



*Watertown Elementary Schools Building Project*

# Design **Watertown**



architects

**WPS Building Committee**

**Ai3 Architects, LLC**  
**Hill International, Inc**

February 5, 2020

Schools Project Website: [watertown.k12.ma.us/building\\_for\\_the\\_future/elementary\\_schools\\_building\\_project](http://watertown.k12.ma.us/building_for_the_future/elementary_schools_building_project)

*Watertown Elementary Schools Building Project*

# **DesignUpdate**





# Hosmer

*Exterior Rendering*



*View from the corner of Concord Road and Chauncey Street*



# Hosmer

*Exterior Rendering*



*View from the corner of Hancock and Winthrop Streets*



# Cunniff

*Exterior Rendering*



*View from Warren Street*



# Cunniff

Exterior Rendering

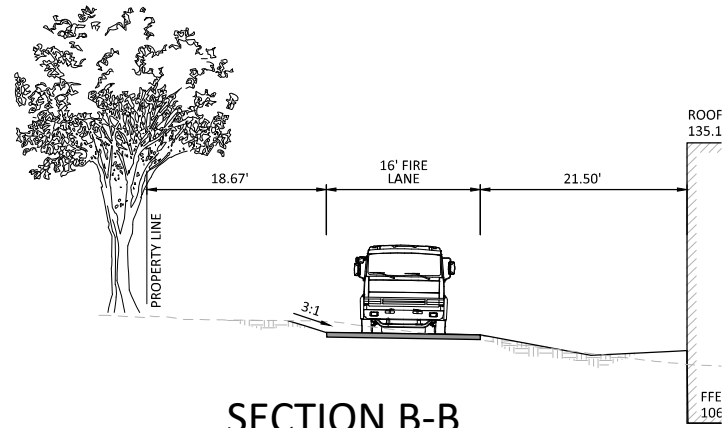


*View from main parking lot towards school*

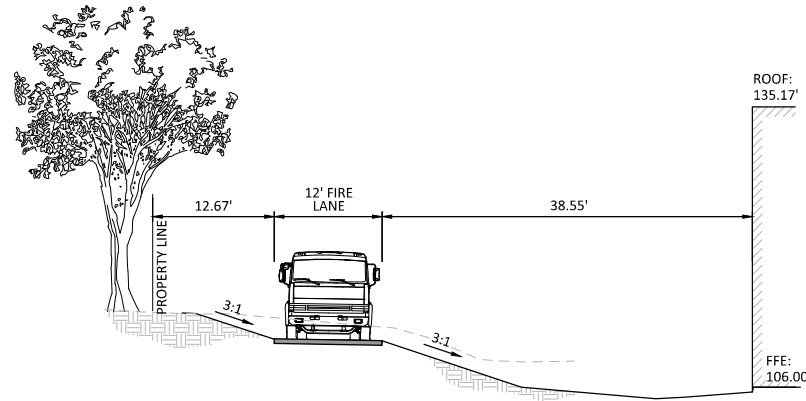


# Cunniff

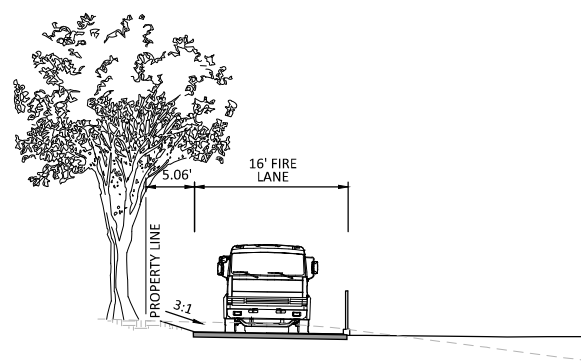
Site Update



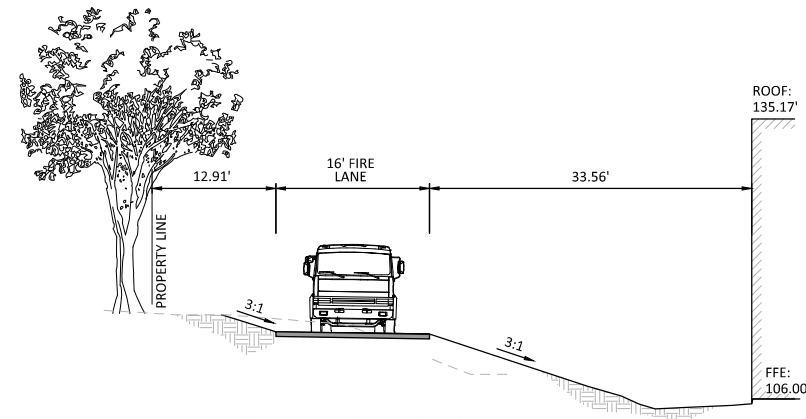
**SECTION B-B**



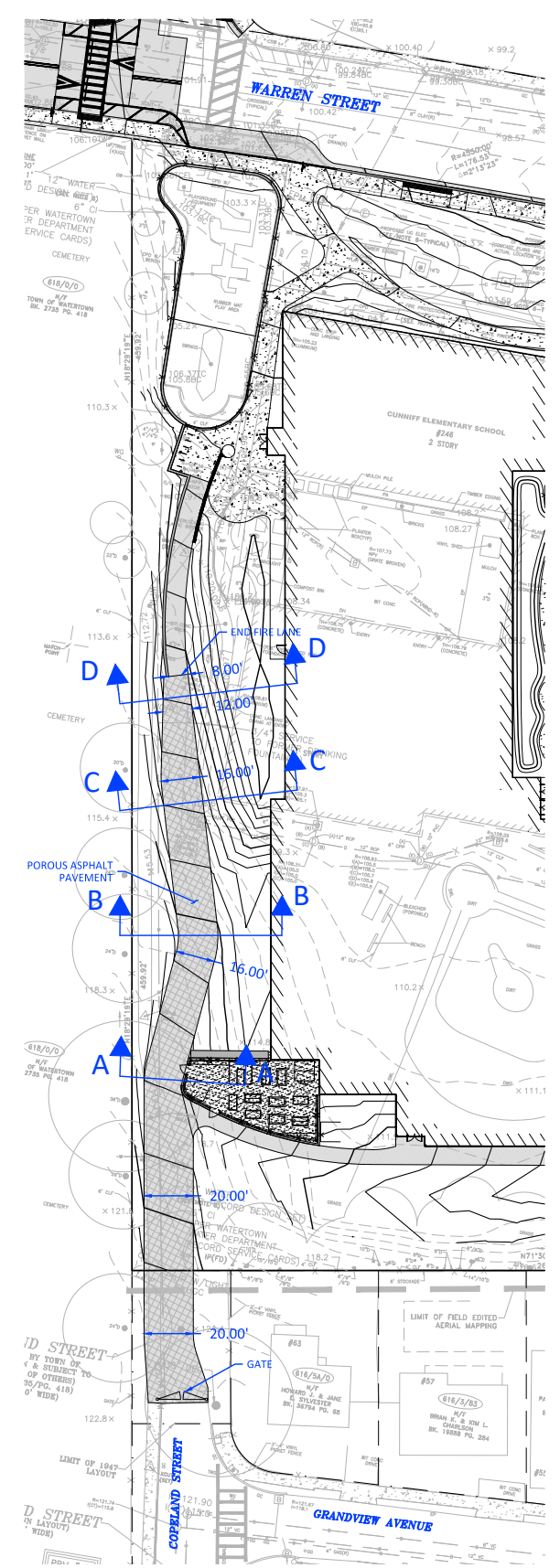
**SECTION D-D**



**SECTION A-A**



**SECTION C-C**

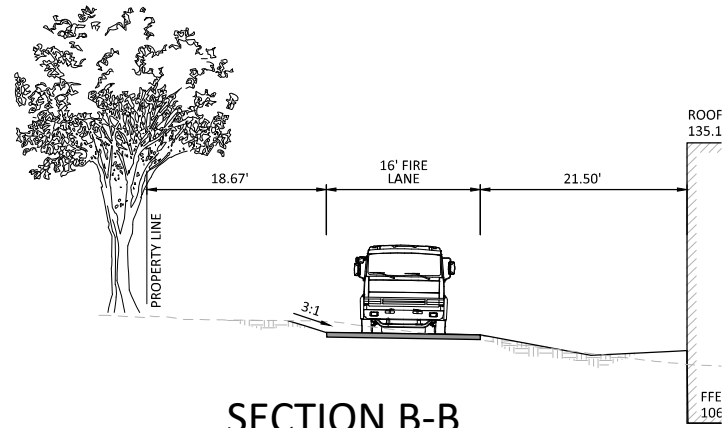


*Emergency Access Roadway*

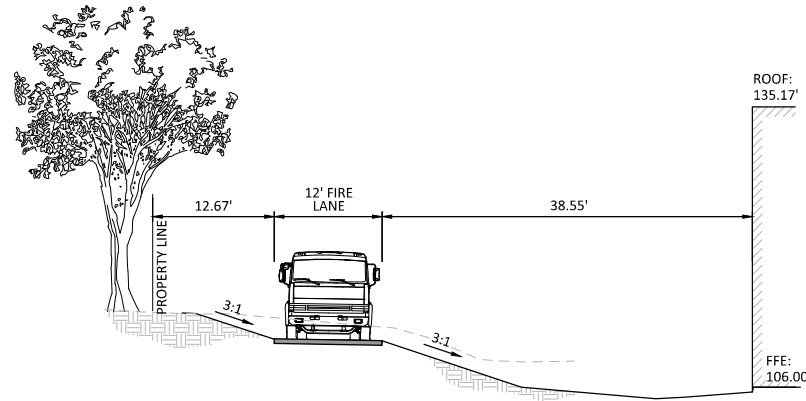


