Form # P 04

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

BUILDING PERMIT

Please Read Application And Notes, If Any, Attached

Permit Number: 100101

This is to certify that DAVISON/BISSON LLC /Sprinkler System

has permission to Install Fire Suppression System Permit

AT 238 RIVERSIDE ST **CBL** 316 B002001

provided that the person or persons, firm or corporation acting this permit shall comply with all of the provisions of the Statutes of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of buildings and structures, and of the application on file in this department.

Apply to Public Works for street line and grade if nature of work requires such information.

Notification of inspection must be given and written permission procured before this building or part thereof is lathed or otherwise covered-in. 24 HOUR NOTICE IS REQUIRED.

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

PERMIT ISSUED
FEB 23 2010
CITY OF PORTLAND

OTHER REQUIRED APPROVALS

Fire Dept. CAPT. R. Gaither

Health Dept.

Appeal Board

Other

Department of Traffic

Director - Building & Inspection Services

2/22/10

PENALTY FOR REMOVING THIS CARD

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No:	Issue Date:	CBL:
10-0101		316 B002001

Location of Construction:	Owner Name:	Owner Address:	Phone:
238 RIVERSIDE ST	DAVISON/BISSON LLC	1111 LISBON ST	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	Sprinkler System, Inc	P.O. Box 1285 Lewiston	2077820104
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	**Zone:**
		Fire Suppression System	B-4

Past Use:	Proposed Use:	Permit Fee:	Cost of Work:	CEO District:
Commercial -PPG Paint - connected w/ permit# 091054 - Lakeds Collision #09-0399	Lakeds Collision Commercial -PPG Paint - Install Fire Suppression System Permit	$50.00	$3,000.00	5

FIRE DEPT: ☑ Approved ☐ Denied

* See Conditions

Signature: KB

INSPECTION: Use Group: S-1/B Type: Sprinkler IBC-2003

Signature: JMB 2/22/10

Proposed Project Description:
Install Fire Suppression System Permit

PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)

Action: ☐ Approved ☐ Approved w/Conditions ☐ Denied

Signature: Date:

Permit Taken By:	Date Applied For:
ldobson	02/04/2010

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building permits do not include plumbing, septic or electrical work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..

PERMIT ISSUED
FEB 23 2010
CITY OF PORTLAND

Zoning Approval

Special Zone or Reviews	Zoning Appeal	Historic Preservation
☐ Shoreland	☐ Variance	☑ Not in District or Landmark
☐ Wetland	☐ Miscellaneous	☐ Does Not Require Review
☐ Flood Zone	☐ Conditional Use	☐ Requires Review
☐ Subdivision	☐ Interpretation	☐ Approved
☐ Site Plan	☐ Approved	☐ Approved w/Conditions
Maj ☐ Minor ☐ MM ☐ Obstructions	☐ Denied	☐ Denied
Date: 2/4/10 TBM	Date:	Date: TBM

CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT | ADDRESS | DATE | PHONE

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE | DATE | PHONE

City of Portland, Maine - Building or Use Permit

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No:	Date Applied For:	CBL:
10-0101	02/04/2010	316 B002001

Location of Construction:	Owner Name:	Owner Address:	Phone:
238 RIVERSIDE ST	DAVISON/BISSON LLC	1111 LISBON ST	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	Sprinkler System, Inc	P.O. Box 1285 Lewiston	(207) 782-0104
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		Fire Suppression System	

Proposed Use:	Proposed Project Description:
Commercial -PPG Paint & Lockards- connected w/ permit# 091054 & 090399 - Install Fire Suppression System Permit	Install Fire Suppression System Permit

Dept: Zoning **Status:** Approved with Conditions **Reviewer:** Ann Machado **Approval Date:** 02/04/2010

Note: **Ok to Issue:** ☑

1) This permit is being approved on the basis of plans submitted. Any deviations shall require a separate approval before starting that work.

Dept: Building **Status:** Approved with Conditions **Reviewer:** Jeanine Bourke **Approval Date:** 02/22/2010

Note: **Ok to Issue:** ☑

1) Sprinkler systems to be designed and installed per IBC 2003 standards Sec. 903.3.1

Dept: Fire **Status:** Approved with Conditions **Reviewer:** Capt Keith Gautreau **Approval Date:** 02/12/2010

Note: **Ok to Issue:** ☑

1) The Fire alarm and Sprinkler systems shall be reviewed by a licensed contractor[s] for code compliance. Compliance letters are required.
2) The sprinkler system shall be installed in accordance with NFPA 13.
3) Application requires State Fire Marshal approval.
4) Fire department connection type and location shall be approved in writing by fire prevention bureau.
5) System acceptance and commissioning must be co-ordinated with alarm and suppression system contractors and the Fire Department. Call 874-8703 to schedule.

Fire Suppression System Permit

If you or the property owner owes real estate or property taxes or user charges on any property within the city, payment arrangements must be made before permits of any kind are accepted.

Installation address: 238-254 Riverside St. CBL: _____

Exact location: (within structure) Rear building - entire structure

Type of occupancy(s) (NFPA & ICC): Light Hazard / Ordinary Hazard Group 2

Building owner: Lockard's Collision

Managing Supervisor: Scott E. Garland License No: 278

Supervisor phone: 775-1521 E-mail: scottssi@maine.rr.com

Installing contractor: Sprinkler Systems Inc. License No: 093

Contractor phone: 775-1521 E-mail: krisssi@maine.rr.com

The suppression work to be done will be: New: ☐ Renovation: ☐ Addition to existing system: ☒

This is an amendment to an existing permit: Yes: ☐ NO ☒ Permit no: _____

NFPA Standard will this system is designed to: NFPA #13 Edition: 2007

*Non-NFPA systems are not approved for use within the City of Portland.

Attach all design information and complete approved submittals as may be required by the State Fire Marshal's Office.

Contractor shall verify location and type of all FDCs shall be approved in writing by the Fire Prevention Bureau.

COST OF WORK: $3,000

PERMIT FEE: $50.
($10 PER $1,000 + $30 FOR THE FIRST $1,000)

Download a new copy of this document from www.portlandmaine.gov for every submittal. Submit all information to the Building Inspections Department, 389 Congress Street, Room 315, Portland, Maine 04101.

Prior to acceptance of any fire protection system, a complete commissioning and acceptance test must be coordinated with all fire system contractors and the Fire Department, and proper documentation of such test(s) provided.

All installation(s) must comply with NFPA and the Fire Department Technical Standard(s).

