

# THE NEW W. EDWARD BALMER SCHOOL

## WHITINSVILLE, MASSACHUSETTS

SCHOOL BUILDING COMMITTEE MEETING

JULY 21, 2020

# AGENDA

1. Call to Order
2. Statement regarding Governor Baker's March 10, 2020 Order Suspending Certain Provisions of the Open Meeting Law
3. Attendance
4. Statement of Audio and Video Recording
5. Public Comment

Comments for this meeting may be emailed in advance of the 6:30 p.m. start time to [sbc@nps.org](mailto:sbc@nps.org).

*All comments will be recorded in the record, and all attempts will be made to mention them live during the meeting. Any emails received during the meeting before the public comment period ends will also be attempted to be mentioned.*

6. Approval of Minutes
7. Approval of Invoices and Commitments
8. Technology Pre-Purchase Update
9. Vail Field Irrigation
10. Construction Update
11. New or Old Business
12. Committee Questions
13. Next Meeting: August 18, 2020
14. Adjourn





# IRRIGATION SYSTEM QUESTIONS

- 1). What is the true cost of an irrigation system, with and without a well? ***See table following.***
- 2). Could the cost be reduced by doing a delegated design? Many of these firms design and install irrigation systems. ***System will be provided with delegated design by the subcontractor's registered sprinkler designer.***
- 3). What is the credit we'd receive from our landscape contractor who wouldn't have to use labor to move hoses during the original growth period? ***This savings is reflected in subcontractor pricing, see table following.***
- 3b). If we have an irrigation system, can we delete some field hydrants? What's the credit for that? ***Yes, except for one at the concession shed, the field hydrants would be deleted and credited, but they are only \$250/per each.***
- 4). What is the annual consumption cost estimated to water the grass without a well? ***See slides following.***

# IRRIGATION SYSTEM QUESTIONS

5). How often typically will the fields need watered, and what would the annual cost be estimated for a DPW staff person do that manually (moving sprinklers) for the 50-year design life of the facility.

- *The frequency of watering depends on the season and rainfall and can vary widely.*
- *Grass needs about 1 inch of water/rainfall per week to thrive; we assumed peak watering 3x week to achieve this.*
- *Assume five cannons would need to be moved three times per watering, assume 12 minutes each move = 3 hours per watering x 3 per week x 4 per month x 6 months = 216 Person-hours x 50 years = 10,800 person-hours.*
- *There is currently no budget or staff to perform manual watering, and it is done by volunteer groups if at all.*

6). If the system only runs at night, can the WWC provide enough pressure and volume to irrigate without causing a large pressure drop in the neighborhood? **WWC did not analyze to this level. WWC recommends drilling irrigation wells.**