# Cunniff

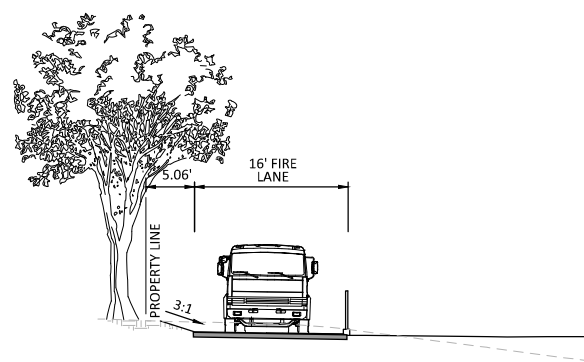
Site Update



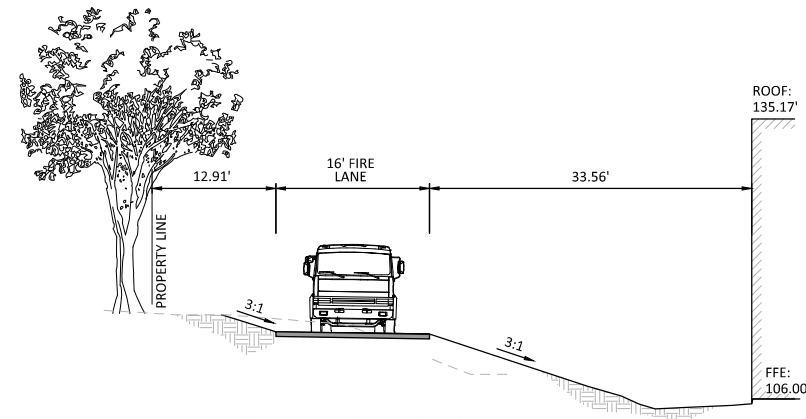
**SECTION B-B**



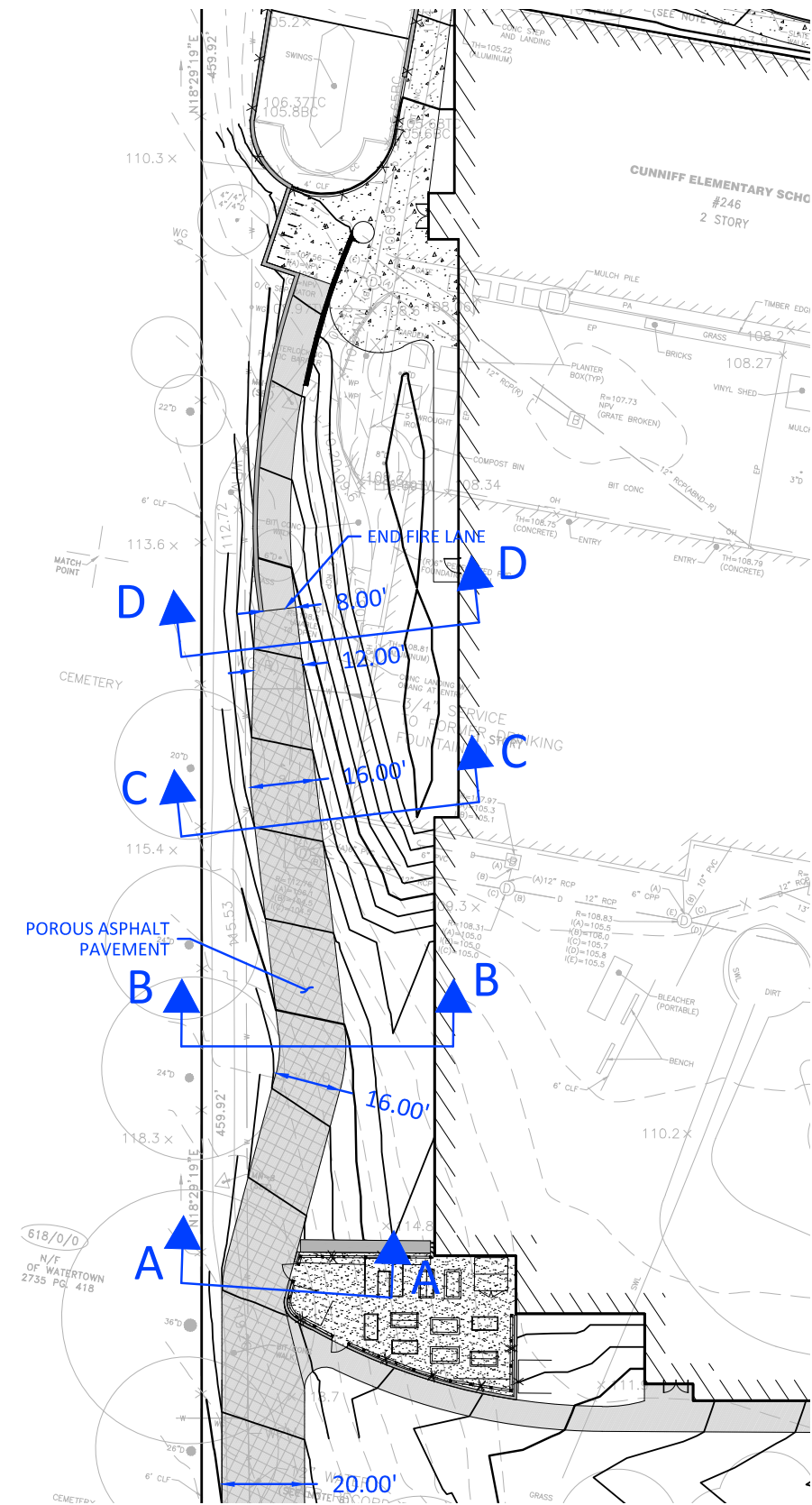
**SECTION D-D**



**SECTION A-A**



**SECTION C-C**



*Emergency Access Roadway*



*Watertown Elementary Schools Building Project*

# **Sustainability** Update





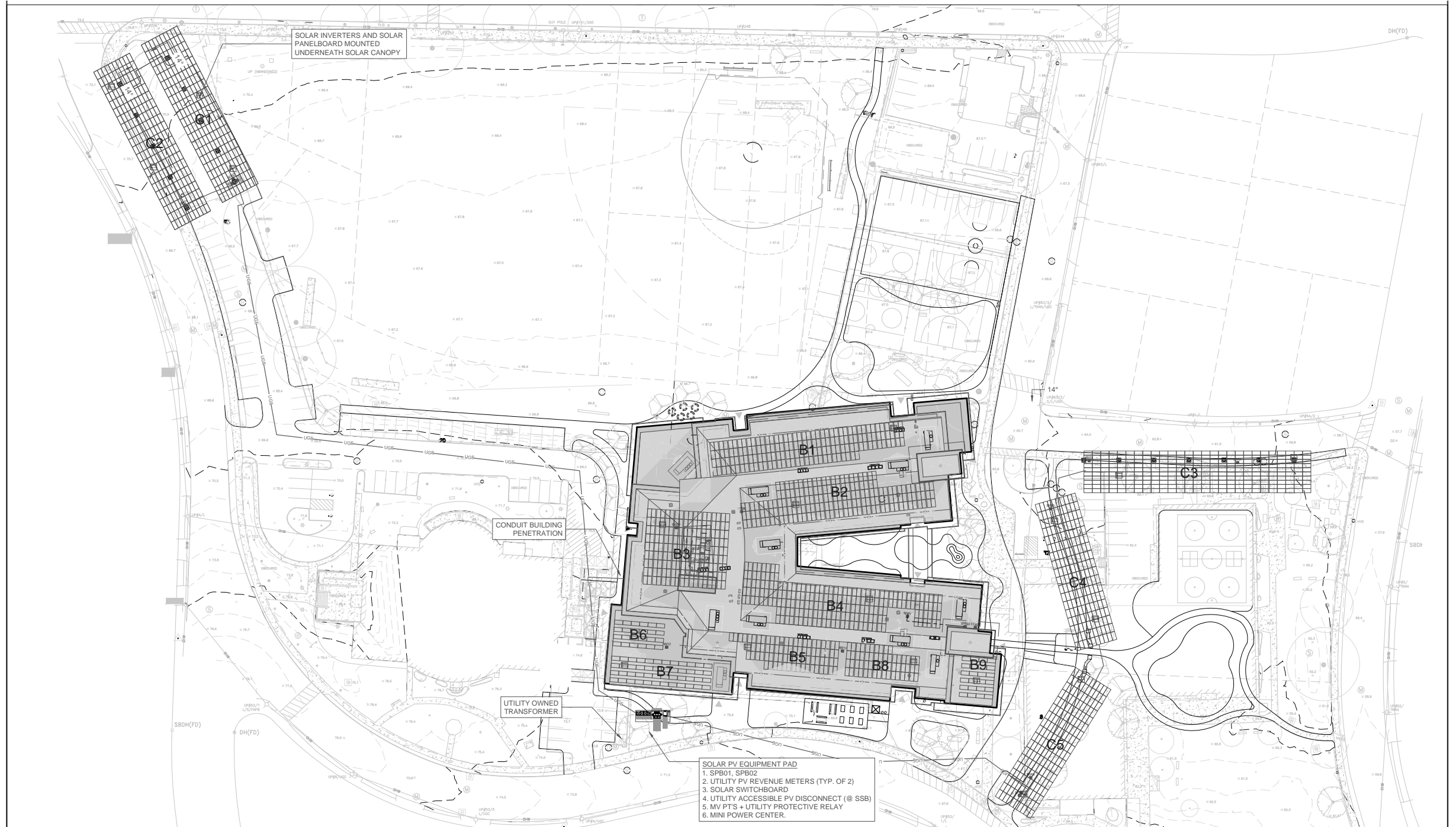
# Hosmer

## Sustainability Update

*Approximate*  
**kWh production:**  
 983,000 kWh  
 annually

PV SYSTEM PROJECT SUMMARY	
DC SYSTEM SIZE	817.6 KW DC
AC SYSTEM SIZE	707.0 KVA
INTERCONNECTING VOLTAGE	480/277V
