NASHOBA
Regional School District

Feasibility Study

10 MARCH 2008

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PART 1 – INTRODUCTION

Purpose:

The Nashoba Regional School District selected LPA, in May 2007, to study the feasibility of 1) relocating the District Administrative Offices, and 2) providing additional educational and support space at Nashoba Regional High School

The District offices are presently located in the Emerson Elementary School Building in Bolton, in space slated for renovation/reuse as classrooms. The NRHS, although having undergone a significant renovation/addition project in 2002, has since experienced an enrollment increase of approximately 50 students/year and needs additional general classrooms, science labs, cafeteria and support spaces.

Process:

Phase 1 – Documentation of existing conditions

- Available drawings, maps and other data was collected.
- Applicable codes, ordinances and regulations were identified, researched and summarized.
- Building and site conditions were field verified during onsite visits.
- Existing conditions site and floor plans were drawn in AutoCAD format.

Phase 2 – Programming

- LPA met with District Administrators to discuss program requirements. The 2006 Kang Report (refer to appendices) was utilized, with minor modifications, as the basis for the District Offices Space Needs.
- Educational/support space requirements were determined by NRHS and District Administrators during meetings with LPA.
- A written Building Program, including description/quantity of spaces, SF requirements, adjacencies, and other data that would influence design, was prepared. The Building Program was submitted to, and approved by, NRSD Administrators.

Phase 3 – Design

- Schematic Design options were developed, in site plan and 3D massing form, for new construction, addition and renovations.
- Merits and limitations were identified for each design option.
- Design options were presented to the Facilities Committee.

Phase 4 – Recommendations

- Preliminary cost data was established based on SF area of proposed work. Budget recommendations included both construction costs and "soft" costs such as A/E fees, testing, furnishings & equipment, contingencies, etc.
- A final written report and presentation graphics were incorporated into a format suitable for public forum and town meeting presentation.

Executive Summary:

The programming phase of this study identified a combined District Offices/NRHS need for approximately 28,000 SF of space (11,000 SF District Offices, 13,000 SF NRHS educational space and 4,000 SF "Add Alternate" NRHS Cafeteria and Presentation Room space.

The scope of this study was limited to the 45 $\pm$ acre NRHS site. LPA also field documented and made a preliminary assessment of the Prescott and Memorial Buildings in Lancaster; although these buildings were not pursued further.

The NRHS site is served by an onsite well (domestic and fire protection water) and an onsite sewage treatment plant. In addition to the substantial site development constraints associated with these two items, there are wetlands, a flood zone and an underground gas main to contend with. The athletic fields are actively used and covered, along with parking areas, driveways and the existing building(s), most of the site. In short, there are limited options for placement of new buildings or additions.

In 2002 the High School building and site were substantially renovated and a new performing arts addition was built. Mechanical/electrical systems were replaced and have sufficient capacity to serve the proposed new spaces. The building, as part of an extensive project such as the 2002 renovation, would have been required to comply with applicable accessibility, life safety, seismic and other building codes; or, variances would have been granted. It should be noted that Building 2 (areas C, D & E; or the E/T shops, Cafeteria/Kitchen, Administrative Offices and Physical Education spaces), already exceeds the area allowed by code, and required a variance for the 2002 renovation project. Further renovations/additions to Building 2 will require variances and/or the insertion of new fire walls. Also noteworthy is the impending issuance of the seventh edition of the MA State Basic Building Code, tentatively scheduled for March 2008 (although its issuance has already been delayed several times). Once issued, there will be a 6-month period during which either the existing or new building code may be implemented. This new edition of the code, modeled on the International Building Code (IBC), is expected to differ significantly from the present 6th edition code, and will require an in-depth code study to determine its implications.

Three (3) basic design options were identified. All options incorporate a separate addition for the "Add Alternate" Cafeteria space. The design options can be described as follows:

Option 1:

Site: New tennis courts and parking built south of the soccer game field.
District Offices: New free-standing 1-story building and parking constructed on the existing tennis courts.
NRHS Educational Space: New 2-story addition constructed adjacent to the west Classroom Wing.
Add Alternate Presentation Room: New 1-story addition adjacent to the gymnasium entrance.

Option 2:

Site: New parking area built south of the soccer game field.
District Offices: New 2-story addition/renovation over, and adjacent to, the existing NRHS Administrative Offices,
NRHS Educational Space: New 2-story addition constructed adjacent to the west Classroom Wing.
Add Alternate Presentation Room: New 1-story addition adjacent to the Gymnasium entrance.

Option 3:

Site: Relocated driveway and parking area adjacent to baseball field; and new parking area built south of the soccer game field.
District Offices: Lower level of 2-story addition built adjacent to the north end of the west Classroom Wing.
NRHS Educational Space: Upper (new Media Center and Presentation Room) and partial lower (science labs) levels of 2-story addition built adjacent to the north end of the west classroom; and renovated former media center (general classrooms).

The three design options were presented to the NRSD Facilities Committee in November 2007, along with supporting graphics, merits/limitations and a list of recommended criteria for evaluating and selecting a preferred option.

Total project budget recommendations, for each option are included in Part 4 of this study. As of this report, there was no consensus or preference for a particular design option, and LPA understood that alternative sites and/or leased space were under consideration for the District Office space. Regardless of what is decided, it is highly recommended that NRSD involve MSBA as soon as possible by submitting a Statement Of Interest.

Limitations:

The scope of this study is limited to schematic design solutions. Cost data, in particular, is calculated on a square foot basis at this level of design. Existing conditions site plans were developed from available sources and are not, unless noted otherwise, based on field property line surveys, soil borings, wetlands delineation, etc. Exhaustive hazardous material surveys and testing were not conducted. Further design development and site investigation is recommended, once a schematic design is approved, to obtain more information.

PART 2 – EXISTING CONDITIONS

Narrative: The existing conditions were documented from various sources during the summer of 2007. Contract documents from the 2002 renovation were made available by the Owner and generally served as the base for AutoCAD format site/floor plans prepared by LPA. LPA made several site visits to field verify existing conditions and take photographs. Online GIS mapping was used to identify site features (i.e. wetlands, flood zones, well protection zones, soil types, etc.) with potential impact to design.

Site: The High School is served by an onsite well that provides water for domestic and fire protection purposes. The well is located adjacent to the mechanical room on the north side of the school. Water is pumped via a 4" supply pipe, to underground pump house and storage tanks (4,000-gallon domestic and 40,000-gallon fire protection) located adjacent to the east end of the track and constructed in 2002. MA DEP has jurisdiction over the well (ID #2034010-01G) and any proposed activities within Zone 1 radius of 286' and Interim Wellhead Protection Area (IWPA) radius of 789'. Although no work of any kind is allowed within the Zone 1, MA DEP previously allowed the 2002 building expansion due to special circumstances. Any new work in the Zone 1 would have to be directly related to the maintenance of or improvement to the well or associated systems, and would require DEP approval. New work within the IWPA is not anticipated to be an issue, in this case, because the onsite sanitary waste treatment plant is well below its approved design capacity.

The High School is also served by an onsite sanitary waste treatment plan located on the west side of the site adjacent to the student parking area. The plant was constructed in 2002 and was designed to accept 12,000 gallons per day (GPD). The High School is currently discharging 2,000-3,000 GPD with a recent listed peak of 6,000 GPD. There is also potential, by utilizing an available leaching field, to increase the design capacity to 24,000 GPD.

The science labs discharge acid waste into a 5,000-gallon underground tight tank, with leak detection monitoring system, located at the south end of the west Classroom Wing. The acid waste system was part of the 2002 renovations.

Site drainage includes catch basins, manholes and piping tied into a main detention basin west of the student parking area. Site drainage improvements were made in 2002 and focused on the treatment plant, front of the building, auditorium area and the new detention basin. Pitched roofs are allowed to drip onto a crushed stone strip with perforated pipe drain. Low-slope roofs are drained by internal roof drains tied into the site drainage system. An increase in the amount of impervious area (i.e. pavement, rooftop, etc.) on the site may require an in-depth study of the existing storm drainage system and its capacity.

The athletic fields are bisected, on an east-west axis, by an underground gas main and easement. A relocated propane tank is indicated on the 2002 drawings, adjacent to the main electrical transformer, but was not observed by LPA. A 100 ± gallon propane tank was observed, next to the kitchen in the loading dock area, and is presumed to provide gas for cooking and/or science labs.

The building's boilers are fed from a 10,000-gallon underground fuel oil storage tank, with leak detection monitoring system, located off the southeast corner of the running track and installed in 2002.

The main electrical service enters the site via overhead wires from Green Road to a utility pole adjacent to the new Auditorium. From there, it runs underground to a pad-mounted transformer next to the grandstands and then into the mechanical/electrical room.

The emergency power needs of the building and life safety systems are provided by a pad-mounted emergency generator located between the underground water pump house and the tennis courts. The sanitary waste treatment plant is independently served by its own emergency generator.

Site lighting was upgraded, as part of the 2002 renovation, with a combination of pole-mounted high-intensity shielded fixtures and building-mounted fixtures.

Site paving and sidewalks are predominately bituminous concrete with some Portland cement concrete paving at entrances, stairs and ramps. Curbing, where provided, is typically granite. Paving installed during the 2002 renovation is in good condition; there are, however, some older sections (i.e. at rear courtyard adjacent to Cafeteria) of bituminous paving that are deteriorated. There are a total of approximately 355 parking spaces onsite, including 13 accessible spaces. Curb cuts are located at sidewalks to provide an accessible route from parking/loading zones to the building entries and the athletic field grandstands.

In addition to the High School building, there are several freestanding accessory structures on the site. These include the waste treatment plant, the storage garage near the Auditorium, the grandstands with platform lift, the modular building next to the baseball field, the baseball dugouts, and various storage containers used for athletic equipment.

In the loading dock area, there is one large (30 CY +) dumpster/trash compactor and two smaller recycling dumpsters.

The athletic fields include 1-running track, 1-football/game field, 1-baseball game field, 1-softball/field hockey game field, 1-soccer practice field, 1-soccer game field, and 3-tennis courts.

The USDA online survey indicates the major portion of the site as "Udorthents, smoothed", which is defined as "made land over firm loamy basal till; 80" + to depth of restrictive feature", and as "urban land", or that which has been developed with buildings, pavement, etc. The remaining area is divided into categories, relating to development potential for small commercial buildings, of "very limited" (westernmost portion of site including the heavily forested area near water treatment plant and the soccer same field) and 'somewhat limited" (narrow strip along Main/Green Streets and east edge of property including tennis courts). The primary reasons for limited development potential are the slope of the land and, in the "somewhat limited" category, shallow depth to saturated groundwater zone. The "udorthents, smoothed" and "urban land" areas are not rated for their development potential.

Online FEMA mapping indicates the north side of the softball field as being in a "B" zone. The impact of this flood zone should be minimal, if any, as the "B" zone is defined as an "area between limits of the 100-year and 500-year flood". Flood-resistant requirements typically are not triggered unless the proposed work is in the 100-year flood zone.

The area to the west of the waste treatment plant and detention basin is indicated, on the available drawings, as wetlands. While no delineation was performed for this study, it is highly unlikely that development of this area will be possible, given the overall site drainage pattern (east-to-west) and proximity of the sanitary waste treatment facility and storm water detention basin.