7). What is the net cost of the system (1-2-3-3b)? **See table following.**





# IRRIGATION OPTIONS FOR SPORT FIELDS

## Base Option 1 – (5) yard hydrants, basic emergency watering

- using WWC potable water from 10" main

## Option 2 - Loop with hose coupling quick-connects

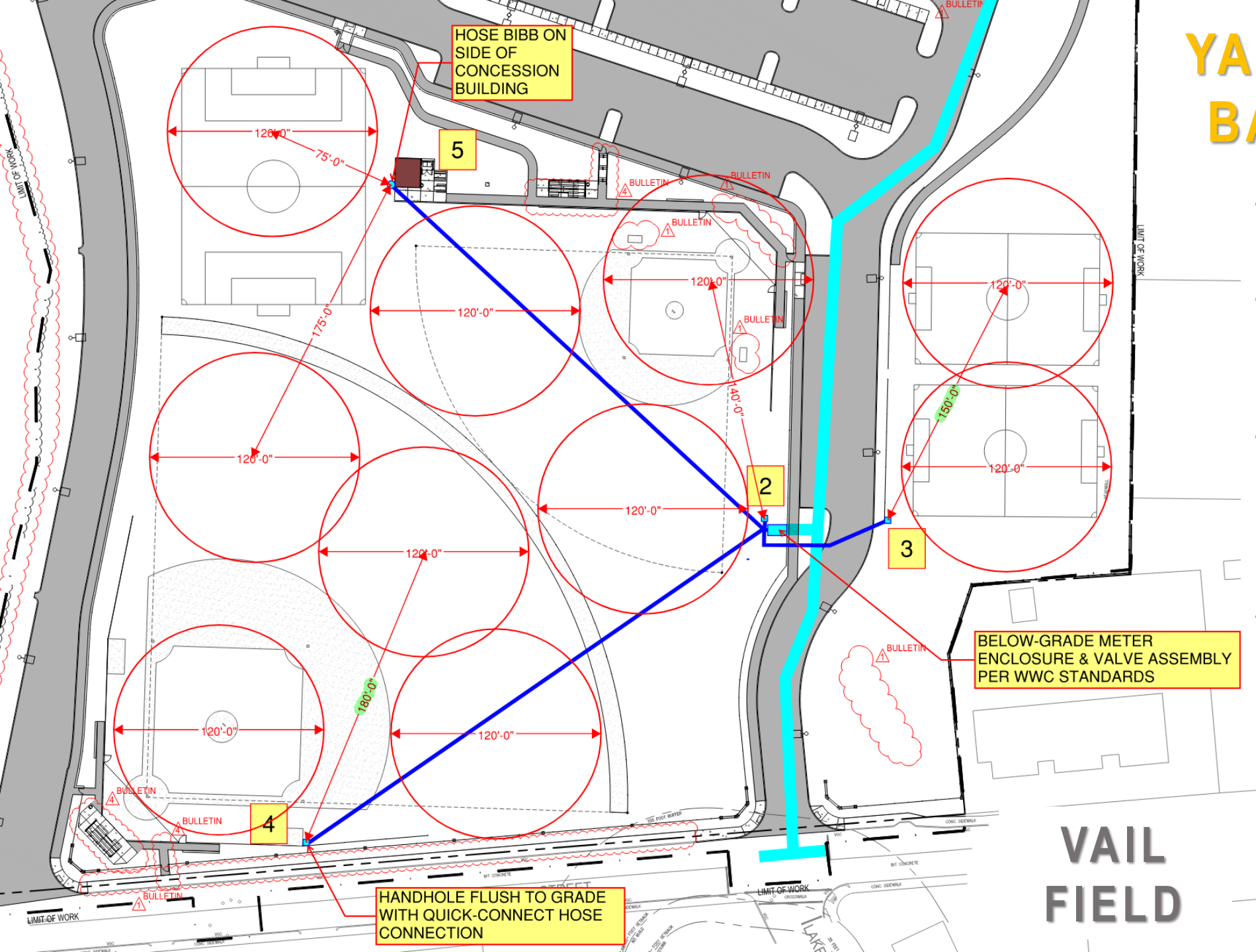
- using irrigation well(s)
- phased step toward full irrigation

## Option 3 - Full Irrigation

- using irrigation well(s)
- Dialog with WWC indicates that potable water use not advised for irrigation options.
- All options shown are schematic diagrams only. No detailed design has been completed at this time. Design will be delegated to the subcontractor and included in the price.

