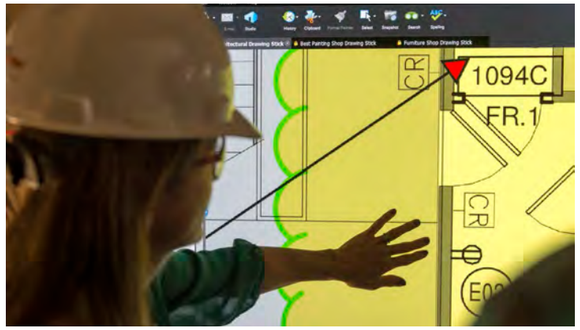
Interview & Presentation Package
May 18, 2015

SHAWMUT
Design and Construction



Dover School District

Dover High School and Career Technical Center Building Project

AGENDA

SHAWMUT OVERVIEW

1. Shawmut Firm Introduction
2. Team Introductions
3. Shawmut's Experience
4. Approach to Preconstruction Services
5. Estimating and Budgeting
6. Shawmut Technology

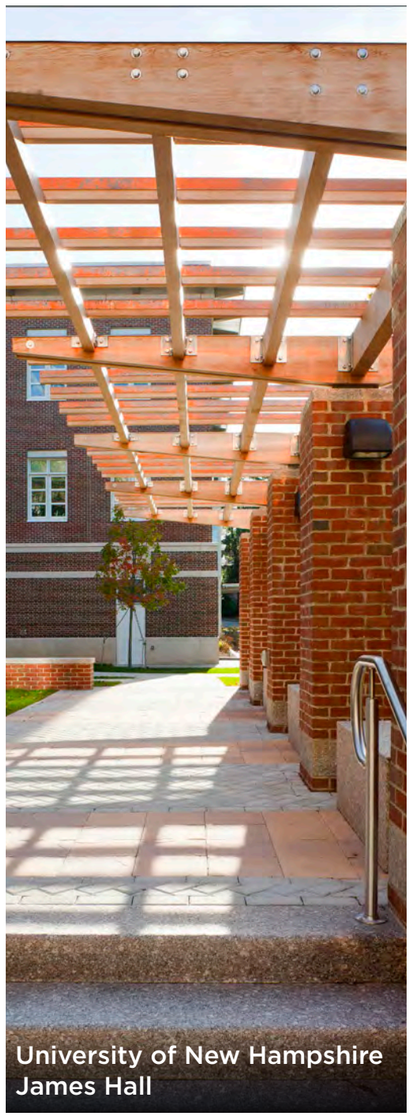
PROJECT SPECIFIC

7. Overview and Ground Level
8. Preconstruction Review
9. Design Options Analysis

SHAWMUT ADDED VALUE

10. Together. Let's Build

Town of Wayland
High School Expansion and
Modernization



University of New Hampshire
James Hall

Town of Lexington
New Estabrook
Elementary School

PROJECT TEAM

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Vice President
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PROJECT EXECUTIVE

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SUPERINTENDENT

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PRECONSTRUCTION

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IN-HOUSE TEAM RESOURCES

Scott Santry
Senior Electrical Estimator

Steve Ham
Construction Manager

Charlie MacLean
Senior Mechanical Estimator

Tim Grant
Virtual Construction Planner / BIM

Chuck Stronach
M/E/P Manager

Charlie Aylward
Safety Manager

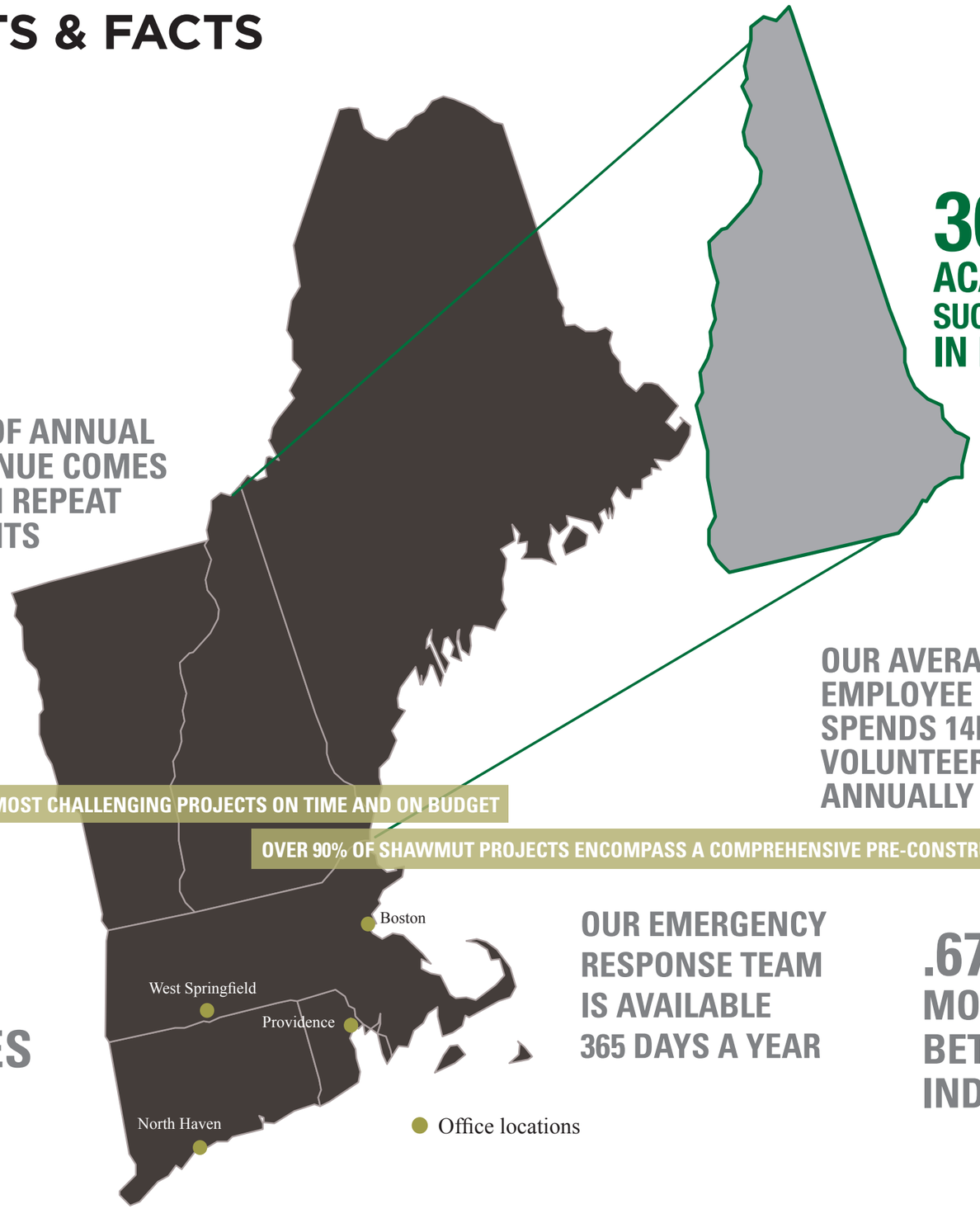
Regina Olivieri
Permitting Specialist

Kimberley Maul, CDT
Lean Construction Manager

SHAWMUT STATS & FACTS

WE BUILD, ON AVERAGE, 12-14,000,000 SF ANNUALLY

80% OF ANNUAL REVENUE COMES FROM REPEAT CLIENTS



30+
ACADEMIC PROJECTS SUCCESSFULLY COMPLETED IN NEW HAMPSHIRE

OUR AVERAGE EMPLOYEE SPENDS 14HRS VOLUNTEERING ANNUALLY

A REPUTATION FOR DELIVERING THE MOST CHALLENGING PROJECTS ON TIME AND ON BUDGET

OVER 90% OF SHAWMUT PROJECTS ENCOMPASS A COMPREHENSIVE PRE-CONSTRUCTION PHASE

SHAWMUT HAS BEEN NAMED A "BEST PLACE TO WORK" 33 TIMES

OUR EMERGENCY RESPONSE TEAM IS AVAILABLE 365 DAYS A YEAR

.67 SAFETY EXPERIENCE MODIFICATION RATE, FAR BETTER THAN THE NATIONAL INDUSTRY AVERAGE

NEW HAMPSHIRE EXPERIENCE

Dover School District
Dover High School and
Career Technical Center

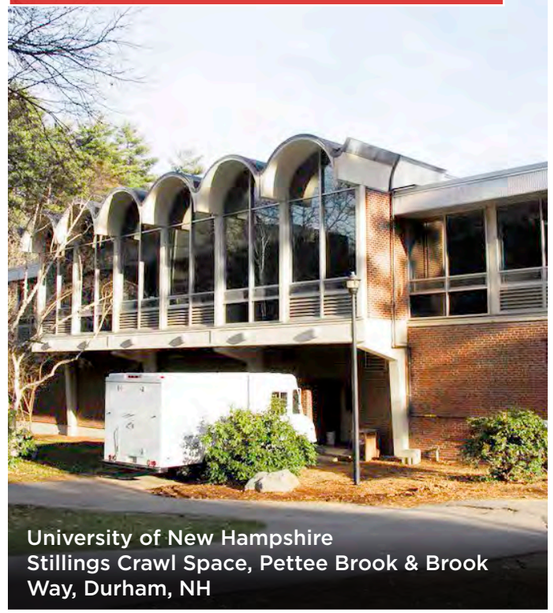
Learning Centers

University of New Hampshire
James Hall Addition and Renovation, Durham, NH

Fitness Facilities

University of New Hampshire
Hamel Recreation Center Upgrades, Durham, NH *(In progress)*

Phased/Occupied Construction

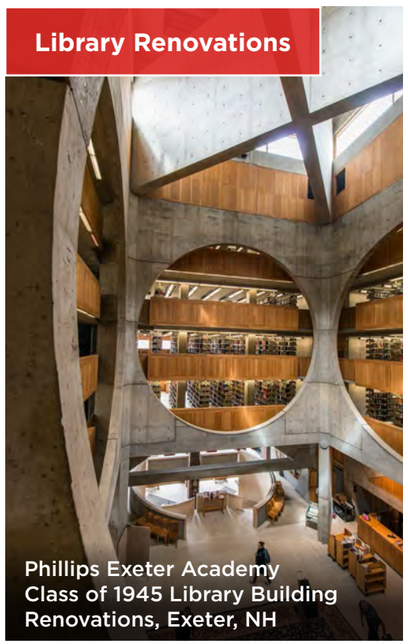


University of New Hampshire
Stillings Crawl Space, Pettee Brook & Brook Way, Durham, NH

Bell Tower Restoration

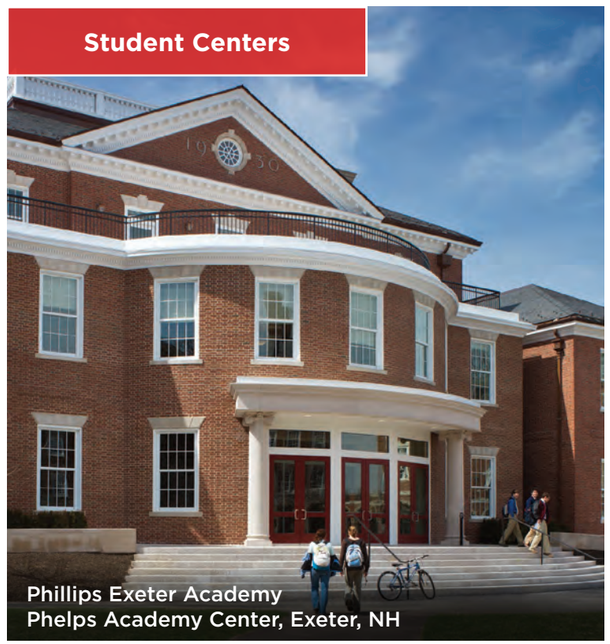
Dartmouth College
Baker Bell Tower Restoration, Hanover, NH *(In progress)*

Library Renovations



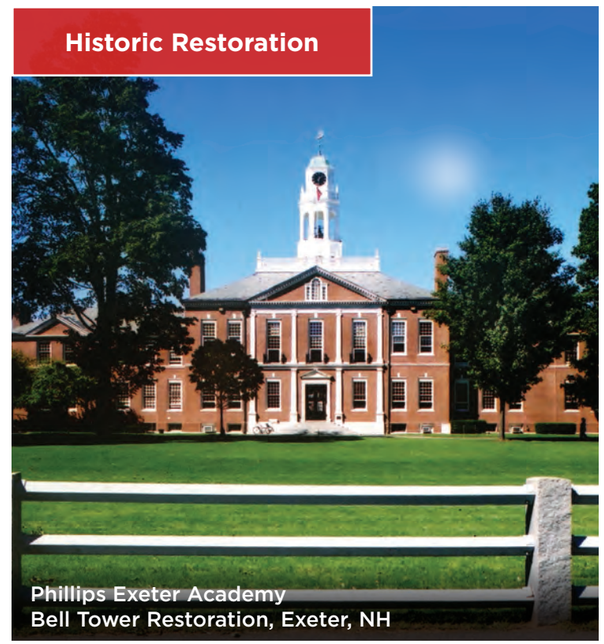
Phillips Exeter Academy
Class of 1945 Library Building Renovations, Exeter, NH

Student Centers



Phillips Exeter Academy
Phelps Academy Center, Exeter, NH

Historic Restoration



Phillips Exeter Academy
Bell Tower Restoration, Exeter, NH

RELEVANT EXPERIENCE

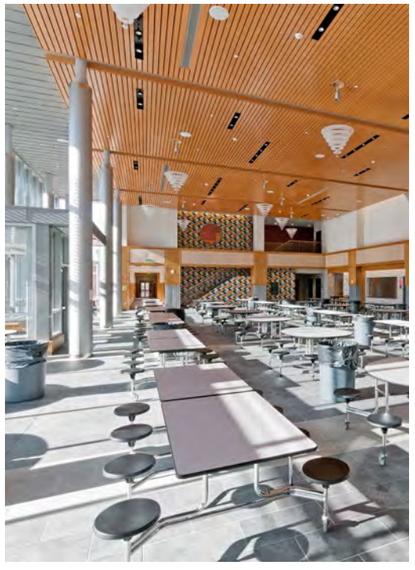
Dover School District
Dover High School and
Career Technical Center

Wayland High School Expansion and Modernization

Architect:
HMFH Architects, Inc.

