

Farmington High School

Schematic Design Report



Prepared for the Farmington High School Building Committee - 16 July 2020

Amended on 11 January 2021

Amended on 10 March 2021

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I. Acknowledgments

This Schematic Design Package is a product of collaboration with many professionals and volunteers. A partial list of those individuals is below. Many thanks for your insights and efforts. We look forward to the next stage.

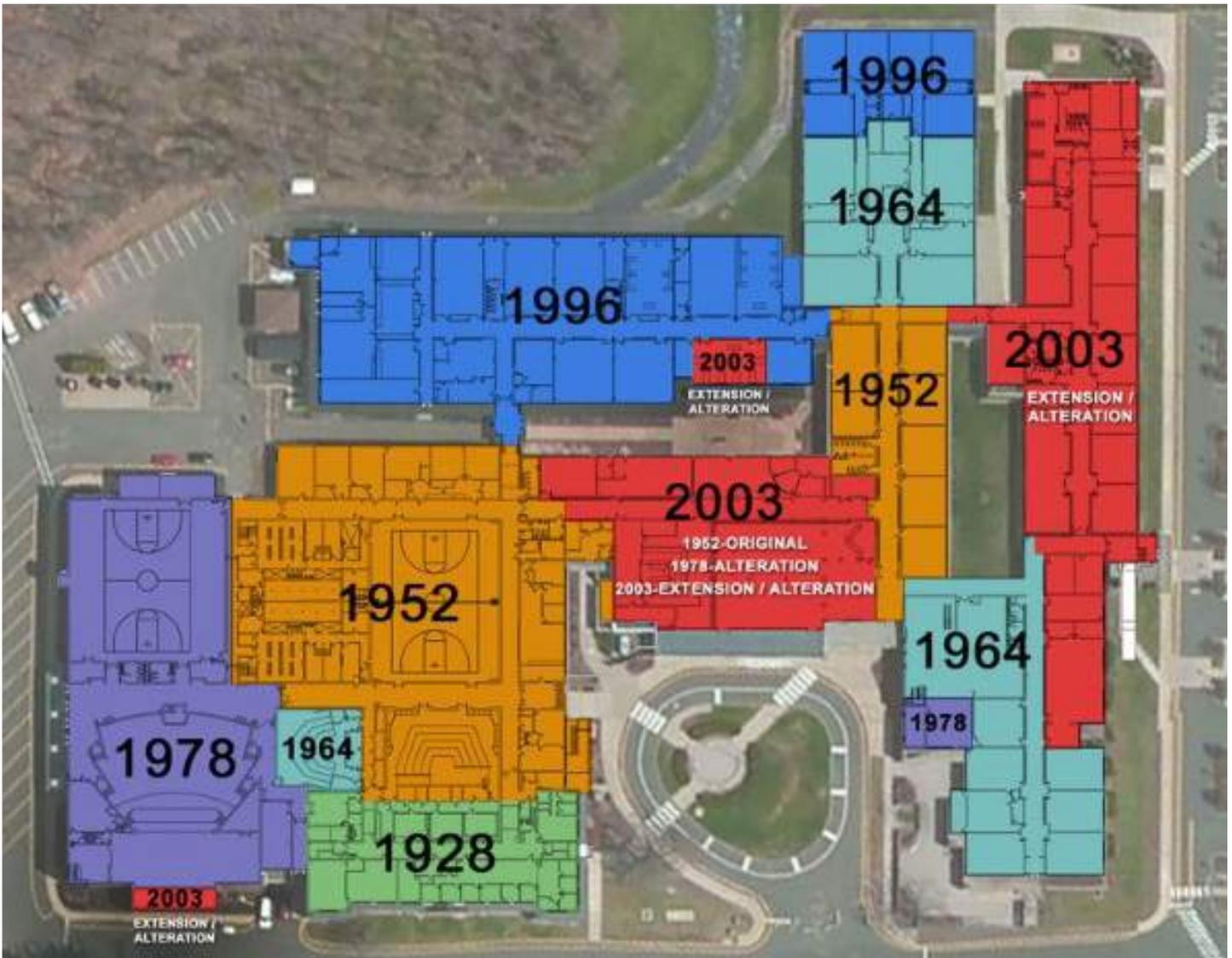
FHS Building Committee

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Ellen Siuta, Board of Education Member
Johnny Carrier, Resident
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Kathryn Krajewski, Assistant Town Manager
Tim Harris, Farmington Public Schools Director of Facilities
Other Town and Board of Education Staff as needed
Devon Aldave, Clerk of the Committee

Consultant Team

Construction Solutions Group, Construction Management
TSKP STUDIO, Architects
Kohler Ronan Consulting Engineers, MEP, FP, and IT Systems
Michael Horton Associates, Inc., Structural Engineering
Milone & MacBroom, Civil Engineering, Landscape Design
Food Service Design Collaborative, Kitchen Consultant
PM&C, Cost Estimators



Existing building with vintages of each addition

II. Introduction and Guiding Principles

Returning to concern over the Farmington High School (FHS) Facilities, on March 26, 2019, Farmington's Town Council appointed and charged the Farmington High School Building Committee (FHSBC) with a two-part task. Part One was to develop three distinct schemes with two competing design teams. The FHSBC then was to select a scheme from a team, making a recommendation to the Town Council to move forward to Part Two in which that design team would develop with the FHSBC a more complete Preliminary Design. This Schematic Design report constitutes the design team's portion of Part Two and recaps the findings and decision-making which led to its development.

