DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

BUILDING PERMIT

This is to certify that HIGH TECH FIRE PROTECTION of PO Box 156, Minot, ME 04258

For installation at Lot #9, ROCKLEDGE AVE, LDI Marjorie Shaw Residence

Job ID: 2011-08-1922-FAFS

CBL: 105 - - J - 009 - 001 - - - - -

has permission to Install a dry NFPA 13D sprinkler system

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

Notification of inspection and written permission procured before this building or part thereof is lathed or otherwise closed-in. 48 HOUR NOTICE IS REQUIRED.	A final inspection must be completed by owner before this building or part thereof is occupied. If a certificate of occupancy is required, it must be

Fire Prevention Officer

Code Enforcement Officer / Plan Reviewer

THIS CARD MUST BE POSTED ON THE STREET SIDE OF THE PROPERTY
PENALTY FOR REMOVING THIS CARD

BUILDING PERMIT INSPECTION PROCEDURES

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

or email: buildinginspections@portlandmaine.gov

With the issuance of this permit, the owner, builder or their designee is required to provide adequate notice to the city of Portland Inspections Services for the following inspections. Appointments must be requested 48 to 72 hours in advance of the required inspection. The inspection date will need to be confirmed by this office.

- **Please read the conditions of approval that is attached to this permit!! Contact this office if you have any questions.**
- **Permits expire in 6 months. If the project is not started or ceases for 6 months.**
- **If the inspection requirements are not followed as stated below additional fees may be incurred due to the issuance of a "Stop Work Order" and subsequent release to continue.**

The project cannot move to the next phase prior to the required inspection and approval to continue, REGARDLESS OF THE NOTICE OF CIRCUMSTANCES.

IF THE PERMIT REQUIRES A CERTIFICATE OF OCCUPANCY, IT MUST BE PAID FOR AND ISSUED TO THE OWNER OR DESIGNEE BEFORE THE SPACE MAY BE OCCU0PIED.

City of Portland, Maine - Building or Use Permit Application

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

Job No:	Date Applied:	CBL:	
2011-08-1922-FAFS	**8/4/2011**	**105 - - J - 009 - 001 - - - - -**	
Location of Construction: **ROCKLEDGE AVE LTLLE DIAMOND ISLAND**	Owner Name: **MARJORIE SHAW**	Owner Address: **225 COMMERCIAL ST STE 502 PORTLAND, ME - MAINE 04101**	Phone:
Business Name:	Contractor Name: **High Tech Fire Protection**	Contractor Address: **PO Box 156, Minot, ME 04258**	Phone: **998-2551**
Lessee/Buyer's Name:	Phone:	Permit Type: **FAFS**	Zone: **I-R1**
Past Use: **Single family dwelling (under construction)**	Proposed Use: **Same: single family dwelling – to install a fire suppression system**	Cost of Work: **$22,000.00**	CEO District:
		Fire Dept: 1 Approved w/ conditions ___ Denied ___ N/A Signature: Bjandall (58)	Inspection: Use Group: Type: Signature:
Proposed Project Description: **water based fire suppression system**		Pedestrian Activities District (P.A.D.)	
Permit Taken By: Gayle		**Zoning Approval**	

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 electrial work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False informatin may invalidate a building permit and stop all work.

Special Zone or Reviews	**Zoning Appeal**	**Historic Preservation**
___ Shoreland	___ Variance	✓ Not in Dist or Landmark
___ Wetlands	___ Miscellaneous	___ Does not Require Review
___ Flood Zone	___ Conditional Use	___ Requires Review
___ Subdivision	___ Interpretation	___ Approved
___ Site Plan	___ Approved	___ Approved w/Conditions
___ Maj ___ Min ___ MM	___ Denied	___ Denied
Date: 8/9/11	Date:	Date:

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 appication 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 PHON

PORTLAND MAINE

Strengthening a Remarkable City, Building a Community for Life • www.portlandmaine.gov

Director of Planning and Urban Development
Penny St. Louis

Job ID: 2011-08-1922-FAFS
Installation of a dry NFPA 13D sprinkler system

For installation at:
Lot #9, ROCKLEDGE AVE, LDI
Marjorie Shaw Residence

CBL: 105 - - J - 009 - 001 - - - - -

Conditions of Approval:

Fire

The sprinkler system shall be installed in accordance with NFPA 13D. A compliance letter is required.

Application requires State Fire Marshal approval.

#20110819 RECEIVED

AUG - 4 2011

Dept. of Building Inspections
City of Portland Maine

Water-Based 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: Rockledge Avenue - Little Diamond Is CBL: 105 J 009

Exact location: (within structure) Entire Structure

Type of occupancy(s) (NFPA & ICC): Residential IR-1

Building owner: Marjorie Shaw

Managing Supervisor (RMS): Jeremy A Foss License No: 808

Supervisor phone: (207) 998-2551 E-mail: JFoss@fairpoint.net

Installing contractor: High Tech Fire Protection License No: 102

Contractor phone: (207) 998-2551 E-mail: HTFP@fairpoint.net

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 this system is designed to: 13D Edition: 2010

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

Download a new copy of this document from www.portlandmaine.gov/fire for every submittal. Attach all working documents and complete approved submittals as may be required by the State Fire Marshal's Office on electronic PDF's in addition to full sized plans.

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

COST OF WORK: 21,370

PERMIT FEE: 240

($10 PER $1.000 + $30 FOR THE FIRST $1.000)

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: 8/1/2011

. . . **Fire Protection by Computer Design**

HIGH TECH FIRE PROTECTION
84 HACKETT MILLS ROAD
POLAND, ME 04274
998-2551

Job Name	:	East Wing Hall Calc.
Building	:	Marjorie Shaw Residence
Location	:	Lot 9 Rockledge Avenue
System	:	NFPA 13D
Contract	:	040411-2
Data File	:	East Wing Hall Calc w Meter.wxf

HYDRAULIC DESIGN INFORMATION SHEET

Name - East Wing Hall Calc. Date - 6/1/2011
Location - Lot 9 Rockledge Avenue
Building - Marjorie Shaw Residence System No. - NFPA 13D
Contractor - High Tech Fire Protection Contract No. - 040411-2
Calculated By - Jeremy Foss Drawing No. - FP-1.2
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'-0"
OCCUPANCY - Residential

SYSTEM DESIGN

Type of Calculation: ( )NFPA 13 Residential ( )NFPA 13R (X)NFPA 13D
Number of Sprinklers Flowing: ( )1 (X)2 ( )4 ( )
( )Other
( )Specific Ruling Made by Date

Listed Flow at Start Point - 15 Gpm System Type
Listed Pres. at Start Point - 9.4 Psi ( ) Wet (X) Dry
MAXIMUM LISTED SPACING 16 x 16 ( ) Deluge ( ) PreAction
Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
Additional Flow Added - 0 Gpm Make Tyco Model LFII
Elevation at Highest Outlet - 18 Feet Size 1" K-Factor 4.9
Note: Temperature Rating 155

Calculation Summary: Gpm Required 31 Psi Required 55 At Base of Riser
C-Factor Used: Overhead 150 Underground 150

WATER SUPPLY

Water Flow Test:
Date of Test - 8/10/2001
Time of Test -
Static (Psi) - 96
Residual (Psi) - 54
Flow (Gpm) - 1321
Elevation - 16

Pump Data:
Rated Cap.
@ Psi
Elev.
Other

Tank or Reservoir:
Cap.
Elev.

