Form # P 04

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

BU[...]TION

PERMIT

Please Read Application And Notes, If Any, Attached

Permit Number: 081538

This is to certify that MAINE MEDICAL CENTER[...]ean & A[...]

has permission to Installation of Fire Protection ([...]inklers)

AT 22 BRAMHALL ST CB[...] 053 D007001

provided that the person or persons, fi[...] or co[...]on ac[...]ting this permit shall comply with all of the provisions of the Statutes of Ma[...]e and of the O[...]ces of the City of Portland regulating the construction, maintenance and use[...]f buildings and stru[...]res, 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.

Noti[...]tion o[...]spectio[...]ust be give[...]nd writte[...]ermissio[...]rocured befo[...]this bui[...]g or pa[...]hereof is lathe[...]or oth[...]ed-in. 24 HOU[...]NOTICE IS REQUIRED.

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

OTHER REQUIRED APPROVALS

Fire Dept. Cindy Glass

Health Dept.

Appeal Board

Other

Department Name

12/16/08

Director - Building & Inspection Services

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:
08-1538	12/4/08	053 D007001

Location of Construction:	Owner Name:	Owner Address:	Phone:
22 BRAMHALL ST	MAINE MEDICAL CENTER	22 BRAMHALL ST	207-657-5646
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	Dean & Allyn Inc.	P.O. Box 709 Gray	2076575646
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	**Zone:**
		Additions - Commercial	C-4

Past Use:	Proposed Use:	Permit Fee:	Cost of Work:	CEO District:
Maine Medical Ctr/2nd Floor, Richard Bldg	Maine Medical Ctr/2nd Floor, Richard Bldg - Installation of Fire Protection (Sprinklers)	$450.00	$42,800.00	2

Proposed Project Description:
Installation of Fire Protection (Sprinklers)

FIRE DEPT: ☑ Approved ☐ Denied
See Conditions
Signature:

INSPECTION:
Use Group: I-2 Type: 2B
IMC-2003
IBC-2003
Signature: 12/4/08

PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)
Action: ☐ Approved ☐ Approved w/Conditions ☐ Denied
Signature: Date:

Permit Taken By:	Date Applied For:
lmd	12/10/2008

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..

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 ☐	☐ Denied	☐ Denied
Date: 12/4/08	Date:	Date:

PERMIT ISSUED
DEC 1?
CITY OF PORTLAND

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:
08-1538	12/10/2008	053 D007001

Location of Construction:	Owner Name:	Owner Address:	Phone:
22 BRAMHALL ST	MAINE MEDICAL CENTER	22 BRAMHALL ST	207-657-5646
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
	Dean & Allyn Inc.	P.O. Box 709 Gray	(207) 657-5646
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		Additions - Commercial	

Proposed Use:	Proposed Project Description:
Maine Medical Ctr/2nd Floor, Richard Bldg - Installation of Fire Protection (Sprinklers)	Installation of Fire Protection (Sprinklers)

Dept: Zoning **Status:** Approved **Reviewer:** Marge Schmuckal **Approval Date:** 12/11/2008

Note: **Ok to Issue:** ☑

Dept: Building **Status:** Approved with Conditions **Reviewer:** Chris Hanson **Approval Date:** 12/16/2008

Note: **Ok to Issue:** ☑

1) Equipment must be installed in compliance with the manufacturer's specifications
2) All penetratios through rated assemblies must be protected by an approved firestop system installed in accordance with ASTM 814 or UL 1479, per IBC 2003 Section 712.

Dept: Fire **Status:** Approved with Conditions **Reviewer:** Capt Greg Cass **Approval Date:** 12/11/2008

Note: **Ok to Issue:** ☑

1) Complete "As built drawings " shall be provided to the fire dept at job completion.
2) The Fire alarm and Sprinkler systems shall be reviewed by a licensed contractor[s] for code compliance. Compliance letters are required.
3) A single source supplier should be used for all through penetrations.
4) The sprinkler system shall be installed in accordance with NFPA 13.
5) Application requires State Fire Marshal approval.

BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

to schedule your inspections as agreed upon

Permits expire in 6 months, if the project is not started or ceases for 6 months.

The Owner or their designee is required to notify the inspections office for the following inspections and provide adequate notice. Notice must be called in 48-72 hours in advance in order to schedule an inspection:

By initializing at each inspection time, you are agreeing that you understand the inspection procedure and additional fees from a "Stop Work Order" and "Stop Work Order Release" will be incurred if the procedure is not followed as stated below.

