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ICC-ES Evaluation Report

ESR-2401

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This report is subject to renewal 01/2019.

DIVISION: 10 00 00—SPECIALTIES

SECTION: 10 31 00—MANUFACTURED FIREPLACES

REPORT HOLDER:

MASONRY FIREPLACE INDUSTRIES, LLC

EVALUATION SUBJECT:

MASON-LITE MODULAR CONCRETE FIREPLACES

ICC ES | ICC ES PMG | ICC ES LISTED

"2014 Recipient of Prestigious Western States Seismic Policy Council (WSSPC) Award in Excellence"

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ANSI ACCREDITED
ISO/IEC 17065
Product Certification Body
#1000

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DIVISION: 10 00 00—SPECIALTIES
Section: 10 31 00—Manufactured Fireplaces

REPORT HOLDER:

MASONRY FIREPLACE INDUSTRIES, LLC

EVALUATION SUBJECT:

MASON-LITE MODULAR CONCRETE FIREPLACES

ADDITIONAL LISTEES:

BURNTECH FIREPLACE SOLUTIONS

CAPO FIRESIDE

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2012, 2009 and 2006 *International Residential Code®* (IRC)
- 2012, 2009 and 2006 *International Mechanical Code®* (IMC)
- 2012, 2009 and 2006 *International Fuel Gas Code®* (IFGC)

Properties evaluated:

- Fire resistance
- Seismic resistance

2.0 USES

The Mason-Lite™ modular concrete fireplaces, Models MFP-33, MFP-39, MFP-44, MFP-49 and MFP-63, are fireplaces that are constructed in the field using prefabricated concrete firebox components with factory-built chimneys. The fireplaces are for use only with solid wood logs, LPG or natural gas log lighters complying with CSA 8, and decorative gas appliances complying with ANSI Z 21.60.

Mason-Lite modular concrete gas-fired fireplace models MGFP-39, MGFP-44, and MGFP-49 (Burntech Models GBVS39, GBVS44 and GBVS49) (Capo Fireside Models ASG39, ASG44 and ASG49) comply with ANSI Z21.50, and are constructed in the field and vented with a listed Type B gas vent.

3.0 DESCRIPTION

3.1 Fireplace Units:

The Mason-Lite™ Masonry Fireplace is a modular refractory masonry unit designed for field assembly. The firebox is constructed using precast, interlocking refractory blocks secured to each other using Mason-Lite mortar. The system is supplied with all parts necessary for the assembly of a complete masonry firebox unit. Figures 1 and 2 illustrate the Mason-Lite system components. For combustible floor installations, the Mason-Lite system includes a noncombustible raised platform designed to be placed beneath the field-assembled firebox unit. High-temperature refractory brick, $1^{1}/_{8}$ inches (28.6 mm) thick, is required to line the interior of the firebox. See Table 1 for Masonry Fireplace Industries (MFI), Capo Fireside and Burntech Fireplace Solutions (Burntech) models, fireplace weights and floor areas.

The MFP-33, MFP-39, MFP-44, MFP-49, and MFP-63 are also sold as FMI Products, LLC, models MM33, MM39, MM44, MM49 and MM63, respectively. Additionally, the products are sold as Burntech Fireplace Solutions models TFS-33, TFS-39, TFS-44, TFS-49, and TFS-63, respectively. The products are also sold as Capo Fireside models AS33, AS39, AS44, AS49 and AS63.

3.2 Factory-built Chimneys:

The wood-burning fireplaces may only be used in conjunction with listed factory-built specific chimney systems. The MFP-33, MFP-39, MFP-44 (AS33, AS39, AS44, TFS33, TFS39, TFS44) wood burning fireplaces require the use of a Desa/FMI DM12 12-inch-diameter (305 mm) chimney or 12- or 14-inch-diameter (305 or 356 mm) flue system listed by an approved agency as complying with UL103. The MFP-49 (AS49, TFS-49) fireplace requires a 14-inch-diameter (356 mm) flue system listed by an approved agency as complying with UL103. The MFP-63 (AS63, TFS63) fireplace requires the use of a Desa/FMI DM16 16-inch-diameter (406 mm) flue system listed by an approved agency as complying with UL103 and labeled as “Residential Type and Building Heating Appliance Chimney.” As an alternative, the MFP-63 (AS63, TFS63) fireplace may use a dual Desa/FMI DM12 12-inch-diameter (305 mm) flue system. The chimneys are limited to a maximum height of 40 feet (12 192 mm) and a minimum height of 14 feet (4267 mm); except that, where offsets are used, the minimum height is 17 feet (5181 mm). No more than two offsets are permitted.

3.3 Fireplaces Equipped with a Decorative Gas Appliance:

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The fireplace systems described in Section 3.1 may be installed with a decorative gas appliance listed in accordance with ANSI Z21.60, provided the fireplace is terminated with a 10-inch-diameter (254 mm) listed Type B gas vent.

3.4 Gas-fired Fireplaces:

Models MGFP-39, MGFP-44, and MGFP-49 (GBVS39, GBVS44, GBVS49, ASG39, ASG44 and ASG49), complying with ANSI Z21.50, require the use of a listed 10-inch-diameter (254 mm) Type B gas vent and must comply with Chapter 8 of the IMC and Chapter 5 of the IFGC. The models must be as specified in the Mason-Lite published installation instructions.

3.5 Grout and Mortar:

The grout and mortar used to construct the fireplace is provided by Masonry Fireplace Industries, LLC.

4.0 DESIGN AND INSTALLATION

4.1 General:

The fireplace units must be installed in accordance with this report, the fireplace manufacturer's published installation instructions, and the applicable code. A copy of the manufacturer's instructions must be available at the jobsite at all times during installation. As applicable, the factory-built chimney or Type B gas vent installation instructions must also be available at the jobsite at all times during installation. The fireplaces are not recognized for use with doors.

