

**DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK**  
**CITY OF PORTLAND**

Please Read  
Application And  
Notes, If Any,  
Attached

**BUILDING INSPECTION**

**PERMIT**

Permit Number: 070319

This is to certify that UNION STATION LMT PARTNERSHIP /Hannel Bros. Co

has permission to Install hood system w/ rooftop fan

AT 966 CONGRESS ST

064 A001001

**PERMIT ISSUED**

JUN 11 2007

provided that the person or persons who accept this permit shall comply with all of the provisions of the Statutes of the State and of the Ordinances of the City of Portland regulating the construction, maintenance and use of buildings and structures, and of the application on file in this department.

Apply to Public Works for street line and grade if nature of work requires such information.

Classification of inspection must be given and when permission is procured before this building or part thereof is occupied or occupied closed-in. 4  
 YOUR NOTICE REQUIRED.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

**OTHER REQUIRED APPROVALS**

Fire Dept. Greg Cass

Health Dept. \_\_\_\_\_

Appeal Board \_\_\_\_\_

Other \_\_\_\_\_

Department Name

*Jeanne Bouke* 6/6/07  
 Director - Building & Inspection Services

**PENALTY FOR REMOVING THIS CARD**

**City of Portland, Maine - Building or Use Permit Application**

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

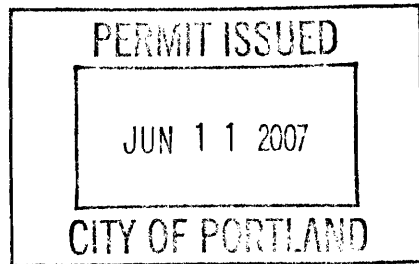
Permit No: 07-0319	Issue Date:	CBL: 064 A001001
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Location of Construction: 966 CONGRESS ST	Owner Name: UNION STATION LMT PARTNE	Owner Address: 12 BROOK ST	Phone:
Business Name:	Contractor Name: Hannel Bros. Co.	Contractor Address: 46 Strawberry Ln. Lewiston	Phone 2077846477
Lessee/Buyer's Name	Phone:	Permit Type: Hood Systems, Commerical	Zone: B-2

Past Use: Commercial / Restaurant Sodoku	Proposed Use: Commercial Restaurant Sodoku Install hoodsystem w/ rooftop fan	Permit Fee:	Cost of Work: \$11,000.00	CEO District: 2
Proposed Project Description: Install hood system w/ rooftop fan		FIRE DEPT: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied <i>See Conditions</i>	INSPECTION: Use Group: <i>A2</i> Type: <i>Type 1 hoods</i> <i>IBC-2003</i>	
		Signature: <i>Greg, Cruz</i> Signature: <i>JMB 6/6/07</i>		
PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)				
Action: <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied				
Signature: _____ Date: _____				

Permit Taken By: dmartin	Date Applied For: 03/28/2007	<b>Zoning Approval</b>		
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- This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
- Building permits do not include plumbing, septic or electrical work.
- Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..



<b>Special Zone or Reviews</b> <input type="checkbox"/> Shoreland <input type="checkbox"/> Wetland <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan Maj <input type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/> Date: <i>3/28/07</i>	<b>Zoning Appeal</b> <input type="checkbox"/> Variance <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Conditional Use <input type="checkbox"/> Interpretation <input type="checkbox"/> Approved <input type="checkbox"/> Denied Date: _____	<b>Historic Preservation</b> <input checked="" type="checkbox"/> Not in District or Landmark <input type="checkbox"/> Does Not Require Review <input type="checkbox"/> Requires Review <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied Date: _____
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**CERTIFICATION**

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT	ADDRESS	DATE	PHONE
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE		DATE	PHONE

**City of Portland, Maine - Building or Use Permit**

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

<b>Permit No:</b> 07-0319	<b>Date Applied For:</b> 03/28/2007	<b>CBL:</b> 064 A001001
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<b>Location of Construction:</b> 966 CONGRESS ST	<b>Owner Name:</b> UNION STATION LMT PARTNE	<b>Owner Address:</b> 12 BROOK ST	<b>Phone:</b>
<b>Business Name:</b>	<b>Contractor Name:</b> Hannel Bros. Co.	<b>Contractor Address:</b> 46 Strawberry Ln. Lewiston	<b>Phone</b> (207) 784-6477
<b>Lessee/Buyer's Name</b>	<b>Phone:</b>	<b>Permit Type:</b> Hood Systems, Commerical	

<b>Proposed Use:</b> Commercial Restaurant Sodoku Install hoodsystem w/ rooftop fan	<b>Proposed Project Description:</b> Install hood system w/ rooftop fan
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**Dept:** Zoning      **Status:** Approved      **Reviewer:** Marge Schmuckal      **Approval Date:** 03/28/2007  
**Note:**      **Ok to Issue:**

**Dept:** Building      **Status:** Approved with Conditions      **Reviewer:** Jeanine Bourke      **Approval Date:** 06/06/2007  
**Note:**      **Ok to Issue:**

- 1) The Hood shall be installed per IMC 2003 and NFPA 96  
This permit is approved based on the plans submitted and updated for reductions in the cleaances based on the application of a UL approved fire wrap or equivalent assembly per code.

**Dept:** Fire      **Status:** Approved with Conditions      **Reviewer:** Cptn Greg Cass      **Approval Date:** 04/02/2007  
**Note:**      **Ok to Issue:**

- 1) NFPA 96 compliance letter is required.
- 2) Minimum 3" clearance to combustables is required.  
This is required even with the use of a fire wrap.

**Comments:**

4/9/2007-jmb: left vmsg. W/Alan H. To verify the clearance reduction materials, air recovery and supporting roof material

4/11/2007-jmb: Spoke to Alan H., he will provide a letter of analysis on the roof system load( he was a registered engineer), also fax the 3m wrap specs and the UL Listing on the hood to combustibles.

4/14/2007-jmb: Received fax from Alan H. Of the

5/15/2007-jmb: Alan H. Will submit further detail on the ceiling preparation and hood clearance

6/6/2007-jmb: Received new drawings, ok to issue



# General Building Permit Application

If you or the property owner owes real estate or personal property taxes or user charges on any property within the City, payment arrangements must be made before permits of any kind are accepted.

Location/Address of Construction: <u>966 CONGRESS ST.</u>		
Total Square Footage of Proposed Structure		Square Footage of Lot
Tax Assessor's Chart, Block & Lot Chart#      Block#      Lot#	Owner: <u>UNIQUE STATION LMT PARTNERSHIP</u>	Telephone:
<u>* 64      A      001</u>		
Lessee/Buyer's Name (If Applicable) <u>SOKODU TORIYAKI</u>	Applicant name, address & telephone: <u>HANNON BROS CO. 46 STRAWBERRY AVE. LEWISTON, ME 04240</u>	Cost Of Work: \$ <u>11,000<sup>00</sup></u> Fee: \$ <u>130<sup>00</sup></u> C of O Fee: \$ <u>N/A</u>
Current legal use (i.e. single family) <u>Commercial</u>	If vacant, what was the previous use? _____	
Proposed Specific use: <u>Restaurant - Sokodu</u>	Is property part of a subdivision? _____ If yes, please name _____	
Project description: <u>Install hood w/ rooftop fan</u>		
Contractor's name, address & telephone: <u>HANNON BROS CO. 46 STRAWBERRY AVE. LEWISTON, ME 04240</u>		
Who should we contact when the permit is ready: <u>ALAN HANNON</u>		
Mailing address: <u>P.O. BOX 1160 LEWISTON, ME 04243-1160</u>		
Phone: <u>207-784-6477</u>		

Please submit all of the information outlined in the Commercial Application Checklist.  
Failure to do so will result in the automatic denial of your permit.

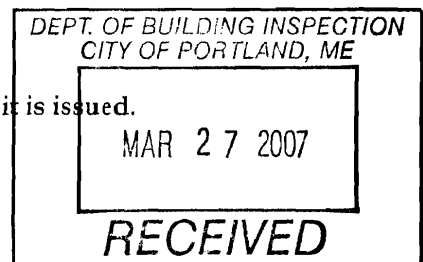
In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information visit us on-line at [www.portlandmaine.gov](http://www.portlandmaine.gov), stop by the Building Inspections office, room 315 City Hall or call 874-8703.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

Signature of applicant: Alan P. Hannon

Date: 3/27/07

This is not a permit; you may not commence ANY work until the permit is issued.



CC



# PORTLAND MAINE

*Strengthening a Remarkable City, Building a Community for Life • www.portlandmaine.gov*

Lee Urban- Director of Planning and Development  
Michael J. Nugent- Inspections Division Director

## Kitchen Exhaust System Checklist and Code Provisions

Dear Applicant,

The following is a checklist to assist you in filing for a permit for a Kitchen Exhaust system. The applicable Mechanical Code provisions have also been attached. Please complete this and submit job specific construction documents that demonstrate compliance with the attached information.

### Type of System:

Type I X Type II \_\_\_\_\_

(Type I systems are systems that vent fryers, grills, broilers, ovens or woks. Type II systems are systems that vent steamers and other non grease producing appliances)

### Type of Materials:

Is the hood Stainless steel or other type of steel? STAINLESS STEEL If Other, what Type? \_\_\_\_\_

Is the duct work Stainless steel or other type of steel? HOT ROLLED STEEL If Other, what type? \_\_\_\_\_

Thickness of the steel for the hood 18 GAUGE

Thickness of the duct for the hood 16 GAUGE

Type of Hood and Duct supports

CANOPY HOOD & DUCT  
SUPPORTED WITH UNI STRUT & THREADED ROD

Type of seams and Joints BUTT JOINTS WELDED CONTINUOUS

Grease Gutters provided? YES

Hood Clearance from Combustibles materials 1" w/ FIRE BARRIER WEAP INSULATION

Duct Clearance from Combustibles materials 1" w/ FIRE BARRIER WEAP INSULATION.

Vibration Isolation System: INTERNAL WITH ROOF TOP UPBLAST EXHAUST FANS

Air Velocity within the duct system 2500 FPM

Grease accumulation prevention system STEEL BAFFLE FILTERS

Cleanouts NONE REQUIRED

Grease Duct enclosure N/A

Exhaust Termination ROOF TOP UPBLAST FANS

Fire Suppression system RANGE GUARD

Exhaust fan mounting and clearance from the roof or wall  
EF-1 ⇒ 46 1/2 EF-2 ⇒ 43"

Exhaust fan distance from other vents or openings GREATER THAN 10'-0"

Exhaust fan height above adjoining grade N/A

#### Hood Specs

Style of hood CANOPY

Type of Filter: BAFFLE STYLE

Height of filter above nearest cooking surface: \_\_\_\_\_

Capacity of hood in CFM ~~XXXX~~ KH-1 ⇒ 5367 KH-2 ⇒ 4258

Make up Air system description and capacity  
SUPPLY AIR FAN 7200 CFM

## SECTION 506 COMMERCIAL KITCHEN HOOD VENTILATION SYSTEM DUCTS AND EXHAUST EQUIPMENT

**506.1 General.** Commercial kitchen hood ventilation ducts and exhaust equipment shall comply with the requirements of this section. Commercial kitchen grease ducts shall be designed for the type of cooking appliance and hood served.

**506.2 Corrosion protection.** Ducts exposed to the outside atmosphere or subject to a corrosive environment shall be protected against corrosion in an approved manner.

**506.3 Ducts serving Type I hoods.** Type I exhaust ducts shall be independent of all other exhaust systems except as provided in Section 506.3.5. Commercial kitchen duct systems serving Type I hoods shall be designed, constructed and installed in accordance with Sections 506.3.1 through 506.3.12.3.

**506.3.1 Duct materials.** Ducts serving Type I hoods shall be constructed of materials in accordance with Sections 506.3.1.1 and 506.3.1.2.

**506.3.1.1 Grease duct materials.** Grease ducts serving Type I hoods shall be constructed of steel not less than 0.055 inch (1.4 mm) (No. 16 Gage) in thickness or stainless steel not less than 0.044 inch (1.1 mm) (No. 18 Gage) in thickness.

**Exception:** Listed and labeled factory-built commercial kitchen grease ducts shall be installed in accordance with Section 304.1.

**506.3.1.2 Makeup air ducts.** Makeup air ducts connecting to or within 18 inches (457 mm) of a Type I hood shall be constructed and installed in accordance with Sections 603.1, 603.3, 603.4, 603.9, 603.10 and 603.12. Duct insulation installed within 18 inches (457 mm) of a Type I hood shall be noncombustible or shall be listed for the application.

**506.3.2 Joints, seams and penetrations of grease ducts.** Joints, seams and penetrations of grease ducts shall be made with a continuous liquid-tight weld or braze made on the external surface of the duct system.

**Exceptions:**

1. Penetrations shall not be required to be welded or brazed where sealed by devices that are listed for the application.
2. Internal welding or brazing shall not be prohibited provided that the joint is formed or ground smooth and is provided with ready access for inspection.
3. Listed and labeled factory-built commercial kitchen grease ducts installed in accordance with Section 304.1.

**506.3.2.1 Duct joint types.** Duct joints shall be butt joints or overlapping duct joints of either the telescoping or bell type. Overlapping joints shall be installed to prevent ledges and obstructions from collecting grease or interfering with gravity drainage to the intended collection point. The difference between the inside cross-sectional dimensions of overlapping sections of duct shall not exceed 0.25 inch (6 mm). The length of overlap for overlapping duct joints shall not exceed 2 inches (51 mm).

**506.3.2.2 Duct-to-hood joints.** Duct-to-hood joints shall be made with continuous internal or external liquid-tight welded or brazed joints. Such joints shall be smooth, accessible for inspection, and without grease traps.

