CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0014857

Insp Area: 1

Site Address: 2800 J ST SAC
Parcel No: 007-0113-001

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

CONTRACTOR
PRIDE COMPANIES
4448 AMBROSE AVE
LA CA 900027

OWNER
JOSEPH MARY A GEMSCH REVOCA
3171 RIVERSIDE BL
SACRAMENTO CA 95818

ARCHITECT

Nature of Work: REPLACE ANSL SYSTEM IN EXISTING HOOD WITH A PYRO-CHEM FIRE SUPPRESION SYSTEM.

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'sAddress_____

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 C16 License Number 684434 Date 12/18/00 Contractor Signature _____

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 herby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

X Date 12/18/00 X Applicant/Agent Signature _____

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, forthe performance of work for which the permit is issued.

X KC 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 STATE FUND Policy Number 495-99 UNIT 0000253 Exp Date 07/01/2001

___ (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 12/18/00 X Applicant Signature _____

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 # 0014857 Insp. Area 1C

Applicant MUST complete ALL Unshaded areas

ADDRESS ARROWS #118 1800 I STREET SAC Suite _____
PARCEL # 007-0113-001

684434 C16

CONTACT	LICENSED CONTRACTOR Lic No. # 684434 C-16
Name GEORGE KHALIL	Name PRIDE COMPANIES
Street Address 4448 AMBROSE AVE	Address 4448 AMBROSE AVE
City/State/Zip LA CA 90027	City/State/Zip LA CA 90027
Phone 323 662 8171 FAX 323 661 2128	Phone 323 662 8171 FAX 323 661 2128
E-mail: PRIDEUSA@PACBELL.NET	E-mail: PRIDEUSA@PACBELL.NET
ARCHITECT/ENGINEER	**OWNER**
Name GEORGE KHALIL	Name LILIT MARZBETUNY
Address 4448 AMBROSE AVE	Address P O BOX 29369 L
City/State/Zip LA CA 90027	City/State/Zip LA CA 90029
Phone 323 662 8171 FAX 323 661 2128	Phone 323 913 7355 FAX
E-mail:	E-mail:

→ Will permittee have any employees on the jobsite? ☐ No ☒ Yes → INSURANCE CO: GENESIS INDEMNITY

→ WORKER'S COMPENSATION POLICY # 496-99 UNITO00053 EXPIRATION DATE: 7/1/01

NATURE OF WORK IN DETAIL: INSTALL FIRE PROTECTION SYSTEM IN HOOD ABOVE COOKING LINE TO PROVIDE FIRE PROTECTION OF KITCHEN APPLIANCES

OCCUPANT/TENANT: CARROWS #118 VALUATION: $ 5400.00

FLOOD STATUS: S.C.A.T. 311

JOB DESCRIPTION: BLDG SHELL APT TI( ) REM(X) SW FIRE ADD OTH

INSPECTION DISCIPLINES	BLDG	MECH	PLUMB	ELEC	SITE	FIRE

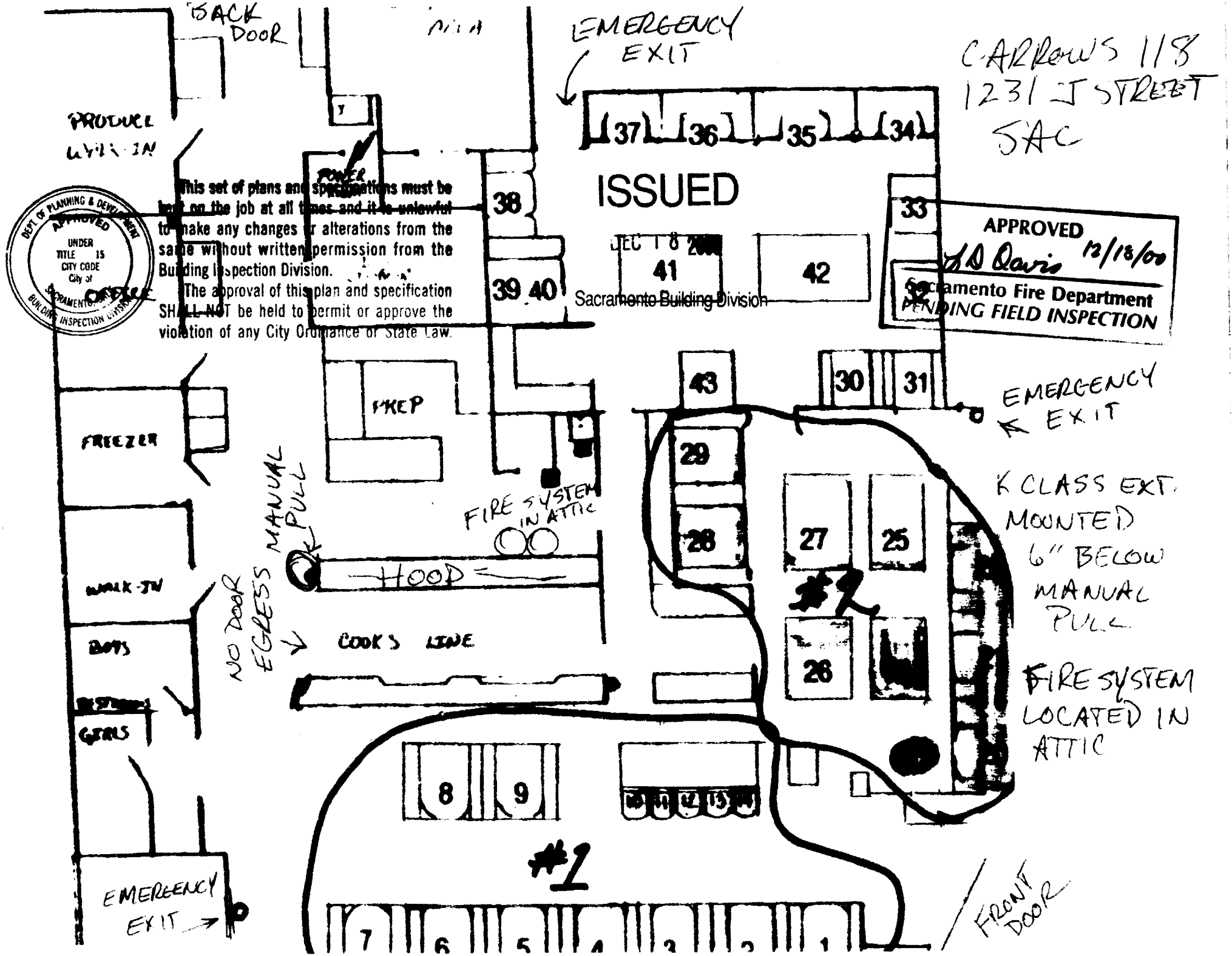
# Stories	1st flrArea.	Total Area	Use Zone	Occp Group	Const type	Fire Req. Y/N SPR	ALARM	Fed Code	Vio. File [H] [Quad]

B	L	P	M	E	F	S	D	PW	UTIL
					BLDG				

COMMENTS: 12/18/00

REGIONAL SANITATION FEES? ☐ Yes ☐ No HEALTH DEPARTMENT? ☐ Yes ☐ No

WATER FLOW TEST FOR NEW BUILDINGS OR ADDITIONS? ☐ Provided ☐ Faxed


BACK DOOR
EMERGENCY EXIT
CARROWS 1/8
1231 I STREET
SAC
PRODUCE WALK-IN
37 36 35 34
ISSUED
This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations from the same without written permission from the Building Inspection Division.
The approval of this plan and specification SHALL NOT be held to permit or approve the violation of any City Ordinance or State Law.
DEPT OF PLANNING & DEVELOPMENT APPROVED UNDER TITLE 15 CITY CODE City of SACRAMENTO BUILDING INSPECTION DIVISION
38
39 40
41
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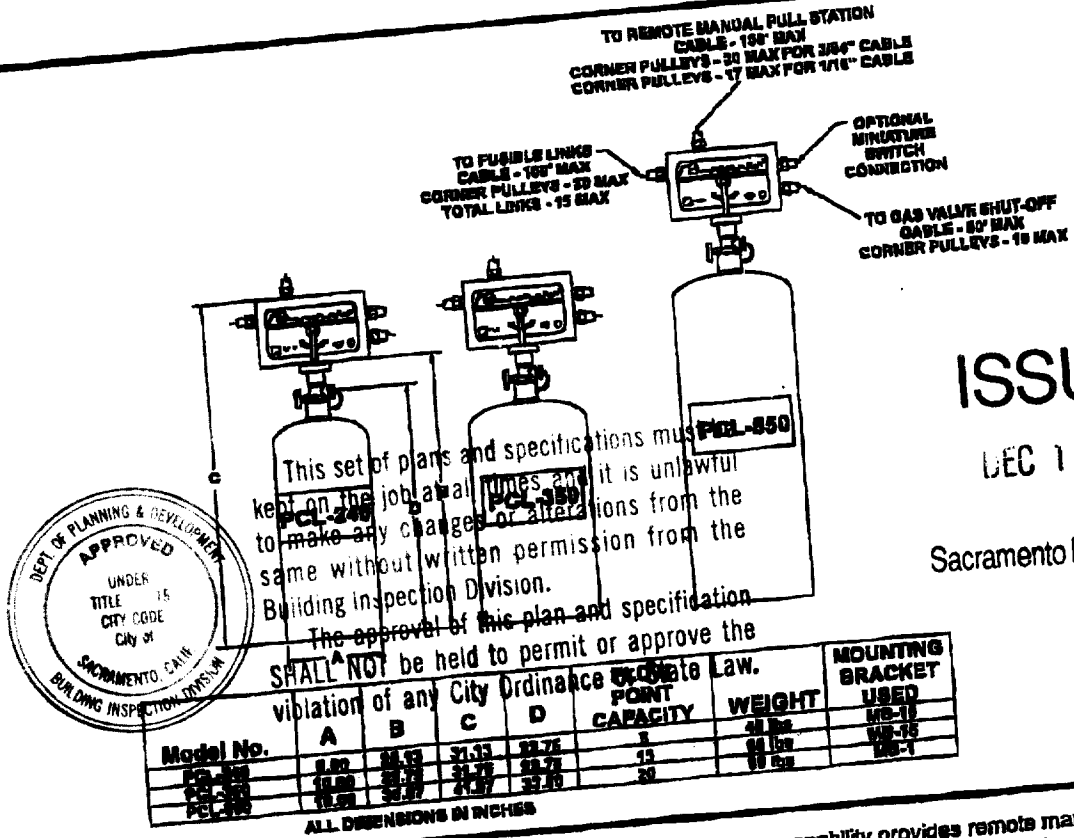
32
DEC 18 2000
Sacramento Building Division
APPROVED 12/18/00
Sacramento Fire Department
PENDING FIELD INSPECTION
43
30 31
EMERGENCY EXIT
PREP
FREEZER
29
28
27
25
K CLASS EXT. MOUNTED 6" BELOW MANUAL PULL
MANUAL PULL
FIRE SYSTEM IN ATTIC
HOOD
#2
WALK-IN
NO DOOR EGRESS
COOK'S LINE
BOYS
GIRLS
26
FIRE SYSTEM LOCATED IN ATTIC
8 9
#1
EMERGENCY EXIT
7 6 5 4 3 2 1
FRONT DOOR

