

UTILITY ANALYSIS
FLOW TEST

MEMO

To: Vladimir Lyubetsky
Drummey Rosane Anderson, Inc.
235 Bear Hill Road
Waltham, MA 02451

From: Gilbert Castera

Date: 06/29/2021

RE: Northeast Metrotech Regional High School
Flow Test and Pump Systems Verification

Project #: 60-20-409

We have reviewed the flow tests conducted on 6/24/2021 and based on this review we have determined that they are consistent as far as the flow test from Old Nahant (Observation Hydrant at elevation approximately 133.0' per Google Earth) should be from a better looped main versus the flow test from the existing High School (Observation Hydrant at elevation approximately 88.0' per Google Earth) would be from a dead end line or not so well looped main. This is noted on the basis that the flow test from the existing High School site has a lower residual pressure. Per these (2) test results, the projected values at our building site are at elevation 163.50' for the new building.

Based on the preliminary calculations completed according to these (2) flow test results and projecting these values at the site for the main building and for the other buildings, our findings are as follows:

1. A fire pump will be required for the main building.
2. A domestic booster will be required for the main building.
3. A water tank will not be required for the main building. The addition of the feed main currently planned originating from Old Nahant is essential as far as making the system work.
4. Booster pumps will not be required for the satellite building based on their elevations per information from the Landscape drawings.

Note that the project will require a flow test when the final pump sizing will need to be completed. Note as well that we are proceeding on the basis that the main building is not to be classified as a high rise.

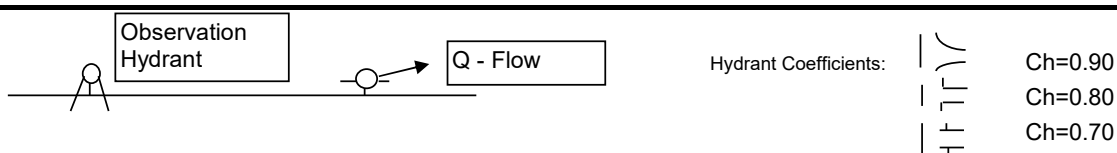
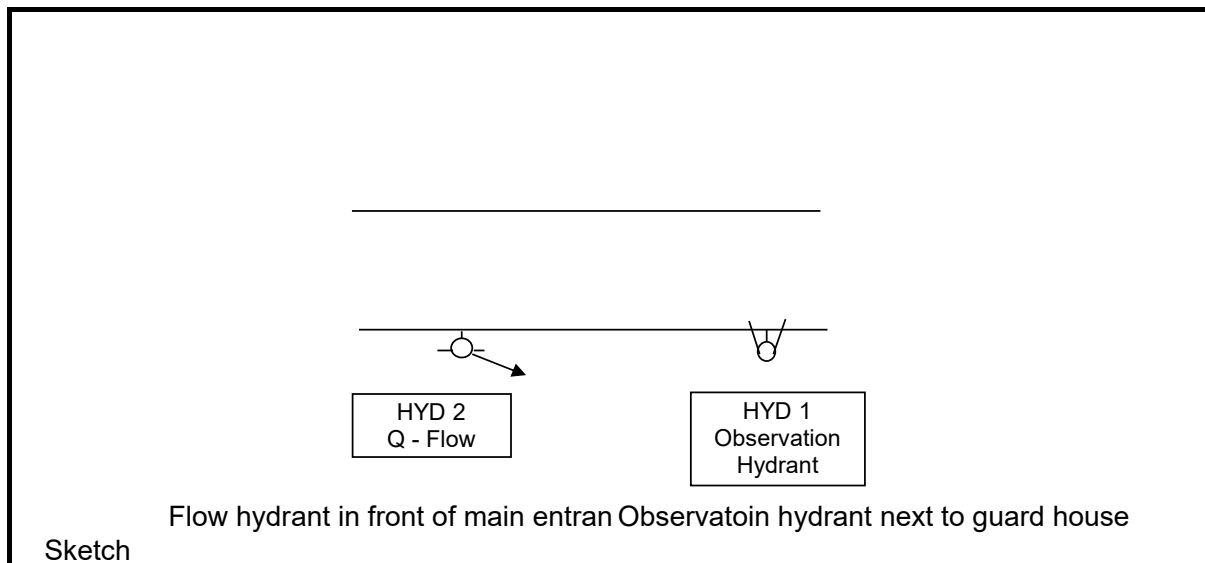
Let me know if you have any questions regarding the above.

cc: KJC - Bala

HYDRANT FLOW TEST SUMMARY SHEET

Project 13872
 Date: 24-Jun-21
 Time: 9:00 PM
 Test By DMC

Client: DRA
 Project: NEMT
 Location: School Parking Lot



Flow Test Summary			
Observation Hydrant		Flow Hydrant:	
Static:	82 psi	Pitot (P):	45 psi
Residual:	60 psi	Diameter (d):	2.5 inches
(psi = pounds per square inch)		Hyd. Coefficient (Ch):	0.7

