

North Carolina Department of Insurance
322 Chapanoke Road, Suite 200
Raleigh, NC 27603
Mechanical Ad-Hoc Committee Meeting
September 30, 2009

Members present: Chairman Al Bass, Billy Hinton, Skip Higgins, John Wiggins, Mike Gibson, and Alec Arthur

The changes below are from the 2009 International Mechanical Code. These mark-ups will be adopted for the 2012 NC Mechanical Code. Items shown in ~~STRIKEOUT~~ are to be deleted and UNDERLINED items are to be added.

Chapter 1 – SCOPE AND ADMINISTRATION

1. **101.2.1 Appendicies.** Bring forward from the 2009 NC Mechanical Code.
2. **101.5 Requirements of other State agencies, occupational licensing boards or commissions.** Bring forward from the 2009 NC Mechanical Code.
3. **Section 103 - Section 109** – Bring forward from existing 2009 NC Mechanical Code.

Chapter 2 - DEFINITIONS

1. Bring forward the wording from the 2009 NC Mechanical Code for the definition of **APPROVED**.
2. Bring forward the wording from the 2009 NC Mechanical Code for the definition of **CLOSET**.
3. Adopt the wording from the 2009 IMC for the definition of **LABELED**.

Add the word *Appliance(s)* before the word *equipment* throughout the definition.

LABELED. Appliances, *equipment*, materials or products to which have been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, inspection agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the appliance, *equipment*, material or product meets identified standards or has been tested and found suitable for a specified purpose.

4. Adopt the wording from the 2009 IMC for the definition of **LISTED**.

Add the word *Appliance(s)* before the word *equipment* throughout the definition.

LISTED. *Appliances, equipment, materials, products or services included in a list published by an organization acceptable to the code official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose listing states either that the appliance, equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose.*

5. MECHANICAL JOINT. Delete

6. JOINT, MECHANICAL. A general form of gas-tight joints obtained by the joining of metal parts through a positive-holding mechanical construction, such as flanged joint, screwed joint or flared joint. These joints include both the press-type and push-fit joining systems.

7. Bring forward the wording from the 2009 NC Mechanical Code for the definition of **REGISTERED DESIGN PROFESSIONAL.**

CHAPTER 3 – GENERAL REGULATIONS

301.4 Listed and labeled. Appliances regulated by this code shall be *listed* and *labeled* for the application in which they are installed and used, unless otherwise *approved* in accordance with Section 105.

Exceptions:

1. Listing and labeling of *equipment* and appliances used for refrigeration shall be in accordance with Section 1101.2.
2. Field erected equipment shall be deemed acceptable provided it is assembled using listed components and parts, provided that the design thereof is by a *Registered design professional.*

301.14.1 Foundation and exterior wall sealing. Annular spaces around pipes, electric cables, conduits or other openings in the walls shall be protected against the passage of rodents by closing such opening with cement mortar, concrete masonry, silicone caulking or noncorrosive metal.

303.5 Indoor locations for fuel-fired appliances. Fuel-fired furnaces, fuel-fired water heaters and fuel-fired boilers installed in closets and alcoves shall be *listed* for such installation. For purposes of this section, a closet or alcove shall be defined as a room or space having a volume less than 12 times the total volume of fuel-fired appliances other than boilers and less than 16 times the total volume of boilers. Room volume shall be computed using the gross floor area and the actual ceiling height up to a maximum computation height of 8 feet (2438 mm).

304.2 Conflicts. Bring forward the deletion from the 2009 NC Mechanical Code.

304.3.1 Parking garages. Connection of a parking garage with any room in which there is a fuel-fired *appliance* shall be by means of a vestibule providing a two-doorway separation, except that a single door is permitted where the sources of ignition in the *appliance* are elevated in accordance with Section 304.3.

Exceptions:

1. This section shall not apply to *appliance* installations complying with Section 304.6.
2. This does not apply to one- and two-family dwellings and townhouses.

304.8 Clearances to combustible construction. Bring forward the wording from the 2009 NC Mechanical Code.

304.10 Under-floor and exterior grade installations. Bring forward the wording from the 2009 NC Mechanical Code and **DELETE** language in the 2009 IMC.

304.10.3 Crawl space supports. A support shall be provided at each corner of the unit not less than 8 x 8 inches. The unit shall be supported a minimum of 2 inches above grade. When constructed of brick, the bricks shall be mortared together. All units stacked shall be mortared together. Fabricated units, formed concrete, or other approved materials shall be permitted.

304.11 Guards. Bring forward the NC Amendment from the 2009 NC Mechanical Code.

306.1.1 Central furnaces. Bring forward the deletion from the 2009 NC Mechanical Code.

306.3 Appliances in attics. Use 2009 IMC wording.

Exception #2 only – Bring forward the wording from the 2009 NC Mechanical Code.

306.3.1 Electrical requirements. Bring forward the deletion from the 2009 NC Mechanical Code.

306.4 Appliances under floors. Integrate NC amendment into the new 2009 IMC paragraph.

306.4.1 Electrical requirements. Bring forward the deletion from the 2009 NC Mechanical Code.

306.5 Equipment and appliances on roofs or elevated structures. Where *equipment requiring access* and appliances requiring periodic maintenance are installed on roofs or elevated structures at a height exceeding 16 feet (4877 mm), such access shall be provided by a permanent *approved* means of access, the extent of which shall be from grade or floor level to the *equipment* and appliances' level service space. Such access shall not require climbing over obstructions greater than 30 inches (762 mm) high or walking on roofs having a slope greater than four units vertical in 12 units horizontal (33-percent slope). Where access involves climbing over parapet walls, the height shall be measured to the top of the parapet wall.

*The remainder of this item should remain as it is in the 2009 IMC.

