

**CITY OF SACRAMENTO**  
1231 I Street, Sacramento, CA 95814

**Permit No: 0105388**  
**Insp Area: 3**

**Site Address: 5597 STOCKTON BL SAC**  
Parcel No: 023-0221-018

Sub-Type: REM  
Housing (Y/N): N

CONTRACTOR  
GROTHMAN BLDRS.  
PO BOX 1445  
FODI CA 95241

OWNER  
EXXON CORPORATION  
CONCORD CA  
94524

ARCHITECT

**Nature of Work: GAS STN/FOOD PREP AREA REMODEL**

**CONSTRUCTION LENDING AGENCY:** I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C)

Lender's Name \_\_\_\_\_ Lender's Address \_\_\_\_\_

**LICENSED CONTRACTORS DECLARATION:** I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

X License Class B License Number 740587 Date 5-23-01 Contractor Signature Lama Kass

**OWNER-BUILDER DECLARATION:** I hereby affirm under penalty of perjury that I am exempt from the contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code; any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars (\$500.00).

\_\_\_\_\_, I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professional Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

\_\_\_\_\_, I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law)

\_\_\_\_\_, I am exempt under Sec. \_\_\_\_\_ B & PC for this reason: \_\_\_\_\_

Date \_\_\_\_\_ Owner Signature \_\_\_\_\_

**IN ISSUING THIS BUILDING PERMIT,** the applicant represents, and the city relies on the representation of the applicant, that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement to be constructed does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and hereby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

X Date 5-23-01 X Applicant/Agent Signature Lama Kass

**WORKER'S COMPENSATION DECLARATION:** I hereby affirm under penalty of perjury one of the following declarations:

\_\_\_\_\_, I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued.

\_\_\_\_\_, I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier \_\_\_\_\_ Policy Number \_\_\_\_\_ Exp Date \_\_\_\_\_

(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

X Date 5-23-01 X Applicant Signature Lama Kass

**WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.**

**THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.**

**APPLICATION FOR COMMERCIAL BUILDING PERMIT**

**CITY OF SACRAMENTO**  
**DEVELOPMENT SERVICES DIVISION**  
**PERMIT SERVICES SECTION**

1231 I Street, Rm. 200  
 Sacramento, CA 95814 (916) 264-7619 FAX 264-7046

ACTIVITY #	Insp. Area
0105388	

*Applicant MUST complete ALL Unshaded areas*

ADDRESS 5597 Stockton Blvd. Sacramento Suite \_\_\_\_\_  
 PARCEL # \_\_\_\_\_

<p align="center"><b>CONTACT</b></p> <p>Name <u>Laura Kass</u></p> <p>Street Address <u>9104 Folsom Blvd. PMB 137</u></p> <p>City/State/Zip <u>Sacto CA 95827</u></p> <p>Phone <u>(916) 412-7604</u> FAX <u>(916) 361-7604</u></p> <p>E-mail: <u>allaccesspermits@msn.com</u></p>		<p align="center"><b>LICENSED CONTRACTOR</b> Lic No. # <u>790587</u></p> <p>Name <u>Grothman Builders</u></p> <p>Address <u>PO Box 1445</u></p> <p>City/State/Zip <u>Lodi CA 95241</u></p> <p>Phone <u>(209) 333-7208</u> FAX <u>(209) 333-2579</u></p> <p>E-mail: <u>grothman@inreach.com</u></p>	
<p align="center"><b>ARCHITECT/ENGINEER</b></p> <p>Name <u>Alexander Scheflo + Assoc inc.</u></p> <p>Address <u>2926 Pacific Ave</u></p> <p>City/State/Zip <u>Stockton 95204</u></p> <p>Phone <u>(209) 948-9761</u> FAX _____</p> <p>E-mail: _____</p>		<p align="center"><b>OWNER</b></p> <p>Name <u>KB Service Stations</u></p> <p>Address <u>5597 Stockton Blvd.</u></p> <p>City/State/Zip <u>Sacramento CA 9</u></p> <p>Phone <u>(916) 240-6387</u> FAX <u>(916) 784-0517</u></p> <p>E-mail: _____</p>	

