# PROJECT MANUAL

East Longmeadow High School

*Schematic Design Submittal*

## Town of East Longmeadow

*180 Maple St,*

*East Longmeadow, MA 01028*

*August 25, 2023*

*OWNER*

***Town of East Longmeadow***
*60 Center Square*
*East Longmeadow, MA 01028*

*SUBMITTED BY*

***Jones Whitsett Architects***
*308 Main Street*
*Greenfield, MA 01301*

*In association with:*
***SMMA***
*1000 Massachusetts Avenue*
*Cambridge, MA 02138*

*JWA No. 2206*

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Appendices omitted - as they are included elsewhere in the MSBA SD Binder

**EAST LONGMEADOW HIGH SCHOOL**

# 10 PROJECT DESCRIPTION

## 1010 Project Summary

### 1010.10 Summary of Work

Project is the construction of a new High School, grades 9-12, located in East Longmeadow, Massachusetts. The project includes construction of a new school building, with classrooms, gymnasium, and 533- seat theater; and outdoor athletic facilities including assorted sports fields, tennis courts, and a concessions building. Construction is expected to begin August 2024 and extend 36 months.

### 1010.30 Trade Contract Summaries

The Project will include the following Trade Sub-Bid categories and related Specification Sections.

Masonry Trade Sub Bid

Miscellaneous and Ornamental Iron Trade Sub Bid

Waterproofing, Dampproofing and Caulking Trade Sub Bid

Roofing and Flashing Trade Sub Bid

Glass and Glazing Trade Sub Bid

Metal Windows Trade Sub Bid

Tiling Trade Sub Bid

Terrazzo Stair Finish Trade Sub Bid

Acoustical Ceilings Sub Bid

Resilient Flooring Sub Bid

Painting Trade Sub Bid

Elevator Trade Sub Bid

Fire Protection Trade Sub Bid

Plumbing Trade Sub Bid

HVAC Trade Sub Bid

Electrical Trade Sub Bid

**1010.50 Work Restrictions**

Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.

On-Site Work Hours: Limit work to normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, except as otherwise indicated. Obtain prior authorization from the Owner at least 72 hours in advance for work at the site outside these hours or on weekends. Schedule deliveries of material and equipment to the site during normal hours of construction operations, however without impeding the normal school operations. School arrival and departure times are approximately 7:05 a.m. to 7:25 a.m. and 1:45 p.m. to 2:05 p.m.

Restriction on work within the building: Work shall only be performed within the phased work areas, only after all temporary noise and dust barriers have been constructed and temporary exhaust fans made operational.

Restrictions on Use of Site: Site Work and Work outside the building may be performed while school is in session if it does not interfere with or impede school activities, including but not limited to arrivals and departures of students and staff, and outdoor athletic and play activities.

Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner without prior written approval of the Owner.

Noise, Vibration, and Odors: Coordinate operations that may result in elevated levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner. The Owner will be the sole judge of whether construction activities are disrupting operations.

Quiet Days: Each phase will include five quiet days, to be chosen by the Owner. During these days no work will be performed, that in the judgment of the Owner, will impact their activities during these days.

Employee Screening: Comply with Owner's requirements regarding CORI reporting and requirements stated in the General Conditions regarding CORI screening of Contractor personnel working on the Project site.

Identification Badges: Provide identification badges for Contractor's employees, and for employees of the Contractor's subcontractors, sub-subcontractors, and suppliers.

No Smoking On Site: Smoking, tobacco products, e-cigarettes, and other controlled substances are not permitted on the project site.

### 1010.51 Proprietary Items

The Building Committee has voted to agree to the following proprietary items which they have deemed to be in the best interest of the Town as an extension of existing systems:

- BMS: StruxureWare
- Door Access: AXIS
- Hardware: Schlage
- Security Camers: AXIS
- Clocks/Paging: Atlas
- Video surveillance: AXIS

## 1020 Project Program

### 1020.10 Site Program

Access roads, parking areas for students, staff, and visitors, parent & bus drop-off loops, emergency vehicle access around building, and truck access to the loading dock.

Outdoor dining area, (2) outdoor classrooms, landscaping and courtyards for clients' passive recreation and an outdoor athletics programming including, (2) basketball courts, (6) tennis courts, (2) baseball fields, (2) softball fields, (4) multi-purpose sport fields, new concessions building, new access ramp to new press box.

Exterior building-mounted cameras and lighting.

### 1020.50 Facility Program

The new building will be constructed as a two-story, 191,780 GSF facility with classrooms, a gymnasium, cafeteria/commons, a 533-seat auditorium, and associated spaces. The building will accommodate the Town's IT Department, District Offices, and ELCAT (East Longmeadow Community Access TV). The existing school will be completely demolished after the new facility is occupied.

## 1030 Project Criteria

### 1030.10 Zoning Requirements

The building will be designed in accordance with local zoning bylaws.

### 1030.20 Code Analysis

The building will be designed in accordance with the Massachusetts State Building Code, 10th Edition and all referenced standards, the Massachusetts Stretch Energy Code, the Massachusetts Architectural Access Board (MAAB) and the Americans with Disabilities Act (ADA) accessibility standards.

East Longmeadow is a Stretch Code Community. The East Longmeadow High School project will be permitted under the new 2023 Massachusetts (MA) Energy Code and Stretch Code International Energy Conservation Code 2021 (IECC 2021), including the new Massachusetts amendments and new Stretch Code requirements that were issued in 2023.

### 1030.50 Sustainable Design Requirements

**LEEDv4 Certification:** Leadership in Energy and Environmental Design (LEED); LEEDv4 Certification: The awarding authority has determined that this facility shall be designed and constructed in accordance with the principals of the U.S. Green Building Council's LEED Green Building Rating System™, in order to achieve LEED Silver Certification.

It will be necessary for East Longmeadow School District to register the project with USGBC during or at the end of the design development phase. Design, material and systems selections consistent with the Silver Certification goal.

Schools criteria, and the additional options that may be exercised in order for this building to achieve a Silver Certification. All of the criteria identified as "prerequisites" must be met to achieve certification. Between 50 and 59 LEED points are required for Silver Certification.

During subsequent design development, contract document, and construction phases, the opportunities and decisions presented in the matrix will be developed further and formally documented.

Containment of work areas during abatement and demolition of the existing building will be essential to protect occupants of the new school occupied during the duration of demolition.

Once the project is complete, a commitment to recycling, green housekeeping and parking practices is included within the project.

The SBC voted in August 2023 to pursue 3% additional reimbursement available to projects that meet the requirements of the 2023 MA DOER Stretch Code and the 2023 MA DOER “Specialized Code” and the additional 1% reimbursement based on the goal of achieving 5 of 7 LEED indoor air quality points. The project will be designed to meet the additional requirement to the MA Specialized Code through the Net Zero Schools compliance pathway of the Specialized Code.

### 1030.56 Indoor Air Quality Requirements

The new facility will have specification requirements to ensure that air quality at the new building is not impacted by demolition activities of the existing building that lead to unhealthy or uncomfortable conditions for students, staff, faculty, visitors, as well as construction personnel.

Demolition and Abatement: The Contractor is required to employ a Certified Indoor Environmentalist (CIE)as a qualified IAQ Consultant to prepare IAQ plans, monitor air quality, interpret sampling results, evaluate materials used during construction, and recommend changes to mitigate unacceptable air quality. The CIE will make recommendations regarding work practices, conduct indoor air quality testing, and review the properties of construction materials based on MSDS sheets to ensure that air quality in the occupied spaces of the building meets regulated and guideline recommendations. Work areas will be maintained under

negative pressure, relative to adjacent occupied areas, at all times during construction, by means of appropriately sized and correctly functioning fan units directly exhausting thru filtration to the outside of the building and dust and soundproof partitioning.

## 1040 Existing Conditions

### 1040.30 Assessment

The East Longmeadow High School is located at 180 Maple Street in East Longmeadow Massachusetts. The property is bounded by Maple Street and residential properties to the North, Saint Michael's Parish, the Redstone Rail Trail, and retail establishments to the east, industrial and residential properties to the south, and residential properties to the west. The property is approximately 61.4 acres and is identified by the Town of East Longmeadow Assessor as Parcel 17-33-10 (the Site). The Site is accessed from three (3) curb cuts along Maple Street and a singular point from Norden Street. Approximately 20 feet of grade change exists across the site and generally slopes down from north to south. The higher elevations are along Maple Street and the lower elevations are in the southern and eastern portions of the site. The existing school sits approximately 10 feet below the front access point elevation on Maple Street.

The northern half of the Site contains the school building, the front U-shape access drive and main parking lot off of Maple Street, the access and parking off of Norden Street, pedestrian walkways, tennis courts, the track with synthetic field, a practice field, and areas of open green space. The primary service area is located on the south façade of the building. The track and field area contains two (2) spectator stand areas, a press box, two (2) concession buildings, a ticket booth building, and dedicated stadium lighting.

The southern half of the Site consists of various turf grass athletic fields, two baseball diamonds, one tee ball diamond, a stormwater pond, and wooded areas.

### 1040.50 Subsurface Investigation

Various subsurface investigations have been performed and include soil probes, soil borings, test pits, and a geophysical survey.

Subsurface soils have been evaluated to confirm geotechnical recommendations for the building foundations and earthwork. Soils have also been analyzed to confirm restrictions when exported from the site.

## 1050 Owner's Work

**FF&E:** Owner will provide moveable furniture, fixtures and equipment under a separate contract.

**Technology Equipment:** Owner will provide instructional technology equipment under a separate contract. Infrastructure and coordination will be under the construction contract.

## 1090 Funding

### 1090.10 Budget

Estimated total project cost is estimated at $176.5M with a not to exceed budget of $180M.

### 1090.30 Sources

The project will be funded through a debt exclusion bond measure by the Town of East Longmeadow and a grant of the MSBA with Mass Save and other sustainability incentives providing support for renewable energy and energy conservation systems.

## 20 OWNER DEVELOPMENT

## 2020 Permits

### 2020.10 Zoning Permits

Site Plan Review through the Town of East Longmeadow Planning Board will be required for this project. A Special Permit for earth removal operations is required through the Town of East Longmeadow Planning Board.

### 2020.30 Building Permits

A building permit will be applied for by the General Contractor.

### 2020.50 Regulatory Required Permits

See General section Z70.

## 30 PROCUREMENT REQUIREMENTS

## 3010 Project Delivery

### 3010.10 Project Delivery Methods

The Project will employ a construction management at risk delivery method, as permitted under M.G.L. Ch. 149A, as promulgated by Chapter 193 of the Acts of 2004, subject to issuance of a notice to proceed by the office of the inspector general.

**Qualifications Requirements:** Bidders bidding on the General Contract will be required to be certified by DCAM.

**Trade Contractors:** will be required to meet qualification criteria which will be written into the Specifications by the Architect. Generally, qualifications will include minimum years of experience and experience on other projects of similar size.

### 3020 Solicitation

#### 3020.10 Advertisements and Invitations

**Bid Solicitation:** The Project will be advertised and bid in accordance with M.G.L. Chapter 30 and M.G.L. Chapter 149A, Section 44, the statutes governing bidding for public works projects in Massachusetts.

**Bid security:** in the form of a bid bond or a treasurer's or cashier's check will be required.

Any requirements which the Town of East Longmeadow may have with respect to promoting equal employment opportunity and affirmative action, or to encouraging the participation of minority-owned business enterprises and women-owned business enterprises will be made a part of the bidding requirements and the conditions of the Contract.

**Geotechnical Information:** Boring logs and Test Pits obtained by the Owner for use by the Architect in developing the design will be made available to bidders. Refer to the 12/19/2022 Preliminary Geotech Report and the 3/27/23 Limited Subsurface Report and the Permeability and Field-Testing Reports dated 5/26/22 and provided by O'Reilly, Talbot and Okun.

### 3040 Available Project Information

#### 3040.30 Existing Condition Information

Existing building and site plans are available and will be provided to the cost estimators. There is no guarantee that these drawings represent as-built or current building conditions.

## 40 CONTRACTING REQUIREMENTS

### 4010 Contracting Forms and Supplements

#### 4010.10 Notice of Award

The Town will issue a Notice of Award to the lowest eligible bidder.

#### 4010.30 Agreement Forms

The successful Construction Manager and Trade Contract-bidders will be required to comply with the Town of East Longmeadow's Equal Employment Opportunity and Affirmative Action (EEO/AA) policies and the MSBA's Minority Business Enterprise/Women-owned Business Enterprise (MBE/WBE) requirements.

The form of agreement between the Owner and the Contractor will be AIA Document A101-2007.

The General Conditions of the Contract will be AIA Document A201-2007, modified to reflect the specific requirements of this Project.

Form of Owner-Contractor Agreement: AIA A101-2007, Stipulated Sum.

Form of General Conditions: AIA A201-2007, with amendments.

Amendments will be drafted by JWA, reviewed by the Town of East Longmeadow's counsel and the Town's insurer. Statutory provisions applicable to the construction of public buildings in Massachusetts will be included.

Trade Contracts: Contracts between the Construction Manager and the Trade Contractors for filed sub-bid trades will be in the form set forth in M.G.L. Ch. 149, s.44F.

Bonds: The Construction Manager/Contractor and Trade Contractors will be required to furnish Performance and Payment Bonds in the full amount of the Contract Price.

Insurance: requirements for types and limits of insurance coverage which the Contractor shall be required to carry will comply with MSBA requirements.

### 4030 Conditions of the Contract

#### 4030.30 General Conditions

The General Conditions of the Contract will be AIA Document A201-1987, modified by statutory requirements applicable to public work in Massachusetts, and by such other terms and conditions as the Town's attorney and the Town's insurance advisor shall require.

#### 4030.35 Supplementary Conditions

The project team will draft additional Supplementary Conditions for review by the Owner and the Owner's attorney, based in information which the Owner will provide.

Town of East Longmeadow requirements for types and limits of insurance coverage which the Contractor is to carry.

Town of East Longmeadow has a policy of equal employment opportunity (EEO) or affirmative action (AA), or a policy/program governing the employment of minority-owned businesses or women-owned businesses.

## A. SUBSTRUCTURE

### A10 FOUNDATIONS

#### A1010 Standard Foundations

##### A1010.10 Wall Foundations

20" thick reinforced, cast-in-place concrete walls with and 8” brick shelf resting on continuous strip footings, around the perimeter of the building, extending at least 4'-0" below finished grade for footings resting on compacted structural fill or undisturbed soils.

##### A1010.30 Column Foundations

Individual spread footings at columns with allowable bearing pressures as recommended in the Site Geotechnical Evaluation Report.

#### A1020 Special Foundations

##### A1020.80 Grade Beams

Strap concrete grade beams between some column footings will be required to resist uplift at locations of steel braced frames.

### A40 SLABS-ON-GRADE

#### A4010 Standard Slabs-on-Grade

##### A4010.10 Standard Slabs-on-Grade

Cast-in-place concrete slab 5" thick, reinforced with welded wire fabric, placed over insulation and a vapor barrier and a base course of approximately 8" of compacted gravel. The floor of the auditorium will be constructed as an inclined slab on grade, with 5” thick reinforced concrete .The exact details of the slab-on-grade subgrade preparation will be determined from the recommendations set forth in the Geotechnical Site Evaluation Report.

See Section G1030, Sitework Excavation, for requirements for excavation including rock excavation, backfilling and compacting.

## A4040 Pits and Bases

**Elevator Pits:** Constructed with 12" reinforced concrete walls with a 12" thick reinforced concrete foundation mat incorporating a sump pit as required. An appropriate waterstop will be part of the design.

**Kitchen Pits:** Typical service pits and trenches will be comprised of 4000psi reinforced concrete pits comprised of 8” thick walls and 8” thick foundation mat.

## A4090 Slab-On-Grade Supplementary Components

### A4090.10 Perimeter Insulation, Slab Insulation, and Vapor Retarder

**Perimeter Insulation:** 4" thick foamed plastic insulation, continuous with the under-slab insulation, extending vertically along the outside face of foundation walls for a distance of 4'-0" below finish grade.

**Under-Slab Insulation:** 2" thick foamed plastic insulation, extending under the entire surface of the floor slab.with 4” for a 6’ wide area around the perimeter.

### A4090.20 Vapor Retarder

**Vapor Retarder:** Heavy-duty, unreinforced, 15 mils thick polyolefin sheet with Perm Rating of 0.03 perms or less, "Stego Wrap" by Stego Industries, LLC, or equal; continuous under the slab on grade.

### A4090.30 Waterproofing

**Elevator Pits:** Elevator and other pits will be made watertight by application of negative-side waterproofing.Product: crystalline waterproofing, Xypex, by Xypex chemical corporation or equal.

### A4090.40 Dampproofing

Bituminous Dampproofing, cold applied, at foundation walls, footings, and frost walls, and drainage panels as a protection course

# A90 SUBSTRUCTURE RELATED ACTIVITIES

## A9010 Substructure Excavation

### A9010.10 Backfill and Compaction

See Section G1070, Site Earthwork, for requirements for excavation including dewatering, backfilling, and compacting.

# B. SHELL

## B10 SUPERSTRUCTURE

### B1010 Floor Construction

#### B1010.10 Floor Structural Frame

**Structural Steel Recycled Content:** All steel is to consist of a minimum of 95% recycled steel with over 80% post- consumer and 15% pre-consumer recycled material in compliance with LEED for Schools requirements.

**Misc. Metals Recycled Content:** Recycled content of Metal Products; Provide products with average recycled content of steel products so post-consumer recycled content plus one-half of pre-consumer recycled content is no less than 60%.

**Lateral Load-Resisting System:** Lateral loads due to wind and seismic forces will be resisted by diagonal braced frames at selected locations, at each level and will be incorporated within the interior and/or exterior wall systems. The building will be subdivided by 1 or 2 expansion joints. Each of the sections will have its own lateral force resisting system.

#### B1010.20 Floor Decks, Slabs, and Toppings

Typical elevated floor construction will consist of a 3¼" lightweight concrete slab on 3", 18 gage composite metal deck, (6¼" total depth), reinforced with welded wire fabric. (This floor system provides a 2-hour fire rated floor slab without the need to spray fire-proof the deck). The slab will be supported on a system of composite, wide flange structural steel beams compositely connected to the slab with field welded shear connectors. Steel composite beams will be supported on composite steel wide flange girders. The steel girders will in turn be supported on steel wide-flange columns, round, or square tubular columns.

Steel framing which is not concealed by walls or ceilings will be considered Architecturally Exposed Structural Steel.

A vibration analysis is typically performed on all framing members, in order to create a structure that is comfortable, and free from excessive vibrations that would create discomfort for the building's occupants.

**Lateral Bracing for Seismic/Wind Loads:** Steel braced frames consisting of 5" to 6" square diagonal steel tube members in a chevron or single diagonal configuration, located within the interior partitions or at strategic locations in the exterior walls.

The classroom wing will be Type IB construction with a 2 hour rating for floors, and a 2- hour rating for columns. The structural systems shall conform to Underwriters Lab or Factory Mutual specifications.

The structural system for assembly areas will be Type IB with a 2 hour rated floor assembly

### B1010.50 Ramps

Exterior ramps will be constructed as cast-in-place concrete slab supported on concrete foundation walls and footings. Slab surface will receive a broomed finish.

**Railings and Handrails:** Exterior Galvanized steel pipe rail, painted guard rails with stainless steel handrails.

### B1010.90 Floor Construction Supplementary Components

**Floor Construction Fireproofing:** Columns, girders and beams supporting floors (but not lateral bracing members) will be protected with sprayed-on fireproofing, with a 2-hour equivalent rating. Floor slab decks do not need fire proofing as their composite section with lightweight concrete provides the required rating.

**Architecturally exposed columns** will be protected with intumescent paint fireproofing.

**Floor Construction Firestopping:** Through-penetration fire-stopping in accordance with a tested U.L. design, to attain a 2-hour F-rating, and a corresponding T-rating where required by Code.

Each Trade sub-contractor shall provide firestopping design and installation for all penetrations caused by that trade to the wall/floor/ceiling assemblies. Work of all trades and sub-contractors will be referenced to a single firestopping specification and reference standards.

Low-emitting Materials: All fireproofing will be specified to meet the test standards of Indoor Advantage Gold, Greengard Children and Schools of California Department of Health Services “Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using small- Scale environmental Chambers.”

## B1020 Roof Construction

### B1020.10 Roof Structural Frame

**Solar-ready per code, Massachusetts:** Total solar-ready zone area shall consist of an area not less than 1,600 square feet, or 75% of the roof area that is either flat or oriented between 110 degrees and 270 degrees of true north, exclusive of mandatory access or set back areas. Solar-ready zones shall be free from obstructions from roof equipment or accessories.

**Typical Classrooms wings, and Administration Wing:** Roof Construction will consist of 3" deep, 18 gage type "B" galvanized metal roof deck. Roof Decks will be supported on a system of wide flange steel beams spaced 10' apart, maximum, and in turn will be supported on steel wide flange girders. The Girders in turn will be supported by steel pipe, square tube shaped, or wide flange columns carried to the foundation. Steel weights for these areas to be 9-10 psf. Roof will be sloped to roof drains at ¼ inch per foot. This will be achieved by sloping the steel and complementing it with tapered insulation where steel could not be sloped.

Roof areas directly beneath the larger rooftop mechanical equipment as well as a 5' perimeter around the unit will be constructed with a 4" normal weight concrete topping slab supported on a 2" deep, 20 gage, galvanized composite metal deck, (6" total depth), supported on wide flange beams and girders.

All roof areas that are not designated for rooftop equipment or other purposes, will be designed with a 20 PSF allowance for roof mounted photovoltaics. Areas to receive Photovoltaic panels will require an 18-gage deck, and additional 1.0 PSF of steel framing.

**Auditorium and Gymnasium:** The roof framing will be 3" deep, 20/20gage, Type BCA, galvanized, cellular acoustic metal deck supported by wide flange steel beam, which in turn, will be supported by "LH" series long-span steel joists spaced a maximum of 8'-0" apart. The Gymnasium structural framing shall include design factors for support of gym divider partition and other hung equipment. The roof will be designed with a 20 PSF allowance for roof mounted photovoltaics.

**Cafeteria** Portions of high roof over the cafeteria shall consist of 3" deep, 20/20gage, Type BCA, galvanized, cellular acoustic metal deck supported on exposed glulam beams which are supported by perimeter steel beams.

**Lobby and Media Center:** Roof shall consist of 3" cellular acoustic, roof deck supported on glue lam. Beams spaced a maximum of 9' apart. The joist will frame to perimeter steel girders, supported on steel columns carried to the foundation and protected as required by code for IB construction.

Roofs will be sloped to roof drains at 1/4 inch per foot. This will be achieved by sloping the steel and complementing it with tapered insulation where steel could not be sloped.

**Lateral Load-Resisting System:** Lateral wind and seismic forces will be resisted by braced frames at selected locations and incorporated into interior and/or exterior wall systems.

### B1020.20 Roof Decks, Slabs, and Sheathing

Areas of the roof supporting large mechanical equipment will be constructed with concrete topping applied to galvanized composite metal deck, supported on wide flange beams and girders for equipment mounting.

### B1020.30 Canopy Construction

Steel framed roof with 1-1/2 inch galvanized metal deck supported on steel beams and columns.

Lateral load-resistance will be provided by moment connections between the steel framing and the columns.

### B1020.90 Roof Construction Supplementary Components

Refer to paragraphs describing roofing membrane system.

**Roof Construction Fireproofing:** Steel beams, girders and columns supporting roof deck will be protected with spray-applied cementitious fireproofing to attain the fire ratings required by Code for Type IB protected construction. Roof Deck on Auditorium, Cafeteria, Gymnasium, Lobby and Media Center will not be fire proofed.

**Roof Construction Firestopping:** Through-penetration fire-stopping in accordance with a tested U.L. design, to attain a 1 hour F-rating, and a corresponding T-rating where required by Code.

Each Trade sub-contractor to provide firestopping design and installation for all penetrations caused by that trade to the roof assemblies. Work of all trades and sub-contractors will be referenced to a single firestopping specification and reference standards.

## B1080 Stairs

### B1080.10 Stair Construction

**Exterior stairs**: will be constructed as cast-in-place concrete slabs supported on concrete foundation walls and footings. Tread and landing surface will receive a broom finish.

**Railings and Handrails:** Galvanized steel pipe rail; painted.

**Interior Stairs:** Steel stairs conforming to NAAMM (National Association of Architectural Metal Manufacturers) **"Architectural" Class**, with structural steel stringers, concrete-filled steel pan treads and platforms, steel plate risers.

Steel stairs conforming to NAAMM (National Association of Architectural Metal Manufacturers) **"Commercial" Class;** steel components shop primed and field painted with alkyd paint system.

**Railings:** painted steel bar stock balusters, with wood cap rail and stainless-steel handrails.

### B1080.80 Ladders

Roof Ladders: Galvanized, painted steel.

## B20 EXTERIOR VERTICAL ENCLOSURES

### B2010 Exterior Walls

#### B2010.10 Exterior Wall Veneer

**Unit Masonry, Clay Brick(S13):** Brick Masonry, Norman size: Interstate Brick Canyon Rose Norman brick or similar accented with contrasting Colors, Precast concrete trim and stone base , tied to stud framing with stainless steel, thermally improved ties. Precast concrete trim will be at window sills, and at transitions between brick and rainscreen assemblies. Loose steel lintels above openings less than 8'-0" wide. Through wall flashing to be composite stainless-steel fabric with stainless steel drip edge.

**Formed Metal Rainscreen System (S14):** Formed metal , Morin. or similar, installed on thermally separated sub-structure such and Smart CI pultruded fiberglass tied to stud framing. Stainless steel through wall flashing.

**Composite Metal Wall Panel Rainscreen System at canopies fascia and roof monitors (S16):** Composite metal panels, Alucabond or similar with NFPA-285 wall assembly compliant panel core, installed on thermally separated sub-structure such and Smart CI pultruded fiberglass sub framing tied to stud framing. Stainless-Steel Through wall flashing.