306.5.1 Sloped roofs. Where appliances, *equipment*, fans or other components that require ~~service~~ periodic maintenance are installed on a roof having a slope of three units vertical in 12 units horizontal (25-percent slope) or greater and having an edge more than 30 inches (762 mm) above grade at such edge, a level platform shall be provided on each side of the *appliance* or *equipment* to which access is required for service, repair or maintenance. The platform shall be not less than 30 inches (762 mm) in any dimension and shall be provided with guards. The guards shall extend not less than 42 inches (1067 mm) above the platform, shall be constructed so as to prevent the passage of a 21 -inch diameter (533 mm) sphere and shall comply with the loading requirements for guards specified in the *International Building Code*. Access shall not require walking on roofs having a slope greater than four units vertical in 12 units horizontal (33-percent slope). Where access involves obstructions greater than 30 inches (762 mm) in height, such obstructions shall be provided with ladders installed in accordance with Section 306.5 or stairs installed in accordance with the requirements specified in the *International Building Code* in the path of travel to and from appliances, fans or *equipment* requiring service.

306.5.2 Electrical requirements. Bring forward the deletion from the 2009 NC Mechanical Code.

307.2 Evaporators, condensing furnaces and cooling coils. Bring forward the wording from the 2009 NC Mechanical Code.

307.2.1 Condensate disposal. Condensate from all condensing furnaces, cooling coils and evaporators shall be conveyed from the drain pan outlet to an *approved* place of disposal. Such piping shall maintain a minimum horizontal slope in the direction of discharge of not less than one-eighth unit vertical in 12 units horizontal (1-percent slope). When unable to drain by gravity a condensate pump may be used. Where pumps are used, they shall be installed with a factory-equipped auxiliary high-level switch and shall shut off equipment served upon activation of the auxiliary high-level switch. Where damage to any building components will occur as a result of overflow from the pump, the pump shall also be located in the auxiliary drain pan or in a separate drain pan equipped with a separate drain line or water-level detection device. Condensate shall not discharge into a street, alley or other areas so as to cause a nuisance.

307.2.2 Drain pipe materials and sizes. Components of the condensate disposal system shall be cast iron, galvanized steel, copper, cross-linked polyethylene, polybutylene, polyethylene, ABS, CPVC, or PVC pipe or tubing. All components shall be selected for the pressure and temperature rating of the installation. Joints and connections shall be made in accordance with the applicable provisions of Chapter 7 of the *International Plumbing Code* relative to the material type. Condensate waste and drain line size shall be not less than ¾-inch (19 mm) internal diameter and shall not decrease in size from the drain pan connection to the place of condensate disposal. ~~Where the drain pipes from more than one unit are manifolded together for condensate drainage, the pipe or tubing shall be sized in accordance with Table 307.2.2.~~

TABLE 307.2.2 CONDENSATE DRAIN SIZING – DELETE

307.2.3 Auxiliary and secondary drain systems. Adopt the 2009 IMC language but bring forward the wording of Item number 4 from the 2009 NC Mechanical Code.

SECTION 308 – CLEARANCE REDUCTION FOR UNLISTED EQUIPMENT AND UNLISTED APPLIANCES

308.2 Listed appliances and equipment. Bring forward the deletion from the 2009 NC Mechanical Code.

*Revise the following Table title from the 2009 NC Mechanical Code:

TABLE 308.6 CLEARANCE REDUCTION METHODS FOR UNLISTED EQUIPMENT

*Under the last column “6” of the table, change the number 2 to number 3.

308.7 Solid fuel-burning appliances. The clearance reduction methods specified in Table 308.6 shall not be utilized to reduce the clearance required for solid fuel-burning appliances that are labeled for installation with clearances of 12 inches (305 mm) or less. ~~Where appliances are labeled for installation with clearances of greater than 12 inches (305 mm), the clearance reduction methods of Table 308.6 shall not reduce the clearance to less than 12 inches (305 mm).~~

312.1 Load calculations. Heating and cooling system design loads for the purpose of sizing systems, appliances and *equipment* shall be determined in accordance with the procedures described in the ASHRAE/ACCA Standard 183. Alternatively, design loads shall be determined by an *approved* equivalent computation procedure, using the design parameters specified in Chapter 3 of the *International Energy Conservation Code*. For one- and two-family dwellings and townhouses, heating and cooling *equipment* shall be sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other *approved* heating and cooling calculation methodologies.

The committee will begin in Chapter 4.

The Next Scheduled Meeting. The next meeting for the Mechanical Code Ad-Hoc Committee is Wednesday, October 21st. This meeting will begin at 9:00AM and will be held at NCDOI in Conference Room 204.

**Mechanical Ad-Hoc Committee Meeting
October 21, 2009**

Members present: Chairman Al Bass, Billy Hinton, Skip Higgins, John Wiggins, Ralph Euchner, Mike Gibson, Alec Arthur and Henry Webster

The changes below are from the 2009 International Mechanical Code. These mark-ups will be adopted for the 2012 NC Mechanical Code. Items shown in ~~STRIKEOUT~~ are to be deleted and UNDERLINED items are to be added.

Chapter 4 – VENTILATION

4. 403.2.1 Recirculation of air. Bring forward from the 2009 NC Mechanical Code.

*Items number **3** and **4** should read as follows:

***3.** Where mechanical exhaust is required by Note b in Table 403.3, recirculation of air to other spaces shall be prohibited. All air supplied to such spaces shall be exhausted, including any air in excess of that required by Table 403.3.

***4.** Where mechanical exhaust is required by Note g in Table 403.3, mechanical exhaust is required and recirculation to other spaces is prohibited where more than 10 percent of the resulting supply airstream consists of air recirculated from these spaces.

5. TABLE 403.3 – MINIMUM VENTILATION RATES

***Footnote (b.)** – Adopt 2009 IMC wording and add NC amendment.

***Footnote (g.)** – Mechanical exhaust is required and recirculation to other spaces is prohibited except that recirculation shall be permitted where the resulting supply airstream consists of not more than 10 percent air recirculated from these spaces (see Section 403.2.1, Items 2 and 4).

***OCCUPANCY CLASSIFICATION – Private dwellings, single and multiple**
- ~~Garages, separate for each dwelling~~

***EXHAUST AIRFLOW RATE CFM/FT² a**
- ~~100 cfm per car~~

6. 405.2 Fan shutdown controls. Bring forward from the 2009 NC Mechanical Code.

7. **406.1 General.** Bring forward **Exception** from the 2009 NC Mechanical Code.

Chapter 5 – EXHAUST SYSTEMS

1. **501.3.** Add the following new **Exception**:

Exception: Domestic exhaust systems in residential occupancies and similar uses (domestic clothes dryer, domestic range hood, domestic bathroom exhaust).