# YARD HYDRANTS: BASE OPTION 1

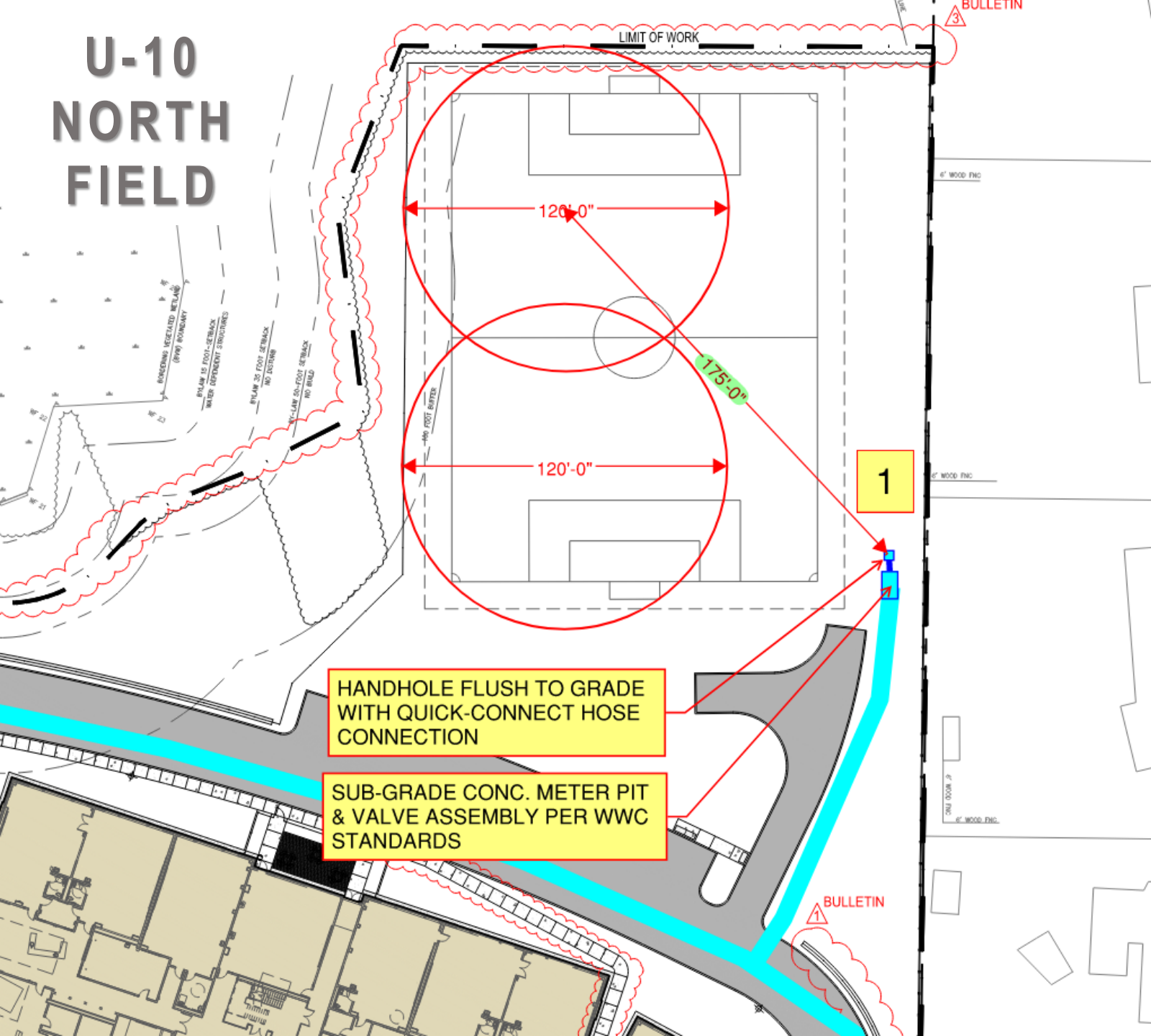
- Basic watering during dry periods
- One yard hydrant hose connection per field group; (5) total
- Use curtailed/ prohibited during declared “dry periods” (odd/even days) or drought/ water emergencies
- Very inefficient watering method, poor coverage



VAIL  
FIELD



# U-10 NORTH FIELD



## YARD HYDRANTS: BASE OPTION 1

- Ongoing cost of potable water purchased from WWC
- Assumes a large amount of volunteer labor to move hoses and sprinklers
- long hoses = friction/pressure loss
- Recreation Commission owns no hoses or sprinkler equipment