MAXIMUM EXPORT AMP RATING	960 A

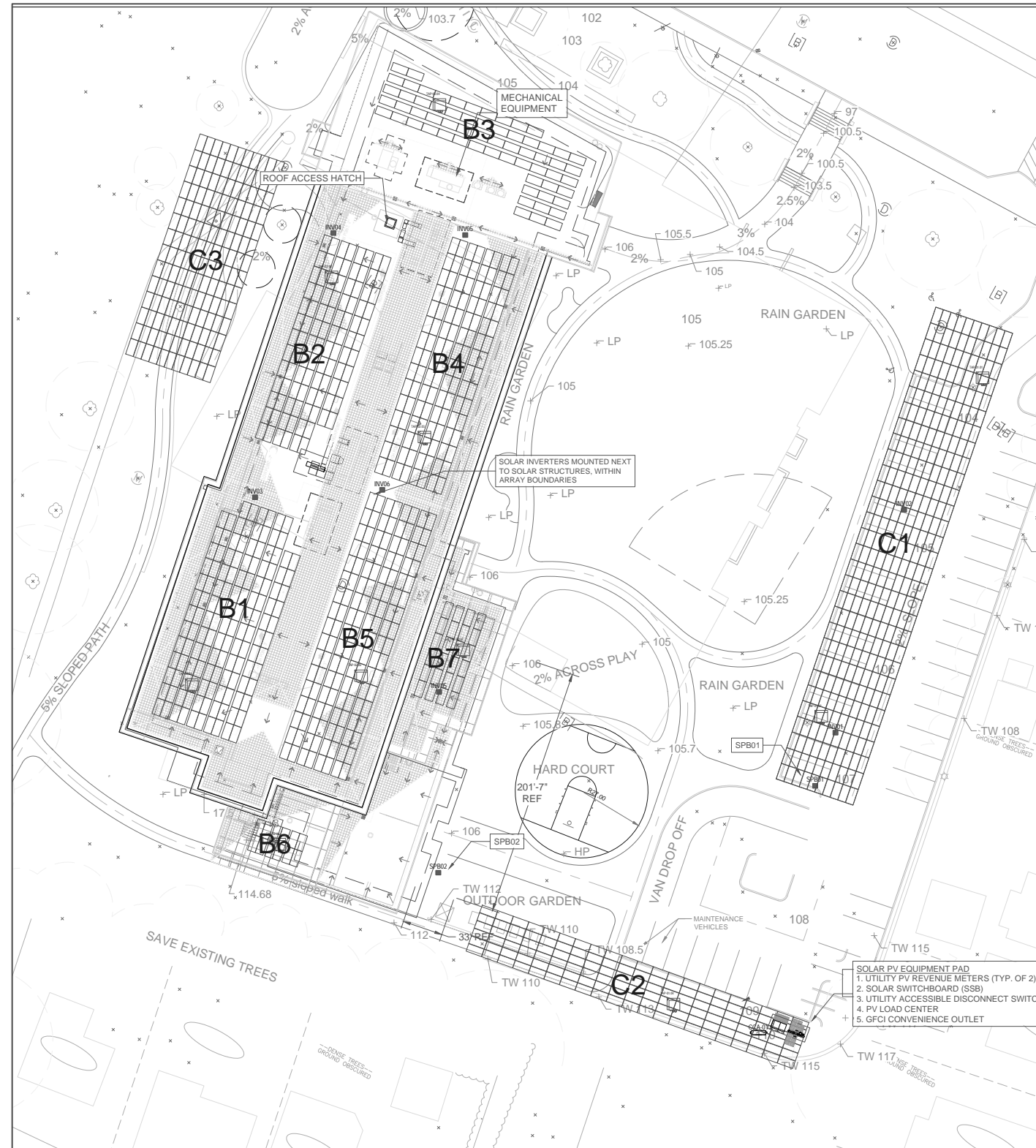
PV ARRAY SUMMARY						
ARRAY ID	ROW	COLUMN	TOTAL	KW DC	AZI	TILT
ARRAY C1	21	10	210	87.2	240°	14°
ARRAY C2	21	10	210	87.2	240°	14°
ARRAY C3	27	10	270	112.1	122°	14°
ARRAY C4	18	10	180	74.7	74°	14°
ARRAY C5	18	10	180	74.7	180°	14°
ARRAY B1	42	4	158	65.6	175°	8°
ARRAY B2	-	-	170	70.6	175°	8°
ARRAY B3	-	-	162	67.2	185°	8°
ARRAY B4	-	-	196	81.3	185°	8°
ARRAY B5	-	-	80	33.2	185°	8°
ARRAY B6	4	6	24	10.0	185°	10°
ARRAY B7	4	12	48	19.9	185°	10°
ARRAY B8	-	-	58	24.1	185°	8°
ARRAY B9	6	4	24	10.0	185°	10°
TOTAL	-	-	1970	817.6		