Duration:
27 months

Project Size:
154,350 sf - new construction
40,800 sf -renovation



Haverhill Caleb Dustin Hunking New Elementary/Middle School

Architect:
JCJ Architecture

Est. Duration:
26 months

Project Size:
148,000 sf - new construction

Stoneham New Middle School

Architect:
Tappé Associates, Inc.

Est. Duration:
18 Months

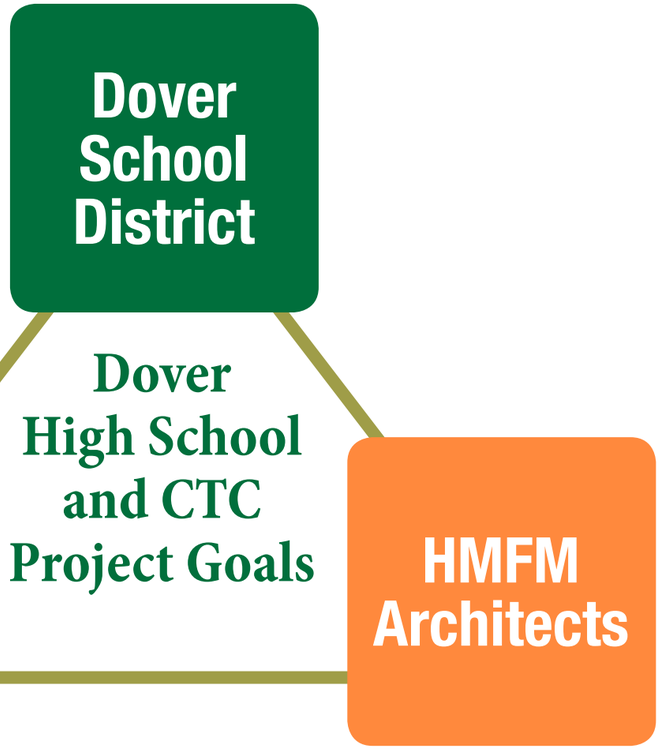
Project Size:
83,000 sf - new construction
50,000 sf - renovation

OUR APPROACH TO PRECONSTRUCTION

A Collaborative **Partnership** with the Owner, Architect, Engineers and the Consultants

All Working **Together** Towards Common Project Goals

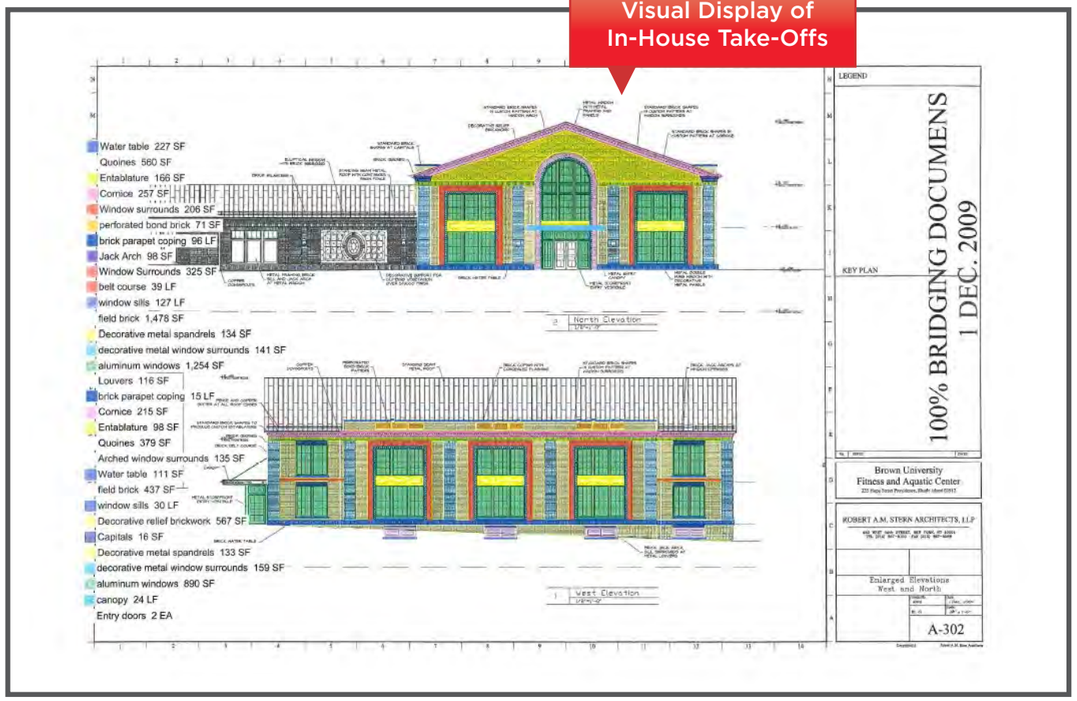
- Design
- Budget
- Schedule



ESTIMATING AND BUDGETING

Sample

Visual Display of In-House Take-Offs



Budget Development

- Collaboration among all team members
- Understanding of the project goals and ability to bridge the information to capture the intended scope
- Mitigate cost and schedule exposures early on in the design development by providing a detailed drawing review to ensure completeness of the documents
- Developing detailed and transparent budgets to share with all team members to achieve consensus on the scope
- Reconciliation at each step of the program development
- Value management to maximize both scope and budget
- Detailed scope exhibits to enhance documents and account for scope gaps

Assemble Systems: 3-D Modeling to Assist with Estimating

Sample

120037_UML_CC - 2012-07-05_UML_CC_ARCH - 2 - Model Inventory
Thursday, August 7, 2014 11:57 AM

Color	Category Name	Item	Source ID	Quantity	Unit	Count (EA)	Area (SF)	Volume (CY)	Perimeter (LF)
	Casework			362.00	EA	362			
	Ceilings			98,924.84	SF	427			
	Columns			1.00	EA	1			
	Curtain Panels					13,985			
	Curtain Systems			1.00	EA	1			
	Curtain Wall Mullions					5,930			
	Doors					360			
	Electrical Equipment			1.00	EA	1			
	Floors			283,833.45	SF	50			
	Generic Models			116.00	EA	116			
	Lighting Fixtures			1,887.00	EA	1,887			
	Mass			5.00	EA	5			
	Mechanical Equipment			473.00	EA	473			
	Plumbing Fixtures			107.00	EA	107			
	Railings					43			
	Ramps			1.00	EA	1			
	Site			4.00	EA	4			
	Specialty Equipment			687.00	EA	687			

Sample

10/2/2014

Item	Description	Takeoff Qty		Total Unit Cost		Total Amount
	Cast-In-Place Concrete					574,807
051200.00	Structural Metal Framing					
----	Floor Framing (73,155 sf @ 13#/sf per Structural Narrative)	476.00	ton	3,200.00	/ton	1,523,200
----	Premium for Exposed Structural Steel Connection	1.00	ls	25,000.00	/ls	25,000
	Structural Metal Framing					1,548,200
053100.00	Steel Decking					
----	2" Metal Floor Deck	70,275.00	sf	3.55	/sf	249,476
	Steel Decking					249,476
078116.00	Cementitious Fireproofing					
----	Spray Fireproofing @ Beams / Columns	61,087.00	sf	2.60	/sf	158,826
	Cementitious Fireproofing					158,826
078413.00	Penetration Firestopping					
----	Firestopping @ Slab Edges	2,387.00	lf	20.00	/lf	47,740
	Penetration Firestopping					47,740
099123.10	Interior Painting					
----	Intumescent Paint @ Exposed Structural Steel Beams	11,295.00	sf	4.00	/sf	45,180
----	Intumescent Paint @ Exposed Structural Steel Columns	1.00	ls	50,000.00	/ls	50,000
	Interior Painting					95,180
	B1010 Floor Construction				18.07	/sf 2,674,230
	147,996.00 sf					
B1020	Roof Construction					
033005.00	Cast-In-Place Concrete					
25	6" Place and Finish Slab on Deck	7,251.00	sf	3.55	/sf	25,741
25	Concrete Material - Lightweight	134.00	cy	140.00	/cy	18,760
25	Furnish & Install WWF	7,251.00	sf	1.20	/sf	8,701
	Cast-In-Place Concrete					53,202

Detailed Budget Pricing

DELIVERING GMP UNDER BUDGET Budgeting and Cost Control

Dover School District
Dover High School and
Career Technical Center

Sample

Reconciles Early Packages to the Control Budget

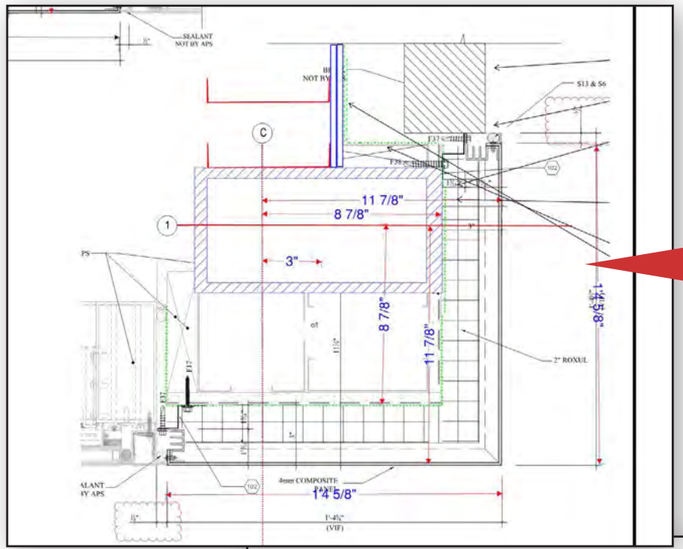
Maintain Discipline with Early Packages to Stay on Budget

