

GENERAL

WORK INCLUDED: EACH CONTRACTOR SHALL VERIFY LANDLORD REQUIREMENTS, BID AND INSTALLATION SHALL BE BASED ON SUCH REQUIREMENTS. DRAWINGS AND SPECIFICATIONS. MECHANICAL CONTRACTOR SHALL COORDINATE ALL MECHANICAL WORK WITH THAT OF OTHER TRADES ON THE PROJECT PREVENTING UNNECESSARY CONFLICTS OR DELAYS DURING CONSTRUCTION. IF FOR ANY REASON EXISTING EQUIPMENT TO BE RE-USED NEEDS REPLACEMENT PARTS, THIS COST IS TO BE COVERED UNDER ORIGINAL CONTRACT AMOUNT AND WILL NOT BE ACCEPTED AS AN EXTRA COST OR EXPENSE.

CONTRACTOR MUST INSPECT ALL EQUIPMENT TO BE RE-USED AT TIME OF BIDDING OR NEGOTIATING PERIOD.

CONTRACTOR SHALL EXAMINE THE SITE. COMPARE IT WITH DRAWINGS AND SPECIFICATIONS AND BECOME FAMILIAR WITH EXISTING CONDITIONS BEFORE SUBMITTING A BID. NO ALLOWANCE WILL SUBSEQUENTLY BE MADE IN BEHALF OF THIS CONTRACTOR BY REASON OF ANY ERROR ON HIS PART.

CODES AND STANDARDS: ALL CODES, ORDINANCES, RULES, REGULATIONS, ORDERS, AND OTHER LEGAL REQUIREMENTS WITH WHICH COMPLIANCE IS REQUIRED BY GOVERNING AUTHORITIES SHALL BE ADHERED TO.

CONTRACTOR SHALL VERIFY WITH HVAC PLAN TO COORDINATE THE REQUIREMENT OF PLENUM RATED FIXTURES, PIPING, WIRING, ETC. FAILURE TO DO SO COULD RESULT IN THE REMOVAL AND REPLACEMENT OF THESE ITEMS AT NO ADDITIONAL COST TO THE TENANT.

DRAWINGS AND SPECIFICATIONS ARE TO BE CONSIDERED AS SUPPLEMENTING EACH OTHER. WORK SPECIFIED BUT NOT SHOWN ON DRAWINGS, OR SHOWN ON DRAWINGS BUT NOT SPECIFIED, SHALL BE PERFORMED OR FURNISHED AS THOUGH MENTIONED IN BOTH SPECIFICATIONS AND DRAWINGS. IF NOT OTHERWISE DIRECTED, INSTALLATION OF ALL SYSTEMS AND EQUIPMENT SHALL BE IN ACCORDANCE WITH APPLICABLE CODES AND IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. WHERE WORK DESCRIBED IN THE SPECIFICATIONS IS IN CONFLICT WITH THE WORK SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL SUPPLY THE GREATER QUANTITY, QUALITY AND COST VIA THE BID AND CONTACT THE ENGINEER FOR CLARIFICATION ON DIRECTION PRIOR TO INSTALLATION.

MECHANICAL

SCOPE

- A. THE WORK COVERED BY THIS SPECIFICATION INCLUDES THE COMPLETE HEATING AND AIR CONDITIONING SYSTEM.
- B. THE WORK TO BE PERFORMED UNDER THE HEATING AND AIR CONDITIONING SPECIFICATIONS AND DRAWINGS CONSISTS OF FURNISHING ALL LABOR AND MATERIAL FOR THE COMPLETE INSTALLATION OF ALL HEATING AND AIR CONDITIONING SYSTEM FOR TENANT SPACE.

THE WORK SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING:

- 1. HEATING/COOLING UNITS
- 2. TOILET ROOM EXHAUST SYSTEMS
- 3. AUTOMATIC TEMPERATURE CONTROL
- 4. DUCTWORK AND AIR CONTROL
- 5. USE OF CRANE TO PLACE ROOF TOP EQUIPMENT (WHEN REQUIRED)

GENERAL:

- A. THIS SPECIFICATION IS INCLUSIVE FOR EACH ITEM REQUIRING ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO PROPERLY INSTALL, ALTER, ADJUST, AND PUT IN OPERATION, THE COMPLETE HEATING AND AIR CONDITIONING SYSTEM.
- B. THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER LAYOUT AND CONSTRUCTION OF THE WORK INCLUDED IN THIS CONTRACT.

