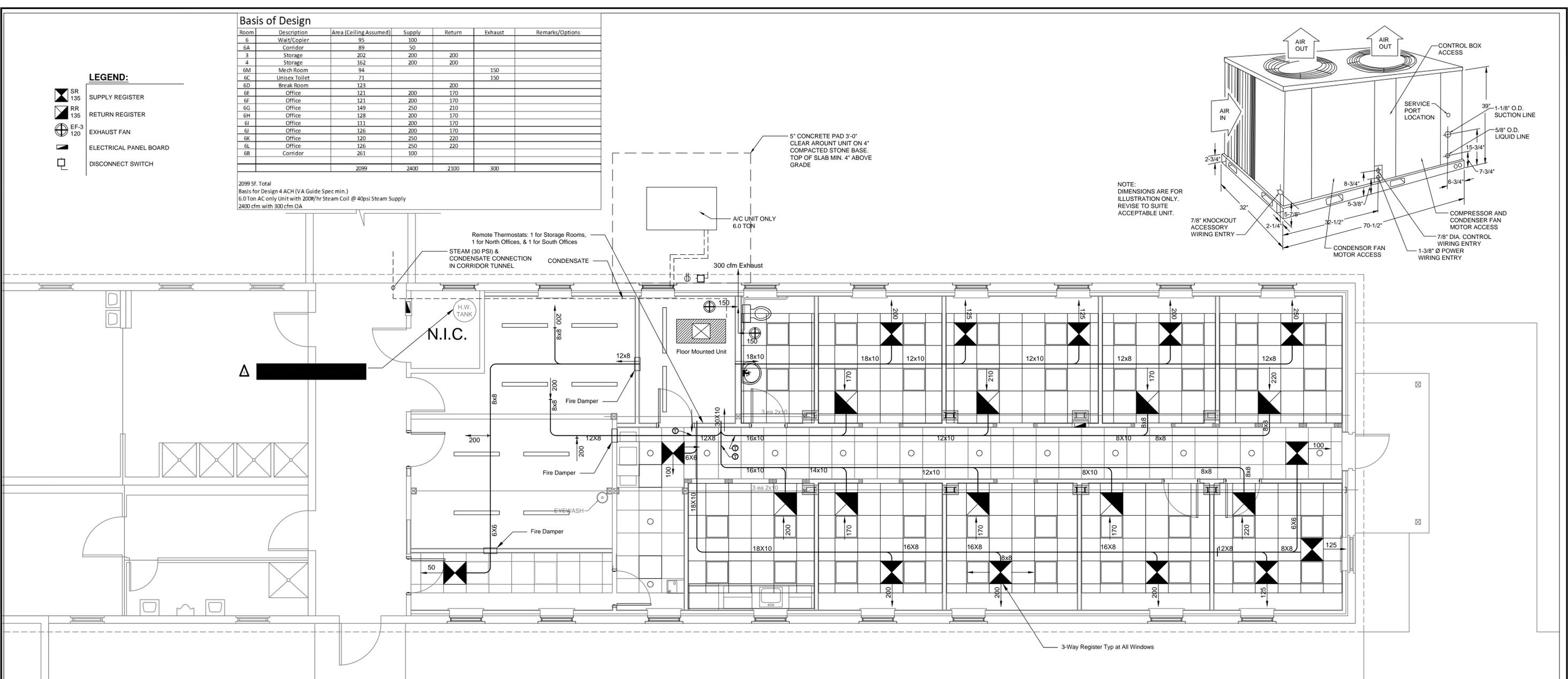
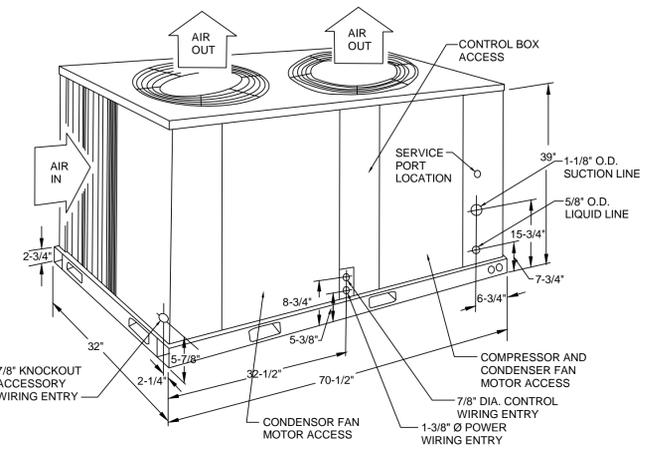


