

Millbury Planning Board Site Plan Review Continuance Raymond E. Shaw Elementary School Project

Millbury, MA | Millbury Public Schools July 20, 2020

DESIGN TEAM

Turowski2 Architecture, Inc.

Peter Turowski, AIA

Green International, Inc.

Corinne Tobias, PE, PTOE

Dodson Flinker Landscape Architects, LLC

Peter Flinker, RLA

Nitsch Engineering, Inc.

Sandra Brock, PE

SITE PLAN WAIVERS REQUESTED

Fees:

Waiver from Site Plan Review Application Fee (\$500 + \$20/parking space) and Stormwater Management Permit Application Fee (\$200).

Survey:

Waiver from Zoning Bylaw, Section 12.44(a) requirement that **all property corners be pinned** and that at least three property boundary markers be indicated with Massachusetts Grid Plane Coordinates (both elevation and coordinates).

Construction documents will require the contractor to provide an as-built record survey that meets zoning regulations.

12.44c:

Waiver to allow submission of an unscaled birds eye view rendering in lieu of an **isometric line drawing at the same scale as the site plan**.

12.44e:

Waiver to allow submission of **1/8**" **scale** exterior elevation plans **in lieu of the 1/4**" **scale** required by this section, due to the large size of the building.

SITE PLAN WAIVERS REQUESTED

12.45q:

Waiver for relief from **interior landscaping within parking areas** over nineteen (19) spaces with alternative approach.

22.3:

Pursuant to MGL c 40A § 3, the so called Dover Amendment, request **for** waiver from height limitation of thirty feet (30').

The project is within Millbury's Route 146 Highway Corridor Overlay District, with a height limitation of one hundred feet (100'). While this does not apply to this project, it could be argued that the town's zoning document considers greater heights in this district appropriate.

The Shaw School is surrounded with substantial vegetative buffer with virtually no visibility from sensitive abutting residential properties.

The predominate height of the proposed building is under twenty-nine Feet (29). There are three sloped roof sections designed to support photovoltaic arrays that exceed thirty feet (30') at the high end and two (2) sloped roofs at stair towers which provide access to the roof – these are just under forty feet (40') at their high end.

SITE PLAN WAIVERS REQUESTED

34.6.01:

Waiver from sign size limitations of 4SF for wall signs and 6'H/6SF for freestanding signs.

<u>Freestanding Sign</u>: There is one monumental free-standing sign proposed at the base of the entrance driveway on Elmwood Street. Please refer to the drawing set, sheet #W0.02 for a rendering. This sign is designed to emulate the building construction in form and material with a brick base and metal panel background to the lettering. The total height of the sign including the base is seven feet eight inches (7'-8"). The total square footage of the sign panel itself (excluding the base) is seventy-six square feet (76 SF).

<u>Building Sign</u>: There is one building mounted sign (free standing letters mounted to the building façade). Please refer to the drawing set, sheet #W0.02 for rendering. The sign is at the main entrance. The proposed size (boundary of the lettering) is fifty-five (55) square feet. Letters are 12" tall



- Why was this location chosen for the new building?
- Are there any other feasible locations on the property?
- Are there issues with the proximity to the mall?

• Why This Location?

MSBA STUDY PROCESS

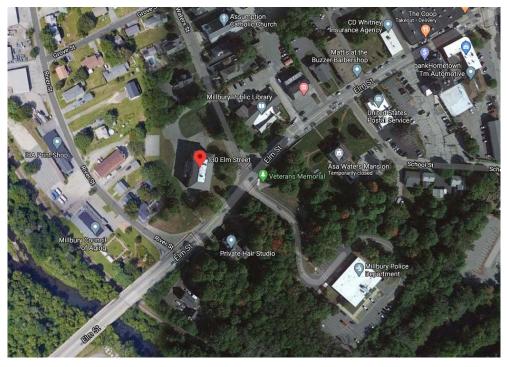
The MSBA Study process required looking a multiple options / multiple sites which was done. Due diligence was acceptable to MSBA for their funding.

Town owned sites reviewed in the study processed were too small to support a new 550 student school building.

MSBA does not participate in costs of land acquisition

The McGrath Educational Center
130 Elm Street, town has jurisdiction.
and
The Dorothy Manor School
153 Millbury Avenue, school has jurisdiction





• Why This Location?

MSBA STUDY PROCESS

Multiple configurations and options were considered at the Elmwood Street site











Are there any other feasible locations on the property?

Considered location east of the school:

- Classrooms view over Mall
- Play areas immediately adjacent to the Mall
- Possible loss of vegetative buffer between mall and school
- Utility Easement Restrictions



• Why This Location?

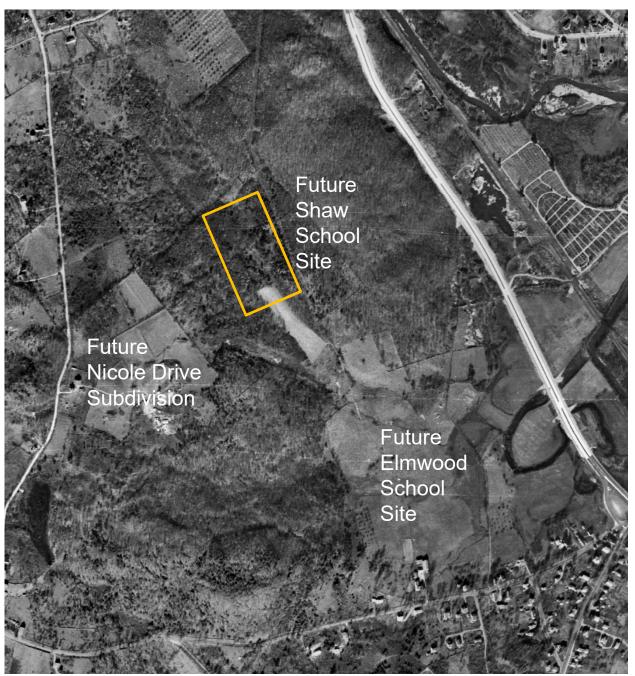
AGRICULTURAL HISTORY

The historic farms were located where they are because they are the best most usable locations.