A Pre-construction Meeting will take place upon receipt of your building permit.

__X__ Final inspection required at completion of work.

Certificate of Occupancy is not required for certain projects. Your inspector can advise you if your project requires a Certificate of Occupancy. All projects DO require a final inspection.

If any of the inspections do not occur, the project cannot go on to the next phase, REGARDLESS OF THE NOTICE OR CIRCUMSTANCES.

CERIFICATE OF OCCUPANICES MUST BE ISSUED AND PAID FOR, BEFORE THE SPACE MAY BE OCCUPIED.

_____ _____

Signature of Applicant/Designee Date

_____ _____

Signature of Inspections Official Date

CBL: 053 D007001 **Building Permit #:** 08-1538

General Building Permit Application

If 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: 22 BRAMHALL STREET PORTLAND, ME		
Total Square Footage of Proposed Structure	Square Footage of Lot	
Tax Assessor's Chart, Block & Lot Chart# 053 Block# D Lot# 001	Owner: MAINE MEDICAL CENTER	Telephone:
Lessee/Buyer's Name (If Applicable)	Applicant name, address & telephone: 207-657-5646 DEAN & ALLYN INC P.O. Box 709 GRAY, ME 04039	Cost Of Work: $ 42,800.00 Fee: $ 450.00 C of O Fee: $

Current legal use (i.e. single family) HOSPITAL
If vacant, what was the previous use? _____
Proposed Specific use: PATIENT CARE
Is property part of a subdivision? _____ If yes, please name _____
Project description: INSTALLATION OF FIRE PROTECTION (SPRINKLERS) IN THE 2ND FLOOR OF THE RICHARDS BLDG AT THE MMC HOSPITAL

Contractor's name, address & telephone:

Who should we contact when the permit is ready: JAMES WHITE
Mailing address: Phone: 207-657-5646
@ DEAN & ALLYN, INC
P.O. Box 709
GRAY, ME 04039

Please submit all of the information outlined in the Commercial Application Checklist. Failure to do so will result in the automatic denial of your permit.

In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information or to download copies of this form and other applications visit the Inspections Division on-line at www.portlandmaine.gov, or stop by the Inspections Division office, room 315 City Hall or call 874-8703.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work 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: James White Date: 12/9/08

This is not a permit; you may not commence ANY work until the permit is issued.

DEAN & ALLYN, INC.

FIRE PROTECTION · SPECIAL HAZARD

P.O. Box 709 • 32 Lewiston Road • Bldg. 1C
Gray, ME 04039-0709
207/657-5646 • fax 657-5647

LETTER OF TRANSMITTAL

DATE	JOB NO.
12/9/08	C818

ATTENTION: DONNA (PORTLAND BLDG DEPT)

RE: SPRINKLER SYSTEM PERMIT

PLEASE FIND ENCLOSED:
SPRINKLER LAYOUT
HYDRAULIC CALCS
CD W/ PDF COPIES & PERMIT APPLICATION W/ CHECK FOR FEE

TO PORTLAND CITY HALL (PLAN REVIEW)
380 CONGRESS ST. ROOM 315 3RD FLOOR
PORTLAND, ME 04101

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☒ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☒ HYDRAULIC CALCS
☒ CD W/ PDF VERSION OF PLANS & CALCS

COPIES	DATE	NO.	DESCRIPTION
1	12/9	1 OF 1	SPRINKLER LAYOUT – 2ND FLOOR RICHARDS BLDG
1	12/9	WX1	HYDRAULIC CALCULATIONS
1	12/9	WX2	" "
1	12/9	WX3	" "
1	12/9	WX4	" "
1	12/9	1	PERMIT APPLICATION
1	12/9	1	CHECK # 18902 FOR $1 450.00 (PERMIT FEE)
1	12/9	1	CD WITH PDF VERSION OF PLANS & CALCS

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS PLEASE FIND ENCLOSED DRAWING (SPRINKLER LAYOUT), CALCS, CD, PERMIT APPLICATION, AND CHECK FOR $1 450.00 - PERMIT FEE.

