

Renovation of Existing Performing Arts Building and Athletic Building (Demolition of Existing Academic Core) and Construction of a New Academic Core Addition









Renovation of Existing Athletic Building (Demolition of Existing Academic Core) and Construction of a New Academic Core and Performing Arts Addition









## New Construction







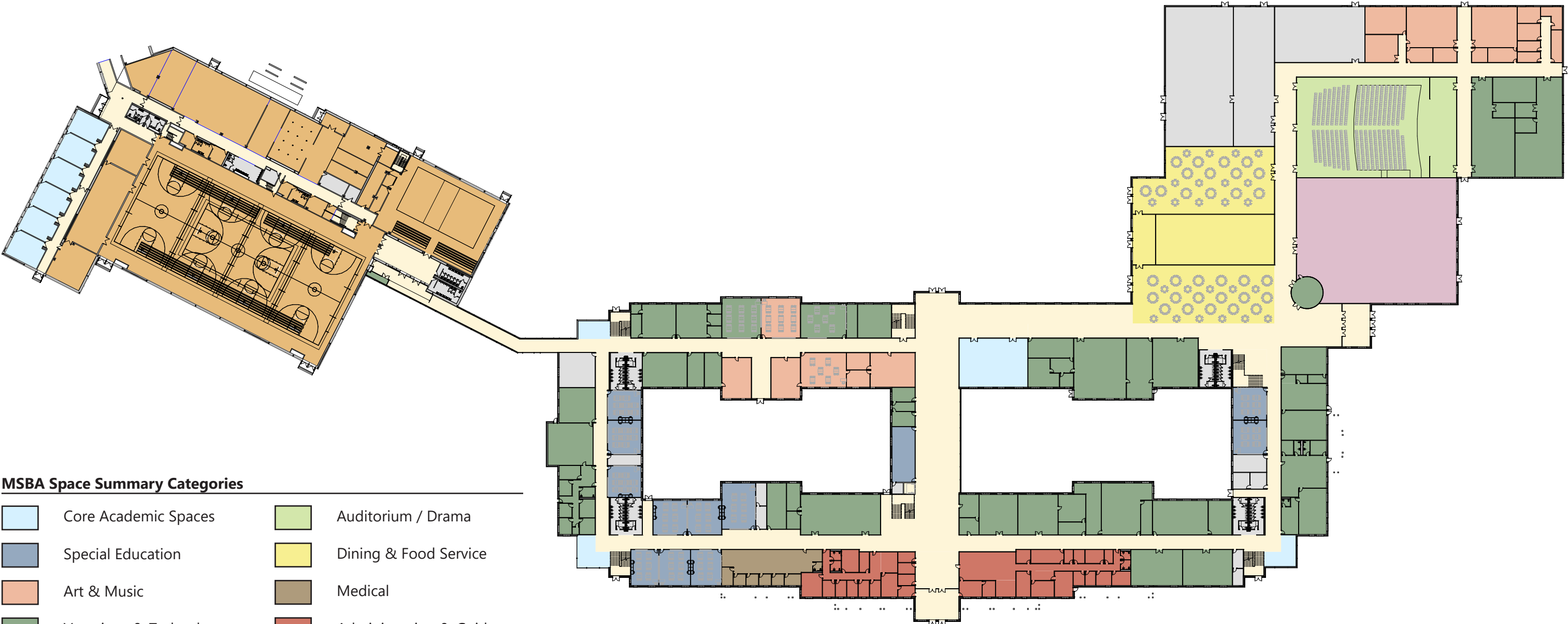


New Construction  
(Use of Prefabricated Building for Large Spaces)
















OPTION 1E  
CONCEPTUAL BUILDING PLANS  
Final Evaluation of Alternatives



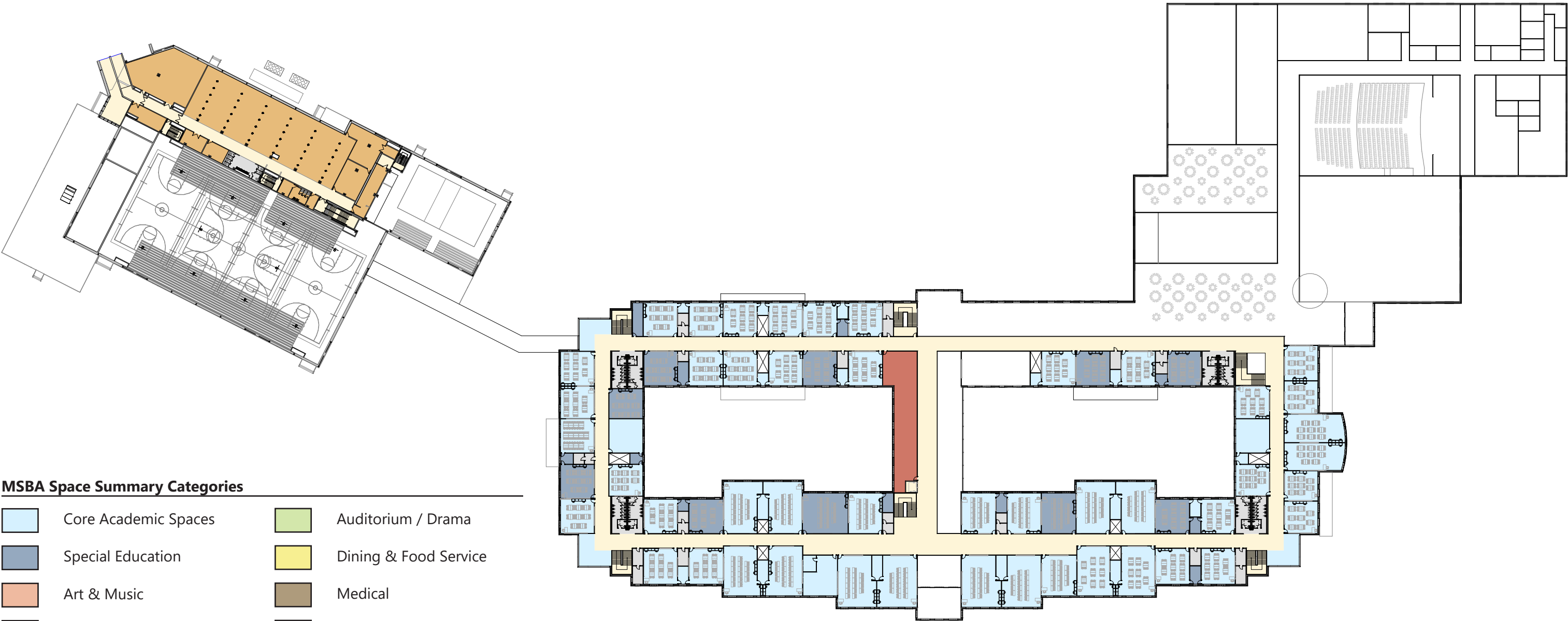
**MSBA Space Summary Categories**

	Core Academic Spaces		Auditorium / Drama
	Special Education		Dining & Food Service
	Art & Music		Medical
	Vocations & Technology		Administration & Guidance
	Health & Physical Education		Custodial & Maintenance
	Media Center		

**FLOOR ONE**





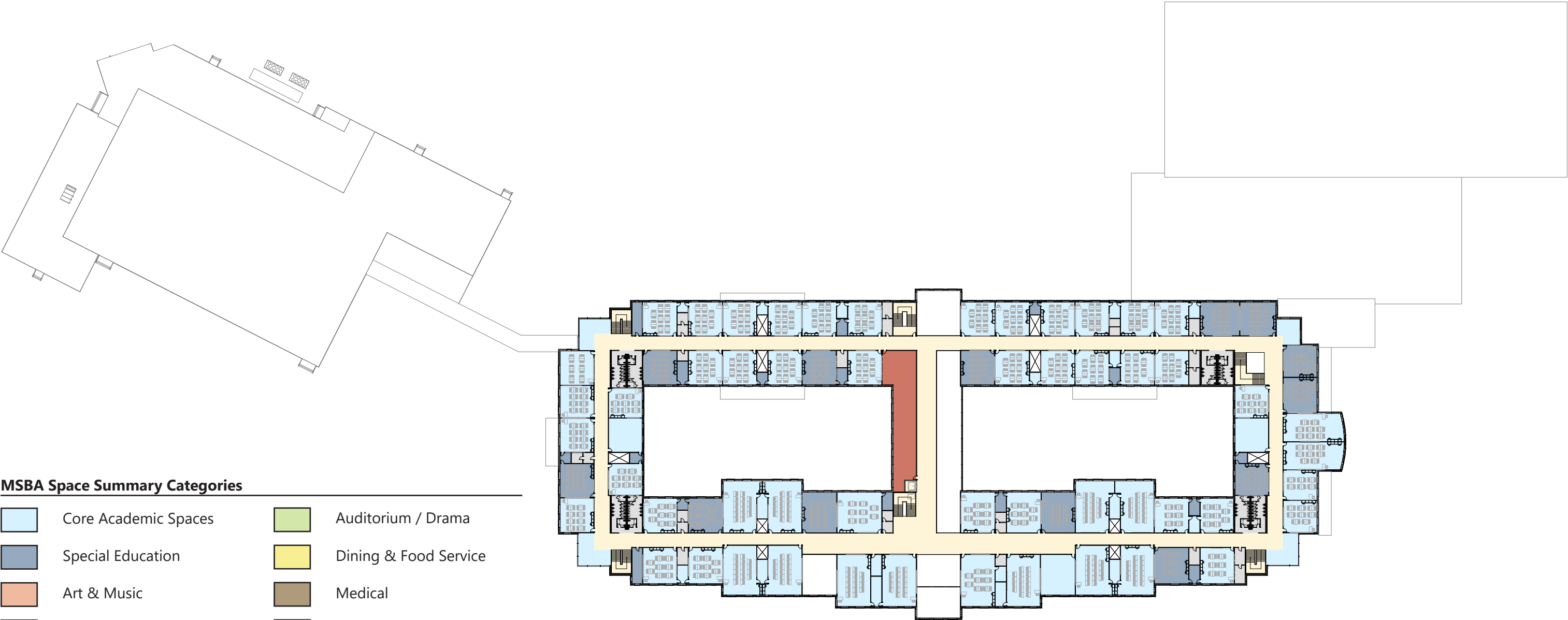













**FLOOR TWO**









MSBA Space Summary Categories			
	Core Academic Spaces		Auditorium / Drama
	Special Education		Dining & Food Service
	Art & Music		Medical
	Vocations & Technology		Administration & Guidance
	Health & Physical Education		Custodial & Maintenance
	Media Center		

**FLOOR THREE**







# OPTION 1E

## STRUCTURAL NARRATIVE

### Final Evaluation of Alternatives

The proposed scheme required renovations to the existing athletic building and the demolition of the remainder of the existing school except the Performing Arts Building which will remain as a separate structure. A new, three (3) story academic core building is proposed to be connected to the renovated Athletic Building by way of a corridor. A new, double height, single story, pre-engineered steel building is proposed to be attached to the new academic core building that would house the auditorium, music program, and other ancillary spaces.

#### **PRIMARY STRUCTURAL CODE ISSUES RELATED TO THE EXISTING STRUCTURE**

If any repairs, renovations, additions or change of occupancy or use are made to the existing structures, a check for compliance with 780 CMR, Chapter 34 "Existing Structures" (Massachusetts Amendments to The International Existing Building Code 2015) of the Massachusetts Amendments to the International Building Code 2015 (IBC 2015) and reference code "International Existing Building Code 2015" (IEBC 2015) will be required. The intent of the IEBC and the related Massachusetts Amendments to IEBC is to provide alternative approaches to alterations, repairs, additions and/or a change of occupancy or use without requiring full compliance with the code requirements for new construction.

The IEBC provides three (3) compliance methods for the repair, alteration, change of use, or additions to an existing structure. Compliance is required with only one (1) of the three

(3) compliance alternatives. Once the compliance alternative is selected, the project will have to comply with all requirements of that particular method. The requirements from the three (3) compliance alternatives cannot be applied in combination with each other.

The three (3) compliance methods are as follows:

1. Prescription Compliance Method.
2. Work Area Compliance Method.
3. Performance Compliance Method.

#### **Comment**

The approach is to evaluate the compliance requirements for each of the three (3) methods and select the method that would yield the most cost effective solution for the structural scope of the project. The selection of the compliance method may have to be re-evaluated after the impact of the selected method is understood and after analyzing the compliance requirements of the other disciplines, Architectural, Mechanical, Fire Protection, Electrical, and Plumbing.

Since the existing building contains un-reinforced masonry wall structures, the anchorage of the walls to the floor and roof structure will have to be evaluated if the work area of the project exceeds 50 percent of the aggregate floor and roof area of the building.

#### **Prescriptive Compliance Method**

In this method, compliance with Chapter 3 of the IEBC is required. As part of the scope of this report, the extent of the compliance requirements identified are limited to the structural requirements of this chapter.

#### **Additions**

Based on the project scope, the following structural issues have to be addressed:

- All additions should comply with the code requirements for new construction in the IBC.
- For additions that are not structurally independent of an existing structure, the existing structure and its addition, acting as a single structure, shall meet the requirements of the code for new construction for resisting lateral loads, except for the existing lateral load carrying structural elements whose demand-capacity ratio is not increased

by more than 10 percent, these elements can remain unaltered.

- Any existing gravity, load-carrying structural element for which an addition or its related alterations causes an increase in the design gravity load of more than 5 percent shall be strengthened, supplemented, or replaced.

### **Alterations**

- Any existing gravity, load-carrying structural element for which an addition or its related alterations causes an increase in the design gravity load of more than 5 percent shall be strengthened, supplemented, or replaced.
- For alterations that would increase the design lateral loads or cause a structural irregularity or decrease the capacity of any lateral load carrying structural element, the structure of the altered building shall meet the requirements of the code for new construction, except for the existing lateral load carrying structural elements whose demand-capacity ratio is not increased by more than 10 percent, these elements can remain unaltered.

### **Work Area Compliance Method**

In this method, compliance with Chapters 4 through 12 of the IEBC is required. As part of the scope of this report, the extent of the compliance requirements identified is limited to the structural requirements of these chapters.

In this method, the extent of alterations has to be classified into LEVELS OF WORK based on the scope and extent of the alterations to the existing structure. The LEVEL OF WORK can be classified into LEVEL 1, LEVEL 2, or LEVEL 3 Alterations. In addition, there are requirements that have to be satisfied for additions to the existing structure.

The extent of the renovations (includes Architectural, FP, and MEP renovations) for this project will exceed 50 percent of the aggregate area of the building, thus the LEVEL OF WORK for this project would be classified as LEVEL 3 Alterations. This would require compliance with provision of Chapters 6, 7, and 8 of the IEBC. If the scope of the project includes new additions to the existing structure, this would trigger compliance with provisions in Chapter 10 of the IEBC.

### **Level 3 Alterations**

- Any existing gravity, load-carrying structural element for which an alteration causes an increase in the design gravity load of more than 5 percent shall be strengthened, supplemented, or replaced.
- For alterations where more than 30 percent of the total floor area and roof areas of a building or structure have been or proposed to be involved in structural alterations

within a twelve (12) month period, the evaluation and analysis shall demonstrate that the altered building complies with the full design wind loads as per the code requirements for new construction and with reduced IBC level seismic forces.

- For alterations where not more than 30 percent of the total floor and roof areas of a building are involved in structural alterations within a twelve (12) month period, the evaluation and analysis shall demonstrate that the altered building or structure complies with the loads at the time of the original construction or the most recent substantial alteration (more than 30 percent of total floor and roof area). If these alterations increase the seismic demand-capacity ratio on any structural element by more than 10 percent, that particular structural element shall comply with reduced IBC level seismic forces.
- Existing anchorage of all unreinforced masonry walls to the structure have to be evaluated.

### **Additions**

- All additions shall comply with the requirements for the code for new construction in the IBC.
- Any existing gravity, load-carrying structural element for which an addition or its related alterations cause an increase in design gravity load of more than 5 percent shall be strengthened, supplemented, or replaced.
- For additions that are not structurally independent of any existing structures, the existing structure and its additions, acting as a single structure, shall



meet the requirements of the code for new construction in the IBC for resisting wind loads and IBC Level Seismic Forces (may be lower than loads from the Code for New Construction in the IBC), except for small additions that would not increase the lateral force story shear in any story by more than 10 percent cumulative. In this case, the existing lateral load resisting system can remain unaltered.

### **Performance Compliance Method**

Following the requirements of this method for the alterations and additions may be onerous on the project because this method requires that the altered existing structure and the additions meet the requirements for the code for new construction in the IBC.

### **PARTICULAR REQUIREMENTS OF COMPLIANCE METHODS**

For our project, in order to meet compliance with one (1) of the two (2) compliance methods "Prescriptive Compliance Method" or the "Work Area Compliance Method", we have to address the following:

#### **Prescriptive Compliance Method**

##### **Additions**

The proposed additions would be designed structurally independent of the existing structures, thus, would not impart any additional lateral loads on the existing structure.

If the proposed alterations are such that the alterations increase the design lateral loads on the existing building or cause any structural irregularity or decrease the lateral load carrying capacity of the building, the structure of the altered building shall meet the requirements of the Code for New

Construction in the IBC.

If the proposed additions increase the design gravity load on portions of the existing roof members, these members would have to be reinforced and this incidental structural alteration of the existing structures would have to be accounted for in the scope of the alterations to the existing school and would trigger requirements for alterations.

##### **Alterations**

Alterations that would increase the design gravity loads by more than 5 percent on any structural members would have to be reinforced.

If the proposed alterations of the structure increases the demand-capacity ratio of any lateral load resisting element by more than 10 percent, the structure of the altered building or structure shall meet the requirements for the code for new construction.

#### **Work Area Compliance Method**

##### **Level 3 Alterations**

If the proposed structural alterations of an existing structure are less than 30 percent of the total floor and roof areas of the existing structure, we have to demonstrate that the altered structure complies with the loads applicable at the time of the original construction and that the seismic demand-capacity ratio is not increased by more than 10 percent on any existing structural element. Those structural elements whose seismic demand-capacity ratio is increased by more than 10 percent shall comply with reduced IBC level seismic forces.

If the proposed structural alterations of an existing structure exceed 30 percent of the total floor and roof areas of an existing structure, we have to demonstrate that the altered structure complies with the IBC for wind loading and with reduced IBC level seismic forces.

Existing anchorage of all unreinforced masonry walls to the structure have to be evaluated. If the existing anchorage of the walls to the structure is deficient, the tops of the masonry walls will require new connections to the structure.

##### **Additions**

The proposed additions would be designed structurally independent of the existing structures, thus they would not impart any additional lateral loads on the existing structures.

##### **Comment**

The compliance requirements of the two (2) methods, in most respects, are very similar. The Prescriptive Compliance Method

would require that the existing lateral load resisting systems meet the requirements of the code for new construction of the IBC, even for small increases of design lateral loads. The requirements in both methods will require anchorage of all existing masonry walls. Based on this, we would recommend the Work Area Compliance Method for the project.

## **PROPOSED STRUCTURAL SCHEME FOR EXISTING ATHLETIC BUILDING**

Primary structural code issues related to the existing structure are due to the extent of the proposed demolition of the existing school. The existing athletic building will essentially have to comply with the code for new construction. Based on the review of the existing documents, it appears that the existing athletic building does not rely on the existing portion of the structure that is proposed for demolition. The existing masonry walls will have to be positively connected to the roof and floor framing members. Foundations of some of the interior walls that would become exterior walls will require underpinning to bring the foundations below the frost depth.

## **PROPOSED STRUCTURAL SCHEME FOR THE ADDITIONS**

The proposed additions will be structurally separated from the existing athletic building that is to remain.

All of the existing masonry walls will have to be positively connected to the structure.

Due to the replacement of the entire mechanical system, an allowance should be made for reinforcing of the existing roof framing to support the new units. The cost should be carried as a percentage cost of the mechanical units in the budget.

## **PROPOSED ACADEMIC CORE BUILDING ADDITION**

### **SUBSTRUCTURE**

#### **Foundations**

Based on the foundations of the existing structure, the columns of the proposed addition would bear on reinforced concrete footings and the perimeter foundation walls would bear on continuous reinforced concrete strip footings extending at least 4 ft. - 0 in. below grade. With the assumed bearing capacity of the soil of 2 tons/sf, a typical interior footing would be 9 ft. - 0 in. x 9 ft. - 0 in. x 24 in. deep and a typical exterior footing would be 8 ft. x 8 ft. x 24 in. in the three (3) story addition. The exterior foundation walls would be 14 to 16 in. thick reinforced cast-in-place concrete walls in 24 to 36 in. wide x 12 in. deep continuous reinforced concrete strip footings around the perimeter of the addition extending a minimum of 4 ft. - 0 in. below finished grade.

### **Slabs-on-Grade**

Based on the existing school construction, the lowest level of the proposed additions would be a 5 in. thick concrete slab-on-grade reinforced with welded wire fabric over a vapor barrier on 2 in. thick rigid insulation on 8 in. of compacted granular structural fill and a base course of 8 in. of compacted gravel.

### **SUPERSTRUCTURE**

#### **Floor Construction**

##### ***Typical Floor Construction***

The slab-on-deck construction would be 5 ¼ in. light weight concrete composite metal deck slab reinforced with welded wire fabric on wide flange steel beams spanning between steel girders and columns. The weight of the structural steel is estimated to be 13 psf for the typical framing.

#### **Roof Construction**

##### ***Typical Roof Construction***

The roof construction would be galvanized, corrugated 1 ½ in. deep, Type 'B' metal roof deck spanning between wide flange steel beams and girders. At locations of roof supported mechanical equipment, a concrete slab will be provided similar to the typical supported slab. The weight of the structural steel is estimated to be 13 psf.

#### **Vertical Framing Elements**

##### ***Columns***

Columns will be hollow structural steel columns. Typical columns would be HSS 8 x 8 columns.

##### ***Lateral Load-Resisting System***

The typical lateral load-resisting system would be concentric braced frames comprised of HSS structural steel members.



## **PROPOSED PRE-ENGINEERED STEEL BUILDING ADDITION**

### **SUBSTRUCTURE**

#### **Foundations**

Based on the foundations of the existing structure, the columns of the proposed addition would bear on reinforced concrete footings and the perimeter foundation walls would bear on continuous reinforced concrete strip footings extending at least 4 ft. – 0 in. below grade. With the assumed bearing capacity of the soil of 2 tons/sf, a typical interior footing would be 6 ft. – 0 in. x 6 ft. – 0 in. x 24 in. deep and a typical exterior footing would be 6 ft. – 0 in. x 6 ft. – 0 in. x 24 in. The exterior foundation walls would be 14 to 16 in. thick reinforced cast-in-place concrete walls in 24 to 36 in. wide x 12 in. deep continuous reinforced concrete strip footings around the perimeter of the addition extending a minimum of 4 ft. – 0 in. below finished grade.

#### **Slabs-on-Grade**

Based on the existing school construction, the lowest level of the proposed additions would be a 5 in. thick concrete slab-on-grade reinforced with welded wire fabric over a vapor barrier on 2 in. thick rigid insulation on 8 in. of compacted granular structural fill and a base course of 8 in. of compacted gravel.

### **SUPERSTRUCTURE**

The pre-engineered superstructure would be a steel framed structure supported on reinforced concrete foundations. The structure would be composed of steel bents with tapered columns and beams. The roof deck would be a composite deck spanning between steel 'Z' shaped purlins. The lateral loads would be resisted by ordinary steel moment frames and ordinary concentric braced frames.





# OPTION 1E

## FIRE PROTECTION NARRATIVE

### Final Evaluation of Alternatives

The following is the Fire Protection system narrative which defines the scope of work and capacities of the Fire Protection system as well as the Basis of Design.

#### Codes

All work installed under Section 210000 shall comply with the Massachusetts Building Code and all federal, state, and county codes, laws, statutes, and authorities having jurisdiction.

#### Design Intent

All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Fire Protection system and all items incidental thereto, including commissioning and testing.

#### General

In accordance with the provisions of the Massachusetts Building Code, a school building of greater than 12,000s.f. must be protected with an automatic sprinkler system.

#### Description

The new building will be served by three (3) new 8-inch fire services, each with a double check valve assembly, wet alarm valve complete with electric bell, and fire department connection meeting local thread standards. One (1) fire service shall serve the renovated Gymnasium wing, one (1) fire service shall serve the middle Classroom wing and one (1) fire service shall serve the Kitchen/Auditorium wing.

System will be a combined standpipe/sprinkler system with control valve assemblies to limit the sprinkler area controlled to less than 52,000 s.f. as required by NFPA 13-2013.

Control valve assemblies shall consist of a supervised shutoff valve, check valve, flow switch and test connection with drain. Standpipes meeting the requirements of NFPA 14-2013 shall be provided in the egress stairwells and in the Stage area.

All areas of the building, including all finished and unfinished spaces, combustible concealed spaces, all electrical rooms, and closets will be sprinklered.

All sprinkler heads will be quick response, pendent in hung ceiling areas and upright in unfinished areas.

Fire department valves and cabinets will be provided on each side of the stage in the building.

#### Basis of Design

The mechanical rooms, kitchen, science classrooms, and storage rooms are considered Ordinary Hazard Group 1; stage is considered Ordinary Hazard Group 2; all other areas are considered light hazard.

#### Required Design Densities:

Light Hazard Areas	0.10 GPM over 1,500 s.f.
Ordinary Hazard Group 1	0.15 GPM over 1,500 s.f.
Ordinary Hazard Group 2	0.20 GPM over 1,500 s.f.

#### Sprinkler Spacing (max.):

Light Hazard Areas:	225 s.f.
Ordinary Hazard Areas:	130 s.f.

A flow test shall be performed to determine whether there is adequate water to serve the project without a fire pump for each of the three (3) service locations.

#### Piping

Sprinkler piping 1-1/2 in. and smaller shall be ASTM A-53, Schedule 40 black steel pipe. Sprinkler/standpipe piping 2 in. and larger shall be ASTM A-135, Schedule 10 black steel pipe.

**Fittings**

Fittings on fire service piping, 2 in. and larger, shall be Victaulic Fire Lock Ductile Iron Fittings conforming to ASTM A-536 with integral grooved shoulder and back stop lugs and grooved ends for use with Style 009-EZ or Style 005 couplings. Branch line fittings shall be welded or shall be Victaulic 920/920N Mechanical Tees. Schedule 10 pipe shall be roll grooved. Schedule 40 pipe, where used with mechanical couplings, shall be roll grooved and shall be threaded where used with screwed fittings. Fittings for threaded piping shall be malleable iron screwed sprinkler fittings.

**Joints**

Threaded pipe joints shall have an approved thread compound applied on male threads only. Teflon tape shall be used for threads on sprinkler heads. Joints on piping, 2 in. and larger, shall be made up with Victaulic, or equal, Fire Lock Style 005, rigid coupling of ductile iron and pressure responsive gasket system for wet sprinkler system as recommended by manufacturer.

**Double Check Valve Assembly**

Double check valve assembly shall be Massachusetts State approved, U.L./F.M. approved, with iron body bronze mounted construction complete with supervised OS & Y gate valves and test cocks. Two (2) spare sets of gaskets and repair kits shall be furnished.

Double check valve detector assembly shall be of one of the following:

1. Watts Series 757-OSY
2. Wilkins 350A-OSY
3. Conbraco Series 4S-100
4. Or equal



# OPTION 1E

## PLUMBING NARRATIVE

### Final Evaluation of Alternatives

The following is the Plumbing systems narrative, which defines the scope of work and capacities of the Plumbing system as well as the Basis of Design. The Plumbing systems shall be designed and constructed for LEED for Schools where indicated in this narrative.

#### Codes

All work installed under Section 220000 shall comply with the Massachusetts Building Code, Massachusetts Plumbing Code and all federal, state, and county codes, laws, statutes, and authorities having jurisdiction.

#### Design Intent

All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Plumbing work and all items incidental thereto, including commissioning and testing.

#### General

The Plumbing Systems that will serve the project are cold water, hot water, tempered water, sanitary waste and vent system, special waste systems, grease waste system, storm drain system, and natural gas.

The building will be serviced by Municipal water and Municipal sewer system.

All Plumbing in the building will conform to Accessibility Codes and to Water Conserving sections of the Plumbing Code.

#### Drainage System

Soil, Waste, and Vent piping system will be provided to connect to all fixtures and equipment. The system runs from

ten (10) feet outside the building and terminates with stack vents through the roof.

A separate Grease Waste System will be provided starting with connection to an exterior concrete grease interceptor running through the kitchen and server area fixtures and terminating with a vent terminal through the roof. Point of use grease interceptors are to be provided at designated kitchen fixtures. The grease interceptor is provided under Division 22 scope.

Storm Drainage system will be provided to drain all roofs with roof drains piped through the building to a point ten (10) feet outside the building.

A separate Special Waste System shall be provided starting with a connection to an interior limestone chip acid neutralizer, running thru the building to collect science classroom fixtures and terminating with vent terminals through the roof. Special Waste and Vent piping will be Schedule 40 electric heat fused polypropylene piping, fittings, and traps, flame retardant above grade and non-flame retardant below ground.

Drainage system piping will be service weight cast iron piping; hub and spigot with gaskets for below grade; no hub with gaskets, bands and clamps for above grade 2 in. and larger. Waste and vent piping 1-1/2 in. and smaller will be type 'L' copper.

#### Water System

A new 4-inch domestic water service from the municipal water system will be provided to each of three (3) zones. One (1) domestic service shall serve the renovated Gymnasium wing, one (1) fire service shall serve the middle Classroom wing and one (1) fire service shall serve the Kitchen/Auditorium wing. A meter and backflow preventer, if required, will be provided at each of the three (3) locations.

A cold water distribution main is provided. Non-freeze wall hydrants with integral back flow preventers are provided along the exterior of the building.

Each of the three (3) wings shall be equipped with a Domestic hot water system provided with a combination of gas fired, high efficiency, condensing water heaters (800,000 BTUH input), with separate storage tank (500 gallon). Each system is to be equipped with thermostatically controlled mixing devices to control water temperature to the fixtures.

A pump at each system will re-circulate hot water from the piping system. Water temperature will be 120 deg. F to serve general use fixtures. A 140 deg. F hot water will be supplied to the kitchen dishwasher.

Water piping will be type 'L' copper with wrought copper sweat fittings, silver solder or press-fit system. All piping will be insulated with 1 in. thick high density fiberglass.

### **Natural Gas System**

Three (3) natural gas services will be provided for the building and will serve the boilers, domestic water heaters, kitchen cooking equipment, and roof top equipment.

Natural gas piping will be Schedule 40 black steel pipe with threaded gas pattern malleable fittings for 2 in. and under and butt welded fittings for 2-1/2 in. and larger.

### **Fixtures LEED for Schools**

Furnish and install all fixtures, including supports, connections, fittings, and any incidentals to make a complete installation.

Fixtures shall be the manufacturer's guaranteed label trademark indicating first quality. All acid resisting enameled ware shall bear the manufacturer's symbol signifying acid resisting material.

Vitreous china and acid resisting enameled fixtures, including stops, supplies and traps shall be of one (1) manufacturer by Kohler, American Standard, or Eljer, or equal. Supports shall be Zurn, Smith, Josam, or equal. All fixtures shall be white. Faucets shall be Speakman, Chicago, or equal.

Fixtures shall be as scheduled on drawings.

- Water Closet: High efficiency toilet, 1.28 gallon per flush, wall hung, vitreous china, siphon jet. Manually operated 1.28 gallon per flush-flush valve.
- Urinal: High efficiency 0.13 gallon per flush urinal, wall hung, vitreous china. Manually operated 0.13 gallon per flush-flush valve.
- Lavatory: Wall hung/countertop ADA lavatory with 0.5 GPM metering mixing faucet programmed for 10 second run-time cycle.
- Sink: Elkay ADA stainless steel countertop sink with Chicago 201A faucet and 0.5 GPM aerator.
- Drinking Fountain: Halsey Taylor hi-low wall mounted electric water cooler, stainless steel basin with bottle filling stations.
- Janitor Sink: 24 x 24 x 10 Terrazo mop receptor Stern-Williams or equal.
- Laboratory Sinks: Faucets with vacuum breakers and 0.74 GPM aerators.

### **Drains**

Drains will be cast iron, caulked outlets, nickel alloy strainers, and in

waterproofed areas and roofs shall have galvanized iron clamping rings with 6 lb. lead flashings to bond 9 in. in all directions. Drains shall be Smith, Zurn, Josam, or equal.

### **Valves**

Valves will be located to isolate all parts of the system. Shutoff valves 3 in. and smaller shall be ball valves, solder end or screwed, Apollo, or equal.

### **Insulation**

All water piping shall be insulated with snap-on fiberglass insulation Type ASJ-SSL, equal to Johns Manville Micro-Lok HP.

### **Cleanouts**

Cleanouts shall be full size up to 4 in. threaded bronze plugs located as indicated on the drawings and/or where required in soil and waste pipes.

Cleanouts for Special Waste System shall be Zurn #Z9A-C04 polypropylene cleanout plug with Zurn #ZANB-1463-VP nickel bronze scoriated floor access cover.

### **Access Doors**

Access doors will be provided for access to all concealed parts of the plumbing system that require accessibility. Coordinate types and locations with the Architect.

### **Water Heaters**

Three (3) domestic hot water systems, each gas fired, high efficiency, condensing water heaters (800,000 BTUH total input), with separate storage tank (500 gallon) shall be provided.

# OPTION 1E

## MECHANICAL NARRATIVE

### Final Evaluation of Alternatives

#### Design Criteria

Interior environmental conditions will be based on Massachusetts Code 780 CMR 12 and ASHRAE Standard 55-2004.

Ventilation of spaces will be designed to meet or exceed the requirements of the latest edition of the Massachusetts State Building Code, the ICC International Mechanical Code and ASHRAE Standard 62-2010, Ventilation for Acceptable Indoor Air Quality.

HVAC equipment will be selected to comply with the 2012 edition of the International Energy Conservation Code and ASHRAE 90.1-2007.

The HVAC systems will be designed to meet the acoustical requirements of ANSI S12.60-2002. The American National Standards Institute developed this standard specification and design guideline to help eliminate acoustical problems in the design stage of a project. Essentially, the steady background noise level in core learning areas should not exceed an NC of 35.

#### Heating System

High efficiency, gas fired, condensing boilers will produce hot water to meet the heating needs of the school. Preliminary load calculations indicate that the school may need four (4) boilers each having a capacity of approximately 8,000 MBH. Each boiler will be sized to handle 1/4 of the peak heating load. The boilers will be manufactured by Cleaver-Brooks, Model CFLC-8000 or approved equal and will have a maximum efficiency of 95%. Exact size of boilers will be determined during the

design phase of the project.

Due to the fact that the specified boilers do not have a minimum flow requirement, the boiler system will be piped in a primary configuration with the hot water reset schedule being maintained by the boilers. Each boiler will be furnished with an automatic two-way control valve to isolate the boiler when not firing.

The facility will be divided into four (4) hot water system zones. Hot water will be circulated through each zone by a dedicated pair of hot water circulating pumps. Each pair of pumps will be designed to operate in a lead/lag configuration such that the lag pump shall automatically start should the lead pump fail. The lead/lag assignment shall be reversible through the automatic temperature control system. Preliminary calculations indicate that each pump set should be sized to provide 800 GPM at 100 feet of head. The speed of the pumps will be controlled by variable frequency drives (VFD). Exact size of pumps will be determined during the design phase of the project.

#### Chilled Water System

As part of the base design, the following spaces will be provided with air conditioning:

- Cafeteria
- Administration area including Principal's Office, Assistant Principal's Office, School Psychologist's Office, Counselor's Office, Adjustment Counselor's Office, Pre-school Coordinator's Office, Nurse's Office, and Conference rooms
- Teacher's planning/work rooms
- Multipurpose rooms
- Sped PT/OT spaces
- Library/Media center
- Classrooms
- Music/performing arts areas
- Computer classrooms

Locker rooms, kitchen, gymnasium, electric rooms, and shop areas will not be air-conditioned unless specifically directed by School Department representatives.

Preliminary calculations indicate that two (2) 500-ton centrifugal chillers will be required to produce chilled water to meet the cooling needs of the school on a design day. Each chiller will



be furnished with a variable frequency drive for increased energy efficiency. The chillers will be located in the main mechanical room. Exact chiller size is to be determined. Specified chiller shall be compliant with ASHRAE 90.1. The chilled water plant will also require the installation of two (2) induced draft cooling towers, each sized for 500 tons.

The chilled water system will be piped in a primary/secondary configuration. This will permit the use of two-way control valves and variable frequency drives while maintaining constant flow through the chiller as recommended by the chiller manufacturer.

The facility will be divided into four (4) chilled water system zones. Chilled water will be circulated through each zone by a dedicated pair of chilled water circulating pumps. The chilled water pumps will be designed to operate in a lead/lag configuration such that the lag pump shall automatically start should the lead pump fail. The lead/lag pump assignment shall be reversible through the automatic temperature control system. Preliminary calculations indicate that each pump should be sized to provide a maximum of 500 GPM at 75 feet of head. The speed of the pumps will be controlled by VFD's. Exact size of pumps will be determined.

## Summary of HVAC Systems

### Classrooms

1. Energy recovery rooftop units will supply the classrooms with tempered air via a system of ductwork and ceiling mounted induction units. Energy recovery rooftop units are an effective way of reducing the overall energy consumption of a building. Energy recovery rooftop units will be furnished with the following components:
  - Double-wall insulated casings
  - Supply and exhaust fans
  - MERV 13 air filters for superior indoor air quality
  - Energy recovery wheel
  - Hot water heating coil
  - Chilled water cooling coil to dehumidify and cool the supply air
  - Variable frequency drives
2. Each classroom will be furnished with induction units. The induction units will utilize dry primary air provided by the energy recovery units, the code required ventilation air needed, at an inlet static pressure of 0.6" and distributes this air through a bank of specially designed aerodynamic nozzles that discharges the air at high velocity into a mixing chamber that creates a lower pressure. This lower pressure draws room air over a coil that imparts either sensible cooling or heating as it passes over the coil. This induces room air, then mixes with the primary air and is discharged through a grille. This

air circulates throughout the room and is gently drawn back up to the return grille of the induction unit. This air circulation produces even and consistent temperatures throughout the room.

3. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the induction unit. This energy of the exhaust air leaving the classrooms is recovered at the energy recovery rooftop units.
4. The room thermostat controls water flow through the coil via the automatic temperature control system to maintain individual space temperature control.

### ***Administration, Library, Multipurpose Rooms, Music Room, Computer Classrooms, and Teachers Workrooms***

1. Energy recovery rooftop units will supply these spaces with tempered air via a system of ductwork and ceiling mounted induction units. The energy recovery units used in these spaces will be very similar to those used for the classrooms.
2. Each space will be furnished with at least one (1) induction unit. The exact number of induction units per space will be determined during the design phase. The induction units will take this source of dry primary air, the code required ventilation air needed, at an inlet static pressure of 0.6" and distribute this air through a bank of specially designed aerodynamic nozzles that discharges the air at high velocity into a mixing chamber that creates a lower pressure. This lower pressure draws room air over a coil that imparts either sensible cooling or heating as it passes over the coil. This induces room

air, then mixes with the primary air and is discharged through a grille. This air circulates throughout the room and is gently drawn back up to the return grille of the induction unit. This air circulation produces even and consistent temperatures throughout the room.

3. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the induction unit. The total energy (both latent and sensible) of the exhaust air leaving the spaces is recovered at the energy recovery rooftop units.
4. The room thermostat controls water flow through the coil via the automatic temperature control system to maintain individual space temperature control.

#### **Existing Fieldhouse**

1. The existing air handling equipment and ductwork that serve the existing fieldhouse will be removed and replaced with new air handling equipment. Air will be distributed throughout the space via new ductwork and supply diffusers.
2. The heating and ventilating units will be fitted with a hot water coil only.
3. The new air handling units will utilize the demand controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO<sub>2</sub> in the space.
4. Space temperature will be sensed with remote space mounted sensors and controlled through the building management system.

#### **Existing Natatorium**

1. A new pool dehumidification unit will be installed to serve the existing natatorium. This unit will provide the recommended air quantity at the recommended relative humidity suitable for a pool environment.
2. All deteriorated ductwork will be replaced with new ductwork, including stainless steel ductwork in areas of high humidity.

#### **Cafeteria**

1. A dedicated rooftop air-handling unit will handle the Cafeteria.
2. This unit will provide both heating and cooling. The rooftop unit will utilize the demand controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO<sub>2</sub> in the space.
3. Space temperature will be sensed with remote space mounted sensors and controlled through the building management system.

#### **Kitchen**

1. The kitchen areas will be handled by a roof mounted, gas fired make-up air handling unit specifically designed to provide tempered air to the kitchen in order to offset the amount of air being exhausted through the kitchen hood.
2. The kitchen hood exhaust system shall be provided with a Mellink kitchen hood exhaust control system which is designed to vary the speed of the kitchen hood exhaust fan in response to the intensity of the cooking operations taking place. Essentially, the fan will operate at higher speeds when higher heat and smoke producing cooking is taking place. The Mellink system will also modulate the outside air damper and fan speed of the make-up air unit.

#### **Auditorium**

1. The HVAC needs of the auditorium will be accommodated by a dedicated rooftop air handling unit. The rooftop unit will be furnished with a hot water heating coil and chilled water cooling coil.
2. This unit will provide both heating and cooling. The rooftop unit will utilize the demand controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO<sub>2</sub> in the space.
3. Space temperature will be sensed with remote space mounted sensors and controlled through the building management system.

**Controls**

Griffith & Vary, Inc. recommends this facility be furnished with a Building Management System. This system will feature full Digital Direct Controls (DDC). This system will be capable of controlling the following:

- Space temperature set point
- Start and stop of all energy recovery rooftop units and air-handling units
- Start and stop of chillers
- Enable/Disable boilers
- Start and stop of chilled water pumps
- Start and stop of hot water pumps
- Schedule occupied/unoccupied times for various spaces
- Monitoring of supply and return temperatures for hot water and chilled water
- Optimization of plant efficiency
- Monitoring of mechanical equipment (fans, pumps, boilers, chiller, etc.) and indication of any alarms, which may result from equipment failures

To save energy required to heat or cool outdoor air, carbon dioxide sensors will be employed in the gymnasium, auditorium, and cafeteria to allow a reduction of outdoor air during periods of low occupancy and motion sensors will also be utilized to allow closure of outdoor air dampers when assembly areas are unoccupied. Classrooms will also have occupancy sensors to modulate dampers in the supply air duct branches as a means of saving energy during periods when the classrooms are unoccupied.



# OPTION 1E

## ELECTRICAL NARRATIVE

### Final Evaluation of Alternatives

The building electric services will be provided via three (3) pad mounted transformers located on site as provided by the electric utility company; one (1) for the center building and one (1) for each of the wings. Primary service conduits in concrete duct bank will be provided from the electric utility pole to three transformers via electric utility company standard manholes. Secondary service feeders and conduits in concrete duct bank will be provided from the three transformers to three (3) switchboards. The electric utility company meters will be mounted on the transformers. The existing electric service and the existing pad mounted transformer for the existing stadium will be maintained. Telephone and cable TV service conduits will be provided from a utility pole to the building demarcation point (MDF Room). A fire alarm service conduit will be provided from a utility pole to the fire alarm control panel.

Three (3) switchboards will be provided; one (1) for the center building and one (1) for each of the wings' Main Electric rooms. Preliminary load calculations indicate that the switchboards will be rated at 4000 amperes, 277/480 volt, three phase, four wire. The switchboards will be provided with surge protection devices. Switchboard distribution sections will feed 277/480 volt panelboards and major Mechanical and Plumbing equipment. Dry-type transformers will be provided to distribute 120/208 volt power for branch circuit panelboards and the Kitchen panelboards. One (1) of the kitchen panelboards will be provided with a shunt trip main circuit breaker which will trip if fire suppression under

hoods in initiated, shutting down all circuits under the hoods. Panelboards with surge protection devices for computers will be provided, fed from computer grade K-rated transformers. Zero sequence harmonic filters connected to the computer panelboards will be provided to reduce neutral currents. Shops with equipment will be provided with panelboards including shunt trip main circuit breakers and mushroom type shut-off switches which can be pushed to shut down power to the panelboards in the event of an emergency. Other shops will be provided with dedicated panelboards.

Three (3) diesel fuel generators with sound attenuated, weatherproof enclosures will be provided; one (1) for the center building and one (1) for each of the wings. Preliminary load calculations indicate that the generators will be rated at 400kW, 277/480 volt, three phase, four wire. The generators will supply loads as selected by the Owner, however the following is anticipated: emergency power automatically upon loss of normal power to emergency egress, exterior building mounted, Administration, Student Dining, Mechanical Room, Electric rooms, Kitchen, Student Dining, ganged Toilet rooms, Custodian, Teacher Dining, Receiving, Locker rooms, Nurse's suite, and Gymnasium lighting, elevators, heating system equipment, fire alarm control panel, security system, telephone system, select MDF and IDF room receptacles, cooling for MDF and select IDF rooms, and kitchen walk-in cooler and freezer. Two (2) automatic transfer switches (ATS's) per building for a total of six (6) will be provided to separate emergency from optional standby loads. The emergency ATS and associated emergency panelboards will be located in two hour rated closets with two hour rated feeders. The optional standby ATS and associated panelboards will be located in normal electric rooms. Emergency panelboards will be provided with surge protection devices as required by the National Electrical Code.

General convenience receptacles will be located throughout the building as required. Receptacles provided in Toilet rooms, near sinks, the Kitchen, and outdoors will be provided with ground fault protection. Circuiting will be provided to Kitchen equipment, Mechanical, Plumbing equipment, and miscellaneous loads as required.

In general, highly efficient LED lighting fixtures will be provided throughout the building. Lighting levels will be in accordance with I.E.S. (Illuminating Engineering Society of North America)

recommendations and the Massachusetts State Building Code energy requirements. Classrooms will be provided with direct/indirect, pendant mounted lighting fixtures. Office areas, Corridors, and Conference rooms will be provided with volumetric lighting fixtures. The Gymnasium will be provided with high bay lighting fixtures. Storage, Mechanical, and Electrical rooms will be provided with strip lighting fixtures. The Main Lobby, Library, and Cafeteria will be provided with decorative lighting. The Kitchen and Locker rooms will be provided with gasketed wet location lighting fixtures. The Auditorium will be provided with surface cylinders, recessed down lights, step lighting, and wall sconces. The Stairs will be provided with vandal resistant wall mounted lighting fixtures. Down lights will be provided at various locations. The Stage will be provided with theatrical lighting fixtures and a dimming system. The dimming system will be connected to the fire alarm system bringing the house lights to full brightness upon initiation of fire alarm system. Edge lit exit signs will be provided at all egress doors and at additional locations as required to identify exit discharge routes. Vandal resistant exit signs will be provided in the Gymnasium. Pole mounted and building mounted site lighting fixtures and bollards will be provided.

Lighting fixtures in rooms less than 900 square feet will be controlled primarily by room occupancy sensors. Lighting fixtures nearest to the exterior walls with windows in Classrooms will be dimmed via daylight photo sensors. Larger areas not controlled by occupancy sensors and exterior lighting will be controlled through lighting relay panels and low voltage switches. Digital timer switches will be provided in Storage rooms.

An addressable manual and automatic fire alarm system will be provided. The fire alarm control panel will be located in the main electric room or in an area as so directed by the Fire Department. A remote annunciator panel will be provided in the Vestibule at the Main Lobby and where required by the Fire Department. A map of the entire building will be framed and mounted adjacent to the annunciator. Keyed boxes will be provided outside the Fire Department entries. Manual pull stations will be located within five feet (5') of each egress door and at the entrance to each Stair. Additional pull stations will be provided as required by Code. Heat detectors will be provided at the top of the elevator shaft and any other areas not provided with protection by the fire suppression system. Smoke detectors will be provided in the Corridors, in Stairs at each floor level, in the Elevator Machine Room, and at all elevator landings for early detection of smoke for recall. All devices including tamper, flow, pressure switches, and PIV, associated with the fire suppression system will be connected to the fire alarm system. Audio/visual appliances will be provided in the Corridors, Classrooms and all large areas such as the Auditorium, Gymnasium, Student Dining, and Library. Visual devices will be provided in Toilet and Conference rooms. Mechanical equipment

shall be shut down by the fire alarm system as required by code.

A telephone/data/video/security/clock/speaker conduit system consisting of back boxes and conduit with pull strings to above accessible ceilings will be provided for technology. Cable tray will be provided above the Corridor ceilings and MDF and IDF rooms for low voltage wiring.

A bi-directional amplifier with coaxial cabling above accessible ceilings will be provided to amplify Fire Department and Police frequencies to ensure that there are no "dead" spots in the building for communication within building.

An empty conduit system with pull strings will be provided for the PV system consisting of photovoltaic panels and an inverter. Conduits will be provided from the switchboard to an exterior mounted disconnect switch for shutting down the PV system if need be. Conduits will also be provided from the exterior disconnect switch to the inverter and from the inverter to the banks of photovoltaic panels.

# OPTION 1E TECHNOLOGY NARRATIVE Final Evaluation of Alternatives

All existing cabling and devices in the existing building to be renovated shall be removed.

The technology labs will be capable of accommodating an entire class of students (28). Network access in the technology labs will be hard wired. Four (4) ceiling data jacks shall be provided and wireless access points will be provided. In addition, the equipment specified below for a typical classroom shall be included in each lab.

## **271000 Structured Cabling**

The new network design will support a 10GHZ backbone over single mode and/or multi-mode fiber and up to 10G over Category 6A to the desktop.

Twelve (12) pairs of single mode fiber and twelve (12) pairs of multi mode fiber will be provided from the MDF to each IDF, to be utilized for data, voice, security systems, etc.

Cat 6A cabling will be provided for data, voice, CCTV, and wireless access points (four (4) data drops at each wireless access point location). Wireless access point outlet placements are intended to provide the capability for complete wireless coverage throughout the school.

Each teacher location will be wired with four (4) data ports and one (1) voice port.

Category 6A cabling will be provided for the Owner provided phone system (support for Voice over IP).

## **272100 Network Switches**

Network electronics (switches) shall be provided and installed by the Owner.

## **272133 Wireless Access Points**

Wireless access points, and a controller if applicable, will be provided, one (1) access point in each classroom, and three (3) in each large group space. Office suites shall have an access point. Access points may be proprietary, to ensure compatibility with existing district infrastructure.

## **273000**

The phone system and handsets shall be provided and installed by the Owner. The building shall be cabled to support a voice over IP phone system using Cat 6A.

## **274000**

Video and audio presentation equipment (wall mounted wide format ultra short throw projector (possible interactive projector if an interactive whiteboard is not provided)), 8' marker board (possible 8' interactive white board if an interactive projector is not provided), voice lift system with microphones and amplifier, and up to four (4) ceiling speakers) will be permanently installed in classrooms, labs and designated rooms. The PC/laptop in each classroom shall be provided by the Owner. A presentation camera will be provided in each interactive classroom and in designated spaces.

The Auditorium shall have a high lumen (min 14k lumen) theater level projector provided. A sound system, assistive listening system, video recording system, and mixer board shall be provided. An intuitive touch screen control system shall be provided. Wired and wireless microphones shall be provided.

A sound system shall be provided in the Gym. An assistive listening system shall be provided. Wired and wireless microphones shall be provided.

Student dining shall contain a sound system and assistive listening system.

## **275000**

A public address system shall be provided. Digital clocks synchronized with a master clock shall be provided in every



classroom and conference room, and where designated on the drawings. The PA system shall be integrated with the Owner provided phone system to allow the use of the phone system for paging within the building.

**277000**

A high definition, 1080p, 9 channel IPTV system shall be provided. TVs with set top boxes shall be provided at designated locations. Coax shall not be run for video distribution purposes within the school. The capability and devices necessary to broadcast three (3) high definition "live" video streams to the IPTV system from any data port within the school shall be provided. A video on demand system shall be provided. Digital signage capability shall be included. A mini-headend with two (2) DVD players and an encoding station shall be included in the Media Center.

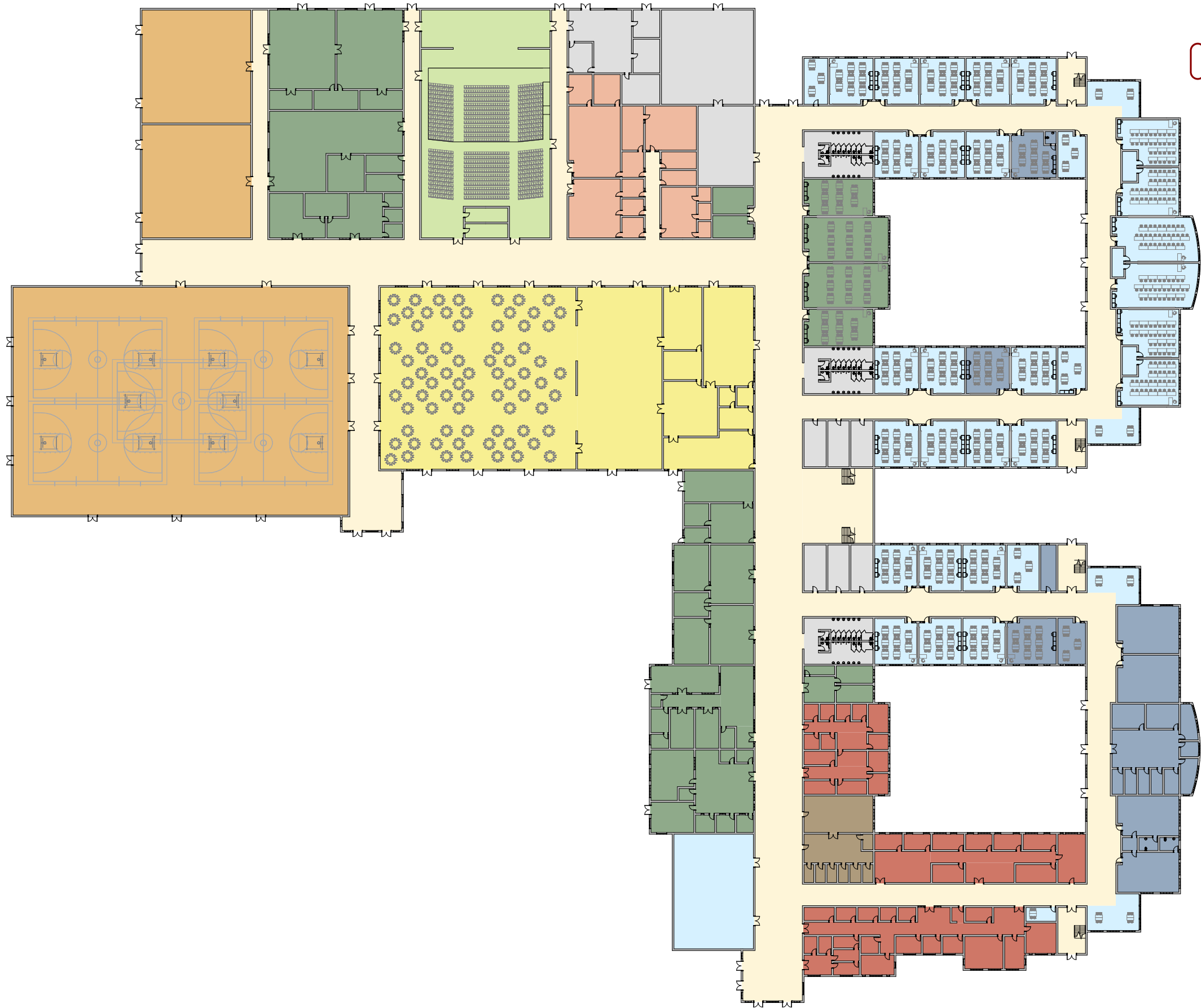
**280000**

An access control system shall be provided. Card readers shall be located as designated on the drawings. Main entries shall be equipped with a video entry system.

Intrusion detection system and related components shall be provided. Every first floor room with a window shall have a motion sensor. Motion sensors shall also be placed within the hallways and in vestibules.

An indoor/outdoor CCTV system (IP based) will be provided. Coverage shall include entrances, hallways, stairwells, building perimeter, and parking. Other areas, such as the gym, auditorium, café, and administration area shall be included.

OPTION 2B  
CONCEPTUAL BUILDING PLANS  
Final Evaluation of Alternatives



**MSBA Space Summary Categories**

- Core Academic Spaces
- Special Education
- Art & Music
- Vocations & Technology
- Health & Physical Education
- Media Center
- Auditorium / Drama
- Dining & Food Service
- Medical
- Administration & Guidance
- Custodial & Maintenance

**FLOOR ONE**







**MSBA Space Summary Categories**

- Core Academic Spaces
- Special Education
- Art & Music
- Vocations & Technology
- Health & Physical Education
- Media Center
- Auditorium / Drama
- Dining & Food Service
- Medical
- Administration & Guidance
- Custodial & Maintenance

**FLOOR TWO**





**MSBA Space Summary Categories**

- Core Academic Spaces
- Special Education
- Art & Music
- Vocations & Technology
- Health & Physical Education
- Media Center
- Auditorium / Drama
- Dining & Food Service
- Medical
- Administration & Guidance
- Custodial & Maintenance


**FLOOR THREE**







**MSBA Space Summary Categories**

-  Core Academic Spaces
-  Special Education
-  Art & Music
-  Vocations & Technology
-  Health & Physical Education
-  Media Center
-  Auditorium / Drama
-  Dining & Food Service
-  Medical
-  Administration & Guidance
-  Custodial & Maintenance

**FLOOR FOUR**



# OPTION 2B

## STRUCTURAL NARRATIVE

### Final Evaluation of Alternatives

#### **SUBSTRUCTURE**

##### **Foundations**

Based on the foundations of the existing structure, the columns of the proposed structure would bear on reinforced concrete spread footings and the perimeter foundation walls would bear on continuous reinforced concrete strip footings extending at least 4'-0" below grade. With an assumed bearing capacity of the soil of 2 tons/sf, a typical interior footing would be 10 ft. – 0 in. x 10 ft. – 0 in. x 24 in. deep and the typical exterior footings would be 9 ft. x 9 ft. x 24 in. deep for the four (4) story structure. The typical exterior foundation walls would be 14 in. to 16 in. thick, reinforced cast-in-place concrete walls on 24 to 36 in. wide continuous reinforced concrete strip footings around the perimeter of the building extending a minimum of 4 ft. – 0 in. below finished grade.

The interior and exterior foundations supporting the columns of the single story, pre-engineered steel structure would be 6 ft. – 0 in. x 6 ft. – 0 in. x 2 ft. – 0 in. deep.

##### **Slabs-on-Grade**

Based on the existing school construction, the lowest level of the proposed structure would be a 5 in. thick concrete slab-on-grade reinforced with welded wire fabric over a vapor barrier on 2 in. thick rigid insulation on 8 in. of compacted granular structural fill and a base course of 8 in. of compacted gravel.

#### **SUPERSTRUCTURE**

##### **Floor Construction**

###### ***Typical Floor Construction***

A 5 ¼ in. light weight concrete composite metal deck slab reinforced with welded wire fabric on wide flange steel beams spanning between steel girders and columns. The weight of the structural steel is estimated to be 13 psf for the typical framing.

##### **Roof Construction**

###### ***Typical Roof Construction***

The roof construction would be galvanized, corrugated 1 ½ in. deep, Type 'B' metal roof deck spanning between wide flange steel beams and girders. At locations of roof supported mechanical equipment, a concrete slab will be provided similar to the typical supported slab. The weight of the structural steel is estimated to be 13 psf.

###### ***Low Roof Structure***

The typical roof would be a continuation of the adjacent floor and would be similar to the typical floor construction of 5 ¼ in. light weight concrete composite metal deck slab reinforced with welded wire fabric on wide flange steel beams spanning between steel girders and columns. This roof will be supporting the mechanical units or green plantation. The units would be screened by a screen comprised of structural steel posts and beams. The weight of the structural steel is estimated to be 15 psf. Note that the low roofs above the four (4) shop areas will be long span, metal roof deck construction.

#### **VERTICAL FRAMING ELEMENTS**

##### **Columns**

Columns will be hollow structural steel columns. Typical columns would be HSS 12 x 12 columns due to the height of the lowest level.

##### **Lateral Load-Resisting System**

The proposed school structure will be divided into two (2) parts separated by way of an expansion joint.

The lateral load resisting system for the portion housing the Gymnasium and other spaces north of the commons would be ordinary concentric braced frames comprised of HSS structural steel members.



The typical lateral load resisting system for the remainder of the structure would be ordinary concentric braced frames comprised of HSS structural steel members.

**Pre-Engineered Superstructure**

The pre-engineered superstructure would be a steel framed structure supported on reinforced concrete foundations. The structure would be comprised of steel bents with tapered columns and beams. The roof deck would be a composite deck spanning between steel 'Z' shaped purlins. The lateral loads would be resisted by ordinary steel moment frames and ordinary concentric braced frames.

# OPTION 2B

## FIRE PROTECTION NARRATIVE

### Final Evaluation of Alternatives

The following is the Fire Protection system narrative which defines the scope of work and capacities of the Fire Protection system as well as the Basis of Design.

#### Codes

All work installed under Section 210000 shall comply with the Massachusetts Building Code and all federal, state, and county codes, laws, statutes, and authorities having jurisdiction.

#### Design Intent

All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Fire Protection system and all items incidental thereto, including commissioning and testing.

#### General

In accordance with the provisions of the Massachusetts Building Code, a school building of greater than 12,000s.f. must be protected with an automatic sprinkler system.

#### Description

The new building will be served by three (3) new 8-inch fire services, each with a double check valve assembly, wet alarm valve complete with electric bell, and fire department connection meeting local thread standards. One fire service shall serve the renovated Gymnasium wing, and each of the Classroom wings shall be served by a separate fire service.

The system will be a combined standpipe/sprinkler system with control

valve assemblies to limit the sprinkler area controlled to less than 52,000 s.f. as required by NFPA 13-2013.

Control valve assemblies shall consist of a supervised shutoff valve, check valve, flow switch and test connection with drain. Standpipes meeting the requirements of NFPA 14-2013 shall be provided in the egress stairwells and in the Stage area.

All areas of the building, including all finished and unfinished spaces, combustible concealed spaces, all electrical rooms, and closets will be sprinklered.

All sprinkler heads will be quick response, pendent in hung ceiling areas and upright in unfinished areas.

Fire department valves and cabinets will be provided on each side of the Stage in the Building.

#### Basis of Design

The mechanical rooms, kitchen, science classrooms, and storage rooms are considered Ordinary Hazard Group 1; stage is considered Ordinary Hazard Group 2; all other areas are considered light hazard.

#### Required Design Densities:

Light Hazard Areas	0.10 GPM over 1,500 s.f.
Ordinary Hazard Group 1	0.15 GPM over 1,500 s.f.
Ordinary Hazard Group 2	0.20 GPM over 1,500 s.f.

#### Sprinkler Spacing (max.):

Light Hazard Areas:	225 s.f.
Ordinary Hazard Areas:	130 s.f.

A flow test shall be performed to determine whether there is adequate water to serve the project without a fire pump for each of the three (3) service locations.

#### Piping

Sprinkler piping 1-1/2 in. and smaller shall be ASTM A-53, Schedule 40 black steel pipe. Sprinkler/standpipe piping 2 in. and larger shall be ASTM A-135, Schedule 10 black steel pipe.

## **Fittings**

Fittings on fire service piping, 2 in. and larger, shall be Victaulic Fire Lock Ductile Iron Fittings conforming to ASTM A-536 with integral grooved shoulder and back stop lugs and grooved ends for use with Style 009-EZ or Style 005 couplings. Branch line fittings shall be welded or shall be Victaulic 920/920N Mechanical Tees. Schedule 10 pipe shall be roll grooved. Schedule 40 pipe, where used with mechanical couplings, shall be roll grooved and shall be threaded where used with screwed fittings. Fittings for threaded piping shall be malleable iron screwed sprinkler fittings.

## **Joints**

Threaded pipe joints shall have an approved thread compound applied on male threads only. Teflon tape shall be used for threads on sprinkler heads. Joints on piping, 2 in. and larger, shall be made up with Victaulic, or equal, Fire Lock Style 005, rigid coupling of ductile iron and pressure responsive gasket system for wet sprinkler system as recommended by manufacturer.

## **Double Check Valve Assembly**

Double check valve assembly shall be Massachusetts State approved, U.L./F.M. approved, with iron body bronze mounted construction complete with supervised OS & Y gate valves and test cocks. Two (2) spare sets of gaskets and repair kits shall be furnished.

Double check valve detector assembly shall be of one of the following:

- Watts Series 757-OSY
- Wilkins 350A-OSY
- Conbraco Series 4S-100
- Or equal

# OPTION 2B

## PLUMBING NARRATIVE

### Final Evaluation of Alternatives

The following is the Plumbing system narrative which defines the scope of work and capacities of the Plumbing system as well as the Basis of Design. The Plumbing system shall be designed and constructed for LEED for Schools where indicated on this narrative.

#### Codes

All work installed under Section 220000 shall comply with the Massachusetts Building Code, Massachusetts Plumbing Code and all federal, state, and county codes, laws, statutes, and authorities having jurisdiction.

#### Design Intent

All work is new and consists of furnishing all materials, equipment, labor, transportation, facilities, and all operations and adjustments required for the complete and operating installation of the Plumbing work and all items incidental thereto, including commissioning and testing.

#### General

The Plumbing Systems that will serve the project are cold water, hot water, tempered water, sanitary waste and vent system, special waste systems, grease waste system, storm drain system, and natural gas.

The building will be serviced by Municipal water and Municipal sewer system.

All Plumbing in the building will conform to Accessibility Codes and to Water Conserving sections of the Plumbing Code.

#### Drainage System

Soil, Waste, and Vent piping system is provided to connect to all fixtures and equipment. The system runs from ten (10) feet outside building and terminates with stack vents through the roof.

A separate Grease Waste System starting with connection to an exterior concrete grease interceptor running through the kitchen and server area fixtures and terminating with a vent terminal through the roof. Point of use grease interceptors are to be provided at designated kitchen fixtures. The grease interceptor is provided under Division 22 scope.

Storm Drainage system is provided to drain all roofs with roof drains piped through the building to a point ten (10) feet outside the building.

A separate Special Waste System shall be provided starting with a connection to an interior limestone chip acid neutralizer, running through the building to collect science classroom fixtures and terminating with vent terminals through the roof. Special Waste and Vent piping will be Schedule 40 electric heat fused polypropylene piping, fittings and traps, flame retardant above grade and non-flame retardant below ground.

Drainage system piping will be service weight cast iron piping; hub and spigot with gaskets for below grade; no hub with gaskets, bands and clamps for above grade 2 in. and larger. Waste and vent piping 1-1/2 in. and smaller will be type 'L' copper.

#### Water System

A new 4 inch domestic water service from the municipal water system will be provided to each of three (3) zones. One (1) domestic service shall serve the Gymnasium/Auditorium wing, and each of the Classroom wings shall be served by a separate domestic services. A meter and backflow preventer, if required, will be provided at each of the three (3) locations.

Cold water distribution main is provided. Non-freeze wall hydrants with integral back flow preventers are provided along the exterior of the building.

Each of the three (3) wings shall be equipped with a Domestic hot water system provided with a combination of gas fired, high efficiency, condensing water heaters (800,000 BTUH input), with



separate storage tank (500 gallon). Each system is to be equipped with thermostatically controlled mixing devices to control water temperature to the fixtures.

A pump at each system will re-circulate hot water from the piping system. Water temperature will be 120 deg. F to serve general use fixtures. A 140 deg. F hot water will be supplied to the kitchen dishwasher.

Water piping will be type 'L' copper with wrought copper sweat fittings, silver solder or press-fit system. All piping will be insulated with 1 in. thick high density fiberglass.

### **Natural Gas System**

Three (3) natural gas services will be provided for the building and will serve the boilers, domestic water heaters, kitchen cooking equipment and roof top equipment.

Natural gas piping will be Schedule 40 black steel pipe with threaded gas pattern malleable fittings for 2 in. and under and butt welded fittings for 2-1/2 in. and larger.

### **Fixtures LEED for Schools**

Furnish and install all fixtures, including supports, connections, fittings, and any incidentals to make a complete installation. Fixtures shall be the manufacturer's guaranteed label trademark indicating first quality. All acid resisting enameled ware shall bear the manufacturer's symbol signifying acid resisting material.

Vitreous china and acid resisting enameled fixtures, including stops, supplies and traps shall be of one (1) manufacturer, by Kohler, American Standard, or Eljer, or equal. Supports shall be Zurn, Smith, Josam, or equal. All fixtures shall be white. Faucets shall be Speakman, Chicago, or equal.

Fixtures shall be as scheduled on drawings.

- Water Closet: High efficiency toilet, 1.28 gallon per flush, wall hung, vitreous china, siphon jet. Manually operated 1.28 gallon per flush-flush valve.
- Urinal: High efficiency 0.13 gallon per flush urinal, wall hung, vitreous china. Manually operated 0.13 gallon per flush-flush valve.
- Lavatory: Wall hung/countertop ADA lavatory with 0.5 GPM metering mixing faucet programmed for 10 second run-time cycle.
- Sink: Elkay ADA stainless steel countertop sink with Chicago 201A faucet and 0.5 GPM aerator.
- Drinking Fountain: Halsey Taylor hi-low wall mounted electric water cooler, stainless steel basin with bottle filling stations.
- Janitor Sink: 24 x 24 x 10 Terrazo mop receptor Stern-

Williams or equal.

- Laboratory Sinks: Faucets with vacuum breakers and 0.74 GPM aerators.

### **Drains**

Drains will be cast iron, caulked outlets, nickel alloy strainers, and in waterproofed areas and roofs shall have galvanized iron clamping rings with 6 lb. lead flashings to bond 9 in. in all directions. Drains shall be Smith, Zurn, Josam, or equal.

### **Valves**

All valves will be located to isolate all parts of the system. Shutoff valves 3 in. and smaller shall be ball valves, solder end or screwed, Apollo, or equal.

### **Insulation**

All water piping shall be insulated with snap-on fiberglass insulation Type ASJ-SSL, equal to Johns Manville Micro-Lok HP.

### **Cleanouts**

Cleanouts shall be full size up to 4 in. threaded bronze plugs located as indicated on the drawings and/or where required in soil and waste pipes. Cleanouts for Special Waste System shall be Zurn #Z9A-C04 polypropylene cleanout plug with Zurn #ZANB-1463-VP nickel bronze scoriated floor access cover.

### **Access Doors**

Access doors will be provided for access to all concealed parts of the plumbing system that require accessibility. Coordinate types and locations with the Architect.

### **Water Heaters**

Three (3) domestic hot water systems, each gas fired, high efficiency, condensing water heaters (800,000 BTUH total input), with separate storage tank (500 gallon) will be provided.

# OPTION 2B

## MECHANICAL NARRATIVE

### Final Evaluation of Alternatives

#### Design Criteria

Interior environmental conditions will be based on Massachusetts Code 780 CMR 12 and ASHRAE Standard 55-2004.

Ventilation of spaces will be designed to meet or exceed the requirements of the latest edition of the Massachusetts State Building Code, the ICC International Mechanical Code and ASHRAE Standard 62-2010, Ventilation for Acceptable Indoor Air Quality.

HVAC equipment will be selected to comply with the 2012 edition of the International Energy Conservation Code and ASHRAE 90.1-2007.

The HVAC systems will be designed to meet the acoustical requirements of ANSI S12.60-2002. The American National Standards Institute developed this standard specification and design guideline to help eliminate acoustical problems in the design stage of a project. Essentially, the steady background noise level in core learning areas should not exceed an NC of 35.

#### Heating System

High efficiency, gas fired, condensing boilers will produce hot water to meet the heating needs of the school. Preliminary load calculations indicate that the school may need four (4) boilers each having a capacity of approximately 8,000 MBH. Each boiler will be sized to handle one-quarter of the peak heating load. The boilers will be manufactured by Cleaver-Brooks, Model CFLC-8000 or approved equal and will have a maximum efficiency of 95%. Exact size of boilers will be

determined during the design phase of the project.

Due to the fact that the specified boilers do not have a minimum flow requirement, the boiler system will be piped in a primary configuration with the hot water reset schedule being maintained by the boilers. Each boiler will be furnished with an automatic two-way control valve to isolate the boiler when not firing.

The facility will be divided into four (4) hot water system zones. Hot water will be circulated through each zone by a dedicated pair of hot water circulating pumps. Each pair of pumps will be designed to operate in a lead/lag configuration such that the lag pump shall automatically start should the lead pump fail. The lead/lag assignment shall be reversible through the automatic temperature control system. Preliminary calculations indicate that each pump set should be sized to provide 800 GPM at 100 feet of head. The speed of the pumps will be controlled by variable frequency drives (VFD). Exact size of pumps will be determined during the design phase of the project.

#### Chilled Water System

As part of the base design, the following spaces will be provided with air conditioning:

- Cafeteria
- Administration area including Principal's Office, Assistant Principal's Office, School Psychologist's Office, Counselor's Office, Adjustment Counselor's Office, Pre-school Coordinator's Office, Nurse's Office and conference rooms.
- Teacher's planning/work rooms
- Multipurpose rooms
- Sped PT/OT spaces
- Library/Media center
- Classrooms
- Music/performing arts areas
- Computer classrooms

Locker Rooms, kitchen, gymnasium, electric rooms, and shop areas will not be air-conditioned unless specifically directed by School Department representatives.

Preliminary calculations indicate that two (2) 500-ton centrifugal chillers will be required to produce chilled water to meet the cooling needs of the school on a design day. Each chiller will be furnished with a variable frequency drive for increased energy

efficiency. The chillers will be located in the main mechanical room. Exact chiller size is to be determined. Specified chiller shall be compliant with ASHRAE 90.1. The chilled water plant will also require the installation of two (2) induced draft cooling towers, each sized for 500 tons.

