

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK CITY OF PORTLAND

Please Read Application And Notes, If Any, Attached

BUILDING DEPARTMENT

PERMIT

PERMIT ISSUED
Permit Number: 050730
JUL 18 2005
CITY OF PORTLAND

This is to certify that MUNIOY HILL RESTORATION SERVICES LLC Applicant

has permission to The Front Room- install hood system

AT 73 CONGRESS ST City of Portland, Oregon 97201-014 F021001

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of this 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.

Notification of inspection must be given and when permission procured before this building or part thereof is started or closed-in. **24 HOUR NOTICE IS REQUIRED.**

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

OTHER REQUIRED APPROVALS

Fire Dept. Capt. Corey Cass 6-13-05

Health Dept. _____

Appeal Board _____

Other _____
Department Name

[Signature]
Director - Building & Inspection Services

PENALTY FOR REMOVING THIS CARD

Location of Construction: 73 CONGRESS ST		Owner Name: MUNJOY HILL RESTORATIONS	Owner Address: 40 PORTLAND PIER # 11	Permit No: 05-0730	PERMIT ISSUED JUL 18 2005	BL: 014 F021001
Business Name:		Contractor Name: Applicant	Contractor Address: Portland	CITY OF PORTLAND		Phone:
Lessee/Buyer's Name		Phone:	Permit Type: Hood Systems, Commerical	Zone: B1b		
Proposed Use: offices on first floor & apts above	Proposed Use: To install hood system on first floor in anticipation of use change to restaurant		Permit Fee:	Cost of Work: \$0.00	CEO District: 1	
Proposed Project Description: To install hood system on the first floor			FIRE DEPT: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied <i>with conditions</i>	INSPECTION: Use Group: HVAC Type: <i>LOCAL EXHIBIT 50</i> <i>7/15/05</i> <i>GWJ</i>		
Signature:			Signature:			
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: Idobson	Date Applied For: 06/09/2005	Zoning Approval				
1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules. 2. Building permits do not include plumbing, septic or electrical work. 3. 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..		Special Zone or Reviews <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"/> <i>ok with conditions</i> Date: <i>6/13/05</i>	Zoning Appeal <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: _____	Historic Preservation <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: _____		

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

Permit No: 05-0730	Date Applied For: 06/09/2005	CBL: 014 F021001
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Location of Construction: 73 CONGRESS ST	Owner Name: MUNJOY HILL RESTORATIONS	Owner Address: 40 PORTLAND PIER # 11	Phone:
Business Name:	Contractor Name: Applicant	Contractor Address: Portland	Phone
Lessee/Buyer's Name	Phone:	Permit Type: Hood Systems, Commerical	

To install hood system on first floor in anticipation of use change to restaurant

To install hood system on the first floor

Dept: Zoning **Status:** Approved with Conditions **Reviewer:** Marge Schmuckal **Approval Date:** 06/13/2005
Note: 6/13/05 On 6/6/05 the council passed an emergency amendment to change the zone to B1b which allows a restaurant use under a conditional use approval before the ZBA - the applicant is applying for that under permit #05-0726 **Ok to Issue:**

1) This permit is being approved on the basis of plans submitted. Any deviations shall require a separate approval before starting that work.
2) This permit is only for hood work. Any installation taken in advance of an approved use change is solely the applicant's responsibility. Under the likelihood that an appeal to deny a restaurant use may occur, the hoodwork shall be removed.

Dept: Building **Status:** Approved with Conditions **Reviewer:** Mike Nugent **Approval Date:** 07/15/2005
Note: **Ok to Issue:**

1) Chase must have a continuous 1 Hour Fire rating to termination.
2) Duct work must be listed and labeled for zero clearance -- NO MIN WOOL!!!!!!!!!!!!MJN
3) Flame Stop by Thermal Ceramics is an acceptable alternative to a "0" clearance product if installed (two layers) in compliance with the UL listed installation guideline. MJN.

Dept: Fire **Status:** Approved with Conditions **Reviewer:** Cptn Greg Cass **Approval Date:** 06/13/2005
Note: **Ok to Issue:**

1) All construction to comply with NFPA 101

Comments:
6/9/2005-ldobson: Marge asked for separate permit for hood cost was on original change of use permit LJD
6/16/2005-mjn: Need plans that show compliance with the 2003 IMC and IBC (structurals etc...) Owner and Contractor have been notified.
7/14/2005-mjn: Plans have changed to run the duct within the building in a chase. Ductwork needs to be listed and labeled for clearance reduction installer and owner notified.



ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office # 5360 Workman Mill Road, Whittier, California 90601 # (562) 699-0543
Regional Office# 900 Montclair Road, Suite A, Birmingham, Alabama 35213 # (205) 599-9800
Regional Office # 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 # (708) 799-2305

Legacy report on the BOCA® National Building Code1999 and the 1998 International Mechanical Code@

DIVISION: 07—THERMAL AND MOISTURE PROTECTION
Section: 07815— Flexible Blanket Fireproofing

REPORT HOLDER:

THERMAL CERAMICS
P.O. BOX 923
AUGUSTA, GEORGIA 30903
(706) 796-4200
tceramics@thermalceramics.com
www.thermalceramics.com

EVALUATION SUBJECT:

THERMAL CERAMICS FIREMASTER® DUCTWRAP,
THERMAL CERAMICS FIREMASTER® DUCTWRAP+, and
THERMAL CERAMICS FIREMASTER® FASTWRAP+

EVALUATION SCOPE:

Compliance with the following codes:

BOCA® National Building Code/1999

- # Section 704.1.1 Fire resistance ratings
Section 106.4 Alternative materials and equipment
Section 803.2 Classification
Section 704.4.1.1 Elementary materials

1998 International Mechanical Code®

- # Section 302.1 Penetrations of floor/ceiling assemblies and fire resistance-rated assemblies
Section 506.3.12 Duct enclosure
Section 604.3 Coverings and linings
Section 202 General Definitions (Noncombustible material)
Section 308.3 Protective assembly construction and installation
Section 308.4 Allowable reduction
Section 308.5 Labeled assemblies

DESCRIPTION

FireMaster® DuctWrap and DuctWrap+: A non-asbestos, inorganic insulating flexible blanket composed primarily of alkaline-earth silicate wool or alumino silicate with a nominal density of 6 lb/ft³ (96 kg/m³). FireMaster DuctWrap and DuctWrap+ blanket is completely encapsulated in a fiber-reinforced

foil scrim material intended to prevent the absorption of grease or water condensation by the fiber ceramic blanket. The wrap is manufactured in a thickness of 1.5-inch (38 mm) and roll widths of 24 and 48 inches (610 and 1219 mm). Figure 1.1 at the end of this report illustrates the basic system components.

FireMaster® FastWrap+: A non-asbestos, inorganic insulating flexible blanket composed primarily of alkaline-earth silicate wool with a nominal density of 6 lb/ft³ (96 kg/m³). FireMaster FastWrap+ blanket is completely encapsulated in a fiber-reinforced foil scrim material intended to prevent the absorption of grease or water condensation by the fiber ceramic blanket. The wrap is manufactured in a thickness of 1.5-inch (38 mm) and roll widths of 24 and 48 inches (610 and 1219 mm). Figure 1.2 at the end of this report illustrates the basic system components.

In addition to FireMaster DuctWrap+, DuctWrap and FastWrap+ blankets, the following accessories are used for the complete installation of the duct wrap system.

- # Tape: Filament tape, a minimum 0.75-inch-wide (19.1 mm), is used to temporarily secure each layer of the duct wrap in place prior to installation of steel banding. Aluminum tape is used to seal cut edges of a blanket.
Steel Banding: Carbon or Stainless steel, 0.5- or 0.75-inch-wide (12.7 or 19.1 mm) x 0.015-inch-thick (0.38 mm).
Insulation Impaling Pins: Minimum 12 gauge, 5 inches to 7 inches (127 to 178 mm) in length which are welded to the duct surface and used to secure the duct wrap in place. The insulation is secured on the pins by 1.5-by-1.5-inch-square (38 x 38 mm) or 1.5-inch-diameter (38 mm) galvanized steel speed clips. Alternatively, minimum 12 gauge cup head pins may be used.
Grease Duct Access Door Hardware: Hardware for installation of the duct wrap to grease duct access doors consists of insulation impaling pins described above, 0.25-inch-diameter (6.4 mm) x 4.5- to 5-inch-long (114 to 127 mm) galvanized steel threaded rods welded to the duct at corners of the access door opening, 0.25-inch-diameter (6.4 mm) wing nuts with 0.25-inch-diameter (6.4 mm) steel washers, and 4-inch-long (102 mm) long hollow steel tubing to fit threaded rods.

Through-penetration Firestop System: Component materials of the through-penetration firestop systems are a packing material and a sealant (see Figures 4.1 and 4.2). For installations of FireMaster DuctWrap+ or DuctWrap, the packing material consists of either unfaced FireMaster DuctWrap, DuctWrap+ or mineral wool fiber with a nominal

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density of 3 lb/ft³ (48 kg/m³), with an in-place thickness of 4.25 inches (108 mm). Sealant consists of Tremco Fyre-Sil Silicone Firestop Sealants with a minimum installed thickness of 0.25-inch (6.4 mm).

For installations of FireMaster FastWrap+, the packing material consists of unfaced FireMaster FastWrap+ with an in-place thickness of 4.25 inches (108 mm). Sealant consists of Tremco Fyre-Sil Silicone Firestop Sealant, TREMstop Acrylic Sealant, or Rectorseal Metacaulk 835+ with a minimum installed thickness of 0.25-inch (6.4 mm).

USE AND APPLICATION

FireMaster Ductwrap, DuctWrap and FastWrap+ are intended for use as:

- # An alternative to a 1- and 2-hour fire resistance rated shaft enclosure for kitchen grease ducts and HVAC ducts; and
- # A method for reducing required clearances to combustible materials;

FireMaster DuctWrap+, DuctWrap and FastWrap+ used as an alternative to a shaft enclosure or as a means of reducing clearance to combustibles is installed in direct contact with the exterior surface of the grease ducts or HVAC ducts to be enclosed. Every portion of the duct surface is to be enclosed with:

- # A minimum of one layer of FireMaster DuctWrap+ or DuctWrap material to achieve a 1-hour fire resistance rated shaft enclosure for HVAC ducts only.
- # A minimum of two layers of FireMaster DuctWrap+ or DuctWrap material to achieve a 2-hour fire resistance rated shaft enclosure or zero clearance to combustibles.
- # A minimum of one layer of FireMaster FastWrap+ material to achieve a 2-hour fire resistance rated shaft enclosure or zero clearance to combustibles at the overlaps or collars and a reduced clearance of 1 1/2 inches (38 mm) in between the overlaps or collars.

The horizontal and longitudinal joints of each layer are overlapped by a minimum of 3 inches (76 mm) to achieve a telescoping or checkerboard pattern as described in Figure 1.2. An alternative to the overlap method is permitted where the ends of the wrap are butted tightly together and covered with a layer of 6-inch-wide (152 mm) FireMaster DuctWrap+, DuctWrap and FastWrap+, centered over the butt joint with a minimum of 3 inches (76 mm) overlap on each side of the joint. On double layered systems the joints of the first and second layers must be staggered and a 6-inch-wide (152 mm) collar installed on the outer layer.

The duct wrap materials are temporarily held in place with filament tape prior to the installation of the steel banding. Carbon or stainless steel banding shall be used for zero-clearance, 1-hour and 2-hour applications. For FireMaster FastWrap+ a minimum 12 gauge pin installation technique is permitted as an alternative to handing (see Figure 1.2).

For horizontal bottom and outside vertical duct surfaces that exceed 24 inches (610 mm), insulation impaling pins are welded to the duct and the duct wrap is impaled on these pins and held in place with steel speed clips. See Figure 2 at the end of this report for a diagram of typical insulation pin layout.

Horizontal and vertical duct support members are not required to be wrapped with the duct wrap material when the support system consists of a minimum 0.375-inch-diameter (9.5 mm) steel rods and 1.5-by-1.5-by-0.125-inch-thick (38 × 38 × 3.2 mm) steel support angles.

Grease duct access doors at horizontal cleanouts, as required by and located in accordance with the 1998 *International Mechanical Code*[®], shall be protected by either three layers of FireMaster DuctWrap+, or Ductwrap, or two layers of FastWrap+ duct wrap. Each succeeding layer shall overlap the previous by a minimum of 1-inch (25 mm). The wrap is installed on insulation impaling pins welded to the access door and secured with steel speed clips as illustrated in Figures 3.1 and 3.2 at the end of this report. For prefabricated access doors, an exterior cover plate may be used to hold the insulation in place over the door.

Through-penetration Firestop System

Penetrations of fire resistance rated floor/ceiling or wall assemblies by grease ducts or HVAC ducts protected with FireMaster DuctWrap+, DuctWrap or FastWrap+ shall be protected by one of the through-penetration firestop systems described in this report and as shown in Figures 4.1 and 4.2 at the end of this report.