During Part One, two competing design teams worked with the FHSBC and the Town's professional staff to independently design three distinct schemes:

1. Maintaining the existing Farmington High School (FHS) facilities
2. Renovate as New the existing facilities with selected demolition and additions at the current location
3. New Building on the existing site

A fourth scheme, new building on a new site, was eliminated prior to the engagement of the design teams in Part One. The FHSBC approached Part One using the Town's approved Summary of Needs (SON) and previous committee's reports and findings as guidance.

The SON identified the following concerns:



Accreditation and Accessibility



Security Compliance



Sprawling Layout



Educational Programming



Building Envelop Code Compliance and Energy Efficiency

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A holistic summary, the SON identified the concerns and deficiencies requiring remediation with the goal of providing a comprehensive solution to the Town's and High School's needs. Each team produced three complete and costed schemes for a total of six schemes. The FHSBC then weighed the Town's priorities against the possibilities presented by each scheme. The FHSBC scored each scheme across seven criteria closely based on the SON:

- Local, State, and Federal Requirements – the schemes' ability to address Accessibility, Security, and NEASC Deficiencies
- Programmatic Needs – the schemes' ability to satisfy the Educational Specifications and provide flexible and Collaborative environments for new or enhanced programming
- Consolidation of Space – The schemes' ability to reduce sprawl, efficiently use space, and include program elements currently located off-site
- Building Systems – the scheme's ability to provide efficient systems and envelop that comport with the Town's maintenance culture and sustainability goals
- Site Improvements – the scheme's ability to provide good and secure flow of traffic, provide for the athletic field requirements, and to be ADA compliant
- Benefits to the Community – the scheme's ability to provide community use of the facilities and possible shelter services
- Fit and Feel of Farmington – the scheme's ability to satisfy the Town's expectation of internal and external design.

Cost was an additional factor but reported separately to the Town Council alongside the schemes' scoring. After considering and scoring these criteria, the FHSBC selected TSKP Studio's New Building scheme. This report focuses on the elements of TSKP Studio's New Building option and references the other schemes if they contain findings material to this design's development.

The Town Council accepted FHSBC's selection and urge the Committee to move into Part Two. They charged the Committee to investigate reducing the ultimate cost to town in so far as it did not impact the SON or other key selection factors. Section VI provides a summary of the Project Cost.

The FHSBC and TSKP Studio team moved into Part 2 using the Committee's criteria and scoring as its guiding principles.



Aerial of existing campus

III. Site Design

During Part One, the design team worked with the Committee to evaluate construction sites for a new building. The New Building's site needs to provide ample building pad area, good access, clear circulation, and sufficient buffer from adjacent parcels, all the while minimizing disruption of the existing school's population and learning. Building on or adjacent to the existing building is out of the question. A site below the main school and adjacent to the library is too steeply sloped to provide good, flexible building floor plates. A site above the main building on the upper field does provide good, level ground but is difficult to access due to its remoteness and steep grade changes. It is tight against regulated natural diversity habitat zones and abutting residential neighbors. Ultimately, two potential sites remained - atop the football stadium or along the parcel's eastern edge. Both sites provide large, flexible building pads, good access, are well buffered for circulation, and are shifted sufficiently from the existing circulation and education spaces. However, each site impacts the adjacent parcels differently.



Site layout for football field

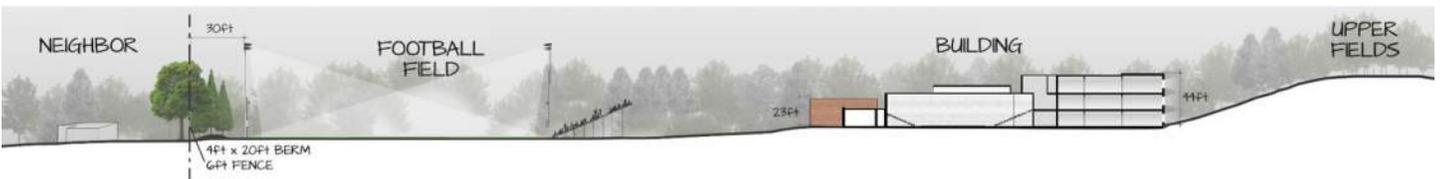
Building on the football field will necessarily shift that site athletic elements to the eastern edge of the parcel. In addition to the cost of rebuilding the field, stands, and track, the group felt the football field is a much too intrusive neighbor to the abutting parcels, bringing with its evening noise and lights.