The chilled water system will be piped in a primary/secondary configuration. This will permit the use of two-way control valves and variable frequency drives while maintaining constant flow through the chiller as recommended by the chiller manufacturer.

The facility will be divided into four (4) chilled water system zones. Chilled water will be circulated through each zone by a dedicated pair of chilled water circulating pumps. The chilled water pumps will be designed to operate in a lead/lag configuration such that the lag pump shall automatically start should the lead pump fail. The lead/lag pump assignment shall be reversible through the automatic temperature control system. Preliminary calculations indicate that each pump should be sized to provide a maximum of 500 GPM at 75 feet of head. The speed of the pumps will be controlled by VFD's. Exact size of pumps will be determined.

## Summary of HVAC Systems

### Classrooms

1. Energy recovery rooftop units will supply the classrooms with tempered air via a system of ductwork and ceiling mounted induction units. Energy recovery rooftop units are an effective way of reducing the overall energy consumption of a building. Energy recovery rooftop units will be furnished with the following components:
  - Double-wall insulated casings
  - Supply and exhaust fans
  - MERV 13 air filters for superior indoor air quality
  - Energy recovery wheel
  - Hot water heating coil
  - Chilled water cooling coil to dehumidify and cool the supply air
  - Variable frequency drives
2. Each classroom will be furnished with induction units. The induction units will utilize dry primary air provided by the energy recovery units, the code required ventilation air needed, at an inlet static pressure of 0.6" and distributes this air through a bank of specially designed aerodynamic nozzles that discharges the air at high velocity into a mixing chamber that creates a lower pressure. This lower pressure draws room air over a coil that imparts either sensible cooling or heating as it passes over the coil. This induces room air then mixes with the primary air and is discharged through a grille. This air circulates throughout the room and is gently drawn back up

to the return grille of the induction unit. This air circulation produces even and consistent temperatures throughout the room.

3. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the induction unit. This energy of the exhaust air leaving the classrooms is recovered at the energy recovery rooftop units.
4. The room thermostat controls water flow through the coil via the automatic temperature control system to maintain individual space temperature control.

### ***Administration, Library, Multipurpose Rooms, Music Room, Computer Classrooms, and Teachers Workrooms***

1. Energy recovery rooftop units will supply these spaces with tempered air via a system of ductwork and ceiling mounted induction units. The energy recovery units used in these spaces will be very similar to those used for the classrooms.
2. Each space will be furnished with at least one (1) induction unit. The exact number of induction units per space will be determined during the design phase. The induction units will take this source of dry primary air, the code required ventilation air needed, at an inlet static pressure of 0.6" and distribute this air through a bank of specially designed aerodynamic nozzles that discharges the air at high velocity into a mixing chamber that creates a lower pressure. This lower pressure draws room air over a coil that imparts either sensible cooling or heating as it passes over the coil. This induces room air, then mixes with the primary air and is discharged through a grille.

This air circulates throughout the room and is gently drawn back up to the return grille of the induction unit. This air circulation produces even and consistent temperatures throughout the room.

3. A portion of the room air is exhausted to the outside as a relief for the primary air entering through the induction unit. The total energy (both latent and sensible) of the exhaust air leaving the spaces is recovered at the energy recovery rooftop units.
4. The room thermostat controls water flow through the coil via the automatic temperature control system to maintain individual space temperature control.

### **Gymnasium**

1. The Gymnasium will be furnished with two (2) heating and ventilating rooftop units. Air will be distributed throughout the space via ductwork and supply diffusers.
2. The heating and ventilating units will be fitted with a hot water coil only.
3. The rooftop units will utilize the demand controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO2 in the space.
4. Space temperature will be sensed with remote space mounted sensors and controlled through the building management system.

### **Cafeteria**

1. A dedicated rooftop air-handling unit will handle the Cafeteria.
2. This unit will provide both heating

and cooling. The rooftop unit will utilize the demand controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO2 in the space.

3. Space temperature will be sensed with remote space mounted sensors and controlled through the building management system.

### **Kitchen**

1. The kitchen areas will be handled by a roof mounted, gas fired make-up air handling unit specifically designed to provide tempered air to the kitchen in order to offset the amount of air being exhausted through the kitchen hood.
2. The kitchen hood exhaust system shall be provided with a Mellink kitchen hood exhaust control system which is designed to vary the speed of the kitchen hood exhaust fan in response to the intensity of the cooking operations taking place. Essentially, the fan will operate at higher speeds when higher heat and smoke producing cooking is taking place. The Mellink system will also modulate the outside air damper and fan speed of the make-up air unit.

### **Auditorium**

1. The HVAC needs of the auditorium will be accommodated by a dedicated rooftop air handling unit. The rooftop unit will be furnished with a hot water heating coil and chilled water cooling coil.
2. This unit will provide both heating and cooling. The rooftop unit will utilize the demand controlled ventilation sequence of operation. This strategy permits the modulation of the outside air dampers and fan speed based on the level of CO2 in the space.
3. Space temperature will be sensed with remote space mounted sensors and controlled through the building management system.

### **Controls**

Griffith & Vary, Inc. recommends this facility be furnished with a Building Management System. This system will feature full Digital Direct Controls (DDC). This system will be capable of controlling the following:

- Space temperature set point
- Start and stop of all energy recovery rooftop units and air-handling units
- Start and stop of chillers
- Enable/Disable boilers
- Start and stop of chilled water pumps



- Start and stop of hot water pumps
- Schedule occupied/unoccupied times for various spaces.
- Monitoring of supply and return temperatures for hot water and chilled water
- Optimization of plant efficiency
- Monitoring of mechanical equipment (fans, pumps, boilers, chiller, etc.) and indication of any alarms, which may result from equipment failures

To save energy required to heat or cool outdoor air, carbon dioxide sensors will be employed in the gymnasium, auditorium, and cafeteria to allow a reduction of outdoor air during periods of low occupancy and motion sensors will also be utilized to allow closure of outdoor air dampers when assembly areas are unoccupied. Classrooms will also have occupancy sensors to modulate dampers in the supply air duct branches as a means of saving energy during periods when the classrooms are unoccupied.

## OPTION 2B

# ELECTRICAL NARRATIVE

### Final Evaluation of Alternatives

The building electric services will be provided via three (3) pad mounted transformers located on site as provided by the electric utility company; one for each of the wings. Primary service conduits in concrete duct bank will be provided from the electric utility pole to three transformers via electric utility company standard manholes. Secondary service feeders and conduits in concrete duct bank will be provided from the three (3) transformers to three (3) switchboards. The electric utility company meters will be mounted on the transformers. The existing electric service and the existing pad mounted transformer for the existing Football Stadium will be maintained. Telephone and cable TV service conduits will be provided from a utility pole to the building demarcation point (MDF Room). A fire alarm service conduit will be provided from a utility pole to the fire alarm control panel.

Three (3) switchboards will be provided; one for each of the wings' Main Electric rooms. Preliminary load calculations indicate that the switchboards will be rated at 4000 amperes, 277/480 volt, three phase, four wire. The switchboards will be provided with surge protection devices. Switchboard distribution sections will feed 277/480 volt panelboards and major Mechanical and Plumbing equipment. Dry-type transformers will be provided to distribute 120/208 volt power for branch circuit panelboards and the Kitchen panelboards. One (1) of the kitchen panelboards will be provided with a shunt trip main circuit breaker which will trip if fire suppression under hoods is initiated, shutting down all

circuits under hoods. Panelboards with surge protection devices for computers will be provided, fed from computer grade K-rated transformers. Zero sequence harmonic filters connected to the computer panelboards will be provided to reduce neutral currents. Shops with equipment will be provided with panelboards including shunt trip main circuit breakers and mushroom type shut-off switches which can be pushed to shut down power to the panelboards in the event of an emergency. Other shops will be provided with dedicated panelboards.

Three (3) diesel fuel generators with sound attenuated, weatherproof enclosures will be provided; one (1) for each of the wings. Preliminary load calculations indicate that the generators will be rated at 400kW, 277/480 volt, three phase, four wire. The generators will supply loads as selected by the Owner, however the following is anticipated; emergency power automatically upon loss of normal power to emergency egress, exterior building mounted, Administration, Student Dining, Mechanical Room, Electric rooms, Kitchen, Student Dining, ganged Toilet rooms, Custodian, Teacher Dining, Receiving, Locker rooms, Nurse's suite, and Gymnasium lighting, elevators, heating system equipment, fire alarm control panel, security system, telephone system, select MDF and IDF room receptacles, cooling for MDF and select IDF rooms, and kitchen walk in cooler and freezer. Two (2) automatic transfer switches (ATS's) per building for a total of six will be provided to separate emergency from optional standby loads. The emergency ATS and associated emergency panelboards will be located in two hour rated closets with two hour rated feeders. The optional standby ATS and associated panelboards will be located in normal electric rooms. Emergency panelboards will be provided with surge protection devices as required by the National Electrical Code.

General convenience receptacles will be located throughout the building as required. Receptacles provided in Toilet rooms, near sinks, the Kitchen, and outdoors will be provided with ground fault protection. Circuiting will be provided to Kitchen equipment, Mechanical, Plumbing equipment, and miscellaneous loads as required.

In general, highly efficient LED lighting fixtures will be provided throughout the building. Lighting levels will be in accordance with I.E.S. (Illuminating Engineering Society of North America) recommendations and the Massachusetts State Building Code

energy requirements. Classrooms will be provided with direct/indirect, pendant mounted lighting fixtures. Office areas, Corridors, and Conference rooms will be provided with volumetric lighting fixtures. The Gymnasium will be provided with high bay lighting fixtures. Storage, Mechanical, and Electrical rooms will be provided with strip lighting fixtures. The Main Lobby, Library, and Cafeteria will be provided with decorative lighting. The Kitchen and Locker rooms will be provided with gasketed wet location lighting fixtures. The Auditorium will be provided with surface cylinders, recessed down lights, step lighting, and wall sconces. The Stairs will be provided with vandal resistant wall mounted lighting fixtures. Down lights will be provided at various locations. The Stage will be provided with theatrical lighting fixtures and a dimming system. The dimming system will be connected to the fire alarm system bringing the house lights to full brightness upon initiation of fire alarm system. Edge lit exit signs will be provided at all egress doors and at additional locations as required to identify exit discharge routes. Vandal resistant exit signs will be provided in the Gymnasium. Pole mounted and building mounted site lighting fixtures and bollards will be provided.

Lighting fixtures in rooms less than 900 square feet will be controlled primarily by room occupancy sensors. Lighting fixtures nearest to the exterior walls with windows in Classrooms will be dimmed via daylight photo sensors. Larger areas not controlled by occupancy sensors and exterior lighting will be controlled through lighting relay panels and low voltage switches. Digital timer switches will be provided in Storage rooms.

An addressable manual and automatic fire alarm system will be provided. The fire alarm control panel will be located in the main electric room or an area as so directed by the Fire Department. A remote annunciator panel will be provided in the Vestibule at the Main Lobby and where required by the Fire Department. A map of the entire building will be framed and mounted adjacent to the annunciator. Keyed boxes will be provided outside the Fire Department entries. Manual pull stations will be located within five feet (5') of each egress door and at the entrance to each Stair. Additional pull stations will be provided as required by Code. Heat detectors will be provided at the top of the elevator shaft and any other areas not provided with protection by the fire suppression system. Smoke detectors will be provided in the Corridors, in Stairs at each floor level, in the Elevator Machine Room, and at all elevator landings for early detection of smoke for recall. All devices including tamper, flow, pressure switches, and PIV, associated with the fire suppression system will be connected to the fire alarm system. Audio/visual appliances will be provided in the Corridors, Classrooms and all large areas such as the Auditorium, Gymnasium, Student Dining, and Library. Visual devices will be provided in Toilet and Conference rooms. Mechanical equipment shall be shut down by the fire alarm system as required by code.

A telephone/data/video/security/clock/speaker conduit system consisting of back boxes and conduit with pull strings to above accessible ceilings will be provided for technology. Cable tray will be provided above the Corridor ceilings and MDF and IDF rooms for low voltage wiring.

A bi-directional amplifier with coaxial cabling above accessible ceilings will be provided to amplify Fire Department and Police frequencies to ensure that there are no "dead" spots in the building for communication within building.

An empty conduit system with pull strings will be provided for the PV system consisting of photovoltaic panels and an inverter. Conduits will be provided from the switchboard to an exterior mounted disconnect switch for shutting down the PV system if need be. Conduits will also be provided from the exterior disconnect switch to the inverter and from the inverter to the banks of photovoltaic panels.

# OPTION 2B

## TECHNOLOGY NARRATIVE

### Final Evaluation of Alternatives

The technology labs will be capable of accommodating an entire class of students (28). Network access in the technology labs will be hard wired. Four (4) ceiling data jacks shall be provided and wireless access points will be provided. In addition, the equipment specified below for a typical classroom shall be included in each lab.

#### **271000 Structured Cabling**

The new network design will support a 10GHZ backbone over single mode and/or multi-mode fiber and up to 10G over Category 6A to the desktop.

Twelve (12) pairs of single mode fiber and twelve (12) pairs of multi mode fiber will be provided from the MDF to each IDF, to be utilized for data, voice, security systems, etc.

Cat 6A cabling will be provided for data, voice, CCTV, and wireless access points (four (4) data drops at each wireless access point location). Wireless access point outlet placements are intended to provide the capability for complete wireless coverage throughout the school.

Each teacher location will be wired with four (4) data ports and one (1) voice port.

Category 6A cabling will be provided for the Owner provided phone system (support for Voice over IP).

#### **272100 Network Switches**

Network electronics (switches) shall be provided and installed by the Owner.

#### **272133 Wireless Access Points**

Wireless access points, and a controller if applicable, will be provided, one (1) access point in each classroom, and three (3) in each large group space. Office suites shall have an access point. Access points may be proprietary, to ensure compatibility with existing district infrastructure.

#### **273000**

The phone system and handsets shall be provided and installed by the Owner. The building shall be cabled to support a voice over IP phone system using Cat 6A.

#### **274000**

Video and audio presentation equipment (wall mounted wide format ultra short throw projector (possible interactive projector if an interactive whiteboard is not provided)), 8' marker board (possible 8' interactive white board if an interactive projector is not provided), voice lift system with microphones and amplifier, and up to four (4) ceiling speakers) will be permanently installed in classrooms, labs and designated rooms. The PC/laptop in each classroom shall be provided by the Owner. A presentation camera will be provided in each interactive classroom and in designated spaces.

The Auditorium shall have a high lumen (min 14k lumen) theater level projector provided. A sound system, assistive listening system, video recording system, and mixer board shall be provided. An intuitive touch screen control system shall be provided. Wired and wireless microphones shall be provided.

A sound system shall be provided in the Gym. An assistive listening system shall be provided. Wired and wireless microphones shall be provided.

Student dining shall contain a sound system and assistive listening system.

#### **275000**

A public address system shall be provided. Digital clocks synchronized with a master clock shall be provided in every classroom and conference room, and where designated on the drawings. The PA system shall be integrated with the Owner provided phone system to allow the use of the phone system for paging within the building.



**277000**

A high definition, 1080p, 9 channel IPTV system shall be provided. TVs with set top boxes shall be provided at designated locations. Coax shall not be run for video distribution purposes within the school. The capability and devices necessary to broadcast three (3) high definition "live" video streams to the IPTV system from any data port within the school shall be provided. A video on demand system shall be provided. Digital signage capability shall be included. A mini-headend with two (2) DVD players and an encoding station shall be included in the Media Center.

**280000**

An access control system shall be provided. Card readers shall be located as designated on the drawings. Main entries shall be equipped with a video entry system.

Intrusion detection system and related components shall be provided. Every first floor room with a window shall have a motion sensor. Motion sensors shall also be placed within the hallways and in vestibules.

An indoor/outdoor CCTV system (IP based) will be provided. Coverage shall include entrances, hallways, stairwells, building perimeter, and parking. Other areas, such as the gym, auditorium, café, and administration area shall be included.

# CONSTRUCTION COST ESTIMATES

Final Evaluation of Alternatives



**PSR Estimate - OPTIONS 1D, 1E + 2B**

**Durfee High School  
New School and Renovation**

Fall River, MA

Prepared for:

**AI3 Architects**

June 21, 2017



**Durfee High School**  
New School and Renovation  
Fall River, MA

21-Jun-17

**PSR Estimate - OPTIONS 1D, 1E + 2B**

**MAIN CONSTRUCTION COST SUMMARY**

	<b>Construction Start</b>	<b>Gross Floor Area</b>	<b>\$/sf</b>	<b>Estimated Construction Cost</b>
<b>OPTION 1D</b>				
Construct New High School (Core Academic Building) - Trade Costs	Jun-19	336,521	\$285.97	\$96,235,048
Athletic Building - Renovation		98,523	\$190.19	\$18,738,411
Preforming Arts Building - Renovation		91,000	\$259.56	\$23,619,650
Demolish Existing Building		383,687	\$5.50	\$2,110,279
Allowance for HazMat removals at existing building per UEC estimate <sup>1</sup>				\$2,944,200
Sitework - Trade Costs	Jun-19			\$10,978,328
<b>SUBTOTAL TRADE COSTS BUILDING and SITEWORK</b>		<b>526,044</b>	<b>\$293.94</b>	<b>\$154,625,916</b>
Design and Estimating Contingency	12.00%			\$18,555,110
Escalation Allowance	6.0%			\$9,277,555
<b>SUBTOTAL INCLUDING CONTINGENCIES</b>				<b>\$182,458,581</b>
General Conditions <sup>2</sup>	6.0%			\$10,947,515
Insurances	1.3%			\$2,371,962
Bond	0.90%			\$1,642,127
Fee	3.0%			\$5,473,757
Building Permit				Waived
<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		<b>526,044</b>	<b>\$385.70</b>	<b>\$202,893,942</b>



**Durfee High School**  
New School and Renovation  
Fall River, MA

21-Jun-17

**PSR Estimate - OPTIONS 1D, 1E + 2B**

**OPTION 1E**

Construct New High School (Core Academic Building) - Trade Costs	Jun-19	342,807	\$285.21	\$97,773,466
Athletic Building - Renovation		98,523	\$190.19	\$18,738,411
Prefabricated Building		60,000	\$294.02	\$17,641,119
Demolish Existing Building		383,687	\$5.50	\$2,110,279
Allowance for HazMat removals at existing building per UEC estimate <sup>1</sup>				\$2,944,200

Sitework - Trade Costs	Jun-19			\$10,978,328
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SUBTOTAL TRADE COSTS BUILDING and SITEWORK		501,330	\$299.57	\$150,185,803
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Design and Estimating Contingency	12.00%			\$18,022,296
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Escalation Allowance	6.0%			\$9,011,148
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SUBTOTAL INCLUDING CONTINGENCIES				<b>\$177,219,247</b>
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General Conditions <sup>2</sup>	6.0%			\$10,633,155
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Insurances	1.3%			\$2,303,850
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Bond	0.90%			\$1,594,973
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Fee	3.0%			\$5,316,577
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Building Permit				Waived
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<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		501,330	\$393.09	<b>\$197,067,802</b>
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**Durfee High School**  
New School and Renovation  
Fall River, MA

21-Jun-17

**PSR Estimate - OPTIONS 1D, 1E + 2B**

**OPTION 2B**

Construct New High School - Trade Costs	Jun-19	319,966	\$295.87	\$94,668,188
Prefabricated Building		170,000	\$268.13	\$45,582,628
Demolish Existing Building		482,210	\$5.50	\$2,652,155
Allowance for HazMat removals at existing building per UEC estimate <sup>1</sup>				\$2,944,200

Sitework - Trade Costs	Jun-19			\$15,651,928
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SUBTOTAL TRADE COSTS BUILDING and SITEWORK		489,966	\$329.61	\$161,499,099
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Design and Estimating Contingency	12.00%			\$19,379,892
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Escalation Allowance	6.0%			\$9,689,946
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SUBTOTAL INCLUDING CONTINGENCIES				<b>\$190,568,937</b>
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General Conditions <sup>2</sup>	6.0%			\$11,434,136
Insurances	1.3%			\$2,477,396
Bond	0.90%			\$1,715,120
Fee	3.0%			\$5,717,068
Building Permit				Waived

<b>TOTAL ESTIMATED CONSTRUCTION COST</b>		489,966	\$432.50	<b>\$211,912,657</b>
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**Durfee High School**  
New School and Renovation  
Fall River, MA

21-Jun-17

**PSR Estimate - OPTIONS 1D, 1E + 2B**

<sup>1</sup> Costs from UEC Report dated February 13, 2017 - costs do not include design and testing fees

<sup>2</sup> Based on 149 Design-bid-build procurement - If CM 149A procurement selected costs will likely be higher by +/-5%

This feasibility cost estimate was produced from drawings and specifications and other documentation prepared by Ai3 Architects and their design team received June 2, 2017.

This estimate includes all direct construction costs, general contractor's overhead and profit and design contingency. Cost escalation assumes start dates indicated.

Bidding conditions are expected to be public bidding under Chapter 149 of the Massachusetts General Laws to pre-qualified general contractors, and pre-qualified sub-contractors, open specifications for materials and manufactures.

The estimate is based on prevailing wage rates for construction in this market and represents a reasonable opinion of cost. It is not a prediction of the successful bid from a contractor as bids will vary due to fluctuating market conditions, errors and omissions, proprietary specifications, lack or surplus of bidders, perception of risk, etc. Consequently the estimate is expected to fall within the range of bids from a number of competitive contractors or subcontractors, however we do not warrant that bids or negotiated prices will not vary from the final construction cost estimate.

**ITEMS NOT CONSIDERED IN THIS ESTIMATE**

Items not included in this estimate are:

- All professional fees and insurance
- Building Permit costs
- Land acquisition, feasibility, and financing costs
- All Furnishings, Fixtures and Equipment
- Items identified in the design as Not In Contract (NIC)
- Items identified in the design as by others
- Owner supplied and/or installed items (e.g. draperies, furniture and equipment)
- Rock excavation; special foundations (unless indicated by design engineers)
- Utility company back charges, including work required off-site
- Work to City streets and sidewalks, (except as noted in this estimate)
- Construction or occupancy phasing or off hours' work, (except as noted in this estimate)



Durfee High School  
New School and Renovation  
Fall River, MA

PSR Estimate - OPTIONS ID, 1E + 2B

21-Jun-17

BUILDING SYSTEM		CONSTRUCTION COST SUMMARY							
		OPTION 1D		OPTION 1E		OPTION 2B			
		SUB-TOTAL	\$/SF	SUB-TOTAL	\$/SF	SUB-TOTAL	\$/SF	TOTAL	\$/SF
		526,044		501,330		489,966			
A10	FOUNDATIONS								
A1010	Standard Foundations	\$2,272,607	\$4.32	\$2,485,482	\$4.96	\$2,293,581	\$4.68		
A1020	Special Foundations	\$0	\$0.00	\$0	\$0.00	\$0	\$0.00		
A1030	Lowest Floor Construction	\$2,000,477	\$3.80	\$2,249,828	\$4.735,310	\$2,747,474	\$5.61	\$5,041,055	
A20	BASEMENT CONSTRUCTION								
A2010	Basement Excavation	\$0	\$0.00	\$0	\$0.00	\$0	\$0.00		
A2020	Basement Walls	\$0	\$0.00	\$0	\$0.00	\$0	\$0.00	\$0	
B10	SUPERSTRUCTURE								
B1010	Upper Floor Construction	\$7,530,180	\$14.31	\$7,530,180	\$15.02	\$8,819,013	\$18.00		
B1020	Roof Construction	\$5,353,887	\$10.18	\$4,628,246	\$9.23	\$2,843,210	\$5.80	\$11,662,223	
B20	EXTERIOR CLOSURE								
B2010	Exterior Walls	\$9,328,187	\$17.73	\$7,963,187	\$15.88	\$8,627,664	\$17.61		
B2020	Windows	\$8,564,290	\$16.28	\$8,109,290	\$16.18	\$9,789,075	\$19.98		
B2030	Exterior Doors	\$244,236	\$0.46	\$214,236	\$0.43	\$135,132	\$0.28	\$18,551,871	
B30	ROOFING								
B3010	Roof Coverings	\$7,419,551	\$14.10	\$5,321,431	\$10.61	\$2,466,578	\$5.03		
B3020	Roof Openings	\$13,800	\$0.03	\$13,800	\$0.03	\$13,800	\$0.03	\$2,480,378	
C10	INTERIOR CONSTRUCTION								
C1010	Partitions	\$14,864,373	\$28.26	\$14,009,383	\$27.94	\$14,598,810	\$29.80		
C1020	Interior Doors	\$1,817,961	\$3.45	\$1,662,361	\$3.32	\$2,029,011	\$4.14		
C1030	Specialties/Millwork	\$5,573,342	\$10.59	\$5,454,288	\$10.88	\$5,427,638	\$11.08	\$22,055,459	
C20	STAIRCASES								
C2010	Stair Construction	\$548,300	\$1.04	\$548,300	\$1.09	\$548,300	\$1.12		
C2020	Stair Finishes	\$149,550	\$0.28	\$149,550	\$0.30	\$141,600	\$0.29	\$689,900	
C30	INTERIOR FINISHES								
C3010	Wall Finishes	\$4,162,458	\$7.91	\$3,909,032	\$7.80	\$4,279,694	\$9.35		
C3020	Floor Finishes	\$5,740,742	\$10.91	\$5,344,888	\$10.66	\$6,069,626	\$12.39		
C3030	Ceiling Finishes	\$5,229,925	\$9.94	\$4,958,071	\$9.89	\$5,639,626	\$11.51	\$16,288,946	
D10	CONVEYING SYSTEMS								
D1010	Elevator	\$162,150	\$0.31	\$162,150	\$0.32	\$162,150	\$0.33	\$162,150	
D20	PLUMBING								
D20	Plumbing	\$7,364,616	\$14.00	\$7,018,620	\$14.00	\$6,859,524	\$14.00	\$6,859,524	



Durfee High School  
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BUILDING SYSTEM		CONSTRUCTION COST SUMMARY											
		SUB-TOTAL	OPTION 1D	TOTAL	\$/SF	SUB-TOTAL	OPTION 1E	TOTAL	\$/SF	SUB-TOTAL	OPTION 2B	TOTAL	\$/SF
					526,044				501,330				489,966
D30	HVAC												
D30	HVAC	\$17,885,496	\$17,885,496	\$34.00	\$17,045,220	\$17,045,220	\$34.00	\$16,658,844	\$34.00	\$16,658,844	\$16,658,844	\$34.00	
D40	FIRE PROTECTION												
D40	Fire Protection	\$2,104,176	\$2,104,176	\$4.00	\$2,005,320	\$2,005,320	\$4.00	\$1,959,864	\$4.00	\$1,959,864	\$1,959,864	\$4.00	
D50	ELECTRICAL												
D5010	Service & Distribution	\$4,471,375		\$8.50	\$4,261,306		\$8.50	\$4,164,711	\$8.50			\$8.50	
D5020	Lighting & Power	\$5,786,484		\$11.00	\$5,514,630		\$11.00	\$5,389,626	\$11.00			\$11.00	
D5030	Communication & Security Systems	\$7,627,639		\$14.50	\$7,269,286		\$14.50	\$7,104,507	\$14.50			\$14.50	
D5040	Other Electrical Systems	\$862,565	\$18,748,063	\$1.64	\$844,137	\$17,889,359	\$1.68	\$809,932	\$1.65		\$17,468,776	\$1.65	
E10	EQUIPMENT												
E10	Equipment	\$2,669,734	\$2,669,734	\$5.08	\$2,669,734	\$2,669,734	\$5.33	\$2,669,734	\$5.45		\$2,669,734	\$5.45	
E20	FURNISHINGS												
E2010	Fixed Furnishings	\$5,231,152		\$9.94	\$4,996,584		\$9.97	\$5,802,092	\$11.84			\$11.84	
E2020	Movable Furnishings		\$5,231,152	\$0.00		\$4,996,584	\$0.00		\$0.00		NIC	\$0.00	
F10	SPECIAL CONSTRUCTION												
F10	Special Construction	\$3,100,000	\$3,100,000	\$5.89	\$7,300,000	\$7,300,000	\$14.56	\$11,900,000	\$24.29		\$11,900,000	\$24.29	
F20	HAZMAT REMOVALS												
F2010	Building Elements Demolition	\$436,796		\$0.83	\$436,796		\$0.87	\$0	\$0.00		\$0	\$0.00	
F2020	Hazardous Components Abatement	\$77,660	\$514,456	\$0.15	\$77,660	\$514,456	\$0.15	\$0	\$0.00		\$0	\$0.00	
TOTAL DIRECT COST (Trade Costs)			\$138,593,109	\$263.46		\$134,152,996	\$267.59				\$140,250,816	\$286.25	



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PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 336,521

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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NEW BUILDING - CORE ACADEMIC OPTION 1D

**GROSS FLOOR AREA CALCULATION**

1st Floor	136,521
2nd Floor	100,000
3rd Floor	100,000

<b>TOTAL GROSS FLOOR AREA (GFA)</b>	<b>336,521 sf</b>
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**A10 FOUNDATIONS**

**A1010 STANDARD FOUNDATIONS**

2,955	CY			
<u>Strip footings; 3'-0" x 1'-4"</u>				
Excavation	4,472	cy	12.00	53,664
Store on site for reuse	4,472	cy	8.00	35,776
Backfill with selected material	3,937	cy	6.50	25,591
Formwork	9,177	sf	10.00	91,770
Re-bar	34,500	lbs	1.20	41,400
Concrete material; 3,000 psi	535	cy	120.00	64,200
Placing concrete	535	cy	40.00	21,400
<u>Strip footings; 2'-0" x 1'-0" at interior walls and braced frames</u>				
Excavation	2,407	cy	12.00	28,884
Store on site for reuse	2,407	cy	8.00	19,256
Backfill with selected material	2,213	cy	6.50	14,385
Formwork	4,000	sf	10.00	40,000
Re-bar	20,000	lbs	1.20	24,000
Concrete material; 3,000 psi	194	cy	120.00	23,280
Placing concrete	194	cy	40.00	7,760
<u>Foundation wall stem; 12" thick</u>				
Formwork	6,900	sf	12.00	82,800
Re-bar	17,250	lbs	1.20	20,700
Concrete material; 3,000 psi	101	cy	120.00	12,120
Placing concrete	101	cy	40.00	4,040
Dampproofing foundation wall and footing	3,450	sf	1.85	6,383
Insulation to foundation walls; 2" thick	13,800	sf	2.50	34,500
<u>Foundation wall; 18" thick</u>				
Formwork	27,600	sf	12.00	331,200
Re-bar	69,000	lbs	1.20	82,800
Concrete material; 3,000 psi	805	cy	120.00	96,600
Placing concrete	805	cy	40.00	32,200
Dampproofing foundation wall and footing	20,700	sf	1.85	38,295
Insulation to foundation walls; 2" thick	13,800	sf	2.50	34,500
Form shelf	3,450	lf	6.00	20,700
<u>Column footings, F8 - 8' x 8' x 2'-0"</u>				
Excavation	1,472	cy	16.00	23,552
Store on site for reuse	1,472	cy	8.00	11,776
Backfill with selected material	785	cy	6.50	5,103
Formwork	8,832	sf	11.00	97,152
Re-bar	31,592	lbs	1.20	37,910
Concrete material; 3,000 psi	687	cy	120.00	82,440
Placing concrete	687	cy	50.00	34,350
<u>Column footings, F9 - 9' x 9' x 2'-0"</u>				





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NEW BUILDING - CORE ACADEMIC OPTION 1D

52	Excavation	1,001	cy	16.00	16,016		
53	Store on site for reuse	1,001	cy	8.00	8,008		
54	Backfill with selected material	497	cy	6.50	3,231		
55	Formwork	5,760	sf	11.00	63,360		
56	Re-bar	20,604	lbs	1.20	24,725		
57	Concrete material; 3,000 psi	504	cy	120.00	60,480		
58	Placing concrete	504	cy	50.00	25,200		
59	<u>Miscellaneous</u>						
60	Perimeter drain	3,450	lf	16.00	55,200		
61	Underslab drain; 6" line @ 20' oc with 12" trunk line					Assumed NR	
62	Piers/pilasters	129	cy	900.00	116,100		
63	Set anchor bolts grout plates; supplied by others	872	loc	25.00	21,800		
64	SUBTOTAL					1,974,607	

A1020 SPECIAL FOUNDATIONS

No Work in this section

SUBTOTAL

A1030 LOWEST FLOOR CONSTRUCTION

71	<u>New Slab on grade, 5" thick</u>						
72	Rough and fine grade	15,169	sy	1.50	22,754		
73	Structural fill under building					Assumed NR	
74	Gravel beneath slab on grade; 12" thick; compacted	5,056	cy	34.00	171,904		
75	Mesh Re-bar 15% lap	156,999	sf	1.00	156,999		
76	Concrete -5" thick; 4,000 psi	2,177	cy	125.00	272,125		
77	Place & finish including control joints	136,521	sf	2.25	307,172		
78	Moisture Mitigation; admixture	2,177	cy	60.00	130,620		
79	Vapor barrier under slab on grade	136,521	sf	0.85	116,043		
80	Rigid insulation beneath slab on grade; 2" thick	136,521	sf	2.00	273,042		
81	<u>Elevator Pit</u>						
82	Excavation for elevator pit	168	cy	14.00	2,352		
83	Remove off site	168	cy	17.37	2,918		
84	Backfill with gravel	8	cy	35.00	280		
85	Elevator pit walls						
86	formwork	960	sf	14.00	13,440		
87	reinforcement	1,440	lbs	1.20	1,728		
88	Concrete material; 3,000 psi	12	cy	120.00	1,440		
89	placing concrete in walls	12	cy	40.00	480		
90	Slab						
91	formwork	120	sf	11.00	1,320		
92	reinforcement	600	lbs	1.20	720		
93	concrete material in slab	12	cy	125.00	1,500		
94	placing concrete in slab; 3,000 psi	12	cy	40.00	480		
95	<u>Miscellaneous</u>						
96	Polymer modified Cement waterproofing to elevator pit	680	sf	12.00	8,160		
97	Neutralization pit	1	loc	4,000.00	4,000		
98	Grease interceptor pit	1	loc	2,500.00	2,500		
99	Equipment pads	500	sf	7.00	3,500		
100	SUBTOTAL					1,495,477	



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**NEW BUILDING - CORE ACADEMIC OPTION 1D**

<b>TOTAL - FOUNDATIONS</b>	<b>\$3,470,084</b>
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**A20 BASEMENT CONSTRUCTION**

**A2010 BASEMENT EXCAVATION**  
No Work in this section  
SUBTOTAL

**A2020 BASEMENT WALLS**  
No Work in this section  
SUBTOTAL

<b>TOTAL - BASEMENT CONSTRUCTION</b>	
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**B10 SUPERSTRUCTURE**

	13.00	lbs/sf	-	
<b>B1010 FLOOR CONSTRUCTION</b>	2,187	tns	-	
<u>Floor Structure - Steel:</u>				
Structural steel	<b>1,300</b>	tns	3,500.00	4,550,000
Shear studs	<b>25,000</b>	ea	6.00	150,000
<u>Floor Structure</u>				
Metal floor decking; 2", 20 gage	<b>200,000</b>	sf	4.00	800,000
Mesh reinforcement in concrete topping	<b>230,000</b>	sf	1.00	230,000
Concrete topping to metal decking, 5 1/4" thick; Light weight	<b>3,403</b>	cy	160.00	544,480
Placing concrete topping	<b>200,000</b>	sf	2.00	400,000
Moisture Mitigation; admixture	<b>3,403</b>	cy	60.00	204,180
<u>Miscellaneous</u>				
Rebar at slab edges	<b>15,000</b>	lbs	1.20	18,000
Firestopping at floor penetrations	<b>1</b>	floors	2,500.00	2,500
Fire stopping at slab edges	<b>3,411</b>	lf	4.00	13,644
Allowance for tiered seating at seminar	<b>248</b>	lfr	150.00	37,200
Concrete steps to seminar	<b>95</b>	lfr	120.00	11,400
Miscellaneous fire stopping	<b>1</b>	ls	20,000.00	20,000
Base plates	<b>8,720</b>	lbs	3.00	26,160
Supply anchor bolts installed by others	<b>218</b>	ea	12.00	2,616
Spray-applied fireproofing to beams and columns only	<b>200,000</b>	sf	2.50	500,000
SUBTOTAL				7,510,180

**B1020 ROOF CONSTRUCTION**

<u>Roof Structure - Steel:</u>				
Structural steel	<b>887</b>	tns	3,500.00	3,104,500
<u>Roof Structure</u>				
Metal roof decking; 1 1/2, 20 gage galv., type B	<b>136,521</b>	sf	3.50	477,824
<u>Miscellaneous</u>				
Support framing to roof screen ; HSS galvanized	<b>15</b>	tns	3,800.00	57,000
Spray-applied fireproofing to beams and deck	<b>136,521</b>	sf	3.00	409,563
Concrete slab for Roof Top equipment	<b>5,000</b>	sf	10.00	50,000
Connect to existing Athletic Building	<b>1</b>	ls	50,000.00	50,000
Bent plate	<b>3,500</b>	lf	50.00	175,000
Canopy frame	<b>9</b>	tns	5,000.00	45,000
Moment connections	<b>100</b>	ea	350.00	35,000



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**NEW BUILDING - CORE ACADEMIC OPTION 1D**

155	Chiller dunnage	3	tns	5,000.00	15,000		
156	SUBTOTAL					4,418,887	

157	<b>TOTAL - SUPERSTRUCTURE</b>						<b>\$11,929,067</b>
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**B20 EXTERIOR CLOSURE** 157,935

162	<b>B2010 EXTERIOR WALLS; 60% of Exterior Closure</b>	94,761	sf		-		
164	Interior skin						
165	8" metal stud back-up	94,761	sf	12.00	1,137,132		
166	GWB to inside of exterior wall	94,761	sf	3.50	331,664		
167	Gypsum densglass sheathing board	94,761	sf	2.50	236,903		
168	Air/Vapor barrier to exterior walls, fluid applied	94,761	sf	6.00	568,566		
169	Rigid insulation, 3"	94,761	sf	2.50	236,903		
170	Exterior skin; Material % based on Abington HS						
171	Cement Board; 27%	25,585	sf	26.00	665,210		
172	Masonry exterior; 58%	54,961	sf	40.00	2,198,440		
173	PVC panels; 15%	14,214	sf	36.00	511,704		
174	PVC Trim and Custom Shapes	94,761	sf	3.50	331,664		
175	Precast trim and custom pieces	94,761	sf	2.50	236,903		
176	Miscellaneous						
177	Louvered equipment enclosure, prefinished louvered aluminum (10' high)	290	lf	320.00	92,800		
178	Signs / logos / flagpoles	1	ls	50,000.00	50,000		
179	Scaffold to exterior walls	157,935	sf	2.50	394,838		
180	SUBTOTAL					6,992,727	

182	<b>B2020 WINDOWS; 40% of Exterior Closure</b>	63,174	sf		-		
183	Aluminum windows; 6%	3,790	sf	95.00	360,050		
184	Storefront	6,949	sf	90.00	625,410		
185	Curtainwall	52,434	sf	120.00	6,292,080		
186	Sun shade	1,500	lf	140.00	210,000		
187	Louvers	100	sf	55.00	5,500		
188	Air/Vapor barrier at window & louver openings	18,050	lf	2.00	36,100		
189	Backer rod & sealant at window & louver openings	18,050	lf	9.00	162,450		
190	Wood blocking at window openings	18,050	lf	14.00	252,700		
191	SUBTOTAL					7,944,290	

**B2030 EXTERIOR DOORS**

194	<u>Hollow metal doors, frames and HW</u>						
195	Single leaf	2	ea	1,600.00	3,200		
196	Double leaf	8	pr	3,200.00	25,600		
197	<u>Exterior Doors - Aluminum</u>						
198	3'-0" x 7'-0" w/ glazed panels Type EE	6	ea	3,800.00	22,800		
199	6'-0" x 7'-0" w/ glazed panels Type EE Double	10	pr	7,500.00	75,000		
200	<u>Miscellaneous</u>						
201	Overhead door 9' x 7'	1	ea	3,780.00	3,780		
202	Backer rod & sealant to exterior doors	528	lf	5.00	2,640		
203	Wood blocking at door openings	528	lf	4.00	2,112		
204	SUBTOTAL					135,132	



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NEW BUILDING - CORE ACADEMIC OPTION 1D

<b>TOTAL - EXTERIOR CLOSURE</b>	<b>\$15,072,149</b>
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**B30 ROOFING**

**B3010 ROOF COVERINGS**

Flat Roofing:

White EPDM roof membrane mechanically fastened with 6" insulation	143,347	sf	25.00	3,583,675
Tapered insulation at roofs	14,335	sf	3.50	50,173
Walk boards, 24" x 36"	1,000	ea	30.00	30,000
<u>Miscellaneous Roofing</u>				
Flashing	143,347	sf	1.00	143,347
Roof expansion joints	1	ls	5,000.00	5,000
Air/Vapor barrier at roof edges	143,347	sf	0.20	28,669
Wood blocking at expansion joints and roof edges	143,347	sf	0.25	35,837
Canopies; roofing	1	ls	50,000.00	50,000
Roof ladders	5	loc	1,650.00	8,250
SUBTOTAL				3,934,951

**B3020 ROOF OPENINGS**

Elevator PH and vent	2	ea	3,000.00	6,000
Smoke hatches	2	ea	3,900.00	7,800
SUBTOTAL				13,800

<b>TOTAL - ROOFING</b>	<b>\$3,948,751</b>
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**C10 INTERIOR CONSTRUCTION**

**C1010 PARTITIONS**

New partitions	336,521	sf	35.00	11,778,235
SUBTOTAL				11,778,235

**C1020 INTERIOR DOORS**

Glazed vestibule doors including frame and hardware; double door	10	pr	8,000.00	80,000
Glazed vestibule doors including frame and hardware; single door	6	ea	4,000.00	24,000
Wood doors	353	ea	650.00	229,450
Hollow Metal doors	118	ea	400.00	47,200
Door frames				
HM single	471	ea	350.00	164,850
Hardware	471	ea	700.00	329,700
Sidelights	118	ea	1,300.00	153,400
Glazing to doors	353	sf	35.00	12,355
Premium for fire rated doors	118	sf	500.00	59,000
Acoustical Gasketing	1	ls	15,000.00	15,000
Paint doors and frames	471	ea	85.00	40,035
Sealants & caulking	471	ea	51.00	24,021
SUBTOTAL				1,179,011

**C1030 SPECIALTIES / MILLWORK**

Specialties	336,521	sf	8.00	2,692,168
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**NEW BUILDING - CORE ACADEMIC OPTION 1D**

257	Miscellaneous sealants & caulking	336,521	gsf	1.15	386,999		
258	Misc. metals	336,521	sf	1.50	504,782		
259	SUBTOTAL					3,583,949	

**TOTAL - INTERIOR CONSTRUCTION**

**\$16,541,195**

**C20 STAIRCASES**

**C2010 STAIR CONSTRUCTION**

267	Monumental stairs	6	flt	50,000.00	300,000		
268	Egress stairs	9	flt	25,000.00	225,000		
269	Concrete fill to stairs	1	ls	20,000.00	20,000		
270	Roof access ladders	3	ea	1,100.00	3,300		
271	SUBTOTAL					548,300	

**C2020 STAIR FINISHES**

274	High performance coating to stairs including all railings etc.	15	flt	2,500.00	37,500		
275	Stair finish to monumental stairs	1,050	lfr	25.00	26,250		
276	Rubber base; stairs	1,350	lf	3.00	4,050		
277	Rubber tile at stairs - landings	3,150	sf	14.00	44,100		
278	Rubber tile at stairs - treads & risers	1,350	lft	22.00	29,700		
279	SUBTOTAL					141,600	

**TOTAL - STAIRCASES**

**\$689,900**

**C30 INTERIOR FINISHES**

**C3010 WALL FINISHES**

287	Wall finishes	336,521	sf	9.00	3,028,689		
288	SUBTOTAL					3,028,689	

**C3020 FLOOR FINISHES**

291	Floor finishes	336,521	sf	11.00	3,701,731		
292	SUBTOTAL					3,701,731	

**C3030 CEILING FINISHES**

295	Ceiling finishes	336,521	sf	11.00	3,701,731		
296	SUBTOTAL					3,701,731	

**TOTAL - INTERIOR FINISHES**

**\$10,432,151**

**D10 CONVEYING SYSTEMS**

**D1010 ELEVATOR**

304	Passenger elevator, 3 stop, 1 opening; 3500 lbs; 120 fpm	2	ea	80,000.00	160,000		
305	6 x 4 x 3/8 angle to elevator pit	30	lf	25.00	750		
306	Pit ladders	1	ea	650.00	650		





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**NEW BUILDING - CORE ACADEMIC OPTION 1D**

307	Sill angles	30	lf	25.00	750		
308	SUBTOTAL					162,150	

<b>TOTAL - CONVEYING SYSTEMS</b>	<b>\$162,150</b>
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**D20 PLUMBING**

315	<b>D20 PLUMBING, GENERALLY</b>						
316	Plumbing allowance	336,521	sf	14.00	4,711,294		
317	SUBTOTAL					4,711,294	

<b>TOTAL - PLUMBING</b>	<b>\$4,711,294</b>
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**D30 HVAC**

323	<b>D30 HVAC, GENERALLY</b>						
324	HVAC allowance	336,521	sf	34.00	11,441,714		
325	SUBTOTAL					11,441,714	

<b>TOTAL - HVAC</b>	<b>\$11,441,714</b>
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**D40 FIRE PROTECTION**

332	<b>D40 FIRE PROTECTION, GENERALLY</b>						
333	Fire Protection allowance	336,521	sf	4.00	1,346,084		
334	SUBTOTAL					1,346,084	

<b>TOTAL - FIRE PROTECTION</b>	<b>\$1,346,084</b>
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**D50 ELECTRICAL**

340	<b>D5010 SERVICE &amp; DISTRIBUTION</b>						
341	Service and distribution allowance	336,521	sf	8.50	2,860,429		
342	SUBTOTAL					2,860,429	

344	<b>D5020 LIGHTING &amp; POWER</b>						
345	Lighting & power allowance	336,521	sf	11.00	3,701,731		
346	SUBTOTAL					3,701,731	

348	<b>D5030 COMMUNICATION &amp; SECURITY SYSTEMS</b>						
349	Communication & security allowance	336,521	sf	14.50	4,879,555		
350	SUBTOTAL					4,879,555	

352	<b>D5040 OTHER ELECTRICAL SYSTEMS</b>						
353	Other electrical systems allowance	336,521	sf	2.00	673,042		
354	SUBTOTAL					673,042	

<b>TOTAL - ELECTRICAL</b>	<b>\$12,114,757</b>
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**E10 EQUIPMENT**



Durfee High School  
New School and Renovation  
Fall River, MA

21-Jun-17

PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 336,521

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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NEW BUILDING - CORE ACADEMIC OPTION 1D

**E10 EQUIPMENT, GENERALLY**

Volley ball standards	1	ls	1,500.00	1,500		
Equipment for tv editing and production	1	ls	25,000.00	25,000		
Kiln	2	ea	3,000.00	6,000		
Shop equipment	1	ls	150,000.00	150,000		
Science classrooms equipment	1	ls	100,000.00	100,000		
Equipment at central chemical storage	1	loc	20,000.00	20,000		
Residential appliances	1	ls	35,000.00	35,000		
SUBTOTAL						337,500

**TOTAL - EQUIPMENT**

**\$337,500**

**E20 FURNISHINGS**

**E2010 FIXED FURNISHINGS**

Furnishings allowance	336,521	sf	12.00	4,038,252		4,038,252
SUBTOTAL						

**E2020 MOVABLE FURNISHINGS**

All movable furnishings to be provided and installed  
by owner

NIC

**TOTAL - FURNISHINGS**

**\$4,038,252**

**F10 SPECIAL CONSTRUCTION**

**F10 SPECIAL CONSTRUCTION**

No items in this section

SUBTOTAL

**TOTAL - SPECIAL CONSTRUCTION**

**F20 SELECTIVE BUILDING DEMOLITION**

**F2010 BUILDING ELEMENTS DEMOLITION**

See main summary for demolition of existing buildings

SUBTOTAL

**F2020 HAZARDOUS COMPONENTS ABATEMENT**

Removal of Asbestos Containing Materials in existing  
building - Included in Summary

SUBTOTAL

**TOTAL - SELECTIVE BUILDING DEMOLITION**



Durfee High School  
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Fall River, MA

21-Jun-17

PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 91,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**RENOVATE PERFORMING ARTS BUILDING - OPTION 1D**

**GROSS FLOOR AREA CALCULATION**

First Floor 91,000

**TOTAL GROSS FLOOR AREA (GFA) 91,000 sf**

**A10 FOUNDATIONS**

**A1010 STANDARD FOUNDATIONS**

New foundations for bracing/shear walls 91,000 gsf 3.00 273,000  
SUBTOTAL 273,000

**A1020 SPECIAL FOUNDATIONS**

No Work in this section  
SUBTOTAL

**A1030 LOWEST FLOOR CONSTRUCTION**

Patch/repair existing SOG 91,000 sf 5.00 455,000  
SUBTOTAL 455,000

**TOTAL - FOUNDATIONS \$728,000**

**A20 BASEMENT CONSTRUCTION**

**A2010 BASEMENT EXCAVATION**

No Work in this section  
SUBTOTAL

**A2020 BASEMENT WALLS**

No Work in this section  
SUBTOTAL

**TOTAL - BASEMENT CONSTRUCTION**

**B10 SUPERSTRUCTURE**

**B1010 FLOOR CONSTRUCTION**

No Work in this section  
SUBTOTAL -

**B1020 ROOF CONSTRUCTION**

Seismic upgrades 91,000 gsf 10.00 910,000  
SUBTOTAL 910,000

**TOTAL - SUPERSTRUCTURE \$910,000**

**B20 EXTERIOR CLOSURE**

**B2010 EXTERIOR WALLS**

New exterior closure 91,000 gsf 15.00 1,365,000  
SUBTOTAL 1,365,000

**B2020 WINDOWS**



Durfee High School  
New School and Renovation  
Fall River, MA

21-Jun-17

PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 91,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**RENOVATE PERFORMING ARTS BUILDING - OPTION 1D**

57	Replace windows	91,000	gsf	5.00	455,000		
58	SUBTOTAL					455,000	

**B2030 EXTERIOR DOORS**

61	Exterior Doors - Aluminum						
62	6'-0" x 7'-0" w/ glazed panels Type EE Double	4	pr	7,500.00	30,000		
63	SUBTOTAL					30,000	

65	<b>TOTAL - EXTERIOR CLOSURE</b>						<b>\$1,850,000</b>
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**B30 ROOFING**

69	<b>B3010 ROOF COVERINGS</b>						
70	New roofing	91,000	sf	25.00	2,275,000		
71	SUBTOTAL					2,275,000	

**B3020 ROOF OPENINGS**

74	No Work in this section						
75	SUBTOTAL						

77	<b>TOTAL - ROOFING</b>						<b>\$2,275,000</b>
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**C10 INTERIOR CONSTRUCTION**

82	<b>C1010 PARTITIONS</b>						
83	New partitions	91,000	sf	25.00	2,275,000		
84	SUBTOTAL					2,275,000	

**C1020 INTERIOR DOORS**

87	Interior doors	91,000	sf	5.00	455,000		
88	SUBTOTAL					455,000	

**C1030 SPECIALTIES / MILLWORK**

91	Other Specialties	91,000	sf	6.00	546,000		
92	Auditorium/Music/Café wood paneling/trim/acoustic panels	1	ls	500,000.00	500,000		
93	SUBTOTAL					1,046,000	

95	<b>TOTAL - INTERIOR CONSTRUCTION</b>						<b>\$3,776,000</b>
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**C20 STAIRCASES**

99	<b>C2010 STAIR CONSTRUCTION</b>						
100	No Work in this section						
101	SUBTOTAL						

**C2020 STAIR FINISHES**

104	No Work in this section						
105	SUBTOTAL						



Durfee High School  
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PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 91,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**RENOVATE PERFORMING ARTS BUILDING - OPTION 1D**

<b>TOTAL - STAIRCASES</b>							
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**C30 INTERIOR FINISHES**

**C3010 WALL FINISHES**

Wall finishes	91,000	sf	10.00	910,000		910,000	
SUBTOTAL							910,000

**C3020 FLOOR FINISHES**

Floor finishes	91,000	sf	15.00	1,365,000		1,365,000	
SUBTOTAL							1,365,000

**C3030 CEILING FINISHES**

Ceiling finishes; premium for auditorium	1	ls	250,000.00	250,000			
Ceiling finishes	91,000	sf	11.00	1,001,000		1,251,000	
SUBTOTAL							1,251,000

<b>TOTAL - INTERIOR FINISHES</b>							<b>\$3,526,000</b>
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**D10 CONVEYING SYSTEMS**

**D1010 ELEVATOR**

SUBTOTAL

<b>TOTAL - CONVEYING SYSTEMS</b>							
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**D20 PLUMBING**

**D20 PLUMBING, GENERALLY**

Plumbing allowance	91,000	sf	14.00	1,274,000		1,274,000	
SUBTOTAL							1,274,000

<b>TOTAL - PLUMBING</b>							<b>\$1,274,000</b>
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**D30 HVAC**

**D30 HVAC, GENERALLY**

HVAC allowance	91,000	sf	34.00	3,094,000		3,094,000	
SUBTOTAL							3,094,000

<b>TOTAL - HVAC</b>							<b>\$3,094,000</b>
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**D40 FIRE PROTECTION**

**D40 FIRE PROTECTION, GENERALLY**

Fire Protection allowance	91,000	sf	4.00	364,000		364,000	
SUBTOTAL							364,000

<b>TOTAL - FIRE PROTECTION</b>							<b>\$364,000</b>
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Durfee High School  
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PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 91,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**RENOVATE PERFORMING ARTS BUILDING - OPTION 1D**

**D50 ELECTRICAL**

**D5010 SERVICE & DISTRIBUTION**

Service and distribution allowance	91,000	sf	8.50	773,500	
SUBTOTAL					773,500

**D5020 LIGHTING & POWER**

Lighting & power allowance	91,000	sf	11.00	1,001,000	
SUBTOTAL					1,001,000

**D5030 COMMUNICATION & SECURITY SYSTEMS**

Communication & security allowance	91,000	sf	14.50	1,319,500	
SUBTOTAL					1,319,500

**D5040 OTHER ELECTRICAL SYSTEMS**

Other electrical systems allowance	91,000	sf	1.00	91,000	
SUBTOTAL					91,000

**TOTAL - ELECTRICAL**

**\$3,185,000**

**E10 EQUIPMENT**

**E10 EQUIPMENT, GENERALLY**

Theater & stage equipment including stage curtains & rigging	1	ls	450,000.00	450,000	
Stage dimming, control system, theatrical fixtures	1	ls	200,000.00	200,000	
Auditorium AV system	1	ls	250,000.00	250,000	
Emergency light transfer switch (ELTS), allow 12 circuit	1	ls	6,750.00	6,750	
TV Studio track, curtain, & grid	1	ls	53,000.00	53,000	
Chorus track, curtain, & grid	1	ls	25,000.00	25,000	
Lecture hall equipment - dimming, control, & performance fixtures - Allow	1	ls	30,000.00	30,000	
Cubicle curtain & track	6	loc	500.00	3,000	
Projection screen; gymnasium	1	ea	9,000.00	9,000	
Projection screen; stage proscenium	1	ea	9,000.00	9,000	
Projection screen; cafeteria	1	ea	2,200.00	2,200	
Projection screen; lecture hall	1	ea	2,200.00	2,200	
TV Display- free standing	5	ea	5,000.00	FFE	
Food service equipment	1	ls	425,000.00	425,000	
SUBTOTAL					1,465,150

**TOTAL - EQUIPMENT**

**\$1,465,150**

**E20 FURNISHINGS**

**E2010 FIXED FURNISHINGS**

Auditorium seating	750	seats	350.00	262,500	
Furnishings allowance	91,000	sf	10.00	910,000	
SUBTOTAL					1,172,500

**E2020 MOVABLE FURNISHINGS**



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PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 91,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**RENOVATE PERFORMING ARTS BUILDING - OPTION 1D**

212	All movable furnishings to be provided and installed by owner						
213	SUBTOTAL					NIC	
214							
215	<b>TOTAL - FURNISHINGS</b>						<b>\$1,172,500</b>
216							
217							
218	<b>F10 SPECIAL CONSTRUCTION</b>						
219							
220	<b>F10 SPECIAL CONSTRUCTION</b>						
221	No Work in this section						
222	SUBTOTAL					-	
223							
224	<b>TOTAL - SPECIAL CONSTRUCTION</b>						
225							
226							
227	<b>F20 SELECTIVE BUILDING DEMOLITION</b>						
228							
229	<b>F2010 BUILDING ELEMENTS DEMOLITION</b>						
230	See main summary for demolition of existing buildings						
231	SUBTOTAL						
232							
233	<b>F2020 HAZARDOUS COMPONENTS ABATEMENT</b>						
234	Removal of Asbestos Containing Materials in existing building - Included in Summary						
235	SUBTOTAL						
236	<b>TOTAL - SELECTIVE BUILDING DEMOLITION</b>						



Durfee High School  
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21-Jun-17

PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 342,807

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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NEW BUILDING - CORE ACADEMIC OPTION 1E

**GROSS FLOOR AREA CALCULATION**

1st Floor	142,807
2nd Floor	100,000
3rd Floor	100,000

<b>TOTAL GROSS FLOOR AREA (GFA)</b>	<b>342,807 sf</b>
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**A10 FOUNDATIONS**

<b>A1010 STANDARD FOUNDATIONS</b>	2,955	CY		
<u>Strip footings; 3'-0" x 1'-4"</u>				
Excavation	4,472	cy	12.00	53,664
Store on site for reuse	4,472	cy	8.00	35,776
Backfill with selected material	3,937	cy	6.50	25,591
Formwork	9,177	sf	10.00	91,770
Re-bar	34,500	lbs	1.20	41,400
Concrete material; 3,000 psi	535	cy	120.00	64,200
Placing concrete	535	cy	40.00	21,400
<u>Strip footings; 2'-0" x 1'-0" at interior walls and braced frames</u>				
Excavation	2,407	cy	12.00	28,884
Store on site for reuse	2,407	cy	8.00	19,256
Backfill with selected material	2,213	cy	6.50	14,385
Formwork	4,000	sf	10.00	40,000
Re-bar	20,000	lbs	1.20	24,000
Concrete material; 3,000 psi	194	cy	120.00	23,280
Placing concrete	194	cy	40.00	7,760
<u>Foundation wall stem; 12" thick</u>				
Formwork	6,900	sf	12.00	82,800
Re-bar	17,250	lbs	1.20	20,700
Concrete material; 3,000 psi	101	cy	120.00	12,120
Placing concrete	101	cy	40.00	4,040
Dampproofing foundation wall and footing	3,450	sf	1.85	6,383
Insulation to foundation walls; 2" thick	13,800	sf	2.50	34,500
<u>Foundation wall; 18" thick</u>				
Formwork	27,600	sf	12.00	331,200
Re-bar	69,000	lbs	1.20	82,800
Concrete material; 3,000 psi	805	cy	120.00	96,600
Placing concrete	805	cy	40.00	32,200
Dampproofing foundation wall and footing	20,700	sf	1.85	38,295
Insulation to foundation walls; 2" thick	13,800	sf	2.50	34,500
Form shelf	3,450	lf	6.00	20,700
<u>Column footings, F8 - 8' x 8' x 2'-0"</u>				
Excavation	1,472	cy	16.00	23,552
Store on site for reuse	1,472	cy	8.00	11,776
Backfill with selected material	785	cy	6.50	5,103
Formwork	8,832	sf	11.00	97,152
Re-bar	31,592	lbs	1.20	37,910
Concrete material; 3,000 psi	687	cy	120.00	82,440
Placing concrete	687	cy	50.00	34,350
<u>Column footings, F9 - 9' x 9' x 2'-0"</u>				



Durfee High School  
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Fall River, MA

21-Jun-17

PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 342,807

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**NEW BUILDING - CORE ACADEMIC OPTION 1E**

52	Excavation	1,001	cy	16.00	16,016		
53	Store on site for reuse	1,001	cy	8.00	8,008		
54	Backfill with selected material	497	cy	6.50	3,231		
55	Formwork	5,760	sf	11.00	63,360		
56	Re-bar	20,604	lbs	1.20	24,725		
57	Concrete material; 3,000 psi	504	cy	120.00	60,480		
58	Placing concrete	504	cy	50.00	25,200		
59	<u>Miscellaneous</u>						
60	Perimeter drain	3,450	lf	16.00	55,200		
61	Underslab drain; 6" line @ 20' oc with 12" trunk line				Assumed NR		
62	Piers/pilasters	129	cy	900.00	116,100		
63	Set anchor bolts grout plates; supplied by others	872	loc	25.00	21,800		
64	SUBTOTAL					1,974,607	

**A1020 SPECIAL FOUNDATIONS**

67	No Work in this section						
68	SUBTOTAL						

**A1030 LOWEST FLOOR CONSTRUCTION**

71	<u>New Slab on grade, 5" thick</u>						
72	Rough and fine grade	15,867	sy	1.50	23,801		
73	Structural fill under building				Assumed NR		
74	Gravel beneath slab on grade; 12" thick; compacted	5,289	cy	34.00	179,826		
75	Mesh Re-bar 15% lap	164,228	sf	1.00	164,228		
76	Concrete -5" thick; 4,000 psi	2,277	cy	125.00	284,625		
77	Place & finish including control joints	142,807	sf	2.25	321,316		
78	Moisture Mitigation; admixture	2,277	cy	60.00	136,620		
79	Vapor barrier under slab on grade	142,807	sf	0.85	121,386		
80	Rigid insulation beneath slab on grade; 2" thick	142,807	sf	2.00	285,614		
81	<u>Elevator Pit</u>						
82	Excavation for elevator pit	168	cy	14.00	2,352		
83	Remove off site	168	cy	17.37	2,918		
84	Backfill with gravel	8	cy	35.00	280		
85	Elevator pit walls						
86	formwork	960	sf	14.00	13,440		
87	reinforcement	1,440	lbs	1.20	1,728		
88	Concrete material; 3,000 psi	12	cy	120.00	1,440		
89	placing concrete in walls	12	cy	40.00	480		
90	Slab						
91	formwork	120	sf	11.00	1,320		
92	reinforcement	600	lbs	1.20	720		
93	concrete material in slab	12	cy	125.00	1,500		
94	placing concrete in slab; 3,000 psi	12	cy	40.00	480		
95	<u>Miscellaneous</u>						
96	Polymer modified Cement waterproofing to elevator pit	680	sf	12.00	8,160		
97	Neutralization pit	1	loc	4,000.00	4,000		
98	Grease interceptor pit	1	loc	2,500.00	2,500		
99	Equipment pads	500	sf	7.00	3,500		
100	SUBTOTAL					1,562,234	
101							



Durfee High School  
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PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 342,807

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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NEW BUILDING - CORE ACADEMIC OPTION 1E

<b>TOTAL - FOUNDATIONS</b>	<b>\$3,536,841</b>
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**A20 BASEMENT CONSTRUCTION**

**A2010 BASEMENT EXCAVATION**

No Work in this section

SUBTOTAL

**A2020 BASEMENT WALLS**

No Work in this section

SUBTOTAL

<b>TOTAL - BASEMENT CONSTRUCTION</b>	
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**B10 SUPERSTRUCTURE**

**B1010 FLOOR CONSTRUCTION**

Floor Structure - Steel:

Structural steel 1,300 tns 3,500.00 4,550,000

Shear studs 25,000 ea 6.00 150,000

Floor Structure

Metal floor decking; 2", 20 gage 200,000 sf 4.00 800,000

Mesh reinforcement in concrete topping 230,000 sf 1.00 230,000

Concrete topping to metal decking, 5 1/4" thick; Light weight 3,403 cy 160.00 544,480

Placing concrete topping 200,000 sf 2.00 400,000

Moisture Mitigation; admixture 3,403 cy 60.00 204,180

Miscellaneous

Rebar at slab edges 15,000 lbs 1.20 18,000

Firestopping at floor penetrations 1 floors 2,500.00 2,500

Fire stopping at slab edges 3,411 lf 4.00 13,644

Allowance for tiered seating at seminar 248 lfr 150.00 37,200

Concrete steps to seminar 95 lfr 120.00 11,400

Miscellaneous fire stopping 1 ls 20,000.00 20,000

Base plates 8,720 lbs 3.00 26,160

Supply anchor bolts installed by others 218 ea 12.00 2,616

Spray-applied fireproofing to beams and columns only 200,000 sf 2.50 500,000

SUBTOTAL 7,510,180

**B1020 ROOF CONSTRUCTION**

Roof Structure - Steel:

Structural steel 928 tns 3,500.00 3,248,000

Roof Structure

Metal roof decking; 1 1/2, 20 gage galv., type B 142,807 sf 3.50 499,825

Miscellaneous

Support framing to roof screen ; HSS galvanized 15 tns 3,800.00 57,000

Spray-applied fireproofing to beams and deck 142,807 sf 3.00 428,421

Concrete slab for Roof Top equipment 5,000 sf 10.00 50,000

Connect to existing Athletic Building 1 ls 50,000.00 50,000

Bent plate 3,500 lf 50.00 175,000

Canopy frame 9 tns 5,000.00 45,000

Moment connections 100 ea 350.00 35,000



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PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 342,807

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**NEW BUILDING - CORE ACADEMIC OPTION 1E**

155	Chiller dunnage	3	tns	5,000.00	15,000		
156	SUBTOTAL					4,603,246	

157							
158	<b>TOTAL - SUPERSTRUCTURE</b>						<b>\$12,113,426</b>
159							

160							
161	<b>B20 EXTERIOR CLOSURE</b>	157,935					
162							

163	<b>B2010 EXTERIOR WALLS; 60% of Exterior Closure</b>	94,761	sf		-		
164	<u>Interior skin</u>						
165	8" metal stud back-up	94,761	sf	12.00	1,137,132		
166	GWB to inside of exterior wall	94,761	sf	3.50	331,664		
167	Gypsum densglass sheathing board	94,761	sf	2.50	236,903		
168	Air/Vapor barrier to exterior walls, fluid applied	94,761	sf	6.00	568,566		
169	Rigid insulation, 3"	94,761	sf	2.50	236,903		
170	<u>Exterior skin; Material % based on Abington HS</u>						
171	Cement Board; 27%	25,585	sf	26.00	665,210		
172	Masonry exterior; 58%	54,961	sf	40.00	2,198,440		
173	PVC panels; 15%	14,214	sf	36.00	511,704		
174	PVC Trim and Custom Shapes	94,761	sf	3.50	331,664		
175	Precast trim and custom pieces	94,761	sf	2.50	236,903		
176	<u>Miscellaneous</u>						
177	Louvered equipment enclosure, prefinished louvered aluminum (10' high)	290	lf	320.00	92,800		
178	Signs / logos / flagpoles	1	ls	50,000.00	50,000		
179	Scaffold to exterior walls	157,935	sf	2.50	394,838		
180	SUBTOTAL					6,992,727	
181							

182	<b>B2020 WINDOWS; 40% of Exterior Closure</b>	63,174	sf		-		
183	Aluminum windows; 6%	3,790	sf	95.00	360,050		
184	Storefront	6,949	sf	90.00	625,410		
185	Curtainwall	52,434	sf	120.00	6,292,080		
186	Sun shade	1,500	lf	140.00	210,000		
187	Louvers	100	sf	55.00	5,500		
188	Air/Vapor barrier at window & louver openings	18,050	lf	2.00	36,100		
189	Backer rod & sealant at window & louver openings	18,050	lf	9.00	162,450		
190	Wood blocking at window openings	18,050	lf	14.00	252,700		
191	SUBTOTAL					7,944,290	
192							

**B2030 EXTERIOR DOORS**

193	<u>Hollow metal doors, frames and HW</u>						
194	Single leaf	2	ea	1,600.00	3,200		
195	Double leaf	8	pr	3,200.00	25,600		
196	<u>Exterior Doors - Aluminum</u>						
197	3'-0" x 7'-0" w/ glazed panels Type EE	6	ea	3,800.00	22,800		
198	6'-0" x 7'-0" w/ glazed panels Type EE Double	10	pr	7,500.00	75,000		
199	<u>Miscellaneous</u>						
200	Overhead door 9' x 7'	1	ea	3,780.00	3,780		
201	Backer rod & sealant to exterior doors	528	lf	5.00	2,640		
202	Wood blocking at door openings	528	lf	4.00	2,112		
203	SUBTOTAL					135,132	
204							
205							





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PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 342,807

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**NEW BUILDING - CORE ACADEMIC OPTION 1E**

<b>TOTAL - EXTERIOR CLOSURE</b>	<b>\$15,072,149</b>
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**B30 ROOFING**

**B3010 ROOF COVERINGS**

Flat Roofing:

White EPDM roof membrane mechanically fastened with 6" insulation	149,947	sf	25.00	3,748,675
Tapered insulation at roofs	14,995	sf	3.50	52,483
Walk boards, 24" x 36"	1,000	ea	30.00	30,000
<u>Miscellaneous Roofing</u>				
Flashing	149,947	sf	1.00	149,947
Roof expansion joints	1	ls	5,000.00	5,000
Air/Vapor barrier at roof edges	149,947	sf	0.20	29,989
Wood blocking at expansion joints and roof edges	149,947	sf	0.25	37,487
Canopies; roofing	1	ls	50,000.00	50,000
Roof ladders	5	loc	1,650.00	8,250
SUBTOTAL				

**B3020 ROOF OPENINGS**

Elevator PH and vent	2	ea	3,000.00	6,000	
Smoke hatches	2	ea	3,900.00	7,800	
SUBTOTAL					13,800

<b>TOTAL - ROOFING</b>	<b>\$4,125,631</b>
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**C10 INTERIOR CONSTRUCTION**

**C1010 PARTITIONS**

New partitions	342,807	sf	35.00	11,998,245	
SUBTOTAL					11,998,245

**C1020 INTERIOR DOORS**

Glazed vestibule doors including frame and hardware; double door	10	pr	8,000.00	80,000
Glazed vestibule doors including frame and hardware; single door	6	ea	4,000.00	24,000
Wood doors	353	ea	650.00	229,450
Hollow Metal doors	118	ea	400.00	47,200
Door frames				
HM single	471	ea	350.00	164,850
Hardware	471	ea	700.00	329,700
Sidelights	118	ea	1,300.00	153,400
Glazing to doors	353	sf	35.00	12,355
Premium for fire rated doors	118	sf	500.00	59,000
Acoustical Gasketing	1	ls	15,000.00	15,000
Paint doors and frames	471	ea	85.00	40,035
Sealants & caulking	471	ea	51.00	24,021
SUBTOTAL				

**C1030 SPECIALTIES / MILLWORK**

Specialties	342,807	sf	8.00	2,742,456
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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**NEW BUILDING - CORE ACADEMIC OPTION 1E**

257	Miscellaneous sealants & caulking	342,807	gsf	1.15	394,228		
258	Misc. metals	342,807	sf	1.50	514,211		
259	SUBTOTAL					3,650,895	

260

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<b>TOTAL - INTERIOR CONSTRUCTION</b>	<b>\$16,828,151</b>
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**C20 STAIRCASES**

265

266

**C2010 STAIR CONSTRUCTION**

267

268

269

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271

Monumental stairs	6	flt	50,000.00	300,000		
Egress stairs	9	flt	25,000.00	225,000		
Concrete fill to stairs	1	ls	20,000.00	20,000		
Roof access ladders	3	ea	1,100.00	3,300		
SUBTOTAL					548,300	

272

273

**C2020 STAIR FINISHES**

274

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276

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279

High performance coating to stairs including all railings etc.	15	flt	2,500.00	37,500		
Stair finish to monumental stairs	1,050	lfr	25.00	26,250		
Rubber base; stairs	1,350	lf	3.00	4,050		
Rubber tile at stairs - landings	3,150	sf	14.00	44,100		
Rubber tile at stairs - treads & risers	1,350	lft	22.00	29,700		
SUBTOTAL					141,600	

280

281

<b>TOTAL - STAIRCASES</b>	<b>\$689,900</b>
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282

283

284

**C30 INTERIOR FINISHES**

285

286

**C3010 WALL FINISHES**

287

288

Wall finishes	342,807	sf	9.00	3,085,263		
SUBTOTAL					3,085,263	

289

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**C3020 FLOOR FINISHES**

291

292

Floor finishes	342,807	sf	11.00	3,770,877		
SUBTOTAL					3,770,877	

293

294

**C3030 CEILING FINISHES**

295

296

Ceiling finishes	342,807	sf	11.00	3,770,877		
SUBTOTAL					3,770,877	

297

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<b>TOTAL - INTERIOR FINISHES</b>	<b>\$10,627,017</b>
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**D10 CONVEYING SYSTEMS**

302

303

**D1010 ELEVATOR**

304

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306

Passenger elevator, 3 stop, 1 opening; 3500 lbs; 120 fpm	2	ea	80,000.00	160,000		
6 x 4 x 3/8 angle to elevator pit	30	lf	25.00	750		
Pit ladders	1	ea	650.00	650		



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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**NEW BUILDING - CORE ACADEMIC OPTION 1E**

307	Sill angles	30	lf	25.00	750		
308	SUBTOTAL					162,150	

<b>TOTAL - CONVEYING SYSTEMS</b>						<b>\$162,150</b>	
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**D20 PLUMBING**

314	<b>D20 PLUMBING, GENERALLY</b>						
315	Plumbing allowance	342,807	sf	14.00	4,799,298		
316	SUBTOTAL					4,799,298	

<b>TOTAL - PLUMBING</b>						<b>\$4,799,298</b>	
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**D30 HVAC**

