

City of Portland, Maine – Building or Use Permit Application 389 Congress Street, 04101, Tel: (207) 874-8703, FAX: 874-8716

Location of Construction: 2 Portland Sq		Owner: 601/Two Portland Sq, Inc.		Phone:	Permit No: 981274
Owner Address:		Lessee/Buyer's Name: Forum Financial		Phone:	BusinessName:
Contractor Name: Eastern Fire Tim Hinman		Address: 885-1400 CALL FOR PICK UP		Phone:	
Past Use: Office		Proposed Use: Same		COST OF WORK: \$ 9,648.00	PERMIT FEE: \$ 70.00
		FIRE DEPT. <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied		INSPECTION: Use Group: Type:	
		Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>	
Proposed Project Description: Install Fire Alarm 4th floor/Telecom Room		PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.) Action: Approved <input type="checkbox"/> Approved with Conditions: <input type="checkbox"/> Denied <input type="checkbox"/>		Zoning Approval: 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"/>	
Permit Taken By: SP		Date Applied For: 05 November 1998			

PERMIT ISSUED
NOV 9 1998
CITY OF PORTLAND

Zone: CBL: 03B-7-002

PERMIT ISSUED WITH REQUIREMENTS

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 provisions of the code(s) applicable to such permit

05 November 1998

SIGNATURE OF APPLICANT ADDRESS: DATE: PHONE:

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE PHONE:

Zoning Appeal
 Variance
 Miscellaneous
 Conditional Use
 Interpretation
 Approved
 Denied

Historic Preservation
 Not in District or Landmark
 Does Not Require Review
 Requires Review

Action:
 Approved
 Approved with Conditions
 Denied

Date: _____

CEO DISTRICT



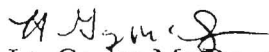
PORTLAND FIRE DEPARTMENT

Review Date: 11/6/98 Contractor: Eastern Fire

Address: 2 Portland Sq. CBL: _____

Please note marked Conditions of Approval

- * The boiler or furnace shall be protected by enclosing with one hour fire rated construction including fire doors and ceiling or by providing automatic extinguishment and smoke protected enclosure. Sprinkler piping serving not more than six sprinklers may be connected to a domestic water supply system having a capacity sufficient to provide a 0.15 gpm per sq ft of floor throughout the entire area. An indicating shut-off valve shall be installed in an accessible location between the sprinkler and the connection to the domestic water supply. Minimum pipe size shall be 3/4" copper or 1" steel. Maximum coverage area of a residential sprinkler in 144 sq ft per sprinkler.
- * All required fire alarm systems shall have the capacity of zone disconnect via switches or key pad program provided the method is approved by the Fire Prevention Bureau.
- * All remote annunciators shall have a visible trouble indicator along with the fire alarm zone indicators.
- * Any master box connected to the municipal fire alarm system shall have a supervised municipal disconnect switch.
- * All master box locations shall be approved by the Fire Dept. Director of Communications.
- * A master box shall be located so that the center of the box is five feet above finished floor.
- * All master box locations are required to have a Knox box.
- * A fire alarm acceptance report shall be submitted to the Portland Fire Department.
- * All underground tank removal(s) and/or installation(s) shall be done in accordance with the Department of Environmental Protection and Regulation (Chapter 691).
- * No cutting of tanks on site. Cutting of tanks to be done at an approved disposal site.
- * The fire dispatcher must be notified at least 48 hrs in advance of removal or transportation of tanks.
- * All above ground L/P tanks shall be located in accordance with NFPA 58 standards.
- * Any tank located near the path of vehicle movement shall be protected.
- * All piping shall be protected from possible mechanical damage and vandalism.
- * A 4" storz fire department connection is required.
- * Any renovation of sprinkler system over 20 heads must have State Fire Marshall approval.
- * A sprinkler performance test shall be submitted to the P.F.D. after completion of work.
- * State Fire Marshall approval is required for this project.



Lt. Gaylen Mc Dougall

Portland Fire Prevention Bureau

THIS IS NOT A PERMIT/CONSTRUCTION CANNOT COMMENCE UNTIL THE PERMIT IS ISSUED

**Building or Use Permit Pre-Application
Attached Single Family Dwellings/Two-Family Dwelling
Multi-Family or Commercial Structures and Additions Thereto**

In the interest of processing your application in the quickest possible manner, please complete the Information below for a Building or Use Permit.

NOTEIf 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 (include Portion of Building): <i>2 Portland Sq 4th Fl Telecom Room</i>			
Total Square Footage of Proposed Structure		Square Footage of Lot	
Tax Assessor's Chart, Block & Lot Number Chart# <i>30</i> Block# <i>B</i> Lot# <i>2</i>		Owner: <i>FORUM FINANCIAL</i>	Telephone#:
Owner's Address: <i>TWO PORTLAND SQUARE</i>		Lessee/Buyer's Name (If Applicable)	Cost Of Work: <i>\$ 9648</i> Fee <i>\$ 70</i>
Proposed Project Description:(Please be as specific as possible) <i>Install Fire Alarm</i>			
Contractor's Name, Address & Telephone <i>EASTERN FIRE Eq., SCARBOROUGH, ME # 885-1400</i>			Rec'd By: <i>Tim Hinman</i>
Current Use: <i>Office</i>		Proposed Use: <i>Same</i>	

Separate permits are required for Internal & External Plumbing, HVAC and Electrical installation.