2. **504.5 Makeup air.** ~~Installations exhausting more than 200 cfm (0.09m³/s) shall be provided with makeup air.~~ Where a closet is designed for the installation of a clothes dryer, an opening having an area of not less than 100 square inches (0.0645 m²) shall be provided in the closet enclosure or *makeup air* shall be provided by other *approved* means.
3. **504.6 Domestic clothes dryer ducts.** Adopt 2009 IMC paragraph and add NC amendment. Bring forward **Exception** from the 2009 NC Mechanical Code and place it under **504.6.2 Duct installation.**
4. **504.6.1 Material and size.** Exhaust ducts shall have a smooth interior finish and shall be constructed of metal a minimum 0.016 inch (0.4 mm) thick. With the exception of the transition duct, flexible ducts are prohibited. The exhaust duct size shall be 4 inches (102 mm) nominal in diameter.
5. **504.6.2 Duct installation.** Exhaust ducts shall be supported at 4-foot (1219 mm) intervals and secured in place and shall terminate not less than 12 inches (305 mm) above finished grade. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude into the inside of the duct.

*Bring forward **Exception** from **504.6** from the 2009 NC Mechanical Code.

6. **504.6.3 Transition ducts.** Transition ducts used to connect the dryer to the exhaust duct system shall be a single length that is *listed and labeled* in accordance with UL 2158A. Transition ducts shall be a maximum of 8 feet (2438 mm) in length, ~~and~~ shall not be concealed within construction, and must remain entirely within the room in which the appliance is installed.
7. **504.6.5 Length identification.** ~~Where the exhaust duct is concealed within the building construction,~~ The equivalent length of the exhaust duct shall be identified on a permanent label or tag. The label or tag shall be located within 6 feet (1829 mm) of the exhaust duct connection.
8. **504.6.6 Exhaust duct required.** Where space for a clothes dryer is provided, an exhaust duct system shall be installed. ~~Where the clothes~~

~~dryer is not installed at the time of occupancy, the exhaust duct shall be capped at the location of the future dryer.~~

Exception: Where a *listed* condensing clothes dryer is installed prior to occupancy of structure.

The committee will begin in Chapter 5 – Section 505.

The Next Scheduled Meeting. The next meeting for the Mechanical Code Ad-Hoc Committee is Tuesday, October 27th. This meeting will begin at 9:00AM and will be held at NCDOI in Conference Room 204.

Mechanical Ad-Hoc Committee Meeting
October 27, 2009

Members present: Chairman Al Bass, Billy Hinton, John Wiggins, Ralph Euchner, Mike Gibson, Alec Arthur, Janie Sutton, Lacy Smith and Henry Webster

The changes below are from the 2009 International Mechanical Code. These mark-ups will be adopted for the 2012 NC Mechanical Code. Items shown in ~~STRIKEOUT~~ are to be deleted and UNDERLINED items are to be added.

Chapter 5 – EXHAUST SYSTEMS

01.505.1 Domestic Systems. Keep the language from the 2009 IMC with **Exceptions 2.3** and **2.4** to read as follows:

Exceptions:

- 2.3 The PVC duct shall not be more than \pm 2 inches (~~25~~ 50 mm) above the indoor concrete floor surface.
- 2.4 The PVC duct shall not be more than \pm 2 inches (~~25~~ 50 mm) above grade outside of the building.

02. Keep the language from the 2009 IMC with the following modification to the first paragraph:

506.3.2.5 Grease duct test. Prior to the use or concealment of any portion of a grease duct system, a leakage test shall be performed in the presence of the code official. Ducts shall be considered to be concealed where installed in shafts or covered by coatings or wraps that prevent the ductwork from being visually inspected on all sides. The permit holder shall be responsible to provide the necessary *equipment* and perform the grease duct leakage test. A light test shall be performed to determine that all welded and brazed joints are liquid tight.

03.506.3.10 Grease duct enclosures. A grease duct serving a Type I hood that penetrates a ceiling, wall or floor shall be enclosed from the point of penetration to the outlet terminal. A duct shall penetrate exterior walls only at locations where unprotected openings are permitted by the *International Building Code*. The duct enclosure shall serve a single grease duct and shall not contain other ducts, piping or wiring systems. Duct enclosures shall be either field-applied or factory-built. Duct enclosures shall have a fire-resistance rating not less than that of the ~~floor~~ assembly penetrated, but need not exceed 2 hours. Duct enclosures shall be as prescribed by Section 506.3.10.1, 506.3.10.2 or 506.3.10.3.

04.506.3.10.4 Duct enclosure not required. Keep as an **Exception** under **506.3.10 Grease duct enclosures.**

05.507.2.1 Type I hoods. Type I hoods shall be installed where cooking *appliances* produce grease or smoke. Type I hoods shall be installed over ~~*medium-duty, heavy-duty*~~ and *extra-heavy-duty cooking appliances*. Type I hoods shall be installed over *light-duty cooking appliances* and *medium-duty cooking appliances* that produce grease or smoke.

06.507.2.2 Type II hoods. Type II hoods shall be installed above dishwashers and *light-duty appliances* and *medium-duty appliances* that produce heat or moisture and do not produce grease or smoke, except where the heat and moisture loads from such appliances are incorporated into the HVAC system design or into the design of a separate removal system. Type II hoods shall be installed above all *light-duty appliances* and *medium-duty appliances* that produce products of *combustion* and do not produce grease or smoke. Spaces containing cooking appliances that do not require Type II hoods shall be ventilated in accordance with Section 403.3. ~~For the purposes of determining the floor area required to be ventilated, each individual appliance that is not required to be installed under a Type II hood shall be considered as occupying not less than 100 square feet (9.3 m²).~~

*Bring forward **Exceptions 1-5** from the 2009 NC Mechanical Code and modify number 5 to read as follows:

5. Low-temperature ~~{not greater than 120°F (49°C)}~~ commercial chemical-type dishwashers.

07.507.2.3 Domestic cooking appliances used for commercial purposes. Bring forward the **Exception** from the 2009 NC Mechanical Code with the following modifications:

Exception: A maximum of two residential domestic ranges (four burner) installed in dwelling units, churches, schools, day care centers, break areas and similar installations.