Engineer and Architect Specifications

Kitchen Knight™
Wet Chemical
Restaurant Kitchen Fire
Suppression System

TM



Model No.	A	B	C	D	POINT CAPACITY	WEIGHT	MOUNTING BRACKET USED
PCL-250	8.00	14.13	21.13	28.75	5	41 lbs	MB-1B
PCL-350	10.00	22.17	21.13	28.75	15	51 lbs	MB-1B
PCL-450	10.00	22.17	21.17	33.10	20	59 lbs	MB-1

ALL DIMENSIONS IN INCHES

General

The Kitchen Knight™ Restaurant Kitchen Fire Suppression System is a pre-engineered solution to appliance and ventilating hood and duct grease fires. The system is designed to maximize hazard protection, reliability, and installation efficiency. Automatic or manual system activation releases a throttle discharge of potassium carbonate solution on the protected area in the form of fine droplets to extinguish the fire and prevent reignition after the discharge is complete.

System Operation

The Kitchen Knight™ Restaurant Kitchen Fire Suppression System has been designed for protecting kitchen hood, plenum, exhaust duct, grease filters, and cooking appliances (such as fryers, griddles, rangetops, upright broilers, charbroilers and woks) from grease fires. The versatile state-of-the-art wet chemical distribution technique, combined with dual, independent activation capability - automatic fusible link or manual release - provides efficient, reliable protection the moment a fire is detected. Once initiated, the pressurized wet chemical extinguishing agent cylinder expels a potassium carbonate solution through a pre-engineered piping network and out the discharge nozzles. The wet chemical discharge pattern is maintained for a duration of time to ensure extinguishment and inhibit reignition.

Expanded capability provides remote manual actuation, gas equipment shutdown, and electrical system shutdown. This optional equipment will enhance the basic system functions and be applicable when designing custom configurations to suit a particular customer's needs and/or comply with local codes.

Suggested Architect's Specifications

The fire suppression system should be of the stored pressure, wet chemical pre-engineered fixed nozzle type manufactured by Pyro-Chem. A carbon dioxide cartridge is designed in compliance with Military Specification "MIL-C-601G", and shall be used as the pneumatic releasing device for the system. The cartridge shall be an integral part of the control head assembly. The wet chemical storage cylinder shall be D.O.T.-rated for stored pressure of 175 psig, and a pressure gage shall be provided on the cylinder valve for visual inspection. The system shall be capable of automatic and manual actuation. Automatic actuation shall be provided by an appropriate number of thermal detectors mounted in series on a stainless steel wire input line to the control head. Manual actuation shall be provided by turning a handle on the primary head and/or by an optional remote pull station with a dedicated stainless steel input line to the control head.

Pyro-Chem

(800) 526-1079 toll free
(973) 335-9750 phone
(973) 335-0259 fax

301 Division Street
Boonton, NJ 07005

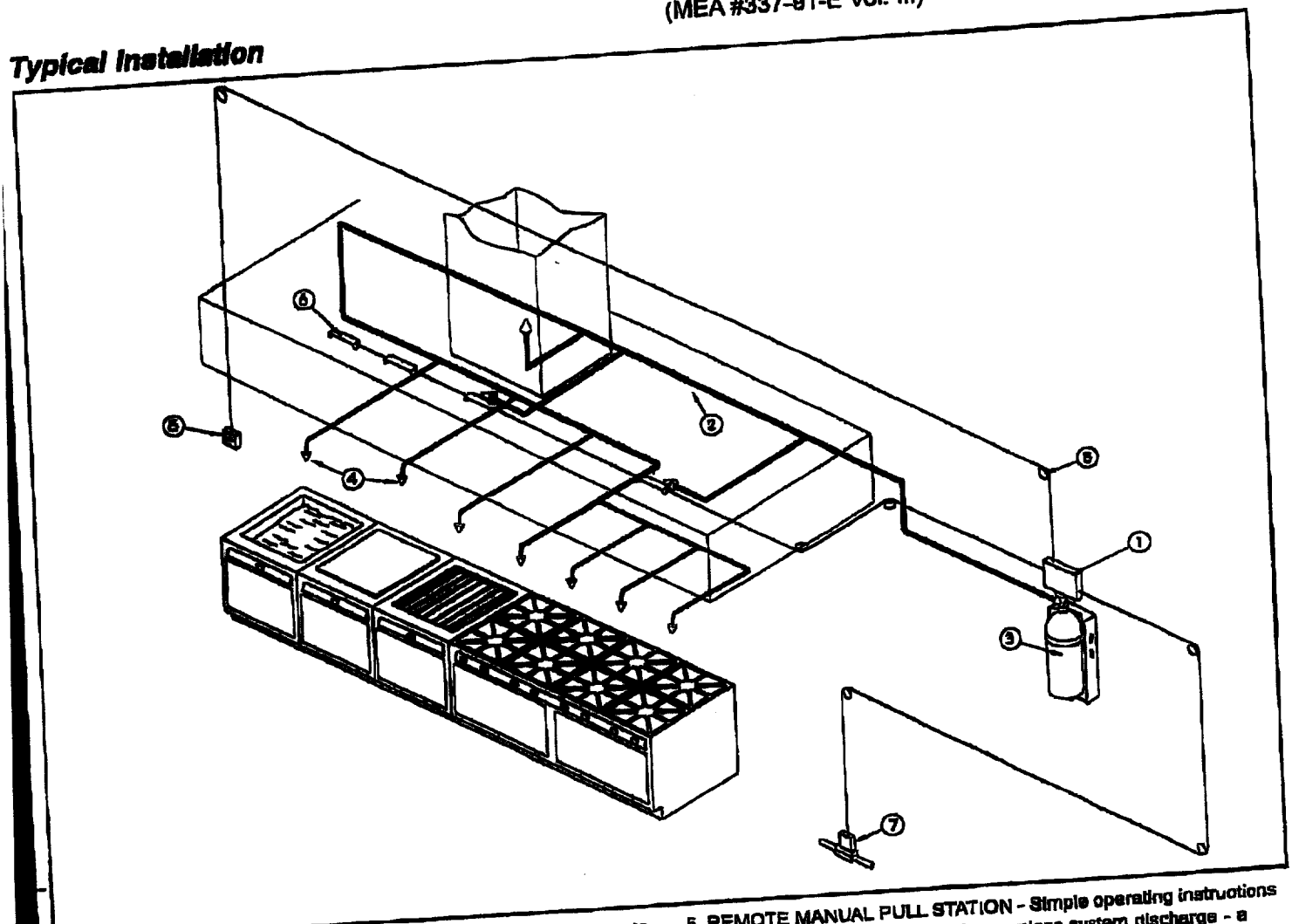
May 1, 1997

The system shall have been tested to the UL Standard for *Fire Extinguishing Systems for Protection of Restaurant Cooking Area, UL300*, and Listed by Underwriters Laboratories, Inc. It shall be installed in accordance with the National Fire Protection Association Standard No. 17A *Wet Chemical Extinguisher Systems, and No. 96 Standard for the Installation of Equipment for the Removal of Smoke and Grease Laden Vapors from Commercial Cooking Equipment*, and comply with all local and/or state codes and standards.

Features

- UL and ULC Approved
- Complies with NFPA Standard 17A and 96
- Meets the requirements of the Building Officials and Code Administrators
- Approved by the City of New York Material and Equipment Acceptance Division (MEA #337-91-E Vol. III)

Typical Installation



1. CYLINDER CONTROL UNIT - Integral design requires no separate release pressure cylinder - separate wire cable activation lines for automatic fusible link and optional remote pull station provide an added measure of safety - an easily accessible manual release mechanism which provides an option to the automatic fusible link and, depending on local codes, can be used in place of a remote manual pull station - unique fool proof technique for achieving necessary input wire cable tension.

2. PIPING - Unbalanced piping network simplifies application design and installation - no separate piping to connect system pressure cylinders to extinguishing agent container. Schedule 40 stainless, chrome-plated and black pipe can be used.

3.CYLINDERS (DOT-4B-175 Rated) - Contain Pyro-Chem Potassium Carbonate Solution stored at 175 psig - pressure gage for visual maintenance checks - 2.40, 3.60, and 5.50 gallon sizes provide 8, 13, and 20 flow point coverage respectively, offering a broad range of application coverage.

