

January - December 2004

## Mechanical Inspection Memo

Mechanical Inspection Memos are provided as a reference of updated procedures and code clarifications. This information does not change or replace the Pikes Peak Regional Building Code, adopted as law to provide minimum standards to protect the public health and safety. Reference the adopted Codes for exact standards. Permits for work are subject to the latest codes as amended by the Pikes Peak Regional Building Code.

The information is categorized as general information, IECC (2000 International Energy Conservation Code), mechanical, plumbing, manufactured homes and townhomes. Topics are alphabetized for easy reference and includes the month that it was published. You also may use word search.

# PIKES PEAK REGIONAL BUILDING DEPARTMENT

## General Information

**2003 CODES AND AMENDMENTS ARE POSTED UNDER CURRENT INFORMATION** — Amendments to the proposed 2000 Uniform Plumbing Code, 2003 International Mechanical Code, and 2003 International Fuel Gas Code are posted here on the web site. It is anticipated that new codes and amendments will be adopted January 2005. (May 2004) Provisions of the new codes being considered for adoption, along with their proposed amendments, are not applicable to current installations. (July 2004)

**PAYMENT OF USE TAX TO INDIVIDUAL JURISDICTIONS** — As a reminder, when a permit is obtained for work in a jurisdiction that charges a use tax, the tax must be paid as well as the permit fee. If for any reason the use tax has not been paid, the permit will be temporarily invalidated and no inspections will be made until the tax is paid. (Feb. 2003)

**PERMIT FEE SCHEDULE** — The new permit fee schedule was implemented February 17 in all jurisdictions served by RBD.

**VARIANCE FEE** — Fees to process variance requests will go into effect for the April meeting of the Mechanical Committee, and must accompany the variance request application form. The fee applies to all requests, including Consent Calendar items, and covers the committee hearing as well as decisions appealed to the Board of Review. (Feb. 2003)

## IECC (International Energy Conservation Code)

**2000 IECC IMPLEMENTED IN EL PASO COUNTY** — The 2000 International Energy Conservation Code, as amended by the Pikes Peak Regional Building Code was implemented February 17 in unincorporated El Paso County; the IECC has been in effect in the City of Colorado Springs since October 22, 2003. (Feb. 2003)

**2000 IECC CLARIFICATION** — Sections 503.3.3.4.2 and 503.3.3.4.3 of the 2000 International Energy Conservation Code (IECC) do not apply to ducts/plenums formed by building construction as allowed by Section 601.1.2 of the UMC. However, ducts/plenums constructed in this manner must continue to be sealed per Section 601.6 of the UMC. (Jan 2004)

**ENERGY CALCULATIONS** — Energy Calculations verify that the structure is insulated to meet the requirements of IECC Chapters 4, 5 or 6, and are required for all structures (occupancies) that are to be heated.

**HEAT LOSS CALCULATIONS** — Heat Loss Calculations verify that the proposed equipment is correctly sized to meet the requirements of UBC Section 310.11, and are required only for R- occupancies.

**PIPING SYSTEM INSULATION** — The 2000 IECC as amended requires insulation on domestic water recirculating systems, both mechanical and gravity, IECC Section 504.5, and HVAC piping, IECC Section 503.3.3.1. Insulation is not required for runouts 12 feet or less in length on domestic recirculating systems or HVAC piping. (Aug 2004)

## Mechanical

**AC COIL, TERMINATING SECONDARY DRAIN** — Terminating the second drain for an AC coil over a soffit vent in the attic does not meet code requirements; UMC Sections 309.3 and 1105.12. (Aug 2004)

**AC REPLACEMENT CONDENSER** — Regarding the replacement of a condenser on an existing AC system, an electrical service outlet within 25 feet of the unit is NOT required. (Nov/Dec 2004)

**APPLIANCE IGNITION SOURCE INSTALLATION** — Section 303.1.3 of the UMC requires appliance ignition sources installed in a garage to be located a minimum of 18 inches above the floor. For furnaces, this includes the blower motor unless a shaded pole, PCM or equivalent motor is used. (Oct 2004)

