STOW ELEMENTARY SCHOOL

PROJECT DESCRIPTION

10	Project Description
20	Proposal, Bidding and Contracting
A	Substructure
A10	Existing Building
A20	Foundation
A30	Slab on Grade
B	Shell
B10	Superstructure
B20	Exterior Enclosure
B30	Roofing
C	Interiors
C10	Interior Construction
C20	Stairs
C30	Interior Finishes
D	Services
D10	Conveying
D20	Plumbing
D30	Heating, Ventilating and Air Conditioning (HVAC)
D40	Fire Protection
D50	Electrical
E	Equipment and furnishings
E10	Equipment
E20	Furnishings
F	Special Construction and demolition
F10	Special Construction
F20	Selective Demolition
G	Building Sitework
G10	Site Preparation
G20	Site Improvements
G30	Site Civil/Mechanical Utilities

10 PROJECT DESCRIPTION

1010 Project Summary

The Project is the construction of the new addition and comprehensive renovations to the Center Elementary School. This project combines the educational program of the Pompositticut (Pompo) Elementary School (grades K-2) and the Center Elementary School, (grades 3-5), 403 Great Road, Stow, Massachusetts.

The project includes new building construction, abatement and demolition of portions of the existing building, comprehensive renovation of the existing Center School and construction of access drives, parking and associated site work.

1020 Project Program

1020.01 Site Program

The site is bounded by Great Road (Route 117) to the south, private residential properties and other town owned land to the east, (the other town owned land borders on Hartley Road), the Hale Middle School to the north and private residential property to the west. Site constraints and the constraint of keeping the existing building functioning during this phased construction will impact construction operations.

Sitework includes construction of new site drives; parking areas for staff, students and visitors (approximately 100 spaces); and truck access to the loading dock.

1020.02 Building Program

The new Pompo/Center Elementary School will be designed to accommodate 600 students plus 30 pre-kindergarten students and will be approximately 98,000 square feet in size.

Program spaces are typical for an elementary school of this size, and include general purpose classrooms, art and music spaces, special education classrooms, gymnasium and other support spaces, a student cafeteria and servery with full prep/service kitchen, a library with computer zone and associated support spaces, administration area, nurse's suite and teacher and administration support spaces.

The building will be designed in accordance with the 7th edition of the Massachusetts State Building Code.

1020.03 MA-CHPS/High Performing Schools Requirements

The new Pompo/Center Elementary School will be designed and constructed in accordance with the principals of the Massachusetts High Performance Green Schools planning and criteria guidelines (MA-CHPS), published by the Collaborative for High Performance Schools.

1020.04 Additional Sustainable Design Elements

The following sustainable design elements will be incorporated into the design of the building and site.

LED Site Lighting: Light Emitting Diode (LED) parking lot lighting fixtures have high performance, light quality and exceptional long life characteristics over conventional metal halide fixtures.

Porous Pavement: Porous pavement uses an asphalt mix similar to that of Open Graded Friction Course pavement and utilizes a porous base course. This system allows rain water to penetrate the asphalt as well as the base layer below and recharge to groundwater. Porous pavement will be provided for the Emergency Access Drive.

Performance Measurement: Provide energy meters for various systems in the building to monitor system usage and efficiency and to troubleshoot system operation. The applications would include the gas and electric consumption of the heating, ventilation and air conditioning systems and the energy consumption of the lighting systems (e.g. those where occupancy or daylighting control is implemented).

Green Roof: A "green roof" (or vegetated roof) is a roof with plants on it. The plants grow in a light-weight planting medium which is placed over a conventional roof system. The planting medium retains rainwater which is taken up by the vegetation and transpired into the air. Green roofs are classified as "extensive" (growing medium depth of 6-inches or less, supporting ground-cover type plants such as sedum, herbs or perennials) or "intensive" (deeper growing medium, more diverse, taller plants such as perennials, grasses, shrubs, and small trees). There is a one story portion of the new classroom wing that will be designed to accept a future (vertical) addition. This is the area designated to receive the green roof with an area of approximately 5,590 square feet. Access for maintenance will be provided, but the area will not be accessible to students.

Green roofs protect the roofing membrane from UV radiation and temperature variations, reduce peak rates of storm water run-off from the roof; reduce the building's heating and cooling loads, and improve air quality in the vicinity of the building.

1030 Existing Conditions/Phasing

The existing Center Elementary School building will remain in operation until the building addition has been completed and is ready for occupancy. The students will move into the new potions of the building allowing for the comprehensive renovation of the existing building. Pompo and PreK students will not be moved into the entire project is complete. Parking on site during construction will be restricted. Construction access will be from Hartley Road for Phase 1 and from Great Road during Phase 2.

1040 Owner's Work

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

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

SECTION A SUBSTRUCTURE

A10 EXISTING BUILDING

Some new foundations and slab on grade construction is anticipated as part of modification to the existing building. This work is described in Section B, "Superstructure."

