

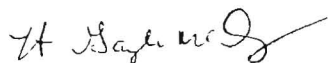
PORTLAND FIRE DEPARTMENT

Review Date: 8/31/28 Contractor: Sprinkler Services

Address: 297 Cumberland Ave. CBL: _____

Please note marked Conditions of Approval

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



Lt. Gaylen Mc Dougall
Portland Fire Prevention Bureau

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

**Building or Use Permit Pre-Application
Additions/Alterations/Accessory Structures
To Detached Single Family Dwelling**

Comperm

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

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

Location/Address of Construction: THE SALVATION ARMY HEADQUARTERS, 297 LUMBERLAND AVE, PORTLAND

Tax Assessor's Chart, Block & Lot Number Chart# <u>033</u> Block# <u>N</u> Lot# <u>020</u>	Owner: <u>THE SALVATION ARMY</u>	Telephone#: <u>774-6504</u>
Owner's Address: <u>297 LUMBERLAND AVE</u>	Lessee/Buyer's Name (If Applicable)	Cost Of Work: Fee <u>\$ 27,000</u> <u>\$155.00</u>

Proposed Project Description: (Please be as specific as possible)
INSTALL A NEW SPRINKLER SYSTEM

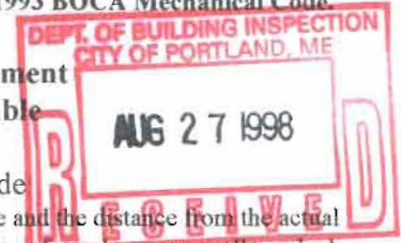
Contractor's Name, Address & Telephone 892-1415 Rec'd By:
SPRINKLER SERVICES P.O. Box 809 Winham 04062 M.H.

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

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

You must Include the following with you application:

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



If there is expansion to the structure, a complete plot plan (Site Plan) must include

- The shape and dimension of the lot, all existing buildings (if any), the proposed structure and the distance from the actual property lines. Structures include decks porches, a bow windows cantilever sections and roof overhangs, as well as, sheds, pools, garages and any other accessory structures.
- Scale and required zoning district setbacks

4) Building Plans (Sample Attached)

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

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

Certification

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

Signature of applicant: [Signature] Date: 8/27/98

Building Permit Fee: \$25.00 for the 1st \$1000. cost plus \$5.00 per \$1,000.00 construction cost thereafter.



SPRINKLER SERVICES

P.O. BOX 809 • 5 LAMB STREET
WINDHAM, ME 04062
1-207-892-1415 • 1-800-400-1415
FAX 1-207-892-2707

TRANSMITTAL RECORD

Date 8.24.98

Job No 98-064

To: CITY OF PORTLAND

Job THE SALVATION ARMY HEADQUARTERS
PORTLAND, ME

INSPECTIONS, RM 315 CITY HALL
PORTLAND, ME 04101

Attention: _____

Gentlemen:

2 copies of SPRINKLER SHOP DRAWING (1-3 OF 3, DATED 8-20-98)

2 copies of HYDRAULIC CALCULATIONS PACKAGE (5 PGS, DATED 8-20-98)

1 copies of CHECK #4633 FOR \$155.00 PERMIT FEE

_____ copies of _____

_____ copies of _____

_____ copies of _____

_____ copies of _____

_____ copies of _____

- are enclosed herewith approved
- approved except as noted
- approved as noted, resubmit
- disapproved (see remarks)
- for your approval or comments
- for your information and use
- for your files
- per your request

Remarks: PLEASE RETURN 2 PERMIT, PLANS HAVE BEEN SENT TO THE
STATE FIRE MARSHAL'S OFFICE FOR A PERMIT.