**Exceptions:** This section shall not apply to:

1. A vertical duct-to-hood collar connection made in the top plane of the hood in accordance with all of the following:
  - 1.1. The hood duct opening shall have a 1-inch-deep (25 mm), full perimeter, welded flange turned down into the hood interior at an angle of 90 degrees from the plane of the opening.
  - 1.2. The duct shall have a 1-inch-deep (25 mm) flange made by a 1-inch by 1-inch (25 mm by 25 mm) angle iron welded to the full perimeter of the duct not less than 1 inch (25 mm) above the bottom end of the duct.
  - 1.3. A gasket rated for use at not less than 1,500°F (815°C) is installed between the duct flange and the top of the hood.
  - 1.4. The duct-to-hood joint shall be secured by stud bolts not less than 0.25 inch (6.4 mm) in diameter welded to the hood with a spacing not greater than 4 inches (102 mm) on center for the full perimeter of the opening. All bolts and nuts are to be secured with lockwashers.
2. Listed and labeled duct-to-hood collar connections installed in accordance with Section 304.1.

**506.3.2.3 Duct-to-exhaust fan connections.** Duct-to-exhaust fan connections shall be flanged and gasketed at the base of the fan for vertical discharge fans; shall be flanged, gasketed and bolted to the inlet of the fan for side-inlet utility fans; and shall be flanged, gasketed and bolted to the inlet and outlet of the fan for in-line fans.

**506.3.2.4 Vibration isolation.** A vibration isolation connector for connecting a duct to a fan shall consist of noncombustible packing in a metal sleeve joint of approved design or shall be a coated-fabric flexible duct connector listed and labeled for the application. Vibration isolation connectors shall be installed only at the connection of a duct to a fan inlet or outlet.

**506.3.3 Grease duct supports.** Grease duct bracing and supports shall be of noncombustible material securely attached to the structure and designed to carry gravity and seismic loads within the stress limitations of the *International Building Code*. Bolts, screws, rivets and other mechanical fasteners shall not penetrate duct walls.

**506.3.4 Air velocity.** Grease duct systems serving a Type I hood shall be designed and installed to provide an air velocity within the duct system of not less than 1,500 feet per minute (7.6 m/s).

**Exception:** The velocity limitations shall not apply within duct transitions utilized to connect ducts to differently

## EXHAUST SYSTEMS

sized or shaped openings in hoods and fans, provided that such transitions do not exceed 3 feet (914 mm) in length and are designed to prevent the trapping of grease.

**506.3.5 Separation of grease duct system.** A separate grease duct system shall be provided for each Type I hood. A separate grease duct system is not required where all of the following conditions are met:

1. All interconnected hoods are located within the same story.
2. All interconnected hoods are located within the same room or in adjoining rooms.
3. Interconnecting ducts do not penetrate assemblies required to be fire-resistance rated.
4. The grease duct system does not serve solid fuel-fired appliances.

**506.3.6 Grease duct clearances.** Grease duct systems and exhaust equipment serving a Type I hood shall have a clearance to combustible construction of not less than 18 inches (457 mm), and shall have a clearance to noncombustible construction and gypsum wallboard attached to noncombustible structures of not less than 3 inches (76 mm).

**Exception:** Listed and labeled factory-built commercial kitchen grease ducts and exhaust equipment installed in accordance with Section 304.1.

**506.3.7 Prevention of grease accumulation in grease ducts.** Duct systems serving a Type I hood shall be constructed and installed so that grease cannot collect in any portion thereof, and the system shall slope not less than one-fourth unit vertical in 12 units horizontal (2-percent slope) toward the hood or toward an approved grease reservoir. Where horizontal ducts exceed 75 feet (22 860 mm) in length, the slope shall not be less than one unit vertical in 12 units horizontal (8.3-percent slope).

**506.3.8 Grease duct cleanouts and other openings.** Grease duct systems shall not have openings therein other than those required for proper operation and maintenance of the system. Any portion of such system having sections not provided with access from the duct entry or discharge shall be provided with cleanout openings. Cleanout openings shall be equipped with tight-fitting doors constructed of steel having a thickness not less than that required for the duct. Doors shall be equipped with a substantial method of latching, sufficient to hold the door tightly closed. Doors shall be designed so that they are operable without the use of a tool. Door assemblies, including any frames and gasketing, shall be approved for the purpose, and shall not have fasteners that penetrate the duct. Listed and labeled access door assemblies shall be installed in accordance with the terms of the listing.

**506.3.8.1 Personnel entry.** Where ductwork is large enough to allow entry of personnel, not less than one approved or listed opening having dimensions not less than 20 inches by 20 inches (508 mm by 508 mm) shall be provided in the horizontal sections, and in the top of vertical risers. Where such entry is provided, the duct and its supports shall be capable of supporting the additional load and the cleanouts specified in Section 506.3.8 are not required.

**506.3.9 Grease duct horizontal cleanouts.** Cleanouts located on horizontal sections of ducts shall be spaced not more than 20 feet (6096 mm) apart. The cleanouts shall be located on the side of the duct with the opening not less than 1.5 inches (38 mm) above the bottom of the duct, and not less than 1 inch (25 mm) below the top of the duct. The opening minimum dimensions shall be 12 inches (305 mm) on each side. Where the dimensions of the side of the duct prohibit the cleanout installation prescribed herein, the openings shall be on the top of the duct or the bottom of the duct. Where located on the top of the duct, the opening edges shall be a minimum of 1 inch (25 mm) from the edges of the duct. Where located in the bottom of the duct, cleanout openings shall be designed to provide internal damming around the opening, shall be provided with gasketing to preclude grease leakage, shall provide for drainage of grease down the duct around the dam, and shall be approved for the application. Where the dimensions of the sides, top or bottom of the duct preclude the installation of the prescribed minimum-size cleanout opening, the cleanout shall be located on the duct face that affords the largest opening dimension and shall be installed with the opening edges at the prescribed distances from the duct edges as previously set forth in this section.

**506.3.10 Grease duct enclosure.** 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*. Ducts shall be enclosed in accordance with the *International Building Code* requirements for shaft construction. The duct enclosure shall be sealed around the duct at the point of penetration and vented to the outside of the building through the use of weather-protected openings. Clearance from the duct to the interior surface of enclosures of combustible construction shall be not less than 18 inches (457 mm). Clearance from the duct to the interior surface of enclosures of noncombustible construction or gypsum wallboard attached to noncombustible structures shall be not less than 6 inches (152 mm). The duct enclosure shall serve a single grease exhaust duct system and shall not contain any other ducts, piping, wiring or systems.

### Exceptions:

1. The shaft enclosure provisions of this section shall not be required where a duct penetration is protected with a through-penetration firestop system classified in accordance with ASTM E 814 and having an "F" and "T" rating equal to the fire-resistance rating of the assembly being penetrated and where the surface of the duct is continuously covered on all sides from the point at which the duct penetrates a ceiling, wall or floor to the outlet terminal with a classified and labeled material, system, method of construction or product specifically evaluated for such purpose, in accordance with a nationally recognized standard for such enclosure materials. Exposed duct wrap systems shall be protected where subject to physical damage.
2. A duct enclosure shall not be required for a grease duct that penetrates only a nonfire-resistance-rated roof/ceiling assembly.



**506.3.11 Grease duct fire-resistive access opening.** Where cleanout openings are located in ducts within a fire-resistance-rated enclosure, access openings shall be provided in the enclosure at each cleanout point. Access openings shall be equipped with tight-fitting sliding or hinged doors that are equal in fire-resistive protection to that of the shaft or enclosure. An approved sign shall be placed on access opening panels with wording as follows: "ACCESS PANEL. DO NOT OBSTRUCT."

**506.3.12 Exhaust outlets serving Type I hoods.** Exhaust outlets for grease ducts serving Type I hoods shall conform to the requirements of Sections 506.3.12.1 through 506.3.12.3.

**506.3.12.1 Termination above the roof.** Exhaust outlets that terminate above the roof shall have the discharge opening located not less than 40 inches (1016 mm) above the roof surface.

**506.3.12.2 Termination through an exterior wall.** Exhaust outlets shall be permitted to terminate through exterior walls where the smoke, grease, gases, vapors, and odors in the discharge from such terminations do not create a public nuisance or a fire hazard. Such terminations shall not be located where protected openings are required by the International Building Code. Other exterior openings shall not be located within 3 feet (914 mm) of such terminations.

**506.3.12.3 Termination location.** Exhaust outlets shall be located not less than 10 feet (3048 mm) horizontally from parts of the same or contiguous buildings, adjacent property lines and air intake openings into any building and shall be located not less than 10 feet (3048 mm) above the adjoining grade level.

**Exception:** Exhaust outlets shall terminate not less than 5 feet (1524 mm) from an adjacent building, adjacent property line and air intake openings into a building where air from the exhaust outlet discharges away from such locations.

**506.4 Ducts serving Type II hoods.** Single or combined Type II exhaust systems for food-processing operations shall be independent of all other exhaust systems. Commercial kitchen exhaust systems serving Type II hoods shall comply with Sections 506.4.1 and 506.4.2.

**506.4.1 Type II exhaust outlets.** Exhaust outlets for ducts serving Type II hoods shall comply with Sections 401.5 and 401.5.2. Such outlets shall be protected against local weather conditions and shall meet the provisions for exterior wall opening protectives in accordance with the International Building Code.

**506.4.2 Ducts.** Ducts and plenums serving Type II hoods shall be constructed of rigid metallic materials. Duct construction, installation, bracing and supports shall comply with Chapter 6. Ducts subject to positive pressure and ducts conveying moisture-laden or waste-heat-laden air shall be constructed, joined and sealed in an approved manner.

**506.5 Exhaust equipment.** Exhaust equipment, including fans and grease reservoirs, shall comply with Section 506.5.1

through 506.5.5 and shall be of an approved design or shall be listed for the application.

**506.5.1 Exhaust fans.** Exhaust fan housings serving a Type I hood shall be constructed as required for grease ducts in accordance with Section 506.3.1.1.

**Exception:** Fans listed and labeled in accordance with UL 762.

**506.5.1.1 Fan motor.** Exhaust fan motors shall be located outside of the exhaust airstream.

**506.5.2 Exhaust fan discharge.** Exhaust fans shall be positioned so that the discharge will not impinge on the roof, other equipment or appliances or parts of the structure. A vertical discharge fan shall be manufactured with an approved drain outlet at the lowest point of the housing to permit drainage of grease to an approved grease reservoir.

**506.5.3 Exhaust fan mounting.** An upblast fan shall be hinged and supplied with a flexible weatherproof electrical cable to permit inspection and cleaning. The ductwork shall extend a minimum of 18 inches (457 mm) above the roof surface.

**506.5.4 Clearances.** Exhaust equipment serving a Type I hood shall have a clearance to combustible construction of not less than 18 inches (457 mm).

**Exception:** Factory-built exhaust equipment installed in accordance with Section 304.1 and listed for a lesser clearance.

**506.5.5 Termination location.** The outlet of exhaust equipment serving Type I hoods, shall be in accordance with Section 506.3.12.3

**Exception:** The minimum horizontal distance between vertical discharge fans and parapet-type building structures shall be 2 feet (610 mm) provided that such structures are not higher than the top of the fan discharge opening.

## SECTION 507 COMMERCIAL KITCHEN HOODS

**507.1 General.** Commercial kitchen exhaust hoods shall comply with the requirements of this section. Hoods shall be Type I or Type II and shall be designed to capture and confine cooking vapors and residues.

**Exceptions:**

1. Factory-built commercial exhaust hoods which are tested in accordance with UL 710, listed, labeled and installed in accordance with Section 304.1 shall not be required to comply with Sections 507.4, 507.7, 507.11, 507.12, 507.13, 507.14 and 507.15.
2. Factory-built commercial cooking recirculating systems which are tested in accordance with UL 197, listed, labeled and installed in accordance with Section 304.1 shall not be required to comply with Sections 507.4, 507.5, 507.7, 507.12, 507.13, 507.14 and 507.15.
3. Net exhaust volumes for hoods shall be permitted to be reduced during no-load cooking conditions, where

## EXHAUST SYSTEMS

engineered or listed multi-speed or variable-speed controls automatically operate the exhaust system to maintain capture and removal of cooking effluents as required by this section.

**507.2 Where required.** A Type I or Type II hood shall be installed at or above all commercial cooking appliances in accordance with Sections 507.2.1 and 507.2.2. Where any cooking appliance under a single hood requires a Type I hood, a Type I hood shall be installed. Where a Type II hood is required, a Type I or Type II hood shall be installed.

**507.2.1 Type I hoods.** Type I hoods shall be installed where cooking appliances produce grease or smoke, such as occurs with griddles, fryers, broilers, ovens, ranges and wok ranges.

**507.2.2 Type II hoods.** Type II hoods shall be installed where cooking or dishwashing appliances produce heat or steam and do not produce grease or smoke, such as steamers, kettles, pasta cookers and dishwashing machines.

### Exceptions:

1. Under-counter-type commercial dishwashing machines.
2. A Type II hood is not required for dishwashers and potwashers that are provided with heat and water vapor exhaust systems that are supplied by the appliance manufacturer and are installed in accordance with the manufacturer's instructions.

**507.2.3 Domestic cooking appliances used for commercial purposes.** Domestic cooking appliances utilized for commercial purposes shall be provided with Type I or Type II hoods as required for the type of appliances and processes in accordance with Sections 507.2, 507.2.1 and 507.2.2.

**507.2.4 Solid fuel.** Type I hoods for use over solid fuel-burning cooking appliances shall discharge to an exhaust system that is independent of other exhaust systems.

**507.3 Fuel-burning appliances.** Where vented fuel-burning appliances are located in the same room or space as the hood, provisions shall be made to prevent the hood system from interfering with normal operation of the appliance vents.

**507.4 Type I materials.** Type I hoods shall be constructed of steel not less than 0.043 inch (1.09 mm) (No. 18 MSG) in thickness, or stainless steel not less than 0.037 inch (0.94 mm) (No. 20 MSG) in thickness.