LUNENBURG MIDDLE / HIGH SCHOOL - LUNENBURG, MA					BID OPENING:	October 28, 2014 - 2:00PM -		
CSI Reference	Description	SDC's 90% CD Reconciled Budget	Estimated Final GMP (90% CD Reconciled Budget w/ Contingency)	iGMP #1 Actual	iGMP #2 Actual	Main GMP Actual	Final GMP	Variance (Estimated Final GMP vs. Final GMP)
024116	Structure Demolition	$2,163,000	$2,166,244.52			$320,000	$320,000	($1,846,245)
024116	Asbestos Abatement	$0	$0			$1,621,300	$1,621,300	$1,621,300
024116	VAT Abatement	$0	$0			$77,500	$77,500	$77,500
033000	Cast-In-Place Concrete - ER-1, ER-1.1	$3,242,000	$3,246,863	$3,242,000		$185,412	$3,427,412	$180,549
040001	Masonry	$3,320,775	$3,325,756			$2,781,000	$2,781,000	($544,756)
051200	Structural Steel - ER-2 & ER-2.1	$4,379,800	$4,386,370		$4,328,000	($77,498)	$4,250,502	($135,868)
055000	Misc. & Ornamental Metals	$730,310	$731,405			$973,000	$973,000	$241,595
061000	Rough Carpentry	$31,305	$31,352			$0	$0	($31,352)
064000	Rough Carpentry HOLD PANELING @ MEDIA CENTER	$0	$0			$63,000	$63,000	$63,000
064000	Architectural Millwork	$835,385	$836,638			$598,637	$598,637	($238,001)
070001	Waterproofing / AVB / Joint Sealants / Caulking	$445,132	$445,800			$714,000	$714,000	$268,200
070002	Asphalt Shingles / EPDM / Roofing & Flashing	$1,979,338	$1,982,307			$1,563,000	$1,563,000	($419,307)
072100	Thermal Insulation	$168,516	$168,769			$108,000	$108,000	($60,769)
074213	Metal Wall Panels	$481,424	$482,146			$887,763	$887,763	$405,617
078100	Cementitious Fireproofing	$491,599	$492,336			$695,056	$695,056	$202,720
080001	Metal Windows	$1,509,385	$1,511,649			$1,567,116	$1,567,116	$55,467
080002	Glass and Glazing	$326,625	$327,115			$169,030	$169,030	($158,085)
081113	Doors / Frames / Hardware	$558,200	$559,037			$609,000	$609,000	$49,963
083323	Sectional Doors	$40,000	$40,060			$22,060	$22,060	($18,000)
084513	Polycarbonate Panels	$86,580	$86,710			$65,838	$65,838	($20,872)
092116	Gypsum Board Panels	$4,085,210	$4,091,337			$4,348,100	$4,348,100	$256,763
090002	Ceramic Tile	$837,120	$838,376			$1,229,265	$1,229,265	$390,889
090003	Acoustical Tile Ceilings	$464,301	$464,997			$765,400	$765,400	$300,403
090005	Resilient Flooring	$676,984	$677,999			$424,914	$424,914	($253,085)
096446	Wood Athletic Flooring	$166,965	$167,215			$203,965	$203,965	$36,750
096723	Resinous Flooring	$32,610	$32,659			$40,148	$40,148	$7,489
096813	Tile Carpeting / Entrance Grille / Floor Mats	$98,660	$98,808			$133,015	$133,015	$34,207
090007	Interior Painting	$446,224	$446,893			$349,000	$349,000	($97,893)
101100	Visual Display Surfaces / Toilet Compartments / Toilet Accessories / Lockers	$625,655	$626,593.49			$449,630	$449,630	($176,963)
101419	Signage	$84,510	$84,637			$54,281	$54,281	($30,356)
114000	Food Service Equipment	$300,000	$300,450			$261,147	$261,147	($39,303)
116143	Theater and Stage Equipment	$365,400	$365,948			$0	$0	($365,948)
116113	Acoustical Shells	$247,975	$248,347			$68,914	$68,914	($179,433)
116623	Athletic Equipment	$284,664	$285,091			$226,089	$226,089	($59,002)
122400	Window Shades	$120,134	$120,314			$136,550	$136,550	$16,236
123213	Fixed Casework and Equipment	$683,200	$684,225			$1,081,400	$1,081,400	$397,175
126113	Fixed Seating	$153,700	$153,931			$111,272	$111,272	($42,659)
132800	Athletic and Recreational Construction - Bleachers	$198,100	$198,397			$170,259	$170,259	($28,138)
133413	Greenhouse	$149,963	$150,188			$165,304	$165,304	$15,116
140001	Hydraulic Passenger Elevators	$240,000	$240,360			$224,653	$224,653	($15,707)
144216	Chair Lift	$0	$0			$27,700	$27,700	$27,700
210001	Fire Suppression	$737,821	$738,928			$584,250	$584,250	($154,678)
220001	Plumbing	$2,198,392	$2,201,690			$1,888,000	$1,888,000	($313,690)
230001	HVAC	$5,731,902	$5,740,500			$4,818,000	$4,818,000	($922,500)
260001	Electrical / Communications / Security	$5,800,695	$5,809,396			$5,521,250	$5,521,250	($288,146)
260000	Electrical Enabling - ER-1 & ER-1.1	$123,495	$123,680	$123,495		$0	$123,495	($185)
260000	New Electrical Service (Unitil)	$82,000	$82,123	$82,000		$0	$82,000	($123)
312000	Earthwork - ER-1 & ER-1.1	$5,765,708	$5,774,356	$5,755,544		$149,676	$5,905,220	$130,864
312000	Earthwork - Addendum ER-1.2, ER-2, ER-2.1	$219,506	$219,835	$219,506		$0	$219,506	($329)
312000	Earthwork - HOLD SOD - SAND AMMEND	$0	$0	$0		$6,000	$6,000	$6,000
312000	Earthwork - HOLD OUTDOOR CLASSROOM	$0	$0	$0		$3,000	$3,000	$3,000
323000	Site Improvements HOLD FOR OUTDOOR CLASSROOMS	$0	$0	$0		$23,000	$23,000	$23,000
323000	Site Improvements HOLD FOR SOD	$0	$0	$0		$105,000	$105,000	$105,000
323000	Site Improvements / Site Furnishings / Landscape	$907,108	$908,469			$965,975	$965,975	$57,506
	Sub-total (All Trades combined)	**$52,617,375**	**$52,696,302**	**$9,422,545**	**$4,328,000**	**$37,478,371**	**$51,228,916**	**($1,467,385)**
	Design / Pricing Contingency	$78,927	$0	$0	$0	$0	$0	$0
	**GMP Contingency	$1,052,348	$1,052,348	$188,451	$86,560	$745,567	$1,020,578	($31,770)
	Project Requirements	$975,000	$975,000	$10,900	$500	$963,600	$975,000	$0
	General Conditions	$2,702,523	$2,702,523	$533,591	$245,901	$1,923,031	$2,702,523	$0
	CM Fee	$1,050,000	$1,050,000	$193,043	$88,669	$768,288	$1,050,000	$0
	P&P Bond	$442,500	$442,500	$81,354	$37,368	$259,278	$378,000	($64,500)
	GLI + Builders Risk	$649,000	$649,000	$119,319	$54,806	$464,875	$639,000	($10,000)
	Total	**$59,567,672**	**$59,567,672**	**$10,549,203**	**$4,841,804**	**$42,603,010**	**$57,994,017**	**($1,573,655)**

CONSTRUCTABILITY REVIEW

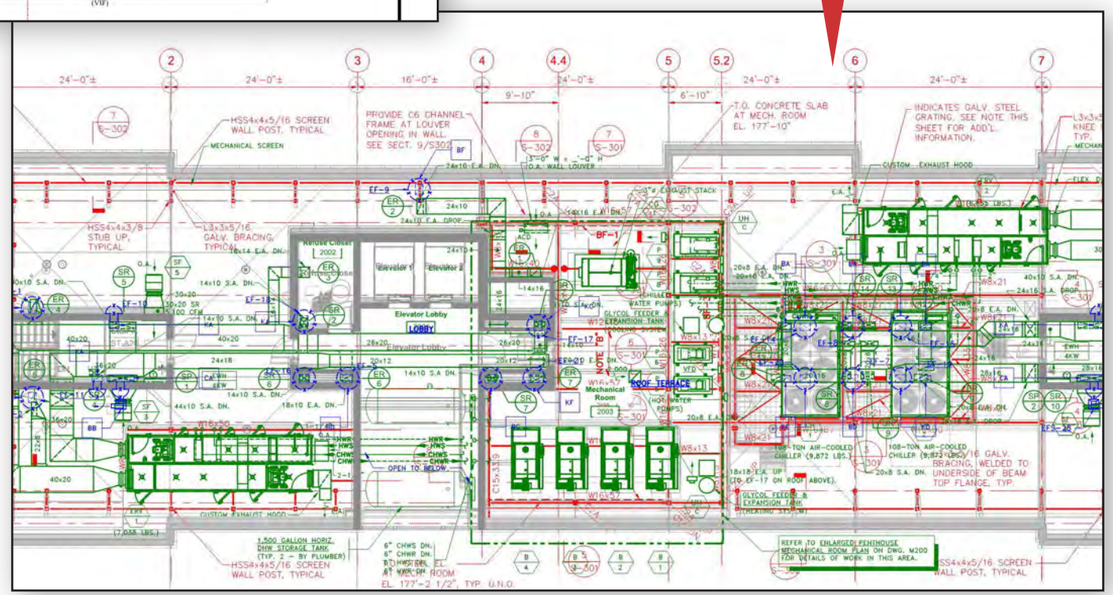
Dover School District
Dover High School and
Career Technical Center

Shawmut uses Bluebeam and other software early in design phase to vet out constructability. This will assist with logistics and construction phasing as well as details. This process allows details to be developed and incorporated into the project documents prior to subcontractor bidding. All this adds up to even more value for the Dover School District.



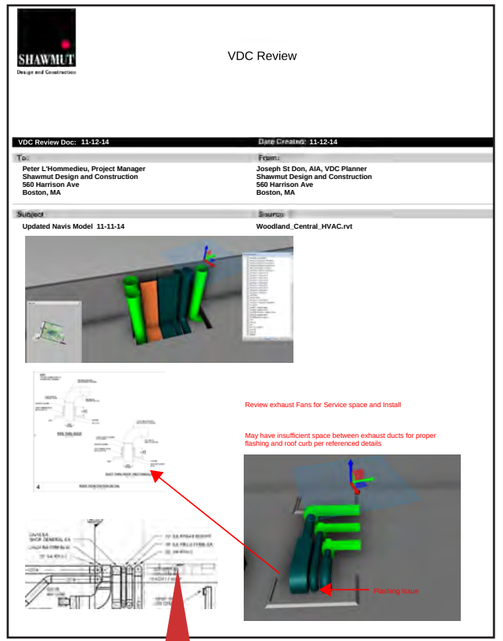
Evaluate design components for sequencing of installation and coordination of trades. Understand how to implement design elements in an efficient manner without impacting design intent.

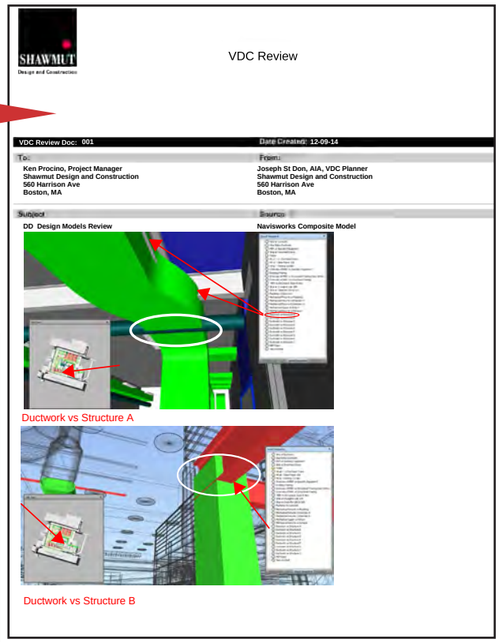
Overlay M/E/P layers in Bluebeam in early stages of design to help determine construction sequencing and installation conflicts.



VIRTUAL PLANNING / BIM

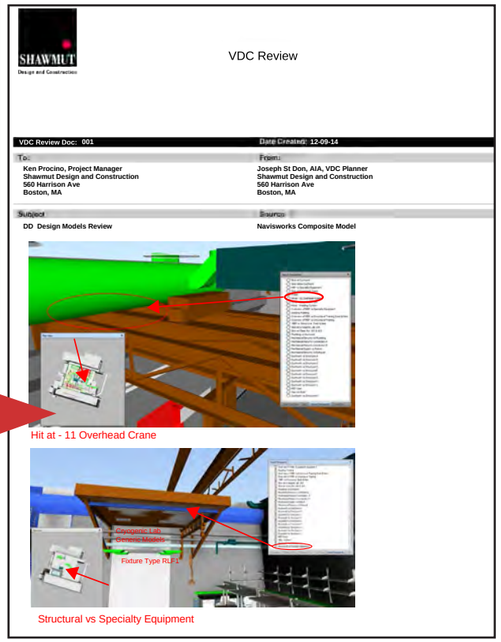
Shawmut uses clash detection and coordination of M/E/Ps during the early phases of preconstruction and design