323	<b>D30 HVAC, GENERALLY</b>						
324	HVAC allowance	342,807	sf	34.00	11,655,438		
325	SUBTOTAL					11,655,438	

<b>TOTAL - HVAC</b>						<b>\$11,655,438</b>	
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**D40 FIRE PROTECTION**

332	<b>D40 FIRE PROTECTION, GENERALLY</b>						
333	Fire Protection allowance	342,807	sf	4.00	1,371,228		
334	SUBTOTAL					1,371,228	

<b>TOTAL - FIRE PROTECTION</b>						<b>\$1,371,228</b>	
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**D50 ELECTRICAL**

340	<b>D5010 SERVICE &amp; DISTRIBUTION</b>						
341	Service and distribution allowance	342,807	sf	8.50	2,913,860		
342	SUBTOTAL					2,913,860	

344	<b>D5020 LIGHTING &amp; POWER</b>						
345	Lighting & power allowance	342,807	sf	11.00	3,770,877		
346	SUBTOTAL					3,770,877	

348	<b>D5030 COMMUNICATION &amp; SECURITY SYSTEMS</b>						
349	Communication & security allowance	342,807	sf	14.50	4,970,702		
350	SUBTOTAL					4,970,702	

352	<b>D5040 OTHER ELECTRICAL SYSTEMS</b>						
353	Other electrical systems allowance	342,807	sf	2.00	685,614		
354	SUBTOTAL					685,614	

<b>TOTAL - ELECTRICAL</b>						<b>\$12,341,053</b>	
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**E10 EQUIPMENT**



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GFA 342,807

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**NEW BUILDING - CORE ACADEMIC OPTION 1E**

**E10 EQUIPMENT, GENERALLY**

Volley ball standards	1	ls	1,500.00	1,500		
Equipment for tv editing and production	1	ls	25,000.00	25,000		
Kiln	2	ea	3,000.00	6,000		
Shop equipment	1	ls	150,000.00	150,000		
Science classrooms equipment	1	ls	100,000.00	100,000		
Equipment at central chemical storage	1	loc	20,000.00	20,000		
Residential appliances	1	ls	35,000.00	35,000		
SUBTOTAL						337,500

**TOTAL - EQUIPMENT**

**\$337,500**

**E20 FURNISHINGS**

**E2010 FIXED FURNISHINGS**

Furnishings allowance	342,807	sf	12.00	4,113,684		4,113,684
SUBTOTAL						

**E2020 MOVABLE FURNISHINGS**

All movable furnishings to be provided and installed  
by owner  
SUBTOTAL

NIC

**TOTAL - FURNISHINGS**

**\$4,113,684**

**F10 SPECIAL CONSTRUCTION**

**F10 SPECIAL CONSTRUCTION**

No items in this section  
SUBTOTAL

**TOTAL - SPECIAL CONSTRUCTION**

**F20 SELECTIVE BUILDING DEMOLITION**

**F2010 BUILDING ELEMENTS DEMOLITION**

See main summary for demolition of existing buildings  
SUBTOTAL

**F2020 HAZARDOUS COMPONENTS ABATEMENT**

Removal of Asbestos Containing Materials in existing  
building - Included in Summary  
SUBTOTAL

**TOTAL - SELECTIVE BUILDING DEMOLITION**



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PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 60,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**PRE-FABRICATED METAL BUILDING - OPTION 1E**

**GROSS FLOOR AREA CALCULATION**

First Floor 60,000

**TOTAL GROSS FLOOR AREA (GFA) 60,000 sf**

**A10 FOUNDATIONS**

**A1010 STANDARD FOUNDATIONS**

614 CY

Strip footings: 2'-6" x 1'-0"

Excavation	1,637	cy	12.00	19,644
Store on site for reuse	1,637	cy	8.00	13,096
Backfill with selected material	1,505	cy	6.50	9,783
Formwork	2,720	sf	10.00	27,200
Re-bar	13,600	lbs	1.20	16,320
Concrete material; 3,000 psi	132	cy	120.00	15,840
Placing concrete	132	cy	40.00	5,280

Foundation wall: 18" thick

Formwork	10,200	sf	12.00	122,400
Re-bar	25,500	lbs	1.20	30,600
Concrete material; 3,000 psi	298	cy	120.00	35,760
Placing concrete	298	cy	40.00	11,920
Dampproofing foundation wall and footing	8,160	sf	1.85	15,096
Insulation to foundation walls; 2" thick	5,440	sf	2.50	13,600
Form shelf	1,360	lf	6.00	8,160

Column footings, F6 - 6'-0" x 6'-0" x 2'-0"

Excavation	806	cy	16.00	12,896
Store on site for reuse	806	cy	8.00	6,448
Backfill with selected material	654	cy	6.50	4,251
Formwork	2,611	sf	11.00	28,721
Re-bar	5,883	lbs	1.20	7,060
Concrete material; 3,000 psi	152	cy	120.00	18,240
Placing concrete	152	cy	50.00	7,600

Miscellaneous

Perimeter drain	1,360	lf	16.00	21,760
Underslab drain; 6" line @ 20' oc with 12" trunk line				w/plumbing
Piers/pilasters	32	cy	900.00	28,800
Set anchor bolts grout plates; supplied by others	216	loc	25.00	5,400

SUBTOTAL

485,875

**A1020 SPECIAL FOUNDATIONS**

**No Work in this section**

SUBTOTAL

**A1030 LOWEST FLOOR CONSTRUCTION**

New Slab on grade, 5" thick

Rough and fine grade	6,667	sy	1.50	10,001
Structural fill under building				Assumed NR
Gravel beneath slab on grade; 12" thick; compacted	2,222	cy	34.00	75,548
Mesh Re-bar 15% lap	69,000	sf	1.00	69,000
Concrete -5" thick; 4,000 psi	957	cy	125.00	119,625



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PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 60,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**PRE-FABRICATED METAL BUILDING - OPTION 1E**

52	Place & finish including control joints	60,000	sf	2.25	135,000		
53	Moisture Mitigation; admixture	957	cy	60.00	57,420		
54	Vapor barrier under slab on grade	60,000	sf	0.85	51,000		
55	Rigid insulation beneath slab on grade; 2" thick	60,000	sf	2.00	120,000		
56	SUBTOTAL					637,594	

58	<b>TOTAL - FOUNDATIONS</b>						<b>\$1,123,469</b>
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**A20 BASEMENT CONSTRUCTION**

**A2010 BASEMENT EXCAVATION**

No Work in this section

SUBTOTAL

**A2020 BASEMENT WALLS**

No Work in this section

SUBTOTAL

71	<b>TOTAL - BASEMENT CONSTRUCTION</b>						
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**B10 SUPERSTRUCTURE**

**B1010 FLOOR CONSTRUCTION**

No Work in this section

SUBTOTAL

**B1020 ROOF CONSTRUCTION**

See Special Construction

SUBTOTAL

84	<b>TOTAL - SUPERSTRUCTURE</b>						
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**B20 EXTERIOR CLOSURE**

**B2010 EXTERIOR WALLS**

See Special Construction

SUBTOTAL

**B2020 WINDOWS**

See Special Construction

SUBTOTAL

**B2030 EXTERIOR DOORS**

See Special Construction

SUBTOTAL

101	<b>TOTAL - EXTERIOR CLOSURE</b>						
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**B30 ROOFING**

**B3010 ROOF COVERINGS**





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GFA 60,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**PRE-FABRICATED METAL BUILDING - OPTION 1E**

See Special Construction  
SUBTOTAL

**B3020 ROOF OPENINGS**

No Work in this section  
SUBTOTAL

**TOTAL - ROOFING**

**C10 INTERIOR CONSTRUCTION**

**C1010 PARTITIONS**

New partitions 60,000 sf 20.00 1,200,000  
SUBTOTAL 1,200,000

**C1020 INTERIOR DOORS**

Interior doors 60,000 sf 5.00 300,000  
SUBTOTAL 300,000

**C1030 SPECIALTIES / MILLWORK**

Other Specialties 60,000 sf 6.00 360,000  
Auditorium/Music/Café wood paneling/trim/acoustic  
panels 1 ls 500,000.00 500,000  
SUBTOTAL 860,000

**TOTAL - INTERIOR CONSTRUCTION**

**\$2,360,000**

**C20 STAIRCASES**

**C2010 STAIR CONSTRUCTION**

No Work in this section  
SUBTOTAL

**C2020 STAIR FINISHES**

No Work in this section  
SUBTOTAL

**TOTAL - STAIRCASES**

**C30 INTERIOR FINISHES**

**C3010 WALL FINISHES**

Wall finishes 60,000 sf 10.00 600,000  
SUBTOTAL 600,000

**C3020 FLOOR FINISHES**

Floor finishes 60,000 sf 15.00 900,000  
SUBTOTAL 900,000

**C3030 CEILING FINISHES**



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GFA 60,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**PRE-FABRICATED METAL BUILDING - OPTION 1E**

157	Ceiling finishes; premium for auditorium	1	ls	250,000.00	250,000		
158	Ceiling finishes	60,000	sf	11.00	660,000		
159	SUBTOTAL					910,000	

<b>TOTAL - INTERIOR FINISHES</b>						<b>\$2,410,000</b>	
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**D10 CONVEYING SYSTEMS**

**D1010 ELEVATOR**  
SUBTOTAL

<b>TOTAL - CONVEYING SYSTEMS</b>							
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**D20 PLUMBING**

<b>D20 PLUMBING, GENERALLY</b>							
Plumbing allowance	60,000	sf	14.00	840,000			
SUBTOTAL						840,000	

<b>TOTAL - PLUMBING</b>						<b>\$840,000</b>	
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**D30 HVAC**

<b>D30 HVAC, GENERALLY</b>							
HVAC allowance	60,000	sf	34.00	2,040,000			
SUBTOTAL						2,040,000	

<b>TOTAL - HVAC</b>						<b>\$2,040,000</b>	
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**D40 FIRE PROTECTION**

<b>D40 FIRE PROTECTION, GENERALLY</b>							
Fire Protection allowance	60,000	sf	4.00	240,000			
SUBTOTAL						240,000	

<b>TOTAL - FIRE PROTECTION</b>						<b>\$240,000</b>	
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**D50 ELECTRICAL**

<b>D5010 SERVICE &amp; DISTRIBUTION</b>							
Service and distribution allowance	60,000	sf	8.50	510,000			
SUBTOTAL						510,000	

<b>D5020 LIGHTING &amp; POWER</b>							
Lighting & power allowance	60,000	sf	11.00	660,000			
SUBTOTAL						660,000	

<b>D5030 COMMUNICATION &amp; SECURITY SYSTEMS</b>							
Communication & security allowance	60,000	sf	14.50	870,000			
SUBTOTAL						870,000	



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GFA 60,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**PRE-FABRICATED METAL BUILDING - OPTION 1E**

**D5040 OTHER ELECTRICAL SYSTEMS**

Other electrical systems allowance	60,000	sf	1.00	60,000		60,000	
SUBTOTAL							60,000

**TOTAL - ELECTRICAL**

**\$2,100,000**

**E10 EQUIPMENT**

**E10 EQUIPMENT, GENERALLY**

Theater & stage equipment including stage curtains & rigging	1	ls	450,000.00	450,000			
Stage dimming, control system, theatrical fixtures	1	ls	200,000.00	200,000			
Auditorium AV system	1	ls	250,000.00	250,000			
Emergency light transfer switch (ELTS), allow 12 circuit	1	ls	6,750.00	6,750			
TV Studio track, curtain, & grid	1	ls	53,000.00	53,000			
Chorus track, curtain, & grid	1	ls	25,000.00	25,000			
Lecture hall equipment - dimming, control, & performance fixtures - Allow	1	ls	30,000.00	30,000			
Cubicle curtain & track	6	loc	500.00	3,000			
Projection screen; gymnasium	1	ea	9,000.00	9,000			
Projection screen; stage proscenium	1	ea	9,000.00	9,000			
Projection screen; cafeteria	1	ea	2,200.00	2,200			
Projection screen; lecture hall	1	ea	2,200.00	2,200			
TV Display- free standing	5	ea	5,000.00	FFE			
Food service equipment	1	ls	425,000.00	425,000			
SUBTOTAL						1,465,150	

**TOTAL - EQUIPMENT**

**\$1,465,150**

**E20 FURNISHINGS**

**E2010 FIXED FURNISHINGS**

Auditorium seating	750	seats	350.00	262,500			
Furnishings allowance	60,000	sf	10.00	600,000			
SUBTOTAL						862,500	

**E2020 MOVABLE FURNISHINGS**

All movable furnishings to be provided and installed by owner							
SUBTOTAL						NIC	

**TOTAL - FURNISHINGS**

**\$862,500**

**F10 SPECIAL CONSTRUCTION**

**F10 SPECIAL CONSTRUCTION**

Pre-fab Building	60,000	sf	70.00	4,200,000		4,200,000	
SUBTOTAL							4,200,000

**TOTAL - SPECIAL CONSTRUCTION**

**\$4,200,000**



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GFA 60,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**PRE-FABRICATED METAL BUILDING - OPTION 1E**

**F20 SELECTIVE BUILDING DEMOLITION**

**F2010 BUILDING ELEMENTS DEMOLITION**

See main summary for demolition of existing buildings

SUBTOTAL

**F2020 HAZARDOUS COMPONENTS ABATEMENT**

Removal of Asbestos Containing Materials in existing  
building - Included in Summary

SUBTOTAL

**TOTAL - SELECTIVE BUILDING DEMOLITION**



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GFA 98,523

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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EXISTING ATHLETIC BUILDING - RENOVATION OPTIONS 1D + 1E

**GROSS FLOOR AREA CALCULATION**

GFA 98,523

<b>TOTAL GROSS FLOOR AREA (GFA)</b>	<b>98,523</b>	<b>sf</b>
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**A10 FOUNDATIONS**

**A1010 STANDARD FOUNDATIONS**

Tie in at new building 1 ls 25,000.00 25,000  
SUBTOTAL 25,000

**A1020 SPECIAL FOUNDATIONS**

No Work in this section  
SUBTOTAL

**A1030 LOWEST FLOOR CONSTRUCTION**

Miscellaneous  
Cut and patch slab to tie in existing utilities 1 ls 50,000.00 50,000  
SUBTOTAL 50,000

<b>TOTAL - FOUNDATIONS</b>	<b>\$75,000</b>
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**A20 BASEMENT CONSTRUCTION**

**A2010 BASEMENT EXCAVATION**

No Work in this section  
SUBTOTAL

**A2020 BASEMENT WALLS**

No Work in this section  
SUBTOTAL

<b>TOTAL - BASEMENT CONSTRUCTION</b>	
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**B10 SUPERSTRUCTURE**

**B1010 FLOOR CONSTRUCTION**

Tie in at new building 1 ls 20,000.00 20,000  
SUBTOTAL 20,000

**B1020 ROOF CONSTRUCTION**

Miscellaneous  
Miscellaneous repair 1 ls 25,000.00 25,000  
SUBTOTAL 25,000

<b>TOTAL - SUPERSTRUCTURE</b>	<b>\$45,000</b>
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**B20 EXTERIOR CLOSURE**

**B2010 EXTERIOR WALLS**

Exterior skin 38,830  
Fiber cement siding attached to existing wall panel 38,830 sf 22.00 854,260



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PSR Estimate - OPTIONS 1D, 1E + 2B

GFA 98,523

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**EXISTING ATHLETIC BUILDING - RENOVATION OPTIONS 1D + 1E**

Miscellaneous

Tie into new corridor

1

ls

15,000.00

15,000

Scaffold to exterior walls

40,480

sf

2.50

101,200

SUBTOTAL

970,460

**B2020 WINDOWS**

Windows / Storefront

1,650

sf

100.00

165,000

SUBTOTAL

165,000

**B2030 EXTERIOR DOORS**

Hollow metal doors, frames and HW

Double leaf

4

pr

3,200.00

12,800

Exterior Doors - Aluminum

6'-0" x 7'-0" w/ glazed panels Double

8

pr

8,000.00

64,000

Miscellaneous

Backer rod & sealant to exterior doors

256

lf

5.00

1,280

Wood blocking at door openings

256

lf

4.00

1,024

SUBTOTAL

79,104

**TOTAL - EXTERIOR CLOSURE**

**\$1,214,564**

**B30 ROOFING**

**B3010 ROOF COVERINGS**

Flat Roofing:

New PVC membrane roofing system

75,600

sf

16.00

1,209,600

SUBTOTAL

1,209,600

**B3020 ROOF OPENINGS**

SUBTOTAL

**TOTAL - ROOFING**

**\$1,209,600**

**C10 INTERIOR CONSTRUCTION**

**C1010 PARTITIONS**

Seismic upgrades/shear walls

98,523

gsf

6.00

591,138

Interior storefronts/glazing etc.

2,500

sf

60.00

150,000

Replace existing interior storefronts/glazing etc.

1,000

sf

70.00

70,000

SUBTOTAL

811,138

**C1020 INTERIOR DOORS**

New interior doors and hardware; 50% in existing frames

100

ea

1,300.00

130,000

Door frames

HM single

50

ea

350.00

17,500

Premium for fire rated doors

25

ea

750.00

18,750

Paint doors and frames

100

ea

120.00

12,000

Sealants & caulking

100

ea

51.00

5,100

SUBTOTAL

183,350





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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**EXISTING ATHLETIC BUILDING - RENOVATION OPTIONS 1D + 1E**

**C1030 SPECIALTIES / MILLWORK**

*Toilet Accessories*

Gang bathrooms	7	rms	2,500.00	17,500	
Visual display boards					
Marker Boards	1,000	sf	22.00	22,000	
Tack Boards	600	sf	20.00	12,000	
Wood veneer display cases	20	lf	1,500.00	30,000	
Mirrors at fitness rooms	1,000	sf	26.00	26,000	
Architectural woodwork	1	ls	50,000.00	50,000	
Athletic lockers	300	opn	240.00	72,000	
Lockers four tier	2,000	opn	320.00	640,000	
Miscellaneous sealants & caulking	98,523	gsf	0.50	49,262	
Misc. metals	98,523	sf	0.25	24,631	

SUBTOTAL

943,393

**TOTAL - INTERIOR CONSTRUCTION**

**\$1,937,881**

**C20 STAIRCASES**

**C2010 STAIR CONSTRUCTION**

SUBTOTAL

**C2020 STAIR FINISHES**

Rubber base; stairs	150	lf	3.00	450	
Rubber tile at stairs - landings	350	sf	12.00	4,200	
Rubber tile at stairs - treads & risers	150	lft	22.00	3,300	

SUBTOTAL

7,950

**TOTAL - STAIRCASES**

**\$7,950**

**C30 INTERIOR FINISHES**

**C3010 WALL FINISHES**

Paint to existing walls	98,523	sf	1.50	147,785	
Porcelain wall tile to wet walls	2,266	sf	24.00	54,384	
<u>Gym/Athletics</u>					
Gym wall pads	1,600	sf	12.00	19,200	
Volleyball sleeves	4	ea	600.00	2,400	

SUBTOTAL

223,769

**C3020 FLOOR FINISHES**

Patch tile at pool	3,500	sf	3.00	10,500	
Porcelain tile to floors; toilets & showers	1,800	sf	24.00	43,200	
Porcelain tile base	480	lf	24.00	11,520	
VCT to floors; includes floor leveling	52,871	sf	5.50	290,791	
Sheet sports flooring	26,500	sf	12.00	318,000	

SUBTOTAL

674,011

**C3030 CEILING FINISHES**

Paint existing ceilings	63,597	sf	2.00	127,194	
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**EXISTING ATHLETIC BUILDING - RENOVATION OPTIONS 1D + 1E**

161	ACT ceiling 2 x 2	30,000	sf	5.00	150,000		
162	SUBTOTAL					277,194	

164	<b>TOTAL - INTERIOR FINISHES</b>						<b>\$1,174,974</b>
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**D10 CONVEYING SYSTEMS**

**D1010 ELEVATOR**  
No work required  
SUBTOTAL

172	<b>TOTAL - CONVEYING SYSTEMS</b>						
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**D20 PLUMBING**

178	<b>D20 PLUMBING, GENERALLY</b>						
179	Plumbing allowance	98,523	sf	14.00	1,379,322		
180	SUBTOTAL					1,379,322	

182	<b>TOTAL - PLUMBING</b>						<b>\$1,379,322</b>
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**D30 HVAC**

186	<b>D30 HVAC, GENERALLY</b>						
187	HVAC allowance	98,523	sf	34.00	3,349,782		
188	SUBTOTAL					3,349,782	

190	<b>TOTAL - HVAC</b>						<b>\$3,349,782</b>
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**D40 FIRE PROTECTION**

195	<b>D40 FIRE PROTECTION, GENERALLY</b>						
196	Fire Protection allowance	98,523	sf	4.00	394,092		
197	SUBTOTAL					394,092	

199	<b>TOTAL - FIRE PROTECTION</b>						<b>\$394,092</b>
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**D50 ELECTRICAL**

203	<b>D5010 SERVICE &amp; DISTRIBUTION</b>						
205	Service and distribution allowance	98,523	sf	8.50	837,446		
206	SUBTOTAL					837,446	

208	<b>D5020 LIGHTING &amp; POWER</b>						
209	Lighting & power allowance	98,523	sf	11.00	1,083,753		
210	SUBTOTAL					1,083,753	

212	<b>D5030 COMMUNICATION &amp; SECURITY SYSTEMS</b>						
213	Communication & security allowance	98,523	sf	14.50	1,428,584		
214	SUBTOTAL					1,428,584	



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**EXISTING ATHLETIC BUILDING - RENOVATION OPTIONS 1D + 1E**

**D5040 OTHER ELECTRICAL SYSTEMS**

Other electrical systems allowance

98,523 sf 1.00 98,523

SUBTOTAL

98,523

**TOTAL - ELECTRICAL**

**\$3,448,306**

**E10 EQUIPMENT**

**E10 EQUIPMENT, GENERALLY**

Front loading automatic washer

1 ls 1,080.00 1,080

Front loading electric dryer

1 ls 1,104.00 1,104

Refrigerator w/ ice making kit

1 ls 840.00 840

Ice cube machine

1 ls 3,000.00 3,000

Projection screen

1 ea 9,000.00 9,000

Gym dividing curtain

12,960 sf 16.00 207,360

Motorized backstops

2 ea 10,000.00 20,000

Motorized assisted telescoping bleachers - Pool

400 seat 140.00 56,000

Motorized assisted telescoping bleachers - Fieldhouse

2,500 seat 140.00 350,000

Folding panel partition (electrically operated)

2,430 sf 90.00 218,700

SUBTOTAL

867,084

**TOTAL - EQUIPMENT**

**\$867,084**

**E20 FURNISHINGS**

**E2010 FIXED FURNISHINGS**

Roller blinds to windows

1,650 sf 6.00 9,900

Training room

Base cabinet w/ Plam counter tops

15 lf 420.00 6,300

Coaches Conference Room

Base cabinet w/ Plam counter tops

10 lf 420.00 4,200

SUBTOTAL

20,400

**E2020 MOVABLE FURNISHINGS**

All movable furnishings to be provided and installed  
by owner

SUBTOTAL

NIC

**TOTAL - FURNISHINGS**

**\$20,400**

**F10 SPECIAL CONSTRUCTION**

**F10 SPECIAL CONSTRUCTION**

Pool renovation

1 ls 3,100,000.00 3,100,000

SUBTOTAL

3,100,000

**TOTAL - SPECIAL CONSTRUCTION**

**\$3,100,000**

**F20 SELECTIVE BUILDING DEMOLITION**



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**EXISTING ATHLETIC BUILDING - RENOVATION OPTIONS 1D + 1E**

269	<b>F2010 BUILDING ELEMENTS DEMOLITION</b>						
270	Demo entrance porch	750	sf	15.00	11,250		
271	Remove existing windows / storefront	1,650	sf	8.00	13,200		
272	Remove existing exterior double doors	12	ea	200.00	2,400		
273	Remove existing roofing	75,600	sf	1.50	113,400		
274	Remove existing ceiling finishes	30,000	sf	1.25	37,500		
275	Remove existing doors	100	ea	120.00	12,000		
276	Temporary protection and cleaning	1	ls	50,000.00	50,000		
277	Miscellaneous demolition	98,523	gsf	2.00	197,046		
278	SUBTOTAL					436,796	
279							
280	<b>F2020 HAZARDOUS COMPONENTS ABATEMENT</b>						
281	Allowance for attaching exterior siding to existing asbestos panels	38,830	sf	2.00	77,660		
282	SUBTOTAL					77,660	
283							
<b>TOTAL - SELECTIVE BUILDING DEMOLITION</b>							<b>\$514,456</b>



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NEW BUILDING - OPTION 2B

**GROSS FLOOR AREA CALCULATION**

1st Floor	84,340
2nd Floor	92,428
3rd Floor	71,599
4th Floor	71,599

**TOTAL GROSS FLOOR AREA (GFA) 319,966 sf**

**A10 FOUNDATIONS**

**A1010 STANDARD FOUNDATIONS**

Strip footings: 3'-0" x 1'-4"

Excavation	4,064	cy	12.00	48,768
Store on site for reuse	4,064	cy	8.00	32,512
Backfill with selected material	3,578	cy	6.50	23,257
Formwork	8,339	sf	10.00	83,390
Re-bar	31,350	lbs	1.20	37,620
Concrete material; 3,000 psi	486	cy	120.00	58,320
Placing concrete	486	cy	40.00	19,440

Strip footings: 2'-0" x 1'-0" at interior walls and braced frames

Excavation	1,204	cy	12.00	14,448
Store on site for reuse	1,204	cy	8.00	9,632
Backfill with selected material	1,107	cy	6.50	7,196
Formwork	2,000	sf	10.00	20,000
Re-bar	10,000	lbs	1.20	12,000
Concrete material; 3,000 psi	97	cy	120.00	11,640
Placing concrete	97	cy	40.00	3,880

Foundation wall stem; 12" thick

Formwork	6,270	sf	12.00	75,240
Re-bar	15,675	lbs	1.20	18,810
Concrete material; 3,000 psi	91	cy	120.00	10,920
Placing concrete	91	cy	40.00	3,640
Dampproofing foundation wall and footing	3,135	sf	1.85	5,800
Insulation to foundation walls; 2" thick	12,540	sf	2.50	31,350

Foundation wall; 18" thick

Formwork	25,080	sf	12.00	300,960
Re-bar	62,700	lbs	1.20	75,240
Concrete material; 3,000 psi	732	cy	120.00	87,840
Placing concrete	732	cy	40.00	29,280
Dampproofing foundation wall and footing	18,810	sf	1.85	34,799
Insulation to foundation walls; 2" thick	12,540	sf	2.50	31,350

Form shelf

	3,135	lf	6.00	18,810
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Column footings, F8 - 8' x 8' x 2'-0"

Excavation	1,338	cy	16.00	21,408
Store on site for reuse	1,338	cy	8.00	10,704
Backfill with selected material	714	cy	6.50	4,641
Formwork	8,026	sf	11.00	88,286
Re-bar	28,708	lbs	1.20	34,450
Concrete material; 3,000 psi	624	cy	120.00	74,880
Placing concrete	624	cy	50.00	31,200



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**NEW BUILDING - OPTION 2B**

52	<u>Column footings, F9 - 9' x 9' x 2'-0"</u>						
53	Excavation	501	cy	16.00	8,016		
54	Store on site for reuse	501	cy	8.00	4,008		
55	Backfill with selected material	249	cy	6.50	1,619		
56	Formwork	2,880	sf	11.00	31,680		
57	Re-bar	10,302	lbs	1.20	12,362		
58	Concrete material; 3,000 psi	252	cy	120.00	30,240		
59	Placing concrete	252	cy	50.00	12,600		
60	Miscellaneous						
61	Perimeter drain	3,135	lf	16.00	50,160		
62	Underslab drain; 6" line @ 20' oc with 12" trunk line				Assumed NR		
63	Piers/pilasters	98	cy	900.00	88,200		
64	Set anchor bolts grout plates; supplied by others	660	loc	25.00	16,500		
65	SUBTOTAL					1,627,096	

**A1020 SPECIAL FOUNDATIONS**

66	No Work in this section						
69	SUBTOTAL						

**A1030 LOWEST FLOOR CONSTRUCTION**

72	<u>New Slab on grade, 5" thick</u>						
73	Rough and fine grade	9,371	sy	1.50	14,057		
74	Structural fill under building				Assumed NR		
75	Gravel beneath slab on grade; 12" thick; compacted	3,124	cy	34.00	106,216		
76	Mesh Re-bar 15% lap	96,991	sf	1.00	96,991		
77	Concrete -5" thick; 4,000 psi	1,345	cy	125.00	168,125		
78	Place & finish including control joints	84,340	sf	2.25	189,765		
79	Moisture Mitigation; admixture	1,345	cy	60.00	80,700		
80	Vapor barrier under slab on grade	84,340	sf	0.85	71,689		
81	Rigid insulation beneath slab on grade; 2" thick	84,340	sf	2.00	168,680		
82	<u>Elevator Pit</u>						
83	Excavation for elevator pit	168	cy	14.00	2,352		
84	Remove off site	168	cy	17.37	2,918		
85	Backfill with gravel	8	cy	35.00	280		
86	Elevator pit walls						
87	formwork	960	sf	14.00	13,440		
88	reinforcement	1,440	lbs	1.20	1,728		
89	Concrete material; 3,000 psi	12	cy	120.00	1,440		
90	placing concrete in walls	12	cy	40.00	480		
91	Slab						
92	formwork	120	sf	11.00	1,320		
93	reinforcement	600	lbs	1.20	720		
94	concrete material in slab	12	cy	125.00	1,500		
95	placing concrete in slab; 3,000 psi	12	cy	40.00	480		
96	<u>Miscellaneous</u>						
97	Polymer modified Cement waterproofing to elevator pit	680	sf	12.00	8,160		
98	Neutralization pit	1	loc	4,000.00	4,000		
99	Grease interceptor pit	1	loc	2,500.00	2,500		
100	Equipment pads	500	sf	7.00	3,500		
101	SUBTOTAL					941,041	





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NEW BUILDING - OPTION 2B

<b>TOTAL - FOUNDATIONS</b>	<b>\$2,568,137</b>
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**A20 BASEMENT CONSTRUCTION**

**A2010 BASEMENT EXCAVATION**

No Work in this section

SUBTOTAL

**A2020 BASEMENT WALLS**

No Work in this section

SUBTOTAL

<b>TOTAL - BASEMENT CONSTRUCTION</b>	
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**B10 SUPERSTRUCTURE**

**B1010 FLOOR CONSTRUCTION**

Floor Structure - Steel:

Structural steel

Shear studs

Floor Structure

Metal floor decking; 2", 20 gage

Mesh reinforcement in concrete topping

Concrete topping to metal decking, 5 1/4" thick; Light weight

Placing concrete topping

Moisture Mitigation; admixture

Miscellaneous

Rebar at slab edges

Firestopping at floor penetrations

Fire stopping at slab edges

Allowance for tiered seating at seminar

Concrete steps to seminar

Miscellaneous fire stopping

Base plates

Supply anchor bolts installed by others

Spray-applied fireproofing to beams and columns only

SUBTOTAL

**B1020 ROOF CONSTRUCTION**

Roof Structure - Steel:

Structural steel

Roof Structure

Metal roof decking; 1 1/2, 20 gage galv., type B

Miscellaneous

Support framing to roof screen ; HSS galvanized

Spray-applied fireproofing to beams and deck

Concrete slab for Roof Top equipment

Bent plate

Canopy frame

Moment connections

13.00	lbs/sf	-	
2,080	tns	-	
<b>1,532</b>	tns	3,500.00	5,362,000
<b>29,453</b>	ea	6.00	176,718
<b>235,626</b>	sf	4.00	942,504
<b>270,970</b>	sf	1.00	270,970
<b>4,009</b>	cy	160.00	641,440
<b>235,626</b>	sf	2.00	471,252
<b>4,009</b>	cy	60.00	240,540
<b>15,000</b>	lbs	1.20	18,000
<b>1</b>	floors	2,500.00	2,500
<b>3,411</b>	lf	4.00	13,644
<b>248</b>	lfr	150.00	37,200
<b>95</b>	lfr	120.00	11,400
<b>1</b>	ls	20,000.00	20,000
<b>6,600</b>	lbs	3.00	19,800
<b>165</b>	ea	12.00	1,980
<b>235,626</b>	sf	2.50	589,065
			8,819,013
<b>548</b>	tns	3,500.00	1,918,000
<b>84,340</b>	sf	3.50	295,190
<b>15</b>	tns	3,800.00	57,000
<b>84,340</b>	sf	3.00	253,020
<b>5,000</b>	sf	10.00	50,000
<b>3,500</b>	lf	50.00	175,000
<b>9</b>	tns	5,000.00	45,000
<b>100</b>	ea	350.00	35,000



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**NEW BUILDING - OPTION 2B**

155	Chiller dunnage	3	tns	5,000.00	15,000		
156	SUBTOTAL					2,843,210	

158	<b>TOTAL - SUPERSTRUCTURE</b>						<b>\$11,662,223</b>
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161	<b>B20 EXTERIOR CLOSURE</b>	195,630					
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163	<b>B2010 EXTERIOR WALLS; 60% of Exterior Closure</b>	117,378	sf		-		
164	Interior skin						
165	8" metal stud back-up	117,378	sf	12.00	1,408,536		
166	GWB to inside of exterior wall	117,378	sf	3.50	410,823		
167	Gypsum densglass sheathing board	117,378	sf	2.50	293,445		
168	Air/Vapor barrier to exterior walls, fluid applied	117,378	sf	6.00	704,268		
169	Rigid insulation, 3"	117,378	sf	2.50	293,445		
170	Exterior skin; Material % based on Abington HS						
171	Cement Board; 27%	31,692	sf	26.00	823,992		
172	Masonry exterior; 58%	68,079	sf	40.00	2,723,160		
173	PVC panels; 15%	17,607	sf	36.00	633,852		
174	PVC Trim and Custom Shapes	117,378	sf	3.50	410,823		
175	Precast trim and custom pieces	117,378	sf	2.50	293,445		
176	Miscellaneous						
177	Louvered equipment enclosure, prefinished louvered aluminum (10' high)	290	lf	320.00	92,800		
178	Signs / logos / flagpoles	1	ls	50,000.00	50,000		
179	Scaffold to exterior walls	195,630	sf	2.50	489,075		
180	SUBTOTAL					8,627,664	

182	<b>B2020 WINDOWS; 40% of Exterior Closure</b>	78,252	sf		-		
183	Aluminum windows; 6%	4,695	sf	95.00	446,025		
184	Storefront	8,608	sf	90.00	774,720		
185	Curtainwall	64,949	sf	120.00	7,793,880		
186	Sun shade	1,500	lf	140.00	210,000		
187	Louvers	100	sf	55.00	5,500		
188	Air/Vapor barrier at window & louver openings	22,358	lf	2.00	44,716		
189	Backer rod & sealant at window & louver openings	22,358	lf	9.00	201,222		
190	Wood blocking at window openings	22,358	lf	14.00	313,012		
191	SUBTOTAL					9,789,075	

193	<b>B2030 EXTERIOR DOORS</b>						
194	Hollow metal doors, frames and HW						
195	Single leaf	2	ea	1,600.00	3,200		
196	Double leaf	8	pr	3,200.00	25,600		
197	Exterior Doors - Aluminum						
198	3'-0" x 7'-0" w/ glazed panels Type EE	6	ea	3,800.00	22,800		
199	6'-0" x 7'-0" w/ glazed panels Type EE Double	10	pr	7,500.00	75,000		
200	Miscellaneous						
201	Overhead door 9' x 7'	1	ea	3,780.00	3,780		
202	Backer rod & sealant to exterior doors	528	lf	5.00	2,640		
203	Wood blocking at door openings	528	lf	4.00	2,112		
204	SUBTOTAL					135,132	



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**NEW BUILDING - OPTION 2B**

<b>TOTAL - EXTERIOR CLOSURE</b>	<b>\$18,551,871</b>
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**B30 ROOFING**

**B3010 ROOF COVERINGS**

Flat Roofing:

White EPDM roof membrane mechanically fastened with 6" insulation	88,557	sf	25.00	2,213,925	
Tapered insulation at roofs	8,856	sf	3.50	30,996	
Walk boards, 24" x 36"	1,000	ea	30.00	30,000	
<u>Miscellaneous Roofing</u>					
Flashing	88,557	sf	1.00	88,557	
Roof expansion joints	1	ls	5,000.00	5,000	
Air/Vapor barrier at roof edges	88,557	sf	0.20	17,711	
Wood blocking at expansion joints and roof edges	88,557	sf	0.25	22,139	
Canopies; roofing	1	ls	50,000.00	50,000	
Roof ladders	5	loc	1,650.00	8,250	
SUBTOTAL					2,466,578

**B3020 ROOF OPENINGS**

Elevator PH and vent	2	ea	3,000.00	6,000	
Smoke hatches	2	ea	3,900.00	7,800	
SUBTOTAL					13,800

<b>TOTAL - ROOFING</b>	<b>\$2,480,378</b>
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**C10 INTERIOR CONSTRUCTION**

**C1010 PARTITIONS**

New partitions	319,966	sf	35.00	11,198,810	
SUBTOTAL					11,198,810

**C1020 INTERIOR DOORS**

Glazed vestibule doors including frame and hardware; double door	10	pr	8,000.00	80,000	
Glazed vestibule doors including frame and hardware; single door	6	ea	4,000.00	24,000	
Wood doors	353	ea	650.00	229,450	
Hollow Metal doors	118	ea	400.00	47,200	
Door frames					
HM single	471	ea	350.00	164,850	
Hardware	471	ea	700.00	329,700	
Sidelights	118	ea	1,300.00	153,400	
Glazing to doors	353	sf	35.00	12,355	
Premium for fire rated doors	118	sf	500.00	59,000	
Acoustical Gasketing	1	ls	15,000.00	15,000	
Paint doors and frames	471	ea	85.00	40,035	
Sealants & caulking	471	ea	51.00	24,021	
SUBTOTAL					1,179,011

**C1030 SPECIALTIES / MILLWORK**



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GFA 319,966

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**NEW BUILDING - OPTION 2B**

256	Auditorium/Music/Café wood paneling/trim/acoustic panels	1	ls	500,000.00	500,000		
257	Specialties	319,966	sf	8.00	2,559,728		
258	Miscellaneous sealants & caulking	319,966	gsf	1.15	367,961		
259	Misc. metals	319,966	sf	1.50	479,949		
260	SUBTOTAL					3,907,638	

**TOTAL - INTERIOR CONSTRUCTION**

**\$16,285,459**

**C20 STAIRCASES**

**C2010 STAIR CONSTRUCTION**

267	Monumental stairs	6	flt	50,000.00	300,000		
268	Egress stairs	9	flt	25,000.00	225,000		
269	Concrete fill to stairs	1	ls	20,000.00	20,000		
270	Roof access ladders	3	ea	1,100.00	3,300		
271	SUBTOTAL					548,300	

**C2020 STAIR FINISHES**

275	High performance coating to stairs including all railings etc.	15	flt	2,500.00	37,500		
276	Stair finish to monumental stairs	1,050	lfr	25.00	26,250		
277	Rubber base; stairs	1,350	lf	3.00	4,050		
278	Rubber tile at stairs - landings	3,150	sf	14.00	44,100		
279	Rubber tile at stairs - treads & risers	1,350	lft	22.00	29,700		
280	SUBTOTAL					141,600	

**TOTAL - STAIRCASES**

**\$689,900**

**C30 INTERIOR FINISHES**

**C3010 WALL FINISHES**

288	Wall finishes	319,966	sf	9.00	2,879,694		
289	SUBTOTAL					2,879,694	

**C3020 FLOOR FINISHES**

292	Floor finishes	319,966	sf	11.00	3,519,626		
293	SUBTOTAL					3,519,626	

**C3030 CEILING FINISHES**

296	Ceiling finishes	319,966	sf	11.00	3,519,626		
297	SUBTOTAL					3,519,626	

**TOTAL - INTERIOR FINISHES**

**\$9,918,946**

**D10 CONVEYING SYSTEMS**

**D1010 ELEVATOR**

305	Passenger elevator, 3 stop, 1 opening; 3500 lbs; 120 fpm	2	ea	80,000.00	160,000		
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**NEW BUILDING - OPTION 2B**

306	6 x 4 x 3/8 angle to elevator pit	30	lf	25.00	750		
307	Pit ladders	1	ea	650.00	650		
308	Sill angles	30	lf	25.00	750		
309	SUBTOTAL					162,150	
310							
311	<b>TOTAL - CONVEYING SYSTEMS</b>						<b>\$162,150</b>

**D20 PLUMBING**

316	<b>D20 PLUMBING, GENERALLY</b>						
317	Plumbing allowance	319,966	sf	14.00	4,479,524		
318	SUBTOTAL					4,479,524	
319							
320	<b>TOTAL - PLUMBING</b>						<b>\$4,479,524</b>

**D30 HVAC**

324	<b>D30 HVAC, GENERALLY</b>						
325	HVAC allowance	319,966	sf	34.00	10,878,844		
326	SUBTOTAL					10,878,844	
327							
328	<b>TOTAL - HVAC</b>						<b>\$10,878,844</b>

**D40 FIRE PROTECTION**

334	<b>D40 FIRE PROTECTION, GENERALLY</b>						
335	Fire Protection allowance	319,966	sf	4.00	1,279,864		
336	SUBTOTAL					1,279,864	
337							
338	<b>TOTAL - FIRE PROTECTION</b>						<b>\$1,279,864</b>

**D50 ELECTRICAL**

341	<b>D5010 SERVICE &amp; DISTRIBUTION</b>						
342	Service and distribution allowance	319,966	sf	8.50	2,719,711		
343	SUBTOTAL					2,719,711	
344							
345	<b>D5020 LIGHTING &amp; POWER</b>						
346	Lighting & power allowance	319,966	sf	11.00	3,519,626		
347	SUBTOTAL					3,519,626	
348							
349	<b>D5030 COMMUNICATION &amp; SECURITY SYSTEMS</b>						
350	Communication & security allowance	319,966	sf	14.50	4,639,507		
351	SUBTOTAL					4,639,507	
352							
353	<b>D5040 OTHER ELECTRICAL SYSTEMS</b>						
354	Other electrical systems allowance	319,966	sf	2.00	639,932		
355	SUBTOTAL					639,932	
356							
357	<b>TOTAL - ELECTRICAL</b>						<b>\$11,518,776</b>



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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**NEW BUILDING - OPTION 2B**

**E10 EQUIPMENT**

**E10 EQUIPMENT, GENERALLY**

Volley ball standards	1	ls	1,500.00	1,500		
Equipment for tv editing and production	1	ls	25,000.00	25,000		
Kiln	2	ea	3,000.00	6,000		
Shop equipment	1	ls	150,000.00	150,000		
Science classrooms equipment	1	ls	100,000.00	100,000		
Equipment at central chemical storage	1	loc	20,000.00	20,000		
Residential appliances	1	ls	35,000.00	35,000		
Front loading automatic washer	1	ls	1,080.00	1,080		
Front loading electric dryer	1	ls	1,104.00	1,104		
Refrigerator w/ ice making kit	1	ls	840.00	840		
Ice cube machine	1	ls	3,000.00	3,000		
Projection screen	1	ea	9,000.00	9,000		
SUBTOTAL						352,524

**TOTAL - EQUIPMENT**

**\$352,524**

**E20 FURNISHINGS**

**E2010 FIXED FURNISHINGS**

Furnishings allowance	319,966	sf	12.00	3,839,592		
SUBTOTAL						3,839,592

**E2020 MOVABLE FURNISHINGS**

All movable furnishings to be provided and installed  
by owner  
SUBTOTAL

NIC

**TOTAL - FURNISHINGS**

**\$3,839,592**

**F10 SPECIAL CONSTRUCTION**

**F10 SPECIAL CONSTRUCTION**

No items in this section  
SUBTOTAL

**TOTAL - SPECIAL CONSTRUCTION**

**F20 SELECTIVE BUILDING DEMOLITION**

**F2010 BUILDING ELEMENTS DEMOLITION**

See main summary for demolition of existing buildings  
SUBTOTAL

**F2020 HAZARDOUS COMPONENTS ABATEMENT**

Removal of Asbestos Containing Materials in existing  
building - Included in Summary  
SUBTOTAL

**TOTAL - SELECTIVE BUILDING DEMOLITION**



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GFA 170,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**PRE-FABRICATED METAL BUILDING - OPTION 2B**

**GROSS FLOOR AREA CALCULATION**

First Floor 170,000

**TOTAL GROSS FLOOR AREA (GFA) 170,000 sf**

**A10 FOUNDATIONS**

**A1010 STANDARD FOUNDATIONS**

842 CY

Strip footings: 2'-6" x 1'-0"

Excavation	2,245	cy	12.00	26,940
Store on site for reuse	2,245	cy	8.00	17,960
Backfill with selected material	2,064	cy	6.50	13,416
Formwork	3,730	sf	10.00	37,300
Re-bar	18,650	lbs	1.20	22,380
Concrete material; 3,000 psi	181	cy	120.00	21,720
Placing concrete	181	cy	40.00	7,240

Foundation wall: 18" thick

Formwork	13,988	sf	12.00	167,856
Re-bar	34,970	lbs	1.20	41,964
Concrete material; 3,000 psi	408	cy	120.00	48,960
Placing concrete	408	cy	40.00	16,320
Dampproofing foundation wall and footing	11,190	sf	1.85	20,702
Insulation to foundation walls; 2" thick	7,460	sf	2.50	18,650
Form shelf	1,865	lf	6.00	11,190

Column footings, F6 - 6'-0" x 6'-0" x 2'-0"

Excavation	1,105	cy	16.00	17,680
Store on site for reuse	1,105	cy	8.00	8,840
Backfill with selected material	896	cy	6.50	5,824
Formwork	3,581	sf	11.00	39,391
Re-bar	8,068	lbs	1.20	9,682
Concrete material; 3,000 psi	209	cy	120.00	25,080
Placing concrete	209	cy	50.00	10,450

Miscellaneous

Perimeter drain	1,865	lf	16.00	29,840
Underslab drain; 6" line @ 20' oc with 12" trunk line				w/plumbing
Piers/pilasters	44	cy	900.00	39,600
Set anchor bolts grout plates; supplied by others	300	loc	25.00	7,500

SUBTOTAL 666,485

**A1020 SPECIAL FOUNDATIONS**

**No Work in this section**

SUBTOTAL

**A1030 LOWEST FLOOR CONSTRUCTION**

New Slab on grade, 5" thick

Rough and fine grade	18,889	sy	1.50	28,334
Structural fill under building				Assumed NR
Gravel beneath slab on grade; 12" thick; compacted	6,296	cy	34.00	214,064
Mesh Re-bar 15% lap	195,500	sf	1.00	195,500
Concrete -5" thick; 4,000 psi	2,711	cy	125.00	338,875





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**PRE-FABRICATED METAL BUILDING - OPTION 2B**

52	Place & finish including control joints	170,000	sf	2.25	382,500		
53	Moisture Mitigation; admixture	2,711	cy	60.00	162,660		
54	Vapor barrier under slab on grade	170,000	sf	0.85	144,500		
55	Rigid insulation beneath slab on grade; 2" thick	170,000	sf	2.00	340,000		
56	SUBTOTAL					1,806,433	

57							
58	<b>TOTAL - FOUNDATIONS</b>						<b>\$2,472,918</b>

**A20 BASEMENT CONSTRUCTION**

**A2010 BASEMENT EXCAVATION**  
No Work in this section  
SUBTOTAL

**A2020 BASEMENT WALLS**  
No Work in this section  
SUBTOTAL

71	<b>TOTAL - BASEMENT CONSTRUCTION</b>						
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**B10 SUPERSTRUCTURE**

**B1010 FLOOR CONSTRUCTION**  
No Work in this section  
SUBTOTAL

**B1020 ROOF CONSTRUCTION**  
See Special Construction  
SUBTOTAL

84	<b>TOTAL - SUPERSTRUCTURE</b>						
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**B20 EXTERIOR CLOSURE**

**B2010 EXTERIOR WALLS**  
See Special Construction  
SUBTOTAL

**B2020 WINDOWS**  
See Special Construction  
SUBTOTAL

**B2030 EXTERIOR DOORS**  
See Special Construction  
SUBTOTAL

101	<b>TOTAL - EXTERIOR CLOSURE</b>						
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**B30 ROOFING**

**B3010 ROOF COVERINGS**



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**PRE-FABRICATED METAL BUILDING - OPTION 2B**

See Special Construction  
SUBTOTAL

**B3020 ROOF OPENINGS**

No Work in this section  
SUBTOTAL

**TOTAL - ROOFING**

**C10 INTERIOR CONSTRUCTION**

**C1010 PARTITIONS**

New partitions 170,000 sf 20.00 3,400,000  
SUBTOTAL 3,400,000

**C1020 INTERIOR DOORS**

Interior doors 170,000 sf 5.00 850,000  
SUBTOTAL 850,000

**C1030 SPECIALTIES / MILLWORK**

Other Specialties 170,000 sf 6.00 1,020,000  
Auditorium/Music/Café wood paneling/trim/acoustic panels 1 ls 500,000.00 500,000  
SUBTOTAL 1,520,000

**TOTAL - INTERIOR CONSTRUCTION**

**\$5,770,000**

**C20 STAIRCASES**

**C2010 STAIR CONSTRUCTION**

No Work in this section  
SUBTOTAL

**C2020 STAIR FINISHES**

No Work in this section  
SUBTOTAL

**TOTAL - STAIRCASES**

**C30 INTERIOR FINISHES**

**C3010 WALL FINISHES**

Wall finishes 170,000 sf 10.00 1,700,000  
SUBTOTAL 1,700,000

**C3020 FLOOR FINISHES**

Floor finishes 170,000 sf 15.00 2,550,000  
SUBTOTAL 2,550,000

**C3030 CEILING FINISHES**



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GFA 170,000

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**PRE-FABRICATED METAL BUILDING - OPTION 2B**

157	Ceiling finishes; premium for auditorium	1	ls	250,000.00	250,000		
158	Ceiling finishes	170,000	sf	11.00	1,870,000		
159	SUBTOTAL					2,120,000	

<b>TOTAL - INTERIOR FINISHES</b>	<b>\$6,370,000</b>
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**D10 CONVEYING SYSTEMS**

**D1010 ELEVATOR**  
SUBTOTAL

<b>TOTAL - CONVEYING SYSTEMS</b>	
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**D20 PLUMBING**

<b>D20 PLUMBING, GENERALLY</b>							
Plumbing allowance	170,000	sf	14.00	2,380,000			
SUBTOTAL						2,380,000	

<b>TOTAL - PLUMBING</b>	<b>\$2,380,000</b>
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**D30 HVAC**

<b>D30 HVAC, GENERALLY</b>							
HVAC allowance	170,000	sf	34.00	5,780,000			
SUBTOTAL						5,780,000	

<b>TOTAL - HVAC</b>	<b>\$5,780,000</b>
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**D40 FIRE PROTECTION**

<b>D40 FIRE PROTECTION, GENERALLY</b>							
Fire Protection allowance	170,000	sf	4.00	680,000			
SUBTOTAL						680,000	

<b>TOTAL - FIRE PROTECTION</b>	<b>\$680,000</b>
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**D50 ELECTRICAL**

<b>D5010 SERVICE &amp; DISTRIBUTION</b>							
Service and distribution allowance	170,000	sf	8.50	1,445,000			
SUBTOTAL						1,445,000	

<b>D5020 LIGHTING &amp; POWER</b>							
Lighting & power allowance	170,000	sf	11.00	1,870,000			
SUBTOTAL						1,870,000	

<b>D5030 COMMUNICATION &amp; SECURITY SYSTEMS</b>							
Communication & security allowance	170,000	sf	14.50	2,465,000			
SUBTOTAL						2,465,000	



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**PRE-FABRICATED METAL BUILDING - OPTION 2B**

**D5040 OTHER ELECTRICAL SYSTEMS**

Other electrical systems allowance

170,000

sf

1.00

170,000

SUBTOTAL

170,000

**TOTAL - ELECTRICAL**

**\$5,950,000**

**E10 EQUIPMENT**

**E10 EQUIPMENT, GENERALLY**

Gym dividing curtain

12,960

sf

16.00

207,360

Motorized backstops

2

ea

10,000.00

20,000

Motorized assisted telescoping bleachers - Pool

400

seat

140.00

56,000

Motorized assisted telescoping bleachers - Fieldhouse

2,500

seat

140.00

350,000

Folding panel partition (electrically operated)

2,430

sf

90.00

218,700

Theater & stage equipment including stage curtains & rigging

1

ls

450,000.00

450,000

Stage dimming, control system, theatrical fixtures

1

ls

200,000.00

200,000

Auditorium AV system

1

ls

250,000.00

250,000

Emergency light transfer switch (ELTS), allow 12 circuit

1

ls

6,750.00

6,750

TV Studio track, curtain, & grid

1

ls

53,000.00

53,000

Chorus track, curtain, & grid

1

ls

25,000.00

25,000

Lecture hall equipment - dimming, control, & performance fixtures - Allow

1

ls

30,000.00

30,000

Cubicle curtain & track

6

loc

500.00

3,000

Projection screen; gymnasium

1

ea

9,000.00

9,000

Projection screen; stage proscenium

1

ea

9,000.00

9,000

Projection screen; cafeteria

1

ea

2,200.00

2,200

Projection screen; lecture hall

1

ea

2,200.00

2,200

TV Display- free standing

5

ea

5,000.00

FFE

Food service equipment

1

ls

425,000.00

425,000

SUBTOTAL

2,317,210

**TOTAL - EQUIPMENT**

**\$2,317,210**

**E20 FURNISHINGS**

**E2010 FIXED FURNISHINGS**

Auditorium seating

750

seats

350.00

262,500

Furnishings allowance

170,000

sf

10.00

1,700,000

SUBTOTAL

1,962,500

**E2020 MOVABLE FURNISHINGS**

All movable furnishings to be provided and installed by owner

SUBTOTAL

NIC

**TOTAL - FURNISHINGS**

**\$1,962,500**

**F10 SPECIAL CONSTRUCTION**

**F10 SPECIAL CONSTRUCTION**



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GFA 170,000

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**PRE-FABRICATED METAL BUILDING - OPTION 2B**

262	Pre-fab Building	170,000	sf	70.00	11,900,000		
263	SUBTOTAL					11,900,000	

264							
265	<b>TOTAL - SPECIAL CONSTRUCTION</b>						<b>\$11,900,000</b>

**F20 SELECTIVE BUILDING DEMOLITION**

**F2010 BUILDING ELEMENTS DEMOLITION**

See main summary for demolition of existing buildings  
SUBTOTAL

**F2020 HAZARDOUS COMPONENTS ABATEMENT**

Removal of Asbestos Containing Materials in existing  
building - Included in Summary  
SUBTOTAL

266							
267							
268							
269							
270							
271							
272							
273							
274							
275							
276							
277							
	<b>TOTAL - SELECTIVE BUILDING DEMOLITION</b>						



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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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SITEWORK OPTIONS 1D + 1E

**G SITEWORK**

**G10 SITE PREPARATION & DEMOLITION**

Site Demolitions and Relocations

Site construction fence	5,000	lf	12.00	60,000	
Pavement/curbing removal - grind up asphalt to reuse	105,000	sf	1.00	105,000	
Remove and dispose concrete sidewalk	20,000	sf	1.50	30,000	
Remove and dispose tennis courts	54,100	sf	1.00	54,100	
Tree removal	1	ls	20,000.00	20,000	
Misc. Tree Protection	1	ls	2,500.00	2,500	
Cut and cap existing utilities	12	loc	1,000.00	12,000	
Remove and dispose of existing drainage structures and utilities	1	ls	20,000.00	20,000	
Miscellaneous demolition	1	ls	100,000.00	100,000	
SUBTOTAL					403,600

Site Earthwork

Construction entrances/wheel washes (allowance)	2	loc	12,000.00	24,000	
Strip topsoil, store on site for reuse	13,889	cy	8.00	111,112	
Cut/fill; AV 2ft over site; assume balanced site	74,074	cy	6.00	444,444	
Urban fill allowance	1	ls	400,000.00	400,000	
Fine grading	58,457	sy	3.00	175,371	
Silt fence/erosion control (allowance)	5,000	lf	14.00	70,000	
Erosion Control monitoring & maintenance	1	ls	30,000.00	30,000	

Hazardous Waste Remediation

SUBTOTAL					1,254,927
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**G20 SITE IMPROVEMENTS**

Roadways and Parking Lots

Bituminous concrete paving	214,515			-	
gravel base; 12" thick	7,945	cy	40.00	317,800	
bituminous concrete; 4" thick	23,835	sy	24.00	572,040	
Temporary parking and roadway/phasing allowance	1	ls	100,000.00	100,000	
<u>Concrete pads</u>					
gravel base; 12" thick	37	cy	32.00	1,184	
concrete paving; 6" thick	1,000	sf	7.00	7,000	
6"x18" granite curb	9,000	lf	35.00	315,000	
Single solid lines, 4" thick	400	space	25.00	10,000	
Wheelchair Parking	20	space	75.00	1,500	
Crosswalk Hatching	4	loc	900.00	3,600	
Other road markings	1	ls	7,500.00	7,500	
HC curb cuts	15	loc	350.00	5,250	
Entrance sign	1	ls	30,000.00	30,000	
New traffic signs	50	ea	350.00	17,500	
Miscellaneous other site improvements	1	ls	250,000.00	250,000	
SUBTOTAL					1,638,374

Pedestrian paving

<u>Concrete paving</u>					
gravel base; 8" thick	3,100	cy	40.00	124,000	
concrete paving; 4" thick	54,075	sf	6.25	337,969	
color concrete paving; 4" thick @ plaza's	57,525	sf	8.00	460,200	

Concrete pavers @ outdoor learning center

Concrete pavers	15,500	sf	17.00	263,500	
gravel base; 8" thick	385	cy	32.00	12,320	



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**New School and Renovation**  
Fall River, MA

21-Jun-17

**PSR Estimate - OPTIONS 1D, 1E + 2B**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SITEWORK OPTIONS 1D + 1E</b>							
56	dry pack; 2" thick	92	cy	22.00	2,024		
57	concrete base; 4" thick	15,500	sf	5.00	77,500		
58							
59	<u>Site Improvements</u>						
60	Bicycle racks	18	ea	1,000.00	18,000		
61	Bollards	20	ea	800.00	16,000		
62	45' Flag pole	1	loc	7,500.00	7,500		
63	Flagpole base - monolithic granite w/granite paving surround.	1	loc	3,500.00	3,500		
64	Ornamental trash/recycling receptacles	10	ea	800.00	8,000		
65	6 seat picnic table	8	ea	1,500.00	12,000		
66	Ornamental benches	6	ea	3,000.00	18,000		
67	Seatwall	250	lf	350.00	87,500		
68	Concrete retaining walls	2,000	lf	450.00	900,000		
69							
70	New tennis courts	8	loc	110,000.00	880,000		
71	New Multi-purpose field	110,000	sf	9.00	990,000		
72	New softball field	1	sf	400,000.00	400,000		
73	New baseball field	1	sf	500,000.00	500,000		
74							
75	Fencing	1	ls	60,000.00	60,000		
76	Dumpster enclosure	100	lf	55.00	5,500		
77	SUBTOTAL					5,183,513	
78							
79							
80	<u>Landscaping &amp; Plantings:</u>						
81	Spread existing amended topsoil @ seeded areas	3,704	cy	26.00	96,304		
82	New seeded areas - L&S	200,000	sf	0.15	30,000		
83	<u>Trees</u>						
84	Trees	70	ea	1,000.00	70,000		
85	Shrubs	300	ea	175.00	52,500		
86	Perennials / Grasses	2,500	ea	4.50	11,250		
87	Other plantings/mulch etc.	1	ls	50,000.00	50,000		
88	Irrigation				Assume NR		
89	SUBTOTAL					310,054	
90							
91	<b>G30 CIVIL MECHANICAL UTILITIES</b>						
92	<u>Water supply</u>						
93	New water supply	1	ls	200,000.00	200,000		
94	<u>Sanitary sewer</u>						
95	New sanitary system	1	ls	120,000.00	120,000		
96	<u>Storm Sewer</u>						
97	New drainage and detention system	214,515	sf	6.00	1,287,090		
98							
99	<u>Gas and Electrical service</u>						
100	E&B trench for new lines, pipe and install by utilities						
101	New gas service	500	lf	25.00	By Utility		
102	SUBTOTAL					1,607,090	
103							
104	<b>G40 SITE ELECTRICAL</b>						
105	<u>Power</u>						
106	Utility company backcharges				NIC		
107	Riser pole	2	ea	1,350.00	2,700		
108	Manhole	3	ea	4,050.00	12,150		
109	Primary ductbank, empty						
110	Ductbank 2-4" primary	800	lf	36.00	28,800		





**Durfee High School**  
**New School and Renovation**  
Fall River, MA

21-Jun-17

**PSR Estimate - OPTIONS 1D, 1E + 2B**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SITEWORK OPTIONS 1D + 1E</b>							
111	Pad mount transformer	2	ea	By Utility	NIC		
112	Transformer pad	2	ea	2,250.00	4,500		
113	Ductbank 10-4" with 4000A feed, secondary	40	lf	828.00	33,120		
114	Secondary power handhole	1	ea	1,350.00	1,350		
115	Generator						
116	Generator pad grounding	1	ea	1,350.00	1,350		
117	Ductbank	20	lf	225.00	4,500		
118	<u>Communications</u>						
119	Riser pole	1	ea	2,250.00	by utility		
120	Low voltage manhole L	6	ea	2,250.00	13,500		
121	Ductbank	800	lf	36.00	28,800		
122	<u>Site Lighting</u>						
123	Site lighting allowance	1	ls	450,000.00	450,000		
124	SUBTOTAL					580,770	
125							
126							
127	<b>SUBTOTAL SITE DEVELOPMENT</b>						<b>\$10,978,328</b>



Durfee High School  
New School and Renovation  
Fall River, MA

21-Jun-17

PSR Estimate - OPTIONS 1D, 1E + 2B

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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**SITEWORK OPTION 2B**

1							
2	<b>G SITEWORK</b>						
3							
4	<b>G10 SITE PREPARATION &amp; DEMOLITION</b>						
5	<u>Site Demolitions and Relocations</u>						
6	Site construction fence	5,000	lf	12.00	60,000		
7	Pavement/curbing removal - grind up asphalt to reuse	105,000	sf	1.00	105,000		
8	Remove and dispose concrete sidewalk	20,000	sf	1.50	30,000		
9	Remove and dispose tennis courts	54,100	sf	1.00	54,100		
10	Tree removal	1	ls	20,000.00	20,000		
11	Misc. Tree Protection	1	ls	2,500.00	2,500		
12	Cut and cap existing utilities	12	loc	1,000.00	12,000		
13	Remove and dispose of existing drainage structures and utilities	1	ls	20,000.00	20,000		
14	Miscellaneous demolition	1	ls	200,000.00	200,000		
15	SUBTOTAL					503,600	
16							
17	<u>Site Earthwork</u>						
18	Construction entrances/wheel washes (allowance)	2	loc	12,000.00	24,000		
19	Strip topsoil, store on site for reuse	13,889	cy	8.00	111,112		
20	Cut/fill; AV 4ft over site; assume balanced site	148,148	cy	6.00	888,888		
21	Urban fill allowance	1	ls	400,000.00	400,000		
22	Fine grading	79,067	sy	3.00	237,201		
23	Silt fence/erosion control (allowance)	5,000	lf	14.00	70,000		
24	Erosion Control monitoring & maintenance	1	ls	30,000.00	30,000		
25	<u>Hazardous Waste Remediation</u>						
26	SUBTOTAL					1,761,201	
27	<b>G20 SITE IMPROVEMENTS</b>						
28	<u>Roadways and Parking Lots</u>						
29	Bituminous concrete paving	400,000			-		
30	gravel base; 12" thick	14,815	cy	40.00	592,600		
31	bituminous concrete; 4" thick	44,444	sy	24.00	1,066,656		
32	Temporary parking and roadway/phasing allowance	1	ls	100,000.00	100,000		
33	<u>Concrete pads</u>						
34	gravel base; 12" thick	37	cy	32.00	1,184		
35	concrete paving; 6" thick	1,000	sf	7.00	7,000		
36	6"x18" granite curb	12,000	lf	35.00	420,000		
37	Single solid lines, 4" thick	400	space	25.00	10,000		
38	Wheelchair Parking	20	space	75.00	1,500		
39	Crosswalk Hatching	4	loc	900.00	3,600		
40	Other road markings	1	ls	7,500.00	7,500		
41	HC curb cuts	15	loc	350.00	5,250		
42	Entrance sign	1	ls	30,000.00	30,000		
43	New traffic signs	50	ea	350.00	17,500		
44	Miscellaneous other site improvements	1	ls	500,000.00	500,000		
45	SUBTOTAL					2,762,790	
46							
47	<u>Pedestrian paving</u>						
48	<u>Concrete paving</u>						
49	gravel base; 8" thick	3,100	cy	40.00	124,000		
50	concrete paving; 4" thick	54,075	sf	6.25	337,969		
51	color concrete paving; 4" thick @ plaza's	57,525	sf	8.00	460,200		
52							
53	<u>Concrete pavers @ outdoor learning center</u>						
54	Concrete pavers	15,500	sf	17.00	263,500		
55	gravel base; 8" thick	385	cy	32.00	12,320		



**Durfee High School**  
**New School and Renovation**  
Fall River, MA

21-Jun-17

**PSR Estimate - OPTIONS 1D, 1E + 2B**

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SITEWORK OPTION 2B</b>							
56	dry pack; 2" thick	92	cy	22.00	2,024		
57	concrete base; 4" thick	15,500	sf	5.00	77,500		
58							
59	<u>Site Improvements</u>						
60	Bicycle racks	18	ea	1,000.00	18,000		
61	Bollards	20	ea	800.00	16,000		
62	45' Flag pole	1	loc	7,500.00	7,500		
63	Flagpole base - monolithic granite w/granite paving surround.	1	loc	3,500.00	3,500		
64	Ornamental trash/recycling receptacles	10	ea	800.00	8,000		
65	6 seat picnic table	8	ea	1,500.00	12,000		
66	Ornamental benches	6	ea	3,000.00	18,000		
67	Seatwall	250	lf	350.00	87,500		
68	Concrete retaining walls	3,000	lf	450.00	1,350,000		
69							
70	New tennis courts	8	loc	110,000.00	880,000		
71	New Multi-purpose field	110,000	sf	9.00	990,000		
72	New softball field	1	sf	400,000.00	400,000		
73	New baseball field	1	sf	500,000.00	500,000		
74							
75	Fencing	1	ls	60,000.00	60,000		
76	Dumpster enclosure	100	lf	55.00	5,500		
77	SUBTOTAL					5,633,513	
78							
79							
80	<u>Landscaping &amp; Plantings:</u>						
81	Spread existing amended topsoil @ seeded areas	3,704	cy	26.00	96,304		
82	New seeded areas - L&S	200,000	sf	0.15	30,000		
83	<u>Trees</u>						
84	Trees	70	ea	1,000.00	70,000		
85	Shrubs	300	ea	175.00	52,500		
86	Perennials / Grasses	2,500	ea	4.50	11,250		
87	Other plantings/mulch etc.	1	ls	100,000.00	100,000		
88	Irrigation				Assume NR		
89	SUBTOTAL					360,054	
90							
91	<b>G30 CIVIL MECHANICAL UTILITIES</b>						
92	<u>Water supply</u>						
93	New water supply	1	ls	350,000.00	350,000		
94	<u>Sanitary sewer</u>						
95	New sanitary system	1	ls	200,000.00	200,000		
96	<u>Storm Sewer</u>						
97	New drainage and detention system	400,000	sf	8.00	3,200,000		
98							
99	<u>Gas and Electrical service</u>						
100	E&B trench for new lines, pipe and install by utilities						
101	New gas service	500	lf	25.00	By Utility		
102	SUBTOTAL					3,750,000	
103							
104	<b>G40 SITE ELECTRICAL</b>						
105	<u>Power</u>						
106	Utility company backcharges					NIC	
107	Riser pole	2	ea	1,350.00	2,700		
108	Manhole	3	ea	4,050.00	12,150		
109	Primary ductbank, empty						
110	Ductbank 2-4" primary	800	lf	36.00	28,800		



Durfee High School  
New School and Renovation  
Fall River, MA

21-Jun-17

PSR Estimate - OPTIONS 1D, 1E + 2B

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
<b>SITEWORK OPTION 2B</b>							
111	Pad mount transformer	2	ea	By Utility	NIC		
112	Transformer pad	2	ea	2,250.00	4,500		
113	Ductbank 10-4" with 4000A feed, secondary	40	lf	828.00	33,120		
114	Secondary power handhole	1	ea	1,350.00	1,350		
115	Generator						
116	Generator pad grounding	1	ea	1,350.00	1,350		
117	Ductbank	20	lf	225.00	4,500		
118	<u>Communications</u>						
119	Riser pole	1	ea	2,250.00	by utility		
120	Low voltage manhole L	6	ea	2,250.00	13,500		
121	Ductbank	800	lf	36.00	28,800		
122	<u>Site Lighting</u>						
123	Site lighting allowance	1	ls	750,000.00	750,000		
124	SUBTOTAL					880,770	
125							
126							
127	<b>SUBTOTAL SITE DEVELOPMENT</b>						<b>\$15,651,928</b>

## TEK Estimate

### DURFEE HIGH SCHOOL - FALL RIVER, MA

June 15 2017

#### OPTION 1E

		Chap 149 Bid	Chap 149A CM
NEW CONSTRUCTION		\$114,817,400	\$114,817,400
FIELD HOUSE RENOVATIONS		\$21,385,900	\$21,385,900
SITEWORK		\$8,243,000	\$8,243,000
SUB TOTAL	JUNE 17	\$144,446,300	\$144,446,300
DESIGN CONTINGENCY	12%	\$17,333,556	\$17,333,556
GENERAL CONDITIONS	33 MOS (149) - 29 MOS (149) @ \$160,000	\$5,280,000	\$4,640,000
GENERAL REQUIREMENTS(149A)	3%		\$4,992,596
BONDS	1.25%	\$2,088,248	\$2,142,656
INSURANCE	1.25%	\$2,088,248	\$2,142,656
PERMIT		WAIVED	WAIVED
NON-FS BID UPCHARGE (149A)	10% NON FS VALUE = \$65,000,000		\$6,500,000
ESCALATION TO MID POINT	10.2%	\$15,758,025	\$16,168,587
4.5% PA - 1 YR INCLUDED	JULY 20		
CM FEE (149A)	3%		\$5,950,990
OHP (149)	5%	\$9,349,719	
<b>TOTAL OF ALL CONSTRUCTION OPTION 1E</b>		<b>\$196,344,097</b>	<b>\$204,317,340</b>

**NEW BUILDING / SITE / DEMOLITION OF EXISTING**

**DIRECT TRADE COSTS** **\$123,060,400**  
\$ / SF **\$303.10**

**DURFEE HIGH SCHOOL - FALL RIVER, MA OPTION 1E**

June 15 2017

CSI CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	ESTIMATED COST	SUB TOTAL	TOTAL COST
<b>FLOOR AREAS</b>							
	LOWEST FLOOR (NEW)	206,000					
	2ND FLOOR (NEW)	100,000					
	3RD FLOOR (NEW)	100,000					
	FIELD HOUSE (EXISTING)	91,000					
	DEMOLITION (EXISTING)	300,000					
<b>A10 FOUNDATIONS</b>							
A1010	STANDARD FOUNDATIONS						
	Excavate/Backfill (5700/2800) CY	1	LS		200,000		
	Foundation Concrete	2,400	CY	1,500.00	3,600,000		
	SUBTOTAL					3,800,000	
A1010	SPECIAL FOUNDATIONS						
	None						
	SUBTOTAL					0	
A1010	LOWEST FLOOR CONSTRUCTION						
	Excavate/Backfill (700/700) CY	1	LS		40,000		
	SOG Concrete(includes B1 Admx)	3,900	CY	600.00	2,340,000		
	SUBTOTAL					2,380,000	
	<b>TOTAL FOUNDATIONS</b>				<b>COST / SF \$15.22</b>		<b>\$6,180,000</b>
<b>A20 BASEMENT CONSTRUCTION</b>							
A2010	BASEMENT EXCAVATE/BACKFILL						
	None					0	
	SUBTOTAL						
A2020	BASEMENT WALLS						
	None					0	
	SUBTOTAL						
	<b>TOTAL BASEMENT CONSTRUCTION</b>				<b>COST / SF \$0.00</b>		<b>\$0</b>
<b>B10 SUPERSTRUCTURE</b>							
B1010	UPPER FLOOR CONSTRUCTION						
	SOD Concrete(includes B1 Admx)	3,000	CY	625.00	1,875,000		
	Floor Structure - Steel	1,800	TON	4,600.00	8,280,000		
	SUBTOTAL					10,155,000	
B1020	ROOF STRUCTURE - STEEL						
	Roof Structure - Steel	900	TON	4,600.00	4,140,000		
	Pre-Fab Bldg Steel Frame	300	TON	3,200.00	960,000		
	SUBTOTAL					5,100,000	
B1020a	ROOF STRUCTURE - CONCRETE						
	SOD Concrete	100	CY	550.00	55,000		
	SUBTOTAL					55,000	
B1020b	FIREPROOFING						
	FireProofing	406,000	SF	4.00	1,624,000		
	SUBTOTAL					1,624,000	
	<b>TOTAL SUPERSTRUCTURE</b>				<b>COST / SF \$41.71</b>		<b>\$16,934,000</b>