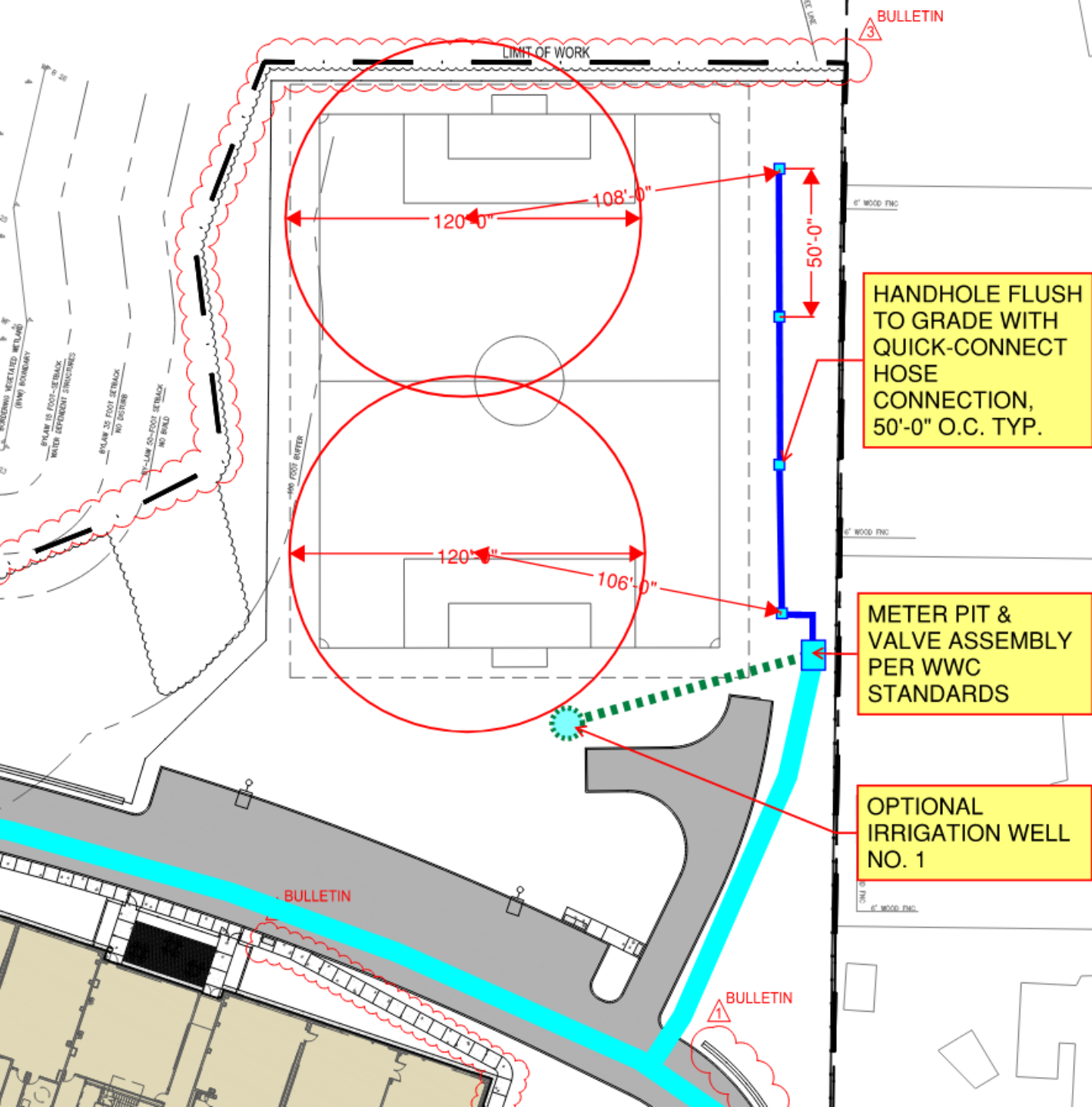


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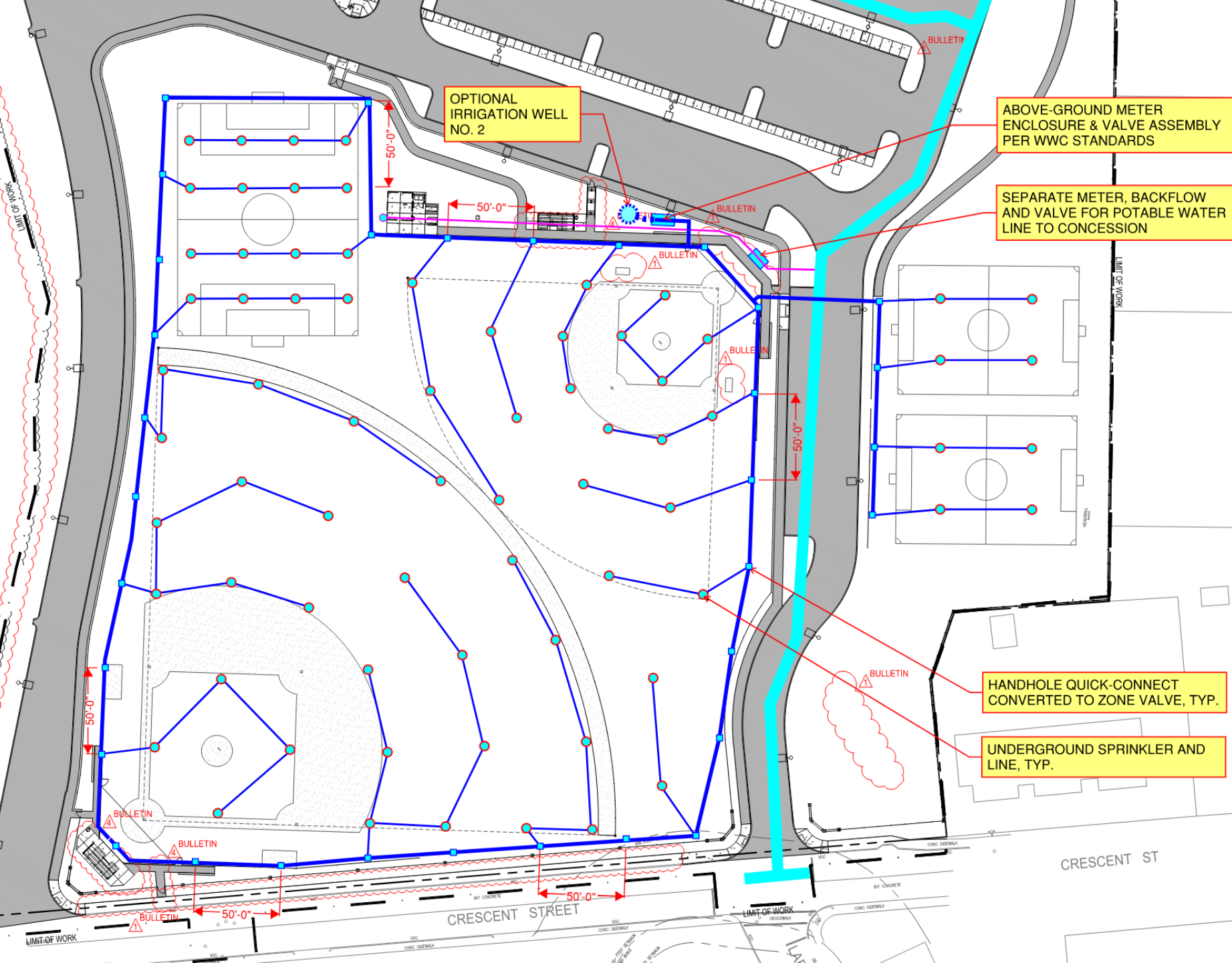
- “Phased Option” – loop infrastructure now for full irrigation system later
- Quick-connect hose bibbs in hand holes at 50’ on center
- Install controller wire in loop for later use
- Surface watering with hoses and rotary sprinkler guns
- Shorter hose runs, more convenient hookups, less friction loss, less labor
- Quick-connects can be easily converted to in-ground sprinkler branch runs