A20 FOUNDATIONS

Based on information contained in the preliminary geotechnical report, the proposed structure will bear on reinforced concrete spread footings and the perimeter foundation walls would bear on continuous reinforced concrete strip footings extending at least 4'-0" below grade. The foundations in the proximity of the existing building would be lowered to match the elevations of foundations of the existing structure. Based on the existing building information, the allowable bearing capacity of the soil is assumed to be 3 tons per square foot. The exterior foundation walls will be 14 inches to 16 inches thick, reinforced cast-in-place concrete walls on 24 inches to 36 inches wide continuous reinforced concrete strip footings around the perimeter of the building extending a minimum of 4'-0" below finished grade. The above information will be confirmed by the final geotechnical investigation that will be completed during the Design Development Phase.

A30 SLAB ON GRADE

The lowest level of the proposed building would be a 4 inches (minimum) thick concrete slab on grade reinforced with welded wire fabric over a vapor barrier on 2 inches thick rigid insulation on 8 inches minimum of compacted granular structural base course. This will be confirmed by the final geotechnical investigation that will be completed during the Design Development Phase.

20 PROPOSAL, BIDDING AND CONTRACTING

2020 Bidding and Award of Construction Contract

Design and construction of the new Pompo/Center Elementary School will proceed in a conventional design-bid-build sequence as required by Massachusetts laws governing construction of public works.

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

Bidders and filed sub-bidders will be pre-qualified and will be required to be certified by DCAM.

The successful general bidder and filed sub-bidders will be required to comply with the Town of Stow's Equal Employment Opportunity and Affirmative Action (EEO/AA) policies and the MSBA's MBE/WBE requirements.

2030 Contract Forms

Agreement and General Conditions: At this time, it is assumed that standard AIA Documents A101 and A201, modified to incorporate statutory provisions, will be used as the basis for the Agreement and General Conditions.

Subcontract Forms: Subcontracts between the Contractor and the subcontractors for filed sub-bid trades will be in the form set forth in M.G.L. Ch. 149, s.44F.

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

SECTION B SHELL

B10 SUPERSTRUCTURE

B1010 Primary Structural Code Issues Related to the Existing Building

B1010.01 Applicable Code

If any repairs, renovations or additions are made to the structure, a check for compliance with 780 CMR, Chapter 34 "Existing Structures" of The Massachusetts State Building Code is required. The intent of 780 CMR, Chapter 34 is to permit repairs, alterations, additions and/or a change of use without requiring full compliance with the code for new construction.

B1010.02 Existing Building

The existing building consists of an original building built around 1954 and two additions, the first built around 1957 and the second built around 1960. The building consists of a linear classroom wing with gymnasium/cafeteria at the south end of the school. The cafeteria area is on a raised floor (stage height) with a crawl space underneath. There is also a short 1-story perpendicular classroom and mechanical room wing on the west side of the main classroom wing that has a high bay mechanical room that extends below grade with a basement. Both additions were added sequentially to the north end of the classroom wing.

As part of the new project, a portion of the second addition will be demolished and then partially reconstructed. In addition, a portion of the original building will be demolished and partially reconstructed. The "1-Story Perpendicular Wing" will be partially demolished and the kitchen area (off the cafeteria) will be completely demolished.

B1010.03 Level 2 Work

It appears that the removal and/or reconstruction of existing structural framing is less than between 15% of the total horizontal framing of the existing structure. In addition, any work involving shear walls or lateral frames does not appear to involve more than 35% of the lateral force resistance of the building. Therefore, the work may be classified as Level 2 Work as defined in Chapter 34 of The Massachusetts State Building Code.

For Level 2 Work, the following structural issues have to be addressed for the existing building:

1. Identify load path (or lack thereof) to the foundation for gravity and lateral loads.

   Based on a review of drawings for the existing building, it is a 1-story, wood and steel-framed structure. The roof of the classroom building is framed with wood joists and decking supported on steel beams and columns and load-bearing CMU walls. The roof of the gymnasium/cafeteria is framed with metal deck supported on steel beams and columns and load-bearing CMU walls. The raised floor at the cafeteria/stage area is a concrete framed slab. The ground floor is a slab on grade with perimeter foundation walls on continuous footings. The below grade area at the mechanical room is framed with cast-in-place concrete basement walls. Columns are supported on spread footings with an allowable bearing pressure of 6000 psf.

2. Evaluate the existing structural elements or systems that may be need of repair or other remedial action and determine the character and extent of the repairs or remedial action.

   The existing building appears to be in good condition. There are no major signs of settlement or distress in the exterior and interior walls. It is anticipated that some minor upgrades will be required. These are discussed below.

3. Determine the net service live load capacity at areas where there are structural changes to floors or roofs.

   This involves areas of the existing building that will be partially demolished and then reconstructed. These areas will be designed to support Code required live and snow loads for new construction.

4. Determine the live load capacity of the existing roof structure and verify whether it can support the minimum snow loads as required by Chapter 34 of the Code.

   A review of the existing roof framing indicates it meets the required snow load capacity.

5. Determine the lateral load capacity of the existing building relative to lateral load resistance required for the level of work to be performed, and, determine what is needed to provide the required lateral load resistance.

   The existing building lateral load-resisting system appears to consist of unreinforced masonry shear walls. While some minor reinforcing of the connection of the roof diaphragm to the shear walls is anticipated, the building appears to have lateral load-resisting system that will require little, if any, upgrades.

6. Determine and evaluate the connectivity of the various structural elements.

   The building framing appears to provide an appropriate load-path to transfer gravity loads to the foundations.