CONDITIONS OF USE

This report is limited to the applications and products as stated herein. ICC-ES Subcommittee on National Codes intends that the report be used by the code official to determine that the report subject complies with the code requirements specifically addressed, provided that this product is installed in accordance with the following conditions:

- # FireMaster DuctWrap+, DuctWrap and FastWrap+ shall be installed in accordance with the manufacturer's published installation instructions, as referenced in Table 1 of this report.
- # Use of FireMaster DuctWrap+, DuctWrap and FastWrap+ as an alternative to a 1- or 2-hour fire resistance rated shaft enclosure shall be limited to horizontal and vertical kitchen grease ducts and HVAC ducts constructed of a minimum nominal thickness of 0.028-inch (0.71 mm) (No. 24 Gauge) steel, in the following thicknesses:
 - ! FireMaster DuctWrap+ and Ductwrap: A single-layer wrap for 1-hour fire resistance application, as described in this report.
 - ! FireMaster DuctWrap+ and Ductwrap: A two-layer wrap for 2-hour fire resistance and zero clearance application, as described in this report.
 - ! FireMaster FastWrap+: A one-layer wrap for 2-hour fire resistance and limited zero clearance/reduced application, as described in this report.
- # Use of FireMaster DuctWrap+, DuctWrap and FastWrap+ as a means of reducing clearance to combustibles to zero is limited to ducts constructed of a minimum nominal thickness of 0.06-inch (1.52 mm) (No. 16 Gauge) steel, with a maximum dimension of 52 inches (1321 mm) and a maximum cross-sectional area of 2704 in² (1.745 m²).
- # Use of FireMaster DuctWrap+, DuctWrap and FastWrap+ as an alternative to a 1- or 2-hour fire resistance enclosures is limited to ducts constructed of a minimum nominal thickness of 0.028-inch (0.71 mm) (No. 22 Gauge) steel, with a maximum dimension of 52 inches (1321 mm) and a maximum cross-sectional area of 2016 in² (1.3 m²).
- # FireMaster DuctWrap+, DuctWrap and FastWrap+ shall extend for a minimum distance of 36 inches (914 mm) beyond the edge of the combustible material when the duct wrap is used for zero-clearance to combustible installations, when the entire length of the duct is not completely wrapped.

- # Where FireMaster DuctWrap+, DuctWrap or FastWrap+ is used as an alternative to a fireresistance rated shaft enclosure, and the support framing does not meet the criteria stated in this report, all horizontal and vertical support members for the duct shall be completely wrapped with one layer of applicable wrap material.
- # The through-penetration firestop system, in conjunction with FireMaster Ductwrap, DuctWrap and FastWrap+, is limited to penetrations of fireresistance rated floor or wall assemblies by kitchen grease ducts and HVAC ducts as follows:
 - ! **Duct construction:** Steel, minimum nominal thickness of 0.028-inch (0.71 mm) (No. 22 Gage).
 - ! **Duct size:** Maximum dimension of 84 inches (2134 mm), and a maximum perimeter dimension of 216 inches (5486 mm). Where any duct dimension exceeds 39 inches (991 mm), the structural integrity of the duct shall be maintained by mechanically fastening a 1.5-by-1.5-by-0.125-inch-thick (38 × 38 × 3.2 mm) transverse steel angle located 3 inches (76 mm) beyond the top surface of the floor and on both sides of walls.
 - ! **Annular space:** Maximum 4.75 inches (121 mm) between wrap and edge of opening, filled with a through-penetration firestop system as illustrated in Figure 4.1 or 4.2 of this report.
 - ! **Floor construction:** Reinforced normal weight (nominal density of 140 to 150 lb/ft³ (2 243 to 2 403 kg/m³) concrete slabs with a minimum thickness of 4.5 inches (114 mm).
 - ! **Wall construction:** Reinforced normal weight concrete with a minimum thickness of 4.5 inches (121 mm) or concrete masonry units with a minimum thickness of 5.5 inches (140 mm).
- # Where ducts enclosed with FireMaster DuctWrap+, Duct-Wrap or FastWrap+ penetrate a fireresistance rated assembly, the perimeter of the penetration shall be protected by one of the through-penetration firestop systems shown in Figure 4.1 or 4.2.
- # Where ducts enclosed with FireMaster DuctWrap+, Duct-Wrap or FastWrap+ penetrate a floor or wall assembly other than those listed in this report are outside the scope of this report and shall be protected in accordance with Section 710.0 of the BOCA[®] National Building Code 1999.
- # Where air ducts enclosed with FireMaster DuctWrap+, Ductwrap or FastWrap+ penetrate a floor or wall assembly other than those listed in this report, and which do not connect more than two stories, a fire damper shall be installed at the floor line in accordance with the requirements of Section 714.2.5 of the BOCA[®] National Building Code 1999.
- # This report is subject to periodic re-examination. For information on the current status of this report, contact the ICC-ES.
- # Underwriters Laboratories Inc., Project 95NK7245, dated March 14, 1996, containing results of full-scale engulfment and through-penetration firestop system testing.
- # Underwriters Laboratories Inc., Project 99NK9739, dated August 2, 1999, and Project 99NB01066, dated August 30, 1999, containing results of comparison fire testing of the FireMaster FastWrap+ and DuctWrap material.
- # Fire Protection Products Test Center, Report No. 96-172, dated October 15, 1996, witnessed and signed by Michael A. O'Hara, P.E., containing results of small-scale fire testing performed in accordance with the time-temperature curve of ASTM E 119.
- # Omega Point Laboratories, Project No. 11660-93593 Revised, dated June 22, 1992, Project No. 11660-93594, dated June 29, 1992, and Project No. 11660-106956, dated August 25, 2000, containing results of full-scale engulfment and through-penetration firestop system testing.
- # Underwriters Laboratories Inc., Project 92NK8199, dated June 19, 1992, containing results of through-penetration firestop system testing performed in accordance with ASTM E 814.
- # An engineering analysis from Michael A. O'Hara of MountainStar, dated December 14, 1994, containing an analytical engineering assessment in support of installation on large ducts.
- # Thermal Ceramics, *Quality System Manual*, revised October 1993 and 1999, containing signatures of the manufacturer and the labeling agency (Underwriters Laboratories Inc.) and procedures related to inspection and labeling of the duct wrap.
- # Omega Point Laboratories, OPL Document No. 11660-3, Revision a, dated August 2000, titled *FireMaster[®] Fast-Wrap+[™]*, containing signatures of the manufacturer and the labeling agency (Omega Point Laboratories), and procedures related to inspection and labeling of the duct wrap.
- # Quality System Manual for Thermal Ceramics, dated April 2001, containing signatures of the manufacturer and the labeling agency (Underwriters Laboratories Inc., and the procedures related to inspection and labeling of FireMaster DuctWrap+.
- # Omega Point Laboratories, Project No. 11660-92785, dated January 8, 1992, containing results of testing performed in accordance with ASTM E 136.
- # Loss Prevention Council LPC Laboratories, Report No. TE-91299, dated August 11, 1998, containing results of non-combustibility testing.
- # Underwriters Laboratories Inc., Project 91NK21367, dated July 1, 1992, containing results of UL 1978, Standard for Grease Ducts.
- # Omega Point Laboratories, Project No. 11660-106957, dated June 30, 2000 and Project No. 9006-107429, dated September 19, 2000, containing results of UL 1978, Standard for Grease Ducts.
- # Underwriters Laboratories Inc., Project 79NK1036, dated September 14, 1979, containing results of testing performed in accordance with ASTM E 84 indicating the duct wrap met the requirement for a Class I flame spread classification.
- # Holometrix, Inc. Testing Services Division, Report No. TCC-10, dated March 1997, containing results of testing performed in accordance with ASTM C 411.

ITEMS REQUIRING VERIFICATION

The following items are related to the use of the report subject, but not within the scope of this evaluation. However, these items are related to the determination of code compliance:

- ✓ Construction and installation of grease ducts and WAC ducts comply with the applicable provisions of the 1998 International Mechanical Code[®].

INFORMATION SUBMITTED

- # Omega Point Laboratories, Project Nos. 11660-95576 and 11660-95577, dated June 2, 1993, containing results of large-scale wall fire testing performed in accordance with ASTM E 119.

- # Thermal Ceramics, Project No. 11660-112781, rev. 1, dated November 20, 2002, containing results of testing in accordance with UL 1978 Section 12 and 13, *Standard for Grease Ducts*.
- # Thermal Ceramics, Project No. 11660-111465, dated July 29, 2002, containing results of testing performed in accordance with ASTM E 84.
- # Thermal Ceramics, Project No. 11660-106956, dated August 25, 2000, containing results of testing performed in accordance with ASTM E-199 and ASTM E 814.
- # Underwriters Laboratories Inc., File R14229 Project 95NK7245, March 14, 1996, containing results of fire testing in accordance ASTM E 119.
- # Manufacturer's published installation instructions, as indicated in Table 1 of this report.

APPLICATION FOR PERMIT

To aid in the determination of compliance with this report, the following represents the minimum level of information to accompany the application for permit:

- # The language "See ICC-ES Legacy Report No. 22-25" or a copy of this report;
- # All ducts proposed to be protected;
- # Fire resistance rating(s) required and provided;
- # Type and material of all ducts to be protected;
- # Size(s) and nominal thickness of all ducts to be protected;
- # Details of duct hangers and/or supports.

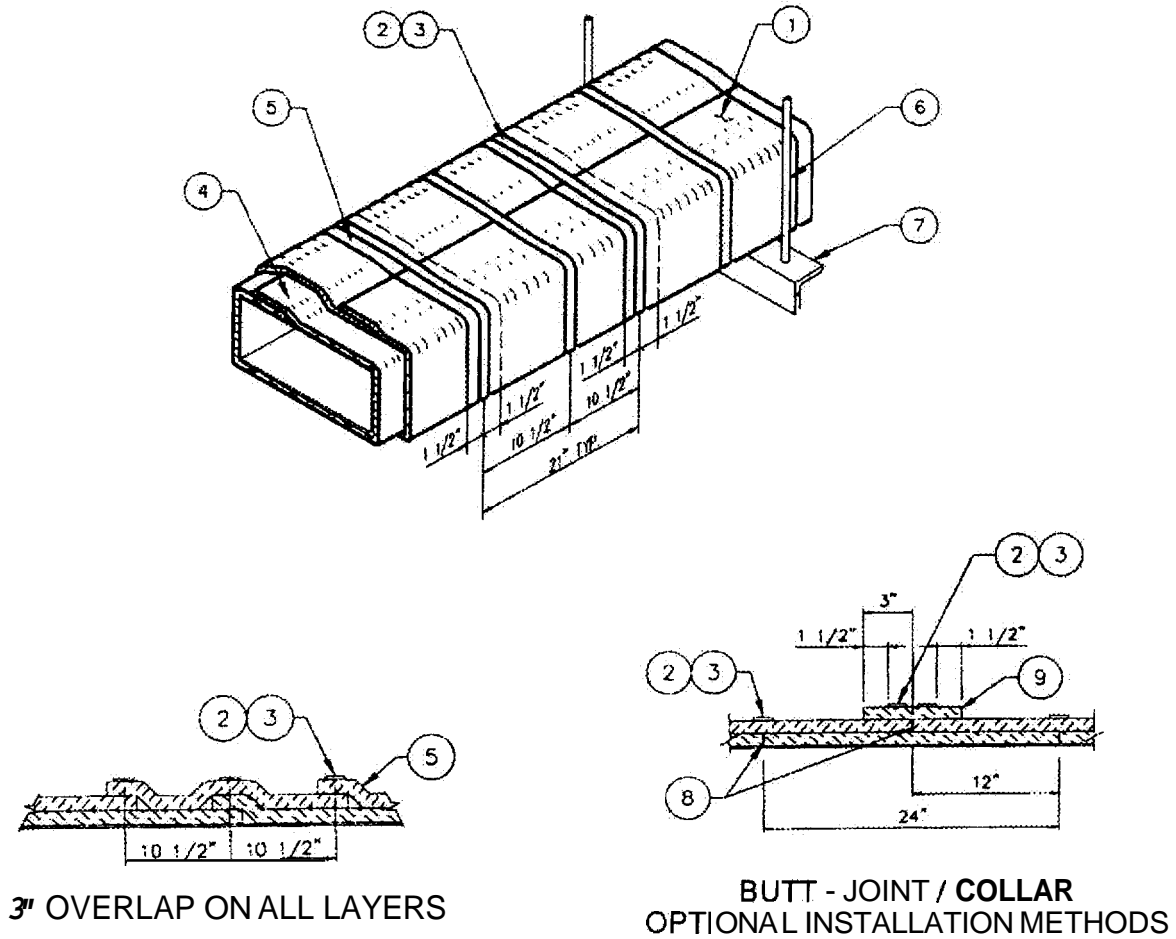
PRODUCT IDENTIFICATION

All Thermal Ceramics FireMaster DuctWrap+, DuctWrap and FastWrap+, manufactured in accordance with this report shall bear the following identification:

- # "See ICC-ES Legacy Report No. 22-25."
- # A label stating the product name and the mark of the labeling agency, Underwriters Laboratories Inc. for FireMaster DuctWrap and DuctWrap+ and Omega Point Laboratories for FastWrap+.