Well
Proof Flow Gpm

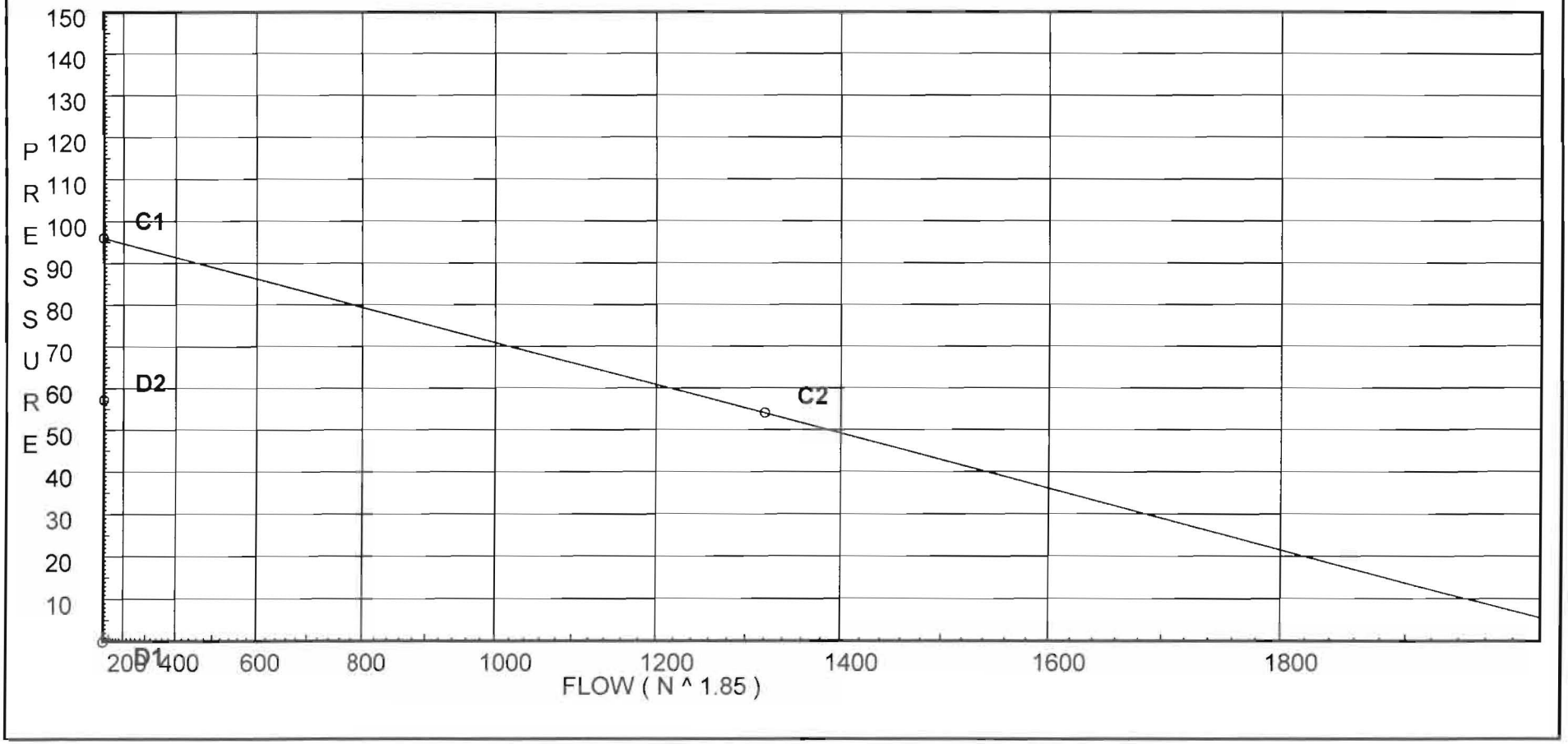
Location: Test Hydrant Located on Rockledge Avenue Approx. 450' from site.

Source of Information: Portland Water District

City Water Supply:
C1 - Static Pressure : 96
C2 - Residual Pressure: 54
C2 - Residual Flow : 1321

Demand:

D1 - Elevation	:	-0.217
D2 - System Flow	:	30.6601
D2 - System Pressure	:	57.168
Hose (Adj City)	:	
Hose (Demand)	:	
D3 - System Demand	:	30.6601
Safety Margin	:	38.793



Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
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	1	1	1	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
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
R *	CPVC Coupling Tee-Run	1	1	1	1	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0
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
Zik	Wilkins 950XL	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

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

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

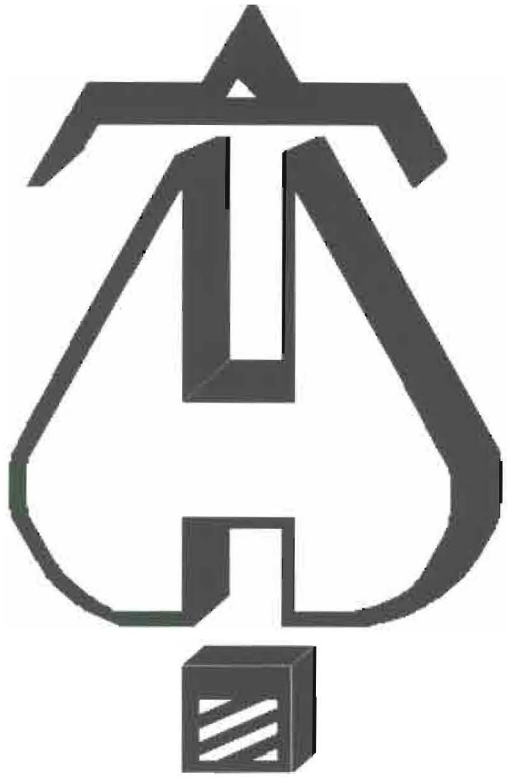
Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
DP1	-1.0	4.9	9.4	na	15.02	0.05	256	9.4
601	15.5	K = K @ EQ01	9.61	na	15.02			
602	15.5	K = K @ EQ01	10.41	na	15.64			
C1	15.5		10.7	na				
C2	15.5		13.32	na				
C3	16.0		13.88	na				
C4	16.0		23.06	na				
C5	18.0		23.57	na				
C6	18.0		29.6	na				
X4	18.0		35.69	na				
X5	8.0		40.73	na				
X6	8.0		44.66	na				
TOR	8.0		45.48	na				
BOR	2.0		48.62	na				
BASE	-1.0		59.74	na				
H1	-2.0		63.31	na				
H2	-2.0		64.96	na				
H3	16.0		57.16	na				
TEST	16.0		57.17	na				

