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The Construction Documents shall consist of all drawings, specifications, surveys, soils reports, schedules and other information...

- 2) SUPPLY DIFFUSERS: AS INDICATED ON DRAWINGS. 3) RETURN AIR REGISTERS; AS INDICATED ON DRAWINGS. D) DUCT INSULATION 1) INSULATE ALL SUPPLY, MAKE-UP AIR AND RETURN AIR DUCTS WITH FOIL FACED BLANKET, SEE PLANS FOR ADDITIONAL INFORMATION. 2) MAXIMUM 25 FLAME SPREAD 50 SMOKE DEVELOPED. 3) GENERAL: A. INSTALL ALL EQUIPMENT WHERE INDICATED ON THE APPROVED CONTRACT DRAWINGS. B. AVOID INTERFERENCE WITH STRUCTURE AND THE WORK OF OTHER TRADES; DO NOT CUT INTO LOAD CARRYING MEMBERS WITHOUT THE SPECIFIC APPROVAL OF THE ARCHITECT. C. TEMPERATURE CONTROL SYSTEMS SHALL BE AS SHOWN ON THE DRAWINGS. E) ACCEPTANCE 1) THE SYSTEM SHALL BE CONSIDERED FOR ACCEPTANCE UNTIL THE MECHANICAL SUBCONTRACTOR HAS COMPLETE WORK AND DEMONSTRATED TO THE REPRESENTATIVE OF THE OWNER, PROPER OPERATION OF THE SYSTEM AND STRICT COMPLIANCE WITH THE SPECIFICATIONS. PARTICULARLY IN REFERENCE TO THE FOLLOWING ARTICLES OF THESE SPECIFICATIONS. A. TESTING B. CLEANING C. INSTRUCTIONS AND OPERATING MANUALS D. TRAINING OF OPERATING PERSONNEL E. AS-BUILT DRAWINGS F. GUARANTEE CERTIFICATES G. START UP AND TEST DOCUMENT F) AIR CONDITIONING UNIT START UP AND TEST 1) ALL AIR CONDITIONING EQUIPMENT SHALL BE STARTED AND CHECKED BY AN AUTHORIZED FACTORY SERVICE REPRESENTATIVE. ANY PROBLEMS ARISING WITH THE EQUIPMENT SHALL BE CORRECTED BY THE MANUFACTURER. THE MANUFACTURER SHALL PROVIDE A CHECK LIST OR REPORT ON THE OPERATION OF THE EQUIPMENT WHICH SHALL BE FORWARDED TO THE ARCHITECT. G) GUARANTEE 1) THE GUARANTEE PROVISION OF THIS REQUIRES PROMPT REPLACEMENT OF ALL DEFECTIVE WORKMANSHIP AND MATERIALS OCCURRING WITHIN ONE YEAR OF JOB ACCEPTANCE. THIS INCLUDES ALL WORK REQUIRED TO REMOVE AND REPLACE THE DEFECTIVE ITEM AND TO MAKE ALL NECESSARY ADJUSTMENTS TO RESTORE THE ENTIRE INSTALLATION TO ITS ORIGINAL SPECIFIED OPERATING CONDITION AND FINISH AT THE TIME OF ACCEPTANCE. 10 TESTING, ADJUSTING AND BALANCING A) THE TESTING, ADJUSTING AND BALANCING OF THE AIR CONDITIONING AND HOOD SYSTEM WILL BE PROVIDED BY THE OWNER. THE AIR CONDITIONING CONTRACTOR SHALL PROVIDE AND COORDINATE THE SERVICES OF QUALIFIED RESPONSIBLE MECHANICS AND OTHER PERSONNEL AS REQUIRED TO CORRECT, REPAIR OR REPLACE ALL DEFICIENT ITEMS OR CONDITIONS FOUND DURING THE TESTING AND BALANCING PERIOD.