Very truly yours,

By SCOTT E. GALLAND, SEIT, RMS
DESIGN MANAGER



SPRINKLER SERVICES

P.O. BOX 809 • 5 LAMB STREET
 WINDHAM, ME 04062
 1-207-892-1415 • 1-800-400-1415
 FAX 1-207-892-2707

HYDRAULIC DESIGN INFORMATION SHEET

NAME THE SALVATION ARMY HEADQUARTERS DATE AUG 20, 1998
 LOCATION 297 CUMBERLAND AVE, PORTLAND, ME 04103
 BUILDING — SYSTEM NO. —
 CONTRACTOR ATLANTIC LEAST CONTRACTORS CONTRACT NO. 98-064
 CALCULATED BY SCOTT E. GALLAND DRAWING NO. 1-3 OF 3
 CONSTRUCTION: COMBUSTIBLE NON-COMBUSTIBLE CEILING HEIGHT — FT.
 OCCUPANCY LIGHT HAZARD CHURCH

SYSTEM DESIGN	<input checked="" type="checkbox"/> NFPA 13: <input checked="" type="checkbox"/> LT. HAZ. <input type="checkbox"/> ORD. HAZ. GP. <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> EX. HAZ. <input type="checkbox"/> NFPA 231 <input type="checkbox"/> NFPA 231C: <input type="checkbox"/> FIGURE <u>—</u> ; CURVE <u>—</u> <input type="checkbox"/> OTHER (Specify) <u>—</u> <input type="checkbox"/> SPECIFIC RULING <u>—</u> MADE BY <u>—</u> DATE <u>—</u>																							
	<table border="1"> <tr> <td>AREA OF SPRINKLER OPERATION</td> <td><u>1500 SF</u></td> <td colspan="2" style="text-align: center;">SYSTEM TYPE</td> </tr> <tr> <td>DENSITY</td> <td><u>.10</u></td> <td><input checked="" type="checkbox"/> WET</td> <td><input type="checkbox"/> DRY <input type="checkbox"/> DELUGE <input type="checkbox"/> PRE-ACTION</td> </tr> <tr> <td>AREA PER SPRINKLER</td> <td><u>20x20 MAX</u></td> <td colspan="2" style="text-align: center;">SPRINKLER OR NOZZLE</td> </tr> <tr> <td>HOSE ALLOWANCE GPM: INSIDE</td> <td><u>—</u></td> <td>MAKE <u>RELIABLE</u></td> <td>MODEL <u>"FIR-EC"</u></td> </tr> <tr> <td>HOSE ALLOWANCE GPM: OUTSIDE</td> <td><u>100</u></td> <td>SIZE <u>"1 1/2" x 3/4"</u></td> <td>K-FACTOR <u>8.0</u></td> </tr> <tr> <td>RACK SPRINKLER ALLOWANCE</td> <td><u>—</u></td> <td colspan="2">TEMPERATURE RATING <u>155°</u></td> </tr> </table>	AREA OF SPRINKLER OPERATION	<u>1500 SF</u>	SYSTEM TYPE		DENSITY	<u>.10</u>	<input checked="" type="checkbox"/> WET	<input type="checkbox"/> DRY <input type="checkbox"/> DELUGE <input type="checkbox"/> PRE-ACTION	AREA PER SPRINKLER	<u>20x20 MAX</u>	SPRINKLER OR NOZZLE		HOSE ALLOWANCE GPM: INSIDE	<u>—</u>	MAKE <u>RELIABLE</u>	MODEL <u>"FIR-EC"</u>	HOSE ALLOWANCE GPM: OUTSIDE	<u>100</u>	SIZE <u>"1 1/2" x 3/4"</u>	K-FACTOR <u>8.0</u>	RACK SPRINKLER ALLOWANCE	<u>—</u>	TEMPERATURE RATING <u>155°</u>
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CALCULATION SUMMARY: GPM REQUIRED 266.32 PSI REQUIRED 74.23 AT BASE OF RISER.
 "C" FACTOR USED: OVERHEAD 120 UNDERGROUND 140

WATER SUPPLY	<table border="1"> <tr><th colspan="2">WATER FLOW TEST</th></tr> <tr><td>DATE & TIME</td><td><u>7/23/98</u></td></tr> <tr><td>STATIC PSI</td><td><u>86</u></td></tr> <tr><td>RESIDUAL PSI</td><td><u>81</u></td></tr> <tr><td>GPM FLOWING</td><td><u>1300</u></td></tr> <tr><td>ELEVATION</td><td><u>7-0</u></td></tr> </table>	WATER FLOW TEST		DATE & TIME	<u>7/23/98</u>	STATIC PSI	<u>86</u>	RESIDUAL PSI	<u>81</u>	GPM FLOWING	<u>1300</u>	ELEVATION	<u>7-0</u>	<table border="1"> <tr><th colspan="2">PUMP DATA</th></tr> <tr><td>RATED CAPACITY</td><td><u>—</u></td></tr> <tr><td>AT PSI</td><td><u>—</u></td></tr> <tr><td>ELEVATION</td><td><u>—</u></td></tr> </table>	PUMP DATA		RATED CAPACITY	<u>—</u>	AT PSI	<u>—</u>	ELEVATION	<u>—</u>	<table border="1"> <tr><th colspan="2">TANK OR RESERVOIR</th></tr> <tr><td>CAPACITY</td><td><u>—</u></td></tr> <tr><td>ELEVATION</td><td><u>—</u></td></tr> </table>	TANK OR RESERVOIR		CAPACITY	<u>—</u>	ELEVATION	<u>—</u>
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LOCATION CEDAR ST & CUMBERLAND AVE
 SOURCE OF INFORMATION PORTLAND WATER DISTRICT