7. Determine the existence of anchors connecting floor and roof decks to concrete or masonry walls, and, if they exist, evaluate their ability to provide lateral support to walls and transfer in-place shear from decks to the plane of the walls.

   Some minor reinforcing of connections in the lateral load-resisting system is anticipated as discussed in item 5 above.

8. Determine the lateral supports of all structural and non-structural masonry walls and provide details.

   It is anticipated that minor work will be required, such as the addition of seismic clips along the top of some walls.

9. Evaluate existence of brittle connections of precast concrete cladding components, if any.

   There are no precast components on this building

B1020 Existing Building Modifications

There are three areas in the existing building that will be modified.

B1020.01 Classroom Wing

The second classroom wing addition will be partially demolished to make room for the new construction. In addition, part of the existing roof framing will be demolished and rebuilt in order to replace part of the interior load-bearing CMU walls with steel beams and columns to create an open space at the new building entry.

B1020.02 Mechanical Room Wing

The second area to be modified is at the mechanical room wing. This portion of the building will be partially demolished leaving the existing basement structure. The walls of the basement will be cut to 4 feet below the proposed grade. A new floor slab will be constructed over the basement area consisting of a 4-1/2" inch concrete slab on 3 inches composite deck supported by composite steel beams. A portion of the floor will be framed so that it can be removed if it becomes necessary to remove or replace a large water storage tank that will be located in the existing basement. The new slab will receive a waterproofing membrane and a protective concrete topping slab.

B1020.03 Cafeteria

The third modification will involve the partial demolition of the existing cafeteria area at the east side of the building, including the demolition of the raised floor/stage area that also contains the existing kitchen. A new exterior masonry wall bearing on a cast-in-place foundation wall will be constructed at the demolished area. A slab on grade will be constructed where the raised floor was removed.

B1030 New Building Floor Construction

B1030.01 Typical Floor Construction

A 3-1/4" light weight concrete slab on 3 inch galvanized composite metal deck slab reinforced with welded wire fabric on composite wide flange steel beams and girders spanning between steel columns. The weight of the structural steel is estimated to be 10.5 psf.

B1040 New Building Roof Construction

B1040.01 Two Story Classroom Wing Roof Framing

The roof construction would be galvanized corrugated 1-1/2" deep, Type 'B' metal roof deck spanning between sloped steel beams to drain roof. The weight of the structural steel is estimated to be 9 psf.

B1040.02 One Story Wing Roof Framing – for Future Addition

The roof of the one story classroom wing would be similar to the typical floor construction of 3-1/4" light weight concrete slab on 3 inch galvanized composite metal deck slab reinforced with welded wire fabric on composite wide flange steel beams and girders spanning between steel columns. The weight of the structural steel is estimated to be 10.5 psf.

B1020.03 Gymnasium Roof Framing

The roof construction would be galvanized corrugated 3 inch deep, Type 'N' acoustic metal roof deck spanning between longspan gable joists and other special joists to create a hip roof. The weight of the steel joists and miscellaneous structural steel is estimated to be 12.5 psf

B1020.04 Cafeteria Wing Roof Framing

The roof construction would be galvanized 3 inches deep, Type 'N' acoustic metal roof deck spanning between wide flange steel beams which would be supported by two longspan structural steel trusses and columns to create the hip roof. The weight of the structural steel is estimated to be 12.5 psf.

B1020.05 Single Story Kitchen and Utilities Wing Roof Framing

The roof construction would be galvanized corrugated metal 1-1/2" deep, Type 'B' metal roof deck spanning between wide flange steel beams which in turn would be supported by wide flange steel girders and columns. The weight of the structural steel is estimated to be 10 psf.

B1020.06 Low Roof Above the Media Center and Lobby Roof Framing

The low roof above the media center and lobby would be the continuation of the second floor slab which is 5-1/4", light weight concrete composite metal deck slab reinforced with welded wire fabric on wide flange steel beams spanning between steel girders and columns. The weight of the structural steel is estimated to be 10 psf.

B1020.07 Two Single Story Administration Wings Roof Framing

The roof construction would be galvanized corrugated 1-1/2" deep, Type 'B' metal roof deck spanning between sloped steel beams to create a traditional hip roof. The weight of the structural steel is estimated to be 9 psf.

B1030 Vertical Framing Elements

B1030.01 Columns

Columns shall be wide flange steel columns or hollow structural steel columns. The weight of the structural steel is estimated to be 1.25 psf.

B1030.02 Lateral Load-Resisting System

Typical lateral load resisting system would be concentric steel braced frames comprised of hollow structural steel sections for all wings, including the double story spaces for the gymnasium and the cafetorium. The weight of the structural steel is estimated to be 1.25 psf.

B20 EXTERIOR ENCLOSURE

B2010 Exterior Walls

B2010.01 Exterior Wall Skin

Masonry Walls: Brick veneer in two colors, nominal 4-inch wythe, with precast concrete trim, anchored to stud framing with stainless steel ties. Loose steel lintels above window and door openings.

- Brick: Extruded brick, nominal 2-1/2 high by 8 inches long.
- Precast Concrete Trim: Sills.
- Through-Wall Flashing: Self-adhering modified bitumen flashing lapped over formed stainless steel flashing projecting through the face.