**Uninsulated CMU wall at Concessions stand:** CMU wall split face

#### B2010.20 Exterior Wall Construction

**Design Wind Loads for Exterior Walls** For elements located within 10 feet of salient corners and for soffits, 36 pounds per square foot inward and outward.

For elements located more than 10 feet from salient corners, 25.2 psf acting inward and outward.

For framing elements, such as stud back-up and curtain wall framing, which are located more than 10 feet from salient corners and have a tributary area of 200 square feet or more, 17.0 psf acting inward and outward.

**Stud framing,** 16 gauge or heavier steel studs with G90 galvanizing, covered with 5/8-inch-thick glass-fiber-faced gypsum panel sheathing. 6" studs typ.

Stud framing will be designed to resist wind loads calculated for the Project, with deflection not to exceed 1/600 for stud framing alone without contribution of sheathing to stiffness. Refer to Appendix B for pertinent wind loads.

Design stud framing to resist wind loads specified below, with deflection not to exceed 1/600 for stud framing alone without contribution of sheathing to stiffness.

For elements of framing within 10 feet of salient corners, 36 pounds per square foot inward and outward.

For elements of framing located more than 10 feet from salient corners and having a tributary area of less than 200 square feet, 25.2 psf action inward and outward.

**Cavity Wall Construction (S13):** Face brick veneer, air space, nonflammable moisture resistant , 6" of water repellant mineral wool board insulation installed at the outside face of the sheet air barrier, foil faced, self-adhering vapor retarding, modified bituminous sheet air barrier over 5/8" glass mat gypsum wall sheathing, cold form metal studs with gypsum board at interior face. And 3 ½" mineral wool batt insulation between the studs . Loose steel lintels above doors, window, and louver openings. Stainless steel brick ties and flashing.

**Rain screen Wall Construction (S14):** Formed Metal facing, rainscreen assembly air space, 6" of non-flammable, water repellant, mineral wool board insulation, self-adhering vapor retarding, modified bituminous sheet air barrier over 5/8" glass mat gypsum wall sheathing, cold form metal studs , 3 ½" mineral wool batt insulation between the studs , with gypsum board at interior face. Stainless steel flashing.

**Rain screen Wall Construction (S16):** Metal composite panel facing, rainscreen assembly air space, 6" of non-flammable, water repellant, mineral wool board insulation, self-adhering vapor retarding , modified bituminous sheet air barrier over 5/8" glass mat gypsum wall sheathing, cold form metal studs with 31/2" mineral wool insulation between the studs, gypsum board at interior face. Stainless steel flashing.

**Water Drainage:** Composite stainless-steel fabric flashing for through wall flashing in masonry cavity walls with integral stainless steel drip edge at lintels and shelf angles. Mortar mesh in air space, and open head weeps with cellular plastic baffles.

**Air Barrier /Vapor Retarder:** Self Adhering, Foil faced, vapor-retarding membrane air barrier, modified bituminous, GCP Applied Technology; Perm-a-Barrier, Low Temperature Aluminum Wall Membrane or equal. Applied over exterior face of sheathing throughout the building, wherever walls are insulated.

1. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E 2178.

2. Vapor Permeance: Maximum 0.1 perm; ASTM E 96/E 96M.

**Insulation Below Grade:** See foundation insulation in Part A.

**Building Enclosure Commissioning (BE CX):** The Project shall include Building enclosure Commissioning (BE CX), as part of the LEEDv4 enhanced commissioning credits and MSBA requirements. Commissioning will include whole building blower door testing per ASTM E3158 or E1827.

### B2010.30 Exterior Wall Interior Skin

Typical: 5/8-inch-thick gypsum board, with joints taped and finished.

**Cavity Walls:** 5/8-inch-thick gypsum board, with joints taped and finished, applied over galvanized steel cold-form metal framing.

### B2010.60 Equipment Screens

Perforated Formed metal panels mounted on galvanized structural steel back up framing.

### B2010.80 Exterior Expansion Control

At exterior walls provide preformed, foam joint seals manufactured from urethane or EVA (ethylene vinyl acetate) foam with minimum density of 10 lb/cu.ft. and impregnated with a nondrying, water-repellant agent. Factory produce in pre-compressed sizes in roll or stick form to fit joint widths based on design criteria indicated, with factory- or field applied adhesive for bonding to substrates.

## B2020 Exterior Windows

### B2020.20 Exterior Windows

**Aluminum Windows:** Extruded aluminum, factory glazed fixed and operable awning windows, and Fixed windows. Windows have thermally broken frames to achieve U=0.295 min. on operable units and U=0.225 min . on fixed units. Units combined for larger openings include field-mulled extrusions with mating frames and gaskets.

Extruded aluminum, factory glazed fixed and operable windows.

**Vision Glass:** Insulating triple glazed glass units, 1-3/4" thick (1/4" glass, Low -e coating + 1/2" air space with Argon + 1/4" glass, low E coating + ½" air space + ¼" glass).

### B2020.30 Exterior Window Wall

**Storefront, at interior vesitbules:** Extruded aluminum, stick-built storefront assembly; thermal break, equal to Kawneer "Trifab 451T" framing system or similar system by EFCO or Vistawall, with high-performance organic coating ("Kynar 500") in an architectural color. Glazed with 1" thick insulating glass, clear tempered glass with low-E coating on No. 2 surface.

**Glazed Curtain Wall:** Extruded aluminum curtain wall system, employing EFCO Xtherm 5600, Kawneer "1600 Wall," Vistawall "2600," or equivalent framing system by Wausau, outside glazed. Mullions 2-1/2-inch face width, by depth required to resist wind loads. Glazed with Vision or translucent glass. Refer to Exterior Elevations for locations. Glazed Curtain wall system to have thermally broken frames to achieve an assembly U-value of U=0.23 for the assembly.

**Vision Glass:** Insulating triple glazed glass units, 1-3/4" thick (1/4" glass, Low -e coating + 1/2" air space with Argon + 1/4" glass, low E coating + ½" air space + ¼" glass). Triple glazed, Insulating glass units; with Argon gas and Low-E coating. Unit U-value 0.14 or better and SHGC of .35 or better.

**Translucent Glass:** Translucent Insulating triple glazed glass units, 1-3/4" thick (1/4" glass, Low -e coating + 1/2" aerogel fill + 1/4" glass, + ½" air space + ¼" glass).

**Spandrel Glass** Insulating triple glazed glass units, 1-3/4" thick (1/4" glass, Low -e coating + 1/2" air space with Argon + 1/4" glass, low E coating + ½" air space + ¼" glass)., with opaque ceramic frit on the No. 6 surface.

**Building Enclosure Commissioning (BE Cx):** The project shall include building enclosure commissioning (BE Cx), as part of the LEEDv4 enhanced commissioning credits and MSBA requirements.

## B2050 Exterior Doors And Grilles

### B2050.10 Exterior Entrance Doors

**Aluminum entrance doors:** Aluminum stile and rail entry doors with 3-1/2-inch-wide stile, to match glazed curtainwall with custom arrangement of intermediate mullions.

**Glass:** Insulating glass units, 1" thick (1/4" glass + 1/2" air space w/argon gas + 1/4" glass) with low-E coating, tempered safety glass. Units U-value (winter) of 0.23 minimum and SHGC of 0.37 or better.

Security Glazing: LTI Smart Glass, Inc.; School Guard Glass SG4 at select locations.

**Hardware:** Full height continuous hinge; exit device; offset tubular pulls; closers; select threshold; weather-stripping.

One leaf at each entrance will also be activated by low-power power-assisted operating device, with push-plates located on both sides of the door.

Locking will be coordinated with owner's security system for access control.

### B2050.20 Exterior Utility Doors

Flush steel doors, insulated, Extra Heavy Duty (16-gauge steel face with steel stiffeners in core), fully insulated, in fully welded, 14 gauge steel frames, G90 galvanized, shop-primed and field painted. R-value of 7

Hardware: Mortised lockset with lever handle; butt hinges; threshold

### B2050.40 Exterior Special Function Doors

**Overhead Coiling Doors**: Insulated Aluminum Overhead Service Doors with Electric Door Operator: Standard duty, with emergency manual chain operation, obstruction-detection device, audible and visual signals.

### B2050.70 Exterior Gates

Refer to Section G2060.20.

## B2070 Exterior Louvers And Vents

### B2070.10 Exterior Louvers

Aluminum Louvers: Fixed Aluminum Louvers. 45% free area with insect screens and blank off panels. CS Louvers A4097 or sim. 3- coat Kynar finish.

Carry allowance of $65,000 for exterior louvers and vents required for mechanical equipment.

## B2080 Exterior Wall Appurtenances

### B2080.70 Exterior Fabrications

Exterior Aluminum sun control devices. Horizontal sun control devices are required at the windows of the southern elevation. Prefabricated Aluminum with fixed horizontal fins. Kynar 3 coat finish, custom color.

The horizontal aluminum sun control louvers at the southern facing Curtain wall of the cafeteria as shown on elevations. Prefabricated, curtain wall supported with fixed horizontal fins. Kynar 3 coat finish, custom color.

### B2080.80 Bird Control Devices

Low profile electric bird deterrent device by Nixalite of America, Bird Barrier America, or Hot Foot America.

## B30 EXTERIOR HORIZONTAL ENCLOSURES

### B3010 Roofing

#### B3010.50 Low-Slope Roofing

ERA-1: Low slope membrane roof, 1 hour fire rated assembly, fully adhered high albedo PVC membrane roof.

ERA-1A: Same as ERA-1, but no fire rating required and with acoustic metal deck (above auditorium, Gymnasium, Cafeteria and media Center).

ERA-1B: Same as ERA-1, but with composite concrete deck for HVAC equipment noise mitigation. No spray fireproofing associated with this roofing assembly as the composite deck provides the required fire rating.

**Fully Adhered PVC:** Polyvinyl Chloride membrane system, Sarnafil or equal, applied over steel deck, and also to concrete-filled steel deck, and consisting of the following components:

1. Membrane: 60 mil thick, reinforced. Color: Light grey or white.
2. Cover Board: Glass-mat, water-resistant gypsum board; pre-primed "Dens-Deck" manufactured by Georgia-Pacific Corp. or approved equal, 1/2" thickness.
3. Insulation: Polyisocyanurate with glass mat facers; 8 1/2-inch average thickness. R-50
4. Substrate Board: ½" thick primed “Dens Deck”.
5. Vapor Retarder: Reinforced polyethylene; Griffolyn type.
6. Walkway Pads: As required for access to roof-top mounted equipment.
7. Warranty: Total system warranty, 20 years.

**Building Enclosure Commissioning (BE Cx):** The project shall include building enclosure commissioning (BE Cx), as part of the LEEDv4 enhanced commissioning credits and MSBA requirements.

#### B3010.70 Canopy Roofing

Same as above unless noted otherwise in this section.

### B3020 Roof Appurtenances

#### B3020.10 Roof Accessories

Brake formed metal roof edge fascia, 10” high.

#### B3020.30 Roof Specialties

Metal Copings: Formed aluminum, 0.050 inch thickness min. with factory mitered and continuously welded corners. Finish: Custom 3-coat fluoropolymer.

Roof-Edge Fascia: Manufactured, two-piece, roof-edge fascia consisting of snap-on metal fascia cover with a continuous extruded-aluminum anchor bar with integral drip-edge cleat to engage fascia cover. Provide matching factory mitered and continuously welded corner units. Finish: Custom 3-coat fluoropolymer.

## B3060 Horizontal Openings

### B3060.10 Roof Windows and Skylights

Plastic Unit Skylights: Fixed domed insulated units fabricated from clear acrylic or polycarbonate as manufactured by Naturalite, O'Keefe's or Wasco. Quantity: 6

### B3060.10 Roof Monitors

Roof Monitors geometry as shown in drawings. 3 sides clad in Composite metal panel (S16) listed above on B2010.20, North face glazed . With Curtail wall assembly listed above on B2020.30

Glass: Insulating triple glazed glass units, 1-3/4" thick (1/4" glass, Low -e coating + 1/2" air space with Argon + 1/4" glass, low E coating + ½" air space + ¼" glass)..

### `3060.50 Vents and Hatches

Provide Smoke Hatches over stage. Provide high temperature fusible link actuator, manual operator from level of stage, and automatic reset of switch when closed from above. Provide safety net inside opening of 4x4 steel cargo netting secured to curb. Quantity: 4

Roof Access Hatches: Insulated aluminum, single leaf opaque hatch with double-walled curbs. Two-coat fluoropolymer finish. Safety railing system and ladder-assist post. Quantity: 2

## B3080 Overhead Exterior Enclosures

### B3080.20 Exterior Soffits

**Canopy:** See also "Facias" in "Exterior Wall Skin" paragraph. The underside of the canopy will be finished with Wood Look Metal Slats sim to exterior rated Armstrong Metal works classic ,over glass mat sheathing and an air barrier. The area under the canopy will be illuminated with recessed lights.

## C. INTERIORS

## C10 INTERIOR CONSTRUCTION

### C1010 Interior Partitions

#### C1010.10 Interior Fixed Partitions

**Masonry:** Concrete unit masonry construction will be used to enclose spaces that need high durability, such as the following locations:

locker rooms
mechanical room
electrical rooms
fire pump room
elevator shaft and elevator machine room
receiving area.

**Construction:** Normal-weight concrete masonry units, typically 8-inch width, ASTM C270 Type S mortar, reinforced with vertical rebar and with horizontal truss-type reinforcing in every other course. Partitions will run from the floor to the underside of steel floor or roof deck above and will be restrained from lateral movement at the top.

**Typical Gypsum Board Partitions:** 5/8 inch thick gypsum board on 0.0179 inch (25 gauge) steel studs, 3-5/8" deep studs spaced 16 inches on center. Screw gypsum board to studs.

Non-Rated Partitions: Extend to 6-inches above the ceiling.

Fire-Rated Partitions: Extend to underside of deck.

2-hour rated construction around elevator shafts, emergency electrical closets, main switchgear room

1-hour rated partitions at stairs, kitchen, loading dock area, between classrooms and corridors.

**Schedule of Gypsum Board Locations:**

Install interior gypsum board products in the following locations:

a. Type X: Walls and ceilings unless otherwise indicated.
b. Moisture- and Mold-Resistant Type: Walls and ceilings in restrooms, locker rooms, server, kitchen

c. Abuse-Resistant Type: Corridor walls where tile/wood wainscotting is indicated.

d. High-Impact Type: Gymnasium walls where gypsum board is indicated.

e. Flexible Type: Where curved walls are indicated.

Install cementitious backer board in the following locations:

a. Shower rooms, restrooms behind tile, behind large format porcelain wall tile, and decorative tile wall locations

Refer to Wall Types for additional detail.

**Acoustical Partitions:** Generally, at the locations listed below, new partitions will be constructed as sound-attenuating, with an STC of 45 or better, with acoustical insulation inside the wall and acoustical caulking at top and bottom of the partition:

1. Music, Chorus and ensemble rooms. STC 60
2. Video Production STC 60
3. Auditorium & Lighting STC 65
4. Administrative areas including Planning Rooms.
5. Classrooms and Resources Rooms
6. Library
7. Toilet rooms.
8. Media Center
9. Conference Rooms
10. Lab and Studio Spaces

### C1010.20 Interior Glazed Partitions

**Frames:** Hollow-metal construction, 16-gauge steel, with corners mitered and welded; shop-primed for field painting.

**Glass:** Clear glass; tempered at sidelights and where required by Code; annealed at other locations.

**Classroom doors:** Hollow metal construction, full width door of 36 inches with 26 inch sidelight and 18 inch transom

**Offices doors:** Hollow metal construction, full width door of 36 inches with 18 inch sidelight

**Vestibules:** At primary entrances, if a vestibule is included in the design, the interior vestibule wall will be constructed of **aluminum storefront, without thermal break**. The same material as the frame, sidelights and transom of the entrance door surround at the exterior walls.

**Corridors:** Hollow-metal construction, 16-gauge steel, **aluminum storefront, without thermal break, Kawneer 450,** with corners mitered and welded; shop-primed for field painting **“Kynar” or “Hylar” high-performance coating**.

**Security Glazing:** LTI Smart Glass, Inc.; School Guard Glass SG4 at entry vestibule

### C1010.90 Interior Partition Supplementary Components

Through-penetration firestopping in accordance with a tested U.L. design, to attain and f-rating equal to the rating of the partitions, and a corresponding T-rating where required by code.

Top-of-partitions firestopping at rated partitions and smoke barriers in accordance with a tested U.L. Design.

## C1020 Interior Windows

### C1020.20 Interior Fixed Windows

Hollow metal borrowed lites, with 16-gauge hollow metal frames, face welded, and factory primed for field finishing.

Glazing: 1/4”-thick, fully tempered clear glass, laminated.

Security Glazing: LTI Smart Glass, Inc.; School Guard Glass SG4 at designated locations

### C1020.50 Interior Special Function Windows

Transaction windows

Security Glazing: LTI Smart Glass, Inc.; School Guard Glass SG4

**“Frameless” Glass:**
Clear ½” thick laminated glass with 4” high clear anodized aluminum head and sill glazing shoes.

Assume 140 linear feet at 7’-2” height installed on a 6” curb to receive base finish.

## C1030 Interior Doors

### C1030.10 Interior Swinging Doors

**Flush Wood Doors:** Flush wood doors in steel frames will be specified for cross-corridor doors, classrooms and other teaching spaces, administrative offices, break rooms, toilet rooms, and for other doors in public areas.

**Product:** Flush wood doors, hardwood veneer face, WDMA Premium Grade 5-ply construction, natural finish, as manufactured by Algoma, Eggers, Marshfield, Mohawk or VT Industries. Pre fit doors to steel frames.

- Face Veneer: Select white maple veneer, plain sliced.
- Finish: Factory finish to match AWI TR-6 conversion varnish.

**Flush Steel Doors:** Flush steel doors in steel frames will be specified for mechanical equipment rooms, electrical equipment rooms, fire pump room, receiving area, and similar service locations.

**Product:** ANSI 250.8 Level 2, "Heavy Duty" doors, with 0.042-inch thick (18 gauge) cold-rolled steel faces, seamless edges. Shop-primed and field painted.

**Special Architectural Doors:** For special locations such as the entrances to the library, or the auditorium **aluminum storefront doors** may be specified.

**Steel Frames:** 0.053-inch thick (16 gauge) cold-rolled steel hollow-metal frames; corners mitered and welded. Furnish drywall and masonry profiles, as appropriate to construction in which doors will be set. Shop-primed and field painted.

**Door Hardware:** Heavy-commercial quality; US 32D satin stainless finish.

- Locksets: Mortised locksets and latchsets, with lever handles.
- Keying: Grand-Master and Masterkeying system to be coordinated with the Owner.
- Provide key cabinet and key organizing system.
- Electrified hardware: Electrified Hardware to be used for security purposes must be UL listed for Burglary Applications.
- Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.
- Exit Devices: Exit devices shall be touchpad type, fabricated stainless steel. Provide electrical options as scheduled.
- Lock Power Supplies: It is imperative that the security contractor and hardware supplier coordinate the lock voltage requirements, fail safe/fail secure requirements, lock in-rush current requirements, whether locks are continuous duty or not and any other related issues. Power supplies to be furnished by Door Hardware Suppliers and installed by the Security of Electrical Contractor. Locate power supplies and battery backup in the access control mechanical space when wire run lengths permit.
- "Request to Exit / Touch Bar Monitor," Electrified Panic Hardware shall be provided with one internal SPDT switch which monitors the touch bar, as called for on the security system drawings.
- Closers: Provide at all access controlled doors and at doors specified in the door hardware schedule.
- Provide key cabinet and key organizing system.

### C1030.20 Interior Entrance Doors

- Aluminum entrance doors and storefront framing system matching the entrance doors, single glazed with 1/4 inch thick clear tempered safety glass.

- **Hardware:** Full height continuous hinges; offset tubular pulls; tubular push bars full width of door; exposed closers.

### C1030.40 Interior Coiling Doors

**Coiling Grille at Kitchen:** Overhead coiling aluminum open link style grille with brushed aluminum finish. Electrically operated.

**Coiling Counter Shutter at Culinary Classroom:** Stainless steel, manually operated, with hood, stainless steel shelf and jambs.

### C1030.80 Interior Access Doors and Panels

**Access Doors:** Furnish metal access doors to provide access to plumbing, mechanical, and electrical controls. Flush access doors with exposed flanges in nominal 14-gauge steel sheet, factory primed for field painting. Provide 16-gauge stainless steel sheet for wall locations with ceramic tile finish and in kitchen. Furnish fire-rated units for installation in fire-rated walls and fire-rated ceiling assemblies.

Typical door size is 12 x 12 inches with larger sized as indicated.

## C1070 Suspended Ceiling Construction

### C1070.10 Acoustical Suspended Ceilings

**Acoustical Ceiling:** Acoustical lay-in panels, size as scheduled in the finish schedule, supported by steel double-web grid with **standard 15/16"** wide aluminum face cap.

- In enclosed areas, provide wet-felted mineral fiber panels.
- In open office areas, unless floor-ceiling or roof ceiling assembly is required to be rated (alternate to fireproofing), provide high-NRC fiberglass panels.

Classrooms to have NRC not less than 0.70, Music Rooms to have NRC not less than 0.80.

**Acoustical Ceiling, scrubbable:** Mineral-fiber lay-in panels with scrubbable aluminum or mylar face; supported by steel double-web grid with standard 15/16" wide aluminum face cap. NRC not less than 0.70.

### C1070.20 Suspended Plaster and Gypsum Board Ceilings

**Gypsum Board, Painted:** Suspended gypsum board assembly with joints taped and finished; painted with 1-coat PVA primer and 2 top coats of flat latex paint.

### C1070.50 Specialty Suspended Ceilings

**Linear Wood Ceilings:** (Low ceiling area of cafeteria) Linear, solid wood slat and rod panels suspended from standard 15/16-inch suspension system with acoustical blanket.

Basis of design: Rulon

**Sound Diffusing Panels, Band & Chorus Room:** Manufacturer's standard panel construction consisting of facing material laminated to front face, edges, and back edge border of core.

(1) Basis of Design Product: Wenger; Pyramidal Diffuser Panels.

(2) Panel Shape: Pyramidal.

(3) Mounting: Back mounted with manufacturer's standard suspension system, secured to substrate.

(4) Core: Manufacturer's standard, prepared for required acoustical performance.

(5) Edge Construction: Manufacturer's standard chemically hardened core with no frame.

(6) Acoustical Performance: Sound absorption SAA of 0.15 to 0.25 according to ASTM C 423 for Type A mounting according to ASTM E 795.

(7) If retaining dimensions in "Panel Width" and "Panel Height" subparagraphs below, clarify direction of dimensions on Drawings.

(8) Panel Size: 24 x 24 inches.

**Sound Reflecting Ceiling Panels (Stage**): Prefabricated, curved sound reflectors; manufacturer's standard panel construction consisting of facing material laminated to front face, edges, and back edge border of core.

1. Basis of Design Product: Kinetics Noise Control; Ovation Reflector Panels.
2. Panel Shape: Curved.
3. Mounting: Back mounted with suspension system secured to substrate.
4. Core: Manufacturer's standard plywood core, 3/4-inch thickness.
5. Edge Construction: Manufacturer's standard, stained to match panel face.
6. Facing Material: White maple wood veneer.

    a. Color: Custom stain to match Architect's sample.

7. Acoustical Performance: Highly acoustically reflective with not less than 0.05 Sabines of absorption per square foot of panel for all 1/3 octave band frequencies in the 200 Hz to 2000 Hz range according to ASTM C 423 for Type J mounting according to ASTM E 795.
8. Weight of Reflector Panel: No less than 2 psf and a maximum of 2.5 psf, and excludes steel framing weight.
9. Panel Sizes: As indicated on Drawings.

**C1070.60 Spray Applied Ceiling Finishes**

**Sprayed Acoustic Insulation:** ICC-K13 or Sonospray fc, as noted on drawings

**C1070.70 Special Function Ceilings**

**Exposed Structure (Painted):** Shop-primed steel structure; field painted with spray-applied alkyd flat finish.

**DEFS:** Cement Board sheathing directly applied stucco finish for soffits at underside of loading dock canopy

## C1090 Interior Specialties

### C1090.10 Interior Railings and Handrails

Hardwood railings, 1-1/2-inch diameter, with stainless steel wall brackets at all ramp locations.
Railings, Catwalk: Schedule 40 steel pipe guardrails with 4 inch high steel plate toe kick; with two horizontal rails with outriggers for lighting.

### C1090.20 Information Specialties

1. Display cases: Illuminated display cases with factory fabricated recessed cabinet, tackboard assembly on back inside surface, operable glazed doors at front, and trim on face to cover edge of recessed opening; 10 inch wide, 6 mm thick tempered glass shelves on adjustable shelf standards, three shelves per unit.
2. Interior signage: Interior plastic panel signs for room identification, including tactile characters and Braille for handicapped accessibility. Provide light-sensitive, water-wash photopolymer face layer bonded to a phenolic base layer to produce a composite sheet with overall, face-layer, and base-layer thickness of 1/8-inch; and a Type D Shore durometer hardness of 80.

   a. Basis-of-Design Product: ASI Sign Systems, Inc.; InTouch.

3. Field applied, vinyl character signs: Characters die cut from 2-mil thick, weather-resistant vinyl film with release liner on the back and carrier film on the front for on-site alignment and application on glazing. Provide room identification sign on exterior window, one per room, for exterior identification. Basis-of-Design Product: ASI Sign Systems, Inc.; LTV Series Dimensional Letters.

4. **Markerboards:** Wall-mounted porcelain on steel markerboards with extruded aluminum trim and chalk tray, and tack-strip along top of board. Claridge or

   Greensteel.
   Classrooms: (2)12'x4', (2) 6'x4' per classroom.
   Science Rooms:(2) 12'x4'
   LGI: (2) 16'x4'
   Offices: (1) 4'x4'
   Conference Rms: (1) 6'x4'
   Gym, Alt PE, Weight: (1) 6'x4'

5. **Tackboards:** ¼-inch thick minimum, linoleum resilient tackable surface material, factory laminated to 1/4"-inch-thick hardboard backing.

