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Edward Devotion School
MSBA
Preferred Schematic Report

Brookline, Massachusetts

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Volume 2 of 3

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Brookline, MA
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ELECTRICAL SYSTEMS

NARRATIVE REPORT - OPTION 0

REPAIR OPTION

The following is the Electrical system narrative, which defines the scope of work and capacities of the Power and Lighting System as well as the Basis of Design. The electrical systems shall be designed and constructed in accordance with ***LEED for Schools***.

1. CODES

   All work installed under Division 26 shall comply with the Massachusetts State Building Code, IBC 2009 Appendix 115AA - Stretch Energy Code and all local, county, and federal codes, laws, statutes, and authorities having jurisdiction.

2. DESIGN INTENT

   The work of Division 26 is as described in this narrative. 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 electrical work and all items incidental thereto, including commissioning and testing.

3. SEQUENCE OF OPERATIONS AND INTERACTIONS

   A. Classroom and corridor lighting will be controlled via “smart panels”, which is achieved through programming self-contained solenoid operated circuit breakers. The control of the circuit breakers shall be by automatic means such as an occupancy sensor in each classroom. The system will be interfaced with the DDC control system for schedule functions. The controllability shall be in conformance with ***LEED for Schools IEQ Credit 6.1.*** The occupancy sensor shall have auxiliary contacts for DDC input functions.

   B. Exterior lighting will be controlled by photocell “on” and “smart panel” for “off” operation. The parking area lighting will be controlled by “zones” and have dual level control.

   C. Emergency and exit lighting will be run through life safety panels to be “on” during normal power conditions as well as power outage conditions. The emergency lighting system will have time control so that lights are “on” only when building is occupied.

4. DESCRIPTION OF THE SYSTEMS

   A. Electrical Distribution System:

      1. Service ratings are designed for a demand load of 10 watts/s.f. The service capacity will be sized for 2000 amperes with 100 percent rating at 277/480 volt, 3 phase, 4 wire. New lighting and power panels will be provided to accommodate respective loads. The equipment will be located in dedicated rooms or closets.

      2. The new electrical main service will be located in the existing main electrical room. The main electrical room will be constructed as part of Phase One.

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B. Interior Lighting System:

1. Classroom lighting fixtures consist of pendant mounted indirect LED luminaries with dimming drivers. The fixtures will be pre-wired for dimming control where natural daylight is available and also for multi-level switching. Office lighting fixtures will consist of similar fixtures to classrooms. Offices on the perimeter with windows shall have daylight dimming controls**.** In existing building recessed LED panel fixtures will be used.

   In general lighting power density will be 40 percent less than IECC 2009. The power density reduction relates to ***LEED for Schools Credit EAC1.***

2. Lighting levels will be approximately 30 foot candles in classrooms and offices. The daylight dimming footcandle level will be in compliance with ***LEED for Schools IEQ 6.1.***

3. Gymnasium and multi-purpose lighting will be comprised of direct LED fixtures with dimming drivers. The fixtures will be provided with protective wire guards. The light level will be designed for approximately 50 foot candles.

   Daylight dimming will be provided within 15 feet of skylights or glazing. Daylight dimming controls will be similar in operation to classrooms.

4. Corridor lighting will be comprised of linear indirect lighting using LED light source. The corridor light level will be designed for approximately 15 foot candles. Corridor lighting will be on a schedule through the DDC system control and only “on” during occupied hours. The corridor lighting will have two level control.

5. Cafetorium lighting will be pendant mounted/indirect fluorescent fixtures with electronic ballasts. The light levels will be designed for approximately 20 foot candles.

6. Kitchen and Servery lighting will consist of recessed 2 ft. x 2 ft. lensed gasketed LED panels. Light levels will be approximately 50 foot candles.

7. Library lighting will consist of indirect fluorescent fixtures with LED dimmable drivers. Light levels will be approximately 30 foot candles.

8. Garage lighting will consist of LED surface mounted fixtures.

9. Each area will be locally switched and designed for multi-level controls. Each classroom, office space and toilet rooms will have an occupancy sensor to turn lights off when unoccupied. Daylight sensors will be installed in each room where natural light is available for dimming of light fixtures.

10. The entire school will be controlled with an automatic lighting control system using the DDC control system for schedule programming of lights.

C. Emergency Generator Power:

1. An exterior 200 kw natural gas emergency generator with sound attenuated enclosure will be provided. Light fixtures and LED exit signs will be installed to serve all egress areas such as corridors, intervening spaces, toilets, stairs, and exit discharge exterior doors. The administration area lighting and selected receptacles will be connected to the emergency generator.

2. The generator will be sized to include fire safety systems, boilers and circulating pumps, refrigeration equipment, communications systems, etc.

D. Site Lighting System

1. Fixtures for area lighting will be pole mounted cut-off 'LED' luminaries in the entry drive and drop-off area. The fixtures shall be per *Town of Brookline standards.* The exterior lighting will be connected to the automatic lighting control system for photocell on and timed off operation. The site lighting fixtures will be dark sky compliant. The illumination level is 0.50 fc for parking areas. The site lighting system shall be in conformance with ***LEED for Schools Credit SSC8***.

2. Building perimeter fixtures will be 'LED' wall-mounted, cut-off over exterior doors for exit discharge.

E. Wiring Devices:

1. Each classroom will have a minimum of two duplex receptacles per teaching wall and two double duplex receptacles on dedicated circuits at classroom computer workstations. The teacher's workstation will have a double duplex receptacle, also on a dedicated circuit.

2. Office areas will generally have one duplex outlet per wall. At each workstation a double duplex receptacle will be provided.

3. Corridors will have a cleaning receptacle at approximately 25 ft. intervals.

4. Exterior weatherproof receptacles with lockable enclosures will be installed at exterior doors.

5. A system of computer grade panelboards with double neutrals and transient voltage surge suppressors will be provided for receptacle circuits.

6. Certain plug loads such as copiers, printers, and electric water coolers will be controlled by the DDC system for shutdown on a schedule basis.

F. Fire Alarm System:

1. A fire alarm and detection system will be provided with battery back-up. The system will be of the addressable type where each device will be identified at the control panel and remote annunciator by device type and location to facilitate search for origin of alarms.

2. Smoke detectors will be provided in open areas, corridors, stairwells and other egress ways.

3. The sprinkler system will be supervised for water flow and tampering with valves.

4. Speaker/strobes will be provided in egress ways, classrooms, assembly spaces, open areas and other large spaces. Strobe-only units will be provided in single toilets and conference rooms.

5. Manual pull stations will be provided at exit discharge doors and at each egress stairwell not located at grade level.

6. The system will be remotely connected to automatically report alarms to fire department via an approved method by the fire department.

G. Uninterruptible Power Supply (UPS):

1. One 30kw, three-phase centralized UPS systems will be provided with battery back-up.

2. The system will provide conditioned power to sensitive electronic loads, telecommunication systems, bridge over power interruptions of short duration and allow an orderly shutdown of servers, communication systems, etc. during a prolonged power outage.

3. The UPS systems will also be connected to the standby generator.

5. TESTING REQUIREMENTS

The Electrical Contractor shall provide testing of the following systems with the Owner and Owner's representative present:

- Lighting and power panels for correct phase balance.
- Emergency generator.
- Lighting control system (interior and exterior).
- Fire alarm system.
- Security system.

Testing reports shall be submitted to the engineer for review and approval before providing to the Owner.

6. OPERATION MANUALS AND MAINTENANCE MANUALS:

When the project is completed, the Electrical Contractor shall provide operation and maintenance manuals to the Owner.

7. RECORD DRAWINGS AND CONTROL DOCUMENTS:

When the project is complete, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items, will be provided to the Owner.

8. COMMISSIONING

The project will be commissioned per Section 018100 of the specifications.

9. CCTV

A Closed Circuit TV system will consist of computer servers with image software, computer monitors and IP based closed circuit TV cameras. The head end server will be located in the head end MDF room and will be rack-mounted. The system can be accessed from any PC within the facility or externally via an IP address. Each camera can be viewed independently. The network video recorders NVR's will record all cameras and store this information for 21 days at 15 images per second (virtual real time).

The location of the cameras is generally in corridors and exterior building perimeter. The exterior cameras are pan-tilt-zoom type.

The system will fully integrate with the access control system to allow viewing of events from a single alarm viewer. Camera images and recorded video will be linked to the access system to allow retrieval of video that is associated with an event.

10. INTRUSION SYSTEM

An intrusion system will consist of security panel, keypads, motion detectors and door contacts. The system is addressable which means that each device will be identified when an alarm occurs. The system is designed so that each perimeter classroom with grade access will have dual tech sensors along the exterior wall and corridors, and door contacts at each exterior door.

The system can be partitioned into several zones. Therefore, it is possible to use the Gym area while the remainder of the school remains alarmed.

The system will include a digital transmitter to summons the local police department in the event of an alarm condition

The intrusion system will be connected to the automated lighting control system to automatically turn on lighting upon an alarm.

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11. CARD ACCESS

A card access system includes a card access controller, door controllers and proximity readers/keypads. Proximity readers will be located at various locations. Each proximity reader will have a distinctive code to identify the user and a log will be kept in memory. The log within the panel can be accessed through a computer.

The alarm condition will also initiate real time recording on the integrated CCTV System. The system may be programmed with graphic maps allowing the end user to quickly identify alarm conditions and lock/unlock doors.

The system is modular and may be easily expanded to accommodate any additional devices.

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ELECTRICAL SYSTEMS

NARRATIVE REPORT – OPTION 1 (Renovation/Addition)

The following is the Electrical system narrative, which defines the scope of work and capacities of the Power and Lighting system as well as the Basis of Design. The electrical systems shall be designed and constructed for ***LEED for Schools*** where indicated on this narrative. This project shall confirm to LEED Silver rating.

1. CODES

   All work installed under Division 26 shall comply with the Massachusetts State Building Code, IBC 2009 Appendix 115AA - Stretch Energy Code and all local, county, and federal codes, laws, statutes, and authorities having jurisdiction.

2. DESIGN INTENT

   The work of Section 260000 is indicated in this narrative report. 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 Electrical work and all items incidental thereto, including commissioning and testing.

3. SEQUENCE OF OPERATIONS AND INTERACTIONS

   A. Classroom and corridor lighting will be controlled via “addressable relays”, which is achieved through programming. The control of the relays shall be by automatic means such as an occupancy sensor in each classroom. The controllability shall be in conformance with ***LEED for Schools IEQ Credit 6.1***.

   B. Exterior lighting will be controlled by photocell “on” and “schedule” for “off” operation. The vehicle circulation area lighting will be controlled by “zones” and will have dimming-level control.

   C. Emergency and exit lighting will be run through life safety panels to be on during normal power conditions as well as power outage conditions.

4. DESCRIPTION OF THE SYSTEMS

   A. Electrical Distribution System:

      1. New construction service ratings are designed for a demand load of 10 watts/s.f. The service capacity will be sized for 2500 amperes with 100% rating at 277/480 volt, 3Ø, 4wire. New lighting and power panels will be provided to accommodate respective loads. The service capacity will be sized for 20% spare capacity.

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B. Interior Lighting System:

1. Classroom lighting fixtures consist of pendant mounted indirect LED luminaries with dimming drivers. The fixtures will be pre-wired for dimming control where natural daylight is available and also for multi-level switching. Office lighting fixtures will consist of similar fixtures to classrooms. Offices on the perimeter with windows shall have daylight dimming controls**.** In existing building recessed LED panel fixtures will be used.

   In general lighting power density will be 40 percent less than IECC 2009. The power density reduction relates to ***LEED for Schools Credit EAC1.***

2. Lighting levels will be approximately 30 foot candles in classrooms and offices. The daylight dimming footcandle level will be in compliance with ***LEED for Schools IEQ 6.1.***

3. Gymnasium and multi-purpose lighting will be comprised of direct LED fixtures with dimming drivers. The fixtures will be provided with protective wire guards. The light level will be designed for approximately 50 foot candles.

   Daylight dimming will be provided within 15 feet of skylights or glazing. Daylight dimming controls will be similar in operation to classrooms.

4. Corridor lighting will be comprised of linear indirect lighting using LED light source. The corridor light level will be designed for approximately 15 foot candles. Corridor lighting will be on a schedule through the DDC system control and only “on” during occupied hours. The corridor lighting will have two level control.

5. Cafetorium lighting will be pendant mounted/indirect fluorescent fixtures with electronic ballasts. The light levels will be designed for approximately 20 foot candles.

6. Kitchen and Servery lighting will consist of recessed 2 ft. x 2 ft. lensed gasketed LED panels. Light levels will be approximately 50 foot candles.

7. Library lighting will consist of indirect fluorescent fixtures with LED dimmable drivers. Light levels will be approximately 30 foot candles.

8. Garage lighting will consist of LED surface mounted fixtures.

9. Each area will be locally switched and designed for multi-level controls. Each classroom, office space and toilet rooms will have an occupancy sensor to turn lights off when unoccupied. Daylight sensors will be installed in each room where natural light is available for dimming of light fixtures.

10. The entire school will be controlled with an automatic lighting control system using the DDC control system for schedule programming of lights.

C. Emergency Lighting System:

1. An exterior 200 kw natural gas fuelled indoor emergency generator with sound attenuated housing will be provided. Light fixtures and LED exit signs will be installed to serve all egress areas such as corridors, intervening spaces, toilets, stairs and exit discharge exterior doors. The administration area lighting will be connected to the emergency generator.

2. The generator will be sized to include life safety systems, boilers and circulating pumps, communications systems and kitchen refrigeration.

D. Site Lighting System

1. Fixtures for area lighting will be pole-mounted cut-off 'LED' luminaries in the drop-off areas. The fixtures shall be per Town of Brookline standards. Pole heights will be below 12 ft. Fixtures for the underground parking shall be low profile, suspended `LED` fixtures. The exterior lighting will be connected to the automatic lighting control system for photocell on and timed off operation. The site lighting fixtures will be dark sky compliant. The illumination level is 0.5 foot candle minimum for parking areas in accordance with Illuminating Engineering Society. The site lighting system shall be in conformance with ***LEED for Schools Credit SSC8***.

2. Building perimeter fixtures will be wall mounted cut-off over exterior doors for exit discharge.

E. Wiring Devices:

1. Each classroom will have a minimum of (2) duplex receptacles per teaching wall and (2) double duplex receptacles on dedicated circuits at classroom computer workstations. The teacher's workstation will have a double duplex receptacle also on a dedicated circuit. Refer to drawings.

2. Office areas will generally have (1) duplex outlet per wall. At each workstation a double duplex receptacle will be provided.

3. Corridors will have a cleaning receptacle at approximately 25 foot intervals.

4. Exterior weatherproof receptacles will be installed at exterior doors.

5. A system of computer grade panelboards with double neutrals and transient voltage surge suppressors will be provided for receptacle circuits.

F. Fire Alarm System:

1. A fire alarm and detection system will be provided with 60 battery back-up. The system will be of the addressable type where each device will be identified at the control panel and remote annunciator by device type and location to facilitate search for origin of alarms.

2. Smoke detectors will be provided in open areas, corridors, stairwells and other egress ways.

3. The sprinkler system will be supervised for water flow and tampering with valves.

4. Speaker/strobes will be provided in egress ways, classrooms, assembly spaces, open areas and other large spaces. Strobe only units will be provided in single toilets and conference rooms.

5. Manual pull stations will be provided at exit discharge doors.

6. The system will be remotely connected to automatically report alarms to fire department via wireless master box.

G. Uninterruptible Power Supply (UPS):

1. One (1) 30kw, three (3) phase centralized UPS systems will be provided with battery back-up.

2. The system will provide conditioned power to sensitive electronic loads, telecommunication systems, bridge over power interruptions of short duration and allow an orderly shutdown of servers, communication systems, etc. during a prolonged power outage.

3. The UPS systems will also be connected to the stand by generator.

H. Lightning Protection System:

1. A system of lightning protection devices will be provided.

2. The lightning protection equipment will include air terminals, conductors, conduits, fasteners, connectors, ground rods, etc.

5. TESTING REQUIREMENTS

The Electrical Contractor shall provide testing of the following systems with the Owner and Owner's representative present:

- Lighting and power panels for correct phase balance.
- Emergency generator.
- Lighting control system (interior and exterior).
- Fire alarm system.
- Security system.
- Lightning protection system.

Testing reports shall be submitted to the engineer for review and approval before providing to the Owner.

6. OPERATION MANUALS AND MAINTENANCE MANUALS:

When the project is completed, the Electrical Contractor shall provide operation and maintenance manuals to the Owner.

7. RECORD DRAWINGS AND CONTROL DOCUMENTS:

When the project is completed, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items, will be provided to the Owner.

8. COMMISSIONING

The project shall be commissioned per Section 018000 of the specifications.

9. RENEWABLE ENERGY PROVISIONS

Provisions for a renewable energy system will consist of a 30 kw grid connected photovoltaic PV system intended to reduce the facilities demand for electricity by three percent. The photovoltaic system will operate in conformance with the green schools initiative. System will consist of roof mounted photovoltaic modules, weather station, data acquisition system and inverters. Interactive display terminals will be provided for students and for public awareness of the benefits of renewable energy. The system will be modular in design which will allow for future additions. The wind turbines relate to ***LEED Credit EAC2*.**

10. SITE UTILITIES

The Electric, Telephone and Cable TV utilities will be underground for each system provided.

11. CCTV

A Closed Circuit TV system will consist of computer servers with image software, computer monitors and IP based closed circuit TV cameras. The head end server will be located in the head end (MDF) room and will be rack mounted. The system can be accessed from any PC within the facility or externally via an IP address. Each camera can be viewed independently. The network video recorders (SAN) will record all cameras and store this information for 45 days at 30 images per second (virtual real time).

The location of the cameras is generally in corridors and exterior building perimeter. The exterior cameras are pan-tilt-zoom type.

The system will fully integrate with the access control system to allow viewing of events from a single alarm viewer. Camera images and recorded video will be linked to the access system to allow retrieval of video that is associated with an event.

12. INTRUSION SYSTEM

An intrusion system will consists of security panel, keypads, motion detectors and door contacts. The system is addressable which means that each device will be identified when an alarm occurs. The system is designed so that each perimeter classroom with grade access will have dual tech sensors along the exterior wall and corridors, door contacts at each exterior door.

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The system can be partitioned into several zones. Therefore, it is possible to use the Gym area while the remainder of the school remains alarmed.

The system will include a digital transmitter to summons the local police department in the event of an alarm condition

The intrusion system will be connected to the automated lighting control system to automatically turn on lighting upon an alarm.

13. CARD ACCESS

A card access system includes a card access controller, door controllers and proximity readers/keypads. Proximity readers will be located at various locations. Each proximity reader will have a distinctive code to identify the user and a log will be kept in memory. The log within the panel can be accessed through a computer.

The alarm condition will also initiate real time recording on the integrated CCTV System. The system may be programmed with graphic maps allowing the end-user to quickly identify alarm conditions and lock/unlock doors.

The system is modular and may be easily expanded to accommodate any additional devices.

14. PHASING

The new electrical service will be constructed under Phase 1. The new service will back feed the existing main switchboard.

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ELECTRICAL SYSTEMS

NARRATIVE REPORT – OPTION 2 (Renovation/Addition)

The following is the Electrical system narrative, which defines the scope of work and capacities of the Power and Lighting system as well as the Basis of Design. The electrical systems shall be designed and constructed for ***LEED for Schools*** where indicated on this narrative. This project shall confirm to LEED Silver rating.

1. CODES

   All work installed under Division 26 shall comply with the Massachusetts State Building Code, IBC 2009 Appendix 115AA - Stretch Energy Code and all local, county, and federal codes, laws, statutes, and authorities having jurisdiction.

2. DESIGN INTENT

   The work of Section 260000 is indicated in this narrative report. 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 Electrical work and all items incidental thereto, including commissioning and testing.

3. SEQUENCE OF OPERATIONS AND INTERACTIONS

   A. Classroom and corridor lighting will be controlled via “addressable relays”, which is achieved through programming. The control of the relays shall be by automatic means such as an occupancy sensor in each classroom. The controllability shall be in conformance with ***LEED for Schools IEQ Credit 6.1***.

   B. Exterior lighting will be controlled by photocell “on” and “schedule” for “off” operation. The vehicle circulation area lighting will be controlled by “zones” and will have dimming-level control.

   C. Emergency and exit lighting will be run through life safety panels to be on during normal power conditions as well as power outage conditions.

4. DESCRIPTION OF THE SYSTEMS

   A. Electrical Distribution System:

      1. New construction service ratings are designed for a demand load of 10 watts/s.f. The service capacity will be sized for 2500 amperes with 100% rating at 277/480 volt, 3Ø, 4wire. New lighting and power panels will be provided to accommodate respective loads. The service capacity will be sized for 20% spare capacity.

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B. Interior Lighting System:

1. Classroom lighting fixtures consist of pendant mounted indirect LED luminaries with dimming drivers. The fixtures will be pre-wired for dimming control where natural daylight is available and also for multi-level switching. Office lighting fixtures will consist of similar fixtures to classrooms. Offices on the perimeter with windows shall have daylight dimming controls**.** In existing building recessed LED fixtures will be used with dimming drivers.

   In general lighting power density will be 40 percent less than IECC 2009. The power density reduction relates to ***LEED for Schools Credit EAC1.***

2. Lighting levels will be approximately 30 foot candles in classrooms and offices. The daylight dimming footcandle level will be in compliance with ***LEED for Schools IEQ 6.1.***

3. Gymnasium lighting will be comprised of direct LED fixtures with dimming drivers. The fixtures will be provided with protective wire guards. The light level will be designed for approximately 50 foot candles.

   Daylight dimming will be provided within 15 feet of skylights or glazing. Daylight dimming controls will be similar in operation to classrooms.

4. Corridor lighting will be comprised of linear indirect lighting using LED light source. The corridor light level will be designed for approximately 15 foot candles. Corridor lighting will be on a schedule through the DDC system control and only “on” during occupied hours. The corridor lighting will have two level control.

5. Cafetorium lighting will be pendant mounted/indirect LED fixtures with dimming drivers. The light levels will be designed for approximately 20 foot candles.

6. Kitchen and Servery lighting will consist of recessed 2 ft. x 2 ft. lensed gasketed LED panels. Light levels will be approximately 50 foot candles.

7. Library lighting will consist of indirect LED fixtures with dimming drivers. Light levels will be approximately 30 foot candles.

8. Garage lighting will consist of LED surface mounted fixtures.

9. Each area will be locally switched and designed for multi-level controls. Each classroom, office space and toilet rooms will have an occupancy sensor to turn lights off when unoccupied. Daylight sensors will be installed in each room where natural light is available for dimming of light fixtures.

10. The entire school will be controlled with an automatic lighting control system using the DDC control system for schedule programming of lights.

C. Emergency Lighting System:

1. An exterior 200 kw natural gas fuelled indoor emergency generator with sound attenuated housing will be provided. Light fixtures and LED exit signs will be installed to serve all egress areas such as corridors, intervening spaces, toilets, stairs and exit discharge exterior doors. The administration area lighting will be connected to the emergency generator.

2. The generator will be sized to include life safety systems, boilers and circulating pumps, communications systems and kitchen refrigeration.

D. Site Lighting System

1. Fixtures for area lighting will be pole-mounted cut-off 'LED' luminaries in the drop-off areas. The fixtures shall be per Town of Brookline standards. Pole heights will be below 12 ft. Fixtures for the underground parking shall be low profile, suspended `LED` fixtures. The exterior lighting will be connected to the automatic lighting control system for photocell on and timed off operation. The site lighting fixtures will be dark sky compliant. The illumination level is 0.5 foot candle minimum for parking areas in accordance with Illuminating Engineering Society. The site lighting system shall be in conformance with ***LEED for Schools Credit SSC8***.

2. Building perimeter fixtures will be wall mounted cut-off over exterior doors for exit discharge.

E. Wiring Devices:

1. Each classroom will have a minimum of (2) duplex receptacles per teaching wall and (2) double duplex receptacles on dedicated circuits at classroom computer workstations. The teacher's workstation will have a double duplex receptacle also on a dedicated circuit. Refer to drawings.

2. Office areas will generally have (1) duplex outlet per wall. At each workstation a double duplex receptacle will be provided.

3. Corridors will have a cleaning receptacle at approximately 25 foot intervals.

4. Exterior weatherproof receptacles will be installed at exterior doors.

5. A system of computer grade panelboards with double neutrals and transient voltage surge suppressors will be provided for receptacle circuits.

F. Fire Alarm System:

1. A fire alarm and detection system will be provided with 60 battery back-up. The system will be of the addressable type where each device will be identified at the control panel and remote annunciator by device type and location to facilitate search for origin of alarms.

2. Smoke detectors will be provided in open areas, corridors, stairwells and other egress ways.

3. The sprinkler system will be supervised for water flow and tampering with valves.

4. Speaker/strobes will be provided in egress ways, classrooms, assembly spaces, open areas and other large spaces. Strobe only units will be provided in single toilets and conference rooms.

5. Manual pull stations will be provided at exit discharge doors.

6. The system will be remotely connected to automatically report alarms to fire department via an approved method by the fire department.

G. Uninterruptible Power Supply (UPS):

1. One (1) 30kw, three (3) phase centralized UPS systems will be provided with battery back-up.

2. The system will provide conditioned power to sensitive electronic loads, telecommunication systems, bridge over power interruptions of short duration and allow an orderly shutdown of servers, communication systems, etc. during a prolonged power outage.

3. The UPS systems will also be connected to the stand by generator.

H. Lightning Protection System:

1. A system of lightning protection devices will be provided.

2. The lightning protection equipment will include air terminals, conductors, conduits, fasteners, connectors, ground rods, etc.

5. TESTING REQUIREMENTS

The Electrical Contractor shall provide testing of the following systems with the Owner and Owner's representative present:

- Lighting and power panels for correct phase balance.
- Emergency generator.
- Lighting control system (interior and exterior).
- Fire alarm system.
- Security system.
- Lightning protection system.

Testing reports shall be submitted to the engineer for review and approval before providing to the Owner.

6. OPERATION MANUALS AND MAINTENANCE MANUALS:

When the project is completed, the Electrical Contractor shall provide operation and maintenance manuals to the Owner.

7. RECORD DRAWINGS AND CONTROL DOCUMENTS:

When the project is completed, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items, will be provided to the Owner.

8. COMMISSIONING

The project shall be commissioned per Section 018000 of the specifications.

9. RENEWABLE ENERGY PROVISIONS

Provisions for a renewable energy system will consist of a 30 kw grid connected photovoltaic PV system intended to reduce the facilities demand for electricity by three percent. The photovoltaic system will operate in conformance with the green schools initiative. System will consist of roof mounted photovoltaic modules, weather station, data acquisition system and inverters. Interactive display terminals will be provided for students and for public awareness of the benefits of renewable energy. The system will be modular in design which will allow for future additions. The wind turbines relate to ***LEED Credit EAC2*****.**

10. SITE UTILITIES

The Electric, Telephone and Cable TV utilities will be underground for each system provided.

11. CCTV

A Closed Circuit TV system will consist of computer servers with image software, computer monitors and IP based closed circuit TV cameras. The head end server will be located in the head end (MDF) room and will be rack mounted. The system can be accessed from any PC within the facility or externally via an IP address. Each camera can be viewed independently. The network video recorders (SAN) will record all cameras and store this information for 45 days at 30 images per second (virtual real time).

The location of the cameras is generally in corridors and exterior building perimeter. The exterior cameras are pan-tilt-zoom type.

The system will fully integrate with the access control system to allow viewing of events from a single alarm viewer. Camera images and recorded video will be linked to the access system to allow retrieval of video that is associated with an event.

12. INTRUSION SYSTEM

An intrusion system will consists of security panel, keypads, motion detectors and door contacts. The system is addressable which means that each device will be identified when an alarm occurs. The system is designed so that each perimeter classroom with grade access will have dual tech sensors along the exterior wall and corridors, door contacts at each exterior door.

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The system can be partitioned into several zones. Therefore, it is possible to use the Gym area while the remainder of the school remains alarmed.

The system will include a digital transmitter to summons the local police department in the event of an alarm condition

The intrusion system will be connected to the automated lighting control system to automatically turn on lighting upon an alarm.

13. CARD ACCESS

A card access system includes a card access controller, door controllers and proximity readers/keypads. Proximity readers will be located at various locations. Each proximity reader will have a distinctive code to identify the user and a log will be kept in memory. The log within the panel can be accessed through a computer.

The alarm condition will also initiate real time recording on the integrated CCTV System. The system may be programmed with graphic maps allowing the end-user to quickly identify alarm conditions and lock/unlock doors.

The system is modular and may be easily expanded to accommodate any additional devices.

14. PHASING

The new electrical service will be constructed under Phase 1 and back feed existing equipment.

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ELECTRICAL SYSTEMS

NARRATIVE REPORT – OPTION 3 (New Construction)

The following is the Electrical system narrative, which defines the scope of work and capacities of the Power and Lighting system as well as the Basis of Design. The electrical systems shall be designed and constructed for ***LEED for Schools*** where indicated on this narrative. This project shall confirm to LEED Silver rating.

1. CODES

   All work installed under Division 26 shall comply with the Massachusetts State Building Code, IBC 2009 Appendix 115AA - Stretch Energy Code and all local, county, and federal codes, laws, statutes, and authorities having jurisdiction.

2. DESIGN INTENT

   The work of Section 260000 is indicated in this narrative report. 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 Electrical work and all items incidental thereto, including commissioning and testing.

3. SEQUENCE OF OPERATIONS AND INTERACTIONS

   A. Classroom and corridor lighting will be controlled via “addressable relays”, which is achieved through programming. The control of the relays shall be by automatic means such as an occupancy sensor in each classroom. The controllability shall be in conformance with ***LEED for Schools IEQ Credit 6.1***.

   B. Exterior lighting will be controlled by photocell “on” and “schedule” for “off” operation. The vehicle circulation area lighting will be controlled by “zones” and will have dimming-level control.

   C. Emergency and exit lighting will be run through life safety panels to be on during normal power conditions as well as power outage conditions.

4. DESCRIPTION OF THE SYSTEMS

   A. Electrical Distribution System:

      1. New construction service ratings are designed for a demand load of 10 watts/s.f. The service capacity will be sized for 2500 amperes with 100% rating at 277/480 volt, 3Ø, 4wire. New lighting and power panels will be provided to accommodate respective loads. The service capacity will be sized for 20% spare capacity.

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B. Interior Lighting System:

1. Classroom lighting fixtures consist of pendant mounted indirect LED luminaries with dimming drivers. The fixtures will be pre-wired for dimming control where natural daylight is available and also for multi-level switching. Office lighting fixtures will consist of similar fixtures to classrooms. Offices on the perimeter with windows shall have daylight dimming controls**.** In existing building recessed LED fixtures will be used with dimming drivers.

   In general lighting power density will be 40 percent less than IECC 2009. The power density reduction relates to ***LEED for Schools Credit EAC1.***

2. Lighting levels will be approximately 30 foot candles in classrooms and offices. The daylight dimming footcandle level will be in compliance with ***LEED for Schools IEQ 6.1.***

3. Gymnasium lighting will be comprised of direct LED fixtures with dimming drivers. The fixtures will be provided with protective wire guards. The light level will be designed for approximately 50 foot candles.

   Daylight dimming will be provided within 15 feet of skylights or glazing. Daylight dimming controls will be similar in operation to classrooms.

4. Corridor lighting will be comprised of linear indirect lighting using LED light source. The corridor light level will be designed for approximately 15 foot candles. Corridor lighting will be on a schedule through the DDC system control and only “on” during occupied hours. The corridor lighting will have two level control.

5. Cafetorium lighting will be pendant mounted/indirect LED fixtures with dimming drivers. The light levels will be designed for approximately 20 foot candles.

6. Kitchen and Servery lighting will consist of recessed 2 ft. x 2 ft. lensed gasketed LED panels. Light levels will be approximately 50 foot candles.

7. Library lighting will consist of indirect LED fixtures with dimming drivers. Light levels will be approximately 30 foot candles.

8. Garage lighting will consist of LED surface mounted fixtures.

9. Each area will be locally switched and designed for multi-level controls. Each classroom, office space and toilet rooms will have an occupancy sensor to turn lights off when unoccupied. Daylight sensors will be installed in each room where natural light is available for dimming of light fixtures.

10. The entire school will be controlled with an automatic lighting control system using the DDC control system for schedule programming of lights.

C. Emergency Lighting System:

1. An exterior 200 kw natural gas fuelled indoor emergency generator with sound attenuated housing will be provided. Light fixtures and LED exit signs will be installed to serve all egress areas such as corridors, intervening spaces, toilets, stairs and exit discharge exterior doors. The administration area lighting will be connected to the emergency generator.

2. The generator will be sized to include life safety systems, boilers and circulating pumps, communications systems and kitchen refrigeration.

D. Site Lighting System

1. Fixtures for area lighting will be pole-mounted cut-off 'LED' luminaries in the parking and drop-off areas. The fixtures shall be per Town of Brookline standards. Pole heights will be below 20 ft. Fixtures for the underground parking shall be low profile, suspended `LED` fixtures. The exterior lighting will be connected to the automatic lighting control system for photocell on and timed off operation. The site lighting fixtures will be dark sky compliant. The illumination level is 0.5 foot candle minimum for parking areas in accordance with Illuminating Engineering Society. The site lighting system shall be in conformance with ***LEED for Schools Credit SSC8***.

2. Building perimeter fixtures will be wall mounted cut-off over exterior doors for exit discharge.

E. Wiring Devices:

1. Each classroom will have a minimum of (2) duplex receptacles per teaching wall and (2) double duplex receptacles on dedicated circuits at classroom computer workstations. The teacher's workstation will have a double duplex receptacle also on a dedicated circuit. Refer to drawings.

2. Office areas will generally have (1) duplex outlet per wall. At each workstation a double duplex receptacle will be provided.

3. Corridors will have a cleaning receptacle at approximately 25 foot intervals.

4. Exterior weatherproof receptacles will be installed at exterior doors.

5. A system of computer grade panelboards with double neutrals and transient voltage surge suppressors will be provided for receptacle circuits.

F. Fire Alarm System:

1. A fire alarm and detection system will be provided with 60 battery back-up. The system will be of the addressable type where each device will be identified at the control panel and remote annunciator by device type and location to facilitate search for origin of alarms.

2. Smoke detectors will be provided in open areas, corridors, stairwells and other egress ways.

3. The sprinkler system will be supervised for water flow and tampering with valves.

4. Speaker/strobes will be provided in egress ways, classrooms, assembly spaces, open areas and other large spaces. Strobe only units will be provided in single toilets and conference rooms.

5. Manual pull stations will be provided at exit discharge doors.

6. The system will be remotely connected to automatically report alarms to fire department via an approved method by the fire department.

G. Uninterruptible Power Supply (UPS):

1. One (1) 30kw, three (3) phase centralized UPS systems will be provided with battery back-up.

2. The system will provide conditioned power to sensitive electronic loads, telecommunication systems, bridge over power interruptions of short duration and allow an orderly shutdown of servers, communication systems, etc. during a prolonged power outage.

3. The UPS systems will also be connected to the stand by generator.

H. Lightning Protection System:

1. A system of lightning protection devices will be provided.

2. The lightning protection equipment will include air terminals, conductors, conduits, fasteners, connectors, ground rods, etc.

5. TESTING REQUIREMENTS

The Electrical Contractor shall provide testing of the following systems with the Owner and Owner's representative present:

- Lighting and power panels for correct phase balance.
- Emergency generator.
- Lighting control system (interior and exterior).
- Fire alarm system.
- Security system.
- Lightning protection system.

Testing reports shall be submitted to the engineer for review and approval before providing to the Owner.

6. OPERATION MANUALS AND MAINTENANCE MANUALS:

When the project is completed, the Electrical Contractor shall provide operation and maintenance manuals to the Owner.

7. RECORD DRAWINGS AND CONTROL DOCUMENTS:

When the project is completed, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items, will be provided to the Owner.

8. COMMISSIONING

The project shall be commissioned per Section 018000 of the specifications.

9. RENEWABLE ENERGY PROVISIONS

Provisions for a renewable energy system will consist of a 30 kw grid connected photovoltaic PV system intended to reduce the facilities demand for electricity by three percent. The photovoltaic system will operate in conformance with the green schools initiative. System will consist of roof mounted photovoltaic modules, weather station, data acquisition system and inverters. Interactive display terminals will be provided for students and for public awareness of the benefits of renewable energy. The system will be modular in design which will allow for future additions. The wind turbines relate to ***LEED Credit EAC2*.**

10. SITE UTILITIES

The Electric, Telephone and Cable TV utilities will be underground for each system provided.

11. CCTV

A Closed Circuit TV system will consist of computer servers with image software, computer monitors and IP based closed circuit TV cameras. The head end server will be located in the head end (MDF) room and will be rack mounted. The system can be accessed from any PC within the facility or externally via an IP address. Each camera can be viewed independently. The network video recorders (SAN) will record all cameras and store this information for 45 days at 30 images per second (virtual real time).

The location of the cameras is generally in corridors and exterior building perimeter. The exterior cameras are pan-tilt-zoom type.

The system will fully integrate with the access control system to allow viewing of events from a single alarm viewer. Camera images and recorded video will be linked to the access system to allow retrieval of video that is associated with an event.

12. INTRUSION SYSTEM

An intrusion system will consists of security panel, keypads, motion detectors and door contacts. The system is addressable which means that each device will be identified when an alarm occurs. The system is designed so that each perimeter classroom with grade access will have dual tech sensors along the exterior wall and corridors, door contacts at each exterior door.

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The system can be partitioned into several zones. Therefore, it is possible to use th while the remainder of the school remains alarmed.

The system will include a digital transmitter to summons the local police department of an alarm condition

The intrusion system will be connected to the automated lighting control system to a turn on lighting upon an alarm.

13. CARD ACCESS

A card access system includes a card access controller, door controllers an readers/keypads. Proximity readers will be located at various locations. Each prox will have a distinctive code to identify the user and a log will be kept in memory. Th the panel can be accessed through a computer.

The alarm condition will also initiate real time recording on the integrated CCTV Sy system may be programmed with graphic maps allowing the end-user to quickly id conditions and lock/unlock doors.

Appendix H

Technology System Narratives

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TECHNOLOGY SYSTEMS

NARRATIVE REPORT – OPTION 0

REPAIR OPTION

The following is the Technology System narrative, which defines the scope of work and capacities of the Communications system infrastructure and Security system as well as the Basis of Design.

1. CODES

   A. All work installed under Section 270000 shall comply with the Massachusetts Building Code, IBC 2009, and all local, county, and federal codes, laws, statues, and authorities having jurisdiction.

2. DESIGN INTENT

   A. 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 Technology and Security work and all items incidental thereto, including commissioning and testing.

3. TECHNOLOGY

   A. The data system infrastructure will consist of fiber optic backbone cabling horizontal wiring will consist of Category 6A UTP Plenum rated cabling for both data and telephone systems for gigabit connectivity. The telephone infrastructure will accommodate PBX, or VOIP based voice systems. A new IP telephone system will be used.

   B. Each classroom will have 4 data outlets for student computers. Two data, one voice with video and audio connections to a wall mounted projector will be provided at teacher's station with interconnectivity to a interactive whiteboard. A wall phone outlet with 2 way ceiling speaker will be provided for communications with administration. Wireless access points will be provided in all classrooms and other spaces in addition to (2) CAT6A.cables to access points multimode fiber will also be provided.

   C. A central paging system will be provided and integrated with the telephone system. The speaker shall be IP.

   D. A wireless GPS/LAN based master clock system will be provided with 120V wireless remote clocks that act as transceivers.

   E. The Main Distribution Frame (MDF) will contain all core network switching and IP voice switch. Intermediate Distribution Frames (IDFs) will serve each floor/wing of the school. A fiber optic backbone will be provided from each IDF to MDF. The backbone will be designed for 10 Gbps Ethernet.

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4. TESTING REQUIREMENTS

A. The Technology and Security Contractors shall provide testing of the following systems with the Owner and Owner's representative present:
- Telephone and data cabling
- Fiber optic backbone cabling
- Paging system
- Wireless clock system
- A/V wiring for classrooms

Testing reports shall be submitted to the engineer for review and approval before providing to the Owner.

5. OPERATION MANUALS AND MAINTENANCE MANUALS:

A. When the project is completed, the Technology Contractor shall provide operation and maintenance manuals to the Owner.

6. RECORD DRAWINGS AND CONTROL DOCUMENTS:

A. When the project is completed, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items, will be provided to the Owner.

7. COMMISSIONING

A. The project shall be commissioned per Commissioning Section of the specifications.

8. PHASING

A. The existing telephone, Town WAN, internet and cable-TV services will be impacted by phasing. A new headend room is required as part of Phase 1.

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TECHNOLOGY SYSTEMS

NARRATIVE REPORT – OPTION 1 (Renovation/Addition)

The following is the Technology System narrative, which defines the scope of work and capacities of the Communications system infrastructure and Security system as well as the Basis of Design.

1. CODES

   A. All work installed under Section 270000 shall comply with the Massachusetts Building Code, IBC 2009, and all local, county, and federal codes, laws, statues, and authorities having jurisdiction.

2. DESIGN INTENT

   A. 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 Technology and Security work and all items incidental thereto, including commissioning and testing.

3. TECHNOLOGY

   A. The data system infrastructure will consist of fiber optic backbone cabling horizontal wiring will consist of Category 6A UTP Plenum rated cabling for both data and telephone systems for gigabit connectivity. The telephone infrastructure will accommodate PBX, or VOIP based voice systems. A new IP telephone system will be used.

   B. Each classroom will have 4 data outlets for student computers. Two data, one voice with video and audio connections to a wall mounted projector will be provided at teacher's station with interconnectivity to a interactive whiteboard. A wall phone outlet with 2 way ceiling speaker will be provided for communications with administration. Wireless access points will be provided in all classrooms and other spaces in addition to (2) CAT6A.cables to access points multimode fiber will also be provided.

   C. A central paging system will be provided and integrated with the telephone system. The speaker shall be IP.

   D. A wireless GPS/LAN based master clock system will be provided with 120V wireless remote clocks that act as transceivers.

   E. The Main Distribution Frame (MDF) will contain all core network switching and IP voice switch. Intermediate Distribution Frames (IDFs) will serve each floor/wing of the school. A fiber optic backbone will be provided from each IDF to MDF. The backbone will be designed for 10 Gbps Ethernet.

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4. TESTING REQUIREMENTS

A. The Technology and Security Contractors shall provide testing of the following systems with the Owner and Owner's representative present:
- Telephone and data cabling
- Fiber optic backbone cabling
- Paging system
- Wireless clock system
- A/V wiring for classrooms

Testing reports shall be submitted to the engineer for review and approval before providing to the Owner.

5. OPERATION MANUALS AND MAINTENANCE MANUALS:

A. When the project is completed, the Technology Contractor shall provide operation and maintenance manuals to the Owner.

6. RECORD DRAWINGS AND CONTROL DOCUMENTS:

A. When the project is completed, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items, will be provided to the Owner.

7. COMMISSIONING

A. The project shall be commissioned per Commissioning Section of the specifications.

8. PHASING

A. The existing telephone, Town WAN, internet and cable-TV services will be impacted by phasing. A new headend room is required as part of Phase 1.

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TECHNOLOGY SYSTEMS

NARRATIVE REPORT – OPTION 2 (Renovation/Addition)

The following is the Technology System narrative, which defines the scope of work and capacities of the Communications system infrastructure and Security system as well as the Basis of Design.

1. CODES

   A. All work installed under Section 270000 shall comply with the Massachusetts Building Code, IBC 2009, and all local, county, and federal codes, laws, statues, and authorities having jurisdiction.

2. DESIGN INTENT

   A. 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 Technology and Security work and all items incidental thereto, including commissioning and testing.

3. TECHNOLOGY

   A. The data system infrastructure will consist of fiber optic backbone cabling horizontal wiring will consist of Category 6A UTP Plenum rated cabling for both data and telephone systems for gigabit connectivity. The telephone infrastructure will accommodate PBX, or VOIP based voice systems. A new IP telephone system will be used.

   B. Each classroom will have 4 data outlets for student computers. Two data, one voice with video and audio connections to a wall mounted projector will be provided at teacher's station with interconnectivity to a interactive whiteboard. A wall phone outlet with 2 way ceiling speaker will be provided for communications with administration. Wireless access points will be provided in all classrooms and other spaces in addition to (2) CAT6A.cables to access points multimode fiber will also be provided.

   C. A central paging system will be provided and integrated with the telephone system. The speaker shall be IP.

   D. A wireless GPS/LAN based master clock system will be provided with 120V wireless remote clocks that act as transceivers.

   E. The Main Distribution Frame (MDF) will contain all core network switching and IP voice switch. Intermediate Distribution Frames (IDFs) will serve each floor/wing of the school. A fiber optic backbone will be provided from each IDF to MDF. The backbone will be designed for 10 Gbps Ethernet.

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4. TESTING REQUIREMENTS

A. The Technology and Security Contractors shall provide testing of the following systems with the Owner and Owner's representative present:
- Telephone and data cabling
- Fiber optic backbone cabling
- Paging system
- Wireless clock system
- A/V wiring for classrooms

Testing reports shall be submitted to the engineer for review and approval before providing to the Owner.

5. OPERATION MANUALS AND MAINTENANCE MANUALS:

A. When the project is completed, the Technology Contractor shall provide operation and maintenance manuals to the Owner.

6. RECORD DRAWINGS AND CONTROL DOCUMENTS:

A. When the project is completed, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items, will be provided to the Owner.

7. COMMISSIONING

A. The project shall be commissioned per Commissioning Section of the specifications.

8. PHASING

A. The existing telephone, Town WAN, internet and cable-TV services will be impacted by phasing. A new headend room is required as part of Phase 1.

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TECHNOLOGY SYSTEMS

NARRATIVE REPORT – OPTION 3 (New Construction)

The following is the Technology System narrative, which defines the scope of work and capacities of the Communications system infrastructure and Security system as well as the Basis of Design.

1. CODES

   A. All work installed under Section 270000 shall comply with the Massachusetts Building Code, IBC 2009, and all local, county, and federal codes, laws, statues, and authorities having jurisdiction.

2. DESIGN INTENT

   A. 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 Technology and Security work and all items incidental thereto, including commissioning and testing.

3. TECHNOLOGY

   A. The data system infrastructure will consist of fiber optic backbone cabling horizontal wiring will consist of Category 6A UTP Plenum rated cabling for both data and telephone systems for gigabit connectivity. The telephone infrastructure will accommodate PBX, or VOIP based voice systems. A new IP telephone system will be used.

   B. Each classroom will have 4 data outlets for student computers. Two data, one voice with video and audio connections to a wall mounted projector will be provided at teacher's station with interconnectivity to a interactive whiteboard. A wall phone outlet with 2 way ceiling speaker will be provided for communications with administration. Wireless access points will be provided in all classrooms and other spaces in addition to (2) CAT6A.cables to access points multimode fiber will also be provided.

   C. A central paging system will be provided and integrated with the telephone system. The paging speakers will be IP.

   D. A wireless GPS/LAN based master clock system will be provided with 120V wireless remote clocks that act as transceivers.

   E. The Main Distribution Frame (MDF) will contain all core network switching and IP voice switch. Intermediate Distribution Frames (IDFs) will serve each floor/wing of the school. A fiber optic backbone will be provided from each IDF to MDF. The backbone will be designed for 10 Gbps Ethernet.

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4. TESTING REQUIREMENTS

A. The Technology and Security Contractors shall provide testing of the following systems with the Owner and Owner's representative present:

- Telephone and data cabling
- Fiber optic backbone cabling
- Paging system
- Wireless clock system
- A/V wiring for classrooms

Testing reports shall be submitted to the engineer for review and approval before providing to the Owner.

5. OPERATION MANUALS AND MAINTENANCE MANUALS:

A. When the project is completed, the Technology Contractor shall provide operation and maintenance manuals to the Owner.

6. RECORD DRAWINGS AND CONTROL DOCUMENTS:

A. When the project is completed, an as-built set of drawings, showing all lighting and power requirements from contract and addendum items, will be provided to the Owner.

7. COMMISSIONING

A. The project shall be commissioned per Commissioning Section of the specifications.

8. PHASING

A. The existing telephone, internet and cable-TV services will not be impacted by phasing.

Appendix I

Response to MSBA Review Comments

Massachusetts School Building Authority

Steven Grossman
Chairman, State Treasurer

John K. McCarthy
Executive Director

April 16, 2014

Mr. Melvin Kleckner, Town Administrator
Town of Brookline
333 Washington Street, 6th Floor
Brookline, MA 02445

Re: Town of Brookline, Edward Devotion School

Dear Mr. Kleckner:

The Massachusetts School Building Authority (the "MSBA") is forwarding review comments for the Module 3 Feasibility Study Preliminary Design Program submission for the Edward Devotion School project received by the MSBA on March 24, 2014.

Responses to the attached comments shall be forwarded to the assigned Project Coordinator, Sarah Blache (Sarah.Blache@MassSchoolBuildings.org) through the Owner's Project Manager. Please review and return responses within 14 days of receipt of this letter.

If you have any questions or comments, please do not hesitate to contact Ron Roberge (Ron.Roberge@MassSchoolBuildings.org).

Sincerely,

Mary Pichetti
Director of Capital Planning

Attachments:
Attachment 'A' Preliminary Design Program Review Comments
Attachment 'B' Preliminary Design Program Initial Space Summary Review

40 Broad Street, Suite 500 • Boston, MA 02109 • Tel: 617-720-4466 • Fax: 617-720-5260 • www.MassSchoolBuildings.org

Cc: Legislative Delegation
Betsy DeWitt, Chair, Brookline Board of Selectmen
Sean Cronin, Brookline Deputy Town Administrator
Alan Morse, Chair, Brookline School Committee
Dr. William H. Lupini, Superintendent, Brookline Public Schools
Peter C. Rowe, Deputy Superintendent, Brookline Public Schools
Anthony Guigli, Owner's Project Manager, Town of Brookline
Pip Lewis, Designer, HMFH Architects, Inc.
File: 10.2 Letters (Region 4)

Attachment 'A' - Module 3 Preliminary Design Program Review Comments

District: Town of Brookline
School: Edward Devotion School
Submittal Due Date: March 24, 2014
Submittal Received Date: March 24, 2014
Review Dates: March 25, 2014 – April 14, 2014
Reviewed by: R. Roberge, C. Alles, J Jumpe

MSBA REVIEW COMMENTS:

The following comments[1] on the Preliminary Design Program submittal are issued pursuant to a review of the project submittal document for the Edward Devotion School presented as a part of the Feasibility Study submission in accordance with the MSBA Module 3 Guidelines, as produced by HMFH Architects, Inc. and its consultants. Certain supplemental components from the Owner's Project Manager (OPM) – Town of Brookline are included.

3.1 Preliminary Design Program submittal completion:

- OPM certification of completeness & conformity – *Provided although the submittal is incomplete as described below.*
- Educational Program - *Incomplete-refer to comments shown in italics.*

3.1.1 Introduction

- Narrative summary of the Capital Budget Statement and Target Budget for the proposed project – *The Town of Brookline's Capital Budget Statement recommends the Devotion project be funded through a voter approved Debt Exclusion Override. The feasibility study/schematic phases are being funded through an identified $1M surplus from town accounts. The town intends to carry $77M Debt Exclusion within their FY 2015 Capital Improvement Program Budget to fund the Devotion project. The submitted schedule identifies the District's vote for funding is planned for July 8, 2015.*
- Updated Project Schedule – *The project schedule identifies a Preferred Schematic submittal date of July 30, 2014 and a scheduled MSBA Board of Director meeting on September 24, 2014.* ***Not identified is a scheduled meeting with the MSBA***

[1] The written comments provided by the MSBA are solely for purposes of determining whether the submittal documents, analysis process, proposed planning concept and any other design documents submitted for MSBA review appear consistent with the MSBA's guidelines and requirements, and are not for the purpose of determining whether the proposed design and its process may meet any legal requirements imposed by federal, state or local law, including, but not limited to, zoning ordinances and by-laws, environmental regulations, building codes, sanitary codes, safety codes and public procurement laws or for the purpose of determining whether the proposed design and process meet any applicable professional standard of care or any other standard of care. Project designers are obligated to implement detailed planning and technical review procedures to effect coordination of design criteria, buildability, and technical adequacy of project concepts. Each city, town and regional school district shall be solely responsible for ensuring that its project development concepts comply with all applicable provisions of federal, state, and local law. The MSBA recommends that each city, town and regional school district have its legal counsel review its development process and subsequent bid documents to ensure that it is in compliance with all provisions of federal, state and local law, prior to bidding. The MSBA shall not be responsible for any legal fees or costs of any kind that may be incurred by a city, town or regional school district in relation to MSBA requirements or the preparation and review of the project's planning process or plans and specifications.

Facilities Assessment Subcommittee ("FAS") which should be tentatively slated for August 20, 2014 or September 10, 2014.

3.1.2 Educational Program

Summary and description of the existing educational program and/or new educational vision and specifications, process, etc., Teaching Philosophy Statement (Including description of the following). ***Please provide an updated Educational Program realigned to include all of the following:***

- Class size policies - ***Please provide confirmation of the Public Schools of Brookline class size policy*** *which was not included within the submitted Educational Program.*
- School scheduling method – ***Please provide identification of the Edward Devotion School scheduling policy***. *Yearly curriculum structure requirements are noted but the Educational Plan only identifies classes structured of 20-45, 40-45, 45-55, 30-40 and 90 minute sessions offering no understanding of planned class periods scheduled per day or week. It is unclear how a daily class structure is organized with the identified variety of class meeting times and if the schedule differs between grade cohorts.*
- Teacher planning and room assignment policies - *Teacher planning time is noted to be programmed with school scheduling. However, a school schedule timetable was not provided. Identified room assignment policies are limited to design goals and do not acknowledge current room assignment policies.* ***Please confirm current and proposed teacher planning and room assignment policies.***
- Pre-kindergarten (SPED only, tuition programs, locations, if applicable) - *Currently the schools Pre-K program has been relocated to other facilities in order to accommodate the existing large Devotion School K-8 population. It is understood the project intends to restore two Pre-K classrooms back into the Devotion School facility.*
- Kindergarten (full day, half day, locations, if applicable) – *The PDP reports that five Kindergarten classrooms currently exist and are planned for the project.* ***Please confirm if the current and proposed Kindergarten programs are full or half day sessions.***
- Special Education (in-house, collaborative, facility restrictions) – *Devotion School houses the District's Special Education Therapeutic Learning Center (TLC) for grades K-8. Participation is identified to match the District's percentage of Special Education students at 16.1% and noted to enroll Devotion schoolchildren and students from other elementary schools. However, a description of participation levels is restricted to "The number of students in these classrooms is monitored to ensure a lower class size".* ***Please provide actual and projected participation/enrollment counts and an understanding of the number of District students who participate in Devotion School TLC program.***
- Transportation policies - *Limited vehicular access space is noted within the PDP as a key issue with the existing facility. Design team field surveys have identified 100 morning and 60 afternoon parent vehicular drop-off/pick-ups, 3-4 school busses/vans using the circular driveway and 550 walkers.* ***Please identify existing and proposed vehicular and pedestrian circulation considerations.***

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3.1.4 Evaluation of Existing Conditions

- Existing historically significant features (if applicable) and any related effect on the project design and/or schedule *:*
  - *The Edward Devotion House is the centerpiece of the existing Devotion School site. The house dates to 1740 with a house frame dating back to 1680. The boundary of the house approximately corresponds to the existing picket fence which surrounds the house. The house is listed on the National Register of Historic Places. The PDP notes it is not anticipated any portion of the Edward Devotion House would be compromised as a result of the proposed work to the Devotion School. The Edward Devotion House has no physical connection to the Edward Devotion School. However, the Devotion House location has greatly influenced the layout of the school over the last two centuries.*
  - *The 1913 portion of the existing Devotion School is eligible for inclusion on the National Register. The report states historic significance of the building as it was designed by architects Kilham & Hopkins who designed several schools in Brookline, and that the 1913 building housed the school attended by President John F. Kennedy and other members of the Kennedy family. The demolition of any portion of the Devotion School will trigger a review process. In anticipation of the possibility that work could include some demolition, the report states that the District filed an application for a Demolition Certificate on February 24, 2014 with the Brookline Preservation Commission. The Commission held a public meeting on March 11, 2014 and voted to uphold the initial findings of the historic significance of the School and imposed a 12 month demolition delay beginning March 11, 2014. The current project schedule would not require any demolition during this 12 month period.* ***Please include the Brookline Preservation Commission's involvement and approval process through subsequent phases and carry significant milestones in the project schedule moving forward.***
- Determination of development restrictions
  - *The PDP indicates that there are no wetlands on site. However, the project will require a mandatory site review through the Town of Brookline Planning Board.* ***Please provide the anticipated date for the Planning Board's site review.***
  - *On February 12, 2014, the Acting Town Counsel for Brookline issued a Memorandum stating Lot 17 (Devotion playground) is not subject to protection under Article 97.* ***Please verify a schedule for local site review and report any development restrictions for the project in subsequent submittals.***
- Evaluation of Architectural Access Board rules and regulations
  - *The extent of work anticipated is reported to be significant enough to require the entire building and site be brought into compliance with current MAAB and ADA requirements.*
- Preliminary evaluation of significant structural, environmental, geotechnical, or other physical conditions that may impact the cost and evaluations of alternatives. – *The PDP indicates potential project impacts as follows:*

- *The 1913 building slate roof is reported to be in good condition however the extent of copper work scope such as the clock tower, flashing, gutters and downspouts that will require repair or replacement should be evaluated to determine the scope of work in the final assessment of options and used to inform the scope and budget developed during schematic design as applicable.*
- *The report indicates the 1913 building floor has warped and shifted and may require replacement with any renovation particularly at heavily traffic areas such as corridors.*
- *The report indicates the 1913 building is built with load bearing masonry walls and it may be necessary to bring these load bearing walls up to current lateral load requirements.*
- *A seismic analysis/evaluation is identified as needed to analyze any portion of the existing building which will remain to determine adequate lateral capacity.*
- *The existing fire separation between the additions is reported as insufficient.*
- ***Please verify a timeline and confirm determination of a budget for the noted work scope will be identified during plan development and incorporated into the final evaluation of options.***

- Determination for need and schedule for soils exploration and geotechnical evaluation
  - *The design team's environmental consultant recommends a Ground Penetrating Radar test be performed to determine if one or two underground storage tanks exist on the site. Town of Brookline records are not clear of the tank(s) actual capacity or if they were ever removed from the site. The original oil fired burners were converted to gas and tanks are no longer in service to the building.* ***Please confirm if/when this will occur and report the findings of a Ground Penetrating Radar test and any potential geotechnical remediation required to be conducted and how they will be accounted for in the Project Scope and Budget that is developed during the Schematic Design.*** *The project team should be aware of the current policies associated with MSBA's participation in the abatement and removal of hazardous materials.*
- Environmental site assessments minimally consisting of a Phase I: Initial Site Investigation – *The PDP reports the following site assessments are required.* ***Please provide a timetable to complete the identified site assessment investigation.***
  - *Additional soil and groundwater testing requirements are identified to be required at previous boring locations and the current/previous underground storage tank(s) location.*
  - *Required video inspection of existing storm water and sewer lines.*
  - *Flow test required to determine the need for a fire pump.*
  - *The MSBA notes that a Phase I Site Investigation is required to be completed prior to the selection of a preferred alternative and is to be submitted with the Preferred Schematic Report.*
- Assessment of the facility for the presence of hazardous materials – *The PDP indicates the following:*
  - *Asbestos contained in material found throughout all three existing buildings.*
  - *Soil beneath 1954 building crawl space assumed to contain asbestos.*

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- *The project team should be aware of the current policies associated with MSBA's participation in the abatement and removal of hazardous materials.*

3.1.5 Site Development Requirements

- Existing site plans:
  - Site access and circulation;
    - ***Please provide an existing site plan indicating site access, emergency, vehicular and pedestrian circulation.***
  - Parking and paving;
    - ***Please provide a site plan indicating all existing parking and location of the identified 65 authorized on-street parking spaces per agreement with the Town of Brookline.***
  - Zoning setbacks and limitations;
    - ***Please provide any zoning requirements related to the project.***
  - Easements;
    - ***Please provide an understanding of the existing and proposed solution to the east-west pedestrian walkway that connects Babcock Street to Devotion Street.*** *The PDP notes members of the public have expressed a desire to maintain this pedestrian walkway, while school administrators have indicated the walkway presents security challenges with public intrusion during school hours.*

3.1.6 Preliminary Evaluation of Alternatives

- The Preliminary Evaluation of Alternatives should include a detailed analysis of compliance with district objectives for each of the following:
  - Analysis of school district student school assignment practices and available space in other schools in the district;
    - *The District maintains eight K-8 school facilities and reports that every school in the District except for the recently renovated Heath and Runkle Schools exceeds programmed capacity.*
  - Rental or acquisition of existing buildings;
    - *The District currently leases space from two religious institutions to house temporarily relocated programs. Even though the two Pre-K classes currently held off-site will be relocated to the Devotion facility when the project is completed, Brookline Public Schools anticipates continuing the existing lease agreements into the foreseeable future.*
  - Base repair option that is limited to minimum work to meet current code requirements, to be used as a benchmark for comparative analysis of alternatives;
    - *Option 0 - Limited to replacement of building systems, accessibility and life safety updates and compliance with structural and seismic codes. The District has determined this option is not viable for further development as it does not address overcrowding concerns.*

- Renovation(s) and/or addition(s) of varying degrees to the existing building(s); *All three options include a 19,262 sf underground parking garage with the roof of the garage to serve as green space/play area and temporary relocation of 6-8 grade levels during construction.*
  - *In addition to the base repair option, the PDP states five renovation and addition options and three new building options were proposed and presented to the School Building Committee (SBC). The submitted PDP only included three renovation and addition options and one new building option for consideration as selected by the SBC for further development.*
  - *Option 1.1 – Renovation/addition scheme, including 40,906 sf of renovated space in the 1913 building and 147,528 sf of additional construction. Phase 1, demolish the existing large gymnasium and construct a new addition on the existing baseball field. Phase 2, move into the new addition, demo 1954 and 1974 wings no longer in use, renovate 1913 building, construct the new large gymnasium and complete the site work. The Multi-Purpose Room would be restored to its original two levels.*
  - *Option 1.4 – Renovation/addition scheme including 40,906 sf of renovated space in the 1913 building and 144,839 sf of new construction. Phase 1, demolish the existing gymnasium (the school will remain in operation and the small gymnasium will be the only Physical Education space available during this phase), construct a new gymnasium and classroom addition to southwest. Phase 2, move into new addition, demolish the 1954 building and complete phase 2 construction in place of the 1954 structure. Phase 3 would relocate students from the 1974 building, followed by its demolition and renovation of the 1913 building.*
  - *Option 2 – Renovation/addition scheme including 40,906 sf of renovated space in the 1913 building and 146,791 sf of new construction. Phase 1 would create a 5 story building along Stedman Street requiring selective demolition of the 1974 building including several classrooms, part of the cafeteria and demolition of the existing gymnasium to accommodate Phase 1. The 1954 and most of the 1974 buildings would remain in operation during this phase and the small gymnasium will be the only Physical Education space available during Phase 1 work. This option intends to minimize the building footprint and as a result the new addition will be 5 stories and tall enough to result in a high rise classification and inherent life safety code compliance (more stringent material and fire resistance compliance, required fire pump and secondary fire department connection, pressurized stairwells, etc.). Phase 2 would demolish the 1954 and 1974 buildings, construct the remaining parts of the new addition and renovate the 1913 building as well as completion of athletic and playfields.*

- Construction of new building and the evaluation of potential locations.

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- *Option 3.2 creates a new school facility (identified in the PDP as a renovation/addition option) on the existing ball field and construction of the new 187,234 sf school would take place while the existing school remains in full operation. Upon completion of the new facility, the existing school would be demolished and the site developed for community green space and playfields. A 21,525 sf below grade parking garage is planned at the ground level. Although this option would not immediately impact the existing school, the District is considering a temporary relocation of 6-8 grade levels to address overcrowding during construction.*

- List of 3 distinct alternatives (including at least 1 renovation and/or addition option) are recommended for further development and evaluation.
  - *The District has recommended the above listed Options 1.1, 1.4, 2 and 3.2 for further development.* ***Please include the base repair option (Option 0) in the summary of Preliminary Design Pricing Table within the Preferred Schematic Report.***

Attachment 'B' –Module 3 PDP Initial Space Summary Review

District: Town of Brookline
School: Edward Devotion School
Submittal Due Date: March 24, 2014
Submittal Received Date: March 24, 2014
Review Dates: March 25, 2014 – April 14, 2014
Reviewed by: R. Roberge, C. Alles, J. Jumpe

The Massachusetts School Building Authority (the "MSBA") has completed its review of the proposed initial space summary included with the Preliminary Design Program as produced by HMFH Architects, Inc. and its consultants. This review involved evaluating the extent to which the Edward Devotion School's proposed space summary conforms to the MSBA guidelines and regulations.