4.2 Design:

When installed in accordance with Section 4.3 of this report and the manufacturer's instructions, the fireplace units may be installed in Seismic Design Categories A through F. In Seismic Design Categories C, D, E and F, the seismic design parameters are limited to the values noted in Table 2. The seismic design must be in accordance with Sections 13.3, 13.4, 13.5 and 13.6 of ASCE 7.

When installed in accordance with Figure 10 of this report, the Mason-Lite modular concrete fireplaces may be anchored to a concrete slab-on-grade, located in Seismic Design Categories A through F, as determined from the seismic design parameters shown in Table 2 of this report.

When installation is on wood floor construction, the licensed design professional must determine the requirements for support and anchorage for the combined gravity and seismic loading. The applicability of the seismic design parameters in Table 2 must be verified with due consideration of the flexibility of anchorage and supports. In addition, the calculated long-term deflection of the wood members supporting the fireplace must not exceed the values shown in IBC Table 1604.3 for floor members. Under the IRC, an engineered design must be provided in accordance with IRC Section R301.1.3.

4.3 Installation:

The Mason-Lite™ masonry fireplace system may be installed directly on concrete slabs and footings or on combustible floors, subject to the structural design limitations contained within this report. For concrete foundations, the firebox base must be installed directly to the foundation. For combustible supporting systems, installation of a 1-inch-thick (25.4 mm) ceramic fiber-board, 6-inch-high (152 mm) or 8.5-inch-high (216 mm) (for MFP-63, AS63, TFS63) metal support base and $^1/_2$-inch-thick (12.7 mm) cement board is required before placement of the firebox hearth components. The precast components are assembled following the Mason-Lite published instructions and using the mortar described in Section 3.5. Minimum No. 4 reinforcing bar or $^1/_2$-inch-diameter (12.7 mm) all-thread bar must be installed, and the cells of the precast components are grouted with Mason-Lite grout. Anchorage of the fireplace unit to the foundation or supporting floor must be as described in Section 4.2.

After completion of the construction of the lower firebox components, the precast lintel and firebox dome components are installed. The chimney anchor plate must then be attached to the firebox dome as shown in Figure 4. Once the installation of the chimney anchor plate is completed, the listed prefabricated chimney flue pipe or listed Type B gas vent must be installed. See Figures 5, 6 and 7. The clearances to combustibles must comply with Table 4 or Table 5. Installation of the chimney or gas vent must be in accordance with the chimney or gas vent listing, the chimney or gas vent manufacturer's instructions and the applicable code.

Firebrick lining having a minimum thickness of $1^1/_8$ inches (29 mm) and complying with ASTM C1261 must be installed along with any required hearth extensions as shown in Figure 8.

Combustion air must be provided in accordance with Chapter 17 of the IRC or Chapter 7 of the IMC.

5.0 CONDITIONS OF USE

The Mason-Lite modular concrete fireplaces described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The fireplaces must be installed in accordance with this report and the manufacturer's published installation instructions. In the event of a conflict between this report and the manufacturer's instructions, the more restrictive governs.

5.2 The fireplace units must be installed by contractors approved by Masonry Fireplace Industries, LLC.

5.3 When installation is over framed floor construction, the supporting structure and the anchorage of the fireplace unit to the supporting structure must be designed for all applicable loads, including gravity, wind and earthquake loading, and must include applicable load combinations in accordance with IBC Section 1605. The weights of the various components and the footprint of the installed unit are included in Table 1. The structural design and calculations must be prepared by a registered design professional and must be provided to the code official for approval.

5.4 When installation is over a slab-on-grade concrete foundation, the installation must be as shown in Figure 10 of this report.

5.5 The fireplaces must not be installed with doors.

5.6 Compliance with the fireplace air leakage provisions found in 2012 *International Energy Conservation Code*® (IECC) Section R402.4.2 and Table R402.4.1.1, 2012 IRC Section N1102.4.2 and Table N1102.4.1.1, 2009 IECC Section 402.4.3 and 2009 IRC Section N1102.4.3 are outside the scope of this report.

5.7 The fireplace units are manufactured in Riverside, California, under a quality-control program with inspections by ICC Evaluation Service, LLC.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Field-constructed Fireplace Systems Using

Prefabricated Blocks (AC375), dated February 2012 (editorially revised April 2014).

7.0 IDENTIFICATION

7.1 The components of the fireplace units, including mortar and grout, are supplied to the jobsite on a factory-assembled, shrink-wrapped pallet bearing a label with the company name (Masonry Fireplace Industries, LLC, Innovative Hearth Products (IHP), or Burntech Fireplace Solutions) and address; the product name; the address of the manufacturing plant; and the evaluation report number (ESR-2401). A permanent label must be attached to the installed fireplace by the contractor, identifying the report holder's or additional listee's name; the product name; the manufacturing location; the date of manufacture and the serial number; the clearances to combustibles; other information required by UL 127; and the evaluation report number (ESR-2401).