Applicant signature: _____ Date: 2-4-10

RECEIVED
FEB - 4 2010
Dept. of Building Inspections
City of Portland Maine

State of Maine
Department of Public Safety
Fire Sprinkler System Permit

8712

Lockards Collision

Located at: 238-254 Riverside St
In the Town of: Portland
Occupancy/Use: Autobody Shop and Offices
Type of System: NFPA 13

RECEIVED
FEB - 4 2010
Dept. of Building Inspections
City of Portland Maine

Permission is hereby given to:

Sprinkler Systems, Inc.
PO Box 1285
Lewiston, ME 042431285
Contractor License # **93**

according to plans submittal filed with the Licensing and Inspections Unit and are now approved.
This application form/plans are filed under log # **2091268** , and no departure from application form/plans shall be made without prior approval in writing. This permit is issued under the provisions of Title 32, Chapter 20, Section 12004-I. Nothing herein shall excuse the holder of this permit for failure to comply with local ordinances, zoning laws, or other pertinent legal restrictions. Each permit issued shall be displayed/available at the site of construction.

This permit was issued on **7/22/2009** for a fee paid of **$100.00**

This permit will expire at midnight on *Monday, January 18, 2010*

Anne H. Jordan
Commissioner

Fire Department Connection Location/Type per Local Fire Department

Within 30 days of the completion of a new fire sprinkler system or an addition to an existing fire sprinkler system, a fire sprinkler system contractor shall provide to the Licensing and Inspections Unit a copy of this permit signed and dated by the certified responsible managing supervisor representing that the fire sprinkler system has been installed according to specifications of the approved plan to the best of the supervisor's knowledge, information, and belief. This requirement is part of the sprinkler law, and neglect of this duty is grounds to not renew the contractor's license to do work in the State of Maine. All sprinkler licenses expire June 30th every year.

Job completed, tested and verified on date of _____

RMS for this job: Garland Scott E.

RMS Signature: _____

State of Maine
Department of Public Safety
Fire Sprinkler System Permit

8712

Lockards Collision

Located at: 238-254 Riverside St
In the Town of: Portland
Occupancy/Use: Autobody Shop and Offices
Type of System: NFPA 13

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Sprinkler Systems, Inc.
PO Box 1285
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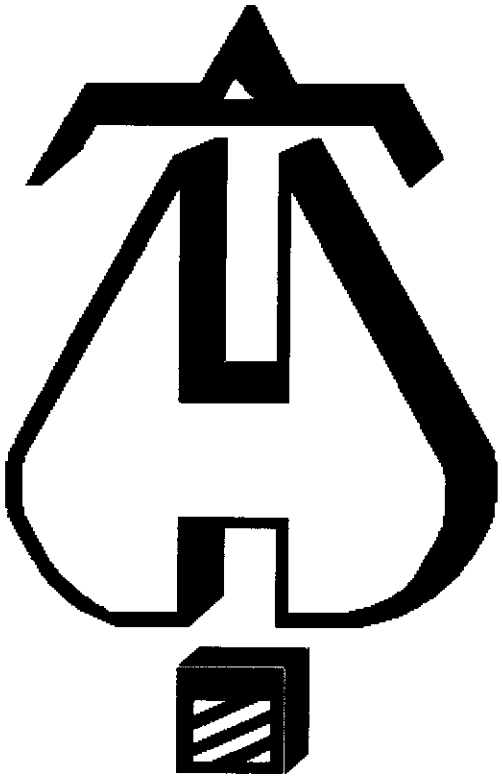
Job completed, tested and verified on date of _____

RMS for this job: Garland Scott E.

RMS Signature: _____



. . . Fire Protection by Computer Design

Sprinkler Systems, Inc.
2-4 Avon Street
P.O. Box 1285
Lewiston, Maine 04240
207-782-0104

Job Name	:	LOCKARDS COLLISION
Building	:	OFFICE ADDITION
Location	:	238-254 RIVERSIDE STREET, PORTLAND, ME 04102
System	:	1 OF 1
Contract	:	09002
Data File	:	LOCKARDSAUTO1.WXF

Hydraulic Design Information Sheet

Name - LOCKARDS COLLISIOIN — Date - 7-8-2009
Location - 238-254 RIVERSIDE STREET, PORTLAND, ME 04102
Building - OFFICE ADDITION — System No. - 1 OF 1
Contractor - PM CONSTRUCTION — Contract No. - 09002
Calculated By - KRISTOPHER J. FISH — Drawing No. - 1 OF 1
Construction: ( ) Combustible (X) Non-Combustible — Ceiling Height - 8-0
Occupancy - ORDINARY HAZARD GROUP 2, 130 SF

SYSTEM DESIGN

(X) NFPA 13 ( ) Lt. Haz. Ord.Haz.Gp. ( ) 1 (X) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other

Specific Ruling	Made By	Date

Area of Sprinkler Operation	- ENTIRE	System Type	Sprinkler/Nozzle
Density	- .2	( ) Wet	Make RELIABLE
Area Per Sprinkler	- 111 SF	(X) Dry	Model F1FR
Elevation at Highest Outlet	- 74.208	( ) Deluge	Size 1/2X1/2
Hose Allowance - Inside	-	( ) Preaction	K-Factor 5.6
Rack Sprinkler Allowance	-	( ) Other	Temp.Rat.155 DEG
Hose Allowance - Outside	- 250 GPM	AT X1	

Note DESIGN AREA #1 - PARTS STORAGE ROOM

Calculation Summary: Flow Required - 410.394 Press Required - 39.732 AT TEST
C-Factor Used: 100 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:		Pump Data:		Tank or Reservoir:
Date of Test	- 9-8-2004			Cap. -
Time of Test	-	Rated Cap.-		Elev.-
Static Press	- 82	@ Press	-	
Residual Press	- 78	Elev.	-	Well
Flow	- 1393			Proof Flow
Elevation	- 54.5			

Location - WATER FLOWED FROM HYD #1263 ON RIVERSIDE CT FROM A 12" DEAD END CITY MAIN. TEST GUAGES READ FROM HYD #1264 ON RIVERSIDE ST
Source of Information - PORTLAND WATER DISTRICT

COMMODITY STORAGE

Commodity		Class	Location
Storage Ht.		Area	Aisle W.
Storage Method:	Solid Piled %	Palletized %	Rack

( ) Single Row	( ) Conven. Pallet	( ) Auto. Storage	( ) Encap.
( ) Double Row	( ) Slave Pallet	( ) Solid Shelf	( ) Non
( ) Mult. Row		( ) Open Shelf	

RACK STORAGE

Flue Spacing — Clearance:Storage to Ceiling
Longitudinal — Transverse

Horizontal Barriers Provided:

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
D	Generic Dry Pipe Valve	0	0	0	0	0	0	9.5	17	0	28	0	47	0	0	0	0	0	0	0	0
E	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
G	Generic Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
T	90' Flow Thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
W	Generic Wafer Check Vlv	0	0	0	0	0	0	0	0	0	10.3	0	13.1	31.8	35.8	27.4	0	0	0	0	0

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
TYP1	0.0	5.6	15.72	na	22.2	0.2	111	15.716
TYP2	0.0	5.6	7.0	na	14.82	0.2	74.081	7.0
1	74.208	K = K @ ARM1	18.88	na	22.86			
2	74.167	K = K @ ARM1	19.39	na	23.17			
3	74.208	K = K @ ARM1	19.52	na	23.25			
4	74.208	K = K @ ARM1	17.8	na	22.2			
5	74.167	K = K @ ARM2	18.01	na	22.32			
6	74.167	K = K @ ARM1	19.03	na	22.95			
7	74.208	K = K @ ARM1	20.18	na	23.64			
A	74.167		20.41	na				
B	74.167		21.1	na				
C	74.167		22.46	na				
D	74.125		23.57	na				
E	74.125		24.21	na				
G	74.125		24.73	na				
H	74.125		29.07	na				
N	74.0		31.04	na				
RT	72.208		31.81	na				
RB	67.792		33.81	na				
X1	54.5		39.7	na	250.0			
TEST	54.5		39.73	na				

The maximum velocity is 14.08 and it occurs in the pipe between nodes B and C

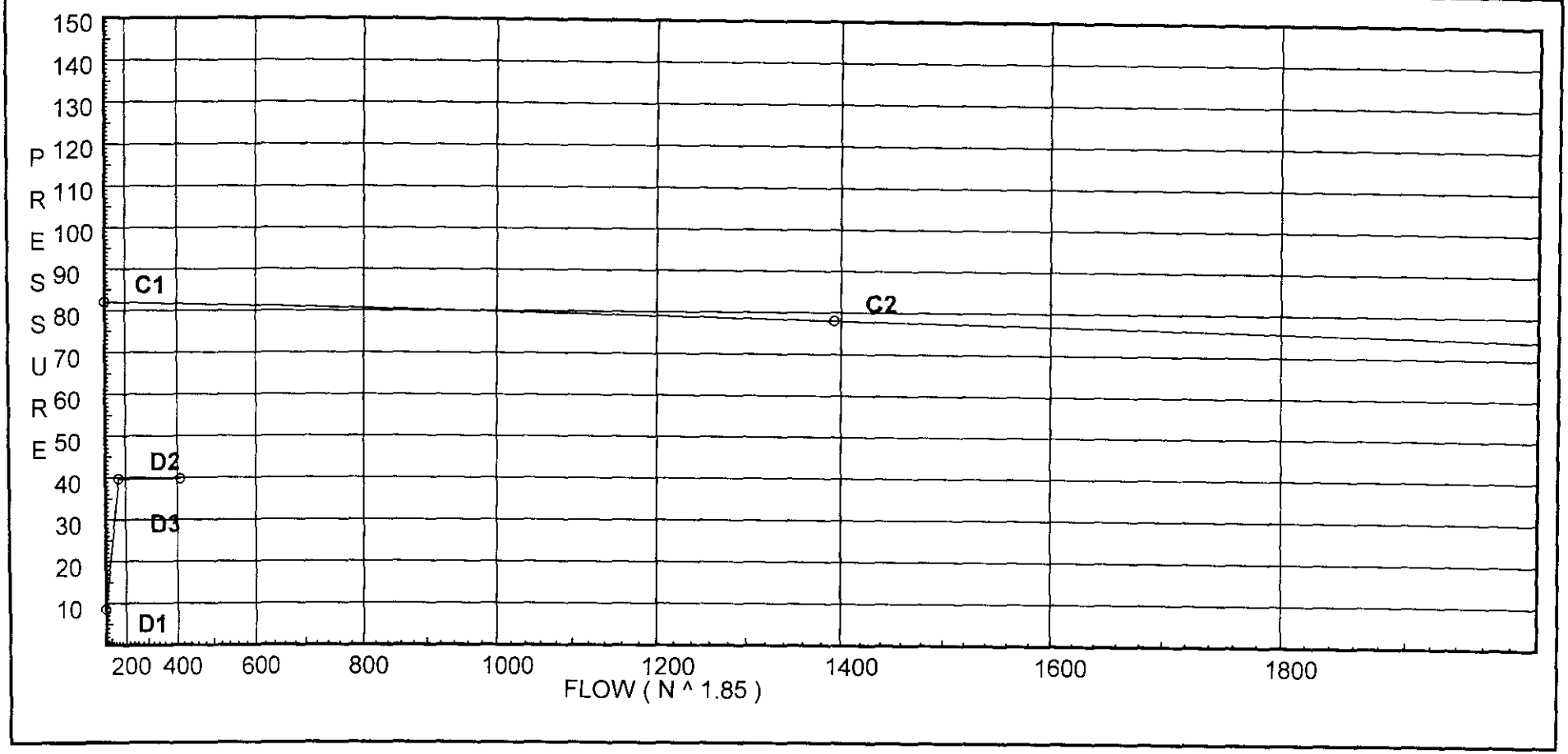
Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
TYP1	22.20	1.049	2E	2.855	3.000	15.716		K Factor = 5.60
to		100	1T	3.568	6.423	0.0		
ARM1	22.2	0.2212		0.0	9.423	2.084		Vel = 8.24
	0.0							
	22.20					17.800		K Factor = 5.26
TYP2	14.82	1.049	2E	2.855	2.500	7.000		K Factor = 5.60
to		100	1T	3.568	6.423	0.0		
ARM2	14.82	0.1047		0.0	8.923	0.934		Vel = 5.50
	0.0							
	14.82					7.934		K Factor = 5.26
1	22.86	1.442		0.0	10.000	18.875		K Factor @ node ARM1
to		100		0.0	0.0	0.018		
2	22.86	0.0496		0.0	10.000	0.496		Vel = 4.49
2	23.17	1.442	1T	5.304	0.333	19.389		K Factor @ node ARM1
to		100		0.0	5.304	0.0		
A	46.03	0.1809		0.0	5.637	1.020		Vel = 9.04
	0.0							
	46.03					20.409		K Factor = 10.19
3	23.25	1.442	1T	5.304	11.667	19.523		K Factor @ node ARM1
to		100		0.0	5.304	0.018		
A	23.25	0.0511		0.0	16.971	0.868		Vel = 4.57
	0.0							
	23.25					20.409		K Factor = 5.15
4	22.20	1.442		0.0	4.000	17.800		K Factor @ node ARM1
to		100		0.0	0.0	0.018		
5	22.2	0.0470		0.0	4.000	0.188		Vel = 4.36
5	22.32	1.442		0.0	6.000	18.006		K Factor @ node ARM2
to		100		0.0	0.0	0.0		
6	44.52	0.1700		0.0	6.000	1.020		Vel = 8.75
6	22.95	1.442	1T	5.304	0.333	19.026		K Factor @ node ARM1
to		100		0.0	5.304	0.0		
B	67.47	0.3672		0.0	5.637	2.070		Vel = 13.25
	0.0							
	67.47					21.096		K Factor = 14.69
7	23.64	1.442	1T	5.304	11.667	20.183		K Factor @ node ARM1
to		100		0.0	5.304	0.018		
B	23.64	0.0527		0.0	16.971	0.895		Vel = 4.64
	0.0							
	23.64					21.096		K Factor = 5.15
A	69.28	2.157		0.0	12.667	20.409		
to		100		0.0	0.0	0.0		
B	69.28	0.0542		0.0	12.667	0.687		Vel = 6.08