Metal Panels: Formed aluminum composite panels, 4 mm thick, for wall facing. Installed in drainage-plane rainscreen design. Sheet metal flashing to match finish of panel face.

B2010.02 Exterior Wall Construction

Back-up Wall: Cold-formed steel framing, 45 mil stud thickness, with G90 galvanizing, covered with 1/2 inch thick glass fiber-faced gypsum panel sheathing.

- Deflection not to exceed 1/720 where framing carries masonry veneer; and not to exceed 1/360 where framing carries metal panels.
- Stud spacing as required by the performance, but no farther apart than 16 inches on center.

B2010.03 Exterior Wall Insulation

Insulation Above Grade: Three-inch-thick spray-applied polyurethane insulation, installed in the air space behind the masonry, veneer and metal panel. Insulation provides thermal insulation, and acts as air barrier, vapor retarder and weather barrier.

Flashing: Continuity of the weather barrier and air barrier will be provided by using self-adhering modified bituminous flashing for transitions to doors, windows and penetrations.

B2010.04 Exterior Wall Air Barrier and Vapor Retarder

Combination Air Barrier and Vapor Retarder: The spray applied foam insulation noted above performs as the air and vapor barrier also.

B2010.05 Exterior Wall Interior Skin

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

B2010.06 Exterior Louver

Mechanical Room Louvers: Extruded aluminum fixed blade louvers with drainable blade profile; high performance painted finish, with bird screen, and with insulated blank-out panels to cover excess louver area not connected to duct.

B2010.08 Exterior Soffits

Overhang Soffits at the existing building: The underside of the overhang will be finished composite-metal panels over sheathing. The building thermal insulation and air barrier will extend over this soffit, to enclose the supporting structure and tie into the roofing system.

Canopy Soffit: Composite-metal panels over sheathing. Assume canopies are uninsulated, and that the building air barrier/vapor barrier does not extend onto canopies. The area under the canopy will be illuminated with recessed lights.

B2020 Exterior Windows

B2020.01 Storefronts

Storefront Framing: Extruded aluminum, center-glazed, stick-built storefront assembly. System to include iso-bar type thermal break and high-performance PVDF finish.

Glazing: One-inch-thick insulating glass; argon-filled, clear tempered glass with low-e coating and high-performance edge spacer.

B2020.02 Glazed Curtain Wall

Curtain Wall System: Extruded aluminum curtain wall system, thermally-isolated curtain wall system, equal to EFCO 5500 system. Mullions size to be 2-1/2 inches by 6 inches. Framing will incorporate a non-metallic structural

strut between interior and exterior metal framing. U-value of 0.42 or lower when glazed.

Glazing: One-inch-thick insulating glass; argon-filled, clear tempered glass with low-e coating and high-performance edge spacer.

Spandrel Glass: Same as vision glass, with addition of opaque ceramic frit on the No. 4 (innermost) surface.

B2020.03 Aluminum Windows

Aluminum windows: Punched openings will be windows of traditional design, with operable awning vents. High-performing window assemblies, providing overall U-value of 0.35 or less. Window frame extrusions will incorporate a non-metallic thermal break. Insect screens will be provided. Finish to be high-performance PVDF. Product to be equal to EFCO 510-I or equal.

Glazing: One-inch-thick insulating glass; argon-filled, clear tempered glass with low-e coating and high-performance edge spacer.

B2030 Exterior Doors

B2030.01 Exterior Entrance Doors

Aluminum Entrance Doors: Heavy duty wide-stile doors with 0.125-inch-thick extrusion wall thickness and custom arrangement of intermediate mullions. Product to be Kawneer "500" or equal.

Glazing: One-inch-thick insulating glass; argon-filled, clear tempered glass with low-e coating and high-performance edge spacer.

Hardware: Full height continuous hinge; rim exit device; offset tubular pulls; surface-mounted overhead closers; stops; threshold; weatherstripping. Removable mullion at pairs of doors.

- One leaf at each of the two main entrance vestibule entrances 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 the security system for access control.

B2030.02 Exterior Service Doors

Flush Steel Doors: Extra heavy duty insulated core doors with 0.053-inch-thick (nominal 16 gauge) G60 galvanized steel faces, in fully welded, 0.067-inch-thick

(nominal 14 gauge) G60 galvanized steel frames; shop-primed and field painted.

- Hardware: Mortised lockset with lever handle; butt hinges; threshold; gasketing.

B30 ROOFING

B3010 Roof Coverings

B3010.01 Low-Slope Roofs; Above Deck Roof Covering Components

Roof Membrane: Fully-adhered single-ply roofing over insulated steel deck. Also over concrete slab at the area identified for future expansion.

- Underlayment: Half-inch thick glass-faced gypsum substrate board mechanically fastened to steel deck. (not required at the concrete deck area for future expansion)
- Air Barrier/Vapor Retarder: Self-adhering rubberized asphalt sheet.
- Insulation: Polyisocyanurate with glass felt facers; 5-inch thickness, applied in at least two layers, with first layer mechanically fastened and the other layers adhered to layer below. Where structural roof deck is flat and at the area for future expansion, tapered insulation will provide slope to drain; 1/4 inch per foot.
- Cover Board: Half-inch thick glass-faced gypsum panel.
- Membrane: 60 mils thick thermoplastic membrane with heat-welded seams; mechanically-attached. Product to be thermoplastic polyolefin (TPO.)
- Walkways: To provide access to rooftop equipment, membrane walkway pads will be laid over and adhered to the roofing membrane.
- Performance: Resist wind uplift calculated in accordance with the Massachusetts State Building Code for 100 mph design wind velocity, Exposure B.