7.2 The report holder's contact information is the following:

MASONRY FIREPLACE INDUSTRIES, LLC
6391 JURUPA AVENUE
RIVERSIDE, CALIFORNIA 92504
(800) 345-7078
www.mason-lite.com

7.3 The Additional Listee's contact information is the following:

BURNTECH FIREPLACE SOLUTIONS
6250 PLATT AVENUE, NO. 577
WEST HILLS, CALIFORNIA 91307
www.burntech.com

CAPO FIRESIDE
26401 VIA DE ANZA
SAN JUAN CAPISTRANO, CALIFORNIA 92675
(949) 364-5118
www.capofireside.com

TABLE 1—MASON-LITE FIREPLACE WEIGHTS AND FLOOR AREA[1]

MFI MODEL	MFP-33	MFP-39	MGFP-39	MFP-44	MGFP-44	MFP-49	MGFP-49	MFP-63
CAPO FIRESIDE MODEL	AS33	AS39	ASG39	AS44	ASG44	AS49	ASG49	AS63
BURNTECH	TFS33	TFS39	GBVS39	TFS44	GBVS44	TFS49	GBVS49	TFS63
Fireplace Weight (lbs)	1,167	1,260	1,460	1,331	1,580	1,462	1,680	2,225
Damper/Anchor Plate, Firebrick, Grout & Mortar Weight (lbs)	350	380	380	430	430	480	480	550
Steel Platform Weight (lbs)	51	61	61	65	65	80	80	90
Maximum Chimney Weight (lbs/lineal ft)	10	10	10	10	10	12	12	15
Chimney or Vent Size-I.D. (inches)	12	12	10	12	10	14[2]	10	16[2]
Floor Area	37 in. x 28 in. (7.2 ft^2)	42 in. x 28 in. (8.12 ft^2)		48 in. x 28 in. (9.33 ft^2)		53 in. x 28 in. (10.30 ft^2)		67 in. X 28 in. (13.03 ft^2)

For **SI:** 1 lb = 4.45 N, 1 in. = 25.4 mm, 1 lb/lineal ft. = 0.0146 N/mm, 1 ft^2 = 0.092 mm^2.

[1]MFP, AS and TFS designates fireplace used with a UL 103 complying listed factory-built chimney. MGFP, ASG and GBVS designates fireplace used with a listed Type B gas vent.

[2]AS49 fireplace requires the use of a 12-inch-diameter listed flue system. The MFP-63, AS63 and TFS63 fireplaces require the use of a dual 12-inch-diameter flue system or a single 16-inch-diameter flue system.

TABLE 2—SEISMIC DESIGN PARAMETERS

PARAMETER	VALUE
Amplification factor, a_p	1.0
Component response modification factor, R_p.	1.5
Maximum z/h factor; where *z* is the height in structure of point of attachment of component with respect to the base and *h* is the average roof height of structure with respect to the base	0
Fundamental period of the fireplace, T_p	0.16
Maximum Spectral response acceleration parameter, S_{Ds}	1.25

TABLE 3—DEFLECTION LIMITS

CONSTRUCTION	L	S or W	D +L_1
Floor members	l/360	---	l/240

[1]For wood structural members having a moisture content of less than 16 per cent at time of installation and used under dry conditions, the deflection resulting from L + 0.5D is permitted to be substituted for the deflection resulting from L + D. (Note: this table has been copied from IBC Table 1604.3).

TABLE 4—MINIMUM CLEARANCE TO COMBUSTIBLES FOR MFP, TFS AND MM SERIES WOOD-FIRED FIREPLACE SYSTEMS (inches)

Unit front, sides, rear:	2
Combustible Floor (MFP-33 through MFP-49):	6
Combustible Sheathing above opening top:	18
Combustible Floor (MFP-63):	8
Sheathing or trim to opening sides:	8
Mantle above opening	12
Opening to sidewall:	24
Hearth extension beyond front:	20
Hearth extension beyond sides:	12
Insulation from firebox:	2

For **SI:** 1 inch=25.4 mm.

TABLE 5—MINIMUM CLEARANCE TO COMBUSTIBLES FOR MGFP AND GBVS SERIES GAS-FIRED FIREPLACE SYSTEMS (inches)

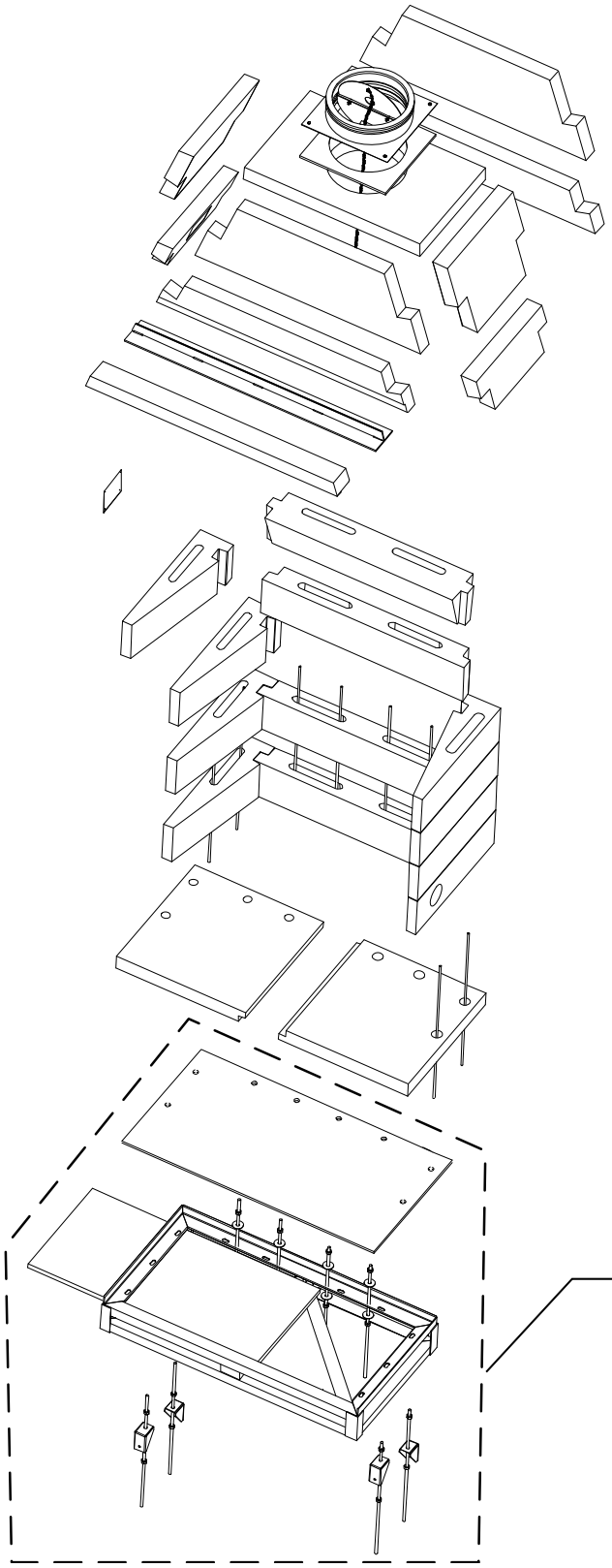
Back/Side(s)	0
Top	0
Vent	1
Front[1]	48
Perpendicular Walls	8
Floor	0
Ceiling	24
Mantle[2]	3