**507.5 Type II hood materials.** Type II hoods shall be constructed of steel not less than 0.030 inch (0.76 mm) (No. 22 Gage) in thickness, stainless steel not less than 0.024 inch (0.61 mm) (No. 24 Gage) in thickness, copper sheets weighing not less than 24 ounces per square foot (7.3 kg/m<sup>2</sup>), or of other approved material and gage.

**507.6 Supports.** Type I hoods shall be secured in place by non-combustible supports. All Type I and Type II hood supports shall be adequate for the applied load of the hood, the unsupported ductwork, the effluent loading, and the possible weight of personnel working in or on the hood.

**507.7 Hood joints, seams and penetrations.** Hood joints, seams and penetrations shall comply with Sections 507.7.1 and 507.7.2.

**507.7.1 Type I hoods.** External hood joints, seams and penetrations for Type I hoods shall be made with a continuous external liquid-tight weld or braze to the lowest outermost perimeter of the hood. Internal hood joints, seams, penetrations, filter support frames, and other appendages attached inside the hood shall not be required to be welded or brazed but shall be otherwise sealed to be grease tight.

### Exceptions:

1. Penetrations shall not be required to be welded or brazed where sealed by devices that are listed for the application.
2. Internal welding or brazing of seams, joints, and penetrations of the hood shall not be prohibited provided that the joint is formed smooth or ground so as to not trap grease, and is readily cleanable.

**507.7.2 Type II hoods.** Joints, seams and penetrations for Type II hoods shall be constructed as set forth in Chapter 6, shall be sealed on the interior of the hood and shall provide a smooth surface that is readily cleanable and water tight.

**507.8 Cleaning and grease gutters.** A hood shall be designed to provide for thorough cleaning of the entire hood. Grease gutters shall drain to an approved collection receptacle that is fabricated, designed and installed to allow access for cleaning.

**507.9 Clearances for Type I hood.** A Type I hood shall be installed with a clearance to combustibles of not less than 18 inches (457 mm).

**Exception:** Clearance shall not be required from gypsum wallboard attached to noncombustible structures provided that a smooth, cleanable, nonabsorbent and noncombustible material is installed between the hood and the gypsum wallboard over an area extending not less than 18 inches (457 mm) in all directions from the hood.

**507.10 Hoods penetrating a ceiling.** Type I hoods or portions thereof penetrating a ceiling, wall or furred space shall comply with all the requirements of Section 506.3.10.

**507.11 Grease filters.** Type I hoods shall be equipped with listed grease filters designed for the specific purpose. Grease-collecting equipment shall be provided with access for cleaning. The lowest edge of a grease filter located above the cooking surface shall be not less than the height specified in Table 507.11.

TABLE 507.11  
MINIMUM DISTANCE BETWEEN THE LOWEST EDGE OF A  
GREASE FILTER AND THE COOKING SURFACE OR THE  
HEATING SURFACE

TYPE OF COOKING APPLIANCES	HEIGHT ABOVE COOKING SURFACE (feet)
Without exposed flame	0.5
Exposed flame and burners	2
Exposed charcoal and charbroil type	3.5

For SI: 1 foot = 304.8 mm.

**507.11.1 Criteria.** Filters shall be of such size, type and arrangement as will permit the required quantity of air to pass through such units at rates not exceeding those for which the filter or unit was designed or approved. Filter units shall be

installed in frames or holders so as to be readily removable without the use of separate tools, unless designed and installed to be cleaned in place and the system is equipped for such cleaning in place. Removable filter units shall be of a size that will allow them to be cleaned in a dishwashing machine or pot sink. Filter units shall be arranged in place or provided with drip-intercepting devices to prevent grease or other condensate from dripping into food or on food preparation surfaces.

**507.11.2 Mounting position.** Filters shall be installed at an angle of not less than 45 degrees (0.79 rad) from the horizontal and shall be equipped with a drip tray beneath the lower edge of the filters.

**507.12 Canopy size and location.** The inside lower edge of canopy-type commercial cooking hoods shall overhang or extend a horizontal distance of not less than 6 inches (152 mm) beyond the edge of the cooking surface, on all open sides. The vertical distance between the front lower lip of the hood and the cooking surface shall not exceed 4 feet (1219 mm).

**Exception:** The hood shall be permitted to be flush with the outer edge of the cooking surface where the hood is closed to the appliance side by a noncombustible wall or panel.

**507.13 Capacity of hoods.** Commercial food service hoods shall exhaust a minimum net quantity of air determined in accordance with this section and Sections 507.13.1 through 507.13.4. The net quantity of exhaust air shall be calculated by subtracting any airflow supplied directly to a hood cavity from the total exhaust flow rate of a hood. Where any combination of extra-heavy-duty, heavy-duty, medium-duty, and light-duty cooking appliances are utilized under a single hood, the highest exhaust rate required by this section shall be used for the entire hood.

**507.13.1 Extra-heavy-duty cooking appliances.** The minimum net airflow for Type I hoods used for extra-heavy-duty cooking appliances shall be determined as follows:

Type of Hood	CFM per linear foot of hood
Wall-mounted canopy	550
Single island canopy	700
Double island canopy (per side)	550
Backshelf/pass-over	Not allowed
Eyebrow	Not allowed

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.13.2 Heavy-duty cooking appliances.** The minimum net airflow for Type I hoods used for heavy-duty cooking appliances shall be determined as follows:

Type of Hood	CFM per linear foot of hood
Wall-mounted canopy	400
Single island canopy	600
Double island canopy (per side)	400
Backshelf/pass-over	400
Eyebrow	Not allowed

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.13.3 Medium-duty cooking appliances.** The minimum net airflow for Type I hoods used for medium-duty cooking appliances shall be determined as follows:

Type of Hood	CFM per linear foot of hood
Wall-mounted canopy	300
Single island canopy	500
Double island canopy (per side)	300
Backshelf/pass-over	300
Eyebrow	250

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.13.4 Light-duty cooking appliances.** The minimum net airflow for Type I hoods used for light duty cooking appliances and food service preparation and cooking operations approved for use under a Type II hood shall be determined as follows:

Type of Hood	CFM per linear foot of hood
Wall-mounted canopy	200
Single island canopy	400
Double island canopy (per side)	250
Backshelf/pass-over	250
Eyebrow	250

For SI: 1 cfm per linear foot = 1.55 L/s per linear meter.

**507.14 Noncanopy size and location.** Noncanopy-type hoods shall be located a maximum of 3 feet (914 mm) above the cooking surface. The edge of the hood shall be set back a maximum of 1 foot (305 mm) from the edge of the cooking surface.

**507.15 Exhaust outlets.** Exhaust outlets located within the hood shall be located so as to optimize the capture of particulate matter. Each outlet shall serve not more than a 12-foot (3658 mm) section of hood.

**507.16 Performance test.** A performance test shall be conducted upon completion and before final approval of the installation of a ventilation system serving commercial cooking appliances. The test shall verify the rate of exhaust airflow required by Section 507.13, makeup airflow required by Section 508, and proper operation as specified in this chapter. The permit holder shall furnish the necessary test equipment and devices required to perform the tests.

**507.16.1 Capture and containment 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. 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.

## SECTION 508 COMMERCIAL KITCHEN MAKEUP AIR

**508.1 Makeup air.** Makeup air shall be supplied during the operation of commercial kitchen exhaust systems that are provided for commercial cooking appliances. The amount of

## EXHAUST SYSTEMS

makeup air supplied shall be approximately equal to the amount of exhaust air. The makeup air shall not reduce the effectiveness of the exhaust system. Makeup air shall be provided by gravity or mechanical means or both. For mechanical makeup air systems, the exhaust and makeup air systems shall be electrically interlocked to insure that makeup air is provided whenever the exhaust system is in operation. Makeup air intake opening locations shall comply with Sections 401.5 and 401.5.1.

**508.1.1 Makeup air temperature.** The temperature differential between makeup air and the air in the conditioned space shall not exceed 10°F (6°C).

### Exceptions:

1. Makeup air that is part of the air-conditioning system.
2. Makeup air that does not decrease the comfort conditions of the occupied space.

**508.2 Compensating hoods.** Manufacturers of compensating hoods shall provide a label indicating minimum exhaust flow and/or maximum makeup airflow that provides capture and containment of the exhaust effluent.

## SECTION 509 FIRE SUPPRESSION SYSTEMS

**509.1 Where required.** Commercial cooking appliances required by Section 507.2.1 to have a Type I hood shall be provided with an approved automatic fire suppression system complying with the *International Building Code* and the *International Fire Code*.

## SECTION 510 HAZARDOUS EXHAUST SYSTEMS

**510.1 General.** This section shall govern the design and construction of duct systems for hazardous exhaust and shall determine where such systems are required. Hazardous exhaust systems are systems designed to capture and control hazardous emissions generated from product handling or processes, and convey those emissions to the outdoors. Hazardous emissions include flammable vapors, gases, fumes, mists or dusts, and volatile or airborne materials posing a health hazard, such as toxic or corrosive materials. For the purposes of this section, the health-hazard rating of materials shall be as specified in NFPA 704.

**510.2 Where required.** A hazardous exhaust system shall be required wherever operations involving the handling or processing of hazardous materials, in the absence of such exhaust systems and under normal operating conditions, have the potential to create one of the following conditions:

1. A flammable vapor, gas, fume, mist or dust is present in concentrations exceeding 25 percent of the lower flammability limit of the substance for the expected room temperature.
2. A vapor, gas, fume, mist or dust with a health-hazard rating of 4 is present in any concentration.

3. A vapor, gas, fume, mist or dust with a health-hazard rating of 1, 2 or 3 is present in concentrations exceeding 1 percent of the median lethal concentration of the substance for acute inhalation toxicity.

### [F] 510.2.1 Lumber yards and woodworking facilities.

Equipment or machinery located inside buildings at lumber yards and woodworking facilities which generates or emits combustible dust shall be provided with an approved dust-collection and exhaust system installed in conformance with this section and the *International Fire Code*. Equipment and systems that are used to collect, process or convey combustible dusts shall be provided with an approved explosion-control system.

**[F] 510.2.2 Combustible fibers.** Equipment or machinery within a building which generates or emits combustible fibers shall be provided with an approved dust-collecting and exhaust system. Such systems shall comply with this code and the *International Fire Code*.

**510.3 Design and operation.** The design and operation of the exhaust system shall be such that flammable contaminants are diluted in noncontaminated air to maintain concentrations in the exhaust flow below 25 percent of the contaminant's lower flammability limit.

**510.4 Independent system.** Hazardous exhaust systems shall be independent of other types of exhaust systems. Incompatible materials, as defined in the *International Fire Code*, shall not be exhausted through the same hazardous exhaust system. Hazardous exhaust systems shall not share common shafts with other duct systems, except where such systems are hazardous exhaust systems originating in the same fire area.

Contaminated air shall not be recirculated to occupied areas unless the contaminants have been removed. Air contaminated with explosive or flammable vapors, fumes or dusts; flammable or toxic gases; or radioactive material shall not be recirculated.

**510.5 Design.** Systems for removal of vapors, gases and smoke shall be designed by the constant velocity or equal friction methods. Systems conveying particulate matter shall be designed employing the constant velocity method.

**510.5.1 Balancing.** Systems conveying explosive or radioactive materials shall be prebalanced by duct sizing. Other systems shall be balanced by duct sizing with balancing devices, such as dampers. Dampers provided to balance air-flow shall be provided with securely fixed minimum-position blocking devices to prevent restricting flow below the required volume or velocity.

**510.5.2 Emission control.** The design of the system shall be such that the emissions are confined to the area in which they are generated by air currents, hoods or enclosures and shall be exhausted by a duct system to a safe location or treated by removing contaminants.

**510.5.3 Hoods required.** Hoods or enclosures shall be used where contaminants originate in a limited area of a space. The design of the hood or enclosure shall be such that air currents created by the exhaust systems will capture the contaminants and transport them directly to the exhaust duct.

754-6172 Cell

-----Original Message-----

**From:** Jeanie Bourke [mailto:JMB@portlandmaine.gov]

**Sent:** Wednesday, April 25, 2007 2:01 PM

**To:** ahahnel@hahnelbroscos.com

**Cc:** Arthur Rowe

**Subject:** RE: Sokodu Teriyaki Application

Hi Alan,

I understand you met Arthur Rowe at Soduko today to iron out some of the details. If I may weigh in on the issue of this 3m Fire Wrap 15A again....

The bottom line is that there needs to be 18" to combustibles and the reduction criteria is spelled out in the code. The use of other products used to reduce that distance must be listed for such application. We as the AHJ are not requiring the hood to be wrapped, just to meet the code for clearance reduction. The engineering judgement refers to the "protection being up to 2hrs". What does that mean? The typical language would be in inches of clearance to combustibles. Does the technical service representative have credentials to back up this information?

I am not convinced that this material is being used per the installation and application listing. I will have Cptn. Greg Cass review the judgement as well.

Thanks

Jeanie Bourke  
Inspection Services Division Director

City of Portland  
Planning Dept./ Inspections Division  
389 Congress St. Rm 315  
Portland, ME 04101  
[jmb@portlandmaine.gov](mailto:jmb@portlandmaine.gov)  
(207)874-8715

>>> "Alan Hahnel" <ahahnel@hahnelbroscos.com> 04/24 4:41 PM >>>  
Jeanie,

I do not know that the construction of the building incorporated metal stud walls. Metal studs could have been used, but only a destructive investigation would confirm what was used. I would suggest that the preferred method would be the use of the 15A Fire Barrier Wrap Insulation on the back, side and top of the hood to assure adequate protection to the building.

It is interesting that the codes do not specifically address the top of the hood and how to protect this area. My assumption has been to treat the top of the hood as a wall, but I have never seen or heard of putting stainless steel under a sheet rock and metal stud ceiling. As head room may be a problem in some kitchens the treatment of the top of the hood can be critical to maintain the minimum clearance to the bottom of the hood. What is your interpretation of the code on ceilings?