The Shaw School site though returned to forest prior to 1975 development, was formerly field bounded by stone walls.



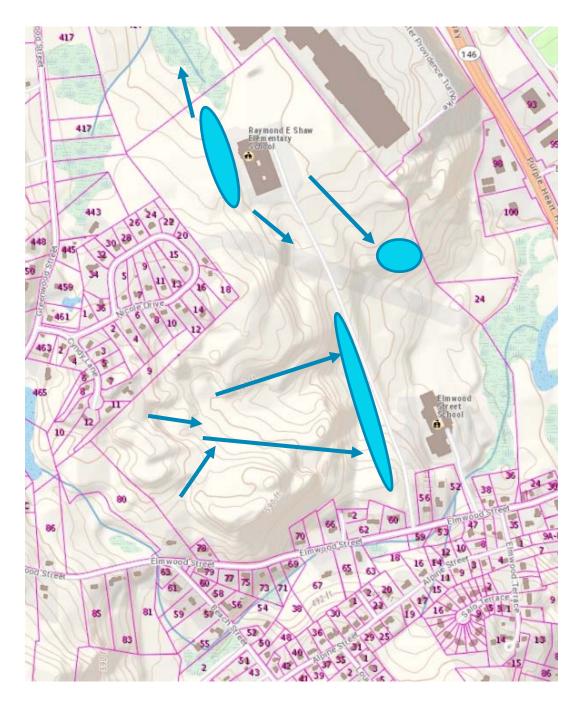
Witter Family Farm c. 1938



 Are there any other feasible locations on the property?

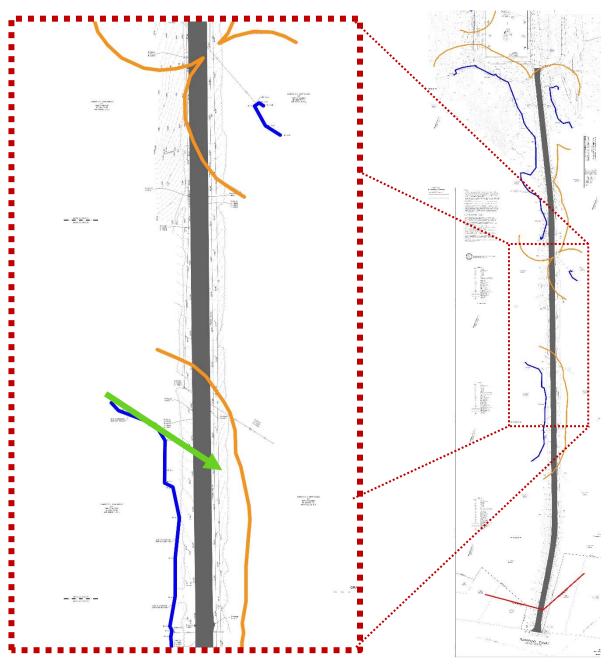
There are significant wetlands around the existing school site and around the entire site generally.

Most wetlands south of Shaw School site feed to the area north and east of the Elmwood School where there is a major wetland and floodplain.



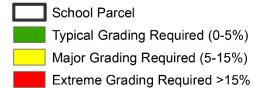
 Are there any other feasible locations on the property?

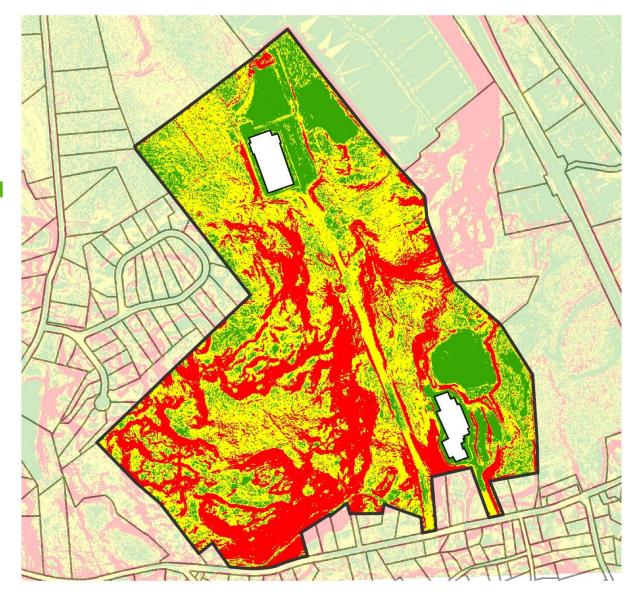
The driveway
length has
wetlands along its
length - flagged by
a wetland
professional prior
to survey.



 Are there any other feasible locations on the property?

The site is predominately ledge, and the undeveloped areas have significant slope making much of the site generally unsuitable for building.





Are there any other feasible locations on the property?

Building elsewhere requires cuts and fills of 30' or more and would require blasting. All at major direct expense to the Town, as the MSBA limits reimbursement for site related costs.