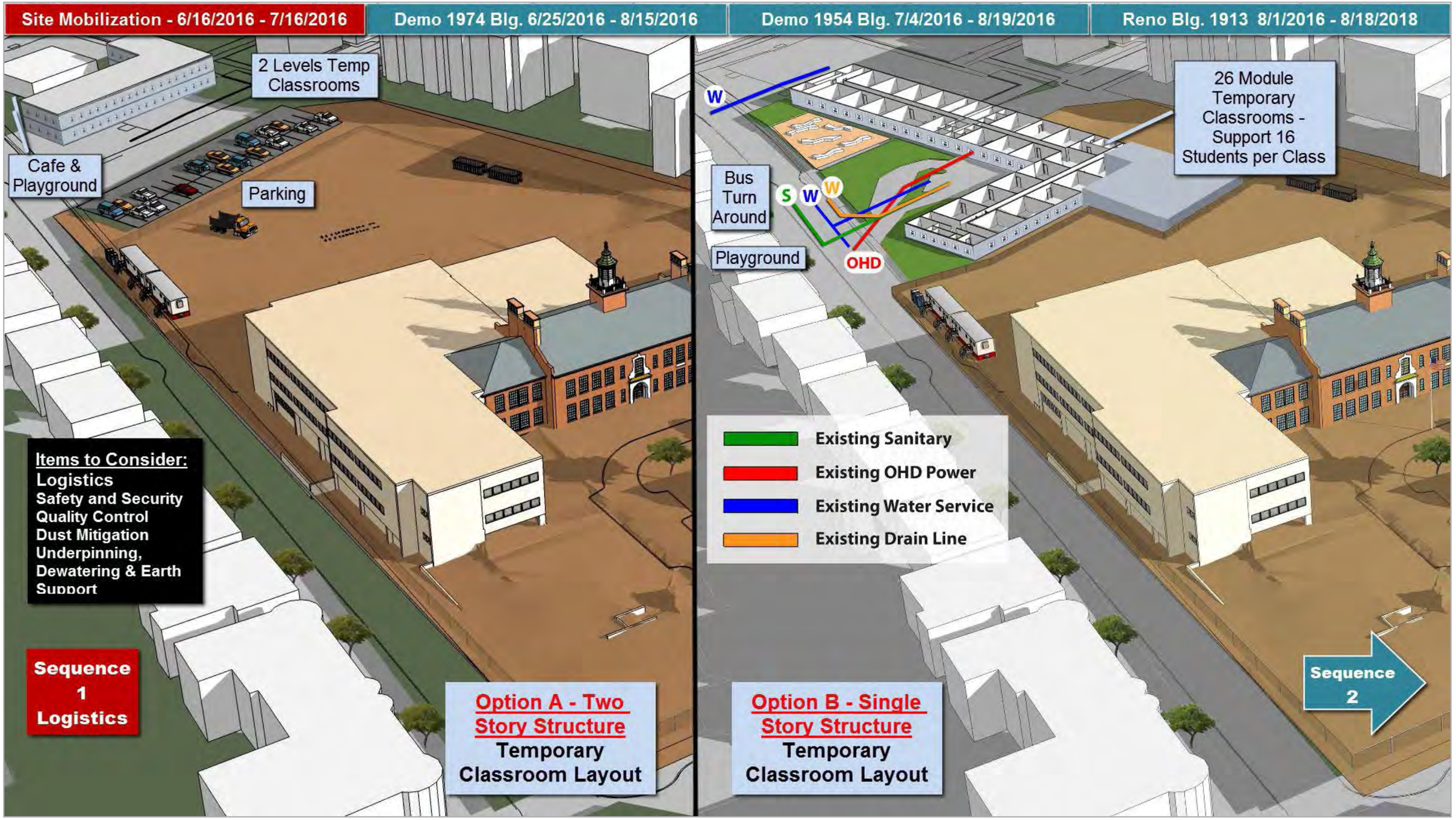
We find constructability or maintenance and operational issues associated with the design early in the preconstruction process

Identify issues with the design and implementation of owner supplied equipment early in the preconstruction process



LOGISTICS TOOLS

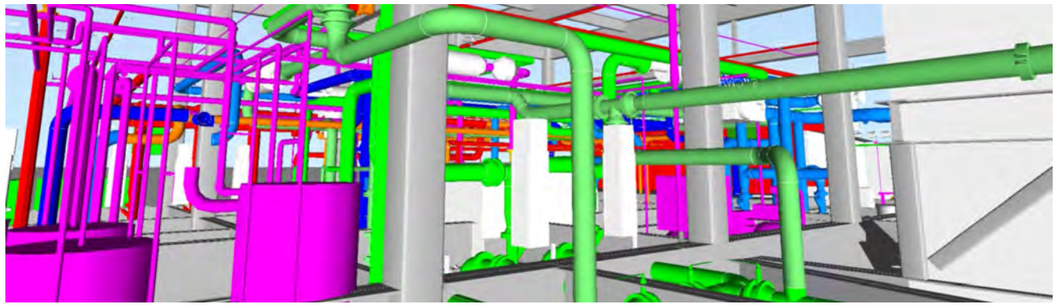
Sample



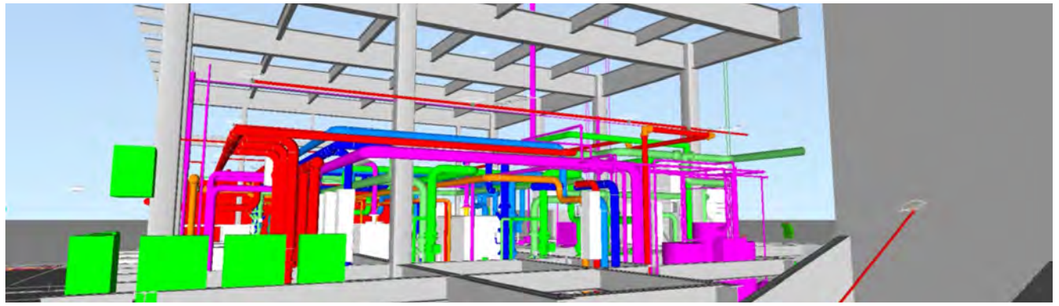
VIRTUAL PLANNING / BIM

Dover School District
Dover High School and
Career Technical Center

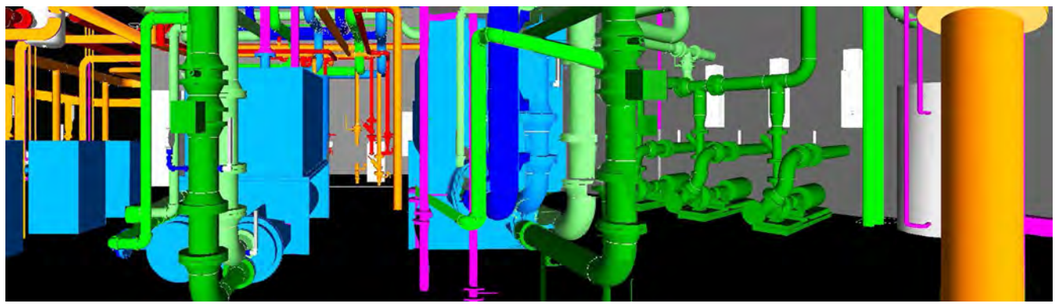
› Highly technical facilities requiring carefully planning and meticulous execution aided by Shawmut's BIM/VDC services.



› Lab building 3D "fly through" animation provided facilities personnel input to equipment service and maintenance requirements. This animation model sample was highlighted at a fund-raising event.



› All lab stakeholders were given opportunity to review and comment on fully coordinated 3D model.



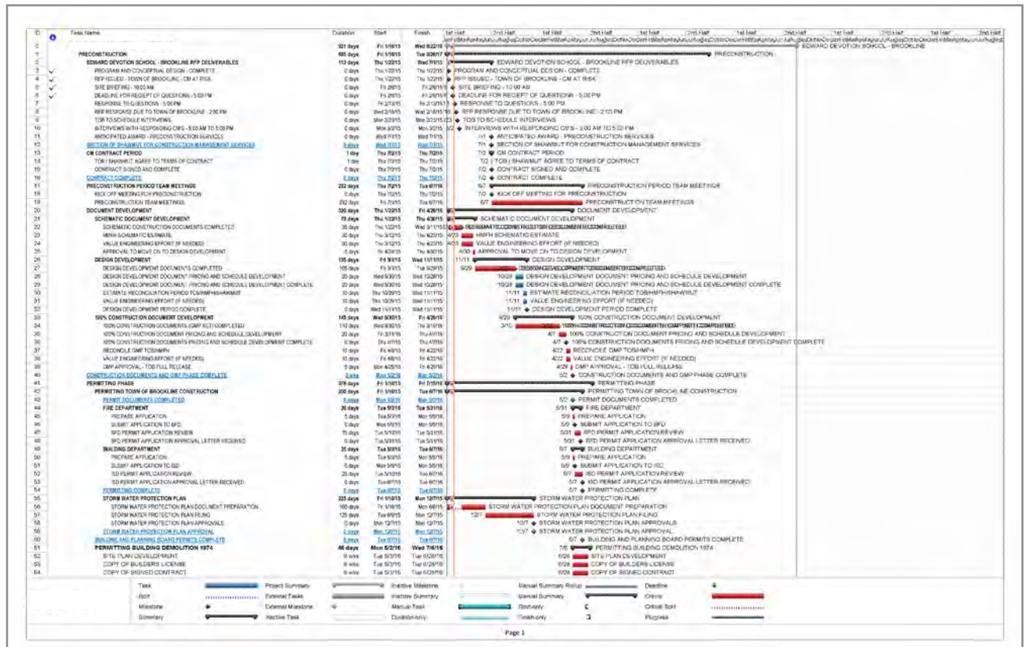
› Successful installation of exposed M/E/P systems at ceiling level is the direct result of early 3D coordination facilitated by Shawmut allowing the design team timely input to coordinated layout.

SCHEDULE MANAGEMENT

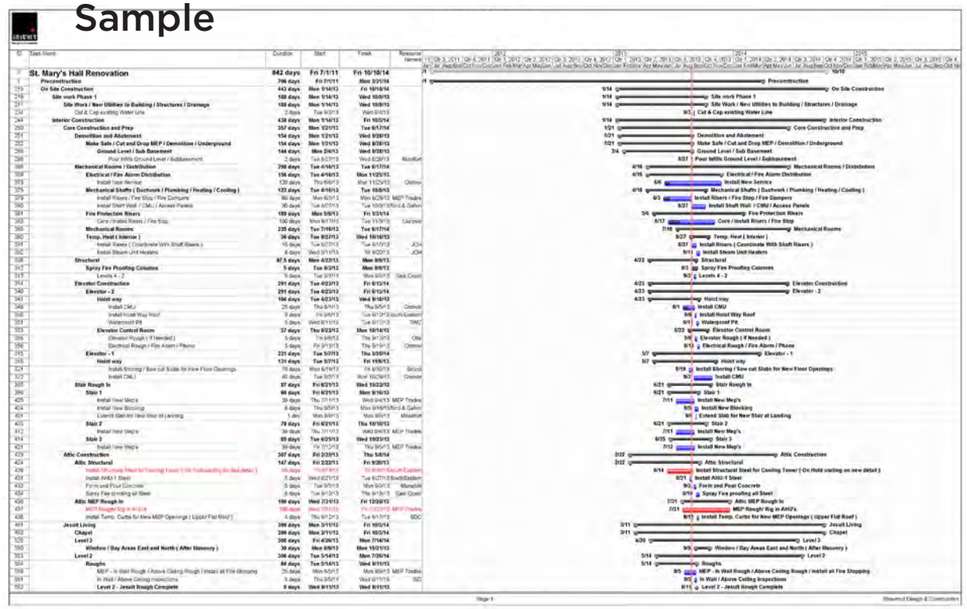
Dover School District
Dover High School and
Career Technical Center

- Scheduling Predictability
  - Long-term planning
  - Precise scheduling
  - Accurate reporting
- Schedule Development
  - Establish an initial project baseline to analyze and measure progress
  - Work sessions with the consultants, subcontractor partners
  - Field staff to establish a highly detailed short-term look-ahead schedule
- Master Project Schedule
  - Design deliverables
  - Estimating deliverables
  - Pre-construction decision dates
  - Building permits and approvals
  - Procurement and early release packages
  - Critical path activities
  - Start-up and commissioning activities
  - Owner move-in activities