- DIVISION 16 - ELECTRICAL SECTION 16050 - GENERAL NOTES AND SPECIFICATIONS 1. GENERAL A) CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS, LABOR, TOOLS, TRANSPORTATION, SUPERINTENDENCE AND RELATED ITEMS TO INSTALL A COMPLETE AND FULLY OPERATIVE INTERIOR AND EXTERIOR ELECTRICAL SYSTEM AS SPECIFIED HEREIN, SHOWN ON THE DRAWINGS AND ELSEWHERE REQUIRED. B) ALL OUTLETS, FIXTURES AND EQUIPMENTS SHALL BE FULLY CONNECTED TO PROPER SOURCES OF POWER SUPPLY AND LEFT READY TO USE. C) PROVIDE ALL EXCAVATION AND TAMP-BACK-FILL AS REQUIRED TO COMPLETE WORK. CORRECT ANY SETTING DURING GUARANTEE PERIOD TO OWNER'S SATISFACTION. D) PROVIDE ALL NECESSARY CUTTING AND PATCHING AS REQUIRED TO COMPLETE WORK. PATCHING SHALL BE DONE BY SKILLED AT THEIR WORK. ALL OPENINGS SHALL BE FILLED AND PATCHED TO CONFORM WITH FIRE REGULATIONS. E) COOPERATE WITH OTHER TRADES: MAKE KNOWN TO OTHER TRADES ARRANGEMENT OF ELECTRICAL WORK AND EXAMINE WORK OF OTHER TRADES TO AVOID CONFLICTS. EXAMINE DRAWINGS OF OTHER TRADES TO DETERMINE EXACT EQUIPMENT LOCATIONS. EXAMINE MANUFACTURER'S SHOP DRAWINGS TO DETERMINE ROUGHING-IN REQUIREMENTS. F) PERMITS-FEES-CODES: PAY ALL COST FOR PERMITS, FEES AND INSPECTIONS REQUIRED BY AUTHORIZED AGENCIES HAVING JURISDICTION OVER ELECTRICAL WORK. ELECTRICAL SYSTEM SHALL CONFORM TO REQUIREMENTS OF NATIONAL, STATE AND LOCAL ELECTRICAL CODES, LOCAL AUTHORITIES AND UTILITY COMPANY. G) EQUIPMENT MANUFACTURERS LISTED ARE TO INDICATE PRODUCT QUALITY; OTHER MANUFACTURERS OF EQUAL QUALITY WILL BE ACCEPTABLE UPON WRITTEN APPROVAL OF OWNER. ALL ELECTRICAL MATERIALS SHALL BE NEW, LISTED AND LABELED BY UL AND SHALL CONFORM TO INDUSTRY STANDARDS, PARTICULARLY NEMA, NFPA, N.E.C. & OTHERS. H) PROVIDE TYPEWRITTEN DIRECTIONS IN PANELBOARDS WITH CLEAR PLASTIC SHIELDS. PROVIDE ENGRAVED PLASTIC LOAD NAMEPLATES ON ALL DISCONNECT SWITCHES, MOTOR STARTERS AND CONTROL DEVICES. I) TEST: ENTIRE ELECTRICAL SYSTEM SHALL BE FULLY TESTED AND CORRECTED OF ANY SHORT CIRCUITS, OPEN GROUNDS, FAULTY WIRING AND INCORRECT CONNECTIONS. J) GUARANTEE: COMPLETE ELECTRICAL SYSTEM INCLUDING ALL MATERIALS, EQUIPMENT AND LABOR SHALL BE GUARANTEE FOR A PERIOD OF ONE YEAR BEGINNING WITH DATE OF ACCEPTANCE OF BUILDING BY OWNER. K) EACH BIDDER SHALL BEFORE SUBMITTING A PROPOSAL, VISIT AND EXAMINE THE SITE IN ACCORDANCE WITH DIVISION 1 TO SATISFY HIMSELF AS TO MATERIALS AND SCOPE OF THE NEW CONSTRUCTION AND ANY DIFFICULTY ATTENDING THE PERFORMANCE OF THE WORK. L) THE SUBMISSION OF A PROPOSAL WILL BE CONSIDERED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. CLAIMS MADE SUBSEQUENT TO THE TIME OF SUBMISSION OF THE PROPOSAL FOR LABOR, EQUIPMENT AND MATERIAL REQUIRED FOR DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAS AN EXAMINATION BEEN MADE, WILL NOT BE RECOGNIZED. M) WORKMANSHIP: ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN NEAT, WORKMANLIKE MANNER. UNSIGHTLY INSTALLATIONS SHALL BE REMOVED OR REWORKED AT NO ADDITIONAL EXPENSE TO THE OWNER.