4.NOZZLES - Fixed and Swivel head nozzles have been established to relax placement tolerances.

5. REMOTE MANUAL PULL STATION - Simple operating instructions with a double action release avoids careless system discharge - a 100' wire cable run with 1/16 inch cable and 17 corner pulleys maximum or 3/64 inch cable and 20 corner pulleys maximum allows mounting flexibility - a dedicated wire cable input line to the cylinder control head provides a true back-up in the event thermal links are fouled.

6. FUSIBLE LINK KITS - Accommodates both series and terminal placement to minimize inventory and simplify ordering - all necessary components included for efficient assembly and installation - a 350° F fusible link standard - other temperatures available - 15 fusible links on a 100' wire cable run with 20 corner pulleys maximum provides substantial hazard coverage.

7. AUTOMATIC GAS SHUT-OFF VALVE - Complies with requirements pertaining to the shut-off of fuel as described by NFPA 17A - after regular maintenance/service check can be reset at control head for convenience of service technician - a 50' wire cable run with 15 corner pulleys maximum provides mounting flexibility.

8. CORNER PULLEYS AND ACCESSORIES - Designed to ensure reliable system function, as tested by Underwriters Laboratories.

Pyro-Chem
Kitchen Knight
PCL-240/360/600
Restaurant Kitchen
Fire Suppression System
Nozzle Coverage Summary Sheet

KITCHEN KNIGHT™
COOKING AREA FIRE SUPPRESSION SYSTEM

Appliance	Manual page no.	Nozzle Type	Flow Points	Coverage Area Per Nozzle: Width (in)	Length (in)	Min Height (in)	Max. Height (in)
ep Fat Fryer - Vat	3-4 / 3-4a	NL-F2	2	18	18	30	42
ep Fat Fryer - Drip Pan	3-4 / 3-4a			18	9.75		
ersized Deep Fat Fryer - Vat	3-4c	(2) NL-F2	4	22	22	30	42
ersized Deep Fat Fryer - Drip Pan	3-4c			22	5.75		
ep Fat Fryer (Low Proximity) - Vat	3-4 / 3-4a	NL-FL2	2	18	18	18	28
ep Fat Fryer (Low Proximity) - Drip Pan	3-4 / 3-4a			18	9.75		
ersized Deep Fat Fryer (Low Proximity) - Vat	3-4d	(2) NL-FL	4	22	22	18	28
ersized Deep Fat Fryer (Low Proximity) - Drip Pan	3-4d			22	5.75		
nge	3-3	NL-F1.25	1.25	12	30	40	60
nge	3-4b	NL-RH2	2	28	28	32	45
nge - Low Proximity	3-4b	NL-F1	1	12	28	15	30
ddle	3-4	NL-R	1	30	30	24	60
ddle - Low Proximity	3-4e	NL-D2	2	48	30	10	41
stant Charbroiler	3-5	NL-R	1	25	25	24	50
mavia Rock Charbroiler	3-5	NL-F2	2	25	25	30	50
tural Class "A" Charbroiler	3-6	NL-A	1	20	24	15	35
right Broiler	3-6	NL-UB	0.5	30	34	1	3
ain Broiler - Clgas Top	3-6 / 3-7	NL-UB	0.5	30	34	1	3
ain Broiler - Open Top	3-7	NL-A	1	32	34	10	22
ting Skillet / Braising Pan	3-6a	NL-F2	2	18	27.75	30	38
ting Skillet / Braising Pan (Low Proximity)	3-6a	NL-FL2	2	18	27.75	18	28
ok	3-7	NL-R	1	14-24	3.875-7.625	40	50

Plenum	Manual page no.	Nozzle Type	Flow Points	Coverage Area Per Nozzle: Width (ft)	Length (ft)
Single Bank / V-Bank	3-2	NL-A	1	4	8

Duct	Manual page no.	Nozzle Type	Flow Points	Coverage Area Per Nozzle: Max. Side (in)	Perimeter (in)	Diameter (in)	Length (in)
Rectangular	3-1 / 3-2	NL-D1	1	17	50	N/A	Unlimited
Rectangular	3-1 / 3-2	NL-D2	2	25	75.5	N/A	"
Rectangular	3-1 / 3-2	NL-D3	3	33	100	N/A	"
Rectangular	3-1 / 3-2	2 x NL-D1	2	34	84	N/A	"
Rectangular	3-1 / 3-2	2 x NL-D3	6	66	180	N/A	"
Circular	3-1 / 3-2	NL-D1	1	N/A	50	16	"
Circular	3-1 / 3-2	NL-D2	2	N/A	75.5	24	"
Circular	3-1 / 3-2	NL-D3	3	N/A	100	31.75	"
Circular	3-1 / 3-2	2 x NL-D1	2	N/A	84	28.75	"
Circular	3-1 / 3-2	2 x NL-D3	6	N/A	150	47.75	"
Electrostatic Precipitator	3-6b	NL-UB	0.5	N/A	N/A	N/A	N/A

CHAPTER III
SYSTEM DESIGN

This section will cover the proper design of the Pyro-Chem Restaurant Fire Suppression System. It is divided into four (4) sections:

1. Nozzle Coverage and Placement.
2. Cylinder Sizing.
3. Piping Limitations.
4. Detector Requirements.

Each of these sections must be completed before attempting any installation.

SECTION 1
Nozzle Coverage and Placement

This section will provide guidelines for determining nozzle type, positioning, and quantity for duct, plenum, and appliance protection.

A. Duct Protection

The following three (3) nozzles have been developed for the protection of exhaust ducts:

1. Model NL-P.
2. Model NL-D2.
3. Model NL-D3.

Each nozzle is approved for use with the exhaust fan dampered, undampered with the fan on, or undampered with the fan off. It is not required that the fan be shut down or the exhaust duct be dampered for the system to operate properly. Each nozzle is approved to protect exhaust ducts of unlimited length.

1. Model NL-P

The Model NL-P nozzle is a one (1) flow point nozzle designed for the protection of exhaust ducts. One (1) or two (2) Model NL-P nozzles can be used on a single duct branch.

A single Model NL-P exhaust duct nozzle can protect a square or rectangular duct with a maximum perimeter of 50 inches and a maximum one-side length of 17 inches. It can also protect a round duct with a maximum circumference of 50 inches and a maximum diameter of 16 inches (see Figure 3-1). The nozzle must be installed on the centerline of the duct and aimed directly into the duct opening (see Figure 3-2).

Two (2) Model NL-P exhaust duct nozzles can protect a square or rectangular duct with a maximum perimeter of 84 inches and a maximum one-side length of 34 inches. They can also protect a round duct with a maximum circumference of 84 inches and a maximum diameter of 26.5 inches. When two (2) Model NL-P nozzles are used to protect a single duct, the cross sectional area of the duct must be divided into two equal symmetrical areas. The nozzle must then be installed on the centerline of the area it protects and aimed directly into the duct opening (see Figure 3-2.1).

2. Model NL-D2.

The Model NL-D2 nozzle is a two (2) flow point nozzle designed for the protection of exhaust ducts. Only one (1) Model NL-D2 nozzle can be used on a single duct branch.

A single Model NL-D2 exhaust duct nozzle can protect a square or rectangular duct with a maximum perimeter of 75.5 inches and a maximum one-side length of 25 inches. It can also protect a round duct with a maximum circumference of 75.5 inches and a maximum diameter of 24 inches (see Figure 3-1). The nozzle must be installed on the centerline of the duct and aimed directly into the duct opening (see Figure 3-2).

3. Model NL-D3.

The Model NL-D3 nozzle is a three (3) flow point nozzle designed for the protection of exhaust ducts. One (1) or two (2) Model NL-D3 nozzles can be used on a single duct branch.

A single Model NL-D3 exhaust duct nozzle can protect a square or rectangular duct with a maximum perimeter of 100 inches and a maximum one-side length of 33 inches. It can also protect a round duct with a maximum circumference of 100 inches and a maximum diameter of 31.75 inches (see Figure 3-1). The nozzle must be installed on the centerline of the duct and aimed directly into the duct opening (see Figure 3-2).

Two (2) Model NL-D3 exhaust duct nozzles can protect a square or rectangular duct with a maximum perimeter of 150 inches and a maximum one-side length of 66 inches. They can also protect a round duct with a maximum circumference of 150 inches and a maximum diameter of 47.5 inches. When two (2) Model NL-D3 nozzles are used to protect a single duct, the cross sectional area of the duct must be divided into two equal symmetrical areas. The nozzle must then be installed on the centerline of the area it protects and aimed directly into the duct opening (see Figure 3-2.1).

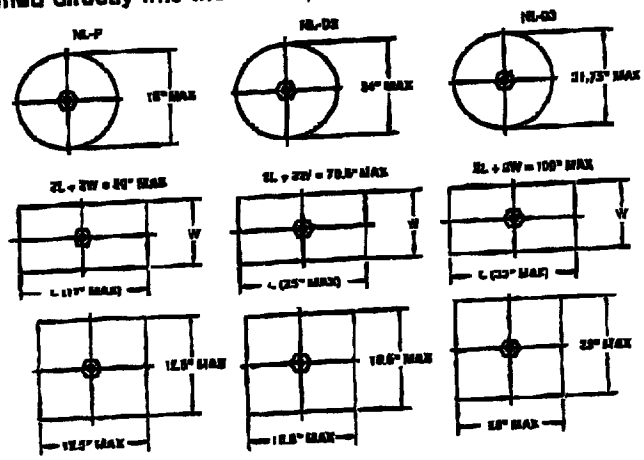


Figure 3-1. Duct Nozzle Coverage Limitations.