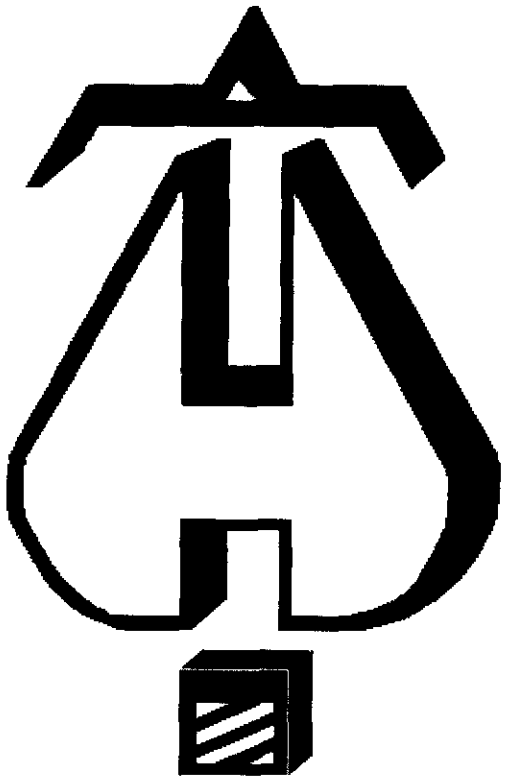
Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
B	91.11	2.157		0.0	5.333	21.096		
to		100		0.0	0.0	0.0		
C	160.39	0.2565		0.0	5.333	1.368		Vel = 14.08
C	0.0	2.157		0.0	4.250	22.464		
to		100		0.0	0.0	0.018		
D	160.39	0.2562		0.0	4.250	1.089		Vel = 14.08
D	0.0	2.157		0.0	2.500	23.571		
to		100		0.0	0.0	0.0		
E	160.39	0.2564		0.0	2.500	0.641		Vel = 14.08
E	0.0	2.157		0.0	2.000	24.212		
to		100		0.0	0.0	0.0		
G	160.39	0.2565		0.0	2.000	0.513		Vel = 14.08
G	0.0	2.157	1T	8.783	8.167	24.725		
to		100		0.0	8.783	0.0		
H	160.39	0.2564		0.0	16.950	4.346		Vel = 14.08
H	0.0	3.26	1E	6.714	34.583	29.071		
to		100	1T	14.388	21.101	0.054		
N	160.39	0.0343		0.0	55.684	1.910		Vel = 6.16
N	0.0	6.357		0.0	1.792	31.035		
to		100		0.0	0.0	0.776		
RT	160.39	0.0017		0.0	1.792	0.003		Vel = 1.62
RT	0.0	6.065	1D	47.0	4.417	31.814		
to		120	1W	13.1	63.100	1.913		
RB	160.39	0.0012	1G	3.0	67.517	0.080		Vel = 1.78
RB	0.0	8.27	1E	28.468	600.292	33.807		
to		140	1G	6.326	90.148	5.757		
X1	160.39	0.0002	1T	55.354	690.440	0.136		Vel = 0.96
X1	250.00	12.34		0.0	200.000	39.700		Qa = 250
to		140		0.0	0.0	0.0		
TEST	410.39	0.0002		0.0	200.000	0.032		Vel = 1.10
	0.0							
	410.39					39.732		K Factor = 65.11

City Water Supply:
C1 - Static Pressure : 82
C2 - Residual Pressure: 78
C2 - Residual Flow : 1393

Demand:

D1 - Elevation	8.536
D2 - System Flow	160.394
D2 - System Pressure	39.732
Hose (Adj City)	
Hose (Demand)	250
D3 - System Demand	410.394
Safety Margin	41.851





. . . Fire Protection by Computer Design

Sprinkler Systems, Inc.
2-4 Avon Street
P.O. Box 1285
Lewiston, Maine 04240
207-782-0104

Job Name : LOCKARDS COLLISION
Building : OFFICE ADDITION
Location : 238-254 RIVERSIDE STREET, PORTLAND, ME 04102
System : 1 OF 1
Contract : 09002
Data File : LOCKARDSAUTO2.WXF

Hydraulic Design Information Sheet

Name - LOCKARDS COLLISIOIN — Date - 7-8-2009
Location - 238-254 RIVERSIDE STREET, PORTLAND, ME 04102
Building - OFFICE ADDITION — System No. - 1 OF 1
Contractor - PM CONSTRUCTION — Contract No. - 09002
Calculated By - KRISTOPHER J. FISH — Drawing No. - 1 OF 1
Construction: ( ) Combustible (X) Non-Combustible — Ceiling Height - 8-0
Occupancy - LIGHT HAZARD - 225 SF

SYSTEM DESIGN

(X) NFPA 13 (X) Lt. Haz. Ord.Haz.Gp. ( ) 1 ( ) 2 ( ) 3 ( ) Ex.Haz.
( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve
Other
Specific Ruling — Made By — Date

Area of Sprinkler Operation - ENTIRE	System Type	Sprinkler/Nozzle
Density - .1	( ) Wet	Make RELIABLE
Area Per Sprinkler - 205.375	(X) Dry	Model F1FR
Elevation at Highest Outlet - 74.208	( ) Deluge	Size 1/2X1/2
Hose Allowance - Inside -	( ) Preaction	K-Factor 5.6
Rack Sprinkler Allowance -	( ) Other	Temp.Rat.155 DEG
Hose Allowance - Outside - 100 GPM	AT X1	