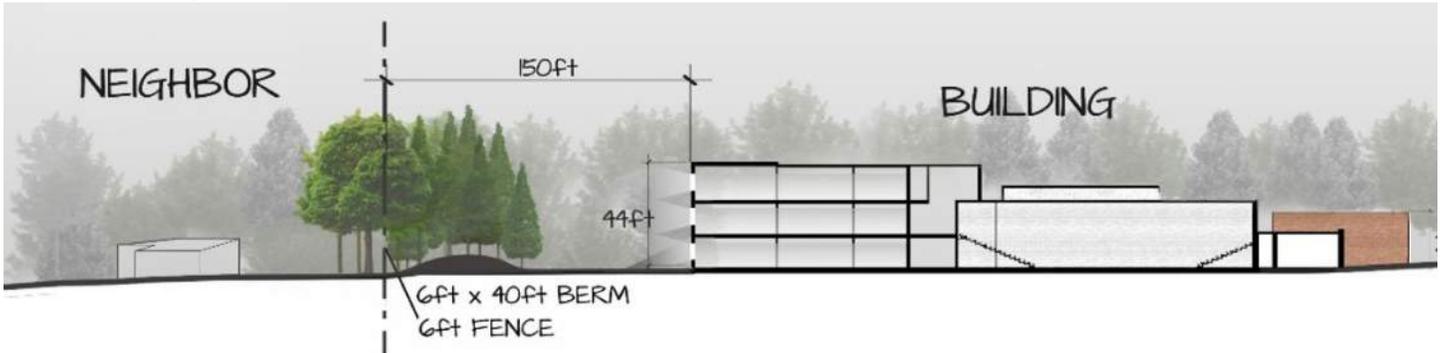
Site layout for east edge of property

Conversely, building along the eastern edge of the parcel, the new building can be moved far enough from the existing school and still provide an ample setback from the adjacent parcels. Additionally, the building will buffer those abutters from the lights and noise of the fields. As a group, the site along the eastern edge was deemed as the best location for the New Building.

Both sites' scheme make use of a 6 feet high, 40 feet wide landscape buffer, heavily planted with evergreens, to insulate the adjacent parcels from sight-lines, lights, and noise.