LAWS, ORDINANCES AND REGULATIONS:

- A. ALL SYSTEMS IN ALL AND/OR PART SHALL CONFORM TO ALL PERTINENT LAWS, ORDINANCES AND REGULATIONS OF ALL BODIES HAVING JURISDICTION, AT ALL GOVERNING LEVELS, NOTWITHSTANDING ANYTHING IN THESE DRAWINGS OR SPECIFICATIONS TO THE CONTRARY. IN CASE OF CONFLICT BETWEEN GOVERNING LEVELS, THE MORE STRINGENT LAWS SHALL APPLY.
- B. THE CONTRACTOR SHALL PAY ALL FEES AND OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BY ANY AUTHORITY HAVING JURISDICTION IN CONNECTION WITH HIS WORK.

MATERIALS AND EQUIPMENT:

- A. ALL MATERIALS SHALL BE NEW AND SHALL BE OF THE TYPE AND SHALL MEET THE CAPACITIES OF EQUIPMENT SPECIFIED ON THE DRAWINGS.
- B. ALL EQUIPMENT OFFERED UNDER THESE SPECIFICATIONS SHALL BE LIMITED TO PRODUCTS REGULARLY PRODUCED AND RECOMMENDED FOR SERVICE, IN ACCORDANCE WITH ENGINEERING DATA, RATINGS, OR OTHER COMPREHENSIVE LITERATURE MADE AVAILABLE TO THE PUBLIC AND IN EFFECT AT THE TIME OF OPENING OF BIDS.
- C. EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS FOR TYPE AND CAPACITY OF EACH PIECE OF EQUIPMENT USED.

WORKMANSHIP:

- A. ALL HEATING EQUIPMENT SHALL BE INSTALLED IN A WORKMANLIKE MANNER MEETING THE ACCEPTED STANDARDS OF THE HEATING INDUSTRY. THE WORK SHALL BE DONE BY SKILLED HEATING CRAFTSMAN, AND SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF ASHRAE AND/OR THE SMACNA MANUAL.

CUTTING, PATCHING AND PAINTING:

UNLESS OTHERWISE DIRECTED BY THE LANDLORD CRITERIA, THE CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING REQUIRED IN CONNECTION WITH HIS WORK. ALL FINISHED SURFACES THAT ARE CUT SHALL BE REPLACED IN KIND SO THAT THERE ARE NO VISIBLE EVIDENCE OF "PATCH".

PAINTING OF MECHANICAL WORK SHALL BE BY PRIME CONTRACTOR. ALL EQUIPMENT WHICH HAS HAD THE FINISH DAMAGED BY INSTALLATION OR TRANSPORTATION SHALL BE REFINISHED.

ROOF AND OTHER PENETRATIONS:

EACH CONTRACTOR REQUIRING OPENINGS IN THE ROOF OF THE BUILDING STRUCTURE (WHERE REQUIRED) SHALL MAKE ARRANGEMENTS WITH THE LANDLORD FOR SUCH OPENINGS. PROCEDURE AND COST ARRANGEMENTS SHALL BE OUTLINED IN THE LANDLORD CRITERIA. COMPLY WITH ALL LANDLORD REQUIREMENTS. ALL ROOF PENETRATIONS SHALL BE ARRANGED TO PROVIDE A WEATHER-TIGHT INSTALLATION. THE INSTALLATION SHALL INCLUDE, WHERE REQUIRED, VENTILATING COLLARS TO GIVE PROPER CLEARANCE FROM COMBUSTIBLE ROOFS, FLOORS, CEILINGS OR OTHER SUCH STRUCTURES. FIRE-PROOFING SHALL BE PROVIDED USING MATERIALS CONFORMING WITH MUNICIPAL CODES AND ORDINANCES.