08.507.2.4 Extra-heavy-duty. Type I hoods for use over *extra-heavy-duty cooking appliances* shall not also cover *heavy-, medium-, or light-duty appliances*. Such hoods shall discharge to an exhaust system that is independent of other exhaust systems.

09.507.8 Cleaning and grease gutters. Bring forward the amendment from the 2009 NC Mechanical Code.

10.507.16.2 Certification. Bring forward from the 2009 NC Mechanical Code.

11.510.8 Duct construction. Keep 2009 IMC but separate second paragraph into two paragraphs to read as follows:

Nonmetallic ducts shall have a flame spread index of 25 or less and a smoke-developed index of 50 or less, when tested in accordance with ASTM E 84 or UL 723. Ducts shall be *approved* for installation in such an exhaust system.

Where the products being exhausted are detrimental to the duct material, the ducts shall be constructed of alternate materials that are compatible with the exhaust.

Chapter 6 – DUCT SYSTEMS

9. 602.2.1 Materials within plenums. Keep the 2009 IMC and add the following new **Exception** and renumber #4 to #5 and #5 to #6. They will now read as follows

Exceptions:

1. Rigid and flexible ducts and connectors shall conform to Section 603.
2. Duct coverings, linings, tape and connectors shall conform to Sections 603 and 604.
3. This section shall not apply to materials exposed within plenums in one- and two-family dwellings.
4. This section shall not apply to materials exposed within equipment rooms and furnace rooms in dwelling units.
5. This section shall not apply to smoke detectors.
6. Combustible materials fully enclosed within continuous noncombustible raceways or enclosures, *approved* gypsum board assemblies or within materials *listed* and *labeled* for such application.

10. 603.1.1 Bring forward from the 2009 NC Mechanical Code.

11. 603.7 Rigid duct penetrations. Duct system penetrations of walls, floors, ceilings and roofs and air transfer openings in such building components shall be protected as required by Section 607. Ducts in a private garage and ducts penetrating the walls or ceilings separating a *dwelling unit* from a private garage shall be continuous and constructed of a minimum 26 gage [0.0187 inch (0.4712 mm)] galvanized sheet metal or other approved noncombustible material and shall not have openings into the garage. Fire and smoke dampers are not required in such ducts passing through the wall or ceiling separating a *dwelling unit* from a private garage except where required by Chapter 7 of the *International Building Code*.

12. 603.9 Joints, seams and connections. Bring forward from the 2009 NC Mechanical Code paragraph and modify **Exception** to read as follows:

Exception:

1. Continuously welded ~~and locking type~~ longitudinal joints and seams in ducts ~~operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.~~
2. Ducts exposed within the conditioned space they serve shall not be required to be sealed.

13. 603.10.1 For one- and two-family dwellings and townhouses. Bring forward from the 2009 NC Mechanical Code.

14. 603.12 Condensation. Bring forward from the 2009 NC Mechanical Code.

15. 603.19 Under-floor furnace plenums. Under-floor furnace plenums shall be prohibited in new structures. Modification or repairs to existing under-floor furnace plenums in existing structures shall conform to the requirements of this section.

603.19.1 General. The space shall be cleaned of loose combustible materials and scrap, and shall be tightly enclosed. The ground surface of the space shall be covered with a moisture barrier having a minimum thickness of 4 mils (0.1 mm). Plumbing waste cleanouts shall not be located within the space.

603.19.2 Materials. The under-floor space, including the sidewall insulation, shall be formed by materials having flame-spread ratings not greater than 200 when tested in accordance with ASTM E 84.

603.19.3 Furnace connections. A duct shall extend from the furnace supply outlet to not less than 6 inches (152 mm) below the combustible framing. This duct shall comply with the provisions of Section 603. A noncombustible receptacle shall be installed below any floor opening into the plenum in accordance with the following requirements:

1. The receptacle shall be securely suspended from the floor members and shall not be more than 18 inches (457 mm) below the floor opening.
2. The area of the receptacle shall extend 3 inches (76 mm) beyond the opening on all sides.
3. The perimeter of the receptacle shall have a vertical lip at least 1 inch (25 mm) high at the open sides.

603.19.4 Access. Access to an under-floor furnace plenum shall be provided through an opening in the floor with minimum dimensions of 18 inches by 24 inches (457 mm by 610 mm).

603.19.5 Furnace controls. The furnace shall be equipped with an automatic control that will start the air-circulating fan when the air in the furnace bonnet reaches a temperature not higher than 150°F (66°C). The furnace shall additionally be equipped with an *approved* automatic control that limits the outlet air temperature to 200°F (93°C).

16. 604.1 General. Bring forward from the 2009 NC Mechanical Code.

17. 604.9 Thermal continuity. Bring forward the **Exception** from the 2009 NC Mechanical Code.

The committee will begin in Chapter 6 – Section 605.

The Next Scheduled Meeting. The next meeting for the Mechanical Code Ad-Hoc Committee is Friday, November 20th. This meeting will begin at 9:00AM and will be held at NCDOI in Conference Room 204.

**Mechanical Ad-Hoc Committee Meeting
November 20, 2009**

Members present: Chairman Al Bass, Billy Hinton, John Wiggins, Ralph Euchner, Mike Gibson, Alec Arthur, Janie Sutton, and Lacy Smith

The changes below are from the 2009 International Mechanical Code. These mark-ups will be adopted for the 2012 NC Mechanical Code. Items shown in ~~STRIKEOUT~~ are to be deleted and UNDERLINED items are to be added.

Chapter 6 – DUCT SYSTEMS

07.606.2.2 Common supply and return air systems. Bring forward **EXCEPTION** from the 2009 NC Mechanical Code and number to read as follows:

Exception:

1. Individual smoke detectors shall not be required for any fan-powered unit serving only one space.
2. Individual smoke detectors shall not be required for each fan-powered terminal unit, provided that such units do not have an individual design capacity greater than 2,000 cfm (0.9 m³/s) and will be shut down by activation of one of the following:
 1. Smoke detectors required by Section 606.2.1 and 606.2.3.
 2. An approved area smoke detector system located in the return air plenum serving such units.
 3. An area smoke detector system as prescribed in the exception to Section 606.2.1.