FireMaster Product	Installation Instructions
FireMaster DuctWrap	<i>Thermal Ceramics FireMaster Commercial Kitchen Grease and Air Ventilation Duct Systems Product Data and Installation Manual, dated August 1999</i>
FireMaster DuctWrap+	<i>Thermal Ceramics FireMaster DuctWrap+ Product Data and Installation Guide, copyright 2001</i>
FireMaster FastWrap+	<i>Thermal Ceramics FireMaster FastWrap+ Product Data and Installation Guide, copyright 2001</i>

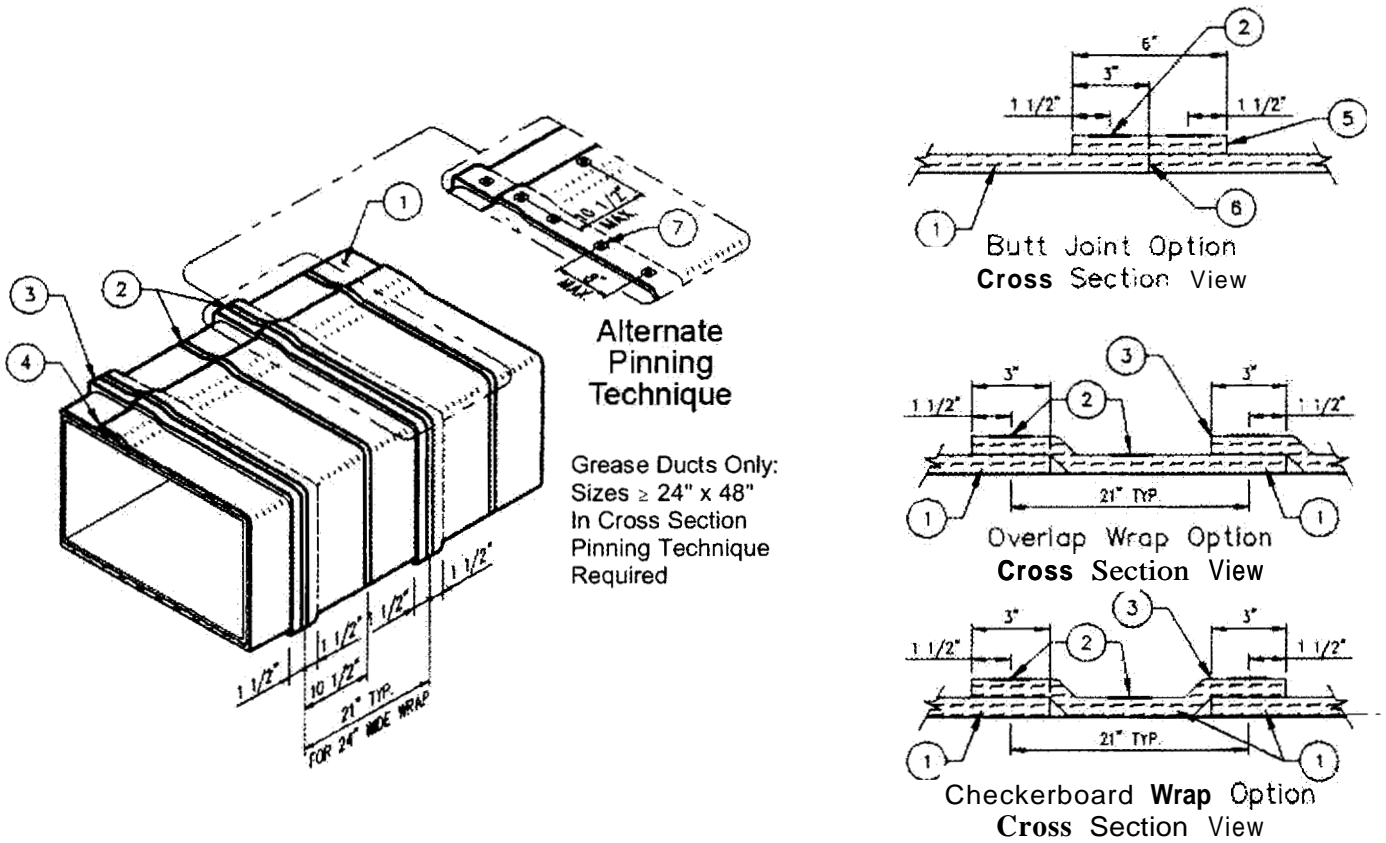
**FireMaster® Duct Wrap+ Or Duct Wrap
Commercial Kitchen Grease or Air Duct System
■ Or 2 Hour Shaft Alternative
Zero Clearance To Combustibles
(Overlap Wrap Technique)**



FireMaster Duct Wrap+ Or Duct Wrap	
1	Two Layers FireMaster DuctWrap+ Or DuctWrap+
2	Filament Tape
3	Steel Banding 1/2-inch Wide Min.
4	Min. 3-inch Perimeter Overlap
5	Min. 3-inch Longitudinal Overlap
6	Min. 3/8-inch Diameter Hanger Rod
7	1 1/2-inch x 1 1/2-inch x 1/8-inch Angle
8	Firmly Butted Joint
9	6-inch Wide Duct Wrap or Duct Wrap+ Collar

FIGURE 1.1*

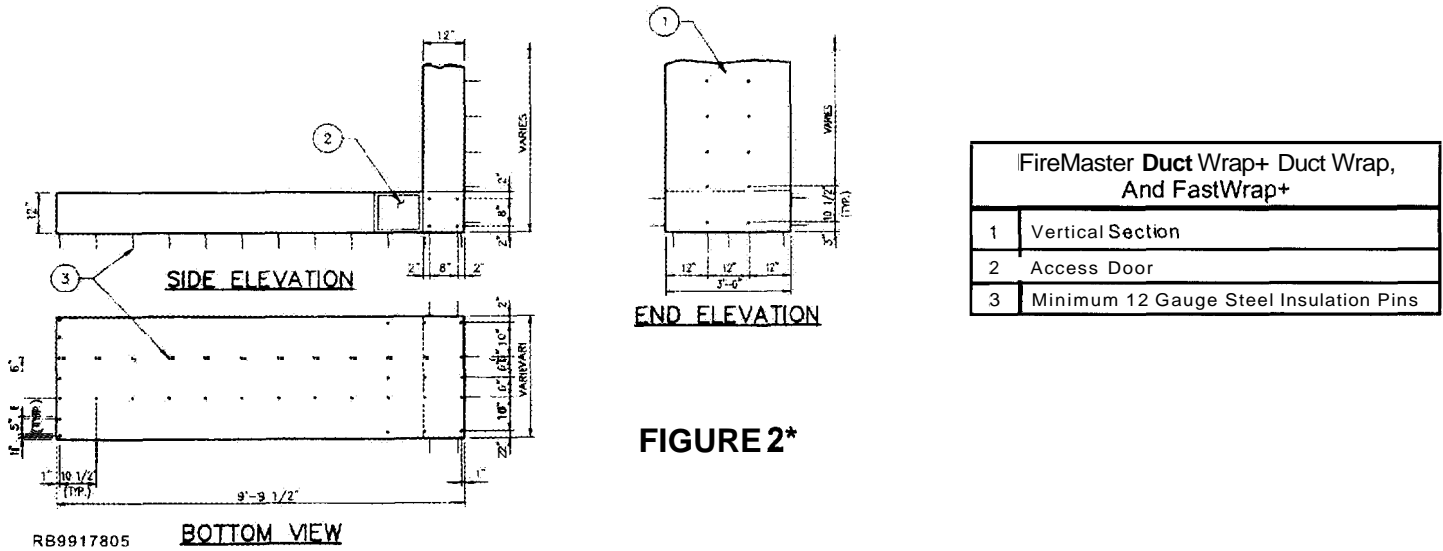
FireMaster® FastWrap+™ Commercial Kitchen Grease Duct Or Air Ventilation Duct Systems 1 Or 2 Hour Shaft Alternative Zero Clearance To Combustibles



1	One Layer FireMaster FastWrap+, 1 1/2-inch-thick
2	Steel Banding 1/2" Wide Min.
3	3-inch Min. Longitudinal Overlap
4	3-inch Min. Perimeter Overlap
5	6-inch Wide FireMaster FastWrap+ Collar (For Butt Joint Option)
6	Firmly Butted Joint (For Butt Joint Option)
7	10 or 12 Gage Steel Insulation Pin With 1 1/2-inch x 1 1/2-inch or 1 1/2-inch Dia. Galvanized Speed Clips (For Alternate Pinning)

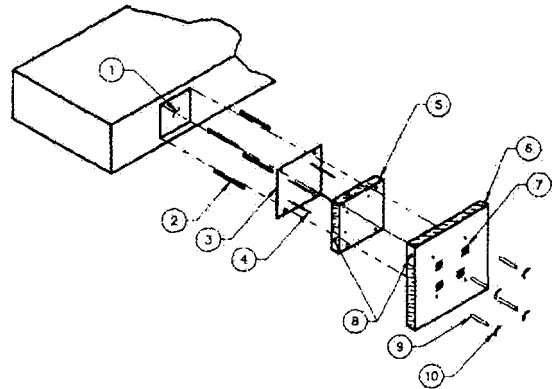
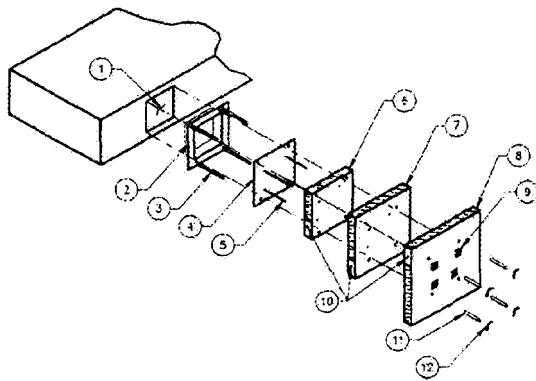
FireMaster® Insulation Pin Layout For Duct Spans ≥ 24 " Wide (Overlap Wrap Technique)

FireMaster Duct Wrap+, Duct Wrap, And FastWrap+



FireMaster® Duct Wrap+ Or Duct Wrap Commercial Kitchen Grease Duct System Access Door System

FireMaster® FastWrap+™ Commercial Kitchen Grease Duct Access Door System



1	Door Hole
2	Access Frame Welded To Duct
3	1/4-inch Dia. All Thread Rods
4	Access Cover – 16 Gauge
5	Insulation Pins – Welded
6	One Layer FireMaster Duct Wrap+ Or Duct Wrap
7	One Layer FireMaster Duct Wrap+ Or DuctWrap 1-inch Overlap
8	One Layer FireMaster Duct Wrap+ Or DuctWrap 1-inch Overlap
9	Speed Clips
10	Aluminum Tape At Edges
11	Soool Pieces For Threaded Rods
12	1/4-inch Dia. Wing Nuts

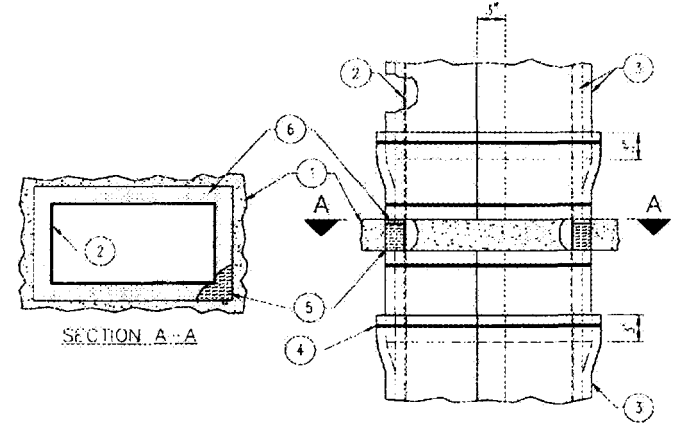
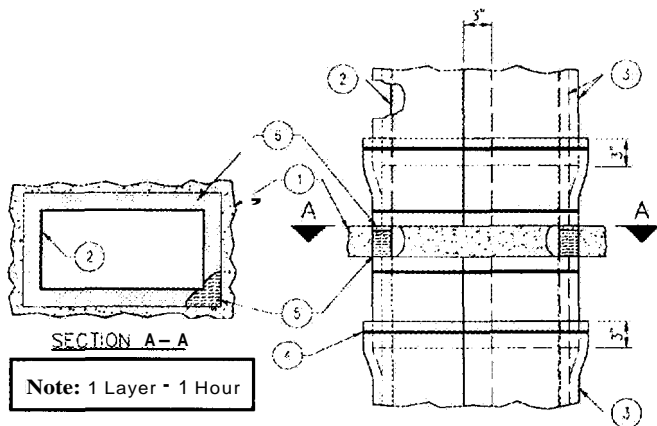
1	Door Hole
2	1/4" Dia. All Thread Rods
4	Insulation Pins – Welded
5	One Layer FireMaster FastWrap+
6	One Layer FireMaster FastWrap+ 1" Overlap
7	Saeed Clios
8	Aluminum Tape At Edges
9	Spool Pieces For Threaded Rods
10	1/4-inch Dia. Wing Nuts

FIGURE 3.1*

FIGURE 3.2*

**FireMaster® Duct Wrap Or Duct Wrap+
Through Penetration System
1 Or 2 Hour Grease Duct**

**FireMaster® Duct Wrap Or Duct Wrap+
Through Penetration System
2 Hour Air Duct**



Note: 1 Layer - 1 Hour

FireMaster Duct Wrap Or Duct Wrap+	
1	Floor Or Wall
2	Duct
3	Two Layers FireMaster Duct Wrap+ Or Duct Wrap
4	Minimum 1/2-inch Steel Banding
5	FireMaster Duct Wrap+ Or Duct Wrap (Packing Material)
6	Through-Penetration Firestop System

