ROOFS AND CEILINGS TO MATCH EXISTING, WHERE NECESSARY FOR PIPING AND FIXTURE REMOVAL & INSTALLATION.
- Y. KITCHEN EQUIPMENT FURNISHED BY KITCHEN EQUIPMENT CONTRACTOR - PLUMBING CONTRACTOR SHALL ROUGH-IN AND MAKE FINAL CONNECTIONS TO UTILITIES REQUIRED AND PROVIDE PIPING, STOPS, WATER HAMMER ARRESTERS, TRAPS AND FITTINGS FOR EQUIPMENT TO BE IN OPERATIONAL ORDER. COORDINATE WITH KITCHEN EQUIPMENT SUPPLIER FOR CONNECTIONS AND LOCATIONS. SEE KITCHEN EQUIPMENT CONNECTION SCHEDULE FOR RESPONSIBILITY OF WHO FURNISHES VACUUM BREAKERS AND PRESSURE REDUCING VALVES.
- Z. PVC PIPING SHALL NOT BE INSTALLED.
- AA. PROVIDE ACCESSIBLE SHUTOFF VALVE INSIDE THE BUILDING FOR EACH WALL HYDRANT.
- AB. CONTRACTOR SHALL COORDINATE ALL CONNECTIONS OF PLUMBING SYSTEMS WITH EXTERIOR SITE UTILITIES AND SERVICES PRIOR TO INSTALLING ANY PIPING ON THE INTERIOR. CONTRACTOR SHALL CONFIRM THAT ALL INTERIOR PIPE INVERTS AND PIPE INVERTS AT THE 5' LINE MATCH EXTERIOR PIPE INVERTS, PRIOR TO INSTALLING ANY INTERIOR PIPING BELOW FLOOR.
- GENERAL MECHANICAL NOTES CONT.**
- I. PROVIDE DRAW BANDS AND SEAL END OF DUCT INSULATION ON ALL FLEXIBLE CONNECTIONS. MAXIMUM LENGTH OF FLEXIBLE DUCTS SHALL BE THREE FEET.
- J. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY SEALING PENETRATIONS THROUGH A FIRE RATED, SMOKE RATED OR COMBINATION FIRE & SMOKE RATED SEPARATIONS. SEE SPECIFICATIONS FOR FIRE & SMOKE RATED SEALANTS. SEE ARCHITECTURAL PLANS FOR RATED SEPARATIONS.
- K. COORDINATE ALL GRILLE, REGISTER AND DIFFUSER LOCATIONS WITH REFLECTED CEILING PLAN, LIGHT FIXTURES, SPRINKLER HEADS, COMMUNICATION/SOUND DEVICES AND FIRE ALARM DEVICES.
- L. INSTALL ESCUTCHEON PLATES ON ALL WALL PENETRATIONS SERVING ROUND DUCT WALL PENETRATIONS. FABRICATE ESCUTCHEON PLATES TO TRIM THE OPENING IN THE WALL.
- M. INSTALL WALL ANGLE FOR ALL RECTANGULAR DUCT PENETRATIONS THROUGH WALLS.
- N. FOR EXPOSED DUCTWORK THOROUGHLY CLEAN, REMOVE ALL SHIPPING LABELS AND OTHER IDENTIFICATION TAGS. DUCTWORK DESIGNATED TO BE PAINTED SHALL HAVE PHOSPHATIZED FINISH. PROVIDE MILL-PHOSPHATIZED FINISH FOR EXPOSED BUT DESIGNATED TO BE PAINTED. COORDINATE WITH ARCHITECTURAL DRAWINGS DUCTWORK DESIGNATED FOR PAINTING AND EXPOSED DUCTWORK REQUIREMENTS.
- O. PROVIDE DUCT MOUNTED ACCESS DOOR AT FIRE DAMPER, SMOKE DAMPER OR COMBINATION FIRE/SMOKE DAMPERS TO ALLOW FOR MAINTENANCE AND VISUAL INSPECTION PER NFPA REQUIREMENTS.
- P. VOLUME DAMPERS ABOVE INACCESSIBLE CEILINGS SHALL HAVE EXTENSION RODS AND ESCUTCHEON PLATES.
