

DESIGN DEVELOPMENT BEVERLY PUBLIC SCHOOLS



BUILDING BRIGHT FUTURES

collaboration
collaboration exploration
research-based learning
research-based learning

December 23, 2015

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Project Number: 1403.00

December 23, 2015

Report Prepared for:

Beverly School Building Committee
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**** Design Development Drawings and Project Manual are being provided under a separate cover.**

INTRODUCTION

SUMMARY OF DESIGN DEVELOPMENT

Subsequent to the submittal of Schematic Design on August 6, 2015, Ai3 Architects, LLC, Heery International, Inc., and Agostini Bacon Construction have been collaborating with the Owner to further refine the Schematic Design drawings and specifications. The development of the design and documentation during the Design Development phase included continued weekly meetings with the Working Group, programming meetings with the administration, faculty and staff, meetings with the local police and fire officials, City Planner, City transportation engineers, building officials, Green Sub-committee, School Committee, School Building Committee, and the Beverly City Council.

The discussions and input included all elements of the project. A few examples of the topics discussed include; site parking, site vehicular and pedestrian circulation, site topography, site signage, site utilities, site educational spaces, off site traffic and bus circulation, site paving materials, building branding, exterior building materials, exterior glass and daylighting, space planning and programming, building security and CCTV, building system design (MEP/FP, Structural), etc. The attached drawings and specification and documents contained within the enclosed binder are as a result of the numerous meetings, conversations and input provided by the Owner.

On September 30, 2015, the MSBA Board of Directors approved the proposed project, execution of the Project Funding Agreement, and construction of the new Beverly Middle School.

FINAL DESIGN PROGRAM DESIGN PROGRAM SUMMARY

On August 6, 2015, the Educational Space Summary and Designer Certification were submitted to the MSBA as part of the Schematic Design submittal. There have been a couple minor deviations in the Educational Space Summary since the Schematic Design submission. The narrative below outlines these changes:

Core Academic Spaces:

The overall square footage for the Core Academic Spaces increased from 68,390sf to 68,950sf.

Health Classroom

The size of the Health Classroom increased by 560sf in order to meet the programmatic needs of the District's Health and Physical Education program. This area was re-distributed from the Locker Room square footage area.

Special Education:

No modifications were made to the Special Education category. The overall square footage for the Special Education category remains at 15,850sf.

Art & Music:

The overall square footage for the Art & Music category remains at 6,550sf.

Concessions

Concessions was not originally delineated as a distinct space in the proposed space summary. The Owner requested a separate space for concessions during events at the Gymnasium and Auditorium. The Design Development submission identifies two practice rooms at 75 sf in lieu of three at 75sf to accommodate the added space.

Vocations & Technology:

No modifications were made to the Vocations & Technology category. The overall square footage for the Vocations & Technology category remains at 9,600sf.

Health & Physical Education:

The overall square footage for the Health & Physical Education category decreased from 15,400sf to 14,840sf.

Locker Rooms - Boys / Girls w/ Toilets

The size of the Locker Rooms decreased by 560sf in order to meet the programmatic needs of the District's Health and Physical Education program. This area was re-distributed from the Locker Room square footage area to the Health Classroom.

Media Center:

No modifications were made to the Media Center category. The size of the Media Center category remains at 8,401sf.

Dining & Food Service:

No modifications were made to the Dining & Food Service category. The overall square footage for the Dining & Food Service category remains at 15,872sf.

Medical:

No modifications were made to the Medical category. The overall square footage for the Medical category remains at 910sf.

Administration & Guidance:

No modifications were made to the Administration & Guidance category. The overall square footage for the Administration & Guidance category remains at 4,796sf.

Custodial & Maintenance:

No modifications were made to the Custodial & Maintenance category. The overall square footage for the Custodial & Maintenance category remains at 2,870sf.

Other (Auditorium):

No modifications were made to the Other (Auditorium) category. The overall square footage for the Other (Auditorium) category remains at 5,700sf.

No changes in the project design have been made that would impact the final design program submitted and certified by the designer for the Design Development submittal.

The following pages contain the signed Educational Space Summary and Designer's Certification which confirm the previously reported area calculations are identical to the Schematic Design area calculations previously submitted, and the overall square footage of the new facility remains 231,509 square feet.

FINAL DESIGN PROGRAM

EDUCATIONAL SPACE SUMMARY

FINAL DESIGN PROGRAM ARCHITECT'S CERTIFICATION

December 23, 2015
Massachusetts School Building Authority

Re: Designer Certification

Sarah Blanche, Project Manager,

Ai3 Architects hereby certifies the design for the new Beverly Middle School meets the square foot calculations outlined below as previously reported on August 6, 2015 in the Schematic Design Submission:

Lower Level Gross Floor Area:	24,275sf
First Floor Gross Floor Area:	80,471sf
Second Floor Gross Floor Area:	42,356sf
Third Floor Gross Floor Area:	49,065sf
<u>Fourth Floor Gross Floor Area:</u>	<u>35,342sf</u>

Total All Floors: 231,509sf

The sum all the floor areas equals the gross floor area of 231,509 square feet identified in the Educational Space Summary dated December 23, 2015 submitted with the Design Development Submission dated December 23, 2015.

To the best of our ability and to the extent of the information we have produced during the Design Development phase, the overall gross square footage, as outlined above, is accurate.

Sincerely,
Ai3 Architects, Inc.



Troy L. Randall, Partner, AIA LEED AP BD+C

SITE PERMITTING NARRATIVE

SITE PERMITTING NARRATIVE

Based on the Schematic Design Plans for the project site, there are multiple permits that will be required at the local, state, and federal level for site construction. The local permitting information was compiled from the City of Beverly Zoning Ordinance, Chapter XXXVIII with amendments through December 2013 (Zoning) and conversations with Steve Frederickson, Director/Building Commissioner of the Beverly Municipal Inspections Department; Leah Zambenardi, Assistant City Planner with the Beverly Planning Board; Aaron Clausen, Director of Planning & Community Development; Stephanie Williams, City Solicitor; and Gregory St. Louis, City Engineer. According to the "Zoning Map with Overlays, City of Beverly, Massachusetts – FYE 2014" the Site is located in an area zoned One-Family District (R-10). Educational facilities are noted to be allowed "under special conditions" within a Zone R-10 as stated in Zoning Section 38-11(A). The following is a list of anticipated permits:

SITE PLAN REVIEW - PLANNING BOARD

The project is not subject to a Site Plan Review or Special Permit Review by the Planning Board based on conversations with both the City Solicitor and the Director of Planning & Community Development.

ZONING BOARD OF APPEALS

The project is considered a government use under the jurisdiction of the City of Beverly. As such, the Zoning use is allowed in all districts per Zoning Section 38-6(A). Based on conversations with the City Solicitor and the Director of Planning & Community Development, the project is not subject to variance review with the Zoning Board of Appeals.

PARE completed a review of Massachusetts GIS data and conducted a preliminary review of the wetlands on site. During the field investigation, wetlands were identified on the site. According to the City of Beverly's Wetlands Protection Ordinance these wetlands have associated minimum 100 foot regulatory buffers as well as local 25-foot No-Disturbance Zones. Work is proposed within the 100 foot buffer of the larger Isolated Vegetated Wetland (IVW) and within the small IVW. Work within the Isolated Vegetated Wetland requires wetland replication at a rate of 2:1 as indicated in the Beverly Wetland Bylaw. Based on the scope of the work, a Notice of Intent (NOI) will be required to be submitted to the Beverly Conservation Commission, and the Massachusetts Department of Environmental Protection for work associated with new construction.

A Request for Determination of Applicability (RDA) was requested for work associated with the building demolition and was submitted on October 13, 2015. A negative determination for the work associated with building demolition was issued on October 28, 2015.

The NOI associated with the new construction work is to be submitted on December 22, 2015. Two public hearings are anticipated to be held on January 5, 2016 and February 2, 2016. A determination is anticipated to be issued by the Commission within 21 days of the close of the hearing, followed by a 10 day appeal period. It is anticipated that the permitting process with the Commission would take between approximately 60 – 75 days.

The project will require an application to be filed with the Engineering Department in regards to "Drainage Alterations" permit and an "Erosion/Sediment Control & Materials Management Application." We understand that the permit and application, as well as their review, will run concurrently with the Conservation Commission filing based on conversations with Gregory St. Louis.

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (Mass DEP)

The project will meet the 2008 Stormwater Management Guidelines and appropriate submissions will be made to the Beverly Conservation Commission and Mass DEP, the jurisdictional entity for these guidelines.

An Underground Injection Control Registration will need to be filed for any stormwater systems proposed to infiltrate into the ground. Based on the soil conditions encountered on the site, it is not anticipated that stormwater systems will be proposed to infiltrate and therefore an Underground Injection Control Registration is not anticipated to be required.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

The proposed project will require filing a NPDES construction general permit with the EPA for disturbance of an area of more than one acre of land. The Contractor awarded the contract is responsible for filing for the NPDES General Permit and preparing a project specific Stormwater Pollution Prevention Plan. With the start of demolition proposed in January, the Contractor has already filed a Notice of Intent with the EPA and prepared a Stormwater Pollution Plan.

The scope of work for the schematic design plans does not appear to trigger MEPA thresholds at this time. However, the following are potential triggers that we will continue to monitor as the design progresses: In the category of land, creation of ten (10) or more acres of impervious area would require a MEPA review. The total study area is 15.08 acres. In the existing condition, 2.81 acres are impervious, and in the proposed condition, 7.78 acres will be impervious. Under the proposed new construction, this represents an increase in impervious surface of 4.97 acres and therefore does not require a MEPA review under the land requirement. In the category of wetlands, waterways, and tidelands, the alteration of 5,000 or more square feet of bordering or isolated vegetated wetlands would require MEPA review. The design plans include 1,210 square feet of isolated vegetated wetland alteration, which does not exceed the threshold. In the category of transportation, the construction of 300 or more new parking spaces at a single location would require MEPA review. The existing site contains 78 parking spaces. In the proposed design, 293 parking spaces are proposed representing a 215 space increase and therefore does not require a MEPA review under the transportation requirement.

As the design plans are developed further, all thresholds will be reviewed in regards to the proposed project. If MEPA review is required, MEPA requires applications to be submitted one year prior to construction.

There are three entrances to the site in the current proposed design. One is designated for authorized vehicles only including designated faculty and busses. The other two are open to all vehicular traffic, one of which is a one way entrance off of Cabot Street, and the other is a two way entrance and exit off of Balch Street. The north Cabot Street entrance is located within a state highway layout. The south Cabot Street entrance and the Balch Street entrance are located within the local roadway layout. Based on the current design document plans, and the traffic impact analysis, the site appears to be subject to a MassDOT Category II – Major Vehicular Access Permit. The review schedule for the permit consists of three separate submissions. A detailed review of each submission is required by MassDOT. The first submission is to be reviewed within 35 business days, the second submission is to be completed within 20 business days, and the third submission shall be reviewed within 20 business days. It is anticipated that the permitting process with MassDOT would take approximately three months.

SITE UTILITY NARRATIVE

SITE UTILITY NARRATIVE

The existing conditions utility information was collected through site visits in October of 2014, communications with Roland Adams (Beverly GIS Manager), Gregory St. Louis (City Engineer), and Mike Collins (Commissioner of Public Services and Engineering) as well as data available through MassGIS, Beverly GIS online maps, National Grid Gas and Electric Maps, and an on-the-ground survey performed by Welch Associates Land Surveyors, Inc. in May and June of 2015.

SEWER

Sanitary waste from the existing building is conveyed via gravity sewer line to a cross-country sewer main. The line that services the building is a 10-inch VC line that exits the east side of the building and then connects to a 21" PVC sewer line which discharges to a 30" RCP sewer main in Balch Street. This is shown on plans entitled "Brimbal Avenue Interceptor Cross-Country Balch Street to Cabot Street" dated November 1982 as prepared by Camp Dresser & McKee Inc. The 21" PVC sewer line flows via gravity from Cabot Street, along the east side of the site, towards Balch Street. Plans we obtained do not indicate the presence of an existing exterior grease trap.

Within the scope of the current proposed design documents, the existing sewer service will be removed and the 21" PVC sewer line passing through the site will be maintained. As part of the new construction, three 6" SDR gravity sewer service lines leave the proposed building and connect to this existing sewer line. The sewer line collecting kitchen water passes through a grease and oil separator before connecting with the other two lines. During design, the capacity of the existing sewer line will be evaluated to determine if it can handle the increased use or if there will be a need to provide a connection to the 30" RC sewer main in Balch Street.

WATER

Water mains are located in Cabot and Balch Streets. They are 12-inch cast iron and 8-inch cast iron, respectively. Fire hydrants are located on Cabot and Balch Streets as well as one on site. The on site hydrant is located on the east side of the property at approximately the mid-point of the soccer field. The water main for this hydrant is serviced via the Balch Street water main. Record City information indicates there is a 4-inch water service to the building which is off of Cabot Street. We understand that an existing irrigation system is located in the athletic fields and an irrigation control box was picked up by Welch Associates. However, information as to the pipe sizes and locations is unknown. We would recommend that record plans of the existing irrigation system and its components be provided if future development plans include the use of this system.

Within the scope of the current proposed design documents, the fire hydrant on Balch Street will be removed and relocated to the west side of the proposed curb cut. The existing water service lines will be removed and replaced with an 8" CLDI water line. Two connections will be made to the 12-inch Cabot Street water main and one connection will be made to the 8-inch Balch Street water main.

A hydrant flow test was performed on September 11, 2015. Based on the results, a fire pump was not determined to be necessary at this time. Coordination with the Fire Department will confirm the final design of the fire suppression system.

Record drainage plans were not available at the City to review. However, Beverly GIS information and a Welch Associates survey indicate drainage lines and direction of flow within the lines and pipe sizes. The existing on site drainage system appears to consist mainly of conveyance via a closed drainage system. Additionally, the on site closed drainage system acts as a conveyance system for stormwater being captured from portions of Cabot Street as well as the neighborhood to the west which consists of portions of Courtney Drive, Fitzgerald Way, and some commercial properties.

The Cabot Street drainage system enters the site north of the building via an 18-inch RCP pipe and continues through the site going beneath the parking lot, the building, and the athletic fields. The westerly neighborhood's drainage system enters from the west side of the site via a 24-inch RCP and continues beneath the wetlands and the athletic fields. There is one point of discharge for the drainage system which is located on the south side of the property towards Balch Street via a 24-inch RCP. The stormwater ultimately discharges south to the Shoe Pond Basin through the Cummings Center property. The Cummings Center property is located to the south of the site across Balch Street.

Drainage is collected from impervious and pervious surfaces via catch basins and conveyed via a closed drainage system to the discharge point. It appears that the stormwater system is receiving little treatment in regards to TSS removal.

Within the scope of the current proposed design documents, the stormwater from Cabot Street and the neighborhood to the west, as described above, will be re-routed to maintain conveyance through the site in conjunction with the new design.

The current drainage design meets the Massachusetts Department of Environmental Protection stormwater standards, the City of Beverly Stormwater and Construction Site Management Ordinance, and meets the 80% TSS removal and peak flow attenuation measures.

National Grid is the supplier of natural gas to the City of Beverly. There is a gas meter and valve at the west side of the existing building near the loading area and a 4" CI gas service coming in the front (north side) of the building. Future development options would require that the existing system be located and analyzed for capacity. Coordination is beginning to occur with National Grid regarding service improvements.

National Grid is the supplier of electricity to the City of Beverly. Electricity is supplied below ground for the existing building. The service enters the building from the front (north side) and appears to be a three phase service. Estimated electrical loads for the new school have been calculated. Coordination is ongoing with National Grid regarding service improvements.

GEOTECHNICAL REPORT GEOTECHNICAL REPORT

The Phase I Geotechnical Report, dated November 4, 2014, was included the Preliminary Design Program (Feasibility Study) submission. This report can be found in tab 5 (Volume 2) of the Feasibility Study project report dated November 25, 2014.

The Phase II Geotechnical Report, dated July 9, 2015, was included the Schematic Design submission. This report can be found in tab 5 of the Schematic Design project report dated August 6, 2015.

SECURITY & VISUAL ACCESS

SECURITY & VISUAL ACCESS REQUIREMENTS

OVERVIEW

The design of the Beverly Middle School will have access control and security as one of the technology priorities. All doors are expected to be locked at all times, except during programmed unlocked times for pickups and drop offs. This is achieved with using standard keys on non-high traffic areas that do not need to be timed unlock/locked, and using electrified locks on main, secondary, and pickup/drop-off zone doors such that they may be locked during the day, except for when the access control program is scheduled to unlock the doors certain times of the day. Some of these doors will have card readers. The intent is to not distribute keys to any staff member unless absolutely necessary.

The three Café doors will all be electrified, and the center door will have card access for those in possession of a card. This card reader shall be disabled when the security system is armed. It will only be a point of entry during normal business hours with card access, or when the three doors are programmed unlocked during drop off times.

The three classroom wing stairwell doors will be electrified and will include card access for teachers to access the building. These card readers will be disabled when the building alarm system is active.

The library exterior door and custodian door will be electrified and have card access. Both of these card readers will be enabled when the security system is armed. Keypads will be placed inside these doors to disarm the security system.

The secondary entrance at the gym will have electrified doors and card access. This card reader shall remain active when the building alarm system is active. A keypad is located in the vestibule to disarm the alarm system.

All students arriving after the designated morning arrival period will need to enter the building through the primary controlled access point at the front of the building and adjacent to the Administration area.

The main entry is a controlled access point for the Beverly Middle School which includes an entry lobby vestibule with electronically locked doors, electronic access control, and closed circuit television (CCTV), creating a controlled checkpoint for students and visitors to pass in order to be screened before being allowed access to the Main Office for the school.

All other doors, including stair egress doors, located at the exterior of the school will be egress only and should be locked at all times.

A safety and security meeting was held to discuss District emergency procedures during the Design Development phase. This meeting focused on first responders' access requirements and mobilization areas within the new school and around the school campus. Specifically, the meeting discussed the following security items in detail:

Main entrance security check-in and access control

Classroom lockdown procedures inclusive of classroom visibility and lockset hardware access

Alternative entry locations for first responders and knox box locations

The security meeting was attended by City Officials, school district administration, and representatives from the Beverly Police and Fire Departments.

The main entry lobby is designed with two sets of electronically locked double doors creating two control points for visitors to pass in order to gain access to the school. The Main Office is designed such that once a visitor is near the main entry, a voice and video display system (monitored by a member of the Main Office) allows an individual access to the building's entry vestibule by electronically unlocking the second inner door during school hours. The outer most doors are expected to be push/pull during school hours to allow shelter for those visiting the school before entry is granted. The outer doors can be automatically locked upon a lockdown condition. The inner vestibule serves as a checkpoint for visual recognition. Once permission is granted to enter the building, the second set of control doors is electronically unlocked to allow visitors to gain access to the Main Lobby adjacent to the administration and waiting area. Card access will be provided at both sets of doors to allow authorized staff unfettered access to the building. It is possible to deactivate all cards below a certain security level during a lockdown scenario, leaving only specific users card access to the building at any card access location, or to allow only secured cards which are distributed during a lockdown to function at card readers. One of these two options is recommended.

The Main Administration Desk is located in an area within a visitor's direct line of sight in the Main Office and main entry corridor for added security. A CCTV camera is located inside the front vestibule to allow not only clear visual access to the individual at the call box, but also visibility of any individuals within the proximity of the person at the call box. In the event of a security breach or emergency condition, panic buttons will be placed within the administration area. A public address announcement will initiate in a constant loop, notifying the staff of the lockdown condition. The central monitoring station will immediately be notified of the lockdown condition (if desired) and the local authorities will be notified of the school lockdown.

CLASSROOM SECURITY

The classroom entry design will include a vision panel in the upper half of the classroom entry door. The lines of sight into and from the classrooms were discussed with the members of the School Department and personnel from the Police and Fire Departments. Classroom entry doors will have the ability to be locked by teachers with any classroom key from inside the room in the event of a lockdown. This allows any classroom key, while individually keyed to the outside door for the various disciplines, to be used for locking down any room as a "safe zone."

SECONDARY EMERGENCY ENTRY LOCATION

The overall building plan identifying secondary entry locations for first responders was reviewed with members of the School Department and personnel from the Police and Fire Departments. The custodial area exterior door for the second means of entry will be provided with access card readers for staff and emergency responders.

ADDITIONAL BUILDING SECURITY FEATURES

Most of the building perimeter will be covered by CCTV cameras to provide ample coverage around the building perimeter. All first floor rooms with windows will have motion sensors which will activate the school's alarm system when an intruder is detected. A "staging" area was discussed with the School Department and Police and Fire Departments. The staging area is an area within the building where first responders will take over as a command and control center in the event of a lockdown situation. The staging area was identified as the Custodial area. This area is in close proximity to the MDF (where the security and CCTV servers are), has a dock, and has card access at the exterior door. It also has an outlet in the office on generator power and will contain a PA system control console. A dedicated phone line, independent of the phone system, will also be provided.

Future safety and security meetings for coordination and discussion are planned through the design process.

INTERIOR COLOR THEORY

INTERIOR COLOR THEORY STATEMENT

One of the primary goals in architecture is to inspire and evoke human emotions through design. As educational designers, we have a unique opportunity to predictably elicit specific behavior and emotional responses through thoughtful design theories manifested in the built environment. Color selection is a crucial component of this process. Color theory in educational facilities, especially in high school and middle school environments, is of utmost importance when dealing with young adults. Color selections can sway thinking, change actions, and cause reactions. Use of color can enhance students' visual processing, while simultaneously promoting calm in an open, safe atmosphere.

We advocate a strategy of "functional" color selection in lieu of "aesthetic" color selection. This functional approach to color selection focuses on using color to achieve an end result such as reduced eye fatigue, increased attention span, and supporting desired behavioral responses in multiple educational settings. We recommend the following functional color selections for the Beverly Middle School. The selections below specifically avoid the use of trendy colors that will appear dated in five to ten years.

Research has also highlighted the positive effects the use of natural materials has on human health and well-being. Many natural materials, specifically wood, is considered visually appealing and to have a calming effect on its occupants, resulting in reduced stress and anxiety. The use of natural materials also reminds us of our connection to the natural environment.

CLASSROOMS

Visual stimulation strengthens mental association in the brain, evolving into visual thinking and bolstering creativity. Classroom color selection is vital to student performance. Blacks, browns, and red colors are proven to have a negative impact on the classroom learning environment. Stark white colors, which are appropriate for institutional spaces, are inappropriate for educational facilities because they offer the most light reflectance, thereby causing eyestrain and limited student focus. Classroom colors should be selected in a cream or taupe color palette, which offer a relaxing atmosphere that will allow learners to focus. It is important to select colors in this range with a light reflectance value (LRV) of 85% or higher. A high light reflectance value improves the daylighting quality of the classroom by distributing exterior natural light more evenly. If the classroom space is to be subdivided into smaller zones with a specific function, like a small group reading area for highly distracted students, light purple and blue color choices for that particular area would be appropriate. These color tones have been proven to calm easily distracted students. Using the correct color selection on the teaching wall in classrooms will help to reduce instances of eyestrain for students by helping eyes to relax as students look up from a task. Studies suggest that the teaching wall colors should be a medium hue with a LRV of 50% - 60%; the remaining walls will have a neutral tint such as Oyster White, Sandstone, or Beige. The teaching wall treatment also helps to relieve the visual monotony of a classroom and studies have shown this color transition can stimulate a student's brain activity.

Due to the transient nature of corridors, bold and energetic colors are used to move students quickly from class to class and to prevent undue socialization. Corridor spaces can easily accommodate a wider color range to accommodate school colors and provoke a sense of school spirit and pride. The use of accent colors above classroom entries provide an easily identifiable marker for students. Classroom door frames and lockers are accented with vibrant colors, and school colors will be considered. In areas where pause and reflection are included in the design, such as the recycling centers and exhibit/presentation areas, muted colors of cream and taupe will be utilized contrasting with vibrant graphic accents and displays.

CORRIDORS

The Beverly Middle School Library Media Center will utilize a color palette that enhances quietness and concentration. The color tones conducive to this type of environment would include pale and light shades of earth color tones complimenting wood trim throughout the Media Center. The ceiling treatment would consist of ACT ceiling tiles, GWB painted soffits with a high LRV to help distribute daylight evenly, and wood ceiling panels. The lighting will complement the color selection and provide a warm inviting color temperature conducive to a calm environment for reading and concentration.

LIBRARY MEDIA CENTER

In areas such as Student Dining and the Gymnasium, the color palette will consist of warm stimulating colors with yellow and orange tones. Accents will consist of burgundy (deep red) and navy colors to promote a cheerful, non-aggressive response. Brighter red tones are commonly known to promote aggressive behavior when used in high reaction spaces, therefore its use should be limited to accents and banding.

INTERACTION SPACES

QUALITY CONTROL DOCUMENTATION

During the Design Development Phase, the Design Team has held coordination meetings and discussions with the design consultants, Owner's Project Manager (Heery International), and the Construction Manager (Agostini-Bacon Construction). The Design Team has been developing and utilizing the building information model (BIM) since the Schematic Design phase as a tool to visualize, coordinate, and analyze various facets of the design process. This tool and the continuous communication between all parties have enabled the team to ensure the following:

Existing vs. New Piles:

Coordination of the proposed new steel piles, concrete pile caps, and grade beams with the existing concrete filled steel pipe piles related to the existing Memorial Building and the appropriate cut-off (elevation) has occurred during the Design Development phase and incorporated within the Demolition/Abatement Early Bid Package and the Design Development documents.

Schedule:

One of several benefits of having the Construction Manager (Agostini-Bacon) included as part of the team early in the design process is the input they provide specifically related to refinement of the design (early bid packages) and construction schedule. The team has been collaborating since the Schematic Design process to identify the most cost-effective, efficient, and appropriate schedule to open the building for the 2018 school year. A few examples include the appropriately timed release of early bid packages (i.e., abatement/demolition of the existing memorial building, steel piles, foundation and structural steel) as well as the construction sequencing to maximize production and minimize general conditions costs during the winter months.

Filed Sub-Bid Trades:

All filed sub-bid trades have been identified in the Table of Contents, Invitation to Bid (00 01 16), and Instruction to Bidders (00 21 13) sections of the specification. Keynotes included in the construction documents have been coordinated with the appropriate specification sections. The Master Keynote List is included in Appendix A of the specification and is also included on Drawing A1.02. The Keynote List is directly linked to the specification sections and clearly assigns responsibility to either the general contractor or filed sub-bidders. Agostini-Bacon has provided their input related to the filed sub-bid trades.

Equipment and Power Requirements:

The equipment and power requirements identified in the Design Development drawings have been coordinated. Numerous programming meetings were held with all departments and user groups during Schematic Design and Design Development. Discussions and coordination with regard to equipment and power requirements will continue to progress through the construction document phase of the project.

Mechanical Room Clearances, Utility Pathways and Shaft Sizes:

The utility pathways throughout the building were established early in the design process with the consultation from the design consultants. As the design developed, the mechanical room clearances and shaft sizes for mechanical ductwork were coordinated and will continue to be coordinated as the design progresses. The use of BIM has assisted and will continue to assist in this process.

Ceiling Clearances:

Ceiling clearances identified in the Design Development drawings reflect proper heights and dimension to allow proper clearances for structural, mechanical, electrical, plumbing, and fire protection trades. The Design Team will continue to evaluate the ceiling clearances during the Construction Documents phase. The use of BIM has assisted and will continue to assist in this process.

Ai3 Architects, LLC's approach to management of the quality of new construction includes a combination of quality control by the Construction Manager (CMr) and quality assurance by the Owner's Project Manager and Design Team. The Construction Quality Control/Quality Assurance Plan (CQAP) is an inherent part of the construction drawings and project specifications. The Construction Documents detail the systems and controls that Ai3 has put in place so that the quality of the project will meet the requirements specified in the Construction Documents. The specifications provide definition and overall management of the quality approach to be followed by the Construction Manager. The quality of construction will be ensured through an integrated system of quality assurance performed by the Owner's Project Manager, Construction Manager, and Design Team. The Owner's Project Manager will be responsible for the day-to-day coordination of quality assurance and quality control measures in the field. This Construction Quality Control/Quality Assurance Plan (CQAP) establishes project procedures and general responsibilities for the quality assurance and quality control (QC/QA) program as well as protocols to ensure that the new work will be executed in accordance with the relevant portions of the Contract Documents.

The Construction Manager (CMr) will be responsible for all work in accordance with the plans and specifications. The Construction Manager will also be responsible for controlling the quality of their work to meet contract plans, specifications, and related requirements. The Contractor's Quality Control is the systematic implementation of a program of inspections, tests, and production controls to attain the required standards of quality and to preclude problems resulting from noncompliance. Pursuant to Technical Specification Section 01 45 00 Quality Control, the Construction Manager will establish an independent Quality Control program and write a Contractor Quality Control Plan (CQCP). The CQCP must provide for tests and inspections pursuant to various technical specifications. It will define procedures to ensure that activities affecting quality are properly documented and accomplished in accordance with contract documents; written instructions; and industry standards, codes, and procedures. Furthermore, the CQCP will define methods for ensuring that activities affecting quality will be accomplished under controlled conditions.

Independently of the contractors, the Owner's Project Manager (OPM) will provide Quality Assurance through daily monitoring and scheduled inspections to verify the effectiveness of the contractor's QC program and assure that the quality and contract requirements are

met by the contractors. The OPM assures that the contractor's QC is working effectively and that the resultant construction complies with the quality requirements established by the contract.

The objectives of this CQAP are to:

- Describe the quality program and organization to be implemented so that the project is constructed in accordance with the contract requirements and industry standards;
- Describe guidelines for inspection and documentation of construction activities;
- Provide reasonable assurance that the completed work will meet or exceed the requirements of the construction drawings and specifications; and
- Describe how any unexpected changes or conditions that could affect the construction quality will be detected, documented, and addressed during construction.

Heery International, Inc. has been retained to provide Owner Project Management services for this project. Heery International, Inc. will supervise work on this project in accordance with the requirements outlined by the MSBA and the Quality Control Plan described above.

BUILDING SYSTEMS

HVAC HEAT GAIN & HEAT LOSS CALCULATIONS

<b style="color: blue;">Air System Sizing Summary for RTU-01 Zone 1 Project Name: Beverly Middle-School Prepared by: Griffith & Vary, Inc.	12/16/2015 04:32PM
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Air System Information

Air System Name RTU-01 Zone 1	Number of zones 1
Equipment Class CW AHU	Floor Area 12370.0 ft ²
Air System Type VAV	Location Beverly, Massachusetts

Sizing Calculation Information

Calculation Months Sep to Jun	Zone CFM Sizing Peak zone sensible load
Sizing Data Calculated	Space CFM Sizing Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load 16.6 Tons	Load occurs at Sep 1500
Total coil load 199.7 MBH	OA DB / WB 86.2 / 70.2 °F
Sensible coil load 145.8 MBH	Entering DB / WB 80.2 / 66.3 °F
Coil CFM at Sep 1500 5350 CFM	Leaving DB / WB 55.0 / 53.8 °F
Max block CFM at Sep 1400 6040 CFM	Coil ADP 52.2 °F
Sum of peak zone CFM 6040 CFM	Bypass Factor 0.100
Sensible heat ratio 0.730	Resulting RH 50 %
ft ² /Ton 743.3	Design supply temp. 55.0 °F
BTU/(hr-ft ²) 16.1	Zone T-stat Check 1 of 1 OK
Water flow @ 10.0 °F rise 39.96 gpm	Max zone temperature deviation 0.0 °F

Central Heating Coil Sizing Data

Max coil load 17.8 MBH	Load occurs at Jan 0600
Coil CFM at Jan 0600 2554 CFM	BTU/(hr-ft ²) 1.4
Max coil CFM 6040 CFM	Ent. DB / Lvg DB 48.6 / 55.0 °F
Water flow @ 20.0 °F drop 1.78 gpm	

Preheat Coil Sizing Data

Max coil load 18.0 MBH	Load occurs at Des Htg
Coil CFM at Des Htg 2437 CFM	Ent. DB / Lvg DB 43.2 / 50.0 °F
Max coil CFM 6040 CFM	
Water flow @ 20.0 °F drop 1.80 gpm	

Supply Fan Sizing Data

Actual max CFM at Sep 1400 6040 CFM	Fan motor BHP 0.00 BHP
Standard CFM 6033 CFM	Fan motor kW 0.00 kW
Actual max CFM/ft ² 0.49 CFM/ft ²	Fan static 0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM 2437 CFM	CFM/person 34.33 CFM/person
CFM/ft ² 0.20 CFM/ft ²	

Air System Design Load Summary for RTU-01 Zone 1

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:32PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Sep 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 86.2 °F / 70.2 °F			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	1298 ft²	31738	-	1298 ft²	-	-
Wall Transmission	2272 ft²	2527	-	2272 ft²	5677	-
Roof Transmission	5113 ft²	8367	-	5113 ft²	13592	-
Window Transmission	1298 ft²	4941	-	1298 ft²	36798	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	7257 ft²	0	-	7257 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	12370 W	42206	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	71	24565	25435	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	3000	0	-	0	0
Safety Factor	10% / 10%	11734	2544	15%	8410	0
>> Total Zone Loads	-	129077	27979	-	64478	0
Zone Conditioning	-	122333	27979	-	57520	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	5350 CFM	0	-	2437 CFM	0	-
Ventilation Load	2159 CFM	23302	25957	984 CFM	64351	0
Supply Fan Load	5350 CFM	0	-	2437 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	145635	53936	-	121871	0
Central Cooling Coil	-	145757	53936	-	0	0
Central Heating Coil	-	-122	-	-	0	-
Preheat Coil	-	0	-	-	17953	-
Terminal Reheat Coils	-	0	-	-	103918	-
>> Total Conditioning	-	145635	53936	-	121871	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for RTU-02 Locker Rooms

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:32PM

Air System Information

Air System Name **RTU-02 Locker Rooms**
 Equipment Class **CW AHU**
 Air System Type **SZCAV**

Number of zones **1**
 Floor Area **1333.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
 Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **1.5** Tons
 Total coil load **18.5** MBH
 Sensible coil load **16.7** MBH
 Coil CFM at Jun 1500 **652** CFM
 Max block CFM **652** CFM
 Sum of peak zone CFM **652** CFM
 Sensible heat ratio **0.900**
 ft²/Ton **862.4**
 BTU/(hr-ft²) **13.9**
 Water flow @ 10.0 °F rise **3.71** gpm

Load occurs at **Jun 1500**
 OA DB / WB **88.0 / 71.0** °F
 Entering DB / WB **88.0 / 71.0** °F
 Leaving DB / WB **64.2 / 62.6** °F
 Coil ADP **61.6** °F
 Bypass Factor **0.100**
 Resulting RH **64** %
 Design supply temp. **58.0** °F
 Zone T-stat Check **1 of 1** OK
 Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **43.8** MBH
 Coil CFM at Des Htg **652** CFM
 Max coil CFM **652** CFM
 Water flow @ 20.0 °F drop **4.38** gpm

Load occurs at **Des Htg**
 BTU/(hr-ft²) **32.9**
 Ent. DB / Lvg DB **7.0 / 69.3** °F

Supply Fan Sizing Data

Actual max CFM **652** CFM
 Standard CFM **651** CFM
 Actual max CFM/ft² **0.49** CFM/ft²

Fan motor BHP **0.18** BHP
 Fan motor kW **0.14** kW
 Fan static **1.00** in wg

Outdoor Ventilation Air Data

Design airflow CFM **652** CFM
 CFM/ft² **0.49** CFM/ft²

CFM/person **65.15** CFM/person

Zone Sizing Summary for RTU-02 Locker Rooms

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:32PM

Air System Information

Air System Name **RTU-02 Locker Rooms**
 Equipment Class **CW AHU**
 Air System Type **SZCAV**

Number of zones **1**
 Floor Area **1333.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
 Space CFM Sizing **Individual peak space loads**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft ²)	Zone CFM/ft ²
Zone 1	7.5	652	652	Jan 2300	0.0	1333.0	0.49

Zone Terminal Sizing Data

No Zone Terminal Sizing Data required for this system.

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1							
L05 Girls Locker Room	1	3.0	Jan 2300	282	0.0	451.0	0.63
L11 Boys Locker Room	1	3.0	Jan 2300	281	0.0	450.0	0.63
TL-3 Girls Toilets	1	0.8	Jan 2300	44	0.0	216.0	0.20
TL-5 Boys Toilets	1	0.8	Jan 2300	44	0.0	216.0	0.20

DESIGN DEVELOPMENT - BEVERLY PUBLIC SCHOOLS

Air System Design Load Summary for RTU-02 Locker Rooms

Project Name: Beverly Middle-School
Prepared by: Griffith & Vary, Inc.

12/16/2015
04:32PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 88.0 °F / 71.0 °F			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²	-	-
Wall Transmission	0 ft²	0	-	0 ft²	0	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	1333 ft²	0	-	1333 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	1333 W	4548	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	10	2300	1200	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	685	120	15%	0	0
>> Total Zone Loads	-	7533	1320	-	0	0
Zone Conditioning	-	7656	1320	-	0	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	652 CFM	0	-	652 CFM	0	-
Ventilation Load	652 CFM	8560	529	652 CFM	44282	0
Supply Fan Load	652 CFM	483	-	652 CFM	-483	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	16699	1849	-	43799	0
Central Cooling Coil	-	16699	1849	-	0	0
Central Heating Coil	-	0	-	-	43799	-
>> Total Conditioning	-	16699	1849	-	43799	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for RTU-03 Gym

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:33PM

Air System Information

Air System Name	RTU-03 Gym	Number of zones	1
Equipment Class	CW AHU	Floor Area	12095.0 ft ²
Air System Type	SZCAV	Location	Beverly, Massachusetts

Sizing Calculation Information

Calculation Months	Sep to Jun	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	29.6 Tons	Load occurs at	Jun 1500
Total coil load	355.6 MBH	OA DB / WB	88.0 / 71.0 °F
Sensible coil load	257.7 MBH	Entering DB / WB	83.9 / 68.6 °F
Coil CFM at Jun 1500	8846 CFM	Leaving DB / WB	56.9 / 55.6 °F
Max block CFM	8846 CFM	Coil ADP	53.9 °F
Sum of peak zone CFM	8846 CFM	Bypass Factor	0.100
Sensible heat ratio	0.725	Resulting RH	50 %
ft ² /Ton	408.2	Design supply temp.	58.0 °F
BTU/(hr-ft ²)	29.4	Zone T-stat Check	1 of 1 OK
Water flow @ 10.0 °F rise	71.15 gpm	Max zone temperature deviation	0.0 °F

Central Heating Coil Sizing Data

Max coil load	483.2 MBH	Load occurs at	Des Htg
Coil CFM at Des Htg	8846 CFM	BTU/(hr-ft ²)	39.9
Max coil CFM	8846 CFM	Ent. DB / Lvg DB	29.1 / 79.8 °F
Water flow @ 20.0 °F drop	48.34 gpm		

Supply Fan Sizing Data

Actual max CFM	8846 CFM	Fan motor BHP	0.00 BHP
Standard CFM	8837 CFM	Fan motor kW	0.00 kW
Actual max CFM/ft ²	0.73 CFM/ft ²	Fan static	0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM	5704 CFM	CFM/person	29.10 CFM/person
CFM/ft ²	0.47 CFM/ft ²		

Zone Sizing Summary for RTU-03 Gym

Project Name: Beverly Middle-School
Prepared by: Griffith & Vary, Inc.

12/16/2015
04:33PM

Air System Information

Air System Name **RTU-03 Gym**
Equipment Class **CW AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **12095.0** ft²
Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft ²)	Zone CFM/ft ²
Zone 1	162.2	8846	8846	Jun 1600	103.2	12095.0	0.73

Zone Terminal Sizing Data

No Zone Terminal Sizing Data required for this system.

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1							
L15A Gym Play Area	1	102.1	Jun 1600	5568	98.3	10489.0	0.53
L15A Gym Spectator	1	60.1	Jun 1700	3279	4.9	1606.0	2.04

Air System Design Load Summary for RTU-03 Gym

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:33PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 88.0 °F / 71.0 °F			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	1489 ft²	19805	-	1489 ft²	-	-
Wall Transmission	7783 ft²	5652	-	7783 ft²	19447	-
Roof Transmission	12095 ft²	28694	-	12095 ft²	32154	-
Window Transmission	1489 ft²	5958	-	1489 ft²	36585	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	84 ft²	259	-	84 ft²	1588	-
Floor Transmission	12095 ft²	0	-	12095 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	12095 W	41267	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	196	45079	23520	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	14671	2352	15%	13466	0
>> Total Zone Loads	-	161386	25872	-	103238	0
Zone Conditioning	-	152680	25872	-	99801	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	8846 CFM	0	-	8846 CFM	0	-
Ventilation Load	5704 CFM	71000	72014	5704 CFM	383372	0
Supply Fan Load	8846 CFM	0	-	8846 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	223679	97886	-	483173	0
Central Cooling Coil	-	257698	97886	-	0	0
Central Heating Coil	-	-34019	-	-	483173	-
>> Total Conditioning	-	223679	97886	-	483173	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for RTU-04 Auditorium

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:33PM

Air System Information

Air System Name	RTU-04 Auditorium	Number of zones	1
Equipment Class	CW AHU	Floor Area	9423.0 ft ²
Air System Type	SZCAV	Location	Beverly, Massachusetts

Sizing Calculation Information

Calculation Months	Sep to Jun	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	49.6 Tons	Load occurs at	Jun 1400
Total coil load	595.6 MBH	OA DB / WB	87.5 / 70.9 °F
Sensible coil load	408.9 MBH	Entering DB / WB	82.6 / 67.8 °F
Coil CFM at Jun 1400	13257 CFM	Leaving DB / WB	54.0 / 52.8 °F
Max block CFM	13257 CFM	Coil ADP	50.8 °F
Sum of peak zone CFM	13257 CFM	Bypass Factor	0.100
Sensible heat ratio	0.687	Resulting RH	50 %
ft ² /Ton	189.8	Design supply temp.	58.0 °F
BTU/(hr-ft ²)	63.2	Zone T-stat Check	1 of 1 OK
Water flow @ 10.0 °F rise	119.19 gpm	Max zone temperature deviation	0.0 °F

Central Heating Coil Sizing Data

Max coil load	545.2 MBH	Load occurs at	Des Htg
Coil CFM at Des Htg	13257 CFM	BTU/(hr-ft ²)	57.9
Max coil CFM	13257 CFM	Ent. DB / Lvg DB	34.6 / 72.7 °F
Water flow @ 20.0 °F drop	54.54 gpm		

Supply Fan Sizing Data

Actual max CFM	13257 CFM	Fan motor BHP	0.00 BHP
Standard CFM	13243 CFM	Fan motor kW	0.00 kW
Actual max CFM/ft ²	1.41 CFM/ft ²	Fan static	0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM	7412 CFM	CFM/person	10.81 CFM/person
CFM/ft ²	0.79 CFM/ft ²		

Zone Sizing Summary for RTU-04 Auditorium

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:33PM

Air System Information

Air System Name **RTU-04 Auditorium**
 Equipment Class **CW AHU**
 Air System Type **SZCAV**

Number of zones **1**
 Floor Area **9423.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
 Space CFM Sizing **Individual peak space loads**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft ²)	Zone CFM/ft ²
Zone 1	243.1	13257	13257	Jun 1700	48.9	9423.0	1.41

Zone Terminal Sizing Data

No Zone Terminal Sizing Data required for this system.

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1							
151 Auditorium	1	184.1	Jun 1700	10039	36.3	7390.0	1.36
152A Band Chorus	1	59.0	Jun 1700	3219	12.6	2033.0	1.58

Air System Design Load Summary for RTU-04 Auditorium

Project Name: Beverly Middle-School
Prepared by: Griffith & Vary, Inc.

12/16/2015
04:33PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1400			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 87.5 °F / 70.9 °F			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	0 ft²	0	-	0 ft²	-	-
Wall Transmission	6995 ft²	5411	-	6995 ft²	17478	-
Roof Transmission	9431 ft²	20189	-	9431 ft²	25072	-
Window Transmission	0 ft²	0	-	0 ft²	0	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	9423 W	32151	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	686	15778	82320	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	21553	8232	15%	6382	0
>> Total Zone Loads	-	237081	90552	-	48932	0
Zone Conditioning	-	237464	90552	-	44817	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	13257 CFM	0	-	13257 CFM	0	-
Ventilation Load	7412 CFM	90397	96169	7412 CFM	500333	0
Supply Fan Load	13257 CFM	0	-	13257 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	327861	186721	-	545150	0
Central Cooling Coil	-	408911	186721	-	0	0
Central Heating Coil	-	-81050	-	-	545150	-
>> Total Conditioning	-	327861	186721	-	545150	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for RTU-05 Zone 2

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:33PM

Air System Information

Air System Name **RTU-05 Zone 2**
 Equipment Class **CW AHU**
 Air System Type **TEMPER**

Number of zones **1**
 Floor Area **21025.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
 Space CFM Sizing **Individual peak space loads**

Precool Coil Sizing Data

Total coil load **29.9** Tons
 Total coil load **358.6** MBH
 Sensible coil load **235.8** MBH
 Coil CFM at Jun 1500 **6624** CFM
 Max coil CFM **6624** CFM
 Sensible heat ratio **0.658**
 Water flow @ 10.0 °F rise **71.76** gpm

Load occurs at **Jun 1500**
 OA DB / WB **88.0 / 71.0** °F
 Entering DB / WB **88.0 / 71.0** °F
 Leaving DB / WB **55.0 / 53.7** °F
 Bypass Factor **0.100**

Preheat Coil Sizing Data

Max coil load **302.0** MBH
 Coil CFM at Des Htg **6624** CFM
 Max coil CFM **6624** CFM
 Water flow @ 20.0 °F drop **30.22** gpm

Load occurs at **Des Htg**
 Ent. DB / Lvg DB **52.7 / 95.0** °F

Supply Fan Sizing Data

Actual max CFM **6624** CFM
 Standard CFM **6617** CFM
 Actual max CFM/ft² **0.32** CFM/ft²

Fan motor BHP **0.00** BHP
 Fan motor kW **0.00** kW
 Fan static **0.00** in wg

Return Fan Sizing Data

Actual max CFM **6624** CFM
 Standard CFM **6617** CFM
 Actual max CFM/ft² **0.32** CFM/ft²

Fan motor BHP **0.00** BHP
 Fan motor kW **0.00** kW
 Fan static **0.00** in wg

Outdoor Ventilation Air Data

Design airflow CFM **6624** CFM
 CFM/ft² **0.32** CFM/ft²

CFM/person **14.72** CFM/person

Air System Design Load Summary for RTU-05 Zone 2

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:33PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	NO COOLING DATA			HEATING DATA AT DES HTG		
	NO COOLING OA DB / WB			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	2757 ft²	-	-	2757 ft²	-	-
Wall Transmission	6838 ft²	-	-	6838 ft²	17085	-
Roof Transmission	0 ft²	-	-	0 ft²	0	-
Window Transmission	2757 ft²	-	-	2757 ft²	75424	-
Skylight Transmission	0 ft²	-	-	0 ft²	0	-
Door Loads	21 ft²	-	-	21 ft²	397	-
Floor Transmission	9516 ft²	-	-	9516 ft²	0	-
Partitions	0 ft²	-	-	0 ft²	0	-
Ceiling	0 ft²	-	-	0 ft²	0	-
Overhead Lighting	-	-	-	0	0	-
Task Lighting	-	-	-	0	0	-
Electric Equipment	-	-	-	0	0	-
People	-	-	-	0	0	0
Infiltration	-	-	-	-	0	0
Miscellaneous	-	-	-	-	0	0
Safety Factor	0% / 0%	-	-	0%	0	0
>> Total Zone Loads	-	-	-	-	92907	0
Zone Conditioning	-	-	-	-	0	0
Plenum Wall Load	0%	-	-	0	0	-
Plenum Roof Load	0%	-	-	0	0	-
Plenum Lighting Load	0%	-	-	0	0	-
Return Fan Load	-	-	-	6624 CFM	0	-
Ventilation Load	-	-	-	6624 CFM	175971	0
Supply Fan Load	-	-	-	6624 CFM	0	-
Space Fan Coil Fans	-	-	-	-	0	-
Duct Heat Gain / Loss	0%	-	-	0%	0	-
>> Total System Loads	-	-	-	-	175971	0
Precool Coil	-	-	-	-	0	0
Preheat Coil	-	-	-	-	302039	-
>> Total Conditioning	-	-	-	-	302039	0
Key:	Positive values are clg loads			Positive values are htg loads		
	Negative values are htg loads			Negative values are clg loads		

Air System Sizing Summary for RTU-06 Zone 2

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:33PM

Air System Information

Air System Name	RTU-06 Zone 2	Number of zones	1
Equipment Class	CW AHU	Floor Area	18179.0 ft ²
Air System Type	TEMPER	Location	Beverly, Massachusetts

Sizing Calculation Information

Calculation Months	Sep to Jun	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Precool Coil Sizing Data

Total coil load	27.5 Tons	Load occurs at	Jun 1500
Total coil load	329.9 MBH	OA DB / WB	88.0 / 71.0 °F
Sensible coil load	216.9 MBH	Entering DB / WB	88.0 / 71.0 °F
Coil CFM at Jun 1500	6093 CFM	Leaving DB / WB	55.0 / 53.7 °F
Max coil CFM	6093 CFM	Bypass Factor	0.100
Sensible heat ratio	0.658		
Water flow @ 10.0 °F rise	66.01 gpm		

Preheat Coil Sizing Data

Max coil load	286.2 MBH	Load occurs at	Des Htg
Coil CFM at Des Htg	6093 CFM	Ent. DB / Lvg DB	51.5 / 95.0 °F
Max coil CFM	6093 CFM		
Water flow @ 20.0 °F drop	28.63 gpm		

Supply Fan Sizing Data

Actual max CFM	6093 CFM	Fan motor BHP	0.00 BHP
Standard CFM	6086 CFM	Fan motor kW	0.00 kW
Actual max CFM/ft ²	0.34 CFM/ft ²	Fan static	0.00 in wg

Return Fan Sizing Data

Actual max CFM	6093 CFM	Fan motor BHP	0.00 BHP
Standard CFM	6086 CFM	Fan motor kW	0.00 kW
Actual max CFM/ft ²	0.34 CFM/ft ²	Fan static	0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM	6093 CFM	CFM/person	14.54 CFM/person
CFM/ft ²	0.34 CFM/ft ²		

Zone Sizing Summary for RTU-06 Zone 2

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:33PM

Air System Information

Air System Name **RTU-06 Zone 2**
 Equipment Class **CW AHU**
 Air System Type **TEMPER**

Number of zones **1**
 Floor Area **18179.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
 Space CFM Sizing **Individual peak space loads**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft ²)	Zone CFM/ft ²
Zone 1	256.1	6093	6093	Jun 1600	109.7	18179.0	0.34

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1							
334A Art Class	1	20.1	Jun 1700	556	8.6	1254.0	0.44
335 Academic Team Room	1	15.2	Jun 0800	430	1.8	1332.0	0.32
336 Language Class	1	12.6	Jun 0800	391	4.3	845.0	0.46
337 Small Group	1	2.9	Jun 0800	80	1.6	163.0	0.49
339A Science Class	1	14.1	Jun 0800	427	5.3	1143.0	0.37
339B Prep Room	1	0.5	Jan 2300	10	0.0	81.0	0.12
340 General Class	1	15.0	Jun 1600	390	7.6	834.0	0.47
341 General Class	1	14.6	Sep 1500	386	4.4	796.0	0.48
342 Small Group	1	4.4	Sep 1500	109	1.6	239.0	0.45
344 General Class	1	14.5	Sep 1500	354	5.0	867.0	0.41
C303 Corridor	1	14.4	Jun 1600	127	6.7	2116.0	0.06
C403 Corridor	1	20.5	Jun 1600	127	15.5	2115.0	0.06
435B Academic Team Room	1	18.8	Jun 1600	430	6.5	1333.0	0.32
436 General Class	1	14.5	Jun 1600	391	6.5	843.0	0.46
437 Small Group	1	3.2	Jun 1500	80	2.1	163.0	0.49
439A Science Class	1	17.3	Jun 1600	427	9.4	1143.0	0.37
439B Prep Room	1	0.7	Jun 1700	10	0.2	81.0	0.12
441 General Class	1	15.9	Sep 1500	386	6.4	796.0	0.48
442 Small Group	1	4.8	Sep 1500	109	2.3	239.0	0.45
444 General Class	1	16.9	Sep 1500	394	7.2	867.0	0.45
445 Reading Class	1	15.7	Sep 1500	382	6.2	769.0	0.50
447 Small Group	1	2.8	Jun 1700	99	0.5	160.0	0.62

Air System Design Load Summary for RTU-06 Zone 2

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:33PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	NO COOLING DATA			HEATING DATA AT DES HTG		
	NO COOLING OA DB / WB			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	2366 ft²	-	-	2366 ft²	-	-
Wall Transmission	6164 ft²	-	-	6164 ft²	15401	-
Roof Transmission	10597 ft²	-	-	10597 ft²	28171	-
Window Transmission	2366 ft²	-	-	2366 ft²	65742	-
Skylight Transmission	0 ft²	-	-	0 ft²	0	-
Door Loads	21 ft²	-	-	21 ft²	397	-
Floor Transmission	0 ft²	-	-	0 ft²	0	-
Partitions	0 ft²	-	-	0 ft²	0	-
Ceiling	0 ft²	-	-	0 ft²	0	-
Overhead Lighting	-	-	-	0	0	-
Task Lighting	-	-	-	0	0	-
Electric Equipment	-	-	-	0	0	-
People	-	-	-	0	0	0
Infiltration	-	-	-	-	0	0
Miscellaneous	-	-	-	-	0	0
Safety Factor	0% / 0%	-	-	0%	0	0
>> Total Zone Loads	-	-	-	-	109711	0
Zone Conditioning	-	-	-	-	0	0
Plenum Wall Load	0%	-	-	0	0	-
Plenum Roof Load	0%	-	-	0	0	-
Plenum Lighting Load	0%	-	-	0	0	-
Return Fan Load	-	-	-	6093 CFM	0	-
Ventilation Load	-	-	-	6093 CFM	157373	0
Supply Fan Load	-	-	-	6093 CFM	0	-
Space Fan Coil Fans	-	-	-	-	0	-
Duct Heat Gain / Loss	0%	-	-	0%	0	-
>> Total System Loads	-	-	-	-	157373	0
Precool Coil	-	-	-	-	0	0
Preheat Coil	-	-	-	-	286174	-
>> Total Conditioning	-	-	-	-	286174	0
Key:	Positive values are clg loads			Positive values are htg loads		
	Negative values are htg loads			Negative values are clg loads		

Air System Sizing Summary for RTU-07 Zone 3

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:34PM

Air System Information

Air System Name **RTU-07 Zone 3**
 Equipment Class **CW AHU**
 Air System Type **TEMPER**

Number of zones **1**
 Floor Area **22408.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
 Space CFM Sizing **Individual peak space loads**

Precool Coil Sizing Data

Total coil load **33.2** Tons
 Total coil load **398.0** MBH
 Sensible coil load **261.7** MBH
 Coil CFM at Jun 1500 **7351** CFM
 Max coil CFM **7351** CFM
 Sensible heat ratio **0.658**
 Water flow @ 10.0 °F rise **79.64** gpm

Load occurs at **Jun 1500**
 OA DB / WB **88.0 / 71.0** °F
 Entering DB / WB **88.0 / 71.0** °F
 Leaving DB / WB **55.0 / 53.7** °F
 Bypass Factor **0.100**

Preheat Coil Sizing Data

Max coil load **332.9** MBH
 Coil CFM at Des Htg **7351** CFM
 Max coil CFM **7351** CFM
 Water flow @ 20.0 °F drop **33.30** gpm

Load occurs at **Des Htg**
 Ent. DB / Lvg DB **53.0 / 95.0** °F

Supply Fan Sizing Data

Actual max CFM **7351** CFM
 Standard CFM **7343** CFM
 Actual max CFM/ft² **0.33** CFM/ft²

Fan motor BHP **0.00** BHP
 Fan motor kW **0.00** kW
 Fan static **0.00** in wg

Return Fan Sizing Data

Actual max CFM **7351** CFM
 Standard CFM **7343** CFM
 Actual max CFM/ft² **0.33** CFM/ft²

Fan motor BHP **0.00** BHP
 Fan motor kW **0.00** kW
 Fan static **0.00** in wg

Outdoor Ventilation Air Data

Design airflow CFM **7351** CFM
 CFM/ft² **0.33** CFM/ft²

CFM/person **13.56** CFM/person

Air System Design Load Summary for RTU-07 Zone 3

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:34PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	NO COOLING DATA NO COOLING OA DB / WB			HEATING DATA AT DES HTG HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	2917 ft²	-	-	2917 ft²	-	-
Wall Transmission	6930 ft²	-	-	6930 ft²	17315	-
Roof Transmission	0 ft²	-	-	0 ft²	0	-
Window Transmission	2917 ft²	-	-	2917 ft²	80909	-
Skylight Transmission	0 ft²	-	-	0 ft²	0	-
Door Loads	0 ft²	-	-	0 ft²	0	-
Floor Transmission	11777 ft²	-	-	11777 ft²	0	-
Partitions	0 ft²	-	-	0 ft²	0	-
Ceiling	0 ft²	-	-	0 ft²	0	-
Overhead Lighting	-	-	-	0	0	-
Task Lighting	-	-	-	0	0	-
Electric Equipment	-	-	-	0	0	-
People	-	-	-	0	0	0
Infiltration	-	-	-	-	0	0
Miscellaneous	-	-	-	-	0	0
Safety Factor	0% / 0%	-	-	0%	0	0
>> Total Zone Loads	-	-	-	-	98224	0
Zone Conditioning	-	-	-	-	0	0
Plenum Wall Load	0%	-	-	0	0	-
Plenum Roof Load	0%	-	-	0	0	-
Plenum Lighting Load	0%	-	-	0	0	-
Return Fan Load	-	-	-	7351 CFM	0	-
Ventilation Load	-	-	-	7351 CFM	196531	0
Supply Fan Load	-	-	-	7351 CFM	0	-
Space Fan Coil Fans	-	-	-	-	0	-
Duct Heat Gain / Loss	0%	-	-	0%	0	-
>> Total System Loads	-	-	-	-	196531	0
Precool Coil	-	-	-	-	0	0
Preheat Coil	-	-	-	-	332868	-
>> Total Conditioning	-	-	-	-	332868	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for RTU-08 Zone 3

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:34PM

Air System Information

Air System Name	RTU-08 Zone 3	Number of zones	1
Equipment Class	CW AHU	Floor Area	21344.0 ft ²
Air System Type	TEMPER	Location	Beverly, Massachusetts

Sizing Calculation Information

Calculation Months	Sep to Jun	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Precool Coil Sizing Data

Total coil load	31.1 Tons	Load occurs at	Jun 1500
Total coil load	373.4 MBH	OA DB / WB	88.0 / 71.0 °F
Sensible coil load	245.6 MBH	Entering DB / WB	88.0 / 71.0 °F
Coil CFM at Jun 1500	6897 CFM	Leaving DB / WB	55.0 / 53.7 °F
Max coil CFM	6897 CFM	Bypass Factor	0.100
Sensible heat ratio	0.658		
Water flow @ 10.0 °F rise	74.73 gpm		

Preheat Coil Sizing Data

Max coil load	323.9 MBH	Load occurs at	Des Htg
Coil CFM at Des Htg	6897 CFM	Ent. DB / Lvg DB	51.5 / 95.0 °F
Max coil CFM	6897 CFM		
Water flow @ 20.0 °F drop	32.41 gpm		

Supply Fan Sizing Data

Actual max CFM	6897 CFM	Fan motor BHP	0.00 BHP
Standard CFM	6890 CFM	Fan motor kW	0.00 kW
Actual max CFM/ft ²	0.32 CFM/ft ²	Fan static	0.00 in wg

Return Fan Sizing Data

Actual max CFM	6897 CFM	Fan motor BHP	0.00 BHP
Standard CFM	6890 CFM	Fan motor kW	0.00 kW
Actual max CFM/ft ²	0.32 CFM/ft ²	Fan static	0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM	6897 CFM	CFM/person	13.58 CFM/person
CFM/ft ²	0.32 CFM/ft ²		

Zone Sizing Summary for RTU-08 Zone 3

Project Name: Beverly Middle-School
Prepared by: Griffith & Vary, Inc.

12/16/2015
04:34PM

Air System Information

Air System Name **RTU-08 Zone 3**
Equipment Class **CW AHU**
Air System Type **TEMPER**

Number of zones **1**
Floor Area **21344.0** ft²
Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft ²)	Zone CFM/ft ²
Zone 1	318.7	6897	6897	Jun 1600	122.5	21344.0	0.32

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1							
316 Multimedia Video Lab	1	18.3	Jun 1700	391	8.5	1179.0	0.33
318 Assist Principal AP2	1	1.2	Jan 2300	13	0.0	140.0	0.10
320 Teachers Collab.	1	17.5	Jun 1700	141	1.5	683.0	0.21
321 SSP 7th Grade	1	3.5	Jan 2300	147	0.0	224.0	0.66
321A SSP Office	1	2.1	Jun 0800	11	1.7	94.0	0.11
322 General Class	1	12.5	Jun 0800	386	4.3	799.0	0.48
323 Small Group	1	3.6	Jun 0800	109	1.6	239.0	0.45
325 General Class	1	12.6	Jun 0800	394	4.9	868.0	0.45
326 Learning Center	1	4.8	Jun 0800	176	2.1	384.0	0.46
327 SBI Math	1	6.6	Jun 0800	196	2.2	385.0	0.51
328 Reading Class	1	16.4	Jun 1600	390	7.7	836.0	0.47
329 Small Group	1	3.7	Sep 1500	80	1.6	163.0	0.49
331A Science Class	1	16.5	Sep 1500	427	5.3	1144.0	0.37
331B Prep Room	1	0.5	Jan 2300	10	0.0	81.0	0.12
332 General Class	1	14.7	Sep 1500	391	4.3	843.0	0.46
333B Academic Team Room	1	15.6	Sep 1500	430	1.8	1334.0	0.32
C302 Corridor	1	14.8	Jun 1600	137	5.6	2276.0	0.06
C402 Corridor	1	23.7	Jun 1600	137	16.3	2288.0	0.06
418 Assist Principal AP3	1	1.6	Jun 1700	13	0.4	140.0	0.10
420 Teachers Collab.	1	18.6	Jun 1700	141	3.4	684.0	0.21
421 SSP 8th Grade	1	4.1	Jun 1700	147	0.6	224.0	0.66
421A SSP Office	1	2.2	Jun 1500	11	1.9	94.0	0.11
422 General Class	1	14.2	Jun 1600	386	6.4	799.0	0.48
423 Small Group	1	4.1	Jun 1600	109	2.3	239.0	0.45
425 General Class	1	15.0	Jun 1600	394	7.3	868.0	0.45
426 Therapeutic Learning	1	7.4	Jun 1600	196	3.2	384.0	0.51
427 Resource Room	1	7.4	Jun 1600	196	3.3	385.0	0.51
429 Small Group	1	4.1	Sep 1500	80	2.7	165.0	0.48
431A Science Class	1	18.5	Jun 1600	427	8.3	1143.0	0.37
431B Prep Room	1	0.9	Jun 1800	10	0.5	82.0	0.12
432 General Class	1	16.1	Sep 1500	391	6.5	843.0	0.46
433B Academic Team Room	1	19.8	Jun 1600	430	6.5	1334.0	0.32

Air System Design Load Summary for RTU-08 Zone 3

Project Name: Beverly Middle-School
Prepared by: Griffith & Vary, Inc.

12/16/2015
04:34PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	NO COOLING DATA			HEATING DATA AT DES HTG		
	NO COOLING OA DB / WB			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	2633 ft²	-	-	2633 ft²	-	-
Wall Transmission	6902 ft²	-	-	6902 ft²	17245	-
Roof Transmission	11687 ft²	-	-	11687 ft²	31069	-
Window Transmission	2633 ft²	-	-	2633 ft²	73825	-
Skylight Transmission	0 ft²	-	-	0 ft²	0	-
Door Loads	21 ft²	-	-	21 ft²	397	-
Floor Transmission	0 ft²	-	-	0 ft²	0	-
Partitions	0 ft²	-	-	0 ft²	0	-
Ceiling	0 ft²	-	-	0 ft²	0	-
Overhead Lighting	-	-	-	0	0	-
Task Lighting	-	-	-	0	0	-
Electric Equipment	-	-	-	0	0	-
People	-	-	-	0	0	0
Infiltration	-	-	-	-	0	0
Miscellaneous	-	-	-	-	0	0
Safety Factor	0% / 0%	-	-	0%	0	0
>> Total Zone Loads	-	-	-	-	122537	0
Zone Conditioning	-	-	-	-	0	0
Plenum Wall Load	0%	-	-	0	0	-
Plenum Roof Load	0%	-	-	0	0	-
Plenum Lighting Load	0%	-	-	0	0	-
Return Fan Load	-	-	-	6897 CFM	0	-
Ventilation Load	-	-	-	6897 CFM	178178	0
Supply Fan Load	-	-	-	6897 CFM	0	-
Space Fan Coil Fans	-	-	-	-	0	-
Duct Heat Gain / Loss	0%	-	-	0%	0	-
>> Total System Loads	-	-	-	-	178178	0
Precool Coil	-	-	-	-	0	0
Preheat Coil	-	-	-	-	323912	-
>> Total Conditioning	-	-	-	-	323912	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for RTU-09 Cafe 7-8 Grades

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:34PM

Air System Information

Air System Name **RTU-09 Cafe 7-8 Grades**
 Equipment Class **CW AHU**
 Air System Type **SZCAV**

Number of zones **1**
 Floor Area **14543.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
 Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **36.7** Tons
 Total coil load **439.8** MBH
 Sensible coil load **333.9** MBH
 Coil CFM at Jun 1500 **12544** CFM
 Max block CFM **12544** CFM
 Sum of peak zone CFM **12544** CFM
 Sensible heat ratio **0.759**
 ft²/Ton **396.8**
 BTU/(hr-ft²) **30.2**
 Water flow @ 10.0 °F rise **88.01** gpm

Load occurs at **Jun 1500**
 OA DB / WB **88.0 / 71.0** °F
 Entering DB / WB **81.4 / 66.9** °F
 Leaving DB / WB **56.7 / 55.4** °F
 Coil ADP **53.9** °F
 Bypass Factor **0.100**
 Resulting RH **50** %
 Design supply temp. **58.0** °F
 Zone T-stat Check **1 of 1** OK
 Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **533.9** MBH
 Coil CFM at Des Htg **12544** CFM
 Max coil CFM **12544** CFM
 Water flow @ 20.0 °F drop **53.41** gpm

Load occurs at **Des Htg**
 BTU/(hr-ft²) **36.7**
 Ent. DB / Lvg DB **42.1 / 81.6** °F

Supply Fan Sizing Data

Actual max CFM **12544** CFM
 Standard CFM **12531** CFM
 Actual max CFM/ft² **0.86** CFM/ft²

Fan motor BHP **0.00** BHP
 Fan motor kW **0.00** kW
 Fan static **0.00** in wg

Outdoor Ventilation Air Data

Design airflow CFM **5488** CFM
 CFM/ft² **0.38** CFM/ft²

CFM/person **21.15** CFM/person

Zone Sizing Summary for RTU-09 Cafe 7-8 Grades

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:34PM

Air System Information

Air System Name **RTU-09 Cafe 7-8 Grades**
 Equipment Class **CW AHU**
 Air System Type **SZCAV**

Number of zones **1**
 Floor Area **14543.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
 Space CFM Sizing **Individual peak space loads**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft ²)	Zone CFM/ft ²
Zone 1	217.2	12544	12544	Sep 1100	163.2	14543.0	0.86

Zone Terminal Sizing Data

No Zone Terminal Sizing Data required for this system.

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1							
317A Cafe 7-8 Grades	1	199.9	Sep 1100	10901	135.4	7461.0	1.46
C300 Corridor	1	7.0	Jun 0900	384	4.4	3167.0	0.12
C400 Corridor	1	23.1	Jun 1700	1260	23.4	3915.0	0.32

Air System Design Load Summary for RTU-09 Cafe 7-8 Grades

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:34PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 88.0 °F / 71.0 °F			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	4093 ft²	64236	-	4093 ft²	-	-
Wall Transmission	4005 ft²	3011	-	4005 ft²	10007	-
Roof Transmission	11376 ft²	26989	-	11376 ft²	30242	-
Window Transmission	4093 ft²	16557	-	4093 ft²	101673	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	5345 W	18235	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	260	59684	31140	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	18871	3114	15%	21288	0
>> Total Zone Loads	-	207582	34254	-	163210	0
Zone Conditioning	-	200347	34254	-	164359	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	12544 CFM	0	-	12544 CFM	0	-
Ventilation Load	5488 CFM	69948	71630	5488 CFM	369494	0
Supply Fan Load	12544 CFM	0	-	12544 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	270296	105884	-	533853	0
Central Cooling Coil	-	333940	105884	-	0	0
Central Heating Coil	-	-63645	-	-	533853	-
>> Total Conditioning	-	270296	105884	-	533853	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for RTU-10 Cafe 5-6 Grades

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:34PM

Air System Information

Air System Name	RTU-10 Cafe 5-6 Grades	Number of zones	1
Equipment Class	CW AHU	Floor Area	14638.0 ft ²
Air System Type	SZCAV	Location	Beverly, Massachusetts

Sizing Calculation Information

Calculation Months	Sep to Jun	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Central Cooling Coil Sizing Data

Total coil load	32.8 Tons	Load occurs at	Jun 1500
Total coil load	393.6 MBH	OA DB / WB	88.0 / 71.0 °F
Sensible coil load	300.7 MBH	Entering DB / WB	80.8 / 66.6 °F
Coil CFM at Jun 1500	11465 CFM	Leaving DB / WB	56.4 / 55.2 °F
Max block CFM	11465 CFM	Coil ADP	53.7 °F
Sum of peak zone CFM	11465 CFM	Bypass Factor	0.100
Sensible heat ratio	0.764	Resulting RH	50 %
ft ² /Ton	446.3	Design supply temp.	58.0 °F
BTU/(hr-ft ²)	26.9	Zone T-stat Check	1 of 1 OK
Water flow @ 10.0 °F rise	78.76 gpm	Max zone temperature deviation	0.0 °F

Central Heating Coil Sizing Data

Max coil load	394.9 MBH	Load occurs at	Des Htg
Coil CFM at Des Htg	11465 CFM	BTU/(hr-ft ²)	27.0
Max coil CFM	11465 CFM	Ent. DB / Lvg DB	45.2 / 77.1 °F
Water flow @ 20.0 °F drop	39.51 gpm		

Supply Fan Sizing Data

Actual max CFM	11465 CFM	Fan motor BHP	0.00 BHP
Standard CFM	11453 CFM	Fan motor kW	0.00 kW
Actual max CFM/ft ²	0.78 CFM/ft ²	Fan static	0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM	4458 CFM	CFM/person	17.08 CFM/person
CFM/ft ²	0.30 CFM/ft ²		

Zone Sizing Summary for RTU-10 Cafe 5-6 Grades

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:34PM

Air System Information

Air System Name **RTU-10 Cafe 5-6 Grades**
 Equipment Class **CW AHU**
 Air System Type **SZCAV**

Number of zones **1**
 Floor Area **14638.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
 Space CFM Sizing **Individual peak space loads**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft ²)	Zone CFM/ft ²
Zone 1	210.1	11465	11465	Sep 1000	97.8	14638.0	0.78

Zone Terminal Sizing Data

No Zone Terminal Sizing Data required for this system.

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1							
117A Cafe 5-6 Grades	1	189.2	Sep 1000	10314	95.3	7453.0	1.38
C200 Corridor	1	12.0	Sep 1400	652	2.5	3928.0	0.17
C100 Corridor	1	9.2	Jan 2300	500	0.0	3257.0	0.15

Air System Design Load Summary for RTU-10 Cafe 5-6 Grades

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:34PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1500			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 88.0 °F / 71.0 °F			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	3145 ft²	49582	-	3145 ft²	-	-
Wall Transmission	3101 ft²	2427	-	3101 ft²	7748	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	3145 ft²	12583	-	3145 ft²	77273	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	10710 ft²	0	-	10710 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	10979 W	37458	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	261	60029	31320	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	10% / 10%	16208	3132	15%	12753	0
>> Total Zone Loads	-	178287	34452	-	97774	0
Zone Conditioning	-	174175	34452	-	94340	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	11465 CFM	0	-	11465 CFM	0	-
Ventilation Load	4458 CFM	57004	58447	4458 CFM	300556	0
Supply Fan Load	11465 CFM	0	-	11465 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	231178	92899	-	394896	0
Central Cooling Coil	-	300672	92899	-	0	0
Central Heating Coil	-	-69494	-	-	394896	-
>> Total Conditioning	-	231178	92899	-	394896	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for RTU-11 Zone 4

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:35PM

Air System Information

Air System Name **RTU-11 Zone 4**
 Equipment Class **CW AHU**
 Air System Type **TEMPER**

Number of zones **1**
 Floor Area **18887.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
 Space CFM Sizing **Individual peak space loads**

Precool Coil Sizing Data

Total coil load **28.8** Tons
 Total coil load **346.0** MBH
 Sensible coil load **227.5** MBH
 Coil CFM at Jun 1500 **6391** CFM
 Max coil CFM **6391** CFM
 Sensible heat ratio **0.658**
 Water flow @ 10.0 °F rise **69.24** gpm

Load occurs at **Jun 1500**
 OA DB / WB **88.0 / 71.0** °F
 Entering DB / WB **88.0 / 71.0** °F
 Leaving DB / WB **55.0 / 53.7** °F
 Bypass Factor **0.100**

Preheat Coil Sizing Data

Max coil load **285.9** MBH
 Coil CFM at Des Htg **6391** CFM
 Max coil CFM **6391** CFM
 Water flow @ 20.0 °F drop **28.60** gpm

Load occurs at **Des Htg**
 Ent. DB / Lvg DB **53.5 / 95.0** °F

Supply Fan Sizing Data

Actual max CFM **6391** CFM
 Standard CFM **6384** CFM
 Actual max CFM/ft² **0.34** CFM/ft²

Fan motor BHP **0.00** BHP
 Fan motor kW **0.00** kW
 Fan static **0.00** in wg

Return Fan Sizing Data

Actual max CFM **6391** CFM
 Standard CFM **6384** CFM
 Actual max CFM/ft² **0.34** CFM/ft²

Fan motor BHP **0.00** BHP
 Fan motor kW **0.00** kW
 Fan static **0.00** in wg

Outdoor Ventilation Air Data

Design airflow CFM **6391** CFM
 CFM/ft² **0.34** CFM/ft²

CFM/person **13.95** CFM/person

Air System Design Load Summary for RTU-11 Zone 4

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:35PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	NO COOLING DATA			HEATING DATA AT DES HTG		
	NO COOLING OA DB / WB			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	2278 ft²	-	-	2278 ft²	-	-
Wall Transmission	6115 ft²	-	-	6115 ft²	15279	-
Roof Transmission	0 ft²	-	-	0 ft²	0	-
Window Transmission	2278 ft²	-	-	2278 ft²	62907	-
Skylight Transmission	0 ft²	-	-	0 ft²	0	-
Door Loads	0 ft²	-	-	0 ft²	0	-
Floor Transmission	9247 ft²	-	-	9247 ft²	0	-
Partitions	0 ft²	-	-	0 ft²	0	-
Ceiling	0 ft²	-	-	0 ft²	0	-
Overhead Lighting	-	-	-	0	0	-
Task Lighting	-	-	-	0	0	-
Electric Equipment	-	-	-	0	0	-
People	-	-	-	0	0	0
Infiltration	-	-	-	-	0	0
Miscellaneous	-	-	-	-	0	0
Safety Factor	0% / 0%	-	-	0%	0	0
>> Total Zone Loads	-	-	-	-	78186	0
Zone Conditioning	-	-	-	-	0	0
Plenum Wall Load	0%	-	-	0	0	-
Plenum Roof Load	0%	-	-	0	0	-
Plenum Lighting Load	0%	-	-	0	0	-
Return Fan Load	-	-	-	6391 CFM	0	-
Ventilation Load	-	-	-	6391 CFM	172798	0
Supply Fan Load	-	-	-	6391 CFM	0	-
Space Fan Coil Fans	-	-	-	-	0	-
Duct Heat Gain / Loss	0%	-	-	0%	0	-
>> Total System Loads	-	-	-	-	172798	0
Precool Coil	-	-	-	-	0	0
Preheat Coil	-	-	-	-	285854	-
>> Total Conditioning	-	-	-	-	285854	0
Key:	Positive values are clg loads			Positive values are htg loads		
	Negative values are htg loads			Negative values are clg loads		

Air System Sizing Summary for RTU-12 Zone 4

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:35PM

Air System Information

Air System Name	RTU-12 Zone 4	Number of zones	1
Equipment Class	CW AHU	Floor Area	18098.0 ft ²
Air System Type	TEMPER	Location	Beverly, Massachusetts

Sizing Calculation Information

Calculation Months	Sep to Jun	Zone CFM Sizing	Sum of space airflow rates
Sizing Data	Calculated	Space CFM Sizing	Individual peak space loads

Precool Coil Sizing Data

Total coil load	26.7 Tons	Load occurs at	Jun 1500
Total coil load	320.6 MBH	OA DB / WB	88.0 / 71.0 °F
Sensible coil load	210.8 MBH	Entering DB / WB	88.0 / 71.0 °F
Coil CFM at Jun 1500	5921 CFM	Leaving DB / WB	55.0 / 53.7 °F
Max coil CFM	5921 CFM	Bypass Factor	0.100
Sensible heat ratio	0.658		
Water flow @ 10.0 °F rise	64.15 gpm		

Preheat Coil Sizing Data

Max coil load	281.9 MBH	Load occurs at	Des Htg
Coil CFM at Des Htg	5921 CFM	Ent. DB / Lvg DB	50.9 / 95.0 °F
Max coil CFM	5921 CFM		
Water flow @ 20.0 °F drop	28.20 gpm		

Supply Fan Sizing Data

Actual max CFM	5921 CFM	Fan motor BHP	0.00 BHP
Standard CFM	5914 CFM	Fan motor kW	0.00 kW
Actual max CFM/ft ²	0.33 CFM/ft ²	Fan static	0.00 in wg

Return Fan Sizing Data

Actual max CFM	5921 CFM	Fan motor BHP	0.00 BHP
Standard CFM	5914 CFM	Fan motor kW	0.00 kW
Actual max CFM/ft ²	0.33 CFM/ft ²	Fan static	0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM	5921 CFM	CFM/person	14.27 CFM/person
CFM/ft ²	0.33 CFM/ft ²		

Zone Sizing Summary for RTU-12 Zone 4

Project Name: Beverly Middle-School
Prepared by: Griffith & Vary, Inc.