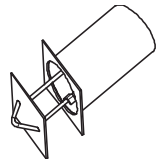
For **SI:** 1 inch=25.4 mm.

[1]Top of louver opening to ceiling.
[2]3-inch wide mantle.

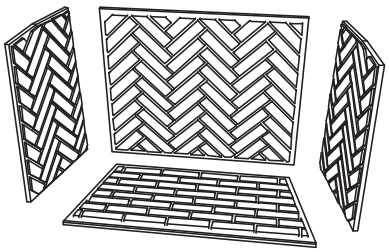
FIREPLACE PARTS DIAGRAM
MODELS MFP33/39/44/49

Note: See MFI installation instructions for a complete description of the items shown.





Optional Outside Ø4"
Combustion Air Kit
Model No.: MFP4-AK



MFPXXSHBL- Herringbone
MFPXXFRBL- Running Bond

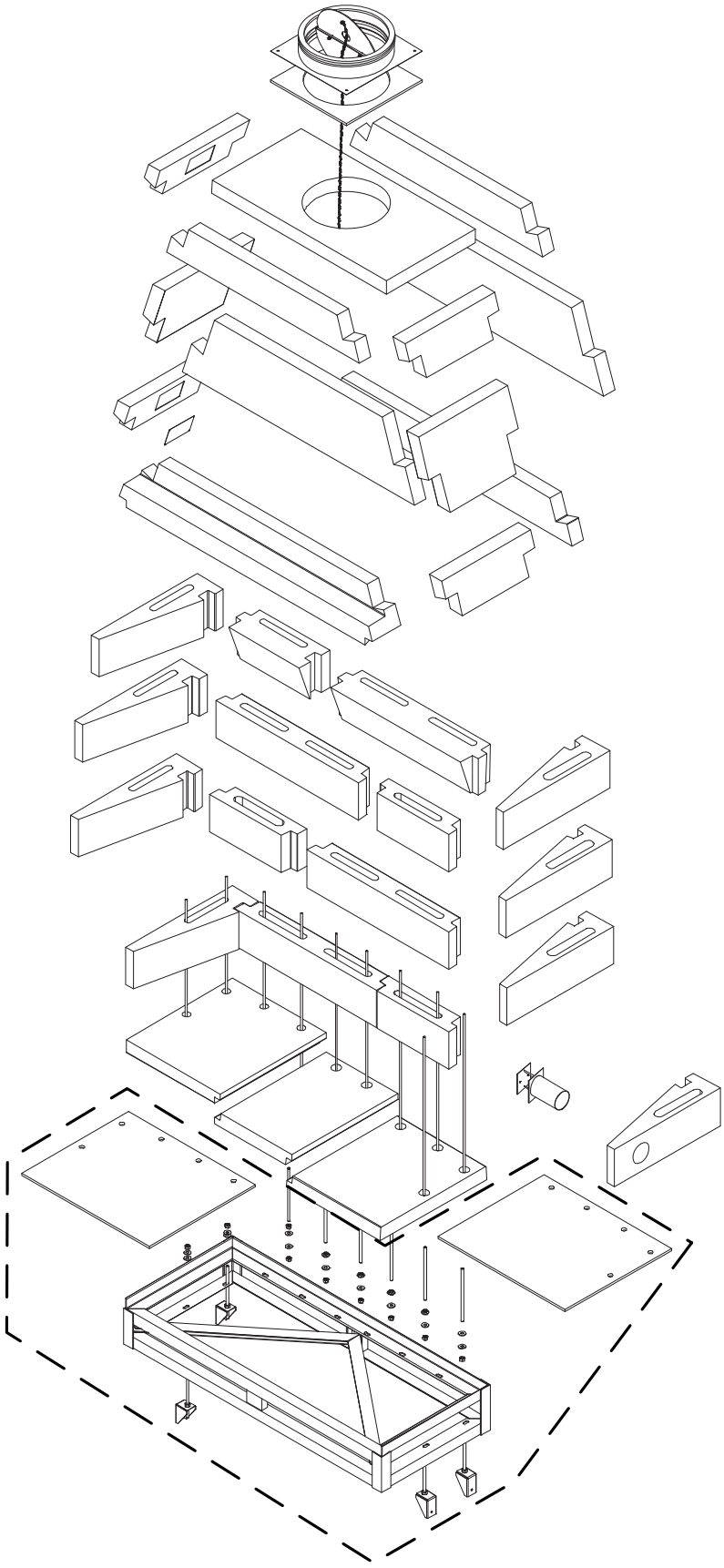
FIGURE 6

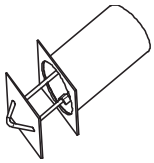
FOR COMBUSTIBLE FLOORS

FIGURE 1

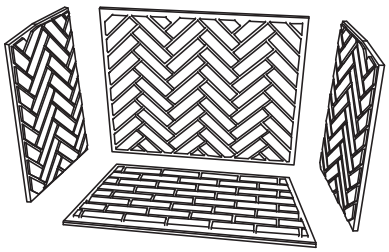
FIREPLACE PARTS DIAGRAM
MODEL MFP63

Note: See MFI installation instructions for a complete description of the items shown.