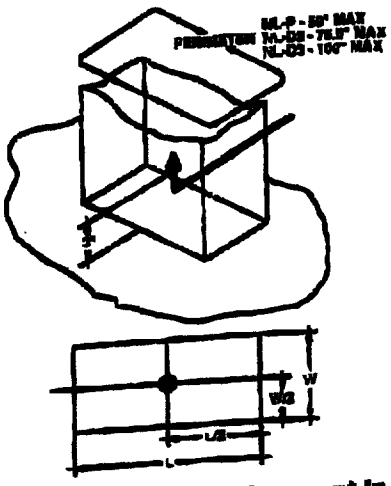


Figure 3-2. Single Nozzle Placement in Duct.

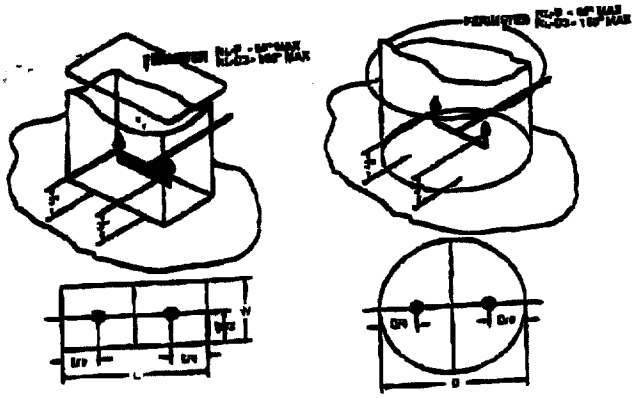


Figure 3-2.1. Dual Nozzle Placement in Duct.

Duct Nozzle Coverage Chart

NOZZLE	MAXIMUM SIDE	MAXIMUM PERIMETER	FLOW POINTS
NL-P	17"	50"	1
2 x NL-P	34"	84"	2
NL-D2	28"	75"	2
NL-D3	33"	100"	3
2 x NL-D3	66"	150"	6

NOTE: A SINGLE DUCT BRANCH CAN ONLY SUPPORT:
1) A Single NL-P
2) A Single NL-D2
3) A Single NL-D3
4) Two NL-P's
5) Two NL-D3's

B. Plenum Protection

The Model NL-A nozzle is a one (1) flow point nozzle that has been developed to protect the plenum section of the exhaust hood. Only one (1) Model NL-A nozzle can be used on a single plenum branch. A single Model NL-A can protect a plenum (with single or V-Bank filters) with rectangular dimensions of 8' x 4' or less. Larger plenums can be protected by dividing the hazard area so that each nozzle protects an area of 8' x 4' or less (see Figure 3-3).

The nozzle(s) must be located at the center of the V-Bank width or centered between the filter width when used with a single bank filter plenum. It must be within 4" of the wall it is mounted against (see Figure 3-4).

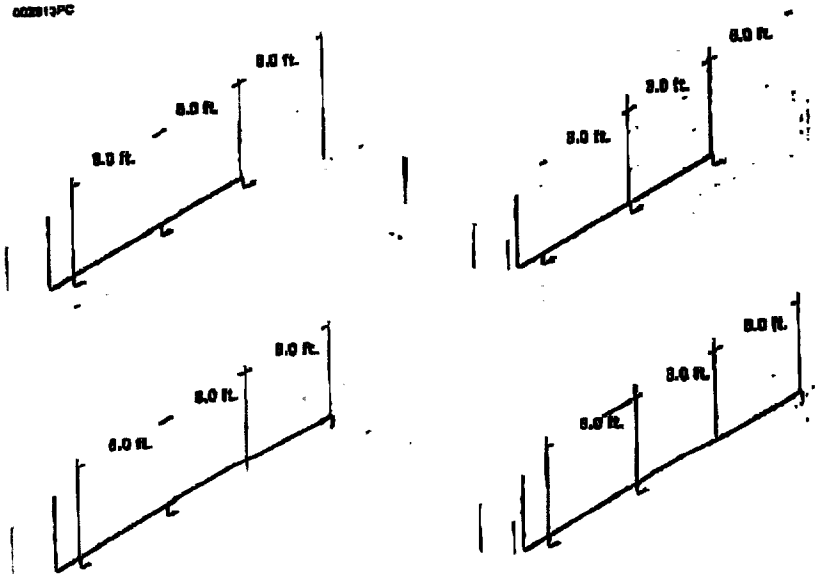


Figure 3.3 Plenum Coverage Limitations, Model NL-A Nozzle.

3.1. Deep Fat Fryer Coverage.

The Model NL-F2 nozzle is a two (2) flow point nozzle that is used for the protection of a single vat of a deep fat fryer. The maximum area that can be protected by a single NL-F2 nozzle is:

1. Cooking Area: 18" x 18"
2. Integral Drip Board: 18" x 9.75"

The nozzle must be located within 11.875" of the center of the longest side, and within 7" of the center of the shortest side of the cooking surface and aimed at the center of the protected zone. The nozzle must be mounted 30" to 42" above the top surface of the deep fat fryer (see Figure 3-8.2).

The tip of the Model NL-F2 nozzle has two flat areas designed to assist aiming. The nozzle must be positioned so that these flat areas are parallel to the longest side of the protected zone. See Figure 3-8.1.

NOTE

Nozzle shall be located anywhere in the shaded area and aimed at the center of the protected zone.

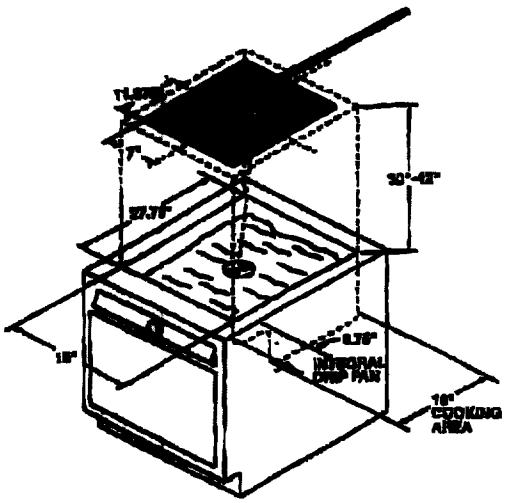


Figure 3-8.2. Model NL-F2 Nozzle Placement, Deep Fat Fryer.

NOTE

For installations that require the use of the Model NL-F2 or the Model NL-FL2 nozzle to protect a deep fat fryer in accordance with Deep Fat Fryer Coverage 3.1 shown here (See Figure 3-8.2 and Figure 3-8.3), the following additional restrictions apply to the main supply line piping before this nozzle:

1. Minimum length, linear: 6 feet
2. Minimum length, equivalent: 14.1 feet
3. Minimum system flow points: 4
4. Minimum branches (total): 3

3.2 Deep Fat Fryer Coverage.

The Model NL-FL2 nozzle is a two (2) flow point nozzle that is used for the protection of a single vat of a deep fat fryer. The maximum area that can be protected by a single NL-FL2 nozzle is:

1. Cooking Area: 18" x 18"
2. Integral Drip Board: 18" x 9.75"

The nozzle must be located within 11.875" of the center of the longest side, and within 3" of the center of the shortest side of the cooking surface and aimed at the center of the protected zone. The nozzle must be mounted 16" to 26" above the top surface of the deep fat fryer (see Figure 3-8.3).

NOTE

Nozzle shall be located anywhere in the shaded area and aimed at the center of the protected zone.

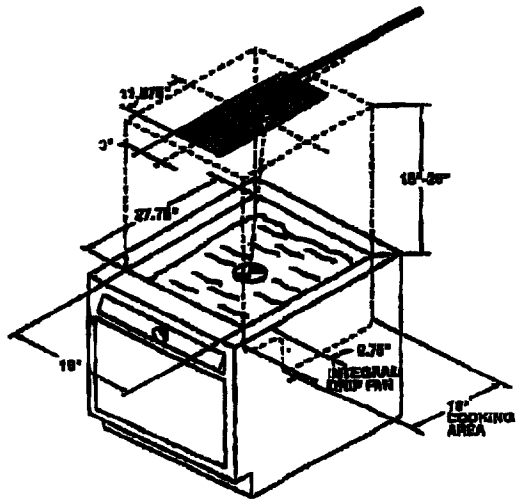


Figure 3-8.3. Model NL-FL2 Nozzle Placement, Deep Fat Fryer.

3.3. Modular Deep Fat Fryer Coverage.

The Model NL-F2 nozzle is a two (2) flow point nozzle that is used for the protection of a single vat of a deep fat fryer. The maximum area that can be protected by two (2) NL-F2 nozzles is:

1. Cooking Area: 22" x 22"
2. Integral Drip Board: 22" x 5.75"

To protect a fryer with the above maximum dimensions or smaller, the area is divided into two equal areas, with a single NL-F2 nozzle protecting each area. Each nozzle must be located within a section (as noted by the shaded area in Figure 3-8.6), that is not less than 2" from the fryer perimeter and not less than 1" from the fryer's shortest side centerline.

Each nozzle, regardless of its location within its section, must be aimed at a point located at the center of the longest side and 1" from the center of the shortest side. See Figure 3-8.6.

The nozzle must be mounted 30" to 42" above the top surface of the deep fat fryer (see Figure 3-8.6).

The tip of the Model NL-F2 nozzle has two flat areas designed to assist aiming. The nozzle must be positioned so that these flat areas are parallel to the longest side of the protected zone. See Figure 3-8.1.

NOTE

For installations that require the use of the Model NL-F2 nozzle to protect a deep fat fryer in accordance with the Modular Deep Fat Fryer Coverage 3.3 shown here, the following additional restrictions apply to the main supply line piping before this nozzle:

1. Minimum length, linear: 8 feet
2. Minimum length, equivalent: 14.1 feet
3. Minimum system flow points: 4
4. Minimum branches (total): 3

NOTE

Nozzle must be located anywhere within the shaded area and aimed at a point on the centerline of the longest side and 1" from the centerline of the shortest side.