- All construction must be conducted in compliance with the 1996 B.O.C.A. Building Code as amended by Section 6-Art II.
- All plumbing must be conducted in compliance with the State of Maine Plumbing Code.
- All Electrical Installation must comply with the 1996 National Electrical Code as amended by Section 6-Art III.
- HVAC(Heating, Ventilation and Air Conditioning) installation must comply with the 1993 BOCA Mechanical Code.

You must include the following with you application:

- 1) A Copy of Your Deed or Purchase and Sale Agreement
- 2) A Copy of your Construction Contract, if available
- 3) A Plot Plan/Site Plan

Minor or Major site plan review will be required for the above proposed projects. The attached checklist outlines the minimum standards for a site plan.

4) Building Plans

Unless exempted by State Law, construction documents must be designed by a registered design professional.

A complete set of construction drawings showing all of the following elements of construction:

- Cross Sections w/Framing details (including porches, decks w/ railings, and accessory structures)
- Floor Plans & Elevations
- Window and door schedules
- Foundation plans with required drainage and dampproofing
- Electrical and plumbing layout. Mechanical drawings for any specialized equipment such as furnaces, chimneys, gas equipment, HVAC equipment (air handling) or other types of work that may require special review must be included.

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/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: <i>Brian Anderson</i>	Date: <i>11-4-98</i>
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Building Permit Fee: \$25.00 for the 1st \$1,000.cost plus \$5.00 per \$1,000.00 construction cost thereafter.

Additional Site review and related fees are attached on a separate addendum

Call for info





MATERIAL SAFETY DATA SHEET

EMERGENCY TELEPHONE (501) 862-5141

IDENTITY - FM-200™
(1,1,1,2,3,3,3-Heptafluoropropane)

SECTION I - PRODUCT INFORMATION

MANUFACTURER'S NAME - GREAT LAKES CHEMICAL CORPORATION

TELEPHONE NUMBER FOR INFORMATION - (317) 497-6100

WHMIS HAZARD CLASS AND DIVISION - A.

CAS REGISTRY NO. 431-89-0 DATE PREPARED 10/94

FORMULA C₃HF₇ SUPERSEDES 5/93

CHEMICAL FAMILY - Halogenated Alkane

PRODUCT USE - Fire extinguishing, fire suppression, explosion suppression and inerting agent

PREPARED BY - Regulatory Affairs Department
Great Lakes Chemical Corporation
West Lafayette, Indiana 47906

This product is being commercially manufactured under a TSCA Section 5 Consent Order. The Significant New Use Rule (SNUR) for this chemical can be located in 40 CFR Part 721.8125. For use as an ODC alternative, consult 40 CFR Part 82.170 for approved SNAP uses or contact Great Lakes Chemical Corporation.

SECTION II

HAZARDOUS COMPONENTS (Specify Chemical Identity: Common Names)

<u>COMPONENT</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits Recommended</u>	<u>Optional</u>
1,1,1,2,3,3,3-Heptafluoropropane	Not estbl.	Not estbl.	Not estbl.	>99

GLCC Product Code: 109

Incompatibility (Materials to Avoid)

Powdered metals (ex. Al, Mg, or Zn) and strong alkalis, oxidizers or reducing agents are not compatible with this and most other halogenated organic compounds.

Hazardous Decomposition or Byproducts

Decomposition by elevated temperatures (fire conditions, glowing metal surfaces) may generate hazardous decomposition products common to other CFCs, HCFCs or HBFCs. These can include hydrogen fluoride, carbon monoxide, carbon dioxide and others.

Hazardous Polymerization

May Occur _____ Will Not Occur _____ X _____

Conditions to Avoid: None

SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry:

Inhalation? Yes Skin? No Ingestion? No

Health Hazards (Acute and Chronic):

The human health hazards of this product are expected to be similar to other liquified gases including N₂, CO₂, CFCs, HCFCs, and HBFCs. Therefore, direct eye or skin contact with the liquid or cold gas can cause chilling or possibly frostbite of exposed tissues. Inhalation of high concentrations can be harmful or fatal due to oxygen deprivation and/or heart irregularities (arrhythmias). Misuse of the product by deliberately inhaling high concentrations of this gas could cause death without warning. Persons with preexisting cardiac or central nervous system disorders may be more susceptible to effects of an overexposure. The use of epinephrine or similar compounds can increase susceptibility to heart irregularities caused by excessive exposure to these types of compounds.

Animal studies have found the rat 4 hour LC₅₀ to be >788,696 ppm (~80%), the highest level tested. A cardiac sensitization study in dogs found the NOEL, NOAEL, and LOAEL to be 7.0%, 9.0%, and 10.5% (vol. gas/vol. air) respectively. A 90 day inhalation study did not find any exposure related effects at 105,000 ppm (10.5% vol./vol.), the highest level tested. Inhalation studies looking for developmental effects on pregnant rabbits and rats or their offspring did not show any exposure related effects at the highest concentration tested (105,000 ppm).