Building: The High School is divided into three (3) distinct buildings, separated by fire walls. Building 1 consists of the two (2) 1960 and 1970 Classroom Wings. Building 2 includes the 1960 and 1970 Administrative areas, Cafeteria/Kitchen, E/T Wing, Physical Education spaces and Music Rooms. Building 3 was constructed as part of the 2002 renovation and includes the Auditorium and support spaces. The construction type for all three (3) buildings is "2C – Noncombustible Unprotected". Use Group is predominantly "E – Educational", with separated mixed-use group "A3 – Assembly" components (Gymnasium and Media Center), and Group "A1 – Assembly" (Building 3 – Auditorium).

As previously noted, Building 2 will require a variance, or the insertion of new fire walls, if modified or expanded (i.e. cafeteria and/or presentation room alternates).

Structural foundations are typically cast-in-place concrete. Floor framing at the original 1960 building and 2002 renovation is concrete on metal deck on steel framing. Floor and roof framing at the 1970 building is hollow concrete plank. Roof framing is a combination of steel beams, steel trusses and hollow concrete plank. The 1960 Classroom Wing and Administrative Area are covered with pitched light-gauge steel trusses and metal deck.

Exterior walls are typically brick masonry veneer with CMU backup, rigid insulation and membrane or fluid-applied air/vapor barrier. Precast concrete spandrels are used at the 1970 Classroom Wing Gymnasium and Auditorium areas.

Metal wall panels are also used at the cable ends of the 1960 Classroom Wing, entry features and Gymnasium expansion.

Roofing is primarily adhered single-ply heat welded PVC membrane, installed as part of the 2002 renovation. The 1970 Classroom Wing, expanded Gymnasium and Music Rooms are covered with ballasted single-ply PVC membrane roofing, which existed prior to 2002. Also, the more recent pitched roofs, at the 1960 Classroom Wing and Administration Area, are covered with shingle roofing.

While an exhausting analysis of the High School thermal envelope was not performed, it is assumed that the 2002 renovation work complied with energy requirements for existing buildings as stated in Chapter 34 of the MA State Building Code.

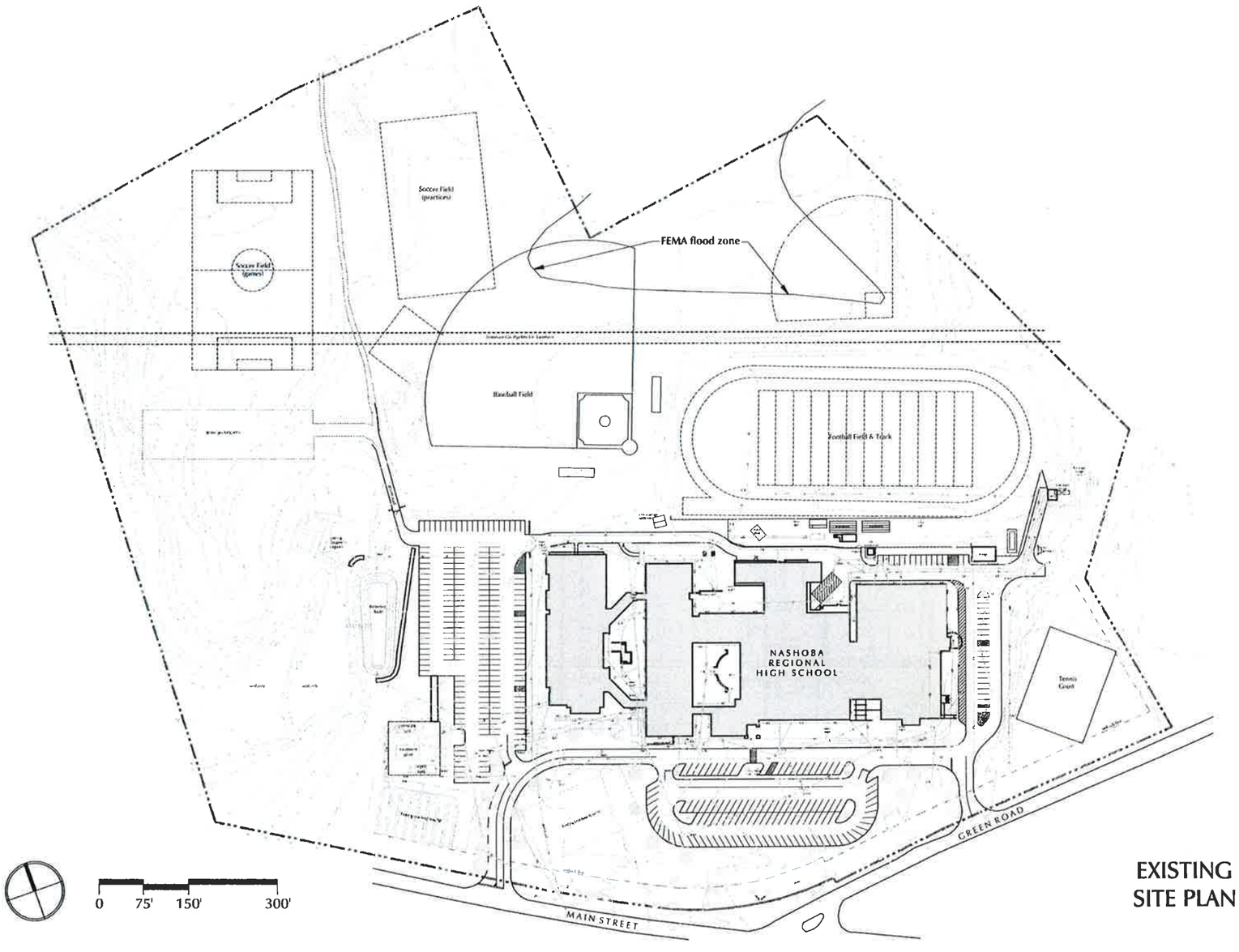
Likewise, it would be expected that a program of hazardous material abatement would have been undertaken in areas affected by the 2002 renovation.

Interior finishes are durable and well maintained. Corridors in the 1960 Classroom Wing are finished with terrazzo flooring. Elsewhere, vinyl composition tile, ceramic tile and rubber tile flooring are used extensively. Walls are predominantly painted. Ceilings generally include painted structure, acoustical ceiling tile systems and painted gypsum board/plaster.

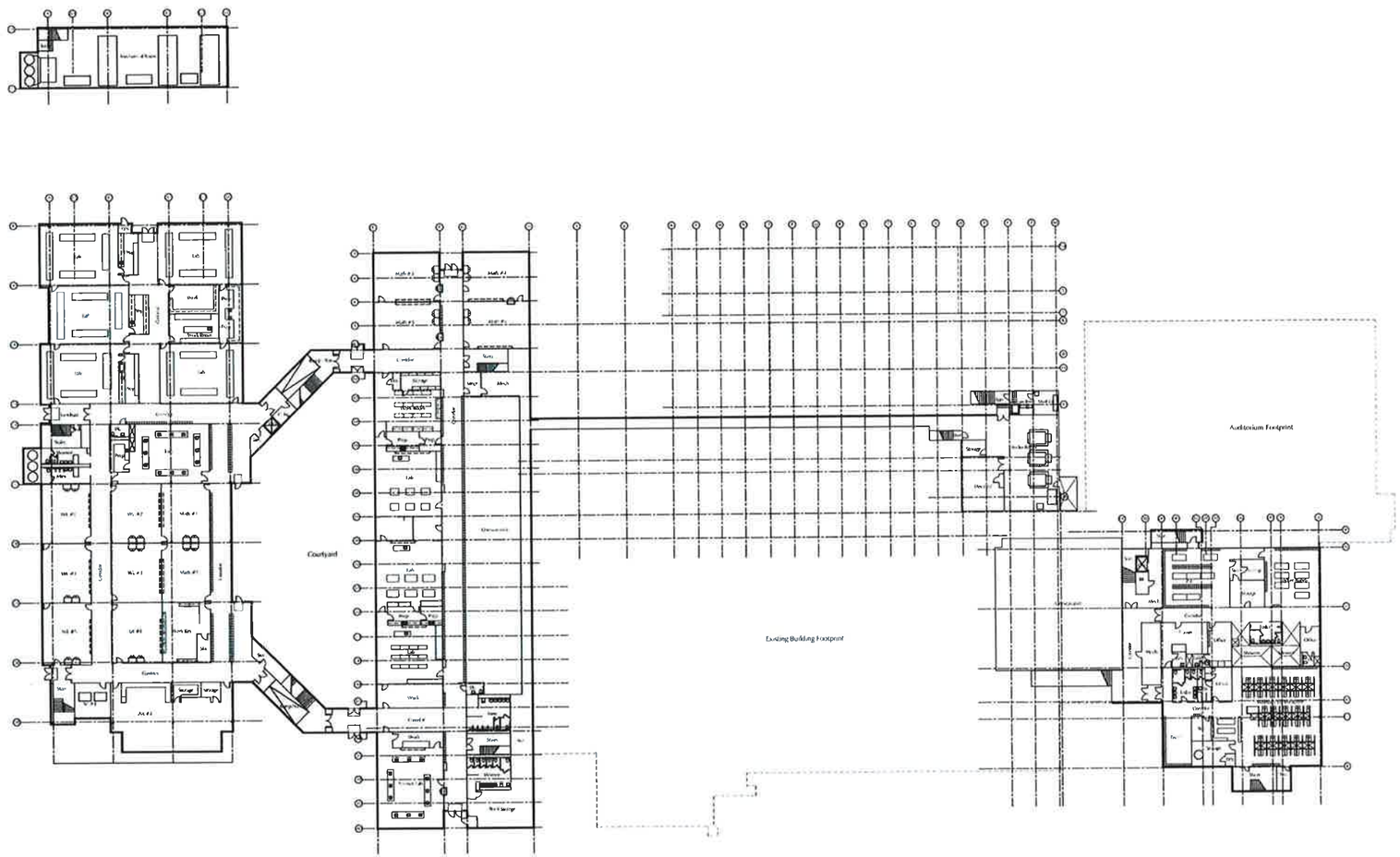
It is presumed that the 2002 renovations, based on their scope, would have brought the existing building into full compliance with MA Architectural Access Board (AAB) regulations for new construction. Although a comprehensive accessibility evaluation was not performed for this study, it appears that, based on LPA's observations and review of the 2002 renovation drawings, most if not all of the building is in compliance with AAB requirements applicable in 2002.

Mechanical/Electrical: Refer to Appendix A - Mechanical Report and Appendix B - Electrical Report.