12/16/2015
04:35PM

Air System Information

Air System Name **RTU-12 Zone 4**
Equipment Class **CW AHU**
Air System Type **TEMPER**

Number of zones **1**
Floor Area **18098.0** ft²
Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
Sizing Data **Calculated**

Zone CFM Sizing **Sum of space airflow rates**
Space CFM Sizing **Individual peak space loads**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft ²)	Zone CFM/ft ²
Zone 1	269.3	5921	5921	Jun 1600	116.2	18098.0	0.33

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1							
304 General Class	1	13.6	Jun 0900	385	4.3	795.0	0.48
305 Small Group	1	4.0	Jun 0900	108	1.6	237.0	0.46
307 General Class	1	14.3	Jun 0900	394	4.9	867.0	0.45
308 ELL English Lang.	1	6.2	Jun 0900	156	2.1	386.0	0.40
309 Language Based	1	7.1	Jun 0900	196	2.2	381.0	0.51
310 General Class	1	15.1	Jun 1700	240	7.7	836.0	0.29
311 Small Group	1	3.7	Jun 1700	81	1.6	176.0	0.46
313A Science Class	1	16.4	Jun 1700	427	5.3	1145.0	0.37
313B Prep Room	1	0.5	Jan 2300	10	0.0	82.0	0.12
314 General Class	1	14.6	Jun 1700	390	4.3	831.0	0.47
315B Academic Team Room	1	18.3	Jun 1700	612	2.2	1434.0	0.43
317D School Adj Coun	1	4.4	Sep 1300	14	3.9	151.0	0.09
317E School Adj Coun	1	2.7	Jun 0900	15	1.7	162.0	0.09
C301 Corridor	1	13.1	Jun 1700	117	6.2	1952.0	0.06
C401 Corridor	1	22.4	Jun 1700	126	14.9	2104.0	0.06
404 General Class	1	14.8	Jun 1500	385	6.4	795.0	0.48
405 Small Group	1	4.3	Jun 1500	108	2.3	237.0	0.46
407 General Class	1	15.6	Jun 1500	394	7.3	867.0	0.45
408 Reading Class	1	7.7	Jun 1500	196	3.2	386.0	0.51
409 Language Based	1	7.7	Jun 1500	196	3.2	381.0	0.51
411 Small Group	1	4.3	Jun 1700	81	2.7	176.0	0.46
413A Science Class	1	18.8	Jun 1700	427	8.3	1145.0	0.37
413B Prep Room	1	0.8	Jun 1700	10	0.5	82.0	0.12
414 General Class	1	16.7	Jun 1700	391	6.5	842.0	0.46
415B Academic Team Room	1	20.2	Jun 1700	430	6.6	1335.0	0.32
417A Instructional Coach	1	4.6	Sep 1300	14	4.3	151.0	0.09
417B Instructional Coach	1	2.8	Jun 1500	15	2.1	162.0	0.09

Air System Design Load Summary for RTU-12 Zone 4

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:35PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	NO COOLING DATA			HEATING DATA AT DES HTG		
	NO COOLING OA DB / WB			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	2649 ft²	-	-	2649 ft²	-	-
Wall Transmission	6985 ft²	-	-	6985 ft²	17453	-
Roof Transmission	9499 ft²	-	-	9499 ft²	25252	-
Window Transmission	2649 ft²	-	-	2649 ft²	73493	-
Skylight Transmission	0 ft²	-	-	0 ft²	0	-
Door Loads	0 ft²	-	-	0 ft²	0	-
Floor Transmission	0 ft²	-	-	0 ft²	0	-
Partitions	0 ft²	-	-	0 ft²	0	-
Ceiling	0 ft²	-	-	0 ft²	0	-
Overhead Lighting	-	-	-	0	0	-
Task Lighting	-	-	-	0	0	-
Electric Equipment	-	-	-	0	0	-
People	-	-	-	0	0	0
Infiltration	-	-	-	-	0	0
Miscellaneous	-	-	-	-	0	0
Safety Factor	0% / 0%	-	-	0%	0	0
>> Total Zone Loads	-	-	-	-	116198	0
Zone Conditioning	-	-	-	-	0	0
Plenum Wall Load	0%	-	-	0	0	-
Plenum Roof Load	0%	-	-	0	0	-
Plenum Lighting Load	0%	-	-	0	0	-
Return Fan Load	-	-	-	5921 CFM	0	-
Ventilation Load	-	-	-	5921 CFM	150885	0
Supply Fan Load	-	-	-	5921 CFM	0	-
Space Fan Coil Fans	-	-	-	-	0	-
Duct Heat Gain / Loss	0%	-	-	0%	0	-
>> Total System Loads	-	-	-	-	150885	0
Precool Coil	-	-	-	-	0	0
Preheat Coil	-	-	-	-	281893	-
>> Total Conditioning	-	-	-	-	281893	0
Key:	Positive values are clg loads			Positive values are htg loads		
	Negative values are htg loads			Negative values are clg loads		

Air System Sizing Summary for RTU-13 Administration

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:35PM

Air System Information

Air System Name **RTU-13 Administration**
 Equipment Class **CW AHU**
 Air System Type **VAV**

Number of zones **1**
 Floor Area **5220.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Peak zone sensible load**
 Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **12.2** Tons
 Total coil load **146.4** MBH
 Sensible coil load **128.9** MBH
 Coil CFM at Sep 1400 **5337** CFM
 Max block CFM at Sep 1400 **5940** CFM
 Sum of peak zone CFM **5940** CFM
 Sensible heat ratio **0.881**
 ft²/Ton **428.0**
 BTU/(hr-ft²) **28.0**
 Water flow @ 10.0 °F rise **29.29** gpm

Load occurs at **Sep 1400**
 OA DB / WB **85.7 / 70.1** °F
 Entering DB / WB **77.4 / 63.2** °F
 Leaving DB / WB **55.0 / 53.7** °F
 Coil ADP **52.5** °F
 Bypass Factor **0.100**
 Resulting RH **45** %
 Design supply temp. **55.0** °F
 Zone T-stat Check **1 of 1** OK
 Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **7.1** MBH
 Coil CFM at Jan 0600 **672** CFM
 Max coil CFM **5940** CFM
 Water flow @ 20.0 °F drop **0.71** gpm

Load occurs at **Jan 0600**
 BTU/(hr-ft²) **1.4**
 Ent. DB / Lvg DB **45.2 / 55.0** °F

Preheat Coil Sizing Data

No heating coil loads occurred during this calculation.

Supply Fan Sizing Data

Actual max CFM at Sep 1400 **5940** CFM
 Standard CFM **5933** CFM
 Actual max CFM/ft² **1.14** CFM/ft²

Fan motor BHP **0.00** BHP
 Fan motor kW **0.00** kW
 Fan static **0.00** in wg

Outdoor Ventilation Air Data

Design airflow CFM **672** CFM
 CFM/ft² **0.13** CFM/ft²

CFM/person **15.28** CFM/person

Zone Sizing Summary for RTU-13 Administration

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:35PM

Air System Information

Air System Name **RTU-13 Administration**
 Equipment Class **CW AHU**
 Air System Type **VAV**

Number of zones **1**
 Floor Area **5220.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Peak zone sensible load**
 Space CFM Sizing **Individual peak space loads**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft ²)	Zone CFM/ft ²
Zone 1	128.2	5940	672	Sep 1400	120.9	5220.0	1.14

Zone Terminal Sizing Data

Zone Name	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Coil Load (MBH)	Zone Htg Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	131.7	13.18	0.0	0.00	0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1							
101A Admin Waiting	1	17.0	Jun 0900	789	8.7	1244.0	0.63
101C Principals Office	1	6.1	Jun 1500	281	7.4	389.0	0.72
101F Teachers Mail Room	1	3.4	Jan 2300	160	0.0	164.0	0.97
101G Conference Room	1	3.5	Jan 2300	161	0.0	251.0	0.64
C100B Main Lobby	1	70.9	Sep 1300	3284	80.3	1153.0	2.85
200 Guidance Nurse Rec	1	2.6	Jun 1700	119	0.8	269.0	0.44
200B Guidance Office	1	2.4	Jun 1500	113	1.7	119.0	0.95
200C Guidance Office	1	2.8	Jun 0900	128	2.1	104.0	1.23
200D Guidance Office	1	2.8	Jun 0900	128	2.1	103.0	1.25
200E Guidance Office	1	2.3	Jun 1500	105	1.4	101.0	1.04
200F Guidance Storage	1	0.5	Jun 1700	23	0.2	76.0	0.30
200A Guidance Waiting	1	2.9	Jun 1700	135	0.9	288.0	0.47
201A Nurse Suite	1	4.5	Jun 1700	207	1.0	317.0	0.65
201B Exam Screen	1	2.3	Jun 1700	105	0.3	91.0	1.16
201D Resting	1	2.8	Jun 1700	129	1.9	179.0	0.72
201C Nurse Office	1	3.2	Jun 1700	150	4.0	139.0	1.08
201E Resting	1	4.0	Jun 1400	185	4.6	125.0	1.48
201F Exam Room	1	3.7	Jun 0900	171	3.3	108.0	1.58

Air System Design Load Summary for RTU-13 Administration

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:35PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Sep 1400			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 85.7 °F / 70.1 °F			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	3551 ft²	59229	-	3551 ft²	-	-
Wall Transmission	2448 ft²	1369	-	2448 ft²	6117	-
Roof Transmission	3172 ft²	4549	-	3172 ft²	8432	-
Window Transmission	3551 ft²	11446	-	3551 ft²	90544	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	3201 ft²	0	-	3201 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	5220 W	17810	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	44	10435	7065	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	11670	0	-	0	0
Safety Factor	10% / 10%	11651	707	15%	15764	0
>> Total Zone Loads	-	128159	7772	-	120857	0
Zone Conditioning	-	122747	7772	-	118310	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	5337 CFM	0	-	672 CFM	0	-
Ventilation Load	604 CFM	6141	9694	76 CFM	5051	0
Supply Fan Load	5337 CFM	0	-	672 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	128888	17466	-	123361	0
Central Cooling Coil	-	128888	17478	-	-4769	0
Central Heating Coil	-	0	-	-	0	-
Preheat Coil	-	0	-	-	0	-
Terminal Reheat Coils	-	0	-	-	128130	-
>> Total Conditioning	-	128888	17478	-	123361	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for RTU-14 Media Center

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:36PM

Air System Information

Air System Name **RTU-14 Media Center**
 Equipment Class **CW AHU**
 Air System Type **VAV**

Number of zones **1**
 Floor Area **5671.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Peak zone sensible load**
 Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **17.5** Tons
 Total coil load **210.0** MBH
 Sensible coil load **164.4** MBH
 Coil CFM at Jun 1600 **6145** CFM
 Max block CFM at Jun 1600 **6770** CFM
 Sum of peak zone CFM **6770** CFM
 Sensible heat ratio **0.783**
 ft²/Ton **324.1**
 BTU/(hr-ft²) **37.0**
 Water flow @ 10.0 °F rise **42.02** gpm

Load occurs at **Jun 1600**
 OA DB / WB **87.5 / 70.9** °F
 Entering DB / WB **79.8 / 65.4** °F
 Leaving DB / WB **55.0 / 53.7** °F
 Coil ADP **52.2** °F
 Bypass Factor **0.100**
 Resulting RH **47** %
 Design supply temp. **55.0** °F
 Zone T-stat Check **1 of 1** OK
 Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **16.4** MBH
 Coil CFM at Jan 0600 **2114** CFM
 Max coil CFM **6770** CFM
 Water flow @ 20.0 °F drop **1.64** gpm

Load occurs at **Jan 0600**
 BTU/(hr-ft²) **2.9**
 Ent. DB / Lvg DB **47.8 / 55.0** °F

Preheat Coil Sizing Data

Max coil load **3.3** MBH
 Coil CFM at Des Htg **2114** CFM
 Max coil CFM **6770** CFM
 Water flow @ 20.0 °F drop **0.33** gpm

Load occurs at **Des Htg**
 Ent. DB / Lvg DB **48.5 / 50.0** °F

Supply Fan Sizing Data

Actual max CFM at Jun 1600 **6770** CFM
 Standard CFM **6763** CFM
 Actual max CFM/ft² **1.19** CFM/ft²

Fan motor BHP **0.00** BHP
 Fan motor kW **0.00** kW
 Fan static **0.00** in wg

Outdoor Ventilation Air Data

Design airflow CFM **2114** CFM
 CFM/ft² **0.37** CFM/ft²

CFM/person **19.75** CFM/person

Zone Sizing Summary for RTU-14 Media Center

Project Name: Beverly Middle-School
 Prepared by: Griffith & Vary, Inc.

12/16/2015
 04:36PM

Air System Information

Air System Name **RTU-14 Media Center**
 Equipment Class **CW AHU**
 Air System Type **VAV**

Number of zones **1**
 Floor Area **5671.0** ft²
 Location **Beverly, Massachusetts**

Sizing Calculation Information

Calculation Months **Sep to Jun**
 Sizing Data **Calculated**

Zone CFM Sizing **Peak zone sensible load**
 Space CFM Sizing **Individual peak space loads**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (MBH)	Design Airflow (CFM)	Minimum Airflow (CFM)	Time of Peak Load	Maximum Heating Load (MBH)	Zone Floor Area (ft ²)	Zone CFM/ft ²
Zone 1	146.1	6770	2114	Jun 1600	96.4	5671.0	1.19

Zone Terminal Sizing Data

Zone Name	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Coil Load (MBH)	Zone Htg Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	130.6	13.06	0.0	0.00	0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1							
100A Media Center	1	130.8	Jun 1600	6062	93.5	5261.0	1.15
100B Library Office	1	8.8	Jun 1700	407	0.5	167.0	2.44
100C Tech Workroom	1	5.1	Jun 1700	237	1.8	167.0	1.42
100D Editing	1	1.5	Jun 1700	69	0.5	76.0	0.91

DESIGN DEVELOPMENT - BEVERLY PUBLIC SCHOOLS

Air System Design Load Summary for RTU-14 Media Center

Project Name: Beverly Middle-School
Prepared by: Griffith & Vary, Inc.

12/16/2015
04:36PM

ZONE LOADS	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1600			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 87.5 °F / 70.9 °F			HEATING OA DB / WB 7.0 °F / 4.9 °F		
	Details	Sensible (BTU/hr)	Latent (BTU/hr)		Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	2534 ft²	49658	-	2534 ft²	-	-
Wall Transmission	2933 ft²	2641	-	2933 ft²	7328	-
Roof Transmission	5340 ft²	13432	-	5340 ft²	14196	-
Window Transmission	2534 ft²	10008	-	2534 ft²	62260	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	5671 ft²	0	-	5671 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	5671 W	19349	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	0 W	0	-	0	0	-
People	107	24715	13435	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	13000	0	-	0	0
Safety Factor	10% / 10%	13280	1344	15%	12568	0
>> Total Zone Loads	-	146083	14779	-	96352	0
Zone Conditioning	-	141099	14779	-	90886	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	6145 CFM	0	-	2114 CFM	0	-
Ventilation Load	1918 CFM	23293	30792	660 CFM	42995	0
Supply Fan Load	6145 CFM	0	-	2114 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	164392	45570	-	133881	0
Central Cooling Coil	-	164392	45574	-	0	0
Central Heating Coil	-	0	-	-	0	-
Preheat Coil	-	0	-	-	3324	-
Terminal Reheat Coils	-	0	-	-	130557	-
>> Total Conditioning	-	164392	45574	-	133881	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

BUILDING SYSTEMS

ELECTRICAL LOAD CALCULATION



Griffith & Vary, Inc.
 12 Kendrick Road
 Wareham, MA 02571
 (T) 508-295-0050
 (F) 508-295-0003

December 23, 2015

RE: Beverly Middle School
 Beverly, MA

Griffith and Vary Inc. has prepared the Design Development Electrical Plans and Specifications for the above referenced project. Beverly Middle School is a four story structure, approximately 231,509 square feet.

Estimated Electrical Loads for the New School:

Load Type	Load in kVA
Lighting	448
Air Conditioning	931
Water Heating	7
Heating	62
Refrigeration	49
Receptacles	518
Computers	792
Cooking/Cleaning	152
Elevator	68
Miscellaneous	289
Misc Motors	160
Future Sports Lighting	197
Bus Depot	166

NEC 220.86 Schools
 Optional Method Calculation

$3,839,000 \text{ VA} / 232,000 \text{ ft}^2 = 16.55 \text{ VA/ft}^2$
 $3\text{VA} \times 232,000 \text{ ft}^2 \times 100\% = 696,000 \text{ VA}$
 $13.55 \text{ VA} \times 232,000 \text{ ft}^2 \times 75\% = 2,357,250 \text{ VA}$
 $696,000 + 2,357,900 = 3,053,250 \text{ VA}$
 $3,053,250 @ 480\text{V}, 3 \text{ phase} = \mathbf{3679A}$

Based upon the loads above, we are designing the Electric service to come from the National Grid transformer to the 4000A, 480/277 volt, 3 phase, 4 wire switchboard with a 4000A 100% rated main circuit breaker. We have designed the Electric service to be secondary metered by National Grid at the pad mounted transformer.

BUILDING SYSTEMS

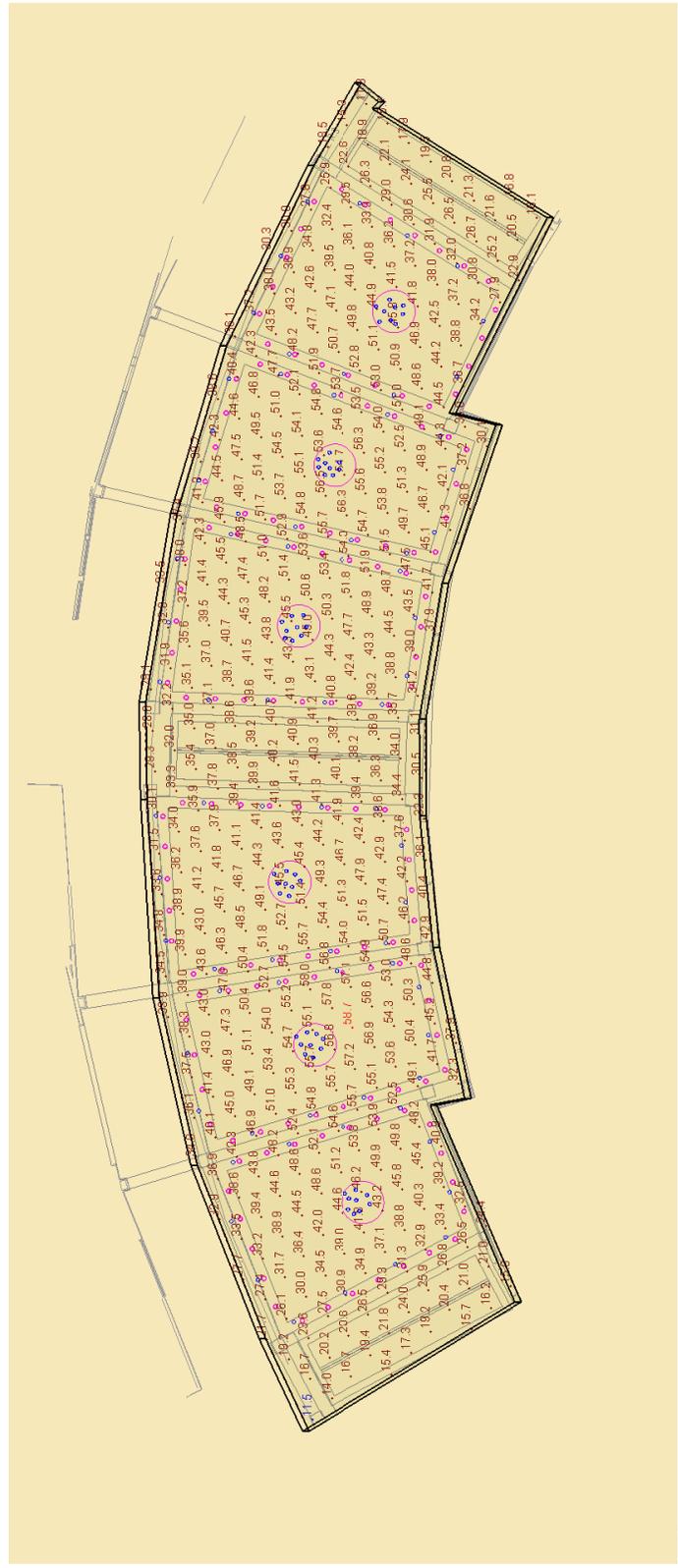
LIGHTING DESIGN & FIXTURE DATA SHEETS



Beverly Middle School

Designer:
Date: 08/01/2017
Project:
Scale:
Note to Scale:
Drawing No.:

1 of 2

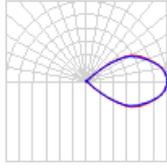
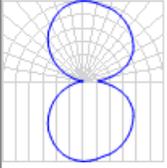


Statistics

Description

Cafeteria Dining 5/6th Grade

Symb	Avg	Max	Min	Max/Mi	Avg/Mi
ol	fc	fc	fc	n	n
+	40.7 fc	58.7 fc	11.5 fc	5.1:1	3.5:1

Luminaire Schedule										
Symbol	Label	QTY	Catalog Number	Description	Lamp	Numb er Lamps	Lumens per Lamp	LLF	Wattag e	Wattage Density
	A	74	ESA-C10-P-28-D-WD-U-525-35K (525mA) CONFIGURED FROM KXR6JW28D15AC or ESA-ADR-WD-6-28-D-120-SSGC-FF-525-35K (525mA) WITH TRIM KTR6JZX00MF	CONFIGURED FROM FABRICATED METAL FRAME, FABRICATED FINNED METAL HEAT SINK, FLAT METAL CIRCUIT BOARD MOUNTING PLATE, 1 CIRCUIT BOARD WITH 28 LEDS, 1 CLEAR PLASTIC NON-INTEGRAL LENS BELOW EACH LED, CAST BLACK PAINTED METAL LED LENS TRIM PLATE, FABRICATED BLACK PAINTED METAL UPPER SURROUND, SPUN SEMI-DIFFUSE METAL REFLECTOR AND TRIM WITH BLACK PAINTED TOP SECTION. OPEN BOTTOM.	CONFIGURED FROM TWENTY-EIGHT WHITE LIGHT EMITTING DIODES (LEDS), VERTICAL	28	103,085 4	0.9	52	
	B	54	421001	CYLINDRA LED PENDANT	65W LED 3500K	1	3603.06 1	0.9	65	
Power Statistics										
Description			# Luminaire s		Total Watts		Area		Density	
Power Density Zone 5/6 th Grade			128		7358.0 W		6394.3 ft ²		1.2 W/ft ²	



Beverly Middle School

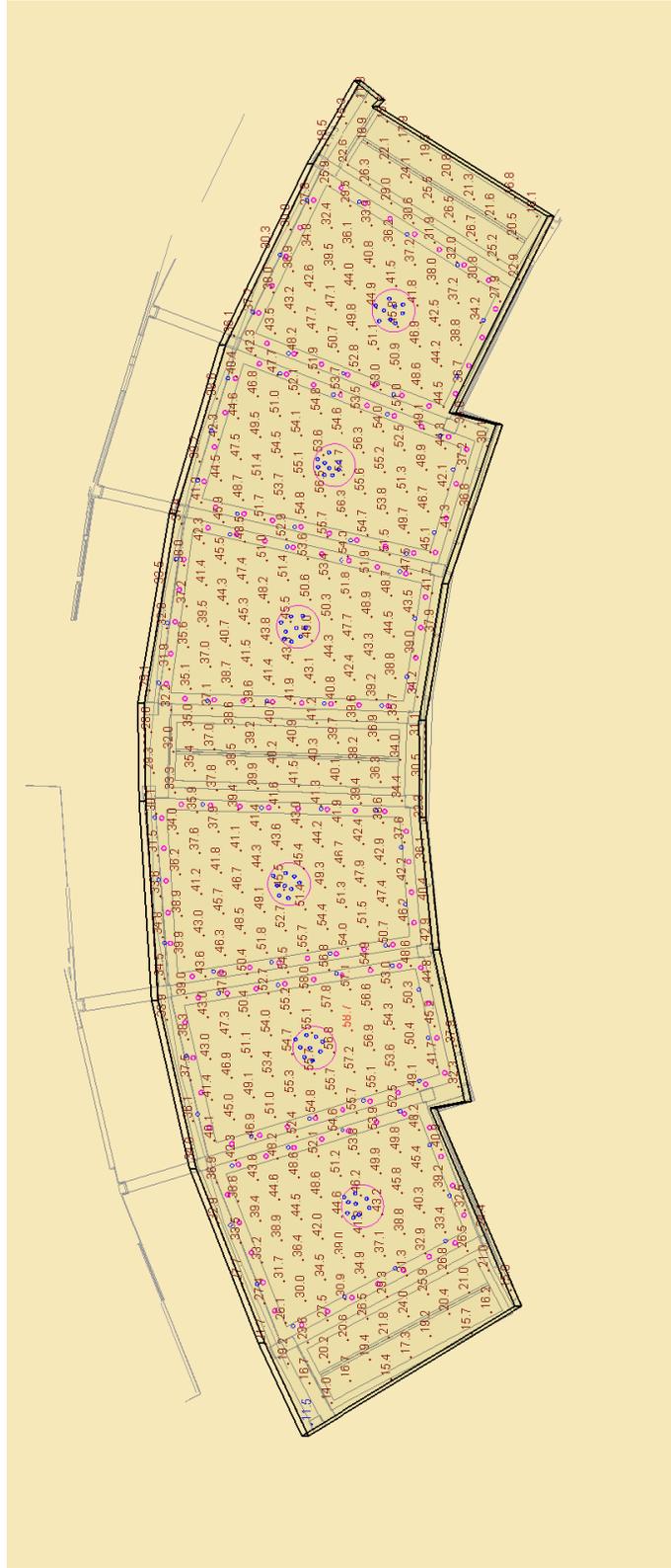
Designer: 2/20/2015
Date: 10/15/2015
Net to Scale
Drawing No. 2 of 2



Beverly Middle School

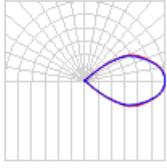
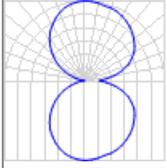
Preparer:
Date:
Project:
Scale:
Note to Scale:
Drawing No.:

1 of 2



Current View

Statistics	Symbol	Avg	Max	Min	Max/Mi	Avg/Mi
Cafeteria Dining 7/8th Grade	+	40.7 fc	58.7 fc	11.5 fc	5.1:1	3.5:1

Luminaire Schedule							Beverly Middle School			
Symbol	Label	QTY	Catalog Number	Description	Lamp	Numb er Lamps	Lumens per Lamp	LLF	Wattag e	
	A	74	ESA-C10-P-28-D-WD-U-525-35K (525mA) CONFIGURED FROM KXR6JW28D15AC or ESA-ADR-WD-6-28-D-120-SSGC-FF-525-35K (525mA) WITH TRIM KTR6JZX00MF	CONFIGURED FROM FABRICATED METAL FRAME, FABRICATED FINNED METAL HEAT SINK, FLAT METAL CIRCUIT BOARD MOUNTING PLATE, 1 CIRCUIT BOARD WITH 28 LEDs, 1 CLEAR PLASTIC NON-INTEGRAL LENS BELOW EACH LED, CAST BLACK PAINTED METAL LED LENS TRIM PLATE, FABRICATED BLACK PAINTED METAL UPPER SURROUND, SPUN SEMI-DIFFUSE METAL REFLECTOR AND TRIM WITH BLACK PAINTED TOP SECTION. OPEN BOTTOM.	CONFIGURED FROM TWENTY-EIGHT WHITE LIGHT EMITTING DIODES (LEDS), VERTICAL	28	103,085 4	0.9	52	
	B	54	421001	CYLINDRA LED PENDANT	65W LED 3500K	1	3603,06 1	0.9	65	

Power Statistics			
Description	# Luminaire s	Total Watts	Area Density
Power Density Zone 7/8 th Grade	128	7358.0 W	6394.3 ft ² 1.2 W/ft ²



Designer:
 Date: 12/9/2015
 Scale:
 Drawing No.:
 2 of 2

ESA-C10-MD-28-D

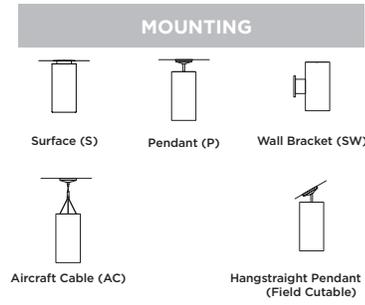
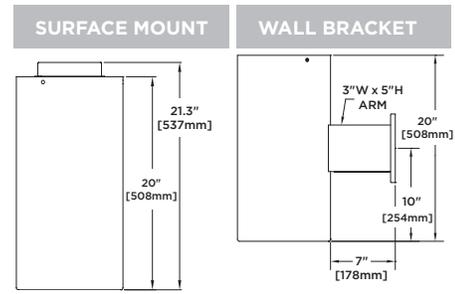
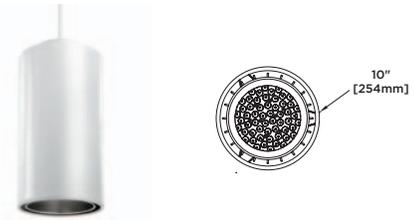
Essentia® LED Downlight – Cylinder

Product Description

Ten-inch cylinder downlight luminaire designed for 28 high output LEDs. Two-piece optical assembly provides a broad, even light distribution, combining low brightness, with maximum visual cutoff and efficiency. Four light distributions available – narrow spot, narrow, medium, and wide. Ten year limited warranty on fixture.

Performance Summary

- Utilizes BetaLED® Technology
- Patented NanoOptic® Product Technology
- Made in the U.S.A. of U.S. and imported parts
- CRI:** Refer to chart on page 2
- CCT:** 2700K , 3500K (standard) , 4000K
- Limited Warranty:** 10 years on luminaire



Ordering Information

Example: ESA-C10-MD-S-28-D-U-BK-SSGC-C-OPTIONS

ESA	C10	MD		28	D	U			C	
Family Name	Type	Optic	Mounting	LED Count	Series	Voltage	Color	Reflector/ Cone Finish ³	Drive Current	Options <small>Please type additional options in manually on the lines provided below</small>
ESA	C10 10" Cylinder	MD Medium	S Surface P Pendant ¹ SW Wall Bracket HP Hangstraight Pendant ² AC1 5' Aircraft Cable AC2 10' Aircraft Cable AC3 15' Aircraft Cable	28	D	U Universal 120-277V	BK Black BZ Bronze CS Camaro Silver WH White	SSGC Clear SSGGR Graphite SSGBR Bronze SSGCG Champagne Gold SSGPE Pewter SSGWH Wheat SSGB Black W White	C 525mA	DH Dimming - Optional Lutron® Hi-Lume® driver available FS Fusing LM Shielding Media 27K 2700K ⁴ - 90 Nominal CRI 30K 3000K ⁴ - 90+ CRI 40K 4000K ⁴ - 80+ CRI

† See www.cree.com/lighting/products/warranty for warranty terms.
 1. 24" standard, consult factory for other lengths
 2. 24" standard; 45° max slope, field cuttable (consult factory for other lengths)
 3. SSG = Soft Satin Glow Anti-Iridescent
 4. Color temperature per fixture; 3500K Standard



Rev. Date: 04/29/13



ESA-C10-MD-28-D

Product Specifications

CONSTRUCTION & MATERIALS

- Luminaire uses 28 high output LEDs, tolerance to be within a 2-step MacAdam Ellipse.
- Tilted Axial and/or Axial TIR NanoOptic® on each individual LED to maximize light delivered through aperture.
- Provides 45° visual cutoff to source.
- Low brightness parabolic spun Alzak aluminum cone, 0.06" (2mm) thick with polished radius and continuous self-flange.
- Soft Satin Glow Clear finish, standard.
- Precision nickel plated cone retainers assure that the lower cone is held in position.
- Custom extruded aluminum heatsink.
- Flow-Thru design to maximize cooling of LEDs.
- Heavy wall aluminum housing.
- Surface, pendant, wall, or cable mounting.
- Exclusive Colorfast DeltaGuard® finish features an E-Coat epoxy primer with an ultra-durable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Bronze, black, white and camaro silver* powder topcoats are available. The finish is covered by our 10 year limited warranty. *One year warranty

ELECTRICAL SYSTEM

- High efficiency constant current drivers 525mA drive current.
- Input Voltage:** 120 or 277V
- 0-10V dimming, standard. 100%-10% full-range continuous dimming.
- Power Factor:** > 0.9 at full load.
- Total Harmonic Distortion:** < 20% at full load.

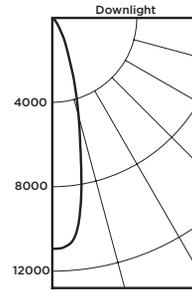
REGULATORY & VOLUNTARY QUALIFICATIONS

- UL/cUL listed damp location.
- RoHS compliant.
- Meets Buy American requirements within ARRA.

Color Tolerance			
Color	Target CCT	Tolerance	CRI
4000K	3899	+/- 75K	80
3500K	3388	+/- 63K	80
3000K	2993	+/- 50K	90
2700K	2755	+/- 42K	90

Photometry

All published luminaire photometric testing performed to IESNA LM-79-08 standards.



Candlepower Summary

Angle	Mean CP
0°	6389
5°	6108
15°	4324
25°	2402
35°	770
45°	121
55°	48
65°	29
75°	6
85°	1
90°	0

Lumen Summary

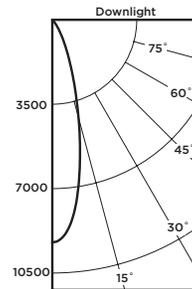
VerticleAngle	Average
45°	3376
55°	1650
65°	1369
75°	491
85°	139

Test Report #: ITL76358
 ESA-C10-MD-S-28-D-U-WH-D-SSG-C-35K
 Initial Delivered Lumens: 3585
 Efficacy: 53 Lm/W
 S/M: 0.68

Cone of Light

Distance from Workplane	Footcandles	Beam Diameter
6'	286	2.8
8'	161	3.6
10'	103	4.5
12'	72	5.3
14'	53	6.3

Lensed



Candlepower Summary

Angle	Mean CP
0°	5222
5°	5036
15°	3709
25°	2050
35°	786
45°	174
55°	61
65°	30
75°	5
85°	0
90°	0

Lumen Summary

VerticleAngle	Average
45°	4855
55°	2114
65°	1399
75°	399
85°	0

Test Report #: ITL76357
 ESA-C10-MD-S-28-D-U-WH-D-SSG-C-35KLM
 Initial Delivered Lumens: 3197
 Efficacy: 47 Lm/W
 S/M: 0.70

Cone of Light

Distance from Workplane	Footcandles	Beam Diameter
6'	235	2.8
8'	132	3.8
10'	85	4.8
12'	59	5.5
14'	43	6.5

IES Files

To obtain an IES file specific to your project consult:
<http://www.cree.com/lighting/tools-and-support/interior-ies-configuration-tool>

Lumen Output, Electrical, and Lumen Maintenance Data

Medium Distribution													
LED Count	3500K/4000K		3000K		2700K		Sytem Watts 120-277	Total Current				L70 Hours* @ 25° C (77° F)	50K Hours Lumen Maintenance Factor* @ 25° C (77° F)
	Initial Delivered Lumens without Lens Media	Initial Delivered Lumens with Lens Media	Initial Delivered Lumens without Lens Media	Initial Delivered Lumens with Lens Media	Initial Delivered Lumens without Lens Media	Initial Delivered Lumens with Lens Media		@ 120V	@ 208V	@ 240V	@ 277V		
28	2,748	2,443	2,061	1,832	1,896	1,686	53	0.42	0.24	0.21	0.18	147,000	90%

* Projected L₇₀ (10K) Hours: > 60,000. For recommended lumen maintenance factor data see TD-14

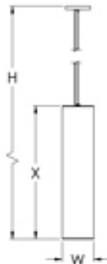
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S2542



Order as a Complete Unit:

Model No. + Lamp Code + Finish Code + Option Code + Voltage

BASE MODEL NO.

S2540, S2541, S2542

DIMENSIONS

W	H	X	BASE MODEL NO.	ADD LAMP CODE	ADD FINISH CODE
8"	96"	49-1/2"	S2542	3FP28 3FP54 L48-30K L48-35K	BA, BB, BN, PT

SPECIFICATIONS

Ballast: High Power Factor, Electronic, 120/277

Mounting: Mounts to all Standard Electrical Junction Boxes (by others) with Hardware Provided.

FINISHES

BA Brushed Aluminum

BB Brushed Brass

BN Brushed Nickel

PT Painted Finishes

(Specify Color Code from Our Standard Finish Chart)

OPTIONS

EM Emergency Battery Pack with Fluorescent Lighting (Integral or Remote)

OA Specify Overall Height of Fixture in Inches; e.g. – OA48

DIM Dimmable Integral Ballast (Consult Factory)

SWC 45-Degree Swivel Canopy

MR16 Optional Low Voltage Downlight – Voltage Specific

1S Single Stem

LAMPING

FP28 = 28 Watt Mini Bi-Pin, T5

FP54 = 54 Watt Mini Bi-Pin, T5 H0

L48-30K = 48 Watt LED 3000 Kelvin, 6000 Lumens

L48-35K = 48 Watt LED 3500 Kelvin, 6000 Lumens

FEATURES

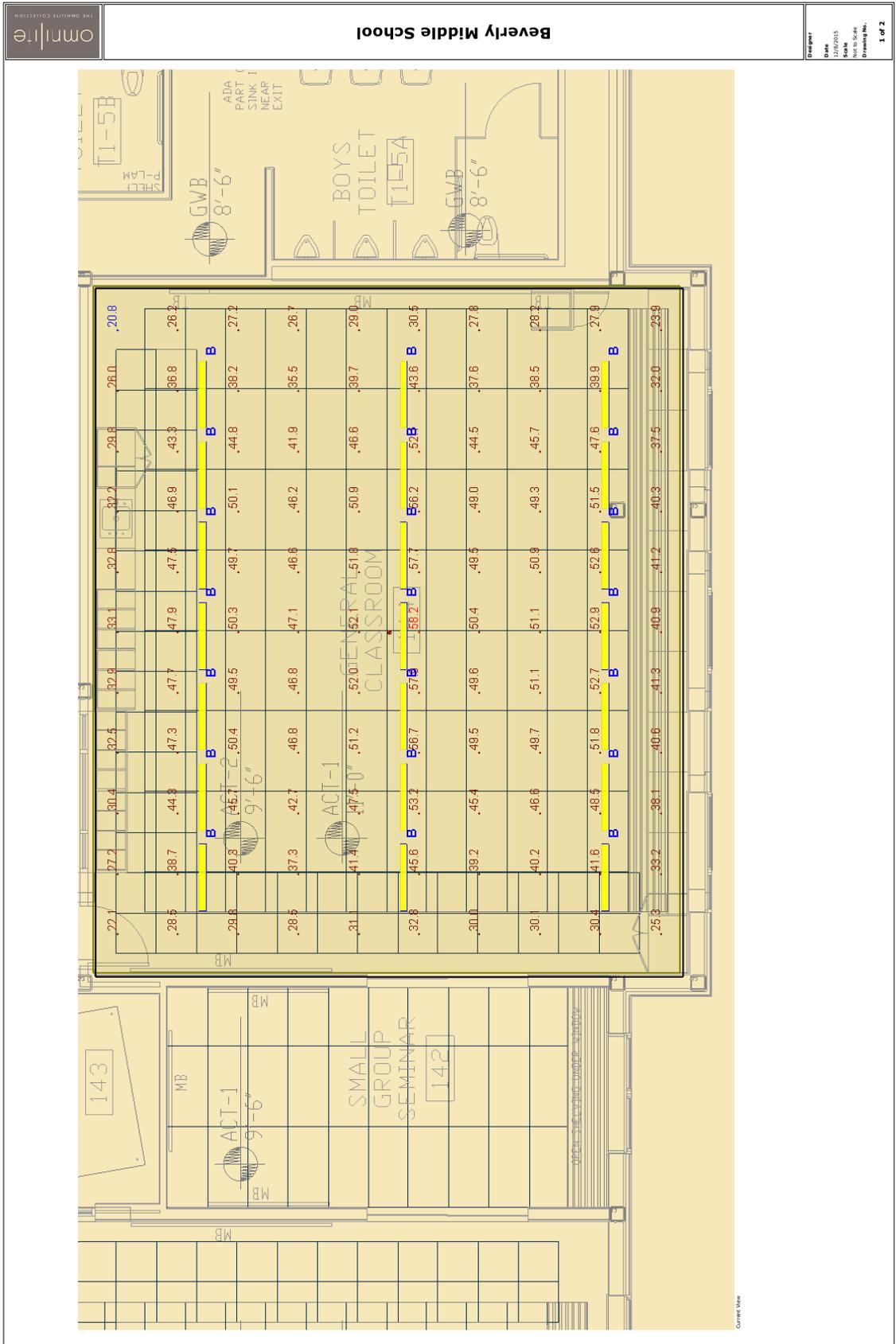
- Opal Matt Acrylic Cylinder
- Clear Silver Braided Cord with (1) Adjustable Aircraft Cable
- LED 0-10V Dimming Driver



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Tel (707) 864-2172 | Fax (707) 864-2182

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omilite THE QUALITY COLLECTION

Beverly Middle School

1 of 2



Beverly Middle School

Designer: _____
 Date: 12/26/2015
 Scale: _____
 Drawing No.: _____

2 of 2

Luminaire Schedule						
Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp
	B	42	FINELITE, INC.	FINELITE S12-LED-IP-DCO-X-3E-S0-S0-3500K-OPEN		
		240		S12-LED-IP-DCO-X-3E-S0-S0-3500K-OPEN-ITL81841.001.lies		
						12.01811
						0.9
						28.9

Statistics

Description	Symbol	Avg	Max	Min	Max/Mi n	Avg/Mi n
General Classroom 3E	+	41.6 fc	58.2 fc	20.8 fc	2.8:1	2.0:1

Power Statistics

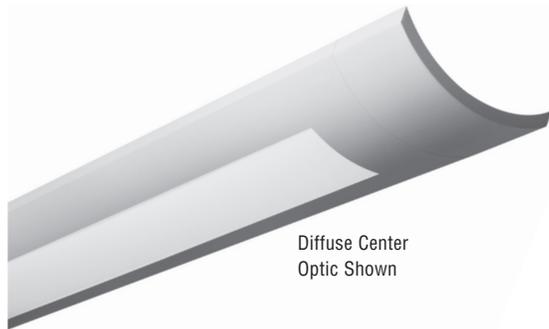
Description	# Luminaires	Total Watts	Area	Density
Power Density classroom 3E	21	606.9 W	993.8 ft ²	0.6 W/ft ²



BUY AMERICAN ACT OF 2009 COMPLIANT

FINELITE

Series 12 LED Indirect/Direct - 3E Technical Sheet



Diffuse Center Optic Shown



Date

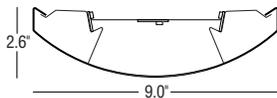
Project

Type

Comments

DESCRIPTION

Series 12-ID LED is an indirect/direct LED luminaire with classic curved shape and diffuse center optic. The luminaire uses mid-powered LEDs for long life and enhanced performance. Series 12-ID LED is available with standard flat endcap or optional extended diecast aluminum endcap.



DIMENSIONS / LIGHT ENGINE:

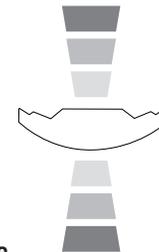
LED light engine uses mid-powered LEDs positioned to deliver excellent distribution for the uplight and downlight.



3 Light Engine (3E)

PERFORMANCE

Series 12 LED 3E delivers up to 92 lumens per watt and includes separately controllable light engines for the uplight and downlight. Available in Standard Output and High Output lumen packages.

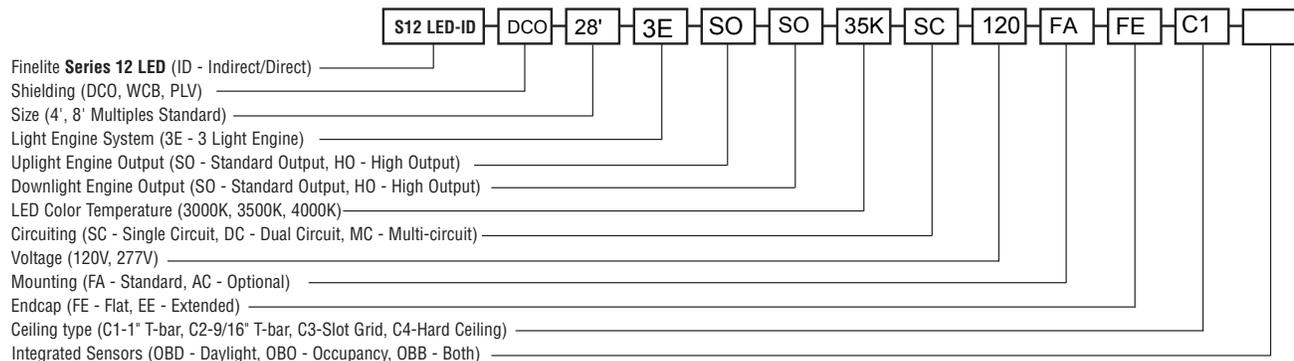


DIMMING

The uplight and downlight can be dimmed together or individually for maximum control over your space. 0-10V controls; Range 100-10%.

ORDERING GUIDE

Sample Number: S12 LED-ID - DCO - 32' - 3E - SO - SO - 3500K - SC - 277 - FA - FE - C1 - OBO



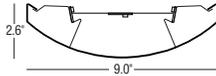


FINELITE

Series 12 LED Indirect/Direct - 3E Technical Sheet

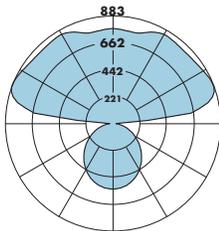
PHOTOMETRY (4' Luminaire)

Series 12-ID LED 3E HO/HO
 Distribution: 72% up / 28% down
 Efficacy: 92.4 Lumens per watt
 Total Luminaire Output: 5232 lumens (1308 lumens/foot)
 56.6 watts (14.2 watts/foot)



Peak Candela Value: 877 @ 115°
 CRI: 83
 R9: 20
 CCT: 3500K
 ITL LM79 Report 81841

CANDLEPOWER SUMMARY						
	0.0	22.5	45.0	67.5	90.0	Flux
0	537	537	537	537	537	
5	535	535	534	536	534	51
15	510	509	511	512	511	144
25	462	460	465	467	466	214
35	399	399	403	404	404	251
45	325	326	329	331	331	253
55	247	248	251	253	253	224
65	167	169	173	174	175	121
75	90	94	97	101	103	103
85	24	27	35	42	45	39
90	0	6	14	21	23	
95	46	265	407	314	290	288
105	161	386	651	802	847	610
115	294	456	674	827	877	630
125	419	544	691	807	846	600
135	531	602	734	809	846	547
145	631	651	768	827	841	467
155	707	708	751	810	826	351
165	757	752	758	765	769	215
175	782	777	777	775	774	74
180	780	780	780	780	780	



SPECIFICATIONS

CONSTRUCTION: Body is 20-gauge die-formed steel with 18-gauge die-formed internal joiner system. Plug-together wiring standard. All components are hard-tooled to tolerances of +/- 0.010".

ENDCAPS: (FE) Flat Endcap standard, 20-gauge die-formed steel, adds 0.1" at each end. Optional: (CE) Curved Endcap, aluminum die-cast endcap with 0.100" reveal, adds 5.0" at each end.

LUMEN PACKAGES: Available in two lumen packages- High output and Standard Output. SO/SO 3000K delivers 691 lumens per foot (28.9 watts per 4' luminaire). HO/HO 3000K delivers 1253 lumens per foot (56.7 watts per 4' luminaire). SO/HO 3000K delivers 873 lumens per foot (38.2 watts per 4' luminaire). HO/SO 3000K delivers 1072 lumens per foot (47 watts per 4' luminaire). SO/SO 3500K delivers 721 lumens per foot (28.9 watts per 4' luminaire). HO/HO 3500K delivers 1308 lumens per foot (56.6 watts per 4' luminaire). SO/HO 3500K delivers 882 lumens per foot (38.2 watts per 4' luminaire). HO/SO 3500K delivers 1148 lumens per foot (47 watts per 4' luminaire). SO/SO 4000K delivers 746 lumens per foot (28.9 watts per 4' luminaire). HO/HO 4000K delivers 1358 lumens per foot (56.7 watts per 4' luminaire). SO/HO delivers 944 lumens per foot (38.2 watts per 4' luminaire). HO/SO 4000K delivers 1160 lumens per foot (47 watts per 4' luminaire).

SHIELDING OPTIONS:

- DCO Diffuse Center Optic, 73% transmissive, 99% diffusion.
- WCB White Cross Blade Baffle, 87 cell baffles spaced 0.5" apart and finished with 96% reflective white paint.

SSL Semi Specular Louver, 44 cell louvers spaced 1.0" apart.

LIGHT ENGINE: Light engine is made up of mid-powered LEDs and is designed to distribute heat properly to maximize the life of the LEDs. Light distribution delivers effective uplight and downlight distribution with an even illumination on the Diffuse Center Optic (DCO).

LED COLOR TEMPERATURE: Available in 3000K, 3500K, and 4000K. CRI: 83; R9: 20 at 3500K.

DRIVER: High performance Constant Current Reduction (CCR) driver standard. Can be wired as dimming or non-dimming. Dimming is compatible with 0-10V controls with a range of 10%-100%. Driver is fully accessible from below the ceiling. Power Factor: ≥0.9. Total Harmonic Distortion (THD) <20%. Expected driver lifetime: 100,000 hours.

ELECTRICAL: 120V or 277V prewired. Fixture and electrical components are ETL listed conforming to UL 1598 in the U.S.A., and Canada; ETL listed to certified CAN/CSA C22.2 No. 250.0. In accordance with NEC Code 410.73 (G), this luminaire contains an internal driver disconnect.

Emergency to generator/inverter wiring, internal generator transfer switch, nightlight wiring. Please note: Battery backup not available.

INTEGRATED SENSORS: S12-ID LED can be specified with integrated PIR (Passive Infrared) occupancy sensors or daylight sensors. Refer to Occupancy Sensor and Daylight Sensor tech sheets for more info.

MOUNTING OPTIONS: Standard: (FA) 50" fully Adjustable aircraft cable with safety stop. Contact factory for additional lengths up to 150". Optional: (AC)

Semi-adjustable aircraft cable (± 0.5) in lengths of 12", 15", 18", 21", 24", 27", 30", 36".

SUPPORT CABLES: Plated steel cable and hardware.

FEED: Standard with one-18 gauge/5 conductor single circuit feed controlling uplight and downlight together (power and dimming). Specify dual feeds for independent control of uplight and downlight. 14 gauge feed cord used when fixture current exceeds 5 amps.

FINISHES: Finelite Signal White standard. Optional Adders: 185 colors available from Tiger Drylac's RAL color chart.

LUMEN MAINTENANCE: Series 12-ID LED is rated to deliver 90% lumen maintenance (L90) to 100,000 hours and 70% lumen maintenance (L70) to 334,000 hours.

LENGTHS: 4' and 8' section lengths can be combined to make longer runs. Contact factory for additional lengths.

LABELS: Fixture and electrical components are ETL listed conforming to UL 1598 in the U.S.A., and Canada; ETL listed to certified CAN/CSA C22.2 No. 250.0. Fixtures will bear ETL labels.

WEIGHT: Fixture weight = 2.6 to 3.6 lb/ft. with curved endcaps. Fixture weight 2.0 lb/ft. with flat endcaps.

WARRANTY: Series 12-ID LED comes standard with a 10-Year warranty on all components. Optional accessories such as emergency battery packs are covered by their individual manufacturer warranties.

LIFE CYCLE COST ANALYSIS

LIFE CYCLE COST ANALYSIS

The project has energy efficiency goals that include the following main aspects:

- Receive 8+ points for the LEEDv4 Energy and Atmosphere Credit. This means that the project goal is to improve the proposed school building performance so it offers at least 20% energy cost savings as compared to a “baseline” building that meets the minimum requirements of ASHRAE Standard 90.1-2010 (or Chapter 4 of IECC 2012) since this is the state-wide basic energy code.
- The District is considering, for educational purposes, the installation of renewable energy systems that generate electricity or thermal energy on site with direct integration into the educational curriculum.
- Provide optimized building operation while managing and maintaining the building construction costs within the project budget.
- Participate in the energy efficiency incentive program offered by a local electric and gas company (NGrid Electric and Gas) to help offset some of the incremental construction costs associated with more energy efficient building equipment and systems.

To help achieve the aforementioned energy efficiency objectives, the Design Team has done the following:

- Collaboration during the design process between the Design Team members.
- Collaborated with the local “Green Sub-committee” discussing topics related to building materials, passive green design, building system design, environmental design (acoustics, daylighting, etc.) among other topics.
- Collaboration and enrollment early in the design process with NGrid with their Whole Building Approach: Integrated Design Path Program. Regular meetings and discussions have occurred through the design process beginning early in the Schematic Design phase.
- The project architect, Ai3 Architects, LLC (Ai3), retained the services of Andelman and Lelek Engineering, Inc. (ALE) as energy modeling and life cycle cost analysis consultants. ALE is an engineering consulting and design firm specializing in building energy modeling, energy efficiency studies, and sustainable building development as related to energy consuming building systems. ALE is currently developing an energy consumption simulation model of the Beverly Middle School building, and various design alternatives will be tested to determine their energy efficiency and cost-effectiveness using the model on an as needed basis. ALE is also expected to carry out an Integrated Design Path study for the project. The study report will be submitted to NGrid Company and will serve as the basis for the determination of the monetary incentive to be offered by the utility.

While a complete energy efficiency analysis of the Beverly Middle School is underway presently, below is an initial list of the design features/measures for consideration in this project. The measures are grouped into several categories. The list includes items that may already be planned for the project (based on the design for previous school projects) or may be considered as new “enhancements”. Some measures may still be added at some later time as more design detail becomes available. The list is being “vetted” by the Design Team in general and revised/

updated as more design information becomes available. The building energy model is being used to evaluate some of the measures listed below to assess their individual impact on the overall energy consumption of the building and their potential cost-effectiveness.

Building Envelope

- Roof insulation exceeding baseline/minimum code requirements.
- Enhanced wall insulation that will also exceed the baseline/minimum code requirements.
- Optimized window efficiency and daylighting. The objective was to select windows that offer a favorable combination of glass and frame properties for good thermal and solar control; that includes a low overall U-value, low solar heat gain coefficient (SHGC) - at least for south facing windows, and high visible light transmittance (VT). The project is expected to use windows that have a low-e coating on two surfaces and insulating properties (argon filled glazing cavity) for superior thermal performance.

Electrical Systems

- Optimized lighting system for an entire building resulting in an average lighting power density (LPD) for the building that is better (less) than the maximum code allowance. This measure focuses on selection of energy efficient lighting fixtures, lamps, drivers, and ballasts. The lighting system offers a low LPD while allowing for good quality and lighting levels as per IESNA recommendations.
- Enhancements to interior lighting controls including occupancy sensors, daylight harvesting controls, etc. Many of these features are required by the energy code and some that are under consideration exceed the requirements. The design is expected to include daylight harvesting controls in classrooms. Other spaces where daylight harvesting will also be considered include any spaces with significant access to daylight – library, cafeteria, gymnasium, etc. The light control method can range from on/off to continuous dimming depending on preference and how visually critical tasks will be typically performed in a particular space. Occupancy sensors for lighting control are expected to be used extensively in this school project. It is expected that the sensor application will be what is commonly referred to as a “vacancy” sensor. This means that lights are automatically turned off when the space is unoccupied but they need to be turned manually on (auto OFF manual ON). Manual OFF override would also be provided.
- Parking/grounds lighting. Energy efficient LED lighting is considered for the parking and grounds lighting. Enhanced controls are also under consideration.

HVAC Systems

Enhanced controls for air handling systems. These can potentially include the following (as applicable):

- CO₂-based demand controlled ventilation (DCV) is planned for spaces such as the cafeteria, the gymnasium, and the auditorium since these are required by the building code. In addition, CO₂-based DCV is planned for selected spaces/systems for which such control is not required by code.

- Occupancy (or CO2) based controls for VAV boxes and/or static pressure reset for selected VAV systems.
- Variable air volume variable temperature controls for individual units serving large single zone spaces (such as the auditorium, cafeteria, or gymnasium). Depending on the code compliance path, this feature may be required by the code.
- Enhanced kitchen hood and make-up air unit controls.
- VFD's for variable flow HW pumps and, if applicable, for CHW pumps serving variable flow CHW loop.
- Differential enthalpy economizers for selected systems.

Other enhancements to HVAC systems include:

- ECM for fan coil units and/or fan powered boxes (if applicable).
- Energy recovery devices with high energy recovery effectiveness (if applicable). This measure would provide energy recovery wheels with energy recovery effectiveness exceeding the minimum code requirements. This might be applied to any 100% OA unit (e.g., a locker room unit) or mixing units that will typically operate at high percentage of OA.
- High efficiency condensing boilers and optimized hot water supply temperature for space heating. This measure would provide high efficiency condensing boilers in lieu of baseline boilers. This measure would also provide optimized design for the entire hot water system by using design hot water supply temperature of 140 degrees Fahrenheit and aggressive supply temperature set point reset to maximize condensing effect in the boilers and improve seasonal efficiency of the boiler plant.
- High efficiency air-cooled chiller with optimized part load performance.
- High efficiency dedicated IT room cooling equipment (if applicable).
- Isolating school areas with different use schedule by assigning separate units for these spaces. For example, one rooftop unit is planned for the administrative offices and several rooftop units are planned for the main classrooms, etc.
- Other incremental enhancements may be identified later as more design data about this system type becomes available.

Considerations are given to designing all HVAC systems for reasonably low pressure drops to reduce fan power and fan energy. Similar comment applies to water systems and pumping power and energy.

Other Systems

- Enhancements for the Domestic Water Heating. High efficiency condensing domestic water heating units are planned. Insulating jackets with high insulation values (R-14 or higher) are considered for the hot water tanks.
- High Efficiency Appliances and Kitchen Equipment. The Energy Star rated equipment is expected to be considered by the Design Team in the selection of the kitchen appliances such as: reach-in refrigerators, a ware washer, and holding cabinets. The Energy Star rating is used to recognize energy efficient appliances, lighting, boilers, and other energy consuming equipment and systems.

LEEDV4 FOR BD+C: SCHOOLS

LEED v4 for BD+C: Schools Project Checklist



Project Name: Beverly Middle School
Date: 12.23.2015

Y	?	N	Credit	1	Integrative Process
Y			Credit	1	
7	1	0	Location and Transportation	15	
	X		Credit	15	LEED for Neighborhood Development Location
	X		Credit	1	Sensitive Land Protection
	X		Credit	2	High Priority Site
			Credit	5	Surrounding Density and Diverse Uses
	2		Credit	4	Access to Quality Transit
	1		Credit	1	Bicycle Facilities
	X		Credit	1	Reduced Parking Footprint
			Credit	1	Green Vehicles
7	1	0	Sustainable Sites	12	
			Prereq	Required	Construction Activity Pollution Prevention
			Prereq	Required	Environmental Site Assessment
	1		Credit	1	Site Assessment
	2		Credit	2	Site Development - Protect or Restore Habitat
	1		Credit	1	Open Space
	2		Credit	3	Rainwater Management
	X		Credit	2	Heat Island Reduction
	1		Credit	2	Light Pollution Reduction
	X		Credit	1	Site Master Plan
			Credit	1	Joint Use of Facilities
7	0	0	Water Efficiency	12	
			Prereq	Required	Outdoor Water Use Reduction
			Prereq	Required	Indoor Water Use Reduction
			Prereq	Required	Building-Level Water Metering
	2		Credit	2	Outdoor Water Use Reduction
	4		Credit	7	Indoor Water Use Reduction
	X		Credit	2	Cooling Tower Water Use
			Credit	1	Water Metering
19	3	0	Energy and Atmosphere	31	
			Prereq	Required	Fundamental Commissioning and Verification
			Prereq	Required	Minimum Energy Performance
			Prereq	Required	Building-Level Energy Metering
			Prereq	Required	Fundamental Refrigerant Management
	5		Credit	6	Enhanced Commissioning
	8	2	Credit	16	Optimize Energy Performance
	1		Credit	1	Advanced Energy Metering
	2		Credit	2	Demand Response
	2		Credit	3	Renewable Energy Production
	1		Credit	1	Enhanced Refrigerant Management
			Credit	2	Green Power and Carbon Offsets

5	3	0	Materials and Resources	13	
Y			Prereq	Required	Storage and Collection of Recyclables
Y			Prereq	Required	Construction and Demolition Waste Management Planning
1	1		Credit	5	Building Life-Cycle Impact Reduction
1			Credit	2	Building Product Disclosure and Optimization - Environmental Product Declarations
	1		Credit	2	Building Product Disclosure and Optimization - Sourcing of Raw Materials
1	1		Credit	2	Building Product Disclosure and Optimization - Material Ingredients
2			Credit	2	Construction and Demolition Waste Management
8	2	0	Indoor Environmental Quality	16	
Y			Prereq	Required	Minimum Indoor Air Quality Performance
Y			Prereq	Required	Environmental Tobacco Smoke Control
Y			Prereq	Required	Minimum Acoustic Performance
1			Credit	2	Enhanced Indoor Air Quality Strategies
2			Credit	3	Low-Emitting Materials
1			Credit	1	Construction Indoor Air Quality Management Plan
2			Credit	2	Indoor Air Quality Assessment
X			Credit	1	Thermal Comfort
1	1		Credit	2	Interior Lighting
X			Credit	3	Daylight
1			Credit	1	Quality Views
1			Credit	1	Acoustic Performance
2	1	0	Innovation	6	
1	1		Credit	5	Innovation
1			Credit	1	LEED Accredited Professional
4	0	0	Regional Priority	4	
1			Credit	1	Regional Priority: LT Surrounding Density and Diverse Uses
1			Credit	1	Regional Priority: WE Outdoor Water Use Reduction
1			Credit	1	Regional Priority: EA Optimized Energy Performance
1			Credit	1	Regional Priority: EA Renewable Energy Production

59 | 12 | 0 **TOTALS** **Possible Points: 110**
 Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

RECEIPT

Invoice # : 90911082
 Order # : 11863221
 Invoice Date : 10/19/2015

Green Building Certification Institute

1-800-795-1746
 202-828-1145
www.gbci.org/contact

Paid By:

Troy Randall
 526 Boston Post Road
 WAYLAND , MA 01778
randall@ai3architects.com

Paid To:

Green Building Certification Institute
 PO Box 822964
 Philadelphia, PA 19182-2964

Payment Method	Payment Date
Credit Card: XXXX XXXX XXXX2970	10/19/2015

Project ID : 1000062986
 Project Name : Beverly Middle School
 USGBC Member Company : Ai3 Architects, LLC

Item Description	Quantity	List Price/Unit	Discount (If applicable)	Amount
LEED for Schools Registration	1 EA	\$ 1,200.00	(\$ 0.00)	\$ 1,200.00
			Shipping/Handling	\$ 0.00
			Sales Tax	\$ 0.00
			Total Paid	\$ 1,200.00

PROPRIETARY ITEMS PROPRIETARY ITEMS

The City of Beverly local officials and the School District administration have evaluated potential proprietary products during the Design Development phase. As a result of the numerous discussions and meetings, the current list of potential proprietary products has been identified as follows:

1. Closed Circuit Television (CCTV): *Genetec*
2. Access Controls: *Genetec*
3. Wireless System (WIFI): *Adtran Bluesocket Wireless Devices*
4. Building Management System (BMS): *Johnson Controls - Metasys*

The City and District plan to continue evaluating products, including evaluating classroom instructional technologies throughout the 60% Construction Document Phase. Once the City and District have completed their evaluation, a final products list has been developed, the necessary back-up documentation has been generated, and the City of Beverly's School Building Committee has provided a formal vote and acceptance of the information in compliance with MGL, the District will provide this information to the MSBA.

APPENDIX A
UPDATED PROJECT BUDGET

Total Project Budget

City of Beverly
New Beverly Middle School

9/23/2015

Total Project Budget: All costs associated with the project are subject to 963 CMR 2.16(5)	Estimated Budget	Scope Items Excluded from the Estimated Basis of Maximum Facilities Grant or Otherwise Ineligible	Estimated Basis of Maximum Total Facilities Grant ¹	Estimated Maximum Total Facilities Grant ¹
Feasibility Study Agreement				
Feasibility Study Agreement				
OPM Feasibility Study	\$240,000	\$0	\$240,000	
A&E Feasibility Study	\$925,000	\$0	\$925,000	
Environmental & Site	\$175,000	\$0	\$175,000	
Other	\$125,000	\$0	\$125,000	
Feasibility Study Agreement Subtotal	\$1,465,000	\$0	\$1,465,000	\$823,184
Administration				
Administration				
Legal Fees	\$25,000	\$25,000	\$0	\$0
Owner's Project Manager				
Design Development	\$123,000	\$0	\$123,000	
Construction Contract Documents	\$281,000	\$0	\$281,000	
Bidding	\$135,000	\$0	\$135,000	
Construction Contract Administration	\$2,302,871	\$107,639	\$2,195,232	
Closeout	\$72,659	\$0	\$72,659	
Extra Services	\$0	\$0	\$0	
Reimbursable & Other Services	\$75,000	\$0	\$75,000	
Cost Estimates	\$150,000	\$0	\$150,000	
Advertising	\$5,000	\$0	\$5,000	
Permitting	\$50,000	\$50,000	\$0	
Owner's Insurance	\$0	\$0	\$0	
Other Administrative Costs	\$0	\$0	\$0	
Administration Subtotal	\$3,219,530	\$182,639	\$3,036,891	\$1,706,429
Architecture and Engineering				
Basic Services				
Design Development	\$2,405,416	\$0	\$2,405,416	
Construction Contract Documents	\$3,571,890	\$0	\$3,571,890	
Bidding	\$174,615	\$0	\$174,615	
Construction Contract Administration	\$1,340,210	\$281,439	\$1,058,771	
Closeout	\$128,410	\$0	\$128,410	
Other Basic Services	\$0	\$0	\$0	
Basic Services Subtotal	\$7,620,541	\$281,439	\$7,339,102	
Reimbursable Services				
Construction Testing	\$0	\$0	\$0	
Printing (over minimum)	\$75,000	\$0	\$75,000	
Other Reimbursable Costs	\$68,500	\$0	\$68,500	
Hazardous Materials	\$140,700	\$0	\$140,700	
Geotech & Geo-Env.	\$187,500	\$0	\$187,500	
Site Survey	\$7,930	\$0	\$7,930	
Wetlands	\$27,500	\$0	\$27,500	
Traffic Studies	\$25,500	\$0	\$25,500	
Architectural/Engineering Subtotal	\$8,153,171	\$281,439	\$7,871,732	\$4,423,126
CM & Risk Preconstruction Services				
Pre-Construction Services	\$192,064	\$7,093	\$184,971	\$103,935
Site Acquisition				
Site Acquisition				
Land / Building Purchase	\$0	\$0	\$0	
Appraisal Fees	\$0	\$0	\$0	
Recording fees	\$0	\$0	\$0	
Site Acquisition Subtotal	\$0	\$0	\$0	\$0
Construction Costs				
SUBSTRUCTURE				
Foundations	\$8,661,726	\$0		
Basement Construction	\$0	\$0		
SHELL				
SuperStructure	\$8,055,454	\$0		
Exterior Closure	\$8,798,120	\$0		
Exterior Walls	\$0	\$0		
Exterior Windows	\$0	\$0		
Exterior Doors	\$0	\$0		
Roofing	\$1,727,670	\$0		
INTERIORS				
Interior Construction	\$7,459,477	\$0		
Staircases	\$0	\$0		
Interior Finishes	\$3,442,232	\$0		
SERVICES				
Conveying Systems	\$430,000	\$0		
Plumbing	\$3,008,324	\$0		
HVAC	\$8,137,370	\$0		
Fire Protection	\$951,036	\$0		
Electrical	\$8,652,653	\$0		
EQUIPMENT & FURNISHINGS				
Equipment	\$1,335,974	\$0		
Furnishings	\$2,290,884	\$0		
SPECIAL CONSTRUCTION & DEMOLITION				
Special Construction	\$35,000	\$0		
Existing Building Demolition	\$632,500	\$0		
In-Bldg. Hazardous Material Abatement	\$1,495,000	\$0		
Asbestos Cont'g Floor Mat'l Abatement	\$240,000	\$240,000		
Other Hazardous Material Abatement	\$0	\$0		
BUILDING SITEWORK				
Site Preparation	\$1,726,765	\$0		
Site Improvements	\$2,344,492	\$0		
Site Civil / Mechanical Utilities	\$1,104,424	\$0		
Site Electrical Utilities	\$656,040	\$0		
Other Site Construction	\$202,677	\$0		
Scope Excluded Site Cost		\$998,324		
Construction Trades Subtotal	\$71,387,818	\$1,238,324		
Contingencies (Design and Pricing)	\$6,747,967	\$117,053		
D/B/B Sub-Contractor Bonds	\$394,405	\$6,842		
D/B/B Insurance		\$0		

Total Project Budget

**City of Beverly
New Beverly Middle School**

9/23/2015

Total Project Budget: All costs associated with the project are subject to 963 CMR 2.16(5)	Estimated Budget	Scope Items Excluded from the Estimated Basis of Maximum Facilities Grant or Otherwise Ineligible	Estimated Basis of Maximum Total Facilities Grant¹	Estimated Maximum Total Facilities Grant¹
D/B/B General Conditions	\$4,341,939	\$75,317		
D/B/B Overhead & Profit		\$0		
GMP Insurance	\$868,582	\$15,067		
GMP Fee	\$1,623,316	\$28,159		
GMP Contingency	\$1,711,712	\$29,692		
Escalation to Mid-Point of Construction	\$3,053,693	\$52,971		
Overall Excluded Construction Cost		\$19,215,229		
Construction Budget	\$90,129,432	\$20,778,653	\$69,350,779	\$38,968,203
Alternates				
Ineligible Work Included in the Base Project	\$0	\$0	\$0	
Alternates Included in the Total Project Budget	\$0	\$0	\$0	
Alternates Excluded from the Total Project Budget	\$0		\$0	
Subtotal to be Included in Total Project Budget	\$0	\$0	\$0	\$0
Miscellaneous Project Costs				
Utility Company Fees	\$50,000	\$0	\$50,000	
Testing Services	\$150,000	\$0	\$150,000	
Swing Space / Modulers	\$0	\$0	\$0	
Other Project Costs (Mailing & Moving)	\$100,000	\$100,000	\$0	
Misc. Project Costs Subtotal	\$300,000	\$100,000	\$200,000	\$112,380
Furnishings and Equipment				
Furnishings	\$837,000	\$0	\$837,000	
Equipment	\$837,000	\$0	\$837,000	
Computer Equipment	\$1,674,000	\$0	\$1,674,000	
FF&E Subtotal	\$3,348,000	\$0	\$3,348,000	\$1,881,241
Soft Costs that exceed 20% of Construction Cost		\$0		
Project Budget	\$106,807,197	\$21,349,824	\$85,457,373	\$48,018,498

Board Authorization	
Design Enrollment	1,395
Total Building Gross Floor Area (GSF)	231,509
<hr/>	
Total Project Budget (excluding Contingencies)	\$106,807,197
Scope Items Excluded or Otherwise Ineligible	-\$21,349,824
Third Party Funding (Ineligible)	\$0
Estimated Basis of Maximum Total Facilities Grant ¹	\$85,457,373
Reimbursement Rate ^{3,4}	56.19%
Est. Max. Total Facilities Grant (before recovery) ¹	\$48,018,498
Cost Recovery	\$0
Estimated Maximum Total Facilities Grant ¹	\$48,018,498

51.42 Reimbursement Rate Before Incentive Points
4.77 Total Incentive Points^{3,4}
56.19% MSBA Reimbursement Rate

NOTES
This document was prepared by the MSBA based on a preliminary review of information and estimates provided by the City of Beverly for the Briscoe Middle School project. Based on this preliminary review, certain budget, cost and scope items have been determined to be ineligible for reimbursement, however, this document does not contain a final, exhaustive list of all budget, cost and scope items which may be ineligible for reimbursement by the MSBA. Nor is it intended to be a final determination of which budget, cost and scope items may be eligible for reimbursement by the MSBA. All project budget, cost and scope items shall be subject to review and audit by the Authority, and the Authority shall determine, in its sole discretion whether any such budget, cost and scope items are eligible for reimbursement. The MSBA may determine that certain additional budget, cost and scope items are ineligible for reimbursement.