The maximum velocity is 11.92 and it occurs in the pipe between nodes H1 and H2

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
DP1	15.02	1.101	1T	9.563	1.500	9.400		K Factor = 4.90
to		150.0	1O	5.0	14.562	-0.433		
EQ01	15.02	0.0401		0.0	16.062	0.644		Vel = 5.06
	0.0							
	15.02					9.611		K Factor = 4.84
601	15.02	1.101	3R	3.0	12.000	9.611		K Factor @ node EQ01
to		150.0	1O	5.0	8.000	0.0		
602	15.02	0.0400		0.0	20.000	0.801		Vel = 5.06
602	15.64	1.101		0.0	1.900	10.412		K Factor @ node EQ01
to		150.0		0.0	0.0	0.0		
C1	30.66	0.1500		0.0	1.900	0.285		Vel = 10.33
C1	0.0	1.049	1E	1.427	5.100	10.697		
to		100.0		0.0	1.427	0.0		
C2	30.66	0.4019		0.0	6.527	2.623		Vel = 11.38
C2	0.0	1.049	1E	1.427	0.500	13.320		
to		100.0		0.0	1.427	-0.217		
C3	30.66	0.4022		0.0	1.927	0.775		Vel = 11.38
C3	0.0	1.049	2E	2.855	20.000	13.878		
to		100.0		0.0	2.855	0.0		
C4	30.66	0.4019		0.0	22.855	9.186		Vel = 11.38
C4	0.0	1.049	1E	1.427	2.000	23.064		
to		100.0		0.0	1.427	-0.866		
C5	30.66	0.4018		0.0	3.427	1.377		Vel = 11.38
C5	0.0	1.049		0.0	15.000	23.575		
to		100.0		0.0	0.0	0.0		
C6	30.66	0.4019		0.0	15.000	6.028		Vel = 11.38
C6	0.0	1.101	2N	14.0	23.600	29.603		
to		150.0	3R	3.0	17.000	0.0		
X4	30.66	0.1500		0.0	40.600	6.089		Vel = 10.33
X4	0.0	1.394	1E	4.762	10.000	35.692		
to		150.0		0.0	4.761	4.331		
X5	30.66	0.0476		0.0	14.761	0.702		Vel = 6.45
X5	0.0	1.38	1E	2.141	30.800	40.725		
to		100.0	1T	4.282	6.423	0.0		
X6	30.66	0.1057		0.0	37.223	3.935		Vel = 6.58
X6	0.0	1.61	1E	2.855	13.500	44.660		
to		100.0		0.0	2.855	0.0		
TOR	30.66	0.0499		0.0	16.355	0.816		Vel = 4.83
TOR	0.0	1.61	1E	2.855	6.000	45.476		
to		100.0	1Eql	2.141	4.996	2.599		
BOR	30.66	0.0498		0.0	10.996	0.548		Vel = 4.83
BOR	0.0	1.61	1E	4.0	4.000	48.623		
to		120.0	1Zik	0.0	4.000	10.830		* Fixed loss = 9.531
BASE	30.66	0.0356		0.0	8.000	0.285		Vel = 4.83

HIGH TECH FIRE PROTECTION
East Wing Hall Calc.

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*******	Notes ******
BASE	0.0	1.72	1E	3.087	180.000	59.738			
to		150.0	1G	0.617	3.704	0.433			
H1	30.66	0.0171		0.0	183.704	3.138		Vel = 4.23	
H1	0.0	1.025	1T	6.75	1.000	63.309			
to		150.0		0.0	6.750	0.0			
H2	30.66	0.2125		0.0	7.750	1.647		Vel = 11.92	
H2	0.0	8.27		0.0	450.000	64.956			
to		140.0		0.0	0.0	-7.796			
H3	30.66	0.0		0.0	450.000	0.004		Vel = 0.18	
H3	0.0	6.16	1E	20.084	20.000	57.164			
to		140.0	1G	4.304	67.425	0.0			
TEST	30.66	0.0	1T	43.037	87.425	0.004		Vel = 0.33	
	0.0								
	30.66					57.168		K Factor = 4.06	



. . . Fire Protection by Computer Design

HIGH TECH FIRE PROTECTION
84 HACKETT MILLS ROAD
POLAND, ME 04274
998-2551

Job Name	:	West Wing Stair Calc.
Building	:	Marjorie Shaw Residence
Location	:	Lot 9 Rockledge Avenue
System	:	NFPA 13D
Contract	:	040411-2
Data File	:	West Wing Stair Calc w Meter.wxf

HYDRAULIC DESIGN INFORMATION SHEET

Name - West Wing Stair Calc. Date - 6/1/2011
Location - Lot 9 Rockledge Avenue
Building - Marjorie Shaw Residence System No. - NFPA 13D
Contractor - High Tech Fire Protection Contract No. - 040411-2
Calculated By - Jeremy Foss Drawing No. - FP-1.2
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'-0"
OCCUPANCY - Residential

SYSTEM DESIGN

Type of Calculation: ( )NFPA 13 Residential ( )NFPA 13R (X)NFPA 13D
Number of Sprinklers Flowing: ( )1 (X)2 ( )4 ( )
( )Other
( )Specific Ruling Made by Date

Listed Flow at Start Point - 15 Gpm System Type
Listed Pres. at Start Point - 9.4 Psi ( ) Wet (X) Dry
MAXIMUM LISTED SPACING 16 x 16 ( ) Deluge ( ) PreAction
Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
Additional Flow Added - 0 Gpm Make Tyco Model LFII
Elevation at Highest Outlet - 28 Feet Size 1" K-Factor 4.9
Note: Temperature Rating 155

Calculation Summary: Gpm Required 31 Psi Required 52 At Base of Riser
C-Factor Used: Overhead 150 Underground 150

WATER SUPPLY

Water Flow Test:		Pump Data:	Tank or Reservoir:
Date of Test	- 8/10/2001	Rated Cap.	Cap.
Time of Test	-	@ Psi	Elev.
Static (Psi)	- 96	Elev.	
Residual (Psi)	- 54	Other	Well
Flow (Gpm)	- 1321		Proof Flow Gpm
Elevation	- 16		

