SECTION 150000 - BASIC MECHANICAL REQUIREMENTS

A. GENERAL CONDITIONS OTHER CONTRACT DOCUMENTS 1. THE GENERAL CONDITIONS AND OTHER CONTRACT DOCUMENTS AS SET FORTH HEREBY ARE TO BE INCORPORATED INTO AND BECOME A PART OF THE SPECIFICATIONS FOR THE WORK UNDER THIS DIVISION.

CODES AND PERMITS 1. COMPLY WITH RULES, REGULATIONS OF STATE, COUNTY, AND CITY AUTHORITIES HAVING JURISDICTION OVER THE PREMISES, INCLUDING SAFETY REQUIREMENTS OF OSHA. DO NOT CONSTRUE THIS AS RELIEVING CONTRACTOR FROM COMPLYING WITH SPECIFICATIONS WHICH EXCEED CODE REQUIREMENTS AND NOT IN CONFLICT

2. SECURE AND PAY FOR ALL PERMITS AND CERTIFICATES OF INSPECTION REQUIRED. MAKE PAYMENTS TO ALL PUBLIC UTILITIES FOR WORK PERFORMED BY THEM IN PROVIDING SERVICE CONNECTIONS. C. LOCAL CONDITIONS

1. VISIT SITE, BECOME FAMILIAR WITH CONDITIONS AFFECTING THIS WORK. NO ADDITIONAL PAYMENT WILL BE MADE ON CLAIMS THAT ARISE FROM LACK OF KNOWLEDGE OF EXISTING CONDITIONS.

2. THIS CONTRACTOR SHALL BE HELD TO HAVE EXAMINED THE PREMISES AND SITE SO AS TO COMPARE THEM WITH THE DRAWINGS AND SPECIFICATIONS. NO ALLOWANCE SHALL BE MADE TO THE CONTRACTOR BY REASON OF HIS FAILURE TO HAVE MADE SUCH EXAMINATION OR OF ANY ERROR ON HIS PART. D. DRAWINGS

1. DRAWINGS AND SPECIFICATIONS ARE TO BE CONSIDERED AS SUPPLEMENTING EACH OTHER. WORK SPECIFIED SHALL BE PERFORMED OR FURNISHED AS THOUGH MENTIONED IN BOTH SPECIFICATIONS AND DRAWINGS

2. THE DRAWINGS ARE SCHEMATIC ONLY AND ARE INTENDED TO SHOW THE APPROXIMATE LOCATIONS. DO NOT SCALE. E. SHOP DRAWINGS

1. THIS CONTRACTOR SHALL SUBMIT SHOP DRAWINGS ON THE ITEMS OF EQUIPMENT AND SYSTEMS AS NECESSARY TO CLEARLY SHOW EQUIPMENT AND CONSTRUCTION.

1. THIS CONTRACTOR SHALL HAVE IN CHARGE OF THE WORK, A COMPETENT SUPERINTENDENT WITH EXPERIENCE IN THE WORK TO BE INSTALLED UNDER THIS CONTRACT.

1. THIS CONTRACTOR SHALL COORDINATE HIS WORK AND COOPERATE WITH THE OTHER CONTRACTORS. HE SHALL ARRANGE HIS WORK WITH THEIRS SO THAT THERE WILL BE NO DELAY IN THE PROPER INSTALLATION.

2. EXAMINE WORK OF OTHER TRADES WHICH COMES IN CONTACT WITH OR IS COVERED BY THIS WORK. DO NOT ATTACH TO, COVER, OR FINISH AGAINST ANY DEFECTIVE WORK, OR INSTALL WORK OF THIS DIVISION IN A MANNER WHICH WILL PREVENT OTHER TRADES FROM PROPERLY INSTALLING THEIR WORK. CONSULT ALL DRAWINGS, SPECIFICATIONS AND DETAILS OF OTHER DIVISIONS OF THE WORK. H. GUARANTEE AND WARRANTIES

 WARRANT THAT EQUIPMENT AND ALL WORK IS INSTALLED IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE AND THAT ALL EQUIPMENT WILL MEET REQUIREMENTS SPECIFIED. ANY EQUIPMENT FAILING TO PERFORM OR FUNCTION AS SPECIFIED SHALL BE REPLACED WITH COMPLYING EQUIPMENT, WITHOUT COST TO THE OWNER. 2. GUARANTEE AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS;

MAKE GOOD REPAIR OR REPLACE ANY DEFECTIVE WORK, MATERIAL OR EQUIPMENT WITHIN ONE YEAR FROM DATE OF ACCEPTANCE. PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED END OF SECTION

G. VALVES:

SECTION 150500 - BASIC MECHANICAL MATERIALS AND METHODS PART 1 GENERAL

A. REFER TO INDIVIDUAL PIPING SYSTEM SPECIFICATION SECTIONS FOR PIPE, FITTING, JOINING MATERIALS AND METHODS. PIPE THREADS SHALL COMPLY WITH ASME B1.20.1 FOR FACTORY-THREADED PIPE AND PIPE B. FURNISH AND INSTALL MANUFACTURED ESCUTCHEONS FOR EXPOSED

WALL AND CEILING PENETRATIONS. INSTALL DIELECTRIC UNIONS WHEREVER JOINING DISSIMILAR METALS TO PREVENT GALVANIC ACTION AND CORROSION. C. FURNISH AND INSTALL SLEEVES FOR WALL, FLOOR SLAB AND ROOF

PENETRATIONS WITH A MIN. TWO SIZES LARGER THAN PIPE OR INSULATION: STEEL PIPE: ASTM A53, GRA, SCH. 40 GALV. PLAIN ENDS. PVC PLASTIC PIPE: ASTM D1785, SCH. 40.