Basis of Design

Room	Description	Area (Ceiling Assumed)	Supply	Return	Exhaust	Remarks/Options
6	Wait/Copier	95	100			
6A	Corridor	89	50			
3	Storage	202	200	200		
4	Storage	162	200	200		
6M	Mech Room	94			150	
6C	Unisex Toilet	71			150	
6D	Break Room	123		200		
6E	Office	121	200	170		
6F	Office	121	200	170		
6G	Office	149	250	210		
6H	Office	128	200	170		
6I	Office	111	200	170		
6J	Office	126	200	170		
6K	Office	120	250	220		
6L	Office	126	250	220		
6B	Corridor	261	100			
		2099	2400	2100	300	

2099 Sf. Total
 Basis for Design 4 ACH (VA Guide Spec min.)
 6.0 Ton AC only Unit with 200#/hr Steam Coil @ 40psi Steam Supply
 2400 cfm with 300 cfm OA

- LEGEND:**
- SR 135 SUPPLY REGISTER
 - RR 135 RETURN REGISTER
 - EF-3 120 EXHAUST FAN
 - ELECTRICAL PANEL BOARD
 - DISCONNECT SWITCH



- NOTES:**
- DESIGN IS FOR 2,400 CFM SUPPLY, 2,100 CFM RETURN, AND 300 CFM OUTSIDE AIR (12.5%). UNIT WILL BE AN A/C ONLY SYSTEM. OUTSIDE AIR CONDENSER WILL BE 6.0 TR. EER OF 12.1 OR BETTER (NOT INCLUDING STEAM COIL). PEAL INSTANTANEOUS LOAD OF 80,000 BTUH, WITH SHR OF 0.75 (68,000 BTUH SENSIBLE WITH 94 F OUTSIDE DRY BULB, 76 F WB, RETURN TEMPERATURE 80 F DB, 66 WB. BASIS OF DESIGN IS AAOB RQ-6 (or equal), WITH VFD, ECONOMIZER, AND 3 VAV ZONES WITH 3 STEAM COIL RE-HEATS WITH NO SIMULTANEOUS HEATING/COOLING. ONE ZONE FOR STORAGE ROOMS, SECOND ZONE FOR NORTH SIDE OFFICE AREA, AND THIRD ZONE FOR SOUTH SIDE OFFICE AREA. UNIT SHALL BE EXTERIOR MOUNTED ON A STAND WITH INSULATION ON ALL SIDES INCLUDING THE BOTTOM OF THE UNIT. EXTERIOR GRADE DUCTWORK TO THE UNIT SHALL BE USED AND INSULATED WITH AT WEATHERPROOF JACKET. WATTMASTER (or equal) CONTROLLER REQUIRED TO CONTROL UNIT RE-HEATS. DUCT TEMPERATURE SENSORS SHALL CONTROL TEMPERATURES. ELECTRICAL SUPPLY IS 208V-3. A BASE WILL BE INCLUDED FOR OUTSIDE AIR AND NEEDED TRAP DEPTH. ESTIMATED EXTERNAL STATIC, INCLUDING SYSTEM EFFECTS AND STEAM COIL IS 1.4 IWC. HEATING WILL BE PROVIDED BY STEAM COIL IN THE RETURN AIR DUCT. BASIS OF DESIGN 1NF04S1. STEAM IS SUPPLIED AT 30 PSI AND WILL BE REGULATED TO 10 PSI FOR THE COIL. OUTSIDE AIR WILL BE PROVIDED THROUGH THE BASE OF THE VERTICAL UNIT.
 - EVAPORATOR CONDENSATE WILL BE TRAPPED FOLLOWING MANUFACTURER RECOMMENDATION, AND RUN TO THE EXTERIOR. CONDENSATE LINE (PVC ACCEPTABLE) WILL INCLUDE AIR GAP PRIOR TO DOWNSPOUT. EXTERIOR LINE