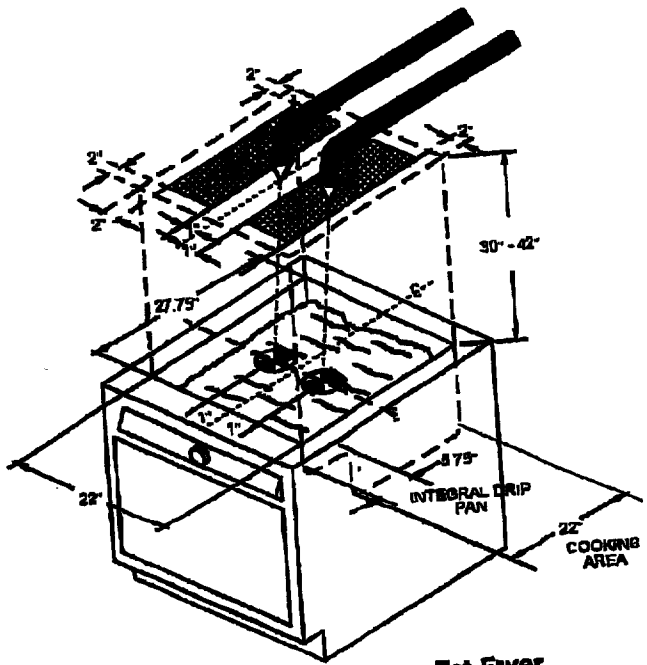


Figure 3-8.6. Model NL-F2 Nozzle Placement, Deep Fat Fryer.

3.4. Modular Deep Fat Fryer Coverage.

The Model NL-FL2 nozzle is a two (2) flow point nozzle that is used for the protection of a single vat of a deep fat fryer. The maximum area that can be protected by two (2) NL-FL2 nozzles is:

1. Cooking Area: 22" x 22"
2. Integral Drip Board: 22" x 5.75"

To protect a fryer with the above maximum dimensions or smaller, the area is divided into two equal areas, with a single NL-FL2 nozzle protecting each area. Each nozzle must be located within a section (as noted by the shaded area in **Figure 3-8.7**), that is:

1. Not less than 6" from the fryer's longest side perimeter,
2. Not less than 2" from the fryer's shortest side perimeter, and
3. Not less than 1" from the fryer's shortest side centerline.

Each nozzle, regardless of its location within its section, must be aimed at a point located at the center of the longest side and 1" from the center of the shortest side. See **Figure 3-8.7**.

The nozzle must be mounted 16" to 26" above the top surface of the deep fat fryer (see **Figure 3-8.7**).

NOTE

For installations that require the use of the Model NL-FL2 nozzle to protect a deep fat fryer in accordance with the Modular Deep Fat Fryer Coverage 3.4 shown here, the following additional restrictions apply to the main supply line piping before this nozzle:

1. Minimum length, linear: 8 feet
2. Minimum length, equivalent: 14.1 feet
3. Minimum system flow points: 4
4. Minimum branches (total): 3

NOTE

Nozzle must be located anywhere within the shaded area and aimed at a point on the centerline of the longest side and 1" from the centerline of the shortest side.

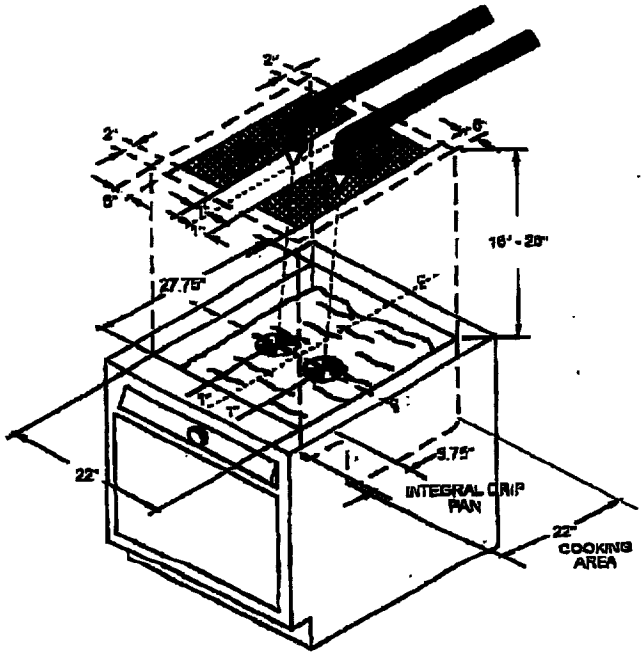


Figure 3-8.7. Model NL-FL2 Nozzle Placement, Deep Fat Fryer.

1.1. Range Coverage.

The Model NL-RH2 is a 2 flow point nozzle that is used for range top protection. The maximum range top area that can be protected by a single NL-RH2 nozzle is 28" x 28". The nozzle must be located within 5" of the center of the protected zone, and aimed at the center of the protected zone. The nozzle must be mounted 32" to 45" above the cooking surface. See Figure 3-8.4.

1.2. Range Coverage.

The Model NL-F1 is a 1 flow point nozzle that is used for range top protection. The maximum range top area that can be protected by a single NL-F1 nozzle is 12" x 28". See Figure 3-8.5.

a. Nozzle Location.

Side To Side Nozzle Location:
The nozzle must be located on the longest centerline of the protected zone.

Front To Back Nozzle Location:
The nozzle must be located not more than 6" from the center of the protected zone.

Nozzle Height:
The nozzle must be mounted 15" to 30" above the cooking surface.

b. Nozzle Aiming.

The tip of the Model NL-F1 nozzle has two flat areas designed to assist aiming. The nozzle must be positioned so that these flat areas are parallel to the longest side of the protected zone. See Figure 3-6.

NOTE
Nozzle must be located anywhere within the shaded area and aimed at the center of the protected zone.

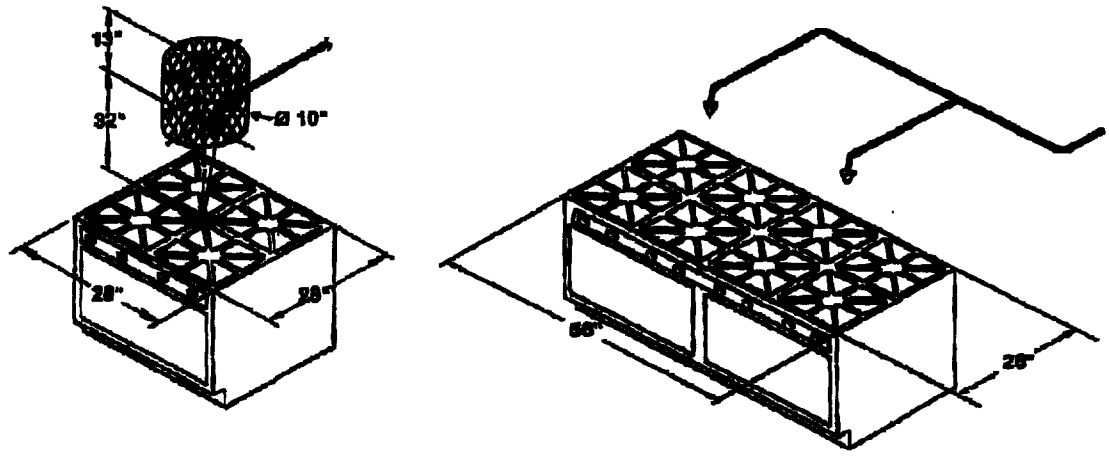


Figure 3-8.4. Model NL-RH2 Range Nozzle Placement

NOTE
For installations that require the use of the Model NL-RH2 or NL-F1 nozzle to protect a range in accordance with Range Coverage 1.1 or 1.2 shown here (See Figure 3-8.4 and Figure 3-8.5), the following additional restrictions apply to the main supply line piping before this nozzle:
1. Minimum length, linear: 6 feet
2. Minimum length, equivalent: 14.1 feet
3. Minimum system flow points: 4
4. Minimum branches (total): 3

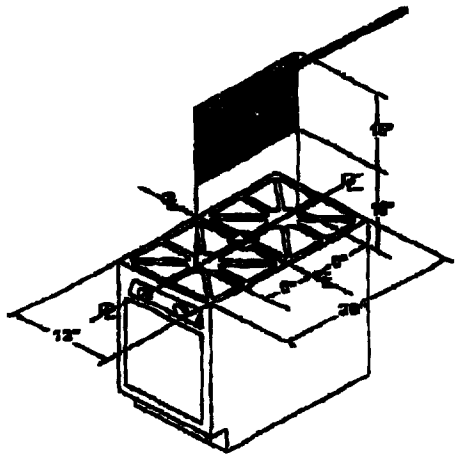


Figure 3-8.6. Model NL-F1 Range Nozzle Placement

4. Radiant Charbroiler Coverage.

NOTE

A radiant charbroiler is distinguished by the use of gas or electrically heated metal strips (radiants) that are used for cooking.

The Model NL-R nozzle is a one (1) flow point nozzle that is used to protect either gas or electrically fueled radiant charbroilers. The maximum area that can be protected by a single NL-R nozzle is 25" x 25".

The nozzle must be located over the cooking surface and aimed at the center of the protected zone. The nozzle must be mounted 24" to 50" above the cooking surface. See **Figure 3-9.**

NOTE

Nozzle shall be located anywhere in the shaded area and aimed at the center of the protected zone.