D. FURNISH AND INSTALL EQUIPMENT NAMEPLATES IDENTIFYING UNIT NUMBER AND AREA SERVICED BY UNIT. PIPING SYSTEMS SHALL HAVE SNAP-ON PLASTIC PIPE MARKERS TO INDICATE SERVICE AND FLOW

E. INSTALL PIPING FREE OF SAGS AND BENDS TIGHT TO SLABS, TRUSSES, JOISTS, COLUMNS, WALLS, AND OTHER BUILDING COMPONENTS. ALLOW SUFFICIENT SPACE ABOVE REMOVABLE LAY-IN CEILINGS FOR PANEL

F. REFER TO DIVISION 9 SECTION "PAINTING" FOR FIELD PAINTING REQUIREMENTS.

1. BALL VALVES, 2" AND SMALLER: RATED FOR 400 PSI WOG - TWO PIECE CONSTRUCTION WITH TEFLON SEATS AND SEALS. VALVES SHALL BE NIBCO MODEL S-580-BR OR APPROVED EQUAL 2. PLUG VALVES, 2 1/2" AND LARGER: RATED AT 175 PSI WOG, LUBRICATED

PLUG TYPE, SEMI-STEEL BODY, WRENCH OPERATED WITH FLANGED ENDS. VALVES SHALL BE NORDSTROM 143 OR APPROVED EQUAL. 3. CHECK VALVES, 2" AND SMALLER: RATED AT 200 PSI WOG, CAST BRONZE BODY, HORIZONTAL SWING, Y-PATTERN AND BRONZE DISC. VALVES

SHALL BE NIBCO MODEL S413 OR APPROVED EQUAL OTHER APPROVED MANUFACTURES: CRANE, HAMMOND, JAMESBURY, JENKINS, KEYSTONE, POWELL, STOCKHAM, AND WATTS.

H. HANGERS AND SUPPORT COMPONENTS SHALL BE FACTORY FABRICATED OF MATERIALS, DESIGN AND MANUFACTURER COMPLYING WITH MSS 1. DOMESTIC WATER PIPING 2 1/2" DIA. AND SMALLER: GRINNELL FIG. NO. CT-69 TUBING HANGER WITH FIG NO. 167 PROTECTION SHIELD.

2. STORM/SANITARY WASTE AND VENT PIPING: GRINNELL FIG. NO. 260 ADJ STEEL CLEVIS HANGER FOR HORIZONTAL PIPING, GRINNEL FIG. NO. 261 STEEL RISER CLAMP FOR VERTICAL PIPING WHERE PIPING IS SUPPORTED FORM OVERHEAD WOOD TRUSSES, USE GRINNELL FIG. NO. 153 PIPE HANGER FLANGE.

3. HANGER RODS SHALL BE ASTM A-107 CONTINUOUS THREADED WITH THE FOLLOWING LOADING: 3/8" - 610 LBS., 1/2" - 1130 LBS., 5/8" - 1810 LBS. AND 3/4" - 2710 LBS.

4. HANGER SPACING AS FOLLOWS: STEEL PIPE - AT INTERVALS NOT EXCEEDING 12'-0". COPPER PIPE - 1 1/4" AND SMALLER 6'-0" INTERVALS 1 1/2" AND

LARGER 10'-0" INTERVALS. c. CAST IRON PIPE - AT INTERVALS NOT EXCEEDING 10'-0". d. PLASTIC SCH. 40 PIPE - AT INTERVALS NOT EXCEEDING 4'-0".

5. HANGERS MANUFACTURED BY FEE AND MASON, B LINE AND HYDRA-ZORB ARE ALSO ACCEPTABLE. 6. MISCELLANEOUS STEEL PLATES, SHAPES AND BARS: ASTM A36.

COPPER TUBING: ADJUSTABLE STEEL CLEVIS HANGER, B-LINE B3104CT.

2. UNINSULATED PIPING: ADJUSTABLE STEEL CLEVIS HANGER, B-LINE B3104 3. INSULATED HOT PIPING (2 INCH AND SMALLER): ADJUSTABLE STEEL

CLEVIS HANGER WITH GALVANIZED SHEET METAL SHIELD, B-LINE B3100 WITH B3151 SERIES. 4. INSULATED COLD PIPING (4 INCH AND SMALLER): ADJUSTABLE STEEL

CLEVIS HANGER WITH GALVANIZED SHEET METAL SHIELD, B-LINE B3100 5. PLASTIC PIPING: ADJUSTABLE V-BOTTOM STEEL CLEVIS HANGER WITH

WITH B3106V SERIES. MANUFACTURERS: B-LINE, ANVIL (GRINNELL), MICHIGAN, PHD, HILTI, HOLDRITE OR APPROVED EQUAL. MULTIPLE OR TRAPEZE HANGERS: 12 GAUGE, ROLL FORMED, ASTM A570 GRADE 33 STRUCTURAL STEEL CHANNEL, 1 5/8 INCH X 1 5/8 INCH COATED STEEL CHANNELS WITH SPACERS AND HANGER RODS, B-LINE B22 STRUT OR STRONGER AS REQUIRED. MOUNT PIPES TO TRAPEZE WITH

GALVANIZED 18 GAUGE CONTINUOUS SUPPORT CHANNEL, B-LINE B3106

TWO-PIECE PIPE STRAPS SIZED FOR OUTSIDE DIAMETER OF PIPE/INSULATION, B-LINE B2000 SERIES. MANUFACTURERS: B-LINE, UNISTRUT, SUPERSTRUT OR APPROVED EQUAL

K. WALL SUPPORT: (PIPE SIZES TO 3 INCH): CARBON STEEL HOOK, B-LINE B3191, MICHIGAN, PHD, HILTI, HOLDRITE OR APPROVED EQUAL. L. VERTICAL SUPPORT: STEEL RISER CLAMP SIZED TO FIT OUTSIDE DIAMETER OF PIPE, B-LINE B3373, MICHIGAN, PHD, HILTI, HOLDRITE OR

M. FLOOR SUPPORT (HOT PIPE SIZES TO 6 INCH AND ALL COLD PIPE SIZES): CARBON STEEL ADJUSTABLE PIPE SADDLE (SCREWED OR WELDED TO APPROPRIATE BASE STAND) AND NIPPLE ATTACHED TO STEEL BASE STAND SIZED FOR PIPE ELEVATION, B-LINE B3093, B3088T, B3090 OR B3088, MICHIGAN, PHD, HILTI, HOLDRITE OR APPROVED EQUAL N. HANGERS SHALL BE DESIGNED TO IMPEDE DISENGAGEMENT BY