Precautions to be Taken in Handling and Storing

Use the same type of precautions as would be used in handling any cryogenic gas. Protect container from damage. Handle in well-ventilated areas. When this material is used as a firefighting agent in fixed or portable extinguishing systems, follow the manufacturer's instructions for operation, inspection, maintenance and repair of the system.

Other Precautions

DOT: Proper Shipping Name: Compressed gases, n.o.s.
(Halogenated alkane)
Hazard Class\Division: 2.2
Packing Group: Not applicable
Identification Number: UN1956
Label: Nonflammable gas

SECTION VIII - CONTROL MEASURES

Respiratory Protection

Wear a NIOSH/MSHA approved self-contained breathing apparatus in emergency situations.

Ventilation

Local Exhaust - Use to minimize exposure to gas.

Mechanical - Use for general area control.

Special - None

Other - None

Protective Gloves - Use lined neoprene gloves if handling liquid.

Eye Protection - Chemical splash goggles when handling liquid

Other Protective Equipment - None

Work Hygienic Practices - Ensure piping is empty before doing maintenance work.

Information on this form is furnished solely for the purpose of compliance with OSHA's Hazard Communication Standard, 29CFR 1910.1200 and The Canadian Environmental Protection Act, Canada Gazette Part II, Vol. 122, No. 2 and shall not be used for any other purpose.

EASTERN FIRE EQUIPMENT, INC.

4 WASHINGTON AVE.
SCARBOROUGH, ME 04074
TEL 207-885-1400/800-720-7192
FAX 207-885-1530

38-B-002
98-1274

FORUM FINANCIAL GROUP

FM-200 SYSTEM

TELECOMMUNICATIONS ROOM

Owner: Forum Financial Group

Location: Two Portland Square
Portland, ME 04101

Protected Space: Telecommunications room with computers, switchgear and a "UPS" system. Area: 438 sq.ft. Volume: 3,723 cu.ft.

System Type: Automatic electric total flooding per NFPA 2001 and 72.

Manufacturer: Kidde-Fenwal, Inc.

System Design: Temperature: 70 degrees F., controlled

Minimum design concentration: 7.0%

Actual design concentration: 7.35%, 134 lbs. of FM-200 agent

Kidde-Fenwal "ECS" computer flow calcs, version 2.20, (U.L. EX 4674, FMRC File J.I.0D0A1.AF)

Enclosure Integrity: A. Enclosure penetrations and openings will be sealed by Owner, responsible trades, or Others.

B. Primary room AC is recirculating, and building AC system ducts are fitted with electro-thermal links and dampers that will be closed by the FM-200 control panel.

Alarms: System includes local horn-strobe alarm indicators and a connection to the building fire alarm system.

Parts:	(1)	90-100200-001	200# cylinder/valve assembly
	(1)	292971	200# cylinder strap
	(134)	90-190000-001	lbs. FM-200 agent
	(1)	283899	2" flexible discharge hose
	(1)	90-194026-266	1-1/4", 360 degree discharge nozzle
	(1)	90-194025-234	1", 360 degree discharge nozzle
	(1)	06-231865-739	FM-200 warning sign
	(1)	890181	24 VDC control head

EASTERN FIRE EQUIPMENT, INC.

4 WASHINGTON AVE.

SCARBOROUGH, ME 04074

TEL 207-885-1400/800-720-7192

FAX 207-885-1530

(2)

(1)	295001	"Gemini" control panel
(2)	220266	12 volt battery
(1)	295008	auxiliary relay board, 4 SPDT relays
(1)	70-510000-001	ionization smoke detector
(1)	71-550000-001	photoelectric smoke detector
(2)	70-501000-001	2 wire detector base
(1)	84-100007-001	pull station
(1)	75-000014-002	horn/strobe alarm indicator
(1)	75-000011-004	horn/strobe alarm indicator

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Kidde ECS Series - Version 2.20
UL EX 4674, FMRC File J.I. 0D0A1.AF (P/N 90-190001-220)
Project: TELECOMMUNICATIONS ROOM FM-200 SYSTEM
File Name: C:\KID220\PROJECTS\FORUM01.FLC
Calculation Date/Time: Nov 3, 1998, 9:14:28 AM

Project Report

---- Distributor ----

Name: EASTERN FIRE EQUIPMENT
Address: 4 WASHINGTON AVE
: SCARBOROUGH ME 04074
: TIM HINMAN
Phone: 207-885-1400

---- Customer ----

Name: FORUM FINANCIAL GROUP
Address: TWO PORTLAND SQUARE
: P.O. BOX 446
: PORTLAND, ME 04112-0446

Phone: 879-1900
Contact: DAN McKEOWN
Title: TELECOMMUNICATIONS MANAGER

---- Project ----

Project: TELECOMMUNICATIONS ROOM FM-200 SYSTEM
Designer: TIM HINMAN
Number:
Account:
Location: 4TH FLOOR

Desc.: FM-200 SYSTEM FOR 4TH FLOOR TELECOMMUNICATIONS
ROOM.