Approximate kWh production:  
586,000 kWh annually

PV MODULE SUMMARY						
ARRAY ID	ROW	COLUMN	TOTAL	KW DC	AZI	TILT
ARRAY C1	30	10	300	124.5	109°	14°
ARRAY C2	14	11	154	63.9	109°	14°
ARRAY C3	21	6	126	52.3	109°	14°
ARRAY B1	8	14	106	44.0	200°	8°
ARRAY B2	8	13	100	41.5	200°	8°
ARRAY B3	-	-	65	27.0	200°	5°
ARRAY B4	8	15	120	49.8	200°	8°
ARRAY B5	8	17	136	56.4	200°	8°
ARRAY B6	2	6	12	5.0	200°	9°
ARRAY B7	4	6	24	10.0	109°	10°
TOTAL			1143	462.9		



- SOLAR PV EQUIPMENT PAD**
1. UTILITY PV REVENUE METERS (TYP. OF 2)
  2. SOLAR SWITCHBOARD (SSB)
  3. UTILITY ACCESSIBLE DISCONNECT SWITCH (ADS)
  4. PV LOAD CENTER
  5. GFCI CONVENIENCE OUTLET



## Construction Cost: Base Bid vs. Alternate

Include as part of the  
**Base Bid Construction Cost:**

- PV infrastructure in building (conduits, raceways, roof designed to support PV)
- PV infrastructure on site (underground conduits, etc.)
- PV custom structural support canopies (primarily parking areas) – estimated at \$1.5 million

*Advantages:*

- Coordination of canopy installation with remaining sitework (less disruption)
- Ability to design appropriate site lighting
- Ability to address site security (cameras, view angles, etc.)
- Ability to ensure appropriate aesthetics

Include as  
**Bid Alternate #1:**

- PV panels, switchgear, inverters, supports, ballast, etc. (all components for completed PV system) – estimated at \$4.5 million

*Advantages:*

- Provides Committee with additional time to complete PPA versus ownership analysis
- Decision on acceptance of alternate does not have to occur until post-bidding execution of contract
- No obligation to accept alternate
- Provides Committee with exact cost of PV under an ownership scenario under the general contract
- Allows Committee to evaluate the cost of PV in the context of final construction bids and available funding



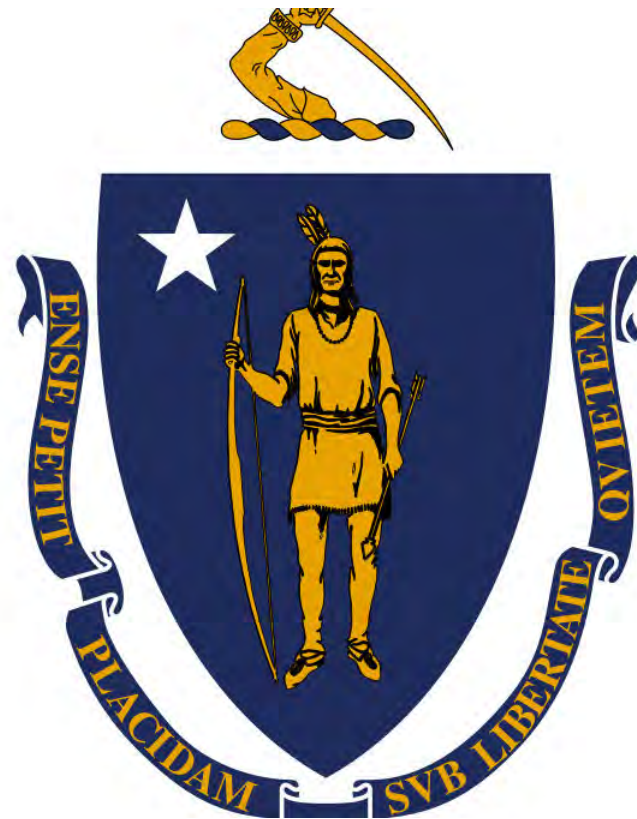
*Watertown Elementary Schools Building Project*

# **Design Specifications**





## ▶ Proprietary Specifications Under M.G.L. c.149, §§44A-M



### Excerpts from M.G.L.

M.G.L. c.30, §39M(b) requires that proprietary specifications for public construction projects, including buildings, shall only be used "... for sound reasons in the public interest stated in writing in the public records of the awarding authority ... such writing to be prepared after reasonable investigation." A governmental body must document the reasons and provide them in writing to anyone making a written request for the information. M.G.L. c.30, §39M(b) expressly applies to construction contracts procured under M.G.L. c.149, §§44A-M as well as to construction contracts procured under M.G.L. c. 30, §39M.

The governmental body therefore has the responsibility for ensuring that a reasonable investigation is conducted before proprietary specifications can be used in an invitation for bids (IFB) for a public construction project.

Proprietary specifications, while permitted by Massachusetts construction law, may be used only after careful consideration and proper documentation that the use is justified by sound reasons in the public interest.