The MSBA considers it critical that the District and their Designers aggressively pursue design strategies to achieve compliance with the MSBA guidelines for all proposed projects in the new program and strive to meet the gross square footage allowed per student and the core classroom space standards, as outlined in the guidelines. The MSBA also considers its stance on core classroom space critical to its mission of supporting the construction of successful school projects throughout the Commonwealth that meet current and future educational demands. The MSBA does not want to see this critical component of education suffer at the expense of larger or grander spaces that are not directly involved in the education of students.

The following review is based on the submitted initial space summary (no specific option indicated) construction project option with a mutually agreed upon design enrollment of 1,010 students in grades K-8

The MSBA review comments are as follows:

- **Core Academic** – The District is proposing to provide a total of 53,990 net square feet (nsf) which exceeds the MSBA guidelines by 6,150 nsf. -
  - *Classrooms Grades 1-5: The District is proposing one additional classroom above the MSBA guideline and the classrooms are planned at 900 nsf in lieu of 950 nsf with reduced classrooms sized to allocate space for Small Group areas within grade cohort clustering. The MSBA accepts this variation to the guidelines.*
  - *Classrooms Grades 6-8: The District is proposing one classroom below the MSBA guideline and the classrooms are planned at 900 nsf in lieu of 950 nsf with reduced classrooms sized to allocate space for Small Group areas within grade cohort clustering. The MSBA accepts this variation to the guidelines.*
  - *Nine Small Group Rooms are programmed at 150 nsf each totaling 1,350 nsf. In total, General Classrooms and Small Group Rooms for grades 1 to 8 total 650 nsf below the MSBA guideline. The MSBA accepts these variations to the guidelines.*
  - *Nine Small Group Rooms each 150 nsf are programmed to accommodate Literacy and Math Specialist. Specialist's spaces are included within the*

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Core Academic category as the Specialists are noted to serve the general student population as well as special needs students. ***Although the MSBA does not object to these spaces, please provide actual participation levels and an understanding of how the identified 45-55, 50-60 and 90 minute instructional blocks are programmed into a daily school schedule.***

- *Four English Language Learner (ELL) rooms of 250 nsf each are included within the Core Academic category. There are 119 students identified who currently participate in the ELL program. The variance description notes two full time teachers are dedicated to serve the Hebrew ELL population and an additional two teachers assist non-Hebrew ELL participants. A breakdown of participating students for each program was not provided. Classes are identified as 45-60 or 60-90 minute sessions with no indication of a classroom schedule structure. Twelve students with special needs are also identified to participate in the ELL program.* ***Please provide an understanding of actual participation levels and how class sessions are structured within the daily school schedule.***
- *One 250 nsf space is programmed for the Enrichment Challenge Support program which is noted to provide curriculum opportunities for students who show a capacity for advanced levels of academic achievement.* ***Please provide an understanding of actual participation levels and how class sessions are structured within the daily school schedule.***

- **Special Education** – The District is proposing to provide a total of 9,335 net square feet (nsf) which is 2,745 nsf below the MSBA guidelines. –
  - *The reports states that the Devotion School is based on the educational model of full inclusion and there are no existing or planned Self-Contained Special Education classrooms.* ***Please provide additional information to validate 3,875 nsf of support spaces identified on the Space Summary but not noted within the support narrative (Resource Rooms, Therapist, two Psychologists, Team Facilitator, Team Clerk and a programmed space identified as BCBA).***
  - *Devotion houses a district-wide Therapeutic Learning Center (TLC) for students with a history of emotional disabilities. All TLC students are noted to be included with their peers in general education classes and receive pull out educational support as outlined within their Individual Education Plans.* ***Please provide participation counts and scheduled use of the TLC clusters and identify the intended participation and proposed design features for the 500 nsf Comprehensive Learning Center classified for students who require a higher level of service.***
  - *Please note that the Special Education program is subject to approval by the Department of Elementary and Secondary Education (DESE). The District should provide the information required for this submittal with the schematic design submittal. Formal approval of the District's proposed Special Education program by the DESE is a prerequisite for executing a Project Funding Agreement with the MSBA.*

- **Art and Music/ Voc-Tech** – The District is proposing to provide a combined total of 16,750 nsf which exceeds the MSBA guidelines by 5,500 nsf. The MSBA offers the following:
  - *The proposed program includes a 5,500 nsf multi-purpose room with stage (which MSBA understands to be the size of the existing multi-purpose room and Stage).* ***In order for the MSBA to consider this variation to the guidelines please provide the following:***
    - ***Is the space to be included in the proposed program should new construction prove to be the most educational appropriate and cost effective solution selected by the District?***
    - ***Should a multipurpose space be included in the proposed project would it be designed to allow for use by the lower grades to support the Health and Physical Education curriculum as with other existing schools in the District the MSBA has visited?***
    - ***What function of the proposed multi-purpose room would be prohibited by locating the stage off of the gymnasium space that could be designed to support the two functions.***
    - ***Should the District select renovations and additions as the most educational appropriate and cost effective solution could the renovated multi-purpose space be designed to support delivery of the Health and Physical Education curriculum for the younger grade students?***

- **Health and Physical Education** – The District is proposing to provide a total of 10,550 nsf which exceeds the MSBA guidelines by 2,216 nsf.
  - *The category exceeds MSBA guidelines by 2,216 nsf and includes two gymnasiums for a total of three teaching stations.* ***In order for MSBA to consider the District's stated need for an additional teaching station for delivery of their Health and Physical Education curriculum in grades K-8, please demonstrate how the Physical Education spaces are scheduled and clarify the uses of and need for a multi-purpose room in addition to the proposed stations.***
  - *However, should the District realize opportunities for a more efficient design that allows for combining the multi-purpose room and Health and Physical Education spaces, the space would be carried within this category.*

- **Media Center** – The District is proposing to provide a total of 5,547 nsf which meets the MSBA guidelines. - *No further action required.*

- **Dining and Food Service** – The District is proposing to provide a total of 8,249 nsf which is 4,125 nsf below the MSBA guidelines. -
  - *The MSBA notes that the Cafeteria nsf area has been calculated based on scheduling three lunch periods per day. As such the Cafeteria is sized 2,525 nsf below the MSBA guidelines for a dining room to serve a 1,010 student population.*

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- *The 1,600 nsf space allocation for a Stage has been eliminated from the program as the stage is included as part of the existing Auditorium within the Art & Music category. This note is not relevant to Option 3.2, a new school facility.*

- **Medical** – The District is proposing to provide a total of 810 nsf which meets the MSBA guidelines. - *No further action required.*

- **Administration and Guidance** – The District is proposing to provide a total of 4,525 nsf which exceeds the MSBA guidelines by 739 nsf.
  - *Three Vice-Principal Offices are proposed. The District intends to locate a Vice-Principal Office within each designed grade cluster (K-3 / 4-6 / 7-8). The MSBA accepts this variation to the guidelines.*
  - *A 150 nsf METCO office is programmed to offer administrative, student and family support. The MSBA understands the District's intent to continue participation in the METCO program and accepts this variation to the guidelines.*
  - *A 200 nsf office is assigned for World Language teachers. It is understood the teachers within this program will not have dedicated classroom assignments.* ***Please expand on the number of designated teachers and planned use of the programmed office.***
  - *A 130 nsf Steps To Success office is planned.* ***Please provide additional information to support this program including curriculum goals, room design considerations and actual participation levels and scheduling.***

- **Custodial and Maintenance** – The District is proposing to provide a total of 2,567 nsf which meets the MSBA guidelines. - *No further action required.*

- **Total Building Net Floor Area** – The District is proposing to provide a total of 112,323 nsf which exceeds the MSBA guidelines by 7,735 nsf *exclusive of the parking facility and 132,323 nsf with the parking facility included. As noted in the categories above, the District and the design team must address the comments provided to facilitate a better understanding and allow for further review.*

- **Total Building Gross Floor Area** – *It is not clear what the District is proposing for a gross floor area of the proposed project.* ***Please provide the gross floor area inclusive of the Pre-K spaces and exclusive of the parking spaces. In all future Space Summary submittals, please provide the gross floor area of the proposed project inclusive of the Pre-K spaces and a separate gross floor area for the parking facility. As noted in the categories above, the District and the design team must address the comments provided to facilitate a better understanding and allow for further review.***

Prior to completing the final evaluation of options and selecting a preferred solution the District and its consultants must address and incorporate the comments provided in this review. The space summary shall be refined as needed for each alternate and differences

from the agreed upon updated space summary. Once an alternative is recommended the MSBA will review the associated space summary to evaluate conformance with the MSBA guidelines, deviations relating to proposed renovations if applicable, and programmatic needs that may vary from the guidelines.

Please note that upon moving forward into subsequent phases of the proposed project, the Designer will be required to confirm in writing, with each submission, that the design remains in accordance with the MSBA guidelines and that they have not deviated from the allowable gross square footage and educational program approved in the previous submittals.

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TOWN of BROOKLINE
Massachusetts

BUILDING DEPARTMENT

Daniel F. Bennett
Building Commissioner

Ms. Sarah Blache
Massachusetts School Building Authority
40 Broad Street, Suite 500
Boston, Massachusetts 02109

25 July 2014

Re: Edward Devotion School
Follow-up to FAS Meeting of 9 July 2014

Dear Ms. Blache:

I am in receipt of your email to the Town Administrator dated 10 July 2014 requesting an updated schedule and additional information relative to the use of the proposed Multi-Purpose Room during scheduled school hours.

Enclosed find a copy of the update schedule, a three (3) page spreadsheet of the scheduled uses of the proposed gyms, cafeteria and Multi-Purpose Room and a one (1) page narrative "The Value of a Multi-Purpose Room in the Devotion School Renovation Plan".

I trust the information so furnished will be sufficient to include the Multi-Purpose Room in the Educational Program and that the Massachusetts School Building Authority (MSBA) will formally approve said program and the Preliminary Design Program submission in the near future. If you have any questions or need any additional information, please email or call me at 617.730.2044. Thank you.

Sincerely,

Anthony Guigli
Owner's Project Manager

Cc: M. Kleckner, G. Metzger, HMFH, W. Lupini, D. Collins, HMFH, P. Rowe, File, D. Bennett

333 Washington Street, Brookline, Massachusetts 02445
Tel: (617) 730-2100 Fax: (617) 739-7542

The Value of a Multi-Purpose Room in the Devotion School Renovation Plan

Overarching principles in the design of the Devotion School renovation plan include creating a sense of community to help make a large school feel small and providing flexible learning spaces to support the necessary shifts in teaching and learning in the 21st Century. As described in the *Whole Building Design Guide* of the National Institute of Building Sciences, multipurpose rooms are a fundamental space in elementary schools. This is now truer than ever.

The value of a multipurpose room is described in its name – a space that is flexible and can easily be reconfigured to meet instructional needs for varying sized groups during the school day – it's a space that serves multiple purposes.

Instruction has moved away from the familiar scene of the teacher standing at the board in the front of the room with all the students sitting at their desks lined up in straight rows facing forward. Now, learning goals are focused on critical thinking and problem solving, communication and collaboration, and the acquisition and application of new knowledge. These goals require different forms of instruction in a different "classroom" space.

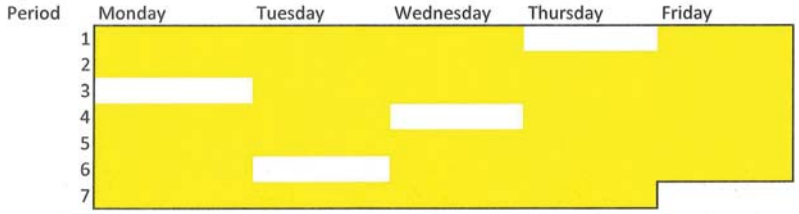
For example, the strategy of dividing the class into smaller groups requires spaces that are flexible and can be reconfigured quickly into multiple smaller learning spaces. With an increase in team teaching, cross-disciplinary projects, and learning in student working groups a multipurpose room can serve as an overflow or satellite space for students designing and creating products of their learning. A well-designed and well-provisioned multipurpose room becomes an extension of a 21st century classroom.

Beyond a classroom, a multipurpose room can be transformed into almost any other space in a school – a library, a gallery space, a video production studio, a robotics lab, a stage, a yoga studio, an adult meeting and learning space, or a quiet, contemplative space for reading and reflection – it depends on the teaching and learning needs and the size of the group. Providing access to mobile technology and digital tools maximizes the potential of a multipurpose room as another arena supporting learning. Creating flexible arenas for learning is a goal of the Devotion renovation project.

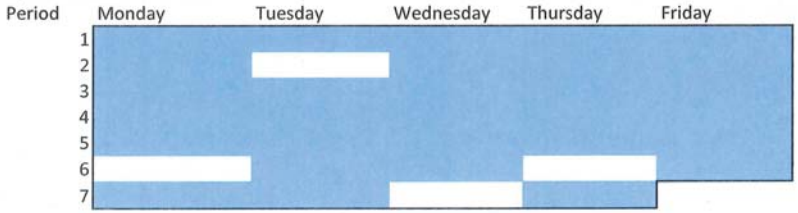
Another goal of the Devotion renovation project is to help a large K-8 neighborhood school feel small to students. A multipurpose room can be an appropriate space for grade level groups to gather as a community. The feel in a comfortable multipurpose room better supports the goals of a community meeting than the feel of gathering in a large gymnasium, sitting in rows in an auditorium, or at separate tables in a cafeteria. A multipurpose room can help create the environment necessary to do the work of a community, to connect with each other, to allow everyone to see the collective community within which they belong, and to be known. Gathering like this is a great antidote to anonymity and disconnect, and the gathering space matters.

A multipurpose room in the Devotion School gives the Devotion School community a valuable space for a variety of uses: meetings, exercise classes, presentations, displays, or small performances. We believe that its inclusion in the Devotion School design is fundamental to our educational vision for the 21st century.

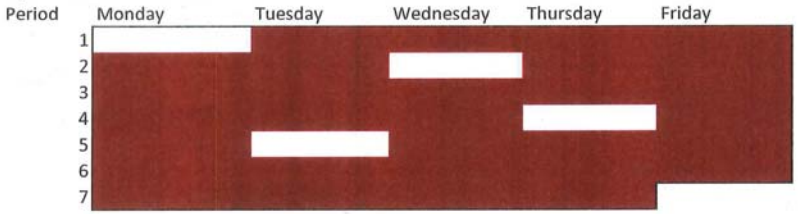
Gymnasium #1 - Schedule



Gymnasium #2 - Schedule



Gymnasium #3 - Schedule



Devotion School is being designed for 1010 students across 9 grades (K-8) with an expected 5 sections per grade. Each section is scheduled for 2 Gym classes per week. As a result the facility is being designed to accommodate 90 individual periods of Gym classes per week.

The Devotion school works on a seven period day 4 days per week and a six period day on Friday. Each gym will therefor have four unscheduled periods per week (shown by the white cells).

Multi-Purpose Room Narrative

Cafeteria - Schedule

Period	Monday	Tuesday	Wednesday	Thursday	Friday
7:30	Breakfast				
8:00	Clean-up/Break down				
8:30	Open				
9:00	Open				
9:30	Open				
10:00	Open				
10:30	Set-up				
11:00	Lunch				
11:30	Clean-up				
11:45	Lunch				
12:15	Clean-up				
12:30	Lunch				
1:00	Clean-up				
1:30	Open				
2:20	Close				

The Devotion School cafereria, in order to accommodate 1010 students will be scheduled for three (3) lunches per day, each for 30 minutes minimum. This model shows the impact of the time necessary to serve, eat, set-up and clean-up .

At most (Mon.-Thurs.) the school would have a teo hour block available for group activities in the morning (8:30-10-30 AM) and for 50 minutes on Monday through Thursday.

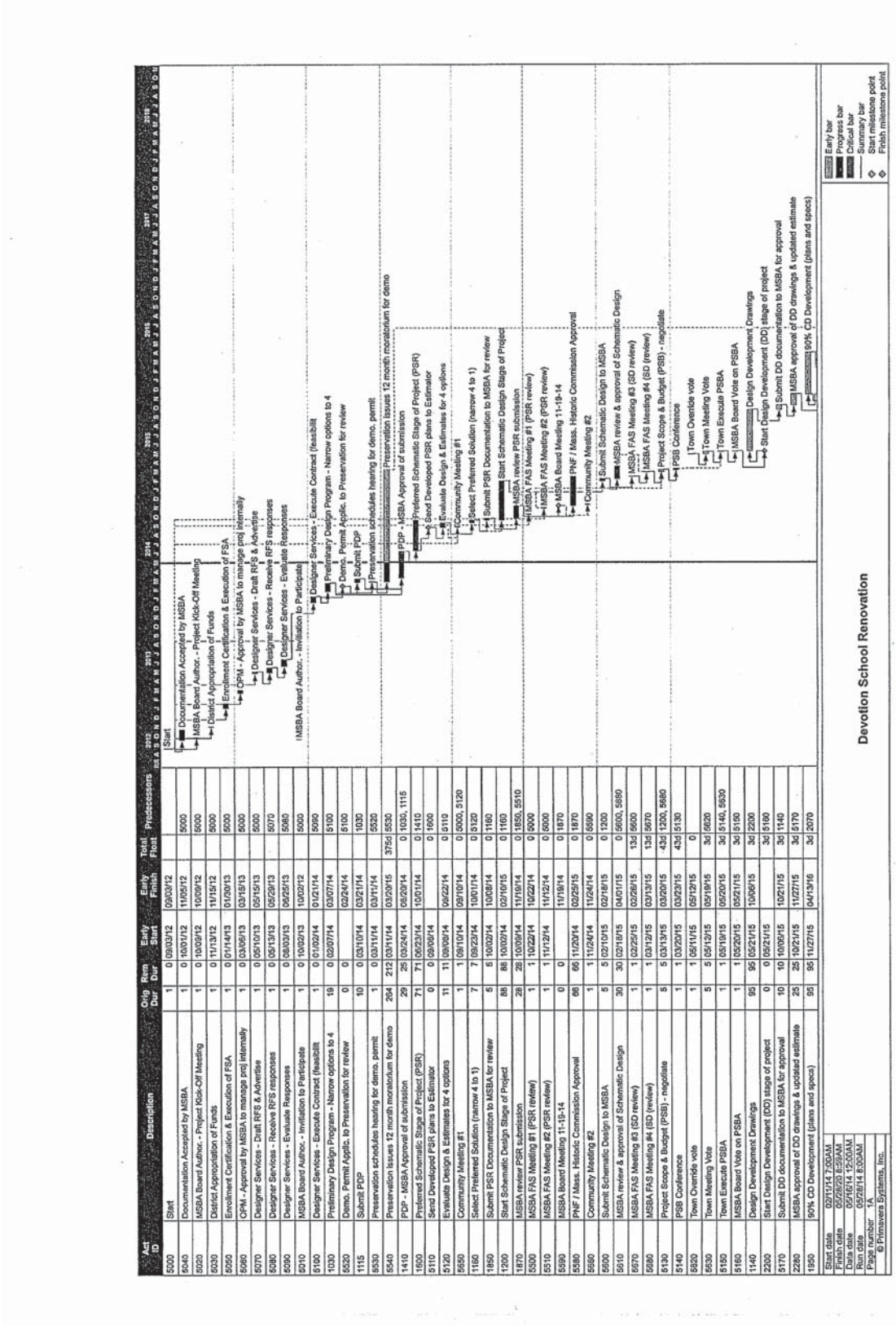
Devotion School Multi-Purpose Room - Sample Schedule*

Period	Monday	Tuesday	Wednesday	Thursday	Friday
1	Gr 5 Comm. Mtg.	Mr. Bentley (SS) & Ms. Barns (Perf. Arts) - gr 7 *1920s* performances	Ms. Taylor - gr 5 *Alternative Energy* Project Development	Mr. Brown - gr 6 *Immigration Debates*	Ms. Mitchell (Visual Arts) & Math (Mr. Stoddard) - gr 8 *Beautiful Math!*
2	Gr K Comm. Mtg.				
3	Ms. Jacobs - Adaptive PE			gr 3 Team - *Simple Machines & Robotics* videos	
4	Gr 6 & 2 Literacy Buddies				
5	Gr 8 Student-Led Discussions *What does it mean to be free?*	Educators K-2 Literacy Collaborative - *Benchmark Assessment and Using Data*	Gr 4 *SPARK*		
6			Ms. Green - gr 5 *Act Locally, Think Globally presentations*		
7	Urban Improv - gr 7	Urban Improv - gr 8	Urban Improv - gr 6	Gr 2 Comm. Mtg. Gr 1 Comm. Mtg.	

*Given its high demand, advanced scheduling for use of the multipurpose room is required. A strength of the multipurpose room is its flexibility - no two weeks are alike. This document is an example of what a one-week schedule may look like. It only represents activities during school hours.

Coded Purpose — **Used to gather data about ongoing use of multipurpose room**

- Overflow space - the same activity is happening in the classroom. More room is needed.
- Station/Satellite space - a different instructional activity is happening in the classroom. Students cycle through both spaces over time.
- Grade Level Community Meeting space - regularly scheduled discussions as part of the Social Emotional Learning *(Responsive Classroom* and *Developmental Designs*) and Bullying Prevention Program *(Olweus*)
- Physical/Movement space - SPARK activities and other structured forms of movement (yoga, team-building activities)
- Presentation space - used for student presentations with audiences beyond the class, guest speakers, and demonstrations.
- Display space - space for presentations of student work that remain available for viewing beyond the single class time.
- Performance space - staged events with space requirements larger than classroom and/or audiences larger than the class.
- Adult space - used for meetings and professional learning


Devotion School Renovation
Early bar
Progress bar
Critical bar
Summary bar
Start milestone point
Finish milestone point
Start date 02/11/14 7:00AM
Finish date 02/28/20 8:59AM
Data date 05/16/14 12:00AM
Run date 05/28/14 8:00AM
Page number 1A
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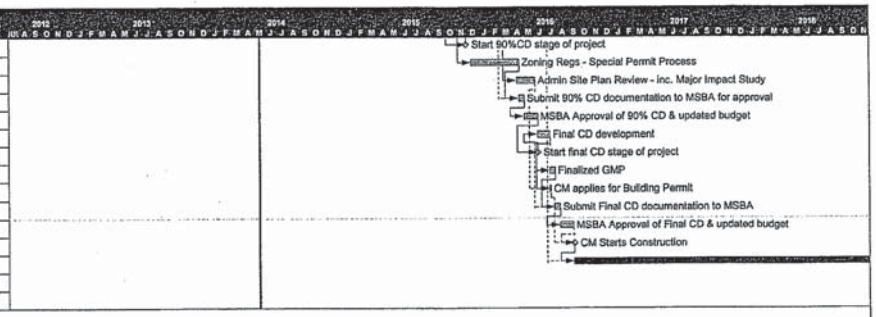
Act ID	Description	Orig Dur	Rem Dur	Early Start	Early Finish	Total Float	Predecessors
2070	Start 90%CD stage of project	0	0	11/27/15		3d	2280
5570	Zoning Regs - Special Permit Process	88	88	12/11/15	04/19/16	3d	1950
5550	Admin Site Plan Review - Inc. Major Impact Study	33	33	04/13/16	06/01/16	72d	1950
5180	Submit 90% CD documentation to MSBA for approval	10	10	04/19/16	05/03/16	3d	1950, 5570
2320	MSBA Approval of 90% CD & updated budget	25	25	05/03/16	06/08/16	3d	5180
1990	Final CD development	22	22	06/08/16	07/11/16	3d	5190
5190	Start final CD stage of project	0	0	06/08/16		3d	2320
2030	Finalized GMP	10	10	07/11/16	07/25/16	3d	1990
5560	CM applies for Building Permit	3	3	07/11/16	07/14/16	45d	1990, 5550
5200	Submit Final CD documentation to MSBA	10	10	07/25/16	08/09/16	3d	1990, 2030
5210	MSBA Approval of Final CD & updated budget	25	25	08/08/16	09/13/16	3d	5200
5220	CM Starts Construction	0	0	09/16/16		0	5210, 5560
5230	3 YR construction duration ("Phase 1" to end)	930	930	09/16/16	05/14/20	0	5220, 5540
5240	Substantial Completion	0	0		05/14/20	0	5230
5250	Move-In	10	10	05/14/20	05/28/20	0	5240



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Devotion School Renovation

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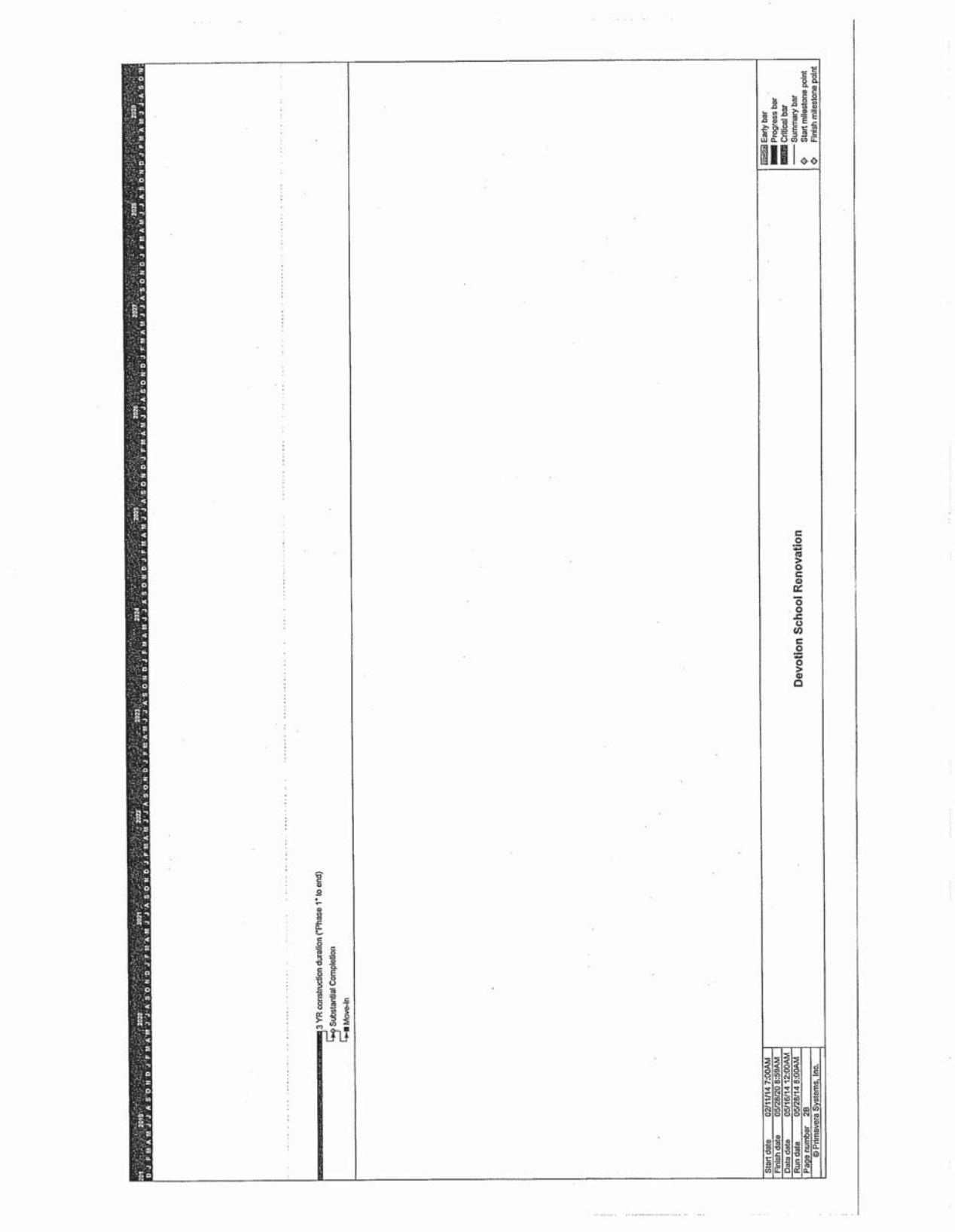
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TOWN of BROOKLINE
Massachusetts

BUILDING DEPARTMENT

Daniel F. Bennett
Building Commissioner

Ms. Sarah Blache
Project Coordinator
Massachusetts School Building Authority
40 Broad Street, Suite 500
Boston, Massachusetts 02109

5 May 2014

Re: Edward Devotion School

Dear Ms. Blache:

The Town of Brookline is in receipt of the letter from the MSBA Director of Capital Planning to the Town Administrator dated 16 April 2014, regarding the review of the Preliminary Design Program for the referenced project.

Attached please find responses to the comments including the following attachments:

1. Updated Project Schedule
2. Revised Educational Program
3. Existing Site Plan
4. Existing Lower Level Plan
5. Zoning By-Law
6. Revised Proposed Space Summary

We look forward to hearing from you soon. If you have any questions or need any additional information, please call me at 617.730.2044 or email at tguigli@brooklinema.gov. Thank you.

Sincerely,

Anthony Guigli
Owner's Project Manager

Cc: Devotion School Building Committee
HMFH Architects
File

333 Washington Street, Brookline, Massachusetts 02445
Tel: (617) 730-2100 Fax: (617) 739-7542

HMFH Response to MSBA PDP Submittal Review
Attachment A – Module 3 Preliminary Design Program Review Comments
April 30, 2014

3.1.1. Introduction

A. Updated Project Schedule
Refer to Attachment 1- Updated Project Schedule.
The updated schedule indicates a Preferred Schematic Report submittal to the MSBA on August 6, 2014. Two tentative dates for the meeting with the Facilities Assessment Subcommittee (FAS) have been added to the schedule – August 20, 2014 and September 10, 2014.

3.1.2 Educational Program
Refer to Attachment 2 – Revised Educational Program – Teaching Philosophy, Methods, and Goals

A. Class Size Policies
Refer to Class Size Policies statement in Section 3.1.2 Educational Program – Teaching Philosophy, Methods, and Goals. The system-wide class size guideline for Pre-K is 16 students per class. System-wide class size guidelines for Kindergarten through grade 2 are 22 students per class. Class size guidelines for grades 3 - 8 are 25 students per class.

B. School Scheduling Method
Students in grades K-5 are assigned to a self-contained homeroom class and participate in daily, unified arts specialist classes, and a 40-minute lunch and recess block. Students in grades 6 - 8 rotate through a seven-period academic day, including core instructional classes, targeted instruction, unified arts specialist classes and a 30-minute lunch and recess block.

C. Teacher Planning and Room Assignment Policies
According to Unit A Teacher Contract: All teachers will have a 30-minute duty-free lunch period to be taken at the following times: In the elementary schools, during the regular student lunch period of their grade level where practicable; Each elementary teacher (K-6) will be scheduled for a daily preparation period. In a five-day week, at least four (4) of these preparation periods will be scheduled for at least forty (40) minutes in length, while the fifth will be scheduled for at least thirty (30) minutes in length. Such preparation periods are exclusive of the one-half (1/2) hour duty-free lunch period per day; Teachers responsible for grades 7 & 8 only, will have a minimum of five unassigned periods, exclusive of the one-half hour duty free lunch period per day and will usually be responsible for a homeroom; Teachers of art, home economics, industrial arts, music, physical education and specialists (except nurses), and teachers responsible for instruction in more than one school in grades K-8 will have a minimum of five unassigned periods per week exclusive of the one-half (1/2) hour duty-free lunch period per day.

D. Kindergarten
Kindergarten in the Brookline Public Schools operates as a full-day session. This schedule will continue for the increased student enrollment.

E. Special Education (in-house, collaborative, facility restrictions)

The actual current enrollment in the TLC program is 16 students, all of whom are Brookline Public School District students. State laws and Massachusetts Department of Education regulations mandate that student age spans may not exceed 48 months in a learning center environment, therefore in a Pre-K to Grade 8 school; there must be at least three learning center classrooms to accommodate this law.
The projected future enrollment in the TLC program is 25 students, all of whom will be Brookline Public School District students.

F. **Transportation Policies**
The existing and proposed vehicular and pedestrian circulation considerations are discussed in Section 3.1.5 Site Development Requirements in both the Narrative and in the Infrastructure Criteria Summary. These issues are also analyzed in greater detail in Section 3.1.6 Preliminary Evaluation of Alternatives. For each Option, the Attributes Matrix lists criteria in various categories and records whether the associated option meets the criteria. Vehicular and Pedestrian Circulation is one of these categories.

3.1.4 Evaluation of Existing Conditions

A. **Historically Significant Features**
The Brookline Preservation Commission's involvement and approval process is complete with the March 11, 2014 vote of historic significance of the Devotion School and the imposition of a 12-month demolition delay. A Project Notification Form will be filed with the Massachusetts Historical Commission when the Preferred Solution is selected by the Town of Brookline.

B. **Determination of Development Restrictions**
Refer to Attachment 1 – Updated Project Schedule
On the updated Project Schedule, the time frame for the Zoning Special Permit Process is from 02/11/2016 to 06/16/2016. The time frame for Administrative Site Plan Review for Projects of Major Impact is 06/14/2016 to 07/29/2016.
Any resultant development restrictions for the project will be reported in subsequent submittals.

C. **Preliminary evaluation of significant structural, environmental, geotechnical, or other physical conditions that may impact the cost and evaluation of alternatives.**
Refer to Appendix F Structural Report for a description of the Massachusetts Existing Building Code (MEBC) provisions that relate to the scope of repairs and alterations and the impact on seismic and structural upgrades.
In the PDP submission, the cost estimates for the Renovation with Addition options carried costs for anticipated seismic upgrades. During the PSR phase, these costs will be refined and the cost estimates developed in this phase will continue to include these costs. The extent of seismic investigation required by the MEBC is dependent upon the magnitude of the proposed re-purposing of the space, which will be more developed in the PSR phases. For the cost estimates in the PSR phase, the costs will be based on the most conservative assumptions for seismic upgrades. If the Preferred Solution is one of the Renovation with Addition options, seismic analysis will be ongoing throughout the Schematic Design, Design Development, and Construction Documents phases. Subsequent cost estimates will adjust the costs for structural and seismic work as determined by the ongoing engineering analysis and by Owner direction, in the case of upgrades that exceed code-required scope.

D. **Determination for need and schedule for soils exploration and geotechnical evaluation.**
A Ground Penetrating Radar test will be performed to determine if one or two underground storage tanks exist on the site. Since this test is a non-intrusive test, it could be performed at any time. It is recommended that this test be completed before the scheduling of any additional borings. Results of the initial subsurface exploration are included in the PDP submission. The final phase of the subsurface explorations will be performed once a Preferred Solution has been selected and approved by the MSBA Board, at which time the final location of the building will have been determined. The Schematic Design phase is scheduled to begin in the Fall of 2015. The Ground Penetrating Radar test followed by the final borings could be scheduled at the beginning of the Schematic Design phase, ideally at a time when students are not present at the site.
Any potential geotechnical remediation required will be included in the design and cost estimate developed during the Schematic Design phase.

E. **Environmental Site Assessments**
The Phase I Environmental Site Assessment Report is included in Appendix E of the PDP submission. As discussed in the report, one Recognized Environmental Condition (REC) is the data gap pertaining to the one-or-two underground storage tanks. The recommendation of a Ground Penetrating Radar test has been discussed above. Another REC is one soil sample obtained at one of the boring locations that contained concentrations of extractable petroleum hydrocarbons (EPH) and volatile organic compounds (VOCs) above RCS-1 standards. The report recommends additional soil and groundwater testing in the vicinity of the boring and the underground storage tanks. It is recommended that this testing be performed at the time of the final subsurface exploration program during the Schematic Design phase.
Other recommended tests are the video inspection of the existing storm water and sewer lines and a flow test required to determine the need for a fire pump. These investigative tasks are recommended for any of the options, with the exception of the sewer line in the New Construction option. In that option, the sanitary sewer line will be relocated. Results of the testing will not be a factor in the selection of the Preferred Solution. These tasks will be scheduled during the Schematic Design phase.

3.1.5 Site Development Requirements

A. **Site Access and Circulation**
A site survey was included in Section 3.1.5 Site Development Requirements.
Refer to Attachment 3 – Existing Site Plan indicating site access, emergency, vehicular and pedestrian circulation, and above-ground parking spaces.

B. **Parking and Paving**
Refer to Attachment 3 – Existing Site Plan and Attachment 4 – Parking Plans for on-site parking and neighborhood permit parking locations.
As noted in the Infrastructure Criteria Summary in Section 3.1.5 Site Development Requirements, 55 parking spaces are located in the existing underground parking garage.
A neighborhood parking permit program was instituted in 2008. These are not assigned or designated parking spaces. Each pass is valid for only one street for any space within a

range of street addresses. The parking passes cover a roughly five-block radius from the school. In 2008, 60 permits were issued, as indicated in the Parking Plan. Currently, 65 parking permits are issued. With increased student enrollment, a need for additional staff parking is projected. The location of these parking spaces will be determined as the project progresses.

C. **Zoning Setbacks and Limitations**
Refer to Attachment 5 – Town of Brookline Zoning-by-Law Article IV Use Regulations

D. **Easements**
Refer to Appendix B – Proposed Systems Narratives for Options – Landscape Narrative. As described in the narrative, each of proposed options maintains a public pedestrian connection from Babcock Street to Devotion Street and then across the site to Stedman Street. In the development of play space in each option, the elevated pathway ridge across the site will require re-grading. The issue of public access versus school security is a concern of the School Building Committee. The final decision about whether this public connection will be maintained will be determined by the submittal of the Preferred Schematic Report.

3.1.6 Preliminary Evaluation of Alternatives

A. **Preliminary Cost Estimate**
Refer to Section 3.1.6 Preliminary Evaluation of Alternatives – Preliminary Cost Estimate. Option 0 Base Repair Option is included in the Preliminary Cost Estimate.
As stated in the review comments, Option 0 will be included in the Preliminary Design Pricing Table in the Preferred Schematic Report.

HMFH Response to MSBA PDP Submittal Review
Attachment B – Module 3 PDP Initial Space Summary Review
April 30, 2014

1. **Core Academic**

   A. **Nine Small Group Rooms**
   Refer to additional description of literacy and math specialists in Section 3.1.2 Educational Program – Teaching Philosophy, Methods, and Goals
   Specialists' rooms will be distributed through the school to provide adjacency to the grade cohort clustering. These rooms are used not only for targeted student interventions, as described below, but for student assessments, parent conferences, teacher coaching and support, and storage of interactive teaching materials.

   1. Literacy Specialists
      To serve the current student enrollment, Devotion employs 3.5 FTE literacy specialists. When enrollment increases to 1010 students, another literacy specialist will be added. In Grades 1-5, all students participate in a daily, uninterrupted 90-minute literacy block. Students who receive targeted literacy interventions do so during this block of time. 18 students in Grades 1-5 meet with a literacy specialist for intensive literacy intervention five times a week for 30 minutes. Thirty-five students in Grades 1-5 meet with a literacy specialist for intensive literacy intervention four times a week for 45 minutes. By Grades 6-8, English Language Arts instruction is provided in daily 50-60 - minute instructional blocks. Students in Grades 6-8 who receive targeted literacy interventions do so during daily 45-55-minute instructional blocks. 15 students in Grades 6-8 meet with literacy specialists four times a week for 45 minute intensive literacy intervention. Each literacy specialist is scheduled for five instructional blocks a week of push-in reading support in the general education classroom. Therefore, five literacy specialists are required to serve the enrollment. Additionally, of the 3.5 FTE, 0.5 FTE is allocated for providing Reading Recovery intervention to grade 1 students. Reading Recovery is an intensive, daily, one teacher to one student reading intervention. Four students receive 5 x 30 Reading Recovery services from a literacy specialist.
   2. Math Specialists
      To serve the current student enrollment, Devotion employs three math specialists. When enrollment increases to 1010 students, another math specialist will be added. In Grades 1-5, all students participate in a daily, uninterrupted 60-minute math block. Students who receive targeted math interventions do so during this block of time. Sixteen students in Grades 1-5 meet with a math specialist for targeted math intervention 1 x 30 minutes per week. Eight students in Grades 1-5 meet with a math specialist for targeted math intervention 1 x 45 minutes per week. Four students in Grades 1-5 meet with a math specialist for targeted math intervention 2 x 45 minutes per week. Two students in Grades 1-5 meet with a math specialist for targeted math intervention 1 x 60 minutes per week. By Grades 6-8, math instruction is provided in daily 50-minute instructional blocks. Students in Grades 6-8 who receive targeted math interventions do so during daily 45-55-minute instructional blocks. Three students in Grades 6-8 meet with a math specialist, each for two 45-55-minute instructional blocks a week. Full time math specialists are scheduled for 34 instructional blocks a week. Therefore, four math specialists are required to serve the enrollment.

HMFH Response to MSBA Review – Attachment B
April 30, 2014

B. Four English Language Learner (ELL) Rooms

With a population of the 119 students, the ELL program serves 14% of the current student population. The number of students participating in the ELL program is expected to increase when the enrollment increases to 1010 students. The distribution of the current 119 students within the four ELL programs is as follows:

K-3 Hebrew ELL (1.0 FTE) – 36 students. Teacher instructs five days per week, six periods per day. Instructional periods range from 45 to 60 minutes in length. Small group classes range from 1-6 students. Student groups include: nine students serviced 6 x 60 minutes per week; nine students serviced 4 x 60 minutes per week; thirteen students serviced 3 x 60 minutes per week; five students serviced 2 x 45 minutes per week.

Grades 4-8 Hebrew ELL (1.0 FTE) - 34 students. Teacher instructs five days per week, seven periods per day. Instructional periods range from 45 to 90 minutes in length. Small group classes range from 2-7 students. Student groups include: one student is serviced 1 x 45 minutes per week; two students serviced 1 x 50 minutes per week; five students serviced 2 x 45 minutes per week; six students serviced 3 x 45 minutes per week; six students serviced 5 x 45 minutes per week; one students serviced 4 x 50 minutes per week; seven students serviced 5 x 50 minutes per week; one student serviced 5 x 60 minutes per week; three students serviced 5 x 80 minutes per week; one student serviced 5 x 90 minutes per week.

K-2 Non-Hebrew ELL (0.8 FTE) - 27 students. Teacher instructs four days per week, eight periods per day. Instructional periods range from 30 to 50 minutes in length. Small group classes range from 1-6 students. Student groups include: six students serviced 4 x 30 minutes per week; two students serviced 2 x 40 minutes per week; six students serviced 4 x 40 minutes per week; two students serviced 1 x 45 minutes per week; three students serviced 2 x 45 minutes per week; four students serviced 4 x 45 minutes per week; four students serviced 4 x 50 minutes per week.

Grades 3-8 Non-Hebrew ELL (1.0 FTE) – 22 students. Teacher instructs five days per week, seven periods per day. Instructional periods range from 30 to 90 minutes in length. Small group classes range from 1-5 students. Student groups include: three students serviced 2 x 30 minutes per week; one student serviced 1 x 45 minutes per week; three students serviced 3 x 30 minutes per week; five students serviced 2 x 45 minutes per week; two students serviced 4 x 45 minutes per week; seven students serviced 5 x 45 minutes per week; one students serviced 5 x 90 minutes per week.

C. Enrichment Challenge Support Room

Refer to the full description of the Enrichment and Challenge Support Program in Section 3.1.2 Educational Program – Teaching Philosophy, Methods, and Goals.
With the current enrollment, 20 students participate in this program as members of small enrichment groups. Each small enrichment group meets up to six instructional blocks a week. In addition, the ECS instructor pushes into classrooms for co-teaching and enrichment opportunities for 6 instructional blocks per week (0.6 FTE). Participation in the program is expected to increase with the future larger student enrollment.

Page 2 of 6

2. Special Education

Refer to additional description of the Special Education providers and related space requirements in Section 3.1.2 Educational Program – Teaching Philosophy, Methods, and Goals.
As noted in the MSBA review, the District is proposing a total of 9,335 net square feet (nsf) for Special Education, which is 2,745 nsf below the MSBA guidelines.

A. Support Space

1. The MSBA guidelines allow (2) 500 nsf Resource Rooms for Grades 6-8 and (3) 500 nsf Resource Rooms for Grades 1-5. In the Proposed Space Summary, four of these Resource Rooms are listed. They are further identified as Learning Center for grades 7-8, 5-6, 3-4, and K-2. The Special Education services at Devotion follow a foundation of tiered level of instruction. The Learning Centers provide Tier Two services – strategic levels of instruction. Tier Three services – intensive levels of instruction – are provided in the other two types of learning centers – the Comprehensive Learning Centers and the Therapeutic Learning Centers. As described in the Educational Program narrative, the four Learning Centers at Devotion resemble large office spaces, for 1:1 or small group instruction.
2. In addition to the description of specialist services provided as part of the Variance from MSBA Recommended Guidelines narrative, further description of these services is provided in Section 3.1.2 Educational Program. A wide range of services is provided to meet the individual needs of students, from academic intervention to related services in areas such as speech therapy, occupational therapy and physical therapy. Availability of therapeutic services for students requiring special education intervention in the realm of social, emotional and adjustment areas is present at all schools and levels. Related service providers include speech/language therapists, psychologists, a BCBA, and a social worker who supports the TLCs. The Team Facilitator and the Team Clerk provide the administrative support for the Special Education specialists and for collaboration with general education staff. While these offices could have been listed in the Administration and Guidance section of the Space Summary, they are most accurately categorized as Special Education spaces. The rooms for the OT/PT therapists are sized to accommodate the specialized equipment used during therapeutic sessions. The offices for the specialists are sized to accommodate 1:1 instruction or meetings of several people.

B. Therapeutic and Comprehensive Learning Centers

1. The percentage of students at Devotion School with special needs is reflective of the District percentage (16.1%) FY13. With current student enrollment, 16 students use the services of the Therapeutic Learning Centers (TLC), all of whom are Brookline Public School District students. Projected future enrollment in the TLC learning program is 25 students, all of whom will be Brookline Public School District students. 26 students use the services of the Comprehensive Learning Centers (CLC). These numbers are expected to increase when the student enrollment increases to 1010. TLC and CLC classes are divided into three grade level clusters (K-2, 3-5, and 6-8). State laws and Massachusetts Department of Education regulations mandate that student age spans may not exceed 48 months in a learning center environment. Therefore, in a Pre-K to Grade 8 school, there must be at least three learning center classrooms to accommodate this law.
2. A student's access to the TLC is determined by each individual student's IEP. The continuum of services ranges from fully included in general education settings with pull-out services in the TLC to direct instruction in the TLC. As described in Section 3.1.2 Educational Program,

the TLCs will be designed as a suite in order to accommodate multiple tiers of student needs including the following spaces – a space for academic support, community building and social skills instruction, a calming area for relaxation, and a safe place for students to de-escalate when in crisis.

3. The description of the proposed design features for the 500 nsf Comprehensive Learning Center is provided in Section 3.1.2 Educational Program. There, the CLC is described as a small classroom. In this space the special educator will conduct small group instruction, social skills groups and collaborate with other related service providers to provide services to students.

C. **DESE Approval**
As noted in the review comments, the District will submit the Special Education program, with required documentation, to the Department of Elementary and Secondary Education (DESE) during the Schematic Design phase. The District acknowledges that formal approval of the District's proposed Special Education program by the DESE is a prerequisite for executing a Project Funding Agreement with the MSBA.

3. Art and Music/ Voc-Tech

Refer to Section 3.1.3 Initial Space Summary for Variance from MSBA Recommended Guidelines.

A. The Multipurpose Room with Stage is included in the proposed space summary for all options. In the Renovation and New Addition options, the existing 5,500 nsf is programmed to remain. In the New Construction Option, the equivalent space has been included.

B. As discussed in the Variances narrative and in the Health and Physical Education section below in this memorandum, a third gym teaching station has been included in the Proposed Space Summary. This gym station will be fully utilized by the Physical Education classes, with no available time for other programming.

C. The MSBA review poses the question; "What function of the proposed multi-purpose room would be prohibited by locating the stage off of the gymnasium space that could be designed to support the two functions?"
As in the existing school, the Multipurpose room will have a flat floor with an elevated platform area to serve as a Stage. The existing room is equipped with room divider partitions that allow the space to be subdivided into smaller classrooms. This may also be included in the design of a Multipurpose room in a new school.
The proposed uses for a Multipurpose room include a wide range of school-wide functions such as multi-class interdisciplinary programs, student enrichment programs, performances, rehearsals, music and movement classes, science and art fairs, teacher development programming, community meetings, school assemblies for combined grades, etc. Many of these programs will be scheduled during the school day. While the space will be designed to be as flexible as possible, some of these programs will require time for setting up the equipment or seating for the program. Some of these events, such as a science or art fairs, will need to remain in place for a fixed period. The issue of sharing the space with the PE classes is not that the design of the two spaces is so different, but, rather, that the two functions need to be scheduled at the same time.

D. The MSBA review asks whether, if a Renovation and Additions options is selected, the renovated multi-purpose room could be designed to support delivery of the Health and Physical Education curriculum for the younger grade students. There are several challenges with this approach. As

discussed in the previous paragraphs, the required number of gym classes (K-2 = 345 students x 2 classes/wk = 30 sessions. 30 sessions/ 34 instructional blocks = 1 station) will fully utilize the space with no time for other programming. Additionally, the existing Multipurpose room is located on the second floor. This would locate these students remotely from the other large gym space, which will ideally be located in proximity to the athletic fields and main school entrances. Separating the gym spaces would eliminate the opportunity for the three PE instructors to share the supervision of the athletic classes. Finally, the structural capacity of the existing Multi-purpose room will need to be evaluated for the loading of an athletic function.

4. **Health and Physical Education**

   A. The Variance from MSBA Recommended Guidelines narrative in Section 3.1.3 Initial Space Summary provides the calculation to determine the need for three gym stations. To summarize:

      1010 students in grades K-8 will each participate in (2) 40-45 minute PE classes a week.
      1010 students = 5 sections x 9 grades x 2 classes/wk = 90 PE classes. With 102 instructional blocks per week, three gym stations will be required.
      Each of three PE instructors will teach 30 classes a week. The schedule dictates that the three Physical Education classes need to be scheduled at the same time.

   B. Refer to above discussion in Art and Music/ Voc-Tech for the proposed uses of a Multipurpose Room in addition to the third gym station.

5. **Dining and Food Service**

   A. The Variance from MSBA Recommended Guidelines narrative in Section 3.1.3 Initial Space Summary discussed the categorization of 1,600 nsf allowable by the MSBA guidelines for a Stage. This area has not been included in the Design & Food Service category, as in the MSBA guidelines, but has been assigned to the Art & Music category.
   B. The MSBA review states that this note is not relevant to Option 3.2, a new school facility.
   C. The assignment of this 1,600 nsf applies to all options, both Renovation/Addition and New Construction. As described in the narrative, to ensure that the scale of the dining space is appropriate to the age group of the children, the size of the Cafeteria is based on the space needed for dining, and not that required to create a Cafetorium space that would result by adjoining the area of the Stage with the Cafeteria. With three lunch periods for Dining, and the time required to re-arrange cafeteria seating, greater flexibility and more use of the space will occur if the Stage area is assigned to the Multipurpose Room.
   D. Re-assigning the 1,600 nsf to the Art & Music category will help to offset the proposed 5,500 nsf for the Multipurpose room. This area is programmed for all options. In the Renovation and New Addition options, the existing 5,500 nsf Multipurpose Room is programmed to remain. In the New Construction option, the equivalent space has been included.

6. **Administration and Guidance**

   A. **World Language Office**
      Refer to a detailed description of the World Language program in Section 3.1.2 Educational Program – Teaching Philosophy, Methods, and Goals.

As described in the Variance from MSBA Recommended Guidelines narrative in Section 3.1.3 Initial Space Summary, three World Language instructors will share one office space. As noted, these teachers do not have dedicated classrooms. This office will serve as their workspace for planning and for the storage of their interactive teaching materials. A portion of the office will serve as conference space for collaboration with teachers and for parent conferences.

B. **Steps to Success**

Refer to a detailed description of the Steps to Success Program (STS) in Section 3.1.2 Educational Program – Teaching Philosophy, Methods, and Goals.

Steps to Success is a comprehensive educational achievement program providing academic, social development, and family support for low-income students and their families. Working with students in Grades 4-12, the program seeks to break through the attitudes and substantive barriers – both personal and institutional – that can make it difficult for these students to succeed in school and pursue a college education. The Steps to Success program also offers an After Hours University, which provides homework support and tutoring, as well as enrichment club options and gross motor activities.

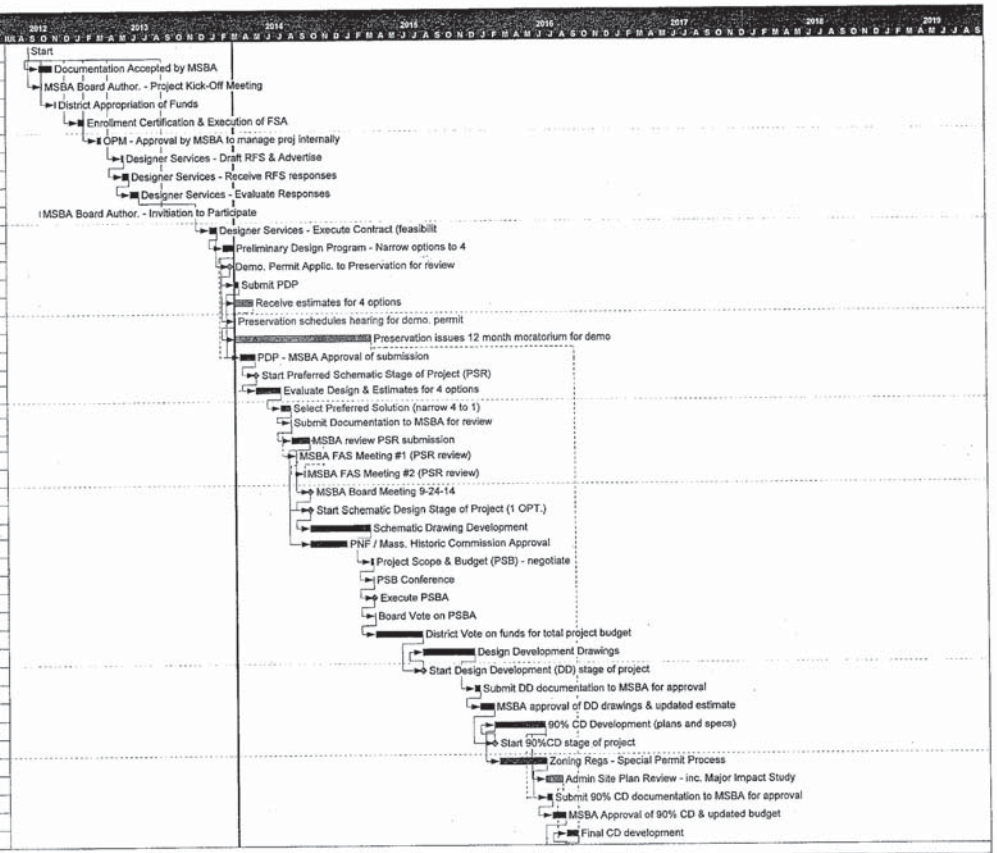
Design considerations for the Steps to Success office include work space for the full-time liason staff member, a small conference area for meetings with parents or teachers, and acoustical privacy as many of the meetings are of a confidential nature.

7. **Total Building Net Floor Area and Total Building Gross Floor Area**

Refer to Attachment 6 - Revised Proposed Space Summary with net and gross floor area inclusive of the Pre-K spaces and exclusive of the parking spaces.

Attachment 1 Updated Project Schedule

Act ID	Description	Orig Dur	Rem Dur	Early Start	Early Finish
5000	Start	1	0	09/03/12	09/03/12
5040	Documentation Accepted by MSBA	1	0	10/01/12	11/05/12
5020	MSBA Board Author. - Project Kick-Off Meeting	1	0	10/09/12	10/09/12
5030	District Appropriation of Funds	1	0	11/13/12	11/15/12
5050	Enrollment Certification & Execution of FSA	1	0	01/14/13	01/30/13
5060	OPM - Approval by MSBA to manage proj internally	1	0	03/06/13	03/15/13
5070	Designer Services - Draft RFS & Advertise	1	0	05/10/13	05/15/13
5080	Designer Services - Receive RFS responses	1	0	05/13/13	05/29/13
5090	Designer Services - Evaluate Responses	1	0	06/03/13	06/25/13
5010	MSBA Board Author. - Invitiation to Participate	1	0	10/02/12	10/02/12
5100	Designer Services - Execute Contract (feasibilit	1	0	01/02/14	01/21/14
1030	Preliminary Design Program - Narrow options to 4	19	0	02/07/14	03/07/14
5520	Demo. Permit Applic. to Preservation for review	0	0		02/24/14
1115	Submit PDP	10	10	03/10/14	03/21/14
5110	Receive estimates for 4 options	35	35	03/10/14	04/28/14
5530	Preservation schedules hearing for demo. permit	1	0	03/11/14	03/11/14
5540	Preservation issues 12 month moratorium for demo	264	253	03/11/14	03/11/15
1410	PDP - MSBA Approval of submission	29	29	03/24/14	05/02/14
1600	Start Preferred Schematic Stage of Project (PSR)	0	0	05/05/14	
5120	Evaluate Design & Estimates for 4 options	47	47	05/05/14	07/10/14
1160	Select Preferred Solution (narrow 4 to 1)	18	18	07/11/14	08/05/14
1850	Submit Documentation to MSBA for review	1	1	08/06/14	08/06/14
1870	MSBA review PSR submission	34	34	08/07/14	09/24/14
5500	MSBA FAS Meeting #1 (PSR review)	1	1	08/20/14	08/20/14
5510	MSBA FAS Meeting #2 (PSR review)	1	1	09/10/14	09/10/14
5590	MSBA Board Meeting 9-24-14	0	0		09/24/14
1110	Start Schematic Design Stage of Project (1 OPT.)	0	0	09/25/14	
1200	Schematic Drawing Development	110	110	09/25/14	03/05/15
5580	PNF / Mass. Historic Commission Approval	66	66	09/25/14	12/31/14
5130	Project Scope & Budget (PSB) - negotiate	5	5	03/06/15	03/12/15
5140	PSB Conference	1	1	03/13/15	03/13/15
5150	Execute PSBA	0	0		03/13/15
5160	Board Vote on PSBA	1	1	03/16/15	03/16/15
1130	District Vote on funds for total project budget	88	88	03/17/15	07/21/15
1140	Design Development Drawings	95	95	07/22/15	12/07/15
2200	Start Design Development (DD) stage of project	0	0	07/22/15	
5170	Submit DD documentation to MSBA for approval	10	10	12/08/15	12/21/15
2280	MSBA approval of DD drawings & updated estimate	25	25	12/22/15	01/27/16
1950	90% CD Development (plans and specs)	95	95	01/28/16	06/13/16
2070	Start 90%CD stage of project	0	0	01/28/16	
5570	Zoning Regs - Special Permit Process	88	88	02/11/16	06/16/16
5550	Admin Site Plan Review - inc. Major Impact Study	33	33	06/14/16	07/29/16
5180	Submit 90% CD documentation to MSBA for approval	10	10	06/17/16	06/30/16
2320	MSBA Approval of 90% CD & updated budget	25	25	07/01/16	08/05/16
1990	Final CD development	22	22	08/08/16	09/07/16



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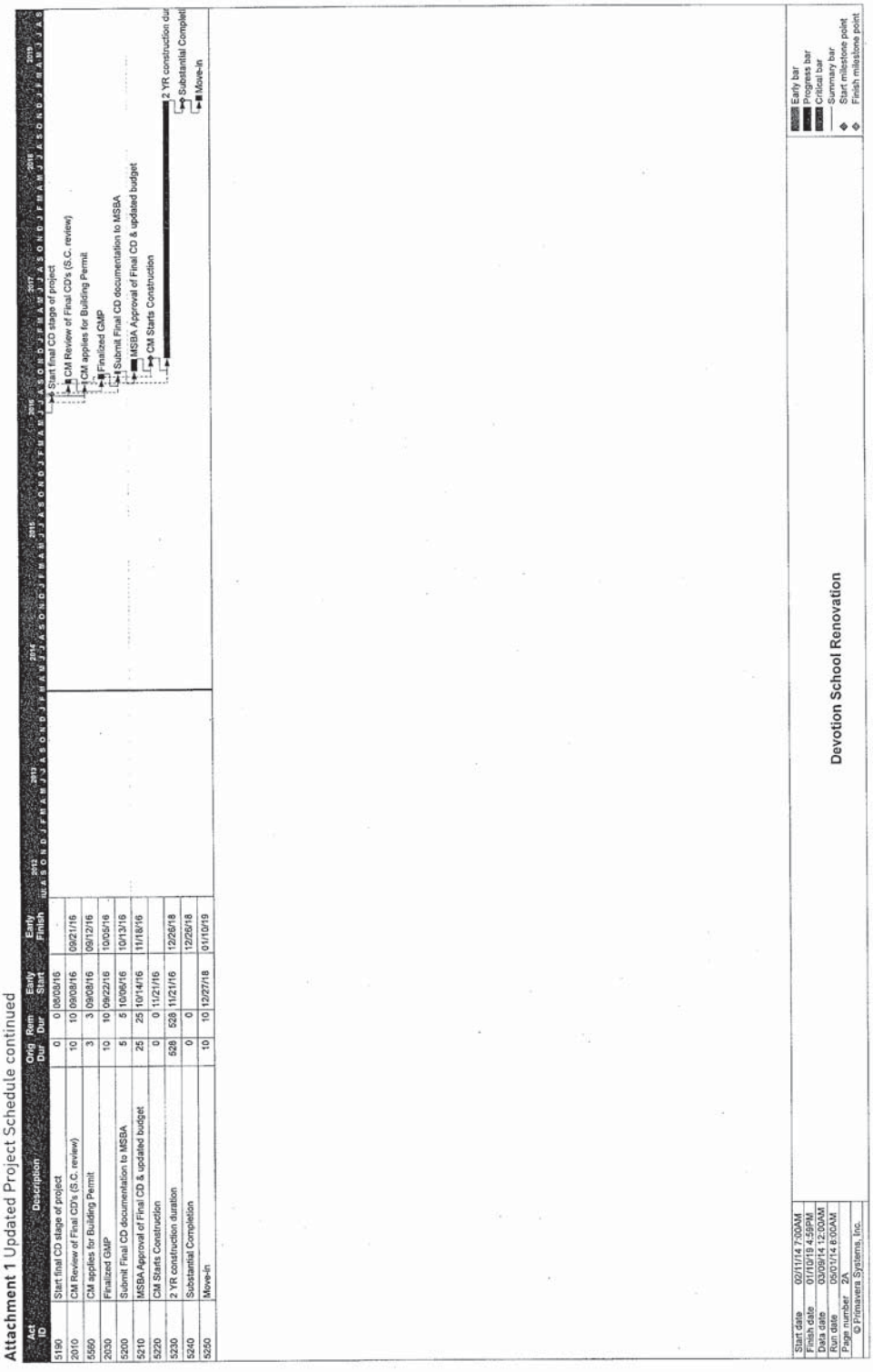
Devotion School Renovation

Early bar
Progress bar
Critical bar
Summary bar
Start milestone point
Finish milestone point

Attachment 1 Updated Project Schedule continued



ATTACHMENT 2
EDWARD DEVOTION ELEMENTARY SCHOOL
REVISED EDUCATIONAL PROGRAM - TEACHING PHILOSOPHY, METHODS, AND GOALS

The Public Schools of Brookline (PSB) provide education to pre-school through twelfth grade students in eight elementary schools and one comprehensive high school. In addition to traditional academic programs, the Public Schools of Brookline offer continuing education courses, summer school, enrichment programs, and numerous athletic opportunities. The Edward Devotion School is the largest of Brookline's K-8 elementary schools, with a population of 842 students. It enjoys an international reputation, welcoming students from all over the world. The system-wide programs offered at Devotion are the English Language Learner program with a high concentration of Hebrew speakers, and a K through 8 Therapeutic Learning Center for students who need intensive social and emotional supports.