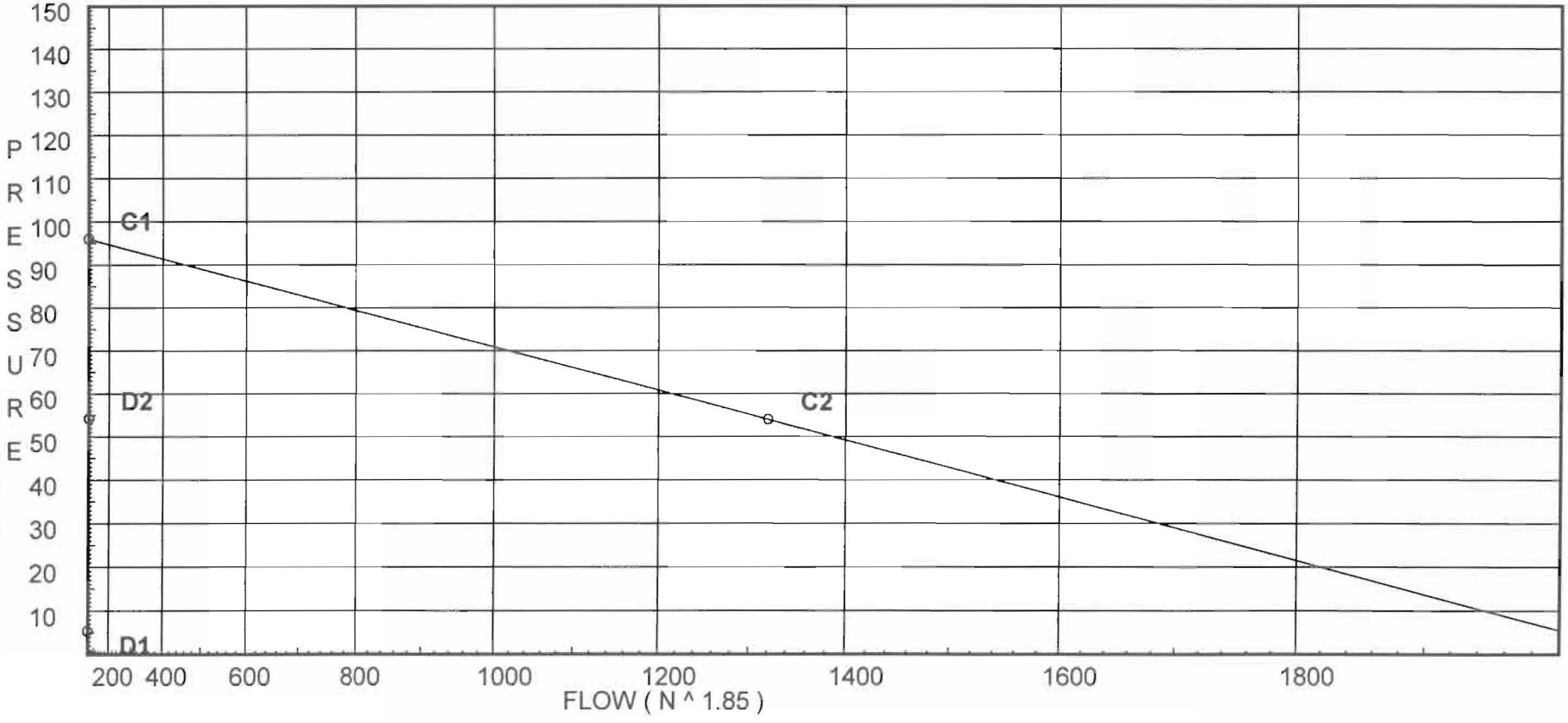
Location: Test Hydrant Located on Rockledge Avenue Approx. 450' from site.

Source of Information: Portland Water District

City Water Supply:
C1 - Static Pressure : 96
C2 - Residual Pressure: 54
C2 - Residual Flow : 1321

Demand:

D1 - Elevation	:	5.414
D2 - System Flow	:	30.1014
D2 - System Pressure	:	54.234
Hose (Adj City)	:	
Hose (Demand)	:	
D3 - System Demand	:	30.1014
Safety Margin	:	41.728



Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
E	90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
F	45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	Generic Gate Valve	0	0	1	1	1	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
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
R *	CPVC Coupling Tee-Run	1	1	1	1	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0
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
Zik	Wilkins 950XL	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

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

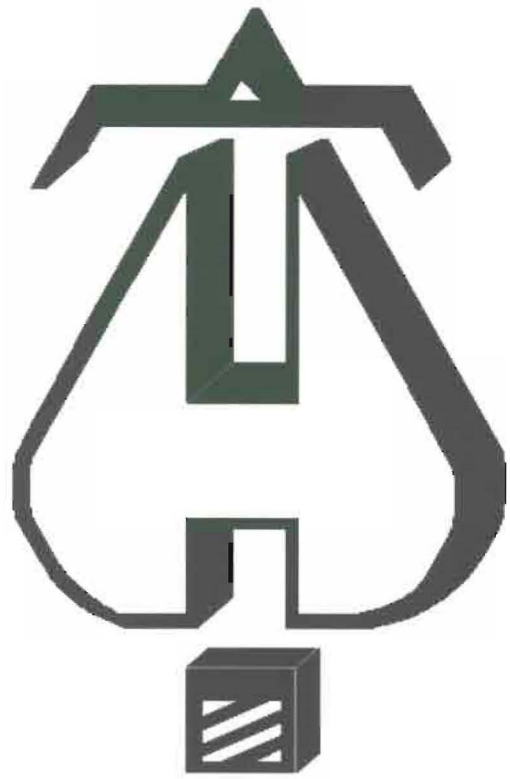
Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
DP1	-1.0	4.9	9.4	na	15.02	0.05	256	9.4
801	28.5	K = K @ EQ01	9.07	na	15.02			
802	28.5	K = K @ EQ01	9.14	na	15.08			
D1	28.5		9.93	na				
D2	28.5		12.72	na				
D3	18.5		19.22	na				
D4	18.5		20.15	na				
D5	18.5		24.23	na				
D6	18.5		27.32	na				
D7	18.0		28.33	na				
D8	18.0		29.52	na				
D9	8.0		35.85	na				
D10	8.0		42.4	na				
TOR	8.0		42.73	na				
BOR	2.0		45.86	na				
BASE	-1.0		56.96	na				
H1	-2.0		60.43	na				
H2	-2.0		62.02	na				
H3	16.0		54.23	na				
TEST	16.0		54.23	na				

