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March 31, 2025

City of Pompano Beach Fire Department
Attn: Mr. Jim Galloway
100 West Atlantic Boulevard
Pompano Beach, Florida 33060

Re: **Coastal 18** - Needed Fire Flow Calculations
AJH #: 23-0300

To Whom it May Concern:

Listed below please find the certified needed fire flow computations for the above-referenced project for your use. The fire hydrant water flow test has been ordered, but has not been performed, as yet. The site plan, Life Safety Plans, and civil engineering plans have been submitted and are being processed for approval at this time.

The needed fire flow requirements are based on the *Insurance Services Office Guide For Determination of Needed Fire Flow* updated in 2014. I believe this is the current version of the ISO Guide. There is one proposed new 16,000 sf building on site. The fire flow calculations below will determine the Needed Fire Flow for the proposed building.

The fire flow requirements as indicated in Chapter 1 of the ISO Guide are shown below:

$$NFF_i = C_i (O_i) [1.0 + (X + P_i)]$$

where, NFF_i = the needed fire flow in gpm
C_i = a factor related to the type of construction
O_i = a factor related to the type of occupancy
X = a factor related to the exposure of buildings
P = a factor related to the communication between buildings.

The construction factor is determined per Chapter 2 of the ISO Guide:

$$C_i = 18 \times F \times (A)^{0.5}$$

where, C_i = the required fire flow in gpm
F = coefficient related to the type of construction. In this case, the building construction is of non-combustible materials. Therefore, use C = 0.8.
A = The total gross floor area in the building for Construction Class 3 is
Total First Floor (16,000 sf) = 16,000 sf

C = $18 \times 0.8 \times (16,000 \text{ sf})^{0.5} = 1,272 \text{ gpm}$
C = 1,750 gpm (rounded to the nearest 250 gpm)

The occupancy factor is determined per Chapter 3 of the ISO Guide. It is not specified whether this occupancy is a low fire hazard, therefore, we will not reduce the required fire flow as permitted in Chapter 3 of the ISO Guide. Therefore, the Occupancy Factor (O_i) = 1.0. Thus, the required fire flow remains at 1,750 gpm.

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PZ25-12000007

05/07/2025

The Exposure and Communication Factor (X+Pi) are determined per Chapter 4 of the ISO Guide.

The exposure factor, Xi, for this building is determined as follows. The closest structure to the subject Building is more than 100' away (115' to the office trailer). It is not possible that any other building will be closer than 100' to this building. The length-height product is 160 (160 ft long wall times 1 story). Per table 330.A(2) of the ISO Guide, the exposure factor for masonry unprotected openings is 0.0056 (a conservative estimate). This is actually a steel building with a steel roof. So these results are conservative. There is no communication, P, between the buildings. That is, there is no passageway or connection between the buildings.

The Needed Fire Flow is computed as follows:

$$NFFi = (Ci) \times (Oi) \times [1.0 + (Xi + Pi)]$$

$$NFFi = 1,750 \text{ gpm} \times 1.0 \times [1 + (0.0056 + 0)] = 1,750 \text{ gpm} \times 1.0 \times 1.0056$$

$$NFFi = 1,760 \text{ gpm}$$

$$NFFi = 1,750 \text{ gpm (rounded to the nearest 250 gpm)}$$

Therefore, the required minimum fire flow shall be 1,750 gpm with a minimum residual pressure of 20 psi.

The fire hydrant water flow test has been ordered, but has not been performed as yet. Once the test is performed we will be able to evaluate how many hydrants will be required to provide the needed fire flow..

In addition, this building will be fire sprinkled.

Thank you for your kind attention to this matter. Should you have any questions regarding this, or any other, matter, please do not hesitate to contact this office.

Sincerely,
A. J. Hydro Engineering, Inc.



Howard Jablon, P.E.

cc: file
Josh Rogers, Coastal Waste & Recycling of Martin

Attachments

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PZ25-12000007

05/07/2025