Grade and School Configuration Policies

The Public Schools of Brookline provides educational programs for students in preschool through grade 12. As of September 9, 2013, there were 7,372 Pre-K through 12 students enrolled in the Public Schools of Brookline. The eight elementary schools educate students in grades Pre-K/Kindergarten through Grade 8 and Brookline High School serves students in Grades 9 – 12. The Devotion School is the largest of the eight elementary schools in Brookline. Students attend the Brookline elementary schools in their geographical neighborhoods.

Class Size Policies

The Brookline School Committee, Brookline district leadership, and the Brookline Educators Union recognize that class size is an important factor in quality education. While recognizing that a steadily increasing enrollment in Brookline, coupled with limited space in our school buildings, has put pressure on class sizes, the average system wide class size has remained relatively steady during the recent 8-year period of enrollment growth. System-wide class size guidelines for Kindergarten through grade 2 are 22 students per class. Class size guidelines for grades 3 – 8 are 25 students per class.

The number of required classrooms based on an enrollment for 842 students is as follows:

• Kindergarten	5 classrooms
• Grade 1	6 classrooms
• Grade 2	5 classrooms
• Grade 3	4 classrooms
• Grade 4	4 classrooms
• Grade 5	4 classrooms
• Grade 6	4 classrooms
• Grade 7	4 classrooms
• Grade 8	4 classrooms
• Total	40 classrooms

Pre-kindergarten serves three and four year olds in a mixed age group. Children who enter as three-year olds continue for a second year as four-year olds prior to kindergarten entry. Children who enter as four-year olds attend for one year prior to kindergarten. Kindergarten operates as a full-day session. This will continue for the increased student enrollment.

The Early Childhood Program provides comprehensive, developmentally appropriate, inclusive educational opportunities to the children of Brookline. The Brookline Early Education Program (BEEP) consists of 19 programs serving 275 children. BEEP Pre-kindergarten programs are two year programs and serve children ages 3-5. The BEEP Pre-school programs are one year programs that serve children ages 2.6 to 3.5. All programs follow the same Profile of Developmental Goals and Curriculum Content to design the early childhood experience. The inclusive preschool and pre-kindergarten classrooms typically have a teaching staff of one early childhood master teacher and two support staff for 15-17 students. Each classroom is designed to meet the individual needs of young children with and without an identified special need. Therapists work with teachers to provide appropriate services within the classroom and to enrich the learning opportunities for all.

Historically, all Brookline Elementary Schools have housed pre-kindergarten classrooms, providing the aforementioned inclusive educational opportunities to the children of Brookline. In 2012 pre-kindergarten classes were moved out of the Devotion School and displaced to other sites in town due to increasing enrollment and space constraints. The Devotion building project affords the opportunity to create two pre-kindergarten classrooms allowing for the Devotion community's youngest learners to once again be in an elementary school setting.

Devotion houses the district-wide *Therapeutic Learning Center (TLC)* for K-8 students diagnosed with emotional and behavioral disabilities. The TLC is a special education and supportive service based program for students with a history of emotional disabilities, which impact their learning. This integrated program provides students with a variety of educational supports, such as: reduced student to teacher ratio; full time school social worker dedicated to TLC; paraprofessional support while included in general education classes; weekly group lessons targeting social skills and social thinking. TLC classes are divided into three grade level clusters (K-3, 4-6, 7/8), and program staff is extensively trained in Social Thinking Curriculum, Collaborative Problem Solving, and Crisis Prevention Intervention. All students served by the TLC are included with their peers in general education classes, receiving some pull-out academic supports as outlined in their educational plans. Students in the TLC often receive other related services, including OT, SLP, and counseling. Our special educators serve not only as liaisons, but as case-managers for students in order to bridge the gap between home and school-based services.

In addition to our TLC classes, students with special needs are supported by our Learning Centers (LC) or our Comprehensive Learning Centers (CLC). The CLC Programs are designed for students with varied disabilities who require a higher level of services. The CLC classes have a low staff to student ratio allowing for increased individualization. Students may receive higher levels of direct, specially designed instruction in academic areas within the Comprehensive Learning Centers. A high level of case management and coordination of services is provided by the CLC teachers. Although these programs are building based, when necessary other elementary schools may access these programs as district-wide options.

The English Language Learner program (ELL) supports a significant number of Devotion students. With a population of 119 students, our ELL program serves 14 % of the student population. Small groups of students meet with ELL teachers several times per week both in and out of the classroom for direct English instruction. Devotion is home to the district-wide Hebrew ELL population, with two full-time teachers to instruct these students. Devotion has two additional teachers (totaling 1.8 FTE) to serve non-Hebrew speaking ELL students. ELL classes range in number of students served at one time. Small group instruction is the approach used in all four classes. The four classrooms are utilized in the following ways:

- K-3 Hebrew ELL: four 60-90 minute periods per day; small groups range from 6-8 students
- Grades 4-8 Hebrew ELL: six 45-60 minute periods per day; small groups range from 1-8 students
- K-2 Non-Hebrew ELL: four 60-90 minute periods per day; small groups range from 3-7 students
- Grades 3-8 Non-Hebrew ELL: six 45-60 minute periods per day; small groups range from 1-6 students

The Public Schools of Brookline, including the Devotion School, has long been a participating district in the METCO Program. There are currently 23 Boston students enrolled at Devotion. These families are fully included in the Devotion community, and receive additional support from the Devotion METCO liaison.

The Public Schools of Brookline, including the Devotion School also participates in the Steps to Success Program (STS). STS is a comprehensive educational achievement program providing academic, social development and family support for low-income students and their families. Working with students in Grades 4-12, the program seeks to break through the attitudes and substantive barriers -both personal & institutional - that can make it difficult for these students to succeed in school and pursue a college education.

Devotion staff and students take pride in the outreach efforts and community service programs. Annual community service and outreach programs include:

- Heifer International
- 8th Grade Service Learning Projects
- Food Collection for Brookline Food Pantry
- Fall Backpack Drive
- Boston Strong Ribbon and Bake Sales
- International Night

- Science Fair
- Spelling and Geography Bees
- Math League Intra-District Competitions

School Scheduling Method

Students in grades K-5 are assigned to a self-contained homeroom class and participate in daily, unified arts specialist classes, and a 40-minute lunch and recess block. Students in grades 6 – 8 rotate through a seven-period academic day, including core instructional classes, targeted instruction, unified arts specialist classes and a 30-minute lunch and recess block.

The Devotion School schedule reflects an effort to designate adequate time dedicated to each core content area K-8. In addition, specialist programs, which enhance the core program and provide contractual preparation time for classroom teachers, are also scheduled K-8. These time allotments are as follows:

- Reading/Writing – 250 – 450 minutes
- Mathematics – 250 – 300 minutes
- Science/Technology/Engineering – 90 – 150 minutes
- Social Studies – 90 – 150 minutes
- Social Curriculum – 50 – 100 minutes
- Foreign Language – 250 minutes (7-8)
- Art – 45 minutes
- Music – 70 minutes (K-3); 80 minutes (4-5); 90 minutes (6-8); Includes Conservatory for grades 4 - 8
- Physical Education, Health and Wellness – (90 minutes (K-6); 180 minutes (7-8)
- Instructional Technology – 45 minutes (7-8)
- Elementary World Language – 60 minutes (K-2); 90 minutes (3-5); 135 minutes (6)

According to Unit A Teacher Contract: All teachers will have a 30-minute duty-free lunch period to be taken at the following times: In the elementary schools, during the regular student lunch period of their grade level where practicable; Each elementary teacher (K-6) will be scheduled for a daily preparation period. In a five-day week, at least four (4) of these preparation periods will be scheduled for at least forty (40) minutes in length, while the fifth will be scheduled for at least thirty (30) minutes in length. Such preparation periods are exclusive of the one-half (1/2) hour duty-free lunch period per day; Teachers responsible for grades 7 & 8 only, will have a minimum of five unassigned periods, exclusive of the one-half hour duty free lunch period per day and will usually be responsible for a homeroom; Teachers of art, home economics, industrial arts, music, physical education and specialists (except nurses), and teachers responsible for instruction in more than one school in grades K-8 will have a minimum of five unassigned periods per week exclusive of the one-half (1/2) hour duty-free lunch period per day.

The Brookline School Committee recognizes the importance of providing adequate numbers of specialist teachers in both the elementary and high schools. Elementary specialist teachers are defined as Art, Music, Physical Education, Library-Media and Elementary World Language. These programs are a vital component of the complete educational program that are both a value and expectation of the Public Schools of Brookline to offer our students. Appropriate and adequate space should be part of the design for these programs.

The current specialist sections at Devotion Elementary are as follows:

- **Art** – Twenty-three 40-45 minute blocks are taught by one Art teacher (1.0 FTE), while eighteen 40-45 minute blocks are taught by second part-time Art teacher (0.7 FTE). We will require three full-size Art rooms in the Devotion School, and these instructional spaces should be designed to meet the needs of students across the grade levels. For instance, the furniture and amenities (ie. sinks) should be scaled differently for students in K-2, 3-5, and 6-8.

- **Music** – One Music teacher (1.0 FTE) instructs thirty-three 30-40 minute General Music blocks and one 45-minute Guitar Ensemble block each week. A second part-time Music teacher (0.5 FTE) instructs twelve 30-40 minute General Music blocks and four 45-minute chorus blocks each week. A third part-time Music teacher (0.2 FTE) instructs five 40-minute General Music blocks each week. General Music instruction takes place in one of two Music classrooms at Devotion.

- **Conservatory** – Itinerant instrumental music instructors teach weekly Conservatory classes to students in grades 4 – 8 (three teachers at 0.2 FTE each). Grades 4 & 5 participate in one Conservatory class in addition to their weekly General Music class. Students in grades 6 – 8 participate in two Conservatory blocks weekly, electing to play an instrument in the band or strings orchestra, sing in the grade level chorus, or take a Music Production class. Students attend Conservatory in a music room, the auditorium, the cafeteria, the computer lab, or at times, in lobby areas due to space constraints.

- **Physical Education, Health and Wellness** – One Physical Education teacher instructs twenty-eight 40-45 minute blocks each week (1.0 FTE). A second Physical Education teacher instructs twenty-eight 40-45 minute blocks each week (1.0 FTE). A third part-time Physical Education teacher instructs twenty-four 40-minute blocks each week (0.9 FTE). The Devotion School houses only two gym spaces – one full-size gym, and one "small" gym, which is used as an instructional space only for students in grade K-2. Our schedule dictates that three Physical Education to be scheduled at one time. Therefore, two classes must "double up" in the large gym in order to accommodate all of the instructional sessions. One part-time Health teacher instructs twelve 45-minute blocks of Health and Wellness to grades 7 & 8 each week (0.6 FTE). A second part-time Health teacher instructs four 45-minute blocks of Health and Wellness to grade 7 each week (0.2 FTE). There is no dedicated classroom space for Health and Wellness classes, therefore the Health teachers travel to other 7th and 8th grade classrooms for instruction.

- **Library/Media** – The Devotion School library is currently staffed five days per week with a full-time, certified school librarian. Classroom teachers in grades K-5 sign up for 30-minutes of library time every third week. During this time, the librarian and classroom teacher collaborate to share stories, support student research, and manage book circulation. Classes, accompanied by the classroom teacher, can use the library and its resources for the purpose of research and inquiry in connection to the classroom curriculum.

- **Instructional Technology** – Instructional technology is integrated into the classrooms and is supported by a full-time Educational Technology Specialist (ETS). In addition to a dedicated computer lab with a Smartboard and twenty-six desktop computers, the ETS supports teacher use of multiple laptop carts. The ETS teaches eight 45-minute blocks to students in grades 7 & 8. As the "first line of defense", the ETS is called upon to troubleshoot minor technology problems for classroom teachers and specialists. For more involved technology issues, teachers and specialists are instructed to contact the district Help Desk for assistance. There is a need for a second computer lab to accommodate the scheduling demands for our increasing enrollment. At this time we have 40 classroom sections that need access on a regular basis to the computer lab. However, our school wide schedule only allows for 35 sections to be scheduled in a given week. In our current building, not all classes are able to access the lab on a weekly basis. With an additional computer lab, all 45 classroom sections will be able to access the computer lab for direct technology instruction, peer collaboration, research, and project-based learning on a weekly basis.

- **Elementary World Language** (EWL) – Students in grades K-2 receive three 20-minute blocks of Spanish instruction each week. Students in grades 3 – 5 receive three 30-minute blocks of Spanish instruction, and students in grade 6 receive three 45-minute blocks of Spanish instruction each week. One EWL teacher instructs forty-five blocks of 20-45 minute Spanish classes each week. A second EWL teacher instructs thirty-nine blocks of 20-45 minute Spanish classes each week. A third part-time EWL teacher (0.4 FTE) instructs twelve 30-minute blocks of Spanish each week. Instruction takes place in the homeroom class, in collaboration with the classroom teacher.

Teaching Methodology and Structure

Brookline's Learning Expectations meet or exceed the rigorous Massachusetts Curriculum Frameworks (which are based on the Common Core). The Brookline Learning Expectations have been developed by teams of teachers, led by curriculum coordinators, and are based on state and national standards. The Brookline School Committee reviews and approves the Learning Expectations for the district.

Our K-8 curriculum units and instructional materials are developed and identified to support all students in meeting the Learning Expectations. Units of study are constantly being revised and/or replaced as new units are developed and added that incorporate new content, materials, assessments and technology that are better aligned with our Learning Expectations. An

emphasis on inter-disciplinary work is also a goal as we work to provide the highest quality curriculum and instruction to every student.

Below is an overview of the general elementary curriculum, methods, and assessments used by teachers.

Literacy

The English Language Arts Program serves to develop, assess, and support instructional practices for effective learning in reading, writing, and speaking. Staff development is provided based on student and program needs across the system. The K-8 Language Arts program emphasizes explicit instruction in strategies of proficient readers and writers. These strategies are critical for effective reading and writing across the curriculum. Brookline uses The Continuum of Literacy Learning, PreK-8 (Fountas & Pinnell), a comprehensive and detailed description of student proficiency in literacy, as the document that guides daily instruction. Literacy Specialists in each elementary school provide reading and writing support to teachers and students.

Schedules for grades 1 – 5 reflect a daily, uninterrupted 90-minute literacy block. During this protected instructional block, students receive small group reading instruction from their classroom teachers, and participate in a variety of language arts learning centers, allowing students to refine reading and writing skills. Students who receive targeted literacy interventions do so during this block of time. Interventions may be provided by one of our four literacy specialists, a special educator, or an ELL teacher. In grades 6-8 students have a daily 50-60 minute block of English Language Arts instruction. Students requiring additional supports and literacy intervention receive targeted instruction from classroom teachers, special educators and ELL teachers during designated 45-55- minute instructional blocks each day.

Assessment practices include: running records and system-wide instruments including the *Benchmark Assessment System* (BAS). Teachers use other informal weekly assessments in an effort to measure student progress. Grade level data meetings are conducted two times per year, to examine whole class and small group instructional implications as well as identify students and develop plans for individual literacy interventions. Tier 2 Intervention includes the Leveled Literacy Intervention (LLI) and Reading Recovery (grade 1).

Although most of the reading and writing instruction takes place within the classroom environment, and across content areas, smaller work areas are necessary to facilitate individualized instruction, both 1:1 and small group settings. In addition, small work areas support individual and small group general education interventions in reading and writing. Areas designed inside and outside the classroom are preferred. Devotion employs four literacy specialists. Each has their own office space where planning, coaching, direct instruction and intervention take place.

Math

Students learn mathematics in whole class, small group, and partner configurations. The curriculum includes a variety of hands-on activities and many materials that require space to store in each classroom. Three math specialists work with classroom teachers to support curriculum development and planning for differentiated instruction. Math specialists also provide individual and small group intervention to students across all grade levels. Three math specialists share inadequate office space, where planning, coaching and intervention work takes place.

Science and Technology/ Engineering

Teachers implement hands-on science and engineering curriculum that requires the use of kit materials and student science notebooks. Each grade level uses water as a material in their curriculum so sinks are necessary. Additionally, space for storage of science materials and for set up and use of the materials for investigation or experimentation are required. Storage for the science kits when not in use is needed.

Social Sciences

Students engaged in a history/social sciences curriculum that wherever possible integrates with the informational skills components of the new Massachusetts Curriculum Frameworks for English Language Arts (incorporating the Common Core Standards). It is important that there is wall space available for maps and educational posters/displays as well as ample storage capacity for books and other content materials.

Enrichment Challenge Support

The Brookline Public Schools has a commitment to enable all children to reach their full potential. The mission of the Enrichment and Challenge Support Program is to assist and support classroom teachers in providing for those students who show a capacity for high levels of academic, intellectual and/or creative achievement.

The Enrichment and Challenge Support Program is a K-8 system-wide program that supports classroom teachers in providing challenging curriculum and extension opportunities for students who show a capacity for high levels of academic, intellectual, and creative achievement. There is an ECS program resource teacher on staff in each elementary school in Brookline. At Devotion a part-time ECS teacher (0.6 FTE) works collaboratively with Classroom Teachers, Guidance Counselors, and Principals to provide information, consultation, and extension opportunities. She works with teachers to help them differentiate instruction and develop extension and enrichment opportunities within their classrooms. The Devotion School ECS Resource Teacher also leads whole-class, small group, or one-on-one extension lessons as a way of supporting classroom teachers. ECS teachers are also available as a resource to the parent community. The ECS teacher has dedicated office space to meet with individual as well as small groups of students, to collaborate with and coach teachers, and to conference with parents.

Social / Emotional

Responsive Classroom (K-5) and *Developmental Designs* (6-8) represent the core social-emotional curriculum at Devotion. Both RC and DD programming require classroom meeting areas to conduct "morning meetings" or "advisory" meetings. Each classroom should have an area zoned for these class meetings and other like functions. Many staff members have also been trained in Marie Garcia Winter's *Social Thinking* curriculum and lead Tier II instruction with small groups of students.

ELL

The current ELL population at Devotion School is 119 students. Four ELL teachers support these students. Two teachers are assigned to support our Hebrew speakers and two teachers work with our non-Hebrew ELL students. Our support model is both push-in and pull-out, as determined by the student's level of English proficiency. Students at the entering and developing stage need a designated ELL learning classroom.

World Language

The K-6 World Language Program is based on current pedagogical research about effective approaches to language acquisition. It meets the rigorous expectations of the Massachusetts Foreign Languages Curriculum Framework as well as the nationally established standards for foreign language education. The overall goals are:

- To acquire proficiency in speaking, listening, reading and writing the target language;
- To acquire an understanding of and appreciation for other cultures;
- To reinforce learning of the general curriculum content through the study of a world language; and
- To develop students as language learners

Grade K-6 World Language is Content-Enriched FLES (Foreign Language in the Elementary School), which provides a sequential language learning experience that aims to develop language proficiency, appropriate to each grade level. Content-Enriched FLES programs are those in which language lessons reinforce concepts from other subject areas: social studies, science, and math, and English language arts. The schedule for world language instruction, by grade, is:

Grades K-2:	3 sessions x 20 minutes = 60 minutes/week
Grades 3-5:	3 sessions x 30 minutes = 90 minutes/week
Grade 6:	3 sessions x 45 minutes = 135 minutes/week.

The Brookline Elementary World Language Learning Expectations are based upon the "5 C's" of the National Standards for Foreign Languages: Communication, Cultures, Comparisons, Connections and Communities. World language teachers, together with the K-8 Curriculum Coordinator for World Languages, continue to develop a proficiency-based curriculum grounded

in culture as the program achieves implementation. The curriculum and assessments focus on what students can *do* with the language, and reflect the proficiency descriptors of the National Performance Guidelines for K-12 Learners.

World language teachers use almost exclusively the target language (90% +) of Spanish or Chinese for instruction and the emphasis is on functional communication activities in real-life situations. Lessons are carried out through the use of songs, games, books, and other interactive activities that provide students immediate opportunities to practice the language. Material is introduced in thematic units of School and Community, Family, and Climate (K- 2); Community, Leisure Time, Climate and Food (3-5). Students in Grade 6 continue to further their learning in these themes while transitioning to a more formal middle grade program model.

Three Elementary World Language teachers instruct students in grades K-6. All three teachers share office space for planning, collaborating with teachers, and communicating with parents.

Our students in grades 7 & 8 select to study either Spanish or French as a World Language. World Language classes meet five days per week for 50-55 minutes.

Teacher Planning and Room Assignment Policies

Below is a description of the ideal planning and room assignment policies as well as how the Devotion School is currently organized due to space limitations:

The ideal grade level classroom formation would neighbor one another to offer close proximity for collaboration, communication and flexible grouping. Other core academic spaces such as art, music, computer labs, and library would ideally be within close proximity to the general classrooms to provide ease of transition from space to space as well as limit the transition time between classes to maximize the time spent in the classrooms.

Other core spaces such as the gymnasium, auditorium, and cafeteria are used by the community, therefore ease of access for the public is preferred. The cafeteria will ideally be located on the first floor with direct access to the play spaces for time before or after lunch.

Classroom space and needs for our special education programs varies. The four Learning Centers (LC) provide instructional services within the general education classrooms, however small instructional spaces for individual and small group instruction are required. These spaces should be easily accessible from the general classrooms. Small classroom spaces are needed for each of our three Comprehensive Learning Centers (CLC). Students will come to the CLC for core instruction, social curriculum and other services throughout the day. Finally, our three Therapeutic Learning Centers (TLC) provide our students with a small classroom learning space, a separate relaxation area for calming and social skills work, as well as a space for students to safely and privately de-escalate when in emotional crisis. Our current TLC suites have 4-5 small office/classroom spaces within their respective suits to meets the range of needs presented by the students served.

Currently there are three floors in the Devotion School with the bottom floor below grade

referred to as the basement level. There are six classrooms, two Therapeutic Learning Centers, and one Comprehensive Learning Center located on the basement level, along with core subjects of music and physical education. The basement level is also home to our Occupational Therapy room, and offices for one of our two Vice Principals, our three Physical Educators, and our Director of Guidance. The Devotion Cafeteria is also located on the basement floor. Our cafeteria currently has the capacity to seat only two grade levels during a lunch period, thus requiring us to schedule five lunch shifts. Our 2nd grade and 6th grade students begin lunch at 10:45 am, and our Kindergarten and 1st grade students don't eat until the last lunch period, at 12:40 pm.

Three Kindergartens, two grade 1, and two grade 2 classrooms, as well as a Learning Center and an office/instructional space for one ELL teacher, are housed in the "1950s wing" of the building. One of our 1st grade classrooms was recently added to meet the demands of our increasing enrollment, however the only space to convert was a former learning center, and as a result this one 1st grade classroom is significantly smaller than our other primary grade classrooms. As such we had to cap the enrollment in this classroom at 16 students for this academic year. This wing does not physically align with the rest of the building, as it has only two floors. One floor is built at ground level, and the other directly above it. When looking at the intersection of the original structure and the 1950s wing, some of the Kindergarten, Grade 1 and Grade 2 classrooms seem to have been built on floors one-and-a-half and two-and-a-half.

On the other side of the original structure, sits the "1970s wing". This wing of the building houses Grades 4 – 8, and was originally built in an open concept design. Three of the four 4th grade classrooms are on the second floor of this wing. Due to space constraints, one 4th grade classroom is not in proximity of the others, but is on the other side of the building. All four 5th grade classrooms are on the 2nd floor of the 1970s wing, as well as two of the four 6th grade classrooms. Additionally, one learning center, the ECS room, and one ELL office are on the second floor of this wing. In the middle of all these classrooms and offices, we have built a "mini computer lab". This area, subdivided by half-wall cubicles, holds nine desktop computers and provides small group instructional space for staff and students to work. Also on the second floor are the two Art rooms and a cluster of office spaces divided by temporary walls and doors. We call this space "the village". The village is home to our three EWL teachers, our three math specialists, one reading specialist, our METCO liaison and our Steps to Success liaison. This space is inadequate for our needs. The office areas are too small, and because of the portable nature of the design, none of the offices have ceilings. This is a problem for staff who wish to assess a student and is in need of a quiet work space, or for a teacher and parent who need to discuss a confidential matter. The 3rd floor of the 1970s wing houses our two remaining 6th grade classrooms, our 7th and 8th grade science labs, and classrooms for each remaining 7th and 8th grade core content course – ELA, Math and Social Studies. There is an additional classroom that is used as shared space for our middle grade Spanish teacher, French teacher, and Health teacher. This one room is not adequate for the number of classes scheduled, so Foreign Language and Health classes are often conducted in other core content classrooms. The 3rd floor space also has a "mini computer lab", as well as a learning center, a speech therapy office and a social worker's office.

The original structure on the second floor is home to the main office, including the principal's office and team facilitator's office. Additionally, a guidance office, the nurse's suite, the psychologist's office, our second vice principal's office, two second grade classrooms, one fourth

grade classroom, a reading specialist's office, and two Hebrew ELL teachers reside on the second floor. Our library, full-size computer lab, teacher's lounge, and teacher's workroom are on the main level as well. The library resides in a space that was originally designed as an auditorium. It serves all the students in the school for both instruction and research.

On the third floor of the original structure sits the auditorium, one literacy specialist office, four third grade classrooms, two Comprehensive Learning Centers, one Therapeutic Learning Center and a guidance office.

Overall, the Devotion School has clustered classrooms in neighboring proximity of one another, and attempted to work within the space constraints posed by the architecture of the design.

Some of the special education instruction occurs within the regular education classrooms, however we retain a need for 10 separate learning center classrooms, with three of these designed as suites to accommodate the varying degrees of need within our Therapeutic Learning Centers.

Due to lack of space and fire code restrictions there is no opportunity for the entire school to gather for school assemblies. Currently, the gym and/or auditorium is used for school assemblies that need to occur at three different times, one for grades K-2, another for grades 3-5, and a third for grades 6-8.

Flexible Grouping

General education teachers engage in flexible grouping methods to meet the instructional needs of their students and as determined in collaboration with special educators and other instructional specialists. Grouping and regrouping methods take place weekly within classrooms and among grade level classrooms. General education, special education, literacy and math specialists, and ELL teachers collaborate to provide tier one (general curriculum), tier two (strategic intervention) and tier three (intensive intervention) in the inclusive environment. Pullout instruction is provided for students who require it, based on their personalized instructional needs within tier two and tier three programming. There is shared responsibility among the faculty for all students' success. Grade level classrooms are organized within common hallways and adjacent locations. Close proximity is critical in order to achieve the requisite communication and collaboration for flexible grouping methods in a grade level teams. Current architectural aspects of Devotion School preclude the necessary adjacencies to ensure team proximity for all grade levels.

Lunch Programs

The mission of Food Services is to provide healthy, tasty, high-quality, sustainable, affordable meals to the students and staff of the Brookline Public Schools. Breakfast and lunch are served at all nine schools in the district. As part of the National School Breakfast and Lunch Program, we follow guidelines set by the USDA regulating what qualifies as a healthy breakfast and lunch. Meals are cooked from scratch, using real food, and we are continually looking for ways to improve our school meals.

Parents set up online lunch accounts and pre-pay meals. All students have an individual PIN number. A students' account can indicate a specific allergic warning or set restrictions on choices by parents.

There is one cafeteria in the existing Devotion School. This poses significant challenges for scheduling, dining, transitions and staffing support. Presently, the Devotion School runs five lunch sessions. The number of lunch sessions requires a significant number of staff to provide adequate supervision. This poses a challenge to us, given the constraints of the current collective bargaining agreement, and our need for a robust student supervisory plan in alignment with our anti-bullying initiative.

Currently, Devotion School has a staff of one kitchen manager and three attendants who work in a full service kitchen. Lunch service begins at 10:45 am, with the last lunch concluding at 1:05 pm. The number of students within each lunch ranges from 172 to 217 students. Each lunch period includes two grade levels, with lunch shifts that have complex, overlapping transitions. Each lunch period utilizes one serving line, where students use a PIN number system when purchasing their lunch. The current cafeteria is inadequate in terms of space and sound issues, and one lunch line is not sufficient for serving such a large number of students in a timely manner.

Technology Instruction Policies and Program Requirements (Labs, In-Classroom, Media Center, Required Infrastructure, ETC.)

Devotion School currently offers the following instructional technology:

Kindergarten

- 1 of the five classrooms has a Smartboard
- 1-2 desktop computers per classroom for student use
- Every teacher has a laptop
- 1 Printer is shared between the five classrooms
- 1 classroom has an Elmo/LCD Projector

Grade 1

- 1 of the six classrooms has a Smartboard
- 1-2 desktop computers per classroom for student use
- Every teacher has a laptop
- 2 printers are shared between the six classrooms
- 0 of the six classrooms have an Elmo/LCD Projector

Grade 2

- 3 of the five classrooms have a Smartboard
- 1-2 desktop computers per classroom for student use
- Every teacher has a laptop
- 2 printers are shared between the five classrooms
- 0 of the five classrooms have an Elmo/LCD Projector

Grade 3

- 1 of the four classrooms has a Smartboard
- 1-2 desktop computers per classroom for student use
- Every teacher has a laptop
- 3 printers are shared between the four classrooms
- 1 of the four classrooms has an Elmo/LCD Projector

Grade 4

- All four of the classrooms have a Smartboard
- 1-2 desktop computers per classroom for student use
- Every teacher has a laptop
- 2 printers are shared between the four classrooms
- 2 of the classrooms have an Elmo/LCD Projector

Grade 5

- 3 of the four classrooms have a Smartboard
- 1-2 desktop computers per classroom for student use
- Every teacher has a laptop
- 2 printers are shared between the four classrooms
- 1 of the four classrooms has an Elmo/LCD Projector

Grade 6

- 3 of the four classrooms have a Smartboard
- 1-2 desktop computers per classroom for student use
- Every teacher has a laptop
- 1 printer is shared between the four classrooms
- 1 of the classrooms has an Elmo/LCD Projector

Grade 7

- 3 of the four classrooms have a Smartboard
- 1-2 desktop computers per classroom for student use
- Every teacher has a laptop
- 1 printer is shared between the four classrooms
- 1 classroom has an Elmo/LCD Projector

Grade 8

- 3 of the four classrooms have a Smartboard
- 1-2 desktop computers per classroom for student use
- Every teacher has a laptop
- 1 printer is shared between the four classrooms
- 2 of the classrooms have an Elmo/LCD Projector

Library: A shared black and white laser printer is located in the library. Students and teachers have access to 13 current generation desktops. There are two separate desktops – one at the circulation desk for checkout, the other is used by the librarian. Through the district's membership in the state library system the school library has access to an online encyclopedia (Encyclopedia Britannica) and InfoBits (Gale Database). Through the school library, all teachers and students have access to Teachingbooks.net and Cobblestone Publications.

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Computer Lab: The lab is equipped with 25 current generation desktops. Three laptop carts, of 20, 12, and 10 laptops, are housed in the computer lab. The laptops are checked out daily for use in K-8 classrooms. There is a need for a second computer lab to accommodate the scheduling demands for our increasing enrollment. At this time we have 40 classroom sections that need access on a regular basis to the computer lab. However, our school wide schedule only allows for 35 sections to be scheduled in a given week. In our current building, not all classes are able to access the lab on a weekly basis. With an additional computer lab, all 45 classroom sections will be able to access the computer lab for direct technology instruction, peer collaboration, research, and project-based learning on a weekly basis.

There is an Acceptable Use Policy for students and staff in the district. Parents are asked to review the Acceptable Use Policy with their children, sign and return the district form to the main office. All students receive instruction in the Acceptable Use Policy during the first two months of the school year.

Art/ Music/ Performing Arts

The Public Schools of Brookline has a vibrant visual and performing arts program. Within the week, all students at Devotion take one, 40-45 minute visual art class, grades K-3 take one 30-minute and one 40-minute general music class, Grades 4 & 5 take one 40-minute general music class and one 45-minute Conservatory class, and grades 6-8 take two 45-minute Conservatory classes per week. There are two small music classrooms at Devotion with minimal storage space. Conservatory classes are taught by itinerant staff, who serve all elementary schools in town. As a result, we are limited in our ability to schedule these classes across all days of the week. Conservatory classes take place one afternoon and one morning per week. Due to the lack of physical space, these instrumental music classes take place in the music rooms, auditorium, computer lab, cafeteria, the art room, and at times in a lobby area.

Devotion hosts a variety of music concerts (choral and instrumental) throughout the school year. Additionally, students in grades 2 – 8 are involved in musical theater. Performances take place in the auditorium, which has a capacity of 300 people. As such, we are limited in the number of classes and families we can invite to attend a performance, or have to schedule multiple show times. School Committee policy for the Public Schools of Brookline requires that all elementary schools have a multipurpose room with the capacity to seat at least 40% of its total occupancy.

Devotion currently has two small art classrooms. Each classroom has two sinks, but lacks proper storage space for materials. One classroom has a kiln room. The other classroom was once a woodshop, and retains its woodworking equipment. Both classrooms have limited amounts of natural lighting. Devotion needs three art classrooms, one art room for each grade level cluster, with ample natural light and with enough space for the largest class to sit a maximum of four students per table. The visual art classrooms need a separate storage closet for material/equipment storage as well as teacher preparation. The visual art classrooms require ample storage capacity within the classroom for artwork in process. The layout of the classroom should separate the worktables from preparation/sink areas. Multiple sinks at appropriate student height, and furniture and amenities (i.e. sinks) scaled to meet the needs of the grade level clusters, are required. A separate kiln room attached to the classroom is required. The

visual art classrooms need a technology/media station (computers with photo/video software and Internet access) set-up to serve 4-6 students and away from paints and clay preparation. There should be ample space for whole demonstrations and exhibiting exemplary artwork on the walls.

In the corridor outside the visual art classroom as well as corridors throughout the school, there should be ample wall space designed for student artwork to be exhibited, including a 3D wall case centrally located in the school.

Physical Education and Outdoor Activities

All students, K-8, participate in instructional, quality physical education program twice a week, for 40-45 minutes each class. The curriculum is presented in accordance with the Massachusetts Frameworks and the National Standards for Quality Physical Education.

Devotion has 2.9 FTE physical educators. One Physical Education teacher instructs twenty-eight 40-45 minute blocks each week (1.0 FTE). A second Physical Education teacher instructs twenty-eight 40-45 minute blocks each week (1.0 FTE). A third part-time Physical Education teacher instructs twenty-four 40-minute blocks each week (0.9 FTE). The Devotion School houses only two gym spaces – one full-size gym, and one "small" gym, which is used as an instructional space only for students in grade K-2. Our schedule dictates that three Physical Education to be scheduled at one time. Therefore, two classes must "double up" in the large gym in order to accommodate all of the instructional sessions.

Outdoors, Devotion has a number of play areas including an adjacent baseball diamond, basketball courts and tennis courts, maintained by the town Parks and Recreation department. This park space is used mainly by the school during school hours, but is shared with local recreation programs and neighbors after school and on weekends. A number of neighborhood athletic groups use the park when school is not in session. In addition, playground areas are available for student use on school property. The "Front Playground" abuts Harvard Street and is considered the main playground for the Kindergarten classes. There are two climbing structures and two slides at this play site. There is also a large sand play area, and two bike racks. Kindergarten students also have access to a small paved area with two hopscotch grids painted on the pavement. Students in grades 1 – 3 have access to a second playground space. In this space, a large play structure offers two slides, monkey bars and other climbing opportunities. Adjacent to this structure are foursquare grids painted on a small paved area. The Devotion School Garden, maintained by staff and students and integrated across the K-8 science curriculum, resides in this section of the playground. Students in grades 4 & 5 access a third playground space. In this area there is another large play structure, offering monkey bars, two slides, connective bridges and climbing areas. There are three tire swings in this play space. Grades 4 & 5 also have access to a large hot-top play area that contains two basketball hoops, three hopscotch grids and five foursquare grids. Our students in grades 6-8 use the adjacent open fields, baseball diamond and basketball courts during recess time.

Special Education

The percentage of students at Devotion School with special needs is reflective of the District percentage (16.1%) FY13. This includes students in the Devotion School district as well as students from other elementary schools in the district who are placed in one of the district-wide Therapeutic Learning Centers (grades K-8) located at Devotion.

Inclusion is a core belief and practice in the Public Schools of Brookline. This educational model challenges schools to meet the needs of all students by educating learners with disabilities alongside their non-disabled peers. The environment necessary to nurture and foster inclusion is built upon a shared belief system between general and special education, and a willingness to merge the talents and resources of teachers.

The mission of all of the schools in Brookline is to "educate each student to become a responsible adult and contribute to the quality of life in a free, changing society. Develop capable, confident learners who contribute to their community, participate thoughtfully in democracy, and succeed in a diverse and evolving global society." An inclusive education helps prepare students with disabilities for an integrated adult life and builds understanding and acceptance within the broader community.

Student Services are defined as school psychologists, inclusion facilitators, learning center teachers, social workers, speech/language pathologists, occupational therapists, physical therapists and nurses. In many cases these positions are shared among more than one school, but together they represent a team-based approach to supporting students and families in need at the elementary level in Brookline.

Teachers at the Devotion School support students through a variety of teaching models: co-teaching, team teaching, flexible grouping, small group instruction, and individualized instruction. Teachers believe that all learners should be provided differentiated forms of instruction and recognize that all students learn in different ways, rates, and timeframes. To that end, the Devotion School continually adapts its staffing support, instructional methodologies, and assessment practices to meet student needs.

Tiered levels of instruction provide the general education foundation of Devotion School's continuum of service model. Devotion Staff provides tiered levels of instruction to all students (tier one - the general classroom curriculum; tier two - strategic levels of instruction; tier three - intensive levels of instruction usually at the individualized level). If a student demonstrates academic and/or social/emotional/behavioral concerns despite thorough RTI procedures, the teacher refers the student to the building Child Study Team or the CST Team. These teams support teachers implementing additional strategies.

Special education services throughout the district address the needs of identified learners with disabilities between the ages of three and twenty-two, who require specialized instruction to support access to the curriculum. A wide range of services is provided to meet the individual needs of students, from academic intervention to related services in areas such as speech therapy, occupational therapy and physical therapy. Availability of therapeutic services for students requiring special education intervention in the realm of social, emotional and

adjustment areas is present at all schools and levels. Staff works closely with families in assuring the services needed are identified and provided to students in accordance with applicable mandates. A strong and positive relationship exists between the district staff and the Special Education Parent Advisory Council to the benefit of the school system, students and families. Strong collaboration with general education staff is a concerted effort to provide services to students in the most inclusive manner, which benefits all students within the class setting. Providing consultation, collaboration and professional development opportunities to both regular education and special education staff across the district is an active approach to further the joint efforts of all teachers to provide students with special education services in the most inclusive setting, which is appropriate.

Devotion School offers instructional spaces for pullout small group and individual instruction provided by learning center teachers, and inclusion facilitators, who support inclusion for students with significant disabilities. Related service providers include two speech/language pathologists, an occupational therapist, a physical therapist, a psychologist, a BCBA, and a social worker. Teachers of deaf/hearing impaired students and vision-impaired students also support students with these disabilities in accessing the curriculum.

The district-wide Therapeutic Learning Center (TLC) program takes place in heterogeneous classes with general education students enrolled at Devotion and students with specific social-emotional and behavioral disabilities from other elementary schools throughout the district. Students with special needs are supported academically and socially through small group and individual teaching and modifications of the curriculum. The TLC is a special education and supportive service based program for students with a history of emotional disabilities, which impact their learning. The TLC provides the following as deemed necessary by each individual student's IEP:

- direct instruction in a separate setting or in a general education setting
- support in general education
- continuum of services from fully included to direct instruction in a separate setting
- adaptations of the educational environment
- positive behavior intervention plans
- instruction in relaxation techniques
- counseling

Special education learning spaces are spread among general education classrooms. The location of the classrooms allows staff to communicate and collaborate fluidly throughout the day on student needs and programming. The number of students in these classrooms is monitored to ensure a lower class size is maintained to allow the flexible learning requirements of the students. The actual current enrollment in the TLC program is 16 students, all of whom are Brookline Public School District students. State laws and Massachusetts Department of Education regulations mandate that student age spans may not exceed 48 months in a learning

center environment; therefore, in a Pre-K to Grade 8 school, there must be at least three learning center classrooms to accommodate this law. The projected future enrollment in the TLC program is 25 students, all of whom will be Brookline Public School District students.
The four Learning Centers at Devotion resemble large office spaces, for 1:1 or small group instruction. The three Comprehensive Learning Centers require a bit more space, resembling a small classroom. In this space the special educator will conduct small group instruction, social skills groups and collaborate with other related service providers to provide services to students. The three Therapeutic Learning Centers are designed as a "suite" in order to accommodate multiple tiers of student needs. There must be space for academic support, community building and social skills instruction, a calming area for relaxation, and a safe space for students to de-escalate when in crisis.

Transportation Policies

Brookline Public Schools provides bus transportation for K-8 students residing more than 2.0 walking miles in their districted school. These students are transported at district expense. All students in Grades K-6, who live less than 2.0 miles from their school, are responsible for their own transportation. The Department does make exceptions for students whose needs are "safety" related. K-6 students who live 2.0 miles or more from the school may opt to purchase a bus pass in accordance with the MBTA fee schedule. Special education transportation services are separate from regular bus transportation.

The Devotion Elementary School has one district bus to transport students with special needs to and from the Therapeutic Learning Center program and one Boston bus for METCO students. Students who are bused are dropped off in our bus drop-off lane between 7:30 am and 7:40 am daily. Monday through Thursday, school dismisses at 2:30 pm and on Fridays, school dismisses at 1:40 pm due to weekly professional "collaborative time" for teaching staff. Due to the fact that the Devotion School site has limited driveway space, there is no live student drop-off or pick-up on the site. Many students walk or bicycle to school or parents park nearby on local streets and walk the remaining distance to the school with the students. The school staff provides safety and supervision on the school property during arrival and dismissal times. The town Police Department provides crossing guards in the vicinity of the school.

Functional and Spatial Relationships and Adjacencies

The Edward Devotion School serves the vibrant Coolidge Corner neighborhood and is the largest of Brookline's K to 8 schools, with a population of 838 students. It enjoys an international reputation: historically, it is the public school that President John F. Kennedy attended; academically, it welcomes students from all over the world, and socially, it reflects and respects human diversity.

Functional and spatial relationships and adjacencies are key to the successful design of the new facility. These relationships between classrooms and programs in the school define the programmatic, functional, spatial, and environmental requirements of the educational facility and become the basis for the design at the next phase. Devotion School depends on adjacencies for

communication, collaboration, flexible grouping, and teaming. Providing learning areas both in and outside classrooms for small group work, individual tutorial spaces, and additional instructional break out rooms are critical in a school with a focus on integrated classrooms at grades K-8, requiring specialized instruction and an emphasis on inclusive practices.

Community is a core value among students, staff and parents. Devotion School is a warm and inviting place for children, staff and families. A priority for the students, staff and Devotion community is to bring a "small school" feel to a large elementary design. The PTO and parent volunteers are actively involved in before, during and after school programs. Devotion requires a welcoming main office and community arrival space that accommodates the high morning influx of families who walk or get dropped off by parents at school arrival, as well as the active dismissal procedures. The students, faculty and parent community value and require a space for the entire school to gather, both as a common space to gather and celebrate learning and as an area to spotlight the arts through assemblies and performances. A functional dining facility with a reasonable capacity is a need of the school. After school, we provide space for a K-4 extended day program that operates until 6:00 pm. Approximately 100 students participate in this program daily Monday through Friday. Community gathering space is necessary, as well as smaller spaces for homework support, small group activities and gross motor play. The Devotion After School Enrichment Program (DASEP) conducts a series of clubs after school Mondays through Fridays until 6:00 pm. This program offers students in grades K-6 club options that require use of space to engage in art, drama and sports activities. The Steps to Success program offers an After Hours University, which also requires space for students to receive homework support and tutoring, as well as enrichment club options and gross motor activities. The Devotion School also hosts a variety of intramural athletic programs, including flag football, volleyball, basketball and floor hockey. These teams utilize outdoor field space and the large gym for programming. The new design should include a large gym with space for bleachers to accommodate spectators during athletic events.

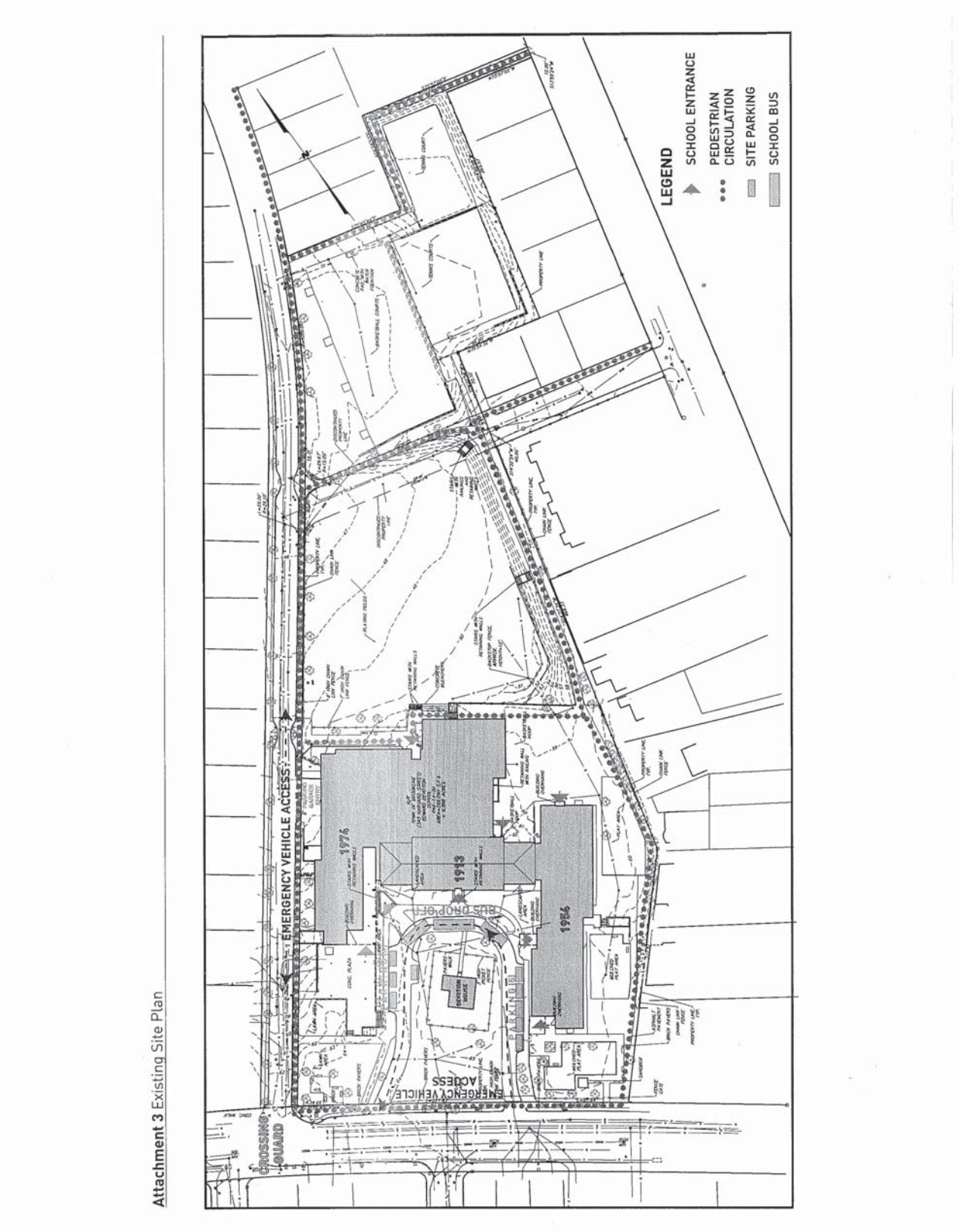
The Devotion School is a relationship-oriented community, that practices and values inclusive partnerships and mutual support in all aspects of the school community. This is the overall spirit of the school that will drive the design of the facility.

Security and Visual Access Requirements

Devotion Elementary School requires a safe main driveway entrance access to the school site with safe secondary access for emergency needs. Devotion Elementary School also requires:

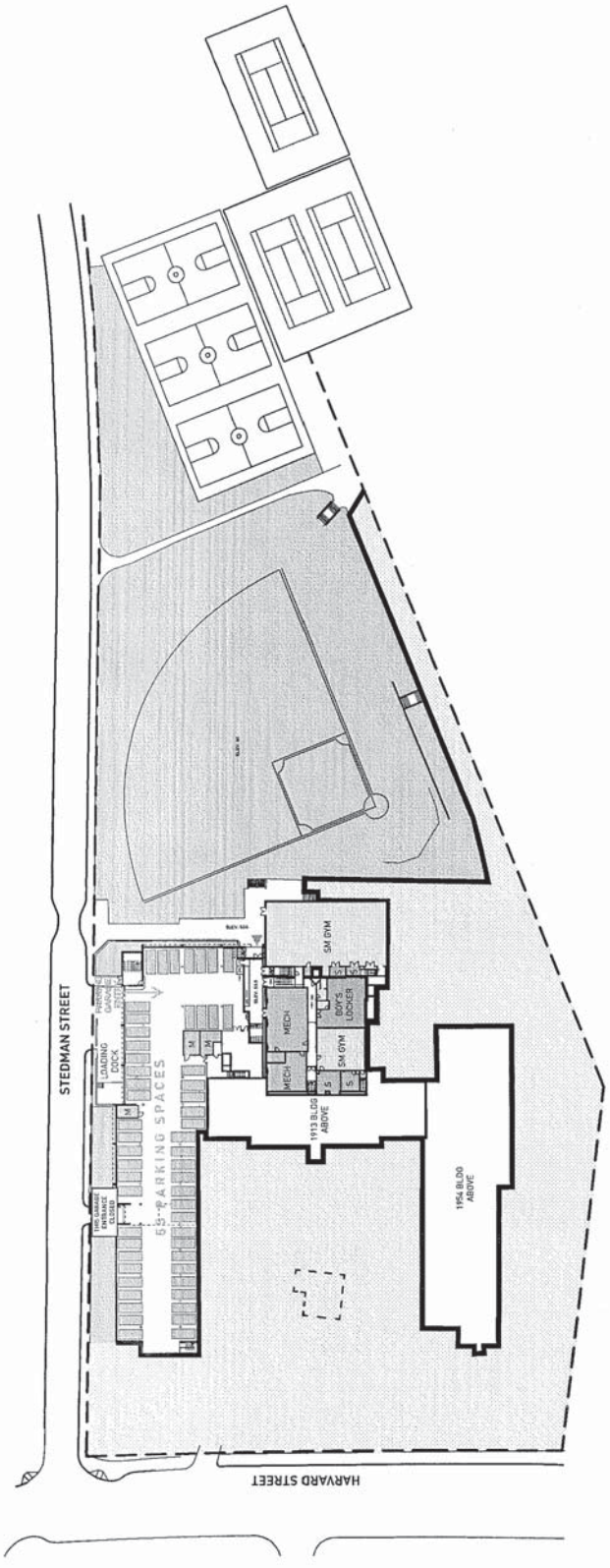
- Access Control utilizing a security access fob device by authorized staff.
- Visual Security of the main entrances utilizing a video monitoring/recording system that will be monitored at the school secretary's desk.
- Safe staff parking
- Safe visitor parking
- Safe pathways for pedestrians and bicyclists coming from varied directions to the school
- Safe bus access systems that do not interfere with drop off and pick up traffic
- Safe recess grounds and play fields that can be properly supervised by staff and protected from vehicle traffic

- Visual access of the driveway, garage and parking lots
- Safe access for kitchen, facility and shipping / receiving separate from school traffic to the main entrance
- Safe and appropriate access to the perimeter of the building and play fields



Attachment 3 Existing Site Plan

Attachment 4 Parking Plans: Existing On Site Parking



Devotion School Permit Parking Zones	
Stedman Street	15
Beal Street	5
Naples Road	10
Fuller Street	10
Coolidge Street	5
Thorndike Street	5
Gibbs Street	5
Clarence Street	5
TOTAL	60

Attachment 4 Parking Plans: Neighborhood Permit Parking

ARTICLE IV
USE REGULATIONS

§4.00 – APPLICABILITY OF REGULATIONS

Except as provided by law or in this By-law, in each district no building, structure, or land shall be used or occupied except for the purposes permitted in the district in the section of this Article applicable thereto.

§4.01 – PERMITTED USES

1. A use listed in **§4.07** is permitted as of right in any district under which it is denoted by the word "Yes", subject to such requirements as may be specified in **§4.07**.

2. A use listed in **§4.07** may be permitted if the Board of Appeals so determines and issues a special permit therefore as provided in **Article IX** in any district under which it is denoted by the letters "SP", subject to such requirements as may be specified in **§4.07**, and such further restrictions as said Board may establish. Any application for change in a special permit use or condition approved by the Board of Appeals shall require either a new special permit or Board of Appeals approval of modification of the prior special permit as provided in **Article IX**.

3. In accordance with the requirements of **§5.09**, any use listed in **§4.07** which is denoted by the word "Yes" shall be considered to be denoted by the letters "SP", if it falls into any of the following categories:

   a. It is on a lot any part of which is located in the G-l.75(CC) District or which fronts on or is within 100 feet of Beacon Street, Boylston Street, Brookline Avenue, Commonwealth Avenue, Harvard Street, and Washington Street.

   b. It is a non-residential use in a non-residential district with more than 10,000 square feet of gross floor area or with 20 or more parking spaces, except municipal facilities in I-1.0 districts when authorized by a two-thirds vote of Town Meeting.

Attachment 5 continued

c. It is a non-residential use in a residential district with more than 5,000 square feet of gross floor area or with 10 or more parking spaces.

§4.02 – USES SUBJECT TO OTHER REGULATIONS

Uses permitted as of right or by special permit shall be subject, in addition to use regulations, to such regulations of height, area, yard, setback, lot size and area, lot width, floor area ratio, provisions for off-street parking and loading, and to such other provisions as are specified in other Articles hereof.

§4.03 – PRE-EXISTING SPECIAL PERMIT USES

Any lawful use existing on the effective date of this By-law or subsequent amendments which is classified as requiring a special permit in the district in which the land occupied by the use is located shall be deemed to have been granted a special permit subject to maintaining the character and extent of operations and structures existing on that date. Any application for change in use or structure shall require a special permit from the Board of Appeals as provided in **Article IX**.

§4.04 – LIMITATION OF AREA OF ACCESSORY USES

1. No accessory use or uses within a building shall occupy more than a combined total of 25 per cent of the floor area of the principal building, other than required off-street parking.

2. No accessory use or uses not within a building shall occupy more than a combined total of 25 per cent of the unbuilt lot area, or of the required rear yard area, other than required off-street parking.

3. No accessory use shall occupy part of the required front or side yards, except off-street parking as required in M-1.0, M-1.5, M-2.0, and M-2.5 Districts and in business and industrial districts, and as provided in **§§ 5.44, 5.53, 5.63,** and **5.72.**

§4.05 – RESTRICTIONS ON ACCESSORY USES IN RESIDENCE DISTRICTS

1. In any residence district, no accessory use shall be permitted which involves or requires any of the following:

   a. The employment of any persons who is not resident in the dwelling unit, other than a domestic employee, except:

      1) Attendant or attendants to an accessory garage or parking space;

      2) Employee or employees of Uses 13, 14, 19, 20, 52, 63, 64, 66, 68 as permitted under **§4.07** and Uses 58, 58A or 59 as permitted hereunder and in **§4.07**.

   b. The maintenance of a stock in trade, except for Uses 63, 64, and 68 in **§4.07**, or the use of show windows or displays or advertising visible outside the premises to attract customers or clients, other than professional announcement signs, except as provided for Use 64 in **§4.07**.

Under no circumstances shall such a facility cause a significant negative impact on the surrounding neighborhood in terms of traffic, parking, noise, or other factors relating to quality of life. The Building Commissioner shall condition a Certificate of Occupancy for Uses 60A and 60B, and the Board of Appeals shall condition a Special Permit for Use 60B, on compliance with this requirement. This requirement shall also apply to any facility under Uses 60A and 60B that predates the adoption of this zoning language.

Any Special Permit issued for Use 60B shall automatically expire if the operator's state license at the permitted location for a Large Family Child Care Home is terminated.

§4.06 – TEMPORARY ACCESSORY USES

1. The Building Commissioner may grant a permit for a nonconforming temporary building or use incidental to a building development and where reasonably required for such development and for such temporary structures as tents and marquees which will be in place for not more than a few days in connection with special occasions or events.

2. Such permit may be issued for an initial period of not more than two years, and in the case of a building only upon application accompanied by a bond and a bill of sale to the Town to be effective in case the building is not removed prior to the expiration date of the permit.

3. Such a permit may be renewed by the Building Commissioner for successive periods of not more than two years each.

§4.07 – TABLE OF USE REGULATIONS

Attachment 5 continued

Principal Uses	Residence					Business			Ind.
	S	SC	T	F	M	L	G	O	I
6A. Life care facilities, incorporating independent apartment living units for elders combined with supportive medical, nursing or other shared facilities. *Allowed by special permit only on lots greater than 5 acres.	SP*	SP*	SP*	SP*	SP	Yes	Yes	No	No
7. Lodging House, licensed and unlicensed.	No	No	No	SP	SP	SP	SP	No	No
8. Hotel *Permitted by special permit in M-2.5 Districts and in business districts only if the hotel building is not within 50 feet from a lot or lots in an S, SC, or T District.	No	No	No	No	No*	No	SP*	No	No
8A. Limited Service Hotel *Permitted by Special permit in M-2.5 and in the Cleveland Circle Hotel Overlay District. **Permitted as of right only in the G-1.75 (LSH) Limited Service Hotel District, provided that the applicant for a building permit certifies to the Building Commissioner that (a) at least 20% of all on-site parking spaces will be available for overnight public parking at prevailing overnight public rates, (b) that all on-site parking spaces will be available between 8:00 a.m. and 6:00 p.m. at prevailing public meter rates and (c) at least 25% of the lot area is to be used for open space open to the public. Otherwise such use shall be by special permit in business districts only if the hotel building is not within 50 feet from a lot or lots in an S, SC or T District. Permitted by Special Permit in G-(DP) District in accordance with **Section 5.06.4.g**.	No	No	No	No	No*	No*	Yes**	No	No
INSTITUTIONAL, RECREATIONAL & EDUCATIONAL USES									
9. Places of worship and other religious uses exempt from use regulation by **The Zoning Act, M.G.L. Ch. 40A, §3**.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10. Educational uses exempt from use regulation by **The Zoning Act, Ch. 40A, §3**.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11. Library or museum, open to the public or connected with a permitted educational use, and not conducted as a private gainful business.	SP	SP	SP	SP	Yes	Yes	Yes	Yes	Yes
12. Recreational facility owned or operated by an agency of the Town or other government.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

§5.00 – DISTRICT REGULATIONS

The regulations for each district pertaining to minimum lot size, minimum lot area per dwelling unit, minimum lot width, maximum height of buildings, maximum floor area ratio, minimum usable open space per dwelling unit, minimum front yard depth, minimum side yard width, minimum rear yard depth, minimum setback distance of top of wall from any lot line, shall be as specified in this section, **Table 5.01, Table of Dimensional Requirements**, subject to the further provisions of Article V.

GENERAL REGULATIONS

§5.01 – LOT AREA OR YARDS REQUIRED

The lot or yard areas required for any new building or use shall not include any part of a lot that is required by any other building or use to comply with any requirements of this By-law. No required lot or yard area shall include any property the ownership of which has been transferred subsequent to the effective date of this By-law if such property was a part of the area required for compliance with the dimensional requirements applicable to the lot from which such transfer was made.

§5.02 – SPACING OF NON-RESIDENTIAL BUILDINGS ON THE SAME LOT

Where two or more main buildings for other than residential uses are proposed to be built upon property in one ownership, front, side, and rear yards are required only at lot lines abutting other property.

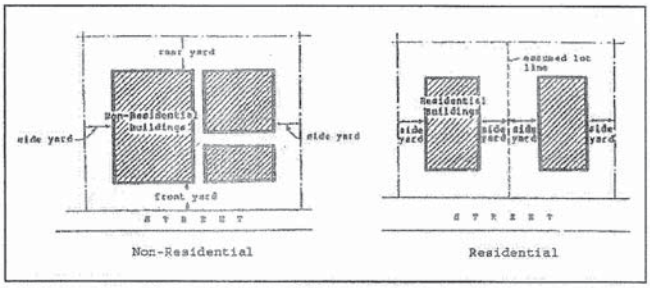


Figure 5.01 - Buildings on the Same Lot

§5.03 – SPACING OF RESIDENTIAL BUILDINGS ON THE SAME LOT

Where two or more main buildings to be used as family dwellings are proposed to be built upon property in one ownership or where one or more such buildings are proposed upon property where there are one or more existing residential buildings, except as provided in **§5.04**, required front,

Attachment 5 continued

Table 5.01 – Table of Dimensional Requirements		LOT SIZE MINIMUM (sq. ft.)	FLOOR AREA RATIO MAXIMUM	LOT WIDTH MINIMUM (feet)	HEIGHT [9] MAXIMUM (feet)	MINIMUM YARD [3, 10] (feet)			OPEN SPACE (% of gross floor area)	
DISTRICT	USE					Front [1,6]	Side [2]	Rear	Landsc.	Usable
T-6	1-family detached dwelling	5,000	0.75	45	35	15	7.5	30	10%	30%
	2-family dwelling	6,000	0.75	55	35	15	10	30	10%	30%
	1-family attached dwelling	3,000	0.75	25	35	15	none [2]	30	10%	30%
	Any other structure or principle use	6,000	0.75	55	35	25	20	40	30%	none
T-5	1-family detached dwelling	4,000	1.0	40	35	15	7.5	30	10%	30%
	2-family dwelling	5,000	1.0	45	35	15	10	30	10%	30%
	1-family attached dwelling	2,500	1.0	20	35	15	none [2]	30	10%	30%
	Any other structure or principle use	5,000	1.0	50	35	25	20	40	30%	none
F-1.0	1-family dwelling	4,000	1.0	40	35	15	7.5	30	10%	30%
	2-family dwelling	5,000	1.0	45	35	15	10	30	10%	30%
	3-family dwelling	5,000	1.0	45	40	15	10	30	10%	30%
	Any other structure or principal use	5,000	1.0	60	40	15	10+L/10	30	10%	30%
(Additional regulations are contained in the text of Article 5.00)		Required Lot Frontage: 25' in S and SC districts and 20' in all other districts								

Table 5.01 - Table Of Dimensional Requirements							PBI [11]		MINIMUM YARD [3] (feet)			OPEN SPACE (% of gross floor area)	
DISTRICT	USE	LOT SIZE MINIMUM (sq. ft.)	FLOOR AREA RATIO MAXIMUM	PBI [11] NB ONLY	LOT WIDTH MINIMUM (feet)	HEIGHT [9] MAXIMUM	B	NB	Front [1,6]	Side [2]	Rear	Landsc.	Usable [13]
M-0.5	1-family detached dwelling	4,000	0.5	NA	40	35	NA	NA	15	7.5	30	10%	30%
	2-family detached dwelling	5,000	0.5	NA	45	35	NA	NA	15	10	30	10%	30%
	other dwelling structure		0.5	NA	none	35	NA	NA	15	10+L/10	30	10%	30%
	first dwelling unit	3,000											
	each additional dwelling unit	2,000											
	Any other structure or principle use	5,000	0.5	NA	none	35	NA	NA	25	20	40	30%	none
M-1.0 & M-1.0 (CAM)	1-family detached dwelling	4,000	1.0	NA	40	35	NA	NA	15	7.5	30	10%	20%
	2-family detached dwelling	5,000	1.0	NA	45	35	NA	NA	15	10	30	10%	20%
	1-family attached dwelling	2,250	1.3	NA	20	35	NA	NA	15	none	30	10%	20%
	other dwelling structure		1.0	NA	none	40	NA	NA	15	10+L/10	30	10%	20%
	first dwelling unit	3,000											
	each additional dwelling unit	1,000											
	Any other structure or principal use	5,000	1.0	NA	none	40	NA	NA	25	20+L/10	40	20%	none
(Additional regulations are contained in the text of Article 5.00)		Required Lot Frontage: 25' in S and SC districts and 20' in all other districts											

4. Taxicab stand and taxi pickup and drop-off shall be provided in an adjacent area on both the Brookline and the Boston segments of the site.

b) Final traffic design and mitigation shall be required and include the potential impact of the redevelopment of any directly abutting parcels, regardless of municipal boundaries. Specifically, the traffic design and mitigation shall allow for no more than a total of 110,000 square feet of Limited Service Hotel use; 48,000 square feet of office or medical office; and 18,000 square feet of restaurant or retail use.

c) Pedestrian improvements shall include:

1. Improvements to two pedestrian crossings across Chestnut Hill Avenue, including at Cleveland Circle as well as the crossing aligned with vehicular turn-around at the MBTA station south of the MBTA right-of-way. A third pedestrian crossing shall be provided where the signal for the Chestnut Hill Avenue entrance will be located, near the Boston/Brookline boundary, if approved by the Brookline Director of Transportation and Engineering as well as Boston Transportation Department.