Sample



Sample



Dover High School and Career Technical Center Building

Project Specific

AERIAL IMAGES

Dover School District
Dover High School and
Career Technical Center

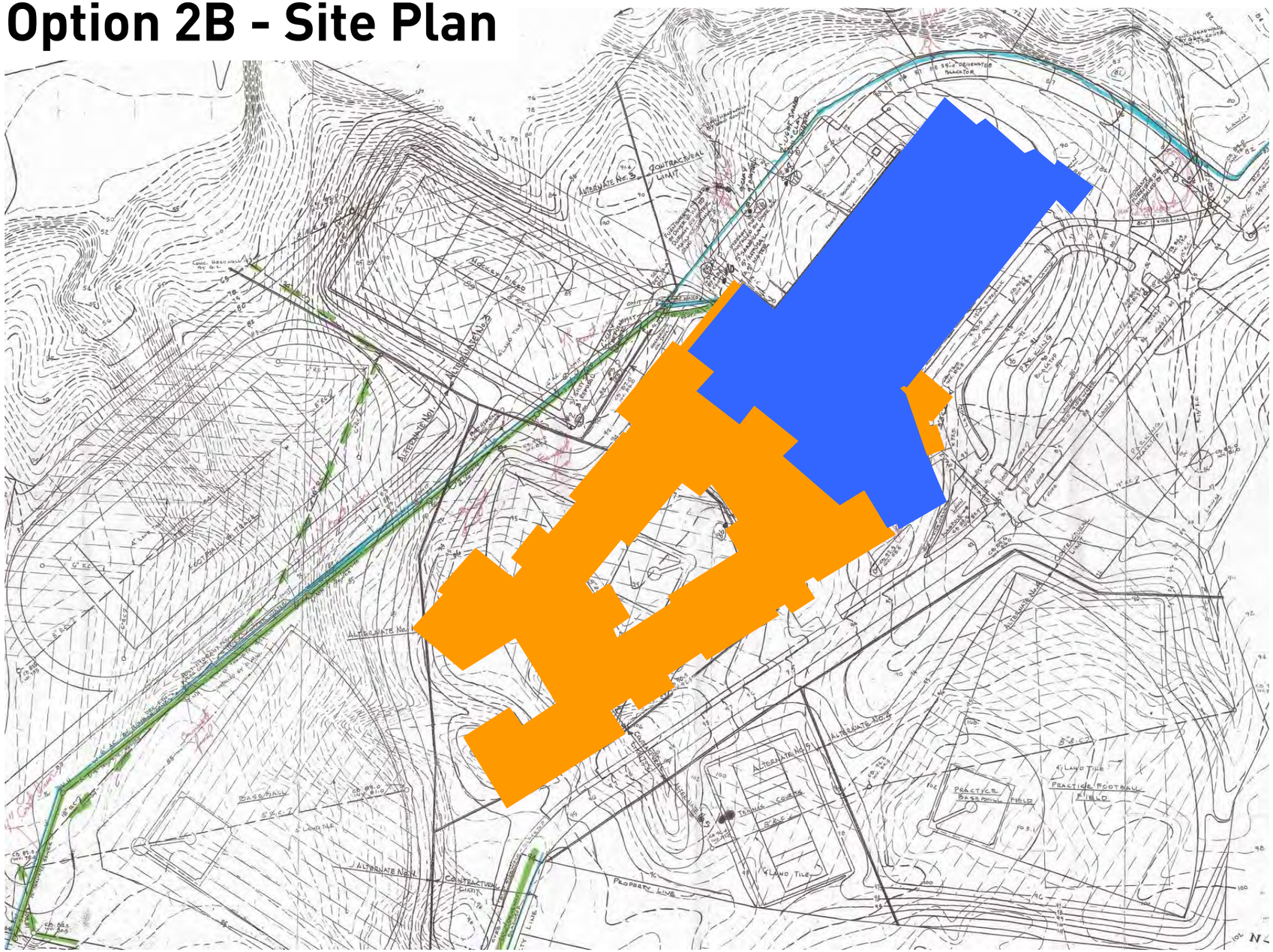
SITE VISIT

Dover School District
Dover High School and
Career Technical Center

SITE UTILITY PLAN

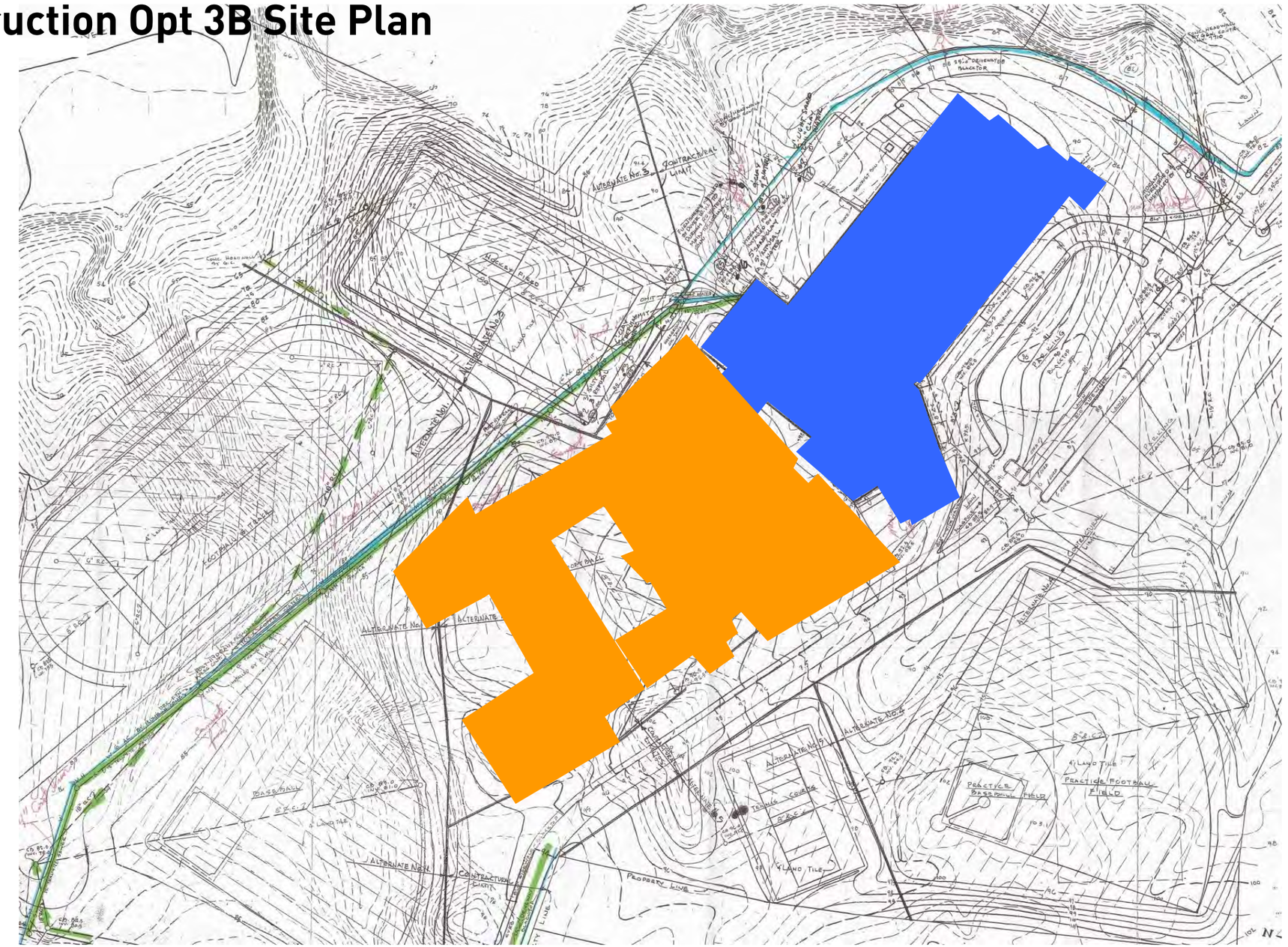
Dover School District
Dover High School and
Career Technical Center