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Calculation Date/Time: Nov 3, 1998, 9:14:28 AM

Enclosure Report

Elevation: 0 ft (relative to sea level)
Atmospheric Correction Factor: 1

Enclosure Number: 1
Name: TELECOMMUNICATIONS ROOM
Enclosure Temperature...
Minimum: 70 F
Maximum: 70 F
Maximum Concentration: 7.355 %
Design Concentration...
Adjusted: 7.350 %
Minimum: 7.000 %
Minimum Agent Required: 127.1 lbs

Width: 0.0 ft
Length: 0.0 ft
Height: 0.0 ft

Volume: 3723.0 cubic ft
Non-permeable: 0.0 cubic ft

Total Volume: 3723.0 cubic ft

Adjusted Agent Required: 134.0 lbs
Number of Nozzles: 2

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File Name: C:\KID220\PROJECTS\FORUM01.FLC
Calculation Date/Time: Nov 3, 1998, 9:14:28 AM

Agent Source Report

Agent: FM-200 / Propellant N2
(FM-200 is a Trademark of the Great Lakes Chemical Corp.)
Adjusted Agent Required: 134.0 lbs
Container Name: 200 lb. Cylinder
Container Part Number: 90-100200-001
Number of Main Containers: 1
Number of Reserve Containers: 0
Manifold: No Manifold
Pipe Take Off Direction: Up
Agent Per Container: 134.0 lbs
Fill Density: 46.9 lbs / cubic ft
Container Empty Weight: 139 lbs
Weight, All Containers + Agent: 273 lbs
Floor Area Per Container: 1.01 square ft
Floor Loading Per Container: 271 lbs / square ft

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 Project: TELECOMMUNICATIONS ROOM FM-200 SYSTEM
 File Name: C:\KID220\PROJECTS\FORUM01.FLC
 Calculation Date/Time: Nov 3, 1998, 9:14:28 AM

Pipe Network Report

PART 1 - PIPE

Description	---Node--		Type	Diameter	Pipe -----	
	Start	End			Length	Elevation
Main Cyl. X 1	0	1		2 in	3.63 ft	3.63 ft
Pipe	1	2	40T	1-1/2 in	3.38 ft	4.96 ft
Pipe	2	3	40T	1-1/2 in	19.50 ft	-
Pipe	3	4	40T	1-1/2 in	3.92 ft	-
Pipe	4	5	40T	1 in	10.75 ft	-
Pipe/E1-N2	5	6	40T	1 in	0.66 ft	-0.66 ft
Pipe	4	7	40T	1-1/4 in	6.75 ft	-
Pipe/E1-N1	7	8	40T	1-1/4 in	0.66 ft	-0.66 ft

PART 2 - EQUIVALENT LENGTH

-Node--		----- Pipe Parts -----						--- Equivalent Length ---	
Str	End	90	45	Thru	Side	Union	Other	Added	Total
0	1	-	-	-	-	-	-	-	65.0 ft
1	2	-	-	-	-	-	Flex Hose	-	3.4 ft
2	3	1	-	-	-	-	-	-	23.8 ft
3	4	1	-	-	-	-	-	-	8.2 ft
4	5	-	-	-	1	-	-	-	16.5 ft
5	6	1	-	-	-	-	-	-	3.5 ft
4	7	-	-	-	1	-	-	-	14.3 ft
7	8	1	-	-	-	-	-	-	4.4 ft

PART 3 - NOZZLE

-Node--		----- Nozzle -----					
Str	End	Flow	Name	Diameter	Type	Nozzle Area	
0	1	134.0 lbs					
1	2	134.0 lbs					
2	3	134.0 lbs					
3	4	134.0 lbs					
4	5	57.0 lbs					
5	6	57.0 lbs	E1-N2	1 in	360 Degree	0.3440 square in	
4	7	77.0 lbs					
7	8	77.0 lbs	E1-N1	1-1/4 in	360 Degree	0.4433 square in	

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Part List Report

Total Agent Required: 134.0 lbs
 Container Name: 200 lb. Cylinder
 Number Of Containers: 1

Name	Nozzle Area	Part Number
E1-N1	0.4433 square in	90-194026-266
E1-N2	0.3440 square in	90-194025-234

Pipe:	Type	Diameter	Length
	40T	1 in	11.41 ft
	40T	1-1/4 in	7.41 ft
	40T	1-1/2 in	26.80 ft

'Other' Items:
 1 (2 in) - Flex Hose

List of 90 degree elbows:
 1 - 1 in
 2 - 1-1/2 in
 1 - 1-1/4 in

List of Tees:
 1 - 1-1/2 in

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System Acceptance Report

System Discharge Time: 9.6 seconds
 Percent agent in pipe: 39.81%
 Percent agent before 1st Tee: 30.30%