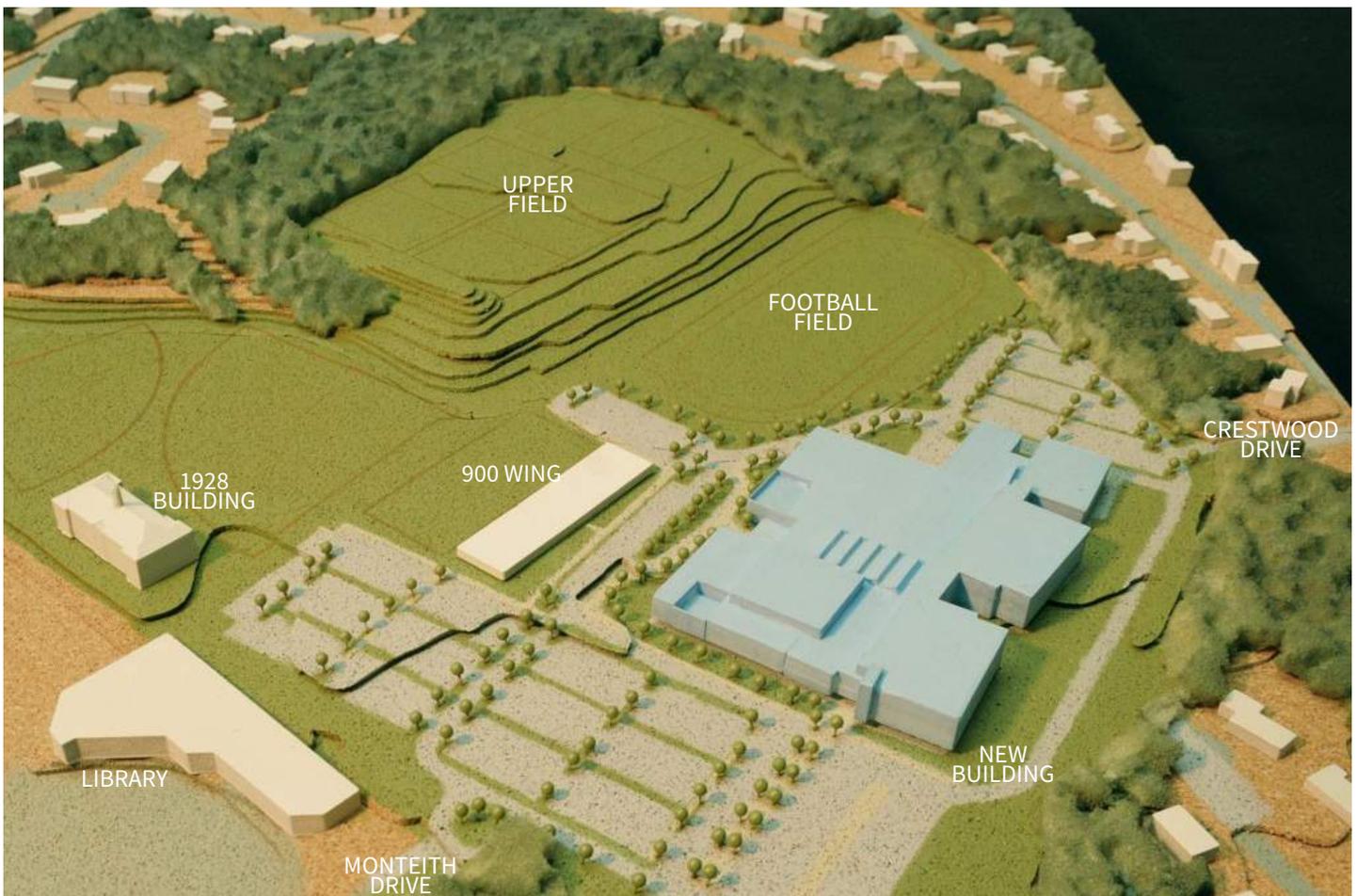
Site section for football field



Site section for eastern edge of property

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The proposed site design provides clear precincts and circulation between those precincts. The New Building faces the existing approach, Monteith Drive. Student drop-off, by car or bus, are split into two loops., connected by a wide hardscaped access path. Visitor and student parking is provided up front. Building services and deliveries are kept internal to the parcel by a straightforward service road to a rear service yard. Faculty and staff utilize this service road to access a rear parking lot. Off this same service road, there is an after-hours building entrance, oriented towards the interior of the property, to receive and gather the large populations who will come to the school for evening sporting or performance



Site model of preferred scheme

events. The New Building is the main structure on the site and is contained within these access paths and drives. It is an efficient and compact focus with distinct connections to the other site elements. Those elements, all located to the west across the service drive are site athletic amenities and other programmatic elements affiliated, but not directly connected, with most students' daily lives.

The existing school is to be demolished to provide space for additional parking and relocated fields. The existing building's 900 Wing (built in 2003) remains and is renovated to provide additional Field House space and an Administrative Suite for Central Office which will be relocated from Town Hall. Beyond the 900 wing are a new practice baseball field and tennis courts, both displaced by the New Building. The site design provides for the original 1928 wing to remain in place should the Town decide to do so. The 1928 building is discussed in more detail in Section VI.

Additional site improvements include accessibility improvements to the upper fields, football field stands and press box. The entire length of Monteith Drive, the existing access drive, is widened to provide two full lanes for both ingress and egress. For a second access point, emergency and Town vehicle access is provided at the end of Crestwood. There is an existing gate here. The proposed site design improves this gate and extends the emergency access road with a wide paved road along the New Building's eastern edge. This road too will be gated, used as a pedestrian walkway except in times of emergency. During Part One, the design team looked at the viability of creating a second site access point through a Town open space parcel at the far western edge of the site. The scheme was deemed unsuitable, requiring too much cut and fill to safely descend from the property down to Highwood Road.



Illustrative site plan



View of main entrance

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View along renovated 900 Wing of after hours entrance