COMMODITY STORAGE	COMMODITY <u>—</u> CLASS <u>—</u> LOCATION <u>—</u> STORAGE HEIGHT <u>—</u> AREA <u>—</u> AISLE WIDTH <u>—</u> STORAGE METHOD: SOLID PILED <u>—</u> % PALLETIZED <u>—</u> % RACK <u>—</u> %				
	<input checked="" type="checkbox"/> SINGLE ROW <input type="checkbox"/> CONVENTIONAL PALLET <input type="checkbox"/> AUTOMATIC STORAGE <input type="checkbox"/> ENCAPSULATED <input type="checkbox"/> DOUBLE ROW <input type="checkbox"/> SLAVE PALLET <input type="checkbox"/> SOLID SHELVING <input type="checkbox"/> NON-ENCAPSULATED <input type="checkbox"/> MULTIPLE ROW <input type="checkbox"/> OPEN				
	<table border="1"> <tr> <td>FLUE SPACING IN INCHES</td> <td>CLEARANCE FROM TOP OF STORAGE TO CEILING</td> </tr> <tr> <td>LONGITUDINAL <u>—</u> TRANSVERSE <u>—</u></td> <td><u>—</u> FT. <u>—</u> IN.</td> </tr> </table>	FLUE SPACING IN INCHES	CLEARANCE FROM TOP OF STORAGE TO CEILING	LONGITUDINAL <u>—</u> TRANSVERSE <u>—</u>	<u>—</u> FT. <u>—</u> IN.
	FLUE SPACING IN INCHES	CLEARANCE FROM TOP OF STORAGE TO CEILING			
LONGITUDINAL <u>—</u> TRANSVERSE <u>—</u>	<u>—</u> FT. <u>—</u> IN.				
HORIZONTAL BARRIERS PROVIDED <u>—</u>					

