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BUILDINGS BULLETIN 2010-021
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Purpose: This document establishes acceptance criteria for welded code-prescribed ducts with field applied fire-rated insulation and factory manufactured commercial grease ducts with field applied fire-rated insulation.

Related Code Section(s):

AC	113.2.3	MC	301.4	MC	506.3.1.1
BC	1704.13	MC	301.6	MC	506.3.2
BC	1704.25	MC	304.1	MC	506.3.6
BC	712.3.1	MC	506.1	MC	506.3.10
		MC	506.2	MC	607

Subject(s): Commercial kitchen hood ventilation system, grease duct, welded code-prescribed ducts with field applied fire-rated insulation; Commercial kitchen hood ventilation system, grease duct, factory manufactured commercial grease ducts with field applied fire-rated insulation; Type I hood, ducts; Grease ducts

Background: This bulletin addresses grease ducts and exhaust equipment materials and grease duct enclosures serving Type I hoods. Grease ducts shall either be welded code-prescribed ducts or factory manufactured commercial grease ducts.

Welded code-prescribed duct materials and thicknesses are reference in section MC 506.3.1.1. Factory manufactured commercial grease ducts are evaluated as an alternative to welded code-prescribed duct as per section MC 506.3.1.1.

Field applied fire-rated insulation used as a grease duct enclosure is referenced in section MC 506.3.10, exception 1.

Description:

a) Welded code-prescribed ducts with field applied fire-rated insulation, consists of:
   1. A welded code-prescribed duct system.
   2. Welded code-prescribed duct connection.
   3. Field applied two hour/zero clearance fire-rated grease duct insulation enclosure system.

b) Factory manufactured commercial grease ducts with field applied fire-rated grease duct insulation enclosure consists of:
   1. Factory fabricated sheet metal grease duct system, including enhancement.
   2. A liquid-tight high temperature connection method for joining grease duct sections in the field.
   3. Field applied two hour/zero clearance fire-rated grease duct insulation enclosure

system.

Evaluation Scope: 2008 NYC Construction Codes

Evaluation Criteria: Pursuant to AC 28-113, the Office of Technical Certification and Research recognizes welded code-prescribed ducts with field applied fire-rated insulation enclosure, and factory-manufactured commercial grease ducts with field applied fire-rated insulation enclosure when tested, designed and evaluated in accordance with the following:

Fire-rated insulation enclosure system

Field applied two hour/zero clearance fire-rated grease duct insulation enclosure systems installed with (1) welded code-prescribed duct system or, (2) a factory-manufactured commercial grease duct, shall be tested, evaluated, and listed in accordance ASTM E2336 "*Standard Test Method for Fire Resistance Grease Duct Enclosure Systems"* [1], ASTM E814/UL 1479, "*Fire Test of Through-Penetration Firestop"* [2] and ASTM E84 *"Standard Test Method for Surface Burning Characteristics of Building Materials"* [3].

Duct Construction

a. Welded code-prescribed duct shall be constructed in accordance with section MC 506.3.1.1.
b. Factory manufactured commercial grease duct system and liquid-tight high temperature connections shall be constructed in accordance with the manufacturer's installation instructions and the conditions of the required listing agency, and tested, evaluated and listed in accordance with UL 1978 *"Standard for Grease Ducts"* [4].

Testing and labeling

Acceptable welded code-prescribed duct with field applied fire-rated insulation enclosure, and factory manufactured commercial grease ducts with field applied fire-rated insulation enclosure shall be tested and listed as a system (with the duct and specific brand grease duct insulation evaluated together) to the above referenced standards by an approved agency, and shall comply with the conditions of this bulletin.

Uses: Welded code-prescribed ducts with field applied fire-rated insulation enclosure, or factory manufactured commercial grease ducts with field applied fire-rated insulation enclosure are used for grease duct systems and exhaust equipment serving Type I hoods.

Conditions of Acceptance: Grease ducts made with welded code-prescribed duct system with field applied fire-rated insulation enclosure, or factory-manufactured commercial grease ducts with field applied fire-rated insulation enclosure shall be designed and installed in accordance with the 2008 NYC Construction Codes and other applicable provisions including but not limited to the following:

A. Design

Welded code-prescribed duct system with field applied fire-rated insulation, or factory manufactured commercial grease ducts with field applied fire-rated insulation shall be designed in accordance with the 2008 NYC Construction Codes, manufacturer's installation instructions, and the conditions of the required listing agency.