- 2) ALL HVAC DUCTS, DAMPERS, GRILLES, REGISTERS AND DIFFUSERS. 4) HVAC CONTROLS. B) GAS CONNECTIONS (IF REQUIRED): GAS WILL BE BROUGHT TO HEATING, VENTILATING AND AIR CONDITIONING AND FINAL TIE-IN TO HVAC BY PLUMBING CONTRACTOR. 2. INTENT OF DRAWINGS A) THE DRAWINGS ARE DIAGRAMMATIC TO THE EXTENT THAT THEY DO NOT INDICATE OFFSETS, BENDS, SPECIAL FITTINGS AND EXACT LOCATIONS. B) PIPING, DUCTWORK, APPARATUS AND EQUIPMENT SHALL BE INSTALLED TO AVOID OBSTRUCTIONS, PRESERVE HEADROOM, KEEP OPENINGS AND PASSAGEWAYS CLEAR AND MAKE ALL OPERATING EQUIPMENT ACCESSIBLE FOR MAINTENANCE. C) GOVERNING CODES AND STANDARDS: 1) INSTALL ALL WORK IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE STANDARDS OF SAFETY, ADOPTED AND APPROVED BY THE INSURANCE UNDERWRITERS AND THE LATEST STANDARDS RECOGNIZED BY ASHRAE AND SMACNA AND IN ACCORDANCE WITH LOCAL CODE. 2) IN CASE OF CONFLICT BETWEEN SAID CODES AND THE DRAWINGS, THE CODES SHALL GOVERN IN ALL CASES; HOWEVER, NOTIFY OWNER, BEFORE MAKING SUCH CHANGES. 3. EXAMINATION OF DRAWINGS AND SITE A) BEFORE COMMENCING THE WORK, THE CONTRACTOR SHALL CAREFULLY STUDY THE DRAWINGS, SPECIFICATIONS AND SITE. HE SHALL DEEMINATELY DETERMINE IN ADVANCE THE METHODS OF INSTALLING AND CONNECTING THE APPARATUS. THE MEANS FOR GETTING THE EQUIPMENT INTO PLACE, AND SHALL MAKE HIMSELF FAMILIAR WITH ALL OF THE REQUIREMENTS OF THE CONTRACT. EQUIPMENT SHALL PHYSICALLY FIT THE AREA ALLOCATED WITH AMPLE ACCESS FOR SERVICE. B) THE CONTRACTOR SHALL REFER ANY DISCREPANCIES TO THE ARCHITECT FOR DECISION BEFORE PROCEEDING WITH THE WORK. 4. SUBMITTALS A) MATERIALS LIST: THE CONTRACTOR SHALL SUBMIT, AT HIS EXPENSES, THREE (3) COPIES OF EQUIPMENT BROCHURES IN INDEX FORM WITHIN FIFTEEN (15) DAYS AFTER CONTRACT IS SIGNED. ALL EQUIPMENT AND MATERIAL SUBMITTALS SHALL BE SUBMITTED AT ONE TIME. THE DRAWINGS SUBMITTED SHALL BEAR THE SIGNATURE OF APPROVAL OF THE CONTRACTOR AS EVIDENCE THAT THE DRAWINGS HAVE BEEN CHECKED BY THE CONTRACTOR AND COMPLY WITH THE REQUIREMENTS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS. 5. GUARANTEE A) FURNISH WRITTEN, CERTIFIED GUARANTEE, IN ACCEPTABLE FORM, TO THE OWNER, AGAINST DEFECTIVE WORKMANSHIP, MATERIALS, AND OPERATING EQUIPMENT; FURTHER, GUARANTEE TO REBALANCE AND ADJUST ENTIRE SYSTEM FOR ANY PART THEREOF, AS REQUIRED FOR PERFECT OPERATION FOR A PERIOD OF AT LEAST ONE (1) YEAR AFTER ACCEPTANCE, INCLUDING COST OF REPLACEMENT CHARGE. REPAIR, REPLACE AND MAKE SATISFACTORILY OPERATIVE ANY AND ALL DEFECTIVE ITEMS AND MAKE OWNER FREE FROM ANY COST AND LIABILITY IN CONNECTION THEREWITH. FOR THE TERMS OF GUARANTEE, THE MANUFACTURER SHALL PROVIDE A LIST OF HIS UNIT COMPRESSORS FOR A PERIOD OF FIVE (5) YEARS. 