Warranty: Total system warranty, 20 years with enhanced wind uplift warranty.

B3010.02 Flashing and Sheet Metal

Coping and Roof Edge: 0.080 inch thick formed aluminum with PVDF finish. Two-piece assembly consisting of formed steel clip and snap-on aluminum fascia.

B3010.03 Vegetated Roof

Approximately 5000 square feet of roof above the one story classroom area (new construction) will be overlaid with an extensive vegetated roof system consisting

of low-growing sedum on 3 to 5 inches of planting medium. The planted area will be bordered by a strip of riverbed gravel ballast about 24-inches wide.

B3020 Roof Openings

B3020.01 Skylights

Aluminum-Framed Skylights: Assume one skylight, 200 square feet in size at entry vestibule. Glazed with insulated glass unit, tempered exterior light and laminated interior light.

Aluminum-Framed replacement skylights at the locations of existing skylights. (Assume 20, remainder to have openings infilled)

SECTION C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 Partitions

C1010.01 Masonry Partitions

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 floor or roof deck above, and will be restrained from lateral movement at the top.

- **Locations:** Mechanical rooms, main electrical room, elevator shafts and elevator machine rooms, receiving area, classroom partitions within the existing building.

Fire-Rated Partitions: Where a fire-rating is required, masonry partitions will be constructed to conform to a specific U.L. design. Specific locations will depend upon the final building design, but the following are probable locations:

- 2-hour rated construction around elevator shafts and elevator mechanical room, and emergency electrical rooms.

- 1-hour rated partitions at building mechanical room and main electrical room.

- 2-hour rated firewall to be located between the existing wood framed building and the new construction. Firewall to include an 8' x 8' rolling fire shutter and 100 square feet of 2-hour fire rated ceramic transparent glazing.

C1010.02 Gypsum Board Partitions

Typical Gypsum Board Partitions: 5/8 inch thick gypsum board on 3-5/8" deep, 0.0359 inch thick (nominal 20 gauge) steel studs spaced 16 inches on center. Screw gypsum board to studs. Partitions typically extend full height from floor to underside of deck above.

Fire-Rated Gypsum Board Partitions: As above, but conforming to a specific U.L. design, and constructed with Type X/Fire Core gypsum board. Specific

locations will depend upon the final building design, but the following locations are probable:

- 2-hour rated construction around emergency electrical closets and utility shafts.

- 1-hour rated partitions at stairs, kitchen, platform and gymnasium.

Acoustical Partitions; STC 45: Typical Gypsum Board partition with acoustical insulation inside the wall and acoustical caulking at top and bottom of the partition.

- Locations: Classrooms to corridors and offices.

Acoustical Partitions; STC 50: Typical Gypsum Board partition, except one side with two layers of 5/8" gypsum board; acoustical insulation inside the wall and acoustical caulking at top and bottom of the partition.

- Between classrooms.

Acoustical Partitions; STC 60: Sound and vibration attenuating partitions; double stud with space between, gypsum board both sides, acoustical insulation inside the wall and acoustical caulking at top and bottom of the partition.

- Locations: Cafeteria, music and break out rooms.

Shaft Wall: Galvanized steel C-H studs with 1-inch thick coreboard and 5/8-inch thick Type X gypsum on outside face.

- Locations: Mechanical shafts.

C1010.03 Masonry Veneer Partitions

Concrete unit masonry, standard block with painted finish, and glazed CMU top course, tied back to the underlying stud framing.

- Location: Gymnasium

C1010.05 Interior Guard Rails

Guardrails around Floor Openings: Painted steel railings, with stainless steel top rail, matching the railings on the stairs.

- Locations: At the floor openings adjacent to the central stair.

C1010.06 Interior Windows

Hollow Metal Frames: Hollow-metal construction, 16 gauge steel, with corners mitered and welded; shop-primed for field painting. Typical all locations except those listed below under "wood frames" heading.

Wood Frames: Solid hardwood assembly at Library Media Center and Administration entrances.

Glass: Clear glass, tempered at all locations. Vision panels in fire-rated partitions and fire wall will be fire-rated transparent ceramic material, such as "Fire-Lite."

C1010.07 Interior Storefront

At primary entrances the interior vestibule wall will be constructed of the same material as the frame, sidelights and transom of the entrance door surround at the exterior walls. Glass will be clear, tempered safety glass.

C1010.08 Interior Partition Firestopping

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

Top-of-Partition Firestopping: Will be in accordance with a tested U.L. Design. Occurs at rated partitions and smoke barriers.

C1020 Interior Doors

C1020.01 Interior Swinging Doors

Wood Doors: Flush wood doors, hardwood veneer face, AWI PC-5 Premium Grade 5-ply construction, natural finish. Factory-finished and factory-fit to steel frames.

Face Veneer: Select white maple veneer, plain sliced.