DUCTWORK:

- A. ALL DUCTWORK SHALL BE INSTALLED AS SHOWN ON MECHANICAL DRAWINGS.
- B. THE DUCTWORK SHALL BE CLEAR INSIDE OF THE SIZES SHOWN ON THE DRAWINGS. ALL DUCTS TO BE SHEET METAL DUCTS AS PER ASHRAE AND SMACNA GUIDELINES.
- C. FLEXIBLE DUCTS SHALL BE LIMITED TO 5'-0" MAX. FOR CONNECTION TO AIR DEVICES.
- D. EXPOSED DUCTWORK SHALL BE STANDARD SPIRAL ROUND GALVANIZED SHEET METAL DUCTWORK 24 GAUGE UP TO 30", 22 GAUGE - 32" TO 50".
- DUCTWORK SHALL BE "FACTORY MADE" CLASS 1 GALVANIZED SHEET METAL WITH IRON SUPPORTS SECURED TO OVERHEAD MEMBERS AT 5'-0" ON CENTER. DUCTWORK MATERIALS SHALL BE PER CURRENT MECHANICAL CODE.

DUCTWORK INSULATION:

UNEXPOSED SUPPLY FROM THE AIR CONDITIONING UNIT SHALL BE WRAPPED WITH 1-1/2" THICK 1 LB/CUFT FIBERGLASS, FOIL BACKED INSULATION TO PREVENT CONDENSATION. GRILLES AND DIFFUSERS SHALL BE AS MANUFACTURED BY KRUEGER, HART AND COOLEY, BARBER-COLMAN, OR TITUS. EACH IS TO BE FITTED WITH A VOLUME DAMPER. (OPPOSED BLADE DAMPER) TESTING AND BALANCING CERTIFIED (AABC OR NABB) INDEPENDENT TESTING COMPANY TO TEST AND BALANCE SYSTEM TO CFM AS SPECIFIED. REPORT RESULTS TO TENANT AND ARCHITECT.

GUARANTEE:

- A. EACH CONTRACTOR SHALL UNCONDITIONALLY GUARANTEE IN WRITING ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF OWNER. THE CONTRACTOR SHALL PROVIDE FREE SERVICE FOR ALL EQUIPMENT INVOLVED IN HIS CONTRACT DURING THIS GUARANTEE PERIOD.
- B. THE GUARANTEE SHALL INCLUDE RESTORATION OF ITS ORIGINAL CONDITION OF ALL ADJACENT WORK THAT MUST BE DISTURBED IN FULFILLING THIS GUARANTEE.
- C. ALL SUCH REPAIRS AND/OR REPLACEMENTS SHALL BE MADE WITHOUT DELAY, AND AT THE CONVENIENCE OF THE OWNER.
- SUBSTITUTIONS:
- A. APPROVALS OF SUBSTITUTIONS FOR "APPROVED EQUAL", MUST BE IN WRITING AND SUBSTITUTION MUST BE APPROVED BEFORE INSTALLATION. INSTALLATION WITHOUT PRIOR APPROVAL MAY RESULT IN CONTRACTOR REMOVING SUBSTITUTION AND REPLACING IT WITH SPECIFIED ITEM AT HIS EXPENSE.
- B. APPROVAL MAY BE GIVEN BY ARCHITECT, ENGINEER OR OWNER.

TEMPERATURE CONTROL:

- REUSE AND RELOCATE ALL EXISTING THERMOSTAT AS SHOWN ON PLAN. PROVIDE NEW IF REQUIRED NEW AS REQUIRED - VERIFY ON SITE.
- A. TEMPERATURE CONTROL SHALL BE BY A WALL MOUNTED HEATING/COOLING THERMOSTAT, WITH SUBBASE HAVING SELECTOR SWITCHES FOR "ON/AUTO" AND "HEAT/OFF/COOL" TEMPERATURE RANGE FROM 50 DEGREES F. TO 90 DEGREES F.
- B. THIS STANDARD SYSTEM TO BE USED UNLESS SPECIAL CONTROL SYSTEM IS CALLED FOR OR SHOWN ON DRAWINGS.