- WILL BE INSULATED, R-6, UP TO SPOUT CONNECTION. WALL PENETRATION WILL BE SEALED.
- STEAM COIL WILL PROVIDE APPROX. 190 MB HEATING AT 5 PSIG. STEAM COIL WILL BE VERTICALLY INSTALLED ON THE RETURN SIDE OF THE EVAPORATOR UNIT WITH PITCH TO THE CONNECTION END. STEAM AND CONDENSATE IS AVAILABLE AT THE CORRIDOR CRAWL SPACE. PROVIDED AT 40 PSI. PROVIDE AND INSTALL PRESSURE REGULATOR TO REDUCE DELIVERY FROM 40 PSI. GATE VALVE, STRAINER AND CONTROL VALVE WILL BE INSTALLED ON SUPPLY; DIRT POCKET, F&T TRAP AND GATE VALVE ON THE CONDENSATE SIDE. STEAM AND CONDENSATE LINES WILL BE INSULATE AS PER ASHRAE 90.1-2004.
- DUE TO CONSTRICTED SPACE BETWEEN CEILING AND DROP CEILING AND ABSENCE OF INSULATION, DUCT WORK SHALL BE LOW LOSS COEFFICIENT AS PER SMACNA HVAC SYSTEMS DUCT DESIGN. REDUCTION OF STATIC LOSS IS ESSENTIAL TO REDUCED FAN HORSEPOWER AND GENERATED NOISE. DUCTWORK WILL BE INSTALLED TIGHT TO CEILING OUTSIDE OF MECHANICAL ROOM. CEILING HEIGHT OF 8'-0" IN CORRIDOR, BATHROOMS AND HAC WILL BE MAINTAINED, AND 8'-6" IN ALL OTHER SPACES (NO DROP CEILING IN MECHANICAL ROOM OR STORAGE ROOMS).
- SUPPLY AND RETURN CONNECTIONS WILL MAXIMIZE STRAIGHT SECTIONS FOR REDUCTION OF SYSTEM EFFECTS. SMOOTH RADIUS ELBOWS SHALL BE USED OUTSIDE OF THE MECHANICAL ROOM (R/W=1.0 OR 1.5). SHORTER RADIUS (0.5 OR 0.75) IS ALLOWED IN MECHANICAL ROOMS. ABRUPT TRANSITIONS WILL NOT BE USED; LOW ANGLE (30 DEGREE OR LESS TYPICAL) WILL BE USED. TRANSITIONS AND FITTINGS WILL BE PLACED ABOVE BATHROOMS, HAC, AND STORAGE AREA

- TO THE EXTENT POSSIBLE.
- DUCT BRANCH TAKE-OFFS WILL MAINTAIN 4 TO 5 FEET BETWEEN EACH OTHER AND FITTINGS/TRANSITIONS TO THE GREATEST EXTENT POSSIBLE. BRANCH DUCT TAP-IN FITTINGS WITH 45 DEGREE ENTRY THROAT WILL BE USED FOR SQUARE TAKE-OFFS. IF ROUND TAPS ARE USED, NEAREST EQUIVALENT DIAMETER FROM SMACNA WILL BE USED WITH CONICAL TAP.
- USAGE OF FLEXIBLE DUCT WILL BE LIMITED TO MAXIMUM 5 FOOT LENGTH, FULLY EXTENDED, AND SUPPORTED AT ANY TURN. USAGE WILL BE LIMITED TO CONNECTION BETWEEN DIFFUSER/GRILLE AND HARD DUCT.
- MANUALLY OPERATED, SINGLE BLADE QUADRANT-TYPE BALANCING DAMPERS WILL BE INSTALLED ON ALL TAPS. DAMPERS WILL BE PLACED APPROXIMATELY TWO DIAMETERS FOR THE BRANCH, WITH MAXIMUM DISTANCE POSSIBLE BETWEEN DAMPER AND DIFFUSER.
- MECHANICAL ROOM AND BATHROOM EXHAUSTS WILL BE GANGED ONTO A SINGLE, IN-LINE, ENERGY STAR RATED, 120V FAN. EXHAUST DUCT WILL BE RUN THROUGH THE ROOF, WITH DAMPER AND "Y" FITTING ABOVE THE TOILET CEILING. NEW ROOF PENETRATION, WITH RAIN GUARD WILL BE REQUIRED. PENETRATION WILL BE SEALED AND FLASHED. BASIS OF DESIGN IS FANTECH PB 360-Z (DUCTING AT 8" DIAMETER. GRILLES BY MANUFACTURER).
- DIFFUSERS AND GRILLES SHALL BE SIZED FOR LSS THAN 0.10 IWC DROP. BASIS OF DESIGN IS MCD.
- DUCT OUTSIDE OF MECHANICAL ROOM WILL NOT BE INSULATED AS PER ASHRAE 90.1-2007. MECHANICAL ROOM IS CONSIDERED UNCONDITIONED SPACE. SUPPLY DUCT IN MECHANICAL ROOM WILL BE INSULATED FOR R-3.5. RETURN DUCT IS