6. COORDINATION WITH OTHER TRADES A) THE WORK UNDER THIS SECTION SHALL BE COORDINATED WITH OTHER TRADES TO MAINTAIN A RAPID AND SMOOTH CONSTRUCTION PROGRESS WITH A MINIMUM OF INTERFERENCE. 7. FINISHING A) APPLY A COAT OF ZINC CHROMATE, OR RUSTOLEUM TO BARE METAL SURFACES OF SUPPORTS, ETC. COLOR TO MATCH UNITS' COLOR OR AS DIRECTED BY ARCHITECT OR OWNER. 8. CLEAN UP A) ALL EQUIPMENT AND EXPOSED SURFACES SHALL BE LEFT SMOOTH AND CLEAN. ALL PLATE WORK SHALL BE POLISHED AND THE ENTIRE PREMISES SHALL BE CLEANED OF UNUSED MATERIALS, RUBBISH, DEBRIS AND GREASE SPOTS. 9. PRODUCTS A) GENERAL 1) ALL EQUIPMENT SHALL BE THE CAPACITY AND TYPE SHOWN ON THE EQUIPMENT SCHEDULE ON THE DRAWINGS AND SHALL BE AS MANUFACTURED BY ONE OF THE MANUFACTURERS DESIGNATED ON THAT SCHEDULE OR SHALL BE AN EQUAL APPROVED IN ADVANCE BY THE ARCHITECT. B) SHEETMETAL WORK 1) SHEETMETAL: PRIME STEEL SHEETS, HOT DIPPED GALVANIZED OF THE FOLLOWING GAUGES: A. UP TO 12" WIDE OR DIAMETER, #26. B. 13" TO 30" WIDE OR DIAMETER, #24. C. 31" TO 60" WIDE OR DIAMETER, #22. D. PARTITIONS FORMING PLENUM OR SUCTION CHAMBERS, #18 GAUGE WITH 1 1/2" x 1 1/2" x 3/16" GALVANIZED IRON ANGLE AND RIVETS FOR SEAM CONNECTION AND STIFFING. E. EXPOSED BRANCH ROUND DUCT SHALL BE SPIRAL TYPE SIMILAR TO SEMCO "SS" 75 SINGLE WALL ROUND PIPE WITH ALL REQUIRED FITTINGS. PIPE SHALL BE 24-28 GA. 2) DUCT CONSTRUCTION: A. LONGITUDINAL JOINTS: PITTSBURGH CORNER SEAMS OR SNAP LOCK. B. TRANSVERSE JOINTS: GOVERNMENT LOCKS RIVETED AT CORNERS, CONSTRUCTED OF METAL ONE GAUGE HEAVIER THAN THAT JOINING DUCT SECTIONS. DUCTS UNDER 20" MAY BE JOINED WITH TRANSVERSE CAPSTRIPS. C. SUPPORTS: EXCEPT AS OTHERWISE SPECIFIED, ALL DUCT HANGERS SHALL BE CONSTRUCTED OF 1/2" NO. 16 GALVANIZED STRAP, SPACING NOT TO EXCEED EIGHT FOOT INTERVALS. WHERE DUCT HANGERS EXCEED SIX FEET IN LENGTH, PROVIDE ADEQUATE SWAY BRACING. ALL VERTICAL DUCTS SHALL BE SUPPORTED ON ANGLE IRON BRACKETS. D. ELBOWS: MADE FOR AN EASY FLOW OF AIR FOR MINIMUM FRICTION, INSIDE RADIUS EQUAL TO WIDTH OF DUCT. PROVIDE ELBOWS WITH APPROVED DUCT TURNS WHERE INDICATED ON PLANS OR WHERE SPACE DOES NOT PERMIT REQUIRED RADIUS. E. FLEXIBLE CONNECTION: AT ALL FANS, CONNECTIONS SHALL BE NEOPRENE COATED GLASS FIBER CLOTH ENDS WHICH ARE TO BE TURNED INTO ABUTTING ENDS OF SHEETMETAL OR ANGLE IRON FRAMES SO AS TO FORM A GASKET TO FORM AN AIR TIGHT JOINT. 3) WORKMANSHIP AND CONSTRUCTION SHALL MEET AND EXCEED THE STANDARDS AS SET FORTH BY SMACNA. C) GRILLES, REGISTERS AND DIFFUSERS 1) SIZES: AS INDICATED ON DRAWINGS.