MOVEMENT OF SUPPORTED PIPE. O. PROVIDE STONEMAN TRISOLATORS OR EQUIVALENT OR 1/4 INCH THICK HAIR FELT AT ALL COPPER PIPE HANGERS OR SUPPORTS, EXCEPT NONE REQUIRED FOR INSULATED HOT PIPES

P. HANGERS AND CLAMPS FOR SUPPORT OF BARE COPPER TUBING SHALL BE COATED WITH COPPER-COLORED EPOXY PAINT. AN ADDITIONAL PVC COATING OF THE EXPOY-COATED HANGER SHALL BE APPLIED WHERE REQUIRED BY THE TENANT'S AUTHORIZED REPRESENTATIVE

Q. HANGERS FOR OTHER THAN BARE COPPER PIPING SHALL BE ZINC PLATED IN ACCORDANCE WITH ASTM B633-SC3 OR SHALL HAVE AN ELECTRO-DEPOSITED GREEN EPOXY FINISH. R. STRUT CHANNELS SHALL BE PRE-GALVANIZED IN ACCORDANCE WITH

ASTM A653-G90 OR HAVE AN ELECTRO-DEPOSITED EPOXY FINISH. . ROOF SUPPORTS FOR PIPE SIZES TO 3 INCH: POLYCARBONATE RESIN ROLLER AND NYLON ROD SITUATED IN A POLYCARBONATE RESIN BASE, "U" SHAPED CRADLE, GUIDE HOLES PROVIDED FOR MOUNTING STRAP (USING 1/2 INCH #10 SCREWS) AND SPACERS AS REQUIRED, SPACED MAXIMUM 10'-0" ON CENTER, MIRO 24-R OR APPROVED EQUAL.

PART 2 PRODUCTS - NOT USED PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 152500 - MECHANICAL INSULATION

1. FURNISH AND INSTALL INSULATION FOR DUCTWORK AND PIPING AS DESCRIBED IN CONTRACT DOCUMENTS. SUBMIT PRODUCT DATA FOR EACH TYPE OF MECHANICAL INSULATION FOR THE DATA FOR EACH TYPE OF MECHANICAL INSULATION FOR THE PROJECT, IDENTIFYING R-VALUE, THICKNESS, AND ACCESSORIES.

1. INSULATION SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS AND

A SMOKE DEVELOPED RATING OF 50 OR LESS. 2. SCHEDULE INSULATION APPLICATION AFTER DUCT AND PIPING TESTS HAVE BEEN COMPLETED.

PART 2 PRODUCTS 1. GLASS FIBER: INORGANIC GLASS FIVERS, BONDED WITH A

THERMOSETTING RESIN. a. BLANKET: 1-1/2" THICK WITH ALUMINUM FOIL SCRIM KRAFT FACING AND 1 LB/CU. FT. DENSITY. OWENS-CORNING FRK.

b. PREFORMED PIPE INSULATION: 1" THICK WITH REINFORCED ALL SERVICE VAPOR RETARDER JACKETING. OWENS-CORNING FIBERGLASS ASJ. c. DUCT LINER: 1" THICK COATED WITH A BLACK PIGMENTED

FIRE-RESISTANT COATING ON THE AIRSTREAM SIDE AND 1-1/2 LB./CU. FT. DENSITY. OWENS-CORNING AEROFLEX. d. OTHER APPROVED MANUFACTURES: CERTAINTEED, KNAUF, AND MANVILLE.

PART 3 EXECUTION 1. SELECT ACCESSORIES COMPATIBLE WITH MATERIALS SUITABLE FOR THE SERVICE THAT DO NOT CORRODE, SOFTEN, OR OTHERWISE

> ATTACK THE INSULATION OR JACKET. 2. SLIP INSULATION ON THE COLD AND HOT WATER PIPE AND SEAL JOINTS WITH ADHESIVE. WHERE THE SLIP ON TECHNIQUE IS NOT POSSIBLE, CUT ONE SIDE LONGITUDINALLY AND APPLY TO THE PIPE. SEAL SEAMS AND JOINTS WITH ADHESIVE.

3. INSULATE FINISHED PLUMBING LINES TO FIXTURES ACCESSIBLE TO THE DISABLED WITH 3/8" ARMSTRONG ARMAFLEX OR EQUAL. 4. DUCTWORK APPLICATION:

a. ALL RETURN AIR DUCTWORK IS TO BE LINED WITH DUCT LINER. b. ALL SUPPLY DUCTWORK LOCATED IN CONCEALED AREAS OR ABOVE THE CEILING IS TO BE WRAPPED WITH BLANKET INSULATION. THE FIRST 15'-0" OF THE SUPPLY DUCTWORK FROM THE ROOFTOP UNIT IS TO BE LINED WITH DUCT LINER. WRAP INSULATION CAN BE OMITTED ON SECTIONS OF DUCTWORK INSTALLED WITH DUCT

c. ALL SUPPLY DUCTWORK IN STOCKROOM IS TO BE UN-INSULATED. d. FOR THE EXPOSED DUCTWORK IN THE SALES AREA, THE FIRST 15'-0" OF THE SUPPLY DUCTWORK FROM THE ROOFTOP UNIT IS TO BE LINED WITH DUCT LINER. IF CONCENTRIC DIFFUSERS ARE MOUNTED DIRECTLY BELOW THE ROOFTOP UNIT, ALL OF THE SUPPLY

DUCTWORK SHOULD BE LINED TO THE CONCENTRIC DIFFUSERS. 5. DOMESTIC COLD AND HOT WATER PIPING IS TO BE INSULATED WITH 1" PREFORMED PIPE INSULATION.

END OF SECTION SECTION 154100 - PLUMBING PIPING

PART 1 GENERAL 1. FURNISH AND INSTALL PLUMBING PIPING AS SHOWN ON DWGS. 2. FURNISH AND INSTALL WATER METER (IF REQUIRED) IN COMPLIANCE WITH THE LOCAL WATER UTILITY COMPANY'S STANDARDS.