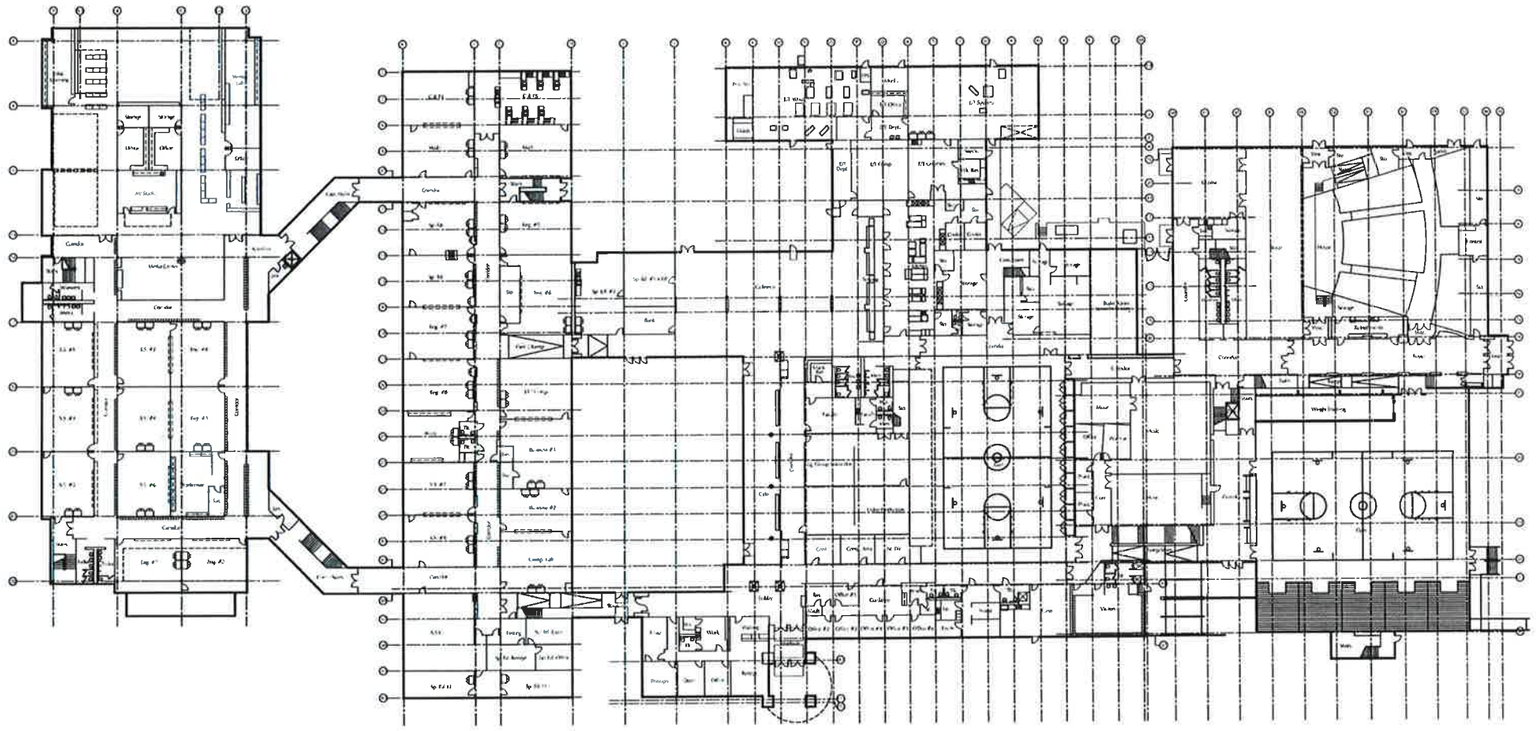
Graphics: Refer to the following pages for existing conditions site plan, floor plans and photos.

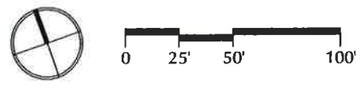


EXISTING SITE PLAN



EXISTING LOWER LEVEL FLOOR PLAN





EXISTING UPPER LEVEL FLOOR PLAN

Main Entry Panoramic View

Art Room and Waste Treatment Plant Panoramic View

Art Room and Classroom Wing

Waste Treatment Plant and Parking Panoramic View

Waste Treatment Plant and Parking Panoramic View

West Classroom Wing Panoramic View

West Parking Area Panoramic View

Athletic Fields Panoramic View

Science Classrooms Panoramic View

E.T. Wing and Cafeteria Panoramic View

E.T. Wing

Cafeteria/Classroom E.T. Panoramic View

Loading and Service Area Panoramic View

Service Building and Tennis Courts Panoramic View

Water Pump House and Athletic Field Panoramic View

Courtyard

PART 3 – NEEDS/PROGRAMMING

Narrative: The NRSD space needs were divided into two (2) categories; Administrative Office Space and Educational Space. District Administrative Offices are presently located in the Emerson Elementary School building in Bolton. That space, however, is needed by the school for classroom use and is scheduled for renovation in the near future. The Kang associates Inc. Space Program, commissioned previously by the NRSD and dated July 28, 2006 (See Appendix C) was used as the basis for the Administrative District Offices category of the building program.

The Educational Space Needs were established as the result of meeting with NRHS principal Jeremy Roche and NRSD Assistant Superintendent of Finance George King. Two (2) spaces, the expanded Cafeteria and the Presentation Room, were identified as "Add Alternates". An alternate is a feature or space designed to be either added or omitted to/from the base bid scope of work when bids are received. The costs associated with an alternate are separated, and can be clearly distinguished from, the base bid work. Alternates are an effective tool for managing costs, but must be carefully selected and detailed to avoid conflicts and/or confusion.

For either category, the square foot area indicated for any given space is given in net area and does not include wall thickness, corridors, stairs, mechanical/electrical rooms, etc. A factor of 40% (of the net area subtotal) is added to yield the total gross area. Cost recommendations (See Part 4) are based on gross area. The graphic that follows the proposed building program (on the next several pages) represents the relative size, in net area, of all program spaces.

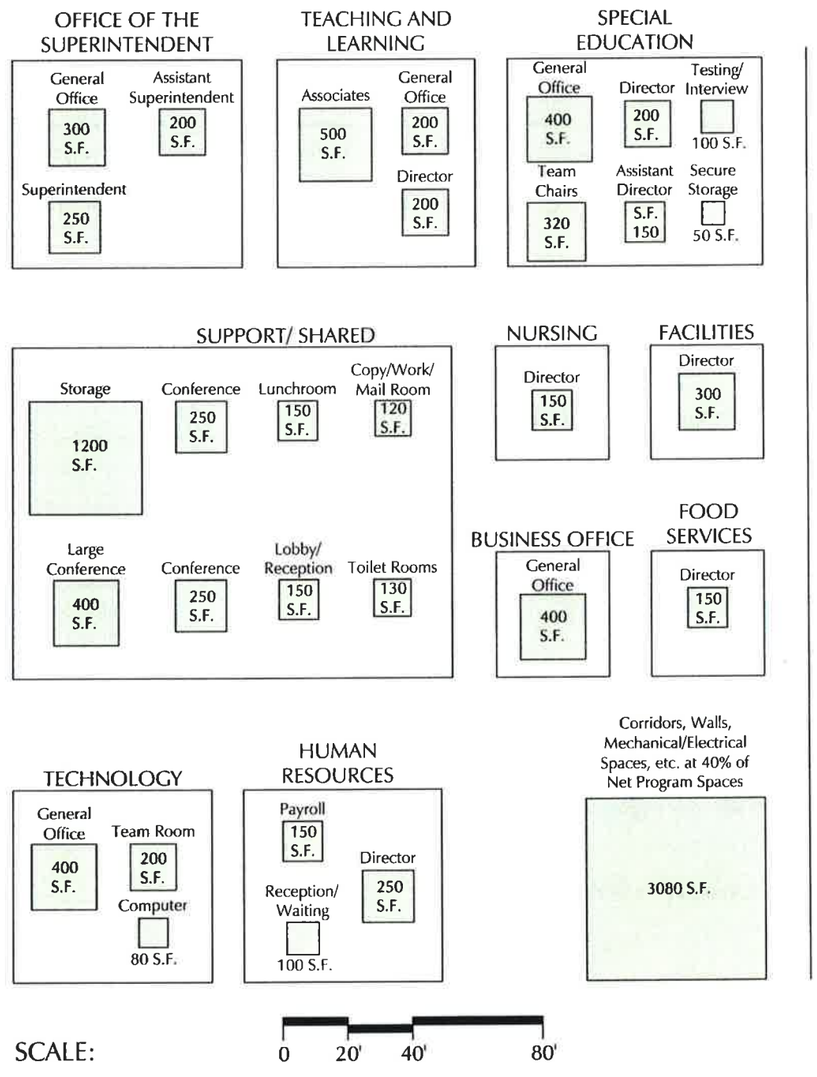
DEPARTMENT	SPACE	ADJACENCIES	DESCRIPTION/ COMMENTS	PROPOSED AREA (NET SF)
NASHOBA REGIONAL SCHOOL DISTRICT	**Office of the Superintendent**			
	General Office		2 occupants	300
	Superintendent	Large Conference	1 occupant with meeting space for 4	250
	Assistant Superintendent		1 occupant with meeting space for 4	200
	Teaching and Learning	Conference, SPED and Superintendent		
	General Office		1 occupant	200
	Director		1 occupant with meeting space for 4	200
	Associates		4 occupants with office partitions	500
	Special Education	Conference and Superintendent		
	General Office		3 occupants	400
NASHOBA REGIONAL SCHOOL DISTRICT (continued)	Director		1 occupant with meeting space for 4	200
	Assistant Director		1 occupant with meeting space for 4	150
	Team Chairs		4 occupants with office partitions and acoustic privacy	320
	Testing/ Interview		2 occupants	100
	Secure Storage			50
	Nursing			
	Director	Superintendent	1 occupant with meeting space for 2	150
	Technology			
	General Office		4 occupants	400
	Team Room		Shared private office space	200
	Computer		Separate 24-hour environmental control	80
	Facilities			
	Director	Assistant Superintendent and Business	1 occupant with counter space for 2 technicians, plan storage and meeting space for 4	300
	Business Office			
	General Office		2.5 occupants with office partitions	400
	Human Resources	Assistant Superintendent and Business		
	Reception/ Waiting		Space for filling out forms	100
	Director		1 occupant with meeting space for 4	250
	Payroll		1 occupant	150

DEPARTMENT	SPACE	ADJACENCIES	DESCRIPTION/ COMMENTS	PROPOSED AREA (NET SF)
NASHOBA REGIONAL SCHOOL DISTRICT (continued)	**Food Services**	Assistant Superintendent and Business		
	Director		1 occupant	150
	Support/Shared			
	Large Conference		40 occupants in chairs with possible operable partition	400
	Conference		15 occupants at tables and chairs	250
	Conference		15 occupants at tables and chairs	250
	Copy/Work/Mail Room			120
	Lunchroom			150
	Storage			1200
	Toilet Rooms		3 private unisex toilet rooms and 1 accessible unisex toilet room	130
	Lobby/ Reception			150
			SUB-TOTAL DISTRICT OFFICES PROGRAM SPACE AREA (NET)	**7,700 SF**
			+ 40% FACTOR (CORRIDORS, WALLS, MECHANICAL/ ELECTRICAL SPACES, ETC.)	**3,080 SF**
			TOTAL PROPOSED DISTRICT OFFICES BUILDING AREA (GROSS)	**10,780 SF**