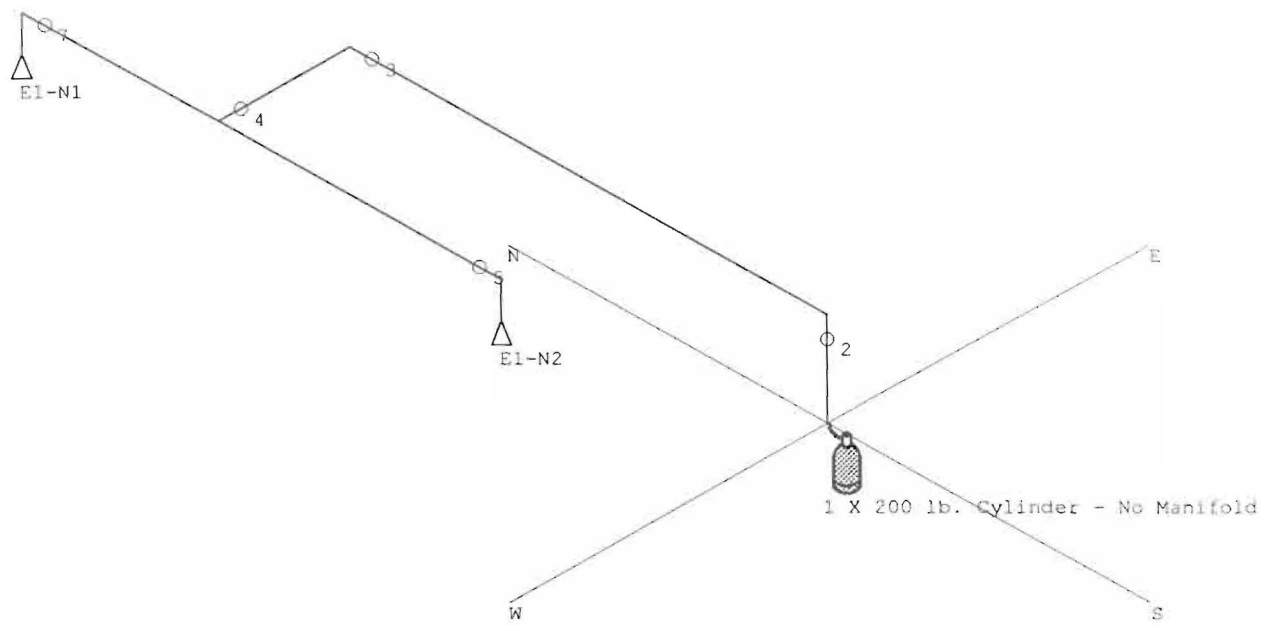
Enclosure Number: 1
 Enclosure Name: TELECOMMUNICATIONS ROOM

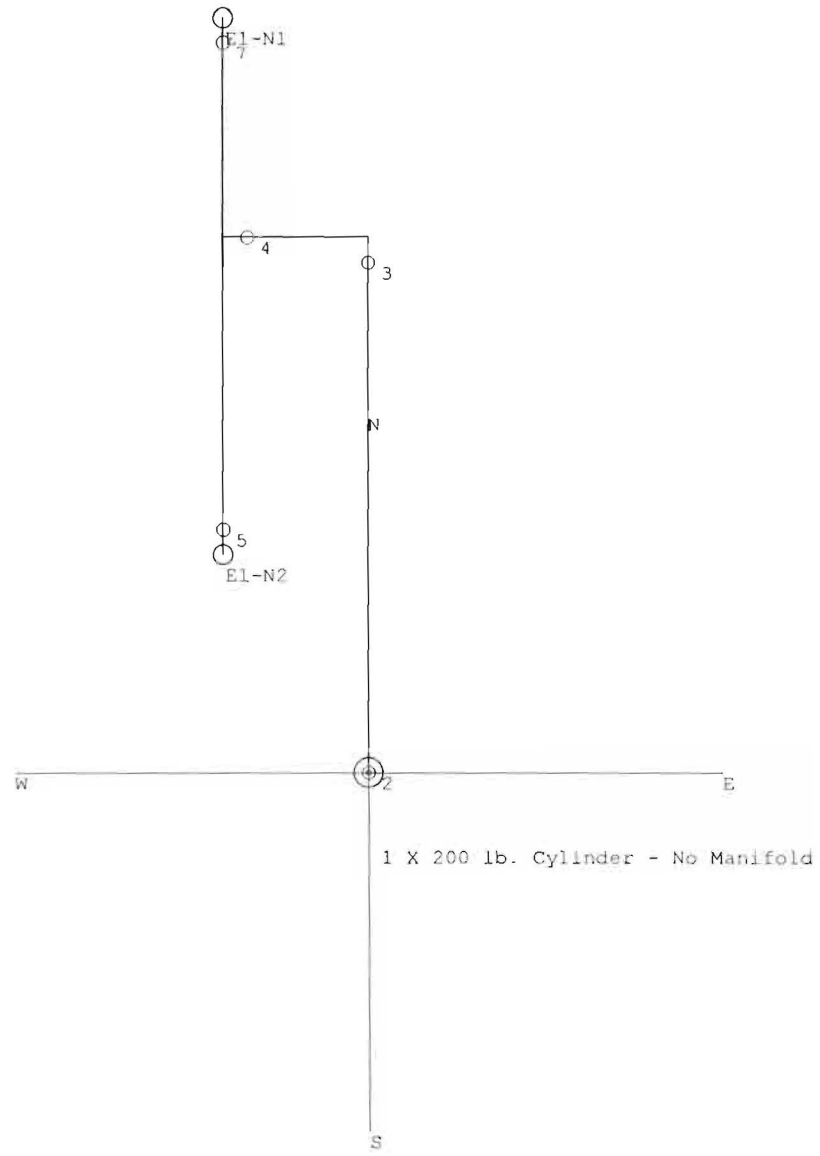
Minimum Design Concentration: 7.000%
 Adjusted Design Concentration: 7.350%
 Predicted Concentration: 7.355%
 Maximum Expected Agent Concentration: 7.355% (At 70 F)