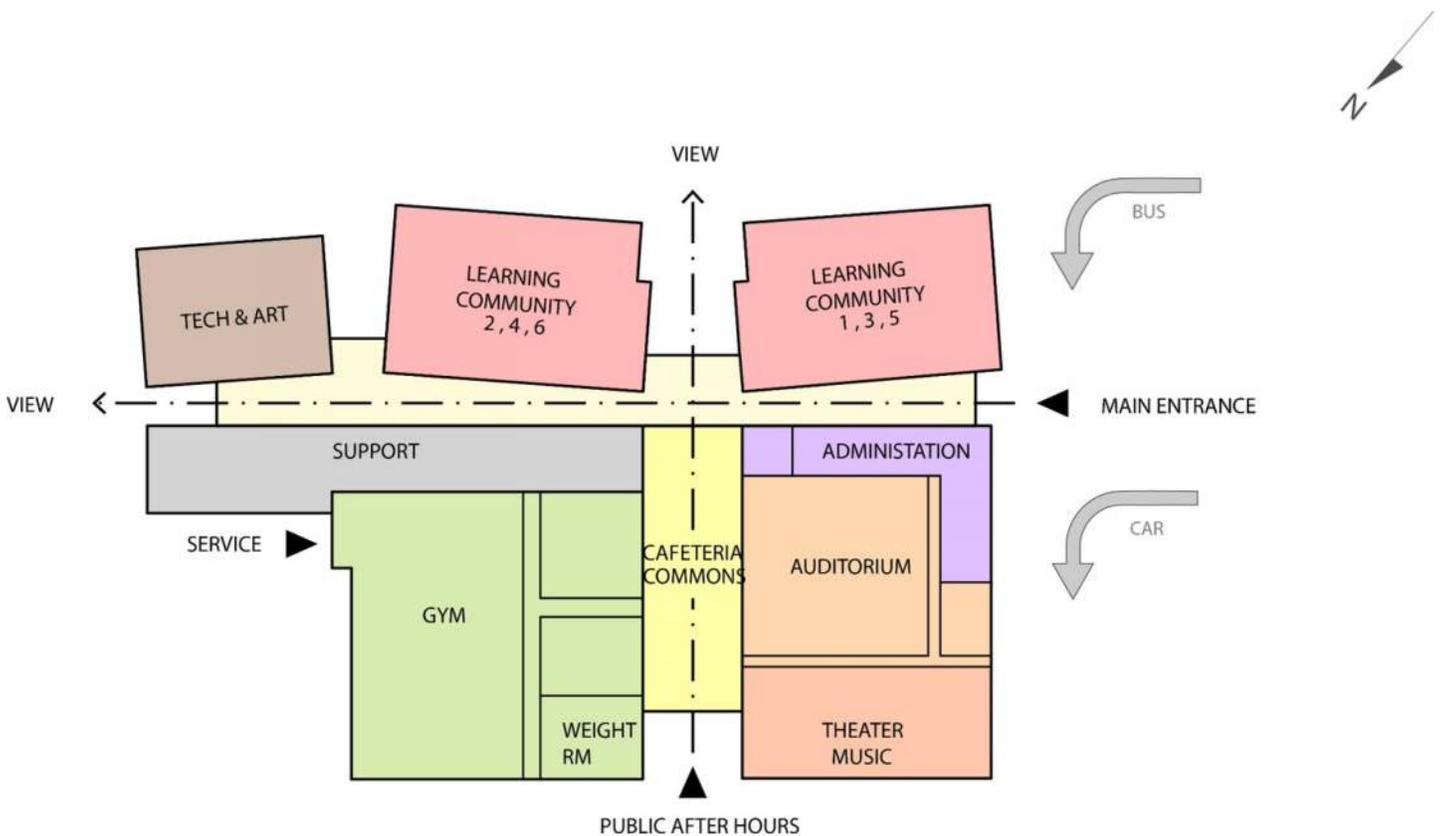


View along eastern edge of property



View of eastern classroom wings

IV. Building Layout and Education Specifications



Plan diagram

The New Building’s layout takes its cues from the Site Design (Section III) and similarly provides clear precincts and circulation. The plan divides across two main axes. The first axis, running north-south, connects the main entrance, facing the drop-off loops and Monteith, to the rear staff entrance. It provides wide circulation and clear sight-lines separating the core educational classrooms to the east from the larger group educational spaces (auditorium, music rooms, gymnasium) to the west.

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View along main north-south axis

The rooms that have doors along this axis can be opened up to the corridor with interior storefronts. It is thought that “seeing in” and “being seen” can activate the corridor and engage these rooms into the life of the school. The degree of direct visual connection remains to be studied.

This north-south axis is bisected by an east-west axis running from the after-hours entrance. It is sufficiently wide to provide all the seating capacity for the cafeteria. Outside of lunch hours, it is available as a common space or lobby space for the Auditorium and Gymnasium populations.



View along east-west axis looking down on cafeteria

Administrative spaces are clustered along the New Building’s main entry at the drop off loops, providing good “eyes on the street” for the school’s comings and goings. Primary administration is located along the ground floor. Counseling is located along the second floor. The Learning Communities are grouped in pairs and stacked three stories. Section V discusses the Learning Communities in detail. The long north-south axis ends with a two-story career education and visual arts cluster. Performing arts, theater and music spaces are clustered to one side of the Cafeteria and indoor athletic spaces, including the Gymnasias, are clusters to the other side. The Media Center, or Learning Commons sits on the second floor overlooking this gathering space.



Plan of renovated 900 Wing

The rework at the 900 wing renovates the existing field house and expands that program to provide Title IX parity. These spaces maintain good adjacency and access to the field site amenities. The existing glass tower used for student entry is renovated to be a dedicated entrance to the Central Office administrative suite. This new office use will provide staff and support space for Farmington Public School. It includes a large conference room suitable for Board of Education meetings.

Complete floor plans and pricing specifications of primary spaces and building systems are included in Section VIII.