**CLEARANCE TO COMBUSTIBLES CLARIFICATION** — Some furnace manufacturers' installation instructions require a minimum 1-inch clearance to combustibles at the top of the plenum. Although the UMC does not mandate this specific requirement, installations must comply with UMC Section 303.1. This also applies to installations where the top of the plenum is extended up into the floor joist cavity either via duct or opening to this space. (Aug. 2004)

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## Mechanical

**COMBUSTION AIR** — There are 7 different methods of providing combustion air per Table 7-A of the 1997 Uniform Mechanical Code (UMC). Regardless of the method used, when a dryer is located in the same room as a gas burning appliance, the door to the room must either be fully louvered or removed in order to comply with code. (Jan 2004)

**COMBUSTION AIR FROM ATTIC** — Must comply with UMC Section 703.1. (See also 2003 Mechanical Memo). (Aug 2004)

**CPVC VENTS FOR 90% + EFFICIENT APPLIANCES** — When CPVC vents for 90% + efficient appliances are installed in a garage, they must be enclosed/protected per Section 302.4, Exception #3, of the Uniform Building Code. The vent must be exposed adequately in order to verify correct installation prior to complete covering. (Jan 2004)

**CSST GAS SYSTEM INSTALLATION** — Sections 303.1 and 1311.1 of the UMC require corrugated stainless steel (CSST) gas systems to be installed per the manufacturer's installation instructions. Appropriate brackets/supports must be provided at gas meter and appliance outlet connections. (Oct. 2004)

**DRYER DUCT PROTECTION** — Section 603.3 of the UMC requires ducts to be protected by approved barriers when exposed to mechanical damage by vehicles or from other causes. Dryer vents penetrating top and bottom plates of 2 x 4 wall construction are considered as protected when in compliance with 1997 UBC Section 2320.11.7. (Sept. 2004)

**DRYER EXHAUST DUCT JOINT CONNECTION TO ROOF CAP TERMINAL** — This joint must comply with Sections 504 and 601 of the UMC. If the roof cap terminal is not in place at the time of the residential rough inspection (HRR), the dryer exhaust duct must be securely fastened in place and terminate flush at the top of the roof sheathing. (Sept 2004)

**DUCT SUPPORT REQUIREMENTS** — Sections 308.1 and 603.1.2 of the UMC require ducts to be supported. Supply and return air plenums connecting to a horizontal furnace must be supported at the ends as well as at the furnace when more than 36 inches in length. (Oct 2004)

**EQUIPMENT "FIXED IN POSITION"** — Section 308.1 of the 1997 Uniform Mechanical Code (UMC) requires equipment to be "fixed in position by substantial means which will prevent its incidental displacement." This may be required in certain situations when equipment is placed on a pad per Section 304.8 of the 1997 UMC. (April 2004)

**FLEXIBLE DUCT VIBRATION ISOLATORS & AIR LEAKAGE** — Be aware of potential air leakage at the corners of flexible duct vibration isolators; these joints must be properly sealed. UMC Section 601.6 & IECC Section 503.3.3.4.3. (Aug 2004)

**GAS FIREPLACE INSTALLATION IN A BEDROOM** — Section 304.5 of the 1997 Uniform Mechanical Code (UMC) prohibits gas fireplaces from being installed in a bedroom with the following exceptions: (Oct 2004)

- a) The fireplace is a direct vent appliance per Section 206 of the UMC; or
- b) The volume of the bedroom complies with the definition of unconfined space per Section 223 of the UMC.

**Note:** There are several fireplace units that appear to be a direct vent appliance but are not listed as such. In these instances the bedroom must be an unconfined space (Refer to Section 223 of the UMC).

**GAS PIPING & USE OF UNIONS** — Section 1312.12 of the UMC limits the use of unions in gas piping at exposed fixture, appliance or equipment connections as well as exterior locations immediately on the discharge side of a shutoff. Other locations require the use of right & left nipples and couplings. (Jan 2004)

**LENNOX HEARTH PRODUCTS FOR FIREPLACES** — An update was distributed from Lennox Hearth Products regarding installation instructions for fireplaces using a direct vent system. This update specifies that a decorative shroud may be installed over a vertically installed vent when using a SV4.5VTR termination. Installation must comply with the instructions amended by the manufacturer. (Nov/Dec 2004)

**Note:** This does *not* apply to:

- a) Multiple direct vent terminals.
- b) Terminals for Type B venting systems.