A. SUMMARY 1. THIS SECTION INCLUDES PLUMBING PIPING SYSTEMS AS SHOWN ON DWGS. AND CONNECTING INTO SYSTEMS AS REQUIRED. SYSTEMS INCLUDE THE FOLLOWING:

a. POTABLE WATER DISTRIBUTION, INCLUDING COLD AND HOT WATER b. DRAINAGE AND VENT SYSTEMS, INCLUDING SANITARY AND STORM.

PART 2 PRODUCTS A. DOMESTIC WATER PIPING SYSTEMS 1. ALL ABOVE-GROUND PIPING SHALL BE TYPE "L" HARD DRAWN COPPER

WITH WROUGHT COPPER FITTINGS. 2. SWEAT COPPER JOINTS WITH 95/5 TIN-ANTIMONY SOLDER FOR ABOVE **GROUND PIPING.**

B. SOIL, WASTE, AND VENT PIPING

1. PIPE AND FITTINGS a. ABS (ASTM D266) OR PVC (ASTM D2665) PLASTIC PIPE & FITTINGS. PROVIDE APPROVED CLEANER & GLUE FOR ABS OR PVC FITTINGS.

b. VENT PIPING SHALL BE TYPE "L" HARD COPPER WITH WROUGHT COPPER FITTINGS OR STEEL PIPING WITH NO HUB CONNECTIONS WHERE RETURN AIR PLENUM IS UTILIZED.

PART 3 EXECUTION

1. SECTIONAL VALVES: INSTALL SECTIONAL VALVES CLOSE TO MAIN ON EACH BRANCH OR EQUIPMENT CONNECTIONS AND WHERE INDICATED. USE BALL VALVES FOR SECTIONAL VALVES 2 INCHES AND SMALLER.

2. SHUTOFF VALVES: INSTALL SHUTOFF VALVES ON INLET TO EACH PLUMBING EQUIPMENT ITEM, ON EACH SUPPLY TO EACH PLUMBING FIXTURE NOT HAVING STOPS ON SUPPLIES, AND ELSEWHERE AS INDICATED. FOR SHUTOFF VALVES 2 INCHES AND SMALLER, USE BALL

B. CONNECTIONS 1. SUPPLY RUNOUTS TO FIXTURES: INSTALL HOT AND COLD WATER SUPPLY PIPING RUNOUTS OF SIZES INDICATED, BUT NOT SMALLER THAN REQUIRED BY PLUMBING CODE TO FIXTURES.

2. DRAINAGE RUNOUTS TO FIXTURES: PROVIDE DRAINAGE AND VENT PIPING RUNOUTS, WITH APPROVED TRAP, OF SIZES INDICATED, BUT NOT SMALLER THAN REQUIRED BY PLUMBING CODE, TO PLUMBING FIXTURES AND DRAINS.

C. FIELD QUALITY CONTROL 1. INSPECT WATER DISTRIBUTION PIPING AND DRAINAGE PIPING. a. DO NOT ENCLOSE, COVER, OR PUT INTO OPERATION WATER DISTRIBUTION PIPING SYSTEM UNTIL IT HAS BEEN INSPECTED AND

APPROVED BY THE AUTHORITY HAVING JURISDICTION.

2. TEST WATER DISTRIBUTION PIPING AS FOLLOWS:

a. TEST FOR LEAKS AND DEFECTS IN NEW WATER DISTRIBUTION PIPING b. CAP AND SUBJECT THE PIPING SYSTEM TO A STATIC WATER

PRESSURE TWICE THE OPERATING PRESSURE WITHOUT

EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR 4 HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED.

c. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST SYSTEM OR PORTION THEREOF UNTIL SATISFACTORY RESULTS ARE

3. DRAINAGE AND VENT PIPING TEST: a. TEST DRAINAGE AND VENT SYSTEM ACCORDING TO PROCEDURES

OF AUTHORITY HAVING JURISDICTION.

END OF SECTION

SECTION 154400 - PLUMBING FIXTURES

PART 1 GENERAL 1. PROVIDE PLUMBING FIXTURES AND TRIM, FITTINGS, OTHER COMPONENTS AND SUPPORTS AS SPECIFIED ON THE DRAWINGS IN THE

PLUMBING FIXTURE SCHEDULE. 2. FAUCETS: UNLESS OTHERWISE SPECIFIED, PROVIDE FAUCETS THAT ARE CAST BRASS WITH POLISHED CHROME-PLATED FINISH.

a. WALL HUNG LAVATORIES AND SINKS

3. FURNISH WALL CARRIERS FOR THE FOLLOWING FIXTURES:

1. ORDER PRODUCTS AS INDICATED ON DRAWINGS. 2. INSPECT EACH INSTALLED FIXTURE FOR DAMAGE. REPLACE DAMAGED FIXTURES AND COMPONENTS. 3. SUBMIT SHOP DRAWINGS TO DESIGNER FOR SUBSTITUTION APPROVAL.

PART 3 EXECUTION 1. OPERATE AND ADJUST FAUCETS AND CONTROLS. REPLACE DAMAGED AND MALFUNCTIONING FIXTURES, FITTINGS, AND CONTROLS. 2. ADJUST WATER PRESSURE AT FAUCETS, AND FLUSHOMETERS HAVING CONTROLS, TO PROVIDE PROPER FLOW AND STREAM.

> 3. REPLACE WASHERS OF LEAKING AND DRIPPING FAUCETS AND STOPS. 4. CLEAN FIXTURES, FITTINGS, AND SPOUT AND DRAIN STRAINERS WITH MANUFACTURERS' RECOMMENDED CLEANING METHODS AND MATERIALS.

5. PROVIDE PROTECTIVE COVERING FOR INSTALLED FIXTURES AND 6. DO NOT ALLOW USE OF FIXTURES AS TEMPORARY FACILITIES.

END OF SECTION

SECTION 154600 - PLUMBING EQUIPMENT PART 1 GENERAL

A. THIS SECTION INCLUDES DOMESTIC WATER HEATERS 1. TANKLESS RACK SYSTEM WALL MOUNTED GAS WATER HEATER. 2. SMALL ELECTRIC DOMESTIC WATER HEATER.

