

The first fifteen feet off furnace (and all ductwork in garage) of all supply, fresh, or return air ducts, shall be insulated on the interior with 1" thick 1.5 lb density Johns Manville Linacoustic "A" duct liner. Liner shall have maximum air friction correction factor of 1.10 at 1000 FPM velocity, minimum NRC of .55 liner and a composite fire and smoke hazard rating as tested by ASTM E-84, NFPA 255 and UL 723 not to exceed a flame spread of 25 and smoke development of 50. Liner shall be installed in accordance with Duct Liner Application Standard SMACNA.

Supply air ducts inside the building envelope to be insulated with standard duct wrap meeting the Energy Compliance Statement shown on the drawings. All outside air and ductwork outside the building envelope to be insulated as noted in this paragraph.

CONTROLS

Scope: Provide all labor, material, equipment, transportation, and other incidentals necessary to complete the work described, but not necessarily limited to the following:

- a. Air balancing
- b. Exhaust fans
- c. Furnaces/condensing units
- d. PTAC units

The control system shall be basically electric, with supplementary electronic devices as required.

- a. Air Balancing: Airflow for all mechanical systems shall be as shown on plans. Provide a balance report on standard AABC form or approved facsimile to the owner.
- b. Restroom exhaust fans: Light switches in all restrooms will turn fan on and off.
- c. Furnaces/condensing units: Contractor provided automatic switchover thermostat with night setback is to maintain room temperature. Outside air to be shut off in the unoccupied mode.
- d. PTAC units to have integral thermostat control devices.

PLUMBING

Required: All plant, labor, equipment, appliances, materials, transportation, facilities, and services necessary for and/or reasonably incidental to the completion of all plumbing work, in conformity with the drawings, the specifications, and the other contract documents, including, but not necessarily limited to the following:

- 1. Domestic Cold Water.
- 2. Domestic Hot Water.
- 3. Drainage & Venting System with Proper Connections to all Drains and equipment.
- 4. Natural Gas.

PIPING

Run main soil pipe and branches to all fixtures. Size piping as shown. Run piping directly and concealed from view, unless otherwise shown. Grade horizontal runs 1/4" to the foot minimum. Provide sufficient drains to draw water from entire domestic water system and sections thereof where shutoffs are shown. Furnish and install complete hot and/or cold water service to all fixtures as shown on drawings. Run lines parallel to each other and parallel with the lines of the building. Cut pipes accurately to required measurements and work into place without springing or forcing. Provide for expansion and contraction of piping. Paint exposed threads on underground piping with one coat asphaltum varnish.

MATERIALS AND INSTALLATION

- a. Sanitary Sewer: Piping and fittings shall be schedule 40 ABS or PVC DWV piping with solvent fittings are approved.
- b. Clean-outs: as required by code and local authorities in order to remove rust accumulation or other obstructions and as shown on plans. Set screw cap in cleanout with graphite paste. Cleanouts in floors shall be flush using ABS or PVC floor level cleanout fittings. Location of all cleanouts subject to approval of inspector.
- c. Vents: Schedule 40 ABS or PVC DWV piping with solvent fittings. Vent lines shall follow soil and water lines connecting with them above highest fixtures with proper fittings. Carry vents through the roof as shown, 14" minimum heights above roof. Bring together in one stack through roof wherever possible.
- d. Traps: Install "P" traps in branch lines from floor drains or where required. Traps installed in connection with threaded pipe shall be recess drainage pattern. Traps installed in connection with cast iron pipe shall be of the same quality and grade as the pipe. Traps installed in connection with fixtures shall have a seal of not less than 2" or more than 4". Exposed traps shall be chrome plated cast brass or chrome plated 17 ga. tubular type or PVC. Provide trap primers as required by Code.
- e. Flashing Connections: Flash openings in roof for vent pipes with 4 lb. lead flashing. Provide 15" stack. Extend base 8" on all sides of stack. Provide counterflashing sleeve and 6" nipple compatible with the 'S' tile roof. Make flashing watertight at roof.
- f. Domestic Hot and Cold Water: Copper or PEX as approved by local authorities and code.
- g. Gas piping: Pipe and fittings to be carbon steel butt welded, ASTM 120, Schedule 40 black welded steel pipe with standard weight malleable iron screwed or ASTM A 234-77A welded forged steel fittings. Valves to be 125 psi bronze square head cock, Crane 250 or equal. Pipe installed through air plenums, in walls and pipes 2-1/2" and larger shall have welded fittings and joints. Other pipe may have screwed or welded fittings.
- h. Joints: Make joints between cast iron piping and fittings with "no-hub" stainless steel clamps and neoprene gaskets. Copper joints to be sweated with 95/5 or 96/4 tin, antimony solder. Make screw joints in steel waste and vent pipe with approved pipe paste and with not more than three threads exposed at finish.
- i. Hangers and supports: Per code and governing authorities. Hanger spacing as recommended by the manufacturer for the flow temperature in the pipe.

