

# FUS - Fire Flow Calculations



**Novatech Project #:** 123101  
**Project Name:** 200 Elgin Street / 169 Lisgar / 18 Nepean  
**Date:** 5/3/2024  
**Input By:** Curtis Ferguson, E.I.T.  
**Reviewed By:** Greg MacDonald, P.Eng.  
**Drawing Reference:**

**Legend:** Input by User  
 No Input Required  
**Reference:** Fire Underwriter's Survey Guideline (2020)  
 Formula Method

**Building Description:** 11 Storey Mixed Use Tower  
**Type II - Non-combustible construction**

Step		Choose		Value Used	Total Fire Flow (L/min)	
<b>Base Fire Flow</b>						
1	<b>Construction Material</b>		<b>Multiplier</b>		0.8	
	<b>Coefficient related to type of construction</b> <b>C</b>	Type V - Wood frame		1.5		
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction	Yes	0.8		
Type I - Fire resistive construction (2 hrs)			0.6			
2	<b>Floor Area</b>				21,000	
	<b>A</b>	Building Footprint (m <sup>2</sup> )	2400			
		Number of Floors/Storeys	11			
		Protected Openings (1 hr) if C<1.0	No			
		Area of structure considered (m <sup>2</sup> )		14,400		
<b>F</b>	<b>Base fire flow without reductions</b> <b>F = 220 C (A)<sup>0.5</sup></b>					
<b>Reductions or Surcharges</b>						
3	<b>Occupancy hazard reduction or surcharge</b>		<b>FUS Table 3</b>	<b>Reduction/Surcharge</b>	17,850	
	<b>(1)</b>	Non-combustible		-25%		
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
Rapid burning			25%			
4	<b>Sprinkler Reduction</b>		<b>FUS Table 4</b>	<b>Reduction</b>	-8,925	
	<b>(2)</b>	Adequately Designed System (NFPA 13)	Yes	-30% -30%		
		Standard Water Supply	Yes	-10% -10%		
		Fully Supervised System	Yes	-10% -10%		
		<b>Cumulative Sub-Total</b>				<b>-50%</b>
<b>Area of Sprinklered Coverage (m<sup>2</sup>)</b>		26400	100%			
		<b>Cumulative Total</b>		<b>-50%</b>		
5	<b>Exposure Surcharge</b>		<b>FUS Table 5</b>	<b>Surcharge</b>	13,388	
	<b>(3)</b>	North Side	0 - 3 m	25%		
		East Side	0 - 3 m	25%		
		South Side	10.1 - 20 m	15%		
		West Side	0 - 3 m	25%		
		<b>Cumulative Total</b>		<b>75%</b>		
<b>Results</b>						
6	<b>(1) + (2) + (3)</b>	<b>Total Required Fire Flow, rounded to nearest 1000L/min</b>		<b>L/min</b>	<b>22,000</b>	
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	<b>L/s</b>	<b>367</b>
				or	<b>USGPM</b>	<b>5,812</b>