- **Wood Finish:** Factory finished with stain and conversion varnish.
- **Locations:** Cross-corridor doors, classrooms and other teaching spaces, administrative offices, teacher break rooms, toilet rooms, and for other doors in public areas.

Steel Doors: HMMA 861 "Heavy Duty" doors, with 0.042" thick cold-rolled steel faces, seamless edges. Shop-primed and field painted.

- **Locations:** Exterior doors to mechanical equipment rooms, electrical equipment rooms, receiving area, and similar service locations.

Steel Frames: Heavy-duty hollow-metal frames with face-welded corners. Furnish drywall and masonry profiles, as appropriate to construction in which doors will be set. Shop-primed and field painted.

- Frames for classroom doors typically include an 18-inch wide sidelight glazed with clear safety glass; or fire-rated ceramic glazing where required for fire-rating.

Hardware: Heavy-duty, BHMA Grade 1; with satin chrome plated finish on interior locations, and stainless steel at exterior locations.

- **Locksets:** Mortise locksets and latch sets at interior doors; lever handles.
- **Keying:** Grand-Master and Masterkeying system to be coordinated with the Owner.
- Provide key cabinet and key organizing system.

Fire-Rated Openings: Where openings are required to be fire-resistance rated, U.L. listed and labeled products, tested under positive pressure, will be specified.

C1020.02 Interior Entrance Doors

At primary entrances, the interior vestibule doors will match the exterior entrance doors.

- **Glazing:** Single glazed with 6-mm-thick clear tempered safety glass.
- **Hardware:** Full height continuous hinges; offset tubular pulls; tubular push bars full width of door; surface-mounted overhead closers.

C1020.03 Interior Coiling Doors

Overhead Coiling Fire Doors: 1-1/2 hour rated steel doors, shop-primed and field painted.

- **Release Mechanism:** Sprinkler water flow activation.
- **Raising and Lowering:** Electrical operation.
- **Annunciator:** Strobe lights and voice annunciator, to comply with ADA requirements.
- **Location and Size:** Servery; two doors, each 8' wide by 10' high, to protect three openings.

Overhead Coiling Fire Doors: 2-hour rated steel doors, shop-primed and field painted.

- **Location and Size:** Firewall; one doors, each 8' wide by 8' high, to protect opening.

Overhead Coiling Doors: One door, each 10' wide x 8' high, installed at the loading dock. Manual operation.

C1020.04 Interior Coiling Grilles

Coiling Grilles: Overhead coiling aluminum open link style grille with brushed aluminum finish. Electrically operated. Locations as listed below, with preliminary sizes.

- **Servery:** Two 8' wide by 10' high.

C1020.04 Other Interior Doors

Access Doors: Furnish access doors to provide access to plumbing, mechanical, and electrical controls. Stainless steel units in kitchen and toilet rooms; painted steel units at other locations. Furnish fire-rated units for installation in fire-rated walls and fire-rated ceiling assemblies.

C1030 Specialties and Fittings

C1030.01 Visual Display Boards

Subject to review with the Owner, markerboards and tackboards are anticipated to include the following:

Markerboards, Fixed: Wall-mounted porcelain on steel marker boards with extruded aluminum trim and chalk tray, and tack-strip along top of board.

- Quantity: Three 4' x 8' per classroom. One 4' x 4' per office.

Tackboards: Wall-mounted vinyl-coated cork tackboards with extruded aluminum trim.

- Quantity: Two 4' x 8' per classroom, one at 4' x 4' per office and additional tackboards may be installed in corridors as the program requires

Map Holders: Wall mounted, to hold 8-1/2" x 11" paper, with long edge horizontal. One per room.

Interactive Markerboards: Refer to Part D

C1030.02 Fabricated Compartments and Cubicles

Toilet Compartments: Plastic partitions (phenolic). Floor supported with headrail. Stainless steel hardware. Full height bracket.

Cubicle Curtains: In Nurse's suite, enclosing three cubicles. Flame-resistant polyester curtains with mesh band at top; hung from track.

C1030.03 Wall and Corner Guards

Corner guards: Stainless steel. Provided in kitchen areas and loading dock corridors.

C1030.04 Interior Signage

Metal Dedication Plaque: Cast aluminum plaque; one to be located in the lobby.

Interior Panel Signs: One at each door, with raised contrasting letters and Braille to meet accessibility requirements. Size: Approximately 8" x 8".

Dimensional Characters: 8 inches high letters identifying the gymnasium, Cafeteria and Media center. Exterior building mounted letter, size and location to be determined.

Egress Path Diagrams: Framed "Path to Exit" signs, 8-1/2" by 11"; one per room.

Wayfinding: In corridors as required.

Miscellaneous Signs: Other signs as required for life safety, such as those required by fire services.

C1030.05 Plastic Lockers

Kitchen Staff Lockers: Wardrobe lockers, single-tier, 12" x 12" x 6-feet high, painted steel with louvers in the door.

- Locking: Padlock loops.
- Mounting: Set on 4-inch high glazed masonry base.
- Accessories: Hanger rod, sloped tops, end panels as exposed ends.
- Quantity: 8

C1030.06 Storage Shelving

Metal storage shelving will be provided by the Owner, under a separate Furnishings, Fixtures and Equipment contract.