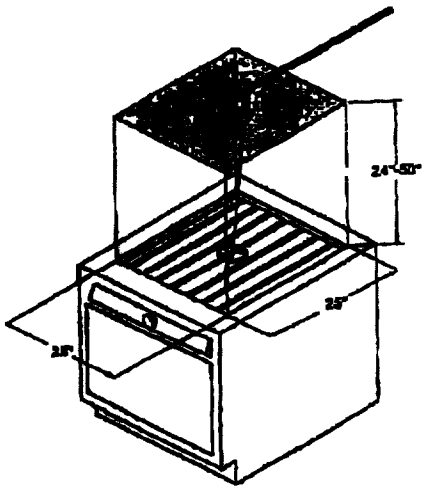


Figure 3-9. Model NL-R Nozzle Placement, Radiant Charbroiler.

5. Synthetic Rock Charbroiler Coverage.

NOTE

A synthetic rock charbroiler is distinguished by the use of lava, pumice, or synthetic rocks that are used for cooking.

The Model NL-F2 nozzle is a two (2) flow point nozzle that is used for the protection of either gas or electrically fueled synthetic rock charbroiler. The maximum fuel depth shall not exceed two (2) layers of lava, pumice, or synthetic rocks. The maximum area that can be protected by a single NL-F2 nozzle is 25" x 25".

The nozzle must be located over the cooking surface and aimed at the center of the protected zone. The nozzle must be mounted 30" to 50" above the cooking surface (see **Figure 3-10).**

The tip of the Model NL-F2 nozzle has two flat areas designed to assist aiming. The nozzle must be positioned so that these flat areas are parallel to the longest side of the protected zone. See **Figure 3-8.1.**

NOTE

Nozzle shall be located anywhere in the shaded area and aimed at the center of the protected zone.

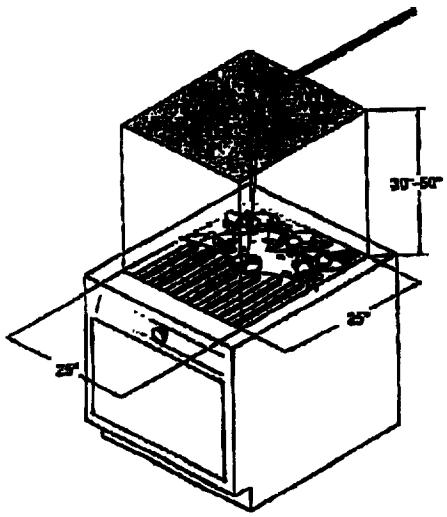


Figure 3-10. Model NL-F2 Nozzle Placement, Synthetic Rock Charbroiler.

6. Natural Class "A" Charbroiler Coverage.

NOTE

A Class "A" charbroiler is distinguished by the use of charcoal, mesquite chips, chunks, and/or logs that are used for cooking.

The Model NL-A nozzle is a one (1) flow point nozzle that is used for the protection of Class "A" charbroilers with a maximum fuel depth of six (6) inches. The maximum area that can be protected by a single NL-A nozzle is 20" x 24".

The nozzle must be located over the cooking surface and aimed at the center of the protected zone. The nozzle must be mounted 15" to 35" above the cooking surface. See **Figure 3-11.**

NOTE

Nozzle shall be located anywhere in the shaded area and aimed at the center of the protected zone.

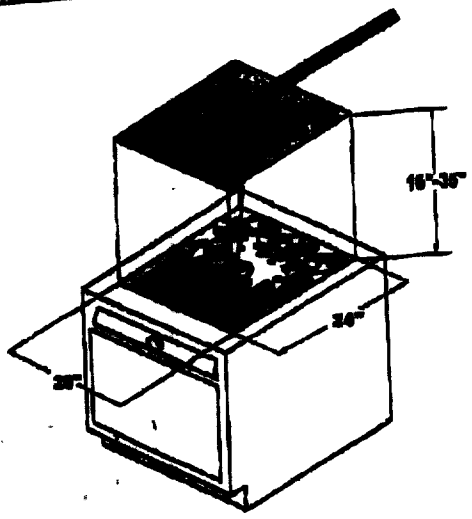


Figure 3-11. Model NL-A Nozzle Placement, Class "A" Charbroiler.

7. Upright Broiler Coverage.

The Model NL-UB nozzle is a one-half (1/2) flow point nozzle that is used for upright broiler protection. Two (2) Model NL-UB nozzles are commonly used for this application. The purpose of using two nozzles is to distribute the chemical evenly between the cooking surface (on top) and the drip pan (below). For upright broilers that have no drip pan, a single Model NL-UB nozzle can be used. The maximum area that can be protected by a pair of NL-UB nozzles (or a single NL-UB nozzle when no drip pan is present) is 30" x 34".

One nozzle must be positioned in the front entrance of the broiling chamber and aimed at the diagonal corner. The nozzle will be positioned above the cooking surface. If necessary, the second nozzle must be installed above the front edge of the grease drip pan and aimed at its midpoint. See Figure 3-12.

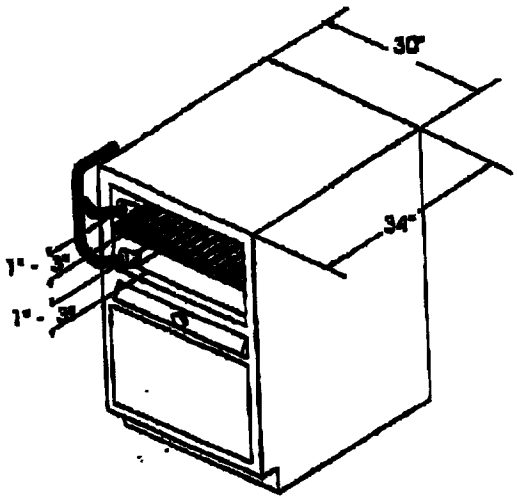


Figure 3-12. Model NL-UB Nozzle Placement, Upright Broiler.

8. Chain Broiler Coverage.

Two types of chain broilers are commonly used; open and closed top. Each is protected in a different manner.

a. Close Top Chain Broiler Coverage.

The Model NL-UB nozzle is a one-half (1/2) flow point nozzle that is used for closed top chain broiler protection. Two (2) Model NL-UB nozzles are commonly used for this application. The purpose of using two nozzles is to distribute the chemical evenly between the cooking surface (on top) and the drip pan (below). For closed top chain broilers that have no drip pan, a single Model NL-UB nozzle can be used. The maximum area that can be protected by a pair of NL-UB nozzles (or a single NL-UB nozzle when no drip pan is present) is 30" x 34".

One nozzle must be positioned in the front entrance of the broiling chamber and aimed at the diagonal corner. The nozzle will be positioned above the cooking surface. The second nozzle (if necessary) must be installed above the front edge of the grease drip pan and aimed at its midpoint. See Figure 3-13.

2.1 Low Proximity Griddle Protection

The Model NL-D2 nozzle is a two (2) flow point nozzle that is used for griddle protection. The maximum griddle area that can be protected by a single NL-D2 nozzle is 48" x 30".

Option 1

The nozzle must be located over the griddle cooking surface, within 12" of the center of the longest side and within 3" of the edge of the protected zone. The nozzle must be aimed at a point on the center line of the longest side and 10" from the edge of the longest side of the protected zone. The nozzle must be mounted 10" to 41" above the cooking surface. See Figure 3-8.5.

NOTE

Nozzles shall be located at the front or rear of the griddle, anywhere in the shaded area and aimed at the center of the protected zone.

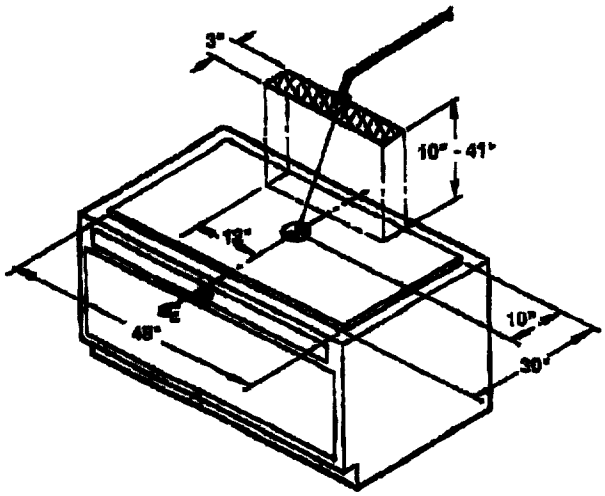


Figure 3-8.5. Option 1: Model NL-D2 Nozzle Placement, Griddle.

Option 2

The nozzle must be located over the griddle cooking surface, within 6" of the center of the shortest side and within 3" of the edge of the protected zone. The nozzle must be aimed at a point on the center line of the shortest side and 16" from the edge of the shortest side of the protected zone. The nozzle must be mounted 10" to 41" above the cooking surface. See Figure 3-8.4.

NOTE

Nozzles shall be located on the left or right side of the griddle, anywhere in the shaded area and aimed at the center of the protected zone.

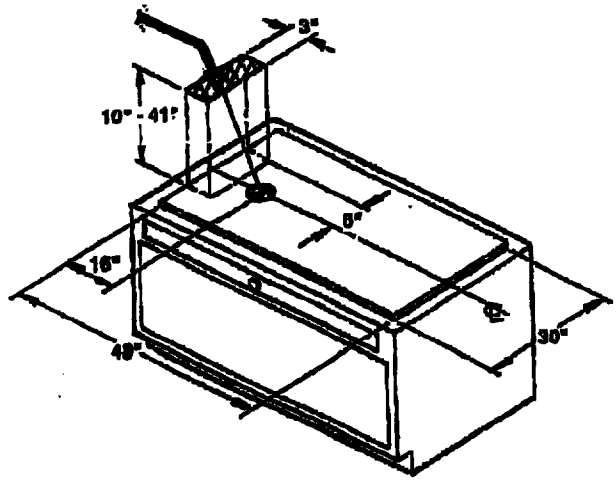


Figure 3-8.9. Option 2: Model NL-D2 Nozzle Placement, Griddle.