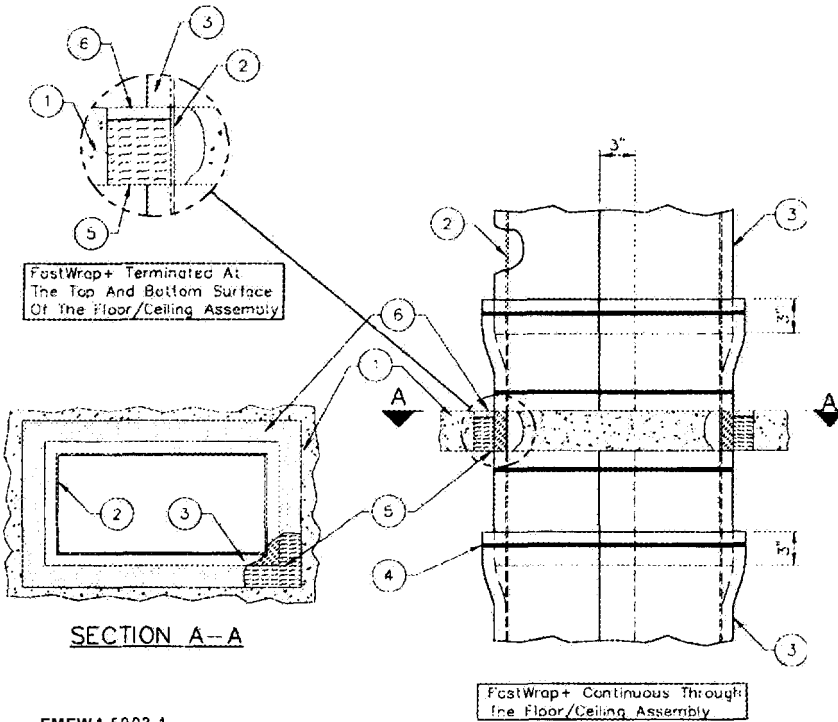
FireMaster Duct Wrap Or Duct Wrap+	
1	Floor Or Wall
2	Duct
3	Two Layers FireMaster Duct Wrap+ Or Duct Wrap
4	Minimum 1/2-inch Steel Banding
5	FireMaster Duct Wrap+ Or Duct Wrap (Packing Material)
6	Through-Penetration Firestop System

FMDW005-0

FMDW007-0

FIGURE 4.1*

**FireMaster FastWrap®+ Through Penetration System
1 Or 2 Hour Grease Or Air Duct**



FireMaster FastWrap+	
1	Floor Or Ceiling
2	Duct
3	One Layer FireMaster FastWrap+, 1 1/2-inch-thick
4	Minimum 1/2-inch Steel Banding or Pinning
5	FireMaster FastWrap+ (Packing Material)
6	Through-Penetration Firestop System

FMFW 1.5003-1

*THESE DRAWINGS ARE FOR ILLUSTRATION PURPOSES ONLY. THEY ARE NOT INTENDED FOR USE AS CONSTRUCTION DOCUMENTS FOR THE PURPOSE OF DESIGN, FABRICATION OR ERECTION.



Thermal Ceramics



1047464304

Duct Wrap Duct Wrap+ Commercial Kitchen Grease Duct Air Ventilation Duct

Product Data & Installation Guide



NFPA 96
MEA
MC

1. Product Description

Thermal Ceramics FireMaster® Duct Wrap and FireMaster Duct Wrap+ products are foil-encapsulated, non-combustible, high temperature, inorganic flexible fireproofing wrap materials specifically tested to provide a 1 or 2 hour fire rated enclosure for commercial kitchen grease and air ventilation ducts. The difference between the two wrap systems is the core material basic chemistries. FireMaster Duct Wrap is a high temperature ceramic fiber insulating blanket composed primarily of alumina and silica and FireMaster Duct Wrap+ is a low biopersistence alkaline-earth silicate wool. Both chemistries are free of binders and lubricants. FireMaster Duct Wrap and Duct Wrap+ products are classified by Underwriters Laboratories listing and Follow-up Service Program to ensure uniform thickness and density specifications, thus providing consistency in end physical properties for required fire ratings based on the number of wraps applied.

FireMaster Duct Wrap and Duct Wrap+ systems are proven performance alternatives through extensive testing to 1 or 2-hour fire-resistance rated shaft enclosures for commercial kitchen grease and air ventilation duct systems. With its excellent insulating capability of withstanding fire temperatures up to 2000°F (1093°C), it protects combustible constructions at zero clearance throughout the entire cocoon wrap enclosure for commercial kitchen grease ducts in tight congested areas. When the commercial kitchen grease or air ventilation duct penetrates fire rated walls and floors, Fire Barrier 2000+, 1000 N/S or 1003 S/L Silicone Sealant used in combination with FireMaster Duct Wrap and Duct Wrap+ provides an alternate means of protection to rigid shafts by maintaining the integrity of the 1 or 2 hour floor or wall assembly.

Product Features

- Completely inorganic
 - Low biopersistence with FireMaster Duct Wrap+
 - Alternate to rigid shaft enclosures
 - Zero clearance to combustibles protection
 - Wide range of proven performance testing for complex duct jobs
 - Wide variety of through-penetration systems
 - Compact wrap design saves space
 - lightweight flexible system requires minimum labor and resists cracking
 - Problem solver for tight, congested areas
 - Totally foil encapsulated system protects against material degradation and potential fire hazards
- Passive fire proof material does not lose fire fighting capabilities with age
- Product markings on foil ensure proper material identification for easy inspections

2. Applications

- 1 or 2 Hour Commercial Kitchen Grease Ducts
- 1 or 2 Hour Air Ventilation Ducts

			Units Ctn.	Wt./Ctn.
Duct Wrap or Duct Wrap+	Roll	1 1/2" x 24" x 25' (37.5mm x 60cm x 7.5m)	1	43 lbs. (19.5kg)
Duct Wrap or Duct Wrap+	Roll	1 1/2" x 48" x 25' (37.5mm x 120cm x 7.5m)	1	86 lbs (39kg)
Color		White filler blanket with silver foil encapsulation		

Application	Fire Resistive Rating		
Grease Ducts	1 or 2 hours	2 layers FireMaster Duct Wrap or FireMaster Duct Wrap+ UL YYET 3' (75mm) perimeter and longitudinal overlap	UL C-AJ 701.4 UL C-AJ 702.1 ULC-FRD-4
Air Ventilation Duct Systems	1 hour	1 layer FireMaster Duct Wrap or FireMaster Duct Wrap+ V-1, V-3, 3" (75mm) perimeter and longitudinal overlap or optional butt joint plus collar wrap method	JL C-AJ 701.2 JL C-AJ 701.3 JL VI-1734.1 JLC-FRD-3
Air Ventilation Duct Systems	2 hours	2 layers FireMaster Duct Wrap or FireMaster Duct Wrap+ JL V-2, V-4, 3" (75mm) perimeter and longitudinal overlap or optional butt joint plus collar wrap method	UL C-AJ 701.4 UL C-AJ 702.1 UL W-L-704.1 ULC-FRD-3

5. Performance

A. FireMaster Duct Wrap & FireMaster Duct Wrap+

Flammability (ASTM# 84/UL 723)

Foil:	Flame spread	5
	Smoke developed	5
Blanket:	Flame spread	0
	Smoke developed	0

Thermal Resistance

R value per ASTM C 518

4.15 per inch at 70°F (21°C)

B. Fire Stop Sealant

3 M Fire Barrier Sealant	2000+	1000 N/S	1003 S/L
Color	Light Gray	Light Gray	Light Gray
Working Time (min.)	10 - 20	5 - 10	20 - 40
Cure Time at 77°F (25°C), 50%R.H.	14 - 21 days	14 - 21 days	14 - 21 days
Flow, Sag, or Slump	Ni	Ni	Self Leveling
Elongation at Break	600%	600%	600%

6. Listings

Agency	Reference Standard/ File Number
Underwriters laboratories Inc.	Grease Duct Enclosures (WET): R 14229; Fire Resistance Ventilation Duct Assemblies (HNLJ): V-1, V-2, V-3, V-4 Batts and Blankets (BKNV): R8418; Through-Penetration Firestop Systems (XHEZ): C-AJ-7012, C-AJ-7019, C-AJ-7014, C-AJ-7021, W-L-7041
SBCCI	Research Report 9424D
BOCA	Research Report 2.1.51
NFPA	Complies with NFPA 96, 1998 Edition
California State Fire Marshall	listing Nos. 2440-1361:100 4485-1361:101
New York City	MEA # 417-92-M [grease ducts] 417-92-M Vol II [air ventilation ducts]
North Carolina Mechanical Code	Sections 308.4.7, 308.4.10 Volume III
International Mechanical Code	Section 506 Commercial Kitchen Grease Ducts and Exhaust Equipment, Section 507 Commercial Kitchen Hoods

7. Installation

The FireMaster Duct Wrap and Duct Wrap+ systems shall be installed by a qualified contractor in accordance with the manufacturer's instructions and the referenced standards.

Materials and Equipment

- FireMaster Duct Wrap and Duct Wrap+ blanket. 1/2" (38mm) thick, 24" (610mm) or 48" (120cm) wide, 6 pcf density, 25' (7.5m) long rolls, 48" (120cm) wide blanket helps to minimize waste
- Aluminum foil tape
- Minimum 3/4" (19mm) wide filament tape
- Carbon steel or stainless steel banding material, minimum 1/2" (12.5mm) wide, minimum 0.015" (0.38mm) thick, with steel banding clips.
- Hand banding tensioner and crimping tool

- Minimum 12 gage copper-coated steel insulation pins, 4" to 5" long (102 - 127mm); galvanized steel speed clips, minimum 1 1/2" (38mm) x 1 1/2" (38mm) square or 1 1/2" dia. (38mm), or equivalent sized cup-head pins; capacitor discharge stud gun
- Access door hardware: four galvanized steel threaded rods, 1/4" diameter (6.35mm) by 4 1/2" to 5" long (114 to 127mm) with 1/4" (6.35mm) wing nuts and 1/4" (6.35mm) washers; 4" (102mm) long steel tubing to fit threaded rods
- Fire Barrier 2000+, 1000 N/S or 1003 S/L silicone sealant

Storage:

The FireMaster Duct Wrap, Duct Wrap+, and Fire Barrier Silicone Sealant must be stored in a dry warehouse environment on pallets. Pallets should not be stacked.

Preparatory Work:

FireMaster Duct Wrap and Duct Wrap+ are installed with common tools, such as knives, bonders and capacitor discharge guns for applying insulation pins. In order to install the duct fire stop system, the surfaces of all openings and penetrating items need to be clean, dry, frost free, and free of dust.

Installation techniques for Thermal Ceramics FireMaster Duct Wrap and Duct Wrap+ [Figure 1]

- 3" (75mm) Overlap Wrap Telescope - Each blanket overlaps one adjacent blanket a minimum of 3" (75mm), and each blanket has one edge exposed and one edge covered by the next blanket as shown in figure 1. The visible edges of the longitudinal overlaps all point in the same direction.

- Butt Joint & Collar System - The adjacent blankets of both interior & exterior layers are firmly butted together with the exterior joints located 12" (30cm) away from the interior joints. An 8" (20cm) wide collar made from FireMaster Duct Wrap or Duct Wrap+ is centered over each exterior joint, overlapping each blanket by 4" (101mm) as shown in Figure 1. The collar overlaps itself with a 3" (75mm) perimeter overlap.

- 2 & 3 Sided Wrap System - When space does not allow for a full wrap enclosure on all four sides of the duct, the FireMaster Duct Wrap or Duct Wrap+ may be installed on 2 or 3 sides of the duct and mechanically attached to a concrete or CMU assembly on the unexposed side of the duct

General:

Applies to all FireMaster Duct Wrap & FireMaster Duct Wrap+ Installation Methods

To minimize waste, FireMaster material should be rolled out tautly before measuring. Cut edges of the blanket shall be taped with aluminum foil tape to prevent exposed edges of the insulation from wicking moisture from condensation or grease from a compromised leaking duct joint into the material and causing degradation of the fire barrier. The FireMaster material may be installed with either a mechanical banding system or insulation pins and clips (see Mechanical Attachment Methods below and figures 1 and 2). When using the banding technique, caution shall be taken to ensure that the bands are not fitted too snug as which could result in cutting into the blanket. To prevent blanket sag on ducts with dimensions greater than or equal to 24" (600mm), insulation pins, long enough to extend through the lay of blanket insulation, are welded to the duct in columns spaced 12" (305mm) apart, between 6" and 12" (152 and 305mm) from each edge and 10-1/2" (267mm) on center along the bottom horizontal and outside vertical duct runs as shown in Figure 3. Insulation pins that extend beyond the blanket wrap shall be tuned down to eliminate sharp points.

Support hanger systems do not need to be wrapped provided that the steel hanger rods are at least a minimum of 3/8" (9.5 mm) diameter and the steel angle is a minimum of 1 1/2" x 1 1/2" x 1/8" (38mm x 38mm x 3.2mm). Horizontal trapeze support system may be incorporated into the wrap enclosure.

A. Overlap Wrap Telescope Installation

FireMaster Duct Wrap and Duct Wrap+ commercial kitchen grease duct and air ventilation duct 2 hour enclosure includes a two-layer wrap construction for 1 or 2 hour grease ducts and 2 hour air ventilation ducts, or a one-layer wrap for 1 hour air ventilation ducts applied directly to all surfaces of the duct (see figure 1 and 2). The first or interior layer of FireMaster Duct Wrap or Duct Wrap+ blanket is wrapped around the perimeter of the duct and is cut to a length with enough excess to overlap itself not less than 3" (75mm). Adjacent blankets are placed to overlap the previous blanket not less than 3" (75mm). The overlap made by adjacent blankets forms the "longitudinal" overlap. The overlap a blanket makes with itself is called the "perimeter" overlap. The first layer is held in place with filament tape 1 1/2" (38mm) from each blanket edge and in the center of the blanket. The second layer is wrapped around the perimeter of the first layer with the longitudinal overlaps of the exterior layer spaced 10 1/2" (26cm) away from those of the interior layer and held in place with filament tape 1 1/2" (38mm) from each blanket edge and in the center of the blanket until banding is in place or the pinning attachment is fully secured.

