

# Sprinkler Heads & General Design Information

## Residential Fire Sprinkler System

FKL Engineering Consultants Ltd.  
(cell) 604- 618-0438, (email) fred@leemail.ca

**Project Address :** (LWH) 3419 E 48th Ave., Vancouver **Date:**  
**Installation Contractor :** General Fire Sprinkler Systems **August 9, 2019**

### Manufacturer's Listed Minimum Design Flow & Pressure

Type Selected	Style	Make Model	Temp . K	1@12x12 2@12x12 (gpm@psi)	1@14x14 2@14x14 (gpm@psi)	1@16x16 2@16x16 (gpm@psi)	1@18x18 2@18x18 (gpm@psi)	1@20x20 2@20x20 (gpm@psi)	Sym.	Bsmt Count	Main Count	2nd fl. Count	3rd fl. Count
	Pendent	Tyco LFI TY2234	155 4.9	13@7.0	13@7.0	13@7.0	17@12.0	20@16.7	●				
	Conceal Pendent	Tyco LFI TY3596	155 4.9	13@7.0	13@7.0	13@7.0	17@12.0	20@16.7	●				
	Pendent	Reliable F1/RES/49	155 4.9	13@7.0	13@7.0	13@7.0	17@12.0	20@16.6	●				
	Conceal Pendent	Reliable RFC 49	155 4.9	13@7.0	13@7.0	13@7.0	17@12.0	20@16.7	●				
	Conceal Pendent	Viking VK456	155 4.9	13@7.0	13@7.0	13@7.0	17@12.0	23@22.0	●				
	Pendent	Globe GL4910	155 4.9	13@7.0	14@8.2	14@8.2	17@12.0	20@16.7	●				
X	Conceal Pendent	Globe GL4906	155 4.9	13@7.0	13@7.0	13@7.0	17@12.0	20@16.7	●		7	8	
	Pendent	Victaulic V2740	155 4.9	12@7.8	13@7.0	13@7.0	17@12.0	20@16.7	●				
	Commercial Conc.Pend.	Tyco 3531 Reliable G4A	155 5.6	coverage=148 sq.ft per head, min. flow = 14.8 usgpm@7.0psi max. distance from walls - 7' 6"					●				
	Commercial Pendent	Tyco 3231 Globe 5601	155 5.6	coverage=148 sq.ft per head, min. flow = 14.8 usgpm@7.0psi max. distance from walls - 7' 6"					⚙				
	Sidewall	Tyco LFI Ty2334	155 4.4	12@8.7	14@10.1	16@13.2	N/A	N/A	◀				
	Sidewall	Reliable F1/RES/44	155 4.4	12@7.5	14@10.2	16@13.3	19@18.7		◀				
	Sidewall	Victaulic V2738	155 4.2	14@11.1	14@11.1	17@16.4	N/A	N/A	◀				
	Sidewall	Reliable RFS42	155 4.2	12@8.2	14@11.1	18@18.4	N/A	N/A	◀				
	Sidewall	Globe GL4431	155 4.4	13@8.7	15@11.6	16@13.2			◀				
	Commercial Sidewall	Tyco 3331 Reliable F1FR	155 5.6	coverage=148 sq.ft per head, min. flow = 14.8 usgpm@7.0psi max. from side walls - 7', max. from opposite wall - 14'					◀				
	Sidewall Hi-Temp.	Globe GL Series	200 5.6						◀				
X	Pendent Hi-Temp.	Globe GL Series	200 5.6						⊙		1		

### General Notes:

- Sprinkler system shall conform to the requirements of NFPA-13D, 2012 B.C. Building Code, V.B.B.L.2007
- Verify all dimensions on site and coordinate with other trades for location of pipes and sprinklers
- Exposed piping shall be type L copper & concealed piping shall be BlazeMaster protected with minimum 1/2" drywall.
- Unsprinklered washroom shall be max. 55 sq.ft.
- Unsprinklered closets max. 24 sq.ft. and the least dimension less than 3 ft and with drywall finish.
- Unsprinklered crawl space shall be max. 3'-11" high and shall not be used for storage.
- Install all piping so as to be drainable.
- Piping run in outside wall/roof/deck assemblies shall be boxed in against any exposed sides with 2-1/2" R- 15 high density insulation and all joints sealed with expansion foams.
- The sprinkler fire water shall be connected to the furthest toilet (flow thru. system), unless otherwise specified.