C1030.08 Toilet and Shower Accessories

Toilet Room Accessories: Stainless steel similar to Bobrick classic style (flat face). Subject to discussion with Owner regarding vendor-supplied paper towel and soap dispensers.

- Combination paper towel dispenser and waste receptacle unit: Two per multi-user toilet room; one per single-user toilet room.
- **Paper Towel Dispensers:** One per each sink, except in toilet rooms
- **Soap Dispensers:** One per each sink.
- Toilet paper dispensers, partition mounted: One per toilet in multi-user toilet rooms
- Toilet paper dispensers, wall mounted, recessed: One per single-user toilet room
- **Sanitary Napkin Disposal Units:** One per staff toilet.
- **Grab Bars:** Two at each wheelchair accessible water-closet.
- **Mirrors In Single-User Toilet Rooms:** Stainless steel framed mirrors.

- **Mirrors In Multi-User Toilet Rooms:** All-glass mirrors, not toilet accessories; see below.

Shower Accessories

- **Fold-down seats:** In one shower stall in each locker rooms and in one shower stall in each staff shower room.
- Grab bars.
- Shower curtains, hooks and rods: One set per shower compartment
- **Robe Hooks:** One per shower compartment
- **Soap Dispenser:** One per stall.

Custodial Accessories

- **Mop Holder With Shelf:** One per janitor's closet.

Miscellaneous Accessories

In each room other than toilet rooms and kitchen where there is a sink, one wall-mounted paper towel dispensers and one soap dispenser will be provided at each sink. Locations include classrooms with sinks, art rooms and teacher/staff dining rooms.

C1030.09 **Mirrors**

Wall-mounted, unframed, mirrors will be provided in each multi-user toilet room, above the lavatories.

C20 STAIRS

C2010 Stair Construction

C2010.01 Steel Stairs

Stairs: Steel stairs conforming to NAAMM (National Association of Architectural Metal Manufacturers) "Architectural" Class, with tubular or channel steel stringers, concrete-filled steel pan treads and platforms, steel plate risers, open soffit, all welded construction.

Lobby Stair: Unenclosed stair connecting entrance lobby to second floor.

C2010.03 Wood Stairs

Stairs from seating area to stage in the Cafetorium will be wood framed, with maple treads and risers.

C2020 Stair Finishes

C2020.01 Tread, Riser and Landing Finishes

Lobby Stair: Manufactured aggregate treads and landing. Steel structure painted with high-performance epoxy paint.

Egress Stairs: Rubber tread and risers covers; rubber tile on landings. Steel structure painted with high-performance epoxy paint.

Stair to Stage in Cafetorium: Exposed hardwood with transparent urethane finish.

C2020.02 Stair Railings

Lobby Stair: Painted steel railings, vertical picket design, with stainless steel top rail and handrails.

Egress Stairs: Painted steel railings, vertical picket design, with stainless steel top rail and handrail. Wall-mounted handrails will be stainless steel pipe with stainless steel wall brackets.

Stairs in Cafetorium: Stainless steel pipe handrail, wall-mounted.

C30 INTERIOR FINISHES

C3000 Overview

C3000.01 Finishes Schedule

Room	Floor	Walls	Ceiling
Entrance Vestibules	Entrance Mat (see Part E)	Glazed storefront system.	Skylight
Entrance Lobby	Porcelain tile.	Wood paneling; gypsum board painted.	Acoustical panel
Corridors in academic and public areas	VCT	Porcelain tile wainscot with wood chair rail; gypsum board painted.	Acoustical panel
Corridors in service areas (receiving, mechanical room)	VCT	Painted CMU.	Sound-attenuating gypsum board above acoustical panel ceiling.
Classrooms, computer lab, and similar teaching spaces	VCT	Gypsum board, painted.	Acoustical panel
Library	Carpet	Wood paneling; gypsum board, painted.	Acoustical panel
Art Room	Sealed concrete	Gypsum board, painted.	Acoustical panel
Offices, Administration area	Carpet	Gypsum board, painted.	Sound-attenuating gypsum board above acoustical panel ceiling.
Offices, other areas	Carpet	Gypsum board, painted.	Sound-attenuating gypsum board above acoustical panel ceiling.
Cafeteria	Porcelain tile.	Porcelain tile wainscot; painted gypsum board above.	Wood acoustical panel; exposed structure painted white
Kitchen	Resinous flooring	FRP panels	Acoustical panel, Mylar faced
Servery	Porcelain tile.	Porcelain tile wainscot; gypsum board, painted.	Acoustical panel.

Room	Floor	Walls	Ceiling
Music room	VCT	Fabric-faced acoustical panels two walls; painted gypsum board.	Mix of sound-absorbing acoustical panels and sound reflecting gypsum board panels.
Performance Platform	Apron: Wood strip flooring and platform	Painted CMU.	Exposed structure, painted black and wood acoustical ceiling
Gymnasium	Wood athletic flooring	Painted CMU wainscot w/glazed block cap; wood fiber acoustical panels.	Exposed structure, painted
Toilet Rooms	Ceramic mosaic tile.	Painted CMU	Gypsum board, epoxy painted
Mechanical rooms	Concrete, w/ sealer.	Painted CMU	Exposed structure.
Storage rooms	VCT	Painted CMU	Exposed structure.
Loading dock and receiving area	Concrete w/ sealer	Painted CMU	Exposed structure.