PART 2 PRODUCTS A. TANKLESS RACK SYSTEM: NAVIEN MODEL NPE240A 1. PROVIDE TANKLESS RACK SYSTEM OF SIZE, FLOW RATE AND

> TEMPERATURE RISE AS SPECIFIED ON THE DRAWINGS. 2. TO BE CONSTRUCTED OF MARINE GRADE POWDER COATED ALUMINUM. 3. WATER AND GAS PIPING MANIFOLD ASSEMBLED AT MANUFATURER'S FACTORY AND DELIVERED TO THE JOBSITE SUCH THAT ONLY FINAL CONNECTIONS ARE REQUIRED ONSITE.

4. UNIT'S WATER TRUNK LINES ARE CONSTRUCTED OF TWO (2) 2-1/2" DIAMETER RIGID COPPER. UNIT'S GAS LINE IS 1-1/4" - 1-1/2" DIA NPT POWDER COATED SCHEDULE 40 STEEL. SPECIFY SIZE WHEN ORDERING. 5. CONCENTRIC VENTING SYSTEM IS PROVIDED BY THE MANUFACTURER AND SHIPED LOOSE TO BE INSTALLED BY THE CONTRACTOR ON SITE.

SPECIFY LENGTH WHEN ORDERING 6. APPROVED ALTERNATE MANUFACTURERS

6.1. RINNAI MODEL: C199i 6.2. AO SMITH MODEL: ATI-CRS2WN-N 6.3. STATE MODEL: GTS-CRS-2WM-MI

B. INSTA HOT WATER HEATER 1. STORES WITH ONLY PET WASH PROVIDE TANKLESS WATER HEATER BELOW LAVATORY IN RESTROOMS. PART 3 EXECUTION - NOT USED

END OF SECTION

END OF SECTION

SECTION 154900 - NATURAL GAS SYSTEMS

PART 1 GENERAL 1. FURNISH AND INSTALL GAS PIPING AS SHOWN ON DRAWINGS, AND IN COMPLIANCE WITH NFPA 54.

2. PURCHASE GAS METER (IF REQUIRED) IN COMPLIANCE WITH GAS COMPANY'S STANDARDS. LOCATE AS SHOWN ON DWGS. PART 2 PRODUCTS

1. PIPING SHALL BE ASTM A53, SCHEDULE 40 BLACK STEEL PIPE. PROVIDE THREADED PIPE FOR 2" AND UNDER PIPING, PROVIDE PLAIN END PIPE FOR 2-1/2" AND OVER PIPING. 2. FITTINGS SHALL BE 150# MALLEABLE IRON FOR 2" AND UNDER. FITTINGS

SHALL BE ASTM A-234 BUTT WELD FOR 2-1/2" AND OVER. 3. USE AN APPROVED PIPE DOPE AT CONNECTIONS. 4. PROVIDE A DRIP LEG, GAS COCK, AND UNION WITHIN 72 INCHES OF EACH

CONNECTION TO EQUIPMENT. B. VALVES - SEE SECTION 150500

PART 3 EXECUTION 1. COMPLY WITH NFPA 54 "NATIONAL FUEL GAS CODE" FOR GAS PIPING MATERIALS AND COMPONENTS, INSTALLATIONS, AND INSPECTION

TESTING AND PURGING 2. LISTING AND LABELING: PROVIDE EQUIPMENT AND ACCESSORIES THAT ARE LISTED AND LABELED. A. FIELD QUALITY CONTROL

1. INSPECT, LEAK TEST, AND PURGE NATURAL GAS SYSTEMS ACCORDING TO LOCAL GAS COMPANY STANDARDS. 2. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS, AND RETEST

3. REPORT TEST RESULTS PROMPTLY AND IN WRITING TO THE ARCHITECT AND THE AUTHORITY HAVING JURISDICTION. 4. VERIFY CAPACITIES AND PRESSURE RATINGS OF GAS METERS,

SYSTEM UNTIL SATISFACTORY RESULTS ARE OBTAINED.

REGULATORS, VALVES, AND SPECIALTIES. 5. VERIFY CORRECT PRESSURE SETTINGS FOR PRESSURE REGULATORS. 6. VERIFY THAT SPECIFIED PIPING TESTS ARE COMPLETE.

7. INSTALL SHUT-OFF VALVE, UPSTREAM FROM GAS METER, OUTSIDE BUILDING AT GAS SERVICE ENTRANCE.

SECTION 156000 - ROOFTOP HEATING AND COOLING UNITS PART 1 GENERAL

1. INSTALL ROOFTOP HEATING AND COOLING UNITS AS SCHEDULED ON THE DRAWINGS. UNITS SHALL BE RATED BY ARI STANDARD 240 FOR CAPACITY AND ARI STANDARD 270 FOR SOUND. UNITS SHALL BE DESIGNED, MANUFACTURED AND TESTED IN ACCORDANCE WITH UL REQUIREMENTS AND HAVE THE UL LABEL. UNITS SHALL CARRY A 5-YEAR WARRANTY ON COMPRESSORS, A 10-YEAR WARRANTY ON HEAT EXCHANGERS, AND A 1-YEAR WARRANTY ON ALL OTHER PARTS.

PART 2 PRODUCTS 1. EQUIPMENT SHALL BE YORK MANUFACTURED BY JOHNSON CONTROLS -NO EXCEPTIONS. UNITS SHALL BE COMPLETELY FACTORY ASSEMBLED AND TESTED. UNITS SHALL INCLUDE THE FOLLOWING: CONDENSER FANS, COILS AND MOTOR, INTERCONNECTING WIRING AND CONTROL PANEL, FILTER SECTION, COMPRESSORS AND COMPLETE REFRIGERATION SYSTEM, CENTRIFUGAL EVAPORATOR FAN AND MOTOR, GAS-FIRED FURNACE SECTION, AND AUTOMATIC CONTROLS AS SCHEDULED ON