Construction Contingency ²	\$2,703,883
Ineligible Construction Contingency ²	\$1,802,589
"Potentially Eligible" Construction Contingency ²	\$901,294
Owner's Contingency ²	\$1,200,000
Ineligible Owner's Contingency ²	\$0
"Potentially Eligible" Owner's Contingency ²	\$1,200,000
Total Potentially Eligible Contingency ²	\$2,101,294
Reimbursement Rate ^{3,4}	56.19%
Potential Additional Contingency Grant Funds ²	\$1,180,717
Maximum Total Facilities Grant	\$49,199,215
Total Project Budget	\$110,711,080

1 - The Estimated Basis of Total Facilities Grant and Estimated Maximum Facilities Grant amounts appearing in the "MSBA Board Approved Budget" column do not include any potentially eligible contingency funds and are subject to review and audit by the MSBA. The Estimated Basis of Total Facilities Grant, Estimated Maximum Facilities Grant, and Maximum Total Facilities Grant amounts appearing in the "Proposed Revised PFA Budget" column have been adjusted to account for construction bids received in accordance with Section 2.2 of the PFA and any budget revision requests submitted and approved by the MSBA as of the Date noted in the Proposed Revised Budget PFA column of the PFA Amendment. These amounts are also subject to further review and audit by the MSBA.

2 - Pursuant to Section 3.20 of the Project Funding Agreement and the applicable policies and guidelines of the Authority, any project costs associated with the reallocation or transfer of funds from either the Owner's contingency or the Construction contingency to other budget line items shall be subject to review by the Authority to determine whether any such costs are eligible for reimbursement by the Authority. All costs are subject to review and audit by the MSBA.

3 - The MSBA has provisionally included two (2) incentive points for energy efficiency, subject to the District meeting certain sustainability requirements for the project. If the District does not meet the requirements for the energy efficiency, the District will not qualify for these incentive points and the MSBA will adjust the reimbursement rate accordingly.

4 - The MSBA has provisionally included one (1) incentive point for the Construction Manager at Risk construction delivery method, subject to the District receiving approval from the Office of the Inspector General to utilize this method. If the District does not receive approval for the Construction Manager at Risk delivery method, the District will not qualify for these incentive points and the MSBA will adjust the reimbursement rate accordingly.

By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete.

By: _____
Title: Chair of School Building Committee

Date: _____

By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete.

By: _____
Title: Chief Executive Officer

Date: _____

By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete.

By: _____
Title: Superintendent of Schools

Date: _____

By signing this Total Project Budget, I hereby certify that I have read and understand the form and further certify, to the best of my knowledge and belief, that the information supplied by the District in the table above is true, accurate, and complete.

By: _____
Title: Chair of School Committee

Date: _____

Signatures Obtained

APPENDIX B
UPDATED PROJECT SCHEDULE

**City of Beverly, MA
New Beverly Middle School
Schematic Design Submission Master Schedule**

ID	Task Name	Start	Finish	2014	2015	2016	2017	2018	2019	2020		
1	Eligibility Period Activity	Wed 1/1/14	Fri 9/5/14	Eligibility Period Activity								
6	Owners Project Manager Selection	Wed 9/3/14	Mon 11/3/14			Owners Project Manager Selection						
10	Designer Selection	Wed 7/2/14	Thu 9/4/14			Designer Selection						
18	Preliminary Design Program	Fri 9/5/14	Tue 1/13/15			Preliminary Design Program						
24	Preferred Schematic Report	Wed 11/26/14	Wed 3/25/15			Preferred Schematic Report						
32	Schematic Design	Fri 2/13/15	Wed 9/30/15			Schematic Design						
40	MSBA Agreement Activities	Wed 9/30/15	Fri 3/24/17									
41	Project Scope and Budget Agreement (PSBA)	Wed 9/30/15	Mon 11/30/15									
42	MSBA Prepares and Issues PSBA	Wed 9/30/15	Thu 10/29/15									
43	City of Beverly Reviews and Executes PSBA	Fri 10/30/15	Mon 11/30/15									
44	Project Funding Agreement	Wed 9/30/15	Fri 1/8/16									
45	MSBA Prepares and Issues PFA	Wed 9/30/15	Wed 12/23/15									
46	City of Beverly Reviews and Executes PFA	Wed 12/23/15	Fri 1/8/16									
47	Guaranteed Maximum Price (GMP) Amendment	Fri 2/3/17	Fri 3/24/17									
48	MSBA Prepares and Issues GMP Amendment	Fri 2/3/17	Fri 3/3/17									
49	City of Beverly Reviews and Executes GMP Amendment	Sat 3/4/17	Fri 3/24/17									
50	DESE Review	Fri 8/7/15	Wed 12/23/15			DESE Review						

Project: City of Beverly, MA Modu
Date: Thu 12/10/15

Task	External Tasks	Manual Task	Finish-only
Split	External Milestone	Duration-only	Deadline
Milestone	Inactive Task	Manual Summary Rollup	Critical
Summary	Inactive Milestone	Manual Summary	Critical Split
Project Summary	Inactive Summary	Start-only	Progress

**City of Beverly, MA
New Beverly Middle School
Schematic Design Submission Master Schedule**

ID	Task Name	Start	Finish	2014	2015	2016	2017	2018	2019	2020
51	MSBA Review of DESE Submittal	Fri 8/7/15	Mon 9/14/15							
52	DESE Review and Approval	Fri 8/14/15	Wed 12/23/15							
53	Pre-Construction	Tue 12/2/14	Tue 12/29/15							
54	CM Procurement	Tue 12/2/14	Mon 6/1/15							
55	Prepare/submit/receive approval of IG for CMR	Tue 12/2/14	Tue 3/3/15							
56	Prepare and issue CM RFQ	Tue 1/20/15	Wed 2/25/15							
57	Receive & Evaluate Qualifications packages	Wed 3/4/15	Tue 3/24/15							
58	Prepare and issue CM RFP	Wed 3/4/15	Wed 4/8/15							
59	Receive & Evaluate technical and Price proposals	Wed 4/29/15	Tue 5/12/15							
60	Select CM	Mon 6/1/15	Mon 6/1/15							
61	CM-SD Phase Preconstruction Services	Tue 6/2/15	Wed 9/30/15							
62	CM-Design Phase Preconstruction Services	Thu 10/1/15	Tue 12/29/15							
63	Contracts Administration Activities	Wed 9/30/15	Thu 12/8/16							
64	Designer Amendment Final Design And Construction	Wed 9/30/15	Thu 10/29/15							
65	Review and Negotiate Designer Proposal	Wed 9/30/15	Thu 10/29/15							
66	Develop and Incorporate BIM Requirements for Designer	Wed 9/30/15	Thu 10/29/15							

Project: City of Beverly, MA Modu
Date: Thu 12/10/15

Task	External Task	Manual Task	Finish-only
Split	External Milestone	Duration-only	Deadline
Milestone	Inactive Task	Manual Summary Rollup	Critical
Summary	Inactive Milestone	Manual Summary	Critical Split
Project Summary	Inactive Summary	Start-only	Progress

**City of Beverly, MA
New Beverly Middle School
Schematic Design Submission Master Schedule**

ID	Task Name	Start	Finish	2014	2015	2016	2017	2018	2019	2020
83	RDA Filing	Sat 9/26/15	Sat 9/26/15							
84	Conservation Committee Meeting	Tue 10/13/15	Tue 10/13/15							
85	Additional Hazardous Materials Investigation/Sampling	Tue 10/13/15	Mon 10/26/15							
86	Register with USGBC - LEED	Fri 11/13/15	Fri 11/13/15							
87	Ai3 Issues Cost Estimating Package	Wed 12/2/15	Wed 12/2/15							
88	DD Submission Date	Wed 12/23/15	Wed 12/23/15							
89	MSBA DD Review	Thu 12/31/15	Wed 1/20/16							
90	Address DD Review Comments	Thu 1/21/16	Wed 2/10/16							
91	Early package Development	Mon 9/14/15	Mon 4/18/16							
92	Early Package #1 - Abatement/Demolition	Fri 10/9/15	Thu 12/10/15							
93	Early Package #2 - Piles, Civil & Landscaping	Mon 9/14/15	Fri 3/11/16							
94	Early Package #3 - Foundation and Structure	Tue 12/1/15	Mon 4/18/16							
95	60% Construction Documents (CD)	Wed 12/23/15	Wed 6/22/16							
96	60% CD Development	Wed 12/23/15	Wed 5/11/16							
97	Ai3 Issues Cost Estimating Package	Mon 4/18/16	Mon 4/18/16							
98	Cost Estimate Reconciliation	Thu 5/5/16	Fri 5/6/16							
99	60% CD Submission Date	Wed 5/11/16	Wed 5/11/16							

Project: City of Beverly, MA Modu
Date: Thu 12/10/15

Task	External Tasks	Manual Task	Finish-only
Split	External Milestone	Duration-only	Deadline
Milestone	Inactive Task	Manual Summary Rollup	Critical
Summary	Inactive Milestone	Manual Summary	Critical Split
Project Summary	Inactive Summary	Start-only	Progress

**City of Beverly, MA
New Beverly Middle School
Schematic Design Submission Master Schedule**

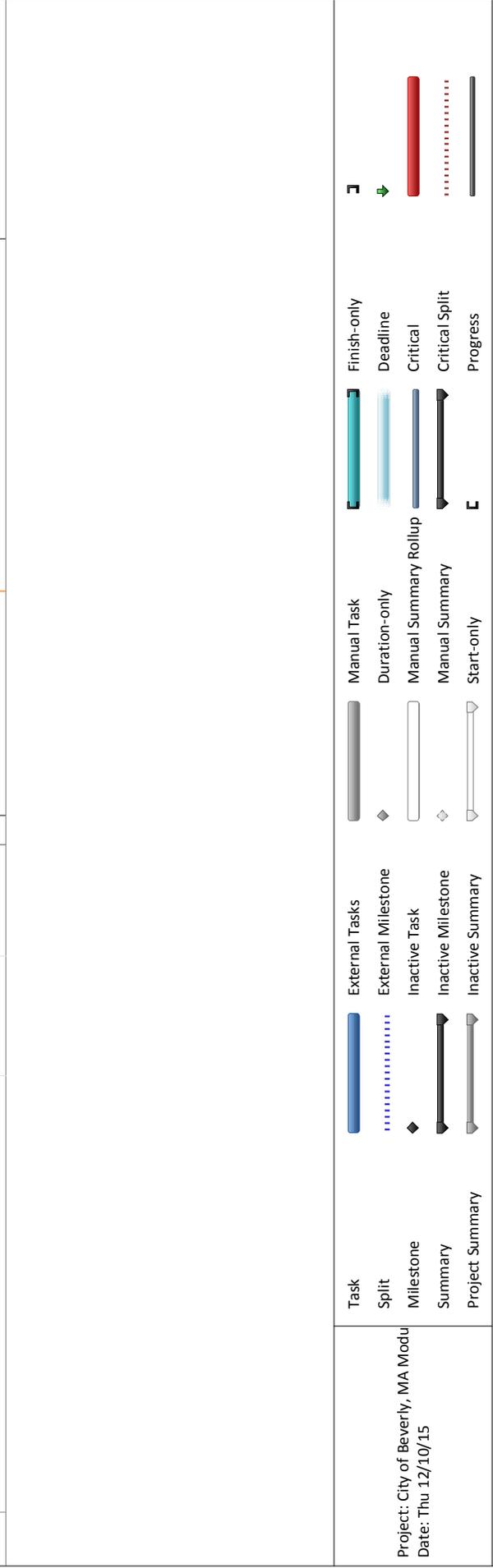
ID	Task Name	Start	Finish	2014	2015	2016	2017	2018	2019	2020
100	MSBA 60% CD Review	Wed 5/11/16	Wed 6/1/16			MSBA 60% CD Review				
101	Address 60% CD Review Comments	Thu 6/2/16	Wed 6/22/16			Address 60% CD Review Comments				
102	90% Construction Documents (CD)	Wed 5/11/16	Fri 9/30/16			90% CD Development				
103	90% CD Development	Wed 5/11/16	Wed 8/17/16							
104	Ai3 Issues Cost Estimating Package	Mon 7/25/16	Mon 7/25/16							
105	Cost Estimate Reconciliation	Thu 8/11/16	Fri 8/12/16							
106	90% CD Submission Date	Wed 8/17/16	Wed 8/17/16			90% CD Submission Date				
107	MSBA 90% CD Review	Wed 8/17/16	Wed 9/7/16			MSBA 90% CD Review				
108	Address 90% CD Review Comments	Wed 9/7/16	Tue 9/27/16			Address 90% CD Review Comments				
109	Design Phase Complete	Fri 9/30/16	Fri 9/30/16			Design Phase Complete				
110	Provisional Review Submission to USGBC - LEED	Fri 9/30/16	Fri 9/30/16							
111	Bidding/Trade Contractor Selection	Tue 5/10/16	Wed 1/18/17			Bidding/Trade Contractor Selection				
112	Prequalification Process of Trade Bidders	Tue 5/10/16	Tue 9/6/16							
113	Bids due Trade Contract Bid Period	Wed 11/2/16	Wed 11/30/16			Bids due Trade Contract Bid Period				
114	Notice to Proceed	Thu 12/1/16	Wed 12/7/16			Notice to Proceed				
115	Negotiate GMP	Tue 12/20/16	Wed 1/18/17			Negotiate GMP				
116	Construction	Wed 12/2/15	Fri 12/28/18							Construction

Project: City of Beverly, MA Modu
Date: Thu 12/10/15

Task	External Task	Manual Task	Finish-only
Split	External Milestone	Duration-only	Deadline
Milestone	Inactive Task	Manual Summary Rollup	Critical
Summary	Inactive Milestone	Manual Summary	Critical Split
Project Summary	Inactive Summary	Start-only	Progress

**City of Beverly, MA
New Beverly Middle School
Schematic Design Submission Master Schedule**

ID	Task Name	Start	Finish	2014	2015	2016	2017	2018	2019	2020
117	Bid Abatement/Demolition Early Packages	Wed 12/2/15	Wed 12/23/15							
118	Perform Abatement/Demolition work	Thu 12/24/15	Wed 3/23/16							
119	Bid - Piers/Foundations/Structural Steel Early Packages	Wed 3/2/16	Wed 3/23/16							
120	Install Piers/Piles/or GCC's	Tue 4/5/16	Thu 6/30/16							
121	Install Foundations	Fri 7/1/16	Fri 9/30/16							
122	Install Structural Steel	Sat 10/1/16	Sat 12/31/16							
123	General Building Construction	Tue 1/3/17	Fri 3/30/18							
124	Substantial Completion	Fri 3/30/18	Fri 3/30/18							
125	Final Completion - Construction Phase	Tue 5/29/18	Tue 5/29/18							
126	FF&E / Move-in	Fri 3/30/18	Wed 6/27/18							
127	Project Closeout	Fri 3/30/18	Fri 12/28/18							



DESIGNER'S CONSTRUCTION COST ESTIMATE

APPENDIX C



Design Development Estimate

Beverly Public Schools Middle School

Beverly, MA

PM&C LLC
20 Downer Ave, Suite 1C
Hingham, MA 02043

(T) 781-740-8007
(F) 781-740-1012

Prepared for:

Architecture Involution LLC

December 18, 2015



Beverly Public Schools
 Middle School
 Beverly, MA

18-Dec-15

Design Development Estimate

MAIN CONSTRUCTION COST SUMMARY

	Construction Start	Gross Floor Area	\$/sf	Estimated Construction Cost
NEW MIDDLE SCHOOL				
Construct New Middle School - Trade Costs	Jul-16	231,589	\$300.84	\$69,671,183
Building Demolition and Hazmat Removal - Main Building: including existing piles ¹				\$1,674,381
Sitework - Trade Costs	Jul-16			\$6,516,655
SUBTOTAL TRADE COSTS BUILDING and SITEWORK		231,589	\$336.21	\$77,862,219
Design and Estimating Contingency	3.0%			\$2,335,867
Escalation Allowance	1.5%			\$1,167,933
Subtotal				\$81,366,019
General Conditions				\$3,379,133
General Requirements	2.0%			\$1,627,320
Insurances - Builders Risk				\$252,235
Insurances				\$364,520
Bond				\$349,874
Fee	1.75%			\$1,423,905
Permit				NIC
CM Contingency	2.0%			\$1,627,320
TOTAL OF ALL CONSTRUCTION ESCALATED TO MID-POINT OF CONSTRUCTION		231,589	\$390.30	\$90,390,326



Beverly Public Schools
Middle School
Beverly, MA

18-Dec-15

Design Development Estimate

¹ Package has been bid

² Costs are based on C. 149a CM at Risk

This Design Development cost estimate was produced from drawings and specifications and other documentation prepared by Aig Architects and their design team dated December 2nd 2015.

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

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

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

ITEMS NOT CONSIDERED IN THIS ESTIMATE

Items not included in this estimate are:

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



Beverly Public Schools
 Middle School
 Beverly, MA

18-Dec-15

Schematic Design Estimate

GFA 231,589

CONSTRUCTION COST SUMMARY

<i>BUILDING SYSTEM</i>	<i>SUB-TOTAL</i>	<i>TOTAL</i>	<i>\$/SF</i>	<i>%</i>
NEW MIDDLE SCHOOL				
A10 FOUNDATIONS				
A1010 Standard Foundations	\$1,852,385			
A1020 Special Foundations	\$4,174,893			
A1030 Lowest Floor Construction	\$3,072,135	\$9,099,413	\$39.29	11.7%
A20 BASEMENT CONSTRUCTION				
A2010 Basement Excavation	\$0			
A2020 Basement Walls	\$555,640	\$555,640	\$2.40	0.7%
B10 SUPERSTRUCTURE				
B1010 Upper Floor Construction	\$5,029,509			
B1020 Roof Construction	\$3,731,042	\$8,760,551	\$37.83	11.3%
B20 EXTERIOR CLOSURE				
B2010 Exterior Walls	\$6,005,265			
B2020 Windows	\$3,464,400			
B2030 Exterior Doors	\$280,005	\$9,749,670	\$42.10	12.5%
B30 ROOFING				
B3010 Roof Coverings	\$2,297,785			
B3020 Roof Openings	\$31,200	\$2,328,985	\$10.06	3.0%
C10 INTERIOR CONSTRUCTION				
C1010 Partitions	\$4,596,390			
C1020 Interior Doors	\$1,272,845			
C1030 Specialties/Millwork	\$2,573,504	\$8,442,739	\$36.46	10.8%
C20 STAIRCASES				
C2010 Stair Construction	\$604,800			
C2020 Stair Finishes	\$202,220	\$807,020	\$3.48	1.0%
C30 INTERIOR FINISHES				
C3010 Wall Finishes	\$943,551			
C3020 Floor Finishes	\$3,396,443			
C3030 Ceiling Finishes	\$1,884,309	\$6,224,303	\$26.88	8.0%
D10 CONVEYING SYSTEMS				
D1010 Elevator	\$558,325	\$558,325	\$2.41	0.7%



Beverly Public Schools
 Middle School
 Beverly, MA

18-Dec-15

Schematic Design Estimate

GFA 231,589

CONSTRUCTION COST SUMMARY

<i>BUILDING SYSTEM</i>	<i>SUB-TOTAL</i>	<i>TOTAL</i>	<i>\$/SF</i>	<i>%</i>
NEW MIDDLE SCHOOL				
D20 PLUMBING				
D20 Plumbing	\$2,687,450	\$2,687,450	\$11.60	3.5%
D30 HVAC				
D30 HVAC	\$7,308,409	\$7,308,409	\$31.56	9.4%
D40 FIRE PROTECTION				
D40 Fire Protection	\$921,165	\$921,165	\$3.98	1.2%
D50 ELECTRICAL				
D5010 Service & Distribution	\$1,866,720			
D5020 Lighting & Power	\$2,813,516			
D5030 Communication & Security Systems	\$3,463,631			
D5040 Other Electrical Systems	\$1,054,840	\$9,198,707	\$39.72	11.8%
E10 EQUIPMENT				
E10 Equipment	\$1,071,439	\$1,071,439	\$4.63	1.4%
E20 FURNISHINGS				
E2010 Fixed Furnishings	\$1,812,017			
E2020 Movable Furnishings	NIC	\$1,812,017	\$7.82	2.3%
F10 SPECIAL CONSTRUCTION				
F10 Special Construction	\$145,350	\$145,350	\$0.63	0.2%
F20 HAZMAT REMOVALS				
F2010 Building Elements Demolition & Abatement	\$1,674,381			
F2020 Hazardous Components Abatement	Incl	\$1,674,381	\$7.23	2.2%
SUBTOTAL DIRECT BUILDING COST (Trade Costs)		\$71,345,564	\$308.07	91.6%
G SITEWORK				
G10 Site Preparation & Demolition	\$736,349			
G20 Site Improvements	\$3,755,671			
G30 Civil Mechanical Utilities	\$2,024,635			
G40 Site Electrical	\$0	\$6,516,655	\$28.14	8.4%
TOTAL DIRECT COST (Trade Costs)		\$77,862,219	\$336.21	100.0%



CONSTRUCTION COST SUMMARY IN CSI FORMAT								
NEW HIGH SCHOOL			SITEWORK			TOTAL PROJECT		
	Subtotal	Total	Subtotal	Total	Subtotal	Total	Cost/SF	
NEW MIDDLE SCHOOL								
DIV. 2 EXISTING CONDITIONS		\$1,674,381		\$0		\$1,674,381		
024117 Building Demolition	\$1,674,381		\$0		\$1,674,381		\$7.2	
DIV. 3 CONCRETE		\$5,436,194		\$303,489		\$5,739,683		
030513 Concrete Sealers	\$0		\$0		\$0		\$0.0	
033000 Cast In Place Concrete	\$5,436,194		\$303,489		\$5,739,683		\$24.8	
DIV. 4 MASONRY		\$682,966		\$103,620		\$786,586		
042000 Unit Masonry	\$682,966		\$103,620		\$786,586		\$3.4	
DIV. 5 METALS		\$9,047,009		\$20,250		\$9,067,259		
051200 Structural Steel Framing	\$6,101,928		\$0		\$6,101,928		\$26.3	
051500 Stud Shear Connectors	\$103,386		\$0		\$103,386		\$0.4	
053100 Steel Decking	\$996,499		\$0		\$996,499		\$4.3	
054000 Cold Formed Metal Framing	\$885,752		\$0		\$885,752		\$3.8	
055000 Metal Fabrications	\$445,444		\$20,250		\$465,694		\$2.0	
055100 Metal Stairs and Railings	\$514,000		\$0		\$514,000		\$2.2	
DIV. 6 WOODS, PLASTICS & COMPOSITES		\$2,058,198		\$0		\$2,058,198		
061000 Rough Carpentry	\$145,170		\$0		\$145,170		\$0.6	
061600 Sheathing	\$606,041		\$0		\$606,041		\$2.6	
062000 Finish Carpentry	\$1,209,077		\$0		\$1,209,077		\$5.2	
064000 Architectural Woodwork	\$97,910		\$0		\$97,910		\$0.4	
DIV. 7 THERMAL & MOISTURE PROTECTION		\$7,095,199		\$0		\$7,095,199		
071613 Elastomeric Sheet Waterproofing	\$279,180		\$0		\$279,180		\$1.2	
071613 Polymer Modified Bitumen	\$12,240		\$0		\$12,240		\$0.1	
072100 Thermal Insulation	\$212,836		\$0		\$212,836		\$0.9	
072726 Fluid Applied Air Barriers	\$654,098		\$0		\$654,098		\$2.8	
074243 Cementitious Panels	\$2,683,480		\$0		\$2,683,480		\$11.6	
075419 PVC Roofing	\$1,736,773		\$0		\$1,736,773		\$7.5	
075563 Vegetated Roof Covering	\$0		\$0		\$0		\$0.0	
076200 Sheet Metal Flashing & Trim	\$413,320		\$0		\$413,320		\$1.8	
077200 Roof Accessories	\$31,200		\$0		\$31,200		\$0.1	
078100 Applied Fireproofing	\$535,416		\$0		\$535,416		\$2.3	
078400 Firestopping	\$27,500		\$0		\$27,500		\$0.1	
079200 Joint Sealants	\$413,856		\$0		\$413,856		\$1.8	
079513 Construction & Expansion Joints	\$95,300		\$0		\$95,300		\$0.4	
DIV. 8 DOORS & WINDOWS		\$5,976,445		\$0		\$5,976,445		
081113 Doors and Frames	\$517,500		\$0		\$517,500		\$2.2	
083100 Access Doors and Panels	\$0		\$0		\$0		\$0.0	
083323 Overhead Coiling Doors	\$7,800		\$0		\$7,800		\$0.0	
083513 Folding Glass Walls	\$867,240		\$0		\$867,240		\$3.7	
084313 Aluminum Framed Storefronts	\$176,000		\$0		\$176,000		\$0.8	
084413 Glazed Aluminum Curtainwall	\$2,123,660		\$0		\$2,123,660		\$9.2	
085113 Aluminum Windows	\$1,208,150		\$0		\$1,208,150		\$5.2	
088000 Glazing	\$891,845		\$0		\$891,845		\$3.9	
089000 Louvers and Vents	\$184,250		\$0		\$184,250		\$0.8	
DIV. 9 FINISHES		\$9,903,873		\$0		\$9,903,873		
090002 Tile	\$595,759		\$0		\$595,759		\$2.6	
090004 Epoxy Terrazzo	\$1,070,712		\$0		\$1,070,712		\$4.6	
090006 Resilient Flooring	\$2,841,426		\$0		\$2,841,426		\$12.3	
090009 Painting	\$766,407		\$0		\$766,407		\$3.3	
092900 GWB	\$3,959,994		\$0		\$3,959,994		\$17.1	
096400 Wood Flooring	\$49,952		\$0		\$49,952		\$0.2	
096466 Wood Athletic Flooring	\$192,528		\$0		\$192,528		\$0.8	
096623 Resinous Matrix Terrazzo Flooring	\$42,620		\$0		\$42,620		\$0.2	
096800 Carpet	\$122,190		\$0		\$122,190		\$0.5	
098414 Acoustic Panels	\$262,285		\$0		\$262,285		\$1.1	
DIV 10 SPECIALTIES		\$685,140		\$0		\$685,140		
101116 Markerboards	\$264,392		\$0		\$264,392		\$1.1	
101400 Signage	\$116,000		\$0		\$116,000		\$0.5	
102113 Toilet Compartments	\$46,208		\$0		\$46,208		\$0.2	
102123 Cubicles	\$3,000		\$0		\$3,000		\$0.0	
102228 Folding Partition	\$105,600		\$0		\$105,600		\$0.5	
102813 Toilet Accessories	\$64,800		\$0		\$64,800		\$0.3	
104400 Fire Protection Specialties	\$56,500		\$0		\$56,500		\$0.2	
105113 Metal Lockers	\$28,640		\$0		\$28,640		\$0.1	
DIV. 11 EQUIPMENT		\$1,042,239		\$0		\$1,042,239		
114000 Foodservice Equipment	\$500,000		\$0		\$500,000		\$2.2	



CONSTRUCTION COST SUMMARY IN CSI FORMAT								
NEW HIGH SCHOOL			SITEWORK			TOTAL PROJECT		
	Subtotal	Total	Subtotal	Total	Subtotal	Total	Cost/SF	
NEW MIDDLE SCHOOL								
115213	Projection Screens	\$25,600		\$0	\$25,600		\$0.1	
116100	Theatre Equipment	\$300,000		\$0	\$300,000		\$1.3	
116623	Gymnasium Equipment	\$108,613		\$0	\$108,613		\$0.5	
116653	Gymnasium Dividers	\$108,026		\$0	\$108,026		\$0.5	
DIV. 12	FURNISHINGS		\$1,948,689		\$95,600		\$2,044,289	
122400	Window Shades	\$193,932		\$0	\$193,932		\$0.8	
123000	Casework	\$1,403,837		\$0	\$1,403,837		\$6.1	
124813	Entrance Floor Mats and Frames	\$115,440		\$0	\$115,440		\$0.5	
126100	Fixed Audience Seating	\$211,480		\$0	\$211,480		\$0.9	
126613	Telescoping Bleachers	\$24,000		\$0	\$24,000		\$0.1	
129300	Site Furnishings	\$0		\$95,600	\$95,600		\$0.4	
DIV. 13	SPECIAL CONSTRUCTION		\$145,350		\$0		\$145,350	
133000	Prefabricated Bus Shelter	\$145,350		\$0	\$145,350		\$0.6	
DIV. 14	CONVEYING SYSTEMS		\$555,000		\$0		\$555,000	
142424	Holeless Hydraulic Elevators	\$555,000		\$0	\$555,000		\$2.4	
DIV. 21	FIRE SUPPRESSION		\$921,165		\$0		\$921,165	
210000	Fire Suppression	\$921,165		\$0	\$921,165		\$4.0	
DIV.22	PLUMBING		\$2,687,450		\$0		\$2,687,450	
220000	Plumbing	\$2,687,450		\$0	\$2,687,450		\$11.6	
DIV. 23	HVAC		\$7,308,409		\$0		\$7,308,409	
230000	HVAC	\$7,308,409		\$0	\$7,308,409		\$31.6	
DIV.26	ELECTRICAL		\$9,198,707		\$0		\$9,198,707	
260000	Electrical	\$9,198,707		\$0	\$9,198,707		\$39.7	
DIV. 31	EARTHWORK		\$4,979,150		\$763,844		\$5,742,994	
311000	Site Preparation & Clearing	\$0		\$421,781	\$421,781		\$1.8	
312000	Earthwork	\$804,257		\$291,063	\$1,095,320		\$4.7	
312500	Erosion Control	\$0		\$51,000	\$51,000		\$0.2	
316300	Piles	\$4,174,893		\$0	\$4,174,893		\$18.0	
DIV. 32	EXTERIOR IMPROVEMENTS		\$0		\$3,223,392		\$3,223,392	
320000	Bituminous Paving, curbing & Edging	\$0		\$1,764,199	\$1,764,199		\$7.6	
323000	Site Improvements	\$0		\$572,408	\$572,408		\$2.5	
321724	Signs	\$0		\$21,000	\$21,000		\$0.1	
323300	Segmental Retaining Wall	\$0		\$45,200	\$45,200		\$0.2	
329900	Landscaping	\$0		\$820,585	\$820,585		\$3.5	
DIV. 33	UTILITIES		\$0		\$2,006,460		\$2,006,460	
331000	Water Distribution	\$0		\$260,495	\$260,495		\$1.1	
333000	Sanitary Sewerage	\$0		\$130,580	\$130,580		\$0.6	
334000	Storm Drainage Systems	\$0		\$1,615,385	\$1,615,385		\$7.0	
SUBTOTAL DIRECT (TRADE) COST			\$71,345,564		\$6,516,655		\$77,862,219	



Design Development Estimate

GFA 231,589

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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NEW MIDDLE SCHOOL

GROSS FLOOR AREA CALCULATION

1							
2	Basement	24,832					
3	First Floor	79,407					
4	Second Floor	41,871					
5	Third Floor	49,306					
6	Fourth Floor	36,173					
7							

8	TOTAL GROSS FLOOR AREA (GFA)					231,589	sf
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A10 FOUNDATIONS

A1010 STANDARD FOUNDATIONS

14							
15	<u>GB1: 5'-0" deep x 2'-0" wide</u>						
15	310000 Excavation	2,698	cy	11.00	29,678		
16	310000 Store on site for reuse	2,698	cy	8.00	21,584		
17	310000 Backfill with selected material	1,754	cy	6.50	11,401		
18	033000 Formwork	24,280	sf	12.00	291,360		
19	033000 Re-bar	113,280	lbs	1.20	135,936		
20	033000 Concrete material; 3,000 psi	944	cy	132.00	124,608		
21	033000 Placing concrete	944	cy	50.00	47,200		
22	<u>GB2: 2'-0" deep x 2'-0" wide</u>						
23	310000 Excavation	263	cy	11.00	2,893		
24	310000 Store on site for reuse	263	cy	8.00	2,104		
25	310000 Backfill with selected material	171	cy	6.50	1,112		
26	033000 Formwork	2,364	sf	12.00	28,368		
27	033000 Re-bar	11,040	lbs	1.20	13,248		
28	033000 Concrete material; 3,000 psi	92	cy	132.00	12,144		
29	033000 Placing concrete	92	cy	50.00	4,600		
30	<u>GB3: 5'-0" deep x 3'-0" wide</u>						
31	310000 Excavation	57	cy	11.00	627		
32	310000 Store on site for reuse	57	cy	8.00	456		
33	310000 Backfill with selected material	31	cy	6.50	202		
34	033000 Formwork	440	sf	12.00	5,280		
35	033000 Re-bar	3,120	lbs	1.20	3,744		
36	033000 Concrete material; 3,000 psi	26	cy	132.00	3,432		
37	033000 Placing concrete	26	cy	50.00	1,300		
38	<u>Perimeter stem wall</u>						
39	033000 Formwork	4,944	sf	13.00	64,272		
40	033000 Re-bar	11,520	lbs	1.20	13,824		
41	033000 Concrete material; 3,000 psi	96	cy	132.00	12,672		
42	033000 Placing concrete	96	cy	50.00	4,800		
43	<u>Pile Cap PC2, 7'-0" x 3'-0" x 3'-4"</u>						
44	310000 Excavation	1,357	cy	13.00	17,641		
45	310000 Store on site for reuse	1,357	cy	8.00	10,856		
46	310000 Backfill with selected material	1,017	cy	7.00	7,119		
47	033000 Formwork	8,330	sf	12.00	99,960		
48	033000 Re-bar	12,229	lbs	1.20	14,675		
49	033000 Concrete material; 3,000 psi	340	cy	135.00	45,900		
50	033000 Placing concrete	340	cy	50.00	17,000		
51	<u>Pile Cap PC3, 7'-0" x 7'-0" x 3'-4"</u>						
52	310000 Excavation	1,793	cy	13.00	23,309		
53	310000 Store on site for reuse	1,793	cy	8.00	14,344		
54	310000 Backfill with selected material	1,126	cy	7.00	7,882		
55	033000 Formwork	9,800	sf	12.00	117,600		
56	033000 Re-bar	19,871	lbs	1.20	23,845		
57	033000 Concrete material; 3,000 psi	667	cy	135.00	90,045		
58	033000 Placing concrete	667	cy	50.00	33,350		
59	<u>Pile Cap PC4, 7'-0" x 7'-0" x 3'-4"</u>						



Beverly Public Schools
Middle School
Beverly, MA

18-Dec-15

Design Development Estimate

GFA 231,589

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
NEW MIDDLE SCHOOL							
60	310000	Excavation	1,219	cy	13.00	15,847	
61	310000	Store on site for reuse	1,219	cy	8.00	9,752	
62	310000	Backfill with selected material	765	cy	7.00	5,355	
63	033000	Formwork	6,664	sf	12.00	79,968	
64	033000	Re-bar	20,432	lbs	1.20	24,518	
65	033000	Concrete material; 3,000 psi	454	cy	135.00	61,290	
66	033000	Placing concrete	454	cy	50.00	22,700	
67		<u>File Cap PC6, 10'-0" x 7'-0" x 3'-4"</u>					
68	310000	Excavation	388	cy	13.00	5,044	
69	310000	Store on site for reuse	388	cy	8.00	3,104	
70	310000	Backfill with selected material	226	cy	7.00	1,582	
71	033000	Formwork	2,023	sf	12.00	24,276	
72	033000	Re-bar	7,297	lbs	1.20	8,756	
73	033000	Concrete material; 3,000 psi	162	cy	135.00	21,870	
74	033000	Placing concrete	162	cy	50.00	8,100	
75		<u>Miscellaneous</u>					
76	033000	Piers/pilasters	180	cy	650.00	117,000	
77	033000	Set anchor bolts grout plates; supplied by others	1,216	loc	25.00	30,400	
78	033000	Site stairs against and integrated with building	1	loc	50,000.00	In Site	
79	310000	Perimeter drain	2,914	lf	18.00	52,452	
80		SUBTOTAL					1,852,385
81							
82	A1020	SPECIAL FOUNDATIONS					
83	316300	Piling mobilization	1	ls	100,000.00	100,000	
84	316300	Load tests	1	ls	105,000.00	105,000	
85	316300	Vibration monitoring/pile survey	1	ls	120,000.00	120,000	
86	316300	Store surplus material on site	5,212	cy	14.00	72,968	
87	316300	Predrilling				NIC	
88	316300	Pile cut offs	1	sf	30,000.00	30,000	
89	316300	Steel H piles, av. 65'	83,265	vlf	45.00	3,746,925	
90		SUBTOTAL					4,174,893
91							
92	A1030	LOWEST FLOOR CONSTRUCTION					
93		<u>New Structural Slab, 12" thick</u>	93.745	sf		-	
94	310000	Gravel fill, 8"	2,326	cy	35.00	81,410	
95	310000	Structural fill, 6"	1,736	cy	30.00	52,080	
96	310000	Allowance for unsuitables	6,000	cy	40.00	240,000	
97	310000	Common fill to bring up levels	12,636	cy	8.00	101,088	
98	033000	Rigid insulation; 40 psi	93,745	sf	2.15	201,552	
99	071353	Waterproofing under slab	24,832	sf	9.00	223,488	
100	033000	Vapor barrier	93,745	sf	0.75	70,309	
101	310000	Compact existing sub-grade	93,745	sf	0.55	51,560	
102	033000	Formwork	2,914	lf	12.00	34,968	
103	033000	Rebar, 6#/SF	562,470	lbs	1.20	674,964	
104	033000	Concrete - 12" thick; 4,000 psi	3,646	cy	137.50	501,325	
105	033000	Premium for additional rebar at pile caps	1	ls	50,000.00	50,000	
106	033000	Placing concrete	3,646	cy	50.00	182,300	
107	033000	Finishing and curing concrete	93,745	sf	3.00	281,235	
108	033000	Barrier 1 moisture mitigation	3,646	cy	50.00	182,300	
109		<u>Elevator Pit</u>					
110	310000	Excavation for elevator pit	252	cy	14.00	3,528	
111	310000	Remove off site	252	cy	16.00	4,032	
112	310000	Backfill with gravel	12	cy	32.00	384	
113		Elevator pit walls					
114	033000	formwork	1,440	sf	14.00	20,160	
115	033000	reinforcement	2,160	lbs	1.20	2,592	
116	033000	Concrete material; 3,000 psi	18	cy	135.00	2,430	
117	033000	placing concrete in walls	18	cy	50.00	900	



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Middle School
Beverly, MA

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NEW MIDDLE SCHOOL

118	Slab						
119	033000 formwork	180	sf	16.00	2,880		
120	033000 reinforcement	900	lbs	1.20	1,080		
121	033000 concrete material in slab	18	cy	135.00	2,430		
122	033000 placing concrete in slab; 3,000 psi	18	cy	50.00	900		
123	<u>Miscellaneous</u>						
124	071613 Polymer modified Cement waterproofing to elevator pit	1,020	sf	12.00	12,240		
125	033000 Neutralization pit	1	loc	4,000.00	4,000		
126	033000 Grease interceptor pit	1	loc	2,500.00	2,500		
127	033000 Loading dock	1	ls	35,000.00	35,000		
128	033000 Equipment pads	500	sf	7.00	3,500		
129	033000 Premium for stepped floor at auditorium	3,000	sf	15.00	45,000		
130	SUBTOTAL					3,072,135	

TOTAL - FOUNDATIONS						\$9,099,413
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A20 BASEMENT CONSTRUCTION

A2010 BASEMENT EXCAVATION

SUBTOTAL -

A2020 BASEMENT WALLS

142	<u>Perimeter footing at retaining wall; 9'-8" wide x 2'-6" deep</u>						
143	310000 Excavation	1,119	cy	11.00	12,309		
144	310000 Store on site for reuse	1,119	cy	8.00	8,952		
145	310000 Backfill with selected material	703	cy	6.50	4,570		
146	033000 Formwork	2,210	sf	12.00	26,520		
147	033000 Re-bar	49,920	lbs	1.20	59,904		
148	033000 Concrete material; 3,000 psi	416	cy	132.00	54,912		
149	033000 Placing concrete	416	cy	50.00	20,800		
150	<u>Retaining wall; 20" thick</u>						
151	033000 Formwork	12,376	sf	15.00	185,640		
152	033000 Re-bar	30,940	lbs	1.20	37,128		
153	033000 Concrete material; 3,000 psi	401	cy	135.00	54,135		
154	033000 Placing concrete	401	cy	50.00	20,050		
155	071353 Waterproofing foundation wall and footing	7,956	sf	7.00	55,692		
156	072100 Insulation to foundation walls; 2" thick	6,188	sf	2.00	12,376		
157	033000 Form shelf	442	lf	6.00	2,652		
158	SUBTOTAL					555,640	

TOTAL - BASEMENT CONSTRUCTION						\$555,640
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B10 SUPERSTRUCTURE

B1010 FLOOR CONSTRUCTION

164		15.51	lbs/sf		-		
165		1,796	tns		-		
166	<u>Floor Structure - Steel:</u>						
167	051200 Beams; W-section	821	tns	3,200.00	2,627,200		
168	051200 Beams; HSS	73	tns	3,400.00	248,200		
169	051200 Steel at building perimeter	31	tns	3,400.00	105,400		
170	051200 Steel at wind girts	24	tns	3,400.00	81,600		
171	051500 Shear studs	17,231	ea	6.00	103,386		
172	<u>Floor Structure</u>						
173	053100 Metal floor decking; 2", 18 gage	137,844	sf	3.75	516,915		
174	033000 Mesh reinforcement in concrete topping	158,521	sf	0.90	142,669		
175	033000 Concrete topping to metal decking, 4-1/2" thick; Light weight	2,010	cy	176.00	353,760		
176	033000 Place and finish concrete	137,844	sf	2.00	275,688		



Design Development Estimate

GFA 231,589

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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NEW MIDDLE SCHOOL

177	033000	Moisture Mitigation; admixture	2,010	cy	50.00	100,500	
178		<u>Miscellaneous</u>					
179	033000	Rebar at slab edges	15,000	lbs	1.20	18,000	
180	033000	Additional labor at sloped slab in auditorium	2,100	sf	6.00	12,600	
181	033000	Concrete steps to auditorium	52	lfr	75.00	3,900	
182	078400	Firestopping at floor penetrations	3	floors	2,500.00	7,500	
183	078400	Miscellaneous fire stopping	1	ls	20,000.00	20,000	
184		Relieving angles					Incl in Structure
185	051200	Base plates	12,160	lbs	1.75	21,280	
186	079513	Expansion joint at floor decks	1,455	lf	25.00	36,375	
187	051200	Full weld	239	ea	300.00	71,700	
188	051200	Moment connections allowance	7	ea	500.00	3,500	
189	051200	Supply anchor bolts installed by others	304	ea	12.00	3,648	
190	078100	Fireproofing to beams and columns	137,844	sf	2.00	275,688	
191		SUBTOTAL					5,029,509

B1020 ROOF CONSTRUCTION

194		<u>Roof Structure - Steel:</u>					
195	051200	Beams; W-section	277	tns	3,200.00	886,400	
196	051200	Beams; HSS	7	tns	3,400.00	23,800	
197	051200	Columns; HSS	309	tns	3,400.00	1,050,600	
198	051200	Bracing; HSS	167	tns	3,400.00	567,800	
199	051200	Steel at canopy/roof perimeter	87	tns	3,400.00	295,800	
200		<u>Roof Structure</u>					
201	053100	Metal roof decking; 3"	86,576	sf	4.00	346,304	
202	053100	Acoustical decking	19,040	sf	7.00	133,280	
203		<u>Miscellaneous</u>					
204	051200	Support framing to roof screen ; HSS galvanized	25	tns	3,800.00	95,000	
205	078100	Fireproofing to beams and deck	86,576	sf	3.00	259,728	
206	033000	Concrete slab for Roof	6,370	sf	9.00	57,330	
207	055000	Angle framing at roof details					Incl in Structure
208	051200	Chiller dunnage	1	ls	15,000.00	15,000	
209		SUBTOTAL					3,731,042

TOTAL - SUPERSTRUCTURE

\$8,760,551

B20 EXTERIOR CLOSURE

216	B2010 EXTERIOR WALLS		93,237	sf		-	
217		<u>Interior skin</u>					
218	054000	10" metal stud back-up	93,237	sf	9.50	885,752	
219	092900	GWB to inside of exterior wall	93,237	sf	3.00	279,711	
220	061600	Nail base insulation	93,237	sf	6.50	606,041	
221	072726	Air/Vapor barrier to exterior walls, fluid applied	93,237	sf	6.00	559,422	
222	072100	1.5" spray foam insulation	93,237	sf	2.15	200,460	
223		<u>Exterior skin</u>					
224	074243	Fiber cement panel siding-Nichiha	61,411	sf	30.00	1,842,330	
225	074243	Fiber cement panel -Nichiha; smooth	22,390	sf	32.00	716,480	
226	042000	Simulated stone veneer	9,436	sf	45.00	424,620	
227		<u>Misc Trim</u>					
228	042000	Stone veneer to column including backup	458	sf	65.00	29,770	
229	042000	Stone sill to top of stone veneer at columns	110	lf	110.00	12,100	
230	074243	Fiber cement trim at corner- one side only	2,898	lf	15.00	43,470	
231	042000	Stone sill to top of stone veneer	2,198	lf	58.00	127,484	
232		<u>Miscellaneous</u>					
233	074243	Cement Board column covers: assumed at exterior columns	307	lf	60.00	18,420	
234	079513	Expansion joint at walls	387	lf	25.00	9,675	
235	089000	Louvered equipment enclosure, prefinished louvered aluminum (10' high): non-acoustical	4,950	sf	35.00	173,250	



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Middle School
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NEW MIDDLE SCHOOL

236	101400	Logo signs/graphics applied to cement siding	9	loc	1,500.00	13,500	
237	074243	Scaffold/lifts to exterior walls	125,559	sf	0.50	62,780	
238		SUBTOTAL					6,005,265
239							
240		B2020 WINDOWS	32,322			-	
241	085113	Aluminum windows	13,575	sf	80.00	1,086,000	
242	084413	Aluminum CW	18,747	sf	110.00	2,062,170	
243	084413	Storefront	118	sf	85.00	10,030	
244	085113	Premium for casement openings	349	loc	350.00	122,150	
245	084413	Sun shade	205	lf	120.00	24,600	
246	089000	Louvers allowance	200	sf	55.00	11,000	
247	072726	Air/Vapor barrier at window & louver openings	11,876	lf	5.00	59,380	
248	079200	Backer rod & sealant at window & louver openings	11,876	lf	3.50	41,566	
249	061000	Wood blocking at window openings	11,876	lf	4.00	47,504	
250		SUBTOTAL					3,464,400
251							
252		B2030 EXTERIOR DOORS					
253		<u>Hollow metal doors, frames and HW</u>					
254	081113	Single leaf	1	ea	1,600.00	1,600	
255	081113	Double leaf	4	pr	3,200.00	12,800	
256		<u>Glazed Aluminum Doors</u>					
257	084313	3'-0" x 7'-0"	4	ea	4,000.00	16,000	
258	084313	6'-0" x 7'-0"	16	pr	8,000.00	128,000	
259		<u>Miscellaneous</u>					
260	083323	Overhead door 12' x 10'	1	ea	7,800.00	7,800	
261	083513	Nana wall doors 12' x 10'	5	ea	21,600.00	108,000	
262	079200	Backer rod & sealant to exterior doors	645	lf	5.00	3,225	
263	061000	Wood blocking at door openings	645	lf	4.00	2,580	
264		SUBTOTAL					280,005
265							
266		TOTAL - EXTERIOR CLOSURE					\$9,749,670
267							
268							
269		B30 ROOFING					
270							
271		B3010 ROOF COVERINGS					
272		<u>Flat Roofing:</u>					
273	075419	White PVC roof membrane mechanically fastened with 6" insulation	103,153	sf	16.50	1,702,025	
274	075419	Premium for tapered insulation	2,986	sf	3.00	8,958	
275	075419	Membrane roof walkway pads allowance	5,158	sf	5.00	25,790	
276		<u>Miscellaneous Roofing</u>					
277	076200	Roof to wall flashings	1,537	lf	25.00	38,425	
278	076200	Fascia trim/roof edge	4,412	lf	30.00	132,360	
279	076200	Flashing at roof drains	53	loc	250.00	13,250	
280	072726	Air/Vapor barrier at roof edges	4,412	lf	8.00	35,296	
281	079513	Roof expansion joints	485	lf	50.00	24,250	
282	076200	Soffits to canopies/large overhangs; allowance	2,299	sf	40.00	91,960	
283	076200	Roof edge soffits; assumed aluminum sheet	5,493	sf	25.00	137,325	
284	061000	Wood blocking roof edges and expansion joint	14,691	lf	6.00	88,146	
285		SUBTOTAL					2,297,785
286							
287		B3020 ROOF OPENINGS					
288		Skylight allowance				NIC	
289	077200	Elevator PH and vent	3	ea	3,000.00	9,000	
290	077200	Smoke hatches	3	ea	3,900.00	11,700	
291	077200	Roof hatches and ladder	3	ea	3,500.00	10,500	
292		SUBTOTAL					31,200
293							
294		TOTAL - ROOFING					\$2,328,985
295							



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NEW MIDDLE SCHOOL

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

CMU Partitions

Elevator Shaft walls - 2 hr rated

3,708 sf 24.00 88,992

Seismic Clips at the tops of all CMU interior partitions

65 loc 120.00 7,800

GWB Partitions

F3 - 3 5/8" metal studs, 2 layer 5/8" GWB b/s, insulation

1,807 sf 13.50 24,395

F23 - 2 rows 3-5/8" metal studs, 2 layers 1/2" GWB b/s, 2 layers insulation

7,048 sf 18.50 130,388

G3 - 3 5/8" metal studs, 1 layer 1/2" GWB b/s, insulation

15,856 sf 10.50 166,488

G6 - 6" metal studs, 1 layer 1/2" GWB b/s, insulation

6,897 sf 12.50 86,213

GA3 - 3 5/8" metal studs, 2 layers 1/2" GWB b/s, insulation

6,682 sf 13.50 90,207

GA4 - 3 5/8" metal studs, 2 layers 1/2" GWB o/s, 1 layer o/s insulation

7,249 sf 12.00 86,988

GA6 - 6" metal studs, 2 layers 1/2" GWB b/s, insulation

28,293 sf 15.50 438,542

GA7 - 6" metal studs, 2 layers 1/2" GWB o/s, 1 layer o/s insulation

15,622 sf 14.00 218,708

GA8 - 8" metal studs, 2 layers 1/2" GWB o/s, 1 layer o/s insulation

2,009 sf 16.00 32,144

GA10 - 10" metal studs, 2 layers 1/2" GWB o/s, 1 layer o/s insulation

294 sf 18.00 5,292

GB - 2 rows 3-5/8" metal studs, 1 layer 1/2" GWB b/s, 2 layers insulation

51,780 sf 15.50 802,590

GD - 2 rows 3-5/8" metal studs, 2 layers 1/2" GWB b/s, 2 layers insulation

20,246 sf 18.50 374,551

GP - 2 rows 3-5/8" metal studs, 2 layers 1/2" GWB b/s, 2 layers insulation

13,648 sf 19.50 266,136

GF1 - 1-5/8" metal studs, 1 layer 1/2" GWB o/s, 1 layer insulation

12,324 sf 5.75 70,863

GF3 - 3-5/8" metal studs, 1 layer 1/2" GWB o/s, 1 layer insulation

14,299 sf 7.75 110,817

GF4 - 3-5/8" metal studs, 2 layers 1/2" GWB o/s, 1 layer insulation

5,563 sf 9.25 51,458

GF5 - 6" metal studs, 1 layer 1/2" GWB o/s, 1 layer insulation

309 sf 9.75 3,013

GF6 - 6" metal studs, 1 layer 1/2" GWB o/s, 1 layer insulation

5,545 sf 9.75 54,064

Shaft Wall

15,563 sf 13.00 202,319

GWB to knee walls at auditorium, reception and library desk

1,014 sf 12.50 12,675

Aluminum reveal

15,192 lf 4.00 60,768

Sealants & caulking at partitions

235,756 sf 0.25 58,939

Sliding glass door w/ fixed panel

3' x 7' door and panel

6 ea 3,000.00 18,000

4' x 8' door and panel

49 ea 4,000.00 196,000

6' x 8' door and panel

2 ea 6,000.00 12,000

Operable partition

Support framing for Operable partition

66 lf 120.00 7,920

Operable partition at Auditorium, 20' high

1,320 sf 80.00 105,600

Support framing for Operable glass partition

444 lf 120.00 53,280

Operable glass partition

4,218 sf 180.00 759,240

SUBTOTAL

4,596,390

C1020 INTERIOR DOORS

Glazed Aluminum Doors

6'-0" x 7'-0"

4 pr 8,000.00 32,000



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NEW MIDDLE SCHOOL								
340	081113		<u>Door, Frames, Hardware</u>					
341	081113	242	ea	1,500.00	363,000			
342	081113	51	pr	2,700.00	137,700			
343	088000	52	ea	150.00	7,800			
344	088000	206	ea	250.00	51,500			
345			<u>Interior Glazing</u>					
346	088000	4,352	sf	65.00	282,880			
347	088000	809	sf	65.00	52,585			
348	088000	4,294	sf	60.00	257,640			
349	084413	316	sf	85.00	26,860			
350	081113	6	loc	400.00	2,400			
351	090009	344	ea	110.00	37,840			
352	079200	344	ea	60.00	20,640			
353			SUBTOTAL				1,272,845	
354								
355	C1030		SPECIALTIES / MILLWORK					
356			<u>Toilet Partitions</u>					
357	102113	16	ea	1,323.00	21,168			
358	102113	16	ea	823.00	13,168			
359	102113	16	ea	392.00	6,272			
360	102113	4	ea	1,400.00	5,600			
361	055000	32	loc	150.00	4,800			
362			<u>Toilet Accessories</u>					
363	102813	16	rms	2,500.00	40,000			
364	102813	30	rms	600.00	18,000			
365	102813	9	rms	500.00	4,500			
366	102813	4	ea	250.00	1,000			
367	102813	4	ea	100.00	400			
368	102813	1	ea	900.00	900			
369	055000	1	ls	60,000.00	NIC			
370			<u>Auditorium</u>					
371	051200	1	ls	5,000.00	5,000			
372	061000	66	lfr	90.00	5,940			
373			<u>Library/Media Center</u>					
374	062000	213	lf	220.00	46,860			
375	062000	1	ls	50,000.00	50,000			
376			<u>5/6 Student Dining</u>					
377	062000	115	lf	42.00	4,830			
378	062000	1	ls	4,000.00	4,000			
379	062000	1	ls	8,000.00	8,000			
380	062000	132	lf	35.00	4,620			
381	062000	22	lf	400.00	8,800			
382			<u>7/8 Student Dining</u>					
383	062000	231	lf	42.00	9,702			
384	062000	1	ls	5,000.00	5,000			
385	062000	1	ls	10,000.00	10,000			
386	062000	89	lf	35.00	3,115			
387	062000	22	lf	400.00	8,800			
388			<u>Gym/Athletics</u>					
389	062000	1	ls	20,000.00	20,000			
390	062000	23	lf	400.00	9,200			
391	062000	62	lf	500.00	31,000			
392			HS Guidance reception desk allowance				FF&E	
393			Career center desk allowance				FF&E	
394	062000	1	ls	175,000.00	175,000			
395	062000	5,984	sf	60.00	359,040			
396			<u>Lobby</u>					
397	062000	475	sf	45.00	21,375			
398								
399	062000	6,032	sf	45.00	271,440			
400			<u>Library/Media Center</u>					



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NEW MIDDLE SCHOOL

401	062000	Misc. wood trim & molding at library	1	ls	25,000.00	25,000	
402	062000	Wood Paneling in library	515	sf	45.00	23,175	
403							
404	101116	Visual display boards					
405	101116	Marker Boards with tack strip	11,060	sf	20.00	221,200	
406	101116	Marker Boards	2,094	sf	18.00	37,692	
407	101116	Tack Boards	275	sf	20.00	5,500	
408		8' IWB	9	loc	5,400.00	w/ electrical	
409		12' IWB	1	loc	5,400.00	w/ electrical	
410		14' IWB	1	loc	5,400.00	w/ electrical	
411		18' IWB	1	loc	5,400.00	w/ electrical	
412	061000	Backer panels in electrical closets	1	ls	1,000.00	1,000	
413	055000	Support to projection screens	1	ls	2,000.00	2,000	
414	055000	SS lockable time capsule	1	ea	1,500.00	1,500	
415	055000	Elevator support framing	1	ls	5,000.00	5,000	
416	079513	Expansion joint cover assemblies	1	ls	25,000.00	25,000	
417	105113	Metal corridor lockers; single tier				NIC	
418	105113	Open face lockers in locker room single tier				NIC	
419	033000	Concrete base at lockers	68	lf	130.00	8,840	
420	105113	15" wide x 24" high Metal gym lockers; double tier	80	opn	220.00	17,600	
421	105113	Lockers @ Kitchen	10	opn	240.00	2,400	
422	105113	Lockers @ Custodian	6	opn	240.00	1,440	
423	105113	Locker room benches	48	lf	150.00	7,200	
424	088000	Mirrors	384	sf	35.00	13,440	
425	104400	Fire extinguisher cabinets	160	ea	350.00	56,000	
426	055000	Handrails at auditorium	76	lf	55.00	4,180	
427	055000	Guardrails at auditorium	42	lf	175.00	7,350	
428	055000	Guardrails at floor openings to below	516	lf	200.00	103,200	
429	062000	Premium for wood panel at student dining handrail	185	sf	50.00	9,250	
430	104400	Emergency key cabinets	1	ls	500.00	500	
431	101400	Room signage	344	loc	150.00	51,600	
432	101400	Decorative signage	1	ls	35,000.00	35,000	
433	101400	Signage at library	1	ls	2,500.00	2,500	
434	101400	Building directory	2	ea	1,000.00	2,000	
435	101400	Exterior signage	1	ls	10,000.00	10,000	
436	101400	Dedication plaque	1	ea	1,400.00	1,400	
437	122400	Roller blinds to windows	32,322	sf	6.00	193,932	
438	079200	Miscellaneous sealants & caulking	231,589	gsf	1.25	289,486	
439	055000	Misc metals	231,589	sf	1.00	231,589	
440		SUBTOTAL					2,573,504
441							
442	TOTAL - INTERIOR CONSTRUCTION						\$8,442,739
443							
444							
445	C20 STAIRCASES						
446							
447	C2010 STAIR CONSTRUCTION						
448	055100	Cafeteria Stairs	4	flt	35,000.00	140,000	
449	033000	Half height stairs; concrete	2	flt	16,000.00	32,000	
450	055100	Egress stairs	17	flt	22,000.00	374,000	
451	033000	Concrete fill to stairs	21	flt	2,800.00	58,800	
452		SUBTOTAL					604,800
453							
454	C2020 STAIR FINISHES						
455	090009	High performance coating to stairs including all railings etc.	21	flt	2,500.00	52,500	
456	096623	Stair finish to monumental stairs	700	lfr	35.00	24,500	
457	096623	Epoxy terrazzo at landings	453	sf	40.00	18,120	
458	090005	Rubber base; stairs	2,550	lf	3.00	7,650	
459	090005	Rubber tile at stairs - landings	5,950	sf	9.00	53,550	
460	090005	Rubber tile at stairs - treads & risers	2,550	lft	18.00	45,900	



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NEW MIDDLE SCHOOL

461	SUBTOTAL					202,220		
462								
463	TOTAL - STAIRCASES							\$807,020
464								
465								
466	C30 INTERIOR FINISHES							
467								
468	C3010 WALL FINISHES							
469	090009 Paint to GWB walls	486,541	sf	0.85	413,560			
470	090009 Premium for epoxy paint	5,620	sf	1.00	5,620			
471	090002 Ceramic wall tile toilet rooms; full height at gang bathrooms	12,328	sf	20.00	246,560			
472	090002 Ceramic wall tile toilet rooms; full height at wet wall in single bathrooms, wainscoting elsewhere	4,684	sf	20.00	93,680			
473	090002 Ceramic wall tile at kitchen's	1,010	sf	22.00	22,220			
474	090002 Ceramic wall tile at corridor	1,263	sf	22.00	27,786			
475	090009 Stain, paint to wood trim and panels	1	ls	25,000.00	25,000			
476	098414 Tectum wall panels at set design/construction - A10.52	75	lf	15.00	1,125			
477	<u>Technology application</u>							
478	098414 Acoustic wall panels	250	sf	22.00	5,500			
479	<u>Band practice</u>							
480	098414 Sound panels	250	sf	26.00	6,500			
481	<u>Gym/Athletics</u>							
482	098414 Sound absorption panels @ gym	1,500	sf	14.00	21,000			
483	098414 Misc sound panels throughout	1	ls	75,000.00	75,000			
484	SUBTOTAL					943,551		
485								
486	C3020 FLOOR FINISHES							
487	096400 Wood laminate flooring to stage	2,216	sf	22.00	48,752			
488	096400 Oak T&G wood strip flooring to stairs at stage	48	lfr	25.00	1,200			
489	096466 Gymnasium wood flooring	12,033	sf	16.00	192,528			
490	096800 Carpet to floors	24,438	sf	5.00	122,190			
491	090005 VCT	65,463	sf	4.00	261,852			
492	090005 Static controlled resilient flooring	923	sf	9.00	8,307			
493	090005 Epoxy terrazzo	77,659	sf	30.00	2,329,770			
494	090005 Rubber	3,263	sf	11.00	35,893			
495	090009 Thin film epoxy floors	1,919	sf	12.00	23,028			
496	090002 Quarry tile to floors	3,230	sf	18.00	58,140			
497	090002 Quarry tile base	405	lf	14.00	5,670			
498	090002 Ceramic mosaic tiles to floors; toilets & showers	5,953	sf	19.00	113,107			
499	090002 Ceramic tile base	2,383	lf	12.00	28,596			
500	090005 Rubber cove base	35,180	lf	2.80	98,504			
501	090009 Sealed concrete floor at mech rooms	7,457	sf	1.50	11,186			
502	124813 Recessed entry mats	888	sf	50.00	44,400			
503	124813 Walk off mats	888	sf	15.00	13,320			
504	SUBTOTAL					3,396,443		
505								
506	C3030 CEILING FINISHES							
507	092900 GWB ceilings	8,529	sf	10.00	85,290			
508	092900 GWB soffits; horizontal	14,289	sf	12.00	171,468			
509	092900 GWB soffits; vertical	7,449	sf	14.00	104,286			
510	092900 GWB soffits; vertical @ Band/Chorus	920	sf	18.00	16,560			
511	092900 GWB soffits; vertical radius	703	sf	20.00	14,060			
512	098414 Acoustical clouds in Auditorium	2,188	sf	70.00	153,160			
513	090009 Paint exposed structure - cafeteria	1,637	sf	2.50	4,093			
514	090009 Paint exposed structure - gym, auditorium	17,652	sf	2.50	44,130			
515	090009 Paint to exposed @ classroom perimeter	19,152	sf	2.00	38,304			



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NEW MIDDLE SCHOOL

516	090009	Paint exposed structure	52,837	sf	1.50	79,256	
517	090009	Paint to gwb ceilings and soffits	31,890	sf	1.00	31,890	
518	062000	Exposed glue-lam - non structural	560	lf	80.00	44,800	
519	055000	Aluminum truss - non structural	225	lf	60.00	13,500	
520	090003	ACT 1 ceiling 2 x 4	47,764	sf	5.00	238,820	
521	090003	ACT 2 ceiling 2 x 2	14,077	sf	5.50	77,424	
522	090003	ACT 3 ceiling 2 x 2 3/4" maple wood veneer panels	9,556	sf	20.00	191,120	
523	090003	ACT 4 ceiling 8' x 3-3/4" x 3/4" thick wood veneer panels	12,250	sf	22.00	269,500	
524	090003	ACT 5 ceiling 2' x 3.75'- extruded polycarbonate	1,421	sf	10.00	14,210	
525	090003	ACT 8 ceiling 2x2 vinyl coated	2,037	sf	5.50	11,204	
526	090003	2' wood slats	4,363	sf	18.00	78,534	
527	090003	Sound blades to Rm.155	210	lf	60.00	12,600	
528	090003	Wood ceiling	575	sf	32.00	18,400	
529	090003	Wood clouds at corridors	3,280	sf	45.00	147,600	
530	090003	Cable hung acoustic panels to 155	260	sf	35.00	9,100	
531	064000	Millwork @ Band/Chorus	1	ls	15,000.00	15,000	
532		SUBTOTAL					1,884,309

TOTAL - INTERIOR FINISHES						\$6,224,303
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D10 CONVEYING SYSTEMS

D1010 ELEVATOR

540	142424	Passenger elevator 3, 2 stop, 1 opening; 4000 lbs; 150 fpm	1	ea	80,000.00	80,000	
541	142424	Passenger elevator 1, 4 stop, 1 opening; 3500 lbs; 150 fpm	1	ea	160,000.00	160,000	
542	142424	Passenger elevator 2, 7 stop, 2 opening; 4000 lbs; 150 fpm	1	ea	315,000.00	315,000	
543	055000	6 x 4 x 3/8 angle to elevator pit	30	lf	25.00	750	
544	055000	Pit ladders	1	ea	650.00	650	
545	055000	Sill angles	77	lf	25.00	1,925	
546		SUBTOTAL					558,325

TOTAL - CONVEYING SYSTEMS						\$558,325
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D20 PLUMBING

D20 PLUMBING, GENERALLY

554		<u>Equipment</u>					
555	220000	Gas fired hot water heater	2	ea	17,000.00	34,000	
556	220000	Water meter assembly	1	ea	4,500.00	4,500	
557	220000	Connection to gas meter	1	ea	1,050.00	1,050	
558	220000	Reduce pressure backflow preventer	4	ea	3,080.00	12,320	
559	220000	Expansion tank	1	ea	3,080.00	3,080	
560	220000	Hot water circulator pump assembly	2	ea	1,200.00	2,400	
561	220000	Emergency shower recirc water pump	2	ea	1,000.00	2,000	
562	220000	Mixing valve	1	ea	4,400.00	4,400	
563	220000	Roof drain	46	ea	755.00	34,730	
564	220000	Floor drain	26	ea	645.00	16,770	
565	220000	Wall hydrant	8	ea	250.00	2,000	
566	220000	Hose bibb	24	ea	200.00	4,800	
567	220000	Interior grease interceptor	1	ea	3,000.00	3,000	
568	220000	Emergency shower with mixing valve & drain	14	ea	3,500.00	49,000	
569	220000	Acid neutralization system	1	ls	35,000.00	35,000	
570	220000	Recycled storm water system	1	ls	125,000.00	NIC	
571	220000	Rough-in & connection to kitchen equipment	1	ls	30,000.00	30,000	



Design Development Estimate

GFA 231,589

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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NEW MIDDLE SCHOOL

572	220000	<u>Plumbing Fixtures</u>					
573	220000		85	ea	1,200.00	102,000	
574	220000		88	ea	900.00	79,200	
575	220000		2	ea	2,000.00	4,000	
576	220000		28	ea	1,500.00	42,000	
577	220000		5	ea	1,000.00	5,000	
578	220000		9	ea	950.00	8,550	
579	220000		14	ea	3,800.00	53,200	
580	220000		62	ea	875.00	54,250	
581	220000		6	ea	1,000.00	6,000	
582	220000		42	ea	900.00	37,800	
583	220000		12	ea	900.00	10,800	
584	220000		1	ls	20,000.00	20,000	
585	220000	<u>Domestic Water Piping</u>					
586	220000		14,000	lf	50.00	700,000	
587	220000		1	ls	175,000.00	175,000	
588	220000	<u>Non-Potable Water Piping</u>					
589	220000		1,200	lf	24.00	28,800	
590	220000		1	ls	7,200.00	7,200	
591	220000	<u>Emergency Shower Water Piping</u>					
592	220000		1,000	lf	24.00	24,000	
593	220000		1	ls	6,000.00	6,000	
594	220000	<u>Pipe insulation</u>					
595	220000		16,200	lf	9.00	145,800	
596	220000	<u>Sanitary Waste And Vent Piping</u>					
597	220000		11,000	lf	44.00	484,000	
598	220000	<u>Acid Neutralization Piping</u>					
599	220000		3,300	lf	24.00	79,200	
600	220000	<u>Storm Drainage, Hubless Cast Iron Piping</u>					
601	220000		4,400	lf	44.00	193,600	
602	220000	<u>Natural Gas Piping</u>					
603	220000		1,000	lf	85.00	85,000	
604	220000		1	ls	22,000.00	22,000	
605	220000	<u>Miscellaneous</u>					
606	220000		1	ls	55,000.00	55,000	
607	220000		1	ls	10,000.00	10,000	
608	220000		1	ls	10,000.00	10,000	
609	220000		1	ls	28,000.00	Waived	
610							
611							
612							
613							
614							
615							
616							
617							
618	230000		3	ea	70,000.00	210,000	
619	230000		3	ea	3,000.00	9,000	
620	230000		2	ea	1,500.00	3,000	
621	230000		1	ea	675.00	675	
622	230000		4	ea	750.00	3,000	
623	230000		28	ea	545.00	15,260	
624	230000		6	ea	500.00	3,000	
625	230000		142	lf	85.00	12,070	
626	230000		1,994	lf	130.00	259,220	
627	230000		1	ls	12,000.00	12,000	
628		<u>Cooling Equipment</u>					
629	230000		2	ea	207,600.00	415,200	
630	230000		36	ea	4,000.00	144,000	
631		<u>Pumps</u>					
632	230000		2	ea	17,550.00	35,100	

2,687,450

TOTAL - PLUMBING

\$2,687,450

D30 HVAC

D30 HVAC, GENERALLY

617		<u>Heating Equipment</u>					
618	230000		3	ea	70,000.00	210,000	
619	230000		3	ea	3,000.00	9,000	
620	230000		2	ea	1,500.00	3,000	
621	230000		1	ea	675.00	675	
622	230000		4	ea	750.00	3,000	
623	230000		28	ea	545.00	15,260	
624	230000		6	ea	500.00	3,000	
625	230000		142	lf	85.00	12,070	
626	230000		1,994	lf	130.00	259,220	
627	230000		1	ls	12,000.00	12,000	
628		<u>Cooling Equipment</u>					
629	230000		2	ea	207,600.00	415,200	
630	230000		36	ea	4,000.00	144,000	
631		<u>Pumps</u>					
632	230000		2	ea	17,550.00	35,100	



Beverly Public Schools
Middle School
Beverly, MA

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Design Development Estimate

GFA 231,589

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
NEW MIDDLE SCHOOL							
633	230000 Chilled water pump 700 GPM with VFD	2	ea	21,000.00	42,000		
634	230000 Boiler water pump 275 GPM	3	ea	6,875.00	20,625		
635	<u>Air distribution</u>						
636	<u>Air Handling Unit</u>						
637	230000 Vender quote for below RTU's	1	ls	1,136,375.00	1,136,375		
638	230000 Labor to install RTU's	1	ls	45,000.00	45,000		
639	230000 RTU-1 5500 CFM 100% O.A. HW & CHW coils	1	ea				
640	230000 RTU-2 2200 CFM 100% O.A. HW coil with ERW	1	ea				
641	230000 RTU-3 10000 CFM 100% O.A. HW coil	1	ea				
642	230000 RTU-4 13600 CFM 100% O.A. HW coil	1	ea				
643	230000 RTU-5 12880 CFM 100% O.A. HW & CHW coils with ERW	1	ea				
644	230000 RTU-6 10400 CFM 100% O.A. HW & CHW coils with ERW	1	ea				
645	230000 RTU-7 12010 CFM 100% O.A. HW & CHW coils with ERW	1	ea				
646	230000 RTU-8 12560 CFM 100% O.A. HW & CHW coils with ERW	1	ea				
647	230000 RTU-9 12600 CFM 100% O.A. HW & CHW coils	1	ea				
648	230000 RTU-10 11500 CFM 100% O.A. HW & CHW coils	1	ea				
649	230000 RTU-11 11185 CFM 100% O.A. HW & CHW coils with ERW	1	ea				
650	230000 RTU-12 10925 CFM 100% O.A. HW & CHW coils with ERW	1	ea				
651	230000 RTU-13 5500 CFM 100% O.A. HW & CHW coils	1	ea				
652	230000 RTU-14 6800 CFM 100% O.A. HW & CHW coils	1	ea				
653	230000 Fan coil unit	1	ea	1,200.00	1,200		
654	230000 MUA unit 6490 CFM gas fired (kitchen)	1	ea	20,000.00	20,000		
655	230000 Terminal box unit HW reheat	104	ea	1,200.00	124,800		
656	<u>Exhaust fan</u>						
657	230000 Exhaust fans	21	ea	3,000.00	63,000		
658	<u>Sheet metal & Accessories</u>						
659	230000 Galvanized ductwork with fittings & hangers	175,000	lbs	9.00	1,575,000		
660	230000 Duct insulation	105,000	sf	4.00	420,000		
661	230000 Breeching & flue	1	ls	50,000.00	50,000		
662	230000 Roof intake and relief vents	12	ea	1,500.00	18,000		
663	230000 Sound Attenuators	47	ea	2,000.00	94,000		
664	230000 Miscellaneous sheet metal accessories	231,589	sf	0.50	115,795		
665	<u>Piping</u>						
666	<u>Hot Water Piping</u>						
667	230000 Hot water piping with fittings & hangers	13,800	lf	50.00	690,000		
668	230000 Valves & accessories	1	ls	170,000.00	170,000		
669	<u>Chilled Water Piping</u>						
670	230000 Chilled water piping with fittings & hangers	2,000	lf	50.00	100,000		
671	230000 Valves & accessories	1	ls	25,000.00	25,000		
672	<u>Refrigerant Piping</u>						
673	230000 Refrigerant piping with fittings & hangers	2,000	lf	16.00	32,000		
674	230000 Valves & accessories	1	ls	8,000.00	8,000		
675	<u>Condensate Drain Piping</u>						
676	230000 Condensate drain piping with fittings & hangers	1,000	lf	20.00	20,000		
677	<u>Piping Insulation</u>						
678	230000 Piping insulation	18,800	lf	9.00	169,200		
679	<u>Controls (DDC)</u>						
680	230000 Automatic temperature controls	231,589	sf	4.00	926,356		
681	<u>Balancing</u>						
682	230000 System testing & balancing	231,589	sf	0.65	150,533		
683	<u>Miscellaneous</u>						
684	230000 Coordination & management	1	ls	75,000.00	75,000		



Design Development Estimate

GFA 231,589

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
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NEW MIDDLE SCHOOL

685	230000	Commissioning support	1	ls	40,000.00	40,000	
686	230000	Coring, sleeves & fire stopping	1	ls	15,000.00	15,000	
687	230000	Equipment start-up and inspection	1	ls	2,000.00	2,000	
688	230000	Rigging & equipment rental	1	ls	20,000.00	20,000	
689	230000	Vibration & seismic restraints	1	ls	18,000.00	18,000	
690		SUBTOTAL					7,308,409

TOTAL - HVAC						\$7,308,409
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D40 FIRE PROTECTION