MECHANICAL UNIT:

- (2) EXISTING 5 TON GAS HEAT ROOFTOP UNITS TO BE REUSED, (1) EXISTING 4 TON ELECTRIC HEAT ROOFTOP UNIT TO BE REUSED. SEE SCHEDULE ON M1 FOR BALANCE AND SPECIFICATIONS.
- B. ALL UNITS SHALL BE WITH WATERPROOFED AND INSULATED DRAIN PANS AND SHALL BE INTERNALLY ENGINEERED WITH RIGID FIBERGLASS BOARD AND NEOPRENE COATING. PROVIDE FACTORY ENGINEERED VIBRATION ISOLATORS FOR MOUNTING EACH UNIT. FURNISH EACH UNIT WITH A DISCONNECT SWITCH.
- C. ALL UNIT CASINGS SHALL BE DIFORMED STEEL WITH SMOOTH PANEL CONSTRUCTION WITHOUT PROJECTING ANGLES OR EDGES. ALL COMPONENTS HAVE REMOVABLE PANELS FOR ACCESS TO INTERIOR AND SHALL BE INTERNALLY BOLTED TO ADJACENT COMPONENTS. PREPUNCHED STRUCTURAL STEEL HANGERS SHALL BE WELDED TO THE CASING.
- D. FANS SHALL BE STATICALLY AND DYNAMICALLY BALANCED. FORWARD-CURVED, MULTI-BLADE TYPE V-BELT DRIVES SHALL INCLUDE VARIABLE PITCH SHEAVE ON THE MOTOR PULLEY OF ALL MOTORS. MOTOR BASES SHALL BE OF THE SLIDE RAIL ADJUSTABLE TYPE. SHAFTS SHALL BE OF SINGLE PIECE CONSTRUCTION, BALANCED, AND SIZED TO OPERATE AT LEAST 25% BELOW CRITICAL SPEED BEARING SHALL BE SELF-ALIGNING TYPE, STUD MOUNTED IN RECESSED BEARING HOUSINGS FOR EXTERIOR ACCESS. BEARINGS SHALL TYPE WITH GREASE LUBRICATION LINES EXTENDED TO THE OUTSIDE OF THE CASING.
- E. ELECTRICAL WIRING OF MOTORS AND EQUIPMENT AS SPECIFIED ON DRAWINGS.

F. SEQUENCE OF CONTROL (GAS ROOF TOP UNIT)

- 1. OCCUPIED HOURS.
  - A. UNIT OUTDOOR AIR DAMPER SHALL OPEN TO ITS MINIMUM POSITION AND UNIT SUPPLY FAN SHALL OPERATE CONTINUOUSLY.
  - B. UNIT COMPRESSOR(S) SHALL CYCLE OR HEAT EXCHANGER SHALL STAGE TO MAINTAIN SPACE SETPOINT.
  - C. UNIT ECONOMIZER CYCLE SHALL BE INITIATED UPON A SIGNAL FROM OUT DOOR AIR SENSORS. OUTDOOR AIR DAMPER, RETURN AIR DAMPER, AND UNIT COMPRESSOR(S) SHALL CYCLE TO MAINTAIN SPACE SETPOINT.
- 2. UNOCCUPIED HOURS.
  - A. UNIT OUTDOOR AIR DAMPER SHALL REMAIN CLOSED AND UNIT SUPPLY FAN SHALL CYCLE ON A SIGNAL FROM SPACE SENSOR.
  - B. UNIT COMPRESSOR(S) SHALL CYCLE OR HEAT EXCHANGER SHALL STAGE WITH UNIT SUPPLY FAN TO MAINTAIN SPACE SETPOINT.
- C. SEQUENCE OF CONTROL (ELECTRIC ROOF TOP UNIT)
- 1. OCCUPIED HOURS.
  - A. UNIT OUTDOOR AIR DAMPER SHALL OPEN TO ITS MINIMUM POSITION AND UNIT SUPPLY FAN SHALL OPERATE CONTINUOUSLY.
  - B. UNIT COMPRESSOR(S) SHALL CYCLE OR ELECTRIC HEATER SHALL STAGE TO MAINTAIN SPACE SETPOINT.
  - C. UNIT ECONOMIZER CYCLE SHALL BE INITIATED UPON A SIGNAL FROM OUT DOOR AIR SENSORS. OUTDOOR AIR DAMPER, RETURN AIR DAMPER, AND UNIT COMPRESSOR(S) SHALL CYCLE TO MAINTAIN SPACE SETPOINT.
- 2. UNOCCUPIED HOURS.
  - A. UNIT OUTDOOR AIR DAMPER SHALL REMAIN CLOSED AND UNIT SUPPLY FAN SHALL CYCLE ON A SIGNAL FROM SPACE SENSOR.
  - B. UNIT COMPRESSOR(S) SHALL CYCLE OR ELECTRIC HEATER SHALL STAGE WITH UNIT SUPPLY FAN TO MAINTAIN SPACE SETPOINT.