The maximum velocity is 11.7 and it occurs in the pipe between nodes H1 and H2

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
DP1	15.02	1.049		0.0	1.000	9.400		K Factor = 4.90
to		100.0		0.0	0.0	-0.433		
EQ01	15.02	0.1070		0.0	1.000	0.107		Vel = 5.58
	0.0							
	15.02					9.074		K Factor = 4.99
801	15.02	1.101	1T	9.563	6.900	9.074		K Factor @ node EQ01
to		150.0	1O	5.0	14.562	0.0		
D1	15.02	0.0401		0.0	21.462	0.860		Vel = 5.06
	0.0							
	15.02					9.934		K Factor = 4.77
802	15.08	1.101	1T	9.563	5.100	9.141		K Factor @ node EQ01
to		150.0	1O	5.0	14.562	0.0		
D1	15.08	0.0403		0.0	19.662	0.793		Vel = 5.08
D1	15.02	1.101	1R	1.0	13.200	9.934		
to		150.0	1O	5.0	6.000	0.0		
D2	30.1	0.1450		0.0	19.200	2.784		Vel = 10.14
D2	0.0	1.101	1O	5.0	10.000	12.718		
to		150.0		0.0	5.000	4.331		
D3	30.1	0.1449		0.0	15.000	2.174		Vel = 10.14
D3	0.0	1.101	1R	1.0	5.400	19.223		
to		150.0		0.0	1.000	0.0		
D4	30.1	0.1450		0.0	6.400	0.928		Vel = 10.14
D4	0.0	1.049		0.0	10.500	20.151		
to		100.0		0.0	0.0	0.0		
D5	30.1	0.3885		0.0	10.500	4.079		Vel = 11.17
D5	0.0	1.101	2R	2.0	12.300	24.230		
to		150.0	1N	7.0	9.000	0.0		
D6	30.1	0.1449		0.0	21.300	3.087		Vel = 10.14
D6	0.0	1.101	1O	5.0	0.500	27.317		
to		150.0		0.0	5.000	0.217		
D7	30.1	0.1449		0.0	5.500	0.797		Vel = 10.14
D7	0.0	1.101	1O	5.0	3.200	28.331		
to		150.0		0.0	5.000	0.0		
D8	30.1	0.1450		0.0	8.200	1.189		Vel = 10.14
D8	0.0	1.101	1E	3.825	10.000	29.520		
to		150.0		0.0	3.825	4.331		
D9	30.1	0.1450		0.0	13.825	2.004		Vel = 10.14
D9	0.0	1.049	2T	7.137	9.000	35.855		
to		100.0	1F	0.714	7.851	0.0		
D10	30.1	0.3885		0.0	16.851	6.546		Vel = 11.17
D10	0.0	1.61	1E	2.855	3.900	42.401		
to		100.0		0.0	2.855	0.0		
TOR	30.1	0.0483		0.0	6.755	0.326		Vel = 4.74

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
TOR	0.0	1.61	1E	2.855	6.000	42.727		
to		100.0	1Eql	2.141	4.996	2.599		
BOR	30.1	0.0482		0.0	10.996	0.530		Vel = 4.74
BOR	0.0	1.61	1E	4.0	4.000	45.856		
to		120.0	1Zik	0.0	4.000	10.834		* Fixed loss = 9.534
BASE	30.1	0.0344		0.0	8.000	0.275		Vel = 4.74
BASE	0.0	1.72	1E	3.087	180.000	56.965		
to		150.0	1G	0.617	3.704	0.433		
H1	30.1	0.0165		0.0	183.704	3.033		Vel = 4.16
H1	0.0	1.025	1T	6.75	1.000	60.431		
to		150.0		0.0	6.750	0.0		
H2	30.1	0.2053		0.0	7.750	1.591		Vel = 11.70
H2	0.0	8.27		0.0	450.000	62.022		
to		140.0		0.0	0.0	-7.796		
H3	30.1	0.0		0.0	450.000	0.004		Vel = 0.18
H3	0.0	6.16	1E	20.084	20.000	54.230		
to		140.0	1G	4.304	67.425	0.0		
TEST	30.1	0.0	1T	43.037	87.425	0.004		Vel = 0.32
	0.0							
	30.10					54.234		K Factor = 4.09



. . . Fire Protection by Computer Design

HIGH TECH FIRE PROTECTION
84 HACKETT MILLS ROAD
POLAND, ME 04274
998-2551

Job Name	:	Main House Bunk Room Calc.
Building	:	Marjorie Shaw Residence
Location	:	Lot 9 Rockledge Avenue
System	:	NFPA 13D
Contract	:	040411-2
Data File	:	Main House Bunk Room Calc w Meter.wxf

HYDRAULIC DESIGN INFORMATION SHEET

Name - Main House Bunk Room Calc. Date - 6/1/2011
Location - Lot 9 Rockledge Avenue
Building - Marjorie Shaw Residence System No. - NFPA 13D
Contractor - High Tech Fire Protection Contract No. - 040411-2
Calculated By - Jeremy Foss Drawing No. - FP-1.2
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height Varies
OCCUPANCY - Residential

SYSTEM DESIGN

Type of Calculation: ( )NFPA 13 Residential ( )NFPA 13R (X)NFPA 13D
Number of Sprinklers Flowing: ( )1 (X)2 ( )4 ( )
( )Other
( )Specific Ruling Made by Date

Listed Flow at Start Point - 23 Gpm System Type
Listed Pres. at Start Point - 27.3 Psi ( ) Wet (X) Dry
MAXIMUM LISTED SPACING 16 x 16 ( ) Deluge ( ) PreAction
Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
Additional Flow Added - 0 Gpm Make Tyco Model LFII
Elevation at Highest Outlet - 30 Feet Size 1/2" K-Factor 4.4
Note: Temperature Rating 155

Calculation Summary: Gpm Required 46 | Psi Required 86 | At Base of Riser
C-Factor Used: Overhead 150 | Underground 150

WATER SUPPLY

Water Flow Test:
Date of Test - 8/10/2001
Time of Test -
Static (Psi) - 96
Residual (Psi) - 54
Flow (Gpm) - 1321
Elevation - 16

Pump Data:
Rated Cap.
@ Psi
Elev.
Other

Tank or Reservoir:
Cap.
Elev.