Total Heads

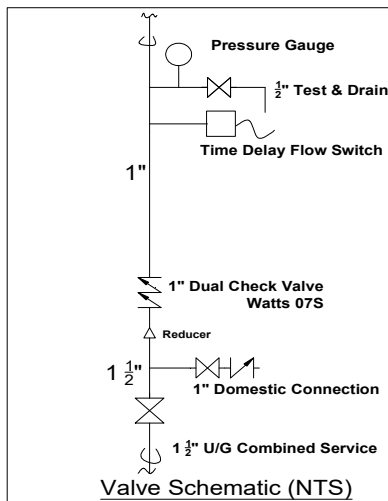
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### General Information:

General Information:				
City Water Supply (psi)	Static: 72	Residual: 63	@ 36 usgpm	
Fire Pump	- NA -			
Sprinkler heads Coverage ( ft x ft )				
 basmt fl 	 main fl 	 2nd fl 	 3rd fl 	
	16x16	12x12	16x16	12x12
<u>Demand</u> (psi @ usgpm, 2 heads)			(Professional Engineer)	
44.91 psi @ 31.44 usgpm				



# HYDRAULIC CALCULATIONS

**Address: (Laneway House) 3419 E 48th Ave., Vancouver**

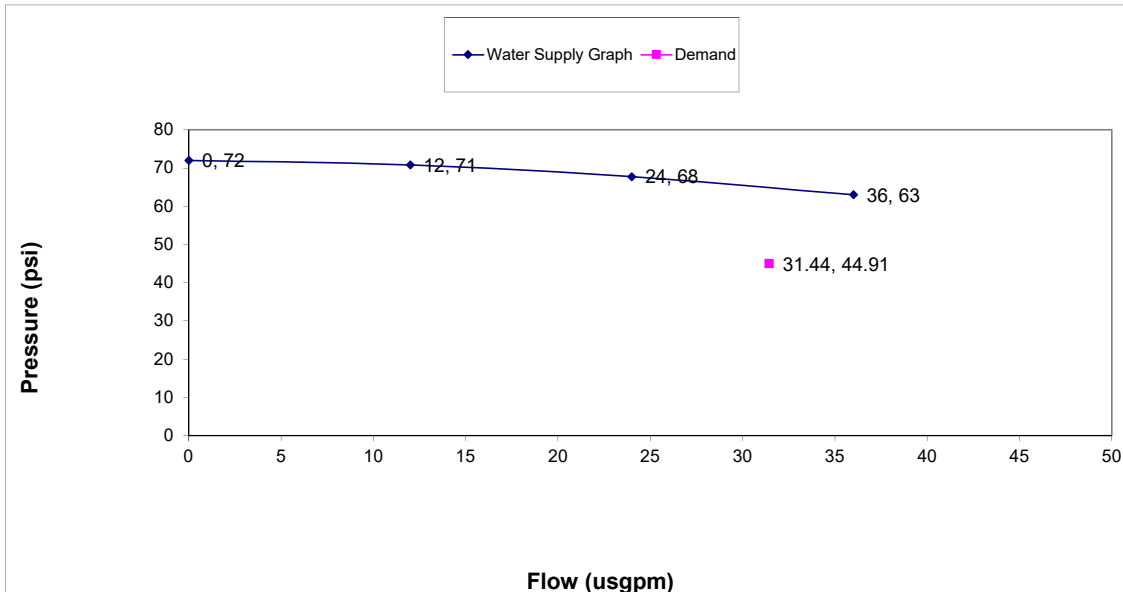
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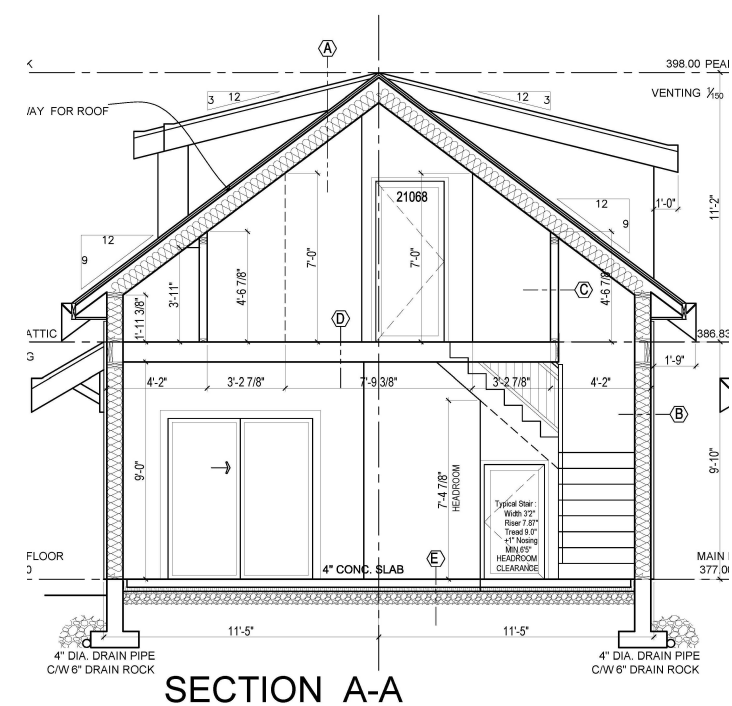
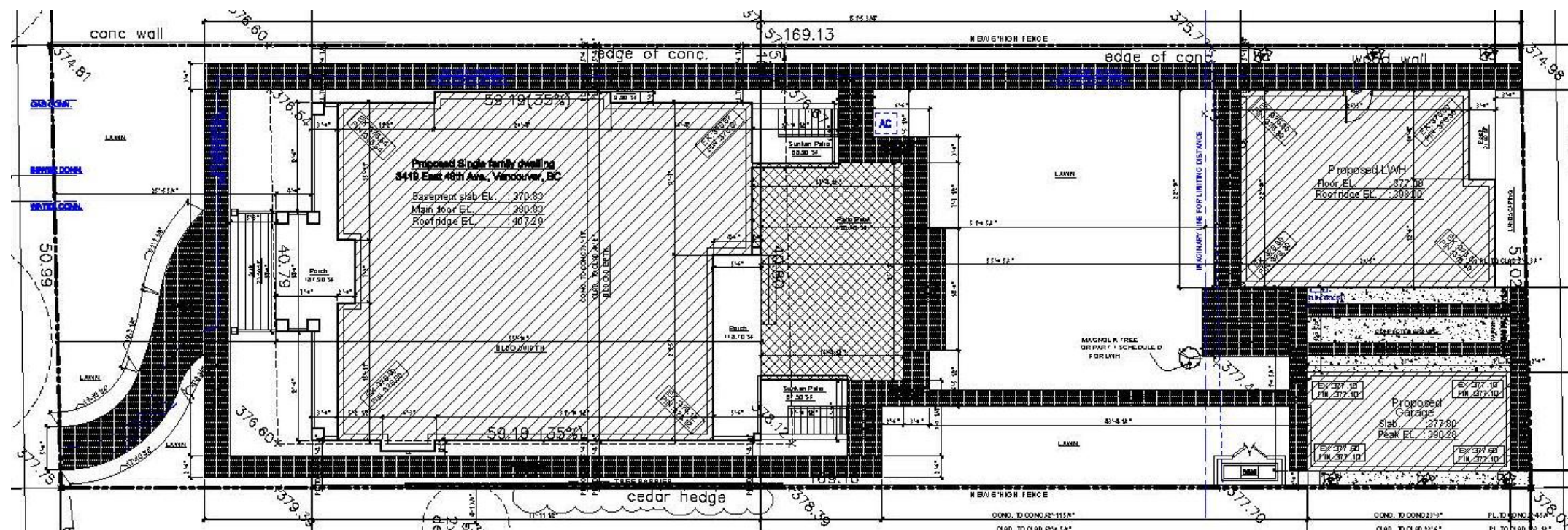
Make : Globe GL4906      Type: Conc. Pendant      Listed Flow/Pressure: 13.00 usgpm      7.00 psi  
Two Head Flow      K = 4.9      Coverage:(ftxft): 16x16