- NOT INSULATED.
- SUPPLY DUCTWORK IN THE MECHANICAL ROOM WILL BE SEAL LEVEL B (TRANSVERSE JOINTS AND LONGITUDINAL SEAMS). ALL OTHER DUCTWORK WILL BE SEAL LEVEL C (TRANSVERSE JOINTS ONLY).
- REFRIGERANT LINES WILL BE INSULATED AS PER MANUFACTURER RECOMMENDATION. BUILDING PENETRATIONS WILL BE SEALED AND INSULATED.
- OUTSIDE AIR DAMPER WILL HAVE MOTORIZED ACTUATOR. TWO POSITION OPERATION FOR 25% OPEN AND FULLY SHUT IS REQUIRED. OUTSIDE AIR LOUVER WILL INCORPORATE A 1/2" WIRE BIRD SCREEN. DAMPER WILL HAVE MAXIMUM LEAKAGE GIVEN BY ASHRAE 90.1-2004.
- DISCONNECT WILL BE PROVIDED AND INSTALLED SEPARATELY FOR CONDENSER AND EVAPORATOR, AND WILL BE PLACED WITHIN PLAIN SITE OF EQUIPMENT MAINTENANCE AREA.
- FLEXIBLE, NON-FLAMMABLE CONNECTIONS WILL FOR EVAPORATOR WILL BE FIELD INSTALLED FOLLOWING MANUFACTURER GUIDANCE.
- THERMOSTAT WILL COMPLY WITH ASHRAE 90.1-2004 REQUIREMENTS. TEMPERATURE WILL BE SET FOR 78 F COOLING DURING BUSINESS HOURS AND WARM-UP PERIOD (0600 TO 1800) AND 72 F HEATING. NIGHT SETBACK TEMPERATURES OF 65 F COOLING AND 65 F HEATING WILL BE PROGRAMMED. THERMOSTAT SHALL INCLUDE TIME-OF-DAY FUNCTION FOR CLOSING OF OUTSIDE AIR DAMPER DURING UNOCCUPIED HOURS (FOR FUTURE CO2 CONTROL).

1 HVAC - Plan
 1/4" = 1' 0"

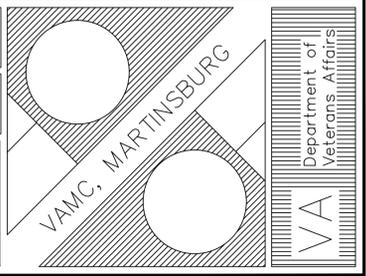
Revised	07/25/12
Rev Explanation & Initials	Date