Well
Proof Flow Gpm

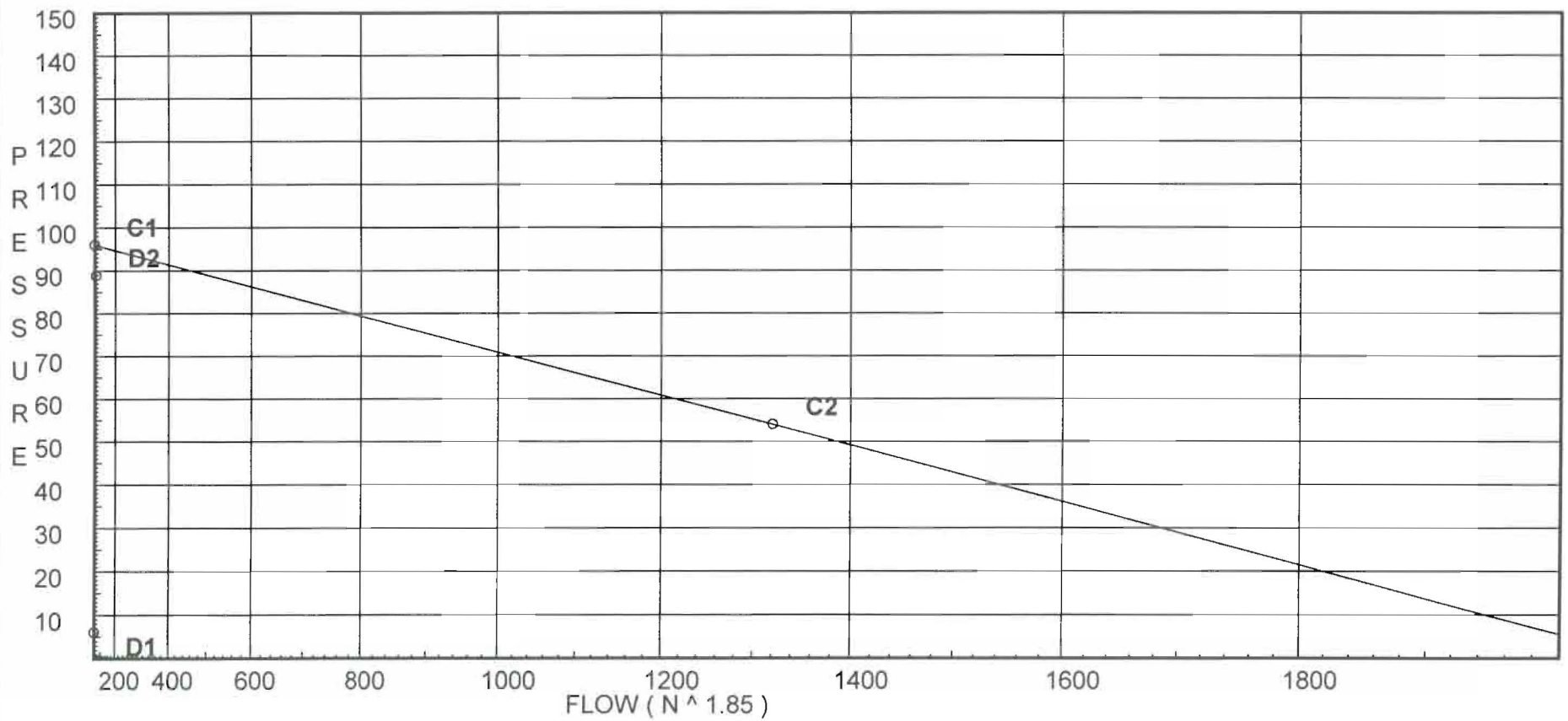
Location: Test Hydrant Located on Rockledge Avenue Approx. 450' from site.

Source of Information: Portland Water District

City Water Supply:
C1 - Static Pressure : 96
C2 - Residual Pressure: 54
C2 - Residual Flow : 1321

Demand:

D1 - Elevation	:	6.063
D2 - System Flow	:	46.0129
D2 - System Pressure	:	88.856
Hose (Adj City)	:	
Hose (Demand)	:	
D3 - System Demand	:	46.0129
Safety Margin	:	7.059



Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
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	1	1	1	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
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
R *	CPVC Coupling Tee-Run	1	1	1	1	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0
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
Zik	Wilkins 950XL	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

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

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
201	30.0	4.4	27.3	na	22.99	0.05	196	27.3
A1	30.0		27.99	na				
A2	28.0		29.65	na				
202	30.0	4.4	27.38	na	23.02	0.05	196	27.3
A3	30.0		28.07	na				
A4	28.0		29.73	na				
X1	28.0		31.45	na				
X2	18.0		41.18	na				
X3	18.0		43.06	na				
X4	18.0		54.91	na				
X5	8.0		60.73	na				
X6	8.0		69.07	na				
TOR	8.0		70.8	na				
BOR	2.0		74.56	na				
BASE	-1.0		86.06	na				
H1	-2.0		93.15	na				
H2	-2.0		96.64	na				
H3	16.0		88.85	na				
TEST	16.0		88.86	na				

The maximum velocity is 17.89 and it occurs in the pipe between nodes H1 and H2

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
201	22.99	1.101	1N	7.0	0.800	27.300		K Factor = 4.40
to		150.0		0.0	7.000	0.0		
A1	22.99	0.0881		0.0	7.800	0.687		Vel = 7.75
A1	0.0	1.101	1N	7.0	2.000	27.987		
to		150.0		0.0	7.000	0.866		
A2	22.99	0.0880		0.0	9.000	0.792		Vel = 7.75
A2	0.0	1.101	1R	1.0	9.500	29.645		
to		150.0	2O	10.0	11.000	0.0		
X1	22.99	0.0880		0.0	20.500	1.805		Vel = 7.75
	0.0							
	22.99					31.450		K Factor = 4.10
*P								
202	23.02	1.101	1N	7.0	0.800	27.379		K Factor = 4.40
to		150.0		0.0	7.000	0.0		
A3	23.02	0.0883		0.0	7.800	0.689		Vel = 7.76
A3	0.0	1.101	1N	7.0	2.000	28.068		
to		150.0		0.0	7.000	0.866		
A4	23.02	0.0883		0.0	9.000	0.795		Vel = 7.76
A4	0.0	1.101	1R	1.0	8.500	29.729		
to		150.0	2O	10.0	11.000	0.0		
X1	23.02	0.0883		0.0	19.500	1.721		Vel = 7.76
	0.0							
	23.02					31.450		K Factor = 4.10
*P								
X1	46.01	1.101	1N	7.0	10.000	31.450		
to		150.0		0.0	7.000	4.331		
X2	46.01	0.3178		0.0	17.000	5.403		Vel = 15.50
X2	0.0	1.101	1O	5.0	0.900	41.184		
to		150.0		0.0	5.000	0.0		
X3	46.01	0.3180		0.0	5.900	1.876		Vel = 15.50
X3	0.0	1.101	1R	1.0	24.300	43.060		
to		150.0	1N	7.0	13.000	0.0		
X4	46.01	0.3178	1O	5.0	37.300	11.854		Vel = 15.50
X4	0.0	1.394	1E	4.762	10.000	54.914		
to		150.0		0.0	4.761	4.331		
X5	46.01	0.1007		0.0	14.761	1.487		Vel = 9.67
X5	0.0	1.38	1E	2.141	30.800	60.732		
to		100.0	1T	4.282	6.423	0.0		
X6	46.01	0.2240		0.0	37.223	8.338		Vel = 9.87
X6	0.0	1.61	1E	2.855	13.500	69.070		
to		100.0		0.0	2.855	0.0		
TOR	46.01	0.1058		0.0	16.355	1.730		Vel = 7.25

HIGH TECH FIRE PROTECTION
Main House Bunk Room Calc.