D40 FIRE PROTECTION, GENERALLY

698	210000	Double check valve assembly	1	ea	8,500.00	8,500	
699	210000	Wet alarm check valve assembly	1	ea	4,000.00	4,000	
700	210000	Siamese connection	2	ea	1,500.00	3,000	
701	210000	Zone control valve stations	4	ea	2,000.00	8,000	
702	210000	Fire hose valve with cabinet	17	ea	1,000.00	17,000	
703	210000	Sprinkler head	2,115	ea	75.00	158,625	
704	210000	Branch pipe with fittings & hangers	25,380	lf	16.00	406,080	
705	210000	Main pipe with fittings & hangers	8,460	lf	26.00	219,960	
706	210000	Standpipe with fittings & hangers	2,200	lf	30.00	66,000	
707		<u>Miscellaneous</u>					
708	210000	Coordination & management	1	ls	16,000.00	16,000	
709	210000	Hydraulic calculations	1	ls	4,000.00	4,000	
710	210000	Coring, sleeves & fire stopping	1	ls	10,000.00	10,000	
711	210000	Fees & permits	1	ls	8,500.00	Waived	
712		SUBTOTAL					921,165

TOTAL - FIRE PROTECTION						\$921,165
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D50 ELECTRICAL

D5010 SERVICE & DISTRIBUTION

Gear & Distribution

Normal Power

722	260000	4000A 480/277V switchboard	1	ea	125,000.00	125,000	
723	260000	Meter	1	ea	300.00	300	
724	260000	400A 480/277V panelboard	7	ea	4,200.00	29,400	
725	260000	225A 480/277V panelboard	1	ea	2,100.00	2,100	
726	260000	150KVA dry type transformer	3	ea	11,000.00	33,000	
727	260000	112.5KVA dry type transformer rated	1	ea	20,600.00	20,600	
728	260000	75KVA dry type transformer	6	ea	7,450.00	44,700	
729	260000	75KVA dry type transformer k-13 rated	6	ea	11,200.00	67,200	
730	260000	600A 120/208V double tub panelboard	3	ea	12,500.00	37,500	
731	260000	300A 120/208V triple tub panelboard	6	ea	7,500.00	45,000	
732	260000	300A 120/208V double tub panelboard	6	ea	5,000.00	30,000	
733	260000	208/120V panelboard, unsized	1	ea	3,000.00	3,000	
734	260000	Lighting control panel	11	ea	3,200.00	35,200	
735	260000	Zero sequence harmonic filter	10	ea	1,000.00	10,000	
736	260000	500A disconnect	2	ea	5,000.00	10,000	
737	260000	400A disconnect	1	ea	3,000.00	3,000	
738	260000	300A disconnect	2	ea	3,000.00	6,000	
739	260000	200A disconnect	1	ea	1,550.00	1,550	
740	260000	600A feed	100	lf	155.00	15,500	
741	260000	500A feed	60	lf	123.00	7,380	
742	260000	400A feed	1,800	lf	108.00	194,400	
743	260000	300A feed	370	lf	75.00	27,750	
744	260000	225A feed	550	lf	50.00	27,500	



Beverly Public Schools
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Beverly, MA

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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
NEW MIDDLE SCHOOL							
745	260000 150A feed	150	lf	33.00	4,950		
746	260000 100A feed	3,300	lf	24.00	79,200		
747	260000 2-250A feed in 3-1/2" conduit	200	lf	110.00	22,000		
748	<u>Emergency power</u>						
749	260000 500kW diesel fueled WP enclosed generator	1	ls	145,000.00	145,000		
750	260000 800A ATS	1	ea	14,100.00	14,100		
751	260000 150A ATS	1	ea	4,525.00	4,525		
752	260000 1200A 480/277V distribution panelboard	1	ea	20,000.00	20,000		
753	260000 400A distribution panelboard	1	ea	5,500.00	5,500		
754	260000 400A 480/277V panelboard	2	ea	4,200.00	8,400		
755	260000 100A 480/277V panelboard	3	ea	1,400.00	4,200		
756	260000 150KVA dry type K-13 transformer	2	ea	24,850.00	49,700		
757	260000 75KVA dry type transformer	2	ea	7,450.00	14,900		
758	260000 75KVA dry type transformer k-13 rated	1	ea	11,200.00	11,200		
759	260000 30KVA dry type transformer	1	ea	4,600.00	4,600		
760	260000 600A 120/208V triple tub panelboard	1	ea	18,000.00	18,000		
761	260000 600A 120/208V double tub panelboard	1	ea	12,500.00	12,500		
762	260000 300A 120/208V double tub panelboard	3	ea	5,000.00	15,000		
763	260000 300A 120/208V panelboard	1	ea	2,500.00	2,500		
764	260000 100A 120/208V panelboard	1	ea	1,400.00	1,400		
765	260000 400A disconnect	1	ea	3,000.00	3,000		
766	260000 225A disconnect	2	ea	1,550.00	3,100		
767	260000 200A disconnect	3	ea	1,550.00	4,650		
768	Feeder						
769	260000 800A feed	100	lf	214.00	21,400		
770	260000 600A feed	60	lf	155.00	9,300		
771	260000 400A feed	420	lf	108.00	45,360		
772	260000 300A feed	250	lf	75.00	18,750		
773	260000 225A feed	80	lf	50.00	4,000		
774	260000 200A feed	150	lf	44.00	6,600		
775	260000 100A feed	1,000	lf	24.00	24,000		
776	260000 60A feed	50	lf	17.00	850		
777	260000 2-300A feed in 3-1/2" conduit	60	lf	150.00	9,000		
778	260000 2-250A feed in 3-1/2" conduit	80	lf	110.00	8,800		
779	<u>UPS System</u>						
780	260000 Allowance for UPS system	1	ea	30,000.00	30,000		
781	<u>Equipment Wiring</u>						
782	260000 Allowance for misc mechanical equipment feeds & connections	231,589	sf	1.40	324,225		
783	Allowance for 3-3" empty conduits for PV system						
784	260000 AC feed, connection, & safety switch	2	ea	1,500.00	3,000		
785	260000 Boiler feed and connections	3	ea	1,200.00	3,600		
786	260000 BP 20A feed, connection, & safety switch	3	ea	850.00	2,550		
787	260000 Control panel 20A feed & connection	2	ea	750.00	1,500		
788	260000 CUH 20A feed & connection	4	ea	960.00	3,840		
789	260000 DDC controls feed and connection only	1	ea	750.00	750		
790	260000 DF 20A feed, connection, & TS	10	ea	1,035.00	10,350		
791	260000 EF feed, connection, & safety switch	21	ea	1,000.00	21,000		
792	260000 Elevator cab power feed and connection	3	ea	1,200.00	3,600		
793	260000 Elevator feed, connection & safety switch, allow 70A	3	ea	3,200.00	9,600		
794	260000 FCU 20A feed & connection	1	ea	950.00	950		
795	260000 HUH 20A feed & connection	1	ea	950.00	950		
796	260000 Kiln feed and connection	2	ea	1,500.00	3,000		
797	260000 Kitchen equipment feed and connections	1	ls	25,000.00	25,000		
798	260000 MAU 20A feed and connection	1	ea	1,200.00	1,200		
799	260000 Overhead door feed, connection, & NFSS	3	ea	1,200.00	3,600		
800	260000 Pump 30A feed, connection & connection to VFD	2	ea	1,200.00	2,400		
801	260000 Pump 50A feed, connection & connection to VFD	2	ea	1,500.00	3,000		



Beverly Public Schools
Middle School
Beverly, MA

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Design Development Estimate

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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
NEW MIDDLE SCHOOL							
802	260000 RTU 30A feed, connection & 30A NFSS WP	4	ea	1,400.00	5,600		
803	260000 RTU 50A feed, connection & 60A NFSS WP	10	ea	1,920.00	19,200		
804	260000 RTU feed, connection & NFSS WP	2	ea	1,920.00	3,840		
805	260000 Tech shop equipment feed, connection, & NFSS	4	ea	1,600.00	6,400		
806	260000 SUBTOTAL					1,866,720	
807							
808	D5020 LIGHTING & POWER						
809	<u>Lighting & Branch Power</u>						
810	260000 Type A	783	ea	750.00	587,250		
811	260000 Type A1	85	ea	450.00	38,250		
812	260000 Type B	615	ea	280.00	172,200		
813	260000 Type C	18	ea	600.00	10,800		
814	260000 Type C1	2	ea	300.00	600		
815	260000 Type D	47	ea	300.00	14,100		
816	260000 Type F	116	ea	230.00	26,680		
817	260000 Type G	14	ea	500.00	7,000		
818	260000 Type H	72	ea	600.00	43,200		
819	260000 Type H1	100	ea	350.00	35,000		
820	260000 Type J	297	ea	400.00	118,800		
821	260000 Type K	63	ea	1,000.00	63,000		
822	260000 Type L	152	ea	300.00	45,600		
823	260000 Type M	60	ea	750.00	45,000		
824	260000 Type N, not scheduled	1	ea	500.00	500		
825	260000 Type O, not scheduled	6	ea	500.00	3,000		
826	260000 Type P	15	ea	800.00	12,000		
827	260000 Type Q	29	ea	280.00	8,120		
828	260000 Type R	35	ea	400.00	14,000		
829	260000 Type S	48	lf	100.00	4,800		
830	260000 Type T	2	ea	250.00	500		
831	260000 Type U	27	ea	220.00	5,940		
832	260000 Type UC	8	ea	250.00	2,000		
833	260000 Exit sign	135	ea	180.00	24,300		
834	<u>Lighting Control</u>						
835	260000 Allowance for lighting control system	231,589	sf	0.75	173,692		
836	260000 Occupancy sensor	337	ea	125.00	42,125		
837	260000 Daylight sensor	105	ea	125.00	13,125		
838	260000 Single pole LV switch	57	ea	25.75	1,468		
839	260000 Single pole LV switch WP	2	ea	35.00	70		
840	260000 Entry station	9	ea	150.00	1,350		
841	260000 Single pole LV dimmer switch	648	ea	65.00	42,120		
842	<u>Branch devices</u>						
843	260000 Double duplex receptacle	485	ea	40.00	19,400		
844	260000 Double duplex receptacle in floor box	2	ea	40.00	80		
845	260000 Duplex receptacle	800	ea	21.00	16,800		
846	260000 GFI duplex receptacle	178	ea	36.00	6,408		
847	260000 Special purpose outlet	125	ea	50.00	6,250		
848	260000 Branch device allowance	231,589	sf	0.30	69,477		
849	260000 Connection to EWC	15	ea	75.00	1,125		
850	260000 Connection to disposal & switch	1	ea	75.00	75		
851	260000 Connection to door push plate	4	ea	75.00	300		
852	260000 Connection to door push button actuator	8	ea	75.00	600		
853	260000 Connection to door power	7	ea	75.00	525		
854	260000 Connection to hand dryer	2	ea	75.00	150		
855	260000 Connection to flush valve	68	ea	75.00	5,100		
856	260000 Connection to cord reel	17	ea	75.00	1,275		
857	260000 Connection to dishwasher	1	ea	75.00	75		
858	260000 Connection to RTU light	16	ea	75.00	1,200		
859	260000 Emergency power off button	2	ea	150.00	300		
860	260000 Floor box	2	ea	250.00	500		
861	260000 WP device plate	19	ea	11.00	209		
862	260000 Device plate	2,350	ea	4.20	9,870		
863	260000 Device box	5,600	ea	21.00	117,600		



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CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
NEW MIDDLE SCHOOL							
864	260000 3/4" EMT	42,000	lf	6.50	273,000		
865	260000 3/4" PVC	200	lf	7.00	1,400		
866	260000 #12 THHN	190,000	lf	0.75	142,500		
867	260000 12-2 MC cable	75,000	lf	3.80	285,000		
868	260000 12-3 MC cable	25,000	lf	4.50	112,500		
869	260000 Allow for scope not yet defined	231,509	sf	0.80	185,207		
870	260000 SUBTOTAL					2,813,516	
871							
872	D5030 COMMUNICATION & SECURITY SYSTEMS						
873	<u>Voice & Data</u>						
874	260000 Network switches assumes 2,500 ports	1	ls	25,000.00	25,000		
875	260000 PBX by Contractor	1	ls	350,000.00	350,000		
876	260000 MDF fit-out	1	ls	6,500.00	6,500		
877	260000 IDF fit-out	8	ea	3,000.00	24,000		
878	260000 A1 3 port device	30	ea	60.00	1,800		
879	260000 A2 4 port device	14	ea	80.00	1,120		
880	260000 A3 4 port device	2	ea	80.00	160		
881	260000 D1 device	32	ea	20.00	640		
882	260000 D2 device	204	ea	40.00	8,160		
883	260000 D4 device	75	ea	80.00	6,000		
884	260000 D4 device in floor box	6	ea	80.00	480		
885	260000 PH device	51	ea	20.00	1,020		
886	260000 TI 8 port device	107	ea	160.00	17,120		
887	260000 V 2 port device	107	ea	40.00	4,280		
888	260000 V1 device	1	ea	20.00	20		
889	260000 V2 12 port device	1	ea	240.00	240		
890	260000 WAP4 4 port device	166	ea	250.00	41,500		
891	260000 Wireguard	4	ea	65.00	260		
892	260000 Rough in						
893	260000 1 gang box with 1" conduit stub	525	ea	105.00	55,125		
894	260000 1 gang box with 1/2" conduit stub	51	ea	80.00	4,080		
895	260000 2 gang box with 2-1" conduit stubs	214	ea	200.00	42,800		
896	260000 2 gang box with 1" & 2" conduit stubs	107	ea	260.00	27,820		
897	260000 2 gang box with 1" & 1-1/2" conduit stubs	107	ea	240.00	25,680		
898	260000 Telecom allowance	231,589	sf	2.00	463,178		
899	<u>Fire Alarm</u>						
900	260000 Control panel	1	ea	25,000.00	25,000		
901	260000 Annunciator	5	ea	2,500.00	12,500		
902	260000 Master box	1	ea	3,500.00	3,500		
903	260000 Knox box	1	ea	315.00	315		
904	260000 Bell	1	ea	260.00	260		
905	260000 Exterior beacon	1	ea	260.00	260		
906	260000 Smoke detector	196	ea	130.00	25,480		
907	260000 Manual pull station	36	ea	130.00	4,680		
908	260000 Heat detector	1	ea	130.00	130		
909	260000 Duct smoke detector	15	ea	422.00	6,330		
910	260000 Audio/visual device	276	ea	155.00	42,780		
911	260000 Visual device	85	ea	145.00	12,325		
912	260000 Magnetic door holder	42	ea	195.00	8,190		
913	260000 Elevator recall connection	6	ea	120.00	720		
914	260000 Smoke damper connection	2	ea	150.00	300		
915	260000 Remote alarm indicator	20	ea	200.00	4,000		
916	260000 FP equipment connection, allow	16	ea	150.00	2,400		
917	260000 Modules	75	ea	150.00	11,250		
918	260000 Device box	800	ea	21.00	16,800		
919	260000 3/4" EMT	6,000	lf	6.50	39,000		
920	260000 #14 THHN	18,000	lf	0.60	10,800		
921	260000 FA MC cable	22,400	lf	4.65	104,160		
922	260000 Programming and testing	1	ls	14,500.00	14,500		
923	260000 Fire alarm allowance	231,589	sf	0.40	92,636		
924	<u>Bi-Directional Amplifier System</u>						



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NEW MIDDLE SCHOOL							
925	260000 Bi-Directional Amplifier System	1	ls	110,000.00	110,000		
926	260000 <u>Master Clock System</u>						
927	260000 Head end	1	ls	20,000.00	20,000		
928	260000 Clock	183	ea	120.00	21,960		
929	260000 Clock 16"	7	ea	150.00	1,050		
930	260000 Speaker, ceiling mount	528	ea	120.00	63,360		
931	260000 Speaker, Exterior wall mount	22	ea	250.00	5,500		
932	260000 Volume control	2	ea	120.00	240		
933	260000 Device box with 1/2" conduit stubbed	260	ea	80.00	20,800		
934	260000 Speaker box	500	ea	65.00	32,500		
935	260000 Wireguard	4	ea	75.00	300		
936	260000 Low voltage cabling	44,000	lf	1.25	55,000		
937	260000 <u>Audio Visual Systems</u>						
938	260000 Assisted Listening System - Gymnasium	2	ea	5,000.00	10,000		
939	260000 Assisted Listening System - Cafeteria	2	ls	5,000.00	10,000		
940	260000 Assisted Listening System - Auditorium	1	ls	5,000.00	5,000		
941	260000 Classroom interactive AV equipment & installation including white board, short throw projector and assisted listening system	1	ls	600,000.00	600,000		
942	260000 Allowance for Auditorium AV system	1	ls	125,000.00	125,000		
943	260000 Auditorium AV rough-in and power	1	ls	50,000.00	50,000		
944	260000 Gymnasium sound system	2	ea	20,000.00	40,000		
945	260000 Cafeteria sound system	2	ea	20,000.00	40,000		
946	260000 Microphone 1 port	20	ea	20.00	400		
947	260000 RH	5	ea	20.00	100		
948	260000 Remote sound system speaker, 1 port	412	ea	20.00	8,240		
949	260000 Remote sound system subwoofer, 1 port	5	ea	20.00	100		
950	260000 Device box, allow	442	ea	21.00	9,282		
951	260000 1/2" conduit	1,000	lf	5.80	5,800		
952	260000 3/4" conduit	20,000	lf	6.50	130,000		
953	260000 1" conduit	500	lf	8.75	4,375		
954	260000 <u>Theater Systems</u>						
955	260000 Auditorium rigging equipment with installation & Studio pipe grid, Barbizon allowance	1	ls	276,000		See Equipment	
956	260000 Theatrical dimming system equipment, Barbizon allowance	1	ls	196,350.00		See Equipment	
957	260000 Auditorium performance lighting rough-in, installation and power	1	ls	85,000.00	85,000		
958	260000 Dimmer rack installation	2	ea	2,000.00	4,000		
959	260000 Rack power, see feeders above						
960	260000 <u>Gymnasium Equipment</u>						
961	260000 Scoreboard with controls and shot clock & wireless controller	2	ea	15,000.00	30,000		
962	260000 Motorized back stop with key switch	12	ea	1,500.00	18,000		
963	260000 Motorized bleachers with key switch	2	ea	1,500.00	3,000		
964	260000 Motorized divider curtain with key switch	2	ea	1,500.00	3,000		
965	260000 <u>Security System</u>						
966	260000 Head end	1	ls	150,000.00	150,000		
967	260000 Duress Button	3	ea	120.00	360		
968	260000 Card reader	3	ea	300.00	900		
969	260000 CCTV camera	137	ea	85.00	116,450		
970	260000 CCTV camera WP	41	ea	1,100.00	45,100		
971	260000 Door contact	63	ea	120.00	7,560		
972	260000 Power supply	7	ea	250.00	1,750		
973	260000 Electric strike	1	ea	120.00	120		
974	260000 Keypad	1	ea	350.00	350		
975	260000 Overhead door contact	3	ea	120.00	360		
976	260000 Video entry station	1	ea	750.00	750		
977	260000 Video control station	2	ea	2,500.00	5,000		
978	260000 Motion detector	104	ea	120.00	12,480		
979	260000 Device box with conduit stubbed	305	ea	90.00	27,450		
980	260000 Door junction box	50	ea	150.00	7,500		



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NEW MIDDLE SCHOOL

981	260000	Wireguard	3	ea	65.00	195	
982	260000	Low voltage cabling	25,000	lf	1.20	30,000	
983		SUBTOTAL					3,463,631
984							
985		D5040 OTHER ELECTRICAL SYSTEMS					
986		<u>Site Electrical & Communications</u>					
987		<u>Utility</u>					
988	260000	Pole riser	1	ea	1,200.00	1,200	
989	260000	Utility co. charges (allow)	1	ls	30,000.00	30,000	
990	260000	Pad mount transformer	1	ea			By Utility co.
991	260000	Transformer pad	1	ea	2,500.00	2,500	
992	260000	Primary ductbank 2-4"PVC conduits concrete encased	710	lf	65.00	46,150	
993	260000	4000A secondary ductbank CC 10-4" concrete encased	120	lf	880.00	105,600	
994	260000	Power ductbank EE 2-4" concrete encased	440	lf	115.00	50,600	
995	260000	Generator ductbank DD 3-4", 100A feed, 800A feed, & circuitry	120	lf	215.00	25,800	
996	260000						
997		<u>Communication</u>					
998	260000	Communication ductbank BB 3-4" conduits concrete encased	520	lf	120.00	62,400	
999	260000	Communication ductbank FF 6-4" conduits concrete encased	530	lf	178.00	94,340	
1000	260000	Communication ductbank GG 2-4" conduits concrete encased	360	lf	60.00	21,600	
1001		<u>Site Lighting</u>					
1002	260000	SL1	8	ea	3,200.00	25,600	
1003	260000	SL2	1	ea	3,200.00	3,200	
1004	260000	SL3	8	ea	3,200.00	25,600	
1005	260000	SL4	4	ea	3,900.00	15,600	
1006	260000	SL5	12	ea	3,200.00	38,400	
1007	260000	SL6	34	ea	600.00	20,400	
1008	260000	SL7	16	ea	1,700.00	27,200	
1009	260000	Pole base	49	ea	350.00	17,150	
1010	260000	Circuitry	6,000	lf	16.00	96,000	
1011	260000	Vehicle charging station (VCS)	6	ea	5,000.00	30,000	
1012	260000	Power to VCS	1,600	lf	20.00	32,000	
1013		<u>Site Security</u>					
1014	260000	CCTV camera WP, assumes on lighting pole	7	ea	1,500.00	10,500	
1015	260000	Circuitry, allow	1,500	lf	12.00	18,000	
1016		<u>Miscellaneous</u>					
1017	260000	Grounding & bonding	1	ls	30,000.00	30,000	
1018	260000	Seismic restraints	1	ls	10,000.00	10,000	
1019	260000	Lightning protection system, allow	1	sf	90,000.00	90,000	
1020	260000	Temp power and lights	1	ls	125,000.00	125,000	
1021	260000	Permits and fees	1	ls		Waived	
1022		SUBTOTAL					1,054,840
1023							
1024		TOTAL - ELECTRICAL					\$9,198,707
1025							
1026							
1027		E10 EQUIPMENT					
1028							
1029		E10 EQUIPMENT, GENERALLY					
1030	114000	Food service equipment	1	ls	500,000.00	500,000	
1031	116100	Theater & stage equipment including stage curtains & rigging	1	ls	150,000.00	150,000	
1032	116100	Theatrical lighting	1	ls	150,000.00	150,000	
1033	116100	Auditorium AV systems	1	ls	125,000.00	w/ electrical	
1034	102123	Cubicle curtain & track	6	loc	500.00	3,000	
1035	115213	Projection screen; stage proscenium	1	ea	9,000.00	9,000	



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NEW MIDDLE SCHOOL

1036	115213	Projection screen; cafeteria	1	ea	2,200.00	2,200	
1037	115213	TV Display	12	ea	1,200.00	14,400	
1038	116653	Gym dividing curtain	5,211	sf	16.00	83,376	
1039	116623	Wall pads to gym	884	sf	9.63	8,513	
1040	116623	Fold up basketball stops, electric	12	ea	7,800.00	93,600	
1041	126613	Telescoping bleachers; fixed	200	seat	120.00	24,000	
1042	116623	Folding mats	1	ls	5,000.00	5,000	
1043	116623	Volley ball standards	1	ls	1,500.00	1,500	
1044	115313	Kiln	2	ea	3,000.00	F,F&E	
1045	115313	Science classrooms equipment; fume hood allowance	2	ea	8,200.00	NIC	
1046	115300	Science classrooms equipment; other equipment	1	ls	100,000.00	NIC	
1047	090003	Pegboard	100	sf	22.00	2,200	
1048		<u>Appliances</u>					
1049	116653	Refrigerator	5	ea	1,500.00	7,500	
1050	116653	Under counter refrigerator	13	ea	750.00	9,750	
1051	116653	Washing machine	2	ea	1,100.00	2,200	
1052	116653	Dryer	2	ea	1,200.00	2,400	
1053	116653	Wall oven - built in at attain	1	ea	1,300.00	1,300	
1054	116653	Range at attain	1	ea	1,500.00	1,500	
1055		SUBTOTAL				1,071,439	
1056							
1057		TOTAL - EQUIPMENT					\$1,071,439
1058							
1059							
1060		E20 FURNISHINGS					
1061							
1062		E2010 FIXED FURNISHINGS					
1063	124813	Recessed entry mats	888	sf	50.00	44,400	
1064	124813	Walk off mats	888	sf	15.00	13,320	
1065	126100	Auditorium seating	511	seat	280.00	143,080	
1066	126100	Folding bleacher auditorium seating	171	seat	400.00	68,400	
1067	064000	Display case , 10'-0" X 7'-0" , 2/A10.25	1	ea	14,000.00	14,000	
1068	064000	Display case with glass doors , 6'-0" X 7'-0" , 8/a9.51	5	ea	8,400.00	42,000	
1069	062000	Window sill	1,869	lf	30.00	56,070	
1070	123000	Wall hung work counter	82	lf	113.00	9,266	
1071	123000	Wall cabinets	173	lf	143.00	24,739	
1072	123000	Open wall cabinets	63	lf	113.00	7,119	
1073	123000	Base cabinets & counters	200	lf	315.00	63,000	
1074	123000	Base open shelving and counters	5	lf	285.00	1,425	
1075	123000	Wood cap on low walls	161	lf	45.00	7,245	
1076	123000	Classroom Casework and specialties	44	rms			
1077	123000	Art Classrooms/Lab 5-6					
1078	123000	base cabinets, 36" w/ ss countertop	37	lf	308.00	11,396	
1079	123000	wall cabinets, 30" high	77	lf	143.00	11,011	
1080	123000	portfolio storage units	2	ea	1,200.00	2,400	
1081	123000	tall storage, 36"	6	loc	900.00	5,400	
1082	123000	Art Classrooms/Lab 7-8					
1083	123000	base cabinets, 36" w/ ss countertop	49	lf	308.00	15,092	
1084	123000	wall cabinets, 30" high	76	lf	143.00	10,868	
1085	123000	portfolio storage units	2	ea	1,200.00	2,400	
1086	123000	tall storage, 36"	4	loc	900.00	3,600	
1087	123000	Academic team room					
1088	123000	base cabinets w/ plam countertop	390	lf	240.00	93,600	
1089	123000	open shelving above markerboards	559	lf	75.00	41,925	
1090	123000	wall cabinets	78	lf	143.00	11,154	
1091	123000	tall storage, 48"	13	ea	1,200.00	15,600	
1092	123000	Typical Classroom	44	rms			
1093	123000	base cabinets w/ plam countertop	580	lf	240.00	139,200	
1094	123000	wall cabinets, 2' high	264	lf	113.00	29,832	
1095	123000	wall cabinets, 18" high	484	lf	101.00	48,884	
1096	123000	open wall cabinets, 2' high	352	lf	90.00	31,680	
1097	123000	small storage cubbies beneath window	352	lf	150.00	52,800	



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NEW MIDDLE SCHOOL							
1098	123000	264	lf	225.00	59,400		
1099	123000	256	lf	135.00	34,560		
1100	123000	44	loc	675.00	29,700		
1101	123000	44	loc	900.00	39,600		
1102	123000	12	loc	1,200.00	14,400		
1103	123000	44	loc	113.00	4,972		
1104	123000	6	rms				
MS Science Classroom 5-6							
1105	123000	234	lf	315.00	73,710		
1106	123000	66	lf	143.00	9,438		
1107	123000	54	lf	113.00	6,102		
1108	123000	66	lf	101.00	6,666		
1109	123000	48	lf	90.00	4,320		
1110	123000	48	lf	263.00	12,624		
1111	123000	36	lf	225.00	8,100		
1112	123000	6	loc	900.00	5,400		
1113	123000	6	rms				
MS Science Classroom 7-8							
1114	123000	234	lf	315.00	73,710		
1115	123000	66	lf	143.00	9,438		
1116	123000	54	lf	113.00	6,102		
1117	123000	66	lf	101.00	6,666		
1118	123000	48	lf	90.00	4,320		
1119	123000	48	lf	263.00	12,624		
1120	123000	36	lf	225.00	8,100		
1121	123000	12	rms				
MS Science Classroom prep							
1122	123000	192	lf	315.00	60,480		
1123	123000	192	lf	143.00	27,456		
1124	123000						
Teacher collaboration and staff lunch							
1125	123000	32	lf	113.00	3,616		
1126	123000	56	lf	263.00	14,728		
1127	123000	72	lf	143.00	10,296		
1128	123000	32	lf	101.00	3,232		
1129	123000	4	loc	600.00	2,400		
1130	123000	4	loc	900.00	3,600		
1131	123000	8	loc	1,125.00	9,000		
1132	123000	60	lf	90.00	5,400		
1133	123000						
Teacher mail & time room							
1134	123000	16	lf	143.00	2,288		
1135	123000	4	lf	315.00	1,260		
1136	064000	156	ope	60.00	9,360		
1137	123000		rms				
Multimedia and video application							
1138	123000	21	lf	113.00	2,373		
1139	123000	1	loc	900.00	900		
1140	123000	2	loc	1,200.00	2,400		
1141	123000	8	lf	143.00	1,144		
1142	123000		rms				
Technology applications and production lab							
1143	123000	14	lf	113.00	1,582		
1144	123000	1	loc	1,500.00	1,500		
1145	123000	11	lf	143.00	1,573		
1146	123000	3	lf	315.00	945		
1147	123000						
Guidance/Nurse waiting							
1148	064000	12	lf	225.00	2,700		
1149	123000	10	lf	263.00	2,630		
1150	123000	10	lf	143.00	1,430		
1151	123000						
Nurse/Exam/Resting							
1152	123000	36	lf	263.00	9,468		
1153	123000	35	lf	143.00	5,005		
1154	123000	1	loc	450.00	450		
1155	123000	4	loc	900.00	3,600		
1156	123000	3	ea	1,050.00	3,150		
1157	123000						
Library workroom							
1158	123000	11	lf	263.00	2,893		
1159	123000	37	lf	113.00	4,181		
1160	123000	18	lf	135.00	2,430		



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NEW MIDDLE SCHOOL							
1161	123000 tall storage, 36"	1	loc	900.00	900		
1162	123000 Editing/Small group						
1163	123000 wall hung work counter	33	lf	113.00	3,729		
1164	123000 open wall cabinets	20	lf	90.00	1,800		
1165	123000 SBI ELA						
1166	123000 Tall storage with drawers at bottom, 36", 13/A9.93	1	loc	1,050.00	1,050		
1167	123000 Open cubby upper shelving	4	lf	225.00	900		
1168	123000 Open cubby upper shelving, 12", 13/A9.93	3	lf	300.00	900		
1169	123000 SBI reading						
1170	123000 base cabinets w/ plam countertop	4	lf	263.00	1,052		
1171	123000 open shelving at window	10	lf	135.00	1,350		
1172	123000 Tall storage with drawers at bottom, 36", 13/A9.93	1	loc	1,050.00	1,050		
1173	123000 Tall storage, 36"	1	loc	900.00	900		
1174	123000 SBI Math						
1175	123000 base cabinets w/ plam countertop	4	lf	263.00	1,052		
1176	123000 open shelving at window	10	lf	135.00	1,350		
1177	123000 Tall storage with drawers at bottom, 36", 13/A9.93	1	loc	1,050.00	1,050		
1178	123000 Tall storage, 36"	1	loc	900.00	900		
1179	123000 SSP						
1180	123000 base cabinets w/ plam countertop	4	lf	263.00	1,052		
1181	123000 open shelving at window	10	lf	135.00	1,350		
1182	123000 Tall storage with drawers at bottom, 36", 13/A9.93	1	loc	1,050.00	1,050		
1183	123000 Small group reading room						
1184	123000 open shelving	121	lf	113.00	13,673		
1185	123000 Custodian's workshop						
1186	123000 tool storage, 36"	2	loc	900.00	1,800		
1187	123000 work bench, 36" deep	20	lf	188.00	3,760		
1188	123000 Set design and construction application lab						
1189	123000 open faced shelving cabinet, 27", 3/A10.52	3	loc	900.00	2,700		
1190	123000 tall storage, 48"	2	loc	1,050.00	2,100		
1191	123000 Band/Choral						
1192	123000 Base cabinets and counters	6	lf	315.00	1,890		
1193	123000 tall storage, 18"	1	loc	450.00	450		
1194	123000 tall storage, 48"	2	loc	1,200.00	2,400		
1195	123000 Auditorium						
1196	123000 Base cabinets and counters	6	lf	315.00	1,890		
1197	123000 tall storage, 18"	1	loc	450.00	450		
1198	123000 tall storage, 48"	2	loc	1,200.00	2,400		
1199	123000 Conference room						
1200	123000 Base cabinets and counters	5	lf	315.00	1,575		
1201	123000 wall cabinets	5	lf	143.00	715		
1202	123000 tall storage, 36"	2	loc	900.00	1,800		
1203	123000 Attain (Autism)						
1204	123000 Base cabinets and counters	36	lf	315.00	11,340		
1205	123000 wall cabinets	24	lf	143.00	3,432		
1206	123000 tall storage, 30"	1	loc	750.00	750		
1207	123000 tall storage, 36"	2	loc	900.00	1,800		
1208	123000 Learning center 5/6 - 7/8						
1209	123000 Base open shelving and counters	30	lf	285.00	8,550		
1210	123000 tall storage, 36"	2	loc	900.00	1,800		
1211	123000 Therapeutic learning 5/6 grades						
1212	123000 Base open shelving and counters	30	lf	300.00	9,000		
1213	123000 tall storage, 36"	2	loc	900.00	1,800		
1214	123000 Language based - 5-8						
1215	123000 base cabinets w/ plam countertop	4	lf	263.00	1,052		
1216	123000 open shelving at window	10	lf	135.00	1,350		
1217	123000 Tall storage with drawers at bottom, 36", 13/A9.93	1	loc	1,050.00	1,050		
1218	123000 Tall storage, 36"	1	loc	900.00	900		
1219	123000 ELL - English language learners						
1220	123000 wall hung work counter	24	lf	113.00	2,712		
1221	123000 base open shelving and counters	32	lf	285.00	9,120		
1222	123000 Resource room						
1223	123000 base cabinets w/ plam countertop	4	lf	263.00	1,052		



Design Development Estimate

GFA 231,589

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	EST'D COST	SUB TOTAL	TOTAL COST
NEW MIDDLE SCHOOL							
1224	123000						
	open shelving at window	10	lf	135.00	1,350		
1225	123000						
	Tall storage with drawers at bottom, 36" , 13/A9.93	1	loc	1,050.00	1,050		
1226	123000						
	Tall storage, 36"	1	loc	900.00	900		
1227	123000						
	Self contained sped						
1228	123000						
	wall hung work counter	14	lf	113.00	1,582		
1229	123000						
	tall storage, 36"	1	loc	900.00	900		
1230	123000						
	wall cabinets	13	lf	143.00	1,859		
1231	123000						
	Sped conference room						
1232	123000						
	Base open shelving and counters	15	lf	285.00	4,275		
1233	123000						
	Sped speech						
1234	123000						
	tall open storage, 34"	2	loc	765.00	1,530		
1235	123000						
	tall storage, 36"	2	loc	900.00	1,800		
1236	123000						
	Sped testing						
1237	123000						
	tall open storage, 24"	1	loc	540.00	540		
1238	123000						
	tall storage, 36"	1	loc	900.00	900		
1239	123000						
	small storage cubbies beneath window	24	ope	150.00	3,600		
1240	123000						
	Opportunity room						
1241	123000						
	Base open shelving and counters	8	lf	285.00	2,280		
1242	123000						
	OT/PT						
1243	123000						
	Base cabinets and counters	7	lf	263.00	1,841		
1244	123000						
	wall cabinets	7	lf	143.00	1,001		
1245	123000						
	tall storage, 48"	1	loc	1,200.00	1,200		
1246	123000						
	open wall cabinets	11	lf	135.00	1,485		
1247	123000						
	Allowances for rooms with casework not shown						
1248	064000						
	Allowance for band/chorus storage	25	lf	450.00	11,250		
1249	064000						
	Allowance for music storage	6	lf	600.00	3,600		
1250	064000						
	Health instructor office :L3 +l2	550	sf	35.00	NIC		
1251	064000						
	Midi Lab	469	sf	35.00	NIC		
1252	064000						
	Recycling room/trash	414	sf	35.00	NIC		
1253	123000						
	Research room	551	sf	35.00	NIC		
1254						1,812,017	
1255							
1256							
	E2020 MOVABLE FURNISHINGS						
1257							
	All movable furnishings to be provided and installed by owner						
1258							
	SUBTOTAL						NIC
1259							
1260							
	TOTAL - FURNISHINGS						\$1,812,017
1261							
1262							
1263							
	F10 SPECIAL CONSTRUCTION						
1264							
1265							
	F10 SPECIAL CONSTRUCTION						
1266	133000						
	Bus building prefabricated building	1,530	sf	95.00	145,350		
1267							
	SUBTOTAL					145,350	
1268							
1269							
	TOTAL - SPECIAL CONSTRUCTION						\$145,350
1270							
1271							
1272							
	F20 SELECTIVE BUILDING DEMOLITION						
1273							
1274							
	F2010 BUILDING ELEMENTS DEMOLITION						
1275							
	See main summary for demolition of existing buildings						
1276							
	SUBTOTAL						
1277							
1278							
	F2020 HAZARDOUS COMPONENTS ABATEMENT						
1279	013280						
	Removal of Asbestos Containing Materials in existing building - Included in Summary						
1280							
	SUBTOTAL						
1281							
1282							
	TOTAL - SELECTIVE BUILDING DEMOLITION						

Design Development Estimate

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
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SITWORK

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G SITEWORK

G10 SITE PREPARATION & DEMOLITION

Site Demolitions and Relocations

311000	Site construction fence	4,026	lf	11.00	44,286		
311000	Pavement/curbing removal - grind up asphalt to reuse	57,900	sf	1.00	57,900		
311000	Remove and dispose concrete sidewalk	8,338	sf	1.25	10,423		
311000	Demolish existing buildings					Summary	
311000	Remove and dispose of fencing	1	ls	5,000.00	5,000		
311000	Remove and reset stone memorial	1	ea	1,500.00	1,500		
311000	Sawcut existing pavement	845	lf	6.00	5,070		
311000	Tree removal/clear and grub	1	ls	45,000.00	45,000		
311000	Misc Tree Protection	1	ls	2,500.00	2,500		
311000	Remove hydrant	1	ls	350.00	350		
311000	Cap existing waterline	1	ls	1,000.00	1,000		
311000	Cut and cap existing utilities	3	loc	1,000.00	3,000		
311000	Remove and dispose of existing utilities	2,842	lf	10.00	28,420		
311000	Remove and dispose of existing drainage structures	1	ls	10,500.00	10,500		
311000	Miscellaneous demolition	1	ls	50,000.00	50,000		
	SUBTOTAL						264,949

Site Earthwork

310000	Construction entrances/wheel washes	4,577	sf	6.00	27,462		
311000	Strip topsoil, store on site for reuse	19,604	cy	8.00	156,832		
310000	Cut/fill	34,484	cy	6.00	206,904		
310000	Fine grading	58,403	sy	0.50	29,202		
312500	Silt fence/erosion control	3,000	lf	12.00	36,000		
312500	Inlet protection	1	ls	5,000.00	5,000		
312500	Erosion Control monitoring & maintenance	1	ls	10,000.00	10,000		
	<u>Hazardous Waste Remediation</u>						
311000	Abandon oil tanks in place	2	ea	5,000.00	10,000	W/Abatement	
	SUBTOTAL						471,400

G20 SITE IMPROVEMENTS

Roadways and Parking Lots

	Bituminous concrete paving	185,220			-		
320000	gravel base; 8" thick	4,576	cy	35.00	160,160		
320000	bituminous concrete; 3 1/2" thick	20,580	sy	26.00	535,080		
320000	6"x18" granite curb	7,885	lf	34.00	268,090		
320000	6"x18" revealed granite curb	288	lf	38.00	10,944		
320000	6"x18" flush granite curb	124	lf	32.00	3,968		
320000	Single solid lines, 4" thick	353	space	25.00	8,825		
320000	Wheelchair Parking	13	space	75.00	975		
320000	Crosswalk Hatching	9	loc	900.00	8,100		
320000	Other road markings	1	ls	7,500.00	7,500		
320000	HC curb cuts	25	loc	350.00	8,750		
042000	Stone veneer wall, precast entrance sign	1	ls	30,000.00	30,000		
321724	New traffic signs	60	ea	350.00	21,000		
	<u>Stairs and Ramps</u>						
033000	Concrete to stair treads	180	lfr	160.00	28,800		
033000	Cheek walls	61	sf	80.00	4,880		
055000	Ornamental handrails	81	lf	250.00	20,250		
	<u>Precast Concrete pavers type B</u>						
	<u>Concrete pavers</u>						
320000	Precast concrete pavers	5,515	sf	16.00	88,240		
320000	sand base; 1" thick	16	cy	35.00	560		
320000	gravel base; 8" thick	137	cy	35.00	4,795		
320000	concrete base; 4" thick	5,515	sf	6.00	33,090		
	<u>Precast Concrete pavers type C</u>						
	<u>Concrete pavers</u>						
320000	Precast concrete pavers	12,451	sf	16.00	199,216		
320000	sand base; 1" thick	37	cy	35.00	1,295		



Design Development Estimate

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
SITWORK							
66	320000 gravel base; 8" thick	309	cy	35.00	10,815		
67	320000 concrete base; 8" thick	12,451	sf	10.00	124,510		
68	<u>Granite Stone pavers</u>						
69	Granite pavers						
70	320000 Granite stone pavers	1,800	sf	30.00	54,000		
71	320000 sand base; 1" thick	5	cy	35.00	175		
72	320000 gravel base; 8" thick	45	cy	35.00	1,575		
73	320000 concrete base; 4" thick	1,800	sf	6.00	10,800		
74	<u>Pedestrian paving</u>						
75	Concrete paving	24,717			-		
76	320000 gravel base; 8" thick	626	cy	35.00	21,910		
77	320000 concrete; 4" thick	24,717	sf	6.50	160,661		
78	320000 concrete pad; 6" thick	616	sf	9.00	5,544		
79							
80	Bituminous concrete paving	9,527			-		
81	320000 gravel base; 8" thick	235	cy	35.00	8,225		
82	320000 bituminous concrete bike lane	1,059	sy	24.00	25,416		
83	<u>Site Improvements</u>						
84	129300 Bicycle racks	22	ea	600.00	13,200		
85	129300 Benches	2	ea	2,500.00	5,000		
86	129300 Flag pole	2	loc	7,500.00	15,000		
87	129300 Ornamental trash/recycling receptacles	16	ea	800.00	12,800		
88	129300 Outdoor dining table and chairs	20	ea	2,000.00	40,000		
89	323000 8' chain-link fence	540	lf	40.00	21,600		
90	323000 8' chain-link fence gates - sliding gate	1	ea	4,000.00	4,000		
91	323000 Ornamental fence	340	lf	160.00	54,400		
92	323000 Ornamental fence - gate A	2	ea	15,000.00	30,000		
93	323000 Ornamental fence - gate B	1	ea	6,000.00	6,000		
94	323000 Ornamental fence - gate C	1	ea	6,000.00	6,000		
95	323000 10' Green trellis fence	58	lf	420.00	24,360		
96	323000 8' wood fence	300	lf	90.00	27,000		
97	323000 Wood decking	812	sf	35.00	28,420		
98	042000 Monolithic granite wall 5/L2.4	70	lf	300.00	21,000		
99	Stone veneer wall shown on 6 / L2.1						
100	<u>Strip footings to retaining wall - 4' x 1'-0"</u>						
101	033000 Formwork	376	sf	10.00	3,760		
102	033000 Re-bar	1,680	lbs	1.20	2,016		
103	320000 Gravel base; 12" thick	28	cy	35.00	980		
104	033000 Concrete material; 4,000 psi	28	cy	130.00	3,640		
105	033000 Placing concrete	28	cy	55.00	1,540		
106	033000 Concrete retaining walls	70	cy	800.00	56,000		
107	033000 Form shelf/recess for stone	376	lf	10.00	3,760		
108	033000 Stone veneer to exposed face of concrete retaining walls	940	sf	60.00	56,400		
109	042000 Granite cap on stone veneer wall	188	lf	75.00	14,100		
110	129300 Bike racks type B	12	ea	800.00	9,600		
111	Stone veneer wall shown on 6 / L2.4						
112	<u>Strip footings to retaining wall - 4' x 1'-0"</u>						
113	033000 Formwork	562	sf	10.00	5,620		
114	033000 Re-bar	2,520	lbs	1.20	3,024		
115	033000 Gravel base; 12" thick	42	cy	35.00	1,470		
116	033000 Concrete material; 4,000 psi	42	cy	130.00	5,460		
117	033000 Placing concrete	42	cy	55.00	2,310		
118	033000 Concrete retaining walls; 4'-7" High	95	cy	800.00	76,000		
119	033000 Form shelf/recess for stone	281	lf	15.00	4,215		
120	033000 Finish to exposed face of concrete retaining walls	234	sf	7.00	1,638		
121	042000 Stone veneer to exposed face of concrete retaining walls	450	sf	60.00	27,000		
122	Stone veneer wall shown on 7 / L2.4						
123	<u>Strip footings to retaining wall - 4' x 1'-0"</u>						
124	033000 Formwork	240	sf	10.00	2,400		
125	033000 Re-bar	1,080	lbs	1.20	1,296		
126	033000 Gravel base; 12" thick	18	cy	35.00	630		



Design Development Estimate

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
SITework							
127	033000 Concrete material; 4,000 psi	18	cy	130.00	2,340		
128	033000 Placing concrete	18	cy	55.00	990		
129	033000 Concrete retaining walls; 4'-7" High	41	cy	800.00	32,800		
130	033000 Form shelf/recess for stone	120	lf	15.00	1,800		
131	033000 Finish to exposed face of concrete retaining walls	100	sf	7.00	700		
132	042000 Stone veneer to exposed face of concrete retaining walls	192	sf	60.00	11,520		
133	323000 2" x 6" black locust plank to top of wall 2' wide	120	lf	140.00	16,800		
134	310000 Excavate and backfill	233	cy	40.00	9,320		
135	323000 Perforated sock drain	350	lf	15.00	5,250		
136	323200 Segmental block retaining walls	1,130	sf	40.00	45,200		
137							
138	<i>Athletic Fields</i>						
139	323000 Gravel base - assumed 12" thick	4,725	cy	32.00	151,200		
140	323000 Soil mix; reuse amended soil from on-site spoils	4,500	cy	22.00	99,000		
141	323000 Seeding	121,510	sf	0.25	30,378		
142	323000 Scoreboard	1	ea	8,000.00	8,000		
143	323000 Soccer goals (movable)	4	pr	2,500.00	10,000		
144	323000 Miscellaneous site improvements	1	ls	50,000.00	50,000		
145	<u>Landscaping & Plantings:</u>						
146	329000 Spread existing amended topsoil @ seeded areas	6,682	cy	22.00	147,004		
147	329000 Wetland restoration	2,251	sf	6.00	13,506		
148	329000 Planters	2,938	sf	1.50	4,407		
149	329000 New sodded lawn areas	162,018	sf	0.75	121,514		
150	329000 Boulders	24	ea	250.00	6,000		
151	329000 Ornamental tree grate	9	ea	1,400.00	12,600		
152	329000 <i>Tress</i>						
153	329000 Red Sunset Maple 3" cal	29	ea	875.00	25,375		
154	329000 Jacquemontii Birch 2.5" cal	18	ea	750.00	13,500		
155	329000 Whitebarked Himalayan Birch 2.5" cal	20	ea	750.00	15,000		
156	329000 Forest Pansy Redbud 2.5" cal	2	ea	750.00	1,500		
157	329000 Red Kousa Dogwood 2.5" cal	11	ea	750.00	8,250		
158	329000 Thomless Common Honeylocust 3.5 cal	13	ea	1,000.00	13,000		
159	329000 Eastern Red Cedar 8' Height	56	ea	750.00	42,000		
160	329000 Tulip Tree 3" cal	3	ea	875.00	2,625		
161	329000 Green Pillar Oak 3" cal	9	ea	875.00	7,875		
162	329000 Nigra Cedar 8' Height	20	ea	750.00	15,000		
163	329000 American Elm 3 1/2" cal	14	ea	875.00	12,250		
164	329000 Leylandi Cypress 10 -12' ht	17	ea	1,300.00	22,100		
165	329000 <i>Shrubs</i>						
166	329000 Mapleleaf Viburnum 10gal	18	ea	350.00	6,300		
167	329000 Arrowwood Viburnum 10gal	33	ea	350.00	11,550		
168	329000 Swamp Azalea 5gal	12	ea	225.00	2,700		
169	329000 Pussy Willow 5gal	16	ea	225.00	3,600		
170	329000 Dwarf Red Twig Dogwood	23	ea	120.00	2,760		
171	329000 Inkberry Holly	12	ea	120.00	1,440		
172	329000 Blue Lobelia 3gal	50	ea	120.00	6,000		
173	329000 Swamp Milkweed 3gal	10	ea	120.00	1,200		
174	329000 Purple Coneflower 3gal	10	ea	120.00	1,200		
175	329000 Spotted Joe Pye Weed 3gal	9	ea	120.00	1,080		
176	329000 Dwarf Inkberry	4	ea	120.00	480		
177	329000 Highbush Blueberry	22	ea	120.00	2,640		
178	329000 Little Bunny Fountain Grass 1gal	44	ea	60.00	2,640		
179	329000 Little Bluestem Grass 1gal	94	ea	60.00	5,640		
180	329000 New England Aster 1gal	17	ea	60.00	1,020		
181	329000 <i>Groundcovers & Perennials</i>						
182	329000 Big Blue Lily Turf 1gal	1,721	sf	0.50	861		
183	329000 No-mow grass mix	3,311	sf	0.50	1,656		
184	329000 New England Meadow mix	6,428	sf	0.50	3,214		
185	329000 Little Bluestem Grass 1gal	1,760	sf	0.50	880		
186	329000 Allowance for irrigation at fields	186,812	sf	1.50	280,218		
187	SUBTOTAL					3,755,671	
188							
189	G30 CIVIL MECHANICAL UTILITIES						



Design Development Estimate

CSI CODE	DESCRIPTION	QTY	UNIT	UNIT COST	ESTD COST	SUB TOTAL	TOTAL COST
SITework							
190	<u>Water supply</u>						
191 331000	New fire DI piping; 8"	2,275	lf	75.00	170,625		
192 331000	New DI piping; 6"	515	lf	55.00	28,325		
193 331000	New DI piping; 4"	54	lf	45.00	2,430		
194 331000	New copper piping; 2"	59	lf	35.00	2,065		
195 331000	New fire hydrant	8	loc	2,600.00	20,800		
196 331000	FD connection	2	loc	2,000.00	4,000		
197 331000	Gate valves	27	loc	750.00	20,250		
198 331000	Connect to existing line (Wet Taps)	4	loc	3,000.00	12,000		
199	<u>Sanitary sewer</u>						
200 333000	6" SDR- 35 PVC sewer	1,076	lf	80.00	86,080		
201 333000	SMH	5	ea	6,000.00	30,000		
202 333000	Connect to existing	1	loc	1,500.00	1,500		
203 333000	Grease / Oil separator	1	loc	13,000.00	13,000		
204	<u>Storm Sewer</u>						
205 334000	OCS	2	ea	5,000.00	10,000		
206 334000	WQS	4	ea	14,000.00	56,000		
207 334000	Manhole	27	loc	3,800.00	102,600		
208 334000	Connect to existing line	3	loc	2,500.00	7,500		
209 334000	Catch basins	30	loc	3,200.00	96,000		
210 334000	Area drains	26	loc	2,600.00	67,600		
211 334000	30" HDPE	550	lf	120.00	66,000		
212 334000	24" HDPE	600	lf	100.00	60,000		
213 334000	18" HDPE	1,300	lf	90.00	117,000		
214 334000	15" HDPE	813	lf	75.00	60,975		
215 334000	12" HDPE	3,318	lf	70.00	232,260		
216 334000	Roof leader connection	3	ea	350.00	1,050		
217 334000	Underground retention; precast chambers	3,904	sf	85.00	331,840		
218 334000	Underground pipe retention; 48" pipe	11,616	sf	35.00	406,560		
219	<u>Gas service</u>						
220	E&B trench for new lines, pipe and install by utilities						
221 310000	New gas service	727	lf	25.00	18,175		
222	SUBTOTAL					2,024,635	
223							
224	G40 SITE ELECTRICAL						
225	Included in Electrical						
226	SUBTOTAL						
227							
SUBTOTAL SITE DEVELOPMENT						\$6,516,655	

OPM'S CONSTRUCTION COST ESTIMATE

APPENDIX D



Heery International, Inc.

MSBA PROJECT NUMBER: 201300300305

Estimator: **RH, GR, BA, DW**
Checked by: **G. Ridgely**
Project Manager: **M. Lydon**

BID PACK:	General
PHASE:	DD
DOCUMENTS DATE:	12/2/2015
ESTIMATE DATE:	12/16/2015
REVISION DATE:	12/17/2015

PROJECT:	New Beverly Middle School Beverly, MA
OWNER:	City of Beverly, Massachusetts
ARCHITECT:	Ai3 Architects
INTERIOR DESIGNER:	Ai3 Architects
ENGINEERS:	

BUILDINGS AREA:			231,509 S.F.
TOTAL CONSTRUCTION COST:	\$	90,023,922	\$ 388.86 /S.F.

BEVERLY PUBLIC SCHOOLS
BEVERLY, MASSACHUSETTS
100% DESIGN DEVELOPMENT ESTIMATE
DECEMBER 17, 2015

QUALIFICATIONS

This Design Development Estimate is based on information received from Ai3 Architects. The labor rates are based on the most recent data available for the local project area. All unit prices include installation and are based on competitive bids being received. This Design Development Estimate is based on the following assumptions:

- Normal Construction schedule has been used to prepare the estimate. The phasing requirements have been considered in this estimate.
- Costs are based on a forty (40) hour work week, Monday thru Friday.
- Items that could impact this estimate are:
 - Restrictive technical specification
 - Non-competitive bid conditions
 - Sole source specification of materials or products
 - Delays beyond the projected schedule
 - Accelerated completion
- This estimate is based on local prevailing wage rates.
- Costs are included per the bid results for asbestos abatement or hazardous materials removal and the existing buildings demolition.
- The following items have been excluded:
 - Geotechnical engineering.
 - Utility company back charges and user fees/surcharges.
 - Testing or inspection services, as required by MA State Building Code or other: concrete, soils, pavement, fireproofing.
 - Costs associated with air monitoring/clearance sampling.
 - Costs for FF&E.
- No adjustments have been made to this estimate for Minority Business Enterprise or Women's Business Enterprise contracting requirements.
- Heery International, Inc. has no control over the cost of labor and materials, the General Contractor's or any Subcontractor's method of determining price or competitive bidding and market conditions. This opinion of probable cost of construction is made on the basis of the experience, qualifications, and best judgment of the Cost Analyst familiar with the construction industry. Heery cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from this or subsequent estimates. Heery International, Inc. has prepared this estimate in accordance with generally accepted principles and practices.

BEVERLY PUBLIC SCHOOLS
BEVERLY, MASSACHUSETTS
100% DESIGN DEVELOPMENT ESTIMATE
DECEMBER 17, 2015

DOCUMENTATION

The following documents were used in the preparation of this 100% DD Estimate:

- 100 % DD Drawings Volumes 1&2 dated December 2, 2015
- 100% DD Construction Specifications Volumes 1&2 dated December 2, 2015
- Various Emails from Ai3 architects dated December 17, 2015

CLARIFICATIONS / QUALIFICATIONS

General

- In addition to the Qualifications and Assumptions noted below, all estimate scope descriptions, quantities and notes serve to specify what is included in this estimate.
- All allowance amounts are inclusive of all material costs, freight to jobsite, labor to install the item(s), and subcontractor overhead and profit
- Builder's Risk is included.
- Building Permit costs are excluded
- Design Contingency is included at 4.75% and would reduce to zero upon completion of the documents at the 100% CD level.
- Construction Contingency or Bidding contingency is included at 2%.
- Escalation Contingency is included at 2%
- General Conditions & Requirements are included at 6.7% of construction costs
- General Liability Insurance is included at 0.45%
- Bond fees are included at 0.45%
- Overhead & Profit is included at 1.75%
- Allowance for Kitchen equipment is included at \$500,000 per the Kitchen equipment consultant.

Architectural

- Science Prep area includes Base and Wall Cabinet with epoxy counter
- All line items with an allowance in the description or a lump sum as the unit cost are allowances based on experience with Mass. School system and the most recent 100% construction document school

Structural

- Heery's estimate includes a quantity of 1281 - 60Ton Capacity steel H piles driven to a depth of 65 feet per discussions during the reconciliation meeting.

Heery International, Inc.

OFFICES NATIONWIDE



BEVERLY PUBLIC SCHOOLS
BEVERLY, MASSACHUSETTS
100% DESIGN DEVELOPMENT ESTIMATE
DECEMBER 17, 2015

HVAC

- 3,055 LF of radiant panel are included in Heery estimate
- Heery estimate 399 LF of Fin-tube radiation.
- Roof top units are included as per the mechanical schedule.

Plumbing

- Plumbing fixtures counts are independent take off from the current 100% DD drawings some fixture types on the fixture schedule especially the P-11 thru P13H shown as "FBO" were not located on the drawings.



Heery International, Inc.

PROJECT: **New Beverly Middle School
Beverly, MA**

Project No: **1225900**
Bid Pack: **General**
Date: **12/16/2015**
Phase: **DD**
SF: **231509**

MASTERFORMAT SUMMARY - LEVEL 1

MASTERFORMAT 2012	Description	Estimate	Cost per SF	% of Total	
00 00 00	<i>Procurement and Contracting Requirements</i>	\$ 211,752.00	\$ 0.91	0.24%	
02 00 00	<i>Existing Conditions</i>	\$ 1,781,300	\$ 7.69	1.98%	
03 00 00	<i>Concrete</i>	\$ 5,402,565	\$ 23.34	6.00%	
04 00 00	<i>Masonry</i>	\$ 1,473,319	\$ 6.36	1.64%	
05 00 00	<i>Metals</i>	\$ 7,816,643	\$ 33.76	8.68%	
06 00 00	<i>Wood, Plastics, and Composites</i>	\$ 589,238	\$ 2.55	0.65%	
07 00 00	<i>Thermal and Moisture Protection</i>	\$ 5,875,614	\$ 25.38	6.53%	
08 00 00	<i>Openings</i>	\$ 6,110,062	\$ 26.39	6.79%	
09 00 00	<i>Finishes</i>	\$ 9,902,671	\$ 42.77	11.00%	
10 00 00	<i>Specialties</i>	\$ 1,071,154	\$ 4.63	1.19%	
11 00 00	<i>Equipment</i>	\$ 1,595,474	\$ 6.89	1.77%	
12 00 00	<i>Furnishings</i>	\$ 2,588,503	\$ 11.18	2.88%	
13 00 00	<i>Special Construction</i>	\$ 210,000	\$ 0.91	0.23%	
14 00 00	<i>Conveying Equipment</i>	\$ 525,000	\$ 2.27	0.58%	
21 00 00	<i>Fire Suppression</i>	\$ 951,036	\$ 4.11	1.06%	
22 00 00	<i>Plumbing</i>	\$ 2,581,249	\$ 11.15	2.87%	
23 00 00	<i>Heating, Ventilating, and Air Conditioning (HVAC)</i>	\$ 7,559,184	\$ 32.65	8.40%	
26 00 00	<i>Electrical</i>	\$ 5,455,330	\$ 23.56	6.06%	
27 00 00	<i>Communications</i>	\$ 1,982,861	\$ 8.56	2.20%	
28 00 00	<i>Electronic Safety and Security</i>	\$ 969,089	\$ 4.19	1.08%	
31 00 00	<i>Earthwork</i>	\$ 4,648,608	\$ 20.08	5.16%	
32 00 00	<i>Exterior Improvements</i>	\$ 3,272,243	\$ 14.13	3.63%	
33 00 00	<i>Utilities</i>	\$ 2,713,985	\$ 11.72	3.01%	
TOTAL DIRECT COST		\$ 75,286,881	\$325.20	83.63%	
GENERAL REQUIREMENTS		6.70%	\$5,044,221	\$21.79	5.60%
TAXES, PERMITS, INSURANCE & BONDS					
	<i>Insurance (General Liability)</i>	0.45%	\$361,490	\$1.56	0.40%
	<i>Builders Risk</i>	0.31%	\$233,389	\$1.01	0.26%
	<i>Bond Fees</i>	0.45%	\$359,883	\$1.55	0.40%
FEES AND CONTINGENCIES					
	<i>Overhead & Profit</i>	1.75%	\$1,422,503	\$6.14	1.58%
TOTAL DIRECT COST W/OUT CONTINGENCIES		\$82,708,367	\$357.26	91.87%	
	<i>Design Contingencies</i>	4.75%	\$3,928,647	\$16.97	4.36%
	<i>Bidding Contingencies</i>	2.00%	\$1,732,740	\$7.48	1.92%
	<i>Escalation Contingencies</i>	2.00%	\$1,654,167	\$7.15	1.84%
TOTAL CONSTRUCTION COST		\$90,023,922	\$388.86	100.00%	



Heery International, Inc.

PROJECT: **New Beverly Middle School**
Beverly, MA

Project No: **1409500**
 Bid Pack: **General**
 Date: **12/16/2015**
 Phase: **DD**
 Estimator: **RH, GR, BA, DW**
 SF: **231509**

UNIFORMAT SUMMARY - LEVEL 1

	Heery Estimate	Per SF	%
A SUBSTRUCTURE	\$9,172,103	\$39.62	10.19%
B SHELL	\$19,883,919	\$85.89	22.09%
C INTERIORS	\$13,029,255	\$56.28	14.47%
D SERVICES	\$20,022,612	\$86.49	22.24%
E EQUIPMENT & FURNISHINGS	\$4,175,858	\$18.04	4.64%
F SPECIAL CONSTRUCTION & DEMOLITION	\$1,851,550	\$8.00	2.06%
G BUILDING SITEWORK	\$7,151,584	\$30.89	7.94%
TOTAL DIRECT COST	\$75,286,881	\$325.20	83.63%
Z GENERAL			
Z10 GENERAL CONDITIONS/REQUIREMENTS 6.70%	\$5,044,221	\$21.79	5.60%
Z70 TAXES, PERMITS, INSURANCE & BONDS			
Z7030 Insurance (General Liability) 0.45%	\$361,490	\$1.56	0.40%
Z7050 Builders Risk Insurance 0.31%	\$233,389	\$1.01	0.26%
Z7070 Bond Fees 0.45%	\$359,883	\$1.55	0.40%
Z90 FEES AND CONTINGENCIES			
Z9030 Overhead & Profit 1.75%	\$1,422,503	\$6.14	1.58%
TOTAL DIRECT COST W/OUT CONTINGENCIES	\$82,708,367	\$357.26	91.87%
Z9050.10 Design Contingencies 4.75%	\$3,928,647	\$16.97	4.36%
Z9050.30 Bidding Contingencies 2.00%	\$1,732,740	\$7.48	1.92%
Z9050.50 Escalation 2.00%	\$1,654,167	\$7.15	1.84%
TOTAL CONSTRUCTION COST	\$90,023,922	\$388.86	100.00%



Heery International, Inc.

PROJECT: **New Beverly Middle School**
Beverly, MA

Project No: **1409500**

Bid Pack: **General**

Date: **12/16/2015**

Phase: **DD**

Estimator: **RH, GR, BA, DW**

SF: **231509**

UNIFORMAT SUMMARY - LEVEL 2

	Heery Estimate	Per SF	%
A SUBSTRUCTURE			
A10 FOUNDATIONS	\$6,517,323	\$28.15	7.24%
A20 SUBGRADE ENCLOSURES	\$393,069	\$1.70	0.44%
A40 SLABS-ON-GRADE	\$2,072,586	\$8.95	2.30%
A60 WATER AND GAS MITIGATION	\$27,125	\$0.12	0.03%
A90 SUBSTRUCTURE RELATED ACTIVITIES	\$162,000	\$0.70	0.18%
B SHELL			
B10 SUPERSTRUCTURE	\$8,815,490	\$38.08	9.79%
B20 EXTERIOR VERTICAL ENCLOSURES	\$9,106,436	\$39.34	10.12%
B30 EXTERIOR HORIZONTAL ENCLOSURES	\$1,961,992	\$8.47	2.18%
C INTERIORS			
C10 INTERIOR CONSTRUCTION	\$8,383,024	\$36.21	9.31%
C20 INTERIOR FINISHES	\$4,646,232	\$20.07	5.16%
D SERVICES			
D10 CONVEYING	\$525,000	\$2.27	0.58%
D20 PLUMBING	\$2,581,249	\$11.15	2.87%
D30 HVAC	\$7,559,184	\$32.65	8.40%
D40 FIRE PROTECTION	\$951,036	\$4.11	1.06%
D50 ELECTRICAL	\$5,454,194	\$23.56	6.06%
D60 COMMUNICATIONS	\$1,982,861	\$8.56	2.20%
D70 ELECTRONIC SAFETY AND SECURITY	\$969,089	\$4.19	1.08%
D80 INTEGRATED AUTOMATION	\$0	\$0.00	0.00%
E EQUIPMENT & FURNISHINGS			
E10 EQUIPMENT	\$1,489,474	\$6.43	1.65%
E20 FURNISHINGS	\$2,686,384	\$11.60	2.98%
F SPECIAL CONSTRUCTION & DEMOLITION			
F10 SPECIAL CONSTRUCTION	\$210,000	\$0.91	0.23%
F20 FACILITY REMEDIATION	\$1,000,000	\$4.32	1.11%
F30 DEMOLITION	\$641,550	\$2.77	0.71%
G BUILDING SITEWORK			
G10 SITE PREPARATION	\$793,229	\$3.43	0.88%
G20 SITE IMPROVEMENTS	\$3,239,857	\$13.99	3.60%
G30 LIQUID AND GAS SITE UTILITIES	\$2,494,127	\$10.77	2.77%
G40 ELECTRICAL SITE IMPROVEMENTS	\$421,694	\$1.82	0.47%
G50 SITE COMMUNICATIONS	\$202,677	\$0.88	0.23%
G90 MISCELLANEOUS SITE CONSTRUCTION	\$0	\$0.00	0.00%
TOTAL DIRECT COST	\$75,286,881	\$325.20	83.63%
Z GENERAL			
Z10 GENERAL CONDITIONS/REQUIREMENTS 6.70%	\$5,044,221	\$21.79	5.60%
Z70 TAXES, PERMITS, INSURANCE & BONDS			
Z7030 Insurance (General Liability) 0.45%	\$361,490	\$1.56	0.40%
Z7050 Builders Risk Insurance 0.31%	\$233,389	\$1.01	0.26%
Z7070 Bond Fees 0.45%	\$359,883	\$1.55	0.40%
Z90 FEES AND CONTINGENCIES			
Z9030 Overhead & Profit 1.75%	\$1,422,503	\$6.14	1.58%
TOTAL DIRECT COST W/OUT CONTINGENCIES	\$82,708,367	\$357.26	91.87%
Z9050.10 Design Contingencies 4.75%	\$3,928,647	\$16.97	4.36%
Z9050.30 Bidding Contingencies 2.00%	\$1,732,740	\$7.48	1.92%
Z9050.50 Escalation 2.00%	\$1,654,167	\$7.15	1.84%
TOTAL CONSTRUCTION COST	\$90,023,922	\$388.86	100.00%



Heery International, Inc.