Will permittees have any employees on the jobsite?  No  Yes → INSURANCE CO: \_\_\_\_\_  
 WORKER'S COMPENSATION POLICY: \_\_\_\_\_ EXPERIENCE DATE: \_\_\_\_\_

NATURE OF WORK IN DETAIL: New food service equipment, new cabinets, Counters & Countertops, New floor tile and ceiling tile in food service area

OCCUPANT/TENANT: Chevron mini mart VALUATION: \$30000

FLOOD STATUS: _____		S.C.A.T. _____								
JOB DESCRIPTION		BLDG	SHELL	APT	TR	REM	SW	FIRE	ADD	OTH
INSPECTION DISCIPLINES		<u>BLDG</u>	<u>MECH</u>	<u>PLUMB</u>	<u>ELEC</u>	<u>SITE</u>	<u>FIRE</u>			
# Stories	In Area	Total Area	Use Zone	Occp Group	Const type	Fire Req	Feat Code	Vio. File		
<u>30</u>	<u>30</u>	<u>1980</u>	<u>M</u>	<u>(13) FSH</u>	<u>(F)</u>	<u>S</u>	<u>B</u>	[H] [Quad]	PW	UTIL

COMMENTS: \* provide typical cross section of partition wall with full dimensions & wall anchorage @ top & bottom of wall  
\* provide new counter height including off counter

REGIONAL SANITATION FEES?  Yes  No HEALTH DEPARTMENT?  Yes  No  
 WATER FLOW TEST FOR NEW BUILDINGS OR ADDITIONS?  Provided  Faxed



# ICBO Evaluation Service, Inc.

5360 WORKMAN MILL ROAD • WHITTIER, CALIFORNIA 90601-2299

A subsidiary corporation of the International Conference of Building Officials

## EVALUATION REPORT

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ER-4975

Reissued November 1, 1999

Filing Category: FIRE-RESISTIVE CONSTRUCTION—Other Fire-resistive Construction (080)

### FIREMASTER® FIRE PROTECTION SYSTEM FOR GREASE DUCTS

THERMAL CERAMICS  
POST OFFICE BOX 923  
AUGUSTA, GEORGIA 30309

3M FIRE PROTECTION PRODUCTS  
3M CENTER 207-1S-02  
ST. PAUL, MINNESOTA 55125

#### 1.0 SUBJECT

FireMaster® Fire Protection System for Grease Ducts.

#### 2.0 DESCRIPTION

##### 2.1 General:

The FireMaster fire protection system is a proprietary blanket insulation material applied directly over a duct system serving a Type I kitchen hood. The duct must comply with Section 507.3 of the ICBO *Uniform Mechanical Code*™ (UMC) or Section 506.3 of the *International Mechanical Code*® (IMC). When installed in accordance with this report, the FireMaster system is an alternate to the one- or two-hour fire-resistive enclosure requirements of Section 507.6 of the UMC and Section 506.12 of the IMC. The FireMaster system is installed with zero clearance between the grease duct and the insulating material, and may be installed with zero clearance from the insulating material to combustibles. The FireMaster system is permitted to be installed in plenums in accordance with Section 601.4 of the UMC and Section 602.2.1 of the IMC.

The system is recognized for use with ducts incorporating the FireMaster system that penetrate concrete or concrete masonry fire-resistive assemblies. The penetrations must be protected with the through-penetration fire-stop assemblies described in Section 2.3.2.

##### 2.2 Materials:

**2.2.1 FireMaster System Insulating Blanket:** 3M FireMaster Duct Wrap 2x2™ insulating blanket is an organic refractory ceramic fiber blanket totally encapsulated with a polypropylene/aluminum foil scrim. The blanket, nominally 2 inches thick, is delivered to the jobsite in rolls 20 feet (6.09 m) long by 2 or 4 feet (610 or 1219 mm) wide. The blanket has a density of 7 pcf (112.1 kg/m<sup>3</sup>) and has a flame-spread rating of 25 or less and a smoke developed rating of 450 or less when tested in accordance with UBC Standard 8-1.