2. FACTORY-INSTALLED OPTIONS SHALL INCLUDE INTELLISPEED VARIABLE FREQUENCY DRIVE (VFD), INTELLISPEED CONTROL OF THE VFD BASED ON STAGES OF COOLING (PROVIDES SINGLE ZONE VAV FAN OPERATION AS DEFINED BY ASHRAE 90.1 SECTION 6.4.3.10), DRY BULB LOW LEAK ECONOMIZER W/BAROMETRIC RELIEF AND WITH ECONOMIZER FAULT DETECTION & DIAGNOSTIC (MEETS ASHRAE 90.1-2013, IECC 2015, CALIFORNIA TITLE 24, AMCA 511), 3 HP HIGH STATIC BELT DRIVE BLOWER, STANDARD 2" THROWAWAY FILTERS. SIMPLICITY® SE CONTROLLER INCLUDING DISCHARGE AIR, RETURN AIR, AND OUTDOOR AIR TEMPERATURE SENSORS, POWERED CONVENIENCE OUTLET (110 VAC / 15 AMP), HACR CIRCUIT BREAKER/DISCONNECT, RETURN AIR SMOKE DETECTOR (BOTTOM RETURN ONLY), PHASE MONITOR, MICRO-CHANNEL "ALL-ALUMINUM" CONDENSER COIL, COPPER TUBE/ALUMINUM FIN EVAPORATOR COIL, AND COMPOSITE DRAIN PAN.

3. FIELD-INSTALLED ACCESSORIES SHALL INCLUDE 14" HIGH ROOF CURB,

CO2 SPACE/WALL MOUNT SENSOR, AND YORK PROGRAMMABLE

PART 3 EXECUTION

END OF SECTION

1. INSTALL UNITS ON ROOF CURBS WITH 3/4" X 1-3/4" WIDE GASKETING MATERIAL SUPPLIED BY UNIT MANUFACTURER.

SECTION 158000 - POWER VENTILATORS

PART 1 GENERAL 1. INSTALL YORK (PENNBARRY) VENTILATORS AS DESCRIBED IN CONTRACT DRAWINGS.

PART 2 PRODUCTS 1. AS SCHEDULED ON DRAWINGS. OTHER APPROVED MANUFACTURERS INCLUDE BROAN, CARNES, GREENHECK, AND PENN.

2. CEILING MOUNTED EXHAUST FANS SHALL BE ACOUSTICALLY INSULATED WITH A SOUND LEVEL RATING OF 4.6 SONES MAXIMUM. PROVIDE EXHAUST GRILLE, SHATTERPROOF BACK DRAFT DAMPER, ROOF CAP AND RUBBER - IN SHEAR VIBRATION ISOLATORS. PART 3 EXECUTION

1. INSTALL FANS LEVEL AND PLUMB, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. SECURE UNITS TO STRUCTURE OR CURB

2. CHECK EXHAUST FANS FOR ANYTHING THAT WILL AFFECT ITS OPERATION AND TAKE CORRECTIVE ACTION BEFORE START-UP. END OF SECTION

SECTION 159000 - METAL DUCTWORK PART 1 GENERAL 1. FURNISH AND INSTALL RECTANGULAR AND ROUND METAL DUCTS AND

PLENUMS FOR HVAC SYSTEMS PER THE CONTRACT DOCUMENTS. 2. FURNISH AND INSTALL DUCT LINER IN ALL RETURN AIR DUCTWORK.

MAINTAIN AIR WAY DIMENSIONS ON DRAWINGS. 3. COMPLY WITH NFPA 90A, "STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEM." PART 2 PRODUCTS

1. FABRICATE DUCTS OF LOCK FORMING QUALITY, ASTM A 527, COATING DESIGNATION G90, IN CONFORMANCE WITH ALL "SMACNA" STANDARDS. PROVIDE MILL PHOSPHATIZED FINISH FOR EXPOSED SURFACES OF DUCTS EXPOSED TO VIEW. SEAL JOINTS AND SEAMS WITH UNITED DUCT SEAL OR EQUAL

2. SEE SECTION 152500 FOR DUCT LINER SPECIFICATION. 3. VOLUME DAMPERS IN MAIN AND BRANCH DUCTS SHALL BE FACTORY FABRICATED MULTIPLE OPPOSED BLADE DESIGN WITH STANDARD LEAKAGE RATING, LOCKING QUADRANT AS MANUFACTURED BY AIR CONTROL PRODUCTS TCD-OB OR EQUAL.

4. FIRE DAMPERS SHALL BE "RUSKIN" IBD2 TYPE B, 165°F FUSIBLE LINK, 1 1/2" HOUR RATED, UNLESS OTHERWISE NOTED ON THE DRAWINGS OR AS REQUIRED BY LOCAL BUILDING CODE. REGULATIONS. 5. DUCT HANGERS SHALL BE 1" X 18 GA. GALV. STEEL STRAPS SPACED NOT

MORE THAN 8 FT. APART. 6. PROVIDE TURNING VANES IN ALL S.A. AND R.A. ELBOWS. TURNING VANES SHALL BE SINGLE BLADE VANES WITH TRAILING EDGE, 1-1/4" WIDE VANE 7. FLEXIBLE DUCTS SHALL COMPLY WITH U.L. 181, CLASS I, FACTORY-

FABRICATED, INSULATED ROUND DUCT WITH AN OUTER GLASS-REINFORCED SILVER MYLAR JACKET ENCLOSING 1-1/2" THICK GLASS FIBER INSULATION AROUND A CONTINUOUS INNER LINER. REINFORCEMENT SHALL BE A STEEL-WIRE HELIX ENCAPSULATED IN THE POLYETHYLENE FILM INNER LINER.