B. Butt Joint / Collar Installation

FireMaster Duct Wrap or Duct Wrap+ is installed in two layers with a tight butt joint construction. The first layer of FireMaster Duct Wrap or Duct Wrap+ is applied directly to the duct with each adjacent blanket tightly butted to the next. The blankets of the first layer are held in place with filament glass tape 1 1/2" (38 mm) from each blanket edge and in the center of the blanket. The second layer of FireMaster Duct Wrap or Duct Wrap+ is wrapped around the perimeter of the first layer with a tight butt joint construction with the joints of the exterior wrap located 12" (305mm) away from the butted joints of the interior layer blankets. The second layer of FireMaster Duct Wrap or Duct Wrap+ is held in place with filament tape as a temporary hold until the mechanical attachment system is installed. An 8" (203mm) wide FireMaster Duct Wrap or Duct Wrap+ Collar is centered over the joints of the exterior layer and wrapped around the perimeter of the duct and cut to a length so that it overlaps itself not less than 3" (75mm). The collar is held in place with filament tape placed 1 1/2" (38mm) from each edge of the collar until the mechanical banding or pinning and clip attachment method is fully secured.

C. 2 & 3 Sided Wrap System

When space does not allow for a complete wrap applied to the duct on all four sides, the FireMaster Duct Wrap or Duct Wrap+ can be installed on 2 or 3 sides of the exposed duct in one of the installation methods described above and mechanically attached to a concrete or CMU assembly, thus enclosing the duct on all accessible sides. The FireMaster Duct Wrap or Duct Wrap+ is installed on the duct as described in the two installation methods described above with the starting edge of the blanket attached to the concrete or CMU assembly and then wrapped around the duct until the other end can be affixed to the other concrete or CMU assembly, thus encapsulating the duct with insulation around all accessible sides. The blanket is to flange out onto the concrete or CMU assembly. It shall be secured to the adjoining assembly with min 3/16" (5mm) diameter, 4" (100mm) long concrete anchors, footed to a minimum 1 1/2" (38mm) wide x 3/16" (5mm) thick steel strip/strap with pre-drilled holes spaced a maximum 10" (25cm) on center. The FireMaster Duct Wrap or Duct Wrap+ insulation wrap is secured to the duct with banding. The ends of the banding are to loop into the steel strips/straps that

foot the blanket to the concrete floor or wall, and tightened down.

Mechanical Attachment Methods for Insulation Wrap:

1. Banding - 1/2" (12.7mm) wide carbon steel or stainless steel banding, 0.015" (0.38mm) thick, is placed around the entire perimeter of the insulated duct with maximum 10 1/2" (267mm) spacing centers and 1 1/2" (38mm) from each blanket edge or 1 1/2" (38mm) from each collar edge when using the butt joint and collar method. When banding, filament tape can be used to temporarily hold the blanket in place until the banding is applied. The banding is placed around the material and tightened so as to firmly hold the FireMaster Duct Wrap or Duct Wrap+ in place against the duct, but not cause any cutting or damage to the blanket.

2. Pinning - To prevent blanket sag on duct spans 24" (610mm) or larger, min. 12 gage, 5" long (127mm) copper coated steel insulation pins are welded to the duct in columns spaced 12" (305mm) apart, 6" - 12" (152 - 305mm) from each edge and on 10 1/2" (267mm) centers along bottom horizontal and outside vertical runs [see fig 3]. Pins are also required 1" (25mm) from the end of a duct and 1" (25mm) from any edge near a 90° bend, spaced on 6" (152mm) centers. Pins are locked into place with 1 1/2" (38mm) diameter round or square, galvanized steel, speed clips or cup head pins. Pins that extend beyond outer blanket wrap layer shall be turned down to eliminate sharp edges or the excess length cut off.

Grease Duct Access Door Installation (See Figure #4)

Four galvanized steel threaded rods, 1/4" diameter (6.35mm) by 4 1/2" to 5" long (114 to 127mm) are welded to the duct at the corners of the door opening. 4" (100mm) long steel tubes fit over the threaded rods and protect the blanket material when the door is fastened. Four 5" (125mm) long 12 gage insulation pins are welded to the door panel for installation of the blanket. Three layers of FireMaster Duct Wrap or Duct Wrap+ are impaled over the 12 gage insulation pins on the door panel. The first layer is cut and impaled on the door panel insulation pins with no less than 1" (25mm) overlap. The second layer is cut to overlap the first layer by no less than 1" (25mm), and the third layer is cut to overlap the second by no less than 1" (25mm). It is essential that these layers fit tightly against the wrap surrounding the access door opening with no through openings. The three layers are impaled over the pins and are locked in place with speed clips. Pins that extend beyond the outer layer of FireMaster wrap shall be turned down to avoid sharp points on the door.

The insulated door panel is placed over the threaded rods covered by the steel tubes and held in place with washers and wing nuts. The details are shown in Figure 4.

Through-Penetration Firestop System

When the duct penetrates a concrete or dry-wall fire rated wall, ceiling, or floor, an approved fire stop system must be employed. The through penetration systems listed under Specifications in Paragraph 4 above, and shown in Figures 5 through 8, are approved for FireMaster Duct Wrap and Duct Wrap+.

To fire stop the through penetration void area of the wrapped duct, fill the annular space between the wrapped duct and periphery of the opening with 4 1/4" (107mm) thickness of scrap FireMaster Duct Wrap or Duct Wrap+, firmly packed into the opening and recessed 1/2" (6.25mm) below the top of the opening. Apply 1/4" (6.25mm) minimum Fire Barrier 2000+, 1000 N/S or 1003 S/L Silicone Sealant over the packing material within the annulus, flush with top surface of floor or both surfaces of wall.

Alternatively when there is no room in the remaining annular space to wrap the duct with 1 or 2 layers of the FireMaster Duct Wrap

or FireMaster Duct Wrap+ material, the FireMaster enclosure may terminate above and below the floor/ceiling or wall assembly as shown in figure 5 - 7 by mechanically attaching the FireMaster to the termination point above and below the termination area with bands or pins.

8. Maintenance

NO maintenance is required when installed in accordance with the manufacturer's installation instructions. Once installed, if any section of the FireMaster Duct Wrap or FireMaster Duct Wrap+ is damaged, the following procedures will apply:

- The damaged section should be removed by cutting the steel bands and removing the anchor clips holding it in place
- A new section of the same dimension should be cut from a roll of Duct Wrap or FireMaster Duct Wrap+, either 24" (610mm) or 48" (120cm) wide. Cut edges of the blanket shall be taped to prevent exposed edges of the insulation from wicking moisture or grease into the material and degradation of the fire barrier
- The new section should be placed per manufacturer's installation instructions ensuring the same overlap and installation method that existed previously

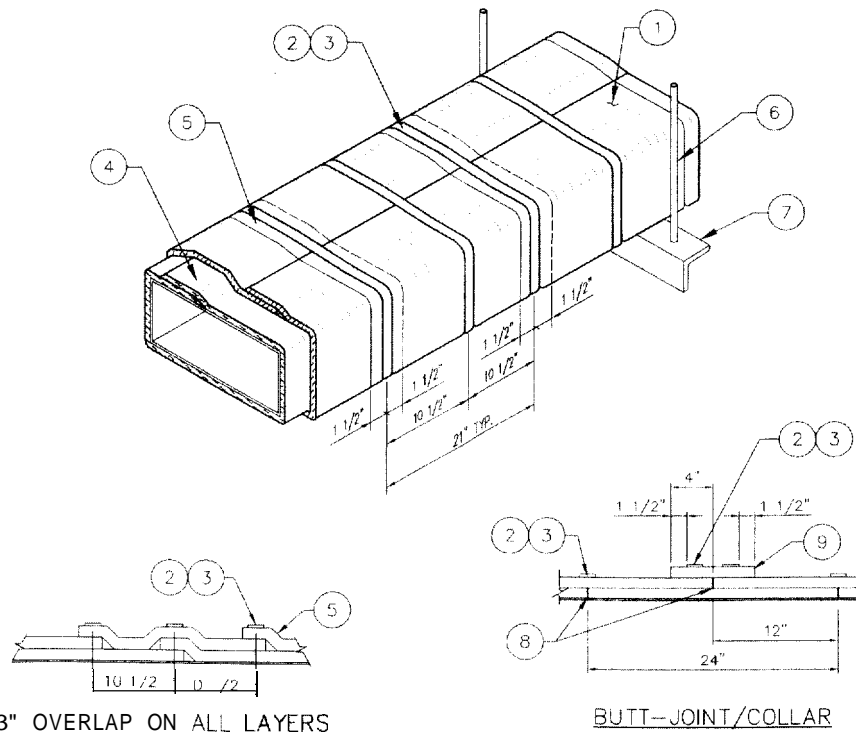
- The steel banding should be placed around the material and tensioned so as to firmly hold the FireMaster Duct Wrap or Duct Wrap+ in place without cutting into the blanket causing violation of the fire barrier

9. limitations

- FireMaster Duct Wrap and FireMaster Duct Wrap+ shall be installed in accordance with Thermal Ceramics manufacturer's installation instructions
- Multiple steel ducts in a single Duct Wrap or Duct Wrap+ enclosure are not permitted
- Minimum $\frac{3}{8}$ " (10mm) diameter all thread steel rods and minimum $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{1}{8}$ " (38 x 38 x 3.2mm) steel support angle do not have to be wrapped
- The size of the steel duct shall not be limited
- The use of transitional duct sizes shall not be limited
- The use of transition to gypsum wallboard shaft shall not be limited
- The integrity of FireMaster Duct Wrap and Duct Wrap+ systems is limited to the quality of the installation

*For personal protective equipment recommendations see the MSDS.

Thermal Ceramics
FireMaster Duct Wrap or Duct Wrap+
Commercial Kitchen Grease Duct System
1 or 2 Hour Shaft Alternative
Zero Clearance to Combustibles (Overlap Wrap Technique)



BUTT-JOINT/COLLAR
OPTIONAL INSTALLATION METHODS

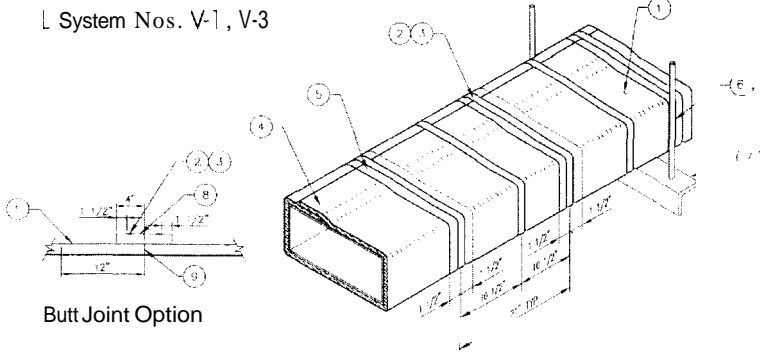
FireMaster Duct Wrap or Duct Wrap+ Figure 1 Drawing#RB0100501	
1	Two layers FireMaster Duct Wrap or Duct Wrap+
2	Filament tape
3	Banding
4	3" minimum perimeter overlap
5	3" minimum longitudinal overlap
6	$\frac{3}{8}$ " minimum diameter hanger rod
7	$1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{1}{8}$ " angle
8	Firmly butted joint
9	8" wide Duct Wrap or Duct Wrap+ collar

Note: The integrity of FireMaster Duct Systems is limited to the quality of the installation

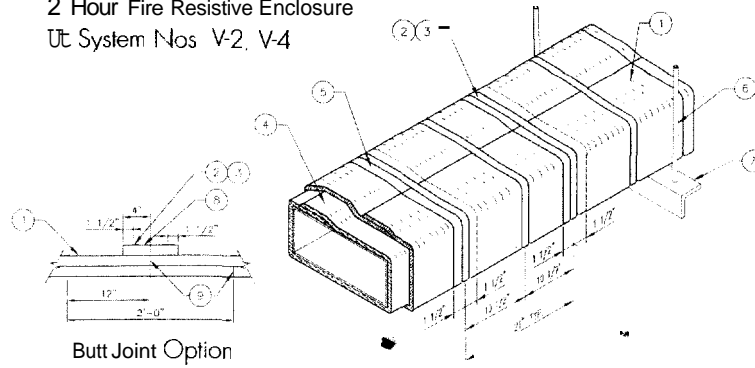
Thermal Ceramics

FireMaster Duct Wrap or Duct Wrap+ Air Ventilation Duct System (Overlap Wrap Technique)

1 Hour Fire Resistive Enclosure
System Nos. V-1, V-3



2 Hour Fire Resistive Enclosure
System Nos. V-2, V-4

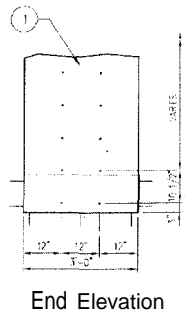
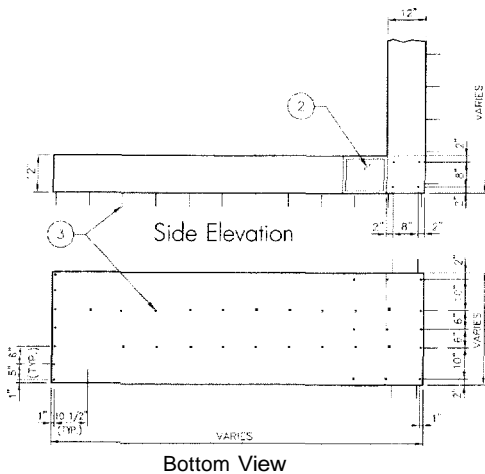