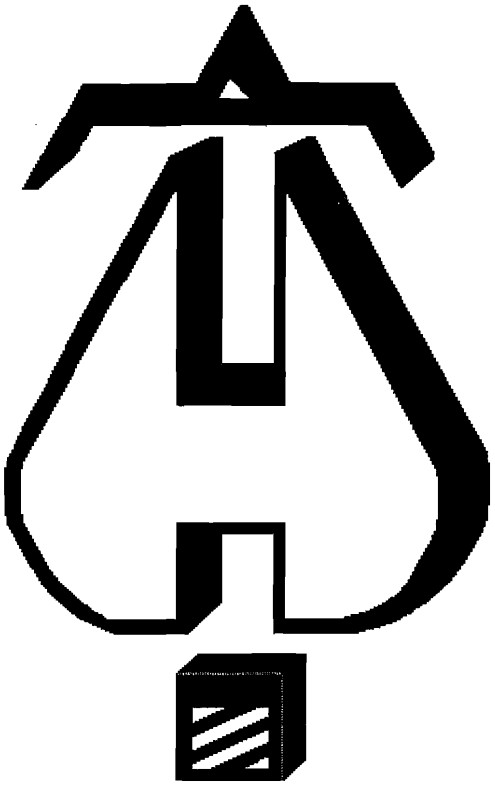
PLEASE CALL WITH ANY QUESTIONS OR CONCERNS.

THANK YOU

COPY TO FILE

SIGNED: James White

If enclosures are not as noted, kindly notify us at once.



. . . Fire Protection by Computer Design

DEAN & ALLYN, INC.
32 LEWISTON ROAD BUILDING 1C
P.O. BOX 709
GRAY, ME 04039
207-657-5646

Job Name	:	MMC 2CND FLOOR RICHARDS
Building	:	Richards Building
Location	:	Maine Medical Center-22 Bramhall St-Portland, Me
System	:	WX1
Contract	:	C0810818
Data File	:	MMC---2C.WX1

Hydraulic Design Information Sheet

Name - Second Floor Fire Protection Upgrade — Date - 11/7/08
Location - Maine Medical Center-22 Bramhall St-Portland, Me
Building - Richards Building — System No. - WX1
Contractor - Dean & Allyn, Inc — Contract No. - C0810818
Calculated By - James R White — Drawing No. - 1 of 1
Construction: ( ) Combustible (X) Non-Combustible — Ceiling Height - 8'-0"
Occupancy - Hospital- PATIENT HOLDING ROOM

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 - 12 HEADS	System Type	Sprinkler/Nozzle
Density - .1	(X) Wet	Make VIKING
Area Per Sprinkler - 138	( ) Dry	Model VK462
Elevation at Highest Outlet - 8'-0"	( ) Deluge	Size 1/2"
Hose Allowance - Inside - 100	( ) Preaction	K-Factor 5.6
Rack Sprinkler Allowance - 0	( ) Other	Temp.Rat.155 deg
Hose Allowance - Outside - 0		

Note SAFETY MARGIN = 78.04 PSI - LARGEST ROOM +2 (12 HEADS)

Calculation Summary: Flow Required - 347.20 Press Required - 81.76
C-Factor Used: 120 Overhead 120 Underground

WATER SUPPLY

Water Flow Test:	Pump Data:	Tank or Reservoir:
Date of Test - 10/11/07		Cap. -
Time of Test -	Rated Cap.-	Elev.-
Static Press - 170	@ Press -	
Residual Press - 75	Elev. -	Well
Flow - 1160		Proof Flow
Elevation - 0		

Location - RICHARDS FIRE PUMP

Source of Information - ANNUAL PUMP TEST

COMMODITY STORAGE RACK

Commodity N/A — Class — Location
Storage Ht. N/A — 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	

Flue Spacing N/A — Clearance:Storage to Ceiling
Longitudinal N/A — Transverse N/A

Horizontal Barriers Provided: N/A

Fittings Used Summary

DEAN & ALLYN, INC.
MMC 2CND FLOOR RICHARDS

Date 110308

Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
B	Generic Butterfly Valve	0	0	0	0	0	0	7	10	0	12	9	10	12	19	21	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
Fsp	Flow Switch Potter VSR	Fitting generates a Fixed Loss Based on Flow																			
G	Generic Gate Valve	0	0	0	0	1	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
Mbb	B Ball Milw BB-SC100			2.25	2	2.5	2.25	10													
N	CPVC 90'Ell Harvel-Spears	7	7	7	8	9	11	12	13	0	0	0	0	0	0	0	0	0	0	0	0
O	CPVC Tee - Branch	3	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
S	Generic Swing Check Valve	4	5	5	7	9	11	14	16	19	22	27	32	45	55	65	76	87	98	109	130
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