2. Sidewalk improvements on the western side of Chestnut Hill Avenue shall include a minimum 10' wide sidewalk from the Brookline Boundary to the MBTA bridge and a replacement of sidewalk from the MBTA bridge to Clinton Road.

7) Noise. A required condition for any Special Permit under this Overlay shall be an enforceable agreement and/or condition to the Special Permit that requires the property owner to comply with the requirements any Noise By-law or ordinance of both Brookline and Boston, without regard to municipal boundaries.

§5.07 – DWELLINGS IN BUSINESS AND INDUSTRIAL DISTRICTS

1. Dwellings in business and industrial districts shall conform to the minimum usable open space and minimum side and rear yard requirements of the M district with the same maximum permitted floor area ratio as the business or industrial district in which the dwelling is located or of the M-2.0 district for dwellings in G-1.75 districts. However, if the Board of Appeals finds that a waiver of such dimensional requirements would promote reasonable development of the site compatible with adjacent buildings and the surrounding area, the Board may waive such requirements by special permit.

§5.08 – EXCEPTIONS TO DIMENSIONAL REQUIREMENTS FOR USES 9 & 10

1. The floor area ratio requirements as applied to Uses 9 and 10 listed in **§4.07** shall be less restrictive than as specified in **Table 5.01** in the following respects:

a. Where several lots in the same ownership and also in the same use district are separated from each other only by an adjacent street or intersecting adjacent streets, the area of all such lots may be aggregated in calculating floor area ratio.

b. The floor area ratio shall be increased by one per cent for each 2,000 square feet of lot area exceeding the lot size minimum for the district under consideration, up to a maximum of 65 percent.

Attachment 5 continued

2. Under a special permit the Board of Appeals may permit further modifications in the dimensional requirements specified in **Article V** as applied to Uses 9 and 10 to the extent necessary to allow reasonable development of such a use in general harmony with other uses permitted and as regulated in the vicinity.

§5.09 – DESIGN REVIEW

1. Purpose

The purpose of this section is to provide individual detailed review of certain uses and structures which have a substantial impact upon the character of the Town and upon traffic, utilities and property values therein, thereby affecting the public health, safety and general welfare thereof. The design review process is intended to promote the specific purposes listed in **§1.0, paragraph 1**. of this By-law.

2. Scope

In the following categories all new structures and outdoor uses, exterior alterations, exterior additions, and exterior changes, including exterior demolitions, which require a building permit from the building department under the Building Code, shall require a special permit subject to the community and environmental impact and design review procedures and standards hereinafter specified. Exterior alterations, exterior additions and exterior changes, including fences, walls, and driveways, to residential uses permitted by right in S, SC, T, and F districts; signs as regulated in **§§ 7.02**, and **7.03**; and regulated facade alterations as defined and regulated in **§7.06** shall be exempt from the requirements of this section.

a. Any structure or outdoor use on a lot any part of which is located in the G-1.75(CC) or L-0.5 (CL) Districts or which fronts on or is within 100 feet of: Beacon Street Commonwealth Avenue, Boylston Street, Harvard Street, Brookline Avenue, or Washington Street.

b. attached dwellings in groups of three or more

c. designed groups of single-family dwellings as per **§5.11, paragraph 2.**

d. multiple dwellings with four or more units on the premises, whether contained in one or more structures

e. lodging houses and hotels

f. gasoline service stations

g. outdoor automobile sales and storage for sales

h. non-residential uses in a non-residential district with more than 10,000 square feet of gross floor area or with 20 or more parking spaces, except municipal facilities in I-1.0 districts when authorized by a two-thirds vote of Town Meeting

on the lot in question shall be permitted no further from such prior adjoining conditions than the width of the lot or 100 feet, whichever is less;

§9.10 – EVENING MEETINGS

No public hearing shall be held on an application for a variance, a special permit, or an extension of time pursuant to **§9.07** earlier than 7:00 p.m.

§9.11 – ADMINISTRATIVE SITE PLAN REVIEW REQUIREMENTS FOR EDUCATIONAL USES IN RESIDENCE DISTRICTS

1. A project plan application for an educational use in a residence district shall be filed for any proposed development, which is an outdoor structure, exterior alteration, or addition, greater than 10,000 square feet, or any project which the Planning Director and Building Commissioner determine shall have major impacts on the surrounding neighborhood. The application shall be filed with the Planning Director at least forty-five (45) days prior to the application for a building permit. Such application shall consist of ten (10) sets of a written explanation of the project and plan(s) prepared, as appropriate, by an architect, landscape architect, professional engineer or land surveyor. Site plan(s) shall be drawn at a minimum scale of 1" equal 20'. In an initial meeting with the Planning Director, it shall be determined which of the following should reasonably be required for submission given the scope of the project.

   a. Evidence of the applicant's nonprofit educational status, except if a child care facility;

   b. Boundaries, dimensions and area of the subject lot(s);

   c. Use of the existing building or structures on the subject lot(s);

   d. Existing and proposed topography of the subject lot(s) at two (2) foot intervals;

   e. Existing and proposed easements and existing and proposed wetlands and watercourses, if any:

   f. All existing and proposed buildings, structures, parking lots, maneuvering aisles, driveways, driveway openings, pedestrian walks, loading areas, pick-up and drop-off areas, and natural areas and landscaping on the subject lot(s) with the dimensions thereof;

   g. Vehicular and pedestrian circulation both within the site and in relation to adjacent streets, properties and proposed project, and a traffic study, in accordance with **§5.09**, to evaluate safety impacts if the Planning Director determines in his/her reasonable judgment that a significant traffic impact will result;

   h. All facilities for sewage, refuse and other waste disposal, for surface water, drainage, utilities, and proposed screening, associated with the proposed development;

   i. All landscaping, including fencing, walls, planting areas, signs, exterior storage, and lighting associated with the proposed development;

Attachment 5 continued

j. Facade elevations, floor plans and roof top utilities for any proposed new construction and/or alteration to the existing building or structure.

2. At the time the applicant files an application, the Planning Director shall give written notice of said filing to Town Meeting members in the precinct in which the proposed project is located and to immediate abutters of the property. The applicant shall give all reasonable assistance to the Planning Director in his/her review of the site plan, including, but not limited to, attendance of at least one meeting called by the Planning Director.

3. The Planning Director, upon receipt of the application, shall forthwith transmit a copy to the Building Department, Public Works, Transportation Division, Preservation and Conservation Commissions, and Fire and Police Chiefs. These departments shall respond with their comments and recommendations to the Planning Director within twenty-one (21) day period thereof. Upon the receipt of any responses by the above-mentioned departments, and/or, upon the expiration of said twenty-one (21) day period, the Planning Director shall review said submittal for completeness and the proposed project for compliance with the dimensional and parking requirements in the Zoning By-law. Further, the Director may consider the application in light of the criteria set forth below:

   a. Convenience and safety of vehicular and pedestrian movement within the site and in relation to adjacent streets, properties or improvements, including regulation of the number, design and location of access driveways and the location and design of handicapped parking. The sharing of access driveways by adjoining sites is to be encouraged wherever feasible;

   b. Adequacy of the methods for disposal of sewage, refuse and other wastes and of the methods of regulating surface water drainage;

   c. Provision for off-street loading and unloading of vehicles incidental to the servicing of the buildings and related uses on the site;

   d. Screening of parking areas and structure(s) on the site from adjoining premises or from the street by walls, fences, plantings or other means.

   e. Wherever feasible, major topographical changes and tree and soil removal shall be minimized, and any topographic changes shall be in keeping with the appearance of the neighboring developed areas;

   f. Location of utility service lines underground wherever possible. Consideration of the site design, including the location and configuration of structures and the relationship of the site's structures to nearby structures in terms of major design elements including scale, materials, color, roof and cornice lines;

   g. Avoidance of the removal of disruption of historical resources on or off-site. Historical resources include designated historical structures or sites, historical architectural elements or archaeological sites.

4. After said review the Planning Director may make recommendations to the applicant for changes

in the site plan, which changes shall be consistent with accepted and responsible planning principles. Upon completion of the review process, the Director shall indicate, in writing, to the Building Commissioner that there has been compliance by the applicant with the procedural requirements as stated above and whether in his/her opinion, the applicant has complied with the Zoning By-law. This statement shall be made within forty-five (45) days after receipt of the site plan application. If no such statement is received by the Building Commissioner within the above-stated time period, he/she shall accept an application for a building permit without receipt of such statement. If the applicant does not apply for a building permit within one (1) year from the date of the original site plan application to the Planning Director, the applicant must refile under the procedures set forth above.

Attachment 6 Revised Proposed Space Summary

EDWARD DEVOTION SCHOOL	Existing Conditions			PROPOSED Total			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	Comments
CORE ACADEMIC SPACES		**57**	**41,585**		**78**	**53,990**		**51**	**47,840**	
(List classrooms of different sizes separately)										
Pre-Kindergarten w/ toilet				1,200	2	2,400	1,200		-	1,100 SF min - 1,300 SF max
Kindergarten w/ toilet	1,115	5	5,575	1,200	5	6,000	1,200	5	6,000	1,100 SF min - 1,300 SF max
General Classrooms - Grades 1-5	660	1	660	900	25	22,500	950	24	22,800	900 SF min - 1,000 SF max
" "	765	8	6,120							
" "	880	7	6,160							
" "	1,115	7	7,805							
General Classrooms - Grades 6-8	650	1	650	900	15	13,500	950	16	15,200	900 SF min - 1,000 SF max
" "	775	3	2,325							
" "	830	6	4,980							
" "	900	2	1,800							
Science Classroom / Lab	1,050	1	1,050	1,200	3	3,600	1,200	3	3,600	1 period / day / student
" "	1,290	1	1,290							
Prep room	110	1	110	80	3	240	80	3	240	
"	210	1	210							
World Language Classrooms	650	1	650	900	2	1,800				
Small Group Rooms - Grades K-5										
Small Group Rooms - Grades K-2				150	3	450				
Small Group Rooms - Grades 1-5				150	3	450				
Small Group Rooms - Grades 6-8				150	3	450				
Small Group Room / Literacy Specialists										
Literacy Specialist	100	1	100							
Literacy Specialist 6-8	250	1	250	150	1	150				
Literacy Specialist 3-5	360	1	360	150	2	300				
Literacy Specialist K-2	160	1	160	150	2	300				
Small Group/ Math Specialists										
Math Specialist 6-8	100	1	100	150	2	300				
Math Specialist 3-5	100	1	100	150	1	150				
Math Specialist K-2	100	1	100	150	1	150				
Enrichment Challenge Support	150	1	150	250	1	250				
ELL	180	1	180	250	4	1,000				
"	200	1	200							
ELL Hebrew	200	1	200							
"	300	1	300							

EDWARD DEVOTION SCHOOL	Existing Conditions			PROPOSED Total			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	Comments
SPECIAL EDUCATION			5,677			9,336			12,080	
(List rooms of different sizes separately)										
Self-Contained SPED - Grades 6-8							950	3	2,850	8% of pop. in self-contained SPED
Therapeutic Learning Center 7-8	550	1	550							
Therapeutic Learning Center 6-8				1,000	1	1,000				
Comprehensive Learning Center 6-8	500	1	500	500	1	500				
Self-Contained SPED - Grades K-5							950	5	4,750	8% of pop. in self-contained SPED
Therapeutic Learning Center 4-6	590	1	590							
Therapeutic Learning Center 3-5				1,000	1	1,000				
Comprehensive Learning Center 4-5	500	1	500							
Comprehensive Learning Center 3-5				500	1	500				
Therapeutic Learning Center K-3	780	1	780							
Therapeutic Learning Center K-2				1,000	1	1,000				
Comprehensive Learning Center K-3	380	1	380							
Comprehensive Learning Center K-2				500	1	500				
Self-Contained SPED - Grades K-5 toilet							60	5	300	
Self-Contained SPED - Grades 3-5 toilet				60	2	120				
Self-Contained SPED - Grades K-2 toilet				60	2	120				
Self-Contained SPED - Grades 6-8 toilet				60	2	120	60	3	180	
Resource Room - Grades 6-8							500	2	1,000	
Learning Center 7-8	400	1	400	500	1	500				
Learning Center 5-6	440	1	440	500	1	500				
Resource Room - Grades 1-5							500	3	1,500	
Learning Center 3-4	200	1	200	500	1	500				
Learning Center K-2	290	1	290	500	1	500				
Small Group Room / Reading							500	3	1,500	1/2 size Gen. Clrm.
Speech	200	1	200	150	3	450				
"	117	1	117							
OT	410	1	410	500	1	500				
PT				500	1	500				
Special Ed Team Facilitator	180	1	180	150	2	300				
Special Ed Team Clerk				125	1	125				
BCBA				150	1	150				
TLC Social Worker				150	1	150				
Psychologist	140	1	140	150	2	300				

Attachment 6 Revised Proposed Space Summary continued

EDWARD DEVOTION SCHOOL	Existing Conditions			PROPOSED			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
				Total						
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	Comments
ART & MUSIC			**9,600**			**13,550**			**8,050**	
Art Classroom - Grades 1-5	1,050	1	1,050	1,000	2	2,000	1,000	2	2,000	assumed schedule 2 times / week / student
Art Classroom - Grades 6-8	1,010	1	1,010	1,200	1	1,200	1,200	1	1,200	assumed use - 50% population 2 times / week
Art Workroom w/ Storage & kiln	350	1	350	150	3	450	150	3	450	
Band / Chorus - 100 seats				1,500	1	1,500	1,500	1	1,500	
Music Classroom / Large Group - 25-50 seats	1,100	1	1,100	1,200	2	2,400	1,200	2	2,400	assumed schedule 2 times / week / student
Music Practice / Ensemble - Grades 1-5				75	4	300	75	4	300	
Music Practice / Ensemble - Grades 6-8				200	1	200	200	1	200	
Music Practice - Drum Room	300	1	300							
Music Storage	290	1	290							
Multipurpose room with Stage	5,500	1	5,500	5,500	1	5,500				
VOCATIONS & TECHNOLOGY			**660**			**3,200**			**3,200**	
Tech Clrm. - Instructional Technology	660	1	660	1,200	1	1,200	1,200	1	1,200	Assumed use - 25% Population - 5 times/week
Tech Clrm. - Instructional Technology				2,000	1	2,000	2,000	1	2,000	Assumed use - 25% Population - 5 times/week
HEALTH & PHYSICAL EDUCATION			**8,720**			**10,550**			**8,334**	
Gymnasium (2 stations)	4,340	1	4,340	6,000	1	6,000	6,000	1	6,000	6000 SF Min. Size
Gym Storeroom	250	2	500	150	1	150	150	1	150	
"	80	3	240							
Health Instructor's Office w/ Shower & Toilet	70	2	140	200	2	400	184	1	184	
Locker Rooms - Boys / Girls w/ Toilets	1,140	1	1,140	500	2	1,000	1,000	2	2,000	
" "	1,240	1	1,240							
Small Gymnasium (1 station)	1,120	1	1,120	3,000	1	3,000				
MEDIA CENTER			**4,720**			**5,547**			**5,547**	
Media Center/Reading Room	4,720	1	4,720	5,547	1	5,547	5,547	1	5,547	
DINING & FOOD SERVICE			**7,280**			**8,249**			**12,374**	
Cafeteria / Dining	4,740	1	4,740				7,575	1	7,575	2 seatings - 15SF per seat
				5,050	1	5,050				3 seatings - 15SF per seat
Kitchen	1,050	1	1,050	2,310	1	2,310	2,310	1	2,310	1600 SF for first 300 + 1 SF/student Add'l
Chair / Table / Equipment Storage	210	1	210	536	1	536	536	1	536	200 SF for first 300 + .333 SF/student Add'l
Staff Lunch Room	810	1	810	353	1	353	353	1	353	200 SF for first 400 + .25 SF/student Add'l
Stage							1,600	1	1,600	
Servery	470	1	470							

EDWARD DEVOTION SCHOOL	Existing Conditions			PROPOSED Total			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	Comments
MEDICAL			430			810			810	
Medical Suite Toilet	0	0	-	60	1	60	60	1	60	
Nurses' Office / Waiting Room	200	1	200	250	1	250	250	1	250	
Examination Room/ Resting	110	1	110	100	5	500	100	5	500	
" "	120	1	120							
ADMINISTRATION & GUIDANCE			2,450			4,525			3,786	
Principal's Office w/ Conference Area	270	1	270	375	1	375	375	1	375	
Principal's Secretary / Waiting	250	1	250	125	1	125	125	1	125	
Vice Principal's Office -VP1	200	1	200	130	1	130	130	1	130	
Vice Principal's Office - VP2	180	1	180	130	1	130	130	0	-	
Vice-Principal's Office - VP3				130	1	130				
General Office / Waiting Room / Toilet	330	1	330	638	1	638	638	1	638	
Conference room				284	1	284	284	1	284	
Teachers' Mail and Time Room				100	1	100	100	1	100	
Duplicating Room				167	1	167	167	1	167	
Records Room				141	1	141	141	1	141	
Supervisory / Spare Office				130	1	130	130	1	130	
General Waiting Room				100	1	100	100	1	100	
Guidance Office	100	2	200	150	6	900	150	6	900	
Guidance Storeroom				40	1	40	40	1	40	
Teachers' Work Room	720	1	720	655	1	655	655	1	655	
World Language Office	100	1	100	200	1	200				
METCO Office	100	1	100	150	1	150				
Steps to Success Office	100	1	100	130	1	130				
CUSTODIAL & MAINTENANCE			850			2,567			2,567	
Custodian's Office	150	1	150	150	1	150	150	1	150	
Custodian's Workshop	300	1	300	332	1	332	332	1	332	
Custodian's Storage	250	1	250	375	1	375	375	1	375	
Storeroom	150	1	150	674	1	674	674	1	674	
Recycling Room / Trash				400	1	400	400	1	400	
Receiving and General Supply				436	1	436	436	1	436	
Network / Telecom Room				200	1	200	200	1	200	
OTHER			1,720			0			0	
Extended Day Program Classroom	620	2	1,240							
Extended Day Program Storage	320	1	320							
Extended Day Program Office	160	1	160							

Attachment 6 Revised Proposed Space Summary continued

EDWARD DEVOTION SCHOOL	Existing Conditions			PROPOSED Total			MSBA Guidelines (refer to MSBA Educational Program & Space Standard Guidelines)			
ROOM TYPE	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	ROOM NFA[1]	# OF RMS	area totals	Comments
PARKING			20,000			20,000			0	
Parking	20,000	1	20,000	20,000	1	20,000				
Parking Excluded										
Total Building Net Floor Area (NFA)			83,692			112,324			104,588	
Proposed Student Capacity / Enrollment						1,010			1,010	Enter grade enrollments to the right
Total Building Gross Floor Area (GFA)*			141,231			168,485			156,882	
Grossing factor (GFA/NFA)			1.69			1.50			1.50	
Parking Included										
Total Building Net Floor Area (NFA)			103,692			132,324			104,588	
Proposed Student Capacity / Enrollment						1,010			1,010	Enter grade enrollments to the right
Total Building Gross Floor Area (GFA)[2]			162,051			198,485			156,882	
Grossing factor (GFA/NFA)			1.56			1.50			1.50	

1 Individual Room Net Floor Area (NFA) 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.

2 Total Building Gross Floor Area (GFA) 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

Name of Architect Firm: HMFH Architects, Inc.

Name of Principal Architect: Philip S. Lewis

Signature of Principal Archit

Date: April 30, 2014

Appendix J

Education Plan Appendices

Appendices

A. Public Schools of Brookline: Strategic Plan - Vision, Mission, Core Values and Goals

B. K-8 Time Allocations, 2014-2015 and 21st Century Interdisciplinary Themes

C. Engineering Design Process

D. Grade 3 Curriculum Overview

E. Grade 3 Science/Engineering Learning Expectations

F. Essential Learning Expectations

G. Work Habits and Skills

H. Devotion Technology Snapshot

I. TPACK and SAMR

J. Rigor and Relevance Framework and
Rigor/Relevance Framework + SAMR Model + P21.org

Appendix A:

Public Schools of Brookline:

Strategic Plan – Vision, Mission, Core Values and Goals

PUBLIC SCHOOLS OF BROOKLINE
STRATEGIC PLAN

Vision Statement

Ten Year Vision
The Public Schools of Brookline
Dynamic, Collaborative, Equitable
Engaged with the Community
Contributing to the World

Brookline provides an extraordinary education for every child. Each child's unique path to achievement is supported in academically exciting and programmatically rich environments. A dynamic, diverse community of teaching professionals works collaboratively, innovating and inspiring each other and their students. Staff gets to know students intellectually, developmentally and culturally. Students are encouraged to question and challenge ideas and participate as active citizens. Schools use a variety of assessments to get the fullest picture of student learning and growth over time. These data are shared regularly with the community, and they form the basis of how we understand and improve student, teacher and administrator performance. Parents are partners with the schools in supporting their children's education, and schools communicate effectively so that parents are confident of the response to their child's circumstances and needs. The community, well informed and involved in the schools, supports these efforts that continue a tradition of challenging ourselves to do better, efforts that ensure the enduring value of a Brookline education.

Mission

Our mission is to ensure that every student develops the skills and knowledge to pursue a productive and fulfilling life, to participate thoughtfully in a democracy, and succeed in a diverse and evolving global society.

Public Schools of Brookline
Vision, Mission, Core Values and Goals
May 2014

Core Values

High Achievement for All
We inspire our students to develop a passion for learning. We realize the power of holding high expectations for every student, and we understand that intelligence grows with effort and cultivation. We emphasize rigor and relevance, placing great importance on curriculum, instruction, and assessment that challenge students to develop the capacity to synthesize information, acquire knowledge, exercise judgment, and apply their understanding to solve complex, real-world problems. We support students through strong relationships to become invested in their learning, develop the confidence and persistence to grow as learners, and meet their goals for success in and beyond school.

Excellence in Teaching
We understand that passionate, knowledgeable, and skillful educators are the core strength of our schools. Understanding that excellent teaching begins with strong relationships with students, we actively create an environment in which students feel safe to take intellectual risks, are respected for their identity, and are motivated to challenge themselves. Educators share responsibility for all students and provide engaging instruction and assessments that accommodate differences in learning styles, interests, and readiness. We create and sustain a collaborative environment for educators that promotes an atmosphere of intellectual excitement, innovative instruction, and professional growth.

Collaboration
We commit to collaboration in all aspects of education to foster interaction among diverse viewpoints and broaden learning for our students, educators, and community. We emphasize collective problem solving in student learning. We promote professional collaboration by supporting educator teams working together across schools, disciplines, grades, and roles. We engage with parents, guardians, and the Brookline community to establish common goals and share the responsibility for educating our students. We seek and nurture partnerships with local, regional, and national organizations that add value to our collective enterprise.

Respect for Human Differences
We know that a diverse, inclusive atmosphere strengthens us as individuals, as a community, and as learners. We honor Brookline's diversity and value the varied perspectives and experiences that enrich our schools. We foster a safe environment for expressing and exploring human differences and commonalities, in an environment in which caring and authentic understanding promote a deep sense of belonging and respect for all.

Educational Equity
We identify, understand, and eliminate barriers to educational achievement in our schools. Educators in every school provide their students with the individual support needed to reach and exceed Brookline's high standards. While allowing for the expression of diverse perspectives, we establish policies and practices that are fair and just for all our schools and provide educational opportunities to ensure that every student can meet our standards for achievement, participation, and growth, regardless of race, ethnicity, religion, gender and gender identity, sexual orientation, age, language, national origin, disability/ability, socio-economic status, or other human differences.

Goals

Goal 1: Every Student Achieving
Ensure that every student meets or exceeds Brookline's high standards and eliminate persistent gaps in student achievement by establishing educational equity across all classrooms, schools, and programs.

Goal 2: Every Student Invested in Learning
Increase every student's ownership of his/her learning and achievement by using rigor, relevance, and relationships to foster a spirit of inquiry and the joy of learning.

Goal 3: Every Student Prepared for Change and Challenge
Instill in every student the habits of mind and life strategies critical for success in meeting the intellectual, civic, and social demands of life in a diverse, ever-changing, global environment.

Goal 4: Every Educator Growing Professionally
Foster dynamic professional learning communities that inspire inquiry, reflection, collaboration, and innovation, and use data to improve teaching, advance student learning, and refine the programs and practices of the Public Schools of Brookline.

Appendix B:

K-8 Time Allocations, Expectations and Guidelines, 2014-2015

and

21st Century Interdisciplinary Themes

THE PUBLIC SCHOOLS OF BROOKLINE
BROOKLINE, MASSACHUSETTS 02445

OFFICE OF TEACHING AND LEARNING
PHONE: 617-730-2432

WILLIAM H. LUPINI, Ed.D.
SUPERINTENDENT OF SCHOOLS

JENNIFER FISCHER-MUELLER, Ed.D.
DEPUTY SUPERINTENDENT FOR
TEACHING AND LEARNING

2014-2015

TIME ALLOCATIONS - EXPECTATIONS AND GUIDELINES

The time allocations that are described in this document provide a guide to the total minutes per day and per week that should be used to develop daily and weekly educational plans. The Time Allocations guide is divided by grade for easier reference.

It is expected that in grades K – 5, English Language Arts and Mathematics instruction occur every day (ELA 100 min., Math 60 min.), including days with interruptions in the schedule (for example, assemblies or Early Release Days).

Teachers' *daily classroom schedules* will not necessarily reflect the Time Allocations exactly as described because of the change in the length of the school day to create Collaborative Time for educators on Friday afternoons. In order to meet state requirements, and provide the necessary framework for teacher planning that maximizes learning in every subject area, it is most important to pay attention to the *minutes per week* for each of the subject areas.

Using the Guidelines

1 – Interdisciplinary Time

All too often, in a variety of circumstances, we feel there just isn't enough time for teaching and learning. It is a sentiment teachers relate to very strongly, especially as it seems more and more is expected in the classroom. We need to use the resource of time creatively and effectively. One strategy to enhance learning and maximize the use of time is through the integration of multiple subjects into lessons, projects, and/or units of study. While interdisciplinary strategies are not new, at this time their value is heightened.

The purpose of this message is to highlight the opportunity for interdisciplinary curriculum and planning for instruction. Here is an example:

In Grades K-5, the Time Allocations guidelines list Science instruction as 40 minutes/day and English Language Arts as 100 minutes/day. When you are teaching students about spiders and insects while teaching them strategies for reading nonfiction you can consider some time as "double counted." A 40-minute lesson that integrates the skills of reading nonfiction and the content of spiders and insects can fulfill 40 of ELA's 100 minutes and some Science time. However, reading nonfiction books about spiders and insects does not fulfill the entire Science time allocation requirement of 40 minutes. During Science instruction, students should investigate via inquiry-based hands-on experiences, record their questions and observations in their science notebooks, and talk about science concepts. Then, in the ELA block, their Science experiences can be enhanced by reading nonfiction books (after they have had a chance to explore and attempt to answer their questions on their own) and working on writing tasks that build upon and deepen their understanding of the Science observations and experiences. The Time Allocations guidelines are not a "plug and chug" formula. Teaching and learning is not a minute-by-minute documentable event, but planning daily and weekly instruction needs to begin with an understanding of how to maximize each precious minute of the school day as described in this document.

Interdisciplinary lessons consider the Learning Expectations of both disciplines. Throughout the system, teachers have developed a number of very effective interdisciplinary lessons and units. Your colleagues and Curriculum Coordinators are great resources – please call on them to help develop an integrated approach to meeting the Learning Expectations, and create manageable daily/weekly schedules that support all learners across the disciplines.

2 – Other Planned Instructional Activities

Massachusetts's law requires a minimum number of minutes spent on time and learning for every student, by grade span. *The Time Allocations indicate the minimum number of instructional hours needed in each discipline in order for students to have the required, and Brookline expected, time and learning.*

There is time in each day for other planned instructional activities. In order for these activities to qualify as minutes spent on "time and learning," the activities must be planned for and meet specific learning goals. A teacher monitoring a study hall for students does not constitute "other instructional activities." Instructional activities that do fall under this category include time spent extending and enriching instruction through collaboration with Librarians and Educational Technology Specialists. It may include instruction that is part of social competency programs that align with the Health Learning Expectations. Many of the activities that teachers, specialists and administrators plan in our schools do meet specific learning goals that enrich students' learning experiences.

Time is a precious resource in school. We must use it wisely. These time allocation expectations and guidelines can help you do that.

KINDERGARTEN

Elementary School Day:
Monday – Thursday, 8:00 AM – 2:30 PM; Friday 8:00 AM – 1:40 PM
1900 minutes/week

The Commonwealth of Massachusetts requires that all elementary students receive a minimum of 900 hours/year of instructional time. To meet the 900 hours, students must be engaged in planned instructional activity for at least 300 minutes each day. All Brookline Kindergarten classrooms should exceed this minimum requirement, and meet for 318 instructional minutes each day.

It is expected that in grades K – 6, English Language Arts and Mathematics will be taught every day (ELA 100 min., Math 60 min.), including days with interruptions in the schedule (for example, assemblies or Early Release Days).

Instructional Area	Minutes per day	Days per week	Minutes per week
Art	40	1	40
English Language Arts	100	5	500
Mathematics	60	5	300
Music	30	1	70
	40	1	
Physical Education	40	2	80
Social Studies	40	5	200
Science	40	5	200
World Language	20	3	60
Other Planned Instructional Activities	Varies	5	140
Sub-total			**1590**

Non-Instructional Activity (snack, lunch, recess, transitions, etc.)	62	5	310

Total			**1900**

GRADE 1

Elementary School Day:
Monday – Thursday, 8:00 AM – 2:30 PM; Friday 8:00 AM – 1:40 PM
1900 minutes/week

The Commonwealth of Massachusetts requires that elementary students receive a minimum of 900 hours/year of instructional time. To meet the 900 hours, students must be engaged in planned instructional activity for at least 300 minutes each day. All Brookline first grade classrooms should exceed this minimum requirement, and meet for 312 instructional minutes each day.

It is expected that in grades K – 6, English Language Arts and Mathematics will be taught every day (ELA 100 min., Math 60 min.), including days with interruptions in the schedule (for example, assemblies or Early Release Days).

Instructional Area	Minutes per day	Days per week	Minutes per week
Art	40	1	40
English Language Arts	100	5	500
Mathematics	60	5	300
Music	30	1	70
	40	1	
Physical Education	40	2	80
Social Studies	40	5	200
Science	40	5	200
World Language	20	3	60
Other Planned Instructional Activities	Varies	5	110
Sub-total			**1560**

Non-Instructional Activity (snack, lunch, recess, transitions, etc.)	68	5	340

Total			**1900**

GRADE 2

Elementary School Day:
Monday – Thursday, 8:00 AM – 2:30 PM; Friday 8:00 AM – 1:40 PM
1900 minutes/week

The Commonwealth of Massachusetts requires that all elementary students receive a minimum of 900 hours/year of instructional time. To meet the 900 hours, students must be engaged in planned instructional activity for at least 300 minutes each day. All Brookline second grade classrooms should exceed this minimum requirement, and meet for 312 instructional minutes each day.

It is expected that in grades K – 6, English Language Arts and Mathematics will be taught every day (ELA 100 min., Math 60 min.), including days with interruptions in the schedule (for example, assemblies or Early Release Days).

Instructional Area	Minutes per day	Days per week	Minutes per week
Art	40	1	40
English Language Arts	100	5	500
Mathematics	60	5	300
Music	30	1	70
	40	1	
Physical Education	40	2	80
Social Studies	40	5	200
Science	40	5	200
World Language	20	3	60
Other Planned Instructional Activities	Varies	5	110
Sub-total			**1560**

Non-Instructional Activity (snack, lunch, recess, transitions, etc.)	68	5	340

Total			**1900**

GRADE 3

Elementary School Day:
Monday – Thursday, 8:00 AM – 2:30 PM; Friday 8:00 AM – 1:40 PM
1900 minutes/week

The Commonwealth of Massachusetts requires that all elementary students receive a minimum of 900 hours/year of instructional time. To meet the 900 hours, students must be engaged in planned instructional activity for at least 300 minutes each day. All Brookline third grade classrooms should exceed this minimum requirement, and meet for 312 instructional minutes each day.

It is expected that in grades K – 6, English Language Arts and Mathematics will be taught every day (ELA 100 min., Math 60 min.), including days with interruptions in the schedule (for example, assemblies or Early Release Days).

Instructional Area	Minutes per day	Days per week	Minutes per week
Art	40	1	40
English Language Arts	100	5	500
Mathematics	60	5	300
Music	30	1	70
	40	1	
Physical Education	40	2	80
Social Studies	40	5	200
Science	40	5	200
World Language	30	3	90
Other Planned Instructional Activities	Varies	5	80
Sub-total			**1560**

Non-Instructional Activity (snack, lunch, recess, transitions, etc.)	68	5	340

Total			**1900**

GRADE 4

Elementary School Day:
Monday – Thursday, 8:00 AM – 2:30 PM; Friday 8:00 AM – 1:40 PM
1900 minutes/week

The Commonwealth of Massachusetts requires that all elementary students receive a minimum of 900 hours/year of instructional time. To meet the 900 hours, students must be engaged in planned instructional activity for at least 300 minutes each day. All Brookline fourth grade classrooms should exceed this minimum requirement, and meet for 330 instructional minutes each day.

It is expected that in grades K – 6, English Language Arts and Mathematics will be taught every day (ELA 100 min., Math 60 min.), including days with interruptions in the schedule (for example, assemblies or Early Release Days).

Instructional Area	Minutes per day	Days per week	Minutes per week
Art	45	1	45
English Language Arts	100	5	500
Mathematics	60	5	300
Music	45	2	90
Physical Education	45	2	90
Social Studies	40	5	200
Science	40	5	200
World Language	30	3	90
Other Planned Instructional Activities	Varies	5	135
Sub-total			**1650**

Non-Instructional Activity (lunch, recess, transitions, etc.)	50	5	250

Total			**1900**

GRADE 5

Elementary School Day:
Monday – Thursday, 8:00 AM – 2:30 PM; Friday 8:00 AM – 1:40 PM
1900 minutes/week

The Commonwealth of Massachusetts requires that all elementary students receive a minimum of 900 hours/year of instructional time. To meet the 900 hours, students must be engaged in planned instructional activity for at least 300 minutes each day. All Brookline fifth grade classrooms should exceed this minimum requirement, and meet for 330 instructional minutes each day.

It is expected that in grades K – 6, English Language Arts and Mathematics will be taught every day (ELA 100 min., Math 60 min.), including days with interruptions in the schedule (for example, assemblies or Early Release Days).

Instructional Area	Minutes per day	Days per week	Minutes per week
Art	45	1	45
English Language Arts	100	5	500
Mathematics	60	5	300
Music	45	2	90
Physical Education	45	2	90
Social Studies	40	5	200
Science	40	5	200
World Language	30	3	90
Other Planned Instructional Activities	Varies	5	135
Sub-total			**1650**

Non-Instructional Activity (lunch, recess, transitions, etc.)	50	5	250

Total			**1900**

GRADE 6 *

Elementary School Day:
Monday – Thursday, 8:00 AM – 2:30 PM; Friday 8:00 AM – 1:40 PM
1900 minutes/week

The Commonwealth of Massachusetts requires that all elementary students receive a minimum of 900 hours/year of instructional time. To meet the 900 hours, students must be engaged in planned instructional activity for at least 300 minutes each day. All Brookline sixth grade classrooms should exceed this minimum requirement, and meet for 330 instructional minutes each day.

It is expected that in grades K – 6, English Language Arts and Mathematics will be taught every day (ELA 100 min., Math 60 min.), including days with interruptions in the schedule (for example, assemblies or Early Release Days).

Instructional Area	Minimum minutes per day	Days per week	Minutes per week
Art	45	1	45
English Language Arts	100	5	500
Mathematics	60	5	300
Music	45	2	90
Physical Education	45	2	90
Social Studies	40	5	200
Science	40	5	200
World Language	45	3	135
Other Planned Instructional Activities	Varies	5	90
Sub-total			**1650**

Non-Instructional Activity (lunch, recess, transitions, etc.)	50	5	250

Total			**1900**

** **The grade 6 instructional model varies across schools. For schools that include grade 6 in a middle school model with grades 7 & 8, the instructional time should follow that which is outlined for grades 7 & 8, found on page 10.***

GRADES (6)*, 7 & 8

Elementary School Day:
Monday – Thursday, 8:00 AM – 2:30 PM; Friday 8:00 AM – 1:40 PM
1900 minutes/week

The Commonwealth of Massachusetts requires that all elementary students receive a minimum of 900 hours/year of instructional time and that all middle school students receive a minimum of 990 hours/year of instructional time. To meet the 990 hour requirement, Brookline 7th and 8th grade students must be engaged in planned instructional activity for at least 330 minutes each day.

Instructional Area	Length of class period	Days per week	Minimum minutes per week
Art	45	1	45
English Language Arts	45	5	225
Health	45	2	90
Mathematics	45	5	225
Music	45	1	45
Physical Education	45	2	90
Social Studies	45	5	225
Science	45	5	225
World Language	45	5	225
Other Planned Instructional Activities	Varies	5	255
Sub-total			**1650**

Non-Instructional Activity (lunch, recess, transitions, etc.)	50	5	250

Total			**1900**

**** The grade 6 instructional model varies across schools. For schools that include grade 6 in a middle school model with grades 7 & 8, the instructional time should follow that which is outlined for grades 7 & 8, except for World Language instruction which will continue to follow the time allocation outlined for grade 6, found on page 9.***

21st CENTURY INTERDISCIPLINARY THEMES

What are 21st Century Interdisciplinary Themes?
Apart from school, knowledge and skills from all disciplines are integrated as people encounter situations, problem solve and make decisions. What is learned separately in Social Studies, Math and Science must come together to effectively navigate in the real world. These themes have been identified by the *Partnership for 21st Century Skills* (www.p21.org), and recommended by the Massachusetts DESE (in their *School Reform in the New Millennium* report, November 2008) as areas where disciplines intersect to build content-based understandings that will prepare students for life in the 21st century.

Additional ways to think about these themes:
- They are themes that run throughout our work with students; each discipline has something important to offer in building student understanding.
- They provide a means for transferring knowledge from one domain to another, and to new situations.
- They describe broad categories of citizenship and stewardship that build understanding of our role in 21st century life.
- They promote an awareness of the interconnectedness of all living things and the impact of human actions on a larger scale.
- They carry with them the challenge and opportunity to transform the world, to make it more just and equitable

Why are they important?
The interdisciplinary themes help students make meaning of what they are learning and how it relates to them. Because real life is not divided into content areas, students need to build awareness of the importance of what they are learning by experiencing how it fits together. It prepares students for action, while promoting an understanding of differences as they learn how to preserve and share the resources of the planet.

What is the connection to lifelong learning skills/content?
The 21st Century lifelong learning skills and content provide the means for students to think across disciplines and to practice working collaboratively on ideas presented through interdisciplinary themes.

What are the 21st Century Interdisciplinary Themes?

A. Global Awareness
- Use 21st century skills to understand and address global issues
- Learn from and work collaboratively with individuals representing diverse cultures, religions and lifestyles in a spirit of mutual respect and open dialogue in personal, work and community contexts

DRAFT (2014)

- Understand other nations and cultures, including the use of non-English languages

B. Financial, Economic, Business and Entrepreneurial Literacy
- Know how to make appropriate personal economic choices
- Understand the role of the economy in society
- Use entrepreneurial skills to enhance workplace productivity and career options

C. Civic Literacy
- Participate effectively in civic life through knowing how to stay informed and understanding governmental processes
- Understand democratic values and processes
- Exercise the rights and responsibilities of citizenship at local, state, national and global levels
- Understanding the local and global implications of civic decisions

D. Health and Wellness Literacy
- Obtain, interpret and understand basic health information and services and using such information and services in ways that enhance health
- Understand preventive physical and mental health measures, including proper diet, nutrition, exercise, risk avoidance and stress reduction
- Use available information to make appropriate health-related decisions
- Establish and monitor personal and family health goals
- Understand national and international public health and safety issues

E. Environmental Literacy
- Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as relates to air, climate, land, food, energy, water and ecosystems
- Demonstrating knowledge and understanding of society's impact on the natural world (e.g., population growth, population development, resource consumption rate, etc.)
- Investigating and analyzing environmental issues, and making accurate conclusions about effective solutions
- Taking individual and collective action towards addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues)

F. Humanities Literacy
- Recognize and respect fellow citizens as having equal rights, even though they may be different in race/religion/gender/sexual orientation
- Value the role of art, music, history and literature in understanding and appreciating human behavior and culture
- Have empathy for the lives of others; grasp what policies mean for the opportunities of all people
- Weigh the consequences of one's actions on others in making decisions; have the courage to raise a dissenting voice

2

NEXT STEPS: Develop a 21st Century Interdisciplinary Themes document, arranged as follows:

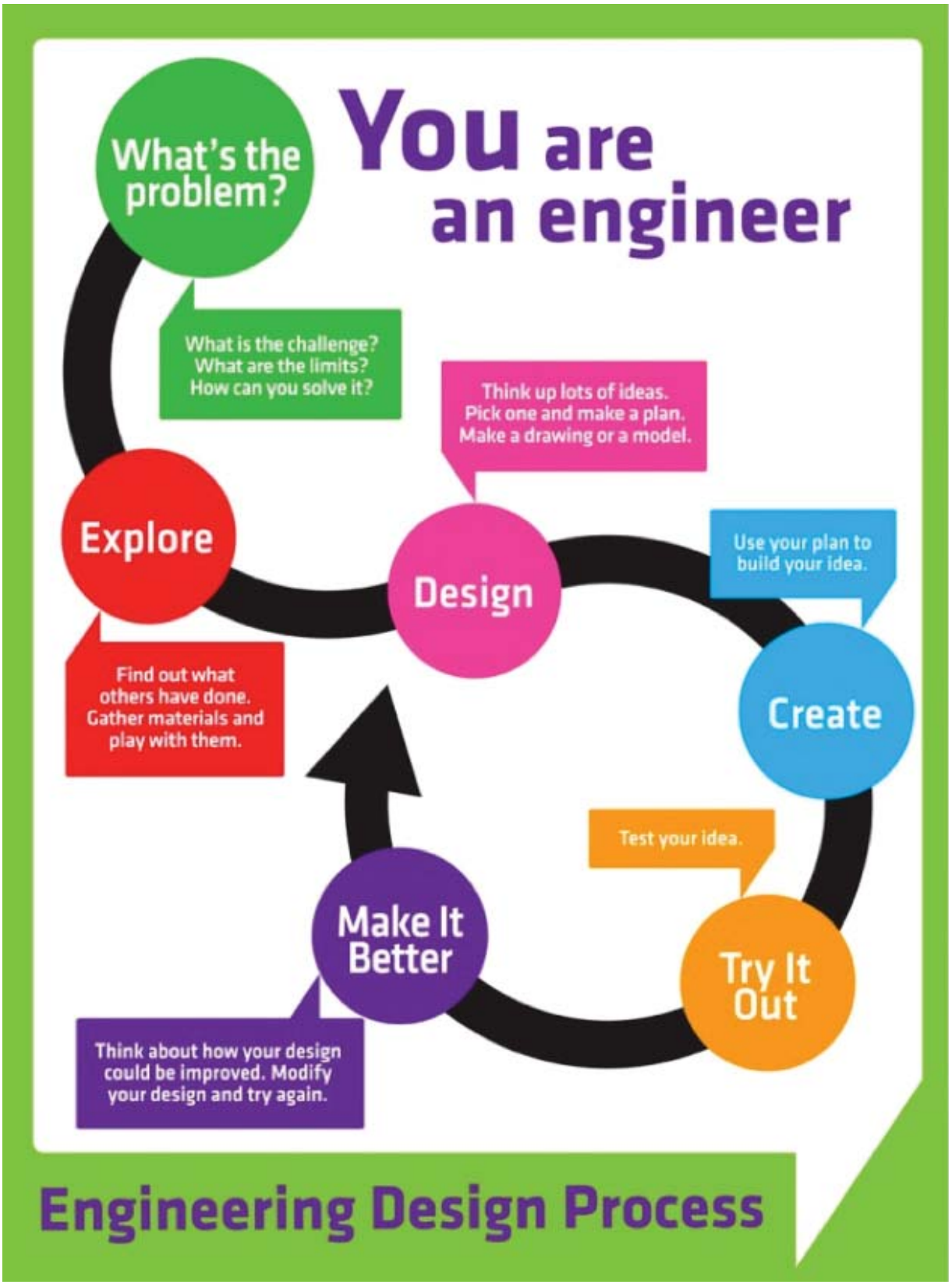
Each theme is described with an explanation as to why it is an important theme for students.
Expectations are identified for the following grade spans: Kindergarten – Grade 2, Grades 3-4-5, Grades 6-7-8, and Grades 9-12.

A chart is presented for each area and category. The chart contains the following information:

INTERDISCIPLINARY THEMES (description – Partnership for 21st Century Skills)	**Why is this interdisciplinary theme important for students**	**Awareness / Beginning Articulation (Often, preK-Gr4)**	**Practicing / Applying / Demonstrating (Often, Gr2-8)**	**Mastering (often, Gr7-12)**
A description of the theme is provided.	*Information as to why this theme is important for students.*	Has an awareness and early understanding of the interdisciplinary theme; has had some exposure to the content of the theme through home and school experiences. Has a beginning ability to identify the theme across content areas.	Can define the core concepts of the interdisciplinary theme; has a grasp of the importance of the theme through personal experience and classroom activities; Uses this information to build a more robust understanding of the theme, and how it affects them as individuals and community members.	Identifies and tests understanding of the theme and its implications in variety of contexts. Is articulate about the content of the theme; understands the complexities, issues, and implications both individually and for others. Challenges assumptions in order to participate thoughtfully as a local, national, and global community member.

Appendix C:

Engineering Design Process


You are an engineer
What's the problem?
What is the challenge? What are the limits? How can you solve it?
Explore
Find out what others have done. Gather materials and play with them.
Design
Think up lots of ideas. Pick one and make a plan. Make a drawing or a model.
Create
Use your plan to build your idea.
Try It Out
Test your idea.
Make It Better
Think about how your design could be improved. Modify your design and try again.
Engineering Design Process

Appendix D:

Grade 3 Curriculum Overview

The Public Schools of Brookline
GRADE THREE CURRICULUM OVERVIEW

Dear Parents and Guardians,

High achievement for all has been a core value in the Public Schools of Brookline for nearly two decades. There are many variables that contribute to a student's academic achievement, one of the most important being a strong connection between the home and school. When families support their child's learning at home, express interest in their studies, and hold high expectations for achievement, a partnership between home and school is created. We hope that this Curriculum Overview will be a useful tool for you as you support and encourage your child's academic success.

Curriculum Coordinators created this overview to highlight the concepts, skills, and knowledge central to each subject area in every grade level. This document is not intended to represent the entire curriculum for this grade; rather it provides you with the key elements taught to all children across the Brookline schools in this grade. If you are interested in learning more about the curriculum, as outlined in our Learning Expectations, visit the Public Schools of Brookline website (www.brookline.k12.ma.us) and look in the *Latest News and Quick Links* section on the main page.

Each year brings new learning challenges and a world of possibilities. Your involvement and knowledge about your child's school experience will help to nurture his or her learning far beyond the four walls of the classroom. As your child begins a new year in the Public Schools of Brookline, please know that we welcome your involvement and value your support.

Respectfully,

Jennifer Fischer-Mueller, Ed.D.
Deputy Superintendent for Teaching and Learning

K-8 Curriculum and Program Coordinators and Directors

Educational Technology and Libraries – *Scott Moore*
English Language Arts - *Joanna Lieberman*
English Language Learner (ELL) Program – *Mindy Paulo*
Enrichment and Challenge Support (ECS) – *Mies Boet*
Mathematics - *Karen Wolfson*
METCO – *Suzie Talukdar*
Performing Arts - *Kenny Kozol*
Physical Education - *Teddi Jacobs*
Science & Health - *Janet MacNeil*
Social Studies - *Geoff Tegnell*
Special Education – *Emily Frank and Mark Nacht*
Visual Arts - *Alicia Mitchell*
World Language - *Dawn Carney*

The Public Schools of Brookline
GRADE THREE CURRICULUM OVERVIEW

Goals of the Public Schools of Brookline

Goal 1: Every Student Achieving
Ensure that every student meets or exceeds Brookline's high standards and eliminate persistent gaps in student achievement by establishing educational equity across all classrooms, schools, and programs.

Goal 2: Every Student Invested in Learning
Increase every student's ownership of his/her learning and achievement by using rigor, relevance, and relationships to foster a spirit of inquiry and the joy of learning.

Goal 3: Every Student Prepared for Change and Challenge
Instill in every student the habits of mind and life strategies critical for success in meeting the intellectual, civic, and social demands of life in a diverse, ever-changing, global environment.

Goal 4: Every Educator Growing Professionally
Foster dynamic professional learning communities that inspire inquiry, reflection, collaboration, and innovation, and use data to improve teaching, advance student learning, and refine the programs and practices of the Public Schools of Brookline.

SOCIAL EMOTIONAL LEARNING & BULLYING PREVENTION/INTERVENTION

The Public Schools of Brookline has created a comprehensive social emotional learning and bullying prevention and intervention program to nurture school culture and provide the knowledge, skills, procedures, and processes required to foster positive student behavior in support of learning. With the effective implementation of the comprehensive program, we envision all Brookline schools reflecting a safe, welcoming, respectful, and nurturing school culture that supports the development of all children through their preK-12 experiences.

The PSB Comprehensive Social Emotional Learning and Bullying Prevention and Intervention Program is characterized by the following program elements in the specified grade(s):

Social Emotional Learning
Social Thinking (K-12)
Responsive Classroom (K-5)
Developmental Designs (6-8)
Facing History and Ourselves (8)
Brookline High School Advisory (9-12)

Bullying Prevention and Intervention
Olweus (K-12)
Understanding Disabilities (4)
Second Step (7-8)

The Public Schools of Brookline
GRADE THREE CURRICULUM OVERVIEW

EDUCATIONAL TECHNOLOGY AND LIBRARIES

The Public Schools of Brookline encourages a culture of inquiry that regularly investigates and experiments with promising new practices that engage students as 21st century learners and prepares them for the evolving global society. The Educational Technology and Library staff works in collaboration with the entire school community to help students become:

- Enthusiastic, independent readers for information and pleasure
- Independent, skillful information users who know how to access, analyze and produce information in a variety of formats using a variety of tools
- Responsible digital-age citizens
- Skillful learners and innovators who use digital tools to develop the "Four Cs:"
    - critical thinking
    - communication
    - collaboration
    - creativity

The integration of these skills is typically addressed through classroom projects within the major curriculum units of study in the core subjects. School libraries are complex hubs of student learning and engagement, with the ability to enhance all curriculum areas. Emerging technologies and near ubiquitous access creates new opportunities to deepen and extend learning, often connecting with people, resources, and perspectives beyond the walls of our classrooms.

In grades three and four students develop information literacy skills that correspond to their developing reading abilities and greater capacity for critical thinking. Students begin exploring features of non-fiction texts and developing search strategies to use with the library catalog and online sites. Students begin to organize found information in order to synthesize and produce new meaning. Students explore different genres in their independent reading and curricular study.

Technology skills are developed through daily tasks and special projects that provide students opportunities to develop intermediate skills with hardware and software. Students develop the ability to use the computer as a writing tool with basic word processing skills, create simple multimedia presentations, and use a variety of technology resources for problem solving, communication, and illustration of thoughts, ideas, and stories.

ENGLISH LANGUAGE ARTS

Brookline's Learning Expectations in ELA meet or exceed the standards outlined in the Massachusetts Frameworks. To reach these demanding standards, Brookline educators use the *Continuum of Literacy Learning PreK-8* (Heinemann, 2011) as their day-to-day guide when teaching specific behaviors in reading and writing. The description of the successful third grade reader and writer below comes primarily from the *Continuum*.

Reading
At the end of third grade, students can identify the characteristics of a full range of genres, including hybrid texts that blend more than one genre in a coherent whole. They read both chapter books and shorter informational texts, along with special forms such as mysteries, series books, books with

sequels, and short stories. Fiction narratives are straightforward but have elaborate plots and multiple characters that develop and change over time. Third grade readers are able to understand some abstract themes and to take on diverse perspectives and issues related to race, language, and culture. Some non-fiction texts provide information in categories on several unrelated topics, many of which are well beyond the reader's typical experience. Students will identify and use underlying structures (description, compare and contrast, temporal sequence, problem and solution, and cause and effect). By the end of the year, they can process complex sentences containing prepositional phrases, introductory clauses, and lists of nouns, verbs, or adjectives. Third grade students solve new vocabulary words, some defined in the text and others unexplained. They can read and understand descriptive words, some complex content-specific words, and certain technical words. Most reading is done silently; in oral reading, third grade students demonstrate all aspects of smooth, fluent processing with little overt problem solving. (*Continuum PreK-8*, pp. 312)

Writing
Third graders have a strong sense of writing fundamentals and are ready to produce longer, more organized pieces of writing. They comfortably compose several sentences on one topic, can spell many high frequency words correctly and use their strong phonics foundation to write new words. They may continue to use phonetic spelling to represent sounds in unknown words.

Students continue their use of the writing process in which they brainstorm ideas, plan their writing, draft, revise and produce a polished final draft.

Third graders learn how to construct a series of paragraphs that include engaging introductory sentences, three or more supporting sentences, and conclusions. They use a variety of sentence structures and write with expression and a personal voice, incorporating words learned through reading and content-area studies.

Third graders further expand their repertoire of writing genres, adding expository nonfiction and writing longer, more cohesive narrative pieces. Third graders produce opinion pieces about themselves and the world around them. They continue to write poetry in a variety of forms with even more figurative language and imagery. Their written responses to reading focus on more complicated character and plot development.

MATHEMATICS

Brookline's Mathematics Learning Expectations, built on the 2011 MA Curriculum Frameworks for Mathematics, are comprised of two main components: the Standards for Mathematical Practice and Standards for Mathematical Content. To achieve mathematical understanding, students are engaged in mathematical experiences which balance mathematical procedures and conceptual understanding.

Mathematical Practices

Two of the mathematical practices that we will be highlighting this year involve making sense of problems and constructing mathematical arguments. Third grade mathematicians are involved in solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Third graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make

sense?" They listen to the strategies of others and will try different approaches. They often will use another method to check their answers.

In third grade, students may construct arguments concretely (for example, by using objects, pictures, and drawings) or may begin to think abstractly. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" and "Why is that true?" Students explain their thinking to others and respond to the thinking of their peers. They decide if the explanations make sense and ask clarifying and probing questions to help refine their thinking.

Mathematical Content

Building on a foundation of place value understanding and fluency with addition and subtraction, we focus on these four critical areas:

Whole Number Operations: Developing understanding of multiplication and division and strategies for multiplication and division within 100.

Fractions: Developing understanding of fractions, especially unit fractions (fractions with a numerator 1).

Area: Developing understanding of the structure of rectangular arrays and of area.

Geometry: Describing and analyzing two-dimensional shapes.

PERFORMING ARTS

Third grade students have music class twice a week in which they joyfully create music while developing the following skills:

Performing: Students will develop skills in singing, reading music, playing instruments, movement and dramatization of music.

Reading and Notating: Students will learn to interpret and apply visual representations for the sounds they hear (musical notation).

Listening and Appreciation: Students will learn to critically respond with understanding when they describe, analyze and interpret music. Students will study music from different periods and locations.

Creating: Students will improvise and compose original works of music.

Connecting: Students will develop understanding of artistic heritage through investigation of the historical and cultural contexts of music.

In third grade, students continue to develop the skills learned in prior years and advance their skills in the following areas:

- Ability to accompany melody using classroom instruments
- Ability to identify instruments and instrument families
- Proper singing posture and ability to match pitch in an expanded range
- Expanded singing repertoire to include rounds and partner songs
- Ability to compose simple rhythms, tonal passages and melodies for voices or instruments

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- Ability to improvise short musical passages, vocally or instrumentally
- Ability to create movement in response to musical sound.
- Ability to play more advanced parts on Orff, the recorder, and other instruments, and read simple music notation on instruments
- Ability to use musical terms in analyzing performances and compositions

The **Performing Arts Learning Expectations** meet the **National Standards for Arts Education** music learning outcomes that are integral to the comprehensive K-12 education of every student.

PHYSICAL EDUCATION

During this period, children's thinking is becoming more orderly, more structured, and more logical. Therefore, students will be more realistic and more rule-oriented. Play will reflect a developing need for order. A challenge to the emerging self-concepts of these students is to demonstrate to themselves and others that they are competent, and that they have skills and abilities of which they can be proud. Physical education classes offer an environment of effective socializing. The physical education teacher helps children differentiate between acceptable and unacceptable ways of expressing feelings. Children need to internalize and understand the merits of participation, cooperation, and competition.

Cooperation precedes the development of competition and it is emphasized in the physical education class. The nature of competitive games demands cooperation, fair play, and sportsmanship, and when these are not present, the joy of participation is lost. Cooperative games teach children that all participants are needed.

The Tactical Games Approach is used when teaching sport skills, using student interest in the game itself to promote skill development and tactical knowledge. In essence, students are playing the game as they work on skills and tactics.

At this age, students begin to relate the value of movement and healthy nutrition practices to personal, long-term healthy lifestyles. Students develop a better understanding of the components of fitness and how these relate to their overall fitness status.

The Grades 3-5 Physical Education Curriculum was developed with the National Standards in mind. These standards describe the physically literate individual. (http://www.shapeamerica.org/standards/pe/index.cfm) In the *3-5* grade span, students work on the skill progressions within each of the following areas:

Motor Skills and Movement Patterns: Develop skills in dribbling with hands/feet, striking with varied implements, jumping rope with rhythm, overhand throwing, and catching. In these grade levels, skills are increasingly incorporated into game play. The Tactical Games Approach is employed when learning sport skills.

Physical Activity & Fitness: Participate for longer periods of time in a variety of vigorous activities. Throughout this grade level cluster, students begin to relate the fitness component s to overall personal fitness status.

Personal and Social Behavior: Demonstrate positive behaviors throughout cooperative activities. Students begin to learn skills in leadership and followership.

Value of Physical Activity and Social Interactions: Recognize the value of physical activity for health, enjoyment, challenge, self-expression and social interaction.

SCIENCE

In third grade science, students explore natural and human-made structures. Science and engineering practices are woven throughout all of the science content, as well as the use of science notebooks and integration with the other curriculum areas.

Structures (Engineering): In this unit, student engineers are introduced to the concepts of structures (natural and human-made) and form and function. They build different types of structures with a variety of materials to discover what makes structures strong and stable. In the culminating activity, they design and build a famous structure, revising their design as needed to make it strong and stable.

Living Structures: The Skeletal System: In this unit, students will have multiple opportunities to gather evidence on how the shape of bones and skeletons match their function. They begin by studying individual unlabeled bones, and then study the groups of bones in the human skeletal system (why are my bones shaped they way they are?). All the while, they are also gathering evidence on the importance of the skeletal system and how its parts all work together as a system. Next, students apply their learning to dissection of a Mysterious Object—studying the form and function of bones they gather and ultimately using them to reconstruct an animal skeleton. This experience leads into a comparison of animal skeletons and investigations of how their bodies may look different, but they have similar types of bones with the same function. Student understanding is then deepened by asking them to make claims about how animal skeletons are adapted to help the animals survive in their habitat. Finally, students read about scientists who use what they know about living animals and their skeletons, along with fossil evidence, to make claims about animals that lived long ago.

Mammal Detectives: Building on their experiences with the skeletal system, students become mammal detectives who use inquiry to identify the features of five mystery mammals. As they receive additional pieces of evidence about their mystery mammal (skulls, teeth, fur, feet, tracks and scat), students observe the evidence and make claims about what their mammal eats, how it moves, how it sees and where it lives, revising their thinking as needed based on new evidence. Ultimately, they make their final claims (supported by evidence) and present them to the class.

SOCIAL STUDIES

In the third grade social studies course of study, Massachusetts Geography and History, students are introduced to the concepts of physical and human geography by examining the geography of New England and the history of Massachusetts. Students will begin by investigating the physical features of Massachusetts within the context of the landforms, climate, and vegetation/animal life biome of the New England region. They will then explore the adaptation of Native Americans and English colonists to the Massachusetts environment. Students will also investigate how English Puritan ideas shaped the development of Massachusetts from colony to state. Students will examine the outbreak of the American Revolution in Massachusetts and trace significant events in the development of Brookline and Boston. Students will read about the lives of noted Massachusetts historical figures.

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New England/Massachusetts Geography: In this unit students will locate and label Massachusetts' physical and political features. They will also employ thematic maps to learn how agriculture, industry, and resources shaped contemporary Massachusetts and research and write reports about other New England states.

Wampanoag: In this unit students will investigate how the Southeastern Massachusetts environment influenced traditional Wampanoag culture. They will trace the seasonal cultural practices of the 17th century Wampanoags and become acquainted with Wampanoag oral traditions and values.

The Pilgrims Build Plymouth Plantation: Students begin this unit by exploring why the Pilgrims left Europe for the New World. Next, students will investigate the Pilgrims' journey across the Atlantic, creation of the Mayflower Compact, and first encounter with the Wampanoags. Students will then critically analyze an account of the First Thanksgiving and conclude by collecting and sharing data on the everyday lives of Pilgrim boys and girls.

Puritan Colonial Massachusetts: In this unit students compare the Pilgrims and Puritans in terms of their reasons for leaving England, beliefs, leadership, and settlement area. Next, they locate different geographical features and settlements of Colonial Massachusetts. Students will compare their lives to those of colonial children and investigate the Massachusetts Bay Colony trades and economy.

Pre-Revolutionary Massachusetts: Students explore the growing tensions between England and the Colonies in this unit. Students will learn about important people like King George III and Samuel Adams and will trace how events like the Boston Tea Party led up to the War for Independence. They will also deepen their understanding of such civic concepts as citizenship and the "common good".

Massachusetts Biography: Students will conclude their study of Massachusetts geography and history with this unit. Students begin by reviewing the elements of a biography and browsing through biographies of significant Massachusetts citizens. They will then read multiple biographies about a person of interest to collect notes and prepare a speech, poster, or booklet depicting their person's life history and contributions to society.

VISUAL ARTS

Students in third grade work with intention to communicate their ideas. They are naturally inquisitive and develop skills of observation, perseverance and reflection. The visual arts instruction asks questions of the young artists: What are we thinking about? What are we able to do with materials to communicate ideas through art? What are learning as we make art? This builds strong artistic habits of mind as the students create work with various tools, processes, and media, and make choices that improve their ability to communicate their ideas, feelings and understandings.

Art lessons are developed to engage students in rich tasks that develop their critical and creative thinking skills, and allow them to develop artistry through deliberate practice. Students develop their artistic skills in the following areas:

Drawing: Creating compositions, using multiple tools, through mark making, lines and forms that communicate the artists' intention.

Painting: Creating a composition using paint that tells a story, expresses an emotion, suggests a feeling, develops a pattern or illustrates the relationship of colors.

Collage: Creating a cohesive composition that communicates the artists' intention by gluing multiple pieces of paper/found materials together in one image.

Printmaking: Creating a composition that transfers images to other surfaces multiple times using printmaking tools, stamps, stencils and plates.

3D Construction: Building a form that has multiple sides, has structural integrity, and embodies the artists' vision.

Lessons have an array of beginning points: interdisciplinary work connected to grade specific themes in other curriculum studies, art history, contemporary art, and student generated curiosities. The work focuses on developing strong artistic habits of mind that develop skill and craftsmanship. The Visual Arts classes meet once a week throughout the year.

WORLD LANGUAGE

Students in grade three continue their journey as language learners, developing a deeper understanding of culture and becoming conversation partners. Our K-5 elementary world language program focuses on developing oral proficiency, with lessons conducted almost exclusively in either Spanish or Chinese. This provides students with many opportunities to hear words in context and make meaning out of them without direct translation. This repetition, coupled with visual supports, first develops comprehension, followed by oral production.