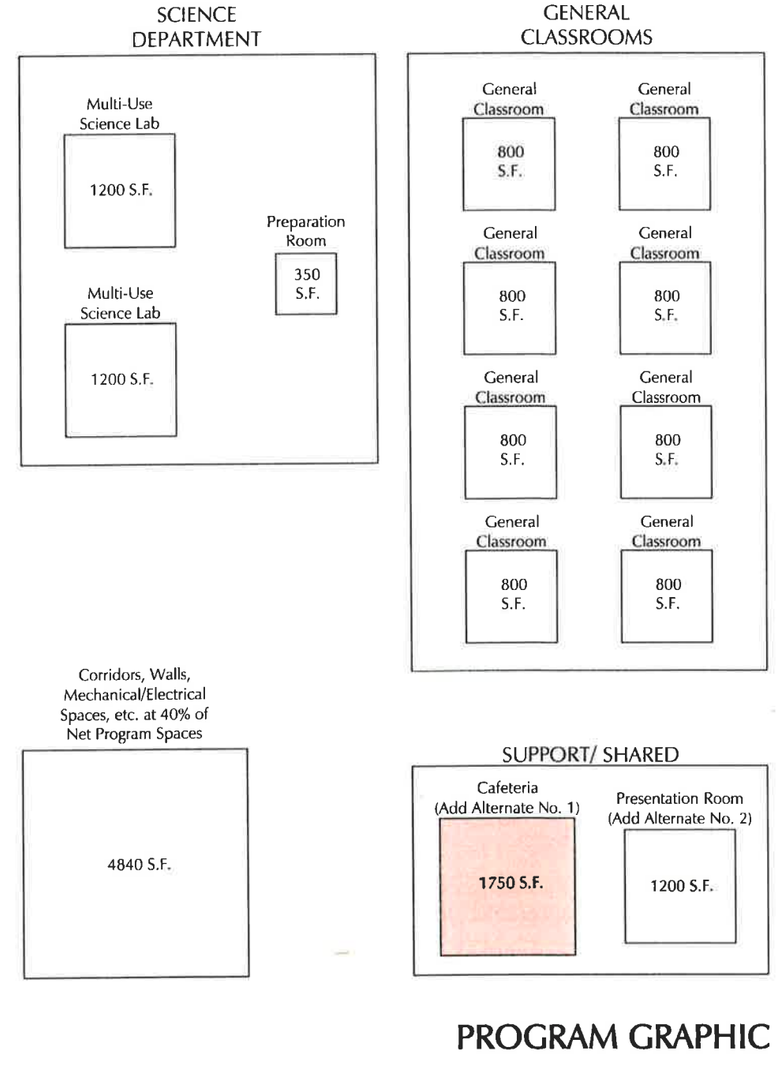
DEPARTMENT	SPACE	ADJACENCIES	DESCRIPTION/ COMMENTS	PROPOSED AREA (NET SF)
NASHOBA REGIONAL HIGH SCHOOL	**General Classroom**			
	General Classroom	Existing Classrooms	25 students at desks and chairs plus teacher; lockable storage unit, whiteboards, ceiling-mounted projector, screen	8 @ 800 = 6400
	General Classroom			
	General Classroom	Existing Classrooms	25 students at desks and chairs plus teacher; lockable storage unit, whiteboards, ceiling-mounted projector, screen	8 @ 800 = 6400
	Science Department			
	Multi-Use Science Lab	Existing Science Labs	40 occupants in chairs with possible operable partition	2 @ 1200 = 2400
	Preparation Room	Multi-Use Science Labs	Two-sided fume hood, shelving, file cabinets	350
	Support/Shared			
	Cafeteria (Add Alternate)	Cafeteria	73' x 24' addition in existing courtyard area	1750
	Presentation Room (Add Alternate)	Exterior	60-75 occupants at fixed seating with tablet arms, tiered seating, ceiling-mounted projector, screen	1200
			SUB-TOTAL HS PROGRAM SPACE AREA (NET)	**12,100 SF**
			+ 40% FACTOR (CORRIDORS, WALLS, MECHANICAL/ ELECTRICAL SPACES, ETC.)	**4,840 SF**
			TOTAL PROPOSED HS BUILDING AREA (GROSS)	**16,940 SF**
			TOTAL PROPOSED DISTRICT OFFICES AND HS BUILDING AREA (GROSS)	**27,720 SF**

NASHOBA
Regional School District

NASHOBA REGIONAL SCHOOL DISTRICT



NASHOBA REGIONAL HIGH SCHOOL



PROGRAM GRAPHIC

PART 4 – DESIGN OPTIONS AND RECOMMENDATIONS

Narrative: The three (3) design options outlined in Part 1 – INTRODUCTION are further described, in written and graphic form, in this section.

The relative merits and limitations of each option are addressed here, based on the following criteria (refer also to the Appendix for more detailed descriptions):

- Initial cost
- Long-term cost
- Ability to support program requirements
- Space efficiency
- Construction impact
- Sustainability
- Regulatory/permitting impact
- Potential for future expansion

New site drainage infrastructure will be required for the relocated tennis courts and new parking area at the west part of the site, and will likely require a Notice of Intent application to the local Conservation Commission and MA DEP. Permit approvals, through MA DEP, will also be required for proposed Alternate Cafeteria and Presentation Room work due to their location within the Zone 1 radius of 286' from the existing onsite well.

The proposed District Offices, as a free-standing building classified under Use Group "B – Business", may be constructed as a new type "5B – Combustible Unprotected" building (assuming an automatic fire suppression system is provided). Proposed educational space should be designed as a new Type "2C – Noncombustible", Use Group "E – Educational" building, connected to the 1970 Classroom Wing (Building 1) but separated by a fire wall.

If designed as a simple addition, the new educational space will cause the total floor area of Building 1 to exceed allowable area limitations, requiring relief from Building Code regulations.

The Cafeteria and Presentation Room Alternates are proposed to be Type "2G – Noncombustible Unprotected" additions to existing Building 2. Use Group for both Alternates is "A3 – Assembly". Due to the 2002 renovation exceeding the allowable area limitation for Building 2, any further modification to Building 2 will also require relief from Building Code regulations.

While compliance with AAB Accessible Regulations will be required, LPA does not anticipate the need for an elevator or lift in either the 1-story District Office Space or the 2-story Educational Space Addition.

Cost recommendations are also made and include, in addition to construction cost, other project costs such as A/E fees, surveys/testing, project management, printing, furnishings/equipment, etc.

Option 1 – Description:

Construction of the free-standing District Offices Building and parking will have, apart from utility connections and tennis court relocation, limited impact on the High School. The proposed educational space, however, will displace parking and eliminate (temporarily) a main access to the school. Construction of new parking will be required and provisions made to allow for the safe passage of students and staff through and/or around construction areas. Construction of the proposed cafeteria expansion and Presentation Room Alternates, likewise, will have a significant impact on the students/staff and should, as much as possible, be scheduled during summer months when the school is largely unoccupied.

Utilities (water, sewer, electric) for the District Offices Building are available in the vicinity of the Auditorium parking area. New Educational and Cafeteria/Presentation Room space will require that existing building utilities be extended, possibly from the school's main mechanical/electrical room.

Option 1 – Merits and Limitations

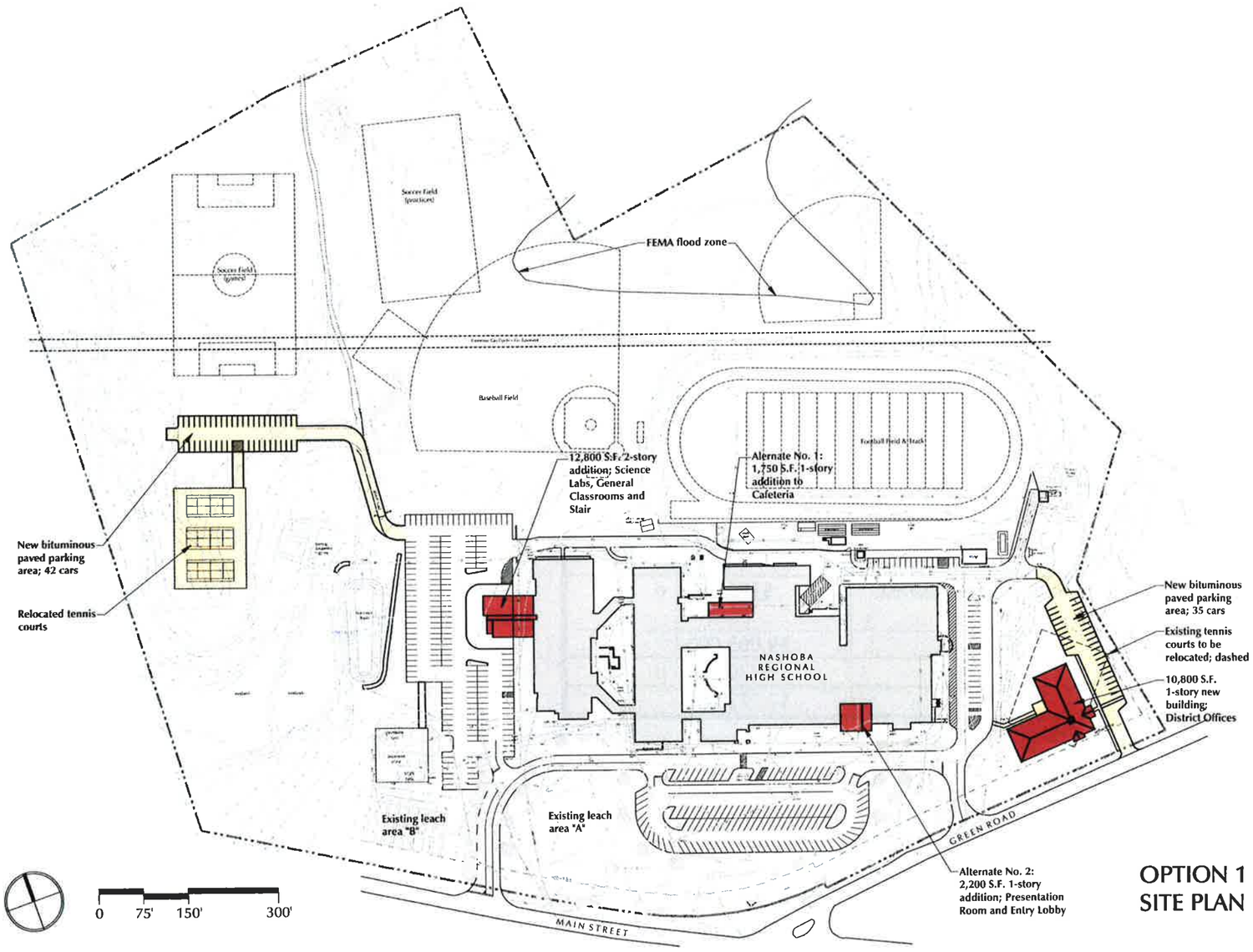
OPTION	MERITS	LIMITATIONS
1	▪ Construction impacts will be minimized due to the freestanding District Offices building. ▪ Potential for future expansion (District Offices) is greater than either Options 2 or 3. ▪ Initial cost will be less than either Options 2 or 3.	▪ District Offices are remotely located relative to the existing high school. ▪ Regulatory/permitting requirements will be more restrictive (compared to Options 2 and 3) due to Option 1's larger site/building footprint. ▪ Long-term operating and maintenance costs will be greater than Options 1 or 2 due to separate District Offices building systems.