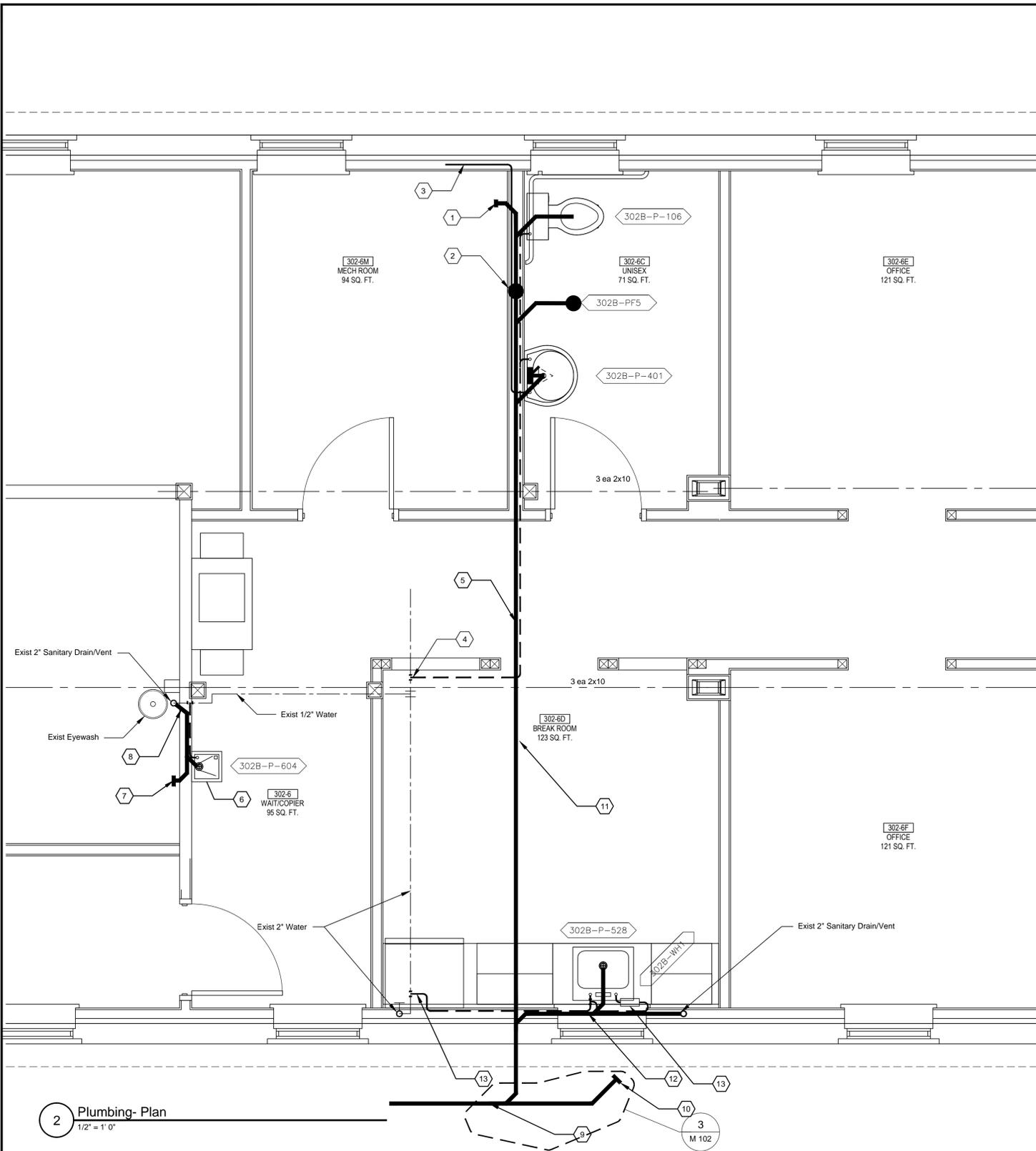
Professional Seal

Drawing Title	HVAC - Plan
Approved:	
Approved:	

Project Title	Building 302B Renovations		
Building Number	302B	Checked	Drawn
		-	SP
Location	VAMC, MARTINSBURG WV		