   Tackboards are included in select classrooms and corridor locations, for quantities and sizes see drawings.

6. **Tack Strip:** 6 inch high vinyl-coated cork installed at ceiling/wall juncture on three walls in each classroom. Allow 40 linear feet for each classroom.

## C1090.25 Compartments and Cubicles

**Toilet Compartments:**

Plastic panel compartment and urinal screens, fabricated from high density polyethylene, as manufactured by Capital, Comtec, Santan or Sanymetal

**Shower Room Dressing Compartments:** Same as the toilet compartments.

**Student Wardrobe Lockers:** 15"x 15" double-tier heavy-duty, all-welded, wardrobe lockers are provided for the students and located in the hallways. 100 Units (200 Lockers) Wardrobe lockers will be double-tier, 6-feet high, painted steel with louvers in the doors, with built-in electronic locks.

- **Quantity:** 100 (2 spaces per locker)

**Student Wardrobe Lockers (locker room – PE changing):** Lockers provided for the students in locker room. Steel, shop-painted, heavy-duty, all-welded**,** style double-tier locker, 18" wide, 15" deep, 72" tall. Basis of Design: Foreman: Phenolic 2-Tier US-Style Locker.

- **Quantity:** 114 (2 spaces per locker)

**Athletic Lockers:** Athletic lockers are provided in the gymnasium locker rooms and at the corridor outside the gym Athletic lockers will be painted steel lockers with expanded metal doors and sides for ventilation, with padlock rings. 24" wide, 15" deep, 72" high.

- **Quantity:** (150) 1-tier lockers with built in bench at locker room. (20) 1-tier lockers at corridor with no bench. (20) 2-tier lockers at corridor with no bench.
- **Accessories:** Locker room benches with laminated wood seats; 3 per locker room and additional ADA accessible benches (with backs).

**Kitchen Staff Lockers:** Double-tier, 6-feet high, painted steel with louvers in the doors, with built-in combination locks. Accessories: Sloped tops, legs and fascia panel.

Basis of Design Product: Penco Products, Inc.; Vanguard Lockers.
Size: 15 x 15 x 72 inches.
Color: As selected by Architect from manufacturer's full range.

**Storage Shelving:** Will be provided under Furniture, Furnishings and Equipment contract. Metal heavy duty floor supported shelving in receiving and storage areas.

**Wardrobe and Closet Specialties:** A plastic laminate covered particleboard shelf and chrome coat rod will be provided at each closet.

Mirrors: Unframed mirrors consisting of film-backed, silvered flat glass mirror with top and bottom aluminum J-channels; for Alt PE room.

### C1090.35 Wall and Door Protection

**Wall and Corner Guards:** Stainless steel corner guards in kitchen areas and loading dock corridors.

### C1090.40 Toilet, Bath, and Laundry Accessories

**Toilet Accessories:** Stainless steel similar to Bobrick classic style (flat face). We typically specify combination towel dispenser and waste receptacle units; soap dispensers; toilet paper dispensers; sanitary napkin disposal units; grab bars.

- Mirrors will be all-glass mirrors (not toilet accessories).

Toilet and bath accessories: Surface mounted, stainless steel accessories including the following:

(1) Toilet tissue dispensers
(2) Paper towel (folded) dispensers for all sink locations.
(3) Liquid soap dispensers for all sink locations.
(4) Waste receptacles, semi-recessed, 12 gal capacity at single unisex, 18 gal at gang toilets
(5) Grab bars at handicapped toilet locations.
(6) Framed mirrors at all sink locations.
(7) Sanitary napkin disposal units.
(8) Mop/broom holders for each Custodian closet.

**Shower Accessories:** Fold-down seats, grab bars, shower curtains and curtain hooks; and robe hooks for shower rooms.

**Miscellaneous Accessories:** Mop holder for janitor's closets. Towel dispensers for classroom sinks.

Electric Hand Dryers: To be installed in closed multi-stall restroom locations only. Provide hand dryer control assembly activated by an infrared optical sensor located next to the air outlet, set to operate as long as hands are under the air outlet, with 35 second lockout feature.

7. Basis-of-Design Product: Excel Dryer Corporation; XLERATOReco Model XL-BW.
8. Recessed Mounting: ADA compliant recess kit is fabricated of 22 gauge 18-8 type 304 stainless steel with #4 satin finish with 16 gauge 18-8 type 304 stainless steel dryer mounting plate with all welded construction.
9. Cover Material and Finish: One-piece, heavy-duty, rib-reinforced, die-cast zinc alloy finished with electrostatically applied epoxy paint. Fasten to wall plate with two chrome plated tamper-proof bolts.
10. Motor: Series commutated through-flow discharge vacuum motor/blower which provided air velocity of 19,000 linear feet per minute at the air outlet and 16,000 linear feet per minute at the hands.
11. Heating Element: Vandal proof, constructed of Nichrome wire and mounted inside the blower housing, protected by an automatic resetting thermostat which opens whenever air flow is cut off and closes when flow of air is resumed. The

heating element shall produce an air temperature of up to 135 deg F at a 72 deg F ambient room temperature at the hands.

### C1090.60 Safety Specialties

Emergency key cabinet: Recessed mounted, high security key vault located at exterior of main entrance door for emergency responder access to the facility.

### C1090.90 Other Interior Specialties

**Interior Signage:** Provide room identification signs, directional signage, safety signs. Type and extent to be determined.

## C20 INTERIOR FINISHES

### C2010 Wall Finishes

#### C2010.10 Tile Wall Finish

**Ceramic Tile:** Restrooms, Classroom Entries: Glazed, varied size ceramic tile, full height. Epoxy grout.

**Porcelain Tile:** Cafeteria, Arts Wing & PE Wing corridors, Unglazed, **12" x 24"**porcelain tile,wainscot height.

Large format porcelain tile

1. For sizes; 15 inches or larger.
2. Use large format tile (LFT) mortar; with latex additive, on cement board substrate.
3. Install with control joints; every 20-25 feet.
4. Flatness; 1/8 inch in 10 feet.
5. Crack isolation membrane or waterproofing membrane at wet areas; full membrane installation, do not bridge control joints.

#### C2010.20 Wall Paneling

**Wood Paneling:** Auditorium, LGI, Media Center.

Manufacturer's standard panel construction consisting of facing material laminated to front face, edges, and back edge border of core.

12. Basis-of-Design Product: Rulon; Flat Veneer Wall System.
13. Panel Shape: Flat.
14. Mounting: Adhesive and mechanically fastened with Z-clips secured to substrate, unless noted otherwise.
15. Core: Manufacturer's standard plywood core, 3/4-inch thickness.
16. Edge Construction: Manufacturer's standard stained to match panel face.
17. Facing Material: Maple veneer.
18. Installation: Z-clip.

**C2010.30 Wall Coverings**

Wall Protection, Kitchen and Utility: Impact resistant sheet wall covering fabricated from fiberglass reinforced plastic; 3/32-inch sheet thickness with smooth finish, Class A flame spread and smoke developed index.

(1) Basis-of-Design Product: Marlite; Standard FRP Panels.
(2) Color: As selected by Architect from manufacturer's full range.
(3) Trim and Joint Moldings: Extruded rigid plastic that matches sheet wall covering color.
(4) Flame-Spread and Smoke Developed Index: 25/450 (Class A).
(5) Mounting: Adhesive.

**C2010.70 Wall Painting and Coating**

CMU: One coat latex block filler with two finish coats, low luster paint.
Gypsum Board: One coat latex primer with two finish coats, low luster paint.

**C2010.80 Acoustical Wall Treatment**

**Acoustical Wood Fiber Wall Panels:** (Gymnasium, Alt PE, Cafeteria, LGI) Tectum "Finale Fabri-Tough" Panels, or equal panel constructed of aspen wood fibers bonded with inorganic hydraulic cement; 2-inches thick, factory painted.

**Acoustical Wood Panels: (Auditorium, Media Center) ASI Audition Panels or Equal.**

1. Panel Size: Custom, as indicated on Drawings.
2. Panel Thickness: 3/4 inch.
3. Core: Class A FR MDF Board.
4. Veneer: White maple.
5. Edge Profile: Square.
6. Edge Banding: Match veneer species.
7. Kerf: 1.6 mm.
8. Perforation Size: 8 mm with 16 mm spacing, staggered.
9. Finish: Custom stain to match Architect's sample

**High-Impact Wall Panels (non-acoustic):** (Main Corridor)

Location: above PCT wainscot, 50%

Basis of Design: Hollman High Impact Wall Panels

**High-Impact Wall Panels (Acoustic):** (Main Corridor)

Location: above PCT wainscot, 50%

Sound Seal 2100

**Fabric-Faced Acoustical Wood Fiber Wall Panels:** (Band & Chorus, Auditorium)

Back mounted, fixed sound absorptive panels with a nominal core thickness of 2 inches; manufacturer's standard panel construction consisting of high density, ultra-

fine fiberglass mat facing material laminated with acoustically transparent adhesive to front face, edges, and back border of dimensionally stable, rigid glass-fiber board core; with edges chemically hardened or impact resistant and resilient to reinforce panel perimeter against warpage and damage. Acoustical Performance: Sound absorption NRC of 0.85 according to ASTM C 423 for Type D5 mounting according to ASTM E 795. Facing Material:

**Acoustical Shaped Panels**: Manufacturer's standard panel construction consisting of rigid thermo-formed plastic in pyramidal, dome, or barrel configuration as recommended by acoustical consultant. Product: Decoustics Limited; Dome Diffuser or similar.

**C2010.90 Wall Finish Supplementary Components**

**Concrete Wall Finishes**: Smooth rubbed finish; latex paint.

**Painted CMU:** Exposed concrete unit masonry, finished with acrylic block filler and 2 coats of epoxy paint.

**Gypsum Board, Latex Paint:** Gypsum board with joints taped and finished; painted with 1-coat primer and 2 top coats of low-VOC latex paint.

**C2020 Interior Fabrications**

Simulated Stone Window Sills: Solid surface material, ½ inch thickness with built-up eased edge. Basis of Design Product: Corian.

## C2030 Flooring

**C2030.10 Flooring Treatment**

**Sealed Concrete:** Additional coat of clear sealer/dustproofer, specified as Concrete work.

**C2030.20 Tile Flooring**

**Porcelain Tile (Corridors)**: Unglazed porcelain paver tile; 24” x 48” tiles, provide crack isolation membrane. Base: 4 by 24 inch bullnose.

Large format porcelain tile

1. For sizes; 15 inches or larger.
2. Use large format tile (LFT) mortar; medium bed, with latex additive.
3. Install with control joints; align tile joints and slab cuts, every 20-25 feet.
4. Flatness; 1/8 inch in 10 feet.
5. Crack isolation membrane or waterproofing membrane at wet areas; full membrane installation, do not bridge slab cuts.

**Ceramic Tile (Restrooms):** Unglazed mosaic tile, 2" x 2", epoxy grout . Base: 4 by 8 inch bullnose.

**C2030.45 Wood Flooring**

**Wood Strip Flooring (stage):** Hard maple strip flooring with tongue-and-groove edges nailed to plywood subfloor. Finish after installation with stain and 3 coats water-borne urethane.

**C2030.50 Resilient Flooring**

B. **Linoleum (classrooms, academic corridors):** Linoleum Sheet Flooring: Linoleum sheet with backing, 0.08 inch thickness, with manufacturer's standard water based surface treatment to reduce maintenance.

1. Basis of Design Product (1st Floor): Forbo Flooring; Marmoleum Real.
2. Basis of Design Product (2nd Floor): Forbo Flooring; Decibel (impact sound reduction of 18dB).

C. Rubber Tile (Science Labs): Modular tile, 24 by 24 inches, 3 mm thickness.

1. Basis of Design Product: Nora flooring; Noraplan Environcare.

**C2030.70 Fluid-Applied Flooring**

D. **Epoxy Resinous Seamless Flooring:**

E. Resinous Flooring (Kitchen): Abrasion-, impact- and chemical-resistant, epoxy/urethane -based, monolithic floor surfacing including preparation, primers and finish coats, designed to produce a seamless floor and integral cove base.

1. Basis of Design Product: Dur-a-Flex; Dur-A-Quartz.

**C2030.75 Carpeting**

**Carpet:** Nylon broadloom, glued down.

1. Classrooms: $ [30 – 40] sq. yd. for materials
2. Library: $[30 – 40] sq. yd. for materials
3. Offices: $[30 – 40]/sq. yd for materials.

**C2030.80 Athletic Flooring**

**Wood Athletic Flooring:**

Wood Athletic Flooring (Gymnasium, Alt PE): Anchored resilient wood athletic flooring system consisting of 25/32-inch wide maple flooring over continuous subfloor sheathing on anchored wide body sleepers over resilient pads, with a system depth of 2-1/2 inches. Apply gymnasium floor finish and painted game markings.

2. Basis of Design Product: Action Floor Systems LLC; ProAir AR.

**Resilient Athletic Flooring (weight room):** Rubber floor tile. Vulcanized composition rubber and EPDM granules in both underlayment and wear surfaces with a wear and

weather resistant polyurethane. Slightly textures, standard 24” square interlocking tile, 2-3/4” thick.

Basis of design: Pliteq; GenieMat 70.

### C2030.85 Entrance Flooring

**Entrance Mat:** Extruded aluminum grille set in frame recessed in floor; Construction Specialties Inc. "Pedigrid." Provide manufacturer's standard foot-grille assemblies consisting of treads of type and profile indicated, interlocked or joined together by cross members, and with support legs (if any) and other components needed to produce a complete installation.

3. Basis of Design Product: Mats, Inc.; Dual Track.
4. Aluminum Foot Grilles: Provide manufacturer's standard foot grilles, bolt-through design, with extruded members, top-surfaced tread rails, and as follows:

**Entrance Mats:** See Part E, Equipment and Furnishings. 100% solution dyed, UV stabilized polypropylene carpet bonded to high density rubber backing to form mats 3/8- thick.

Basis of Design Product: Mats Inc.; Berber RB.

**Entrance Grilles and Frames:** Thin line “T” shaped extruded aluminum blades bolted together, suitable for recessed shallow-pit installation, nominal depth 1-1/2" to 2". "Ultra Scrape” by Mats, Inc.

a. Tread Rails: T-Shaped blades, 1-5/16 x 1/8 x 1-1/2 inch size, combined with T shaped blades 11/16 x 1/8” with anti-slip polymer C9065 insert.
b. Tread Rail Spacing: 1/8- to 3/16-inch- wide openings between treads.
c. Drying Insert: Nylon material.
d. Grille Size: As indicated, panels not to exceed 48” x 42”.

**Roll-up Entrance Mats:** Level-cut-pile nylon carpet, bonded to 1/8- to 1/4-inch-thick flexible vinyl backing, to form mats 3/8- or 7/16-inch-thick with nonraveling edges.

### C2030.90 Flooring Supplementary Components

**Resilient Wall Base:** Type TP (rubber, thermoplastic) cove base with toe, 4-inch high, coil lengths, and job formed inside and outside corners.

## C2040 Stair Finishes

*Steel components shop primed and field painted with alkyd paint system*

### C2040.50 Resilient Stair Finish

**Tread and Landing Finish:** Rubber tread covers, with rubber tile at landings.

### C2040.60 Terrazzo Stair Finish

Precast Terrazzo Units for Stair Treads (monumental & cafeteria stairs): Minimum 3/4-inch- thick, reinforced, portland cement terrazzo units. Comply with NTMA's written recommendations for fabricating precast terrazzo units in sizes and profiles indicated. Reinforce units as required by unit sizes, profiles, and thicknesses and as recommended by manufacturer. Finish exposed-to-view edges and reveals to match face finish. Ease exposed edges to 1/8-inch radius.

Basis of Design Product: Tectura Designs; Cementitious Tread Risers.

## C2050 Ceiling Finishes

### C2050.10 Plaster and Gypsum Board Finish

Suspended gypsum board assembly with joints taped and finished to Level 4; field painted with one coat latex primer and two finish coats of flat latex paint.

Exposed Structure: Shop-primed steel structure, galvanized metal deck; field painted with spray-applied latex flat dry fall paint.

## C2090 Interior Finish Schedules

| Room | Floor | Walls | Ceiling |
|---|---|---|---|
| Entrance Vestibules | Entrance Mat (see Part E) | Glazed storefront system. | 2 x 2 acoustical |
| Entrance Lobby | PCT | PCT Wainscot; gypsum board painted. | Partially open to above with exposed glulam beams & roof deck & 2 x 2 acoustical at lower ceiling areas |
| Corridors (Core, Arts, PE Wings) | PCT | PCT wainscot, latex paint above. | 2 x 2 acoustical |
| Corridors (Academic Wings) | Linoleum | PCT wainscot, latex paint above. | 2 x 2 acoustical |
| Classrooms | Linoleum (85%)<br>Carpet (150%) | Gypsum board, painted. | 2 x 2 acoustical, partially exposed acoustic deck at second floor |
| Labs (including STEM lab) | Rubber Tile | Gypsum board, painted. | 2 x 2 acoustical, partially exposed acoustic deck at second floor |
| Small Group Rooms | Carpet | Gypsum board, painted. | 2 x 2 acoustical |

| Room | Floor | Walls | Ceiling |
|---|---|---|---|
| Large Group Instruction | Carpet | Gypsum board, painted; wood panel | Exposed structure, painted |
| Media Center | Carpet | Wood Panel, Gypsum board, painted. | 2 x 2 acoustical (50%), exposed glulam and roof deck (50%) |
| Art room | sealed concrete | Gypsum board, painted. | 2 x 2 acoustical |
| Offices | Carpet | Gypsum board, painted. | 2 x 2 acoustical |
| Auditorium | Carpet (aisles), sealed concrete (seating, pit) | Wood panels, acoustic panel, gypsum board | Exposed structure, painted; sound directing panels |
| Stage | Wood | Gypsum board, painted. | Exposed structure, painted; sound directing panels |
| Band | Linoleum | Gypsum board, painted., acoustic panel | Sound diffusing panels |
| Chorus | Carpet | Gypsum board, painted., acoustic panel | Sound diffusing panels |
| District Office/IT | Carpet | Gypsum board, painted. | 2 x 2 acoustical |
| Cafeteria | PCT | Gypsum board, painted., acoustic panel | Wood slat ceiling at low ceiling area, exposed structure, painted |
| Kitchen | Epoxy Resin | Gypsum board, epoxy "tile-like" paint | 2 x 4 mylar faced |
| Culinary Arts | Sealed concrete | | 2 x 2 acoustical |
| Toilet Rooms | Ceramic mosaic tile. | Glazed ceramic tile | Washable ACT |
| Gymnasium | Resilient wood flooring | Wall pads, abuse resistant gyp, acoustic wall panel | Exposed structure, painted |
| Alt PE | Resilient wood flooring | Gypsum board, painted. | Exposed structure, painted |
| Weight Room | Rubber tile | Gypsum board, painted. | Exposed structure, painted |
| Locker Rooms | Rubber tile | Ceramic tile | Washable ACT |
| Mechanical rooms | Concrete, w/ sealer. | Painted CMU | Gypsum board, painted |

| Room | Floor | Walls | Ceiling |
|---|---|---|---|
| Storage rooms | Concrete, w/ sealer. | Unpainted CMU | Exposed structure. |
| Loading dock area | Concrete w/ sealer | Exposed structure. | Exposed structure |
| Core Stairs | Terrazzo | | |
| Academic Stairs | Rubber tread | | |

# D SERVICES

## D10 CONVEYING

### D1010.10 Elevators

Elevator: Elevators: One (1). Class A. MRL (Machine Room Less) traction elevator, 5,000 pound capacity,. .

Acceptable Manufacturers: KONE Inc., Otis Elevator Co, Thyssen Krupp, Mitsubishi.

Comply with the Massachusetts State Building Code as amended, and the Elevator Regulations of the Commonwealth of Massachusetts, 524 CMR 17.00.

1. Rated Speed: 150 fpm.
2. Number of Stops: Three at front.
3. Cab size to accommodate stretcher.
4. Operation System: automatic operation.
5. Auxiliary Operations:

    a. Standby-power operation (generator).
    b. Automatic operation of lights and ventilation fans.

6. Security Features: Card-reader operation.
7. Car Enclosures:

    a. Clear Inside Width: 6’-8” from side wall to side wall.
    b. Clear Inside Depth: 5’-5” from back wall to front wall.
    c. Inside Height: 7’-4” inches to underside of ceiling, or Manufacturer’s standard.
    d. Front Walls (Return Panels): Satin stainless steel, No. 4 finish with integral car door frames.
    e. Car Fixtures: Satin stainless steel, No. 4 finish.
        1) Side and Rear Wall Panels: Plastic laminate.
    f. Reveals: Satin stainless steel, No. 4 finish.
    g. Door Faces (Interior): Stainless steel.
    h. Door Sills: Aluminum, mill finish.
    i. Ceiling: Satin stainless steel, No. 4 finish.
    j. Handrails: 1-1/2 inch diameter, satin stainless steel, No. 4 finish, at sides of car.

# D SERVICES

## D20 PLUMBING

**Codes And Standards:**

248 CMR 10.00: Massachusetts Uniform State Plumbing Code

780 CMR, 10th edition (based on 2021 IBC with Massachusetts amendments).

Soil Gas Control Systems in New Construction of Buildings, ANSI CC-1000 (2017)

Massachusetts Fire Prevention Code 527 CMR

### D2000 General Design Considerations

Provide new plumbing systems for the new high school.

All products, equipment, valves, fittings and related appurtenances shall be approved by the Massachusetts Board of State Examiners of Plumbers and Gas Fitters.

Lead Content Limits: All applicable wetted components shall comply with the Safe Water Drinking Act (SWDA) lead reduction requirements of the Federal Reduction of Lead in Drinking Water Act – 2011.

**Scope of Work**

Scope of work will include the installations of new systems to accommodate the new building configuration. The plumbing systems shall be designed according to LEED v4 for Schools standards, with a goal of 30% water efficiency.

- Plumbing fixtures and trim.
- Domestic cold water and hot water distribution systems.
- Science classroom protected water systems and acid waste systems..
- Sanitary waste and vent systems.
- Kitchen waste and vent systems.
- Storm water drainage systems.
- Radon mitigation system.
- Foundation drainage system (by site)

## D2010 Domestic Water Distribution

### D2010.20 Domestic Water Equipment

**Water meter:** Type and style as required by the local water department, and sized for the peak intermittent demands of the building. Piping arrangement at meter installation to be as required by the local water department.

**Hose Bibbs:** Shall be chrome plated, wall mounted, with integral vacuum breaker, and loose key handle. They shall be located in each toilet room, and all rooms containing a floor drain.

**Wall Hydrants:** Freeze proof wall hydrants will be provided around the building. Locations and quantities will be coordinated with the owner to be in convenient locations. (The plumbing code minimum distance requirements between hose connections only applies to residential occupancies).

### D2010.40 Domestic Water Piping

**Cold Water:** The cold water supply system will be extended 10'-0" from the inside face of the building's foundation wall and connect to the water system supplied by the Town of East Longmeadow. A 6" domestic water service will enter the building at the water service room. The service entrance will be equipped with a strainer, water meter, and a Massachusetts approved 6" master reduced pressure backflow preventer downstream of the water meter. There is an existing meter pit on the domestic service to the existing school. The meter pit may be able to be re-used and will be further investigated in design development.

Additional backflow preventers will be provided as needed for equipment and systems such as HVAC equipment, ice machines, dishwashers and coffee makers.

Domestic cold water will be piped with lead-free type L hard-drawn copper with lead-free soldered joints. Domestic cold water piping will be insulated and distributed throughout the building serving all fixtures and equipment requiring cold water.

Provide a deduct water meter, Massachusetts approved 3" reduced pressure backflow preventer, shut-off valve and quick disconnect type fitting for blowing out site irrigation system.

**Hot Water:** Domestic hot water will be provided by two commercial electric water heaters in parallel. Water heaters will include a 20-year full warrantee. Each heater will be sized to provide 66% of the hot water demand. Water will be heated to 140°F. The 140°F water will serve the kitchen equipment. A central master thermostatic mixing valve will reduce the temperature to 120°F for delivery to all other fixtures demanding hot water throughout the school. Thermostatic mixing valves will be digital. Hand wash lavatories and showers will have integral temperature limit stops to provide a maximum of 110°F from the fixtures.

Emergency shower station(s) will need to be provided in the mechanical/boiler room and within the science/lab classrooms. The emergency equipment will be fed from the domestic hot water system with emergency thermostatic mixing valves provided at each emergency shower station.

Domestic hot water will be piped with lead-free type L hard-drawn copper with lead-free soldered joints. Domestic hot water piping will be insulated and distributed throughout the building serving all fixtures and equipment requiring hot water.

| Designation | Description | Operating Temperature |
|---|---|---|
| 140° | Domestic Hot Water (Kitchen, 140°F) | 140 Deg. F. |
| HW | Domestic Hot Water | 120 Deg. F. |
| | Public Lavatory Faucets (Tempered at faucet) | 110 Deg. F. |

**Hot water re-circulation:** Hot water supply piping shall be re-circulated from the remote ends of the system, and returned to the water heaters, to maintain system temperature. Re-circulation loops to be provided with stainless steel bodied circulator pumps, operated by immersion aquastats. Hot water will be circulated directly behind all lavatories and other low-flow fixtures.

The science classrooms will require a protected hot water, cold water, and hot water return system. The protected water systems will start downstream of the backflow preventers and the temperature in the piping will be maintained by a local electric water heater (loop re-heat).

**D2010.60 PLUMBING FIXTURES**

**General:** Plumbing fixtures will be equipped with the following water conserving features (for 30% indoor water use reduction-LEED- WE Credit).

Plumbing fixtures will be mounted in accordance with the plumbing code and industry standards. Fixtures designated as “accessible” will be mounted in accordance with the regulations of the Massachusetts Architectural Access Board (MAAB) and the Americans with Disabilities Act Architectural Guidelines (ADA). As required by MAAB or ADA, a percentage of water closets, urinals, lavatories, sinks, drinking fountains and showers will be made accessible.