Optional Outside Ø4"
Combustion Air Kit
Model No.: MFP4-AK



MFP63SHBL- Herringbone
MFP63FRBL- Running Bond

FIGURE 2

MODELS MFP-63, AS63, TFS63

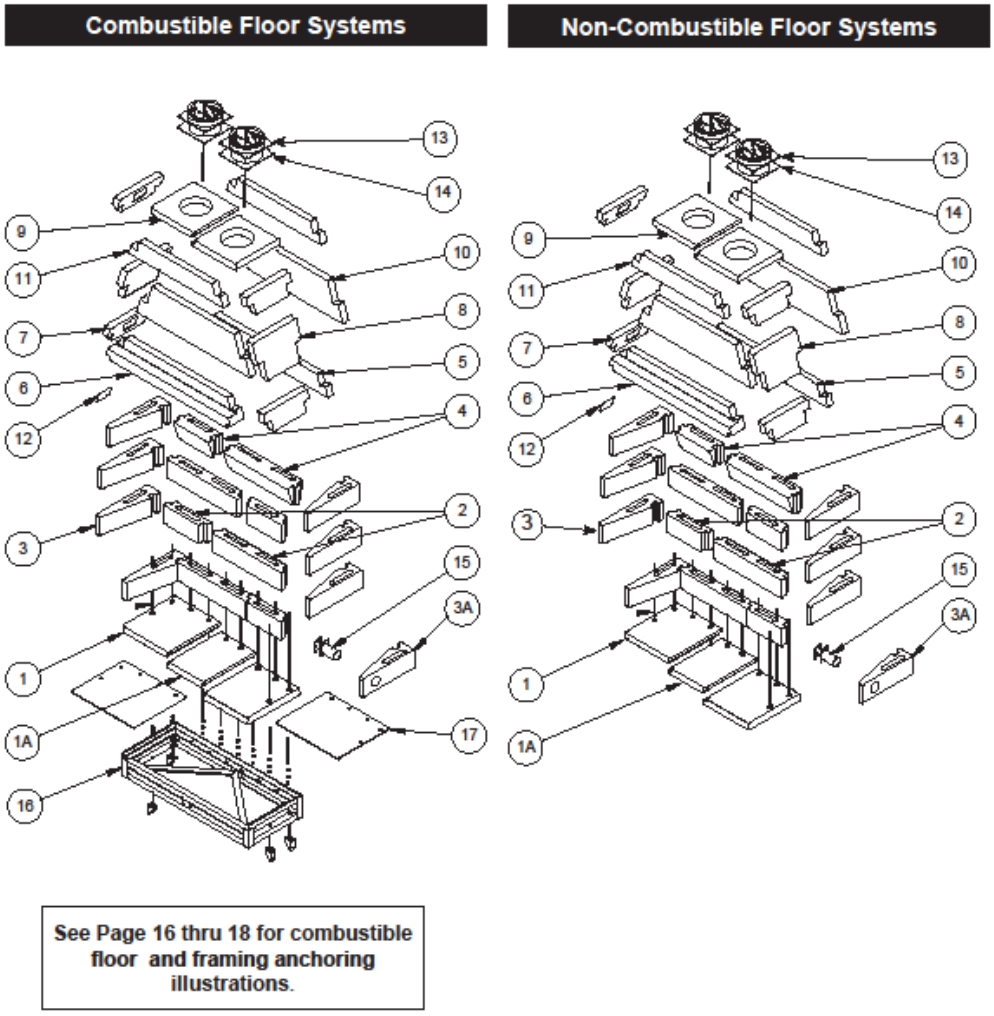


FIGURE 2 (Continued)