Reno Add Option 2B - Site Plan



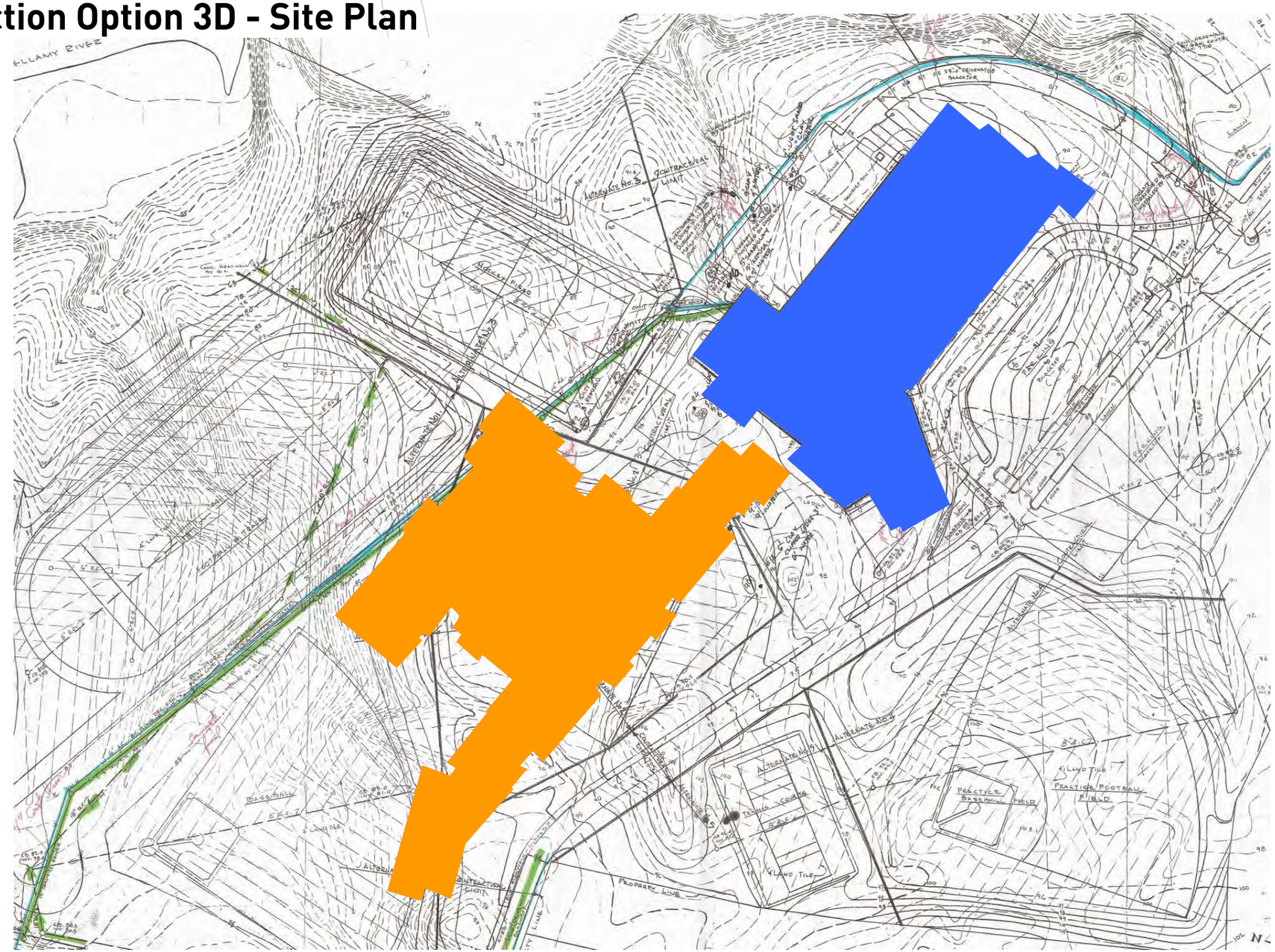
SHAWMUT
Design and Construction

New Construction Opt 3B Site Plan



SHAWMUT
Design and Construction

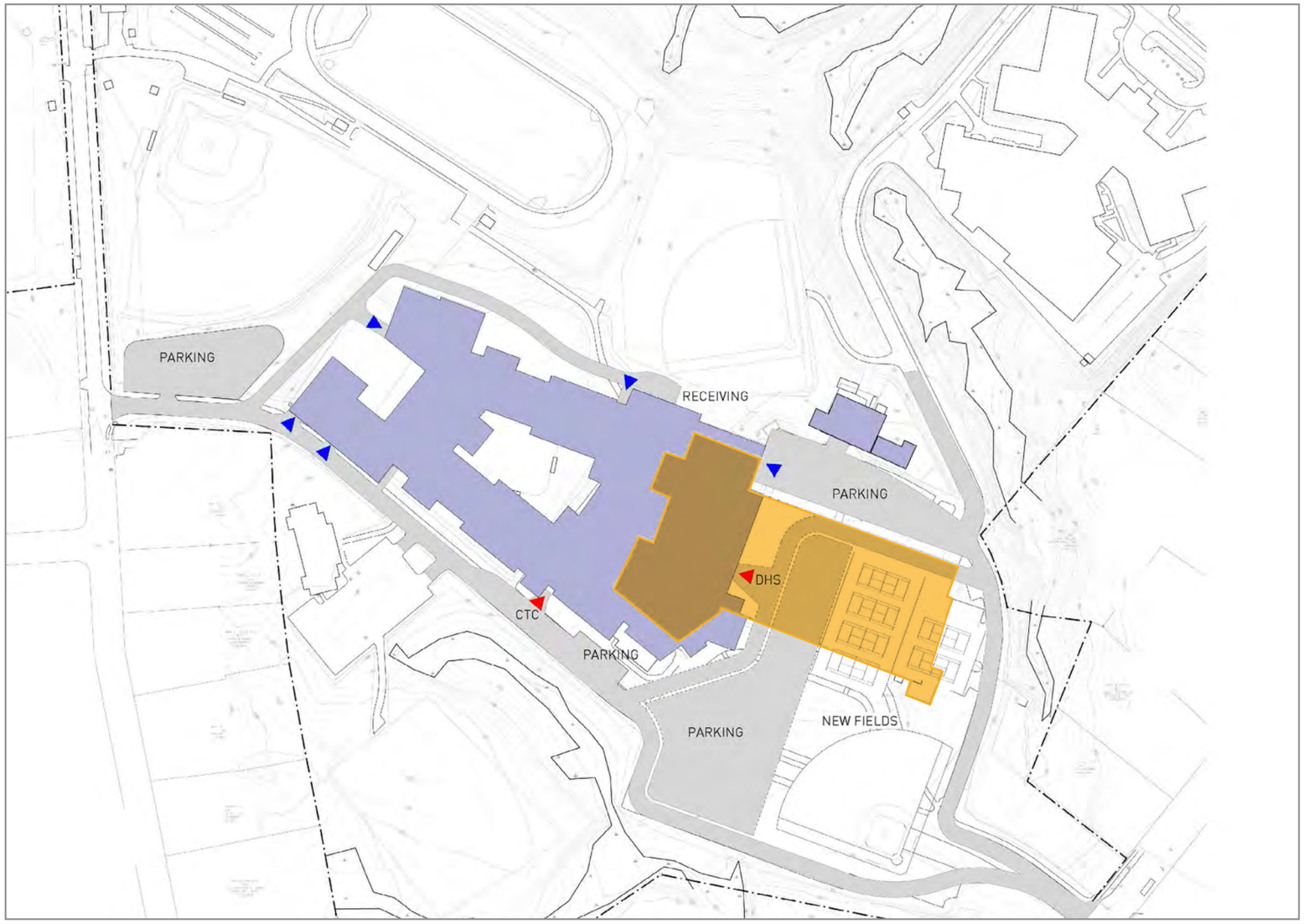
New Construction Option 3D - Site Plan



SHAWMUT
Design and Construction

FLOOR PLAN – RENO ADD OPTION 2B

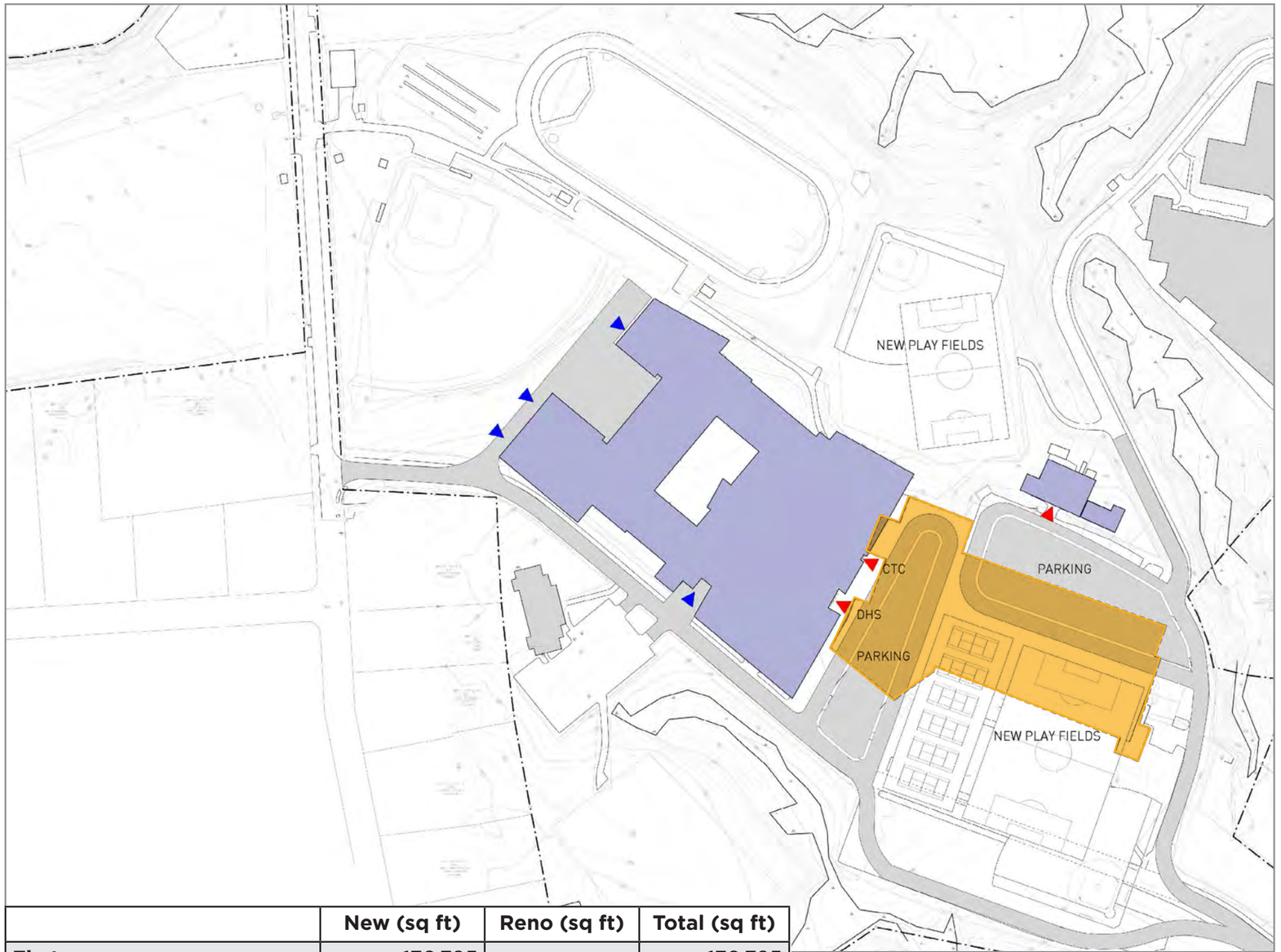
Dover School District
Dover High School and
Career Technical Center



	New (sq ft)	Reno (sq ft)	Total (sq ft)
Ground		12,810	12,810
First	148,086	45,524	193.610
Second	79,814	7,590	87,404
Animal Science	6,500	2,000	8,500
	234,400	**67,924**	**302,324**

FLOOR PLAN – NEW CONSTRUCTION 3B

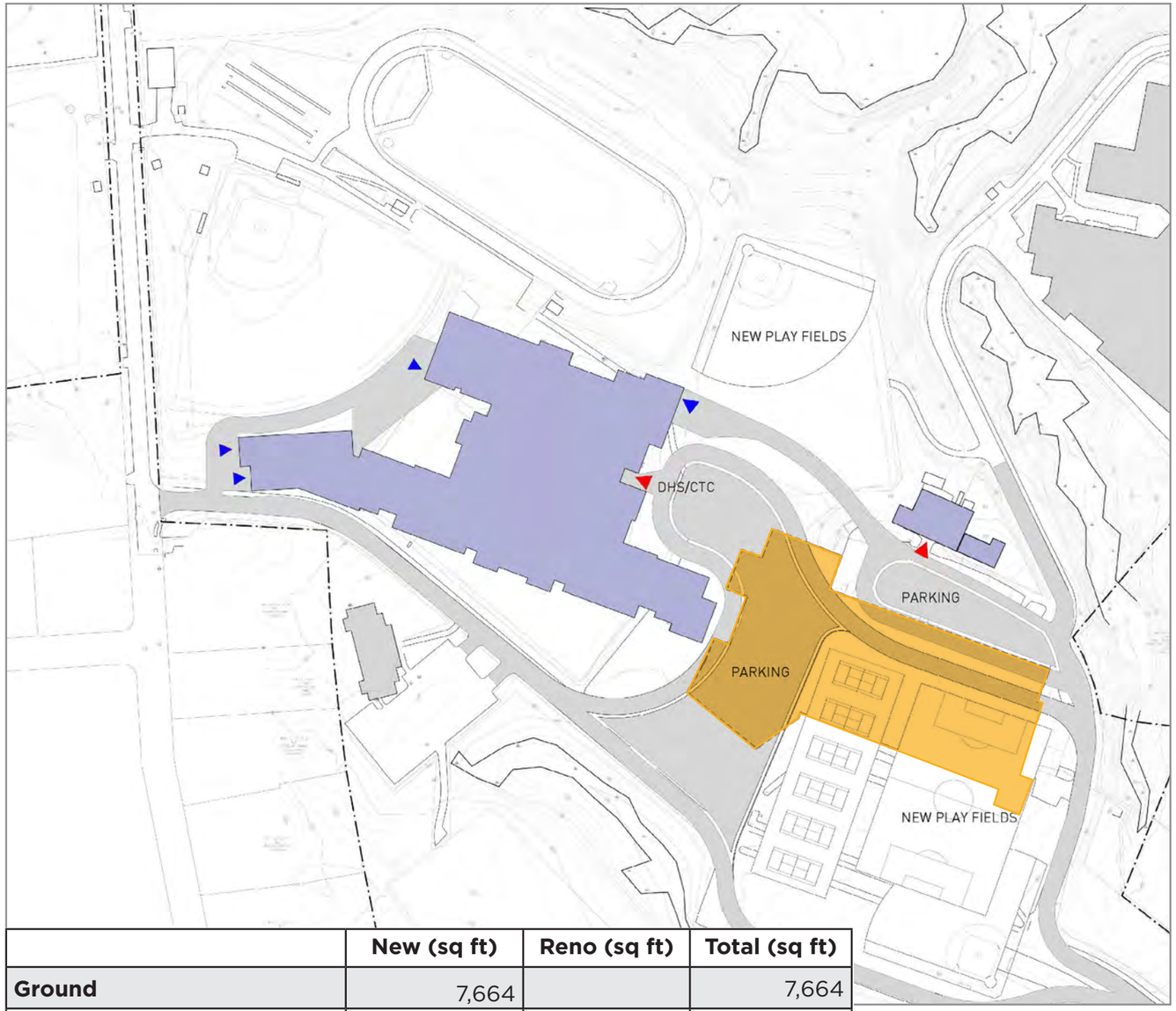
Dover School District
Dover High School and
Career Technical Center



	New (sq ft)	Reno (sq ft)	Total (sq ft)
First	176,795		176,795
Second	78,422		78,422
Third	46,804		46,804
Animal Science	6,500	2,000	8,500
	308,521	**2,000**	**310,521**

FLOOR PLAN – NEW CONSTRUCTION 3D

Dover School District
Dover High School and
Career Technical Center



	New (sq ft)	Reno (sq ft)	Total (sq ft)
Ground	7,664		7,664
First	146,204		146,204
Second	90,149		90,149
Third	49,219		49,219
Animal Science	6,500	2,000	8,500
	299,736	**2,000**	**301,736**

PRECONSTRUCTION REVIEW

DOVER HIGH SCHOOL AND CAREER TECHNICAL CENTER REHABILITATION PROJECT

PRECONSTRUCTION REVIEW

SHAWMUT
Design and Construction

Dover High School and Career Technical Center Rehabilitation Project
25 Alumni Drive, Dover New Hampshire

Programming Requirements:
Designed to meet the needs of 1500 students grades 9-12

General Schedule Deliverables RFQ:
- Issuance of Request for Qualifications: April 3, 2015
- Questions directed in writing to Karen Taylor, Business Administrator k.m.taylor@dover.k12.nh.us by Friday, April 17, 2015 before 9am.
- Deadline for Submissions: April 23, 2015
- Review of Submissions: April 24-May 5, 2015
- Selection of Finalists: May 5, 2015
- Interview of Finalists: May 11 – May 18, 2015
- Proposed JBC Action: May 20, 2015 (estimated based on Interview sliding a week)

HMFH Architects, Inc.

Schedule Timeline:
- Phase 1: including programming, site selection, and concept design: December 2014 – July, 2015.
- Phase 2, Basic Design Services:
  - Schematic Design: July, 2015 – September, 2015
  - Design Development: October, 2015 – December, 2015
  - Construction Documents: January, 2016 – July, 2016
  - Bidding/Negotiation: August, 2016
- Phase 3, Construction (time may vary depending amount of phasing): August, 2016 – August, 2018

Budget and Contract:
- Currently estimated at seventy million dollars $70,000,000
- Minimum general liability limits of $2,000,000.00
- Performance Bonds at 100% of contract and labor/ material bonds at 100% of the contract
- AIA® Document A133TM

Options Summary:
Overall Project Location: West of the School was chosen for both new construction options and potential addition options

Mandatory Criteria for Site Placement:
- Safety -minimize street crossings, ease of access for emergency vehicles
- Minimize impacts on students during construction
- Minimize impact on traffic
- Provide future flexibility and adaptability as community needs evolve over time
- Minimize impact on parking and ball fields to reduce replacement costs
- Pedestrian access to the building during construction
- Servicing for deliveries
- Solar orientation to maximize available natural lighting

Educational Facility Goals:
- Create small learning communities
- Create integrated academic and CTE programs
- Create prominent and centralized Town Square that will be used by all students and by the public as well and will be viewed as the heart of the school
- Provide easy public access to the public career tech spaces such as cosmetology, marketing and culinary arts, ideally as part of the central space
- Provide opportunities for hands-on project based learning and interdisciplinary learning throughout the building
- Encourage a high level of visual connection throughout the school and visual connection to the out-of-doors.
- Provide a range of spaces for different types of learning experiences to take place
- Assure flexibility and adaptability in all planning
- Take in to account safety and security concerns in all planning

Options List:
Option 2B- Renovation of the Gym and Auditorium with a New Addition
Options 3B and 3D- New Construction
- Option 3B – Exterior Courtyard created by Academic Wings
- Option 3D – Eliminates the Courtyard, Adds a 3 Story Academic Wing, and Locates the Gym on top of the locker room to minimize footprint of the building.