Each fixture shall be connected to the piping with separate isolation valves for ease of maintenance.

**Water Closets:** Commercial grade, white vitreous china, wall hung, elongated bowl, 1.28 GPF, with exposed, sensor operated flush valve, and open front white plastic seat and self-sustaining check hinge. Fixture to be mounted on commercial grade, floor supported chair carrier.

**Urinals:** Commercial grade, white vitreous china, wall hung, 0.125 GPF, with exposed, sensor operated, flush valve. Fixture to be mounted on commercial grade, floor supported chair carrier.

**Lavatories:** Commercial grade, white vitreous china, under-mount type, with front overflow. Fixture to be provided with chrome plated hard-wired, sensor operated faucet, open grid drain, supplies with stops, and "P" trap. Faucet flow rates will be limited to 0.35 gpm. Those fixtures designated as accessible, are to have the exposed water and waste piping below the counter insulated.

Student toilet rooms will be provided with individual wall mounted, lavatories. Fixtures to be provided with chrome plated, temperature selecting and metering faucet, open grid drain, supplies with stops, and “P” trap.

**Sink:** MAAB/ADA stainless steel countertop sink with gooseneck faucet and 0.5 GPM aerator.

**Laboratory Sinks:** Faucets with vacuum breakers and 1.0 GPM aerators.

**Nurse’s room**: Commercial grade, 18-gauge, type 302 stainless steel, counter-mounted,with gooseneck faucet and wrist blades. Provide eyewash at sink.

**Science Labs:** Sinks within science classrooms and prep rooms will be integral with the counter. Lab sinks and faucets will be furnished by the casework contractor and installed by the plumbing contractor. Faucets will be provided with vacuum breakers and 1.5 gpm aerators. Each sink will be provided with a 5-gallon acid neutralizing chip tank below the counter.

**Showers:** Showers are to be constructed in place and be equipped with pressure balanced, single handle mixers. Shower heads to be institutional grade, adjustable type, 1.5 GPM flow. Accessible showers will be equipped with a standard shower head and a shower head mounted on a wall slide bar, with flexible supply hose.

**Drinking Fountains/Cooler:** Commercial grade, wall hung, stainless steel finish, self-containedelectric water cooler type, with bottle filler. Fixtures to be dual height to satisfy Massachusetts Architectural Access Board (MAAB) requirements.

**Janitors sinks:** Floor mounted mop service basins, molded plastic composition, with stainless steel grid drain. Provide with chrome plated mixing faucet, bumper guards on basin rim, and stainless steel wall splash guard.

**Emergency Plumbing Fixtures:** Emergency shower and eyewash units will be provided in areas where chemical and/or gas services are present and where chemical treatment of systems is performed. There will not be floor drains at emergency equipment. In mechanical rooms, emergency shower and eyewash units will be free-standingunits. In the nurse’s room, there will be an eyewash unit countertop mounted with a 90 degree swivel.

**Hose Bibbs:** Shall be chrome plated, wall mounted, with integral vacuum breaker, and loose key handle. They shall be located in each toilet room, and all rooms

containing a floor drain. Exterior Wall Hydrants: Shall be non-freeze type with integral vacuum breaker. They shall be strategically placed around the building and mounted approximately 18 inches above grade. One will also be provided on each roof with HVAC equipment on it.

### D2010.90 Domestic Water Distribution Supplementary Components

Insulation will be applied to cold water, hot water, hot water re-circulation, and horizontal storm drain piping. It will be continuous through supports and include a vapor retarding jacket. Cold water piping and storm water piping will be ½" thick. For hot water and hot water recirculation piping, insulation shall be 1" thick.

Exposed piping under fixtures designated for use by the handicapped shall be insulated with pre-molded insulation kits.

Insulation shields to be placed to protect insulation at pipe hangers.

Low-Emitting Materials: All insulation used interior to the vapor barrier will be specified to meet test standards of Indoor Advantage Gold or GreenGuard Children and Schools.

**Pipe and Fittings:**

**Buried Exterior Water Systems:** Class 52 cement-lined ductile iron pipe with restrained mechanical joints.

**Buried Interior Water Systems:** Type K copper with brazed copper joints.

**Above Ground Water Piping:** Type L copper with 95/5 soldered copper joints.

**Water valves:** Shut-off valves 3" and smaller shall be full-port ball valve, bronze body, chrome-plated bronze ball. Shut-ff valves larger than 3" shall be iron body, bronze mounted, inside screw, non-rising stem gate valve. Balancing valves shall be approved circuit setters.

## D2020 Sanitary Drainage

### D2020.10 Sanitary Sewerage Equipment

An exterior grease interceptor servicing the kitchen equipment will be installed by the site contractor with oversight from the plumbing contractor. The grease interceptor will be piped separately as described in section D2020.30.

The plumbing code also requires interior grease traps at specific fixtures. The kitchen waste from these fixtures will be connected together and flow through an interceptor. The quantity and locations will be developed during design development. It is assumed that two are required and they will be located within concrete pits below the slab.

### D2020.30 Sanitary Sewerage Piping

Piping to be designed to collect liquid wastes from all plumbing fixtures, equipment and drains requiring waste connections.

System to include atmospheric venting system, to maintain trap seals.

Electronically operated trap primer systems will provide make-up water to fixture and drain traps where necessary to maintain liquid trap seals.

Waste and vent piping shall be cast iron for piping 2-1/2" and larger. For pipe sizes 2" and smaller (excluded waste piping from urinals) piping shall be hard copper water tube, drawn temper, type M with wrought-copper, solder-joint DWV fittings.

Buried Storm, Sanitary, Waste and Vent: Cast iron bell and spigot with neoprene gasket joints.

All vent piping on the roof shall be kept at a minimum of 25'-0" away from any HVAC air intakes.

Several building drains will exit the building and connect by gravity drain to the site sanitary sewer system 10'-0" from the inside face of the building's foundation wall.

A separate kitchen waste system will be provided to collect waste from all kitchen sinks and equipment that discharge grease. The kitchen waste will be piped separately from the sanitary waste by gravity to discharge to an exterior grease interceptor Kitchen waste (and vent) piping to the exterior grease trap will be by the plumbing contractor.

The vent piping from the exterior grease trap will be provided by the plumbing contractor and routed back into the building and to the roof independent from the rest of the sanitary vent system.

Kitchen waste and vent piping will be cast iron.

**Point-of-use grease traps:** Grease traps will be provided to receive waste discharge from all grease-producing fixtures and equipment. The units will be PDI and ASSE approved and equipped with an automatic draw-off hose. Grease traps will be recessed in the floor.

### D2020.90 Sanitary Drainage Supplementary Components

**Indirect waste piping:** Indirect waste piping receiving cold liquid waste and subject to condensation will be provided with ½" thick insulation.

**Floor drains:** A floor drain will be required in all toilet rooms where more than one water closet/urinal is present. Floor drains will be of cast iron body construction, heavy duty grade, PDI approved. Those for use in toilet rooms and other finished spaces shall be have nickel bronze finishes.

## D2030 Building Support Plumbing Systems

### D2030.10 Stormwater Drainage Equipment

Open end drains will be provided for condensate collection. Each drain will be provided with a backwater valve and vent. The storm vent cannot connect to the conventional sanitary vent system, and will be run independently up through the roof.

### D2030.20 Stormwater Drainage Piping

The systems will collect discharge of storm water from all roof drains. Where possible, the routing will run directly from the roof drain locations, vertically down at building columns or chases and will be collected below the lowest floor slab and will exit the building in multiple locations and terminate 10'-0" from the inside face of the building's foundation wall where it will be continued by the site contractor.

Storm drainage piping shall be cast iron.

Secondary overflow roof drainage systems will be required. Secondary overflow drainage will discharge separately from the main storm drainage system through coordinated locations on the exterior face of the building between 18" above grade.

Secondary overflow storm drainage piping shall be cast iron.

Insulation will be applied to all (primary and secondary) horizontal storm drainage piping and roof drain bodies to prevent condensation. Insulation will be ½" thick and be continuous through supports and include a vapor retarding jacket. Insulation shields will be installed to protect insulation at pipe hangers.

### D2030.30 Facility Stormwater Drains

Roof Drains: Shall be cast iron construction, heavy duty, with flashing clamp for membrane roofing, under-deck clamping device, and aluminum domes.

## D2060 Process Support Plumbing Systems

### D2060.30 Gas Systems

Mechanical systems, kitchen equipment, domestic hot water heaters are all electric. A natural gas service for the school is not required.

**Radon:**

An underground radon mitigation system will be provided. (Confirmation is required during design development). The vent stacks from the underground system will rise within the building and terminate above the roof individually.

Plenum boxes will be required underground within the building footprint to help with the collection of Radon. Each vent stack will be located within 20 feet of its plenum box.

**Buried Radon Trunk Piping:** 6" perforated schedule 40 PVC plastic pipe.

**Radon Vent Stack Piping:** 6" schedule 40 PVC plastic pipe with fittings conforming to ASTM D 1785.

**Underdrain System Piping**: 6" perforated schedule 40 PVC plastic pipe.

**Energy and Water Conservation**

Refer to the LEED scorecard (Silver) for the energy and water conservation criteria, as they are part of design and construction objectives. Some aspects of this initiative, as they pertain to the plumbing systems, are listed below:

- Utilization of low-flow plumbing fixtures throughout the building, including 1.28 GPF water closets, 0.125 GPF urinals, 0.5 GPM lavatory faucets, sensor operated faucets and flush valves in common areas, 1.8 GPM shower heads and 1.5 GPM aerators on kitchen faucets.

- Enhanced 3rd party commissioning of systems, including water heaters and circulating pumps with commissioning agent is part of the construction process.

- Water heaters are a minimum of 94% efficient.

# D SERVICES

## D30 HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS

### D3000 Design Basis

Three HVAC system options were considered in schematic design as part of a 50-year life cycle cost analysis:

- Base System: Air Source VRF with packaged air source heat pump DOAS units and AHUs.
- Option M1: Geothermal system supporting distributed heat pump units, as well as DOAS units and AHUs.
- Option M2: Air source heat recovery chiller supporting water source loop supporting distributed heat pumps and packaged air source heat pump DOAS units and AHUs.

The Air Source VRF system was selected on the basis of best value for the proposed project.

**Air Source VRF System**

- Heating and cooling of Classrooms, Administration and similar spaces will be provided from VRF Heat Recovery type air source heat pumps.
- Ventilation for Classrooms, Administration and similar spaces will be from variable volume packaged DX heat pump DOAS units with VAV distribution (DCV).
- Large single-zone spaces will be served with variable volume packaged rooftop DX Heat Pump AHUs. This would apply to Gym, Cafe, Media, LGI.
- The Auditorium is proposed as a Displacement Ventilation system using a variable volume packaged rooftop DX Heat Pump AHU with backup electric coil.
- The kitchen and Culinary Arts will be supported by hood exhaust fans, a dishwasher fan and an associated makeup air unit.
- The Science Classrooms will be supported by common lab exhaust fans (one for each wing) with distribution through VAV air valves.
- A proprietary building management system (BMS) will be provided to monitor and manage the HVAC system and to monitor various energy meters provided with the electrical and plumbing systems.

### D3000.10 Reference Standards

Building Code: IBC 2021 with 780 CMR Massachusetts amendments.

International Mechanical Code 2021.

International Energy Efficiency Code 2021 with Massachusetts amendments for Stretch Code applies.

Guide Books of The American Society of Heating, Refrigerating and Air Conditioning Engineers.

### D3000.20 Outdoor Design Conditions

- Summer: 86°F.D.B./72°F.W.B. (78°F.W.B. for cooling tower selection).
- Winter: 2°F.
- Source: The Massachusetts State Building Code.

### D3000.30 Indoor Design Conditions

- Computer Rooms: 72°F.D.B, year round.
- Elevator Machine Room: Temperature range of 50-90°F (CMR 524).
- All Other Areas: 75°F in Cooling up to 60%RH; 70°F in Heating (no humidification).

Note: Installations requiring specific temperature and humidity control during construction (e.g., gymnasium floor) must be provided by the contractor as part of the installation.

### D3000.40 Outdoor Air Ventilation

Minimum outside air will be introduced as required by the greater of ASHRAE Standard 62.1, "Ventilation for Acceptable Indoor Air Quality", International Mechanical Code, or the requirement to make up exhaust air.

### D3000.60 Sustainable Design Measures

The project will be certified under the LEED Version 4 for BD+C: New Construction and Major Renovation – Schools certification process, and the following measures will be incorporated into the HVAC system design.

- Enhanced Commissioning of equipment and systems.

## D3020 Heating Systems

### D3020.70 Decentralized Heating Equipment

**Variable Refrigerant Flow (VRF) System:** Approximately 250 Tons capacity. Heating (and cooling) will be provided to the primary occupied spaces of the building through the use of a VRF heat recovery system, utilizing air cooled heat pump units to support a system of indoor evaporator terminal units. Cassette units will be used in corridors, selected offices and secondary spaces. Wall-mounted units or cassettes

will be used in stairwells. Ducted fan coil units will be used in classrooms, conference rooms and other spaces where the acoustic demands dictate their use.

- The roof-mounted heat pumps will be configured with frost protection (panel heaters or other), organized to facilitate maintenance access and supported by 24”-high roof rails.
- Branch controllers will be provided for each VRF zone for distribution to each fan coil, enabling to accommodate simultaneous heating or cooling across the various spaces in a given VRF zone.
- The VRF manufacturer’s control system shall be installed to support the operation of the system and will interface to the proposed BMS through a BACnet/IP connection.

### D3020.90 Heating System Supplementary Components

Electric unit heaters will be provided in selected back-of-house spaces, including storage areas, stairwells and loading dock.

An air curtain with electric heat will be provided at the loading dock door.

**Insulation**: Provide insulation for piping systems in accordance with Energy Code. Provide weatherproof jacket for all exterior piping.

## D3030 Cooling Systems

### D3030.70 Decentralized Cooling

The proposed systems will provide cooling to support the occupied spaces of the project, as described in section D3020.70, above.

### D3030.90 Cooling System Supplementary Components

Ductless split air conditioning units will provide dedicated cooling to data closets and to selected electrical rooms that have transformer loads equal to or larger than 75 kVA. The split units will be configured for low-ambient cooling and the air cooled condensing units will be mounted on the building roof, supported by 24”-high roof rails.

## D3050 Facility HVAC Distribution Systems

The following pipe systems shall be proposed, sized and installed in accordance with ASHRAE guidelines and requirements of the energy code.

### D3050.10 Facility Condensate Distribution

Cooling condensate drains shall be provided from each indoor evaporator terminal unit and with copper pipe, Type L with soldered or Pro-press type fittings. Piping shall be pitched to gravity drain locations provided by Plumbing and condensate pumps will be included where required. Condensate piping shall be insulated with ½" thick fiberglass insulation with FSK jacket.

### D3050.20 Facility Refrigerant Distribution

Refrigerant piping will be provided between the air-cooled condensing units or heat pumps and the associated indoor evaporator terminal units using Copper tubing, type ACR with brazed fittings. The piping shall be sized according to the requirements of the VRF or split system manufacturer based on their system requirements. All piping shall be insulated with closed-cell insulation in accordance with the energy code: 1-1/2" insulation thickness. Outdoor piping will include a weatherproof PVC jacket.

The configuration of the piping and the use of a two-pipe or a three-pipe system shall be based on the selected VRF system manufacturer. Manufacturer-specific fittings and connections system shall be provided as required by the selected system.

### D3050.50 HVAC Air Distribution

Galvanized (G90) sheetmetal shall be used for all distribution from rooftop units and fan coil units for supply and return ductwork, as well as for general exhaust installations.

Aluminum ductwork shall be used for dishwasher exhaust and for exhaust/return associated with the locker rooms.

Black iron ductwork shall be used for all kitchen hood exhaust systems.

### D3050.90 Facility Distribution Systems Supplementary Components

The piping systems testing, adjusting and balancing will be performed by an Air Balancing Contractor certified by either Associated Air Balance Council (AABC), or National Environmental Balancing Bureau (NEBB).

## D3060 Ventilation

### D3060.10 Supply Air

Conditioned ventilation supply air will be distributed using single-duct variable air volume boxes. Individual VAV boxes will be controlled according to the occupied schedule and/or using carbon dioxide sensors for demand controlled ventilation.

AHUs and DOAS Units described below will be standalone air source heat pump units, as follows:

**Air Handling Units** – Individual AHUs will serve the following zones.

- Gymnasium and Fitness – 16,000 cfm
- Cafeteria – 7,000 cfm
- Media Center – 4,000 cfm
- Large Group Instruction – 3,000 cfm
- Auditorium + Stage – 15,000 cfm (as displacement ventilation)

The air handling units will be configured as packaged DX heat pump units. Each AHU will be configured as follows:

- Roof-mounted air handling unit with double wall casing and 3" expanded foam insulation;
- Mixing box section with outdoor air intake and return air intake;
- MERV 10 and MERV 14 filters, unit mounted magnahelic gauges and DP switches for each filter bank;
- DX heat pump coil with associated high-efficiency heat pump section.
- Hot gas reheat coil
- Electric coil with SCR coil to accommodate heat pump defrost cycle.
- Supply fans with EC motor for single-zone VAV control.
- Return fans with EC motors for VAV operation.

**Dedicated Outdoor Air System (DOAS) Units** - Energy recovery units will provide the required ventilation and makeup air to the occupied spaces. The DOAS units will provide general exhaust and will also exhaust selected utility spaces and restrooms. The units will be based on packaged heat pump units to provide heating and air conditioning of the supply air. An energy recovery wheel will recover return air energy to condition the outdoor air prior to mechanically heating or cooling the supply air.

- Two (2) DOAS units as 17,000 CFM
- Two (2) DOAS units as 6,000 CFM

The units will include the following features.

- Double wall casing with 3-inch expanded foam insulation;
- 24"-high roof curb, insulated with vibration isolation;
- Supply Air Tunnel
    - Outdoor intake louver with intake section with motorized isolation damper, air flow measuring station and low-point drain for moisture that collects;
    - MERV 10 and MERV 14 intake filters, each with DP switches and outdoor magnahelic gauges;

    - High-efficiency energy wheel: minimum 80% summer/winter effectiveness;
    - Bypass dampers at the wheel on both the supply and exhaust air tunnels;
    - DX heat pump coil and hot gas reheat coil;
    - Electric coil with SCR control for full heat capacity during heat pump defrost cycles;
    - Supply fans with EC motors: minimum two fans with motorized isolation dampers;
    - Supply outlet with motorized isolation damper.
- Return/Exhaust Air Tunnel
    - Exhaust air inlet with motorized isolation damper;
    - MERV 10 air filter with DP switch and outdoor magnahelic gauge;
    - Common energy wheel with bypass dampers (described above)
    - Exhaust fans with EC motors; minimum two fans with motorized isolation dampers;
    - Exhaust section with motorized isolation damper and exhaust louver.

**Kitchen Makeup Air Unit** – Packaged heat pump unit providing conditioned outdoor air to the kitchen hood system as direct makeup. Units configured with intake louver/hood, MERV 8 and 13 filter section, DX coil, Hot gas reheat coil and Electric coil, variable volume supply fan and discharge plenum.

- Cafeteria kitchen – 3,000 CFM
- Culinary Arts kitchen – 3,000 CFM

**D3060.20 Return Air**

Return air associated with AHU installations will be ducted from the space served to the AHU.

Return air associated with DOAS units will be ducted from the zones served through the use of exhaust VAV boxes. The exhaust VAVs for classroom wings, as well as Administration and Guidance areas, shall be sized to provide zone return, not dedicated to individual rooms. For zones with common restrooms, dedicated exhaust VAVs will be provided to support the restrooms. The VAV boxes will be controlled to track the operation of the supply VAV boxes to maintain the building pressurization as positive (0.01 – 0.05" w.g.).

**D3060.30 Exhaust Air**

A roof exhaust fan will be provided to serve the Art Room kiln installation. A canopy hood will be provided for the kiln and the fan will be temperature controlled, based on a temperature sensor mounted in the hood.

**D3060.90 Ventilation Supplementary Components**

**Cafeteria Kitchen:** A dedicated, roof-mounted upblast grease-type exhaust fan (4,000 cfm) will provide kitchen hood exhaust.

**Culinary Art Kitchen:** A dedicated, roof-mounted upblast grease-type exhaust fan (4,000 cfm) will provide kitchen hood exhaust.

**Kiln:** A dedicated exhaust fan (500 cfm) will be located on the roof. A stainless steel canopy hood will be provided for heat and odor capture above the kiln.

**Labs:** Provide two (2) 3,000 cfm lab exhaust fans with modulating bypass inlet and 10 ft stack. Science classrooms in the east and west classroom wings will each be served by a lab exhaust fan providing 3,000 cfm of lab exhaust to the 1st and 2nd floor science room plus prep room suites. Variable volume air valves will be used for exhaust distribution to fume hoods and general exhaust in Prep Rooms and the Chemical Storage Room.

The air systems testing, adjusting and balancing will be performed by an Air Balancing Contractor certified by either Associated Air Balance Council (AABC), or National Environmental Balancing Bureau (NEBB).

## D3090 Automatic Temperature Controls

The building management system will be based on a StruxureWare DDC system (Schneider Electric) to match the current system used town-wide in East Longmeadow. The system shall provide control, monitoring, alarming and trending of the proposed HVAC systems through the building ethernet network. A graphic user interface will provide representations of the systems and equipment, accessible through the site operator workstation and through web interface.

Equipment with packaged controls shall interface with the proposed BMS through BACnet communications bus connections. BACnet/IP is a preferred alternative to BACnet MSTP.

The kitchen ventilation system will be controlled through a Demand Controlled Ventilation system.

The system will support monitoring of third-party systems associated with Plumbing and Electrical installations, including:

- Emergency Generator
- Lighting Control System
- Plug Load Management System
- Electric submeters (part of Measurement and Verification)
- DHW Heaters
- Gas meters
- BTU meters
- Water meters
- DHW Mixing Valves
- DHW Recirculation Pumps
- Sump or Ejector Pumps

Gas, Water, Electric and BTU Meters will be recorded and totalized as part of the proposed Measurement and Verification plan, which will comply with LEEDv4.

## D SERVICES

## D40 FIRE-PROTECTION

**Codes and Standards:**

780 CMR, 10th edition (based on 2021 IBC with Massachusetts amendments).

527 CMR: Board of Fire Prevention Regulations (based on NFPA 1, 2021 edition with Massachusetts amendments).

NFPA codes and regulations

### D4010 Fire Suppression

#### D4010.10 Water-Based Fire-Suppression

**Wet-Pipe Fire Sprinkler System:**

The facility will be protected throughout with an automatic wet sprinkler system. A new 8-inch fire protection main will be extended from Maple Street onto the site. A fire protection loop will be installed around the building with a new 6-inch service entering the school at a perimeter water/fire service room. The system will also include wet alarm valve assemblies and/or floor control valve assemblies serving each of the sprinkler zones.

The sprinkler system will be separated into multiple zones per floor for the purposes of monitoring water flow. Six zones are anticipated. These consist of four zones for the first floor, and two for the second floor. For the first floor, the zones will be broken out with the auditorium wing, the gymnasium wing, and the two classroom wings all having its own floor control valve. The second floor zones will consist of two classroom wing zones. It is anticipate

Light Hazard areas will include: Office areas, general classrooms, auditorium, computer labs, commons, library and cafeteria seating. These systems will be designed with a density of 0.10 gpm/sf over 1500 square feet. The maximum sprinkler spacing is 15' x 15' (225 square feet). Calculations will include an exterior 100 gpm hose stream.

Ordinary Hazard Group 1 areas will include: Storage areas, mechanical rooms, gymnasium, kitchen food prep, science rooms, data and electrical rooms. Ordinary Hazard classification areas shall be protected at a rate of 0.15 GPM per square foot over the hydraulically remote 1,500 square feet. The maximum sprinkler spacing is 10 feet by 13 feet (130 sf). The hose stream allowance is 250 gpm (combined inside and outside hose).

Ordinary Hazard Group 2 areas will include the stage and any heavy shop classrooms. These areas will be designed for 0.20 gpm/sf over 1,500 square feet. The maximum coverage per sprinkler is 130 square feet (10'x13'). The hose stream allowance is 250 gpm (combined inside and outside hose).

Areas of the building that will not be provided with wet sprinkler protection are:

- Areas above suspended ceilings (noncombustible concealed spaces)
- Main Electrical Room
- Elevator shafts and pits
- Elevator machine rooms
- Emergency electrical closets

**Sprinklers:**

In areas with suspended acoustical ceiling or gypsum board ceiling, sprinklers will be concealed type with a white cover plate.

Provide custom color cover plates for areas with special or ornamental ceiling finishes.

In mechanical rooms, and other unfinished areas, sprinklers will be specified as exposed uprights, with a brass finish.

Sprinklers for areas subject to freezing shall be dry type, including but not limited to: Walk-in coolers and freezers.

### D4010.20 Dry-Pipe Fire Sprinkler Systems

Areas subject to freezing will be provided with dry pipe sprinkler systems. Dry sprinkler systems will be provided throughout the receiving area and other areas that cannot be maintained above 40 degrees F.

Each system will include a dry alarm valve assembly and an air compressor sized to fill the system with air to 40 psi within 30 minutes.

### D4010.50 Standpipes

**Standpipes:** The new school has full fire department access around the building. In addition, the highest occupied story is less than 30 feet above the lowest level of fire department access. Therefore, standpipes are not required by the building code. Coordination with the East Longmeadow Fire Department is required to confirm that fire department valves are not needed for typical fire-fighting operations.

### D4010.80 Fire Protection Equipment

The fire suppression system will include a fire department connection at the fire service location. The fire department connection shall be flush-type Storz connections, with threads to match the East Longmeadow Fire Department standards.