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V. Learning Communities

Learning Communities are a key concept in the Education Specifications and consequently a key feature of the New Building. Conceived as multidisciplinary clusters of classroom and teaming spaces, the six Learning Communities provide the core learning environments in the program and the New Building. Each Learning Community contains a range of classrooms environments and support spaces. These spaces are designed to be centrally focused to increase interdisciplinary learning and to promote the co-educational mission. The Learning Communities consists of 8 standard classrooms and two science classrooms with their associated prep rooms. These are arranged around the perimeter to afford each classroom with windows. Each classroom has interior glazing opening to a break-out space in which each Community can gather for co-educational programs. The interior of each Community contains additional small and large group teaming rooms, a central faculty workroom and office space, and support rooms for toilets, IT, and resources. Two classrooms for each Community are outfitted with a demountable partition allowing them to be combined onto a single room for larger team work. The design provides a flexible and engaging environment to promote collaborative and creative learning spaces.



Prototypical classroom environment



Prototypical Break-out space



Typical components of a Learning Community demonstrating indicative of the range in classroom environments

VI. Cost and Alternates

The cost target for the project was established in Part One of the FHSBC's process. The cost was framed in two terms, Total Project Cost and Cost to the Town. Total Project Cost includes all monies associated with the project, inclusive of construction, equipment, fees, and contingencies. Cost to the Town is the Total Project Cost less grants and monies available from state or other programs.

The recommendation the FHSBC made to Town Council at the conclusion of Part One included the following cost projection:

The Town Council's charge to the FHSBC was to pursue and develop the selected scheme looking to reduce the ultimate Cost to Town to \$105M to \$110M. The Council caveated this charge requesting the FHSBC return and advise them should such a reduction impact the Summary of Needs or other key selection factors.

On January 22, 2020:

	Detailed Estimate	In Millions
1. Arch./Eng. Design Fee	\$ 5,690,000	\$ 5.7
2. Professional Fees	\$ 3,018,487	\$ 3.0
3. Construction Costs	\$ 120,640,036	\$ 120.6
4. Alternates	\$ 0	\$ 0
5. FF&E and Technology	\$ 5,591,000	\$ 5.6
6. Owner Contingency (5%)	\$ 7,100,000	\$ 7.1
7. Grand Total	\$ 142,039,523	\$ 142.0
8. Est. State Reimbursement	- 28,007,905	- 28.0
9. Net Town Share	\$ 114,031,618	\$ 114.0

On February 4, 2020:

10. Target Net Town Share		\$105 to \$110
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The design team revised the scheme in pursuit of this targeted reduction. Working with the FHSBC, educators, and Town staff, TSKP Studio refined the scheme’s scope, improving its content and detail and identifying several areas where savings could be made without impacting the project’s priorities. Targeted reductions in April 2020 included:

After Est. State Reimbursement	Detailed Estimate	In Millions
9. Net Town Share	\$ 114,031,618	\$ 114.0

Potential Cost Reductions Discussed On March 4, 2020:

	Est. Reductions	
a. Reduce Building (7,100 SF x \$480/SF)	\$ 3,400,000	
b. Delete Green Roof (Per Estimate)	425,000	
c. Delete Additional Ballfield (Per Estimate)	620,000	
d. Delete Relocation of Cupola (Per Est.)	150,000	
e. Reduce FF&E and Technology	651,000	
f. Reduced Contingency on Savings	300,000	
g. Total Cost Reductions	\$ 5,546,000	(\$ 5.5)
h. Revised Net Town Share		\$108.5

On February 4, 2020:

10. Target Net Town Share		\$105 to \$110
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After discussion with the Building Committee, TSKP Studio and the engineering team produced Schematic Design drawings and specifications reflecting a further refined scope and understanding of the New Building Scheme. A new construction cost estimate was developed in May 2020. In February 2021, the estimated State reimbursement rates for the New Building and the 900 wing were adjusted. The initial Total Project Costs and the subsequent revisions are tabulated in the chart below:

	Feb 2020 original	May 2020 adjusted	Feb 2021 Rate adjusted	
			900 Wing	New Bldg
1. Arch./Eng. Design Fee	\$ 5.7	\$ 5.7	\$.3	\$ 5.3
2. Professional Fees	\$ 3.0	\$ 3.0	\$.1	\$ 2.8
3. Construction Costs	\$ 120.6	\$ 117.0	\$ 5.1	\$ 110.4
4. Alternates *	\$ 0	\$ 0		\$ 0
5. FF&E and Technology	\$ 5.6	\$ 5.1	\$.2	\$ 4.9
6. Owner Contingency (5%)	\$ 7.1	\$ 6.5	\$.3	\$ 6.1
7. Grand Total	\$ 142.0	\$ 137.3	\$ 6.0	\$ 129.6
8. Est. State Reimbursement	- 28.0	- 27.5	-1.7	- 24.6
9. Net Town Share	\$ 114.0	\$ 109.8	\$ 4.3	\$ 105.0
			\$ 109.3	