FireMaster Duct Wrap or Duct Wrap+ Figure 2 Drawing# RB0100503	
1	One layer FireMaster Duct Wrap or Duct Wrap+
2	Filament tape
3	Banding
4	3" minimum perimeter overlap
5	3" minimum longitudinal overlap
6	3/8" minimum diameter hanger rod
7	1 1/2" x 1 1/2" x 1/8" angle
8	8" wide FireMaster Duct Wrap or Duct Wrap+ collar (for Butt Joint option)
9	Firmly butted joint (for Butt Joint option)

FireMaster Duct Wrap or Duct Wrap+ Figure 2A Drawing# RB0100503	
1	Two layers FireMaster Duct Wrap or Duct Wrap+
2	Filament tape
3	Banding
4	3" minimum perimeter overlap
5	3" minimum longitudinal overlap
6	3/8" minimum diameter hanger rod
7	1 1/2" x 1 1/2" x 1/8" angle
8	8" wide FireMaster Duct Wrap or Duct Wrap+ collar (for Butt Joint option)
9	Firmly butted joint (for Butt joint option)

Thermal Ceramics

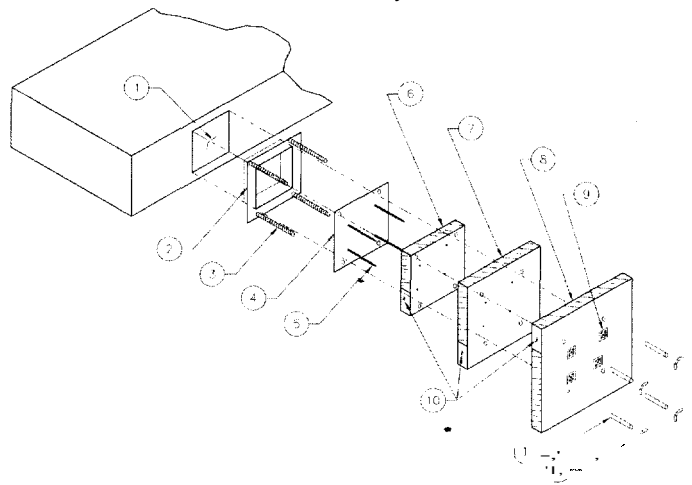
FireMaster Duct System
Typical Insulation Pin Layout
For Duct Spans $\geq 24"$ Wide
To Prevent Blanket Sag



(FireMaster Duct Wrap or Duct Wrap+ Figure 3 Drawing# RB0109301	
1	Vertical section
2	Access door
3	10 or 12 gauge copper coated steel insulation pins

Thermal Ceramics

FireMaster Duct Wrap or Duct Wrap+
Commercial Kitchen Grease Duct
Access Door System

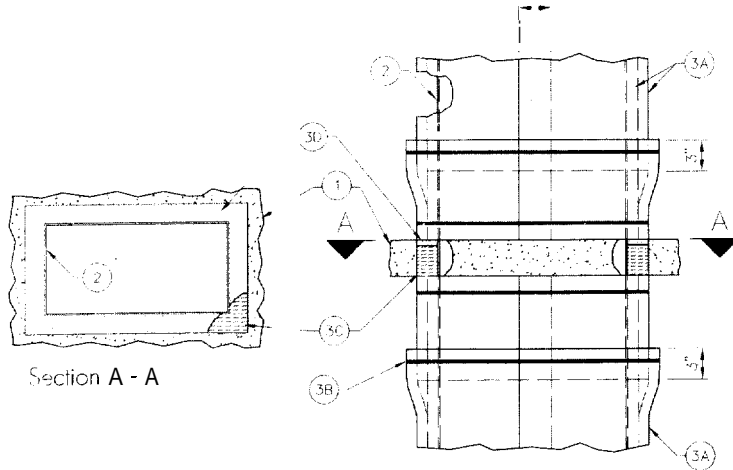


FireMaster Duct Wrap or Duct Wrap+ Figure 4 Drawing# RB0100502	
1	Door hole
2	Access frame welded to duct
3	1/4" diameter threaded rods
4	Access cover - 16 gauge
5	Insulation pins - welded
6	One layer FireMaster Duct Wrap or Duct Wrap+
7	One layer FireMaster Duct Wrap or Duct Wrap+ 1" overlap
8	One layer FireMaster Duct Wrap or Duct Wrap+ 1" overlap
9	Speed clips
10	Aluminum tape at edges
11	Spool pieces for threaded rods
12	1/4" diameter wing nuts

Note: The integrity of FireMaster Duct Systems is limited to the quality of the installation

Thermal Ceramics

FireMaster Duct Wrap or Duct Wrap+
Through Penetration System
1 or 2 Hour Grease Duct
Ut System No. CAJ-7014

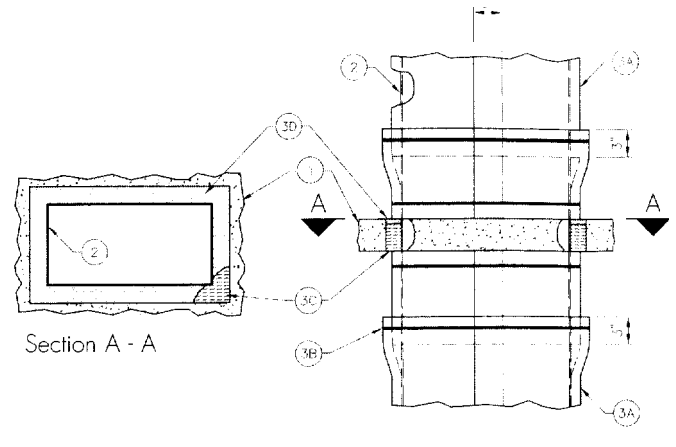


FireMaster Duct Wrap or Duct Wrap+ Figure 5 Drawing# RB0100504	
1	Floor or wall
2	Duct
3A	Two layers FireMaster Duct Wrap or Duct Wrap+
3B	Bonding
3C	FireMaster Duct Wrap or Duct Wrap+ (packing material)
3D	Fire Barrier 2000+, 1000 N/S or 1003 S/L silicone sealants

Note: The integrity of FireMaster Duct Systems is limited to the quality of the installation

Thermal Ceramics

FireMaster Duct Wrap or Duct Wrap+
Through Penetration System
1 Hour Air Duct
Ut System No. CAJ-7019

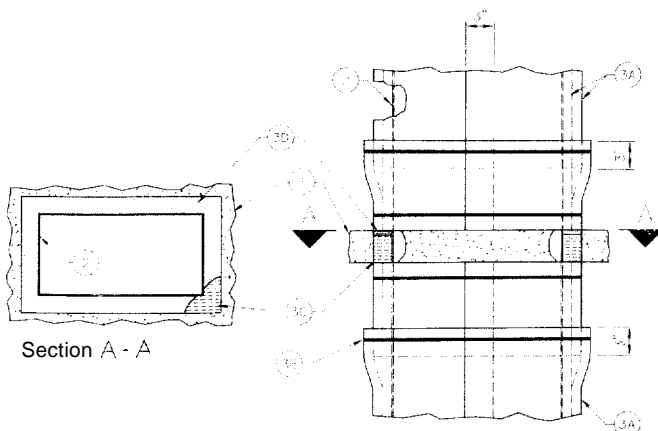


FireMaster Duct Wrap or Duct Wrap+ Figure 6 Drawing# RB0100505	
1	Floor or wall
2	Duct
3A	One layer FireMaster Duct Wrap or Duct Wrap+
3B	Bonding
3C	FireMaster Duct Wrap or Duct Wrap+ (packing material)
3D	Fire Barrier 2000+, 1000 N/S or 1003 S/L silicone sealants

Note: The integrity of FireMaster Duct Systems is limited to the quality of the installation

Thermal Ceramics

FireMaster Duct Wrap or Duct Wrap+
Through Penetration System
2 Hour Air Duct
Ut System No. CAJ-7021

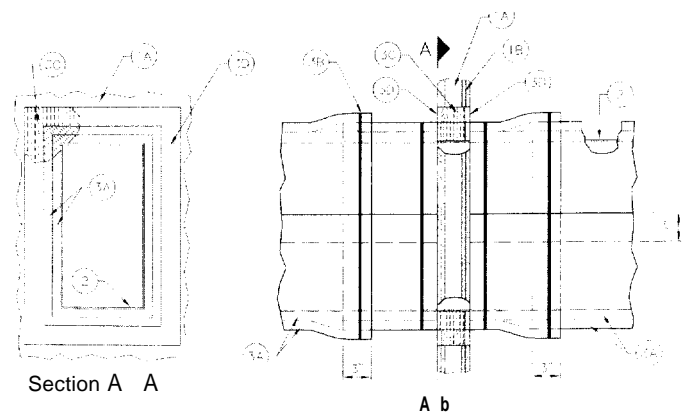


FireMaster Duct Wrap or Duct Wrap+ Figure 7 Drawing# RB0100506	
1	Floor or wall
2	Duct
3A	Two layers FireMaster Duct Wrap or Duct Wrap+
3B	Bonding
3C	FireMaster Duct Wrap or Duct Wrap+ (packing material)
3D	Fire Barrier 2000+, 1000 N/S or 1003 S/L silicone sealants

Note: The integrity of FireMaster Duct Systems is limited to the quality of the installation

Thermal Ceramics

FireMaster Duct Wrap or Duct Wrap+
Through Penetration System
Gypsum Wall 1 or 2 Hour
Grease or Air Ventilation Duct
Ut System No. WL-7041



FireMaster Duct Wrap or Duct Wrap+ Figure 8 Drawing# RB0100517	
1A	Wall
1B	Gypsum wallboard
2	Duct
3A	Two layers FireMaster Duct Wrap or Duct Wrap+
3B	Banding or pinning
3C	FireMaster Duct Wrap or Duct Wrap+ (packing material)
3D	FB 2000+ caulk

Note: The integrity of FireMaster Duct Systems is limited to the quality of the installation

All Purpose 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>73 CONGRESS STREET</u>		
Total Square Footage of Proposed Structure <u>1814</u>		Square Footage of Lot <u>3,567</u>
Tax Assessor's Chart, Block & Lot Chart# <u>14</u> Block# <u>F</u> Lot# <u>21</u>		Owner: <u>Mujoy Hill Restorations</u> Telephone: <u>653-8216</u>
Lessee/Buyer <u>HARDING</u> <u>The Fair</u>	Applicant name, address & telephone: <u>HARDING SMITH</u> <u>65 Waterville St.</u> <u>Portland, ME 04101</u>	Cost Of Work: \$ <u>14,500</u> Fee: \$
Current use: <u>Storage</u>		
If the location is currently vacant, what was prior use: <u>grocery store</u> + <u>156</u> + <u>75</u> <u>cofo</u>		
Approximately how long has it been vacant: <u>20 years</u>		
Proposed use: <u>RESTAURANT - The Front Room</u> - see permit # <u>050724</u> for use change		
Project description: <u>60 seat dining room</u>		DEPT. OF BUILDING INSPECTION CITY OF PORTLAND, ME
Contractor's name, address & telephone:		JUN 8 2015
Who should we contact when the permit is ready: <u>HARDING SMITH</u>		RECEIVED
Mailing address: <u>65 Waterville St. #1</u> <u>Portland, ME 04101</u>		
We will contact you by phone when the permit is ready. You must come in and pick up the permit and review the requirements before starting any work, with a Plan Reviewer. A stop work order will be issued and a \$100.00 fee if any work starts before the permit is picked up. PHONE: <u>319-4368</u>		

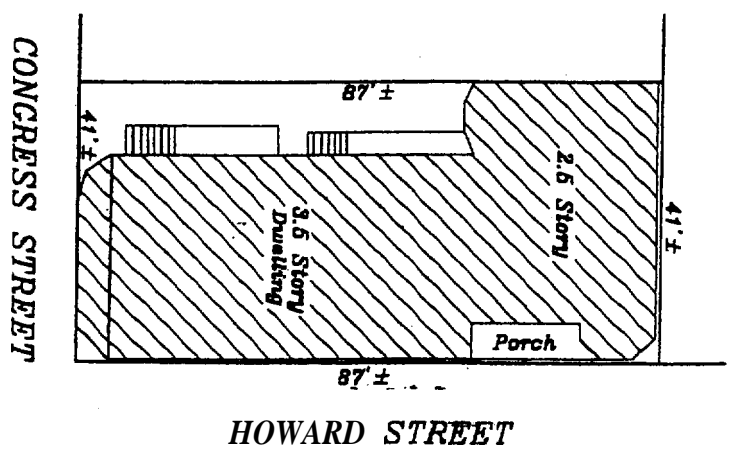
IF THE REQUIRED INFORMATION IS NOT INCLUDED IN THE SUBMISSIONS THE PERMIT WILL BE AUTOMATICALLY DENIED AT THE DISCRETION OF THE BUILDING/PLANNING DEPARTMENT, WE MAY REQUIRE ADDITIONAL INFORMATION IN ORDER TO APPROVE THIS PERMIT.