A horizontal double check valve assembly will be provided on the new fire service. This device will be ASSE listed and Massachusetts State approved.

A free standing post indicator valve will be provided outside the building, on the fire main. An alternate would be a wall type post indicator valve.

### D4010.90 Fire Suppression Supplementary Components

**Fire Pump:** A hydrant flow test was performed on April 5th, 2023. Two tests were performed. The first test included a gauge hydrant (#3070) and a flow hydrant (#3070) on Maple Street. The test resulted in a static pressure of 92 psi and a residual pressure of 88 psi while flowing 1030 gpm. The second test resulted in similar pressures (slight different for elevation) but the flowrate was only flowed 450 gpm. Based on the pressure/flow rate available, preliminary calculations show that a fire pump is not required. Final confirmation will be determined/confirmed during design development.

**Drains:** Provide drain lines for the system main drains and sprinkler floor control valve assemblies. Where practical, drain lines will tie together in a common header. Drains and associated drain headers shall discharge to hub-drains, or to the exterior of the building.

## D4030 Fire Protection Specialties

### D4030.10 Roof Manifolds

Refer to the standpipe section of this specification. Since standpipes are not required, roof manifolds are not required. Final determination requires coordination with the East Longmeadow Fire department as roof manifolds may be desired for typical fire-fighting operations. If requested, the 100 psi minimum flow rate will be provided by the fire department through the fire department connection.

### D4030.30 Fire Protection Cabinets and Extinguishers

Both sides of the stage will be provided with fire department hose connections. Since the building is equipped throughout with an automatic sprinkler system, the hose connections will consist of 1 1/2-inch hose connection installed in accordance with NFPA 13. Both valves will be installed within a fire hose cabinet. The requirement for hose and hose lengths will be coordinated with the East Longmeadow Fire Department.

Fire Extinguisher Cabinets: Fully-recessed cabinet; painted steel trim and door with full-glass panel, DSA glass. Baked enamel primer finish; field painted. Fire extinguishers and cabinets will be provided by the general contractor and located to meet the requirements of NFPA 10.

### D4030.50 Wet Chemical Fire Extinguishing Systems

Wet chemical fire extinguishing systems will be provided at kitchen exhaust hoods by the kitchen equipment contractor.

## D4040 Materials

### D4040.10 Pipe and Fittings

Sprinkler piping 2" and smaller to be Schedule 40, black steel with black cast iron screwed fittings or roll-grooved joints..

Sprinkler piping 2-1/2" and larger to be Schedule 10 black steel pipe, roll grooved, with grooved end fittings. (Schedule 40 with grooved or threaded joints is also acceptable.)

### D4040.20 Valves

Gate valves 2-1/2" and larger to be iron body, bronze mounted, taper wedge, outside screw and yoke, rising stem and flanged ends. Indicating valves to be butterfly type, bronze type with grooved ends. All shut-off valves to be FM approved type, and be equipped with supervisory tamper switches. These switches along with the flow switches shall be monitored by the building fire alarm system.

All test valves shall be at the remote ends of the systems to facilitate system flushing.

# D SERVICES

## D50 ELECTRICAL

### D5010 Codes and Standards

527 CMR 12.00 - National Electrical Code NFPA 70 2023 with the Massachusetts amendments

National Fire Alarm and Signaling Code NFPA 72 2022

780 CMR 10th Edition - International Building Code 2021 with Massachusetts amendments

225 CMR 23.00 - International Energy Conservation Code IECC 2021 with Massachusetts amendments

### D5020 Electrical Service and Distribution

#### D5020.10 Electrical Service

Currently, there are (4) four total individual electrical services provided and terminated at school's area. They are supporting the existing school building itself, the existing tennis courts, the existing stadium, and the existing stadium's scoreboard. All four service are provided by the local Utility Co., National Grid.

**Existing School Building Electrical Service**
The service originates at existing utility pole on Maple Street, extends overhead via one pole along the school's access road and continues undergrounds towards the existing pad-mounted transformer, owned and maintained by National Grid. The transformer has a 277/480v 3ph 4w secondary voltage configuration. The transformer's secondary feeders run underground towards the school building and terminate in the Main Electric room at the 1,200 Amp 277/480v 3ph 4w Main Distribution panel. This electrical service will remain energized until the new school building is constructed and the new school building service is activated, then it shall be disconnected and removed entirely with associated transformer and primary/secondary feeders during the respective existing school's demolition phase.

**New School Building Electrical Service**
The new school building service will be provided by National Grid, as adequate to accommodate the new school building program.

The new electrical service will originate at the new utility pole on Maple Street, and will extend towards the new pad-mounted transformer via a new utility pole provided by the utility company and an underground duct bank provided by the Contractor. The duct bank will consist of (2)-4 inch concrete-encased PVC conduits installed per National Grid standards.

Utility company will provide the primary service feeder cable from the riser pole to the pad-mounted transformer, including terminations on both ends.

The new electrical transformer will be furnished, installed, owned and maintained by National Grid, and will be located adjacent to the building near the Main Electric room.

The transformer will be of the pad-mounted type with primary voltage rating to match utility company distribution voltage in the area, and secondary voltage of 277/480 volts 3ph 4w. The transformer will be sized by National Grid based on load data provided by SMMA.

Concrete pad and grounding for new pad-mounted transformer will be provided by the Contractor per the utility company standard.

Secondary service feeders of the copper conductors will be installed by the Contractor underground in concrete-encased PVC conduits from the pad-mounted transformer to a pad-mounted Transclosure Cabinet, serving as a Point Of Interconnection (POI) between the utility service, the photovoltaic system components (the PV system Switchboard and Battery Storage), and the new school Main Switchboard.

The utility service will be metered at the transformer secondary voltage. The utility metering CTs will be installed in the pad-mounted transformer enclosure (to be finalized with National Grid) per Utility Co. standard.

**Existing Tennis Courts Service**
Existing 200 Amp 120/240v 1 phase 3 wire Utility Service wiring, metering/main distribution equipment and branch wiring to lights will be modified to accommodate site layout revisions as outlined on electrical site plan (scope to be finalized).

**Existing Stadium Service**
Existing 600 Amp 120/240v 1 phase 3 wire Utility Service wiring, metering/main distribution equipment and branch wiring to lights and other stadium loads will be modified to accommodate site layout revisions and stadium scope as outlined on electrical site plan (scope to be finalized).

**Existing Stadium Scoreboard Service**
Existing 200 Amp 120/240v 1 phase 3 wire Utility Service wiring and metering equipment will be modified to accommodate site layout revisions as outlined on electrical site plan (scope to be finalized).

**Communication services**
Along with new school building service (4)-4 inch conduits for communication service providers' use will be installed from the new utility pole (scope to be finalized). Conduits will be extended to the building via underground concrete-encased duct bank and terminated in the MDF room. Separation between electrical duct bank and communication conduits shall be at least 12 inches.

Pre-cast concrete manholes sized per service providers' standards will be provided along the duct banks in quantities as required for service cable field installation.

### D5020.20 New School Building Electrical Design Load

The New School building connected electrical load estimate is based on preliminary building systems design:

| Location | Load |
|---|---|
| Exterior Lighting | 20 KVA |
| Interior Lighting @<0.5W/SF | 95 KVA |
| Computer Power @1W/SF | 190 KVA |
| Convenience Power @1W/SF | 190 KVA |
| Heating/Air-Conditioning, Ventilation, all electric @7.5VA/SF | 1,430 KVA |
| Plumbing equipment, all electric | 525 KVA |
| Kitchen, all electric | 300 KVA |
| Miscellaneous Loads: Gym equipment, overhead doors, etc. | 50 KVA |
| Elevator, 30HP | 35 KVA |
| Compactor (allocated as "future" provisions) | 15 KVA |
| EV Dual Charging Stations, (5) initial and (20) additional as "provisions for future EV" connections | 165 KVA |
| Auditorium Theatrical LED Lighting | 30 KVA |
| Telephone/Data systems: IDF/MDF/Server room equipment | 40 KVA |
| PA, Security and Fire Alarm systems | 20 KVA |
| Outdoor Scoreboards, Pitching machines, etc. | 20 KVA |
| **Total Connected Load** | **3,125 KVA** |

The **Total Demand Load**, assuming the **non-simultaneous equipment operation**, can be estimated approximately as 60% of Kitchen Equipment, 100% of Interior and Exterior Lighting and 70% of the remaining Connected Loads - **2,192 KVA**, or 2,640 Amp at 277/480 volts 3 phase 4 wire power system.

A 4,000 Amp 277/480V 3 phase 4 wire Main Switchboard equipped with a 4,000 Amp 100% rated main circuit breaker will be provided.

The recommended size of the pad-mounted transformer supplied by the National Grid is 2,500 KVA. Projected new building loads will be submitted for evaluation to the National Grid Customer Department, and the new outdoor transformer will be sized/supplied by the National Grid based on their own calculations, standards and protocols.

### D5020.30 Main Electrical Service Equipment

Main Electrical Switchboard: Fully metal enclosed, dead front, front- and rear- aligned, front- accessible only, NEMA1 indoor type, in compliance with UL 891, with a main protective device, and the distribution sections for the feeder protective devices. Switchboard sections will be designed for placement against a wall.

The switchboard will be rated for 4,000 Amps (size to be finalized) at 480Y/277 volts, three phase, four wire, and will be provided with tin-plated aluminum phase and neutral bus bars, and copper equipment ground bus.

Main protective device will be an insulated-case circuit breaker (ICCB), individually fixed mounted, 4,000 Amp, 100% rated, with a solid state trip unit capable of adjusting long time, short time, and ground fault protection characteristics. Switchboard will include an arc energy reduction maintenance switch (ARMS) with a local indicator for a main circuit breaker.

Feeder protective devices will be thermal-magnetic type molded case circuit breakers, but an electronic trip will be furnished for the devices 250 Amp and larger.

The switchboard will be furnished with a service entrance transient voltage surge protection device (SPD) rated 240 kA and digital metering unit to monitor voltage, current, power factor, demand kW and with a data communication port for interface with DDC (BMS).

The main switchboard's short circuit rating will be coordinated with National Grid, but preliminary it is estimated to be 65 KAIC.

**D5020.40 Power Distribution**

Electrical power distribution equipment will be installed in the Main Electric room, Emergency room, and in the downstream electric rooms and closets, as outlined on preliminary Power One-Line Diagram and architectural floor plans.

Electrical power distribution equipment will support the building interior and exterior loads including lighting, “small power” loads, kitchen equipment, mechanical and other loads in respective building areas and outdoor loads associated with the school. “Normal” or “Standby” power source will be supplied to loads from respective electrical panels based on their “critical” status (e.g.: all heating system equipment associated with the building “freeze control” will be powered by the “Standby” power source).

The Main Electric room will house the Main Switchboard, the 277/480 volts 3 phase 4 wire Power Distribution and “Mechanical” panels, the 277/480 volts 3 phase 4 wire Lighting panels, and the 120/208 volts 3 phase 4 wire double-tub MCB “small power” panels wired via associated dry-type transformers. Additionally, there will be transformers supplying power to the kitchen panel and Auditorium “Performance Lighting” Dimmer cabinets.

Typical downstream electric rooms will house the “Normal” and “Standby” 277/480 volts 3 phase 4 wire Power Distribution panels, “Mechanical” panels, Lighting panels, and 120/208 volt 3 phase 4 wire double-tub “Small power” panels wired via associated step-down dry-type transformers.

Dedicated receptacle panelboards will be equipped with SPD devices with surge current ratings of 80 kA per mode. K-rated transformers with electrostatic shielding are required to accommodate operation of the electronic/computer equipment in the office areas. The SPD devices will be also provided for panels supporting “emergency Life-safety” loads.

Gym equipment (basketball backboard operators, shot clocks, scoreboards, electrically-operated divider curtain, etc., scope to be finalized), Auditorium stage equipment, motorized window treatments, door operators, A/V equipment, etc. will be powered from electrical panels installed in respective areas.

Kitchen refrigeration equipment will be power fed from "Emergency Standby" power panels. Emergency Power Off (EPO) button will be provided for emergency power off function. The kitchen panel MCB will be equipped with shunt trip and tied to the kitchen fire suppression system control panel.

"Critical" loads such as sewage pump station, heating system equipment, HVAC serving the IDF/MDF rooms, elevator, etc. will be power fed from "Emergency Standby" power panels.

Five (5) EV Dual charging stations will be furnished and installed at designated spots of the parking lot. They will be wired to the school power distribution system. Additionally, power for twenty (20) "future" EV Dual charging stations will be provided from school power distribution system and terminated in in-ground handholes at designated spots of the parking lot.

Power monitoring system will be provided and arranged such that in addition to monitoring the entire building utility service, the "normal" and "emergency" lighting systems, plug-in loads and large pieces of mechanical equipment located indoor and outdoor could be sub-metered individually and/or by building areas. Power sub-meters recording consumption and demand will be tied into the building DDC system for monitoring. Sub-meter will be provided for all individual energy end uses that represent 10% or more of the total annual consumption of the building.

The infrastructure will be provided to take advantage in future of the Utility Co Demand Response programs or dynamic, real-time pricing program. A comprehensive plan for shedding at least 10% of building estimated peak electricity demand will be developed.

Proposed manufacturers for the electrical power distribution equipment are: General Electric, Square D, Cutler-Hammer and Siemens.

**D5020.70 Grounding**

All exposed, non-current carrying metallic parts of electrical equipment, the raceway system, and the neutral conductor of the wiring system will be grounded in accordance with the Electrical Code.

A ground bus will be provided in the Main Electric room. It shall terminate electric service grounding conductor to the main switchboard ground bus, grounding electrode conductors to the water service pipe and building structural steel, and a conductor to the ground bus in the communication closet.

Separate copper equipment grounding conductor with green outer jacket will be installed with all feeder and branch circuits.

Grounding cable connections to structural steel, grounding rods and other grounding cables will be of the thermal fusion type. Grounding rods will be copper clad steel, 5/8-inch diameter.

### D5020.90 Interior Electrical Dry-type Transformers

Interior electrical dry-type transformers shall be provided to reduce 480 volt, three phase interior distribution voltage to 208Y/120 volts for small equipment power requirements and convenience outlets. Transformers shall be general purpose dry type, air cooled, with indoor ventilated steel enclosure, energy efficient and shall comply with NEMA standard ST 20 and TP-1. Where required to accommodate computer equipment and other non-linear type loads, the transformers shall be K-13 factor rated, and be provided with an electrostatic shielding.

## D5030 General Purpose Electrical Power

### D5030.10 Branch Wiring System

Electrical Branch Wiring: In general, wiring will be insulated conductors installed in metal conduit or metallic tubing run concealed in the finished areas or exposed in the unfinished areas such as a penthouse, mechanical and electric rooms. Minimum conduit size will be 1/2 inch.

Metal clad MC type cable may be used for branch circuit wiring above suspended ceiling and in dry wall partitions. MC type cable shall not be used for the branch circuit homeruns. MC type cable shall not be installed exposed in unfinished areas such as a penthouse, utility and electric rooms.

All conductors smaller than 150 Amp will be copper , 75 degree C insulation, type XHHW or THHN/THWN rated 600 volt. Minimum wire size for power and lighting circuits will be # 12 AWG. Control wiring conductors will be # 14 AWG. Conductors rated 150 Amp and larger shall be aluminum.

Underground conduits or conduits installed under concrete slab shall be PVC Schedule 40. Conduits exposed to weather will be rigid steel and painted.

### D5030.50 Wiring Devices

Duplex receptacles will be heavy duty, specification grade, grounding type, rated 20 Amp at 120 volt, UL listed. Duplex receptacles will be of ground-fault type (GFCI) and weather-proof (WP) types where required by the Code. Tamper resistant type will be provided in all educational and common areas accessible by students.

Quantity of the duplex receptacles in the classrooms, labs, Gym, Media center, Art rooms, Music rooms, offices and other spaces will be as required by the specific area programs.

Minimum of 50% of receptacles (“plug-in loads”) will be controlled by local occupancy sensors or an automatic time-scheduled control system. Dedicated “NC” Non-Controlled receptacles will be provided to accommodate uninterrupted power to “critical” loads and equipment such as laptop charging stations and IT/MDF equipment.

Convenience outlets will be installed in the corridors and other common areas with spacing up to 50 ft.

Quantity and type of the receptacles in the kitchen will be determined by the kitchen equipment design.

Toggle switches will be 20 Amp at 120/277 volt, specification grade, UL listed.

Floor boxes with the duplex receptacles and data jacks may be utilized if required to provide services to the stations in the open areas (Media Center, Art, etc.).

Two-compartment surface-mounted metal raceways (equal to Wiremold 4000) will be installed in the areas where a high density of the receptacles and data outlets is required.

### D5030.90 General Purpose Electrical Power Supplementary Components

**Motor Controls:** Motor control centers and/or individually enclosed combination motor starter/disconnect switches will be provided for the control and overload protection of three-phase motors as required by Massachusetts Electrical Code 527 CMR. Motor starters will be magnetic type and have overload relays in each phase for three phase motors, hand-off-automatic selector switch, and control power transformer. Motor starters will comply with ANSI and NEMA standards.

**Enclosed Safety Switches:** Individual heavy-duty type switches in NEMA 1 for indoor and NEMA 3R for outdoor applications will be provided where equipment disconnecting means are required in accordance with 527 CMR, Massachusetts Electrical Code.

**Electrical Branch Circuit Panelboards:** Electrical branch circuit panelboards will be dead-front type with thermal-magnetic molded case circuit breakers. Panelboards will be provided with (tin-plated)(copper) phase and neutral busses and copper equipment ground bus. Neutral bus 200% rated shall be specified for the panelboards where substantial non-linear type loads are present. Panelboards will be rated 480y/277 volts, three phase, four wire for power and lighting loads and 208y/120 volts, three phase, four wire for small power and convenience outlets. All panelboards will be underwriters laboratories (ul) listed and labeled, and comply with NEMA standard PB1 for panelboards.

## D5040 Lighting

### D5040.10 Lighting Control

Wireless type dimming and multi-scene lighting control stations will be provided throughout for local means of controls. The manual means of controls will be supplemented with automatic controls, consisting of occupancy sensors, photocells (daylight sensors) and the wireless networked digital time-programmable lighting control system, as applicable to specific building areas.

Classrooms, labs, administration offices, conference rooms, bathrooms, storage rooms, teacher rooms and similar spaces will be equipped with occupancy sensors and photocells.

For the building areas without occupancy sensors control, the wireless networked digital time-programmable lighting control system will facilitate automatic lighting shutoff on a scheduled basis with an occupant override.

Dedicated emergency egress lights will be controlled via the programmable lighting control system with an "emergency by-pass" arrangement. These lights will turn OFF during unoccupied hours, however, irrespective of their "on-off" status, they will turn ON automatically during the utility power loss event, or upon the building fire and security alarm systems activation.

Lighting control system will be designed and installed in compliance with the referenced International Energy Conservation Code and LEED for Schools requirements.

Lighting control system will be tied into the building DDC (BMS) system.

### D5040.50 Lighting Fixtures

**PROPOSED ILLUMINATION LEVELS**

| Location | Average Illumination Levels |
|---|---|
| Classrooms | 40-45 FC |
| Offices, Conference Rooms, Media Center | 35-45 FC |
| Kitchen | 40-50 FC |
| Gymnasium | 45-50 FC |
| Dining | 30-40 FC |
| Corridors | 20-25 FC |
| Utility and Storage Rooms | 20-25 FC |

The intent of the lighting design is to provide a visual environment for the students and faculty that is supportive of the educational activities within the building. The lighting system will be designed in compliance with the applicable Energy Code and potentially be eligible for the Utility Co, National Grid's rebate program.

Interior lighting illumination levels will meet the IESNA recommended values for applicable activity type, and will be in compliance with the referenced International Energy Conservation Code energy allowances and control requirements.

In general, lighting design will incorporate the high-efficiency interior lighting fixtures. The LED linear fixtures, LED downlights and LED decorative lights will be provided throughout.

Lighting in classroom, labs and similar educational spaces: continuous rows of the direct/indirect pendant mounted LED fixtures, supplemented with the teacher wall-mounted linear LED fixtures where appropriate, controlled by the local dimmers and/or switches and wired via occupancy sensors. In addition, the ambient daylight sensors

will be provided for automatic dimming control of light fixtures located adjacent to the exterior windows.

Lighting in the administration area offices, teacher support areas, and in the similar areas will be LED recessed 2' x 2' and 2' x 4' of the direct/indirect type, gradually dimmed or multi-switched, controlled by local dimmers and/or switches, wired via occupancy sensors and daylight sensors, where applicable.

Corridor lighting fixtures will be linear recessed LED fixtures 6" x 4' and 6” x 6’, supplemented by the LED downlights. Stairways will mostly have wall mounted LED linear lights.

Lighting in the kitchen, servery and culinary will be LED 2' x 2' and 2' x 4' with prismatic lens.

Gym lighting will include a grid of pendant mounted round or 2’ x 4’ LED lights, controlled by local switches and occupancy sensors. In addition, the ambient daylight sensors will be provided to control fixtures located adjacent to the exterior windows.

Lighting in the Cafeteria, Media Center, and LGI will be a combination of the LED pendants and ceiling recessed LED downlights, supplemented with wall-mounted LED sconces where applicable. These fixtures will be provided with dimmers and/or switches. In addition, the ambient daylight sensors will be provided to control fixtures located adjacent to the exterior windows.

Auditorium will be equipped with a dedicated Theatrical Lighting system allowing for performances and lecture presentations. The system will consist of lighting dimmer cabinets, performance type track-mounted LED multi-color lights located in front of and at the stage, “house” lights above the seating area, and dimming and multi-scene pre-set stations. A separate set of “general use” LED lights will be provided at stage for maintenance tasks operated on a separate manual controls.

The overall lighting design goal is to achieve the LPD (Lighting Power Density) of 0.5W/SF or less.

All interior lights will be controlled by a networked digital time-programmable lighting control system, occupancy sensors and photocells (daylight sensors), as applicable.

Exit signs and egress lighting will be connected to the emergency power distribution system to provide illumination level required by Code for emergency egress in a case of normal power failure.

Lighting system and controls will comply with the requirements of Massachusetts Building Code, Chapter 13 Energy Conservation.

### D5040.90 Exterior Lighting

New energy-efficient exterior lighting system will consist of building-mounted lighting fixtures at egress doors and pole-mounted lights for parking lots, roadways and walkways. All exterior fixtures will be vandal resistant, enclosed, listed for wet locations and with full cut-off light distribution.

Pole-mounted lights will be of dimmable LED type with house side optics as appropriate for installation adjacent to property lines. The fixtures mounting heights, types and locations will be selected to avoid glare and light spillover beyond the property line.

Building-mounted lighting fixtures will be of dimmable LED type and will be wired to emergency generator power system.

Site lighting system for parking lots and roadways will provide a minimum maintained lighting level 0.5 FC at grade level, and 1FC minimum maintained for walkways.

The system will comply with energy use limitations per Massachusetts Building Code and referenced International Energy Conservation Code. Light fixtures and lighting levels will be designed in accordance with IESNA recommendations, in compliance with East Longmeadow zoning by-laws and LEED for Schools requirements, including Reduced Energy and Light Pollution credits.

All exterior lights will be controlled by the new networked programmable lighting control system and a photocell for additional energy savings.

Exterior lighting will be tied into the building DDC (BMS) system for monitoring and time schedule overrides.

## D5060 Power Generation

### D5060.10 Packaged Generator Assemblies

The generator power system has been sized to support emergency (life safety) and standby building loads.

1. **Emergency Life-safety power loads, as required by the Code**:
   Emergency egress lighting (interior and building exterior at exit doors) - 50 KVA
   Fire alarm system and BDA communication system - 5 KVA
2. **Emergency Standby power loads**:
   Limited lighting and small power in administration offices and nurse/medical area, and dedicated bathrooms - 15 KVA
   Heating system equipment associated with building freeze prevention in all building areas, on selective controls - 450 KVA
   Cooling system equipment associated with IDF/MDF/electric rooms - 50 KVA
   Kitchen refrigeration equipment - 80 KVA
   Refrigeration equipment outside of the kitchen – 20 KVA
   Elevator power, lighting and controls - 35 KVA
   Sewage ejection, sump pumps with controls, heat trace, etc. – 25 KVA
   Water service booster, if required – 10 KVA
   Communication system equipment (main equipment/computer servers, PA, telephone, selected wireless access points) – 25 KVA
   Building DDC (BMS) system control panels – 3 KVA
   Security system equipment – 2 KVA

**Packaged Engine Generator Systems**

A new packaged diesel engine-generator system will be provided to supply power to emergency life-safety and standby loads upon loss of the normal electric utility power source. The generator unit will start automatically on loss of normal utility power and transfer to the emergency power system within 10 seconds.

Based on the preliminary estimated load data, the generator system shall be rated 900kW/1,125kVA at 277/480 volt 3 phase, the final size will be finalized in subsequent design phase. The unit will be furnished in an outdoor weather protective and soundproof enclosure.

A skid-based fuel tank will be sized for 24 hours of the generator operation without re-fueling. Fuel tank shall be of double-wall construction and will be furnished with a leak detection system.

The generator power system will include two Automatic Transfer Switches (ATS) and the associated power distribution panels. Emergency ATS#1 for the "life safety" loads will be rated 150 Amp, and emergency "Standby" ATS#2 will be rated 1,200 Amp, preliminary.

"Emergency Life Safety" power distribution equipment including ATS #1 and panels will be installed in 2-hour fire-rated closets in compliance with the requirements of 527 CMR, Massachusetts Electrical Code.

The "life-safety" ATS#1 and associated 277/480 volt 3 phase distribution panel, a 277/480 volt 3 phase lighting panel, and a 120/208 volt "small power" panel will be located in the Main Emergency room, located adjacent to the Main Electric room.

ATS#2 and associated 277/480 volt 3 phase distribution panel, a 277/480 volt 3 phase lighting panel, and a double-tub 120/208 volt panel will be located in the Main Electric room.