On February 4, 2020:

10. Target Net Town Share	\$105 to \$110
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* see potential alternates on page 27

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What were the design revisions? The team identified several items that could be eliminated in the base design, and added as alternates for the projects. These items fit the project’s goals but are not necessarily essential to the project. These alternate items were priced and presented to the FHSBC. Ultimately, the FHSBC can choose one of four actions for each alternate: include the scope into the base project, remove the scope from the project, continue to track the scope as an alternate as the project develops, include the scope as a separate line item in the referendum, allowing the Town to make the value decision as to whether to include the scope. The alternate items and their description are as follows:

	Description	Cost to Town (rounded)	ACTION
* 1	Motorized partition between gyms	\$ 90,600	Potential add alternate
* 2	Stone in lieu of masonry	\$ 541,500	Potential add alternate
3.1	Mothball 1928 building	\$ 1,042,300	Exclude from base project
3.2	Renovate as New 1928 building	\$ 9,821,700	Exclude from base project
4	Additional ballfield	\$ 275,700	Exclude from base project
5.1	Additional energy saving initiative	\$ 676,300	Exclude from base project
5.2	Net-Zero physical plant	\$ 9,144,800	Exclude from base project
6	Route 4 improvements	\$ 763,300	Exclude from base project
7	Universal Design Consultant	\$ 12,600	Included in A/E fee
* 8	Additional FFE allowance	\$ 420,000	Potential add alternate
* 9	Anti-graffiti sealer	\$ 351,600	Potential add alternate
*10	Vert. aluminum sunshades	\$ 449,300	Potential add alternate
*11	Reduce wood ceiling at Atrium	\$ 320,000	Potential add alternate
*12	Other signage and graphics	\$ 64,000	Potential add alternate

* Recommended Add Alternates

Total Add Alternates = \$2.2 million net to Town in Construction and FFE costs.

Alternate Item 1 – Motorized partition between Gymnasia

The base scope for the New Building includes the Large and Small Gymnasia called for in the Educational Specifications. The large Gymnasium is sized for high school tournaments and includes seating for 1400 spectators. This alternate will provide a demountable partition between the two Gymnasia allowing it to be combined for larger school or community events, adding flexibility and an additional community asset. TSKP Studio's recommendation is to continue to track this scope as an alternate as the project develops through its phases.

Alternate Item 2 – Stone in lieu of masonry

The base scope for the New Building is a brick exterior wall accented with precast decorative bands. This alternate scope substitutes a stone veneer of large (2'x4') blue stone units. The addition of stone expands the design and brings the project closer to the material palette of other adjacent Town buildings. TSKP Studio's recommendation is to reduce this stone substitution to the areas where it will be most impactful and continue to track it as an alternate as the project develops through its phases.

Exclude Item 3.1 - Mothball 1928 building and Item 3.2 - Renovate as New 1928 building

A 3-story, hipped-roof, neo-Georgian structure, the 1928 building is the oldest High School building on the site. It is a distinct and memorable element of the current campus. Nevertheless, it sits too remote from the proposed New Building to have an effective role in the Educational Programming of the project. The base scope for the project excludes mothballing the 1928 building. The project also excludes any hazardous material abatement, demolition, or renovation of the 1928 building. In February 2021, the Town Council decided that, if a referendum for the high school project is approved, then a building committee should be formed specifically to study the potential reuse and renovation of the 1928 building as a separate project.

Exclude Item 4 - Additional Ballfield

The base project includes the athletic field program that closely mirrors the existing campus. This alternate tracks adding an additional ballfield. As the design team developed the site plan with the stakeholders, it became increasingly clear that the competing goals of maximizing parking, keeping the 1928 building, rebuilding the tennis courts, and adding a ballfield creates congestion in the west portion of the site. If all elements are to be included in full, significant regrading and retaining walls are required to provide adequate flat area. This additional ballfield may not be achievable if the 1928 building remains.

Exclude Item 5.1 - Additional energy saving initiatives and Item 5.2 - Net-Zero physical plant

The base project includes an energy efficient envelop and physical plant compliant with Connecticut's High Performance Building Standards. It is anticipated that the New Building, while both larger and fully air-conditioned, will operate at less annual utility cost than the existing building. Scope 5.1 could include modular chillers and ice-storage in the physical plant. It is anticipated that these features will pay back their initial investment is less than twenty years. Scope 5.2 could include an upgraded central plan with the goal of making the project "net-zero", meaning it generates as much energy as it consumes annually, by utilizing renewable energy sources, such as a geothermal field and a large photo-voltaic array. However, these items are excluded from the project because of their long payback period.

Exclude Item 6 - Route 4 improvements

The project excludes widening Route 4 to incorporate a dedicated right-hand turn lane west-bound, a dedicated left-hand turning east-bound, and required re-signalization. Note that this scope requires separate State approvals and is unlikely to be reimbursed by state school construction grants.