Students continue to comprehend more than they can produce in the target language. Lessons are built around interactive activities and tasks that develop students' conversation skills. They use sentences and start to create with the language; participate in simple, direct conversations, asking and answering questions; and learn to describe and narrate the topics they are learning about. The themes in third grade are community, leisure time, climate and food, with the cultural focus on Mexico. Lessons increase to thirty minutes, three times a week.

Appendix E:

Grade 3 Science/Engineering Learning Expectations

3rd Grade Science & Engineering Learning Expectations
Public Schools of Brookline
July 16, 2012

Overview

The Science & Engineering Learning Expectations (LEs) outline the content that students will learn and skills (practices) that students will be able to do from preK through Grade 8. They have been designed with careful consideration to how students will build their knowledge from grade to grade (learning progressions). As they progress through the grades, students will reinforce what they have learned before, continually learning certain overarching concepts in new ways and with increased sophistication.

Organization of the Learning Expectations

The Learning Expectations are organized into three strands: 1) Earth Science, 2) Life Science, and 3) Physical Science.

While the traditional Physical Science, Life Science, and Earth Science strands are referenced, it is important to be aware that none of these strands are totally separate. In fact, scientists often work in inter-disciplinary teams, across disciplines and/or alongside engineers to answer their questions and solve problems.

In addition, Science Practices (Inquiry and Nature of Science), Engineering and Environmental Education content has been woven throughout the Learning Expectations, illustrating the vital interconnections between these topics. This approach allows students to learn about these disciplines in the context of the science concepts they are learning, instead of as stand-alone, disconnected units.

Guide to This Document

This document shows the progression of Science concepts in the form of Big Ideas (left column) and Learning Expectations (right column). The Big Ideas identify the content that students will learn and the Learning Expectations illustrate what students will know and be able to do in order demonstrate that they have acquired this knowledge.

3rd Grade Earth Science Learning Expectations [Mammal Detectives Unit]

EARTH SYSTEMS	
Big Ideas	**Learning Expectations**
Changing Earth: Earth's History • Fossils provide evidence about the types of living things, including dinosaurs, that lived long ago and also about the nature of their environments. Fossils can be compared with one another and to living organisms according to their similarities and differences.	• Evaluate claims that fossils provide evidence of the types of living things that have lived on Earth and their environments, citing their similarities and differences to currently living species.
Weather & Climate • Weather is the minute-by-minute to day-by-day variation of the atmosphere's condition on a local scale. Scientists record the patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. Climate describes the ranges of an area's typical weather conditions and the extent to which those conditions vary over years to centuries. • Weather and climate data collected by meteorologists includes: temperature, wind direction and speed, and precipitation.	• Gather information about different climatic areas to compare habitat conditions with mammal adaptations. Explain the effect of climate on mammal adaptations.
Human Interactions with Earth [Social Studies Connection] Extension • Human activities in agriculture, industry, and everyday life have had major effects on living things, the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. • Some types of animals and plants are diminishing in numbers due to loss of habitat and/or other factors. But there are things that humans can do prevent this from happening.	• Use informational sources to identify endangered mammals. For one endangered mammal, explain where they live and why they have become endangered. • Explain what is being done to help endangered mammals survive. Brainstorm a list of things we can do to help.

3rd Grade Life Science Learning Expectations [Mammal Detectives Unit, Skeletal System Unit and Structures Unit]

Big Ideas	Learning Expectations
Characteristics of Living Things • Scientists sort (classify) living things based on features they share in order to learn more about them. • Living things (plants and animals) share certain characteristics (e.g., they grow and reproduce) • All mammals share certain features [They have a backbone, hair or fur, are warm-blooded, breathe air using lungs, and nurse their young. Most mammals give birth to live young]	• Gather evidence to show that animals can be classified based on their features (e.g., vertebrates have backbones, mammals have hair, insects have six legs). • Explain the difference between vertebrates and invertebrates. Give examples of each. • Describe the common features of mammals and sort animal photos into mammals and not mammals.
Structure & Function of Living Things • Animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. • Animal structures (e.g., feet, tails, etc.) can look similar or different depending on the living thing and where it lives.	• Use models to analyze how internal and external structures and systems in mammals allow them to grow, survive and reproduce. • Describe the basic structures of mammals and explain their function (e.g., what they do to help the mammal survive in its environment).
Needs of Living Things • Like most other animals, mammals need food, water, air, a space to live in and raise young (shelter), and the right temperature in order to live and grow. • Food provides animals with the materials they need for body repair and growth and is digested to release the energy they need to maintain body warmth and for motion.	• Describe the basic needs of mammals and give examples.
Ecosystems • Mammals live in places that can provide the things they need to live and grow (habitats). • Mammals, like other animals, depend on plants or other animals for food. They use their senses to find food and water, and they use their body parts to gather, catch, eat and chew the food. • When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. • Changes in an organism's habitat are sometimes beneficial to it and sometimes harmful. For any particular environment, some kinds of organisms survive	• Make claims based on evidence to show that living things can survive only in environments in which their particular needs are met (e.g., mammals that live in the desert, mammals that live in the ocean, etc.). • Explain how a specific mammal's needs are met within its habitat. • Provide evidence that environmental change in a system (e.g., extra water in a normally dry area, pollution or fire) can affect the number and types of living things that live there as some remain, move and/or die. • Show (model) and describe how mammals depend on other living things in their habitat. (ELE) • Compare a human habitat with a beaver's habitat • Give examples to show how changes in a mammal's habitat can affect its survival.

well, some survive less well, and some cannot survive at all. • Populations of organisms live in a variety of habitats, and change in those habitats affects the organisms living there.	• For a certain type of environment (e.g., forest, grassland, desert, etc.), describe the relationship between characteristics of the environment and the mammals that live there.
Adaptations • Mammals have features that help them survive in their environment. [These features include physical adaptations (e.g., feet, teeth, fur, camouflage, etc.) and behavioral adaptations (e.g., migration, behaviors to protect their young, hibernation, communication, etc.). • Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. • Groups can be collections of equal individuals, hierarchies with dominant members, small families, groups of single or mixed gender, or groups composed of individuals similar in age. Some groups are stable over long periods of time; others are fluid, with members moving in and out. Some groups assign specialized tasks to each member; in others, all members perform the same or a similar range of functions.	• Evaluate and communicate information that the characteristics of a group of animals help individual animals survive. • Illustrate how mammals are adapted to live in their environment (desert, tropical forest, temperate forest, grassland, arctic tundra, wetlands, rivers, oceans, mountains). Describe the features of mammals that allow them to live in places others cannot (e.g., polar bear, harbor seal, desert animal, etc.). (ELE) • Compare the adaptations of a snowshoe hare and an antelope jackrabbit. Explain how these features allow the mammal to live in its environment. • Make claims based on evidence to explain why animals may form groups to help them meet their needs and survive (e.g., family groups, pairs, herds).
Growth & Development • Reproduction is essential to the continued existence of every kind of living thing (organism). Plants and animals have unique and diverse life cycles that include a beginning (birth for animals, germination for plants), growing, developing into adults, reproduction, and eventually dying.	• Gather information on the life cycles of a variety of mammals, communicating similarities, differences and patterns in their development. • Compare the life cycle of a mammal and a pillbug.
Biodiversity & Evolution • Fossils provide evidence about the types of organisms (both visible and microscopic) that lived long ago and also about the nature of their environments. Fossils can be compared with one another and to living organisms according to their similarities and differences. • There are many different types of plants and animals on Earth, but only certain types are found naturally at a certain place. • Populations of living things live in a variety of habitats, and change in those habitats affects the organisms living there. Humans, like all other organisms, obtain living and nonliving resources from their environments.	• Gather evidence that some kinds of animals and plants that once lived on Earth (e.g., saber-toothed tigers and wooly mammoths) are no longer found anywhere, although others living now may resemble them. • Compare mammal fossils to one another and to living mammals (scat too). Explain how they are alike and how they are different. • Observe photos of fossils to make claims about the nature of the organisms and the type of environment where they lived, and their similarities to organisms that are alive today. • Give examples of how scientists have used fossils as evidence to make claims about mammals that lived long ago.

3rd Grade Physical Science Learning Expectations

MATTER [Future Mixtures Unit]	
Big Ideas	**Learning Expectations**
Properties of Matter • Objects can be described in terms of the materials they are made of and their physical properties. • Characteristic properties (e.g., hardness, weight) can be used to identify substances. • Some materials are better than others for a particular purpose because of their properties. • A great variety of objects and technologies can be built up from a small set of pieces (e.g., blocks, construction sets).	• Explain how the properties of different natural or manufactured objects suit their purpose (e.g., pillows are made of soft materials, windows are made of clear glass, etc.). • Measure and compare the physical properties (e.g., weight, length) of objects using non-standard and standard units, and explaining the benefits of using standard units.
Chemical Reactions & Mixtures • Scientists investigate to find out about the properties of substances. They use their knowledge of the properties of substances to design mixtures. • When two or more different substances are mixed, a new substance with different properties may be formed; such occurrences depend on the substances and the temperature. When other substances are mixed, the form or appearance may change, but no new substance is formed (the composition of the substances stay the same). • No matter what reaction or change in properties occurs, the total weight of the substances does not change (e.g., sugar in solution). • Dissolving is when a solid mixes with a liquid and breaks apart into tiny pieces too little to see with our eyes.	• Plan and carry out investigations to support the claim that the total weight of a substance does not change when it undergoes physical changes (e.g., change of shape, change from solid to liquid, being dissolved in a liquid). Record data in science notebooks and compile to share with others. • Investigate and gather data to support the claim that the total weight of matter does not change when substances react chemically to form new substances. • Investigate and provide evidence to support the claim that when two or more different substances are mixed, one or more new substances with different properties may be formed (e.g., baking soda and water does not create new substances, but mixing baking soda and vinegar does). • Describe the properties of materials before and after they are mixed. • Research and explain chemical reactions that occur in everyday products (e.g., bread and other foods, epoxy and other reactive adhesives).
FORCE & MOTION (Force & Motion in Structures & Systems) [Structures Unit]	
Big Ideas	**Learning Expectations**
• Objects in contact exert forces on each other (friction, pressure, pushes and pulls). • Each force acts on one particular object and has both strength and a direction.	• Use a model to predict the future motion of an object (e.g., pendulum) based on its regular pattern of motion. • Carry out investigations on objects at rest subject to balanced forces and

An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. • The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. • A system can change as it moves in one direction (e.g., a ball rolling down a hill), shift back and forth (e.g., a swinging pendulum), or go through cyclical patterns (e.g., day and night). • Examining how the forces on and within the system change as it moves can help explain a system's patterns of change. • A system can appear to be unchanging when processes within the system are going on at opposite but equal rates (e.g., water behind a dam is at a constant height because water is flowing in at the same rate that water is flowing out). • Changes can happen very quickly or very slowly and are sometimes hard to see (e.g., plant growth). Conditions and properties of the objects within a system affect how fast or slowly a process occurs (e.g., heat conduction rates). • The materials used (and their characteristics) and the way materials are put together affect the stability of a structure.	measure the relative sizes and directions of these forces (e.g., two horizontal spring scales pulling on a stationary object sitting on a table). • Construct a model of a system in which the forces on an object are balanced to explain how quickly or slowly the system changes when the forces become unbalanced (e.g., heavier and lighter weights on a see saw, pushing or pulling an object with varying force). • Give examples of and demonstrate different ways that parts of structures exert force on one another (including friction, pressure, pushes and pulls). • Demonstrate how the properties and shape of materials used, as well as the way materials are put together, affect the strength of structures.
ENGINEERING [Structures Unit]	
Big Ideas	**Learning Expectations**
• The materials used (and their characteristics) and the way materials are put together affect the strength and stability of a structure. • Structures are systems	• Demonstrate how the properties and shape of materials used, as well as the way materials are put together, affect the strength of structures. • Collaborate with others to design a device built from components to solve a technological problem (e.g., transporting or supporting an object). [Engineering Connection]

Appendix F:

Essential Learning Expectations, Grade 3

The Public Schools of Brookline
Grade 3 – Essential Learning Expectations

Learning Expectations are the K-8 curriculum guidelines for all content areas. They answer these questions for parents, teachers, and students:

- What will students know and be able to do?
- How will students demonstrate their learning?

The Brookline Learning Expectations have been developed by teams of teachers, led by curriculum coordinators, and meet or exceed the Massachusetts Curriculum Frameworks.

The Progress Reports (formerly called Conference Forms) that teachers share with parents list the **Essential Learning Expectations** (or ELEs) for English Language Arts, Math, Science and Social Studies. The ELEs are a subset or synthesis of the Learning Expectations that describe the key skills and understandings for students at a particular grade that are essential for them to master in order to be prepared for the next grade.

It is important to remember that while the ELEs are a shorthand version of the Learning Expectations to share with parents, our curriculum is designed to cover *the entire set of Learning Expectations*, which describe the full understanding of content and acquisition of skills that is expected of students. While the LEs are listed by subject area, it is our instructional practice and goal to integrate across curriculum areas as much as possible. The complete set of K-8 Learning Expectations is available to teachers by subject area in the FirstClass Teacher Portal. They are available to the public through the PSB website - http://brooklinek12-public.rubiconatlas.org/Atlas/Public/View/Default. (This site is being updated to reflect recent revisions.)

The ELEs for English Language Arts, Mathematics, Science and Social Studies are listed below. These ELEs are listed on the Grade 3 Progress Report

ENGLISH LANGUAGE ARTS

READING OVERVIEW

Brookline's Learning Expectations in ELA meet or exceed the standards outlined in the Massachusetts Frameworks. To reach these demanding standards, Brookline educators use the *Continuum of Literacy Learning PreK-8* (Heinemann, 2011) as their day-to-day guide when teaching specific behaviors in reading and writing. The description of the successful first grade reader below comes directly, with a very few changes, from the *Continuum*.

At the end of third grade, students can identify the characteristics of a full range of genres, including hybrid texts that blend more than one genre in a coherent whole. They read both chapter books and shorter informational texts, along with special forms such as mysteries, series books, books with sequels, and short stories. Fiction narratives are straightforward but have elaborate plots and multiple characters who develop and change over time. Third grade readers are able to understand some abstract themes and are able to take on diverse perspectives and issues related to race, language, and culture. Some non-fiction texts provide information in categories on several unrelated topics, many of which are well beyond the reader's typical experience. Students will identify and use underlying structures (description, compare and contrast, temporal sequence, problem and solution, and cause and effect). By the end of the year, they can process sentences that are complex and contain prepositional phrases, introductory clauses, lists of nouns, verbs, or adjectives. Third grade students solve new vocabulary words, some defined in the text and others unexplained. They can read and understand descriptive words, some complex content-specific words, and some

technical words. Most reading is done silently; in oral reading, third grade students demonstrate all aspects of smooth, fluent processing with little overt problem solving. (*Continuum PreK-8*, pp. 312)

WRITING ELEs

Structure/Craft:

Organization

- Introduce, develop, and conclude topics in nonfiction writing, including texts produced for Science, Social Studies, and Math.
- Construct narratives with a clear sequence of events, including texts produced for Science, Social Studies, and Math.
- Use a variety of text structures (including graphics) appropriate to both purpose and genre in ELA and all content areas.

Idea development

- Provide accurate and relevant evidence to support all claims.
- Gather and use information from a variety of reliable sources when writing texts, including those produced for Science, Social Studies, and Math.

Word Choice

- Incorporate words learned through reading and content-area studies into writing.

Language Use

- Use a variety of sentence structures; write with expression and personal voice.

Conventions:

Grammar and Punctuation

- Write in complete sentences with accurate verb tense, along with appropriate punctuation.

Handwriting

- Write fluently in manuscript (printed) handwriting with appropriate spacing.

Spelling

- Correctly spell familiar high-frequency words and words that follow patterns that have been studied in class; use phonetic spelling to represent most sounds in unknown words.

Process:

Planning and Drafting

- Identify purpose, select genre, and produce initial drafts.

Revising

- Revise drafts, using feedback from peers and teachers, as well as new learning from instruction.

Production

- Produce a quantity of writing appropriate to task and time available.

ORAL COMMUNICATION ELEs

- Participate actively in small and large group conversations; listen to and look at speaker and build upon comments of others.
- Share relevant information and ask questions that further the discussion.
- Speak at a volume and rate appropriate to setting.

MATHEMATICS ELEs

Mathematical Practices
- Makes sense of problems and perseveres in solving them.
- Communicates mathematical reasoning and ideas using words, numbers, and/or pictures.

Operations and Algebraic Thinking
- Represents and solves problems involving multiplication and division.
- Understand properties of multiplication and the relationship between multiplication and division.
- Multiply and divide within 100.

Numbers and Operations in Base Ten
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Numbers and Operations – Fractions
- Develop understanding of fractions as numbers. (Fraction as a quantity; fraction on a number line; reasoning about equivalence and comparison of fractions).

Measurement and Data
- Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
- Represents and interpret data.
- Geometric measurement: Understand concepts of area and perimeter and relate concepts to multiplication and addition.

Geometry
- Reasons with shapes and their attributes.

SCIENCE ELEs

Science Practices and Nature of Science
- Ask questions and show curiosity.
- Observe closely and record observations.
- Develop and use models.
- Plan and carry out simple investigations.
- Analyze and interpret data.
- Make reasonable claims based on evidence.
- Share ideas and critique the ideas of other scientists.
- Recognize the importance of science and the skills/characteristics of scientists.

Structures
- Describe and compare structures.
- Demonstrate how the properties and shape of materials and how they are used affect the strength and stability of structures.
- Provide examples and evidence of different ways that parts of structures exert force on one another.

Living Structures: The Skeletal System
- Provide evidence to support the claim that skeletal systems are structures made up of parts that work together to allow the animal to survive.
- Make claims based on evidence on how the forms bones take depend on their function and provide evidence on where and how an animal lives.
- Explain the purpose and function of the skeletal system and what we can do to keep it healthy.

Mammal Detectives and Habitats
- Compare and construct claims based on evidence to show how the features of mammals help them adapt to their habitat.
- Provide evidence to support the claim that living things depend on each other and the environment.
- Explain how changes in the habitat of a living thing may affect its survival.

SOCIAL STUDIES ELEs

Historical Thinking
- Make ethical (fair and principled) judgments about actions of people in the past.
- Use evidence and understanding of the historical context to take an historical perspective.

Geography
- Represent the important political and physical features of Massachusetts on a map.
- Demonstrate understanding of the regional geography of New England by describing the landforms, vegetation, animal life, and climate of a New England state.

History
- Analyze the way the physical geography of southeastern Massachusetts influenced the culture of the Wampanoags.
- Assess the culture of the Pilgrims and assess how they adapted to life in Massachusetts.
- Investigate Puritan culture in New England, including the reasons why the Puritans left England, daily life in the colony, education, work, and early leaders in MA such as John Winthrop.

Civics
- Infer the necessity for communities have government by comparing and contrasting the Mayflower Compact and classroom/school rules, etc.
- Provide examples of different ways people in a community can influence their local government.

Economics
- Define and differentiate money and barter economy and represent examples of each.
- Explains the purpose of taxes and support this explanation with historical and modern examples. (EX: Sugar Tax, Olmsted, DPW, etc.).

Research and Writing Skills
- Gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
- Writes opinion pieces on topics, supporting a point of view with reasons.

Appendix G:

Work Habits and Skills

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Work Habits and Thinking Skills Rubric

PSB Progress Reports (formerly Conference Forms) for Grades K-5) have long contained a section on Work Habits and Attitudes. This section varied by grade, without elaboration on the skills. The revised version is now called **Work Habits and Thinking Skills**, and is accompanied by this rubric, which provides information on each skill about why it is important and what it looks like when students are applying these skills in Grades K-8. Currently, there is no section on the 6-8 progress reports for Work Habits and Thinking Skills, but this rubric is useful for teachers and students in these grades to increase awareness and understanding of these essential skills.

What are Work Habits and Thinking Skills?

The skills identified are foundational abilities and understandings that students can learn and develop that will prepare them to work effectively within and across disciplines, independently and with others, through deliberate practice. As students practice these skills, they form habits of thinking, of approaching tasks in a productive way. While the skills themselves are not new, organizing them and assembling them together is new, as is linking proficiency in these skills to success in the 21st Century workplace.* Students do not develop these skills in isolation, but in combination and in the presence of content. Opportunities to become aware of and practice these skills are present in all curriculum areas, for all students, K-12.

It's important to note that everyone is on a life-long journey to develop his/her thinking through application of skills. This is an area of continuous growth. Students have varying degrees of proficiency in applying these skills for their age, but everyone is somewhere on the continuum. Teachers help students understand why these skills are important, and create opportunities for students to practice them.

Organization of the Rubric

This rubric was developed to help us gain shared understanding of what it looks like when students are practicing these skills in the classroom. The descriptors are observable behaviors that indicate that the student is employing a particular skill. Talking to all students about these skills and why they are important is critically important. It helps students understand what they can do to become better thinkers and learners. The rubric is organized in this way:

- Skills Area - There are 6 areas: Productive and Responsible, Collaborative, Creative and Flexible, Critical Thinking, Reflective, and Responsible Community Member
- List of specific skills (as listed on the conference form)
  - Why is it important?
  - What might it look like in Kindergarten – Grade 2?
  - What might it look like in Grades 3-5?
  - What might it look like in Grades 6-8?

This is a teacher document, intended to provide you with language about these skills and habits for use with students and parents. It can assist you in learning more about when your students use these skills, and guide you in creating explicit opportunities for students to practice and

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apply them. A parent version (with just the first two columns) is available in the PSB Portal. Suggestions for improving the rubric by adding examples or clarifying the language are always welcome.
*More information on the sources used in identifying the skills and developing the rubric is on the last page of this document.

Work Habits and Thinking Skills Reporting Key

The reporting key for this section in the progress report has always been a frequency scale. On this new rubric, a number of observable behaviors are listed for each skill. (This is by no means complete - these are examples.) In general, think about your students and how frequently you observe them employing the skill. The continuum starts with rarely and moves to consistently, as the student develops the habit of being "productive and responsible" or "thinking critically". The student is moving towards routinely, instinctively and habitually applying the skills. Given these are skills we all work on throughout our lifetimes, we expect students to be practicing different skills at different times. It is not a problem if students are only demonstrating a skill occasionally. Even adults are continuing to practice these skills every day.

Three different ways of thinking about frequency are provided. No one is expected to keep a tally on each student. It is about your general sense of the student's approach to working. We welcome additional examples of students applying these skills in the grade spans.

Reporting Key			
Consistently	**Often**	**Sometimes**	**Rarely**
This is an established habit; it is how the student consistently approaches situations and tasks across disciplines.	This is starting to become a habit; this is how the student often approaches situations and tasks. S/he may apply the skill more regularly in some disciplines than others.	The student sometimes approaches situations and tasks in this way, with growing frequency. Not consistently or across disciplines.	Student is just beginning to show evidence of the habit/disposition in specific situations.
Almost all of the time	More than half of the time	Less than half of the time	Limited demonstration of skill/disposition
90%+ of the time	50-90% of the time	20-50% of the time	20% of the time or less

RUBRIC: Productive and Responsible

Skill	Why is it important?	What might it look like in KINDERGARTEN – GR2?	What might it look like in GR 3-5?	What might it look like in GR 6-8?
Persevere at tasks to reach a satisfactory outcome	Some tasks are harder than others. Perseverance is the opposite of giving up when things get hard. In order to persevere, students need strategies and ideas of how to approach a problem in a new way. When one perseveres at a task and accomplishes it, a growth mindset is reinforced.	Grade K-2 students: • Talk about tasks that are easy and tasks that take more time and effort. • Try more than one strategy when working through a complex problem or task. • Seek help and/or ask questions before giving up. • Stay with a task until it is complete.	Grade 3-5 students: • Identify situations where perseverance led to a solution, or improvement. • Talk about obstacles and challenges as part of the problem solving process. • Sees the need for different strategies to solve a complex problem. • Continue working on a task despite distractions or obstacles. • Recognize what a fully completed task looks like.	Grade 6-8 students: • Understand that making mistakes is part of the learning process and continue to try strategies to work around the obstacle. • Work hard and do not give up when presented with a challenging task. • Delay immediate gratification in order to make progress toward a longer-term goal (hard work feels good). • Try different strategies when solving a complex problem. • Continue to work on a task until a quality solution is achieved.
Plan, organize and follow through on tasks	Most tasks involve a series of steps. Organizing the steps into a logical, manageable sequence is necessary for efficient work. A good plan takes resources, including time, into consideration.	Grade K-2 students: • Follow the simple steps outlined for completion of a task. • Describe what is needed to complete a task. • Assemble materials needed for a task. • Make a simple plan to complete a task.	Grade 3-5 students: • Imagine and describe the sequence of steps needed to complete a task. • Follow the steps in a plan in an efficient sequential order. • Describe the resources needed to complete the steps of a simple task (materials, space, time). • Estimate how long it may take to complete the steps of a simple task.	Grade 6-8 Students: • Develop and carry out the sequence of steps needed to complete a task. • Obtain the resources needed to complete a task. • Make use of existing organizational supports, trackers, rubrics, etc.

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Complete work in an appropriate time frame	Tasks take time. Getting a sense of what is realistic in terms of the time it takes to complete the steps in a task helps one to manage a project and ensure completion. This includes a level of self-awareness of how long it takes you to do things, and that some things take longer than others.	Grade K-2 students: • Describe how much time it should take to work on a task based on the teacher's instructions. • Set to work on tasks with the goal of completing them within the given time frame. • Seek help in adjusting time frame for a task when encountering difficulties or falling behind.	Grade 3-5 students: • Describe how long a task should take. • Rethink and adjust the time needed for a task when difficulties occur. • Work toward completion while maintaining high standards for quality. • Manage the multiple tasks they have to work on and complete over the course of a day or week.	Grade 6-8 students: • Identify and prioritize components necessary to complete a long-term task; make a plan to complete all components in a timely manner.
Work independently when appropriate	Many tasks involve working independently. Learning to work on your own when you are called upon to do so is necessary in order to accomplish the array of tasks we are given. It requires a good understanding of the task, and believing that you have the skills to accomplish the work.	Grade K-2 students: • Explain the task they are working on. • Get started working, following teacher directions. • Use the time provided for independent work.	Grade 3-5 students: • Articulate specific clarifying questions that will enable then to work independently. • Start on tasks without teacher assistance, following written or oral directions. • Use work time provided to accomplish tasks that are to be completed independently. • Are able to be productive independently while other students are engaged in work	Grade 6-8 students: • Believe they can do the work independently and attempt the work without prodding. • Are able to be productive independently. • Recognize when they are not able to work independently and advocate for a solution that will help them proceed.
Manage transitions	Adults move from situation to situation all day, and have to successfully transition from one mode of thinking and working to another. In a full school day, students must stop doing one thing in order to begin doing another. They learn that there is a rhythm to a day, and can move to the next part of the day as an individual who is functioning as a member of a larger	Grade K-2 students: • Describe the different parts of the school day, and that you end one part before starting the next part. • Put down a task when directed, and pick it up at a later time. • Move from an individual activity to a group activity, or vice versa. • May help their classmates move along to the next activity. • Describe what his/her tasks are in transition (ex: put away journals; clean up choice area, etc.)	Grade 3-5 students: • Describe the schedule/cycle of the day and have a sense of how long each activity lasts. • Anticipate and prepare for the next move in the day. • Stop work on one activity in order to start the next activity. • Describe the behavior that is appropriate for the different activities of the day. • Move to the next activity as an individual and as a classroom	Grade 6-8 students: • Follow through on classroom expectations for managing transitions as described in Grades 3-5. • Adapt to different expectations and routines of different teachers.

	Group.		member.	

RUBRIC: Collaborative

Skill	Why is it important?	What might it look like in KINDERGARTEN – GR2?	What might it look like in GR 3-5?	What might it look like in GR 6-8?
Communicate about ideas with others	Good communicators are good listeners. This is essential in order to engage in respectful and productive dialogue. Listeners who are receptive to the ideas and input of others know that it may increase their understanding or lead to an improved idea or product. Good communicators are able to articulate their ideas, and seek help from others. They know that other people may have additional information and are able to help one see a problem or situation from another angle.	Grade K-2 students: • Listen, respond, and affirm the ideas of others, and offer personal perspective when appropriate. • Practice waiting to share their own thoughts until the other person is finished speaking. • Paraphrase the ideas of others with some understanding and accuracy. • Use facial, vocal, and body language that shows attentiveness when listening to others. • Talk about what they have done so far and ask questions about what they don't understand. • Explain to a classmate how they solved a problem.	Grade 3-5 students: • Hold their own thought while listening to others. • Respectfully offer ideas that show they have listened. • Acknowledge what others say. • Anticipate learning something by listening to what others have to say. • Use facial, vocal, and body language that shows attentiveness when listening to others. • Describe the process they have used to work on a problem, and at what point they became stuck. • Describe/share the steps they went through to successfully solve a problem.	Grade 6-8 students: • Actively listen to the ideas of others and try to understand them. • Ask clarifying questions to fully understand the ideas of others. • Incorporate others' perspectives to broaden their thinking. • Explain their ideas and processes so that others understand. • Give specific and constructive feedback. • Incorporate feedback appropriately.
Participate in group discussions and group work	Most work is done by groups of people. It's important for students to know that each group member is necessary and contributes, for better or worse, to the outcome or success of the work. Individuals need to understand the purpose of the work and feel confident in	Grade K-2 students: • Follow a group conversation and contribute voluntarily or if called upon. • Share tasks and resources when engaged in group work. • Share ideas with group members. • Incorporate ideas of others when appropriate. • Assert his/her ideas appropriately.	Grade 3-5 students: • Pay attention to group conversations and contribute task-related questions and ideas. • Discuss the goal of the group work and how to work together to get the task done. • Come prepared to do their part. • Individually feel responsible for the success of the group's work.	Grade 6-8 students: • Monitor airtime and share comments that will advance the thinking of the group. • Support group members in completing the group task. • Are willing to allocate and reallocate tasks as needed in order to ensure group success. • Acknowledge and utilize strengths

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	their ideas and skills in order to feel that their participation makes a difference.			of individual group members.
Follow classroom routines	The classroom is a community, set up so people can get along and learn together. Routines help build community by making the classroom a safe, helpful and orderly place. Knowing and following classroom routines help a student to be personally productive and contribute to the productivity and well-being of others.	Grade K-2 students: • Describe or help create classroom routines/expectations and explain the purpose they serve. • Anticipate the routines, and prepare themselves to follow them. • Are patient with others, yet encourage them to follow routines. • Adapt to changes when necessary.	Grade 3-8 students: • Participate in the creation of classroom norms, and articulate the rationale for them. • Describe the fair and logical consequences of not following classroom routines. • Suggest new routines or norms as a way of creating order or organizing their classroom. • Follow classroom routines. • Recognize that some of the time the needs of the group supersede the needs of the individual students.	

RUBRIC: Creative and Flexible

Skill	Why is it important?	What might it look like in KINDERGARTEN – GR2?	What might it look like in GR 3-5?	What might it look like in GR 6-8?
Show eagerness and curiosity as a learner	People who are curious wonder and puzzle about things. They want to know more about the world. They follow their intuition to see what happens. They often respond with "wonderment and awe." Curiosity is a basis for enjoying learning and wanting to learn throughout one's life. It leads to investigation, creative reflection, and new understandings.	Grade K-2 students: • Seek out information or asks questions on topics of interest or experiences that are new to them. • Ask questions that show a desire for bigger understanding – Why? How come? What if? • Explore materials and objects in an imaginative way. • Share their discoveries with others through conversation or artifacts.	Grade 3-8 students: • Seek out information on topics of interest to them by reading, researching, experimenting. • Ask clarifying and probing questions about content. • Spend extra time and effort "digging for answers." • Play with and explore tools and materials to understand how they work, and what they can and cannot do. • Share their discoveries and passions with others; describe what they have found out.	Grade 6-8 students: • Notice phenomena, wonder about them and ponder them over time. • Ask questions that can be investigated. • Generate many ideas. • Are willing to explore open-ended questions with no clear right answers.

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Approach tasks with flexibility and inventiveness	Flexible thinkers are able to take a variety of approaches to thinking about a problem, and are able to view a problem or topic from different directions or perspectives. They are able to change their minds when presented with additional data or new information. Flexible thinkers can see new uses for objects, and are able to combine ideas together in new ways. Flexible thinking is needed for inventing and improving new products and processes.	Grade K-2 students: • Try out different approaches to solving a problem; they can show how problems can be approached in different ways. • Use suggestions and ideas from others to change and improve their work. • Suggest different uses for ordinary objects, or combine objects to make something new. • Improvise to solve a problem.	Grade 3-5 students: • Imagine and suggest how things could be changed – made bigger, smaller, backwards, re-purposed, etc., or how things look from different perspectives. • Talk or show how a change might impact an outcome. (Ex.: If I change this, this would happen.) • Revise their viewpoint or idea based on new information or feedback; will go back and rework something to reflect the newer understanding. • Combine multiple ideas when developing a product or project. • Use ordinary objects in surprising ways, as new components or tools.	Grade 6-8 students: • Create relationships between ideas *in order* to better understand them.
Elaborate on ideas	Elaboration is adding to an idea to make it more interesting or complete. You build upon an existing piece of work, add to it and make it your own. Elaboration allows one to tailor work to suit an audience, make a point, develop the point, or produce a desired effect. By making choices through the process of elaboration, we share our perspective and invite others to notice them and react.	Grade K-2 students: • Add imaginative details to a story or picture. • Make up an ending to a story stem. • Add to an existing object, making it personal and unique. • In collaboration with a partner, can work with a material or set of objects to develop an elaborated idea or project. (Ex: village made of blocks, dramatic play, set of characters, etc.)	Grade 3-5 students: • Take an open-ended prompt and develop an idea. • Build a more complete picture for the audience by including more information and detail. • Add details and information to make something unique and original. • In a group, build on and add to each others' ideas when developing a project.	Grade 6-8 students: • Use feedback to elaborate on an idea and make it more complete.

RUBRIC: Critical Thinking

Skill	Why is it important?	What might it look like in KINDERGARTEN – GR2?	What might it look like in GR 3-5?	What might it look like in GR 6-8?
Connect new information to prior knowledge and experience	By thinking about one's prior experience, you can connect your experience to a new situation, and recognize what can be learned from what you already know. It allows one to see what you don't know and develop a plan to get information.	Grade K-2 students: • When prompted or independently, can identify past experiences or learning that is similar to a new situation. • Remember and share relevant prior learning experiences that provide information that might be helpful now (Have I seen a problem like this before?) • Demonstrate this through conversation, illustration, or answering questions.	Grade 3-8 students: • Identify and share relevant experiences. • Apply content, strategies or learning from one discipline to a problem or concept in another. Ask questions about the connections they see. • Acknowledge the connections that others make. • Begin to make analogies to describe the connection between two or more experiences.	
Consider whether information is reasonable, reliable, and relevant	Given the amount of information available, one must be able to determine which sources/information are reasonable and reliable, and most relevant for one's work.	Grade K-2 students: • Talk about the differences between what is real and what is imaginary, or not real. • Question information that seems absurd or fantastic. • Know where to look up information to check out whether something is reasonable.	Grade 3-5 students: • Explain or give examples of information that is reliable and useful, and information that is not. • Question information that does not seem reasonable or useful. • Seek to verify the accuracy of information using reliable sources.	Grade 6-8 students: • Gather evidence to support a claim. • Evaluate evidence and claims with healthy skepticism. • Consider whether evidence is sufficient to support a claim.
Look for differences and similarities (K-5)	Finding similarities and differences, or comparing and contrasting, is the basis for understanding relationships and classification. It allows one to organize and make sense of our environment. It helps one to understand the nature of a group. Finding	Grade K-2 students: • Identify attributes/properties of things, what it is, and what its opposite might be. • Say how things are alike and different. • Sort and re-sort by multiple attributes, and name categories. • Show how things can be alike in	Grade 3-5 students: • Compare and contrast events, ideas, and perspectives. • Explain or show how things are alike and different, and how the design of something is suited to its purpose. • Identify significant attributes of things that qualify them to be	

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	similarities and differences is the first step in being able to make analogies and metaphors.	some ways and different in other ways. • Draw similarities and differences in text.	classified as part of a particular group.	
Identify patterns, trends and discrepancies (6-8)	Identifying patterns, trends, and discrepancies allows you to make sense of your surroundings and experiences.			Grade 6-8 students: • Infer by making claims based on evidence. • Analyze a situation by thinking about the parts and the whole and how they fit together as a system. • Synthesize information into a new coherent whole. • Identify significant patterns and trends in information.

RUBRIC: Reflective

Skill	Why is it important?	What might it look like in KINDERGARTEN – GR2?	What might it look like in GR 3-5?	What might it look like in GR 6-8?
Understands that improvement comes with effort; Believe all people can improve with effort	*In a growth mindset, people believe that their most basic abilities can be developed through dedication and hard work – brains and talent are just the starting point. This view creates a love of learning and a resilience that is essential for great accomplishment.* (Source: mindset.online.com) Students with a growth mindset know that they can improve. They recognize that everyone starts at different places, and that hard work and effort are required to learn new things. This motivates both teachers and students to try new things.	Grade K-2 students: • Talk about what they do or don't know. • Articulate the belief that if a person doesn't have a skill, they can still learn and succeed. • Are willing to try things (even things that are hard for them) knowing that it is how they can get better at it.	Grade 3-5 students: • Talk about what they are good at, and things that they need to work harder on. • Explain how making a mistake is part of how you learn and how one can get better. • Push themselves to do more, even when they feel they are already good at something, acknowledging there is always more to learn and challenging themselves to become even better. • Encourage others to try new things. • Identify what they don't understand and/or what they need to know. • Look for examples of how similar problems have been solved; will try out the suggestions of others.	Grade 6-8 students: • Push their thinking by accepting and seeking challenges. • Are willing to make mistakes and analyze mistakes to help improve. • Recognize what their personal strengths and challenges are.
Reflect on one's work and behavior	The ability to step back and review one's thinking and behavior helps a learner to recognize how decisions made along the way led to the outcomes. As learners become self-aware, they become more efficient and able to learn from their experiences.	Grade K-2 students: • Explain or show how one action impacts other actions. • Talk about what helped and what was not helpful when reviewing the steps in a task. • Ask questions of classmates about what they did and why. • Explain how they learned from past experiences.	Grade 3-8 students: • Articulate the impact of a decision made during the problem solving process. • Retrace their steps and figure out when a problem started. • Talk about what went well and what they might do differently next time. • Compare how they worked through a task with how others did, asking questions in order to learn about their process. • Monitor understanding and step back to assess how well a plan or strategy is working. • Realize when a plan is not working and they need outside help.	

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RUBRIC: Responsible Community Member

Skill	Why is it important?	What might it look like in KINDERGARTEN – GR2?	What might it look like in GR 3-5?	What might it look like in GR 6-8?
Treat fellow students with kindness (Be kind)	Being kind enables one to better understand the perspectives and needs of others, thus nurturing empathy. When one is kind to others, an atmosphere of trust is fostered which promotes openness and collaboration.	Grade K-2 students: • Consider that individuals have different feelings. • Help out when asked. • Adapt behavior based on feedback from peers.	Grade 3-5 students: • Acknowledge that individuals have different emotional responses to the same words. • Assist without being asked.	Grade 6-8 students: • Are willing to work with a variety of people. • Help community members without being asked.
Consider how a situation can be fair or unfair (Be fair)	Fairness results in people receiving what they are due and deserve. Being fair, that is, treating others equitably and justly, helps create stronger reciprocal relationships and a more caring community.	Grade K-2 students: • Share materials and space. • Take turns. • Listen to the other side of a story.	Grade 3-5 students: • Allocate resources fairly. • Identify an unfair situation, and question it.	Grade 6-8 students: • Understand "fairness" means people's needs are met in different ways. • Devise and advocate solutions to problems involving unfairness and injustices.

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Take responsibility for his/her role in creating a successful group (Be responsible)	Students who are responsible have an awareness of their impact on the larger community of learners. They follow established agreements/class rules, demonstrate appropriate behavior without prompting and place value in the importance of their role in the larger group's overall performance.	Grade K-2 students: • Explain classroom rules, and why they are needed. • Behave according to the class rules. • Encourage classmates to participate, and reminds them of classroom norms. • Come ready to work with the required materials.	Grade 3-8 students: • Are in the habit of following classroom rules; model for other students. • Approach a peer and respectfully remind them of the classroom rules/norms. • Come prepared to work (pre-work done, necessary materials). • Recognize when they have made a mistake or a poor choice and work to make amends.	
Respect the rights and feelings of others (Be respectful)	Respectful students are aware of the social and cross cultural differences within their peers. They accept and respect these human differences, working with consideration and cooperation, kindness, empathy, and tolerance so that all students feel safe when learning together.	Grade K-2 students: • Describe how people may feel differently about a situation. • Talk about how families differ, have different important holidays and traditions. • Are friendly with classmates who are different from them and have different ideas and traditions. • Consider the feelings of others before speaking.	Grade 3-5 students: • Listen and tolerate varying points of view, including those different from their own. • Articulate that there are different ways of doing things, not better or worse. • Choose words intentionally (and carefully) when addressing others; are aware of the perspective of their audience.	Grade 6-8 students: • Accept that people have many points of view and recognize the value in having a number of points of view present in a conversation. • Seek common ground with community members.
Look after his/her safety and that of others (Be safe)	A safe learning environment is essential for students of all ages. Without it they are unable to focus on learning the skills needed for a successful education and future. According to Maslow's hierarchy of needs, one's physiological and safety needs must be addressed in order for a person to be able to self-actualize.	Grade K-2 students: • Follow safety rules. • Respect shared spaces and personal space. • Practice self-control, and are able to verbally express disappointment, anger or frustration.	Grade 3-5 students: • Follow safety rules without needing supervision. • Act appropriately in shared spaces. • Practice self-control. • Communicates concern about unsafe situations (for themselves or others).	Grade 6-8 students: • Advocate and seek help from others when they place themselves *or witness others* in unsafe situations.

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Accept and provide honest input and feedback (Be honest)	Accepting and providing honest feedback is a way to observe someone's understanding of what it means to "be honest." Honesty provides the foundation for a vibrant, collaborative academic environment and prepares students for responsible citizenship.	Grade K-2 students: • Find appropriate things to say about other students' work that are helpful. • Respectfully give straightforward answers to questions.	Grade 3-8 students: • Accept suggestions (constructive criticism) about their work. • Provide critique/ideas to the work of others based on standards.	Grade 6-8 students: • Do their own work, which represent their own thoughts and efforts. • Do not cheat or plagiarize.

The Public Schools of Brookline - Grades K-8

Development of the Rubric

The K-5 rubric was developed over several years by a Teaching and Learning work group, comprised of the coordinators for K-8 Science, K-8 Social Studies, K-12 Art, and Enrichment and Challenge Support, and the Director of Program Review. The section for Grades 6-8 was developed by a work group of middle school educators from Pierce School, who have been working in this area for a number of years. Along the way, many groups of educators provided input and gave feedback. This current document is the result of many people, thinking together, applying 21st Century thinking skills. It is considered a work in progress, and comment and suggestions to improve the rubric are welcomed.

The work groups synthesized information from many sources, including the various lists of skills and habits currently in use in Brookline and other places, in order to determine a framework of categories of skills/habits, and then to identify fundamental skills within each category so as to keep the list manageable yet comprehensive.

An important source for this work was the *Partnership for Twenty-first Century Skills,* a national organization that advocates for 21st century readiness for every student (www.p21.org). Other sources include the recommendations from the *Massachusetts Task Force on 21st Century Skills,* the *ISTE.nets (International Society for Technology in Education Performance Indicators for Students),* the *Massachusetts Library Association skills framework, the Center for Media Literacy Process Skills framework,* and the work on *Habits of Mind,* by Art Costa and colleagues. For those who want to learn more about thinking skills and habits of mind in the 21st century context, a listing of resources is provided:

Bibliography for Work Habits and Skills

Bellanca, James and Ron Brandt. 21st Century Skills: Rethinking How Students Learn. Bloomington, IN: Solution Tree, 2010.

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Crockett, Lee, Ian Jukes, and Andre Churches. Literacy is NOT Enough: Fluencies for the Digital Age. Thousand Oaks, CA: Corwin, 2011.

Dweck, Carol. Mindset: The New Psychology of Success. New York: Ballantine Books, 2007.

Jerald, Craig D. Defining a 21st Century Education. Alexandria, VA: Center for Public Education, 2009.

Trilling, Bernie and Charles Fadel. 21st Century Skills: Learning for Life in Our Times. San Francisco: Jossey-Bass, 2009.

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Appendix H:

Devotion Technology Snapshot

Classroom Models:

Grade	Classroom Model	Notes
K	1 iMac Desktop, 1 Faculty Laptop	
1	1 iMac Desktop, 1 Faculty Laptop, 4 iPads	
2	1 iMac Desktop, 1 Faculty Laptop,	3 out of 5 classrooms have SmartBoards
3	1 iMac Desktop, 1 Faculty Laptop, SmartBoards	3 out of 4 classrooms will have SmartBoards (‘14-’15)
4	1 iMac Desktop, 1 Faculty Laptop, SmartBoard	3 out of 4 classrooms have Document Cameras
5	1 iMac Desktop, 4 iPads, 1 Faculty Laptop, SmartBoard	
6	1 iMac Desktop, 1 Faculty Laptop, SmartBoard/Projector	
7	1 iMac Desktop, 1 Faculty Laptop, SmartBoard/Projector	
8	1 iMac Desktop, 1 Faculty Laptop, SmartBoard	

Learning Centers

LC	Equipment Model	Notes
K-2	1 iMac Desktop, 1 Faculty MBPro Laptop	
3-4	1 iMac Desktop, 1 Faculty MBPro Laptop	
5-6	2 iMac Desktops, 1 Faculty MBPro Laptop	
7-8	2 iMac Desktops, 1 Faculty MBPro Laptop	
K-3 CLC	1 iMac Desktop, 1 Faculty MBPro Laptop	
4-5 CLC	1 iMac Desktop, 1 Faculty MBPro Laptop	

6-8 CLC	2 iMac Desktops, 1 Faculty MBPro Laptop, Projector	
K-3 TLC	1 iMac Desktop, 1 Faculty MBPro Laptop	
4-6 TLC	1 iMac Desktop, 1 Faculty MBPro Laptop	
7-8 TLC	3 iMac Desktops	

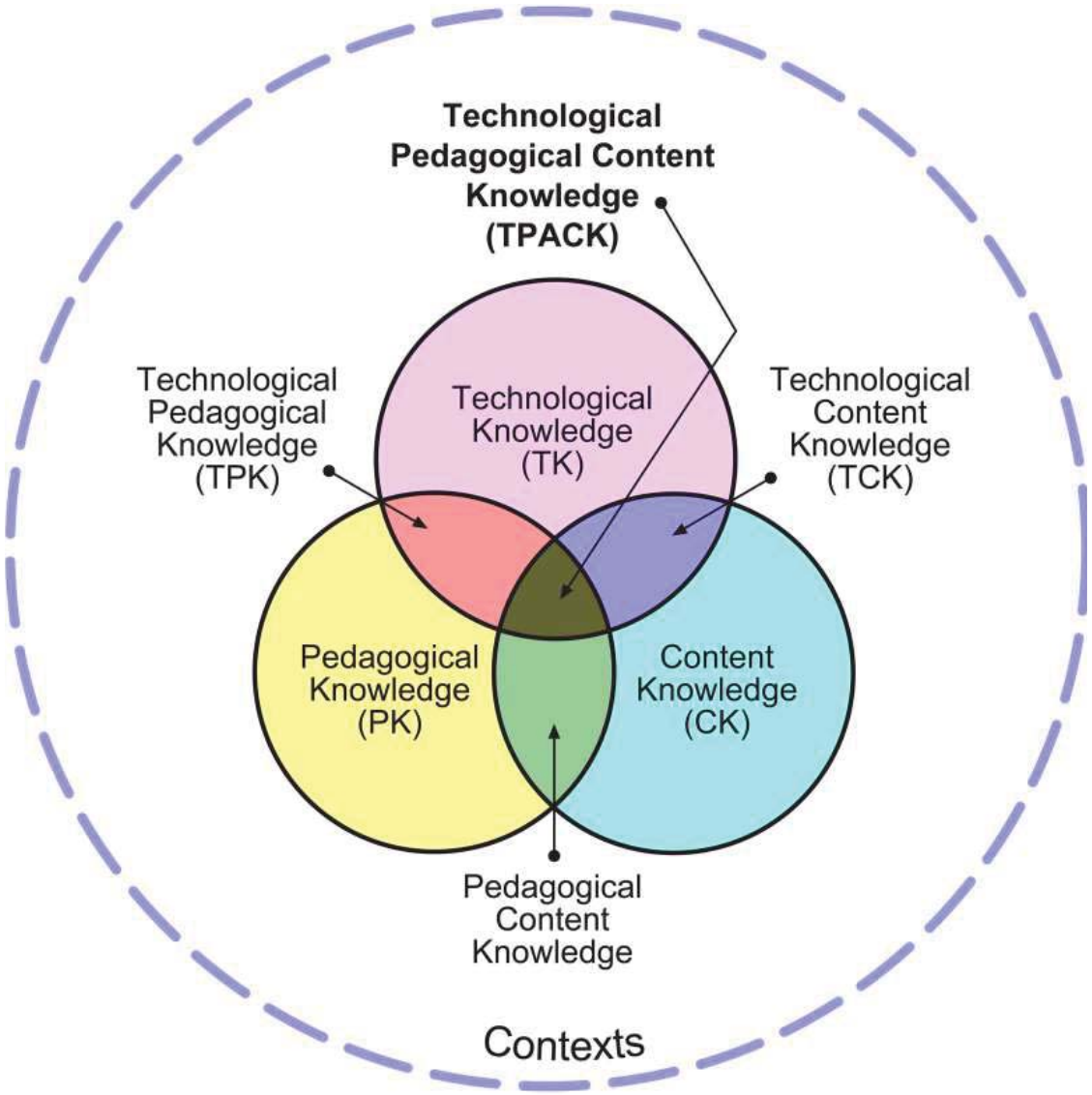
Labs and Mobile Carts

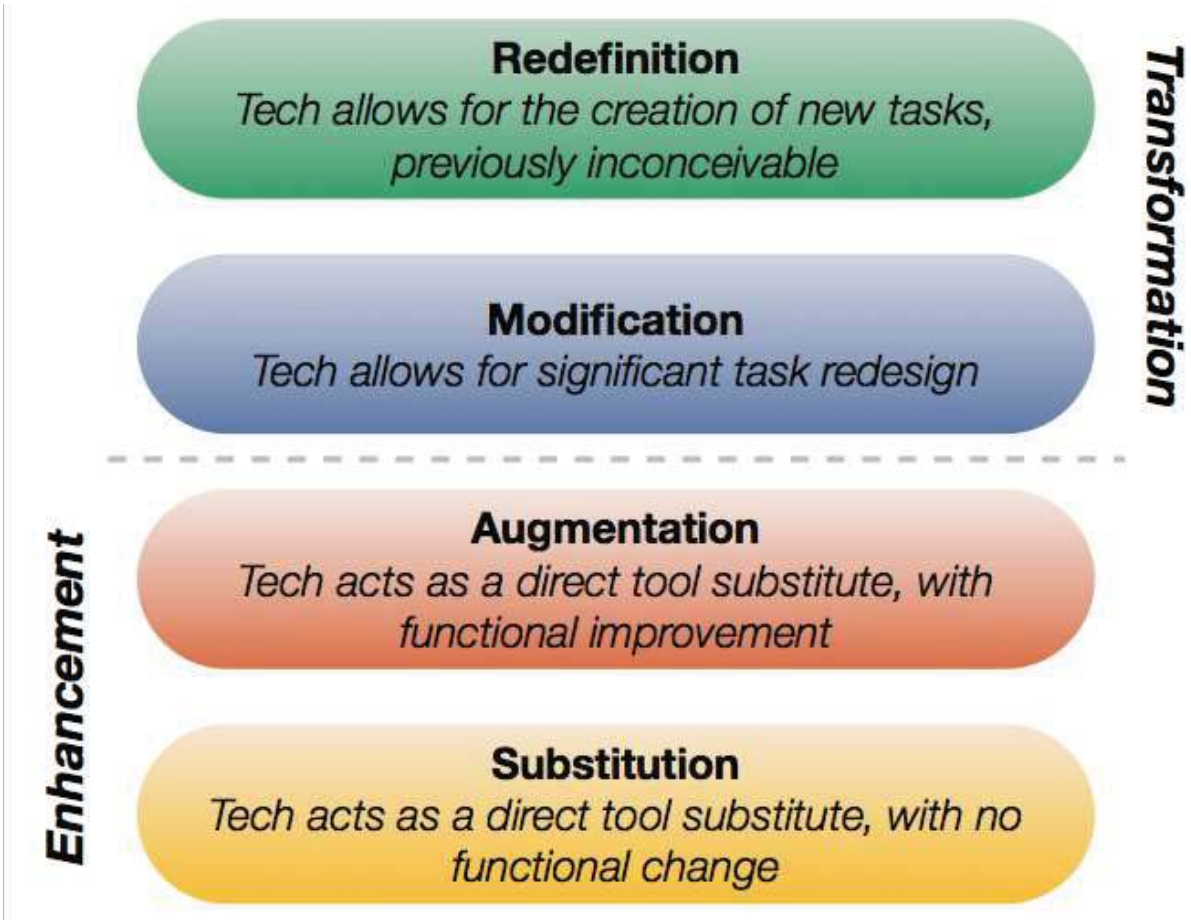
LC	#	Equipment Model	Location	Signup	Notes
Lab	25	iMacs	Lab	Y	
MiniLab1	9	iMacs	5-6 Open Area	N	
MiniLab2	9	iMacs	7-8 Open Area	N	
Library	11	iMacs	Library	N	
ChromeCart	25	Chromebooks	Library	N	
Cart1	14	MB Airs	Lab	Y	
Cart2	14	MB Airs	Lab	Y	
Cart3	24	MB Airs	Lab	Y	
Cart4	8	MB	RM 242	N	
Cart5	26	MB Airs	Lab	Y	
Cart6	26	MB Airs	Lab	Y	

Appendix I:

TPACK and SAMR

TPACK Model
Technological Pedagogical Content Knowledge
http://tpack.org




Redefinition
Tech allows for the creation of new tasks, previously inconceivable
Modification
Tech allows for significant task redesign
Augmentation
Tech acts as a direct tool substitute, with functional improvement
Substitution
Tech acts as a direct tool substitute, with no functional change
Transformation
Enhancement

Appendix J:

Rigor and Relevance Framework

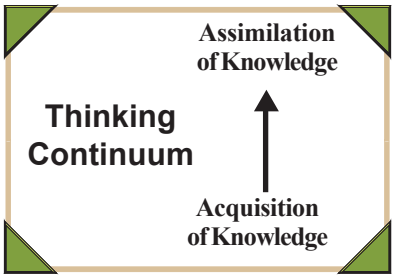
and

Rigor and Relevance Framework + SAMR Morel + P21.org

Rigor/Relevance Framework™

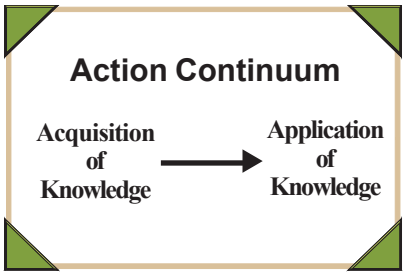
The Rigor/Relevance Framework is a tool developed by staff of the International Center for Leadership in Education to examine curriculum, instruction, and assessment. The Rigor/Relevance Framework is based on two dimensions of higher standards and student achievement.

First, there is a continuum of knowledge that describes the increasingly complex ways in which we think. The Knowledge Taxonomy is based on the six levels of Bloom's Taxonomy:
(1) awareness
(2) comprehension
(3) application
(4) analysis
(5) synthesis
(6) evaluation.



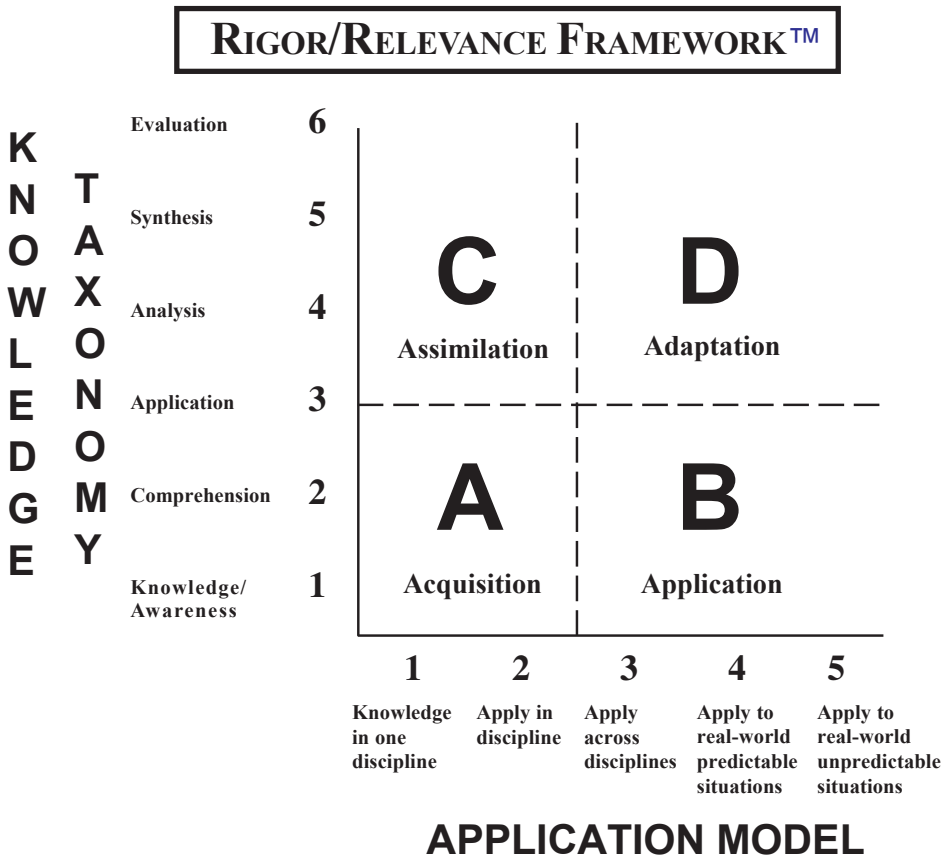
The low end of this continuum involves acquiring knowledge and being able to recall or locate that knowledge in a simple manner. Just as a computer completes a word search in a word processing program, a competent person at this level can scan through thousands of bits of information in the brain to locate that desired knowledge.

The high end of the Knowledge Taxonomy labels more complex ways in which individuals use knowledge. At this level, knowledge is fully integrated into one's mind, and individuals can do much more than locate information. They can take several pieces of knowledge and combine them in both logical and creative ways. Assimilation of knowledge is a good way to describe this high level of the thinking continuum. Assimilation is often referred to as a higher-order thinking skill: at this level, the student can solve multistep problems and create unique work and solutions.



The second continuum, created by Dr. Willard R. Daggett, is known as the Application Model. The five levels of this action continuum are:
(1) knowledge in one discipline
(2) apply in discipline
(3) apply across disciplines
(4) apply to real-world predictable situations
(5) apply to real-world unpredictable situations

The Application Model describes putting knowledge to use. While the low end is knowledge acquired for its own sake, the high end signifies action — use of that knowledge to solve complex real-world problems and to create projects, designs, and other works for use in real-world situations.



The Rigor/Relevance Framework has four quadrants.

Quadrant A represents simple recall and basic understanding of knowledge for its own sake. Quadrant C represents more complex thinking but still knowledge for its own sake. Examples of quadrant A knowledge are knowing that the world is round and that Shakespeare wrote *Hamlet*.

Quadrant C embraces higher levels of knowledge, such as knowing how the U.S. political system works and analyzing the benefits and challenges of the cultural diversity of this nation versus other nations.

Quadrants B and D represent action or high degrees of application. Quadrant B would include knowing how to use math skills to make purchases and count change. The ability to access information in wide-area network systems and the ability to gather knowledge from a variety of sources to solve a complex problem in the workplace are types of quadrant D knowledge.

Each of these four quadrants can also be labeled with a term that characterizes the learning or student performance.

Quadrant A — Acquisition

Students gather and store bits of knowledge and information. Students are primarily expected to remember or understand this acquired knowledge.

Quadrant B — Application

Students use acquired knowledge to solve problems, design solutions, and complete work. The highest level of application is to apply appropriate knowledge to new and unpredictable situations.

Quadrant C — Assimilation

Students extend and refine their acquired knowledge to be able to use that knowledge automatically and routinely to analyze and solve problems and create unique solutions.

Quadrant D — Adaptation

Students have the competence to think in complex ways and also apply knowledge and skills they have acquired. Even when confronted with perplexing unknowns, students are able to use extensive knowledge and skill to create solutions and take action that further develops their skills and knowledge.

A Fresh Approach

The Rigor/Relevance Framework is a fresh approach to looking at curriculum standards and assessment. It is based on traditional elements of education yet encourages movement to application of knowledge instead of maintaining an exclusive focus on acquisition of knowledge.

The Framework is easy to understand. With its simple, straightforward structure, it can serve as a bridge between school and the community. It offers a common language with which to express the notion of a more rigorous and relevant curriculum and encompasses much of what parents, business leaders, and community members want students to learn. The Framework is versatile; it can be used in the development of instruction and assessment. Likewise, teachers can use it to measure their progress in adding rigor and relevance to instruction and to select appropriate instructional strategies to meet learner needs and higher achievement goals.

Here is an example involving technical reading and writing.

Quadrant A
Recall definitions of various technical terms.

Quadrant B
Follow written directions to install new software on a computer.

Quadrant C
Compare and contrast several technical documents to evaluate purpose, audience, and clarity.

Quadrant D
Write procedures for installing and troubleshooting new software.

Defining Rigor

Rigor refers to academic rigor — learning in which students demonstrate a thorough, in-depth mastery of challenging tasks to develop cognitive skills through reflective thought, analysis, problem-solving, evaluation, or creativity. Rigorous learning can occur at any school grade and in any subject. The Knowledge Taxonomy describes levels of rigor.

A versatile way to define the level of rigor of curriculum objectives, instructional activities, or assessments is the Knowledge Taxonomy Verb List (see page 6). The Verb List can be used either to create a desired level of expected student performance or to evaluate the level of existing curriculum, instruction or assessment.

An example of student performance at various levels follows. Notice each statement starts with a verb that comes from the appropriate section of the Knowledge Taxonomy Verb List. The expected achievement level for teaching about nutrition can vary depending on the purpose of the instruction. If a teacher only wants students to acquire basic nutritional knowledge, a student performance set at level one of two is adequate. If the instruction is intended to have a more significant impact on nutritional habits then some of the objectives need to be similar to levels four through six.

Basic Nutrition

Level	Performance
Level 1 – Knowledge	Label foods by nutritional groups
Level 2 – Comprehension	Explain nutritional value of individual foods
Level 3 – Application	Make use of nutrition guidelines in planning meals
Level 4 – Analysis	Examine success in achieving nutrition goals
Level 5 – Synthesis	Develop personal nutrition goals
Level 6 – Evaluation	Appraise results of personal eating habits over time

Note that each of the levels requires students to think differently. Levels four through six require more complex thinking than levels one through three.

When creating lesson plans and student objectives, selecting the proper word from the Knowledge Taxonomy Verb List can help to describe the appropriate performance. Simply start with a verb from the desired level and finish the statement with a specific description of that skill or knowledge area.

The Verb List can also be used to evaluate existing lesson plans, assessments, and instructional experiences. Looking for verbs and identifying their level will give a good indication of the level of student performance in that instruction.

Defining Relevance

Relevance refers to learning in which students apply core knowledge, concepts, or skills to solve real-world problems. Relevant learning is interdisciplinary and contextual. Student work can range from routine to complex at any school grade and in any subject. Relevant learning is created, for example, through authentic problems or tasks, simulation, service learning, connecting concepts to current issues, and teaching others. The Application Model describes the levels of relevance.

Identifying the level of relevance of curriculum objectives and instructional activities is a little more difficult than determining the Knowledge Taxonomy level because there is no verb list. However, just as the Knowledge Taxonomy categorizes increasing levels of thinking, the Application Model described increasingly complex applications of knowledge. Any student performance can be expressed as one of five levels of the Application Model. The Application Model Decision Tree can assist in setting the desired level of expected student performance in application (see pages 7-8) by asking the questions: Is it application? Is it real world? Is it unpredictable?