Satellite "life safety" panels will be installed either in dedicated 2-hour fire-rated emergency closets or in downstream "emergency/normal" electric rooms with 2-hour fire-rated walls and floor/ceilings (design to be finalized in subsequent design phase).

"Emergency life safety" system feeders shall be installed in 2-hour fire-rated enclosures or installed underground, otherwise shall be using MI cable in accordance with requirements of Code.

**D5060.20 Photovoltaic System**

The roof-mounted PV system is preliminary estimated at 450 KWAC.

Strings of individual 300W PV panel modules and power optimizers will be connected to 3 phase DC to AC PV inverters in NEMA 3R housings with integrated DC disconnects. There will be approximately (15) fifteen 33.3 kW each or (10) ten 50-62.5 kW each roof-mounted PV inverters (size and quantity of inverters to be finalized). The

roof-mounted PV support system shall be a ballasted type. A pad-mounted battery storage will be installed to support this system.

The PV inverters will be wired to an appropriate number of circuit breakers in a dedicated outdoor pad-mounted multi-section PV Switchboard. The PV Switchboard will be 1,000 Amp 277/480V, 3 phase, 4 wire, with bus rating per NEC requirements.

The system shall be separately metered and interconnected with the utility transformer via the transclosure cabinet, refer to Section D5020.10.

## D5080 Miscellaneous Electrical Systems

### D5080.10 Lightning Protection

The lightning protection system shall be designed and installed in accordance with NFPA 780, Standard for Installation of Lightning Protection Systems. System shall consist of the roof mounted air terminals, grounding conductors, down leads, ground rods and bonding conductors. Upon completion, the system shall be provided with a Underwriters Laboratories (UL) Label.

### D5080.20 Electric Vehicle (EV) Charging Stations

Electric Vehicle charging stations will be provided at specific locations within the parking lot. EV chargers will be Level 2 type, 208 volt single phase input with an output rating of 6.6 kW. The chargers will be bollard style mount and be capable of powering two vehicles at once, via a power shared controller. Five (5) dual charging stations, capable of charging up to ten (10) vehicles simultaneously will be located at the parking lot. Power for additional twenty five (20) “future” EV dual charging stations will be roughed in to site and terminated at in-ground handholes.

## D5090 Commissioning

The following electrical systems will be commissioned, including all equipment, installation, operation and controls, programming, integration with other systems and monitoring:

- Lighting system
- Lighting control system
- Power usage metering and monitoring system
- Generator Set

# D SERVICES

## D60 COMMUNICATIONS

### D6010 Voice and Data Communications Infrastructure

#### D6020.10 Voice Communications Switching and Routing Equipment

A voice and data distribution system will provide connectivity from the area voice/data outlets to their respective communication closets, and backbone cables connectivity from the each closet to the main communication room. Wiring, outlets and terminations will be installed to comply with EIA/TIA 568 standards.

System program requirements and design shall be developed by the Communication Consultant. It shall include the specification for data/voice system including recommended equipment, jacks, installation and wiring requirements. Power requirements in watt per sq. ft. for the communication closets shall be determined by Communication Consultant.

The voice and data distribution system shall consist of Category 6A structured unshielded twisted pair (UTP) cabling systems and outlets for local area network (LAN) and voice communications. Outlets shall be provided in the offices, classrooms, workrooms, library, computer labs, Gymnasium, auditorium, natatorium, designated outdoor locations and mechanical rooms.

Underground duct bank of four 4-inch conduits will run from the Telecommunications Service Provider riser pole on Maple Street to the demarcation location in the building's main communication room. The existing town fiber optic underground cable path that currently passes through the site for the new building will be intercepted and rerouted to maintain service to the existing high school. Underground infrastructure will be installed to run the fiber optic cable to the new building. Auxiliary Telecommunications Rooms will be located throughout the building keep the maximum length of horizontal distribution cabling to workstation outlets within the industry standard of 100-meters. The Telecommunications Rooms will be will be connected with the main Telecommunications Equipment Room (TER) using fiber optic and multi-pair copper backbone cables.

Network switches, wireless access points and a VoIP (voice over IP) telephone that includes the VoIP head end and handsets distributed throughout the building will be purchased and installed under the Technology Equipment budget using State Contract vendors. The equipment will be specified, purchased and installed over the course of the final year of construction and prior to occupancy. This approach ensures that the school will be equipped with the most current components on day one.

## D6030 Audio-Video Communication

### D6030.10 Audio-Video Systems

**Audio Visual Systems:** The Dining Commons will be equipped with a large venue projector and screen scaled to accommodate the space and specified with sufficient lumens for optimal viewing conditions. The Gymnasium will be equipped with a video projection system and a local sound system with capability to perform independently to serve other indoor athletic spaces or as a single sound system. The Gymnasium will include an assistive listening system per ADA requirements.

The Auditorium will be equipped with a local sound system and video projection system to support presentations and performances. The Auditorium will include an assistive listening system per ADA requirements, an audio and video monitoring system for off stage cueing and headphone intercom equipment for stage crew communications.

Classrooms, Learning Commons and Conference Rooms will be designed with power, data and conduit raceways to accommodate video display equipment and associated signal cabling. Displays and associated signal cabling will be purchased and installed under the Technology Equipment budget. Local sound systems in these spaces will be provided under the base building contract. All local sound systems will be interfaced with the fire alarm and school-wide Public Address System in order to interrupt local sound in the event of an emergency or school announcements.

## D6060 Distributed Communications And Monitoring

### D6060.50 Distributed Systems

Clock and Program Systems: A clock and program system will be provided for originating and distributing time and time correction signals, and for programming and initiating audible program signals. System will consist of a master control unit, indicating clocks, and connections to the public address and music system. Master control unit will transmit time and time correction signals to all system clocks throughout the building and generate program tone signals for broadcasting over all loudspeakers on the public address and music system.

Public Address (PA) System: An IP-Based PA System will be provided for transmitting announcements throughout the building. Classrooms and selected spaces will be equipped with two-way communications capability to allow Teachers and Administrators to communicate through classroom speakers or through classroom handsets. Corridors and larger spaces including the Gym and Dining Commons will have one-way Public Address capability. The PA system will be integrated with the Electronic Security System and VoIP Telephone System.

Distributed Antenna System: A Distributed Antenna system, with Bi-Directional Amplification will be provided if required to support public safety and School District radio communications. Decision will be based on performing a radio system survey and developing a signal heat map to assess building conditions prior to issuing construction documents.

Cellular Repeater System: A Cellular Repeater System will be considered to provide students and staff with reliable mobile access service throughout the building. Further discussion with the ELHS and ELPS Administration is required to confirm this system is within the overall project budget and desired.

## D6090 Communications Supplementary Components

### D6090.10 Supplementary Components

**Security Access and Surveillance:** Refer to Section D70, Electronic Safety and Security for a complete description.

# D SERVICES

## D70 ELECTRONIC SAFETY AND SECURITY

## D7010 ELECTRONIC SECURITY MANAGEMENT SYSTEM

The electronic security management system shall consist of the following subsystems as specified herein:

1. Electronic Surveillance
2. Electronic Access Control
3. Electronic Intrusion Detection
4. Gunshot Detection System
5. Security Communication System
6. Visitor Management System

The security system shall consist of a primary system server to manage the video surveillance cameras and recording, access control and intrusion alarms. Remotely distributed card access readers, control panels, zone controlling keypads, door position switches, motion detectors, duress and lockdown alarms shall serve to secure staff and monitor doors and interior spaces. All servers tie into a Regional Dispatch Center.

The system shall be include graphical mapping allowing the end-user to quickly identify alarm conditions and lock/unlock doors.

The system shall transmit alarm signals to the District's security systems service provider upon detection of an unauthorized building entry.

The School Building Authority shall be requested to approve the following proprietary systems for the project:

1. Axis – Access Control System
2. Axis – Video Surveillance System
3. Axis Communications – IP Surveillance Cameras
4. Cisco – Network Equipment
5. Sonitrol – Intrusion Detection System

### D7010.10 ELECTRONIC VIDEO SURVEILLANCE

An IP-based system shall be provided to perform fixed surveillance, assessment, license plate recognition, monitoring, and recording operations. The system shall be capable of integrated operations with other security related systems such as the access control systems or alarm call-up and event assessment at all remote workstations.

The system consists of computer servers with management software, computer monitors and IP-based cameras. The video management server shall be rack mounted. The system can be accessed by authorized users from any computer within the school or externally via an IP address. The system shall allow for remote viewing and control by administration as well as remote visibility for the Police Department.

Camera coverage shall include corridors, stairwells, cafeteria, auditorium, gymnasium, building entrances, exterior building locations, site access roads, the bus drop-off area

and parking lots. The final scope of the system and performance criteria shall be further defined.

## D7010.20 NETWORK VIDEO RECORDER (NVR)

The NVR shall provide storage of all cameras using the following criteria:

1. 90-day video storage retention.
2. Interior cameras record on motion and exterior cameras record continuously.
3. All cameras using H.265 compression.
4. Interior fixed cameras: Record HDTV 1920x1080 with H.264 compression @ 15 images per second when motion is detected.
5. Exterior fixed cameras: Record HDTV 1920x1080 with H.264 compression @ 5 images per second when no motion is detected and 15 images/second when motion is detected.
6. Motion triggered recording
    a. Assume that motion shall be detected 50% of the day.
    b. Motion detection shall be configurable by camera and schedule to mitigate nuisance triggers.
    c. Record video as specified herein when motion is detected.
    d. Record video as specified herein when no motion is detected.

The cameras shall provide video surveillance, assessment, and visual alarm monitoring of selected interior and exterior access doors as well as other critical areas.

1. Cameras shall be IP based fixed and multi-lens cameras.
2. Cameras shall include infrared illumination.
3. Each camera can be viewed independently.

Exterior cameras shall have low light sensitivity, weatherproof housings and accessories for exterior conditions. Exterior cameras shall be mounted on light poles, building walls, corners or under building soffits. Exterior cameras shall have surge suppression.

## D7010.30 ELECTRONIC ACCESS CONTROL

Access Control System: Fully integrated system, which shall include door controllers, card readers and audio/ video intercoms, electric locking devices, request to exit switches, door release buttons, electromagnetic door holders, lockdown buttons, audible alarms, automatic door operators, lock power supplies, equipment enclosures, tamper switches, credentials, credential printers and credential cameras.

The system monitors and controls all access of the perimeter doors, including the front door.

Interface: The access control system shall interface with the video surveillance system, as well as card access, for select interior doors.

Card readers: Installed on doors requiring access control.

Duress Buttons: Installed at predetermined locations to alert emergency officials of any emergency. Each office shall have a button to alert the alarm monitoring company.

Electric Locking Devices: Electrified door hardware for card reader controlled doors shall include electrified locksets, electrified hinges, electric exit devices, and electric power transfers.

Request to Exit Devices (REX): The request to exit device shall shunt the alarm initiated from the door contact upon egress. Shunting of the alarm shall be accomplished by connection of the REX to an appropriate input on the field control panel. This input shall be programmed to shunt the door contact upon activation of the REX device.

Door Release Button: The door release button, when activated, shall trigger an event in the access control system, which shall unlock the associated door.

Electromagnetic Door Holder: Each electromagnetic door holder shall be configured to be de-magnetized upon activation of the lockdown button and intrusion detection system. Magnetization shall not occur until reset by either system.

Lockdown Button: The lockdown button, when activated, shall trigger an event in the access control system, which shall lock all electrified doors, disable the card readers and any door release functions and trigger exterior indicator beacons to illuminate. Cards of security personnel shall continue to work on the locked out readers during a lockdown situation. The lockdown button, when activated, shall cut power for electromagnetic door holding magnets. Magnets shall remain de-energized until reset.

## D7010.40 ELECTRONIC INTRUSION DETECTION

The system consists of door position switches and motion detection in all main perimeter areas of the building.

This system shall be fully integrated with the access control system.

Motion Detectors: Shall be dual technology, combining a PIR and microwave sensor.

Door Position Switch (DPS): The DPS at card reader controlled locations serve to indicate the open/closed status of the associated door and shall establish the basis for reporting a door-propped or unauthorized entry condition.

## D7010.50 SECURITY COMMUNICATION

The video intercom system shall be capable of having multiple control units and/or IP direct masters and video door stations.

All exterior communication equipment shall have lightning protection.

Installed separately from conventional general-purpose internal communications systems, the system shall be used as a video door entry system, emergency announcement system, rescue assistance system, urgent call system, public announcement system, and access control system as scheduled, indicated or required.

The system shall have the ability to roll over any video intercom door station call to any video intercom master station within the complete system. This system functionality shall be flexible and configurable by system programming and not rely upon physical wiring connections.

The system shall include remote door unlocking capability from the master station.

Shall include a full range of control unit functions, including basic conversation, shall be capable: call forwarding, scan monitoring, emergency call, priority call, video audio recording, paging, and zone paging as scheduled, indicated or required.

### D7010.60 ELECTRONIC VISITOR MANAGEMENT

The system shall be used for recording and monitoring visitors.

The system shall include the software and associated equipment, including a workstation and printer for visitor sign-in and management.

The system shall provide the following functions:
1. Screen every visitor, including contractors, guardians, and volunteers against up-to-date U.S. sex offender databases.
2. Check visitors against custom school or district databases which can contain custodial restrictions and/or banned visitors.
3. Alert administrative and security personnel should a visitor be identified as a risk.
4. Print badges with the approved visitor's photo, name, date, time of entry, the building name, and visitor's destination.
5. Generate accurate, reliable district-wide and school-level reports with a complete sign-in history for every person entering your schools.

The system shall include the following equipment:
1. ID scanner for state issued identification cards.
2. Visitor Badges.
3. Camera.
4. Printer for visitor badges or student tardy passes.

### D7010.70 GUNSHOT DETECTION SYSTEM

The gunshot detection system shall be installed throughout the school and alert when gunfire is detected inside the school.

The system shall immediately relay the shot location information through floor plan maps, and send text and e-mail notifications to key personnel including building administration, staff, and first responders with no required human interaction.

The system shall be integrated with the access control and video surveillance system to activate cameras in the area in order to give key personnel a visual overview of the event.

Police department integration shall be provided to send automated video feeds and mapping information of the incident direct to their mobile devices.

## D7050 DETECTION AND ALARM

### D7050.10 Fire Detection and Alarm

Addressable, non-coded, Class A supervised type fire detection and alarm system shall be provided to meet the requirements of the Massachusetts Building Code, NFPA-72, NFPA-90A, Americans with Disabilities Act, and local Fire Department requirements.

Fire alarm system shall consist of a Fire Alarm Control Panel (FACP) with microphone assembly, printer, LCD type remote annunciator(s), automatic smoke and heat detectors, manual pull stations, audible and visible alarm signals, connections to automatic fire suppression systems. The system shall transmit the trouble and alarm signals to monitoring Central Station approved by Fire Department via two dedicated telephone lines.

The system shall be as manufactured by FCI, Edwards (EST), Notifier or Simplex.

Fire alarm control panel shall provide an alarm and annunciation capability in case of activation of any manual fire alarm station, smoke detector, heat detector, duct smoke detector, sprinkler water flow switch or fire suppression system.

Audible (speakers) and visual (high intensity strobes) alarm devices shall be installed per NFPA-72.

Addressable type duct smoke detectors shall be installed in supply and return air ducts as required by NFPA-90A.

As a minimum, the system type smoke detectors shall be provided in the main electric room, downstream electric rooms and closets, data/telephone rooms, storage areas, corridors, elevator machine room, elevator lobbies and at the top of the stairways. Additional areas, specifically requested by the local Fire department to be equipped with automatic fire detection devices, shall be reviewed and finalized in subsequent design phases.

Fire suppression systems shall be tied to the fire alarm control panel.

Fire pump alarm/trouble signal wiring to the fire alarm control panel shall be provided.

# E EQUIPMENT AND FURNISHINGS

## E10 EQUIPMENT

### E1010 Vehicle and Pedestrian Equipment

#### E1010.50 Loading Dock Equipment

**Dock Bumpers**: Heavy molded-rubber compound reinforced with nylon, rayon or polyester cord. Furnish units with predrilled anchor holes.

1. Configuration: Inverted L-shape; 18" high by 18" wide.
2. Thickness: 4 inches (100 mm)

**Dock Levelers**: 20,000 pound capacity, hydraulic leveler, as manufactured by Rite-Hite or Kelley.

### E1030 Commercial Equipment

#### E1030.80 Foodservice Equipment

**Kitchen:** A full kitchen will be provided to serve the Cafeteria capable of serving the 800 student population and serving an additional 450 meals per day to 2 district elementary schools. The kitchen will include a scramble serving area.

Refer to Conceptual Design Drawing and kitchen narrative.

**Culinary Classroom:** 6 teaching kitchen stations that will include range with oven, insinkerators at preparation, 3 microwaves, chest freezer, 3 refrigerators and freezers, 3 dishwashers. 1 teaching kitchen will be ADA compliant. Equipment shall be commercial grade. Additional areas will include a mirrored demonstration area, tables and chairs for classroom setting, dry storage and residential laundry equipment.

### E1040 Institutional Equipment

#### E1040.10 Educational and Scientific Equipment

**Fume Hoods:** One hood in each Science Prep Room; 4 total. One two-sided/glass sided teaching hood in each chemistry classroom; 2 total.

**Biological Safety Cabinets (BSC's):** Assume 8, 4 per floor.

**Other Laboratory Equipment: [To be determined.]** May be furnished by Owner.

**Chemical Storage Cabinets:** Full-height metal storage cabinets for storage of flammable chemicals and acids; one of each type in each Science Prep Room.

**Miscellaneous Equipment:** Goggles sterilization cabinet.

**Related Work:** See D20, Plumbing, for emergency eye-wash. See E20 for laboratory casework.

## E1060 Residential Equipment

### E1060.10 Residential Appliances

The teachers' lounge area will include kitchen equipment, such as a refrigerator, and microwave oven.

**Dishwashers**:

- 1 per each science prep room
- 3 in Culinary Classroom

**Washer/Dryer:**

- 1 set in Culinary Classroom
- 1 set in PE Storage
- 1 set in Kitchen
- 1 set in Life Skills
- 1 set in Life Skills 18-22
- 1 stacked set in Custodial

## E1070 Entertainment and Recreational Equipment

### E1070.10 Theater and Stage Equipment

The Auditorium Stage will not include a traditional proscenium. It will include a main curtain and rear curtain.

See Audio-Visual Equipment, below for projection screen.

**Rigging:** Computer-controlled, motorized hoisting and rigging system.

- Size/Capacity: Assume 20 operable battens.

**Fire Curtain:** Released by building fire-detection system; manual Brail winch for raising.

**Stage Curtains and Tracks:** Initially, assume all are on operable rigging.

- Main draw curtain and valance.
- Mid draw curtain.
- Masking legs (2 pairs) and borders (3), to mask the wing and the ceiling above the stage.
- Rear cyclorama.
- Electric light battens (3).
- Spare pipe battens (3).

**Stage Lighting:** Lights, dimming and control equipment; programmable, computer operated.

- Lighting Fixtures: Elipsoidal spotlights, compact fresnels, aurora CYC, and worklight fixtures.

**Video Studio Lighting and Dimming Systems:** Lights, dimming and control equipment; programmable, computer operated.

**Related Work:**

- See Audio-Visual Equipment, below for projection screens.
- See D50, Electrical Work, for power and wiring to rigging, lighting and controls.
- See D50, Electrical Work, for auditorium sound system.

### E1070.50 Athletic Equipment

**Indoor Equipment in Gymnasium:** The Gymnasium will be equipped so that it can be used for full-court basketball games utilizing the entire gymnasium, or for 2 practice games separated by a divider curtain.

Equipment to be provided:

1. Electronic scoreboard for interior installation.
2. Electronic shot timer.
3. Basketball backboards, overhead mounted type, with glass backboards for main court and wood backboards for practice courts.
4. Wall protection mats.
5. Divider curtain.
6. Floor sleeves for volleyball posts.
7. Mat hoist (1 per gym, 1 per Alt PE) Basis of Design: Draper 502021
8. Batting cage

9. 24ft barre and mirror wall at Alt PE

**Outdoor Athletic Equipment:** Refer to Section G, Sitework.

**Athletic Lockers:** Refer to Section C1030, Fittings, for new athletic lockers and locker room benches.

**E1070.80 Audio-Visual Equipment**

Sound system, rack, amplifier and speakers

In the auditorium (as part of full theatrical specifications)

In the gymnasium

In the cafeteria

In the Large Group Instruction Room

**Projection Screens:** Electrically operated screens with standard reflective fabric face; motor in roller. Screens will be provided at the following locations:

- In the Auditorium, on the stage.
- In the Cafeteria.
- In the Large Group Instruction Room.
- In the Gymnasium

**E 1090.20**

**Ice Making Machines**

- In Athletic Trainers Office (90lbs)
- In Science Prep Rooms (4, 50lbs)
- In Concessions Building (50lbs)

## E20 FURNISHINGS

### E2010 Fixed Furnishings

#### E2010.20 Window Treatments

Manual light filtering shades will be provided at all ext. window locations.

Manual Room Darkening Shades with Track at LGI and Science Rooms.

Motorized Shades at Gymnasium, Auditorium and Cafeteria

**Manually Operated Shades with Spring Rollers (Interior windows and doors)**

Basis of Design: Draper Spring Roll Flex Shade

**Manually Operated Shades with Single Rollers for Room Darkening**

Basis of Design: Draper Manual Flex Shade with

**Motor Operated Single Roller Shade**

Basis of Design: Draper Inc. Motorized FlexShade

#### E2010.30 Casework

**Classroom Casework:** Plastic laminate clad casework fabricated to AWI (American Woodwork Institute) Custom Grade, flush overlay design. Plastic laminate countertops. Classroom casework will be designed to conventional modular sizes and may be purchased from a manufacturer of standardized institutional casework.

1. Colors: Laminate-cladding will be in a variety of solid colors.
2. Accessibility: Base cabinets with sinks will be designed so that the sinks can be reached by children or teachers in a wheelchair.

**Tall Storage Units":** 2 per classroom, typical

**Wardrobes:** Each classroom will have a two person teacher's wardrobe unit fabricated in the same materials as the classroom cabinets, and fitted with coat hanging rod and shelf.

**Coffee Station Casework:** Plastic laminate clad wood casework, fabricated to AWI (American Woodwork Institute) Custom Grade flush overlay design. Plastic laminate countertops. Casework will be designed to conventional modular sizes and may be purchased from a manufacturer of standardized casework.

**Colors:** Laminate-cladding will be specified in several solid colors.

**Lavatory Counters:** Solid surfacing material, such as DuPont "Corian."

**Reception Desk:** Custom-fabricated wood veneered plywood with solid wood trim, fabricated to AWI (American Woodwork Institute) Custom Grade standards. Top surface material to be determined.

**Adjustable Shelving:** Provide utility shelving for storage rooms, copy rooms, and similar locations: Laminate-clad shelves with solid-wood edge banding, supported on extra-heavy duty double slot extruded aluminum stanchions and brackets; 12" deep shelving.

**Lab Casework:** Base and wall-hung cabinets fabricated with wood cases and interiors with wood veneer doors and drawer fronts. AWI (American Woodwork Institute) Custom Grade, flush overlay design. Epoxy benchtops, 1-1/4"countertops with 4" epoxy backsplash. Basis of design product: CiF Lab Solutions E-line Premium Wood Casework.

**Lavatory Counters:** Epoxy resin, black, 1-1/4 inch thick, with stainless steel lavatories specified under Plumbing.

**Adjustable Shelving:** Provide utility shelving for storage rooms, copy rooms, and similar locations: Wood shelves with solid-wood edge banding, supported on extra-heavy duty double slot extruded aluminum stanchions and brackets; 12" deep shelving.

**E2010.70 Fixed Multiple Seating**

The Auditorium will be furnished with fixed theater-type seating to accommodate the programmed number of seats. Type of seats (upholstered, non-upholstered) will be determined during design development. Seating layout will include areas for wheelchairs to comply with the Americans with Disabilities Act and with the Regulations of the Massachusetts Architectural Access Board.

**E2010.90 Other Fixed Furnishings**

**Mirrors:** In toilet rooms, provide unframed mirrors extending full width above lavatory counters, mounted to wall on plywood backing with mirror mastic and continuous top and bottom chrome-plated brass or stainless steel edge clips.

**Entrance Mats:** Extruded aluminum grill-type mat in extruded aluminum frame recessed in concrete subfloor; Construction Specialties "Pedi-Grid."

**Entrance Mats:** Thin line “T” shaped extruded aluminum blades bolted together, suitable for shallow-pit installation, nominal depth 1-1/2" to 2".

1. Aluminum Finish: Clear mill finish.
2. Acceptable Product: “Ultra Scrape” by Mats, Inc. Stoughton, MA.

**Frame:** Extruded aluminum frame recessed in concrete subfloor.

**Roll-up Entrance Mats:** Level-cut-pile nylon carpet, bonded to 1/8- to 1/4-inch-thick flexible vinyl backing, to form mats 3/8- or 7/16-inch-thick with nonraveling edges**.**

## E2050 Moveable Furnishings

All moveable furnishings, such as classroom desks, cafeteria chairs and tables, and office furniture, will be provided by the under a separate Furnishings, Fixtures and Equipment contract.

**Telescoping Stands:** Electrically-operated telescoping bleachers will be provided in the Gymnasium, to accommodate the programmed number of seats.

Bleacher layout will include areas for wheelchairs to comply with the Americans with Disabilities Act and with the Regulations of the Massachusetts Architectural Access Board.

Fixed bleacher seating for the outdoor athletic fields is described in Section G, Sitework.

# F SPECIAL CONSTRUCTION AND DEMOLITION

## F10 SPECIAL CONSTRUCTION

### F1020 Special Structures

#### F1020.40 Manufacturer-Engineered Structures

Science Greenhouse: 20' x 10' Pre-engineered greenhouse structure consisting of glazed aluminum framing with a minimum 4:12 roof pitch, attached to building as shown.