- D) CLEANING AND PROTECTION 1) THE CONTRACTOR SHALL REMOVE FROM THE JOB SITE ALL DEBRIS AND LEFTOVER MATERIALS FOR WHICH HE IS RESPONSIBLE. CLEAN ALL FIXTURES AND EQUIPMENT AND REPAIR ANY BLEMISHES IN THE FINISH. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR REPLACING FIXTURES WHERE DAMAGE RESULTS FROM FAILURE TO PROVIDE PROTECTION DURING INSTALLATION. 2) FLUSH OUT PIPES: AFTER THE PLUMBING PIPING HAS BEEN INSTALLED, INSPECTED AND APPROVED, THE PIPES SHALL BE FLUSHED TO REMOVE ANY FOREIGN MATTER FROM THE PIPES WITH CHLORINE OR HTH SOLUTION TO SANITIZE THE NEW PIPING OR AS REQUIRED BY THE LOCAL AUTHORITIES. E) MAINTENANCE 1) ALL PARTS OF THE PLUMBING FIXTURES AND ASSOCIATED EQUIPMENT SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE GUARANTEE PERIOD. ONE MONTH AFTER FINAL ACCEPTANCE OF THE BUILDING BY THE OWNER, THE CONTRACTOR SHALL GO OVER ALL THE FIXTURES AND TEST ALL WORKING PARTS AND PUT EVERYTHING IN GOOD WORKING ORDER. ALL FIXTURES, INCLUDING TRAPS, SHALL BE THOROUGHLY CLEANED AND ALL PARTS PUT IN GOOD WORKING ORDER. SECTION 15550 - SPRINKLER SYSTEM 1. SCOPE OF WORK A) WORK INCLUDED UNDER THIS SECTION CONSISTS OF PROVIDING LABOR, MATERIALS, APPLIANCES, EQUIPMENT, TOOLS, TRANSPORTATION, SUPERINTENDENCE AND SERVICES REQUIRED TO CONSTRUCT AND INSTALL A LIMITED AREA SPRINKLER SYSTEM AS SPECIFIED, INDICATED AND ELSEWHERE REQUIRED. B) THE LIMITED SPRINKLER SYSTEM SPECIFIED HEREIN IS REQUIRED TO MEET THE LOCAL BUILDING CODE. C) REFER TO SECTION 15400, PLUMBING, FOR PIPING AND CHECK VALVES. 2. PRODUCTS A) HANGERS 1) HANGERS MUST MEET NFPA APPROVED TYPE FOR CONSTRUCTION USED. B) SPRINKLERS 1) SPRINKLERS SHALL BE APPROVED AUTOMATIC SPRAY SPRINKLERS TO COMPLY WITH NFPA 13. SPRINKLERS SHALL BE OF OPERATING TEMPERATURE AS REQUIRED BY NFPA AND THE FIRE MARSHAL'S OFFICE. PROVIDE ANTI-FREEZE LOOPS AT TOWERS. PROVIDE ANTI-FREEZE LOOP AT ENTRY VESTIBULE IN AREAS NORTH OF MASON DIXON LINE. VERIFY ALL FIRE MARSHAL REGULATIONS. PROVIDE APPROVED METAL CABINET WITH NUMBER OF REPLACEMENT HEADS OF VARIOUS TYPES AND QUANTITIES AS REQUIRED BY INSURING AGENCY. 2) SEMI-RECESSED SPRINKLERS WITH 12" DISCHARGE ORIFICE IN FINISHED AREAS WHERE SPRINKLERS ARE EXPOSED TO THE PUBLIC. 3) STANDARD CHROME PENDANT SPRINKLERS WITH SHORT ESCUTCHEON (1/2" 1/2" DISCHARGED ORIFICE IN KITCHEN & SERVICE AREAS. C) WATER FLOW INDICATOR 1) PROVIDE AN ELECTRIC WATER FLOW INDICATOR WHERE INDICATED AND/OR REQUIRED BY THE AUTHORITIES HAVING JURISDICTION. WATER FLOW INDICATOR SHALL BE PROVIDED WITH TIME DELAY MECHANISM WHICH ABSORBS FLUCTUATION CAUSED BY WATER SURGES. SWITCHES SHALL BE WIRED COMPATIBLE WITH SOLENOID VALVE INSTALLED IN DOMESTIC WATER LINE. 3. EXECUTION A) INSTALLATION 1) CONTRACTOR TO PREPARE DRAWINGS WITH THE INTENT THAT ALL LINES CLEAR OBSTRUCTIONS AS PIPES, BEAMS, LIGHTS, HANGERS AND SIMILAR ITEMS. EXAMINE BUILDING AND PLANS CONFIRMING DIMENSIONS BEFORE PIPE IS CUT, FABRICATED AND/OR INSTALLED, TO DETERMINE IF OFFSETS ARE NECESSARY. WHERE REQUIRED, OFFSETS SHALL BE MADE WITHOUT ADDITIONAL COST TO OWNER. 