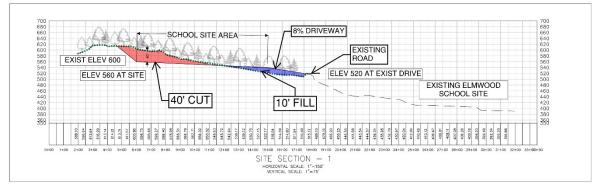




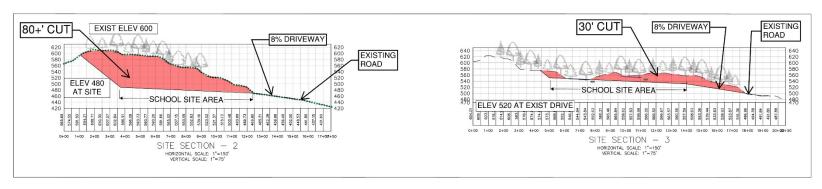




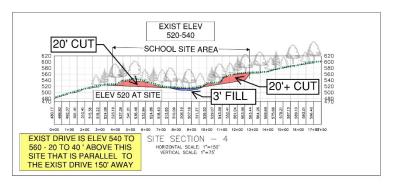


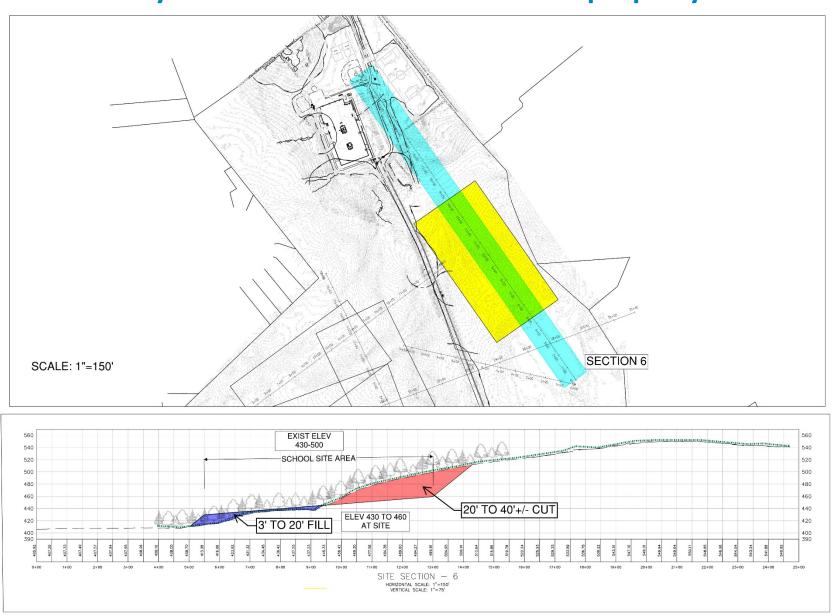








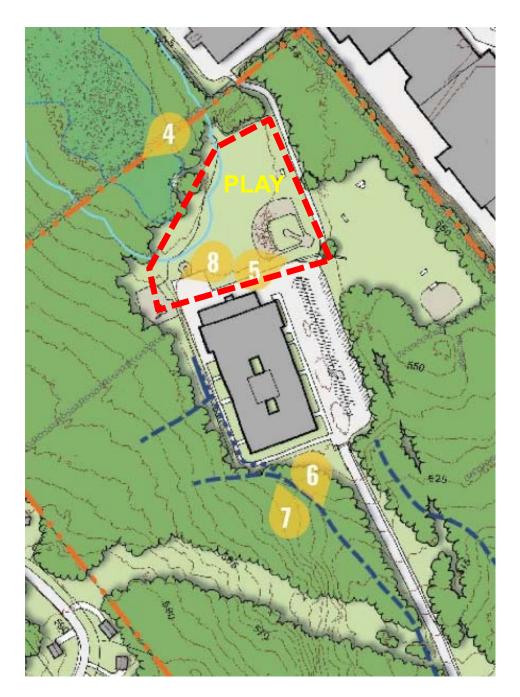




Are there issues
 with the proximity
 to the mall?

Principal Tuccio reports that there have been no issues with the mall being close to the existing school; except people cutting through from Elmwood St to access the Mall.

Existing school play areas are located to the north of the school adjacent to the Mall.



Are there issues
 with the proximity
 to the mall?

The proposed school locates play areas to the south and west side of the new school, further from the mall than the current layout, and protected the buffer of the school building itself.

The proposed school has increased security with a single school hour entrance and surveillance cameras at the exterior



Question 2 COMBINATION DRIVEWAY

• Is it feasible to combine the Shaw and Elmwood School driveways?

R.E. Shaw Elementary School School Day: 7:49 to 2:20

Students currently arrive between 7:40 and 7:55

By School Day: 9 Minutes

By Arrival Time: 35-40 Minutes

Elmwood Street School

School Day: 8:30 to 3:16

Students currently arrive between 8:20 and 8:35

By School Day: 41 Minutes

By Arrival Time: 40 Minutes

Question 2 COMBINATION DRIVEWAY

• Is it feasible to combine the Shaw and Elmwood School driveways?

- Current traffic flow at Elmwood is not ideal, cars and busses mix in entry loop and lower parking lot and requires students being dropped off to pass through busses.
- Would complicate Elmwood as the vehicles heading to/from Shaw would be forced to maneuver through queues for Elmwood.
- Combined outlet onto Elmwood St would mean more cars and probable decrease level of service



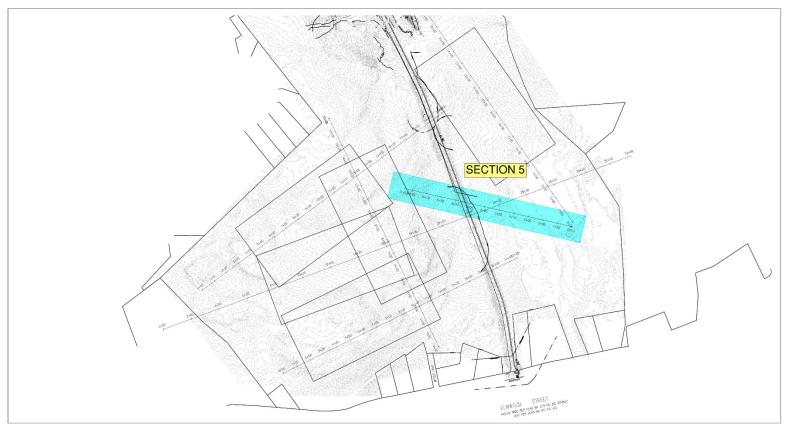
Question 2 COMBINATION DRIVEWAY

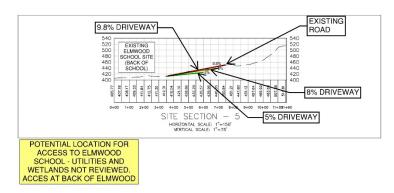
• Is it feasible to combine the Shaw and Elmwood School driveways?