Note DESIGN AREA #2 - OFFICES

Calculation Summary: Flow Required - 594.301 Press Required - 50.576 AT TEST
C-Factor Used: 100 Overhead 140 Underground

WATER SUPPLY

Water Flow Test:	Pump Data:	Tank or Reservoir:
Date of Test - 9-8-2004		Cap. -
Time of Test -	Rated Cap.-	Elev.-
Static Press - 82	@ Press -	
Residual Press - 78	Elev. -	Well
Flow - 1393		Proof Flow
Elevation - 54.5		

Location - WATER FLOWED FROM HYD #1263 ON RIVERSIDE CT FROM A 12" DEAD END CITY MAIN. TEST GUAGES READ FROM HYD #1264 ON RIVERSIDE ST
Source of Information - PORTLAND WATER DISTRICT

COMMODITY STORAGE

Commodity — Class — Location
Storage Ht. — Area — Aisle W.
Storage Method: Solid Piled % Palletized %

( ) Single Row	( ) Conven. Pallet	( ) Auto. Storage	( ) Encap.
( ) Double Row	( ) Slave Pallet	( ) Solid Shelf	( ) Non
( ) Mult. Row		( ) Open Shelf	

RACK STORAGE

Flue Spacing — Clearance:Storage to Ceiling
Longitudinal — Transverse

Horizontal Barriers Provided:

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
TYP1	0.0	5.6	7.0	na	14.82	0.1	148.162	7.0
TYP2	0.0	5.6	7.0	na	14.82	0.1	148.162	7.0
TYP3	0.0	5.6	10.86	na	18.45	0.1	184.505	10.855
TYP4	0.0	5.6	13.45	na	20.54	0.1	205.375	13.45
TYP5	0.0	5.6	7.0	na	14.82	0.1	148.162	7.0
TYP6	0.0	5.6	7.0	na	14.82	0.1	148.162	7.0
TYP7	0.0	5.6	12.22	na	19.58	0.1	195.75	12.219
8	74.208	K = K @ ARM1	17.41	na	22.02			
4	74.208		17.57	na				
5	74.167		17.77	na				
6	74.167		18.05	na				
9	74.167	K = K @ ARM1	17.98	na	22.38			
10	74.167	K = K @ ARM1	16.35	na	21.34			
11	74.167	K = K @ ARM2	16.67	na	21.48			
12	74.25	K = K @ ARM3	14.64	na	19.91			
13	74.167	K = K @ ARM4	15.25	na	20.54			
14	74.125	K = K @ ARM5	16.59	na	21.35			
15	74.167	K = K @ ARM1	14.31	na	19.96			
16	74.167	K = K @ ARM1	14.63	na	20.19			
F	74.167		14.65	na				
17	74.125	K = K @ ARM5	15.77	na	20.82			
18	74.167	K = K @ ARM2	19.46	na	23.21			
19	74.125	K = K @ ARM2	20.2	na	23.64			
20	74.125	K = K @ ARM6	20.68	na	23.57			
J1	74.125		23.99	na				
21	74.167	K = K @ ARM7	14.61	na	20.15			
22	74.125	K = K @ ARM2	14.99	na	20.36			
23	74.167	K = K @ ARM1	15.18	na	20.56			
24	74.125	K = K @ ARM1	15.49	na	20.77			
K	74.125		16.47	na				
25	74.167	K = K @ ARM2	19.9	na	23.47			
26	74.125	K = K @ ARM2	20.44	na	23.78			
M	74.125		21.55	na				
L	74.125		21.61	na				
27	74.083	K = K @ ARM1	23.09	na	25.36			
J	74.083		25.43	na				
B	74.167		18.31	na				
C	74.167		18.44	na				
D	74.125		18.56	na				
E	74.125		18.77	na				
G	74.125		19.21	na				
H	74.125		26.37	na				
28	74.083	K = K @ ARM2	28.29	na	27.98			
29	74.0	K = K @ ARM1	35.52	na	31.45			
N	74.0		40.31	na				
RT	72.208		41.1	na				
RB	67.792		43.66	na				
X1	54.5		50.51	na	100.0			
TEST	54.5		50.58	na				

The maximum velocity is 19.74 and it occurs in the pipe between nodes J and H

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
TYP1	14.82	1.049	2E	2.855	2.000	7.000		K Factor = 5.60
to		100	1T	3.568	6.423	0.0		
ARM1	14.82	0.1047		0.0	8.423	0.882		Vel = 5.50
	0.0							
	14.82					7.882		K Factor = 5.28
TYP2	14.82	1.049	2E	2.855	2.500	7.000		K Factor = 5.60
to		100	1T	3.568	6.423	0.0		
ARM2	14.82	0.1047		0.0	8.923	0.934		Vel = 5.50
	0.0							
	14.82					7.934		K Factor = 5.26
TYP3	18.45	1.049	2E	2.855	4.500	10.855		K Factor = 5.60
to		100	1T	3.568	6.423	0.0		
ARM3	18.45	0.1571		0.0	10.923	1.716		Vel = 6.85
	0.0							
	18.45					12.571		K Factor = 5.20
TYP4	20.54	1.049	2E	2.855	3.000	13.450		K Factor = 5.60
to		100	1T	3.568	6.423	0.0		
ARM4	20.54	0.1914		0.0	9.423	1.804		Vel = 7.62
	0.0							
	20.54					15.254		K Factor = 5.26
TYP5	14.82	1.049	2E	2.855	3.000	7.000		K Factor = 5.60
to		100	1T	3.568	6.423	0.0		
ARM5	14.82	0.1046		0.0	9.423	0.986		Vel = 5.50
	0.0							
	14.82					7.986		K Factor = 5.24
TYP6	14.82	1.049	2E	2.855	4.750	7.000		K Factor = 5.60
to		100	1T	3.568	6.423	0.0		
ARM6	14.82	0.1046		0.0	11.173	1.169		Vel = 5.50
	0.0							
	14.82					8.169		K Factor = 5.19
TYP7	19.58	1.049	2E	2.855	2.500	12.219		K Factor = 5.60
to		100	1T	3.568	6.423	0.0		
ARM7	19.58	0.1753		0.0	8.923	1.564		Vel = 7.27
	0.0							
	19.58					13.783		K Factor = 5.27
8	22.02	1.442		0.0	3.500	17.410		K Factor @ node ARM1
to		100		0.0	0.0	0.0		
4	22.02	0.0463		0.0	3.500	0.162		Vel = 4.33
4	0.0	1.442		0.0	4.000	17.572		
to		100		0.0	0.0	0.018		
5	22.02	0.0460		0.0	4.000	0.184		Vel = 4.33