2) FOLLOWING GENERAL SCHEME SHALL BE EMPLOYED WHEN LOCATING SPRINKLER HEADS UNLESS RESTRICTED BY RULES AND REGULATING BODIES. 3) UNLESS OTHERWISE INDICATED, CONCEAL PIPING IN FINISHED PORTIONS OF BUILDING AND EXPOSE ELSEWHERE. CONCEAL PIPING IN FINISHINGS, PIPE SPACES, CHASES AND ABOVE SUSPENDING CEILINGS. INSTALL EXPOSED PIPING PARALLEL OR PERPENDICULAR TO WALLS. 4) LINES AT OR ABOVE CEILINGS SHALL BE HELD AS HIGH AS POSSIBLE AND BE RUN TO AVOID CONFLICTS. INCLUDE FITTINGS AND MATERIAL REQUIRED TO ACCOMPLISH THIS RESULT. 5) PROVIDE SLEEVES FOR PIPING PASSING THROUGH FLOORS, CEILINGS AND MASONRY OF CONCRETE WALLS, LOCATE, CAP AND ANCHOR SLEEVES. 6) PROVIDE LINTELS REQUIRED TO PROPERLY COMPLETE SPRINKLER INSTALLATION. 7) PROVIDE PLATES ON LINES PASSING THROUGH FLOORS, CEILING OR WALLS. 8) HANGERS SHALL BE PROPERLY SPACED AND SECURED TO BUILDING STRUCTURE TO ADEQUATE SUPPORT LINES. SUPPORT FROM SUSPENDED CEILINGS AND/OR SIMILAR CONSTRUCTION WILL NOT BE ACCEPTED. 9) DEVICES SHALL BE IN ACCORDANCE WITH RULES AND REGULATIONS OF NFPA AND INSURING AGENCY AND SHALL BEAR THEIR LABEL OF APPROVAL. 10) REDUCING BUSHINGS ARE NOT PERMITTED IN MORE THAN ONE OUTLET OF ANY TEE OR ANY TWO OUTLETS OF ANY CROSS. BUSHINGS ARE NOT PERMITTED IN ANY ELBOWS OR WHEN THE REDUCTION IN SIZE OF THE OUTLET IS NOT LESS THAN 1/2". 11) INSTALL CHECK VALVE WHERE INDICATED ON PLANS. B) TESTING 1) TEST SYSTEMS UNDER NORMAL OPERATING CONDITIONS AND DEMONSTRATE THAT PARTS ARE FUNCTIONING PROPERLY, CONDUCT TESTS AND SECURE FINAL CERTIFICATES OF APPROVAL. DELIVER COPIES OF CERTIFICATES TO ARCHITECT/ENGINEER & LANDLORD. 2) TEST SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: 3) TWO HOUR, 200 POUND HYDROSTATIC TEST ABOVEGROUND SYSTEM. 4) INCLUDE COST AND RUN SUCH TESTS AS MAY BE NECESSARY TO DEMONSTRATE THAT EQUIPMENT EQUALS OR EXCEEDS CAPACITIES SPECIFIED UPON REQUEST. 5) NOTIFY ARCHITECT/ENGINEER TWENTY-FOUR HOURS BEFORE TESTING. SECTION 15770 - HEATING, VENTILATING AND AIR CONDITIONING 1. WORK INCLUDED A) HEATING, VENTILATING AND AIR CONDITIONING WORK REQUIRED, INCLUDING HOISTING OF EQUIPMENT TO THE ROOF AND SETTING IT IN PLACE, INCLUDES, BUT IS NOT NECESSARILY LIMITED TO: 1) PACKAGE HEATING, VENTILATING AND AIR CONDITIONING UNITS. 2) ALL HVAC DUCTS, DAMPERS, GRILLES, REGISTERS AND DIFFUSERS. 4) HVAC CONTROLS.