Most direct location is just north of the **Elmwood school where** the sewer line runs. **Security and safety** concerns pushing Shaw Play Area traffic through **Elmwood Site** Retaining Truck Loading

Question 2 | SHAW ELMWOOD CONNECTION

• Is it feasible to combine the Shaw and Elmwood School driveways

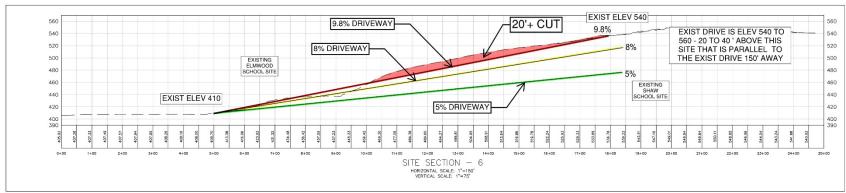




Question 2 | SHAW ELMWOOD CONNECTION

• Is it feasible to combine the Shaw and Elmwood School driveways





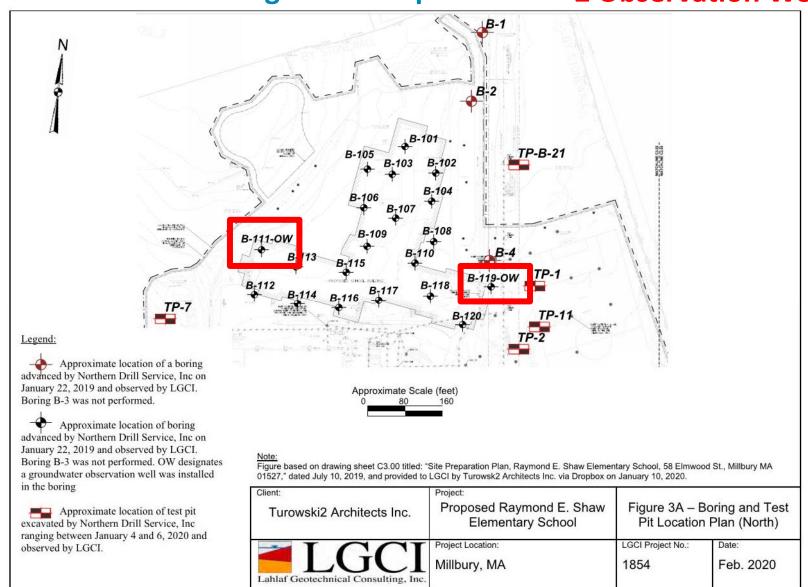
Town Planner Question 25 Elmwood / Shaw Connection

- Is it feasible to formalize a path between the two schools?
- Formalizing a pedestrian path from Shaw to Elmwood with stabilized paving.
- All locations:
 - Wetland impact potential.
 - Not budgeted
- Location 1: NGrid has a general policy against this type of shared use; their approval would be required
- <u>Location 2</u>: Steep grades, main sanitary route, through playgrounds
- <u>Location 3</u>: Steep grades, retaining wall at base of slope.



14 Test Pits21 Borings

Where were the borings and test pits done? 2 Observation Wells



Boring logs

Table 1 - Summary of LGCI's Borings
Proposed Raymond E. Shaw Elementary School
Millbury, Massachusetts
LGCI Project No. 1854

Boring No.	Ground Surface Elevation (ft.) ^{1,2,3}	Groundwater Depth / El. (ft.) ⁴	Bottom of Topsoil / Subsoil / Asphalt Depth / El. (ft.)	Bottom of Fill Depth / El. (ft.)	Bottom of Buried Organics Depth / El. (ft.)	Bottom of Silt / Sand Depth / El. (ft.)	Bottom of Boring Depth / El. (ft.)
2018 Study							
B-1	542.0	4.5 / 537.5	0.7 / 541.3	2.0 / 540.0	- / -	22.0 ⁶ / 520.0	22.0 / 520.0
B-2	541.0	5.0 / 536.0	0.5 / 540.5	2.0 / 539.0	- / -	22.0° / 519.0	22.0 / 519.0
B-4	542.0	5.0 / 537.0	1.0 / 541.0	2.0 / 540.0	- / -	22.0 ⁶ / 520.0	22.0 / 520.0
2019 Study						EE.O	
B-101	538.5	3.3 / 535.2	2.0 / 536.5	- / -	-/-	19.0° / 519.5	19.0 / 519.5
B-102	539.9	3.9 / 536.0	2.0 / 537.9	- / -	- / -	19.36 / 520.6	19.3 / 520.6
B-103	538.9	1.6 / 537.3	2.0 / 536.9	- / -	- / -	19.0 ⁶ / 519.9	19.0 / 519.9
B-104	539.9	3.6 / 536.3	2.0 / 537.9	-/-	- / -	19.0° / 520.9	19.0 / 520.9
B-105	538.1	3.5 / 534.6	2.0 / 536.1	- / -	- / -	19.06 / 519.1	19.0 / 519.1
B-106	538.8	5.8 / 533.0	2.0 / 536.8	- / -	- / -	20.0° / 518.8	20.0 / 518.8
B-107	539.6	3.6 / 536.0	0.7 / 538.9	4.0 / 535.6	- / -	21.0 ⁶ / 518.6	21.0 / 518.6
B-108	540.6	5.5 / 535.1	- / -	2.0 / 538.6	4.0 / 536.6	19.5 ⁶ / 521.1	19.5 / 521.1
B-109	539.6	3.8 / 535.8	2.0 / 537.6	6.0 / 533.6	- / -	20.0° / 519.6	20.0 / 519.6
B-110	540.5	0.8 / 539.7	2.0 / 538.5	4.0 / 536.5	- / -	21.0 ⁶ / 519.5	21.0 / 519.5
B-111-OW	538.0	.º / ·	2.0 / 536.0	-/-	4.0 / 534.0	21.0 ⁶ / 517.0	21.0 / 517.0
B-112	540.4	1.6 / 538.8	0.3 / 540.1	0.9 / 539.5	6.0 / 534.4	15.0 ⁷ / 525.4	15.0 / 525.4
B-113	538.3	1.0 / 537.3	0.5 / 537.8	4.0 / 534.3	- / -	21.0 ⁶ / 517.3	21.0 / 517.3
B-114	540.1	5.2 / 534.9	2.0 / 538.1	-/-	4.0 / 536.1	21.06 / 519.1	21.0 / 519.1
B-115	539.0	4.7 / 534.3	2.0 / 537.0	4.0 / 535.0	- / -	21.0° / 518.0	21.0 / 518.0
B-116	540.0	3.8 / 536.2	2.0 / 538.0	-/-	- / -	20.0 ⁶ / 520.0	20.0 / 520.0
B-117	540.0	4.6 / 535.4	2.0 / 538.0	- / -	- / -	21.0° / 519.0	21.0 / 519.0
B-118	540.7	5.4 / 535.3	0.4 / 540.3	2.0 / 538.7	- / -	21.0 ⁶ / 519.7	21.0 / 519.7
B-119-OW	544.5	.º / -	2.0 / 542.5	- / -	- / -	19.0 ⁶ / 525.5	19.0 / 525.5
B-120	543.0	3.5 / 539.5	0.5 / 542.5	-/-	- / -	21.06 / 522.0	21.0 / 522.0