SPRINKLER SERVICES
HYDRAULIC CALCULATIONS

8-20-98, THE SALVATION ARMY HEADQUARTERS, 98-064, C= 120

PAGE NUMBER 2

REF PT#	K	GPM	TOTAL GPM	PIPE I.D.	PIPE LTH	EQUIV FTGS	LOSS /FT	TOTAL LOSS	TOTAL PSI	JCT PT#	
===	=====	=====	=====	=====	=====	=====	=====	=====	=====	===	
									10.49		
1	5.62	18.20	18.20	1.049	0.500	5.00	0.1093	0.60	11.09	1	
		ELEVATION = -.5 FEET						-0.22	10.87		
1	0.00	0.00	18.20	1.049	7.833	0.00	0.1093	0.86	11.73	2	
2	5.52	18.90	37.10	1.049	8.833	4.00	0.4082	5.24	16.97	3	
	K = 9.0076										
									16.03		
3	5.62	22.50	22.50	1.049	1.500	7.00	0.1618	1.38	17.40	3	
		ELEVATION = -.5 FEET						-0.22	17.19		
3	9.01	37.34	59.84	1.380	15.000	0.00	0.2600	3.90	21.09	4	
4	5.43	24.92	84.77	1.380	15.000	0.00	0.4950	7.43	28.51	A	
A	0.00	0.00	84.77	1.380	2.292	6.00	0.4950	4.10	32.62	B	
B	0.00	0.00	84.77	1.610	11.000	0.00	0.2337	2.57	35.19	C	
	K = 14.2897										
									17.19		
5	5.43	22.50	22.50	1.049	15.000	0.00	0.1618	2.43	19.61	6	
6	5.43	24.04	46.54	1.380	15.000	0.00	0.1633	2.45	22.06	D	
D	0.00	0.00	46.54	1.380	2.292	6.00	0.1633	1.35	23.42	C	
	K = 9.6167 >		57.05						35.19		
C	14.29	84.77	141.81	2.067	13.209	0.00	0.1793	2.37	37.56	E	
E	0.00	0.00	141.81	2.067	9.792	10.00	0.1793	3.55	41.11	F	
F	0.00	0.00	141.81	2.067	2.667	10.00	0.1793	2.27	43.38	G	
G	0.00	0.00	141.81	2.067	16.042	20.00	0.1793	6.46	49.84	H	
H	0.00	0.00	141.81	2.635	20.833	12.00	0.0550	1.80	51.64	J	
J	0.00	0.00	141.81	3.260	10.958	14.00	0.0195	0.49	52.13	K	
K	0.00	0.00	141.81	3.260	2.000	0.00	0.0195	0.04	52.17	L	
L	0.00	0.00	141.81	3.260	16.250	7.00	0.0195	0.45	52.62	M	
M	0.00	0.00	141.81	4.260	4.292	10.00	0.0053	0.08	52.70	RT	
RT	0.00	0.00	141.81	4.026	3.709	12.00	0.0070	0.11	52.81	RB	
	ELEVATION = 31.667 FEET							13.71	66.52		
	K = 17.3873		DESIGN AREA #2 - OPEN OFFICE 2ND Floor .10/900 + 100								
										(NOT MOST REMOTE)	
									7.00		
7	5.62	14.87	14.87	1.049	0.500	5.00	0.0752	0.41	7.41	7	
		ELEVATION = -.5 FEET						-0.22	7.20		
7	0.00	0.00	14.87	1.049	8.583	0.00	0.0752	0.65	7.84	8	
8	5.54	15.52	30.39	1.049	12.250	0.00	0.2822	3.46	11.30	9	
9	5.54	18.63	49.02	1.380	4.167	6.00	0.1798	1.83	13.13	AA	
AA	0.00	0.00	49.02	1.610	8.000	0.00	0.0849	0.68	13.81	AD	
AD	13.53	50.28	99.30	2.067	6.583	10.00	0.0927	1.54	15.35	AE	
	K = 25.3492										
									7.20		
15	5.54	14.87	14.87	1.610	6.958	0.00	0.0093	0.06	7.26	AE	
	K = 5.5177 >		21.61						15.35		
AE	25.35	99.30	120.91	2.067	3.042	0.00	0.1335	0.41	15.75	16	
16	5.54	22.00	142.91	2.067	7.167	10.00	0.1819	3.12	18.87	G	
G	0.00	0.00	142.91	2.067	16.042	20.00	0.1819	6.56	25.43	H	
H	0.00	0.00	142.91	2.635	20.833	12.00	0.0558	1.83	27.26	J	
J	0.00	0.00	142.91	3.260	10.958	14.00	0.0198	0.49	27.75	K	

SPRINKLER SERVICES
HYDRAULIC CALCULATIONS

8-20-98, THE SALVATION ARMY HEADQUARTERS, 98-064, C= 120

PAGE NUMBER 3

REF PT#	K	GPM	TOTAL GPM	PIPE I.D.	PIPE LTH	EQUIV FTGS	LOSS /FT	TOTAL LOSS	TOTAL PSI	JCT PT#
K	0.00	0.00	142.91	3.260	2.000	0.00	0.0198	0.04	27.79	L
L	0.00	0.00	142.91	3.260	16.250	6.00	0.0198	0.44	28.23	M
M	0.00	0.00	142.91	4.260	4.292	10.00	0.0054	0.08	28.31	RT
RT	0.00	0.00	142.91	4.026	3.709	12.00	0.0071	0.11	28.42	RB

ELEVATION = 31.667 FEET

K = 22.0168 DESIGN AREA *2 - STAFF 2ND FLOOR .10 | LARGEST +100

(NOT MOST REMOTE)