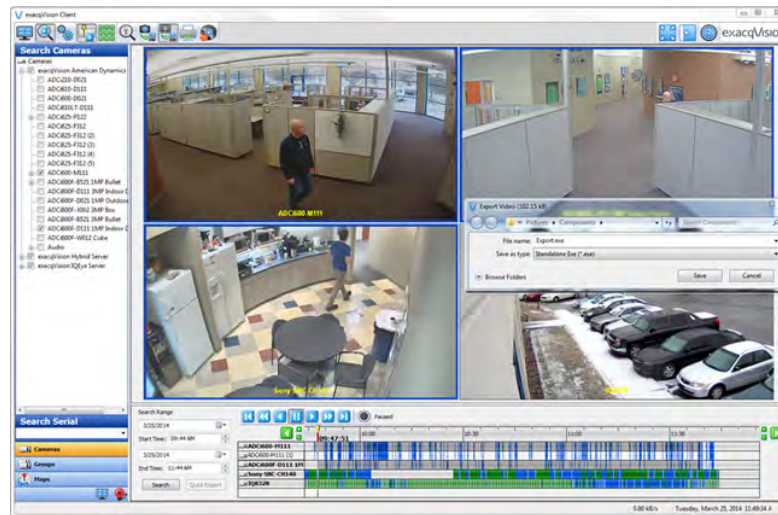
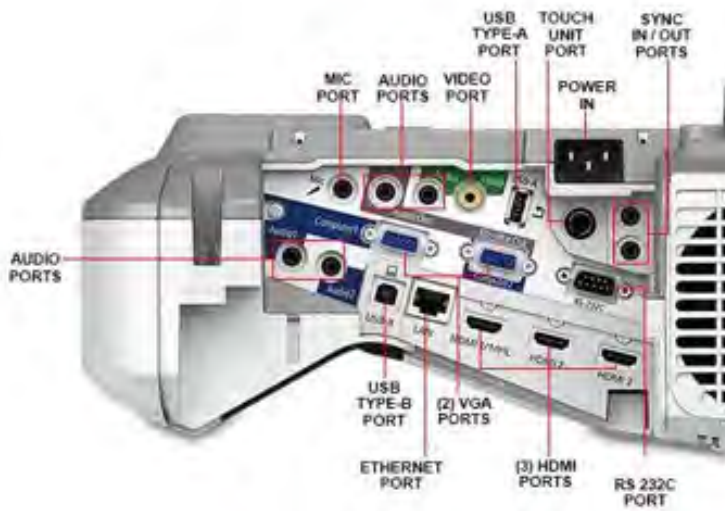
There are cases where, after a reasonable investigation, a governmental body concludes that only one acceptable brand of product exists, or that technology has advanced so rapidly that fewer than three brands or manufacturers of a particular material are available in the commercial marketplace.

The proprietary specifications must still include an "or equal" clause.



Design Specifications

# Proprietary Specifications Under M.G.L. c.149, §§44A-M



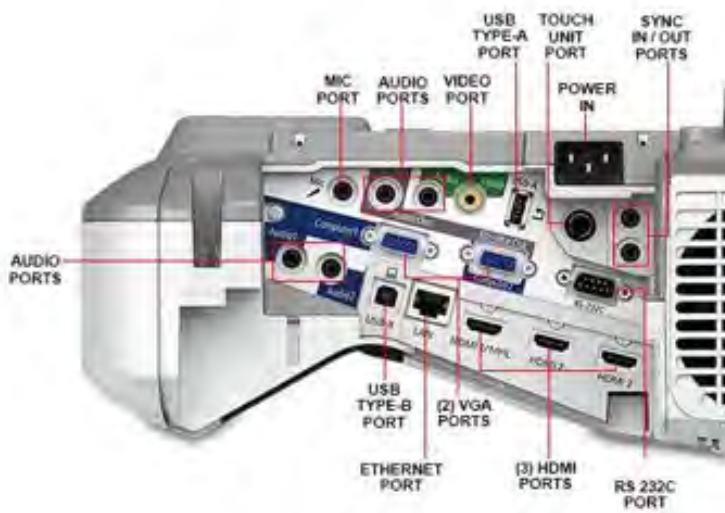
*Interactive Projector*

*Video Surveillance*

*Voice Amplification System*



## ▶ Proprietary Specifications Under M.G.L. c.149, §§44A-M



*Interactive Projector*

### Interactive Projector

The Epson Brightlink with wireless option has been selected as a proprietary item for the Watertown Public Schools. This decision was made after significant research into the interactive whiteboard market, and with input gathered from teachers and administrators throughout the District, as well as from neighboring communities and collaborators.

There have been many changes in interactive classroom technologies as first-generation solutions required boards that could not be written on and could only be used interactively. Second generation boards eliminated this restriction and can now be used as both a projector “screen” and a writing surface. The third generation

of interactive technologies, which the Epson solution falls into, no longer requires a physical board, just a firm writing surface. This significantly reduces the cost and increases the flexibility within the classroom.

Teachers can now use standard marker boards as a writing surface, projection screen, and an interactive teaching tool with existing software and an interactive pen. Epson is a leader in developing LCD projectors. The Epson Brightlink wireless interactive projector is easy to use, provides maximum flexibility, and integrates with all other classroom equipment currently deployed in the District and is planned for the Cunniff and Hosmer Elementary Schools.

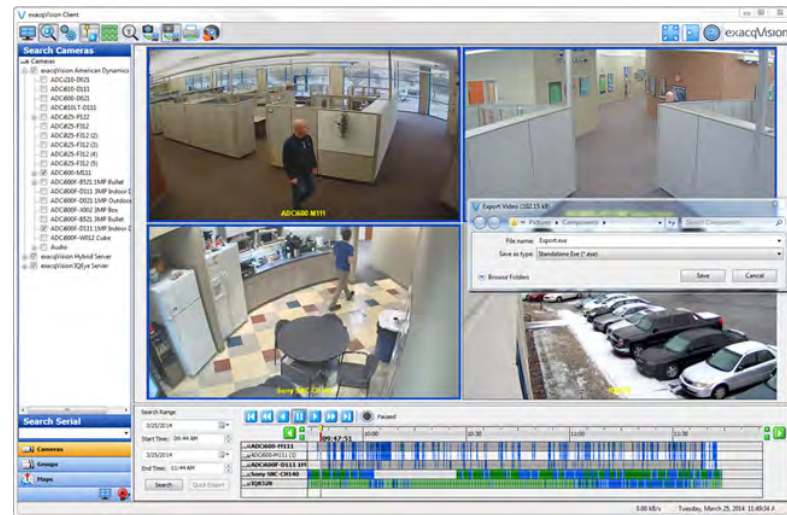


# ▶ Proprietary Specifications Under M.G.L. c.149, §§44A-M



## Video Surveillance

Exacq Video Management System is the system Watertown Public Schools currently utilizes at the Middle, High, and Administrative (Phillips) buildings. The system is easy to deploy, configure, and manage, and staff are trained in and proficient in using this system. Any new systems should maintain tight compatibility with those already deployed. As such, Exacq has been selected to be the video surveillance and VMS solution for the Watertown Public School district.