**LOUVERED DOORS & COMBUSTION AIR IN ENCLOSED AREAS** — A single fully louvered door is considered as no door in regards to combustion air and enclosures. A set of double doors that are each 50 percent louvered are considered to be the same as a single fully louvered door. (March 2004)

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## Mechanical

**LP GAS SYSTEM & NEW CONSTRUCTION** — The inspection consists of checking the LP drain as part of the plumbing base inspection; and any openings into the building in respect to the step down regulator at the house. (Refer to UMC Section 1314, item 9.) (April 2004)

**MEASUREMENT BETWEEN EQUIPMENT AND GRADE** — The 3-inch separation between equipment and grade, required by Section 304.8 of the UMC is measured to the earth (ground) and not landscaping rocks. (Nov/Dec 2004)

**NORDYNE FORCED AIR FURNACES** — Installation instructions for forced air furnaces manufactured by Nordyne prohibit the return air duct from connecting to the rear portion of the blower compartment of the furnace. If an error occurs, Nordyne has stated that it can be corrected by rerouting the return air duct to the side of the blower compartment and “patching” the hole at the rear. (Sept 2004)

**REFRIGERATION LINE TESTS** — Refrigeration lines are required to be tested, UMC Section 1122.2. Refer also to the AC Installation Inspection check list, item 5, on this web site. (Aug 2004)

**REFRIGERATION PIPING & TUBING** — Section 1110.2 of the UMC does not specify the type of material to be used on refrigeration piping and tubing in order to be “securely fastened to a permanent structure.” Nonmetallic supports, such as plastic holy iron (plumbers’ tape), and the webbing material used to support flexible duct are acceptable. (Sept 2004)

**REPLACEMENT FURNACE SYSTEM & VENT SIZING** — When a furnace system is replaced, the venting system must meet the requirements of the GAMA Tables and provisions made for a future installation of a 40,000 BTU water heater. If the venting system is already sized and configured properly for the installation of a 40,000 BTU water heater, additional provisions are not required. (Feb 2004)

**SEALING LOW PRESSURE DUCT SYSTEMS** — Section 503.3.3.4.2 of the 2000 IECC, requires low pressure duct systems to be sealed with tapes and mastics as specified in Section 503.3.3.4.3. All tapes and mastics listed to UL181A, UL181B or UL181A/B are acceptable for use on metal ducts. (Jan 2004)

**SEALING OF JOINTS, SEAMS, FITTINGS, ETC.** — Section 601.6 of the UMC requires “all joints, seams and fittings on duct systems...” to be sealed substantially air tight. In addition, Section 503.3.3.4.2 requires “all longitudinal and transverse joints, seams and connections of low pressure supply and return ducts...” to be sealed. This includes: (Nov/Dec 2004)

- 1) Metal ducts (Section 601.7 UMC)
- 2) Tinned steel (Section 601.8 UMC)
- 3) Vibration isolators (Section 601.9 UMC)
- 4) Factory-made air ducts (Section 603.2 UMC)
- 5) Concealed building spaces (Section 601.1.2 UMC)

**All ducts must be sealed.** With the exception of item e, UL 181 Listed tapes and mastics are required.

**SELKIRK/METAL BESTOS** — This new product designated as a “draft hood connector” is UL listed and is acceptable as a double wall connector, but must be installed per listing and the manufacturer’s instructions. (Jan 2004)

**SINGLE WALL VENT PIPE IN ATTIC OF EXISTING STRUCTURE** — Single wall vent pipe, located in an attic area of an existing structure, is considered as an unsafe installation in regards to Section 810 of the 1997 UMC. When replacing a gas appliance served by this type of installation, a new venting system is required to be installed. See Item 27 of the Mechanical Committee Meeting of 7/14/04 (July 2004)

**SUPPLY AIR PLENUM ATTACHING TO A FURNACE** — When attaching the supply air plenum to a furnace, usage of raw, flange or “S” connections is acceptable in all cases; this joint/connection must be sealed per Section 503.3.3.4.2 of the 2000 IECC. (May 2004)