FIRE PROTECTION (IF APPLICABLE)

EXECUTION--INSTALLATION:

- A. GENERAL CONTRACTOR TO VERIFY MALL SPRINKLER CONTRACTOR REQUIREMENTS AND USE SPECIFIED CONTRACTOR IF REQUIRED.
- B. INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF NFPA 13. INSTALL SPRINKLER PIPING PRODUCTS WHERE REQUIRED IN ACCORDANCE WITH RECOGNIZED PRACTICES TO ENSURE THAT FIRE PROTECTION SPRINKLER PIPING COMPLIES WITH GOVERNING REQUIREMENTS AND SERVES THE INTENDED PURPOSES.
- C. EXAMINE OTHER WORK SHOWN ON THE DRAWINGS AND CONDITIONS AT THE JOB SITE. COORDINATE THE ROUTING OF WORK WITH OTHER TRADES TO AVOID INTERFERENCE WITH OTHER INSTALLATIONS.
- D. PIPE ROUTING AND SPRINKLER HEAD LOCATIONS SHALL BE LOCATED AS REQUIRED TO AVOID EQUIPMENT, PLUMBING, HEATING AND AIR CONDITIONING PIPING, DUCTWORK, LIGHTING FIXTURES, ELECTRICAL CONDUITS AND BUS DUCTS AND SIMILAR WORK.
- E. PROVIDE PIPE OFFSETS AS REQUIRED TO COMPLETE THE INSTALLATION. MODIFY PIPE, PREFABRICATED PIPING, PIPE HANGERS AND OTHER COMPONENTS AS REQUIRED TO FIT THE JOB SITE CONDITIONS. CLEANING AND FLUSHING: PRIOR TO CONNECTING SPRINKLER PIPING FOR FLUSHING, FLUSH WATER FEED MAINS, LEAD-IN CONNECTIONS AND CONTROL PORTIONS OF SPRINKLER PIPING. AFTER FIRE SPRINKLER PIPING INSTALLATION HAS BEEN COMPLETED AND BEFORE PIPING IS PLACED IN SERVICE, FLUSH ENTIRE SPRINKLER SYSTEM UNDER PRESSURE, AS REQUIRED TO REMOVE FOREIGN SUBSTANCES AS REQUIRED BY NFPA 13. CONTINUE FLUSHING UNTIL WATER IS CLEAR AND CHECK TO ENSURE THAT DEBRIS HAS NOT CLOGGED SPRINKLERS.
- TESTING:
  - A. AFTER FLUSHING SYSTEM, TEST FIRE SPRINKLER PIPING HYDROSTATICALLY IN ACCORDANCE WITH NFPA 13, AT NOT LESS THAN 200 PSI OR AT 50 PSIG. CHECK SYSTEM FOR LEAKAGE AT JOINTS. MEASURE HYDROSTATIC PRESSURE AT LOW POINT OF EACH SYSTEM OR ZONE BEING TESTED.
  - B. REPAIR OR REPLACE PIPING SYSTEM AS REQUIRED TO ELIMINATE LEAKAGE IN ACCORDANCE WITH NFPA STANDARDS FOR "LITTLE OR NO LEAKAGE" AND RETEST AS SPECIFIED TO DEMONSTRATE COMPLIANCE.