Pressure / Flow Summary - STANDARD

DEAN & ALLYN, INC.
MMC 2CND FLOOR RICHARDS

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
D001	16.0	5.6	7.0	na	14.82	0.1	115	7.0
D002	16.0	5.6	7.0	na	14.82	0.1	115	7.0
D003	30.083	5.6	8.03	na	15.87	0.1	80	7.0
D004	30.083	5.6	8.28	na	16.11	0.1	80	7.0
D005	30.083	5.6	12.94	na	20.15	0.1	96	7.0
D006	30.083	5.6	12.68	na	19.94	0.1	94	7.0
D007	30.083	5.6	13.33	na	20.45	0.1	94	7.0
D008	30.083	5.6	15.81	na	22.26	0.1	120	7.0
D009	30.083	5.6	23.31	na	27.04	0.1	80	7.0
D010	30.083	5.6	23.22	na	26.99	0.1	80	7.0
D011	30.083	5.6	18.21	na	23.9	0.1	138	7.0
D012	30.083	5.6	19.36	na	24.64	0.1	138	7.0
27	31.083		12.78	na				
28	31.083		13.32	na				
29	31.083		15.87	na				
26	31.083		7.11	na				
25	31.083		8.21	na				
24	31.083		7.95	na				
22	31.083		18.54	na				
23	31.083		19.52	na				
5	31.083		23.37	na				
17	31.083		23.42	na				
18	31.083		23.59	na				
19	31.083		24.03	na				
20	31.083		43.22	na				
21	31.083		43.31	na				
8	31.083		49.81	na				
15	31.083		63.14	na				
16	31.083		68.78	na				
14B	11.5		77.31	na				
1	31.083		6.88	na				
2	31.083		7.39	na				
3	31.083		8.53	na				
4	31.083		12.92	na				
6	31.083		23.5	na				
7	31.083		24.81	na				
9	31.083		49.4	na				
10	31.083		47.58	na				
11	31.083		51.58	na				
12	31.083		54.73	na	100.0			
13	31.083		68.35	na				
14	11.5		76.91	na				
14A	3.0		81.24	na				
TEST	3.0		81.76	na				

The maximum velocity is 27.63 and it occurs in the pipe between nodes 4 and 5

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
D001	29.63	1.049	1T	5.0	1.000	7.000		K Factor = 5.60
to		120		0.0	5.000	6.099		
EQ01	29.63	0.2693		0.0	6.000	1.616		Vel = 11.00
	0.0							
	29.63					14.715		K Factor = 7.72
D002	29.63	1.049	1E	2.0	1.000	7.000		K Factor = 5.60
to		120		0.0	2.000	6.099		
EQ02	29.63	0.2693		0.0	3.000	0.808		Vel = 11.00
	0.0							
	29.63					13.907		K Factor = 7.95
D001	14.82	1.101	1N	7.0	1.000	7.000		K Factor = 5.60
to		150		0.0	7.000	-0.433		
1	14.82	0.0390		0.0	8.000	0.312		Vel = 4.99
	0.0							
	14.82					6.879		K Factor = 5.65
D002	15.04	1.101	1N	7.0	1.000	7.000		K Factor = 5.60
to		150		0.0	7.000	-0.433		
26	15.04	0.0674		0.0	8.000	0.539		Vel = 5.07
	0.0							
	15.04					7.106		K Factor = 5.64
D003	15.87	1.101	1N	7.0	1.000	8.031		K Factor = 5.60
to		150		0.0	7.000	-0.433		
24	15.87	0.0444		0.0	8.000	0.355		Vel = 5.35
	0.0							
	15.87					7.953		K Factor = 5.63
D004	16.11	1.101	1N	7.0	1.000	8.279		K Factor = 5.60
to		150		0.0	7.000	-0.433		
25	16.11	0.0455		0.0	8.000	0.364		Vel = 5.43
	0.0							
	16.11					8.210		K Factor = 5.62
D005	20.15	1.101	1O	5.0	1.000	12.943		K Factor = 5.60
to		150		0.0	5.000	-0.433		
4	20.15	0.0690		0.0	6.000	0.414		Vel = 6.79
	0.0							
	20.15					12.924		K Factor = 5.61
D006	19.94	1.101	1N	7.0	1.000	12.675		K Factor = 5.60
to		150		0.0	7.000	-0.433		
27	19.94	0.0676		0.0	8.000	0.541		Vel = 6.72
	0.0							
	19.94					12.783		K Factor = 5.58
D007	20.45	1.101	1O	5.0	1.000	13.332		K Factor = 5.60
to		150		0.0	5.000	-0.433		
28	20.45	0.0708		0.0	6.000	0.425		Vel = 6.89
	0.0							
	20.45					13.324		K Factor = 5.60
D008	22.26	1.101	1O	5.0	1.000	15.806		K Factor = 5.60
to		150		0.0	5.000	-0.433		
29	22.26	0.0830		0.0	6.000	0.498		Vel = 7.50