Calculations				Hazen Williams C=150													
To		From			Domestic (usgpm)	Piping		Fittings				Total eq. ft	Pressure Loss (psi)				Total (psi)
Ref. Pt.	Elev (ft)	Ref. Pt.	Elev (ft)	Flow (usgpm)		Pipe ID (inch)	Pipe Mat.	Elbow 90	Tee Bran.	Ball Valve	Pipe		Elev.	Fric. Ref.	Fric.	dual check & water meter	7.00
6	18	4	18	13.00		1.109	cpvc	1	1	0	12	22	0.00		0.65		7.65
5	18	4	18	13.44		1.109	cpvc	0	1	0	1	4	0.00	0.13			7.65
4	18	3	4	26.44		1.109	cpvc	5	6	0	28	93	6.09		10.24		23.98
3	4	2	4	26.44	5.0	1.025	copper L	2	0	0	5	10	0.00		1.62	8.0	33.59
2	4	1	0	31.44		1.263	polytube	0	1	1	115	119	1.74		9.58		44.91
				31.44									7.83		22.09		44.91

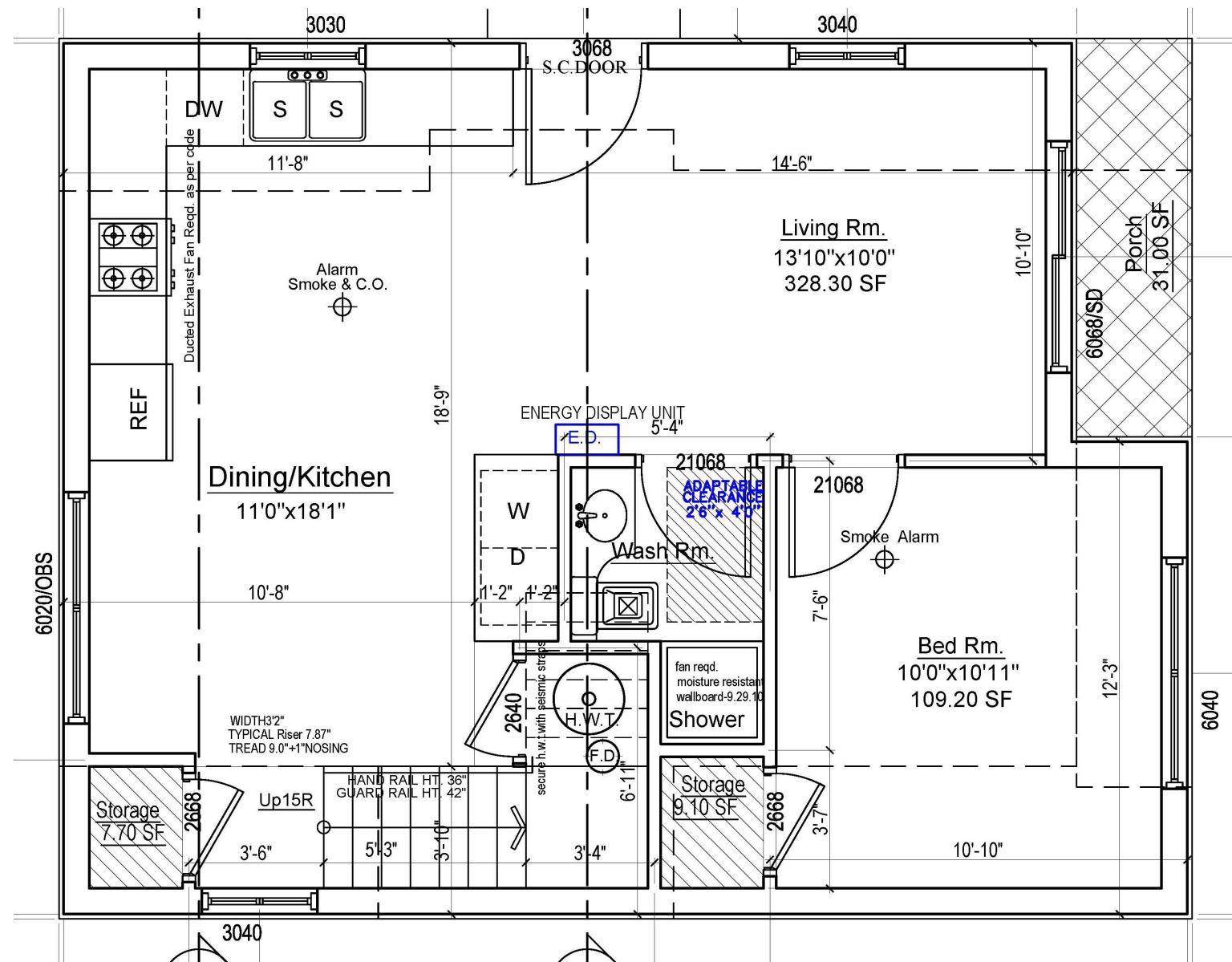
## System Design Summary

Ref. Pt.	K	Elev. (ft)	Flow (usgpm)	Pressure (psi)	Coverage (ft x ft)
6	4.9	18	13.00	7.00	16x16
5	4.9	18	13.44	7.53	16x16
The sprinkler system flow is			26.44	usgpm	
The total system flow is			31.44	usgpm at 44.91 psi	
Static Pressure			72	psi	
Residual Pressure			63	psi at 36.00 usgpm	
Available Pressure			64.99	psi at 31.44 usgpm	
Operating Pressure			44.91	psi at 31.44 usgpm	
Pressure Remaining			20.08	psi	