Option 1 – Cost Recommendations

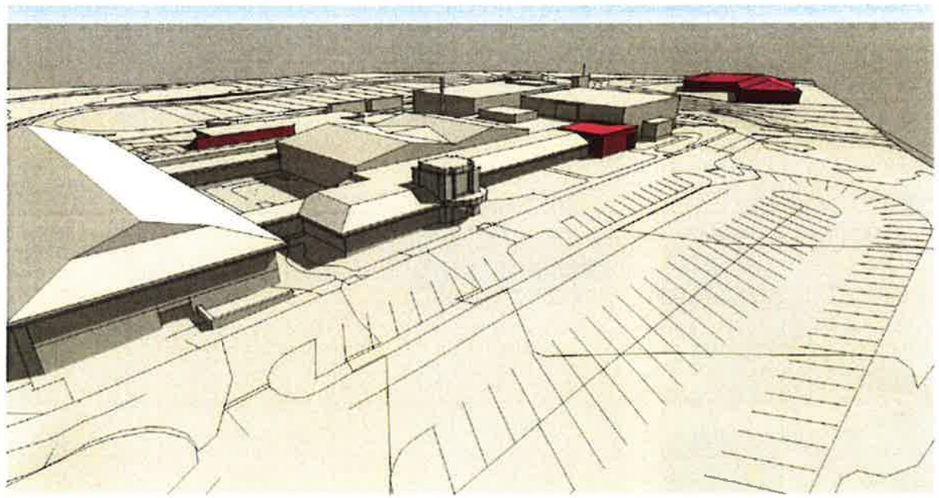
ITEM NO.	DESCRIPTION	ESTIMATED SCHEDULED VALUE	NOTES
1	Site Acquisition	NA	a
2	Site Construction Cost	$523,000	b, c
3.1	Building Construction Cost - District Offices	$2,797,000	b, d
3.2	Building Construction Cost - Educational Space	$3,315,000	b, e
3.3	Building Construction Cost - Alternate No. 1 Cafeteria	$413,000	b, f
3.4	Building Construction Cost - Alternate No. 2 Presentation Room	$570,000	b, g
4.1	Architectural/Engineering Fees	$664,000	h
4.2	Architectural/Engineering Fees – Alternate No. 1	$41,000	h
4.3	Architectural/Engineering Fees – Alternate No. 2	$57,000	h
5	Project Manager	$90,000	i
6	Clerk of the Works	$135,000	j
7	Printing and Document Publication	$12,000	k
8	Furniture and Equipment	$276,000	l
9	Legal and Bond Costs	$10,000	m
10	Hazardous Materials Abatement	NA	n
11	Surveys, Borings, Testing and Other Professional Support Services	$100,000	o
12	SUB-TOTAL	$9,003,000	
13	Project Contingency	$720,000	p
14	**TOTAL**	$9,723,000	

NOTES:

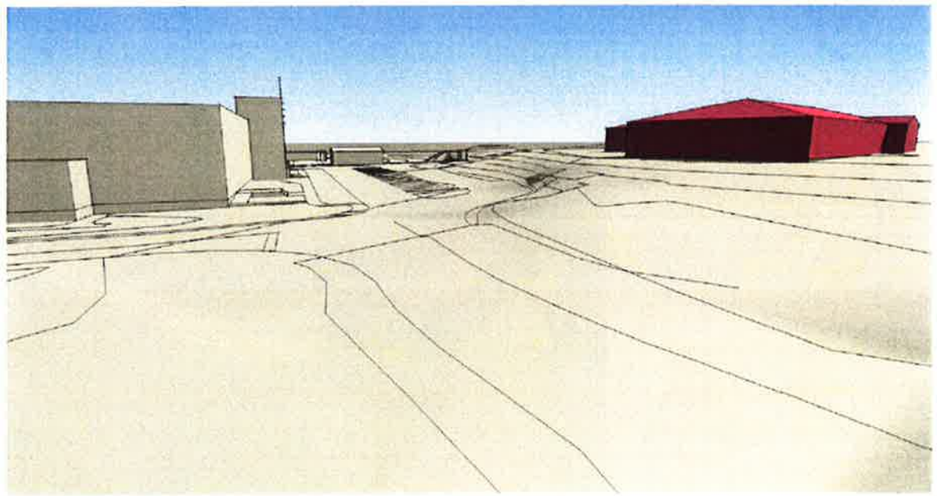
a. This cost summary assumes that additional land is not required.
b. Construction costs are based on middle-to-high range 2010 est. prevailing wage construction and assume an inflation factor of 4%/year.
c. Site Construction Cost is based on 3-new tennis courts, demolition of existing tennis courts, new 42-car parking area (west of student parking) and new 35-car parking area (at new District Offices). Costs include clearing and grubbing, earthwork, drainage infrastructure, bituminous paving, landscaping, lighting and site improvements (fencing, guardrails, tennis court equipment, signage, etc.).
d. Building Construction Cost - District Offices is based on a new 10,800 SF 1-story Type 5B building at $259/SF.
e. Building Construction Cost – Educational Space is based on a new 12,800 SF 2-story Type 2C addition at $259/SF.
f. Building Construction Cost - Alternate No. 1 Cafeteria is based on a new 1,750 SF 1-story Type 2C addition at $236/SF.
g. Building Construction Cost - Alternate No. 2 Presentation Room is based on a new 2,200 SF 1-story Type 2C addition at $259/SF.
h. Architectural/Engineering fees are based on 10% of combined Site/Building Construction Cost.
i. Project Manager estimate is based on one part-time position for 18 months at $5,000/month.
j. Clerk of the Works estimate is based on one full-time position for 18 months at $7,500/month.
k. Assumes 150 sets of printed bid documents (drawings and specifications) at $75/each plus miscellaneous printing costs.
l. Furniture and equipment costs are based on 27,550 SF at $10/SF and include furniture (desks, chairs, tables, etc.), office equipment (copiers, etc.), technology (computers, printers, hubs, projectors, etc.), telephone system (PBX and handsets), appliances, custodial/maintenance equipment, and similar equipment.
m. Legal costs are estimated based on previous projects and will vary.
n. It is assumed that hazardous materials abatement was completed during the 2002 renovation project.
o. Includes land survey, geotechnical exploration and recommendations, independent cost estimating, furniture/equipment design fees, and construction testing/monitoring (soils, concrete, steel, roofing, bituminous concrete, etc.).
p. Project contingency is based on 8% of SUB-TOTAL (line item 12).



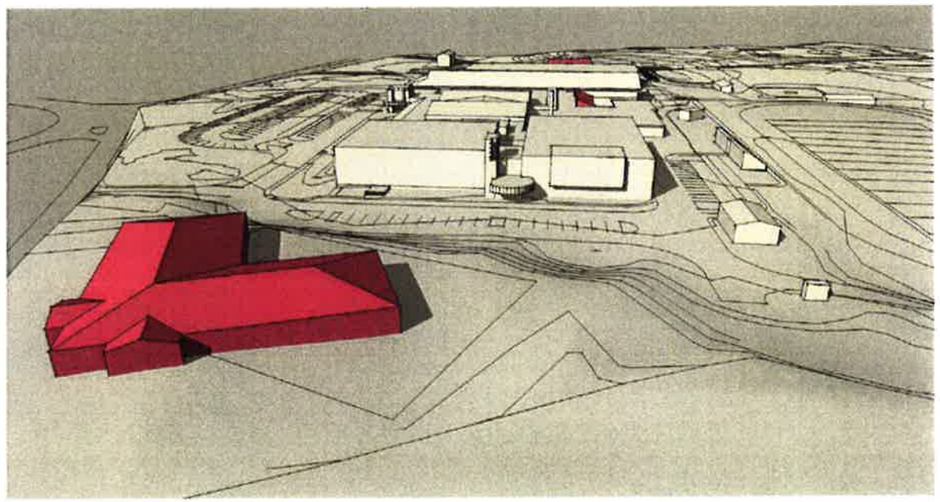
OPTION 1
SITE PLAN



OPTION 1
VIEW TOWARDS MAIN ENTRY

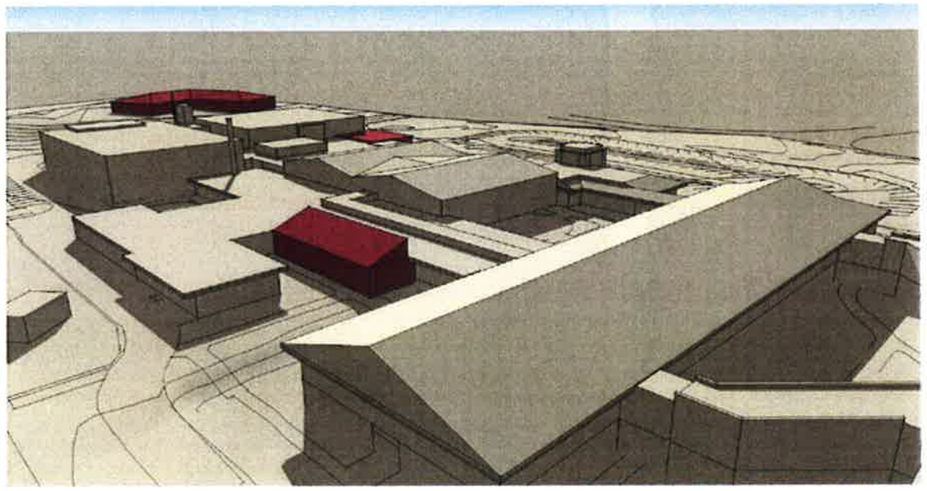


OPTION 1
VIEW TOWARDS
DISTRICT OFFICES BUILDING

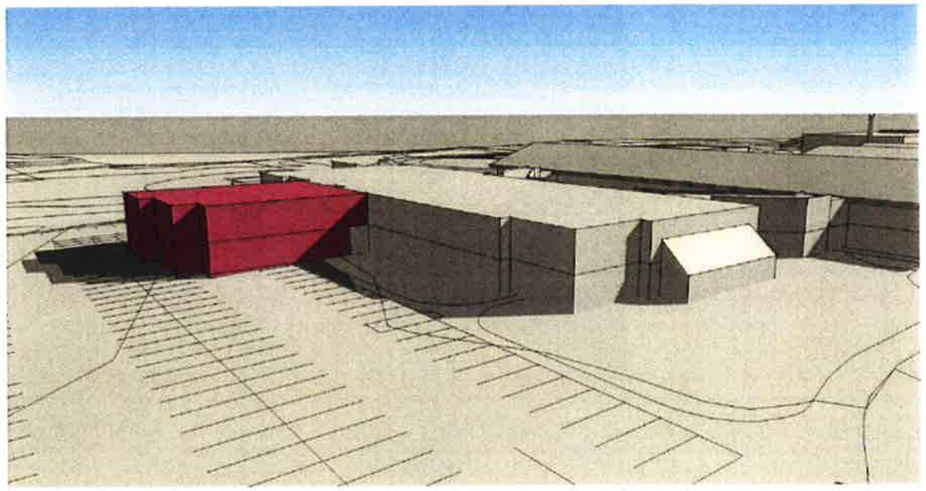


OPTION 1
VIEW TOWARDS AUDITORIUM ENTRY

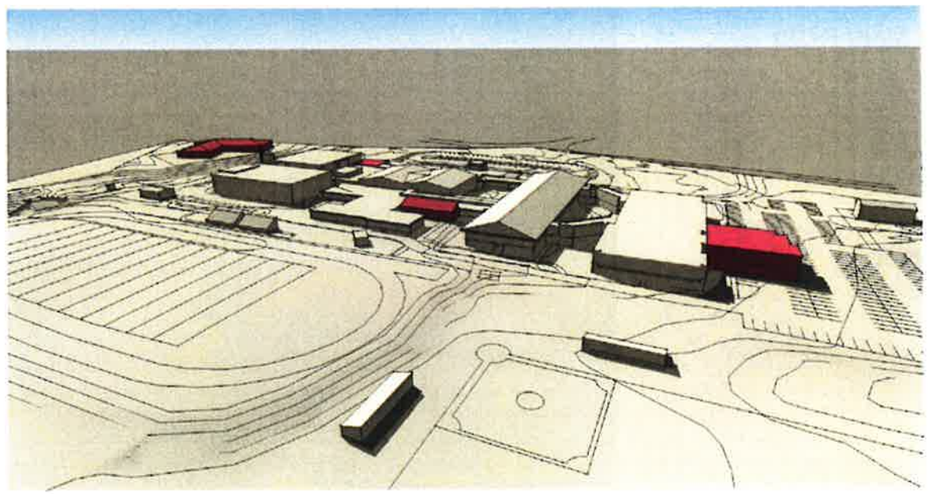
OPTION 1 - MASSING



OPTION 1
VIEW TOWARDS CAFETERIA



OPTION 1
VIEW TOWARDS
WEST CLASSROOM WING



OPTION 1
VIEW TOWARDS BACK OF HIGH SCHOOL

OPTION 1 - MASSING

Option 2 – Description:

Construction of the new District Office Space, above and adjacent to the High School Administration Area, will have significant impacts on the High School. The addition of a new floor level will involve extensive demolition of and modifications to existing structural, mechanical and electrical systems. A new elevator and two stairs will be required to access the proposed upper level. The proximity of this work to the school's Main Entry and bus drop-off/pick-up will dictate the need for an aggressive construction schedule. The bulk of the heavy work should occur during summer months. There will likely, however, be an overlap between construction and school schedules, and it will be necessary to provide for the safe passage of students, staff and visitors during those times. Additionally, it will probably be necessary to temporarily relocate existing High School administrative functions during construction.