8. MAXIMUM FLEXIBLE DUCT RUN TO BE 5'-0".

1. CONSTRUCT AND INSTALL EACH DUCT SYSTEM FOR THE SPECIFIC DUCT PRESSURE CLASSIFICATION INDICATED PER SMACNA AND LOCAL CODE. INSTALL DUCTS CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS, AND OTHER PERMANENT ELEMENTS OF THE BUILDING. 2. ADJUST VOLUME CONTROL DAMPERS AS REQUIRED BY THE TESTING

AND BALANCING PROCEDURES. VACUUM DUCT SYSTEMS PRIOR TO FINAL ACCEPTANCE. 3. ALL SUPPORTS FOR FLEXIBLE DUCT SHALL INCORPORATE A 1" WIDE BAND CLAMP. SUPPORT SYSTEM MUST NOT DAMAGE NEW DUCT OR CAUSE OUT OF ROUND SHAPE. MAXIMUM LENGTH OF FLEXIBLE DUCTS SHALL BE 5'-0"

4. INSTALL ONLY RIGID METAL DUCTWORK WHERE IT IS EXPOSED TO VIEW.

END OF SECTION SECTION 159500 - AIR OUTLETS AND INLETS

PART 1 GENERAL 1. INSTALL TUTTLE AND BAILEY CEILING AIR DIFFUSERS AND GRILLES AS DESCRIBED IN CONTRACT DOCUMENTS. AIR OUTLETS AND INLETS

SHALL COMPLY WITH ARI 650 STANDARD. PART 2 PRODUCTS 1. AS SCHEDULED ON DRAWINGS. OTHER APPROVED MANUFACTURER'S INCLUDE: ANEMOSTAT, CARNES, KRUEGER, TUTTLE AND BAILEY.

2. ALL DIFFUSERS SHALL HAVE BORDER STYLES COMPATIBLE WITH ADJACENT CEILING SYSTEMS. 3. REGISTERS, DIFFUSERS, AND GRILLES SHALL HAVE A SEMI-GLOSS WHITE ENAMEL FACTORY FINISH UNLESS NOTED OTHERWISE.

PART 3 EXECUTION 1. INSTALL AIR OUTLETS AND INLETS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. COORDINATE LOCATION OF CEILING DIFFUSERS AND GRILLES WITH THE REFLECTED CEILING PLAN.

ANCHOR SECURELY INTO OPENINGS. 2. CONTRACTOR TO TEMPORARILY INSTALL MERV-8 FILTER ON RETURN AIR INLET DURING CONSTRUCTION PERIOD. FILTER SHALL BE CHANGED WEEKLY DURING CONSTRUCTION. END OF SECTION

SECTION 159900 - TESTING, ADJUSTING, AND BALANCING

PART 1 GENERAL

 A. GENERAL 1. FURNISH TESTING, BALANCING, AND ADJUSTING OF HEATING, COOLING AND EXHAUST SYSTEMS. TESTING AGENCY SHALL HAVE FIVE YEARS

EXPERIENCE WITH PROJECTS OF SIMILAR SIZE AND SCOPE. 2. SUBMIT FOUR COPIES OF COMPLETE TEST DATA FOR EVALUATION AND APPROVAL. SUBMIT FORMS PREPARED BY AABC. 3. TEST, ADJUST, AND BALANCE THE AIR CONDITIONING SYSTEM DURING

THE SUMMER SEASON AND HEATING SYSTEM DURING THE WINTER 4. HVAC CONTRACTOR TO PERFORM COMPLETE TEST AND BALANCE ON NEW OR UPDATED HVAC SYSTEM AND SUBMIT TO GC AND BUILDING

OFFICIAL IF REQUIRED. PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION 1. PERFORM TESTING AND BALANCING IN COMPLETE ACCORDANCE WITH THE ASSOCIATED AIR BALANCE COUNCIL "STANDARDS FOR FIELD MEASUREMENTS AND INSTRUCTIONS."

> 2. INSTRUMENTS USED BY AGENCY SHALL BE ACCURATELY CALIBRATED AND MAINTAINED IN GOOD WORKING ORDER. 3. AIR TESTING AND BALANCING PROCEDURE

a. CHECK FILTERS. DO NOT PROCEED WITHOUT CORRECT, CLEAN b. TEST AND ADJUST BLOWER RPM TO DESIGN REQUIREMENTS.

CFM, STATIC PRESSURES, SUCTION AND DISCHARGE. e. TEST AND RECORD ENTERING AND LEAVING AIR TEMPERATURES. BOTH HEATING AND COOLING. f. TEST AND ADJUST EACH DIFFUSER, GRILLE, AND REGISTER TO WITHIN 10% OF DESIGN REQUIREMENTS. IDENTIFY EACH DIFFUSER,

GRILLE, AND REGISTER BY MANUFACTURER, TYPE, SIZE, AND

d. TEST AND RECORD SUPPLY AIR, RETURN AIR AND EXHAUST AIR

COMPARISON BETWEEN REQUIRED CFM AND TESTED. B. REPORT IS PART OF THE REQUIRED CLOSEOUT PACKAGE AND MUST BE POSTED TO NATIONAL ACCOUNT VENDOR.

2. QUALITY STANDARD: NFPA 13 AND NFPA 70

c. TEST AND RECORD MOTOR FULL LOAD AMPS.

SECTION 159999 - FIRE SUPPRESSION

END OF SECTION

PART 1 GENERAL 1. FIRE PROTECTION DESIGN, CONSTRUCTION DRAWINGS HYDRONIC CALCULATIONS AND FLOW RATES SHALL BE PREPARED BY A CERTIFIED FIRE PROTECTION ENGINEER.

3. OBSERVE ALL LANDLORD FIRE PROTECTION REQUIREMENTS. LANDLORD REQUIREMENTS SHALL SUPERCEDE ANY LISTED IN THIS SPECIFICATION.

1. PIPING BETWEEN FIRE-DEPARTMENT CONNECTION AND CHECK VALVES: STANDARD-WEIGHT STEEL PIPE WITH GROOVED-END OR THREADED END

2. STANDARD-PRESSURE, WET-PIPE SPRINKLER SYSTEM NPS 2 AND SMALLER: STANDARD-WEIGHT OR SCHEDULE 30, BLACK-STEEL PIPE WITH

THREADED OR GROOVED-END FITTINGS. 3. STANDARD-PRESSURE, WET-PIPE SPRINKLER SYSTEM NPS 2-1/2 AND LARGER: STANDARD-WEIGHT OR SCHEDULE 30, BLACK-STEEL PIPE WITH WELDED OR GROOVED-END FITTINGS

4. STANDARD-PRESSURE, WET-PIPE SPRINKLER SYSTEM NPS 2-1/2 AND LARGER: STANDARD-WEIGHT OR SCHEDULE 10, BLACK-STEEL PIPE WITH WELDED FITTINGS