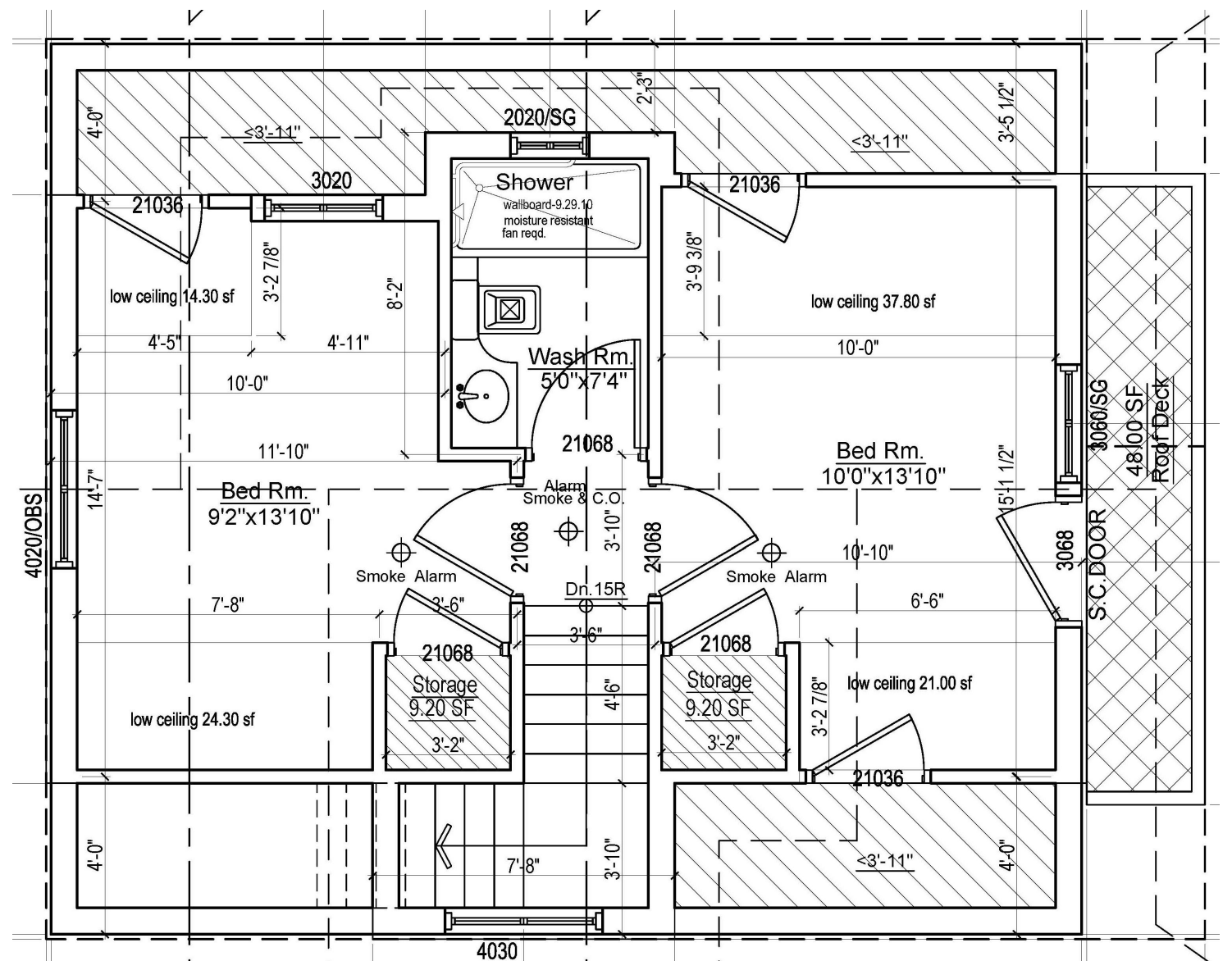








Main Floor (scale: 1/4"=1'-0")



2nd Floor (scale: 1/4"=1'-0")

<b>HEAD MODEL</b> ● Globe GL4906	<b>HEAD TYPE</b> Concealed Pendant	<b>SPECIFICATIONS</b> 155F, k=4.9	<b>COVERAGE</b> 16' x 16'
<b>FKL ENGINEERING</b> CONSULTANTS LTD  phone: 604-618-0438 email: fred@leemail.ca	<b>DRAWING</b> Fire Protection		<b>FIRE SPRINKLER INSTALLATION CONTRACTOR</b> General Fire Sprinklers, 778-858-3050
	<b>ADDRESS</b> 3419 E 48th Ave., LWH	<b>CITY</b> Vancouver	<b>PAGE</b> 2 / 2
	<b>DATE</b> August 9th, 2019	<b>NOTES</b>	
			<b>PROFESSIONAL SEAL</b> 