Video Surveillance



**Proprietary Specifications Under  
M.G.L. c.149, §§44A-M**



Voice Amplification System

The District's voice amplification solution of choice is the TopCat System by LightSpeed Technologies. With Access technology (1.9GHz), the system has over 200' of range and can add 2-way audio pods for use in the designed huddle spaces. There is no interference from other networks or devices.

With the wireless media controller, the teachers have the freedom to place the unit in the best location possible in the classroom, instead of being restricted by permanent wiring. The voice reproduction is optimal for teaching in an elementary classroom, and the ease of installation is desirable. One unit provides coverage for the entire

classroom and can be wirelessly expanded with other accessories. The TopCat provides a truly wireless solution without permanent wiring in the classroom.

*Voice Amplification System*



*Watertown Elementary Schools Building Project*

# **Schedule**Update





**WATERTOWN ELEMENTARY SCHOOLS  
HOSMER, CUNIFF & LOWELL**



ID	Task Mode	Task Name	Duration	Start	Finish	Pred	2nd Quarter				3rd Quarter				4th Quarter				1st Quarter				2nd Quarter				3rd Quarter				4th Quarter				1st Quarter				2nd Quarter				3rd Quarter				4th Quarter								
							Apr	May	Jun	Jul	Jul	Aug	Sep	Oct	Oct	Nov	Dec	Jan	Jan	Feb	Mar	Apr	Apr	May	Jun	Jul	Jul	Aug	Sep	Oct	Oct	Nov	Dec	Jan	Jan	Feb	Mar	Apr	Apr	May	Jun	Jul	Jul	Aug	Sep	Oct	Oct	Nov	Dec	Jan	Jan	Feb	Mar	Apr	Apr
0		<b>WATERTOWN ELEMENTARY SCHOOLS - Design, Permit and Bid Schedule</b>	<b>1105 days?</b>	<b>Wed 5/15/19</b>	<b>Mon 8/7/23</b>																																																		
1	✓	<b>DESIGN DEVELOPMENT</b>	<b>126 days</b>	<b>Wed 5/15/19</b>	<b>Wed 11/6/19</b>																																																		
2	✓	Building Committee Vote on LEED & Net Zero Goal	1 day	Wed 6/5/19	Wed 6/5/19																																																		
3	✓	HazMat Survey of Existing Buildings	11 days	Mon 7/15/19	Mon 7/29/19																																																		
4	✓	Phase 2 Site Survey and Utilities	21 days	Wed 5/15/19	Wed 6/12/19																																																		
5	✓	Phase 2 Geotechnical Investigations	11 days	Mon 6/24/19	Mon 7/8/19																																																		
6	✓	Infrared Roof Inspections - Lowell	5 days	Mon 5/20/19	Fri 5/24/19																																																		
7	✓	Present Preliminary Phasing and Construction Schedule	1 day	Wed 6/5/19	Wed 6/5/19																																																		
8	✓	Phasing & Construction Schedule Update	1 day	Fri 8/16/19	Fri 8/16/19																																																		
9	✓	100% DD Drawings Complete	1 day	Fri 8/2/19	Fri 8/2/19																																																		
10	✓	100% DD Cost Estimates Complete	1 day	Fri 8/16/19	Fri 8/16/19																																																		
11	✓	Procurement/Selection of the Commissioning Agent	1 day	Wed 11/6/19	Wed 11/6/19																																																		
12	✓	<b>CONSTRUCTION DOCUMENTS</b>	<b>271 days</b>	<b>Wed 9/18/19</b>	<b>Wed 9/30/20</b>																																																		
13	✓	LEED Scorecard & Net Zero Update	1 day	Wed 9/18/19	Wed 9/18/19																																																		
14	✓	Phasing & Construction Schedule Update	1 day	Wed 9/18/19	Wed 9/18/19																																																		
15	✓	Establish Prequalification Committee	1 day	Fri 11/15/19	Fri 11/15/19																																																		
16	✓	Prepare RFP for prequalification of Filed Subcontractors and General Contractors	7 days	Thu 11/7/19	Fri 11/15/19																																																		
17	✓	Review and Publish results of prequalification process	26 days	Thu 1/2/20	Thu 2/6/20																																																		
18	✓	60% Construction Documents Completed	1 day	Fri 11/22/19	Fri 11/22/19																																																		
19	✓	Commissioning Agents review of 60% CD's	20 days	Fri 11/22/19	Thu 12/19/19																																																		
20	✓	60% Construction Documents Cost Estimate Due	1 day	Wed 12/18/19	Wed 12/18/19																																																		
21	✓	Estimators reconcile 60% CD's	3 days	Fri 12/20/19	Tue 12/24/19																																																		
22	✓	Planning Board Informal Meeting (Tenative)	1 day	Wed 1/8/20	Wed 1/8/20																																																		
23	✓	Stormwater Permit Submittal	47 days	Tue 11/26/19	Wed 1/29/20																																																		
24	✓	LEED Scorecard & Net Zero Update	1 day	Wed 1/29/20	Wed 1/29/20																																																		
25	✓	Phasing & Construction Update	1 day	Wed 1/29/20	Wed 1/29/20																																																		
26	✓	90% Construction Documents Due - Hosmer & Cunniff ES	0.5 days	Wed 2/5/20	Wed 2/5/20																																																		
27	✓	Commissioning Agents Review of 90% CD's - Hosmer & Cunniff ES	20 days	Thu 2/6/20	Wed 3/4/20																																																		
28	✓	100% Construction Documents Due - Hosmer & Cunniff ES	1 day	Wed 3/11/20	Wed 3/11/20																																																		
29	✓	Lowell ES - 60% - 90% CD's	88 days	Wed 4/1/20	Fri 7/31/20																																																		
30	✓	Commissioning Agents Review of Lowells 90% CD's	20 days	Mon 8/3/20	Fri 8/28/20																																																		
31	✓	Lowell ES - 100% CD's Being finalized	24 days	Mon 8/31/20	Thu 10/1/20																																																		
32	✓	Move Management Update	1 day	Wed 2/5/20	Wed 2/5/20																																																		
33	✓	<b>BIDDING - HOSMER ES &amp; CUNIFF ES</b>	<b>62 days</b>	<b>Thu 3/5/20</b>	<b>Fri 5/29/20</b>																																																		
34	✓	Submit Advertisement to Central Register & local	15 days	Thu 3/5/20	Wed 3/25/20																																																		
35	✓	100% Bid Documents Available	1 day	Wed 3/11/20	Wed 3/11/20																																																		
36	✓	Distribute Bid Docs to Approved Filed Subcontractors	1 day	Thu 3/12/20	Thu 3/12/20	35																																																	
37	✓	Filed Sub-Bids Due - Cunniff & Hosmer	1 day	Wed 4/8/20	Wed 4/8/20																																																		