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
TOR	0.0	1.61	1E	2.855	6.000	70.800		
to		100.0	1Eql	2.141	4.996	2.599		
BOR	46.01	0.1057		0.0	10.996	1.162		Vel = 7.25
BOR	0.0	1.61	1E	4.0	4.000	74.561		
to		120.0	1Zik	0.0	4.000	10.899		* Fixed loss = 9.6
BASE	46.01	0.0755		0.0	8.000	0.604		Vel = 7.25
BASE	0.0	1.72	1E	3.087	180.000	86.064		
to		150.0	1G	0.617	3.704	0.433		
H1	46.01	0.0362		0.0	183.704	6.650		Vel = 6.35
H1	0.0	1.025	1T	6.75	1.000	93.147		
to		150.0		0.0	6.750	0.0		
H2	46.01	0.4502		0.0	7.750	3.489		Vel = 17.89
H2	0.0	8.27		0.0	450.000	96.636		
to		140.0		0.0	0.0	-7.796		
H3	46.01	0.0		0.0	450.000	0.009		Vel = 0.27
H3	0.0	6.16	1E	20.084	20.000	88.849		
to		140.0	1G	4.304	67.425	0.0		
TEST	46.01	0.0001	1T	43.037	87.425	0.007		Vel = 0.50
	0.0							
	46.01					88.856		K Factor = 4.88

. . . Fire Protection by Computer Design

HIGH TECH FIRE PROTECTION
84 HACKETT MILLS ROAD
POLAND, ME 04274
998-2551

Job Name	:	Main House Stair Calc.
Building	:	Marjorie Shaw Residence
Location	:	Lot 9 Rockledge Avenue
System	:	NFPA 13D
Contract	:	040411-2
Data File	:	Main House Stair Calc w Meter.wxf

HYDRAULIC DESIGN INFORMATION SHEET

Name - Main House Stair Calc. Date - 6/1/2011
Location - Lot 9 Rockledge Avenue
Building - Marjorie Shaw Residence System No. - NFPA 13D
Contractor - High Tech Fire Protection Contract No. - 040411-2
Calculated By - Jeremy Foss Drawing No. - FP-1.2
Construction: (X) Combustible ( ) Non-Combustible Ceiling Height 8'-0"
OCCUPANCY - Residential

SYSTEM DESIGN

Type of Calculation: ( )NFPA 13 Residential ( )NFPA 13R (X)NFPA 13D
Number of Sprinklers Flowing: ( )1 (X)2 ( )4 ( )
( )Other
( )Specific Ruling Made by Date

Listed Flow at Start Point - 15 Gpm System Type
Listed Pres. at Start Point - 9.4 Psi ( ) Wet (X) Dry
MAXIMUM LISTED SPACING 16 x 16 ( ) Deluge ( ) PreAction
Domestic Flow Added - 0 Gpm Sprinkler or Nozzle
Additional Flow Added - 0 Gpm Make Tyco Model LFII
Elevation at Highest Outlet - 28 Feet Size 1" K-Factor 4.9
Note: Temperature Rating 155

Calculation Summary: Gpm Required 31 Psi Required 52 At Base of Riser
C-Factor Used: Overhead 150 Underground 150

WATER SUPPLY

Water Flow Test:		Pump Data:	Tank or Reservoir:
Date of Test	- 8/10/2001	Rated Cap.	Cap.
Time of Test	-	@ Psi	Elev.
Static (Psi)	- 96	Elev.	
Residual (Psi)	- 54	Other	Well
Flow (Gpm)	- 1321		Proof Flow Gpm
Elevation	- 16		

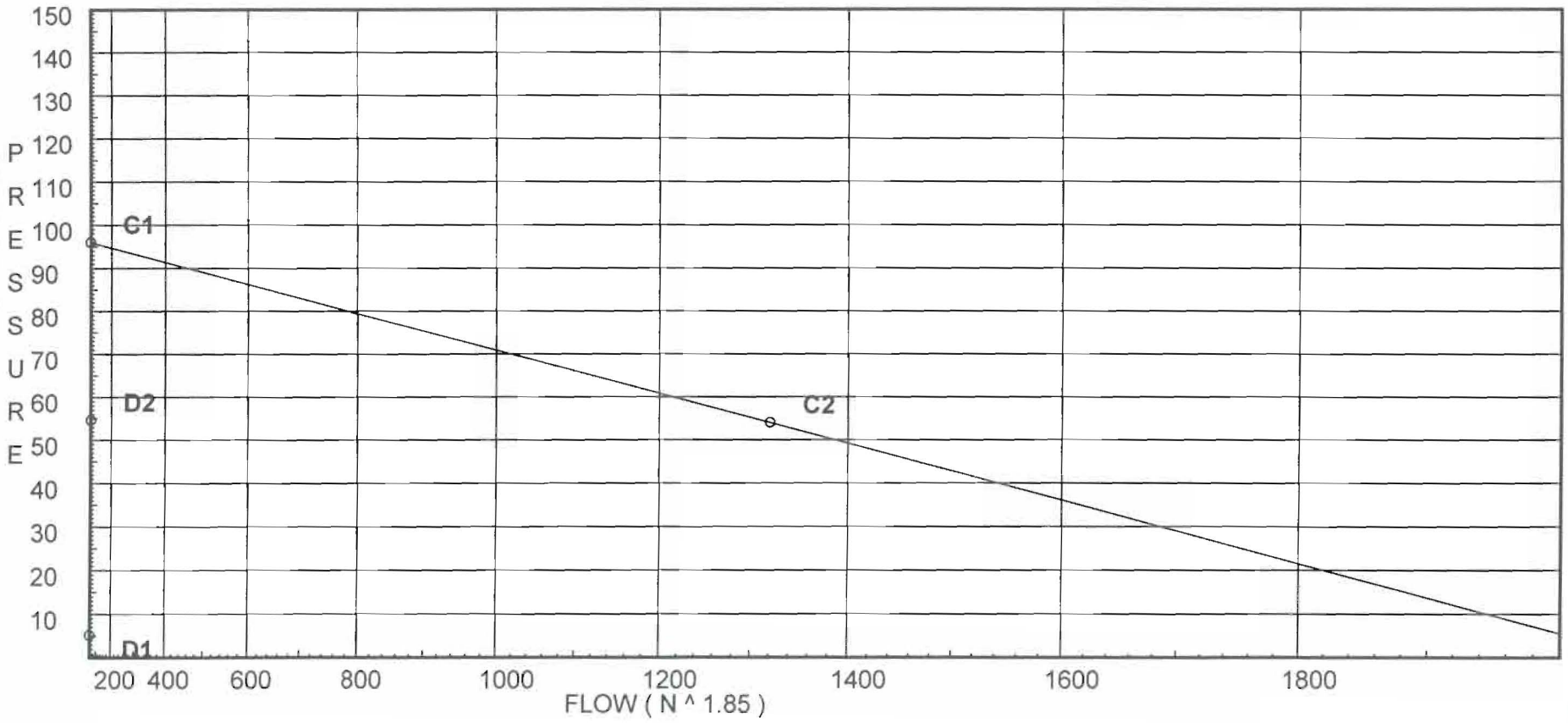
Location: Test Hydrant Located on Rockledge Avenue Approx. 450' from site.