Nozzle	Minimum Agent Required	Adjusted Agent Required	Predicted Agent Delivered	Nozzle Pressure (Average)
E1-N1	73.0 lbs	77.0 lbs	77.0 lbs	155 psig
E1-N2	54.1 lbs	57.0 lbs	57.0 lbs	146 psig

End of Report

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Isometric View #: 1 Standard Isometric View
File Name: C:\KID220\PROJECTS\FORUM01.FLC
Calculation Date/Time: 11/3/98 9:14:28 AM
Page: 7





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Isometric View #: 9 Standard Elevation View
File Name: C:\KID220\PROJECTS\FORUM01.FLC
Calculation Date/Time: 11/3/98 9:14:28 AM
Page: 9

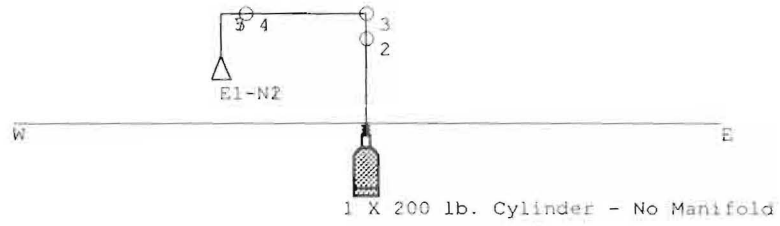


TABLE 2. WORKSHEET FOR CALCULATING STANDBY BATTERY REQUIREMENTS

Fill in blank spaces where applicable and complete multiplication

DEVICETYPE	NO. OF DEVICES	CURRENT PER DEVICE	TOTAL DEVICE CURRENT
1 INTERNAL LOAD (INCLUDES COMMON CONTROL BOARD)			0.100 A
2 TOTAL STANDBY CURRENT FOR			
a) SUPPRESSION CONTROL BOARD	1	× 160 A	.16 A
b) TWO-ZONE BOARD		× .035 A	A
c) FOUR-ZONE BOARD		× .075 A	A
d) ALARM AUXILIARY BOARD		× .025 A	A
e) CITY BOX		× .025 A	A
f) REVERSE POLARITY		× 100 A	A
g) SPRINKLER SUPERVISION BOARD		× .010 A	A
h) OTHER		× A	A
i) OTHER		× A	A
3 4 WIRE SMOKE DETECTORS	2	× 0.060 1000 A	.00012 A
4 4 WIRE SMOKE DETECTORS SUPERVISORY RELAY P/N 220393		× 0.020 A	A
5 STANDBY CURRENT LOAD (SUM OF LINES 1 THROUGH 4)			.26012 A
6 TOTAL ALARM CONDITION LOAD (ENTER SUM FROM LINE 8 OF TABLE 1)			1.588 A

BATTERY CALCULATION CHART

7 MULTIPLY LINE 5 BY THE REQUIRED HOURS OF STANDBY (* and **)	.26012 A	× 24 H	= 6.24 AH
8 MULTIPLY LINE 6 BY THE REQUIRED HOURS OF ALARM (** and ***)	1.588 A	× 1/12 H	.13 AH
9 MINIMUM BATTERY CAPACITY [(LINE 7 + LINE 8) × 1.1]	6.24 + .13 = 6.37	× 1.1	= 7.0 AH

- * NFPA 72A requires 24 hours minimum of battery operating capacity in normal condition. NFPA 72B AND 72C require 60 hours of standby battery capacity.
 - ** NFPA 72A requires 1/12 hour (5 minutes) minimum of battery operating capacity in alarm condition.
 - *** Factory Mutual requires 90 hours of battery operating capacity in normal condition and 30 minutes during alarm conditions when the Gemini Panel is used as a deluge or preaction sprinkler system.
- NOTE: When an Auxiliary Power Supply is used, separate batteries of equal amp-hour rating must be provided for each power supply. Total amp-hour capacity must meet or exceed that specified in line 9 above.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	-16.4°C (3°F)
Specific Gravity (water=1)	1.46
Vapor Pressure (mm Hg)	58.8 psia at 70°F (21°C)
Melting Point	-131°C (-204°F)
Vapor Density (AIR=1)	6.04
Evaporation Rate (Butyl Acetate=1)	Not Available
Solubility in Water	260 mg/L
Appearance and Odor	Colorless gas, odorless

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)	Nonflammable gas
Flammable Limits	
LEL	Not Applicable
UEL	Not Applicable

Extinguishing Media

All conventional media are suitable.