PROJECT: **New Beverly Middle School**
Beverly, MA
UNIFORMAT SUMMARY - LEVEL 3

Project No: **1409500**
 Bid Pack: **General**
 Date: **12/16/2015**
 Phase: **DD**
 Estimator: **RH, GR, BA, DW**
 SF: **231509**

UNIFORMAT SUMMARY - LEVEL 3	Heery Estimate	Per SF	%
A SUBSTRUCTURE			
A10 FOUNDATIONS			
A1010 Standard Foundations	\$1,506,898	\$6.51	1.67%
A1020 Special Foundations	\$5,010,425	\$21.64	5.57%
A20 SUBGRADE ENCLOSURES			
A2010 Walls for Subgrade Enclosures	\$393,069	\$1.70	0.44%
A40 SLABS-ON-GRADE			
A4010 Standard Slabs-on-Grade	\$1,669,736	\$7.21	1.85%
A4020 Structural Slabs-on-Grade	\$0	\$0.00	0.00%
A4030 Slab Trenches	\$0	\$0.00	0.00%
A4040 Pits and Bases	\$28,800	\$0.12	0.03%
A4090 Slab-On-Grade Supplementary Components	\$374,050	\$1.62	0.42%
A60 WATER AND GAS MITIGATION			
A6010 Building Subdrainage	\$27,125	\$0.12	0.03%
A6020 Off-Gassing Mitigation	\$0	\$0.00	0.00%
A90 SUBSTRUCTURE RELATED ACTIVITIES			
A9010 Substructure Excavation	\$162,000	\$0.70	0.18%
A9020 Construction Dewatering	\$0	\$0.00	0.00%
A9030 Excavation Support	\$0	\$0.00	0.00%
A9040 Soil Treatment	\$0	\$0.00	0.00%
B SHELL			
B10 SUPERSTRUCTURE			
B1010 Floor Construction	\$7,525,204	\$32.51	8.36%
B1020 Roof Construction	\$943,166	\$4.07	1.05%
B1080 Stairs	\$347,120	\$1.50	0.39%
B20 EXTERIOR VERTICAL ENCLOSURES			
B2010 Exterior Walls	\$5,618,316	\$24.27	6.24%
B2020 Exterior Windows	\$3,311,645	\$14.30	3.68%
B2050 Exterior Doors and Grilles	\$118,100	\$0.51	0.13%
B2070 Exterior Louvers and Vents	\$50,000	\$0.22	0.06%
B2080 Exterior Wall Appurtenances	\$8,375	\$0.04	0.01%
B2090 Exterior Wall Specialties	\$0	\$0.00	0.00%
B30 EXTERIOR HORIZONTAL ENCLOSURES			
B3010 Roofing	\$1,806,989	\$7.81	2.01%
B3020 Roof Appurtenances	\$71,289	\$0.31	0.08%
B3040 Traffic Bearing Horizontal Enclosures	\$0	\$0.00	0.00%

New Beverly Middle School

UNIFORMAT SUMMARY - LEVEL 3		Heery Estimate	Per SF	%
B3060	Horizontal Openings	\$33,714	\$0.15	0.04%
B3080	Overhead Exterior Enclosures	\$50,000	\$0.22	0.06%
C INTERIORS				
C10 INTERIOR CONSTRUCTION				
C1010	Interior Partitions	\$4,871,720	\$21.04	5.41%
C1020	Interior Windows	\$0	\$0.00	0.00%
C1030	Interior Doors	\$598,600	\$2.59	0.66%
C1040	Interior Grilles and Gates	\$30,000	\$0.13	0.03%
C1060	Raised Floor Construction	\$0	\$0.00	0.00%
C1070	Suspended Ceiling Construction	\$1,647,189	\$7.12	1.83%
C1090	Interior Specialties	\$1,235,514	\$5.34	1.37%
C20 INTERIOR FINISHES				
C2010	Wall Finishes	\$1,124,050	\$4.86	1.25%
C2020	Interior Fabrications	\$0	\$0.00	0.00%
C2030	Flooring	\$3,355,445	\$14.49	3.73%
C2040	Stair Finishes	\$141,736	\$0.61	0.16%
C2050	Ceiling Finishes	\$25,000	\$0.11	0.03%
C2090	Interior Finish Schedules	\$0	\$0.00	0.00%
D SERVICES				
D10 CONVEYING				
D1010	Vertical Conveying Systems	\$525,000	\$2.27	0.58%
D1030	Horizontal Conveying	\$0	\$0.00	0.00%
D1050	Material Handling	\$0	\$0.00	0.00%
D1080	Operable Access Systems	\$0	\$0.00	0.00%
D20 PLUMBING				
D2000	General Design Considerations	\$0	\$0.00	0.00%
D2010	Domestic Water Distribution	\$1,609,763	\$6.95	1.79%
D2020	Sanitary Drainage	\$370,672	\$1.60	0.41%
D2030	Building Support Plumbing Systems	\$282,108	\$1.22	0.31%
D2050	General Service Compressed-Air	\$0	\$0.00	0.00%
D2060	Process Support Plumbing Systems	\$318,705	\$1.38	0.35%
D30 HVAC				
D3000	Design Basis	\$0	\$0.00	0.00%
D3010	Facility Fuel Systems	\$0	\$0.00	0.00%
D3020	Heating Systems	\$2,115,419	\$9.14	2.35%
D3030	Cooling Systems	\$352,199	\$1.52	0.39%
D3050	Facility HVAC Distribution Systems	\$2,006,388	\$8.67	2.23%
D3060	Ventilation	\$1,932,263	\$8.35	2.15%
D3070	Special Purpose HVAC Systems	\$0	\$0.00	0.00%
D3080	ATC/BMS	\$1,041,791	\$4.50	1.16%
D3090	Testing	\$87,973	\$0.38	0.10%
D3095	Commissioning	\$23,151	\$0.10	0.03%
D40 FIRE PROTECTION				
D4010	Fire Suppression	\$951,036	\$4.11	1.06%
D4030	Fire Protection Specialties	\$0	\$0.00	0.00%
D50 ELECTRICAL				

New Beverly Middle School

UNIFORMAT SUMMARY - LEVEL 3		Heery Estimate	Per SF	%
D5010	Facility Power Generation	\$211,752	\$0.91	0.24%
D5020	Electrical Service And Distribution	\$2,744,296	\$11.85	3.05%
D5030	General Purpose Electrical Power	\$908,354	\$3.92	1.01%
D5040	Lighting	\$1,474,038	\$6.37	1.64%
D5080	Miscellaneous Electrical Systems	\$115,755	\$0.50	0.13%
D60 COMMUNICATIONS				
D6010	Data Communications	\$565,766	\$2.44	0.63%
D6020	Voice Communications	\$75,000	\$0.32	0.08%
D6030	Audio-Video Communication	\$207,146	\$0.89	0.23%
D6060	Distributed Communications And Monitoring	\$1,134,950	\$4.90	1.26%
D6090	Communications Supplementary Components	\$0	\$0.00	0.00%
D70 ELECTRONIC SAFETY AND SECURITY				
D7010	Access Control and Intrusion Detection	\$651,004	\$2.81	0.72%
D7030	Electronic Surveillance	\$0	\$0.00	0.00%
D7050	Detection and Alarm	\$318,086	\$1.37	0.35%
D7070	Electronic Monitoring and Control	\$0	\$0.00	0.00%
D7090	Electronic Safety and Security Supp. Comps.	\$0	\$0.00	0.00%
D80 INTEGRATED AUTOMATION				
D8010	Integrated Automation Facility Controls	\$0	\$0.00	0.00%
E EQUIPMENT AND FURNISHINGS				
E10 EQUIPMENT				
E1010	Vehicle and Pedestrian Equipment	\$5,000	\$0.02	0.01%
E1030	Commercial Equipment	\$504,155	\$2.18	0.56%
E1040	Institutional Equipment	\$85,638	\$0.37	0.10%
E1060	Residential Equipment	\$46,030	\$0.20	0.05%
E1070	Entertainment and Recreational Equipment	\$848,652	\$3.67	0.94%
E1090	Other Equipment	\$0	\$0.00	0.00%
E20 FURNISHINGS				
E2010	Fixed Furnishings	\$2,521,854	\$10.89	2.80%
E2050	Moveable Furnishings	\$164,530	\$0.71	0.18%
F SPECIAL CONSTRUCTION AND DEMOLITION				
F10 SPECIAL CONSTRUCTION				
F1010	Integrated Construction	\$0	\$0.00	0.00%
F1020	Special Structures	\$150,000	\$0.65	0.17%
F1030	Special Function Construction	\$0	\$0.00	0.00%
F1050	Special Facility Components	\$0	\$0.00	0.00%
F1060	Athletic and Recreational Special Construction	\$60,000	\$0.26	0.07%
F1080	Special Instrumentation	\$0	\$0.00	0.00%
F20 FACILITY REMEDIATION				
F2010	Hazardous Materials Remediation	\$1,000,000	\$4.32	1.11%
F30 DEMOLITION				
F3010	Structure Demolition	\$641,550	\$2.77	0.71%
F3030	Selective Demolition	\$0	\$0.00	0.00%
F3050	Structure Moving	\$0	\$0.00	0.00%
G SITEWORK				
G10 SITE PREPARATION				

New Beverly Middle School

UNIFORMAT SUMMARY - LEVEL 3		Heery Estimate	Per SF	%	
G1010	Site Clearing	\$83,050	\$0.36	0.09%	
G1020	Site Elements Demolition	\$271,046	\$1.17	0.30%	
G1030	Site Element Relocations	\$0	\$0.00	0.00%	
G1050	Site Remediation	\$0	\$0.00	0.00%	
G1070	Site Earthwork	\$439,133	\$1.90	0.49%	
G20 SITE IMPROVEMENTS					
G2010	Roadways	\$56,500	\$0.24	0.06%	
G2020	Parking Lots	\$1,479,971	\$6.39	1.64%	
G2030	Pedestrian Plazas and Walkways	\$714,530	\$3.09	0.79%	
G2040	Airfields	\$0	\$0.00	0.00%	
G2050	Athletic, Recreational, and Playfield Areas	\$106,000	\$0.46	0.12%	
G2060	Site Development	\$269,606	\$1.16	0.30%	
G2080	Landscaping	\$613,250	\$2.65	0.68%	
G30 LIQUID AND GAS SITE UTILITIES					
G3010	Water Utilities	\$524,043	\$2.26	0.58%	
G3020	Sanitary Sewerage Utilities	\$143,500	\$0.62	0.16%	
G3030	Storm Drainage Utilities	\$1,803,814	\$7.79	2.00%	
G3050	Site Energy Distribution	\$0	\$0.00	0.00%	
G3060	Site Fuel Distribution	\$22,770	\$0.10	0.03%	
G3090	Liquid and Gas Site Utilities Supp. Comps.	\$0	\$0.00	0.00%	
G40 ELECTRICAL SITE IMPROVEMENTS					
G4010	Site Electric Distribution Systems	\$208,806	\$0.90	0.23%	
G4050	Site Lighting	\$212,888	\$0.92	0.24%	
G50 SITE COMMUNICATIONS					
G5010	Site Communications Systems	\$202,677	\$0.88	0.23%	
G90 MISCELLANEOUS SITE CONSTRUCTION					
G9010	Tunnels	\$0	\$0.00	0.00%	
TOTAL DIRECT COST		\$75,286,881	\$325.20	83.63%	
Z GENERAL					
Z10	GENERAL CONDITIONS/REQUIREMENTS	6.70%	\$5,044,221	\$21.79	5.60%
Z70	TAXES, PERMITS, INSURANCE & BONDS				
Z7030	Insurance (General Liability)	0.45%	\$361,490	\$1.56	0.40%
Z7050	Builders Risk	0.31%	\$233,389	\$1.01	0.26%
Z7070	Bond Fees	0.45%	\$359,883	\$1.55	0.40%
Z90	FEES AND CONTINGENCIES				
Z9030	Overhead & Profit	1.75%	\$1,422,503	\$6.14	1.58%
TOTAL DIRECT COST W/OUT CONTINGENCIES		\$82,708,367	\$357.26	91.87%	
Z9050.10	Design Contingencies	4.75%	\$3,928,647	\$16.97	4.36%
Z9050.30	Bidding Contingencies	2.00%	\$1,732,740	\$0.00	0.00%
Z9050.50	Escalation	2.00%	\$1,654,167	\$7.15	1.84%
TOTAL CONSTRUCTION COST		\$90,023,922	\$388.86	100.00%	

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
A	SUBSTRUCTURE					
1	A10 - FOUNDATIONS					
2	A1010 STANDARD FOUNDATIONS					
3	033000 CAST IN PLACE CONCRETE					
4	PILE CAPS PC2 thru PC6	1,281	CY	750.00	960,750	A1010.30
5	FOUNDATION PERIM. WALL	150	CY	750.00	112,500	A1010.10
6	CONTINUOUS WALL FOOTINGS @ DET 1/S2.04	398	CY	500.00	199,000	A1010.10
7	UNSUITABLE SOIL ALLOWANCE	1	LS	200,000.00	200,000	A1010.10
8	072100 THERMAL INSULATION					
9	2" RIGID FOUND INSUL.@ PERIMETER FND WALLS	13,859	SF	2.50	34,648	A1010.10
10	FOUNDATION PERIM. WALL WATERPROOFING	4,000	SF	7.00	28,000	
11					-----	
12					1,506,898	
13						
14						
15						
16						
17	A1020 SPECIAL FOUNDATIONS					
18	65T ON H PILES (1281 each piles @65' depth)	83,265	VLF	45.00	3,746,925	A1020.10
19	MOB/DEMOB	1	LS	35,000.00	35,000	A1020.10
20	TEST PILES	1	LS	100,000.00	100,000	A1020.10
21	LAYOUT AND SURVEY PILES	1	LS	75,000.00	75,000	A1020.10
22	REMOVE UNDERGROUND OBSTRUCTIONS	1	LS	7,500.00	7,500	A1020.10
23						
24	GRADE BEAMS	1,046	CY	1,000.00	1,046,000	A1020.80
25					-----	
26					5,010,425	
27						
28	TOTAL A10 - FOUNDATIONS		\$28.15 /COST PER SF		6,517,323	
29						
30	A20 - SUBGRADE ENCLOSURES					
31						
32	A2010 WALLS FOR SUBGRADE ENCLOSURE					
33					-----	
34					0	
35						
36	A2020 BASEMENT WALLS					
37	CONC. BASEMENT (FOUNDATION WALL)	394	CY	998.00	393,069	A2010.10
38					-----	
39					393,069	
40						
41	TOTAL A20 - SUBGRADE ENCLOSURES (BSMT CONSTRUCTION)		\$1.70 /COST PER SF		393,069	
42						
43	A40 - SLABS ON GRADE					
44						
45	A4010 STANDARD SLABS ON GRADE					
46	033000 CAST IN PLACE CONCRETE					
47						
48	12" STRUCTURAL SLAB ON GRADE	94,733	SF	12.00	1,136,796	A4010.10
49	12" WASHED GRAVEL UNDER SLAB	94,733	SF	2.81	266,200	A4010.10
53	12" STONE LAYER	94,733	SF	2.50	236,833	A4010.10
54	THICKENED SLAB @ INTERIOR CMU	106	CY	150.00	15,908	A4010.10
55	ADDITIONAL CONCRETE AT PILE TYPE P1 UNDER SLAB	80	CY	175.00	14,000	A4010.10
56	TOTAL SOG AREA	94,733	SF		-----	
57					1,669,736	
58						
59	A4020 STRUCTURAL SLABS ON GRADE					
60						
61	A4030 SLAB TRENCHES					
62						
63	A4040 PITS AND BASES					
64	033000 CAST IN PLACE CONCRETE					
65	ELEVATOR PIT	21	CY	900.00	18,900	A4040.01
66	ACID NEUTRALIZATION PIT	11	CY	900.00	9,900	A4040.01

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
67						
68						
69					-----	
70					28,800	
71						
72						
73	A4090 SLABS ON GRADE SUPPLEMENTARY COMPONENTS					
74						
75	<u>070002 DAMPPROOF, WATERPROOF & JOINT SEALANTS*</u>					
76	ELEV. PIT WATERPROOFING	3	EA	3,750.00	11,250	A4090.30
77	ACID NEUTRALIZATION PIT WPG	1	LS	4,000.00	4,000	A4090.30
78	2" RIGID SLAB INSUL. 25PSI	94,733	SF	2.00	189,466	A4090.10
79	UNDER SLAB WATERPROOFING	15800	SF	7.00	110,600	A4090.10
80						
81						
82	<u>072616 BELOW GRADE VAPOR RETARDERS</u>					
83	BELOW SLAB VAPOR BARRIER	94,733	SF	0.62	58,734	A4090.20
84						
85					-----	
86					374,050	
87						
88	TOTAL A40 - SLABS ON GRADE			\$8.95 /COST PER SF	2,072,586	
89						
90	A60 - WATER AND GAS MITIGATION			N/A		
91						
92	A6010 BUILDING SUBDRAINAGE					
93						
94	FOUNDATION DRAIN AROUND LOWEST LEVEL	775	LF	35.00	27,125	A6010.10
95	*EXCLUDES UNDERSLAB DRAINAGE		NIC			
96					-----	
97					27,125	
98						
99	A6020 OFF GASSING MITIGATION					
100					0	
101					-----	
102					0	
103						
104	TOTAL A60 WATER AND GAS MITIGATION			\$0.12 /COST PER SF	27,125	
105						
106	A90 - SUBSTRUCTURE RELATED ACTIVITIES					
107						
108	A9010 SUBSTRUCTURE EXCAVATION					
109						
110	BUILDING:					
111						
112	STRUCTURAL FILL - REUSE ON SITE MATL	8,000	CY	14.00	112,000	A9010.10
113	UNDERSLAB PLUMBING AND ELECTRICAL	1	LS	50,000.00	50,000	A9010.10
114						
115					-----	
116					162,000	
117						
132						
133	TOTAL A90 - SUBSTRUCTURE RELATED ACTIVITIES			\$0.70 /COST PER SF	162,000	
134						
135						
B SHELL						
136	B10 SUPERSTRUCTURE					
137	B1010 FLOOR STRUCTURE	1768	TONS	TOTAL		
138						
139	<u>051200 STRUCTURAL STEEL FRAMING</u>					
140	STRUCTURAL STEEL BEAMS	1138.5	TONS	3,400.00	3,870,900	B1010.10
141	STRUCTURAL STEEL COLUMNS	369	TONS	3,500.00	1,292,025	B1010.10
142	STRUCTURAL STEEL BRACE FRAMES	183	TONS	3,500.00	639,975	B1010.10
143	MOMENT CONNECTIONS	7.0	EA	2,500.00	17,500	B1010.10

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
144	4" X 3/4 " SHEAR STUDS	31500	EA	5.00	157,500	B1010.10
145	033000 CAST IN PLACE CONCRETE					
147	2.5" LIGHT WEIGHT CONCRETE SLAB ON METAL DECK	137,631	SF	4.87	670,263	B1010.20
148						
149	053100 STEEL DECK					
150	2" 18 ga COMPOSITE METAL FLOOR DECK	137,631	SF	2.84	390,872	B1010.20
151						
152						
153	078000 FIRESTOPPING					
154	FIRESTOPPING	231,509	SF	0.35	81,028	B1010.20
155						
156	078100 APPLIED FIREPROOFING					
157						
158	SPRAY ON FIREPROOFING FRAME & DECK	231,509	SF	1.75	405,141	B1010.20
159					0	B1010.20
160						
161						
162					3,654,304	
163						
164	B1020 ROOF CONSTRUCTION					
165	051200 STRUCTURAL STEEL FRAMING					
166	STRUCTURAL STEEL DEEP LONG SPAN BAR JOIST	71.0	TONS	3,200.00	227,166	B1020.10
167						
168	053100 STEEL DECK					
169	3"DEEP X 18 GA GLAV TYP. ROOF DECK	84,500	SF	5.00	422,500	B1020.20
170	3" DEEP 18GA ACOUSTICAL CELLULAR ROOF DECK @ GYM & AUDITORIUM	20,500	SF	7.00	143,500	B1020.20
171	TOTAL ROOF DECK AREA	105,000	SF			
172						
173	078100 APPLIED FIREPROOFING					
174	SPRAY ON FIREPROOFING FRAME & DECK	1	LS	150,000.00	150,000	B1020.20
175						
176						
177					943,166	
178						
179	B1080 STAIRS					
180						
181	033000 CAST IN PLACE CONCRETE					
182	CONCRETE FILL IN METAL PANS	538	EA	100.00	53,800	B1080.10
183						
184	055000 METAL FABRICATIONS					
185	AUD./STAGE CATWALKS ALLOWANCE	607	SF	35.00	21,245	B1080.70
186	AUD./STAGE CATWALKS RAILINGS ALLOWANCE	300	LF	55.00	16,500	B1080.70
187	METAL PAN STAIRS W/FILL	538	RSR	450.00	242,100	B1080.10
188	RAILINGS @ LOADING DOCK RAMP ALLOWANCE	95	LF	55.00	5,225	B1080.70
189	LADDERS ALLOWANCE	110	LF	75.00	8,250	B1080.80
190						
191						
192					347,120	
193						
194	TOTAL B10 SUPERSTRUCTURE			\$38.08 /COST PER SF	8,815,490	
195						
196	B20 - EXTERIOR VERTICAL ENCLOSURES					
197						
198	B2010 EXTERIOR WALLS					
199						
200	042000 UNIT MASONRY					
201						
202					0	
203	FLASHING	1	LS	40,000.00	40,000	B2010.10
204	STAGING	1	LS	100,000.00	100,000	B2010.10
205	STONE WATER TABLE	1893	SF	45.00	85,185	B2010.10
206	NATURAL STONE VENEER	7520	SF	60.00	451,200	B2010.10
207					0	B2010.10
208						
209	054000 COLD FORMED METAL FRAMING					
210	EXTERIOR WALL: 5/8 GYPSUM					

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
211	STUD FRAMING	88,420	SF	6.25	552,625	B2010.30
212	1/2" DENS GLASS WALL	88,420	SF	2.44	215,745	B2010.30
213						
214						
215	<u>072726 FLUID APPLIED MEMBRANE AIR BARRIER</u>					
216						
217	VAPOR BARRIER	88,420	SF	6.03	533,173	B2010.10
218						
219	<u>072100 THERMAL INSULATION</u>					
220	SPRAY FOAM INSULATION	88,420	SF	3.50	309,470	B2010.10
221	RIGID INSULATION	88,420	SF	2.60	229,892	B2010.10
222						
223	<u>092900 GYPSUM BOARD</u>					
224	DRYWALL BACKUP ON EXTERIOR WALLS	88,420	SF	9.35	826,727	B2010.30
225	<u>074243 COMPOSITE WALL PANEL</u>					
226						
227	METAL SOFFIT PANEL ALLOWANCE	1	LS	50,000.00	50,000	B3080.20
228	<u>074646 FIBER CEMENT WALL PANELS</u>					
229	FIBER CEMENT WALL PANELS	75,420	SF	25.00	1,885,500	B2010.10
230						
231	MECHANICAL EQUIPMENT SCREEN	4,860	SF	80.00	388,800	B2010.60
232					-----	
233					5,668,316	
234						
235	B2020 EXTERIOR WINDOWS					
236						
237	<u>061053 MISCELLANEOUS ROUGH CARPENTRY</u>					
238						
239	BLOCKING	1	LS	25,000.00	25,000	B2020.20
240						
241	<u>070002 DAMPPROOF., WATERPROOF & JOINT SEALANTS*</u>					
242						
243	CAULKING ALLOWANCE	1	LS	100,000.00	100,000	B2020.20
244						
245	<u>072726 FLUID APPLIED MEMBRANE AIR BARRIER</u>					
246						
247	FLASHING	1	LS	50,000.00	50,000	B2020.20
248						
249	<u>080001 ALUMINUM WINDOWS*</u>					
250	ALUM. UNIT WINDOW	16,475	SF	75.00	1,235,625	B2020.20
251	ALUM. STOREFRONT W/ SPANDREL/CURTAINWALL	17,282	SF	110.00	1,901,020	B2020.30
252					-----	
253					3,311,645	
254						
255	B2050 EXTERIOR DOORS AND GRILLES					
256						
257						
258						
259	EXTERIOR DOORS SINGLE	4	EA	3,800.00	15,200	B2050.10
260	EXTERIOR DOORS DOUBLE	11	EA	7,650.00	84,150	B2050.10
261					0	B2050.10
262						
263	<u>081113 HOLLOW METAL DOORS AND FRAMES</u>					
264	INSULATED HM DOORS COMPLETE:					
265						
266	DOUBLE AT GYM	3	EA	2,000.00	6,000	B2050.10
267	SINGLE /MISC	1	EA	1,500.00	1,500	B2050.10
268	ROOF ACCESS - SGL	3	EA	1,750.00	5,250	B2050.20
269	OVERHEAD DOOR 12 X 10	1	EA	6,000.00	6,000	B2050.30
270						
271	<u>0871000 DOOR HARDWARE</u>					
272						
273	FINISH HDW SET - EXT. DOOR:					
274	INCLUDED ABOVE					
275						
276						

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
277					-----	
278					118,100	
279						
280	B2070 EXTERIOR LOUVERS AND VENTS					
281						
282	089000 LOUVERS AND VENTS					
283						
284	ALUM LOUVERS ALLOWANCE	1	LS	50,000.00	50,000	B2070.10
285					-----	
286					50,000	
287						
288	B2080 EXTERIOR WALL APPURTENANCES					
289						
290	108233 EXTERIOR SUN CONTROL	67	LF	125.00	8,375	B2080.10
291						
292					-----	
293					8,375	
294						
295	B2090 EXTERIOR WALL SPECIALTIES					
296					-----	
297					0	
298						
299	TOTAL B20 - EXTERIOR VERTICAL ENCLOSURES			\$39.34 /COST PER SF	9,106,436	
300						
301	B30 - EXTERIOR HORIZONTAL ENCLOSURES					
302						
303	B3010 ROOFING					
304						
305	<u>06100 ROUGH CARPENTRY ALLOWANCE</u>					
306						
307	TYP. EDGE BLOCKING (3 BF/LF)	3,509	BF	3.20	11,227	B3020.10
308	BASE FLASHING BLOCKING (3 BF/LF)	5,316	BF	3.20	17,011	B3020.10
309	SCREEN, HATCH, SKYLIGHT AND EQUIP BLOCKING ALLOWANCE	1	LS	8,000.00	8,000	B3020.10
310						
311	<u>070001 ROOFING</u>					
312	FULLY ADHEARED WHITE PVC	99,235	SF	12.00	1,190,820	B3010.50
313	1/2" UNDERLAYMENT "DENS DECK"	99,235	SF	2.00	198,470	B3010.50
314	POLY VAPOR BARRIER	99,235	SF	0.35	34,732	B3010.50
315	MEMBRANE FLASHING	1	LS	50,000.00	50,000	B3010.50
316	WALKWAY PADS ALLOWANCE	1,000	SF	5.50	5,500	B3020.30
317	TAPERED INSULATION ALLOWANCE	5,000	SF	2.68	13,400	B3010.50
318	FACTORY FABRICATED COPINGS	3,651	LF	37.00	135,087	B3010.50
319	ALUMINUM TRIM & FLASHING:					
320	FLASHING AND GRAVEL STOP	5,316	LF	30.00	159,480	B3010.90
321	EXP JT ASSEMBLIES	1	LS	25,000.00	25,000	B3010.90
322						
323					-----	
324					18.63	1,848,728
325						
326						
327	B3020 ROOF APPURTENANCES					
328						
329						
330	SNOW GUARDS	492	LF	25.00	12,300	B3020.70
331	DOWNSPOUT	16	EA	750.00	12,000	B3020.70
332	GUTTER	150	LF	35.00	5,250	B3020.70
333						
334	ROOF DRAIN		w/Div. 22			
335					-----	
336					29,550	
337						
338	B3040 TRAFFIC BEARING HORIZONTAL ENCLOSURES					
339					-----	
340					0	
341						
342	B3060 HORIZONTAL OPENINGS					

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
343						
344						
345						
346	ELEVATOR HOIST VENT	3	EA	1,738.00	5,214	B3060.50
347	HEAT AND SMOKE VENT	3	EA	9,500.00	28,500	B3060.50
348						
349	086000 SKYLIGHT					
350						
351					33,714	
352						
353	B3080 OVERHEAD EXTERIOR ENCLOSURES					
354					0	
355						
356						
357					0	
358						
359	TOTAL B30 EXTERIOR HORIZONTAL ENCLOSURES		\$8.47 /COST PER SF		1,961,992	
360						
361						

C INTERIORS

362	C10 - INTERIOR CONSTRUCTION					
363	C1010 INTERIOR PARTITIONS					
364	<u>042000 UNIT MASONRY</u>					
365	6" CMU	1,073	SF	18.00	19,314	C1010.10
366	8" CMU	19,738	SF	20.00	394,760	C1010.10
367						
368	<u>061000 FINISH CARPENTRY</u>					
369						
370	INTERIOR BLOCKING	231,509	GSF	0.25	57,877	C1010.10
371	MISC. ROUGH CARPENTRY	231,509	GSF	0.50	115,755	C1010.10
372	PLYWOOD	2,864	SF	2.00	5,728	C1010.10
373						
374	070002 DAMPPROOF, WATERPROOF & JOINT SEALANTS*					
375						
376	JOINT SEALANTS	231,509	GSF	0.25	57,877	C1010.10
377						
378						
379	078000 FIRESTOPPING					
380						
381	FIRESTOPPING	500	EA	127.40	63,700	C1010.10
382						
383	079500 EXPANSION CONTROL					
384						
385	EXPANSION JOINTS	1	LS	25,000.00	25,000	C1010.10
386						
387						
388	<u>083520 FOLDING GLASS DOORS</u>					
389						
390	SLIDING GLASS WALL 4' X8'-8" @ SMALL GROUP/READING	1,491	SF	150.00	223,609	C1010.20
391	SLIDING GLASS WALL 6' X8'-8" @ EDITING/QUIET AREA	69	SF	150.00	10,400	C1010.20
392	SLIDING GLASS WALL @ ACADEMIC AREA	4,218	SF	150.00	632,700	C1010.20
393						
394						
395	092000 GYPSUM BOARD ASSEMBLIES					
396	5/8" DW W/ 3-5/8" MS	13,689	SF	10.07	137,848	C1010.10
397	5/8" DW W/ 3-5/8" MS, 3-1/2" INSL.	9,381	SF	11.57	108,538	C1010.10
398	5/8" DW (2) W/ 3-5/8" , MS 3-1/2"INSL.	28,040	SF	12.57	352,463	C1010.10
399	5/8" DW W/ 6" MS	19,667	SF	11.07	217,714	C1010.10
400	5/8" DW W/ 6" MS, 6" INSL.	18,518	SF	12.07	223,512	C1010.10
401	5/8" DW (2) W/ 6" MS, 6" INSL.	3,118	SF	13.07	40,752	C1010.10
402	5/8" DW (2) W/ 8" MS, 8" INSL.	4,270	SF	14.07	60,079	C1010.10
403	CHASE WALL					
404	5/8" DW W/2-1/2" MS	197	SF	7.10	1,399	C1010.10
405	5/8" DW W/3-5/8" MS	11,050	SF	9.25	102,213	C1010.10
406	5/8" DW W/3-5/8" MS, 3-1/2 INSL.	10,128	SF	10.75	108,876	C1010.10

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
407	5/8" DW (2) W/3-5/8" MS, 3-1/2 INSL.	18,513	SF	11.75	217,528	C1010.10
408	5/8" DW W/6" MS	8,107	SF	8.10	65,667	C1010.10
409	5/8" DW W/6" MS, 6" INSL.	15,864	SF	9.60	152,294	C1010.10
410	5/8" DW (2) W/6" MS, 6" INSL.	471	SF	10.60	4,993	C1010.10
411	8" STEEL STUD 5/8 SUBSTRATE	2,981	SF	7.00	20,867	C1010.10
412	DOUBLE STUD PARTITIONS					
413	5/8 DW(2), 3-5/8: MS (2), 3-1/2" INSL. (2)	13,206	SF	12.10	159,793	C1010.10
414	SHAFTWALL PARTITIONS					
415	5/8" DW, 1" SW, 4" MS	7,510	SF	10.57	79,381	C1010.10
416	5/8" DW, 1" SW, 4" MS, 3-1/2" INSL.	1,696	SF	12.10	20,522	C1010.10
417	5/8" DW (2), 1" SW, 4" MS, 3-1/2" INSL.	11,075	SF	13.10	145,083	C1010.10
418	5/8" DW (2), 1" SW, 6" MS, 3-1/2" INSL.	6,261	SF	14.10	88,280	C1010.10
419	CEMENT BOARD AT CWT (TOILET/SHW)	9,210	SF	1.25	11,513	C1010.10
420						
421	099100 PAINTING*					
422						
423	102238 OPERABLE PANEL PARTITIONS					
424	FOLDING PARTITIONS AT CLASSROOMS	272	LF	90.00	24,480	C1010.50
425						
426	<u>081113 HOLLOW METAL DOORS AND FRAMES</u>					
427						
428	INTERIOR H.M WINDOWS, SIDELITES AND TRANSOMS (INCL. GLASS):					
429	DOOR FRAME GLAZING	3,698	SF	56.10	207,458	C1010.20
430						
431	080001 ALUMINUM WINDOWS*					
432						
433	INTERIOR ALUM. STOREFRONT:					
434	TRANSACTION WINDOW (BULLETPROOF FILM)	210	SF	125.00	26,250	C1010.20
435	HOLLOW METAL GLAZING	4,730	SF	60.00	283,800	C1010.20
436	INTERIOR CURTAINWALL	4,037	SF	100.00	403,700	C1010.20
437					0	C1010.20
438					-----	
439					4,871,720	
440						
441						
442	C1020 INTERIOR WINDOWS					
443						
444	INTERIOR FIXED WINDOWS				0	C1020.20
445						
446	incl. w/ windows, sidelites and transoms				-----	
447					0	
448						
449						
450	C1030 INTERIOR DOORS					
451						
452	<u>081113 HOLLOW METAL DOORS AND FRAMES</u>					
453						
454	HM DOORS COMPLETE:					
455	DOORS SINGLE	63	EA	1,700.00	107,100	C1030.10
456	DOORS DOUBLE	29	PR	2,500.00	72,500	C1030.10
457						
458	<u>081400 WOOD DOORS</u>					
459						
460	DOOR TYPE (INCL. GLAZING):					
461	WOOD SINGLE TYPE C, AA,A	179	EA	1,675.00	299,825	C1030.10
462	TYPE EE WOOD DOUBLE	21	EA	2,675.00	56,175	C1030.10
463						
464	<u>083113 ACCESS DOORS AND FRAMES</u>					
465						
466	ACCESS PANELS ALLOWANCE	1	LS	25,000.00	25,000	C1030.80
467						
468	<u>087100 DOOR HARDWARE</u>					
469						
470	INCLUDED WITH DOORS					
471						
472	080001 ALUMINUM WINDOWS*					

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
473						
474	INTERIOR ALUM. DOOR, FRAME, HDW, GLASS & GLAZING:					
475	STOREFRONT DOOR DOUBLE	3	PR	10,000.00	30,000	C1030.10
476	STOREFRONT DOOR SINGLE	2	EA	4,000.00	8,000	C1030.20
477						
478	099100 PAINTING*					
479						
480	INCLUDED WITH DOOR				0	
481					-----	
482					598,600	
483						
484						
485	C1040 INTERIOR GRILLES AND GATES					
486						
487	093300 SPECIAL GRILLES & DOORS					
488						
489	OVERHEAD COILING DOORS @ ACEDEMIC ROOM 7' X 8'4"	12	EA	2,500.00	30,000	C1040.10
490					-----	
491					30,000	
492						
493	C1060 RAISED FLOOR CONSTRUCTION					
494						
495	117900 MISCELLANEOUS EQUIPMENT					
496						
497					-----	
498					0	
499						
500	C1070 SUSPENDED CEILING CONSTRUCTION					
501						
502	092900 GYPSUM BOARD ASSEMBLIES					
503						
504	SPECIALTY CEILINGS:					
505	AUDITORIUM/CORRIDOR	5,000	SF	30.00	150,000	C1070.50
506						
507	GYPSUM DRYWALL ASSEMBLIES:					
508	DRYWALL CEILING	9,780	SF	10.73	104,939	C1070.20
509	OPERABLE PARTITION SOFFIT	1,830	LF	75.00	137,250	C1070.20
510	DRYWALL SOFFIT ALLOWANCE	1	LS	75,000.00	75,000	C1070.20
511	WOOD CEILING/CLOUDS	5,500	SF	15.00	82,500	C1070.50
512	MISCL CEILING UPGRADES	1	LS	100,000.00	100,000	C1070.50
513	095113 ACOUSTICAL PANEL CEILING					
514	ACOUSTICAL CEILING ACT ALL TYPES	210,000	SF	4.75	997,500	C1070.10
515					-----	
516					1,647,189	
517						
518	C1090 INTERIOR SPECIALTIES					
519						
520						
521						
522	055000 METAL FABRICATIONS*					
523						
524	WALL RAIL	1,199	LF	85.00	101,915	C1090.10
525	FLOOR/GUARD RAIL	1,382	LF	85.00	117,470	C1090.10
526	POST SUPPORTED RAIL W/WOOD HANDRAIL @ curved café	535	LF	200.00	107,000	C1090.10
527	MISC. RAIL AT AUDITORIUM /RAMP	165	LF	150.00	24,750	C1090.10
528	STRUCTURAL SUPPORT AT GYM EQUIPMENT	1	LS	5,000.00	5,000	C1090.90
529						
530	BUILDING LETTER	19	EA	315.00	5,985	C1090.20
531	BUILDING DIRECTORY - ALLOW	1	EA	5,000.00	5,000	C1090.20
532	GRAPHICS AT WING CORRIDOR/STUDENT DINING	12	EA	5,000.00	60,000	C1090.20
533	MISC. INT. SIGNAGE WAYFINDING	1	LS	2,500.00	2,500	C1090.20
534	INTERIOR MOUNTED LETTERS	4	EA	5,000.00	20,000	C1090.20
535	DOOR SIGNAGE	292	EA	150.00	43,800	C1090.20
536	SPECIAL SIGN AT TOILET ROOMS	10	EA	200.00	2,000	C1090.20
537						
538	102113 TOILET COMPARTMENTS					

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
539	SOLID PLASTIC TOILET PARTITIONS:					
540	STD. PARTITION	25	EA	1,245.00	31,125	C1090.40
541	HC PARTITION	20	EA	1,300.00	26,000	C1090.40
542	URINAL SCREEN	19	EA	415.00	7,885	C1090.40
543						
544	<u>102600 WALL AND DOOR PROTECTION</u>					
545						
546	WALL & CORNER GUARDS - ALLOW	20	EA	225.74	4,515	C1090.35
547						
548	<u>102800 TOILET BATH AND LAUNDRY ACCESSORIES</u>					
549						
550	ADA SHWR SEAT	2	EA	406.02	812	C1090.40
551	SHWR GRAB BAR	4	EA	76.50	306	C1090.40
552	SHWR ROD & CURTAIN	2	EA	56.64	113	C1090.40
553	TOWEL HOOK	2	EA	35.61	71	C1090.40
554	PAPER TOWEL DISPENSER	48	EA	135.00	6,480	C1090.40
555	TOILET TISSUE DISPENSER	75	EA	55.40	4,155	C1090.40
556	GRAB BARS	96	EA	95.00	9,120	C1090.40
557	SOAP DISPENSER	84	EA	63.23	5,311	C1090.40
558	MIRROR	84	EA	258.52	21,716	C1090.40
559	SANITARY NAPKIN DISPOSAL	22	EA	300.55	6,612	C1090.40
560	JANITOR SHELF AND MOP HOLDER	4	EA	95.26	381	C1090.40
561	COAT HOOK ALLOWANCE	50	EA	25.00	1,250	C1090.40
562						
563	CLASSROOM ACCESSORIES:					
564	SOAP DISPENSER	61	EA	35.00	2,135	C1090.40
565	PAPER TOWEL DISPENSER	61	EA	135.00	8,235	C1090.40
566						
567	<u>105113 METAL LOCKERS</u>					
568	LOCKER VIBRATION CLIPS	1,236	EA	16.00	19,776	C1090.25
569	STUDENT LOCKER	1,072	EA	250.00	268,000	C1090.25
570	PE LOCKER	164	EA	300.00	49,200	C1090.25
571	LOCKER RM BENCH-ALLOWANCE	250	LF	57.40	14,350	C1090.25
572	KITCHEN/CUSTODIAL SINGLE-ALLOWANCE	40	EA	250.00	10,000	C1090.25
573						
574	<u>101100 VISUAL DISPLAY SURFACES</u>					
575						
576	MARKERBOARDS -	11,412	SF	18.00	205,416	C1090.20
577	TACKBOARDS	728	SF	10.00	7,280	C1090.20
578	RAIL	2,985	LF	10.00	29,850	C1090.20
579						
580	<u>115300 LABORATORY EQUIPMENT</u>					
581						
582	EMERGENCY EYE WASH STATION				0	C1090.60
583	IN PLUMBING					
584						
585					1,235,514	
586						
587						
588	TOTAL C10 - INTERIOR CONSTRUCTION	\$36.21	/COST PER SF		8,383,024	
589						
590						
591						
592	C20 - INTERIOR FINISHES					
593						
594	C2010 WALL FINISHES					
595						
596	<u>042000 UNIT MASONRY*</u>					
597						
598						
599	VESTIBULE:					
600	4" BRICK	1,124	SF	30.00	33,720	C2010.50
601						
602						
603	<u>062000 INTERIOR FINISH CARPENTRY</u>					
604						

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Unifomat 2010
605	HARDWOOD WALL PANEL ALLOWANCE	5,363	SF	40.00	214,520	C2010.20
606						
607						
608	STAGE CASER OPENING	80	LF	100.00	8,000	C2010.20
609						
610	FRP PANEL ALLOWANCE	2,222	SF	12.00	26,664	C2010.80
611						
612						
613	<u>093000 TILING</u>					
614						
615	CERAMIC WALL TILE	19,033	SF	21.00	399,693	C2010.10
616	PORCELAIN WALL TILE ALLOWANCE	1,067	SF	22.00	23,470	C2010.10
617						
618	098433 SOUND ABSORBING WALL UNITS					
619						
620						
621	SOUND REFLECTIVE PANEL ALLOWANCE	5,000	SF	20.00	100,000	C2010.80
622						
623						
624	<u>099000 PAINTING</u>					
625	INTERIOR PAINTING- WALLS	231,509	GSF	1.25	289,386	C2010.70
626	EPOXY RESINOUS COATING SYSTEM	3,690	SF	7.75	28,598	C2010.70
627					-----	
628					1,124,050	
629						
630	C2020 INTERIOR FABRICATIONS					
631						
632	C2030 FLOORING					
633						
634	<u>093000 TILING</u>					
635						
636	CERAMIC FLOOR TILE:					
637	CERAMIC TILE 2 X 2	6,934	SF	21.00	145,614	C2030.20
638	CERAMIC WALL BASE	2,719	LF	22.00	59,818	C2030.20
639						
640	QUARRY TILE FLOOR:					
641	QUARRY TILE	2,996	SF	18.00	53,928	C2030.20
642	QUARRY BASE	556	SF	19.00	10,564	C2030.20
643						
644	PORCELAIN FLOOR TILE:					
645						
646	<u>096500 RESILIENT FLOORING</u>					
647						
648	STATIC CONTROL RESILIENT FLOORING	941	SF	11.00	10,351	C2030.50
649						
650	RUBBER TILE:					
651	RUBBER TILE				0	C2030.50
652						
653	VCT :					
654	VCT	65,000	SF	4.00	260,000	C2030.50
655	VENTED RUBBER BASE				0	C2030.50
656	RUBBER BASE	18,286	LF	3.48	63,635	C2030.50
657						
658	<u>096400 WOOD FLOORING</u>					
659						
660	STAGE	1,694	SF	6.50	11,011	C2030.45
661						
662	WOOD BASE	911	LF	17.32	15,779	C2030.45
663						
664	<u>096466 WOOD ATHLETIC FLOORING</u>					
665						
666	WOOD ATHLETIC FLOORING	12,673	SF	15.00	190,095	C2030.80
667						
668	<u>096723 RESINOUS FLOORING</u>					
669						
670	EPOXY FLOORING	1,056	SF	12.04	12,714	C2030.70

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
671						
672	096813 CARPETING					
673	SHEET CARPET:					
674						
675	CARPET TILE:					
676	CARPET TILE	2,980	SY	40.00	119,200	C2030.75
677						
678	124800 ENTRANCE FLOOR MATS					
679						
680	ENTRY GRILLE	250	SF	35.00	8,750	C2030.85
681	ENTRY MAT	529	SF	25.00	13,225	C2030.85
682						
683						
684	CONCRETE SEALER	917	SF	0.83	761	C2030.10
685	POLISHED CONCRETE STAINED	4,000	SF	8.50	34,000	C2030.10
686	EPOXY TERRAZZO FLOORING	78,000	SF	30.00	2,340,000	C2030.60
687					-----	
688					3,349,445	
689						
690						
691	C2040 STAIR FINISHES					
692						
693	096500 RESILIENT FLOORING					
694						
695	STAIR :					
696	RUBBER TREADS AND RISERS	3,168	LFR	19.74	62,536	C2040.50
697	STAIR NOSING	3,168	LF	25.00	79,200	C2040.50
698	097000 TERRAZZO					
699	TERRAZZO AT STAIR INCLUDED WITH FLOORING					
700						
701	062000 INTERIOR FINISH CARPENTRY					
702						
703	AUDITORIUM WOOD STAIRS	2	FLT	3,000.00	6,000	C2030.45
704						
705						
706	099100 PAINTING					
707						
708	inc. above					
709					-----	
710					147,736	
711						
712						
713	C2050 CEILING FINISHES					
714	MISC. OTHER.	1	LS	25,000.00	25,000	C2050.70
715						
716						
717					-----	
718					25,000	
719						
720						
721	C2090 INTERIOR FINISH SCHEDULES					
722					-----	
723					0	
724						
725						
726	TOTAL C20 - INTERIOR FINISHES			\$20.07 /COST PER SF	4,646,232	
727						
728						

D SERVICES						
729	D10 - CONVEYING					
730	142400 HYDRAULIC ELEVATORS*					
731	PASSENGER ELEVATOR 5 stop 7 OPENINGS	1	EA	225,000.00	225,000	D1010.10
732	PASSENGER ELEVATOR 4 stop	1	EA	200,000.00	200,000	D1010.10
733	PASSENGER ELEVATOR 2 stop	1	EA	100,000.00	100,000	D1010.10

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
734					-----	
735					525,000	
736						
737	D1020 HORIZONTAL CONVEYING					
738					-----	
739					0	
740						
741	D1050 MATERIAL HANDLING					
742					-----	
743					0	
744						
745	D1080 OPERABLE ACCESS SYSTEMS					
746					-----	
747					0	
748						
749	TOTAL D10 - CONVEYING			\$2.27 /COST PER SF	525,000	
750					0	
751	D20 - PLUMBING					
752						
753	D2000 GENERAL DESIGN CONSIDERATIONS					
754					-----	
755					0	
756	D2010 DOMESTIC WATER DISTRIBUTION					
757						
758	FIXTURES:					
759	P-1 & P-1H WATER CLOSET	82	EA	1,850.00	151,700	D2010.60
760	P-2& P-2H URINAL	27	EA	1,490.00	40,230	D2010.60
762	P-3,P-3H LAVATORIES	83	EA	1,200.00	99,600	D2010.60
764	P-3B LAV WALL MTD TWO STATION LAVATORY BRADLEY	2	EA	4,500.00	9,000	D2010.60
770	LAB SINKS TRIM ONLY & CONNECT_labs sink_counted on drawings	33	EA	650.00	21,450	D2010.60
772	P-4 BI LEVEL ELECTRIC WATER COOLER	14	EA	3,600.00	50,400	D2010.60
773	P-5 P-5H SHOWER	5	EA	975.00	4,875	D2010.60
774	P-6 JANITORS SINK	6	EA	2,500.00	15,000	D2010.60
776	P-7 EMERGENCY EYE WASH SCIENCE CLASSROOM	12	EA	4,375.00	52,500	D2010.60
779	P-8 & P-9 GENERAL CLASSROOM & TEACHERS SINKS	66	EA	1,000.00	66,000	D2010.60
780	P-10 NURSES EXAM SINKS	3	EA	750.00	2,250	D2010.60
781	P-11 THRU P13H NOT SHOWN ON DRAWINGS				0	D2010.60
782	P-14 & P14H SS SINGLE BOWL SINK	31	EA	650.00	20,150	D2010.60
783	FIXTURE CONNECTIONS	333	EA	300.00	99,900	D2010.60
784					0	D2010.60
785						
786	ROUGH IN FIXTURES					
787	ES/EW-1 & 2 EYE WASH/SHW	12	EA	500.00	6,000	D2010.60
788	SCIENCE CLASS ROOM SINK IN SCIENCE CASEWORK	33	EA	450.00	14,850	D2010.60
789	KITCHEN EQUIPMENT CONNECTIONS	69	EA	300.00	20,775	D2010.60
790	FUME HOOD	5	EA	750.00	3,847	D2010.60
791	HOSE BIBB	4	EA	175.00	700	D2010.60
792	WALL HYDRANT-narrative page 4_every 100 foot intervals	26	EA	1,125.00	29,441	D2010.60
793	DUPLEX GAS TURRET	33	EA	385.00	12,705	D2010.60
796	CLOTHES WASHER CONNECTION	1	EA	350.00	350	D2010.60
797						
798	WATER HEATER:					
799	CLASSROOM AREA-1 LOCKERS (PAGE 3 HVAC NARRATIVE)	3	EA	83,355.04	250,065	D2010.90
801	EXPANSION TANK 25 GAL	3	EA	1,500.00	4,500	D2010.90
802	6" DBL WALL FLUE CPVC	200	LF	75.00	15,000	D2010.90
803	6" DBL WALL FLUE CPVC	200	LF	75.00	15,000	D2010.90
804	ROOF CAP	3	EA	1,000.00	3,000	D2010.90
805						
806	STORM WATER RECLAIM PUMPS 5HP				0	D2010.90
807	CP FRACTIONAL HP CIRCULATION PUMPS	4	EA	2,500.00	10,000	D2010.90
808	BALANCING VALVES	19	EA	1,350.00	25,968	D2010.90
809						
810						
811	MIXING VALVES:					
812	MV-1 - MASTER 2"	1	EA	4,500.00	4,500	D2010.90
814	4" RPZ	1	EA	1,500.00	1,500	D2010.20

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
815	2" RPBP DOUBLE CHECK VALVE ASSEMBLY	3	EA	1,600.00	4,104	D2010.20
816	2.5" RPBP IRRIGATION SYSTEM @ FIELDS	1	EA	1,600.00	1,600	D2010.20
817	2" RPZ	6	EA	700.00	4,200	D2010.20
818	1" 1/4" RPBP	1	EA	650.00	650	D2010.20
819	WASHING MACHINE BOX	3	EA	325.00	834	D2010.20
820	6" WATER SERVICE METER AND EQUIPMENT	1	LS	10,000.00	10,000	D2010.20
821						
822						
823	COPPER WATER LINES:					
824	PIPING:					
825	1/2" DOMESTIC WATER COPPER	4,000	LF	14.35	57,400	D2010.40
826	3/4" DOMESTIC WATER COPPER	1,800	LF	18.15	32,670	D2010.40
827	1" DOMESTIC WATER COPPER	575	LF	22.00	12,650	D2010.40
828	1 1/4" DOMESTIC WATER COPPER	300	LF	26.00	7,800	D2010.40
829	1 1/2" DOMESTIC WATER COPPER	650	LF	31.50	20,475	D2010.40
830	2" DOMESTIC WATER COPPER	2,050	LF	43.50	89,175	D2010.40
831	2.5" DOMESTIC WATER COPPER		LF	60.00	0	D2010.40
832	3" DOMESTIC WATER COPPER	850	LF	76.00	64,600	D2010.40
833	4" DOMESTIC WATER COPPER	450	LF	122.00	54,900	D2010.40
834	6" DOMESTIC WATER COPPER	45	LF	297.00	13,365	D2010.40
835	Accessories&Fittings Domestic water systems	1	LS	70,607.00	70,607	D2010.40
836	1/2" UTP DOMESTIC WATER COPPER UNDERGROUND	519	LF	35.00	18,178	D2010.40
838	3/4" PCW &PHW & PHWC COPPER	340	LF	18.15	6,168	D2060.30
839	1" PCW &PHW & PHWC COPPER	212	LF	22.00	4,655	D2060.30
841	1.5" PCW &PHW & PHWC COPPER	205	LF	31.50	6,463	D2060.30
842	2" PCW &PHW & PHWC COPPER	171	LF	43.50	7,419	D2060.30
843	2.5" PCW &PHW & PHWC COPPER	63	LF	60.00	3,770	D2060.30
844	Accessories&Fittings Protected water systems	1	LS	9,330.70	9,331	D2060.30
845	TEMPORARY WATER CONNECTION	1	LS	10,000.00	10,000	D2010.40
846						
847	INSULATION:					
848	1/2" DOMESTIC WATER-INSULATION 1"WALL	4,000	LF	5.80	23,200	D2010.40
849	3/4" DOMESTIC WATER-INSULATION 1"WALL	1,800	LF	6.10	10,980	D2010.40
850	1" DOMESTIC WATER INSULATION 1"WALL	575	LF	6.40	3,680	D2010.40
851	1.25" DOMESTIC WATER -INSULATION 1"WALL	300	LF	6.75	2,025	D2010.40
852	1.5" DOMESTIC WATER -INSULATION 1"WALL	650	LF	6.85	4,453	D2010.40
853	2" DOMESTIC WATER -INSULATION 1"WALL	2,050	LF	7.20	14,760	D2010.40
854	2.5" DOMESTIC WATER -INSULATION 1"WALL	0	LF	7.75	0	D2010.40
855	3" DOMESTIC WATER -INSULATION 1"WALL	850	LF	8.15	6,928	D2010.40
856	4" DOMESTIC WATER -INSULATION 1"WALL	450	LF	10.00	4,500	D2010.40
857	6" DOMESTIC WATER -INSULATION 1"WALL	45	LF	12.40	558	D2010.40
858	Accessories&Fittings Domestic water systems insulation	1	EA	14,216.60	14,217	D2010.40
859	1/2" PCW &PHW & PHWC COPPER -INSULATION 1"WALL		LF	23.54	0	D2060.30
860	3/4" PCW &PHW & PHWC COPPER -INSULATION 1"WALL	340	LF	6.10	2,073	D2060.30
861	1" PCW &PHW & PHWC COPPER -INSULATION 1"WALL	212	LF	6.40	1,354	D2060.30
863	1.5" PCW &PHW & PHWC COPPER -INSULATION 1"WALL	205	LF	6.85	1,405	D2060.30
864	2" PCW &PHW & PHWC COPPER -INSULATION 1"WALL	171	LF	7.20	1,228	D2060.30
865	2.5" PCW &PHW & PHWC COPPER -INSULATION 1"WALL	63	LF	7.75	487	D2060.30
866	Accessories&Fittings Protected water systems insulation	1	EA	1,309.53	1,310	D2060.30
867						
868						
869						
870						
871					1,655,427	
872						
873						
874	D2020 SANITARY DRAINAGE					
875	1.5" CI SANITARY AND VENT PIPING	1,155	LF	26.00	30,030	D2020.30
876	2" CI SANITARY AND VENT PIPING	1,800	LF	27.50	49,500	D2020.30
877	2" CI SANITARY UNDERGROUND	750	LF	37.50	28,125	D2020.30
878	3" CI SANITARY AND VENT PIPING	80	LF	32.00	2,560	D2020.30
879	3" CI SANITARY UNDERGROUND	60	LF	43.00	2,580	D2020.30
880	4" CI SANITARY AND VENT PIPING	1,450	LF	38.00	55,100	D2020.30
881	4"CI SANITARY UNDERGROUND	1,580	LF	49.57	78,321	D2020.30
882	4"KW CI SANITARY UNDERGROUND	240	LF	49.57	11,897	D2020.30
883	IN LINE GREASE INTERCEPTOR BELOW FLOOR	3	EA	12,500.00	37,500	D2020.30

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
884	IN LINE GREASE INTERCEPTOR ABOVE	1	EA	6,500.00	6,500	D2020.30
885	TP-1 TRAP PRIMER SYSTEM	1	EA	5,000.00	5,000	D2020.10
886	TP-2 TRAP PRIMER SYSTEM	5	EA	3,500.00	17,500	D2020.10
887					-----	
888					324,612	
889						
890						
891	D2030 BUILDING SUPPORT PLUMBING SYSTEMS					
892						
893	CLEANOUTS & FLOOR DRAINS:					
896	FCO-2"	2	EA	235.00	470	D2020.10
897	FCO-3"	1	EA	250.00	250	D2020.10
898	FCO-4"	30	EA	300.00	9,000	D2020.10
899	FCO-5"	9	EA	310.00	2,790	D2020.10
900	FCO-6"	9	EA	350.00	3,150	D2020.10
901	4"FD@ MECHANICAL ROOMS	4	EA	850.00	3,400	D2020.10
902	4"FD GENERAL	20	EA	750.00	15,000	D2020.10
903	4"FD @ SCIENCE LABS ACID RESISTANT	12	EA	1,000.00	12,000	D2020.10
904					0	D2020.10
905						
906						
907	ROOF DRAINAGE SYSTEM:					
908	4" ROOF DRAIN & OVERFLOW DRAINS	22	EA	750.00	16,500	D2030.20
909	5" ROOF DRAIN & OVERFLOW DRAINS	25	EA	1,100.00	27,500	D2030.20
910	4" (ST)ROOF DRAIN PIPING ELEVATED	860	LF	48.64	41,831	D2030.20
911	5" (ST)ROOF DRAIN PIPING ELEVATED	900	LF	67.14	60,428	D2030.20
912	6" (ST)ROOF DRAIN PIPING ELEVATED	310	LF	75.00	23,250	D2030.20
913	8" (ST)ROOF DRAIN PIPING ELEVATED	90	LF	104.83	9,435	D2030.20
914	4" (ST)ROOF DRAIN PIPING UNDERGROUND	68	LF	50.00	3,400	D2030.20
915	5" (ST)ROOF DRAIN PIPING UNDERGROUND	500	LF	60.00	30,000	D2030.20
916	6" (ST)ROOF DRAIN PIPING UNDERGROUND	50	LF	65.00	3,250	D2030.20
917	8" (ST)ROOF DRAIN PIPING UNDERGROUND	290	LF	70.00	20,300	D2030.20
918	10" (ST)ROOF DRAIN PIPING UNDERGROUND	375	LF	75.00	28,125	D2030.20
919	12" (ST)ROOF DRAIN PIPING UNDERGROUND	180	LF	100.50	18,090	D2030.20
920					-----	
921					328,168	
922						
923						
924	D2050 GENERAL SERVICE COMPRESSED AIR					
925			N/A			
926						
927					-----	
928					0	
929						
930						
931	D2060 PROCESS SUPPORT PLUMBING SYSTEMS					
932						
933	1" GAS LINE	45	LF	15.00	675	D2060.10
934	1.25" GAS LINE	1,471	LF	20.00	29,418	D2060.10
935	1.5" GAS LINE	70	LF	23.00	1,610	D2060.10
936	2" GAS LINE	115	LF	29.50	3,393	D2060.10
937	2.5" GAS LINE	357	LF	43.50	15,508	D2060.10
938	3" GAS LINE	120	LF	55.00	6,600	D2060.10
939	4" GAS LINE	455	LF	65.00	29,591	D2060.10
940	6" GAS LINE	40	LF	74.50	2,980	D2060.10
941	GAS SHUT OFF VALVES	14	EA	1,200.00	16,927	D2060.10
942	GAS FLOW METERS-construction narrative-page 39	1	EA	2,500.00	2,500	D2060.10
943	GAS REGULATORS	10	EA	800.00	8,207	D2060.10
944						
945						
946	ACID WASTE NEUTRALIZATION SYSTEM	1	EA	41,036.33	41,036	D2060.20
947	ACID WASTE EJECTOR PUMP	1	LS	12,695.61	12,696	D2060.20
948	1.5" AG POLYPROPYLENE ACID WASTE	690	LF	39.50	27,255	D2060.20
949	2" AG POLYPROPYLENE ACID WASTE	295	LF	44.61	13,160	D2060.20
950	4" AG POLYPROPYLENE ACID WASTE	512	LF	56.49	28,923	D2060.20
951	4" UG POLYPROPYLENE ACID WASTE FUSED JOINTS	225	LF	66.50	14,963	D2060.20

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
952	2" UG POLYPROPYLENE ACID WASTE FUSED JOINTS	320	LF	55.00	17,600	D2060.10
953						
954					-----	
955					273,041	
956						
957	TOTAL D20 - PLUMBING			\$11.15 /COST PER SF	2,581,249	
958						
959	D30 - HVAC					
960						
961	D3000 DESIGN BASIS					
962						
963	230000 HVAC					
964						
965	DDC TEMPERATURE CONTROL	231,509	GSF	4.50	1,041,791	D3080.10
966	TEST AND BALANCE	231,509	GSF	0.38	87,973	D3090.10
967	COORDINATION WITH COMISSIONING AGENT	231,509	GSF	0.10	23,151	D3095.10
968						
969					-----	
970					1,152,915	
971						
972						
973	D3010 FACILITY FUEL SYSTEMS					
974			N/A			
975						
976					-----	
977					0	
978						
979						
980	D3020 HEATING SYSTEMS					
981						
982	CONDENSING BOILER _CLEARFIRE_4000 MBH_HVAC narrative page 6	3	EA	44,000.00	132,000	D3020.70
983	BOILER BRANCH INTAKES	218	LF	150.00	32,701	D3020.70
984	BOILER BRANCH EXHAUSTS	231	LF	150.00	34,624	D3020.70
985	BOILER PIPING CONNECTIONS & ACCESSORIES	1	LS	10,000.00	10,000	D3020.70
986	EXPANSION TANKS	3	EA	6,500.00	19,500	D3020.70
987	AIR SEPARATOR FOR HOT WATER	3	EA	3,500.00	10,500	D3020.70
988						
989	ROOF TOP UNITS:					
990	RTU_14 EACH	137,460	CFM	10.00	1,374,600	D3020.70
1000	ENERGY RECOVERY RTU FOR CLASSROOMS	7	EA	25,000.00	175,000	D3020.70
1001	VIBRATION ISOLATION	1	LS	30,000.00	30,000	D3060.90
1002	CRANE TO ROOF	1	LS	20,000.00	20,000	D3020.70
1003					-----	
1004					1,838,925	
1005						
1006						
1007	D3030 COOLING SYSTEMS					
1008						
1009	CHILLER:					
1010	ELECTRIC AIR COOLED CHILLER 175 TONS EACH	2	EA	147,500.00	295,000	D3030.30
1011	PROPYLENE GLYCOL 30% system allowance -narrative page 8	1	LS	25,000.00	25,000	D3030.30
1012	BUFFER TANK BT-1 CHW 600 GAL-estimate gallons	1	LS	8,475.00	8,475	D3030.30
1013	CHILLED WATER PIPING AND VALVE	1	LS	19,235.78	19,236	D3030.30
1014	CHILLER VIBRATION ISOLATION	1	LS	4,488.35	4,488	D3030.30
1015	PUMPS:					
1016	HOT WATER PUMPS	2	EA	8,720.22	17,440	D3050.10
1017	CHILLED WATER PUMPS	2	EA	12,000.00	24,000	D3050.10
1018	BOILER CIRCULATOR B1,2,3	3	EA	2,500.00	7,500	D3050.10
1020	VFD DRIVES	7	EA	2,875.00	20,125	D3050.10
1021	CHEMICAL TREATMENT SYSTEM	1	EA	8,500.00	8,500	D3050.10
1022	AIR SEPARATOR FOR CHILLED WATER SYSTEM	1	EA	4,500.00	4,500	D3050.10
1023						
1024					-----	
1025					434,265	
1026						
1027						

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1028	D3050 FACILITY HVAC DISTRIBUTION SYSTEMS					
1029						
1030	HVAC PIPING:					
1031	HOT WATER PIPE					
1032	3/4" HW	18,861	LF	26.80	505,483	D3050.10
1033	1" HW	3,282	LF	27.00	88,604	D3050.10
1034	1 1/4" HW	2,171	LF	29.00	62,961	D3050.10
1035	1 1/2" HW	1,561	LF	35.00	54,623	D3050.10
1036	2" HW	1,771	LF	48.00	85,007	D3050.10
1037	2 1/2" HW	1,294	LF	70.00	90,575	D3050.10
1038	3" HW	258	LF	90.00	23,198	D3050.10
1039	4" HW	258	LF	160.00	41,242	D3050.10
1040	6" HW	204	LF	320.00	65,248	D3050.10
1041						
1042	HOT WATER PIPE INSULATION					
1043	3/4" HW	18,861	LF	7.50	141,460	D3050.10
1044	1" HW	3,282	LF	9.00	29,535	D3050.10
1045	1 1/4" HW	2,171	LF	9.50	20,625	D3050.10
1046	1 1/2" HW	1,561	LF	10.00	15,607	D3050.10
1047	2" HW	1,771	LF	11.50	20,366	D3050.10
1048	2 1/2" HW	1,294	LF	12.50	16,174	D3050.10
1049	3" HW	258	LF	13.50	3,480	D3050.10
1050	4" HW	258	LF	14.20	3,660	D3050.10
1051	6" HW	204	LF	14.70	2,997	D3050.10
1052						
1053	CHILLED WATER PIPE:					
1054	3/4" CW	1,784	LF	26.80	47,806	D3050.10
1055	1" CW	533	LF	27.00	14,404	D3050.10
1056	1 1/4" CW	133	LF	29.00	3,868	D3050.10
1057	1 1/2" CW	291	LF	35.00	10,189	D3050.10
1058	2" CW	464	LF	48.00	22,283	D3050.10
1059	2 1/2" CW	2,194	LF	70.00	153,591	D3050.10
1060						
1061	CHILLED WATER PIPE INSULATION					
1062	3/4" CW	1,784	LF	7.50	13,378	D3050.10
1063	1" CW	533	LF	9.00	4,801	D3050.10
1064	1 1/4" CW	133	LF	9.50	1,267	D3050.10
1065	1 1/2" CW	291	LF	10.00	2,911	D3050.10
1066	2" CW	464	LF	11.50	5,339	D3050.10
1067	2 1/2" CW	2,194	LF	12.50	27,427	D3050.10
1068						
1069	UNIT HEATERS :					
1070	UNIT HEATERS 420 CFM EACH	5	EA	725.00	3,625	D3050.10
1071	UNIT HEATERS 380 CFM EACH	5	EA	725.00	3,625	D3050.10
1072	UNIT HEATERS 1100 CFM EACH	5	EA	1,200.00	6,000	D3050.10
1073	WALL RECESSED CABINET UNIT HEATER	5	EA	2,500.00	12,500	D3050.10
1074						
1075	INDUCTION UNITS:					
1082	VAV BOXES	50	EA	1,350.00	67,500	D3050.10
1083	REFRIGERATE LINES	1,500	LF	25.00	37,500	D3050.10
1084						
1085	CONDENSATE DRAINS					
1086	3/4 "	1,000	LF	20.00	20,000	D3050.10
1087	1 "	700	LF	25.00	17,500	D3050.10
1088						
1089	RADIANT PANEL					
1090	RADIANT PANEL RP FOR CLASSROOMS (NARRATIVE PAGE 9)	2,546	LF	100.00	254,600	D3020.90
1091	ACCESSORIES	1	EA	10,000.00	10,000	D3020.90
1092						
1093	FIN TUBE RADIATION					
1094	FIN-TUBE RADIATION-NARRATIVE PAGE 7	399	LF	90.00	35,894	D3020.90
1095	ACCESSORIES	1	EA	6,000.00	6,000	D3020.90
1096						
1097					2,052,852	
1098	D3060 VENTILATION					
1099						

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1100	EXHAUST:					
1101	EXHAUST AIR GRILLES	80	EA	250.00	19,877	D3060.30
1102	VOLUME DAMPERS	38	EA	210.00	8,079	D3060.30
1103	FIRE DAMPERS	32	EA	230.00	7,374	D3060.30
1104	DUCTWORK & ACCESSORIES	19,631	LBS	9.00	176,677	D3060.30
1105						
1106	SUPPLY:					
1107	SUPPLY AIR GRILLES	385	EA	250.00	96,179	D3060.10
1108	LINEAR DIFFUSER	192	LF	95.00	18,274	D3060.10
1109	VOLUME DAMPERS	417	EA	210.00	87,523	D3060.10
1110	FIRE DAMPERS	32	EA	230.00	7,374	D3060.10
1111	DUCTWORK & ACCESSORIES	52,943	LBS	8.50	450,018	D3060.10
1112	DUCT LINER FIBERGLASS 1" THICK	9,032	SF	7.25	65,481	D3050.70
1113	DUCT INSULATION WRAP FOIL FACE 1.5" THICK	27,104	SF	4.15	112,484	D3050.70
1114						
1115	RETURN:					
1116	RETURN GRILLES	301	EA	150.00	45,204	D3060.20
1117	VOLUME DAMPERS	64	EA	225.00	14,427	D3060.20
1118	FIRE DAMPERS	26	EA	250.00	6,412	D3060.20
1119	DUCTWORK & ACCESSORIES	73,329	LBS	8.50	623,299	D3060.20
1120	ALUM. DUCTWORK	1,282	LBS	12.00	15,389	D3060.20
1121	DUCT LINER	6,412	SF	4.15	26,609	D3060.20
1122	KITCHEN EXHAUST DUCTWORK - WELDED	1,924	LBS	20.00	38,472	D3060.20
1123	FIRERATED KITCHEN EXHAUST INSULATION	1	LS	8,976.70	8,977	D3060.20
1124						
1125	EXHAUST FANS:					
1126	FRACTIONAL HP FANS	12,016	CFM	3.00	36,048	D3060.30
1127	KITCHEN EXHAUST FANS	6,271	CFM	5.00	31,354	D3060.30
1128	FEF EXHAUST FANS 1-4 1000CFM EA.	5,130	CFM	5.00	25,648	D3060.30
1129	SOUND ATTENUATOR VIBRO ACOUSTICS	46	EA	2,532.00	116,892	D3060.90
1130	SUPPLY VARIABLE AIR VOLUME TERMINAL BOX	19	EA	1,525.00	29,335	D3060.90
1131	RETURN/EXHAUST VARIABLE AIR VOLUME AIR TERM .BOX	13	EA	1,000.00	12,824	D3060.90
1132						
1133						
1134					-----	
1135					2,080,227	
1136						
1137	D3070 SPECIAL PURPOSE HVAC SYSTEMS					
1138					-----	
1139					0	
1140						
1141	TOTAL D30 - HVAC			\$32.65 /COST PER SF	7,559,184	
1142						
1143						
1144	D40 - FIRE PROTECTION					
1145						
1146	D4010 FIRE SUPPRESSION					
1147	SPRINKLER SYSTEM	231,509	GSF	4.00	926,036	D4010.10
1148	*EXCLUDES FIRE PUMP					
1149	DRYPIPE AT FREEZER & ENTRANCE	1	LS	25,000.00	25,000	D4010.10
1150	ROOF MANIFOLDS INCLUDED ABOVE				-----	
1151					951,036	
1152						
1153	D4040 FIRE PROTECTION SPECIALTIES					
1154						
1155	<u>104413 FIRE EXTINGUISHERS</u>					
1156	MOVED TO EQUIPMENT					
1157					-----	
1158					0	
1159						
1160	TOTAL D40 - FIRE PROTECTION			\$4.11 /COST PER SF	951,036	
1161						
1162						
1163						
1164						
1165						

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1166	D50 - ELECTRICAL					
1167						
1168	D5010 FACILITY POWER GENERATION					
1169	GENERATOR					
1170	DIESEL GENERATOR 750KW W/TWO ATS	1	EA	211,752.00	211,752	D5010.90
1171					-----	
1172					211,752	
1173						
1174	D5020 ELECTRICAL SERVICE & DISTRIBUTION					
1175	ELECTRICAL SERVICE					
1176	TEMPORARY ELECTRIC	231509	SF	0.37	85,658	D5020.10
1177	MAIN SWITCHBOARD 4000A 277/480V	1	EA	110,500.00	110,500	D5020.10
1178					-----	
1179					196,158	
1180	POWER DISTRIBUTION					
1181	120/208V PANELS	40	EA	2,837.44	113,498	D5020.30
1182	277/480V PANELS	28	EA	2,633.36	73,734	D5020.30
1183	TRANSFORMERS	26	EA	6,575.45	170,962	D5020.30
1184	POWER DISTRIBUTION CONDUIT/WIRE COMPLETE (VARIES)	6,895	LF	62.73	432,494	D5020.30
1185	EQUIPMENT CONNECTIONS	620	EA	144.26	89,493	D5020.30
1186	PANEL BOARD SURGE PROTECTORS	8	EA	1,750.00	14,000	D5020.30
1187	PV READY ROOF	1	LS	2,500.00	2,500	D5020.30
1188	ELECTRIC ADD	231,509	SF	7.00	1,620,563	D5020.30
1189					-----	
1190					2,517,243	
1191						
1192	GROUNDING	1702	LF	18.15	30,895	D5020.70
1193					-----	
1194					2,744,296	
1195						
1196						
1197	D5030 GENERAL PURPOSE ELECTRICAL POWER					
1198	BRANCH WIRING					
1199	MECHANICAL BRANCH WIRING/CONDUIT COMPLETE (VARIES)	26,297	LF	16.27	427,853	D5030.10
1200	POWER OUTLET BRANCH WIRING/CONDUIT COMPLETE (VARIES)	59,419	LF	4.19	248,967	D5030.10
1201	SWITCHES BRANCH WIRING/CONDUIT COMPLETE (VARIES)	15,713	LF	3.74	58,767	D5030.10
1202					-----	
1203					735,587	
1204						
1205	WIRING DEVICES					
1206	POWER OUTLETS (DEVICES, BOXES, COVERS, & CONN.)	2100	EA	82.27	172,767	D5030.50
1207					-----	
1208					172,767	
1209						
1210					-----	
1211					6,577,803	
1212						
1213	D5040 LIGHTING					
1214	LIGHTING CONTROL					
1215	THEATRE DIMMING SYSTEM	1	LS	200,000.00	200,000	D5040.10
1216	AUDITORIUM DIMMING SYSTEM	1	LS	100,000.00	100,000	D5040.10
1217	SMART GYM CONTROL SYSTEM	1	LS	25,000.00	25,000	D5040.10
1218	OCCUPANCY SENSORS	200	EA	221.16	44,232	D5040.10
1219	DAYLIGHT PHOTOCELLS	50	EA	113.51	5,676	D5040.10
1220	SP SWITCHES	60	EA	74.90	4,494	D5040.10
1221	3 WAY SWITCHES	200	EA	84.26	16,852	D5040.10
1222	AUTOMATIC WALL SWITCHES	80	EA	137.06	10,965	D5040.10
1223	DIMMERS	55	EA	261.99	14,409	D5040.10
1224	TEACHER STATIONS	100	EA	318.40	31,840	D5040.10
1225					-----	
1226					453,468	
1227						
1228	LIGHTING BRANCH WIRING					
1229	LIGHTING BRANCH WIRING/CONDUIT COMPLETE (VARIES)	45,573	LF	4.08	185,940	D5040.20
1230					-----	
1231					185,940	

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1232						
1233	LIGHTING FIXTURES					
1234	(PARKING LIGHTING IN SECTION G4050.10)					
1235						
1236					-	D5040.50
1237					-	D5040.50
1238	INTERIOR LIGHTING					
1239	VOLUMETRIC	120	EA	450.00	54,000	D5040.50
1240	HIGHBAY GYM	45	EA	524.00	23,580	D5040.50
1241	LIGHT STRIP	150	EA	265.00	39,750	D5040.50
1242	WALL SCONCES	245	EA	300.00	73,500	D5040.50
1243	LUMINOUS BOWLS	130	EA	220.00	28,600	D5040.50
1244	DOWNLIGHTS	110	EA	345.00	37,950	D5040.50
1245	WET/GASKETED	80	EA	600.00	48,000	D5040.50
1246	RECESSED DOWNLIGHTS	125	EA	540.00	67,500	D5040.50
1247	STEPLIGHTING	25	EA	495.00	12,375	D5040.50
1248	PRISMATIC LENS TROFFER LIGHT STRIP	375	EA	615.00	230,625	D5040.50
1249	EXIT SIGNS	75	EA	250.00	18,750	D5040.50
1250	AUDITORIUM/THEATRE LIGHTING	1	LS	200000.00	200,000	D5040.50
1251					-----	
1252					834,630	
1253						
1254					-----	
1255					1,474,038	
1256						
1257	D5080 MISCELLANEOUS ELECTRICAL SYSTEMS					
1258	SEE D5020.70 FOR GROUNDING					
1259	LIGHTNING PROTECTION	231509	SF	0.50	115,755	D5080.10
1260	UTILITY BACKCHARGE - ALLOW					
1261					-----	
1262					115,755	
1263						
1264						
1265	TOTAL D50 - ELECTRICAL			\$23.56 /COST PER SF	5,454,194	
1266						
1267	D60 - COMMUNICATIONS					
1268						
1269	D6010 DATA COMMUNICATIONS					
1270	SM FIBER	2525	LF	7.60	19,190	D6010.10
1271	MM FIBER	2525	LF	8.95	22,599	D6010.10
1272	TELEPHONE & DATA DROPS	1144	EA	326.00	372,944	D6010.10
1273	TELECOM RACKS & EQUIPMENT	95	EA	1,392.45	132,283	D6010.10
1274	CABLE TRAY	150	LF	125.00	18,750	D6010.20
1275					-----	
1276					565,766	
1277						
1278	D6020 VOICE COMMUNICATIONS					
1279	SEE D6010.10					
1280	DISTRIBUTED ANTENNA SYSTEM (ENS)	1	LS	75,000.00	75,000	D6020.50
1281						
1282	D6030 AUDIO-VIDEO COMMUNICATION					
1283	MEDIA SERVER	1	LS	75,000.00	75,000	D6030.10
1284	DATA ACQUISITION SERVER	1	LS	50,000.00	50,000	D6030.10
1285	AV SYSTEM ROUGH IN & CABLING	65	EA	1,263.78	82,146	D6030.10
1286					-----	
1287					282,146	
1288						
1289						
1290	D6060 DISTRIBUTED COMM. & MONITORING					
1291	AUDITORIUM SOUND & VIDEO SYSTEM	1	LS	300,000.00	300,000	D6060.10
1292	PAGING SYSTEM	540	EA	210.55	113,697	D6060.10
1293	GYM SOUND SYSTEM	1	LS	35,000.00	35,000	D6060.10
1294	BAND MUSIC ROOM SOUND SYSTEM	2	EA	12,000.00	24,000	D6060.10
1295	PE MULTIPURPOSE SOUND SYSTEM	2	EA	12,000.00	24,000	D6060.10
1296	AUDITORIUM PROJECTION SYSTEM	1	EA	50,000.00	50,000	D6060.10
1297	TV STUDIO SOUND SYSTEM	1	EA	70,000.00	70,000	D6060.10

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1298	CLOCK SYSTEM	150	EA	268.23	40,235	D6060.50
1299	CLOCK SYSTEM MC	1	LS	15,000.00	15,000	D6060.50
1300	ELECTRIC ADD AV TO 1.1	231,509	SF	2.00	463,018	D6060.10
1301		0			-----	
1302					1,134,950	
1303						
1304	D6090 COMM. SUPPLEMENTARY COMPONENTS					
1305					-----	
1306					0	
1307						
1308	TOTAL D60 - COMMUNICATIONS		\$8.56 /COST PER SF		1,982,861	
1309						
1310	D70 - ELECTRONIC SAFETY AND SECURITY					
1311						
1312	D7010 ACCESS CONTROL & INTRUSION DETECTION					
1313	CCTV CAMERAS (COMPLETE)	91	EA	2,522.94	229,588	D7010.10
1314	MOTION DETECTORS (COMPLETE)	135	EA	450.00	60,750	D7010.10
1315	CARD READERS (COMPLETE)	40	EA	2,496.00	99,840	D7010.10
1316	DOORS AND INTERCOM (COMPLETE)	290	EA	899.40	260,826	D7010.10
1317					-----	
1318					651,004	
1319	D7030 ELECTRONIC SURVEILLANCE					
1320						
1321	SEE D7010.10					
1322					-----	
1323					0	
1324						
1325	D7050 DETECTION AND ALARM					
1326	FIRE ALARM BRANCH	25218	LF	0.85	21,435	D7050.10
1327	FIRE ALARM SYSTEM (COMPLETE)	580	EA	511.46	296,651	D7050.10
1328						
1329					-----	
1330					318,086	
1331	D7070 ELECTRIC MONITORING & CONTROL					
1332					-----	
1333					0	
1334	D7090 ELEC. SAFETY & SEC. SUPPLEMENT. COMP.					
1335					-----	
1336					0	
1337						
1338	TOTAL D70 - ELECTRONIC SAFETY AND SECURITY		\$4.19 /COST PER SF		969,089	
1339						
1340	D80 - INTEGRATED AUTOMATION					
1341						
1342	D8010 INTEGRATED AUTOMATION FACILITY CONTROLS					
1343						
1344					-----	
1345					0	
1346						
1347	TOTAL D80 - INTEGRATED AUTOMATION		\$0.00 /COST PER SF		0	
1348						
1349						

E EQUIPMENT AND						
1350	E10 - EQUIPMENT					
1351						
1352	111300 LOADING DOCK EQUIPMENT					
1353	LOADING DOCK BUMPERS	1	LS	5,000.00	5,000	E1010.50
1354					-----	
1355					5,000	
1356						
1357						
1358	E1030 COMMERCIAL EQUIPMENT					
1359						
1360	114000 FOOD SERVICE EQUIPMENT					

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1361	COMMERCIAL ICE MAKER	3	EA	1,385.00	4,155	E1030.80
1362	FOOD SERVICE EQUIPMENT ALLOWANCE	1	LS	500,000.00	500,000	E1030.80
1363					-----	
1364					504,155	
1365						
1366						
1367	E1040 INSTITUTIONAL EQUIPMENT					
1368						
1369						
1370	CHEMICAL STORAGE CABINET	3	EA	2,500.00	7,500	E1040.10
1371	FLAMMABLE CHEMICALS CAB	1	EA	1,369.00	1,369	E1040.10
1372	FIRST AID KIT	12	EA	186.45	2,237	E1040.10
1373	FUME HOOD (2 SIDED)	4	EA	9,284.02	37,136	E1040.10
1374	GOGGLE CABINET	12	EA	953.78	11,445	E1040.10
1375	FIRE BLANKET CAB	12	EA	250.00	3,000	E1040.10
1376	FUME HOOD BASE CABINET	20	LF	1,100.00	22,000	E1040.10
1377						
1378	117900 MISCELLANEOUS EQUIPMENT					
1379					0	
1380	HEALTH OFFICE CUBICLE TRACK W/CURTAIN	38	LF	25.00	950	E1040.20
1381					0	
1382						
1383					-----	
1384					85,638	
1385	E1060 RESIDENTIAL EQUIPMENT					
1386						
1387	113100 RESIDENTIAL APPLIANCES ALLOWANCE					
1388	REFRIGERATOR -TOP FREEZER	10	EA	1,372.48	13,725	E1060.10
1389	WALL OVEN	1	EA	2,500.00	2,500	E1060.10
1390	RANGE HOOD	1	EA	750.00	750	E1060.10
1391	UNDERCOUNTER ICE MACHINE @ SCIENCE PREP	12	EA	1,500.00	18,000	E1060.10
1392	GARBAGE DISPOSAL	4	EA	500.00	2,000	E1060.10
1393	MICROWAVE	4	EA	516.98	2,068	E1060.10
1394	DISHWASHER	4	EA	537.61	2,150	E1060.10
1395	COOK TOP	1	EA	779.44	779	E1060.10
1396	UNDERCOUNTER REFRIGERATOR	1	EA	499.00	499	E1060.10
1397	WASHER	1	EA	2,029.00	2,029	E1060.10
1398	DRYER	1	EA	1,529.00	1,529	E1060.10
1399					-----	
1400					46,030	
1401						
1402						
1403						
1404	E1070 ENTERTAINMENT & RECREATIONAL EQUIPMENT					
1405						
1406	116133 THEATRICAL RIGGING					
1407	STAGE CURTAIN & RIGGING	1	LS	300,000.00	300,000	E1070.10
1408						
1409						
1410	116623 GYMNASIUM EQUIPMENT					
1411	BASKETBALL BACKSTOP - ELECTRIC	4	EA	9,000.00	36,000	E1070.50
1412	VOLLEY BALL COURT EQUIP. NET, POST AND TENSIONING	4	EA	700.00	2,800	E1070.50
1413	MAT LIFTER	1	EA	15,850.00	15,850	E1070.50
1414	WALL PADDING -7' ALLOWANCE	1,700	SF	13.00	22,100	E1070.50
1415	MOTORIZED GYM DIVIDER CURTAIN	1,589	SF	18.00	28,602	E1070.50
1416	SCOREBOARD ALLOWANCE	2	EA	20,000.00	40,000	E1070.50
1417	SHOT CLOCK ALLOWANCE	2	EA	1,500.00	3,000	E1070.50
1418	FOLDING PARTITION AT GYM	1,133	SF	100.00	113,300	E1070.50
1419	115213 PROJECTION SCREENS					
1420	ELEC. OP. PROJ. SCREENS:					
1421	CLASSROOMS INTERACTIVE PROJECTOR	272	EA	1,000.00	272,000	E1070.80
1422	AUDITORIUM	1	LS	15,000.00	15,000	E1070.80
1423					-----	
1424					848,652	
1425						
1426	TOTAL E10 - EQUIPMENT			\$6.43 /COST PER SF	1,489,474	