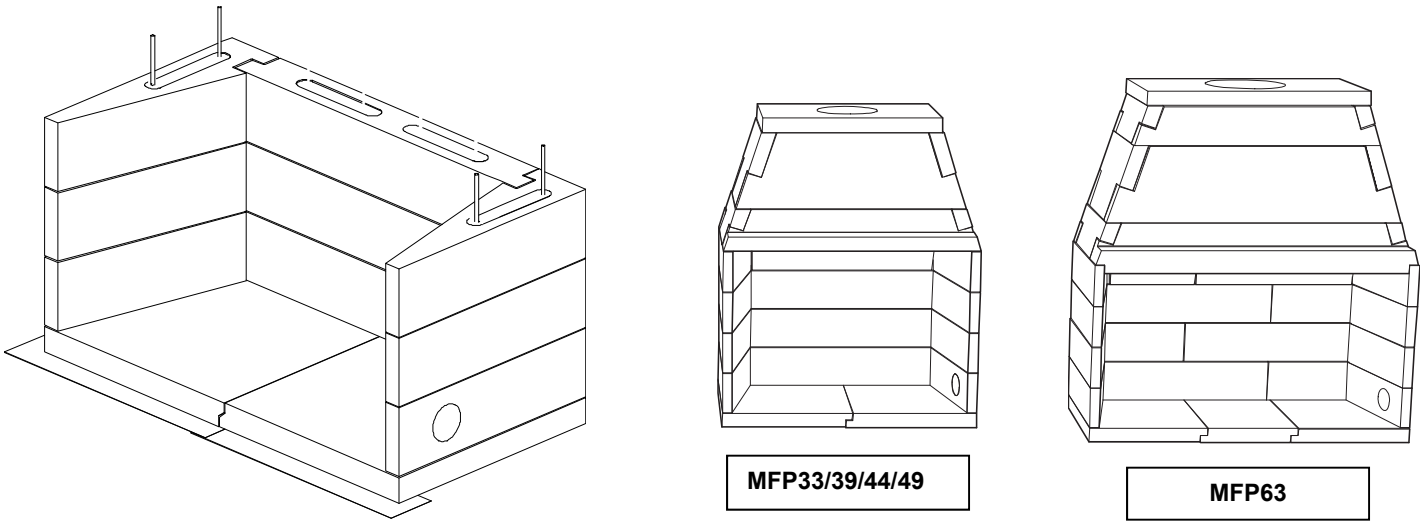


FIGURE 3—MASON-LITE ASSEMBLED FIREPLACE COMPONENTS

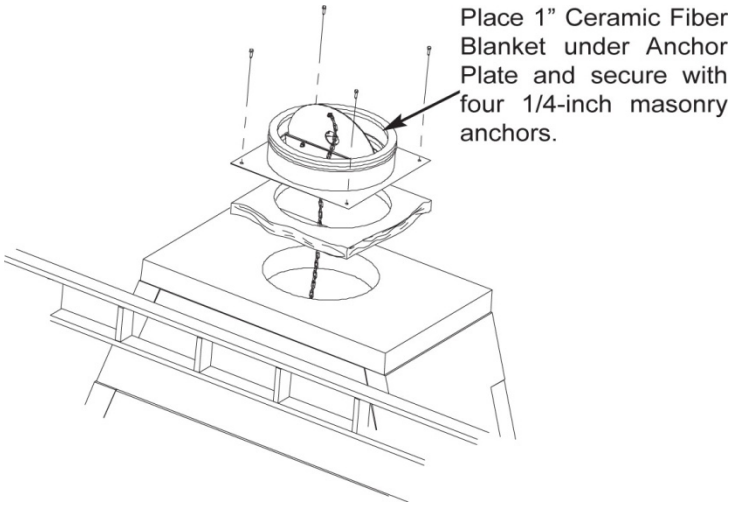

Place 1” Ceramic Fiber Blanket under Anchor Plate and secure with four 1/4-inch masonry anchors.