CLEANING SYSTEM

Thoroughly clean all equipment, piping and all other material controlled under this contract free from rust, scale, and other dirt before any painting or covering is done, or the system put in operation.

TESTS

- a. Piping systems shall be subjected to the following tests and no piping shall be covered or concealed until it has been so tested, inspected, and approved by the Architect and any local inspector having jurisdiction. Water piping shall be hydrostatically tested at 50 psi in excess of maximum working pressures. 100 psi minimum. Plumbing waste and drain piping shall be tested by filling with water to the top of a 10-foot riser and left standing for 24 hours without appreciable drop in water level.
- b. When so directed by the Architect and/or Engineer, Contractor shall conduct an operating test on any piece of equipment to demonstrate its capacity and/or operating characteristics.

FIXTURE INSTALLATION

- a. Provide exact fixture locations, including proper mounting heights, obtained from details on drawings and from manufacturer's specifications.
- b. Interior exposed pipe, valves, and fixture trim shall be chrome plated.
- c. Complete installation of each fixture including trap and accessories with accessible stop or control valve in each hot and cold water branch supply line. Make fixture floor connections with approved brand of cast iron floor flange, soldered or caulked securely to waste pipe. Make joint between fixture and floor flange tight with approved fixture setting compound or gaskets.
- d. Polish chrome finish at completion of project.
- e. Caulk between fixtures, wall, and floor with white butyl rubber non-absorbent caulking compound. Point all edges.
- f. Install fixtures and fittings as per local codes and manufacturer's instructions.

FIXTURE SCHEDULE

- a. Furnish and install the necessary plumbing fixtures or components in quantity as shown on plans. Provide all necessary valves, cast "P" traps, stops with risers, fittings, and accessories to make the job complete with the fixtures specified on the drawings. Exposed stops to be equal to Eastman GR12 with flexible risers.
- b. Fixtures shall be Kohler, Crane, American-Standard, or an approved equal. Specialties shall be Zurn, Josam, J.R. Smith, Symmons or Wade. Before fixtures are ordered, the contractor should submit a complete list of plumbing fixtures, giving the catalog number, cut and make, for approval. Fixtures shall not be ordered until this list is approved.

INSULATION

Not required if PEX pipe used except for exposed trap and hot water lines under ADA lavatories. Copper hot water piping or cold-water piping susceptible to condensation to be insulated with 1/2" fiber, foam or high density insulation with vapor barrier.

ELECTRICAL

ELECTRICAL DESIGN AND INSTALLATION BY LICENSED CONTRACTOR PER ELECTRICAL AND ENERGY CODE, LOCAL ADMINISTRATIVE AUTHORITY AND OWNER SPEC.