The Basic Nutrition example below is similar to the one in the Defining Rigor section in that it uses nutrition to describe student performance at various levels. Each level requires students to apply knowledge differently.

Similarly, the expected achievement level for teaching about nutrition can vary depending on the purpose of the instruction. If a teacher wants students only to acquire basic nutritional knowledge, a student performance set at level one is adequate. If the instruction is intended to have a significant impact on nutritional habits, then some of the objectives need to be at levels four and five.

Use of the Application Model Decision Tree can help to describe desired performance. Start by writing draft statements of student objectives and then use the Decision Tree to reflect on and revise these statements. The Decision Tree focuses on the three key characteristics that distinguish levels of the Application Model: application, real world, and unpredictability. The second page of the Decision Tree offers additional criteria to determine whether an objective meets the test of application, real world, and unpredictability.

The Application Model Decision Tree can also be used to evaluate existing lesson plans, assessments, and instructional experiences. Answer the questions to identify at which level of student performance that instruction or assessment is.

Basic Nutrition

Level	Performance
Level 1 – Knowledge in One Discipline	Label foods by nutritional groups
Level 2 – Application in One Discipline	Rank foods by nutritional value
Level 3 – Interdisciplinary Application	Make cost comparisons of different foods considering nutritional value
Level 4 – Real-world Predictable Situations	Develop a nutritional plan for a person with a health problem affected by food intake
Level 5 – Real-world Unpredictable Situations	Devise a sound nutritional plan for a group of 3-year-olds who are picky eaters

Knowledge Taxonomy Verb List

1 Knowledge

arrange, check, choose, find, group, identify, label, list, locate, match, name, point to, recall, recite, repeat, say, select, write

2 Comprehension

advance, calculate, change, contemplate, convert, define, explain, extrapolate, infer, interpret, outline, project, propose, reword, submit, transform, translate, vary

3 Application

adopt, capitalize on, consume, devote, employ, exercise, handle, maintain, make use of, manipulate, mobilize, operate, put to use, relate, solve, start, take up, utilize

4 Analysis

assay, audit, break down, canvass, check out, deduce, dissect, divide, examine, include, inspect, look at, scrutinize, sift, study, survey, test for, uncover

5 Synthesis

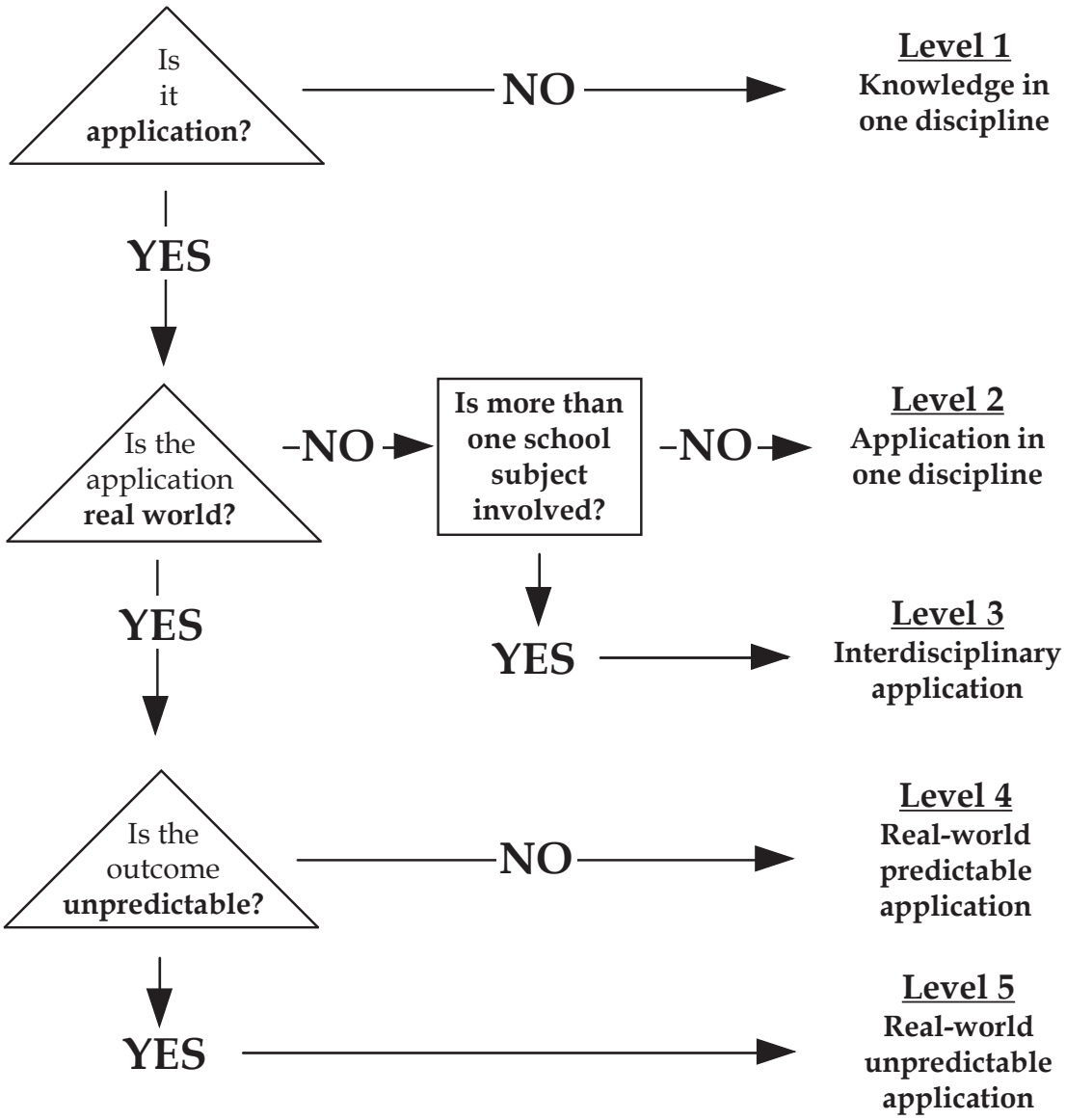
blend, build, cause, combine, compile, compose, conceive, construct, create, develop, evolve, form, generate, make up, originate, produce, reorder, structure

6 Evaluation

accept, appraise, arbitrate, assess, award, classify, criticize, decide, determine, grade, judge, prioritize, rank, rate, reject, rule on, settle, weigh

Application Model Decision Tree

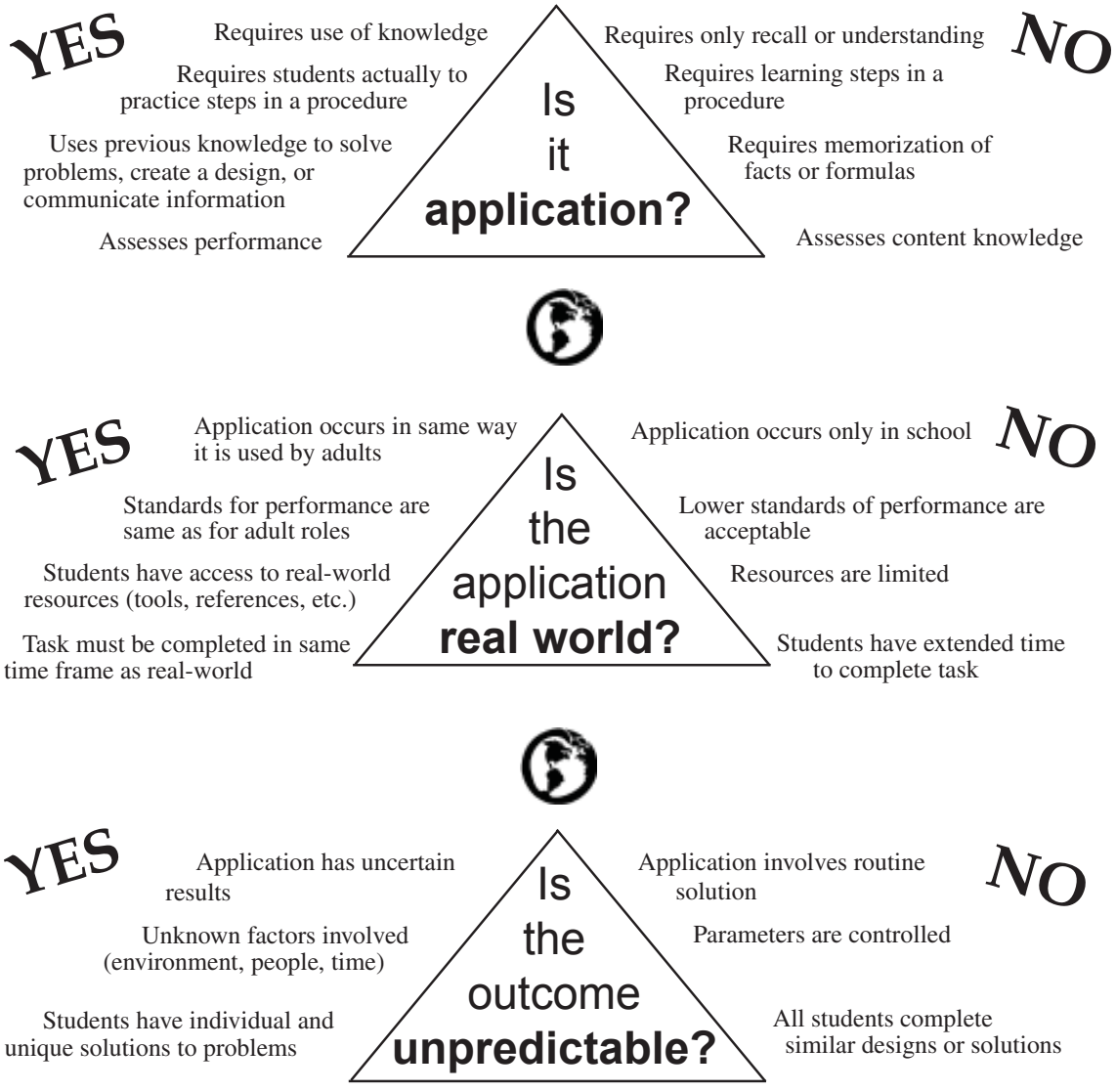
Directions: Select a task, application, or activity and then answer the following questions. See next page for clarification of the questions.



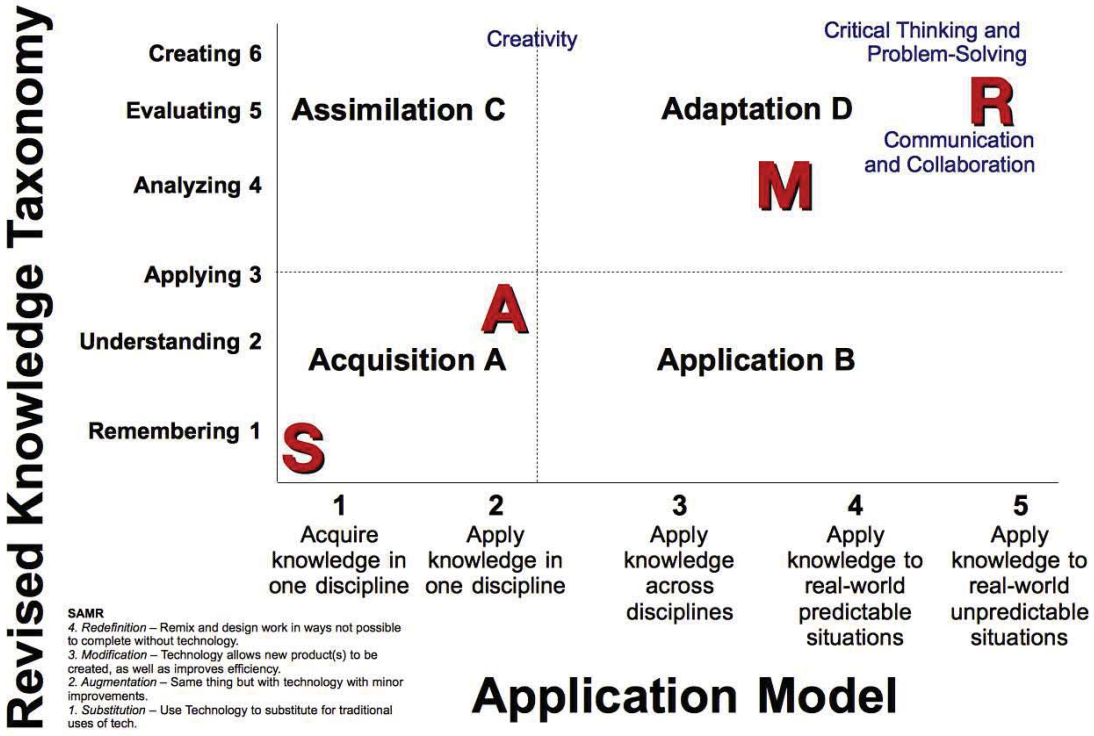
continued on page 8

Application Model Decision Tree

Directions: Use the following statements to clarify where a task, application, or assessment belongs on the Application Model.



Rigor/Relevance Framework + SAMR Model + P21.org



SAMR
4. Redefinition – Remix and design work in ways not possible to complete without technology.
3. Modification – Technology allows new product(s) to be created, as well as improves efficiency.
2. Augmentation – Same thing but with technology with minor improvements.
1. Substitution – Use Technology to substitute for traditional uses of tech.

Appendix K

Capital Improvements Program

TOWN OF BROOKLINE
MASSACHUSETTS

CAPITAL IMPROVEMENTS PROGRAM

FY 2015 to 2020

Prepared under the provisions of Section 81-C of Chapter 41
of the General Laws of the Commonwealth of Massachusetts

BROOKLINE PLANNING BOARD
MAY 2014

FY 2015 to 2020
Capital Improvements Program
Town of Brookline, Massachusetts
May 2014

PLANNING BOARD

Mark J. Zarrillo, Chairman

Linda K. Hamlin, Clerk

Robert Cook, Member

Steven A. Heikin, Member

Steven R. Kanes, Member

Sergio Modigliani, Member

Jonathan Simpson, Member

Project Staff:

Sean Cronin, Deputy Town Administrator

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Department of Planning and Community Development

Town of Brookline
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Mark J. Zarrillo, Chairman
Linda K. Hamlin, Clerk
Robert Cook
Steven A. Heikin
Steven R. Kanes
Sergio Modigliani
Jonathan Simpson

March 20, 2014

Dear Town Meeting Members:

The Planning Board is providing you with the FY2015-2019 Capital Improvements Program for Brookline. In January, the Planning Board held meetings with Town Department Heads, who explained their requests and answered questions the Board had about the proposed projects and expenditures. This letter serves as a recommendation from the Planning Board to Town Meeting on those requests and highlights areas of concern that the Board believes should be addressed in future CIPs.

The primary area of concern relates to the schools. The recent dramatic increase in kindergarten enrollment has created significant pressure to add classrooms to accommodate students as they move through the school system. The current CIP cannot fund projects already in the pipeline plus the school expansion projects recommended by the B-space Committee, while still remaining within the Town's 7.5% Financing Policy. This has prompted the Town to seek alternative funding mechanisms for CIP projects, including a voter approved debt exclusion override and surplus funding of $1M to help with the feasibility study for the Driscoll School project. In addition to the above, the Town is assuming that a portion of the costs for major school expansion projects will be reimbursed through the Massachusetts School Building Authority; however, given the number of needed school expansions, this may not be the case.

The Planning Board is also concerned that with the pressure of the pending override for the schools, the Town will delay funding for important non-school related CIP projects including, but not limited to - Public Safety, Information Technology, Planning and Community Development and Public Works. Two budget items the Planning Board would like to see implemented 1) funding the planning process for the revitalization of the Route 9 corridor, which should be done sooner rather than later and 2) improvements to the Fire Department's fleet by simplifying the process for procurement and maintenance of new and existing apparatus. Moreover, as the Town expects the upward trend in school enrollment to continue, it is critical to plan now to avoid future overrides or inadequate funding for non-School capital needs. The cost of such capital underfunding was a hard learned lesson during the '90's, and the Town must be careful not to repeat this in the future.

The Capital Improvements Program attempts to depict clearly the current and projected needs related to the Town's capital assets. As the Town grapples with funding challenges, it is essential that Town Meeting recognizes that funding of the school system and other CIP projects is paramount to maintaining the excellence of Brookline schools, public safety, and the quality of life for residents and businesses.

Very truly yours,

Mark J. Zarrillo, Chairman

TABLE OF CONTENTS

THE CAPITAL IMPROVEMENTS PROGRAM

DEFINITION AND PURPOSE

The Capital Improvements Program (CIP) is a six-year schedule for the expenditure of Town funds for major public capital improvements. A capital improvement is one that provides for construction, reconstruction, renovation or replacement of a public building, facility; major equipment item; purchase land or a building for a public purpose; or a long-range development study. While the type of improvement is the basic criterion, a project costing at least $25,000 and with a life expectancy of 10 years is generally considered to be a capital improvement. The basic purpose of the CIP is to schedule essential capital improvements in an orderly way over a six-year period with consideration for the priorities and the financial capability of the Town.

Capital planning and budgeting is a critical undertaking for any government and is "central to economic development, transportation, communication, delivery of other essential services, and environmental management and quality of life", as stated in ICMA's "Capital Budgeting: A Guide for Local Governments". In fact, without a sound plan for long-term investment in infrastructure and equipment, the ability of local government to accomplish its goals is greatly hampered. Developing a financing plan for capital investments that fits within the overall framework of a community is of equal importance, as poor decisions regarding the use of debt can negatively impact a community's financial condition for many years.

THE PROCESS

The preparation of the annual CIP is mandated by statute: MGL Chapter 41 provides that the Planning Board shall prepare and submit annually a CIP for the Town. Chapter 270 of the Acts of 1985, special legislation known as the "Town Administrator Act", directs the Town Administrator to prepare and recommend an annual financial plan that includes a CIP. The annual process for Brookline begins in the Summer with a letter from the Town Administrator to departments. Departments then submit their project requests, which in many cases are the result of various board/commission (Park and Recreation Commission, Library Trustees, etc.) public hearings. The requests are then reviewed by a working group that is co-chaired by the Deputy Town Administrator and the Director of the Department of Planning and Community Development and is comprised of all department heads that have requested projects. After reviewing all project requests, a Preliminary CIP is recommended to the Town Administrator, who then presents it to the Board of Selectmen as part of a public hearing on the Town's Operating and Capital budgets that is held in December.

The Planning Board and the Capital Sub-Committee of the Advisory Committee then hold separate hearings at which all projects included in the Preliminary CIP are reviewed. After recommendations from the Capital Sub-Committee, the full Advisory Committee holds public hearings on the CIP and makes its recommendations as part of the annual budget article presented to Town Meeting. The Planning Board's final recommendations are published in this annual CIP booklet that is distributed prior to the Annual Town Meeting. Town Meeting then takes action on the projects included in the first year of the CIP as part of its budget vote.

PRIORITIES

The Planning Board utilizes specific criteria to evaluate capital improvement project requests. These criteria were developed by the Planning Board in conjunction with Town department

heads and the CIP Committee. These criteria were developed to assist in establishing priorities among various departmental requests:

- The project is necessary for health and safety effects.
- The project is mandated by legislative of court action.
- The project supports adopted plans and policies.
- Fiscal impact of the proposed project.
- The extent to which the project impacts costs and revenues.
- The readiness and feasibility of the project.
- The implications of deferring the project.
- The qualitative impact of the project on public services.
- The distributional effects of the project.
- The relationship of the project to other capital projects.
- The disruption and inconvenience expected to be caused by the project.
- The community economic effects of the project.
- The environmental, aesthetic, and social effects of the project.
- The extent to which the project prolongs the functional life of a capital asset.
- The number of years that the project has been carried in the CIP.

In addition to the criteria listed above, the Planning Board takes into account the following factors where applicable:

- Relationship to Comprehensive Plan, Community Development Program, and other basic policy documents.
- Timing with respect to feasibility of accomplishment and relationship with other projects.
- Effect on annual operating budget.
- Availability of state and federal grants, reimbursements, or credits.
- Balance among user groups, functions, and areas of the Town.

It should be noted that the Planning Board recognizes that delays will add to projected costs of major projects rescheduled for later years. However, these added costs do not obviate the need for scheduling improvements within a responsible fiscal framework to permit possible changes in priorities in response to future fiscal situations.

THIS YEAR'S PROGRAM

The recommended FY15 – FY20 CIP calls for an investment of $318.2 million, for an average of approximately $53 million per year. This continues the Town's commitment to prevent the decline of its infrastructure, upgrade its facilities, improve its physical appearance, and invest in opportunities that positively impact the Operating Budget. Over the last 10 years (FY05 - FY14), the Town has authorized expenditures of $178.8 million, for an average of nearly $17.9 million per year. These efforts, which have been supported by the Board of Selectmen, the Advisory Committee, Town Meeting, and, ultimately, the taxpayers of Brookline, have helped address a backlog of capital projects, have dramatically improved the Town's physical assets, and have helped yield savings in the Operating Budget through investments in technology and energy efficiency.

It was a challenge to develop a balanced CIP that continues to reflect the various priorities of the Town while simultaneously addressing the overcrowding issue in the schools. The overcrowding issue has prompted the recommendation for a Debt Exclusion Override for the Devotion School, as described below. As has been widely reported, what used to be Kindergarten classes of 425 students are now classes of 630-660. As those classes move through the system, there will continue to be annual classroom space challenges in the elementary schools and a space crisis at the High School in 4-5 years. This CIP encompasses the B-Space Committee plan to address this issue in a comprehensive manner.

Absent any changes in School policies, it is not possible to fund the projects already in the capital pipeline, plus the new school expansion projects recommended by the B-Space Committee, within the Town's 7.5% Financing Policy. Therefore, it is recommended that the Devotion School project be funded outside of the Proposition 2½ tax levy limit through a voter approved Debt Exclusion Override. In addition, it is recommended that $1 million from surpluses in the Overlay account is used in FY15 to fund the feasibility study / schematic design phase of the Driscoll School project. Finally, the Town assumes that major school expansion projects will receive a portion of their costs reimbursed by the Commonwealth of Massachusetts through the Massachusetts School Building Authority (MSBA).

The decision to recommend a Debt Exclusion for the Devotion School project is not made lightly. The B-Space Committee made its recommendations in September and the School Committee subsequently voted to support the "expand in place" approach to creating needed classroom space. As a result, this CIP incorporates three major school expansion projects:

- Devotion School – a renovation/addition project that results in a larger school (1,000+ students) than originally conceived.
- Driscoll School – new to the CIP, this project would add 12 new classrooms and make it an 800+ student school.
- High School – with the larger grades making their way through the elementary schools, they will soon be at the High School. This CIP provides funding for an addition.

Without a Debt Exclusion for the Devotion School project, this CIP does not work. The basic premise here is using the Debt Exclusion for Devotion as a way to free-up future debt service capacity for the Driscoll and High School projects. The current (FY14-FY19) CIP assumes $54 million of Town funding for the Devotion project within the Proposition 2½ tax levy. By funding it with a Debt Exclusion, the revenue capacity previously allocated to the Devotion School becomes available for the Driscoll and High School projects. Simply stated, a Debt Exclusion Override for the Devotion School allows for the funding of all three projects.

It should also be clearly stated that the Override Study Committee (OSC) is in the process of reviewing the B-Space recommendations. If they determine that the classroom expansion plan supported by B-Space is not required or could be scaled back, then a Debt Exclusion for the Devotion project would be revisited. Also, the Town will not be in a position to seek a Debt Exclusion until the Spring of 2015, so there will more time to study the issue.

School overcrowding is an issue that the Town must continue to address. Since the plans to address the issue are expensive, it places great pressure on the CIP. This FY15 – FY20 CIP includes the following items that address the overcrowding issue:

- $1.75 million is included in FY15 for Classroom Capacity. In both FY08 and FY10, Town Meeting appropriated $400,000 to address space needs, followed by $530,000 in FY11 and $1.75 million in both FY13 and FY14. The amount requested for FY15 will go toward the creation of additional classroom space at Lawrence School and costs associated with any further space conversions into classrooms within existing school buildings, a process that is more complex and challenging each year as available space is reduced. There is also $500,000 in FY16 for work required at the High School to start preparing the facility for the influx of students.

- $43 million is included for the Driscoll School addition project recommended by B-Space. Of that amount, $14.7 million (35%) is assumed to be funded by the MSBA and $27.3 million (65%) by the Town. $1 million is included in FY15 for the feasibility / schematic design portion of the project (funded from Overlay Surplus), followed by funding for design completion and construction in FY17.

- Last year during the preparation of the FY14- FY19 CIP, no funding was included for future work required at the High School to address the space issues that will present themselves as the larger classes in the elementary schools reach the high school because a concept study was underway. That concept study, which was funded in FY13, has been helpful in the development of a plan to address the overcrowding issue. A High School addition project was also recommended by the B-Space Committee and supported by the School Committee. This CIP includes $76 million for this project, of which $26.3 million (35%) is assumed to be funded by the MSBA and $48.8 million (65%) by the Town. $1.75 million is included in FY17 for the feasibility/schematic design portion of the project, followed by funding for design completion and construction in FY19.

- Based on updated figures from the project architect (HMFH), the estimate for the Devotion School Project is increased to $110 million and the MSBA participation rate assumption is reduced from 40% to 30%. This results in a $77 million Town cost. As previously detailed, this CIP assumes a Debt Exclusion for the Devotion project.

All of this is being addressed while continuing to address on-going infrastructure improvements including streets, sidewalks, parks/playgrounds, and water/sewer systems. The core of any CIP should be the repair of and improvement to a community's infrastructure, and that is the case with this Proposed CIP. Governmental jurisdictions across the country continue to struggle with the issue of funding infrastructure needs, especially in these economic and budgetary times. Fortunately, Brookline's CIP policies (dedicated CIP funding) and taxpayer support (debt exclusions for Schools and an Override that included infrastructure needs) have allowed the community to fund these needs at the appropriate funding levels to maintain our capital infrastructure. For example, even with the pressure placed on the CIP by the school overcrowding issue and other high priority demands, this CIP continues the Town's commitment to upgrading its parks, playgrounds, and other open spaces. As proposed, this CIP renovates the following **parks/playgrounds**:

	Total	FY2015 Amount	FY2016 Amount	FY2017 Amount	FY2018 Amount	FY2019 Amount	FY2020 Amount	Future Years Amount
Pierce Playground	1,010,000	**90,000**	920,000					
Brookline Ave Playground	870,000		870,000					
Emerson Garden Playground	670,000		60,000	610,000				
Corey Hill Playground	600,000		40,000	560,000				
Brookline Reservoir Park	1,880,000			80,000	1,800,000			
Harry Downes Field & Playground	880,000			80,000	800,000			
Murphy Playground	780,000				60,000	720,000		
Schick Playground	770,000				70,000	700,000		
Soule Athletic Fields	550,000					50,000	500,000	
Larz Anderson Park	8,400,000					2,700,000	2,200,000	3,500,000
Kraft Family Athl. Field Turf Repl.	770,000					70,000	700,000	
Robinson Playground	990,000					90,000	900,000	
Riverway Park	425,000							425,000
Cypress Playground/Athl. Field	1,500,000						100,000	1,400,000
TOTAL	**20,095,000**	**90,000**	**1,890,000**	**1,330,000**	**2,730,000**	**4,330,000**	**4,400,000**	**5,325,000**

This CIP also includes a plan to utilize Cemetery Funds for roadwork ($150,000 between FY15-16) and lot expansion ($770,000 in Future Years). This is an outcome of the conversations with the Cemetery Trustees regarding the appropriate use of their separate funds.

A few years ago, a study was made of the conditions of the **fire stations** and what was needed to maintain the integrity of the floors and building in regard to the newer, larger fire equipment. The work outlined in the report included flooring, shoring, beams, columns, and structural work. The report also included recommendations for the HVAC systems, generators, lighting, life safety, and mechanical, electrical, plumbing (MEP), along with other peripheral systems. In FY12, $650,000 was appropriated to undertake the Structural component. The next phase for implementation was the Life Safety component. This CIP continues the plan to modify basic life safety components (e.g., smoke detectors, carbon monoxide detectors). The final phase (mechanical, electrical, plumbing) is also included, starting in FY17.

This CIP also addresses a long-standing need in the Fire Department: a modern **fire fleet maintenance facility**. The current maintenance facility is located in Station #1 and the shop is not large enough to allow access to many of the Department's vehicles, leaving the mechanics no choice but to do repairs out in the street, the drill yard at Station #6, or on occasion inside another fire station. This is obviously unsafe when on the street and inefficient when working in locations away from the shop and all its tools and equipment. The limited size of the shop and its inability to house the apparatus leaves the Fire Department looking to costly outside repair vendors more often than would be necessary if the Department had an adequate facility. The plan is to construct a new facility behind Station #6. In addition, the Fire Chief has expressed his desire to modernize the Department's training facility, which is also located at Station #6. A total of $4.2 million is included for these projects.

The Town has an excellent **fire apparatus** rehab/replacement schedule that calls for rehabbing engines every 10 years and ladders every 12 years and for replacing front line engines every 17 years and front line ladder trucks every 20 years. Because of this policy, the Fire Department has an excellent and young stable of engines and ladders. This CIP continues to follow the policy and replaces Ladder #2 in FY15 ($900K), Engine #5 in FY15 ($580K), and Engine #6 in FY19 ($660K). It also includes $1.2 million for rehabilitation.

The **Village Square and Riverway Park Pedestrian/Bike Path** are significant public works projects that are slated for FY15 / FY16. The table on the following page summarizes the funding plan, which shows both projects being funded 100% with non-Town funding:

	FY2015	FY2016
Village Sq. Circulation Improv. - CD	375,000	250,000
Village Sq. Circulation Improv. - Offsite Improvements from 2 Brookline Pl		750,000
Village Sq. Circulation Improv. - State Grant (TIP)		4,375,971
Village Sq. Circulation Improv. - Total	**375,000**	**5,375,971**
Riverway Park Pedestrian/Bike Path - Federal Grant		675,000
Riverway Park Pedestrian/Bike Path - State Grant (DCR)		300,000
Riverway Park Pedestrian/Bike Path - State Grant (TIP)		325,000
Riverway Park Pedestrian/Bike Path - CD		200,000
Riverway Park Pedestrian/Bike Path. - Total	**0**	**1,500,000**

For a number of years the School Department has been working on the development of a plan to enhance **educational technology**. The Override Study Committee is reviewing this issue, as there is a substantial cost associated with the overall plan. The funding in this CIP ($320,000 in FY15 + $200,000/yr for FY's 16-20) is for the infrastructure and equipment required to start implementing the plan.

This CIP includes a new $1 million bond authorization for grounds and facility improvements at the **Robert T. Lynch Municipal Golf Course**. The funds would be used to finish cart paths on holes 14 and 15, complete bunker renovations on holes 14, 16 and 17, restoration of the 9th fairway, substantial tree pruning/elimination, and irrigation maintenance. Additionally, the clubhouse would get a much needed upgrade to the electrical and HVAC system. The debt will be phased so that debt service will remain at affordable levels. The golf course enterprise fund pays for all debt service associated with the golf course and its facilities.

Some of the major projects proposed in the CIP include:

- Devotion School - $77 million of Town funding + $33 million of State funding (FY15)
- BHS - $50.5 million of Town funding + $26.3M of State funding (FY17, FY19)
- Driscoll School - $28 million of Town funding + $14.7 million of State funding (FY15, FY17)
- Village Square - $5.8 million (FY16) - - all outside funding
- Larz Anderson Park - $4.9 million (FY19-20)
- Newton St. Landfill (Rear Landfill Closure) - $4.6 million (FY15)
- Fire Fleet Maintenance / Training Facility - $4.2 million (FY15, FY17)
- Classroom Capacity - $2.3 million (FY15-16)
- Fire Sta. Renovations - $1.9 million (FY15, FY17-20)
- Brookline Reservoir Park - $1.9 million (FY17-18)
- Educational Technology - $1.6 million (FY15-FY20)
- LED Streetlights - $1.5 million (FY15-FY17)
- Riverway Park Pedestrian/Bike Path - $1.5 million (FY16) - - all outside funding
- Pierce Playground - $1 million (FY15-FY16)
- Golf Course - $1 million (FY16) -- enterprise fund

Continued major investments include:

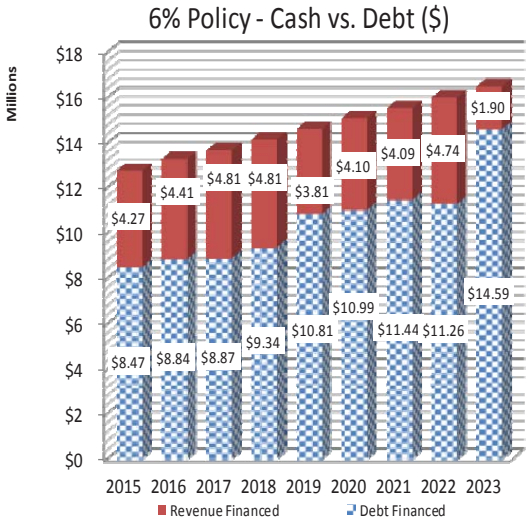
- Parks and Open Space - $19.7 million
- Street and Sidewalk Rehab - $17.5 million

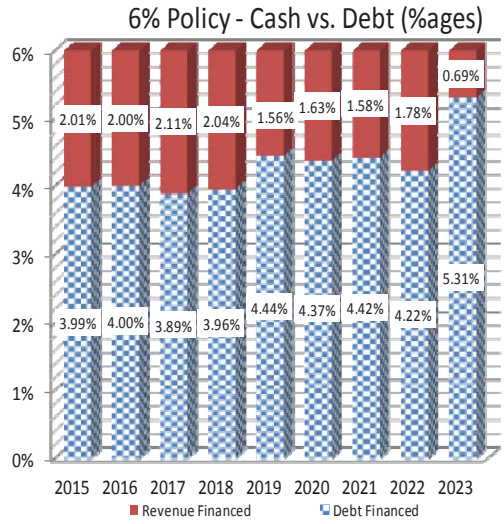
- Town/School Roofs - $7.5 million
- General Town/School Building Repairs - $6.9 million
- Fire Apparatus- $3.3 million
- Water & Sewer Infrastructure - $3 million -- enterprise fund
- Information Technology - $1.9 million
- Tree Replacement - $1.1 million
- Energy Conservation - $1 million

CIP FUNDING

The financial foundation of the Town's CIP is the policy that states an amount equivalent to 6% of the prior year's net revenue be dedicated to the CIP. This key policy places both a floor and a ceiling on the amount of debt supported by the tax levy that can be authorized, thereby limiting the impact on the Operating Budget. The goal is to have the 6% consist of both a debt-financed component and a revenue (or pay-as-you-go) component, with 4.5% for debt-financed CIP and 1.5% for pay-as-you-go CIP.

Each of the past few CIPs have stressed the "tightness" of the CIP resulting primarily from the costs associated with addressing the increasing school enrollment and the cost estimate for the Devotion School project. Graphs showed the split between revenue-financed and debt-financed CIP being relatively consistent from FY14 – FY17, then becoming more heavily weighted toward debt because of the Devotion School debt service coming on-line. In FY18, there was less than $800,000 of revenue-financed CIP, well below the normal levels of $3.5 million - $4 million. This posed significant challenges to funding "standard" revenue-financed projects such as streets/sidewalks, park projects, and smaller-scale Town/School facility upgrades. The debt exclusion override for the Devotion School project recommended in this CIP has the effect of "normalizing" the split, as shown in the graphs below. The chart goes out to FY22 to show the impact of the High School project. As you can see, taking on $48.8 million in debt for that project results in a shift toward the debt-financed portion and away from revenue-financed CIP in FY23.





In addition to the 6% financing policy, Free Cash, CDBG, and State/Federal grants are the other key components of the overall financing strategy of the CIP. The Town's certified Free Cash for the fiscal year ending June 30, 2013 was $7.08 million. The proposed allocation of Free Cash follows the Town's formal Free Cash policy, which results in the following use of these funds:

Certification	$7,084,861
1. Operating Budget Reserve	$530,584
2. Unreserved Fund Balance/Stabilization Fund	$2,000,709
3. Liability Reserve	$234,839
4. Capital Improvements	$3,183,504
5. Affordable Housing Trust Fund	$170,390
Sub-Total	$6,120,026
Amt available for Special Use (#6)	$964,835
6. Special Use:	
Additional CIP	$964,835
Amount Appropriated	$5,084,152

By following these policies, $3,183,504 of Free Cash is used to get from 6% of prior year net revenue to 7.5%. Then an additional $964,835 is allocated to the CIP to help balance it. In total, $4,148,339 of Free Cash goes toward the CIP.

State/Federal grants total $85.7 million over the six-year period, or 27% of all funding. Of this amount, $33 million represents the potential State share of the Devotion School Renovation project, $14.7 million represents the potential State share of the Driscoll School project, and $26.3 million represents the potential State share of the BHS project.

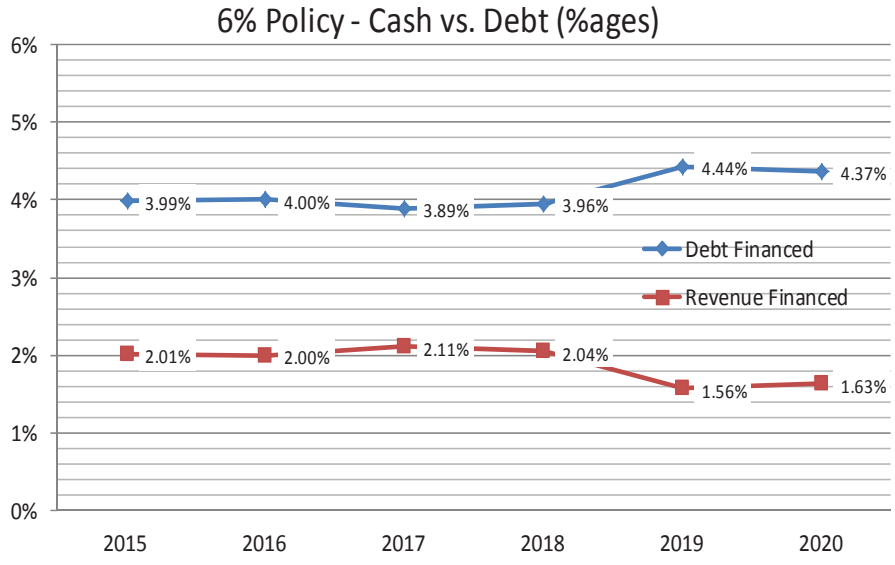
Another key CIP financing policy is that both the Water and Sewer Enterprise Fund and the Golf Course Enterprise Fund cover 100% of their debt service. When additional capital work to the water and sewer infrastructure or to the golf course is requested, the impact debt service has on those enterprise funds is taken into consideration. Since they are both 100% cost recovery funds, any growth in debt service may well necessitate increases in fees. Therefore, the decision to authorize additional debt is made carefully.

The table on the following page details the funding source for each year of the CIP. As it shows, $101.1 million (32%) of the funding comes from General Fund bonds, $85.7 million (27%) comes from State/Federal grants, and $47.8 million (15%) comes from cash (Property Tax, Free Cash).

GRAND TOTAL BY SOURCE (in millions)

	FY15	FY16	FY17	FY18	FY19	FY20	TOTAL	% OF TOTAL
Property Tax	$4.27	$4.38	$4.78	$4.77	$3.77	$4.08	$26.05	8.2%
Free Cash	$4.15	$3.26	$3.37	$3.49	$3.60	$3.72	$21.59	6.8%
Overlay Reserve Surplus	$1.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.00	0.3%
General Fund Bond	$5.50	$3.37	$32.60	$0.00	$54.95	$4.70	$101.12	31.8%
General Fund Bond (Debt Exclusion)	$77.00	$0.00	$0.00	$0.00	$0.00	$0.00	$77.00	24.2%
State / Federal Grants	$33.95	$7.03	$15.65	$0.95	$27.20	$0.95	$85.73	26.9%
Golf Bond (Ent. Fund)	$0.00	$1.00	$0.00	$0.00	$0.00	$0.00	$1.00	0.3%
Utility Bond (Water/Sewer Ent. Fund)	$0.00	$0.00	$3.00	$0.00	$0.00	$0.00	$3.00	0.9%
CDBG	$0.38	$0.45	$0.00	$0.00	$0.00	$0.00	$0.83	0.3%
Other	$0.10	$0.80	$0.00	$0.00	$0.00	$0.00	$0.90	0.3%
TOTAL	$126.34	$20.29	$59.39	$9.21	$89.53	$13.45	$318.21	100%

Given the reliance on more than $101 million of bonds supported by the General Fund within the tax levy (i.e., exclusive of the Devotion School debt that, as proposed, would be supported by a Debt Exclusion), there is an impact on the Town's operating budget. However, because the CIP complies with the Town's CIP Financing Policies, the impact on the debt service budget is offset by a decrease in the tax-financed component. As the portion of the 6% that is utilized for borrowing increases or decreases, the portion supported by the tax-financed monies moves in the opposite direction. The graph below shows how the 6% is apportioned between debt-financed and pay-as-you-go for each of the six years of the Proposed CIP.



For all entities, both public and private, debt financing is a primary method of financing large capital projects, as it enables projects to be undertaken now with the costs spread out over a period of years. However, if used in an imprudent and / or poorly constructed manner, debt can have a disastrous impact on the Operating Budget and negatively impact the level and quality of services. This is why the Town's CIP Financing Policies are a vital component of

the Town's overall Financial Planning guidelines. A well-planned and properly devised debt management plan is critical to maintaining the Town's positive financial condition and to maintaining the Town's much-valued Aaa bond rating. The Town's credit was most recently reviewed on May 15, 2013 by Moody's and the Town maintained its Aaa rating. Among the reasons stated by Moody's for the Aaa rating were:

> "the town's history of structurally balanced operations, adequate reserve levels, and strong fiscal policies",
>
> "proactive management",
>
> and a debt position that "will remain manageable"

The bond authorization process is laid out in Massachusetts General Laws (MGL), specifically Chapter 44, Sections 7 and 8. General Obligation (GO) Bonds are secured by a pledge of revenues through property taxes and are authorized by Town Meeting via a 2/3's vote. Bond Anticipation Notes (BANs) can be utilized prior to the permanent issuance of bonds and are included as part of the Town's 6% funding policy.

Chapter 44, Section 10 limits the authorized indebtedness to 5% of the Town's equalized valuation (EQV). The Town's most recent EQV, approved by the State as of 1/1/2012, is $16.632 billion. Therefore, the Town's debt limit is $832 million. Obviously, the Town has no plans to come near this limit. In fact, the Town's CIP Financing Policies would not allow outstanding debt to reach that level, as a number of measurement variables would not be met.

Debt can be broken into "exempt debt" and "non-exempt debt". Exempt debt is paid for outside of the property tax levy limit of Proposition 2 1/2. Stated another way, it is paid for with taxes raised outside of the property tax limit. In order to have exempt debt, a Debt Exclusion Override is required, and that can only be approved by the local electorate. Non-Exempt debt, or "within-levy debt", must be raised and paid for within the property tax levy. In Brookline, one project is funded with exempt debt: the High School Renovation ($43.8 million). The last debt service payment for that project is in FY20. As previously noted, this CIP assumes a Debt Exclusion Override for the Devotion School project.

Debt is issued on behalf of the Water and Sewer Enterprise Fund and the Golf Course Enterprise Fund. The tax levy does not fund any enterprise fund debt. As previously mentioned, they are 100% cost recovery funds, so they pay for their debt service through their own revenue streams. The table on the following page breaks out outstanding debt by fund, with exempt and non-exempt debt of the General Fund separated, for each of the past six years. Looking at FY13, this shows that the Town's total outstanding debt was $75.07 million, of which $13.78 million (18.4%) was owed by either the State ($2.85 million) or enterprise funds ($10.93 million), leaving $61.3 million of outstanding debt.

OUTSTANDING DEBT

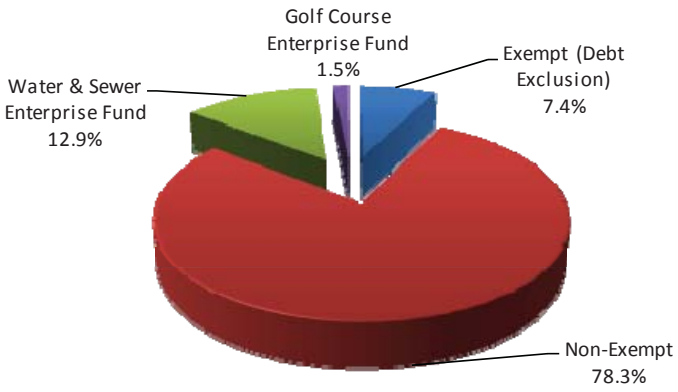
DESCRIPTION	FY08	FY09	FY10	FY11	FY12	FY13
Total General Fund Outstanding Debt	**82,984,105**	**82,876,289**	**60,243,947**	**62,629,298**	**66,094,309**	**64,145,426**
a.) Exempt (Debt Exclusion) [1]	34,553,585	31,966,160	10,839,685	9,286,963	7,831,500	6,430,000
b.) Non-Exempt	48,430,520	50,910,129	49,404,262	53,342,335	58,262,809	57,715,426
Minus State (SBA) Reimbursed Debt [2]	26,128,742	24,129,458	5,221,408	4,423,697	3,554,470	2,849,005
Net General Fund Outstanding Debt	56,855,363	58,746,831	55,022,539	58,205,600	62,539,839	61,296,421
Water & Sewer Enterprise Fund Outstanding Debt	14,892,054	14,215,027	13,278,553	12,245,702	11,521,791	10,028,654
Golf Course Enterprise Fund Outstanding Debt	1,032,428	883,684	860,000	1,080,000	929,000	899,000
Enterprise Fund Outstanding Debt	**15,924,482**	**15,098,711**	**14,138,553**	**13,325,702**	**12,450,791**	**10,927,654**
TOTAL Outstanding Debt	**98,908,587**	**97,975,000**	**74,382,500**	**75,955,000**	**78,545,100**	**75,073,080**

[1] The Lincoln School and High School projects were financed via a Debt Exclusion.

[2] The following school projects were reimbursed by the State: High School (through FY09), Lincoln (through FY12), Baker, and Heath.

The graph below depicts the FY14 figures. As it shows, 78% of the Town's debt is covered within the levy while 7% is covered outside the levy via Debt Exclusion Overrides. The remaining 15% is covered by enterprise fund revenues.

FY14 OUTSTANDING DEBT BY SOURCE



The projected level of outstanding debt based upon the CIP is shown in the table on the following page. The increase in FY17 is due to the Devotion School project.

OUTSTANDING DEBT (PROJECTED)

DESCRIPTION	FY14	FY15	FY16	FY17	FY18	FY19	FY20
Total General Fund Outstanding Debt	**64,039,088**	**65,282,544**	**68,082,856**	**121,318,780**	**150,737,281**	**146,880,308**	**141,354,245**
a.) Exempt (Debt Exclusion) [1]	5,510,000	4,590,000	10,542,536	59,238,529	74,031,780	71,483,308	68,849,078
b.) Non-Exempt	58,529,088	60,692,544	57,540,320	62,080,251	76,705,501	75,397,000	72,505,167
Minus State (SBA) Reimbursed Debt [2]	2,452,505	2,056,310	1,756,800	1,457,900	1,162,050	866,200	576,450
Net General Fund Outstanding Debt	61,586,583	63,226,234	66,326,056	119,860,880	149,575,231	146,014,108	140,777,795
Water & Sewer Enterprise Fund Outstanding Debt	9,655,220	8,764,182	7,464,899	7,172,942	5,550,504	5,761,129	4,451,753
Golf Course Enterprise Fund Outstanding Debt	1,099,000	1,151,500	1,000,000	1,117,500	1,026,750	951,000	1,375,250
Enterprise Fund Outstanding Debt	**10,754,220**	**9,915,682**	**8,464,899**	**8,290,442**	**6,577,254**	**6,712,129**	**5,827,003**
TOTAL Outstanding Debt	**74,793,308**	**75,198,226**	**76,547,755**	**129,609,221**	**157,314,535**	**153,592,437**	**147,181,248**

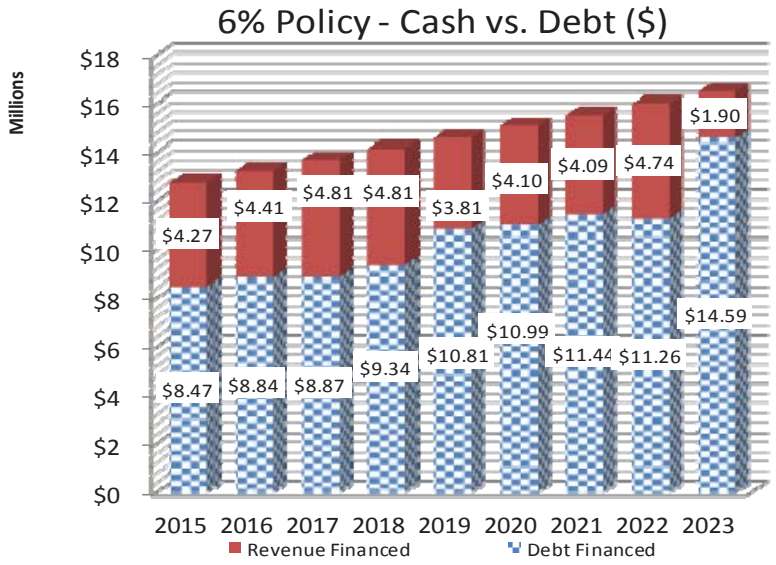
[1] The Lincoln School and High School projects were financed via a Debt Exclusion. Current funding plans for the Devotion School project assumes a Debt Exclusion.

[2] The Baker and Heath school projects are being reimbursed by the State.

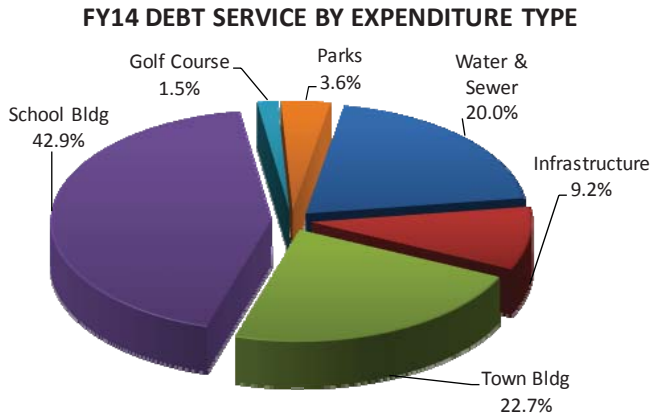
Once debt is incurred, an amount must be set aside annually to fund the principal and interest payments, known as Debt Service. As previously noted, if debt is used in an imprudent and / or poorly constructed manner, it can have a negative impact on the Operating Budget. This is because of debt service: debt service takes away funding that would otherwise be available for other areas of the Operating Budget. If decision makers are not made aware of the impact debt service has on the Operating Budget (via long-range forecasting), then the authorization of debt is being made in a vacuum. Governmental bodies can cripple their finances if bonds are authorized and issued without a full understanding of the impact they have on the overall finances of the entity.

In Brookline, both the Long Range Financial Plan and the planning process for the CIP clearly show decision makers the impact debt service has on the Operating Budget. Since the Town's CIP Financing Policies set a limit on the overall amount of debt that can be issued -- basically the 6% policy plus the other debt management variables that are to be measured -- the impact on the Operating Budget is both known and within an expected range.

The graph on the following page illustrates how the Town's 6% policy works. In each year, the amount available for the CIP is 6% of the prior year's net revenue. This amount represents the total impact on the Operating Budget. For FY15, $12.7 million is dedicated to the CIP ($8.5 million for net debt service and $4.3 million for pay-as-you-go), and, therefore, unavailable for the operating budget. The graph also shows the balance between pay-as-you-go CIP and debt-financed CIP: as debt service increases, pay-as-you-go capacity decreases, and vice versa. This is clearly shown in FY23, when the large increase in debt service (resulting from the BHS project coming on-line) reduces the pay-as-you-go portion of the CIP.



The graph below breaks out existing (FY14) debt service by expenditure type. As it shows, the largest component of debt service is for school buildings, followed by town buildings and the water and sewer system.



As was previously mentioned, debt is issued on behalf of the Water and Sewer Enterprise Fund and the Golf Course Enterprise Fund. Those debt service costs are budgeted for within both enterprise funds and are covered by enterprise fund revenues. As a result, the tax levy does not fund any enterprise fund debt service. The table on the following page breaks out debt service by fund, with exempt and non-exempt debt of the General Fund separated, for each of the past six years. Looking at FY14, it shows that the Town's total debt service was $11.94 million, of which $3.1 million (26%) was reimbursed by either the State ($556,757) or enterprise funds ($2.54 million), leaving $8.84 million of debt service.

CAPITAL IMPROVEMENTS PROGRAM, 2015-2020 **TOWN OF BROOKLINE**

DEBT SERVICE

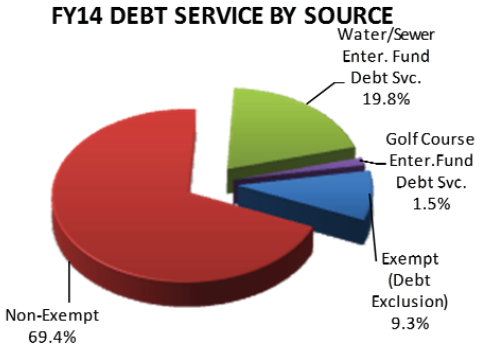
DESCRIPTION	FY09	FY10	FY11	FY12	FY13	FY14
Total General Fund Supported Debt Service	12,248,349	11,873,959	9,440,762	10,098,259	9,804,995	9,393,246
a.) Exempt (Debt Exclusion) [1]	4,372,943	4,347,320	1,899,453	1,730,917	1,630,808	1,112,800
b.) Non-Exempt	7,875,406	7,526,639	7,541,309	8,367,342	8,174,187	8,280,446
Minus State (SBA) Reimbursed Debt [2]	3,267,371	3,267,371	1,227,634	1,227,634	587,125	556,757
Net General Fund Debt Service	8,980,978	8,606,588	8,213,128	8,870,625	9,217,870	8,836,489
Water & Sewer Enterprise Fund Supported Debt Svc.	2,511,192	2,472,352	2,495,199	2,321,242	2,375,403	2,365,461
Golf Course Enterprise Fund Supported Debt Svc.	190,037	184,135	189,130	185,679	191,499	179,374
Enterprise Fund Debt Service	**2,701,229**	**2,656,487**	**2,684,329**	**2,506,921**	**2,566,902**	**2,544,835**
TOTAL Debt Service	**14,949,578**	**14,530,446**	**12,125,091**	**12,605,180**	**12,371,897**	**11,938,081**

[1] The Lincoln School and High School projects were financed via a Debt Exclusion.

[2] The following school projects were reimbursed by the State: High School (through FY09), Lincoln (through FY12), Baker, and Heath.

The graph to the right depicts the FY14 figures. As it shows, 69% of the Town's debt service is covered within the levy while 9% is covered outside the levy via Debt Exclusion Overrides. The remaining 22% is covered by enterprise fund revenues.

The projected level of debt service based upon the CIP is shown in the table below.



DEBT SERVICE (PROJECTED)

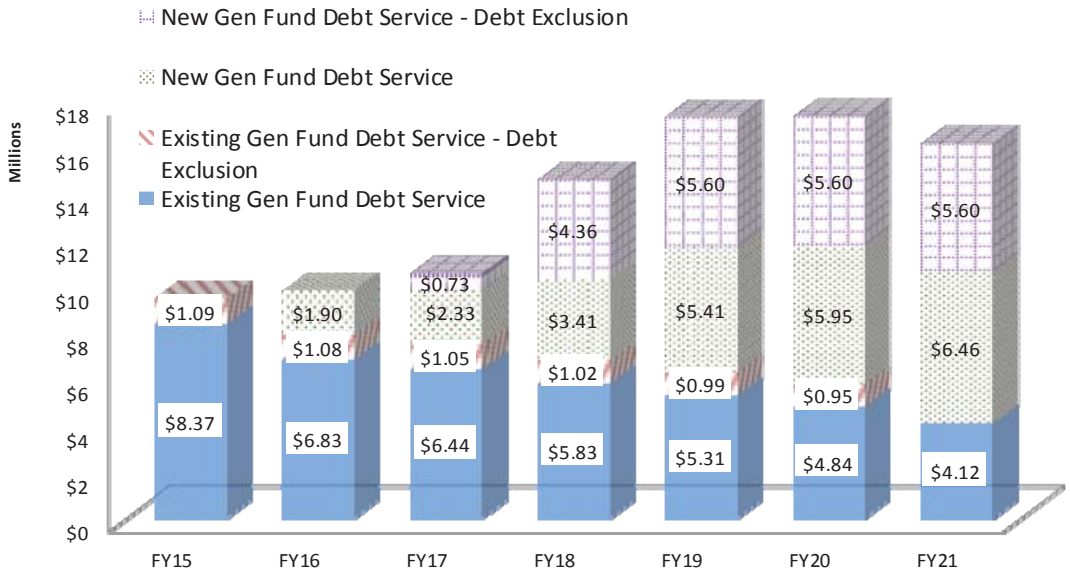
DESCRIPTION	FY15	FY16	FY17	FY18	FY19	FY20	FY21
Total General Fund Supported Debt Service	9,561,757	9,914,554	10,645,463	14,720,877	17,401,274	17,446,432	16,276,375
a.) Exempt (Debt Exclusion) [1]	1,094,400	1,076,000	1,775,807	5,385,240	6,589,231	6,552,631	5,601,031
b.) Non-Exempt	8,467,357	8,838,554	8,869,656	9,335,637	10,812,043	10,893,801	10,675,344
Minus State (SBA) Reimbursed Debt [2]	556,757	556,757	556,757	556,757	556,757	434,662	434,662
Net General Fund Debt Service	9,005,000	9,357,797	10,088,706	14,164,120	16,844,517	17,011,770	15,841,713
Water & Sewer Enterprise Fund Supported Debt Svc.	2,139,383	2,215,867	1,985,264	1,819,427	1,430,165	1,466,261	1,138,725
Golf Course Enterprise Fund Supported Debt Svc.	188,049	195,868	187,450	184,988	189,060	184,439	193,468
Enterprise Fund Debt Service	**2,327,432**	**2,411,735**	**2,172,714**	**2,004,415**	**1,619,225**	**1,650,699**	**1,332,193**
TOTAL Debt Service	**11,889,188**	**12,326,288**	**12,818,177**	**16,725,292**	**19,020,499**	**19,097,131**	**17,608,568**

[1] The Lincoln School and High School projects were financed via a Debt Exclusion. Current funding plans for the Devotion School project assumes a Debt Exclusion.

[2] The Baker and Heath school projects are being reimbursed by the State.

Great care has gone into crafting the Debt Management Plan for the FY15 – FY20 CIP, which is shown on page 57. This debt management plan results in the Town complying with all of its CIP Financing Policies. The table shows the amount of authorization, the amount to be borrowed, and the number of years planned for paying off the principal (term). The Town hopes to not have to borrow for the $1.245 million for the Carlton St. Footbridge. The Town is working toward a grant for the project and if it is received, the Town will not have to issue a bond for the project. Town Meeting would then be asked to rescind the bond authorization.

As previously mentioned, when Moody's last reviewed the Town's bond rating in May, 2013, they referenced the above average amortization rate. That is an important factor in being able to take on additional debt: as old debt runs off, new debt can be taken on. The graph below shows the amortization of existing debt and the proposed new debt for the General Fund. It should be noted, however, that level debt service is being used for the Devotion School Debt Exclusion, as the Override Study Committee is planning on recommending that approach for any future debt exclusion projects.



A common indicator used to measure debt service levels is comparing it to revenue, since it is those revenues that are needed to pay the principal and interest payments. For general funds, ratings agencies tend to consider ratios of between 5% - 10% as being prudent. The table on page 60 shows debt service as a percent of revenue for the General Fund, Water and Sewer Enterprise Fund, and the Golf Course Enterprise Fund. As it shows, total debt service is projected at 4.6% in FY14 but will increase to 6.3% in FY19 when the majority of debt service associated with the Devotion School project kicks in. When looking solely General Fund-supported debt, the figure drops to 4.1% in FY14, reaching a high of 6.4% in FY19.

On the pages that follow, you will find a listing of all projects and description of each.

Along with the pages referenced above, the Town's CIP Policies adopted by the Board of Selectmen and additional summary charts are included at the end of this document. These provide the reader with additional financial information that allows for a better understanding of the CIP. Section VII of the FY2015 Financial Plan includes additional detail about the CIP and the impact on the Town's overall finances. The Financial Plan can be found on-line at www.brooklinema.gov or in the Selectmen's Office.