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
5	0.0	1.442		0.0	6.000	17.774		
to		100		0.0	0.0	0.0		
6	22.02	0.0463		0.0	6.000	0.278		Vel = 4.33
6	0.0	1.442	1T	5.304	0.333	18.052		
to		100		0.0	5.304	0.0		
B	22.02	0.0463		0.0	5.637	0.261		Vel = 4.33
	0.0							
	22.02					18.313		K Factor = 5.15
9	22.38	1.442	1T	5.304	1.667	17.980		K Factor @ node ARM1
to		100		0.0	5.304	0.0		
B	22.38	0.0478		0.0	6.971	0.333		Vel = 4.40
	0.0							
	22.38					18.313		K Factor = 5.23
10	21.34	1.442		0.0	7.500	16.345		K Factor @ node ARM1
to		100		0.0	0.0	0.0		
11	21.34	0.0437		0.0	7.500	0.328		Vel = 4.19
11	21.47	1.442	1T	5.304	6.500	16.673		K Factor @ node ARM2
to		100		0.0	5.304	0.018		
D	42.81	0.1583		0.0	11.804	1.868		Vel = 8.41
	0.0							
	42.81					18.559		K Factor = 9.94
12	19.91	1.442		0.0	15.000	14.642		K Factor @ node ARM3
to		100		0.0	0.0	0.036		
13	19.91	0.0384		0.0	15.000	0.576		Vel = 3.91
13	20.54	1.442		0.0	9.250	15.254		K Factor @ node ARM4
to		100		0.0	0.0	0.018		
14	40.45	0.1426		0.0	9.250	1.319		Vel = 7.95
14	21.36	1.442	1T	5.304	1.667	16.591		K Factor @ node ARM5
to		100		0.0	5.304	0.0		
E	61.81	0.3122		0.0	6.971	2.176		Vel = 12.14
	0.0							
	61.81					18.767		K Factor = 14.27
15	19.96	1.442	1T	5.304	3.667	14.308		K Factor @ node ARM1
to		100		0.0	5.304	0.0		
F	19.96	0.0386		0.0	8.971	0.346		Vel = 3.92
	0.0							
	19.96					14.654		K Factor = 5.21
16	20.19	1.442		0.0	0.500	14.634		K Factor @ node ARM1
to		100		0.0	0.0	0.0		
F	20.19	0.0400		0.0	0.500	0.020		Vel = 3.97
F	19.96	1.442		0.0	7.833	14.654		
to		100		0.0	0.0	0.018		
17	40.15	0.1406		0.0	7.833	1.101		Vel = 7.89

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
17	20.82	1.442	1T	5.304	6.000	15.773		K Factor @ node ARM5
to		100		0.0	5.304	0.0		
G	60.97	0.3044		0.0	11.304	3.441		Vel = 11.98
	0.0							
	60.97					19.214		K Factor = 13.91
18	23.21	1.442		0.0	14.000	19.464		K Factor @ node ARM2
to		100		0.0	0.0	0.018		
19	23.21	0.0510		0.0	14.000	0.714		Vel = 4.56
19	23.63	1.442		0.0	2.583	20.196		K Factor @ node ARM2
to		100		0.0	0.0	0.0		
20	46.84	0.1866		0.0	2.583	0.482		Vel = 9.20
20	23.58	1.442		0.0	8.333	20.678		K Factor @ node ARM6
to		100		0.0	0.0	0.0		
J1	70.42	0.3975		0.0	8.333	3.312		Vel = 13.83
J1	0.0	1.682	1T	7.065	0.500	23.990		
to		100		0.0	7.066	0.018		
J	70.42	0.1877		0.0	7.566	1.420		Vel = 10.17
	0.0							
	70.42					25.428		K Factor = 13.96
21	20.15	1.442		0.0	9.250	14.608		K Factor @ node ARM7
to		100		0.0	0.0	0.018		
22	20.15	0.0392		0.0	9.250	0.363		Vel = 3.96
22	20.37	1.442		0.0	10.333	14.989		K Factor @ node ARM2
to		100		0.0	0.0	0.0		
K	40.52	0.1429		0.0	10.333	1.477		Vel = 7.96
	0.0							
	40.52					16.466		K Factor = 9.99
23	20.56	1.442		0.0	7.250	15.180		K Factor @ node ARM1
to		100		0.0	0.0	0.018		
24	20.56	0.0408		0.0	7.250	0.296		Vel = 4.04
24	20.78	1.442	1T	5.304	1.250	15.494		K Factor @ node ARM1
to		100		0.0	5.304	0.0		
K	41.34	0.1483		0.0	6.554	0.972		Vel = 8.12
K	40.51	1.442	1T	5.304	4.500	16.466		
to		100		0.0	5.304	0.0		
L	81.85	0.5249		0.0	9.804	5.146		Vel = 16.08
	0.0							
	81.85					21.612		K Factor = 17.61
25	23.47	1.442		0.0	10.000	19.904		K Factor @ node ARM2
to		100		0.0	0.0	0.018		
26	23.47	0.0521		0.0	10.000	0.521		Vel = 4.61