- E1. For general lighting use no smaller than #12 NM-B wire for 'R' Group Occupancy. For 'I' Group Occupancy use THWN OR XHHN nylon jacket thermoplastic cable in intermediate metallic conduit.
- E2. Ufer grounds (grounding electrodes in footings and/or foundations using either 20' of rebar or #4 bare copper wire) are required in addition to water pipe grounds. Ufer grounds do not eliminate the need of driven rod electrodes.
- E3. At least one exterior, GFCI protected receptacle is required on all dwelling units, shall have weather protection covers if exposed to weather.
- E4. All required receptacles shall be spaced no more than six feet from any door or wall opening and so that at no point along the floor line of walls shall the distance to a receptacle be greater than 6 feet, . Walls two feet or more in width shall count in the floor line distance. No space along the kitchen counter that is at least 12" wide shall be more than 24" from an outlet except directly behind a sink, range or counter mounted cooking unit.
- E5. GFCI protected receptacles are required in the following locations: Exterior, garages, bathrooms, kitchens, unfinished basements, crawl space, bidets and within six feet of a water source.
- E6. Kitchen counter receptacles shall be served be a minimum of two 20 amp small appliance GFCI circuits. All island counters and counter areas wider than 12" shall be served by GFCI receptacles.
- E7. At least one wall switch, controlled lighting outlet is required in habitable rooms, bathrooms, hallways, stairways, garages with power and at exterior entrances or exits.
- E8. Lighting outlets are required in attics with serviceable equipment, under floor spaces with serviceable equipment, utility rooms and basements.
- E9. provide power and connect fans in baths complete with.
- E10. Non-recessed incandescent lighting fixtures in clothes closets shall be at least 12" horizontally from any shelving (6" for recessed or fluorescent)
- E11. Not Used
- E12. 110 volt smoke detectors with battery back up are required in all sleeping rooms, all floor levels and hallways adjacent to bedrooms of dwelling units. All detector alarm circuits shall be wired with detectors serving bedrooms.
- E13. Not Used.
- E14. Install phone and TV jacks in location of owners choice.
- E15. Not Used.
- E16. Furnish and install all new material and equipment bearing the listing label of Underwriters Laboratories (UL)
- E17. Utilize the following fire alarm equipment:
 - Notifier BNG and BRG manual fire alarm pull stations
 - Notifier Gentex HG/SHG Electronic Horns
 - Notifier system sensor 1400 ionization smoke detector
 - Notifier PS series battery back-up
- E18. Contractor shall coordinate work with the local utility company
- E19. All intercom speakers to have accessible volume/power on-off
- E20. Fire alarm system shall have audible alarms as well as visual alarms
- E21. Fire alarm and smoke detection system working plans shall be submitted for review and approval prior to system installation as per code
- E22. Independent phone lines to be wired to each bedroom for optional phone hookup by the residents. Phone lines in the office, staff, kitchen and living areas are to be wired on the same phone circuit.

- E23. Install door buzzers at exterior egress doors which indicate when door is opened. Install single pole switch for each door in Office so that buzzer circuit may be shut off at operators option.
- E24. Unless specifically noted to the contrary, all materials and equipment shall be of standard catalog and production as required to produce complete operating systems.
- E25. The entire installation must be in strict accordance with the Latest National Electrical Code (NEC), latest rules and regulations of the National Fire Protection Association, State and Local codes and inspectors, and all other applicable codes including but not limited to the following:
 - 1. Occupational Safety and Health Act Standards (OSHA)
 - 2. NFPA #70 – National Electric Code (NEC)
 - 3. ADA Standards – Americans with Disabilities Act (ADA)
 - 4. ANSI/IEEE C-2 National Electrical Safety Code
 - 5. NECA – Standard of Installation
 - 6. International Building Code (IBC)
 - 7. International Fire Code (IFC)
 - 8. NFPA 101 Life Safety
 - 9. Standard Rules and Regulations for Assisted Living Homes
- E26. Comply with all rules and regulations of the companies providing electric and telephone service. All materials and equipment required by, but not regularly furnished by, the agency providing these services shall be furnished as part of the work of this contract. All charges by the agency providing these services for work done by then in the installation of these services shall be paid for by the tenants/owner.
- E27. All equipment must be installed in accordance with manufacturer's recommendations
- E28. The contractor shall obtain all necessary construction permits
- E29. As an option to the hard wired intercom system shown, the owner may consider the following as a substitute:
 - "Quick Response Emergency call system QR4500" by Code Alert for use with up to 16 pendant or wall mounted transmitters or approved equal.
- E30. Arc fault protection is required in all habitable spaces of a dwelling unit. (bedrooms, living, dining, family, kitchen ect.) When 'R' Group Occupancy is used with non-metallic sheathed cable, all receptacles shall be AFCI. When 'I' Group Occupancy is used with metallic conduit or armored cable and metal boxes the first receptacle in the circuit shall be AFCI and provide protection for the entire circuit.
- E31. In 'I' Group Occupancy provisions shall be made for separation of critical systems with a back-up power source and automatic switching.
- E32. All exits shall have an emergency egress light on the outside of the doorway and connected to the emergency lighting system.

REVISIONS	BY



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FOUR HILLS BEEHIVE
NEW MEXICO

PAGE TITLE

SPECIFICATIONS II

DRAWN
AJ/SM
CHECKED
RTK
DATE
JANUARY, 2013
SCALE
AS NOTED
JOB NO.
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OF SHEETS