Special Fire Fighting Procedures

Keep cylinders cool with a water spray applied from a safe distance. Use a self-contained breathing apparatus if containers rupture or release under fire conditions. Do not allow reentry into areas where this material has been released without first ventilating to remove products of combustion/decomposition.

Unusual Fire and Explosion Hazards

Although containers of our product are provided with pressure and temperature relief devices, containers can rupture if exposed to localized heat. Thermal decomposition will generate toxic and corrosive gases. See Section V for details.

SECTION V - REACTIVITY DATA

Stability Stable X Unstable _____

Conditions to Avoid: None known

Incompatibility (Materials to Avoid)

Powdered metals (ex. Al, Mg, or Zn) and strong alkalis, oxidizers or reducing agents are not compatible with this and most other halogenated organic compounds.

Hazardous Decomposition or Byproducts

Decomposition by elevated temperatures (fire conditions, glowing metal surfaces) may generate hazardous decomposition products common to other CFCs, HCFCs or HBFCs. These can include hydrogen fluoride, carbon monoxide, carbon dioxide and others.

Hazardous Polymerization

May Occur _____ Will Not Occur _____ X _____

Conditions to Avoid: None

SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry:

Inhalation? Yes Skin? No Ingestion? No

Health Hazards (Acute and Chronic):

The human health hazards of this product are expected to be similar to other liquified gases including N₂, CO₂, CFCs, HCFCs, and HBFCs. Therefore, direct eye or skin contact with the liquid or cold gas can cause chilling or possibly frostbite of exposed tissues. Inhalation of high concentrations can be harmful or fatal due to oxygen deprivation and/or heart irregularities (arrhythmias). Misuse of the product by deliberately inhaling high concentrations of this gas could cause death without warning. Persons with preexisting cardiac or central nervous system disorders may be more susceptible to effects of an overexposure. The use of epinephrine or similar compounds can increase susceptibility to heart irregularities caused by excessive exposure to these types of compounds.

Animal studies have found the rat 4 hour LC₅₀ to be >788,696 ppm (~80%), the highest level tested. A cardiac sensitization study in dogs found the NOEL, NOAEL, and LOAEL to be 7.0%, 9.0%, and 10.5% (vol. gas/vol. air) respectively. A 90 day inhalation study did not find any exposure related effects at 105,000 ppm (10.5% vol./vol.), the highest level tested. Inhalation studies looking for developmental effects on pregnant rabbits and rats or their offspring did not show any exposure related effects at the highest concentration tested (105,000 ppm).



MATERIAL SAFETY DATA SHEET

EMERGENCY TELEPHONE (501) 862-5141

IDENTITY - FM-200™
(1,1,1,2,3,3,3-Heptafluoropropane)

SECTION I - PRODUCT INFORMATION

MANUFACTURER'S NAME - GREAT LAKES CHEMICAL CORPORATION

TELEPHONE NUMBER FOR INFORMATION - (317) 497-6100

WHMIS HAZARD CLASS AND DIVISION - A.

CAS REGISTRY NO. 431-89-0 DATE PREPARED 10/94

FORMULA C₃HF₇ SUPERSEDES 5/93

CHEMICAL FAMILY - Halogenated Alkane

PRODUCT USE - Fire extinguishing, fire suppression, explosion suppression and inerting agent

PREPARED BY - Regulatory Affairs Department
Great Lakes Chemical Corporation
West Lafayette, Indiana 47906

This product is being commercially manufactured under a TSCA Section 5 Consent Order. The Significant New Use Rule (SNUR) for this chemical can be located in 40 CFR Part 721.8125. For use as an ODC alternative, consult 40 CFR Part 82.170 for approved SNAP uses or contact Great Lakes Chemical Corporation.

SECTION II

HAZARDOUS COMPONENTS (Specify Chemical Identity: Common Names)

<u>COMPONENT</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Other Limits Recommended</u>	<u>Optional</u>
1,1,1,2,3,3,3-Heptafluoropropane	Not estbl.	Not estbl.	Not estbl.	>99

GLCC Product Code: 109

KIDDE FM-200 FIRE SUPPRESSION SYSTEMS

TYPICAL APPLICATIONS

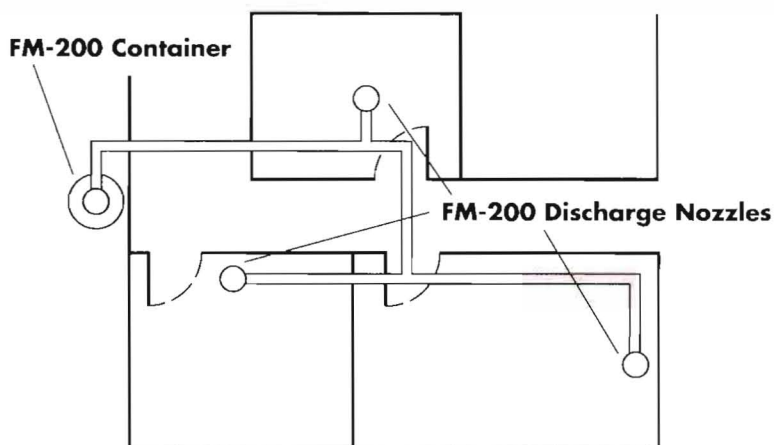
- Chemical Storage Areas
- Cleanrooms
- Communications Facilities
- Computer Areas
- Data Processing Libraries
- Emergency Power Facilities
- Laboratories
- Libraries
- Manufacturing Processes
- Museums
- Process Control Centers
- Records Storage Rooms
- Robotics
- Telephone Equipment Rooms