In Option 2 , the existing tennis courts remain, but a new parking area and associated site drainage infrastructure are required to offset District Offices needs and the loss of existing student parking. Similar to Option 1, a Notice of Intent application will likely be required.

The Educational Space and Cafeteria./Presentation room Alternates, for Option 2, are the same as for Option 1 and the same comments apply. Under Option 2, the District Offices should be designed as either a Type "2C – Noncombustible Unprotected" or Type "2B – Noncombustible Protected" addition. Similar to the Cafeteria and Presentation Room Alternates, the proposed District Office modifications to Building 2 will require relief from allowable area limitations of the MA Building Code.

Option 2 – Merits and Limitations

OPTION	MERITS	LIMITATIONS
2	▪ District Offices are located adjacent to, and share the same main entrance as, the existing high school administrative and guidance areas. ▪ Regulatory/permitting requirements will be less restrictive (compared to Options 1 and 3) due to Option 2's smaller site/building footprint. ▪ Long-term operating and maintenance costs will be less than Option 1 due to integrated building systems.	▪ Construction impacts (phased construction, extended schedule, disruption of existing spaces, inconvenience to occupants, etc.) will be maximized due to the new District Office level inserted above the existing high school administration/guidance areas. ▪ Initial cost will be greater than Option 1.

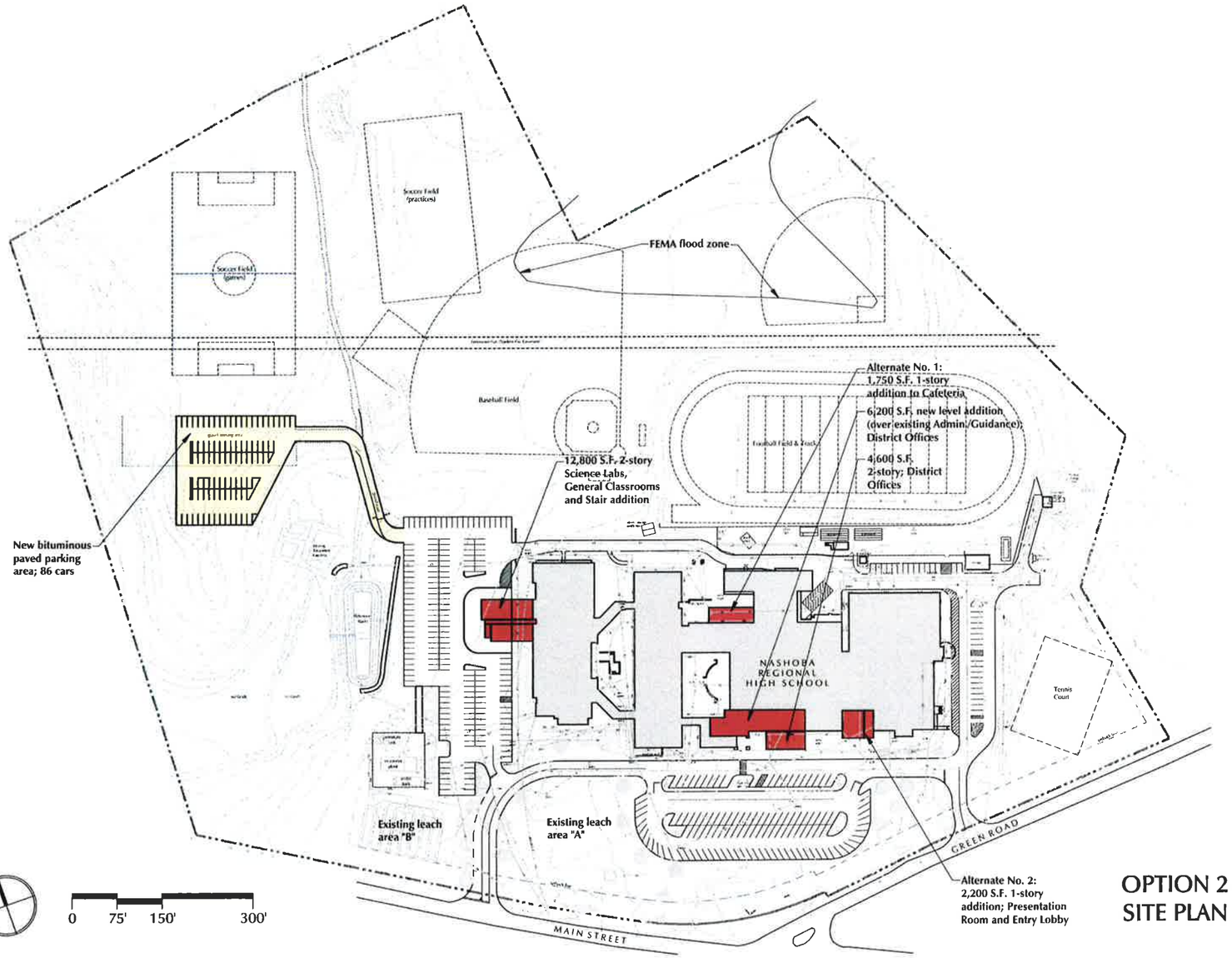
Option 2 – Cost Recommendations

ITEM NO.	DESCRIPTION	ESTIMATED SCHEDULED VALUE	NOTES
1	Site Acquisition	NA	a
2	Site Construction Cost	$340,000	b, c
3.1	Building Construction Cost - District Offices	$3,560,000	b, d
3.2	Building Construction Cost - Educational Space	$3,315,000	b, e
3.3	Building Construction Cost - Alternate No. 1 Cafeteria	$413,000	b, f
3.4	Building Construction Cost - Alternate No. 2 Presentation Room	$570,000	b, g
4.1	Architectural/Engineering Fees	$722,000	h
4.2	Architectural/Engineering Fees – Alternate No. 1	$41,000	h
4.3	Architectural/Engineering Fees – Alternate No. 2	$57,000	h
5	Project Manager	$90,000	i
6	Clerk of the Works	$135,000	j
7	Printing and Document Publication	$12,000	k
8	Furniture and Equipment	$276,000	l
9	Legal and Bond Costs	$10,000	m
10	Hazardous Materials Abatement	NA	n
11	Surveys, Borings, Testing and Other Professional Support Services	$100,000	o
12	SUB-TOTAL	$9,641,000	
13	Project Contingency	$771,000	p
14	**TOTAL**	$10,412,000	

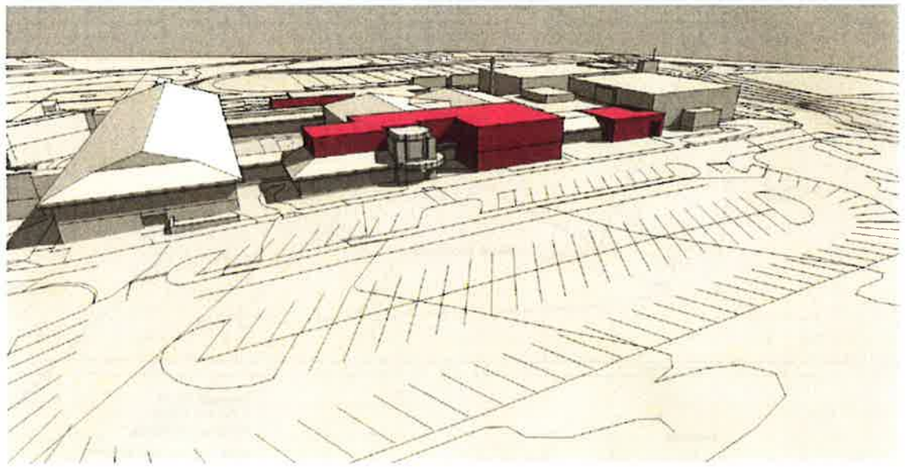
NOTES:

a. This cost summary assumes that additional land is not required.
b. Construction costs are based on middle-to-high range 2010 prevailing wage construction and assume an inflation factor of 4%/year.
c. Site Construction Cost is based on 86-car parking area (west of student parking). Costs include clearing and grubbing, earthwork, drainage infrastructure, bituminous paving, landscaping, lighting and site improvements (fencing, guardrails, signage, etc.).
d. Building Construction Cost - District Offices is based on a new 6,200 SF Type 2C addition (new floor level over existing Admin./Guidance) at $382/SF plus a new 4,600 SF 2-story Type 2C addition at $259/SF.
e. Building Construction Cost – Educational Space is based on a new 12,800 SF 2-story Type 2C building at $259/SF.
f. Building Construction Cost - Alternate No. 1 Cafeteria is based on a new 1,750 SF 1-story Type 2C addition at $236/SF.
g. Building Construction Cost - Alternate No. 2 Presentation Room is based on a new 2,200 SF 1-story Type 2C addition at $259/SF.
h. Architectural/Engineering fees are based on 10% of combined Site/Building Construction Cost.
i. Project Manager estimate is based on one part-time position for 18 months at $5,000/month.
j. Clerk of the Works estimate is based on one full-time position for 18 months at $7,500/month.
k. Assumes 150 sets of printed bid documents (drawings and specifications) at $75/each plus miscellaneous printing costs.
l. Furniture and equipment costs are based on 27,550 SF at $10/SF and include furniture (desks, chairs, tables, etc.), office equipment (copiers, etc.), technology (computers, printers, hubs, projectors, etc.), telephone system (PBX and handsets), appliances, custodial/maintenance equipment, and similar equipment.
m. Legal costs are estimated based on previous projects and will vary.
n. It is assumed that hazardous materials abatement was completed during the 2002 renovation project.
o. Includes land survey, geotechnical exploration and recommendations, independent cost estimating, furniture/equipment design fees, and construction testing/monitoring (soils, concrete, steel, roofing, bituminous concrete, etc.).
p. Project contingency is based on 8% of SUB-TOTAL (line item 12).