Sincerely,

**Alan R. Hahnel**

**Hahnel Bros. Co.**

46 Strawberry Ave. PO Box 1160  
Lewiston, Maine 04243-1160

784-6477 Phone

782-9859 Fax

754-6172 Cell

-----Original Message-----

**From:** Jeanie Bourke [mailto:JMB@portlandmaine.gov]

**Sent:** Tuesday, April 24, 2007 4:19 PM

**To:** ahahnel@hahnelbrosc.com

**Subject:** RE: Sokodu Teriaki Application

Thanks Alan,

The IMC commentary spells it out quite clearly that the wall must be of noncombustible studs and sheetrock....is this the case?

If so, then the stainless steel could be installed directly on the sheetrock to have the exception apply.

If not, it appears the 15A wrap or ceramic boad could reduce it to zero clearance.

Thanks

Jeanie Bourke

Inspection Services Division Director

City of Portland

Planning Dept./ Inspections Division

389 Congress St. Rm 315

Portland, ME 04101

[jmb@portlandmaine.gov](mailto:jmb@portlandmaine.gov)

(207)874-8715

>>> "Alan Hahnel" <ahahnel@hahnelbrosc.com> 04/23 4:56 PM >>>

Jeanie,

I have not been able to acquire any UL or NSF testing data for the kitchen hoods at the Sokodu Teriaki Restaurant. My guess is that the 3" air space is the manufacture's effort to comply with IMC Section 506.3.6 as it applies to a hood, rather than the ductwork, placed up against a sheetrock wall without the stainless steel wall covering as described in the Exception clause of IMC Section 507.9.

In either case, the use of the 15A wrap can get the clearance to combustibles of the hood down to 0".

Hopefully this assists you in processing the Mechanical Permit Application. We look forward to your acceptance.

Sincerely,

**Alan R. Hahnel**

**Hahnel Bros. Co.**

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-----Original Message-----

**From:** Jeanie Bourke [mailto:JMB@portlandmaine.gov]

**Sent:** Wednesday, April 18, 2007 10:01 AM

**To:** ahahnel@hahnelbrosc.com

**Subject:** Re: Sokodu Teriaki Application

Thank you Alan....good to know they had the structurals looked at. The info on the hood clearance reduction using the 15A wrap is interesting, thanks for supplying an installation reccommenation. Did you find anything from the hood manufacturer relating to clearances to combustibles? Those specs would be helpful in determining what the 3" space allows for and any other methods for reducing the clearance.  
Thanks

Jeanie Bourke  
Inspection Services Division Director

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(207)874-8715

>>> "Alan Hahnel" <ahahnel@hahnelbrosc.com> 04/14 12:16 PM >>>  
Attached are the documents we discussed for the Mechanical Permit Application.

I will follow up with a hard copy in the mail.

**Alan R. Hahnel**

**Hahnel Bros. Co.**

46 Strawberry Ave. PO Box 1160  
Lewiston, Maine 04243-1160

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**Jeanie Bourke - RE: Sokodu Teriyaki Application**

**From:** "Alan Hahnel" <ahahnel@hahnelbroscos.com>  
**To:** "Jeanie Bourke" <JMB@portlandmaine.gov>  
**Date:** 5/4/2007 4:21 PM  
**Subject:** RE: Sokodu Teriyaki Application  
**CC:** "Andy Chen" <akchen@yahoo.com>, <jaek8@yahoo.com>

Jeanie,

I have finally finished my research on kitchen hood clearances to combustibles in response to your e-mail. I have looked at both the International Mechanical Code and NFPA 96. It is interesting how different the two codes are and how each approaches the same subject.

In answer to your question about the "2 hr protection" reference in the Fire Barrier Wrap literature, the designation is the NFPA measurement of Fire Resistance as a function of time that an assembly or material could withstand a fire exposure before it failed. The time duration is the time occupants have to be protected by the designated assembly or material during that fire event. For the various grease duct assemblies, they have been tested for two hours with an internal fire before any of them failed. In the case of the 3M Fire Barrier Wrap Insulation, it was tested on 16 gauge steel duct and positioned with 0" to combustibles and the assembly protected the combustibles during the tested fire event for at least 2 hours.

The Fire Barrier Wrap Insulation has many tests for its application on grease exhaust duct. I have not found any product that has been tested on a kitchen hood. It is interesting that the mineral wool insulation that is referenced in NFPA 96 for a reduction to combustibles is not an acceptable application by the insulation manufacturer and the manufacturer specifically disclaims the use of their product in that application. I have attached three (3) different test reports on the 3M Fire Barrier Wrap Insulation attesting to its viability to protect combustibles at 0" clearance, but there are no credentials / tests to back up the use on the hood. With that being said, NFPA 96 4.2.3.3 does allow 0" clearance for "materials and products that are listed for the purpose of reducing clearance."

The International Mechanical Code on the other hand offers only two options for hood clearances. The options are either 18" or 0" when the hood is mounted onto a metal stud / sheetrock / metal surface assembly. Sokodu Teriyaki has wood stud walls and thus does not meet the IMC code requirements. It is surprising how little information concerning the hood clearances there are in both codes versus the extensive amount of information on duct clearances there is.

It is our request that you consider the use of the 3M Fire Barrier Wrap Insulation applied to the hood, a proven material that reduces clearances to combustibles, and the existing modified IMC wall construction as a total system to protect the occupants of the building. The original installation does not have the fire barrier insulation and the hoods will need to be removed for the installation of the fire protective material. Upon approval of the Mechanical Building Application this work would be scheduled and performed.

Thank you for your time and patience on this project. We await your decision.

Sincerely,

**Alan R. Hahnel**

**Hahnel Bros. Co.**

46 Strawberry Ave. PO Box 1160  
Lewiston, Maine 04243-1160

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**Jeanie Bourke - RE: Sokodu Teriyaki Application**

**From:** Jeanie Bourke  
**To:** Alan Hahnel  
**Date:** 5/8/2007 11:20 AM  
**Subject:** RE: Sokodu Teriyaki Application  
**CC:** Andy Chen; jaek8@yahoo.com

Alan,

I appreciate the effort and diligence you have put into researching this product, and your explanations. I agree, the two codes are very different in many respects.

The mineral wool in an of itself used in that application is not listed, but used as stated in 4.2.3.2, with the noncombustible spacers and 22 gauge sheet-metal satisfies the reduction to 3". The IMC has a similar explanation in Table 308.6 for reductions, and the footnote gives the specs of that mineral or fiberglass batts used. Note that the IMC is much more restrictive than the NFPA in reduction amounts. This table does show options from the 18".

The issue with the 3M wrap, even though it is intended to be used to reduce clearances to combustible materials, is the installation specifications. These specs are very detailed and need to be followed for the product to meet code requirements. See the 5th condition of installation where it states if the wrap is not used around the whole duct, it must extend 36" beyond. I realize you have submitted a detail on the suggested method of installation on a hood, it just shows the top of the hood, what about the sides? How will the walls be treated? Do all the pins and banding compromise the listing of the hood itself? Is the hood listed and approved for any reductions?

Also, I feel a little more comfortable with this method if it is up against type x sheetrock on combustible framing, but the descriptions in the code to combustible material are the required installations to reduce clearances. The IMC commentary gives a more detailed description of the intent....I can fax you these sections.  
Thanks

Jeanie Bourke  
Inspection Services Division Director

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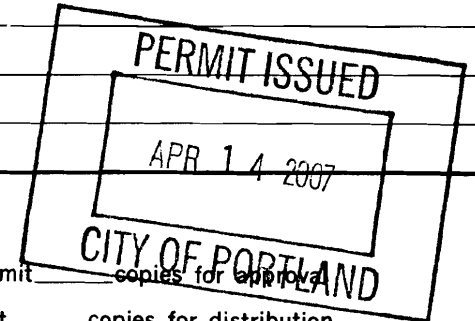
# LETTER OF TRANSMITTAL

DATE	APRIL 14, 2007	JOB NO.	6906-700
ATTENTION	JEANIE BOUZKE		
RE:	SOKODU TERZIYAKI 966 CONGRESS ST. PORTLAND, ME		

WE ARE SENDING YOU  Attached  Under separate cover via \_\_\_\_\_ the following items:

Shop drawings     Prints     Plans     Samples     Specifications  
 Copy of letter     Change order     MANUFACTURERS DATA.

COPIES	DATE	NO.	DESCRIPTION
1	4/13/07	2	REVISED HOOD PLAN VIEW
1	4/13/07	6	3M FIRE BARRIER DUCT WRAP 15A LITERATURE
1	4/12/07	2	3M FIRE PROTECTION PRODUCTS - REDUCTION TO COMBUSTIBLES
1	9/15/06	1	ASSOCIATED DESIGN PARTNERS STRUCTURAL DRAWING.



THESE ARE TRANSMITTED as checked below:


- |  |   |   |
|--|---|---|
| <input type="checkbox"/> For approval                | <input type="checkbox"/> Approved as submitted            | <input type="checkbox"/> Resubmit _____ copies for approval   |
| <input type="checkbox"/> For your use                | <input type="checkbox"/> Approved as noted                | <input type="checkbox"/> Submit _____ copies for distribution |
| <input type="checkbox"/> As requested                | <input type="checkbox"/> Returned for corrections         | <input type="checkbox"/> Return _____ corrected prints        |
| <input type="checkbox"/> For review and comment      | <input type="checkbox"/> _____                            |   |
| <input type="checkbox"/> FOR BIDS DUE _____ 20 _____ | <input type="checkbox"/> PRINTS RETURNED AFTER LOAN TO US |   |

REMARKS JEANIE,  
ATTACHED IS MANUFACTURER'S DATA DETAILING  
INSTALLATION OF THE BLANKET INSULATION TO ACHIEVE 0"  
CLEARANCE FOR HOOD & DUCT. THE OWNER HAD ALREADY DONE  
THE STRUCTURAL ANALYSIS FOR THE SUPPORT OF THE HOODS. I  
HAVE ADDED THE INTAKE FAN & DUCT ONTO OUR DRAWING.

COPY TO \_\_\_\_\_



SIGNED:

**3M**  
**Fire Protection Products**



ENGINEERING JUDGMENT FOR:
04/12/07
Don Parker
General Insulation
35 Willow St.
Lewiston, ME
Fax: (207) 786-0963

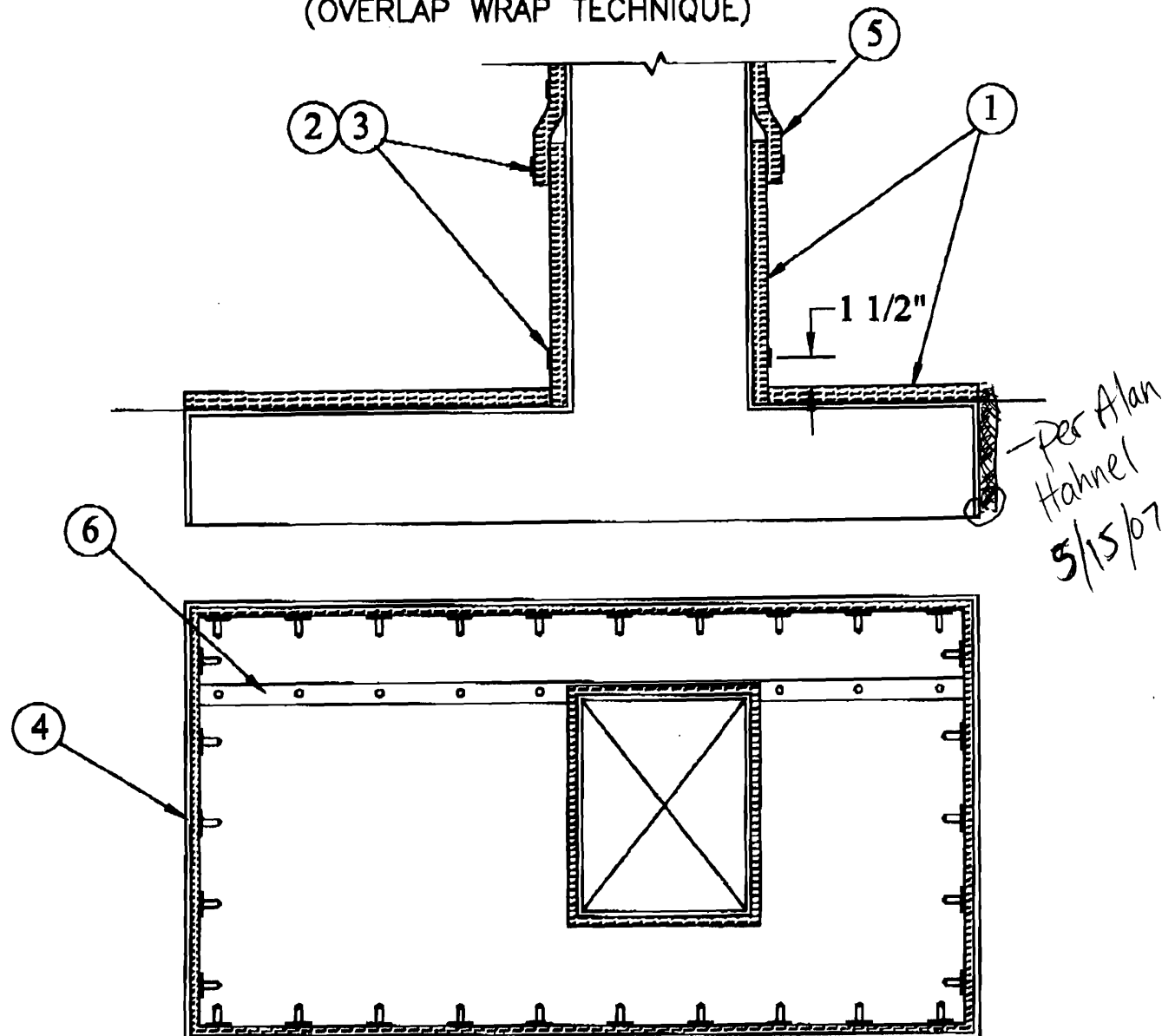
<b>Project:</b> Sokodu Teriyaki	<b>Contractor:</b> TBD
<b>Fire Stopping Category:</b> Discussion	