Project: WATERTOWN ELEMEN  
Date: Mon 1/27/20

**WATERTOWN ELEMENTARY SCHOOLS  
HOSMER, CUNIFF & LOWELL**



ID	Task Mode	Task Name	Duration	Start	Finish	Pred	Gantt Chart																																															
							2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec	1st Quarter Jan   Feb   Mar	2nd Quarter Apr   May   Jun	3rd Quarter Jul   Aug   Sep	4th Quarter Oct   Nov   Dec													
38		Distribute Bid Documents to Aproved General Contractors	1 day	Thu 3/12/20	Thu 3/12/20	35	[Gantt bar for task 38]																																															
39		General Bids Due - Cuniff & Hosmer	1 day	Thu 4/30/20	Thu 4/30/20		[Gantt bar for task 39]																																															
40		Contract Award to GC	1 day	Fri 5/29/20	Fri 5/29/20		[Gantt bar for task 40]																																															
41		<b>MOVE MANAGEMENT</b>	<b>817 days</b>	<b>Mon 6/22/20</b>	<b>Mon 8/7/23</b>		[Gantt bar for task 41]																																															
42		Last day of 2019 - 2020 school year (Weather permitting)	1 day	Mon 6/22/20	Mon 6/22/20		[Gantt bar for task 42]																																															
43		Move from Hosmer to Z shaped section	4 days	Tue 6/23/20	Fri 6/26/20	42	[Gantt bar for task 43]																																															
44		Move Hosmer PS & PK to Phillips Building	4 days	Tue 6/23/20	Fri 6/26/20	42	[Gantt bar for task 44]																																															
45		Move from Hosmer Z shaped section to New Hosmer ES	5 days	Mon 7/18/22	Fri 7/22/22		[Gantt bar for task 45]																																															
46		Move from Cuniff to Cuniff West (St. Jude - Waltham)	10 days	Tue 6/23/20	Mon 7/6/20	42	[Gantt bar for task 46]																																															
47		Move from Cuniff West to New Cuniff ES	5 days	Mon 12/27/21	Fri 12/31/21		[Gantt bar for task 47]																																															
50		<b>CONTRACTOR MOBILIZATION</b>	<b>470 days</b>	<b>Tue 6/23/20</b>	<b>Fri 4/8/22</b>		[Gantt bar for task 50]																																															
51		Contractor secures Z shape bld. section from main bld. and does selective demolition	4 days	Tue 6/23/20	Fri 6/26/20		[Gantt bar for task 51]																																															
52		Contractor Mobilizes on Site for Abatement & Demolition - Hosmer	4 days	Tue 6/23/20	Fri 6/26/20		[Gantt bar for task 52]																																															
53		Contractor Mobilizes on Site for Abatement & Demolition - Cuniff	4 days	Tue 6/23/20	Fri 6/26/20		[Gantt bar for task 53]																																															
55		<b>CONSTRUCTION TIME FRAME</b>	<b>790 days</b>	<b>Tue 6/23/20</b>	<b>Fri 6/30/23</b>		[Gantt bar for task 55]																																															
56		Hosmer ES - Construction Duration - Approx. 24 months	522 days	Tue 6/23/20	Tue 6/21/22		[Gantt bar for task 56]																																															
57		Cuniff ES - Construction Duration - Approx. 17 months	370 days	Tue 6/23/20	Fri 11/19/21		[Gantt bar for task 57]																																															
58		Lowell ES - Construction Duration - Approx. 15 months	325 days	TBD	TBD		[Gantt bar for task 58]																																															
59		<b>BIDDING - LOWELL ES</b>	<b>381 days</b>	<b>Wed 9/30/20</b>	<b>Tue 3/15/22</b>		[Gantt bar for task 59]																																															
60		Prepare RFP for prequalification of Filed Subcontractors and General Contractors	7 days	Fri 9/10/21	Fri 9/17/21		[Gantt bar for task 60]																																															
61		Review and Publish results of prequalification proc	26 days	Fri 10/29/21	Fri 12/3/21		[Gantt bar for task 61]																																															
62		Submit Advertisement to Central Register & local	15 days	Mon 1/3/22	Fri 1/21/22		[Gantt bar for task 62]																																															
63		100% Bid Documents Available	1 day	Wed 9/30/20	Wed 9/30/20		[Gantt bar for task 63]																																															
64		Distribute Bid Docs to Approved Filed Subcontract	1 day	Wed 1/12/22	Wed 1/12/22		[Gantt bar for task 64]																																															
65		Filed Sub-Bids Due - Lowell Elementary School	1 day	Thu 2/10/22	Thu 2/10/22		[Gantt bar for task 65]																																															
66		Distribute Bid Documents to Aproved General Contractors	1 day	Wed 1/12/22	Wed 1/12/22		[Gantt bar for task 66]																																															
67		General Bids Due - Lowell Elementary School	1 day	Thu 2/24/22	Thu 2/24/22		[Gantt bar for task 67]																																															
68		Contract Award to GC	1 day	Tue 3/15/22	Tue 3/15/22		[Gantt bar for task 68]																																															

Project: WATERTOWN ELEMEN  
Date: Mon 1/27/20



Questions?  
**Thank you**