**2.2.2 Duct System:** Grease ducts serving Type I hoods must be constructed of minimum 0.055-inch-thick (1.40 mm) (No. 16 gage) steel or of stainless steel at least 0.044 inch (1.10 mm) thick. Joints and seams of grease ducts must comply with Section 507.3.2 of the UMC or Section 506.5 of the IMC. Duct supports must comply with Section 507.3.3 of the UMC or Section 506.6 of the IMC. When the duct system penetrates a floor/ceiling assembly required to be protected in accordance with Section 711 of the *Uniform Building Code*™ (UBC), the duct system must be supported as described in Figures 3 and 4.

**2.2.3 Duct Wrap Tape:** Two types of tape are used with the enclosure system. Pressure-sensitive aluminum foil tape, a minimum of 3 inches (76.2 mm) wide, is used to seal cut edges of the blanket material. High-performance filament tape, 3/4 inch (19.1 mm) wide, and complying with ASTM D 5330, Type II, such as 3M Company tape number 898, is used to secure the blanket material.

**2.2.4 Banding Material:** Banding material must be minimum-0.015-inch-thick (0.38 mm), Type 304 stainless steel. The banding is between 1/2 and 3/4 inch (12.7 to 19.1 mm) wide.

**2.2.5 Silicone Sealant:** The material used for through-penetration fire-stops described in Section 2.3.2.1 is a one-component silicone elastomeric that cures upon exposure to atmospheric humidity to form a flexible seal. The sealant is manufactured by the 3M Company and is labeled 3M Fire Barrier 2000+. Working time of the sealant is 10 to 20 minutes, and the cure time is from 14 to 21 days at 77°F (25°C) and 50 percent relative humidity. The sealant is packaged in caulking tubes and pails.

#### 2.3 Installation:

##### 2.3.1 Two-hour Fire-resistive Grease Duct Enclosure Assembly:

**2.3.1.1 Enclosure Assembly:** A total of two 2-inch-thick (51 mm) layers of FireMaster blanket material are installed around the grease duct. Each layer is cut to a length sufficient to wrap completely around the perimeter of the grease duct and provide a minimum 3-inch (76.2 mm) overlap. Aluminum foil tape is used to seal cut edges of the blanket. All joints between each layer are staggered a minimum of 12 inches (305 mm), and all overlaps of adjacent blankets are a minimum of 3 inches (76 mm). Each layer of blanket material is held in place with 3/4-inch-wide (19.1 mm) filament tape, placed circumferentially 1 1/2 inches (38 mm) from the edges of each blanket and spaced 10 1/2 inches (267 mm) on center.

Steel banding is used to hold in place the outer layer of the blanket enclosure system. The bands are placed circumferentially 1 1/2 inches (38 mm) from the edges of the blanket and are spaced 10 1/2 inches (267 mm) on center. The tension of the banding material must be sufficient to firmly hold in place the blanket materials, but must not be so great as to cause any cutting or damage to the blanket material. See Figure 1 for details. For maximum duct sizes, see Section 2.3.1.3.

For duct dimensions greater than 24 inches (610 mm), No. 10 gage copper-coated steel insulation pins, long enough to extend through the two layers of blanket insulation, are welded in columns spaced 12 inches (305 mm) apart, between 6 and 12 inches (152 and 305 mm) from each edge and 10 1/2 inches (267 mm) on center along the bottom horizontal and outside vertical duct runs, to prevent blanket sag. The blankets are locked into place over the pins with 1 1/2-inch-by-1 1/2-inch (38 mm by 38 mm) galvanized steel speed clips.

As an alternative to a 3-inch (72 mm) overlap of adjacent blankets, the blankets may be installed using a butt-joint/

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*This report is based upon independent tests or other technical data submitted by the applicant. The ICBO Evaluation Service, Inc., technical staff has reviewed the test results and/or other data, but does not possess test facilities to make an independent verification. There is no warranty by ICBO Evaluation Service, Inc., express or implied, as to any "Finding" or other matter in the report or as to any product covered by the report. This disclaimer includes, but is not limited to, merchantability.*

overlap method or a butt-joint/collar method. These methods are illustrated in Figure 1. When two blanket layers are encapsulated in one bag, the butt-joint/collar method must be used.

During installation, the duct wrap must not be compressed.