FIGURE 4

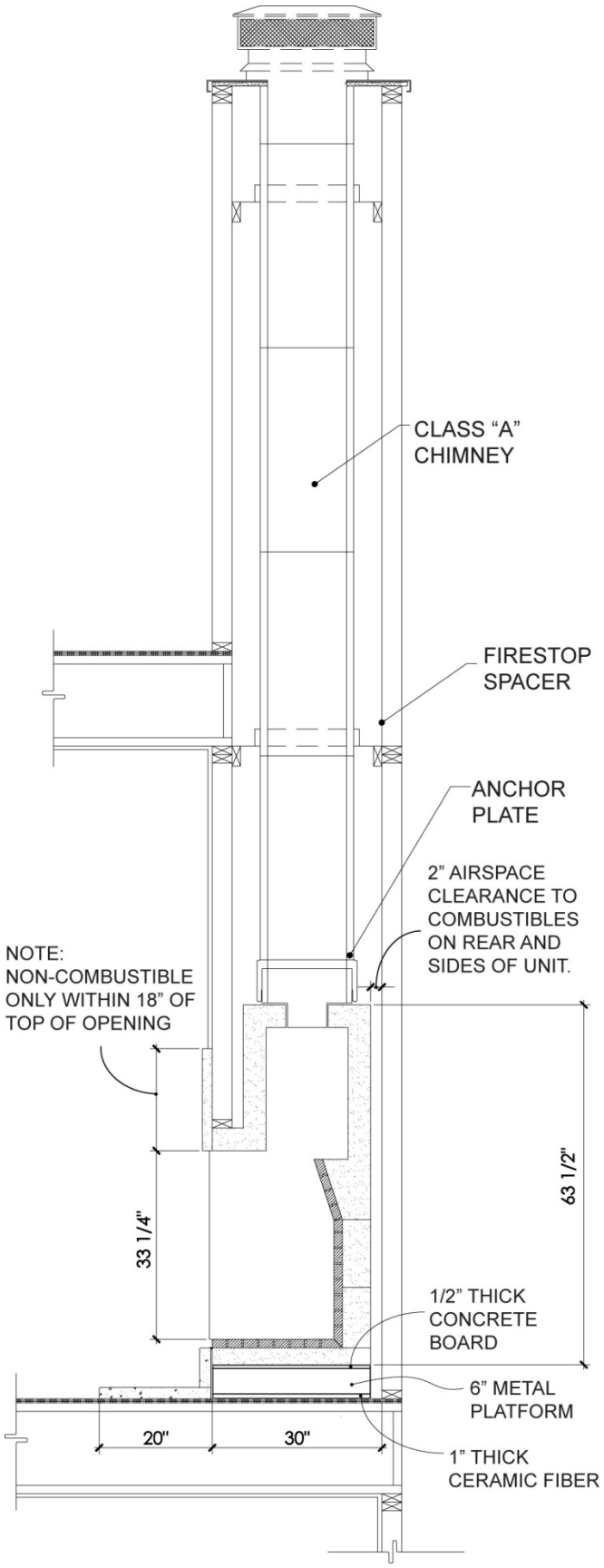


FIGURE 5

Firestop Spacer with Living Space Above Ceiling

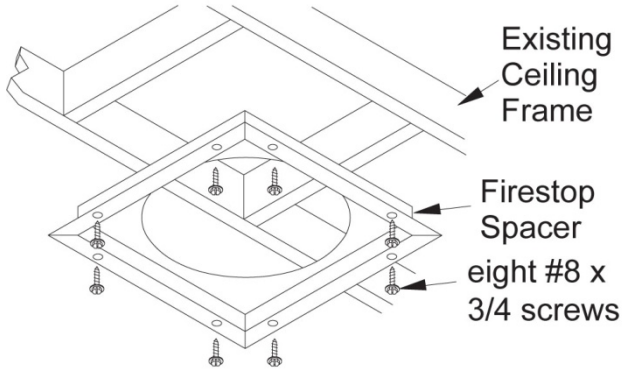


FIGURE 6

Firestop Spacer with Attic Space Above Ceiling

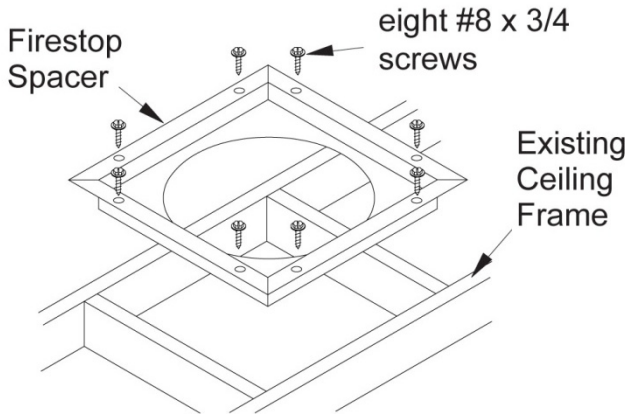


FIGURE 7

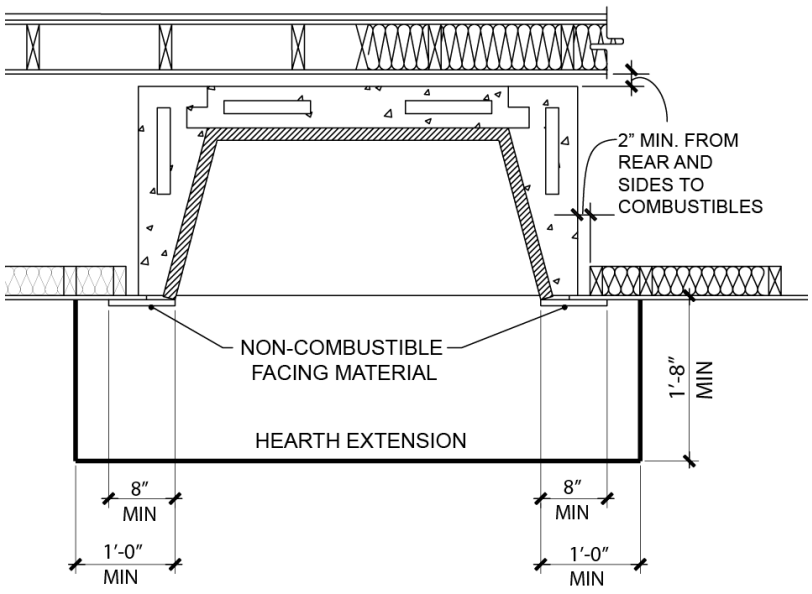
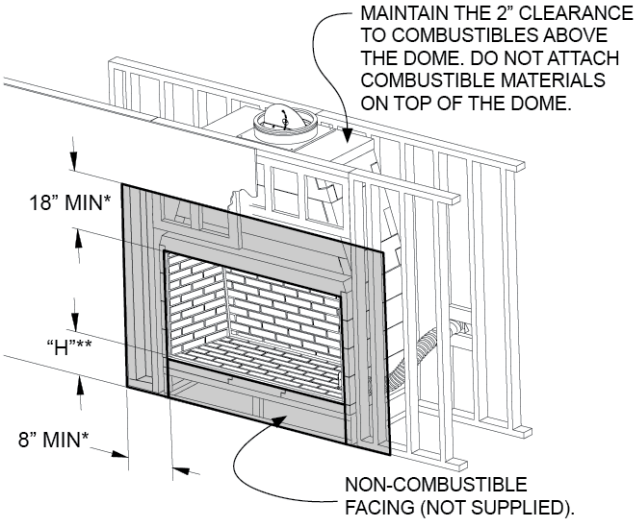


FIGURE 8

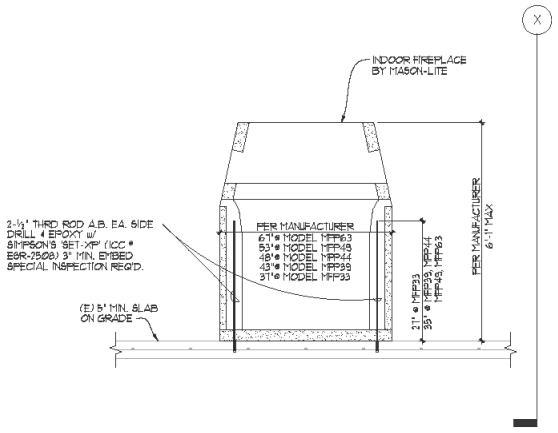


Condition	Dim. "H"**
with 6" platform	10"
with 8" platform	12"
without platform	3"

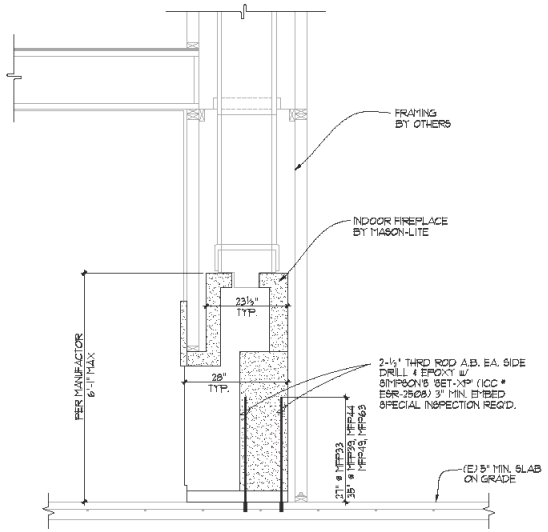
* MINIMUM CLEARANCE TO COMBUSTIBLE MATERIALS.
** MEASURED FROM FLOOR TO TOP OF FIREBRICK LINER.