#### F1020.40 Masonry Concessions Building

Concessions building is an uninsulated seasonal masonry building with a 28' by 48' footprint. Construction to be load bearing uninsulated single wythe CMU. Refer to section b-Shell for exterior wall and roof description. Roof Structure will be tube steel or wide flange beams supported by the reinforced masonry walls. Doors shall be hollow metal on Hollow metal frame. Windows (4 ), 4'W X6'H on the Concessions area and Storage, and (4) 4'x3' high windows at the toilet room areas. Field storage space will be outfitted with overhead garage door to the field.

### F1030 Special Function Construction

#### F1030.10 Sound and Vibration Control

Lockers: Neoprene pads integral with locker doors in hallways and academic areas, to control noise from door closings.

### F1050 Special Facility Components

#### F1050.10 Pools

**Whirlpool:** Prefabricated athletic therapy whirlpool unit Basis-of-Design: Whitehall Manufacturing, S series, 110 gallon stationary whirlpool. Material: 304 stainless steel.

### F1060 Athletic and Recreational Special Construction

#### F1060.10 Indoor Score Boards

Provide Scoreboards for Basketball and Volleyball. Basis-of-Design: Provide NEVCO 2700 (basketball) and 2750 (volleyball) or comparable product, with LED display and wireless scoreboard control.

Provide Shot Clocks, NEVCO Model SCD-7 or equal, with LED display.

### F1060.40 Floor Sockets

At Center Court and Weight Room

Volleyball Floor Insert: Solid-brass floor plate; and steel pipe sleeve, concealed by floor plate, with capped bottom end, 3-1/2 inch internal diameter, sized to fit post standards. Product: Draper Inc. with cover plate, or equal.

### F1060.50 Athletic and Recreational Court Walls

**Wall Safety Pads:** Padded wall wainscot panels designed to be attached in a continuous row; each panel section consisting of fill laminated to backer board with covered by seamless fabric covering. Provide safety pad fabric covering fabricated from puncture- and tear-resistant, 14-oz./sq. yd PVC-coated polyester or nylon-reinforced PVC fabric treated with fungicide for mildew resistance; with surface-burning characteristics indicated by ASTM E 84, and lined with fire-retardant liner.

### F1060.60 Demountable Athletic Surfaces

**Gymnasium Divider Curtains:** Electrically operated, roll up. Manufacturer to be Draper Inc. or similar. Upper Curtain, Mesh: Woven fabric of 100 percent polyester yarn coated with PVC weighing not less than 6.5 oz./sq. yd. Lower Curtain, Solid: Woven polyester coated with PVC, 18 oz./sq. yd, embossed, 8-foot height above floor. Passes NFPA 701, permanently flame resistant.

## F20 FACILITY REMEDIATION

## F2010 HAZARDOUS MATERIALS REMEDIATION

### F2010.10 Transportation and Disposal of Hazardous Materials

The Architect's consultant, Smith and Wessel Associates performed a preliminary assessment of the interior of the building to determine the presence and extent of hazardous materials. Their report, dated **March 29, 2018** was delivered to the Owner under separate cover. The study was limited in scope and concentrated on identifying large ticket items that, if present, would require cost for their handling and disposal. The following materials were visually observed:

**Mercury:** Present in fluorescent light ballasts and in thermostats throughout the building. Handle and dispose of as universal waste.

### F2010.20 Asbestos Remediation

**Asbestos:** In brief, the preliminary assessment identified suspect ACBM at the following locations; these materials will have to be removed prior to renovation or demolition work in areas where it may be disturbed. A more detailed assessment will follow during the design development phase of the project.

- in pipe fitting insulation
- in carpet mastic
- in resilient floor tile/mastic
- in wall/window/canopy/fume hood panels
- in vapor/moisture barriers
- in fire door insulation
- in mudding fittings
- in door and window caulking
- in window glazing compound
- in ceiling daubs
- in chalk/whiteboard daubs
- in wall panel glue
- in fireproofing
- in plaster
- in wall expansion
- in ceiling tile
- in window sills

### F2010.30 Lead Remediation

**Lead Based Paint:** Elevated levels of lead-based paint (lead content greater than 1.0 mg/cm$^2$) are present on the **exterior metal canopy structure and the interior wall terracotta**. Lead paint does not have to be removed before renovation **or demolition**, but components that are covered by LBP may require special handling and disposal, personnel air monitoring and other work protection in compliance with the OSHA lead standard.

### F2010.40 Polychlorinate Biphenyl Remediation

**PCBs**: While not confirmed, PCBS may be present in fluorescent lamps, window glazing compound, wall expansion joint compound and door caulking. Handle and dispose of as universal waste. The existing transformer is assumed to be the property of the local power company and should be addressed by the power company if removed.

## F30 DEMOLITION

### F3010 Structure Demolition

#### F3010.10 Building Demolition

Demolish the entire existing building per phasing plan, including foundations. Prior to demolition, abate hazardous materials as described below. Provide temporary weather-tight enclosure to protect existing building to remain, until new building is constructed.

# G SITEWORK

## G10 SITE PREPARATION

### G1010 Site Clearing

#### G1010.05 General Requirements

The existing East Longmeadow High School is to remain functional, including vehicle access, utilities, parking, and all other functions critical to the use of the school, until such time that the existing school building has been vacated and all operations have been moved into the new school building. Any necessary temporary parking, access drives, and/or play areas are to be reconfigured for the existing school building and maintained throughout construction of the new school building.

Provide and maintain construction access from Maple Street and Norden Street Locations of specific access will depend on the sub-phase.

Maintain safe access for emergency vehicles to the site and existing High School throughout the duration of construction.

#### G1010.10 Clearing and Grubbing

All site clearing and erosion & sediment control measures for the site will be in compliance with the Town of East Longmeadow standards and the NPDES General Permit from the EPA. If an Order of Conditions from the Town of East Longmeadow Conservation Commission is required, it will be obtained at the completion of permitting and the conditions will be incorporated into the required measures. Provide and maintain erosion control measures to protect sediment from entering the storm drain system and adjacent resource areas.

Provide temporary protective barriers consisting of post driven 8' high chain link fence with tension wire top and bottom to enclose the project site and construction activities. Maintain and adjust the temporary protective barriers as needed throughout the course of construction.

Protect all utilities to remain in Maple Street, Norden Street, and within the site, throughout construction. Coordinate any temporary service interruptions with the Town of East Longmeadow and any owners affected.

Temporary signage shall include a total of 30 signs.

#### G1010.30 Tree and Shrub Removal and Trimming

Remove all vegetation within the limit of work as shown on the drawings.

Existing trees to remain will be tagged in the field by the Landscape Architect and protected by the Contractor with a chain link fence during construction. A 4" layer of bark mulch will be spread a distance of 1.5x the DBH of the tree. Costs for damage to existing trees will be estimated by caliper inch at breast height based on AAN standards.

### G1010.50 Earth Stripping and Stockpiling

Existing topsoil will be stripped, stockpiled, and reused on-site. Existing topsoil is to be augmented as necessary to meet specifications for loam. Before reuse, topsoil will be tested, and the necessary amendments added as defined by chemical and mechanical soil tests. Topsoil will be stabilized with vegetation until screened and spread on site. Excess topsoil will remain the property of the Town. The Contractor is to transport excess topsoil to a location determined by the Town within the Town boundaries.

Strip overburden soils from limit of work and dispose off-site in accordance with all applicable local, state, and federal codes and requirements.

## G1020 Site Elements Demolition

### G1020.10 Utility Demolition

All utilities associated with the existing building are to be maintained until such time that the building has been vacated and prepared for demolition. Upon the building being vacated these utilities will be removed to the extents indicated on the drawings, including removal of the existing underground fuel oil tank and associated piping.

Existing above and below ground utilities within the proposed building footprint are to be removed or relocated in their entirety, as shown on the drawings. The remainder of existing above and below ground utilities within the remaining limit of work are to be protected and maintained unless specifically designated to be removed or relocated on the drawings.

### G1020.50 Selective Site Demolition

Remove and dispose of buildings/structures, pavements, curbing, sidewalks, slabs, fencing/guardrails, backstops, walls, seating, signs, light poles, flag poles, site furnishings, and any other site elements within the limit of work as shown on the drawings.

Do not disturb existing site improvements scheduled to remain. Provide safe access to adjacent buildings and features to remain throughout construction as necessary.

Salvage site improvements as shown on the drawings. Salvaged items are to be stored in an area designated by the District that is protected from the elements and construction operations.

## G1030 Site Element Relocations

### G1030.10 Utility Relocation

Relocate any utilities that interfere with the new school building construction as shown on the drawings.

## G1050 Site Remediation

### G1050.60 Contaminated Site Material Removal

See the attached Phase 1 Site Assessment.

## G1070 Site Earthwork

### G1070.10 Grading

Grade site to the elevations shown on the drawings.

### G1070.20 Excavation and Fill

Excavate for building foundations, retaining walls, seat walls, structures, utilities, slabs, equipment pads, sports field and court equipment, playgrounds, foundations for site features, drives, walks and parking areas including bracing and support as required.

Subsurface investigations identify reworked soils/fill within the building footprint at depths ranging from 1.5 feet to 3 feet deep. Fills within the building area and for a distance of 10 feet along the building perimeter, are to be excavated out to a minimum depth of 6" below bottom of footing elevations and 8" below the bottom of floor slab elevation to allow for placement of imported crushed stone and gravel base course layers respectively. The remaining fill within this area may remain in place provided it be proof compacted prior to installing any materials over it. Any existing fill that is considered unsuitable within this area is to be removed until such depth that suitable fill or native soils are reached, and replaced with imported structural fill. Excavated fill may be reused elsewhere on site as common fill.

Existing fill material is to be removed to the bottom of hardscape base course elevations where applicable, to allow for the installation of the full depth section of hardscape material. Any existing fill that is considered unsuitable is to be removed where within 36 inches of the finish grade within hardscape areas, including concrete equipment pads. Resultant grades are to be brought up to the bottom of base course gravel with imported structural fill.

Unsuitable material that is not suitable for reuse is to be hauled off site in accordance with all local, state, and federal regulations.

Prepare subgrade and bearing surfaces, including ground improvements, proofrolling and dewatering. Dewater as necessary to maintain groundwater levels at a minimum

of two feet below proposed bottom of footing elevations throughout the duration of foundation excavation, installation, and backfill.

Place and compact fills from onsite and offsite sources. Compact fill layers below building and pavement to 95% Maximum Dry Density, per ASTM 1557. All base course materials below pavement and building areas will be required to meet MassDOT specifications for structural fill. Fill in landscape areas will meet the specifications for common fill.

Prepare subbase and base courses for buildings, pavements, and athletic field areas.

Prepare landscape areas including preparation of subgrade and placement of topsoil.

All imported material is to be clean, native, and uncontaminated from a borrow pit.

#### G1070.35 Erosion and Sedimentation Controls

Erosion and sediment controls will be placed around the downstream perimeter of each phase of the project as well as around soil stockpile areas. Install and maintain inlet sediment control measures at existing inlets to the storm drain system.

## G20 SITE IMPROVEMENTS

### G2010 Roadways

#### G2010.10 Roadway Pavement

Heavy Duty bituminous flexible pavement: 3-inch binder course, 1 ½-inch wearing course on a gravel base in locations shown on the drawings. Materials in compliance with Section 460 of the MassDOT Standard Specifications.

Standard Duty bituminous flexible pavement: 2 ½-inch binder course, 1 ½-inch wearing course on a gravel base in locations shown on the drawings. Materials in compliance with Section 460 of the MassDOT Standard Specifications.

The surface material in the loading dock area will consist of thickened Portland cement concrete pavement with reinforcement on a gravel base to the extents shown on the drawings.

The surface material in the emergency access path will consist of a combination of porous pavement and reinforced turf surfacing, with rigid cellular polyethylene interlocking grid units capable of supporting H20 loads, on a gravel base to the extents shown on the drawings.

#### G2010.20 Roadway Curbs and Gutters

Entry and access drives: VA4 vertical granite.

Bus van and parent drop-off areas: VA4 flush granite.

### G2010.40 Roadway Appurtenances

Traffic Signage: Provide applicable traffic signage to offer guidance for the proposed vehicular circulation system. Assume a total of 50 signs.

Pavement Markings: Provide pavement markings as shown on the drawings. Existing roadway striping within the limit of work that is disturbed by the construction is to be re-striped.

### G2010.70 Roadway Lighting

Roadway lighting is specified in Section G5040.90 “Exterior Lighting”.

## G2020 Parking Lots

### G2020.10 Parking Lot Pavement

Heavy Duty bituminous flexible pavement: 3-inch binder course, 1 ½-inch wearing course on a gravel base in locations shown on the drawings. Materials in compliance with Section 460 of the MassDOT Standard Specifications.

Standard Duty bituminous flexible pavement: 2 ½-inch binder course, 1 ½-inch wearing course on a gravel base in locations shown on the drawings. Materials in compliance with Section 460 of the MassDOT Standard Specifications.

Permeable pavers: precast pavers over aggregate base in locations shown on the drawings.

Approximately 464 parking spaces will be provided on site to serve faculty, staff and visitors, including 18 accessible spaces and 10 spaces serviced by EV charging stations.

### G2020.20 Parking Lot Curbs and Gutters

Parking lot curbing: VA4 vertical granite.

### G2020.40 Parking Lot Appurtenances

Parking Signage: Provide signage for parking areas, including but not limited to accessible, visitor, district offices, ELCAT, IT, SRO, EV charging, and LEV/FEV vehicles. Assume a total of 50 signs.

Precast Concrete Wheel Stops: Provide at accessible and EV charging parking spaces.

Pavement Markings: Provide pavement markings as shown on the drawings.

### G2020.70 Parking Lot Lighting

Parking lot lighting is specified in Section G5040.90 “Exterior Lighting”.

## G2030 Pedestrian Plazas and Walkways

### G2030.10 Pedestrian Pavement

Pedestrian walkways will consist of a combination of portland cement concrete pavement with broom finish and saw cut joints and bituminous pavement, consisting of 1 ½-inch binder course, 1 ½-inch wearing course, on a gravel base as shown on the drawings.

The main entrance plaza will consist of portland cement concrete pavement with broom finish and saw cut joints on a gravel base. Provide cast iron detectable warning panels at all accessible parking spaces and curb cut locations as shown on the drawings.

The walkways adjacent to the proposed flagpole will consist of precast unit pavers on a gravel base.

Outdoor classroom areas will consist of a combination of integrally colored concrete pavement with broom finish and saw cut joints and synthetic lawn with composite nailer edge on a gravel base as shown on the drawings.

Bioretention area crossing: Pressure-treated beams and deck joists, western red cedar decking, top and mid rails, rail support posts, buttress posts, and ledger, concrete abutments at each end and beam footings, and hot dipped galvanized steel hardware and fasteners, complete in place, as shown on the drawings.

### G2030.20 Pedestrian Pavement Curbs and Gutters

Flush sidewalk and accessible curb cut ramp conditions: VA4 flush granite curb or flush concrete pavement, integral with the adjacent concrete sidewalk.

### G2030.30 Exterior Steps and Ramps

Ramps: Cast-in-place concrete; standard cements and aggregates; broom finish. Widths and slopes conforming to ADAAG and MAAB. Schedule 40 steel pipe guardrails, and handrails.

Loading dock: Provide schedule 40 steel pipe guardrail at edge of loading dock as shown on the drawings.

### G2030.70 Plaza and Walkway Lighting

Plaza and walkway lighting is specified in Section G5040.90 “Exterior Lighting”.

### G2030.80 Exterior Pedestrian Control Equipment

Provide (4) solar-powered, rectangular rapid flashing pedestrian crossing beacons with related signage and concrete footing, complete in place, in locations shown on the drawings.

## G2050 Athletic, Recreational, and Playfield Areas

### G2050.10 Athletic Areas

Provide (6) tennis courts: bituminous flexible pavement consisting of 2 ½-inch binder course, 1 ½-inch wearing course on a gravel base, textured acrylic color coat system, painted tennis layout, tennis nets with posts and center anchors in locations shown on the drawings.

Provide painted striping for (6) pickleball courts overlayed onto tennis courts as shown on the drawings.

Provide new concrete bases for sport court lighting system for (6) tennis courts, in locations shown on the drawings, with capacity to illuminate the entire court area to meet IES recommended light levels. Existing fixtures and poles are to be salvaged and reinstalled on the new bases.

Provide (2) basketball courts: bituminous flexible pavement consisting of 2 ½-inch binder course, 1 ½-inch wearing course on a gravel base, textured acrylic color coat system, painted basketball layout, and basketball goals with posts in locations shown on the drawings.

Provide prefabricated, elevated press box and support structure with ADA and MAAB compliant accessible ramp system as shown on the drawings. Finished floor of press box to be approximately 12' height above finished grade.

### G2050.30 Recreational Areas

Playground surfacing: 3" minimum depth of 2-layer rubber polyurethane poured-in place surfacing system as shown on the drawings. System to comply with ASTM F-1292 and be certified by IPEMA. Provide flush concrete edger as shown on the drawings.

Play equipment shall be provided to meet the District's $60K budget. All equipment to comply with ASTM F 1487-07ae1 and be certified with IPEMA.

### G2050.50 Playfield Areas

Provide (1) varsity boys baseball field complete with (2) dugouts set on concrete pads, (2) players benches, (2) concrete bleacher pads, electronic scoreboard, (2) foul poles, chain link batting cage with netting, painted and chalk lines, and all necessary baseball field equipment, complete in place, in location shown on the drawings.

Provide (1) junior varsity boys baseball field complete with (2) dugouts set on concrete pads, (2) players benches, chain link backstop, (2) foul poles, painted and chalk lines,

and all necessary baseball field equipment, complete in place, in location shown on the drawings.

Provide (1) varsity girls softball field complete with (2) dugouts set on concrete pads, (2) players benches, (2) concrete bleacher pads, electronic scoreboard, (2) foul poles, chain link batting cage with netting, painted and chalk lines, and all necessary softball field equipment, complete in place, in location shown on the drawings.

Provide (1) junior varsity girls softball field complete with (2) dugouts set on concrete pads, (2) players benches, (2) foul poles, painted and chalk lines, and all necessary softball field equipment, complete in place, in location shown on the drawings.

Provide athletic field topsoil and base profile and lawn mix as shown on the drawings and as specified in Section G2080 Landscaping.

Provide skinned infield mix for boys baseball and girls softball infield and warning track areas as shown on the drawings.

Provide painted overlay striping layout for soccer as shown on the drawings, showing any field lines, markings, and boundaries on the field.

Provide natural turf football field with (2) permanent football goal posts, (2) players benches, and painted striping layout for football as shown on the drawings.

Provide natural turf soccer/girls lacrosse field with (2) soccer goals, (2) lacrosse goals, (2) players benches, and painted striping layout for soccer and girls lacrosse as shown on the drawings.

Provide natural turf soccer/boys lacrosse field with (2) soccer goals, (2) lacrosse goals, (2) players benches, and painted striping layout for soccer and boys lacrosse as shown on the drawings.

Provide natural turf practice field with perimeter painted striping as shown on the drawings.

Provide 10’ height safety netting system suitable for lacrosse, complete in place, as shown on the drawings.

Reinstall salvaged segmental concrete practice wall and artificial turf surfacing as shown on the drawings.

## G2060 Site Development

### G2060.20 Fences and Gates

Provide 4’, 6’, and 10’ height vinyl-clad chain link fence with single and double access gates in locations shown on the drawings. Provide HDPE coil fence crown for fencing at baseball and softball fields.

Provide 22’ height vinyl-clad chain link fence backstops for baseball and softball fields in locations shown on the drawings.

Provide 4’ height decorative, industrial-grade aluminum picket fence system with top rail and single access gate surrounding the playground as shown on the drawings.

Provide pressure-treated wood guardrail in locations shown on the drawings.

Provide pressure treated, double-leaf wood swing gate with (2) pressure treated keeper posts and hot dipped galvanized steel hardware and fasteners in locations shown on the drawings.

**G2060.25 Site Furnishings**

Bicycle Racks: Provide fifteen (25) hoop style 2-capacity bicycle racks, 27” high by 25” diameter, with stainless steel finish. Each bicycle rack shall be in-ground mounted into a concrete footing.

Flexible seating: Provide (10) sets containing a freestanding table with (4) freestanding chairs for outdoor dining terrace at the rear of the building.

Trash and Recycling Receptacles: Provide five (10) 45-gallon linear metal combination trash/recycling receptacles with stainless steel finish and associated graphics.

**G2060.30 Exterior Signage**

Provide one (1) monument masonry freestanding two-sided sign 4’ height. x 15’ length. with stainless steel cut letters, 12” in height with font and finish selected by the Landscape Architect.

**G2060.35 Flagpoles**

Provide one (1) ground set flagpole with stainless steel finish. 35’ height. Provide one (1) 6’ x 10’ flag.

**G2060.40 Covers and Shelters**

Provide three (3) triangular shade canopy structures as shown on the drawings. Each shade canopy structure shall consist of 24’ equal length sides, 12’ height, three (3) powder-coated steel support posts, nylon canopy, and related appurtenances.

**G2060.60 Site Walls**

Retaining walls to be cast-in-place reinforced concrete, heights as shown on the drawings.

Seat walls in front entrance plaza, outdoor learning environments, and outdoor dining terrace to be a combination of free standing 24” x 24” granite block and precast concrete block, with 18” exposed height, with lengths and locations as shown on the drawings.

### G2060.85 Site Specialties

Site bollards at bus drop-off and parent drop-off to be 6" diameter x 36" ht. concrete-filled, galvanized steel bollards with welded cap, primed and painted with two (2) coats of enamel, locations and quantities as shown on the drawings.

Site bollards at the loading area will be 6" diameter x 48" ht. concrete-filled, galvanized steel bollards with welded cap, primed and painted with two (2) coats of enamel, locations and quantities as shown on the drawings.

Placed landscape boulders: native red stone, 67% to have length and width range of 2' to 4' and 33% to have length and width range of 4' to 6'.

## G2080 Landscaping

### G2080.10 Irrigation

Automatic irrigation system and all accessories and appurtenances shall be provided for only the varsity boys baseball field, varsity girls softball field, natural turf soccer/girls lacrosse field, natural turf soccer/boys lacrosse field, and natural turf football field as shown on the drawings.

An above-grade water valve with meter assembly is to be provided off of the 8" water distribution main where the irrigation system begins.

### G2080.20 Turf and Grasses

General lawn areas shall be provided in the locations shown on the drawings. Athletic field lawn areas shall be provided in the locations shown on the drawings. Seed mixes for both lawn area types will be appropriate to their use.

Bioretention areas shall be provided in the locations shown on the drawings. Seed mixes for bioretention areas will be appropriate for their use.

### G2080.30 Plants

Trees, shrubs, ornamental grasses and perennials will be provided to complement the site and public areas.

### G2080.50 Planting Accessories

Provide eighteen (18) inches of planting soil in plant bed areas, eight (8) inches of topsoil in general lawn areas, and eight (8) inches of topsoil in athletic field lawn areas as per specified topsoil preparation and amendment additives. All topsoil shall be reused, amended on-site topsoil with supplemental topsoil imported from off-site sources as necessary. Topsoil is to contain no material greater than one (1) inch diameter.

Provide bioretention soils at the depths and locations shown on the drawings.

Include inorganic and organic soil amendments and fertilizers as necessary.

Include shredded pine bark mulch at a minimum depth of three (3) inches.

Include all staking, guying, and other tree stabilization materials as necessary.

Include watering at least twice per week for plant establishment during the maintenance period.

### G2080.70 Landscape Lighting

Landscape lighting is specified in Section G5040.90 “Exterior Lighting”.

### G2080.80 Landscaping Activities

Contractor shall provide a 90-day maintenance period for all plantings, bioretention areas, and lawn areas. Contractor shall warranty plantings for one (1) year to ensure the health and establishment of all plantings.

## G30 SITE UTILITIES

## G3010 Water Utilities

### G3010.10 Site Domestic Water Distribution

The water distribution main will be 8-inch Class 52 ductile iron pipe. The new main will connect to the downstream side of the existing meter pit and be routed around the full perimeter of the building. The water main serves as distribution for fire protection water as well – see Section G3010.30.

The domestic water service to the school building will be 6-inch Class 52 ductile iron pipe, routed off of the water distribution main.

The domestic water service to the concession building will be 2-inch Type “K” copper tubing.

The pipe shall be furnished with necessary materials and equipment recommended by the manufacturer for use in joining pipe lengths and fittings conforming to ANSI Specifications.

### G3010.30 Site Fire Protection Water Distribution

The water distribution main will be 8-inch Class 52 ductile iron pipe (serves as distribution for domestic water as well). The fire protection service to the school building will be 8-inch Class 52 ductile iron pipe, routed off the water distribution main.

The pipe shall be furnished with necessary materials and equipment recommended by the manufacturer for use in joining pipe lengths and fittings conforming to ANSI Specifications.

Fire hydrants will be provided at locations shown on the plan and shall be served by a 6-inch Class 52 ductile iron pipe off of the water distribution main.

## G3020 Sanitary Sewerage Utilities

### G3020.20 Sanitary Sewerage Piping

Polyvinyl Chloride (PVC) Pipe for Sanitary Sewage Conveyance via gravity: Sanitary Sewage discharge pipes from the school building shall be 6-inch diameter polyvinyl chloride (PVC) pipe. Sewage discharge pipes from the concessions building shall be 4-inch diameter PVC pipe. Sanitary Sewage mains shall be 8-inch diameter PVC pipe. Sanitary Sewage pipe shall be type PSM, SDR-35 PVC pipe.

PVC Pressure Pipe (Force Main): Provide 4-inch, Schedule 40 PVC pipe for force main applications and where shown on the plans.

### G3020.40 Utility Vaults and Tanks

The precast reinforced concrete vault and tank structures shall be designed by a Massachusetts Registered Professional Engineer employed by the Contractor.

Concrete shall have a minimum 28-day compressive strength of 5,000 psi using Type II or III Portland cement.

Kitchen waste will discharge to a 5,000 gallon precast concrete grease trap.