<b>Topic:</b> Reduction of clearance to combustible materials around a grease duct hood	
<p><b>Discussion:</b> At this time, to the knowledge of 3M Fire Protection Products there are no requirements for the wrapping of the top of a grease duct hood and there is no test standard to comply with, nor hourly rating to achieve. However, when local jurisdiction requires hoods to be wrapped, follow the suggested installation procedure:</p> <p>To reduce the clearance to combustible materials around the grease duct hood, the Fire Barrier Duct Wrap material shall be installed in accordance with the requirements of the Fire Barrier Duct Wrap installation instructions, any applicable design listing from Intertek or applicable code evaluation report with the following additions:</p> <ol style="list-style-type: none"> <li>1. Due to the proximity of the hood to possible combustibles, the hood can be wrapped with one layer of Duct Wrap 15A with the proper overlaps for protection of up to 2 hr. The Duct Wrap 15A can be mechanically fastened to the hood by pinning or with 3/4 in. steel banding using screws and 2 in. diameter washers to one side of the hood. Tighten the banding across the top of the hood and secure the opposite side in the same manner as the first side.</li> <li>2. The required overlaps in the Duct Wrap material must be maintained on the grease duct hood, as well as onto the transition into the grease duct itself.</li> </ol> <p>Supplemental Documents to this Engineering Judgment: Fire Barrier Duct Wrap 15A Commercial Kitchen Grease Fire Protection system Installation Instructions.</p> <p><b>3M Fire Barrier Material:</b> Fire Barrier Duct Wrap 15A</p>	
<p>Engineering Discussion Letter Prepared By:</p>  <p>Kate Baker          Technical Service Representative</p>	<p>Reviewed By:</p>  <p>518386          cc: Ryan Fenstermaker</p>



**3M Building Safety Solutions Department**  
 3M Center, Building 207-1S-02  
 St. Paul, MN 55144-1000

3M FIRE BARRIER DUCT WRAP 15 A  
SUGGESTED INSTALLATION FOR GREASE HOOD DETAIL  
1 OR 2 HOUR SYSTEM  
(OVERLAP WRAP TECHNIQUE)



1. ONE LAYER OF DUCT WRAP 15A
2. FILAMENT TAPE
3. BANDING
4. 10 GAUGE 6" LONG, COPPER COATED INSULATION PINS OR PRE-INSULATED "CUP HEAD" PINS OR SPEED CLIPS SPACING @ 10 1/2"
5. 3" MIN. PERIMETER OVERLAP
6. 3" MIN. SEAM OVERLAP

CONSULT CURRENT INDEPENDENT TESTING LABORATORIES (UL, OPL) FOR SYSTEMS OR DESIGN DETAILS

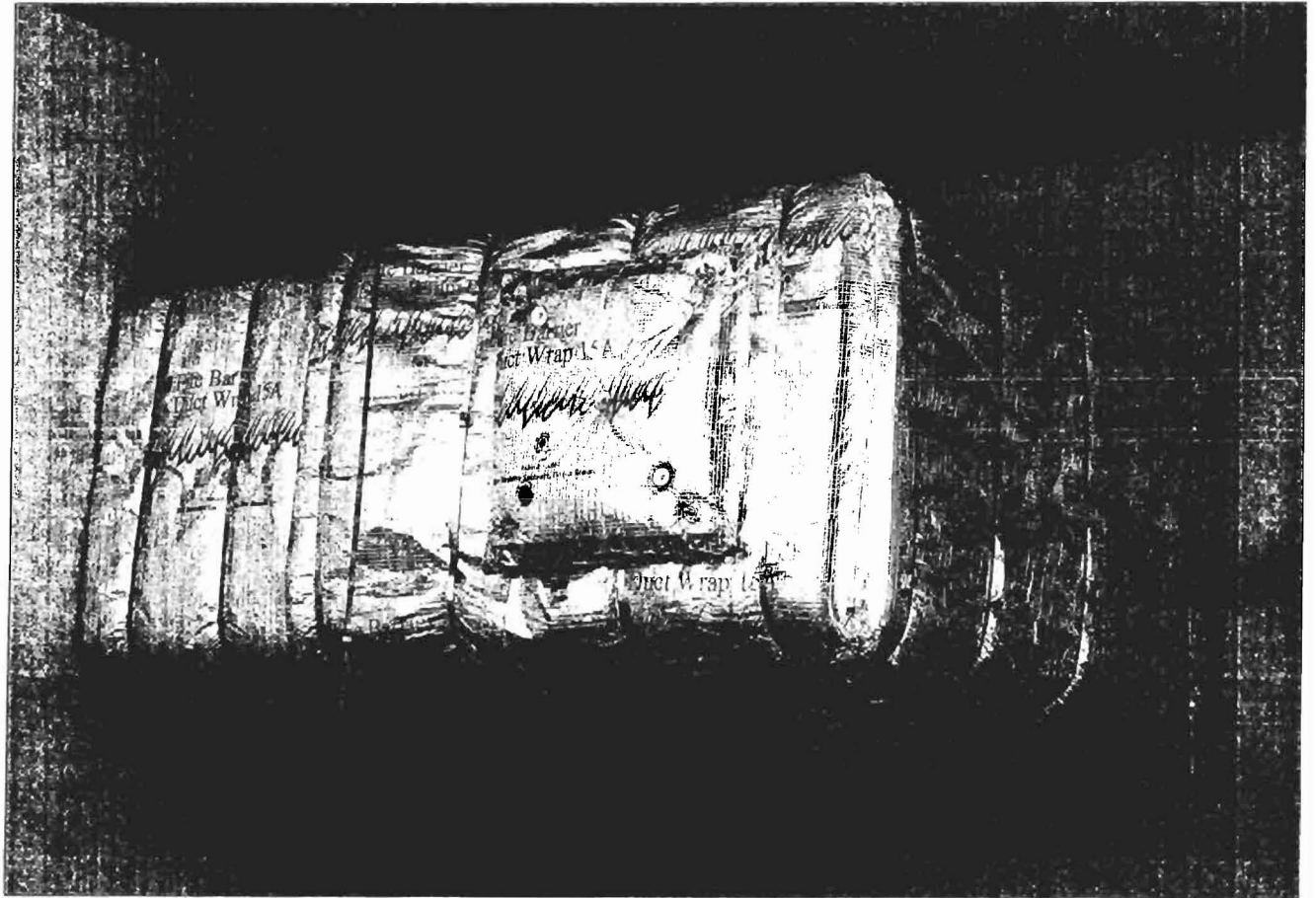
PROJECT:		PAGE 1 OF 2	SIGNATURE	DATE
SYSTEM / DESIGN NO. GREASE-HOOD-DETAIL.DWG		DATE 03-02-04	<p>NOT FOR USE AS CONSTRUCTION DOCUMENT. DRAWING NOT TO SCALE.</p> <p>All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, however, since the conditions of use and application are beyond our control, 3M shall not be liable for any damage, direct or consequential, resulting from the use of this material or design. 3M's only warranty shall be to replace any of our products proved to be defective.</p>	
<b>3M Fire Protection Products</b>				

**3M**

# Fire Barrier Duct Wrap 15A

Commerical Kitchen Grease Duct Fire Protection System

Product Data and Installation Instructions



Compliance  
Report 2132

**NFPA 96**  
Compliance  
1998 Edition

Complies with  
**International  
Mechanical Code**

Complies with  
**Standard  
Mechanical Code**



## 1. Product Description

3M™ Fire Barrier Duct Wrap 15A is a fire resistant wrap consisting of a patented inorganic blanket encapsulated with a scrim-reinforced foil. It is used to fire rate commercial kitchen grease ducts and is a proven alternative to 1 or 2 hour fire resistant rated shaft enclosures. This non-asbestos wrap contains a safer fiber construction\* and installs easily because of its high flexibility and strength. 3M Fire Barrier Duct Wrap 15A is the thinnest standard, single layer fire resistant wrap that has passed the UL1978 test which simulates a grease duct fire. With its excellent insulating capabilities, it is an ideal choice for tight spaces because it protects combustible constructions at zero clearance to the overlap or collar. 3M Fire Barrier 1000 N/S, 1003 S/L and 2000+ Silicone Sealants used in combination 3M Fire Barrier Duct Wrap 15A provide an effective firestop when the duct penetrates fire rated walls and floors.

### Features

- Thinnest, standard one layer wrap for grease ducts rated as a shaft alternative per UL 1978
- Zero clearance to the overlap or collar for congested spaces
- High flexibility for installation ease
- Foil encapsulated with unique center overlap seam for blanket protection, less dust, and high wrap strength
- Safer fiber construction\*

\*Has been demonstrated to be soluble in the lungs according to EU guidelines 67/548/EWG, Note Q for bio persistence.

## 2. Applications

3M Fire Barrier Duct Wrap 15A is an ideal fire resistive enclosure for commercial kitchen grease ducts. It is a proven performance alternative to a 1 or 2 hour fire resistant rated shaft enclosures and provides zero clearance to combustible construction at overlap or collar. 3M Fire Barrier 1000 N/S, 1003 S/L or 2000+ Silicone Sealant is used in combination with 3M Fire Barrier Duct Wrap 15A to firestop the duct when the duct penetrates fire rated floors and walls.

## 3. Availability

Product	Unit	Size	Units/ ctn.	Wt./ ctn.
3M Fire Barrier Duct Wrap 15A	Roll	1.5 in. x 24 in. x 20 ft. (38mm x 60.9cm x 609 cm)	1	53 lbs. 24 kg
3M Fire Barrier Duct Wrap 15A	Roll	1.5 in. x 48 in. x 20 ft. (38mm x 121 cm x 609 cm)	1	106 lbs. 48 kg

## 4. Typical Physical Properties

Blanket Color: gray/green  
Weight: 1.38 lbs./sq. ft. (6.73 kg/sq. m)

## 5. Performance

3M Fire Barrier Duct Wrap 15A has been tested in accordance with the following:

ASTM C 411  
ASTM C 51  
ASTM E 84  
ASTM E 119  
ASTM E 136  
ASTM E 814  
UL 1978 (Sections 12 & 13)

### Surface Burning Characteristics (ASTM E 84)

Foil Encapsulated Blanket:

Flame Spread: 0  
Smoke Developed: 0

Blanket:

Flame Spread: 0  
Smoke Developed: 0

### Thermal Conductivity

Temperature °F (°C)	btu•in./(hr.°ft²•F)
500 (260)	0.417
1000 (537)	0.922
1500 (815)	1.69
1800 (982)	2.27

For technical data and properties of 3M Fire Barrier 1000 N/S, 1003 S/L and 2000+ Silicone Sealants see separate product data sheets available from your 3M representative

### Grease Duct Listings

Fire Resistive Rating	Enclosure System	Omega Point Lab. Design Nos.	
		Duct System	Through-Penetration System
1 or 2 hours	1 layer of 3M Fire Barrier Duct Wrap 15A, 3 in. (76 mm) perimeter and longitudinal overlaps	GD 532 F	FS 557 W FS 558 F FS 559 W FS 560 F FS 561 F FS 562 W FS 563 W

### Code Compliance

3M Fire Barrier Duct Wrap 15A complies with requirements of the following codes:

NFPA 96, 1998 Edition  
Standard Mechanical Code  
International Mechanical Code  
Standard Building Code  
SBCCI Compliance Report 2132

This is only a partial list of code compliance. For the latest code and approval information go to [www.3m.com/firestop](http://www.3m.com/firestop) or speak to your authorized 3M distributor or sales representative at (800) 328-1687.

### 6. Installation Techniques

3M Fire Barrier Duct Wrap 15A system should be installed in accordance with the following installation instructions.

## Material and Equipment

- 3M Fire Barrier Duct Wrap 15A blanket, 1-1/2 in. (38 mm) thick, 24 in. (60 cm) or 48 in. (121 cm) wide, 20 ft. (609 cm) standard length. The 48 in. (121 cm) wide blanket helps to minimize waste.
- Aluminum foil tape.
- Minimum 3/4 in. (19 mm) wide filament tape.
- Carbon steel or stainless steel banding material, minimum 1/2 in. (12,7 mm) wide, minimum 0.015 in. (0,38 mm) thick, with steel banding clips.
- Hand banding tensioner, crimping tool, and banding cutter.
- Minimum 12 gauge copper-coated steel insulation pins; galvanized steel speed clips, minimum 1-1/2 in. (38 mm) square or 1-1/2 in. (38 mm) dia. round, or equivalent sized insulated cup-head pins; capacitor discharge stud gun.
- Access door hardware: four galvanized steel thread rods, 1/4 in. (6 mm) diameter by 4-1/2 in. to 5 in. long (114 mm to 127 mm) with 1/4 in. (6 mm) wing nuts and 1/4 in. (6 mm) washers; 4 in. (102 mm) long steel hollow tubing to fit threaded rods.
- Minimum 4.0 lb. (1,8 kg) density mineral wool or scrap pieces of 3M Fire Barrier Duct Wrap 15A blanket
- 3M Fire Barrier 1000 N/S, 1003 S/L or 2000+ Silicone Sealant.

## Storage

The 3M Fire Barrier Duct Wrap 15A and 3M Fire Barrier 1000 N/S, 1003 S/L and 2000+ Silicone Sealants must be stored in a dry warehouse environment. Pallets should not be stacked.

**Preparatory Work:** 3M Fire Barrier Duct Wrap 15A is installed with common tools, such as knives, banders and capacitor discharge guns for applying insulation pins. In order to install the duct firestop system, the surfaces of all the openings and penetrating items need to be clean, dry, frost free and free of dust.

