



# Coffee Break Training - Fire Protection Series

## Access and Water Supplies: Fire Flow Formulas: Part 13: Insurance Services Office Needed Fire Flow: Exposure Factor Values

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**Learning Objective:** The student will be able to obtain the “exposure factor” variable,  $X_i$ , from the Insurance Services Office (ISO) Needed Fire Flow (NFF) formula exposure factor table.

Last week, we discussed the exposure factor variable,  $X_i$ , and how it affects the ISO NFF formula. In general,  $X_i$  addresses the influence of adjoining and connected buildings on the NFF.

$$NFF_i = (C_i) (O_i) [1 + (X_i + P_i)]$$

Where:

$X_i$  = a factor for exposure to adjacent buildings

$P_i$  = a factor for communications (openings) in party-walls

The  $X_i$  value is obtained from a table. Last week’s Coffee Break Training explained the factors that influence the  $X_i$  value. The following table is a representative sample of the ISO exposure factor table. Once the construction factors, distance and “length-height values” are determined, the  $X_i$  value is chosen from the table.



The distance between these Insurance Services Office (ISO) Construction Class 1 buildings influences the Needed Fire Flow (NFF) formula because of the exposure threat.

Construction of Facing Wall of Subject Building	Distance in Feet to the Exposure Building	Length-height of Facing Wall of Exposure Building	Construction of Exposure Building Facing Wall (ISO Classes)			
			2, 4, 5 and 6			
			1,3	Unprotected Openings	Semi-protected Openings*	Blank Wall
Frame Metal or Masonry with Openings	0-10	1-100	0.22	0.21	0.16	0
		101-200	0.23	0.22	0.17	0
		201-300	0.24	0.23	0.18	0
		301-400	0.25	0.24	0.19	0
		>400	0.25	0.25	0.20	0
	11-30	1-100	0.17	0.15	0.11	0
		101-200	0.18	0.16	0.12	0
		201-300	0.19	0.18	0.14	0
		301-400	0.20	0.19	0.15	0
		>400	0.20	0.19	0.15	0
<b>Note: The table continues with additional values.</b>						
Blank Masonry Wall	<ul style="list-style-type: none"> <li>If the facing wall of the exposure building is higher than the subject building:               <ul style="list-style-type: none"> <li>Use this table, <b>except</b> use only the length-height of the exposure building <b>above</b> the height of the facing wall of the building being evaluated for fire flow.</li> <li>Buildings 5 stories or more in height are considered 5 stories.</li> </ul> </li> <li>When the height of the facing wall of the exposure building is the <b>same</b> or <b>lower</b> than the height of the subject building facing wall, <math>X_i = 0</math>.</li> </ul>					

\*Wired glass or outside, open sprinklers.

For a complete version of the ISO “Guide for the Determination of Needed Fire Flow,” visit [www.iso.com](http://www.iso.com).



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