Pipe Connections: Vault and tank structures shall have pipe openings to accept the type of pipe specified. Pipe opening shall be minimum size required to receive the pipe and shall be accurately set to conform to the required line and grade.

Sanitary Sewer Pump Station: the wet well and valve pit shall be precast concrete structures of the dimensions shown on the plans. Provide two (2) – 3 horsepower submersible pumps with related components and accessories.

### G3020.50 Sanitary Sewerage Structures

Precast Concrete Manholes: Precast reinforced concrete manhole structures shall comply with material, design, and construction standards specified under ASTM C478. Manholes shall be 4-foot diameter. Manhole tops shall be precast concrete designed to meet American Association of Standard Highway and Transportation Officials (AASHTO) H20 loadings. Frames and covers shall be of cast iron.

Cleanouts shall be cast iron with a heavy-duty brass top. Cleanout frame and cover shall be set in concrete 12 by 12 by 6-inches deep, except where location is in bituminous paving.

## G3030 Storm Drainage Utilities

### G3030.10 Storm Drainage Utility Collection

Storm water from the site and building will be collected by a network of catch basins, areas drains, and trench drains, and then conveyed to the discharge point at the existing detention pond via a series of manholes and piping. Portions of the storm water runoff will be routed to bioretention areas, porous pavement, permeable pavers, and subsurface infiltration chambers for treatment, infiltration, and detention, prior to downstream conveyance of overflow.

### G3030.20 Storm Drainage Piping

Storm drain pipe will be Corrugated Polyethylene, with the exception of pipe segments specifically noted to be Reinforced Concrete.

### G3030.40 Site Storm Water Structures

Catch Basins including Frame and Grate: Precast reinforced concrete catch basins shall comply with material, design, and construction standards specified under ASTM C478. Diameter of structure to be 4 feet. Frames and grates shall be of 4-flange cast iron. Catch basins shall have removable hoods and a minimum 4-feet deep sump.

Area Drains including Frame and Grate: Precast reinforced area drains shall comply with material, design, and construction standards specified under ASTM C478. Diameter of structure to be 2.5 feet. Frames and grates shall be of 4-flange cast iron. Area drains shall have a minimum 2-foot deep sump.

Manholes: Precast reinforced concrete manhole structures shall comply with material, design, and construction standards specified under ASTM C478. Frames and covers shall be of cast iron.

Trench drains shall be a pre-engineered, manufactured system that conforms to the design loading requirements of AASHTO H-20. Channels shall be manufactured from polyester resin polymer concrete with an integrally cast-in ductile iron edge rail.

Underground Infiltration Basins: Underground infiltration basins shall be composed of corrugated arches made of either impact modified polypropylene or polyethylene copolymer. The arches shall be arranged as indicated on the plans and the system should be as indicated on the detail. ¾” crushed stone to be used as backfill from 6 inches below the base of the arches to 6 inches above the top of arches, with the entire system wrapped with non-woven geotextile fabric.

Outlet Control Structures: Outlet control structures for the underground infiltration basins to be 5-foot by 5-foot precast reinforced concrete with concrete baffle wall, in

compliance with material, design, and construction standards specified under ASTM C478. Frames and covers shall be of cast iron.

Water Quality Structures/Systems: Precast reinforced concrete water quality structures shall comply with material, design, and construction standards specified under ASTM C478. Frames and covers shall be of cast iron. The water quality structure shall have a proven laboratory test record of having the capability to remove a minimum of 80 percent of the sediment load from the low-flow storm conditions from the total catchment area of the contributing drainage system.

Bioretention Basins: The bioretention basin shall be constructed of a sand base layer, pea stone, drainage fabric geotextile, and bioretention soil media. See Section G2080 for information on bioretention seed mix.

See Sections G2020 and G2030 for information on porous pavement and permeable paver systems.

## G40 ELECTRICAL SITE IMPROVEMENTS

### G4010 Site Electric Distribution Systems

Site electrical utilities will include excavation and backfill for underground ducts, manholes, handholes, cables, and concrete encasement of specific ducts, for extending electric utility services from the various utility connection points into the building. Replacement of one (1) utility pole within the site by the utility service provider is anticipated. The extension of the service will be designed and installed to comply with the specific utility standards and regulations. The utility service provider will be consulted to determine specific requirements for the project. The proposed point of connection is as shown on Site Plan.

Utility Company Transformers: Utility company transformers will be of the pad mount type and be located as shown on the Electrical Site plan. Oil containment to be provided around the pad.

Emergency Generator: An emergency generator in a weather protective enclosure will be located adjacent to the building as shown on the Electrical Site plan.

Refer to Section D5020 for additional information on the site electric distribution systems.

### G4050 Site Lighting

Refer to Section D5040.90 "Exterior Lighting”.

Exterior building lighting will consist of building mounted LED (at egress doors) and pole mounted dimmable LED full cut-off fixtures (for parking lots, roadways, and

walkways), with house side optics as appropriate for installation adjacent to residential houses and property lines. Exterior lighting will be time switched and/or photo-cell controlled via programmable lighting control system. Light fixtures and lighting levels will be designed in accordance with IESNA and LEED. The lighting fixtures mounting height, type and location will be selected to avoid glare and light spillover beyond the property line in compliance with East Longmeadow zoning by-laws and LEED for Schools requirements, including Reduced Energy and Light Pollution credits. The system will comply with energy use limitations per Massachusetts Building Code and referenced International Energy Code 2021.

## G50 SITE COMMUNICATIONS

### G5010.30 Site Communications Distribution

Work will include excavation and backfill for underground ducts, manholes, handholes, and cables for extending Internet, Telephone and CATV utility services from the utility connection point into the building. The service extension will be designed and installed to comply with the specific utility standards and regulations.

The proposed point of connection will be in a dedicated Telecommunications Entrance Facility that will be located near the Main Electric Room service entrance.

Refer to Section D60 for additional information on the communications distribution systems.

### G5010.50 Wireless Communications Distribution

The grounds around the new high school will be wired to support outdoor wireless access points that will provide network connectivity for student and staff access. Areas of coverage will include outdoor learning spaces and areas in proximity to the new school where students will congregate. Further discussion is required to determine the desired level of wireless access coverage will be provided in more remote locations such as the athletic fields.

# Z GENERAL

## Z10 GENERAL REQUIREMENTS

### Z1010 Price and Payment Procedures

#### Z1010.20 Unit Prices

Unit prices proposed by the Bidders and accepted by the Owner will be used as the basis for adjusting the Contract Price should actual quantities of work differ from the quantity included in the base Contract Price.

Bidders will be required to provide unit prices for the following types of Work:

1. Various classes of earthwork.
2. Miscellaneous and structural steel.
3. Various types of asbestos abatement work

#### Z1010.30 Alternates

Alternates will be identified by the Architect in consultation with the Owner during the Contract Documents phase, as a means for insuring that the Project will be constructed within the budget.

#### Z1010.50 Substitution Procedures

The Owner and the Architect will consider substitutions only when one of the following conditions applies:

1. The substitution is proposed for cause.

2. The substitution will provide a clear benefit to the Owner, such as the same performance and quality at a lower cost, or better performance and quality at the same cost, or an improved construction schedule.

3. The proposed substitution is an "equal" as defined by M.G.L. Ch. 30, s. 39M(b).

4. Identify product or fabrication or installation method to be replaced. Use Substitution Form provided in the Project Manual. Provide documentation detailed side-by-side comparison of significant qualities of proposed substitution with those of the Work specified.

   a. Provide certification that the substitution will not adversely affect project goals for number of points and certification under LEED.

### Z1010.60 Contract Modification Procedures

When modifications are initiated by the Owner, the Architect will ask the Contractor to prepare a cost proposal for the change, for review by the Architect and Owner.

Changes may also be proposed by the Contractor, for limited reasons set forth in the Contract Documents.

Change Orders have to be accepted and signed by the Owner, the Architect and the Contractor.

Changes to which the Contractor has not yet agreed with respect to payment, may be implemented as a Construction Change Directive, signed by the Owner and the Architect. CCD's will become CO's when accepted and signed by the Contractor.

### Z1010.70 Payment Procedures

Schedule of values: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule and submittals schedule. Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values correlated with each phase of payment.

Projected applications for payment report: Submit a report indicating projected Applications for Payment to the Architect concurrent with submittal of the Contractor's initial construction schedule and prior to submitting the initial Application for Payment.

Applications for payment: Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

## Z1020 Administrative Requirements

### Z1020.10 Project Management and Coordination

Refer to the Project Description, Section 2010, for a discussion of employing a Construction Manager at risk. The term "Contractor" as used throughout this document shall refer to either the construction manager at risk or the general contractor, as applicable.

Contractor will be required to employ a Project Manager and a Superintendent. The Superintendent will be on site full time during construction, and will be responsible for scheduling Progress Meetings.

The Owner will employ a Project Representative who will be on site full time during construction.

Applications for payment will be submitted monthly by the Contractor, in accordance with statutory requirements. The Architect will review and approve Applications for Payment.

### Z1020.30 Construction Progress Documentation

Construction progress documentation includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's construction schedule.
3. Daily construction reports.
4. Material location reports.
5. Site condition reports.
6. Construction waste plan/monthly progress reports.
7. Indoor Air Quality (IAQ) plan/monthly progress reports.
8. Sustainable materials attributes monthly progress reports.

### Z1020.50 Submittal Procedures

The Contractor will prepare and submit for the Architect's review Action Submittals such as Shop Drawings, Samples, Product Data and Informational Submittals such as Certificates, Test Reports, and Material Safety Data Sheets (MSDS).

Architect will review and approve or otherwise comment on Action Submittals which are required by the Specifications.

Architect will review but will not be required to approve or take action on Informational Submittals.

**LEED Credits:** Where information about material content or chemical emissions is required in order to document compliance with LEED Credit requirements.

## Z1040 Quality Requirements

### Z1040.40 Quality Assurance

Contractor will be responsible for developing procedures to measure and report the quality and performance of construction, and for confirming that fabricators, installers, manufacturers testing agencies, and others involved in the construction process meet the specified requirements.

### Z1040.80 Quality Control

The Contractor will be required to provide the services of a Registered Engineer or Registered Land Surveyor to lay out locations and elevations for the building and for site improvements.

The Owner will employ a testing and inspection agency to perform the following tests and inspections:

1. Inspect soil for proper compaction and moisture content under footings, foundations, and slabs on grade.
2. Review concrete mix design, perform slump tests, and analyze results.
3. Inspect structural steel connections.
4. Review mortar mix design, and perform testing of mortar and masonry units.
5. Full-time roofing inspection.
6. Field testing of windows and curtain wall for water leakage and air infiltration.
7. HVAC and building system performance.

All other testing and inspection will be by the Contractor.

## Z1050 Temporary Facilities and Controls

### Z1050.10 Temporary Utilities

**Temporary Power:** By electrical sub-contractor. Owner will pay backcharges for connection to utility company, as this information is usually not available to bidders at the time bids are due.

**Temporary Water:** By plumbing sub-contractor. Cost of backcharge (charge for connecting to utility company lines) will be included in the plumbing sub-contract price.

**Temporary Sewer:** By site sub-contractor, for re-routing around new building.

**Temporary Drainage:** By site sub-contractor, for re-routing around new building.

**Temporary Gas:** By utility company, for re-routing around new building. Owner will pay backcharges for installation to utility company, as this information is usually not available to bidders the time bids are due.

### Z1050.20 Construction Facilities

Contractor will be responsible for field offices.

### Z1050.30 Construction Aids

- Scaffolding and Staging: Contractor shall furnish, erect, and maintain exterior and interior staging and scaffolding required to be over 8' high for use without

charge by each Trade-Bidder as needed by them for proper execution of their work. Staging and scaffolding less than 8 feet high shall be provided by each Trade-Bidder for its own use.

- Hoists and Cranes: Hoisting equipment and machinery required at heights 8 feet and above shall be furnished, installed, operated and maintained by the General Contractor for the use of all Subcontractors' material and equipment, except where otherwise specified in each Trade-Bid Section. Hoisting equipment necessary for under 8 feet shall be by the subcontractor.

**Z1050.35 Temporary Vehicular Access and Parking**

Contractor will enter and leave the site from a single location, which will be designated by the Owner and shown on the Drawings.

**Z1050.40 Temporary Barriers and Enclosures**

Contractor will be required to provide a site fence to secure the site, with a locking gate at the entrance to the site.

**Z1050.50 Temporary Controls**

**Environmental Protection, General:** Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.

**Existing Hazardous Materials:** Refer to Section F of this document for precautions during abatement and handling of asbestos containing materials, lead-based paint and other hazardous materials which may be present in and on surfaces of the existing buildings.

**Erosion Control:** Refer to Section G for a description of erosion and sediment control to be placed on the site and maintained during demolition and construction.

**Environmental Protection:** Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.

**Outdoor Air Quality Control**: Provide adequate means for containing dust and debris generated by construction operations.

**Indoor Air Quality Contaminant Containment and Control:** Develop and enforce temporary procedures for preventing demolition and construction activities from creating unacceptable IAQ within occupied areas and new construction during each phase.

- Existing Building: Prior to any construction activity beginning, the Contractor shall mount minimum MERV 13 filters on the intakes of all the existing wall or areaway

intakes for ventilation air equipment, to prevent construction and demolition debris and dust from entering the new HVAC systems. The filters shall be replaced periodically, minimum once a week or more frequently as needed. If necessary, provide a sheet metal plenum box with filter cartage, minimum MERV 13. The plenum shall be mounted on the face of the ventilation air equipment intake louvers. The plenum box shall be sealed watertight to the intake louver. The plenum box shall have a 45-degree weather shield to prevent water carry to the filter. The plenum box shall be mounted on intake louvers facing the construction site as well as adjacent ventilation air equipment intake louvers which will also have the potential of carrying in construction debris and dust.

- New Building: Prior to the demolition of the existing building, the General Contractor shall mount minimum MERV 13 filters on the intakes of all the roof top equipment, to prevent construction and demolition debris and dust from entering the new HVAC systems. The filters shall be replaced periodically, minimum once a week or more frequently as needed.

- IAQ Monitoring: Provide IAQ monitoring, conducted by Contractor's IAQ Consultant during all phases of construction and demolition.

    1) Before Construction Baseline Survey: Prior to the start of construction, conduct baseline IAQ survey in existing building to determine the background levels of air contaminants normally present inside occupied areas and building exterior. Provide complete survey, including sufficient number of rooms and spaces to be representative of entire occupied area. Baseline assessment shall include evaluations of factors as recommended by the IAQ Consultant, including comfort factors (temperature, relative humidity, carbon monoxide, and carbon dioxide), background respirable particulates, mold, moisture, and total VOCs.

    2) Before Demolition Baseline Survey: Prior to the start of demolition, conduct baseline IAQ survey in new building to determine the background levels of air contaminants normally present inside new construction areas and building exterior. Provide complete survey, including sufficient number of rooms and spaces to be representative of entire project area. Baseline assessment shall include evaluations of factors as recommended by the IAQ Consultant, including comfort factors (temperature, relative humidity, carbon monoxide, and carbon dioxide), background respirable particulates, mold, moisture, and total VOCs.

    3) Monthly Routine Monitoring: Perform monthly monitoring to determine levels of air contaminants present in new building spaces, with particular attention paid to the portion of the building immediately adjacent to demolition and construction activities.

4) **Noise Control:** Develop and maintain a noise-abatement program to minimize disturbances to school activities and other buildings adjacent to the site.

**Waste Disposal**: In accordance with local regulations and with the approved Waste Management Plan.

**Temporary Partitions:** Temporary dust and sound partitions within the building to allow construction within an ongoing operating school.

### Z1050.70 Project Identification

The Contractor will be required to provide a project sign in accordance with MSBA requirements.

## Z1060 Product Requirements

### Z1060.10 Common Product Requirements

Products that are manufactured in Massachusetts or “Made in the USA” are preferred.

## Z1070 Execution and Closeout Requirements

### Z1070.30 Cleaning and Waste Management

The Contractor is required to complete the cleaning operations before requesting inspection for certification of Substantial Completion.

After the punch list work has been completed, as a prerequisite to Final Acceptance of the Work, reclean the entire building and grounds.

### Z1070.40 Starting and Adjusting

As a prerequisite to Substantial Completion, Contractor will start up each piece of equipment and make adjustments necessary to insure that equipment is performing to specifications.

At the completion of the Project, Contractor will instruct Owner' personnel in operation and maintenance procedures for equipment furnished under this Contract.

### Z1070.70 Closeout Submittals

Certified record survey showing property line, foundation locations, and finished floor elevations.

Certificates of inspection including:

Certificate of Occupancy

Certificate of inspection for elevators

Certificate of inspection for mechanical work

Certificate of inspection for electrical work

Reports of equipment start-up, testing and balancing.

Change-over information related to Owner's occupancy, use, operation and maintenance, including final meter readings, if applicable.

Change-over from construction keying to final keying.

Consent of surety to payment at the time of Substantial Completion.

Completed project Operation and Maintenance Manuals.

Record of training of Owner's personnel; training videos if required.

Contractor's project warranty.

Project Record Documents: Record Drawings, Record Specifications, Shop Drawings.

Contractor-prepared Submittals required for LEED Certification.

When the Contractor believes that the work is substantially complete, including the closeout submittals, the Contractor will notify the Architect in writing and request inspection. Prior to requesting this inspection, the Contractor will prepare a list of work still incomplete ("punch list") and attach this list to the request for inspection.

The Architect will the make an inspection to determine whether the work is Substantially Complete and in accordance with the Contract Documents and, if it is, will issue the Certificate of Substantial Completion.

### Z1070.80 Demonstration and Training

Record of training of Owner's personnel and training videos, as required.

## Z1090 Life Cycle Activities

### Z1090.10 Commissioning/LEED Certification Requirements

**Construction Waste Management Plan:** Pursuant to LEED Materials and Resource Credit, Contractor will be required to develop and enforce a construction waste management plan that will recover 75% of construction waste materials that would otherwise go into landfill. Document the successful implementation of the waste management plan for the LEED Submittal.

**Construction IAQ Management Plan:** Pursuant to LEED Indoor Environmental Quality Credit, Contractor will be required to develop and enforce a construction indoor air quality management plan which will describe procedures to be implemented during construction and then prior to occupancy to ensure that indoor air quality meets referenced standards when the Owner occupies the building. Document successful implementation of the plan for the LEED Submittal.

This plan will include either general building flush-out just prior to occupancy, or air testing after construction ends, followed by selective flush-out in areas in which contaminant concentrations exceeds permitted maxima.

**LEED Credit:** Pursuant to LEED Energy and Atmosphere, Fundamental Building Systems Commissioning, and Energy and Atmosphere Credit, Additional Commissioning, a third party agent will perform commissioning work for this project.

Massachusetts School Building Authority (MSBA) and LEED require, as a minimum, fundamental building systems commissioning to determine that that the building's energy related systems are installed, calibrated and perform according to the District's project requirements, basis of design, and construction documents.

The MSBA will assign a Commissioning Agent to the Project.

Third Party Commissioning: The LEED scorecard for this project requires fundamental and enhanced building systems commissioning to determine that that the building's energy related systems are installed, calibrated and perform according to the owner's project requirements, basis of design, and construction documents.

Minimum commissioning should cover the following energy-related systems:

- Heating, ventilating, air conditioning, and refrigeration (HVAC&R) systems (mechanical and passive) and associated controls.
- Lighting and daylighting controls.
- Domestic hot water systems.
- Renewable energy systems, if any (wind, solar etc.).

Enhanced Commissioning: The commissioning process (and its benefits to subsequent performance of the building) can be enhanced by beginning the commissioning process early during the design process and executing additional activities after systems performance verification is completed. Enhancements might include:

- Have the Commissioning Agent review the Owner's project requirements, basis of design, and design documents prior to 50% completion of drawings and specifications, and back-check the review comments in the next design submission.
- During construction, concurrent with architect's review, have the Commissioning Agent review contractor submittals applicable to systems being commissioned for compliance with the Owner's project requirements and basis of design.
- Develop a systems manual that provides future operating staff the information needed to understand and optimally operate the commissioned systems.
- Verify that the requirements for training operating personnel and building occupants are completed.
- Within 10 months after substantial completion, have the commissioning agent participate in a review of building operation with O&M staff and occupants. Include a plan for resolution of outstanding commissioning related issues.

Commissioning will also include verification of thermal and air barrier performance of the building envelope.

The Owner will direct its Testing and Inspection Agency to inspect and test building envelope components as they are installed.

Whole Building Air Infiltration System may include the following:

- Perform whole building air infiltration testing to quantify air leakage and determine if the as-built construction achieved the required air infiltration target.
- Use infrared technology to survey exterior walls and identify areas with thermal anomalies, including discontinuous insulation and air leakage.
- Survey the roof and use infrared technology to identify roof areas with wet insulation that needed to be repaired prior to substantial completion.

## Z70 PERMITS, INSURANCE AND BONDS

### Z7050.10 Site Permits

The following permits and approvals will be required for this project; except where noted as Contractor's responsibility, obtaining these permits and approvals will be the responsibility of the Owner, assisted by SMMA.

- Notice of Intent from the Town of East Longmeadow Conservation Commission and MA DEP.
- Site Plan Review and Special Permit for Earth Moving Operations from the Town of East Longmeadow Planning Board.
- EPA NPDES NOI for construction activities
- Permit for Curb Cut, Water and Sewer Services from the Town of East Longmeadow Department of Public Works.
- Trench permit from the Town of East Longmeadow Department of Public Works. (Obtained by the Contractor.)

An Environmental Notification Form (ENF) is not required for this project.

### Z7050.20 Building Permits

The Contractor will be required to obtain all permits necessary for this Project, including but not limited to the building permit and permits pertaining to mechanical and electrical work. The awarding authority may wish to request that the Town of East Longmeadow waive the fees for permits issued by the Town.

### Z7050.30 Insurance

Contractor will be required to carry workman's compensation,  and other statutory insurance which is required by the Commonwealth of Massachusetts.

Contractor will also be required to purchase and maintain, for the duration of the project, Liability Insurance in the form and in amounts to be specified by the Owner.

## Z7070 Bond Fees

### Z7070.10 Bonds

Contractor will be required to provide a performance bond and a payment bond, each in the amount of 100% of the Contract Price.

Trade Contract sub-contractors will be required to provide performance and payment bonds, each in the amount of 100% of their respective contracts.

## 3-2
## PROPRIETARY ITEMS

On August 10th, 2023, the School Building Committee voted to approve the following proprietary items in the project manual:

**Item #1: StruxureWare - for BMS**

**Item #2: AXIS- for door access system**

**Item #3: Schlage - for door hardware**

**Item #4: AXIS - for security cameras**

**Item #5: Atlas - for clocks and paging**

**Item #6: AXIS - video surveillance system**

The vote was unanimous.

Each item/system was requested by the Owner because they have been used in other buildings throughout the Town and have been deemed as preferred items/systems by the Owner. The consistency of these items in all the Town's school buildings makes it easier for them to maintain and/or replace as needed. The Owner has also found these specific items/systems to be the most cost-effective over the buildings' life cycles and therefore recommended them for the School Building Committee's consideration.

EAST LONGMEADOW PUBLIC SCHOOLS
180 Maple Street
East Longmeadow, MA. 01028-2788

*Achievement* *Accountability*

Gordon Smith
Superintendent of Schools

Pamela Blair
Asst. Superintendent for Business

August 25th, 2023

Ms. Nina Pappacostas
Project Coordinator
Massachusetts School Building Authority
40 Broad St., Suite 500
Boston, Massachusetts 02109

Dear Ms. Pappacostas:

Pursuant to the Office of the Inspector General's Proprietary Specifications in Public Construction Projects guidelines; the proprietary items listed below were voted on and approved by the Town of East Longmeadow's School Building Committee on August 10th, 2023. Proprietary items were proposed by the East Longmeadow Public Schools Facilities Department, East Longmeadow Public Schools Information Technology Department, and the East Longmeadow Public Schools Security Department. Each item/system was requested by the Owner because they have been used in other buildings throughout the Town and have been deemed as preferred items/systems by the Owner. The consistency of these items in all the Town's school buildings makes it easier for them to maintain and/or replace as needed. The Owner has also found these specific items/systems to be the most cost-effective over the buildings' life cycles and therefore recommended them for the School Building Committee's consideration.

- **StruxureWare,** ***building automation system.*** StruxureWare is the standard for building automation systems across the East Longmeadow Public School District. The Facilities Department has extensive training on these systems. The implementation of any other system would result in higher maintenance/service costs and additional training time and costs for the Facilities Department.
- **Axis,** ***door access system.*** Axis is the standard for door access systems across the East Longmeadow Public School District. The Facilities Department has extensive training on these systems. The implementation of any other system would result in higher maintenance/service costs and additional training time and costs for the Facilities Department.
- **Schlage,** ***door hardware.*** Schlage is the standard for all door hardware for the East Longmeadow Public School Department. The implementation of any other door hardware would create inconsistencies and additional training costs for the Facilities Department.
- **Axis Security Cameras,** ***cameras.*** Axis security cameras are standard in East

Longmeadow Public School buildings. The Security Department is familiar with these cameras. The implementation of any other security cameras would cause unfamiliarity and would require additional training/costs for the Security Department.

- **Atlas, *clocks and paging.*** AtlasIED is the standard clock and paging system in East Longmeadow Public School buildings. The IT Department is familiar with this system and equipment. The implementation of any other product would cause unfamiliarity and would require additional training/costs for the IT Department.
- **Axis, *video surveillance system.*** Axis video surveillance systems are standard in East Longmeadow Public School buildings. The Security Department is familiar with these cameras. The implementation of any other security cameras would cause unfamiliarity and would require additional training/costs for the Security Department

The East Longmeadow Public School Department, along with the East Longmeadow Building Department ensures that each item complies with state and local regulations, policies, and guidelines.

**By:** Jordan C. Smith

**Title:** Superintendent of Schools

**Date:** 8/25/2023

**By:**

**Title:** Building Commissioner

**Date:** 8/25/2023