- 4. GAS PIPING: A) UNDERGROUND GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE WITH LONG RADIUS STEEL WELDING FITTINGS. PROTECT PIPE AND FITTINGS WITH TRANTEX WRAPPING TAPE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. OTHER TYPE OF PIPE PROTECTION OF EQUIVALENT QUALITY WILL BE OPTIONAL WITH THIS CONTRACTOR. INSTALLATION OF GAS SERVICE PIPING AND MATERIAL SHALL MEET WITH LOCAL GAS COMPANY'S APPROVAL. B) GAS PIPING ABOVE GROUND SHALL BE SCHEDULE 40 BLACK STEEL WITH 125 LB. BLACK MALLEABLE IRON SCREWED FITTINGS AND SUPPORTED AT INTERVALS NOT TO EXCEED 8'-0" AND AT EACH CHANGE IN HORIZONTAL OR VERTICAL DIRECTION. GAS PIPING COMPOUND AT JOINTS SHALL BE IN COMPLIANCE WITH NFPA BULLETIN NO. 54 AND LOCAL APPLICABLE CODES AND SUITABLE FOR NATURAL GAS SERVICE. C) GAS PIPING SHALL SUPPLY HVAC UNITS, INDICATED ON DRAWINGS BY THIS CONTRACTOR. D) MOISTURE TRAPS SHALL BE INSTALLED ON EACH PIPING DROP FOR HVAC UNITS. 5) STORM DRAIN LEADER: SAME AS SOIL, WAIST & VENT PIPING. 6) INSULATION A) ALL WATER PIPES, RAIN LEADERS AND ETC., SHALL BE INSULATED. PIPING SHALL BE INSULATED TO PREVENT EXCESSIVE HEAT LOSS AND TO PREVENT CONDENSATION AND SWEATING. ALL PIPING SHALL BE INSULATED WITH AT LEAST 1/2" THICK FOAM INSULATION AS MANUFACTURED BY ARMSTRONG ARMAFLEX OR APPROVED EQUAL. AS MUCH OF THE INSULATION AS POSSIBLE SHALL BE SLIDED ON TO THE PIPING AS THE PIPING IS BEING CONNECTED IN ORDER TO AVOID CUTTING THE INSULATION. ALL BUTT ENDS AND ANY NECESSARY LONGITUDINAL JOINTS SHALL BE SEALED WITH RUBBER BASED ADHESIVE. 7. FIXTURES A) SEE DRAWINGS FOR SPECIFICATIONS. 8. FIASHINGS A) ALL PIPING AND VENTS PASSING THROUGH ROOF SHALL BE FIASHED WATERTIGHT WITH SIX POUND TO THE SQUARE FOOT LEAD USING SLEEVE FIASHING WITH BASE EXTENDING AT LEAST 12 INCHES IN THE DIRECTION BEYOND THE OUTSIDE DIAPHRAGM OF THE PIPE. TURN SLEEVE DOWN A MINIMUM OF 1-1/2" INTO TOP OF VENT PIPE WITH LEAD FITTING SNUGLY INSIDE THE PIPE. WRAP MEMBRANE ROOF UP PIPE AND CLAMP. ALL GAS VENT CAPS SHALL BE FITTED WITH LEAD FITTING SNUGLY INSIDE OF PIPE. ALL VENT CAPS SHALL BE VANDAL PROOF. VERIFY APPROVED FIASHING MATERIAL AND METHODS WITH ROOFING CONTRACTOR TO ENSURE A COMPLETE JOB. SEE DETAILS ON ARCH. SHEETS. 9. CLEANOUTS A) SEE DRAWINGS FOR SPECIFICATIONS. 10. EQUIPMENT A) VALVES, COCKS AND FAUCETS 1) UNLESS SPECIFICALLY INDICATED ELSEWHERE, THE VALVES SHALL BE DESIGNED FOR NOT LESS THAN 126 LBS. WORKING PRESSURE. THE VALVES SHALL HAVE SUITABLE VALVE BODY PATTERNS FOR CONNECTION TO THE PIPE FOR WHICH THEY WILL OPERATE. ALL VALVES WITH RISING STEMS SHALL HAVE BACK SEATS FOR PACKING UNDER PRESSURE. APPROVED EQUAL GATE VALVES AND CHECK VALVES AS MANUFACTURED BY STOCKHAM, WALWORTH, LUNKENHEIMER, SCOTT, HAMMOND, CRANE OR WATTS WILL BE ACCEPTABLE. 2) GATE VALVES SHALL BE HAMMOND 1 B634 SPUT WEDGE OR APPROVED EQUAL. 3) CUTOFF VALVES UNDERNEATH LAVATORIES, TANK TYPE WATER CLOSETS, SANITARY SINKS AND WATER COOLERS SHALL BE CHROME PLATED ANGLE STOP VALVES WITH SOFT ANNEALED CHROME PLATED COPPER CONNECTION PIPES AND CHROME PLATED ESCUTCHEON PLATES. 