# DURFEE HIGH SCHOOL - FALL RIVER, MA OPTION 1E

June 15 2017

CSI CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	ESTIMATED COST	SUB TOTAL	TOTAL COST
<b>B20 EXTERIOR CLOSURE</b>							
B2010	EXTERIOR WALLS						
	Veneer Support Steel	50	TON	10,000.00	500,000		
	LGM Studs / Sheathing (x Floor Ht)	13,000	LF	150.00	1,950,000		
	AVB	200,000	SF	8.00	1,600,000		
	Cavity Insulation	90,000	SF	4.00	360,000		
	Masonry Veneer	90,000	SF	38.00	3,420,000		
	Soffits / Cornices	35,000	SF	60.00	2,100,000		
	Veneer at Pre-Fab	25,000	SF	25.00	625,000		
	Exterior Caulking	250,000	SF	3.00	750,000		
	SUBTOTAL					11,305,000	
B2020	WINDOWS						
	Punch Windows	25,000	SF	95.00	2,375,000		
	Curtainwall	35,000	SF	120.00	4,200,000		
	Sunshades	1	LS		1,000,000		
	SUBTOTAL					7,575,000	
B2030	EXTERIOR DOORS						
	Door Leafs	75	EA	2,500.00	187,500		
	SUBTOTAL					187,500	
	<b>TOTAL EXTERIOR CLOSURE</b>				<b>COST / SF \$46.96</b>		<b>\$19,067,500</b>
<b>B30 ROOFING</b>							
B3010	ROOF COVERINGS						
	PVC Adhered Roofs(Taper Insul)	125,000	SF	20.00	2,500,000		
	Standing Seam (Board Insul)	25,000	SF	25.00	625,000		
	SUBTOTAL					3,125,000	
B3020	ROOF OPENINGS						
	Hatches/Vents/Flashings	1	LS		75,000		
	Skylights	NONE					
	SUBTOTAL					75,000	
	<b>TOTAL ROOFING</b>				<b>COST / SF \$7.88</b>		<b>\$3,200,000</b>
<b>C10 INTERIOR CONSTRUCTION</b>							
C1010	PARTITIONS						
	CMU (6,8,12)	75,000	SF	19.00	1,425,000		
	Seismic Restraint / Expansion	5,000	LF	50.00	250,000		
	Rough Carpentry(Project SF)	406,000	SF	4.00	1,624,000		
	Gyp Board Partitions	500,000	SF	14.00	7,000,000		
	SUBTOTAL					10,299,000	
C1020	INTERIOR DOORS						
	Doors/Frames/Hardware(Glazed)	600	EA	1,800.00	1,080,000		
	OH / Acoustic Doors	1	LS		150,000		
	Vision Panels(Glazed)	100	EA	500.00	50,000		
	SUBTOTAL					1,230,000	
C1030	SPECIALTIES / MILLWORK						
	Toilet Partitions / Accessories	1	LS		100,000		
	Bldg Signage	600	EA	175.00	105,000		
	Extinguishers	1	LS		20,000		
	Lockers	2,500	EA	250.00	625,000		
	Marker / Tack Boards	125	RMS	2,000.00	250,000		
	Folding Partitions	1	LS		100,000		
	Misc Metal Supports	1	LS		200,000		
	Misc Metal Guard/Hand Rails	1	LS		150,000		
	Rough Carpentry (Project SF)	406,000	SF	0.25	101,500		
	Millwork Allowance	1	LS		1,000,000		
	Acoustical Allowance	1	LS		500,000		
	SUBTOTAL					3,151,500	
	<b>TOTAL INTERIOR CONSTRUCTION</b>				<b>COST / SF \$36.16</b>		<b>\$14,680,500</b>



**DURFEE HIGH SCHOOL - FALL RIVER, MA OPTION 1E**

June 15 2017

CSI CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	ESTIMATED COST	SUB TOTAL	TOTAL COST
<b>C20 STAIRCASES</b>							
C2010	STAIR CONSTRUCTION						
	Steel Stairs (2 Flts/Floor)	16	EA	18,000.00	288,000		
	Stair Concrete(Incl B1 Admx)	25	CY	1,000.00	25,000		
	Misc Ladders	1	LS		15,000		
	Misc Stairs ( Mech/Stage/Nosings)	1	LS		15,000		
	SUBTOTAL					343,000	
C2020	STAIR FINISHES						
	Stair One Piece Tread/Riser	220	EA	400.00	88,000		
	Rubber Flooring/Base	9,000	SF	9.00	81,000		
	Paint Stairs (2 Flts/Floor)	16	EA	1,500.00	24,000		
	SUBTOTAL					193,000	
<b>TOTAL STAIRCASES</b>					<b>COST / SF \$1.32</b>		<b>\$536,000</b>
<b>C30 INTERIOR FINISHES</b>							
C3010	WALL FINISHES						
	Ceramic Wall Tile	10,000	SF	15.00	150,000		
	Paint Partitions (Project SF)	406,000	SF	3.50	1,421,000		
	Epoxy Upcharge	200,000	SF	0.75	150,000		
	SUBTOTAL					1,721,000	
C3020	FLOOR FINISHES						
	VCT / Base	311,100	SF	4.00	1,244,400		
	Sheet Vinyl	4,000	SF	8.00	32,000		
	Carpet	4,500	SY	35.00	157,500		
	Ceramic Tile Floors	20,000	SF	12.00	240,000		
	Quarry / Porcelain Tile	20,000	SF	16.00	320,000		
	Stage	2,500	SF	18.00	45,000		
	SUBTOTAL					2,038,900	
C3030	CEILING FINISHES						
	Acoustical Ceiling	300,000	SF	3.00	900,000		
	Special Ceiling Construction	100,000	SF	10.00	1,000,000		
	SUBTOTAL					1,900,000	
<b>TOTAL INTERIOR FINISHES</b>					<b>COST / SF \$13.94</b>		<b>\$5,659,900</b>
<b>D10 CONVEYING SYSTEMS</b>							
D1010	ELEVATOR						
	3 Stop Elevator	1	LS		150,000		
	Misc Metals (Sills/Ladders/Grates)	1	LS		10,000		
	SUBTOTAL					160,000	
<b>TOTAL CONVEYING SYSTEMS</b>					<b>COST / SF \$0.39</b>		<b>\$160,000</b>

**DURFEE HIGH SCHOOL - FALL RIVER, MA OPTION 1E**

June 15 2017

CSI CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	ESTIMATED COST	SUB TOTAL	TOTAL COST
<b>D20 PLUMBING</b>							
D20	PLUMBING						
	Plumbing Allowance	406,000	SF	13.00	5,278,000		
	SUBTOTAL					5,278,000	
	<b>TOTAL PLUMBING</b>				<b>COST / SF \$13.00</b>		<b>\$5,278,000</b>
<b>D30 HVAC</b>							
D30	HVAC (AC)						
	HVAC Allowance	406,000	SF	39.00	15,834,000		
	SUBTOTAL					15,834,000	
	<b>TOTAL HVAC</b>				<b>COST / SF \$39.00</b>		<b>\$15,834,000</b>
<b>D40 FIRE PROTECTION</b>							
D40	FIRE PROTECTION						
	Fire Protection Allowance	406,000	SF	4.00	1,624,000		
	SUBTOTAL					1,624,000	
	<b>TOTAL FIRE PROTECTION</b>				<b>COST / SF \$4.00</b>		<b>\$1,624,000</b>
<b>D50 ELECTRICAL</b>							
D50	ELECTRICAL (INCL TECHNOLOGY)						
	Electrical Allowance	406,000	SF	31.00	12,586,000		
	SUBTOTAL					12,586,000	
	<b>TOTAL ELECTRICAL</b>				<b>COST / SF \$31.00</b>		<b>\$12,586,000</b>
<b>E10 EQUIPMENT</b>							
E10	EQUIPMENT						
	Kitchen Equipment	1	LS		600,000		
	Auditorium Seating	600	EA	250.00	150,000		
	Theatrical Allowance	1	LS		250,000		
	Lecture Seating	50	EA	600.00	30,000		
	Computer Rooms	6	EA	5,000.00	30,000		
	Art Rooms	2	EA	5,000.00	10,000		
	Music Rooms	3	EA	5,000.00	15,000		
	Science Labs	10	EA	5,000.00	50,000		
	Classrooms	100	EA	500.00	50,000		
	Appliance Allowance	1	LS		100,000		
	SUBTOTAL					1,285,000	
	<b>TOTAL EQUIPMENT</b>				<b>COST / SF \$3.17</b>		<b>\$1,285,000</b>

**DURFEE HIGH SCHOOL - FALL RIVER, MA OPTION 1E**

June 15 2017

CSI CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	ESTIMATED COST	SUB TOTAL	TOTAL COST
<b>E20 FURNISHINGS</b>							
E2010	FIXED FURNISHINGS						
	Computer Rooms	6	EA	20,000.00	120,000		
	Art Rooms	2	EA	15,000.00	30,000		
	Music Rooms	3	EA	15,000.00	45,000		
	Science Labs	10	EA	50,000.00	500,000		
	Classrooms	100	EA	4,500.00	450,000		
	Projection Screens	1	LS		150,000		
	Window Treatments	1	LS		200,000		
	Floor Mats	1	LS		60,000		
	SUBTOTAL					1,555,000	
E2020	MOVEABLE FURNISHINGS						
	None Provided						
	SUBTOTAL					0	
	<b>TOTAL FURNISHINGS</b>				<b>COST / SF \$3.83</b>		<b>\$1,555,000</b>
<b>F10 SPECIAL CONSTRUCTION</b>							
F10	SPECIAL CONSTRUCTION						
	Tennis Courts - Surface	62,500	EA	50.00	3,125,000		
	Soccer / BB Field	1	LS		250,000		
	Chain Link Fencing(Court+Ret Wall)	1,500	LF	75.00	112,500		
	SUBTOTAL					3,487,500	
	<b>TOTAL SPECIAL CONSTRUCTION</b>				<b>COST / SF \$8.59</b>		<b>\$3,487,500</b>
<b>F20 SELECTIVE BUILDING DEMOLITION</b>							
F2010	BUILDING ELEMENTS DEMOLITION						
	General Bldg Demolition	300,000	EA	12.00	3,600,000		
	SUBTOTAL					3,600,000	
F2020	HAZMAT ABATEMENT						
	General Abatement Allowance	1	LS		3,150,000		
	SUBTOTAL					3,150,000	
	<b>TOTAL SELECTIVE BLDG DEMO</b>				<b>COST / SF \$16.63</b>		<b>\$6,750,000</b>

**DURFEE HIGH SCHOOL - FALL RIVER, MA OPTION 1E**

June 15 2017

CSI CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	ESTIMATED COST	SUB TOTAL	TOTAL COST
<b>G SITEWORK</b>							
G10	SITE PREPARATION & DEMOLITION						
	Site Demolition	1	LS		100,000		
	Site Cuts / Fills (Handle 50k CY)	50,000	CY	12.00	600,000		
	Urban Fill Allowance (5000 Ton)	1	LS		400,000		
	Tank Allowance	1	LS		25,000		
	Tank Soil Allowance (100 Ton)	1	LS		15,000		
	Site Temporary Conditions	1	LS		50,000		
	SUBTOTAL					1,190,000	
G20	SITE IMPROVEMENTS						
	Sidewalks (Concrete)	50,000	SF	6.00	300,000		
	Pavers	60,000	CY	18.00	1,080,000		
	Stairs / Site Walls (Concrete/Rails)	1	LS		150,000		
	Asphalt Paving	45,000	SY	25.00	1,125,000		
	Granite Curb	10,000	LF	30.00	300,000		
	Landscape Allowance	1	LS		750,000		
	Retaining Walls (VersaBlok)	25,000	SF	30.00	750,000		
	Chain Link Fence	5,000	LF	50.00	250,000		
	Site Appurtenances(Allowance)	1	LS		100,000		
	SUBTOTAL					4,805,000	
G30	CIVIL / MECHANICAL UTILITIES						
	Drainage	4,000	LF	140.00	560,000		
	Water Quality (Allowance)	1	LS		750,000		
	Sanitary	1,200	LF	140.00	168,000		
	Domestic Water	800	LF	200.00	160,000		
	Fire Protection Water	400	LF	200.00	80,000		
	SUBTOTAL					1,718,000	
G40	ELECTRICAL UTILITIES						
	Electric Service	400	LF	700.00	280,000		
	Site Lighting(Allowance)	1	LS		150,000		
	Communications Service	400	LF	250.00	100,000		
	SUBTOTAL					530,000	
	<b>TOTAL SITE DEVELOPMENT</b>				<b>% OF DIRECT COST 6.7%</b>		<b>8,243,000</b>



# DURFEE HIGH SCHOOL - FALL RIVER, MA OPTION 1E

June 15 2017

CSI CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	ESTIMATED COST	SUB TOTAL	TOTAL COST
<b>B20 EXTERIOR CLOSURE</b>							
B2010 EXTERIOR WALLS							
	AVB	33,575	SF	8.00	268,600		
	Cavity Insulation	33,575	SF	4.00	134,300		
	Cement Siding Rain Screen	33,575	SF	32.00	1,074,400		
	Soffits / Cornices	2,000	SF	25.00	50,000		
	Exterior Caulking	35,875	SF	2.00	71,750		
	SUBTOTAL					1,599,050	
B2020 WINDOWS							
	Punch Windows	1,000	SF	95.00	95,000		
	Curtainwall	1,000	SF	120.00	120,000		
	SUBTOTAL					215,000	
B2030 EXTERIOR DOORS							
	Door Leafs	22	EA	2,500.00	55,000		
	SUBTOTAL					55,000	
	<b>TOTAL EXTERIOR CLOSURE</b>				<b>COST / SF \$20.54</b>		<b>\$1,869,050</b>
<b>B30 ROOFING</b>							
B3010 ROOF COVERINGS							
	PVC Adhered Roofs(Taper Insul)	66,600	SF	20.00	1,332,000		
	Pool Area not in 66,600	6,875	SF	20.00	137,500		
	SUBTOTAL					1,469,500	
B3020 ROOF OPENINGS							
	Hatches/Vents/Flashings	1	LS		30,000		
	SUBTOTAL					30,000	
	<b>TOTAL ROOFING</b>				<b>COST / SF \$16.48</b>		<b>\$1,499,500</b>
<b>C10 INTERIOR CONSTRUCTION</b>							
C1010 PARTITIONS							
	CMU (6,8) 48,000 SF Exist +/-	20,000	SF	19.00	380,000		
	Seismic Restraint / Expansion	3,500	LF	50.00	175,000		
	Rough Carpentry(Project SF)	91,000	SF	4.00	364,000		
	Gyp Board Partitions	1	LS		75,000		
	SUBTOTAL					994,000	
C1020 INTERIOR DOORS							
	Doors/Frames/Hardware(Glazed)	130	EA	1,800.00	234,000		
	Vision Panels(Glazed)	50	EA	500.00	25,000		
	SUBTOTAL					234,000	
C1030 SPECIALTIES / MILLWORK							
	Toilet Partitions / Accessories	1	LS		250,000		
	Bldg Signage	150	EA	175.00	26,250		
	Extinguishers	1	LS		15,000		
	Lockers	2,300	EA	275.00	632,500		
	Marker / Tack Boards	8	RMS	2,000.00	16,000		
	Mirror Glazing	1,000	SF	20.00	20,000		
	Misc Metal Supports	1	LS		50,000		
	Misc Metal Guard/Hand Rails	1	LS		20,000		
	Rough Carpentry (Project SF)	91,000	SF	0.25	22,750		
	Millwork Allowance	1	LS		75,000		
	SUBTOTAL					1,127,500	
	<b>TOTAL INTERIOR CONSTRUCTION</b>				<b>COST / SF \$25.88</b>		<b>\$2,355,500</b>

**DURFEE HIGH SCHOOL - FALL RIVER, MA OPTION 1E**

June 15 2017

CSI CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	ESTIMATED COST	SUB TOTAL	TOTAL COST
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**C20 STAIRCASES**

C2010 STAIR CONSTRUCTION

SUBTOTAL

0

**C2020 STAIR FINISHES**

Stair One Piece Tread/Riser	85	EA	400.00	34,000
Rubber Flooring/Base	1,400	SF	9.00	12,600
Paint Stairs (2 Flts/Floor)	6	EA	1,500.00	9,000

SUBTOTAL

55,600

**TOTAL STAIRCASES**

**COST / SF \$0.61**

**\$55,600**

**C30 INTERIOR FINISHES**

**C3010 WALL FINISHES**

Ceramic Wall Tile	12,000	SF	15.00	180,000
Paint Partitions (Project SF-Tile)	81,000	SF	3.50	283,500
Epoxy Upcharge	81,000	SF	0.75	60,750

SUBTOTAL

524,250

**C3020 FLOOR FINISHES**

VCT / Base	56,000	SF	4.00	224,000
Sports Floor in Field House	25,000	SF	20.00	500,000

Quarry / Porcelain Tile	10,000	SF	16.00	160,000
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SUBTOTAL

884,000

**C3030 CEILING FINISHES**

Acoustical Ceiling	30,000	SF	3.00	90,000
Paint to Exposed Structure	61,000	SF	5.00	305,000

SUBTOTAL

395,000

**TOTAL INTERIOR FINISHES**

**COST / SF \$19.82**

**\$1,803,250**

**D10 CONVEYING SYSTEMS**

D1010 ELEVATOR

CONNECTION FROM NEW TO BE 2 STORY OR ADD ELEVATOR OR LIFT

SUBTOTAL

0

**TOTAL CONVEYING SYSTEMS**

**COST / SF \$0.00**

**\$0**



**DURFEE HIGH SCHOOL - FALL RIVER, MA OPTION 1E**

June 15 2017

CSI CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	ESTIMATED COST	SUB TOTAL	TOTAL COST
<b>D20 PLUMBING</b>							
D20	PLUMBING Plumbing Allowance	91,000	SF	10.00	910,000		
	SUBTOTAL					910,000	
	<b>TOTAL PLUMBING</b>				<b>COST / SF \$10.00</b>		<b>\$910,000</b>
<b>D30 HVAC</b>							
D30	HVAC (AC) HVAC Allowance	91,000	SF	35.00	3,185,000		
	SUBTOTAL					3,185,000	
	<b>TOTAL HVAC</b>				<b>COST / SF \$35.00</b>		<b>\$3,185,000</b>
<b>D40 FIRE PROTECTION</b>							
D40	FIRE PROTECTION Fire Protection Allowance	91,000	SF	4.00	364,000		
	SUBTOTAL					364,000	
	<b>TOTAL FIRE PROTECTION</b>				<b>COST / SF \$4.00</b>		<b>\$364,000</b>
<b>D50 ELECTRICAL</b>							
D50	ELECTRICAL (INCL TECHNOLOGY) Electrical Allowance	91,000	SF	28.00	2,548,000		
	SUBTOTAL					2,548,000	
	<b>TOTAL ELECTRICAL</b>				<b>COST / SF \$28.00</b>		<b>\$2,548,000</b>
<b>E10 EQUIPMENT</b>							
E10	EQUIPMENT						
	Field House Backstops Motorizd	10	EA	10,000.00	100,000		
	Field House Wall Padding	2,000	SF	20.00	40,000		
	Bleacher Seats	2,500	EA	200.00	500,000		
	Field House Divder Curtains	10	EA	8,500.00	85,000		
	Field House Folding Partition	1	EA	25,000.00	25,000		
	Appliance Allowance	1	LS		5,000		
	SUBTOTAL					755,000	
	<b>TOTAL EQUIPMENT</b>				<b>COST / SF \$8.30</b>		<b>\$755,000</b>

**DURFEE HIGH SCHOOL - FALL RIVER, MA OPTION 1E**

June 15 2017

CSI CODE	DESCRIPTION	QUANTITY	UNIT	UNIT COST	ESTIMATED COST	SUB TOTAL	TOTAL COST
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**E20 FURNISHINGS**

E2010 FIXED FURNISHINGS

Projection Screens	1	LS	15,000
Window Treatments	1	LS	15,000
Floor Mats	1	LS	15,000

SUBTOTAL 45,000

E2020 MOVEABLE FURNISHINGS

None Provided

SUBTOTAL 0

**TOTAL FURNISHINGS**

**COST / SF \$0.49 \$45,000**

**F10 SPECIAL CONSTRUCTION**

F10 SPECIAL CONSTRUCTION

Connector Construction Allowance	1	LS	2,000,000
Pool Renovation Allowance	1	LS	3,100,000

SUBTOTAL 5,100,000

**TOTAL SPECIAL CONSTRUCTION**

**COST / SF \$56.04 \$5,100,000**

**F20 SELECTIVE BUILDING DEMOLITION**

F2010 BUILDING ELEMENTS DEMOLITION

Selective Bldg Demolition	91,000	EA	6.00	546,000
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SUBTOTAL 546,000

F2020 HAZMAT ABATEMENT

General Abatement Allowance	1	LS	350,000
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SUBTOTAL 350,000

**TOTAL SELECTIVE BLDG DEMO**

**COST / SF \$9.85 \$896,000**





# SUMMARY OF PRELIMINARY DESIGN PRICING

Final Evaluation of Alternatives

## BMC Durfee High School

Table 1 - Summary of Preliminary Design Pricing

	Total GSF	SF of Renovated Space (Cost*/SF)	SF of New Construction (Cost*/SF)	Site, Building Takedown, Haz Mat. Cost, Swing Space, Takings*	Estimated Total Construction ** (Cost*/SF)	Estimated Total Project Costs
Base Repair <b>OPTION 1</b> Code Required Upgrades ONLY	573,210	573,210 \$101.48/sf	0	\$1,710,000	\$58,169,531 \$101.48/sf	\$73,072,371 \$127.48/sf
<b>OPTION 1A</b> Renovation (Athletics & Performing Arts) / New Construction (Within Exist. Bldg. footprint)	526,044	189,523 \$310/sf	336,521 \$423/sf	\$29,761,823	\$201,015,521 \$382.13/sf	\$243,831,826 \$463.52/sf
<b>OPTION 1B</b> Renovation (Athletics & Performing Arts) / New Construction	526,044	189,523 \$304/sf	336,521 \$411/sf	\$29,199,612	\$195,871,340 \$372.34/sf	\$237,591,935 \$451.66/sf
<b>OPTION 1C</b> Renovation (Athletics & Performing Arts) / New Construction	526,044	189,523 \$304/sf	336,521 \$415/sf	\$24,259,847	\$197,333,168 \$375.12/sf	\$239,365,132 \$455.03/sf
<b>OPTION 1D</b> Renovation (Athletics & Performing Arts) / New Construction (Within Exist. Bldg. footprint)	526,044	189,523 \$310/sf	336,521 \$428/sf	\$16,032,807	\$202,893,942 \$385.70/sf	\$246,110,351 \$467.85/sf
<b>OPTION 1E***</b> <i>Renovation (Athletics Building) / New Construction (with portion Pre-fab)</i>	501,330	98,523 \$292/sf	402,807 \$418/sf	\$16,032,807	\$197,067,802 \$393.09/sf	\$239,043,243 \$476.82/sf
<b>OPTION 2A</b> New Construction - No Pool	476,296	0	476,296 \$425/sf	\$32,923,838	\$202,425,800 \$425/sf	\$245,542,495 \$515.53/sf
<b>OPTION 2B</b> New Construction with Pre-Engineered Building	489,966	0	489,966 \$432.50/sf	\$21,248,283	\$211,912,657 \$432.50/sf	\$257,050,052 \$524.63/sf

\*Marked up construction costs

\*\*Does not include construction contingency

\*\*\*District's Preferred Solution

**Construction Start for ALL options is scheduled for April 2019**



# COST ESTIMATE RECONCILIATION

Final Evaluation of Alternatives



BMC Durfee High School: Fall River, MA							
Preferred Schematic Report Cost Estimate Reconciliation				Preferred Option 1E		6/29/2017	
		GSF 501,330		GSF 497,000			
		ARCH Estimator (PM & C)		OPM Estimator (TEK)		Variance (PM&C - TEK)	
		Total Amount	Cost/SF	Total Amount	Cost/SF	Total Amount	Cost/SF
A10	FOUNDATIONS	\$ 4,735,310	\$ 9.45	\$ 6,180,000	\$ 12.43	\$ (1,444,690)	\$ (2.99)
A20	BASEMENT CONSTRUCTION	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
B10	STRUCTURE	\$ 12,158,426	\$ 24.25	\$ 16,934,000	\$ 34.07	\$ (4,775,574)	\$ (9.82)
B20	EXTERIOR CLOSURE	\$ 16,286,713	\$ 32.49	\$ 20,936,550	\$ 42.13	\$ (4,649,837)	\$ (9.64)
B30	ROOFING	\$ 5,335,231	\$ 10.64	\$ 4,699,500	\$ 9.46	\$ 635,731	\$ 1.19
C10	INTERIOR CONSTRUCTION	\$ 21,126,032	\$ 42.14	\$ 17,036,000	\$ 34.28	\$ 4,090,032	\$ 7.86
C20	STAIRCASES	\$ 697,850	\$ 1.39	\$ 591,600	\$ 1.19	\$ 106,250	\$ 0.20
C30	INTERIOR FINISHES	\$ 14,211,991	\$ 28.35	\$ 7,463,150	\$ 15.02	\$ 6,748,841	\$ 13.33
D10	VERTICAL MOVEMENT	\$ 162,150	\$ 0.32	\$ 160,000	\$ 0.32	\$ 2,150	\$ 0.00
D20	PLUMBING	\$ 7,018,620	\$ 14.00	\$ 6,188,000	\$ 12.45	\$ 830,620	\$ 1.55
D30	HVAC	\$ 17,045,220	\$ 34.00	\$ 19,019,000	\$ 38.27	\$ (1,973,780)	\$ (4.27)
D40	FIRE PROTECTION	\$ 2,005,320	\$ 4.00	\$ 1,988,000	\$ 4.00	\$ 17,320	\$ -
D50	ELECTRICAL	\$ 17,889,359	\$ 35.68	\$ 15,134,000	\$ 30.45	\$ 2,755,359	\$ 5.23
D60	COMMUNICATIONS	\$ -		\$ -	\$ -	\$ -	\$ -
E10	EQUIPMENT	\$ 2,669,734	\$ 5.33	\$ 2,040,000	\$ 4.10	\$ 629,734	\$ 1.22
E20	FURNISHINGS	\$ 4,996,584	\$ 9.97	\$ 1,600,000	\$ 3.22	\$ 3,396,584	\$ 6.75
F10	SPECIAL CONSTRUCTION	\$ 7,300,000	\$ 14.56	\$ 8,587,500	\$ 17.28	\$ (1,287,500)	\$ (2.72)
F20	SELECTIVE DEMOLITION & HAZMAT ABATEMENT	\$ 5,568,935	\$ 11.11	\$ 7,646,000	\$ 15.38	\$ (2,077,065)	\$ (4.28)
G10	SITE PREPARATION	\$ -	\$ -	\$ 1,190,000	\$ 2.39	\$ (1,190,000)	\$ (2.39)
G20	SITE IMPROVEMENTS	\$ 10,978,328	\$ 21.90	\$ 4,805,000	\$ 9.67	\$ 6,173,328	\$ 12.23
G30	SITE MECHANICAL UTILITIES	\$ -	\$ -	\$ 1,718,000	\$ 3.46	\$ (1,718,000)	\$ (3.46)
G40	SITE ELECTRICAL UTILITIES	\$ -	\$ -	\$ 530,000	\$ 1.07	\$ (530,000)	\$ (1.07)
G50	OTHER SITE CONSTRUCTION	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOTAL CONSTRUCTION COSTS		1% \$ 150,185,803	\$ 299.57	\$ 144,446,300	\$ 290.64	\$ 5,739,503	\$ 8.94
Design & Estimating Contingency (12%)		\$ 18,022,296	\$ 35.95	\$ 18,322,716	\$ 36.87	\$ (300,420)	\$ (0.92)
General Conditions		\$ 10,633,155	\$ 21.21	\$ 5,280,000	\$ 10.62	\$ 5,353,155	\$ 10.59
Bonds		\$ 1,594,973	\$ 3.18	\$ 2,203,650	\$ 4.43	\$ (608,677)	\$ (1.25)
Insurances		\$ 2,303,850	\$ 4.60	\$ 2,203,650	\$ 4.43	\$ 100,200	\$ 0.16
Fee (Overhead & Profit)		\$ 5,316,577	\$ 10.60	\$ 9,866,409	\$ 19.85	\$ (4,549,832)	\$ (9.25)
Escalation (6%)		\$ 9,011,148	\$ 17.97	\$ 16,628,855	\$ 33.46	\$ (7,617,707)	\$ (15.48)
TOTAL ESTIMATED COSTS		1% \$ 197,067,802	\$ 393.09	\$ 198,951,580	\$ 400.30	\$ (1,883,778)	\$ (7.22)





# EDUCATIONAL PROGRAM

Preferred Solution



# **BMC DURFEE HIGH SCHOOL EDUCATIONAL PROGRAM**

## **MODULE 3: PREFERRED SCHEMATIC STUDY & REPORT**

### **1.2 EDUCATIONAL PROGRAM**

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#### APPENDIX A – VISIONING SESSION SUMMARY

## **A. INTRODUCTION**

### **Fall River Public Schools Mission Statement**

The mission of the Fall River Public Schools is to provide a quality education so that all students will attain their fullest potential and become responsible members of society. We are committed to providing quality teaching and learning in a respectful, safe, healthy, and supportive environment that links students, parents, and staff in a community of life-long learners and capable problem solvers.

### **City History and Future**

**Fall River** is a city in Bristol County, Massachusetts, United States. Fall River's population was 88,857 at the 2010 census, making it the tenth-largest city in the state.

Located along the eastern shore of Mount Hope Bay at the mouth of the Taunton River, the city became famous during the 19th Century as the leading textile manufacturing center in the United States. While the textile industry has long since moved on, its impact on the city's culture and landscape remains to this day. Fall River's official motto is "We'll Try," dating back to the aftermath of the Great Fire of 1843. It is also nicknamed "the Scholarship City" because Dr. Irving Fradkin founded Dollars for Scholars here in 1958.

Fall River is known for the Lizzie Borden case, Portuguese culture, its numerous 19th-Century textile mills, and Battleship Cove, the world's largest collection of World War II naval vessels and the home of the USS *Massachusetts* (BB-59). Fall River is also the only city in the United States to have its city hall located over an interstate highway.

The "Falling River" that the name Fall River refers to is the Quequechan River which flows through the city, dropping steeply into the bay. The real development of Fall River's industry occurred along the falling river from which it was named. The river had eight falls, which combined to make Fall River the best tidewater privilege in southern New England. It was perfect for industrialization—big enough for profit and expansion, yet small enough to be developed by local capital without interference from Boston.

The advantage of being able to import bales of cotton and coal to fuel the steam engines to Fall River's deep water harbor, and to ship out the finished goods also by water, made Fall River the choice of a series of cotton mill magnates. In 1854, Fall River was officially incorporated as a city, and had a population of about 12,000.

Fall River profited well from the American Civil War and was in a fine position to take advantage of the prosperity that followed. By 1868 it had surpassed Lowell as the leading textile city in America with over 500,000 spindles. Then, during 1871 and 1872, a "most dramatic expansion" of the city occurred: 15 new corporations were founded, building 22 new mills throughout the city, while some of the older mills expanded. The city's population increased by 20,000 people during

these two years, while overall mill capacity doubled to more than 1,000,000 spindles. By 1876, the "Spindle City", as it became known, was second in the world to only Manchester, England.

Fall River rode the wave of economic prosperity well into the early 20th Century. During this time, the city boasted several fancy hotels, theaters, and a bustling downtown. As the City continually expanded during the late 19th Century, its leaders built several fine parks, schools, streetcar lines, a public water supply, and sewerage system to meet the needs of its growing population.

The cotton mills of Fall River had built their business largely on one product: print cloth. Around the year 1910, the city's largest employer, the American Printing Company (APC), employed 6,000 people and was the largest company printer of cloth in the world. Dozens of other city mills solely produced cloth to be printed at the APC. World War I had provided a general increase in demand for textiles, and many of the mills of New England benefited during this time. The post-war economy quickly slowed however, and production quickly outpaced demand. In 1923, Fall River faced the first wave of mill closures. Some mills merged and were able to limp along until the late 1920s. By the 1930s and the Great Depression, many more mills were out of business and the city was bankrupt.

With the demise of the textile industry, many of the City's mills were occupied by smaller companies, some in the garment industry, traditionally based in the New York City area but attracted to New England by the lure of cheap factory space and an eager workforce in need of jobs. The garment industry survived in the City well into the 1990s but has also largely become a victim of globalization and foreign competition.

In the 1960s, the City's landscape was drastically transformed with the construction of the Braga Bridge and Interstate 195, which cut directly through the heart of the City. In the wake of the highway building boom, the City lost some great pieces of its history. The Quequechan River was filled in and re-routed for much of its length. The historic falls, which had given the City its name, were diverted into underground culverts. A series of elevated steel viaducts were constructed as to access the new Braga Bridge. Many historic buildings were demolished.

Since about 1980, there has been a considerable amount of new development in the North end of the City, with many new single- and multi-family housing developments, particularly along North Main Street.

Today, Fall River is similar to many of the large Massachusetts cities that previously thrived on a very specialized commercial development, which has since disappeared and now seeks transformation toward a more diversified economy which encourages business and development. It is well known for its unique local cuisine, with popular restaurants, bakeries, and food retail establishments. The emerging waterfront includes parks, restaurants, and attractions that attract visitors from all over the region. The Southeastern Massachusetts Bioserve and Fall River Freetown State Forest take advantage of the largely unspoiled eastern end of the City, and new bicycle paths are encouraging visitors and locals to explore the City.

The City recognizes that education is one of the most important elements in transforming the City's business, social, and economic development and has made significant investments in the Fall River Public Schools. The original 1887 BMC Durfee High School was a source of pride for the City for almost a century, and restoring that pride to the City's flagship high school is a key step towards the future.

### **BMC Durfee High School History**

The original **BMC Durfee High School** was occupied in 1887 and was one of the first comprehensive high schools in the country and the envy of every city and town in the Commonwealth. It last served as a school in 1977 and now serves as a Probate Court House for the Commonwealth of Massachusetts. It was added to the National Register of Historic Places in 1981. The entire cost of the original building, furnishings, and land was a donation from Mrs. Mary B. Young as a gift to the people of the City of Fall River, in memory of her son, Bradford Matthew Chaloner Durfee, who had died at a young age in 1872. The iconic building, with its tall red-capped clock tower and red-domed observatory tower, occupies prime real estate overlooking the Taunton River and gives rise to our Fall River school district seal, our athletics nickname, the Hilltoppers, our school colors of black and red (for the two roof colors), the school newspaper, the Hilltop, and our school alumni newspaper, the Chimes.

In the 1960s, with significant overcrowding and no room for expansion, planning began for a new high school on an alternative site. The City's intentions were good as they looked to modernize the facilities for teachers and students while simultaneously alleviating the overcrowding at the former site. Unfortunately, the design, planning, and occupancy of the new school provided many challenges. An energetic team of architects with no prior school design experience proceeded to design a sprawling open-classroom facility of over 575,000sf. The project ballooned from \$15.0 million to \$27.5 million, was delayed two years in its completion, and resulted in litigation between the City and both the architect and the general contractor. Even after completion and occupancy, the teachers, students, and facility personnel continued to suffer from a poorly organized building with numerous physical defects. Leaking roofs, leaking windows, and poor air quality plagued the building through its first 10 years of occupancy. The organization of the building, with its hidden entries, lack of visual sightlines, and maze-like hallways resulted in the need to hire an outside security consultant to develop strategies and modifications for the district. The open classroom pods, each alienated from one another, provided a challenging acoustical and educational environment. The six-level floor plan, staggered up the side of a hill, makes movement between many program areas both challenging and time-consuming.

Over the past four decades, the administrators, teachers, students, and facility personnel have made the best of the building they inherited in 1978. Open classroom areas have been enclosed, roofs and windows have been modified, faulty mechanical and electrical equipment have been replaced, and portions of the building which are not safe or have become non-functional have been abandoned. Anyone who has ever toured Durfee High School as a teacher, parent, student, community member, or visitor fully understands the numerous challenges of the poorly designed facility.



Within the past century, there have been many distinguished Alumni from BMC Durfee High School. The following is a partial list representing the diversity of professionals who have passed through the hallways of this important and historical City institution:

- Mark Bomback - Former MLB player (Milwaukee Brewers, New York Mets, Toronto Blue Jays).
- James Chace - (1949) - Distinguished historian.
- Warren A. Cole - (1908) - Founder of Lambda Chi Alpha International Fraternity.
- Morton Dean - (1953) - American television news journalist.
- Margery Eagan - journalist and writer.
- Edward Francis Harrington - (1951) - United States federal judge.
- Tom Gastall - Former MLB player (Baltimore Orioles).
- Russ Gibson - Former MLB player (Boston Red Sox, San Francisco Giants).
- Brandon Gomes - Current MLB player (Tampa Bay Rays).
- Chris Herren - (1994) - Former NBA player for the Denver Nuggets, Boston Celtics.
- Sam Hyde - Comedian, co-creator of sketch comedy group Million Dollar Extreme, and actor and writer of Adult Swim's Million Dollar Extreme Presents: World Peace.
- Brig. Gen. John J. Liset, USAF - (1938) - chief of the USAF Section of the Joint Brazil-United States Military Commission, and chief of the Air Force Section, Military Assistance Advisory Group in Brazil.
- James M. McGuire - (1931) - Supreme Court Justice of the State of New York.
- Ernest Moniz - (1962) - United States Secretary of Energy under Barack Obama.
- Humberto Sousa Medeiros - (1937) - Cardinal of the Roman Catholic Church; former Archbishop of Boston.
- John Moriarty - (1948) - noted vocal coach and accompanist and a conductor and stage director of productions at opera companies throughout America.
- Jerome Namias - (1928) - Prominent American meteorologist; former Chief of the Extended Forecast Division of the National Weather Service and was involved in the research of both the Dust Bowl and El Niño phenomena.
- William J. Porter - (1930) - American diplomat; former ambassador to Canada, Saudi Arabia, and others.
- William K. Reilly - (1958) - former Administrator of the United States Environmental Protection Agency and current director of DuPont.
- James M. Swift - (1888) - first Head Football Coach at Michigan State Normal School (now Eastern Michigan University).
- Luke Urban - Former MLB player (Boston Braves).
- Gen. Melvin Zais, United States Army - (1933) - Decorated United States Army General.

### **Executive Summary of BMC Durfee HS Educational Vision**

For over a year, the faculty, staff, and administration at Durfee High School have been meeting, collaborating, planning, and brainstorming their vision of a future educational facility that would meet the needs of the community, students, teachers, and administrators. More specifically, over the past several months, hundreds of hours have been dedicated to educational visioning sessions

targeted at formulating these ideas into priority goals and guiding principles. All of the thoughts, ideas, strategies, priorities, and goals generated are contained herein. The City of Fall River and the Fall River Public Schools have worked strategically to create programs that engage the student in a learning environment where curriculum standards are taught through highly engaging, rigorous, and relevant real-world applications and projects. Creating a safe and secure environment with adequately and appropriately outfitted spaces is critical to this endeavor. The staff and administration have witnessed the benefits of sub-dividing the student population into smaller grade-level schools and wishes to continue this trend. Additionally, teachers believe that many academic subjects are strengthened through cross-discipline integration, with particular opportunities in math/science integration and the collective integration of humanities. Science, Technology, Engineering, Arts, History, and Math should all be fully integrated, and their study should support the strands that are inherent within the respective Chapter 74 CVTE programs and non-Chapter 74 Career path programs.

The current school methodology includes administrative teams which follow each grade level throughout their respective high school years in an effort to increase personal knowledge of each individual and their specific social, emotional, and academic needs. This approach is bolstered through teacher collaboration, dictating a critical need for dedicated and appropriate space which allows both formal and informal discussion and collaboration to take place throughout the school day. This focus on "knowing the student" also requires that the building supports smaller academic teams with dedicated teacher and support services and a student commons area that engages student dining, student media services, culinary programs, and the student-run restaurant. The facility should support the development and display of student projects, presentations, and socialization. Traditional specials such as art, theatre/drama, and robotics/engineering have specific needs which require some level of separation, but they should be convenient to core subjects in order to avoid the significant travel distances required in the current facility. A positive culture and sense of pride is important in any high school environment, but it is particularly critical in a large high school like Durfee, where adequate gallery space must exist for the celebration and display of student work. This same space should also support student presentation and performance, as the opportunity to bring a group of students together quickly in a convenient and supportive location provides more opportunities for students to develop their communication skills, a critical 21<sup>st</sup> Century educational component. Ubiquitous technology should be fully integrated into each teaching and learning activity, without the cumbersome task of set-up or movement of devices. Outdoor learning environments are critical for science and environmental program studies, but are equally important as part of the educational environment for many other academic disciplines. Indoor/outdoor connections should occur seamlessly throughout the academic environment and should also utilize these outdoor connections to bring natural lighting into all areas of the academic environment.

The BMC Durfee High School is a community facility. It should be designed to support both school and community use which extends beyond the traditional school day, allowing students to continue their academic, athletic, and social endeavors in a safe environment which also supports and incorporates the greater community. As the administration, staff, and students contemplated the "ideal" educational environment, even before the "official" visioning sessions began with the

design professionals, there was overwhelming agreement that a forward-thinking facility should be inspirational, sustainable, safe, and secure. It should also include abundant natural light as well as flexible and adaptable spaces. These elements are critical in supporting the ever-changing educational paradigm, much of which has not yet been imagined. One of the most important components of this evolving educational environment will be the flexibility of the student dining and socialization experience, as the popularity of culinary programs grows rapidly, and the student's desire for casual learning and socialization increases. These combinations warrant a special design focus on creating student-run cafes and restaurants that are strategically located to support the complete student and staff experience. A successful BMC Durfee High School educational program will support these desired outcomes while simultaneously taking careful note of the rich history, background, culture, community, innovation, and philanthropy that thrive within the City. It will be educationally innovative, historically respectful, and community sensitive. The creation of a "new" BMC Durfee High School must clearly recognize the key elements that will foster a collaborative relationship of learning and service throughout the neighborhood, bringing all cultures and backgrounds together as one inclusive community which thrives on diversity. Much of the legwork for creating a roadmap to success is already underway by the City of Fall River and the Fall River Public Schools. As part of the Preliminary Design Program process, the City assembled key educators and administrators for a series of meetings, discussions, and educational visioning sessions targeted at formulating a specific educational program for the BMC Durfee High School which aligns with prior strategic planning, but also delves deeper into the specifics of educational delivery within the high school environment. The BMC Durfee High School environment is already a successful example of how an integrated and collaborative staff can work together to provide a highly successful and customized educational delivery to a very large (2,750 students) and diversified student population, regardless of the challenges of the existing physical facility. Despite the physical challenges of the existing building, the current BMC Durfee High School staff and administration utilize grade-level administrative support teams, interdisciplinary instruction, and hands-on activities to engage students throughout the school day and beyond, offering a large and broad array of academic subjects and after-school activities targeted at engaging all students. The educational visioning narrative and the educational program information contained herein are representative of the discussions, collaboration, and desired goals developed by the administration, staff, teachers, and students of the Fall River Public Schools. It defines the current and future goals and priorities for educational delivery within the BMC Durfee High School. It includes a careful analysis and understanding of the various attributes that make Fall River a significant and historic city for education and, more specifically, the specific attributes which can make the BMC Durfee High School an even more successful educational and social environment for the students, teachers, parents, and the entire neighborhood. The program incorporates 21<sup>st</sup> Century high school design patterns, and will bring innovative thought into a city with a history of innovation and leadership. It also includes a sensitive understanding of the large size and diversity of the school population, promoting an environment where students, parents, and community members can come together in a harmonious environment of enthusiasm, confidence, security, respect, social exchange, and academic excellence.

There are several key design themes or strategies that are critical to the support of learning, teaching, and socialization within the BMC Durfee High School environment. These strategies

evolved as a result of teachers and administrators, who have spent decades working with the students at Durfee High School, joining the design team in brainstorming the priority goals and guiding principles that can make the new Durfee High School a huge success. They are the physical manifestation of how an educational environment can truly impact the student and teacher experience on a daily basis. These themes and strategies are sprinkled throughout the entire educational program and visioning narrative, and some of the most important concepts can be summarized as follows:

### Simplified Organization and Circulation

The current Durfee High School floor plan is a sprawling, confusing maze at approx. 573,000sf. Navigation throughout the school is extremely confusing and both visitors and students are easily lost. The staff and administration repeatedly reported that a unique floor plan configuration that may look very interesting and innovative to architects (i.e. the 1970s BMC Durfee floor plan) can become a complete organizational disaster for students, administrators, staff, visitors, and parents. Despite being declared "innovative" by the designers at the time of its creation, the challenges of the current floor plan organization are significant and provide a constant burden to teachers and students. As a result of decades of frustration with the existing building, there was a strong message from the educational visioning team regarding their desire for a simplified floor plan organization that repeated itself on all levels. Additionally, administrators and educators detailed the many security and safety challenges that are created by the current building organization. Durfee High School includes an extremely large and diverse student population, and although 99% of the students may walk through the doors each day eager to learn, socialize, and grow, it only takes a small number of students to disrupt the learning environment for all students. A successful Durfee High School environment includes not only a detailed focus on academic and educational adjacencies, it also requires the incorporation of critical security and safety strategies, including simplified plan organization, clear sightlines, uncongested student travel, and a simple entry progression. For example, although a large student commons space may be valuable in some school environments, the large common spaces within the current Durfee High School are difficult to manage and often become areas of student conflict and poor behavior. The staff and administration felt that the ability for students to immediately sub-divide upon entry and proceed to their respective grade-levels would prove valuable to interior traffic calming. The educators also brainstormed many plan configurations during multiple educational visioning sessions and repeatedly migrated towards a simple plan organization for each academic grade that involved a "loop" around an internal courtyard. Educators also felt strongly that each academic grade level should have a similar plan organization to keep the building as flexible as possible. As the building height began to settle into a 3-story configuration, the staff and administration felt strongly that floors 2 and 3 should be dedicated to grade level academic zones or "loops" with two grade levels per floor. Educators felt that educational innovation comes from the creation of appropriately sized and well-located spaces within a safe and secure environment that is easy to navigate, and not necessarily from a wildly unique floor plan configuration. Some of the key components of a successful floor plan organization were identified as follows:

- Simplified pattern or form that allows one to navigate in either direction for access (loop)
- Repeating the same floor plan on multiple levels to eliminate confusion
- Clear sightlines down corridor/hallways
- Symmetrical configuration
- Maximized opportunity for natural light into both classroom and student circulation areas
- Passive way-finding strategies
- Centralized entry point

### The Entry Experience

Although the entry experience might not immediately come to mind as a top priority when thinking about the design of a school environment, it repeatedly floated to the top as a guiding principle throughout all of the educational visioning workshops. The large and diverse student body at Durfee High School results in an equally large and diverse range of experiences that students encounter outside of school. They enter the campus carrying a wide range of burdens, emotions, and challenges. The school should represent an opportunity to shed these burdens and challenges. The appearance upon entry to the campus should be welcoming, inspirational, motivational, and should produce a sense of pride. It should be a place that students want to be. Students should be made to feel important, and the facility they enter represents that importance. This "pride in appearance" and "importance of place" was fully inherent in the original 1887 BMC Durfee High School facility, but is completely absent in the 1978 Durfee High School building. Students should be proud to enter the new BMC Durfee High School and should feel a welcoming, personalized experience. There should be a strong sense of history reminding them of the greatness that has passed through Fall River and the alumni of Durfee High School. There should be an obvious pride in the current success of Durfee High School through the exhibit of student work, activities, and successes. Additionally, interaction of community members and parents, as well as the impression they receive during their visit to the school, is important. Most of the visitors will not have the opportunity to tour throughout all areas of the school, and certainly will not have the opportunity to observe the activities and products of student academic work. The ability for key public areas of the building to exhibit this work, not just statically but also dynamically, is a key component in allowing visitors to experience the amazing work that is going on throughout the building, without the need to tour deep into the academic zones, which is obviously not practical. The building should place "education and student activity on display for all to absorb". This instills student pride through the exhibit of their work, which can easily be done by providing opportunities for fixed exhibits, video display, and any other practical and functional means. This kind of exhibit opportunity should not be limited to just the displays at

entry points accessible to visitors, but should also be inherent within the academic zones, allowing students to present and exhibit their project work to other students.

It is also important that entry areas exhibit the history and flavor of the City and School Department through the presentation of artifacts, information, and exhibits. Fall River has a rich and amazing history, yet there is no sense of this in the current building. The staff and administration feel it is very important that visitors have the same sense of pride and history that they desire for the students.

### A Collaborative Environment for Teachers

Each of the smaller grade-level schools (9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup>) must contain spaces that support teachers in their efforts to collaborate, plan, and work. The diverse student body at Durfee High School, along with their equally diverse needs, require that teachers be able to plan specific strategies to support each individual student's needs. Additionally, cross-discipline instruction can only succeed if teachers have appropriate space for curriculum planning and discussion. Technology has greatly assisted collaboration among teachers and staff; however, the power of face-to-face interaction has yet to be replicated by technology. Human interaction is everything, especially in a creative, innovative, and knowledge-intensive sector such as education. The strength of any creative organization is shaped as much by the day-to-day chance contact of its members as it is by formal gatherings such as scheduled conferences and collaborative meetings. Critical information leading to educational innovation and an in-depth understanding of student needs often comes from informal encounters between teachers from varying disciplines and backgrounds. The design of the Durfee High School should include spaces and strategies which promote this interaction while also supporting a variety of professional activities. Additionally, these spaces should avoid isolating teachers at their desks by giving them a secondary 'home' in the workplace where they are able to organize their activities and instruction across a variety of disciplines, sharing their ideas and strategies with their colleagues.

### Flexible and Varied Learning Spaces

21st Century learning is underpinned by varying and flexible teaching methods and spaces that are engaging, motivational, and that allow teachers to tailor instruction to specific student needs. Flexible learning spaces complement current and evolving pedagogies and provide creative and energised learners and teachers. Flexible learning spaces enable social and collaborative learning, integrated curriculum delivery, a mix of teacher-directed and student-directed teaching and learning, independent learning, project work, direct instruction, innovative and creative thinking, relationship building, and problem-solving skills. Flexible and varied spaces also allow for a more

productive integration of special education students into the general academic environment. The staff and administration at Durfee High School are particularly sensitive to the distinct difference between "flexible learning spaces" and "open learning environments" and want to define them accordingly. The current Durfee High School originally included open learning environments and this type of organization has been an enormous challenge to the staff and administration. Flexible learning spaces are different in that they provide a variety of spaces that can be used for specific learning tasks and activities. Available support spaces of varying sizes in a flexible learning environment can be utilized to suit learning styles and abilities, while simultaneously generating engaging and exciting learning opportunities. Open learning environments on the other hand are completely open and provide the necessary variety of learning spaces. Attempting to configure them into smaller or varied spaces is not feasible, and the required noise separation and privacy is non-existent. In open learning environments, students are only able to do one form of learning in a large space reducing the ability to create small group space or quiet areas and spaces tailored for specific tasks.

Small group support spaces or "breakout spaces" directly adjacent to the classrooms make the learning environment more fluid and flexible, allowing teachers to tailor the learning to suit the students and the learning outcomes. These spaces should be separated from the main learning space with glazing or sliding glass doors so that the teacher in the main learning space can passively supervise the space. Students who need a quiet space can be given this opportunity in an adjacent and visible small workroom which accommodates quiet work. If collaborative group discussion is desired, flexible and interchangeable general classrooms that are appropriately sized can accommodate this need. Flexible classrooms with adjacent support spaces also allow teachers to use their available space more effectively than a traditional inflexible classroom with no small group support space. Additionally, flexible learning spaces allow adults and support staff to work within the space, meaning both general education and special education students have access to support more readily. In addition to these small breakout spaces, slightly larger independent study spaces strategically located throughout each grade-level school can aid in supporting the need for cross-discipline instruction where a small group of students representing multiple disciplines is allowed to work independently outside of the classroom. These spaces, identified as "independent study", were determined by staff and administration to be much more valuable and more highly utilized than a larger group space. They satisfy a strong need for small group work among 10-12 students who are completing cooperative work by teachers and students across classes and disciplines. They also allow a group of students from a single classroom to complete independent study where such need is warranted due to varying learning styles and abilities. The enormous size and variety of spaces within the current Durfee High School have given staff and administration many opportunities to evaluate the size, configuration, and organization of learning space, and to determine which spaces best support varying learning styles and student needs. We feel strongly that small group rooms shared by interchangeable classrooms (perhaps one small group room for every two classrooms) combined with larger group rooms (perhaps two per neighbourhood) that support independent study by 10-12 students is an outstanding formula for a flexible and varied learning environment. Note that most of the staff and administration have experienced classrooms with moveable walls, and they have determined that this arrangement is

much less effective than having small and large spaces adjacent to the classrooms and available for immediate use without the need to move a wall or partition.

### Indoor/Outdoor Connections

The connection of indoor and outdoor spaces is important to creating a vibrant and energized educational environment. Students can remain more engaged and motivated through exposure to the outdoors if an effort is made to ensure the appropriate visual and physical connections. Outdoor space goes beyond recreational playfield use and can provide project space, social space, classrooms, study areas, and other support areas for the educational environment. It has a natural integration to many sciences and should not be ignored as part of a 21<sup>st</sup> Century educational environment. Participants in the educational visioning sessions identified indoor/outdoor connections as both a guiding principle and a priority goal. They all realized that an efficient and compact facility for 2,570 pupils would likely be multiple stories; however, they did not feel this in any way compromises the ability to provide the necessary indoor/outdoor connections. Outdoor connectivity does not mean having to walk directly outdoors from a classroom; in fact, in most cases, this would be impractical and defeat security goals. The current 1978 facility rarely exceeds two stories, and yet one can travel through the building for great distances without ever seeing the outdoors or daylight and without ever experiencing any indoor/outdoor connectivity. The current facility also includes an outdoor amphitheater, but it is poorly located/designed and remains in shadow throughout most of the day. The staff and administration want to be actively involved in a thoughtful design process that continually considers convenient outdoor access for students and that also incorporates multiple organizational strategies that keep natural light pouring into all areas of the building. Outdoor learning areas should be developed in convenient and usable locations which receive maximum sunlight throughout the day.

### Branding, Identity, and a Sense of School Community

The personalization and pride desired as part of the “entry experience” goes beyond the entry sequence into the facility and should extend throughout the entire school. One of the most critical measures of any high school is the strength of its internal school community. The educators at Durfee High School have worked enthusiastically and collaboratively for decades to overcome the challenges associated with the existing high school facility. The organizational attributes of a 21<sup>st</sup> Century high school environment can foster school community by creating a learning environment that promotes safety, identity, personalization, pride, belonging, support, and confidence. The facility must be organized so that it accommodates student needs from morning arrival until end-of-day departure. The student must feel a personal connection to the staff and students of their community, and such connection begins at arrival. The need for student exhibition of work and personalization of space is also a key ingredient in strengthening the sense of school community. The entire building should become a dynamic canvas for the display of learning and student activity. Students and teachers must see the fruits of their efforts surrounding



them at all times, reinforcing their sense of purpose and personalizing the school environment. This pride of school environment should extend to the greater community through pride in city and community history. The school environment can incorporate numerous business, community, and historical references and artifacts that engage students in the achievements and the pride of previous generations and give them a powerful sense of place within their school community and their role within the greater community.

### Real World Connections

There are many important elements in creating a successful school environment where civic engagement and community responsibility become an integral part of the program and function. One strategy for fostering this connectivity involves the evaluation of academic and vocation-based activity that can be visually and physically integrated into the core of the school while simultaneously opening itself to community involvement. It requires re-thinking the "core" or "commons" of the school, the definition of "entry", and all of the necessary aspects of security. The school greatly desires to operate the appropriate vocational programs very much like a business and/or business incubator, promoting the desired collaboration with the outside community while simultaneously creating the necessary boundaries for staff, administrators, parents, and students. Programs that may potentially fit within this desired connectivity include the culinary restaurant, cosmetology, early education and care, health assisting, environmental science and technology, design and visual communications, and construction crafts. As the design for the Durfee High School evolves, the placement of each of these programs should strike a delicate balance between connectivity to the academic core and connectivity to the greater community and public.

### Student Socialization and Observation

Social skills and the need to communicate outside of the project/instructional environment are key elements in promoting positive student development. Students must have the opportunity to socialize with their peers without being restricted to an enormous cafeteria or crowded hallway. It is also critical that these student socialization zones be located in a manner that includes passive observation by administration and teachers at all times. The current building includes large open areas that were intended for student socialization, but they are isolated from observation by the staff. This makes them a safety and security threat and requires that school policy include no congregating in these areas. The staff and administration feel strongly that the student dining experience should occur in multiple areas as the current enormous cafeteria is a failure on many levels. The boundaries of the dining experience can also be explored, and although student supervision will continue to be a critical component of a well-designed dining space, allowing the dining experience to flow into an adjacent lobby area or to an outdoor patio should be considered as part of the planning effort. The student dining area can also play a significant role in parent

and community interaction within the school by providing flexible space which supports presentations, programs, and events. It can serve as one of the primary social hubs of not only the school, but also the entire Fall River community. There is also a strong desire for student-run cafes located throughout the building, as this could improve student socialization and the overall school environment while simultaneously offering multiple opportunities for the Culinary, Marketing, and Visual Communications programs.

### Learning Beyond the School Day

As students become involved in more activities, the time they spend on the academic campus expands. These activities include music, performances, athletics, research, science, academics, and more. Many students study after school as they await upcoming practices, performances, or activities which involve them and their friends. Providing appropriate spaces for such activities is a key component of the 21<sup>st</sup> Century academic environment.

### Community Use

In Fall River, the Durfee High School has truly become the center of community use. Gymnasiums, performance theaters, lecture halls, media labs, etc. all become highly utilized community and educational resources. These facilities are not “extras” to be added if funding allows, but are inherent resources that will serve the students, teachers, administrators, and members of the community for decades to come. Their careful planning and inclusion, as well as their integration into the community-wide environment, are critical to supporting community interaction with the educational community. The current high school is a great example; local organizations utilize the gymnasiums, meeting rooms, and auditorium for events and functions. The City currently lacks adequate community spaces and educational resources.

## **B. GRADE AND SCHOOL CONFIGURATION POLICIES**

The Fall River Public Schools has developed a Mission Statement, Core Beliefs, and Vision Statement that are the guiding principles of the District’s educational priorities. The mission of the Fall River Public Schools is to provide a quality education so that all students will attain their fullest potential and become responsible members of society. Fall River Public Schools is committed to providing quality teaching and learning in a respectful, safe, healthy, and supportive environment that links students, parents, and staff in a community of lifelong learners and capable problem solvers.

The Fall River School District shall be one where students are safe and prepared for college and/or careers, where individualization and personalization is strived for, where excellence for all is expected, and where collaboration and communication among all stakeholders is the norm.

The District has an approximate enrollment of 10,100 students and provides comprehensive educational services to students PreK-12. It has eight K-5 elementary schools, two K-8 schools, three middle schools, one comprehensive high school, one therapeutic K-8 school, and one alternative high school. Full-day kindergarten is available free of cost at all Fall River Elementary Schools. In addition, there is a District subsidized pre-school program. Throughout all schools, Fall River prioritizes providing all students a personalized, rigorous, and supportive learning environment.

BMC Durfee High School is a comprehensive high school with grades 9 through 12 and currently has over 2,200 students and 170 teachers. BMC Durfee High School is configured in a traditional grade configuration that has a static Freshman Academy and grade level support teams that cycle with students from 10th through 12th grades. BMC Durfee High School has developed a mission and vision that aligns with the District and sets priorities for the building.

### **Core Beliefs and Values Statement**

The BMC Durfee High School community is dedicated to providing a safe, rigorous learning environment that is equitable, inclusive, and collaborative, empowering students to explore diverse paths and succeed in the 21st Century.

All Hilltoppers have Durfee **PRIDE!**

- P PURPOSE:** Students will demonstrate informational literacy through clear and effective articulation of ideas using various forms of communication.
- R RESPONSIBILITY:** Student will demonstrate personal accountability to the school community.
- I INNOVATION:** Students will demonstrate content literacy by analyzing and solving problems in collaborative academic and real world settings.
- D DILIGENCE:** Students will demonstrate care, effort, and persistence in accomplishing their academic, social, and future goals.
- E EMPOWERMENT:** Students will be able to synthesize the PRIDE expectations.

The current school configuration, due largely to the physical layout of the building, consists of isolated departments that limit the ability to deliver instruction in an interdisciplinary manner. However, one area of the building, Freshman Academy, has been strategically designed to be interdisciplinary in the areas of English, Math, and Science. All freshman students are organized into a single grade-level neighborhood and are able to cluster into freshman teams that make the school feel physically smaller and to support the socio-emotional and academic needs of the freshman. This teaming allows teachers to maximize student support.

The proposed high school project would continue to be a comprehensive high school model that serves the 9-12 population. However, we will be requesting changes to the existing vocational

education structure and offerings. These changes are being recommended based on enrollment trends, data from the Bureau of Labor Statistics, and statistics regarding emerging career pathways. The new facility will allow more cross-curricular opportunities by distributing the disciplines/departments into grade-level-schools which are further subdivided into academic neighborhoods of varying sizes.

Although the term “neighborhood” is often reserved for the discussion of a middle school environment, it repeatedly evolved during the visioning sessions as a term which represents the need to divide the enormous student body (proposed 2,570 pupils) into manageable, personalized, smaller schools within the school, and then further subdividing these small schools into neighborhoods. This need is identified throughout the priority goals and guiding principles with terms like “small school feel, large school pride” and “classroom neighborhoods”. After many discussions about the appropriate size for these “smaller schools within the school” and their “classroom neighborhoods”, it was generally agreed that if the student body could be divided into smaller grade-level schools of about 650 students, and then each of these grade-level schools could be further subdivided into flexible neighborhoods that include humanities, math, and science, this could achieve the desired interdisciplinary grade-level school. If the (non-science) classrooms are all designed to be interchangeable, the proposed layout would not bind the school to content-specific grouping, and the further breakdown of grade-level schools into smaller interdisciplinary “neighborhoods” could continue to evolve and change as needs arise. Unlike a middle school, the neighborhoods are not always the same size and should not be clustered into size-specific groupings. The term “neighborhood” only represents that within each grade-level-school the staff will likely be assembling interdisciplinary teams that may change in size and organization each year. The initial feedback from staff includes the desire to keep some minor content-specific grouping, but not at the risk of compromising interdisciplinary instruction or collaboration opportunities. As the school works to synthesize curricula, opportunities to continue to adjust the size and configuration of interdisciplinary neighborhoods will be inherent in the proposed layout. The collaboration these teams will have with vocational applications will also change routinely as the curriculum evolves, and the visioning team concluded that a large number of flexible (identically designed) classrooms within each school or neighborhood will also aid in supporting this evolution. The science classrooms/labs will obviously be subject specific, but should be equally distributed (where practical) into each grade-level school. As mentioned previously, these interchangeable classrooms will increase flexibility and allow for multiple team sizes and configurations.

The existing BMC Durfee High School building lacks functional small group breakout space that is physically and visibly connected to the core academic classrooms. The building also lacks independent study space that is physically and visibly connected to each core academic neighborhood (i.e., Freshman Academy, 10<sup>th</sup> Grade, 11<sup>th</sup> Grade and 12<sup>th</sup> Grade). During the educational visioning sessions and programming discussions, the faculty, staff, deans, administration, and students identified this condition as a specific weakness to the existing

building and current academic environment. Included herein are conceptual organization diagrams that identify the desired interrelationship of spaces within the academic "neighborhood" environment, including the organization of core academic classrooms, integrated small group breakout space, and easily accessible (close proximity) independent study spaces. The concept behind the "independent study spaces" is to reward the appropriate students with the ability to work independently outside of the classroom, with less direct supervision and observation than the breakout space.

The proposed grade-level schools with their inherent interdisciplinary neighborhoods would be best organized by floor, with no more than two grade-level schools per floor (i.e., Freshman Academy and 10<sup>th</sup> Grade on the second floor and 11<sup>th</sup> and 12<sup>th</sup> Grade located on the third floor), and with each of these academic grade-level schools being further subdivided into interdisciplinary neighborhoods with multiple possible configurations. Each of the academic neighborhoods will include small group breakout spaces directly connected to the academic classrooms, allowing the instructor to have 3-5 students working independently under direct visual observation. Each grade-level school should include two independent study spaces disconnected from the individual classrooms, yet strategically positioned to allow for greater student independence while providing a comfortable level of oversight and supervision. The independent study spaces can aid in supporting the need for cross-discipline instruction where a small group of students representing multiple disciplines is allowed to work independently outside of the classroom. These spaces were determined by staff and administration to be much more valuable and more highly utilized than a larger group space. They satisfy a strong need for small group work among 10-12 students who are completing cooperative work by teachers and students across classes and disciplines. They also allow a group of students from a single classroom to complete independent study where such need is warranted due to varying learning styles and abilities. The enormous size and variety of spaces within the current Durfee High School have given staff and administration many opportunities to evaluate the size, configuration, and organization of learning space, and to determine which spaces best support varying learning styles and student needs. The small group rooms (breakout space) shared by interchangeable classrooms (perhaps one small group room for every two classrooms) combined with larger group rooms (two per neighborhood) that support independent study by 10-12 students is an outstanding formula for a flexible and varied learning environment. The faculty and staff have also been able to identify a utilization rate of approximately 75% within the 6-period block schedule for the breakout spaces and independent study spaces described above.

The location of grade-level-schools should allow equal access and travel time (if possible) to all students from the main school entry to their respective grade-level school. Consideration should be made for locating grade level schools which involve more travel to specialized instruction areas within a closer proximity to those areas, where practical and applicable. If the proposed design includes almost identical organizations for each grade-level-school, these schools can be moved to varying locations as the program and building use evolves.

The integration and collaboration of academic and vocational learning are important goals of the staff and administration at Durfee High School. The school schedule allows all students to participate in both academic and vocational lab opportunities. It also eliminates any stigma

traditionally associated with pursuing either of these two paths. Ideally, students learn the application of academic study within real-world trades, design, and engineering problems and challenges. Unfortunately, one of the biggest obstacles currently facing Durfee High School is the physical separation of certain vocational programs that could be much more closely integrated to the academic and social core of the school. This physical separation creates significant boundaries and does not allow for the timely movement of students to their respective destinations. The current layout also does not include appropriate collaboration and planning areas for staff and administration. The newly proposed design should resolve these obstacles by locating vocational opportunities with the necessary amount of acoustical separation while remaining within a reasonable travel distance for students. For example, the culinary program includes both a restaurant and a bakery and should be in close proximity to the students. The proximity of the more noisy vocational programs does not have to include direct adjacency, as this would be impractical in many instances. However, students currently have to travel over 1/8 mile to many of these programs, and better proximity can strengthen the educational relationships between vocational and academic. As programs in the construction trades evolve with advancements in science and technology, they will continue to have a strong correlation with the academic science classrooms. Therefore, these large-scale spaces will be designed to be flexible and incorporate evolving technologies. These application labs are unlike a project-based lab in a purely academic high school, as they will always involve the large-scale building, design, and engineering of full-scale projects with real-world applications. They require large open spaces that can accommodate design, assembly, and production equipment. Their placement within the floor plan involves a delicate balance between making them accessible to the academic classrooms while also providing the necessary separation to avoid the disruption that may be caused by activities (noise) within the space. The educational program and visioning also place an additional burden on these spaces; they must be located on the first floor and allow for easy access to the public and community.

Several of the CVTE programs are identified in the educational program as “stand alone” programs; these include programs like Cosmetology, Design & Visual Communications, Early Education & Care, Health Assisting, Radio & Television, and Engineering. Each of these programs has a specific set of adjacencies, connections, and integrations with various academic disciplines and other related programs. For example, Early Education & Care must be near a primary access point for easy access by the preschool students, but also must maintain some key adjacencies to Medical Assisting and the academic classrooms. Medical Assisting must maintain a connection to Early Education, but also has a strong connection to Science. The Cosmetology program would benefit from access to the public, and therefore would need a direct connection to an identifiable public entry. However, as a rapidly evolving field, Cosmetology also has key connections to Medical Assisting.

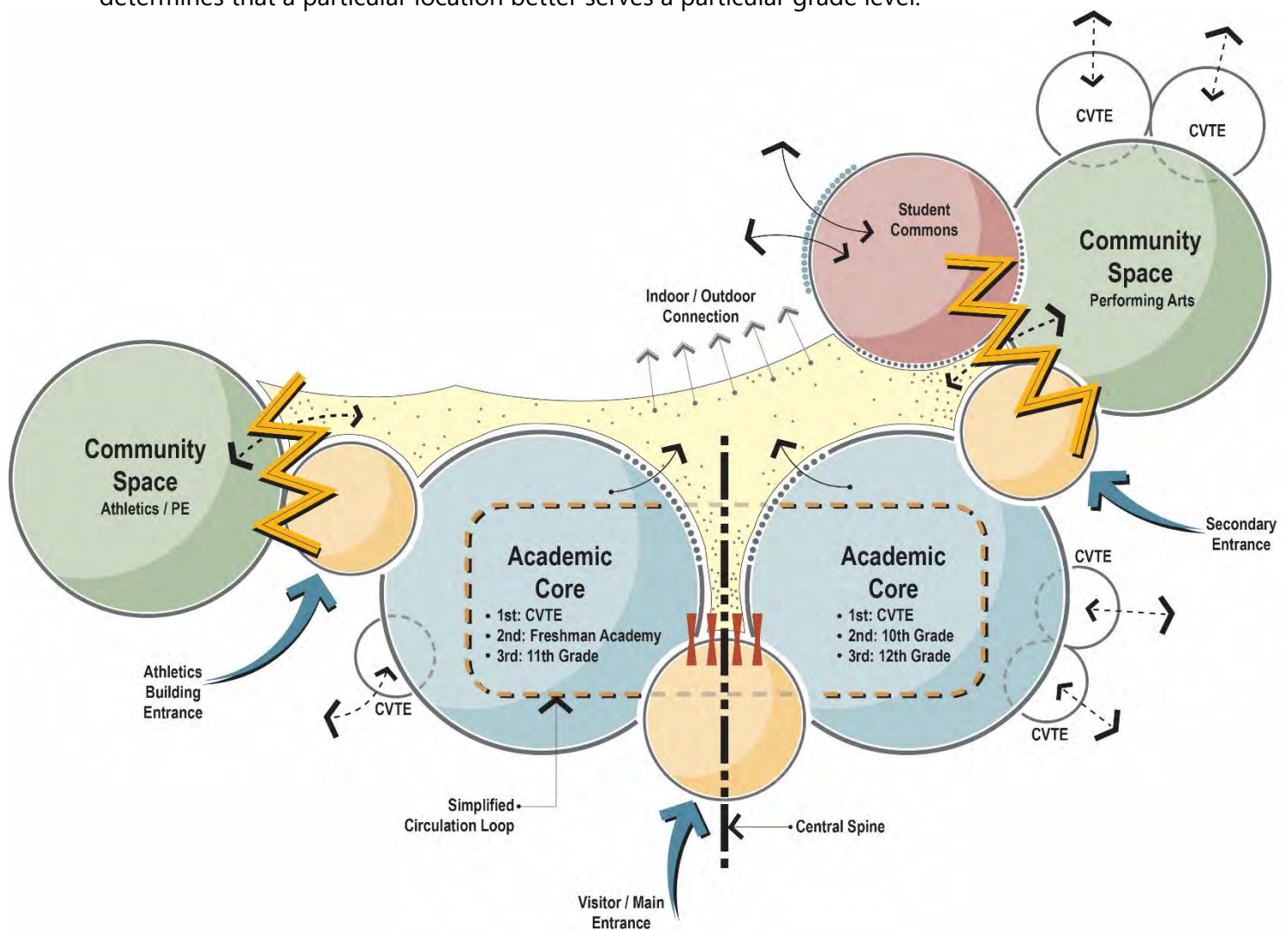
The modern comprehensive high school environment must maintain large vocational labs which are flexible enough to evolve with changes in science, technology, and the required workforce.

However, they do include specialized sound, acoustic, and equipment needs which require specialized components and some specific attributes such as sound separation from academic classrooms. The key to a successful Durfee High School is to create labs which have enough separation, but avoid the isolation which exists at the current building.

### Design Response

The proposed design organizes the grade level teams by floor, with the 9<sup>th</sup> and 10<sup>th</sup> grade teams located on the 2<sup>nd</sup> floor and the 11<sup>th</sup> and 12<sup>th</sup> grade located on the 3<sup>rd</sup> floor. Each grade level is located along a simplified symmetrical "loop" which is identical across all grade levels, a key request from the educators and administrators. Each grade level school is further subdivided with multiple interchangeable classrooms such that interdisciplinary neighborhoods of varying size can be formulated. Desired CVTE spaces such as the culinary restaurant and bakery are closely integrated to key student socialization areas while simultaneously supporting community use, input, and participation where practical. See the respective organizational diagrams below.

By designing each grade level school identically, they can be moved over time if the administration determines that a particular location better serves a particular grade level.