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1427						
1428						
1429	E20 - FURNISHINGS					
1430	E2050 MOVEABLE FURNISHINGS					
1431	FIRE EXTINGUISHER CABINET ALLOWANCE	34	EA	350.00	11,900	E2050.40
1432	FIRE EXTINGUISHERS ALLOWANCE	34	EA	250.00	8,500	E2050.40
1433					-----	
1434					20,400	
1435	E 2010 FIXED FURNISHINGS					
1436						
1437	122100 WINDOW TREATMENT- ALLOWANCE					
1438	HORIZ. BLINDS - MANUAL OP (INT. OPENINGS)	4,587	SF	4.00	18,348	E2010.20
1439	LIGHT FILTERING SHADES - TYP	16,725	SF	4.50	75,263	E2010.20
1440	SCIENCE RM DUEL LIGHT FILTER/DARKENING SHADES	1	LS	25,000.00	25,000	E2010.20
1441	LIBRARY SHEER SHADES(LIGHT MONITOR) - ELEC OP.	1	LS	25,000.00	25,000	E2010.20
1442	CAFE SHADES - ELEC. OP.	1	LS	25,000.00	25,000	E2010.20
1443	ELEC. MOTOR SHADES @ VARIOUS LOCATIONS	1	LS	45,000.00	45,000	E2010.20
1444	BLACKOUT SHADES	1	LS	3,000.00	3,000	E2010.20
1445						
1446	123200 MANUFACTURED WOOD CASEWORK					
1447	06 WOOD MILLWORK					
1448	MILLWORK @ GENERAL OFFICE /RECEPTION/PRINCIPAL	1	LS	50,000.00	50,000	E2010.30
1449	MEDIA INSTRUCTIONAL AREA	1	LS	50,000.00	50,000	E2010.30
1450	DISPLAY CASE ALLOWANCE	14	EA	5,000.00	70,000	E2010.30
1451	RECYCLING CENTERS ALLOWANCE	15	EA	3,500.00	52,500	E2010.30
1452	MAIL ROOM	1	LS	15,000.00	15,000	E2010.30
1453	NURSE AREA BASE, COUNTER AND WALL CABINET ALLOWANCE	42	LF	800.00	33,600	E2010.30
1454	ACADEMIC ROOM	12	EA	4,000.00	48,000	E2010.30
1455	TEACHERS WARDROBE OR TALL CABINET	190	EA	1,439.23	273,454	E2010.30
1456	WALL CABINET	672	LF	250.00	168,000	E2010.30
1457	BASE CABINET	774	LF	454.00	351,396	E2010.30
1458	BASE CABINET WITH OPEN SHELVING	688	LF	300.00	206,400	E2010.30
1459	OPEN SHELVING	612	LF	175.00	107,100	E2010.30
1460	TEACHER'S CABINET T1	58	EA	800.00	46,400	E2010.30
1461	TECHNOLOGY ALLOWANCE	2	EA	25,000.00	50,000	E2010.30
1462	FLAT CABINET AT ART	15	LF	550.00	8,250	E2010.30
1463	VERTICLE CABINET AT ART	15	LF	350.00	5,250	E2010.30
1464	GLASS DRYING RACK ALLOWANCE	24	EA	250.00	6,000	E2010.30
1465	GUIDANCE DESK	7	LF	500.00	3,250	E2010.30
1466	ART STORAGE	2	EA	9,000.00	18,000	E2010.30
1467	MISCL MILLWORK ALLOWANCE	1	LS	300,000.00	300,000	E2010.30
1468						
1469	123600 COUNTERTOPS					
1470	P-LAM COUNTER	223	LF	75.00	16,725	E2010.30
1471	EPOXY COUNTER	672	LF	250.00	168,000	E2010.30
1472	SOLID SURFACE COUNTER AT GANG TOILET-ALLOWANCE	90	LF	175.00	15,750	E2010.30
1473	STAINLESS STEEL COUNTER AT ART ALLOWANCE	48	LF	450.00	21,600	E2010.30
1474	TEACHER COLLABORATION WALL SUPPORTED COUNTER	44	LF	125.00	5,500	E2010.30
1475						
1476	062000 INTERIOR FINISH CARPENTRY					
1477	SOLID SURFACE WINDOW STOOL	1,858	LF	32.00	59,456	E2010.30
1478	UTILITY & CLOSET SHELVING	1	LS	5,000.00	5,000	E2010.30
1479	WOOD TRIM	1	LS	35,000.00	35,000	E2010.30
1480						
1481	126100 FIXED AUDIENCE SEATING					
1482	AUDITORIUM FIXED SEAT	376	EA	307.48	115,612	E2010.70
1483					-----	
1484					2,521,854	
1485	E2020 MOVABLE FURNISHINGS					
1486	126600 TELESCOPING STANDS					
1487	ELEC. OPERATED TELESCOPING AUDIENCE SEATING	203	EA	710.00	144,130	E2050.90
1488					-----	
1489					144,130	
1490						
1491	TOTAL E20 - FURNISHINGS			\$11.60 /COST PER SF	2,686,384	
1492						

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1493						
1494					-----	
1495					4,175,858	
1496						
1497						
1498						
F SPECIAL CONSTR						
1499	F10 - SPECIAL CONSTRUCTION					
1500	F1010 INTEGRATED CONSTRUCTION					
1501						
1502	F1020 SPECIAL STRUCTURES					
1503	MODULAR BUILDING	1,500	SF	100.00	150,000	F1020.40
1504	F1030 SPECIAL FUNCTION CONSTRUCTION					
1505						
1506	F1050 SPECIAL FACILITY COMPONENTS					
1507						
1508	F1060 ATHLETIC & RECREATIONAL SPEC. CONST.					
1509	MOTORIZED BLEACHER SEATING	200	EA	300.00	60,000	F1060.60
1510						
1511	F1080 SPECIAL INSTRUMENTATION					
1512						
1513	TOTAL F10 - SPECIAL CONSTRUCTION			\$0.91 /COST PER SF	210,000	
1514						
1515						
1516	F20 - FACILITY REMEDIATION (SELECTIVE BUILDING DEMO)					
1517						
1518	F2010 HAZARDOUS MATERIALS REMEDIATION					
1519	028000 HAZARDOUS MATERIAL ABATEMENT					
1520	ASBESTOS REMOVAL PER BID QUOTE	1	LS	1,000,000	1,000,000	F2010.20
1521					-----	
1522	FACILITY REMEDIATION				1,000,000	
1523						
1524	TOTAL F20 - FACILITY REMEDIATION (SELECTIVE BUILDING DEM			\$4.32 /COST PER SF	1,000,000	
1525						
1526	F30 - DEMOLITION					
1527						
1528	F3010 STRUCTURE DEMOLITION					
1529	024119 SELECTIVE STRUCTURE DEMOLITION					
1530	REMOVE EXISTING:					
1531	SCHOOL BUILDING PER BID QUOTE	1	ls	641,550.00	641,550	F3010.10
1532					-----	
1533						
1534					641,550	
1535	F3030 SELECTIVE DEMOLITION					
1536					0	
1537					-----	
1538					0	
1539	F3050 STRUCTURE MOVING					
1540					0	
1541					-----	
1542					0	
1543						
1544	TOTAL F30 - DEMOLITION			\$2.77 /COST PER SF	641,550	
1545						
1546						
G SITEWORK						
1547	G10 - SITE PREPARATION					
1548	G1010 SITE CLEARING					
1549						
1550	311000 SITE PREPARATION & CLEARING					
1551	SITE PREPARATION: ALLOWANCE					
1552	REMOVE TREE	47	EA	400.00	18,800	G1010.30
1553	SAWCUT PAVEMENT	1,000	LF	4.75	4,750	G1020.50

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1554	HAY BALE W/SILTATION FENCE	3,327	LF	4.15	13,807	G1070.35
1555	CONSTRUCTION FENCE	4,000	LF	12.00	48,000	G1070.35
1556	CONSTRUCTION ENTRANCE	2	LOC	4,000.00	8,000	G1070.35
1557	20' CONSTRUCTION GATE	2	LOC	1,500.00	3,000	G1070.35
1558	CLEAR & GRUB	11.00	AC	2,500.00	27,500	G1010.10
1559	STRIP AND STACK TOPSOIL - 6"	10,500	CY	3.50	36,750	G1010.50
1560	TEMPORARY SITE SIGNS- ALLOW	70	EA	250.00	17,500	G1070.35
1561	INLET PROTECTION	16	EA	250.00	4,000	G1070.35
1562	TEMPORARY PARKING LOT (12"SUBBASE/2"BINDER/)	5,738	SY	22.88	131,296	G1020.50
1563	TEMPORARY BUILDING EGRESS ALLOWANCE FOR TEMP STRUCTURES AND WALKW	1	LS	50,000.00	50,000	G1020.50
1564	TEMPORARY UTILITIES ALLOWANCE	1	LS	35,000.00	35,000	G1020.50
1565					-----	
1566					398,403	
1567						
1568	G1020 SITE ELEMENTS DEMOLITION					
1569	311000 SITE PREPARATION & CLEARING					
1570						
1571	SALVAGE EXISTING:					
1572						
1573	SITE REMOVE EXISTING:					
1574	MISCL SITE DEMOLITION	1	LS	50,000.00	50,000	G1020.50
1575						
1576	MAIN STREET. REMOVE EXISTING:					
1577					-----	
1578					50,000	
1579	G1030 SITE ELEMENT RELOCATIONS					
1580					0	
1581					-----	
1582					0	
1583	G1050 SITE REMEDIATION					
1584					0	
1585					-----	
1586					0	
1587						
1588	G1070 SITE EARTHWORK					
1589	SITE:					
1590	SITE CUT	15,500	CY	8.00	124,000	G1070.20
1591	SITE FILL - ON SITE MAT'L	15,500	CY	5.00	77,500	G1070.20
1592	EXPORT MATERIAL OFFSITE	0	CY	12.00	0	G1070.20
1593	SITE FINE GRADING	71,560	SY	0.85	60,826	G1070.20
1594	IMPORT COMMON FILL	1,500	CY	45.00	67,500	G1070.20
1595	STREET SWEEPING/ DUST CONTROL	1	LS	10,000.00	10,000	G1070.20
1596	EXCAVATE/BACKFILL @ SITE AMENITIES	1	LS	5,000.00	5,000	G1070.20
1597					0	
1598					0	
1599					-----	
1600					344,826	
1601						
1602	TOTAL G10 - SITE PREPARATION			\$3.43 /COST PER SF	793,229	
1603						
1604						
1605	G20 - SITE IMPROVEMENTS					
1606	G2010 ROADWAYS					
1607	320000 PAVEMENT, CURBING & EDGING					
1608						
1609	CROSSWALKS & MARKING	1	LS	7,500.00	7,500	G2010.40
1610	PATCH @ UTILITIES	1	LS	20,000.00	20,000	G2010.10
1611	PATCH @ NEW ENTRIES	4	LOC	5,000.00	20,000	G2010.10
1612	PATCH @ NEW CURBING	150	LF	60.00	9,000	G2010.10
1613						
1614	G2020 PARKING LOTS					
1615	SCHOOL:					
1616	CONCRETE PAVEMENT @ LOADING DOCK	900	SF	15.00	13,500	G2020.10
1617	CONCRETE PAVEMENT	358	SF	12.00	4,296	G2020.10
1618	BITUMINOUS DRIVE/PARKING STANDARD DUTY	6,756	SY	35.00	236,460	G2020.10
1619	BITUMINOUS DRIVE/PARKING HEAVY DUTY	14,015	SY	45.00	630,675	G2020.10

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1620	GRAVEL BASE @ BITUMINOUS	6,756	CY	25.00	168,900	G2020.10
1621	PARKING/TRAFFIC SIGNAGE	50	EA	350.00	17,500	G2020.40
1622	GRANITE CURB STRAIGHT	8,697	LF	45.00	391,365	G2020.40
1623	PARKING STRIPING	1	LS	10,000.00	10,000	G2020.40
1624	HC PAVEMENT MARKINGS	10	EA	250.00	2,500	G2020.40
1625	CROSSWALK MARKING	3,500	SF	1.25	4,375	G2020.40
1626	CONC. WHEEL STOP 6'	8	EA	50.00	400	G2020.40
1627					-----	
1628					1,536,471	
1629						
1630	G2030 PEDESTRIAN PLAZAS & WALKWAYS					
1631						
1632	320000 PAVEMENT, CURBING & EDGING					
1633	SITE STAIR W/RAILS AUDITORIUM	1	EA	25,000.00	25,000	G2030.30
1634	5" CONCRETE SIDEWALKS	22,034	SF	5.00	110,170	G2030.10
1635	CONCRETE PAVERS & SUBBSAE	19,718	SF	25.00	492,950	G2030.10
1636	BITUMINOUS SIDEWALK	924	SY	30.00	27,720	G2030.10
1637	GRAVEL @ WALKS	924	CY	35.00	32,340	G2030.10
1638	HC CURB CUTS	31	EA	450.00	13,950	G2030.10
1639	CONCRETE SEATS ON GRADE	178	LF	50.00	8,900	G2030.10
1640					-----	
1641					711,030	
1642						
1643						
1644	G2050 ATHLETIC, RECREATIONAL & PLAYFIELD AREAS					
1645						
1646	323100 SITE IMPROVEMENTS					
1647						
1648	FIELD :					
1649	MULTIPURPOSE FIELD	1	LS	100,000.00	100,000	G2050.50
1650	SOCCER FIELD GOAL	4	EA	1,500.00	6,000	G2050.10
1651					-----	
1652					106,000	
1653	G2060 SITE DEVELOPMENT					
1654	323100 SITE IMPROVEMENTS					
1655	RECYCLING RECEPTACLE	10	PR	1,200.00	12,000	G2060.25
1656	BIKE RACK	16	EA	500.00	8,000	G2060.25
1657	ELECTRIC VEHICLE CHARGING STATIONS	6	EA	5,000.00	30,000	G2060.25
1658	SITE STAIR W/RAILS (1 FLT)	1	EA	3,500.00	3,500	G2030.30
1659	30' FLAGPOLE & FOUNDATION @ BUILDING	2	EA	5,260.00	10,520	G2060.35
1660	STONE VENEER RETAINING WALL	178	LF	250.00	44,500	G2060.60
1661	SEGMENTAL RETAINING WALL	642	LF	45.00	28,890	G2060.60
1662	STEEL BOLLARDS	10	EA	1,025.00	10,250	G2060.85
1663	12' BLACK VINYL CHAIN LINK FENCE	918	LF	47.00	43,146	G2060.20
1664	12' CHAIN LINK GATE - DBL 24' WIDE	1	EA	3,500.00	3,500	G2060.20
1665	ORNAMENTAL GREEN SCREEN FENCE	123	LF	80.00	9,840	G2060.20
1666	WOOD DECKING	474	SF	40.00	18,960	G2060.85
1667	SCHOOL SIGN @ ENTRANCE	1	EA	50,000.00	50,000	G2060.30
1668					-----	
1669					273,106	
1670						
1671	G2080 LANDSCAPING					
1672	329000 LANDSCAPING					
1673						
1674	LAWN AND FIELDS:					
1675	RESPREAD TOPSOIL	10,000	CY	10.00	100,000	G2080.20
1676	SEED MIX	1	LS	75,000.00	75,000	G2080.20
1677	SOD	175,000	SF	0.75	131,250	G2080.20
1678	IRRIGATION SYS	175,000	SF	1.25	218,750	G3010.50
1679						
1680	PLANTING:					
1681	BIO RETENTION PLANTING	1	LS	50,000	50,000	G2080.30
1682	DECIDUOUS TREES ALLOWANCE	57	EA	750.00	42,750	G2080.30
1683	FLOWERING TREES ALLOWANCE	72	EA	500.00	36,000	G2080.30
1684	EVERGREEN ALLOWANCE	84	EA	500.00	42,000	G2080.30
1685	SHRUB ALLOWANCE	209	EA	250.00	52,250	G2080.30

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1686	PERENNIAL ALLOWANCE	1,000	EA	25.00	25,000	G2080.30
1687	MULCH	1	LS	20,000.00	20,000	G2080.30
1688	TREE GRATES	7	EA	1,000.00	7,000	G2080.50
1689	BOULDERS	28	EA	250.00	7,000	G2080.50
1690	PLANT MAINTENANCE	1	LS	25,000.00	25,000	G2080.80
1691					-----	
1692					832,000	
1693						
1694	TOTAL G20 - SITE IMPROVEMENTS	\$13.99	/COST PER SF		3,239,857	
1695						
1696						
1697	G30 - LIQUID & GAS SITE UTILITIES					
1698	G3010 WATER UTILITIES					
1699						
1700	330000 UTILITIES					
1701	TAPPING SLEEVE AND VALVE	1	EA	15,000.00	15,000	G3010.10
1702	CONNECT TO EXISTING	1	EA	12,500.00	12,500	G3010.10
1703	2" COPPER	50	LF	45.00	2,250	G3010.10
1704	4" CLDI	50	LF	70.00	3,500	G3010.10
1705	6" CLDI	500	LF	76.00	38,000	G3010.10
1706	8" CLDI	2,000	LF	90.00	180,000	G3010.10
1707	POST VALVE INDICATOR	1	EA	1,477.00	1,477	G3010.10
1708	FIRE HYDRANT	8	EA	3,227.00	25,816	G3010.10
1709	THRUST BLOCKS	30	EA	75.00	2,250	G3010.10
1710	GATE VALVE	14	EA	1,750.00	24,500	G3010.10
1711					-----	
1712					305,293	
1713	G3020 SANITARY SEWERAGE UTILITIES					
1714	330000 UTILITIES					
1715						
1716	SANITARY SEWER:					
1717	6" PVC SANITARY	1,100	LF	85.00	93,500	G3020.20
1718	BUILDING CONNECTION	1	LF	2,500.00	2,500	G3020.20
1719	SANITARY MANHOLE	5	EA	3,500.00	17,500	G3020.50
1720	GREASE TRAP	1	EA	25,000.00	25,000	G3020.40
1721	MAINTAIN EXISTING SYSTEM	1	EA	5,000.00	5,000	G3020.40
1722					-----	
1723					143,500	
1724						
1725	G3030 STORM DRAINAGE UTILITIES					
1726	330000 UTILITIES					
1727	LOADING DOCK TRENCH DRAIN	20	LF	85.00	1,700	G3030.20
1728	AREA DRAIN	26	EA	1,200.00	31,200	G3030.20
1729	DRAINAGE MANHOLE	34	EA	2,500.00	85,000	G3030.20
1730	CATCH BASIN	52	EA	2,400.00	124,800	G3030.20
1731	30"	550	LF	200.00	110,000	G3030.20
1732	24"	668	LF	178.00	118,904	G3030.20
1733	18"	1,500	LF	130.00	195,000	G3030.20
1734	15"	900	LF	110.00	99,000	G3030.20
1735	STORM SEWER 12 HDPE	3,626	LF	85.00	308,210	G3030.20
1736	STORM TRAP UNDERGROUND PRECAST RETENTION CONC PADS UNDER	1	EA	75,000.00	75,000	G3030.20
1737	STORM TRAP UNDERGROUND PRECAST RETENTION 85 X 140	1	EA	275,000.00	275,000	G3030.20
1738	STORM TRAP UNDERGROUND PRECAST RETENTION 85 X 140	1	EA	350,000.00	350,000	G3030.20
1739	WATER QUALITY STRUCTURE STORMCEPTORS	4	EA	7,500.00	30,000	G3030.20
1740						
1741					-----	
1742					1,803,814	
1743						
1744	G3050 SITE ENERGY DISTRIBUTION					
1745					-----	
1746					0	
1747	G3060 SITE FUEL DISTRIBUTION					
1748					-----	
1749					0	
1750						
1751	G3060 SITE GAS DISTRIBUTION					

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1752	330000 UTILITIES					
1753	GAS METER PAD	1	EA	1,500.00	1,500	G3060.10
1754	TRENCH EXCAVATION/BACKFILL - SCHOOL	709	LF	30.00	21,270	G3060.10
1755	GAS SERVICE		By Gas Co.			G3060.10
1756					-----	
1757					22,770	
1758						
1759	TOTAL G30 - LIQUID & GAS SITE UTILITIES		\$10.77 /COST PER SF		2,494,127	
1760						
1761						
1762	G40 - ELECTRICAL SITE IMPROVEMENTS					
1763						
1764	G4010 SITE ELECTRIC DISTRIBUTION SYSTEMS					
1765	330000 UTILITIES					
1766	PRIMARY DUCT BANK CONCRETE ENCASED	850	LF	70.00	59,500	G4010.10
1767	SECONDARY DUCT BANK CONC ENCASED	100	LF	205.00	20,500	G4010.10
1768	DUCTBANK TO FIELD	766	LF	40.29	30,864	G4010.10
1769	ELECTRIC HAND HOLES	32	EA	750.00	24,000	G4010.10
1770	ELECTRIC MANHOLE	2	EA	1,500.00	3,000	G4010.10
1771	GENERATOR PAD	1	EA	10,000.00	10,000	G4010.10
1772	TRANSFORMER PAD	1	EA	3,000.00	3,000	G4010.10
1773	DIRECT BURIED ELECTRICAL FEED - SHED	600	LF	45.00	27,000	G4010.10
1774						
1775	260000 ELECTRICAL					
1776						
1777	FEEDERS - 100% NEUTRAL					
1778	PVC - UNDERGROUND - THREE PHASE	110	LF	81.10	8,921	G4010.20
1779						
1780	DUCT BANK SPARE OR EMPTY RACEWAYS					
1781	PVC - UNDERGROUND					
1782	4.00"	1,000	LF	21.05	21,050	G4010.20
1783	GROUNDING					G4010.20
1784	GROUND ROD 3/4" X 10'	4	EA	149.00	596	G4010.20
1785	BARE COPPER WIRE #1/0	100	LF	3.75	375	G4010.20
1786						
1787	SCHOOL SIGN					
1788	SCHOOL SIGN CIRCUIT	1000	LF	8.25	8,250	G4050.90
1789	FIBER OPTIC CABLE/TELECOM	1000	LF	7.05	7,050	G4050.90
1790						
1791	SECURITY SYSTEM					
1792	CCTV CAMERA W/ UG DUCTS & WIRES	28	EA	2,500.00	70,000	G5010.30
1793	PTZ CAMERA	10	EA	4,000.00	40,000	G5010.30
1794					334,106	
1795						
1796	G4050 SITE LIGHTING					
1797	330000 UTILITIES					
1798						
1799	TRENCH LIGHTING LOOP	5,000	LF	10.00	50,000	G4050.10
1800	LIGHT POLE BASE	49	EA	1,450.00	71,050	G4050.10
1801						
1802	260000 ELECTRICAL					
1803						
1804	LIGHTING FIXTURES					
1805	EXTERIOR					
1806					-	
1807	PARKING & ROADWAY - WITH DUCTS AND WIRING					
1808	PARKING LOT LIGHTS	49	EA	1562.00	76,538	G4050.10
1809					-	G4050.10
1810					-----	
1811					76,538	
1812						
1813						
1814					-----	
1815					197,588	
1816						
1817	TOTAL G40 - ELECTRICAL SITE IMPROVEMENTS		\$1.82 /COST PER SF		421,694	

Breakdown	Description	Quantity	UoM	Unit Cost	Total	Uniformat 2010
1818						
1819						
1820	G50 SITE COMMUNICATIONS					
1821						
1822	G5010 SITE COMMUNICATIONS SYSTEMS					
1823	EMPTY DUCT BANK TELEPHONE/CABLE	925	LF	63.32	58,571	G5010.30
1824	TELEPHONE/CABLE MANHOLES	3	EA	1,575.00	4,725	G5010.30
1825	DUCT BANK TELE/CABLE TO FIELD	660	LF	44.52	29,381	G5010.30
1826						
1827						
1828	<u>TELECOM SERVICE RELOCATION</u>				0	G1030.10
1829					-----	
1830					92,677	
1831						
1832	TOTAL G50 - COMMUNICATIONS				92,677	
1833						
1834						
1835						
1836	G90 MISCELLANEOUS SITE CONSTRUCTION		N/A			
1837						
1838	G9010 TUNNELS					
1839						
1840	TOTAL G90 - MISCELLANEOUS SITE CONSTRUCTION				0	
1841						

APPENDIX E
CONSTRUCTION MANAGER'S
CONSTRUCTION COST ESTIMATE



Beverly Middle School

100% Design Development Estimate Assumptions and Clarifications

General

1. We have based the 100% Design Development Estimate for the Beverly Middle School on drawings and specifications entitled 100% Design Development Cost Estimating Set, dated December 2, 2015.
2. We have adjusted our DD Estimate to reflect the program square footage of 231,509.
3. The Cost of the Building Permit as well as the respective Trade Contractors permits for Mechanical, Plumbing, Fire Protection and Electrical have been waived by the Building Commissioner.
4. We have included a 5 % Design Contingency.
5. We have included a 2 % CM Contingency.
6. We have included a 2 % Escalation Contingency.
7. We have not included any Utility Company Back Charges or Fees as may be applicable.
8. We have not included Sales Tax on materials that are permanently incorporated into the work.
9. We have not included any provisions for Testing and Inspection services as well as Geotechnical field or laboratory testing services.

Existing Conditions

1. We have incorporated the actual Demolition and Haz Mat cost for these services. This bid package was received in early December and has already been released.
2. We have not included engaging the Beverly Fire Department for dust control for demolition operations.

Foundations and Structure

1. We have included 65 Ton H-Piles (approximately 1281 ea.) at an average length of 65' or an overall total of 81,410 linear feet of piles.
2. We have included 2,340 linear feet of H-Piles to support the (9) exterior columns at the east elevation of the Gymnasium. We have also included an additional (9) pile caps accordingly.
3. We have included an Allowance in the sum of \$100,000 for pile support of site utilities, retaining walls, seat walls and building stoops.
4. We have included a standard shallow foundation with a 4' slab on grade for the modular metal building. We have included minimal interior finishes and MEP systems for the modular metal building.
5. We have included additional exterior wall construction at the West elevation of the Auditorium. Elevation 2/A3.05 calls for the grade to be at approximately elevation 28.0



but the site grading drawings indicate exterior grade elevations ranging from Elevation 21.0 to elevation 28.0. As per direction received at the reconciliation meeting of 12/17/15, we have adjusted for lowering the grades to approximately 21.0 to 23.0 and added a radius retaining wall approximately 100' long by 8' high.

6. We have included the exterior columns indicated along the east elevation of the gym 6/A3.06 as well as foundations, and structural steel needed for the roof overhang as indicated on the second floor reflected ceiling plan for zone 4 (A2.24).
7. We have included an exterior staircase along the west elevation of the auditorium as indicated on drawing C3.1. We have not however, included the staircase leading down to elevation 21.0 to access Mechanical Room L13. Regrading of this area will allow direct access to mechanical room L13 from an exterior HM door.
8. We have included vertical and horizontal waterproofing for the foundation retaining walls and slab at the lower level (elev. 21- partial per 12/15/15 sketch). We have also included a perimeter drain as indicated on the same 12/15/15 sketch.
9. We have included 2" 25 PSI rigid insulation for all slabs on grade conditions as discussed at the 12/17/15 reconciliation meeting. All perimeter foundation insulation shall also be 2" 25 PSI rigid insulation.

Interior Finishes

1. We have included terrazzo flooring for rooms 115A, 115B and 115C. Rooms are not listed on the finish schedule.
2. We have included stage flooring as specified in section 062000 – Finish Carpentry. We have not included section 096429 – Wood Strip Plank Flooring as this could not be located in the documents.
3. We have included Gypsum Wall Board ceilings in boy's locker room #L11 as indicated on the reflected ceiling plans. Finish schedule calls for exposed structure.
4. We have included ACT Type 2 at rooms 101A thru 101G as indicated on the finish schedule. The reflected ceiling plans call for ACT Type 1.
5. We have included ACT Type 1 at Lockers 146B as indicated on the reflected ceiling plans. The finish schedule calls for exposed structure.
6. We have included ACT Type 1 at Sped Reception room #245F. Reflected ceiling plans and the finish schedule do not indicate the ceiling type.
7. We have carried acoustical clouds and ACT 8 for the Auditorium Ceiling. Reflected ceiling plans are incomplete.
8. We have included ACT8 and gypsum wall board soffits for the ceiling in Band Chorus room 152A.
9. We have included ACT6 and ACT7 for Kitchen #145A in accordance with the finish schedule. The reflected ceiling plans call for ACT1.
10. We have included a Gypsum Wall Board ceiling for rooms L07, L08, L09 and L16 as indicated on the reflected ceiling plans. Finish schedule calls for exposed structure.

Agostini / Bacon JV
Beverly Middle School
Beverly, MA



100% DD Estimate

Summary		\$ per SF	% of Total
A Substructure			
A10 Foundations	\$2,812,073	\$12.15	3.11%
A20 Special Foundations	\$4,295,614	\$18.55	4.75%
A40 Slabs-on-Grade	\$2,034,354	\$8.79	2.25%
B Shell			
B10 Superstructure	\$8,560,373	\$36.98	9.46%
B20 Exterior Vertical Enclosures	\$9,507,378	\$41.07	10.51%
B30 Exterior Horizontal Enclosures	\$2,491,922	\$10.76	2.76%
C Interiors			
C10 Interior Construction	\$8,587,485	\$37.09	9.49%
C20 Stairs	\$615,338	\$2.66	0.68%
C30 Interior Finishes	\$6,488,935	\$28.03	7.17%
D Services			
D10 Conveying	\$573,500	\$2.48	0.63%
D20 Plumbing	\$2,485,677	\$10.74	2.75%
D30 HVAC	\$7,445,477	\$32.16	8.23%
D40 Fire Protection	\$939,778	\$4.06	1.04%
D50 Electrical	\$8,863,819	\$38.29	9.80%
E Equipment & Furnishings			
E10 Equipment	\$822,000	\$3.55	0.91%
E20 Furnishings	\$1,690,375	\$7.30	1.87%
F Special Construction & Demolition			
F10 Special Construction	\$315,350	\$1.36	0.35%
F20 Facility Remediation	\$1,674,381	\$7.23	1.85%
F30 Demolition	\$0	\$0.00	0.00%
G Building Sitework			
G10 Site Preparation, Demo	\$769,450	\$3.32	0.85%
G20 Site Improvements	\$3,736,511	\$16.14	4.13%
G30 Civil/Mech'l Site Utilities	\$1,915,656	\$8.27	2.12%
Z General Requirements	\$1,658,730	\$7.16	1.83%
Cost Subtotal	\$78,284,176	\$338.15	86.55%
<i>General Conditions</i>	\$3,379,132		
<i>Insurances</i>			
Builders Risk	\$280,390	\$3.10 per \$1,000	
General Liability & Umbrella	\$405,209	\$4.48 per \$1,000	
<i>Overhead & Profit</i>	\$1,441,106	1.75%	
<i>Building Permit & Fees</i>	\$0	Cost Waived	
<i>Preconstruction</i>	\$0	\$0.00	
<i>Performance & Payment Bond</i>	\$351,152	\$4.30 per \$1,000	
<i>Design Contingency</i>	\$2,524,235	3.00%	
<i>Construction Contingency</i>	\$1,682,823	2.00%	
<i>Escalation to Bid Date</i>	\$1,682,823	2.00%	
Total General Contract	\$90,031,047	\$388.89	100.00%

**Agostini / Bacon JV
Beverly Middle School
Beverly, MA**



100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
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A Substructure

A10 Foundations

A1010 Standard Foundations

\$2,812,073 \$800 /cy

03 30 00	Pile Caps - PC2	118	ea	367	cy	420	0	154140	0	0	154,140
03 30 00	Pile Caps - PC3	104	ea	517	cy	420	0	217140	0	0	217,140
03 30 00	Pile Caps - PC4	67	ea	486	cy	420	0	204120	0	0	204,120
03 30 00	Pile Caps - PC6	17	ea	176	cy	420	0	73920	0	0	73,920
03 30 00	Additional Pile Caps for Columns Outside Gym			22	cy	420	0	9240	0	0	9,240
03 30 00	Strand Piles			1,237	ea	150	25	185550	30925	0	216,475
	Pile Cut-offs - R & D			1,237	ea	125	0	154625	0	0	154,625
03 30 00	Cont. Concrete Footings			396	cy	510	0	201960	0	0	201,960
03 30 00	Foundation Retaining Walls			231	cy	750	0	173250	0	0	173,250
03 30 00	Grade Beam - GB1			163	cy	650	0	105950	0	0	105,950
03 30 00	Grade Beam - GB2			718	cy	650	0	466700	0	0	466,700
03 30 00	Grade Beam - GB3			19	cy	650	0	12350	0	0	12,350
03 30 00	Reinforcing Steel - Foundations		Included Above								
03 30 00	Set Anchor Bolts			1,400	ea	25	0	35000	0	0	35,000
03 30 00	Grout Plates			300	ea	50	15	15000	4500	0	19,500
03 30 00	Elevator Pits			3	ea	5800	4200	17400	12600	0	30,000
03 30 00	Misc. Pits			1	ls	5000	4000	5000	4000	0	9,000
03 30 00	Waterstop			250	lf	4.75	15	1188	3750	0	4,938
03 30 00	Housekeeping Pads			1	ls	10200	0	10200	0	0	10,200
03 30 00	Radius Retaining Wall Footings - 100' x 4'			22	cy	650	0	14444	0	0	14,444
03 30 00	Radius Retaining Walls - 100' x 8' High			35	cy	950	0	32933	0	0	32,933
03 30 00	Damproof Exterior Grade Beams		Eliminated	0	sf	1.45	0	0	0	0	0
07 13 53	Sheet Waterproofing @ Vert Found Walls - Lower Level only			4,000	sf	2.75	5.25	11000	21000	0	32,000
07 13 53	Waterproofing Mock-up		Included								
07 16 13	Cement Waterproofing			3	pits	3200	0	9600	0	0	9,600
31 23 19	Dewatering - Localized			1	ls	10000	8200	10000	8200	0	18,200
	Foundation Earthwork										
	Level New Bldg Pad to Elev 27 +/-										
	Unsuitable Soil Allowance		Allowance	6,000	cy	0	40	0	240000	0	240,000
31 00 00	Balance of Cuts for New Bldg Area - Move to fills			2,031	cy	0	10	0	20310	0	20,310
31 00 00	Fill for New Bldg Area			5,486	cy	0	26	0	142636	0	142,636
31 00 00	Exc/BF Pile Caps			2,844	cy	0	10	0	28444	0	28,444
31 00 00	Exc/BF Exterior Walls / Grade Beams			1,150	cy	0	10	0	11496	0	11,496
31 00 00	Exc/BF Interior Grade Beams			533	cy	0	10	0	5333	0	5,333
31 00 00	Stone Stabilization Layer - 12"			4,218	cy	0	34	0	143409	0	143,409
31 00 00	Add Perimeter Drain @ Elev. 21 Foundations			820	lf	0	18	0	14760	0	14,760

A1020 Special Foundations

\$4,295,614

Special Foundations											
31 10 00	Remove Underground Obstructions		Allowance	1	ls	0	10000	0	10000	0	10,000
	Pre Pile Survey			1	ls	0	10000	0	10000	0	10,000
	Pile Lay-out and Verification Survey			1	ls	0	100000	0	100000	0	100,000
	Vibration and Settlement Monitoring			1	ls	0	20000	0	20000	0	20,000
	Pile Mobilization			1	ls	0	65000	0	65000	0	65,000
	Precast Concrete Piles - 12" x 12" 65 ton	1281 ea @ 65' Avg		83,265	lf	0	45	0	3746925	0	3,746,925
	Add Piles for Footing @ East Side of Gym	36 ea @ 65' Avg		2,340	lf	0	45	0	105300	0	105,300
	Pile Allowance for Site Utilities, Retaining Walls		Allowance	1	ls	0	100000	0	100000	0	100,000
	Load, R & D Spoils			3,299	cy	0	8	0	26389	0	26,389
	Dynamic Testing			6	ea	0	7000	0	42000	0	42,000
	Static Load Test			1	ls	0	70000	0	70000	0	70,000

A40 Slabs-on-Grade

A4020 Structural Slabs-on-Grade

\$2,034,354

12" Structural Slab on Grade - 94,903 sf											
03 30 00	12" Structural Slab Concrete			3,515	cy	0	120	0	421800	0	421,800
03 30 00	Form Bulkheads			3,160	lf	12	3	37920	9480	0	47,400
03 30 00	Rebar			300	tn	1000	1150	300000	345000	0	645,000
03 30 00	Pour and Finish Slab on Grade			94,903	sf	0	0	0	0	331500	331,500
03 30 00	Moisture Mitigation Admixture			3,515	cy	0	45	0	158175	0	158,175

**Agostini / Bacon JV
Beverly Middle School
Beverly, MA**



100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
03 30 00	Concrete Pump		8	da	0	2500	0	20000	0	20,000
A4090 Slab-on-Grade Supplementary Components										
30 00 & 07 2"	Perimeter Insulation 25 PSI		14,000	sf	0.65	1.5	9100	21000	0	30,100
30 00 & 07 2"	Under Slab Rigid Insul -250 PSI		113,884	sf	0.52	1.5	59219	170825	0	230,044
30 00 & 07	Vapor Barrier - Stego 15 mil or equal		83,742	sf	0.15	0.18	12561	15074	0	27,635
07 13 53	Elastomeric Waterproofing below SOG	Partial Elev. 21.0	15,000	sf	8	0.18	120000	2700	0	122,700
A Division Total							\$2,659,510	\$6,151,031	\$331,500	\$9,142,041

B Shell

B10 Superstructure

B1010 Floor Construction \$5,484,762

Floor Structural Frame

05 12 00	Structural Steel Framing		1,154	tn	3500	incl	4039000	incl	0	4,039,000
05 31 00	2" Metal Decking		112,388	sf	3.75	incl	421455	incl	0	421,455
03 30 00	4-1/2" Concrete Slab on Metal Deck - 4000 PSI		1,460	cy	0	120	0	175200	0	175,200
03 30 00	Moisture Mitigation Admixture		1,460	cy	0	42	0	61320	0	61,320
03 30 00	WW Mesh		134,866	sf	0.35	0.25	47203	33716	0	80,919
03 30 00	Pour & Finish Slab		112,388	sf	0	incl	0	incl	252873	252,873
03 30 00	Form Bulkheads		6,500	lf	10	2.25	65000	14625	0	79,625
03 30 00	PIP Concrete Stairs		2	sts	1500	1200	3000	2400	0	5,400
03 30 00	Concrete Pump		20	da	0	2500	0	50000	0	50,000
07 81 00	Spray Fireproofing		112,388	sf	2	incl	224776	incl	0	224,776

Floor Construction Supplementary

07 81 00	Misc. Spray Fireproofing		1	ls	20000	0	20000	0	0	20,000
07 84 00	Firestopping / Firesafing		112,388	sf	0.5	incl	56194	incl	0	56,194
07 95 13	Expansion Joint Covers		1	ls	0	18000	0	18000	0	18,000

B1020 Roof Construction \$3,075,611

Roof Structural Frame

05 12 00	Structural Steel Framing		672	tn	3500	incl	2352000	incl	0	2,352,000
05 31 00	3" Metal Roof Decking		71,810	sf	5.25	incl	377003	incl	0	377,003
07 54 19	3" Acoustical Roof Decking		20,433	sf	7.5	incl	153248	incl	0	153,248
03 30 00	6" Concrete Equipment Pads		3,316	sf	15	incl	49740	incl	0	49,740
07 81 00	Fireproof Beams and Decking		71,810	sf	2	incl	143620	incl	0	143,620

B10 Division Total \$7,952,239 \$355,261 \$252,873 \$8,560,373

B20 Exterior Enclosures

B2010 Exterior Walls \$5,715,548

Exterior Wall Veneer

04 20 00	Stone Veneer		7,229	sf	45	incl	325305	incl	0	325,305
04 20 00	Stone Sill		2,052	lf	60	incl	123120	incl	0	123,120
07 24 20	EFS	Not Found	0	lf	0	incl	0	incl	0	0
07 46 46	Mineral Fiber Cement Siding - Siding Panel		66,599	sf	30	incl	1997970	incl	0	1,997,970
07 46 46	Mineral Fiber Cement Siding - Smooth Panel		19,801	sf	30	incl	594030	incl	0	594,030
06 20 00	Cellular PVC Exterior Trim & Panels	Allowance	1	ls	10000	incl	10000	incl	0	10,000
07 46 46	Staging & Lifts		5	mo	0	3000	0	15000	0	15,000
Exterior Wall to match West Auditorium to site			1,650	sf	52.25	incl	86213	incl	0	86,213

Exterior Wall Construction

05 40 00	Lt. Ga. Metal Stud Framing		93,629	sf	6.25	incl	585181	incl	0	585,181
06 10 00	Insulating Nail Base		93,629	sf	6	incl	561774	incl	0	561,774
07 21 00	Misc. Spray Foam Insulation		1	ls	30000	incl	30000	incl	0	30,000
07 27 13	Air Vapor Barrier	INC Membrane flashing	93,629	sf	6	incl	561774	incl	0	561,774
07 21 00	1-1/2" Spray Foam Insulation	Closed Cell	93,629	sf	4	incl	374516	incl	0	374,516

**Agostini / Bacon JV
Beverly Middle School
Beverly, MA**



100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
09 22 16	Exterior Wall Interior Skin Gypsum		93,629	sf	2.25	incl	210665	incl	0	210,665
08 92 00	Equipment Screens Louvered Equipment Enclosure		4,000	sf	60	incl	240000	incl	0	240,000
B2020 Exterior Windows			\$3,499,365							
08 51 13	Exterior Windows (Aluminum) Aluminum Windows		13,798	sf	80	incl	1103840	incl	0	1,103,840
06 10 00	Window Blocking		7,865	lf	12	0	94380	0	0	94,380
10 71 13	Exterior Sun Control Devices		230	lf	240	incl	55200	incl	0	55,200
07 92 00	Sealants		1,700	lf	2.5	incl	4250	incl	0	4,250
08 51 13	Lifts		5	mo	3000	incl	15000	incl	0	15,000
08 44 13	Exterior Window Wall (curtainwall) CW System		19,179	sf	105	incl	2013795	incl	0	2,013,795
08 44 13	Renlita Doors @ Cafeteria		240	sf	345	incl	82800	incl	0	82,800
08 44 13	Nana Wall @ Art and Sim.		272	sf	200	incl	54400	incl	0	54,400
06 10 00	Blocking @ CW		4,050	lf	12	0	48600	0	0	48,600
07 92 00	Sealants		3,640	lf	2.5	incl	9100	incl	0	9,100
08 44 13	Lifts		6	mo	3000	incl	18000	incl	0	18,000
B2050 Exterior Doors & Grilles			\$212,465							
08 43 13	Exterior Entrance Doors Aluminum Entrance Doors (Pair)		10	pr	6500	incl	65000	incl	0	65,000
08 43 13	Aluminum Entrance Doors (Single)		9	ea	3500	incl	31500	incl	0	31,500
	Electric Operators		8	ea	8000	incl	64000	incl	0	64,000
08 11 13	Exterior Utility Doors (Hollow Metal) HM Frames (Double)		8	ea	200	250	1600	2000	0	3,600
08 11 13	HM Frames (Single)		1	ea	125	150	125	150	0	275
08 11 13	HM Doors		17	ea	125	150	2125	2550	0	4,675
08 71 00	New Finish Hardware		17	sets	340	750	5780	12750	0	18,530
07 92 00	Exterior Door Caulking		354	lf	2.5	incl	885	incl	0	885
08 33 23	Overhead Coiling Doors		3	ea	8000	incl	24000	incl	0	24,000
B2070 Exterior Louvers & Vents			\$30,000							
08 90 00	Exterior Louvers Louvers		1	ls	30000	incl	30000	incl	0	30,000
B2090 Exterior Wall Specialties			\$50,000							
01 45 00	Exterior Wall Specialties Sample Exterior Wall Panels	Mock-up (All)	1	ls	50000	incl	50000	incl	0	50,000
B20 Division Total							\$9,474,928	\$32,450	\$0	\$9,507,378
B30 Exterior Horizontal Enclosures										
B3010 Roofing			\$2,421,422							
07 54 19	Low Slope Roofing PVC Roofing		105,683	sf	17	incl	1796611	incl	0	1,796,611
07 54 19	Acoustical Insulation at Decking Flutes		105,683	sf	0.5	incl	52842	incl	0	52,842
06 10 00	Roof Blocking		4,267	lf	12	5	51204	21335	0	72,539
07 71 00	Metal Roof Edge/Parapet Copings		4,267	lf	30	incl	128010	incl	0	128,010
06 10 00	Metal Roof Edge/Parapet Copings, Radius		100	lf	40	incl	4000	incl	0	4,000
07 62 00	Roof to Wall Flashing		1,604	lf	35	incl	56140	incl	0	56,140
07 72 00	Mechanical Equipment Curbs		910	lf	20	incl	18200	incl	0	18,200
07 72 00	Curbs / Penetrations & Misc. Flashings		1	ls	40000	incl	40000	incl	0	40,000
07 54 19	Walkway Pads		1	ls	15000	incl	15000	incl	0	15,000
05 50 00	Roof Access Ladder and Cage		6	loc	7500	incl	45000	incl	0	45,000
07 24 20	Soffits - Framing and Finish		3218	sf	60	incl	193080	incl	0	193,080
B3060 Horizontal Openings			\$70,500							
Vents & Hatches										

**Agostini / Bacon JV
Beverly Middle School
Beverly, MA**



100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
07 72 00	Elevator Louvers		3	ea	3500	incl	10500	incl	0	10,500
07 72 00	Heat & Smoke Hatches		3	ea	15000	incl	45000	incl	0	45,000
07 72 00	Roof Access Hatches		6	ea	2500	incl	15000	incl	0	15,000

B30 Division Total

\$2,470,587	\$21,335	\$0	\$2,491,922
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C Interiors

C10 Interior Construction

C1010 Partitions

\$4,764,635

Interior Fixed Partitions

09 22 16 F23			10,897	sf	19	incl	207043	incl	0	207,043
09 22 16 Unlabeled at Stairwell			3,122	sf	19	incl	59318	incl	0	59,318
09 22 16 G3			16,586	sf	10.25	incl	170007	incl	0	170,007
09 22 16 G3 @ 12" oc			70	sf	11.25	incl	788	incl	0	788
09 22 16 G6			8,174	sf	11.5	incl	94001	incl	0	94,001
09 22 16 G6 @ 12" oc			137	sf	12.5	incl	1713	incl	0	1,713
09 22 16 GA3			5,976	sf	14.25	incl	85158	incl	0	85,158
09 22 16 GA4			6,722	sf	12.25	incl	82345	incl	0	82,345
09 22 16 GA6			34,767	sf	15.75	incl	547580	incl	0	547,580
09 22 16 GA6 @ 12" oc			8,068	sf	16.75	incl	135139	incl	0	135,139
09 22 16 GA7			14,794	sf	13.75	incl	203418	incl	0	203,418
09 22 16 GA7 @ 12" oc			553	sf	14.75	incl	8157	incl	0	8,157
09 22 16 GA8			436	sf	17	incl	7412	incl	0	7,412
09 22 16 GA10			282	sf	19	incl	5358	incl	0	5,358
09 22 16 GB			53,688	sf	13.5	incl	724788	incl	0	724,788
09 22 16 GD			9,091	sf	17.5	incl	159093	incl	0	159,093
09 22 16 GD @ 12" oc			6,816	sf	18.5	incl	126096	incl	0	126,096
09 22 16 GF1			2,397	sf	6	incl	14382	incl	0	14,382
09 22 16 Unlabeled, F1?			2,774	sf	6	incl	16644	incl	0	16,644
09 22 16 GF3			14,440	sf	6.5	incl	93860	incl	0	93,860
09 22 16 GF4			2,219	sf	8.5	incl	18862	incl	0	18,862
09 22 16 GF4 @ 12" oc			2,210	sf	9.5	incl	20995	incl	0	20,995
09 22 16 GF5			256	sf	7.75	incl	1984	incl	0	1,984
09 22 16 GF6			2,453	sf	9.75	incl	23917	incl	0	23,917
09 22 16 GF6 @ 12" oc			416	sf	10.75	incl	4472	incl	0	4,472
09 22 16 GP			10,116	sf	17.5	incl	177030	incl	0	177,030
09 22 16 S1			18,300	sf	15	incl	274500	incl	0	274,500
09 22 16 Low wall @ Auditorium			825	sf	14	incl	11550	incl	0	11,550
09 22 16 Low G03			203	sf	10	incl	2030	incl	0	2,030
09 22 16 Low Wall @ Admin			332	sf	10	incl	3320	incl	0	3,320
09 30 13 Premium for cementious board behind wall tile			23,020	sf	2	incl	46040	incl	0	46,040
09 22 16 Gyp column box-out - 14'			77	ea	750	incl	57750	incl	0	57,750
09 22 16 Gyp column box-out - 28'			7	ea	1500	incl	10500	incl	0	10,500
09 29 00 1/2" plywood behind Gym gyp			10,846	ea	2.5	incl	27115	incl	0	27,115
09 29 00 Premium for Abuse Resistant Board			35,977	ea	1.25	incl	44971	incl	0	44,971
04 20 00 CMU elevator hoistways			6,094	sf	22	incl	134068	incl	0	134,068
04 20 00 Install elevator hoist beam			3	ea	350	incl	1050	incl	0	1,050
10 22 15 Fixed Glass Panel Partitions, 3x7	w/Operable Glass Partitio		0	ea	3,200	incl	0	incl	0	0
10 22 15 Fixed Glass Panel Partitions, 6x8.67			17	ea	4,000	incl	68000	incl	0	68,000
10 22 15 Fixed Glass Panel Partitions, 8x8.67			24	ea	5,200	incl	124800	incl	0	124,800
10 22 15 Fixed Glass Panel Partitions, Media	15.75x9 Scheduled as 6x8.67		2	ea	11,000	incl	22000	incl	0	22,000
10 22 26 Operable Glass Partitions	Modernfold HSW-GP M		4,828	sf	170	incl	820760	incl	0	820,760
10 22 28 Operable Partitions - None Shown	Motorized, MTB, Pass D		0	sf	65	incl	0	incl	0	0
06 10 00 Interior Wood Blocking			30	md	741.44	445	22243	13350	0	35,593
06 10 00 Plywood Backboards			1	ls	10000	incl	10000	incl	0	10,000
Inter Partition Supplementary Components										
07 84 00 Through Penetration Firestopping			231,509	sf	0.35	incl	81028	incl	0	81,028

C1020 Interior Doors

\$1,240,750

Interior Swinging Doors

Hollow Metal

08 11 13 HM Frames - F1 - 3x7			83	ea	125	160	10375	13280	0	23,655
08 11 13 HM Frames - F3 - 6x7			44	ea	200	180	8800	7920	0	16,720
08 11 13 HM Frames - F5 - 3x9 (Fixed Transom)			127	ea	155	195	19685	24765	0	44,450

**Agostini / Bacon JV
Beverly Middle School
Beverly, MA**



100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
08 11 13	HM Frames - 4.25x9 (Sidelite & Transom)		3	ea	175	200	525	600	0	1,125
08 11 13	HM Frames - 5.33x9 (Sidelite & Transom)		12	ea	190	220	2280	2640	0	4,920
08 11 13	HM Frames - 6x9 (Sidelite & Transom)		13	ea	200	225	2600	2925	0	5,525
08 11 13	HM Frames - 8x9 (Sidelite & Transom)		3	ea	215	230	645	690	0	1,335
08 11 13	HM Frames - 114 x7 (Sidelite)		2	ea	250	300	500	600	0	1,100
08 11 13	HM Frames - 20x7 to 9 (2-Openings, S & T)		4	ea	750	850	3000	3400	0	6,400
08 11 13	Interior Aluminum Window - H1		58	ea	2600	incl	150800	incl	0	150,800
08 11 13	Interior Aluminum Window - H2	Not Found	0	ea	0	incl	0	incl	0	0
08 11 13	Interior Aluminum Window - H3		12	ea	1425	incl	17100	incl	0	17,100
08 11 13	Interior Aluminum Window - H4		6	ea	1500	incl	9000	incl	0	9,000
08 11 13	Interior Aluminum Window - Rm 133 Sim	Now Operable Glass Part	0	ea	2500	incl	0	incl	0	0
08 14 16	Type A - Flush SC Wood Doors		108	lvs	150	275	16200	29700	0	45,900
10 22 15	Type B - See C1010	See above	0	lvs	150	275	0	0	0	0
08 14 16	Type C - Flush SC Wood Doors w/lite		114	lvs	150	325	17100	37050	0	54,150
08 14 16	Type D - Flush SC Wood Doors w/2-lites		46	lvs	150	375	6900	17250	0	24,150
08 14 16	Type E - Flush SC Wood Doors w/ small lite		73	lvs	150	375	10950	27375	0	38,325
08 11 13	HM Large Lites at Gym		1,170	sf	35	incl	40950	incl	0	40,950
TBD	Finish Hardware		341	sets	340	900	115940	306900	0	422,840
08 80 00	Glaze Interior Doors / Lites		2,181	sf	25	incl	54519	incl	0	54,519
08 87 00	Glazing Surface Film	Allowance	1	ls	5000	incl	5000	incl	0	5,000
08 34 73	Sound Control Doors	Allowance	1	allw	0	0	0	0	50000	50,000
Interior Entrance Doors										
08 43 13	Aluminum Entrance Doors, Single		2	ea	2500	incl	5000	incl	0	5,000
08 43 13	Aluminum Entrance Doors, Double		7	ea	3500	incl	24500	incl	0	24,500
08 43 13	Interior CW (Storefront) Framing		1,036	sf	85	incl	88060	incl	0	88,060
	Pass Window		1	allw	0	0	0	0	2500	2,500
08 33 13	Coiling Counter Doors	Allowance	1	allw	0	0	0	0	8000	8,000
08 33 26	Overhead Coiling Grilles, 7x8.3	@ Room 133 Sim.	12	ea	5,000	0	60000	0	0	60,000
Interior Access Doors			231,509	sf	0.15	incl	34726	incl	0	34,726
C1030 Fittings										\$1,875,000
	Finish Carpentry	Allowance	1	allw	1875000	incl	1875000	incl	0	1,875,000
06 40 00	Circulation Desk at Library	with Allowance above	0	ls	0	incl	0	incl	0	0
06 40 00	Circulation Desk at Administration Office	with Allowance above	0	ls	0	incl	0	incl	0	0
06 40 00	Computer Desk at Library	with Allowance above	0	ls	0	incl	0	incl	0	0
06 40 00	Mailbox Units	with Allowance above	0	ls	0	incl	0	incl	0	0
06 40 00	Plastic laminate countertops	with Allowance above	0	ls	0	incl	0	incl	0	0
40 00 & 10	Display Cases	with Allowance above	0	ls	0	incl	0	incl	0	0
06 40 00	Fabric Faced Tackboards	with Allowance above	0	ls	0	incl	0	incl	0	0
06 40 00	Glass Shelving & Brackets	with Allowance above	0	ls	0	incl	0	incl	0	0
06 40 00	Bulletin Boards	with Allowance above	0	ls	0	incl	0	incl	0	0
06 55 00	Solid Surface countertops & backsplashes	with Allowance above	0	lf	0	incl	0	incl	0	0
06 55 00	Solid Surface flip up countertops	with Allowance above	0	lf	0	incl	0	incl	0	0
C1090 Interior Specialties										\$707,100
10 44 00	Fire Extinguisher Cabinets		150	ea	160	325	24000	48750	0	72,750
10 44 00	Fire Extinguishers		150	ea	45	90	6750	13500	0	20,250
10 44 00	Fire Extinguisher Cabinets with Blankets		20	ea	90	300	1800	6000	0	7,800
Information Specialties										
10 11 16	Markerboards & Tackboards		1	allw	205000	0	205000	0	0	205,000
Compartments & Cubicles (A10)										
10 21 13	Toilet Compartments		28	ea	950	incl	26600	incl	0	26,600
10 21 13	Toilet Compartments (Accessible)		20	ea	1400	incl	28000	incl	0	28,000
10 21 13	Urinal Screens		20	ea	300	incl	6000	incl	0	6,000
	Shower door & panel		2	ea	850	incl	1700	incl	0	1,700
Lockers										
10 51 13	Type 2 - Single Tier, Sloped Top, Metal Custodial Lockers		10	ea	200	incl	2000	incl	0	2,000
10 51 13	Type 5 - @ Student Locker Rooms		60	ea	300	incl	18000	incl	0	18,000
10 51 13	Type 7 - @ Kitchen		20	ea	200	incl	4000	incl	0	4,000
Bath Accessories										
10 28 13	Toilet Accessories - Single Toilet Rooms		30	ea	800	incl	24000	incl	0	24,000
10 28 13	Toilet Accessories - Locker Rooms		2	ea	1000	incl	2000	incl	0	2,000

**Agostini / Bacon JV
Beverly Middle School
Beverly, MA**



100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
10 28 13	Toilet Accessories - Gang Toilet Rooms		18	ea	1750	incl	31500	incl	0	31,500
10 28 13	Miscellaneous Toilet/Janitor Accessories		1	ls	2500	incl	2500	incl	0	2,500
Window Treatment										
12 24 00	Window Treatments	Allowance	1	allw	75000	incl	75000	incl	0	75,000
Other Interior Specialties										
10 14 00	Signage Package (NIC Traffic Signage)	Allowance	1	allw	180000	incl	180000	incl	0	180,000
10 14 00	Painted, Wall-Mounted, Acrylic ID Plaques	with Allowance above	0	allw	0	incl	0	incl	0	0
10 14 00	Directional Wall Mounted Pan Signs	with Allowance above	0	allw	0	incl	0	incl	0	0
10 14 00	Metal Letters	with Allowance above	0	allw	0	incl	0	incl	0	0
10 14 00	Applied Vinyl Graphics	with Allowance above	0	allw	0	incl	0	incl	0	0
10 14 00	Digital High Pressure Laminated Image Panels	with Allowance above	0	allw	0	incl	0	incl	0	0
10 14 00	Etched Zinc Dedication Plaque	with Allowance above	0	allw	0	incl	0	incl	0	0
C10 Division Total							\$7,970,290	\$556,695	\$60,500	\$8,587,485

C20 Stairs

C2010 Stair Construction \$504,275

Stair Construction										
05 51 00	Stair #1 & #7 (rate INC Guardrail w/wood handrail)		4	flts	25000	incl	100000	incl	0	100,000
05 51 00	Stair #2 (Egress, INC small flight from Infirmary)		3	flts	15000	incl	45000	incl	0	45,000
05 51 00	Stair #3, #4, #5, #6 & #9 (Egress)		13	flts	15000	incl	195000	incl	0	195,000
05 51 00	Stair #8 (Egress, small, no switchbacks)		2	flts	8000	incl	16000	incl	0	16,000
05 51 00	Auditorium stairs (Railings below)		1	flts	6000	incl	6000	incl	0	6,000
05 51 00	Guardrail w/wood cap at Dining & Lobby		500	lf	180	incl	90000	incl	0	90,000
05 51 00	Guardrail w/wood cap @ Lobby, Radius		14	lf	225	incl	3150	incl	0	3,150
05 51 00	Handrail @ auditorium ramp and stairs		117	lf	125	incl	14625	incl	0	14,625
03 30 00	Stair Pan Concrete		23	flts	1500	incl	34500	incl	0	34,500
C2010 Stair Finishes							\$111,063			

Resilient Stair Finish										
09 65 23	Rubber tile @ Stairs		10,180	sf	10	incl	101800	incl	0	101,800
09 65 13	Resilient Base @ Stair Rubber Flooring		2,316	lf	4	incl	9263	incl	0	9,263

C20 Division Total \$615,338 \$0 \$0 \$615,338

C30 Interior Finishes

C3010 Wall Finishes \$1,068,504

Tile Wall Finish										
09 30 13	Wall tile @ Bathrooms		23,020	sf	20	incl	460400	incl	0	460,400
09 30 19	EXCLUDES Porcelain Wall Tile (None Shown)	Not Found	0	sf	0	incl	0	incl	0	0
11 13 00	Dock bumpers		1	ls	2500	incl	2500	incl	0	2,500
11 13 00	Rubber Corner Guards		1	ls	4000	incl	4000	incl	0	4,000
Wall Painting & Coating										
09 91 00	Paint partitions		405,755	sf	0.85	incl	344892	incl	0	344,892
09 72 00	Vinyl Wall Coverings	Not Found	0	sf	0	incl	0	incl	0	0
09 91 00	Paint HM frames		300	ea	150	incl	45000	incl	0	45,000
09 91 00	Paint HM doors		17	lvs	120	incl	2040	incl	0	2,040
07 92 00	Interior Sealants		331,509	sf	0.18	incl	59672	incl	0	59,672
Acoustical Wall Treatment										
09 84 00	Acoustic Room Components	Allowance	1	ls	150000	incl	150000	incl	0	150,000

C3020 Floor Finishes \$3,494,760

Tile Flooring										
Polished Concrete										
09 66 23	Resinous Matrix Terrazzo Flooring	Mostly rectangular dividers	70,986	sf	30	incl	2129580	incl	0	2,129,580
09 30 13	Mosaic Ceramic Floor Tile		7,334	sf	20	incl	146680	incl	0	146,680
09 30 13	Ceramic Tile Base		2,290	lf	20	incl	45800	incl	0	45,800
09 30 13	Marble Thresholds		63	ea	150	incl	9450	incl	0	9,450
09 30 16	Quarry Tile		2,650	sf	25	incl	66250	incl	0	66,250
1' Metal Base in Lobby										
			120	lf	35	incl	4200	incl	0	4,200

**Agostini / Bacon JV
Beverly Middle School
Beverly, MA**



100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
09 65 13	Resilient Base @ Polished Concrete		1,053	lf	2.5	incl	2633	incl	0	2,633
09 65 13	Resilient Base @ Terrazzo		10,410	lf	2.5	incl	26025	incl	0	26,025
09 65 13	Resilient Base @ Epoxy Painted Flooring		10,410	lf	2.5	incl	26025	incl	0	26,025
09 65 13	Quarry Tile Base		384	lf	20	incl	7680	incl	0	7,680
Wood Flooring										
09 64 66	Wood Athletic Flooring	INC vented base	12,095	sf	30	incl	362850	incl	0	362,850
09 64 66	Stencils and logos at WAF		1	ls	10000	incl	10000	incl	0	10,000
06 20 00	Stage Flooring System INC Vented Wall Base (242 lf)		2,260	sf	20	incl	45200	incl	0	45,200
Resilient Flooring										
09 65 23	Rubber tile @ elevators		111	sf	14	incl	1554	incl	0	1,554
09 65 36	Static Control Resilient Flooring		913	sf	12	incl	10956	incl	0	10,956
09 65 16	Sheet vinyl flooring	None found	0	sf	0	incl	0	incl	0	0
09 65 19	VCT		65,707	sf	4.5	incl	295682	incl	0	295,682
09 65 43	Linoleum Flooring	None found	0	sf	0	incl	0	incl	0	0
09 65 13	Resilient Base @ Other Rubber Flooring		439	lf	2.5	incl	1098	incl	0	1,098
Carpeting										
09 68 00	Carpet Tile	No sheet carpet shown	2,983	sy	45	incl	134235	incl	0	134,235
09 65 13	Resilient Base @ Carpet Tile		4,577	lf	2.5	incl	11443	incl	0	11,443
Entrance Flooring										
12 48 13	Recessed Aluminum Foot Grilles		269	sf	90	incl	24210	incl	0	24,210
12 48 13	Walk-off Mat		549	sf	15	incl	8235	incl	0	8,235
Flooring Supplementary Comp.										
	Thin Film Epoxy Flooring		5,001	sf	12	incl	60012	incl	0	60,012
	Resilient Base @ Thin Film Epoxy		785	lf	2.5	incl	1963	incl	0	1,963
09 96 00	Epoxy Deck Enamel	@ auditorium seating	4,636	sf	1.5	incl	6954	incl	0	6,954
07 95 13	Expansion Joints - Interior		1	ls	25000	incl	25000	incl	0	25,000
C3030 Ceiling Finishes										\$1,925,671
Acoustical Suspended Ceilings										
09 51 00	ACT Type 1 - 2x4 Armstrong Cirrus Tegular 535		64,691	sf	5	incl	323455	incl	0	323,455
09 51 00	ACT Type 2 - 2x2 Armstrong Cirrus 584		14,201	sf	5.25	incl	74555	incl	0	74,555
09 51 00	ACT Type 3 - 2x2 Armstrong Natural Variations Maple		10,816	sf	25	incl	270400	incl	0	270,400
09 51 00	ACT Type 4 - 8x0.3 Armstrong Natural Variations Maple		10,897	sf	25	incl	272425	incl	0	272,425
09 51 00	ACT Type 5 - 2x3.75 Armstrong "Infusion Wings" Polycarbonate		1,438	sf	25	incl	35950	incl	0	35,950
09 51 00	ACT Type 6 - 2x4 Armstrong Clean Room VL	Kitchen 1st (1/2) & 3rd	1,460	sf	6.5	incl	9490	incl	0	9,490
09 51 00	ACT Type 7 - 2x2 Armstrong Clean Room VL	Kitchen 1st (1/2)	604	sf	6.5	incl	3926	incl	0	3,926
09 51 00	ACT Type 8 - 2x2 Armstrong Optima Health Zone		3,958	sf	6.5	incl	25727	incl	0	25,727
09 51 00	2x2 Wood Panels	@ Main Lobby	547	sf	30	incl	16410	incl	0	16,410
09 51 00	Wood Clouds	@ Corridors	3,227	sf	35	incl	112945	incl	0	112,945
09 51 00	Wood Clouds	@ Auditorium	2,418	sf	45	incl	108810	incl	0	108,810
09 51 00	Wood Slats	@ Corridors	4,384	sf	40	incl	175360	incl	0	175,360
06 20 00	Simulated timber framing/Glulam Beams		595	lf	50	incl	29750	incl	0	29,750
TBD	Aluminum Trusses		237	lf	50	incl	11850	incl	0	11,850
09 84 00	Soundscape Blades	@ Sound Control Room	67	ea	300	incl	20100	incl	0	20,100
Gypsum Board Ceilings										
09 22 16	Gypsum Board Ceilings		10,544	sf	12	incl	126528	incl	0	126,528
09 91 00	Paint gyp ceilings & soffits		18,204	sf	1	incl	18204	incl	0	18,204
09 91 00	Epoxy paint gyp ceilings		7,826	sf	1.5	incl	11739	incl	0	11,739
09 22 16	GWB Soffits		2,992	lf	35	incl	104720	incl	0	104,720
09 22 16	GWB Soffits, Radius		6,510	sf	15	incl	97650	incl	0	97,650
09 96 00	Paint exposed structure	INC exposed MEPFP	61,509	sf	1	incl	61509	incl	0	61,509
09 96 00	Paint exposed structure	@ Room Perimeters	14,168	sf	1	incl	14168	incl	0	14,168
C20 Division Total							\$6,488,935	\$0	\$0	\$6,488,935

D Services

D10 Conveying

D1010 Vertical Conveying Systems

\$573,500

14 22 00	Elevator 1 - 4-Stop	Based on Ecospace	4	stp	40000	incl	160000	incl	0	160,000
14 22 00	Elevator 2 - 7-Stop, 2-Door	Based on Ecospace	7	stp	45000	incl	315000	incl	0	315,000

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100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
14 22 00	Elevator 3 - 2-Stop	Based on Ecospace	2	stp	4000	incl	8000	incl	0	80,000
14 22 00	Hoist Beams		3	ea	0	850	0	2550	0	2,550
50 00 & 14 22	Elev. Pit Ladder		3	ea	3500	incl	10500	incl	0	10,500
05 50 00	Sill Angles		13	ea	350	incl	4550	incl	0	4,550
	Sump Pit Cover & Frame		3	ea	300	incl	900	incl	0	900
D10 Division Total							\$570,950	\$2,550	\$0	\$573,500

D20 Plumbing

D2010 Plumbing Fixtures

Fixtures

P1 Water Closet	AC	53	ea	3600	incl	190800	incl	0	190800
P1H Water Closet	AC	31	ea	3600	incl	111600	incl	0	111600
P2 Urinal	AC	20	ea	3800	incl	76000	incl	0	76000
P2H Urinal	AC	10	ea	3800	incl	38000	incl	0	38000
P3 Sink - Lavatory	AC	59	ea	3950	incl	233050	incl	0	233050
P3H Sink - Lavatory	AC	29	ea	3950	incl	114550	incl	0	114550
P3B Sink - Lavatory (Gang Sink)	AC	2	ea	6750	incl	13500	incl	0	13500
P4 Drinking Fountain	AC	15	ea	4200	incl	63000	incl	0	63000
P4, 4H, 5H Showers	AC	5	ea	4000	incl	20000	incl	0	20000
P6 Mop Receptor	AC	5	ea	3800	incl	19000	incl	0	19000
P7 Emergency Eyewash / Showers	AC	13	ea	2652	incl	34476	incl	0	34476
P8 Sink - Classroom (w/ Bubbler)	AC	56	ea	4300	incl	240800	incl	0	240800
P9 Sink - Kitchen / Pantry	AC	5	ea	3950	incl	19750	incl	0	19750
P10 Sink - Exam Room	AC	3	ea	3950	incl	11850	incl	0	11850
P11 Sink - Service	AC	2	ea	3950	incl	7900	incl	0	7900
P13, 13H Sink - Art Classroom	AC	5	ea	4400	incl	22000	incl	0	22000
P14, 14H Sink - Science Classroom	AC	19	ea	5400	incl	102600	incl	0	102600

Kitchen & Food Prep Sinks Not Included

Hose Bib	AC	20	ea	706	incl	14120	incl	0	14120
Wall Hydrants	Allowance	10	ea	856	incl	8560	incl	0	8560

Branch Piping & Connections to Fixtures Included w/ Fixtures 1 ls 0 0 0 0 0 0

D2020 Domestic Water Distribution

Water Meter 6"	AC	1	ea	903	3800	903	3800	0	4703
Backflow Preventer (Main Service) 4"	AC	1	ea	1444.8	3280	1445	3280	0	4725
Backflow Preventer (HVAC) 2"	AC	1	ea	361.2	1400	361	1400	0	1761
Backflow Preventer (Science) 1"	AC	6	ea	180.6	733	1084	4398	0	5482
Backflow Preventer (Kitchen)	AC	2	ea	180.6	733	361	1466	0	1827
Backflow Preventer (Emergency Shower) 2"	AC	3	ea	180.6	340	542	1020	0	1562
Water Softener	Not Included								
Pressure Booster Pump	Not Included								

Reclaim Water Equipment Skid Not Included

Thermostatic Mixing Valve									
Emergency Showers	AC	3	ea	722.4	2440	2167	7320	0	9487

Domestic Water Tempering System AC 1 ea 1444.8 7400 1445 7400 0 8845

Gas Fired Hot Water Heater (130 gal)	AC	3	ea	1444.8	24800	4334	74400	0	78734
Emergency Shower HW Heater (Electric)	AC	3	ea	541.8	780	1625	2340	0	3965

HW Recirculating Pumps (15 gpm 1/6 hp)	AC	2	ea	361.2	725	722	1450	0	2172
Emergency Shower Recirc Pump (12 gpm 1/6 hp)	AC	2	ea	361.2	725	722	1450	0	2172

Misc Equipment (Tanks, etc.) AC 6.00% 15711 109724 943 6583 0 7526

HW Heater Flues									
Water Heaters - Intake	AC	3	ea	1083.6	650.16	3251	1950	0	5201
Water Heaters - Exhaust	Included	3	ea	0	0	0	0	0	0

Piping									
Chilled Water & HW Mains & Risers	AC	3864	lf	48	incl	185472	incl	0	185472
Reclaimed Storm Water (Lavs)	Not Included								

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100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
	Kitchen - Rough (Rm 145A, 345)	Allowance	7	mw	3612	2528	25284	17696	0	42980
	Kitchen - Hookup (Rm 145A, 345)	Allowance	7	mw	3612	2528	25284	17696	0	42980
	Hot Water Branch to Fixtures	Included w/ Fixtures	1	ls	0	0	0	0	0	0
	CW Supply & Branch to Fixtures	Included w/ Fixtures	1	ls	0	0	0	0	0	0
	Vent Branch Piping to Fixtures	Included w/ Fixtures	1	ls	0	0	0	0	0	0
	CW Supply to Exterior Irrigation	Allowance	2	md	722.4	577.92	1445	1156	0	2601
	CW Supply to HVAC System	Allowance	4	md	722.4	577.92	2890	2312	0	5202
D2030 Sanitary Waste										
	Elevator Sump Pump / Oil Separator	AC	2	ea	1444.8	2665	2890	5330	0	8220
	Acid Waste Neutralization System (P2.2)	AC	3	ea	5779.2	28000	17338	84000	0	101338
	Tank (55 gallon)	Included	3	ea	0	0	0	0	0	0
	pH Monitoring	Included	3	ea	0	0	0	0	0	0
	Interior Grease Interceptors	AC	2	ea	4334.4	28120	8669	56240	0	64909
	Floor Drains	AC	24	ea	670	incl	16080	incl	0	16080
	Underslab Drainage (Waste)									
	4"	AC	1598	lf	39.8	incl	63600	incl	0	63600
	3"	AC	45	lf	35.3	incl	1589	incl	0	1589
	2"	AC	346	lf	31.3	incl	10830	incl	0	10830
	Underslab Drainage (Acid Waste - Polypropylene)									
	4"	AC	298	lf	50.9	incl	15168	incl	0	15168
	2"	AC	73	lf	40.1	incl	2927	incl	0	2927
	Branch Piping & Connections to Fixtures	Included w/ Fixtures	1	ls	0	0	0	0	0	0
D2040 Rain Water Drainage										
	Roof Drains		46	ea						
	Roof Drains 4"	AC	22	ea	1150	incl	25300	incl	0	25300
	Roof Drains 5"	AC	24	ea	1300	incl	31200	incl	0	31200
	Roof Area		83539	sf	1800	sf/drain				
	Risers									
	8"	AC	42		64.8	incl	2722	incl	0	2722
	6"	AC	208	lf	52.8	incl	10982	incl	0	10982
	5"	AC	800	lf	49.3	incl	39440	incl	0	39440
	4"	AC	404	lf	45.1	incl	18220	incl	0	18220
	Fittings	AC	10.00%		68642	incl	6864	incl	0	6864
	Horizontal Piping									
	6"	AC	67	lf	52.8	incl	3538	incl	0	3538
	5"	AC	415	lf	49.3	incl	20460	incl	0	20460
	4"	AC	359	lf	45.1	incl	16191	incl	0	16191
	Fittings	AC	14.00%		40189	incl	5626	incl	0	5626
	Insulation	Not Included								
	Underslab Drainage (Roof Drains)									
	12"	AC	197	lf	91.1	incl	17947	incl	0	17947
	10"	AC	386	lf	78.6	incl	30340	incl	0	30340
	8"	AC	200	lf	64.1	incl	12820	incl	0	12820
	6"	AC	22	lf	47.4	incl	1043	incl	0	1043
	5"	AC	371	lf	44.1	incl	16361	incl	0	16361
	4"	AC	85	lf	39.8	incl	3383	incl	0	3383
	Fittings	AC	10.00%		33607	incl	3361	incl	0	3361
D2090 Other Plumbing Systems										
	Gas Service	By Local Gas Co								
	Gas Meter	By Local Gas Co								
	Utility Backcharges	Not Included								