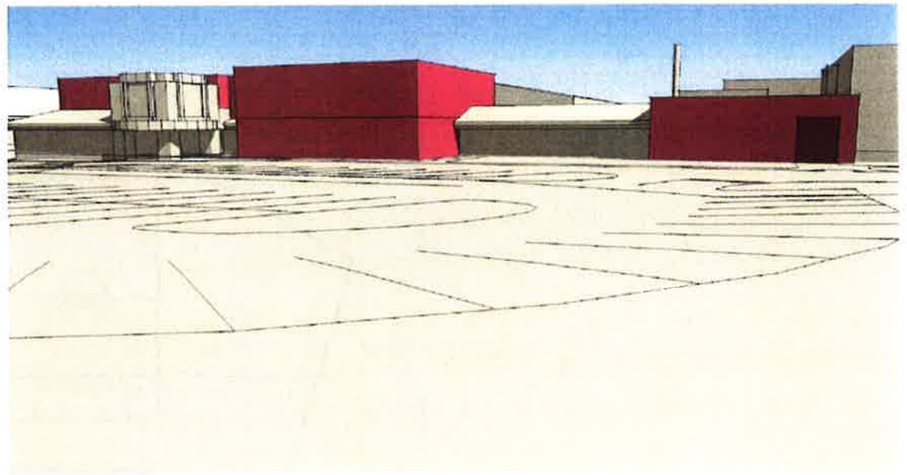
NASHOBA
Regional School District



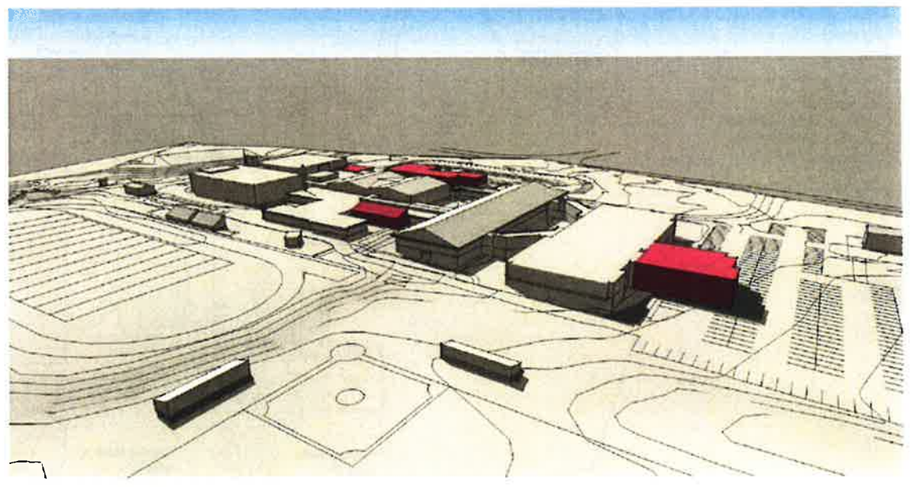
OPTION 2
SITE PLAN



OPTION 2
VIEW TOWARDS MAIN ENTRY



OPTION 2
VIEW TOWARDS GYM ENTRY



OPTION 2
VIEW TOWARDS BACK OF HIGH SCHOOL

OPTION 2 - MASSING

Option 3 – Description:

Construction under Option 3 is concentrated, except for the Cafeteria Expansion Alternate and the Media Center Renovation, in one general area. Accordingly, construction impacts on the High School will be less than Option 2 but more than Option 1. The proposed new construction attached to the north end of the 1970 Classroom Wing will displace student parking as well as the existing driveway adjacent to the baseball field. New parking areas, a relocated driveway and associated site drainage infrastructure are proposed to offset the displaced items, and again will likely require a Notice of Intent application.

The proposed District Offices Space, in Option 3, occupies most of the lower level of the new wing. Science labs and prep room are also proposed for the lower level and would be accessed by way of the existing main corridor in the 1970 Classroom Wing. At the upper level, however, the existing Media Center occupies the entire north end of the 1970 Wing and effectively prevents circulation between that wing and the new addition. Therefore, it is proposed to renovate the existing Media Center into classroom space, with corridor access to the new addition, and to relocate the Media Center and new Presentation room to the upper level of the new addition.

The District Offices, labs and Media Center should be designed as a Type "2C – Noncombustible Unprotected" building, separate from Building 1 by a fire wall. At least one new exit stair will be required. An elevator will also be required if the upper level Presentation Room will be used by the public after the rest of the school is closed.

The Cafeteria Expansion Alternate for Option 3 is the same as for the two previous options, and the same comments apply.

Option 3 – Merits and Limitations

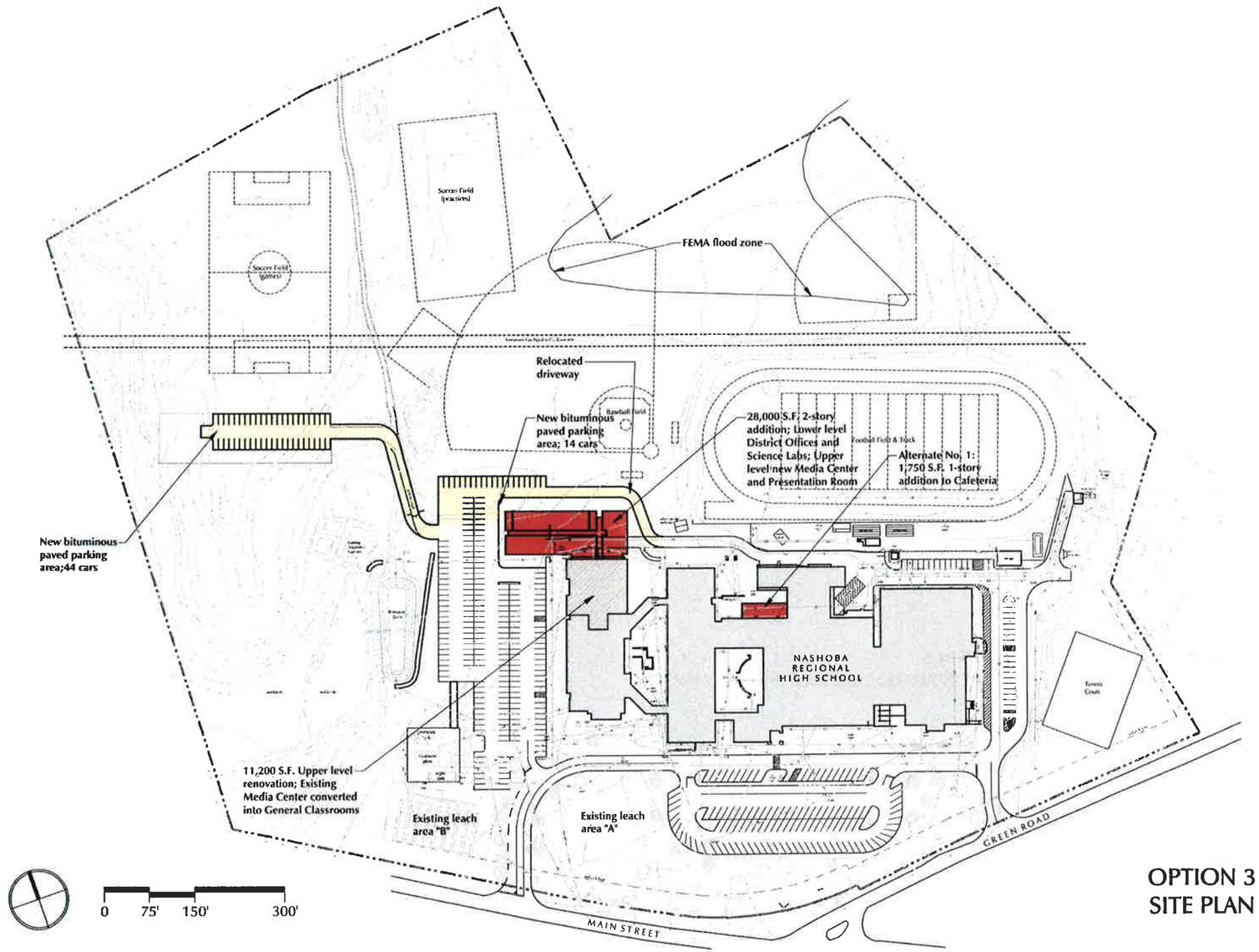
OPTION	MERITS	LIMITATIONS
3	▪ New work, except for Alternate No. 1 Cafeteria addition, is consolidated into a single area.	▪ Requires relocation of existing Media Center due to circulation patterns. ▪ Construction impacts will be greater than Option 1 due to the extent of renovated existing space. ▪ Location of District Offices is less visible than either Options 1or 2.

Option 3 – Cost Recommendations

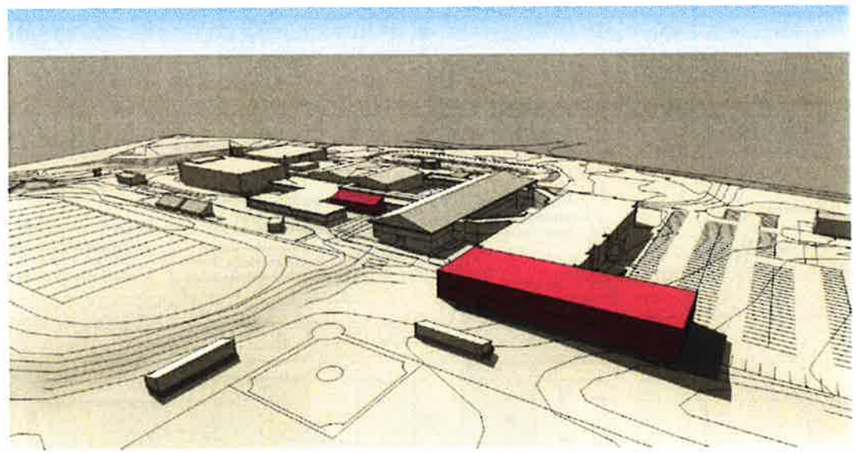
ITEM NO.	DESCRIPTION	ESTIMATED SCHEDULED VALUE	NOTES
1	Site Acquisition	NA	a
2	Site Construction Cost	$311,000	b, c
3.1	Building Construction Cost - District Offices, Educational Space, Presentation Room and Media Center	$9,391,000	b, d
3.3	Building Construction Cost - Alternate No. 1 Cafeteria	$413,000	b, f
4.1	Architectural/Engineering Fees	$970,000	h
4.2	Architectural/Engineering Fees – Alternate No. 1	$41,000	h
5	Project Manager	$90,000	i
6	Clerk of the Works	$135,000	j
7	Printing and Document Publication	$12,000	k
8	Furniture and Equipment	$276,000	l
9	Legal and Bond Costs	$10,000	m
10	Hazardous Materials Abatement	NA	n
11	Surveys, Borings, Testing and Other Professional Support Services	$100,000	o
12	SUB-TOTAL	$11,749,000	
13	Project Contingency	$940,000	p
14	**TOTAL**	$12,689,000	

NOTES:

a. This cost summary assumes that additional land is not required.
b. Construction costs are based on middle-to-high range 2010 prevailing wage construction and assume an inflation factor of 4%/year.
c. Site Construction Cost is based on 44-car parking area (west of student parking), 14-car parking area expansion (north end of student parking area) and relocated driveway adjacent to baseball field.
d. Building Construction Cost - District Offices, Educational Space, Presentation Room and Media Center is based on a new 28,000 SF 2-story Type 2C addition at $259/SF plus 11,200 SF renovated space (existing Media Center converted into general classrooms) at $191/SF.
e. Not used.
f. Building Construction Cost - Alternate No. 1 Cafeteria is based on a new 1,750 SF 1-story Type 2C addition at $236/SF.
g. Not used.
h. Architectural/Engineering fees are based on 10% of Combined Site/Building Construction Cost.
i. Project Manager estimate is based on one part-time position for 18 months at $5,000/month.
j. Clerk of the Works estimate is based on one full-time position for 18 months at $7,500/month.
k. Assumes 150 sets of printed bid documents (drawings and specifications) at $75/each plus miscellaneous printing costs.
l. Furniture and equipment costs are based on 27,550 SF at $10/SF and include furniture (desks, chairs, tables, etc.), office equipment (copiers, etc.), technology (computers, printers, hubs, projectors, etc.), telephone system (PBX and handsets), appliances, custodial/maintenance equipment, and similar equipment.
m. Legal costs are estimated based on previous projects and will vary.
n. It is assumed that hazardous materials abatement was completed during the 2002 renovation project.
o. Includes land survey, geotechnical exploration and recommendations, independent cost estimating, furniture/equipment design fees, and construction testing/monitoring (soils, concrete, steel, roofing, bituminous concrete, etc.).
p. Project contingency is based on 8% of SUB-TOTAL (line item 12).