**Method:** To minimize waste, 3M Fire Barrier Duct Wrap 15A material should be rolled out tautly before measuring. General instructions for installing the 3M Fire Barrier Duct Wrap 15A include a one-layer wrap construction applied directly to the duct. The 3M Fire Barrier Duct Wrap 15A blanket is wrapped around the perimeter of the duct and is cut to a length to overlap itself not less than 3 in. (76 mm). The overlap made by adjacent blankets forms the "longitudinal" overlap. Aluminum foil tape is used to seal all cut edges of the blanket and any tears in the foil scrim.

**There are three (3) approved installation techniques for installing the 3M Fire Barrier Duct Wrap 15A (See Figures 1A-1D and Figures 2A-2D):**

## 1. Telescoping 3 in. (76 mm) Overlap Wrap

With the telescoping overlap wrap method, each blanket overlaps one adjacent blanket, and each blanket has one edge exposed and one edge covered by the next blanket as shown in Figure 1A and 1B. The visible edges of the perimeter overlaps all point in the same direction.

## 2. Checkerboard 3 in. (76 mm) Overlap Wrap

With the 3 in. (76 mm) checkerboard overlap wrap method, blankets with both edges exposed alternate with blankets with covered edges, as shown in Figure 1C. The visible edges of the perimeter overlaps alternate their directions and appear on every other blanket.

## 3. Butt Joint With Collar

With the butt joint and collar method, adjacent blankets are butted tightly together and 6 in. (152 mm) wide collar of 3M Fire Barrier Duct Wrap is centered over the joint, overlapping each blanket by 3 in. (76 mm) minimum as shown in Figure 1D.

In all three overlap techniques the perimeter overlap can occur at any location on the duct.

The blanket is mechanically attached to the duct by steel banding or by welded insulation pins and clips for all three installation methods listed above.

## For Banding Only (See Figures 1A to 1D)

Filament tape can be used to temporarily hold the blanket in place until the banding is applied. The steel banding is applied around the duct 1-1/2 in. (38 mm) from each edge of the blanket, and maximum 10-1/2 in. (26,7 cm) centers. The banding is placed around the material and tightened so as to sufficiently hold the 3M Fire Barrier Duct Wrap 15A in place against the duct, compressing the foil but not cutting the foil.

**Additional Pinning to Prevent Sagging of the Wrap:** For Ducts 24 in. (60 cm) and larger in width, additional pins are needed to support the blanket on the bottom horizontal surface and on the outside face of a vertical duct run. Space pins a maximum of 10-1/2 in. (26,7 cm) apart in the direction of the blanket width, and a maximum of 12 in. (30 cm) apart in the direction of the blanket length. Refer to paragraph below for more information on Mechanical Fastening with Pins.

## For Mechanical Fastening with Pins Only (See Figure 2A to 2D)

Insulation pins are welded to the duct in the centers of the overlaps a minimum of 1-1/2 in. (38 mm) from each edge of the blanket, and spaced a maximum of 10-1/2 in. (26,7 cm) on center along perimeter overlap, and a maximum of 10-1/2 in. (26,7 mm) on center along longitudinal overlaps. The blanket is

impaled over the pins and held in place by galvanized speed clips. Insulation pins that extend beyond the blanket wrap shall be turned down to eliminate sharp points. Insulated cup-head pins can be used at the same spacing requirements of the insulation pins.

**NOTE:** Support hangar systems do not need to be wrapped provided the hangar rods are at least a minimum of 3/8 in. (9,53 mm) diameter and spaced a maximum of 60 in. (152 cm) on center along the length of the duct. Use a minimum 2 in. x 2 in. x 1/4 in. (50 mm x 50 mm x 6,35 mm) steel angle steel support channel or SMACNA equivalent support system.

#### **Access Door Installation (See Figure 3)**

Four galvanized steel threaded rods, 1/4 in. diameter (6,35 mm) by 4-1/2 in. to 5 in. long (114 mm to 127 mm) are welded to the duct at the corners of the door opening. Four steel tubes, each 3 in. (76 mm) long, are placed over the rods to act as protection for the 3M Fire Barrier Duct Wrap 15A when fastening the door. Four insulation pins are welded to the door panel for installation of the blanket. One layer of 3M Fire Barrier Duct Wrap 15A is cut approximately the same size as the access panel and impaled over the insulation pins on the panel. *It is essential that this layer fit tightly against the wrap surrounding the access door opening with no through openings.* A second layer of 3M Fire Barrier Duct Wrap 15A is cut so as to overlap the first layer by a minimum of 1 in. (25,4 mm). The second layer is impaled over the pins and both layers are locked in place with galvanized speed clips. Pins that extend beyond the outer layer of 3M Fire Barrier Duct Wrap 15A shall be turned down to avoid sharp points on the door.

The insulated door panel is placed over the threaded rods and held in place with washers and wing nuts. The details are shown in Figure 3.

#### **Penetrations (See Figures 4A to 4D)**

When the duct penetrates a fire rated wall, ceiling or floor, an approved firestop system must be employed. Figures 4A to 4D illustrate typical conditions.

To firestop the wrapped duct, follow the installation parameters detailed in the following Omega Point Laboratories, Inc. systems:  
FS 557 W, FS 558 F, FS 559 W, FS 560 F, FS 561 F, FS 562 W, FS 563 W.

#### **Other Applications**

Refer to Figures 5, 6, 7, 8 and 9 for additional typical conditions.

#### **7. Maintenance**

No maintenance is required when installed in accordance with the 3M Installation Instructions. Once installed, if any section of the 3M Fire Barrier Duct Wrap 15A is damaged so that the blanket is damaged, the following procedures will apply:

- The damaged section should be removed by cutting the steel banding or removing the clips holding it in place.
- A new section of the same dimension should be cut from a roll of 3M Fire Barrier Duct Wrap 15A, either 24 in. (60,9 cm) or 48 in. (121 cm) wide.
- The new section should be placed and fitted ensuring the same overlap that existed previously.
- The steel banding should be placed around the material and tensioned so as to sufficiently hold the 3M Fire Barrier Duct Wrap 15A in place.
- If the blanket has not been damaged but the foil has ripped, seal the rips with aluminum foil tape.

#### **8. Purchase Information**

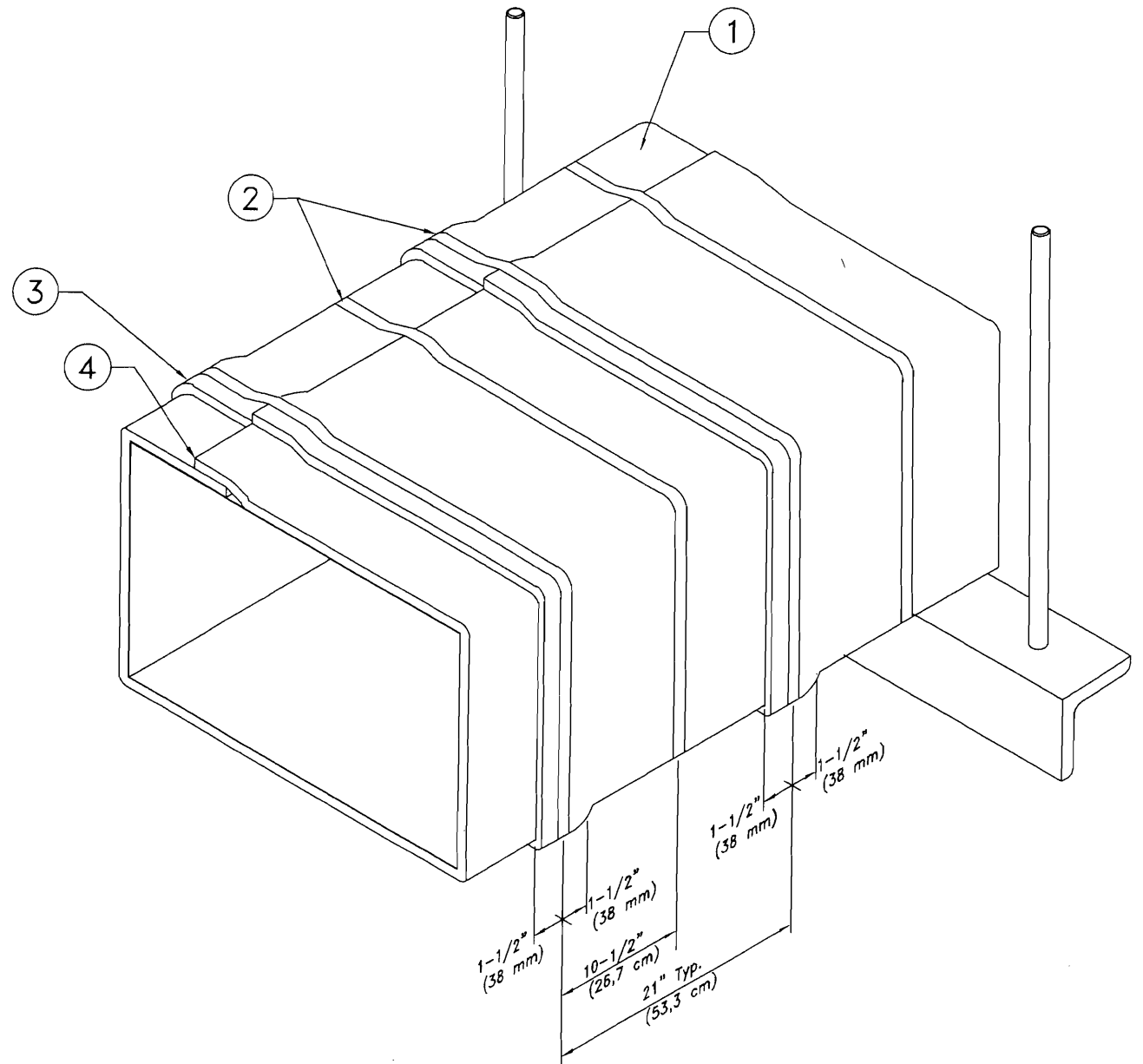
3M Fire Barrier products are available through a network of nationwide distributors. For information on where to buy, go to [www.3m.com/firestop](http://www.3m.com/firestop).

#### **9. Safe Handling Information**

**Consult Material Safety Data Sheet prior to handling and disposing of 3M Fire Barrier Duct Wrap 15A.**



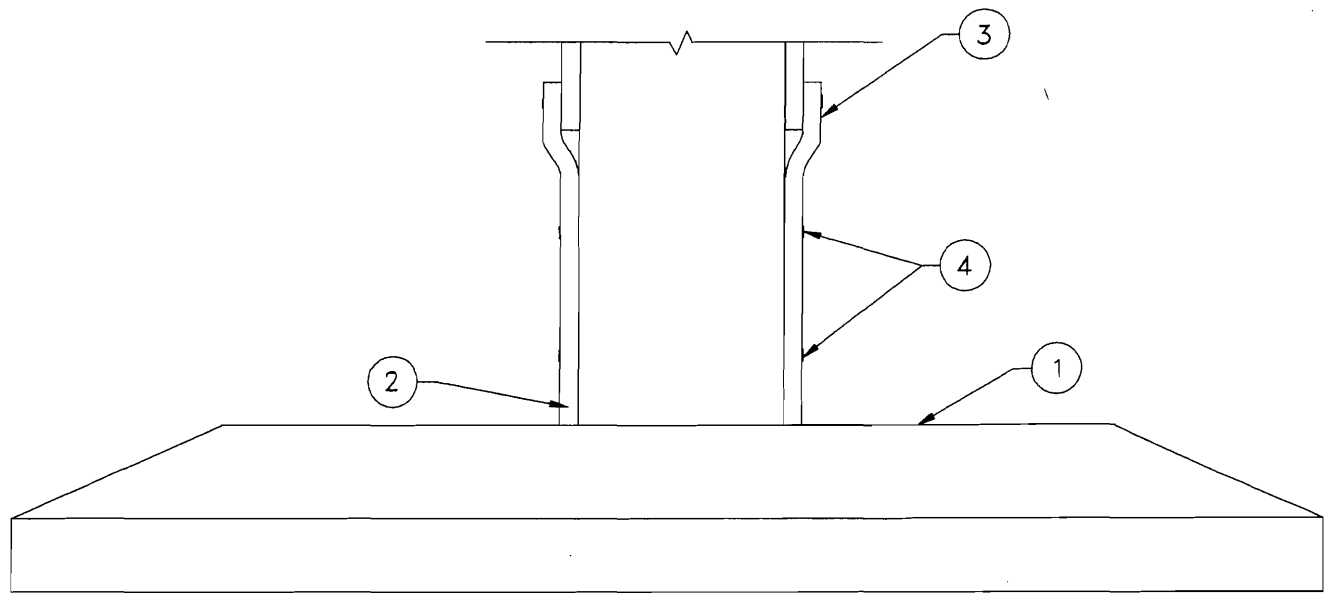
**Figure 1A**  
**3M Fire Barrier Duct Wrap 15A**  
**Commercial Kitchen Grease Duct Systems**  
**1 or 2 Hour Shaft Alternative Zero Clearance to Combustibles**  
**Telescoping Wrap Technique With Banding For Ducts 24 inches (60,9 cm) or Less**



1.	One Layer 3M Fire Barrier Duct Wrap 15A
2.	Steel Banding 1/2 in. (13 mm) Wide Min. Typical
3.	3 in. (76 mm) Min. Longitudinal Overlap
4.	3 in. (76 mm) Min. Perimeter Overlap

System integrity is limited by quality of installation.