### **C. CLASS SIZE POLICIES**

The targeted class size for all disciplines at Durfee High School is approximately 25 students or less but can be more due to staffing and school or programmatic needs. A considerable effort is being taken to make freshman core classes smaller than other grade levels due to the challenge of 9th grade transition. In addition, special education sub-separate classroom average is between 8 and 10 students. In the 2016-2017 school year, the average class size across all regular academic instructional areas was approximately 28 students per class, with specific averages as follows:

Fine and Performing Arts: 27 students

Health and PE: 30 students

English: 25 students

ELL: 20 students

Math: 27 students

Social Science: 28 students

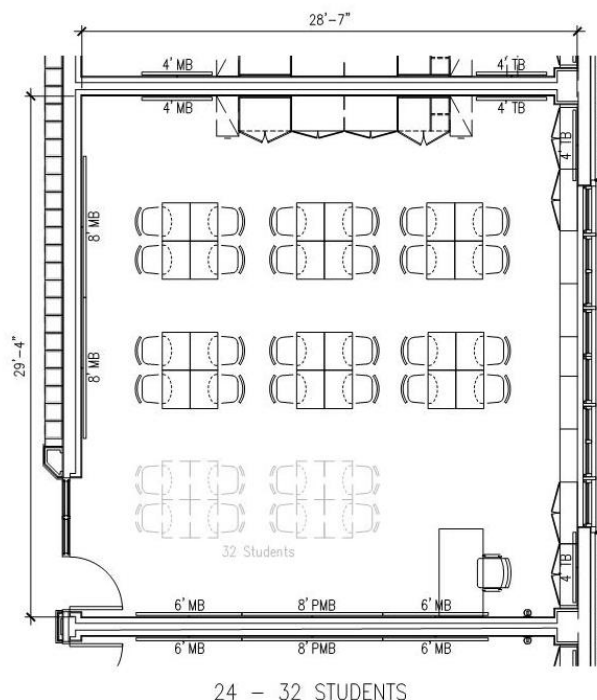
Science: 28 students

World Language: 27 students

CVTE: Varies by program, according to regulations and guidelines.

### **Design Response**

Although the targeted class size is 25 students, classrooms will be configured to ensure that the limited number of classes that exceed this number can also be accommodated. Additionally, classrooms will be flexible/interchangeable within the academic core subjects to allow for flexible scheduling and use.





#### **D. SCHOOL SCHEDULING METHOD**

The school day begins at 7:55 a.m. and ends at 2:40 p.m., consisting of a five-period modified block schedule. The task of scheduling is completed collaboratively by administration and guidance. Some required courses are year-long courses while others are taken as semester. Due to a red/black rotation of classes, students are able to take multiple electives in various areas. CVTE classes are offered in a block-scheduling format with upper grades staying in their CVTE pathways for approximately two or three periods of the day.

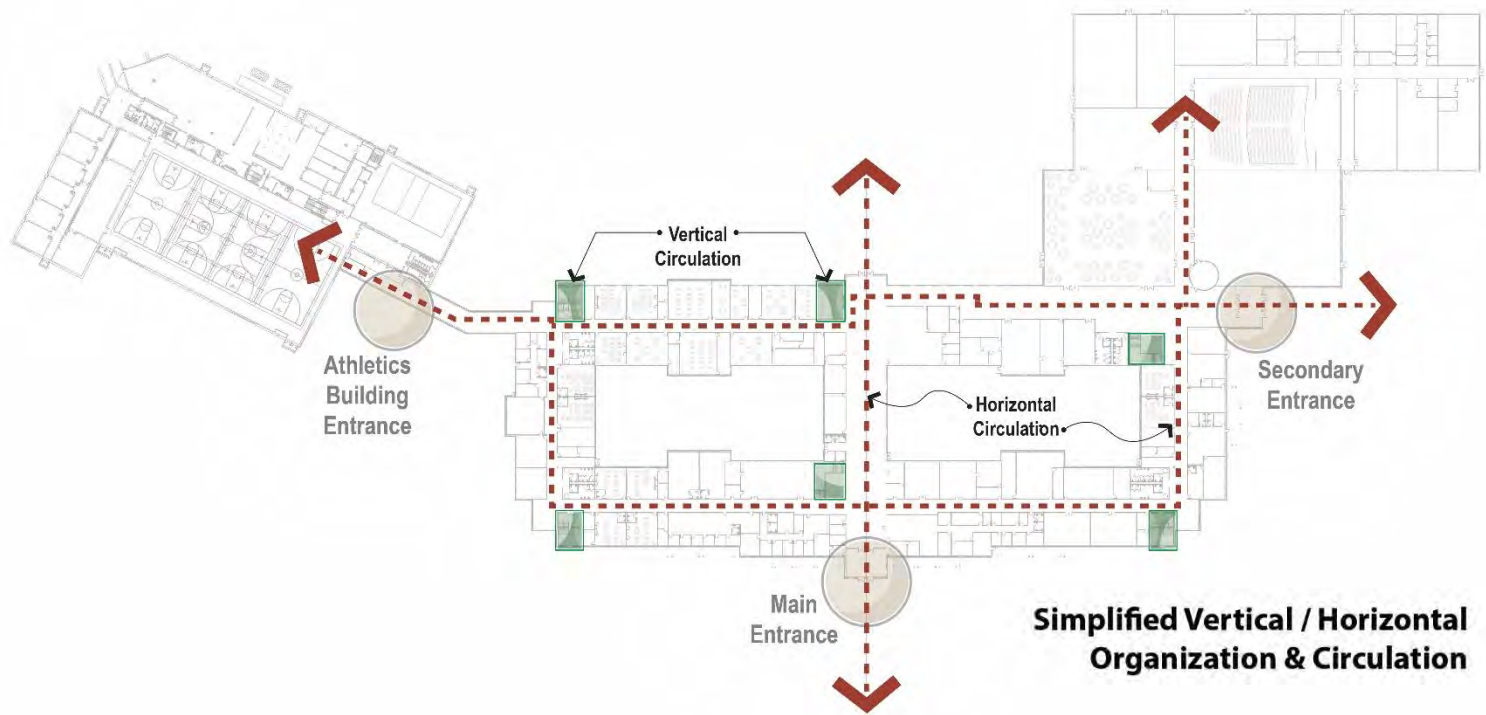
Durfee High School has a school-wide Advisory program that is designed to connect students to a caring staff member, to support positive connections to the school, and to support academic achievement. Advisory is offered one day per week for students in grades 9-12.

In the 2016-2017 school year, a committee of Durfee teachers and administrators met weekly to discuss the strengths and challenges of the current 5-period schedule. There were representatives from each school department on the committee in order to talk about department-specific impacts to any changes. After an exhaustive review of different high school schedules and of Durfee teacher and student surveys and other data, the committee reached consensus to move from a 5-period schedule of 72-minute blocks to a 6-period schedule of 60-minute blocks. The move to a 6-period schedule will allow for Durfee to offer more interventions for students in academic need. In addition, it will offer the opportunity to convert semester core courses to full-year, increasing instructional hours and time on learning. Finally, the move to a 6-period schedule will allow for more flexibility in a student's schedule and will allow students to maximize their high school experience based on individualized learning needs and career goals.

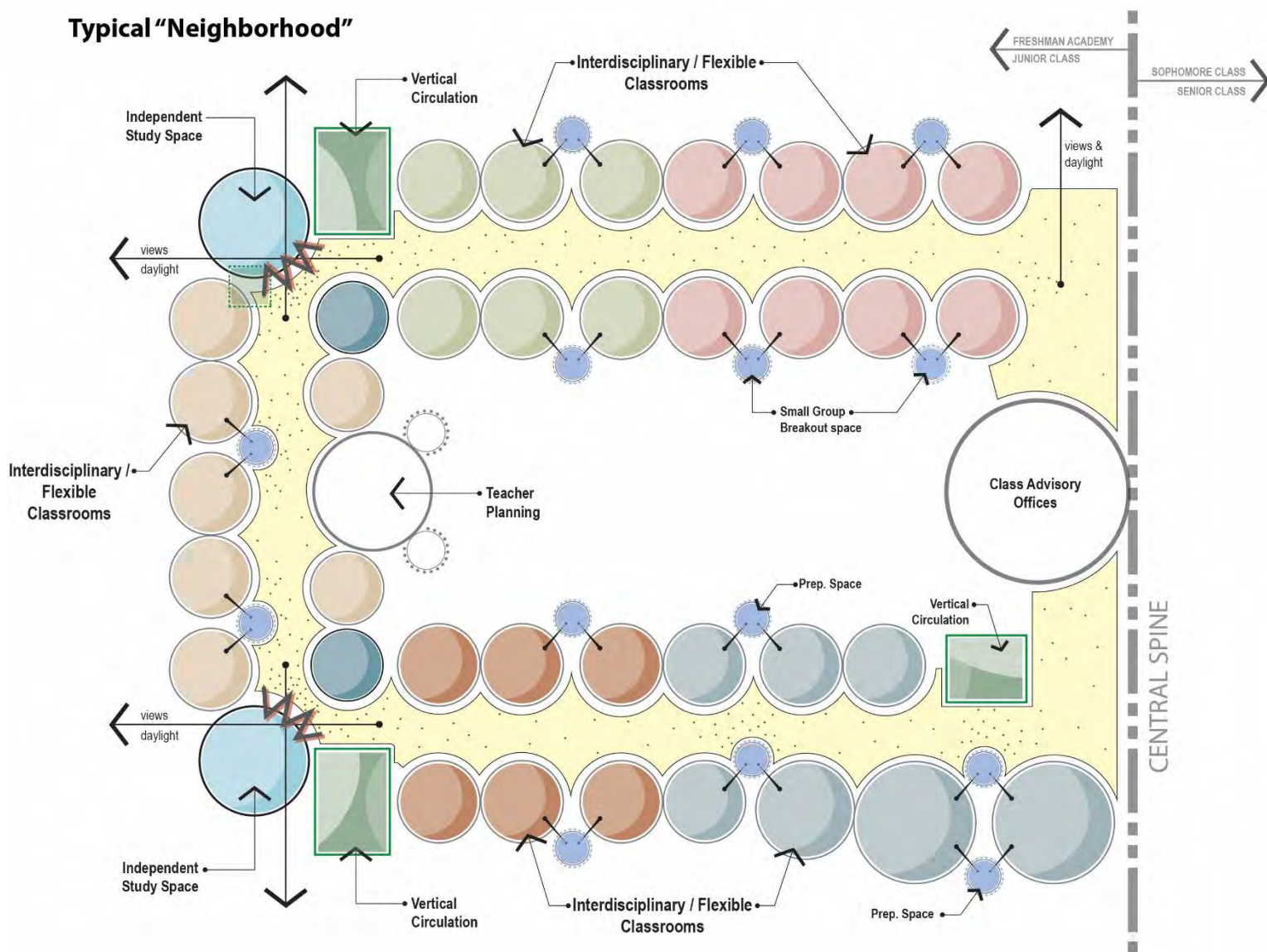
A vote was taken by all Fall River Education Association (FREA) members at the high school to approve a 6-period schedule and the vote was passed in the affirmative. We are in the process of developing a 6-period schedule of 60-minute blocks for the School Year 2017-2018.

#### **Design Response**

The organization of the grade level teams allows for limited student movement between core academic subjects and therefore allows educators to take maximum advantage of the scheduled time-on-learning and also provides greater efficiency in cross-discipline instruction.



## Typical "Neighborhood"



## **E. CURRENT SPATIAL AND FACILITY DEFICIENCIES WHICH IMPACT PROGRAM**

The 1978 BMC Durfee High School building was designed as a sprawling 500,000sf multi-level facility intended to incorporate many "modern" trends in education. Unfortunately, many of these "trends" were not successful and soon became familiar mistakes incorporated into 1970s facilities. The original design created "open classrooms", with many of these areas having been retrofitted over the years to attempt to provide acoustical separation for classrooms. All large buildings require multiple floors; however, the BMC Durfee High School facility includes six different levels staggered across the hillside, none of which stack for more than two levels, congruently resulting in a confusing maze when attempting to navigate from one portion of the building to another. The following is a summary of the challenges of the existing facility, intended to facilitate an understanding of current challenges faced by the administrators, teachers, and students and to allow for better planning in any proposed future facility:

- Retrofitted classrooms (areas of previous open classrooms) improve acoustics but do not have fully enclosed walls because existing HVAC systems cannot function properly if walls were to go to the ceiling.
- Air quality problems have plagued the building since occupancy, as it was designed with no operable windows and is 100% reliant on mechanical ventilation.
- The entire building originally included carpeted floors. Poor ventilation has resulted in moldy carpets and the requirement for removal. The original building was highly reliant on the carpet for proper acoustics and now many areas of the building are extremely loud.
- The classroom "pods" include large internal stairways and surrounding lobby space which is not functional for use by students due to its isolation, noise, and lack of connection to the academic classrooms or student/staff support areas. This area is a large waste of inefficient space that serves very little purpose and is inefficient to ventilate/heat/cool.
- The original design assumed (incorrectly) that there would be limited student traffic flow between pods and other areas of the building. The result is numerous bottlenecks that create student conflict and increase movement time between classes.
- There is a lack of flexible learning spaces for educational projects that require collaboration.
- There are inadequate spaces in the Science Department. All of the rooms that are utilized as "labs" are grossly inadequate as they were designed with the philosophy that very little dedicated lab space was required and science instruction could be provided within the "open classroom" environment. Some spaces have been retrofitted, but NEASC reports cite the school for lack of proper lab space, which is actually quite an understatement when one views the kind of space the high school has available to provide science experiences and applications for 2,500 students. Basic amenities like appropriate electrical and technology services are not available in these areas and the building's concrete structure and open floor plan with limited walls have restricted retrofitting efforts in these areas.
- A school population of 2,500 students requires significant collaboration among teachers and administrators, but the current building includes no appropriate spaces for such.
- The classrooms are poorly organized within the pods, which deters interdisciplinary or collaborative learning.

- The building is a 1970s "brutalist" example of architecture, with its exposed concrete exterior and minimal windows on some facades. It resembles a bunker or prison and lacks natural light and/or windows in many key areas. This dramatically impacts both student and staff morale.
- Many of the vocational spaces were not designed to support modern careers and programs. Many of the highly successful programs like Culinary Arts have limited space and no ability to accommodate all of the students who wish to participate. Many areas and components are not ADA (or CMR 521) accessible, compounding the challenges that the school faces when considering the expansion of existing programs or the introduction of new programs.
- Many of the special education classrooms and support areas are undersized and/or poorly located. The multiple levels within the building provide significant challenges for the movement of students with physical challenges.
- Major heating and cooling issues have plagued the building since its occupancy. Classrooms and programs are constantly relocated throughout the year to ensure that the most highly-occupied spaces find a warm room during the winter or an acceptably comfortable temperature during the warmer months of the Spring and Fall.
- The building is extremely inefficient in terms of its overall exterior building envelope (walls and roof) versus its available floor area. Its unusually large amount of building envelope results in increased operational costs (heating and cooling) and, although this may not seem like an educational issue, the budget required to operate such a building does ultimately impact the available budget of other educational needs.
- The building has an unusually large and complex roof system for a building of its size. It includes approximately 250,000sf of surface area and a multitude of unusual level changes and flashing conditions. Maintaining such a roof system makes it nearly impossible to keep all areas dry and available for occupancy. The result is constant movement of classrooms and programs throughout each year (this has occurred since its original 1978 occupancy) in order to provide spaces that are warm, safe, and dry. New leaks (even in recently replaced roof areas) occur so frequently that ceiling tiles are no longer replaced in order to eliminate potential sources of mold.
- At the time that the building was designed, there was little consideration for the necessary passive and active security provisions which should be inherent in a school facility. There are numerous blind corners, hiding spaces, and unsupervised areas that resulted in the need (1978) to hire a security and safety consultant immediately upon occupancy for review and recommendations. The consultant was highly critical of the building's design and the recommendations came at a significant cost and were initially rejected as being unreasonable for a new school facility. Today, security guards roam the building full-time and the local police play a significant role in assisting the school on safety and security matters. Security cameras have been retrofitted to assist with active security technology. However, the building's inherently poor organization requires significantly more resources than a typical school building of the same size, and much could be done as part of planning a future building to insure a safer and more secure school environment without all of the resources currently required.

- Educational spaces have been created in areas not originally designed for instructional purposes. Most of these spaces include some form of compromise such as size, ventilation, acoustics, or lack of natural lighting.
- CVTE equipment/machinery is almost 40 years old and in need of constant repair and maintenance.
- The Library/Media Center was originally designed as a vast open space and needs significant modifications in order to support the varied and flexible integrated programs of a modern media center. BMC Durfee High School has a very strong television broadcasting program that occupies original and retrofitted space within the Media Center, but lack of accessibility and truly appropriate support space prohibits the expansion of this popular and successful program.
- The original poured-in-place concrete building structure is settling in many areas. Although this does not pose any imminent safety threat in terms of structural failure, it does cause many constant challenges such as interior and exterior doors that may be operating freely one day and inoperable the next due to minor settlement, thereby causing the frames to be out of plumb. This does cause safety and security concerns and should be addressed as quickly as possible. The settlement has also caused several windows to fall out of their frames over the past two years, and it's fairly common to find a piece of spalling (fractured or separated) concrete within the interior of the building.
- The BMC Durfee High School facility includes a pool. Although considered a luxury by some districts, the BMC Durfee High School program has a long history of aquatics dating back to the 19<sup>th</sup> Century. Many former valedictorians and class leaders chose swimming as their form of life-long fitness and exercise, and the swimming programs at Durfee have become second-to-none over the past decades with regard to participation, championships, and scholar-athletes. Unfortunately, much maintenance is required on a daily basis to keep the pool available for students. The current pool is leaching hundreds of gallons of water into the ground on a weekly basis, and the physical building envelope enclosing the pool shows even more significant settlement than remaining portions of the building.
- There is limited "usable" square footage in most tech programs that is not in accordance with Chapter 74 regulations.
- All Technical Studies programs do not all have "related" theory rooms and are not closely integrated to the academic classrooms. The building was designed at a time when CVTE labs were viewed as requiring "isolation" from the remaining facilities. This is no longer true, as these programs should be as fully integrated as practical and their current isolation creates a stigma of reduced importance and/or significance while simultaneously creating an enormous challenge to the integration of academics and hands-on learning.
- Existing electrical panels are at maximum capacity, which does not allow for new machines/technology installation.
- Due to the facility issues, not the budget, the school is unable to add many technical studies programs that are in high demand in accordance with the Bureau of Labor Statistics.

## **F. TEACHING METHODOLOGY AND STRUCTURE**

### **Administrative and Academic Organization Overview**

BMC Durfee High School, originally established in 1887 and moved to the current building in 1978, is a comprehensive educational facility offering academic and technical studies programs currently serving 2,200 students. There are seven Chapter 74 programs at BMC Durfee High School. BMC Durfee is proud of its varied academic offerings, an extensive Advanced Placement program, outstanding broadcasting program, award-winning art program, performing arts center and programs, and the many career and technical pathways that provide valuable resources to the community including, but not limited to: Culinary Arts, Design and Visual Communication, Health Assisting, Early Education and Child Care, and Cosmetology.

The administrative structure of the high school has been and will continue to be organized in grade level teams. Each grade has a grade level office team, with the exception of the Freshman Academy, and is comprised of a Vice Principal, two guidance counselors, an adjustment counselor, an office manager, and a clerk. The Freshman Academy includes an additional school adjustment counselor, a behavior specialist, and a student support specialist.

Each academic discipline has a designated Dean. Deans are administrators who are responsible for the hiring/staffing, scheduling, and teacher evaluations. In addition to coaching and supporting teachers, Deans oversee the curriculum and testing in their content areas. Deans are responsible for running Professional Learning Community meetings, department meetings, and school-wide professional development. Deans do not generally have teaching assignments.

At BMC Durfee High School, we take great pride in our comprehensive high school model. All students are able to take rigorous academic courses of study while simultaneously exploring various elective opportunities and career and vocational pathways. Durfee's graduation requirements are aligned to MASS CORE, which are requirements designed to prepare students to be successful in Massachusetts institutions of higher education.

Our comprehensive model is possible through a parallel scheduling model with students taking academic, career, and technical offerings throughout their school day. This comprehensive academic approach is very different than the typical "vocational school" scheduling model (week-on/week-off). As a result, the facility and the classrooms are used to their capacity each period of the day at BMC Durfee High School. For example, in the Cosmetology program, there are sections for cosmetology for 11th and 12th grade students in the morning and for 9th and 10th graders in the afternoon. Students who take their cosmetology programming in the morning take their academic coursework in the afternoon. This allows for the same academic expectations and time on learning for all students.

In order for this model to work in regards to the building schedule, the spaces are used throughout the entire day as evidenced by our master schedule. The core academic classes are scheduled with a similar approach. For example, we offer grade 10 English sections in the morning as well as in the afternoon. Advanced Placement (AP) courses are offered with multiple sections throughout the day so there is equal access for all students – both CVTE and Academic. Many of our career and technical students are also involved in the AP program.

This model would continue to be in place in a new and/or renovated BMC Durfee High School. Classrooms and CVTE programs would continue to be used throughout the entire school day in order to allow scheduling flexibility. The flexibility within our schedule in regards to academic course offerings and the times they are offered have helped us ensure that there are as many options as possible for our students.

Our goal for the new and/or renovated BMC Durfee High School is that it will be the comprehensive high school of the future - a school with high academic standards that also integrates career and vocational technical education so that students are both career and college ready. Currently, we have excelled as a school community despite an incredibly deficient facility. Our goal is to build a school that ensures that all students at Durfee can receive the best education possible.

### **Room Assignment Policies**

Currently, the assigning of rooms is done in collaboration between School Administration and the Dean of each academic subject. Each subject area is located in a separate wing of the building. The majority of teachers have their own classrooms in the current facility.

All classrooms should be designed as flexible, interchangeable spaces such that they can be organized to support various educational approaches and allow the building to be organized in various ways in the future. However, this approach is not intended to compromise our ability to assign teachers a “home base”, as students and teachers benefit significantly by having a home base with limited rotations. Students often seek out unstructured, additional help from our teachers on a daily basis, and the ability to rely on teachers to be in a specific location is critical to this support system.

At Durfee we use the Workshop Model, which means that every class should have students directly engaging in station work, lab activities and other instructional tasks that require classroom setups. In addition, students benefit in classrooms with visual learning (i.e. posted word walls, student work, data tracking, etc.). The support of interdisciplinary instruction at Durfee is achieved in many ways, but it does not require “forced” interdisciplinary instruction by breaking up the departments. For example, the Freshman Academy is currently operated as 175-student teams with interdisciplinary instruction;



however, these teams are not isolated into pods, and doing so would be too restrictive. As described in the educational visioning summary, the size of the teams can vary, and the best design solution would include large groups of classrooms which are flexible and interchangeable to serve varying disciplines. These classrooms do not need to be broken into pods or small groups of classrooms, as this would be too rigid and would not allow us to change the size and configuration of the teams. These classrooms can share planning and collaboration space, as long as there is at least one planning space per floor and they have access to the small group seminar room. The District wants to maintain the ability to continue the current departmental structures, with the flexibility to organize interdisciplinary teams in various sizes and locations, just as they do now for the Freshman Academy.

### **BMC Durfee High School - 2015-2016 Enrollment Data**

<b>Enrollment by Race/Ethnicity (2015-16)</b>			
<b>Race</b>	<b>% of School</b>	<b>% of District</b>	<b>% of State</b>
African American	8.9	7.4	8.8
Asian	5.1	4.3	6.5
Hispanic	22.0	23.5	18.6
Native American	0.3	0.2	0.2
White	60.4	57.9	62.7
Native Hawaiian, Pacific Islander	0.1	0.1	0.1
Multi-Race, Non-Hispanic	3.2	6.6	3.2

<b>Enrollment by Gender (2015-16)</b>			
	<b>School</b>	<b>District</b>	<b>State</b>
Male	1,119	5,230	488,472
Female	1,092	4,893	464,957
Total	2,211	10,123	953,429



Title	% of School	% of District	% of State
First Language not English	27.0	20.3	19.0
English Language Learner	8.5	9.5	9.0
Students With Disabilities	17.5	18.9	17.2
High Needs	62.2	69.7	43.5
Economically Disadvantaged	50.9	59.1	27.4

Source: Massachusetts Department of Elementary and Secondary Education

### **Curriculum Delivery Methods and Practices**

Historically, BMC Durfee High School has been traditional in its teaching methodologies. Over the past several years, the school community has engaged in a significant amount of professional development to begin to move to an educational delivery model that is more reflective of 21<sup>st</sup> Century skills; smaller learning communities, inquiry-based instruction, and authentic assessment. The Fall River Public Schools was fortunate to receive several competitive federal grants to support this work.

While the school has made great strides to integrate 21st Century skills into instructional practice, the current physical layout of the building poses great challenges for such teaching methodologies. We were cited by the New England Association of Secondary Schools and Colleges (NEASC) for the poor physical condition of the building and lack of ADA compliance.

The proposed high school would maintain programs such as Freshman Academy and departmental structure while affording more opportunities for students and staff to work in a horizontal and vertical interdisciplinary manner while also fully integrating special education programming. In order to support the desired interdisciplinary instruction, departments would be subdivided into smaller departmental groups that are intermixed with other departments, as further defined herein.

As stated earlier, BMC Durfee High School has prioritized a number of school initiatives that focus on personalization. Personalization of programs, student schedules, course selections, and most importantly, personalized relationships. As a result of these efforts, we have made great strides and attained specific goals related to overall student achievement. In addition to the personalization efforts, we have also made a conscious decision to enhance all course offerings. As a result, we have an outstanding course of study with a broad range of courses at all levels of instruction. We are now hoping to have a school facility that matches the high-level courses that we offer.

Several current methodologies and practices will remain integral to the structure of BMC Durfee High School:

### **Freshman Academy Model**

Grade 9 is a year of transition from middle school to high school. The transition is supported by the Freshman Academy. Entering 9<sup>th</sup> graders are offered additional socio-emotional support and are placed within teams (academic neighborhoods) for their English, Math, and Science classes. The team of teachers work collaboratively with student support staff and are committed to achieving common objectives, producing high quality results. The goal is to assist incoming 9<sup>th</sup> graders in adjusting to high school standards and expectations.

The team model is developed around the concept of a small learning community. Students are grouped into one of three teams/neighborhoods. Each team consists of approximately 175 students; however, unlike a middle school, the size of the teams can vary each year and the floor plan should not dictate a specific team size. Teamed teachers are scheduled strategically, affording them a weekly period of common planning time to collectively address the social-emotional and academic needs of their students. These teams are located within their own "Freshman school", but this school does not require a high degree of physical separation from other grade-level schools.

The staff and administration feel that, although grouping the Freshman Academy together in their own school is important, it is not an attempt to have them avoid all contact with students in grades 10<sup>th</sup> through 12<sup>th</sup>, and that doing so would hinder some positive social effects of controlled interaction. The "Freshman Academy" is more of an educational and strategic approach than a completely isolated school. A balance of some separation of this student group and an exposure to upper classmen as the students move to their specialized instruction areas is appropriate. The District believes a floor plan, which includes academic classrooms that are all identically outfitted and sized and that are also in close proximity to science laboratory spaces, will provide the necessary physical environment to continue the successful implementation of the "Freshman Academy".

Our Freshman Academy model is thriving with its new structure of supports. Comparing SY 2014-15 to SY 2015-16, retention and dropout rates are dramatically decreased. Failure reports are completed each quarter in the hopes of engaging families in the effort towards reducing high school dropouts. Enhanced communication with parents and dropout prevention are focal points for the Freshman Academy. Parents are very appreciative of the strategies implemented to enhance communication during the difficult transition period to high school.

### **Advanced Placement Program**

The Advanced Placement Program of the College Board offers college-level courses and exams. It allows students the opportunity to earn advanced standing in college by earning

college credit while still in high school. The following courses are offered for Advanced Placement at BMC Durfee High School:

<i>English Literature AP</i>	<i>U.S. History AP</i>
<i>English Language AP</i>	<i>American Government</i>
<i>European History AP</i>	<i>Biology AP</i>
<i>Chemistry AP</i>	<i>Environmental Science AP(Virtual)</i>
<i>Calculus AB AP</i>	<i>Calculus BC AP (Virtual)</i>
<i>Calculus BC AP</i>	<i>Economics AP (Virtual)</i>
<i>Statistics AP</i>	<i>Music Theory AP</i>
<i>Spanish AP</i>	<i>Physics I AP</i>
<i>Physics II AP</i>	

Advanced Placement courses are rigorous in nature and culminate in an examination in May. It is required that students take the AP exam at the conclusion of each course. Students selecting an AP course for the upcoming year will be given independent summer assignments, which will become the basis for initial work within the course.

### **Dual Enrollment Program**

Through affiliations with area colleges, students can participate in the Dual Enrollment Program. This program allows students to take college-level courses while enrolled at Durfee High School. Courses taken can be used to fulfill graduation requirements or be used as elective credits. Dual Enrollment courses are intended to provide students with advanced standing at their chosen college. The Director of Guidance, in conjunction with the student's Guidance Counselor or Grade Administrator, will determine the GPA weight that will be associated with the course. All Dual Enrollment courses will appear on the student's high school transcript.

Students must have a minimum high school GPA of 2.5 to participate. All students who meet the GPA requirement are eligible to participate upon recommendation of their counselor. Some scholarships are available to pay for Dual Enrollment courses at Bristol Community College.

### **Project Lead the Way (PLTW)**

The STEM Scholars' Project Lead the Way (PLTW) Program is a nationally normed and recognized program that allows students to earn college credit on the high school campus. The curriculum is a rigorous set of courses made up of honors biomedical or engineering topics. Eighth grade students committed to pursuing career pathways in STEM fields with the minimum of completion of Algebra I are eligible for the program as freshmen. STEM Scholars pursuing an engineering pathway would begin by taking Introduction to Engineering Design along with Honors Biology during their freshman year. STEM Scholars pursuing a biomedical pathway would begin by taking Principles of Biomedical Science

along with Honors Biology during their freshman year. Scholars are able to participate in additional college credit opportunities such as Dual Enrollment (DE) courses which meet graduation requirements for high school and Associate of Arts Degree requirements for Bristol Community College and College Board Advanced Placement (AP) courses.

We want a balanced, comprehensive plan of courses in PLTW Engineering and Biomedical Pathways. Additionally, we want to deliver rigorous, competitive coursework that includes online portfolios, hands-on activities, online assessment, integrated technology experiences, and high technical skill competencies. We need a flexible choice of courses to meet individual needs to include honors, DE, and AP coursework. With successful completion of PLTW assessments, scholars can earn college credit for PLTW courses while in high school.

### **Promotion and Graduation Requirements at BMC Durfee High School**

The BMC Durfee High School diploma is awarded in recognition of meeting local and statewide academic requirements. The diploma also signifies that the student has, in the opinion of the School Committee, met standards of conduct during the period up to and including the time of graduation.

Fall River Public Schools has endorsed MassCore requirements for all students and has embedded these requirements into the graduation requirements at BMC Durfee High School. MassCore is a recommended, rigorous course of study based on standards in Massachusetts' curriculum frameworks that aligns high school coursework with college and career expectations. MassCore was developed to provide guidance for a course of study that will help provide students with the academic preparation required for success in post-secondary education and the workplace.

To obtain a diploma from BMC Durfee High School, each student must satisfy the following requirements in addition to acquiring the mandated passing scores of the Massachusetts Comprehensive Assessment System (MCAS) in ELA, Math, and Science. The following list indicates the minimum course requirements as well as the minimum credit requirements for each graduating year needed to fulfill graduation requirements.

#### **Minimum Course Graduation Requirements**

English - 4 Courses

Math - 4 Courses

Science - 3 Lab Science Courses

Social Science - 3 Social Science Courses

World Language - 2 Courses of the same Language

Health - 2 Health Courses

Physical Education - 4 Physical Education Courses

## Fine or Performing Arts -1 Course

As mandated by state law, all students must pass the English Language Arts, Mathematics, and Science portions of the MCAS test, first given in grade 10, in order to receive a high school diploma. Opportunities for remediation and retakes are offered in subsequent years as necessary.

### Minimum Credits Needed for Promotion & Graduation:

#### CLASS of 2020

To enter the Sophomore Class, a student must have earned a minimum of 3.5 credits.

To enter the Junior Class, a student must have earned a minimum of 7.5 credits.

To enter the Senior Class, a student must have earned a minimum of 12 credits.

The minimum Graduation Requirement is 17 credits.

#### CLASS of 2019

To enter the Sophomore Class, a student must have earned a minimum of 3.5 credits.

To enter the Junior Class, a student must have earned a minimum of 7.5 credits.

To enter the Senior Class, a student must have earned a minimum of 12 credits.

The minimum Graduation Requirement is 17 credits.

#### CLASS of 2018

To enter the Junior Class, a student must have earned a minimum of 9 credits.

To enter the Senior Class, a student must have earned a minimum of 13.5 credits.

The minimum Graduation Requirement is 18.5 credits.

#### CLASS of 2017

To enter the Senior Class, a student must have earned a minimum of 15 credits.

The minimum Graduation Requirement is 19.5 credits.

## **Course Levels**

### **Advanced Placement (AP)**

Students taking courses at the Advanced Placement (AP) level are expected to meet the highest standards and are required to take the AP exam at the end of the course. The AP exam is a national exam that oftentimes carries either college credit or reduction of college requirements for graduation. These courses will follow curriculum approved by The College Board and students taking these classes are required to take the AP exam at the culmination of the course. If students do not take the AP exam, they will only receive honors level for the course. Students taking AP courses in ELA, mathematics, and science are required to attend three Saturday study sessions in preparation for the AP examination.

### Honors (H)

Honors courses are extremely demanding academic programs intended for the self-motivated, academically talented student who can work independently and use critical, creative, analytical, and abstract thinking and problem-solving skills.

### College Preparation (CP)

College Preparation courses are challenging, standards-based academic programs that will prepare the student to attend a four-year college or university. Students are expected to use creative and analytical thinking and problem-solving skills. They should be able to move from more structured tasks to independent learning activities.

## **English Language Arts/Literacy**

Several of the current English classrooms are undersized, making them inflexible when it comes to varying teacher styles and learning strategies. Seven of the current classrooms are between 650sf and 750sf and prohibit flexible organization. These smaller classrooms significantly compromise our projects, presentations, or interdisciplinary activities. We are proposing that the new program include 24 English classrooms that are at least 825sf each.

The ELA Department also believes that all students need to be seen as equals and, to the extent possible, would like to avoid classroom arrangements that center around a particular focal point in the room (i.e., no fixed front of the room). In short, the department is looking for beautiful classroom spaces that allow teachers to rearrange them as needed and include various comfortable seating arrangements (including standing desks and comfortable reading chairs for silent reading) and fast internet access. Every ELA classroom should also have a SmartBoard, plenty of whiteboard space (preferably dispersed around the room), soft lighting for reading, plenty of flexible furniture, and a printer located in the room for all to use.

To better meet the needs of our students, the ELA Department would also like to ask that flexible furniture be considered a top priority in the hopes that it can outfit the ELA classrooms on any given day differently to match the day's learning objective. For example, often times our department prefers to arrange the student desks in large circles so that more student-led discussions/debates can ensue, and yet on other days, our teachers would like to be able to set up small work stations for different configurations of student groups to work together on group projects, etc.

The English Language Arts curriculum at Durfee High School is delivered in two ways. The first way is via a face-to-face lesson located in a classroom on site at the school, and the second way is through an Edgenuity course that is accessed by students in need of credit recovery on site at the school in a computer lab. As a progressive department, we are interested in embedding as

much technology as we can into our classrooms and hope to insert more blended learning activities into our lesson plans in the very near future. Therefore, we would like to kindly request that our classrooms have a sizeable amount (more than ten) of Chromebooks on hand and available for daily student use. Considering the number of essays and papers our students are expected to produce (approximately one essay or paper per unit per course), we feel that having Chromebooks in the classrooms is an essential resource needed to get the job done well. Also, we would like to kindly request there be at least one designated distance learning lab on site at the school for credit recovery students.

Our ELA core classes specialize in building literacy skills as well as speaking/listening skills. We model many of our strategies for our students including how to conduct a close read (annotate appropriately, identify deeper hidden meaning in a text), how to revise written work (authentic writing, present model texts to reference as students work), how to speak in front of an audience (Socratic seminars, debate, classroom performances like monologues or slam poetry, etc.), and how to decode unfamiliar words/build vocabulary skills (word walls, etc.). In addition to our core English classes (ELA I, II, III, and IV), our department offers the following electives: Freedom Writers (specializes in personal narratives/empowerment through writing), Creative Writing, Film Studies (Side note: lighting could be an issue in these classrooms), and Journalism. We also offer a special reading program to many of our sub-separate special education students, which we hope to grow and offer to regular education students that are academically behind their peers in the years to come.

In addition to the 24 classrooms requested in the space summary, our ELA and ESL teachers believe they could benefit greatly from a small space directly adjacent to the classroom and fully visible by a teacher within the classroom. This would allow our ESL teachers to conduct listening assessments and would provide an opportunity for ELA and ESL teachers to allow students who are working at a different pace (faster or slower) the opportunity for small group study and instruction. This space would also allow special education students to be more fully integrated into the classroom for a greater amount of time, as those students who need some independent support and require less distractions could utilize these connected small group spaces. Consideration should be given to providing one of these small group spaces for each classroom, and at least one such space should be shared by every two classrooms.

There should be adequate teacher planning and collaboration space to support individual, departmental, and inter-disciplinary collaboration. One of the most significant challenges to our current desire to implement cross-discipline instruction is our lack of readily available planning space. This space is also critical for allowing teachers to collaborate on targeted strategies which address specific student needs. The design of the new Durfee High School must include strategies which promote this interaction while also supporting a variety of professional activities. This planning and collaboration space must include modern and efficient technology amenities such as teacher workstations and interactive virtual bulletin boards. The virtual bulletin boards would

allow multiple departments to share a canvas for posting/reviewing data and sharing ideas for lessons, etc.

The size of our student body and associated teachers requires that we have a full-time ELA Dean who is not in the classroom, but is instead fully dedicated to the responsibilities of the department. This requires a dedicated office space and should be located within reasonable proximity to the classrooms.

The ELA Department would love to see expanded opportunities for cross-curricular work and integration. We welcome more opportunities to work with other departments to show the relevance of English and language in its application to other humanities, science, and math; strengthening the applications and connections. For example, we could benefit from a close proximity to the other humanities and a relatively close physical proximity to math and science. We propose that in order to promote more cross-disciplinary instruction and collaboration, the ELA classrooms be distributed throughout the building, having close proximity to history, social studies, world language, math, and science. In some instances, ELA classrooms may be grouped into micro-clusters (perhaps two or three classrooms) in order to promote content-specific interaction. Additionally, the ELA classrooms should not be so far apart that department discussions are compromised.

### **Mathematics**

Many of our current math classrooms are undersized, making them inflexible when it comes to varying teacher styles and learning strategies. They were designed assuming students would be seated in tightly-configured narrow rows viewing a single "teaching wall." These smaller classrooms, ranging from 650sf to 750sf and representing approximately 50% of our available classrooms, prohibit flexible organization and greatly compromise any desired projects, presentations, or interdisciplinary activities. They should be appropriately sized in our future building plan.

The Math Department currently offers AP Computer Science A and is looking to expand our Computer Science program to offer AP Computer Science Principles and Introduction to Computer Science. These offerings require classrooms with technology that can support the software necessary to run these computer science classes. Also, our Senior Math course offering will involve computer lab time (approximately half time), and we are pushing blended learning in our Geometry classrooms and in our other math courses, so again, classrooms with technology that can support the software necessary to run these course offerings is imperative to the success of our math students. Every so-called "math classroom" should also be an adaptable, flexible, technology rich environment that easily supports whole classroom programming and research activities. We currently lose significant time scheduling students into dedicated "math labs" because our classrooms lack the necessary technology to be instantaneously utilized as labs. This access to computers and technology within all classrooms will give our students a leg up toward 21<sup>st</sup> Century College and Career Readiness.



Our proposed program includes twenty-four 825sf classrooms. As we push the use of graphing calculators in our curriculum, charging stations should be available in classrooms for calculators, rechargeable batteries, and for cell phones with a graphing calculator app. Math classrooms should also be fit with SmartBoards and plenty of whiteboard space for students to be up and mobile, presenting and collaborating on work.

In addition to the 24 classrooms requested in the space summary, we could benefit greatly from a small space directly adjacent to the classroom and fully visible by a teacher within the classroom. This would provide an opportunity for our math teachers to allow students who are working at a different pace (faster or slower) the opportunity for small group study and instruction. This space would also allow special education students to be more fully integrated into the classroom for a greater amount of time, as those students who need some independent support and require less distractions could utilize these connected small group spaces. Consideration should be given to providing one of these small group spaces for each classroom, and at least one such space should be shared by every two classrooms.

The size of our student body and associated teachers requires that we have a full-time Math Dean who is not in the classroom, but is instead fully dedicated to the responsibilities of the department. This requires a dedicated office space and should be located within reasonable proximity to the classrooms.

The current arrangement of math classrooms clusters almost all classrooms into a singular area of the building. This provides many challenges to cross-discipline instruction and is one of the primary reasons Durfee High School lacks the desired interdisciplinary instruction. We would propose that the new building provide expanded opportunities for cross-curricular work and integration, including key connections to the science classrooms. We propose that in order to promote more cross-disciplinary instruction and collaboration, the math classrooms be distributed throughout the building. This would allow math teachers to collaborate in both small and large groups internally, while simultaneously linking them to other departments. It would be ideal if some of the math classrooms were stacked vertically by floor to allow efficient movement of teachers and students. We would also propose that consideration be given to locating math classrooms in close proximity to science classrooms in the interest of promoting STEM objectives.

There was much discussion during the educational visioning sessions about providing the necessary space and organization to promote teacher collaboration. The students at Durfee have a broad range of social, emotional, and educational needs and in order to serve them well, teachers must have an opportunity to collaborate on the specific student needs daily. The design of the new Durfee High School must include strategies which promote this interaction while also supporting a variety of professional activities. Additionally, teachers are no longer tied to their desks but rather they have a 'home' in the workplace where they are able to organize their activities across a variety of environments with a range of different qualities which they share with their colleagues.

## **Science**

### OVERVIEW

Currently, the physical space assigned to science at Durfee High School does not meet minimal, basic programming requirements. Our program is built upon lab-based core courses (e.g., biology, chemistry, physics) that are designed around the new Massachusetts Standards. These new standards are aligned with the Next Generation Science Standards and focus on Scientific Practices, integrated engineering, and design- and project-based instruction and assessments. Our program is also built around lab-based electives and pathways including our Project Lead the Way pathways in biomedicine and engineering. Our core offerings and electives are carefully designed to address societal and student interests (e.g., engineering design process, forensics, environmental studies) and to give students opportunities to gain experience with a range of STEM careers and pathways.

The assigned classrooms lack adequate physical space, as well as space per individual student. This is the most important factor in maintaining safe instructional spaces for both students and faculty and in decreasing the rate of accidents in a classroom. According to the National Science Teachers' Association (NSTA), the minimum recommended floor space per student, in square feet, for combination laboratory/classroom is 60 at the high school level. Therefore, the minimum room size for a class of 24, in square feet, at the high school level, is 1,440. This is also a standard that has been adopted by the MSBA as part of their guidelines. Many of our current science classrooms are "open" classrooms with no walls between the different classroom and lab areas, making it difficult to keep one class focused on important lab instructions. It also creates a dangerous situation when students are distracted or are unable to hear instructions due to the disruptions from surrounding classrooms.

In addition, many of these classrooms lack adequate basic services necessary for doing science, such as access to electricity, water, vacuuming, and gas. Our program does not have specified lab/hands-on time. Our courses blend content with science and engineering practices; they do not separate one from the other. Without adequate basic services in the classrooms, this blending is a struggle (e.g., too few outlets for hot plates, laptops, air tracks; portable fume hoods that limit the number of students and set-ups). In certain cases, temporary services have been made available (e.g., portable burners) in conjunction with modified set-ups that offer anchoring (e.g., ring stands) to ensure safer conditions whenever possible. Furthermore, classroom spaces assigned to science should have eyewashes, emergency showers, hot water, sterilizing cabinets with full sets of safety goggles, and fume hoods. Most classrooms lack some, if not all items listed here.

Finally, the central storage area for all equipment is impractical. Again, blending content with science and engineering practices works best when teachers have easy access to equipment for the "aha" moments of teaching, where students can use an inquiry-based approach for learning and demonstrate their comprehension through higher level skills involving creating and modeling. Dispersing equipment to areas where teachers can use it more frequently is ideal and is not

possible in the space we have available. We would propose utilizing one central chemical storage area and then distributing remaining equipment to the science prep rooms.

We are proposing 23 science classroom/lab environments sized at 1,440sf each. Sixteen of these would serve grades 10 through 12 and seven of them would serve our Freshman Academy. There would be no substantial difference between these labs; we have only sorted them to confirm that we have the appropriate number of labs across all grade levels. Our initial space summary provided with the PDP reduced some of our dedicated Biology and Earth Science classroom/labs to a slightly smaller size. However, after additional consideration we feel that making all classroom/lab environments identical in size will provide greater flexibility in future use and organization. We currently have 26 science labs and classrooms of varying size and our 2017 schedule results in approximately 71% utilization of the classrooms. Our proposed count of classroom lab environments, combined with future course offering and schedules, will result in a utilization rate of almost 80% of the available periods. In establishing the size and number of required science classrooms, the District evaluated the Freshman Academy science curriculum and the general science curriculum to determine the most appropriate quantity and size of science classrooms necessary at each level. As part of the review, the existing building's wide diversity of science classroom sizes and configurations provided the faculty and staff the ability to evaluate the size, configuration, and organization of learning space based on the curriculum, and to determine which size spaces best support the individual science programs. Therefore, the District has identified the above needs reiterated below:

-23 science classrooms at 1,440 nsf (16 serving Grades 10-12 and 7 dedicated to Freshman Academy).

#### PROGRAM OF STUDIES

The BMC Durfee Science Department has consistently offered a variety of courses and pathways to support a range of options for our students. We offer core science lab classes in Integrated Science, Biology, Chemistry, and Physics. These classes are standards based courses with curriculum designed and modified by each Professional Learning Community. Currently, our students are not receiving the level of science offerings that we feel are critical to a high quality science education, and this is a result of inadequately sized and outfitted science labs. For example, our Freshman Science Biology courses are all taking place in nine regular classrooms that are not equipped for the necessary laboratory experiences.

In addition to our Core Science Courses, we offer five Advanced Placement courses: Biology, Chemistry, Environmental Science, Physics 1, and Physics 2. Our open enrollment for Advanced Placement, increasing student enrollment and gains in qualifying scores, have earned our AP Program recognition from Mass Insight including two science teachers being awarded Partners in Excellence. Our Program of Studies also offers the Nationally Accredited Project Lead the Way pathway in biomedical science. Students can either complete the four-year pathway of courses or jump into the Introduction course, Principles of Biomedical Science, at any time. These courses provide students with the academic content, skills, and applied experiences to introduce them to and prepare them for a career in biomedicine.

In addition to our pathways and core courses, we offer a number of Science courses that introduce students to a range of scientific fields and practices. These courses have been designed by the teachers and include Marine Biology, Aerospace Engineering, Astronomy, Urban Farming, Human Biology and Forensics, and Biology of Reproductions. These options have strengthened our Program of Studies and have provided more options for all of our students.

Our Urban Farming course has had 100 students enrolled over the past year. These students have learned about agriculture and botany by helping to maintain our working greenhouse. This class has engaged students in learning about farming and could be expanded into a program that helps start Community Gardens for the City of Fall River. The greenhouse and Urban Farming classes could also work with Culinary in CVTE to provide food for their program and use composting materials from the CVTE Culinary program. The greenhouse is also used for engaging a range of students including summer school students and our Bridge and Ungraded Students who worked on supplying the greenhouse with electricity. Many of our science students are involved in projects that involve going outdoors for investigation and discovery. This approach would benefit greatly from some science labs that are placed on the first floor and have direct exterior exits from the labs. This would allow students to easily move in and out of the classrooms without spending significant time navigating through the building. We are proposing to replicate our current greenhouse in the new program.

BMC Durfee High School offers Astronomy courses in its Program of Studies for students to learn about Earth and Space Science. These courses, which had an enrollment of 278 students in the current academic year, utilize a planetarium and an observatory. Both the planetarium and the observatory have been part of Durfee's history since 1887 when the original donor for the high school, Mary Young, specifically requested that these two spaces be designed into the new facility as part of the "advancement of science education". The planetarium is used in all of the Astronomy courses to show students how the movement of the Earth and planets affect the view of stars and constellations. Other District Schools and the Preschool also visit the planetarium for field trips. The Observatory houses a rare and historic telescope that was made in 1887 by a company called Warner and Swasey. It was donated by Mary Young as part of the "outfitting" of the school in 1887 and remains one of the few functional telescopes of its type in the world. In 1943, it was restored by Professor Leon Campbell, Pickering Professor at Harvard University. It recently underwent a second restoration through the work of numerous volunteers, including the Astronomical Society of Southern New England. It provides a rare asset to student instruction and there have been numerous public viewings offered at the current Durfee Observatory.

The size of our student body and associated teachers requires that we have a full-time Science Dean who is not in the classroom, but is instead fully dedicated to the responsibilities of the department. This requires a dedicated office space and should be located within reasonable proximity to the classrooms.

#### FUTURE GOALS

In addition to sustaining and strengthening our current offerings by providing the necessary Instructional and Lab Space for effective science education, we have a number of goals that align

to our District goals and also the national focus on STEM education. One of our goals is to expand our Biotechnology and Engineering options by providing a space that can accommodate multiple groups in a space that mirrors industry standards. A new building which includes 25 appropriately sized and equipped labs would allow us to have a building with the appropriate science lab technology opportunities. In addition, we could expand the Project Lead the Way (PLW) Biomedical program by providing more experiences in biotechnology into the core feeder courses.

Another goal is to expand our Aerospace program. We currently offer a Project Lead the Way Engineering course in Aerospace Engineering and are in beginning talks of working with other districts to possibly expand our Aerospace program. We currently have an active Aerospace club that has worked to restore a small plane and that is facilitated by two teachers who can also pilot a plane.

The Science Department would love to see expanded opportunities for cross-curricular work and integration. We welcome more opportunities to work with other departments to show the relevance of science and strengthen the applications and connections. For example, we could work with the CVTE Department to provide more experiences in engineering and design (i.e., biotechnology, environmental engineering). We propose that in order to promote more cross-disciplinary instruction and collaboration, the science classrooms/labs be distributed throughout the building in groups of between four and six classrooms/labs. This would provide the efficiency of having the plumbing, science equipment, etc. consolidated to a few areas within the building but would simultaneously avoid having all of the science classrooms/labs located in a singular department area. It would be ideal if some of the "grouped" science classrooms/lab areas were stacked vertically by floor to allow efficient movement of teachers and students. We would also propose that consideration be given to locating science classrooms in close proximity to math classrooms in the interest of promoting STEM objectives.

The visioning sessions included much discussion about indoor/outdoor connections. In addition to providing direct exterior access whenever possible, the District would like to expand its scientific reach to the numerous resources that are available within the boundaries of Southeastern Massachusetts. Scientific programs in areas like marine biology, oceanic research, atmospheric analysis, aquatic applications, and biotechnology can become an inherent part of the science and engineering curriculum.

The current science classroom model that is included on the MSBA website includes all of the desired spatial and organizational requirements as well as the necessary amenities identified herein. It represents the kind of science environment necessary to meet our vision of future STE education at Durfee High School. We also hope to explore and add integrated biotechnology opportunities to a range of the core science courses by creating a building which includes the appropriate science lab technology.

Last, but certainly not least, there was much discussion during the educational visioning sessions about providing the necessary space and organization to promote teacher collaboration.

Technology has greatly assisted collaboration among teachers and staff; however, the power of face-to-face interaction has yet to be replicated by technology. Human interaction is everything, especially in a creative, innovative, and knowledge-intensive sector such as education. The strength of any creative organization is shaped as much by the day-to-day chance contact of its members as it is by formal gatherings such as scheduled appointments. Critical information leading to educational innovation often comes from informal encounters between teachers from varying disciplines and backgrounds. The students at Durfee have a broad range of social, emotional, and educational needs and in order to serve them well, teachers must have an opportunity to collaborate on the specific student needs daily. The design of the new Durfee High School must include strategies which promote this interaction while also supporting a variety of professional activities. Additionally, teachers are no longer tied to their desks but rather they have a 'home' in the workplace where they are able to organize their activities across a variety of environments with a range of different qualities which they share with their colleagues.

### **Social Studies**

The current physical space occupied by social studies classes at DHS does not meet the needs of 21<sup>st</sup> Century learners and their development of the necessary skills for today's world. The assigned classrooms lack adequate infrastructure to support technology related to reliable student internet access and power. The design of most classrooms is a retrofitted open classroom concept, resulting in cavernous rooms with poor acoustics and an unfinished, industrial aesthetic. Consistent noise from exposed HVAC ducts competes with students' and teachers' voices throughout most rooms.

Social studies programming is centered on the study of United States and World History, with related AP offerings, as well as content electives (e.g., psychology, sociology, law) and thematic electives (e.g., Sports in American Life, Political Assassinations, Lizzie Borden Case). Students are required to take three core history classes. Elective courses are available to all students to choose from, based on grade level and interest.

### **Social Studies Core Course Offerings**

<b>COURSE #</b>	<b>DESCRIPTION</b>	<b>LEVEL</b>	<b>GRADES</b>	<b>TERM</b>	<b>CREDIT</b>
	GATE U.S. and World History 1	1	9	YR	.5
16251	Honors U.S. and World History I	1	9	YR	.5
16252	U.S. and World History 1 – College	2	9	YR	.5
16261	Honors U.S. and World History II	1	10	YR	.5
16262	U.S. and World History 1 – College	2	10	YR	.5
16271	Honors U.S. and World History III	1	11	YR	.5

16272	U.S. and World History III – College	2	11	YR	.5
	Senior U.S. and World History	2	12	YR	.5
16151	Pre-AP US and World History II/III	Pre-AP	10	YR	1
16221	AP United States History	AP	11,12	YR	1
16321	AP European History	AP	11,12	YR	1
16521	AP American Government &	AP	11,12	YR	1

### **Elective Course Offerings**

<b>COURSE #</b>	<b>DESCRIPTION</b>	<b>LEVEL</b>	<b>GRADES</b>	<b>TERM</b>	<b>CREDIT</b>
16784	Sports in American Life	El	10, 11, 12	SEM	.25
16664	History of Fall River	El	10,11, 12	SEM	.25
16304	Economics	El	11, 12	SEM	.25
16414	Introduction to Psychology Part I	El	11, 12	SEM	.5
16514	Introduction to Psychology Part II	El	11, 12	SEM	.5
16404	Introduction to Sociology	El	11, 12	SEM	.25
16544	Practical Law	El	11, 12	SEM	.25
16824	American Assassinations	El	11, 12	SEM	.25
16734	Civic Engagement and Action	El	11, 12	SEM	.25
	Introduction to Debate	El	10, 11, 12	SEM	.25
	Introduction to American	El	10, 11, 12	SEM	.25
	Topics in American History: Lizzie	El	10, 11, 12	SEM	.25
	Social and Cultural History of Rock	El	11, 12	SEM	.25
	21 <sup>st</sup> Century Current Events and	El	11, 12	SEM	.25

The current staffing for the Social Studies Department includes 16 general education teachers, three special education teachers, and one Dean. Two grade level teams of teachers (10 and 11) are situated in contiguous classrooms, while one team is located within the Freshman Academy (9). Two special education teachers are located nearby their teams, while the third is contained within the BRIDGE program. These locations are spread over three floors. All classes make use of one computer lab, located adjacent to the Grade 10 team.

The varying types of classrooms within the department, along with their sprawling locations, present a multitude of challenges in terms of programmatic equity for students, maximizing use of collaboration time for teacher teams, and a cohesive alignment of pacing and transition among and between grade level courses.

Teachers across the department have aligned instruction to embed the workshop model. Instruction has shifted from teacher-centered to student-centered, with collaborative strategies and blended learning embedded in all classes. All teachers work to include use of online resources within lessons via 'Smartboards', Chromebook carts, and computer labs. We would propose that the program include adequate space for teacher collaboration, planning, conferencing, and work.

The Social Studies Department is seeking expanded opportunities for cross-curricular work and integration. We feel strongly about the benefits of working with other departments to show the relevance of social studies in its application to other humanities, science, and math; strengthening the applications and connections. For example, we could benefit from a close proximity to the other humanities, and a relatively close physical proximity to math and science. We propose that in order to promote more cross-disciplinary instruction and collaboration, the social studies classrooms be distributed throughout the building, allowing them to be in close proximity to History, English, and World Language. Additionally, the science and math classrooms should be in relatively close proximity to support humanities/science cross discipline instruction. For example, in our new Integrated Science Freshman Curriculum the Science classes will be working with Social Studies to explore the ethics involved in the pharmaceutical business. In another unit, Science will be exploring colonization of other planets and will work with Social Studies to integrate lessons on social structures and government. Social Studies teachers will receive training during SY 2017-18 at Harvard, focused on the Harvard Business School case study method. These case studies will be implemented next school year.

The size of our student body and associated teachers requires that we have a full-time Social Studies Dean who is not in the classroom, but is instead fully dedicated to the responsibilities of the department. This requires a dedicated office space and should be located within reasonable proximity to the classrooms.

The Social Studies Department feels strongly about the benefits of providing the necessary space and organization to promote teacher collaboration. The students at Durfee have a broad range of social, emotional, and educational needs and in order to serve them well, teachers must have an opportunity to collaborate on the specific student needs daily. The design of the new Durfee High School must include strategies which promote this interaction while also supporting a variety of professional activities. Additionally, teachers should have a professional workspace outside of their classrooms, allowing them to organize their activities across a variety of environments with a range of different qualities which they share with their colleagues.

Our proposed program includes 24 classrooms sized at 825sf each. Instruction within our department blends direct instruction with an emphasis on student collaboration and project-based learning. This approach will greatly benefit from some flexible spacing in common areas to allow for a range of collaborative groupings, small and medium conferencing spaces next to



classroom clusters to meet intervention and seminar discussion needs, as well as an adjacency to an amphitheater/distance learning venue for expert/large format presentations and programming. Proximity to the arts cluster would support elevated collaboration between these departments.

In addition to the 24 classrooms requested in the space summary, we could benefit greatly from a small space directly adjacent to the classroom and fully visible by a teacher within the classroom. This would provide an opportunity for our social studies teachers to allow students who are working at a different pace (faster or slower) the opportunity for small group study and instruction. This space would also allow special education students to be more fully integrated into the classroom for a greater amount of time, as those students who need some independent support and require less distractions could utilize these connected small group spaces. Consideration should be given to providing one of these small group spaces for each classroom, and at least one such space should be shared by every two classrooms.

### **World Languages**

The current physical space occupied by world language classes at DHS does not meet the needs of 21<sup>st</sup> Century learners and their development of the necessary skills for today's world. The assigned classrooms lack adequate infrastructure to support technology related to reliable student internet access and power. The design of most classrooms is a retrofitted open classroom concept resulting in cavernous rooms with poor acoustics and an unfinished, industrial aesthetic. Consistent noise from exposed HVAC ducts competes with students' and teachers' voices throughout most rooms.

World Language programming is centered on the study of French, Portuguese, and Spanish, with related AP offerings. Presently, the department is comprised of eleven teachers and one Dean. All students are required to pass two years of a language to graduate. World Language classrooms are spread out across parts of the building with few contiguous rooms. This was a result of establishing a Freshman Academy which took over an area formerly dedicated to World Languages.

<b>World Language Courses</b>					
<b>COURSE #</b>	<b>DESCRIPTION</b>	<b>LEVEL</b>	<b>GRADES</b>	<b>TERM</b>	<b>CREDIT</b>
11101	French I Honors	HON	9-12	SEM	.5
11102	French I CP	CP	9-12	SEM	.5
11111	French II Honors	HON	10-12	SEM	.5

11112	French II CP	CP	10-12	SEM	.5
11121	French III Honors	HON	11-12	SEM	.5
11122	French III CP	CP	11-12	SEM	.5
11131	French IV Honors	HON	11-12	SEM	.5
11151	AP French	AP	11-12	YR	1
11201	Portuguese I Honors	HON	9-12	SEM	.5
11202	Portuguese I CP	CP	9-12	SEM	.5
11211	Portuguese II Honors	HON	10-12	SEM	.5
11212	Portuguese II CP	CP	10-12	SEM	.5
11221	Portuguese III Honors	HON	11-12	SEM	.5
11222	Portuguese III CP	CP	11-12	SEM	.5
11231	Portuguese IV Honors	HON	11-12	SEM	.5
11261	Advanced Portuguese	HON	11-12	SEM	.5
11292	Portuguese I for Heritage Lang. Learners	CP	9-12	SEM	.5
11282	Portuguese II for Heritage Lang. Learners	CP	10-12	SEM	.5
11301	Spanish I Honors	HON	9-12	SEM	.5
11302	Spanish I CP	CP	9-12	SEM	.5
11311	Spanish II Honors	HON	9-12	SEM	.5
11312	Spanish II CP	CP	9-12	SEM	.5
11321	Spanish III Honors	HON	11-12	SEM	.5
11322	Spanish III CP	CP	11-12	SEM	.5
11331	Spanish IV Honors	HON	11-12	SEM	.5
11351	AP Spanish	AP	11-12	YR	1

11382	Spanish I for Heritage Lang. Learners	CP	9-12	SEM	.5
11362	Spanish II for Heritage Lang. Learners	CP	10-12	SEM	.5
11372	Spanish III for Heritage Lang. Learners	CP	10-12	SEM	.5
11392	An Invitation to Languages and Cultures I CP	CP	9-12	SEM	.5
11394	An Invitation to Languages and Cultures II CP	CP	10-12	SEM	.5
<b>World Language Elective Courses</b>					
11204	Portuguese for Health Careers CP	CP	11-12	SEM	.25
11304	Spanish for Health Careers CP	CP	11-12	SEM	.25

The varying types of classrooms within the department, along with their sprawling locations, present a multitude of challenges in terms of programmatic equity for students, maximizing use of collaboration time for teacher teams, and a cohesive alignment of pacing and transition among and between grade level courses.

Teachers across the department have aligned instruction to embed the workshop model. Instruction has shifted from teacher-centered to student-centered, with collaborative strategies and blended learning embedded in all classes. All teachers work to include use of online resources within lessons via 'Smartboards', Chromebook carts, and computer labs.

The World Language Department believes a new facility offers an opportunity for promoting cross-curricular work and integration. We feel strongly about the benefits of working with other departments to show the relevance of language and its application to other humanities, science, and math; strengthening the applications and connections. For example, we could benefit from a close proximity to the other humanities, and a relatively close physical proximity to math and science. We propose that in order to promote more cross-disciplinary instruction and collaboration, the world language classrooms should be distributed throughout the building in small "micro-clusters" of language classrooms (perhaps two or three classrooms), each cluster being in close proximity to a history, English, and social studies cluster. This would provide the efficiency of having the world language staff grouped into small clusters that are in close proximity to the other humanities. Math and science should also be in close proximity. The World Language classrooms should not be too far apart, as we do want the opportunity to easily meet as a department without having to traverse the entire building.

The size of our student body and associated teachers requires that we have a full-time World Languages Dean who is not in the classroom, but is instead fully dedicated to the responsibilities of the department. This requires a dedicated office space and should be located within reasonable proximity to the classrooms.

The World Language Department feels strongly about the benefits of providing the necessary space and organization to promote teacher collaboration. The students at Durfee have a broad range of social, emotional, and educational needs and in order to serve them well, teachers must have an opportunity to collaborate on the specific student needs daily. The design of the new Durfee High School must include strategies which promote this interaction while also supporting a variety of professional activities. Additionally, teachers should have a professional workspace outside of their classrooms, allowing them to organize their activities across a variety of environments with a range of different qualities which they share with their colleagues.

Our proposed program includes 15 classrooms sized at 825sf, with an adjacent digital language lab of a similar size. World Language instruction employs a diverse set of strategies to develop the four domains of acquisitions—speaking, listening, reading, and writing. This approach will greatly benefit from some flexible spacing in common areas to allow for a range of collaborative groupings, small and medium conferencing spaces next to classroom clusters to meet intervention and seminar discussion needs, as well as an adjacency to an amphitheater/distance learning venue for expert/large format presentations and programming. The need for a state-of-the-art digital language lab will support the current instructional model as well as next steps to expand offerings. In particular, students are often faced with a choice of upper level language classes and participation in CVTE, Arts, and AP classes. These students will have an online option to meet their individual scheduling needs. The digital lab will also serve to offer languages not currently in our program of studies, such as Mandarin and Arabic. Proximity to the arts cluster would support elevated collaboration between these departments.

In addition to the fifteen classrooms requested in the space summary, we could benefit greatly from a small space directly adjacent to the classroom and fully visible by a teacher within the classroom. This would provide an opportunity for our world language teachers to allow students who are working at a different pace (faster or slower) the opportunity for small group study and instruction. This space would also allow special education students to be more fully integrated into the classroom for a greater amount of time, as those students who need some independent support and require less distractions could utilize these connected small group spaces. Consideration should be given to providing one of these small group spaces for each classroom, and at least one such space should be shared by every two classrooms.

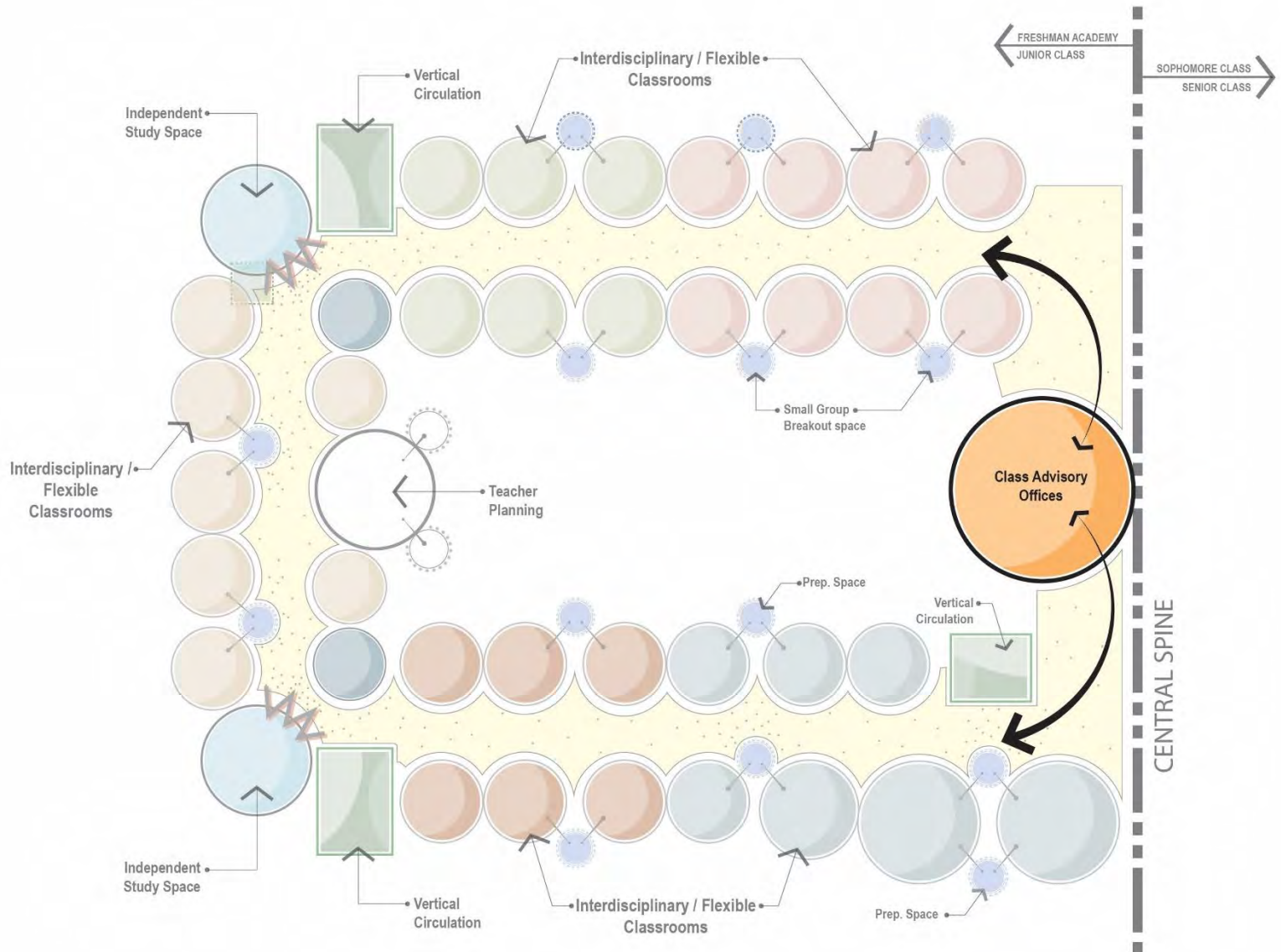
### **Student Guidance and Support Services**

We have a very strong advisory program targeted at meeting the needs of our specific student population. The purpose of this program is to increase the personalization of our students' high school experience by creating a course in which students can connect in a small group setting with one adult. These small groups provide a safe supportive environment where students can explore decision-making and life skills that may not be addressed in a classroom curriculum. The student's classroom teacher has in-depth knowledge of the content of various courses taught within his/her department, as well as levels of expectation within each course. The quality of work the student is capable of producing, in addition to knowing the individual student, allows teachers to make valid recommendations as to which core academic courses the student should take within the department. The student's guidance counselor has a broad overview of the entire curriculum. Besides having a strong sense of the student's performance and ability level, the counselor is knowledgeable of the courses necessary to fulfill graduation requirements as well as the courses necessary to be accepted into various post-secondary institutions. One of the major roles of the counselor can be to advocate for the student's academic, personal/social, and career/college needs. The guidance counselor advises students and families about academic pathways and courses that will align with post-high school plans. All students are assigned to counselors for a one year period during their freshman year. These counselors will support and advocate for students as they transition into Durfee High School. Beginning in the sophomore year, students remain with their counselor through their remaining years at BMC Durfee High School. During this same period of sophomore through senior year, the students remain with the same administrative and advisory team, including advisor, counselor, vice principal, etc., for the duration of their high school experience. This allows the administrative team to be acutely aware of each student's social, physical, emotional, and academic needs.

The staff and administration at BMC Durfee High School have employed many strategies targeted at providing the students with a personalized experience that overcomes the challenges of such a large high school population. One of these challenges includes the impersonal nature of a single administrative team overseeing 2,570 students. Therefore, we have adopted an administrative structure that is conducive to a more personalized student experience; fosters communication between faculty, students, parents and guardians; and provides the continuity and structure to ensure all students' experiences will be marked by excellence. Each grade level of students at BMC Durfee High School enters an environment that includes their own dedicated team of administrators (one for each grade level). This team follows the students as they progress through completion of a high school diploma. The teams consist of a Vice Principal and two Guidance Counselors, supplemented by Adjustment Counselors, a Truant Officer, and a School Resource Officer. This administrative support team is further expanded within the freshman team to provide additional support to students as part of their transition to the high school environment. In the Freshman Academy Grade Office, the team structure consists of the following: Vice Principal, Clerk, School Administrator Manager, two Guidance Counselors, and a Behavior Specialist. Immediately adjacent to the grade office are two School Adjustment Counselors and a Student Support Specialist working collaboratively with the administrative team.

Design Response

The organization of the grade-level schools into classroom neighborhoods allows educators to take maximum advantage of the scheduled time-on-learning and also provides greater efficiency in cross-discipline instruction. Note that the administrative team for each school is located within the area identified as "class advisory offices", and is centrally located within that grade level.



## **G. TEACHER PLANNING AND COLLABORATION**

BMC Durfee High School has consistently supported a culture of collaboration. Each teacher is assigned to a Professional Learning Community that meets every week. These meetings are used to collaborate on curriculum, instruction, and assessments. These teams meet to design and modify benchmarks and assessments, plan their administration, and analyze the resulting data to plan instructional interventions. These times are also used to collectively plan instructional activities, modify Standards Based Units, and share best practices. Each Department has its own Professional Learning Community room so that student data can be posted and tracked in a confidential setting. The ideal Professional Learning Community Room would have a seminar setting (conference table and chairs) with dry erase boards, bulletin boards, and an interactive board with projector.

Teachers also spend time collaborating outside of their Professional Learning Community meetings. The Freshman Academy teachers regularly meet with other subject teachers in their cohort along with a Freshman Guidance Counselor to discuss each student and the best way to support the student's academic, social, and emotional needs. Teachers also spend time with other teachers during their prep periods to collaborate on their lesson plans and discuss resource allocation and best instructional practices.

BMC Durfee High School has five Deans of Teaching and Learning (ELA, Math, Science, Social Studies and World Languages) who are in charge of supervising the teachers in their departments and overseeing curriculum, instruction, and assessments. The Deans of Teaching and Learning each have an inner and outer office space located near their department classrooms, teacher rooms, and collaboration areas. The outer office space is used to meet with teachers and small teams of teachers to support their growth. For example, each Dean conducts coaching cycles with teachers to support their growth as effective educators. The inner office is used to complete the managerial and supervisory tasks that are required of each Dean and to have confidential meetings with teachers. The inner office is also used to store confidential personnel paperwork. Since Deans of Teaching and Learning are also in charge of staffing, they utilize the inner office to meet with applicants.

Each department at BMC Durfee also has a teacher's room that is used for teacher lunch times and informal gatherings. These teacher's rooms foster a culture of collaboration by giving teachers an area to informally meet, plan, and share. By providing an area for informal teacher gathering and a department lunch area, Durfee has helped create strong communities between our teachers.