Full Renovation of the Existing Building

Option 2B- Renovation of the Gym and Auditorium with a New Addition (Cost Savings)
- New Addition to the West of the Current Building
- Renovation of the Gym and Auditorium (balance of building is demolished after C of O).
- Concern over impact to the students due to close proximity
- Renovations of the boiler plant, Gym, Auditorium and Small Animal barn total approximately 66,000 SF.
- Renovation work would need to be phased over the summer months
- CM required to keep renovations inside of current time frame of the project.
- Existing boilers could be relocated to new building, as they were replaced in 2002 and remain in good working order.
- Gym is in good condition and would need mostly system upgrades.
- Animal Barn is also in good condition and would mostly require system upgrades.
- Option is two stories tall
- New parking, new softball, new tennis courts, in the location of the existing building

Options 3B and 3D- New Construction:
- Both options are sited similar to 2B but do not preserve any of the existing building
- Existing building would be demolished after C of O
- The existing barn would be reused.
- Less Concern over impact to the students due to slightly further away location (+25-ft).
- Two Legs would be three stories in 3B
- One Leg would be three stories in 3D
- New parking, new softball, new tennis courts, in the location of the existing building

Architectural Features of Both 2B Addition and 3B/3D New Building:
- Exterior façade of metal stud back up with brick veneer
- Aluminum windows and curtain wall will make up 30% of the façade.
- Roof will be a white thermoplastic membrane roof.
- GWB with tile wainscot for a majority of the corridor, stairs and town square walls
- Linoleum for corridors, lobbies and classroom floors and rubber floor stair coverings.
- Acoustical ceiling tile for all learning spaces with some exposed ceilings in common areas.
- The Gymnasium in the new option would have a wood floor and CMU walls.
- The Auditorium in any option would have a wood floor at the stage and exposed concrete floor at the seating with carpeted aisles.
- The walls will have wood panels and acoustical treatments and the ceiling will have reflective wood clouds.
- AV/TEL-DATA/WIRELESS/TECH CENTERS
- Sustainable building.
- Student and community gardens, minimized parking and will limit heat-island effect through the use of landscaping and roof material.
- Energy efficiency measures will be met by minimized air conditioning and the use of displacement ventilation to dehumidify the school.
- Water reduction will be achieved through the use of low flow fixtures and no irrigation system.
- Electricity usage will be minimized by use of natural light in 90% of classroom spaces and through the use of automatic daylight dimming systems in 100% of teaching spaces.
- High efficiency light fixtures will also be used.
- The indoor environmental air quality will be enhanced by the use of low emitting materials, improved acoustic quality and providing access to views from all classrooms.
- Ductwork and all absorptive materials will be protected during construction to ensure no mold or contamination is established in the building.
- The facility will receive a full flush out after construction is complete and before occupancy.
- Whenever possible, materials will be selected with recycled content, manufactured from a regional source and use certified wood.

Full Renovation of the Existing Building:
- Approach is based on replacement of mechanical, electrical, plumbing, and fire protection systems and code requirements for life safety and accessibility.
- Greatest impact on students and safety
- Net loss for program space as rooms may be required to be larger (bathrooms/MEP Chases) to meet accessibility
- **JBC** not in favor of this approach but recommend a cost estimate be pursued for this work
- Extended construction period due to phasing

Option:
- Swing Space Req'd for this option – up to a ¼ of the student population would have to be relocated (375 students).
- McIntosh College was a potential lease option for 12 classrooms and other requirements. That space would require significant work, as well as four modular classrooms for capacity (23 students per classroom).

Option:
- Before the reno could start (4) new CTE programs would have to be completed, approx. 1 year has been set aside for this.
- 16 Modular Classrooms would be built on site for approx. 400 students. Once the programs have been relocated and the Modular Classrooms complete, the 400 students would move into the temporary area.

Renovation:
- The renovation would take place over three years in phases and the temporary classrooms/CTE area will be in use through-out that period.
  - **Year One:** Central Interior Classroom Portion to receive new mini-pile foundation and new structural bracing. All three floors would be in construction.
  - **Year Two:** Classrooms in the front of the building would be would be renovated, including replacement of the windows and window framing system. All three floors would be closed off during this period.
  - **Year Three:** Classrooms in the rear of the building would be renovated.
  - **Year Four – Six:** The Career Tech Center Y4, The Gym and Cafeteria Y5, The Auditorium and World Language Y6.

Information below this line would relate to all phases as it would be required to be understood for partial renovation of the existing building (Option 2B), Demolition of the Existing Building (Option 3B and 3D), and the Renovation Option. The below information was originally taken from the RFQ/P Document for Feasibility.

Summary of Feasibility Study
- Approximately 26 acres
- Original high school was designed by Dirsha & Lampron Architects & Engineers, and built in 1967
- 1989, Lavallee / Brensinger Architects were hired to design the Career Tech Center addition
- 2002 McHenry Architecture was hired to design a World Language Classroom addition, once commonly referred to as the "Freshman Academy".
- The 3 buildings making up the High School and CTC **are referred to as the 1967 building, the 1989 building and the 2002 building**.
- The current school is approximately 250,000 square feet
- 1500 full time Dover High School students and 75 Career Technical Center students

Some of the larger capital projects included:
- 1970 addition of tin storage shed added to the grounds
- 1991 part of the girls locker room was converted to a weight room
- 1999 the administration and art rooms were renovated,
- 2000 an accessible ramp was constructed to connect the main entry to the first floor level

PRECONTRUCTION REVIEW

• 2002 a boiler replacement project was undertaken
• 2007 new bleachers were installed in the gymnasium,
• 2008 the roof was replaced
• 2009 a new barn was built for the Animal Science Career Tech Program
• 2010 new flashing was installed on the Freshman Academy
• 2014 the home side gym bleachers were replaced.

Key Concerns in the Report:

- Lateral and Seismic Loading is a concern for all three structures. Particularly in the 1967 building, for which a complete seismic retrofit would be recommended.
- The nature of the existing columns, footings, and floor framing system make seismic upgrades challenging.
- Concrete Entry Canopy seismic resistance and on-going maintenance.
- Lack of Code Compliant Accessibility
- Lack of Code Compliant Stairs, Handrails, and Egress Doors
- Poor Artificial Light
- Thermal Control Issues
- Inefficient Walls and Roof Systems
- The Kalwall Exterior Wall System should be replaced at the 1967 Building
- MEP/FP Systems should be replaced as part of substantial renovations
- Existing floor heights on the 2nd and 3rd floors are right and will require increased planning or options for duct work etc.

Existing Conditions:

- In 2008 the roofing system was replaced with a TPO roofing system. Concern over thermal breaks at roof fasteners as a potential precon exploratory review item. The roof's have a 20 year warranty.
- The 1967 portion of the building is made up from two different wall systems – CMU, Rigid, Brick Façade and a Kalwall System. Replacement of the Kalwall Panels is recommended due to a 50 year lifespan of the system. Efflorescence is visible in some areas from possible issues with the air space/cavity behind the brick. Sealant around the windows, doors, and control joints have met there lifespan.
- The 1989 and 2002 additions have similar CMU, Rigid, and Brick Façade systems. Efflorescence is visible and needs to be reviewed to protect against further damage. Overall the exterior finishes have held up well.
- 1967 Windows are original to the building. ¼" tempered glass in aluminum frames. 21 out of 52 windows have no views to the exterior. The 2002 addition has aluminum frames and double glazing. These windows have approached their half-life and have been reported to have significant drafts. The windows at the lower level on the North Side are at grade and need to be shoveled out.
- Auditorium – original fixed metal seating, too steep to meet ADA, accessibility, listening devices, movable partitions no longer work (and the parts are un-available, given the size of the Auditorium it may be cost effective to renovate this area.
- Gymnasium – 13, 690 sq ft., the floors have been maintained but should be replaced, the overall condition is good but needs renovations. Settlement cracking was noted in the CMU. Bathrooms and Locker Rooms are in poor condition.
- Cafeteria and Kitchen – The existing Cafeteria and Kitchen are located on the lowest level of the building adjacent to the loading dock. Large trucks that service the school can't make the turn into the loading dock and the loading dock has been abandoned. Currently they use a loading dock at the other end of the building and transport the goods through the building. Kitchen is past it's useful life and the flooring has had issues with cracking and heaving.
- Library – central to the school on the main level, with no natural light. Needs a complete renovation.
- Career Technical Spaces – Overall in good condition but does not meet the programmatic needs of the department. A recent flood has caused mold to grow on the lower floor. Renovation needed.
- Walls and Floors – Typical walls are CMU and are in fair condition. Does not lend itself well to renovation and programmatic changes. Flooring in the 1966 portion is VCT with the exception of the Gym. The flooring materials in total are ACM related and will require abatement/remediation. The 1989 and 2002 additions have similar flooring materials that do not contain ACM but require replacement.
- ACT – a full replacement of all ceiling materials should be part of any renovation.

- Stairs – a full replacement/modification of all stair railings to meet code. Accessibility is a concern. Replacement of the elevator in the 1967 addition would be required to meet ADA codes.
- Structurally – Areas of live load deficiency/spacing of framing, the three story 1966 building was originally designed as a spread footing building for the 3 story section but the designed later turned to concrete filled pipe piles prior to construction. The additions are founded on a spread footing design, as is the balance of the lower 1966 sections. In all the building(s) do not have any expansion or isolation joints as constructed. Snow drift areas between lower and higher roof lines, especially over the locker rooms.
- Structurally/Seismic – Introduction of structural steel braced bays to resist lateral loads for the 1966 Building. The existing columns are a tube design with an "outer shell" of concrete wrapped in steel. In order to introduce these connections the fireproofing concrete and outer shell would have to be removed to make the connection. The existing floor slabs were cast with Steeltex draped fabric forms and the deflected shape of that system complicates the installation of bracing. The existing pile foundations were not sized or detailed in anticipation of uplift loads. While the 2002 building would not require extensive work to comply, the 1989 building would require extensive structural upgrades to comply with seismic and wind standards. This would again be with braced bays added to the existing building frame.
- MEP/FP – The mechanical systems in the 1966 and 1989 buildings are past their useable lives. The 2002 building mechanic systems are in use-able condition.
- Exterior Site Upgrades – A complete rebuild of several parking areas, some grind and overlay, and ADA/Accessibility Upgrades Required through-out .

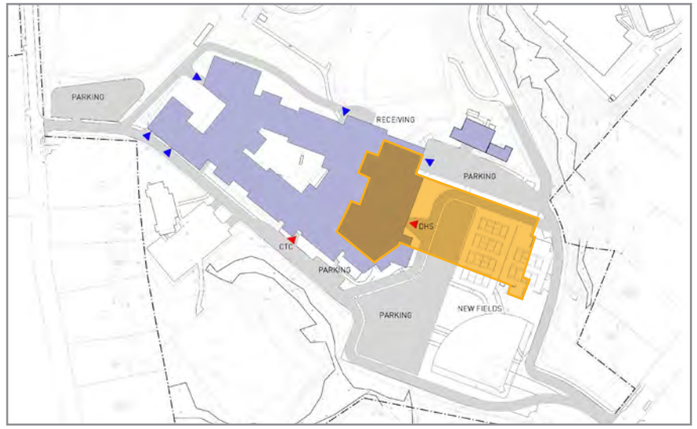
Reno Add Option 2B - Site Plan

New Construction Opt 3B Site Plan

New Construction Option 3D - Site Plan

Full Rehabilitation

DESIGN OPTIONS



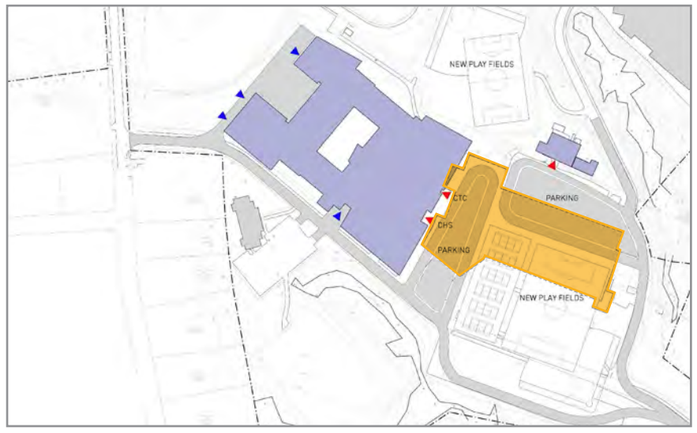
2B Reno Add Option | Reno: 67,924 sq ft | New: 234,400 sq ft | Total 302,324

Opportunities

- Less Total Demolition
- Sustainable approach through “REUSE”
- Cost savings potential to be studied
- Utilize existing Boilers
- Re-using existing superstructure of (Gym / Audiotrium)
- Re-Using existing TPO roofing
- Center Courtyard

Challenges

- Logistical Concern over proximity to existing school (Most impact of 3)
- Renovation (Tight Summer Schedule)
- Potential Risk with existing conditions (Gym / Auditorium / Boiler Plant)
- Connection to existing to existing superstructure
- Varied Geometry of the envelope
- New Façade East Gymnasium post demolition
- Phased Occupied Renovation
- Underpinning required at West Side of existing Gym required for footings
- Weather Tight Protection required post demo of existing
- Emergency Egress through site
- Risk for Code Compliance (ADA and Seismic @ Existing)
- Steepness of the existing seating at Auditorium
- Settlement Cracking at the Existing Gym



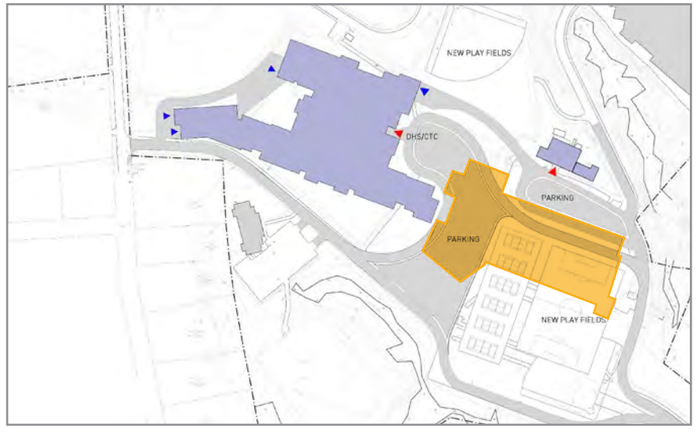
3B Reno Add Option | Reno: 2,000 sq ft | New: 308,521 sq ft | Total 310,521