SPRINKLER TYPES: 5.1. ROOMS WITHOUT CEILINGS: UPRIGHT SPRINKLERS

5.2. ROOMS WITH SUSPENDED OR HARD-LID CEILINGS: PENDENT

5.3. SPRINKLER SHALL BE APPROVED AUTOMATIC SPRAY SPRINKLERS TO COMPLY WITH NFPA 13. SPRINKLERS SHALL BE OF OPERATING TEMPERATURE AS REQUIRED BY NFPA AND THE FIRE MARSHALL'S OFFICE. PROVIDE ANTI-FREEZE LOOPS AT TOWERS. PROVIDE ANTI-FREEZE LOOP AT ENTRY VESTIBULE IN AREAS NORTH OF THE MASON DIXON LINE. VERIFY ALL FIRE MARSHALL REGULATIONS. PROVIDE APPROVED METAL CABINET WITH NUMBER OF REPLACEMENT HEADS OF VARIOUS TYPES AND QUANTITIES AS

PART 3 EXECUTION

REQUIRED BY INSURING AGENCY.

1. INSTALL PIPING FREE OF SAGS AND BENDS 2. INSTALL FITTINGS FOR CHANGES IN DIRECTION AND BRANCH

CONNECTIONS. 3. INSTALL SLEEVES FOR PIPES PASSING THROUGH CONCRETE AND

MASONRY WALLS AND FLOORS. 4. EXTERIOR WALL, PIPE PENETRATIONS: MECHANICAL SLEEVE SEALS

INSTALLED IN STEEL OR CAST-IRON PIPES FOR WALL SLEEVES. 5. INSTALL EQUIPMENT TO ALLOW MAXIMUM POSSIBLE HEADROOM UNLESS SPECIFIC MOUNTING HEIGHTS ARE INDICATED.

TO OTHER BUILDING SYSTEMS AND COMPONENTS, UNLESS OTHERWISE 7. INSTALL CHECK VALVES WHERE INDICATED ON PLANS.

a. TEST SYSTEM UNDER NORMAL OPERATION CONDITIONS AND DEMONSTRATE THAT PARTS ARE FUNCTIONING PROPERLY. CONDUCT TESTS AND SECURE FINAL CERTIFICATES OF APPROVAL. DELIVER COPIES OF CERTIFICATES TO ARCHITECT/ENGINEER AND LANDLORD.

b. TEST SHALL INCLUDE BY NOT LIMITED TO THE FOLLOWING TWO-HOUR, 200 POUND HYDROSTATIC TEST ABOVE GROUND c. INCLUDE COST AND RUN SUCH TEST AS MAY BE NECESSARY TO

CAPACITIES SPECIFIED UPON REQUEST. d. NOTIFY ARCHITECT/ENGINEER TWENTY-FOUR HOURS BEFORE

DEMONSTRATE THAT EQUIPMENT EQUALS OR EXCEEDS

END OF SECTION

TESTING.

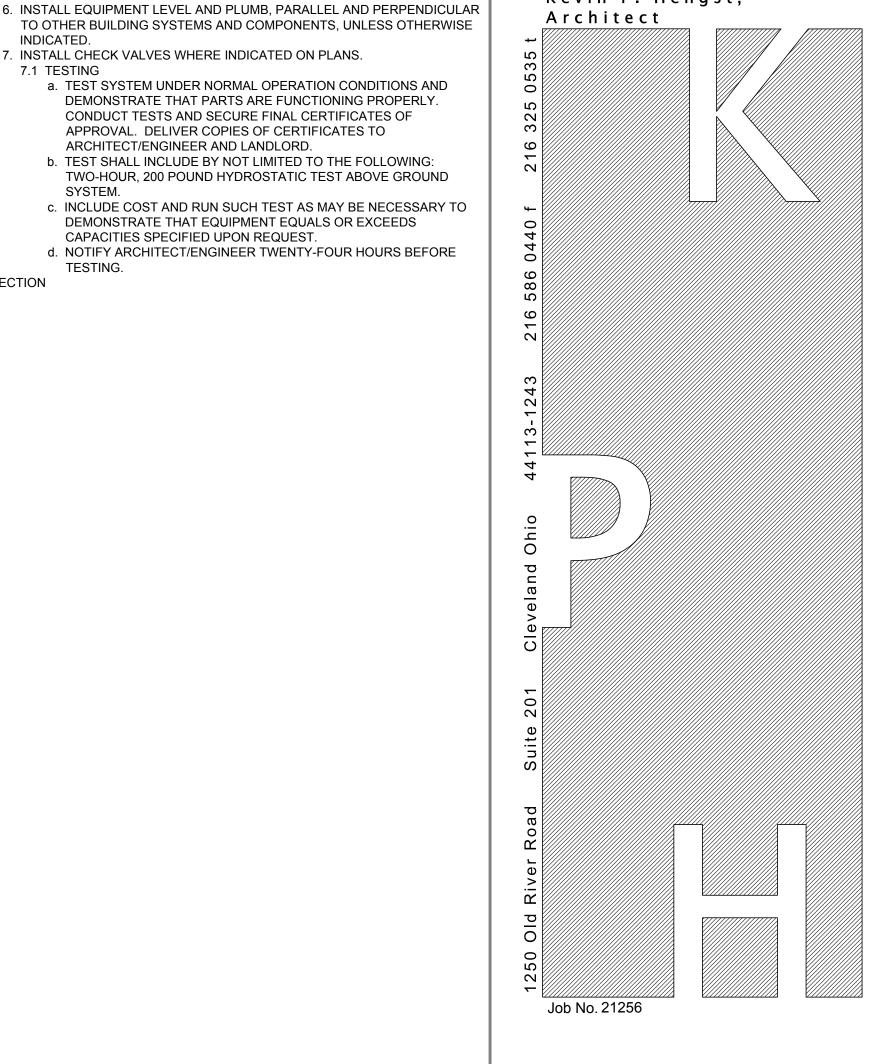
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Addendum A

05/28/2021

08/06/2021





PET SUPPLIES PLUS Store #4175 Stony Point, NY Interior Renovation

Stony Point, NY 10980

22 Holt Dr. Suite 107,

Mechanical and Plumbing Specifications

MPS1.0