08.607.5 Location and installation. Keep 2009 IMC Paragraph and bring 2009 NC Mechanical amendment forward.

Chapter 7 – COMBUSTION AIR – Adopt from 2009 IMC Mechanical Code

Chapter 8 – CHIMNEYS AND VENTS

01.801.20 Plastic vent joints. Bring forward from the 2009 NC Mechanical Code with the following modifications in the last sentence:

Solvent cement joints between CPVC pipe and fittings or PVC pipe and fittings shall be primed. The primer shall be a contrasting color.

02.TABLE 803.10.4. Bring forward the change in the title from the 2009 NC Mechanical Code.

Chapter 9 – SPECIFIC APPLIANCES, FIREPLACES AND SOLID FUEL-BURNING EQUIPMENT

01.917.4 Installation of microwave oven over a cooking appliance. Bring forward from the 2009 NC Mechanical Code.

02.918.2 Minimum duct sizes. Keep 2009 IMC Paragraph and the first part of the Exception and bring the amendment forward from the 2009 NC Mechanical Code.

03.918.6 Prohibited sources. Keep from the 2009 IMC with the following modifications:

6. Delete last sentence.

7. A room or space containing a fuel-burning *appliance or fireplace* where such a room or space serves as a source of return air

7.4 This shall not apply to rooms and spaces containing a fireplace provided that return air inlets are located not less than 10 feet (3048 mm) from the fireplace opening.

04.918.9 Refrigeration coils in warm-air furnaces. Bring forward from the 2009 NC Mechanical Code.

05.918.10 Return-air intake (nonengineered systems). Bring forward from the 2009 NC Mechanical Code and move to 603.18.

06.SECTION 927 – DUCT HEATERS. Bring forward from the 2009 NC Mechanical Code and renumber to SECTION 929.

- **927.1 General.** Change from UL 1995 to UL 1996.

07.SECTION 928 – RADIANT HEATING SYSTEMS. Bring forward from the 2009 NC Mechanical Code.

08.SECTION 929 – BASEBOARD CONVECTORS. Bring forward from the 2009 NC Mechanical Code and renumber to SECTION 930.

Chapter 10 – BOILERS, WATER HEATERS AND PRESSURE VESSELS

1. **1001.1 Scope.** Keep the 2009 IMC paragraph. Bring forward, replacing #7 with 2009 NC Mechanical Code #7 and bring NC amendment forward.
2. **1005.1 Valves.** Keep the 2009 IMC paragraph and **DELETE** the **Exception.**

Chapter 11 – REFRIGERATION

1. **1101.10 Locking access port caps.** Deleted.
2. **SECTION 1109 – PERIODIC TESTING** Bring forward **DELETION** from the 2009 NC Mechanical Code.

Chapter 13 – FUEL OIL PIPING AND STORAGE

1. **1301.2 Storage and piping systems.** Keep 2009 IMC paragraph and bring forward Exception from 2009 NC Mechanical Code.
2. **1301.3 Fuel type.** Bring forward amendment from 2009 NC Mechanical code in place of IMC language.
3. **SECTION 1309 – OIL TANKS FOR ONE- AND TWO-FAMILY DWELLINGS AND TOWNHOUSES.** Bring forward from the 2009 NC Mechanical Code.

Chapter 15 – REFERENCED STANDARDS

1. **ACCA**
 - Manual J - Bring forward from the 2009 NC Mechanical Code.
 - Manual S—04 Residential Equipment Selection.....312
2. **UL**
 - Pick up UL 58 and UL80.
 - Add UL 142
 - Add UL 1996
3. **APPENDIX A** – Delete – Figures 1-4
4. **APPENDIX B** – Delete
5. **APPENDIX C** - Delete

The Next Scheduled Meeting. The next meeting for the Mechanical Code Ad-Hoc Committee is Wednesday, January 6th. This meeting will begin at 9:00AM and will be held at NCDOI in Conference Room 239.

**Mechanical Ad-Hoc Committee Meeting
January 6, 2010**

Members present: Chairman Al Bass, Billy Hinton, John Wiggins, Ralph Euchner, Mike Gibson, Skip Higgins, and Janie Sutton

Abridged Mechanical Code for Residential

Note: Where there is a conflict between the abridged NC Mechanical Code and the NC Mechanical Code, the NC Mechanical Code shall govern.

Chapter 1 – SCOPE AND ADMINISTRATION

01.101.1 Title. These regulations shall be known as the *North Carolina Mechanical Code* as adopted by the North Carolina Building Code Council on [Date], to be effective [Date]. References to the *International Codes* shall mean the North Carolina Codes. The North Carolina amendments to the *International Codes* are underlined.

Chapter 2 – DEFINITIONS

Note: Additional definitions are located in Chapter 2 of the Residential Code and apply.

01.ABRASIVE MATERIALS. OMIT

02.ABSORPTION SYSTEM. OMIT

03.AIR DISPERSION SYSTEM. OMIT

04.APPLIANCE TYPE.

High-heat appliance. OMIT

Medium-heat appliance. OMIT

05.CEILING RADIATION DAMPER. OMIT

06.CLOTHES DRYER. Keep paragraph but the following:

Type 2. OMIT

07.COMBINATION FIRE/SMOKE DAMPER. OMIT

08.COMBUSTIBLE LIQUIDS. OMIT

- 09.COMMERCIAL COOKING RECIRCULATING SYSTEM. OMIT**
- 10.COMMERCIAL KITCHEN HOODS. OMIT**
- 11.COMPENSATING HOODS. OMIT**
- 12.COMPRESSOR. OMIT**
- 13.COMPRESSOR, POSITIVE DISPLACEMENT. OMIT**
- 14.COMPRESSOR UNIT. OMIT**
- 15.CONDENSER. OMIT**
- 16.DIRECT REFRIGERATION SYSTEM. OMIT**
- 17.DRY CLEANING SYSTEMS. OMIT**
- 18.DUCT FURNACE. OMIT**
- 19.EVAPORATIVE COOLER. OMIT**
- 20.EVAPORATIVE COOLING SYSTEM. OMIT**
- 21.EVAPORATOR. OMIT**
- 22.EXTRA-HEAVY-DUTY COOKING APPLIANCE. OMIT**
- 23.FIRE DAMPER. OMIT**
- 24.FLAMMABILITY CLASSIFICATIONS. OMIT**
- 25.FLAMMABILITY LIQUIDS. OMIT**
- 26.FLAMMABLE VAPOR OR FUMES. OMIT**
- 27.FLASH POINT. OMIT**
- 28.FLOOR AREA, NET. OMIT**
- 29.HAZARDOUS LOCATION. OMIT**
- 30.HEAVY-DUTY COOKING APPLIANCE. OMIT**
- 31.HIGH-PROBABILITY SYSTEMS. OMIT**
- 32.HIGH-SIDE PRESSURE. OMIT**
- 33.HOOD. Keep paragraph but the following:**
 - Type I. OMIT**
 - Type II. OMIT**