TOWN OF BROOKLINE CAPITAL IMPROVEMENT PROGRAM: FY2015 - FY2020

CATEGORY CODES (CC):
1 = New Facility Construction
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5 = Vehicles
6 = Miscellaneous

REVENUE CODES (RC):
A = Property Tax/Free Cash/Overlay Surplus
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C = State / Federal Aid
D = Golf Budget
E = Golf Bond
F = Utility Budget
G = Utility Bond
H = CDBG
I = Other
J = Re-Appropriation of Funds
K = Debt Exclusion Override

CC		Total	Prior Year (FY14)	FY2015 Amount	RC	FY2016 Amount	RC	FY2017 Amount	RC	FY2018 Amount	RC	FY2019 Amount	RC	FY2020 Amount	RC	Future Years Amount	RC
	GENERAL GOVERNMENT																
2	Garages-Floor Sealant & Water/Oil Separators	150,000	25,000			50,000	A			75,000	A						
6	Town Building Furniture	100,000				25,000	A			25,000	A	25,000	A			25,000	A
6	Technology Applications	2,251,000	256,000	**270,000**	**A**	270,000	A	275,000	A	280,000	A	300,000	A	300,000	A	300,000	A
6	Data Room Upgrades	250,000				250,000	A										
	General Government Total	2,751,000	281,000	**270,000**		595,000		275,000		380,000		325,000		300,000		325,000	
	PLANNING & COMMUNITY DEVELOPMENT																
4	Village Sq. Circulation Improv. - CD	625,000		**375,000**	**H**	250,000	H										
4	Village Sq. Circulation Improv. - Other	750,000				750,000	I										
4	Village Sq. Circulation Improv. - State	4,375,971				4,375,971	C										
4	Commercial Area Improvements	440,000	50,000	**65,000**	**A**	50,000	A			100,000	A	55,000	A	60,000	A	60,000	A
4	Route 9 Zoning Analysis	125,000														125,000	A
4	Riverway Park Pedestrian/Bike Path - Fed	675,000				675,000	C										
4	Riverway Park Pedestrian/Bike Path - State	625,000				625,000	C										
4	Riverway Park Pedestrian/Bike Path - CD	200,000				200,000	H										
4	Riverway Park Pedestrian/Bike Path - Town	40,000	40,000														
2	Historic Bldgs-Devotion House & Putterham Sch	85,000	85,000														
	Planning & Community Development Total	7,940,971	175,000	**440,000**		6,925,971		-		100,000		55,000		60,000		185,000	
	PUBLIC SAFETY																
5	Fire Apparatus Rehab	1,200,000				275,000	A			525,000	A			400,000	A		
5	Ladder #2 Replacement	900,000		**900,000**	**B**												
5	Engine #3 Replacement	510,000	510,000														
5	Engine #5 Replacement	580,000		**580,000**	**A**												
5	Engine #6 Replacement	660,000										660,000	A				
2	Fire Station Renovations	2,140,000	245,000	**325,000**	**A**			320,000	A	420,000	A	305,000	A	525,000	A		
1	Training & Maintenance Facility	4,165,000		**40,000**	**A**			4,125,000	B								
	Public Safety Total	10,155,000	755,000	**1,845,000**		275,000		4,445,000		945,000		965,000		925,000		-	
	LIBRARY																
2	Coolidge Corner Feasibility/Concept Study	50,000		**50,000**	**A**												
2	Coolidge Corner - Elev./Rear Windows /Carpet	500,000						500,000	A								
6	Library Furnishings	110,000						110,000	A								
2	Library Interior Painting / Facelift	110,000						110,000	A								
	Library Total	770,000	-	**50,000**		-		720,000		-		-		-		-	
	PUBLIC WORKS:																
	Transportation																
4	Traffic Calming / Safety Improvements	300,000				50,000	A	50,000	A	50,000	A	50,000	A	50,000	A	50,000	A
4	Bicycle Access Improvements	70,000	40,000	**30,000**	**A**												
4	Dean / Chestnut Hill Ave Signal	260,000						260,000	A								
4	MBTA Traffic Signalization	50,000		**50,000**	**A**												
4	Woodland Rd / Hammond St. Study	45,000	45,000														
	Public Works - Transportation Sub-Total	725,000	85,000	**80,000**		50,000		310,000		50,000		50,000		50,000		50,000	
	Engineering/Highway																
4	Street Rehab - Town	13,200,000	1,510,000	**1,550,000**	**A**	1,590,000	A	1,630,000	A	1,670,000	A	1,710,000	A	1,750,000	A	1,790,000	A
4	Street Rehab - State	7,601,256	950,157	**950,157**	**C**	950,157	C	950,157	C	950,157	C	950,157	C	950,157	C	950,157	C
4	Sidewalk Repair	2,474,000	283,000	**290,000**	**A**	297,000	A	304,000	A	312,000	A	318,000	A	330,000	A	340,000	A
4	LED Streetlights	2,085,000	540,000	**515,000**	**A**	515,000	A	515,000	A								
4	Parking Lot Rehab.	205,000						205,000	A								
4	Newton St. Landfill - Rear Landfill Closure	4,600,000		**4,600,000**	**B**												
2	Transfer Station Floor	70,000	70,000														
2	Municipal Service Ctr Renov	2,500,000	2,500,000														
	Public Works - Engineering/Highway Sub-Total	32,735,256	5,853,157	**7,905,157**		3,352,157		3,604,157		2,932,157		2,978,157		3,030,157		3,080,157	

TOWN OF BROOKLINE CAPITAL IMPROVEMENT PROGRAM: FY2015 - FY2020

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D = Golf Budget
E = Golf Bond
F = Utility Budget
G = Utility Bond
H = CDBG
I = Other
J = Re-Appropriation of Funds
K = Debt Exclusion Override

CC		Total	Prior Year (FY14)	FY2015 Amount	RC	FY2016 Amount	RC	FY2017 Amount	RC	FY2018 Amount	RC	FY2019 Amount	RC	FY2020 Amount	RC	Future Years Amount	RC
	Water / Sewer																
2	Water Dept. Garage - Roof Repl.	260,000	260,000														
4	Wastewater System Improvements	3,000,000						3,000,000	G								
	Public Works - Water / Sewer Sub-Total	3,260,000	260,000	-		-		3,000,000		-		-		-		-	
	Parks and Playgrounds																
3	Brookline Ave Playground	957,000	87,000			870,000	A										
3	Brookline Reservoir Park	1,880,000						80,000	A	1,800,000	A						
3	Corey Hill Playground	600,000				40,000	A	560,000	B								
3	Cypress Playground/Athl. Field	1,500,000												100,000	A	1,400,000	B
3	Emerson Garden Playground	670,000				60,000	A	610,000	B								
3	Fisher Hill - Field/Playground - Town	1,200,000	1,200,000														
3	Fisher Hill - Field/Playground - Grant	400,000	400,000														
3	Brookline Reservoir Gatehouse Roof	250,000				250,000	A										
3	Br. Res. Gatehouse Carpentry, Stairs, Masonry	400,000				400,000	C										
3	Harry Downes Field & Playground	880,000						80,000	A	800,000	A						
3	Kraft Family Athl. Field Turf Repl.	770,000										70,000	A	700,000	A		
3	Larz Anderson Park	9,060,000	660,000									2,700,000	B	2,200,000	B	3,500,000	B
3	Murphy Playground	780,000								60,000	A	720,000	A				
3	Pierce Playground	1,010,000		**90,000**	**A**	920,000	B										
3	Riverway Park	425,000														425,000	A
3	Robinson Playground	990,000										90,000	A	900,000	A		
3	Schick Playground	770,000								70,000	A	700,000	A				
3	Soule Athletic Fields	550,000										50,000	A	500,000	A		
3	Playground Skatespot	220,000				20,000	A	200,000	A								
3	Parks/Playgrounds Rehab/Upgrade	2,420,000	295,000	**295,000**	**A**	300,000	A	300,000	A	305,000	A	305,000	A	310,000	A	310,000	A
3	Town/School Ground Rehab.	740,000	85,000	**85,000**	**A**	90,000	A	90,000	A	95,000	A	95,000	A	100,000	A	100,000	A
3	Tennis Courts / Basketball Courts	530,000	100,000			230,000	A							100,000	A	100,000	A
2	Comfort Stations	200,000	50,000					100,000	A							50,000	A
	Public Works - Parks and Playground Sub-Total	27,202,000	2,877,000	**470,000**		3,180,000		2,020,000		3,130,000		4,730,000		4,910,000		5,885,000	
	Conservation/Open Space																
3	Tree Removal/Repl	1,420,000	170,000	**170,000**	**A**	175,000	A	175,000	A	180,000	A	180,000	A	185,000	A	185,000	A
3	Old Burial Ground	100,000														100,000	A
3	Walnut Hills Cemetery	1,020,000	100,000	**100,000**	**I**	50,000	I									770,000	I
	Public Works - Conser /Open Space Sub-Total	2,540,000	270,000	**270,000**		225,000		175,000		180,000		180,000		185,000		1,055,000	
	Public Works Total	66,462,256	9,345,157	**8,725,157**		6,807,157		9,109,157		6,292,157		7,938,157		8,175,157		10,070,157	
	RECREATION																
2	Swimming Pool - Showers/Pool Repointing	600,000				600,000	A										
3	Golf Course Improvements	1,000,000				1,000,000	E										
2	Tappan St. Gym Enhancements	30,000				30,000	A										
	Recreation Total	1,630,000	-	-		1,630,000		-		-		-		-		-	
	SCHOOL																
6	Furniture Upgrades	680,000	50,000	**60,000**	**A**	70,000	A	80,000	A	90,000	A	100,000	A	110,000	A	120,000	A
6	School Technology	1,995,000	175,000	**320,000**	**A**	250,000	A	250,000	A	250,000	A	250,000	A	250,000	A	250,000	A
2	Town/School ADA Renovations	580,000	65,000	**65,000**	**A**	70,000	A	70,000	A	75,000	A	75,000	A	80,000	A	80,000	A
2	Town/School Elevator Renov. Program	1,125,000	250,000	**250,000**	**A**	250,000	A	250,000	A	125,000	A						
2	Town/School Emer Generator Repl	125,000	125,000														
2	Town/School Energy Conservation Projects	1,375,000	150,000	**160,000**	**A**	165,000	A	170,000	A	175,000	A	180,000	A	185,000	A	190,000	A
2	Town/School Energy Management System	1,000,000	150,000			200,000	A	150,000	A			250,000	A			250,000	A
2	Town/School Bldg Envelope/Fenestration Rep	5,180,000		**730,000**	**A**	1,300,000	B			650,000	A	750,000	A	750,000	A	1,000,000	A
2	Town/School Roof Repair/Repl. Program	8,875,000	1,350,000	**375,000**	**A**	1,150,000	B					3,500,000	B	2,500,000	B		
2	Town/School Bldg Security / Life Safety Sys	1,250,000	345,000	**300,000**	**A**	100,000	A	125,000	A	130,000	A	140,000	A	110,000	A		
2	High School Addition - Town Share (65%)	50,500,000						1,750,000	A			48,750,000	B				
2	High School Addition - State Share (35%)	26,250,000										26,250,000	C				
2	Baldwin School Renovations	2,250,000														2,250,000	B

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H = CDBG
I = Other
J = Re-Appropriation of Funds
K = Debt Exclusion Override

CC		Total	Prior Year (FY14)	FY2015 Amount	RC	FY2016 Amount	RC	FY2017 Amount	RC	FY2018 Amount	RC	FY2019 Amount	RC	FY2020 Amount	RC	Future Years Amount	RC
2	Driscoll School Addition - Town Share (65%)	28,300,000		**1,000,000**	**A**			27,300,000	B								
2	Driscoll School Addition - State Share (35%)	14,700,000						14,700,000	C								
2	Devotion Rehab. - Town Share (70%)	77,000,000		**77,000,000**	**K**												
2	Devotion Rehab. - State Share (30%)	33,000,000		**33,000,000**	**C**												
2	Old Lincoln School Renovations	3,000,000	3,000,000														
2	Pierce - Elec. Distrib. Upgrade	375,000	375,000														
2	Classroom Capacity	4,000,000	1,750,000	**1,750,000**	**A**	500,000	A										
	School Total	261,560,000	7,785,000	**115,010,000**		4,055,000		44,845,000		1,495,000		80,245,000		3,985,000		4,140,000	
	GRAND TOTAL	**351,269,227**	**18,341,157**	**126,340,157**		**20,288,128**		**59,394,157**		**9,212,157**		**89,528,157**		**13,445,157**		**14,720,157**	
	GRAND TOTAL BY SOURCE																
	A = Property Tax / Free Cash / Overlay Surplus	63,072,000	8,581,000	**9,415,000**	**7%**	7,642,000	38%	8,149,000	14%	8,262,000	90%	7,378,000	8%	7,795,000	58%	5,850,000	40%
	B = General Fund Bond	116,315,000	8,050,000	**5,500,000**	**4%**	3,370,000	17%	32,595,000	55%	-	0%	54,950,000	61%	4,700,000	35%	7,150,000	49%
	C = State / Federal Grants	88,027,227	1,350,157	**33,950,157**	**27%**	7,026,128	35%	15,650,157	26%	950,157	10%	27,200,157	30%	950,157	7%	950,157	6%
	D = Golf Budget	-	-	-	**0%**	-	0%	-	0%	-	0%	-	0%	-	0%	-	0%
	E = Golf Bond	1,000,000	-	-	**0%**	1,000,000	5%	-	0%	-	0%	-	0%	-	0%	-	0%
	F = Utility Budget	260,000	260,000	-	**0%**	-	0%	-	0%	-	0%	-	0%	-	0%	-	0%
	G = Utility Bond	3,000,000	-	-	**0%**	-	0%	3,000,000	5%	-	0%	-	0%	-	0%	-	0%
	H = CDBG	825,000	-	**375,000**	**0%**	450,000	2%	-	0%	-	0%	-	0%	-	0%	-	0%
	I = Other	1,770,000	100,000	**100,000**	**0%**	800,000	4%	-	0%	-	0%	-	0%	-	0%	770,000	5%
	J = Re-Approp. of Existing Funds	-	-	-	**0%**	-	0%	-	0%	-	0%	-	0%	-	0%	-	0%
	K = Debt Exclusion Override	77,000,000	-	**77,000,000**	**61%**	-	0%	-	0%	-	0%	-	0%	-	0%	-	0%
	Grand Total	**351,269,227**	**18,341,157**	**126,340,157**		**20,288,128**		**59,394,157**		**9,212,157**		**89,528,157**		**13,445,157**		**14,720,157**	
	GRAND TOTAL BY ALLOCATION																
	General Government	2,751,000	281,000	**270,000**	**0%**	595,000	3%	275,000	0%	380,000	4%	325,000	0%	300,000	2%	325,000	2%
	Planning and Community Development	7,940,971	175,000	**440,000**	**0%**	6,925,971	34%	-	0%	100,000	1%	55,000	0%	60,000	0%	185,000	1%
	Public Safety	10,155,000	755,000	**1,845,000**	**1%**	275,000	1%	4,445,000	7%	945,000	10%	965,000	1%	925,000	7%	-	0%
	Library	770,000	-	**50,000**	**0%**	-	0%	720,000	1%	-	0%	-	0%	-	0%	-	0%
	DPW - Transportation	725,000	85,000	**80,000**	**0%**	50,000	0%	310,000	1%	50,000	1%	50,000	0%	50,000	0%	50,000	0%
	Engineering/Highway	32,735,256	5,853,157	**7,905,157**	**6%**	3,352,157	17%	3,604,157	6%	2,932,157	32%	2,978,157	3%	3,030,157	23%	3,080,157	21%
	Water / Sewer	3,260,000	260,000	-	**0%**	-	0%	3,000,000	5%	-	0%	-	0%	-	0%	-	0%
	Parks & Playgrounds	27,202,000	2,877,000	**470,000**	**0%**	3,180,000	16%	2,020,000	3%	3,130,000	34%	4,730,000	5%	4,910,000	37%	5,885,000	40%
	Conservation/Open Space	2,540,000	270,000	**270,000**	**0%**	225,000	1%	175,000	0%	180,000	2%	180,000	0%	185,000	1%	1,055,000	7%
	Recreation	1,630,000	-	-	**0%**	1,630,000	8%	-	0%	-	0%	-	0%	-	0%	-	0%
	Public Schools	261,560,000	7,785,000	**115,010,000**	**91%**	4,055,000	20%	44,845,000	76%	1,495,000	16%	80,245,000	90%	3,985,000	30%	4,140,000	28%
	Grand Total	**351,269,227**	**18,341,157**	**126,340,157**		**20,288,128**		**59,394,157**		**9,212,157**		**89,528,157**		**13,445,157**		**14,720,157**	
	GRAND TOTAL BY CATEGORY																
1	New Facility Construction	4,165,000	-	**40,000**	**0%**	-	0%	4,125,000	7%	-	0%	-	0%	-	0%	-	0%
2	Facility Renovation / Repair	266,230,000	10,795,000	**115,005,000**	**91%**	5,065,000	25%	45,545,000	77%	1,650,000	18%	80,200,000	90%	4,150,000	31%	3,820,000	26%
3	Parks / Open Space / Playgrounds	29,892,000	3,097,000	**740,000**	**1%**	3,755,000	19%	2,095,000	4%	3,310,000	36%	4,910,000	5%	5,095,000	38%	6,890,000	47%
4	Infrastructure	41,746,227	3,458,157	**8,425,157**	**7%**	10,328,128	51%	6,914,157	12%	3,082,157	33%	3,083,157	3%	3,140,157	23%	3,315,157	23%
5	Vehicles	3,850,000	510,000	**1,480,000**	**1%**	275,000	1%	-	0%	525,000	6%	660,000	1%	400,000	3%	-	0%
6	Miscellaneous	5,386,000	481,000	**650,000**	**1%**	865,000	4%	715,000	1%	645,000	7%	675,000	1%	660,000	5%	695,000	5%
	Grand Total	**351,269,227**	**18,341,157**	**126,340,157**		**20,288,128**		**59,394,157**		**9,212,157**		**89,528,157**		**13,445,157**		**14,720,157**	
	6-Year Total	**318,207,913**	-														

FY 2015-2020 CIP PROJECT DESCRIPTIONS

NOTE: The figures included in this report are based on the best available cost estimates at the time of the development of the CIP and are subject to change due to revised estimates and bids.

GENERAL GOVERNMENT

1. GARAGES - FLOOR SEALANT & WATER/OIL SEPARATORS

In order to maintain the integrity of the concrete floors in garages, proper maintenance is required, including removing and refinishing the seal coat on those floors. The floors can deteriorate over time due to chemicals, normal wear and tear, cracks and unforeseen conditions. This project would remove and clean the surface of those floors, make any concrete patches, and provide a seal coat to maintain the floor, which should last for 5 - 10 years.

All new garages should have water/oil separators. This program would add to or modify existing systems and add new systems, thereby allowing the Town to meet the environmental needs of the DEP and EPA.

Estimated Cost: $150,000

Time Schedule:
Prior Year -- $25,000 Property Tax / Free Cash
FY 2016 -- $50,000 Property Tax / Free Cash
FY 2018 -- $75,000 Property Tax / Free Cash

2. TOWN BUILDING FURNITURE

This item allows for the replacement of aging furniture at Town Hall and other non-school buildings.

Estimated Cost: $100,000

Time Schedule:
FY 2016 -- $25,000 Property Tax / Free Cash
FY 2018 -- $25,000 Property Tax / Free Cash
FY 2019 -- $25,000 Property Tax / Free Cash
Future Years -- $25,000 Property Tax / Free Cash

3. TECHNOLOGY APPLICATIONS

This annual appropriation is for funding the projects included in the Information Technology Department's Long-Term Strategic Plan, which serves as the framework for the selection and management of technology expenditures and is updated periodically by the Chief Information Officer (CIO). Moreover, additional projects that meet the short-term objectives set by the CIO and appropriate committees provide the guidance for the Town's approach to technology management. Primary focus areas for IT investments include Infrastructure lifecycle replacement, Enterprise Applications/Better Government initiatives, School Technology, and Public Safety enhancements. Special consideration is given to projects that reduce operating expenses and / or create efficiencies.

Estimated Cost: $2,251,000

Time Schedule: Prior Year -- $256,000 Property Tax / Free Cash

FY 2015 -- $270,000 Property Tax / Free Cash
FY 2016 -- $270,000 Property Tax / Free Cash
FY 2017 -- $275,000 Property Tax / Free Cash
FY 2018 -- $280,000 Property Tax / Free Cash
FY 2019 -- $300,000 Property Tax / Free Cash
FY 2020 -- $300,000 Property Tax / Free Cash
Future Years -- $300,000 Property Tax / Free Cash

4. DATA ROOM UPGRADES

The Town's utilization of technology to operate, educate and communicate will continue to increase and, subsequently, the need for guaranteed stability and reliability in the information technology infrastructure will be of paramount importance. The current operation relies upon four primary data centers in which over $1,000,000 of IT equipment is located. In order to maintain efficient and consistent operation of this critical infrastructure, investment in adequate power and cooling is essential for 7 day per week/24 hour per day availability. This project requests the necessary monies to ensure proper power and cooling capabilities as outlined by an outside consultant and jointly agreed upon by the Building and IT departments.

Estimated Cost: $250,000

Time Schedule: FY 2016 -- $250,000 Property Tax / Free Cash

PLANNING AND COMMUNITY DEVELOPMENT

5. VILLAGE SQUARE CIRCULATION IMPROVEMENTS

This significant public works project involves reconfiguration of the existing circulation system in Brookline Village at Washington Street, Route 9, Walnut Street, High Street, and Pearl Street. The existing jughandle used to provide access to Washington Street from Route 9 eastbound would be removed and replaced with a new four-way intersection at Pearl Street. Signals would be relocated and upgraded and a new ADA-compliant surface-level pedestrian crosswalk with walk signal would cross Route 9 just west of Pearl Street as part of a new four-way intersection, replacing the existing pedestrian bridge that crosses Route 9. In addition, lighting and landscaping improvements will be made in the area, improving the overall aesthetics of this portion of Route 9 and Brookline Village.

The funding for the project is assumed to come from four sources:

1. $375,000 in CDBG funding for the removal of the closed pedestrian bridge
2. $250,000 in CDBG funding for the local construction match
3. $750,000 as part of the 1% of off-site improvements related to the re-development of 2 Brookline Place site by Children's Hospital
4. $4.376 million grant from the State's Transportation Improvement Program (TIP), programmed in Federal Fiscal Year 2015

It should also be noted that the Town will be seeking authorization for a Section 108 loan, which is a tool that can be used to undertake CDBG-eligible activities when a lump sum is needed to move a project forward. While the Town is not certain if this authorization will ultimately be utilized, seeking authorization is the prudent course to take in case there is a timing issue with outside funding sources. Under a Section 108 loan, a community borrows against its future CDBG funds. Like a conventional loan, the Section 108 loan would

have an amortization term, but instead of making payments, the Town's loan is paid back once per year off the top of the entitlement.

A Section 108 loan could be used to bridge the timing gap between when the funding is required for the Village Square project and when the developer of 2 Brookline Place will provide the $750,000. If the Town were not to receive the $750,000 in time, then an interest-only, short-term Section 108 loan would be utilized until the Town received the money. If for some reason the funding never materialized, then the Town would flip the short-term loan to a permanent Section 108 loan, with the debt service costs paid from the annual CD budget.

As part of the Section 108 loan authorization, the Town would also include the $250,000 currently planned for the Village Square project from the FY16 CD budget. That would be done in case federal regulations were to change and make the project ineligible. Basically, the Town would be hedging against this outcome since it would remain eligible if it had been part of a Section 108 loan application that was submitted before it became ineligible.

Estimated Cost: $5,750,971

Time Schedule:		
	FY 2015 -- $375,000	Federal Grant (CDBG)
	FY 2016 -- $4,375,971	State Grant
	FY 2016 -- $250,000	Federal Grant (CDBG)
	FY 2016 -- $750,000	Other (1% Off-Site Improvements from 2 Brookline Place)

6. COMMERCIAL AREAS IMPROVEMENTS

This annual appropriation is intended to fund projects detailed in the Economic Development Division's Strategic Plan, which serves as the framework for the selection and management of Commercial Area Improvements and is updated periodically by the Economic Development Advisory Board (EDAB). Additionally, projects that are short-term in nature and need urgent attention are expected to arise from time to time and should be addressed in order to protect our high-functioning commercial areas. Maintaining healthy, local commercial areas affects the quality of life and adds much needed support to the Town's tax base. Annual investment toward easy to use and attractive streets, pedestrian amenities, and other civic spaces makes our commercial areas more enjoyable to live, shop, dine, and work.

Estimated Cost: $440,000

Time Schedule:		
	Prior Year -- $50,000	Property Tax / Free Cash
	FY 2015 -- $65,000	Property Tax / Free Cash
	FY 2016 -- $50,000	Property Tax / Free Cash
	FY 2018 -- $100,000	Property Tax / Free Cash
	FY 2019 -- $55,000	Property Tax / Free Cash
	FY 2020 -- $60,000	Property Tax / Free Cash
	Future Years -- $60,000	Property Tax / Free Cash

7. ROUTE 9 ZONING ANALYSIS

This project would involve a study of the land use and zoning on Route 9. The purpose would be to evaluate the zoning of the area, existing traffic conditions, and make recommendations to implement the Town's Comprehensive Plan relative to Route 9. The study would involve a public participation component, an economic feasibility component, and a traffic analysis component.

Estimated Cost: $125,000

Time Schedule: Future Years -- $125,000 Property Tax / Free Cash

8. RIVERWAY PARK PEDESTRIAN / BICYCLE PATH IMPROVEMENTS

There has been interest for years in a safer crossing for pedestrians and bicycles at Route 9 and the Riverway. Since the DPW completed the construction of a bike/pedestrian path in Olmsted Park, there has been increased use of this park by pedestrians and bicyclists. The path ends at the intersection with Washington Street with no means of crossing Washington Street except at the Brookline Avenue intersection. The State Department of Conservation and Recreation (DCR) commissioned a study to look at viable methods of crossing Washington Street, both in Brookline and Boston.

The Gateway East Public Realm plan developed a preferred solution for this crossing, involving a widening of the median, reconfiguring existing traffic lanes, and a marked crossing. The Selectmen-appointed Emerald Necklace Crossing Committee came to consensus on a preferred crossing alternative for a signalized crossing at Olmsted Park and River Road at Route 9. The design process is still underway and once design plans are complete, the project will access funds from a federal transportation bill earmark ($675,000) for construction. In addition, $625,000 in State grants and $200,000 in CDBG funds are anticipated in FY16 for construction.

It should also be noted that the Town will be seeking authorization for a Section 108 loan, which is a tool that can be used to undertake CDBG-eligible activities when a lump sum is needed to move a project forward. While the Town is not certain if this authorization will ultimately be utilized, seeking authorization is the prudent course to take in case this project was to become ineligible via changes to Federal regulations. (The Town would be hedging against this outcome since the project would remain eligible if it had been part of a Section 108 loan application that was submitted before it became ineligible.) Under a Section 108 loan, a community borrows against its future CDBG funds. Like a conventional loan, the Section 108 loan would have an amortization term, but instead of making payments, the Town's loan is paid back once per year off the top of the entitlement.

Estimated Cost: $1,540,000

Time Schedule:
Prior Year -- $40,000 Property Tax / Free Cash
FY 2016 -- $675,000 Federal Grant
FY 2016 -- $200,000 Federal Grant (CDBG)
FY 2016 -- $625,000 State Grant

9. HISTORIC BUILDINGS REHAB - DEVOTION HOUSE AND PUTTERHAM SCHOOL

The Devotion House was in need of structural stabilization and window repair. At the same time, one of the windows/sash at Putterham School needed to be replaced. Funding for these projects ($85,000) was approved in FY14.

Estimated Cost: $85,000

Time Schedule: Prior Year -- $85,000 Property Tax / Free Cash

PUBLIC SAFETY

10. FIRE APPARATUS REHAB

The Town's policy is to replace front-line fire engines every 17 years and front-line ladder trucks every 20 years. While this replacement schedule serves the Town very well, funding needs to be appropriated every 10 years to rehab engines and every 12 years to rehab ladder trucks.

The breakout of the proposed funding is as follows:

Engine #1 = $200,000(FY16)
Reserve Engine #5 = $75,000(FY16)
Tower 1 (Bronto) = $525,000 (FY18)
Current Engine #5 (will become Engine #4) = $400,000 (FY20)

By rehabbing Reserve Engine #5, the Town will have two reserve fire engines that have been rehabbed and in good working order. Additionally, with the replacement of Ladder# 2 in FY15, the Department's compliment of spare apparatus will be sufficient (once replaced, Ladder #2 will become a spare).

Tower 1 was purchased in 2006 and will be 12 years old in 2018, the point at which the Town policy requires refurbishment. The current estimate for the rehab, based on past Ladder truck refurbishments, the complexity of Tower 1 and its foreign design, is $500,000. While we should plan for this expense, as the time draws near, consideration must be given to a cost/benefit analysis of a rehab verses the cost of a new traditional style Tower Ladder.

Estimated Cost: $1,200,000

Time Schedule: FY 2016 -- $275,000 Property Tax / Free Cash
FY 2018 -- $525,000 Property Tax / Free Cash
FY 2020 -- $400,000 Property Tax / Free Cash

11. LADDER #2 REPLACEMENT

The Town's policy is to replace front-line ladder trucks every 20 years. Ladder #2 will be 20 years old in FY15.

Estimated Cost: $900,000

Time Schedule: FY 2015 -- $900,000 General Fund Bond

12. ENGINE #3 REPLACEMENT

In FY14, $510,000 was appropriated for the replacement of Engine #3. Purchasing a new Engine #3 in FY14, earlier than the replacement policy calls for, allowed for current Engine #3 to become a spare. It replaced Reserve Engine #1, which was 20 years old. If this plan was not followed, Reserve Engine #1 would have been close to 30 years old when able to be replaced, an untenable situation. This approach improved both the front-line and reserve apparatus of the Fire Department.

Estimated Cost: $510,000

Time Schedule: Prior Year -- $510,000 Property Tax / Free Cash

13. ENGINE #5 REPLACEMENT

Under this plan, a new Engine #5 would be purchased at a cost of $580,000. Quint #5, purchased in 2010 and located at Station 5 in Coolidge Corner, would be relocated to Station 4 on Boylston Street, replacing Engine #4 and saving a previously proposed $1,250,000 in FY17. Quint #5 would be better utilized in the Station 4 neighborhood, as the streets are typically wider, there are fewer medical calls, and most importantly, the operation of a Quint in a single company station is more effective than operating it in tandem with a Ladder company as is currently the practice.

Estimated Cost: $580,000

Time Schedule: FY 2015 -- $580,000 Property Tax / Free Cash

14. ENGINE #6 REPLACEMENT

Keeping with the current policy of engine replacement at 17 years, Engine #6 will need to be replaced in FY19. The estimated cost for replacement is $660,000.

Estimated Cost: $660,000

Time Schedule: FY 2019 -- $660,000 Property Tax / Free Cash

15. FIRE STATION RENOVATIONS

A study was made of the conditions of the fire stations and what was needed to maintain the integrity of the floors and building in regard to the newer, larger fire equipment. The work outlined in the report includes flooring, shoring, beams, columns, and structural work. The report also includes recommendations for the HVAC systems, generators, lighting, life safety, and mechanical, electrical, plumbing (MEP), along with other peripheral systems.

The report broke the work into three categories: (1) structural, (2) life safety systems, and (3) MEP. The recommended approach was to fund all required structural work in the first year ($625,000 was approved in FY12), then fund life safety systems by stations as prioritized by the Fire Chief (FY13 – FY15), and then undertake the MEP work (starting in FY17). The estimates for remaining work at each station are as follows:

	Life Safety	MEP
Sta 1 (Brookline Village)		$320,000 (FY17)
Sta 4 (Rt. 9/Reservoir Rd)		$305,000 (FY19)
Sta 5 (Babcock St)	$195,000 (FY15)	$225,000 (FY20)
Sta 6 (Hammond St)	$130,000 (FY15)	$300,000 (FY20)
Sta 7 (Washington Sq)		$310,000 (FY18)
TOTAL	$325,000	$1,4670,000

In addition to the $310,000 in FY18 for Station #7, there is $110,000 included for modifications to the locker room and for the creation of a second means of egress.

Estimated Cost: $2,140,000

Time Schedule: Prior Year -- $245,000 Property Tax / Free Cash
FY 2015 -- $325,000 Property Tax / Free Cash
FY 2017 -- $320,000 Property Tax / Free Cash
FY 2018 -- $420,000 Property Tax / Free Cash
FY 2019 -- $305,000 Property Tax / Free Cash
FY 2020 -- $525,000 Property Tax / Free Cash

16. FIRE DEPARTMENT FLEET MAINTENANCE AND TRAINING BUILDING

The ideal conclusion of this project would be twofold: (1) to create an apparatus maintenance facility that meets the needs of the Brookline Fire Department and provides a safe working environment for the employees and (2) to revamp the current training site into a safe, modern, and up-to-date facility.

The current maintenance facility is located in Station #1. The service area (shop) is on the first floor with storage and office space located in the basement. At this time the service elevator, used to transport supplies to the basement for storage, has been condemned. Because of that, there are tires weighing several hundred pounds virtually inaccessible in the basement. The actual shop area is above the basement area. Currently, the shop floor requires replacement and/or reinforcement if work in the area is to continue. Additionally, the shop is not large enough to allow access to many of the Department's vehicles, leaving the mechanics no choice but to do repairs out in the street, the drill yard, or, on occasion, inside another fire station. This is obviously unsafe when on the street and inefficient when working in locations away from the shop and all its tools and equipment. The limited size of the shop and its inability to house the apparatus leaves the Department looking to costly outside repair vendors more often than would be necessary if the Department had an adequate facility.

The Department's training facility is located at Station #6. A modernized training facility would have a classroom with the technology necessary for the delivery of essential training. The Station would also be upgraded with a new Self Contained Breathing Apparatus (SCAB) filling station, to be utilized not only for the filling of air depleted while training, but also for air used during the course of regular firefighting activities. This would eliminate the need for Engine #6 to travel outside their first due response area in order to fill cylinders. The Training Division would acquire appropriate and sufficient equipment to aid in the administration of hands-on training programs without depleting the equipment from front line companies. This will leave companies fully complimented and better able to return to service and respond to emergencies while at the Training Facility. Lastly, a new drill yard would contain a modern, fully NFPA-compliant, live-fire training building. The existing tower, which is in poor condition, will be removed.

The $40,000 in FY15 is to fund a feasibility study. In FY17, $4.125 million is included for design ($375,000) and construction ($3.75 million).

Estimated Cost: $4,165,000

Time Schedule: FY 2015 -- $40,000 Property Tax / Free Cash
FY 2017 -- $4,125,000 General Fund Bond

LIBRARY

17. COOLIDGE CORNER BRANCH LIBRARY FEASIBILITY/CONCEPT STUDY

Last year, the Coolidge Corner Branch Library circulated 417,356 items, making it the busiest branch library in the state. In fact, the usage of this branch library alone is higher than total library circulation in all but 36

libraries in the state, including several affluent Boston suburbs. The library was originally opened in 1957 and was added onto in 1970. Since then it has seen repairs and renovations to the HVAC system and the façade.

As a result of the heavy use, it is clear that the branch is showing its age and falls short of meeting the needs of library users. A Space Allocation Report, completed in the Fall of 2012, identified the need for an additional 3,000-5,000 square feet of space, including a larger children's room, small and large group meeting space, and more public computers.

Last year, the Waldo Street Area Study Committee identified the branch library as one of the possible participants in the redevelopment of the Durgin/Waldo parcels. The site could offer several advantages that call into question how much money the Town should spend to repair and upgrade the current facility. The current FY14 – FY19 CIP includes the following:

FY15	Installation of windows, carpeting and an elevator/HP lift	$500,000
FY16	Replacement of the roof (part of the Roof Repair/Repl. item)	$415,000
FY16	Fenestration repairs (part of the Envelope/Fenestration Repairs item)	$220,000

The Library Trustees are requesting that the above allocations be placed on hold until further study and consideration can take place. $50,000 is being requested to develop a written building program and a Feasibility/Concept Study. This study would determine if the current facility can be adapted to meet current and projected needs. It may also evaluate the value of the existing building if it were to be sold as part of a larger development project.

Estimated Cost: $50,000

Time Schedule: FY 2015 -- $50,000 Property Tax / Free Cash

18. COOLIDGE CORNER LIBRARY - ELEVATOR (ADA) / REAR WINDOWS/CARPETING

The Coolidge Corner Library is presently only fully accessible at the front main entrance. On the lower level in the rear is a meeting room and toilets, and this room is not handicap accessible from the upper level; the only access is through a rear door. In order to make the library fully accessible, a lift is proposed for installation at the rear of the library, which would allow access directly below. The proposed plan is to build a structure to house a permanent lift outside, which is estimated to cost $245,000, of which $20,000 is for design and $225,000 is for the elevator. By installing the lift on the exterior of the existing building, the library can remain open during the construction and the library will avoid having to discard a significant number of books due to the loss of space caused by the new equipment and resulting ADA code restrictions.

There are nine large panels of glass windows in the rear of the building dating from the original construction in 1970. The glass is not insulated and is loose in a number of areas. All the glass would be replaced with operable windows that can be locked for security purposes. $155,000 is included for plans and specs ($15,000) and the windows ($140,000).

The majority of the carpet was installed in 1997 and is now more than 15 years old. This project will replace approx. 15,000 sq. feet of carpet at an estimated cost of $100,000.

As explained in the previous item, the Waldo Street Area Study Committee identified the branch library as one of the possible participants in the redevelopment of the Durgin/Waldo parcels. The site could offer

several advantages that call into question how much money the Town should spend to repair and upgrade the current facility. Therefore, the Library Trustees have requested $50,000 to complete a Feasibility/Concept Study and have requested that the projects detailed in this item be placed on hold until further study and consideration can take place.

Estimated Cost: $500,000

Time Schedule: FY 2017 -- $500,000 Property Tax / Free Cash

19. LIBRARY FURNISHINGS

This request of $110,000 will be used to replace furnishings and equipment at all three libraries. The furnishings at the Main Library will be 15 years old in 2018. While the tables are expected to last 25 years or more, most of the wood and all of the upholstered chairs will have to be replaced.

Estimated Cost: $110,000

Time Schedule: FY 2017 -- $110,000 Property Tax / Free Cash

20. LIBRARY INTERIOR FACELIFT/PAINTING AND REPAIRS

This project will allow for repairs to the heavy traffic areas of all three libraries. It will provide for the painting of the interior of the libraries every 6-7 years; the replacement of carpeting and other flooring and ceiling tiles, as needed; and the ability to make minor electrical repairs and lighting upgrades. Each library would be done in sections to avoid having to close each facility.

Estimated Cost: $110,000

Time Schedule: FY 2017 -- $110,000 Property Tax / Free Cash

TRANSPORTATION

21. TRAFFIC CALMING / SAFETY IMPROVEMENTS

At this time there are no traffic calming projects that have been reviewed and approved by the Transportation Board; however, the Transportation Division received a request for traffic calming on Fisher Avenue. It is anticipated that whatever measures are approved, they will be constructed simultaneously with the reconstruction of Fisher Avenue.

Heath Street from Hammond Pond Parkway to the Town line will be studied for traffic calming once the Chestnut Hill Square project in Newton is substantially complete.

Estimated Cost: $300,000

Time Schedule: FY 2016 -- $50,000 Property Tax / Free Cash
FY 2017 -- $50,000 Property Tax / Free Cash
FY 2018 -- $50,000 Property Tax / Free Cash
FY 2019 -- $50,000 Property Tax / Free Cash
FY 2020 -- $50,000 Property Tax / Free Cash

Future Years -- $50,000 Property Tax / Free Cash

22. BICYCLE ACCESS IMPROVEMENTS

The $30,000 requested for FY15 is for pavement markings along Cypress Street and School Street. The goal of this project is to provide appropriate on-street pavement treatments to connect the regional bicycle route.

Estimated Cost: $70,000

Time Schedule: Prior Year -- $40,000 Property Tax / Free Cash
FY 2015 -- $30,000 Property Tax / Free Cash

23. DEAN ROAD/CHESTNUT HILL AVE TRAFFIC SIGNAL UPGRADE

The traffic signal at the intersection of Dean Road and Chestnut Hill Avenue is the last of the older electronic traffic signals that needs to be upgraded. $35,000 is for design while the $225,000 is for the signal upgrades.

Estimated Cost: $260,000

Time Schedule: FY 2017 -- $260,000 Property Tax / Free Cash

24. MBTA TRAFFIC SIGNALIZATION

Today, trains filled with up to 260 MBTA customers must wait as six brand-new signals give right-of-way to private vehicles, slowing MBTA service, frustrating passengers, and diminishing the transit riding experience. Brookline residents and businesses appreciate and depend on the C Line and other Green Line branches for essential mobility in our dense urban neighborhoods. According to the most recent available data, the MBTA C-Line serves over 14,000 riders per day, with over 35% of the commuters living along the Beacon Street corridor using public transit as their primary form of transportation.

Since 2008, Transportation Board members and staff have expressed the desire to work collaboratively with the MBTA to address unnecessary delays and help make the service function as intended. The current management team of the MBTA is responsive to these types of service improvements and is currently taking steps to make it feasible for the Town to implement a Transit Signal Prioritization (TSP) program along the C Line by 2017. (TSP is a tool that improves the ability of transit vehicles and automobiles to safely and effectively share limited roadway space.)

At the Spring 2013 Town Meeting, a resolution was passed requesting that the Department of Public Works (DPW) place in their FY15 capital budget funds to study TSP on the Beacon Street corridor. In response, DPW is seeking $50,000 to hire a consultant to study the new MBTA proposed communication system, study our traffic control system on Beacon Street, determine the technology needed to implement the system, and provide a report to the Town that includes a cost-benefits analysis of upgrading the Town-owned traffic signal controllers and associated equipment on Beacon Street to allow for the prioritization of MBTA C-Line trolleys. This project will be overseen by DPW staff and the Transportation Board. Any resulting project will be submitted to Town Meeting for approval in a later CIP request.

Estimated Cost: $50,000

Time Schedule: FY 2015 -- $50,000 Property Tax / Free Cash

25. WOODLAND RD./HAMMOND ST. SAFETY IMPROVEMENT STUDY

Woodland Road at Hammond Street is a large intersection that handles significant traffic in the morning, particularly when Beaver Country Day School is in session. Because the pavement width on Hammond Street is 54' (typical width is 27'+/-), vehicles tend to travel at high rates of speed, which makes it difficult to cross the street for both pedestrians and other vehicles. $45,000 was appropriated in FY14 to identify and quantify the issues, evaluate and recommend a solution, and estimate the cost of the conceptual solution.

Estimated Cost: $45,000

Time Schedule: Prior Year -- $45,000 Property Tax / Free Cash

ENGINEERING/HIGHWAY

26. STREET REHABILITATION - TOWN

In 1992, the Department of Public Works (DPW) undertook a comprehensive study of its roads and implemented a pavement management system. The system was designed to bring Town-owned streets to a sufficient level of repair such that the roads could be maintained without undertaking costly full reconstruction. From 1992 to 1997, the Town made some progress in this regard, but funding was inconsistent. Starting in 1997, the Town began allocating $1 million per year to streets, in addition to Chapter 90 funding from the State.

The Override Study Committee (OSC), which undertook their study in CY07-08, determined that the Town had underfunded road and sidewalk maintenance and construction. Its analysis showed that while funding for road construction activities remained level, construction costs increased approximately 35% between 1997 and 2007, reducing the amount of work that could be completed each year.

Based on the recommendations of the OSC, the 2008 Override approved by the voters included $750,000 for streets and sidewalks, to be increased annually by 2.5%. In FY15, the appropriation is recommended at $1.55 million (the original $1 million base plus the $300,000 added in FY09 increased annually by 2.5%).

Estimated Cost: $13,200,000

Time Schedule: Prior Year -- $1,510,000 Property Tax / Free Cash
FY 2015 -- $1,550,000 Property Tax / Free Cash
FY 2016 -- $1,590,000 Property Tax / Free Cash
FY 2017 -- $1,630,000 Property Tax / Free Cash
FY 2018 -- $1,670,000 Property Tax / Free Cash
FY 2019 -- $1,710,000 Property Tax / Free Cash
FY 2020 -- $1,750,000 Property Tax / Free Cash
Future Years -- $1,790,000 Property Tax / Free Cash

27. STREET REHABILITATION - STATE

The State provides monies under its Chapter 90 program for improvements to certain streets. About 1/3 of Brookline's streets are eligible for 100% State reimbursement. This money supplements the funding appropriated from Town funds for street rehabilitation. An annual $200 million statewide Chapter 90 program is assumed.

Estimated Cost: $7,601,256

Time Schedule:
Prior Year -- $950,157 State Grant
FY 2015 -- $950,157 State Grant
FY 2016 -- $950,157 State Grant
FY 2017 -- $950,157 State Grant
FY 2018 -- $950,157 State Grant
FY 2019 -- $950,157 State Grant
FY 2020 -- $950,157 State Grant
Future Years -- $950,157 State Grant

28. SIDEWALK REPAIR

The Department of Public Works developed a sidewalk management program. Some sidewalks are reconstructed as part of the street reconstruction program; those that are not are funded under this program. The Override Study Committee (OSC), which undertook their study in CY07-08, determined that the Town had underfunded road and sidewalk maintenance and construction. Based on the recommendations of the OSC, the 2008 Override approved by the voters included $750,000 for streets and sidewalks, to be increased annually by 2.5%. Of the FY09 override amount, $50,000 was appropriated for sidewalks. In FY15, the appropriation is recommended at $290,000 (the original $200,000 base plus the $50,000 added in FY09 increased annually by 2.5%).

Estimated Cost: $2,474,000

Time Schedule:
Prior Year -- $283,000 Property Tax / Free Cash
FY 2015 -- $290,000 Property Tax / Free Cash
FY 2016 -- $297,000 Property Tax / Free Cash
FY 2017 -- $304,000 Property Tax / Free Cash
FY 2018 -- $312,000 Property Tax / Free Cash
FY 2019 -- $318,000 Property Tax / Free Cash
FY 2020 -- $330,000 Property Tax / Free Cash
Future Years -- $340,000 Property Tax / Free Cash

29. LED STREETLIGHT REPLACEMENT PROGRAM

The Town owns and maintains approximately 3,600 streetlights that were purchased from NStar in 2001. The majority of the lights use the "cobra head" style fixture with high-pressure sodium lamps ranging from 100 watts to 400 watts. The annual energy cost budgeted for unmetered streetlights totals approximately $365,000. DPW implemented two pilot programs that replaced 104 high-pressure sodium lamps with more efficient LED lamps ranging from 55 to 75 watts to determine both the acceptability by the public and the reduction of energy usage. In addition to reduced energy use and a cleaner, more directed light (less light pollution), industry standards are that the bulb life of the sodium lamps (six years) can be stretched to 20 years for the LED's. This technology is no longer considered cutting edge and a number of communities in Massachusetts are striving to make this the new standard for their lighting systems, and it appears as though the price has plateaued.

This project will replace the high-pressure lamps with LED’s over a four-year period. Based on industry standards, each LED saves $62 per year in energy costs. With 3,600 streetlights, that equates to $223,200 in savings in the utility budget per year. The total cost of the project is $2.1 million, resulting in a 10-year

payback period. With the life expectancy of LED's at 20 years, that means after paying off the purchase cost in the first 10 years, each of the next 10 years results in annual savings of $223,200, or $2.16 million over that second 10-year period. Grant funding and rebate programs will be sought to reduce the Town's cost and reduce the payback period. $540,000 was approved in FY14 for the first of four phases and $515,000 is requested for each of the next three years to complete the project.

Estimated Cost: $2,085,000

Time Schedule: Prior Year -- $540,000 Property Tax / Free Cash
FY 2015 -- $515,000 Property Tax / Free Cash
FY 2016 -- $515,000 Property Tax / Free Cash
FY 2017 -- $515,000 Property Tax / Free Cash

30. PARKING LOT REHABILITATION

Since its construction in 1965, the Centre Street parking lot has not had any substantial maintenance work done. Repairs have been more reactive and of the "band-aid" type. The rehabilitation work will consist of removing and resetting curbing, repaving, new signage, pavement line painting, replacing sidewalks, landscaping, and street light modifications. Should the Coolidge Corner Theatre expansion project move forward, this rehabilitation work would be coordinated with the parking lot improvements behind the theater.

Estimated Cost: $205,000

Time Schedule: FY 2017 -- $205,000 Property Tax / Free Cash

31. NEWTON STREET LANDFILL - REAR LANDFILL CLOSURE

The capping of the front landfill and the partial capping of the rear landfill is complete. $4.6 million is the estimated cost to complete the capping of the rear landfill, along with the construction of the DPW operations area. Grading of the rear landfill will be modified to accommodate acceptance of soil contaminated with ash from the Martha's Lane, Kensington Circle, and Arlington Road neighborhood.

Estimated Cost: $4,600,000

Time Schedule: FY 2015 -- $4,600,000 General Fund Bond

32. TRANSFER STATION CONCRETE FLOOR REPAIR

The existing concrete floor at the Transfer Station was cracked and exposed the reinforcing steel. Without repair, it was a matter of time before the heavy equipment ripped up the floor. $70,000 was appropriated in FY14 to fix the floor.

Estimated Cost: $70,000

Time Schedule: Prior Year -- $70,000 Property Tax / Free Cash

33. MUNICIPAL SERVICE CENTER RENOVATIONS

The Municipal Service Center (MSC) was built in 1999 at 870 Hammond Street to house the Highway and Sanitation Division. Several years after the completion of the facility, the reinforced concrete structural floor on the upper level vehicle storage area showed signs of deterioration from what was believed to be from exposure to salts and fuels from the heavy equipment traffic. The floor was repaired and sealed with the condition that resealing should occur every 5-7 years. This involved removal of the remaining sealants, shot blasting, floor prep, and reapplication of a new epoxy sealant. As a cost savings measure and part of a reorganization of services, the Parks and Open Space Division of the DPW relocated to the MSC in the summer of 2009. The move provided better services and an improved operating environment for the employees of the Division, as their facility at Larz Anderson was substandard. However, the reorganization also created the need for additional vehicle and equipment storage at the MSC. In order to maximize the use of available space, the buildings at Larz Anderson continue to be used to house off-season vehicles and equipment.

Because of the floor conditions and the need to house additional parks equipment, an alternative plan to spending tax dollars frequently for repairs to the floor was considered. In FY09, $40,000 was approved by Town Meeting for a study of space and facility needs of both the Parks and Open Space Division and the Building Department's maintenance craftsmen. The study suggested that the underlying cause of the MSC floor deterioration was due to the marginal sizing of the structural systems supporting the floor, causing the slab to move under heavy equipment loading. The obvious solution was to reconfigure the upper floor space to remove heavy equipment traffic and storage from the structural floor to significantly reduce the loading on the floor and relocate the existing shop space on the non-structural slab to provide additional space for heavy equipment storage. The floor could then be repaired permanently without the fear of future damage occurring due to slab movement. $2.5 million was approved in FY14 for this project.

Estimated Cost: $2,500,000

Time Schedule: Prior Year -- $2,500,000 General Fund Bond

WATER/SEWER

34. WATER DEPARTMENT GARAGE - ROOF REPLACEMENT

In 2008, the Town conducted a study in order to develop a long-term roof repair and replacement schedule. The plan includes the Water Department facility on Netherlands Road in FY14. $260,000 was approved in FY14.

Estimated Cost: $260,000

Time Schedule: Prior Year -- $260,000 Water and Sewer Enterprise Fund Budget

35. WASTEWATER SYSTEM IMPROVEMENTS

This on-going project provides funding for the rehabilitation of the wastewater collection system (sanitary sewer) based on the recommendations of the Wastewater Master Plan completed in 1999. Construction projects to correct sewer system deficiencies have been identified and categorized as: 1) structural improvements, 2) sewer and storm drain separation, 3) infiltration reduction, 4) hydraulic capacity restoration, and 5) cleaning and television inspection to identify areas for further investigation and/or maintenance. Projects are designed, grouped, and constructed with the overall goals of eliminating sewerage

backups into homes and businesses, preventing costly system failures, lowering MWRA wholesale costs by reducing extraneous flows, and making more efficient use of annual operating funds. Funding for this project should enable completion of the currently identified system deficiencies.

Estimated Cost: $3,000,000

Time Schedule: FY 2017 -- $3,000,000 Water and Sewer Enterprise Fund Bond

PARKS/PLAYGROUNDS

36. BROOKLINE AVENUE PLAYGROUND

Brookline Avenue Playground is a four-acre park located in North Brookline. The playground equipment located behind the Lynch Center serves the neighborhood, the community overall and the Brookline Early Education Program (BEEP). The play area was last renovated in 1994 and is in need of complete replacement including new play equipment, safety surfacing, water play and accessibility improvements. This project also includes renovation of the athletic field that serves soccer, football, youth baseball, and softball. Funding for the project is estimated to total $957,000, with $87,000 appropriated in FY14 for design and $870,000 planned for FY16 for construction.

Estimated Cost: $957,000

Time Schedule: Prior Year -- $87,000 Property Tax / Free Cash (Design)
FY 2016 -- $870,000 Property Tax / Free Cash (Construction)

37. BROOKLINE RESERVOIR PARK

Brookline Reservoir Park is a multigenerational community park located along Route 9 between Lee and Warren Streets in the middle of town. It is a man-made body of water approximately 1-mile in circumference with a walking/jogging stonedust track that circles the reservoir. The interior basin of the Reservoir is a stone riprap wall and is in need of repointing, regrouting and replacement of stones. The stonedust path is in need of repair, for both accessibility and safety. In addition to repairing the stone basin, the design review process and restoration project will include consideration of plantings, park furniture, screening from Route 9, comfort station and pathway/access/entry/overlook points. Funding for the project is estimated to total $1.88 million, with $80,000 in FY17 for design and $1.8 million in FY18 for construction.

Estimated Cost: $1,880,000

Time Schedule: FY 2017 -- $80,000 Property Tax / Free Cash (Design)
FY 2018 -- $1,800,000 Property Tax / Free Cash (Construction)

38. COREY HILL PLAYGROUND

Corey Hill Park is located at the crest of Summit Avenue. The southern parcel contains an active play equipment area and lawn and the northern parcel contains an attractive overlook of Boston, lawn area, sundial, and seating. The playground, last renovated in 1989, is in need of complete replacement including site regrading and accessibility improvements. This project will replace all playstructures at the site and review the layout and design of the active playground portion of the park. Site masonry work, benches, walkways, planting, and other site amenities will be included with this renovation. Funding for the project is estimated to total $600,000, with $40,000 in FY16 for design and $560,000 in FY17 for construction.

Estimated Cost: $600,000

Time Schedule: FY 2016 -- $40,000 Property Tax / Free Cash (Design)
FY 2017 -- $560,000 General Fund Bond (Construction)

39. CYPRESS PLAYGROUND & ATHLETIC FIELD

Cypress Playground is a 5.22 acre park located in the heart of Brookline, adjacent to the High School, Tappan Gym and Kirrane Aquatic Center. The park has two softball fields that are shared with a rectangular natural turf field for all sports. A large seating area and full basketball court are located at the far side of the athletic playing fields. The park has a spray pool, picnic area, play equipment for tots and children and a sledding hill.

This renovation includes new play equipment for 2-5 and 5-12 year old children, repair of a perimeter retaining wall, new curbing, updated water play, pathways, drainage improvement, new basketball court, updated picnic area and seating, plantings, new irrigation, infield and athletic field renovation. The $100,000 in FY20 is for design while the $1.4 million in Future Years is for construction.

Estimated Cost: $1,500,000

Time Schedule: FY 2020 -- $100,000 Property Tax / Free Cash (Design)
Future Years -- $1,400,000 General Fund Bond (Construction)

40. EMERSON GARDEN PLAYGROUND

Emerson Garden is a park located along Davis Avenue and Emerson Street with a circuitous walking path, seating, playground and lawn area. The play equipment for tots and older children, last renovated in 1995, is in need of replacement, new perimeter fencing is required, and accessibility needs improvement. The playground review will include consideration of picnic/passive areas, review of spray pool utilities, park furniture, and rehabilitation of the landscaped areas. The design review process will revisit layout, grading, accessibility, safety, and functionality of the park. Funding for the project is estimated to total $670,000, with $60,000 in FY16 for design and $610,000 in FY17 for construction.

Estimated Cost: $670,000

Time Schedule: FY 2016 -- $60,000 Property Tax / Free Cash (Design)
FY 2017 -- $610,000 General Fund Bond (Construction)

41. FISHER HILL FIELD/PLAYGROUND CONSTRUCTION

In FY08, the Town approved a $1.35 million bond for Phase 1 (acquisition and make the property safe and accessible) of the Fisher Hill Reservoir / Playground project, a unique and exciting project that will transform an old, unused reservoir site into a scenic amenity and public park that incorporates an athletic field, passive recreation and open space. In FY13, the Town approved $3.25 million for the next phase of the project -- the conversion of the reservoir into a modern, 10-acre urban park. Funding for this came from the sale of the Town's reservoir site on the opposite side of Fisher Avenue, which has been transformed into a mixed-income housing development. Lastly, in FY14 a $1.2 million bond was approved, as cost estimates were revised and additional funding was required. The FY13 and FY14 appropriations, plus a $400,000 state grant and a fund-raising effort, will enable the creative reuse of the site from an inaccessible state surplus property into a new 10-acre public park in the dense urban town of Brookline.

Estimated Cost: $1,600,000

Time Schedule: Prior Year -- $1,200,000 General Fund Bond
Prior Year -- $400,000 State Grant

42. BROOKLINE RESERVOIR GATEHOUSE ROOF

The Parks and Open Space Division of the Department of Public Works and the Building Department are working with the Preservation Commission to preserve and potentially reuse this nationally significant 1848 granite and iron building, which is located along Route 9 and Warren Street. The gatehouse and Reservoir Park are listed on the National Register of Historic Places. A 2009 engineering study by Structures North determined that its masonry is in good condition and its roof structure could be rehabilitated, despite damage to the truss ends from failed built-in gutters (now covered). In 2010, temporary shoring secured the roof from heavy snow loads and North Bennet Street School students restored the doors and some windows. A master planning process for the Reservoir Park will consider possible uses for its upper interior level.

This funding is to restore the ends of the trusses, re-secure them to the original iron roof with which they are structurally integrated, and replace the present pre-WWI standing-seam steel roof. The engineering study budgets approximately $20,000 for interior demolition, $135,000 for structural work, and $95,000 for a new metal roof. At least $50,000 of this might be offset by an MHC matching grant. If the gatehouse is designated a National Historic Landmark, it would be eligible to compete for "Save America's Treasures" funding.

The Study also addressed carpentry, stair, and masonry repairs, the estimate for which is $400,000. This work is predicated upon the receipt of outside funding.

Estimated Cost: $650,000

Time Schedule: FY 2016 -- $250,000 Property Tax / Free Cash
FY 2016 -- $400,000 State / Federal Grant

43. HARRY DOWNES FIELD & PLAYGROUND

While the oval and track at Harry Downes Field, located at Pond Avenue and Jamaica Road, were renovated in 2006, the play area, softball field and comfort station/storage space are in need of renovation. The playground area was last renovated in 1993. This budget item is intended to replace the play equipment and park furniture, install a water play/spray pool amenity, renovate the softball field, and assess the comfort station/field house. Funding for the project is estimated to total $880,000, with $80,000 in FY17 for design and $800,000 in FY18 for construction.

Estimated Cost: $880,000

Time Schedule: FY 2017 -- $80,000 Property Tax / Free Cash (Design)
FY 2018 -- $800,000 Property Tax / Free Cash (Construction)

44. KRAFT FAMILY ATHLETIC FIELD SYNTHETIC TURF REPLACEMENT

The Kraft Family Athletic Field is nearing 15 years old. The synthetic turf carpet has a warranty of 8 years and an anticipated life cycle of 12 years. The carpet has suffered several tears requiring repair and the field is in need of regrading. The project involves removing the existing carpet, laser grading the subbase,

replacing the synthetic turf and installing new infill. In FY19, $70,000 is included for design while $700,000 is in FY20 for construction.

Estimated Cost: $770,000

Time Schedule: FY 2019 -- $70,000 Property Tax / Free Cash (Design)
FY 2020 -- $700,000 Property Tax / Free Cash (Construction)

45. LARZ ANDERSON PARK

Larz Anderson Park is the former estate of Larz Anderson and his wife Isabel Weld Perkins Anderson, an elite social couple of the early 20th century. With over 60 acres, Larz Anderson Park is the largest park in Brookline, is listed on the National and State Registers of Historic Places and is the flagship park of the Town with many architecturally significant buildings, structures and fences, athletic fields, play equipment, picnic areas, walking paths, an ice rink, significant trees, a water body, sweeping slopes and views of the City of Boston.

The entire access roadway through the park from Newton Street to Avon Street is failing and is in need of replacement. In addition, pedestrian pathways through the park are in need of repair/replacement and the pathways and stairs in the park are currently in poor condition. The FY14 funding ($660,000) allowed for the completion of this work.

The FY19 request ($2.7 million) is for replacement of the deteriorating Temple of Love and Fountain. A detailed conditions assessment of the structure, including sampling and lab tests, found that the concrete used to manufacture the various components of the Temple are cracking, principally due to freeze-thaw damage resulting from corrosion and expansion of steel reinforcement bar and/or mesh. The extensive network of cracks on the cornice, ledges and dome represent a progressive condition that is irreversible and not repairable on a long-term basis. The assessment looked at the Town's options for maintenance, stabilization and replacement. Due to the condition of the concrete, replacement is the recommended course of action.

The $2.2 million budget in FY20 is for the Italianate Garden and the Maintenance Yard. Larz Anderson Park shows many traces of the three major cultural influences on the Anderson's tastes, aesthetics and lifestyle: Italy, Japan and England. The Andersons had a vision for their Brookline home that would take them nearly 20 years to realize. They hired the landscape architect and artist Charles A. Platt to design a sunken Italian garden at the top of the hill that would embody their love of Italy. The Italian Garden infrastructure that remains is in poor and unstable condition. The request for improvements is to make structural repairs to the walks, stairs and walls, restore the gazebo on the east side of the garden (to match the restoration of the west side that was completed several years ago), removal of invasive vegetation and replacement with appropriate planting. $1.1 million is budgeted for this project.

Just below the Italian Garden was the Agricultural and Horticultural area for the Anderson Estate. Isabel and Larz had greenhouses, a hen house, a rose garden, garden shed, and maintained extensive agricultural operations to support themselves and their staff. These operations, later to be replaced by the Parks and Open Space Maintenance Garages, were surrounded by significant concrete/stucco walls. The massive walls have shifted significantly and are cracking and deteriorating. The walls and access gate/door are in need of complete replacement (similar to the replacement of the perimeter wall on Goddard Avenue that was completed several years ago). $1.1 million is budgeted for this project.

Estimated Cost: $9,060,000

Time Schedule: Prior Year -- $660,000 Property Tax / Free Cash
FY 2019 -- $2,700,000 General Fund Bond
FY 2020 -- $2,200,000 General Fund Bond
Future Years -- $3,500,000 General Fund Bond

46. MURPHY PLAYGROUND

Murphy Playground, located between Kent, Bowker and Brook Streets, is a bowl shaped park with a noticeable grade change, retaining walls on three sides, play areas and a sloped open grass area. The park was last renovated in 1992 and is in need of renovation, including new play equipment for tots and older children, new perimeter fencing, improved accessibility, restoration of the field, rehabilitation of pathways, landscape improvements, review of picnic/passive areas, and review of spray pool utilities. The design review process will revisit layout, grading, accessibility, safety, and functionality of the park. Funding for the project is estimated to cost $780,000, with $60,000 for design in FY18 and $720,000 for construction in FY19.

Estimated Cost: $780,000

Time Schedule: FY 2018 -- $60,000 Property Tax / Free Cash (Design)
FY 2019 -- $720,000 Property Tax / Free Cash (Construction)

47. PIERCE PLAYGROUND

Pierce Playground, last renovated in 1991, is located between School Street and Harvard Avenue. The park serves as a community park, neighborhood park and school ground. The park has an upper-level with play equipment and a lower-level with a ball field, with a steep slope in between. The playground is in need of a full renovation that will include drainage improvements; play equipment for both younger children and school-aged children; upgraded utilities, water play, basketball, and site furniture; a rehabilitated field; and repair to pathways, masonry and fencing. Funding for this project is estimated to total $1.01 million, with $90,000 in FY15 for design and $920,000 in FY16 for construction.

Estimated Cost: $1,010,000

Time Schedule: FY 2015 -- $90,000 Property Tax / Free Cash (Design)
FY 2016 -- $920,000 General Fund Bond (Construction)

48. RIVERWAY PARK

This is a continuing project of the Olmsted Park/Riverway Improvements program. This appropriation is for the reconstruction of the riverbanks that have eroded in some places by as much as 10 feet, replacement of failing or hazard trees, edge planting, lawn restoration, rebuilding the path system, and re-grading to prevent future erosion. The project was originally anticipated to be implemented in FY2003; however, with the Brookline/Boston/Commonwealth of Massachusetts/US Army Corps of Engineers joint restoration of the Muddy River, this phase of restoration will be coordinated with the overall flood mitigation, environmental quality, and historic preservation work that is currently being designed and permitted.

Estimated Cost: $425,000

Time Schedule: Future Years -- $425,000 Property Tax / Free Cash

49. ROBINSON PLAYGROUND

Robinson Playground is a 2.38 acre park located between Cypress, High and Franklin Streets in a dense neighborhood. The playground facilities include a youth baseball/softball field, paved basketball court, multi-use court play area, playground equipment, and water play.

The renovation includes new playground equipment for older and younger children; water play, new irrigation and field renovation; basketball and multi-use court improvements; pathway and drainage improvements; and fence replacement. The $90,000 in FY19 is for design while the $900,000 in FY20 is for construction.

Estimated Cost: $990,000

Time Schedule: FY 2019 -- $90,000 Property Tax / Free Cash (Design)
FY 2020 -- $900,000 Property Tax / Free Cash (Construction)

50. SCHICK PLAYGROUND

Schick Park, located on Addington Road, is in need of a full site renovation to meet new safety and accessibility requirements. Renovations will include new play equipment for older and younger children, repointing the stone walls, repair of the wooden picnic shelter, field renovation, fencing, paving and site furniture. The estimated project cost is $770,000, with $70,000 in FY18 for design and $700,000 in FY19 for construction.

Estimated Cost: $770,000

Time Schedule: FY 2018 -- $70,000 Property Tax / Free Cash (Design)
FY 2019 -- $700,000 Property Tax / Free Cash (Construction)

51. SOULE ATHLETIC FIELDS & SITE RENOVATION

The Soule Early Education Center is located on Hammond Street. The athletic fields on site serve daycare programs, athletic leagues, camps, and residents of all ages and abilities. The circulation and stormwater management of the site are in need of redesign and renovation. Funds will provide for design and construction for increased capacity and improvements to parking areas, pathway connections, linkage between the Baldwin School and the Soule site, storm drainage improvements, and the construction of new athletic fields. The estimated project cost is $550,000, with $50,000 in FY19 for design and $500,000 in FY20 for construction.

Estimated Cost: $550,000

Time Schedule: FY 2019 -- $50,000 Property Tax / Free Cash (Design)
FY 2020 -- $500,000 Property Tax / Free Cash (Construction)

52. PLAYGROUND SKATE SPOT

The Town has a significant number of skateboarders and no skateboard park facilities. This lack of facilities results in increased pressure on public and private spaces by skateboarders who utilize these places for recreation. As a result, the safety of both skateboarders and other pedestrians is compromised by skating in

unsanctioned regions. Without skateparks, Brookline skaters are forced to skate in areas that may not be safe or in places that are not designed for skaters.

Estimated Cost: $220,000

Time Schedule: FY 2016 -- $20,000 Property Tax / Free Cash
FY 2017 -- $200,000 Property Tax / Free Cash

53. PARKS AND PLAYGROUNDS REHABILITATION & UPGRADE

This is an on-going town-wide program for the repair and replacement of unsafe and deteriorating playground, fence, and field facilities or components. Items funded under this program include fences, backstops, retaining walls, picnic furniture, turf restoration, bench replacements, playstructures, safety surfacing, and drainage improvements. This program avoids more expensive rehabilitation that would be necessary if these items were left to deteriorate.