**2.3.1.2 Grease Duct Access Doors:** Grease duct access doors are protected with three layers of FireMaster blanket material. Each access door assembly has four threaded rods, one welded to each corner of the perimeter reinforcement frame of the door opening. Each threaded rod measures  $\frac{1}{4}$  inch (6.4 mm) in diameter and 4  $\frac{1}{2}$  to 5 inches (114 to 127 mm) in length. Four-inch-long (102 mm) hollow steel tubes fit over the threaded rods and act as protective sleeves for the blanket material when the door is fastened. In addition, four copper-coated steel insulation pins, with a No. 10 gage diameter and lengths of 4 to 5 inches (102 to 127 mm), are welded to the steel door panel, for blanket installation. Two layers of the blanket material are installed over the welded insulation pins, with the second layer having a perimeter 1 inch (25.4 mm) wider than the first. The third layer of blanket material is cut in a similar manner and installed over the other layers. Each layer must have a minimum overlap of 1 inch (25.4 mm) around the perimeter of the door and any previous blanket layers. The blanket layers are held in place with 1  $\frac{1}{2}$ -inch (38 mm) square or round speed clips, and wing nuts for  $\frac{1}{4}$ -inch-diameter (6.4 mm) rod. Access door labels must be applied to all access doors. See Figure 2 for details of protection for access doors.

**2.3.1.3 Duct Support:** Horizontal duct assemblies with maximum dimensions of 24 inches by 48 inches (610 mm by 1219 mm) or 34 inches by 35 inches (864 mm by 914 mm) are supported with minimum  $\frac{1}{2}$ -inch-diameter (12.7 mm), all-thread steel rod and 2-inch-by-2-inch-by- $\frac{1}{4}$ -inch (51 mm by 51 mm by 6.4 mm) steel angle, spaced a maximum of 60 inches (1524 mm) on center along the length of the duct. A minimum clearance of 2 inches (51 mm) is required between the edge of the protected duct and the steel rod. See Figure 3.

Vertical duct assemblies with maximum dimensions of 24 inches by 48 inches (610 mm by 1219 mm) are supported with 1  $\frac{1}{2}$ -inch-by-1  $\frac{1}{2}$ -inch-by- $\frac{1}{4}$ -inch-thick (38 mm by 38 mm by 6.4 mm) angle brackets, as shown in Figure 4. The brackets are located on opposite sides of the duct on the top and bottom of each floor/ceiling assembly, and are attached to the duct with welds or mechanical fasteners. As an alternative, the brackets are supported by minimum  $\frac{1}{2}$ -inch-diameter (12.7 mm) all-thread rod. Maximum vertical spacing between supports is 12 feet (3658 mm).

### 2.3.2 Through Penetrations:

**2.3.2.1 Wall Assemblies—One-hour F- and T-rated Through-penetration Fire-stop Assembly:** Where the grease duct protected with the FireMaster enclosure assembly penetrates a fire-resistant concrete or concrete masonry wall assembly complying with Table 7-5 of the UBC, and the penetration requires protection, the annular space of the penetration must be protected as follows:

1. **Penetration Opening:** The maximum area of the opening in the fire-rated wall assembly is 3,059 square inches (1.98 m<sup>2</sup>), with a maximum perimeter dimension of 83 inches (2362 mm).
2. **Duct Wrap Material:** The grease duct must be wrapped with the blanket material as described in Section 2.3.1.
3. **Packing Material:** Minimum 4  $\frac{1}{2}$ -inch-thick (114 mm) unfaced scrap duct wrap material or 3 pcf (48 kg/m<sup>3</sup>) mineral wool batt insulation is firmly packed into the opening as a permanent form. The packing material must be recessed a minimum of  $\frac{1}{4}$  inch (6.4 mm) from both surfaces of the wall, to accommodate the sealant material.

4. **Sealant Material:** The recessed voids created by the packing material must be filled a minimum of  $\frac{1}{4}$  inch (6.4 mm) with 3M Fire Barrier 2000+.