The ground surface elevation at borings B-1. B-2, and B-4 was interpolated to the nearest foot from drawings EX-1 to EX-4 titled: "Limited Topographic Plan, Raymond E. Shaw Elementary School, 58 Elmwood Street, Millbury, MA 01527," prepared by Nitsch Engineering Inc., dated November 19, 2018, and e-mailed to LGCI by Turowski2 Architects, Inc. on December 18, 2019.

- 3. The ground surface at borings B-111-OW, B-115, and B-119-OW was interpolated to the nearest 1/2 foot from the plan listed in note 2 above.
- 4. The groundwater level was measured at the end of drilling, as indicated in the boring logs.
- 5. "-" means not encountered.
- 6. Boring terminated in the sand/silt layer.
- 7. B-112 was abandoned at 15 feet due to split spoon and hammer refusal on possible boulder.
- 8. B-121 and B-122 were converted into test pits and were relabeled in Table 2 and in the Test Pit and Boring Location Plan as TP-B-121 and TP-B-122, respectively.
- 9. Groundwater wells were installed at borings B-111 and B-119. See report for groundwater depths.

The ground surface elevation at the 2019 borings (except the borings listed in note 3 below) was provided to us by the project surveyor in an
updated copy of the plan listed in Note 1 above (sheets EX-1 to EX-10). The updated plan was dated February 2020 and was provided to us via
e-mail by Turowski2 Architects, Inc. on February 19, 2020.

Test Pit Logs

Table 2 - Summary of LGCI Test Pits
Proposed Raymond E. Shaw Elementary School
Millbury, Massachusetts
LGCI Project No. 1854

Test Pit No.	Ground Surface Elevation (ft.) ^{1,2}	Groundwater ³ Depth / El. (ft.)	Bottom of Forest Mat / Topsoil / Subsoil Depth / El. (ft.)	Bottom of Fill Depth / El. (ft.)	Bottom of Buried Organic Depth / El. (ft.)	Depth to Bottom of Sand / Silt / or Refusal Depth / El.(ft.)	Depth / El. (ft.)
TP-1	546.9	-/-	1.5 / 545.4	-/-	- / -	12.0° / 534.9	12.0 / 534.9
TP-2	546.8	6.0 / 540.8	1.5 / 545.3	3.5 / 543.3	4.0 / 542.8	12.0 ⁴ / 534.8	12.0 / 534.8
TP-3	529.0	-/-	3.0 / 526.0	8.0 / 521.0	- / -	8.5 ⁴ / 520.5	8.5 / 520.5
TP-4	526.7	7.1 / 519.6	3.1 / 523.6	-/-	- / -	11.24 / 515.5	11.2 / 515.5
TP-5	539.0	- / -	0.5 / 538.5	- / -	- / -	10.54 / 528.5	10.5 / 528.5
TP-6	539.0	7.0 / 532.0	4.5 / 534.5	-/-	- / -	12.0° / 527.0	12.0 / 527.0
TP-7	544.0	2.0 / 542.0	2.0 / 542.0	7.0 / 537.0	- / -	12.0 ⁴ / 532.0	12.0 / 532.0
TP-8	550.0	- / -	3.3 / 546.7	-/-	- / -	9.3 ⁴ / 540.7	9.3 / 540.7
TP-9	545.9	2.0 / 543.9	3.1 / 542.8	-/-	- / -	11.2° / 534.7	11.2 / 534.7
TP-10	549.7	-/-	1.8 / 547.9	6.0 / 543.7	- / -	6.0 / 543.7	6.0 / 543.7
TP-11	547.7	- / -	1.5 / 546.2	-/-	- / -	11.24 / 536.5	11.2 / 536.5
TP-12	539.0	4.5 / 534.5	2.0 / 537.0	-/-	- / -	4.5 ⁴ / 534.5	4.5 / 534.5
TP-B-121 ⁵	544.0	-/-	2.4 / 541.6	-/-	- / -	11.5 ⁴ / 532.5	11.5 / 532.5
TP-B-122°	548.0	- / -	2.1 / 545.9	- / -	- / -	11.9" / 536.1	11.9 / 536.1

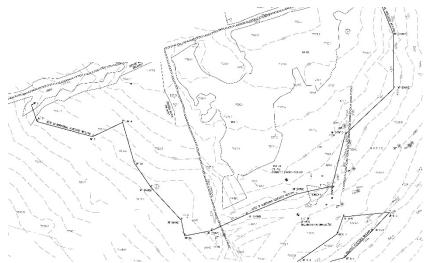
The ground surface elevation was provided to us by the project surveyor in a plan (sheets EX-1 to EX-10) titled: "Limited
Topographic Plan, Raymond E. Shaw Elementary School, 58 Elmwood Street, Millbury, MA 01527," prepared by Nitsch Engineering Inc.,
dated February 2020, and e-mailed to LGCI by Turowski2 Architects, Inc. on February 19, 2020.

- 3. Groundwater was measured during or at the end of the test pit excavation.
- 4. Test pit terminated in sand or silt.
- 5. Test pit excavated at boring location.
- 6. "-" means layer was not encountered.

^{2.} The ground surface at test pits TP-5, TP-6, TP-7, TP-B121 and TP-B-122 was interpolated to the nearest 1/2 foot from the plan listed in note 2 above.

 What are the elevations of the building slab?