C3000.02 Sustainable Design Requirements

Sustainable Materials: Building materials will be selected to optimize the use of sustainable materials, as defined by MA-CHPS for Combined Materials Attributes. Sustainable materials include recycled content materials, bio-based materials, wood certified by the Forest Stewardship Council as sustainably harvested, and material salvaged from the existing elementary school.

Indoor Air Quality (IAQ): To the extent feasible, low-emitting materials will be specified in the following categories: Adhesives, sealants and concrete sealers; carpet and carpet adhesives; resilient flooring and associated adhesives; interior paints; acoustical ceiling panels; wood wall panels.

C3010 Wall Finishes

C3010.01 Wall Paneling

Wood Paneling: Hardwood veneer paneling; select white maple veneer, plain sliced, HPVA Grade A. Shop fabricated and shop- finished with AWI catalyzed urethane system. Manufactured to standard sizes. Location: (2) entrance lobbies; either side of cafeteria platform to 12' AFF.

C3010.02 Gypsum Board Wall Finishes

Gypsum Board: Joints taped and finished

Gypsum Board Accessories: Reveals to be determined

C3010.03 Tile Wall Finishes

Porcelain Tile: Field tile and trim including base and bullnose cap

Ceramic Tile: Field tile and trim including coved base

C3010.04 Acoustical Wall Treatment

Fabric-Faced Acoustical Wood Fiber Wall Panels: Tectum "Finale Fabri-Tough" Panels, or equal panel constructed of aspen wood fibers bonded with inorganic hydraulic cement; 2-inches thick. Sizes and quantities to be determined. Locations: Cafetorium, Library, Music Rooms.

Acoustical Wood Fiber Wall Panels: Tectum Panels, or equal panel constructed of aspen wood fibers bonded with inorganic hydraulic cement; 2-inches thick. Sizes and quantity to be determined. Location: Gymnasium

C3010.05 Interior Wall Painting

Concrete Unit Masonry: Acrylic block filler and two coats of low-VOC latex paint.

Gypsum Board, Latex Paint: One coat primer and two topcoats of low-VOC latex paint.

Gypsum Board, Epoxy Paint: One coat primer and two topcoats of water-based acrylic epoxy.

Shop Primed Metal: Two top coats of low-VOC latex paint.

C3010.06 Other Wall Finishes

Fiberglass Reinforced Plastic Coated Panels (FRP): Crane Composites "Glasboard" type panels with sealed finish; for use in custodial closets.

C3020 Floor Finishes

C3020.01 Concrete Floor Finishes

Sealed Concrete: Clear sealer.

C3020.02 Tile Floor Finishes

Porcelain Tile: Large size, unglazed, porcelain body tile, with matching base

Ceramic Mosaic Tile: Unglazed porcelain tile; 2" x 2"

C3020.03 Wood Flooring

Wood Strip Flooring: Combination hardwood and softwood with tongue-and-groove edges nailed to plywood subfloor. Field finished with transparent urethane varnish.

Wood Athletic Flooring, Gymnasium: Hard Maple strip flooring on plywood subfloor supported on neoprene pads; performance characteristics suitable for basketball and volleyball. Field finished with game line paint and oil-modified urethane varnish.

C3020.04 Resilient Flooring

Resilient Tile Flooring: Vinyl composition tile; 12" x 12" x 1/8" thick.

C3020.05 Carpet Flooring

Carpet Tile: Offices, Library

C3020.06 Resinous Flooring

Kitchen: Water-resistant and heat-shock-resistant decorative resin flooring, 3/16-inch-thick system.

C3030 Ceiling Finishes

C3030.01 Gypsum Board Ceiling Finishes

Gypsum Board: Suspended gypsum board assembly with joints taped and finished.

C3030.02 Acoustical Ceilings

Acoustical Ceilings, Typical: 2 x 2 mineral-fiber acoustical lay-in panels; supported by steel double-web grid with narrow face 9/16" wide aluminum face cap.

Acoustical Ceilings, Sound and Vibration Attenuating: The areas listed below will have, above the typical acoustical ceiling, a sub-ceiling made of a double layer of gypsum board fastened hung from the structure above on resilient studs.

Sound Reflecting Panels: In Music Rooms, where ceilings need to both reflect and absorb sound, typical sound-absorbing panels will be mixed with gypsum panels.

High NRC Ceilings: In the Library, ceiling panels will be large (4 x 4), high NRC 0.70 or higher noise reduction coefficient) fiberglass base panels.

Acoustical Ceiling, Food Prep Areas: 2 x 4 mineral-fiber lay-in panels with scrubbable Mylar face; supported by steel double-web grid with standard 15/16" wide aluminum face cap.

C3030.03 Suspended Wood Ceilings

Wood Ceiling System: Wood-veneer faced panel system suspended from the ceiling on manufacturer's suspension system. Installed in the Cafeteria, platform, part of library, and part of lobby. Product; Armstrong World Industries "WoodWorks" or Rulon Company wood ceiling.

C3030.04 Interior Ceiling Painting

Gypsum Board: One coat primer and two topcoats of low-VOC latex paint.

Exposed Structure: Dryfall paint; flat/no sheen.