Source of Information: Portland Water District

City Water Supply:
C1 - Static Pressure : 96
C2 - Residual Pressure: 54
C2 - Residual Flow : 1321

Demand:

D1 - Elevation	:	5.197
D2 - System Flow	:	30.416
D2 - System Pressure	:	54.634
Hose (Adj City)	:	
Hose (Demand)	:	
D3 - System Demand	:	30.416
Safety Margin	:	41.326



Fitting Legend

Abbrev.	Name	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12	14	16	18	20	24
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	1	1	1	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
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
R *	CPVC Coupling Tee-Run	1	1	1	1	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0
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
Zik	Wilkins 950XL	Fitting generates a Fixed Loss Based on Flow																			

Units Summary

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

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
DP1	-1.0	4.9	9.4	na	15.02	0.05	256	9.4
401	28.0	K = K @ EQ01	9.07	na	15.02			
402	28.0	K = K @ EQ01	9.53	na	15.39			
B1	28.0		10.18	na				
B2	28.0		18.13	na				
X1	28.0		20.09	na				
X2	18.0		26.93	na				
X3	18.0		27.81	na				
X4	18.0		33.32	na				
X5	8.0		38.34	na				
X6	8.0		42.22	na				
TOR	8.0		43.02	na				
BOR	2.0		46.16	na				
BASE	-1.0		57.28	na				
H1	-2.0		60.8	na				
H2	-2.0		62.42	na				
H3	16.0		54.63	na				
TEST	16.0		54.63	na				

The maximum velocity is 11.83 and it occurs in the pipe between nodes H1 and H2

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
DP1	15.02	1.049		0.0	1.000	9.400		K Factor = 4.90
to		100.0		0.0	0.0	-0.433		
EQ01	15.02	0.1070		0.0	1.000	0.107		Vel = 5.58
	0.0							
	15.02					9.074		K Factor = 4.99
401	15.02	1.101	1T	9.563	13.000	9.074		K Factor @ node EQ01
to		150.0	1O	5.0	14.562	0.0		
B1	15.02	0.0401		0.0	27.562	1.105		Vel = 5.06
	0.0							
	15.02					10.179		K Factor = 4.71
402	15.39	1.101	1T	9.563	1.000	9.526		K Factor @ node EQ01
to		150.0	1O	5.0	14.562	0.0		
B1	15.39	0.0420		0.0	15.562	0.653		Vel = 5.19
B1	15.03	1.049	1T	3.568	16.500	10.179		
to		100.0		0.0	3.568	0.0		
B2	30.42	0.3960		0.0	20.068	7.947		Vel = 11.29
B2	0.0	1.101	2R	2.0	6.300	18.126		
to		150.0	1O	5.0	7.000	0.0		
X1	30.42	0.1477		0.0	13.300	1.965		Vel = 10.25
	0.0							
	30.42					20.091		K Factor = 6.79
*P								
X1	30.42	1.101	1N	7.0	10.000	20.091		
to		150.0		0.0	7.000	4.331		
X2	30.42	0.1478		0.0	17.000	2.512		Vel = 10.25
X2	0.0	1.101	1O	5.0	0.900	26.934		
to		150.0		0.0	5.000	0.0		
X3	30.42	0.1478		0.0	5.900	0.872		Vel = 10.25
X3	0.0	1.101	1R	1.0	24.300	27.806		
to		150.0	1N	7.0	13.000	0.0		
X4	30.42	0.1478	1O	5.0	37.300	5.512		Vel = 10.25
X4	0.0	1.394	1E	4.762	10.000	33.318		
to		150.0		0.0	4.761	4.331		
X5	30.42	0.0469		0.0	14.761	0.692		Vel = 6.39
X5	0.0	1.38	1E	2.141	30.800	38.341		
to		100.0	1T	4.282	6.423	0.0		
X6	30.42	0.1042		0.0	37.223	3.877		Vel = 6.53
X6	0.0	1.61	1E	2.855	13.500	42.218		
to		100.0		0.0	2.855	0.0		
TOR	30.42	0.0492		0.0	16.355	0.804		Vel = 4.79
TOR	0.0	1.61	1E	2.855	6.000	43.022		
to		100.0	1Eql	2.141	4.996	2.599		
BOR	30.42	0.0491		0.0	10.996	0.540		Vel = 4.79

HIGH TECH FIRE PROTECTION
Main House Stair Calc.

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv.	Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	******* Notes ******
BOR	0.0	1.61	1E	4.0	4.000	46.161		
to		120.0	1Zik	0.0	4.000	10.834		* Fixed loss = 9.534
BASE	30.42	0.0350		0.0	8.000	0.280		Vel = 4.79
BASE	0.0	1.72	1E	3.087	180.000	57.275		
to		150.0	1G	0.617	3.704	0.433		
H1	30.42	0.0168		0.0	183.704	3.092		Vel = 4.20
H1	0.0	1.025	1T	6.75	1.000	60.800		
to		150.0		0.0	6.750	0.0		
H2	30.42	0.2094		0.0	7.750	1.623		Vel = 11.83
H2	0.0	8.27		0.0	450.000	62.423		
to		140.0		0.0	0.0	-7.796		
H3	30.42	0.0		0.0	450.000	0.004		Vel = 0.18
H3	0.0	6.16	1E	20.084	20.000	54.631		
to		140.0	1G	4.304	67.425	0.0		
TEST	30.42	0.0	1T	43.037	87.425	0.003		Vel = 0.33
	0.0							
	30.42					54.634		K Factor = 4.12

CITY OF PORTLAND, MAINE
Department of Building Inspections

Original Receipt

20 11

Received from

Location of Work

Cost of Construction $ Building Fee:

Permit Fee $ Site Fee:

Certificate of Occupancy Fee:

Total:

Building (IL) ✓ Plumbing (I5) ___ Electrical (I2) ___ Site Plan (U2) ___

Other

CBL: 105 J009

Check #: 17714 **Total Collected $** 340.00

No work is to be started until permit issued.
Please keep original receipt for your records.

Taken by:

WHITE - Applicant's Copy
YELLOW - Office Copy
PINK - Permit Copy