Top of Slab Elevation = 542'-0"



What are the elevations of the northern wetlands?

Wetland Elevation = 528'+/-

What is the groundwater elevation?

B-111-OW: 2.1 - 2.8'

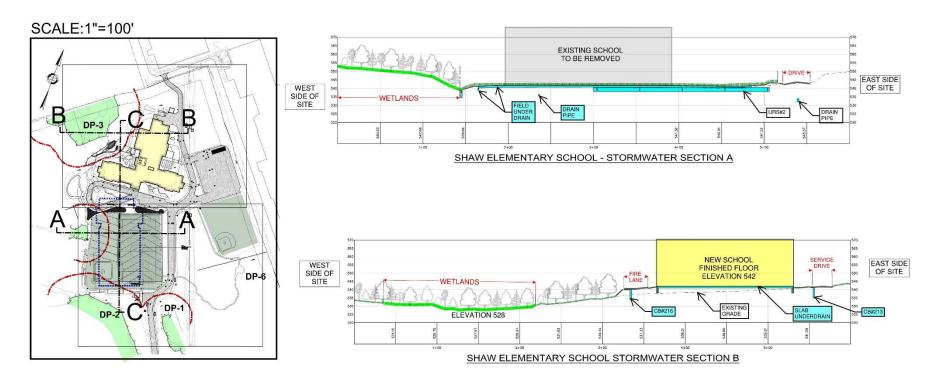
Ground Elevation is 538'

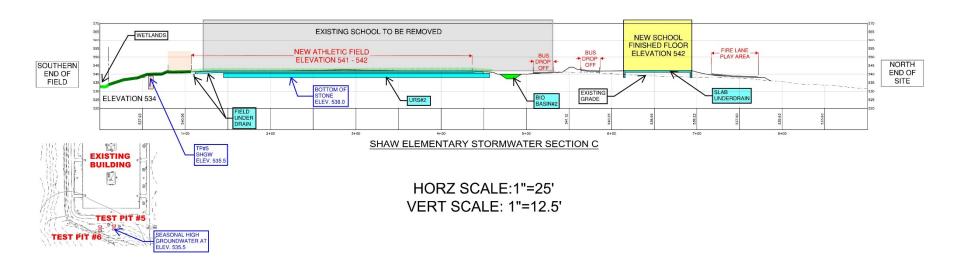
B-119-OW: 3.6 - 8.2'

Ground Elevation is 544'

Date	B-1	OW ¹	B-119-OW ¹			
	G.S. El.=		538.0 ft.	G.S. El.=		544.5 ft.
	Depth / Elevation (ft.)			Depth / Elevation (ft.)		
12/26/2019	0.8	1	537.2	1.1	1	543.4
1/3/2020	2.6	1	535.4	5.1	1	539.4
1/6/2020	2.3	1	535.7	5.3	1	539.2
1/30/2020	2.8	1	535.2	8.2	1	536.3
3/16/2020	2.6	1	535.4	7.8	1	536.7
4/15/2020	2.1	1	535.9	3.6	1	540.9

The ground surface elevation interpolated to the nearest foot from drawings EX-1 to EX-4 titled: "Limited Topographic Plan, Raymond E. Shaw Elementary School, 58 Elmwood Street, Millbury, MA 01527," prepared by Nitsch Engineering Inc., dated November 19, 2018, and e-mailed to LGCI by Turowski2 Architects, Inc. on December 18, 2019.

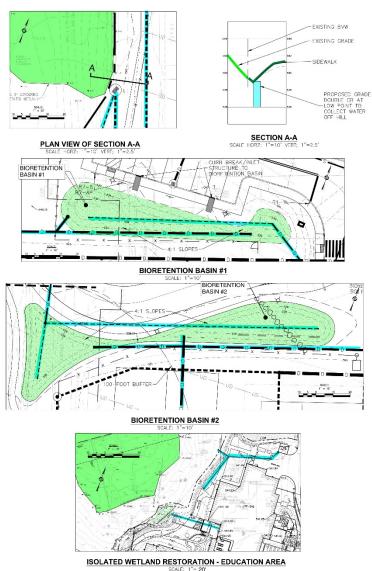


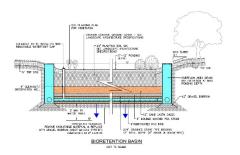


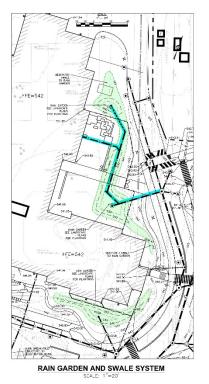
Question 4 | STORMWATER SYSTEM - BASINS 1 & 2

How is the overflow of Basins 1 & 2 being handled?

If the basins north of the sports field are nearing capacity, there are structures just below the top that will prevent an overflow by directing the water to a discharge south of the sports field via underground piping.