2. Branch Line Piping.

Branch piping is used to connect the discharge nozzles to the main supply line. This piping is connected to the side outlet of main supply line tees. The last branch is connected to an elbow at the end of the main supply line. There are seven (7) types of branch piping:

1. One (1) Nozzle Duct Branch.
2. Two (2) Nozzle Duct Branch.
3. One (1) Nozzle Plenum Branch.
4. One (1) Nozzle Appliance Branch.
5. Two (2) Nozzle Appliance Branch.
6. Three (3) Nozzle Appliance Branch.
7. Four (4) Nozzle Range Branch.

UNDERSTANDING EQUIVALENT PIPING

Piping limitations in this chapter are given in both linear and equivalent lengths.

Linear piping is the actual length of straight pipe used on either the main supply line or a branch.

Equivalent piping is equal to the total linear pipe used on either the main supply line or a branch **plus** the equivalent length of any fittings used on either the main supply line or a branch. **See Figure 3-15.**

Equivalent Piping = (Linear Piping) + (Total Equivalent Length of Fittings Used)

All pipe fittings develop a pressure loss which can be equated to the loss through a specific length of straight pipe. This loss is the equivalent length of the fitting. **See Table 3-1.**

Pipe Size	45° Elbow	90° Elbow	Tee Flow Through	Tee Side Outlet	Union or Couplings
3/8"	0.8	1.3	0.8	2.7	0.3
1/2"	0.8	1.7	1.0	3.4	0.4

Table 3-1. Pipe Fitting Equivalent Lengths in Feet.

An example of the total equivalent piping calculation for a typical branch is illustrated by **Figure 3-15.**

NOTE

The only acceptable types of piping which can be used with the Pyro-Chem System are black pipe, stainless steel, or chrome plated pipe. Galvanized pipe cannot be used.

MAIN SUPPLY LINE PIPING LIMITATIONS

1. Model PCL-240.

Main supply line piping limitations for the PCL-240 are given by Table 3-2. The maximum length of main supply line between the first and last branch tee is 30 feet. Examples of acceptable piping configurations are shown in **Figure 3-16.**

Section	Pipe Dia.	Max Flow Points	Max Lengths Feet Linear	Max Lengths Feet Equiv	Min Lengths Feet Linear	Min Lengths Feet Equiv	Max Vert. Rise
Main Supply Line	3/8"	8	21	36	3	7	8'

Table 3-2. Model PCL-240. Main Supply Line Piping Limitations.

NOTE

For installations that require the use of the Model NL-F1.25 nozzle, the following additional restrictions apply before these nozzles:
1. Minimum length, linear: 5 feet
2. Minimum length, equivalent: 12 feet
3. Minimum system flow points: 3
4. Minimum branches (total): 3

2. Model PCL-350.

Main supply line piping limitations for the PCL-350 are given by Table 3-3. The maximum length of main supply line between the first and last branch tee is 30 feet. Examples of acceptable piping configurations are shown in **Figure 3-17.**

Section	Pipe Dia.	Max Flow Points	Max Lengths Feet Linear	Max Lengths Feet Equiv	Min Lengths Feet Linear	Min Lengths Feet Equiv	Max Vert. Rise
Main Supply Line	3/8" 1/2"	13	38	63	3	7	8'

Table 3-3. Model PCL-350. Main Supply Line Piping Limitations.

NOTE

For installations that require the use of the Model NL-F1.25 nozzle, the following additional restrictions apply before these nozzles:
1. Minimum length, linear: 5.5 feet
2. Minimum length, equivalent: 12 feet
3. Minimum system flow points: 3
4. Minimum branches (total): 3

3. Model PCL-550.

Main supply line piping limitations for the PCL-550 are given by Table 3-4. The maximum length of main supply line between the first and last branch tee is 35 feet. Examples of acceptable piping configurations are shown in **Figure 3-18.**

Section	Pipe Dia.	Max Flow Points	Max Lengths Feet Linear	Max Lengths Feet Equiv	Min Lengths Feet Linear	Min Lengths Feet Equiv	Max Vert. Rise
Main Supply Line	1/2"	20	45	80	3	7	8'

Table 3-4. Model PCL-550. Main Supply Line Piping Limitations.

NOTE

For installations that require the use of the Model NL-F1.25 nozzle, the following additional restrictions apply before these nozzles:

1. Minimum length, linear: 5.5 feet
2. Minimum length, equivalent: 12 feet
3. Minimum system flow points: 3
4. Minimum branches (total): 3

BRANCH PIPING LIMITATIONS

There are seven (7) types of branches used on the Pyro-Chem Restaurant Fire Suppression System:

1. One (1) Nozzle Duct Branch.
2. Two (2) Nozzle Duct Branch.
3. One (1) Nozzle Plenum Branch.
4. One (1) Nozzle Appliance Branch.
5. Two (2) Nozzle Appliance Branch.
6. Three (3) Nozzle Appliance Branch.
7. Four (4) Nozzle Range Branch.

NOTE: A range branch is any branch that contains NL-F1.25 nozzles only. Any branch that contains NL-F1.25 nozzles in combination with any other nozzle(s) is considered an appliance branch.

When using the PCL-240, the total of all duct, plenum, appliance, and range branch piping cannot exceed 25 linear feet and 55 equivalent feet.

When using the PCL-350, the total of all duct, plenum, appliance, and range branch piping cannot exceed 35 linear feet and 100 equivalent feet.

When using the PCL-550, the total of all duct, plenum, appliance, and range branch piping cannot exceed 45 linear feet and 125 equivalent feet.

Branch piping limitations are applicable to all cylinder sizes (i.e., PCL-240, PCL-350, and PCL-550). All branch piping must be 3/8" diameter black, chrome plated, or stainless steel pipe.

1. One Nozzle Duct Branch Piping Limitations.

The one nozzle duct branch is a run of 3/8" pipe which connects the main supply line to a single duct nozzle. A one nozzle duct branch can support the following combinations of nozzles:

1. 1 x Model NL-P Nozzle.
2. 1 x Model NL-D2 Nozzle.
3. 1 x Model NL-D3 Nozzle.

One nozzle duct branch piping limitations are given by Table 3-5.

Section	Pipe Dia.	Max Flow Points	Max Lengths Feet Linear	Max Lengths Feet Equiv	Min Lengths Feet Linear	Min Lengths Feet Equiv	Max Vert. Rise
1 Nozzle Duct Branch	3/8"	3	6	12	0	0	4'

Table 3-5. Duct Branch Piping Limitations.

2. Two Nozzle Duct Branch Piping Limitations.

The two nozzle duct branch is a run of 3/8" pipe which connects the main supply line to two duct nozzles. A two nozzle duct branch can support the following combinations of nozzles:

1. 2 x Model NL-P Nozzle.
2. 2 x Model NL-D3 Nozzle.

Two nozzle duct branch piping limitations are given by Table 3-5.1.

Section	Pipe Dia.	Max Flow Points	Max Lengths Feet Linear	Max Lengths Feet Equiv	Min Lengths Feet Linear	Min Lengths Feet Equiv	Max Vert. Rise
2 Nozzle Duct Branch	3/8"	6	8	22	0	0	4'

Table 3-5.1. Duct Branch Piping Limitations.

3. One Nozzle Plenum Branch Piping Limitations.

The one nozzle plenum branch is a run of 3/8" pipe which connects the main supply line to a plenum nozzle. A single plenum branch can support only one flow point. Plenum branch piping limitations are given by Table 3-6.

Section	Pipe Dia.	Max Flow Points	Max Lengths Feet Linear	Max Lengths Feet Equiv	Min Lengths Feet Linear	Min Lengths Feet Equiv	Max Vert. Rise
1 Nozzle Plenum Branch	3/8"	1	4	10	0	0	2'

Table 3-6. Plenum Branch Piping Limitations.

4. One Nozzle Appliance Branch Piping Limitations.

The one nozzle appliance branch is a run of 3/8" pipe which connects the main supply line to a single appliance nozzle. A one nozzle appliance branch can support a maximum of two (2) flow points. One nozzle appliance branch piping limitations are given by Table 3-7.

Section	Pipe Dia.	Max Flow Points	Max Lengths Feet Linear	Max Lengths Feet Equiv	Min Lengths Feet Linear	Min Lengths Feet Equiv	Max Vert. Rise
1 Nozzle Appliance Branch	3/8"	2	6	12	0	0	0'

Table 3-7. One Nozzle Appliance Branch Piping Limitations.