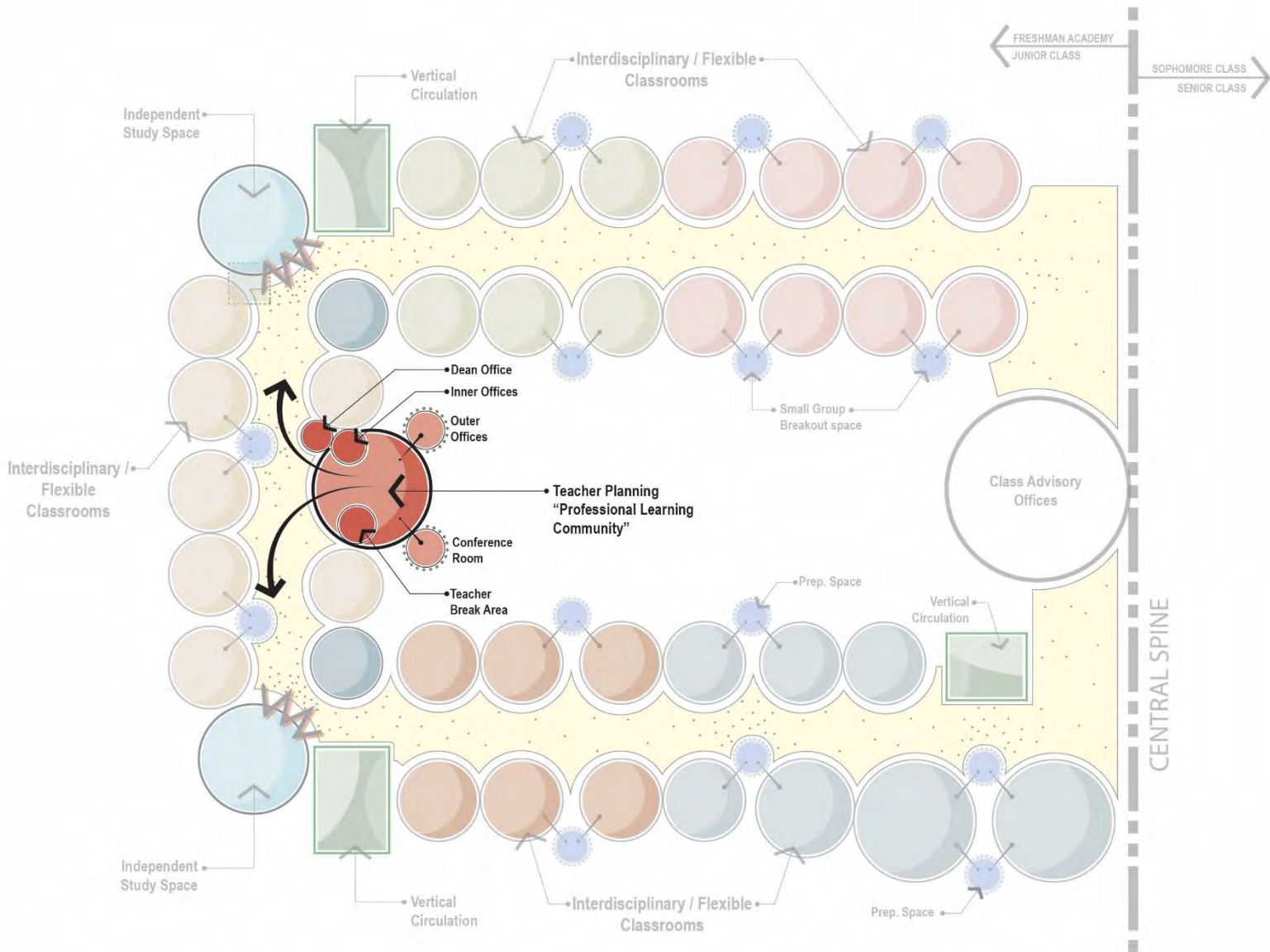
Ideally, there would be teacher collaboration, planning, and work areas throughout the building to allow for both departmental and cross-curricular collaboration. Technology has greatly assisted collaboration among teachers and staff; however, the power of face-to-face interaction has yet to

be replicated by technology. Human interaction is everything, especially in a creative, innovative, and knowledge-intensive sector such as education. The strength of any creative organization is shaped as much by the day-to-day chance contact of its members as it is by formal gatherings such as scheduled appointments. Critical information leading to educational innovation often comes from informal encounters between teachers from varying disciplines and backgrounds. The design of the Durfee High School must include strategies which promote this interaction while also supporting a variety of professional activities. Additionally, teachers are no longer tied to their desks but rather they have a 'home' in the workplace where they are able to organize their activities across a variety of environments with a range of different qualities which they share with their colleagues. Each department should also have an area for teachers to plan, collaborate, and meet in small groups and as Professional Learning Teams. In addition to a large teacher work area, each department should have a room for Professional Learning Team meetings and smaller offices available for individual planning and small group meetings. This planning and collaboration space must include modern and efficient technology amenities such as teacher workstations and interactive virtual bulletin boards. The virtual bulletin boards would allow multiple departments to share a canvas for posting/reviewing data and sharing ideas for lessons, etc. Each department should have an informal area for teachers to eat lunch and gather, as this provides an ideal opportunity for spontaneous interaction and discussion. These areas should also have their Dean offices included or nearby so that Deans could be in close proximity to collaborate, plan, coach, and provide other necessary support.

### Design Response

Collaboration areas are integrated into the grade-level academic schools (neighborhoods).





## **H. LUNCH PROGRAM AND STUDENT DINING**

### **Lunch Program**

Durfee High School has its own full-service kitchen that provides breakfast and lunch daily for the students. We currently service all the students in three lunch periods which, because of the design of the kitchen, provides a challenge for service time. In fiscal year 2015, we averaged approximately 1,800 lunches and 500 breakfasts daily. We have nine serving stations and an “a la carte” station that was built six years ago in the front side area of the cafeteria/auditorium.

We have replaced or repaired many of the major pieces of equipment in the kitchen, but many others are approaching their life limits. We also share our refrigeration and freezer space with the District, thereby making storage space extremely limited.

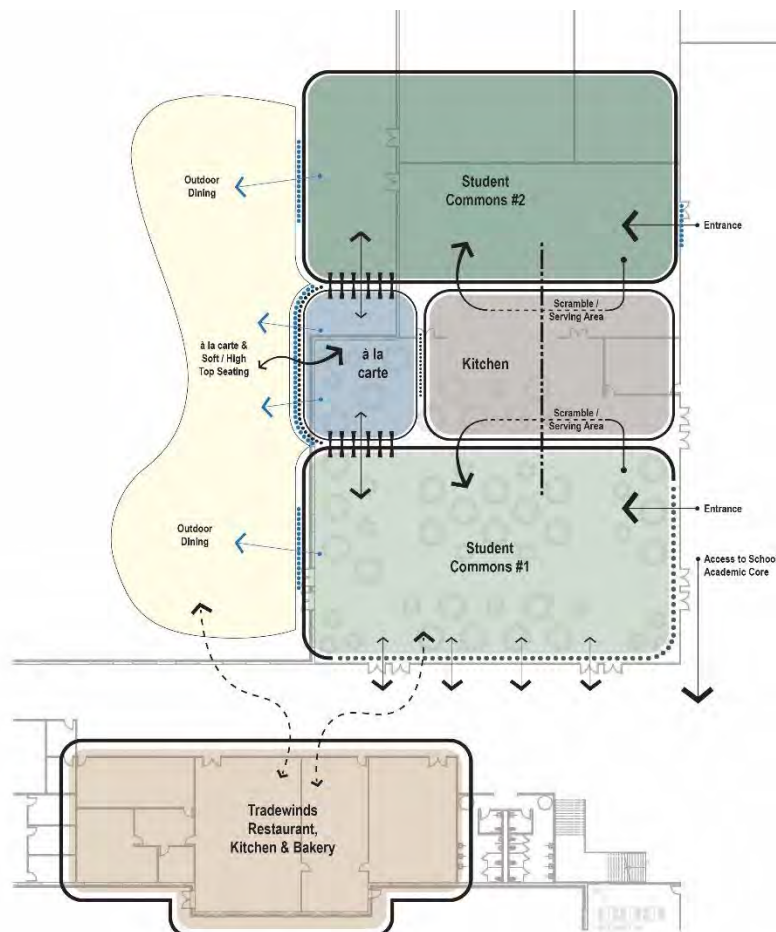
The staff and administration strongly believe that social skills and the need to communicate outside of the project/instructional environment are key elements in promoting positive student

development. Students must have the opportunity to socialize with their peers in a professional manner without being restricted to a single contiguous (traditional) cafeteria-style space. The current building includes a single large cafeteria and is not conducive to student socialization. The staff and administration feel that the student dining experience should be more flexible and that indoor/outdoor boundaries of the dining experience should be explored. The student dining area should also have adjacency with the student restaurant and student bakery to increase the variety of dining experiences. Although student supervision will continue to be a critical component of a well-designed dining space, allowing the dining experience to flow into an adjacent lobby area or to an outdoor patio should be considered as part of the planning effort. The student dining area can also play a significant role in parent and community interaction within the school by providing flexible space which supports presentations, programs, and events. It can serve as one of the

primary social hubs of not only the school, but also the entire Fall River community. The dining space should be located in close proximity to a primary or secondary school entry point in order to facilitate this community involvement. There is also a strong interest in smaller student-run café stands located throughout the building, as this could improve student socialization and the overall school environment while simultaneously offering multiple opportunities for the Culinary, Marketing, and Visual Communications programs.

### Design Response

See diagrams below identifying the location and organization of dining and related spaces.



## **I. TECHNOLOGY INSTRUCTION POLICIES AND PROGRAM REQUIREMENTS**

### **Existing Educational Technology**

Currently, Durfee has a sufficient network infrastructure and wireless footprint covering the majority of the building to support educational technology initiatives. The building was completely updated in 2008 via E-RATE project money, and a smaller E-RATE project is underway this year to replace core switches and wireless access points to modernize the school as we move toward the new building which is several years away.

A typical classroom contains a teacher computer, projector, and (in most) a document camera. There are 15 full-size labs located throughout the building, and each department has a Chromebook cart of 20-30 devices which are available for teacher sign-out. The District manages these devices centrally via our technology support center which remotely pushes out updates to machines after hours. The school currently encourages BYOT/BYOD to fill in any other gaps. Educational technology usage varies from room to room at the high school, with the ultimate goal of the District being for staff and student to incorporate some form of blended/personalized learning each day as an instructional strategy. One full-time technology integration specialist is employed at the high school and is responsible for providing staff with any educational technology related training and professional development. In addition to the full-time tech integration specialist teacher, the District Tech Support Center occupies space at Durfee and its full staff of both data and fixit staff are available to assist Durfee as needed. As a District, all account and user management are done systematically and automatically. A ticketing system is used to triage issues and assign to the appropriate person in the tech team. Equipment is routinely checked and, during vacations and summer, overhauls and replacements are done as warranted.

The Fall River Public Schools has a current district technology plan (2017-2021) which outlines the criteria for implementing and integrating educational technology. Although not specifically stated in the plan, the district does have an accepted goal of 1:1 technology at Durfee High School.

### **Technology Infrastructure**

Durfee serves as the head-end of our District fiber private network in which 17 1G connections connect our buildings and share 2-4 GB of bandwidth. All switches are either 10/100 or 1G to the desktop and wireless is b/g/n. As a district, we have standardized on Cisco-Meraki network and wireless equipment and have received training on such and is preferred for new building. One drawback with the design of the building was that network closets were located inefficiently throughout the building, some being in classrooms and other in occupied offices causing

distractions to the teaching and learning process. All classrooms have a VoIP telephone with voicemail.

### Printing Needs

Durfee has removed most smaller printers, instead forcing printing to more efficient and cost effective centralized copy machines located throughout the building. Each lab does have a printer that offices can use as well.

### Cloud Technology

All staff and students have a "Google Apps for Education" account, which includes Google Drive for all Cloud storage needs.

## **Proposed Educational Objectives**

The District has made great strides in providing technology access to students over the past few years. The high school project represents an opportunity to increase end user's devices and professional development around blended/personal learning. The proposed design will provide multiple layers for using technology as an instructional tool. Educational technology should be integrated seamlessly throughout the campus, both in the building as well as exterior teaching spaces. Campus-wide wireless access is key to creating a flexible environment where students can complete assignments without the confines or boundaries of fixed computer labs. Labs which are dedicated for specific classroom purposes (i.e., science labs, video production, etc.) will serve specific instructional roles and shall be distributed in key locations throughout the new building.

## **Media Center**

The library of the future needs to be a place for teams to work together; teachers and students, formally and informally. This space should be a "learning commons," encouraging a wider scope of use by more school personnel for tutoring, instructional support services, and collaboration. The library/media center must be a creation space giving all students access to workstations with fast processing speed, software for video editing, music production, voice recordings, computer programming, and multi-media production. With a robust wireless network infrastructure, this space must possess ample computer stations, mobile devices, and outlets to recharge mobile technologies. The library/media center needs to expand its presentation spaces.

This space also needs to include an Assessment Center to accommodate the school's assessment materials as mandated per DESE. The assessment center will also house the Assessment Coordinator who oversees state assessments and supports implementation and administration of the testing. The teaching space used by the school's information and research expert, the school librarian, remains vital. This space needs to be prominently placed for one-on-one assistance.

Given that many of our students do not have access to printers and other technology at home, the media center should also include a student-friendly copy/printing station where students have easy access to print assignments.

Our current library/media center is a very active space and there are a number of computers for student use. However, the structure itself is very dysfunctional in that four classrooms are cut into this area due to lack of available space in the English wing of the building. Moving forward, it is critical that this space be designed as a flexible learning center that is welcoming and inviting for staff, students, and parents.

The Durfee High School budget funding for 2017-18 includes restoring a library/media specialist. This position will coordinate usage of six computer labs, deployment of Chromebook carts, and work with teachers and students conducting research.

### **Media Distribution and Retrieval**

In addition to the library/media center, which should serve as the hub for media distribution and resource retrieval, the entire school environment should support media distribution as students are retrieving data resources constantly. This need for distribution of media resources is not intended to imply that books and other physical items that might appear in a traditional library would be distributed throughout the building in "satellite libraries". Instead, the objective is to recognize that as media moves from hardcopy to electronic at a very rapid pace, the need for books will become much more limited and the availability of electronic resources throughout the school environment will be the key to appropriate media distribution. Research needs to be possible throughout the building and supported through a dynamic, wireless environment. Fiber connectivity for video broadcasting should be possible throughout the school building with individual feeds from the classrooms and multiple feeds originating from various locations in the auditorium and gym in order to provide multiple camera angles for productions being done. Additionally, a multiple channel fiber line should be installed out to the football field press box to allow for live broadcasts of football games and events held on the football field.

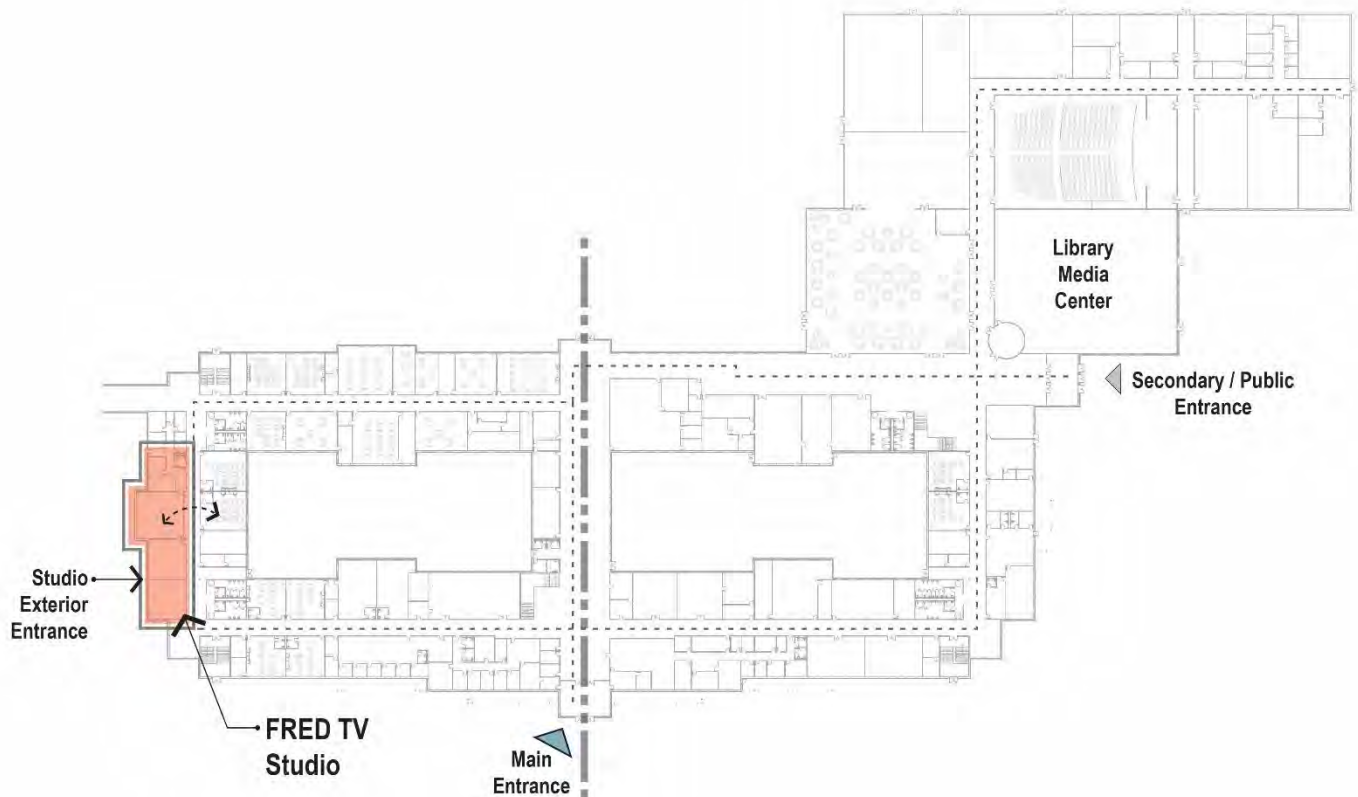
### **Video Broadcasting TV Studio**

Durfee High School's Broadcast Journalism program (FREDTV) produces a number of programs for cablecasting on Comcast Channel 9 as part of the Educational Access Programming for the City. Additionally, we operate the Government Access Channel (FRGTV) Channel 18 out of our facilities. Our students' production of the morning announcements, a weekly news program, sports programming, and District-wide coverage of educational achievements round out the 15 hours of programming per week. Our students also work on community service, staffing the various government channel productions, city council meetings, etc.

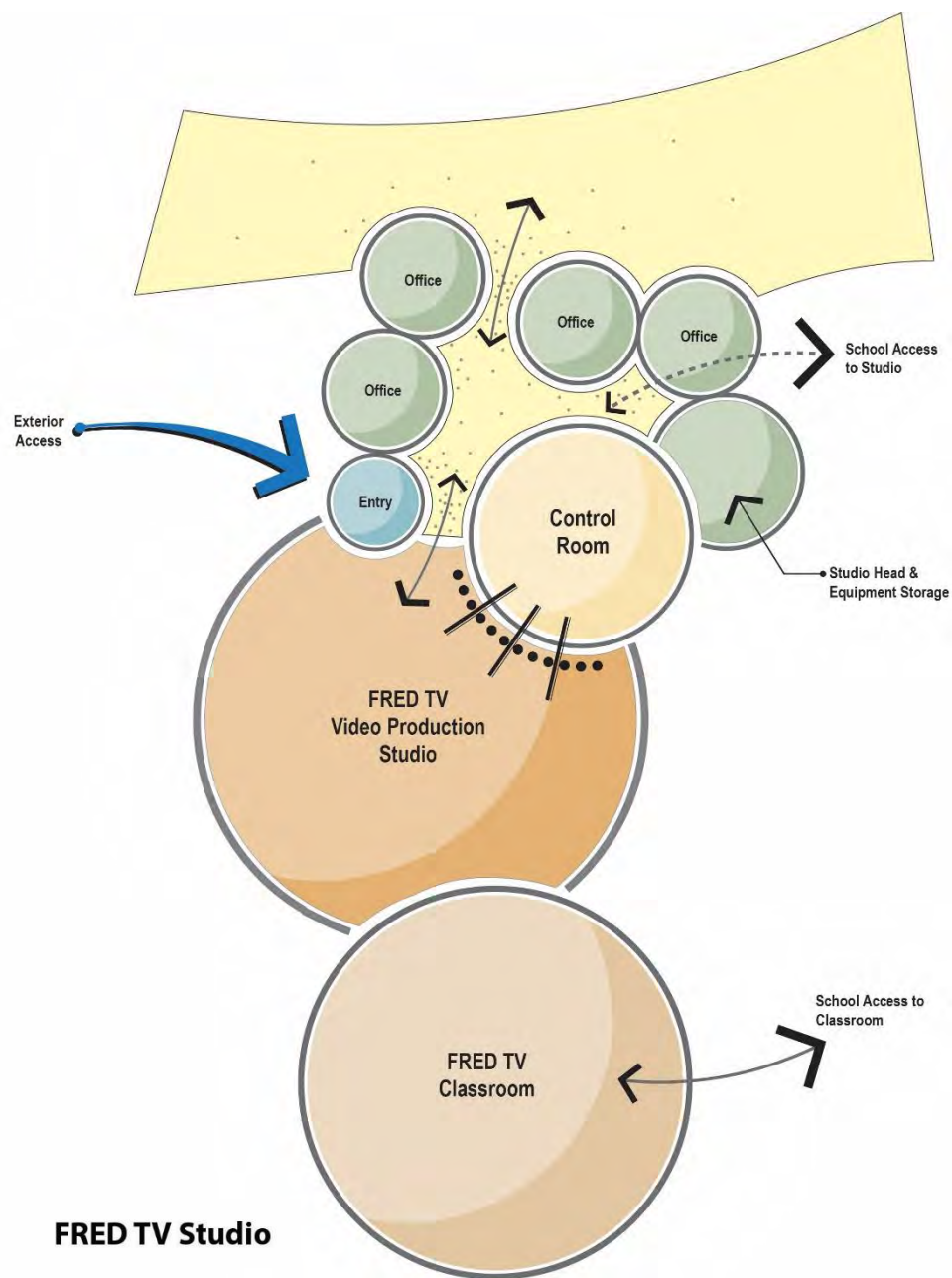
Regional Emmy awards, Safe Driving and Manufacturing awards, Comcast Scholarships, and other numerous awards have been bestowed on our students. Our graduates are working across the industry for Disney, NBC, Discovery, Golf Channel, Hearst News, and our program has been a

model for other schools across the state. In the years since the building of Durfee High School in 1979, the program has outgrown its space on the second floor of the library. In order to provide the students an adequate educational space, a ground floor accessible studio with control room, Head End room, editing suites, and classroom computer lab /viewing room would be necessary for multimedia and broadcast journalism instruction. Four offices will also be needed to accommodate our production staff.

Design Response for Media Center / Media Retrieval / TV Studio:







## **J./K. PERFORMING ARTS & VISUAL ARTS**

### **BMC Durfee High School Fine & Performing Arts**

Durfee High School prides itself on the diversity of culture represented in the over two thousand students that walk its halls every day. The Fine and Performing Arts *celebrate* that cultural diversity via the arts, both visual and performing. Within the fine arts, we have courses that range from art foundation to Advanced Placement art, including design, ceramics, non-traditional sculpture, and painting. In the performance arts, students participate in acting courses, music theory, piano, guitar, band, chorus, orchestra, and music technology (mixing and composing music digitally). BMC Durfee graduates must take at least one arts course in order to graduate.\* Our students compete in a range of interscholastic adjudication festivals, drama and theater competitions and

art contests, and have achieved high standards of work in all areas due to the programming, curriculum, and faculty that we are proud to have at DHS.

One of the key community aspects we pride ourselves on is the City-wide events that we hold at Durfee. Annually, we invite all art teachers from the elementary and middle schools to bring student work to display in the Annual K-12 Spring ARTS EXPO. This event is huge, held in the Nagle Auditorium foyer, as well as throughout the arts wing. Over 10,000 pieces of student work are displayed for the community to view as we celebrate student accomplishment in the fine arts from each of our 17 schools. Student band and orchestra ensembles also perform throughout the evening. In addition to this event, we host the All City Band and All City Orchestra Concerts for the District. These wonderful events bring together students from grades five to twelve as they play in one ensemble for parents and the Fall River Community. The BMC Durfee Musical (with a live pit), held in December of each year involves students playing, acting, and singing, as well as the technical theater students who design and build sets for each show. Next year, our new design course students will be helping with costuming for this event. In the spring, theater students perform a piece for the Fall River community, and both of these events are always well attended by students, FRPS faculty, and community members. The spring and winter concerts are both herculean efforts of preparation, both on the part of the teachers and the students as they perform within their ensemble's pieces chosen at a high level of difficulty. This year, we are proud to report that thousands of visitors sat in our auditorium supporting the efforts of our students and faculty, and this is a tribute to the hard work, expertise, and effort that they put in every day in class and after school.

The Nagle Auditorium is also where the year begins for all Fall River Public School employees. The Superintendent of Schools addresses the entire faculty and staff at an annual welcoming meeting and sends schools off to begin the year on a motivating and inspirational note as we come together to acknowledge our successes and the work ahead as a District! Our wish for the future would be to have an auditorium that is located in close proximity to not only the music and performing arts classrooms, but also to the cafeteria/culinary area so that we can hold these aforementioned events alongside a refreshments/food venue, therefore creating a sense of community through a "dinner and a show" or "coffee and a meeting" type of venue. For the City of Fall River, Durfee's auditorium space is a central location used by City officials (Mayor, Council, School Committee, etc.) as well as outside organizations for rental, thereby creating a small amount of revenue for the District.

In each of the two arts clusters (fine arts and performing), we have four teachers who teach a plethora of core courses and electives for students. These courses include, but may not be limited to:

- Performing Arts: Acting I, II, III, Dance, Musical Theater, Technical Theater, Band, Percussion, Orchestra, Chorus, Music and Audio Production, Music Theory, Piano and Guitar
- Fine Arts: Art I, II, III, Portfolio Prep, AP Art 2/3 D, Ceramics I, II, III, Sculpture I, II and Design.



Our course selection in the Fine and Performing Arts includes a wide range of options for art, music, and theater. Below is a table of each and the number of students enrolled in a year in these courses:

<b>Performing Arts Courses</b>	<b>#</b>
Dance I	60
Acting I	73
Acting II	10
Acting III/Performance Techniques	10
Honors Acting IV	8
Musical Theatre	21
Technical Theatre	42
Band 9/10	20
Band 11/12	21
Honors Band	15
Introduction to Drum/Percussion	30
Advanced Drum/Percussion	10
Orchestra / String Orchestra 9/10	21
Orchestra/ String Orchestra 11/12	13
Honors Orchestra	9
Mixed Chorus	50
Honors Chorus	10
Introduction to Music and Audio Production	86
Advanced Music and Audio Production	15
AP Music Theory	N/A
Introduction to Piano Lab & Music Theory	130
Advanced Piano Lab & Music Theory	25
Introduction to Guitar/ Songwriting	60
Advanced Guitar/Songwriting	10

<b>Fine Arts Courses</b>	<b>#</b>
Art 1	354
Art Foundation	N/A
Art II	66
Honors Art III	25

Honors Art Portfolio Prep	5
Ceramics I	200
Honors Ceramics II	26
Honors Ceramics III	11
Sculpture I	162
Advanced Sculpture II	12
Design	18
AP Studio Art 2-D Design	8
AP Studio Art 3-D Design	3

**Total Students Served: 2,926**

For the new building, our goal is to provide the students with the spaces that support the above listed curricula and, in addition, have a black box theater and dance studio (dance studio would be shared with Physical Education Department). Currently, these classes are run in classrooms that are not designed to support the technology nor the specific needs of the class. As the building was designed with "open classrooms" for the arts in the 1970s, these retro-fitted spaces do not have sufficient outlets for technology nor the footprint that is most beneficial to learning in the arts. The design class needs space for machinery, dress forms, and tables. The ceramics room needs a separate space for the kiln that is outfitted with sufficient ventilation and adequate room for storage of pieces in progress. The 2D drawing and painting room needs easel space, sinks, and table space with options for both artificial and natural lighting. The sculpture room needs space for research and design as well as open space for the construction of small installation work. In the music wing, there exists two performance group spaces (we have four major groups - Band, Orchestra, Chorus and Theater) with practice rooms, but the theater group works in a classroom that is not designed for this type of learning. Although our initial discussions involved the incorporation of a black box theater, it appears that this dedicated space will likely not be included within the new high school building program and may ultimately be provided within other City-controlled facilities. Band and Chorus currently are scheduled so that they are not offered at the same time so that the practice room can be shared by the two ensembles. The Orchestra practice room is shared with guitar but there is not sufficient space for storage of instruments so guitars are currently kept in a room across the hall. There is also currently no designated classroom for the technical theater class which demands a large multi-purpose space for building sets, painting, and prop making. For the music and audio technology classes, ideally we would like to have a classroom space that is modeled on what students would see in a post-secondary setting, with the optimal technology necessary for this rigorous work. Our current MIDI Lab is home to hundreds of students interested in pursuing an education in music and audio technology. This course teaches students how to mix and loop audio to create musical pieces for either theater, film, or audio recording. This classroom setup consists of a teacher workstation

with projector and 15 student workstations with desktop computers and MIDI keyboards for digital composition. The Piano Lab is used for not only introduction to piano and music theory, but also for Advanced Placement Music Theory. This classroom's set up consists of a teacher workstation with projector, and 22 electric piano keyboards with headphones for students to practice and master the learning objective. In addition to the keyboard stations, students need desk space and access to computers for writing (AP Music Theory). The incorporation and advancement of these two spaces will be critical to future program offerings.

In addition to the classroom work spaces, it is our desire to have exposition spaces throughout the building for displaying student work. Glass cases for both 2D and 3D work would allow us to celebrate student accomplishment through the arts and also promote our programs for all students as we display examples in common spaces throughout the building. We would love to have a gallery space in a central location for the community to see the great work that students do at Durfee. In addition, the performing arts team would love to share video from concerts, musicals, theater productions, etc. on flat screens throughout the common spaces in the building.

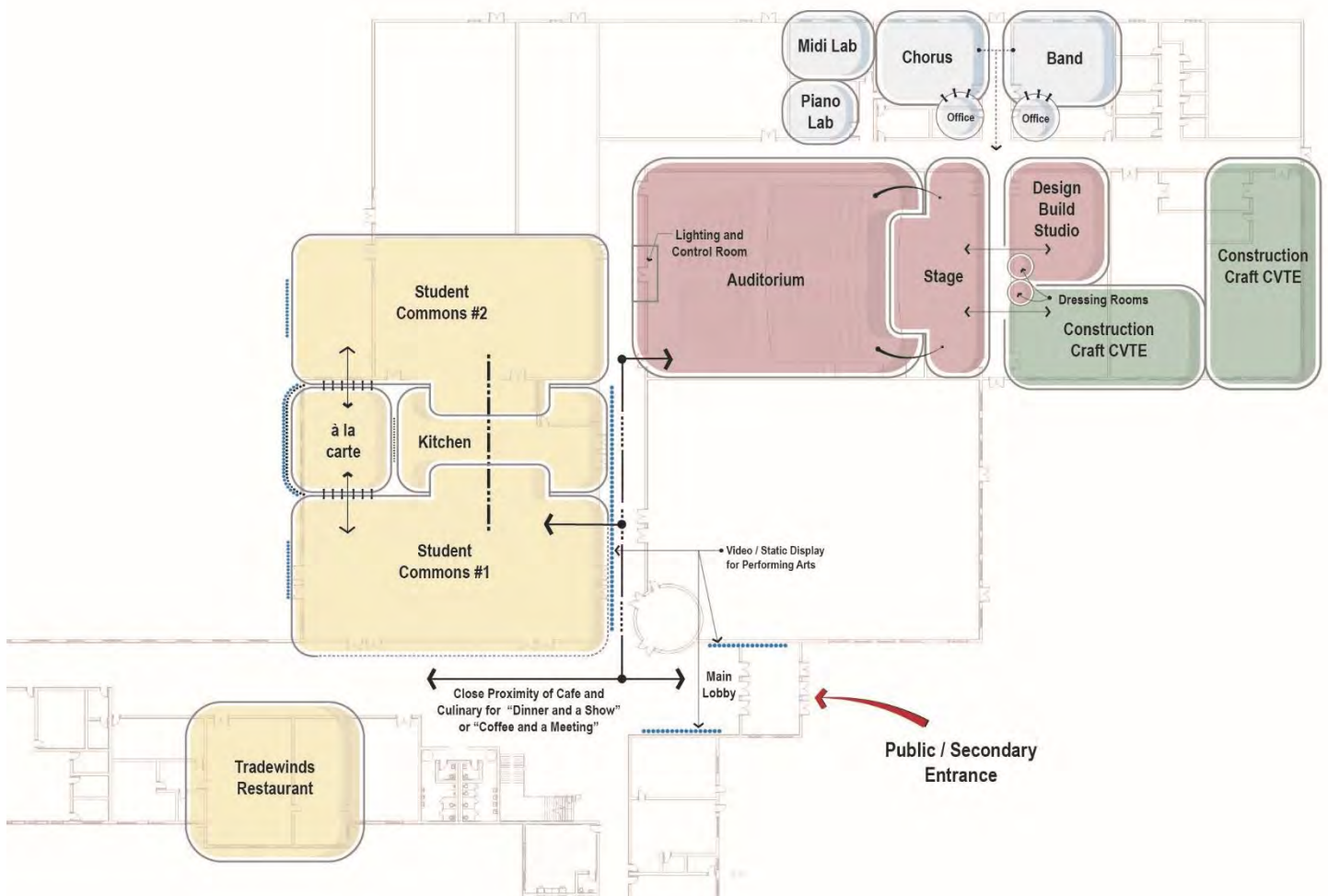
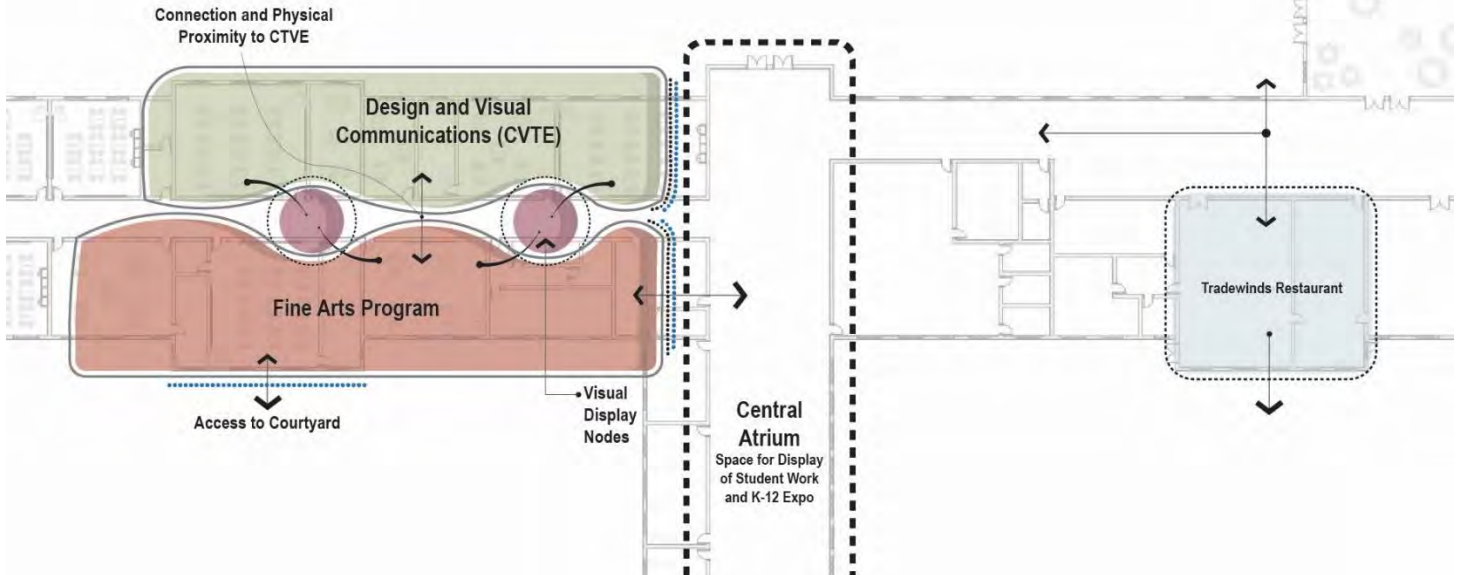
With the expanding use of technology in the music and art world, it is very important that we have state-of-the-art technology in each of the classroom spaces, including projectors, laptops for research, and a 3-D printer for the sculpture class. In addition, the music and audio technology classroom should be modeled on current post-secondary standards for soft/hardware outfitting. Technology in the auditorium should also be modeled on industry standards for a large space such as this. Lighting, sound, and projection are areas to consider when thinking about outfitting this important performance space.

A consistent need in future planning is similar to other departments in an increase in space, but more importantly flexible space. Our course requests in the Fine and Performing Arts department are at an all-time high. A new school facility could potentially bring the arts to the forefront of what we do and a state-of-the-art facility is necessary for our students to be prepared for the competitive world that lies ahead in the realm of the arts. We would also like to incorporate the concept of STEAM integration between the CVTE department and our own. Currently, our facility makes this goal difficult to achieve due to CVTE classrooms location in relation to ours.

The city of Fall River is a community of 88,700 residents. The Fine and Performing Arts program is a vital part of the BMC Durfee High School and community. The proposed Fine and Performing Arts spaces will allow access for our students to take part in innovative programming, both current and new (music, art, dance). In addition, there are currently no other schools in Fall River (including elementary and middle schools) that have a performing arts center large enough to potentially house an appropriate size crowd as well as necessary lighting and sound systems that we currently assume responsibility for. We look forward to designing and creating a wing that supports the learning of all of our fine and performing arts students, as well as the community of Fall River.

\*1 Arts Course Unit is required for high school graduation in accordance with Mass CORE Requirements

## Design Response for Visual and Performing Arts



## **L. PHYSICAL EDUCATION AND HEALTH**

Durfee High School offers students a highly-enrolled Health and Physical Education Program with numerous and varying opportunities for fitness. The overall goal of the program is to ensure that every year of high school instruction for all students provides the knowledge and skills to allow students to value and apply physical activity and its benefits for a lifetime. Through active participation in movement and sport, students will foster an appreciation for personal fitness and other social skills vital to becoming healthy, productive members of the community. The Durfee curriculum is designed to engage and help inspire students to pursue a lifetime of fitness-related activities and healthy decisions. The variety of classes offered for students in both disciplines has been provided to showcase those offerings.

Durfee High School students are required to enroll in and pass four Physical Education courses and two Health courses to graduate. Students are mandated to take a Physical Education class each year of their high school careers, resulting in an extremely high level of participation across all course offerings which exceeds most Districts. These graduation requirements, combined with the use of H&PE teaching stations for multiple other programs such as special education and ROTC, results in a very high utilization rate for over 12 teaching stations including the gymnasium space, pool, weight rooms, wrestling room, dance studio (wellness center), and classrooms that are being used continually throughout the school day for instruction. In fact, the current number of teaching stations is inadequate for the high number of students and the desired course offerings. The current facility severely impacts the quality and variety of program study that can be offered.

The included tables identify the vast array of course offerings at Durfee High School and the high level of participation from students. Durfee High School has five class periods, each period is 72 minutes long, and each teacher instructs three class periods per day. The Physical Education classes are listed on the table by each period block, the teacher is identified by their initials, and the number of students assigned to each individual teacher are listed. The total number of students is also summarized. The classes that are listed in each individual block are taught consecutively during the listed time period. The table has two columns, one column is labeled as **Red** and the other column as **Black**. Durfee High School has a school schedule that has a **Red** Day/ **Black** Day schedule. An example of this schedule is if Monday is a Red day then Tuesday is a Black day and Wednesday would be a Red day, it changes each day between Red and Black. Students' schedules would show Physical Education and Health classes scheduled on those alternate Red/Black day schedules. As an example, if a student has Health period 1 on Red Tuesday, they would not have Health period 1 on Black Wednesday but would have Health period 1 on Red Thursday, so that Health class would be period 1 only on Red days and on the Black

Days period 1 the student would have another class scheduled. **Health Classes** are primarily taught in the classrooms but the elective classes also have one day designated to be in a gymnasium teaching station. The Physical Education classes are listed in **blue** within the table and the student totals for the days they are in the field house are also shown in blue. The classes and student numbers that have a \*star marked before them indicate that the location for those classes/students is a teaching station in the gymnasium, any other locations will be specifically named.

Physical Education	<b>Monday to Friday Red Days</b>		<b>Monday to Friday Black Days</b>
<b>Per 1</b>  Total Students <b>*96</b> <b>*125 on Thurs</b> <b>*138 on Friday</b>	<b>*PE-AC-31 students</b> <b>*PE-KD-33 students</b> <b>*PE-AS-32 students</b> <b>Thursdays-*Stress-GG-29 students</b> <b>Fridays-*Study of D-CS-29 students</b> <b>Fridays-*ROTC-13 students</b>	<b>Per 1</b>  Total Students <b>*159</b> <b>*198 on Friday</b>	<b>*PE-BK- 32 students</b> <b>*PE-AC- 32 students</b> <b>*PE-KD- 32 students</b> <b>*PE-JG -32students</b> <b>*PE-AS- 31 students</b> <b>Fridays-*Stress-29 students</b> <b>Fridays-*ROTC-10 students</b>
<b>Per 2</b>  Total Students <b>*11</b>	<b>Prep-Common Plan Time</b> <b>*APE-JP-11 students</b>	<b>Per 2</b>  Total Students <b>*79</b> <b>*89 on Friday</b>	<b>*PE-JC-32 students</b> <b>*PE-JG-32 students</b> <b>*APE-JP-15 students</b> <b>Fridays-*ROTC-10 students</b>
<b>Per 3</b>  Total Students <b>*145</b>	<b>*PE-AS-28 students</b> <b>*PE-AC-32 students</b> <b>*PE-JC-24 students</b> <b>*PE-JG-22 students</b>	<b>Per 3</b>  Total Students <b>*79</b>	<b>*PE-AS-32 students</b> <b>*PE-JC-32 students</b> <b>*APE-JP-15 students</b> <b>Dance-KV-31 students-Studio</b>

<b>20-pool</b> <b>*171 on Thurs</b> <b>*157 on Friday</b>	<b>*Fitness-CP-24 students</b> <b>*APE-JP-15 students</b> <b>Aqua-BK-20 students-Pool</b> <b>Thursdays -*Nutrition-KD-26 student</b> <b>Fridays-*ROTC-12 students</b>	<b>31 studio</b> <b>31 pool</b> <b>*149 on Fridays</b>	<b>Lifeguarding-BK-11 students-Pool</b> <b>Swim-CP-20 students-Pool</b> <b>Fridays-*Stress-29 students</b> <b>Fridays-*Study of D-CS-29 students</b> <b>Fridays-*ROTC-12 students</b>
<b>Per 4</b>  Total Students <b>* 136</b> <b>*160 on Thurs</b> <b>*146 on Friday</b>	<b>*PE-JC-32 students</b> <b>*PE-JG-32 students</b> <b>*PE-BK-31 students</b> <b>*PE-CP-30 students</b> <b>*APE-JP-11 students</b> <b>Thursdays-*Nutrition-KD-24 students</b> <b>Fridays-*ROTC-10 students</b>	<b>Per 4</b>  Total Students <b>*170</b> <b>11 pool</b> <b>*183 on Friday</b>	<b>*PE-AS-31 students</b> <b>*PE-AC-32 students</b> <b>*PE-KD-32 students</b> <b>*PE-JG-31 students</b> <b>*PE-CP-32 students</b> <b>*APE-JP-12 students</b> <b>Lifeguarding-BK-11 students-Pool</b> <b>Fridays-*ROTC-13 students</b>
<b>Per 5</b>  Total Students <b>*121</b> <b>12-pool</b> <b>* 147 on Wed</b>	<b>*PE-AS-32 students</b> <b>*PE-JC-31 students</b> <b>*PE-JG-28 students</b> <b>*PE-CP-30 students</b> <b>Lifeguarding-BK-Pool</b> <b>Wednesday-S of D-AS-26 students</b>	<b>Per 5</b>  Total Students <b>*96</b>	<b>*PE-CP-32 students</b> <b>*PE-AC-32 students</b> <b>*PE-JC-32 students</b>

The above table shows that the number of students scheduled for each physical education class grossly exceeds the current available teaching and learning stations. This results in an extremely large number of students within each class and restricts our ability to offer creative and engaging physical activities. Many of the programs and courses have been eliminated or altered to accommodate the overcrowding. Unfortunately, this often means that teachers focus more on crowd control and minimizing movement than they do on teaching effective physical skills.

The table also identifies teaching spaces within the gymnasium area that are shared for three periods a day with our special education program **Adapted PE-(APE)**. The APE classes require extra space for movement as some students use walkers or wheelchairs. Many students are physically fragile or have sensory disabilities, so combining with another group in a space would be very unsafe and uncomfortable for the students. For this reason, the class requires a separate larger area for instruction for three periods per day. The other program that shares the Physical Education space is the **Reserve Officer Training Corps-(ROTC) program**. The Cadets have their physical activity classes every Friday for periods 1 to 4 and the size of the group can vary from 8 to 15 students per class. They require their own space with their leading officer teaching physical activity. Twice a year they take the gymnasium for the entire day for exercise ceremonies and all Physical Education classes are moved to the library, cafeteria, or outdoors.

Although the **Career and Technical Education (CTVE)** students who utilize the gym for physical education are not listed in the table, these students attend Physical Education classes every other week for one day. This adds approximately 7 to 12 additional students to the class rosters. These students are generally unable to fit Physical Education into their schedules for Junior and Senior years so they are scheduled to come every other week for a term. The numbers fluctuate and are not always consistent in teacher assignments or terms attended, therefore the students are not counted in the official numbers within the table. Another department that is not fully recognized within the table is **Special Education (SPED)**. Special Education offers several programs where students earn privileges throughout the day. Some students choose going to a gymnasium teaching station as their reward, and are allowed to participate in physical education. They join their paraprofessional in finding a teaching station within the gymnasium. These students generally play basketball or some other movement-driven games/activities. This requires teachers finding or sharing spaces without advance notice. Unfortunately, depending on the paraprofessional that accompanies the students, the teachers can find themselves organizing or supervising the students. This results in numerous other programs and individuals (beyond those listed in the above schedule) utilizing and sharing the gymnasium teaching stations on a regular basis. The space and needs of these various school programs has a significant impact on the teacher's ability to consistently provide effective and safe Physical Education instruction.

There are obvious student safety concerns with the current structure due to the sheer volume of students in the gymnasium during each class period. The current gymnasium has the ability to provide **4 separate teaching stations** for teaching physical education classes of about 20 to 28 students. It is possible to further divide the gymnasium into **6 individual** small teaching spaces for 15 to about 20 students. This division of 6 individual spaces is not appropriate when there are 4 to 6 classes per period assigned to the gymnasium with 30 to 32 students per each individual



class. If the gymnasium is divided into 4 spaces, it is still not appropriate for the current Physical Education classes due to large class sizes, but more specifically the lack of space to accommodate more than 4 smaller classes of 25 students.

The current configuration of the Durfee High School is not adequate to meet the needs of the current school population and the request being made is for more teaching and learning spaces through reorganization and/or additional space, with an understanding that we will likely be reorganizing the existing space for better use and efficiency. Based on our analysis of current offerings and available space, we believe the table demonstrates that there is a need for an **additional 2 teaching stations which could potentially be subdivided to serve as 4 individual teaching and learning classrooms**. This is needed to accommodate the current larger class sizes of 30 to 32 and to provide spaces for 4 to 8 large classrooms and other programs such as APE safely in the gymnasium.

An adequate facility with the appropriate teaching spaces would afford the department the opportunity to offer a Physical Education/Health program that meets the needs of our entire population – something we have never been able to accomplish due to the space constraints. Currently some of our Health Classes offer students one day every-other-week to participate in physical activities in the gymnasium and this activity is counted toward their PE credit. This is done due to lack of space which again limits the number of course offerings. Durfee teachers have had to be creative in order to find available space within the spatial constraints of the existing facility. This has been extremely difficult as program enrollment and offerings increase simultaneously. Though the PE and Health Departments offer a rigorous curriculum, a re-organized or potentially expanded facility with more teaching spaces would allow for classes to be taught every day each semester in lieu of being forced to utilize the current black and red day schedule that is required in order to accommodate all of the classes.

The gymnasium not only lacks the desired total space, but also suffers from poor functionality due to the ineffective curtain dividers that offer no privacy or sound blocking ability. Voices and noises boom through the open space and the noise levels combined with poor acoustics make it difficult for students to hear and understand their teacher's instructions. The mechanically operated curtains, basketball hoops, and bleachers are no longer serviceable so the motors and systems are constantly inoperable with a very high rate of constant failure. Additionally, the heating and ventilation system is extremely ineffective at maintaining reasonable temperatures during the winter and becomes intolerably warm during the spring and summer. The flooring in the gymnasium facility is currently rubber, which compromises staff ability to teach ball skills and other physical education activities. The surface is very unforgiving and should be modified or replaced.

The layout of the facility has numerous entry/exit points which are difficult to monitor and present many safety concerns. Additionally, a main entrance/exit from the rear parking lot results in numerous students utilizing the gymnasium as a thoroughfare to their destination, causing constant disruption to instructional lessons. The facility includes a small room with a low ceiling adjacent to the main gymnasium. This room is too small for a teaching station and becomes a partial solution for the wrestling team. However, its small size and lack of storage compromises this program.

An additional room located adjacent to the main gymnasium previously held our Project Adventure indoor rope course with climbing wall, bridge, and platforms. However, in the past few years, it had to be dismantled due to the building inspector's safety concerns. The wall it was mounted to developed cracks and was deemed unusable and unsafe for any further climbing use. This space has now been converted into a small weight room. Due to the lack of teaching spaces, teachers will often instruct their students in a non-conventional space filled with exercise equipment that is not part of their program. This makes the space seem even more overcrowded and limits student options and participation.

The challenging layout of the existing facility continues upstairs where there is a small studio that is used for Dance and Yoga. Due to lack of space, we can only offer one Dance class at a time. This recently led to over 300 students not having the opportunity to take dance classes. The heating system upstairs is ineffective, including this small studio and another upstairs wellness room with cardiovascular machines. The girls locker room is located on the second floor, and is poorly organized such that the boys have to walk into the back hallway of the girls locker room in order to access the studio and the weight room.

The girls locker room is poorly designed and does not provide appropriate sightlines for visual observation. Its maze-like layout does not allow easy access for students, and teachers are unable to monitor students in many areas. Students are caught hiding among the maze of changing areas on a daily basis. The locker room has approximately five exit and entrance points which makes supervision of so many students very difficult, as none of the doors have operating lock hardware. The amenities within the locker room are original, including outdated plumbing facilities. The boys locker room is located below the girls locker room and resembles the girls locker room in both challenging layout and poor physical condition. The lack of office spaces for both male and female teachers is also an issue with many professionals sharing cramped quarters.

FRPS is very appreciative to have had the opportunity to offer students access to an aquatics facility for many decades. The result has been multiple generations of students experiencing a diverse array of aquatic program offerings that provide outstanding health benefits, as swimming

conditions the whole body by improving cardiovascular, muscle strength, endurance, posture, and flexibility. There is strong support for the aquatics program, as multiple generations have seen and experienced its benefits for life. The pool also has many secondary benefits such as allowing students to take a CPR/First Aid Lifeguarding Class that offers students their certification as lifeguards. Throughout the year students participate in before school lane swimming for exercise, and having the pool allows our large swim and dive teams a facility to practice without having to leave the school campus. Unfortunately, the condition of the pool has deteriorated over the past four decades and it is in need of a renovation/restoration. An upgraded or a new pool would allow the school program to continue to expand aquatics offerings/programs. It would also allow for more community use and continue to build on the current swim and dive programs.

Our outdoor physical education facilities require some renovation. Baseball and softball fields have poor drainage, thereby limiting the available play time for classes and teams. They also require some surface restoration, as they are dusty and lack a viable layer of loam and grass. We have two turf fields which receive an enormous amount of school and community use and will need to be resurfaced soon. The existing tennis courts also receive an enormous amount of school and community use and will need to be renovated and replaced as part of our proposed school project. Renovation and/or replacement of all outdoor physical education facilities will restore the appropriate amenities and allow more learning and physical education opportunities for students.

Currently, Health and PE classrooms are located a significant distance from the physical education learning spaces. The nearest classrooms require significant travel time and are on the second floor, which makes it almost impossible for the educators who teach both physical education and health classes to beat the large student population in moving between health classes and physical education and vice versa. This design and lack of nearby classroom teaching spaces does not allow for collaboration or unity within the department. To be a true wellness program, the need for classroom teaching spaces in close proximity is critical. Currently, when PE classes such as life management and CPR need a classroom space, they utilize the weight room in order to avoid the required travel distance to an appropriate classroom. The current classrooms occupied by the Health teachers do not have full height walls which reach the ceiling and some of the walls do not extend the full length of the room, creating noise and privacy challenges. It is extremely challenging to teach when there is no acoustical separation between two classrooms which are being taught simultaneously. Additionally, one of the classrooms does not have a door and is wide open to the students passing through the back hallway. This classroom also lacks windows/or natural sunlight. All the Health rooms suffer from a lack of proper insulation and are quite cold in the winter. Additionally, a heavy rain or snowfall often results in puddles forming in the classrooms. Health classrooms also lack the necessary technology, as many of the rooms are not

outfitted with ceiling projectors and the teachers must rely on the chance of relocating their classes by securing a booking in the computer lab to have students utilize technology incorporated into their lesson plan. A table has been provided to show the number of health sections and the usage of the classrooms that are needed for approximately 80% of the day. Unfortunately, due to lack of proper Health classrooms, some classes are held in rooms in the library or in small computer labs. Class sizes are high in many classes so the need for proper classrooms to be located near the field house is very important. The Health table is designed to show class sizes and the need for **6 Health classrooms** to accommodate the **6 Health Teachers'** larger classes and for effective instruction. **Rooms 261, 262, 263, 264, 270, IMC 6 are used for 3 to 4 teaching periods a day.**

Health	<b>Monday to Friday Red Days</b>		<b>Monday to Friday Black Days</b>
<b>Per 1</b> Total Students <u><b>147</b></u>	<b>Health 1 -KV-30                      Room</b> <b>263</b> <b>Health II -CC-30                      Room</b> <b>264</b> <b>Stress M-GG-29                      Room</b> <b>262</b> <b>Health II-MR-29                      Room</b> <b>270</b> <b>Study of Disease-CS-29              IMC 6</b>	<b>Per 1</b> Total Students <u><b>58</b></u>	<b>Health 1 -KV-29                      Room</b> <b>263</b> <b>Health II -CC-29                      Room</b> <b>264</b>
<b>Per 2</b> Total Students Prep	<b>Prep-Common Plan Time</b> <b>Use room 262 for planning</b>	<b>Per 2</b> Total Students <u><b>46</b></u>	<b>Nutrition -KD-30                      Room</b> <b>261</b> <b>Health I -CC-29                      Room</b> <b>264</b> <b>Health I-MR-13                      Room</b> <b>270</b>

<b>Per 3</b> Total Students <u>77</u>	<b>Health 1 -KV-18</b> <b>Room</b> <b>263</b> <b>Nutrition -KD-26</b> <b>Room</b> <b>261</b> <b>Health 1-GG-12</b> <b>Room</b> <b>262</b> <b>Life Management-CS-21</b> <b>IMC</b> <b>6</b>	<b>Per 3</b> Total Students <u>84</u>	<b>Health II-MR-26</b> <b>Room</b> <b>272</b> <b>Study of Disease-CS-29</b> <b>IMC</b> <b>6</b> <b>Health I -CC-29</b> <b>Room</b> <b>264</b>
<b>Per 4</b> Total Students <u>98</u>	<b>Health II-GG-23</b> <b>Room</b> <b>262</b> <b>Health I -CC-30</b> <b>Room</b> <b>264</b> <b>Nutrition-KD 24</b> <b>Room</b> <b>261</b> <b>Health II-MR-21</b> <b>Room</b> <b>270</b>	<b>Per 4</b> Total Students <u>51</u>	<b>Health I -CC-30</b> <b>Room</b> <b>264</b> <b>Health Issues-CS-21</b> <b>IMC 6</b>
<b>Per 5</b> Total Students <u>123</u>	<b>Health 1 -KV-20</b> <b>Room</b> <b>263</b> <b>Health I -CC-23</b> <b>Room</b> <b>264</b> <b>Health II-GG-29</b> <b>Room</b> <b>262</b> <b>Health II-MR-25</b> <b>Room</b> <b>270</b> <b>Study of Disease-AC-26</b> <b>IMC 6</b>	<b>Per 5</b> Total Students <u>68</u>	<b>Health 1 -KV-27</b> <b>Room</b> <b>263</b> <b>Health II-MR-13</b> <b>Room</b> <b>270</b> <b>Health II-CS-28</b> <b>IMC 6</b>

In addition to teaching classroom spaces, meeting spaces are needed for the Health and PE departments. Currently, if we want to meet with colleagues, hold a department meeting, meet with parents, or conference with outside community members, the only option is the small and poorly proportioned teachers' lunch room. The Health and PE department head currently utilizes a lunch table as a desk and this does not allow opportunity for privacy or a professional work space. A properly sized and dedicated office space within the department's location would be very beneficial.

The requested and programmed teaching stations, which are included within the gymnasium, pool facility, wellness center, weight rooms, wrestling room, and natatorium will allow us to continue to offer the current course offerings. Although we understand that we are unable to request any additional space (beyond the amount of our current existing space), we do hope that some reconfiguration of existing spaces either in a new facility or a renovation to the existing facility will allow us to create a more efficient layout. This could allow even higher utilization and would work to alleviate some of the current overcrowding within our facility. Additionally, new or renovated locker rooms and health classrooms which are in close proximity to physical education spaces would help us to staff programs more efficiently and avoid time consuming transitions between periods. Additionally, a thoughtful and comprehensive approach to outside learning spaces, including their placement and organization, will allow the PE and Health Department to effectively teach more students and to expand the program offerings for all students.

<b>Durfee Health and Physical Education Courses</b>						
<b>COURSE</b>	<b>DESCRIPTION</b>	<b>LEVEL</b>	<b>GRADES</b>	<b>TERM</b>	<b>Credit</b>	<b>Health or PE Req?</b>
57394	Health I	CP	9	SEM	.25	Health
57024	Health II	CP	11	SEM	.25	Health
57384	Physical Education- Wellness Program*	CP	9-12	SEM	.25	PE

57374	CPR/First Aid/Lifeguard Training *	CP	11-12	SEM	.25	PE
57234	Health Issues in Life Management	CP	11-12	SEM	.25	Health
57254	Fitness Management Concepts & Activities*	CP	11-12	SEM	.25	PE
57354	Aquatic Activities/Team Sports *	CP	11-12	SEM	.25	PE
57265	Stress Management Course	CP	11-12	SEM	.25	Health
56662	Dance	CP		SEM	.25	PE
57375	Swimming for Fitness*	CP	11-12	SEM	.25	PE
57224	Study of Disease	CP	11-12	SEM	.25	Health
	PE Buddies	CP	11-12	SEM	.25	PE
57255	Nutrition, Fitness Concepts/Weight Management	CP	11-12	SEM	.25	PE
57101	Honors Human Anatomy	HON	11-12	SEM	.25	Health
57121	Honors Sports Medicine	HON	11-12	SEM	.25	Health

\*=Is a course that meets the Physical Education Graduation Requirement

## **Athletics**

Currently, we offer a total of 38 sport programs with 22 being at the varsity level. As a result of such a large program, we feel that a state-of-the-art athletic facility both inside and outside is a critical need for our students/athletes and the community. Durfee has a rich tradition, including 12 team state championships and 9 individual state championships. Boys basketball games in the late 1970s, 1980s, and early 1990s frequently had over 2,000 people in attendance. The gymnasium is the site of our Senior graduation, our Senior after-prom party, entire school pep rallies, and several other school functions for our 2,000 plus population.

Our current gymnasium presents several major challenges. For example, the bleachers are non-compliant with current handicap regulations and are constantly failing. The curtains that separate the courts routinely break down where they cannot be lifted or lowered. We have been told that the motors that run the curtains are not even made any longer. The curtains also have graffiti written on them and have rips. The gym floor is made of a rubber substance that is not ideal for basketball games. A hardwood floor is highly recommended. The athletic locker rooms have broken lockers, no ventilation, and not enough space for all our athletes. The coaches and officials do not have an adequate changing area. Visiting teams also do not have a safe, adequate changing area. Our training room needs to be bigger to adequately serve all our athletes.

The indoor Project Adventure course developed in 1980 had to be removed because the walls were deemed to be unsafe. The walls are free floating and the tension from the Project Adventure equipment posed a serious risk. We have been told to not drill any holes into the current walls. The Project Adventure room became a weight room for athletics and Physical Education classes. Our wrestling room is not large enough to hold an adequate practice and it is often used as storage for Physical Education equipment, ruining the wrestling mats that cover the floor.

Our pool has been a huge positive for our school over the last 38 years. It has been used to teach swimming to students of all ages throughout our school system, certify high school students to become lifeguards, and has been home to our boys and girls swim teams. Our students benefit greatly from having a pool on campus. Our swim team participation might not be as high if it was required to go off campus to be on the team.

Two "Field Turf" fields and eight tennis courts were constructed in 2008. This greatly improved our football, soccer, field hockey, tennis, and track facilities. However, the Field Turf is getting run down and will soon need to be resurfaced. Several outside organizations use these fields when Durfee sports are not. This has been tremendous for community involvement but has led to more wear and tear on the fields. The tennis courts have started to crack and the surface has settled to where puddles now occur after rain storms. During the construction of the turf fields, track, and tennis courts, the varsity and junior varsity baseball and softball fields were not touched. These grass, stone dust, and dirt fields are extremely wet in the spring and are often unable to be used because of it. Varsity baseball is often required to move their games off campus or postpone games on sunny days due to the wetness of the field.



Community use of our athletic facilities is a major positive for our school. Outside organizations such as youth soccer, pop warner football, little leagues, AAU programs, United States Tennis Association, and several other community partners use our facilities regularly. Having state-of-the-art indoor and outdoor facilities maximizes opportunities for the entire Fall River community.

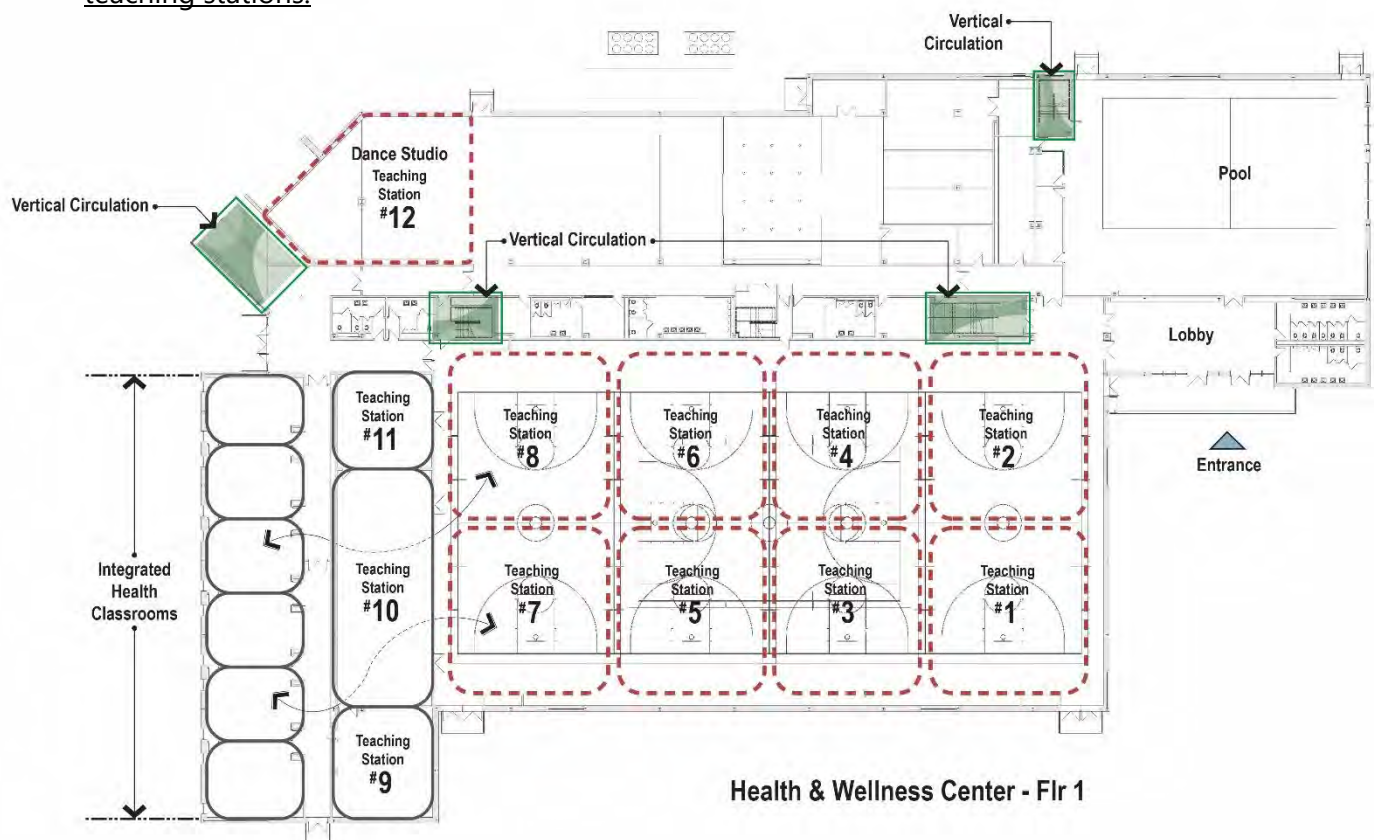
### **Athletic Participation Numbers at Durfee High School for 2016-2017**

- **Fall:** 297
- **Winter:** 271
- **Spring:** 230

### **Outside Organizations that Use the Durfee High School Athletic Facilities**

- New England Futsal Soccer
- Nor'easter Soccer
- Fall River Falcons Football
- American Little League of Fall River
- Bristol County Sheriff's Department Free Clinics
- Massachusetts Youth Soccer Association
- Special Olympics
- New England Futbol Club
- Opportunity for Players to Shine Baseball Club
- United States Tennis Association

Design Response for Physical Education demonstrates how spaces can be re-organized and classrooms can be relocated such that they are in close proximity to the physical education teaching stations.



## **M. SPECIAL EDUCATION**

According to the Department of Elementary and Secondary Education (DESE), Special Education facilities and classrooms should align with the guidelines listed below. The school District provides facilities and classrooms for eligible students that:

- Maximize the inclusion of such students into the life of the school.
- Provide accessibility in order to implement fully each student's IEP.
- Are at least equal in all physical respects to the average standards of general education facilities and classroom.
- Are given the same priority as general education programs in the allocation of instructional and other space in public schools in order to minimize the separation or stigmatization of eligible students.
- And are not identified by signs or other means that stigmatize such students.

The policies above are in direct alignment with the following items:

- 603 CMR 28.03(1)(b)
- Section 504 of the Rehabilitation Act of 1973
- SE 55 is related to State Performance Plan Indicator 5

Currently, one of our special education programs may be in direct violation with the DESE laws and regulations listed below. They are housed in one area of the building. This area is used to facilitate access to classrooms as the elevator is not reliable. Locating programs in this area also increases ease of access to therapy spaces, nursing, and bathroom/changing areas. DESE has not cited us on this issue at present; however, the last audit did not locate these classrooms solely to this area.

### **Inclusion Programs**

Students with mild to moderate disabilities can receive special education services in the general education classroom. The delivery of the services in the general education classrooms are documented in the service delivery of the student's IEP and can occur in the following ways:

- **Consultation:** Curriculum may be modified for the student's needs and are accommodated by the general education teacher in consultation with the special needs teacher and/or specialist.
- **Co-teaching:** The general education curriculum is being followed in a classroom that has both a general education teacher and a special education teacher presenting it in ways that is determined by the needs, education goals, and styles of the students in the class.
- **Paraprofessional Support:** In this setting, the general education teacher will lead the instruction to follow the general education curriculum with the assistance of a paraprofessional to help provide accommodations and modifications per the IEPs of special education students in the class.

### **Language-Based**

This is an academic program that is designed for students with academic and/or communication challenges, typically diagnosed as Specific Learning Disabilities, Communication and/or Neurological. At the high school level, academic supports and strategies focus on skills to promote vocabulary development, receptive and expressive language skills via both oral and written modalities and foundational mathematics to be able to successfully meet the districts and MCAS requirements for graduation. In addition, assistive technology may be utilized for students who benefit from read aloud, speech to text, word prediction, etc. Classrooms are substantially separate and taught by a special education teacher with one para professional. Typically, these classrooms are associated with curriculum content and have an overarching theme which emphasizes key concepts. Modifications include pace and quantity while supporting the development of individualized learning objectives and strategy development. Thus, depending on the population, it is projected that one class per core content area for each grade level would be warranted. This equates to at least 16 classes to accommodate 12 students per class with a teacher and a paraprofessional. In addition, we have a growing need for a supported academic study and would strongly recommend two allocated classrooms allocated for this need.

### **Social Emotional: Bridge**

This is a program that is designed for students with social emotional issues that may manifest in behavioral concerns and reduced academic engagement. Participation in this program is determined through the IEP process and in alignment with the district's kindergarten through grade 8 program. It is a substantially separate program that teaches the curriculum of each grade level to the students in the program in order to facilitate targeted skills development while fostering requirements necessary to receive a traditional diploma. The goal of the program is to foster appropriate pro-social skills and the development of healthy coping mechanisms with transference of skills across academic, community, and social settings. This occurs under certain timelines with the use of steps and levels with incentives at every step or level. The curriculum is provided by a special needs teacher, school adjustment counselor, consulting psychologist, and paraprofessionals.

### **Autism Spectrum Disorder Program (ASD) (Special Education Regulations, 603 CMR 28.02 (7) (a)).**

This program is relatively new to the high school and currently only houses grade 9 students. Based on District projections, it is anticipated that over the course of the next four years, we will require at least one classroom per grade level for our High Functioning Autism classes. These students will be able to access some inclusion opportunities but may need a separate environment to develop social skills and behavioral regulation. In addition, we will require at least three functional ASD classrooms for students who will require a more life skills continuum through age

22 years. Any student that has been diagnosed on the Autism Spectrum can participate in this program. ASD is a neurological disability that can affect verbal and non-verbal communication as well as social interaction. The spectrum of the program is very wide. There are students that are integrated into the general education classes and other students that are substantially separated all day as indicated in their IEPs. The students that are integrated in the general education classrooms are accompanied by a special needs teacher and/or a paraprofessional. The students in the substantially separate classroom are in the room with a special education teacher and one or two paraprofessionals depending on the period of the day. The High Functioning ASD students work on general education curriculum that is highly modified and accommodated. The students in the substantially separate classroom work on functional life skills. All students in this program attend social skills group, sensory integration, mobility, and speech and language therapy.

### **Community Based Program**

This program focuses on functional academic and life skills. There are two components of the program. For students grades 9 through 12, emphasis is on a modified curriculum with critical standards identified via DESE and Common Core. Students in this program typically earn a Certificate of Attainment. The second component of the program is geared for students aged 18 – 22 years old. This is a developing portion of the program with emphasis on career readiness, transitional skills, life skills, and enhancing skills to foster independent living. Ideally, as this program continues to grow, students will have an alternative schedule that allows for increased volunteer and work experiences in the school and larger community. This program is supported by the work of a transitional specialist and, as sites become secured, job coaches will be utilized to support the students.

### **Occupational Therapy**

This therapy area provides services to students who demonstrate special needs in fine and perceptual motor skills development. A certified occupational therapist provides evaluation, consultation, and direct services. The delivery of services is provided in accordance with the student's IEP.

### **Physical Therapy**

This therapy area provides services to students who demonstrate special needs in gross motor development. A certified physical therapist provides evaluation, consultation, and direct services. The delivery of services is provided in accordance with the student's IEP.

### **Speech and Language Therapy**

A certified speech pathologist provides speech and language therapy for students whose receptive and expressive language interferes with his/her ability to make effective progress.

Therapy services are provided either individually, in small groups, or in a consultative model as indicated in the IEP.

### **Psychological/Adjustment Counselor Services**

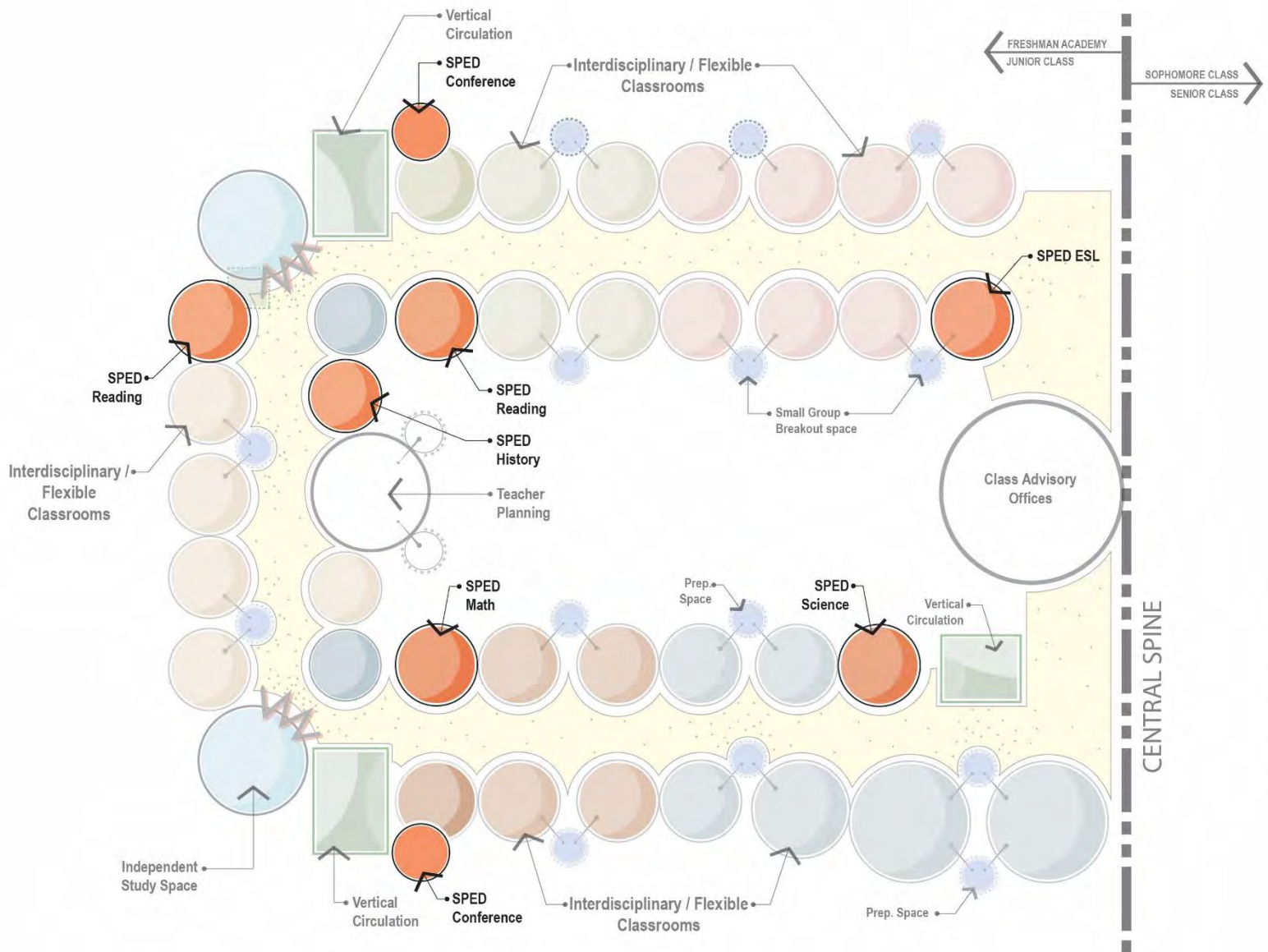
The school psychologist conducts the psychological assessment of special education evaluations through formal testing and observation. The school psychologist also runs the social skills group that is indicated on a student's IEP. The school psychologist will work collaboratively with the adjustment counselor to provide direct counseling services for students who have been identified by the special education team as having behavioral, emotional, or social problems that interfere with their adjustment to school.