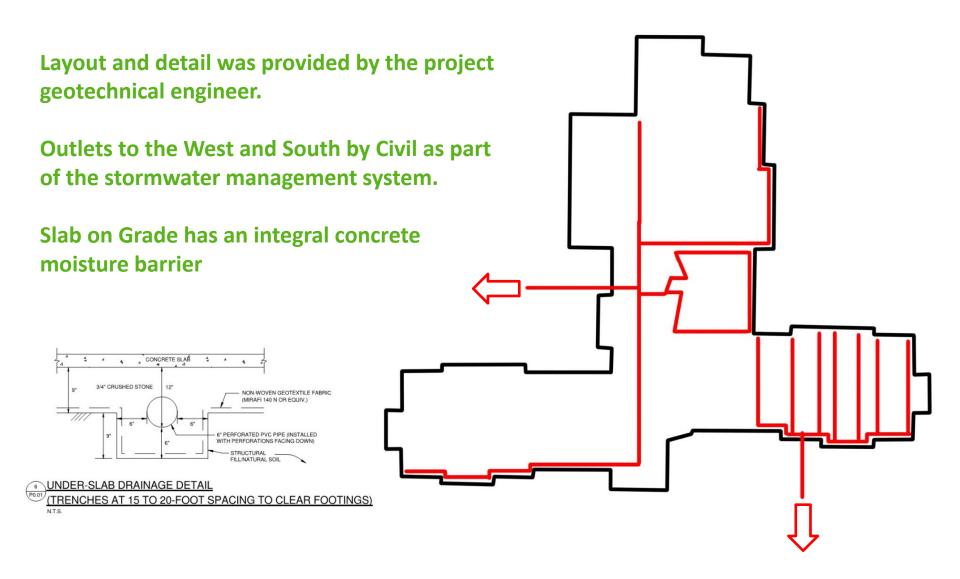






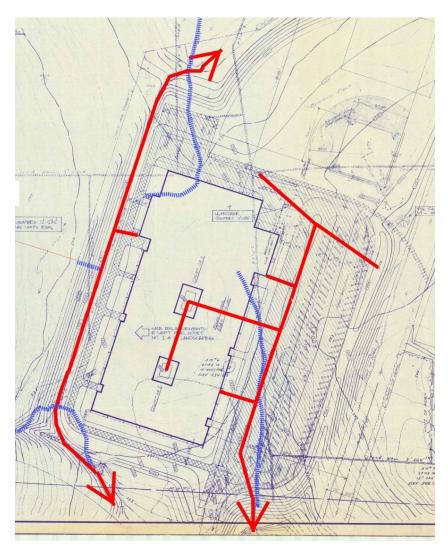
Question 5 UNDERSLAB DRAINAGE

 How is the under-slab drainage system designed? Where does it flow?



Question 6 STORM & GROUND WATER MANAGEMENT

The water management for the existing building is inadequate.
 How is the proposed design going to keep the building and recreational sections of the site dry?



The existing building was located over a seasonal brook. There is no under-slab drainage system. The existing foundation had crystalline waterproofing admixture that may have trapped the water within the building footprint worsening the issue.

New building has a layered ground & stormwater management approach that is consistent with highest standards of engineering practice.

A geotechnical engineer was consulted extensively on this matter, and the peer reviewer, Stantec reviewed the design.

Question 7 UTILITIES FROM BLACKSTONE VALLEY MALL

• Will the utilities (gas and water) at the adjacent mall support the new building? What is the status of the required easements?

Eversource approved the Gas Load calculations provided by Garcia Galuska DeSousa on May 28, 2020.

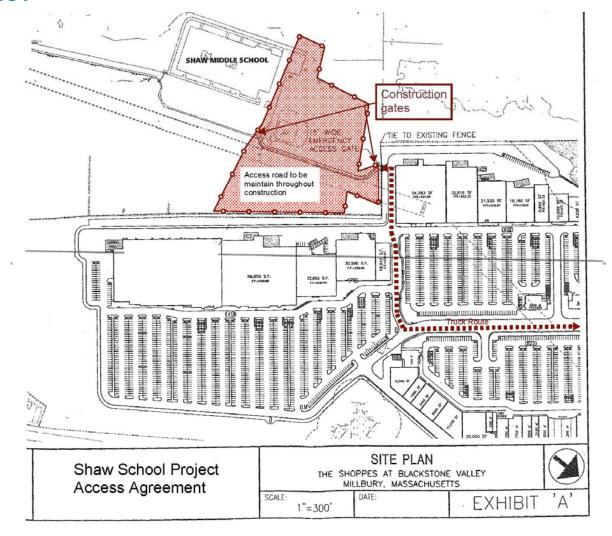
Water Flow Test was conducted by Nitsch Engineering on June 13, 2019. Fire protection and plumbing systems have been designed accordingly based on the results. A fire pump was included in the design to boost flow. This building is designed with sustainable practices in mind, and will likely consume less water than the existing building.

The gas easement will be between the Mall and Eversource, there is no Town involvement with this easement. Eversource maintains gas lines. Details of easement are being finalized.

Question 8 CONSTRUCTION ACCESS

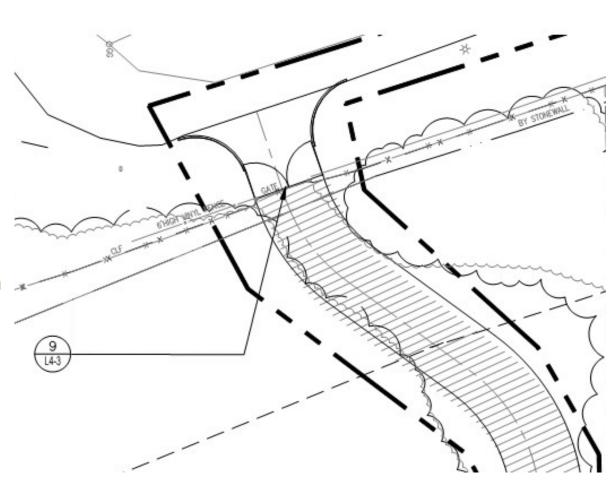
 What will the vehicle flow and volume be through the Mall during construction? What is the status of the agreement with the Mall for that access?

The Project OPM is working with the Mall Ownership. A draft contract has been generated and is in the process of being reviewed by all parties, including specific language and routes for construction access through the Mall.



Question 9 SERVICE ACCESS ROAD

- What will the future state of the emergency access be? How will it be controlled?
 - Access controlled by MFD and MPD
 - New 6' tall gate is proposed similar to existing
 - Covered by a security camera.
 - New light will maintain a low level of illumination



Question 10 EXISTING REFUGE PILE

• What is the plan for the existing refuge pile on the northern edge of the site?

No grade changes or clearing are proposed for this area.

A mature vegetation has established itself, providing a physical and visual barrier between the school site and the mall.



Question 11 ROOF DESIGN

Why does the building have predominately flat roofs?

- Study and design phases considered sloped roofs.
- Eliminated during the development of the project due to the cost.
- Savings of \$2 Million.



Question 12 BUILDING HEIGHT

What are the maximum heights of the sloped roofs?

T.O. STAIR TOWER = 39'- 4 1/4"

T.O. CLASSROOM
SLOPED ROOF = 36'- 8"

T.O. CORRIDOR SLOPED ROOF = 38'- 9 5/8"



Grade adjacent to foundation varies -6" max from T.O Level 1 Slab @ 542'- 0"

Question 13 | FUTURE SOLAR CANOPIES AT PARKING LOT

NOT PRESENTED AT 7.20.2020 MEETING

• Is the infrastructure in place to support future solar canopies in the parking lot?