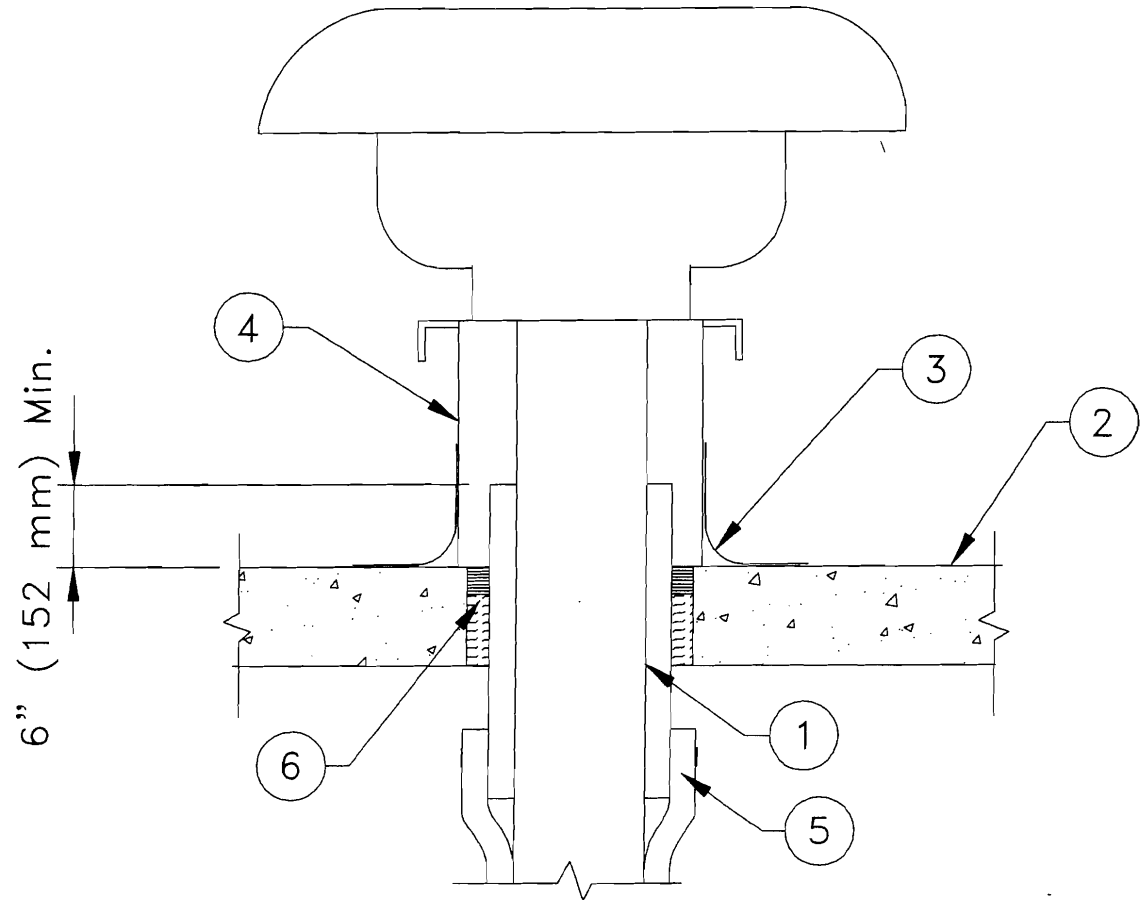
**Figure 7**  
**3M Fire Barrier Duct Wrap 15A**  
**Commercial Kitchen Grease Duct Systems**  
**1 or 2 Hour Shaft Alternative Zero Clearance to Combustibles**  
**Suggested Exhaust Hood**



1.	Hood
2.	One Layer 3M Fire Barrier Duct Wrap 15A
3.	6 in. (152 mm) Minimum Overlap
4.	Banding

System integrity is limited by quality of installation.

**Figure 8**  
**3M Fire Barrier Duct Wrap 15A**  
**Commercial Kitchen Grease Duct Systems**  
**1 or 2 Hour Shaft Alternative Zero Clearance to Combustibles**  
**Suggested Roof Vent**



1.	Duct
2.	Roof Assembly
3.	Roof Flashing
4.	Vent Flashing
5.	One Layer 3M Fire Barrier Duct Wrap 15A
6.	Firestopping System for Rated Roof Assemblies Only

System integrity is limited by quality of installation.



LEWISTON  
46 STRAWBERRY AVE. • P.O. BOX 1160  
LEWISTON, MAINE 04243  
(207) 784-6477 • FAX (207) 782-9859

BANGOR  
219 PERRY ROAD  
BANGOR, MAINE 04401  
(207) 945-6476 • FAX (207) 945-0129

CITY OF PORTLAND - PLANNING  
389 CONGRESS STREET  
PORTLAND, MAINE 04101

# LETTER OF TRANSMITTAL

DATE	JUNE 1, 2007	JOB NO.	6906-700
ATTENTION	JEANIE BOURKE		
RE:	SOKODU TERIYAKI 966 CONGRESS ST. PORTLAND, ME.		

WE ARE SENDING YOU  Attached  Under separate cover via \_\_\_\_\_ the following items:

Shop drawings  Prints  Plans  Samples  Specifications

Copy of letter  Change order  \_\_\_\_\_

COPIES	DATE	NO.	DESCRIPTION
1	6-1-07	2	REVISED HOOD INSTALLATION DRAWINGS
1	4-13-07	6	3M FIRE BARRIER DUCT WRAP 15A LITERATURE
1	4-12-07	2	<del>ASSOCIATED DESIGN DRAWINGS</del>
			3M FIRE PROTECTION PRODUCTS - REDUCTION BULLETIN

THESE ARE TRANSMITTED as checked below:

- For approval  Approved as submitted  Resubmit \_\_\_\_\_ copies for approval
- For your use  Approved as noted  Submit \_\_\_\_\_ copies for distribution
- As requested  Returned for corrections  Return \_\_\_\_\_ corrected prints
- For review and comment  \_\_\_\_\_
- FOR BIDS DUE \_\_\_\_\_ 20 \_\_\_\_\_  PRINTS RETURNED AFTER LOAN TO US

REMARKS \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

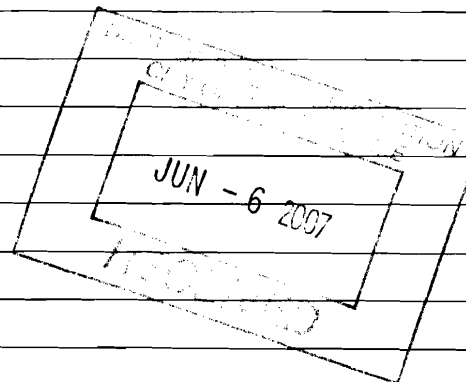
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



COPY TO \_\_\_\_\_

SIGNED:

A

B

C

PERIMETER OF 18" WIDE  
STAINLESS STEEL PANS W/  
3M FIRE BARRIER WRAP  
INSULATION

16  
UP

(B)

1

EF-2  
ROOF TOP EXHAUST FAN  
AS MANUFACTURED  
BY PENN-BARRY  
MODEL FX18BFT  
4258 CFM @ 1/2" SP.

12"  $\phi$   
FLEX  
DUCT

(B)

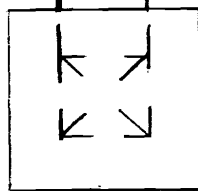
14 x 14 DUCT  
UP THRU ROOF

(A)

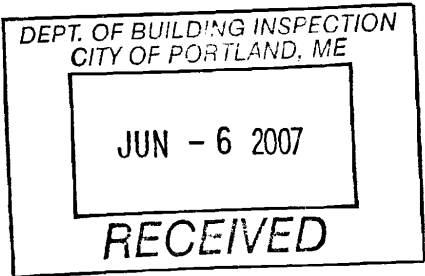
KH-2  
9'0" x 4'0" CANOPY  
KITCHEN EXHAUST HOOD  
AS MANUFACTURED BY WINE  
MODEL # L132848

10'0"  
MIN

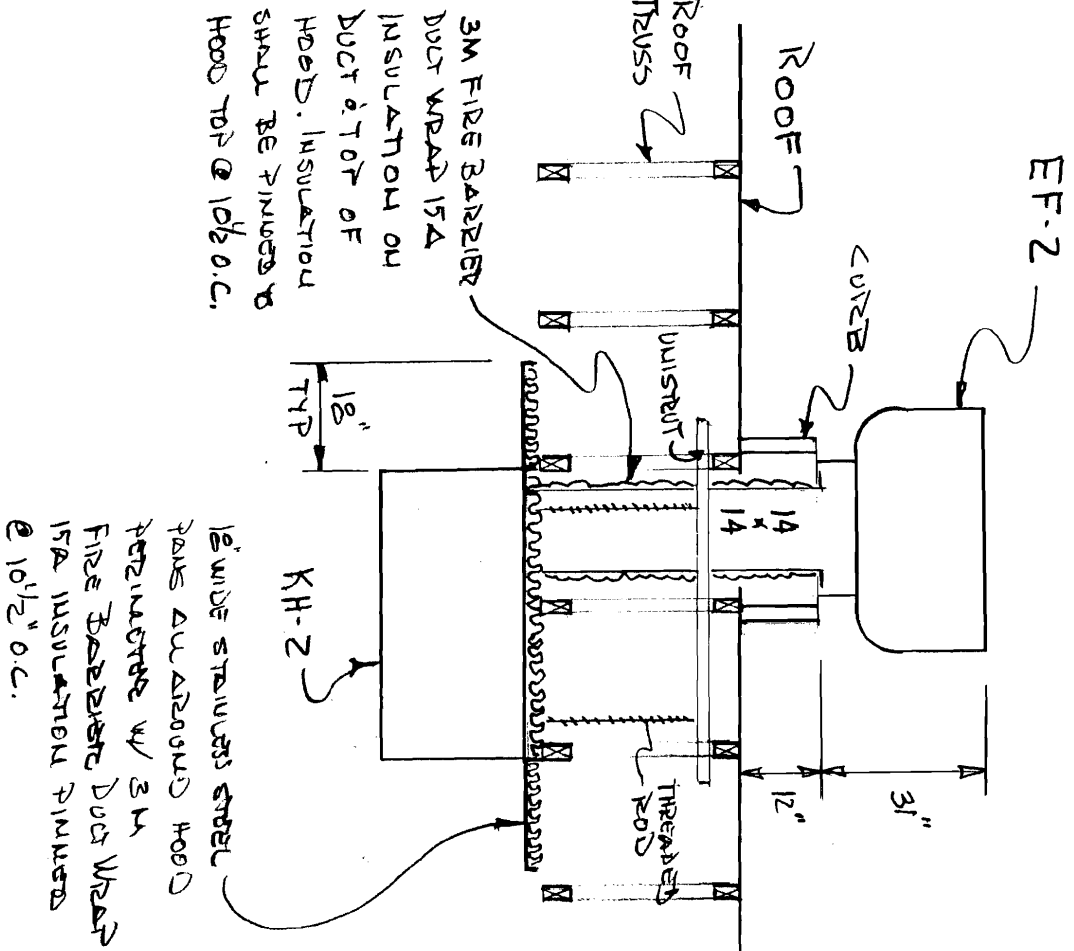
2



FRESH AIR  
INTAKE SUPPLY FAN  
MOUNTED ON ROOF



KITCHEN PLAN VIEW



1 1/2" DIA STAINLESS STEEL POST SURROUND HOOD PERIMETER W/ 3M FIRE BARRIER DUCT WRAP 15A INSULATION PINNED @ 10 1/2" O.C.

3M FIRE BARRIER DUCT WRAP INSULATION ON DUCT, TOP OF HOOD, BACK OF HOOD AND STUDS OF HOOD. INSULATION SHALL BE PINNED TO HOOD @ 10 1/2" O.C.