									25.00	
20	8.00	40.00	40.00	1.049	2.833	7.00	0.4691	4.61	29.61	20
								ELEVATION = -.5 FEET	-0.22	29.40
20	0.00	0.00	40.00	1.610	16.000	0.00	0.0582	0.93	30.33	21
21	7.38	40.63	80.63	1.610	3.750	0.00	0.2130	0.80	31.13	22
22	7.38	41.16	121.79	2.067	16.000	0.00	0.1353	2.16	33.29	23
23	7.38	42.57	164.36	2.067	16.000	0.00	0.2356	3.77	37.06	BA
BA	0.00	0.00	164.36	2.067	19.333	20.00	0.2356	9.27	46.33	BB
								ELEVATION = 1 FEET	0.43	46.76
BB	0.00	0.00	164.36	2.067	15.500	5.00	0.2356	4.83	51.59	BC
BC	0.00	0.00	164.36	2.635	26.833	0.00	0.0722	1.94	53.53	BD
BD	0.00	0.00	164.36	2.635	22.250	18.00	0.0722	2.91	56.44	BE

K = 21.8783

									25.00	
24	8.00	40.00	40.00	1.049	3.667	7.00	0.4691	5.00	30.00	24
								ELEVATION = -.5 FEET	-0.22	29.79
24	0.00	0.00	40.00	2.067	16.000	0.00	0.0172	0.28	30.06	25
25	7.33	40.18	80.18	2.067	16.000	0.00	0.0624	1.00	31.06	BF
BF	0.00	0.00	80.18	2.067	19.333	20.00	0.0624	2.46	33.52	BG
								ELEVATION = 1 FEET	0.43	33.95
BG	0.00	0.00	80.18	2.067	5.417	10.00	0.0624	0.96	34.91	BE

K = 13.5702 > 101.94

BE	21.88	164.36	266.30	3.260	33.333	28.00	0.0625	3.84	60.27	J
J	0.00	0.00	266.30	3.260	10.833	14.00	0.0625	1.55	61.82	K
K	0.00	0.00	266.30	3.260	2.000	0.00	0.0625	0.13	61.95	L
L	0.00	0.00	266.30	3.260	16.250	7.00	0.0625	1.45	63.40	M
M	0.00	0.00	266.30	4.260	4.292	10.00	0.0170	0.24	63.65	RT
RT	0.00	0.00	266.30	4.260	3.709	12.00	0.0170	0.27	63.91	RB

ELEVATION = 23.833 FEET

10.32 74.23

K = 30.9082

DESIGN AREA *3 - CHAPEL FIRST FLOOR .10 | 1500 +100

(HYDRAULICALLY MOST REMOTE AREA)

CONTRACT NO. 98-064

Loss TUN U.G.