- 34. IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH). OMIT**
- 35. INDIRECT REFRIGERATION SYSTEM. OMIT**
- 36. LIGHT-DUTY COOKING APPLIANCE. OMIT**
- 37. LIMITED CHARGE SYSTEM. OMIT**
- 38. LOWER EXPLOSIVE LIMIT (LEL). OMIT**
- 39. LOWER FLAMMABLE LIMIT (LFL). OMIT**
- 40. LOW-PROBABILITY SYSTEMS. OMIT**
- 41. MACHINERY ROOM. OMIT**
- 42. MEDIUM-DUTY COOKING APPLIANCE. OMIT**
- 43. MODULAR BOILER. OMIT**
- 44. NET OCCUPIABLE FLOOR AREA. OMIT**
- 45. NONABRASIVE/ABRASIVE MATERIALS. OMIT**
- 46. NONCOMBUSTIBLE MATERIALS. OMIT**
- 47. OCCUPANCY. OMIT**
- 48. OUTLET. OMIT**
- 49. PLASTIC, THERMOPLASTIC. OMIT**
- 50. PREMISES. OMIT**
- 51. PRESSURE VESSELS—REFRIGERANT. OMIT**
- 52. RECEIVER, LIQUID. OMIT**
- 53. RECLAIMED REFRIGERANTS. OMIT**
- 54. RECOVERED REFRIGERANTS. OMIT**
- 55. RECYCLED REFRIGERANTS. OMIT**
- 56. REFRIGERANT SAFETY CLASSIFICATIONS. OMIT**
- 57. REFRIGERATED ROOM OR SPACE. OMIT**
- 58. REFRIGERATING SYSTEM. OMIT**
- 59. REFRIGERATION CAPACITY RATING. OMIT**

- 60.REFRIGERATION MACHINERY ROOM. OMIT**
- 61.REFRIGERATION SYSTEM, ABSORPTION. OMIT**
- 62.REFRIGERATION SYSTEM CLASSIFICATION. OMIT**
- 63.REFRIGERATION SYSTEM, MECHANICAL. OMIT**
- 64.REFRIGERATION SYSTEM, SELF-CONTAINED. OMIT**
- 65.REGISTERED DESIGN PROFESSIONAL. OMIT**
- 66.SHAFT. OMIT**
- 67.SHAFT ENCLOSURE. OMIT**
- 68.SLEEPING UNIT. OMIT**
- 69.SMOKE DAMPER. OMIT**
- 70.SOLID FUEL (COOKING APPLICATIONS). OMIT**
- 71.SOURCE CAPTURE SYSTEM. OMIT**
- 72.STATIONARY FUEL CELL POWER PLANT. OMIT**
- 73.STORY. OMIT**
- 74.STRENGTH, ULTIMATE. OMIT**
- 75.TLV-TWA (THRESHOLD LIMIT VALUE-TIME-WEIGHTED AVERAGE). OMIT**
- 76.TOILET ROOM. OMIT**
- 77.TOXICITY CLASSIFICATION. OMIT**
- 78.TRANSITION FITTINGS, PLASTIC TO STEEL. OMIT**
- 79.UNIT HEATER. OMIT**

Chapter 3 – GENERAL REGULATIONS

- 01.301.4 Listed and labeled.** Keep paragraph and OMIT the **Exception.**
- 02.301.6 Label information.** OMIT Item number 2.
- 03.301.10 Vibration isolation.** OMIT
- 04.301.15 Seismic resistance.** OMIT

- 05.302.2 Penetrations of floor/ceiling assemblies and fire-resistance-rated assemblies.** OMIT
- 06.[B] 302.5 Cutting, notching and boring in steel framing.** through **[B] 302.5.3 Cutting, notching and boring holes in nonstructural cold-formed steel wall framing.** OMIT
- 07.303.3 Prohibited locations.** Keep paragraph and Item numbers 1, 2, and 4. OMIT Item numbers 3 and 5.
- 08.[B] 303.8 Elevator shafts.** OMIT
- 09.304.4 Prohibited equipment and appliance location.** OMIT
- 10.[FG] 304.5 Hydrogen-generating and refueling operations.** OMIT
- 11.304.6 Public gargages.** OMIT
- 12.304.8 Construction and protection.** OMIT
- 13.[B] 304.11 Guards.** OMIT
- 14.304.12 Area served.** OMIT
- 15.306.2 Appliances in rooms.** ~~Rooms containing appliances shall be provided with a door and an unobstructed passageway measuring not less than 36 inches (914 mm) wide and 80 inches (2032 mm) high.~~
- Exception:** ~~Within a dwelling unit,~~ Appliances installed in a compartment, alcove, basement or similar space shall be accessed by an opening or door and an unobstructed passageway measuring not less than 24 inches (610 mm) wide and large enough to allow removal of the largest *appliance* in the space, provided that a level service space of not less than 30 inches (762 mm) deep and the height of the *appliance*, but not less than 30 inches (762 mm), is present at the front or service side of the *appliance* with the door open.
- 16.306.5 Equipment and appliances on roofs and elevated structures.** through **306.5.2 Electrical requirements.** OMIT
- 17.307.2.2 Drain pipe materials and sizes.** OMIT last sentence of this paragraph.
- 18.TABLE 307.2.2 CONDENSATE DRAIN SIZING** – OMIT
- 19.308.11 Kitchen exhaust ducts.** OMIT
- 20.[F] SECTION 310 EXPLOSION CONTROL** – OMIT
- 21.[F] SECTION 311 SMOKE AND HEAT VENTS** – OMIT

Chapter 4 – VENTILATION

01.401.1 Scope. This chapter shall govern the ventilation of spaces within a building intended to be occupied. Mechanical exhaust systems, including exhaust systems serving clothes dryers and cooking appliances; ~~hazardous exhaust systems; dust, stock and refuse conveyor systems; subslab soil exhaust systems; smoke control systems; energy recovery ventilation systems and other systems specified in Section 502~~ shall comply with Chapter 5.