FIGURE 9

MASON-LITE INDOOR FIRE PLACE



FRONT VIEW ELEVATION (FIG. 1)



X SIDE VIEW ELEVATION (FIG. 2)

STRUCTURAL NOTES

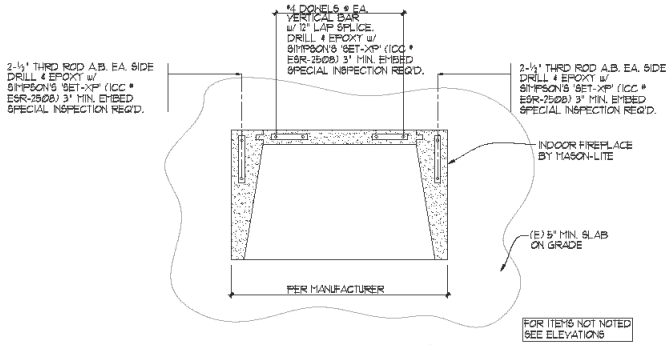
1.) SOIL SUPPORTING FOOTINGS IS NATIVE SOIL.
2.) SOIL ALLOWABLE BEARING PRESSURE USED IN DESIGN IS 1500 PSF.
3.) REINFORCING STEEL SHALL CONFORM TO ASTM 615, GRADE 60.
4.) THREADED RODS SHALL CONFORM TO ASTM F 1554, GRADE 36.
5.) ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE 2009 AND 2012 INTERNATIONAL BUILDING CODE & LOCAL CITY OR COUNTY REQUIREMENTS.

SPECIAL INSPECTION

1. SPECIAL INSPECTION SHALL MEET THE REQUIREMENTS OF THE 2009 AND 2012 IBC.
2. SPECIAL INSPECTORS SHALL:
   - A) BE UNDER THE SUPERVISION OF A REGISTERED DESIGN PROFESSIONAL.
   - B) OBSERVE THE WORK ASSIGNED FOR CONFORMANCE WITH THE APPROVED DRAWINGS AND SPECIFICATIONS.
   - C) FURNISH INSPECTION REPORTS TO THE ENGINEER AND BUILDING DEPARTMENT. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION; THEN IF NOT CORRECTED, TO THE ENGINEER AND BUILDING DEPARTMENT.
   - D) SUBMIT TO THE ENGINEER AND BUILDING DEPARTMENT A FINAL REPORT, SIGNED BY A REGISTERED DESIGN PROFESSIONAL, STATING THAT THE WORK WAS IN CONFORMANCE WITH THE APPROVED DRAWINGS AND SPECIFICATIONS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE 2009 IBC.
3. INSPECTION NOTES:
   - A) CONSTRUCTION INSPECTIONS LISTED ARE IN ADDITION TO THE CALLED INSPECTIONS REQUIRED BY THE 2009 INTERNATIONAL BUILDING CODE. SPECIAL INSPECTION IS NOT A SUBSTITUTE FOR INSPECTION BY A BUILDING OFFICIAL. SPECIALLY INSPECTED WORK WHICH IS INSTALLED OR COVERED WITHOUT APPROVAL OF THE BUILDING OFFICIAL IS SUBJECT TO REMOVAL OR EXPOSURE.
   - B) CONTINUOUS INSPECTION IS ALWAYS REQUIRED DURING PERFORMANCE OF THE WORK UNLESS SPECIFICALLY NOTED.
   - C) SPECIAL INSPECTORS MUST BE CERTIFIED BY THE BUILDING DEPARTMENT TO PERFORM THE TYPES OF INSPECTIONS SPECIFIED.
   - D) IT IS THE RESPONSIBILITY OF THE OWNER TO INFORM THE SPECIAL INSPECTOR OR INSPECTION AGENCY AT LEAST ONE WORKING DAY BEFORE PERFORMING ANY WORK THAT REQUIRES SPECIAL INSPECTION. ALL WORK PERFORMED WITHOUT REQUIRED SPECIAL INSPECTION IS SUBJECT TO REMOVAL.

SPECIAL INSPECTION REQUIRED

I. ANCHORS, ANCHOR BOLTS, & DOWELS
1. VERIFY MANUFACTURERS INSTALLATION REQUIREMENTS (AND TESTING) OF EPOXIED DOWELS IN CONCRETE AT (HOLDOWNS) (EXISTING FOOTINGS) (CONCRETE REPAIRS).



PLAN VIEW (FIG. 3)

NOTE: FOLLOW ALL MANUFACTURERS INSTALLATION REQUIREMENTS.

CASTILLO ENGINEERING
1205 PINE AVE, STE 201, LONG BEACH, CA 90813
T: 562-961-5600 F: 562-961-5700
WWW.CASTILLOENGINEERING.COM

CHECK AND VERIFY ALL DIMENSIONS BEFORE PROCEEDING WITH THE WORK. REPORT DISCREPANCIES TO THE ENGINEER. ALL CONSTRUCTION SHALL CONFORM TO THE C.B.C.

ENGINEER:
RCE 48888
Exp. 12-31-16
Margarito Castillo, S.E.

PROJECT:
PIKE RESIDENCE
MASON-LITE FIREPLACE
PROJECT ADDRESS:
533 MESQUITE HILLS
PALM DESERT, CA

MARK	DATE	REVISIONS
1		
2		
3		

TITLE
INDOOR FIREPLACE

JOB NO. 16-203
DRAWN : JC
CHECKED : MC
DATE : 4 JUL 16

SHEET NUMBER
S1
OF SHEETS

FIGURE 10—MASON-LITE INSTALLATION DETAILS