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: <u>[Signature]</u>	Date: <u>6/7/05</u>
--	---------------------

This is NOT a permit, you may not commence ANY work until the permit is issued.
If you are in a **Historic District** you may be subject to additional permitting and fees with the **Planning Department on the 4th floor of City Hall**

ADDRESS: 29 CONGRESS STREET INSPECTION DATE: NOVEMBER 30, 2001
PORTLAND, MAINE SCALE: 1" = 20'



SEE PROVIDED TITLE REFERENCES FOR APPLICABLE APPLICANCES. ANT.

APPLICANT: ROBERT CLARK REQUESTING PARTY: LEITE & LEVINUX
 OWNER: _____ ATTORNEY: JAMES R. LEVINUX
 LAND: _____ FILE NO. 2010067 FIELD BOOK 220

TITLE REFERENCES:
 DEED BOOK 18498 PAGE 217
 PLAN BOOK _____ PAGE _____ LOT _____
 COUNTY: CUMBERLAND
 MUNICIPAL REFERENCE:
 MAP 14 BLOCK F LOT 21

THIS DWELLING DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD ZONE PER FEMA COMMUNITY MAP NO. 55001 PANEL AREA ZONE: _____ DATE: _____
 THE DWELLING WAS _____ IN COMPLIANCE WITH MUNICIPAL ZONING SETBACK REQUIREMENTS AT THE TIME OF CONSTRUCTION.
 COMMENTS:

YOUR FILE #: 104480
NADEAU & LODGE, INC.
 PROFESSIONAL LAND SURVEYORS
 518 BROADWAY AVENUE
 PORTLAND, ME 04102
 (207) 878-7878

[Signature]
 12.9.01

THIS IS NOT A BOUNDARY SURVEY - NOT FOR RECORDING

INSTR. BY: TLR

Order 291-04/05

Amendment to Zoning Map Re: Rezoning from R-6 Residential to B-1b Neighborhood Business Zone Vicinity of 73 Congress Street – Sponsored by the Planning Board, Lee Lowry, Chair. First reading. Emergency passage requested.

Motion was made by Councilor O'Donnell and seconded by Councilor Mavodones for emergency passage. Passage 9-0.

This only gives him not the use to Zone - which requires ZBA cond. use app

Order 282-04/05

Granting Municipal Officer's Approval of The Front Room, LLC, d/b/a The Front Room, 73 Congress Street. Application for Class I Restaurant with Liquor License. New City and State License – Sponsored by Linda C. Cohen, City Clerk.

Motion was made by Councilor Mavodones and seconded by Councilor Gorham for emergency passage. Passage 9-0.

BUDGET ITEMS:

COMMUNICATIONS:

Corn 4-04/05

Receiving Police Citizen Review Subcommittee Third Annual Report 2004 – Sponsored by Joseph E. Gray, Jr., City Manager

Motion was made by Councilor O'Donnell and seconded by Councilor Gorham to receive the communication. Passage 9-0.

IN COUNCIL REGULAR MEETING JUNE 6, 2005 VOL. 121 PAGE 131

Corn 5-04/05

Receiving Amendments to Rules of the Harbor Commission – Sponsored by Joseph E. Gray, Jr., City Manager.

Motion was made by Councilor Cloutier and seconded by Councilor Cohen to postpone this item to 6/20/05. Passage 9-0.

Order 270-04/05

Reallocating and Appropriating \$30,000 in Community Development Block Grant (HCD) Funds and Amending the FY2003/2004 Consolidated HCD Plan Re: Parkside Community Center – Sponsored by Councilor Karen A. Geraghty. Given first reading on 5/16/05.

Motion was made by Councilor Gorham and seconded by Councilor Geraghty for passage. Passage 9-0.

RESOLUTIONS:

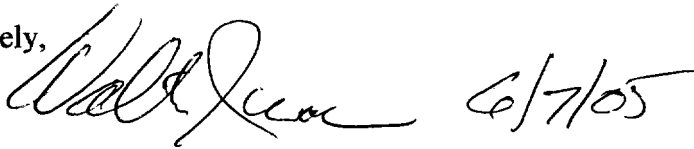
**Munjoy Hill Restorations, LLC
40 Portland Pier #11
Portland, ME 04101**

June 7, 2005

To Whom It May Concern:

This letter is approval for Harding Smith of The Front Room, LLC to apply and use a permit for installing a commercial exhaust hood for the space at 73 Congress Street. We are familiar with the plans. The Front Room is the tenant for the space to be used as a restaurant.

Sincerely,

A handwritten signature in cursive script, followed by the date "6/7/05".

Walter Juve

Bourgoin & Sons LLC
Dan Bourgoin Jr
749-1878

2x8 Lag Into floor truss Length of hood

2" min wool

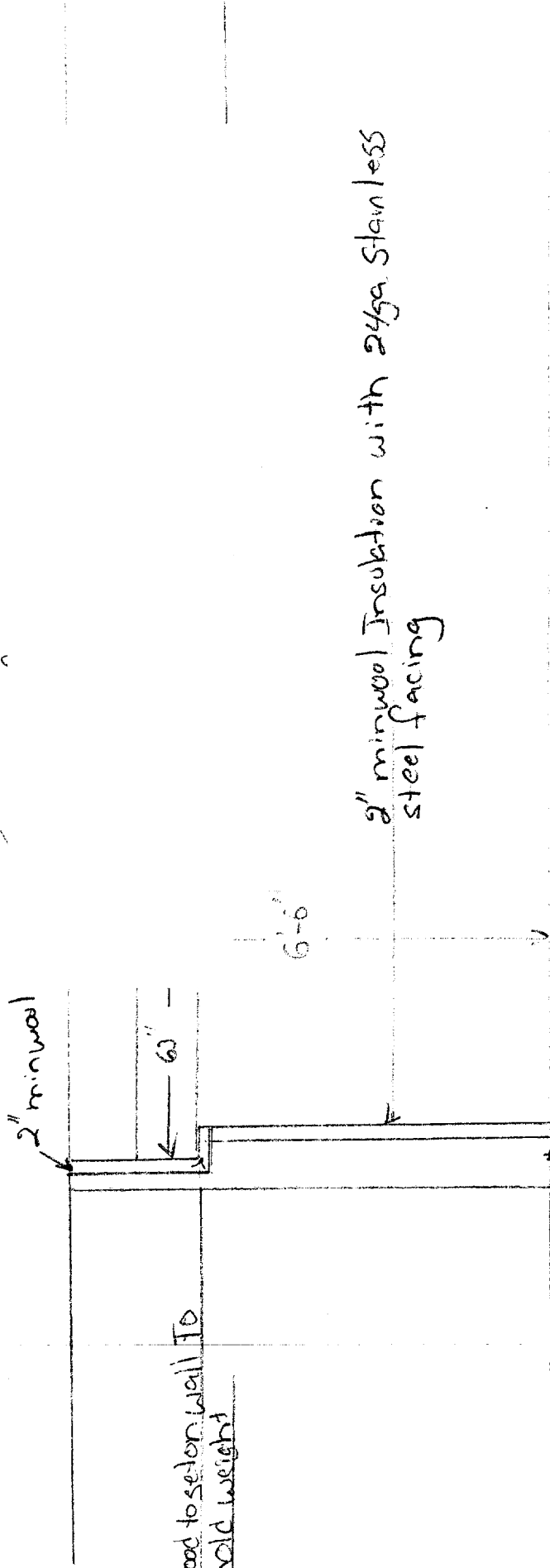
6"

Hood to section wall to
hold weight

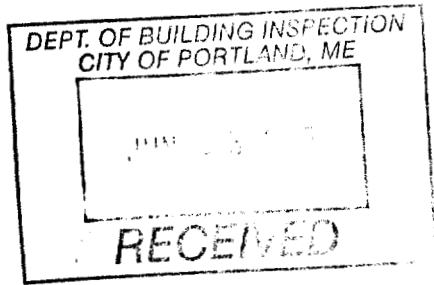
6'-6"

2" min wool Insulation with 24ga Stainless
steel facing

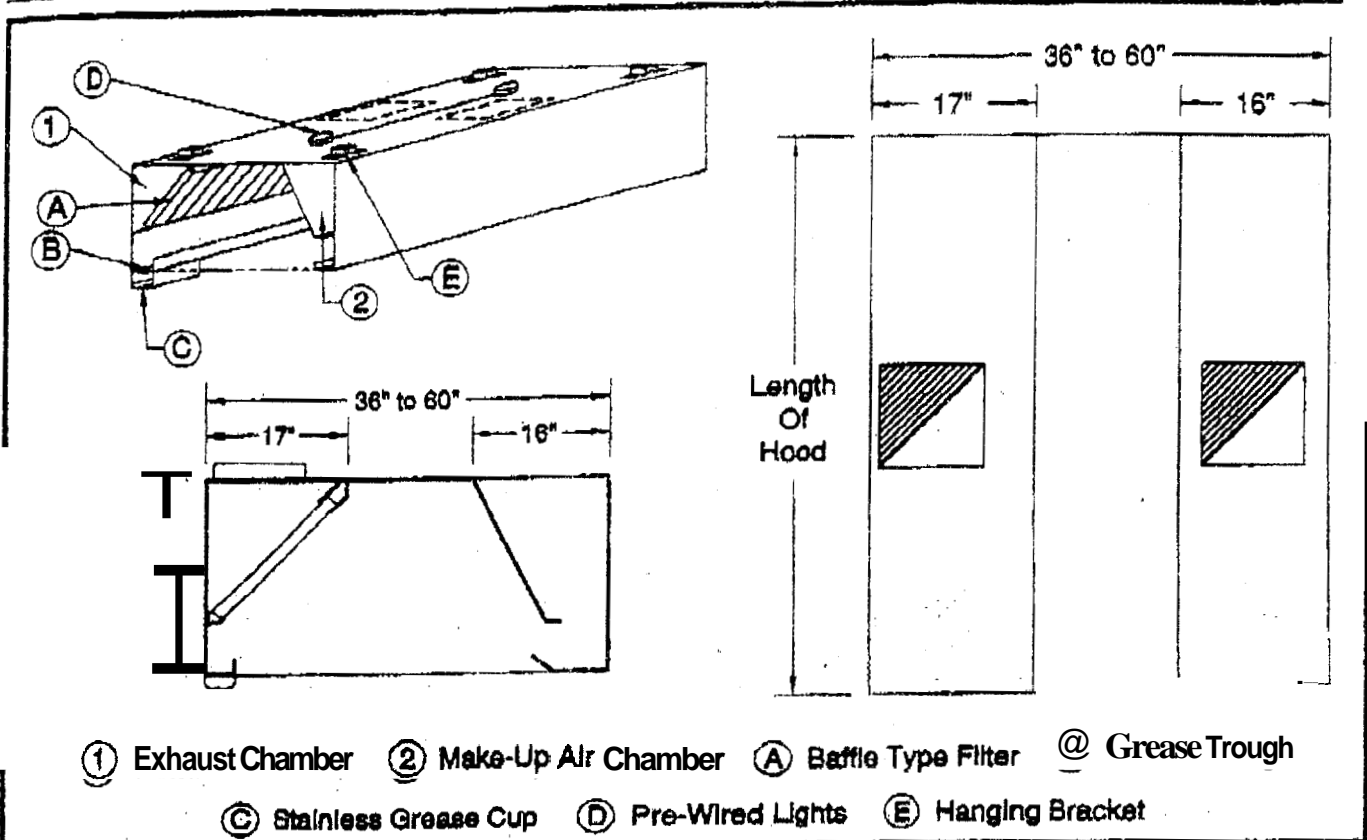
2'x10" Built wall 16 on c/c



Compass



Box Make-Up Air Canopy



HOOD SPECIFICATIONS:

1. All hoods are constructed of 18 gauge steel.
2. All joints are welded liquid tight, without seams by an automatic wire fed mig welder.
3. All hoods are built in accordance to NFPA 96, NSF specifications, & U.L. 710 specifications.
4. Grease trough is made to receive grease extracted by filters.
5. Grease filters are of baffle type (20" wide) and carry a U.L. listing. They are made from a light weight aluminum steel.
6. A stainless steel cup attaches to the tray that runs the entire length of the hood.