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100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
	Gas Piping									
	Main Service	AC	150	Lf	105	incl	15750	incl	0	15750
	HVAC & Plumbing Equipment	AC	432	Lf	48	incl	20736	incl	0	20736
	Pipe	Included	1	ls	0	0	0	0	0	0
	Fittings	Included	1	ls	0	0	0	0	0	0
	Valves	Included	1	ls	0	0	0	0	0	0
	Insulation	Not Included								
	Kitchen Equipment									
	Mains	AC	498	Lf	28	incl	13944	incl	0	13944
	Branches	Incl w/ Kitchen Rough								
	Science Labs									
	Mains	AC	1514	Lf	28	incl	42392	incl	0	42392
	Branches	Included w/ Fixtures	1	ls	0	0	0	0	0	0
	Miscellaneous & General Costs									
	Fire Watch	Not Included								
	Floor & Wall Penetration Cutting	AC	2	mw	4020	1407	8040	2814	0	10854
	Floor & Wall Penetration Sealing	Incl w/ Div 07	1	ls	0	0	0	0	0	0
	Staging & Lifts	AC	1	ls	0	7400	0	7400	0	7400
	Equipment & Pipe Labeling	AC	7	md	722.4	108	5057	756	0	5813
	Project Supervision	Included Above	1	ls	0	0	0	0	0	0
	Subcontractor General Conditions	Included Above	1	ls	0	0	0	0	0	0
	Coordination Drawings	Included	1	ls	0	0	0	0	0	0
	Subcontractor OH&P	Included Above	1	ls	0	0	0	0	0	0
31 00 00	Excavate and Backfill Utilities Under Slab		3,560	Lf	8.5	incl	30260	incl	0	30,260
	Mechanical Permits & Fees (Waived by City)	Not Included	0.00%		2,426,301	0	0	0	0	0
	Subcontractor Bond	AC	1.20%		2,426,301	0	29116	0	0	29116
	D20 Division Total						\$2,172,020	\$313,657	\$0	\$2,485,677
	D30 HVAC									
	D3010 Energy Supply									
	D3020 Heat Generating Systems									
	D3030 Cooling Generating Systems									
	D3050 Terminal & Package Units									
	Equipment									
	B-1,2,3 Boilers (4364 mbh)	AC	3	ea	0	75650	0	226950	0	226950
	ACC-1,2 Air Cooled Chillers (173 ton)	AC	2	ea	0	105875	0	211750	0	211750
	Air Handling Units		15	ea						
	RTU Energy Recovery (Classroom Wings)									
	Units		14	ea						
	CFM	AC / DAC Sales	137460	cfm	0	0	0	0	1136375	1136375
	RTU - 1		10/7.5	hp		5500	cfm			
	RTU - 2		5/5	hp		2000	cfm			
	RTU - 3		(2)7.5/(2)5	hp		10000	cfm			
	RTU - 4		(2)7.5/(2)5	hp		13600	cfm			
	RTU - 5		20/15	hp		12880	cfm			
	RTU - 6		20/15	hp		10400	cfm			
	RTU - 7		20/15	hp		12010	cfm			
	RTU - 8		20/15	hp		12560	cfm			
	RTU - 9		(2)7.5/(2)5	hp		12600	cfm			
	RTU - 10		(2)7.5/(2)5	hp		11500	cfm			
	RTU - 11		20/15	hp		11185	cfm			
	RTU - 12		20/15	hp		10925	cfm			
	RTU - 13		10/7.5	hp		5500	cfm			
	RTU - 14		(2)5/(2)5	hp		6800	cfm			
	MUA Unit (Kitchen)		1	ea						
	MAU-1	AC	6490	cfm	0	5.4	0	35046	0	35046

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100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
	Sound Attenuators	AC	14	ea	0	4800	0	67200	0	67200
	Split Systems		4	ea						
	DFC-1	AC	1	ea	0	7400	0	7400	0	7400
	DFC-2	AC	1	ea	0	7400	0	7400	0	7400
	DFC (Unmarked)	AC	2	ea	0	7400	0	14800	0	14800
	Pumps		8	ea						
	P-1,2 Hot Water (585 gpm, 20 hp)	AC	2	ea	0	6900	0	13800	0	13800
	P3, 4 Chilled Water (700 gpm, 25 hp)	AC	3	ea	0	7800	0	23400	0	23400
	BP-1,2,3 Boiler (275 gpm, 3 hp)	AC	3	ea	0	2785	0	8355	0	8355
	VFDs		45	ea						
	AHUs (Supply & Return Fans)									
	20 hp	AC	6	ea	0	2600	0	15600	0	15600
	15 hp	AC	6	ea	0	2130	0	12780	0	12780
	10 hp	AC	2	ea	0	1650	0	3300	0	3300
	7½ hp	AC	10	ea	0	1200	0	12000	0	12000
	5 hp	AC	12	ea	0	900	0	10800	0	10800
	MUA Unit (5 hp)	AC	1	ea	0	900	0	900	0	900
	Hot Water Recirc Pumps (20 hp)	AC	2	ea	0	2600	0	5200	0	5200
	Chilled Water Recirc Pumps (25 hp)	AC	3	ea	0	2800	0	8400	0	8400
	Boiler Pumps (3 hp)	AC	3	ea	0	1400	0	4200	0	4200
	Fan Coil Unit									
	FCU-1	AC	1	ea	0	3300	0	3300	0	3300
	Terminal Boxes	AC	196	ea	0	620	0	121520	0	121520
	Admin/Guidance (TB w/ HW Reheat)		6416	sf	300	sf/unit				
	Classrooms (TB w/ HW Reheat)		125288	sf	800	sf/unit				
	Classroom Area Corridors		32528	sf	1040	sf/unit				
	Band/Choral (TB w/ HW Reheat)		7500	sf	800	sf/unit				
	Media Center (TB w/ HW Reheat)		5580	sf	800	sf/unit				
	Miscellaneous		54732	sf	1040	sf/unit				
	Ceiling Radiant Heat Panel (12" Wide)		120	rms						
	Classroom Perimeters	AC	2533	lf	0	95	0	240635	0	240635
	Fin Tube Radiation	AC	162	lf	0	52.8	0	8554	0	8554
	Cabinet / Unit Heaters		33	ea						
	Cabinet Unit Heaters		4	ea						
	CUH-1 (335 cfm)	None Shown								
	CUH-2 (430 cfm)	AC	4	ea	0	1800	0	7200	0	7200
	CUH-3 (430 cfm)	None Shown								
	CUH-4 (1410 cfm)	None Shown								
	Horizontal Unit Heaters		1	ea						
	HUH-1 (450 cfm)	AC	1	ea	0	460	0	460	0	460
	HUH-2 (5000 cfm)	None Shown								
	HUH-3 (550 cfm)	None Shown								
	Convector		28	ea						
	CV-1 (1.1 mbh)	AC	11	ea	0	660	0	7260	0	7260
	CV-2 (1.4 mbh)	AC	17	ea	0	660	0	11220	0	11220
	CV-3 (5.3 mbh)	None Shown								
	Exhaust Fans	Allowance	9	ea						
	Toilets									
	Zone 1A	AC	3200	cfm	0	0.85	0	2720	0	2720
	Zone 2	AC	1200	cfm	0	0.85	0	1020	0	1020
	Kiln (Flr 3, Zone 2)	AC	400	cfm	0	1.05	0	420	0	420
	Kitchen Exhaust	Allowance	1	ls	0	8000	0	8000	0	8000
	General & Miscellaneous	Allowance	1	ls	0	12000	0	12000	0	12000

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CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
	Smoke Exhaust	Not Included								
	Miscellaneous Equipment	AC	3.50%		0	2249965	0	78749	0	78749
	Chemical Feed System	Included	1	ls	0	0	0	0	0	0
	Expansion Tanks	Included	1	ls	0	0	0	0	0	0
	Air Separators	Included	1	ls	0	0	0	0	0	0
	Shipping & Freight	AC	1	ls	0	28000	0	28000	0	28000
	Rigging & Setting	AC	1	ls	66360	0	66360	0	0	66360
	Cranes & Lifts	AC	1	ls	0	31500	0	31500	0	31500

D3040 Distribution Systems

Piping

Equipment										
			\$1,344,608							
			\$390,476							
Boiler	AC	3	ea	2814	2111	8442	6333	0	0	14775
Chillers	AC	2	ea	7236	5427	14472	10854	0	0	25326
Air Handlers (Classroom)	AC	14	ea	3618	2714	50652	37996	0	0	88648
MUA Unit (Kitchen)	AC	1	ea	3618	2714	3618	2714	0	0	6332
Split Systems	AC	4	ea	2814	2111	11256	8444	0	0	19700
Circulation Pumps	AC	8	ea	1608	1206	12864	9648	0	0	22512
Feed Systems	AC	2	ea	1407	1055	2814	2110	0	0	4924
Fan Coil Unit	AC	1	ea	402	302	402	302	0	0	704
Terminal Boxes	AC	196	ea	151	45	29596	8820	0	0	38416
Radiant Heating Panels (Branch)	AC	88	rm	402	121	35376	10648	0	0	46024
Radiant Heating Panels	AC	545	ea	50	15	27250	8175	0	0	35425
Finned Tube Radiation	AC	162	lf	13.4	10	2171	1620	0	0	3791
Cabinet / Unit Heaters	AC	33	ea	502.5	377	16583	12441	0	0	29024
Miscellaneous Equipment	AC	5	mw	4020	3015	20100	15075	0	0	35175
Pipe Kitchen Condensing Units	AC	4	ea	2814	2111	11256	8444	0	0	19700
Chilled Water Mains & Distribution										\$954,132
HW Mains & Distribution										
Pipe 8"	AC	208	lf	118.25	incl	24596	incl	0	0	24596
Fittings	AC	14.00%		24596	incl	3443	incl	0	0	3443
Valves	AC	22.00%		24596	incl	5411	incl	0	0	5411
Insulation	AC	208	lf	33.11	incl	6887	incl	0	0	6887
Pipe 6"	AC	1626	lf	77.5	incl	126015	incl	0	0	126015
Fittings	AC	14.00%		126015	incl	17642	incl	0	0	17642
Valves	AC	22.00%		126015	incl	27723	incl	0	0	27723
Insulation	AC	1626	lf	21.7	incl	35284	incl	0	0	35284
Pipe 4"	AC	346	lf	45.63	incl	15788	incl	0	0	15788
Fittings	AC	14.00%		15788	incl	2210	incl	0	0	2210
Valves	AC	22.00%		15788	incl	3473	incl	0	0	3473
Insulation	AC	346	lf	12.78	incl	4422	incl	0	0	4422
Pipe 3"	AC	488	lf	36	incl	17568	incl	0	0	17568
Fittings	AC	14.00%		17568	incl	2460	incl	0	0	2460
Valves	AC	22.00%		17568	incl	3865	incl	0	0	3865
Insulation	AC	488	lf	10.08	incl	4919	incl	0	0	4919
Pipe 2½"	AC	1440	lf	30.7	incl	44208	incl	0	0	44208
Fittings	AC	14.00%		44208	incl	6189	incl	0	0	6189
Valves	AC	22.00%		44208	incl	9726	incl	0	0	9726
Insulation	AC	1440	lf	8.6	incl	12384	incl	0	0	12384
Pipe 2"	AC	4144	lf	25.7	incl	106501	incl	0	0	106501
Fittings	AC	14.00%		106501	incl	14910	incl	0	0	14910
Valves	AC	22.00%		106501	incl	23430	incl	0	0	23430
Insulation	AC	4144	lf	7.2	incl	29837	incl	0	0	29837
Pipe 1½"	AC	318	lf	20.4	incl	6487	incl	0	0	6487
Fittings	AC	14.00%		6487	incl	908	incl	0	0	908
Valves	AC	22.00%		6487	incl	1427	incl	0	0	1427
Insulation	AC	318	lf	5.71	incl	1816	incl	0	0	1816

Branch Piping

Agostini / Bacon JV
Beverly Middle School
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CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total	
	Pipe 2½"	AC	840	lf	30.7	incl	25788	incl	0	25788	
	Fittings	AC	18.00%		25788	incl	4642	incl	0	4642	
	Valves	AC	28.00%		25788	incl	7221	incl	0	7221	
	Insulation	AC	840	lf	8.6	incl	7224	incl	0	7224	
	AHUs		14	ea	60	lf/unit					
	Pipe 1½"	AC	7392	lf	20.4	incl	150797	incl	0	150797	
	Fittings	AC	18.00%		150797	incl	27143	incl	0	27143	
	Valves	AC	28.00%		150797	incl	42223	incl	0	42223	
	Insulation	AC	7392	lf	5.71	incl	42208	incl	0	42208	
	Radiant Ceiling Panels		88	rms	84	ave lf ea					
	Pipe ¾"	AC	3664	lf	13.7	incl	50197	incl	0	50197	
	Fittings	AC	18.00%		50197	incl	9035	incl	0	9035	
	Valves	AC	28.00%		50197	incl	14055	incl	0	14055	
	Insulation	AC	3664	lf	3.84	incl	14070	incl	0	14070	
	Terminal Units (2 pipe)		196	ea	16	lf/unit					
	Unit & Cabinet Heaters (2 pipe)		33	ea	16	lf/unit					
	Gas Piping (Boilers)										
	Pipe	Incl w/ Plumbing	1	ls	0	0	0	0	0	0	
	Fittings	Incl w/ Plumbing	1	ls	0	0	0	0	0	0	
	Valves	Incl w/ Plumbing	1	ls	0	0	0	0	0	0	
	Insulation	Not Included									
	Radiant Floor Heating	Not Included									
	Ductwork				\$1,580,322						
	Equipment										
	Boilers (Flues/OA)	AC	3	ea	1425.6	997.92	4277	2994	0	7271	
	Air Handlers (Classroom)	AC	14	ea	6415.2	4491	89813	62874	0	152687	
	Make-Up Air Unit	AC	1	ea	2851.2	1996	2851	1996	0	4847	
	Fan Coil Unit	AC	1	ea	267.3	187	267	187	0	454	
	Terminal Boxes	AC	196	ea	178.2	125	34927	24500	0	59427	
	Exhaust Fans	Allowance	12	md	712.8	499	8554	5988	0	14542	
	Miscellaneous Equipment	Allowance	4	mw	3564	2495	14256	9980	0	24236	
	Ductwork										
	Distribution Ductwork	AC	86142	lbs	8.4	incl	723593	incl	0	723593	
	Diffuser/Register Branch & Drops	AC	22.00%		723593	incl	159190	incl	0	159190	
	Transitions, 90s, 45s	AC	15.00%		882783	incl	132417	incl	0	132417	
	Bracing, Waste & Sealing	AC	8.00%		1015200	incl	81216	incl	0	81216	
	Fire, Volume Dampers & Accessories	AC	8.00%		1015200	incl	81216	incl	0	81216	
	Exhaust Duct	Included	1	ls	0	0	0	0	0	0	
	Fume Hood Exhaust (Stainless)	None Per GGD									
	Risers & Mains	None Per GGD	0	lf	90	incl	0	incl	0	0	
	Branch to Hoods	None Per GGD	1	ls	0	0	0	0	0	0	
	Diffusers & Grilles	AC	232044	sf	0.6	incl	139226	incl	0	139226	
	Laboratory Hookup										
	Hoods & Cabinets	Allowance	12	ea	1069.2	962	12830	11544	0	24374	
	Snorkel Exhaust	Not Included									
	Miscellaneous Lab Exhaust Hookup	Not Included									
	Insulation										
	Piping	Included Above									
	Ductwork	AC	103886	sf	4.6	incl	477876	incl	0	477876	
	D3060 Controls & Instrumentation										
	Controls										
	Controls	AC	232044	sf	4.6	incl	1067402	incl	0	1067402	
	CO2 Sensors / Demand Control										
	Gymnasium, Auditorium, Cafeteria	Not Included									
	Science Air Valves & Controls	Allowance	12	ea	3800	incl	45600	incl	0	45600	
	Kitchen Exhaust Mellink Control System	Allowance	1	ls	24000	incl	24000	incl	0	24000	

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CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
D3070 Systems Testing & Balancing										
Test & Balance										
	Testing, Adjusting & Balancing	AC	1	ls	112500	0	112500	0	0	112500
	Mechanical System Commissioning	Allowance	1	ls	54000	incl	54000	incl	0	54000
Miscellaneous & General Costs										
	Fire Watch	Not Included								
	Seismic Requirements	AC	0.80%		7233856	incl	57871	incl	0	57871
	Vibration Isolation	AC	0.80%		7233856	incl	57871	incl	0	57871
	Floor & Wall Penetration Cutting	AC	6	mw	4020	1407	24120	8442	0	32562
	Floor & Wall Penetration Sealing	Incl w/ Div 07	1	ls	0	0	0	0	0	0
	Staging & Lifts	AC	1	ls	0	14500	0	14500	0	14500
	Testing & Commissioning	Included Above								
	Equipment & Pipe Labeling	AC	2	mw	3564	713	7128	1426	0	8554
	Project Supervision	Included Above								
	HVAC Subcontractor General Conditions	Included Above								
	Subcontractor OH&P	Included Above								
	Mechanical Permits & Fees (Waived by City)	Not Included	0.00%		7,405,214	0	0	0	0	0
	Subcontractor Bond	AC	1.20%		7,405,214	0	88863	0	0	88863
D30 Division Total							\$4,769,208	\$1,539,894	\$1,136,375	\$7,445,477
D40 Fire Protection										
D4010 Fire Protection										
\$939,778										
D4010.10	Water-Based Fire Suppression	AC	232044	sf	4.05	incl	939778	incl	0	939778
	Backflow Preventer	Included	1	ea	0	0	0	0	0	0
	Pipe Alarm Valve	Included	1	ls	0	0	0	0	0	0
	Sprinkler Drain Valves	Included	1	ls	0	0	0	0	0	0
	Fire Pump	Not Included								
	Standpipe	Included	1	ls	0	0	0	0	0	0
	Floor Control Assembly	Included	1	ls	0	0	0	0	0	0
	FDV	Included	1	ls	0	0	0	0	0	0
	Electric Bell	Included	1	ls	0	0	0	0	0	0
	Kitchen Ansul Systems	By Others / Food Service								
	Piping	Included	1	ls	0	0	0	0	0	0
	Sprinkler Heads (Concealed Pendant)	Included	1	ls	0	0	0	0	0	0
D4030 Fire Protection Specialties										
\$0										
D4030.10	Fire Protection Cabinets	see Div 104400								
D4030.30	Fire Extinguishers	see Div 104400								
D40 Division Total							\$939,778	\$0	\$0	\$939,778
D50 Electrical										
D5020 Electrical Service & Distribution										
\$956,852										
D5020.10	Electrical Service									
	Primary Power Service Ductbank									
	Excavation & Backfill		690	lf	18	incl	12420	incl	0	12,420
	Form Conc. Encased Ductbank		2,760	sfca	7.75	incl	21390	incl	0	21,390
	Pour Conc. Duct Bank		128	cy	125	45	16000	5760	0	21,760
	Secondary Power Service Ductbank									
	Excavation & Backfill		34	lf	18	incl	612	incl	0	612
	Form Conc. Encased Ductbank		136	sfca	7.75	incl	1054	incl	0	1,054
	Pour Conc. Duct Bank		12	cy	125	45	1500	540	0	2,040
	Ductbank to Emergency Generator									
	Excavation & Backfill		20	lf	18	incl	360	incl	0	360
	Form Conc. Encased Ductbank		80	sfca	7.75	incl	620	incl	0	620
	Pour Conc. Duct Bank		5	cy	125	45	625	225	0	850
	Ductbank to Metal Bldg									

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CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
	Excavation & Backfill		460	lf	18	incl	8280	incl	0	8,280
	Form Conc. Encased Ductbank		1,840	sfca	7.75	incl	14260	incl	0	14,260
	Pour Conc. Duct Bank		38	cy	125	45	4792	1725	0	6,517
D5020.30	Power Distribution									
	Transformer	By Others / Utility Co								
	Primary Service	By Others / Utility Co	696	lf						
	Conduit 4"	AC	1392	lf	16	incl	22272	incl	0	22272
	Site Tel/Data Conduit		1037	lf						
	Conduit 4"	AC	3111	lf	16	incl	49776	incl	0	49776
	Secondary Service Feeders	AC	115	lf	125	incl	14375	incl	0	14375
	Feeders to Modular Building									
	Power	AC	440	lf	45	incl	19800	incl	0	19800
	Tel/Data Conduit	AC	360	lf	12	incl	4320	incl	0	4320
	Main Switchgear (4000 amp)	AC	1	ea	146000	incl	146000	incl	0	146000
	Emergency Distribution Panel (800 amp)	AC	1	ea	16500	incl	16500	incl	0	16500
	Panels & Feeders									
	Panels		38	ea						
	Panels (600 amp)	AC	3	ea	5800	incl	17400	incl	0	17400
	Panels - Kitchen (600 amp) E3.03, 3.04	AC	2	ea	5800	incl	11600	incl	0	11600
	Panels (400 amp)	AC	10	ea	5800	incl	58000	incl	0	58000
	Panels (300 amp)	AC	14	ea	4800	incl	67200	incl	0	67200
	Panels - Kitchen (300 amp) E3.03, 3.04)	AC	2	ea	4800	incl	9600	incl	0	9600
	Panels (200 amp)	AC	1	ea	3800	incl	3800	incl	0	3800
	Panel (100 amp) Emer	AC	4	ea	2600	incl	10400	incl	0	10400
	Panel WS-11, ELTS	AC	2	ea	4800	incl	9600	incl	0	9600
	Misc Panels (Lighting Relay / AV)	AC	11	ea	4400	incl	48400	incl	0	48400
	Panelboard Feeders (Main)	AC	600	lf	36	incl	21600	incl	0	21600
	Panelboard Feeders	AC	7562	lf	22	incl	166364	incl	0	166364
			38	ea	199	ave lf ea				
	Transformers		21	ea						
	150 kVA (TKP12,32, TP01)	AC	3	ea	1147.2	4500	3442	13500	0	16942
	75 kVA	AC	8	ea	764.8	5400	6118	43200	0	49318
	TP12,13,14,32,33,34, TKPE12,32 TKPE12,32									
	30 kVA (TEP01)	AC	1	ea	573.6	1600	574	1600	0	2174
	K Rated 150 kVA (TOMDF, TOP01)	AC	2	ea	1147.2	9000	2294	18000	0	20294
	K Rated 75 kVA	AC	7	ea	764.8	6800	5354	47600	0	52954
	TC12,13,14,32,33,34, TOP42									
D5020.70	Grounding									
	Grounding	Allowance	1	ls	28000	incl	28000	incl	0	28000
D5030 General Purpose Electrical Power										\$1,403,574
D5030.10	Branch Wiring System									
D5030.50	Wiring Devices									
D5030.90	Power Supplementary									
	Mechanical Equipment Power									\$243,385
	Boilers	AC	3	ea	764.8	612	2294	1836	0	4130
	Chillers	AC	2	ea	2868	2294	5736	4588	0	10324
	Air Handling Units (Class)	AC	14	ea	2294.4	1836	32122	25704	0	57826
	Air Handling Units	AC	1	ea	1912	1530	1912	1530	0	3442
	Feed Systems	AC	2	ea	764.8	574	1530	1148	0	2678
	Split Systems	AC	4	ea	1147.2	918	4589	3672	0	8261
	Exhaust Fans	AC	8	md	573.6	402	4589	3216	0	7805
	VFDs	AC	45	ea	286.8	201	12906	9045	0	21951
	Pumps	AC	8	ea	478	335	3824	2680	0	6504
	Terminal Units	AC	230	ea	191.2	153	43976	35190	0	79166

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	Water Heaters	AC	6	ea	382.4	306	2294	1836	0	4130
	HW Recirculating Pumps	AC	2	ea	669.2	535	1338	1070	0	2408
	Emer Shower Recirculating Pumps	AC	2	ea	382.4	306	765	612	0	1377
	Drinking Fountains	AC	15	ea	382.4	306	5736	4590	0	10326
	Elevator Sump Pumps	AC	2	ea	669.2	535	1338	1070	0	2408
	Miscellaneous Mechanical Equip	AC	3	mw	3824	3059	11472	9177	0	20649
	Kitchen Rough	AC	4	mw	3824	3059	15296	12236	0	27532
	Kitchen Fitup	AC	3	mw	3824	3059	11472	9177	0	20649
	Elevator	AC	3	ea	2676.8	2141	8030	6423	0	14453
	Autoflush Toilets	AC	114	ea	143.4	86.04	16348	9809	0	26157
	Autoflow Faucets	AC	90	ea	143.4	86.04	12906	7744	0	20650
	Fume Hoods	No Fume Hoods	0	ea	1032	incl	0	incl	0	0
	Misc Lab Equipment Hookup	AC	4	mw	6883	incl	27532	incl	0	27532
	Electric Vehicle Charging Station (C2.1)	AC	6	ea	382.4	2040	2294	12240	0	14534
	Devices & Wiring (Receptacles/Switches)	AC	232044	sf	2.95	incl	684530	incl	0	684530
	Emergency Generator (Diesel 500kW)	AC	1	ls	0	140000	0	140000	0	140000
	Generator Enclosure	Included	1	ea	0	0	0	0	0	0
	Installation	AC	1	ea	9178	6500	9178	6500	0	15678
	Lift/Crane	AC	1	ea	0	4500	0	4500	0	4500
	Automatic Transfer Switches	AC	2	ea	956	7800	1912	15600	0	17512
	Photovoltaic System									
	Panels, Equipment & Supports	Not Included								
	Conduit	AC	1	ls	12800	incl	12800	incl	0	12800
	Lightning Protection	AC	83539	sf	1.6	incl	133662	incl	0	133662

D5040 Lighting

\$2,817,940

- D5040.10 Interior Lighting Control
- D5040.20 Branch Wiring for Lighting
- D5040.50 Lighting Fixtures
- D5040.90 Exterior Lighting

Excavation & Backfill	4,334	lf	10	incl	43340	incl	0	43,340
Light Pole Bases - 6'	28	ea	800	incl	22400	incl	0	22,400
Light Pole Bases - 8'	21	ea	950	incl	19950	incl	0	19,950

Interior Lighting

Fixtures

\$1,352,089

Cafeteria Areas	AC	24160	sf	0	11	0	265760	0	265760
Gymnasium	AC	12460	sf	0	4.4	0	54824	0	54824
Offices, Classrooms, Public	AC	195424	sf	0	5.2	0	1016205	0	1016205
Exterior Building Lighting (SL6)	AC	34	ea	0	450	0	15300	0	15300

Fixtures

2,377 ea

A	Included Above	737	ea	0	0	0	0	0	0
A1	Included Above	83	ea	0	0	0	0	0	0
B	Included Above	574	ea	0	0	0	0	0	0
C	Included Above	18	ea	0	0	0	0	0	0
C1	Included Above	2	ea	0	0	0	0	0	0
D	Included Above	49	ea	0	0	0	0	0	0
F	Included Above	114	ea	0	0	0	0	0	0
G	Included Above	15	ea	0	0	0	0	0	0
H	Included Above	70	ea	0	0	0	0	0	0
H1	Included Above	92	ea	0	0	0	0	0	0
J	Included Above	256	ea	0	0	0	0	0	0
K	Included Above	60	ea	0	0	0	0	0	0
L	Included Above	139	ea	0	0	0	0	0	0
M	Included Above	57	ea	0	0	0	0	0	0
P	Included Above	21	ea	0	0	0	0	0	0
Q	Included Above	25	ea	0	0	0	0	0	0
R	Included Above	38	ea	0	0	0	0	0	0
S	Included Above	0	ea	0	0	0	0	0	0

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	T	Included Above	2	ea	0	0	0	0	0	0
	U	Included Above	25	ea	0	0	0	0	0	0
	Fixture Installation & Wiring	AC	232044	sf	3.3	incl	765745	incl	0	765745
	Emergency Battery Packs	AC	232044	sf	0.5	incl	116022	incl	0	116022
	Emergency Exit Lights	AC	232044	sf	0.28	incl	64972	incl	0	64972
	Exterior Lighting		49	ea						
	SL1	AC	8	ea	2280	incl	18240	incl	0	18240
	SL2	AC	1	ea	2280	incl	2280	incl	0	2280
	SL3	AC	8	ea	2280	incl	18240	incl	0	18240
	SL4 (Dual Head)	AC	4	ea	2930	incl	11720	incl	0	11720
	SL5	AC	12	ea	2280	incl	27360	incl	0	27360
	SL7	AC	16	ea	1920	incl	30720	incl	0	30720
	Sport Field Lighting / Scoreboards	Not Included								
	Lighting Control System & Devices	AC	232044	sf	1.4	incl	324862	incl	0	324862
D6010 Data Communications										\$1,085,493
	Exc. / BF Telecommunications Ductbank F		450	lf	16	incl	7200	incl	0	7,200
	Exc. / BF Telecommunications Ductbank B		450	lf	16	incl	7200	incl	0	7,200
	Form Conc. Encased Ductbank		2,700	sfca	7.75	incl	20925	incl	0	20,925
	Pour Conc. Duct Bank		88	cy	125	45	11000	3960	0	14,960
D6010.10	Data Communications Equipment									
	Data Network Equipment	Allowance	232044	sf	1.8	incl	417679	incl	0	417679
	Network Switches (272100)	Incl w/ Allowance	1	ls	0	0	0	0	0	0
	Wireless Access Points (272133)	Incl w/ Allowance	1	ls	0	0	0	0	0	0
	Structured Cabling (271000)									
	Tel/Data (Conduit Only)	AC	232044	sf	0.7	incl	162431	incl	0	162431
	Tel/Data (CAT6 Wiring)	AC	232044	sf	1.3	incl	301657	incl	0	301657
	Patch Panels	Included	1	ls	0	0	0	0	0	0
	Tel/Data Cable Tray	AC	3552	lf	9.56	16	33957	56832	0	90789
	Corridors		2992	lf						
	MDF/IDF Rooms		560	lf						
	Telephone System (273000)	By Owner								
	Bi-Directional Amplifier System	AC	232044	sf	0.27	incl	62652	incl	0	62652
D6030 Audio-Video Communications										\$1,271,713
D6030.10	Audio-Video System	Allowance	1	ls	1100000	incl	1100000	incl	0	1100000
	Video & Audio Communications (274000)									
	Interactive Whiteboards & Projectors (274100)									
	IPTV Video Distribution System (277000)									
	Auditorium	Incl w/ Allowance	1	ea	0	incl	0	incl	0	0
	Classrooms (Large)	Incl w/ Allowance	60	ea	0	incl	0	incl	0	0
	Classrooms (Small)	Incl w/ Allowance	16	ea	0	incl	0	incl	0	0
	Media Center / Instructional Area	Incl w/ Allowance	1	ea	0	incl	0	incl	0	0
	Cafeterias	Incl w/ Allowance	2	ea	0	incl	0	incl	0	0
	Gymnasium AV & Scoreboard Wiring	Incl w/ Allowance	2	ea	0	incl	0	incl	0	0
	Public Address System (275000)	Allowance	232044	sf	0.74	incl	171713	incl	0	171713
	Conduit & Wiring	Incl w/ Allowances	232044	sf	0	0	0	0	0	0
D7010 Access Control & Intrusion Detect										\$265,067
D7010.10	Access Control									
D7010.50	Intrusion Detection (280000)									
	Equipment & Wiring	AC	1	ls	48000	incl	48000	incl	0	48000
	Card Readers	AC	40	ea	286.8	480	11472	19200	0	30672
	Door Position Switches & Devices	AC	80	ea	764.8	840	61184	67200	0	128384
	Security Conduit	AC	232044	sf	0.25	incl	58011	incl	0	58011

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D7030 Electronic Surveillance										\$294,205
D7030.10	Video Surveillance									
	Indoor/Outdoor CCTV System (282300)	AC	1	ls	35000	0	35000	0	0	35000
	Video Cameras (Exterior)	AC	21	ea	286.8	1030	6023	21630	0	27653
	Video Cameras (Exterior - Pole Mounted)	AC	25	ea	478	1410	11950	35250	0	47200
	Video Cameras (Interior)	AC	140	ea	286.8	1030	40152	144200	0	184352
	Security Conduit	Incl w/ D7010	232044	sf	0	0	0	0	0	0
D7050 Detection & Alarm										\$521,409
D7050.10	Fire Detection & Alarm									
	Fire Alarm System									
	FACP - Control Panel	AC	1	ls	55000	incl	55000	incl	0	55000
	Master Box & Antenna	Included	1	ls	0	0	0	0	0	0
	Fire Alarm - Devices	AC	232044	sf	1.45	incl	336464	incl	0	336464
	Smoke Detectors	Included	1	ls	0	0	0	0	0	0
	Speaker/Strobe	Included	1	ls	0	0	0	0	0	0
	Pull Station	Included	1	ls	0	0	0	0	0	0
	Tamper Switch	Included	1	ls	0	0	0	0	0	0
	Flow Switch	Included	1	ls	0	0	0	0	0	0
	Pressure Switch	Included	1	ls	0	0	0	0	0	0
	Misc Devices	Included	1	ls	0	0	0	0	0	0
	Conduit & Wiring	AC	232044	sf	0.56	incl	129945	incl	0	129945
Electrical Miscellaneous										\$247,566
	Temporary Building Light & Power	AC	232044	sf	0.3	incl	69613	incl	0	69613
	Temporary Power Usage	By Others	12.00	mo	0	0	0	0	0	0
	Fire Watch	Not Included								
	Floor & Wall Penetration Cutting	AC	12	md	764.8	267.68	9178	3212	0	12390
	Floor & Wall Penetration Sealing	AC	1	ls	16000	incl	16000	incl	0	16000
	Staging & Lifts	AC	1	ls	0	10800	0	10800	0	10800
	Testing & Commissioning	AC	1	ls	23000	incl	23000	incl	0	23000
	Equipment & Pipe Labeling	AC	15	md	764.8	114.72	11472	1721	0	13193
	Project Supervision	Included Above								
	Electrical Sub General Conditions	Included Above								
	Subcontractor OH&P	Included Above								
	Electrical Permits & Fees (Waived by City)	Not Included	0.00%		8,547,495	0	0	0	0	0
	Subcontractor Bond	AC	1.20%		8,547,495	0	102570	0	0	102570
D50 Division Total							\$6,684,382	\$2,179,437	\$0	\$8,863,819

E. Equipment & Furnishings

E10 Equipment

E1060 Residential Equipment

11 31 00	Appliances	Allowance	1	ls	10000	incl	10000	incl	0	10,000
11 31 00	Under Counter Ice Machine	with Allowance above	0	lf	0	incl	0	incl	0	0
11 31 00	Front Loading Automatic Washer	with Allowance above	0	lf	0	incl	0	incl	0	0
11 31 00	Front Loading Electric Dryer	with Allowance above	0	lf	0	incl	0	incl	0	0
11 31 00	Refrigerator	with Allowance above	0	lf	0	incl	0	incl	0	0
11 31 00	Refrigerator Under Counter	with Allowance above	0	lf	0	incl	0	incl	0	0
11 31 00	Dishwasher Under Counter	with Allowance above	0	lf	0	incl	0	incl	0	0
11 31 00	Wall Oven	with Allowance above	0	lf	0	incl	0	incl	0	0
11 31 00	Range Hood	with Allowance above	0	lf	0	incl	0	incl	0	0
11 40 00	Food Service Equipment	Allowance	1	allw	450000	incl	450000	incl	0	450,000

E1090 Other Equipment

11 52 13	Projection Screens		1	ls	25000	incl	25000	incl	0	25,000
11 53 00	Laboratory Equipment	with Manufact. Casework								
11 57 00	Vocational Shop Equipment	Allowance	1	ls	25000	incl	25000	incl	0	25,000
11 57 00	Kilns		2	ea	6000	incl	12000	incl	0	12,000

**Agostini / Bacon JV
Beverly Middle School
Beverly, MA**



100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
	Stage Curtain and Rigging	Allowance	1	allw	300000	incl	300000	incl	0	300,000
E10 Division Total							\$822,000	\$0	\$0	\$822,000

E20 Furnishings

E2010 Fixed Furnishings \$1,690,375

Fixed Multiple Seating

12 30 00	Manufactured Casework	Allowance	1	allw	1400000	incl	1400000	incl	0	1,400,000
12 35 51	Musical Instrument Storage Casework	with Manufact. Casework	0	allw	0	incl	0	incl	0	0
12 30 00	Epoxy Resin Countertops & Integral Sinks	with Manufact. Casework								
06 20 00	Plastic Laminate Countertops	with Manufact. Casework								
12 61 00	Fixed Audience Seating		512	ea	325	incl	166400	incl	0	166,400
12 61 00	Telescoping Audience Seating (Band/Choral)	marked as 12 66 13.03	171	ea	725	incl	123975	incl	0	123,975
12 68 00	Seat & Table Assemblies	None shown	0	ea	0	incl	0	incl	0	0

E20 Division Total

\$1,690,375 \$0 \$0 \$1,690,375

F Special Const & Demolition

F10 Special Construction

F1012 Pre-engineered Structures \$145,350

Modular Building			1,530	sf	95	incl	145350	incl	0	145,350
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F1060 Athletic & Rec. Special Con. \$170,000

11 66 23	Gymnasium Equipment	Wall pads & mat hoists	1	ls	100000	incl	100000	incl	0	100,000
11 66 24	Motorized backstops, backboards, etc.	INC Above		ea	0	incl	0	incl	0	0
12 66 13	Telescoping gymnasium bleachers		1	ls	70000	incl	70000	incl	0	70,000
11 66 53	Gymnasium Dividers	INC Above		ea	0	incl	0	incl	0	0
11 68 00	Play Field Equipment & Structures	With Site		ea	0	incl	0	incl	0	0

F10 Division Total

\$315,350 \$0 \$0 \$315,350

F20 Facility Remediation

02 28 20	Haz Material Abatement - Demo & Haz Mat Bid		1	ls	1674381	incl	1674381	incl	0	1,674,381
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F20 Division Total

\$1,674,381 \$0 \$0 \$1,674,381

F30 Demolition

Bulk Building Demolition \$0

02 41 17	Demolish Existing Structure	W/ Haz Mat Above	103,000	sf	0	0	0	0	0	0
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F30 Division Total

\$0 \$0 \$0 \$0

G Building Sitework

G10 Site Demolition

G1010 Site Clearing \$266,585

Erosion & Sedimentation Control										
50 00 & 31	Haybales and Silt Fencing		2,110	lf	4	incl	8440	incl	0	8,440
50 00 & 31	Remove Haybales and Silt Fencing - Ph 1		1,307		1.5	incl	1961	incl	0	1,961
01 50 00	Temporary Fencing & Screening - Ph 1		2,578	lf	12	incl	30936	incl	0	30,936
01 50 00	Relocate Temp Fencing & Screening - Ph 1		1,298	lf	4	incl	5192	incl	0	5,192
01 50 00	Temporary Fencing & Screening - Ph 2		2,083	lf	12	incl	24996	incl	0	24,996
01 50 00	- Gates Vehicular		3	pr	1200	incl	3600	incl	0	3,600
01 50 00	- Gates Pedestrian		3	ea	450	incl	1350	incl	0	1,350
01 50 00	- Temp Fence Windscreen / Dust Barrier	Incl Above								
01 50 00	- Temp Vehicle Access and Parking		1	ls	0	incl	0	incl	4200	4,200
01 73 00	- Maintain Temp Vehicle Access and Parking		1	ls	0	incl	0	incl	3000	3,000

**Agostini / Bacon JV
Beverly Middle School
Beverly, MA**



100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
01 50 00	- Traffic Control/Police Details		40	mhs	120	incl	4800	incl	0	4,800
01 50 00	Noise Control/Abatement Program	W/ Haz Mat Above								
50 00 & 01	Tree Protection		1	ls	6000	incl	6000	incl	0	6,000
01 56 39	Tree Trimming		1	ls	1250	300	1250	300	0	1,550
41 00 & 31	R & D Trees and Stumps		3	acre	3000	incl	7507	incl	0	7,507
41 00 & 31	Clearing and Grubbing		11	acre	1500	incl	17063	incl	0	17,063
41 00 & 31	Strip Topsoil 12" avg		8,803	cy	6	incl	52818	incl	0	52,818
41 00 & 31	Stockpile Topsoil to be Reused		8,803	cy	4	incl	35212	incl	0	35,212
02 41 00	Haul Excess Topsoil		120	cy	8	incl	960	incl	0	960
02 41 00	Protect Stockpile		1	ls	4000	incl	4000	incl	0	4,000
32 50 00	SWPPP		1	ls	0	incl	0	incl	500	500
01 50 00	Dust Control		1	ls	15000	incl	15000	incl	0	15,000
01 50 00	Construction Entrances		3	ea	10000	incl	30000	incl	0	30,000
01 50 00	Maintain Wash Down Stations		1	ls	3500	incl	3500	incl	0	3,500
01 50 00	Temporary Water To Washdown Stations		1	ls	4000	incl	4000	incl	0	4,000
G1020 Site Elements Disposal										\$96,627
	Selective Site Demolition									
41 00 & 31	R & D Concrete Paving		4,717	sf	2.25	incl	10613	incl	0	10,613
41 00 & 31	Sawcut Concrete		160	lf	6	incl	960	incl	0	960
41 00 & 31	Sawcut Asphalt Paving		834	lf	3	incl	2502	incl	0	2,502
41 00 & 31	R & D Bituminous Paving		6,510	sy	4.5	incl	29295	incl	0	29,295
41 00 & 31	Patch Bituminous Paving		257	sy	38	incl	9766	incl	0	9,766
41 00 & 31	R & D Hydrant		1	ls	1500	incl	1500	incl	0	1,500
41 00 & 31	Remove & Rebuild Stone Wall		40	lf	35	5	1400	200	0	1,600
41 00 & 31	Remove and Relocate CL Fencing		203	lf	8	4	1624	812	0	2,436
41 00 & 31	R & D Fencing		509	lf	2.5	incl	1273	incl	0	1,273
41 00 & 31	R & D Sanitary Line and Structures		790	lf	4	2	3160	1580	0	4,740
41 00 & 31	R & D Storm Line and Structures		3,309	lf	5	2.25	16545	7445	0	23,990
41 00 & 31	R & D Gas Line		484	lf	2	1	968	484	0	1,452
41 00 & 31	R & D Water Line		155	lf	3	2	465	310	0	775
41 00 & 31	R & D UG Electric Lines		145	lf	3	2	435	290	0	725
41 00 & 31	Miscellaneous Removals		1	ls	5000	incl	5000	incl	0	5,000
G1030 Site Element Relocations										\$10,200
32 32 10	Locate Landscape Boulders		24	ea	350.00	0	8400	0	0	8,400
31 10 00	Remove & Reset Stone Memorial		1	ea	1800.00	0	1800	0	0	1,800
G1050 Site Remediations										\$25,000
31 10 00	R & D Oil Tanks incl. Sludge	W/ Haz Mat Above								
31 10 00	Screen & Analyze water near UGST	W/ Haz Mat Above								
31 10 00	R & D Contaminated Soils	Allowance	1	ls	25000	0	25000	0	0	25,000
G1070 Site Earthwork										\$371,038
	Building Footprint		94,876	sf						
31 00 00	Unsuitable Soil Allowance - Fill	W/ Foundations								
31 00 00	Foundation Excavation	W/ Foundations								
31 00 00	Backfill - Inside Foundations	W/ Foundations								
31 00 00	Backfill Outside Foundations	W/ Foundations								
31 00 00	Proof Rolling	W/ Foundations								
31 00 00	Site Cuts to Fills		15,431	cy	18	incl	277758	incl	0	277,758
31 00 00	Import Structural Fill		1,357	cy	16	24	21712	32568	0	54,280
31 00 00	Miscellaneous Cuts, Fills & Grading		1	ls	15000	incl	15000	incl	0	15,000
31 00 00	Layout & Engineering		15	Cd	1600	0	24000	0	0	24,000
G10 Division Total							\$717,761	\$43,989	\$7,700	\$769,450
G20 Site Improvements										
G2010 Roadways										
G2020 Parking Lots										\$1,124,455
	Parking Lot Pavement									
32 00 00	Bituminous Pavement Vehicular - 3-1/2"		20,156	sy	30	incl	604680	incl	0	604,680
31 00 00	Gravel Base 8"		5,400	cy	36	incl	194400	incl	0	194,400
31 00 00	Misc. Paving Markings		1	ls	25000	incl	25000	incl	0	25,000

**Agostini / Bacon JV
Beverly Middle School
Beverly, MA**



100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
32 00 00	Granite Curbing, Roadway, Straight		6,120	lf	35	incl	214200	incl	0	214,200
32 00 00	Granite Curbing, Roadway, Radius		1,615	lf	45	incl	72675	incl	0	72,675
32 17 24	Site/Traffic Signs		45	ea	300	incl	13500	incl	0	13,500
G2030 Pedestrian Plazas & Walkways			\$470,873							
Pedestrian Pavement										
32 13 13	Concrete Paving 4"		26,204	sf	12	incl	314448	incl	0	314,448
	Tacktile Warning Strips		26	loc	650	incl	16900	incl	0	16,900
32 13 13	Concrete Pads 8"		571	sf	18	incl	10278	incl	0	10,278
	Oil Spill Containment @ Transformer Pad		1	ls	1600	incl	1600	incl	0	1,600
31 00 00	Gravel Under Paving - 8"		805	cy	36	incl	28980	incl	0	28,980
32 00 00	Bituminous Walks - 3"		1,253	sy	26	incl	32578	incl	0	32,578
31 00 00	Gravel Base 8"		336	cy	36	incl	12089	incl	0	12,089
05 51 00	Rails @ Ramps and Site Stairs		400	lf	35	incl	14000	incl	0	14,000
32 13 13	Exterior Stairs from Auditorium	Allowance	1	ls	40000	incl	40000	incl	0	40,000
G2060 Site Development			\$207,388							
Site Specialties										
12 93 00	30' Flag Pole		2	ea	4000	incl	8000	incl	0	8,000
06 15 00	Bench Type A	12 93 00?	2	ea	4000	incl	8000	incl	0	8,000
12 93 00	Bike Rack Type A		22	ea	950	incl	20900	incl	0	20,900
12 93 00	Bike Rack Type B		12	ea	950	incl	11400	incl	0	11,400
12 93 00	Outdoor Dining Tables Type A		6	ea	3500	incl	21000	incl	0	21,000
	Outdoor Dining Tables Type B		14	ea	2500	incl	35000	incl	0	35,000
32 32 00	Segmental Block Retaining Walls		350	lf	175	incl	61250	incl	0	61,250
06 15 00	Wood Decking - Black Locust		377	sf	30	incl	11310	incl	0	11,310
06 15 00	5" Concrete Base		377	sf	12	incl	4524	incl	0	4,524
06 15 00	8" gravel Base		11	cy	36	incl	404	incl	0	404
	Decorative Metal Bollards		2	ea	650	incl	1300	incl	0	1,300
	Metal Bollards @ Transformer		12	ea	425	incl	5100	incl	0	5,100
12 93 00	Trash Receptacles		16	ea	1200	incl	19200	incl	0	19,200
G2080 Landscaping			\$1,933,795							
Fencing and Gates										
32 31 14	12' Black Vinyl Chainlink Fence		510	lf	30	incl	15300	incl	0	15,300
32 31 14	12' Black Vinyl Chainlink Double Sliding Gate		1	ea	2400	incl	2400	incl	0	2,400
32 31 14	8" Wood Fence @ R. Wall		314	lf	18	incl	5652	incl	0	5,652
32 31 20	10' Green Tresllis Fence		56	lf	125	incl	7000	incl	0	7,000
32 31 20	Ornamental Gate Type A - Lazer Cut - 4 Leafs		48	lf	625	incl	30000	incl	0	30,000
32 31 20	Ornamental Gate Type B - Lazer Cut - 2 Leafs		8	lf	600	incl	4800	incl	0	4,800
32 31 20	Ornamental Gate Type C - Lazer Cut - 2 Leafs		8	lf	600	incl	4800	incl	0	4,800
32 31 20	Ornamental Fence Type A		258	lf	185	incl	47730	incl	0	47,730
32 31 20	Ornamental Fence Type B		323	lf	170	incl	54910	incl	0	54,910
11 68 00	Ball Stopper Netting		131	lf	30	incl	3930	incl	0	3,930
Stone Masonry - Site Walls										
04 43 10	Radius Seatwall Footings		87	cy	450	0	39150	0	0	39,150
	Radius Seatwall Conc. Walls		216	cy	650	0	140400	0	0	140,400
	Wood Seats - Black Locust		203	lf	35	0	7105	0	0	7,105
	Stone Veneer @ Seat Walls		700	sf	45	0	31500	0	0	31,500
	Radius Monolithic Granite Wall Foundation		25	cy	750	0	18750	0	0	18,750
	Radius Monolithic Granite Blocks - 2' x 2'-6"		70	lf	650	0	45500	0	0	45,500
	School Site Sign									
	Entrance Sign Foundation		10	cy	750	0	7500	0	0	7,500
	Entrance Sign Stone Veneer		180	sf	45	0	8100	0	0	8,100
	Aluminum Letters		38	ea	120	0	4560	0	0	4,560
Unit Pavers										
32 14 00	Concrete Pavers, Type B		5,809	sf	20	0	116180	0	0	116,180
32 14 00	4" Concrete Base		5,809	sf	12	0	69708	0	0	69,708
32 14 00	8" Gravel Base		173	cy	34	0	5881	0	0	5,881
32 14 00	Concrete Pavers, Type C		12,261	sf	18	0	220698	0	0	220,698
32 14 00	4" Concrete Base		12,261	sf	12	0	147132	0	0	147,132
32 14 00	8" Gravel Base		365	cy	34	0	12414	0	0	12,414
32 14 00	Paver Concrete Edge Banding		214	sf	20	0	4280	0	0	4,280
04 43 10	Granite Paving Band		1,686	sf	45	0	75870	0	0	75,870
32 14 00	4" Concrete Base		1,686	sf	12	0	20232	0	0	20,232

**Agostini / Bacon JV
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100% DD Estimate

CSI #	Item	Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
32 14 00	8" Gravel Base		50	cy	34	0	1707	0	0	1,707
	Plants									
	Loam									
92 00 & 32 92	Loam Testing		1	ls	1500	0	1500	0	0	1,500
92 00 & 32 92	Screen (Grading) and Respread Existing Loam		8,689	cy	14	0	121646	0	0	121,646
92 00 & 32 92	Apply Soil Additives (Amend)	Allowance	1	ls	10000	0	10000	0	0	10,000
92 00 & 32 92	Wetland Planting Soils		190	cy	40	0	7600	0	0	7,600
92 00 & 32 92	6" Drainage Aggregate @ Wetland Rep Area		64	cy	38	0	2432	0	0	2,432
92 00 & 32 92	Planting Soils		200	cy	36	0	7200	0	0	7,200
32 93 10	Trees	INC Mulch, Water, etc.	377	ea	250	incl	94250	incl	0	94,250
32 93 10	Shrubs	INC Mulch, Water, etc.	209	ea	180	incl	37620	incl	0	37,620
32 93 10	Ground Cover	INC Mulch, Water, etc.	2,620	ea	18	incl	47160	incl	0	47,160
	Wetland Restoration									
32 92 20	Seeding for Lawn Areas	INC Weed Control	123,622	sf	0.5	incl	61811	incl	0	61,811
32 92 20	Maintenance of Lawn Areas		1	ls	2500	incl	2500	incl	0	2,500
32 92 30	Sod @ Multi-use Field	INC Watering, Mowing, Guarantee	172,806	sf	0.9	incl	155525	incl	0	155,525
32 84 00	Irrigation System - Fields		185,704	sf	1.2	0	222845	0	0	222,845
G20 Division Total							\$3,736,511	\$0	\$0	\$3,736,511

G30 Liquid & Gas Site Utilities

G3010 Water Utilities \$339,335

Domestic and Fire Protection Services										
33 10 00	Tapp Water Lines		4	times	1600	incl	6400	incl	0	6,400
33 10 00	6" & 8" CDLI Water Line		2,887	lf	75	incl	216525	incl	0	216,525
33 10 00	Tees, Boxes and Valves		31	ea	650	incl	20150	incl	0	20,150
33 10 00	Hydrant		8	ea	7500	incl	60000	incl	0	60,000
33 10 00	Post Indicator Valve		1	ea	6500	incl	6500	incl	0	6,500
33 10 00	Cut & cap water line		1	loc	1200	incl	1200	incl	0	1,200
33 10 00	Cut & cap water line at main		1	loc	2500	incl	2500	incl	0	2,500
33 10 00	Maintain existing hydrant & water line		276	lf	10	incl	2760	incl	0	2,760
	Maintain underground cabinet		1	ls	2500	incl	2500	incl	0	2,500
	Concrete Thrust Blocks		32	ea	650	incl	20800	incl	0	20,800

G3020 Sanitary Sewerage Utilities \$159,742

Sanitary Sewerage System										
33 30 01	6" PVC Sanitary Piping		1,068	lf	80	incl	85440	incl	0	85,440
33 30 01	Allow for Utility Crossings		1	ls	5,000	incl	5000	incl	0	5,000
33 30 01	SS MH		5	ea	7,000	incl	35000	incl	0	35,000
22 00 00	Grease/Oil Separator		1	ea	25,000	incl	25000	incl	0	25,000
33 30 01	Cut & Connect to Existing Sanitary MH		1	ea	2,000	incl	2000	incl	0	2,000
33 30 01	Cut & Cap SS Line		1	ea	750	incl	750	incl	0	750
33 30 01	Maintain existing sewer main & structures		546	lf	12	incl	6552	incl	0	6,552

G3030 Storm Drainage \$1,400,563

Storm Piping										
33 05 13	Catch Basins / Manholes		57	ea	3500	incl	199500	incl	0	199,500
33 05 13	Area Drains		26	ea	2000	incl	52000	incl	0	52,000
33 40 00	12" HDPE		3,647	lf	42	incl	153174	incl	0	153,174
33 40 00	15"		849	lf	45	incl	38205	incl	0	38,205
33 40 00	18"		1,298	lf	54	incl	70092	incl	0	70,092
33 40 00	24"		675	lf	70	incl	47250	incl	0	47,250
33 40 00	30"		539	lf	90	incl	48510	incl	0	48,510
33 40 00	Connect to Existing Drain Line		2	ea	1500	incl	3000	incl	0	3,000
33 40 00	Connect to Existing MH		4	ea	1200	incl	4800	incl	0	4,800
33 40 00	Outlet Control Structure		2	ea	6500	incl	13000	incl	0	13,000
33 40 00	UG Precast Concrete Det. System 2	32' x 122'	3,904	sf	62	incl	242048	incl	0	242,048
33 40 00	12" Concrete Pad Below UDS 2		3,904	sf	16	incl	62464	incl	0	62,464
33 40 00	UG Detention System 1 - HDPE Piping	88' x 132'	11,616	sf	35	incl	406560	incl	0	406,560
33 40 00	Water Quality Structure		4	ea	12000	incl	48000	incl	0	48,000
01 50 00	Cut & temporarily cap drain line		3	ea	1500	incl	4500	incl	0	4,500
33 40 00	Maintain existing drain line & structures		746	lf	10	incl	7460	incl	0	7,460

G3060 Site Fuel Distribution \$16,016

**Agostini / Bacon JV
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100% DD Estimate

CSI #	Item
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Responsibility	Qty	Unit	Labr\$	Matl\$	Labor Tot	Matl Total	Sub Total	Total
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Site Gas Distribution

Excavate and Backfill Gas Service	702	lf	20	incl	14040	incl	0	14,040
Sand Bedding	52	cy	38	incl	1976	incl	0	1,976
EXCLUDES Cut & Cap Gas Line		ls	0	incl	0	incl	0	0
EXCLUDES Cut & Cap Gas Line @ Main		ls	0	incl	0	incl	0	0
EXCLUDES Cut & Cap Temporary Gas		ls	0	incl	0	incl	0	0
EXCLUDES Maintaining portion of Gas		ls	0	incl	0	incl	0	0

G30 Division Total

\$1,915,656	\$0	\$0	\$1,915,656
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Z General Requirements

Z10 General Requirements

Quality Requirements \$871,230

Quality Control	
Testing and Inspections	By Owner
Geotech Field Services	By Owner

General Conditions

01 50 00	Submittal Exchange	1	ls	31395	0	31395	0	0	31,395
01 50 00	CORI Checks and Implementation	1	ls	2500	0	2500	0	0	2,500
01 50 00	Security	1	ls	18000	0	18000	0	0	18,000
01 50 00	Temporary Rails and Walks	2,000	lf	16.5	0	33000	0	0	33,000
01 50 00	Live Fire Watch	1	ls	25000	0	25000	0	0	25,000
01 50 00	Temp. Wire and Lighting							W/ Electrical	
01 50 00	Power Consumption Charges	24	mo	4500	incl	108000	incl	0	108,000
01 50 00	Gas Consumption Charges	2	mo	4500	incl	9000	incl	0	9,000
01 50 00	Temporary Water	26	mo	425	incl	11050	incl	0	11,050
01 50 00	Temporary Heating	6	mo	24000	incl	144000	incl	0	144,000
01 50 00	Gas Consumption	6	mo	18000	incl	108000	incl	0	108,000
01 50 00	Snow Removal	6	mo	2600	0	15600	0	0	15,600
01 50 00	Temporary Enclosures	32,000	sf	3.15	1.95	100800	62400	0	163,200
01 50 00	Temp. Doors	1	ls	5200	incl	5200	incl	0	5,200
01 50 00	Diesel Generator Fuel - For Testing	1	ls	5000	incl	5000	incl	0	5,000
01 50 00	Temporary Stairs	12	flts	3200	incl	38400	incl	0	38,400
01 50 00	Scaffolding and Lifts							W/ Trades	
01 50 00	Hoisting and Rigging							W/ Trades	
01 50 00	Misc. Hoisting and Loading - Lull	1	ls	20000	incl	20000	incl	0	20,000
01 50 00	Temp Elevator Usage	1	ls	7500	incl	7500	incl	0	7,500
01 50 00	Humidity Control / Air Quality	231,509	sf	0.12	incl	27781	incl	0	27,781
01 73 00	Final Flush Out/Air Testing	231,509	sf	0.08	incl	18521	incl	0	18,521
01 50 00	Temporary Protection of Work	231,509	sf	0.32	incl	74083	incl	0	74,083
01 78 00	Final Property Survey	1	ls	6000	incl	6000	incl	0	6,000

Miscellaneous \$787,500

Bond for Non Filed Subs - Say 1.75% of 45 mil	1	ls	787,500	incl	787500	incl	0	787,500
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Utility Company Backcharges Not Included

Z Division Total

\$1,596,330	\$62,400	\$0	\$1,658,730
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APPENDIX E
RECONCILED CONSTRUCTION COST
ESTIMATE COMPARISON

The Reconciled Construction
Cost Estimate Comparison will
be subsequently issued under a
separate cover.



OPM'S DESIGN DEVELOPMENT DOCUMENT
APPENDIX G
REVIEW COMMENTS

The OPM's Design Development Document Review Comments will be subsequently issued under a separate cover.



APPENDIX H
CONSTRUCTION MANAGER'S
DESIGN DEVELOPMENT DOCUMENT
REVIEW COMMENTS

Beverly Middle School
Beverly, MA

DD Drawings - CM Review Comments
December 18, 2015

	Sheet	Comment
1	G0.02	The legend shows Fire Extinguishers, Cabinets, etc. which are not found on the plans.
2		Need to clarify the stair/exit to the north of the Gym.
3		Need to clarify the egress path and occupant loads to the west of the OT/PT.
4	C0.1	General note 15 refers to a stamped structural design for temp. fencing that has not been included in our previous estimates. See previous comments to SD drawings.
5		General note 16 should be revised before the site early package is issued.
6		Survey note 8 is confusing given that 2 underground tanks currently exist on site.
7	C1.0	Extent of existing irrigation to be removed should be delineated.
8		The extent of Early Package Abatement & Demo should be noted on future drawings being issued.
9	C1.1	Note 5 refers to resetting of an abutters stone wall. Limits of wall being removed and reset should be defined.
10		Note 6 refers to Early Demolition Plans but same have not been provided in this set.
11	C2.0	Note 5 refers to school zone signals on Cabot St. Will there be school zone signals on Balch St.?
12	C2.1	There is a reference to a modular building and some previous discussion that the modular building was outside the scope and budget at this time. We also need details on any slab or foundation required. We also need to clarify if piles are required.
13	C4.0	Note 1 refers to Post Indicator Valves being provided. Note should clarify if they are provided by the site subcontractor.
14	C4.1	Drawing still shows 6" SDR sewer mains. Should clarify with the City if this is acceptable or if 8" minimum are required.
15	C5.1	There is a large underground detention system shown at the bus depot. Have the clay soils been considered for this system? Are there any piles required for this system? Are there any piles required for this system?
16	C5.2	There is a large underground detention system shown in the parking lot to the south of the gym. Have the clay soils been considered for this system? Are there any piles required for this system?
17	C6.5	Please confirm that the UDS-1 has been designed for H-20 loading.
18		Please provide a detail for the cleanouts at the UDS-1 that will be in pavement.
19		Please advise if the concrete pad shown for UDS-2 will require support by piles.
20	L1.0	Drawing note refers to a sliding gate at the bus depot but the plan seems to show a swinging gate.

21 Some of the site improvements are tagged but not all.

22 L1.1 Wetland replication area should refer to details on L3.4.

23 L1.2 Detail references must be completed for some of the tags.

24 Provide details or a reference for the finishes/details at the amphitheater.

25 The tag for the Amphitheater Detail is 4/L-2.1 but this detail is not found there.

26 L1.3 Key tags needed to identify bike racks and site walls and/or refer to details provided further into drawings.

27 L2.0 Detail references must be completed for some of the tags.

28 L2.1 Is there any lighting at the flagpole?

29 Ownership of the electronic message board should be defined.

30 The sliding gate detail shows ground clearance of 3" but the gate slides in an area with granite curb that has a 6" reveal.

31 L2.2 Please clarify.

32 L2.3 Detail references must be completed for some of the tags.

33 Are there no footings required for the site gates?

34 L2.4 Are the decorative gates being provided by the Misc. Metals Trade Contractor?

35 Please confirm that the site walls have been designed for the clay soils. Are piles required?

36 Please confirm that the granite walls have been designed for the clay soils. Are piles required?

37 Detail references must be completed for some of the tags.

38 L2.6 Wood decking has been carried in our estimate at the Amphitheater stage floor.

39 L3.4 Details needed for stone veneer wall with bench.

40 L1.0 Boulder placement at the wetland replication is unclear.

41 Need to coordinate irrigation service entrance and control panel location so that it does not enter the gym.

42 MEP drawings need to define the connection requirements for the irrigation system.

43 Numerous structural notes refer to the Eighth edition of the Building Code. This may need to be updated to the Ninth edition.

44 Foundation Note F1 refers to Sovereign Consultants which appears to be an old note.

45 Foundation Note F2 refers to precast piles and should be updated.

46 S1.04 Notes referring to timber framing should be updated.

47 S1.11 There are a few conflicts between new and existing piles. We should discuss how we handle these conflicts.

48 S1.41 Framing needs to be adjusted at the elevator.

49 S2.01 Reference to precast pile should be updated.

Please see additional comments attached.

- 1/A9.04 room 139B door not shown in elevation by 138.
- Need location for irrigation backflow
- Need location for irrigation controller
- Need power for irrigation controller
- Typical classroom elevations 4& 9/A9.11 does not show outlet above back splash
- A1.22 at 231A has detail bubble 6/A9.01 for this room. A9.01 are corridor elevations. Need elevation for these room as they are different layouts.
- A1.32 & A1.42 at 331A & 431A has detail bubble 6/A9.01 for this room. A9.01 are corridor elevations. Need elevation for these rooms as they are different layouts
- Typ science classroom 5/6 elevation 2 does not show outlet above back splash
- Typ science classroom 7/8/ elevation does not show outlet above back splash
- A1.33 art room 134A & 334A has detail tag 6/A9.02 these are corridor elevations
- 334A appears to have power in casework. Please review and coordinate
- OHD controller note on electrical should read provided by CM installed and wired by electrician along with any other peripheral control device
- Room 146E has outlets mounted 18" AFF. Should these be mounted above the work bench?
- 146E appears to have a column in the middle of the work bench
- Columns 4-3/4-B & 4-3/4-C appear to fall in middle of room
- Please provide exam room elevations
- Provide wiring diagram for motor shades
- Add the following note on electrical for motor shades. EC to provide all power and control wiring for complete and operational system. EC to assume that the motor will come with a 6' long whip from CM to connect to J-box provided and installed by EC. EC to provide all wiring from J-Box to shade controllers provide by CM installed by EC. J-box location to be coordinated in the field between architect, shade installer and EC. EC to assume that one shade controller will control up to four shades. If windows have double shades two controllers will be provided. One controller to operate up 4 light filtering shades and one controller to control up to 4 black out shades.
- 6/A6.01 shows 2/A6.01 for blow up of head detail but this appears to be for the sill.
- 6/A6.01 please tag interior sealant ownership
- 5/A6.01 & 2/A6.01 please tag interior sealant ownership
- Please note that when CW, SF, & window jamb, sill, head details are finalized that all caulking be tag for ownership in relation to metal to metal, metal to siding, primary seal, seal to AVB, interior, etc.
- 1/A5.22 shows 7.71.02 tag for sealant at fascia but not listed in the list of tags on page.
- Should both dual face and single face exit signs be green? Currently one is red and one is green
- Should first floor exit signs have the HC symbol on them per code.
- Add note on bollard detail on C6.1 to be painted by painter
- Provide details for reinforcing for UG detention system foundation
- Provide schedule of detectable warning mats
- Please coordinate all powered door hardware with electrical, technology and hardware schedule.
- CW, SF, & window detail tags missing

- NO power or data shown to electronic message board in entrance sign.
- Please make sure that the schools infrastructure has the proper switch or GBIC to integrate the controlling of message board from there network
- Please provide location for the entrance sign.
- There does not appear to be a scoreboard for the soccer field. If one is to be provided please provide footing details with reinforcement , ftg depth and width and any structural steel support required.
- Roof vents, EF's, splits not shown on roof
- A1.54 next to ACC-1. Is that a skylight?
- Bollards at gas meter?
- Who owns transformer bollards? Misc metal furnish site install?
- P2.2 angle iron brackets & shelf support for heater change from by GC to Misc Metal and add to architectural or list in misc metal spec section under scope of work
- If heat trace will be required for science plumbing please note a 30 amp circuit will be required for each 1000 lf of heat trace
- M1.12 & M1.13 do not show kiln room nor any exhaust duct or controls for kiln or EF
- Does not appear to be any power for the pottery wheels
- Suggest specifying sustain 1195 for flooring adhesive as it is good up to 95% RH
- A9.05 is missing
- A1.12 shows 1&2/A9.04 btw 117A & 133. This appears to be incorrect
- Room 100D elevation tag appears to be incorrect
- Knox box furnished by EC installed by 07 46 46
- No MEP shown for kitchens
- Tag cubicle curtains
- On code plan smoke partition and & 2hr shaft wall has same hatching
- If using spray booth in art room a back draft damper may be required
- CO detector may be need at kitchen hoods
- If fume hoods are added sensor/probe in duct work should be supplied by fume hood and installed and wired by HVAC
- If ice makers are added a funnel drain should be installed to avoid leaks from condensate drain
- If using autoclaves a RPBP will be required

APPENDIX I
PROJECT SIGN

APPENDIX I
UPDATED DESE SUBMITTAL

Special Education Adjacency Table

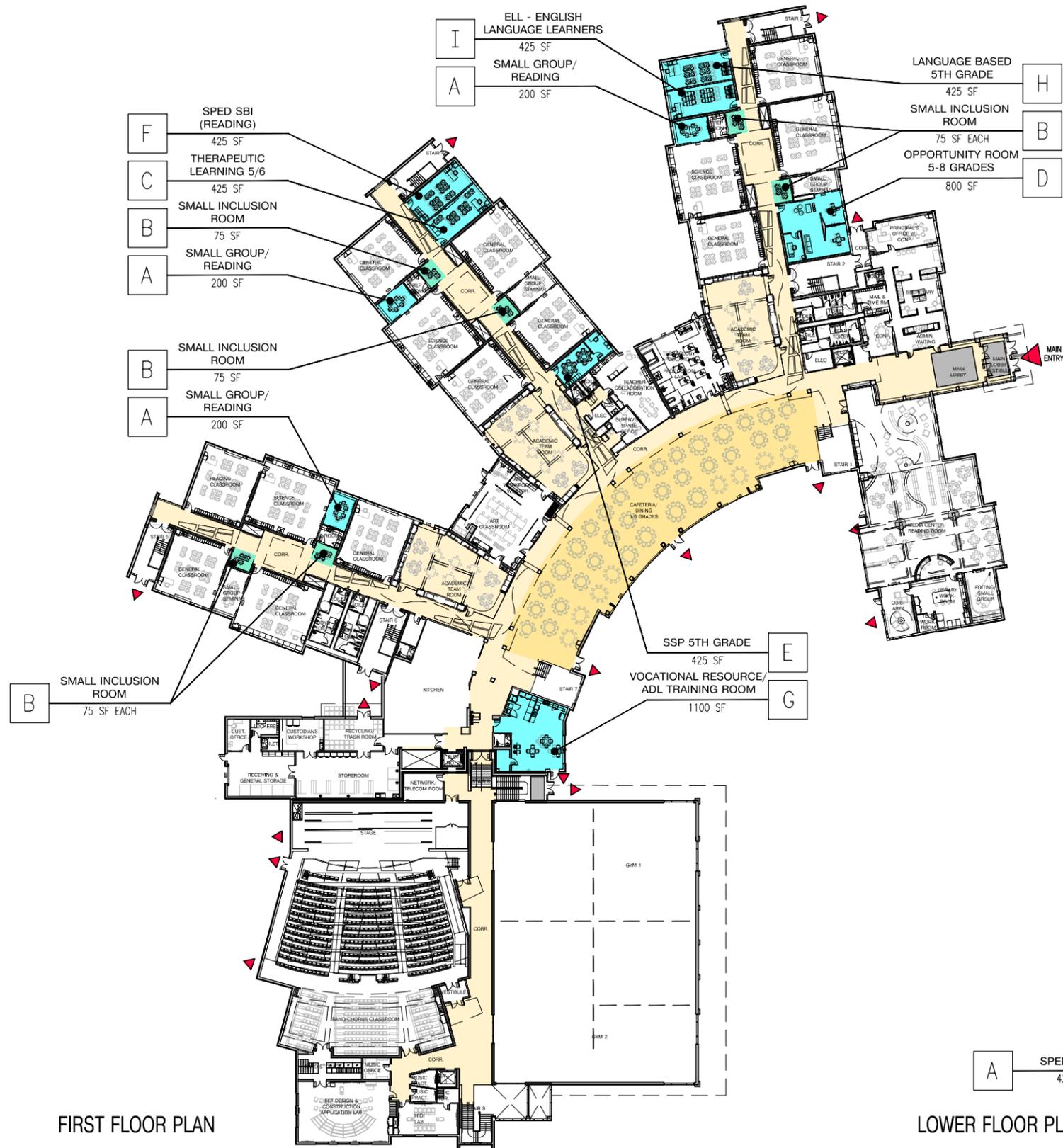
MSBA Guidelines Space	MSBA Guidelines SF	Proposed Room Name	Floor Plan Designation (A-Z)	Proposed SF	Proposed Space Description and Reasoning for Adjacencies
Floor: Lower Level					
*Unique to District		Sped OT/PT	A	425	The OT/PT room will serve to provide services for students, grades 5-8, in meeting their occupational therapy and/or physical therapy services and needs required outside of the general education setting. The size has been determined to be adequate to provide access to the necessary tools and strategies to support student goals. Locating this area close to the gymnasium will also provide further space and access to additional exercise equipment to further support students' physical needs in relation to their goals and recommended service delivery.
Floor 1					
Small Group Room/ Reading	500	Small Group Room/ Reading	A	600	This room will serve as an area to bring students for small group reading instruction. It is located within the academic neighborhoods and between classrooms to allow for optimization of inclusion in the general education classroom and flexibility in providing specialized instruction to students with minimal time spent in transition.
*Unique to District		Small Inclusion Room	B	450	This room will function as an academic support space and breakout space for specialists, paraprofessionals, and/or for students to work collaboratively on small group activities. It is located within the academic neighborhood to allow for optimization of inclusion and flexibility in providing specialized instruction and small group work space.
*Unique to District		Therapeutic Learning 5/6 Grades	C	425	The Therapeutic Learning Center will provide social/emotional and academic support to students in grades 5 and 6. It is located within an academic neighborhood to allow for optimization of inclusion into the general education classroom, while providing a location for access when students require a break from the general education classroom. The location close to the stairwell will allow for access by 6th grade students on the second floor, while minimizing transition time.
*Unique to District		Opportunity Room - 5-8 Grades	D	800	The Opportunity Room will provide social/emotional support to our autism spectrum/Asperger's students in grades 5-8. This room is located close to the elevator and stairwell to allow for access for students located all floors of the building. It is further located within close proximity to the main entrance of the building to support students with high anxiety and difficulties entering the building, providing a morning check-in space before entering homeroom. An adjacent building entry/exit will help facilitate entry into the building.
*Unique to District		Student Support Program (SSP) - 5th Grade	E	425	The Student Support program services students with social/emotional/behavioral challenges, providing a self-contained model and inclusionary model, as outlined in students' Individual Education Programs. The room is located within an academic neighborhood to maximize inclusion opportunities. It is also located adjacent to administration for support, as needed.
*Unique to District		Strategies Based Instruction (SBI) - Reading	F	425	The SBI program provides instruction within a smaller setting. This classroom is located within an academic neighborhood and adjacent to the stairwell, allowing for access by students on other levels of the building, minimizing transition time.
*Unique to District		Vocational Resource/ADL Training Room	G	1100	The ATTAIN program services our students with autism in a self-contained model. The Vocational Resource/ADL Training resource room will provide ATTAIN students with learning opportunities and training on vocational skills and skills of daily living. The resource room is located close to a stairwell to allow for access by students to the other levels of the building for inclusionary purpose and access to the second main ATTAIN classroom on the second floor. The resource room is within close proximity to the kitchen, OT/PT, speech/language (via stairwell), gym and health classroom. As a life skills program, the location provides the ability to utilize the kitchen for daily living/vocational skills; the health classroom for health/nutrition/daily living skills; related therapies for services; the gym for physical activity breaks. This location further provides the students with direct access to the outdoor learning space and the cafeteria, which will also be used as larger team learning and project area outside of the lunch schedule. Students in the ATTAIN program will have the opportunity to participate in project-based learning experiences with their general education peers.
*Unique to District		Language Based - 5th Grade	H	425	The Language-Based Program provides support to students with specific learning disabilities (SLD) in the areas of reading and writing language in a small group setting. Academic support periods are provided for preview and review of content area instruction and concepts taught during students' inclusion in general education classrooms. The room is located in an academic neighborhood and adjacent to the resource room, allowing for additional breakout space, as needed, for individualized and small group instruction.
*Unique to District		ELL - English Language Learners	I	425	The ELL Program classroom is located within an academic neighborhood. The classroom is located close to the stairwell to allow for access by students on other levels of the building, minimizing transition time.
Floor 2					
Small Group Room/ Reading	500	Small Group Room/ Reading	A	600	This room will serve as an area to bring students for small group reading instruction. It is located within the academic neighborhoods and between classrooms to allow for optimization of inclusion in the general education classroom and flexibility in providing specialized instruction to students with minimal time spent in transition.
*Unique to District		Small Inclusion Room	B	450	This room will function as an academic support space and breakout space for specialists, paraprofessionals, and/or for students to work collaboratively on small group activities. It is located within the academic neighborhood to allow for optimization of inclusion and flexibility in providing specialized instruction and small group work space.
*Unique to District		Strategies Based Instruction (SBI) - Math	C	425	The SBI program provides instruction within a smaller setting. This classroom is located within an academic neighborhood and adjacent to the stairwell, allowing for access by students on other levels of the building, minimizing transition time.
*Unique to District		SPED Conference Room	D	290	The SPED Conference Room will provide an area for Team Meetings. This room is located close to the stairwell and elevator for easy access by parents from the main lobby on the first floor, without having to navigate through the building.
*Unique to District		Student Support Program (SSP) - 6th Grade	E	425	The Student Support program services students with social/emotional/behavioral challenges, providing a self-contained model and inclusionary model, as outlined in students' Individual Education Programs. The room is located within an academic neighborhood to maximize inclusion opportunities. It is also located adjacent to administration for support, as needed.