# IRRIGATION OPTION 2: LOOP WITH QUICK- CONNECTS

- Basic watering during dry periods
- Recommended to drill irrigation wells with this option
- Still an inefficient watering method; better access to couplings but still poor coverage



# IRRIGATION OPTION 3



- “Complete Option” – loop infrastructure is trunk for full irrigation system
- Quick-connect in hand holes converted to zone valves
- Installed underground lines and sprinklers
- Automatic, timed, zoned
- Seasonal maintenance required
- Assumes irrigation wells





(2) U-6 FIELDS	Monthly peak demand (cu ft)	
May	4483	75% of monthly peak
June	4483	75% of monthly peak
July	5977	100% of monthly peak
August	5977	100% of monthly peak
September	4483	75% of monthly peak
October	4483	75% of monthly peak
Total (6 mo annual Est Peak Demand)	<b>29,885 cu ft</b>	

U-10 +VAIL FIELDS	Monthly peak demand (cu ft)	
May	89,889	75% of monthly peak
June	89,889	75% of monthly peak
July	119,853	100% of monthly peak
August	119,853	100% of monthly peak
September	89,889	75% of monthly peak
October	89,889	75% of monthly peak
Total (6 mo annual Est Peak Demand)	<b>599,263 cu ft</b>	

# WATER CONSUMPTION CALCULATION

Performed by General Irrigation Engineering (GIE) of Westwood, MA

←(2) U-6 soccer fields west of the school, which are planned to be irrigated using the school's potable water supply and will be connected to the school (9,415 SF area)

←U-10 field (north) and the Vail Fields: (3) U-8 soccer fields, and large and small baseball fields (188,790 SF total area), the source of the water which we are currently inquiring about.

- These are PEAK FLOW numbers!
- Normal expected flows are more like 30-32% of these peak calculations
- That said, we have to plan for the peak.

Questions to Whitinsville Water Co.:

- **Could WWC supply this peak demand to the school fields for irrigation?**
- **Even if they could supply the water, would it be subject to a drought restriction if a water emergency were declared? If so, to what degree?**

*Refer to email from Randy Swigor in packet*

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# WATER CONSUMPTION CALCULATION

## Rough cost calculation:

### (2) U-6 Fields:

Peak 29,885 cu ft / 100 x \$4.83 per 100 cu ft =	\$1,444
Meter charge (Assume 1.5") \$73.88 x 6 mos =	\$443
Meter install/ de-install charge (estimate)	\$200
<u>Annual Maintenance (estimate)</u>	<u>\$500</u>
<b>Total (Peak year)</b>	<b>\$2,587</b>
<b>Total (Average year - 32%)</b>	<b>\$828</b>

### U-10 + Vail Fields:

Peak 599,263 cu ft / 100 x \$4.83 per 100 cu ft =	\$28,945
Meter charge (Assume 2") 120.48 x 6 mos =	\$723
Meter install/ de-install charge (estimate)	\$200
<u>Annual Maintenance (estimate)</u>	<u>\$1500</u>
<b>Total (Peak year)</b>	<b>\$31,368</b>
<b>Total (Average year - 32%)</b>	<b>\$10,038</b>

# OPTION 1

## WATER CONSUMPTION CALCULATION

**U-10 + Vail Fields - Consumption and Cost for Manual watering by surface hoses and water cannons:**

Watering via hoses and cannons is about 20% less efficient.