SPRINKLER MAINS AND BRANCHES

- A. PIPING MATERIAL: BLACK STEEL, SCHEDULE 40 OR LIGHTWEIGHT SPRINKLER PIPE, SCHEDULE 10 ASTM A 135 (IF ALLOWED BY LANDLORD AND LOCAL AUTHORITIES).
- B. FITTINGS: THREADED, CLASS 175. MECHANICAL COUPLINGS AND TEES OF A ROLLED GROOVED TYPE WILL BE ACCEPTED (IN LIEU OF THREADED) IF BOTH U.L. LISTED AND FIRE MARSHAL APPROVED.
- INSTALLATION:
  - C. ALL SPRINKLER PIPING SHALL BE CONCEALED UNLESS OTHERWISE INDICATED. ALL PIPING SHALL BE LOCATED TO AVOID INTERFERENCE WITH ALL OTHER ELEMENTS ABOVE CEILINGS, ETC.
  - D. SUPPORT ALL HORIZONTAL PIPING AT NOT GREATER THAN 10 FEET INTERVALS, EXCEPT PIPES OF SIZE 1-1/2" AND LARGER WHICH SHALL BE SUPPORTED AT NOT GREATER THAN FIFTEEN FEET INTERVALS, WITH APPROVED SWIVEL SPLIT RING HANGERS WITH ROD SUPPORTS AND SWAY BRACES AT EVERY THIRD HANGER.
  - E. ALL SPRINKLER PIPING SHALL BE INSTALLED SO THAT IS CAN BE THOROUGHLY DRAINED AND WHERE PRACTICAL, ARRANGE TO DRAIN THE MAIN VALVE.

SPRINKLER HEADS

- A. SPRINKLER HEADS IN AREAS WITH LAY-IN AND DRYWALL CEILINGS SHALL BE RECESSED TYPE , 165 DEGREE RATED, CHROME PLATED HEAD WITH ESCUTCHEON COLOR TO MATCH CEILING COLOR, VERIFY EXACT COLOR WITH ARCHITECT.
- B. SPRINKLER HEADS IN AREA OF NO CEILING SHALL BE CHROME PLATED UPRIGHT.
- C. ALL SPRINKLER HEADS SHALL BE 1/2" ORIFICE, RATED AT 165 DEGREES WITH A K-FACTOR OF 5.65.
- D. ALL SPRINKLER HEADS THAT ARE TO REMAIN AND BE REUSED SHALL BE PROTECTED DURING CONSTRUCTION AND CLEANED THOROUGHLY TO INSURE THAT THEY ARE CLEAR OF PAINT AND DEBRIS AND ARE IN GOOD WORKING CONDITION, PRIOR TO PROJECT CLOSEOUT.
- E. ALL SPRINKLER HEADS SHALL BE INSTALLED IN ACCORDANCE TO NFPA 13 AND ALL LOCAL CODES AND AUTHORITIES HAVING JURISDICTION.

PLUMBING

SCOPE:

- A. THE WORK TO BE PERFORMED UNDER THE PLUMBING SPECIFICATIONS AND DRAWINGS CONSISTS OF FURNISHING ALL LABOR AND MATERIAL FOR THE COMPLETE INSTALLATION OF ALL PLUMBING SYSTEMS FOR TENANT SPACE. THE WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
  - 1. COLD AND HOT WATER SYSTEMS
  - 2. DRAINAGE AND VENT SYSTEMS
  - 3. INSULATION

GENERAL:

- A. THIS SPECIFICATIONS IS INCLUSIVE FOR EACH ITEM REQUIRING ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY TO PROPERLY INSTALL, ALTER, ADJUST, AND PUT INTO OPERATION, THE COMPLETE PLUMBING SYSTEM .
- B. THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER LAYOUT AND CONSTRUCTION OF THE WORK INCLUDED IN THIS CONTRACT.