- Q. LOCATE AND INSTALL EQUIPMENT TO PROVIDE ALL CODE AND MANUFACTURER'S RECOMMENDED CLEARANCES. KEEP HVAC PIPING, DUCTWORK, ETC. OUT OF CLEARANCE AREAS.
- R. ALL OPENINGS IN WALLS AND FLOORS FOR PIPING SHALL BE CORE DRILLED OR SAW CUT, UNLESS OTHERWISE NOTED.
- S. ALL HVAC PIPING WORK SHALL BE LOCATED ABOVE CEILINGS, IN A PIPE CHASE, OR OTHER CONCEALED LOCATIONS, UNLESS OTHERWISE NOTED. LOCATE AND ARRANGE VALVES, DRAIN FITTINGS, ETC. TO BE ACCESSIBLE THROUGH LAY-IN CEILINGS, ACCESS PANELS OR ACCESS DOORS. PROVIDE ACCESS PANEL OR ACCESS DOOR FOR ALL VALVES, DRAIN FITTINGS, ETC. AT NON-ACCESSIBLE LOCATIONS.
- T. INSTALL SECTIONAL VALVES ON EACH BRANCH AND/OR RISER SERVING TWO OR MORE HYDRONIC TERMINALS OR EQUIPMENT CONNECTIONS. INSTALL VALVES ADJACENT TO MAIN.
- U. INSTALL SHUTOFF VALVES ON INLET AND OUTLET OF EACH MECHANICAL EQUIPMENT ITEM AND/OR EACH HYDRONIC TERMINAL.
- V. SLOPE HVAC PIPING TO DRAIN VALVES. PROVIDE MANUAL AIR VENTS AT HIGH POINTS AND AT TOP OF RISERS.
- W. SEAL ALL HVAC PENETRATIONS. SEAL PENETRATIONS THROUGH RATED WALLS, FLOORS OR CEILINGS WITH MATERIALS APPROPRIATE FOR RATING.
- X. PIPING IN EXTERIOR WALLS SHALL BE LOCATED ON THE INTERIOR SIDE OF BUILDING INSULATION AND VAPOR BARRIER.
- Y. COORDINATE INSTALLATION OF BUILDING INSULATION TO RUN CONTINUOUS BETWEEN PIPING AND EXTERIOR WALL SURFACE.
- Z. PVC PIPING SHALL NOT BE INSTALLED.
- AA. COORDINATE DUCTWORK WITH STRUCTURAL CROSS BRACING. PROVIDE TOP AND BOTTOM BRIDGING BETWEEN JOISTS WHERE DUCTWORK IS TO BE INSTALLED BETWEEN THE JOISTS. COORDINATE WITH ALL TRADES.

NOTICE:
DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SHOP AND OTHER APPROPRIATE DRAWINGS OR AT SITE. LAY OUT AND COORDINATE ALL WORK PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, AND CODES. VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF CLEARANCES FOR ALL TRADES. THIS NOTICE APPLIES TO ALL FARRIS ENGINEERING PLANS.

BID DOCUMENTS	10/10/2018
CONSTRUCTION DOCUMENTS 100% SUBMITTAL - UPDATE	9/28/2018
CONSTRUCTION DOCUMENTS 100% SUBMITTAL	9/7/2018
DESIGN DEVELOPMENT 90% SUBMITTAL	8/3/2018
SCHEMATIC DESIGN 36% SUBMITTAL 2	7/5/2018
SCHEMATIC DESIGN 35% SUBMITTAL	6/6/2018
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Office of
Construction
and Facilities
Management

VA U.S. Department
of Veterans Affairs

Drawing Title
General Mechanical Notes & Symbols
Legend
Approved: Project Director

Phase
BID DOCUMENTS
FULLY SPRINKLERED

Project Title
Second CT Scanner Site Prep Design
Location
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October 10, 2018
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