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
	0.0							
	22.26					15.871		K Factor = 5.59
D009	27.04	1.101	1O	5.0	1.000	23.307		K Factor = 5.60
to		150		0.0	5.000	-0.433		
18	27.04	0.1188		0.0	6.000	0.713		Vel = 9.11
	0.0							
	27.04					23.587		K Factor = 5.57
D010	26.99	1.101	1O	5.0	1.000	23.224		K Factor = 5.60
to		150		0.0	5.000	-0.433		
6	26.99	0.1185		0.0	6.000	0.711		Vel = 9.10
	0.0							
	26.99					23.502		K Factor = 5.57
D011	23.90	1.101	1N	7.0	1.000	18.214		K Factor = 5.60
to		150		0.0	7.000	-0.433		
22	23.9	0.0946		0.0	8.000	0.757		Vel = 8.05
	0.0							
	23.90					18.538		K Factor = 5.55
D012	24.64	1.101	1O	5.0	1.000	19.355		K Factor = 5.60
to		150		0.0	5.000	-0.433		
23	24.64	0.1000		0.0	6.000	0.600		Vel = 8.30
	0.0							
	24.64					19.522		K Factor = 5.58
27	19.94	1.101		0.0	8.000	12.783		
to		150		0.0	0.0	0.0		
28	19.94	0.0676		0.0	8.000	0.541		Vel = 6.72
28	20.44	1.101	1O	5.0	5.200	13.324		
to		150		0.0	5.000	0.0		
29	40.38	0.2497		0.0	10.200	2.547		Vel = 13.61
29	22.27	1.101	1O	5.0	9.500	15.871		
to		150		0.0	5.000	0.0		
19	62.65	0.5626		0.0	14.500	8.157		Vel = 21.11
	0.0							
	62.65					24.028		K Factor = 12.78
26	15.04	1.101	1O	5.0	2.000	7.106		
to		150		0.0	5.000	0.0		
2	15.04	0.0401		0.0	7.000	0.281		Vel = 5.07
	0.0							
	15.04					7.387		K Factor = 5.53
25	16.11	1.101	1O	5.0	2.000	8.210		
to		150		0.0	5.000	0.0		
3	16.11	0.0457		0.0	7.000	0.320		Vel = 5.43
	0.0							
	16.11					8.530		K Factor = 5.52
24	15.87	1.101	1O	5.0	8.000	7.953		
to		150		0.0	5.000	0.0		
3	15.87	0.0444		0.0	13.000	0.577		Vel = 5.35
	0.0							