02.401.3 When required. OMIT

03.TABLE 401.5 – OPENING SIZES IN LOUVERS, GRILLES AND SCREENS PROTECTING AIR INTAKE OPENINGS – OMIT last line only:

Intake openings in other than residential occupancies	>1/4 inch and not > 1 inch
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04.403.2.1 Recirculation of air.

1. Ventilation air shall not be recirculated from one *dwelling* to another ~~or to dissimilar occupancies.~~
2. OMIT

05.403.2.2 Transfer air. OMIT

06.403.3 Outdoor airflow rate. Ventilation systems shall be designed to have the capacity to supply the minimum outdoor airflow rate determined in accordance with this section. The occupant load utilized for design of the ventilation system shall not be less than the number determined from the estimated maximum occupant load rate indicated in Table 403.3. ~~Ventilation rates for occupancies not represented in Table 403.3 shall be those for a listed *occupancy* classification that is most similar in terms of occupant density, activities and building construction; or shall be determined by an *approved* engineering analysis. The ventilation system shall be designed to supply the required rate of *ventilation air* continuously during the period the building is occupied, except as otherwise stated in other provisions of the code.~~

~~With the exception of smoking lounges, the ventilation rates in Table 403.3 are based on the absence of smoking in occupiable spaces. Where smoking is anticipated in a space other than a smoking lounge, the ventilation system serving the space shall be designed to provide ventilation over and above that required by Table 403.3 in accordance with accepted engineering practice.~~

Exception: ~~The occupant load is not required to be determined based on the estimated maximum occupant load rate indicated in Table 403.3~~

~~were approved statistical data document the accuracy of an alternate anticipated occupant density.~~

07. TABLE 403.3 – MINIMUM VENTILATION RATES

Footnote b. ~~Where~~ Mechanical exhaust ~~is~~ required...

Footnote g. ~~Where~~ Mechanical exhaust is required...

*OMIT all of TABLE 403.3 except **“Private dwellings, single and multiple”** section.

08.403.3.1 Zone outdoor airflow. through **403.3.2.3.4 Outdoor air intake flow rate.** OMIT

09.403.4 Exhaust ventilation. Exhaust airflow rate shall be provided in accordance with the requirements in Table 403.3. ~~Exhaust makeup air shall be permitted to be any combination of outdoor air, recirculated air and transfer air, except as limited in accordance with Section 403.2.~~

10.403.5 System operation. and **403.6 Variable air volume system control.** OMIT

11. SECTION 404 – ENCLOSED PARKING GARAGES through **SECTION 406 – VENTILATION OF UNINHABITED** – OMIT

CHAPTER 5 – EXHAUST SYSTEMS

01.501.1 Scope. This chapter shall govern the design, construction and installation of mechanical exhaust systems, including exhaust systems serving clothes dryers and cooking appliances; ~~hazardous exhaust systems; dust, stock and refuse conveyor systems; subslab soil exhaust systems; smoke control systems; energy recovery ventilation systems and other systems specified in Section 502.~~

02.501.2 Exhaust discharge. OMIT **Exception** number 2 only

03.501.2.1 Location of exhaust outlets. OMIT **Exception** numbers 1, 2, and 5.2-5.7 only.

04.501.2.1.1 Exhaust discharge. OMIT

05.501.3 Pressure equalization. Mechanical exhaust systems shall be sized to remove the quantity of air required by this chapter to be exhausted. The system shall operate when air is required to be exhausted. ~~Where mechanical exhaust is required in a room or space in other than occupancies in R-3 and dwelling units in R-2, such space shall be maintained with a neutral or negative pressure. If a greater quantity of air is supplied by a mechanical ventilating supply system than is removed by a~~

~~mechanical exhaust for a room, adequate means shall be provided for the natural or mechanical exhaust of the excess air supplied. If only a mechanical exhaust system is installed for a room or if a greater quantity of air is removed by a mechanical exhaust system than is supplied by a mechanical ventilating supply system for a room, adequate *makeup air* consisting of supply air, transfer air or outdoor air shall be provided to satisfy the deficiency. The calculated building infiltration rate shall not be used to satisfy the requirements of this section.~~

06.502.1 General. An exhaust system shall be provided, maintained and operated as specifically required by this section ~~and for all occupied areas where machines, vats, tanks, furnaces, forges, salamanders and other appliances, equipment and processes in such areas produce or throw off dust or particles sufficiently light to float in the air, or which emit heat, odors, fumes, spray, gas or smoke, in such quantities so as to be irritating or injurious to health or safety.~~

07.[F] 502.1.2 Fuel-dispensing areas. through **503.4 Corrosion-resistant fans.** OMIT

08.504.7 Commercial clothes dryers. through **504.8 Common exhaust systems for clothes dryers located in multistory structures.** OMIT

09. SECTION 506 – COMMERCIAL KITCHEN HOOD VENTILATION SYSTEM DUCTS AND EXHAUST EQUIPMENT through **SECTION 514 – ENERGY RECOVERY VENTILATION SYSTEMS –** OMIT

CHAPTER 6 – DUCT SYSTEMS

01.[B] 601.2 Air movement in egress elements. through **[B] 601.3 Exits.** OMIT

02.602.2.1 Materials within plenums. through **602.2.1.4.2 Equipment in combustible enclosures.** OMIT

03.602.2.1.6 Semiconductor fabrication areas. OMIT

04.602.3 Stud cavity and joist space plenums.

4. OMIT

5...*International Residential Building Code.*

05.603.1 General. An air distribution system shall be designed and installed to supply the required distribution of air. ~~The installation of an air distribution system shall not affect the fire protection requirements specified in the *International Building Code*.~~ Ducts shall be constructed, braced, reinforced and installed to provide structural strength and durability.