OPTION 3
SITE PLAN



OPTION 3
VIEW TOWARDS BACK OF HIGH SCHOOL

OPTION 3
VIEW TOWARDS WEST CLASSROOM WING

OPTION 3 - MASSING

APPENDIX A – MECHANICAL REPORT

SEAMAN ENGINEERING CORPORATION
30 Faith Ave. Auburn, MA 01501 508-832-3535 fx 508-832-3393

MEMORANDUM

Date: April 3, 2008
To: Eric Moore
Co: Lamoureux • Pagano Assoc., Arch.
From: Kevin R. Seaman, P.E.
Re: Nashoba Regional High School – Mechanical Memo of Building Program
cc:

The following is a brief description of the potential impact to the mechanical systems for the proposed building program. Our assessment is limited to that obtained from review of existing drawings and the proposed building program only. No inspections of the site were made. Our comments are limited to interior systems only and no comment or review has been made pertaining to existing well and septic system capacities.

In general the project involves three (3) options for both renovating segments of the existing building as well as constructing additions to support program space needs. General descriptions of options are as follows:

Option #1 incorporates a 12,800 SF classroom addition along with two (2) alternates totaling 14,750 SF for additions to the cafeteria and lobby. This option also includes a separate 10,800 SF structure to house the district offices.

Option #2 incorporates a 12,800 SF classroom addition along with two (2) alternates totaling 14,750 SF for additions to the cafeteria, lobby, administration and district offices.

Option #3 incorporates a 28,000 SF addition to support science labs, district offices & media center along with one (1) alternate of 1,750 SF for an addition to the cafeteria.

Fire Suppression:

The existing building is fully protected by a wet pipe style fire suppression system. This system is supplied with water from a 40,000 gallon underground tank and associated fire pump.

This system will accommodate any of the options outlined above with minor infrastructure modifications. At most, a separate riser would need to be provided for the larger addition if the area limit has been exceeded for this segment of the building. Otherwise all areas could be fed from existing adequately sized mains.

Plumbing:

Based on the size structure proposed, added domestic cold water, hot water and sanitary loads for all the options does not appear to be large enough to require upgrades to main house systems although final interior layout would need to be reviewed to verify. New bathroom groups will need to be provided in the areas of the classroom addition to accommodate the added occupant loads and to support proper travel distances. Code requires travel distance of no more than 300 feet and student fixtures of 1 per 30 water closets female, 1 per 90 water closets male, 1 per 90 urinals male, 1 per 90 lavatories male & female.

If the science labs will be working with natural gas or chemicals, emergency eye wash and shower stations shall be required. These will require a separate water heater of adequate capacity to support the tempered water demand and duration. In addition, if chemicals are dealt with an acid waste neutralizing system shall be required.

HVAC:

The existing buildings heating needs are supported by two (2) H.B. Smith hot water boilers with a combined output capacity of approximately 7 million BTUH. These boilers are dedicated to heating the 181,000 SF existing structure.

All options including the alternates involve the addition of approximately 28,000 SF of space. Depending on final space use, number of science lab hoods, etc… each option could add close to 900,000 BTUH of demand on the heating plant. Although both boilers may be able to just support this added load at maximum output there would be inadequate back-up for the building should one boiler fail. As such we would suggest a smaller boiler be installed to augment the plant. If natural gas is available, consideration could be given to installing a high efficiency condensing type boiler which could be used to support the lower loop temperatures during the shoulder months in addition to helping during peak loads.

The existing hydronic pumps could be modified to support the general added loads for the small additions and renovations, however separate piping loops and dedicated pumps will need to be provided to support the substantial addition areas (i.e. over 5,000 SF).

End of Narrative

A R T Engineering Corp.
ELECTRICAL ENGINEERS
76 Webster Street, Worcester, MA 01603 T. 508.797.0333 F. 508.797.5130

February 28, 2008

Nashoba Regional High School
Electrical Load Analysis

General

ART Engineering Corp. has been retained by Lamoureux Pagano Associates to provide analysis of the electrical distribution system for the proposed renovation/addition options for the Nashoba Regional High School. This evaluation is based on existing drawings and electrical loads provided to our office.

The electrical service for the building is 2000 Amps, 480/277 Volts, 3-phase, 4-wire fed from a utility company transformer located on the exterior of the building. The electrical service is designed for approximately 1300kW at 80% load. The current peak load for the building is around 500kW. A 205kW/265kVA emergency generator powers the building life safety loads (emergency lighting and fire pump). There is sufficient capacity in the existing electrical service to accommodate the proposed renovation/addition options.

Option 1
1. 10,800 S.F. 1-strory new building for district offices.
2. 12,800 S.F. 2-story addition for science labs and classrooms.
3. Alternate 1: 1,750 S.F. 1-story addition to the cafeteria.
4. Alternate 2: 2,200 S.F. 1-story addition for presentation room and entry lobby.

The new 1-story building would be powered by a new electrical service, a utility company pad/pole mount transformer would be provided on the exterior of the building. It would be cost prohibitive to run feeders from the existing electrical service to the proposed location of the new building. The emergency lighting loads would be battery powered unless a new generator was provided.

The 2-story addition would be powered from the existing electrical service. New panels and step-down transformers would be provided for lighting and power loads. The alternate options would be powered from existing electrical panels. The emergency lighting loads would be powered by the existing generator.

A R T Engineering Corp.
ELECTRICAL ENGINEERS
76 Webster Street, Worcester, MA 01603 T. 508.797.0333 F. 508.797.5130

Option 2
1. 6,200 S.F. addition for district offices.
2. 4,600 S.F. 2-story addition for district offices.
3. 12,800 S.F. 2-story addition for science labs and classrooms.
4. Alternate 1: 1,750 S.F. 1-story addition to the cafeteria.
5. Alternate 2: 2,200 S.F. 1-story addition for presentation room and entry lobby.

The 1- and 2-story additions would be powered from the existing electrical service. New panels and step-down transformers would be provided for lighting and power loads. The alternate options would be powered from existing electrical panels. The emergency lighting loads would be powered by the existing generator.

Option 3
1. 28,000 S.F. 2-story addition for district offices, science labs, media center and presentation room.
2. Alternate 1: 1,750 S.F. 1-story addition to the cafeteria.

The 2-story addition would be powered from the existing electrical service. New panels and step-down transformers would be provided for lighting and power loads. The alternate options would be powered from existing electrical panels. The emergency lighting loads would be powered by the existing generator.

KANG ASSOCIATES INC

Architecture
Interior Design

410 Boston Post Road
Sudbury, MA 01776

tel. 978.443.6383
fax. 978.443.1360
em. webmail@kangarchitects.com
www.kangarchitects.com

July 28, 2006

Mr. George King
Asst. Superintendent
Nashoba Regional School District
50 Mechanic Street
Bolton, MA 01740

Re: Space Program

Dear Mr. King:

Enclosed is the space program we developed for your use and information. For this study, questionnaires were distributed to all departments through your office. This was followed up by discussions with staff and observations of current operations. Please note that the spaces have been comfortably sized, using the following assumptions.

Private offices and meeting rooms have been sized for specific desired occupancies and anticipated uses. In sizing general office spaces, anticipated occupancy was used as a guideline. Department directors estimated the number of staff they hoped to include in the future, accounting for growth. For each staff member, 100 square feet has been allotted. This area allows for an 8'x8' corner workstation and a total of 4' of additional width for circulation. Another 100 square feet has been added to each general office space for storage. It should be noted that 8'x8' workstations are generous and provide more work space than is currently provided for staff. Standard desks with returns can also be used and would result in more compact layouts.

In sizing shared storage space, another formula was used. Two hundred square feet has been allotted for each of the five departments that expressed a significant need for record storage (Superintendent, Teaching and Learning, Special Education, Business, and Human Resources), with another 200 square feet added for contingency needs.

Finally, three different efficiencies (65%, 70%, and 75%) were used to provide a range of gross square footage required. Renovation of an existing building that imposes considerable limitations to planning could yield an efficiency as low as 65% whereas a new building can be as efficient at 75%.

I hope this is helpful to you in your planning process. If you have any questions, please do not hesitate to contact me.

Yours truly,

Kaffee Kang

Nashoba Regional School District Offices - Space Program

Space	Proposed Size	Proposed Occupancy	Proximities	Comments
Office of Superintendent				
General office	300	2		
Superintendent	250	1	Large Conference	Meeting space for 6
Asst. Superintendent	200	1		Meeting space for 4
Teaching and Learning			Conference, SPED, Supt.	
General office	200	1		
Director	200	1		Meeting space for 4
Associates	500	4		Office partitions
Special Education			Conference, Supt.	
General office	400	3		
Director	200	1		Meeting space for 4
Asst. Director	150	1		Meeting space for 4
Team Chairs	320	4		4@80SFea, acoustic privacy, office partitions
Testing/Interview	100	2		
Secure Storage	50	0		
Nursing				
Director	150	1	Supt.	Meeting space for 2
Technology				
General office	400	4		Quiet
Team room	200			Shared private office space
Computer	80	0		Separate 24 hr. environmental control
Facilities				
Director	300	1	Asst. Supt., Business	Counter space for 2 technicians
				Plan storage
				Meeting space for 4
Business Office				
General office	400	2.5		Office partitions
Human Resources			Asst. Supt., Business	
Reception/waiting	100			Space for filling out forms
Manager	150	1		
Payroll	150	1		
Food Service				
Director	150	1	Asst. Supt., Business	
Support/Shared				
Large Conference	400	40		Possible movable partition
Conference	250	15		
Conference	250	15		
Copy/work/mail room	120			
Lunchroom	150			
Storage	1200			
Toilet rooms	130			3 private unisex toilet rooms, 1 HP unisex
Lobby/reception	150			
TOTAL NET SF	**7600**			
GROSS SF @ 65% EFFICIENCY	**11692**			
GROSS SF @ 70% EFFICIENCY	**10857**			
GROSS SF @ 75% EFFICIENCY	**10133**			
Visitors parking		10		
Staff parking		35		
TOTAL PARKING		45		