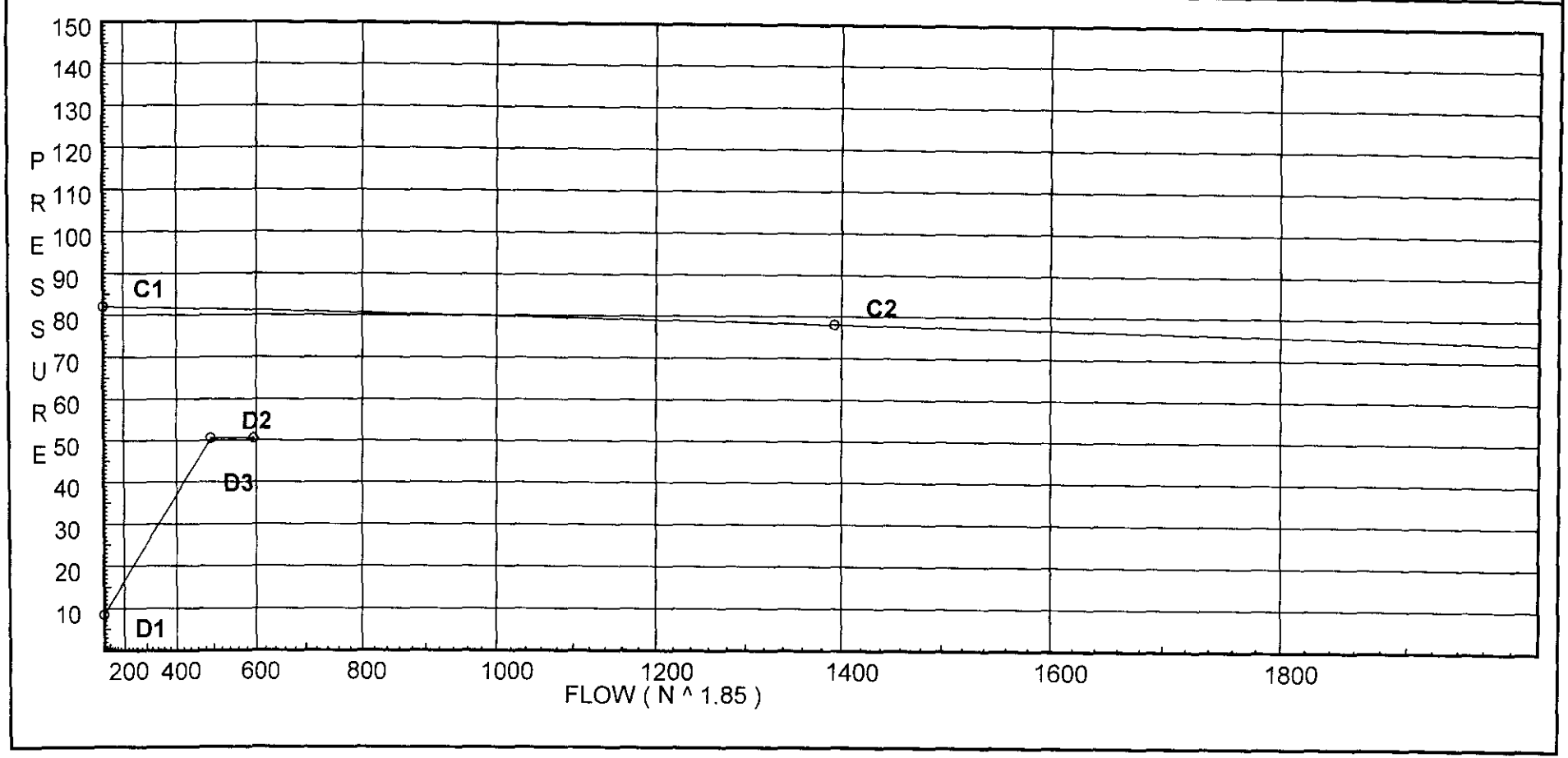
Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
26	23.78	1.442	1T	5.304	0.500	20.443		K Factor @ node ARM2
to		100		0.0	5.304	0.0		
M	47.25	0.1899		0.0	5.804	1.102		Vel = 9.28
M	0.0	2.157		0.0	2.500	21.545		
to		100		0.0	0.0	0.0		
L	47.25	0.0268		0.0	2.500	0.067		Vel = 4.15
L	81.85	2.157		0.0	8.500	21.612		
to		100		0.0	0.0	0.018		
27	129.1	0.1716		0.0	8.500	1.459		Vel = 11.33
27	25.36	2.157	1T	8.783	1.000	23.089		K Factor @ node ARM1
to		100		0.0	8.783	0.0		
J	154.46	0.2391		0.0	9.783	2.339		Vel = 13.56
J	70.42	2.157		0.0	2.000	25.428		
to		100		0.0	0.0	-0.018		
H	224.88	0.4790		0.0	2.000	0.958		Vel = 19.74
	0.0							
	224.88					26.368		K Factor = 43.79
B	44.40	2.157		0.0	5.333	18.313		
to		100		0.0	0.0	0.0		
C	44.4	0.0238		0.0	5.333	0.127		Vel = 3.90
C	0.0	2.157		0.0	4.250	18.440		
to		100		0.0	0.0	0.018		
D	44.4	0.0238		0.0	4.250	0.101		Vel = 3.90
D	42.81	2.157		0.0	2.500	18.559		
to		100		0.0	0.0	0.0		
E	87.21	0.0832		0.0	2.500	0.208		Vel = 7.66
E	61.81	2.157		0.0	2.000	18.767		
to		100		0.0	0.0	0.0		
G	149.02	0.2235		0.0	2.000	0.447		Vel = 13.08
G	60.97	2.157	1T	8.783	8.167	19.214		
to		100		0.0	8.783	0.0		
H	209.99	0.4221		0.0	16.950	7.154		Vel = 18.44
H	224.88	3.26		0.0	8.750	26.368		
to		100		0.0	0.0	0.018		
28	434.87	0.2171		0.0	8.750	1.900		Vel = 16.72
28	27.98	3.26	1E	6.714	22.833	28.286		K Factor @ node ARM2
to		100		0.0	6.714	0.036		
29	462.85	0.2437		0.0	29.547	7.200		Vel = 17.79
29	31.45	3.26	1T	14.388	3.000	35.522		K Factor @ node ARM1
to		100		0.0	14.387	0.0		
N	494.3	0.2752		0.0	17.387	4.785		Vel = 19.00