Opportunities

- Mass Demolition of existing
- More uniform geometry of the envelope
- Shortest Overall Schedule
- Logistical Concern over proximity to existing school
- Smallest overall footprint
- 3 Story construction
- Center Courtyard

Challenges

- Logistical Concern over proximity to existing school (Middle impact of 3)
- Underpinning required at West Side of existing Gym required for footings



3D Reno Add Option | Reno: 2,000 sq ft | New: 299,736 sq ft | Total 301,736

Opportunities

- Mass Demolition of existing
- No Center Courtyard
- Least impact to students based on proximity

Challenges

- Varied Geometry of the envelope
- Underpinning required at West Side of existing Gym required for footings
- 2nd Floor Gym

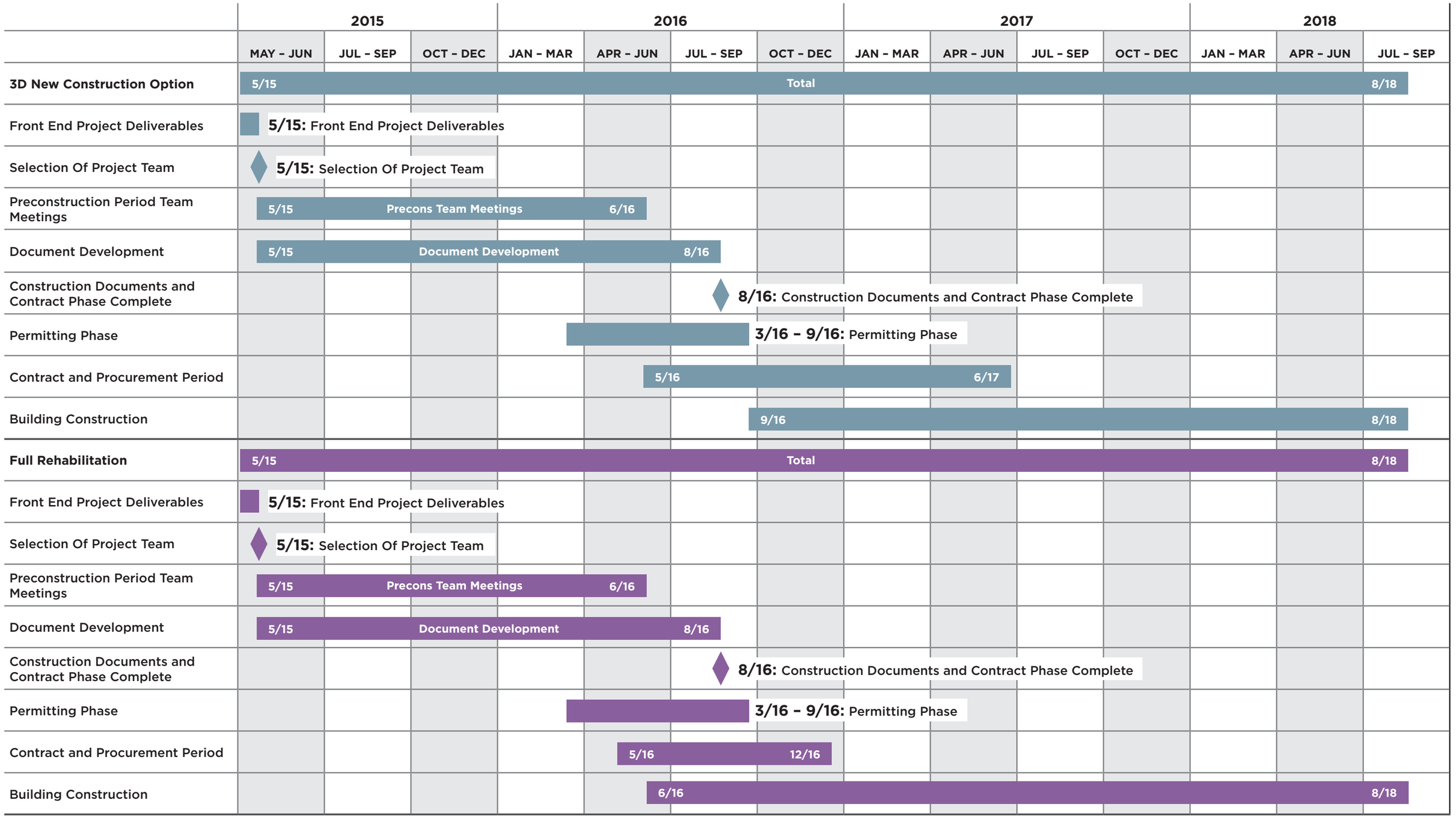
SCHEDULE ANALYSIS

Dover School District
Dover High School and
Career Technical Center

	2015			2016				2017				2018		
	MAY – JUN	JUL – SEP	OCT – DEC	JAN – MAR	APR – JUN	JUL – SEP	OCT – DEC	JAN – MAR	APR – JUN	JUL – SEP	OCT – DEC	JAN – MAR	APR – JUN	JUL – SEP
2B Reno Add Option	5/15 Total													8/18
Front End Project Deliverables	**5/15:** Front End Project Deliverables													
Selection Of Project Team	**5/15:** Selection Of Project Team													
Preconstruction Period Team Meetings	5/15 Precons Team Meetings				6/16									
Document Development	5/15 Document Development					8/16								
Construction Documents and Contract Phase Complete						**8/16:** Construction Documents and Contract Phase Complete								
Permitting Phase						**3/16 – 9/16:** Permitting Phase								
Contract and Procurement Period					5/16				6/17					
Building Construction					6/16									8/18
3B New Construction Option	5/15 Total													8/18
Front End Project Deliverables	**5/15:** Front End Project Deliverables													
Selection Of Project Team	**5/15:** Selection Of Project Team													
Preconstruction Period Team Meetings	5/15 Precons Team Meetings				6/16									
Document Development	5/15 Document Development					8/16								
Construction Documents and Contract Phase Complete						**8/16:** Construction Documents and Contract Phase Complete								
Permitting Phase						**3/16 – 9/16:** Permitting Phase								
Contract and Procurement Period					5/16				6/17					
Building Construction					6/16									8/18

SCHEDULE ANALYSIS

Dover School District
Dover High School and
Career Technical Center



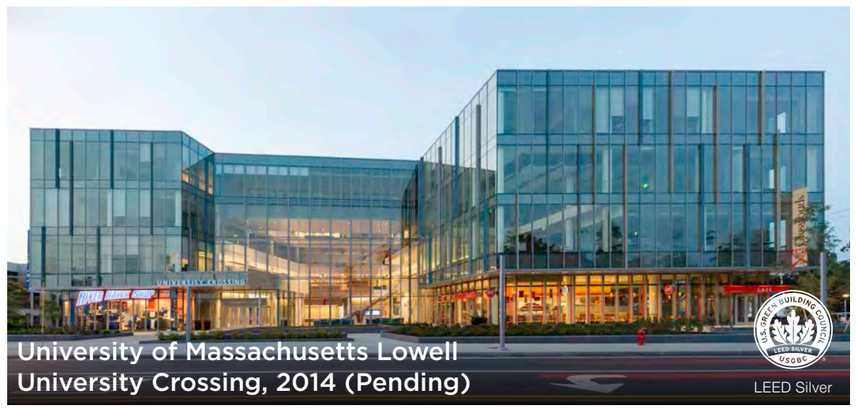
LEED® AND SUSTAINABILITY

- Construction activity pollution prevention
- Construction waste management
- Record keeping for regional and recycled materials
- Certified wood
- Low emitting materials
- Construction indoor air quality management plan
  - › IAQ before occupancy

MORE THAN
70
LEED Accredited
PROFESSIONALS

Uxbridge New High School, 2012

New Greenfield High School, 2013 *(Project in Progress)*
LEED Silver



University of Massachusetts Lowell
University Crossing, 2014 (Pending)
LEED Silver

UMass Amherst
Hampshire Dining Commons Renovation, 2013
LEED Gold

7 LEED
PLATINUM

37 LEED
GOLD

21 LEED
SILVER

4 LEED

4 **MA-CHPS**

SAFETY FOCUS
WE BUILD ON SAFETY

.67 SHAWMUT'S EMR
Far Lower Than the National Average

Dover School District
Dover High School and Career Technical Center

Jobsite Safety	– 100% Safety Orientation and OSHA-10 Training for Everyone On-Site – Daily Site Inspection by Superintendent – Routine Site Inspection by Safety Officer – Job Hazard Analysis (JHA's) Performed for all High-Risk Work and Must be Approved by Superintendent and Safety Department	
Site-Specific Safety Focus	– Finalize and Publish Site Specific Safety Manual – Occupied Campus & Community Safety are #1 – Indoor / Outdoor Air Quality – Pedestrian / Vehicular Access – Worker Decorum – Emergency Procedures	

M/E/P AND SHAWMUT'S ENGINEERING SERVICES DIVISION

Dover School District
Dover High School and
Career Technical Center

- System Level Evaluation & Options for New Mechanicals
- M/E/P Design and Constructability Review
- Evaluate Temporary Heating, Cooling and Life Safety Systems

- Identify Prefabrication Opportunities
- Quality Control Management During Construction
- Management of Detailed M/E/P Pre-Start, Start-Up, and Commissioning Schedules
- Enhanced Owner-Operating Training

EDUCATIONAL OPPORTUNITIES AND CAMPUS OUTREACH

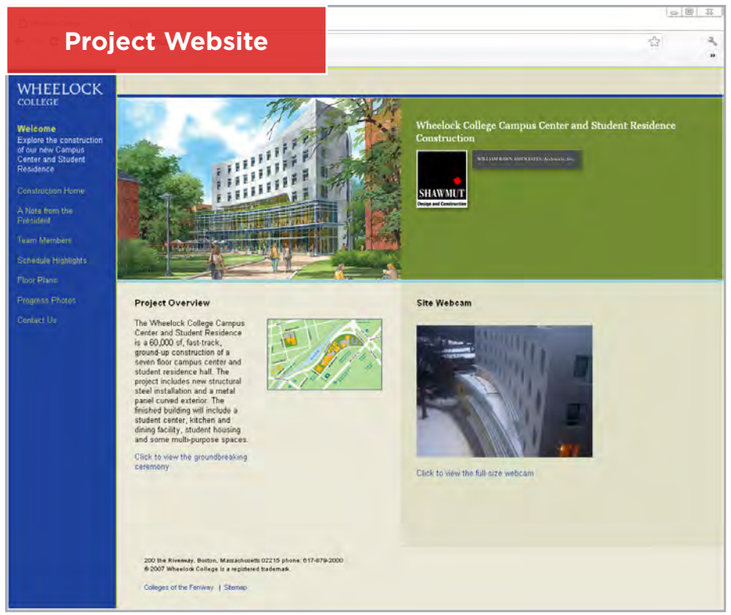
Dover School District
Dover High School and
Career Technical Center

- Web based updates
- “Ask Parviz the Super” email address/blog
- Construction project newsletter
- Guest speakers
- Campus outreach

Construction Site Kiosk

On-Site Classes

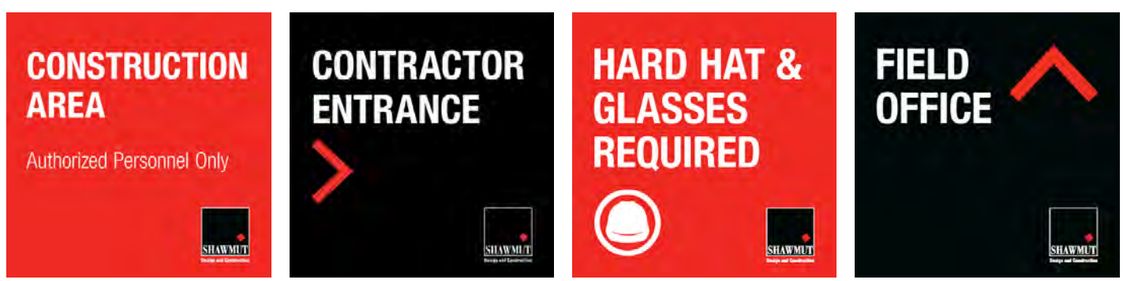
Project Website



Pull Planning Simulations

Field Training Opportunities

Construction Site Signage



TOGETHER. LET'S BUILD.

Dover School District
Dover High School and
Career Technical Center

- A collaborative team environment with some healthy tension mixed in—all working together towards a common goal.
- We're innovative. We'll find the right solution, implement it and return the considerable value to the Dover School District.
- Our teams exhibit qualities of being an owner. We take pride in our work and always strive to find better ways to do things and exceed your expectations.
- Proactive planning = proper and efficient execution.
- We'll listen to the Dover School District and HMFH Architects. We'll understand your goals and intent but make them our own.
- Shawmut believes in a trusting client relationship with complete openness, transparency and flexibility.
- **Certainty of outcome**