4) GAS COCKS FOR ALL EQUIPMENT: SEE DRAWINGS FOR REQUIREMENTS. 5) WATER CUTOFF VALVE SHALL BE NIBCO #8-112 OR APPROVED EQUAL BRONZE SOLDER JOINT, 125 LB. WOG WITH RISING STEMS. 6) EXTERIOR HOSE COCKS AND VALVE FIXTURES TO BE NON-FREEZE TYPE, SUPPLY SHUT-OFF VLVES IF INDICATED ON PLANS. 11. EXECUTION A) PIPING 1) ALL PIPING SHALL BE RUN CONCEALED EXCEPT WHERE SHOWN OTHERWISE ON DRAWINGS. 2) VALVES, TRAPS, CLEAN OUNS AND OTHER APPARATUS SHALL BE INSTALLED IN AN EASILY ACCESSIBLE LOCATION. 3) SOIL, WASTE AND VENT OFFSETS AND HOUSE DRAINS SHALL BE INSTALLED WITH A MINIMUM, UNIFORM GRADE OF 1/8" TO THE FOOT, UNLESS OTHERWISE INDICATED OR REQUIRED BY LOCAL CODES. 4) HOT AND COLD WATER LINES SHALL BE AT LEAST 6" APART WHERE PIPING IS PARALLEL. 5) ALL WATER LINES SHALL RUN OVERHEAD AND DOWN PARTITION WALLS UNLESS NO WALL IS PROVIDED; THEN RUN LINES UNDER SLAB TO POINT OF TERMINATION. ALL LINES SHALL BE CONCEALED UNLESS NOTED OTHERWISE ON PLANS. B) HANGERS AND SUPPORTS 1) COPPER PIPING SHALL BE SUPPORTED AT INTERVALS NOT TO EXCEED 7'-0" AND AT EACH CHANGE IN HORIZONTAL OR VERTICAL DIRECTION. HANGERS SHALL BE FEE & MASON PLASTIC COATED HANGER, FIG. 351 OR APPROVED EQUAL BY GRINNELL HANGER ATTACHMENT TO STRUCTURE SHALL BE AS REQUIRED. 2) GAS PIPING SHALL BE SUPPORTED AT INTERVALS NOT TO EXCEED 8'-0" AND AT EACH CHANGE IN HORIZONTAL OR VERTICAL DIRECTION. STEEL PIPE HANGERS SHALL BE GRINNELL FIG. 104 OR FEE & MASON FIG. 199. ATTACHMENT TO STRUCTURE TO BE AS REQUIRED. 3) HANGER RODS SHALL BE STANDARD BOLT STEEL WITH MACHINE SCREW THREADS, 3/8" DIAMETER MINIMUM. 4) ALL PIPING UNDERGROUND SHALL BE FIRMLY BEDED BY THE BOTTOM OF THE PIPE, AND BELL HOLES PROVIDED TO EACH BELL. ALL PIPING SHALL BE INSTALLED IN GRADED TRENCH EXCAVATED, BACKFILL AND SUPPORT PIPING AS HEREIN BEFORE SPECIFIED. C) TESTS 1) THE PLUMBING SYSTEM AND ASSOCIATED SYSTEM SHALL BE SUBJECT TO CONSTANT INSPECTION AND FINAL APPROVAL OF THE LOCAL AUTHORITIES HAVING JURISDICTION. TESTS IN ADDITION TO THOSE INCLUDED IN THIS SECTION, REQUIRED TO SHOW CODE COMPLIANCE SHALL BE PERFORMED AS DIRECTED. 2) THE GAS SYSTEM, FROM THE METER CONNECTION AND THROUGHOUT THE NEW WORK, SHALL BE SUBJECT TO AN AIR PRESSURE TEST OF NOT LESS THAN 5 PSI FOR A PERIOD OF NOT LESS THAN 4 HOURS AND AT THE SAME TIME THE JOINT AND CONNECTION SHALL BE TESTED BY APPLYING SOAP SUDS TO EACH POINT. THE GAS PIPING SHALL BE TESTED AS AN ENTIRE SYSTEM, BUT ALL UNDERGROUND AND CONCEALED UNES SHALL BE GIVEN THE ABOVE TEST AND APPROVED BEFORE BEING COVERED. FURTHER, EACH EXPOSED JOINT SHALL BE TESTED WITH SOAP SUDS AFTER THE GAS HAS BEEN ADMITTED INTO THE SYSTEM. 3) SHOULD THE CONTRACTOR REFUSE OR NEGLECT TO MAKE ANY TESTS NECESSARY TO SATISFY THE OWNER, HIS REPRESENTATIVE OR CODING OFFICIALS, THAT HE HAS CARRIED OUT THE TRUE INTENT AND MEANING OF THE SPECIFICATIONS, THE OWNER MAY TAKE SUCH TESTS AND CHARGE THE EXPENSE THEREOF TO THE CONTRACTOR.

QUALITY CONTROL CHECK: ADA, REGRESS, SNOW GUARDS, SLAB THICKNESS