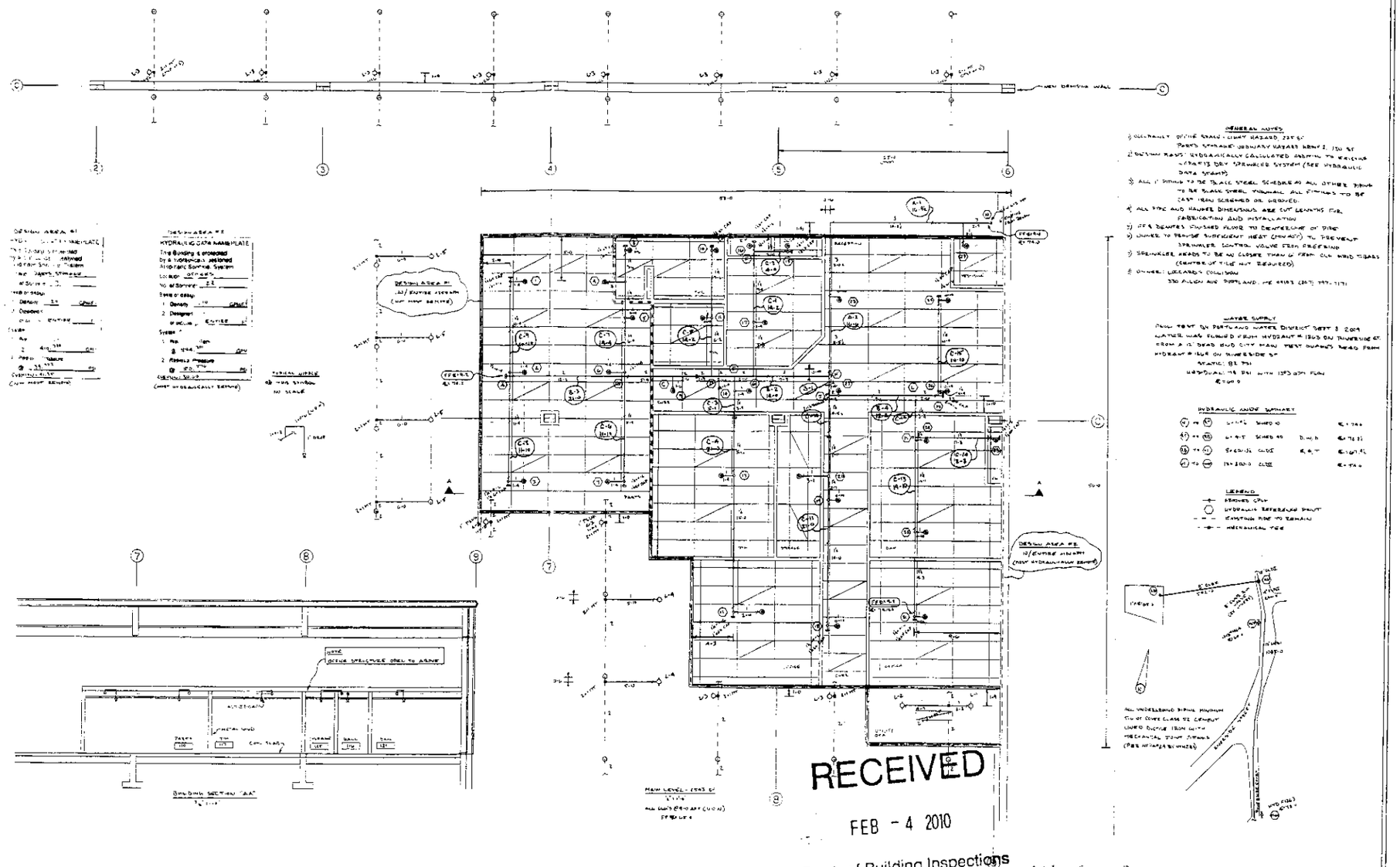
Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
N	0.0	6.357		0.0	1.792	40.307		
to		100		0.0	0.0	0.776		
RT	494.3	0.0106		0.0	1.792	0.019		Vel = 5.00
RT	0.0	6.065	1D	47.0	4.417	41.102		
to		120	1W	13.1	63.100	1.913		
RB	494.3	0.0096	1G	3.0	67.517	0.645		Vel = 5.49
RB	0.0	8.27	1E	28.468	600.292	43.660		
to		140	1G	6.326	90.148	5.757		
X1	494.3	0.0016	1T	55.354	690.440	1.095		Vel = 2.95
X1	100.00	12.34		0.0	200.000	50.512		Qa = 100
to		140		0.0	0.0	0.0		
TEST	594.3	0.0003		0.0	200.000	0.064		Vel = 1.59
	0.0							
	594.30					50.576		K Factor = 83.57

City Water Supply:
C1 - Static Pressure : 82
C2 - Residual Pressure: 78
C2 - Residual Flow : 1393

Demand:

D1 - Elevation	8.518
D2 - System Flow	494.301
D2 - System Pressure	50.576
Hose (Adj City)	
Hose (Demand)	100
D3 - System Demand	594.301
Safety Margin	30.597





HYDRAULIC DESIGN CRITERIA

Density .15 GPM/SF
Remote Area OFFICES
K Factor 5.6 Head Size 1/2"
Hose Allowance 100 GPM
Water Supply 9-3-2009
Static 83
Residual 76
Water Flowing 1393
Size of Supply 12" C.I.

1. Type of Hazard Ordinary HZ 2. Detector Distance N/A
2. Pipe Type Used Schedule 40 4. Sprinkler Area 2500 SF
3. Type of Construction Joist, Conc. & Concrete Steel, Slab, Concrete
4. Maximum Spacing Allowed 15-7 / 130 SF
7. PIPE SIZING METHOD, PIPE SCHEDULE ☐ HYDRAULICALLY CALCULATED ☒
8. ALL HANGERS AND LOCATIONS TO BE IN ACCORDANCE WITH N.F.P.A. PAMPHLET NO 13
9. HIGH DEGREE TEMPERATURE SPRINKLER HEADS TO BE INSTALLED IN ACCORDANCE WITH N.F.P.A. PAMPHLET NO 13

CIRCLE HANGER TYPE TO BE USED

HANGERS

Symbol	Description
	1" STEEL
	1" PIPE CLAMP

ABBREVIATIONS

CONTRACT RESPONSIBILITIES

ITEM	TYP.	OTHERS
STREET CURB		✓
UNDERSLAB		✓
EXCAVATION		✓
PLUMBING		✓
WIRING		✓
PAINTING		✓
TAMPER SWITCHES	✓	
FLOW SWITCHES	✓	
CUT & PATCHING		✓

SPRINKLER HEAD LEGEND

SYMBOL	MAKE	MODEL	FINISH	TYPE	TEMP	N.P.T.	ORIFICE	K-FACTOR	TOTAL
	RELIABLE	F1FR	WHT	STAND UP	165°	1"	17/32	5.6	69
	RELIABLE	F1FR	SATIN BRASS	PENDENT	165°	1/2"	17/32	5.6	2
								TOTAL	69

SUBMITTALS

SENT TO	DATE SENT	DATE RECEIVED
ISO		
FM		
UL		
ETL		
LPC		
STATE FIRE		
LOCAL FIRE		
LOCAL WATER		
GENERAL		

LICENSE # 093
AMS # 278
PERMIT #

SPRINKLER SYSTEMS INC
P.O. BOX 1288
LEWISTON MAINE
04240

LOCKARD'S COLLISION
236-254 RIVERSIDE STREET
PORTLAND ME 04102

CONTRACT WITH FM CONSTRUCTION

SYSTEM TYPE	REVISIONS		
WET ☐	NO.	DATE	DESCRIPTION
DRY ☐			
DELUGE ☐			
PREACTION ☐			
ME LIFE ☐			

SCALE 1/8"=1'-0"
DRAWN BY KJF
CHECKED BY SEG
DATE 7-8-09
TOTAL SPRKS ON JOB 49
SHEET # 1 OF 1
JOB # 09002