DESIGN CRITERIA

Kidde FM-200 Systems are recommended where one or more of the following conditions are involved:

- Either the value of the area's contents or the area's importance to business continuity requires a fire suppression system that can react in seconds.
- Water sprinklers are not available, or if present, may damage the contents of the area to be protected.
- Personnel occupy the area to be protected.
- There is a need for a fire suppression system that employs an agent requiring no post fire cleanup.
- There is a limited amount of storage space for the extinguishing agent containers.

TYPICAL INSTALLATION



Engineered Central Storage System—Three Protected Spaces

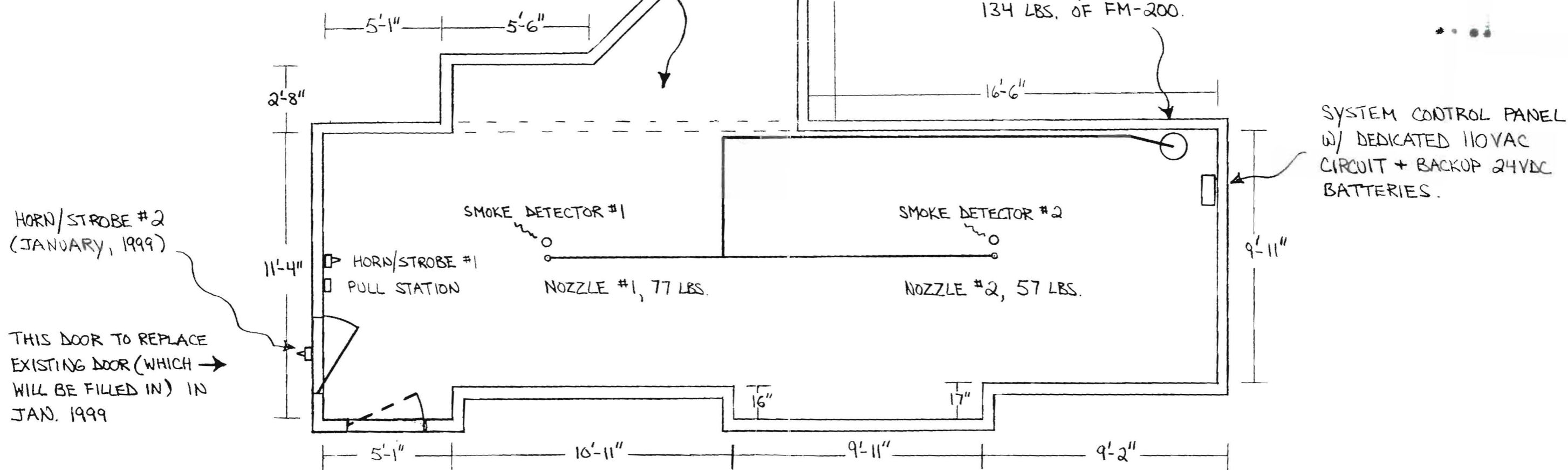
This literature is provided for informational purposes only. Actual performance is based on proper application of the product by a qualified professional.

INSTALLED AND SERVICED BY:

This literature is provided for informational purposes only. KIDDE-FENWAL, INC. assumes no responsibility for the product's suitability for a particular application. The product must be properly applied to perform as described herein.

If you need more information on this product, or if you have a question, contact KIDDE-FENWAL, INC., Ashland, MA 01721. (508) 881-2000.

LINES REPRESENTS THE JANUARY 1999 EXPANSION OF APPROX. 68 SQ. FT. AND 578 C.F.T. THE INITIAL DESIGN INCLUDES FM-200 AGENT FOR THIS AREA, SO THAT THE CONCENTRATION FOR THE INITIAL VOLUME IS $\approx 8\frac{1}{2}\%$.



- NOTES:
1. THE ACT CEILING HEIGHT THROUGHOUT THE SPACE IS 8'-6"
 2. THE AREA ABOVE THE ACT IS A PLENUM, AND ANY SYSTEM WIRING/CABLE SHALL BE PLENUM RATED
 3. THE SYSTEM OUTPUTS SHALL INCLUDE: A. AN ALARM SIGNAL TO THE MAIN BUILDING ALARM PANEL AT THE 2ND FLOOR, B. CONNECTIONS TO 3 ELECTRO-THERMAL LINKS TO CLOSE HVAC DAMPERS SERVING THE SPACE.

FORUM FINANCIAL		
FM-200 SYSTEM, 4TH FL. TELECOM ROOM		
SCALE: $\frac{1}{4}'' = 1'$	APPROVED BY:	DRAWN BY: TEH
DATE: 10.30.98		REVISED:
 Eastern Fire Equipment, Inc. 4 Washington Avenue Scarborough, Me 04074		DRAWING NUMBER: 1 OF 1