Calculated Flow (Q = hydrant flow in gallons per minute - gpm)	
$Q=29.83(Ch)(d)^2(P)^{1/2}$	Q = 875.5 gpm

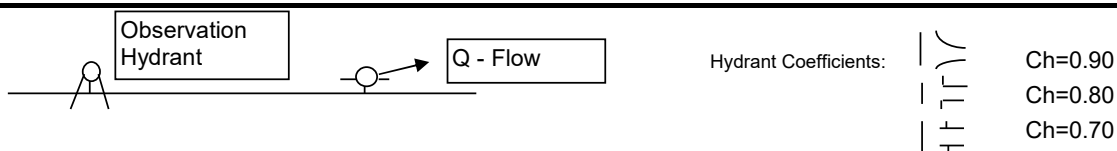
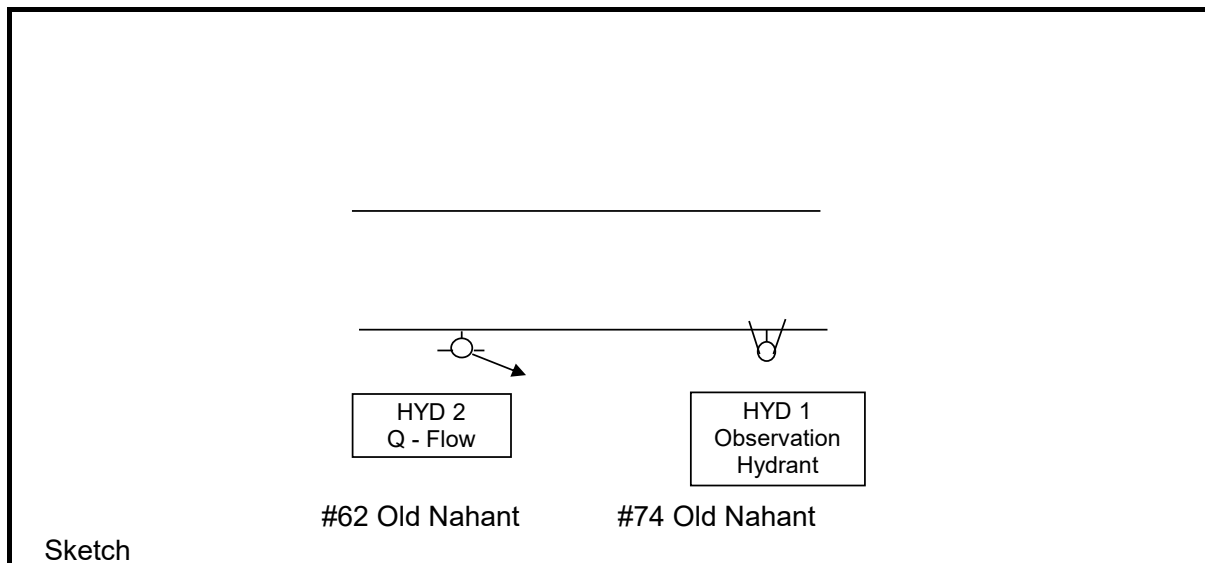
Flow (Q20) at 20 psi	
$Q20 = Q(PD20)^{0.54}/(PD1)^{0.54}$	Q20 = 1531.9 gpm
PD20 = Static - 20 psi = 82 - 20 = 62 psi	
PD1 = Static - Observed = 82 - 60 = 22 psi	

Comments
Hydrants were operated by Hector of the Wakefield Water Department. Hydrant bonnet had some minor leaking during the test.

HYDRANT FLOW TEST SUMMARY SHEET

Project 13872
 Date: 24-Jun-21
 Time: 9:00 PM
 Test By DMC

Client: DRA
 Project: NEMT
 Location: Old Nahant #62 and #74



Flow Test Summary			
Observation Hydrant		Flow Hydrant:	
Static:	64 psi	Pitot (P):	45 psi
Residual:	56 psi	Diameter (d):	2.5 inches
(psi = pounds per square inch)		Hyd. Coefficient (Ch):	0.7

Calculated Flow (Q = hydrant flow in gallons per minute - gpm)	
$Q=29.83(Ch)(d)^2(P)^{1/2}$	Q = 875.5 gpm

Flow (Q20) at 20 psi	
$Q20 = Q(PD20)^{0.54}/(PD1)^{0.54}$	Q20 = 2198.0 gpm
PD20 = Static - 20 psi = 64 - 20 = 44 psi	
PD1 = Static - Observed = 64 - 56 = 8 psi	

Comments
Hydrants were operated by Hector of the Wakefield Water Department. Hydrant bonnet had some minor leaking during the test.