**2.3.2.2 Floor/Ceiling Assemblies—Two-hour F- and T-rated Through-penetration Fire-stop Assembly:** Where the grease duct protected with the FireMaster enclosure assembly described in Section 2.3.1 penetrates a minimum 4  $\frac{1}{2}$ -inch-thick (114 mm) fire-resistant concrete floor/ceiling assembly complying with Table 7-C of the UBC, the annular space of the penetration must be protected as illustrated in Figure 6 and as described below:

1. **Penetration Opening:** The annular space on each side of the wrapped duct shall be a maximum of 3 inches (76 mm). The duct must be located centrally within the opening. The maximum area of the opening in the floor/ceiling assembly is 1,122 square inches (0.724 m<sup>2</sup>), with a maximum opening dimension of 51 inches (1295 mm) when the duct wrap is continuous through the opening. When the duct wrap is terminated at the top and bottom surface of the floor/ceiling assembly, the maximum area of the opening is 752 square inches (0.485 m<sup>2</sup>), with a maximum opening dimension of 47 inches (1193 mm).
2. **Duct Wrap Material:** The grease duct must be wrapped with the blanket material as described in Section 2.3.1.
3. **Packing Material:** One 10  $\frac{1}{2}$ -inch-wide (267 mm) strip and one 2  $\frac{1}{4}$ -inch-wide (57 mm) strip of FireMaster blanket are required. The narrower strip is placed on top of the wider strip, aligned with one edge. The wider strip is then folded over the narrower strip to create a three-layer, 6-inch-thick-by-4  $\frac{1}{4}$ -inch-wide strip. The blanket is then compressed to 50 percent of the original thickness, and placed in the annular space, flush with the lower surface of the concrete slab and recessed a minimum of  $\frac{1}{4}$  inch (6.4 mm) from the upper surface.
4. **Sealant Material:** The recessed void created by the packing material must be filled a minimum of  $\frac{1}{4}$  inch (6.4 mm) with 3M Fire Barrier 2000+.

### 2.4 Identification:

The FireMaster blanket material bears a label indicating the product name, the company name (Thermal Ceramics or 3M Fire Protection Products), and the name of the quality control agency (Omega Point Laboratories, Inc.). Silicone sealants used for through-penetration fire-stops are labeled with the "3M Fire Protection Products" name and the product name.

### 3.0 EVIDENCE SUBMITTED

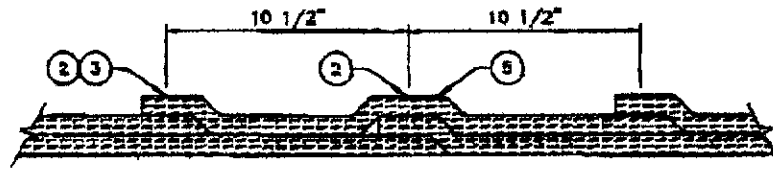
Data in accordance with the ICBO ES Acceptance Criteria for Grease Ducts, Flexible Enclosure Systems (AC101), dated July 1999; data in accordance with UBC Standard 7-5; and a quality control manual.

### 4.0 FINDINGS

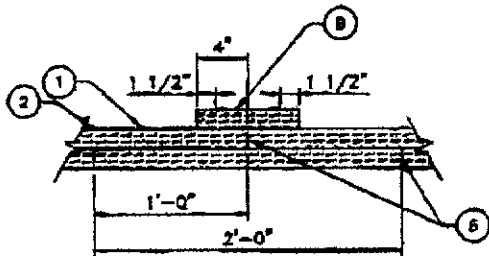
That the FireMaster<sup>®</sup> Fire Protection System for Grease Ducts described in this report complies with the 1997 ICBO Uniform Mechanical Code<sup>™</sup> and 1998 International Mechanical Code<sup>®</sup>, subject to the following conditions:

- 4.1 The system is constructed and installed in accordance with this report.
- 4.2 The FireMaster insulating blanket products are manufactured in Augusta, Georgia, under a quality control program with inspections by Omega Point Laboratories Inc. (NER-QA337).

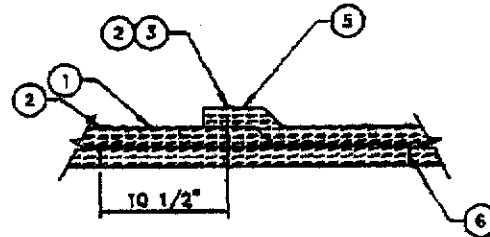
This report is subject to re-examination in one year.



