DUCTWORK NOTES:

1. UNLESS OTHERWISE NOTED, ALL DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL G90 GRADE PER SMACNA. ALL DUCTS CONSTRUCTED OF GALVANIZED STEEL SHEET METAL SHALL HAVE MINIMUM GAGE THICKNESS AS FOLLOWS:

MAXIMUM SIDE (IN.)	GAGE
THROUGH 12	26
13 – 30	24
31 – 54	22
55 – 84	20
OVER 84	16

DIAMETER (IN.)	GAGE
THROUGH 12	26
13 – 18	24
19 – 28	22
29 – 36	20
37 – 52	18

PROVIDE ALL NECESSARY CROSS-BREAKING AND DUCT REINFORCING AS REQUIRED PER SMACNA RECOMMENDATIONS.

2. ALL DUCTWORK SHALL BE DESIGNED, CONSTRUCTED AND INSTALLED PER SMACNA STANDARDS.
3. DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR DIMENSIONS.
4. COORDINATE LOCATION OF DUCTWORK, PIPING, AND DIFFUSERS WITH ALL OTHER TRADES.
5. ALL DUCTWORK AND PIPING ABOVE CEILING AND IN AREAS WITHOUT CEILINGS SHALL BE INSTALLED AS HIGH AS POSSIBLE.
6. PROVIDE AT MINIMUM 10 GAUGE STEEL SLEEVES FOR ALL DUCT PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS AND PARTITIONS. PROVIDE PIPE SLEEVES FOR ALL MECHANICAL PIPING PENETRATING THROUGH FIRE RATED WALLS, FLOORS AND PARTITIONS. SEAL ALL ANNULAR SPACE BETWEEN SLEEVES AND DUCTWORK OR PIPING WITH A FIRE BARRIER MATERIAL EQUAL TO 3M "PENETRATION SEALING SYSTEM".
7. ALL PIPING AND DUCTS IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN FURRED CHASES OR SUSPENDED CEILING.
8. SUPPORTS FOR DUCTS SHALL BE INSTALLED AT INTERVALS OF NOT MORE THAN 10 FEET.
9. ALL DUCTWORK SHALL BE DESIGNED, CONSTRUCTED AND INSTALLED PER SMACNA STANDARDS AND FOR PRESSURES OF 2" E.S.P. SEAL ALL LONGITUDINAL SEAMS AND TRANSVERSE JOINTS WITH FIRE-PROOF SEALANT FOR "AIR-TIGHT" APPLICATION.
   - 9.1. APPROVED SEALANTS:
   - 9.1.1. DUCTMATE INDUSTRIES, INC: PROSEAL PREMIUM WATER BASED DUCT SEALANT.
   - 9.1.2. CARLISLE HVAC PRODUCTS: IRON GRIP 601 WATER BASED SEALANT.
10. DUCTWORK SHALL BE WRAPPED PER THE FOLLOWING:
   - 10.1. DUCTS LOCATED WITHIN INSULATED BUILDING ENVELOPE – 2" THICK FIBERGLASS DUCT INSULATION HAVING AN INSTALLED R-VALUE OF 6.
   - 10.2. DUCTS LOCATED WITHIN BUILDING BUT OUTSIDE ENVELOPE – 3" THICK FLEXIBLE FIBERGLASS OR 2" THICK RIGID BOARD DUCT INSULATION HAVING AN INSTALLED R-VALUE OF 8.
   - 10.3. DUCTS LOCATED OUTSIDE – 2" THICK RIGID POLYISOCYANURATE INSULATION HAVING AN INSTALLED R-VALUE OF 8 ENCASED IN ALUMINUM.
   - ALL DUCT INSULATION SHALL CONTAIN VAPOR BARRIER, AND FIRE RATED FOR FLAME SPREAD OF 25 OR LESS AND SMOKE DEVELOPED FOR 50 OR LESS. INSULATION TO BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
11. FLEXIBLE DUCT SHALL BE ROUTED PER IAW SMACNA STANDARDS, 5' MAX WITH ONE ELBOW.

MECHANICAL NOTES:

1. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF PIPING AND CONNECTION POINTS OF PIPING PRIOR TO FABRICATION AND INSTALLATION. PROVIDE TRANSITIONS WHERE REQUIRED.
2. CONTRACTOR SHALL COORDINATE LOCATION OF ALL PIPING WITH OTHER TRADES.
3. CONTRACTOR SHALL PROVIDE FINAL CONNECTIONS TO EQUIPMENT (DUCTLESS SPLIT SYSTEMS, EXHAUST FANS, ETC.)
4. ALL EQUIPMENT SHALL HAVE ITS MANUFACTURER'S NAMEPLATE SECURELY ATTACHED GIVING DESIGN AND OPERATING CHARACTERISTICS. NAMEPLATES SHALL NOT BE COVERED OR OBSTRUCTED FROM VIEW. ELECTRICAL PANEL SCHEDULES SHALL BE PROVIDED AND/OR WHERE EXISTING THEY SHALL BE AMENDED TO REFLECT THE NEW WORK. PIPING AND CONDUIT SYSTEMS SHALL BE LABELED AND VALVES SHALL BE TAGGED.
5. ALL MECHANICAL AND PLUMBING EQUIPMENT SHALL BE INSTALLED TO ALLOW ADEQUATE SPACE TO PERFORM MAINTENANCE.
6. SUPPORT ALL DUCTWORK IN ACCORDANCE WITH "SMACNA" STANDARDS.
7. CONTRACTOR SHALL BALANCE ALL HVAC SYSTEMS.
8. OPEN ENDS OF ALL PIPING DELIVERED TO SITE SHALL BE COVERED BEFORE DELIVERY TO AVOID CONTAMINATION IN FIELD.
9. CONTRACTOR SHALL PERFORM WITNESSED PRESSURE TESTS TO ALL PIPING PRIOR TO INSULATING.
10. DUCT SIZES ARE NET FREE AREA.
11. WHERE REQUIRED FOR CLEARANCE, TO AVOID INTERFERENCE OR EQUIPMENT CONNECTIONS, THE MECHANICAL CONTRACTOR SHALL OFFSET PIPES OR CONDUITS AS NECESSARY. SPECIAL FITTINGS OR ADAPTERS SHALL BE PROVIDED TO MAINTAIN GOOD FLOW CHARACTERISTICS. PROPERLY DRAIN AND DRIP WHERE NECESSARY.
12. CONTRACTOR SHALL SEAL ALL WALL AND FLOOR PENETRATIONS WITH FIRE STOP FOAM.
13. CONTRACTOR SHALL FIELD ROUTE AND PROVIDE ALL OFFSETS REQUIRED TO AVOID INTERFERENCES WITH OTHER UTILITIES OR EXISTING CONDITIONS.

DOMESTIC WATER SPECIFICATIONS:

1. DOMESTIC WATER PIPE FOR ABOVE GROUND USE SHALL BE ASTM B88 TYPE "L" SEAMLESS COPPER TUBE WITH SOLDER JOINT FITTINGS USING 95-5 SOLDER PER ASTM B32. ALL WATER DISTRIBUTION PIPING SHALL BE WATER RATED FOR NOT LESS THAN 100PSI @ 180°F. DIELECTRIC COUPLING SHALL BE USED WHERE DISSIMILAR METALS ARE JOINED. PIPING MATERIALS FOR USE ON DOMESTIC WATER SYSTEMS INCLUDING FIXTURES & VALVES SHALL NOT CONTAIN MORE THAN 8 PERCENT LEAD.
2. PRIOR TO DISINFECTION, POTABLE WATER PIPING SHALL BE FLUSHED WITH WATER UNTIL NO DIRTY WATER APPEARS AT THE POINTS OF OUTLETS.
3. POTABLE WATER PIPING SHALL BE DISINFECTED PRIOR TO USE PER NATIONAL STANDARD PLUMBING CODE. THE PIPING SHALL BE FILLED WITH A WATER CHLORINE SOLUTION CONTAINING AT LEAST 50 PARTS PER MILLION OF CHLORINE AND SHALL BE VALVED OFF FOR 24 HOURS OR FILLED WITH A WATER CHLORINE SOLUTION CONTAINING AT LEAST 200 PARTS PER MILLION OF CHLORINE AND ALLOWED TO STAND FOR AT LEAST 3 HOURS. FOLLOWING THE ALLOWED STANDING TIME, THE SYSTEM SHALL BE FLUSHED WITH POTABLE WATER UNTIL NO CHLORINE REMAINS IN THE SYSTEM. PROVIDE RESULTS OF DISINFECTION TO OWNER WHEN COMPLETE.
4. DOMESTIC WATER PIPE SHALL CONSIST OF A HYDROSTATIC PRESSURE TEST OF 25 PSIG ABOVE THE WORKING PRESSURE UNDER WHICH IT IS OPERATED FOR NOT LESS THAN 60 MINUTES.
5. IF LEAKS OCCUR DURING TESTING, REPAIRS SHALL BE MADE AND SYSTEM RETESTED UNTIL NO EVIDENCE OF LEAKS EXIST FOR THE DURATION OF THE TEST.
6. BALL VALVES SHALL BE EQUAL TO CONBRACO APOLLO SERIES 82-100 OR 82-200 RATED FOR 150 PSIG W.O.G. OR EQUAL
7. DOMESTIC COLD WATER PIPE 1¼" OR LESS SHALL BE INSULATED WITH ½" THICK FIBERGLASS PREFORMED INSULATION WITH VAPOR JACKET AND SELFSEALING TAPE, EQUAL TO OWENS-CORNING ASJ/SSL-2. INSULATION SHALL HAVE A MEAN TEMPERATURE RATING OF 75°F AND A THERMAL CONDUCTIVITY BTWN .21-.27. INSULATION SHALL BE PLENUM RATED WITH A SMOKE/FIRE SPREAD OF 25/50.
8. DOMESTIC COLD WATER PIPE BTWN 1½" AND 3" SHALL BE INSULATED WITH 1" THICK FIBERGLASS PREFORMED INSULATION WITH VAPOR JACKET AND SELFSEALING TAPE, EQUAL TO OWENS-CORNING ASJ/SSL-2. INSULATION SHALL HAVE A MEAN TEMPERATURE RATING OF 75°F AND A THERMAL CONDUCTIVITY BTWN .21-.27. INSULATION SHALL BE PLENUM RATED WITH A SMOKE/FIRE SPREAD OF 25/50.
9. DOMESTIC HOT WATER & RETURN PIPE LESS 1¼" SHALL BE INSULATED WITH 1" THICK FIBERGLASS PREFORMED INSULATION WITH VAPOR JACKET AND SELFSEALING TAPE, EQUAL TO OWENS-CORNING ASJ/SSL-2. INSULATION SHALL HAVE A MEAN TEMPERATURE RATING OF 100°F AND A THERMAL CONDUCTIVITY BTWN .21-.28. INSULATION SHALL BE PLENUM RATED WITH A SMOKE/FIRE SPREAD OF 25/50.
10. CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL OTHER ASPECTS AND TRADES OF THE PROJECT IN ORDER TO MINIMIZE INTERFERENCES.