**TAPES & MASTICS** — Per Section 503.3.3.4.3 of the 2000 IECC, UL listed 181A tapes and mastics must be used with rigid fibrous glass ducts. UL listed 181B tapes and mastics must be used with flexible air ducts. Both UL 181A and UL181B listed tapes and mastics may be used with metal ducts. (April 2004)

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**THERMO-PAN USAGE** — Acceptable use and installation practices of the thermo-pan where reviewed. Please see January 2003 notes. Thermo-pan is not approved to form a duct unless used in conjunction with building construction per Section 601.1.2 of the 1997 UMC. (April 2004) The UMC Listing for Thermo-Pan (ICBO Report #5398) does not allow the material to be used as a duct. The listing limits the use of this product to the panning of floor joist and stud cavities for return air systems. See also 2003 Mechanical Inspection Memo. (Aug 2004)

**“THREAD PROTECTOR” VERSUS “COUPLING”** — Section 1312.1 of the UMC requires gas piping and fittings, unless welded, to have approved standard threads. The fitting provided on the end of new pipe is a “thread protector” - it is not a “coupling.” A “thread protector” is not allowed for use within a gas piping system; it does not comply with code. (Jan 2004)

**VENT CONNECTOR, HOLE DRILLED FOR CO MONITORING** — A hole drilled into a vent connector (single or double wall) for the purpose of inserting a test probe to monitor CO levels for combustion is acceptable and is not considered a code violation. When not in use, the hole is to be sealed with either UL listed 181 tape or an appropriate size sheet metal screw. (March 2004)

**VENT CONNECTORS, SINGLE WALL** — Tables 3-B and 3-C of the UMC require single wall vent connectors, serving a listed appliance without a draft hood, to be a minimum 18 inches from combustibles. Therefore, it is critical to check the distance of plastic condensate drains at this location. (Oct. 2004)

**VENT OR CONNECTOR, USE OF TAPE** — The UMC does not require joints on vents or vent connectors to be sealed. If tape is installed on a vent or connector, the tape must comply with the definition of noncombustible, UMC Section 216, Item 1. In addition, tape used on B vents must be approved for such use. UMC Sections 304.6, 803.1 & 805.3. (Sept 2004)

**VENTS LOCATED IN CLOSETS** — Vents located in closets must comply with Section 804.2 of the UMC. If the vent is completely located behind a gas appliance so that the appliance must be removed in order to access the vent, the installation complies with code. (Oct. 2004)

**WATER HEATER REPLACEMENTS, DUAL PURPOSE** — When replaced, dual purpose water heaters used for both environmental heating and domestic water, must be properly sized for both functions and will be verified at the time of inspection. (July 2004)

**WATER HEATER, INSULATION ON EXTERIOR** — Insulation on the exterior of a water heater must comply with the clearance requirements specified on the water heater. (July 2004)

## Plumbing

**AUTOMATIC AIR ADMITTANCE VALVES** — Automatic air admittance valves must be installed per listing and the manufacturer’s instructions; there are no code provisions in the UPC. (Nov/Dec 2004)

**CLEARANCE MEASUREMENT AT WATER CLOSET** — Section 408.6 of the UPC requires a 15" clearance at each side of a water closet; this measurement is taken from the center of the drain. In addition, the Section also requires a 24" clearance at the front of the water closet. This dimension is measured perpendicularly from a series of tangents at the front portion of the bowl until it intersects with the perpendicular extension of the 15" side clearance dimension. (Sept. 2004)

**FLOOD GUARD MANUFACTURED BY GENERAL PIPE CLEANERS** — The insertional backwater valve “flood guard” manufactured by General Pipe Cleaners is not acceptable for installation because it does not have an IAPMO or any other listing as required per Section 301.1 of the 1997 Uniform Plumbing Code. This has been verified by directly calling the manufacturer. (April 2004)

**FULL WAY VALVE ON COLD WATER SUPPLY PIPE TO WATER HEATER** — This is required for all new or replacement water heaters per UPC Section 605.2. (Sept. 2004)