**3" OVERLAP ON ALL LAYERS**

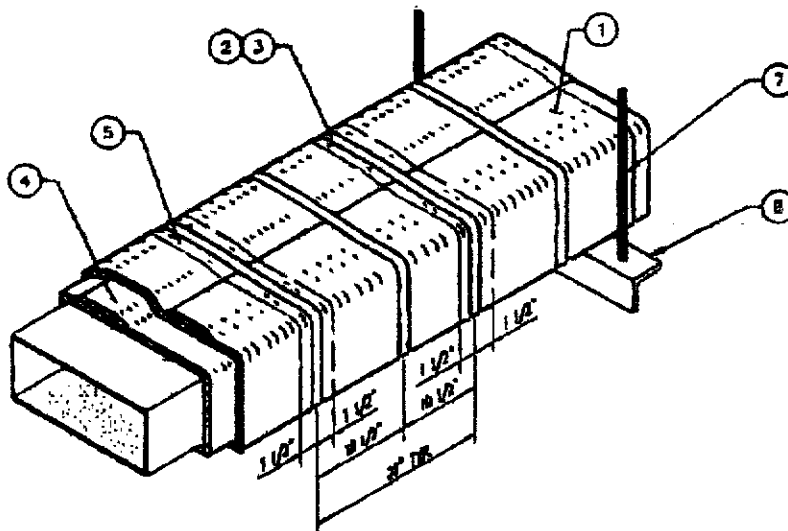


**BUTT JOINT OPTION**



**BUTT JOINT/OVERLAP**

**OPTIONAL INSTALLATION METHODS**



LEGEND	
1	Two layers FireMaster <sup>®</sup> Duct Wrap 2x2 (2 inches thick each = 4 inches total thickness)
2	Filament Tape
3	Banding
4	3-inch perimeter overlap
5	3-inch longitudinal overlap
6	1-inch compressed butt joint
7	3/8-inch diameter (minimum) hanger rod
8	1 1/2-inch-by-1 1/2-inch-by-1/4-inch angle
9	2-inch-wide FireMaster <sup>®</sup> Collar

For SI: 1 inch = 25.4 mm.

**FIGURE 1—TWO-HOUR FIRE-RESISTIVE PROTECTION SYSTEM FOR GREASE DUCTS**



Commercial  
Industrial

Since 1972

**SMITH HEATING & AIR CONDITIONING, INC.**

Commercial Kitchens • Custom Stainless Steel  
H.V. AC • Ref. • Sheet Metal

P.O. Box 383  
1150 N. Filbert St.  
Stockton, CA 95201

Contract Lic. #309146  
PHONE 209/466-1434  
FAX 209/466-0452

FILE NO: Hood - 1

DATE: 7-17-01

TEST BY: Rick

**Ventilation Test Report**

Name of Restaurant: Chevron Station Address: 5597 Stockton Blvd S

**EXHAUST**

Grease Filters: 1 reading/sq. ft.

System Number	Ftr. No.	Hood Length Width	Gross Filter Area Ft. <sup>2</sup>	Net Filter Area Ft. <sup>2</sup>	Measured Velocities @ Filter			Average Velocity	Average CFM
	1		16x16	1.36	256			257	350
	2		16x16	1.36	258			217	295
	3		16x16	1.36	209			264	359
	4		16x20	1.75	226			278	486
	5		16x20	1.75	250			238	416
					278				
					290				
					266				
					262				
					214				
								251	1906

1-11-01

Job Name & Location Chevron Station 5597 Stockton Blvd. Sacramento

MAKE-UP AIR TEST SHEET -

MUA-1

TOTAL LENGTH		#1		#2		#3		#4		#5		#6		#7	
M.U.A. OUTLET	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	
PLENUM SIZE	24	24	24	24											
NET FREE AREA															
SQ.FEET	Ceiling														
VELOCITY	Airflow														
CFM	902			855											

1757 TOTAL

TOTAL LENGTH		#1		#2		#3		#4		#5		#6		#7	
M.U.A. OUTLET	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	
PLENUM SIZE															
NET FREE AREA															
SQ.FEET															
VELOCITY															
CFM															

TOTAL

TOTAL LENGTH		#1		#2		#3		#4		#5		#6		#7	
M.U.A. OUTLET	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	
PLENUM SIZE															
NET FREE AREA															
SQ.FEET															
VELOCITY															
CFM															

TOTAL