06.603.2 Duct sizing. Ducts installed within a single *dwelling unit* shall be sized in accordance with ACCA Manual D or other *approved* methods. ~~Ducts installed within all other buildings shall be sized in accordance with the ASHRAE *Handbook of Fundamentals* or other equivalent computation procedure.~~

07.603.3 Duct classification. OMIT

08.603.4 Metallic ducts. All metallic ducts shall be constructed as specified in the ~~SMACNA *HVAC Duct Construction Standards – Metal and Flexible*~~.

~~**Exception:** Ducts installed within single *dwelling units* shall have a minimum thickness as specified in Table 603.4.~~

09.603.7 Rigid duct penetrations. ~~Duct system penetrations of walls, floors, ceilings and roofs and air transfer openings in such building components shall be protected as required by Section 607. Ducts in a private garage and ducts penetrating the walls or ceilings separating a *dwelling* from a private garage shall be continuous and constructed of a minimum 26 gage [0.0187 inch (0.4712)] galvanized sheet metal and shall not have openings into the garage. Fire and smoke dampers are not required in such ducts passing through the wall or ceiling separating a *dwelling* from a private garage except where required by Chapter 7 of the *International Building Code*.~~

10.603.17.2 Prohibited locations. OMIT

11.604.1 General. Duct insulation shall conform to the requirements of ~~Sections 604.2 through 604.13 and the *International Energy Conservation Code* Part IV of the North Carolina Residential Code.~~

12.604.6 Penetration of assemblies. OMIT

13.604.10 Service openings. OMIT

14. SECTION 606 – SMOKE DETECTION SYSTEMS CONTROL through [B]
SECTION 607 – DUCT AND TRANSFER OPENINGS – OMIT

CHAPTER 7 – COMBUSTION AIR

- Leave as is

CHAPTER 8 – CHIMNEYS AND VENTS

01.801.2 General. Keep paragraph and OMIT **Exception** only

02.803.9 Chimney connector construction. *Chimney* connectors for low-heat *appliances* shall be of sheet steel pipe having resistance to corrosion and heat not less than that of galvanized steel specified in Table 803.9(1).

~~Connectors for medium-heat appliances and high-heat appliances shall be of sheet steel not less than the thickness specified in Table 803.9(2).~~

03. TABLE 803.9(2) – MINIMUM CHIMNEY CONNECTOR THICKNESS FOR MEDIUM- AND HIGH-HEAT APPLIANCES – OMIT

04. TABLE 803.10.6 – CONNECTOR CLEARANCES TO COMBUSTIBLES – OMIT bottom portion of Table. Everything under **Commercial, industrial-type appliances**

05. 804.3.8 Mechanical draft systems for manually fired appliances and fireplaces. OMIT

06. 805.5 Medium-heat appliances. OMIT

07. SECTION 806 – METAL CHIMNEYS – OMIT

CHAPTER 9 – SPECIFIC APPLIANCES, FIREPLACES AND SOLID FUEL-BURNING EQUIPMENT

01. SECTION 907 – INCINERATORS AND CREMATORIES through **SECTION 908 – COOLING TOWERS, EVAPORATIVE CONDENSERS AND FLUID COOLERS – OMIT**

02. SECTION 911 – DUCT FURNACES through **SECTION 912 – INFRARED RADIANT HEATERS – OMIT**

03. 913.1 General. Clothes dryers shall be installed in accordance with the manufacturer's installation instructions. Electric residential clothes dryers shall be tested in accordance with UL 2158. ~~Electric coin-operated clothes dryers shall be tested in accordance with UL 2158. Electric commercial clothes dryers shall be tested in accordance with UL 1240.~~

04. 913.3 Clearances. OMIT

05. 914.5.1 Warning notice. OMIT

06. SECTION 915 – ENGINE AND GAS TURBINE-POWERED EQUIPMENT AND APPLIANCES – OMIT

07. 917.1 Cooking appliances. Cooking appliances that are designed for permanent installation, including ranges, ovens, stoves, broilers, grills, fryers, griddles and barbecues, shall be *listed, labeled* and installed in accordance with the manufacturer's installation instructions. ~~Commercial electric appliances shall be *listed and labeled* in accordance with UL 197.~~ Household electric ranges shall be *listed and labeled* in accordance with UL 858. Microwave cooking appliances shall be *listed and labeled* in accordance with UL 923. Oil-burning stoves shall be *listed and labeled* in

accordance with UL 896. Solid-fuel-fired ovens shall be *listed* and *labeled* in accordance with UL 2162.

08.918.6 Prohibited sources. OMIT Item number 3 only

09. SECTION 920 – UNIT HEATERS – OMIT

10. SECTION 923 – SMALL CERAMIC KILNS through **SECTION 927 – HEAT RECOVERY VENTILATORS – OMIT**

CHAPTER 10 – BOILERS, WATER HEATERS AND PRESSURE VESSELS

01.1004.3 Working clearance. OMIT

02.1004.3.1 Top clearance. OMIT

03.1004.6 Boiler rooms and enclosures. ~~Boiler rooms and enclosures and access thereto shall comply with the *International Building Code* and Chapter 3 of this code.~~ Boiler rooms shall be equipped with a floor drain or other *approved* means for disposing of liquid waste.

04.1005.1 Valves. OMIT **Exception** only

05. SECTION 1011 – TESTS – OMIT

CHAPTER 11 – REFRIGERATION

01.1101.2 Factory-built equipment and appliances. OMIT

02.1101.4 Water connection. through **1102.1 General.** OMIT

03. SECTION 1103 – REFRIGERATION SYSTEM CLASSIFICATION through **[F] 1106.6 – Emergency signs and labels.** – OMIT

04.1107.2 Piping location. Leave in first sentence and OMIT the remainder of the paragraph.

05.1107.2.2 Refrigerant penetrations. OMIT

06.1107.3 Pipe enclosures. OMIT

07.1107.5 Materials for refrigerant pipe and tubing. through **[F] SECTION 1109 – PERIODIC TESTING – OMIT**

CHAPTER 12 – HYDRONIC PIPING

01.SECTION 1207 – TRANSFER FLUID – OMIT

CHAPTER 13 – FUEL OIL PIPING AND STORAGE

- Leave as is

CHAPTER 14 – SOLAR SYSTEMS

- Leave as is