Infrastructure to support the solar canopies is not included in the scope of the project.

9 year payback for roof mounted solar because structure is in place. Payback would increase (double) for canopy mounted solar.

Infrastructure was considered earlier in the project, but was ultimately eliminated due to cost of \$150k to the project.

Net to Gross floor area is limited by MSBA. The building is at the threshold. Increasing gross would push 100% cost of overage to Town.

The power for the building and the mall runs adjacent to the parking lot, therefore when, and if, canopies are installed in the future, they could be connected directly to the grid and not back fed to the school.

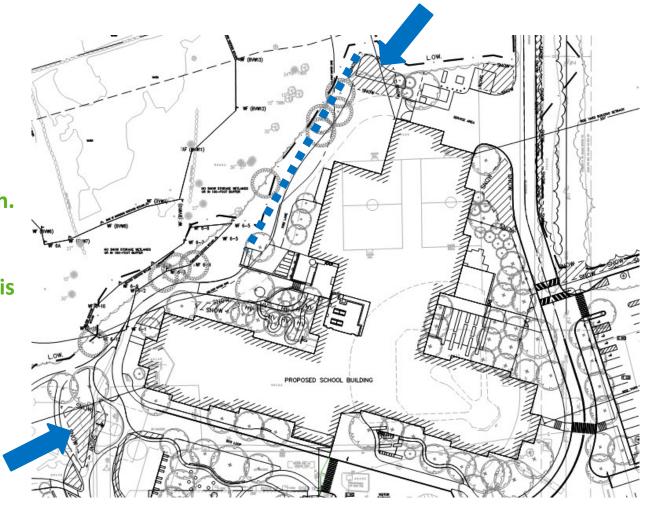
Question 14 | SNOW STORAGE

NOT PRESENTED AT 7.20.2020 MEETING

• Is there sufficient snow storage for the fire lane on the west side of the proposed school?

Snow storage requirements are minimal for the fire lane, and adequate space has been provided to the north.

Additional snow storage to the south is possible for extreme storm events.



Question 15 ADJACENT PROPERTY FOR SALE

NOT PRESENTED AT 7.20.2020 MEETING

• 417 Greenwood St, to the north, is for sale. What is the impact to the school project?

BC reviewed this early in the process when the property first became available.

The adjacent site has significant slope (continuation of the slope west of the existing school) and includes major wetland and streams and adds no value and has not impact to the school project.

The proposed building meets all zoning set back requirements and therefore presents no impact to the adjacent site.

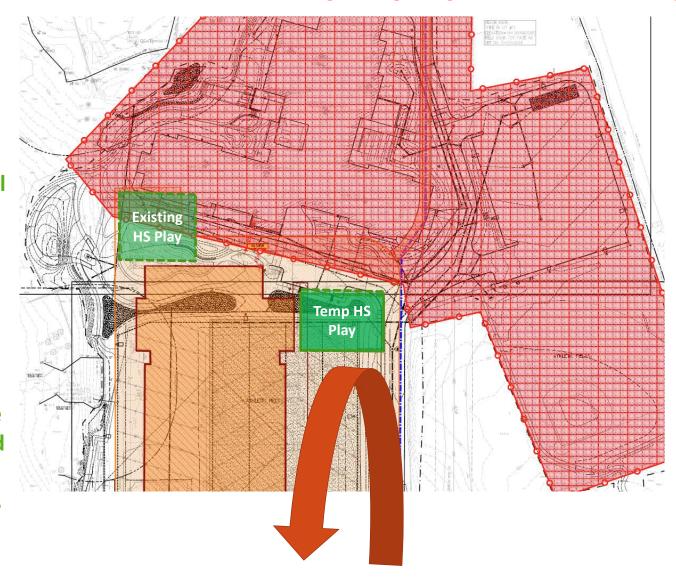


Town Planner Question #9 | OUTDOOR RECREATION DURING CONSTRUCTION

NOTIFIESEENTED AT 7.20.2020 MEETING

Logistics plan includes maintaining a section of hard surface play area safely within the existing parking area, to replace the existing basketball court. It will accommodate a full grade level at recess

Average school day parking needs are about ¾'s of the available parking spaces. Parking will be temporarily redesigned to accommodate average parking needs, emergency access, and a play area

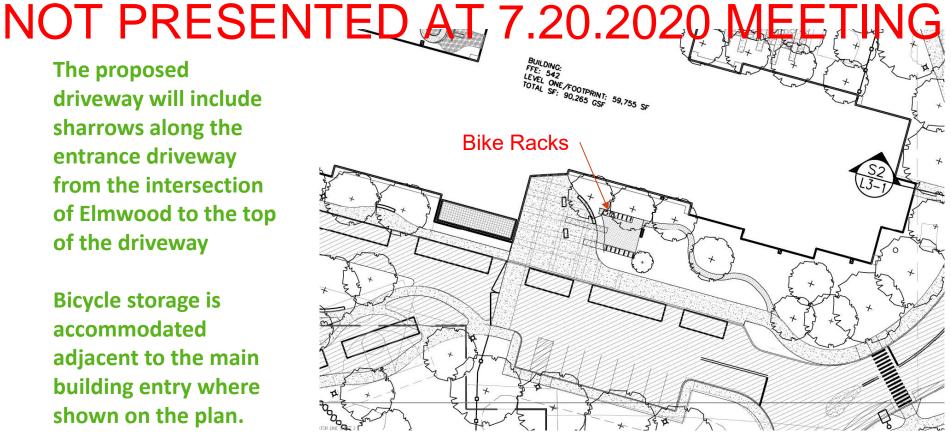


Town Planner Question #14 BICYCLE ACCESS

The proposed driveway will include sharrows along the entrance driveway from the intersection of Elmwood to the top

of the driveway

Bicycle storage is accommodated adjacent to the main building entry where shown on the plan.







THANK YOU

Millbury, MA | Millbury Public Schools July 20, 2020