WORKMANSHIP:

- ALL WORK MUST BE DONE IN A WORKMANLIKE MANNER TO THE COMPLETE SATISFACTION OF THE ENGINEERS AND SHALL BE PERFORMED BY QUALIFIED MECHANICS.
- A. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, AND SHALL CONFORM TO THE GRADE, QUALITY AND STANDARDS SPECIFIED HEREIN.
- B. ALL EQUIPMENT OFFERED UNDER THESE SPECIFICATIONS SHALL BE LIMITED TO PRODUCTS REGULARLY PRODUCED AND RECOMMENDED FOR SERVICE, IN ACCORDANCE WITH ENGINEERING DATA, RATINGS, OR OTHER COMPREHENSIVE LITERATURE MADE AVAILABLE TO THE PUBLIC AND IN EFFECT AT THE TIME OF OPENING OF BIDS.
- C. EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS FOR TYPE AND CAPACITY OF EACH PIECE OF EQUIPMENT USED. LAWS, ORDINANCES AND REGULATIONS:
  - A. ALL MECHANICAL SYSTEMS IN ALL AND/OR PART SHALL CONFORM TO ALL PERTINENT LAWS, ORDINANCES AND REGULATIONS AND ALL BODIES HAVING JURISDICTION, AT ALL GOVERNING LEVELS, NOTWITHSTANDING IN THESE PLANS AND SPECIFICATION TO THE CONTRARY. IN CASE OF CONFLICT BETWEEN GOVERNING LEVELS, THE MORE STRINGENT LAWS SHALL APPLY.
  - B. CONTRACTOR SHALL PAY ALL FEES AND OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BY ANY AUTHORITY HAVING JURISDICTION IN CONNECTION WITH HIS WORK.
  - C. WHERE APPLICABLE, ALL MATERIAL SHALL BEAR THE THE NATIONAL BOARD OF FIRE UNDERWRITER'S SEAL OF APPROVAL. CERTIFICATES TO THIS EFFECT TO BE FURNISHED TO ARCHITECT TO BE TO ARCHITECT UPON REQUEST.
- ESCUTCHEONS:
  - A. ALL EXPOSED PIPES, EXCEPT AS OTHERWISE DESCRIBED, PASSING THRU WALLS, FLOORS, CEILINGS, ETC. IN FINISHED SPACES, SHALL BE PROVIDED WITH SOLID PATTERN HEAVY CEILING, FLOOR OR WALL ESCUTCHEONS WITH SET SCREW. ESCUTCHEONS AND PLATES SHALL BE OF STEEL OR MALLEABLE IRON WITH PRIME COAT READY FOR PAINTING. ESCUTCHEONS WILL NOT BE PROVIDED WHERE SLEEVES INTENTIONALLY EXTEND ABOVE FINISHED FLOOR.
  - B. ALL EXPOSED PLUMBING SHORT BRANCH CONNECTIONS TO FIXTURES AND/OR EQUIPMENT PASSING THROUGH WALL OR FLOORS SHALL BE EQUIPPED WITH PRESS BRASS, CHROMIUM PLATED, SOLID TYPE ESCUTCHEONS.

GUARANTEE:

- A. EACH CONTRACTOR SHALL UNCONDITIONALLY GUARANTEE IN WRITING ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE BY OWNER. THE CONTRACTOR SHALL PROVIDE FREE SERVICE FOR ALL EQUIPMENT INVOLVED IN HIS CONTRACT DURING THIS GUARANTEE PERIOD.
- B. THE GUARANTEE SHALL INCLUDE RESTORATION TO ITS ORIGINAL CONDITION OF ALL ADJACENT WORK THAT MUST BE DISTURBED IN FULFILLING THIS GUARANTEE.
- C. ALL SUCH REPAIRS AND/OR REPLACEMENTS SHALL BE MADE WITHOUT DELAY, AND AT THE CONVENIENCE OF THE OWNER.
- TEMPORARY SERVICES:
  - A. THE CONTRACTOR, AT HIS OWN EXPENSE AND COST, SHALL INSTALL, OPERATE, PROTECT AND MAINTAIN THE RESPECTIVE TEMPORARY SERVICES AS REQUIRED BY HIS WORK.
- TEST OF PIPING AND SYSTEM:
  - A. THE SYSTEMS OF PIPING AS INSTALLED BY THIS CONTRACTOR MUST BE TESTED WITH WATER OR AIR AND PROVEN TIGHT TO THE SATISFACTION OF REPRESENTATIVES OF THE OWNER. TESTING INSTRUMENTS MUST BE FURNISHED BY THE PLUMBING CONTRACTOR.
  - B. TEST MUST BE MADE WITH WATER, EXCEPT WHEN THERE IS DANGER FROM FREEZING, THEN TESTS MAY BE MADE WITH AIR. WOODEN PLUGS ARE NOT TO BE USED IN MAKING TESTS. STERILIZATION OF DOMESTIC WATER SYSTEM:
    - A. BEFORE BEING PLACED IN SERVICE ALL WATER LINES SHALL BE CHLORINATED TO THE SATISFACTION OF THE A.W.W.A SPECIFICATIONS C601-53T.
  - C. SOIL WASTE PIPING SHALL BE SERVICE WEIGHT CAST IRON PIPE, BELL & SPIGOT TYPE AS REQUIRED.
  - D. VENT PIPE SHALL BE SERVICE WEIGHT CAST IRON BELL & SPIGOT TYPE AS REQUIRED PER LOCAL CODE.
  - C. SCHEDULE 40 AND 80 PVC AND ABS PIPING WITH DWV PATTERN FITTINGS MAY BE USED IF ACCEPTABLE TO THE LANDLORD AND LOCAL AUTHORITY HAVING JURISDICTION.