*Unique to District	Sped Meeting Room	F	175	The Sped Meeting Room will allow for Team meetings to review IEP's as well as an additional space for Team collaboration. The room is centrally located close to the elevators and stairwell to allow for access by staff and students on multiple levels of the building, as well as access for parents, minimizing the need to navigate through the building.
	Self-Contained SPED	G	790	The "Self-contained Classroom", "G", on the architectural plans is the main ATTAIN classroom. As a result of continued programming discussions regarding this space, adjustments have been made to the efficiency of the program space, including moving the location of the classroom to the adjacent hallway within the academic neighborhood. The size of the classroom was increased to 790 square feet. The location will provide access to the general education classrooms, academic team room, and maker space within the academic neighborhood area, as well as accessibility to the Vocational Resource/ADL Training room located on the first floor via a stairwell and elevator. The area in which it is located will also provide easy access to speech services.
	Self-Contained SPED Toilet	G1	60	The location for this toilet is for any of those special education students that have disabilities regarding social anxiety and usage of other restrooms in the school. It is located adjacent to the Self-contained (ATTAIN) classroom.
*Unique to District	Language Based - 6th Grade	H	425	The Language-Based Program provides support to students with specific learning disabilities (SLD) in the areas of reading and writing language in a small group setting. Academic support periods are provided for preview and review of content area instruction and concepts taught during students inclusion in general education classrooms. The room is located in an academic neighborhood and adjacent to the resource room, allowing for additional breakout space, as needed, for individualized and small group instruction.
*Unique to District	SPED Learning Center - 5/6 Grades	I	425	The Learning Center provides specially designed instruction within a pull-out models for students, as designated within their Individual Education Program. The Learning Center is located within an academic neighborhood near the stairwell to allow for access by students on all levels of the building, minimizing transition time. It is further located adjacent to the small group reading room to allow for additional breakout space for students.
*Unique to District	Speech	J	180	The speech/testing area is located on the second floor. This area is centrally located within the building and near a stairwell to allow for access by students on other levels of the building.
*Unique to District	Special Education Chair Office	K	180	The Special Education Team Chairperson Office is located on the second floor. This office is centrally located. The adjacent conference area will allow for team meetings and collaborative meetings with staff. The location will allow for access by staff, parents, and students while minimizing the need to travel throughout the building..
Floor 3				
Small Group Room/ Reading	Small Group Room/ Reading	A	600	This room will serve as an area to bring students for small group reading instruction. It is located within the academic neighborhoods and between classrooms to allow for optimization of inclusion in the general education classroom and flexibility in providing specialized instruction to students with minimal time spent in transition.
*Unique to District	Small Inclusion Room	B	450	This room will function as an academic support space and breakout space for specialists, paraprofessionals, and/or for students to work collaboratively on small group activities. It is located within the academic neighborhood to allow for optimization of inclusion and flexibility in providing specialized instruction and small group work space.
*Unique to District	Strategies Based Instruction (SBI) - ELA	C	425	The SBI program provides instruction within a smaller setting. This classroom is located within an academic neighborhood and adjacent to the stairwell, allowing for access by students on other levels of the building, minimizing transition time.
*Unique to District	ELL - English Language Learners	D	425	The ELL Program classroom is located within an academic neighborhood. The classroom is located close to the stairwell to allow for access by students on other levels of the building, minimizing transition time.
*Unique to District	Student Support Program (SSP) - 7th Grade	E	425	The Student Support program services students with social/emotional/behavioral challenges, providing a self-contained model and inclusionary model, as outlined in students' Individual Education Programs. The room is located within an academic neighborhood to maximize inclusion opportunities. It is also located adjacent to administration for support, as needed.
*Unique to District	Language Based - 7th Grade	F	425	The Language-Based Program provides support to students with specific learning disabilities (SLD) in the areas of reading and writing language in a small group setting. Academic support periods are provided for preview and review of content area instruction and concepts taught during students inclusion in general education classrooms. The room is located in an academic neighborhood and adjacent to the resource room, allowing for additional breakout space, as needed, for individualized and small group instruction.
*Unique to District	SPED Learning Center - 7/8 Grades	G	425	The Learning Center provides specially designed instruction within a pull-out models for students, as designated within their Individual Education Program. The Learning Center is located within an academic neighborhood near the stairwell to allow for access by students on all levels of the building, minimizing transition time. It is further located adjacent to the small group reading room to allow for additional breakout space for students.
Floor 4				
Small Group Room/ Reading	Small Group Room/ Reading	A	600	This room will serve as an area to bring students for small group reading instruction. It is located within the academic neighborhoods and between classrooms to allow for optimization of inclusion in the general education classroom and flexibility in providing specialized instruction to students with minimal time spent in transition.
*Unique to District	Small Inclusion Room	B	450	This room will function as an academic support space and breakout space for specialists, paraprofessionals, and/or for students to work collaboratively on small group activities. It is located within the academic neighborhood to allow for optimization of inclusion and flexibility in providing specialized instruction and small group work space.
*Unique to District	Therapeutic Learning 7/8 Grades	C	425	The Therapeutic Learning Center will provide social/emotional and academic support to students in grades 7 and 8. It is located within an academic neighborhood to allow for optimization of inclusion into the general education classroom, while providing a location for access when students require a break from the general education classroom. The location close to the stairwell will allow for access by 7th grade students on the third floor, while minimizing transition time.

*Unique to District	Language Based - 8th Grade	D	425	The Language-Based Program provides support to students with specific learning disabilities (SLD) in the areas of reading and writing language in a small group setting. Academic support periods are provided for preview and review of content area instruction and concepts taught during students inclusion in general education classrooms. The room is located in an academic
*Unique to District	Student Support Program (SSP) - 8th Grade	E	425	The Student Support program services students with social/emotional/behavioral challenges, providing a self-contained model and inclusionary model, as outlined in students' Individual Education Programs. The room is located within an academic neighborhood to maximize inclusion opportunities. It is also located adjacent to administration for support, as needed.
*Unique to District	Strategies Based Instruction (SBI) - SS	F	425	The SBI program provides instruction within a smaller setting. This classroom is located within an academic neighborhood and adjacent to the stairwell, allowing for access by students on other levels of the building, minimizing transition time.
		Total	15,850	

Square Footage Summary:

The proposed overall gross square footage of the new building is 231,509; Average square feet of General Classrooms is 850sf
MSBA guidelines allows for 15,100 net square feet of dedicated special education space. The proposed program is 750 nsf in excess of the guidelines.
*Indicates that space is unique to District's program and does not appear in MSBA space guidelines.



FIRST FLOOR PLAN

LOWER FLOOR PLAN

REVISED
12/17/2015

Legend

Circulation

Special Education



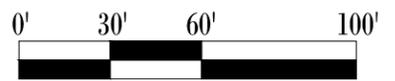


SECOND FLOOR PLAN

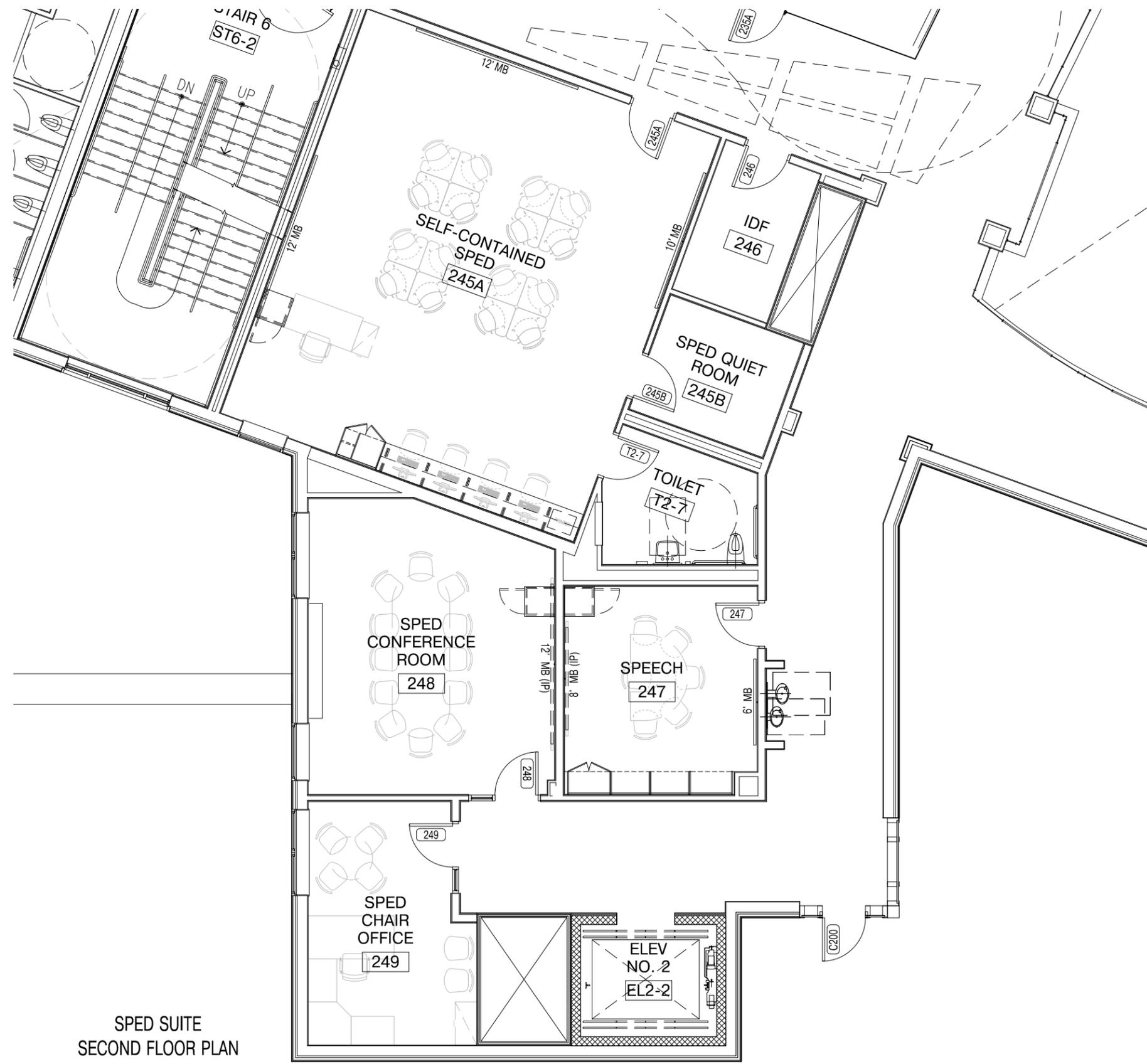
REVISED
12/17/2015

Legend

- Circulation
- Special Education



DRAWN BY:	JMR	A1.20
SCALE:	AS NOTED	
JOB NO:	1403.00	
DATE:	NOV 2, 2015	
REF DWG:		



SPED SUITE
SECOND FLOOR PLAN

BEVERLY MIDDLE SCHOOL
BEVERLY, MA

REVISED
12/17/2015



THIRD FLOOR PLAN

REVISED
12/17/2015

Legend

- Circulation
- Special Education

0' 30' 60' 100'

DRAWN BY: JMR	A1.30
SCALE: AS NOTED	
JOB NO: 1403.00	
DATE: NOV 2, 2015	
REF DWG:	



FOURTH FLOOR PLAN

REVISED
12/17/2015

Legend

- Circulation
- Special Education



DRAWN BY: JMR	A1.40
SCALE: AS NOTED	
JOB NO: 1403.00	
DATE: NOV 2, 2015	
REF DWG:	

APPENDIX K
DESIGNER'S RESPONSE TO
PREVIOUS MSBA COMMENTS

Massachusetts School Building Authority

Deborah B. Goldberg
Chairman, State Treasurer

John K. McCarthy
Executive Director

August 28, 2015

The Honorable Michael P. Cahill
Mayor, City of Beverly
Beverly City Hall
191 Cabot Street
Beverly, MA 01915

Re: City of Beverly, Briscoe Middle School

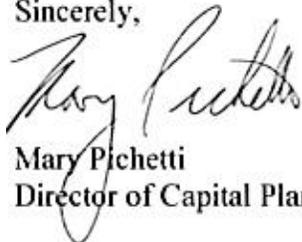
Dear Mayor Cahill:

The Massachusetts School Building Authority (the "MSBA") is forwarding review comments of the Schematic Design submission for the Briscoe Middle School project, received by the MSBA on August 6, 2015.

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

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

Sincerely,



Mary Pichetti
Director of Capital Planning

Attachments:

Attachment 'A' Schematic Design Review Comments

Attachment 'B' Schematic Design Space Summary Review Comments

Page 2

August 28, 2015

Beverly Schematic Design Review Comments

Cc: Legislative Delegation
Paul M. Guanci, President, Beverly City Council
Paul A. Manzo, President, Beverly School Committee
Dr. Steven A. Hiersche, Superintendent, Beverly Public Schools
Jean Sherburne, Director of Finance and Operations, Beverly Public Schools
Bryant Ayles, Director of Municipal Finance, City of Beverly
Denise Deshamps, Economic Development Planner, City of Beverly
Al Calcagno, Owner's Project Manager, Heery International, Inc.
Mark Lydon, Owner's Project Manager, Heery International, Inc.
L. Scott Dunlap, Designer, Ai3 Architects
File: 10.2 Letters (Region 3)

Attachment A – Module 4 Schematic Design Review Comments

District: City of Beverly

School: Briscoe Middle School

Submittal Due Date: August 6, 2015

Submittal Received Date: August 6, 2015

Review Date: August 6-21, 2015

Reviewed by: C. Finch, C. Alles, J. Jumpe

The following comments¹ on the Schematic Design submittal are issued pursuant to a review of the project submittal document for replacement of the existing Briscoe Middle School, and presented as a Schematic Design submission in accordance with the MSBA Module 4 Guidelines, as produced by Ai3 Architects, Inc., and its consultants. Certain supplemental components from the Owner's Project Manager (OPM) – Heery International, Inc., are included.

4.1. Schematic Design Submittal – Submittal Completion

- DESE Submittal – *Complete. Refer to comments shown in italics.*
- Schematic Design Binder – *Complete. Refer to comments shown in italics.*
- Schematic Design Project Manual – *Complete. Refer to comments shown in italics.*
- Schematic Design Drawings – *Complete. Refer to comments shown in italics.*
- Schematic Design Submittal Notification – *Complete.*
- OPM certification of completeness & conformity – *Complete.*

4.1.1. DESE Submission (appendix 4B)

4.B.5. Special Education Adjacency Table

- Completed PDF document (8 ½ x 11) consistent in all ways with the floor plans, space summary and narrative. – *The space indicated as F on the first floor is identified as an “SBI reading room” on the floor plans. However, in the adjacency table it is identified as an “SBISS” space. Additionally, the adjacency table indicates the total Special Education space as 12,630 nsf, and the Space Summary indicates 15,850 nsf. Please clarify and revise as necessary.*

Response: Please reference Ai3 email (via Mark Lydon - Heery International email) to Sarah Blache of the MSBA on 8.23.15 providing the following response and documentation:

“Attached please find the REVISED SPED Adjacency Table noting the following:

- 1. Item “F – SPED SBI SS” has been updated to “F – SPED SBI Reading” to reflect the first floor plan.**

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

2. The square footage for the floor plan designated space “A – Small Group Room / Reading” has been updated to reflect the quantity of spaces for each floor and total square footage identified in the proposed space summary (i.e. There are three (3) “Small Group Room/Reading” spaces for each floor level (each at 215sf), resulting in a total square footage of 645sf per floor. The matrix previously indicated only the square footage for each space, not the total per floor.)
3. The square footage for the floor plan designated space “B - Small Inclusion Room” has been updated to reflect the quantity of spaces for each floor and total square footage identified in the proposed space summary (i.e. There are six (6) “Small Group Room/Reading” spaces for each floor level (each at 75sf), resulting in a total square footage of 450sf per floor. The matrix previously indicated only the square footage for each space, not the total per floor.)
4. The SPED Adjacency Table is now consistent with the Proposed Space Summary and proposed building floor plans and reflects a Total SPED square footage of 15,850.”

4.1.2 Schematic Design Binder

- Final Design Program
 - Two signed copies of updated 11x17 prints educational space summary spreadsheets that reflect current design – *Refer to detailed comments in “Attachment B”.*
 - Include a separate narrative description of all changes since Preferred Schematic submission – *Grade 5 and 6 Science Classrooms have been reduced in area since PSR to 1,025 nsf. MSBA Science Lab Guidelines suggest a minimum of 60 nsf per student. Please confirm that these rooms will allow for the safe delivery of the District’s Science program.*

Response:

All academic neighborhoods are as flexible and interchangeable as possible and will allow for variations and flexibility in future use. However, the 5th and 6th grade neighborhoods should recognize the need for further subdivision into two-teacher teams, and the organization of the grade-level team neighborhood should not prohibit this further subdivision. The 5th and 6th grade science classrooms do not include a requirement for lab instruction, and remain as flexible as possible without built-in stations or lab tables. The Science and Math teachers will often be co-teaching and, therefore, adjacency of their classrooms is important to the efficiency of instruction. Two equally-sized science/math hybrid classrooms within the 5th and 6th grade academic neighborhood will be more effective than one larger science classroom and one smaller math classroom.

Science Labs (one per team within each neighborhood) are located in each grade-level academy. This area will be equipped with appropriate furniture (rolling demonstration tables, workstations, ability to have students work both independently and in cooperative groups) and science materials. It will also be able to promote interdisciplinary work, including STEAM initiatives. The Science Labs should be flexible

and should avoid built-in amenities that limit the flexibility of the space. Middle school science applications, labs, and experiments are more limited than those in high school, and the space should reflect such. Access to sinks, slightly larger overall size, and other minor programmatic needs should be the only characteristics which make this space any different from a typical flexible and interchangeable classroom. The Grade 5/6 Science curriculum will be different from the Grade 7/8 curriculum and we continue to work with the faculty and staff to determine the specific impact, if any, this will have on the amenities within the science labs.

- Designer certification verifying the sum of all floor areas equals the gross floor area of the Final Design Program – *Not provided. Please provide certification indicating that the gross floor area of 231,509 encompasses the entire square footage of the proposed building.*

Response: See attached certification letter dated September 10, 2015.

- Narrative describing how the proposed educational space summary supports each component of the educational program – *The Integrated Production Lab, STEAM Academic Support, and Academic Team room appear to be essentially the same room within each academic neighborhood. Please provide additional scheduling information and an explanation how these separate programs will be delivered within the same space.*

Response: The Maker/Builder space (collectively identified as the integrated production lab, STEAM academic support, and academic team room as outlined in the PDP responses) will be a scheduled space, but will not result in one of the other general classrooms being vacated during its use. It is an extension of the classroom space, and will be utilized simultaneously with one or more classrooms. This is the reason it must be located in direct proximity to the academic neighborhood classrooms and must include a physical connection to the classrooms. Currently proposed schedules and projects suggest that it will have a utilization rate equal to that of any of the general classrooms, as it acts to support one or more disciplines throughout each period of the day.

The Maker/Builder space serves many purposes within the educational program. It supports the academic neighborhood or team, it promotes STEAM integration, it integrates vocational technology into the academic neighborhood, and it provides for the expansion of the traditional classroom for purposes of providing hands-on, real world opportunities to integrate student projects into the curriculum. It is not a specific space intended to accommodate students outside the academic neighborhood, but instead represents an expansion of the neighborhood classrooms, where opportunities to apply learned knowledge are restrained by the size, configuration, function, and amenities of the traditional classroom. The boundaries between the traditionally programmed classrooms and the Maker/Builder space are intended to be blurred in a way that makes it a functional extension of the classroom space.

The combination of the three spaces in the program (to create one collective space) is intended to be somewhat reflective of the ongoing functions within this space, while

simultaneously trying to force it to fit into what is a rather traditional space template that cannot fully acknowledge the multiple functions of the Maker/Builder space. It supports the academic team, provides opportunities for a piece of vocational education, and also helps to integrate STEAM and the arts into the academic neighborhood.

The objective of the Maker/Builder space is to create a flexible learning environment within the heart of each academic neighborhood or team. The space will provide hands-on, creative ways to encourage students to design, experiment, build, and invent as they deeply engage in science, engineering, art, and tinkering. The Maker/Builder space is not solely a science lab, workshop, computer lab, or art room, but it will contain elements found in all of these familiar spaces. It will be designed to accommodate a wide range of activities, tools, and materials. Diversity and cross-pollination of activities are critical to the design, making, and exploration process, and they are critical in setting Maker/Builder spaces and STEAM labs apart from single-use spaces. The goal is to provide learning experiences within each individual academic neighborhood through direct experience with materials. These Maker/Builder spaces are not traditional “vocational shops” with wood and metal equipment and tools; as these large, loud, and specialized amenities are no longer necessary to provide the students with the desired experiences. New digital fabrication devices such as 3D printers and physical computing expand the opportunities with new ways to make things. For the first time ever, student inventions may be printed, fabricated, recorded, and programmed with interactivity. The proposed range of activities in the space will include:

- 3D and 2D printing
- Cardboard construction
- Prototyping
- Project planning and design
- Model making
- Physics practical applications
- Painting and graphic arts
- Small scale manual woodworking
- Digital Media
- Robotics
- Digital fabrication
- Building mechanical and kinetic machines and devices
- Textiles and sewing
- Media production and filming

The space will be utilized for multiple teaching strategies, including, but not limited to:

1. **Exploratory:** Exploratory projects will occur early in a typical school year and be co-taught along with the assistance of an art teacher, vocational teacher, or media specialist. These classes will focus on skill building, allowing students to acquire basic skills within a given domain that they will later apply to cross-discipline or multi-disciplinary projects. In these instances, the Maker/Builder space will allow students to acquire basic exploratory skills within the confines of their academic neighborhood.
2. **Applied:** More involved and complex cross-discipline projects which may involve a single or multiple basic exploratory skills in the creation of a project

which applies to one or more academic disciplines. These classes will be co-taught in an environment which will likely include some students working in the lab (Maker/Builder) space and some students working in the classroom, with the ability to move seamlessly between the two areas.

3. **Portfolio:** Long-term, more ambitious projects based more specifically on decisions and selections made by the student builder, but themed through academic subjects. Students would have multiple opportunities over the course of a quarter or semester to work in periodic increments at completing their portfolio project.

Under a co-teaching model and supported by an aide, three spaces will be utilized simultaneously to allow students with varying learning styles and paces to develop skills in a more customized and fluid environment. A group of students with a single block, or a combination of co-taught periods, would be able to utilize two classrooms and the Maker/Builder space for a long enough period of time to allow for completion of both academic and hand-on instruction.

The Maker/Builder space will also serve as the neighborhood commons, although this is not its primary purpose and would not justify its existence. As the neighborhood commons, it will provide a common place of ownership by the entire academic neighborhood. The educational visioning and educational programming documents identify a strong need for students to have ownership of this small-scale neighborhood area. This ownership includes personalization, display of work, and a gathering space for the academic neighborhood. Students will be allowed to come into this supervised area prior to first class commencement in an effort to allow them to work and socialize in small groups, or independently, without being herded into a large, impersonal holding area like the gymnasium. The Beverly Middle School includes a number of early-arrival students, and the experience created for these students prior to the actual start of the school day is critical to the success of the educational environment.

The Maker/Builder space will also serve as a break-out space for independent and group study. The educational visioning and educational programming identified successful examples of students being allowed to work outside the confines of the classroom. Teachers currently allow students to work in corridors outside the classroom with visual observation. Many students thrive on the ability to be allowed outside the confines of the classroom, and having the adjacent Maker/Builder space available for this use will prove a valuable asset.

The space will remain as flexible as possible, with furniture that can be moved and re-configured with relative ease. Some built-in elements will be required in order to provide critical components such as storage, water, and voice/video/data. However, the goal is to avoid over-designing specific elements into the space, as the most successful spaces are those that contain fewer built-in limitations. Areas for display, work, and both group and independent study will be available but be flexible.

This Maker/Builder space should also include all necessary amenities to support STEAM (Arts) delivery (STEAM Academic Support space), as it allows students within the neighborhood to work actively on projects that include an integrated art/media/visualization component without the restriction of having to leave their neighborhood in order to gain access to the necessary tools and amenities.

- Security and visual access requirements – *It appears that the most-recent version of the Module 4 guidelines issued with Project Advisory 28, published in January 2015, was not used to define this section. Please address the following:*
 - *Please provide confirmation that the persons responsible for implementation of the District’s emergency procedures, and responding emergency medical, fire protection, and police agency representatives have been consulted in the planning process and any associated requirements have been included in the project.*
 - *Please provide verification that the following safety and security related issues have been reviewed and are in accordance with the District’s procedures as noted above:*
 1. *Classroom lockset hardware – confirm hardware functions are compatible with the District’s protocols related to lockdown.*
 2. *Classroom / Instructional spaces visibility – confirm that the inclusion of sidelights at entrance locations is compatible with the District’s current standards related to visibility from corridors and whether any related vision control option measures are to be incorporated specifically with the intended transparency emphasized by the educational program.*
 3. *Alternative entry locations – confirm project includes site and building signage, as may be required by District’s emergency procedures, to identify locations where first responders may more directly reach a person needing medical attention; Knox Boxes; and provisions for building plans to be delivered to local fire and response agencies.*

Response: As a supplement to the narrative provided within the Schematic Design Binder for Security & Visual Access Requirements (Page 95 of the 100% Schematic Design submission dated August 6, 2015), please consider this as confirmation that the design team will continue to meet and coordinate with the individuals responsible for the District’s emergency procedures, and responding emergency medical, fire protection, and police agency representatives in the planning process and any associated requirements have been included in the project.

In addition, please consider this verification that we have previously reviewed and will continue to review (through the design process) safety-related issues with regard to the district’s procedures and requirements for classroom lockset hardware, classroom / instructional spaces visibility, and alternative entry locations, including the necessary site and building signage.

- Site development requirements
 - Provide a description of the total number of parking spaces, how they are distributed, and how the quantities were derived. – *The report indicates that a variance will need to be requested from the City to allow for fewer parking*

spaces than would be required under the Zoning Ordinance. Please provide a timeline for the submission and approval of this variance.

Response: A variance will not be required from the City for the quantity of parking required. This has been updated in the attached revised permitting narrative.

- Geotechnical and geo-environmental analysis – *The geotechnical report indicates that multiple deep foundation systems are being considered to support the building and that the project team should select the foundation support system based on a cost-benefit analysis of the two options. Based on the geotechnical analysis, please confirm the type of foundation(s) that have been factored into the scope and budget. Please describe the process the District will take to determine if adjustments to the proposed system are to be made.*

Response: The project team further evaluated the existing subsurface conditions as part of the Phase II geo-technical and geo-environmental investigations outlined within Lahlaf Geotechnical Consulting, Inc.'s (LGCI) report dated July 9, 2015.

Based on this investigation, site visit to a local ground improvement installation, cost evaluation by three separate costs estimating teams (PM&C, Construction Manager, and the OPM), and discussions with various installation subcontractors, the professional team concluded that the most cost effective, suitable approach to the foundation system at the proposed site was through use of closed-end, concrete filled steel pipe piles (CFP) with structural grade beams and structural slabs. This is the system that has been included as part of the schematic design scope and budget.

- Code analysis and list of permitting and other regulatory filing requirements – *Please provide an update on the status of the permitting requirements referenced in the Preferred Schematic Report: Site Plan Review, Notice of Intent for work within wetland buffers, and the Drainage Alterations permit.*

Response: An updated permitting narrative is provided for review (attached) which addresses the updates on the status of the permitting requirements.

- Utility analysis and soils analysis for on-site septic/sewage treatment facilities. Determine the availability and capacity of all required building utilities; if required provide soils analysis and preliminary design for on-site septic/sewage treatment facilities – *Please confirm capacity for natural gas and electricity.*

Response: Capacity of natural gas and electricity for the site will be reviewed by National Grid as the project moves into the Design Development phase.

- Narrative building systems descriptions – Describe basic information relative to:
 - Sustainable design elements – *The Schematic Design Submittal indicates that “The City is considering the incorporation of a 20,000 gallon gray water collection system...” Please indicate if the costs associated with this system have been carried within the project budget.*

Response: The cost associated with a rainwater collection system is included within the budget. The line item can be found within PM&C's schematic design cost estimate on page 16 (line 520), identified as “Recycled storm water system” -

currently identifying a lump sum value of \$125,000.

- Building structure – *See comment above regarding foundation systems.*
- Fire Protection
 - Confirm if a fire pump will be required – *The report indicates that a hydrant flow test has yet to be completed. As the need for a fire pump could have an impact on the project budget and scope, please indicate when the project team intends on determining capacity to support a fire suppression system. Describe how potential project costs are accounted for in the proposed project budget.*

Response: A fire flow test for the project was completed on September 11, 2015. Attached please find the results dated September 11, 2015 and confirmation by Griffith & Vary, Inc.'s attached letter that a fire pump is NOT required for the Beverly Middle School project.

- Verification that the submitted project schedule provides a timeline associated with filing the Project Notification Form with Massachusetts Historical Commission (“MHC”) and obtaining MHC approval prior to construction bids. Verify that the design team has included all scope items associated with this MHC approval in the submitted Project Scope and Budget spreadsheet. The District should keep the MSBA informed of any decisions and/or proposed actions and should confirm that the proposed project is in conformance with Massachusetts General Law 950, CRM 71.00. – *As noted in the MSBA’s cursory review comments, emailed to the District on August 6, 2015; a copy of the Massachusetts Historical Commission (“MCH”) Project Notification Form was not included in the Schematic Design Binder. Subsequently, the OPM provided the Project Notification Form on August 12, 2015 and informed the MSBA the form would be sent to MHC overnight. Please inform the MSBA when the District receives a response from the MHC.*

Response: Please find the attached response from the Massachusetts Historical Commission dated August 26, 2015 in reference to the Beverly Middle School project, specifically the demolition of the existing Memorial Building, located at 502 Cabot Street.

- Total Project Budget spreadsheet (appendix 4F) to as much detail as the drawings and specifications permit, and a summary of the cost reconciliation of the Designer’s and

OPM’s estimates – *The proposed total project budget was provided in the Schematic Design submittal and continues to be reviewed and will be further discussed leading up to the Project Scope and Budget Conference between the project team and MSBA staff.*

- Abatement of asbestos containing floor material – *The existing conditions report indicated several areas where flooring materials contain asbestos. The costs associated with the removal of these materials are considered ineligible for reimbursement by the MSBA and should be separated from other hazardous material abatement costs.*

Response: The Draft Total Project Budget submitted by the OPM to MSBA separates the asbestos containing floor material scope from other hazardous material scope. An

amount of \$240,000 which is understood to be ineligible is included in the Total Project Budget for asbestos containing flooring material.

- Project schedule
 - MHC and all other applicable related approvals – *Please provide date for the submittal of the Project Notification Form and anticipated response date.*
Response: Please find the attached response from the Massachusetts Historical Commission dated August 26, 2015 in reference to the Beverly Middle School project, specifically the demolition of the existing Memorial Building, located at 502 Cabot Street.
- Local Actions and Approvals Certification (appendix 4G)
 - Certified SBC meeting notes with vote language and vote results – *As noted in the MSBA’s cursory review comments, emailed to the District on August 6, 2015; please provide an original raised seal certified copy of the Local Actions and Approvals meeting minutes for July 28, 2015; which includes the specific language of the vote and the number of votes in favor, opposed, and abstained.*
Response: The OPM (Heery International) delivered the original raised seal certified copy of the said local actions and approvals meeting minutes by FedEx to MSBA on August 14, 2015.

4.1.3. Schematic Design Project Manual

- Itemization of all proprietary items (if any) with an explanation of each, explanation of the public interest for each item, and certification of local authorization that each item complies with state & local regulations, policies and guidelines. – *The District has indicated that, to date, no proprietary products have been identified nor has there been any vote(s) by the elected body to accept proprietary products and that should there be any proprietary selection, it will comply with M.G.L. c.30, §39M(b). The MSBA notes that there are several sections within the submission where single source items are suggested, specifically within the Information Technology section. Please provide all necessary documentation for any proprietary items selected by the District.*
Response: The two products referenced within the Information Technology Section - “Bluesocket” (Wireless Access Point) and “HP Procurve” (Network Switches) - have been discussed with the Owner as having potential to be proprietary. However, the City has not made a formal decision to identify each as a proprietary item. A formal list of proprietary products, including all necessary back up documentation approved by the City of Beverly’s School Building Committee, will be provided within the next submission to the MSBA – 100% Design Development.

4.1.4. Schematic Design Drawings

- Existing site plan at a minimum scale of 1”=40’ including:
 - Property lines with bearings and distances – *The existing site plan shows an easement on the eastern edge of the site. Please indicate if there are any development restrictions associated with this area.*
Response: The easement at the eastern edge of the site does not impose development restrictions. The easement was established in 1985 for the construction of a sewer main

that is City owned. Additionally, future design work that is proposed to occur within this easement will be coordinated with the City as the design progresses.

- Site development plan at a minimum scale of 1"=40' including:
 - Wetlands information – *The permitting requirements section from the District's Preferred Schematic Report indicated that the notice of intent for work within wetland buffers would be filed with the Beverly Conservation Commission and Massachusetts Department of Environmental Protection. Since the PSR drawings were submitted it appears that an isolated wetlands area has been flagged within the bounds of the proposed building. Please clarify if this will affect the project and the ability to secure the approvals needed.*
Response: The Isolated Vegetated Wetland is under the local jurisdiction of the Beverly Conservation Commission. The wetland area is proposed to be filled and replicated at a ratio of 2:1 as required by the Beverly Wetland Bylaw. As part of the permitting process, approval will be requested from the Conservation Commission.
- Interior elevations of a typical general classroom, and typical Pre-K/K Classroom and typical Science Classroom/Lab as applicable. – *As the Academic Team spaces form a significant part of the District's Teaching Neighborhoods and the associated educational program, please provide interior elevations for these rooms.*
Response: As requested, please reference the attached progress interior elevation for the typical Academic Team space (Maker/Builder space).

Additional Comments

- *On March 25, 2015 the MSBA Board of Directors approved the District's Preferred Option 1A for a 233,264 square foot new construction option with an estimated total project cost of \$121,819,300. This Schematic Design submittal under review shows this same option currently as a 231,509 square foot new construction option with an estimated total project cost of \$110,969,609. This represents a decrease of 1,755 square feet and a decrease of \$10,749,691.*
No Response Required.

Attachment B – Module 4 Schematic Design Space Summary Review

District: City of Beverly

School: Briscoe Middle School

Submittal Due Date: August 6, 2015

Submittal Received Date: August 6, 2015

Review Date: August 7-21, 2015

Reviewed by: C. Strid, C. Finch, C. Alles, J. Jumpe

The following comments¹ on the Schematic Design submittal are issued pursuant to a review of the project submittal document for replacement of the existing Briscoe Middle School presented as a part of the Schematic Design submission in accordance with the MSBA Module 4 Guidelines, as produced by Ai3 Architects, Inc., and its consultants. Certain supplemental components from the Owner's Project Manager (OPM) – Heery International, Inc., are included.

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

The following review is based on a new construction project with an agreed upon design enrollment of 1,395 students in grades 5-8.

The MSBA review comments are as follows:

- **Core Academic** – The District is proposing to provide a total of 68,390 net square feet (nsf) which exceeds the MSBA guidelines by 3,080 nsf. The proposed area in this category has not changed since the Preferred Schematic Report submittal. The MSBA accepts this variation to the guidelines. The space summary narrative indicates that there is one classroom in each of the 5th and 6th grade

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academic neighborhoods that is 1,025 nsf. Please provide a description as to why this additional area is needed in these classrooms. Additionally, in each academic neighborhood, the classroom adjacent to the Academic Team Room features a movable wall. Please describe how the ability to expand this area aligns with the educational program and describe anticipated educational activities that the larger space may allow.

Please reference response above.

- **Special Education** – The District is proposing to provide a total of 15,850 net square feet (nsf) which exceeds the MSBA guidelines by 750 nsf. The proposed area in this category has not changed since the Preferred Schematic Report submittal. Please note that the Special Education program is subject to approval by the Department of Elementary and Secondary Education (DESE) and that formal approval of the District’s proposed Special Education program is a prerequisite for executing a Project Funding Agreement with the MSBA.

No Response Required.

- **Art & Music/ Voc-Tech** – The District is proposing to provide a combined total of 16,150 nsf which meets the MSBA guidelines. The proposed area in this category has not changed since the Preferred Schematic Report submittal. The proposed Band/Chorus rooms appear to have expandable bleachers and a movable wall separating them from the auditorium. Please describe, through diagrams and narratives, how these spaces can be used simultaneously as separate programmed spaces, and combined with the auditorium to increase capacity. Additionally, the Set Design and Construction room appears to be configured as a band or chorus room and lacks direct access to the stage or double doors capable of allowing set pieces to be moved to the stage. Please describe the program that will be provided in this space. Please summarize the scheduling and cost impacts associated with providing an expandable auditorium area.

Response: As described within previous documentation, the District has outlined several reasons why this space is critical to the success of the uniquely large student population at the Beverly Middle School and that will satisfy both educational and community goals.

The design of a folding panel partition between the Auditorium and Band Classroom provides a flexible space to satisfy educational needs during the day and community needs in the evening or weekend.

The attached diagrams identify three possible layouts for the spaces:

Layout #1: *Small Group Theater / Seminar / Presentation*

The use of the auditorium and stage with a smaller seating capacity of approximately 550 and the folding panel partition in the closed position will allow the school’s use of the auditorium for core educational curriculum such as Band Ensemble, Choral Ensemble, Drama, project presentation, and distance learning in a more intimate, acoustically-appropriate environment.

Layout #2: Band Classroom / Stage Classroom

Closing the folding panel partition between the Band Classroom and the Auditorium allows use of the Band Classroom for instructional purposes during the school day. In this scenario, the stage can also be used simultaneously as an important teaching station for a larger combined choral and/or band ensemble.

Layout #3: Expanded Auditorium (with use of Band Classroom)

Opening the folding panel partition between the Band Classroom and the Auditorium expands the seating capacity from 550 to approximately 750 occupants, allowing the school to combine two grade levels within the space for a single performance / event. In addition, as explained in previous submissions, the auditorium at the existing middle school has been a highly utilized community resource spanning over many decades. The flexibility of the spaces (band classroom and auditorium) within the proposed middle school will continue to satisfy this important community goal.

Set Design & Construction Room:

The Set Design space is a multipurpose space which falls under the umbrella of vocational technology because this space is utilized to support graphic design, advanced computer applications, and design/build applications. It was labeled as “Set Design” because one of its design/build functions includes students building small-scale props and graphics which are often utilized to support various plays and presentations. However, many of the same tools within the space will be utilized to fabricate other design/build projects. The space does not require a direct adjacency to the stage because it does not include the creation of large scale set components. This space also serves to accommodate drama students and choral students during certain portions of the year when other available spaces are overbooked, although this is not its planned primary purpose. The furniture superimposed within the space in the schematic submittal was only intended to give the space a sense of scale, as there will be multiple arrangements of furniture in the space during various periods of the academic year. The furniture will be removed to avoid confusion regarding its function and purpose.

- **Health and Physical Education** – The District is proposing to provide a total of 15,400 nsf which exceeds the MSBA guidelines by 7,000 nsf. The proposed area in this category has not changed since the Preferred Schematic Report submittal. The MSBA accepts this variation to the guidelines. No further action required.
No Response Required.
- **Media Center** – The District is proposing to provide a total of 8,401 nsf which meets the MSBA guidelines. The proposed area in this category has not changed since the Preferred Schematic Report submittal. No further action required.
No Response Required.
- **Dining & Food Service** - The District is proposing to provide a total of 15,872 nsf which meets the MSBA guidelines. The proposed area in this category has not changed since the Preferred Schematic Report submittal. No further action required.
No Response Required.

- **Medical** - The District is proposing to provide a total of 910 nsf which meets the MSBA guidelines. The proposed area in this category has not changed since the Preferred Schematic Report submittal. No further action required.

No Response Required.
- **Administrative & Guidance** - The District is proposing to provide a total of 4,796 nsf which meets the MSBA guidelines. The proposed area in this category has not changed since the Preferred Schematic Report submittal. No further action required.

No Response Required.
-
- **Custodial & Maintenance** - The District is proposing to provide a total of 2,870 nsf which meets the MSBA guidelines. The proposed area in this category has not changed since the Preferred Schematic Report submittal. No further action required.

No Response Required.
- **Other** - The District is proposing to provide a 5,700 nsf Auditorium which exceeds the MSBA guidelines by 5,700 nsf. It should be noted that the MSBA space standards do not include auditoriums for middle schools. The MSBA accepts inclusion of the auditorium space into the project but will consider cost associated with this space ineligible for reimbursement.

No Response Required.
- **Total Building Net Floor Area** – The District is proposing to provide a total of 154,339 nsf which exceeds the MSBA guidelines by 16,530 nsf. The proposed area has decreased by 1,170 nsf since the Preferred Schematic Report submittal due to the relocation of the District’s Dental Clinic to another facility. Based on the comments provided above, the MSBA accepts this variation to the guidelines. No further actions required, with the exception to the information requested in the Core Academic and Art & Music/ Voc-Tech categories.

No Response Required.
- **Total Building Gross Floor Area** - The District is proposing to provide a total of 231,509 gsf which exceeds the MSBA guidelines by 24,798 gsf, utilizing the maximum allowable grossing factor of 1.5. The proposed area has decreased by 1,755 gsf since the Preferred Schematic Report submittal. Based on the comments provided above, the MSBA accepts this variation to its guidelines and will apply the following policy: The MSBA will establish building areas deemed eligible for reimbursement based on the evaluation of programmed net square foot spaces and the overall grossing factor of the building established in the District’s Schematic Design Submittal. No further actions required, with the exception to the information requested in the Core Academic and Art & Music/ Voc-Tech categories.

No Response Required.

Please note that upon moving forward into subsequent phases of the proposed project, the Designer will be required to provide, with each submission, a signed, updated space summary that reflects the design and demonstrates that the design remains, except as agreed to in writing by the MSBA, in accordance with the guidelines, rules, regulations and policies of the MSBA. Should the updated space summary demonstrate changes to the previous space summary, include a narrative description of the change(s) and the reason for the proposed changes to the project.

Special Education Adjacency Table

MSBA Guidelines Space	MSBA Guidelines SF	Proposed Room Name	Floor Designation (A-Z)	Proposed SF	Proposed Space Description and Reasoning for Adjacencies
Floor: Lower Level					
		Self-Contained SPED	A	425	The self-contained classroom and toilet is an extension of space for the ATTAIn program. It will allow for adequate space for grades 5-6 and 7-8. The ATTAIn program services our students with autism in a self-contained model. The classroom is located close to a building entrance (secondary entrance near the gymnasium), which will provide for easier access to and from the drop-off area. The classroom is also located close to a stairwell to allow for access by students to the other levels of the building for inclusionary purposes. As a life skills program, the location provides the ability to utilize the kitchen for daily living/vocational skills; the adjacent health classroom for health/nutrition/daily living skills; related therapies for services; the gym for physical activity breaks.
		Self-Contained SPED Toilet	B	60	The location for this toilet is for any of those special education students that have disabilities regarding social anxiety and usage of other restrooms in the school. It is located adjacent to the Self-contained classroom.
Floor 1					
Small Group Room/ Reading	500	Small Group Room/ Reading	A	645	This room will serve as an area to bring students for small group reading instruction. It is located within the academic neighborhoods and between classrooms to allow for optimization of inclusion in the general education classroom and flexibility in providing specialized instruction to students with minimal time spent in transition.
* Unique to District		Small Inclusion Room	B	450	This room will function as an academic support space and breakout space for specialists, paraprofessionals, and/or for students to work collaboratively on small group activities. It is located within the academic neighborhood to allow for optimization of inclusion and flexibility in providing specialized instruction and small group work space.
* Unique to District		Therapeutic Learning 5/6 Grades	C	425	The Therapeutic Learning Center will provide social/emotional and academic support to students in grades 5 and 6. It is located within an academic neighborhood to allow for optimization of inclusion into the general education classroom, while providing a location for access when students require a break from the general education classroom. The location close to the stairwell will allow for access by 6th grade students on the second floor, while minimizing transition time.
* Unique to District		Opportunity Room - 5-8 Grades	D	800	The Opportunity Room will provide social/emotional support to our autism spectrum/Asperger's students in grades 5-8. This room is located close to the elevator and stairwell to allow for access for students located all floors of the building. It is further located within close proximity to the main entrance of the building to support students with high anxiety and difficulties entering the building, providing a morning check-in space before entering homeroom. An adjacent building entry/exit will help facilitate entry into the building.
* Unique to District		Student Support Program (SSP) - 5th Grade	E	425	The Student Support program services students with social/emotional/behavioral challenges, providing a self-contained model and inclusionary model, as outlined in students' Individual Education Programs. The room is located within an academic neighborhood to maximize inclusion opportunities. It is also located adjacent to administration for support, as needed.
* Unique to District		Strategies Based Instruction (SBI) - Reading	F	425	The SBI program provides instruction within a smaller setting. This classroom is located within an academic neighborhood and adjacent to the stairwell, allowing for access by students on other levels of the building, minimizing transition time.
* Unique to District		Attain (Autism) 5/6 - 7/8 Grades	G	1200	The ATTAIn program services our students with autism in a self-contained model. The classroom is located close to a building entrance, which will provide for easier access to and from the bus. The classroom is also located close to a stairwell to allow for access by students to the other levels of the building for inclusionary purposes. The classroom is within close proximity to the kitchen, OT/PT, speech/language (via stairwell), gym and health classroom. As a life skills program, the location provides the ability to utilize the kitchen for daily living/vocational skills; the health classroom for health/nutrition/daily living skills; related therapies for services; the gym for physical activity breaks.
* Unique to District		Language Based - 5th Grade	H	425	The Language-Based Program provides support to students with specific learning disabilities (SLD) in the areas of reading and writing language in a small group setting. Academic support periods are provided for preview and review of content area instruction and concepts taught during students' inclusion in general education classrooms. The room is located in an academic neighborhood and adjacent to the resource room, allowing for additional breakout space, as needed, for individualized and small group instruction.
* Unique to District		ELL - English Language Learners	I	425	The ELL Program classroom is located within an academic neighborhood. The classroom is located close to the stairwell to allow for access by students on other levels of the building, minimizing transition time.
Floor 2					
Small Group Room/ Reading	500	Small Group Room/ Reading	A	645	This room will serve as an area to bring students for small group reading instruction. It is located within the academic neighborhoods and between classrooms to allow for optimization of inclusion in the general education classroom and flexibility in providing specialized instruction to students with minimal time spent in transition.
* Unique to District		Small Inclusion Room	B	450	This room will function as an academic support space and breakout space for specialists, paraprofessionals, and/or for students to work collaboratively on small group activities. It is located within the academic neighborhood to allow for optimization of inclusion and flexibility in providing specialized instruction and small group work space.
* Unique to District		Strategies Based Instruction (SBI) - Math	C	425	The SBI program provides instruction within a smaller setting. This classroom is located within an academic neighborhood and adjacent to the stairwell, allowing for access by students on other levels of the building, minimizing transition time.
* Unique to District		SPED Conference Room	D	285	The SPED Conference Room will provide an area for Team Meetings. This room is located close to the stairwell and elevator for easy access by parents from the main lobby on the first floor, without having to navigate through the building.
* Unique to District		Student Support Program (SSP) - 6th Grade	E	425	The Student Support program services students with social/emotional/behavioral challenges, providing a self-contained model and inclusionary model, as outlined in students' Individual Education Programs. The room is located within an academic neighborhood to maximize inclusion opportunities. It is also located adjacent to administration for support, as needed.
* Unique to District		Sped Meeting Room	F	175	The Sped Meeting Room will allow for Team meetings to review IEP's as well as an additional space for Team collaboration. The room is centrally located close to the elevators and stairwell to allow for access by staff and students on multiple levels of the building, as well as access for parents, minimizing the need to navigate through the building.

*Unique to District		Sped OT/PT	G	425	This room will function as the occupational therapy and physical therapy space. It is located in close proximity to the gyms and outdoor access for extension of physical activities as required to meet the goals and objectives/benchmarks of students' Individual Education Programs. It's location near a stairwell will provide for access by students on all levels of the building.
*Unique to District		Language Based - 6th Grade	H	425	The Language-Based Program provides support to students with specific learning disabilities (SLD) in the areas of reading and writing language in a small group setting. Academic support periods are provided for preview and review of content area instruction and concepts taught during students inclusion in general education classrooms. The room is located in an academic neighborhood and adjacent to the resource room, allowing for additional breakout space, as needed, for individualized and small group instruction.
*Unique to District		SPED Learning Center - 5/6 Grades	I	425	The Learning Center provides specially designed instruction within a pull-out models for students, as designated within their Individual Education Program. The Learning Center is located within an academic neighborhood near the stairwell to allow for access by students on all levels of the building, minimizing transition time. It is further located adjacent to the small group reading room to allow for additional breakout space for students.
*Unique to District		Speech / Testing	J	250	The speech/testing area is located on the second floor. This area is centrally located within the building and near a stairwell to allow for access by students on other levels of the building.
*Unique to District		Special Education Chair Office	K	200	The Special Education Team Chairperson Office is located on the second floor. This office is centrally located. The adjacent conference area will allow for team meetings and collaborative meetings with staff. The location will allow for access by staff, parents, and students while minimizing the need to travel throughout the building.
Floor 3					
Small Group Room/ Reading	500	Small Group Room/ Reading	A	645	This room will serve as an area to bring students for small group reading instruction. It is located within the academic neighborhoods and between classrooms to allow for optimization of inclusion in the general education classroom and flexibility in providing specialized instruction to students with minimal time spent in transition.
*Unique to District		Small Inclusion Room	B	450	This room will function as an academic support space and breakout space for specialists, paraprofessionals, and/or for students to work collaboratively on small group activities. It is located within the academic neighborhood to allow for optimization of inclusion and flexibility in providing specialized instruction and small group work space.
*Unique to District		Strategies Based Instruction (SBI) - ELA	C	425	The SBI program provides instruction within a smaller setting. This classroom is located within an academic neighborhood and adjacent to the stairwell, allowing for access by students on other levels of the building, minimizing transition time.
*Unique to District		ELL - English Language Learners	D	425	The ELL Program classroom is located within an academic neighborhood. The classroom is located close to the stairwell to allow for access by students on other levels of the building, minimizing transition time.
*Unique to District		Student Support Program (SSP) - 7th Grade	E	425	The Student Support program services students with social/emotional/behavioral challenges, providing a self-contained model and inclusionary model, as outlined in students' Individual Education Programs. The room is located within an academic neighborhood to maximize inclusion opportunities. It is also located adjacent to administration for support, as needed.
*Unique to District		Language Based - 7th Grade	F	425	The Language-Based Program provides support to students with specific learning disabilities (SLD) in the areas of reading and writing language in a small group setting. Academic support periods are provided for preview and review of content area instruction and concepts taught during students inclusion in general education classrooms. The room is located in an academic neighborhood and adjacent to the resource room, allowing for additional breakout space, as needed, for individualized and small group instruction.
*Unique to District		SPED Learning Center - 7/8 Grades	G	425	The Learning Center provides specially designed instruction within a pull-out models for students, as designated within their Individual Education Program. The Learning Center is located within an academic neighborhood near the stairwell to allow for access by students on all levels of the building, minimizing transition time. It is further located adjacent to the small group reading room to allow for additional breakout space for students.
Floor 4					
Small Group Room/ Reading	500	Small Group Room/ Reading	A	645	This room will serve as an area to bring students for small group reading instruction. It is located within the academic neighborhoods and between classrooms to allow for optimization of inclusion in the general education classroom and flexibility in providing specialized instruction to students with minimal time spent in transition.
*Unique to District		Small Inclusion Room	B	450	This room will function as an academic support space and breakout space for specialists, paraprofessionals, and/or for students to work collaboratively on small group activities. It is located within the academic neighborhood to allow for optimization of inclusion and flexibility in providing specialized instruction and small group work space.
*Unique to District		Therapeutic Learning 7/8 Grades	C	425	The Therapeutic Learning Center will provide social/emotional and academic support to students in grades 7 and 8. It is located within an academic neighborhood to allow for optimization of inclusion into the general education classroom, while providing a location for access when students require a break from the general education classroom. The location close to the stairwell will allow for access by 7th grade students on the third floor, while minimizing transition time.
*Unique to District		Language Based - 8th Grade	D	425	The Language-Based Program provides support to students with specific learning disabilities (SLD) in the areas of reading and writing language in a small group setting. Academic support periods are provided for preview and review of content area instruction and concepts taught during students inclusion in general education classrooms. The room is located in an academic neighborhood and adjacent to the resource room, allowing for additional breakout space, as needed, for individualized and small group instruction.
*Unique to District		Student Support Program (SSP) - 8th Grade	E	425	The Student Support program services students with social/emotional/behavioral challenges, providing a self-contained model and inclusionary model, as outlined in students' Individual Education Programs. The room is located within an academic neighborhood to maximize inclusion opportunities. It is also located adjacent to administration for support, as needed.
*Unique to District		Strategies Based Instruction (SBI) - SS	F	425	The SBI program provides instruction within a smaller setting. This classroom is located within an academic neighborhood and adjacent to the stairwell, allowing for access by students on other levels of the building, minimizing transition time.
			Total	15,850	

Square Footage Summary:

The proposed overall gross square footage of the new building is 231,509; Average square feet of General Classrooms is 825!
MSBA guidelines allows for 15,100 net square feet of dedicated special education space. The proposed program is 750 nsf in excess of the guidelines

***Indicates that space is unique to District's program and does not appear in MSBA space guidelines**



September 10, 2015

Mr. Caulen Finch, Project Manager
Massachusetts School Building Authority
40 Broad Street, Suite 500
Boston, Massachusetts 02109

Re: Designer Certification

Ai3 Architects, LLC hereby certifies the design for the new Beverly Middle School meets the square foot calculations outlined below:

Lower Level Gross Floor Area:	24,832sf
First Floor Gross Floor Area:	79,407sf
Second Floor Gross Floor Area:	41,871sf
Third Floor Gross Floor Area:	49,226sf
<u>Fourth Floor Gross Floor Area:</u>	<u>36,173sf</u>
Total All Floors:	231,509sf

The sum of the lower level, first, second, third, and fourth floor areas equals the gross floor area of 231,509 square feet identified in the Educational Space Summary dated July 20, 2015 submitted with the 100% Schematic Design Submission dated August 6, 2015.

To the best of our ability and to the extent of the information we have produced during the 100% Schematic Design phase, the overall gross square footage, as outlined above, is accurate.

Sincerely,

Ai3 ARCHITECTS, LLC

A handwritten signature in black ink, appearing to read 'Troy L. Randall', is written over the company name. The signature is stylized and includes a large, sweeping flourish that extends to the right and loops back under the name.

Troy L. Randall
Partner, AIA LEED AP BD+C

TLR/san





Griffith & Vary, Inc.
12 Kendrick Road
Wareham, MA 02571
(T) 508-295-0050
(F) 508-295-0003

September 14, 2015

Ai3 Architects
526 Boston Post Road
Wayland, MA 01778

Attention: Troy Randall

RE: Beverly Middle School
Beverly, MA

Dear Mr. Randall,

Per your request, G&V has reviewed the fire hydrant flow test information provided by Pare Corp, performed on Cabot Street September 11, 2015 at 10:30 a.m.

With the provided flow test information, it is determined that a fire pump will not be required to support the new fire protection system for the above project.

With the building not being classified as a high riser building a manual wet class 1 standpipe system is permitted under NFPA 14.

Very truly yours,

Griffith & Vary, Inc.

A handwritten signature in black ink that reads 'Mark Gagnon'. The signature is fluid and cursive, with the first letters of 'M' and 'G' being prominent.

Mark Gagnon
Associate



Site Permitting Narrative - 502 Cabot Street

Based on the Schematic Design Plans for the project site, there are multiple permits that will be required at the local, state, and federal level for site construction. The local permitting information was compiled from the City of Beverly Zoning Ordinance, Chapter XXXVIII with amendments through December 2013 (Zoning) and conversations with Steve Frederickson, Director/Building Commissioner of the Beverly Municipal Inspections Department, Leah Zambernardi, Assistant City Planner with the Beverly Planning Board, Aaron Clausen, Director of Planning & Community Development, Stephanie Williams, City Solicitor and Gregory St. Louis, City Engineer. According to the “Zoning Map with Overlays, City of Beverly, Massachusetts – FYE 2014” the Site is located in an area zoned One-Family District (R-10). Educational facilities are noted to be allowed “under special conditions” within a zone R-10 as stated in Zoning section 38-11(A). The following is a list of anticipated permits:

Site Plan Review – Planning Board

The project is not subject to a Site Plan Review or Special Permit review by the Planning Board based on conversations with both the City Solicitor and the Director of Planning & Community Development.

Zoning Board of Appeals

The project is considered a government use under the jurisdiction of the City of Beverly. As such, the Zoning use is allowed in all districts per Zoning section 38-6(A). Based on conversations with the City Solicitor and the Director of Planning & Community Development, the project is not subject to variance review with the Zoning Board of Appeals.

Conservation Commission

PARE completed a review of Massachusetts GIS data and conducted a preliminary review of the wetlands onsite. During the field investigation, wetlands were identified on the site. According to the City of Beverly’s Wetlands Protection Ordinance have associated minimum 100 foot regulatory buffers as well as local 25-foot No-Disturbance Zones. Work is anticipated within these associated buffers and within the Isolated Vegetated Wetland. Work within the Isolated Vegetated Wetland requires wetland replication at a rate of 2:1 as indicated in the Beverly Wetland Bylaw. Based on the scope of the work, a Notice of Intent (NOI) will be required to be submitted to the Beverly Conservation Commission, and the Massachusetts Department of Environmental Protection for work associated with new construction.

A Request for Determination of Applicability (RDA) will be requested for work associated with the building demolition. The RDA for work associated with building demolition is anticipated to be submitted in late September. A hearing will be held in mid-October.

An NOI associated with the new construction work is anticipated to be submitted in late December 2015. Public hearings will be held in early January 2016 and February 2016. Two public hearings are anticipated for the NOI filing. A determination will be issued by the Commission within 21 days of the close of the hearing. It is anticipated that the permitting process with the Commission would take approximately 60 – 75 days.

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Engineering Department Applications

The project will require an application to be filed with the Engineering department in regards to “Drainage Alterations” permit and an “Erosion/Sediment Control & Materials Management Application.” We understand that the permit and application, as well as their review, will run concurrently with the Conservation Commission filing based on conversations with Gregory St. Louis.

Massachusetts Department of Environmental Protection (Mass DEP)

The project will meet the 2008 Storm Water Management Guidelines and appropriate submissions will be made to the Beverly Conservation Commission and Mass DEP, the jurisdictional entity for these guidelines.

An Underground Injection Control Registration will need to be filed for any stormwater systems proposed to infiltrate into the ground. Based on the soil conditions encountered on the site, it is not anticipated that stormwater systems will be proposed to infiltrate and therefore an Underground Injection Control Registration is not anticipated to be required.

National Pollutant Discharge Elimination System (NPDES)

The proposed project will require filing a NPDES construction general permit with the EPA for disturbance of an area of more than one acre of land. The Contractor awarded the contract is responsible for filing for the NPDES General Permit and preparing a project specific Stormwater Pollution Prevention Plan. The contractor must submit a Notice of Intent 14 days prior to any earth disturbing activities.

Massachusetts Environmental Policy Act (MEPA)

The scope of work for the schematic design plans does not appear to trigger MEPA thresholds at this time. However, the following are potential triggers that we will continue to monitor as the design progresses: In the category of land, creation of ten (10) or more acres of impervious area would require a MEPA review. As the design plans are defined further, the increase in impervious area over the existing conditions will be checked. In the category of wetlands, waterways and tidelands, the alteration of 5,000 or more square feet of bordering or isolated vegetated wetlands. The schematic design plans include 1210 square feet of isolated vegetated wetland alteration which does not exceed the threshold. As the design plans are defined further, the alteration of wetlands will continue to be monitored. In the category of transportation, the construction of 300 or more new parking spaces at a single location would require MEPA review. As the design plans are defined further, the parking space count will be checked.

As the design plans are developed further, all thresholds will be reviewed in regards to the proposed project. If MEPA review is required, MEPA requires applications to be submitted one year prior to construction.

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Massachusetts Department of Transportation (MassDOT)

The Site entrances are currently located off of Cabot Street. The existing north entrance is located within a state highway layout and the existing south entrance is located within a local roadway layout. Based on the current preferred schematic plans, and the initial traffic study, the site appears to be subject to a MassDOT Category II – Major Vehicular Access Permit. The review schedule for the permit consists of three separate submissions. A detailed review of each submission is required by MassDOT. The first submission is to be reviewed within 35 business days, the second submission is to be completed within 20 business days and the third submission shall be reviewed within 20 business days. It is anticipated that the permitting process with MassDOT would take approximately three months.

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The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

August 26, 2015

L. Scott Dunlap
Ai3 Architects, LLC
526 Boston Post Road
Wayland, MA 01778

RE: Beverly Middle School New Construction, Demolition of Memorial Building, 502 Cabot Street, Beverly, MA; MHC# RC.58616

Dear Mr. Dunlap:

Thank you for submitting a Project Notification Form (PNF) for the project referenced above, which was received at this office on August 11, 2015. The staff of the Massachusetts Historical Commission (MHC) have reviewed the information submitted and have the following comments.

The proposed project consists of the demolition of the existing Memorial Building and the construction of a new Beverly Middle School at 502 Cabot Street in Beverly. The information provided indicates that the project will use funding from the Massachusetts School Building Authority (MSBA).

Review of MHC's files indicates that the Beverly Middle School is not included in MHC's Inventory of Historic and Archaeological Assets of the Commonwealth, nor listed in the National and State Registers of Historic Places. No further review by the MHC is required for the MSBA-funded project.

These comments are offered to assist in compliance with Massachusetts General Laws, Chapter 9, Sections 26-27C, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71.00). Please do not hesitate to contact Linda Santoro of my staff, should you have any questions.

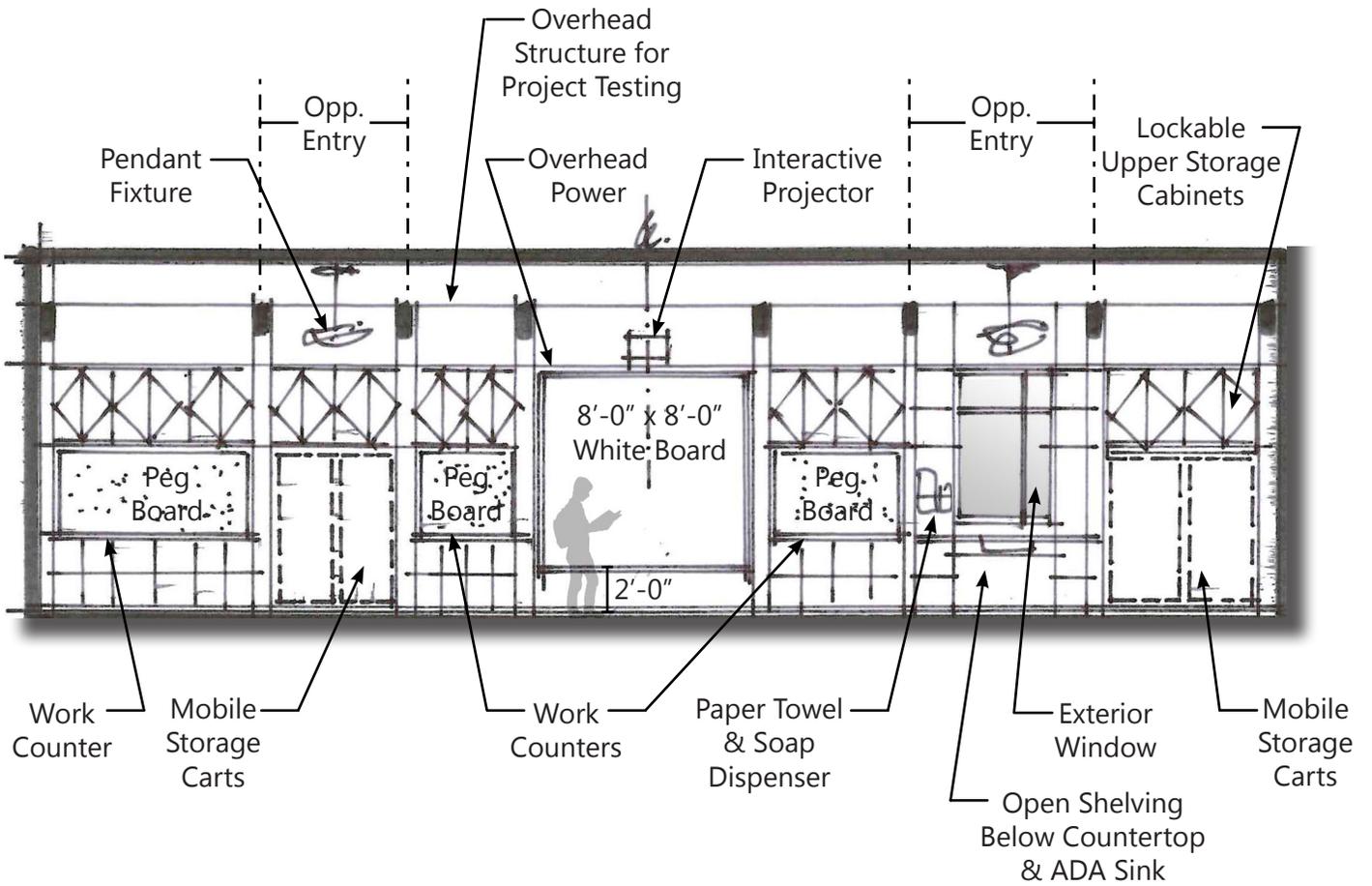
Sincerely,

A handwritten signature in blue ink that reads "Brona Simon".

Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

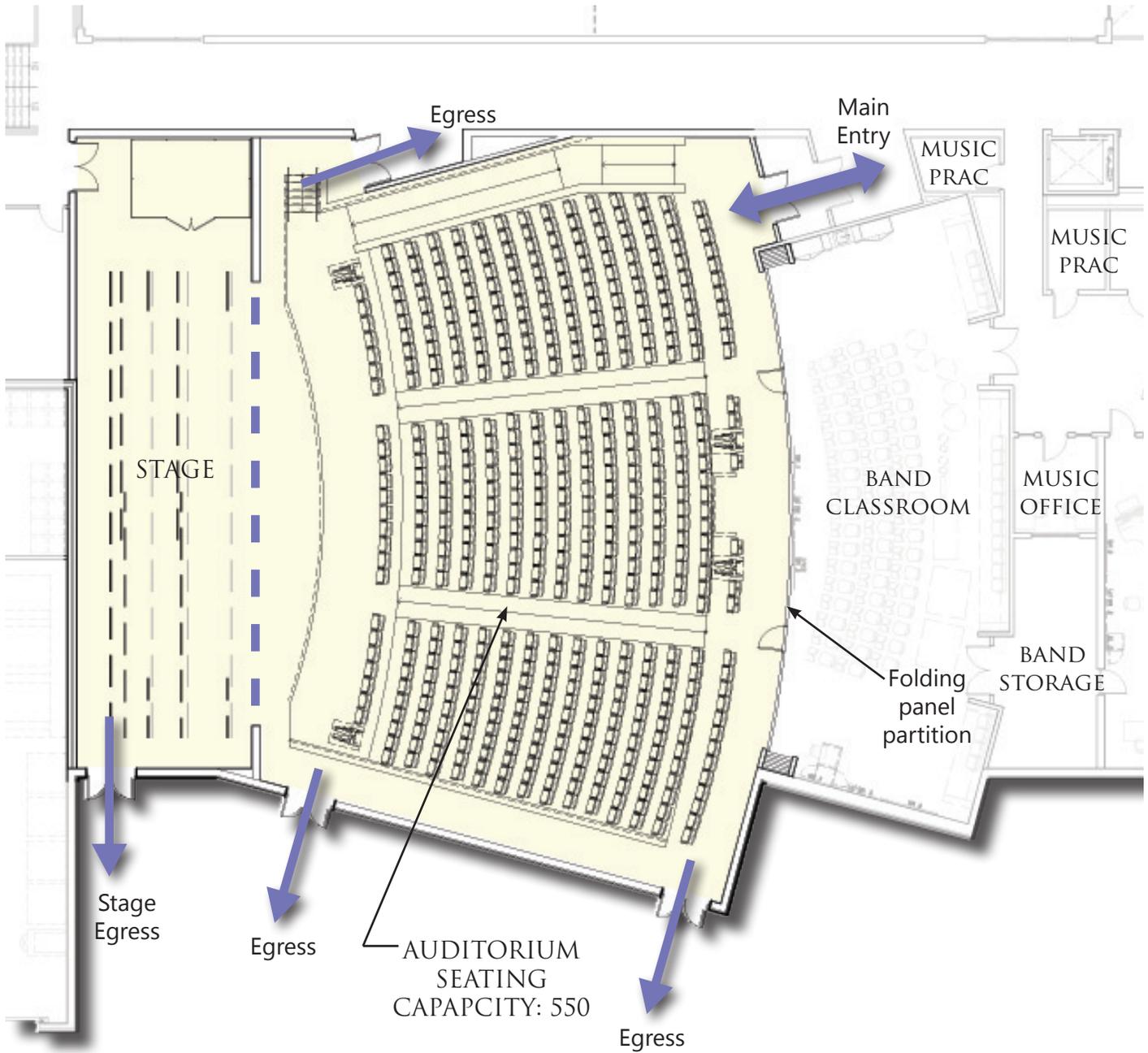
ACADEMIC TEAM ROOM

Interior Elevation



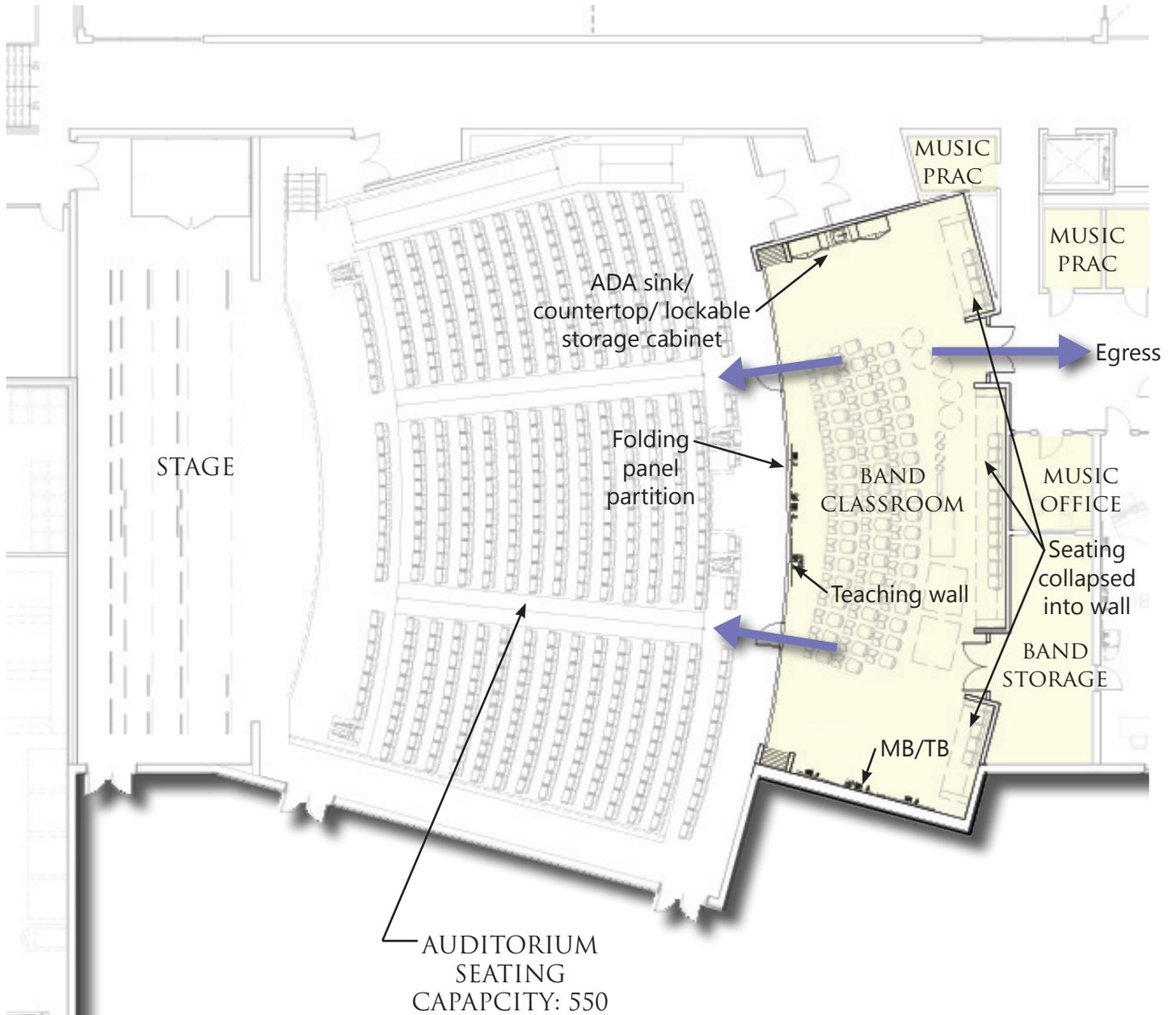
LAYOUT #1: SMALL GROUP THEATER/SEMINAR/PRESENTATION

First Floor



LAYOUT #2: MUSIC/BAND CLASSROOM

First Floor



LAYOUT #3: EXPANDED AUDITORIUM

First Floor

