Commercial Cooking Operations

This guideline has been prepared to assist those responsible for the design, installation, testing, and inspection of Type I kitchen hoods and wet chemical fire extinguishing systems to comply with 2002 NFPA 17A; 2014 Indiana Fire Code (IFC) Chapter 9, Section 904.11; and the 2014 Indiana Mechanical Code (IMC) Chapter 5. The information contained in this document is intended to promote compliance and to ensure that commercial-type food heating and processing operations are adequately ventilated and are properly equipped with fire protection.

This guideline applies to any facility where commercial-type cooking operations produce grease-laden vapors. Cooking appliances producing grease-laden vapors shall be equipped with an exhaust system with the following components: hood, grease removal devices, grease duct system, exhaust fan, make-up air and fire extinguishing equipment. This guideline defines the items and functional tests required for a final acceptance of the kitchen ventilation and kitchen hood fire protection systems. The following Pre-Test form, Commercial Kitchen Hood Final Pre-Inspection Checklist (*Form FP-2011-PICKS-2*) can be used to "certify" the completion of the required components of the Kitchen ventilation system and kitchen hood fire protection system prior to the Final inspection and acceptance tests.

Pre-Test Information

The ventilation system and fire suppression system shall be pre-tested prior to Lafayette Fire Department inspection and final acceptance test to determine that the systems are properly installed and function in accordance with the accepted plans, relevant code sections and standards, and the manufacturer's installation and maintenance manuals.

Testing during the Lafayette Fire Department inspection may require all associated trades to be present. It is strongly suggested that communication with the fire protection contractor, fire alarm contractor, mechanical contractor and a third party hood balance contractor take place to avoid project delays and possible re-inspection fees. Please see the **Commercial Kitchen Hood Final Pre-Inspection Checklist** *(Form FP-2011-PICKS-2)* for Final Inspection items that will require verification prior to scheduling the Final Inspection.

Acceptance Test Information

The Final Inspection will include the following acceptance tests and component operation verification:

1. Ventilation Hood Capture & Containment Test *"Smoke Test"* (Contractor to provide smoke cartridge)
2. Fire Suppression System Puff Test (Contractor to provide Co2 or expellant gas cartridge)
3. Fire Suppression System Automatic and Manual Activation (Contractor to provide test link)
4. Appliance Fuel Shut-Down
5. Exhaust Fan and Make-Up Air Interconnection
6. Fire Alarm Initiation/Notification (If applicable)
7. Appliance / Exhaust fan interlock or thermo sensor operation

For a detailed explanation of the Acceptance Tests, please see page 2.

Acceptance Tests and Inspection Detail

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. The permit holder shall be responsible to provide the necessary equipment and perform the grease duct leakage test. A light test or an approved equivalent test method shall be performed to determine that all welded and brazed 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 responsible contractor is to provide the appropriate means to perform this test in the presence of the Fire Code Official.

Grease Duct Wrap Fire Protection System Installation Inspection

Duct wrap systems listing – ASTM E 2336 – Two layer systems will require an inspection of the first layer installation and an inspection of the second layer installation. Both inspections must be completed prior to enclosing any portion of the wrap system. A copy of the Duct Wrap System product description and installation instruction is to be on site for verification. *The second layer inspection may be conducted in conjunction with an above ceiling inspection.*

Capture & Containment Test "Smoke Test"

The permit holder shall verify capture and containment performance of the exhaust system. This field test shall be conducted with all appliances under the hood at operating temperatures, with all sources of outdoor air providing makeup air for the hood operating and with all sources of recirculated air providing conditioning for the space in which the hood is located operating. Capture and containment shall be verified visually by observing smoke or steam produced by actual or simulated cooking, such as with smoke candles, smoke puffers, etc. The responsible contractor is to provide the appropriate means to perform this test in the presence of the Fire Code Official. **All appliances are to be at cooking temperatures prior to inspector's arrival.**

Puff Test

A Pre-Engineered Automatic Fire Suppression System puff test shall be conducted to verify piping continuity and that the pipe and nozzles are free from debris. The test is conducted by running nitrogen, or other expellant gas, through the piping and confirming that all nozzles are clear. The Fire Protection Contractor is to perform this test in the presence of the Fire Code Official.

Trip Test

A Pre-Engineered Automatic Fire Suppression System trip test for manual release and automatic operation will verify the control head "trips" to operate system, gas and power shuts off completely under hood, shut down of mechanically supplied make up air (if integral to the hood), and alarm system activated if present. The automatic operation test is performed using a "test" link at the terminal detector. The manual trip test is performed by pulling manual pull. The Fire Protection Contractor and Fire Alarm Contractor must be present to conduct this test.

Auxiliary Equipment Test

This test will verify that listed equipment used in conjunction with the restaurant fire system to shut down: power, fuel and make-up air functions properly. Auxiliary equipment may also operate dampers, sound alarm signals or initiate fire alarm systems. The Fire Protection Contractor and Fire Alarm Contractor must be present to conduct this test.

Appliance and Exhaust Fan Interlock

Type I hood systems shall be designed and installed to automatically activate the exhaust fan whenever cooking operations occur. The activation of the exhaust fan shall occur through an interlock with the cooking appliances, by means of heat sensors or by means of other approved methods.