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
	15.87					8.530		K Factor = 5.43
22	23.90	1.101		0.0	10.410	18.538		
to		150		0.0	0.0	0.0		
23	23.9	0.0945		0.0	10.410	0.984		Vel = 8.05
23	24.64	1.101	1O	5.0	10.080	19.522		
to		150		0.0	5.000	0.0		
7	48.54	0.3509		0.0	15.080	5.291		Vel = 16.36
	0.0							
	48.54					24.813		K Factor = 9.74
5	28.51	1.598		0.0	2.100	23.371		
to		150		0.0	0.0	0.0		
17	28.51	0.0214		0.0	2.100	0.045		Vel = 4.56
17	0.0	1.598		0.0	8.000	23.416		
to		150		0.0	0.0	0.0		
18	28.51	0.0214		0.0	8.000	0.171		Vel = 4.56
18	27.04	1.598		0.0	6.000	23.587		
to		150		0.0	0.0	0.0		
19	55.55	0.0735		0.0	6.000	0.441		Vel = 8.89
19	62.65	1.598	1O	8.0	56.700	24.028		
to		150		0.0	8.000	0.0		
20	118.2	0.2966		0.0	64.700	19.193		Vel = 18.91
20	0.0	1.598		0.0	0.310	43.221		
to		150		0.0	0.0	0.0		
21	118.2	0.2968		0.0	0.310	0.092		Vel = 18.91
21	0.0	1.598	1O	8.0	6.370	43.313		
to		150		0.0	8.000	0.0		
10	118.2	0.2967		0.0	14.370	4.263		Vel = 18.91
	0.0							
	118.20					47.576		K Factor = 17.14
8	150.24	1.598	2O	16.0	12.830	49.807		
to		150		0.0	16.000	0.0		
15	150.24	0.4624		0.0	28.830	13.331		Vel = 24.03
15	0.0	2.469	3E	18.0	6.450	63.138		
to		120	1B	7.0	25.000	3.000		* Fixed loss = 3
16	150.24	0.0840	1Fsp	0.0	31.450	2.641		Vel = 10.07
16	0.0	6.065	1E	14.0	31.100	68.779		
to		120		0.0	14.000	8.481		
14B	150.24	0.0011		0.0	45.100	0.048		Vel = 1.67
14B	0.0	6.065	6E	84.0	91.000	77.308		
to		120	2T	60.0	147.000	3.681		
14A	150.24	0.0011	1G	3.0	238.000	0.252		Vel = 1.67
	0.0							
	150.24					81.241		K Factor = 16.67
1	14.82	1.101	1O	5.0	8.000	6.879		
to		150		0.0	5.000	0.0		
2	14.82	0.0391		0.0	13.000	0.508		Vel = 4.99
2	15.04	1.101		0.0	8.000	7.387		
to		150		0.0	0.0	0.0		
3	29.86	0.1429		0.0	8.000	1.143		Vel = 10.06

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
3	31.98	1.101		0.0	8.000	8.530		
to		150		0.0	0.0	0.0		
4	61.84	0.5492		0.0	8.000	4.394		Vel = 20.84
4	20.15	1.101	1O	5.0	6.290	12.924		
to		150		0.0	5.000	0.0		
5	81.99	0.9253		0.0	11.290	10.447		Vel = 27.63
5	-28.51	1.598		0.0	1.910	23.371		
to		150		0.0	0.0	0.0		
6	53.48	0.0686		0.0	1.910	0.131		Vel = 8.56
6	26.99	1.598		0.0	9.000	23.502		
to		150		0.0	0.0	0.0		
7	80.47	0.1457		0.0	9.000	1.311		Vel = 12.87
7	48.53	1.598	1O	8.0	63.660	24.813		
to		150		0.0	8.000	0.0		
8	129.0	0.3488		0.0	71.660	24.994		Vel = 20.64
8	-150.24	1.598	1O	8.0	24.910	49.807		
to		150		0.0	8.000	0.0		
9	-21.24	-0.0124		0.0	32.910	-0.408		Vel = 3.40
9	0.0	1.598	2N	18.0	129.120	49.399		
to		150		0.0	18.000	0.0		
10	-21.24	-0.0124		0.0	147.120	-1.823		Vel = 3.40
10	118.20	1.598	1O	8.0	11.450	47.576		
to		150		0.0	8.000	0.0		
11	96.96	0.2057		0.0	19.450	4.000		Vel = 15.51
11	0.0	1.598	1N	9.0	6.330	51.576		
to		150		0.0	9.000	0.0		
12	96.96	0.2056		0.0	15.330	3.152		Vel = 15.51
12	100.00	2.067	3E	15.0	4.020	54.728		Qa = 100
to		120	1Mbb	2.25	28.250	3.000		* Fixed loss = 3
13	196.96	0.3293	1S	11.0	32.270	10.625		Vel = 18.83
			1Fsp	0.0				
13	0.0	6.065	1E	14.0	31.100	68.353		
to		120		0.0	14.000	8.481		
14	196.96	0.0018		0.0	45.100	0.079		Vel = 2.19
14	0.0	6.065	7E	98.0	207.000	76.913		
to		120	2T	60.0	164.000	3.681		
14A	196.96	0.0017	2G	6.0	371.000	0.647		Vel = 2.19
14A	150.24	6.065	2E	28.0	12.000	81.241		
to		120	1T	30.0	93.000	0.0		
TEST	347.2	0.0050	1G	3.0	105.000	0.521		Vel = 3.86
			1S	32.0				
	0.0							
	347.20					81.762		K Factor = 38.40