Date	06/13/2011
Project No.	613-11-143
M 101	
Dwg. 17 of 27	





2 Plumbing- Plan
1/2" = 1' 0"

PLUMBING FIXTURE SCHEDULE														
MARK	DESCRIPTION	WASTE PIPE		VENT PIPE		COLD WATER		HOT WATER		WASTE FIXTURE UNITS	WATER FIXTURE UNITS	WRIST BLADE HANDLES	ELECTRIC SENSOR	REMARKS
		IN	[mm]	IN	[mm]	IN	[mm]	IN	[mm]					
302B-P-106	WATER CLOSET, FLOOR MTD.	4	[100]	2	[50]	0.5	[13]		[]	1	1	N/A	NO	PRESSURE ASSIST, DUAL FLUSH, OPEN FRONT SEAT, ADA
302B-P-401	LAVATORY WALL HUNG	1.5	[38]	1.25	[31]	0.5	[13]	0.5	[13]	1	2	YES	NO	W/ PLATE TYPE WALL CARRIER, ADA
302B-P-528	KITCHEN SINK	2	[50]	1.5	[38]	0.5	[13]	0.5	[13]	1	2	YES	NO	SINGLE BOWL, STAINLESS STEEL, ADA
302B-PF5	FLOOR DRAIN	3	[75]	1.5	[38]	0.5	[13]		[]	1	0	N/A	NO	W/ TRAP PRIMER
302B-P-604	WATER COOLER	1.5	[38]	1.25	[31]	0.5	[13]	0.5	[13]	1	1	N/A	NO	FROST PROOF
302B-PF7	WALL SUPPLY BOX & OUTLET		[]		[]	5	[13]		[]		0	N/A	NO	PROVIDE BACKFLOW PREVENTER

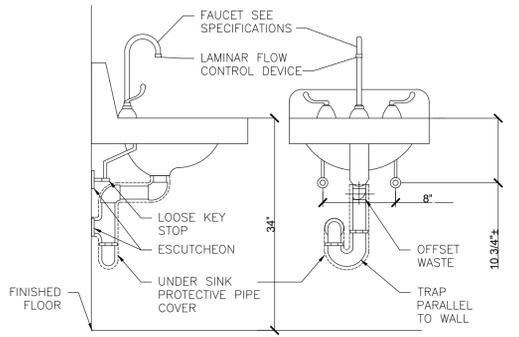
WATER HEATERS		RECOVERY @ 90°F		RELIEF VALVE SETTINGS		ELECTRICAL INPUT				
		GAL/HR	[L/HR]	PSIG	[kPa]	NO OF ELEMENTS	TOTAL KW	KW PER ELEMENT	PHASE	VOLT
302B-WH1	ELEC INSTANTANEOUS HOT WATER HEATER	80	[300]	125	[860]	1	9	9	1	208

- NOTES:**
- ALL FIXTURES SHALL BE WHITE UNLESS NOTED OTHERWISE.
 - ALL WORK SHALL COMPLY WITH THE 2003 INTERNATIONAL PLUMBING CODE, MECHANICAL CODE, ELECTRICAL CODE, AND LOCAL GOVERNING CODES AND PERMITS. CONTRACTOR SHALL OBTAIN ALL PERMITS.
 - ALL INTERIOR HOT AND COLD WATER LINES SHALL BE INSULATED MIN. 1" THICK. HOT WATER LINES AND EXPOSED DRAINS SHALL BE INSULATED W/ WHITE PLASTIC JACKET INSULATION TO PREVENT TOUCH BY HANDICAP - TRUEBRO LAV GUARD OR EQUAL. PIPE INSULATION 1" IN ATTIC & MINIMUM 1/2" IN WALLS. INSULATE WASTE RISERS W/ MINIMUM 1" INSULATION FOR SOUND.
 - CONTRACTOR SHALL PROVIDE ALL NECESSARY FITTINGS, FIXTURES & VALVES, TO MAKE AN OPERATING SYSTEM. ALL PIPING SHALL BE RUN INSIDE WALLS OR ABOVE CEILING UNLESS SHOWN OTHERWISE. ALL EXPOSED PIPING TO OCCUPIED AREAS SHALL BE CHROME PLATED. PLUMBER/INSTALLER SHALL INSURE THAT PIPES ARE ADEQUATELY INSULATED TO PREVENT FREEZING.
 - CONTRACTOR SHALL COORDINATE CONNECTION OF WATER AND SEWER SYSTEMS WITH LOCAL UTILITIES PRIOR TO MAKING FINAL CONNECTIONS TO WATER AND SANITARY SEWER MAINS.
 - CONTRACTOR SHALL PROVIDE ALL MOUNTING HARDWARE & ACCESSORIES TO INSTALL ALL FIXTURES. INSTALL HANDICAP FIXTURES IN COMPLIANCE WITH ADA AND LOCAL CODES.
 - PROVIDE ALL NECESSARY PUMP CONTROLS, STARTERS, DISCONNECTS SHALL BE PROVIDED. CONNECTION TO WATER & SANITARY SEWER MAINS.
 - ALL PIPE PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS AND CEILINGS SHALL BE SEALED PER CODE WITH A FIRE RATED SEALANT OR ASSEMBLY THAT PROVIDES EQUAL FIRE RATING OF THE WALL, FLOORS AND CEILINGS.
 - COORDINATE WITH MECHANICAL AND ELECTRICAL CONTRACTOR ON INSTALLATION & COORDINATION OF WORK & TRADES.
 - PROVIDE FROST-PROOF HOSE BIBBS W/ INTEGRAL VACUUM BREAKERS & COLD WATER PIPING AS SHOWN ON DRAWINGS.