INSULATE--ALL LINES (ABOVE CEILING/IN WALLS INCLUDED):

- A. INSULATION ON COLD WATER, HOT WATER, CONDENSATE LINES, ETC., SHALL BE ARMAFLEX II, OR APPROVED EQUAL, WITH THICKNESS AS REQUIRED. MINIMUM THICKNESS IS 1/2" INCH.
- B. INSULATION ON ROOF DRAINS AND ROOF DRAIN LEADERS SHALL BE FIBERGLASS WITH MULTI-PURPOSE WRAPPING.
- SUBSTITUTIONS:
  - A. SUBSTITUTIONS WILL BE CONSIDERED FOR "OR EQUAL" BUT MUST BE APPROVED IN WRITING, BY OWNER, ARCHITECT OR ENGINEER, PRIOR TO INSTALLATION.
  - B. IF, AFTER PLANS ARE COMPLETED, AUTHORITIES RULE THAT HANDICAPPED RESTROOM IS REQUIRED, BUT NOT SHOWN, USE AMERICAN STANDARD "CADET-HI" WATER CLOSETS AND SET LAVATORY AT PROPER HEIGHT WITH LEVER HANDLES. (VERIFY ALL FINAL EQUIPMENT SPECS WITH PLUMBING DRAWING).

WATER PIPING:

- A. WATER PIPING UNDER FLOOR SHALL BE TYPE "K" SOFT COPPER WITH SILVER SOLDER JOINTS.
- B. WATER PIPING ABOVE FLOOR SHALL BE TYPE "L" HARD DRAWN COPPER WITH LEAD FREE SOLDER JOINTS OR PLUMBING CONTRACTOR MAY USE "PEX" PIPING, IF APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION. VERIFY REQUIREMENTS PRIOR TO BID.
- GAS PIPING:
  - A. GAS PIPING INCLUDING TAP AND SERVICE SHALL BE INCLUDED. COORDINATE METER LOCATION WITH LOCAL AUTHORITY.
  - B. 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.
  - C. 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.
  - D. GAS PIPING SHALL SUPPLY HVAC UNITS, WATER HEATER AND KITCHEN EQUIPMENT IF INDICATED ON DRAWINGS BY THIS CONTRACTOR.
  - E. MOISTURE TRAPS SHALL BE INSTALLED ON EACH PIPING DROP FOR HVAC UNITS, WATER HEATER AND KITCHEN EQUIPMENT.

CONSULTANT:



DUNHAM

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\*COA # CA 2352 PE\* EXPIRATION - 6/30/16

CLIENT:



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PROJECT INFORMATION:

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DURANT, OK 74701

SEAL:



PROJECT NO.: 0416740-037

DRAWN BY: JCB

CHECKED BY: GMS

ISSUE: DATE:  
PERMIT SET 03-09-16

REVISION: DATE:

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PROJECT LOCATION:

DURANT, OK

SHEET NUMBER / TITLE:

M3