5. Two Nozzle Appliance Branch Piping Limitations.

The two nozzle appliance branch is a run of 3/8" pipe which connects the main supply line to two appliance nozzles. A two nozzle appliance branch can support a maximum of four (4) flow points. Two nozzle appliance branch piping limitations are given by **Table 3-7.1.**

Section	Pipe Dia.	Max Flow Points	Max Lengths Feet Linear	Max Lengths Feet Equiv	Min Lengths Feet Linear	Min Lengths Feet Equiv	Max Vert. Rise
2 Nozzle Appliance Branch	3/8"	4	8	22	0	0	0'

Table 3-7.1. Two Nozzle Appliance Branch Piping Limitations

6. Three Nozzle Appliance Branch Piping Limitations

The three nozzle appliance branch is a run of 3/8" pipe which connects the main supply line to three appliance nozzles. A three nozzle appliance branch can support a maximum of five (5) flow points. Three nozzle appliance branch piping limitations are given by **Table 3-7.2.**

Section	Pipe Dia.	Max Flow Points	Max Lengths Feet Linear	Max Lengths Feet Equiv	Min Lengths Feet Linear	Min Lengths Feet Equiv	Max Vert. Rise
3 Nozzle Appliance Branch	3/8"	5	10	28	0	0	0'

Table 3-7.2. Three Nozzle Appliance Branch Piping Limitations

7. Four Nozzle Range Branch Piping Limitations

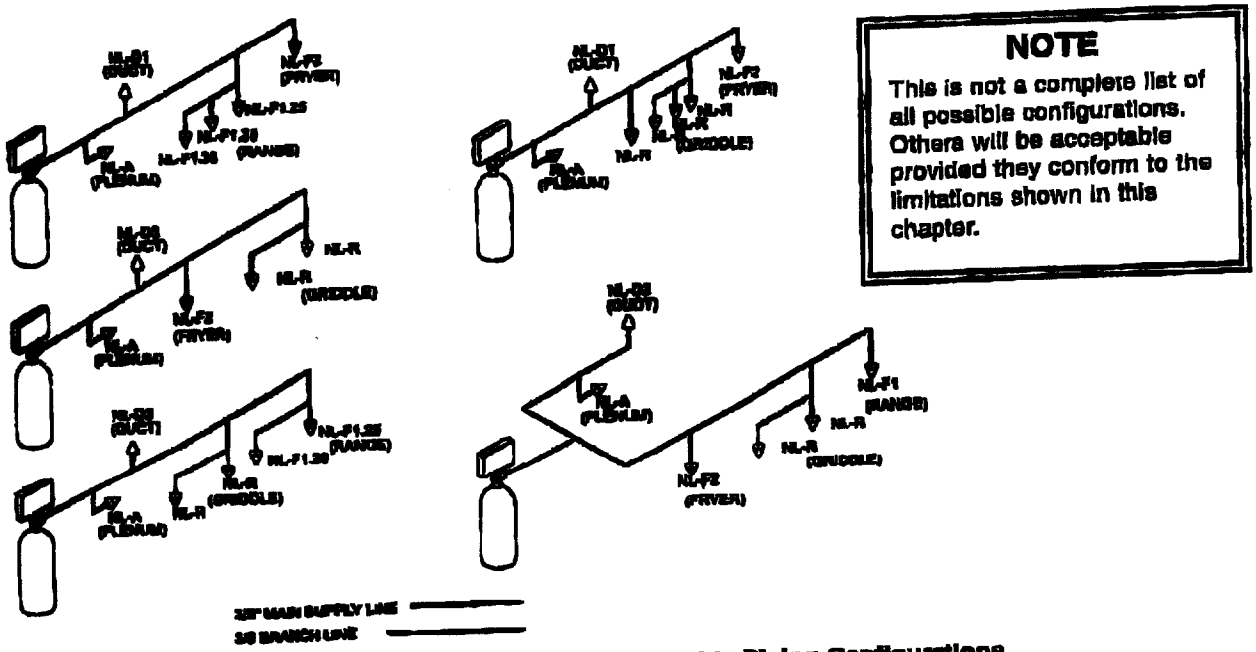
NOTE

These limitations apply to branches that utilize four (4) model NL-F1.25 nozzles. No other types of nozzles, or combinations of nozzles, may be used on a four nozzle branch.

The four nozzle range branch is a run of 3/8" pipe which connects the main supply line to four NL-F1.25 range nozzles. A four nozzle range branch can support a maximum of five (5) flow points. The four nozzle range branch piping limitations are given by **Table 3-8.**

Section	Pipe Dia.	Max Flow Points	Max Lengths Feet Linear	Max Lengths Feet Equiv	Min Lengths Feet Linear	Min Lengths Feet Equiv	Max Vert. Rise
4 Nozzle Range Branch	3/8"	5	10	31	0	0	0'

Table 3-8. Four Nozzle Range Branch Piping Limitations



NOTE

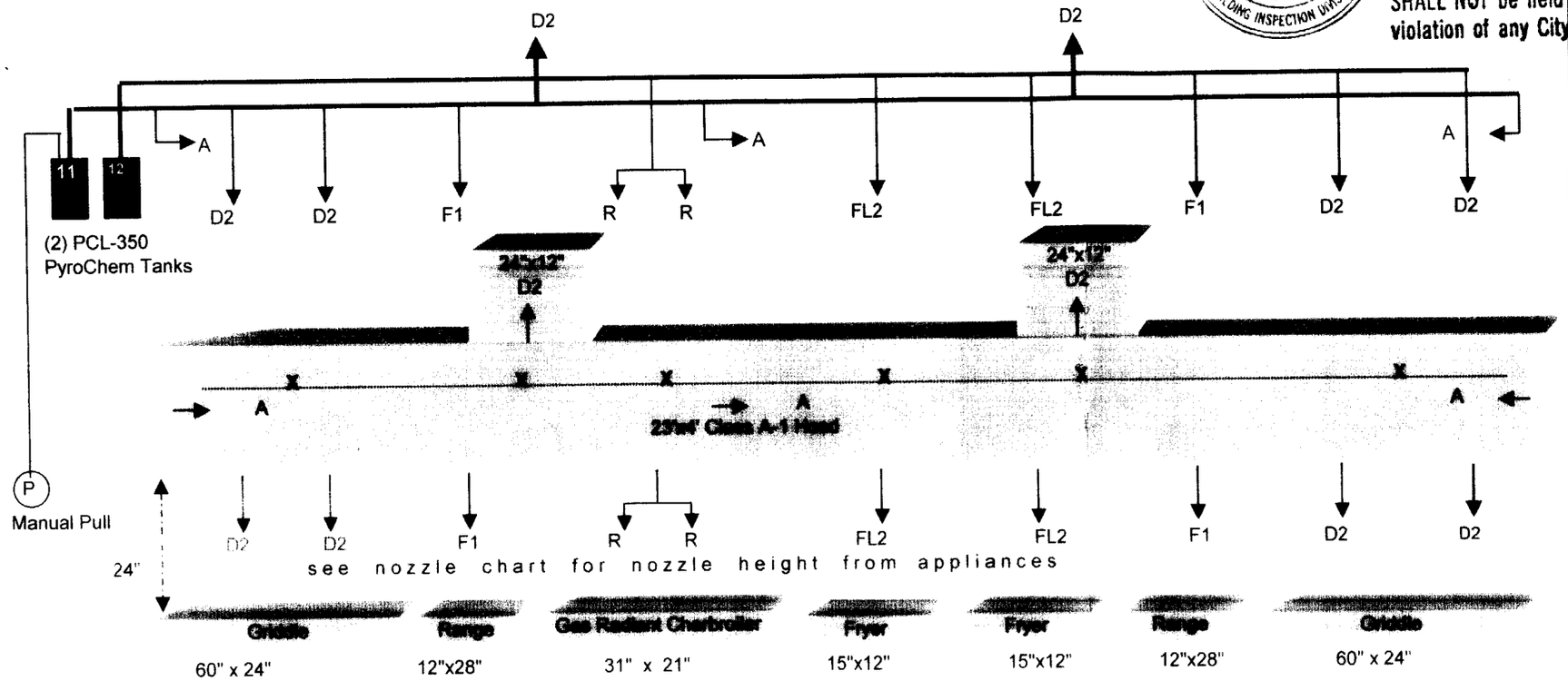
This is not a complete list of all possible configurations. Others will be acceptable provided they conform to the limitations shown in this chapter.

Figure 3-16. Model PCL-240. Examples Of Acceptable Piping Configurations.

Fire Suppression System Plans for Main Cook Line

Plans Not To Scale

Type of System: Pyro-Chem PCL-350 with additional PCL-350 cylinder



Nozzle Chart

Location	Nozzle Type	Nozzle Height	Nozzle flow point	No. of Nozzles	Total flow points
Plenum	NL-A	N/A	1	3	3
Duct	NL-D2	N/A	2	2	4
Griddle 60"	NL-D2	10"-41"	2	2	4
Range 12"	NL-F1	15"-30"	1	2	2
Charbroiler	NL-R	24"-50"	1	2	2
Fryers	NL-FL2	16"x26"	2	2	4
Griddle 60"	NL-D2	10"-41"	2	2	4
					0
System Max.is 26 Flow Points			Flow Points Used:		23

APPROVED
LD Davis 12/18/00
Sacramento Fire Depart
PENDING FIELD INSPEC

CITY OF SACRAMENTO DEVELOPMENT SERVICES
REVIEWED UNDER TITLE 15 CITY CODE City of SACRAMENTO, CALIF. BUILDING INSPECTION DIVISION

This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations on the same without written permission from the Building Inspection Division.

The approval of this plan and specification SHALL NOT be held to permit or approve the violation of any City Ordinance or State Law.

Date of plans: December 05, 2000

Job Site:
Carrow's - 0118
2800 "J" Street
Sacramento, CA 95816
Tel (916) 441-7692

Installation will be performed by:
Pride Companies
4448 Ambrose Ave
Los Angeles, CA 90027

Tel (800) 696-8171
Fax (800) 424-8171
Contractor Lic # 684434 (C16)
Contact: George Khalil

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Legend

Nozzle Line
450 degrees fusible link X
detection line
pull station P
Cylinder
1/2" Supply Pipes or
3/8" Distr Pipes or

NOTES

1. Fire system must be tied into the fire alarm system if there is an existing system.
2. The gas and/or electricity under the hood will shut off automatically when hood fire system activates
3. One K-Class extinguisher will be mounted 6" below manual pull station
4. Two V-ducts, perimeter 72" requiring 2 NL-D2 nozzles
5. Existing mechanical gas valve will be used.
6. Plenum 23' long requires 3 NL-A nozzles.
7. This system requires individual chemical line per cylinder
8. Manual pull station to be installed at point of egress