SHEET NO 4 OF 5

NAME THE SALVATION ARMY HEADQUARTERS

98-064

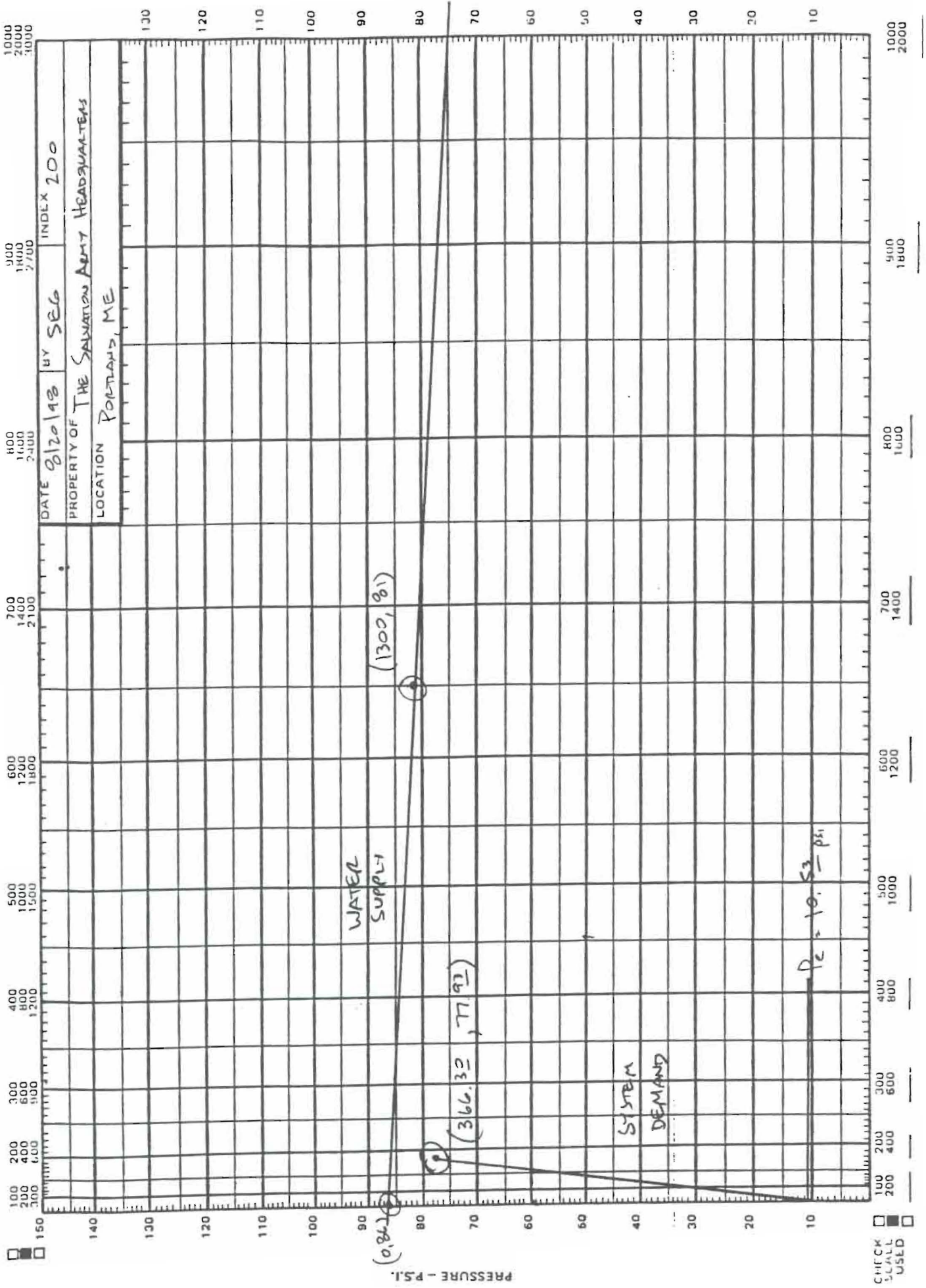
DATE 8-20-98

LOCATION 297 CUMBERLAND AVE, PORTLAND, ME 04103

NOZZLE TYPE & LOCATION	FLOW IN G.P.M.	PIPE SIZE	FITTING & DEVICES	PIPE EQUIV. LENGTH	FRICITION LOSS P.S.I./FT	REQUIRED P.S.I.	HYD. REF. PT	ELEV.	NOTES
C-140	0 -	4"		LGTH. 2500		PT 74.33	RB		
RB	Q266.30	CLDI	L, 2T, 2W	FTG. 72.0	.0209	PF 6.73			
				TOT. 322.0		PE -3.03		-7.0	
HOSE	Q100.00			LGTH.		PT 77.93	X1		
	Q366.30			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			Pres. at Q=366.30
	Q			FTG.		PF			= 85.52 psi
	Q			TOT.		PE			
	Q			LGTH.		PT			Pres. at Q=366.30
	Q			FTG.		PF			= 77.93
	Q			TOT.		PE			
	Q			LGTH.		PT			Pushion =
	Q			FTG.		PF			7.59 psi
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			



WATER SUPPLY GRAPH NO. N 1.85



DATE 8/20/98 BY SEG INDEX 200
 PROPERTY OF THE SALVATION ARMY HEADQUARTERS
 LOCATION PORTLAND, ME

150 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000

PRESSURE - P.S.I.