DELUXE

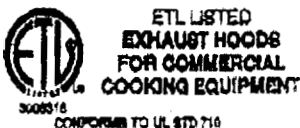
ALL STAINLESS STEEL

HYBRID

FRONT & SIDES STAINLESS
TOP & BACK ALUMINIZED

ECONOMY

American Hood Systems, Inc. "Your Exhaust Hood Specialist"
WWW.AMERICANHOOD.COM

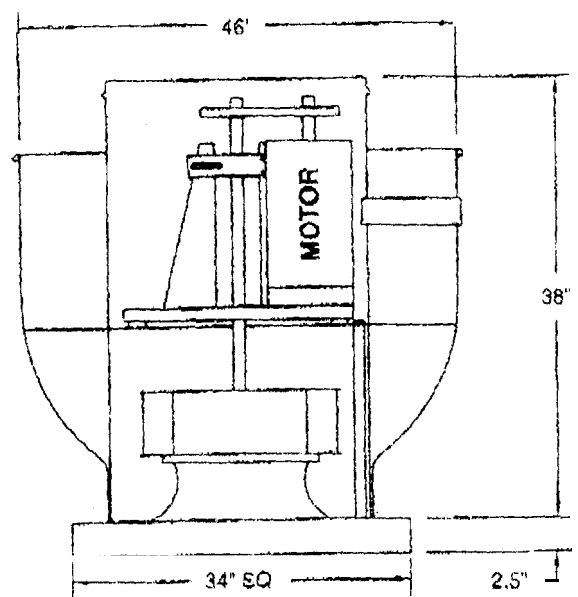


177 Reaser Court
 Elyria, Ohio 44036
 Telephone: 440-365-4567
 Toll Free: 800-854-3267



P.O. Box 1377
 Elyria, Ohio 44036-1377
 Fax: 440-365-2100
 www.americanhood.com

A15-B PERFORMANCE DATA



PHASE	1	
VOLTS	115	208
AMPS	18	9.3
HP	1.5	

DIMENSIONAL DATA

RPM	.000" S.P.		.125" S.P.		.250" S.P.		.375" S.P.		.50" S.P.		.625" S.P.		.75" S.P.		1.00" S.P.		1.25" S.P.		1.50" S.P.		1.75" S.P.	
	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP	CFM	BHP
725	4767	.43	4498	.46	4226	.5	3951	.53	3650	.56	3318	.59	2968	.6	-	-	-	-	-	-	-	-
800	5260	.57	5017	.61	4771	.65	4523	.69	4269	.73	3990	.76	3688	.79	2979	.8	-	-	-	-	-	-
875	5753	.75	5531	.79	5307	.84	5080	.88	4854	.92	4617	.96	4359	.99	3803	1.04	3030	1.04	-	-	-	-
950	6246	.96	6042	1.01	5836	1.05	5628	1.1	5419	1.14	5209	1.19	4988	1.23	4499	1.31	3976	1.34	3180	1.32	-	-
1000	6575	1.12	6381	1.17	6186	1.22	5988	1.27	5790	1.31	5592	1.36	5389	1.41	4944	1.49	4457	1.55	3915	1.57	3019	1.49

STANDARD FEATURES

- HEAVY GAUGE ALUMINUM HOUSING
- 3-YEAR LIMITED WARRANTY ON ALL ELECTRIC MOTORS
- FACTORY SET DRIVE
- BELT DRIVEN MOTORS ARE ENCLOSED IN WEATHER-TIGHT COMPARTMENTS
- AVERAGE UNIT WEIGHT: 180 LBS

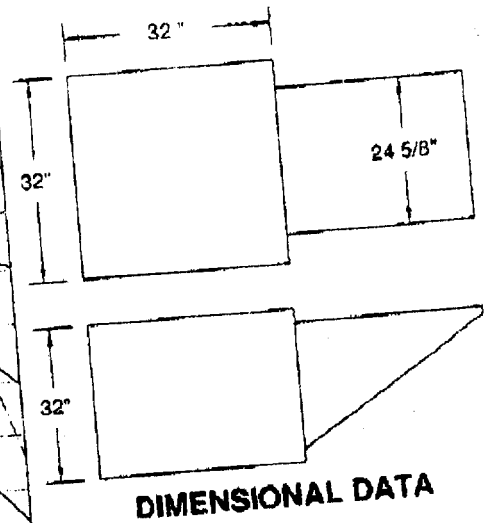
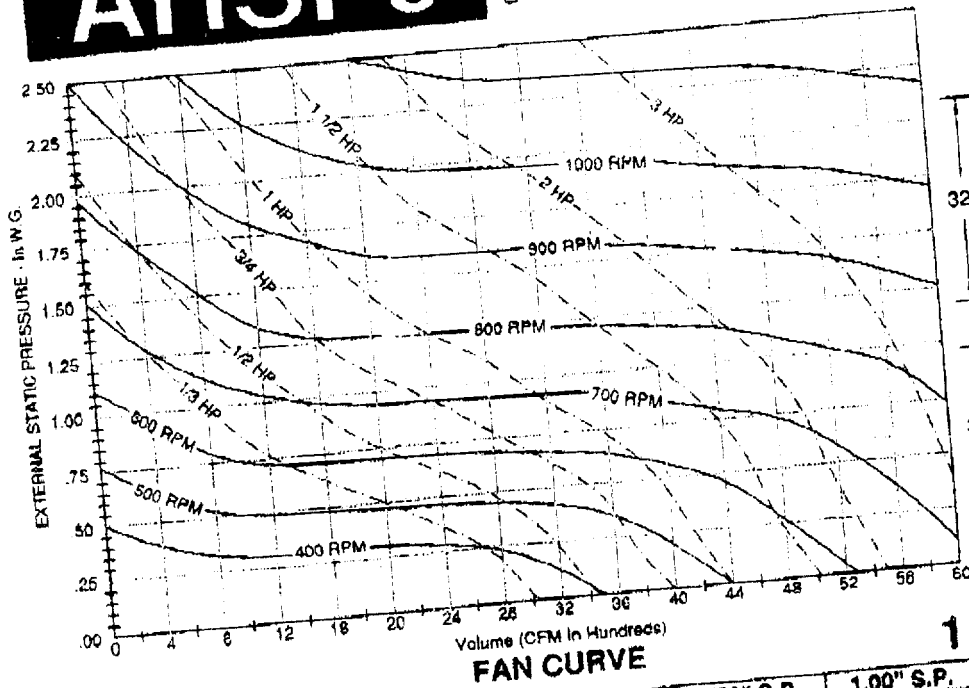


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AHSF9 PERFORMANCE DATA



1 1/2 HP SUPPLY FAN

CFM	.125" S.P.		.250" S.P.		.500" S.P.		.750" S.P.		1.00" S.P.		1.500" S.P.		2.00" S.P.		2.50" S.P.	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	266	.07	362	.13	507	.25	616	.39	705	.53	849	.83	967	1.14	1069	1.47
1750	276	.10	365	.15	508	.29	621	.45	712	.61	861	.94	981	1.29	1086	1.65
2000	289	.13	371	.19	510	.33	622	.56	718	.75	875	1.17	1002	1.59	1111	2.02
2250	309	.18	381	.23	513	.39	623	.63	719	.82	878	1.27	1008	1.74	1120	2.21
2500	332	.23	392	.28	517	.44	626	.63	721	.91	880	1.37	1012	1.88	1126	2.39
2750	356	.30	404	.35	522	.51	629	.71	721	.91	881	1.48	1015	2.01	1131	2.58
3000	381	.38	421	.43	532	.59	632	.79	724	1.01	882	1.61	1016	2.15	1134	2.75
3250	406	.48	443	.53	543	.66	637	.88	727	1.12	885	1.75	1017	2.30	1136	2.91
3500	432	.59	466	.64	553	.79	644	.99	731	1.23	888	1.91	1019	2.47	1137	3.09
3750	458	.71	490	.77	564	.91	654	1.12	735	1.36	891	2.07	1021	2.66	1138	3.28
4000	484	.85	514	.92	579	1.05	666	1.28	743	1.50	891	2.24	1024	2.87	1140	3.51
4250	511	1.01	539	1.09	597	1.22	676	1.42	752	1.67	894	2.42	1027	3.09	1142	3.75
4500	537	1.18	565	1.28	618	1.41	687	1.60	763	1.85	899	2.62	1030	3.30	1145	4.01
4750	564	1.38	590	1.48	640	1.63	700	1.80	775	2.05	905	2.82	1034	3.53	1148	4.28
5000	592	1.60	616	1.70	664	1.87	716	2.02	785	2.27	913	3.11	1039	3.79	1151	4.55
5250	619	1.84	642	1.95	688	2.13	735	2.28	796	2.51	923	3.41	1045	4.06	1155	4.83
5500	646	2.10	668	2.22	712	2.42	756	2.58	809	2.79	934	3.69	1054	4.36	1159	5.14
5750	674	2.39	695	2.51	737	2.73	778	2.90	825	3.08	946	3.99	1064	4.66	1169	5.44

STANDARD FEATURES

- HEAVY GAUGE ALUMINUM
- 3-YEAR LIMITED WARRANTY ON ALL ELECTRIC MOTORS
- FACTORY SET DRIVE
- BELT DRIVE MOTORS ARE ENCLOSED IN WEATHER-TIGHT COMPARTMENTS
- VOLTS: 208-230 / 115
- AMPS: 7.8, 7.5 / 15.0



FANS

ROXUC

The Better Insulation

Technical Product Information

BOARD INSULATION 07210

RWT 8Q

Architectural/OEM

General Product Information:

ROXUL products are mineral wool fibre insulations made from basalt rock and steel slag. This combination results in a non-combustible product with a melting point of approximately 2150°F (1177°C), which gives it excellent fire resistance properties. ROXUL mineral wool is a water repellent yet vapour permeable material. It absorbs water only when water is pressed or forced into the material and once the pressure is relieved, the water will evaporate without any loss of integrity to the material's shape or insulating properties.

All ROXUL products are certified to carry the Environmental Choice logo.



Description & Common Applications:

The RHT 80 product is a non-combustible, rigid mineral wool insulation board that is water repellent and delivers exceptional life cycle performance and value in a diversity of thermal, acoustic and fire protection applications. RHT 80's excellent moisture resistance, non-combustibility and dimensional stability make it the ideal choice for curtain wall applications. The product can be specified with confidence in a variety of building envelope designs, parking garages, acoustic and OEM applications.

Compliance and Performance

ASTM C 612	Mineral Fiber Block and Board Thermal Insulation	Type IV, Complies
CAN/CGSB \$1.10-92	Mineral Fibre Board Thermal Insulation	Type 1, Class 4
EA Approval	New York City Approval	332-97-M
Fire Performance		
ASTM E 136	Behaviour of Materials at 750°C (1382°F)	Non-Combustible
CAN4 S114	Test for Non-Combustibility	Non-Combustible
UL 723	Surface Burning Characteristics	Flame Spread = 0
(ASTM E 84)		Smoke Developed = 0
CAN/ULC \$102	Surface Burning Characteristics	Flame Spread = 0
		Smoke Developed = 0
Maximum Service Temperature		
ASTM C 411	Hot Surface Performance	No Reaction @ 1200°F (650°C)
Dimensional Stability		
ASTM C 356	Linear Shrinkage	1.24% @ 1200°F (650°C)
Moisture Resistance		
ASTM C 1104	Moisture Sorption	0.04%
Corrosion Resistance		
ASTM C 665	Corrosiveness to Steel	Passed
ASTM C 795	For use with Austenitic Stainless Steel	No Reaction
ASTM C 871	Chemical Analysis	Passed
Thermal Resistance		
ASTM C 518 (C177)	R-value @ 75°F (24°C)	4.2/inch
	k-value @ 75°F (24°C)	0.24 Btu.in/ft² hr.°F

Acoustical Performance:

Thickness	ASTM C 423 CO-EFFICIENTS AT FREQUENCIES						
	125 Hz	250 Hz	500 Hz	1000 ME	2000 Hz	4000 Hz	NRC
1.5"	0.17	0.62	1.00	1.05	1.01	1.01	0.90
2.0"	0.32	0.81	1.06	1.02	0.99	1.04	0.95
3.0"	0.78	0.89	1.04	0.98	1.01	1.02	1.00

Density:

ASTM C 612 (Nominal)	8.0 lbs/ft ³	128 kg/m ³
ASTM C 303 (Actual)		
1" thickness	7.4 lbs/ft ³	118 kg/m ³
≥ 1.5" thickness	5.9 lbs/ft ³	94 kg/m ³

Compressive Strength:

ASTM C 165
at 10%: 167 psf (8 kPa)
at 25%: 334 psf (16 kPa)

Facings:

This product can be faced with reinforced foil, ASJ and glass mat facings. Please note that the facings will influence the product's service temperature range.

**Key Application Qualifiers:**

- Easy to install
- Service temperature 1200°F (650°C)
- Non-combustible
- Can be fabricated/laminated
- Low moisture sorption
- Good compressive resistance
- Non-corrosive
- Chemically inert
- CFC and HCFC free product and process
- Made from natural & recycled materials

Other ROXUL Products:

Please consult ROXUL for all your insulation needs. We have an extensive range of products for all applications from pipe insulation to roof products to residential batts. ROXUL invites all inquiries and will act promptly to service all of your requirements.

Note:

ROXUL Inc. has no control over installation design and workmanship, accessory materials or application conditions, ROXUL Inc. does not warranty performance or results of any installation containing ROXUL Inc's products. ROXUL Inc's overall liability and the remedies available are limited by the general terms and conditions of sale. This warranty is in lieu of all other warranties and conditions expressed or implied, including the warranties of merchantability and fitness for a particular purpose.



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? S/S If Other, what Type? _____

Is the duct work Stainless steel or other type of steel? 16ga CRS If Other, what type? _____

Thickness of the steel for the hood 16ga S/S

Thickness of the duct for the hood 16ga steel

Type of Hood and Duct supports lag bolts & supporting wall
& thread rods

Type of seams and Joints butted & welded (solid)

Grease Gutters provided? yes

Hood Clearance from Combustibles materials 4 3/4"

Duct Clearance from Combustibles materials fire rated insulation + 3" air space on all sides

Vibration Isolation System:

Air Velocity within the duct system .75 static pressure

Grease accumulation prevention system

Cleanouts 6" x 10" on each floor (2100° fire rating)

Grease Duct enclosure 5/8" fire rated chase w/ fire stops @ each floor

Exhaust Termination above roof line

Fire Suppression system ansul - 18' flowpoint 6 gallon system

Exhaust fan mounting and clearance from the roof or wall base 48" top 40"

Exhaust fan distance from other vents or openings min. 10'

Exhaust fan height above adjoining grade 18" to base - 40" to top of fan

Hood Specs

Style of hood Box Make-up air canopy

Type of Filter: baffled filters (standard)

Height of filter above nearest cooking surface: 31 6"

Capacity of hood in CFM 3600

Make up Air system description and capacity
16 ga enclosures w/ mesh filters
2880 CFM / 80% of exhaust - makes to 100%

BOURBON STEELERS LLC
Dan Bourgeois
219.187.8