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**PIPING SYSTEM INSULATION** — The 2000 IECC as amended requires insulation on domestic water recirculating systems, both mechanical and gravity, IECC Section 504.5, and HVAC piping, IECC Section 503.3.3.1. Insulation is not required for runouts 12 feet or less in length on domestic recirculating systems or HVAC piping. (Aug 2004)

**PLUMBING & CALCULATION OF VENT AREA** — When calculating required cross sectional area of vents through the roof as specified in Section 904.1 of the UPC, the area of automatic air admittance valves is excluded. (Feb 2004)

**P-TRAPS** — P-traps located in garage ceilings must be installed so that adequate provisions can be made to protect the trap from freezing. Refer to UPC Section 313.6 and 2002 Mechanical Inspection Memo. (Oct. 2004)

**TWO-WAY CLEANOUT ON BUILDING SEWER** — The following information applies to installation of a two-way cleanout outside the structure on the building sewer. UPC Section 707.4 (Aug 2004)

- 1) The upper end cleanout may be omitted.
- 2) The two-way cleanout may be applied to the 135° requirement.

**VENT CONNECTION TO A HORIZONTAL DRAIN** — Section 905.2 of the UPC specifies how vents must connect to a horizontal drain. Refer to January 2003 and March 2001 Mechanical Inspection Notes, and amendment in the 1999 Pikes Peak Regional Building Code (PPRBC). (Sept. 2004)

**WATER METERS AT PLUMBING FINAL INSPECTION** — Per the intergovernmental agreement with Colorado Spring Utilities, water meters are required to be in place at the time of the plumbing final. Since January 2003, the water meter installation is verified at the final building inspection and before the Certificate of Occupancy is issued. (Sept. 2004)

## Townhomes

**TOWNHOME PROPERTY LINES & PLUMBING/MECHANICAL TERMINATIONS** — The following items clarify code provisions regarding the required distance from property lines for plumbing and mechanical terminations: (Feb 2004)

- 1) NO PENETRATIONS of property line walls are permitted. Refer to UBC Section 503.2.1
- 2) Mechanical vents through the roof must be 4 feet minimum from the property line; UMC Section 806.6.1.
- 3) Plumbing vents through the roof must be a minimum of 3 feet from the property line; UPC Section 906.2.
- 4) Mechanical vents from direct vent appliances or side wall discharges must comply with the manufacturer's installation instructions, and the cited Exception to UMC Section 806.6.
- 5) There are no restrictions for combustion air ducts in regards to location to property line; UMC Chapter 7.
- 6) Environmental exhaust must be a minimum of 3 feet from the property line; UMC Section 504.6.
- 7) When townhomes exceed more than 1000 square feet on any floor, including the garage, a 30-inch parapet is required. The exception is the creation of a minimum 5-foot fire resistive zone; UBC Section 709.4.1 and Exception 5 for this "zone."

If Exception 5 is used, note the following requirements:

- a) No roof openings are allowed within 5 feet of the property line; this supersedes above listed items 2, 3 & 6.
- b) Any penetration of the fire resistive membrane by implementation of Exception 5, must be protected per UBC Sections 709.7 and 710.3.

## Manufactured Homes

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**DWV SYSTEM TESTS ON PERMANENT SET MANUFACTURED HOMES** — The same DWV system test is required as a site built structure; UPC Sections 103.5.3 and 103.5.5.2. (Aug 2004)

**INSTALLATION ON PERMANENT FOUNDATION** — (March 2004)

- 1) The building permit issued for “new single family construction” covers all work unless a basement is being finished and is not part of the approved original plan.
- 2) Inspections are not made within the manufactured unit with the exception of a 2-story unit that not assembled prior to delivery.

**MECHANICAL INSPECTIONS OF MANUFACTURED HOMES ON PERMANENT FOUNDATIONS** — The following items come under the jurisdiction of RBD: Water lines, drains, wastes, vents, gas piping, ducts and vents terminating or field installed within the crawl space or basement areas. These are inspected to confirm compliance with applicable code. (July 2004)

**PERMIT CLARIFICATION FOR AIR CONDITION UNIT INSTALLATION** — A separate permit is not required for an air conditioning unit installed during the initial installation of a manufactured home. (July 2004)