SANITARY WASTE SPECIFICATIONS:

1. SANITARY WASTE AND VENT PIPING SHALL BE SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC PIPE (PVC), TYPE-DWV, CONFORMING TO ASTM D 2665, & ASTM F 891. ALL FITTINGS SHALL BE ALL SCHEDULE 40 POLYVINYL CHLORIDE PLASTIC PIPE (PVC), TYPE-DWV, CONFORMING TO ASTM D 2665 & ASTM F 1866. ALL JOINTS SHALL BE PURPLE PRIMED CONFORMING TO ASTM F 656, AND SOLVENT CEMENTED CONFORMING TO ASTM D 2564 FOR SOCKET-TYPE JOINTING. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXACT INVERT ELEVATIONS AND PIPE LOCATIONS, AS WELL AS MAKING ALL CONNECTIONS TO EXISTING IN A MANNER ACCEPTABLE TO THE LOCAL PLUMBING INSPECTOR.
2. IF CEILING IS USED AS A PLENUM RETURN HVAC SYSTEM. SANITARY WASTE AND VENT PIPE & FITTINGS SHALL BE SERVICE WEIGHT HUBLESS CAST IRON ASTM A-888, WITH HUBLESS COUPLING GASKETS IN ACCORDANCE WITH ASTM C564 & CISPI-301 FOR ABOVE GROUND AND HUB AND SPIGOT PIPE & FITTINGS ASTM A-74, WITH COMPRESSION TYPE GASKETS PER ASTMC-564 FOR BELOW SLAB.
3. SANITARY WASTE & VENT PIPE SHALL BE AIR TESTED TO NOT LESS THAN 5 PSIG PRESSURE IN THE SYSTEM. PIPING SYSTEM SHALL SUSTAIN A CONSTANT PRESSURE FOR NOT LESS THAN 15 MINUTES.
4. HORIZONTAL DRAIN PIPING SHALL BE INSTALLED AT UNIFORM SLOPE NOT LESS THAN 1/4" PER FOOT FOR 2½" AND SMALLER, NOT LESS THAN 1/8" PER FOOT FOR 3" TO 6", AND NOT LESS THAN 1/16" PER FOOT FOR 8" OR LARGER. LESSER SLOPE MAY BE PERMITTED AS APPROVED BY LOCAL ADMINISTRATIVE AUTHORITY.

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19P368
STATE OF MARYLAND
JOHN R. FARINA
No. 30332
PROFESSIONAL ENGINEER
DEDC, LLC.
JOHN R. FARINA, PE
MD# 30332
6/17/20

ORIGINAL SIZE
0 1" 2" 3" 4"
1/8 3/8 1/2 1/10

NO.	DATE	REVISION DESCRIPTION

DIO
DIRECTORATE OF INSTALLATION OPERATIONS
ENGINEERING & CONSTRUCTION DIVISION
ABERDEEN PROVING GROUND, MARYLAND

DESIGNED DEDC
DRAWN DEDC
CHECKED DEDC
DATE 06/17/2020
SPEC. NO.
BLDG. NO. 4504
SCALE AS NOTED

TOILET ROOM RENOVATIONS FOR APG BUILDING 4504
ABERDEEN PROVING GROUND, ABERDEEN MARYLAND

MECH. & PLUMB. SPECIFICATIONS

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