Peak 599,263 cu ft x 1.20 = 749,032 cu ft

### **U-10 + Vail Fields:**

Peak 749,032 cu ft / 100 x \$4.83 per 100 cu ft =	\$36,178
Meter charge (Assume 2") 120.48 x 6 mos =	\$723
Meter install/ de-install charge (estimate)	\$200
Annual Maintenance (estimate)	\$500
<b>Total (Peak year)</b>	<b>\$37,600</b>
<b>Total (Average year - 32%)</b>	<b>\$12,032</b>





# IRRIGATION INITIAL COST SUMMARY

COST ITEM	OPTION 1 (BASE IN CONTRACT) (5) YARD HYDRANTS		OPTION 2 LOOP/QUICK-CONNECT SYSTEM WITH WELL		OPTION 3 FULL IRRIGATION WITH WELL
EXPLORATORY TEST WELLS	\$0		\$48,660 for (1) 6" exploratory bedrock well that can be used if viable GPM encountered, includes one \$15K hydrofracture injection*		\$48,660 for (1) 6" exploratory bedrock well that can be used if viable GPM encountered, includes one \$15K hydrofracture injection*
DESIGN & PERMITTING	IN CONTRACT		Well Design by Driller, no Permitting required. Irrigation Design in contract.		Well Design by Driller, no Permitting required. Irrigation Design in contract.
WELL DRILLING	\$0		\$48,660 for (1) 6" bedrock well, includes one \$15K hydrofracture operation*		\$48,660 for (1) 6" bedrock well, includes one \$15K hydrofracture operation*
PUMP & IRRIGATION SYSTEMS	(5) Hydrants + vaults, meters & valves in Contract		\$301,380		\$426,120
CREDIT TO AVOID MANUAL ESTABLISHMENT WATERING	\$0		\$0		(\$24,800)
WATERING EQUIPMENT	\$3,000		\$4,000		\$0
<b>INITIAL COST TOTALS</b>	<b>\$3,000</b>		<b>\$402,700</b>		<b>\$498,640</b>

\* If GPM flow rate is not sufficient upon water discovery, hydrofracturing can be employed at \$15,000 per injection, per well, up to 3 times per well.

# IRRIGATION TOTAL COST OF OWNERSHIP SUMMARY

COST ITEM	OPTION 1 (BASE IN CONTRACT) (5) YARD HYDRANTS		OPTION 2 LOOP/QUICK-CONNECT SYSTEM WITH WELL		OPTION 3 FULL IRRIGATION WITH WELL
INITIAL COST TOTALS	\$3,000		\$402,700		\$498,640
WATER	\$12,000 – \$37,600/ YR		\$0		\$0
WATER, 50-YEAR	\$600,000 - \$1,880,000				
MAINTENANCE	\$1,000 / YR?		\$1,500 / YR?		\$2,000 / YR?
MAINTENANCE, 50-YEAR	\$50,000		\$75,000		\$100,000
OPERATIONAL LABOR	216 HR/ YEAR		162 HR/ YEAR		24 HR/ YEAR
OPERATIONAL LABOR, 50-YEAR, \$25/ HR	\$270,000		\$202,500		\$30,000
TOTAL 50-YEAR COST OF OWNERSHIP	\$923,000 - \$2,200,300		\$680,200		\$628,640
RESULTS	VARIABLE, FAIR		VARIABLE, GOOD		PREDICTABLE, EXCELLENT



# CONSTRUCTION UPDATE



**FONTAINE BROS., INC.**

CONSTRUCTION MANAGERS  
GENERAL CONTRACTORS





# CONSTRUCTION UPDATE



Drone overview of building site, 7/16/20



# CONSTRUCTION UPDATE



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# CONSTRUCTION UPDATE



Light-gage Metal Framing, 7/14/20



# CONSTRUCTION UPDATE



Waterproofing detailing, C-Wing west, 7/14/20



# CONSTRUCTION UPDATE



Concrete Block Masonry in the Gym, 7/14/20



# CONSTRUCTION UPDATE

Stairs 3,4,& 5 up and running, 7/14/20





# CONSTRUCTION UPDATE

M-E-P-FP and interior partition progress, 7/14/20





# CONSTRUCTION UPDATE



Electrical rough-in in a typical classroom, 7/14/20



# QUESTION AND ANSWER