Estimated Cost: $2,420,000

Time Schedule: Prior Year -- $295,000 Property Tax / Free Cash
FY 2015 -- $295,000 Property Tax / Free Cash
FY 2016 -- $300,000 Property Tax / Free Cash
FY 2017 -- $300,000 Property Tax / Free Cash
FY 2018 -- $305,000 Property Tax / Free Cash
FY 2019 -- $305,000 Property Tax / Free Cash
FY 2020 -- $310,000 Property Tax / Free Cash
Future Years -- $310,000 Property Tax / Free Cash

54. TOWN/SCHOOL GROUNDS REHAB

Town and School grounds require on-going structural improvements and repair. These funds will be applied to create attractive and functional landscapes and hardscape improvements including plant installation, regrading, reseeding, tree work, new concrete or asphalt walkways, trash receptacles, bike racks, drainage improvements, retaining walls, and repairs to stairs, treads, railings, benches, or other exterior structures. This program avoids more expensive rehabilitation that would be necessary if these items were left to deteriorate.

Estimated Cost: $740,000

Time Schedule: Prior Year -- $85,000 Property Tax / Free Cash
FY 2015 -- $85,000 Property Tax / Free Cash
FY 2016 -- $90,000 Property Tax / Free Cash
FY 2017 -- $90,000 Property Tax / Free Cash
FY 2018 -- $95,000 Property Tax / Free Cash
FY 2019 -- $95,000 Property Tax / Free Cash
FY 2020 -- $100,000 Property Tax / Free Cash
Future Years -- $100,000 Property Tax / Free Cash

55. TENNIS COURTS/BASKETBALL COURTS

The Town has over 19 basketball courts and 36 hard-surface tennis courts. Over time, the court surfaces begin to deteriorate, crack, and weather. In order to maintain the integrity, safety, and playability of the courts, the Town needs to plan for the phased reconstruction/renovation/resurfacing of the courts.

Estimated Cost: $530,000

Time Schedule: Prior Year -- $100,000 Property Tax / Free Cash
FY 2016 -- $230,000 Property Tax / Free Cash
FY 2020 -- $100,000 Property Tax / Free Cash
Future Years -- $100,000 Property Tax / Free Cash

56. COMFORT STATIONS

These funds are programmed for the renovation of the comfort stations located in various parks.

Estimated Cost: $200,000

Time Schedule: Prior Year -- $50,000 Property Tax / Free Cash
FY 2017 -- $100,000 Property Tax / Free Cash
Future Years -- $50,000 Property Tax / Free Cash

CONSERVATION/OTHER OPEN SPACE

57. TREE REMOVAL AND REPLACEMENT

The tree removal and replacement program represents the Town's effort to balance street tree removals with plantings. As trees mature or are impacted by storm damage or disease, it is critical to remove these before they become public safety hazards. New tree plantings are also critical, as they directly impact the tree-lined character of the community, improve stormwater quality, provide oxygen, reduce heat impact in the Summer, and improve the overall quality of life in Brookline. In addition, funding is included for on-going management work in the four conservation properties (Hall's Pond Sanctuary, Amory Woods Sanctuary, D. Blakely Hoar Sanctuary, and the Lost Pond Sanctuary) and parks. Storm damage, disease, and old age continue to reduce tree canopies. The funds will be utilized to remove hazard trees and provide structural, health, and safety pruning to prolong the life and viability of our significant trees. New trees will be planted in anticipation of the ultimate loss of existing mature trees.

Estimated Cost: $1,420,000

Time Schedule: Prior Year -- $170,000 Property Tax / Free Cash
FY 2015 -- $170,000 Property Tax / Free Cash
FY 2016 -- $175,000 Property Tax / Free Cash
FY 2017 -- $175,000 Property Tax / Free Cash
FY 2018 -- $180,000 Property Tax / Free Cash
FY 2019 -- $180,000 Property Tax / Free Cash
FY 2020 -- $185,000 Property Tax / Free Cash
Future Years -- $185,000 Property Tax / Free Cash

58. OLD BURIAL GROUND

The Old Burying Ground, located on Walnut Street, is Brookline's first cemetery. Although the cemetery dates back to 1717, its appearance today reflects the ideals of the 19th century rural cemetery movement. The cemetery is listed as part of the Town Green National Register Historic District and has been featured in a publication by the Massachusetts Department of Environmental Management entitled "Preservation Guidelines for Historic Burial Grounds and Cemeteries". Research completed by both landscape architects and specialists in monument conservation indicates that the Town has much work to do in restoring the perimeter walls, markers and footstones, tombs, and monuments, as well as landscape improvements.

Estimated Cost: $100,000

Time Schedule: Future Years -- $100,000 Property Tax / Free Cash

59. WALNUT HILLS CEMETERY

The Walnut Hills Cemetery was established by the Town in 1875. Designed to preserve the natural features and effects for the landscape, the Cemetery provides visitors with a place of solace, natural beauty and quiet charm. The Walnut Hills Cemetery was listed in the National and State Registers of Historic Places in 1985.

In 2004, the Town completed a master plan for the Cemetery in order to set the parameters necessary to meet town cemetery needs of the future while maintaining the visual, service, quality and other features that make the Cemetery such a valuable historic cultural resource for the Town. The Walnut Hills Cemetery Trustees and staff recently completed the development of a new interment area at the Cemetery that will serve the Town's needs for the next decade. The Town has completed a conditions assessment of the roadways through the Walnut Hills Cemetery and recommends a program of replacement, resurfacing and repair. The goal is to maintain the historic vehicular circulation system by implementing a program to phase in pavement improvements to resurface the drives and to reconstruct poor areas. The Trustees have also identified other areas for future design and development within the Cemetery for future needs.

The challenge for the Town, staff and Trustees is to satisfy the various demands of today and to prepare for the future. With that challenge, the financing plan for these capital improvements is to use Cemetery Funds. The $250,000 total between FY14 – FY16 is for the above referenced roadway work and will be funded from the Sale of Lots/Service fund (SW01). Current plans for the $770,000 in Future Years, which is intended for lot expansion, is to use a combination of SW01 and an expendable trust fund (TW23) that is under the purview of the Trustees and does not require appropriation by Town Meeting. A bond authorization with debt service funded from these accounts is also a possibility. Meetings with the Trustees will continue, and they will include discussions regarding potential changes to how revenues received for the sale of lots is currently split.

Estimated Cost: $1,020,000

Time Schedule: Prior Year -- $100,000 Other (Cemetery Funds)
FY 2015 -- $100,000 Other (Cemetery Funds)
FY 2016 -- $50,000 Other (Cemetery Funds)
Future Years -- $770,000 Other (Cemetery Funds)

RECREATION

60. SWIMMING POOL - SHOWER RENOVATION/POOL REPOINTING

The Evelyn Kirrane Aquatics Center, located on Tappan Street, consists of three pools. The pool structure needs to have the concrete repointed to prevent foundation cracks and leaks, as it has required increased repair and maintenance over the past few years. If a larger-scale project of this type is not undertaken, structural issues could arise in the future. $350,000 is included in FY16 for this project.

The locker rooms require new showers, tiles and lockers on both the men's and women's sides. The areas have heavy use throughout the year and require constant maintenance and upkeep. $250,000 is included in FY16 for this project.

Estimated Cost: $600,000

Time Schedule: FY 2016 -- $600,000 Property Tax / Free Cash

61. GOLF COURSE IMPROVEMENTS

Originally built in 1933, the Robert T. Lynch Municipal Golf Course has undergone a series of renovations over the past decade, but many more are needed both on the course and in the clubhouse. The proposed $1 million would be used for the following:

- finish cart paths on holes 14 and 15
- complete bunker renovations on holes 14, 16 and 17
- restoration of the 9th fairway
- substantial tree pruning and elimination on course
- irrigation system

Additionally, the clubhouse would get a much needed upgrade to the electrical and HVAC system. Phasing the debt service associated with a $1 million bond will allow for debt service to remain at historical and affordable levels.

Estimated Cost: $1,000,000.

Time Schedule: FY 2016 -- $1,000,000 Golf Course Enterprise Fund Bond

62. TAPPAN ST. GYM ENHANCEMENTS

The Tappan St. Gym building has thousands of square feet of space that could be used differently to accommodate the changing needs of the community. Working with the School Department, the project would create a link between the Evelyn Kiranne Aquatics Center and the gym facility and redesign the Tappan St. first floor office spaces for better oversight of visitors during off-school hours. The $30,000 is for design and construction.

Estimated Cost: $30,000

Time Schedule: FY 2016 -- $30,000 Property Tax / Free Cash

SCHOOL

63. SCHOOL FURNITURE

This is a continuous program to upgrade furniture in all schools, which absorbs significant wear and tear annually. This program will replace the most outdated and worn items.

Estimated Cost: $680,000

Time Schedule: Prior Year -- $50,000 Property Tax / Free Cash
FY 2015 -- $60,000 Property Tax / Free Cash
FY 2016 -- $70,000 Property Tax / Free Cash
FY 2017 -- $80,000 Property Tax / Free Cash
FY 2018 -- $90,000 Property Tax / Free Cash
FY 2019 -- $100,000 Property Tax / Free Cash
FY 2020 -- $110,000 Property Tax / Free Cash
Future Years -- $120,000 Property Tax / Free Cash

64. SCHOOL TECHNOLOGY

In FY14, $175,000 appropriated to move forward in three key areas:

- Complete the Wireless Infrastructure Project – $94,900 to complete the installation of wireless access points, wiring and switches at the remaining elementary schools (Driscoll, Lawrence and Devotion) for enterprise wireless implementation.

- Outfit Special Education LLD Classrooms – $40,100 for the new Language Based Learning Disabilities (LLD) program classrooms at Brookline High School to be outfitted with the classroom technology (Smartboards, laptops and applications) to allow students to experience the appropriate Instructional Model for their individual needs. These classrooms will also serve as mainstream classrooms during other periods.

- Rollout of Evaluation System - $40,000 for the expansion of the FY13 pilot of Teachpoint, a professional staff evaluation system. This funding allowed for a full rollout of the new evaluation system for all professional staff utilizing the Teachpoint application on iPads and laptops, allowing on-line classroom observation and immediate Evaluator/Evaluatee feedback and document sharing.

The School Department has developed a technology plan that is designed to establish the appropriate infrastructure, building capacity in instruction, and improve efficiency in administrative functions within the PSB. Both the School Committee and Override Study Committee will continue to review the specific proposals, as there is a substantial cost and programmatic benefits associated with the overall plan. The funding in this CIP is to provide access through infrastructure and appropriate devices.

The funding in FY15 – FY20 is to upgrade and maintain instructional technology system-wide. In addition, investments will assist in meeting classroom instruction goals, the implementation of a learning management system, and/or a one-to-one device initiative for students at Brookline High School.

Estimated Cost: $1,995,000

Time Schedule: Prior Year -- $175,000 Property Tax / Free Cash
FY 2015 -- $320,000 Property Tax / Free Cash
FY 2016 -- $250,000 Property Tax / Free Cash
FY 2017 -- $250,000 Property Tax / Free Cash
FY 2018 -- $250,000 Property Tax / Free Cash
FY 2019 -- $250,000 Property Tax / Free Cash
FY 2020 -- $250,000 Property Tax / Free Cash
Future Years -- $250,000 Property Tax / Free Cash

65. TOWN/SCHOOL BUILDING - ADA RENOVATIONS

This annual program of improvements is requested in order to bring Town and School buildings into compliance with the Americans with Disabilities Act (ADA), which requires that the Town make public buildings accessible to all.

Estimated Cost: $580,000

Time Schedule: Prior Year -- $65,000 Property Tax / Free Cash
FY 2015 -- $65,000 Property Tax / Free Cash
FY 2016 -- $70,000 Property Tax / Free Cash
FY 2017 -- $70,000 Property Tax / Free Cash
FY 2018 -- $75,000 Property Tax / Free Cash
FY 2019 -- $75,000 Property Tax / Free Cash
FY 2020 -- $80,000 Property Tax / Free Cash
Future Years -- $80,000 Property Tax / Free Cash

66. TOWN/SCHOOL BUILDING - ELEVATOR RENOVATIONS

When a building is renovated, most elevators are upgraded (new controls, motors, cables, refurbishment of the car, etc.) Some elevators are also partially upgraded to meet the requirements of the existing building codes. The buildings that have not been renovated have elevators that are close to 40 years old. Maintenance is an issue and parts are increasingly difficult to find. This project would upgrade those cars and lifts with new equipment.

Estimated Cost: $1,125,000

Time Schedule: Prior Year -- $250,000 Property Tax / Free Cash
FY 2015 -- $250,000 Property Tax / Free Cash
FY 2016 -- $250,000 Property Tax / Free Cash
FY 2017 -- $250,000 Property Tax / Free Cash
FY 2018 -- $125,000 Property Tax / Free Cash

67. TOWN/SCHOOL BUILDING - EMERGENCY GENERATOR REPLACEMENT

Buildings are required by the Massachusetts Building Code to provide for emergency egress in case of a power failure. This is done by either emergency lights on batteries or through the use of a generator. The funding in FY14 supported the replacement of generators and/or the installation of emergency lights or circuits at the Pierce School.

Estimated Cost: $125,000

Time Schedule: Prior Year -- $125,000 Property Tax / Free Cash

68. TOWN/SCHOOL BUILDING - ENERGY CONSERVATION

With continued volatility in utility costs, it is imperative that monies be invested to decrease energy consumption in Town and School buildings. Programs include, but are not limited to, lighting retrofit and controls, energy efficient motors, insulation, and heating and cooling equipment. In addition, water conservation efforts are explored. This program augments existing gas and electric utility conservation programs. A continued area of focus is building commissioning. Many years ago, a building's HVAC system was set up by multiple contractors and then signed off by the design engineer. Sometimes there would be control issues, leading to complaints or high energy usage. The Building Department, for all new projects, hires a Commissioning Agent. Recommissioning of certain buildings is suggested in order to confirm that the equipment was designed, installed and set up properly.

Estimated Cost: $1,375,000

Time Schedule: Prior Year -- $150,000 Property Tax / Free Cash
FY 2015 -- $160,000 Property Tax / Free Cash
FY 2016 -- $165,000 Property Tax / Free Cash
FY 2017 -- $170,000 Property Tax / Free Cash
FY 2018 -- $175,000 Property Tax / Free Cash
FY 2019 -- $180,000 Property Tax / Free Cash
FY 2020 -- $185,000 Property Tax / Free Cash
Future Years -- $190,000 Property Tax / Free Cash

69. TOWN/SCHOOL BUILDING - ENERGY MANAGEMENT SYSTEM

This project is to upgrade the energy management systems in Town and School buildings. A few of the larger buildings have older (30 years) energy management systems that have exceeded their life expectancy and replacement parts are no longer available. These systems would be replaced and upgraded with new web-based systems integrated into the Town's existing computer network. Other systems would be upgraded with newer software or firmware. The Building Department will continue to work with the Information Technology Department on these projects. Software upgrades are needed at the High School, Lawrence, Pierce and Baker Schools in the next few years.

Estimated Cost: $1,000,000

Time Schedule: Prior Year -- $150,000 Property Tax / Free Cash
FY 2016 -- $200,000 Property Tax / Free Cash
FY 2017 -- $150,000 Property Tax / Free Cash
FY 2019 -- $250,000 Property Tax / Free Cash
Future Years -- $250,000 Property Tax / Free Cash

70. TOWN/SCHOOL BUILDING - ENVELOPE /FENESTRATION REPAIRS

In FY12, $250,000 was appropriated for costs associated with repairs to the outside envelope of all Town and School buildings, including a visual inspection of the exterior of all buildings that will help prioritize these repairs. The outside envelope of facilities includes masonry, bricks and mortar, flashing, dental work, coping stones, metal shelves, and tower work. Some of these structures are over 100 years old and have never had

exterior work done to them. A number of buildings have windows, door entrances, and other wall openings (fenestration) that are in need of repair/replacement. This causes water to penetrate into buildings behind walls and ceilings, causing security and safety problems. Also included in this program is any required chimney inspection and repairs, if appropriate, or the installation of new metal liners to connect to the gas burning equipment in the building.

The $730,000 in FY15 is for work at the Old Lincoln School, Soule Rec Gym, and the Eliot Rec Center.

Estimated Cost: $5,180,000

Time Schedule:
FY 2015 -- $730,000 Property Tax / Free Cash
FY 2016 -- $1,300,000 General Fund Bond
FY 2018 -- $650,000 Property Tax / Free Cash
FY 2019 -- $750,000 Property Tax / Free Cash
FY 2020 -- $750,000 Property Tax / Free Cash
Future Years -- $1,000,000 Property Tax / Free Cash

71. TOWN/SCHOOL BUILDING - ROOF REPAIR/REPLACEMENT PROGRAM

A master plan for repair and replacement of roofs on all Town and School buildings was prepared by a consultant. The plan includes a priority list and schedule and calls for $29.3 million over a 20-year period, with $7.5 million required within the six-year period of this FY15 – FY20 CIP. Facilities addressed within this time frame include the following:

FY15	FY16	FY19	FY20
Baker School	C.C. Library	Golf Course Clubhouse	Fire Sta. #1
Larz Anderson Carriage House	Fire Sta. #7	Heath School	Muni. Svc. Ctr.
Soule Gym	Harry Downes Fieldhouse	Lawrence School	Phys Ed Bldg
	Larz Anderson Carp. Shop	Lincoln School	
	Larz Anderson Electrical Shop	Pierce Primary	
	Larz Anderson Skate Pavilion		
	Public Safety HQ		

Estimated Cost: $8,875,000

Time Schedule:
Prior Year -- $1,350,000 General Fund Bond
FY 2015 -- $375,000 Property Tax / Free Cash
FY 2016 -- $1,150,000 General Fund Bond
FY 2019 -- $3,500,000 General Fund Bond
FY 2020 -- $2,500,000 General Fund Bond

72. TOWN/SCHOOL BUILDING - SECURITY/LIFE SAFETY SYSTEMS

Over the last number of years, there have been several large capital projects that improved the security situation of Town and School buildings. This program will extend the effort and improve areas where security may be lacking. In general, the plan calls for making all doors around the perimeter of a building more secure by replacing the doors, frames, door handles, and locks with electronic locks that may only be opened with a keypad and/or on a specific schedule. Only the front main entrance of the building would allow for general access. At the front door, a speaker and doorbell will be added to connect to the building's existing intercom or phone system for use by visitors. The lighting around each building will be improved

and placed on a timer. A small camera system connected to a computer will be added at the main entrance to monitor access to the building.

School buildings will be a priority. Most schools are reasonably secure, but based on an assessment by the Police Department, security can and should be improved. These funds would also be used to continue the on-going process of replacement and installation of new and upgraded burglar alarms, fire alarm systems, sprinkler systems, emergency lighting, and egress signs.

Estimated Cost: $1,250,000

Time Schedule: Prior Year -- $345,000 Property Tax / Free Cash
FY 2015 -- $300,000 Property Tax / Free Cash
FY 2016 -- $100,000 Property Tax / Free Cash
FY 2017 -- $125,000 Property Tax / Free Cash
FY 2018 -- $130,000 Property Tax / Free Cash
FY 2019 -- $140,000 Property Tax / Free Cash
FY 2020 -- $110,000 Property Tax / Free Cash

73. HIGH SCHOOL ADDITION

The Enrollment growth that Brookline's Elementary Schools have experienced during the past eight years will begin to affect Brookline High School (BHS) in FY15 (September, 2014). At that point, BHS enrollment is expected to grow by approximately 100 students per year from 1,800 students to 2,500 students by 2022 -- a growth of more than 700 students in eight years. This enrollment level presents a capacity challenge because the High School was renovated to accommodate 2,100 – 2,200 students and enrollment will reach approximately 2,200 by 2018 and approximately 2,500 by FY22. In FY13, $50,000 was approved for a concept study to review all possible options for addressing the capacity needs of BHS. Those monies were spent to hire an architect to assist the B-Space Committee with the BHS issue.

In consideration of the recommendations for school expansion contained in the B-Space report to address continued enrollment growth, to align with the Public Schools of Brookline Strategic Plan and Vision, and to preserve Brookline's commitment to excellence and equity, the Brookline School Committee voted a set of actions that included engaging in further study regarding the B-Space recommendation to maximize the use, whether by efficiency and/or expansion, of Brookline High School. The process, to be completed during the 2013-2014 school year, is being led by the Superintendent and Headmaster and will benefit from a consultant to help guide the research and constituent engagement. This process will analyze the pedagogical and administrative implications of optimally serving up to 2,500 high school students in Brookline. This may include new or revamped programs, staffing and administrative structures, and facilities use. The plan and educational program for an expansion of high school capacity should follow a process of engagement and deliberation of options with current BHS faculty and students, the Brookline community, the School Committee, and Public School of Brookline leadership, as well as input from the research on current best practices in curriculum, instruction, and pedagogy for secondary schools. This process will take into account, but not be limited to, the options presented in the HMFH High School Concept Study.

$1.75 million is included in FY17 for the Feasibility / Schematic Design phase of the project, followed by $75 million in FY19, of which 65% ($48.75 million) is paid for by the Town and 35% ($26.25 million) by the Massachusetts School Building Authority (MSBA). It should be noted that the $76.75 million figure is purely an estimate and that the figure will most certainly change as the planning process moves forward.

Estimated Cost: $76,750,000

Time Schedule: FY 2017 -- $1,750,000 Property Tax / Free Cash (Feasibility / Schematic Design)
FY 2019 -- $48,750,000 General Fund Bond (Design Completion / Construction)
FY 2019 -- $26,250,000 State Grant (MSBA) (Design Completion / Construction)

74. BALDWIN SCHOOL RENOVATIONS

The Baldwin School, which was built in the 1930's as a library, needs to be renovated. The heating system is over 70 years old and many pipes are failing due to age. The monies for this project would replace the piping and HVAC system and covert the system to forced hot water, thereby allowing for better control, more even temperatures, zoning, and energy savings. The electrical system is also in need of upgrade. In addition, the building is not fully accessible. This project would install an elevator that would connect the top and bottom floors and work would be done on the front entrance to make it accessible. The building also has its original windows, which are wooden, single pane, and leak air. This project would replace those windows with energy efficient, thermal pane style windows. The slate roof also needs repairs along with the gutters.

As part of the school enrollment / space issue, the Baldwin School will be looked at in terms of better utilization of the facility. The building could end up housing some segment of the student population. As a result, funding for any renovations has been pushed back.

Estimated Cost: $2,250,000

Time Schedule: Future Years -- $2,250,000 General Fund Bond

75. DRISCOLL SCHOOL ADDITION

In consideration of the recommendations for school expansion contained in the B-Space report to address continued enrollment growth, to align with the Public Schools of Brookline Strategic Plan and Vision, and to preserve Brookline's commitment to excellence and equity, the Brookline School Committee voted a set of actions that included a Driscoll School renovation and expansion to accommodate four sections per grade, with class sizes conforming to School Committee policy. The target occupancy is September, 2018. This action will achieve the first full renovation of the Driscoll School since it was built in 1911. The project will also address the building's common space shortages. Close attention will have to be paid to the operational implications of adding roughly 25-30% new capacity to the building on an aggressive timeline that will need to be followed to achieve this occupancy date, including pursuing potential partnership with Massachusetts School Building Authority (MSBA).

$1 million is included in FY15 for the Feasibility / Schematic Design phase of the project, followed by $42 million in FY17, of which 65% ($27.3 million) is paid for by the Town and 35% ($14.7 million) by the MSBA. The School Department plans on submitting a Statement of Interest (SOI) to the MSBA in the Spring of 2014. After that milestone, there will be a clearer picture of the possibility of MSBA participation.

Estimated Cost: $43,000,000

Time Schedule: FY 2015 -- $1,000,000 Overlay Reserve Surplus (Feasibility / Schematic Design)
FY 2017 -- $27,300,000 General Fund Bond (Design Completion / Construction)
FY 2017 -- $14,700,000 State Grant (MSBA) (Design Completion / Construction)

76. DEVOTION SCHOOL REHABILITATION

The 148,633 sq. ft. Edward Devotion School, originally built in 1924 with renovations/additions in 1952 and 1974, requires a major renovation/addition. An architectural firm (HMFH) was hired to undertake a Concept Study and developed a range of options for a renovation/addition project. The enrollment of the Devotion School has grown from 664 students in FY08 to 840 students in FY14, a 28% increase in six years. While this growth is reflective of enrollment growth town-wide, the expectation is that enrollment demand in North Brookline will continue for the foreseeable future. The original premise of a renovation to the Devotion School to serve 700 students was initially revised to a model that would serve a population of approximately 850 students, in a mixed configuration of four and five sections per grade. Continued growth to the school age population in North Brookline has led to the decision to build the school to a full five section school at each grade.

In March, 2012 the Town was approved by the Massachusetts School Building Authority (MSBA) to enter the "Eligibility Period", which culminated with an appropriation of $1.75 million for the feasibility study / schematic design stage at the November, 2012 Special Town Meeting. On January 30, 2013, the MSBA approved a Feasibility Study Agreement (FSA) with the Town, which allowed for the hiring of an Owner's Project Manager (OPM) and an architectural firm. The FSA states that the Town will be reimbursed 35.84% of the $1.75 million for this phase of the project (feasibility study / schematic design). In April, 2013 the Town issued a Request For Services (RFS) and selected HMFA as the Feasibility/Schematics design architect. Due to the B-Space Committee review process, the MSBA held off on approving a scope of services contract between the Town and HMFH. Since one of the B-Space recommendations was to increase the design capacity of the Devotion School to 1,010 students from the previously approved capacity of 830 students, the MSBA requested that Brookline return to the November, 2013 MSBA Board for re-approval of the project, after which Brookline could proceed to finalize a contract with HMFH. That re-approval occurred and HMFH has begun their work.

The architects will continue to work with the Devotion School Building Committee and with the community to craft a design that meets the educational program needs of the school, addresses neighborhood concerns, and contributes to the overall plan to address the increase in enrollment that has placed stress on school buildings across the district. That schematic design would then go to the MSBA for approval. At that point, the Town would seek an appropriation for the completion of the design work and for all costs associated with the construction project.

The current estimate is $110 million, with an assumed 30% reimbursement rate from the MSBA, resulting in a Town share of $77 million. This CIP assumes a Debt Exclusion Override to fund the Devotion School project. Such action is required because of both the increased cost estimate for this project and the new projects recommended by the B-Space Committee, which were endorsed by the School Committee: additions to the Driscoll School and High School. In order to free-up debt capacity and use that capacity to fund those two projects, a Debt Exclusion Override is required. The Override Study Committee (OSC) is reviewing the recommendations of the B-Space Committee, so the need for a Debt Exclusion Override will continue to be studied.

Estimated Cost:	$110,000,000	
Time Schedule:	FY 2015 -- $77,000,000	General Fund Bond – Debt Exclusion
	FY 2015 -- $33,000,000	State Grant (MSBA)

77. OLD LINCOLN IMPROVEMENTS/MODIFICATIONS

In FY14, $3 million was appropriated to update some of the building equipment and make the Old Lincoln School usable as school space for the next few years.

Estimated Cost: $3,000,000

Time Schedule: Prior Year -- $3,000,000 General Fund Bond

78. PIERCE SCHOOL – ELECTRIC DISTRIBUTION UPGRADE

The Pierce School has an outdated electrical system and $375,000 was appropriated in FY14 for a new system.

Estimated Cost: $375,000 Property Tax / Free Cash

Time Schedule: Prior Year -- $375,000

79. CLASSROOM CAPACITY

The Public Schools of Brookline have been experiencing K-8 Elementary enrollment increases for the last nine years. K-8 Elementary enrollment has grown by 1,342 students (35%) in the nine years between FY05 and FY14. There are now 5,228 K-8 students compared with less than 3,900 in FY05. Representatives from involved boards/committees (Selectmen, School Committee, Building Commission, Advisory Committee, Planning Board) and Town/School staff have been engaged in discussions regarding the best options for addressing the space needs of the elementary schools. In January, 2013, the Brookline School Population and Capacity Exploration (B-Space) Committee, a joint committee of the Selectmen and the School Committee that included various citizen representatives, was convened and charged with "gathering and analyzing data, and guiding a community discussion on programming and space planning that will accommodate rapid and unabated enrollment growth and support the educational goals of the Public Schools of Brookline".

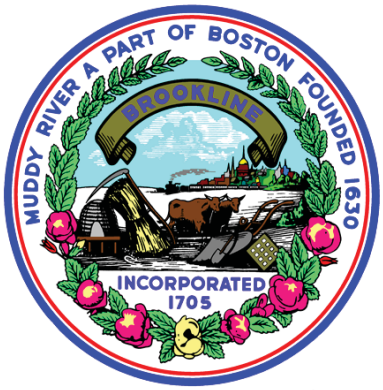
In order to address this serious issue, various mitigation measures have been taken, the most significant being the Runkle School Renovation/Addition and the Heath School Addition. Other mitigation measures have primarily consisted of the careful remodeling and renovation to internal spaces within each of the schools, with the goal being the creation of the highest quality space within available constraints. Over the past few years, the following appropriations have been made to fund the costs associated with creating the additional classroom spaces for the Schools:

$400,000 (FY08 + FY10) $530,000 (FY11) $1.75 million (FY13 + FY14)

The amount requested for FY15 ($1.75 million) was originally intended to go toward (1) the final three lease/purchase payments of the Lawrence School modular classroom addition (the first two payments were to be paid for out of existing Classroom Capacity funds) and (2) costs associated with any further space conversions into classrooms within existing school buildings, a process that is more complex and challenging each year as available space is reduced. Since it now appears as though the Lawrence modular project will not be moving forward (the bids came in well above budget), these funds can go toward alternative plans for new classroom space at Lawrence. The $500,000 in FY16 is for work required at the High School to start preparing that facility for the influx of students.

Estimated Cost: $4,000,000

Time Schedule: Prior Year -- $1,750,000 Property Tax / Free Cash
FY 2015 -- $1,750,000 Property Tax / Free Cash
FY 2016 -- $500,000 Property Tax / Free Cash



CAPITAL IMPROVEMENT PROGRAM (CIP) POLICIES

- **Policies as adopted by the Board of Selectmen**

- **Debt Management Plan**

- **Measurement of Debt Management Policies and other Key Variables**

TOWN OF BROOKLINE
CAPITAL IMPROVEMENT PROGRAM (CIP) POLICIES

Planning, budgeting and financing for the replacement, repair and acquisition of capital assets is a critical component of the Town of Brookline's financial system. Prudent planning and funding of its capital infrastructure ensures that the Town can continue to provide quality public services in a financially sound manner. The development of a Capital Improvement Program (CIP) is the mechanism that the Town uses to identify projects, prioritize funding and create a long-term financial plan that can be achieved within the limitations of the Town's budget.

Definition of a CIP Project

A capital improvement project is any project that improves or adds to the Town's infrastructure, has a substantial useful life, and costs $25,000 or more, regardless of funding source. Examples of capital projects include the following:

- Construction of new buildings
- Major renovation of or additions to existing buildings
- Land acquisition or major land improvements
- Street reconstruction and resurfacing
- Sanitary sewer and storm drain construction and rehabilitation
- Water system construction and rehabilitation
- Major equipment acquisition and refurbishment
- Planning, feasibility studies, and design for potential capital projects

Evaluation of CIP Projects

The capital improvement program shall include those projects that will preserve and provide, in the most efficient manner, the infrastructure necessary to achieve the highest level of public services and quality of life possible within the available financial resources.

Only those projects that have gone through the CIP review process shall be included in the CIP. The CIP shall be developed in concert with the operating budget and shall be in conformance with the Board's CIP financing policy. No project, regardless of the funding source, shall be included in the CIP unless it meets an identified capital need of the Town and is in conformance with this policy.

Capital improvement projects shall be thoroughly evaluated and prioritized using the criteria set forth below. Priority will be given to projects that preserve essential infrastructure. Expansion of the capital plan (buildings, facilities, and equipment) must be necessary to meet a critical service. Consideration shall be given to the distributional effects of a project and the qualitative impact on services, as well as the level of disruption and inconvenience.

The evaluation criteria shall include the following:

- Eliminates a proven or obvious hazard to public health and safety
- Required by legislation or action of other governmental jurisdictions
- Supports adopted plans, goals, objectives, and policies
- Reduces or stabilizes operating costs
- Prolongs the functional life of a capital asset of the Town by five years or more
- Replaces a clearly obsolete facility or maintains and makes better use of an existing facility
- Prevents a substantial reduction in an existing standard of service
- Directly benefits the Town's economic base by increasing property values
- Provides new programs having social, cultural, historic, environmental, economic, or aesthetic value
- Utilizes outside financing sources such as grants

CIP Financing Policies

An important commitment is to providing the funds necessary to fully address the Town's capital improvement needs in a fiscally prudent manner. It is recognized that a balance must be maintained between operating and capital budgets so as to meet the needs of both to the maximum extent possible.

For the purposes of these policies, the following definitions apply:

- Net Operating Revenue - Gross revenues, less net debt exclusion funds, enterprise (self-supporting) operations funds, free cash, grants, transfers from other non-recurring non-general funds, and non-appropriated costs.
- Net Direct Debt (and Debt Service) - Gross costs from local debt, less Prop 2 1/2 debt exclusion amounts and amounts from enterprise operations.
- Net Tax-Financed CIP - Gross amount of appropriations for capital improvements from current revenues, less amounts for enterprise operations, grants, free cash, transfers, and non-recurring special revenue funds.

The capital improvements program shall be prepared and financed in accordance with the following policies:

OUTSIDE FUNDING
State and/or federal grant funding shall be pursued and used to finance the capital budget wherever possible.

ENTERPRISE OPERATIONS - SELF SUPPORTING
Capital projects for enterprise operations shall be financed from enterprise revenues solely.

CIP BUDGET ALLOCATIONS - 6% OF NET REVENUES

Total net direct debt service and net tax-financed CIP shall be maintained at a level equivalent to 6% of prior year net operating revenues.

- TAX FINANCED ALLOCATION - 1.5% OF NET REVENUES
  Net tax-financed capital expenditures shall be maintained at a target level equivalent to 1.5% of prior year net operating revenues.

- DEBT-FINANCED ALLOCATION - 4.5% OF NET REVENUES
  Net direct debt service shall be maintained at a target equivalent to 4.5% of prior year net operating revenues.

DEBT MANAGEMENT POLICIES
Debt financing of capital projects shall be utilized in accordance with the following policies:

- Debt financing for projects supported by General Fund revenue shall be reserved for capital projects and expenditures which either cost in excess of $250,000 or have an anticipated life span of five years or more, or are expected to prolong the useful life of a capital asset by five years or more. For projects supported by Enterprise Fund revenue, debt financing shall be reserved for capital projects and expenditures that cost in excess of $100,000.

- Bond maturities shall not exceed the anticipated useful life of the capital project being financed. Except for major buildings and water and sewer projects, bond maturities shall be limited to no more than ten years.

- Bond maturities shall be maintained so that at least 60% of the outstanding net direct debt (principal) shall mature within 10 years.

- Total outstanding general obligation debt shall not exceed 2.5% of the total assessed value of property.

- Total outstanding general obligation debt per capita shall not exceed $2,385, which reflects $2,000 inflated annually since July 1, 2004. This amount shall continue to be adjusted annually by the consumer price index (CPI) for all urban consumers (northeast region all items).

- Total outstanding general obligation debt per capita shall not exceed 6% of per capita income, as defined by the Census Bureau of the U.S. Department of Commerce.

FREE CASH
After using free cash in accordance with the Town's free cash policy, available free cash shall be used to supplement the CIP so that total CIP funding as a percent of the prior year's net revenue is not less than 7.5%, to the extent made possible by levels of available free cash.

PROJECT	BOND AUTH.	BOND AMT	TERM	2015	2016	2017	2018	2019	2020	2021	2022	2023
Funded Within 6% CIP Policy												
Runkle School - Constr. (previously authorized)	$17.580	$0.500	10	$0.068	$0.066	$0.064	$0.062	$0.061	$0.059	$0.057	$0.055	$0.054
Roof Repairs/Replacements (previously authorized)	$1.350	$1.350	10	$0.182	$0.178	$0.173	$0.168	$0.163	$0.159	$0.154	$0.149	$0.144
Fisher Hill Park (previously authorized)	$1.200	$1.200	10	$0.162	$0.158	$0.154	$0.149	$0.145	$0.141	$0.137	$0.133	$0.128
Old Lincoln School (previously authorized)	$3.000	$3.000	15	$0.313	$0.305	$0.298	$0.290	$0.283	$0.275	$0.268	$0.260	$0.253
MSC Renovations (previously authorized)	$2.500	$1.500	10	$0.203	$0.197	$0.192	$0.187	$0.182	$0.176	$0.171	$0.166	$0.161
Carlton St. Footbridge (previously authorized)	$1.400	$1.245	10		$0.177	$0.172	$0.167	$0.162	$0.156	$0.151	$0.146	$0.140
Muddy River (previously authorized)	$0.745	$0.745	10		$0.104	$0.101	$0.098	$0.095	$0.092	$0.089	$0.086	$0.083
Ladder #2 (future authorization)	$0.900	$0.900	10		$0.128	$0.124	$0.121	$0.117	$0.113	$0.109	$0.105	$0.101
Rear Landfill (future authorization)	$4.600	$4.600	20		$0.449	$0.438	$0.427	$0.416	$0.405	$0.394	$0.383	$0.372
MSC Renovations (future authorization)	$2.500	$1.000	10		$0.143	$0.138	$0.134	$0.130	$0.126	$0.121	$0.117	$0.113
Pierce Playground (future authorization)	$0.920	$0.920	10			$0.131	$0.127	$0.123	$0.119	$0.115	$0.112	$0.108
Roof Repairs/Replacements (future authorization)	$1.050	$1.150	10			$0.164	$0.159	$0.154	$0.149	$0.144	$0.139	$0.135
Envelope/Fenestration Repairs (future authorization)	$1.300	$1.300	10			$0.185	$0.180	$0.174	$0.169	$0.163	$0.158	$0.152
Corey Hill + Emerson Garden (future authorization)	$1.170	$1.170	10				$0.167	$0.162	$0.157	$0.152	$0.147	$0.142
Driscoll School Addition (future authorization)	$27.300	$10.000	20				$0.975	$0.951	$0.928	$0.904	$0.880	$0.856
Driscoll School Addition (future authorization)	$27.300	$17.300	20					$1.687	$1.646	$1.605	$1.563	$1.522
Fire Maintenance/Training Facility (future authorization)	$4.125	$4.125	20					$0.402	$0.392	$0.383	$0.373	$0.363
High School Addition (future authorization) - BAN	$48.750	$5.000	1						$0.100			
Larz Anderson Park (future authorization)	$2.700	$2.700	15						$0.302	$0.293	$0.285	$0.277
Roof Repairs/Replacements (future authorization)	$3.500	$3.500	15						$0.391	$0.380	$0.370	$0.359
High School Addition (future authorization) - BAN	$48.750	$38.000	1							$0.700	$0.000	$0.000
Roof Repairs/Replacements (future authorization)	$2.500	$2.500	10							$0.356	$0.346	$0.335
Larz Anderson Park (future authorization)	$2.200	$2.200	10							$0.314	$0.304	$0.295
High School Addition (future authorization) - BAN	$48.750	$48.750	1								$0.910	
High School Addition (future authorization)	$48.750	$48.750	25									$4.388
Larz Anderson Park (future authorization)	$2.500	$2.500	15									$0.279
Cypress Playground / Athl Field (future authorization)	$1.400	$1.400	10									$0.200
Baldwin School (future authorization)	$2.250	$2.250	15									$0.251
NEW GEN FUND DEBT SERVICE (cumulative)				**$0.927**	**$1.904**	**$2.334**	**$3.411**	**$5.406**	**$6.053**	**$7.160**	**$7.187**	**$11.211**
Debt Exclusions												
Devotion School - Design/Constr. (future authorization)	$77.000	$10.000	25			$0.727	$0.727	$0.727	$0.727	$0.727	$0.727	$0.727
Devotion School - Design/Constr. (future authorization)	$77.000	$50.000	25				$3.637	$3.637	$3.637	$3.637	$3.637	$3.637
Devotion School - Design/Constr. (future authorization)	$77.000	$17.000	25					$1.237	$1.237	$1.237	$1.237	$1.237
NEW DEBT EXCLUSION DEBT SERVICE (cumulative)				**$0.000**	**$0.000**	**$0.727**	**$4.364**	**$5.601**	**$5.601**	**$5.601**	**$5.601**	**$5.601**

PROJECT	BOND AUTH.	BOND AMT	TERM	2015	2016	2017	2018	2019	2020	2021	2022	2023
Enterprise Funds												
Wastewater (previously authorized)	$5.500	$1.000	10	$0.143	$0.138	$0.134	$0.130	$0.126	$0.121	$0.117	$0.113	$0.109
Wastewater (previously authorized)	$5.500	$1.000	10		$0.143	$0.138	$0.134	$0.130	$0.126	$0.121	$0.117	$0.113
Wastewater (previously authorized)	$5.500	$0.686	10			$0.098	$0.095	$0.092	$0.089	$0.086	$0.083	$0.080
Wastewater (future authorization)	$3.000	$1.500	10				$0.214	$0.207	$0.201	$0.195	$0.188	$0.182
Wastewater (future authorization)	$3.000	$1.500	10						$0.214	$0.207	$0.201	$0.195
Golf Course (previously authorized)	$2.840	$0.350	20	$0.033	$0.032	$0.032	$0.031	$0.030	$0.029	$0.029	$0.028	$0.027
Golf Course (previously authorized)	$2.840	$0.200	20		$0.019	$0.019	$0.018	$0.018	$0.017	$0.017	$0.016	$0.016
Golf Course (previously authorized)	$2.840	$0.265	20				$0.025	$0.025	$0.024	$0.023	$0.023	$0.022
Golf Course (future authorization)	$1.000	$0.500	20				$0.048	$0.046	$0.045	$0.044	$0.043	$0.042
Golf Course (future authorization)	$1.000	$0.250	20					$0.024	$0.023	$0.023	$0.022	$0.022
Golf Course (future authorization)	$1.000	$0.250	20							$0.024	$0.023	$0.023
NEW DEBT EXCLUSION DEBT SERVICE (cumulative)				**$0.176**	**$0.332**	**$0.420**	**$0.694**	**$0.697**	**$0.889**	**$0.886**	**$0.857**	**$0.829**

	VARIABLE	FY14	FY15	FY16	FY17	FY18	FY19	FY20	
	Legal Limit for Outstanding Debt = 5% of Equalized Valuation (EQV)								
	EQV for 1/1/12 = $16.227 billion. Assume 2.5% annual growth. (In billions)	$17.048	$17.474	$17.911	$18.359	$18.818	$19.288	$19.771	
	Outstanding Debt as a % of EQV	0.5%	0.5%	0.5%	0.8%	0.9%	0.9%	0.8%	
	General Fund Outstanding Debt as a % of EQV	0.4%	0.4%	0.4%	0.7%	0.9%	0.8%	0.8%	
	Net General Fund Outstanding Debt as a % of EQV	0.4%	0.4%	0.4%	0.7%	0.8%	0.8%	0.7%	
	Total Outstanding Debt (in millions)	$74.8	$75.2	$76.5	$129.6	$157.3	$153.6	$147.2	
	General Fund Outstanding Debt (in millions)	$64.0	$65.3	$68.1	$121.3	$150.7	$146.9	$141.4	
	Net General Fund Outstanding Debt (in millions)	$61.6	$63.2	$66.3	$119.9	$149.6	$146.0	$140.8	
	Total Debt Service (in millions)	$11.9	$11.9	$12.3	$12.8	$16.7	$19.0	$19.1	
	General Fund Debt Service (in millions)	$9.4	$9.6	$9.9	$10.6	$14.7	$17.4	$17.4	
	Net General Fund Debt Service (in millions)	$8.8	$9.0	$9.4	$10.1	$14.2	$16.8	$17.0	
	Total Debt Service Per Capita	$203	$202	$210	$218	$284	$324	$325	#
	General Fund Debt Service Per Capita	$158	$161	$167	$180	$249	$295	$296	#
	Net General Fund Debt Service Per Capita	$150	$153	$160	$172	$241	$287	$290	#
	Total Debt Service as a % of Revenue	4.6%	4.5%	4.6%	4.6%	5.7%	6.3%	6.1%	0
	General Fund Debt Service as a % of General Fund Revenue	4.1%	4.1%	4.1%	4.3%	5.6%	6.4%	6.2%	0
	Net General Fund Debt Service as a % of General Fund Revenue	3.9%	3.8%	3.9%	4.0%	5.4%	6.2%	6.1%	0
A.	Total Outstanding Debt Per Capita as a % of Per Capita Income	1.8%	1.8%	1.8%	2.9%	3.4%	3.3%	3.1%	
	General Fund Outstanding Debt Per Capita as a % of Per Capita Income	1.5%	1.5%	1.6%	2.7%	3.3%	3.1%	2.9%	
	Net General Fund Outstanding Debt Per Capita as a % of Per Capita Income	1.5%	1.5%	1.4%	1.4%	2.9%	2.7%	2.6%	
B.	Total Outstanding Debt Per Capita	$1,273	$1,282	$1,305	$2,209	$2,682	$2,618	$2,509	
	General Fund Outstanding Debt Per Capita	$1,090	$1,113	$1,161	$2,068	$2,569	$2,504	$2,409	
	Net General Fund Outstanding Debt Per Capita	$1,049	$1,078	$1,131	$2,043	$2,550	$2,489	$2,400	
C.	Total Outstanding Debt as a % of Assessed Value (AV)	0.5%	0.5%	0.5%	0.8%	0.9%	0.9%	0.8%	
	General Fund Outstanding Debt as a % of Assessed Value (AV)	0.4%	0.4%	0.4%	0.7%	0.9%	0.8%	0.8%	
	Net General Fund Outstanding Debt as a % of Assessed Value (AV)	0.4%	0.4%	0.4%	0.4%	0.8%	0.7%	0.7%	
D.	Total Debt Maturing Within 10 Years	84%	87%	82%	61%	57%	58%	60%	
	General Fund Debt Maturing Within 10 Years	82%	86%	80%	58%	55%	56%	59%	
E.	CIP Financing as a % of Prior Year's Net Revenue	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	
	Debt-Financed CIP as a % of Prior Year's Net Revenue	4.15%	3.99%	4.00%	3.89%	3.96%	4.44%	4.37%	
	Revenue-Financed CIP as a % of Prior Year's Net Revenue	1.85%	2.01%	2.00%	2.11%	2.04%	1.56%	1.63%	

Town Policies

A. Total Outstanding Debt Per Capita = shall not exceed 6% of Per Capita Income.
B. Total Outstanding Debt Per Capita = shall not exceed $2,544 (for FY14).
C. Total Outstanding Debt = shall not exceed 2.5% of Assessed Value (AV).
D. Bond Maturities = 60% of General Fund principal shall mature within 10 years.
E. CIP Financing = 6% of Prior Year's Net Revenue, with a goal of 4.5% from Debt-Financed and 1.5% from Revenue-Financed.

NOTE: Net General Fund Debt/Debt Service is total General Fund Debt/Debt Service less the share paid by the State for the Heath and Baker projects.

DEBT SERVICE AS A PERCENTAGE OF REVENUE

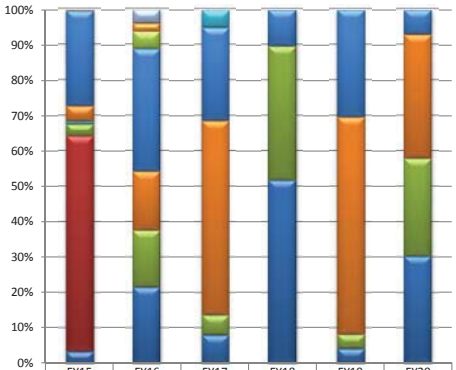
DESCRIPTION	FY12 (Act.)	FY13 (Act.)	FY14 (Proj.)	FY15 (Proj.)	FY16 (Proj.)	FY17 (Proj.)	FY18 (Proj.)	FY19 (Proj.)	FY20 (Proj.)	FY21 (Proj.)
Total General Fund Supported Debt Service	10,098,259	9,804,995	9,393,246	9,561,757	9,914,554	10,645,463	14,720,877	17,401,274	17,446,432	16,276,375
a.) Exempt (Debt Exclusion) [1]	1,730,917	1,630,808	1,112,800	1,094,400	1,076,000	1,775,807	5,385,240	6,589,231	6,552,631	5,601,031
b.) Non-Exempt	8,367,342	8,174,187	8,280,446	8,467,357	8,838,554	8,869,656	9,335,637	10,812,043	10,893,801	10,675,344
Minus SBA Reimbursements	1,227,634	587,125	556,757	556,757	556,757	556,757	556,757	556,757	434,662	434,662
Net General Fund Debt Service	8,870,625	9,217,870	8,836,489	9,005,000	9,357,797	10,088,706	14,164,120	16,844,517	17,011,770	15,841,713
Water & Sewer Enterprise Fund Supported Debt Svc.	2,321,242	2,375,403	2,365,461	2,139,383	2,215,867	1,985,264	1,819,427	1,430,165	1,466,261	1,138,725
Golf Course Enterprise Fund Supported Debt Svc.	185,679	191,499	179,374	188,049	195,868	187,450	184,988	189,060	184,439	193,468
TOTAL Debt Service	**12,605,180**	**12,371,897**	**11,938,081**	**11,889,188**	**12,326,288**	**12,818,177**	**16,725,292**	**19,020,499**	**19,097,131**	**17,608,568**
General Fund Revenue	211,969,506	226,053,760	229,066,953	236,082,975	241,404,753	250,171,754	261,880,896	271,424,207	279,764,302	287,117,571
General Fund Revenue Without SBA Reimbursement	210,741,872	225,466,635	228,510,196	235,526,218	240,847,996	249,614,997	261,324,139	270,867,450	279,329,640	286,682,909
Water & Sewer Enterprise Fund Revenue	25,014,615	26,393,790	26,928,495	26,826,419	27,719,611	28,730,001	29,763,860	30,643,570	32,018,906	33,406,866
Golf Course Enterprise Fund Revenue	1,198,944	1,225,168	1,210,000	1,331,923	1,344,173	1,356,546	1,369,042	1,381,663	1,394,410	1,407,285
TOTAL Revenue of Funds Supporting Debt Svc.	**238,183,065**	**253,672,718**	**257,205,448**	**264,241,317**	**270,468,538**	**280,258,300**	**293,013,798**	**303,449,440**	**313,177,618**	**321,931,722**
General Fund Debt Service as a % of General Fund Revenue	4.8%	4.3%	4.1%	4.1%	4.1%	4.3%	5.6%	6.4%	6.2%	5.7%
Net General Fund Debt Service as a % of General Fund Revenue [2]	4.2%	4.1%	3.9%	3.8%	3.9%	4.0%	5.4%	6.2%	6.1%	5.5%
Water & Sewer Enterprise Fund Debt Service as a % of Revenue	9.3%	9.0%	8.8%	8.0%	8.0%	6.9%	6.1%	4.7%	4.6%	3.4%
Golf Course Enterprise Fund Debt Service as a% of Revenue	15.5%	15.6%	14.8%	14.1%	14.6%	13.8%	13.5%	13.7%	13.2%	13.7%
TOTAL Debt Service as a % of Total Rev. Supporting Debt Svc.	**5.3%**	**4.9%**	**4.6%**	**4.5%**	**4.6%**	**4.6%**	**5.7%**	**6.3%**	**6.1%**	**5.5%**

[1] The Lincoln School and High School projects were financed via a Debt Exclusion. Current funding plans for the Devotion School project assumes a Debt Exclusion.

[2] Excludes both the debt service (expense) reimbursed by the State for school projects and the reimbursement from the State (revenue).

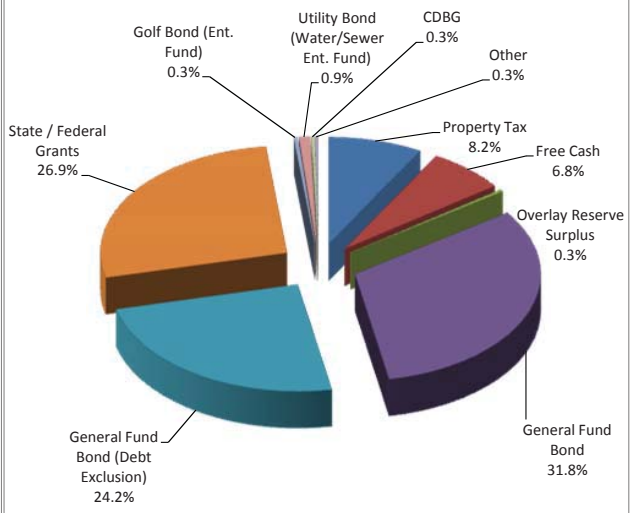
SUMMARY GRAPHS

CIP BY FUNDING SOURCE (in millions of $)

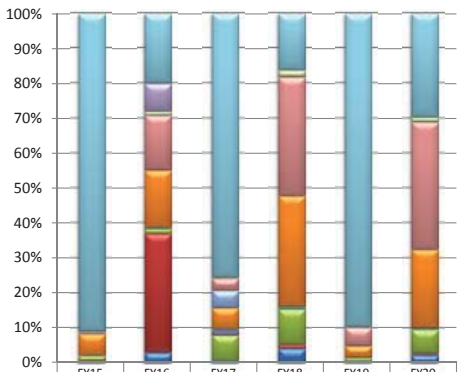


	FY15	FY16	FY17	FY18	FY19	FY20
Other	$0.10	$0.80	$0.00	$0.00	$0.00	$0.00
CDBG	$0.38	$0.45	$0.00	$0.00	$0.00	$0.00
Utility Bond (Water/Sewer Ent. Fund)	$0.00	$0.00	$3.00	$0.00	$0.00	$0.00
Golf Bond (Ent. Fund)	$0.00	$1.00	$0.00	$0.00	$0.00	$0.00
State / Federal Grants	$33.95	$7.03	$15.65	$0.95	$27.20	$0.95
General Fund Bond	$5.50	$3.37	$32.60	$0.00	$54.95	$4.70
Overlay Reserve Surplus	$1.00	$0.00	$0.00	$0.00	$0.00	$0.00
Free Cash	$4.15	$3.26	$3.37	$3.49	$3.60	$3.72
General Fund Bond (Debt Exclusion)	$77.00	$0.00	$0.00	$0.00	$0.00	$0.00
Property Tax	$4.27	$4.38	$4.78	$4.77	$3.77	$4.08

CIP FUNDING BY SOURCE - 6 YR. TOTAL

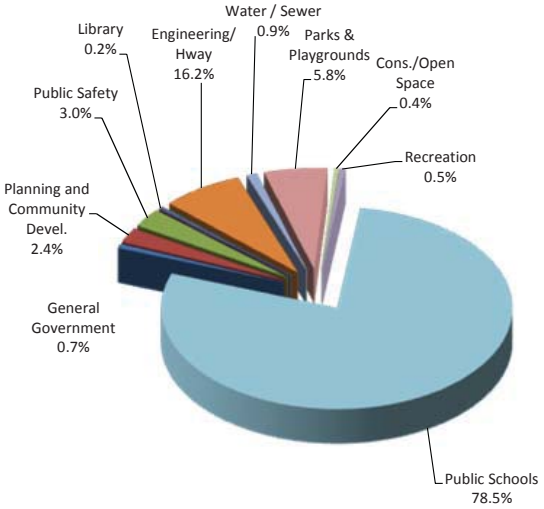


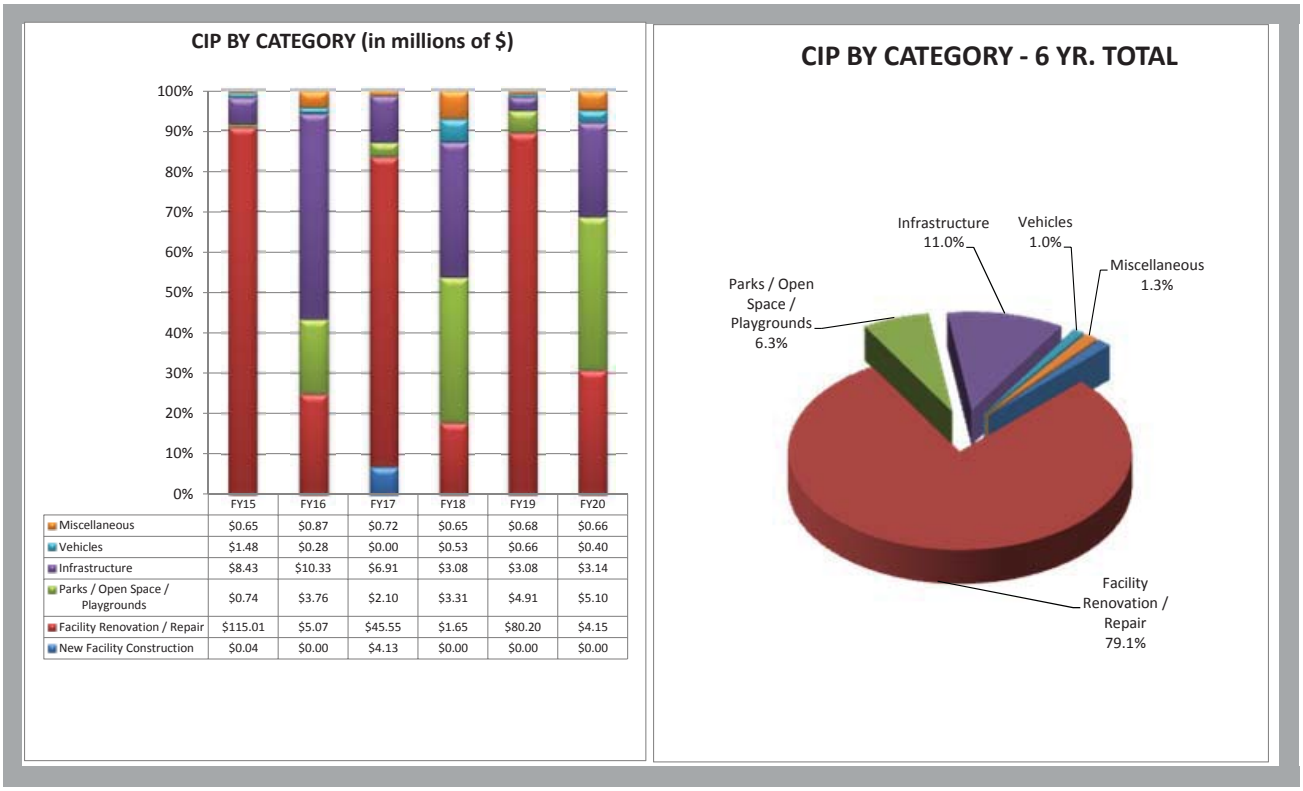
CIP BY ALLOCATION (in millions of $)



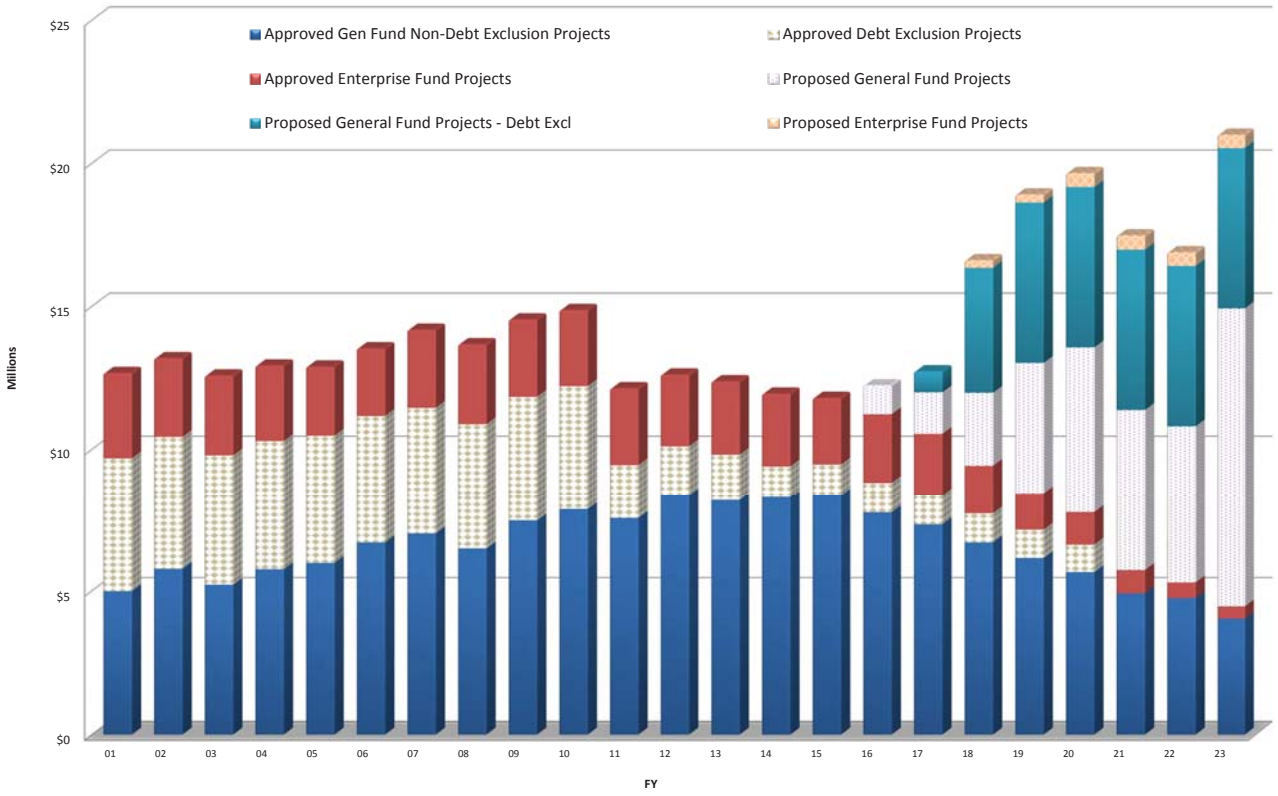
	FY15	FY16	FY17	FY18	FY19	FY20
Public Schools	$115.01	$4.06	$44.85	$1.50	$80.25	$3.99
Recreation	$0.00	$1.63	$0.00	$0.00	$0.00	$0.00
Cons./Open Space	$0.27	$0.23	$0.18	$0.18	$0.18	$0.19
Parks & Playgrounds	$0.47	$3.18	$2.02	$3.13	$4.73	$4.91
Water / Sewer	$0.00	$0.00	$3.00	$0.00	$0.00	$0.00
Engineering/Hway	$7.91	$3.35	$3.60	$2.93	$2.98	$3.03
Transportation	$0.08	$0.05	$0.31	$0.05	$0.05	$0.05
Library	$0.05	$0.00	$0.72	$0.00	$0.00	$0.00
Public Safety	$1.85	$0.28	$4.45	$0.95	$0.97	$0.93
Planning and Community Devel.	$0.44	$6.93	$0.00	$0.10	$0.06	$0.06
General Government	$0.27	$0.60	$0.28	$0.38	$0.33	$0.30

CIP BY ALLOCATION - 6 YR. TOTAL




CIP BY CATEGORY (in millions of $)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
FY15 FY16 FY17 FY18 FY19 FY20
Miscellaneous $0.65 $0.87 $0.72 $0.65 $0.68 $0.66
Vehicles $1.48 $0.28 $0.00 $0.53 $0.66 $0.40
Infrastructure $8.43 $10.33 $6.91 $3.08 $3.08 $3.14
Parks / Open Space / Playgrounds $0.74 $3.76 $2.10 $3.31 $4.91 $5.10
Facility Renovation / Repair $115.01 $5.07 $45.55 $1.65 $80.20 $4.15
New Facility Construction $0.04 $0.00 $4.13 $0.00 $0.00 $0.00
CIP BY CATEGORY - 6 YR. TOTAL
Infrastructure 11.0%
Vehicles 1.0%
Miscellaneous 1.3%
Parks / Open Space / Playgrounds 6.3%
Facility Renovation / Repair 79.1%

DEBT SERVICE BASED ON EXISTING AUTHORIZATIONS AND PROJECTS IN FY15 - FY20 CIP



TOTAL OUTSTANDING DEBT (as of June 30 each year) BASED ON EXISTING AUTHORIZATIONS AND PROJECTS IN FY15 - FY20 CIP