B. Installation Requirements

1. Installation requirements shall be in accordance with the manufacturer's instructions, the applicable listing agency, and the conditions of this bulletin.

2. A field leakage test shall be performed on the entire duct, including duct joints assembled in the field. Prior to the use or concealment of any portion of a grease duct system, a leakage test shall be performed in the presence of a special inspector. Ducts shall be considered to

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be concealed where installed in shafts or covered by coatings or wraps that prevent the duct work 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. The leakage test shall comprise of a light test or approved equivalent or alternate method to determine that all field assembled joints are liquid tight. A light test shall be performed by passing a lamp having a power rating of not less than 100 watts through the entire section of duct work to be tested. The lamp shall be open so as to emit light equally in all directions perpendicular to the duct walls. A test shall be performed for the entire duct system, including the hood-to-duct connection. The ductwork shall be permitted to be tested in sections, provided that every joint is tested.

3. Pursuant to section BC 1704.13, the installation of welded code-prescribed duct system with field applied fire-rated insulation enclosure, or factory manufactured commercial grease ducts with field applied fire-rated insulation enclosure shall be subject to special inspection requirements of Chapter 17 of the Building Code and 1 RCNY section 101-06. Special Inspectors of welded code-prescribed duct with field applied fire-rated insulation enclosure, or a factory manufactured commercial grease duct with field applied fire-rated insulation enclosure shall:

   a. Maintain the same qualification requirements for the **"**Chimney" category as defined in 1 RCNY section 101-06, Appendix A.

   b. Have duties and responsibilities in accordance with following:

      i. Observe the leakage test as mentioned in Item B2 above.
      ii. For factory manufactured commercial grease ducts, ensure that joint sealant used is supplied by the duct manufacturer and listed by an approved agency.
      iii. Verify that the fire-rated grease duct insulation enclosures around a factory manufactured grease duct are listed by an approved agency.
      iv. Inspect duct passageway to insure it is clear and free of any obstructions.

   c. Complete the statement of special inspection by referencing this bulletin under the Special Inspection Item for "Alternative Materials" in section 3.0 of the TR1 form.

4. A welded connection shall be used where the welded code-prescribed duct or the factory manufactured commercial grease duct meets the kitchen hood. The welded hood connector shall be free of gaps and inconsistencies along the entire circumference.

5. Size and the limitation of duct shall be in accordance with the listing agency, as per section AC 28-113.4.1.

6. Firestopping shall be in accordance with section MC 506.3.10, exception 1. Where the grease duct assembly penetrates a fire-rated assembly, the resulting opening around the grease duct system shall be fire stopped with a firestop system tested in accordance with ASTM E 814/UL 1479 as per section BC 712.3. The F and T rating of the firestop system shall be equal to or greater than the fire resistance rating of the assembly being penetrated.

7. Welded code-prescribed duct system with field applied fire-rated insulation enclosure system, or a factory manufactured commercial grease duct with field applied fire-rated insulation enclosure system shall have a flame spread rating of not more than 25 and smoke developed rating of not more than 50 in accordance with ASTM E 84.

8. Factory manufactured commercial grease ducts shall be labeled as per section AC 28-113.4. All shipments and deliveries of materials shall be accompanied by a certificate or label certifying that the materials shipped or delivered are equivalent to those tested and approved.

9. Welded code-prescribed duct system with field applied fire-rated insulation enclosure

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system, and factory manufactured commercial grease duct with field applied fire-rated insulation enclosure system shall be labeled as per section AC 28-113.4. All shipments and delivered of materials shall be accompanied by a certificate or label certifying that the materials shipped or delivered are equivalent to those tested and approved.

Referenced Standards:

1. ASTM E2336-04 (2009) - *"Standard Test Methods for Fire Resistive Grease Duct Enclosure Systems"*
2. ASTM E 814/UL - 1479 *"Fire Test of Through-Penetration Firestop"*
3. ASTM E 84-05 - *"Standard Test Method for Surface Burning Characteristics of Building Materials"*
4. UL 1978-05 – "*Standard for Grease Ducts"*

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