CHECK
 SCALE
 USED

SPRINKLER SERVICES
HYDRAULIC CALCULATIONS

8-20-98, THE SALVATION ARMY HEADQUARTERS, 98-064, C= 120

PAGE NUMBER 2

REF PT#	K	GPM	TOTAL GPM	PIPE I.D.	PIPE LTH	EQUIV FTGS	LOSS /FT	TOTAL LOSS	TOTAL PSI	JCT PT#	
									10.49		
1	5.62	18.20	18.20	1.049	0.500	5.00	0.1093	0.60	11.09	1	
			ELEVATION = -.5 FEET					-0.22	10.87		
1	0.00	0.00	18.20	1.049	7.833	0.00	0.1093	0.86	11.73	2	
2	5.52	18.90	37.10	1.049	8.833	4.00	0.4082	5.24	16.97	3	
	K = 9.0076										
									16.03		
3	5.62	22.50	22.50	1.049	1.500	7.00	0.1618	1.38	17.40	3	
			ELEVATION = -.5 FEET					-0.22	17.19		
3	9.01	37.34	59.84	1.380	15.000	0.00	0.2600	3.90	21.09	4	
4	5.43	24.92	84.77	1.380	15.000	0.00	0.4950	7.43	28.51	A	
A	0.00	0.00	84.77	1.380	2.292	6.00	0.4950	4.10	32.62	B	
B	0.00	0.00	84.77	1.610	11.000	0.00	0.2337	2.57	35.19	C	
	K = 14.2897										
									17.19		
5	5.43	22.50	22.50	1.049	15.000	0.00	0.1618	2.43	19.61	6	
6	5.43	24.04	46.54	1.380	15.000	0.00	0.1633	2.45	22.06	D	
D	0.00	0.00	46.54	1.380	2.292	6.00	0.1633	1.35	23.42	C	
	K = 9.6167 >		57.05						35.19		
C	14.29	84.77	141.81	2.067	13.209	0.00	0.1793	2.37	37.56	E	
E	0.00	0.00	141.81	2.067	9.792	10.00	0.1793	3.55	41.11	F	
F	0.00	0.00	141.81	2.067	2.667	10.00	0.1793	2.27	43.38	G	
G	0.00	0.00	141.81	2.067	16.042	20.00	0.1793	6.46	49.84	H	
H	0.00	0.00	141.81	2.635	20.833	12.00	0.0550	1.80	51.64	J	
J	0.00	0.00	141.81	3.260	10.958	14.00	0.0195	0.49	52.13	K	
K	0.00	0.00	141.81	3.260	2.000	0.00	0.0195	0.04	52.17	L	
L	0.00	0.00	141.81	3.260	16.250	7.00	0.0195	0.45	52.62	M	
M	0.00	0.00	141.81	4.260	4.292	10.00	0.0053	0.08	52.70	RT	
RT	0.00	0.00	141.81	4.026	3.709	12.00	0.0070	0.11	52.81	RB	
	ELEVATION = 31.667 FEET								13.71		
	K = 17.3873		DESIGN AREA * 2 - OPEN OFFICE 2ND FLOOR .10(900 + 100)							66.52	
	(NOT MOST REMOTE)										
7	5.62	14.87	14.87	1.049	0.500	5.00	0.0752	0.41	7.41	7	
			ELEVATION = -.5 FEET					-0.22	7.20		
7	0.00	0.00	14.87	1.049	8.583	0.00	0.0752	0.65	7.84	8	
8	5.54	15.52	30.39	1.049	12.250	0.00	0.2822	3.46	11.30	9	
9	5.54	18.63	49.02	1.380	4.167	6.00	0.1798	1.83	13.13	AA	
AA	0.00	0.00	49.02	1.610	8.000	0.00	0.0849	0.68	13.81	AD	
AD	13.53	50.28	99.30	2.067	6.583	10.00	0.0927	1.54	15.35	AE	
	K = 25.3492										
									7.20		
15	5.54	14.87	14.87	1.610	6.958	0.00	0.0093	0.06	7.26	AE	
	K = 5.5177 >		21.61						15.35		
AE	25.35	99.30	120.91	2.067	3.042	0.00	0.1335	0.41	15.75	16	
16	5.54	22.00	142.91	2.067	7.167	10.00	0.1819	3.12	18.87	G	
G	0.00	0.00	142.91	2.067	16.042	20.00	0.1819	6.56	25.43	H	
H	0.00	0.00	142.91	2.635	20.833	12.00	0.0558	1.83	27.26	J	
J	0.00	0.00	142.91	3.260	10.958	14.00	0.0198	0.49	27.75	K	

SPRINKLER SERVICES
HYDRAULIC CALCULATIONS

8-20-98, THE SALVATION ARMY HEADQUARTERS, 98-064, C= 120

PAGE NUMBER 3

REF PT#	K	GPM	TOTAL GPM	PIPE I.D.	PIPE LTH	EQUIV FTGS	LOSS /FT	TOTAL LOSS	TOTAL PSI	JCT PT#
====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
K	0.00	0.00	142.91	3.260	2.000	0.00	0.0198	0.04	27.79	L
L	0.00	0.00	142.91	3.260	16.250	6.00	0.0198	0.44	28.23	M
M	0.00	0.00	142.91	4.260	4.292	10.00	0.0054	0.08	28.31	RT
RT	0.00	0.00	142.91	4.026	3.709	12.00	0.0071	0.11	28.42	RB
ELEVATION = 31.667 FEET								13.71	42.13	