There are currently sixteen special education teachers, one department head, one adjustment counselor, one school psychologist, and twelve paraprofessionals that support special education programming.

### **Proposed Design**

Special Education rooms will be spread around the school. There will be separate offices so inclusion teachers can collaborate. The Bridge program will consist of four to five classrooms, one with a science lab and another as a computer lab for access to online credit recovery programs. The ASD program is a growing program based on the established District design and growing population of these students. In order to continue to foster in-District opportunities for these students, six classrooms with office space and a sensory room will need to be provided. The Community Based program will require ten classrooms with access to handicap accessible kitchen to foster personal care and life skills. The Fall River Public Schools is dedicated to providing programming to maximize in-District offerings for students to minimize out-of-District placements. Currently, during the transition from middle to high school, parents request OOD programming as the current physical space does not foster the same access as the students received at the middle school level. As our special education population is such a significant cohort within our community, we would like programs to be available that continue to promote options in accordance with the guiding principles of Least Restrict Environment while continuing to foster optimal opportunities for our students.

### **Design Response for Special Education**



## **N./O. VOCATIONS AND TECHNOLOGY & CHAPTER 74 PROGRAMMING**

See Appendix D for Chapter 74 Submission for both non-chapter 74 and Chapter 74 programs

## **P. TRANSPORTATION POLICIES**

A large number of Durfee High School students are transported to school through transportation methods other than the school bus. Fall River is a very large city. Therefore, it is even more important that appropriate transportation be available throughout the entire City of Fall River. Although a large number of students rely upon of the transportation provided by Southeastern Regional Transit Authority, many avail themselves and take their own vehicles. For this reason,

ample student parking and visitor parking, as well as an effective student drop-off and pick-up process, are crucial to the design of the proposed school. Approximately 75% of our student population is eligible for school transportation.

Currently Durfee has four (47 passenger) special education door-to-door school buses that transport approximately 103 students. There are 7 McKinney Vento (homeless/displaced). Currently there are approximately 16 students being transported. There are five wheelchair accessible vans transporting approximately 6 students. There are eleven Southeastern Regional Transportation Authority (SRTA) buses that come to Durfee daily. The buses run a route in the morning which is fully dedicated to high school student transportation. They arrive on campus between 7:00 am and 7:40 am. In the afternoon, for dismissal, another eleven buses arrive to bring students to either the central bus terminal or to their neighborhood city bus stop. Approximately 700 students use the public buses to and from school.

## **Q. FUNCTIONAL AND SPATIAL RELATIONSHIPS**

The functional and spatial relationships and adjacencies are a critical part to the design and development of a new and/or renovated BMC Durfee High School. Many of these have already been described herein. We have highlighted a few additional priorities below.

- Currently, the majority of our career and vocational technical education (CVTE) spaces are housed in a specific area of the high school. We refer to this area as the "tech wing." It is located approximately 1/8 mile from the academic classrooms due to the sprawling nature of the existing building. In designing a new program, we would like to locate many key programs in very close proximity to complimentary academic programs, and all CVTE programs (even those that will require some level of separation due to noise and practicality) within a reasonable walking distance for students. This will help with interdisciplinary opportunities for staff, but also for exposure for our students. We would also like to locate programs such as Child Care, Marketing, Culinary, and Cosmetology near the building's public entry to promote public and community use of these resources. For example, we would like to design a public entrance to the high school where our public service shops are accessible to both the school community and the public. We would also like to locate our student union in this area such that it would have connections to the building entry and the student dining area allowing us to create a café or coffee shop atmosphere. It could be a gathering area for students and staff where laptops and other electronic devices are a part of the culture. We feel that this type of atmosphere will welcome visitors into the building, and it will also be a showcase for student work.
- Science labs should be located in each of the grade-level-schools, not in a separate remote location. The current building isolates these labs.
- Marketing, Graphics, and Art should be in close proximity to each other. Although these are "stand-alone" programs, they often collaborate on team projects.
- In regards to specific locations of the FRED TV program and TV Studio, we would like this

space to have its own secure entrance to accommodate the varied schedule of the staff and to allow for easy access.

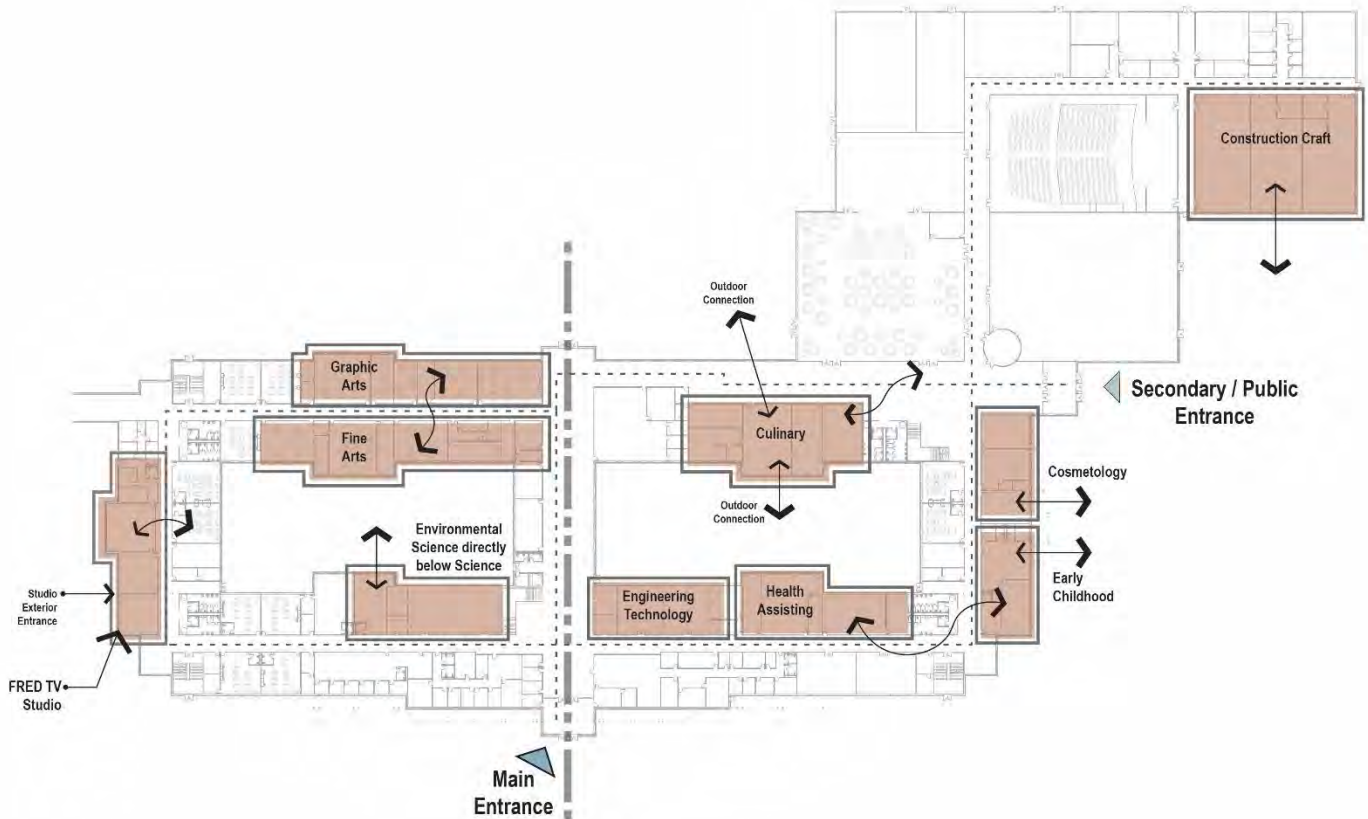
- We would like to ensure that special education classrooms are dispersed throughout the school community so that there is equal access and delivery for all.
- Currently our guidance and house offices are located within each grade level office. In addition, our adjustment counselor offices should be located near the grade level office (not *within* grade level office) in order to ensure student confidentiality. We feel that grade level support teams are one of the strengths of our current building. We would like to maintain this type of structure.
- Our school is a very busy place after school hours and late into the evening. Many of our students participate in a variety of extracurricular activities and, as a result, do not go home in between school and evening events. Therefore, we would like to develop an extracurricular entrance to the building that also includes a student cafe. The gym and its related spaces, auditorium, cafeteria, and FRED TV television studio would be located in this area, and there would be a student union located near this entrance so that students had an area to gather.
- The custodial area and receiving should be located near the cafeteria due to deliveries.
- The proposed high school would maintain a Freshman Academy school-within-the -school and include smaller interdisciplinary neighborhoods, while affording more opportunities for students and staff to work in a horizontal and vertical, interdisciplinary manner while fully integrating special education programming.
- The gymnasium would include a cardio workout space as well as a weight lifting area.

### Indoor/Outdoor Connections

The connection of indoor and outdoor spaces is important to create a vibrant and energizing educational environment. Students can become more engaged in utilizing outdoor space if an effort is made to insure the appropriate visual and physical connection. Outdoor space can go beyond the recreation fields and provide project space, social learning spaces, study areas, and other supports for the education environment. It has a natural integration to many sciences and should not be ignored as part of the 21<sup>st</sup> Century educational environment. This indoor/outdoor connection is mentioned in the priorities for science labs.

### Design Response for Spatial Relationships





## **R. SECURITY AND VISUAL ACCESS REQUIREMENTS**

The Fall River Police Security Resource Officers (SROs), Fall River School District Security Officers, District Administration, faculty, and staff have already been engaged in the feasibility study process to provide the necessary background information and initial conceptual input related to a newly proposed project. This dialogue will continue during the next phase of the feasibility study and subsequent design phases. The District and design team plan to review the Emergency Response Plan at each stage of the design process and make the necessary adjustments to the document as the newly proposed project (site and building) begins to develop with more specificity.

The Medical Emergency Response Plan (MERP) has been submitted to the DESE. This plan is a comprehensive document that includes detailed information related to the security policies (promulgation, implementation, practice, and enforcement) required for situations such as traditional lockdowns, evacuation, evacuation routes and staging areas, bomb threats, explosions, fire/arson, gas leaks, medical emergencies, among many others. Due to the sensitivity of the information contained within this document, a copy can be provided by the District, upon specific request.

A holistic approach to security design for a newly proposed project (educational facility or another use) begins at the commencement of the design process and is NOT considered exclusively an add-on "system" integrated at the end of the design process via the use of technology. Site approach, site circulation, physical placement of the building on site, the interrelationship of the building's physical interior and exterior spaces, and simplification of the building's internal organization must be interwoven into the planning process. It is very evident that the topic of security was not truly integrated as part of the design of the current 1978 BMC Durfee High School building.

Fall River Police Security Resource Officers (SRO's) have been active at BMC Durfee High School at varying degrees of coverage since the opening of the current building in 1978. Currently, there are two Fall River Police Security Resource Officers and seven (five daytime and two nighttime) District security personnel dedicated to the high school building. The Fall River Police SRO's are responsible for scanning the entire building (interior and exterior perimeter) and the seven District security officers are assigned specific areas of the building. Due to budget constraints, a few years ago the District security personnel were reduced from thirteen staff members down to its current level. The District has indicated to us that the number of incidents has increased since the reduction in personnel.

The existing BMC Durfee High School site and building includes a myriad of passive security deficiencies, including: a remotely located, non-descript main entrance; poorly organized site circulation; cafeteria located adjacent to the main entrance; over 50 exterior perimeter doors; maze-like building organization; insufficient lighting for night-time events; security communication "dead-spots"; etc.

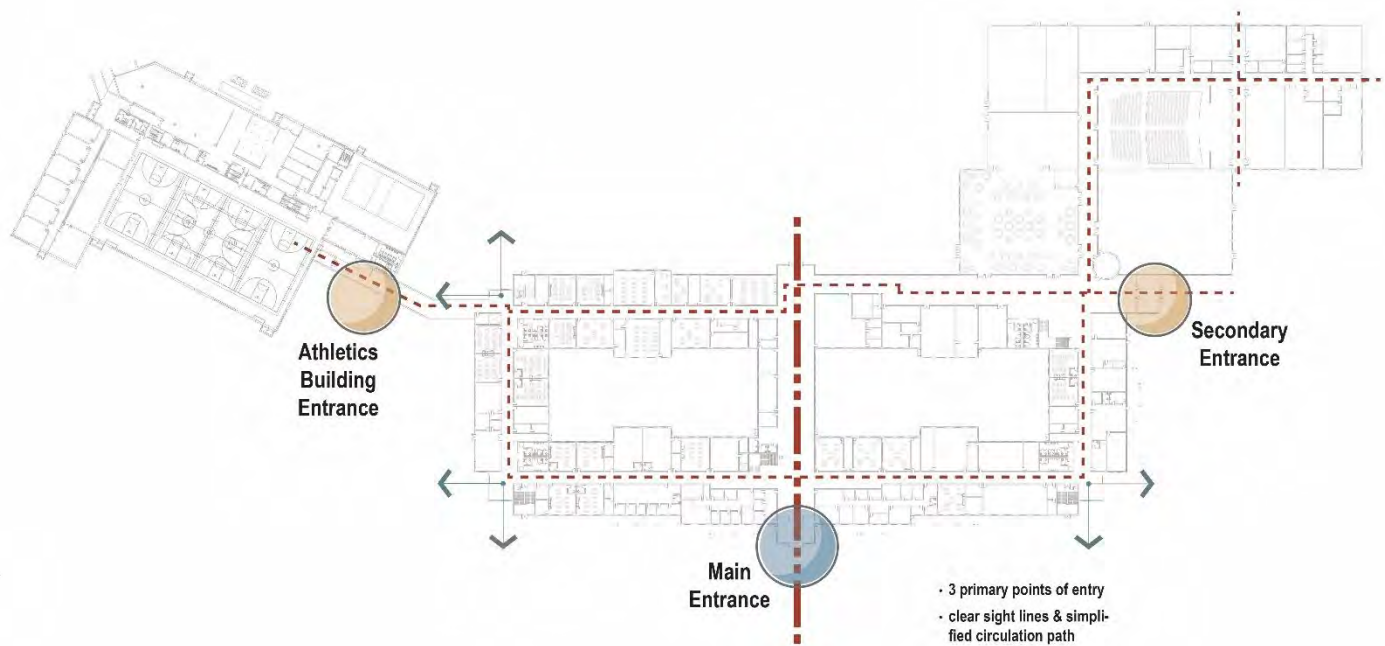
Over the last several years, the District has implemented a mixture of various camera types to help reduce "blind spots" within and outside the facility. This has resulted in various recording devices being implemented and disparate systems being relied upon to effectively react to security events. Currently, the cameras are not actively monitored; they are used purely as a reactive tool after a security event occurs. A unified and robust campus-wide video surveillance system would enable the staff to respond to events in real time based upon motion detection in some areas, coupled with active monitoring of key cameras at specific locations in other areas. Currently, video retention is very low, causing further issues as some events are not detected for days. Retention is from 7-14 days down to one day on some recorders. There are currently only five cameras in the parking lot, and not every outside door is covered by video surveillance.

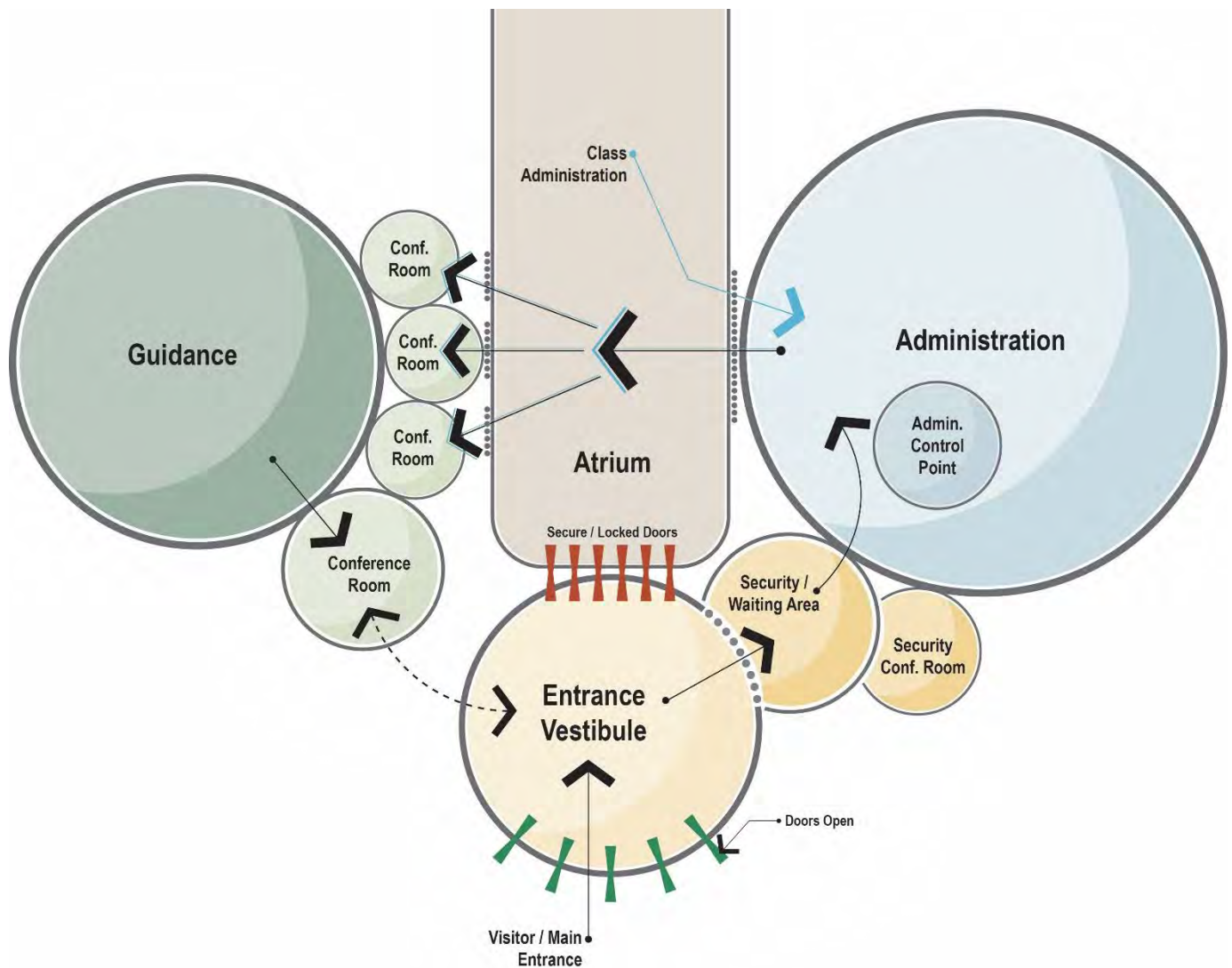
The intrusion detection system is non-existent. Most exterior doors are not monitored.

The access control system currently only controls two doors- the main entry and west main entry. Both doors include an entry system. The existing Kantech access control system is not effective and has been problematic. As such, it is seldom used. Security awareness of all exterior doors and interior spaces while the building is occupied, primarily the responsibility of the access control system, is non-existent since almost all of the exterior doors are not currently monitored.

A more extensive camera system as part of a proposed design solution will enhance school-wide safety and security. Our current camera system is used regularly to help students with issues that arise in regards to theft as well as other student management issues. The expansion of a campus-wide CCTV system will enhance our overall school culture. A new system should be web based so it can be viewed by administration even when they are not in the building. The system should cover all public areas (hallways, common areas, and entrances to the school). Outside coverage should include all student and staff parking and athletic areas. An increased number of cameras would also be very beneficial. This type of model can only enhance school security.

### Design Response for Security and Visual Access





## **S. STUDENT DAY**

The day at Durfee starts for all students at 7:55 a.m. and ends at 2:40 p.m. The schedule runs on a modified block format with students taking five 72-minute classes during the school day. In addition to the five-block schedule, there is an odd/even rotation (Durfee calls it red/black) of some classes allowing for students to explore more elective classes and career pathways. Classes are run for a semester (90 days) or a full school year (180 days). Students are assigned lunch during their four-period class based on the department and class they have. There are three 25-minute lunch periods during this period as well as passing time for students to get to and from lunch.

After the official school day ends, there are various extra-curricular activities, clubs, sports, music, and theatre programs that students can join as enrichment opportunities.

**Below is an example of a Freshman Academy student schedule:**

<b>Non-Advisory Day Schedule</b>	<b>Classes</b>	<b>Advisory Day Schedule</b>	<b>Classes</b>
Period 1 - 7:55-9:02	U.S./World History 1 (S1) Spanish 1 (S2)	Period 1: 7:55-8:57	U.S./World History 1 (S1) Spanish 1 (S2)
Period 2 - 9:07 - 10:19	English 1 (FY)	Period 2: 9:02 - 10:09	English 1 (FY)
Period 3: 10:24 - 11:36	Biology (FY)	Advisory: 10:14 - 10:34	Advisory
Period 4: 11:41 - 1:23	Algebra 1 (FY)	Period 3: 10:39 - 11:46	Biology (FY)
Period 5: 1:28 - 2:40	CTE Exploratory (Black) Health 1 (S1, Red) PE (S2, Red)	Period 4: 11:51 - 1:28	Algebra 1 (FY)
		Period 5: 1:33 - 2:40	CTE Exploratory (Black) Health 1 (S1, Red) PE (S2, Red)

**Below is an example of a Junior student interested in the arts:**

<b>Non-Advisory Day Schedule</b>	<b>Classes</b>	<b>Advisory Day Schedule</b>	<b>Classes</b>
Period 1 - 7:55-9:02	English III (FY)	Period 1: 7:55-8:57	English III (FY)
Period 2 - 9:07 - 10:19	Honors Art III (S1) Honors Ceramics III (S2)	Period 2: 9:02 - 10:09	Honors Art III (S1) Honors Ceramics III (S2)
Period 3: 10:24 - 11:36	PE (S1, Red) and Health II (S1, Black) Design (S2)	Advisory: 10:14 - 10:34	Advisory
Period 4: 11:41 - 1:23	Algebra II (FY)	Period 3: 10:39 - 11:46	PE (S1, Red) and Health II (S1, Black) Design (S2) PE and Health (S10) Design (S2)
Period 5: 1:28 - 2:40	Physics (S1) World History III (S2)	Period 4: 11:51 - 1:28	Algebra II (FY)
		Period 5: 1:33 - 2:40	Physics (S1) World History III (S2)

**Below is an example of a senior CTE student:**

<b>Non-Advisory Day Schedule</b>	<b>Classes</b>	<b>Advisory Day Schedule</b>	<b>Classes</b>
Period 1 - 7:55-9:02	Health Assisting III (FY)	Period 1: 7:55-8:57	Health Assisting III (FY)
Period 2 - 9:07 - 10:19	Health Assisting III (FY)	Period 2: 9:02 - 10:09	Health Assisting III (FY)
Period 3: 10:24 - 11:36	Health Assisting III (FY)	Advisory: 10:14 - 10:34	Health Assisting III (FY)
Period 4: 11:41 - 1:23	Pre-Calculus Honors (S1) Psychology (S2)	Period 3: 10:39 - 11:46	Health Assisting III/ Advisory (11:26-11:46)
Period 5: 1:28 - 2:40	English 4 (FY, Red); Physical Education (S1 Black)	Period 4: 11:51 - 1:28	Pre-Calculus Honors (S1) Psychology (S2)

	Honors Human Anatomy (S2, Black)		
		Period 5: 1:33 - 2:40	English 4 (FY, Red); Physical Education (S1 Black) Honors Human Anatomy (S2, Black)

## **Conclusion**

We have worked closely with the architects at Ai3 Architects, LLC and their consultant, David Stephen from New Vista Design, in developing our vision as well as the guiding principles in designing the new school. We have conducted brainstorming sessions with teachers and administrators throughout the District to visualize the school of the future. Guiding principles were developed and they are woven throughout this document.

BMC Durfee High School has a vibrant community and school culture. This is evident the minute you walk through the doors of the current school. This culture and community should not be lost in the development of the new high school. Like many communities, the high school can and should be a center for community use. The significance of the gymnasium, performing arts center, media labs, flexible spaces, vocational structure, public service access, etc., are all an important and highly utilized community and educational resource. These spaces cannot be seen as “*extras*,” but rather, inherent resources that will serve the students, teachers, administrators, and community members for decades to come. Their careful planning and inclusion, as well as their integration into the community-wide environment, is critical to supporting the interaction of community with education.

BMC Durfee High School will be the **COMPREHENSIVE** high school of the future – a school with high academic standards that also integrates vocational technical education so that students are both career and college ready. Currently, we have excelled as a school community despite an incredibly deficient facility. Our goal is to build a school that ensures all students in Fall River can receive the best education possible.

Educational Visioning is a process which brings together a large cross-section of stakeholders, residents, and educators to develop learning concepts, goals, and values which result in a comprehensive, long-term planning tool for the school District. When a new project is being considered or proposed, educational visioning provides the cornerstone of all educational planning, and it defines the nature of school operations, function, and opportunities for the future. It literally shapes school and community relations for decades to come.

Educational Visioning in Fall River was facilitated by Ai3 Architects, LLC and David Stephen of New Vista Design.

The sessions were a catalyst for generating ideas regarding how the school might best be designed to foster 21st Century education while simultaneously incorporating the needs of the entire community. It enables the architects to develop building plans which are consistent with the needs of the City of Fall River, incorporating the educational, community, organizational, and functional goals and values articulated in the visioning sessions.

The Educational Visioning process included an evaluation of the existing BMC Durfee High School educational delivery, the facility today, and a projection of the facility in the future. The Educational Visioning report contains the result of that evaluation. Some examples of barriers to effective educational delivery in the current high school include: the lack of flexible learning spaces for educational projects that require teamwork; inadequate science labs; grossly undersized classrooms that lack adequate acoustics, natural lighting, and ventilation; segregated technology labs and shops; the absence of teacher centers for collaboration; a lack of support for applied learning and student presentations; and a poorly organized and restrictive high school floor plan that greatly impedes interdisciplinary or hands-on, project based collaborative learning.

The Educational Visioning and Programming sessions are summarized in the following section.



# PREFERRED SOLUTION SPACE SUMMARY

## Preferred Solution

### **Variations Between Initial Space Summary in PDP and Currently-Submitted Space Summary for Preferred Schematic Option 1E**

Subsequent to the submission of the PDP, School Department representatives met with the Building Committee and City Officials to continue to further explore the proposed renovation/re-use options which involved the re-use of portions of the existing building. Additionally, all parties conducted numerous meetings for the review of the proposed Space Summary with a goal of meeting all educational program needs while simultaneously working to align the Space Summary with MSBA guidelines where feasible. Individual departments were asked to review their specific needs for each individual space within the program and make considerations for efficiency without compromising any current or proposed educational programs. Departments also met as a group to make consideration for the sharing and scheduling of spaces which could be shared across departments.

The Preferred Schematic Option 1E is a variation on the previously submitted PDP Option 1. It includes renovation and re-use of the existing health and physical education building only and, therefore, deviates from the previously submitted PDP Option 1 which proposed re-use of additional portions of the existing building. For this reason, there will naturally be many variations from the previously submitted PDP. The following is a summary of variations in the Space Summary from PDP to PSR.

### **Core Academic Spaces**

Variation is extremely minor, resulting in 50 net sf variation on a 123,465 net sf program.

### **Special Education**

Increase of 3,425 net sf as a result of need for additional self-contained classrooms and additional ASD (Autism Spectrum Disorder) classrooms.

### **Art & Music**

Decrease of 2,150 net sf as a result of constructing these program spaces as "new" in lieu of utilizing existing building. Such approach allows alignment with MSBA guidelines.

### **Vocations & Technology**

Very minor decrease of 227 net sf on a 43,420 net sf program. Many minor adjustments to individual spaces as a result of more detailed staff review. No changes or compromises to proposed educational program.

### **Health and Physical Education**

Very minor increase of 180 net sf on a 62,048 net sf program, based primarily on the incorporation of the exact sf for all of the spaces within the existing health and physical education facility and their re-use as part of the proposed Option 1e.

### **Auditorium and Drama**

Decrease from 21,973 net sf to 10,400 net sf as part of no longer using the existing auditorium and drama space and instead proposing this program as "all new" construction which aligns with MSBA guidelines.

### **Dining and Food Service**

Increase from 19,006 net sf to 22,463 net sf. The District was initially trying to fit this program within the MSBA guidelines but determined that the kitchen area specifically could not fit within the guidelines and simultaneously service the other schools in the District. Fall River has completed several MSBA funded school projects that did not require a full service kitchen due to the centralized kitchen service at the high school. The City would argue that the savings achieved by both the MSBA and the City on these other school projects should be considered when evaluating the allowable net sf for the high school kitchen and food storage areas.

***Administration and Guidance***

Decrease from 12,244 net sf to 10,901 net sf. As a result of the significant number of students within the high school, the FRPS operates a specialized administrative team for each grade level. This approach and its value to a successful student experience is detailed within the educational program. However, it does require additional administrators and subsequently additional administrative space. As part of the post-PDP process described above, administrators were charged with finding efficiencies in their current and proposed use of this space. The result is a proposed area that remains 2,722 net sf above MSBA guidelines but is smaller than the PDP submission and remains 3,119 net sf smaller than what the Administration is currently utilizing in the existing building.

***Custodial and Maintenance***

Decrease from 4,985 net sf to 3,553 net sf in order to align with MSBA guidelines.

**Proposed Space Summary - BMC Durfee High School**

## 6.26.17

## OPTION 1E

BMC Durfee High School

	Existing Conditions		
ROOM TYPE	ROOM NFA <sup>1</sup>	# OF RMS	area totals
CORE ACADEMIC SPACES <i>(List classrooms of different sizes separately)</i>			118,557
Classroom - General			
English	1,023	1	1,023
English	1,248	1	1,248
English	1,818	1	1,818
English	422	1	422
English	820	4	3,280
English	826	2	1,652
English	844	4	3,376
English	646	2	1,292
English	858	1	858
Freshman Academy			
English	705	1	705
English	698	1	698
English	764	1	764
English	858	1	858
English	805	2	1,610
English	602	1	602
English	851	1	851
English Dean Office	149	1	149
English Small Conference	135	1	135
Math	814	2	1,628
Math	820	3	2,460
Math	820	2	1,200
Math	756	2	1,512
Math	772	2	1,544
Math	632	2	1,264
Math	826	1	826
Math	659	1	659
Math	852	1	852
Freshman Academy			
Math	765	2	1,530
Math	698	1	698
Math	746	2	1,492
Math	1,222	1	1,222
Math Dean Office	174	1	174
Computer Lab	836	1	836
Computer Lab	861	1	861
Science Computer Lab	772	1	772
			0
World Language	645	1	645
World Language	838	7	5,866
World Language	825	2	1,650
World Language	853	1	853
World Language	984	1	984
World Language	951	1	951
World Language	838	1	838
World Language Lab	1,345	1	1,345
World Language Dean Office			
History	843	1	843
History	742	1	742
History	806	3	2,418
History	606	3	1,818
History	765	2	1,510
History	861	1	861
History	705	1	705
History Lab	852	1	852
Freshman Academy			
History	705	2	1,410
History	765	2	1,530
History Dean Office	283	1	283
Teacher Planning			0
Teachers Room (A1)	233	1	233
Teachers Room (A40)	570	1	570
Teachers Room (A41)	577	1	577
Teachers Room (A43)	373	1	373
Teachers Room (A48)	432	1	432
Teachers Room (A48)	348	1	348
Teachers Room (A47&48)	533	2	1,066
Teachers Room (A42)	400	1	400
Teachers Room (A91)	188	1	188
Small Group Support			
Science Classroom / Lab			
Science	1,306	1	1,306
Science	1,618	1	1,618
Science	1,455	1	1,455
Science	1,219	1	1,219
Science	1,385	1	1,385
Science	1,022	2	2,044
Science	645	1	645
Science	806	1	806
Science	602	2	1,204
Science	836	1	836
Science	856	1	856
Science	1,287	2	2,574
Science	757	2	1,514
Science	1,378	2	2,752
Science	2,128	2	4,252
Science	983	2	1,966
Freshman Academy	987	2	1,974
Science	616	1	616
Science	862	1	862
Science	705	1	705
Science	848	1	848
Science	765	1	765
Science Dean Office	150	1	150
Greenhouse	500	1	500
Plandarium	941	1	941
Plandarium Storage	76	1	76
Plandarium Office	76	1	76
Observatory	900	1	900
Prep Room	351	1	351
Prep Room	567	2	1,134
Prep Room	133	2	266
Prep Room	269	1	269
Prep Room	263	1	263
Prep Room	362	1	362
Prep Room	500	1	500
Prep Room	445	1	445
Central Chemical Storage Rm	351	2	702
Central Chemical Storage Rm	154	2	308
Large Group Seminar #1	868	1	868
Large Group Seminar #2	868	1	868
Large Group Seminar #3	868	1	868
Large Group Seminar #4	868	1	868
Independent Study			
Health Classroom	422	1	422
Health Classroom	925	1	925
Health Classroom	1,004	3	3,012
Health Storage	169	1	169
SPECIAL EDUCATION <i>(List classrooms of different sizes separately)</i>			37,141
Community Based Program			

PROPOSED

Existing to Remain/Renovated			New		Total			
ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	# OF RMS	area totals
		4,075			119,170			123,245
			825	24	19,800	825	24	19,800
	</							



Proposed Space Summary - BMC Durfee High School

OPTION 1E  
NC with Athletic Building Renovation

6.26.17

BMC Durfee High School		Existing Conditions				PROPOSED				MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	area totals	Existing to Remain/Renovated	New		Total	ROOM NFA <sup>1</sup>	area totals	# OF RMS	area totals
Self-Contained SPED	964	1	964							950	18	17,100	Assumed 8% of pop. is self-contained SPED
Self-Contained SPED	853	1	853										
SPED OT/PT	837	1	837	825	825		6	4,950	6				
SPED OT/PT Severe Disabilities	1,449	1	1,449	825	825		1	825	1				
SPED OT/PT Severe Disabilities	1,141	1	1,141	1,250	1,250		1	1,250	1				
SPED Severe Disabilities - Storage	157	1	157	1,250	1,250		1	1,250	1				
SPED ESL	1,117	1	1,117	150	150		1	150	1				
SPED ESL	1,069	1	1,069	825	825		3	2,475	3				
SPED ESL	1,012	1	1,012	2,475	2,475								
SPED Science Sub Separate Classroom	870	2	1,740										
SPED Science Sub Separate Classroom	807	1	807	1,250	1,250		3	3,750	3				
SPED Math Sub-Separate Classroom	852	1	852										
SPED Math Sub-separate Classroom	692	1	692	825	825		2	1,650	2				
SPED History Sub-separate Classroom	662	1	662										
SPED History Sub-separate Classroom	702	1	702	825	825		2	1,650	2				
SPED English/Reading Classroom	678	1	678										
SPED English/Reading Classroom	838	1	838	825	825		3	2,475	3				
SPED English/Reading Classroom	634	1	634										
SPED Classroom	702	1	702										
SPED Book Room	279	1	279	250	250		1	250	1				
Bridge Program													
SPED Behavior Self-Contained Classroom	1,080	1	1,080										
SPED Behavior Self-Contained Classroom	856	3	2,568	825	825		6	4,950	6				
SPED Behavior Self-Contained Classroom	825	1	825										
SPED Behavior Self-Contained Classroom	1,724	1	1,724	125	125		1	125	1				
Adjustment Counselor Office													
Audium Spectrum Disorder Program (ASDP)													
SPED Behavior Self-Contained Classroom (Audium)	803	1	803	825	825		4	3,300	4				
Self-Contained SPED Toilet													
Resource Room													
Small Group Room													
SPED Dean Office													
SPED Offices	1,109	1	1,109	60	60		14	840	14	60	1,080	18	1,080
SPED Office	330	1	330	100	100		26	2,600	26	500	7	3,500	1/2 size Gent. Cbm.
SPED Team Chair Office	287	1	287	200	200		1	200	1	500	7	3,500	1/2 size Gent. Cbm.
SPED Team Chair Office	166	1	166	150	150		4	600	4				
SPED Team Chair Office	224	1	224										
SPED Conference Room	232	1	232										
SPED Conference Room	236	1	236	250	250		4	1,000	4				
SPED Conference Room	702	1	702										
SPED Speech	152	1	152	100	800		8	800	8				
SPED Speech	83	1	83										
SPED Speech Testing	54	6	324										
SPED Speech Observation	83	1	83	100	400		4	400	4				
SPED School Psychologist Office	120	1	120	125	125		1	125	1				
SPED Speech Therapy Office	148	1	148										
SPED Testing	152	1	152	100	800		8	800	8				
SPED Testing	200	1	200										
d. Parenting Center K-3	721	1	721										
d. Parenting Center K-8	673	1	673										
d. Early Childhood Pre-K	678	1	678										
d. District SPED (A45)	6,236	1	6,236										
ART & MUSIC			13,750										
Art Classroom - 25 seats				0	11,600					1,200	5	11,350	Assumed use - 25% Population - 5 times/week
Art Classroom: Sculpture (Art1&2)	1,384	1	1,384	1,200	1,200		1	1,200	1				
Art Classroom: Ceramics	2,025	1	2,025	1,200	1,200		1	1,200	1				
Art Classroom: 182 History	854	1	854	1,200	1,200		1	1,200	1				
Art Storage	111	1	111	150	150								
Art Storage	154	1	154	150	150								
Art Material Storage	263	1	263	250	250								
Art Workroom w/ Storage & kln	500	1	500	500	500		1	500	1				
Art Storage	230	1	230	200	200		1	200	1	150	5	750	
Sculpture Storage	230	1	230	200	200		1	200	1				
Darkroom	121	1	121										
Band - 50 - 100 seats	1,730	1	1,730										
Chorus - 50 - 100 seats (Orchestra)	1,923	1	1,923	1,500	1,500		1	1,500	1	1,500	1	1,500	Assumed use - 25% Population - 5 times/week
MDI Lab	868	1	868	825	825		1	825	1				
Piano Lab	654	1	654	825	825		1	825	1				
Ensemble													
Music Practice	268	1	268	250	250		2	500	2				
Music Practice	286	1	286										
Music Practice	138	2	276	100	300		3	300	3				
Music Practice	316	1	316										
Music Storage													
Music Storage	236	1	236	200	200		1	200	1				
Music Storage	404	1	404	400	400		1	400	1				
Music Storage	75	3	225										
Instrument Repair/Storage	291	1	291	250	250		1	250	1	500	1	500	
Music Office	236	1	236	125	250		2	250	2				
Music Office	163	1	163										
VOCATIONS & TECHNOLOGY			47,634										
Tech Cbm. - (E.G. Drafting, Business)				0	43,420					1,200	9	28,800	Assumed use - 50% Population - 5 times/week
Tech Shop - (E.G. Consumer, Wood)										2,000	9	18,000	Assumed use - 50% Population - 5 times/week
CH 74 Programs													
Environmental Science & Technology (150907)													
Environmental Science & Technology - Offices	3,190	1	3,190	2,500	2,500		1	2,500	1				
Environmental Science & Technology - Storage	298	1	298	300	300		1	300	1				
Design & Visual Communications (500401)													
Design & Visual Communications (500401): Digital Photography	1,273	1	1,273	1,200	1,200		1	1,200	1				
Design & Visual Communications (500401): Fashion Design	1,330	1	1,330	1,200	1,200		1	1,200	1				
Design & Visual Communications (500401): Interior Design/Architecture	275	1	275	400	400		1	400	1				
Design & Visual Communications (500401): Interior Design/Architecture	341	1	341	400	400		1	400	1				
Design & Visual Communications (500401): Graphic Arts Classroom	2,108	1	2,108	1,125	1,125		1	1,125	1				
Design & Visual Communications (500401): Offices				200	200		1	200	1				
Design & Visual Communications (500401): Graphic Arts Storage	228	1	228	300	300		1	300	1				
Cosmetology (120401): Classroom	700	1	700	825	825		1	825	1				
Cosmetology (120401): Hair	872	1	872	900	900		1	900	1				
Cosmetology (120401): Facials	802	1	802	425	425		1	425	1				
Cosmetology (120401): Nails	305	1	305	425	425		1	425	1				
Cosmetology (120401): Prep Room	265	1	265	200	200		1	200	1				
Cosmetology (120401): Waxing	263	1	263	150	150		1	150	1				
Cosmetology (120401): Lockers	257	1	257	150	150		1	150	1				
Cosmetology (120401): Storage	292	1	292	100	100		1	100	1				
Cosmetology (120401): Storage	91	1	91										
Early Education & Care (131210): Preschool Lab	1,000	1	1,000	1,200	1,200		1	1,200	1				
Early Education & Care (131210): Youth Parents Learning Center	827	1	827	825	825		1	825	1				
Early Education & Care (131210): Youth Parents Learning Center	427	1	427	425	425		1	425	1				
Early Education & Care (131210): Totat Rooms				85	255		3	255	3				
Early Education & Care (131210): Observation	60	1	60	120	120		2	240	2				
Early Education & Care (131210): Kitchen	103	1	103	150	150		1	150	1				
Health Assisting (610000): Classroom	1,129	1	1,129	1,200	2,400		2	2,400	2				
Health Assisting (610000): Classroom	1,362	1	1,362	575	575		1	575	1				
Health Assisting (610000): Skills Room	569	1	569	450	450		1	450	1				
Health Assisting (610000): Skills Room	446	1	446	250	250		1	250	1				
Health Assisting (610000): Storage	162	1	162										
Health Assisting (610000): Storage	100	1	100										
Health Assisting (610000): Kitchen	52	1	52										
Culinary Arts (120500): Tradewinds Restaurant	2,191	1	2,191	2,000	2,000		1	2,000	1				
Culinary Arts (120500): Kitchen	890	1	890	825	825		1	825	1				
Culinary Arts (120500): Kitchen	1,770	1	1,770	1,200	1,200		1	1,200	1				
Culinary Arts (120500): Dishwashing				350	350		1	350	1				
Culinary Arts (120500): Laundry				150	150		1	150	1				

Version  
11-24-2010

High School Space Summary



## Proposed Space Summary - BMC Durfee High School

## 6.26.17

## OPTION 1E

BMC Durfee High School				Existing Conditions			
ROOM TYPE	ROOM NFA <sup>1</sup>	# OF RMS	area totals				
Culinary Arts (120500): Lockers/Storage	296	1	296				
Culinary Arts (120500): Bakery	1,817	1	1,817				
Culinary Arts (120500): Storage	368	1	368				
Culinary Arts (120500): Office	97	1	97				
Culinary Arts (120500): Refrigerator/ Freezer	140	1	140				
Radio and Television Broadcasting (090700) (FRED TV): Classroom	781	1	781				
Radio and Television Broadcasting (090700) (FRED TV): Studio	840	1	840				
Radio and Television Broadcasting (090700) (FRED TV): Control Room	174	1	174				
Radio and Television Broadcasting (090700) (FRED TV): Office	103	1	103				
Engineering Technology (150000)	1,277	3	3,831				
Engineering Technology (150000)	1,232	1	1,232				
Engineering Technology (150000): Offices							
Engineering Technology (150000): Storage							
Marketing (180200): Compass Bank							
Marketing (180200): Campus Store	200	1	200				
Construction Craft Laborer (489999)	3,154	1	3,154				
Construction Craft Laborer (489999)	2,450	1	2,450				
Construction Craft Laborer (489999): Design Build Studio	831	1	831				
Construction Craft Laborer (489999): Storage	298	2	516				
Construction Craft Laborer (489999): Finishing Room	201	1	201				
ROTC: Classroom	867	2	1,734				
ROTC: Storage	375	1	375				
ROTC: Office / Kitchen	448	1	448				
Aviation (PLTW - Aerospace)	3,154	1	3,154				
CTVE: Career Tech Office	268	1	268				
CTVE: Career Tech Office	217	1	217				
CTVE: Career Tech Office - Storage	439	1	439				
HEALTH & PHYSICAL EDUCATION							
Teaching Station #1-4 (Gymnasium)	13,477	1	62,048				
Teaching Station #5	3,000	1	13,477				
Teaching Station #6	3,000	1	3,000				
Teaching Station #7	3,000	1	3,000				
Teaching Station #8	3,000	1	3,000				
Teaching Station #9 (Weight Room 1)	2,300	1	2,300				
Teaching Station #10 (Weight Room 2)	1,116	1	1,116				
Teaching Station #11 (Wellness Room)	905	1	905				
Teaching Station #12 (Wellness Center - Dance Studio)	2,304	1	2,304				
PE Alternatives	222	1	222				
Training Room	276	1	276				
Athletic Trainer's Office	226	1	226				
Natatorium (Pool)	6,742	1	6,742				
Boys Pool Shower / Lockers / Toilets	460	1	460				
Girls Pool Shower / Lockers / Toilets	546	1	546				
Pool Storage	207	1	207				
Pool Office	91	1	91				
Gym Storage	1,093	1	1,093				
Gym Storage #1	400	1	400				
Gym Storage #2	403	1	403				
Gym Storage #3	794	1	794				
Gym Storage #4	96	1	96				
Locker Rooms - Boys / Girls w/ Toilets							
Boys Lockers	3,427	1	3,427				
Boys Showers & Drying Area	2,370	1	2,370				
Girls Lockers	1,464	1	1,464				
Girls Showers & Drying Area	6,921	1	6,921				
Phys. Ed. Storage	932	1	932				
Phys. Ed. Storage	803	1	803				
Phys. Ed. Storage	403	1	403				
Phys. Ed. Storage	184	1	184				
Coaches Office #1	96	1	96				
Coaches Office #2	107	1	107				
Coaches Office #3	262	1	262				
Coaches Office w/ Toilet/Shower #4	303	1	303				
PE Office w/ Toilet/Shower #1	350	1	350				
PE Office w/ Toilet/Shower #2	306	1	306				
PE Office #3	142	1	142				
PE Office #4	256	1	256				
Laundry	290	1	290				
Athletic Director's Office							
Health Instructor's Office w/ Shower & Toilet							
MEDIA CENTER							
Media Center / Reading Room	18,449	1	23,440				
Computer Lab	1,080	1	18,449				
Instructional Media Classroom 1	685	1	1,080				
Instructional Media Classroom 2	840	1	685				
Instructional Media Classroom 3	849	1	840				
Assessment Center	760	1	849				
Professional Library	325	1	760				
Audio/Visual Storage	226	1	325				
Library Media Office	226	1	226				
AUDITORIUM / DRAMA							
Auditorium	14,123	1	21,142				
Stage	3,250	1	14,123				
Auditorium Storage	165	1	3,250				
Auditorium Storage	70	1	165				
Auditorium Storage	100	3	70				
Costume Storage Room	527	1	100				
Make-up / Dressing Rooms	281	2	527				
Controls / Lighting / Projection	135	3	281				
Blackbox Theater	1,675	1	1,675				
Ticket Office	65	1	65				
DINING & FOOD SERVICE							
Cafeteria / Student Lounge / Break-out	16,420	1	26,201				
Chair / Table Storage	1,610	1	16,420				
Day Food Storage	2,398	1	1,610				
Dietary Kitchen Storage	90	3	2,398				
Food Service Office	107	1	90				
Locker Area			107				
Scramble Serving Area							
Kitchen	5,119	1	5,119				
Staff Lunch Room	277	1	277				
Kitchen Break Room							
MEDICAL							
Medical Suite / Toilet	54	3	2,375				
Nurses Office / Waiting Room	747	1	54				
Interview Room	45	1	747				
Examination Room / Reading	130	3	45				
Storage	352	1	130				
Nurse: Supervisor Office	329	1	352				
Nurse: Supervisor Kitchen	160	1	329				
Nurse: Storage	190	1	160				
ADMINISTRATION & GUIDANCE							
General Office / Waiting Room / Toilet	1,586	1	14,020				
Teachers Mail and Time Room			1,586				
Duplicating Room	163	1					
Records Room (Sale)	574	1	163				
Principal's Office w/ Conference Area			574				

[illegible]





Proposed Space Summary - BMC Durfee High School

OPTION 1E  
NC with Athletic Building Renovation

6.26.17

ROOM TYPE	Existing Conditions			PROPOSED				MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)		
	ROOM NFA <sup>1</sup>	# OF RMS	area totals	Existing to Remain/Renovated	New	ROOM NFA <sup>1</sup>	# OF RMS	area totals	ROOM NFA <sup>1</sup>	# OF RMS
Principal's Secretary / Waiting	200	1	200			125	1	125	125	1
Administration Conference Room 1	211	1	211			250	1	250	250	1
Administration Conference Room 2	718	1	718			425	1	425	425	1
Director of Operations Office	178	1	178			250	1	250	250	1
School Psychologist Office	152	1	152			125	1	125	125	1
School Psychologist Office	120	1	120			125	1	125	125	1
Attendance Office	162	1	162			100	1	100	100	1
School I/c Career Coordinator	150	2	300			200	2	200	200	2
Counselor Office	135	1	135			100	1	100	100	1
Counselor Office	75	1	75			100	1	100	100	1
Evening School Office	167	1	167			125	1	125	125	1
<b>Security</b>										
Security Desk (Main Lobby)	200	1	200			250	1	250	250	1
Security Conference Room	532	1	532			150	1	150	150	1
Security Staff Conference Room	153	1	153			100	2	200	100	2
Security Office	297	1	297			125	2	250	125	2
School Resource Officer	432	2	864							
<b>Freshman Academy Offices</b>										
Behavior Specialist	1,088	1	1,088							
Freshman Student Support Specialist	432	1	432			100	1	100	100	1
Clerk / Office Manager (SAM) Office Area						300	1	300	300	1
Guidance Counselor Office		2				200	2	200	200	2
Adjustment Counselor Office		1				100	2	200	100	2
Vice Principal Office		1				150	1	150	150	1
Conference Room		1				150	1	150	150	1
Kitchenette										
<b>Sophomore Class Offices</b>										
Clerk / Office Manager (SAM) Office Area	608	1	608			300	1	300	300	1
Guidance Counselor Office		2				100	2	200	100	2
Adjustment Counselor Office		1				100	1	100	100	1
Vice Principal Office		1				150	1	150	150	1
Conference Room						150	1	150	150	1
<b>Junior Class Offices</b>										
Clerk / Office Manager (SAM) Office Area	1,574	1	1,574			300	1	300	300	1
Guidance Counselor Office		3				100	3	300	100	3
Adjustment Counselor Office		1				100	1	100	100	1
Vice Principal Office		1				150	1	150	150	1
Conference Room						150	1	150	150	1
<b>Senior Class Offices</b>										
Clerk / Office Manager (SAM) Office Area	900	1	900			300	1	300	300	1
Guidance Counselor Office		2				100	2	200	100	2
Adjustment Counselor Office		1				100	1	100	100	1
Vice Principal Office		1				150	1	150	150	1
Conference Room						150	1	150	150	1
Adjustment Counselor Office	98	1	98							
Adjustment Counselor Office	181	2	362			200	1	200	200	1
Adjustment Counselor Office	270	1	270			125	1	125	125	1
Adjustment Counselor Office	262	1	262			125	3	375	125	3
Supervisory / Spare Office										
BCC Conference Room/Office	329	1	329			120	1	120	120	1
Guidance Director Office	232	1	232			200	1	200	200	1
Registrar Office	152	1	152			125	1	125	125	1
Guidance Office	168	1	168			125	3	375	125	3
Guidance Office	168	1	168							
Guidance Office	115	1	115							
Guidance Office	129	1	129							
Guidance Office	177	1	177							
Guidance Office	207	1	207							
<b>CUSTODIAL &amp; MAINTENANCE</b>			15,101							
Custodian's Office	187	1	187			150	1	150	150	1
	135	1	135							
	224	2	448							
Custodian's Work Area	950	1	950							
Custodian's Workshop	2,936	1	2,936							
Custodian's Storage	238	1	238							
Custodian's Storage	50	2	100							
Custodian's Storage	388	1	388							
Custodian's Storage	107	1	107							
Custodian's Storage	100	1	100							
Custodian's Storage & Toilet	323	1	323							
Custodian's Storage	173	1	173							
Recycling Room / Trash			0							
Receiving and General Supply			0							
Receiving (Culinary)	372	1	372			400	1	400	400	1
Building Maintenance Office	188	1	188			793	1	793	793	1
Building Maintenance Office	163	1	163							
Building Maintenance Garage	1,081	1	1,081							
Storeroom						1,385	1	1,385	1,385	1
Storage Room (A40)	235	1	235							
Storage Room (A41)	166	1	166							
Storage Room (A41 & A43)	80	8	640							
Storage Room (A42)	140	1	140							
Storage Room (A42)	85	1	85							
Storage Room (A43)	147	1	147							
Storage Room (A43)	230	2	460							
Storage Room (A46)	80	4	320							
Storage Room (A47)	90	4	360							
Storage Room (A47A8)	232	2	464							
Storage Room (A48)	170	1	170							
Network / Telecom Room (MDF)	271	1	271			200	1	200	200	1
IDF & Storage	174	1	174							
IDF (A43)	86	1	86							
IT Offices	1,433	1	1,433							
<b>OTHER</b>			4,044							
Other (specify)										
District Copy Center and Office	925	1	925							
Vacant Space (Formerly District IT Offices)	3,119	1	3,119							
Total Building Net Floor Area (NFA)			385,483							
Proposed Student Capacity / Enrollment										
Total Building Gross Floor Area (GFA) <sup>2</sup>			573,210							
Grossing factor (GFANFA)			1.49							

- <sup>1</sup> Individual Room Net Floor Area (NFA)
- <sup>2</sup> Total Building Gross Floor Area (GFA)

Includes the net square footage measured from the inside face of the perimeter walls and includes all specific spaces assigned to a particular program area including such spaces as non-communal toilets and storage rooms.


Includes the entire building gross square footage measured from the outside face of exterior walls

Architect Certification

I hereby certify that all of the information provided in this "Proposed Space Summary" is true, complete and accurate and, except as agreed to in writing by the Massachusetts School Building Authority, in accordance with the guidelines, rules, regulations and policies of the Massachusetts School Building Authority to the best of my knowledge and belief. A true statement, made under the penalties of perjury.

Name of Architect Firm: Ai3 Architects

Name of Principal Architect: Troy Rappall / Partner

Signature of Principal Architect: 

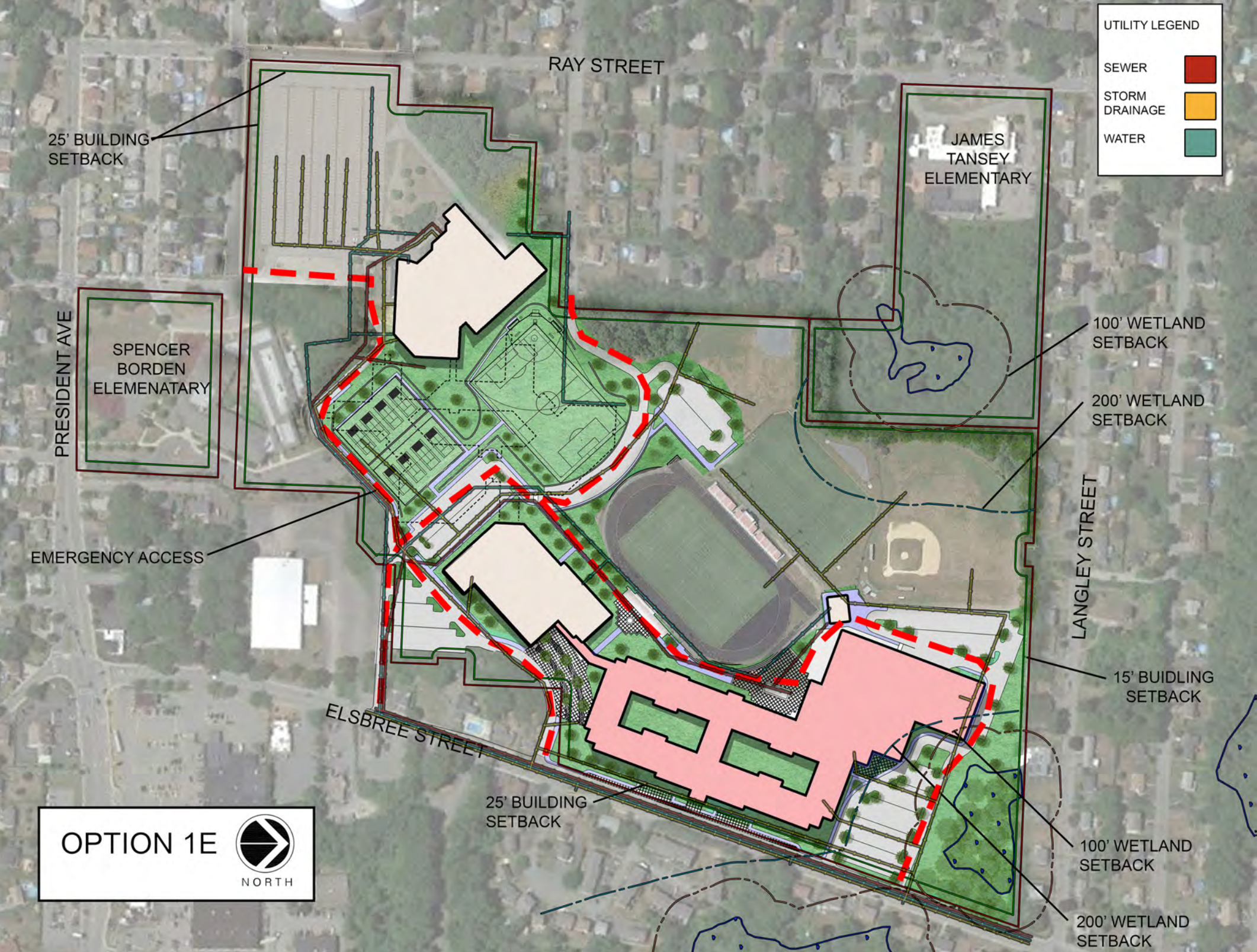
Date: 5/25/2017





# CONCEPTUAL SITE PLAN

Preferred Solution

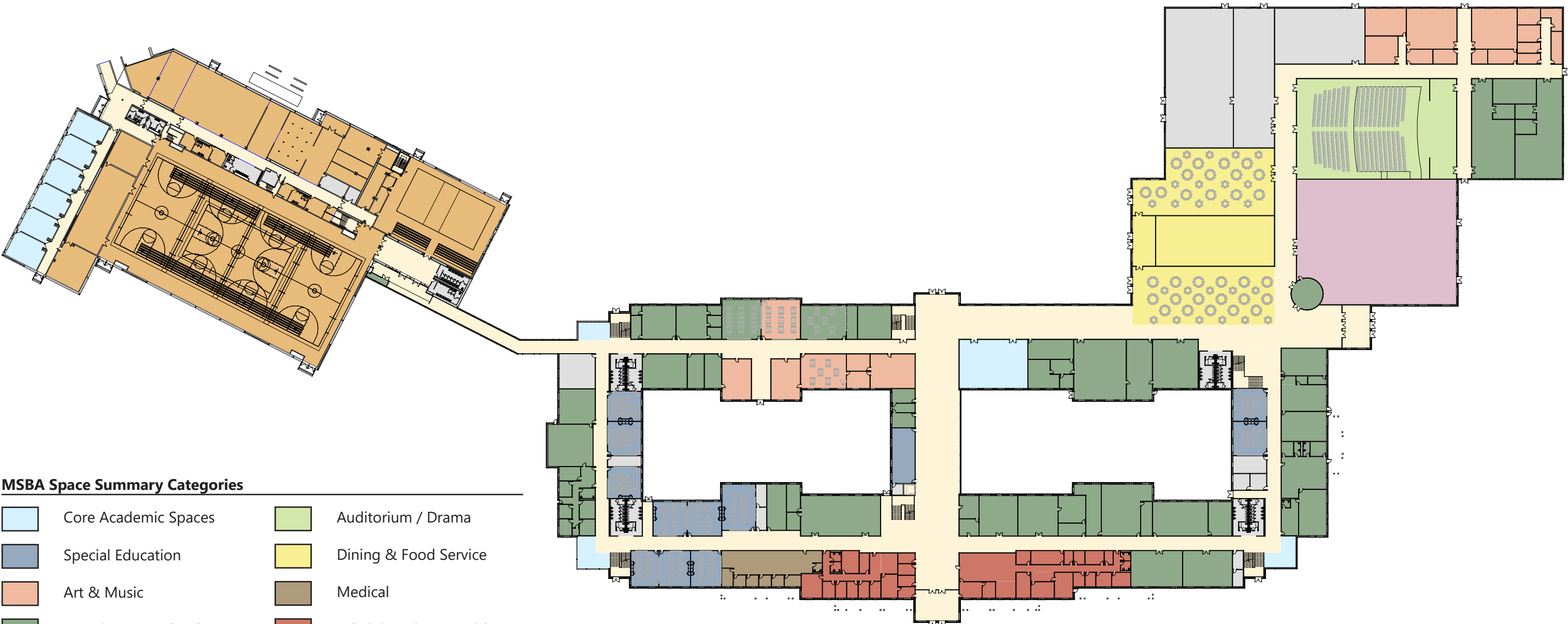

















# CONCEPTUAL BUILDING PLANS

Preferred Solution

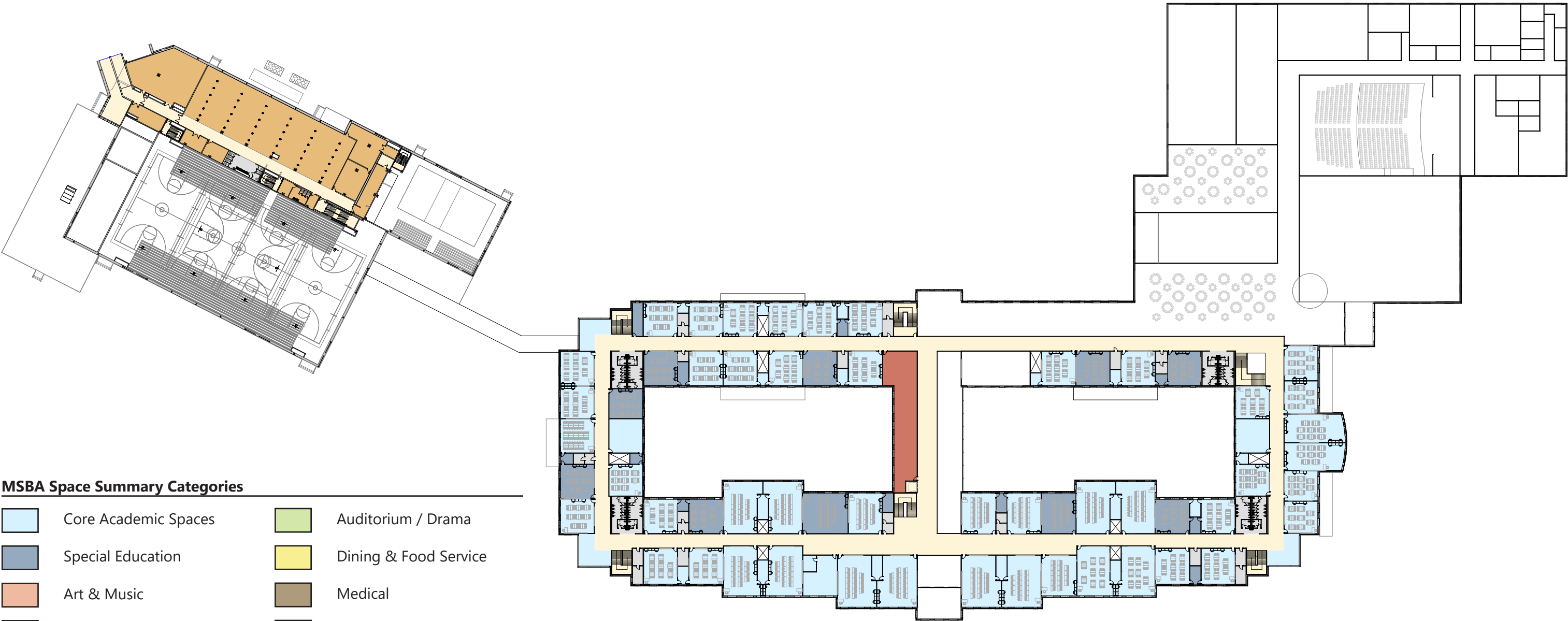


**MSBA Space Summary Categories**

	Core Academic Spaces		Auditorium / Drama
	Special Education		Dining & Food Service
	Art & Music		Medical
	Vocations & Technology		Administration & Guidance
	Health & Physical Education		Custodial & Maintenance
	Media Center		

## FLOOR ONE

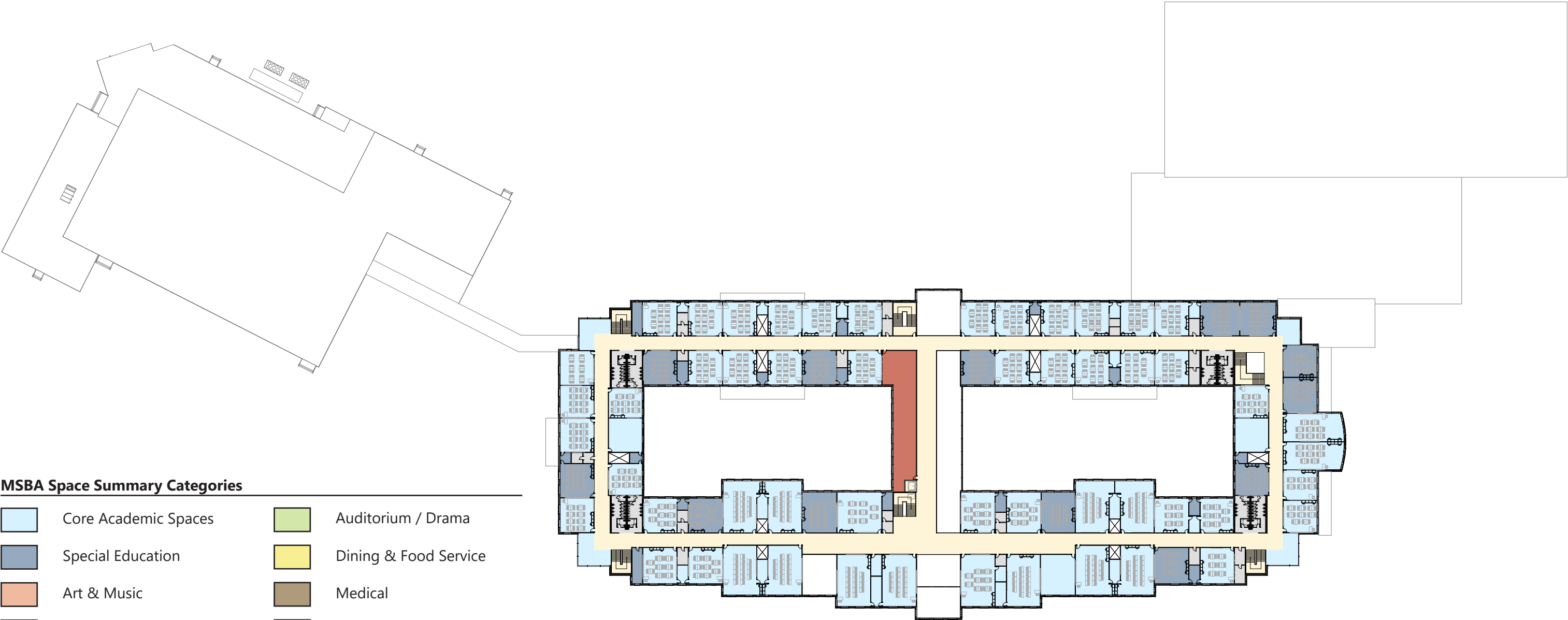




**FLOOR TWO**







**FLOOR THREE**



# SUSTAINABILITY DOCUMENTS

Preferred Solution

This is an acknowledgement that the City of Fall River School District has identified a goal of no additional reimbursement points from the MSBA High Efficiency Green School Program. As their Designer, we have submitted a completed "LEEDv4 BD+C: Schools" scorecard showing 48 attempted points, LEED Certified Certification, which will meet that goal.

The scope of work for this project will include the construction elements and performance tasks to achieve that goal; and all subsequent documents, including but not limited to specifications, drawings and cost estimates, will match the scope of work indicated in the submitted scorecard.

Please note that the project will comply with Project Advisory #41. The project will also exceed the level of energy efficiency required in the current Massachusetts (base) energy code by 10%, using the LEED-S EA "Optimize Energy Performance" credit submittal to demonstrate that performance.

Please see the preliminary scorecard attached on the following page.

Sincerely,  
Ai3 Architects, LLC



Troy L. Randall, Partner  
AIA LEED AP BD+C

LEED v4 for BD+C: Schools  
Project Checklist



Project Name: BMC Durfee High School

Date: 6.29.2017

DRAFT

Y	?	N	Credit	Integrative Process	1
8	2	0	Location and Transportation	15	
			Credit	LEED for Neighborhood Development Location	15
	1		Credit	Sensitive Land Protection	1
			Credit	High Priority Site	2
	4		Credit	Surrounding Density and Diverse Uses	5
	2	1	Credit	Access to Quality Transit	4
			Credit	Bicycle Facilities	1
			Credit	Reduced Parking Footprint	1
	1		Credit	Green Vehicles	1
6	4	0	Sustainable Sites	12	
			Prereq	Construction Activity Pollution Prevention	Required
			Prereq	Environmental Site Assessment	Required
	1		Credit	Site Assessment	1
		2	Credit	Site Development - Protect or Restore Habitat	2
	1		Credit	Open Space	1
	2	1	Credit	Rainwater Management	3
			Credit	Heat Island Reduction	2
	1		Credit	Light Pollution Reduction	1
			Credit	Site Master Plan	1
	1		Credit	Joint Use of Facilities	1
5	2	0	Water Efficiency	12	
			Prereq	Outdoor Water Use Reduction	Required
			Prereq	Indoor Water Use Reduction	Required
			Prereq	Building-Level Water Metering	Required
	2		Credit	Outdoor Water Use Reduction	2
	2	2	Credit	Indoor Water Use Reduction	7
			Credit	Cooling Tower Water Use	2
	1		Credit	Water Metering	1
13	7	0	Energy and Atmosphere	31	
			Prereq	Fundamental Commissioning and Verification	Required
			Prereq	Minimum Energy Performance	Required
			Prereq	Building-Level Energy Metering	Required
			Prereq	Fundamental Refrigerant Management	Required
	4		Credit	Enhanced Commissioning	6
	8	2	Credit	Optimize Energy Performance(8 min. (20%) for additional MSBA funding)	16
			Credit	Advanced Energy Metering	1
	2		Credit	Demand Response	2
	2		Credit	Renewable Energy Production	3
	1		Credit	Enhanced Refrigerant Management	1
			Credit	Green Power and Carbon Offsets	2

510 Materials and Resources					13
Y	Y		Prereq	Storage and Collection of Recyclables	Required
Y	Y		Prereq	Construction and Demolition Waste Management Planning	Required
		X	Credit	Building Life-Cycle Impact Reduction	5
	1		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
	1		Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
	1	1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
	2		Credit	Construction and Demolition Waste Management	2
640 Indoor Environmental Quality					16
Y	Y		Prereq	Minimum Indoor Air Quality Performance	Required
Y	Y		Prereq	Environmental Tobacco Smoke Control	Required
Y	Y		Prereq	Minimum Acoustic Performance	Required
1			Credit	Enhanced Indoor Air Quality Strategies	2
2			Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
1	1		Credit	Indoor Air Quality Assessment	2
		X	Credit	Thermal Comfort	1
1	1		Credit	Interior Lighting	2
	1		Credit	Daylight	3
	1		Credit	Quality Views	1
		X	Credit	Acoustic Performance	1
330 Innovation					6
2			Credit	Pilot Credit: No Cooling Tower	5
1			Credit	LEED Accredited Professional	1
2210 Regional Priority (4 max)					4
1			Credit	Regional Priority: SS Rainwater Management (2 point min)	1
1			Credit	Regional Priority: WE Indoor Water Use Reduction (4 point min)	1
		X	Credit	Regional Priority: WE Cooling Tower Water Use (2 point min)	1
	1		Credit	Regional Priority: EA Optimized Energy Performance (8 point min)	1
	1		Credit	Regional Priority: EA Renewable Energy Production (2 point min)	1
		X	Credit	Regional Priority: MR Building Life-Cycle Impact Reduction (2 point min)	1

**48 21 0 TOTALS** Possible Points: 110  
Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110

# BUDGET STATEMENT

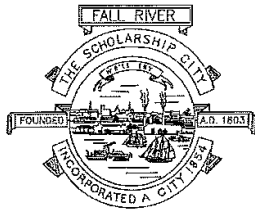
Preferred Solution

The BMC Durfee High School Project will have a significant effect on the City's budget and financing capacity. City and School officials, their financial teams, civic leaders and the SBC's Finance Subcommittee have continued to work together to analyze the City's existing debt limit, debt service capacity, and financing capabilities to determine the City's ability to support the Preferred Option 1E. This option was also thoroughly evaluated from a financial perspective and thoughtfully compared to the other options that were explored. The City feels that the anticipated construction costs of \$197,067,802 and the total project cost of \$239,043,243 are within the City's capacity to fund the project. The City intends to fund approximately \$40 million of the City share from General Funds and to seek Debt Exclusion approval for up to \$48 million from City residents.