Alternate Item 7 – Universal Design

The base scope for the new Building includes a design fully compliant with Federal accessibility standards, state building code guidelines, and the Town's Universal Design ordinance. This alternate adds third-party oversight and consultation. TSKP Studio's recommendation is to add this consultant fee to the base scope of the project.

Alternate Item 8 – Additional FFE allowance

This alternate scope adds back the reduced FFE/IT budget from Part Two of the project's development. TSKP Studio recommends tracking this as an alternate as the project develops through its phases.

Alternate Item 9 - Anti-graffiti Sealer

Adding an anti-graffiti sealer to the interior masonry walls in public spaces may not be necessary if these walls are constructed with ground-face CMU or glazed masonry.

Alternate Item 10 - Vertical Aluminum Sunshades

The vertical aluminum sunshades, or mullion cap extensions, will be further evaluated when an energy model is created and when the payback period can be calculated for these additional architectural elements.

Alternate Item 11 - Reduce Wood Ceiling at Atrium

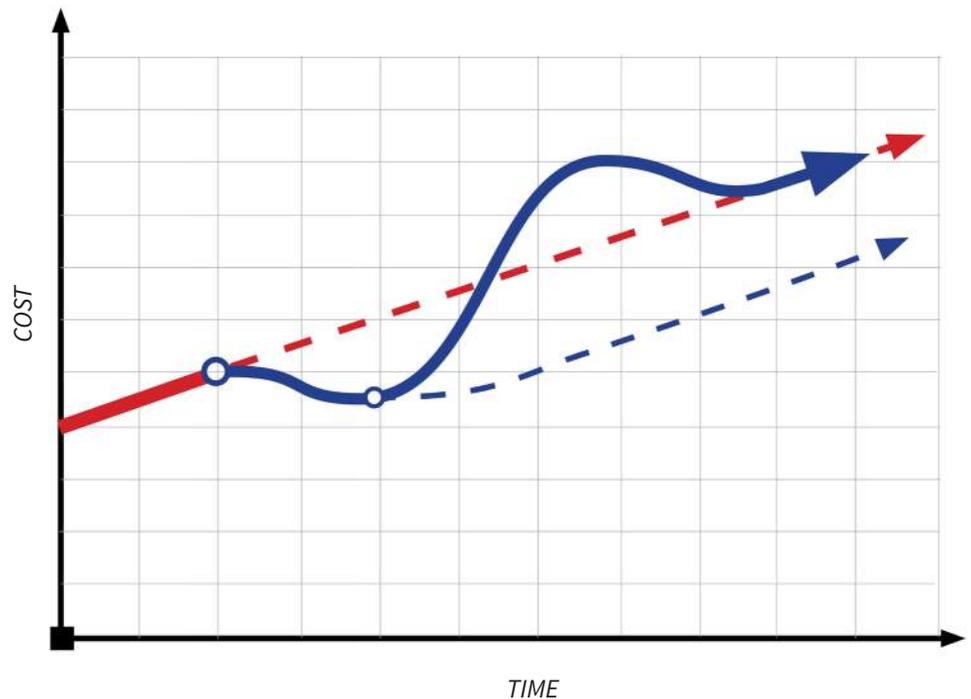
If bidding is favorable, adding more wood acoustical tile can provide color and warmth to the interior of the Atrium. The decision to add more can be made after bids are received.

Alternate Item 12 - Other signage or graphics

Additional signage and accent graphics can be added if they are required.

Impact of COVID-19 Outbreak on Construction Costs

After the Town Council voted to place the FHS Building Project on a temporary pause, the Building Committee asked TSKP Studio to provide updates on the construction industry. The Committee wanted to know specifically if the COVID-19 outbreak has affected cost. TSKP Studio reported that, from their experience, there has been an increase in the number of bids they received on projects in the public sector, such as public schools and libraries because work on commercial projects such as offices, retail businesses and restaurants had suddenly stopped. At the end of 2020, the bids TSKP Studio received on a public school project were 20% lower than expected. Nevertheless, TSKP Studio advised the Building Committee that this change in the industry is most likely temporary and that the budget for the FHS Building Project should not be changed at this time. However, escalation will likely resume, or even increase, at some point in the future when the industry rebounds.



Cost over Time
Red line represents the pre-pandemic escalation trend.
Blue line represents the projected impact of COVID -19 on cost .

VII. Conclusion

The New Building represents a holistic approach to the FHSBC's charge. It improves upon the recommended scheme from Part 1 to provide a flexible and engaging environment for the school and its community. With the FHSBC, the design team has refined the layout and scope to address each of the Committee's selection criteria. The New Building offers a comprehensive solution to the Town of Farmington.



View of main entrance



View of main axis