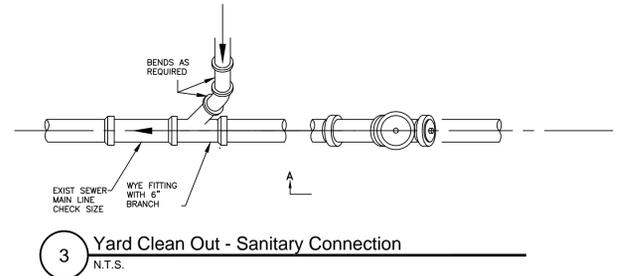
- KEYNOTES:**
- PROVIDE 4" CLEAN OUT.
 - 2" DIA. VENT NEW REPLACE THE HOT WATER TANK IN ROOM 302-5 WITH ONE OF EQUAL SIZE AND CAPACITY. CONNECT TO IT.
 - CONNECT TO EXISTING COLD WATER MAIN
 - NEW 4" SANITARY LINE BELOW CONC. FLOOR
 - NEW DRINKING FOUNTAIN
 - PROVIDE CLEAN-OUT
 - NEW 2" SAN. DRAIN. TIE TO EXIST.
 - EXISTING SEWER LINE CONNECT NEW PIPING TO IT
 - PROVIDE CLEAN-OUT AT GRADE. SECURE WITH 18"x18" CONC. PAD.
 - SAW SLAB APPROX 18" WIDE & EXCAVATE TO INSTALL NEW 4" SAN LINE. COMPACTED BACKFILL AND PATCH SLAB.
 - 2" SAN. DRAIN.
 - UNDER-COUNTER TANKLESS H.W. HEATER, 240/208V 7KW 30 AMP

HANDICAP ACCESSIBILITY NOTES:

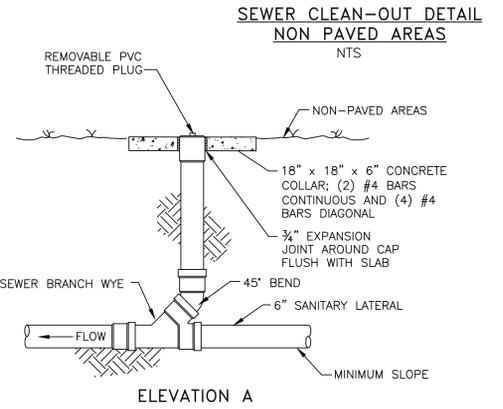
- WATER CLOSETS:** 17"-19" A.F.F. TO RIM
18" FROM SIDEWALL TO CENTER (IN PLAN)
- LAVATORIES:** 34" MAX. A.F.F. TO TOP OF RIM
29" MIN. CLEAR A.F.F. @ APRON
17" MIN. PROJECTION
30" CLEAR CENTERED (IN PLAN)
- WATER COOLERS:** 36" MAX. A.F.F.
27" MIN. CLEAR A.F.F. @ APRON
17"-19" PROJECTION
- URINALS:** 17" MAX. A.F.F. TO TOP OF ELONGATED RIM.



4 TYPICAL WHEELCHAIR LAVATORY DETAIL
N.T.S.



3 Yard Clean Out - Sanitary Connection
N.T.S.



SEWER CLEAN-OUT DETAIL
NON PAVED AREAS
N.T.S.

Revised	07/25/12
Rev Explanation & Initials	Date

Professional Seal

Drawing Title	Project Title
Plumbing Detailed Plans	Building 302B Renovations
Approved:	Building Number 302B
Approved:	Checked -
	Drawn SP
	Location VAMC, MARTINSBURG WV

Date	06/13/2011
Project No.	613-11-143
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VAMC, MARTINSBURG

Department of Veterans Affairs