The City of Fall River remains committed to providing the necessary financial resources to fund the BMC Durfee High School in a prudent and responsible manner that does not preclude other high-priority known and future capital expenditure needs. The Project Team has worked closely and diligently with the City to develop the Preferred Option 1E and feels confident that it not only meets the educational goals, objectives and needs of the District and its students but is also fiscally feasible for the City.

The City Debt Limit, Debt Service Analysis, Tax Impact Analysis and the Capital Budget Statements follow.





**CITY OF FALL RIVER  
MASSACHUSETTS**

**DEPARTMENT of FINANCIAL SERVICES**  
TREASURER • COLLECTOR • AUDITOR • ASSESSOR

**JASIEL F. CORREIA II**  
*Mayor*

**PAULIANNE MARTINS-TEIXEIRA**  
*Treasurer*

April 11, 2017

My name is Paulianne Martins-Teixeira and I am the duly appointed Treasurer for the City of Fall River. The city's inside debt limit is \$ 271,084,560 and the city's inside debt capacity as of June 30, 2016 is \$185,499,345.

Paulianne Martins Teixeira  
Treasurer

One Government Center Fall River, MA 02722  
TEL: (508) 324-2260 FAX (508) 324-2040

**CITY OF FALL RIVER**

**CITY DEBT LIMIT, ALSO REFERRED TO AS DEBT LIMIT**

The inside debt limit is based on five percent (5%) of the equalized valuation of the City.

Equalized Valuation	5,421,691,200.00
Inside Debt Limit (5%)	271,084,560.00
Existing Inside Debt	(72,460,300.00)
Authorized Debt but Unissued	<u>(13,124,915.00)</u>
Current Debt Capacity	185,499,345.00

**OUTSIDE DEBT**

Current Outside Debt related to schools	8,234,086.00
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Total Net Debt Service as of 6-30-2016 (after August 2016 Refunding and 12/16/2016 MCWT Swap)

A

	General Fund		School		Water Net of MWPAT Subsidy		Sewer Net of MWPAT Subsidy		GF City + School
	Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest	P & I
2017	2,698,000.00	893,398.02	4,280,906.65	1,446,410.51	3,144,527.71	1,315,857.53	5,288,099.88	2,836,401.63	9,318,715.18
2018	2,101,500.00	787,104.54	3,998,206.65	2,072,515.39	3,164,386.37	1,184,365.72	5,325,296.43	2,762,652.64	8,959,326.58
2019	2,041,000.00	686,590.76	4,045,206.65	1,634,270.72	3,238,706.67	1,081,149.46	5,469,798.93	2,610,254.03	8,407,068.13
2020	1,991,000.00	594,250.76	4,138,106.65	1,481,415.59	3,293,403.99	980,607.26	5,588,126.17	2,453,395.93	8,204,773.00
2021	2,015,800.00	506,185.76	4,217,406.65	1,323,929.46	3,344,621.68	878,267.81	5,708,482.05	2,296,730.76	8,063,321.87
2022	1,939,000.00	418,523.76	3,783,906.65	1,160,776.32	3,374,097.42	781,409.34	5,711,432.27	2,123,616.98	7,302,206.73
2023	1,684,000.00	332,158.76	3,494,906.65	1,019,883.19	3,417,098.43	692,502.11	5,637,859.01	1,980,015.18	6,530,948.60
2024	1,668,000.00	259,568.76	3,593,906.65	881,715.06	3,261,375.70	602,354.32	5,667,670.01	1,823,644.74	6,403,190.47
2025	1,703,000.00	199,748.76	3,690,906.65	753,946.93	3,297,405.44	533,760.64	5,925,477.13	1,590,808.94	6,347,602.34
2026	1,257,000.00	143,173.76	3,796,906.65	620,273.79	2,517,475.95	465,205.30	6,160,721.34	1,426,871.84	5,817,354.20
2027	1,185,000.00	98,480.63	3,920,906.65	480,599.41	2,384,885.76	397,962.68	6,308,682.82	1,260,956.81	5,684,986.69
2028	728,000.00	72,686.25	3,589,906.65	348,720.03	2,318,883.72	335,560.47	6,247,976.38	1,116,619.10	4,739,312.93
2029	378,000.00	55,635.00	3,684,906.65	220,146.89	2,014,156.68	279,117.04	6,385,664.98	971,617.03	4,338,688.54
2030	350,000.00	44,550.00	965,000.00	136,043.76	1,961,321.62	226,083.77	6,523,094.46	834,716.77	1,495,593.76
2031	370,000.00	33,750.00	975,000.00	104,443.76	1,980,703.03	172,851.03	6,180,608.74	694,850.74	1,483,193.76
2032	380,000.00	22,500.00	995,000.00	72,393.76	1,727,126.90	123,807.54	6,088,476.84	556,155.95	1,469,893.76
2033	390,000.00	10,950.00	505,000.00	39,893.76	1,431,732.23	78,876.10	6,135,161.29	418,152.04	945,843.76
2034	170,000.00	2,550.00	520,000.00	24,518.76	905,281.01	47,951.28	5,301,218.18	328,074.38	717,068.76
2035	-	-	535,000.00	8,359.38	777,459.21	27,789.41	3,183,571.76	247,820.79	543,359.38
2036	-	-	-	-	586,699.00	10,983.98	2,469,375.45	173,866.55	-
2037	-	-	-	-	-	-	2,467,572.70	114,861.63	-
2038	-	-	-	-	-	-	1,744,962.96	64,355.74	-
2039	-	-	-	-	-	-	1,787,790.52	21,624.59	-
2040	-	-	-	-	-	-	-	-	-
Totals	23,049,300.00	5,161,805.52	54,731,086.45	13,830,256.47	48,141,348.52	10,216,462.79	117,307,120.30	28,708,064.79	96,772,448.44

	Principal	Interest
Grand Total	243,228,855.27	57,916,589.57
	301,145,444.84	



**City of Fall River, Massachusetts**  
**Existing & Proposed Long-Term General Fund Debt Service**

Estimated Interest Rate on Proposed Notes Issued 2018: 2.00%  
Estimated Interest Rate on Proposed Notes Issued 2019: 2.25%  
Estimated Interest Rate on Proposed Notes Issued 2020: 2.50%  
Estimated Interest Rate on Proposed Notes Issued 2021: 2.50%

Estimated Interest Rate on Proposed Bonds Issued 2018: 4.50%  
Estimated Interest Rate on Proposed Bonds Issued 2022: 5.00%

**Durfee High School Financing Model #1A - 20 year bonds (2/22/2017)**

	A	B	C = A + B	D	E	F = C + D + E	
Fiscal Year	Total Existing Long-Term General Fund Tax-Supported Debt Service Outstanding (page 2)	Plus: Existing General Fund Tax-Supported Short-Term Bond Anticipation Note Interest & Principal Paydowns (page 3)	Equals: Net Existing General Fund Tax-Supported Debt Service	Plus: Total Projected Debt Service on \$10.986M General Fund Tax-Supported SQ Bonds dated February 2018 (see pages 5 - 8)	Plus: Total Projected Debt Service on \$48M General Fund Tax-Supported SQ Bonds dated February 2022 (see pages 9 - 10)	Equals: Total Existing & Projected Long-Term General Fund Tax-Supported Debt Service	Fiscal Year
2017	9,318,715	163,624	9,482,339	-	-	9,482,339	2017
2018	8,927,827	219,111	9,146,938	-	-	9,146,938	2018
2019	8,368,068	432,708	8,800,776	1,824,898	-	10,625,674	2019
2020	8,161,773	1,305,000	9,466,773	1,755,063	-	11,221,836	2020
2021	8,020,322	1,587,500	9,607,822	1,748,300	-	11,356,122	2021
2022	7,259,207	1,587,500	8,846,707	1,049,925	-	9,896,632	2022
2023	6,482,949	-	6,482,949	903,763	3,853,250	11,239,961	2023
2024	6,355,190	-	6,355,190	875,188	3,858,250	11,088,628	2024
2025	6,294,602	-	6,294,602	670,663	3,859,750	10,825,015	2025
2026	5,760,354	-	5,760,354	679,513	3,857,250	10,297,117	2026
2027	5,627,987	-	5,627,987	672,350	3,860,500	10,160,837	2027
2028	4,678,313	-	4,678,313	556,988	3,859,250	9,094,550	2028
2029	4,277,689	-	4,277,689	543,650	3,858,375	8,679,714	2029
2030	1,495,594	-	1,495,594	539,863	3,857,625	5,893,081	2030
2031	1,483,194	-	1,483,194	559,838	3,861,625	5,904,656	2031
2032	1,469,894	-	1,469,894	377,625	3,855,250	5,702,769	2032
2033	945,844	-	945,844	295,700	3,858,250	5,099,794	2033
2034	717,069	-	717,069	304,900	3,855,250	4,877,219	2034
2035	543,359	-	543,359	298,538	3,860,875	4,702,772	2035
2036	-	-	-	301,725	3,854,875	4,156,600	2036
2037	-	-	-	294,463	3,857,000	4,151,463	2037
2038	-	-	-	301,638	3,861,625	4,163,263	2038
2039	-	-	-	-	3,858,500	3,858,500	2039
2040	-	-	-	-	3,857,375	3,857,375	2040
2041	-	-	-	-	3,857,750	3,857,750	2041
2042	-	-	-	-	3,859,125	3,859,125	2042
Total	96,187,948	5,295,444	101,483,392	14,554,586	77,161,750	193,199,728	

**Assumptions:**

- ✦ Proposed bonds are structured assuming level debt service payments. Interest is estimated and subject to change.
- ✦ Only considers currently authorized projects with notes outstanding and the Durfee High School construction project.
- ✦ Proposed/projected projects are not considered.
- ✦ Durfee High School construction cash flow is estimated.



City of Fall River, Massachusetts  
Total Existing General Fund Tax-Supported Debt Service  
Outstanding as of June 30, 2016 (including subsequent issues)

Date	Principal	Interest	Total P+I
06/30/2017	6,978,906.65	2,339,808.53	9,318,715.18
06/30/2018	6,068,206.65	2,859,619.93	8,927,826.58
06/30/2019	6,047,206.65	2,320,861.48	8,368,068.13
06/30/2020	6,086,106.65	2,075,666.35	8,161,773.00
06/30/2021	6,190,206.65	1,830,115.22	8,020,321.87
06/30/2022	5,679,906.65	1,579,300.08	7,259,206.73
06/30/2023	5,130,906.65	1,352,041.95	6,482,948.60
06/30/2024	5,213,906.65	1,141,283.82	6,355,190.47
06/30/2025	5,340,906.65	953,695.69	6,294,602.34
06/30/2026	4,996,906.65	763,447.55	5,760,354.20
06/30/2027	5,048,906.65	579,080.04	5,627,986.69
06/30/2028	4,256,906.65	421,406.28	4,678,312.93
06/30/2029	4,001,906.65	275,781.89	4,277,688.54
06/30/2030	1,315,000.00	180,593.76	1,495,593.76
06/30/2031	1,345,000.00	138,193.76	1,483,193.76
06/30/2032	1,375,000.00	94,893.76	1,469,893.76
06/30/2033	895,000.00	50,843.76	945,843.76
06/30/2034	690,000.00	27,068.76	717,068.76
06/30/2035	535,000.00	8,359.38	543,359.38
Total	\$77,195,886.45	\$18,992,061.99	\$96,187,948.44

Par Amounts Of Selected Issues

July 15 2006 non-called -Slade School (I).....	50,000.00
July 15 2006 non-called -Letourneau School (I).....	50,000.00
July 15 2006 non-called -Kuss Middle School Planning (I).....	70,000.00
July 15 2006 non-called -Kuss Middle School Construction (I).....	100,000.00
July 15 2006 non-called -Morton Middle School Design (I).....	120,000.00
July 15 2006 non-called -Morton School Construction (I).....	50,000.00
July 15 2006 non-called -Small School Design (I).....	130,000.00
July 15 2006 non-called -City Hall Remodeling (I).....	200,000.00
July 15 2006 non-called -Street Construction (I).....	35,000.00
July 15 2006 non-called -Field House Remodeling (School) (I).....	385,000.00
June 12 2008 Section 108 Loan (O).....	160,000.00
July 15 2008 non-called -Slade Elementary School (ISQ).....	155,000.00
July 15 2008 non-called -Letourneau Elementary School (ISQ).....	555,000.00
July 15 2008 non-called -Kuss Middle School (ISQ).....	315,000.00
July 15 2008 non-called -Small Middle School (ISQ).....	200,000.00
July 15 2008 non-called -Recreational Facility - Durfee HS (ISQ).....	20,000.00
July 15 2008 non-called -Public Building Remodeling (ISQ).....	1,893,198.45
October 23 2008 MSBA Loan 1 (O) Slade Sch.....	2,629,588.00
October 23 2008 MSBA Loan 2 (O) Small Sch.....	665,000.00
May 23 2012 -Cur Ref June 1 2001 non-called Doran School (OSQ).....	655,800.00
May 23 2012 -Cur Ref June 1 2001 non-called Borden School (OSQ).....	745,500.00
May 23 2012 -Cur Ref June 1 2001 non-called Greene School (OSQ).....	390,500.00
May 23 2012 -Cur Ref June 1 2001 non-called Slade (ISQ).....	310,500.00
May 23 2012 -Cur Ref June 1 2001 non-called Letourneau (ISQ).....	259,400.00
May 23 2012 -Cur Ref June 1 2001 non-called North End (ISQ).....	75,000.00
May 23 2012 -Cur Ref June 1 2001 non-called Fire Station (ISQ).....	854,600.00
May 23 2012 -Adv Ref Feb 1 2003 Durfee School HVAC (ISQ).....	1,335,800.00
May 23 2012 -Adv Ref Feb 1 2003 Fire Station (ISQ).....	485,000.00
May 23 2012 -Adv Ref Feb 1 2003 Library Remodeling 1 (ISQ).....	59,000.00
May 23 2012 -Adv Ref Feb 1 2003 Library Remodeling 2 (ISQ).....	67,500.00
May 23 2012 -Adv Ref Feb 1 2003 School Boilers (ISQ).....	2,400,000.00
May 23 2012 -Morton School 1 (ISQ).....	5,600,000.00
May 23 2012 -Morton School 2 (ISQ).....	1,125,000.00
May 23 2012 -Equipment (Vehicles) 1 (ISQ).....	635,000.00
May 23 2012 -Equipment (Vehicles) 2 (ISQ).....	315,000.00
February 13 2014 revised -Britland Part Renovations & Improvements (ISQ).....	775,000.00
February 13 2014 revised -Kennedy & Highland Park Improvements (ISQ).....	1,645,000.00
February 13 2014 revised -Cur Ref Feb 1 03 Non-called North End School (ISQ).....	3,820,000.00
February 12 2015 -Morton School I (ISQ).....	3,910,000.00
February 12 2015 -Morton School II (ISQ).....	1,515,000.00
February 12 2015 -Departmental Equipment & Police Cruisers I (ISQ).....	1,105,000.00
February 12 2015 -Departmental Equipment & Police Cruisers II (ISQ).....	1,255,000.00
February 12 2015 -Departmental Equipment & Police Cruisers III (ISQ).....	555,000.00
February 12 2015 -Refuse & Recycling Bins I (ISQ).....	635,000.00
February 12 2015 -Refuse & Recycling Bins II (ISQ).....	935,000.00
February 12 2015 -Refuse & Recycling Bins III (ISQ).....	2,430,000.00
February 12 2015 -Public Building Remodeling I (ISQ).....	2,340,000.00
February 12 2015 -Public Building Remodeling II (ISQ).....	530,000.00
February 12 2015 -Public Building Remodeling III (ISQ).....	25,000.00
February 12 2015 -Commercial Mower (ISQ).....	130,000.00
February 12 2015 -Street Sweeper (ISQ).....	80,000.00
February 12 2015 -Sidewalk Sweeper (ISQ).....	35,000.00
February 12 2015 -1 Ton Truck (ISQ).....	120,000.00
February 12 2015 -Salt Body for Sanders (ISQ).....	190,000.00
February 12 2015 -Wood Chippers (ISQ).....	40,000.00
February 12 2015 -Fire Department Repeaters (ISQ).....	70,000.00
February 12 2015 -Various Department Vehicles (ISQ).....	130,000.00
February 12 2015 -SUV Police Cruisers (ISQ).....	180,000.00
February 11 2016 -SUV Police Cruisers (ISQ).....	125,000.00
February 11 2016 -Departmental Equipment - Backhoe (ISQ).....	160,000.00
February 11 2016 -Departmental Equipment - Loader (ISQ).....	65,000.00
February 11 2016 -Departmental Equipment - Brush Cutter (ISQ).....	2,960,000.00
February 11 2016 -Street Lighting Upgrades (ISQ).....	508,000.00
February 11 2016 -Computer System Hardware/Software (ISQ).....	453,000.00
September 29 2016 -Cur Ref July 15 2006 Slade School (ISQ).....	453,000.00
September 29 2016 -Cur Ref July 15 2006 Letourneau School (ISQ).....	634,000.00
September 29 2016 -Cur Ref Jul 15 06 Kuss Middle School Planning(ISQ).....	905,750.00
September 29 2016 -Cur Ref Jul 15 06 Kuss Middle School Construc(ISQ).....	1,086,750.00
September 29 2016 -Cur Ref Jul 15 06 Morton Middle School Design(ISQ).....	453,000.00
September 29 2016 -Cur Ref Jul 15 06 Morton Middle School Constr(ISQ).....	453,000.00
September 29 2016 -Cur Ref July 15 2006 Small School Design (ISQ).....	1,090,000.00
September 29 2016 -Cur Ref July 15 2006 City Hall Remodeling (ISQ).....	134,000.00
September 29 2016 -Cur Ref Jul 15 06 Field House Remodel(School)(ISQ).....	2,502,000.00
September 29 2016 -Adv Ref July 15 2008 Slade Elementary School (ISQ).....	2,435,750.00
September 29 2016 -Adv Ref July 15 2008 Letourneau Elem School (ISQ).....	8,795,250.00
September 29 2016 -Adv Ref July 15 2008 Kuss Middle School (ISQ).....	4,975,000.00
September 29 2016 -Adv Ref July 15 2008 Small Middle School (ISQ).....	3,109,500.00
September 29 2016 -Adv Ref July 15 2008 Rec Facility-Durfee HS (ISQ).....	301,500.00
September 29 2016 -Adv Ref July 15 2008 Public Building Remodel(ISQ).....	

TOTAL..... 77,195,886.45



<div> <div>City of Fall River, Massachusetts</div> <div>Durfee High School Financing Model #1A - 20 year bonds (2/22/2017)</div> <div>Existing/Projected Bond Anticipation Note Schedule - General Fund</div> </div>									
DATED	DUE	AMOUNT		TYPE	TERM (IN DAYS)	30/360 Day Count RATE (4)	INTEREST/ PAYDOWNS	FY TOTAL	
2/12/2016	2/11/2017	\$	8,204,000	(1) New Money/Renewal BANs*	359	2.00%	\$ 163,624	\$ 163,624	FISCAL 2017
2/10/2017	2/8/2018	10,986,600	(2)	New Money/Renewal BANs* Paydown	358	2.00%	218,511 600		
								219,111	FISCAL 2018
2/8/2018	2/8/2019	8,000,000		New Money - Durfee High School	360	2.00%	160,000		
8/1/2018	2/8/2019	30,000,000		New Money - Durfee High School	187	1.75%	272,708		
								432,708	FISCAL 2019
2/8/2019	2/8/2020	38,000,000		Renewal - Durfee High School	360	2.25%	855,000		
2/8/2019	2/8/2020	20,000,000		New Money - Durfee High School	360	2.25%	450,000		
								1,305,000	FISCAL 2020
2/8/2020	2/8/2021	58,000,000		Renewal - Durfee High School	360	2.50%	1,450,000		
2/8/2020	2/8/2021	5,500,000		New Money - Durfee High School	360	2.50%	137,500		
								1,587,500	FISCAL 2021
2/8/2021	2/8/2022	63,500,000		Renewal - Durfee High School	360	2.50%	1,587,500	1,587,500	FISCAL 2022

\*Actual.

(1) Total Bond Anticipation Note issue was \$9,804,000, of which \$1,600,000 is supported by the sewer enterprise fund and the water enterprise fund.

(2) Total Bond Anticipation Note issue was \$14,018,925, of which \$3,032,325 is supported by the sewer enterprise fund and the water enterprise fund.





City of Fall River, Massachusetts				INTEREST RATES SUBJECT TO CHANGE			
Construction Cash Flow / Issue Proceeds / Investment Earnings				22-Feb-17			
Estimated Total Project Costs:				240,000,000			
MSBA Reimbursement %:				80.00%			
Estimated MSBA Reimbursement:				192,000,000			
City's Net Share of Project Costs:				48,000,000			
ESTIMATED CASH FLOW							
Date	Note/Bond Proceeds	Assumed MSBA Reimbursement	Available Funds	Projected Total Spending	Funds Available for Investment	Investment Earnings @ 1.50%	Investment Earnings by Fiscal Year
Feb-18	8,000,000	-	8,000,000	1,500,000	6,500,000	8,125	24,800
Mar-18	-	-	6,500,000	1,500,000	5,000,000	6,250	
Apr-18	-	1,140,000	6,140,000	1,500,000	4,640,000	5,800	
May-18	-	1,140,000	5,780,000	3,000,000	2,780,000	3,475	
Jun-18	-	1,140,000	3,920,000	3,000,000	920,000	1,150	
Jul-18	-	2,280,000	3,200,000	3,000,000	200,000	250	
Aug-18	30,000,000	2,280,000	32,480,000	10,000,000	22,480,000	28,100	
Sep-18	-	2,280,000	24,760,000	10,000,000	14,760,000	18,450	
Oct-18	-	7,600,000	22,360,000	10,000,000	12,360,000	15,450	
Nov-18	-	7,600,000	19,960,000	10,000,000	9,960,000	12,450	
Dec-18	-	7,600,000	17,560,000	11,000,000	6,560,000	8,200	
Jan-19	-	7,600,000	14,160,000	11,000,000	3,160,000	3,950	
Feb-19	20,000,000	8,360,000	31,520,000	11,000,000	20,520,000	25,650	
Mar-19	-	8,360,000	28,880,000	11,000,000	17,880,000	22,350	
Apr-19	-	8,360,000	26,240,000	10,000,000	16,240,000	20,300	
May-19	-	8,360,000	24,600,000	10,000,000	14,600,000	18,250	
Jun-19	-	7,600,000	22,200,000	10,000,000	12,200,000	15,250	
Jul-19	-	7,600,000	19,800,000	10,000,000	9,800,000	12,250	
Aug-19	-	7,600,000	17,400,000	7,500,000	9,900,000	12,375	
Sep-19	-	7,600,000	17,500,000	7,500,000	10,000,000	12,500	
Oct-19	-	5,700,000	15,700,000	7,500,000	8,200,000	10,250	
Nov-19	-	5,700,000	13,900,000	7,500,000	6,400,000	8,000	
Dec-19	-	5,700,000	12,100,000	7,500,000	4,600,000	5,750	
Jan-20	-	5,700,000	10,300,000	7,500,000	2,800,000	3,500	
Feb-20	5,500,000	5,700,000	14,000,000	7,500,000	6,500,000	8,125	
Mar-20	-	5,700,000	12,200,000	7,500,000	4,700,000	5,875	
Apr-20	-	5,700,000	10,400,000	5,000,000	5,400,000	6,750	
May-20	-	5,700,000	11,100,000	5,000,000	6,100,000	7,625	
Jun-20	-	3,800,000	9,900,000	5,000,000	4,900,000	6,125	
Jul-20	-	3,800,000	8,700,000	5,000,000	3,700,000	4,625	
Aug-20	-	3,800,000	7,500,000	5,000,000	2,500,000	3,125	
Oct-20	-	3,800,000	6,300,000	5,000,000	1,300,000	1,625	
Nov-20	-	3,800,000	5,100,000	5,000,000	100,000	125	
Dec-20	-	3,800,000	3,900,000	2,500,000	1,400,000	1,750	
Jan-21	-	3,800,000	5,200,000	2,500,000	2,700,000	3,375	
Feb-21	-	1,900,000	4,600,000	2,500,000	2,100,000	2,625	
Mar-21	-	1,900,000	4,000,000	-	4,000,000	5,000	
Apr-21	-	1,900,000	5,900,000	-	5,900,000	7,375	
May-21	-	-	5,900,000	-	5,900,000	7,375	
Jun-21	-	-	5,900,000	-	5,900,000	7,375	
Jul-21	-	9,600,000	15,500,000	-	15,500,000	19,375	
Aug-21	-	-	15,500,000	-	15,500,000	19,375	
Sep-21	-	-	15,500,000	-	15,500,000	19,375	
Oct-21	-	-	15,500,000	-	15,500,000	19,375	
Nov-21	-	-	15,500,000	-	15,500,000	19,375	
Dec-21	-	-	15,500,000	-	15,500,000	19,375	
Jan-22	-	-	15,500,000	-	15,500,000	19,375	
Feb-22	(15,500,000)	-	-	-	-	-	135,625
Mar-22	-	-	-	-	-	-	
Apr-22	-	-	-	-	-	-	
May-22	-	-	-	-	-	-	
Jun-22	-	-	-	-	-	-	
	48,000,000	192,000,000		240,000,000		492,575	492,575



City of Fall River, Massachusetts  
General Obligation State Qualified Municipal Purpose Loan of 2018 Bonds  
Dated February 7, 2018

Assumes Level Debt Service

General (continued to next page)											
	Repairs to City Parks	Yard Waste Carts	Lewiston Street Garage Improvements	Industrial Park Paving Improvements	New Fire Pumper Truck	Fire Department SCBA	Various Outdoor Recreational Facility Improvements	Community Maintenance Equipment	Jefferson St. Area Land Acquisition & Construction Services	Sucker Brook Driveway Crossing	MIS Departmental Equipment
12/1/2018	10,000	200,000	5,000	49,000	20,000	95,000	10,000	34,000	10,000	20,000	90,000
12/1/2019	10,000	220,000	5,000	65,000	25,000	105,000	10,000	30,000	25,000	35,000	95,000
12/1/2020	10,000	230,000	5,000	65,000	30,000	110,000	10,000	35,000	25,000	35,000	100,000
12/1/2021	10,000	-	10,000	70,000	30,000	115,000	10,000	35,000	25,000	35,000	105,000
12/1/2022	15,000	-	10,000	70,000	30,000	125,000	15,000	35,000	25,000	40,000	-
12/1/2023	15,000	-	10,000	75,000	35,000	130,000	15,000	40,000	30,000	40,000	-
12/1/2024	15,000	-	10,000	80,000	35,000	-	15,000	-	30,000	40,000	-
12/1/2025	15,000	-	10,000	85,000	35,000	-	15,000	-	30,000	45,000	-
12/1/2026	15,000	-	10,000	85,000	40,000	-	15,000	-	30,000	45,000	-
12/1/2027	15,000	-	10,000	90,000	40,000	-	15,000	-	35,000	50,000	-
12/1/2028	15,000	-	10,000	95,000	40,000	-	15,000	-	35,000	50,000	-
12/1/2029	15,000	-	10,000	100,000	45,000	-	15,000	-	35,000	50,000	-
12/1/2030	20,000	-	10,000	105,000	45,000	-	20,000	-	40,000	55,000	-
12/1/2031	-	-	10,000	-	-	-	20,000	-	40,000	55,000	-
12/1/2032	-	-	10,000	-	-	-	-	-	40,000	60,000	-
12/1/2033	-	-	15,000	-	-	-	-	-	45,000	65,000	-
12/1/2034	-	-	15,000	-	-	-	-	-	45,000	65,000	-
12/1/2035	-	-	15,000	-	-	-	-	-	50,000	70,000	-
12/1/2036	-	-	15,000	-	-	-	-	-	50,000	70,000	-
12/1/2037	-	-	15,000	-	-	-	-	-	55,000	75,000	-
Total	\$ 180,000	\$ 650,000	\$ 210,000	\$ 1,034,000	\$ 450,000	\$ 680,000	\$ 200,000	\$ 209,000	\$ 700,000	\$ 1,000,000	\$ 390,000
Original Issue Date of BANs	2/12/2016	2/12/2016	2/12/2016	2/12/2016	2/12/2016	2/12/2016	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017
BANs Outstanding	\$180,000	\$650,000	\$210,000	\$1,034,000	\$450,000	\$680,000	\$200,000	\$209,000	\$700,000	\$1,000,000	\$390,000
Reference	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(9)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)
Maximum Term	15	5	30	15	15	8	15	7	30	30	5
Date of MFOB Approval	4/1/2016	1/27/2016	1/27/2016	1/27/2016	1/27/2016	1/27/2016	TBD	TBD	TBD	TBD	TBD
Original Auth. Amt	\$380,000	8/20/3679	\$210,000	\$1,034,000	\$475,000	\$680,000	\$367,490	\$209,375	\$1,000,000	\$1,000,000	\$390,000
Date of Auth.	2/24/2015	8/19/2015	9/24/2015	2/24/2015	10/29/2015	10/29/2015	1/13/2016	2/11/2016	9/30/2016	9/30/2016	10/28/2016
Amount of Paydown	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Maximum Maturity	2/12/2031	2/12/2021	2/12/2046	2/12/2031	2/12/2031	2/12/2024	2/10/2032	2/10/2024	2/10/2047	2/10/2047	2/10/2022
Minimum Principal Payment	\$13,846	\$216,667	\$7,500	\$79,538	\$34,615	\$113,333	\$14,286	\$34,833	\$24,138	\$34,483	\$97,500
Remaining Life	13	3	28	13	13	6	14	6	29	29	4



City of Fall River, Massachusetts  
General Obligation State Qualified Municipal Purpose Loan of 2018 Bonds  
Dated February 7, 2018

Assumes Level Debt Service

General (continued from previous page)													
	Fire Departmental Equipment	Buildings & Grounds Departmental Equipment (10)	Buildings & Grounds Departmental Equipment (8)	Buildings & Grounds Departmental Equipment (6)	Buildings & Grounds Departmental Equipment (5)	Buildings & Grounds Departmental Equipment (3)	Parks & Cemetery Departmental Equipment (10)	Parks & Cemetery Departmental Equipment (8)	Parks & Cemetery Departmental Equipment (7)	Parks & Cemetery Departmental Equipment (4)	Streets & Highways Departmental Equipment (10)	Streets & Highways Departmental Equipment (5)	Streets & Highways Departmental Equipment (2)
12/1/2018	20,000	16,300	5,000	21,300	28,500	3,900	8,000	3,000	20,000	17,000	34,000	20,000	21,000
12/1/2019	20,000	20,000	5,000	25,000	25,000	5,000	10,000	-	20,000	20,000	35,000	20,000	-
12/1/2020	25,000	20,000	-	25,000	30,000	-	10,000	-	20,000	20,000	35,000	25,000	-
12/1/2021	25,000	20,000	-	25,000	30,000	-	10,000	-	20,000	-	35,000	25,000	-
12/1/2022	25,000	25,000	-	30,000	-	-	10,000	-	25,000	-	40,000	-	-
12/1/2023	25,000	25,000	-	-	-	-	10,000	-	25,000	-	40,000	-	-
12/1/2024	30,000	25,000	-	-	-	-	10,000	-	-	-	40,000	-	-
12/1/2025	30,000	25,000	-	-	-	-	10,000	-	-	-	45,000	-	-
12/1/2026	30,000	30,000	-	-	-	-	10,000	-	-	-	45,000	-	-
12/1/2027	-	-	-	-	-	-	-	-	-	-	-	-	-
12/1/2028	-	-	-	-	-	-	-	-	-	-	-	-	-
12/1/2029	-	-	-	-	-	-	-	-	-	-	-	-	-
12/1/2030	-	-	-	-	-	-	-	-	-	-	-	-	-
12/1/2031	-	-	-	-	-	-	-	-	-	-	-	-	-
12/1/2032	-	-	-	-	-	-	-	-	-	-	-	-	-
12/1/2033	-	-	-	-	-	-	-	-	-	-	-	-	-
12/1/2034	-	-	-	-	-	-	-	-	-	-	-	-	-
12/1/2035	-	-	-	-	-	-	-	-	-	-	-	-	-
12/1/2036	-	-	-	-	-	-	-	-	-	-	-	-	-
12/1/2037	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	\$ 230,000	\$ 206,300	\$ 10,000	\$ 126,300	\$ 113,500	\$ 8,900	\$ 88,000	\$ 3,000	\$ 130,000	\$ 57,000	\$ 349,000	\$ 90,000	\$ 21,000
Original Issue Date of BANs	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017
BANs Outstanding	\$230,000	\$206,300	\$10,000	\$126,300	\$113,500	\$8,900	\$88,000	\$3,600	\$130,000	\$57,000	\$349,000	\$90,000	\$21,000
Reference	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)
Maximum Term	10	10	8	6	5	3	10	8	7	4	10	5	2
Date of MFOB Approval	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Original Auth. Amt	\$300,000	\$206,300	\$10,000	\$126,300	\$113,500	\$8,900	\$88,000	\$3,600	\$130,000	\$57,000	\$349,000	\$90,000	\$21,000
Date of Auth.	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016
Amount of Paydown	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$600	\$0	\$0	\$0	\$0	\$0
Maximum Maturity	2/10/2027	2/10/2027	2/10/2025	2/10/2023	2/10/2022	2/10/2020	2/10/2027	2/10/2025	2/10/2024	2/10/2021	2/10/2027	2/10/220	2/10/2019
Minimum Principal Payment	\$25,556	\$22,922	\$1,429	\$25,260	\$28,375	\$4,450	\$9,778	\$429	\$21,667	\$19,000	\$38,778	\$22,500	\$21,000
Remaining Life	9	9	7	5	4	2	9	7	6	3	9	4	1



City of Fall River, Massachusetts  
General Obligation State Qualified Municipal Purpose Loan of 2018 Bonds  
Dated February 7, 2018

Assumes Level Debt Service

General (continued from previous page)										School			Grand Total
Replace Sidewalks - Shared Homeowner Program	Streetscapes - Purchase Street	Streetscapes - Bank Street/Columbia Square	Streetscapes - East Main Street	Police Departmental Equipment	Middle Street Flood Control	Total General	Westall School Wind Storm Damage Repair	Durfee High School Feasibility Study	Total School				
12/1/2018	5,000	10,000	10,000	5,000	60,000	5,000	\$ 856,000	35,000	310,000	\$ 345,000	\$ 1,201,000		
12/1/2019	5,000	15,000	15,000	5,000	70,000	5,000	945,000	65,000	335,000	400,000	1,345,000		
12/1/2020	5,000	15,000	15,000	5,000	70,000	5,000	980,000	65,000	355,000	420,000	1,400,000		
12/1/2021	5,000	15,000	15,000	5,000	-	5,000	680,000	70,000	-	70,000	750,000		
12/1/2022	5,000	15,000	15,000	5,000	-	5,000	565,000	70,000	-	70,000	635,000		
12/1/2023	5,000	15,000	15,000	5,000	-	5,000	560,000	75,000	-	75,000	635,000		
12/1/2024	5,000	15,000	15,000	5,000	-	5,000	375,000	80,000	-	80,000	455,000		
12/1/2025	5,000	20,000	20,000	5,000	-	5,000	400,000	85,000	-	85,000	485,000		
12/1/2026	10,000	20,000	20,000	5,000	-	5,000	415,000	85,000	-	85,000	500,000		
12/1/2027	10,000	20,000	20,000	5,000	-	5,000	315,000	90,000	-	90,000	405,000		
12/1/2028	10,000	20,000	20,000	-	-	5,000	315,000	95,000	-	95,000	410,000		
12/1/2029	10,000	20,000	20,000	-	-	5,000	325,000	100,000	-	100,000	425,000		
12/1/2030	10,000	25,000	25,000	-	-	5,000	360,000	105,000	-	105,000	465,000		
12/1/2031	10,000	25,000	25,000	-	-	5,000	190,000	110,000	-	110,000	300,000		
12/1/2032	-	-	-	-	-	5,000	115,000	115,000	-	115,000	230,000		
12/1/2033	-	-	-	-	-	5,000	130,000	120,000	-	120,000	250,000		
12/1/2034	-	-	-	-	-	5,000	130,000	125,000	-	125,000	255,000		
12/1/2035	-	-	-	-	-	5,000	140,000	130,000	-	130,000	270,000		
12/1/2036	-	-	-	-	-	5,000	140,000	135,000	-	135,000	275,000		
12/1/2037	-	-	-	-	-	5,000	150,000	145,000	-	145,000	295,000		
Total	\$ 100,000	\$ 250,000	\$ 250,000	\$ 50,000	\$ 200,000	\$ 100,000	\$ 8,086,000	\$ 1,900,000	\$ 1,000,000	\$ 2,900,000	\$ 10,986,000		
Original Issue Date of BANs	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017	2/10/2017		2/12/2016	2/12/2016		\$10,986,600		
BANs Outstanding	\$100,000	\$250,000	\$250,000	\$50,000	\$200,000	\$100,000		\$1,900,000	\$1,000,000				
Reference	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)	Ch. 44 s. 7(1)		Ch. 44 s. 7(1)	Ch. 44 s. 7		\$600		
Maximum Term	15	15	15	15	4	30		30	5				
Date of MFOB Approval	TBD	TBD	TBD	TBD	TBD	1/14/2015		1/27/2016	1/27/2016				
Original Auth. Amt	\$200,000	\$1,398,000	\$1,260,500	\$2,075,000	\$600,000	\$3,000,000		\$3,800,000	\$1,000,000				
Date of Auth.	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016	7/1/2013		10/5/2015	10/28/2015				
Amount of Paydown	\$0	\$0	\$0	\$0	\$0	\$0		\$0	\$0				
Maximum Maturity	2/10/2032	2/10/2032	2/10/2032	2/10/2032	2/10/2021	2/10/2047		2/12/2046	2/12/2021				
Minimum Principal Payment	\$7,143	\$17,857	\$17,857	\$3,571	\$66,667	\$3,448		\$67,857	\$333,333				
Remaining Life	14	14	14	14	3	29		28	3				





City of Fall River, Massachusetts  
 General Obligation State Qualified Municipal Purpose Loan of 2018 Bonds  
 Dated February 7, 2018  
 Assumes Level Debt Service  
**ESTIMATED DEBT SERVICE SCHEDULE**  
 \*Interest Estimated and Subject to Change\*

<u>Fiscal Year</u>	<u>Principal</u>	<u>Coupon</u>	<u>Interest</u>	<u>Total P+I</u>
6/30/2019	\$ 1,201,000	4.50%	\$ 623,898	\$ 1,824,898
6/30/2020	1,345,000	4.50%	410,063	1,755,063
6/30/2021	1,400,000	4.50%	348,300	1,748,300
6/30/2022	750,000	4.50%	299,925	1,049,925
6/30/2023	635,000	4.50%	268,763	903,763
6/30/2024	635,000	4.50%	240,188	875,188
6/30/2025	455,000	4.50%	215,663	670,663
6/30/2026	485,000	4.50%	194,513	679,513
6/30/2027	500,000	4.50%	172,350	672,350
6/30/2028	405,000	4.50%	151,988	556,988
6/30/2029	410,000	4.50%	133,650	543,650
6/30/2030	425,000	4.50%	114,863	539,863
6/30/2031	465,000	4.50%	94,838	559,838
6/30/2032	300,000	4.50%	77,625	377,625
6/30/2033	230,000	4.50%	65,700	295,700
6/30/2034	250,000	4.50%	54,900	304,900
6/30/2035	255,000	4.50%	43,538	298,538
6/30/2036	270,000	4.50%	31,725	301,725
6/30/2037	275,000	4.50%	19,463	294,463
6/30/2038	295,000	4.50%	6,638	301,638
<b>Total</b>	<b>\$ 10,986,000</b>		<b>\$ 3,568,586</b>	<b>\$ 14,554,586</b>



City of Fall River, Massachusetts  
General Obligation State Qualified Municipal Purpose Loan of 2022 Bonds  
Dated February 2022  
Assumes Level Debt Service

	Durfee High School 2	Durfee High School 3	Durfee High School 4	Grand Total
12/1/2022	315,000	280,000	75,000	\$ 670,000
12/1/2023	715,000	640,000	175,000	1,530,000
12/1/2024	755,000	670,000	185,000	1,610,000
12/1/2025	790,000	705,000	195,000	1,690,000
12/1/2026	835,000	740,000	205,000	1,780,000
12/1/2027	875,000	780,000	215,000	1,870,000
12/1/2028	920,000	820,000	225,000	1,965,000
12/1/2029	970,000	860,000	235,000	2,065,000
12/1/2030	1,020,000	905,000	250,000	2,175,000
12/1/2031	1,070,000	950,000	260,000	2,280,000
12/1/2032	1,125,000	1,000,000	275,000	2,400,000
12/1/2033	1,180,000	1,050,000	290,000	2,520,000
12/1/2034	1,245,000	1,105,000	305,000	2,655,000
12/1/2035	1,305,000	1,160,000	320,000	2,785,000
12/1/2036	1,375,000	1,220,000	335,000	2,930,000
12/1/2037	1,445,000	1,285,000	355,000	3,085,000
12/1/2038	1,520,000	1,350,000	370,000	3,240,000
12/1/2039	1,595,000	1,420,000	390,000	3,405,000
12/1/2040	1,680,000	1,490,000	410,000	3,580,000
12/1/2041	1,765,000	1,570,000	430,000	3,765,000
Total	\$ 22,500,000	\$ 20,000,000	\$ 5,500,000	\$ 48,000,000
Original Issue Date of BANs	8/1/2018	2/8/2019	2/8/2020	
BANs Outstanding	\$30,000,000	\$20,000,000	\$5,500,000	\$55,500,000
Reference	Ch. 70B	Ch. 70B	Ch. 70B	
Maximum Term	30	30	30	
Amount of Paydown	\$7,500,000	\$0	\$0	\$7,500,000

Assumes MSBA grant receipts and unspent note proceeds would satisfy any required principal paydowns.



City of Fall River, Massachusetts  
General Obligation State Qualified Municipal Purpose Loan of 2022 Bonds  
Dated February 2022  
Assumes Level Debt Service  
ESTIMATED DEBT SERVICE SCHEDULE  
\*Interest Estimated and Subject to Change\*

<u>Fiscal Year</u>	<u>Principal</u>	<u>Coupon</u>	<u>Interest</u>	<u>Total P+I</u>
6/30/2023	\$ 670,000	5.00%	\$ 3,183,250	\$ 3,853,250
6/30/2024	1,530,000	5.00%	2,328,250	3,858,250
6/30/2025	1,610,000	5.00%	2,249,750	3,859,750
6/30/2026	1,690,000	5.00%	2,167,250	3,857,250
6/30/2027	1,780,000	5.00%	2,080,500	3,860,500
6/30/2028	1,870,000	5.00%	1,989,250	3,859,250
6/30/2029	1,965,000	5.00%	1,893,375	3,858,375
6/30/2030	2,065,000	5.00%	1,792,625	3,857,625
6/30/2031	2,175,000	5.00%	1,686,625	3,861,625
6/30/2032	2,280,000	5.00%	1,575,250	3,855,250
6/30/2033	2,400,000	5.00%	1,458,250	3,858,250
6/30/2034	2,520,000	5.00%	1,335,250	3,855,250
6/30/2035	2,655,000	5.00%	1,205,875	3,860,875
6/30/2036	2,785,000	5.00%	1,069,875	3,854,875
6/30/2037	2,930,000	5.00%	927,000	3,857,000
6/30/2038	3,085,000	5.00%	776,625	3,861,625
6/30/2039	3,240,000	5.00%	618,500	3,858,500
6/30/2040	3,405,000	5.00%	452,375	3,857,375
6/30/2041	3,580,000	5.00%	277,750	3,857,750
6/30/2042	3,765,000	5.00%	94,125	3,859,125
Total	\$ 48,000,000		\$ 29,161,750	\$ 77,161,750



**City of Fall River, Massachusetts**

*\$40,000,000 General Obligation State Qualified Bonds dated February 15, 2018*

*Durfee High School*

*30 year bonds - Level Debt Service - Interest Estimated at 4.50% (Subject to Change)*

Fiscal Year	Principal	Interest	Total P+I	Tax Rate Impact (Assumes No Growth in Assessed Value)		
				Residential Tax Rate Impact per \$100,000 of Assessed Value	Commercial/ Industrial/ Personal Property Tax Rate Impact per \$100,000 of Assessed Value	Impact on Average Single Family Home Valued at \$212,852
06/03/2019	\$ 135,000.00	\$ 2,326,962.50	\$ 2,461,962.50	\$ 36.82	\$ 80.58	\$ 78.37
06/03/2020	685,000.00	1,778,512.50	2,463,512.50	36.84	80.63	78.42
06/03/2021	715,000.00	1,747,012.50	2,462,012.50	36.82	80.58	78.37
06/03/2022	745,000.00	1,714,162.50	2,459,162.50	36.78	80.49	78.28
06/03/2023	780,000.00	1,679,850.00	2,459,850.00	36.79	80.51	78.30
06/03/2024	820,000.00	1,643,850.00	2,463,850.00	36.85	80.64	78.43
06/03/2025	855,000.00	1,606,162.50	2,461,162.50	36.81	80.56	78.35
06/03/2026	895,000.00	1,566,787.50	2,461,787.50	36.82	80.58	78.37
06/03/2027	935,000.00	1,525,612.50	2,460,612.50	36.80	80.54	78.33
06/03/2028	980,000.00	1,482,525.00	2,462,525.00	36.83	80.60	78.39
06/03/2029	1,025,000.00	1,437,412.50	2,462,412.50	36.83	80.60	78.39
06/03/2030	1,070,000.00	1,390,275.00	2,460,275.00	36.79	80.53	78.32
06/03/2031	1,120,000.00	1,341,000.00	2,461,000.00	36.81	80.55	78.34
06/03/2032	1,170,000.00	1,289,475.00	2,459,475.00	36.78	80.50	78.29
06/03/2033	1,225,000.00	1,235,587.50	2,460,587.50	36.80	80.54	78.33
06/03/2034	1,280,000.00	1,179,225.00	2,459,225.00	36.78	80.49	78.28
06/03/2035	1,340,000.00	1,120,275.00	2,460,275.00	36.79	80.53	78.32
06/03/2036	1,405,000.00	1,058,512.50	2,463,512.50	36.84	80.63	78.42
06/03/2037	1,465,000.00	993,937.50	2,458,937.50	36.77	80.48	78.27
06/03/2038	1,535,000.00	926,437.50	2,461,437.50	36.81	80.56	78.35
06/03/2039	1,605,000.00	855,787.50	2,460,787.50	36.80	80.54	78.33
06/03/2040	1,680,000.00	781,875.00	2,461,875.00	36.82	80.58	78.37
06/03/2041	1,755,000.00	704,587.50	2,459,587.50	36.78	80.50	78.30
06/03/2042	1,840,000.00	623,700.00	2,463,700.00	36.85	80.64	78.43
06/03/2043	1,920,000.00	539,100.00	2,459,100.00	36.78	80.49	78.28
06/03/2044	2,010,000.00	450,675.00	2,460,675.00	36.80	80.54	78.33
06/03/2045	2,105,000.00	358,087.50	2,463,087.50	36.84	80.62	78.41
06/03/2046	2,200,000.00	261,225.00	2,461,225.00	36.81	80.56	78.35
06/03/2047	2,300,000.00	159,975.00	2,459,975.00	36.79	80.52	78.31
06/03/2048	2,405,000.00	54,112.50	2,459,112.50	36.78	80.49	78.28
Total	\$ 40,000,000.00	\$ 33,832,700.00	\$ 73,832,700.00			

**City of Fall River, Massachusetts**  
*\$80,000,000 General Obligation State Qualified Bonds dated February 15, 2018*  
**Durfee High School**  
*30 year bonds - Level Debt Service - Interest Estimated at 4.50% (Subject to Change)*

Date	Principal	Interest	Total P+I	Tax Rate Impact (Assumes No Growth in Assessed Value)		
				Residential Tax Rate Impact per \$100,000 of Assessed Value	Commercial/ Industrial/ Personal Property Tax Rate Impact per \$100,000 of Assessed Value	Impact on Average Single Family Home Valued at \$212,852
06/03/2019	\$ 270,000.00	\$ 4,653,925.00	\$ 4,923,925.00	\$ 73.64	\$ 161.16	\$ 156.74
06/03/2020	1,365,000.00	3,557,137.50	4,922,137.50	73.61	161.11	156.69
06/03/2021	1,430,000.00	3,494,250.00	4,924,250.00	73.64	161.17	156.75
06/03/2022	1,495,000.00	3,428,437.50	4,923,437.50	73.63	161.15	156.73
06/03/2023	1,560,000.00	3,359,700.00	4,919,700.00	73.58	161.03	156.61
06/03/2024	1,635,000.00	3,287,812.50	4,922,812.50	73.62	161.13	156.71
06/03/2025	1,710,000.00	3,212,550.00	4,922,550.00	73.62	161.12	156.70
06/03/2026	1,790,000.00	3,133,800.00	4,923,800.00	73.64	161.16	156.74
06/03/2027	1,870,000.00	3,051,450.00	4,921,450.00	73.60	161.08	156.66
06/03/2028	1,955,000.00	2,965,387.50	4,920,387.50	73.59	161.05	156.63
06/03/2029	2,045,000.00	2,875,387.50	4,920,387.50	73.59	161.05	156.63
06/03/2030	2,140,000.00	2,781,225.00	4,921,225.00	73.60	161.08	156.66
06/03/2031	2,240,000.00	2,682,675.00	4,922,675.00	73.62	161.12	156.70
06/03/2032	2,345,000.00	2,579,512.50	4,924,512.50	73.65	161.18	156.76
06/03/2033	2,450,000.00	2,471,625.00	4,921,625.00	73.60	161.09	156.67
06/03/2034	2,565,000.00	2,358,787.50	4,923,787.50	73.64	161.16	156.74
06/03/2035	2,680,000.00	2,240,775.00	4,920,775.00	73.59	161.06	156.64
06/03/2036	2,805,000.00	2,117,362.50	4,922,362.50	73.62	161.11	156.69
06/03/2037	2,935,000.00	1,988,212.50	4,923,212.50	73.63	161.14	156.72
06/03/2038	3,070,000.00	1,853,100.00	4,923,100.00	73.63	161.14	156.72
06/03/2039	3,210,000.00	1,711,800.00	4,921,800.00	73.61	161.09	156.67
06/03/2040	3,360,000.00	1,563,975.00	4,923,975.00	73.64	161.17	156.74
06/03/2041	3,515,000.00	1,409,287.50	4,924,287.50	73.64	161.18	156.75
06/03/2042	3,675,000.00	1,247,512.50	4,922,512.50	73.62	161.12	156.70
06/03/2043	3,845,000.00	1,078,312.50	4,923,312.50	73.63	161.14	156.72
06/03/2044	4,020,000.00	901,350.00	4,921,350.00	73.60	161.08	156.66
06/03/2045	4,205,000.00	716,287.50	4,921,287.50	73.60	161.08	156.66
06/03/2046	4,400,000.00	522,675.00	4,922,675.00	73.62	161.12	156.70
06/03/2047	4,600,000.00	320,175.00	4,920,175.00	73.58	161.04	156.62
06/03/2048	4,815,000.00	108,337.50	4,923,337.50	73.63	161.14	156.72
Total	\$ 80,000,000.00	\$ 67,672,825.00	\$147,672,825.00			



**City of Fall River, Massachusetts**  
*\$120,000,000 General Obligation State Qualified Bonds dated February 15, 2018*  
*Durfee High School*  
*30 year bonds - Level Debt Service - Interest Estimated at 4.50% (Subject to Change)*

Date	Principal	Interest	Total P+I	Tax Rate Impact (Assumes No Growth in Assessed Value)		
				Residential Tax Rate Impact per \$100,000 of Assessed Value	Commercial/ Industrial/ Personal Property Tax Rate Impact per \$100,000 of Assessed Value	Impact on Average Single Family Home Valued at \$212,852
06/03/2019	\$ 405,000.00	\$ 6,980,887.50	\$ 7,385,887.50	\$ 110.46	\$ 241.75	\$ 235.11
06/03/2020	2,050,000.00	5,335,650.00	7,385,650.00	110.45	241.74	235.11
06/03/2021	2,140,000.00	5,241,375.00	7,381,375.00	110.39	241.60	234.97
06/03/2022	2,240,000.00	5,142,825.00	7,382,825.00	110.41	241.65	235.02
06/03/2023	2,345,000.00	5,039,662.50	7,384,662.50	110.44	241.71	235.07
06/03/2024	2,450,000.00	4,931,775.00	7,381,775.00	110.40	241.61	234.98
06/03/2025	2,565,000.00	4,818,937.50	7,383,937.50	110.43	241.68	235.05
06/03/2026	2,685,000.00	4,700,812.50	7,385,812.50	110.46	241.74	235.11
06/03/2027	2,805,000.00	4,577,287.50	7,382,287.50	110.40	241.63	235.00
06/03/2028	2,935,000.00	4,448,137.50	7,383,137.50	110.42	241.66	235.03
06/03/2029	3,070,000.00	4,313,025.00	7,383,025.00	110.42	241.65	235.02
06/03/2030	3,210,000.00	4,171,725.00	7,381,725.00	110.40	241.61	234.98
06/03/2031	3,360,000.00	4,023,900.00	7,383,900.00	110.43	241.68	235.05
06/03/2032	3,515,000.00	3,869,212.50	7,384,212.50	110.43	241.69	235.06
06/03/2033	3,675,000.00	3,707,437.50	7,382,437.50	110.41	241.63	235.00
06/03/2034	3,845,000.00	3,538,237.50	7,383,237.50	110.42	241.66	235.03
06/03/2035	4,025,000.00	3,361,162.50	7,386,162.50	110.46	241.76	235.12
06/03/2036	4,210,000.00	3,175,875.00	7,385,875.00	110.46	241.75	235.11
06/03/2037	4,400,000.00	2,982,150.00	7,382,150.00	110.40	241.62	234.99
06/03/2038	4,605,000.00	2,779,537.50	7,384,537.50	110.44	241.70	235.07
06/03/2039	4,815,000.00	2,567,587.50	7,382,587.50	110.41	241.64	235.01
06/03/2040	5,040,000.00	2,345,850.00	7,385,850.00	110.46	241.74	235.11
06/03/2041	5,270,000.00	2,113,875.00	7,383,875.00	110.43	241.68	235.05
06/03/2042	5,510,000.00	1,871,325.00	7,381,325.00	110.39	241.60	234.97
06/03/2043	5,765,000.00	1,617,637.50	7,382,637.50	110.41	241.64	235.01
06/03/2044	6,030,000.00	1,352,250.00	7,382,250.00	110.40	241.63	235.00
06/03/2045	6,310,000.00	1,074,600.00	7,384,600.00	110.44	241.70	235.07
06/03/2046	6,600,000.00	784,125.00	7,384,125.00	110.43	241.69	235.06
06/03/2047	6,905,000.00	480,262.50	7,385,262.50	110.45	241.73	235.09
06/03/2048	7,220,000.00	162,450.00	7,382,450.00	110.41	241.63	235.00
Total	\$120,000,000.00	\$101,509,575.00	\$221,509,575.00			

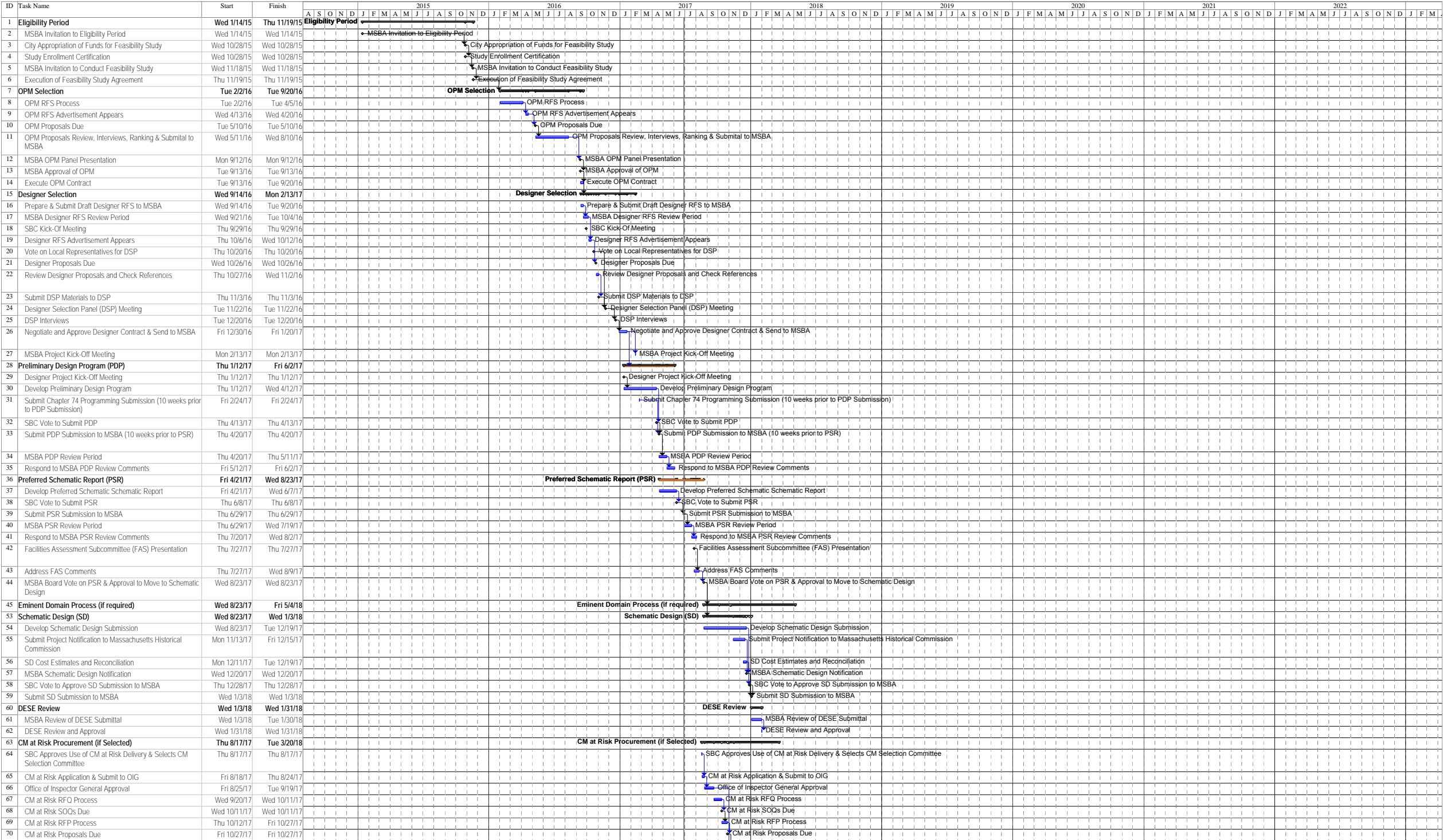
**City of Fall River, Massachusetts**  
**\$160,000,000 General Obligation State Qualified Bonds dated February 15, 2018**  
**Durfee High School**  
**30 year bonds - Level Debt Service - Interest Estimated at 4.50% (Subject to Change)**

Date	Principal	Interest	Total P+I	Tax Rate Impact (Assumes No Growth in Assessed Value)		
				Residential Tax Rate Impact per \$100,000 of Assessed Value	Commercial/ Industrial/ Personal Property Tax Rate Impact per \$100,000 of Assessed Value	Impact on Average Single Family Home Valued at \$212,852
06/03/2019	\$ 535,000.00	\$ 9,307,962.50	\$ 9,842,962.50	\$ 147.20	\$ 322.17	\$ 313.33
06/03/2020	2,730,000.00	7,114,500.00	9,844,500.00	147.23	322.22	313.38
06/03/2021	2,855,000.00	6,988,837.50	9,843,837.50	147.22	322.20	313.36
06/03/2022	2,990,000.00	6,857,325.00	9,847,325.00	147.27	322.31	313.47
06/03/2023	3,125,000.00	6,719,737.50	9,844,737.50	147.23	322.23	313.38
06/03/2024	3,270,000.00	6,575,850.00	9,845,850.00	147.25	322.26	313.42
06/03/2025	3,420,000.00	6,425,325.00	9,845,325.00	147.24	322.25	313.40
06/03/2026	3,575,000.00	6,267,937.50	9,842,937.50	147.20	322.17	313.33
06/03/2027	3,740,000.00	6,103,350.00	9,843,350.00	147.21	322.18	313.34
06/03/2028	3,915,000.00	5,931,112.50	9,846,112.50	147.25	322.27	313.43
06/03/2029	4,095,000.00	5,750,887.50	9,845,887.50	147.25	322.26	313.42
06/03/2030	4,285,000.00	5,562,337.50	9,847,337.50	147.27	322.31	313.47
06/03/2031	4,480,000.00	5,365,125.00	9,845,125.00	147.24	322.24	313.40
06/03/2032	4,685,000.00	5,158,912.50	9,843,912.50	147.22	322.20	313.36
06/03/2033	4,900,000.00	4,943,250.00	9,843,250.00	147.21	322.18	313.34
06/03/2034	5,130,000.00	4,717,575.00	9,847,575.00	147.27	322.32	313.48
06/03/2035	5,365,000.00	4,481,437.50	9,846,437.50	147.26	322.28	313.44
06/03/2036	5,610,000.00	4,234,500.00	9,844,500.00	147.23	322.22	313.38
06/03/2037	5,870,000.00	3,976,200.00	9,846,200.00	147.25	322.27	313.43
06/03/2038	6,140,000.00	3,705,975.00	9,845,975.00	147.25	322.27	313.42
06/03/2039	6,420,000.00	3,423,375.00	9,843,375.00	147.21	322.18	313.34
06/03/2040	6,715,000.00	3,127,837.50	9,842,837.50	147.20	322.16	313.32
06/03/2041	7,025,000.00	2,818,687.50	9,843,687.50	147.22	322.19	313.35
06/03/2042	7,350,000.00	2,495,250.00	9,845,250.00	147.24	322.24	313.40
06/03/2043	7,690,000.00	2,156,850.00	9,846,850.00	147.26	322.30	313.45
06/03/2044	8,040,000.00	1,802,925.00	9,842,925.00	147.20	322.17	313.33
06/03/2045	8,410,000.00	1,432,800.00	9,842,800.00	147.20	322.16	313.32
06/03/2046	8,800,000.00	1,045,575.00	9,845,575.00	147.24	322.25	313.41
06/03/2047	9,205,000.00	640,462.50	9,845,462.50	147.24	322.25	313.41
06/03/2048	9,630,000.00	216,675.00	9,846,675.00	147.26	322.29	313.45
Total	\$160,000,000.00	\$135,348,575.00	\$295,348,575.00			

PROJECT SCHEDULE Preferred Solution



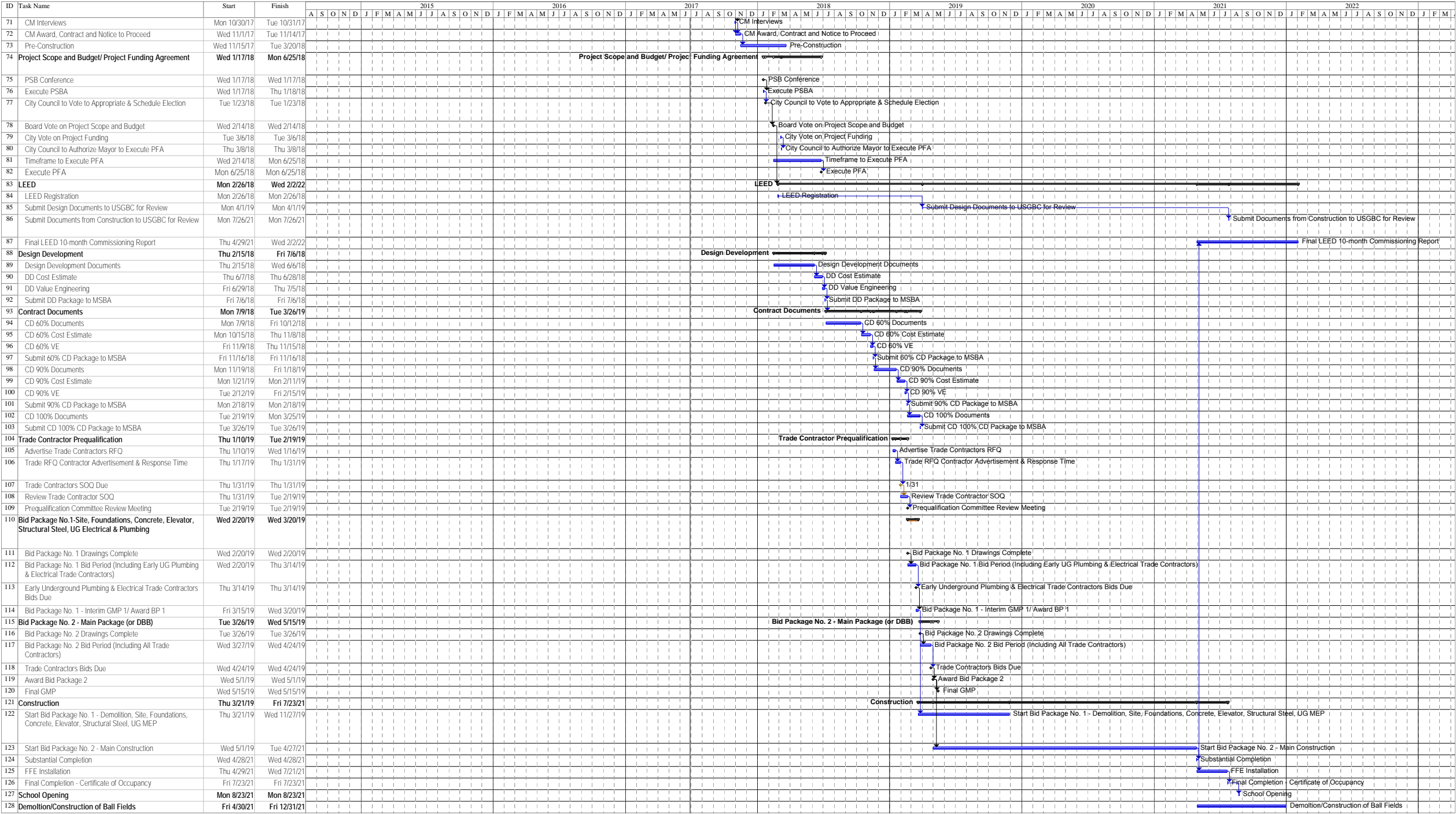
FALL RIVER - BMC DUFFEE HIGH SCHOOL  
PRELIMINARY PROJECT SCHEDULE  
Feasibility Study Phase: Preferred Schematic Report - June 29, 2017







FALL RIVER - BMC DUFFEE HIGH SCHOOL  
PRELIMINARY PROJECT SCHEDULE  
Feasibility Study Phase: Preferred Schematic Report - June 29, 2017





# LOCAL ACTIONS AND APPROVALS PROCESS

## Local Actions and Approvals

The Durfee High School Building Committee has held ten posted meetings and a number of Subcommittee meetings, and working sessions were held with District Educators, School Administration, Civic Leaders and representatives from the City. There have been two Public Forums held during the development of the Preferred Schematic Report. One Public Forum was held several days after the Preliminary Design Program submission and another held prior to the submission of the Preferred Schematic Report.

The City is scheduled to hold a debt exclusion election for the Project between February 15, 2018 and April 2018. The City Council must first vote to select a date for the election. The election will be held after the Schematic Design submission on January 3, 2018 once project costs are established and approved by the MSBA on February 14, 2018. The City vote will be contingent upon the execution of a Project Funding Agreement with MSBA.

The following Local Actions and Approvals are included in this section of the report:

1. Local Actions and Approvals Certification Letter
2. Certification Letter on School Building Committee Vote to Approve and Submit the PSR
3. School Building Committee Meeting Minutes
4. Public Forum Presentation and Meeting Minutes
5. Module 3 Feasibility Study Checklist





# LOCAL ACTIONS AND APPROVALS CERTIFICATION LETTER

Local Actions and Approvals

## FALL RIVER PUBLIC SCHOOLS

*"The Scholarship City"*

417 Rock Street, Fall River, MA 02720

*Matthew H. Malone, Ph.D., Superintendent*

June 29, 2017

Ms. Diane Sullivan  
Senior Capital Program Manager  
40 Broad Street  
Boston, Massachusetts 02109

Dear Ms. Sullivan:

The City of Fall River School Building Committee ("SBC") has completed its review of the Feasibility Study's Preferred Schematic Report Submission for the B.M.C. Durfee High School Project (the "Project"), and on June 15 2017, the SBC voted to authorize the Owner's Project Manager to submit the Feasibility Study related materials to the MSBA for its consideration. A certified copy of the SBC Meeting Minutes, which includes the specific language of the vote and the number of votes in favor, opposed, and abstained, are attached in [Section VII](#) of the Preferred Schematic Report Submission.

Since the MSBA's Board of Directors invited the District to conduct a Feasibility Study on November 18, 2015, the SBC has held ten meetings regarding the proposed project, in compliance with the State's Open Meeting Law. These meetings include:

• SBC Meeting	September 29, 2016	Durfee HS Library	4:30 PM
• SBC Meeting	October 20, 2016	Durfee HS Library	4:30 PM
• SBC Meeting	November 16, 2016	Durfee HS Library	4:30 PM
• SBC Meeting	December 8, 2016	Durfee HS Library	4:30 PM
• SBC Meeting	January 12, 2017	Durfee HS Library	4:30 PM
• SBC Meeting	February 15, 2017	Durfee HS Library	4:30 PM
• SBC Meeting	March 9, 2017	Durfee HS Library	4:30 PM
• SBC Meeting	May 11, 2017	Durfee HS Library	4:30 PM
• SBC Meeting	April 13, 2017	Durfee HS Library	4:30 PM
• SBC Meeting	June 15, 2017	Durfee HS Library	4:30 PM

The agendas outlining the topics of discussion at each meeting, the meeting minutes and presentation materials are provided with the Meeting Minutes in [Section VIIb](#) of the Preferred Schematic Report Submission. All votes are recorded in the Meeting Minutes and all Meeting Minutes are posted on the Fall River Public Schools website for public review at <http://www.fallriverschools.org/newdurfeehs.cfm>.

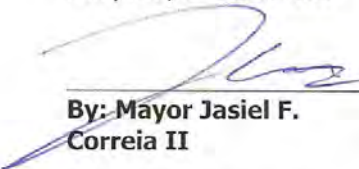
In addition to the SBC meetings listed above, the District held two public meetings, which were posted in compliance with the state Open Meeting Law, at which the Project was discussed. These meetings include:

- |                |               |                                    |
|----------------|---------------|------------------------------------|
| • Public Forum | May 4, 2017   | BMC Durfee High Auditorium 6:30 PM |
| • Public Forum | June 15, 2017 | BMC Durfee High Auditorium 6:30 PM |

To the best of my knowledge and belief, each of the meetings listed above complied with the requirements of the Open Meeting Law, M.G.L. c. 30A, §§ 18-25 and 940 CMR 29 *et seq.*

If you have any questions or require any additional information, please contact Lynn Stapleton, Owner's Project Manager, [lstapleton@leftfieldpm.com](mailto:lstapleton@leftfieldpm.com), 508-269-0457.

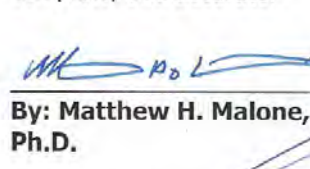
By signing this Local Action and Approval Certification, I hereby certify that, to the best of my knowledge and belief, the information supplied by the District in this Certification is true, complete, and accurate.

  
**By: Mayor Jasiel F. Correia II**

**Title: Chief Executive Officer**

**Date:** 6/13/17

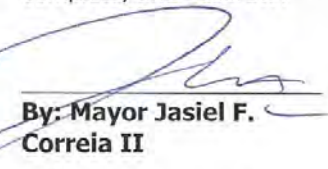
By signing this Local Action and Approval Certification, I hereby certify that, to the best of my knowledge and belief, the information supplied by the District in this Certification is true, complete, and accurate.

  
**By: Matthew H. Malone, Ph.D.**

**Title: Superintendent of Schools**

**Date:** 6/19/17

By signing this Local Action and Approval Certification, I hereby certify that, to the best of my knowledge and belief, the information supplied by the District in this Certification is true, complete, and accurate.

  
**By: Mayor Jasiel F. Correia II**

**Title: Chair of the School Committee**

**Date:** 6/19/17