K = 22.0168 DESIGN AREA #2 - STAFF 2ND FLOOR .10 | LAURESTAM +100
(NOT MOST REMOTE)

20	8.00	40.00	40.00	1.049	2.833	7.00	0.4691	4.61	25.00	20
ELEVATION = -.5 FEET								-0.22	29.40	
20	0.00	0.00	40.00	1.610	16.000	0.00	0.0582	0.93	30.33	21
21	7.38	40.63	80.63	1.610	3.750	0.00	0.2130	0.80	31.13	22
22	7.38	41.16	121.79	2.067	16.000	0.00	0.1353	2.16	33.29	23
23	7.38	42.57	164.36	2.067	16.000	0.00	0.2356	3.77	37.06	BA
BA	0.00	0.00	164.36	2.067	19.333	20.00	0.2356	9.27	46.33	BB
ELEVATION = 1 FEET								0.43	46.76	
BB	0.00	0.00	164.36	2.067	15.500	5.00	0.2356	4.83	51.59	BC
BC	0.00	0.00	164.36	2.635	26.833	0.00	0.0722	1.94	53.53	BD
BD	0.00	0.00	164.36	2.635	22.250	18.00	0.0722	2.91	56.44	BE

K = 21.8783

24	8.00	40.00	40.00	1.049	3.667	7.00	0.4691	5.00	25.00	24
ELEVATION = -.5 FEET								-0.22	29.79	
24	0.00	0.00	40.00	2.067	16.000	0.00	0.0172	0.28	30.06	25
25	7.33	40.18	80.18	2.067	16.000	0.00	0.0624	1.00	31.06	BF
BF	0.00	0.00	80.18	2.067	19.333	20.00	0.0624	2.46	33.52	BG
ELEVATION = 1 FEET								0.43	33.95	
BG	0.00	0.00	80.18	2.067	5.417	10.00	0.0624	0.96	34.91	BE
K = 13.5702 > 101.94								56.44		
BE	21.88	164.36	266.30	3.260	33.333	28.00	0.0625	3.84	60.27	J
J	0.00	0.00	266.30	3.260	10.833	14.00	0.0625	1.55	61.82	K
K	0.00	0.00	266.30	3.260	2.000	0.00	0.0625	0.13	61.95	L
L	0.00	0.00	266.30	3.260	16.250	7.00	0.0625	1.45	63.40	M
M	0.00	0.00	266.30	4.260	4.292	10.00	0.0170	0.24	63.65	RT
RT	0.00	0.00	266.30	4.260	3.709	12.00	0.0170	0.27	63.91	RB

ELEVATION = 23.833 FEET

10.32 74.23

K = 30.9082

DESIGN AREA #3 - CHAPEL FIRST FLOOR .10 | 1500 +100

(HYDRAULICALLY MOST REMOTE AREA)

NOZZLE TYPE & LOCATION	FLOW IN G.P.M.	PIPE SIZE	FITTING & DEVICES	PIPE EQUIV. LENGTH	FRICTION LOSS P.S.I./FT	REQUIRED P.S.I.	HYD. REF. PT ○	ELEV.	NOTES
C-140	0 -	4"		LGTH. 2500		PT 74.23	RB		
RB	Q266.30	CLDT	L, 2T, 2W	FTG. 72.0	.0209	PF 6.73			
				TOT. 322.0		PE -3.03		-7.0	
HOSE	Q100.00			LGTH.		PT 77.93	X1		
	Q366.30			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			Pres. at Q=366.30 = 85.53 psi
	Q			LGTH.		PT			
	Q			FTG.		PF			Pres. at Q=366.30 = 77.93
	Q			TOT.		PE			
	Q			LGTH.		PT			Pressure = 7.59 psi
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			
	Q			LGTH.		PT			
	Q			FTG.		PF			
	Q			TOT.		PE			



WATER SUPPLY GRAPH NO. N 1.85