FLOOR

## SECTION A-A

### NOTES:

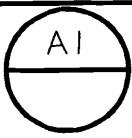
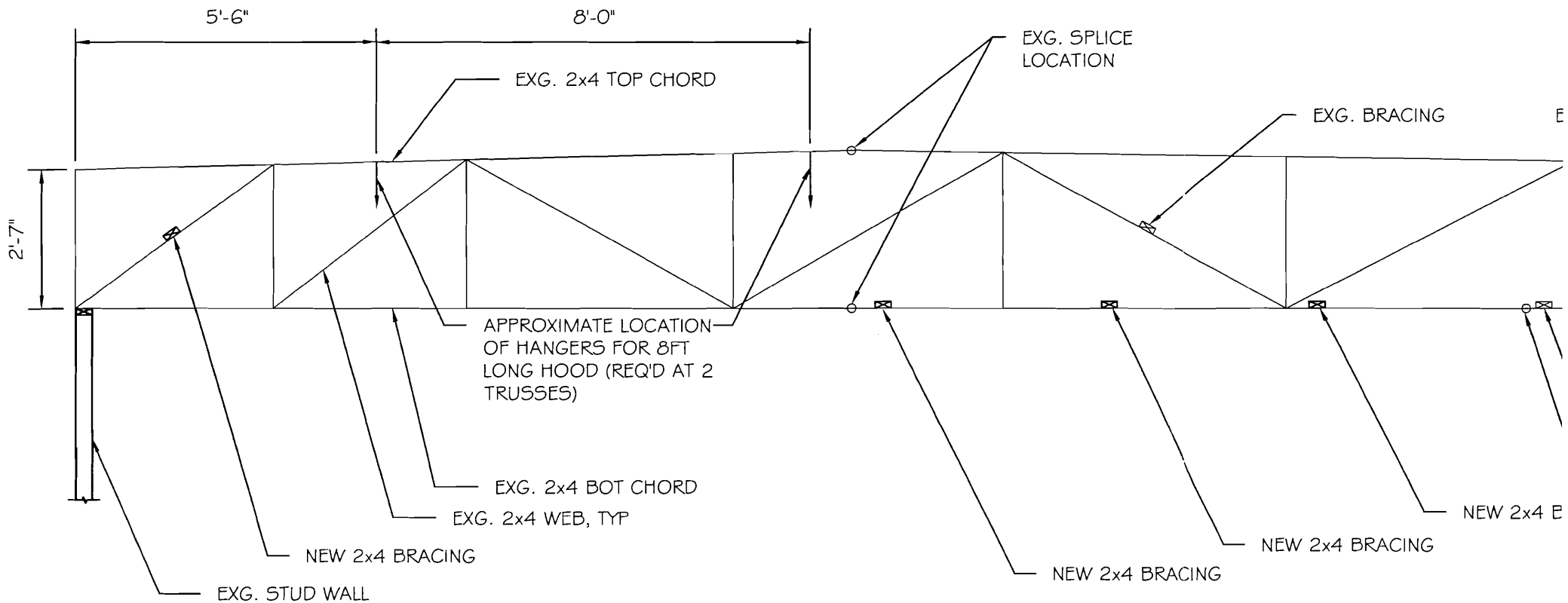
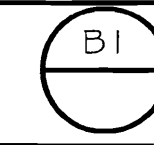
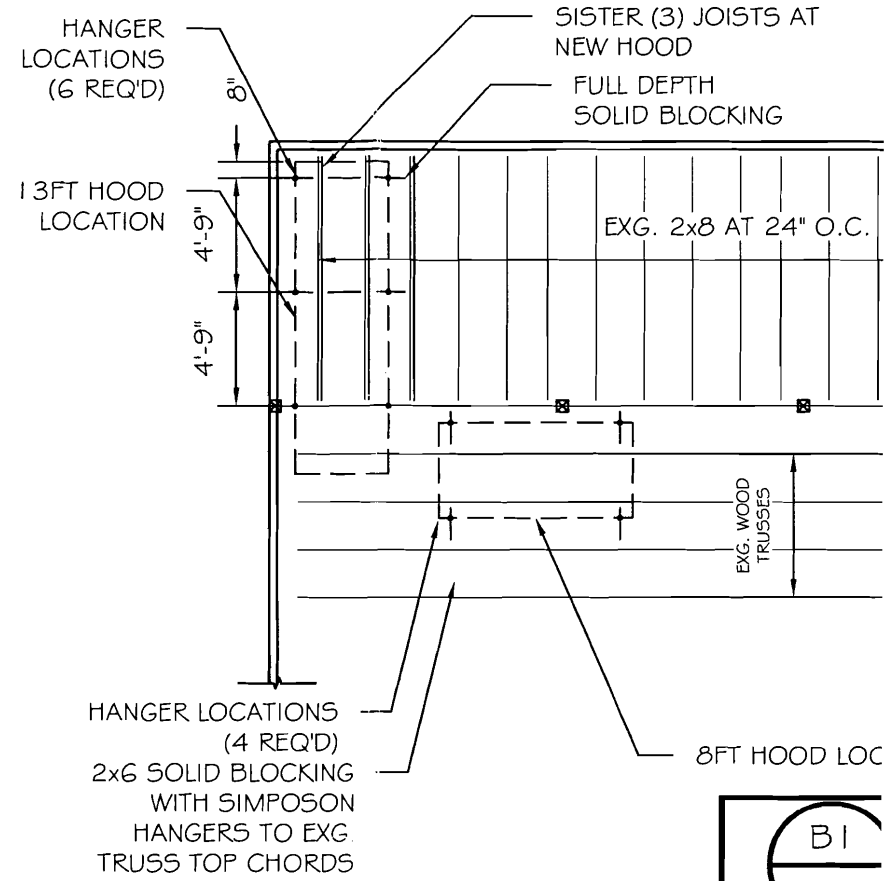
- A. CONSTRUCTION AND INSTALLATION OF THIS KITCHEN HOOD EXHAUST SYSTEMS SHALL CONFORM TO THE 2006 INTERNATIONAL MECHANICAL CODE FOR TYPE I EXHAUST HOODS AND NFPA 96 2004 EDITION.
- B. HOODS TO BE 18 GAUGE STAINLESS STEEL WELDED CONSTRUCTION PER NFPA 96 STANDARDS
- C. FIRE SUPPRESSION SYSTEMS BY OTHERS ON HOOD
- D. HOODS TO BE MADE FROM UNRY BY 3/8"  $\phi$  THREADED ROD.
- E. HOODS TO HAVE BAFFLE TYPE GREASE EXTRACTIVE FILTER.
- F. DUCT TO BE 16 GAUGE HOT R STEEL, CONTINUOUS WELDED CONSTRUCTION.

NOTES

- G.C. ENSURE ALL EXISTING TRUSS BRACING IS PROPERLY ATTACHED TO TRUSS WEBS AND CHORDS.
- ATTACH NEW 2X4 BRACING TO MIN. 5 ADJACENT TRUSSES AND GABLE END WALL. NAIL BRACING TO TRUSS MEMBERS WITH (2) 1 6D NAIL AT EACH CONNECTION POINT.
- DESIGN LOADS  
DL = 12PSF ROOF  
5 PSF CEILING  
SL = 35 PSF FLAT ROOF ( $P_g = 50$  PSF)
- NEW HOOD HANGERS TO BE CONNECTED TO EXG. TRUSS TOP CHORDS AT 8FT LONG HOOD. HANGERS AND CONNECTIONS TO BE CAPABLE OF RESISTING 125# AT 8FT LONG HOOD, 250# AT 13FT LONG HOOD. DESIGN OF HANGERS AND CONNECTIONS IS OUTSIDE THE PURVIEW OF THIS P.E. SEAL.
- 8FT LONG HOOD TO HAVE MIN. 4 HANGERS. 13FT LONG HOOD TO HAVE MIN. 6 HANGERS.
- EXG. 2x8 JOISTS AT LOW ROOF TO BE SISTERED WITH NEW 2x8 PT JOIST AT THE LOCATION OF THE 13FT LONG HOOD (NORTH WALL). SISTER (3) JOISTS IN THE AREA OF THE HOOD LOCATION. INSTALL FULL DEPTH 2x8 SOLID BLOCKING BETWEEN THESE SISTERED JOISTS AT THE HANGER ROD LOCATIONS. BLOCKING TO BE CONNECTED TO JOISTS WITH SIMPON LUS28 JOISTS HANGERS.
- NEW SISTERED MEMBERS TO BE CONNECTED TO EXISTING WITH GLUE AND 2 ROWS OF 1 6D RINGSHANK NAILS AT 6" O.C. STAGGERED.

← NORTH

THIS P.E. ANALYSIS IS FOR MODIFICATIONS TO THE EXISTING ROOF FRAMING AFFECTED BY THE GRAVITY LOADS IMPARTED BY THE TWO PROPOSED MECHANICAL HOOD ONLY. ALL OTHER EXISTING FRAMING ELEMENTS HAVE NOT BEEN ANALYZED AND ARE OUTSIDE THE PURVIEW OF THIS PE SEAL. IN ADDITION, DESIGN AND DETAILS FOR OTHER BUILDING ELEMENTS WERE NOT DONE BY ADP. FOUNDATION ELEMENTS, EXISTING FRAMING CONNECTIONS, COMPONENTS AND CLADDING, FINISHES, FLOOR PLAN LAYOUT, AND OTHER ELEMENTS, HAVE NOT BEEN REVIEWED AND ARE BEYOND THE PURVIEW OF THIS P.E. REVIEW.



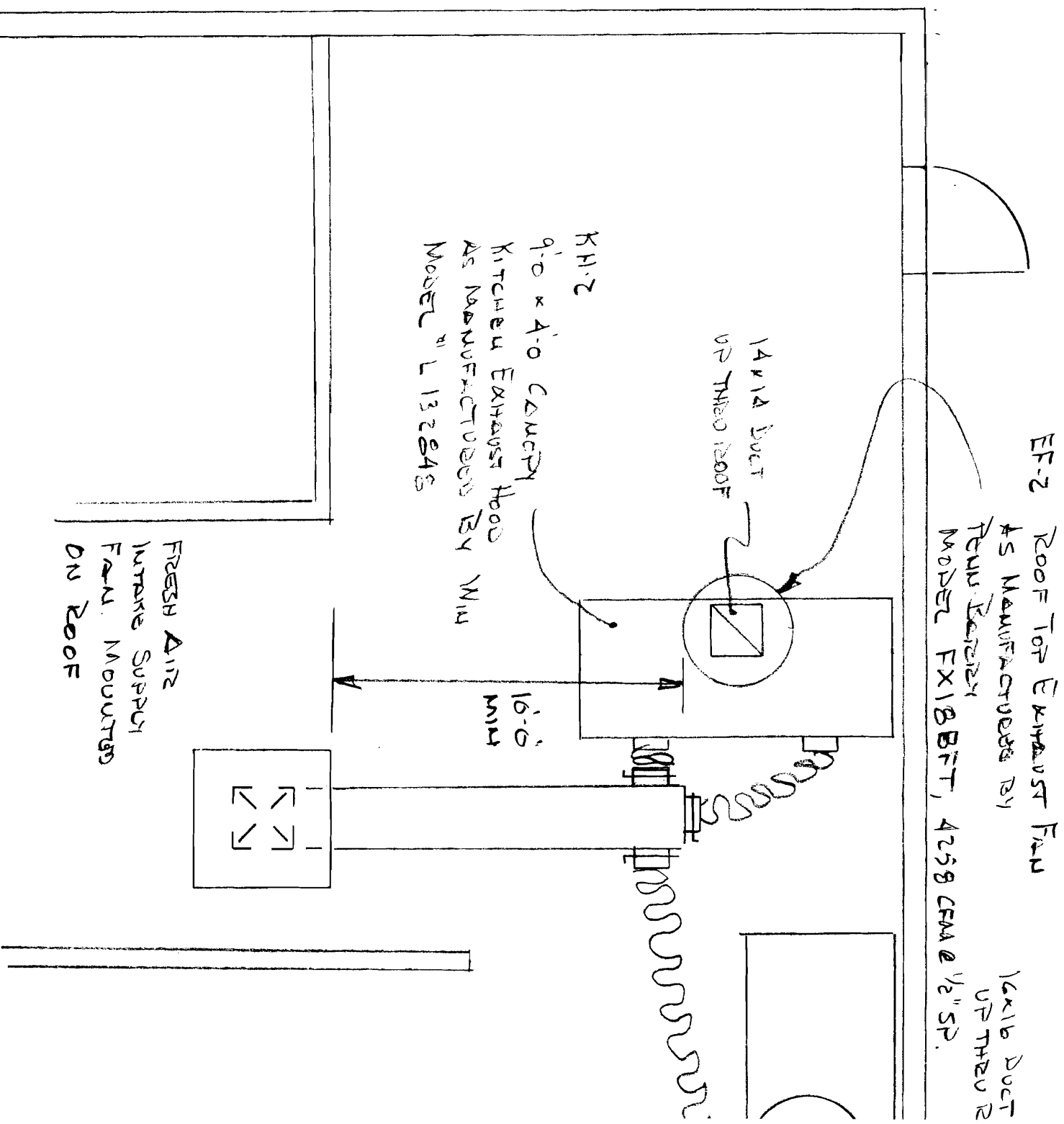
EXG. TRUSS ELEVATION

SCALE:  $\frac{3}{8}'' = 1'-0''$

A

B

C



KITCHEN FAN VIEW

2

1



A

B

C

EF-2 ROOF TOP EXHAUST FAN  
 AS MANUFACTURED BY  
 FENNER BENTLEY  
 MODEL FX18BFT, 4258 CMA @ 1/2" SP.

1/2" DUCT  
 UP THROUGH ROOF

1/2" DUCT  
 UP THROUGH ROOF

KH-2  
 9'-0" x 4'-0" CANOPY  
 KITCHEN EXHAUST HOOD  
 AS MANUFACTURED BY WILM  
 MODEL "L 132848

KITCHEN FLOOR VIEW

2

1

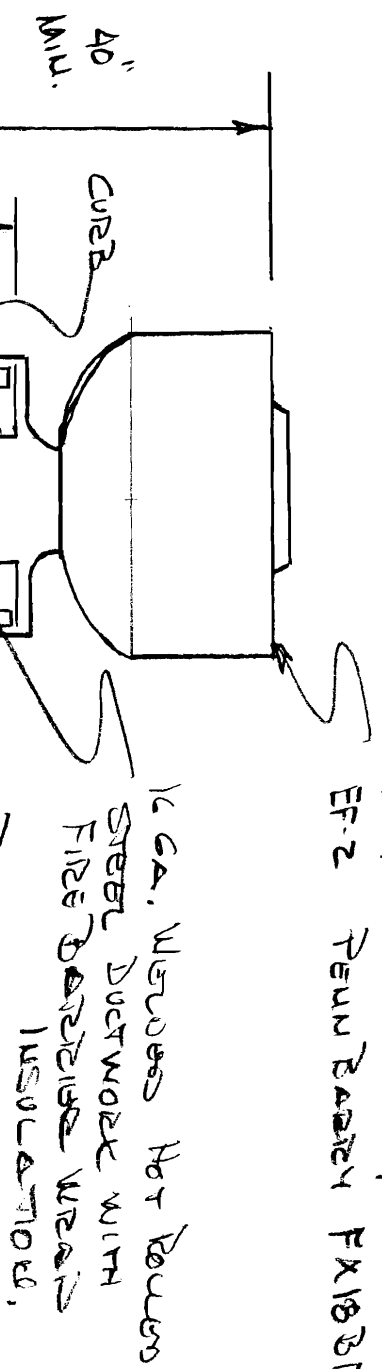
A

B

C

EF-1 PENN BARNEY FX248FT  
 EF-2 PENN BARNEY FX183FT

#  
 #



KH-1 12.0 x 4.0  
 KH-2 9.0 x 4.0

1. HOODS TO BE 1/2 GA. STAINLESS STEEL WELDED CONSTRUCTION PER NFPA 96.
2. AUSUL SYSTEM TO BE INSTALLED IN EACH HOOD.
3. HANG HOOD WITH UNISHROUT  $\frac{3}{8}$ "  $\phi$  THREADED ROD.
4. INSURE TOP OF HOOD AND SIDES ADJACENT TO WALLS WITH FIRE RESISTIVE WRAP INSULATION.
5. HOODS TO HAVE BAFUE TYPE GREASE EXTRACTING REMOVABLE FILTERS.

Yes for  
 #  
 #

#2  
 S

2

1